

Formulierversie  
2016.03

# Aanvraaggegevens

Publiceerbare aanvraag/melding

|                   |                               |
|-------------------|-------------------------------|
| Aanvraagnummer    | 2068831                       |
| Aanvraagnaam      | verlengen bestaande kapschuur |
| Uw referentiecode | -                             |

|                 |                     |
|-----------------|---------------------|
| Ingediend op    | 08-12-2016          |
| Soort procedure | Reguliere procedure |

|                                 |                                                     |
|---------------------------------|-----------------------------------------------------|
| Projectomschrijving             | verlengen bestaande kapschuur It Fryske Gea Katlijk |
| Opmerking                       | -                                                   |
| Gefaseerd                       | Nee                                                 |
| Blokkerende onderdelen weglaten | Nee                                                 |
| Kosten openbaar maken           | Nee                                                 |
| Bijlagen die later komen        | n.t.b.                                              |
| Bijlagen n.v.t. of al bekend    | n.t.b.                                              |

**Bevoegd gezag**

|                 |                                     |
|-----------------|-------------------------------------|
| Naam:           | Gemeente Heerenveen                 |
| Bezoekadres:    | Crackstraat 2<br>8441 ES Heerenveen |
| Postadres:      | Postbus 15000<br>8440 GA HEERENVEEN |
| Telefoonnummer: | 0513-617617                         |
| Faxnummer:      | 0513-617475                         |
| E-mailadres:    | vergunningen@heerenveen.nl          |
| Website:        | www.heerenveen.nl                   |
| Contactpersoon: | Dienst Publiek en Veiligheid        |

## Overzicht bijgevoegde modulebladen

Aanvraaggegevens

Locatie van de werkzaamheden

Werkzaamheden en onderdelen

Bijbehorend bouwwerk bouwen

- Bouwen

Bijlagen

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# Locatie

## 1 Adres

|                      |                  |
|----------------------|------------------|
| Postcode             | 8455JG           |
| Huisnummer           | 24               |
| Huisletter           | A                |
| Huisnummertoevoeging | -                |
| Straatnaam           | Schoterlandseweg |
| Plaatsnaam           | Katlijk          |

Gelden de werkzaamheden in deze  
aanvraag/melding voor meerdere  
adressen of percelen?

☐ Ja  
☒ Nee

# Bouwen

## Bijbehorend bouwwerk bouwen

### 1 Woning

Gaat het om de bouw van één of meer woningen?

- ☐ Ja  
☒ Nee

### 2 De bouwwerkzaamheden

Wat is er op het bouwwerk van toepassing?

- ☐ Het wordt geheel vervangen  
☐ Het wordt gedeeltelijk vervangen  
☒ Het wordt nieuw geplaatst

Eventuele toelichting

-

Hebt u voor deze bouwwerkzaamheden al eerder een vergunning aangevraagd?

- ☐ Ja  
☒ Nee

### 3 Plaats van het bouwwerk

Waar gaat u bouwen?

Bijgebouw

Naam van het bijgebouw of bouwwerk

kapschuur

### 4 Bruto vloeroppervlakte bouwwerk

Verandert de bruto vloeroppervlakte van het bouwwerk door de bouwwerkzaamheden?

- ☒ Ja  
☐ Nee

Wat is de bruto vloeroppervlakte van het bouwwerk in m<sup>2</sup> voor uitvoering van de bouwwerkzaamheden?

216

Wat is de bruto vloeroppervlakte van het bouwwerk in m<sup>2</sup> na uitvoering van de bouwwerkzaamheden?

406

### 5 Bruto inhoud bouwwerk

Verandert de bruto inhoud van het bouwwerk door de bouwwerkzaamheden?

- ☒ Ja  
☐ Nee

Wat is de bruto inhoud van het bouwwerk in m<sup>3</sup> voor uitvoering van de bouwwerkzaamheden?

864

Wat is de bruto inhoud van het bouwwerk in m<sup>3</sup> na uitvoering van de bouwwerkzaamheden?

1624

## 6 Oppervlakte bebouwd terrein

Verandert de bebouwde oppervlakte van het terrein na uitvoering van de bouwwerkzaamheden? ☒ Ja  
☐ Nee

Wat is de bebouwde oppervlakte van het terrein in m2 voor uitvoering van de bouwwerkzaamheden? 0

Wat is de bebouwde oppervlakte van het terrein in m2 na uitvoering van de bouwwerkzaamheden? 0

## 7 Seizoensgebonden en tijdelijke bouwwerken

Gaat het om een seizoengebonden bouwwerk? ☐ Ja  
☒ Nee

Gaat het om een tijdelijk bouwwerk? ☐ Ja  
☒ Nee

## 8 Gebruik

Waar gebruikt u het bouwwerk en/of terrein momenteel voor? ☐ Wonen  
☒ Overige gebruiksfuncties

Geef aan waar u het bouwwerk en/of terrein momenteel voor gebruikt. opslagruimte

Waar gaat u het bouwwerk voor gebruiken? ☐ Wonen  
☒ Overige gebruiksfuncties

Geef aan waar u het bouwwerk voor gaat gebruiken. opslagruimte

## 9 Gebruiksfuncties

In onderstaande tabel staan in de eerste kolom mogelijke gebruiksfuncties die in een bouwwerk kunnen voorkomen. Vul voor alle gebruiksfuncties die voor u van toepassing zijn het aantal personen, de totale gebruiksoppervlakte en de totale vloeroppervlakte van het verblijfsgebied in m2 in hele getallen in.

| Gebruiksfunctie          | Aantal personen | Gebruiksoppervlakte (m2) | Verblijfsoppervlakte (m2) |
|--------------------------|-----------------|--------------------------|---------------------------|
| Bijeenkomst              |                 |                          |                           |
| Cel                      |                 |                          |                           |
| Gezondheidszorg          |                 |                          |                           |
| Industrie                |                 |                          |                           |
| Kantoor                  |                 |                          |                           |
| Logies                   |                 |                          |                           |
| Onderwijs                |                 |                          |                           |
| Sport                    |                 |                          |                           |
| Winkel                   |                 |                          |                           |
| Overige gebruiksfuncties |                 |                          |                           |

## 10 Uiterlijk bouwwerk/welstand

Beschrijf van de onderstaande onderdelen de materialen en kleuren die u voor het bouwwerk gebruikt. U mag het veld leeg laten als u materialen en kleuren in de bijlagen vermeldt

| Onderdelen            | Materiaal | Kleur |
|-----------------------|-----------|-------|
| Gevels                |           |       |
| - Plint gebouw        |           |       |
| - Gevelbekleding      |           |       |
| - Borstweringen       |           |       |
| - Voegwerk            |           |       |
| Kozijnen              |           |       |
| - Ramen               |           |       |
| - Deuren              |           |       |
| - Luiken              |           |       |
| Dakgoten en boeidelen |           |       |
| Dakbedekking          |           |       |

Vul hier overige onderdelen en zie tekening  
bijbehorende materialen en kleuren  
in.

#### 11 Mondeling toelichten

Ik wil mijn bouwplan  
mondeling toelichten voor  
de welstandscommissie/  
stadsbouwmeester.

- ☐ Ja  
☒ Nee

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# Bijlagen

## Formele bijlagen

| Naam bijlage                            | Bestandsnaam                             | Type                                                 | Datum ingediend | Status document |
|-----------------------------------------|------------------------------------------|------------------------------------------------------|-----------------|-----------------|
| 2015-76 bouwplan_1.jpg                  | 2015-76 bouwplan_1.jpg                   | Plattegronden, doorsneden en detailtekeningen bouwen | 2016-12-08      | In behandeling  |
| 2015-76 bouwplan_2.jpg                  | 2015-76 bouwplan_2.jpg                   | Plattegronden, doorsneden en detailtekeningen bouwen | 2016-12-08      | In behandeling  |
| 2016-76_B-01_08-12--2016_compressed_pdf | 2016-76_B-01_0-8-12-2016.compressed-.pdf | Plattegronden, doorsneden en detailtekeningen bouwen | 2016-12-08      | In behandeling  |

Gemeente Heerenveen  
Postbus 15000  
8440 GA Heerenveen  
T.a.v. dhr. D. Polet  
Afdeling vergunningen

Katlijk, 21 september 2016

Betreft: uitbreiding kapschuur Katlijk

Geachte Heer Polet,

In het najaar van 2015 heeft de heer P. Jukema in opdracht van It Fryske Gea contact met u gehad voor uitbreiding van de bestaande kapschuur aan de Schoterlandseweg 24A te Katlijk.

In de begroting van It Fryske Gea van 2017 zijn de financiële middelen voor uitbreiding van de kapschuur gereserveerd, zodat de voorbereidingen voor de realisatie kunnen doorgaan.

Om aan te geven waarom It Fryske Gea de kapschuur wil uitbreiden volgen er nu een aantal argumenten.

Op dit moment staan er diverse machines en werktuigen buiten, wat een rommelige indruk geeft. Er treedt buiten eerder roestvorming op en de duurzaamheid wordt hier negatief door beïnvloed.

Ook het aan- en afkoppelen van werktuigen achter de tractor gebeurt op een niet vlakke ondergrond. Hier is It Fryske Gea op aangesproken met de risico-inventarisatie van de bedrijfslocatie. Het advies was om de werktuigen op een betonnen vloer neer te zetten, zodat de kans op blessures en persoonlijk letsel zo klein mogelijk zijn.

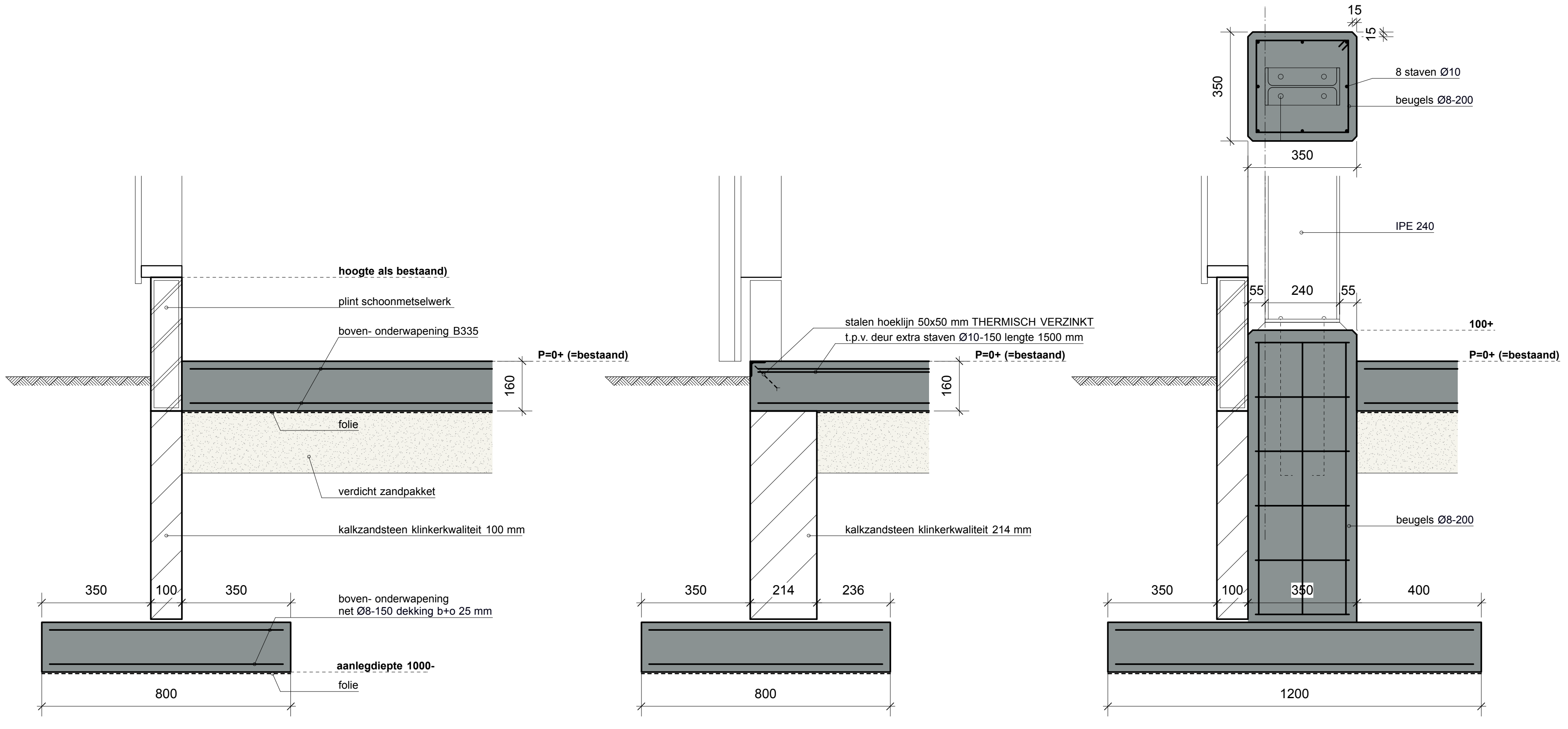
Omdat er het hele jaar door veel onbehandeld hout buiten ligt, zou deze extra ruimte zeer welkom zijn. Dit hout is o.a. bedoeld voor het gebruik van slagboompalen, palen t.b.v. bebording, vlonders en te maken landhekken, allemaal bedoeld t.b.v. natuurterreinen.

Volgens het bestemmingsplan zou er maximaal 625 m<sup>2</sup> aan bebouwing op het erf mogen plaatsvinden. Na uitbreiding van de kapschuur zou de bebouwde oppervlakte 597 m<sup>2</sup> bedragen, ruim binnen de toegestane oppervlakte.

Gezien de bovengenoemde argumenten vraagt It Fryske Gea toestemming tot verlening van de bouwvergunning.

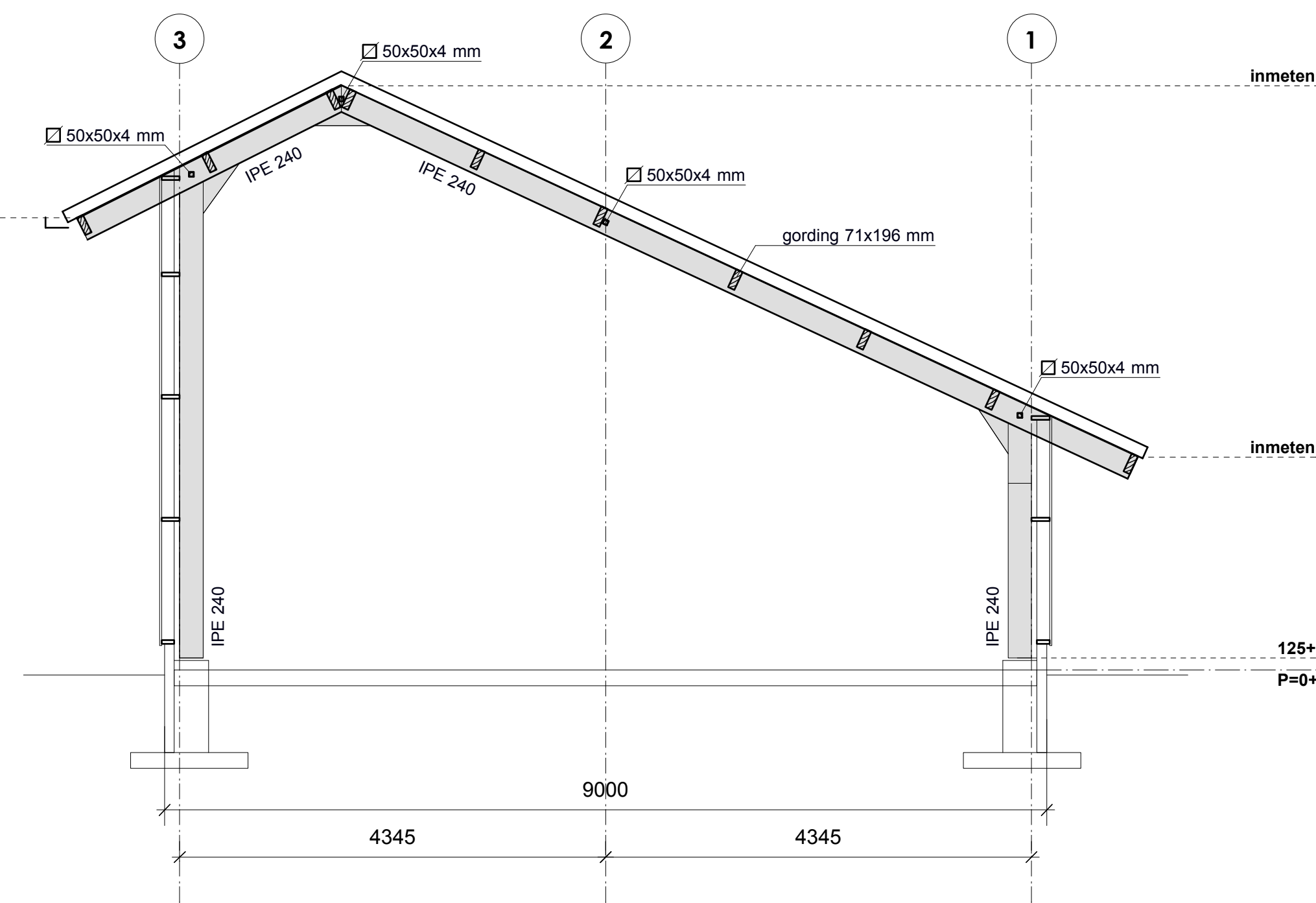
Met vriendelijke groet,

Ane Zijlstra  
Districtshoofd Súd  
It Fryske Gea

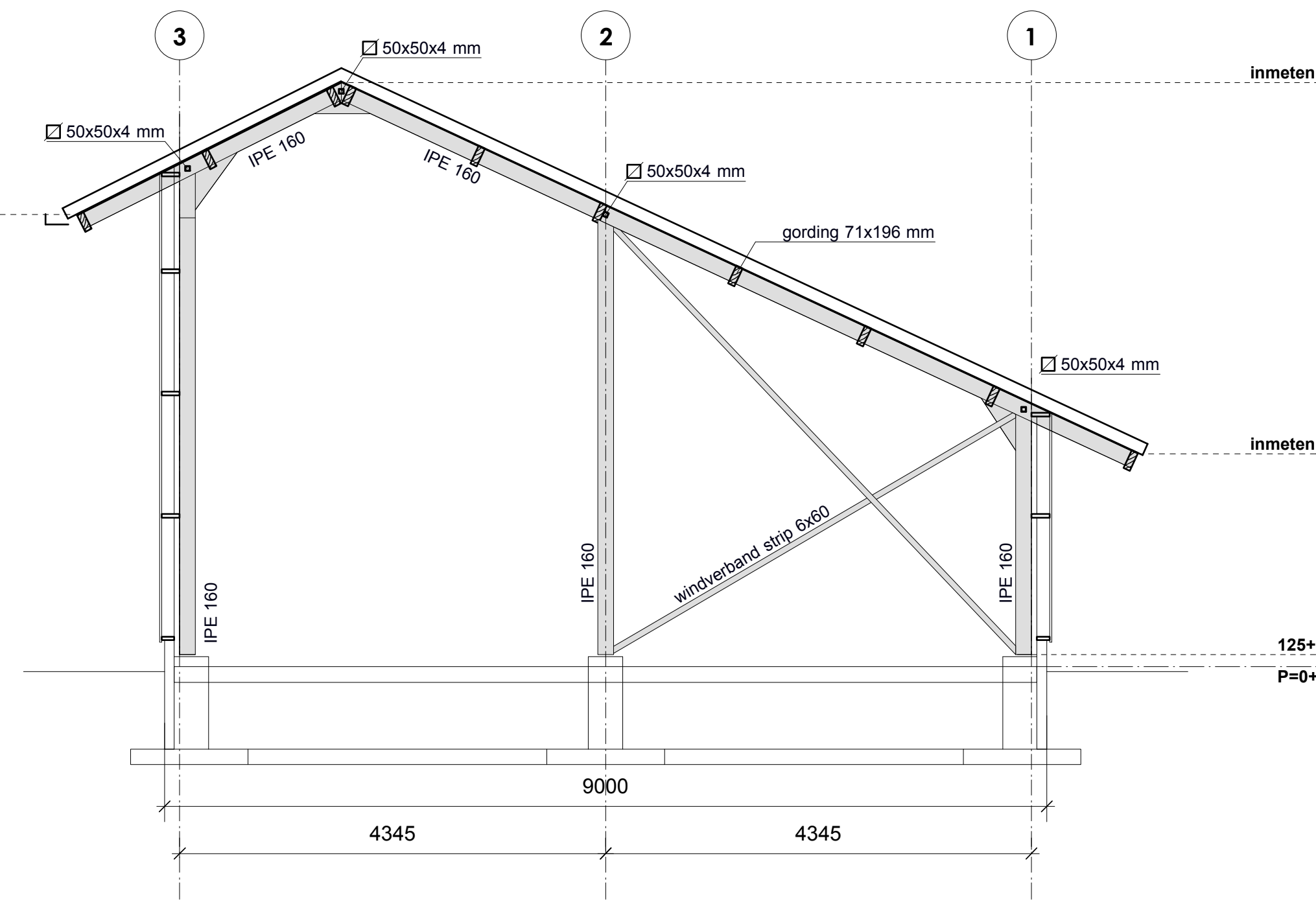


## DETAIL 1

### DETAIL 3



DOORSNEDE as A, B, C en D

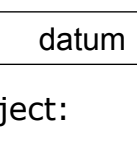
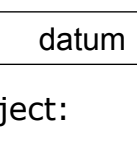
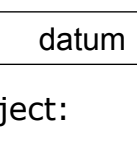


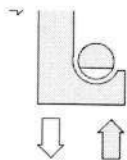
DOORSNEDE as E

Hout:  
Sterkteklasse: C18  
Milieuklasse: I

Staalconstructie algemeen:  
STAALKWALITEIT: S235  
LASSEN: a=5 (minimaal)  
BOUTKWALITEIT: 8.8  
ANKERBOUTKWALITEIT: M16 - 4.6  
ANTICORROSIEBEHANDLING: VOLGENS BESTEK  
AL HET STAAL DAT MET BUITENLUCHT  
IN AANRAKING KOMT, THERMISCH VERZINKEN  
TIJDENS HET STELEN VAN DE STAALCONSTRUCTIE  
ZORGEN VOOR VOLDOENDE MONTAGEVERBAND  
BOUWBEGRIPPEL VAN GETOOGDE LIGGERS NA MONTAGE NADRAAIEN  
DE KOLOMMEN ONDERSAABELN MET KRIMPARME MORTEL  
VOOR HET AANBRENGEN VAN WAND- EN OF GEVELBEPLATING

|                                                      |              |                                                                    |       |                            |
|------------------------------------------------------|--------------|--------------------------------------------------------------------|-------|----------------------------|
| uitvoering betonconstructies<br>volgens NEN-EN 13670 |              | betonkwaliteit vloer:<br>betonkwaliteit balken:<br>staalkwaliteit: |       | C20/25<br>C20/25<br>B 500B |
| onderdeel                                            | milieuklasse | dekking in mm op beugels                                           |       |                            |
|                                                      |              | onder                                                              | boven | zijkant                    |
| funderingsstroken                                    | XC2          | 30                                                                 | 25    | 25                         |
| funderingsbalk en poeren                             | XC2          | 30                                                                 | 30    | 40                         |
| kolommen                                             | XC2          | -                                                                  | 35    | 35                         |
| wanden                                               | XC2          | -                                                                  | 25    | 25                         |
| vloer                                                | XC2          | 25                                                                 | 25    | 25                         |
| werkvloer                                            | folie        |                                                                    |       |                            |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                      |                                                                                                                                                                                            |         |       |       |              |  |          |                                                      |  |  |               |                              |  |  |            |                                                      |  |  |                |                                                   |  |  |          |             |         |         |  |  |                     |  |        |            |         |      |  |  |         |  |                                                                                       |  |                                                                                                                                                                                            |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------|-------|--------------|--|----------|------------------------------------------------------|--|--|---------------|------------------------------|--|--|------------|------------------------------------------------------|--|--|----------------|---------------------------------------------------|--|--|----------|-------------|---------|---------|--|--|---------------------|--|--------|------------|---------|------|--|--|---------|--|---------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                      |                                                                                                                                                                                            |         |       |       |              |  |          |                                                      |  |  |               |                              |  |  |            |                                                      |  |  |                |                                                   |  |  |          |             |         |         |  |  |                     |  |        |            |         |      |  |  |         |  |                                                                                       |  |                                                                                                                                                                                            |  |
| E                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                      |                                                                                                                                                                                            |         |       |       |              |  |          |                                                      |  |  |               |                              |  |  |            |                                                      |  |  |                |                                                   |  |  |          |             |         |         |  |  |                     |  |        |            |         |      |  |  |         |  |                                                                                       |  |                                                                                                                                                                                            |  |
| D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                      |                                                                                                                                                                                            |         |       |       |              |  |          |                                                      |  |  |               |                              |  |  |            |                                                      |  |  |                |                                                   |  |  |          |             |         |         |  |  |                     |  |        |            |         |      |  |  |         |  |                                                                                       |  |                                                                                                                                                                                            |  |
| C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                      |                                                                                                                                                                                            |         |       |       |              |  |          |                                                      |  |  |               |                              |  |  |            |                                                      |  |  |                |                                                   |  |  |          |             |         |         |  |  |                     |  |        |            |         |      |  |  |         |  |                                                                                       |  |                                                                                                                                                                                            |  |
| B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                      |                                                                                                                                                                                            |         |       |       |              |  |          |                                                      |  |  |               |                              |  |  |            |                                                      |  |  |                |                                                   |  |  |          |             |         |         |  |  |                     |  |        |            |         |      |  |  |         |  |                                                                                       |  |                                                                                                                                                                                            |  |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                      |                                                                                                                                                                                            |         |       |       |              |  |          |                                                      |  |  |               |                              |  |  |            |                                                      |  |  |                |                                                   |  |  |          |             |         |         |  |  |                     |  |        |            |         |      |  |  |         |  |                                                                                       |  |                                                                                                                                                                                            |  |
| <table border="1"> <tr> <td>wijz.</td> <td>datum</td> <td colspan="2">omschrijving</td> </tr> <tr> <td>Project:</td> <td colspan="3"><b>uitbreiding bestaande kapschuur It Fryske Gea</b></td> </tr> <tr> <td>Projectadres:</td> <td colspan="3">Schoterlandseweg 24a Katlijk</td> </tr> <tr> <td>Onderdeel:</td> <td colspan="3">funderingsplan - vloer - wapening - staalconstructie</td> </tr> <tr> <td>Opdrachtgever:</td> <td colspan="3">It Fryske Gea - Postbus 3 - 9244 ZN BEETSTERZWAAG</td> </tr> <tr> <td>Formaat:</td> <td>1050x840 mm</td> <td>Schaal:</td> <td>1:50/10</td> </tr> <tr> <td colspan="2"></td> <td colspan="2">Getekend: P. Jukema</td> </tr> <tr> <td>Datum:</td> <td>15-03-2017</td> <td>Bladnr:</td> <td>W-01</td> </tr> <tr> <td colspan="2"></td> <td colspan="2">Werknr:</td> </tr> <tr> <td colspan="2">  </td> <td colspan="2"> <b>v.o.f. Ingenieursbureau Linek c.i.</b><br/> <b>De Fjûrslach 17 - 86501 CG - Ylst</b><br/> <b>Postbus 9 - 8650 AA - Ylst</b><br/> <b>Tel: 0515 53 20 31</b><br/> <b>E-mail: linek@kpnmail.nl</b> </td> </tr> </table> |                                                      |                                                                                                                                                                                            |         | wijz. | datum | omschrijving |  | Project: | <b>uitbreiding bestaande kapschuur It Fryske Gea</b> |  |  | Projectadres: | Schoterlandseweg 24a Katlijk |  |  | Onderdeel: | funderingsplan - vloer - wapening - staalconstructie |  |  | Opdrachtgever: | It Fryske Gea - Postbus 3 - 9244 ZN BEETSTERZWAAG |  |  | Formaat: | 1050x840 mm | Schaal: | 1:50/10 |  |  | Getekend: P. Jukema |  | Datum: | 15-03-2017 | Bladnr: | W-01 |  |  | Werknr: |  |  |  | <b>v.o.f. Ingenieursbureau Linek c.i.</b><br><b>De Fjûrslach 17 - 86501 CG - Ylst</b><br><b>Postbus 9 - 8650 AA - Ylst</b><br><b>Tel: 0515 53 20 31</b><br><b>E-mail: linek@kpnmail.nl</b> |  |
| wijz.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | datum                                                | omschrijving                                                                                                                                                                               |         |       |       |              |  |          |                                                      |  |  |               |                              |  |  |            |                                                      |  |  |                |                                                   |  |  |          |             |         |         |  |  |                     |  |        |            |         |      |  |  |         |  |                                                                                       |  |                                                                                                                                                                                            |  |
| Project:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>uitbreiding bestaande kapschuur It Fryske Gea</b> |                                                                                                                                                                                            |         |       |       |              |  |          |                                                      |  |  |               |                              |  |  |            |                                                      |  |  |                |                                                   |  |  |          |             |         |         |  |  |                     |  |        |            |         |      |  |  |         |  |                                                                                       |  |                                                                                                                                                                                            |  |
| Projectadres:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Schoterlandseweg 24a Katlijk                         |                                                                                                                                                                                            |         |       |       |              |  |          |                                                      |  |  |               |                              |  |  |            |                                                      |  |  |                |                                                   |  |  |          |             |         |         |  |  |                     |  |        |            |         |      |  |  |         |  |                                                                                       |  |                                                                                                                                                                                            |  |
| Onderdeel:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | funderingsplan - vloer - wapening - staalconstructie |                                                                                                                                                                                            |         |       |       |              |  |          |                                                      |  |  |               |                              |  |  |            |                                                      |  |  |                |                                                   |  |  |          |             |         |         |  |  |                     |  |        |            |         |      |  |  |         |  |                                                                                       |  |                                                                                                                                                                                            |  |
| Opdrachtgever:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | It Fryske Gea - Postbus 3 - 9244 ZN BEETSTERZWAAG    |                                                                                                                                                                                            |         |       |       |              |  |          |                                                      |  |  |               |                              |  |  |            |                                                      |  |  |                |                                                   |  |  |          |             |         |         |  |  |                     |  |        |            |         |      |  |  |         |  |                                                                                       |  |                                                                                                                                                                                            |  |
| Formaat:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1050x840 mm                                          | Schaal:                                                                                                                                                                                    | 1:50/10 |       |       |              |  |          |                                                      |  |  |               |                              |  |  |            |                                                      |  |  |                |                                                   |  |  |          |             |         |         |  |  |                     |  |        |            |         |      |  |  |         |  |                                                                                       |  |                                                                                                                                                                                            |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                      | Getekend: P. Jukema                                                                                                                                                                        |         |       |       |              |  |          |                                                      |  |  |               |                              |  |  |            |                                                      |  |  |                |                                                   |  |  |          |             |         |         |  |  |                     |  |        |            |         |      |  |  |         |  |                                                                                       |  |                                                                                                                                                                                            |  |
| Datum:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 15-03-2017                                           | Bladnr:                                                                                                                                                                                    | W-01    |       |       |              |  |          |                                                      |  |  |               |                              |  |  |            |                                                      |  |  |                |                                                   |  |  |          |             |         |         |  |  |                     |  |        |            |         |      |  |  |         |  |                                                                                       |  |                                                                                                                                                                                            |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                      | Werknr:                                                                                                                                                                                    |         |       |       |              |  |          |                                                      |  |  |               |                              |  |  |            |                                                      |  |  |                |                                                   |  |  |          |             |         |         |  |  |                     |  |        |            |         |      |  |  |         |  |                                                                                       |  |                                                                                                                                                                                            |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                      | <b>v.o.f. Ingenieursbureau Linek c.i.</b><br><b>De Fjûrslach 17 - 86501 CG - Ylst</b><br><b>Postbus 9 - 8650 AA - Ylst</b><br><b>Tel: 0515 53 20 31</b><br><b>E-mail: linek@kpnmail.nl</b> |         |       |       |              |  |          |                                                      |  |  |               |                              |  |  |            |                                                      |  |  |                |                                                   |  |  |          |             |         |         |  |  |                     |  |        |            |         |      |  |  |         |  |                                                                                       |  |                                                                                                                                                                                            |  |



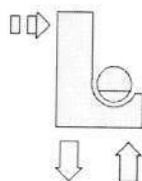
## STATISCHE BEREKENING

Project: Kapschuur  
Projectadres: Schoterlandseweg 24a te Katlijk  
Onderdeel: Fundering  
Opdrachtgever: It Fryske Gea  
Werknummer 17-118

### VOORSCHRIFTEN

- |                                                 |                             |
|-------------------------------------------------|-----------------------------|
| <input checked="" type="checkbox"/> NEN-EN 1991 | Belastingen op constructies |
| <input checked="" type="checkbox"/> NEN-EN 1992 | Betonconstructies           |
| <input type="checkbox"/> NEN-EN 1993            | Staalconstructies           |
| <input type="checkbox"/> NEN-EN 1995            | Houtconstructies            |
| <input type="checkbox"/> NEN-EN 1996            | Metselwerkconstructies      |
| <input checked="" type="checkbox"/> NEN-EN 1997 | Geotechnisch ontwerp        |

Datum: 09-03-2017



**v.o.f. Ingenieursbureau Linek**  
**De Fjûrslach 17 – 8681 CG IJlst**  
**Postbus 9 – 8650 AA IJlst**  
**Tel: 0515-532031**  
**Mail: linek@kpnmail.nl**

## Inhoud

|           |                             |
|-----------|-----------------------------|
| blz. 3    | Belastingen                 |
| 4         | Schema fundering            |
| 5         | lijnlasten                  |
| 6         | poeren t.b.v. str. 8 t/m 11 |
| 7         | " " str. 12                 |
| 8         | stroken ①                   |
| 9         | " ②                         |
| 10 t/m 10 | beg. grondvloer             |

## Algemeen

betrouwbaarheidsk  
referentieperiode

RC1 / CC1  
15 jaar

## $\gamma$ -factor

|               | $\gamma_0$ | $\gamma_1$ | $\gamma_2$ |
|---------------|------------|------------|------------|
| opslagruimtes | 1,0        | 0,9        | 0,8        |

## Belastingen

### beg. Grondvloer

betonvloer

$0,16 \times 25$

$$g = \underline{4,00 \text{ kN/m}^2}$$

v.b.

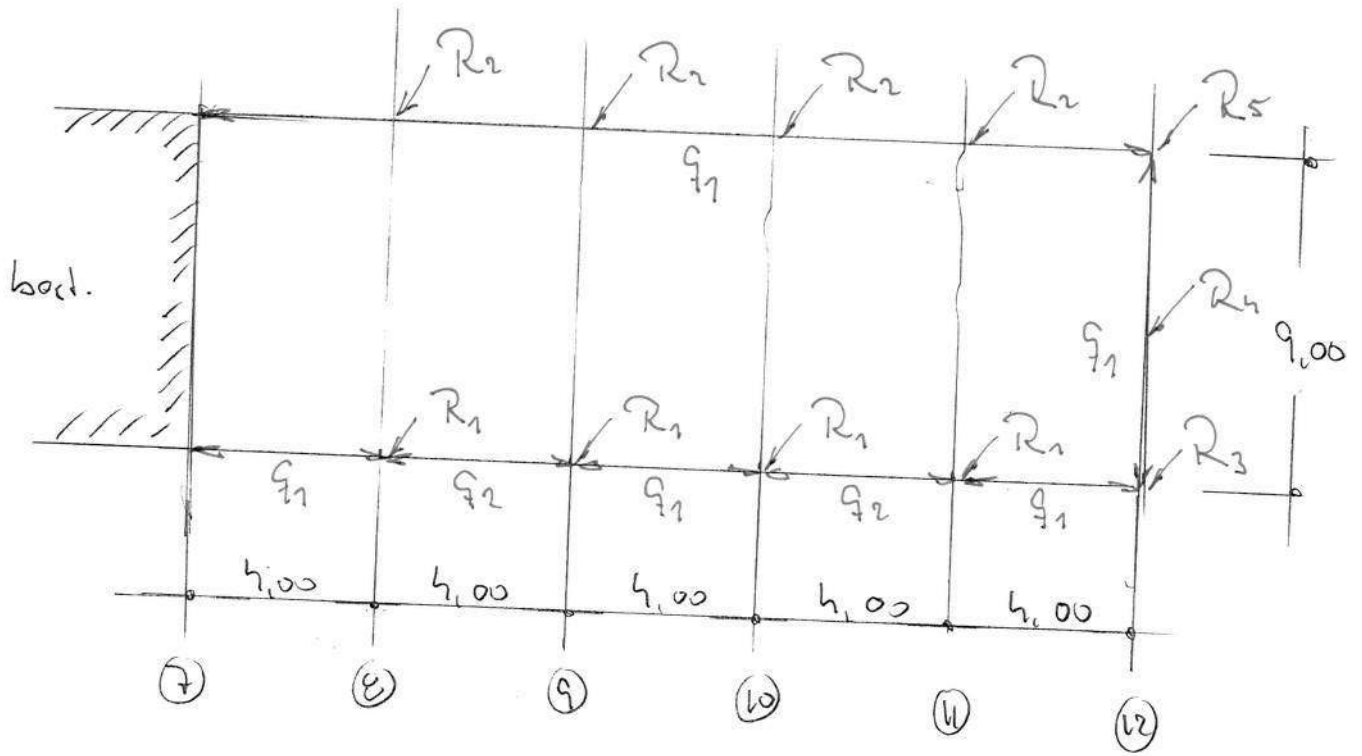
$$q = \underline{3,00 \text{ kN/m}^2}$$

aslast:  $R = 100 \text{ kN}$

## Puntlasten

zie berekening steelconstructie

Schema fundering



## lijnlasten

Gr:

m.w.

grond

strook

$$2,00 \times 0,60$$

$$18,00 \times 0,60 \times 0,70$$

$$0,80 \times 0,18 \times 25$$

$$= 1,20 \text{ kN/m}$$

$$= 7,56 \text{ "}$$

$$= 3,60 \text{ "}$$

$$\underline{\underline{12,36 \text{ kN/m}}}$$

Gr:

m.w.

grond

strook

$$4,00 \times 0,60$$

$$18,00 \times 0,60 \times 0,80$$

$$1,20 \times 0,18 \times 25$$

$$= 2,40 \text{ kN/m}$$

$$= 8,64 \text{ "}$$

$$= 5,40 \text{ "}$$

$$\underline{\underline{16,44 \text{ kN/m}}}$$

aslast voortuig t.p.v. deuren :  $R = \underline{\underline{100 \text{ kN}}}$

Project : kapschuur te katlijk  
Onderdeel : poeren t.b.v. str. 8 t/m 11  
Datum : kN/m/rad  
Eenheden : 09/03/2017

**Toegepaste normen volgens Eurocode met Nederlandse NB**

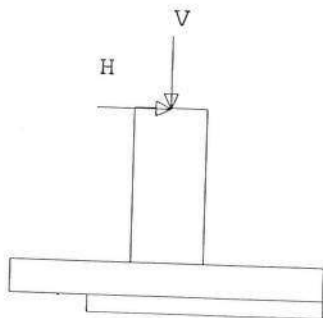
|             |                      |         |              |
|-------------|----------------------|---------|--------------|
| Belastingen | NEN-EN 1990:2002     | C2:2010 | NB:2011 (nl) |
|             | NEN-EN 1991-1-1:2002 | C1:2009 | NB:2011 (nl) |
| Geotechniek | EN 1997-1:2004       | AC:2009 |              |
|             | NEN-EN 1997-1:2005   | C1:2009 | NB:2012      |
|             | NEN 9997-1:2011      | C1:2012 |              |

**Funderingsplaat. (A)**

|                               |         |         |        |       |
|-------------------------------|---------|---------|--------|-------|
| Plaatafmeting B*L*D           | [mm]    | : 1500  | * 1500 | * 160 |
| Kolomafmeting B*H             | [mm]    | : 350   | * 350  |       |
| Aanlegdiepte                  | [m]     | : 0.80  |        |       |
| Bovenkant kolom tov. maaiveld | [m]     | : 0.10  |        |       |
| Excentriciteit kolom          | [mm]    | : 0.00  |        |       |
| Soortelijk gewicht grond      | [kN/m3] | : 19.00 |        |       |
| Soortelijk gewicht beton      | [kN/m3] | : 24.00 |        |       |
| Moment                        | [kNm]   | : 0.00  |        |       |
| Verticale kracht              | [kN]    | : 29.80 |        |       |
| Horizontale kracht            | [kN]    | : 13.80 |        |       |
| Belastingfactor               | :       | : 1.00  |        |       |

**Resultaten**

|                  |         |         |               |               |
|------------------|---------|---------|---------------|---------------|
| Gronddruk        | [kN/m2] | : 39.35 |               |               |
| Kantelmoment     | [kNm]   | : 12.42 | Stab.moment   | [kNm] : 49.86 |
| Kantelveiligheid | :       | : 4.01  | Bef rechts    | [m] : 1.13    |
| Moment links     | [kNm]   | : 2.81  | Moment rechts | [kNm] : -6.30 |



Wapening

$$b/h/d = 150/16/13 \text{ cm}$$

$$k_m = \frac{6.30}{1.00 \times 0.13^2} = 373 \Rightarrow$$

$$k_s = 0.499$$

$$A_s = \frac{6.30}{0.499 \times 0.13} = 112 \text{ mm}^2/\text{m}$$

$$\Rightarrow \# \phi^8 - 150 = 325 \text{ mm}^2/\text{m}$$

tot

Project : kapschuur te katlijk  
 Onderdeel : poeren t.b.v. str. 12  
 Datum : kN/m/rad  
 Eenheden : 09/03/2017

### Toegepaste normen volgens Eurocode met Nederlandse NB

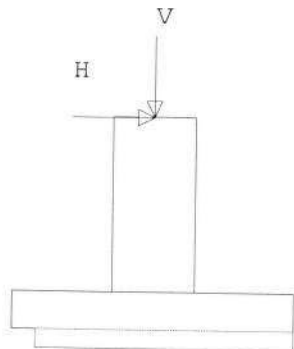
|             |                      |         |              |
|-------------|----------------------|---------|--------------|
| Belastingen | NEN-EN 1990:2002     | C2:2010 | NB:2011 (nl) |
|             | NEN-EN 1991-1-1:2002 | C1:2009 | NB:2011 (nl) |
| Geotechniek | EN 1997-1:2004       | AC:2009 |              |
|             | NEN-EN 1997-1:2005   | C1:2009 | NB:2012      |
|             | NEN 9997-1:2011      | C1:2012 |              |

### Funderingsplaat. (A)

|                               |                      |         |        |       |
|-------------------------------|----------------------|---------|--------|-------|
| Plaatafmeting B*L*D           | [mm]                 | : 1200  | * 1200 | * 160 |
| Kolomafmeting B*H             | [mm]                 | : 350   | * 350  |       |
| Aanlegdiepte                  | [m]                  | : 0.80  |        |       |
| Bovenkant kolom tov. maaiveld | [m]                  | : 0.10  |        |       |
| Excentriciteit kolom          | [mm]                 | : 0.00  |        |       |
| Soortelijk gewicht grond      | [kN/m <sup>3</sup> ] | : 19.00 |        |       |
| Soortelijk gewicht beton      | [kN/m <sup>3</sup> ] | : 24.00 |        |       |
| Moment                        | [kNm]                | : 0.00  |        |       |
| Verticale kracht              | [kN]                 | : 10.31 |        |       |
| Horizontale kracht            | [kN]                 | : 1.82  |        |       |
| Belastingfactor               | :                    | : 1.00  |        |       |

### Resultaten

|                  |                      |         |               |               |
|------------------|----------------------|---------|---------------|---------------|
| Gronddruk        | [kN/m <sup>2</sup> ] | : 25.70 |               |               |
| Kantelmoment     | [kNm]                | : 1.64  | Stab.moment   | [kNm] : 20.42 |
| Kantelveiligheid | :                    | : 12.47 | Bef rechts    | [m] : 1.10    |
| Moment links     | [kNm]                | : 0.01  | Moment rechts | [kNm] : -1.18 |

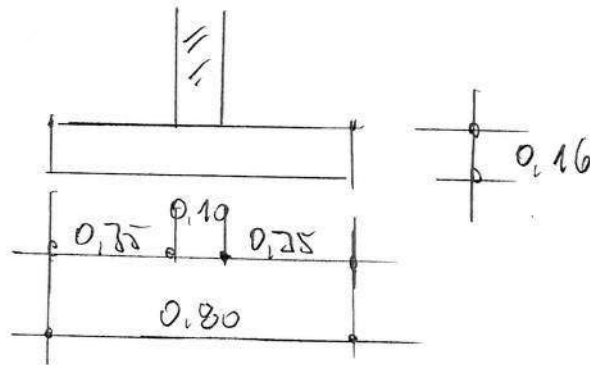


### Strokm ①

$$q_{d1} = 1,35 \cdot 12,36 = \underline{16,69 \text{ kN/m}}$$

$$b = 0,80 \text{ m}$$

$$q_1 = \frac{16,69}{0,80} = 20,86 \text{ kN/m}^2$$



$$M_d = 1,35 \cdot 20,86 \cdot 0,35^2 / 2 = 1,72 \text{ kNm/m}$$

wapening

$$b/h/d = 80/16/13 \text{ cm}$$

$$k_m = \frac{1,72}{1,00 \cdot 0,13^2} = 102 \rightarrow k_s = 0,433$$

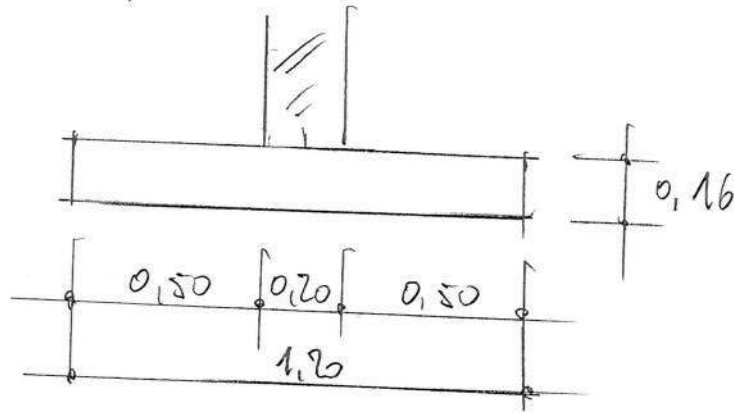
$$A_s = \frac{1,72}{0,433 \cdot 0,13} = 31 \text{ mm}^2/\text{m}$$

$$\Rightarrow \# \phi 8 - 150 = \underline{\underline{335 \text{ mm}^2/\text{m}}}$$

Stroke ② t.p.v. deuren

$$\text{a.slost} : R = 100 \text{ kN}$$

$$q_2 = 16,44 \text{ kN/m}$$



$$q_2 = \frac{1,22 \times 16,44}{1,20} + \frac{1,00 \times 100}{1,20 \times 5,00}$$
$$16,71 + 16,70 = 33,40 \text{ kN/m}^2$$

$$M_d = 33,40 \times 0,50^2 / 2 = 4,18 \text{ kNm/m}$$

$$\Rightarrow \# \# 8-150 = \underline{\underline{335 \text{ mm}^2/\text{m}}}$$

TS/Balkroosters

Rel: 6.03 10 mrt 2017

Project...: Kapschuur te Katlijk

Onderdeel: Beg. grondvloer

Dimensies: kN/m/rad

Datum....: 10/03/2017

Torsiefac: 10 %

Betrouwbaarheidsklasse : 1 Referentieperiode : 15  
Doorbuigingen(beton) zijn dmv gecorrigeerde stijfheden berekend.

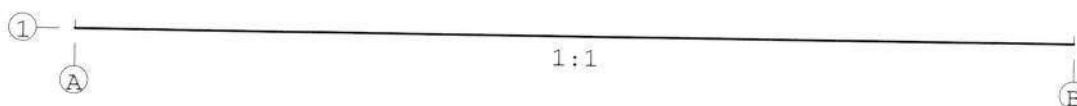
Fysisch lineair : Er is gerekend met de e-modulus uit de materiaaltabel.

Fys.NLE.kort : Er is gerekend met een gecorrigeerde e-modulus (korte duur).

Deze e-mod. is berekend mbv de krachten uit de fysisch lineair berekening.

**Toegepaste normen volgens Eurocode met Nederlandse NB**

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

**GEOMETRIE****MATERIALEN**

| Mt | Omschrijving | E-modulus[N/mm2] | S.M. | Pois. | Uitz. coëff |
|----|--------------|------------------|------|-------|-------------|
| 1  | C25/30       | 8352             | 25.0 | 0.20  | 1.0000e-005 |

**MATERIALEN vervolg**

| Mt | Omschrijving | Cement | Kruipfac. | Toeslag | Rho[kg/m3] |
|----|--------------|--------|-----------|---------|------------|
| 1  | C25/30       |        | 2.77      | Normaal | 2400       |

**PROFIELEN [mm]**

| Prof. | Omschrijving | Materiaal | Oppervlak  | Torsietr.  | Traagheid  | Vormf. |
|-------|--------------|-----------|------------|------------|------------|--------|
| 1     | B*H 1000*160 | 1:C25/30  | 1.600e+005 | 1.228e+009 | 3.413e+008 | 0.00   |

Project...: - Kapschuur te Katlijk  
 Onderdeel: Beg. grondvloer

**PROFIELEN vervolg [mm]**

| Prof. | Staaftype | Breedte | Hoogte | Zs | Rek.As | Type | b1 | h1 | b2 | h2 |
|-------|-----------|---------|--------|----|--------|------|----|----|----|----|
| 1     | 0:Normaal | 1000    | 160    | 80 | 0.00   | 0:RH |    |    |    |    |

**PROFIELVORMEN [mm]**

1 B\*H 1000\*160


**STRAMIENLIJNEN**

| Nr. | Naam | X-begin | Y-begin | X-eind | Y-Eind |
|-----|------|---------|---------|--------|--------|
| 1   | A    | 0.000   | 0.000   | 0.000  | 0.100  |
| 2   | B    | 9.000   | 0.000   | 9.000  | 0.100  |
| 3   | 1    | 0.000   | 0.000   | 9.000  | 0.000  |

**BALKEN**

| Nr. | Naam | Begin | Eind | Profiel               |
|-----|------|-------|------|-----------------------|
| 1   | 1    | A;1   | B;1  | Zie Doorsnedesectoren |

**BALKEN vervolg**

| Nr. | Naam | Aansl.begin | Aansl.eind | Excentr. | Pasm.begin | Pasm.eind | Opm. |
|-----|------|-------------|------------|----------|------------|-----------|------|
| 1   | 1    | WDM         | WDM        | 0.000    | 0.000      | 0.000     |      |

Opmerkingen:

De torsie traagheid van alle balken is tot 10% gereduceerd

**DOORSNEDESECTOREN**

| Balk | Vanaf | Tot   | Lengte | Profiel        | Eindcode | Bedding | Br. [mm] |
|------|-------|-------|--------|----------------|----------|---------|----------|
| 1:1  | 0.000 | 9.000 | 9.000  | 1:B*H 1000*160 | 1:Vast   | 5000    | 1000     |

**BELASTINGGEVALLEN**

| B.G. | Omschrijving | Belast/onbelast    | $\psi_0$ | $\psi_1$ | $\psi_2$ | e.g.  |
|------|--------------|--------------------|----------|----------|----------|-------|
| 1    | Permanent    | 2:Permanent EN1991 |          |          |          | -1.00 |
| 2    | Veranderlijk | 0:Alles tegelijk   | 1.00     | 0.90     | 0.80     | 0.00  |

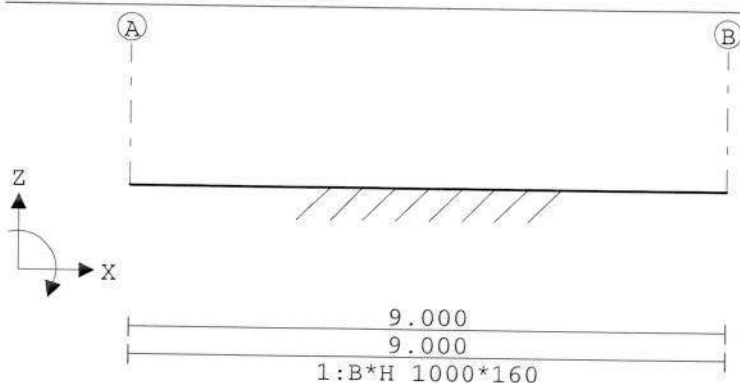
**BELASTINGGEVALLEN**

| B.G. | Omschrijving | Type                          |
|------|--------------|-------------------------------|
| 1    | Permanent    | 1 Permanente belasting        |
| 2    | Veranderlijk | 2 Ver. bel. pers. ed. (p_rep) |

Project...: - Kapschuur te Katlijk  
Onderdeel: Beg. grondvloer

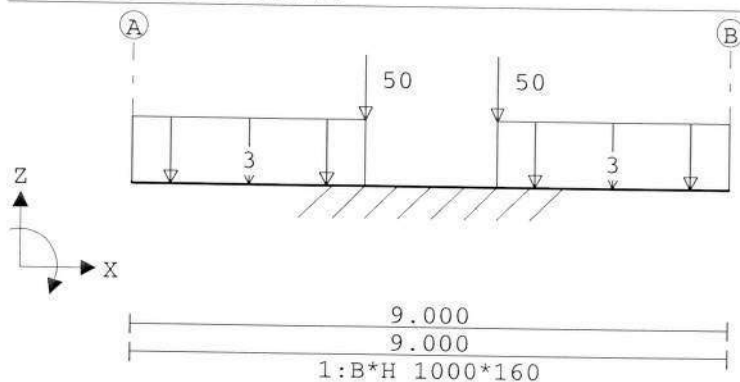
### VELDBELASTINGEN

1:1 B.G:1 Permanent



### VELDBELASTINGEN

1:1 B.G:2 Veranderlijk



### VELDBELASTINGEN

B.G:2 Veranderlijk

| Balk | Last Type    | q1/p/m  | q2     | Afstand | Lengte | Exc.  |
|------|--------------|---------|--------|---------|--------|-------|
| 1:1  | 1 8:Puntlast | -50.000 |        | 3.500   |        | 0.000 |
| 1:1  | 2 8:Puntlast | -50.000 |        | 5.500   |        | 0.000 |
| 1:1  | 3 1:q-last   | -3.000  | -3.000 | 0.000   | 3.500  | 0.000 |
| 1:1  | 4 1:q-last   | -3.000  | -3.000 | 5.500   | 3.500  | 0.000 |

### BELASTINGCOMBINATIES

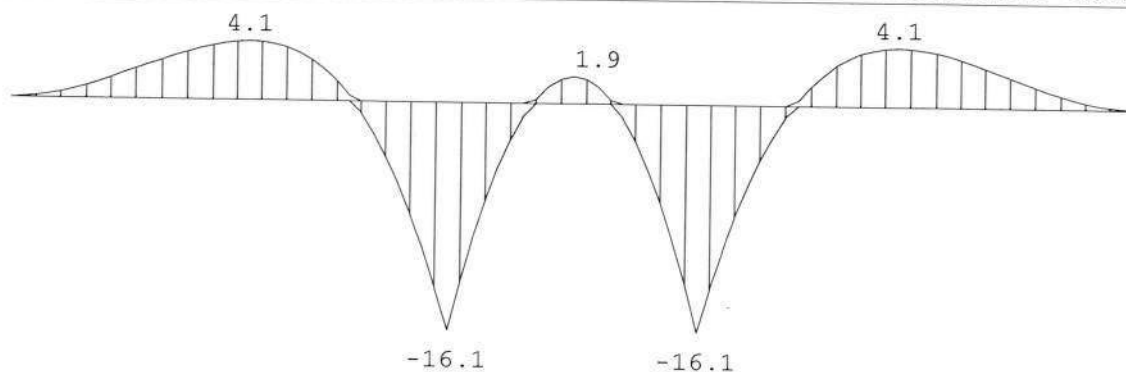
| BC Type  | BG Gen. | Factor | BG Gen. | Factor | BG Gen. | Factor | BG Gen. | Factor |
|----------|---------|--------|---------|--------|---------|--------|---------|--------|
| 1 Fund.  | 1 Perm  | 1.22   |         |        |         |        |         |        |
| 2 Fund.  | 1 Perm  | 0.90   |  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

Project...: - Kapschuur te Katlijk  
Onderdeel: Beg. grondvloer

## OMHULLENDE VAN DE FUNDAMENTELE COMBINATIES

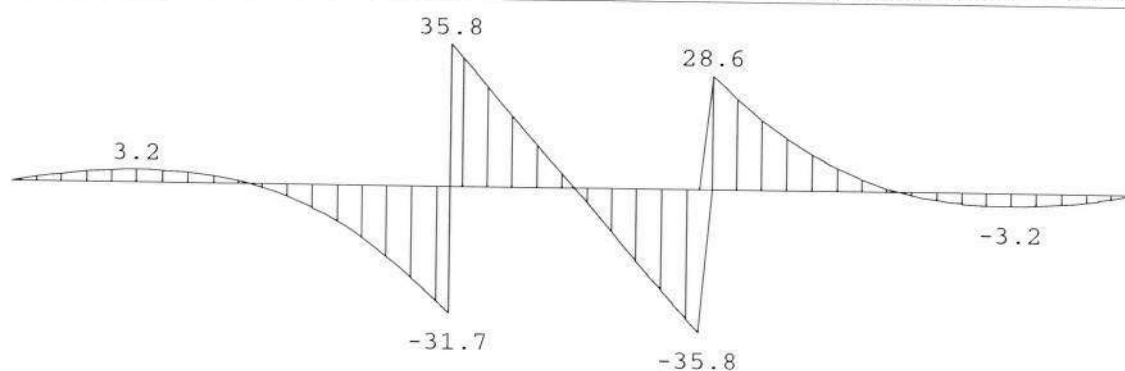
**MOMENTEN** Fysisch lineair

1:1 Fundamentele combinatie



**DWARSKRACHTEN** Fysisch lineair

1:1 Fundamentele combinatie



**VELDWAARDEN** Fysisch lineair

Fundamentele combinatie

| Balk | Veld | Pos.  | Wringmoment |      | Dwarskracht |       | Moment |      |
|------|------|-------|-------------|------|-------------|-------|--------|------|
|      |      |       | min.        | max. | min.        | max.  | min.   | max. |
| 1    | 1    | 0.000 | 0.00        | 0.00 | 0.00        | 0.00  | 0.00   | 0.00 |
| 1    | 1    | 1.000 |             |      |             | 3.22  |        |      |
| 1    | 1    | 1.900 |             |      | 0.00        |       |        | 4.11 |
| 1    | 1    | 2.000 |             |      |             | 0.00  |        |      |
| 1    | 1    | 2.700 |             |      |             |       | 0.00   |      |
| 1    | 1    | 2.800 |             |      |             |       |        | 0.00 |
| 1    | 1    | 3.500 |             |      | -31.66      | 0.00  | -16.09 |      |
| 1    | 1    | 3.500 |             |      | 0.00        | 35.84 | -16.09 |      |
| 1    | 1    | 4.100 |             |      |             |       |        | 0.00 |
| 1    | 1    | 4.200 |             |      |             |       | 0.00   |      |
| 1    | 1    | 4.500 | 0.00        | 0.00 | 0.00        | 0.00  | 0.00   | 1.87 |
| 1    | 1    | 4.500 | 0.00        | 0.00 | 0.00        | 0.00  | 0.00   | 1.87 |
| 1    | 1    | 4.800 |             |      |             |       | 0.00   |      |
| 1    | 1    | 4.900 |             |      |             |       |        | 0.00 |
| 1    | 1    | 5.500 |             |      | -35.84      | 0.00  | -16.09 |      |
| 1    | 1    | 5.600 |             |      | 0.00        | 28.63 |        |      |
| 1    | 1    | 6.200 |             |      |             |       |        | 0.00 |
| 1    | 1    | 6.300 |             |      |             |       | 0.00   |      |
| 1    | 1    | 7.000 |             |      | 0.00        |       |        |      |

Project...: - Kapschuur te Katlijk  
Onderdeel: Beg. grondvloer

### VELDWAARDEN Fysisch lineair Fundamentele combinatie

| Balk | Veld | Pos.  | Wringmoment |      | Dwarskracht |      | Moment |      |
|------|------|-------|-------------|------|-------------|------|--------|------|
|      |      |       | min.        | max. | min.        | max. | min.   | max. |
| 1    | 1    | 7.100 |             |      |             | 0.00 |        | 4.11 |
| 1    | 1    | 8.000 |             |      | -3.22       |      |        |      |
| 1    | 1    | 9.000 | 0.00        | 0.00 | 0.00        | 0.00 | 0.00   | 0.00 |

### TUSSENpunten VERPLAATSINGEN Fysisch lineair Fundamentele combinatie

| Balk | Veld | Pos.  | Verpl. [mm] |       | RX<br>max. | RY<br>max. | Grondspan.<br>[N/mm2] |
|------|------|-------|-------------|-------|------------|------------|-----------------------|
|      |      |       | min.        | max.  |            |            |                       |
| 1    | 1    | 0.000 | -0.97       | -0.32 | 0.00000    | 0.00110    | 0.005                 |
| 1    | 1    | 0.450 | -1.07       | -0.72 | 0.00000    | 0.00113    | 0.005                 |
| 1    | 1    | 0.900 | -1.61       | -0.72 | 0.00000    | 0.00131    | 0.008                 |
| 1    | 1    | 1.350 | -2.28       | -0.72 | 0.00000    | 0.00170    | 0.011                 |
| 1    | 1    | 1.800 | -3.17       | -0.72 | 0.00000    | 0.00229    | 0.016                 |
| 1    | 1    | 2.250 | -4.35       | -0.72 | 0.00000    | 0.00291    | 0.022                 |
| 1    | 1    | 2.700 | -5.75       | -0.72 | 0.00000    | 0.00326    | 0.029                 |
| 1    | 1    | 3.150 | -7.16       | -0.72 | 0.00000    | 0.00280    | 0.036                 |
| 1    | 1    | 3.600 | -8.06       | -0.72 | 0.00000    | 0.00094    | 0.040                 |
| 1    | 1    | 4.050 | -8.18       | -0.72 | 0.00000    | -0.00010   | 0.041                 |
| 1    | 1    | 4.500 | -8.13       | -0.72 | 0.00000    | 0.00000    | 0.041                 |
| 1    | 1    | 4.500 | -8.13       | -0.72 | 0.00000    | 0.00000    | 0.041                 |
| 1    | 1    | 4.950 | -8.18       | -0.72 | 0.00000    | 0.00010    | 0.041                 |
| 1    | 1    | 5.400 | -8.06       | -0.72 | 0.00000    | -0.00094   | 0.040                 |
| 1    | 1    | 5.850 | -7.16       | -0.72 | 0.00000    | -0.00280   | 0.036                 |
| 1    | 1    | 6.300 | -5.75       | -0.72 | 0.00000    | -0.00326   | 0.029                 |
| 1    | 1    | 6.750 | -4.35       | -0.72 | 0.00000    | -0.00291   | 0.022                 |
| 1    | 1    | 7.200 | -3.17       | -0.72 | 0.00000    | -0.00229   | 0.016                 |
| 1    | 1    | 7.650 | -2.28       | -0.72 | 0.00000    | -0.00170   | 0.011                 |
| 1    | 1    | 8.100 | -1.61       | -0.72 | 0.00000    | -0.00131   | 0.008                 |
| 1    | 1    | 8.550 | -1.07       | -0.72 | 0.00000    | -0.00113   | 0.005                 |
| 1    | 1    | 9.000 | -0.97       | -0.32 | 0.00000    | -0.00110   | 0.005                 |

Project...: - Kapschuur te Katlijk  
Onderdeel: Beg. grondvloer

**REACTIES** Fysisch lineair

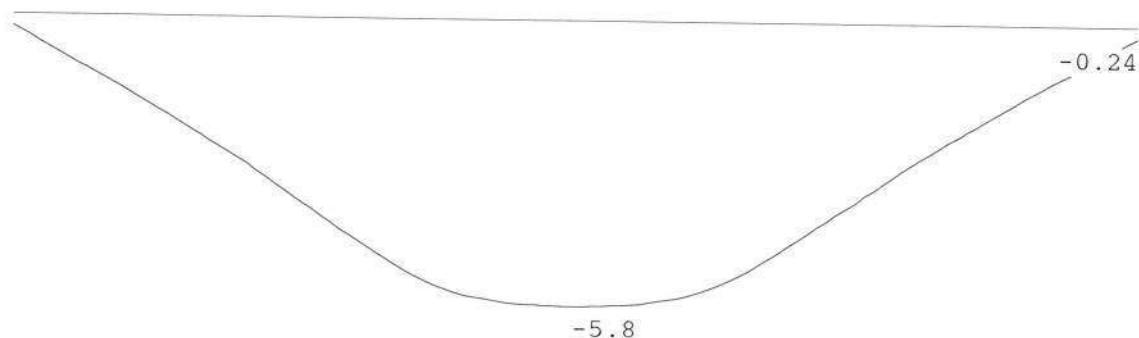
Fundamentele combinatie



**OMHULLENDE VAN DE KARAKTERISTIEKE COMBINATIES**

**VERPLAATSINGEN** [mm] Fys.NLE.kort

1:1 Karakteristieke combinatie



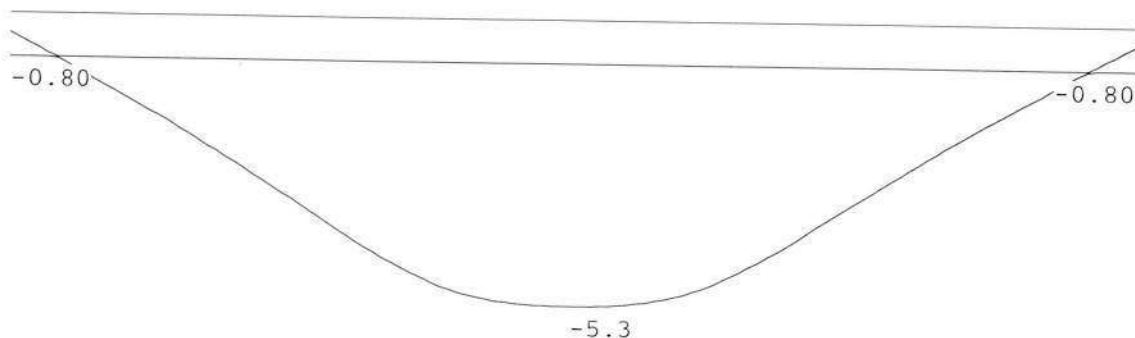
N.B. In deze verplaatsingen is de kruipvervorming (w2) niet verwerkt!

Project...: - Kapschuur te Katlijk  
Onderdeel: Beg. grondvloer

## OMHULLENDE VAN DE FREQUENTE COMBINATIES

VERPLAATSINGEN [mm] Fys.NLE.kort

1:1 Frequente combinatie

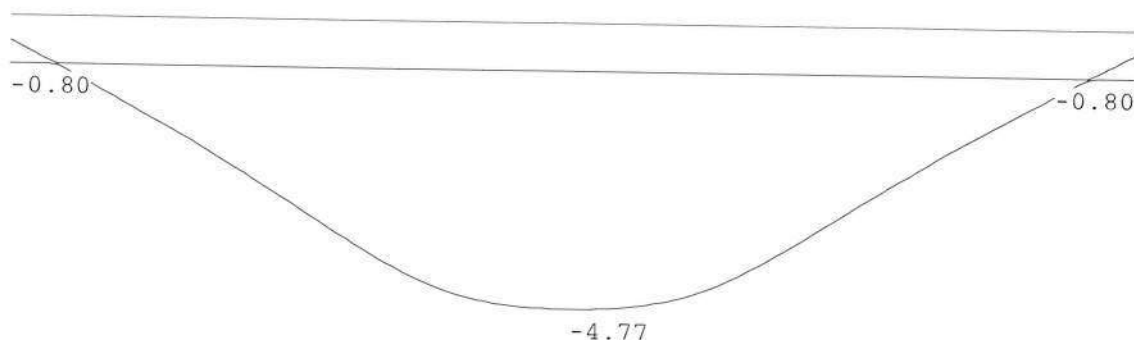


N.B. In deze verplaatsingen is de kruipvervorming (w2) niet verwerkt!

## OMHULLENDE VAN DE QUASI-BLIJVENDE COMBINATIES

VERPLAATSINGEN [mm] Fys.NLE.kort

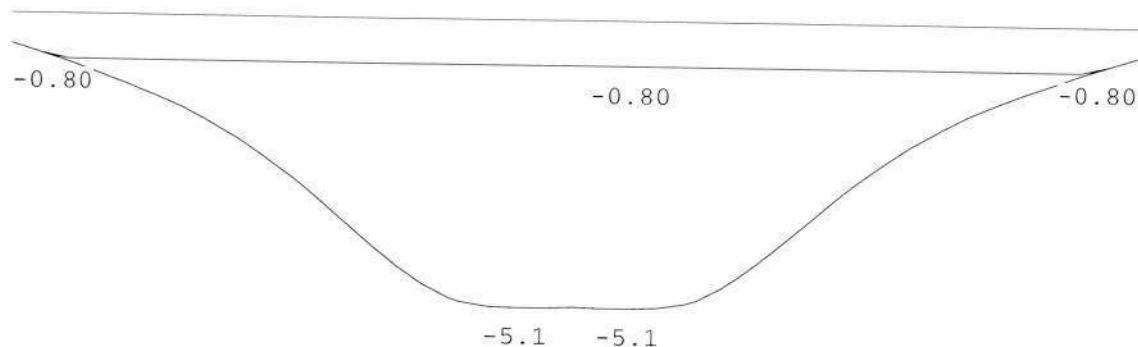
1:1 Quasi-blijvende combinatie



N.B. In deze verplaatsingen is de kruipvervorming (w2) niet verwerkt!

VERPLAATSINGEN [mm] Fys.NLE.lang

1:1 Quasi-blijvende combinatie



N.B. In deze verplaatsingen is de kruipvervorming (w2) niet verwerkt!

Project...: - Kapschuur te Katlijk

Onderdeel: Beg. grondvloer

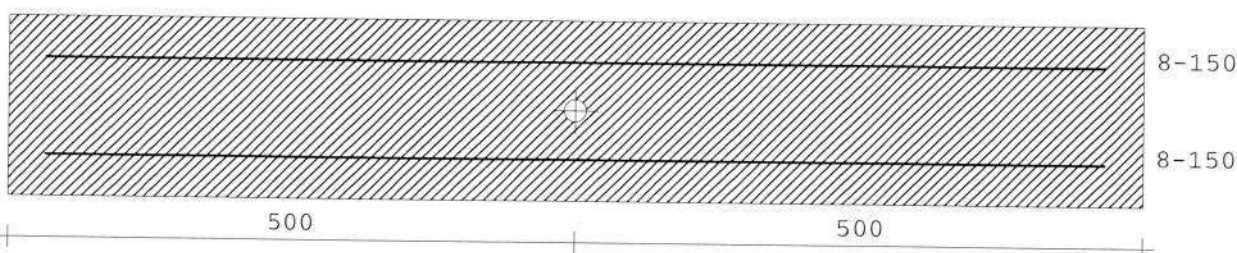
**PROFIELGEGEVENS Vloer [N] [mm]** t.b.v. profiel:1 B\*H 1000\*160

**Algemeen**

|           |                 |            |               |
|-----------|-----------------|------------|---------------|
| Materiaal | : C25/30        |            |               |
| Oppervlak | : 1.600000e+005 | Traagheid  | : 3.4133e+008 |
| Staaftype | : 0: normaal    | Vormfactor | : 0.00        |

**Doorsnede**

|            |         |        |       |                           |      |
|------------|---------|--------|-------|---------------------------|------|
| breedte    | : 1000  | hoogte | : 160 | zwaartepunt tov onderkant | : 80 |
| Referentie | : Boven |        |       |                           |      |



|                                |   |                                      |                        |
|--------------------------------|---|--------------------------------------|------------------------|
| Fictieve dikte                 | : | 137.9                                |                        |
| Breedte lastvlak $a_b$ 6.1(10) | : | 0                                    |                        |
| Betonkwaliteit element         | : | C25/30                               | Kruipcoëf. : 2.770     |
| Soort spanningsrekdiagram      | : | Parabolisch - rechthoekig diagram    |                        |
| Staalkwaliteit hoofdwapening   | : | 500                                  | $\epsilon_{uk}$ : 5.00 |
| Soort spanningsrekdiagram      | : | Bi-lineair diagram met klimmende tak |                        |
| Geprefabriceerd element        | : | Nee                                  |                        |

**Betondekking**

|                                 |   |               |               |
|---------------------------------|---|---------------|---------------|
|                                 |   | Boven         | Onder         |
| Milieu                          | : | XC2           | XC2           |
| Gestort tegen bestaand beton    | : | Nee           | Nee           |
| Element met plaatgeometrie      | : | Ja            | Ja            |
| Specifieke kwaliteitsbeheersing | : | Nee           | Nee           |
| Oneffen beton oppervlak         | : | Nee           | Nee           |
| Ondergrond                      | : | Glad / N.v.t. | Glad / N.v.t. |
| Constructieklasse               | : | S3            | S3            |
| Grootste korrel                 | : | 31.5          |               |

|                                            |   |           |           |
|--------------------------------------------|---|-----------|-----------|
| Hoofdwapening                              | : | 1ste laag | 1ste laag |
| Nominale dekking                           | : | 25        | 25        |
| Toegepaste dekking                         | : | 25        | 25        |
| Gelijkwaardige diameter                    | : | 8         | 8         |
| $C_{min,b}$ $C_{min,dur}$ $\Delta C_{dur}$ | : | 8 20 0    | 8 20 0    |
| $C_{min}$ $\Delta C_{dev}$ $C_{nom}$       | : | 20 5 25   | 20 5 25   |

|                                            |   |          |          |
|--------------------------------------------|---|----------|----------|
| Beugel / Verdeelwapening                   | : | 2de laag | 2de laag |
| Nominale dekking                           | : | 25       | 25       |
| Toegepaste dekking                         | : | 33       | 33       |
| Gelijkwaardige diameter                    | : | 6        | 6        |
| $C_{min,b}$ $C_{min,dur}$ $\Delta C_{dur}$ | : | 6 20 0   | 6 20 0   |
| $C_{min}$ $\Delta C_{dev}$ $C_{nom}$       | : | 20 5 25  | 20 5 25  |

**Wapening**

|                                |   |         |         |
|--------------------------------|---|---------|---------|
|                                |   | Boven   | Onder   |
| Basiswapening                  | : | 8-150   | 8-150   |
| Hoofdwapening laag             | : | 1       | 1       |
| Automatisch verhogen basiswap. | : | Nee     | Nee     |
| Art. 7.3.2 minimum wapening    | : | Ja      | Ja      |
| Bijlegdiameters                | : | 8;10;12 | 8;10;12 |
| Diameter nuttige hoogte        | : | 8.0     | 8.0     |
| diameter verdeelwapening       | : | 6.0     | 6.0     |

Project...: - Kapschuur te Katlijk  
Onderdeel: Beg. grondvloer

**Hoofdwapening**

1:1

| Geb. | Pos.<br>[mm] | $M_{Ed}$<br>[kNm] | z B/O<br>[mm] | Ab<br>[mm <sup>2</sup> ] | Aa<br>[mm <sup>2</sup> ] | Basiswapening<br>+Bijlegwapening | Opm. |
|------|--------------|-------------------|---------------|--------------------------|--------------------------|----------------------------------|------|
| 1    | 1900         | 4.11              | 78 Bov        | 165*                     | 336                      | 8-150                            | 54   |
| 2    | 3500         | -16.09            | 78 Ond        | 272                      | 336                      | 8-150                            |      |

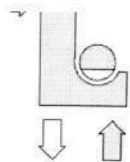
Opmerkingen

[54] \* = Eisen met betrekking tot minimum wapening ten behoeve van  
gecontroleerde scheurvorming zijn toegepast volgens art. 7.3.2.

**Scheurvorming volgens artikel 7.3.3**

1:1

| Geb. | Pos.<br>[mm] | $M_{E;freq}$<br>[kNm] | B/O | $\sigma_s$<br>[N/mm <sup>2</sup> ] | art.  | s<br>opt.<br>[mm] | s<br>max.<br>[mm] | $\phi_{km}$<br>opt.<br>[mm] | $\phi_{km}$<br>max.<br>[mm] | $\sigma_b$<br>opt.<br>[N/mm <sup>2</sup> ] | $\sigma_b$<br>max.<br>[N/mm <sup>2</sup> ] | Opm. |
|------|--------------|-----------------------|-----|------------------------------------|-------|-------------------|-------------------|-----------------------------|-----------------------------|--------------------------------------------|--------------------------------------------|------|
| 1    | 1900         | 2.74                  | Bov | 67.8                               | 7.3.3 | 150               | 300               | 8.0                         | 15.6                        |                                            |                                            |      |
| 2    | 3500         | -10.72                | Ond | 265.4                              | 7.3.3 | 150               | 168               | 8.0                         | 6.6                         |                                            |                                            |      |



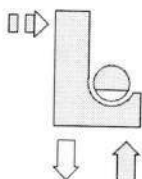
## STATISCHE BEREKENING

Project: Kapschuur  
Projectadres: Schoterlandseweg 24a te Katlijk  
Onderdeel: Staalconstructie  
Opdrachtgever: It Fryske Gea  
Werknummer 17-118

### VOORSCHRIFTEN

- |                                                 |                             |
|-------------------------------------------------|-----------------------------|
| <input type="checkbox"/> NEN-EN 1991            | Belastingen op constructies |
| <input type="checkbox"/> NEN-EN 1992            | Betonconstructies           |
| <input checked="" type="checkbox"/> NEN-EN 1993 | Staalconstructies           |
| <input checked="" type="checkbox"/> NEN-EN 1995 | Houtconstructies            |
| <input type="checkbox"/> NEN-EN 1996            | Metselwerkconstructies      |
| <input type="checkbox"/> NEN-EN 1997            | Geotechnisch ontwerp        |

Datum: 21-03-2017



**v.o.f. Ingenieursbureau Linek**  
**De Fjûrslach 17 – 8681 CG IJlst**  
**Postbus 9 – 8650 AA IJlst**  
**Tel: 0515-532031**  
**Mail: [linek@kpnmail.nl](mailto:linek@kpnmail.nl)**

## Inhoud

blz. 3

h

h A

5 t/m 34

35 t/m 64

65 t/m 72

74

75 t/m 80

81, 82

belastingen

schema kolommen

" dak

st. ⑧ t/m ⑪

" ⑫

windstijl kopgevel

windverband dak

"

langsgewel

gordingen

## Algemeen

betrouwbaarheidskl.

referentieperiode

windgebied 2

4-factoren

RC1 / CC1

15 jaar

onbebouwd

|                     | 20   | 21  | 22  |
|---------------------|------|-----|-----|
| opslagruimtes       | 1,00 | 0,9 | 0,8 |
| wind- en sneeuwbel. | 0,0  | 0,2 | 0,0 |

stabiliteit door spanen en verbanden in gevels en dak

Belastingen

k<sub>op</sub>

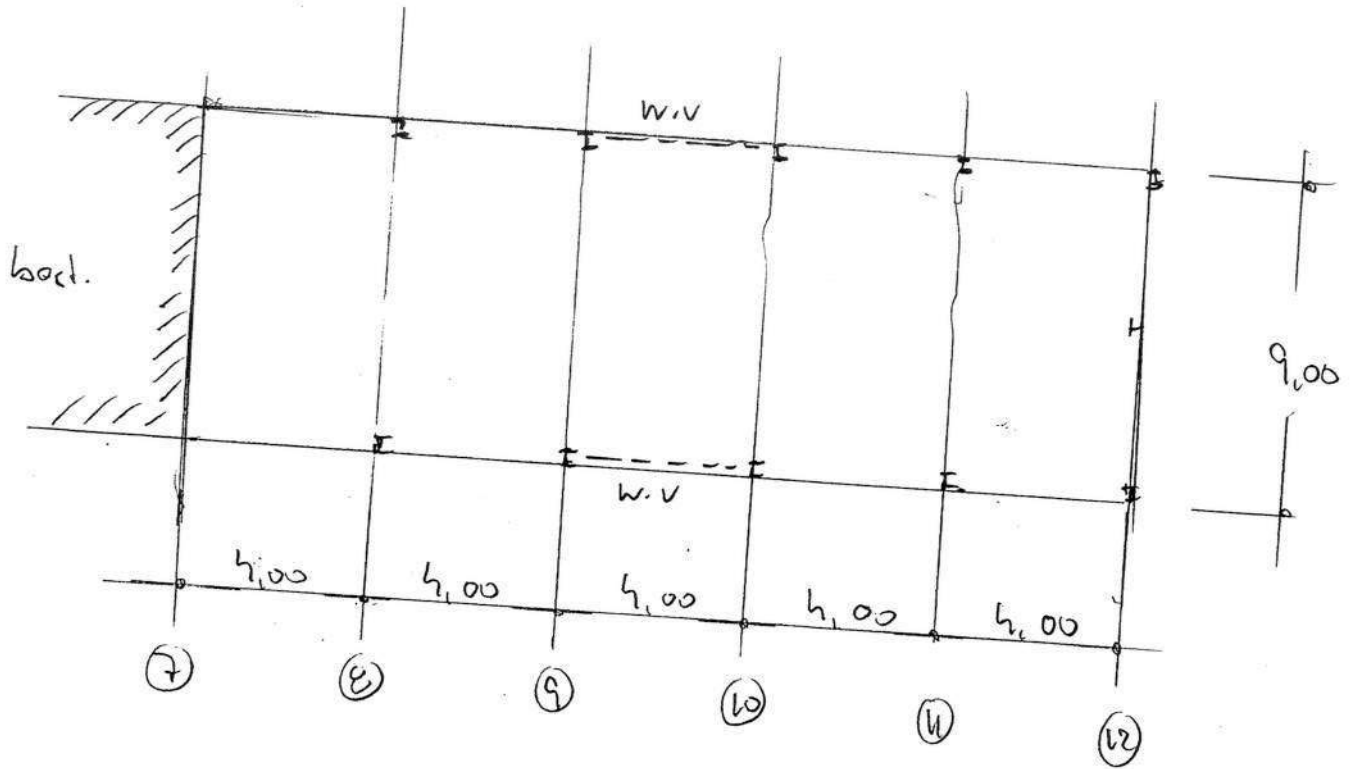
perm. bel.

dokulak

$$g = \underline{\underline{0,25 \text{ kN/m}^2}}$$

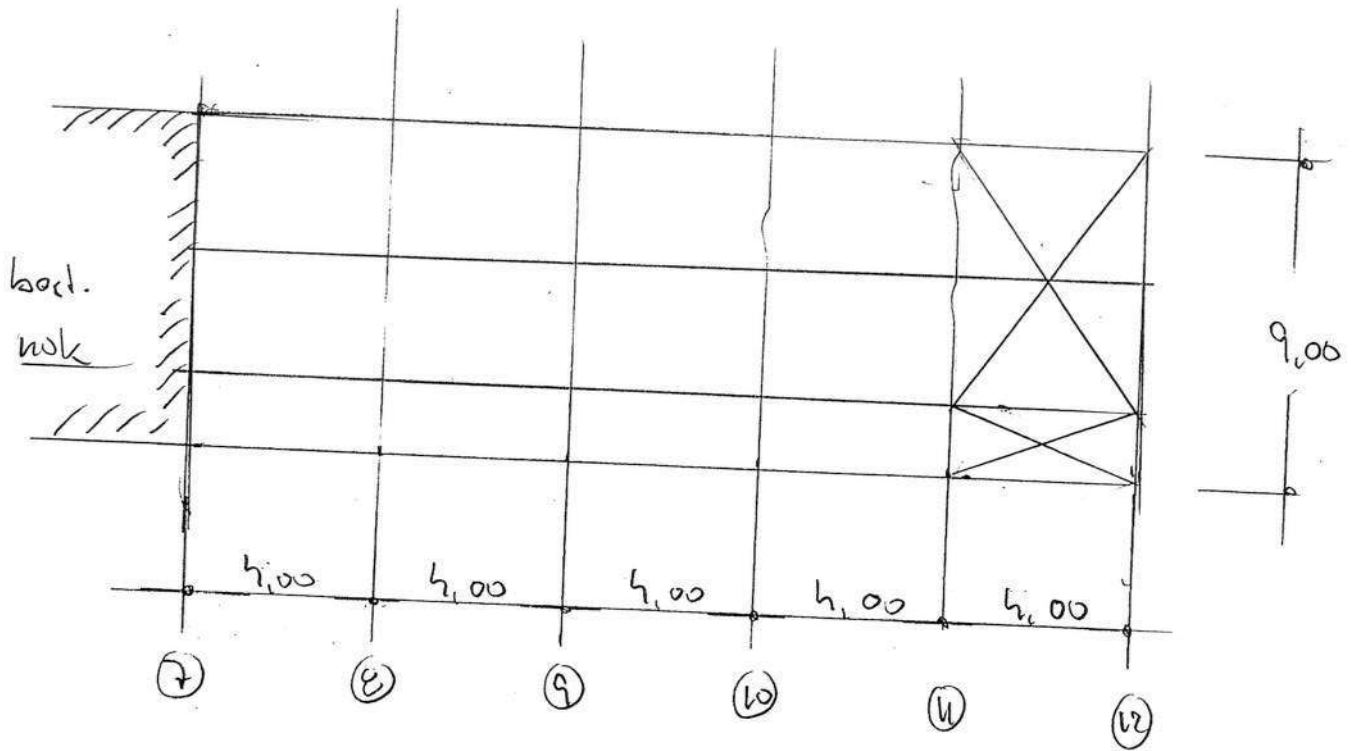
zie vander comp. berek.

# Schema Kolonnen



— 4 A —

# Schema dok



Project...: Kapschuur te Katlijk

Onderdeel: Str. 8 t/m 11

Dimensies: kN;m;rad (tenzij anders aangegeven)

Datum....: 09/03/2017

 Bestand...: c:\projecten 2016\raamwerken\kapschuur te katlijk str.  
8,9,10,11.rww

Belastingbreedte.: 4.000

Rekenmodel.....: 1e-orde-elastisch.

Theorie voor de bepaling van de krachtsverdeling:

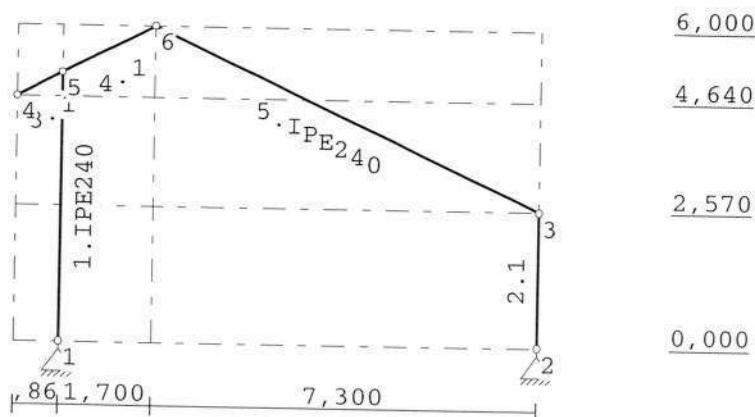
Geometrisch lineair.

Fysisch lineair.

Gunstige werking van de permanente belasting wordt automatisch verwerkt.

**Toegepaste normen volgens Eurocode met Nederlandse NB**

|             |                      |         |              |
|-------------|----------------------|---------|--------------|
| 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 | C2:2009 | NB:2011 (nl) |

**GEOMETRIE**

**STRAMIENLIJNEN**

| Nr. | X     | Z-min | Z-max |
|-----|-------|-------|-------|
| 1   | 0.000 | 0.000 | 6.000 |
| 2   | 0.860 | 0.000 | 6.000 |
| 3   | 2.560 | 0.000 | 6.000 |
| 4   | 9.860 | 0.000 | 6.000 |

**NIVEAUS**

| Nr. | Z     | X-min | X-max |
|-----|-------|-------|-------|
| 1   | 0.000 | 0.000 | 9.860 |
| 2   | 2.570 | 0.000 | 9.860 |
| 3   | 4.640 | 0.000 | 9.860 |
| 4   | 6.000 | 0.000 | 9.860 |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 8 t/m 11

**MATERIALEN**

| Mt | Omschrijving | E-modulus[N/mm2] | S.M. Pois. | Uitz. coëff |
|----|--------------|------------------|------------|-------------|
| 1  | S235         | 210000           | 78.5       | 0.30        |
|    |              |                  |            | 1.2000e-005 |

**PROFIELEN [mm]**

| Prof. | Omschrijving | Materiaal | Oppervlak   | Traagheid   | Vormf. |
|-------|--------------|-----------|-------------|-------------|--------|
| 1     | IPE240       | 1:S235    | 3.9100e+003 | 3.8920e+007 | 0.00   |

**PROFIELEN vervolg [mm]**

| Prof. | Staaftype | Breedte | Hoogte | e     | Type | b1 | h1 | b2 | h2 |
|-------|-----------|---------|--------|-------|------|----|----|----|----|
| 1     | 0:Normaal | 120     | 240    | 120.0 |      |    |    |    |    |

**KNOPEN**

| Knoop | X     | Z     | Knoop | X     | Z     |
|-------|-------|-------|-------|-------|-------|
| 1     | 0.860 | 0.000 | 6     | 2.560 | 6.000 |
| 2     | 9.860 | 0.000 |       |       |       |
| 3     | 9.860 | 2.570 |       |       |       |
| 4     | 0.000 | 4.640 |       |       |       |
| 5     | 0.860 | 5.097 |       |       |       |

**STAVEN**

| St. | ki | kj | Profiel  | Aansl.i | Aansl.j | Lengte Opm. |
|-----|----|----|----------|---------|---------|-------------|
| 1   | 1  | 5  | 1:IPE240 | NDM     | NDM     | 5.097       |
| 2   | 3  | 2  | 1:IPE240 | NDM     | NDM     | 2.570       |
| 3   | 4  | 5  | 1:IPE240 | NDM     | NDM     | 0.974       |
| 4   | 5  | 6  | 1:IPE240 | NDM     | NDM     | 1.925       |
| 5   | 6  | 3  | 1:IPE240 | NDM     | NDM     | 8.066       |

**VASTE STEUNPUNTEN**

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

**BELASTINGGENERATIE ALGEMEEN.**

|                             |       |                         |      |
|-----------------------------|-------|-------------------------|------|
| Betrouwbaarheidsklasse..... | 1     | Referentieperiode.....  | 15   |
| Gebouwdiepte.....           | 55.00 | Gebouwhoogte.....       | 6.00 |
| Niveau aansl.terrein.....   | 0.00  | E.g. scheid.w. [kN/m2]: | 0.00 |

**WIND**

|                                  |              |                    |              |
|----------------------------------|--------------|--------------------|--------------|
| Terrein categorie ...[4.3.2].... | Onbebouwd    |                    |              |
| Windgebied .....                 | 2            | Vb,0 ..[4.2].....  | 27.000       |
| Referentie periode wind.....     | 15.00        | Vb(p) ..[4.2]..... | 24.909       |
| K .....                          | [4.2].....   | n .....            | [4.2].....   |
| Positie spant in het gebouw..... | 5.000        | Kr .....           | [4.3.2]..... |
| z0 .....                         | [4.3.2]..... | Zmin .....         | [4.3.2]..... |
|                                  | 0.200        |                    | 4.000        |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 8 t/m 11

## 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 |

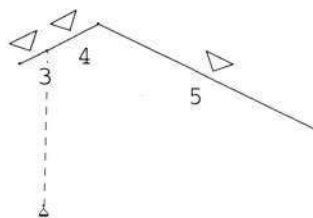
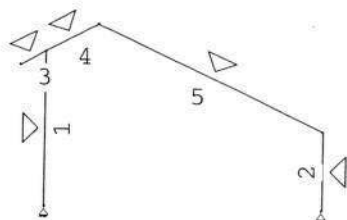
## STAFTYPEN

| Type             | staven |
|------------------|--------|
| 5:Linker gevel.  | : 1    |
| 6:Rechter gevel. | : 2    |
| 7:Dak.           | : 3-5  |

## LASTVELDEN

Wind staven

Sneeuw staven

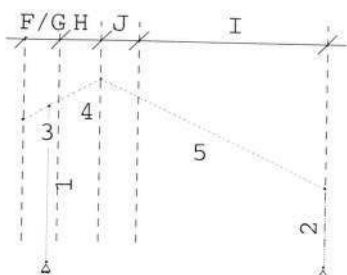


## WIND DAKTYPES

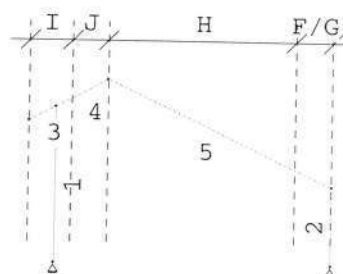
| Nr. | Staaft Type  | reductie bij<br>wind van links | reductie bij<br>wind van Rechts | Cpe volgens art: |
|-----|--------------|--------------------------------|---------------------------------|------------------|
| 1   | 1 Gevel      | 1.000                          | 1.000                     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

## WIND ZONES

Wind van links



Wind van rechts



Project...: Kapschuur te Katlijk

Onderdeel: Str. 8 t/m 11

**WIND VAN LINKS ZONES**

| Nr. | Staafl | Positie | Lengte | Zone |
|-----|--------|---------|--------|------|
| 1   | 1      | 0.000   | 5.097  | D    |
| 2   | 3-4    | 0.000   | 1.200  | F/G  |
| 3   | 3-4    | 1.200   | 1.360  | H    |
| 4   | 5      | 0.000   | 1.200  | J    |
| 5   | 5      | 1.200   | 6.100  | I    |
| 6   | 2      | 0.000   | 2.570  | E    |

**WIND VAN RECHTS ZONES**

| Nr. | Staafl | Positie | Lengte | Zone |
|-----|--------|---------|--------|------|
| 1   | 2      | 0.000   | 2.570  | D    |
| 2   | 5      | 0.000   | 1.200  | F/G  |
| 3   | 5      | 1.200   | 6.100  | H    |
| 4   | 3-4    | 0.000   | 1.200  | J    |
| 5   | 3-4    | 1.200   | 1.360  | I    |
| 6   | 1      | 0.000   | 5.097  | E    |

**Wind indexen**

| Index | CsCd | Cpe/Cpi | qp    | breedte | reductie | Qw     | Zone | Hoek(en)  |
|-------|------|---------|-------|---------|----------|--------|------|-----------|
| Qw1   |      | 0.300   | 0.599 | 4.000   |          | -0.719 |      |           |
| Qw2   | 1.00 | 0.800   | 0.599 | 4.000   |          | -1.918 | D    |           |
| Qw3   | 1.00 | -0.800  | 0.599 | 4.000   |          | 1.918  | F    | 28.0      |
| Qw4   | 1.00 | 0.633   | 0.599 | 4.000   |          | -1.518 | G    | 28.0      |
| Qw5   | 1.00 | 0.373   | 0.599 | 4.000   |          | -0.895 | H    | 28.0      |
| Qw6   | 1.00 | -0.660  | 0.599 | 4.000   |          | 1.582  | J    | 25.2      |
| Qw7   | 1.00 | -0.400  | 0.599 | 4.000   |          | 0.959  | I    | 25.2 28.0 |
| Qw8   | 1.00 | -0.500  | 0.599 | 4.000   |          | 1.199  | E    |           |
| Qw9   |      | -0.200  | 0.599 | 4.000   |          | 0.479  |      |           |
| Qw10  | 1.00 | -0.540  | 0.599 | 4.000   |          | 1.294  | G    | 28.0      |
| Qw11  | 1.00 | -0.213  | 0.599 | 4.000   |          | 0.511  | H    | 28.0      |
| Qw12  | 1.00 | 0.540   | 0.599 | 4.000   |          | -1.294 | G    | 25.2      |
| Qw13  | 1.00 | 0.336   | 0.599 | 4.000   |          | -0.805 | H    | 25.2      |
| Qw14  | 1.00 | -0.567  | 0.599 | 4.000   |          | 1.358  | J    | 28.0      |
| Qw15  | 1.00 | 0.500   | 0.599 | 4.000   |          | -1.199 | I    | 28.0      |
| Qw16  | 1.00 | -0.596  | 0.599 | 4.000   |          | 1.429  | G    | 25.2      |
| Qw17  | 1.00 | -0.232  | 0.599 | 4.000   |          | 0.556  | H    | 25.2      |

**SNEEUW DAKTYPEN**

| Staafl | artikel        |
|--------|----------------|
| 3-4    | 5.3.3 Zadeldak |
| 5-5    | 5.3.3 Zadeldak |

**Sneeuw indexen**

| Index | art   | $\mu$ | $s_k$ | red. | posfac | breedte | $Q_s$ | hoek |
|-------|-------|-------|-------|------|--------|---------|-------|------|
| Qs1   | 5.3.3 | 0.800 | 0.53  | 1.00 |        | 4.000   | 1.682 | 28.0 |
| Qs2   | 5.3.3 | 0.800 | 0.53  | 1.00 |        | 4.000   | 1.682 | 25.2 |
| Qs3   | 5.3.3 | 0.400 | 0.53  | 1.00 |        | 4.000   | 0.841 | 28.0 |
| Qs4   | 5.3.3 | 0.400 | 0.53  | 1.00 |        | 4.000   | 0.841 | 25.2 |

**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   |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 8 t/m 11

## BELASTINGGEVALLEN

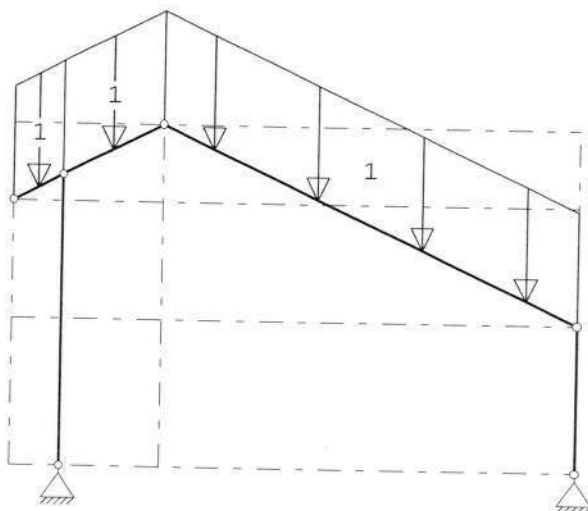
| B.G. | Omschrijving                   | Type       |
|------|--------------------------------|------------|
| g    | 6 Wind van links onderdruk C   | 37         |
| g    | 7 Wind van links overdruk C    | 38         |
| g    | 8 Wind van links onderdruk D   | 39         |
| g    | 9 Wind van links 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 Sneeuw A                    | 22         |
| g    | 19 Sneeuw B                    | 23         |
| g    | 20 Sneeuw C                    | 33         |
|      | 21 Knik                        | 0 Onbekend |

g = gegenereerd belastinggeval

## BELASTINGEN

B.G:1 Permanente belasting

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



## STAAFBELASTINGEN

B.G:1 Permanente belasting

| Staat | Type       | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|-------|------------|--------|-------|-------|-------|----------|----------|----------|
| 3     | 5:QZGloaal | -1.00  | -1.00 | 0.000 | 0.000 |          |          |          |
| 4     | 5:QZGloaal | -1.00  | -1.00 | 0.000 | 0.000 |          |          |          |
| 5     | 5:QZGloaal | -1.00  | -1.00 | 0.000 | 0.000 |          |          |          |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 8 t/m 11

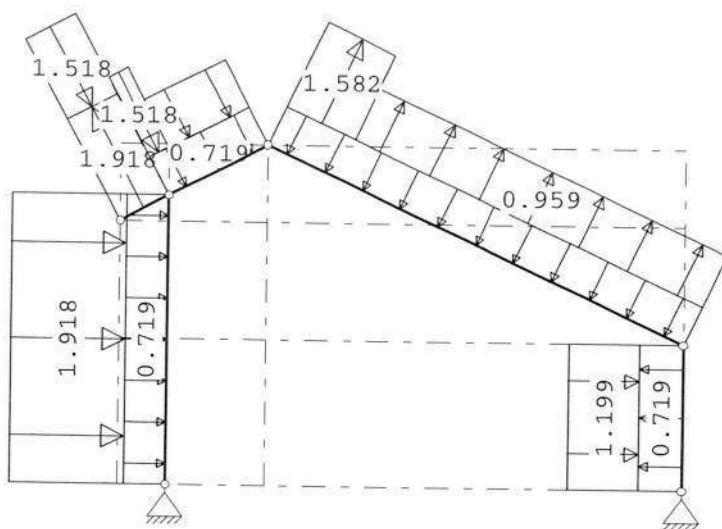
## REACTIES

B.G:1 Permanente belasting

| Kn. | X     | Z      | M                        |
|-----|-------|--------|--------------------------|
| 1   | 1.65  | 9.45   |                          |
| 2   | -1.65 | 7.23   |                          |
|     | 0.00  | 16.68  | : Som van de reacties    |
|     | 0.00  | -16.68 | : Som van de belastingen |

## BELASTINGEN

B.G:2 Wind van links onderdruk A



## STAAFBELASTINGEN

B.G:2 Wind van links onderdruk A

| Staad | Type       | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1     | 1:QZLokaal | Qw1   | -0.72  | -0.72 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw1   | -0.72  | -0.72 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw1   | -0.72  | -0.72 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 2     | 1:QZLokaal | Qw1   | -0.72  | -0.72 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1     | 1:QZLokaal | Qw2   | -1.92  | -1.92 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw3   | 1.92   | 1.92  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal |       | -0.00  | -0.00 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw4   | -1.52  | -1.52 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal |       | -0.00  | -0.00 | 0.000 | 1.540 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw4   | -1.52  | -1.52 | 0.000 | 1.540 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw5   | -0.89  | -0.89 | 0.385 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw6   | 1.58   | 1.58  | 0.000 | 6.740 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw7   | 0.96   | 0.96  | 1.326 | 0.000 | 0.0      | 0.2      | 0.0      |
| 2     | 1:QZLokaal | Qw8   | 1.20   | 1.20  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

## REACTIES

B.G:2 Wind van links onderdruk A

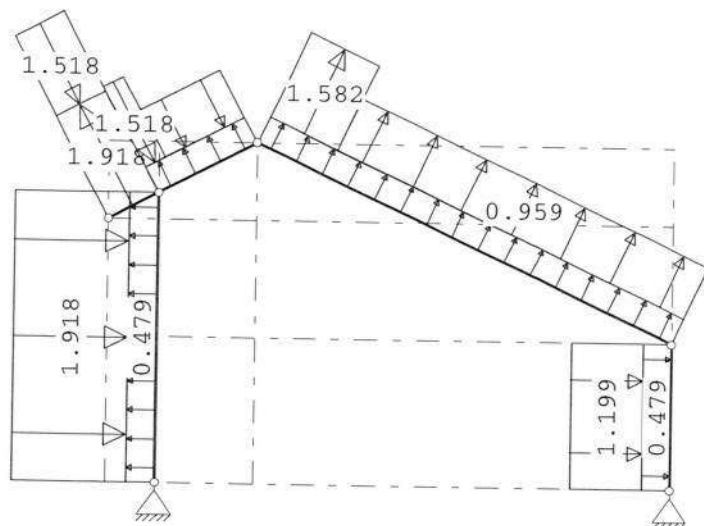
| Kn. | X      | Z     | M                        |
|-----|--------|-------|--------------------------|
| 1   | -9.79  | -4.39 |                          |
| 2   | -7.45  | 4.51  |                          |
|     | -17.23 | 0.11  | : Som van de reacties    |
|     | 17.23  | -0.11 | : Som van de belastingen |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 8 t/m 11

## BELASTINGEN

B.G:3 Wind van links overdruk A



## STAAFBELASTINGEN

B.G:3 Wind van links overdruk A

| Staal | Type       | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1     | 1:QZLokaal | Qw9   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw9   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw9   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 2     | 1:QZLokaal | Qw9   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1     | 1:QZLokaal | Qw2   | -1.92  | -1.92 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw3   | 1.92   | 1.92  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal |       | -0.00  | -0.00 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw4   | -1.52  | -1.52 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal |       | -0.00  | -0.00 | 0.000 | 1.540 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw4   | -1.52  | -1.52 | 0.000 | 1.540 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw5   | -0.89  | -0.89 | 0.385 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw6   | 1.58   | 1.58  | 0.000 | 6.740 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw7   | 0.96   | 0.96  | 1.326 | 0.000 | 0.0      | 0.2      | 0.0      |
| 2     | 1:QZLokaal | Qw8   | 1.20   | 1.20  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

## REACTIES

B.G:3 Wind van links overdruk A

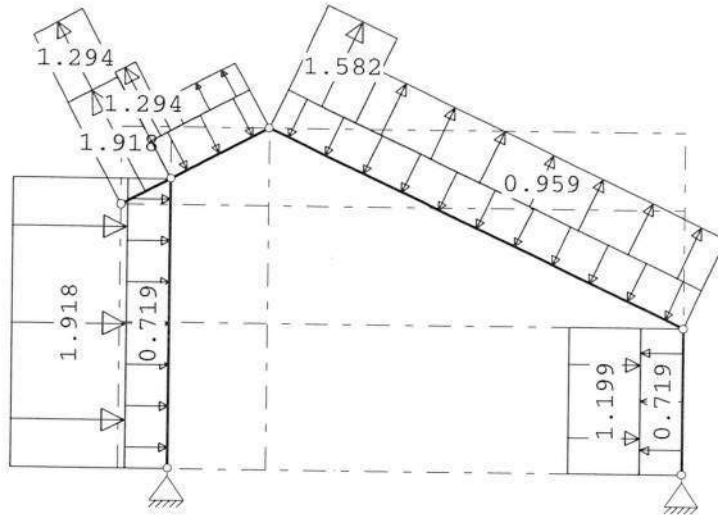
| Kn. | X      | Z      | M                        |
|-----|--------|--------|--------------------------|
| 1   | -8.38  | -9.79  |                          |
| 2   | -8.86  | -0.88  |                          |
|     | -17.23 | -10.67 | : Som van de reacties    |
|     | 17.23  | 10.67  | : Som van de belastingen |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 8 t/m 11

**BELASTINGEN**

B.G:4 Wind van links onderdruk B

**STAAFBELASTINGEN**

B.G:4 Wind van links onderdruk B

| Staal | Type       | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1     | 1:QZLokaal | Qw1   | -0.72  | -0.72 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw1   | -0.72  | -0.72 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw1   | -0.72  | -0.72 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 2     | 1:QZLokaal | Qw1   | -0.72  | -0.72 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1     | 1:QZLokaal | Qw2   | -1.92  | -1.92 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw3   | 1.92   | 1.92  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal |       | 0.00   | 0.00  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw10  | 1.29   | 1.29  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal |       | 0.00   | 0.00  | 0.000 | 1.540 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw10  | 1.29   | 1.29  | 0.000 | 1.540 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw11  | 0.51   | 0.51  | 0.385 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw6   | 1.58   | 1.58  | 0.000 | 6.740 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw7   | 0.96   | 0.96  | 1.326 | 0.000 | 0.0      | 0.2      | 0.0      |
| 2     | 1:QZLokaal | Qw8   | 1.20   | 1.20  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

**REACTIES**

B.G:4 Wind van links onderdruk B

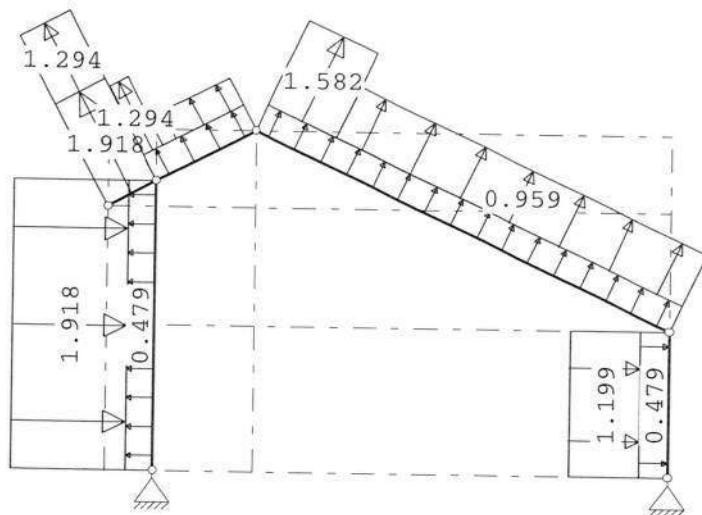
| Kn. | X      | Z     | M                        |
|-----|--------|-------|--------------------------|
| 1   | -8.92  | -7.94 |                          |
| 2   | -5.50  | 2.77  |                          |
|     | -14.42 | -5.17 | : Som van de reacties    |
|     | 14.42  | 5.17  | : Som van de belastingen |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 8 t/m 11

## BELASTINGEN

B.G:5 Wind van links overdruk B



## STAAFBELASTINGEN

B.G:5 Wind van links overdruk B

| Staaft Type  | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|--------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 1:QZLokaal | Qw9   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4 1:QZLokaal | Qw9   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5 1:QZLokaal | Qw9   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 2 1:QZLokaal | Qw9   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1 1:QZLokaal | Qw2   | -1.92  | -1.92 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3 1:QZLokaal | Qw3   | 1.92   | 1.92  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3 1:QZLokaal |       | 0.00   | 0.00  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3 1:QZLokaal | Qw10  | 1.29   | 1.29  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4 1:QZLokaal |       | 0.00   | 0.00  | 0.000 | 1.540 | 0.0      | 0.2      | 0.0      |
| 4 1:QZLokaal | Qw10  | 1.29   | 1.29  | 0.000 | 1.540 | 0.0      | 0.2      | 0.0      |
| 4 1:QZLokaal | Qw11  | 0.51   | 0.51  | 0.385 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5 1:QZLokaal | Qw6   | 1.58   | 1.58  | 0.000 | 6.740 | 0.0      | 0.2      | 0.0      |
| 5 1:QZLokaal | Qw7   | 0.96   | 0.96  | 1.326 | 0.000 | 0.0      | 0.2      | 0.0      |
| 2 1:QZLokaal | Qw8   | 1.20   | 1.20  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

## REACTIES

B.G:5 Wind van links overdruk B

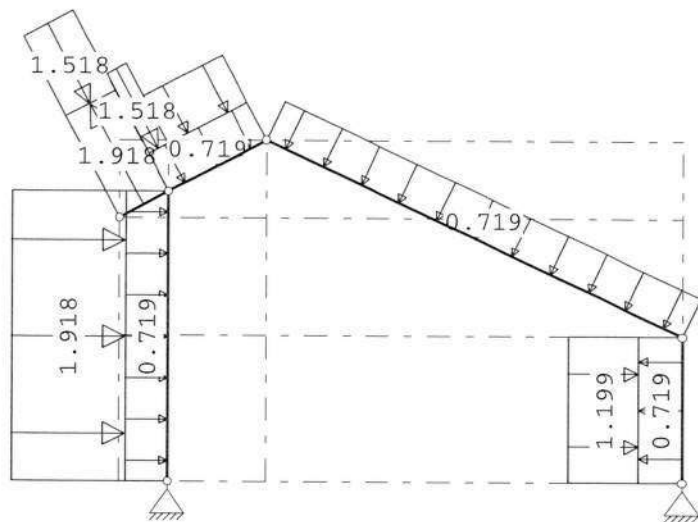
| Kn. | X      | Z      | M                        |
|-----|--------|--------|--------------------------|
| 1   | -7.51  | -13.33 |                          |
| 2   | -6.91  | -2.63  |                          |
|     | -14.42 | -15.96 | : Som van de reacties    |
|     | 14.42  | 15.96  | : Som van de belastingen |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 8 t/m 11

**BELASTINGEN**

B.G:6 Wind van links onderdruk C

**STAAFBELASTINGEN**

B.G:6 Wind van links onderdruk C

| Staaftype    | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|--------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 1:QZLokaal | Qw1   | -0.72  | -0.72 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4 1:QZLokaal | Qw1   | -0.72  | -0.72 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5 1:QZLokaal | Qw1   | -0.72  | -0.72 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 2 1:QZLokaal | Qw1   | -0.72  | -0.72 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1 1:QZLokaal | Qw2   | -1.92  | -1.92 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3 1:QZLokaal | Qw3   | 1.92   | 1.92  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3 1:QZLokaal |       | -0.00  | -0.00 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3 1:QZLokaal | Qw4   | -1.52  | -1.52 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4 1:QZLokaal |       | -0.00  | -0.00 | 0.000 | 1.540 | 0.0      | 0.2      | 0.0      |
| 4 1:QZLokaal | Qw4   | -1.52  | -1.52 | 0.000 | 1.540 | 0.0      | 0.2      | 0.0      |
| 4 1:QZLokaal | Qw5   | -0.89  | -0.89 | 0.385 | 0.000 | 0.0      | 0.2      | 0.0      |
| 2 1:QZLokaal | Qw8   | 1.20   | 1.20  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

**REACTIES**

B.G:6 Wind van links onderdruk C

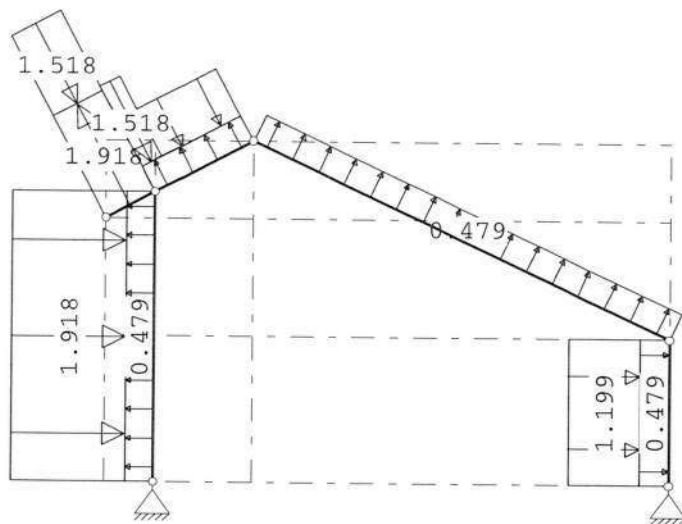
| Kn. | X      | Z     | M                        |
|-----|--------|-------|--------------------------|
| 1   | -7.63  | 0.79  |                          |
| 2   | -5.96  | 7.07  |                          |
|     | -13.59 | 7.86  | : Som van de reacties    |
|     | 13.59  | -7.86 | : Som van de belastingen |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 8 t/m 11

**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     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1     | 1:QZLokaal | Qw9   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw9   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw9   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 2     | 1:QZLokaal | Qw9   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1     | 1:QZLokaal | Qw2   | -1.92  | -1.92 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw3   | 1.92   | 1.92  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal |       | -0.00  | -0.00 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw4   | -1.52  | -1.52 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal |       | -0.00  | -0.00 | 0.000 | 1.540 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw4   | -1.52  | -1.52 | 0.000 | 1.540 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw5   | -0.89  | -0.89 | 0.385 | 0.000 | 0.0      | 0.2      | 0.0      |
| 2     | 1:QZLokaal | Qw8   | 1.20   | 1.20  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

**REACTIES**

B.G:7 Wind van links overdruk C

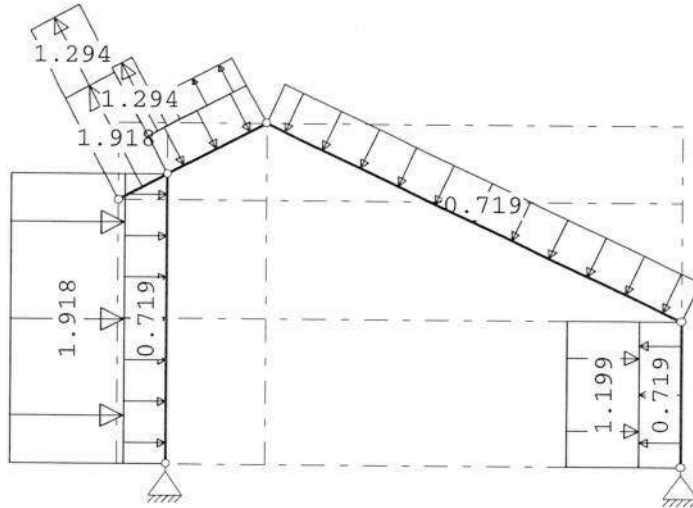
| Kn. | X      | Z     | M                        |
|-----|--------|-------|--------------------------|
| 1   | -6.22  | -4.60 |                          |
| 2   | -7.37  | 1.68  |                          |
|     | -13.59 | -2.92 | : Som van de reacties    |
|     | 13.59  | 2.92  | : Som van de belastingen |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 8 t/m 11

## BELASTINGEN

B.G:8 Wind van links onderdruk D



## STAAFBELASTINGEN

B.G:8 Wind van links onderdruk D

| Staaftype | Type       | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|-----------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1         | 1:QZLokaal | Qw1   | -0.72  | -0.72 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4         | 1:QZLokaal | Qw1   | -0.72  | -0.72 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5         | 1:QZLokaal | Qw1   | -0.72  | -0.72 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 2         | 1:QZLokaal | Qw1   | -0.72  | -0.72 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1         | 1:QZLokaal | Qw2   | -1.92  | -1.92 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3         | 1:QZLokaal | Qw3   | 1.92   | 1.92  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3         | 1:QZLokaal |       | 0.00   | 0.00  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3         | 1:QZLokaal | Qw10  | 1.29   | 1.29  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4         | 1:QZLokaal |       | 0.00   | 0.00  | 0.000 | 1.540 | 0.0      | 0.2      | 0.0      |
| 4         | 1:QZLokaal | Qw10  | 1.29   | 1.29  | 0.000 | 1.540 | 0.0      | 0.2      | 0.0      |
| 4         | 1:QZLokaal | Qw11  | 0.51   | 0.51  | 0.385 | 0.000 | 0.0      | 0.2      | 0.0      |
| 2         | 1:QZLokaal | Qw8   | 1.20   | 1.20  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

## REACTIES

B.G:8 Wind van links onderdruk D

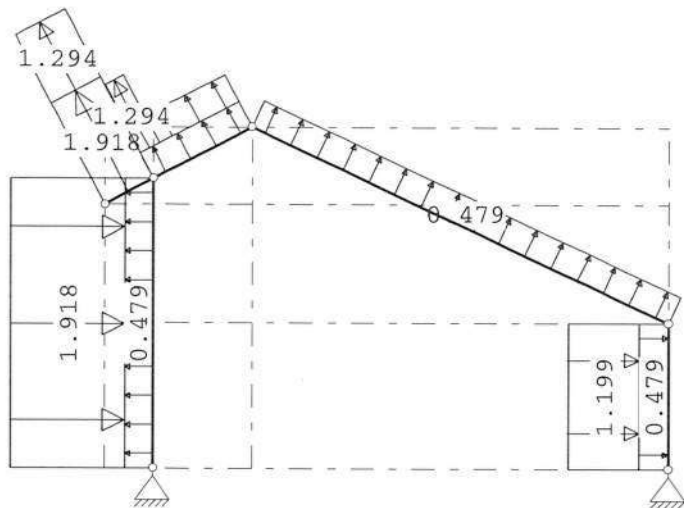
| Kn. | X      | Z     | M                        |
|-----|--------|-------|--------------------------|
| 1   | -6.77  | -2.75 |                          |
| 2   | -4.01  | 5.33  |                          |
|     | -10.78 | 2.57  | : Som van de reacties    |
|     | 10.78  | -2.57 | : Som van de belastingen |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 8 t/m 11

## BELASTINGEN

B.G:9 Wind van links overdruk D



## STAAFBELASTINGEN

B.G:9 Wind van links overdruk D

| Staaftype | Type       | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|-----------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1         | 1:QZLokaal | Qw9   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4         | 1:QZLokaal | Qw9   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5         | 1:QZLokaal | Qw9   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 2         | 1:QZLokaal | Qw9   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1         | 1:QZLokaal | Qw2   | -1.92  | -1.92 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3         | 1:QZLokaal | Qw3   | 1.92   | 1.92  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3         | 1:QZLokaal |       | 0.00   | 0.00  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3         | 1:QZLokaal | Qw10  | 1.29   | 1.29  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4         | 1:QZLokaal |       | 0.00   | 0.00  | 0.000 | 1.540 | 0.0      | 0.2      | 0.0      |
| 4         | 1:QZLokaal | Qw10  | 1.29   | 1.29  | 0.000 | 1.540 | 0.0      | 0.2      | 0.0      |
| 4         | 1:QZLokaal | Qw11  | 0.51   | 0.51  | 0.385 | 0.000 | 0.0      | 0.2      | 0.0      |
| 2         | 1:QZLokaal | Qw8   | 1.20   | 1.20  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

## REACTIES

B.G:9 Wind van links overdruk D

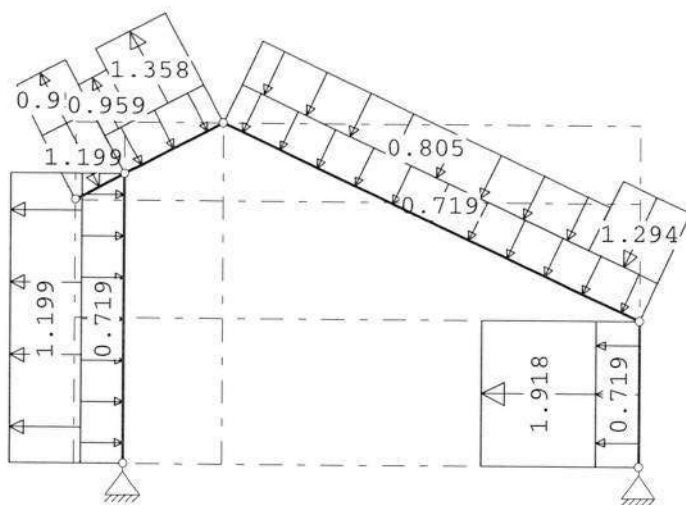
| Kn. | X      | Z     | M                        |
|-----|--------|-------|--------------------------|
| 1   | -5.36  | -8.15 |                          |
| 2   | -5.42  | -0.07 |                          |
|     | -10.78 | -8.21 | : Som van de reacties    |
|     | 10.78  | 8.21  | : Som van de belastingen |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 8 t/m 11

**BELASTINGEN**

B.G:10 Wind van rechts onderdruk A

**STAAFBELASTINGEN**

B.G:10 Wind van rechts onderdruk A

| Staafl | Type       | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|--------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1      | 1:QZLokaal | Qw1   | -0.72  | -0.72 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4      | 1:QZLokaal | Qw1   | -0.72  | -0.72 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5      | 1:QZLokaal | Qw1   | -0.72  | -0.72 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 2      | 1:QZLokaal | Qw1   | -0.72  | -0.72 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 2      | 1:QZLokaal | Qw2   | -1.92  | -1.92 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5      | 1:QZLokaal |       | -0.00  | -0.00 | 6.740 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5      | 1:QZLokaal | Qw12  | -1.29  | -1.29 | 6.740 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5      | 1:QZLokaal | Qw13  | -0.81  | -0.81 | 0.000 | 1.326 | 0.0      | 0.2      | 0.0      |
| 4      | 1:QZLokaal | Qw14  | 1.36   | 1.36  | 0.566 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4      | 1:QZLokaal | Qw7   | 0.96   | 0.96  | 0.000 | 1.359 | 0.0      | 0.2      | 0.0      |
| 3      | 1:QZLokaal | Qw15  | -1.20  | -1.20 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3      | 1:QZLokaal | Qw7   | 0.96   | 0.96  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1      | 1:QZLokaal | Qw8   | 1.20   | 1.20  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

**REACTIES**

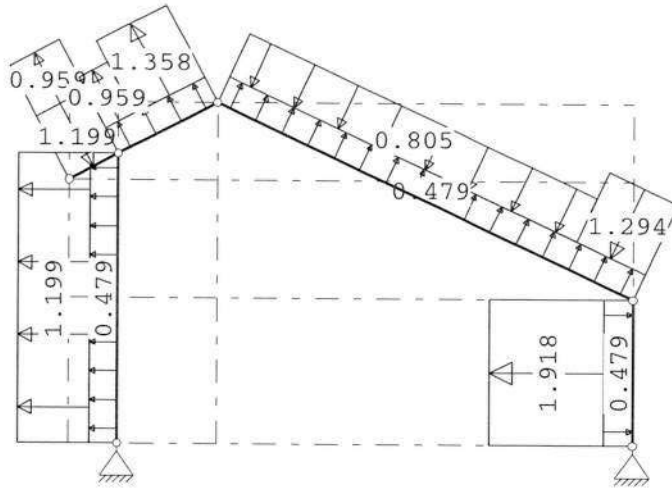
B.G:10 Wind van rechts onderdruk A

| Kn. | X      | Z      | M                        |
|-----|--------|--------|--------------------------|
| 1   | 5.51   | 8.45   |                          |
| 2   | 9.58   | 2.58   |                          |
|     | 15.09  | 11.03  | : Som van de reacties    |
|     | -15.09 | -11.03 | : Som van de belastingen |

Project...: Kapschuur te Katlijk  
 Onderdeel: Str. 8 t/m 11

**BELASTINGEN**

B.G:11 Wind van rechts overdruk A

**STAAFBELASTINGEN**

B.G:11 Wind van rechts overdruk A

| Staaftype    | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|--------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 1:QZLokaal | Qw9   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4 1:QZLokaal | Qw9   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5 1:QZLokaal | Qw9   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 2 1:QZLokaal | Qw9   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 2 1:QZLokaal | Qw2   | -1.92  | -1.92 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5 1:QZLokaal |       | -0.00  | -0.00 | 6.740 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5 1:QZLokaal | Qw12  | -1.29  | -1.29 | 6.740 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5 1:QZLokaal | Qw13  | -0.81  | -0.81 | 0.000 | 1.326 | 0.0      | 0.2      | 0.0      |
| 4 1:QZLokaal | Qw14  | 1.36   | 1.36  | 0.566 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4 1:QZLokaal | Qw7   | 0.96   | 0.96  | 0.000 | 1.359 | 0.0      | 0.2      | 0.0      |
| 3 1:QZLokaal | Qw15  | -1.20  | -1.20 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3 1:QZLokaal | Qw7   | 0.96   | 0.96  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1 1:QZLokaal | Qw8   | 1.20   | 1.20  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

**REACTIES**

B.G:11 Wind van rechts overdruk A

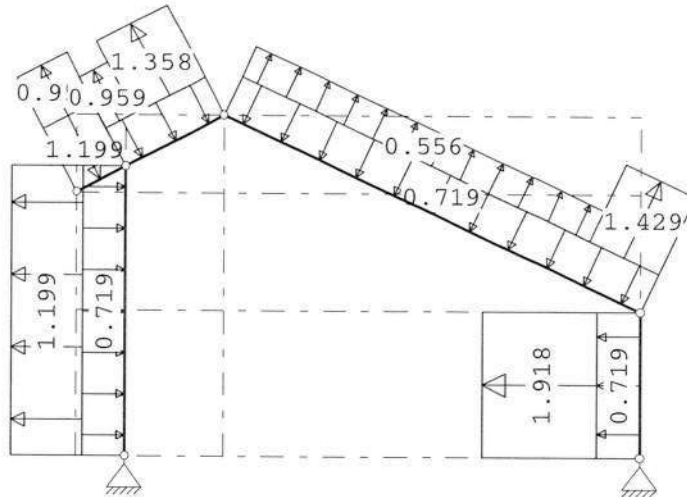
| Kn. | X      | Z     | M                        |
|-----|--------|-------|--------------------------|
| 1   | 6.92   | 3.06  |                          |
| 2   | 8.17   | -2.81 |                          |
|     | 15.09  | 0.25  | : Som van de reacties    |
|     | -15.09 | -0.25 | : Som van de belastingen |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 8 t/m 11

**BELASTINGEN**

B.G:12 Wind van rechts onderdruk B

**STAAFBELASTINGEN**

B.G:12 Wind van rechts onderdruk B

| Staal | Type       | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1     | 1:QZLokaal | Qw1   | -0.72  | -0.72 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw1   | -0.72  | -0.72 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw1   | -0.72  | -0.72 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 2     | 1:QZLokaal | Qw1   | -0.72  | -0.72 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 2     | 1:QZLokaal | Qw2   | -1.92  | -1.92 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal |       | 0.00   | 0.00  | 6.740 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw16  | 1.43   | 1.43  | 6.740 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw17  | 0.56   | 0.56  | 0.000 | 1.326 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw14  | 1.36   | 1.36  | 0.566 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw7   | 0.96   | 0.96  | 0.000 | 1.359 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw15  | -1.20  | -1.20 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw7   | 0.96   | 0.96  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1     | 1:QZLokaal | Qw8   | 1.20   | 1.20  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

**REACTIES**

B.G:12 Wind van rechts onderdruk B

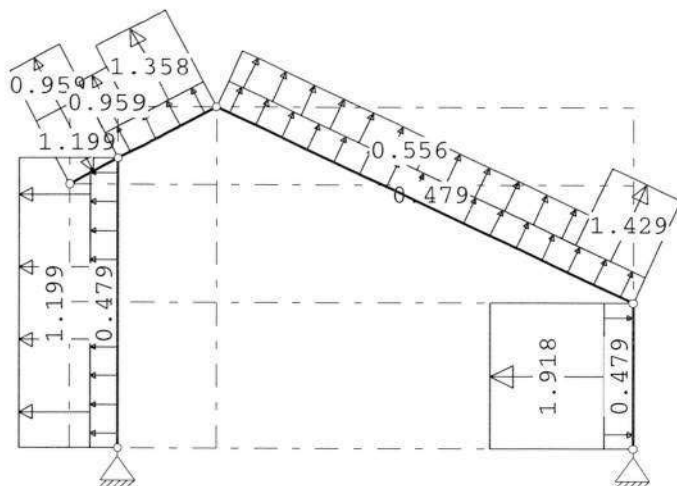
| Kn. | X     | Z     | M                        |
|-----|-------|-------|--------------------------|
| 1   | 2.52  | 1.84  |                          |
| 2   | 7.13  | -2.38 |                          |
|     | 9.65  | -0.54 | : Som van de reacties    |
|     | -9.65 | 0.54  | : Som van de belastingen |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 8 t/m 11

## 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     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1     | 1:QZLokaal | Qw9   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw9   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw9   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 2     | 1:QZLokaal | Qw9   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 2     | 1:QZLokaal | Qw2   | -1.92  | -1.92 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal |       | 0.00   | 0.00  | 6.740 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw16  | 1.43   | 1.43  | 6.740 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw17  | 0.56   | 0.56  | 0.000 | 1.326 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw14  | 1.36   | 1.36  | 0.566 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw7   | 0.96   | 0.96  | 0.000 | 1.359 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw15  | -1.20  | -1.20 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw7   | 0.96   | 0.96  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1     | 1:QZLokaal | Qw8   | 1.20   | 1.20  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

## REACTIES

B.G:13 Wind van rechts overdruk B

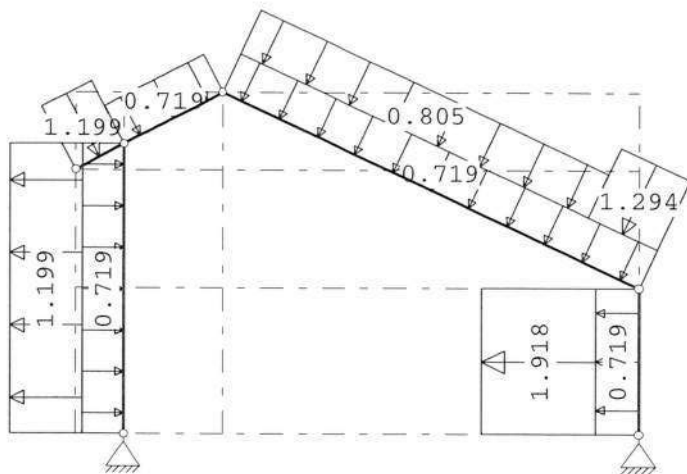
| Kn. | X     | Z      | M                        |
|-----|-------|--------|--------------------------|
| 1   | 3.93  | -3.55  |                          |
| 2   | 5.72  | -7.77  |                          |
|     | 9.65  | -11.32 | : Som van de reacties    |
|     | -9.65 | 11.32  | : Som van de belastingen |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 8 t/m 11

**BELASTINGEN**

B.G:14 Wind van rechts onderdruk C

**STAAFBELASTINGEN**

B.G:14 Wind van rechts onderdruk C

| Staaftype    | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|--------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 1:QZLokaal | Qw1   | -0.72  | -0.72 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4 1:QZLokaal | Qw1   | -0.72  | -0.72 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5 1:QZLokaal | Qw1   | -0.72  | -0.72 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 2 1:QZLokaal | Qw1   | -0.72  | -0.72 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 2 1:QZLokaal | Qw2   | -1.92  | -1.92 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5 1:QZLokaal |       | -0.00  | -0.00 | 6.740 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5 1:QZLokaal | Qw12  | -1.29  | -1.29 | 6.740 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5 1:QZLokaal | Qw13  | -0.81  | -0.81 | 0.000 | 1.326 | 0.0      | 0.2      | 0.0      |
| 3 1:QZLokaal | Qw15  | -1.20  | -1.20 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1 1:QZLokaal | Qw8   | 1.20   | 1.20  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

**REACTIES**

B.G:14 Wind van rechts onderdruk C

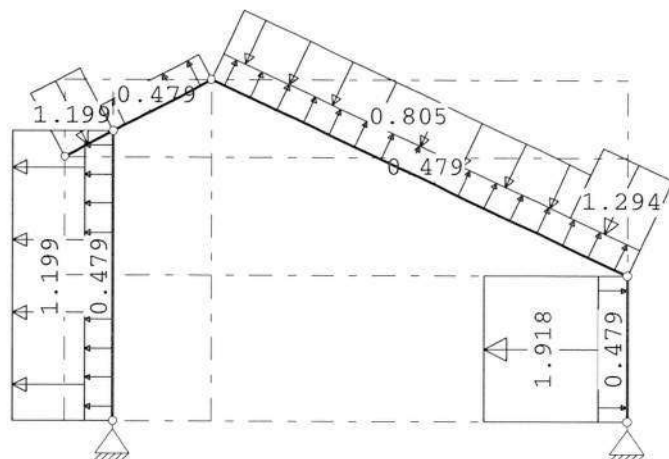
| Kn. | X      | Z      | M                        |
|-----|--------|--------|--------------------------|
| 1   | 5.13   | 10.28  |                          |
| 2   | 8.39   | 3.69   |                          |
|     | 13.53  | 13.97  | : Som van de reacties    |
|     | -13.53 | -13.97 | : Som van de belastingen |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 8 t/m 11

**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     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1     | 1:QZLokaal | Qw9   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw9   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw9   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 2     | 1:QZLokaal | Qw9   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 2     | 1:QZLokaal | Qw2   | -1.92  | -1.92 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal |       | -0.00  | -0.00 | 6.740 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw12  | -1.29  | -1.29 | 6.740 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw13  | -0.81  | -0.81 | 0.000 | 1.326 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw15  | -1.20  | -1.20 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1     | 1:QZLokaal | Qw8   | 1.20   | 1.20  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

**REACTIES**

B.G:15 Wind van rechts overdruk C

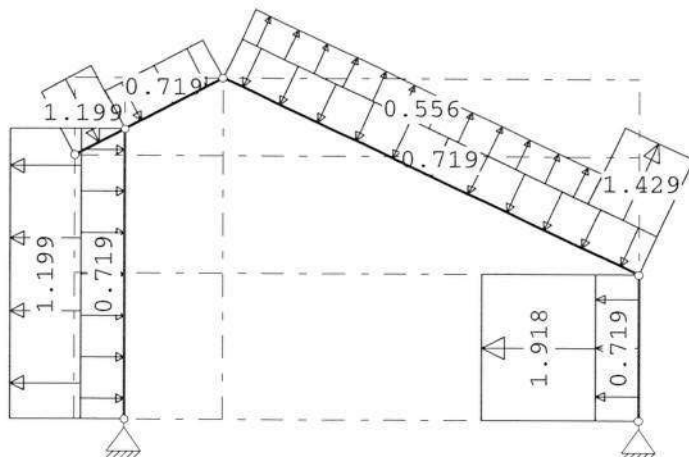
| Kn. | X      | Z     | M                        |
|-----|--------|-------|--------------------------|
| 1   | 6.55   | 4.89  |                          |
| 2   | 6.98   | -1.70 |                          |
|     | 13.53  | 3.18  | : Som van de reacties    |
|     | -13.53 | -3.18 | : Som van de belastingen |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 8 t/m 11

**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     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1     | 1:QZLokaal | Qw1   | -0.72  | -0.72 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw1   | -0.72  | -0.72 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw1   | -0.72  | -0.72 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 2     | 1:QZLokaal | Qw1   | -0.72  | -0.72 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 2     | 1:QZLokaal | Qw2   | -1.92  | -1.92 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal |       | 0.00   | 0.00  | 6.740 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw16  | 1.43   | 1.43  | 6.740 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw17  | 0.56   | 0.56  | 0.000 | 1.326 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw15  | -1.20  | -1.20 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1     | 1:QZLokaal | Qw8   | 1.20   | 1.20  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

**REACTIES**

B.G:16 Wind van rechts onderdruk D

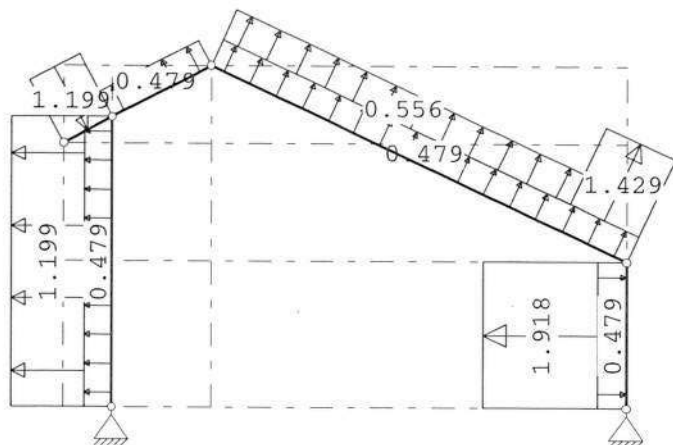
| Kn. | X     | Z     | M                        |
|-----|-------|-------|--------------------------|
| 1   | 2.14  | 3.67  |                          |
| 2   | 5.95  | -1.28 |                          |
|     | 8.09  | 2.40  | : Som van de reacties    |
|     | -8.09 | -2.40 | : Som van de belastingen |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 8 t/m 11

**BELASTINGEN**

B.G:17 Wind van rechts overdruk D

**STAAFBELASTINGEN**

B.G:17 Wind van rechts overdruk D

| Staf | Type       | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1    | 1:QZLokaal | Qw9   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4    | 1:QZLokaal | Qw9   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5    | 1:QZLokaal | Qw9   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 2    | 1:QZLokaal | Qw9   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 2    | 1:QZLokaal | Qw2   | -1.92  | -1.92 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5    | 1:QZLokaal |       | 0.00   | 0.00  | 6.740 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5    | 1:QZLokaal | Qw16  | 1.43   | 1.43  | 6.740 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5    | 1:QZLokaal | Qw17  | 0.56   | 0.56  | 0.000 | 1.326 | 0.0      | 0.2      | 0.0      |
| 3    | 1:QZLokaal | Qw15  | -1.20  | -1.20 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1    | 1:QZLokaal | Qw8   | 1.20   | 1.20  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

**REACTIES**

B.G:17 Wind van rechts overdruk D

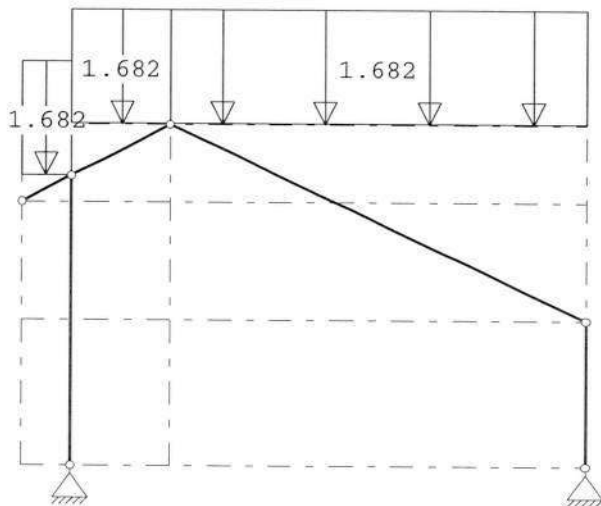
| Kn. | X     | Z     | M                        |
|-----|-------|-------|--------------------------|
| 1   | 3.55  | -1.72 |                          |
| 2   | 4.54  | -6.67 |                          |
|     | 8.09  | -8.39 | : Som van de reacties    |
|     | -8.09 | 8.39  | : Som van de belastingen |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 8 t/m 11

**BELASTINGEN**

B.G:18 Sneeuw A

**STAAFBELASTINGEN**

B.G:18 Sneeuw A

| Staad | Type        | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|-------|-------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 3     | 3:QZgeProj. | Qs1   | -1.68  | -1.68 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4     | 3:QZgeProj. | Qs1   | -1.68  | -1.68 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 3:QZgeProj. | Qs2   | -1.68  | -1.68 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

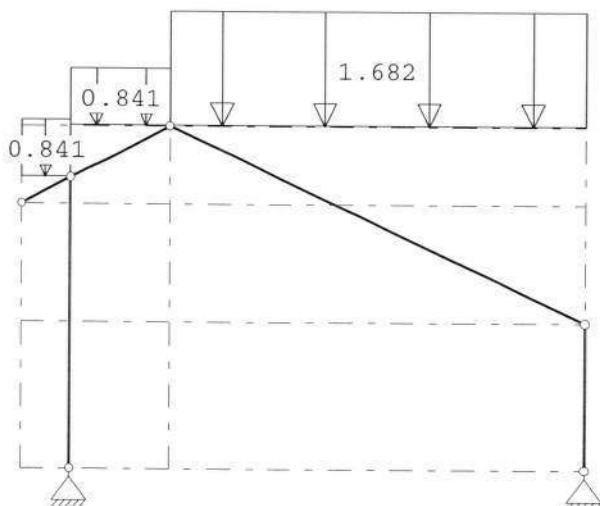
**REACTIES**

B.G:18 Sneeuw A

| Kn. | X     | Z      | M                        |
|-----|-------|--------|--------------------------|
| 1   | 1.92  | 9.08   |                          |
| 2   | -1.92 | 7.50   |                          |
|     | 0.00  | 16.58  | : Som van de reacties    |
|     | 0.00  | -16.58 | : Som van de belastingen |

**BELASTINGEN**

B.G:19 Sneeuw B



Project...: Kapschuur te Katlijk

Onderdeel: Str. 8 t/m 11

**STAAFBELASTINGEN**

B.G:19 Sneeuw B

| Staat | Type        | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|-------|-------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 3     | 3:QZgeProj. | Qs3   | -0.84  | -0.84 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4     | 3:QZgeProj. | Qs3   | -0.84  | -0.84 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 3:QZgeProj. | Qs2   | -1.68  | -1.68 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

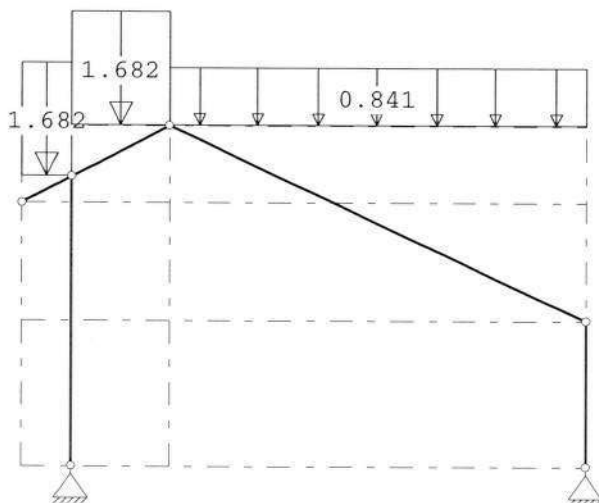
**REACTIES**

B.G:19 Sneeuw B

| Kn. | X     | Z      | M                        |
|-----|-------|--------|--------------------------|
| 1   | 1.84  | 7.03   |                          |
| 2   | -1.84 | 7.40   |                          |
|     | 0.00  | 14.43  | : Som van de reacties    |
|     | 0.00  | -14.43 | : Som van de belastingen |

**BELASTINGEN**

B.G:20 Sneeuw C

**STAAFBELASTINGEN**

B.G:20 Sneeuw C

| Staat | Type        | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|-------|-------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 3     | 3:QZgeProj. | Qs1   | -1.68  | -1.68 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4     | 3:QZgeProj. | Qs1   | -1.68  | -1.68 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 3:QZgeProj. | Qs4   | -0.84  | -0.84 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

**REACTIES**

B.G:20 Sneeuw C

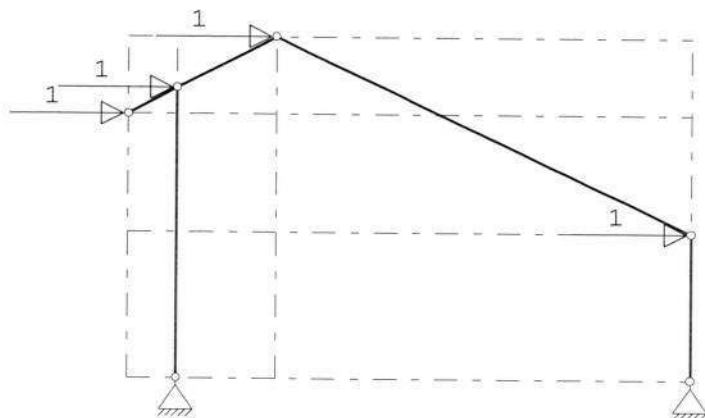
| Kn. | X     | Z      | M                        |
|-----|-------|--------|--------------------------|
| 1   | 1.03  | 6.59   |                          |
| 2   | -1.03 | 3.85   |                          |
|     | 0.00  | 10.44  | : Som van de reacties    |
|     | 0.00  | -10.44 | : Som van de belastingen |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 8 t/m 11

## BELASTINGEN

B.G:21 Knik



## KNOOPBELASTINGEN

B.G:21 Knik

| Last | Knoop | Richting | waarde | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|------|-------|----------|--------|----------|----------|----------|
| 1    | 3     | X        | 1.000  |          |          |          |
| 2    | 4     | X        | 1.000  |          |          |          |
| 3    | 5     | X        | 1.000  |          |          |          |
| 4    | 6     | X        | 1.000  |          |          |          |

## REACTIES

B.G:21 Knik

| Kn. | X     | Z     | M                        |
|-----|-------|-------|--------------------------|
| 1   | -1.22 | -2.03 |                          |
| 2   | -2.78 | 2.03  |                          |
|     | -4.00 | 0.00  | : Som van de reacties    |
|     | 4.00  | 0.00  | : Som van de belastingen |

## 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 $Q_{k,16}$ |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 8 t/m 11

**BELASTINGCOMBINATIES**

| BC Type  |      |           |   |                 |
|----------|------|-----------|---|-----------------|
| 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. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,2}$  |
| 23 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,3}$  |
| 24 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,4}$  |
| 25 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,5}$  |
| 26 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,6}$  |
| 27 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,7}$  |
| 28 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,8}$  |
| 29 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,9}$  |
| 30 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,10}$ |
| 31 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,11}$ |
| 32 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,12}$ |
| 33 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,13}$ |
| 34 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,14}$ |
| 35 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,15}$ |
| 36 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,16}$ |
| 37 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,17}$ |
| 38 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,18}$ |
| 39 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,19}$ |
| 40 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,20}$ |
| 41 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,2}$  |
| 42 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,3}$  |
| 43 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,4}$  |
| 44 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,5}$  |
| 45 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,6}$  |
| 46 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,7}$  |
| 47 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,8}$  |
| 48 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,9}$  |
| 49 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,10}$ |
| 50 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,11}$ |
| 51 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,12}$ |
| 52 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,13}$ |
| 53 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,14}$ |
| 54 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,15}$ |
| 55 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,16}$ |
| 56 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,17}$ |
| 57 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,18}$ |
| 58 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,19}$ |
| 59 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,20}$ |
| 60 Quas. | 1.00 | $G_{k,1}$ |   |                 |
| 61 Freq. | 1.00 | $G_{k,1}$ |   |                 |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 8 t/m 11

**BELASTINGCOMBINATIES**

| BC Type  |      |           |   |                        |
|----------|------|-----------|---|------------------------|
| 62 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,2}$  |
| 63 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,3}$  |
| 64 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,4}$  |
| 65 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,5}$  |
| 66 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,6}$  |
| 67 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,7}$  |
| 68 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,8}$  |
| 69 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,9}$  |
| 70 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,10}$ |
| 71 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,11}$ |
| 72 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,12}$ |
| 73 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,13}$ |
| 74 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,14}$ |
| 75 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,15}$ |
| 76 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,16}$ |
| 77 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,17}$ |
| 78 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,18}$ |
| 79 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,19}$ |
| 80 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,20}$ |
| 81 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 Alle staven de factor:0.90
- 23 Alle staven de factor:0.90

Project...: Kapschuur te Katlijk

Onderdeel: Str. 8 t/m 11

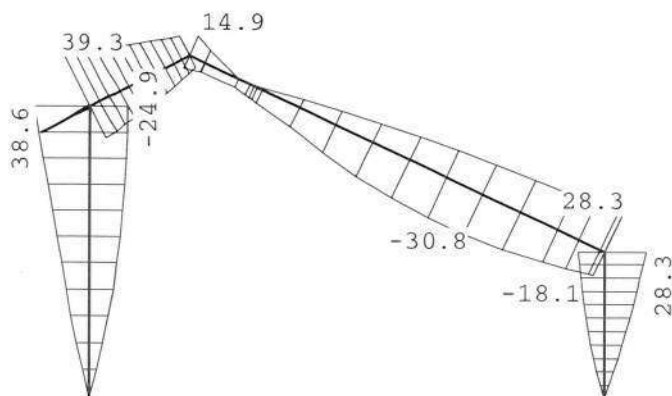
**GUNSTIGE WERKING PERMANENTE BELASTINGEN**

BC Staven met gunstige werking

24 Alle staven de factor:0.90  
25 Alle staven de factor:0.90  
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

**OMHULLENDE VAN DE FUNDAMENTELE COMBINATIES****MOMENTEN**

Fundamentele combinatie

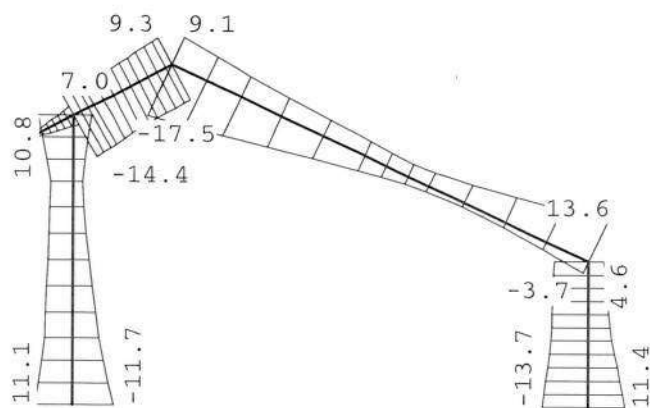


Project...: Kapschuur te Katlijk

Onderdeel: Str. 8 t/m 11

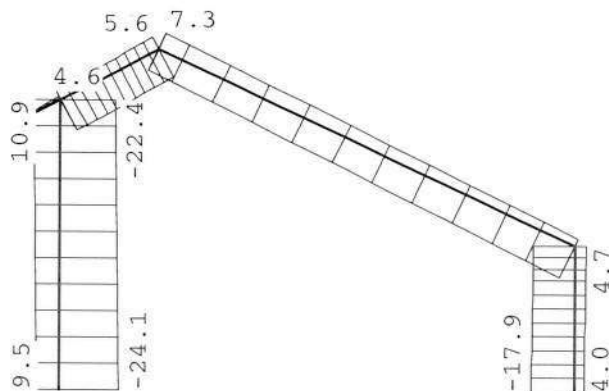
## DWARSKRACHTEN

Fundamentele combinatie



## NORMAALKRACHTEN

Fundamentele combinatie



Project...: Kapschuur te Katlijk

Onderdeel: Str. 8 t/m 11

**STAALPROFIELEN - ALGEMENE GEGEVENS**

|                              |                                            |             |
|------------------------------|--------------------------------------------|-------------|
| Stabiliteit:                 | Classificatie gehele constructie:          | Ongeschoord |
|                              | Belastinggeval m.b.t. bepaling kniklengte: | 20=Sneeuw C |
|                              | 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:                          | 1           |
|                              | Gebouwtype:                                | Industrieel |
|                              | Toel. horiz. verplaatsing gehele gebouw:   | h/150       |
|                              | Kleinste gevelhoogte [m]:                  | 5.1         |

**MATERIAAL**

| Mat nr.                       | Profielnaam | Vloeisp. [N/mm <sup>2</sup> ] | Productie methode | Min. drsn. klasse |
|-------------------------------|-------------|-------------------------------|-------------------|-------------------|
| 1                             | IPE240      | 235                           | Gewalst           | 1                 |
| Partiële veiligheidsfactoren: |             |                               |                   |                   |
| Gamma M;0                     | :           | 1.00                          | Gamma M;1         | : 1.00            |

**KNIKSTABILITEIT**

| Staafl | $l_{sys}$ [m] | Classif. y<br>sterke as | $l_{knik,y}$ [m] | Extra        |                         | $l_{knik,z}$ [m] | Extra        |  |
|--------|---------------|-------------------------|------------------|--------------|-------------------------|------------------|--------------|--|
|        |               |                         |                  | aanp. y [kN] | Classif. z<br>zwakke as |                  | aanp. z [kN] |  |
| 1      | 5.097         | Ongeschoord             | 10.552           | 0.0          | Geschoord               | 5.097            | 0.0          |  |
| 2      | 2.570         | Ongeschoord             | 8.855            | 0.0          | Geschoord               | 2.570            | 0.0          |  |
| 3      | 0.974         | Ongeschoord             | 7.128            | 0.0          | Geschoord               | 0.974            | 0.0          |  |
| 4      | 1.925         | Ongeschoord             | 4.677            | 0.0          | Geschoord               | 1.925            | 0.0          |  |
| 5      | 8.066         | Ongeschoord             | 18.541           | 0.0          | Geschoord               | 8.066            | 0.0          |  |

**KIPSTABILITEIT**

| Staafl | Plts. aangr. |        | 1 gaffel [m] | Kipsteunafstanden [m] |  |
|--------|--------------|--------|--------------|-----------------------|--|
|        |              |        |              |                       |  |
| 1      | 1.0*h        | boven: | 5.10         | 5.097                 |  |
|        |              | onder: | 5.10         | 5.097                 |  |
| 2      | 1.0*h        | boven: | 2.57         | 2.570                 |  |
|        |              | onder: | 2.57         | 2.570                 |  |
| 3      | 1.0*h        | boven: | 0.97         | 0.974                 |  |
|        |              | onder: | 0.97         | 0.974                 |  |
| 4      | 1.0*h        | boven: | 1.93         | 1.925                 |  |
|        |              | onder: | 1.93         | 1.925                 |  |
| 5      | 1.0*h        | boven: | 8.07         | 4,033; 4,033          |  |
|        |              | onder: | 8.07         | 8.066                 |  |

**TOETSING SPANNINGEN**

| Staafl nr. | Mat | BC | Sit | Kl | Plaats | Norm    | Artikel | Formule | Hoogste toetsing U.C. [N/mm <sup>2</sup> ] |     | Opm.  |
|------------|-----|----|-----|----|--------|---------|---------|---------|--------------------------------------------|-----|-------|
| 1          | 1   | 11 | 1   | 1  | Staafl | EN3-1-1 | 6.3.3   | (6.62)  | 0.711                                      | 167 | 47    |
| 2          | 1   | 3  | 1   | 1  | Staafl | EN3-1-1 | 6.3.3   | (6.62)  | 0.352                                      | 83  | 47    |
| 3          | 1   | 24 | 1   | 1  | Staafl | EN3-1-1 | 6.3.1.1 | T(6.46) | 0.024                                      | 6   | 8,4   |
| 4          | 1   | 11 | 1   | 1  | Staafl | EN3-1-1 | 6.3.3   | (6.62)  | 0.475                                      | 112 | 46,47 |
| 5          | 1   | 23 | 1   | 1  | Staafl | EN3-1-1 | 6.3.3   | (6.62)  | 0.671                                      | 158 | 46,47 |

TS/Raamwerken

Rel: 6.06a 21 mrt 2017

Project...: Kapschuur te Katlijk

Onderdeel: Str. 8 t/m 11

Opmerkingen:

[ 4] Controle gedrukte T-rand houdt geen rekening met 2e-orde-wringing.

[ 8] Controle van de gedrukte rand is toegepast (zonder buiging!).

[ 46] T.b.v. kip is een equivalente Q-last berekend.

[ 47] Bij verlopende normaalkracht wordt de grootste drukkracht genomen.

**TOETSING DOORBUIGING**

| Staaf | Soort | Mtg | Lengte<br>[m] | Overst |      | Zeeg<br>[mm] | $u_{tot}$<br>[mm] | BC     | Sit    | u<br>[mm] | Toelaatbaar<br>[mm] *1 |         |
|-------|-------|-----|---------------|--------|------|--------------|-------------------|--------|--------|-----------|------------------------|---------|
| 3     | Dak   | ss  | 0.97          | J      | N    | 0.0          | 1.3               | 57     | 1 Eind | 1.3       | -7.8                   | 2*0.004 |
|       |       |     |               |        | -0.8 |              | 42                | 1 Eind | -0.8   |           |                        |         |
|       |       | ss  |               |        |      |              | 53                | 1 Bijk | -0.5   | -7.8      | 2*0.004                |         |
| 4     | Dak   | ss  | 1.93          | N      | N    | 0.0          | 6.0               | 57     | 1 Eind | 6.0       | -15.4                  | 2*0.004 |
|       |       |     |               |        | -1.8 |              | 47                | 1 Eind | -1.8   |           |                        |         |
|       |       | ss  |               |        |      |              | 42                | 1 Bijk | -4.4   | -15.4     | 2*0.004                |         |
| 5     | Dak   | db  | 8.07          | N      | N    | 0.0          | -20.6             | 49     | 1 Eind | -20.6     | -32.3                  | 0.004   |
|       |       | db  |               |        |      |              | 49                | 1 Bijk | -14.8  | -32.3     | 0.004                  |         |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 12

Dimensies: kN;m;rad (tenzij anders aangegeven)

Datum....: 09/03/2017

Bestand...: c:\projecten 2016\raamwerken\kapschuur te katlijk str. 12.rww

Belastingbreedte.: 2.000

Rekenmodel.....: 1e-orde-elastisch.

Theorie voor de bepaling van de krachtsverdeling:

Geometrisch lineair.

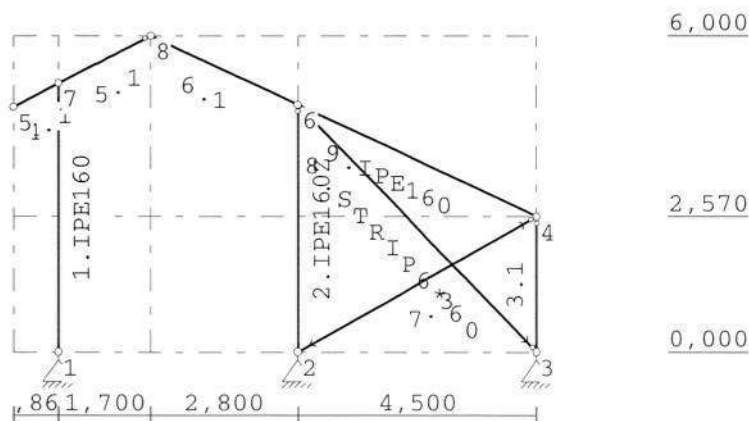
Fysisch lineair.

Gunstige werking van de permanente belasting wordt automatisch verwerkt.

### **Toegepaste normen volgens Eurocode met Nederlandse NB**

|             |                      |         |             |
|-------------|----------------------|---------|-------------|
| 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 | C2:2009 | NB:2011(nl) |

### **GEOMETRIE**



### **STRAMIENLIJNEN**

| Nr. | X     | Z-min | Z-max |
|-----|-------|-------|-------|
| 1   | 0.000 | 0.000 | 6.000 |
| 2   | 0.860 | 0.000 | 6.000 |
| 3   | 2.560 | 0.000 | 6.000 |
| 4   | 5.360 | 0.000 | 6.000 |
| 5   | 9.860 | 0.000 | 6.000 |

### **NIVEAUS**

| Nr. | Z     | X-min | X-max |
|-----|-------|-------|-------|
| 1   | 0.000 | 0.000 | 9.860 |
| 2   | 2.570 | 0.000 | 9.860 |
| 3   | 6.000 | 0.000 | 9.860 |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 12

**MATERIALEN**

| Mt | Omschrijving | E-modulus[N/mm2] | S.M. Pois. | Uitz. coëff |
|----|--------------|------------------|------------|-------------|
| 1  | S235         | 210000           | 78.5       | 0.30        |
|    |              |                  |            | 1.2000e-005 |

**PROFIELEN [mm]**

| Prof. | Omschrijving | Materiaal | Oppervlak   | Traagheid   | Vormf. |
|-------|--------------|-----------|-------------|-------------|--------|
| 1     | IPE160       | 1:S235    | 2.0090e+003 | 8.6900e+006 | 0.00   |
| 2     | IPE160Z      | 1:S235    | 2.0090e+003 | 6.8300e+005 | 0.00   |
| 3     | STRIP6*60    | 1:S235    | 3.6000e+002 | 1.0800e+005 | 0.00   |

**PROFIELEN vervolg [mm]**

| Prof. | Staaftype | Breedte | Hoogte | e    | Type | b1 | h1 | b2 | h2 |
|-------|-----------|---------|--------|------|------|----|----|----|----|
| 1     | 0:Normaal | 82      | 160    | 80.0 |      |    |    |    |    |
| 2     | 0:Normaal | 82      | 160    | 41.0 |      |    |    |    |    |
| 3     | 1:Trek    | 6       | 60     | 30.0 |      |    |    |    |    |

**KNOPEN**

| Knoop | X     | Z     | Knoop | X     | Z     |
|-------|-------|-------|-------|-------|-------|
| 1     | 0.860 | 0.000 | 6     | 5.360 | 4.684 |
| 2     | 5.360 | 0.000 | 7     | 0.860 | 5.097 |
| 3     | 9.860 | 0.000 | 8     | 2.560 | 6.000 |
| 4     | 9.860 | 2.570 |       |       |       |
| 5     | 0.000 | 4.640 |       |       |       |

**STAVEN**

| St. | ki | kj | Profiel     | Aansl.i | Aansl.j | Lengte Opm. |
|-----|----|----|-------------|---------|---------|-------------|
| 1   | 1  | 7  | 1:IPE160    | NDM     | NDM     | 5.097       |
| 2   | 2  | 6  | 2:IPE160Z   | NDM     | ND-     | 4.684       |
| 3   | 4  | 3  | 1:IPE160    | ND-     | NDM     | 2.570       |
| 4   | 5  | 7  | 1:IPE160    | NDM     | NDM     | 0.974       |
| 5   | 7  | 8  | 1:IPE160    | NDM     | ND-     | 1.925       |
| 6   | 8  | 6  | 1:IPE160    | NDM     | NDM     | 3.094       |
| 7   | 2  | 4  | 3:STRIP6*60 | NDM     | ND-     | 5.182       |
| 8   | 6  | 3  | 3:STRIP6*60 | ND-     | ND-     | 6.496       |
| 9   | 6  | 4  | 1:IPE160    | NDM     | NDM     | 4.972       |

**VASTE STEUNPUNTEN**

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

**BELASTINGGENERATIE ALGEMEEN.**

|                             |       |                         |      |
|-----------------------------|-------|-------------------------|------|
| Betrouwbaarheidsklasse..... | 1     | Referentieperiode.....  | 15   |
| Gebouwdiepte.....           | 55.00 | Gebouwhoogte.....       | 6.00 |
| Niveau aansl.terrein.....   | 0.00  | E.g. scheid.w. [kN/m2]: | 1.20 |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 12

**WIND**

Terrein categorie ...[4.3.2]...: Onbebouwd  
 Windgebied .....: 2 Vb,0 ..[4.2].....: 27.000  
 Referentie periode wind.....: 15.00 Vb(p) ..[4.2].....: 24.909  
 K .....[4.2].....: 0.230 n ....[4.2].....: 0.500  
 Positie spant in het gebouw....: 0.000 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**

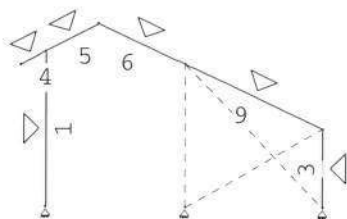
Sneeuwbelasting (sk) 50 jaar : 0.70  
 Sneeuwbelasting (sn) n jaar : 0.53

**STAFTYPEN**

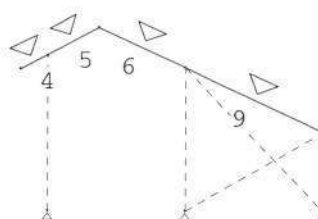
| Type             | staven  |
|------------------|---------|
| 4:Wand / kolom.  | : 2     |
| 5:Linker gevel.  | : 1     |
| 6:Rechter gevel. | : 3     |
| 7:Dak.           | : 4-6,9 |
| 9:Open.          | : 7,8   |

**LASTVELDEN**

Wind staven



Sneeuw staven

**WIND DAKTYPES**

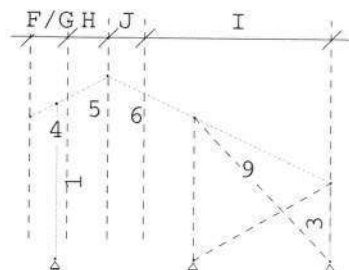
| Nr. | Staaf Type    | reductie bij<br>wind van links | reductie bij<br>wind van Rechts | Cpe volgens art: |
|-----|---------------|--------------------------------|---------------------------------|------------------|
| 1   | 1 Gevel       | 1.000                          | 1.000                           | 7.2.2            |
| 2   | 4-5 Zadel dak | 1.000                          | 1.000                           | 7.2.5            |
| 3   | 6-9 Zadel dak | 1.000                          | 1.000                           | 7.2.5            |
| 4   | 3 Gevel       | 1.000                          | 1.000                           | 7.2.2            |

Project...: Kapschuur te Katlijk

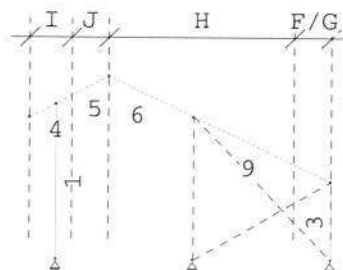
Onderdeel: Str. 12

## WIND ZONES

Wind van links



Wind van rechts



### WIND VAN LINKS ZONES

| Nr. | Staaf | Positie | Lengte | Zone |
|-----|-------|---------|--------|------|
| 1   | 1     | 0.000   | 5.097  | D    |
| 2   | 4-5   | 0.000   | 1.200  | F/G  |
| 3   | 4-5   | 1.200   | 1.360  | H    |
| 4   | 6-9   | 0.000   | 1.200  | J    |
| 5   | 6-9   | 1.200   | 6.100  | I    |
| 6   | 3     | 0.000   | 2.570  | E    |

### WIND VAN RECHTS ZONES

| Nr. | Staaf | Positie | Lengte | Zone |
|-----|-------|---------|--------|------|
| 1   | 3     | 0.000   | 2.570  | D    |
| 2   | 6-9   | 0.000   | 1.200  | F/G  |
| 3   | 6-9   | 1.200   | 6.100  | H    |
| 4   | 4-5   | 0.000   | 1.200  | J    |
| 5   | 4-5   | 1.200   | 1.360  | I    |
| 6   | 1     | 0.000   | 5.097  | E    |

## Wind indexen

| Index | CsCd | Cpe/Cpi | qp    | breedte | reductie | Qw     | Zone | Hoek(en) |
|-------|------|---------|-------|---------|----------|--------|------|----------|
| Qw1   |      | 0.300   | 0.599 | 2.000   |          | -0.360 |      |          |
| Qw2   | 1.00 | 0.800   | 0.599 | 2.000   |          | -0.959 | D    |          |
| Qw3   | 1.00 | -0.800  | 0.599 | 2.000   |          | 0.959  | F    | 28.0     |
| Qw4   | 1.00 | 0.633   | 0.599 | 2.000   |          | -0.759 | F    | 28.0     |
| Qw5   | 1.00 | 0.373   | 0.599 | 2.000   |          | -0.447 | H    | 28.0     |
| Qw6   | 1.00 | -0.660  | 0.599 | 2.000   |          | 0.791  | J    | 25.2     |
| Qw7   | 1.00 | -0.400  | 0.599 | 2.000   |          | 0.479  | I    | 25.2     |
| Qw8   | 1.00 | -0.500  | 0.599 | 2.000   |          | 0.599  | E    | 28.0     |
| Qw9   |      | -0.200  | 0.599 | 2.000   |          | 0.240  |      |          |
| Qw10  | 1.00 | -0.553  | 0.599 | 2.000   |          | 0.663  | F    | 28.0     |
| Qw11  | 1.00 | -0.213  | 0.599 | 2.000   |          | 0.256  | H    | 28.0     |
| Qw12  | 1.00 | 0.540   | 0.599 | 2.000   |          | -0.647 | F    | 25.2     |
| Qw13  | 1.00 | 0.336   | 0.599 | 2.000   |          | -0.403 | H    | 25.2     |
| Qw14  | 1.00 | -0.567  | 0.599 | 2.000   |          | 0.679  | J    | 28.0     |
| Qw15  | 1.00 | 0.500   | 0.599 | 2.000   |          | -0.599 | I    | 28.0     |
| Qw16  | 1.00 | -0.628  | 0.599 | 2.000   |          | 0.753  | F    | 25.2     |
| Qw17  | 1.00 | -0.232  | 0.599 | 2.000   |          | 0.278  | H    | 25.2     |

## SNEEUW DAKTYPEN

| Staaf | artikel         |
|-------|-----------------|
| 4-5   | 5.3.3 Zadel dak |
| 6-9   | 5.3.3 Zadel dak |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 12

**Sneeuw indexen**

| Index | art   | $\mu$ | $s_k$ | red. posfac | breedte | $Q_s$ | hoek |
|-------|-------|-------|-------|-------------|---------|-------|------|
| Qs1   | 5.3.3 | 0.800 | 0.53  | 1.00        | 2.000   | 0.841 | 28.0 |
| Qs2   | 5.3.3 | 0.800 | 0.53  | 1.00        | 2.000   | 0.841 | 25.2 |
| Qs3   | 5.3.3 | 0.400 | 0.53  | 1.00        | 2.000   | 0.420 | 28.0 |
| Qs4   | 5.3.3 | 0.400 | 0.53  | 1.00        | 2.000   | 0.420 | 25.2 |

**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 Sneeuw A                      | 22   |
| g    | 19 Sneeuw B                      | 23   |
| g    | 20 Sneeuw C                      | 33   |

g = gegenereerd belastinggeval

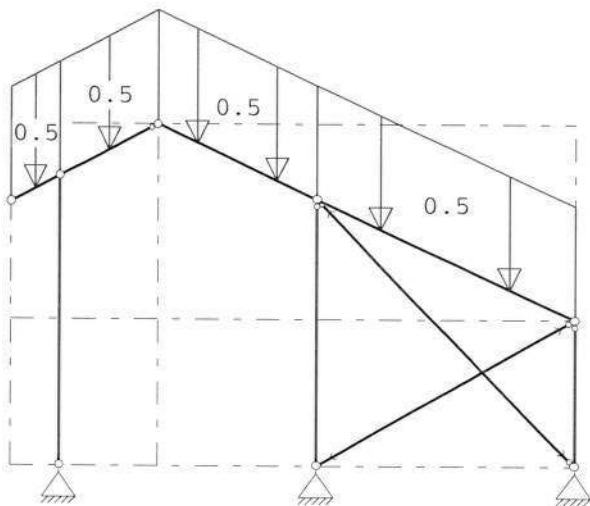
Project...: Kapschuur te Katlijk

Onderdeel: Str. 12

**BELASTINGEN**

B.G:1 Permanente belasting

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

**STAAFBELASTINGEN**

B.G:1 Permanente belasting

| Staafl | Type        | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|--------|-------------|--------|-------|-------|-------|----------|----------|----------|
| 4      | 5:QZGlobaal | -0.50  | -0.50 | 0.000 | 0.000 |          |          |          |
| 5      | 5:QZGlobaal | -0.50  | -0.50 | 0.000 | 0.000 |          |          |          |
| 6      | 5:QZGlobaal | -0.50  | -0.50 | 0.000 | 0.000 |          |          |          |
| 9      | 5:QZGlobaal | -0.50  | -0.50 | 0.000 | 0.000 |          |          |          |

**REACTIES**

B.G:1 Permanente belasting

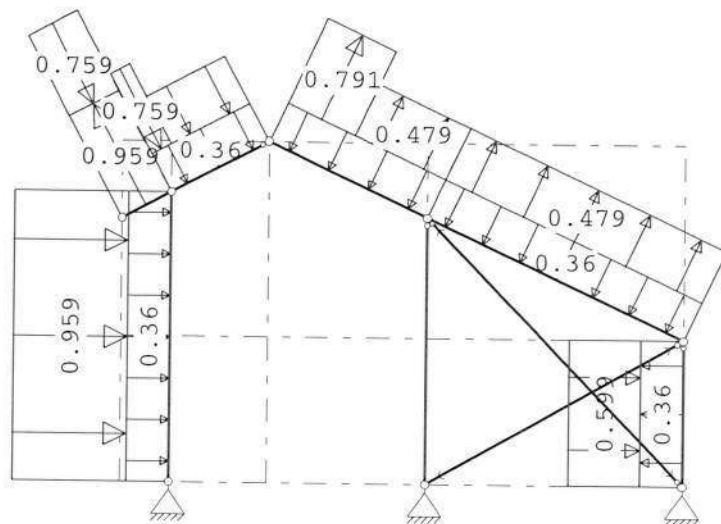
| Kn. | X     | Z     | M                        |
|-----|-------|-------|--------------------------|
| 1   | 0.21  | 2.98  |                          |
| 2   | -0.21 | 4.49  |                          |
| 3   | 0.00  | 2.02  |                          |
|     | 0.00  | 9.49  | : Som van de reacties    |
|     | 0.00  | -9.49 | : Som van de belastingen |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 12

## BELASTINGEN

B.G:2 Wind van links onderdruk A



## STAAFBELASTINGEN

B.G:2 Wind van links onderdruk A

| Staaftype | Type       | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|-----------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1         | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5         | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 6         | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9         | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3         | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1         | 1:QZLokaal | Qw2   | -0.96  | -0.96 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4         | 1:QZLokaal | Qw3   | 0.96   | 0.96  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4         | 1:QZLokaal | Qw4   | -0.76  | -0.76 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5         | 1:QZLokaal | Qw4   | -0.76  | -0.76 | 0.000 | 1.540 | 0.0      | 0.2      | 0.0      |
| 5         | 1:QZLokaal | Qw5   | -0.45  | -0.45 | 0.385 | 0.000 | 0.0      | 0.2      | 0.0      |
| 6         | 1:QZLokaal | Qw6   | 0.79   | 0.79  | 0.000 | 1.768 | 0.0      | 0.2      | 0.0      |
| 6         | 1:QZLokaal | Qw7   | 0.48   | 0.48  | 1.326 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9         | 1:QZLokaal | Qw7   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3         | 1:QZLokaal | Qw8   | 0.60   | 0.60  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

## REACTIES

B.G:2 Wind van links onderdruk A

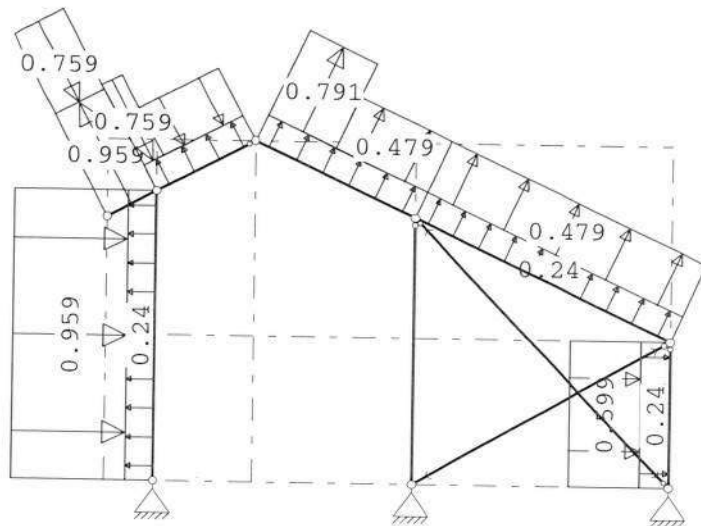
| Kn. | X     | Z     | M                        |
|-----|-------|-------|--------------------------|
| 1   | -4.02 | 0.18  |                          |
| 2   | -4.29 | -4.76 |                          |
| 3   | -0.31 | 4.63  |                          |
|     | -8.62 | 0.06  | : Som van de reacties    |
|     | 8.62  | -0.06 | : Som van de belastingen |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 12

## 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     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1     | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 6     | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9     | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1     | 1:QZLokaal | Qw2   | -0.96  | -0.96 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw3   | 0.96   | 0.96  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw4   | -0.76  | -0.76 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw4   | -0.76  | -0.76 | 0.000 | 1.540 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw5   | -0.45  | -0.45 | 0.385 | 0.000 | 0.0      | 0.2      | 0.0      |
| 6     | 1:QZLokaal | Qw6   | 0.79   | 0.79  | 0.000 | 1.768 | 0.0      | 0.2      | 0.0      |
| 6     | 1:QZLokaal | Qw7   | 0.48   | 0.48  | 1.326 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9     | 1:QZLokaal | Qw7   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw8   | 0.60   | 0.60  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

## REACTIES

B.G:3 Wind van links overdruk A

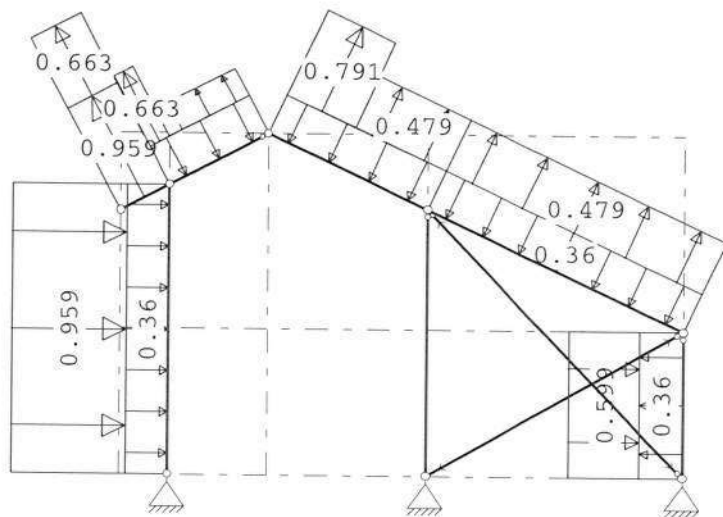
| Kn. | X     | Z     | M                        |
|-----|-------|-------|--------------------------|
| 1   | -2.35 | -0.77 |                          |
| 2   | -5.19 | -8.25 |                          |
| 3   | -1.08 | 3.68  |                          |
|     | -8.62 | -5.34 | : Som van de reacties    |
|     | 8.62  | 5.34  | : Som van de belastingen |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 12

**BELASTINGEN**

B.G:4 Wind van links onderdruk B

**STAAFBELASTINGEN**

B.G:4 Wind van links onderdruk B

| Staat | Type       | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1     | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 6     | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9     | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1     | 1:QZLokaal | Qw2   | -0.96  | -0.96 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw3   | 0.96   | 0.96  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw10  | 0.66   | 0.66  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw10  | 0.66   | 0.66  | 0.000 | 1.540 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw11  | 0.26   | 0.26  | 0.385 | 0.000 | 0.0      | 0.2      | 0.0      |
| 6     | 1:QZLokaal | Qw6   | 0.79   | 0.79  | 0.000 | 1.768 | 0.0      | 0.2      | 0.0      |
| 6     | 1:QZLokaal | Qw7   | 0.48   | 0.48  | 1.326 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9     | 1:QZLokaal | Qw7   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw8   | 0.60   | 0.60  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

**REACTIES**

B.G:4 Wind van links onderdruk B

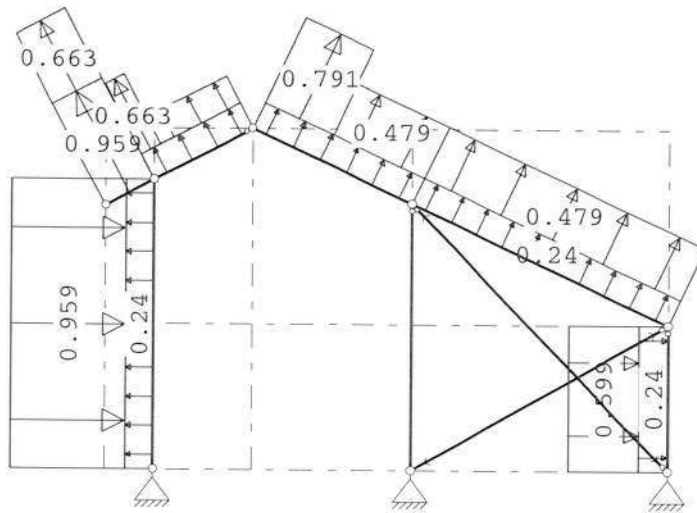
| Kn. | X     | Z     | M                        |
|-----|-------|-------|--------------------------|
| 1   | -3.80 | -2.06 |                          |
| 2   | -3.09 | -3.85 |                          |
| 3   | -0.31 | 3.30  |                          |
|     | -7.20 | -2.61 | : Som van de reacties    |
|     | 7.20  | 2.61  | : Som van de belastingen |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 12

**BELASTINGEN**

B.G:5 Wind van links overdruk B

**STAAFBELASTINGEN**

B.G:5 Wind van links overdruk B

| Staaft | Type       | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|--------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1      | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5      | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 6      | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9      | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3      | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1      | 1:QZLokaal | Qw2   | -0.96  | -0.96 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4      | 1:QZLokaal | Qw3   | 0.96   | 0.96  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4      | 1:QZLokaal | Qw10  | 0.66   | 0.66  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5      | 1:QZLokaal | Qw10  | 0.66   | 0.66  | 0.000 | 1.540 | 0.0      | 0.2      | 0.0      |
| 5      | 1:QZLokaal | Qw11  | 0.26   | 0.26  | 0.385 | 0.000 | 0.0      | 0.2      | 0.0      |
| 6      | 1:QZLokaal | Qw6   | 0.79   | 0.79  | 0.000 | 1.768 | 0.0      | 0.2      | 0.0      |
| 6      | 1:QZLokaal | Qw7   | 0.48   | 0.48  | 1.326 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9      | 1:QZLokaal | Qw7   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3      | 1:QZLokaal | Qw8   | 0.60   | 0.60  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

**REACTIES**

B.G:5 Wind van links overdruk B

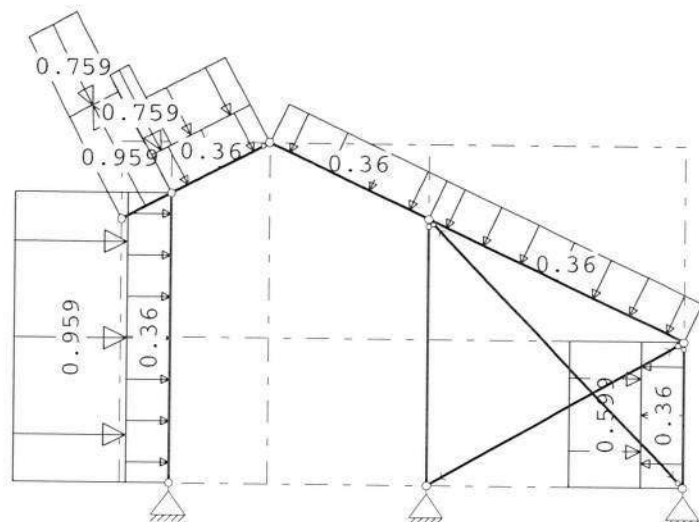
| Kn. | X     | Z     | M                        |
|-----|-------|-------|--------------------------|
| 1   | -2.13 | -3.01 |                          |
| 2   | -4.00 | -7.34 |                          |
| 3   | -1.08 | 2.35  |                          |
|     | -7.20 | -8.00 | : Som van de reacties    |
|     | 7.20  | 8.00  | : Som van de belastingen |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 12

**BELASTINGEN**

B.G:6 Wind van links onderdruk C

**STAAFBELASTINGEN**

B.G:6 Wind van links onderdruk C

| Staaftype    | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|--------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 6 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1 1:QZLokaal | Qw2   | -0.96  | -0.96 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4 1:QZLokaal | Qw3   | 0.96   | 0.96  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4 1:QZLokaal | Qw4   | -0.76  | -0.76 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5 1:QZLokaal | Qw4   | -0.76  | -0.76 | 0.000 | 1.540 | 0.0      | 0.2      | 0.0      |
| 5 1:QZLokaal | Qw5   | -0.45  | -0.45 | 0.385 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3 1:QZLokaal | Qw8   | 0.60   | 0.60  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

**REACTIES**

B.G:6 Wind van links onderdruk C

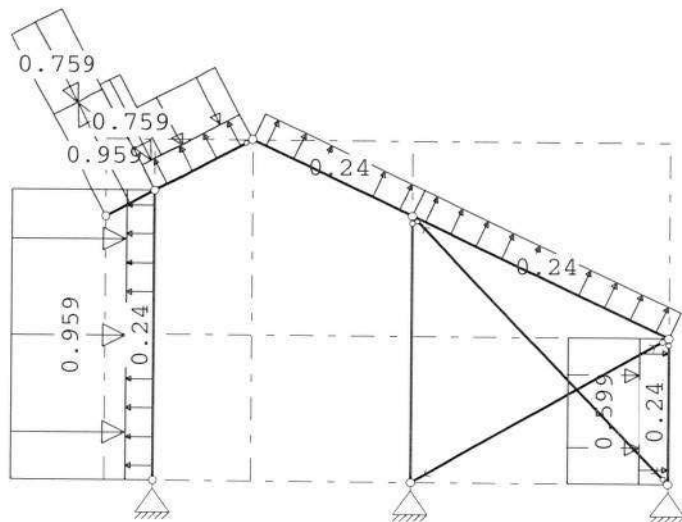
| Kn. | X     | Z     | M                        |
|-----|-------|-------|--------------------------|
| 1   | -3.86 | 0.76  |                          |
| 2   | -2.63 | -0.72 |                          |
| 3   | -0.31 | 3.90  |                          |
|     | -6.80 | 3.93  | : Som van de reacties    |
|     | 6.80  | -3.93 | : Som van de belastingen |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 12

**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     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1     | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 6     | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9     | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1     | 1:QZLokaal | Qw2   | -0.96  | -0.96 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw3   | 0.96   | 0.96  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw4   | -0.76  | -0.76 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw4   | -0.76  | -0.76 | 0.000 | 1.540 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw5   | -0.45  | -0.45 | 0.385 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw8   | 0.60   | 0.60  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

**REACTIES**

B.G:7 Wind van links overdruk C

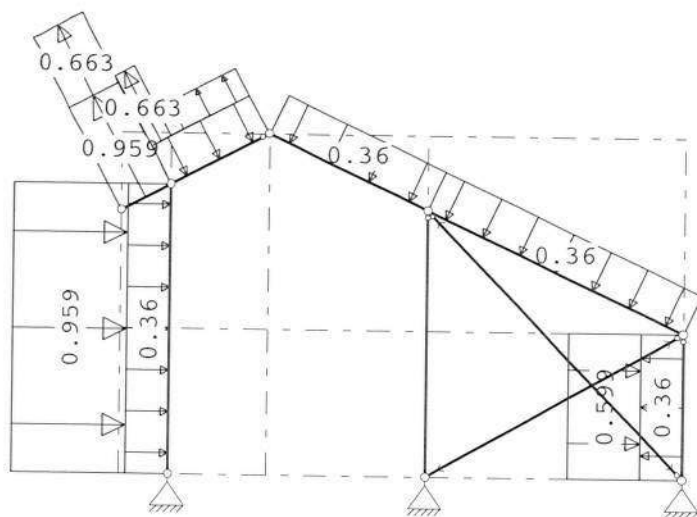
| Kn. | X     | Z     | M                        |
|-----|-------|-------|--------------------------|
| 1   | -2.19 | -0.20 |                          |
| 2   | -3.53 | -4.21 |                          |
| 3   | -1.08 | 2.94  |                          |
|     | -6.80 | -1.46 | : Som van de reacties    |
|     | 6.80  | 1.46  | : Som van de belastingen |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 12

## BELASTINGEN

B.G:8 Wind van links onderdruk D



## STAAFBELASTINGEN

B.G:8 Wind van links onderdruk D

| Staad | Type       | Index | q1/p/m | q2    | A     | B     | $\Psi_0$ | $\Psi_1$ | $\Psi_2$ |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1     | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 6     | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9     | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1     | 1:QZLokaal | Qw2   | -0.96  | -0.96 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw3   | 0.96   | 0.96  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw10  | 0.66   | 0.66  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw10  | 0.66   | 0.66  | 0.000 | 1.540 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw11  | 0.26   | 0.26  | 0.385 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw8   | 0.60   | 0.60  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

## REACTIES

B.G:8 Wind van links onderdruk D

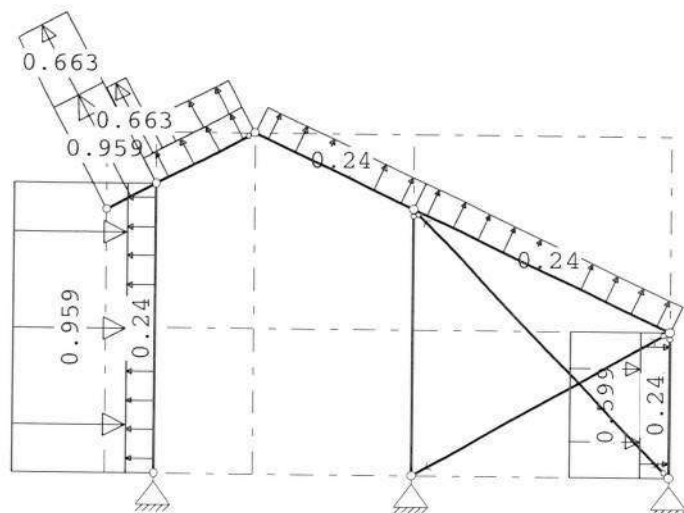
| Kn. | X     | Z     | M                        |
|-----|-------|-------|--------------------------|
| 1   | -3.64 | -1.49 |                          |
| 2   | -1.44 | 0.19  |                          |
| 3   | -0.31 | 2.56  |                          |
|     | -5.38 | 1.27  | : Som van de reacties    |
|     | 5.38  | -1.27 | : Som van de belastingen |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 12

**BELASTINGEN**

B.G:9 Wind van links overdruk D

**STAAFBELASTINGEN**

B.G:9 Wind van links overdruk D

| Staal | Type       | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1     | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 6     | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9     | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1     | 1:QZLokaal | Qw2   | -0.96  | -0.96 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw3   | 0.96   | 0.96  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw10  | 0.66   | 0.66  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw10  | 0.66   | 0.66  | 0.000 | 1.540 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw11  | 0.26   | 0.26  | 0.385 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw8   | 0.60   | 0.60  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

**REACTIES**

B.G:9 Wind van links overdruk D

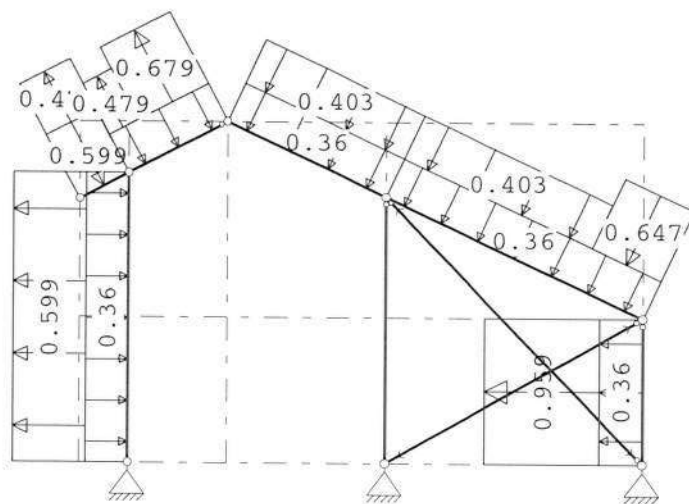
| Kn. | X     | Z     | M                        |
|-----|-------|-------|--------------------------|
| 1   | -1.97 | -2.44 |                          |
| 2   | -2.34 | -3.30 |                          |
| 3   | -1.08 | 1.61  |                          |
|     | -5.38 | -4.13 | : Som van de reacties    |
|     | 5.38  | 4.13  | : Som van de belastingen |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 12

## BELASTINGEN

B.G:10 Wind van rechts onderdruk A



## STAAFBELASTINGEN

B.G:10 Wind van rechts onderdruk A

| Staat | Type       | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1     | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 6     | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9     | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw2   | -0.96  | -0.96 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9     | 1:QZLokaal | Qw12  | -0.65  | -0.65 | 3.646 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9     | 1:QZLokaal | Qw13  | -0.40  | -0.40 | 0.000 | 1.326 | 0.0      | 0.2      | 0.0      |
| 6     | 1:QZLokaal | Qw13  | -0.40  | -0.40 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw14  | 0.68   | 0.68  | 0.566 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw7   | 0.48   | 0.48  | 0.000 | 1.359 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw15  | -0.60  | -0.60 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw7   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1     | 1:QZLokaal | Qw8   | 0.60   | 0.60  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

## REACTIES

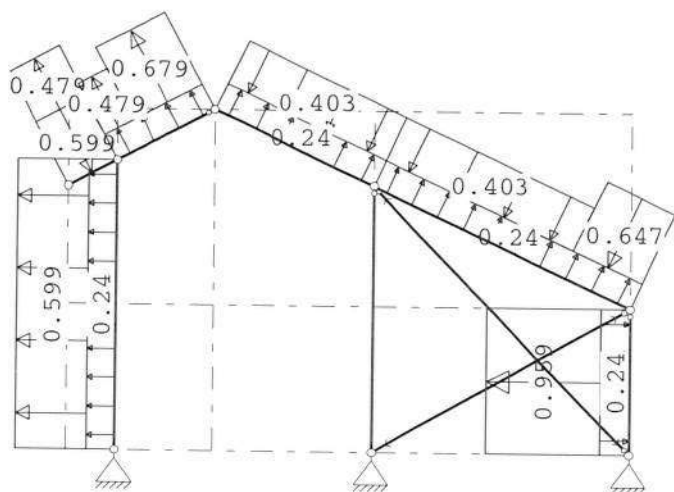
B.G:10 Wind van rechts onderdruk A

| Kn. | X     | Z     | M                        |
|-----|-------|-------|--------------------------|
| 1   | 0.82  | 0.36  |                          |
| 2   | 0.00  | 7.74  |                          |
| 3   | 6.72  | -2.58 |                          |
|     | 7.54  | 5.52  | : Som van de reacties    |
|     | -7.54 | -5.52 | : Som van de belastingen |

Project.: Kapschuur te Katlijk  
Onderdeel: Str. 12

## BELASTINGEN

B.G:11 Wind van rechts overdruk A



## STAAFBELASTINGEN

B.G:11 Wind van rechts overdruk A

| Staaf | Type       | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1     | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 6     | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9     | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw2   | -0.96  | -0.96 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9     | 1:QZLokaal | Qw12  | -0.65  | -0.65 | 3.646 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9     | 1:QZLokaal | Qw13  | -0.40  | -0.40 | 0.000 | 1.326 | 0.0      | 0.2      | 0.0      |
| 6     | 1:QZLokaal | Qw13  | -0.40  | -0.40 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw14  | 0.68   | 0.68  | 0.566 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw7   | 0.48   | 0.48  | 0.000 | 1.359 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw15  | -0.60  | -0.60 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw7   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1     | 1:QZLokaal | Qw8   | 0.60   | 0.60  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

## REACTIES

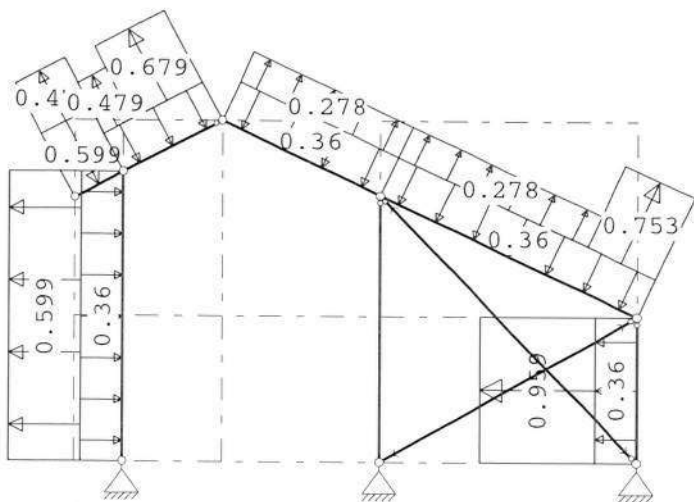
B.G:11 Wind van rechts overdruk A

| Kn. | X     | Z     | M                        |
|-----|-------|-------|--------------------------|
| 1   | 2.50  | -0.60 |                          |
| 2   | 0.00  | 4.25  |                          |
| 3   | 5.05  | -3.53 |                          |
|     | 7.54  | 0.12  | : Som van de reacties    |
|     | -7.54 | -0.12 | : Som van de belastingen |

Project...: Kapschuur te Katlijk  
Onderdeel: Str. 12

**BELASTINGEN**

B.G:12 Wind van rechts onderdruk B

**STAAFBELASTINGEN**

B.G:12 Wind van rechts onderdruk B

| StAAF | Type       | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1     | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 6     | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9     | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw2   | -0.96  | -0.96 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9     | 1:QZLokaal | Qw16  | 0.75   | 0.75  | 3.646 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9     | 1:QZLokaal | Qw17  | 0.28   | 0.28  | 0.000 | 1.326 | 0.0      | 0.2      | 0.0      |
| 6     | 1:QZLokaal | Qw17  | 0.28   | 0.28  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw14  | 0.68   | 0.68  | 0.566 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw7   | 0.48   | 0.48  | 0.000 | 1.359 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw15  | -0.60  | -0.60 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw7   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1     | 1:QZLokaal | Qw8   | 0.60   | 0.60  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

**REACTIES**

B.G:12 Wind van rechts onderdruk B

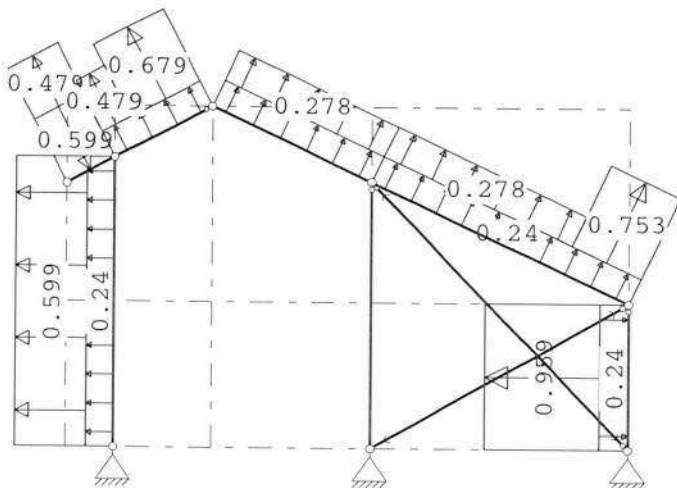
| Kn. | X     | Z     | M                        |
|-----|-------|-------|--------------------------|
| 1   | 0.71  | -0.05 |                          |
| 2   | 0.00  | 1.92  |                          |
| 3   | 4.09  | -2.19 |                          |
|     | 4.80  | -0.31 | : Som van de reacties    |
|     | -4.80 | 0.31  | : Som van de belastingen |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 12

**BELASTINGEN**

B.G:13 Wind van rechts overdruk B

**STAAFBELASTINGEN**

B.G:13 Wind van rechts overdruk B

| Staal | Type       | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1     | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 6     | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9     | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw2   | -0.96  | -0.96 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9     | 1:QZLokaal | Qw16  | 0.75   | 0.75  | 3.646 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9     | 1:QZLokaal | Qw17  | 0.28   | 0.28  | 0.000 | 1.326 | 0.0      | 0.2      | 0.0      |
| 6     | 1:QZLokaal | Qw17  | 0.28   | 0.28  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw14  | 0.68   | 0.68  | 0.566 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw7   | 0.48   | 0.48  | 0.000 | 1.359 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw15  | -0.60  | -0.60 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw7   | 0.48   | 0.48  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1     | 1:QZLokaal | Qw8   | 0.60   | 0.60  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

**REACTIES**

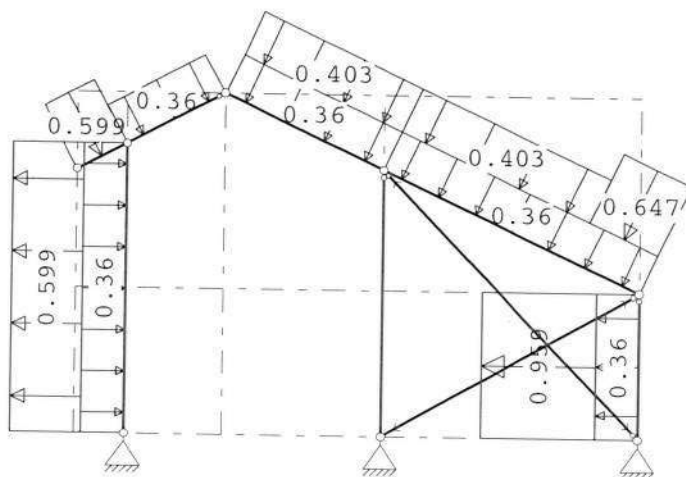
B.G:13 Wind van rechts overdruk B

| Kn. | X     | Z     | M                        |
|-----|-------|-------|--------------------------|
| 1   | 2.38  | -1.00 |                          |
| 2   | 0.00  | -1.57 |                          |
| 3   | 2.42  | -3.14 |                          |
|     | 4.80  | -5.71 | : Som van de reacties    |
|     | -4.80 | 5.71  | : Som van de belastingen |

Project...: Kapschuur te Katlijk  
Onderdeel: Str. 12

## BELASTINGEN

B.G:14 Wind van rechts onderdruk C



## STAAFBELASTINGEN

B.G:14 Wind van rechts onderdruk C

| Staaftype | Type       | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|-----------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1         | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5         | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 6         | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9         | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3         | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3         | 1:QZLokaal | Qw2   | -0.96  | -0.96 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9         | 1:QZLokaal | Qw12  | -0.65  | -0.65 | 3.646 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9         | 1:QZLokaal | Qw13  | -0.40  | -0.40 | 0.000 | 1.326 | 0.0      | 0.2      | 0.0      |
| 6         | 1:QZLokaal | Qw13  | -0.40  | -0.40 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4         | 1:QZLokaal | Qw15  | -0.60  | -0.60 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1         | 1:QZLokaal | Qw8   | 0.60   | 0.60  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

## REACTIES

B.G:14 Wind van rechts onderdruk C

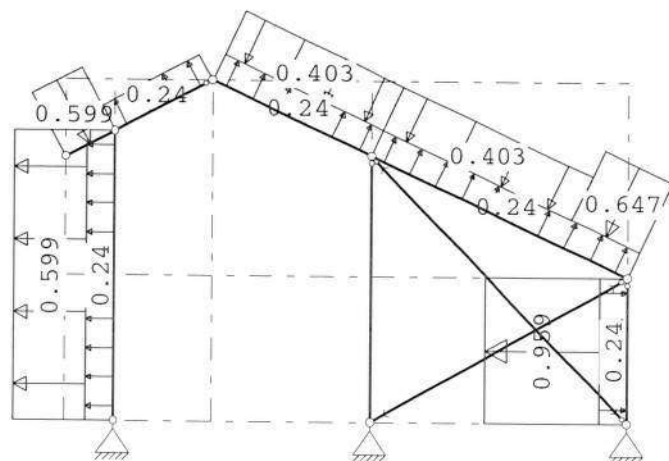
| Kn. | X     | Z     | M                        |
|-----|-------|-------|--------------------------|
| 1   | 0.78  | 1.50  |                          |
| 2   | 0.00  | 7.27  |                          |
| 3   | 5.98  | -1.79 |                          |
|     | 6.76  | 6.98  | : Som van de reacties    |
|     | -6.76 | -6.98 | : Som van de belastingen |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 12

## BELASTINGEN

B.G:15 Wind van rechts overdruk C



## STAAFBELASTINGEN

B.G:15 Wind van rechts overdruk C

| Staafl | Type       | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|--------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1      | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5      | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 6      | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9      | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3      | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3      | 1:QZLokaal | Qw2   | -0.96  | -0.96 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9      | 1:QZLokaal | Qw12  | -0.65  | -0.65 | 3.646 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9      | 1:QZLokaal | Qw13  | -0.40  | -0.40 | 0.000 | 1.326 | 0.0      | 0.2      | 0.0      |
| 6      | 1:QZLokaal | Qw13  | -0.40  | -0.40 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4      | 1:QZLokaal | Qw15  | -0.60  | -0.60 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1      | 1:QZLokaal | Qw8   | 0.60   | 0.60  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

## REACTIES

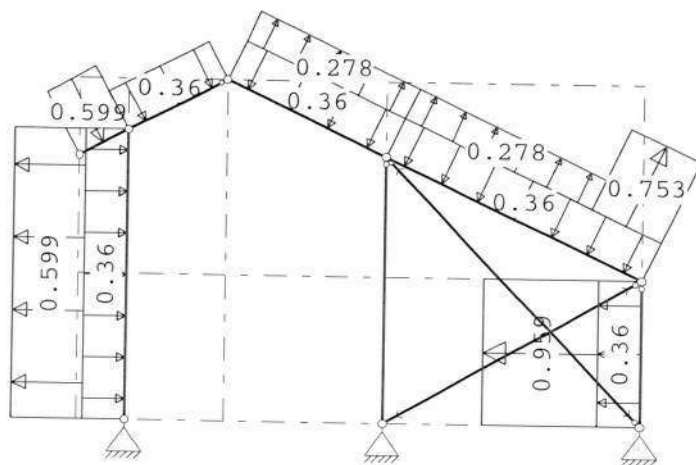
B.G:15 Wind van rechts overdruk C

| Kn. | X     | Z     | M                        |
|-----|-------|-------|--------------------------|
| 1   | 2.45  | 0.55  |                          |
| 2   | 0.00  | 3.79  |                          |
| 3   | 4.31  | -2.75 |                          |
|     | 6.76  | 1.59  | : Som van de reacties    |
|     | -6.76 | -1.59 | : Som van de belastingen |

Project...: Kapschuur te Katlijk  
Onderdeel: Str. 12

## BELASTINGEN

B.G:16 Wind van rechts onderdruk D



## STAAFBELASTINGEN

B.G:16 Wind van rechts onderdruk D

| Staf | Type       | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1    | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5    | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 6    | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9    | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3    | 1:QZLokaal | Qw1   | -0.36  | -0.36 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3    | 1:QZLokaal | Qw2   | -0.96  | -0.96 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9    | 1:QZLokaal | Qw16  | 0.75   | 0.75  | 3.646 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9    | 1:QZLokaal | Qw17  | 0.28   | 0.28  | 0.000 | 1.326 | 0.0      | 0.2      | 0.0      |
| 6    | 1:QZLokaal | Qw17  | 0.28   | 0.28  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4    | 1:QZLokaal | Qw15  | -0.60  | -0.60 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1    | 1:QZLokaal | Qw8   | 0.60   | 0.60  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

## REACTIES

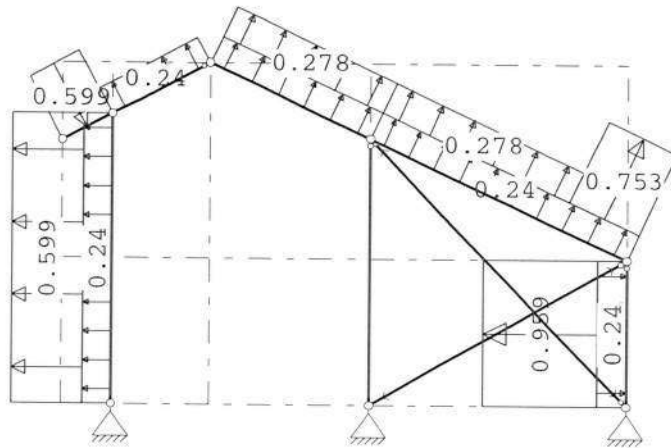
B.G:16 Wind van rechts onderdruk D

| Kn. | X     | Z     | M                        |
|-----|-------|-------|--------------------------|
| 1   | 0.67  | 1.10  |                          |
| 2   | 0.00  | 1.45  |                          |
| 3   | 3.35  | -1.40 |                          |
|     | 4.02  | 1.15  | : Som van de reacties    |
|     | -4.02 | -1.15 | : Som van de belastingen |

Project...: Kapschuur te Katlijk  
Onderdeel: Str. 12

**BELASTINGEN**

B.G:17 Wind van rechts overdruk D

**STAAFBELASTINGEN**

B.G:17 Wind van rechts overdruk D

| Staat | Type       | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|-------|------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1     | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 6     | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9     | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw9   | 0.24   | 0.24  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 3     | 1:QZLokaal | Qw2   | -0.96  | -0.96 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9     | 1:QZLokaal | Qw16  | 0.75   | 0.75  | 3.646 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9     | 1:QZLokaal | Qw17  | 0.28   | 0.28  | 0.000 | 1.326 | 0.0      | 0.2      | 0.0      |
| 6     | 1:QZLokaal | Qw17  | 0.28   | 0.28  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 4     | 1:QZLokaal | Qw15  | -0.60  | -0.60 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1     | 1:QZLokaal | Qw8   | 0.60   | 0.60  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

**REACTIES**

B.G:17 Wind van rechts overdruk D

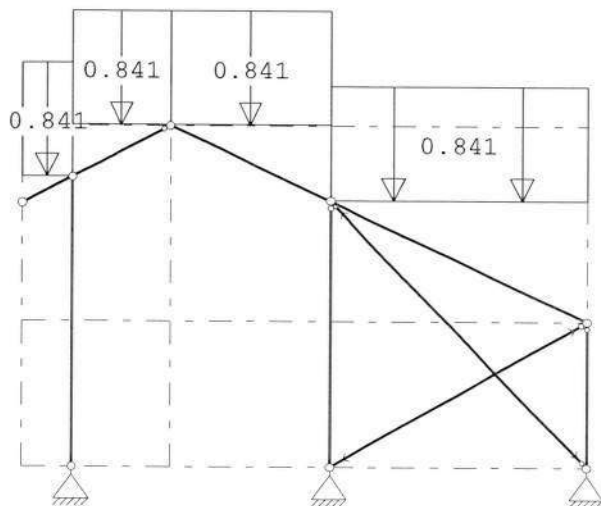
| Kn. | X     | Z     | M                        |
|-----|-------|-------|--------------------------|
| 1   | 2.34  | 0.15  |                          |
| 2   | 0.00  | -2.03 |                          |
| 3   | 1.68  | -2.36 |                          |
|     | 4.02  | -4.24 | : Som van de reacties    |
|     | -4.02 | 4.24  | : Som van de belastingen |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 12

**BELASTINGEN**

B.G:18 Sneeuw A

**STAAFBELASTINGEN**

B.G:18 Sneeuw A

| Staal | Type        | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|-------|-------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 4     | 3:QZgeProj. | Qs1   | -0.84  | -0.84 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 3:QZgeProj. | Qs1   | -0.84  | -0.84 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 6     | 3:QZgeProj. | Qs2   | -0.84  | -0.84 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9     | 3:QZgeProj. | Qs2   | -0.84  | -0.84 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

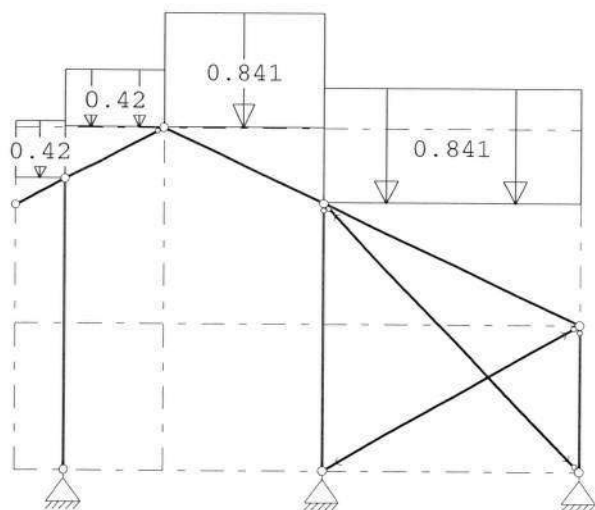
**REACTIES**

B.G:18 Sneeuw A

| Kn. | X     | Z     | M                        |
|-----|-------|-------|--------------------------|
| 1   | 0.24  | 2.47  |                          |
| 2   | -0.24 | 4.15  |                          |
| 3   | 0.00  | 1.67  |                          |
|     | 0.00  | 8.29  | : Som van de reacties    |
|     | 0.00  | -8.29 | : Som van de belastingen |

**BELASTINGEN**

B.G:19 Sneeuw B



Project...: Kapschuur te Katlijk

Onderdeel: Str. 12

**STAAFBELASTINGEN**

B.G:19 Sneeuw B

| Staat | Type        | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|-------|-------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 4     | 3:QZgeProj. | Qs3   | -0.42  | -0.42 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 3:QZgeProj. | Qs3   | -0.42  | -0.42 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 6     | 3:QZgeProj. | Qs2   | -0.84  | -0.84 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9     | 3:QZgeProj. | Qs2   | -0.84  | -0.84 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

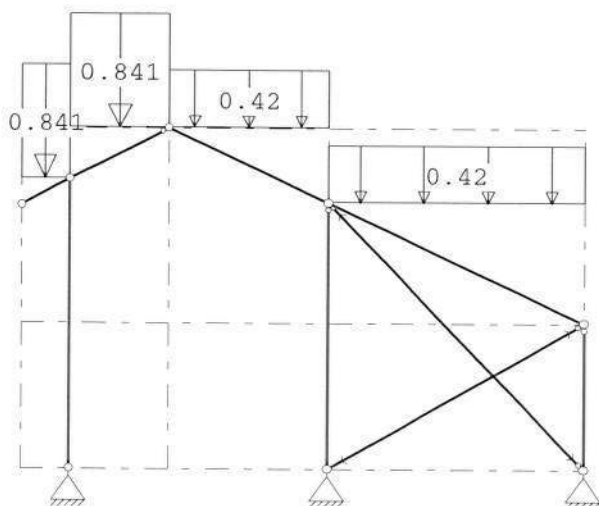
**REACTIES**

B.G:19 Sneeuw B

| Kn. | X     | Z     | M                        |
|-----|-------|-------|--------------------------|
| 1   | 0.18  | 1.46  |                          |
| 2   | -0.18 | 4.12  |                          |
| 3   | 0.00  | 1.64  |                          |
|     | 0.00  | 7.21  | : Som van de reacties    |
|     | 0.00  | -7.21 | : Som van de belastingen |

**BELASTINGEN**

B.G:20 Sneeuw C


**STAAFBELASTINGEN**

B.G:20 Sneeuw C

| Staat | Type        | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|-------|-------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 4     | 3:QZgeProj. | Qs1   | -0.84  | -0.84 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 5     | 3:QZgeProj. | Qs1   | -0.84  | -0.84 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 6     | 3:QZgeProj. | Qs4   | -0.42  | -0.42 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 9     | 3:QZgeProj. | Qs4   | -0.42  | -0.42 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

**REACTIES**

B.G:20 Sneeuw C

| Kn. | X     | Z     | M                        |
|-----|-------|-------|--------------------------|
| 1   | 0.18  | 2.24  |                          |
| 2   | -0.18 | 2.11  |                          |
| 3   | 0.00  | 0.87  |                          |
|     | 0.00  | 5.22  | : Som van de reacties    |
|     | 0.00  | -5.22 | : Som van de belastingen |

Project...: Kapschuur te Katlijk  
Onderdeel: Str. 12

**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. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,2}$  |
| 23 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,3}$  |
| 24 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,4}$  |
| 25 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,5}$  |
| 26 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,6}$  |
| 27 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,7}$  |
| 28 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,8}$  |
| 29 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,9}$  |
| 30 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,10}$ |
| 31 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,11}$ |
| 32 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,12}$ |
| 33 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,13}$ |
| 34 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,14}$ |
| 35 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,15}$ |
| 36 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,16}$ |
| 37 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,17}$ |
| 38 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,18}$ |
| 39 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,19}$ |
| 40 Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,20}$ |
| 41 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,2}$  |
| 42 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,3}$  |
| 43 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,4}$  |
| 44 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,5}$  |
| 45 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,6}$  |

Project.: Kapschuur te Katlijk

Onderdeel: Str. 12

**BELASTINGCOMBINATIES**

BC Type

|          |      |           |   |      |                   |
|----------|------|-----------|---|------|-------------------|
| 46 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,7}$         |
| 47 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,8}$         |
| 48 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,9}$         |
| 49 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,10}$        |
| 50 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,11}$        |
| 51 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,12}$        |
| 52 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,13}$        |
| 53 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,14}$        |
| 54 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,15}$        |
| 55 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,16}$        |
| 56 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,17}$        |
| 57 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,18}$        |
| 58 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,19}$        |
| 59 Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 | $Q_{k,20}$        |
| 60 Quas. | 1.00 | $G_{k,1}$ |   |      |                   |
| 61 Freq. | 1.00 | $G_{k,1}$ |   |      |                   |
| 62 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 | $\psi_1 Q_{k,2}$  |
| 63 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 | $\psi_1 Q_{k,3}$  |
| 64 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 | $\psi_1 Q_{k,4}$  |
| 65 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 | $\psi_1 Q_{k,5}$  |
| 66 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 | $\psi_1 Q_{k,6}$  |
| 67 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 | $\psi_1 Q_{k,7}$  |
| 68 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 | $\psi_1 Q_{k,8}$  |
| 69 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 | $\psi_1 Q_{k,9}$  |
| 70 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 | $\psi_1 Q_{k,10}$ |
| 71 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 | $\psi_1 Q_{k,11}$ |
| 72 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 | $\psi_1 Q_{k,12}$ |
| 73 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 | $\psi_1 Q_{k,13}$ |
| 74 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 | $\psi_1 Q_{k,14}$ |
| 75 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 | $\psi_1 Q_{k,15}$ |
| 76 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 | $\psi_1 Q_{k,16}$ |
| 77 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 | $\psi_1 Q_{k,17}$ |
| 78 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 | $\psi_1 Q_{k,18}$ |
| 79 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 | $\psi_1 Q_{k,19}$ |
| 80 Freq. | 1.00 | $G_{k,1}$ | + | 1.00 | $\psi_1 Q_{k,20}$ |
| 81 Blij. | 1.00 | $G_{k,1}$ |   |      |                   |

Project...: Kapschuur te Katlijk

Onderdeel: Str. 12

**GUNSTIGE WERKING PERMANENTE BELASTINGEN**

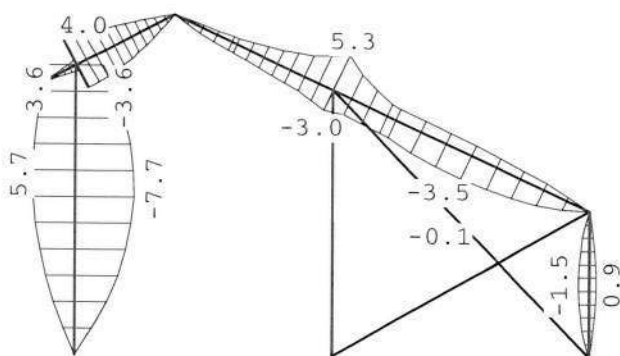
BC Staven met gunstige werking

- 
- |    |                            |
|----|----------------------------|
| 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 | Alle staven de factor:0.90 |
| 23 | Alle staven de factor:0.90 |
| 24 | Alle staven de factor:0.90 |
| 25 | Alle staven de factor:0.90 |
| 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 |

## OMHULLENDE VAN DE FUNDAMENTELE COMBINATIES

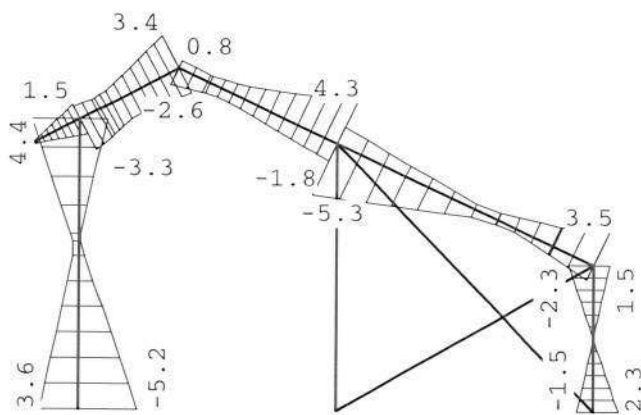
### MOMENTEN

Fundamentele combinatie



### DWARSKRACHTEN

Fundamentele combinatie

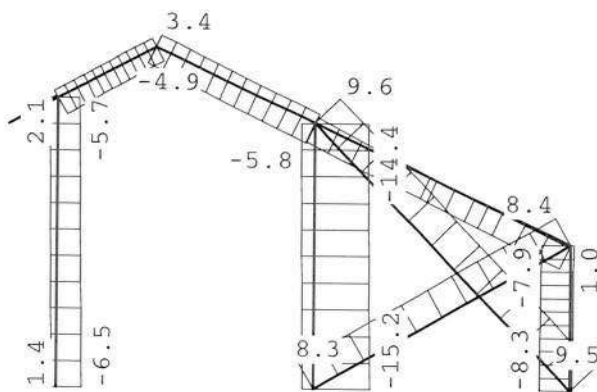


Project...: Kapschuur te Katlijk

Onderdeel: Str. 12

**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]: 5.1

**MATERIAAL**

| Mat nr. | Profielnaam | Vloei-sp.<br>[N/mm <sup>2</sup> ] | Productie<br>methode | Min. drsn.<br>klasse |
|---------|-------------|-----------------------------------|----------------------|----------------------|
| 1       | IPE160      | 235                               | Gewalst              | 1                    |
| 2       | IPE160Z     | 235                               | Gewalst              | 1                    |
| 3       | STRIP6*60   | 235                               | Gewalst              | 1                    |

Partiële veiligheidsfactoren:

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

**KNIKSTABILITEIT**

| Staafl | $l_{sys}$<br>[m] | Classif. y<br>sterke as | $l_{knik,y}$<br>[m] | Extra           |                         | $l_{knik,z}$<br>[m] | Extra           |  |
|--------|------------------|-------------------------|---------------------|-----------------|-------------------------|---------------------|-----------------|--|
|        |                  |                         |                     | aanp. y<br>[kN] | Classif. z<br>zwakke as |                     | aanp. z<br>[kN] |  |
| 1      | 5.097            | Geschoord               | 5.097               | 0.0             | Geschoord               | 5.097               | 0.0             |  |
| 2      | 4.684            | Geschoord               | 4.684               | 0.0             | Geschoord               | 4.684               | 0.0             |  |
| 3      | 2.570            | Geschoord               | 2.570               | 0.0             | Geschoord               | 2.570               | 0.0             |  |
| 4      | 0.974            | Geschoord               | 0.974               | 0.0             | Geschoord               | 0.974               | 0.0             |  |
| 5      | 1.925            | Geschoord               | 1.925               | 0.0             | Geschoord               | 1.925               | 0.0             |  |
| 6      | 3.094            | Geschoord               | 3.094               | 0.0             | Geschoord               | 3.094               | 0.0             |  |
| 7      | 5.182            | Geschoord               | 5.182               | 0.0             | Geschoord               | 5.182               | 0.0             |  |
| 8      | 6.496            | Geschoord               | 6.496               | 0.0             | Geschoord               | 6.496               | 0.0             |  |
| 9      | 4.972            | Geschoord               | 4.972               | 0.0             | Geschoord               | 4.972               | 0.0             |  |

Project...: Kapschuur te Katlijk  
Onderdeel: Str. 12

**KIPSTABILITEIT**

| Staafl | Plts.<br>aangr. | l gaffel<br>[m] | Kipsteunafstanden<br>[m] |
|--------|-----------------|-----------------|--------------------------|
| 1      | 1.0*h           | boven:          | 5.10 5.097               |
|        |                 | onder:          | 5.10 5.097               |
| 2      | 1.0*h           | boven:          | 4.68 4.684               |
|        |                 | onder:          | 4.68 4.684               |
| 3      | 1.0*h           | boven:          | 2.57 2.570               |
|        |                 | onder:          | 2.57 2.570               |
| 4      | 1.0*h           | boven:          | 0.97 0.974               |
|        |                 | onder:          | 0.97 0.974               |
| 5      | 1.0*h           | boven:          | 1.93 1.925               |
|        |                 | onder:          | 1.93 1.925               |
| 6      | 1.0*h           | boven:          | 3.09 3.094               |
|        |                 | onder:          | 3.09 3.094               |
| 7      | 1.0*h           | boven:          | 5.18 5.182               |
|        |                 | onder:          | 5.18 5.182               |
| 8      | 1.0*h           | boven:          | 6.50 6.496               |
|        |                 | onder:          | 6.50 6.496               |
| 9      | 1.0*h           | boven:          | 4.97 4.972               |
|        |                 | onder:          | 4.97 4.972               |

**TOETSING SPANNINGEN**

| Staafl | Mat | BC | Sit | Kl | Plaats | Norm    | Artikel | Formule | Hoogste toetsing<br>U.C. [N/mm <sup>2</sup> ] | Opm. |
|--------|-----|----|-----|----|--------|---------|---------|---------|-----------------------------------------------|------|
| nr.    |     |    |     |    |        |         |         |         |                                               |      |
| 1      | 1   | 3  | 1   | 1  | Staafl | EN3-1-1 | 6.3.3   | (6.62)  | 0.672 158                                     | 47   |
| 2      | 2   | 11 | 1   | 1  | Staafl | EN3-1-1 | 6.3.1.1 | (6.47z) | 0.267 63                                      | 47   |
| 3      | 1   | 15 | 1   | 1  | Staafl | EN3-1-1 | 6.3.3   | (6.62)  | 0.083 20                                      |      |
| 4      | 1   | 24 | 1   | 1  | Einde  | EN3-1-1 | 6.2.10  | (6.31)  | 0.027 6                                       | 46   |
| 5      | 1   | 16 | 1   | 1  | Begin  | EN3-1-1 | 6.2.10  | (6.31)  | 0.138 32                                      |      |
| 6      | 1   | 15 | 1   | 1  | Staafl | EN3-1-1 | 6.3.3   | (6.62)  | 0.185 44                                      | 47   |
| 7      | 3   | 1  | 1   | 1  | Begin  | EN3-1-1 | 6.2.8   | (6.29)  | 0.104 24                                      | 76   |
| 8      | 3   | 11 | 1   | 1  | My-max | EN3-1-1 | 6.2.9.1 | (6.32)  | 0.133 31                                      | 76   |
| 9      | 1   | 7  | 1   | 1  | Staafl | EN3-1-1 | 6.3.3   | (6.62)  | 0.371 87                                      | 47   |

Opmerkingen:

[ 46] T.b.v. kip is een equivalente Q-last berekend.

[ 47] Bij verlopende normaalkracht wordt de grootste drukkracht genomen.

[ 76] Toetsing van kipstabiliteit voor dit profieltype is niet voorzien.

**TOETSING DOORBUIGING**

| Staafl | Soort | Mtg | Lengte | Overst | Zeeg | u <sub>tot</sub> | BC   | Sit       | u    | Toelaatbaar   |
|--------|-------|-----|--------|--------|------|------------------|------|-----------|------|---------------|
|        |       |     | [m]    | I      | J    | [mm]             |      |           | [mm] | [mm] *1       |
| 4      | Dak   | ss  | 0.97   | J      | N    | 0.0              | -4.2 | 41 1 Eind | -4.2 | -7.8 2*0.004  |
|        |       | ss  |        |        |      |                  |      | 41 1 Bijk | -4.8 | -7.8 2*0.004  |
| 5      | Dak   | ss  | 1.93   | N      | N    | 0.0              | 10.1 | 41 1 Eind | 10.1 | -15.4 2*0.004 |
|        |       | ss  |        |        |      |                  | -9.0 | 50 1 Eind | -9.0 |               |
|        |       | ss  |        |        |      |                  |      | 50 1 Bijk | -7.0 | -15.4 2*0.004 |
| 6      | Dak   | ss  | 3.09   | N      | N    | 0.0              | 9.8  | 41 1 Eind | 9.8  | -24.7 2*0.004 |
|        |       | ss  |        |        |      |                  | -8.7 | 50 1 Eind | -8.7 |               |
|        |       | ss  |        |        |      |                  |      | 50 1 Bijk | -6.8 | -24.7 2*0.004 |
| 9      | Dak   | db  | 4.97   | N      | N    | 0.0              | -3.8 | 45 1 Eind | -3.8 | -19.9 0.004   |
|        |       | db  |        |        |      |                  |      | 45 1 Bijk | -2.8 | -19.9 0.004   |

Project...: Kapschuur te Katlijk  
 Onderdeel: Windstijl kopgevel  
 Dimensies: kN;m;rad (tenzij anders aangegeven)  
 Datum....: 09/03/2017  
 Bestand...: c:\projecten 2016\raamwerken\kapschuur te katlijk windstijl  
 kopgevel.rww

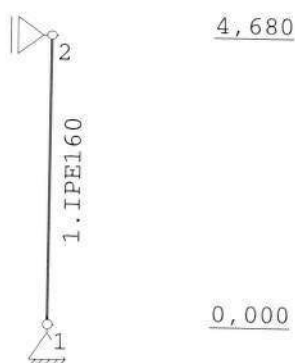
Belastingbreedte.: 4.500  
 Rekenmodel.....: 1e-orde-elastisch.  
 Theorie voor de bepaling van de krachtsverdeling:  
 Geometrisch lineair.  
 Fysisch lineair.

Gunstige werking van de permanente belasting wordt automatisch verwerkt.

### Toegepaste normen volgens Eurocode met Nederlandse NB

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

### GEOMETRIE



### STRAMIENLIJNEN

| Nr. | X     | Z-min | Z-max |
|-----|-------|-------|-------|
| 1   | 0.000 | 0.000 | 4.680 |

### NIVEAUS

| Nr. | Z     | X-min | X-max |
|-----|-------|-------|-------|
| 1   | 0.000 | 0.000 | 0.100 |
| 2   | 4.680 | 0.000 | 0.100 |

### MATERIALEN

| Mt | Omschrijving | E-modulus[N/mm2] | S.M. | Pois. | Uitz. coëff |
|----|--------------|------------------|------|-------|-------------|
| 1  | S235         | 210000           | 78.5 | 0.30  | 1.2000e-005 |

Project...: Kapschuur te Katlijk  
 Onderdeel: Windstijl kopgevel

**PROFIELEN [mm]**

| Prof. | Omschrijving | Materiaal | Oppervlak   | Traagheid   | Vormf. |
|-------|--------------|-----------|-------------|-------------|--------|
| 1     | IPE160       | 1:S235    | 2.0090e+003 | 8.6900e+006 | 0.00   |

**PROFIELEN vervolg [mm]**

| Prof. | Staaftype | Breedte | Hoogte | e    | Type | b1 | h1 | b2 | h2 |
|-------|-----------|---------|--------|------|------|----|----|----|----|
| 1     | 0:Normaal | 82      | 160    | 80.0 |      |    |    |    |    |

**KNOPEN**

| Knoop | X     | Z     |
|-------|-------|-------|
| 1     | 0.000 | 0.000 |
| 2     | 0.000 | 4.680 |

**STAVEN**

| St. | ki | kj | Profiel  | Aansl.i | Aansl.j | Lengte | Opm. |
|-----|----|----|----------|---------|---------|--------|------|
| 1   | 1  | 2  | 1:IPE160 | NDM     | NDM     | 4.680  |      |

**VASTE STEUNPUNTEN**

| Nr. | knoop | Kode | XZR 1=vast 0=vrij | Hoek |
|-----|-------|------|-------------------|------|
| 1   | 1     | 110  |                   | 0.00 |
| 2   | 2     | 100  |                   | 0.00 |

**BELASTINGGENERATIE ALGEMEEN.**

|                              |      |                         |      |
|------------------------------|------|-------------------------|------|
| Betrouwbaarheidsklasse.....: | 1    | Referentieperiode.....: | 15   |
| Gebouwdiepte.....:           | 9.00 | Gebouwhoogte.....:      | 4.68 |
| Niveau aansl.terrein.....:   | 0.00 | E.g. scheid.w. [kN/m2]: | 1.20 |

**WIND**

|                                 |           |                     |        |
|---------------------------------|-----------|---------------------|--------|
| Terrein categorie ...[4.3.2]... | Onbebouwd |                     |        |
| Windgebied .....                | 2         | Vb,0 ..[4.2].....   | 27.000 |
| Referentie periode wind.....    | 15.00     | Vb(p) ..[4.2].....  | 24.909 |
| K .....[4.2].....               | 0.230     | n ....[4.2].....    | 0.500  |
| Positie spant in het gebouw.... | 4.500     | Kr ....[4.3.2]..... | 0.209  |
| z0 .....[4.3.2]...              | 0.200     | Zmin ..[4.3.2]..... | 4.000  |

Project...: Kapschuur te Katlijk  
Onderdeel: Windstijl kopgevel

**WIND**

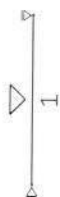
|                                  |       |                         |       |
|----------------------------------|-------|-------------------------|-------|
| Co wind van links ..[4.3.3]....  | 1.000 | Co wind van rechts..... | 1.000 |
| Co wind loodrecht ..[4.3.3]....  | 1.000 |                         |       |
| 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 |                         |       |

**STAAFTYPEN**

|                 |        |
|-----------------|--------|
| Type            | staven |
| 5:Linker gevel. | : 1    |

**LASTVELDEN**

|             |               |
|-------------|---------------|
| Wind staven | Sneeuw staven |
|-------------|---------------|

**WIND DAKTYPES**

| Nr. | Staaft Type | reductie bij<br>wind van links | reductie bij<br>wind van Rechts | Cpe volgens art: |
|-----|-------------|--------------------------------|---------------------------------|------------------|
| 1   | 1 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   | 4.680  | D    |

Project...: Kapschuur te Katlijk  
Onderdeel: Windstijl kopgevel

**Wind indexen**

| Index | CsCd | Cpe/Cpi | qp    | breedte reductie | Qw Zone Hoek(en) |
|-------|------|---------|-------|------------------|------------------|
| Qw1   |      | 0.300   | 0.542 | 4.500            | -0.732           |
| Qw2   | 1.00 | 0.800   | 0.542 | 4.500            | -1.952 D         |
| Qw3   |      | -0.200  | 0.542 | 4.500            | 0.488            |

**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 = gegenereerd belastinggeval

**BELASTINGEN**

B.G:1 Permanente belasting

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

**KNOOPBELASTINGEN**

B.G:1 Permanente belasting

| Last | Knoop | Richting | waarde | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|------|-------|----------|--------|----------|----------|----------|
| 1    | 2     | Z        | -5.350 |          |          |          |

**REACTIES**

B.G:1 Permanente belasting

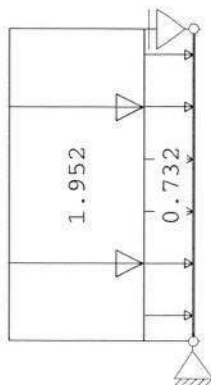
| Kn. | X    | Z     | M                        |
|-----|------|-------|--------------------------|
| 1   | 0.00 | 6.09  |                          |
| 2   | 0.00 |       |                          |
|     | 0.00 | 6.09  | : Som van de reacties    |
|     | 0.00 | -6.09 | : Som van de belastingen |

Project...: Kapschuur te Katlijk

Onderdeel: Windstijl kopgevel

**BELASTINGEN**

B.G:2 Wind van links onderdruk A

**STAAFBELASTINGEN**

B.G:2 Wind van links onderdruk A

| Staaftype    | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|--------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 1:QZLokaal | Qw1   | -0.73  | -0.73 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1 1:QZLokaal | Qw2   | -1.95  | -1.95 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

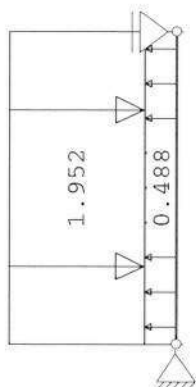
**REACTIES**

B.G:2 Wind van links onderdruk A

| Kn. | X      | Z    | M                        |
|-----|--------|------|--------------------------|
| 1   | -6.28  | 0.00 |                          |
| 2   | -6.28  |      |                          |
|     | -12.56 | 0.00 | : Som van de reacties    |
|     | 12.56  | 0.00 | : Som van de belastingen |

**BELASTINGEN**

B.G:3 Wind van links overdruk A

**STAAFBELASTINGEN**

B.G:3 Wind van links overdruk A

| Staaftype    | Index | q1/p/m | q2    | A     | B     | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|--------------|-------|--------|-------|-------|-------|----------|----------|----------|
| 1 1:QZLokaal | Qw3   | 0.49   | 0.49  | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |
| 1 1:QZLokaal | Qw2   | -1.95  | -1.95 | 0.000 | 0.000 | 0.0      | 0.2      | 0.0      |

Project.: Kapschuur te Katlijk

Onderdeel: Windstijl kopgevel

**REACTIES**

B.G:3 Wind van links overdruk A

| Kn. | X     | Z    | M                        |
|-----|-------|------|--------------------------|
| 1   | -3.43 | 0.00 |                          |
| 2   | -3.43 |      |                          |
|     | -6.85 | 0.00 | : Som van de reacties    |
|     | 6.85  | 0.00 | : Som van de belastingen |

**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. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,2}$        |
| 6  | Fund. | 0.90 | $G_{k,1}$ | + | 1.35 $Q_{k,3}$        |
| 7  | Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,2}$        |
| 8  | Kar.  | 1.00 | $G_{k,1}$ | + | 1.00 $Q_{k,3}$        |
| 9  | Quas. | 1.00 | $G_{k,1}$ |   |                       |
| 10 | Freq. | 1.00 | $G_{k,1}$ |   |                       |
| 11 | Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,2}$ |
| 12 | Freq. | 1.00 | $G_{k,1}$ | + | 1.00 $\psi_1 Q_{k,3}$ |
| 13 | 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  | Alle staven de factor:0.90  |
| 6  | Alle staven de factor:0.90  |

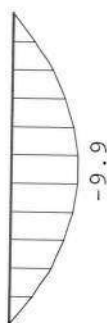
Project...: Kapschuur te Katlijk

Onderdeel: Windstijl kopgevel

## OMHULLENDE VAN DE FUNDAMENTELE COMBINATIES

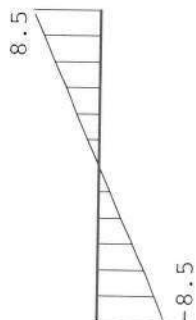
### MOMENTEN

Fundamentele combinatie



### DWARSKRACHTEN

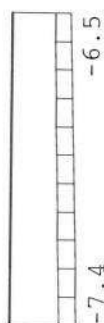
Fundamentele combinatie



Project...: Kapschuur te Katlijk  
Onderdeel: Windstijl kopgevel

**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]:                      | 0.0         |

**MATERIAAL**

| Mat nr.                       | Profielnaam | Vloeisp. [N/mm <sup>2</sup> ] | Productie methode | Min. drsn. klasse |
|-------------------------------|-------------|-------------------------------|-------------------|-------------------|
| 1                             | IPE160      | 235                           | Gewalst           | 1                 |
| Partiële veiligheidsfactoren: |             |                               |                   |                   |
| Gamma M;0                     | : 1.00      | Gamma M;1                     | : 1.00            |                   |

**KNIKSTABILITEIT**

| Staafl | l <sub>sys</sub> [m] | Classif. y<br>sterke as | l <sub>knik,y</sub> [m] | Extra        | Classif. z<br>zwakke as | l <sub>knik,z</sub> [m] | Extra        |
|--------|----------------------|-------------------------|-------------------------|--------------|-------------------------|-------------------------|--------------|
|        |                      |                         |                         | aanp. y [kN] |                         |                         | aanp. z [kN] |
| 1      | 4.680                | Geschoord               | 4.680                   | 0.0          | Geschoord               | 4.680                   | 0.0          |

**KIPSTABILITEIT**

| Staafl | Plts. aangr. | l gaffel [m] | Kipsteunafstanden [m] |       |
|--------|--------------|--------------|-----------------------|-------|
| 1      | 1.0*h        | boven:       | 4.68                  | 4.680 |
|        |              | onder:       | 4.68                  | 4.680 |

**TOETSING SPANNINGEN**

| Staafl nr. | Mat | BC | Sit | Kl | Plaats | Norm    | Artikel | Formule | Hoogste toetsing U.C. [N/mm <sup>2</sup> ] | Opm. |
|------------|-----|----|-----|----|--------|---------|---------|---------|--------------------------------------------|------|
| 1          | 1   | 3  | 1   | 1  | Staafl | EN3-1-1 | 6.3.3   | (6.62)  | 0.855 201                                  | 47   |

Opmerkingen:

[ 47] Bij verlopende normaalkracht wordt de grootste drukkracht genomen.

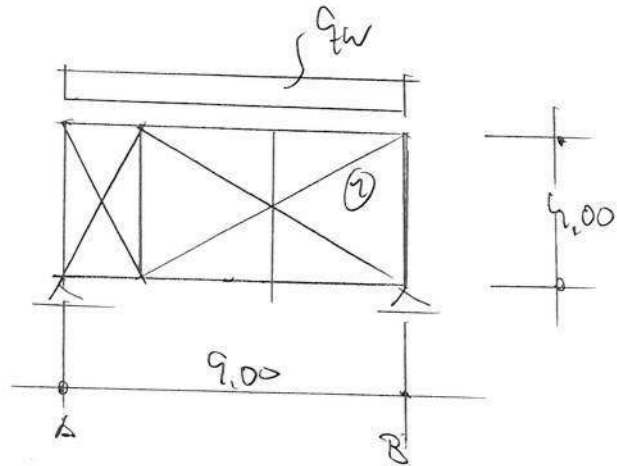
Project...: Kapschuur te Katlijk

Onderdeel: Windstijl kopgevel

**TOETSING HORIZONTALE VERPLAATSING**

| Staafl | BC Sit |   | Lengte | $u_{\text{eind}}$ | Toelaatbaar |      |
|--------|--------|---|--------|-------------------|-------------|------|
|        |        |   | [m]    | [mm]              | [mm]        | [h/] |
| 1      | 7      | 1 | 4.680  | -9.2              | 31.2        | 150  |

## Windverbond dok



$$q_w = (0.8 + 0.5) 0.85 + 0.71 \times 6.00 / 2 = 2.35 \text{ kN/m}$$

$$R_A = R_B = 2.35 \times 9.00 / 2 = 10.57 \text{ kN}$$

staaf ①

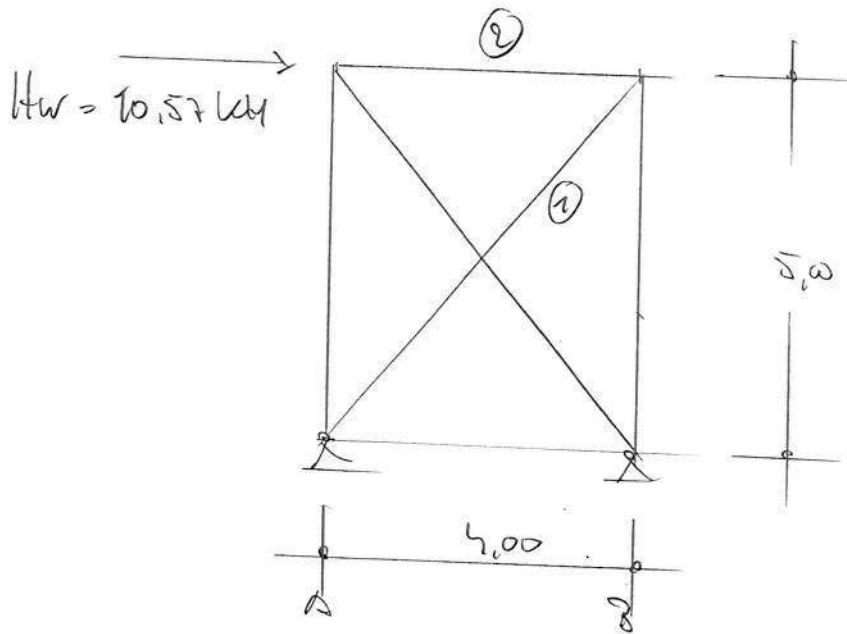
$$T_d = 1.35 (10.57 - 2.35 - 4.00 / 2) / 0.45 = 17.61 \text{ kN}$$

$$\boxed{L 60/60/6} \quad A_{HETTO} = 6.91 - 1.8 \times 0.6 = 5.83 \text{ cm}^2$$

$$\sigma = 17.61 \times 10 / 5.83 = 30.2 \text{ N/mm}^2 < 235 \text{ N/mm}^2$$

2 bouten M16 8.8      probleem

# Windverband Langsgerel



$$R_A = R_B = 10,57 + 5,00 / 4,00 = \pm 13,91 \text{ kN}$$

Stoß 1

$$T_d = 1,35 + 10,57 / 0,62 = 23,00 \text{ kN}$$

$$\boxed{\neq 60/6} \quad A_{\text{NETZ}} = 3,60 - 1,8 + 0,6 = 2,52 \text{ cm}^2$$

$$\sigma = 23,00 + 10 / 2,52 = 91 < 235 \text{ N/mm}^2$$

$$\boxed{\text{Bolzen M16}} \quad 8.8 \quad \text{proklisch}$$

Project...: Kapschuur te Katlijk

Onderdeel: Staaaf 2

Dimensies: kN;m;rad (tenzij anders aangegeven)

Datum....: 09/03/2017

 Bestand...: c:\projecten 2016\raamwerken\kapschuur te katlijk windbok  
 staaaf 2.rww

Belastingbreedte.: 1.000

Rekenmodel.....: 1e-orde-elastisch.

Theorie voor de bepaling van de krachtsverdeling:

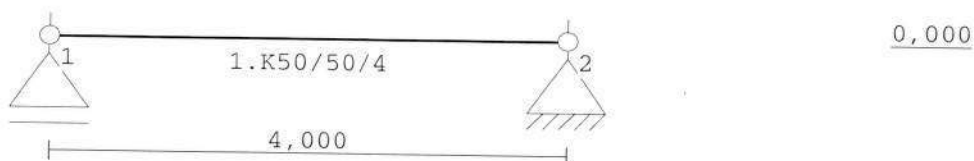
Geometrisch lineair.

Fysisch lineair.

Gunstige werking van de permanente belasting wordt automatisch verwerkt.

**Toegepaste normen volgens Eurocode met Nederlandse NB**

|             |                      |         |             |
|-------------|----------------------|---------|-------------|
| Belastingen | NEN-EN 1990:2002     | C2:2010 | NB:2011(nl) |
|             | NEN-EN 1991-1-1:2002 | C1:2009 | NB:2011(nl) |
| Staal       | NEN-EN 1993-1-1:2006 | C2:2009 | NB:2011(nl) |

**GEOMETRIE**

**STRAMIENLIJNEN**

| Nr. | X     | Z-min | Z-max |
|-----|-------|-------|-------|
| 1   | 0.000 | 0.000 | 0.200 |
| 2   | 4.000 | 0.000 | 0.200 |

**NIVEAUS**

| Nr. | Z     | X-min | X-max |
|-----|-------|-------|-------|
| 1   | 0.000 | 0.000 | 4.000 |

**MATERIALEN**

| Mt | Omschrijving | E-modulus[N/mm <sup>2</sup> ] | S.M. | Pois. | Uitz. coëff |
|----|--------------|-------------------------------|------|-------|-------------|
| 1  | S235         | 210000                        | 78.5 | 0.30  | 1.2000e-005 |

**PROFIELEN [mm]**

| Prof. | Omschrijving | Materiaal | Oppervlak   | Traagheid   | Vormf. |
|-------|--------------|-----------|-------------|-------------|--------|
| 1     | K50/50/4     | 1:S235    | 7.1883e+002 | 2.4975e+005 | 0.00   |

**PROFIELEN vervolg [mm]**

| Prof. | Staaftype | Breedte | Hoogte | e    | Type | b1 | h1 | b2 | h2 |
|-------|-----------|---------|--------|------|------|----|----|----|----|
| 1     | 0:Normaal | 50      | 50     | 25.0 |      |    |    |    |    |

Project...: Kapschuur te Katlijk  
Onderdeel: Staaf 2

**KNOPEN**

| Knoop | X     | Z     |
|-------|-------|-------|
| 1     | 0.000 | 0.000 |
| 2     | 4.000 | 0.000 |

**STAVEN**

| St. | ki | kj | Profiel    | Aansl.i | Aansl.j | Lengte Opm. |
|-----|----|----|------------|---------|---------|-------------|
| 1   | 1  | 2  | 1:K50/50/4 | NDM     | NDM     | 4.000       |

**VASTE STEUNPUNTEN**

| Nr. | knoop | Kode | XZR 1=vast 0=vrij | Hoek |
|-----|-------|------|-------------------|------|
| 1   | 1     | 010  |                   | 0.00 |
| 2   | 2     | 110  |                   | 0.00 |

**BELASTINGGENERATIE ALGEMEEN.**

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

**STAFTYPEN**

| Type    | staven |
|---------|--------|
| 9:Open. | : 1    |

**LASTVELDEN**

Veranderlijke belastingen door personen

**BELASTINGGEVALLEN**

| B.G. | Omschrijving         | EGZ       | Type                          |
|------|----------------------|-----------|-------------------------------|
| 1    | Permanente belasting | EGZ=-1.00 | 1                             |
| 2    | Wind                 |           | 2 Ver. bel. pers. ed. (p_rep) |

**BELASTINGEN**

B.G:1 Permanente belasting

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



Project...: Kapschuur te Katlijk  
Onderdeel: Staaf 2

**BELASTINGEN**

B.G:2 Wind

**KNOOPBELASTINGEN**

B.G:2 Wind

| Last | Knoop | Richting | waarde | $\psi_0$ | $\psi_1$ | $\psi_2$ |
|------|-------|----------|--------|----------|----------|----------|
| 1    | 1     | X        | 10.570 | 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. | 0.90 $G_{k,1}$ + 1.35 $Q_{k,2}$        |
| 5  | Kar.  | 1.00 $G_{k,1}$ + 1.00 $Q_{k,2}$        |
| 6  | Quas. | 1.00 $G_{k,1}$                         |
| 7  | Freq. | 1.00 $G_{k,1}$                         |
| 8  | Freq. | 1.00 $G_{k,1}$ + 1.00 $\psi_1 Q_{k,2}$ |
| 9  | Blij. | 1.00 $G_{k,1}$                         |

**GUNSTIGE WERKING PERMANENTE BELASTINGEN**

BC Staven met gunstige werking

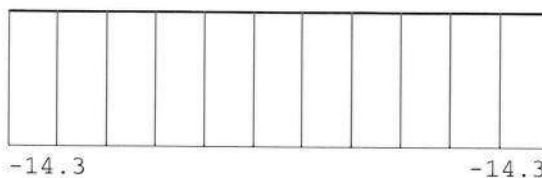
- 1 Geen
- 2 Alle staven de factor:0.90
- 3 Geen
- 4 Alle staven de factor:0.90

Project...: Kapschuur te Katlijk

Onderdeel: Staaf 2

**OMHULLENDE VAN DE FUNDAMENTELE COMBINATIES****NORMAALKRACHTEN**

Fundamentele combinatie

**STAALPROFIELEN - ALGEMENE GEGEVENS**

Stabiliteit: Classificatie gehele constructie: Geschoord

**MATERIAAL**

| Mat nr. | Profielnaam | Vloeisp. [N/mm <sup>2</sup> ] | Productie methode | Min. drsn. klasse |
|---------|-------------|-------------------------------|-------------------|-------------------|
| 1       | K50/50/4    | 235                           | Warmgewalst       | 1                 |

Partiële veiligheidsfactoren:

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

**KNIKSTABILITEIT**

| Staaf | $l_{sys}$ [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     | 4.000         | Geschoord            | 4.000            | 0.0                | Geschoord            | 4.000            | 0.0                |

**KIPSTABILITEIT**

| Staaf | Plts. aangr. | 1 gaffel    | Kipsteunafstanden |
|-------|--------------|-------------|-------------------|
|       |              | [m]         | [m]               |
| 1     | 1.0*h        | boven: 4.00 | 4                 |
|       |              | onder: 4.00 | 4                 |

**TOETSING SPANNINGEN**

| Staaf nr. | Mat | BC | Sit | Kl | Plaats | Norm    | Artikel | Formule | Hoogste toetsing U.C. [N/mm <sup>2</sup> ] | Opm. |
|-----------|-----|----|-----|----|--------|---------|---------|---------|--------------------------------------------|------|
| 1         | 1   | 3  | 1   | 1  | Staaf  | EN3-1-1 | 6.3.3   | (6.61)  | 0.542                                      | 127  |

Project...: Kapschuur te Katlijk

Onderdeel: Staaf 2

# **TOETSING DOORBUIGING**

| Staaf | Soort | Mtg | Lengte | Overst |   | Zeeg | $u_{tot}$ | BC Sit |   |      | $u$  | Toelaatbaar |       |
|-------|-------|-----|--------|--------|---|------|-----------|--------|---|------|------|-------------|-------|
|       |       |     | [m]    | I      | J | [mm] | [mm]      |        |   |      | [mm] | [mm]        | *1    |
| 1     | Dak   | db  | 4.00   | N      | N | 0.0  | -3.6      | 5      | 1 | Eind | -3.6 | -16.0       | 0.004 |

Project : Kapschuur Katlijk  
 Onderdeel : Gordingen  
 Datum : kN/m/rad  
 Eenheden : 21/03/2017

### 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:2011(nl) |
|             | NEN-EN 14080:2013    |                  |             |

### Gording berekening. (H)

zadeldak enkele buiging

#### Algemene gegevens

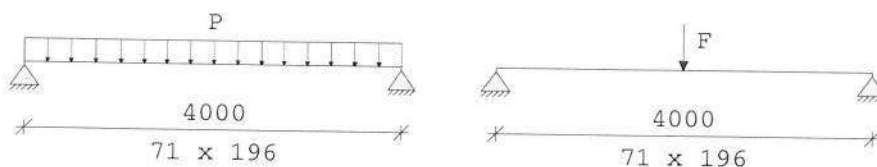
|                       |      |                       |                        |                      |           |
|-----------------------|------|-----------------------|------------------------|----------------------|-----------|
| B x H                 | [mm] | : 71 x 196            | Sterkteklasse          | :                    | C18       |
| Overspanning          | [mm] | : 4000                | Klimaatklasse          | :                    | I         |
| Aantal zijdl. steunen | :    | -                     | Referentie periode [j] | :                    | 50        |
| Opleglengte           | [mm] | : 100                 |                        |                      |           |
| Hoh in het dakvlak    | [mm] | : 1600                |                        |                      |           |
| Helling               | :    | 28.00                 |                        |                      |           |
| Beschot sterkteklasse | :    | C18                   |                        |                      |           |
| Dikte beschot         | [mm] | : 18                  | $E_{0,mean} \times I$  | [Nm <sup>2</sup> /m] | : 4374.0  |
| Windgebied            | :    | 2                     | Terrein                | :                    | Onbebouwd |
| Gebouw L x B x H      | [m]  | : 20.00 x 9.00 x 6.00 |                        |                      |           |

#### Permanente belastingen $G_{rep}$

|                             |   |      |
|-----------------------------|---|------|
| EG balklaag                 | : | 0.12 |
| Isolatie                    | : | 0.00 |
| Extra gewicht               | : | 0.13 |
| Totaal [kN/m <sup>2</sup> ] | : | 0.25 |

#### Veranderlijke belastingen

|                           |                      |                                                          |
|---------------------------|----------------------|----------------------------------------------------------|
| $F_{rep}$                 | [kN]                 | : 1.50                                                   |
| $F_{rep}$ oppervlak       | [m <sup>2</sup> ]    | : 0.10 x 0.10                                            |
| Reductiefactor            | :                    | 1.00                                                     |
| Wind $Q_{p,prob}$         | [kN/m <sup>2</sup> ] | : 0.71 (= $C_{prob}^2 \times Q_p = 1.00^2 \times 0.71$ ) |
| Sneeuw vormfactor $\mu_1$ | :                    | 0.80                                                     |



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

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

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

$\gamma_M[-]$ : 1.30

Project : Kapschuur Katlijk  
 Onderdeel : Gordingen  
 Datum : kN/m/rad  
 Eenheden : 21/03/2017

**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:  
 Belastingcombinatie wind omhoog (opbuigend moment):

$k_{crit,y}$  [-] : 1.00 frm(6.34)

**Resultaten (maatgevende combinaties)**

Factoren t.b.v. toetsing ULS:

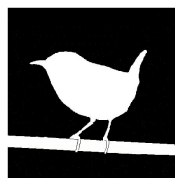
$k_m$  [-] : 0.70 par(6.1.6)

|             |           |                                                                                                                                                     | eis | u.c. |
|-------------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----|------|
| Wind omhoog | frm(6.13) | $\sigma_{v,d} = 0.40 < 2.09$ [N/mm <sup>2</sup> ]                                                                                                   |     | 0.19 |
| Wind        | frm(6.3)  | $\sigma_{c,90,q,d} / (k_{c,90,q} * f_{c,90,d}) +$<br>$\sigma_{c,90,F,d} / (k_{c,90,F} * f_{c,90,d}) < 1.00$<br>$= 0.51 / 1.35 + 0.00 / 2.03 = 0.38$ |     |      |

Wind omhoog frm(6.11)  $\sigma_{m,y,d} = -9.31 < 11.08$  [N/mm<sup>2</sup>] 0.84

Let op: bij 1 of meerdere belastingcombinaties wind treedt een opwaartse oplegreactie op. Houdt hiermee rekening in het ontwerp van de oplegverbinding.

|             |               |                  |      |      |
|-------------|---------------|------------------|------|------|
| Wind omhoog | $u_{bij}$     | = -13.22 < 16.00 | [mm] | 0.83 |
| Wind        | $u_{net,fin}$ | = 13.51 < 16.00  | [mm] | 0.84 |



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# JUKEMA

## BOUWKUNST & RESTAURATIE

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KvK 53711319 - BTW 109083763B02 - NL50 RABO 0163 8858 93

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### KLEUREN EN MATERIALEN

werk no.: 2015-76  
datum: 23-01-2017

---

#### exterieur kapschuur

| <u>onderdeel</u> | <u>materiaal</u> | <u>kleur</u> |
|------------------|------------------|--------------|
|------------------|------------------|--------------|

#### gevels



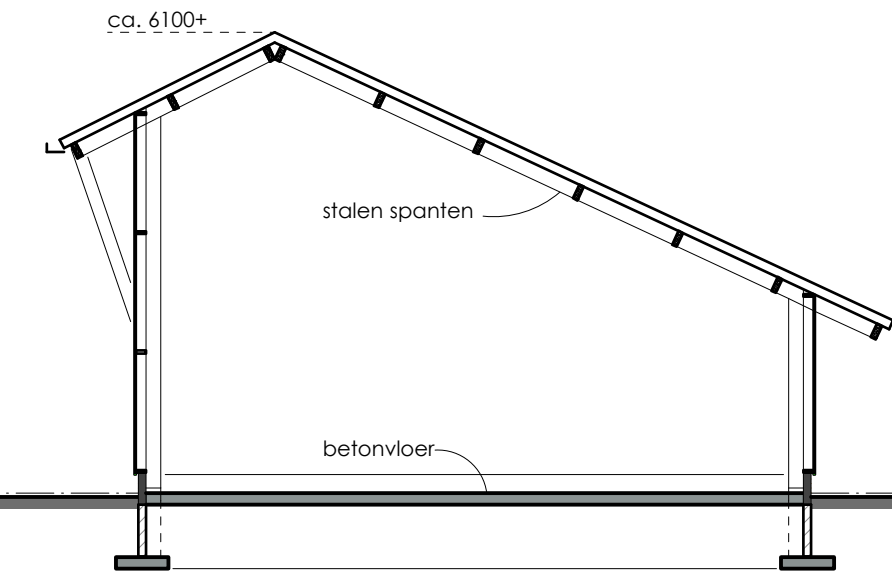
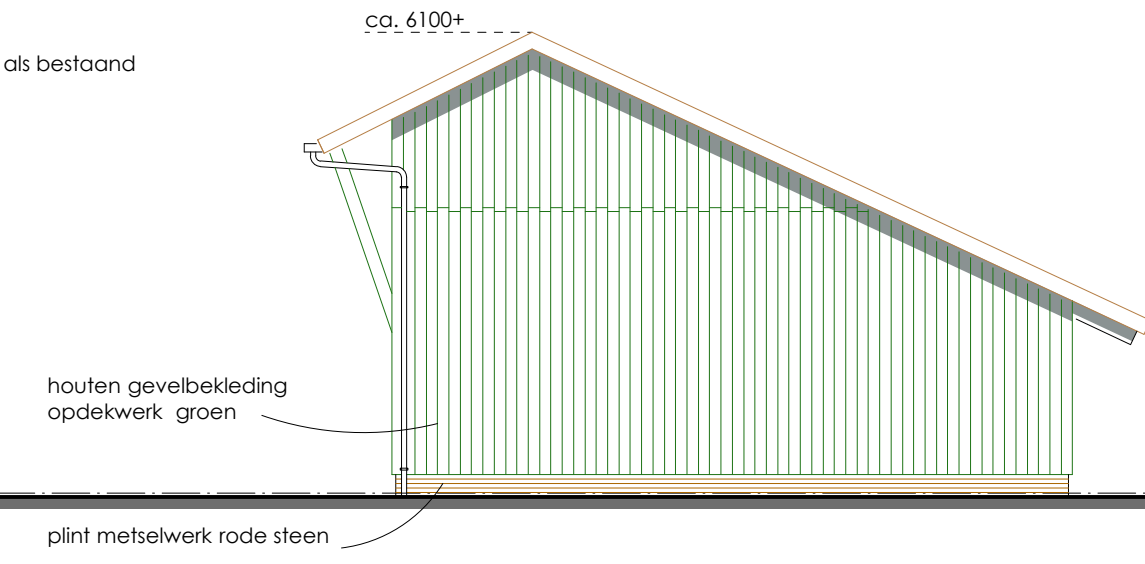
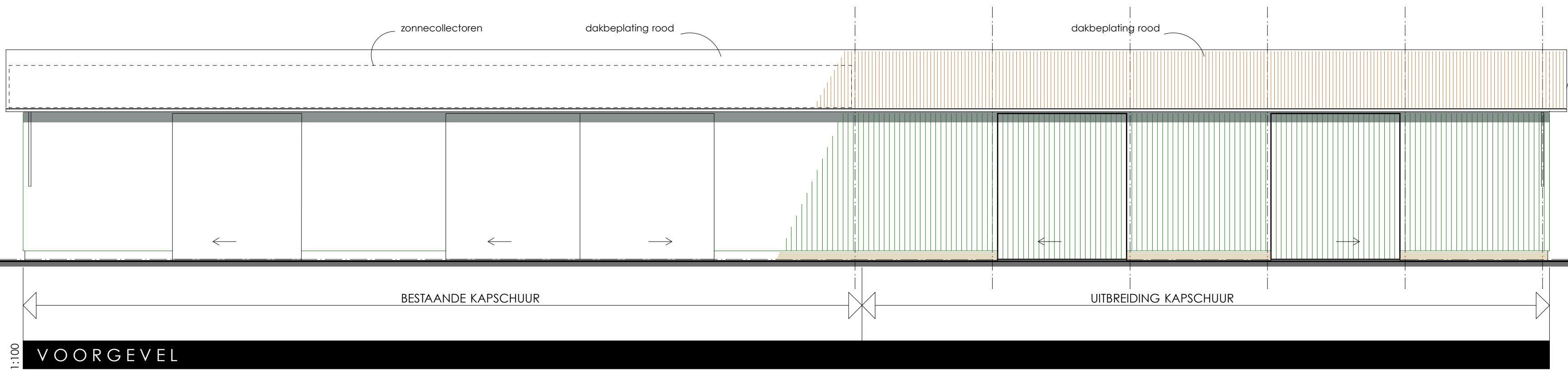
#### bestaande gevel

|                                           |      |                            |
|-------------------------------------------|------|----------------------------|
| gevelbekleding fijn bezaagde houten delen | hout | 'natuurgroen' als bestaand |
|-------------------------------------------|------|----------------------------|

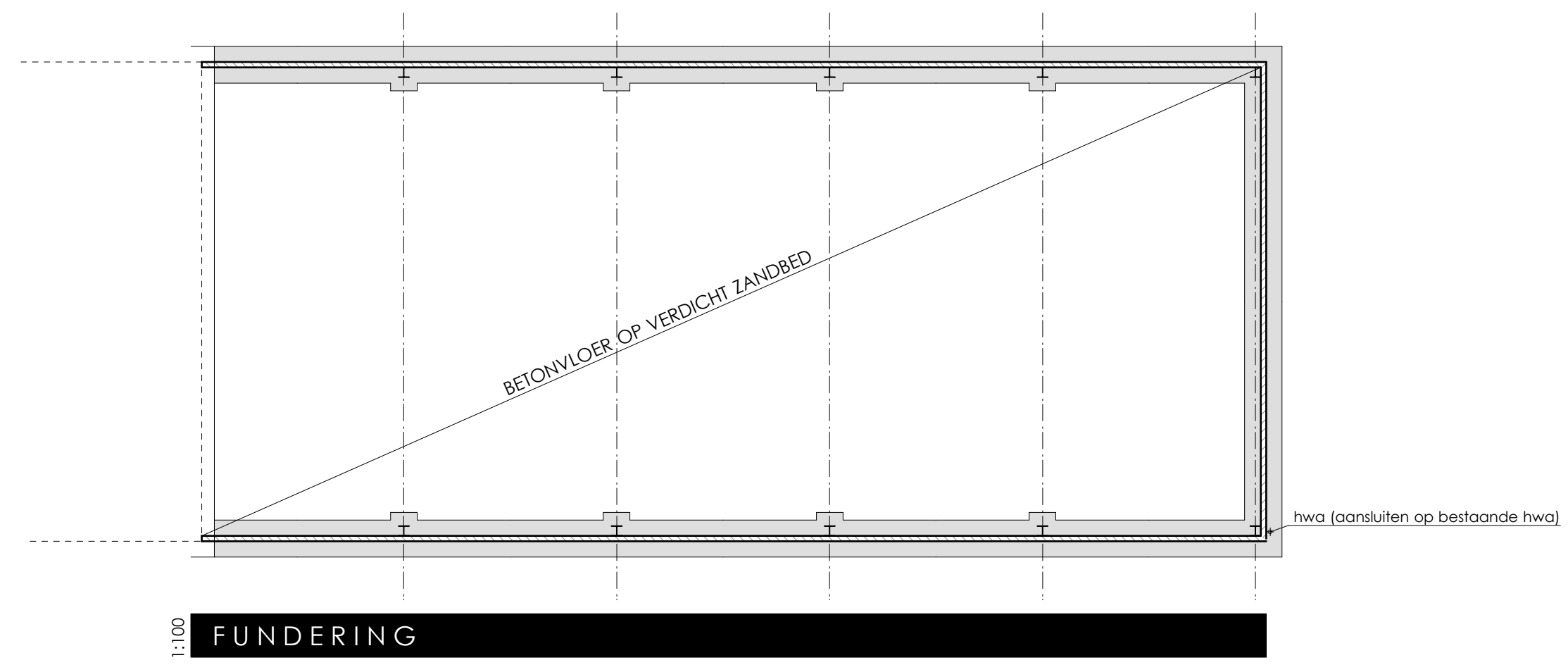
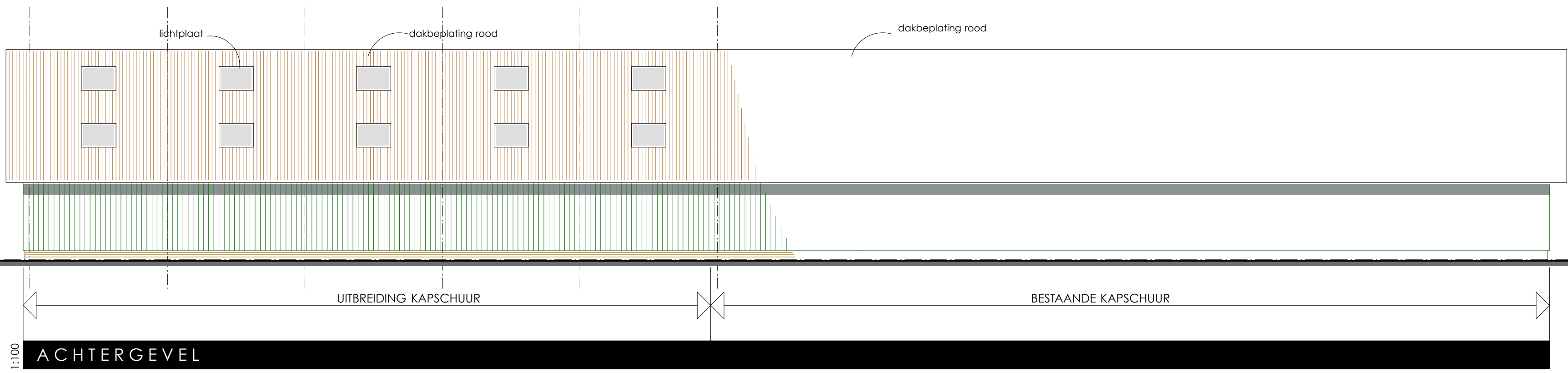
|                              |                    |                              |
|------------------------------|--------------------|------------------------------|
| plint metselwerk<br>voegwerk | rood<br>lichtgrijs | als bestaand<br>als bestaand |
|------------------------------|--------------------|------------------------------|

#### daken

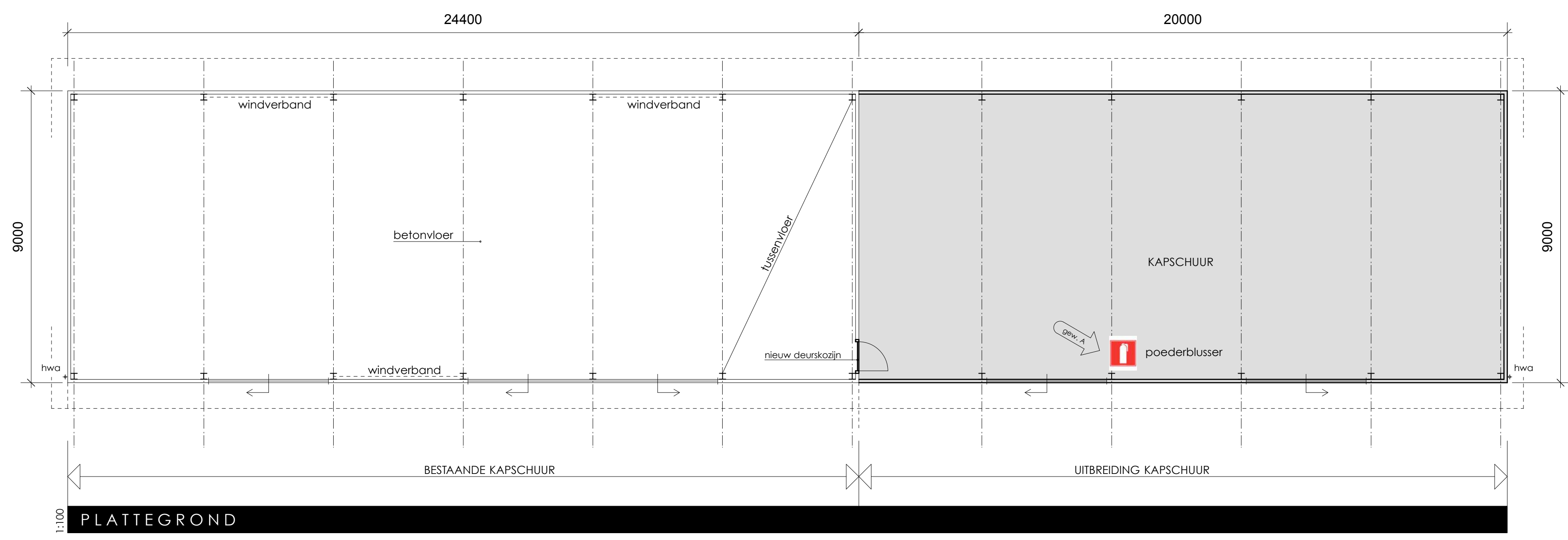
|           |             |                   |
|-----------|-------------|-------------------|
| dakplaten | vezelcement | rood als bestaand |
|-----------|-------------|-------------------|



DAKHELLING/HOOGTE/MAATVOERINGEN CONFORM BESTAAND E.E.A. IN HET WERK OP TE NEMEN



FUNDERING  
FUNDERING CONFORM OPGAVE CONSTRUCTEUR



Schoterlandseweg 24a KATLIJK

KADASTRALE GEMEENTE MILDAM  
SECTIE O  
PERCEEL 424



MAATVOERINGEN IN HET WERK CONTROLEREN CONSTRUCTIE CONFORM OPGAVE CONSTRUCTEUR

opdrachtgever If Fryske Gea

plan bouwplan kapschuur

**JUKEMA**  
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t: 0513 29 8601 | d: 0513 29 8602 | f: 0513 29 8603

| onderdeel | bestektekening |       |               |
|-----------|----------------|-------|---------------|
| werk      | 2015-76        | blad  | B-01          |
| formaat   | A1             | datum | 08-12-2016    |
| schaal    | 1:100          | gew.  | A. 16-01-2017 |

B en W van de gemeente :  
Heerenveen  
Uw nummer : 398-2016 d.d.: 24-1-2017  
Adr.bouwpl. : Schoterlandseweg 24A  
te KATLIJK  
Betreft bouw aanvraag van :  
IT FRYSKE GEA

dossiernummer : W16HRV139-2  
datum : 26-01-2017  
behandeld door : G.Boschloo  
conclusie : VOLDOET

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NL48 BNGH 0285 0223 50

Geacht College,

Met deze brief reageren wij op uw adviesaanvraag.

Op grond van de ingediende gegevens is de adviescommissie ruimtelijke kwaliteit van oordeel dat het plan, getoetst aan de door de gemeenteraad vastgestelde criteria, voldoet aan redelijke eisen van welstand.

Namens de commissie,

ir. G. Boschloo,  
adviseur ruimtelijke kwaliteit