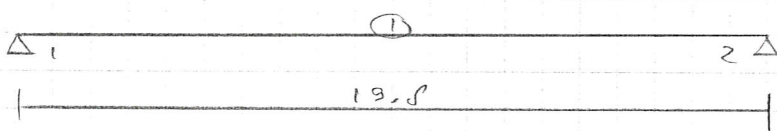


#### 4. Profielen dakconstructie

pos ① :



Profiel : IPE 450

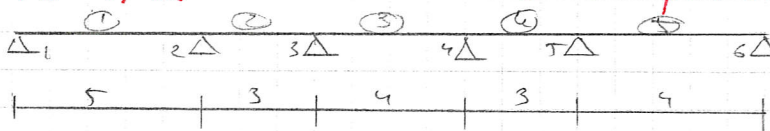
reeg tbr eigen gewicht = 110 mm

zie comp. ber. blz. 33 t/m 38

ig - zonnepanelen  
15 kg/m<sup>2</sup>

IPE 500 + reeg tbr eg = 95 mm  
zie comp. ber. blz. 33 t/m 38<sup>a</sup>

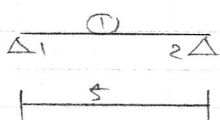
pos ② :



Profiel : HE 140 A

zie comp. ber. blz. 39 t/m 46

pos ③ :



Profiel : HE 140 A

zie comp. ber. blz. 47 t/m 53

pos ④ : als pos ③ praktisch

Profiel : HE 140 A



| STAAFBELASTINGEN |        | B.G:2 Sneeuwbelasting |       |       |          |
|------------------|--------|-----------------------|-------|-------|----------|
| Staaft Type      | ql/p/m | q2                    | A     | B     | $\psi_0$ |
| 1 3:0ZgeProj.    | -2.80  | -2.80                 | 0.000 | 0.000 | 0.0      |

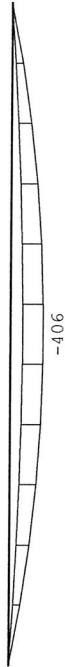
| REACTIES |      | B.G:2 Sneeuwbelasting |   |          |          |
|----------|------|-----------------------|---|----------|----------|
| Kn.      | X    | Z                     | M | $\psi_1$ | $\psi_2$ |
| 1        | 0.00 | 27.72                 |   |          |          |
| 2        | 0.00 | 27.72                 |   |          |          |

0.00 55.44 : Som van de reacties  
0.00 -55.44 : Som van de belastingen

| BELASTINGCOMBINATIES |                                                        |
|----------------------|--------------------------------------------------------|
| BC Type              |                                                        |
| 1 Fund.              | 1.35 G <sub>k,1</sub>                                  |
| 2 Fund.              | 0.90 G <sub>k,1</sub>                                  |
| 3 Fund.              | 1.20 G <sub>k,1</sub> + 1.50 Q <sub>k,2</sub>          |
| 4 Fund.              | 0.90 G <sub>k,1</sub> + 1.50 Q <sub>k,2</sub>          |
| 5 Kar.               | 1.00 G <sub>k,1</sub> + 1.00 Q <sub>k,2</sub>          |
| 6 Quas.              | 1.00 G <sub>k,1</sub>                                  |
| 7 Freq.              | 1.00 G <sub>k,1</sub>                                  |
| 8 Freq.              | 1.00 G <sub>k,1</sub> + 1.00 $\psi_1$ Q <sub>k,2</sub> |
| 9 Blij.              | 1.00 G <sub>k,1</sub>                                  |

| 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            |  |

| OMHULLENDE VAN DE FUNDAMENTELE COMBINATIES |  |
|--------------------------------------------|--|
| MOMENTEN                                   |  |
| Fundamentele combinatie                    |  |



| DWARSKRACHTEN           |  |
|-------------------------|--|
| Fundamentele combinatie |  |



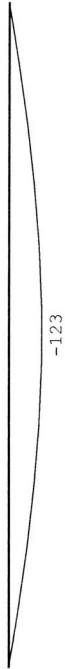
| NORMAALKRACHTEN         |  |
|-------------------------|--|
| Fundamentele combinatie |  |

| STAAFKRACHTEN |     |       | Fundamentele combinatie |    |         |    |         |    |        |    |
|---------------|-----|-------|-------------------------|----|---------|----|---------|----|--------|----|
| St.           | Kn. | Pos.  | NXi/NXj                 |    | DZi/DZj |    | MYi/MYj |    |        |    |
|               |     |       | Min                     | BC | Max     | BC | Min     | BC | Max    | BC |
| 1             | 1   |       | 0.00                    | 1  | 0.00    | 1  | -82.05  | 3  | -30.35 | 2  |
| 1             | 1   | 9.900 | 0.00                    | 1  | 0.00    | 1  | -0.00   | 3  | 0.00   | 2  |
| 1             | 2   |       | 0.00                    | 1  | 0.00    | 1  | 30.35   | 2  | 82.05  | 3  |

| REACTIES |       | Fundamentele combinatie |       |       |       |
|----------|-------|-------------------------|-------|-------|-------|
| Kn.      | X-min | X-max                   | Z-min | Z-max | M-max |
| 1        | 0.00  | 0.00                    | 30.35 | 82.05 |       |
| 2        | 0.00  | 0.00                    | 30.35 | 82.05 |       |

OMHULLENDE VAN DE KARAKTERISTIEKE COMBINATIES

| VERPLAATSINGEN | [mm] | Karakteristieke combinatie |
|----------------|------|----------------------------|
|----------------|------|----------------------------|



| VERPLAATSINGEN | [mm;rad] | Rotatie | Karakteristieke combinatie |
|----------------|----------|---------|----------------------------|
|----------------|----------|---------|----------------------------|

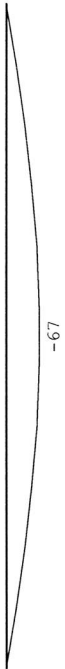
|     |          |          |          |  |
|-----|----------|----------|----------|--|
| Kn. | X-verpl. | Z-verpl. | Rotatie  |  |
| 1   | 0.00     | 0.00     | 0.01983  |  |
| 2   | 0.00     | 0.00     | -0.01983 |  |

OMHULLENDE VAN DE FREQUENTE COMBINATIES

| REACTIES | Frequente combinatie |       |       |       |
|----------|----------------------|-------|-------|-------|
| Kn.      | X-min                | X-max | Z-min | Z-max |
| 1        | 0.00                 | 0.00  | 33.73 | 39.27 |
| 2        | 0.00                 | 0.00  | 33.73 | 39.27 |

OMHULLENDE VAN DE BLIJVENDE COMBINATIES

| VERPLAATSINGEN | [mm] | Blijvende combinatie |
|----------------|------|----------------------|
|----------------|------|----------------------|



| VERPLAATSINGEN | [mm;rad] | Rotatie  | Blijvende combinatie |
|----------------|----------|----------|----------------------|
| Kn.            | X-verpl. | Z-verpl. | Rotatie              |
| 1              | 0.00     | 0.00     | 0.01089              |
| 2              | 0.00     | 0.00     | -0.01089             |

STAALPROFIELEN - ALGEMENE GEGEVENS

|              |               |                     |           |
|--------------|---------------|---------------------|-----------|
| Stabiliteit: | Classificatie | gehele constructie: | Geschoord |
|--------------|---------------|---------------------|-----------|

MATERIAAL

|                               |             |                                   |                   |                      |
|-------------------------------|-------------|-----------------------------------|-------------------|----------------------|
| Mat                           | Profielnaam | Vloei-sp.<br>[N/mm <sup>2</sup> ] | Productie methode | Min. drsn.<br>klasse |
| nr.                           |             |                                   |                   |                      |
| 1                             | IPE500      | 235                               | Gewalst           | 1                    |
| Partiële veiligheidsfactoren: |             |                                   |                   |                      |
|                               | Gamma M;0   | 1.00                              | Gamma M;1         | 1.00                 |

KNIKSTABILITEIT

|        |                             |                             |            |                             |
|--------|-----------------------------|-----------------------------|------------|-----------------------------|
| Staafl | l <sub>sys</sub> Classif. y | l <sub>knik;y</sub> aanp. y | Classif. z | l <sub>knik;z</sub> aanp. z |
|        | [m]                         | sterke as                   | [m]        | [kN] zwakke as              |
| 1      | 19.800                      | Geschoord                   | 19.800     | 0.0 Geschoord               |
|        |                             |                             |            | 19.800 0.0                  |

KIPSTABILITEIT

|        |       |          |                          |
|--------|-------|----------|--------------------------|
| Staafl | Plts. | 1 gaffel | Kipsteunafstanden        |
| aangr. | [m]   |          | [m]                      |
| 1      | 1.0+h | boven:   | 19.80 l <sub>st</sub> =1 |
|        |       | onder:   | 19.80 4*4,95             |

TOETSING SPANNINGEN

|        |               |                     |               |                           |
|--------|---------------|---------------------|---------------|---------------------------|
| Staafl | Mät BC Sit Kl | Plaats Norm Artikel | Formule       | Hoogste toetsing Opm.     |
| nr.    |               |                     |               | U.C. [N/mm <sup>2</sup> ] |
| 1      | 1 3 1 1       | My-max EN3-1-1      | 6.2.5 (6.12y) | 0.788 185                 |

TOETSING DOORBUIGING

|        |           |                      |                         |               |
|--------|-----------|----------------------|-------------------------|---------------|
| Staafl | Soort Mtg | Lengte Overst Zeeg   | u <sub>tot</sub> BC Sit | u Toelaatbaar |
|        |           | [m] I J [mm]         | [mm]                    | [mm] *1       |
| 1      | Dak db    | 19.80 N N 95.0-122.7 | 5 1 Eind -27.7          | -79.2 0.004   |
|        | db        |                      | 5 1 Bijk -55.4          | -79.2 0.004   |