

## 1. Resultant

Linear calculation, Extreme : Global

Selection : All

Class : All ULS

| Case  | Rx<br>[kN] | Ry<br>[kN] | Rz<br>[kN] | Mx<br>[kNm] | My<br>[kNm] | Mz<br>[kNm] |
|---|------------|------------|------------|-------------|-------------|-------------|
| *Student version* *Student version* *Student version* *Student version* *Student version* *Student version* *Student version* *Student version* *Student version* *Student version* *Student version* |            |            |            |             |             |             |

|        |        |      |        |       |          |        |
|--------|--------|------|--------|-------|----------|--------|
| CO3/1  | 95,66  | 0,14 | 74,09  | 15,58 | 1087,24  | -28,84 |
| CO2/2  | -95,36 | 0,11 | 59,04  | 12,73 | -1114,88 | 28,30  |
| CO17/3 | -59,39 | 0,14 | 98,77  | 31,40 | -782,23  | 19,91  |
| MSU/4  | -65,04 | 0,11 | 72,15  | 29,20 | -818,97  | 23,37  |
| CO11/5 | -57,14 | 0,14 | 129,07 | 47,37 | -718,91  | 16,98  |
| CO4/6  | 95,62  | 0,11 | 54,26  | 11,36 | 1091,46  | -28,84 |
| CO7/7  | -57,14 | 0,14 | 128,77 | 56,72 | -718,01  | 16,98  |

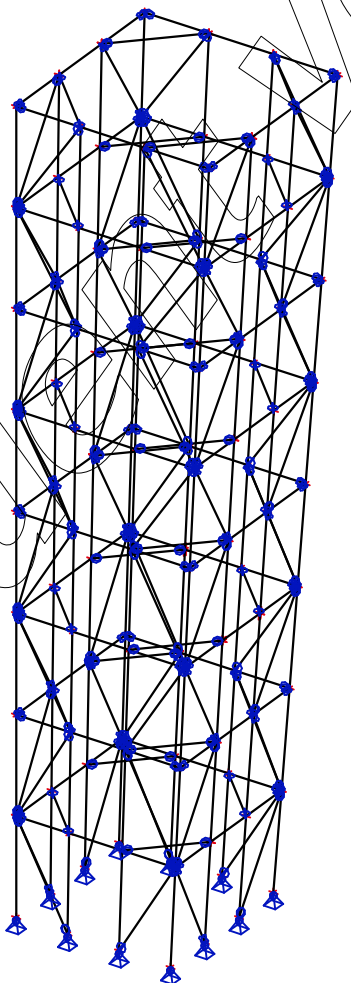
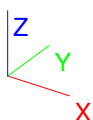
Central point :

| Type Name | X<br>[m] | Y<br>[m] | Z<br>[m] |
|-----------|----------|----------|----------|
|-----------|----------|----------|----------|

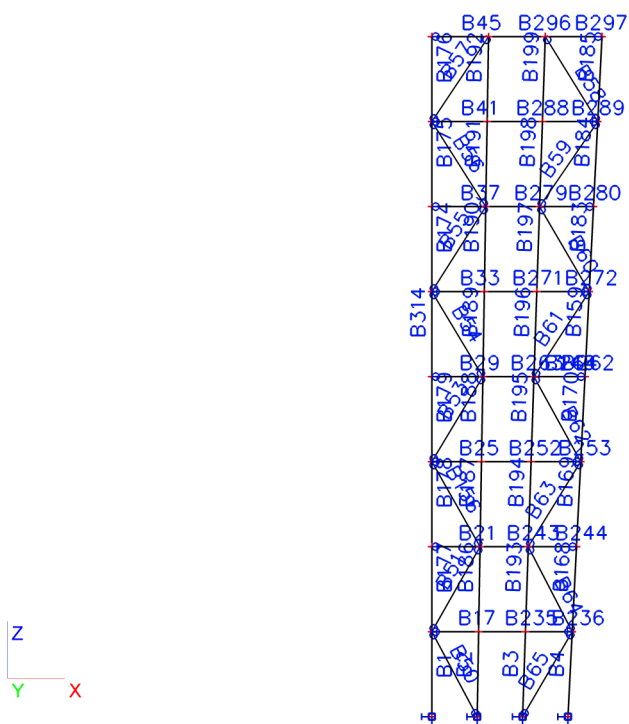
\*Student version\* \*Student version\* \*Student version\* \*Student version\*

|           |       |       |       |
|-----------|-------|-------|-------|
| Resultant | 2,000 | 2,000 | 0,000 |
|-----------|-------|-------|-------|

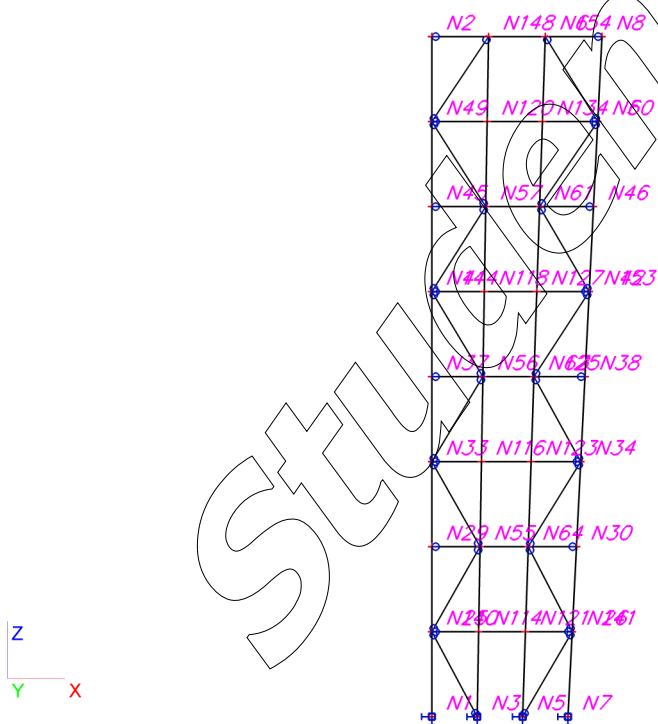
## 2. LC1 / Steel data



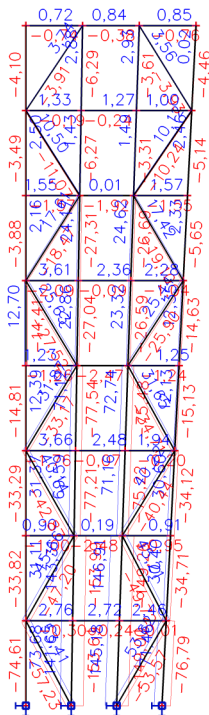
### 3. Stranica 1, oznake elementov



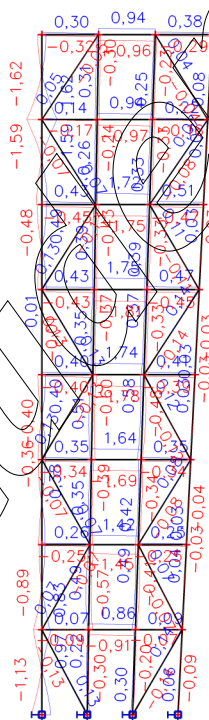
### 4. Stranica 1, oznake členkov



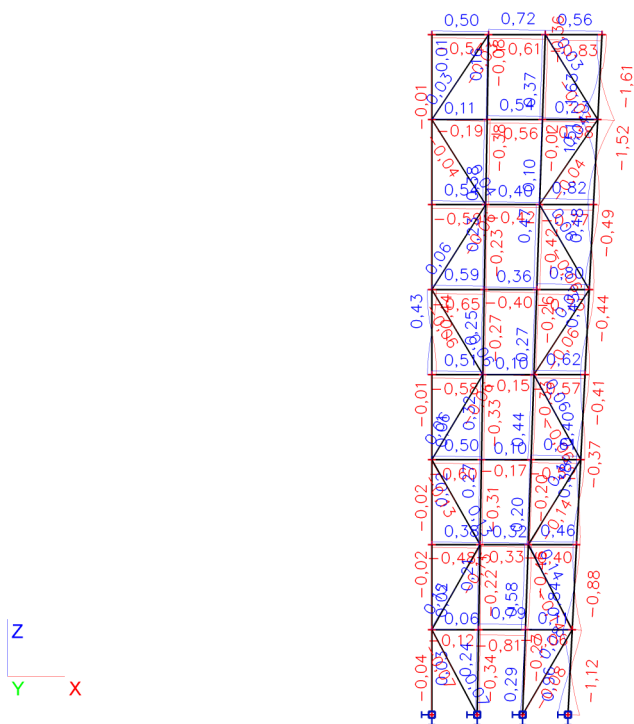
## 5. Stranica 1, N



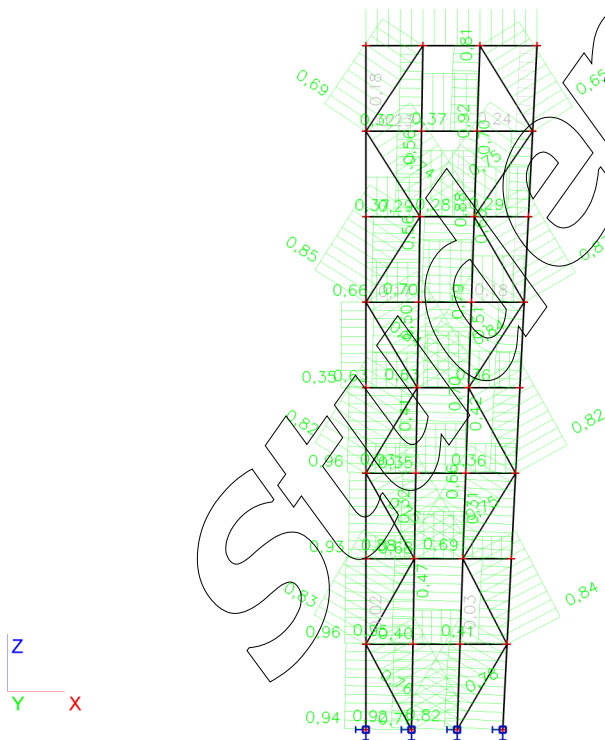
## 6. Stranica 1, Vy



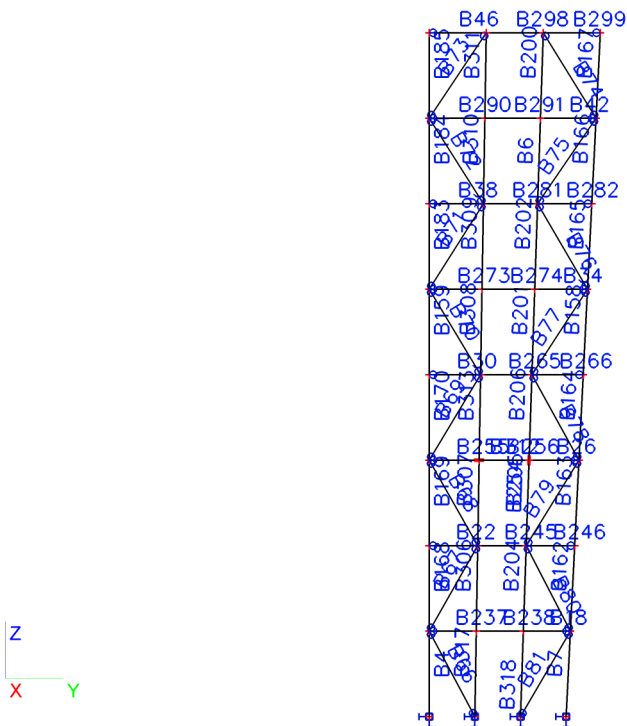
## 7. Stranica 1, Vz



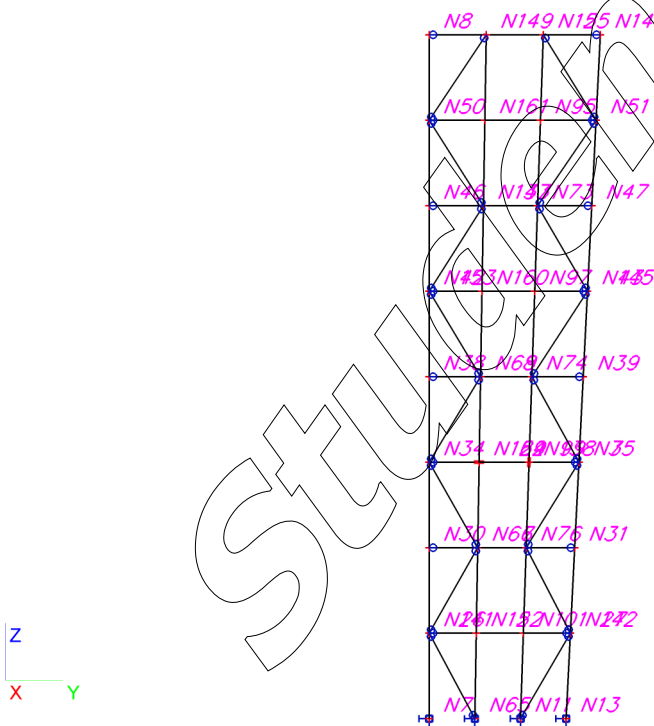
## 8. Stranica 1, stab.check



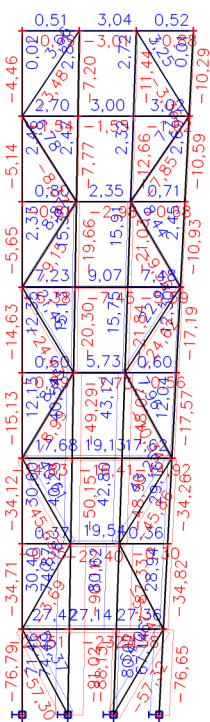
## 9. Stranica 2, oznake elementov



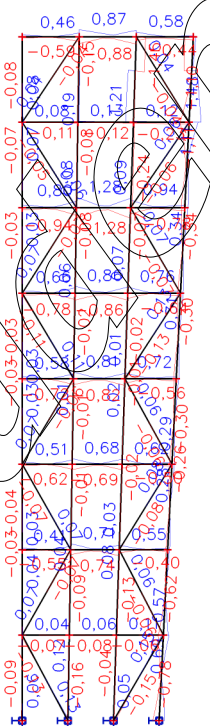
## 10. Stranica 2, oznake členov



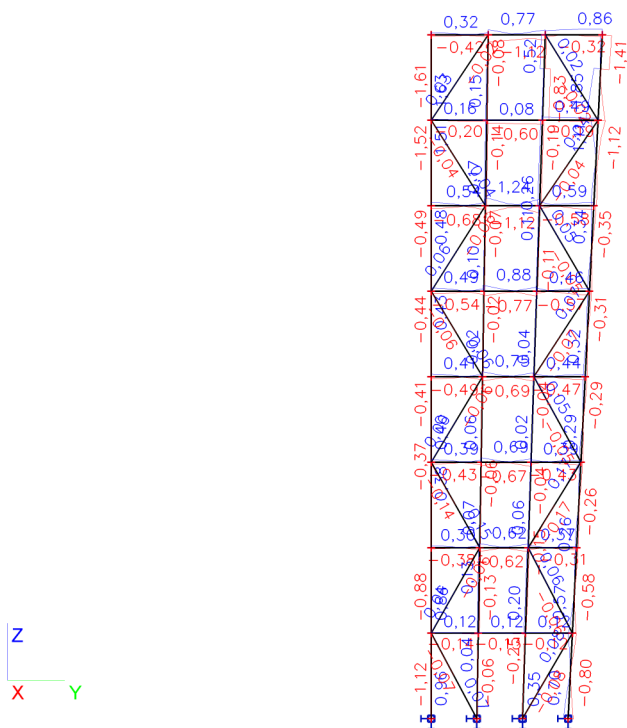
## 11. Stranica 2, N



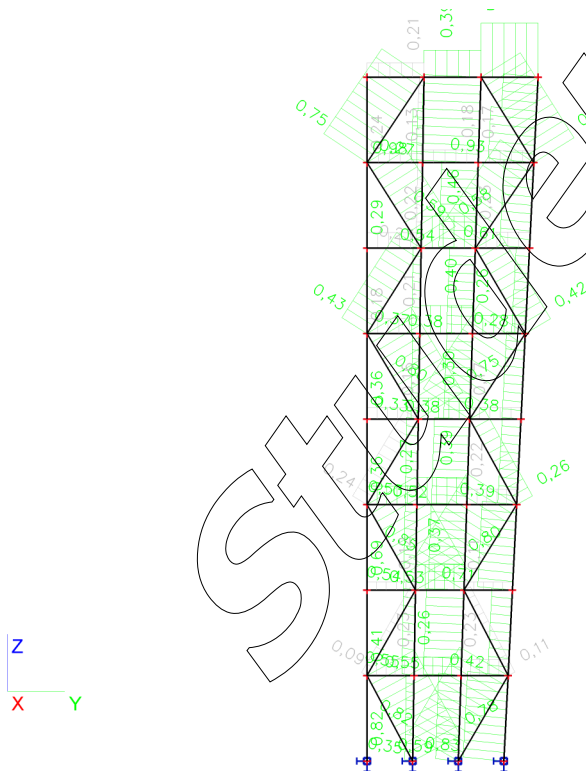
## 12. Stranica 2, Vy

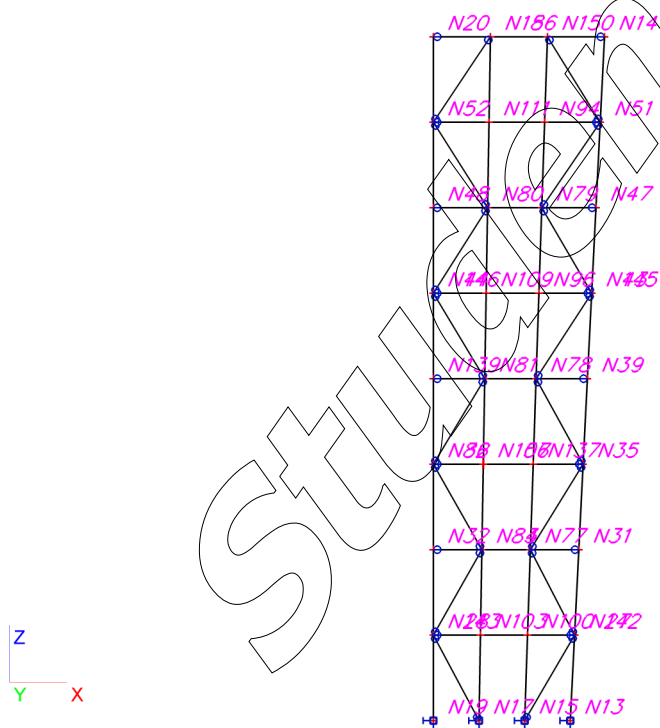
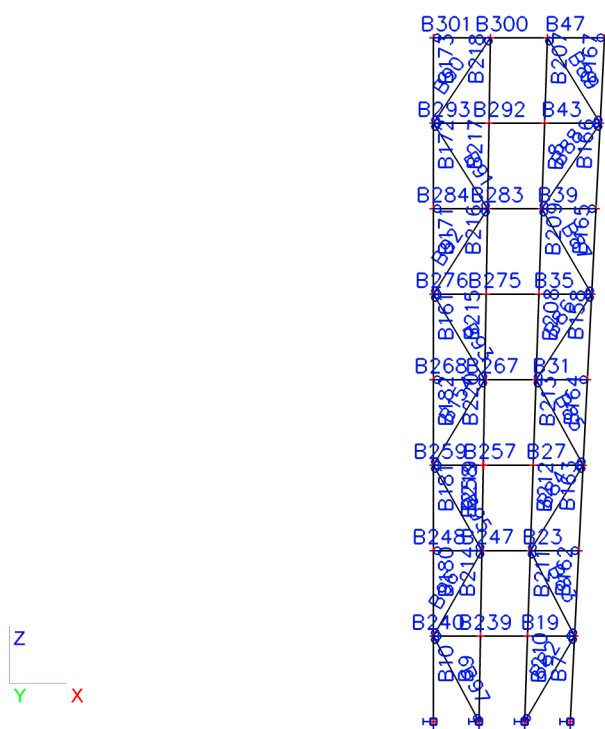


### 13. Stranica 2, Vz



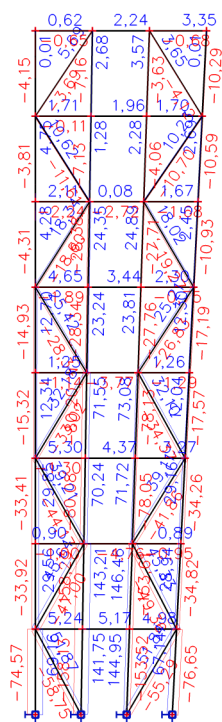
### 14. Stranica 2, stab.check



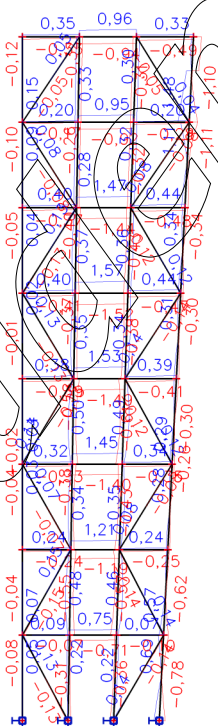




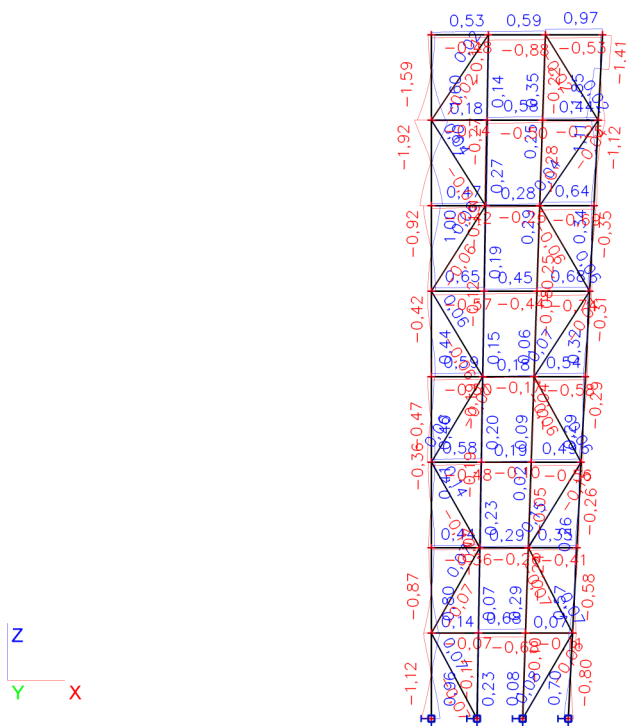
## 17. Stranica 3, N



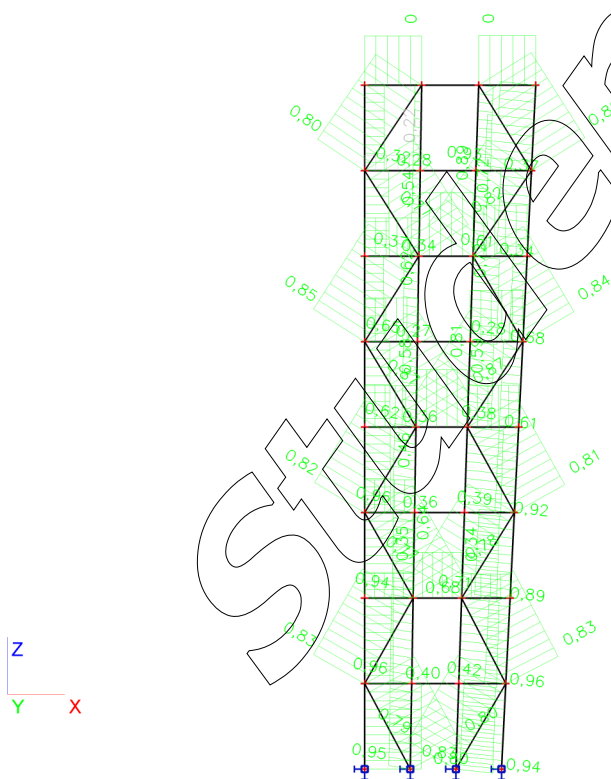
## 18. Stranica 3, Vy



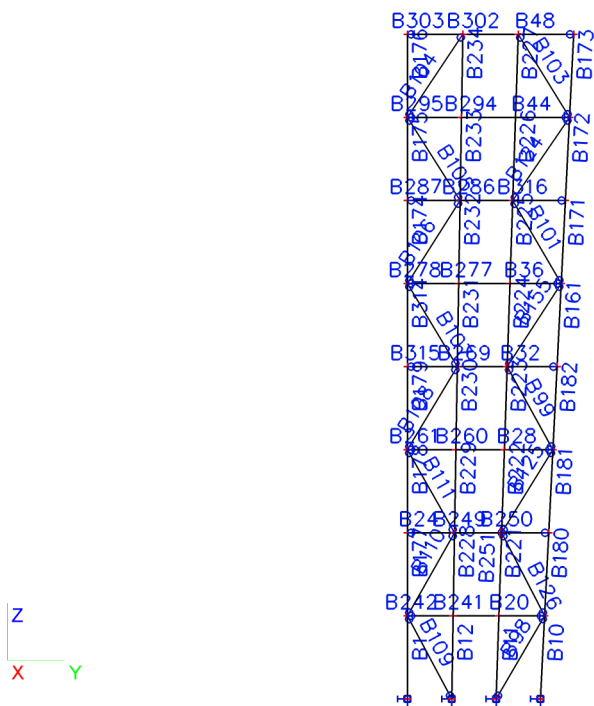
## 19. Stranica 3, Vz



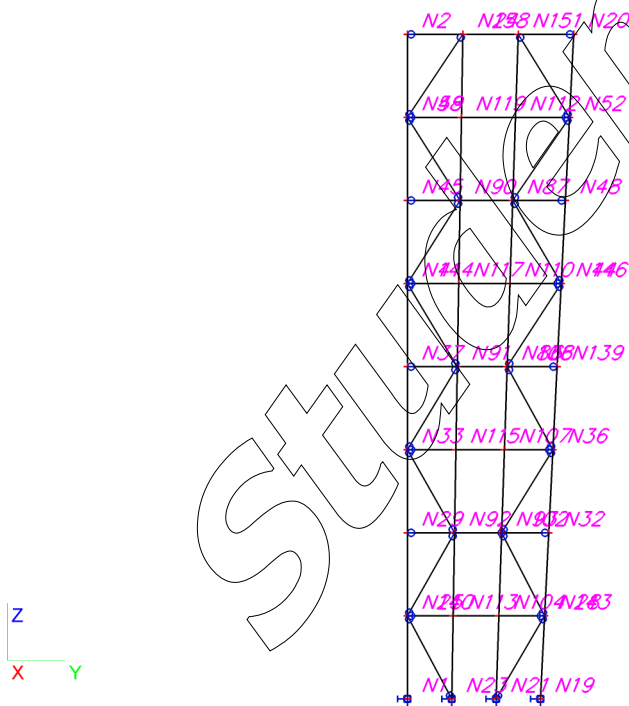
## 20. Stranica 3, stab.check



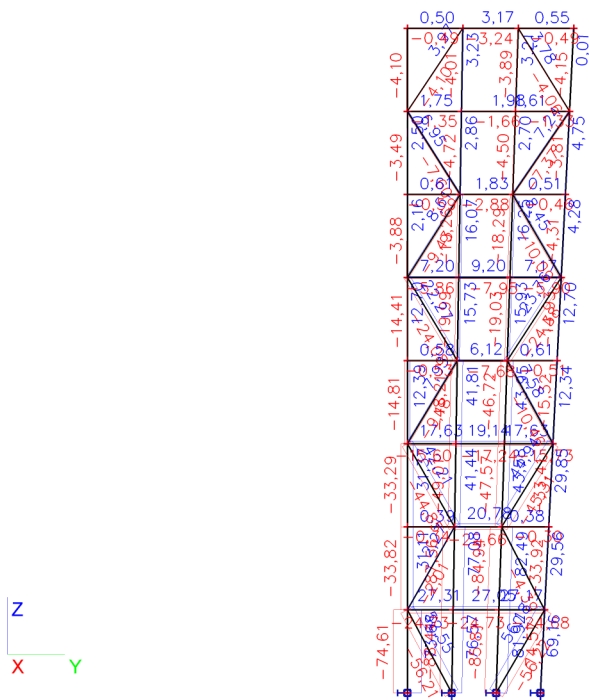
## 21. Stranica 4, oznake elementov



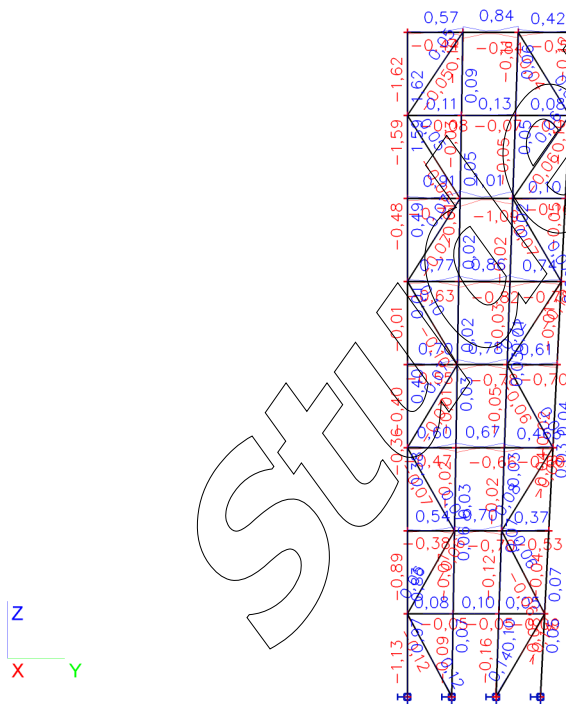
## 22. Stranica 4, oznake členov



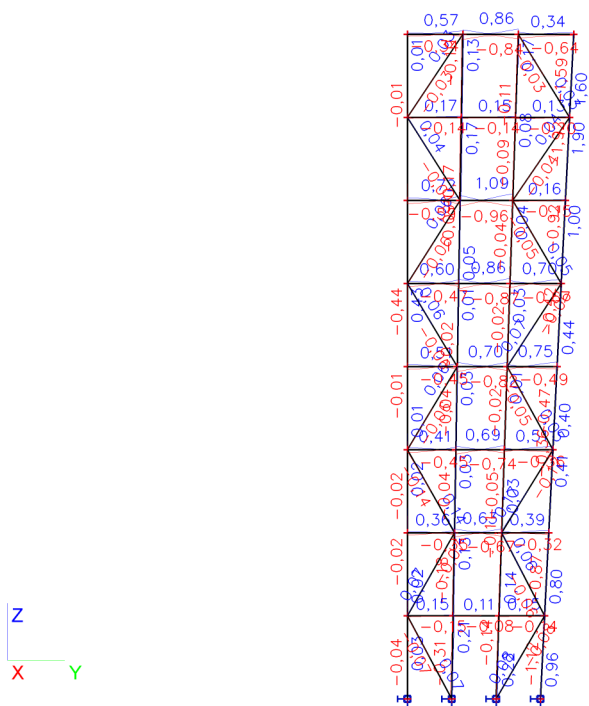
## 23. Stranica 4, N



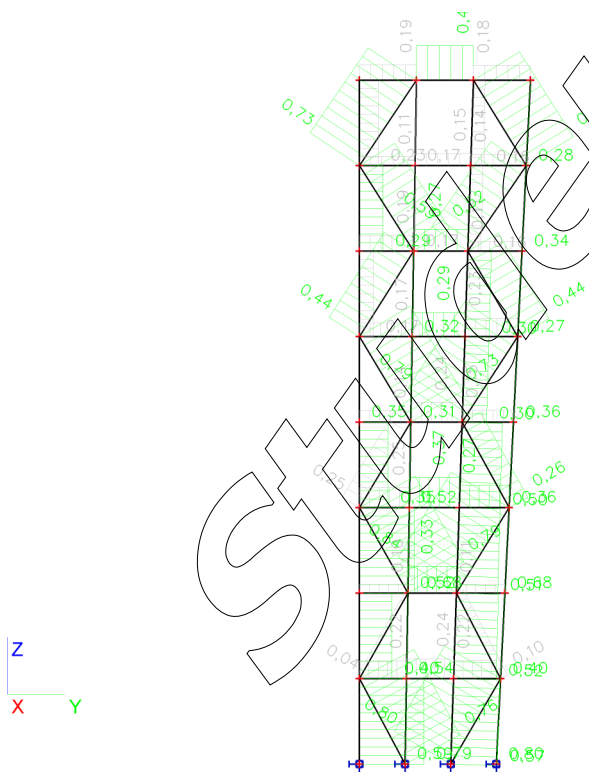
## 24. Stranica 4, Vy



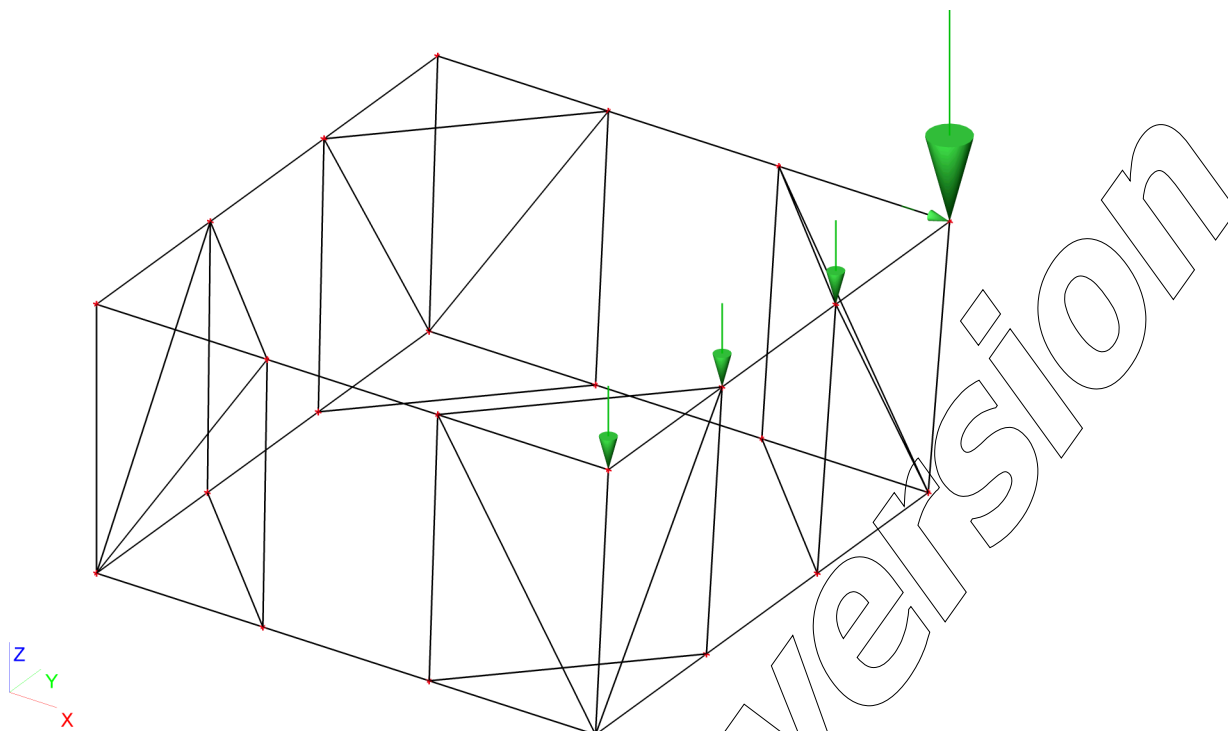
## 25. Stranica 4, Vz



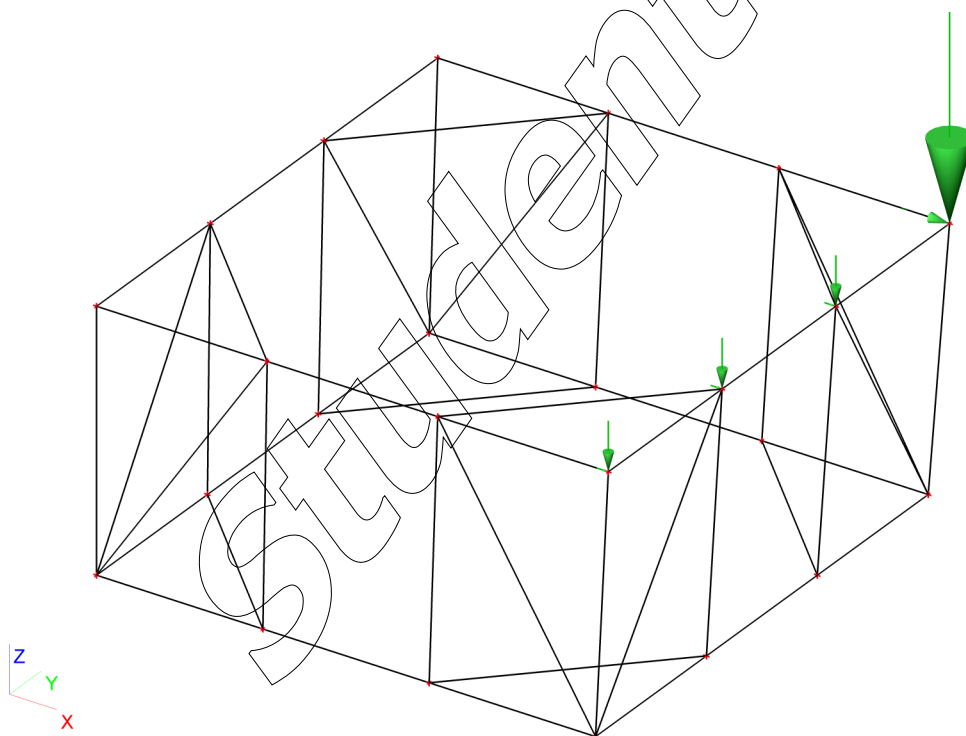
## 26. Stranica 4, stab.check



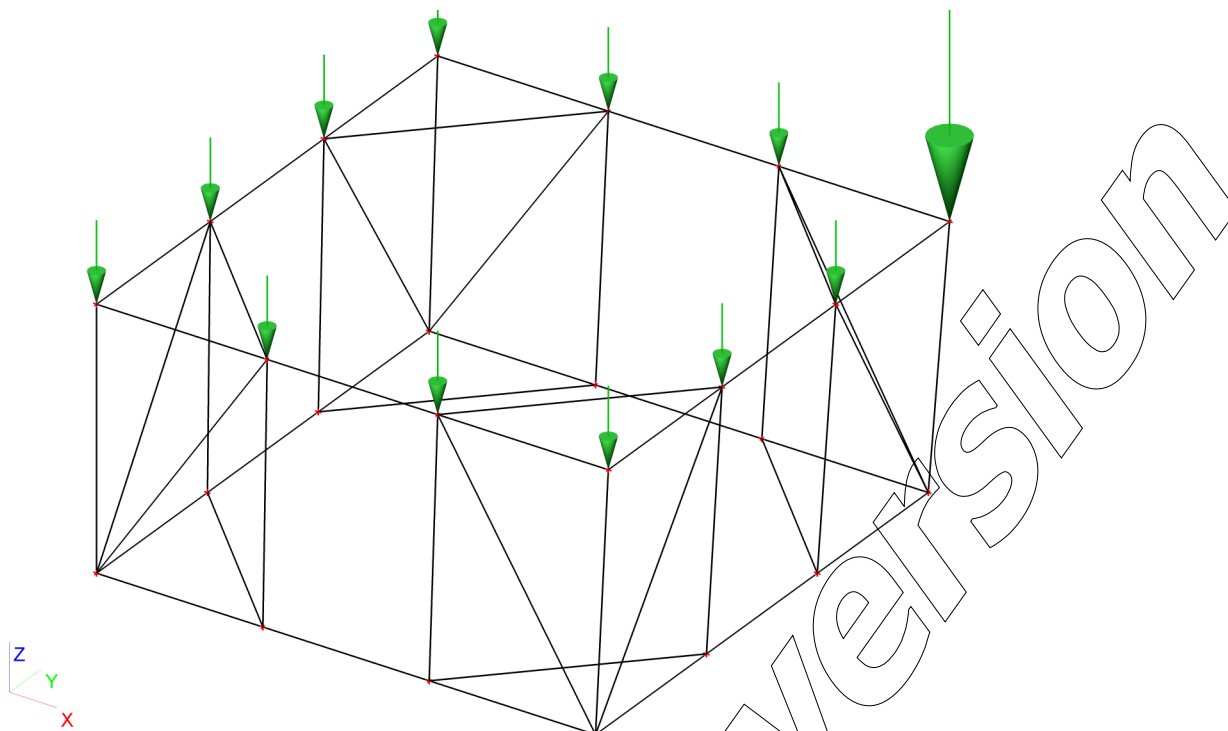
27. koristna1 / Steel data



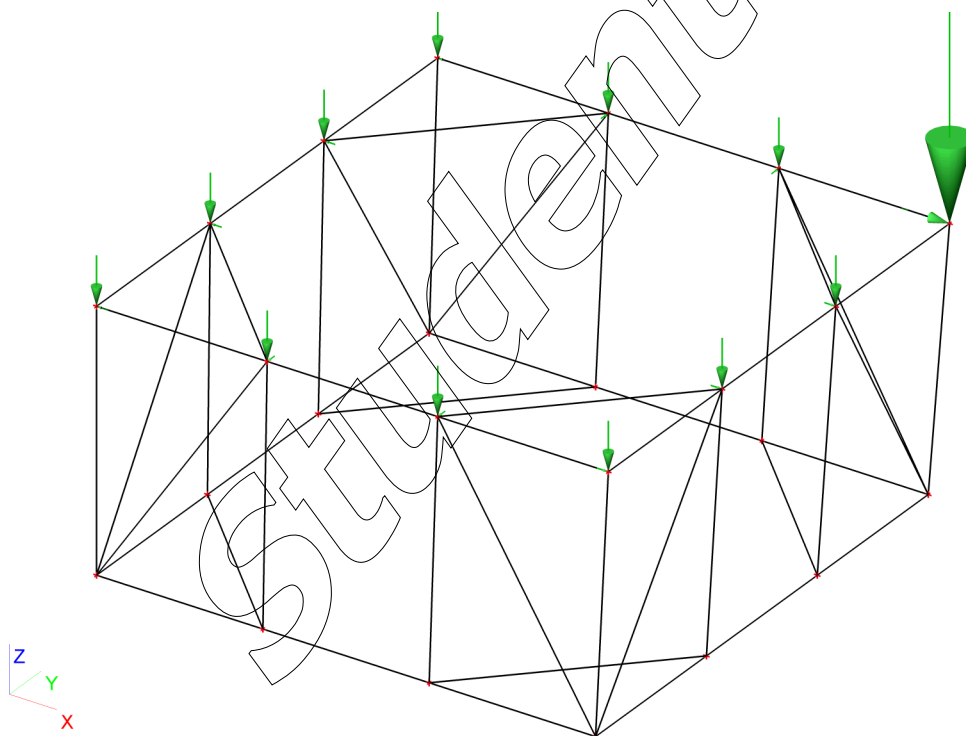
28. koristna2 / Steel data



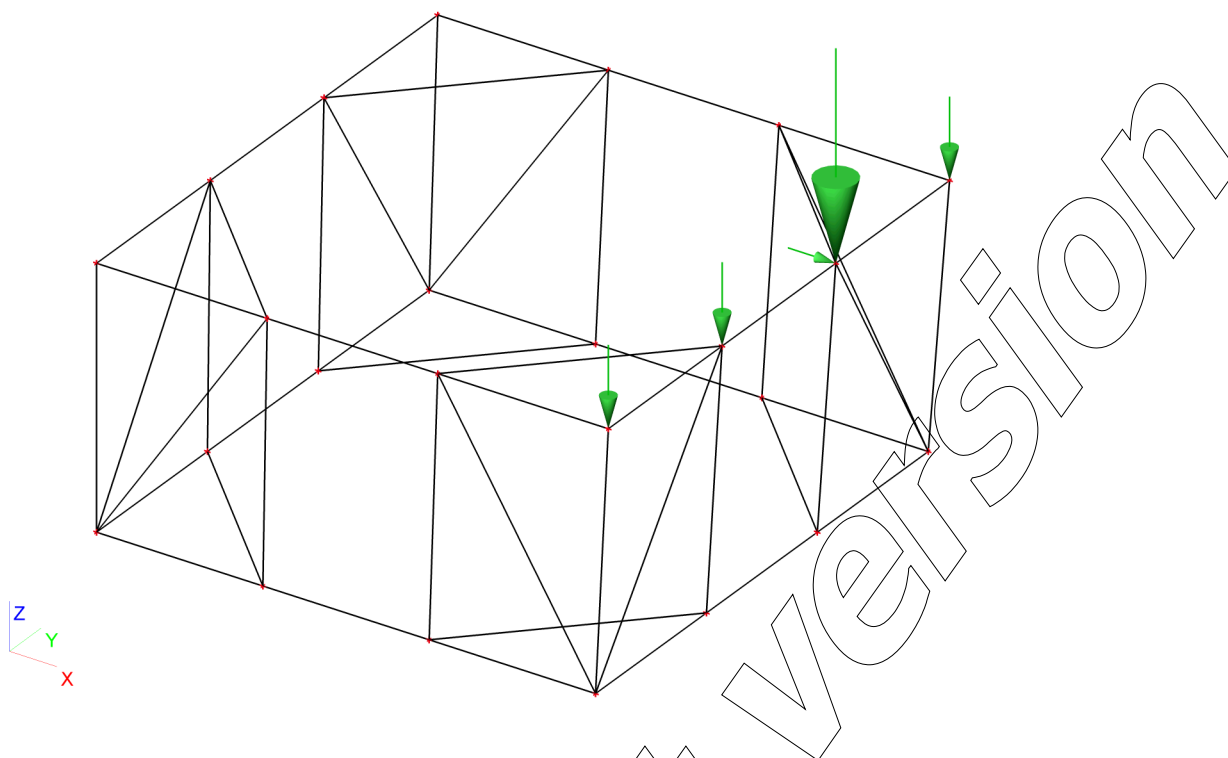
### 29. koristna3 / Steel data



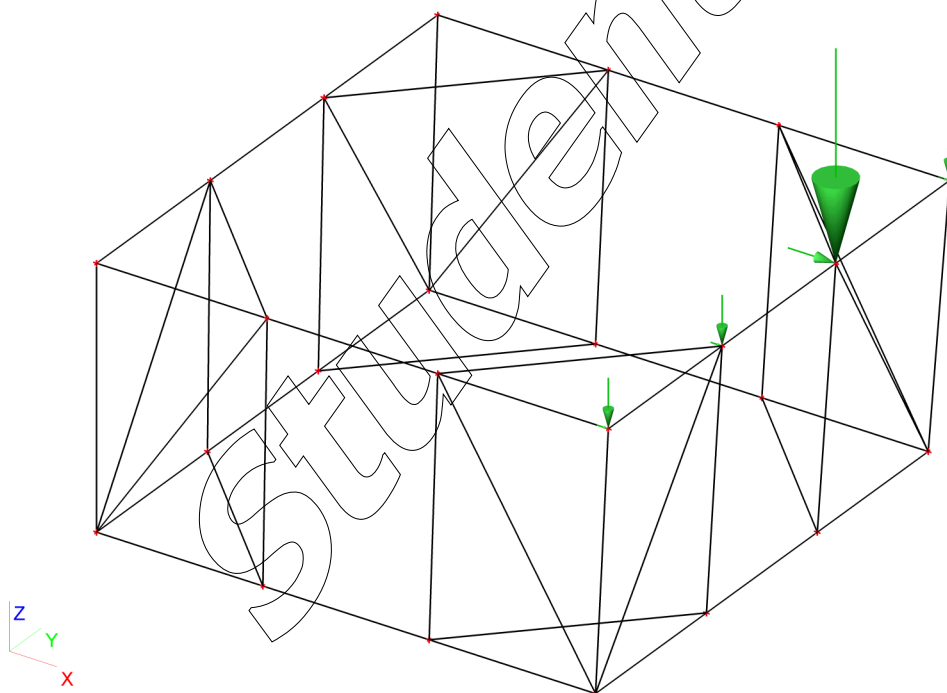
### 30. koristna4 / Steel data



### 31. koristna5 / Steel data

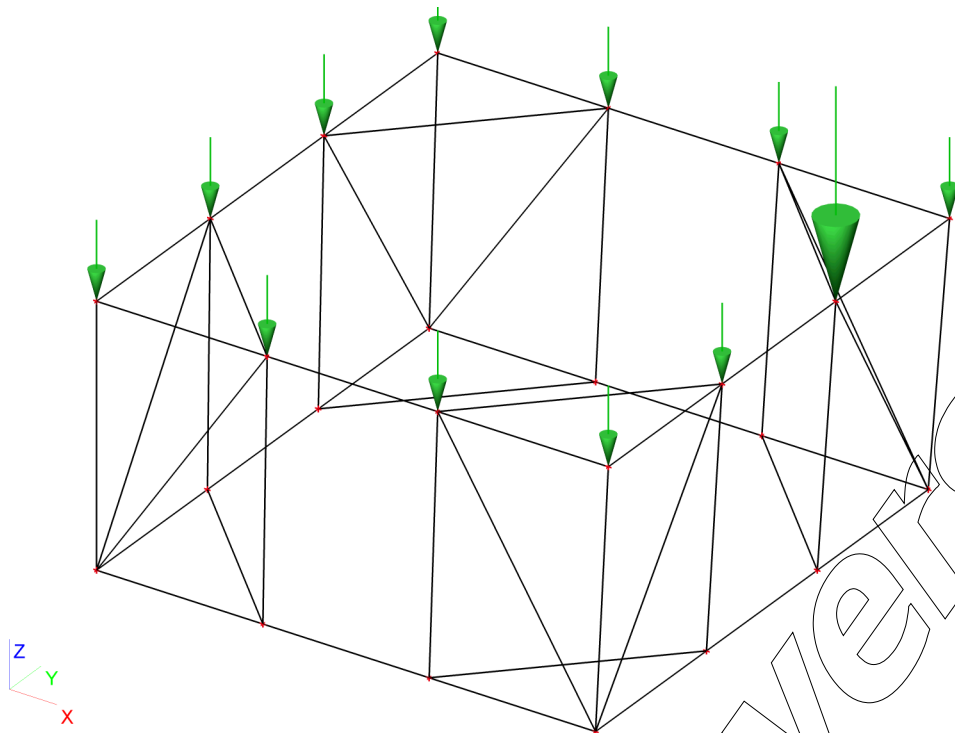


### 32. koristna6 / Steel data

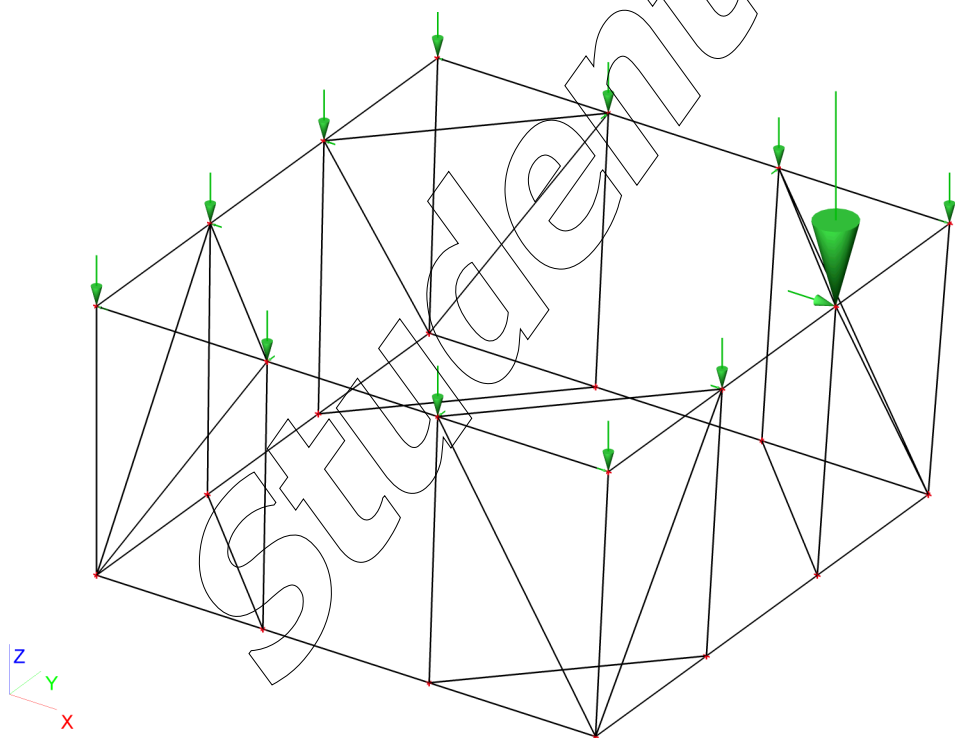




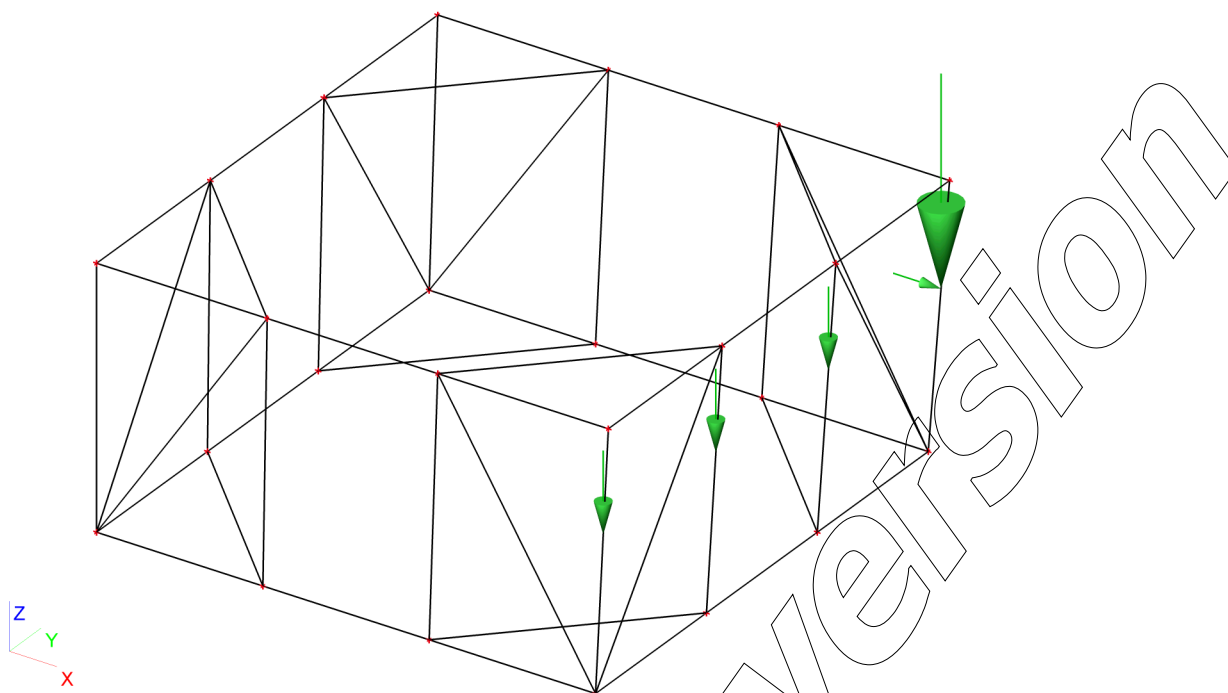
### 33. koristna7 / Steel data



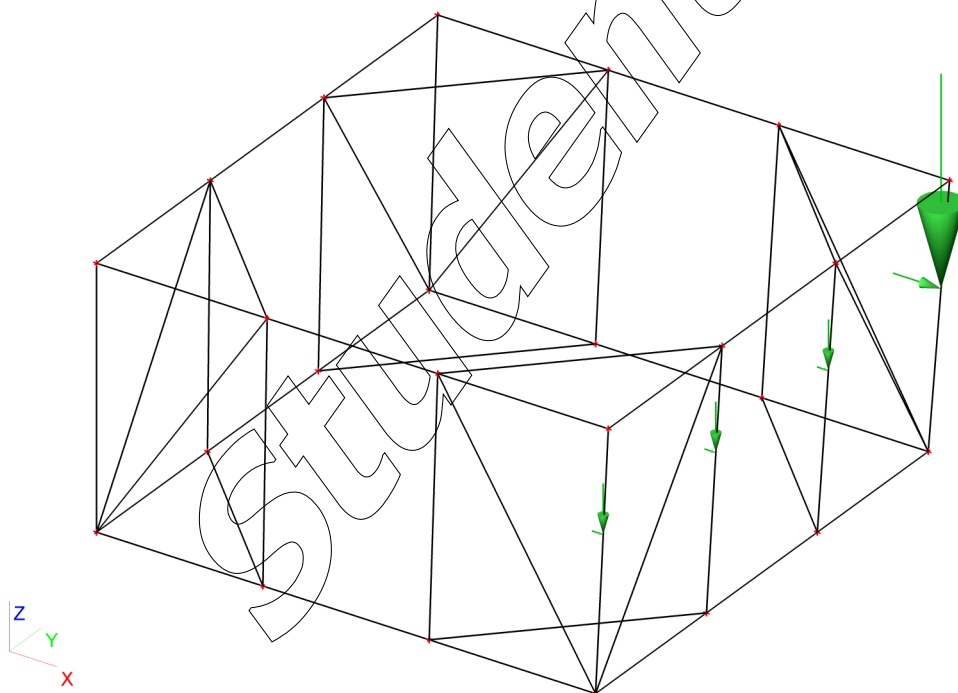
### 34. koristna8 / Steel data



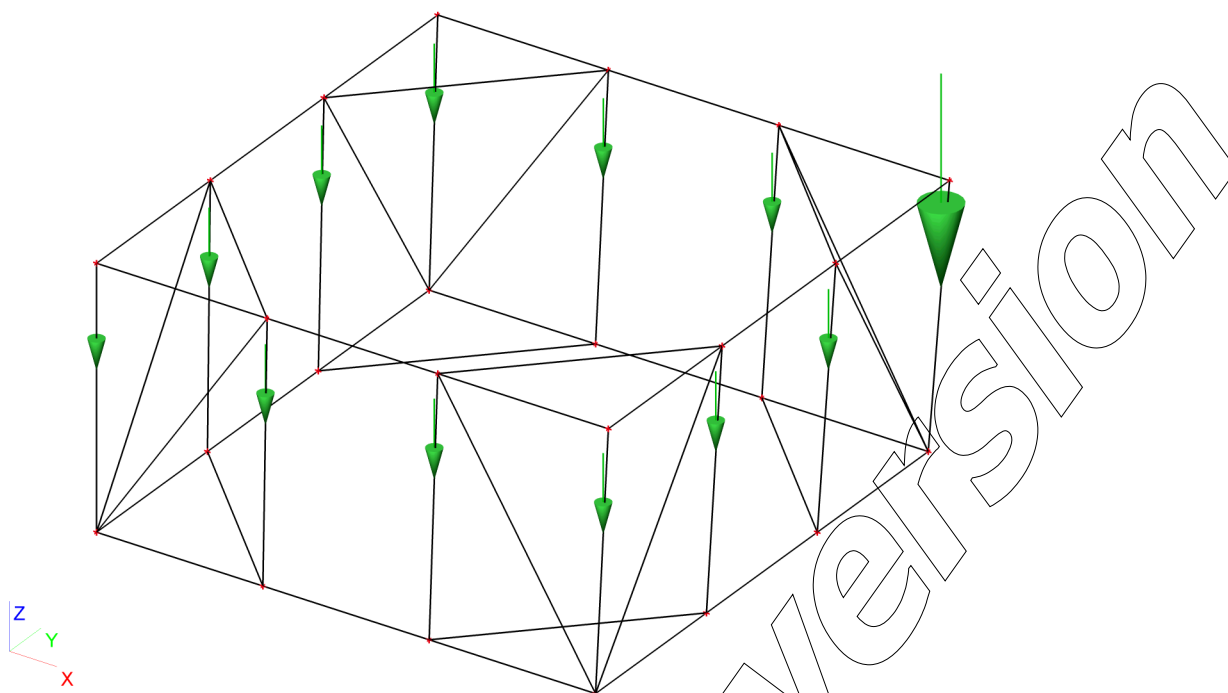
### 35. koristna9 / Steel data



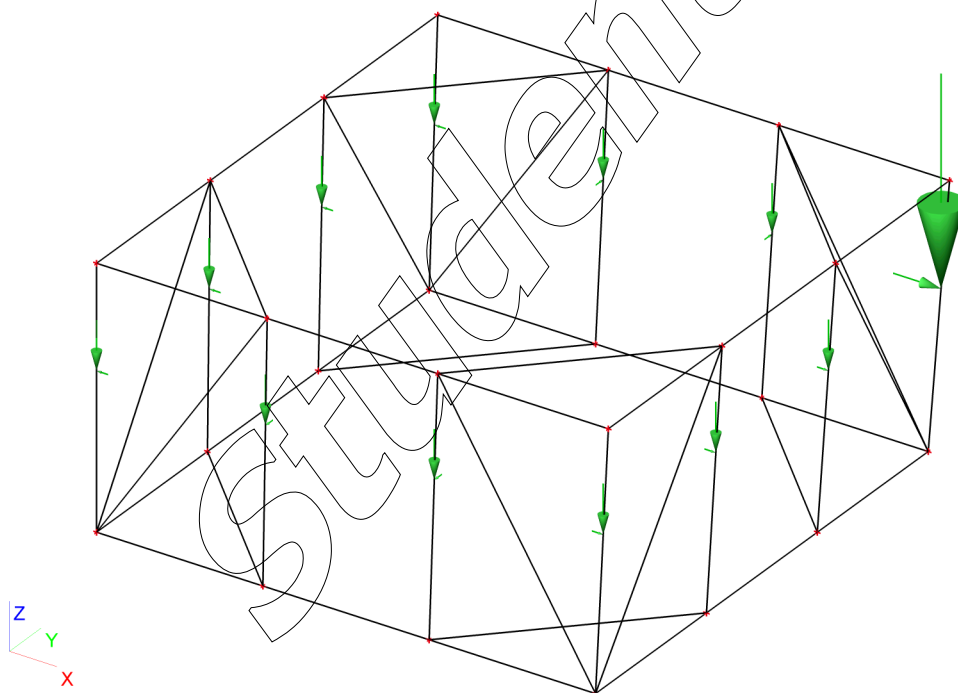
### 36. koristna10 / Steel data



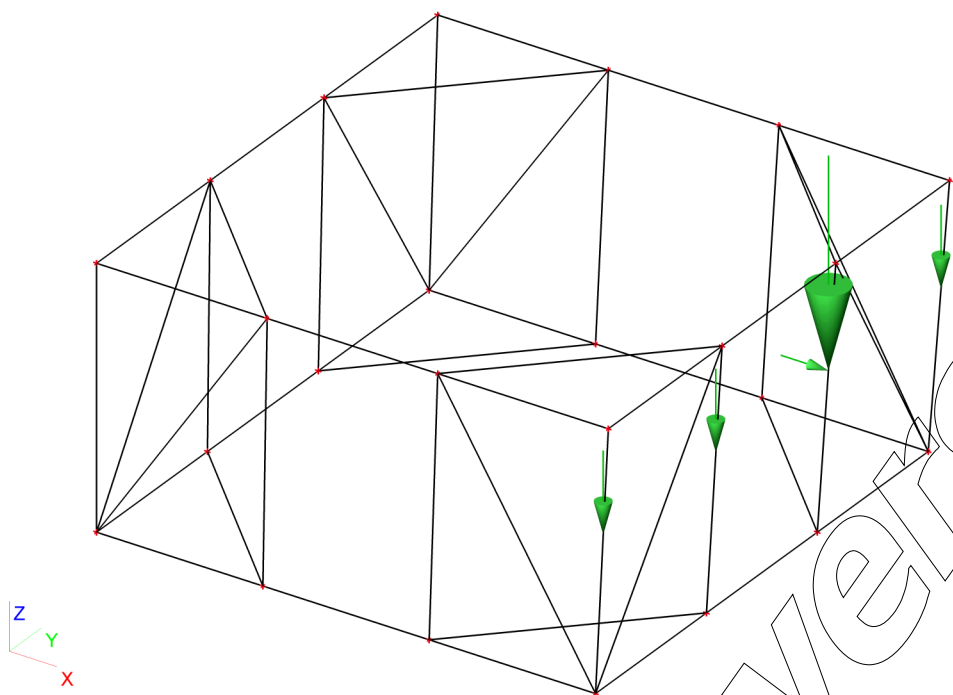
37. koristna11 / Steel data



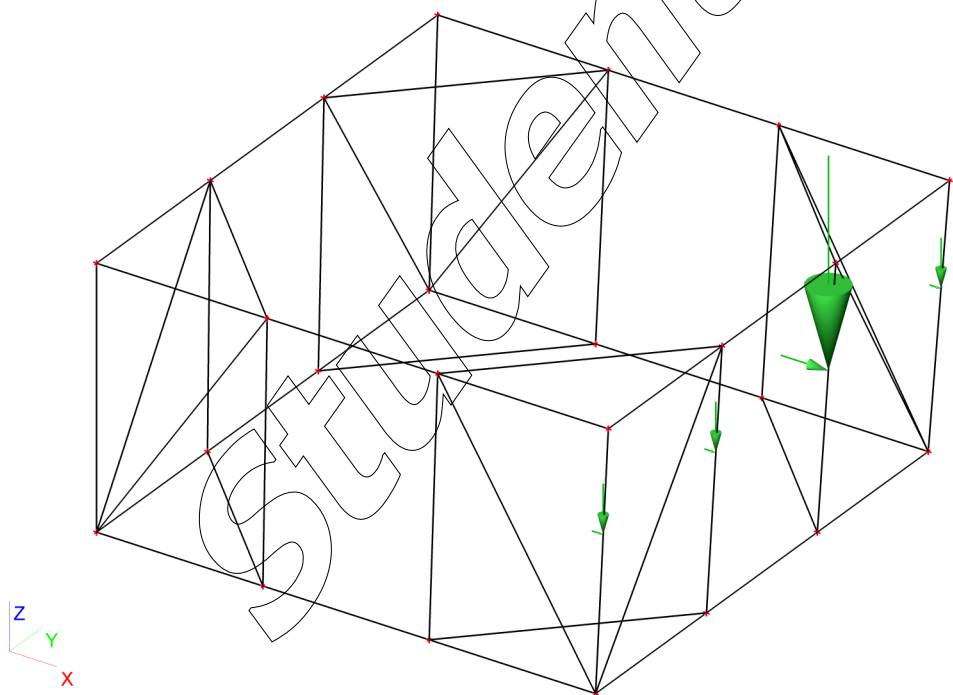
38. koristna12 / Steel data



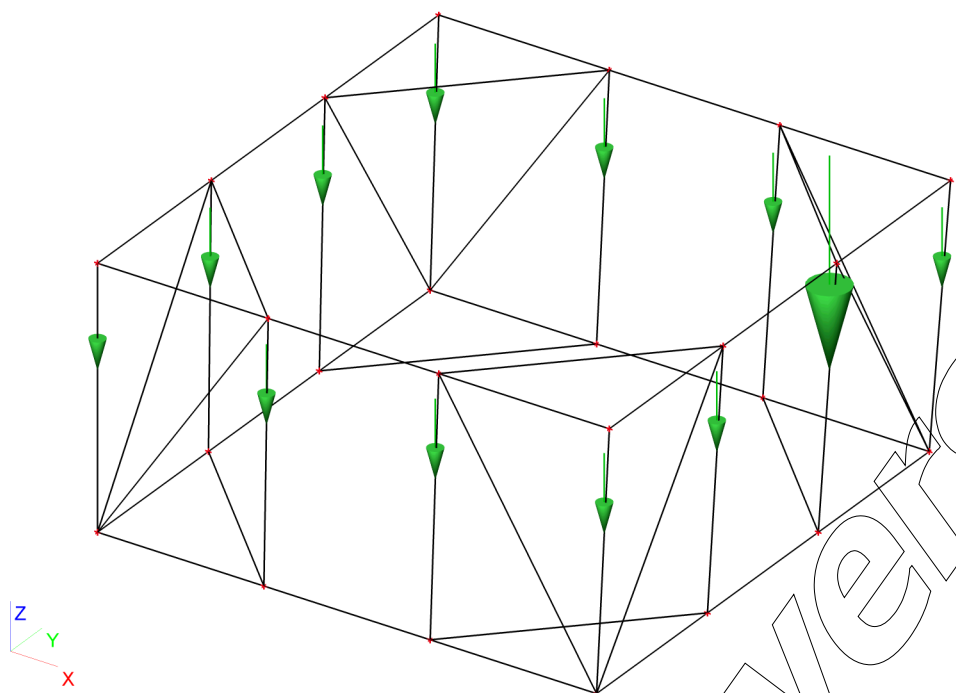
### 39. koristna13 / Steel data



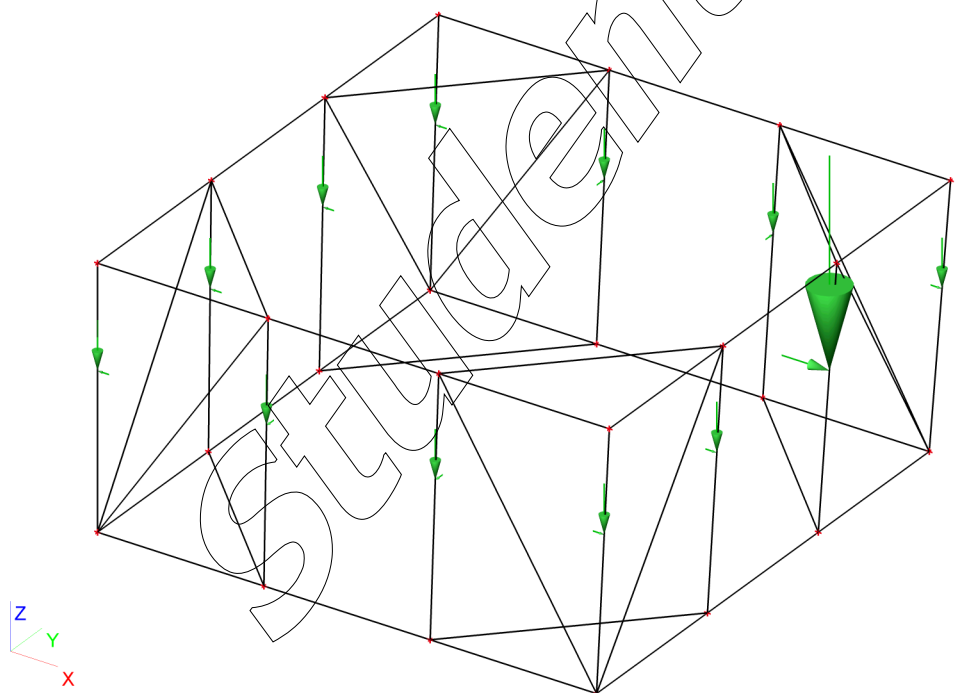
### 40. koristna14 / Steel data



#### 41. koristna15 / Steel data



## 42. koristna16 / Steel data

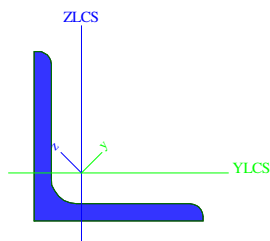


## 43. Cross-sections

|      |      |
|------|------|
| Name | CS10 |
|------|------|

[illegible]

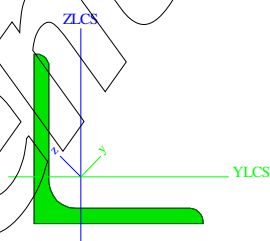
|                    |  |   |
|--------------------|--|---|
| Type               | HFLeq40x40x4   |   |
| Source description | Staalprofielen / deel 5 (Over)spannend staal / SG 1998 |   |
| Item material      | S 235  |   |
| Fabrication        | rolled   |   |
| Buckling y-y, z-z  | b  | b |



|  |             |            |
|--|-------------|------------|
| A [m <sup>2</sup> ]                        | 3,0790e-04  |            |
| A y, z [m <sup>2</sup> ]                   | 1,2911e-04  | 1,2850e-04 |
| I y, z [m <sup>4</sup> ]                   | 7,0870e-08  | 1,8580e-08 |
| I YLCS, ZLCS [m <sup>4</sup> ]             | 4,4730e-08  | 4,4730e-08 |
| I w [m <sup>6</sup> ], t [m <sup>4</sup> ] | 0,0000e+00  | 1,7100e-09 |
| Wel y, z [m <sup>3</sup> ]                 | 2,5056e-06  | 1,1739e-06 |
| Wpl y, z [m <sup>3</sup> ]                 | 3,9965e-06  | 2,0716e-06 |
| d y, z [mm]                                | -13         | 0          |
| c YLCS, ZLCS [mm]                          | 11          | 11         |
| alpha [deg]                                | 45,00       |            |
| IYZLCS [m <sup>4</sup> ]                   | -2,6126e-08 |            |
| AL [m <sup>2</sup> /m]                     | 1,5483e-01  |            |

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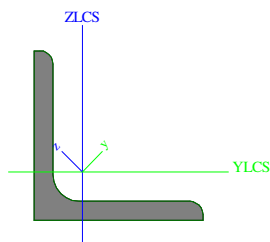
|                    |  |   |
|--------------------|--|---|
| Name               | CS90   |   |
| Type               | HFLeq45x45x4   |   |
| Source description | Staalprofielen / deel 5 (Over)spannend staal / SG 1998 |   |
| Item material      | S 235  |   |
| Fabrication        | rolled   |   |
| Buckling y-y, z-z  | b  | b |



|  |             |            |
|--|-------------|------------|
| A [m <sup>2</sup> ]                        | 3,4930e-04  |            |
| A y, z [m <sup>2</sup> ]                   | 1,4640e-04  | 1,4576e-04 |
| I y, z [m <sup>4</sup> ]                   | 1,0180e-07  | 2,6790e-08 |
| I YLCS, ZLCS [m <sup>4</sup> ]             | 6,4310e-08  | 6,4310e-08 |
| I w [m <sup>6</sup> ], t [m <sup>4</sup> ] | 0,0000e+00  | 1,9200e-09 |
| Wel y, z [m <sup>3</sup> ]                 | 3,1993e-06  | 1,5352e-06 |
| Wpl y, z [m <sup>3</sup> ]                 | 5,0918e-06  | 2,6533e-06 |
| d y, z [mm]                                | -15         | 0          |
| c YLCS, ZLCS [mm]                          | 12          | 12         |
| alpha [deg]                                | 45,00       |            |
| IYZLCS [m <sup>4</sup> ]                   | -3,7493e-08 |            |
| AL [m <sup>2</sup> /m]                     | 1,7396e-01  |            |

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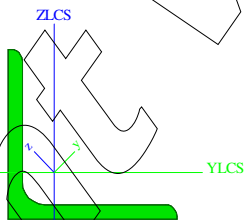
|                    |  |   |
|--------------------|--|---|
| Name               | CS88   |   |
| Type               | HFLeq45x45x5   |   |
| Source description | Staalprofielen / deel 5 (Over)spannend staal / SG 1998 |   |
| Item material      | S 235  |   |
| Fabrication        | rolled   |   |
| Buckling y-y, z-z  | b  | b |



|  |             |            |
|--|-------------|------------|
| A [m <sup>2</sup> ]                        | 4,3030e-04  |            |
| A y, z [m <sup>2</sup> ]                   | 1,8035e-04  | 1,7956e-04 |
| l y, z [m <sup>4</sup> ]                   | 1,2420e-07  | 3,2610e-08 |
| l YLCS, ZLCS [m <sup>4</sup> ]             | 7,8400e-08  | 7,8400e-08 |
| l w [m <sup>6</sup> ], t [m <sup>4</sup> ] | 0,0000e+00  | 3,7500e-09 |
| Wel y, z [m <sup>3</sup> ]                 | 3,9032e-06  | 1,8032e-06 |
| Wpl y, z [m <sup>3</sup> ]                 | 6,2555e-06  | 3,2401e-06 |
| d y, z [mm]                                | -15         | 0          |
| c YLCS, ZLCS [mm]                          | 13          | 13         |
| alpha [deg]                                | 45,00       |            |
| lYZLCS [m <sup>4</sup> ]                   | -4,5763e-08 |            |
| AL [m <sup>2</sup> /m]                     | 1,7396e-01  |            |

[illegible]

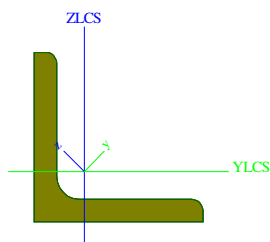
| Name               | CS32   |
|--------------------|--|
| Type               | HFLeq60x60x5   |
| Source description | Staalprofielen / deel 5 (Over)spannend staal / SG 1998 |
| Item material      | S 235  |
| Fabrication        | rolled   |
| Buckling y-y, z-z  | b b  |



|  |             |            |
|--|-------------|------------|
| A [m <sup>2</sup> ]                        | 5,8190e-04  |            |
| A y, z [m <sup>2</sup> ]                   | 2,4390e-04  | 2,4282e-04 |
| l y, z [m <sup>4</sup> ]                   | 3,0710e-07  | 8,0300e-08 |
| l YLCS, ZLCS [m <sup>4</sup> ]             | 1,9370e-07  | 1,9370e-07 |
| l w [m <sup>6</sup> ], t [m <sup>4</sup> ] | 0,0000e+00  | 5,0000e-09 |
| Wel y, z [m <sup>3</sup> ]                 | 7,2364e-06  | 3,4561e-06 |
| Wpl y, z [m <sup>3</sup> ]                 | 1,1444e-05  | 5,9265e-06 |
| d y, z [mm]                                | -20         | 0          |
| c YLCS, ZLCS [mm]                          | 16          | 16         |
| alpha [deg]                                | 45,00       |            |
| lYZLCS [m <sup>4</sup> ]                   | -1,1331e-07 |            |
| AL [m <sup>2</sup> /m]                     | 2,3310e-01  |            |

[illegible]

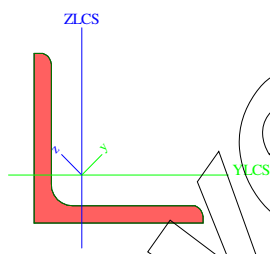
|                    |  |  |  |  |  |              |
|--------------------|--|--|--|--|--|--------------|
| Name               |  |  |  |  |  | CS46         |
| Type               |  |  |  |  |  | HFLeq60x60x8 |
| Source description | Staalprofielen / deel 5 (Over)spannend staal / SG 1998 |  |  |  |  |              |
| Item material      | S 235  |  |  |  |  |              |
| Fabrication        | rolled   |  |  |  |  |              |
| Buckling y-y, z-z  | b  |  |  |  |  | b            |



|  |             |            |
|--|-------------|------------|
| A [m <sup>2</sup> ]                        | 9,0290e-04  |            |
| A y, z [m <sup>2</sup> ]                   | 3,7844e-04  | 3,7677e-04 |
| I y, z [m <sup>4</sup> ]                   | 4,6140e-07  | 1,2160e-07 |
| I YLCS, ZLCS [m <sup>4</sup> ]             | 2,9150e-07  | 2,9150e-07 |
| I w [m <sup>6</sup> ], t [m <sup>4</sup> ] | 0,0000e+00  | 2,0500e-08 |
| Wel y, z [m <sup>3</sup> ]                 | 1,0875e-05  | 4,8619e-06 |
| Wpl y, z [m <sup>3</sup> ]                 | 1,7532e-05  | 9,0278e-06 |
| d y, z [mm]                                | -20         | 0          |
| c YLCS, ZLCS [mm]                          | 18          | 18         |
| alpha [deg]                                | 45,00       |            |
| IYZLCS [m <sup>4</sup> ]                   | -1,6986e-07 |            |
| AL [m <sup>2</sup> /m]                     | 2,3310e-01  |            |

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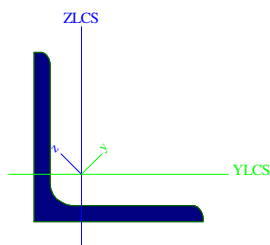
|                    |  |
|--------------------|--|
| Name               | CS39   |
| Type               | HFLeq70x70x7   |
| Source description | Staalprofielen / deel 5 (Over)spannend staal / SG 1998 |
| Item material      | S 235  |
| Fabrication        | rolled   |
| Buckling y-y, z-z  | b b  |



|  |             |            |
|--|-------------|------------|
| A [m <sup>2</sup> ]                        | 9,3970e-04  |            |
| A y, z [m <sup>2</sup> ]                   | 3,9386e-04  | 3,9212e-04 |
| I y, z [m <sup>4</sup> ]                   | 6,7090e-07  | 1,7500e-07 |
| I YLCS, ZLCS [m <sup>4</sup> ]             | 4,2290e-07  | 4,2290e-07 |
| I w [m <sup>6</sup> ], t [m <sup>4</sup> ] | 0,0000e+00  | 1,6000e-08 |
| Wel y, z [m <sup>3</sup> ]                 | 1,3554e-05  | 6,2792e-06 |
| Wpl y, z [m <sup>3</sup> ]                 | 2,1542e-05  | 1,1096e-05 |
| d y, z [mm]                                | -24         | 0          |
| c YLCS, ZLCS [mm]                          | 20          | 20         |
| alpha [deg]                                | 45,00       |            |
| IYZLCS [m <sup>4</sup> ]                   | -2,4779e-07 |            |
| AL [m <sup>2</sup> /m]                     | 2,7224e-01  |            |

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|                    |  |
|--------------------|--|
| Name               | CS11   |
| Type               | HFLeq75x75x7   |
| Source description | Staalprofielen / deel 5 (Over)spannend staal / SG 1998 |
| Item material      | S 235  |
| Fabrication        | rolled   |
| Buckling y-y, z-z  | b b  |



|  |            |            |
|--|------------|------------|
| A [m <sup>2</sup> ]                        | 1,0120e-03 |            |
| A y, z [m <sup>2</sup> ]                   | 4,2417e-04 | 4,2229e-04 |
| I y, z [m <sup>4</sup> ]                   | 8,3020e-07 | 2,1680e-07 |
| I YLCS, ZLCS [m <sup>4</sup> ]             | 5,2350e-07 | 5,2350e-07 |
| I w [m <sup>6</sup> ], t [m <sup>4</sup> ] | 0,0000e+00 | 1,6350e-08 |
| Wel y, z [m <sup>3</sup> ]                 | 1,5654e-05 | 7,3451e-06 |
| Wpl y, z [m <sup>3</sup> ]                 | 2,4843e-05 | 1,2829e-05 |
| d y, z [mm]                                | -25        | 0          |
| c YLCS, ZLCS [mm]                          | 21         | 21         |
| alpha [deg]                                | 45,00      |            |

\*Student version\* \*Student version\* \*Student version\* \*Student version\* \*Student version\* \*Student version\* \*Student version\* \*Student version\* \*S

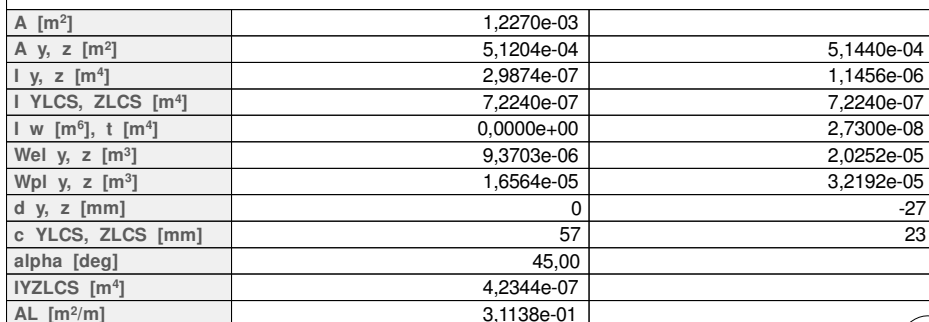


A diagram showing a corner joint between two dark red L-shaped components. A horizontal green line labeled 'YLCS' passes through the corner. A vertical blue line also passes through the corner. A green vector labeled 'S' points upwards and to the right from the corner. A blue vector labeled 'V' points upwards and to the left from the corner.

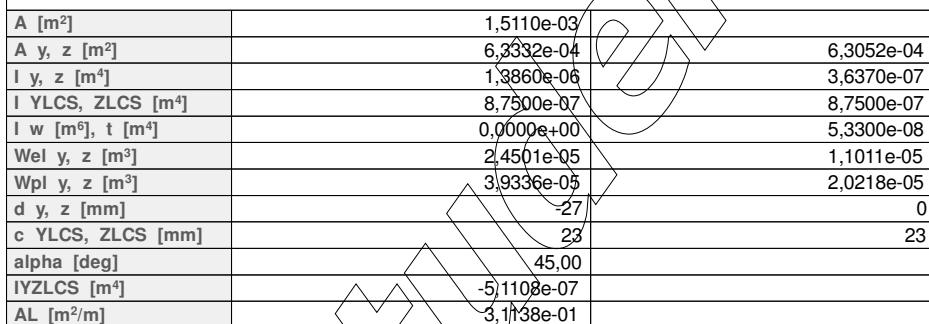
A diagram showing a corner joint between two dark red L-shaped components. A horizontal green line labeled 'YLCS' passes through the corner. A vertical blue line also passes through the corner. A green vector labeled 'S' points upwards and to the right from the corner. A blue vector labeled 'V' points upwards and to the left from the corner.

A diagram showing a corner joint between two dark red L-shaped components. A horizontal green line labeled 'YLCS' passes through the corner. A vertical blue line also passes through the corner. A green vector labeled 'S' points upwards and to the right from the corner. A blue vector labeled 'V' points upwards and to the left from the corner.

A diagram showing a corner joint between two dark red L-shaped components. A horizontal green line labeled 'YLCS' passes through the corner. A vertical blue line also passes through the corner. A green vector labeled 'S' points upwards and to the right from the corner. A blue vector labeled 'V' points upwards and to the left from the corner.



|                    |  |
|--------------------|--|
| Name               | CS7  |
| Type               | HFLeq80x80x10  |
| Source description | Staalprofielen / deel 5 (Over)spannend staal / SG 1998 |
| Item material      | S 235  |
| Fabrication        | rolled   |
| Buckling y-y, z-z  | b b  |



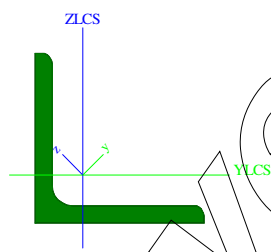
|                    |  |
|--------------------|--|
| Name               | CS102  |
| Type               | HFLeq90x90x7   |
| Source description | Staalprofielen / deel 5 (Over)spannend staal / SG 1998 |
| Item material      | S 235  |
| Fabrication        | rolled   |
| Buckling y-y, z-z  | b b  |



|  |             |            |
|--|-------------|------------|
| A [m <sup>2</sup> ]                        | 1,2240e-03  |            |
| A y, z [m <sup>2</sup> ]                   | 5,1302e-04  | 5,1075e-04 |
| I y, z [m <sup>4</sup> ]                   | 1,4680e-06  | 3,8290e-07 |
| I YLCS, ZLCS [m <sup>4</sup> ]             | 9,2540e-07  | 9,2540e-07 |
| I w [m <sup>6</sup> ], t [m <sup>4</sup> ] | 0,0000e+00  | 1,9780e-08 |
| Wel y, z [m <sup>3</sup> ]                 | 2,3067e-05  | 1,1045e-05 |
| Wpl y, z [m <sup>3</sup> ]                 | 3,6328e-05  | 1,8767e-05 |
| d y, z [mm]                                | -31         | 0          |
| c YLCS, ZLCS [mm]                          | 25          | 25         |
| alpha [deg]                                | 45,00       |            |
| IYZLCS [m <sup>4</sup> ]                   | -5,4221e-07 |            |
| AL [m <sup>2</sup> /m]                     | 3,5051e-01  |            |

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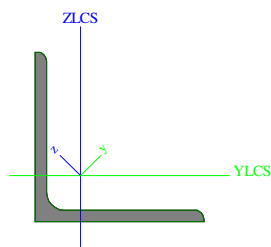
|                    |  |
|--------------------|--|
| Name               | CS111  |
| Type               | HFLeq100x100x10  |
| Source description | Staalprofielen / deel 5 (Over)spannend staal / SG 1998 |
| Item material      | S 235  |
| Fabrication        | rolled   |
| Buckling y-y, z-z  | b b  |



|  |             |            |
|--|-------------|------------|
| A [m <sup>2</sup> ]                        | 1,9150e-03  |            |
| A y, z [m <sup>2</sup> ]                   | 8,0265e-04  | 7,9910e-04 |
| I y, z [m <sup>4</sup> ]                   | 2,8030e-06  | 7,3000e-07 |
| I YLCS, ZLCS [m <sup>4</sup> ]             | 1,7670e-06  | 1,7670e-06 |
| I w [m <sup>6</sup> ], t [m <sup>4</sup> ] | 0,0000e+00  | 6,6700e-08 |
| Wel y, z [m <sup>3</sup> ]                 | 3,9640e-05  | 1,8294e-05 |
| Wpl y, z [m <sup>3</sup> ]                 | 6,2922e-05  | 3,2331e-05 |
| d y, z [mm]                                | -34         | 0          |
| c YLCS, ZLCS [mm]                          | 28          | 28         |
| alpha [deg]                                | 45,00       |            |
| IYZLCS [m <sup>4</sup> ]                   | -1,0362e-06 |            |
| AL [m <sup>2</sup> /m]                     | 3,9965e-01  |            |

\*Student version\* \*Student version\* \*Student version\* \*Student version\* \*Student version\* \*Student version\* \*Student version\* \*Student version\* \*S

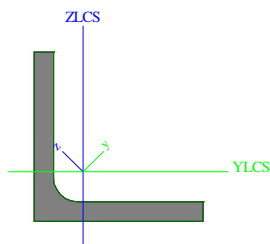
|                    |  |
|--------------------|--|
| Name               | CS6  |
| Type               | HFLeq150x150x10  |
| Source description | Staalprofielen / deel 5 (Over)spannend staal / SG 1998 |
| Item material      | S 235  |
| Fabrication        | rolled   |
| Buckling y-y, z-z  | b b  |



|  |            |            |
|--|------------|------------|
| A [m <sup>2</sup> ]                        | 2,9270e-03 |            |
| A y, z [m <sup>2</sup> ]                   | 1,2268e-03 | 1,2214e-03 |
| I y, z [m <sup>4</sup> ]                   | 9,9050e-06 | 2,5750e-06 |
| I YLCS, ZLCS [m <sup>4</sup> ]             | 6,2400e-06 | 6,2400e-06 |
| I w [m <sup>6</sup> ], t [m <sup>4</sup> ] | 0,0000e+00 | 1,0000e-07 |
| Wel y, z [m <sup>3</sup> ]                 | 9,3385e-05 | 4,5152e-05 |
| Wpl y, z [m <sup>3</sup> ]                 | 1,4608e-04 | 7,5265e-05 |
| d y, z [mm]                                | -51        | 0          |
| c YLCS, ZLCS [mm]                          | 40         | 40         |
| alpha [deg]                                | 45,00      |            |

\*Student version\* \*Student version\* \*Student version\* \*Student version\* \*Student version\* \*Student version\* \*Student version\* \*Student version\* \*S

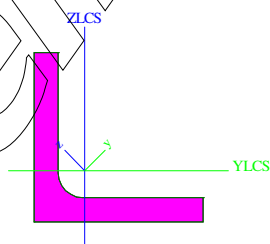
|                          |  |   |
|--------------------------|--|---|
| IYZLCS [m <sup>4</sup> ] | -3,6628e-06                                    |   |
| AL [m <sup>2</sup> /m]   | 5,8620e-01                                     |   |
| Name                     | CS94   |   |
| Type                     | ISEA35/35/4                                    |   |
| Source description       | Indian Standard / IS 808 : 1989 / 3rd Revision |   |
| Item material            | S 235  |   |
| Fabrication              | rolled   |   |
| Buckling y-y, z-z        | b  | b |



|  |             |            |
|--|-------------|------------|
| A [m <sup>2</sup> ]                        | 2,6600e-04  |            |
| A y, z [m <sup>2</sup> ]                   | 1,1154e-04  | 1,1101e-04 |
| I y, z [m <sup>4</sup> ]                   | 4,7000e-08  | 1,2000e-08 |
| I YLCS, ZLCS [m <sup>4</sup> ]             | 2,9000e-08  | 2,9000e-08 |
| I w [m <sup>6</sup> ], t [m <sup>4</sup> ] | 0,0000e+00  | 1,6000e-09 |
| Wel y, z [m <sup>3</sup> ]                 | 1,8990e-06  | 8,3878e-07 |
| Wpl y, z [m <sup>3</sup> ]                 | 3,0494e-06  | 1,5773e-06 |
| d y, z [mm]                                | -12         | 0          |
| c YLCS, ZLCS [mm]                          | 10          | 10         |
| alpha [deg]                                | 45,00       |            |
| IYZLCS [m <sup>4</sup> ]                   | -1,7700e-08 |            |
| AL [m <sup>2</sup> /m]                     | 1,3784e-01  |            |

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|                    |  |   |
|--------------------|--|---|
| Name               | CS34   |   |
| Type               | ISEA35/35/5                                    |   |
| Source description | Indian Standard / IS 808 : 1989 / 3rd Revision |   |
| Item material      | S 235  |   |
| Fabrication        | rolled   |   |
| Buckling y-y, z-z  | b  | b |



|  |             |            |
|--|-------------|------------|
| A [m <sup>2</sup> ]                        | 3,2700e-04  |            |
| A y, z [m <sup>2</sup> ]                   | 1,3709e-04  | 1,3646e-04 |
| I y, z [m <sup>4</sup> ]                   | 5,6000e-08  | 1,5000e-08 |
| I YLCS, ZLCS [m <sup>4</sup> ]             | 3,5000e-08  | 3,5000e-08 |
| I w [m <sup>6</sup> ], t [m <sup>4</sup> ] | 0,0000e+00  | 2,9900e-09 |
| Wel y, z [m <sup>3</sup> ]                 | 2,2627e-06  | 1,0098e-06 |
| Wpl y, z [m <sup>3</sup> ]                 | 3,7077e-06  | 1,9179e-06 |
| d y, z [mm]                                | -11         | 0          |
| c YLCS, ZLCS [mm]                          | 11          | 11         |
| alpha [deg]                                | 45,00       |            |
| IYZLCS [m <sup>4</sup> ]                   | -2,1097e-08 |            |
| AL [m <sup>2</sup> /m]                     | 1,3784e-01  |            |

\*Student version\* \*Student version\* \*Student version\* \*Student version\* \*Student version\* \*Student version\* \*Student version\* \*Student version\* \*S

|                    |  |   |
|--------------------|--|---|
| Name               | CS115  |   |
| Type               | CFRHS50X50X4   |   |
| Source description | Rautaruukki Oyj / Structural Hollow Sections EN10219 / Ed.2007 |   |
| Item material      | S 235  |   |
| Fabrication        | cold formed  |   |
| Buckling y-y, z-z  | c  | c |

|   |            |            |
|---|------------|------------|
| A [m <sup>2</sup> ]                                   | 6,9500e-04 |            |
| A <sub>y, z</sub> [m <sup>2</sup> ]                   | 3,4750e-04 | 3,4750e-04 |
| I <sub>y, z</sub> [m <sup>4</sup> ]                   | 2,3740e-07 | 2,3740e-07 |
| I <sub>w</sub> [m <sup>6</sup> ], t [m <sup>4</sup> ] | 1,0417e-10 | 4,0420e-07 |
| W <sub>el y, z</sub> [m <sup>3</sup> ]                | 9,4900e-06 | 9,4900e-06 |
| W <sub>pl y, z</sub> [m <sup>3</sup> ]                | 1,1730e-05 | 1,1730e-05 |
| d <sub>y, z</sub> [mm]                                | 0          | 0          |
| c <sub>YLCS, ZLCS</sub> [mm]                          | 25         | 25         |
| alpha [deg]   | 0,00       |            |
| AL [m <sup>2</sup> /m]                                | 1.8620e-01 |            |

|                    |  |
|--------------------|--|
| Name               | CS116  |
| Type               | CFRHS60X60X5   |
| Source description | Rautaruukki Oyj / Structural Hollow Sections EN10219 / Ed.2007 |
| Item material      | S 235  |
| Fabrication        | cold formed  |
| Buckling y-y, z-z  | c c  |

|  |            |            |
|--|------------|------------|
| A [m <sup>2</sup> ]                        | 1,0360e-03 |            |
| A y, z [m <sup>2</sup> ]                   | 5,1800e-04 | 5,1800e-04 |
| I y, z [m <sup>4</sup> ]                   | 5,0490e-07 | 5,0490e-07 |
| I w [m <sup>6</sup> ], t [m <sup>4</sup> ] | 3,2400e-10 | 8,6420e-07 |
| Wel y, z [m <sup>3</sup> ]                 | 1,6830e-05 | 1,6830e-05 |
| Wpl y, z [m <sup>3</sup> ]                 | 2,0880e-05 | 2,0880e-05 |
| d y, z [mm]                                | 0          | 0          |
| c YLCS, ZLCS [mm]                          | 30         | 30         |
| alpha [deg]                                | 0,00       |            |
| AL [m <sup>2</sup> /m]                     | 2,2275e-01 |            |

#### 44. Bill of material

| Name              | Mass<br>[kg]      | Surface<br>[m <sup>2</sup> ] | Volume<br>[m <sup>3</sup> ] |
|-------------------|-------------------|------------------------------|-----------------------------|
| *Student version* | *Student version* | *Student version*            | *Student version*           |
| Total results :   | 4909.1            | 166.449                      | 6.2536e-01                  |

| CSS                 | Material | Unit mass<br>[kg/m] | Length<br>[m] | Mass<br>[kg] | Surface<br>[m²] |  |
|---------------------|----------|---------------------|---------------|--------------|-----------------|--|
| CS7 - HFLeq80x80x10 | S 235    | 11,9                | 40,039        | 474,9        | 12,467          |  |
| CS11 - HFLeq75x75x7 | S 235    | 7,9                 | 76,335        | 606,4        | 22,242          |  |
| CS32 - HFLeq60x60x5 | S 235    | 4,6                 | 23,960        | 109,4        | 5,585           |  |
| CS34 - ISEA35/35/5  | S 235    | 2,6                 | 25,102        | 64,4         | 3,460           |  |
| CS39 - HFLeq70x70x7 | S 235    | 7,4                 | 76,849        | 566,9        | 20,921          |  |
| CS46 - HFLeq60x60x8 | S 235    | 7,1                 | 62,925        | 446,0        | 14,668          |  |
| CS83 - HFLeq80x80x8 | S 235    | 9,6                 | 34,627        | 333,5        | 10,782          |  |
| CS88 - HFLeq45x45x5 | S 235    | 3,4                 | 11,884        | 40,1         | 2,067           |  |

| CSS  | Material | Unit mass<br>[kg/m] | Length<br>[m] | Mass<br>[kg] | Surface<br>[m <sup>2</sup> ] |
|--|----------|---------------------|---------------|--------------|------------------------------|
| <i>*Student version* *Student version* *Student version* *Student version* *Student version* *Student version* *Student version* *Student version* *Student version* *Student version* *Student version* *Student version* *Student version* *Student version*</i> |          |                     |               |              |                              |
| CS90 - HFLeq45x45x4  | S 235    | 2,7                 | 11,895        | 32,6         | 2,069                        |
| CS94 - ISEA35/35/4   | S 235    | 2,1                 | 43,725        | 91,3         | 6,027                        |
| CS101 - HFLeq75x75x8   | S 235    | 9,0                 | 80,078        | 721,0        | 23,333                       |
| CS102 - HFLeq90x90x7   | S 235    | 9,6                 | 22,920        | 220,2        | 8,034                        |
| CS111 - HFLeq100x100x10  | S 235    | 15,0                | 40,039        | 601,9        | 15,601                       |
| CS113 - HFLeq80x80x8   | S 235    | 9,6                 | 11,386        | 109,7        | 3,545                        |
| CS115 - CFRHS50X50X4   | S 235    | 5,5                 | 60,075        | 327,8        | 11,186                       |
| CS116 - CFRHS60X60X5   | S 235    | 8,1                 | 20,025        | 162,9        | 4,461                        |