



moment of inertia gross without shear lag: 131997495506.10445

area gross: 202467.81087033657

Buckling Proof according to EC 1993 Part 1-5

3.2 Effective width for elastic shear lag

Shear lag reduction for flange 1

Shear Lag is not neglectable

alpha\_0: 1.7

Beta: 0.31395004434548573

Shear lag reduction for flange 3

Shear Lag is not neglectable

alpha\_0: 1.3

Beta: 0.44121107679637916

## 4.4 Plate elements without longitudinal stiffeners

Iteratively changing the widths until  $M_{Rd\_el\_eff}$  converges to a limit of 0.02

moment of inertia gross with shear lag: 60364468595.56615

moment of inertia eff without shear lag: 114100942203.74236

moment of inertia eff with shear lag: 54037465137.15008

area red: 191555.9088395257

## 4.5 Stiffened plate elements with longitudinal stiffeners

Side 2

### 4.5.2 Plate type behaviour

$\sigma_{cr} = 1810.3890028376563$

Lambda: 0.35702454508416614

Rho\_Global: 1.0

### 4.5.3 Column type buckling behaviour

Column number 9

$A_{sl}=13548.45$ ,  $A_{sl\_eff}=13190.5$ ,  $I_{sl}=27291618.43$

$\sigma_{cr\_c}=665.72$

e1=72.7, e2=59.95

All tension =False

Buckling Values 9

beta\_A\_c =0.9735800820732999

lambda\_c\_bar =0.5862351201416552

Phi\_c =0.7482247121240821

Chi\_c =0.8242908170231383

Critical buckling values

Chi\_c: 0.8242908170231383

sigma\_cr\_c: 665.7265499312396

## 4.5.4 Interaction between plate and column buckling

all\_tension: False

rho\_c = 1.0

Side 3

## 4.5.2 Plate type behaviour

sigma\_cr = 542.2082765863094

Lambda: 0.5953816696784265

Rho\_Global: 1.0

## 4.5.3 Column type buckling behaviour

Column number 10

A\_sl=16998.1, A\_sl\_eff=13902.39, I\_sl=27320365.52

sigma\_cr\_c=208.2

e1=84.87, e2=47.78

All tension =False

## Buckling Values 10

$\beta_{A_c} = 0.8178792681216397$

$\lambda_{c\_bar} = 0.960806674379394$

$\Phi_c = 1.10708338313521$

$\chi_c = 0.6034751810906328$

## Column number 11

$A_{sl} = 16998.1$ ,  $A_{sl\_eff} = 13902.39$ ,  $I_{sl} = 27320365.52$

$\sigma_{cr\_c} = 208.2$

$e_1 = 84.87$ ,  $e_2 = 47.78$

All tension = False

## Buckling Values 11

$\beta_{A_c} = 0.8178792681216398$

$\lambda_{c\_bar} = 0.960806674379394$

$\Phi_c = 1.10708338313521$

$\chi_c = 0.6034751810906328$

## Critical buckling values

$\chi_c$ : 0.6034751810906328

$\sigma_{cr\_c}$ : 208.20206822935626

## 4.5.4 Interaction between plate and column buckling

all\_tension: False

$\rho_c = 1.0$

Side 4
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## 4.5.2 Plate type behaviour

$\sigma_{cr} = 1810.3890028376563$

Lambda: 0.35702454508416614

Rho\_Global: 1.0

## 4.5.3 Column type buckling behaviour

Column number 12

A\_sl=13548.45, A\_sl\_eff=13190.5, I\_sl=27291618.43

sigma\_cr\_c=665.72

e1=72.7, e2=59.95

All tension =False

Buckling Values 12

beta\_A\_c =0.9735800820732999

lambda\_c\_bar =0.5862351201416554

Phi\_c =0.7482247121240823

Chi\_c =0.8242908170231382

Critical buckling values

Chi\_c: 0.8242908170231382

sigma\_cr\_c: 665.7265499312393

## 4.5.4 Interaction between plate and column buckling

all\_tension: False

rho\_c = 1.0

Resistance to shear and interaction shear force and bending moment for side 1

azero: 7000000.0

tau\_int\_t\_flange: -142857.15

tau\_int\_qy\_flange: 527766.69

tau\_int\_flange: 670623.83

## 5. Resistance to shear

lambda\_w\_bar\_loc of the trapezoid line nr. 1: 0.19

lambda\_w\_bar\_loc of the trapezoid line nr. 2: 0.19

lambda\_w\_bar\_loc of the trapezoid line nr. 3: 0.19

lambda\_w\_bar\_loc of the trapezoid line nr. 4: 0.19

lambda\_w\_bar\_loc of the trapezoid line nr. 5: 0.19

lambda\_w\_bar\_loc of the trapezoid line nr. 6: 0.19

lambda\_w\_bar\_loc of the trapezoid line nr. 7: 0.19

lambda\_w\_bar\_loc of the trapezoid line nr. 8: 0.19

lambda\_w\_bar\_loc of the trapezoid line nr. 9: 0.19

lambda\_w\_bar\_loc of the trapezoid line nr. 10: 0.19

lambda\_w\_bar\_loc of the trapezoid line nr. 11: 0.19

lambda\_w\_bar\_loc of the trapezoid line nr. 12: 0.19

lambda\_w\_bar\_loc of the trapezoid line nr. 13: 0.19

lambda\_w\_bar\_loc of the trapezoid line nr. 14: 0.19

lambda\_w\_bar\_loc of the trapezoid line nr. 15: 0.19

lambda\_w\_bar\_loc of the trapezoid line nr. 16: 0.19

lambda\_w\_bar\_loc of the trapezoid line nr. 17: 0.19

stiffened plate; EBPlate

k\_tau: 1570.9499665031585

V\_Ed\_plate: 670623.83

V\_Rd: 7236123.37

eta\_3: 0.0926772250296691

## 7.1 Interaction between shear force, bending moment and axial force

Flange -> (7.1), comment (5)

$\eta_3 \leq 0.5$ ; no interaction needed

utilisation: -1

Proofing Resistance to shear for each subpanel

azero: 7000000.0

### 5. Resistance to shear

$\lambda_{w\_bar\_loc}$  of the trapezoid line nr. 1: 0.19

unstiffened plate; (A.5)

$k_{\tau}$ : 5.353840830449827

$V_{Ed\_plate}$ : 76718.07

$V_{Rd}$ : 425654.31

$\eta_3$ : 0.18023564303915987

$\eta_3\_panel < 1$ : pass subpanel

azero: 7000000.0

### 5. Resistance to shear

$\lambda_{w\_bar\_loc}$  of the trapezoid line nr. 2: 0.19

unstiffened plate; (A.5)

$k_{\tau}$ : 5.353840830449827

$V_{Ed\_plate}$ : 68178.73

$V_{Rd}$ : 425654.31

$\eta_3$ : 0.16017396521564153

$\eta_3\_panel < 1$ : pass subpanel

azero: 7000000.0

## 5. Resistance to shear

lambda\_w\_bar\_loc of the trapezoid line nr. 3: 0.19

unstiffened plate; (A.5)

k\_tau: 5.353840830449827

V\_Ed\_plate: 59639.39

V\_Rd: 425654.31

eta\_3: 0.14011228739212317

eta\_3\_panel < 1: pass subpanel

azero: 7000000.0

## 5. Resistance to shear

lambda\_w\_bar\_loc of the trapezoid line nr. 4: 0.19

unstiffened plate; (A.5)

k\_tau: 5.353840830449827

V\_Ed\_plate: 51100.06

V\_Rd: 425654.31

eta\_3: 0.12005060956860485

eta\_3\_panel < 1: pass subpanel

azero: 7000000.0

## 5. Resistance to shear

lambda\_w\_bar\_loc of the trapezoid line nr. 5: 0.19

unstiffened plate; (A.5)

k\_tau: 5.353840830449827

V\_Ed\_plate: 42560.72

V\_Rd: 425654.31



eta\_3: 0.09998893174508648

eta\_3\_panel < 1: pass subpanel

azero: 7000000.0

## 5. Resistance to shear

lambda\_w\_bar\_loc of the trapezoid line nr. 6: 0.19

unstiffened plate; (A.5)

k\_tau: 5.353840830449827

V\_Ed\_plate: 34021.38

V\_Rd: 425654.31

eta\_3: 0.07992725392156813

eta\_3\_panel < 1: pass subpanel

azero: 7000000.0

## 5. Resistance to shear

lambda\_w\_bar\_loc of the trapezoid line nr. 7: 0.19

unstiffened plate; (A.5)

k\_tau: 5.353840830449827

V\_Ed\_plate: 25482.04

V\_Rd: 425654.31

eta\_3: 0.059865576098049766

eta\_3\_panel < 1: pass subpanel

azero: 7000000.0

## 5. Resistance to shear

lambda\_w\_bar\_loc of the trapezoid line nr. 8: 0.19

unstiffened plate; (A.5)

k\_tau: 5.353840830449827

V\_Ed\_plate: 16942.7

V\_Rd: 425654.31

eta\_3: 0.0398038982745314

eta\_3\_panel < 1: pass subpanel

azero: 7000000.0

## 5. Resistance to shear

lambda\_w\_bar\_loc of the trapezoid line nr. 9: 0.19

unstiffened plate; (A.5)

k\_tau: 5.353840830449827

V\_Ed\_plate: 8403.36

V\_Rd: 425654.31

eta\_3: 0.019742220451013055

eta\_3\_panel < 1: pass subpanel

azero: 7000000.0

## 5. Resistance to shear

lambda\_w\_bar\_loc of the trapezoid line nr. 10: 0.19

unstiffened plate; (A.5)

k\_tau: 5.353840830449827

V\_Ed\_plate: 16942.7

V\_Rd: 425654.31

eta\_3: 0.03980389827453138

eta\_3\_panel < 1: pass subpanel

azero: 7000000.0

## 5. Resistance to shear

$\lambda_{w\_bar\_loc}$  of the trapezoid line nr. 11: 0.19

unstiffened plate; (A.5)

$k_{\tau}$ : 5.353840830449827

$V_{Ed\_plate}$ : 25482.04

$V_{Rd}$ : 425654.31

$\eta_3$ : 0.05986557609804973

$\eta_3\_panel < 1$ : pass subpanel

azero: 7000000.0

## 5. Resistance to shear

$\lambda_{w\_bar\_loc}$  of the trapezoid line nr. 12: 0.19

unstiffened plate; (A.5)

$k_{\tau}$ : 5.353840830449827

$V_{Ed\_plate}$ : 34021.38

$V_{Rd}$ : 425654.31

$\eta_3$ : 0.07992725392156808

$\eta_3\_panel < 1$ : pass subpanel

azero: 7000000.0

## 5. Resistance to shear

$\lambda_{w\_bar\_loc}$  of the trapezoid line nr. 13: 0.19

unstiffened plate; (A.5)

$k_{\tau}$ : 5.353840830449827

$V_{Ed\_plate}$ : 42560.72

$V_{Rd}$ : 425654.31

eta\_3: 0.09998893174508645

eta\_3\_panel < 1: pass subpanel

azero: 7000000.0

## 5. Resistance to shear

lambda\_w\_bar\_loc of the trapezoid line nr. 14: 0.19

unstiffened plate; (A.5)

k\_tau: 5.353840830449827

V\_Ed\_plate: 51100.06

V\_Rd: 425654.31

eta\_3: 0.12005060956860485

eta\_3\_panel < 1: pass subpanel

azero: 7000000.0

## 5. Resistance to shear

lambda\_w\_bar\_loc of the trapezoid line nr. 15: 0.19

unstiffened plate; (A.5)

k\_tau: 5.353840830449827

V\_Ed\_plate: 59639.39

V\_Rd: 425654.31

eta\_3: 0.14011228739212322

eta\_3\_panel < 1: pass subpanel

azero: 7000000.0

## 5. Resistance to shear

lambda\_w\_bar\_loc of the trapezoid line nr. 16: 0.19

unstiffened plate; (A.5)

k\_tau: 5.353840830449827

V\_Ed\_plate: 68178.73

V\_Rd: 425654.31

eta\_3: 0.16017396521564153

eta\_3\_panel < 1: pass subpanel

azero: 7000000.0

## 5. Resistance to shear

lambda\_w\_bar\_loc of the trapezoid line nr. 17: 0.19

unstiffened plate; (A.5)

k\_tau: 5.353840830449827

V\_Ed\_plate: 76718.07

V\_Rd: 425654.31

eta\_3: 0.18023564303915993

eta\_3\_panel < 1: pass subpanel

Resistance to shear and interaction shear force and bending moment for side 2

azero: 7000000.0

## 5. Resistance to shear

lambda\_w\_bar\_loc of the trapezoid line nr. 18: 1.33

lambda\_w\_bar\_loc of the trapezoid line nr. 19: 0.34

lambda\_w\_bar\_loc of the trapezoid line nr. 20: 0.65

stiffened plate; EBPlate

k\_tau: 21.01369360902256

(5.3) lambda\_w\_bar\_1= 1.2

(5.6)  $\lambda_{w\_bar\_2} = 1.2$

(5.7)  $\lambda_{w\_bar\_3} = 1.33$  max single plate slenderness

chosen  $\lambda_{w\_bar} = 1.33$

$V_{Ed\_plate}$ : 957149.52

$V_{Rd}$ : 1658141.64

$\eta_3$ : 0.5772423151566441

## 7.1 Interaction between shear force, bending moment and axial force

Web -> (7.1) without iterating

$\eta_3 > 0.5$ ; interaction needed

$m_{f\_rd}$ : 6443684880.08

$m_{pl\_rd}$ : 13283354375.39

$\eta_1$ : 0.6

utilisation: 0.6145459880467096

Resistance to shear and interaction shear force and bending moment for side 3
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$a_{zero}$ : 7000000.0
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$\tau_{int\_t\_flange}$ : -107142.86
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$\tau_{int\_qy\_flange}$ : 359816.53
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$\tau_{int\_flange}$ : 466959.39
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## 5. Resistance to shear

$\lambda_{w\_bar\_loc}$  of the trapezoid line nr. 21: 0.93

$\lambda_{w\_bar\_loc}$  of the trapezoid line nr. 22: 0.34

$\lambda_{w\_bar\_loc}$  of the trapezoid line nr. 23: 0.85

$\lambda_{w\_bar\_loc}$  of the trapezoid line nr. 24: 0.34

$\lambda_{w\_bar\_loc}$  of the trapezoid line nr. 25: 0.93

stiffened plate; EBPlate

$k_{\tau}$ : 94.91023449900364

$V_{Ed\_plate}$ : 466959.39

$V_{Rd}$ : 3876494.66

$\eta_3$ : 0.12045918702302343

7.1 Interaction between shear force, bending moment and axial force

Flange -> (7.1), comment (5)

$\eta_3 \leq 0.5$ ; no interaction needed

utilisation: -1

Proofing Resistance to shear for each subpanel

azero: 7000000.0

5. Resistance to shear

$\lambda_{w\_bar\_loc}$  of the trapezoid line nr. 21: 0.93

unstiffened plate; (A.5)

$k_{\tau}$ : 5.51015625

(5.3)  $\lambda_{w\_bar\_1} = 0.93$

(5.6)  $\lambda_{w\_bar\_2} = 0.93$

(5.7)  $\lambda_{w\_bar\_3} = 0.93$  max single plate slenderness

chosen  $\lambda_{w\_bar} = 0.93$

$V_{Ed\_plate}$ : 202498.84

$V_{Rd}$ : 941563.44

$\eta_3$ : 0.21506659845051138

$\eta_{3\_panel} < 1$ : pass subpanel

azero: 7000000.0

## 5. Resistance to shear

lambda\_w\_bar\_loc of the trapezoid line nr. 22: 0.34

unstiffened plate; (A.5)

k\_tau: 5.3625

V\_Ed\_plate: 41090.25

V\_Rd: 387649.46

eta\_3: 0.10599849175720635

eta\_3\_panel < 1: pass subpanel

azero: 7000000.0

## 5. Resistance to shear

lambda\_w\_bar\_loc of the trapezoid line nr. 23: 0.85

unstiffened plate; (A.5)

k\_tau: 5.480625

(5.3) lambda\_w\_bar\_1= 0.85

(5.6) lambda\_w\_bar\_2= 0.85

(5.7) lambda\_w\_bar\_3= 0.85 max single plate slenderness

chosen lambda\_w\_bar= 0.85

V\_Ed\_plate: 53907.11

V\_Rd: 939036.93

eta\_3: 0.05740681421411562

eta\_3\_panel < 1: pass subpanel

azero: 7000000.0

## 5. Resistance to shear



lambda\_w\_bar\_loc of the trapezoid line nr. 24: 0.34

unstiffened plate; (A.5)

k\_tau: 5.3625

V\_Ed\_plate: 41090.25

V\_Rd: 387649.46

eta\_3: 0.10599849175720635

eta\_3\_panel < 1: pass subpanel

azero: 7000000.0

## 5. Resistance to shear

lambda\_w\_bar\_loc of the trapezoid line nr. 25: 0.93

unstiffened plate; (A.5)

k\_tau: 5.51015625

(5.3) lambda\_w\_bar\_1= 0.93

(5.6) lambda\_w\_bar\_2= 0.93

(5.7) lambda\_w\_bar\_3= 0.93 max single plate slenderness

chosen lambda\_w\_bar= 0.93

V\_Ed\_plate: 202498.84

V\_Rd: 941563.44

eta\_3: 0.21506659845051138

eta\_3\_panel < 1: pass subpanel

Resistance to shear and interaction shear force and bending moment for side 4

azero: 7000000.0

## 5. Resistance to shear

$\lambda_{w\_bar\_loc}$  of the trapezoid line nr. 26: 0.65

$\lambda_{w\_bar\_loc}$  of the trapezoid line nr. 27: 0.34

$\lambda_{w\_bar\_loc}$  of the trapezoid line nr. 28: 1.33

stiffened plate; EBPlate

$k_{\tau}$ : 21.01353383458647

(5.3)  $\lambda_{w\_bar\_1} = 1.2$

(5.6)  $\lambda_{w\_bar\_2} = 1.2$

(5.7)  $\lambda_{w\_bar\_3} = 1.33$  max single plate slenderness

chosen  $\lambda_{w\_bar} = 1.33$

$V_{Ed\_plate}$ : 1104403.29

$V_{Rd}$ : 1658141.64

$\eta_3$ : 0.6660488251807434

7.1 Interaction between shear force, bending moment and axial force

Web -> (7.1) without iterating

$\eta_3 > 0.5$ ; interaction needed

$m_{f\_rd}$ : 6443684880.08

$m_{pl\_rd}$ : 13283354375.39

$\eta_1$ : 0.6

utilisation: 0.6590458276836744

cross-section with  $b_{sup}=4000$ ,  $b_{inf}=3000$ ,  $h=2000$

trapezoid plate on side 1 with the number 1

$a=(2000, 0)$   $p_1=(1882, 0)$   $p_2=(1882, 0)$   $b=(1764, 0)$   $t=14.0$   $length\_tot=235$

$\sigma_{a\_red}=-125.65$   $\sigma_{b\_red}=-125.65$

trapezoid plate on side 1 with the number 2

a=(1764, 0) p1=(1647, 0) p2=(1647, 0) b=(1529, 0)t=14.0length\_tot=235

sigma\_a\_red=-125.65 sigma\_b\_red=-125.65

trapezoid plate on side 1 with the number 3

a=(1529, 0) p1=(1411, 0) p2=(1411, 0) b=(1294, 0)t=14.0length\_tot=235

sigma\_a\_red=-125.65 sigma\_b\_red=-125.65

trapezoid plate on side 1 with the number 4

a=(1294, 0) p1=(1176, 0) p2=(1176, 0) b=(1058, 0)t=14.0length\_tot=235

sigma\_a\_red=-125.65 sigma\_b\_red=-125.65

trapezoid plate on side 1 with the number 5

a=(1058, 0) p1=(941, 0) p2=(941, 0) b=(823, 0)t=14.0length\_tot=235

sigma\_a\_red=-125.65 sigma\_b\_red=-125.65

trapezoid plate on side 1 with the number 6

a=(823, 0) p1=(705, 0) p2=(705, 0) b=(588, 0)t=14.0length\_tot=235

sigma\_a\_red=-125.65 sigma\_b\_red=-125.65

trapezoid plate on side 1 with the number 7

a=(588, 0) p1=(470, 0) p2=(470, 0) b=(352, 0)t=14.0length\_tot=235

sigma\_a\_red=-125.65 sigma\_b\_red=-125.65

trapezoid plate on side 1 with the number 8

a=(352, 0) p1=(235, 0) p2=(235, 0) b=(117, 0)t=14.0length\_tot=235

sigma\_a\_red=-125.65 sigma\_b\_red=-125.65

trapezoid plate on side 1 with the number 9

a=(117, 0) p1=(0, 0) p2=(0, 0) b=(-117, 0)t=14.0length\_tot=235

sigma\_a\_red=-125.65 sigma\_b\_red=-125.65

trapezoid plate on side 1 with the number 10

$a=(-117, 0)$   $p1=(-235, 0)$   $p2=(-235, 0)$   $b=(-352, 0)$   $t=14.0$   $length\_tot=235$

$\sigma_a\_red=-125.65$   $\sigma_b\_red=-125.65$

trapezoid plate on side 1 with the number 11

$a=(-352, 0)$   $p1=(-470, 0)$   $p2=(-470, 0)$   $b=(-588, 0)$   $t=14.0$   $length\_tot=235$

$\sigma_a\_red=-125.65$   $\sigma_b\_red=-125.65$

trapezoid plate on side 1 with the number 12

$a=(-588, 0)$   $p1=(-705, 0)$   $p2=(-705, 0)$   $b=(-823, 0)$   $t=14.0$   $length\_tot=235$

$\sigma_a\_red=-125.65$   $\sigma_b\_red=-125.65$

trapezoid plate on side 1 with the number 13

$a=(-823, 0)$   $p1=(-941, 0)$   $p2=(-941, 0)$   $b=(-1058, 0)$   $t=14.0$   $length\_tot=235$

$\sigma_a\_red=-125.65$   $\sigma_b\_red=-125.65$

trapezoid plate on side 1 with the number 14

$a=(-1058, 0)$   $p1=(-1176, 0)$   $p2=(-1176, 0)$   $b=(-1294, 0)$   $t=14.0$   $length\_tot=235$

$\sigma_a\_red=-125.65$   $\sigma_b\_red=-125.65$

trapezoid plate on side 1 with the number 15

$a=(-1294, 0)$   $p1=(-1411, 0)$   $p2=(-1411, 0)$   $b=(-1529, 0)$   $t=14.0$   $length\_tot=235$

$\sigma_a\_red=-125.65$   $\sigma_b\_red=-125.65$

trapezoid plate on side 1 with the number 16

$a=(-1529, 0)$   $p1=(-1647, 0)$   $p2=(-1647, 0)$   $b=(-1764, 0)$   $t=14.0$   $length\_tot=235$

$\sigma_a\_red=-125.65$   $\sigma_b\_red=-125.65$

trapezoid plate on side 1 with the number 17

$a=(-1764, 0)$   $p1=(-1882, 0)$   $p2=(-1882, 0)$   $b=(-2000, 0)$   $t=14.0$   $length\_tot=235$

$\sigma_a\_red=-125.65$   $\sigma_b\_red=-125.65$

trapezoid plate on side 2 with the number 18

$a=(-2000, 0)$   $p1=(-1741, 1032)$   $p2=(-1741, 1032)$   $b=(-1711, 1154)$   $t=10.0$   $length\_tot=1190$

$\sigma_a\_red=-125.65$   $\sigma_b\_red=45.26$

trapezoid plate on side 2 with the number 19

$a=(-1711, 1154)$   $p1=(-1671, 1315)$   $p2=(-1671, 1315)$   $b=(-1638, 1445)$   $t=10.0$   $length\_tot=300$

$\sigma_a\_red=45.26$   $\sigma_b\_red=88.34$

trapezoid plate on side 2 with the number 20

$a=(-1638, 1445)$   $p1=(-1570, 1717)$   $p2=(-1554, 1780)$   $b=(-1500, 2000)$   $t=10.0$   $length\_tot=571$

$\sigma_a\_red=88.34$   $\sigma_b\_red=170.43$

trapezoid plate on side 3 with the number 21

$a=(-1500, 2000)$   $p1=(-1258, 2000)$   $p2=(-916, 2000)$   $b=(-675, 2000)$   $t=10.0$   $length\_tot=825$

$\sigma_a\_red=170.43$   $\sigma_b\_red=170.43$

trapezoid plate on side 3 with the number 22

$a=(-675, 2000)$   $p1=(-525, 2000)$   $p2=(-525, 2000)$   $b=(-375, 2000)$   $t=10.0$   $length\_tot=300$

$\sigma_a\_red=170.43$   $\sigma_b\_red=170.43$

trapezoid plate on side 3 with the number 23

$a=(-375, 2000)$   $p1=(-138, 2000)$   $p2=(138, 2000)$   $b=(375, 2000)$   $t=10.0$   $length\_tot=750$

$\sigma_a\_red=170.43$   $\sigma_b\_red=170.43$

trapezoid plate on side 3 with the number 24

$a=(375, 2000)$   $p1=(525, 2000)$   $p2=(525, 2000)$   $b=(675, 2000)$   $t=10.0$   $length\_tot=300$

$\sigma_a\_red=170.43$   $\sigma_b\_red=170.43$

trapezoid plate on side 3 with the number 25

$a=(675, 2000)$   $p1=(916, 2000)$   $p2=(1258, 2000)$   $b=(1500, 2000)$   $t=10.0$   $length\_tot=825$

$\sigma_a\_red=170.43$   $\sigma_b\_red=170.43$

trapezoid plate on side 4 with the number 26

a=(1500, 2000) p1=(1554, 1780) p2=(1570, 1717) b=(1638, 1445)t=10.0length\_tot=571

sigma\_a\_red=170.43 sigma\_b\_red=88.34

trapezoid plate on side 4 with the number 27

a=(1638, 1445) p1=(1671, 1315) p2=(1671, 1315) b=(1711, 1154)t=10.0length\_tot=300

sigma\_a\_red=88.34 sigma\_b\_red=45.26

trapezoid plate on side 4 with the number 28

a=(1711, 1154) p1=(1741, 1032) p2=(1741, 1032) b=(2000, 0)t=10.0length\_tot=1190

sigma\_a\_red=45.26 sigma\_b\_red=-125.65

stiffener plate on side 1 of stiffener nr 1 on stiffener plate position 2

a=(1529, 0) p1=(1564, 130) p2=(1564, 130) b=(1599, 260)t=10.0length\_tot=269

sigma\_a\_red=-125.65 sigma\_b\_red=-87.16

stiffener plate on side 1 of stiffener nr 1 on stiffener plate position 3

a=(1599, 260) p1=(1647, 260) p2=(1647, 260) b=(1695, 260)t=10.0length\_tot=95

sigma\_a\_red=-87.16 sigma\_b\_red=-87.16

stiffener plate on side 1 of stiffener nr 1 on stiffener plate position 4

a=(1695, 260) p1=(1729, 130) p2=(1729, 130) b=(1764, 0)t=10.0length\_tot=269

sigma\_a\_red=-87.16 sigma\_b\_red=-125.65

stiffener plate on side 1 of stiffener nr 2 on stiffener plate position 2

a=(1058, 0) p1=(1093, 130) p2=(1093, 130) b=(1128, 260)t=10.0length\_tot=269

sigma\_a\_red=-125.65 sigma\_b\_red=-87.16

stiffener plate on side 1 of stiffener nr 2 on stiffener plate position 3

a=(1128, 260) p1=(1176, 260) p2=(1176, 260) b=(1224, 260)t=10.0length\_tot=95

sigma\_a\_red=-87.16 sigma\_b\_red=-87.16

stiffener plate on side 1 of stiffener nr 2 on stiffener plate position 4

a=(1224, 260) p1=(1259, 130) p2=(1259, 130) b=(1294, 0)t=10.0length\_tot=269

sigma\_a\_red=-87.16 sigma\_b\_red=-125.65

stiffener plate on side 1 of stiffener nr 3 on stiffener plate position 2

a=(588, 0) p1=(623, 130) p2=(623, 130) b=(657, 260)t=10.0length\_tot=269

sigma\_a\_red=-125.65 sigma\_b\_red=-87.16

stiffener plate on side 1 of stiffener nr 3 on stiffener plate position 3

a=(657, 260) p1=(705, 260) p2=(705, 260) b=(753, 260)t=10.0length\_tot=95

sigma\_a\_red=-87.16 sigma\_b\_red=-87.16

stiffener plate on side 1 of stiffener nr 3 on stiffener plate position 4

a=(753, 260) p1=(788, 130) p2=(788, 130) b=(823, 0)t=10.0length\_tot=269

sigma\_a\_red=-87.16 sigma\_b\_red=-125.65

stiffener plate on side 1 of stiffener nr 4 on stiffener plate position 2

a=(117, 0) p1=(152, 130) p2=(152, 130) b=(187, 260)t=10.0length\_tot=269

sigma\_a\_red=-125.65 sigma\_b\_red=-87.16

stiffener plate on side 1 of stiffener nr 4 on stiffener plate position 3

a=(187, 260) p1=(235, 260) p2=(235, 260) b=(283, 260)t=10.0length\_tot=95

sigma\_a\_red=-87.16 sigma\_b\_red=-87.16

stiffener plate on side 1 of stiffener nr 4 on stiffener plate position 4

a=(283, 260) p1=(318, 130) p2=(318, 130) b=(352, 0)t=10.0length\_tot=269

sigma\_a\_red=-87.16 sigma\_b\_red=-125.65

stiffener plate on side 1 of stiffener nr 5 on stiffener plate position 2

a=(-352, 0) p1=(-318, 130) p2=(-318, 130) b=(-283, 260)t=10.0length\_tot=269

sigma\_a\_red=-125.65 sigma\_b\_red=-87.16

stiffener plate on side 1 of stiffener nr 5 on stiffener plate position 3

$a=(-283, 260)$   $p1=(-235, 260)$   $p2=(-235, 260)$   $b=(-187, 260)$   $t=10.0$   $length\_tot=95$

$\sigma_{a\_red}=-87.16$   $\sigma_{b\_red}=-87.16$

stiffener plate on side 1 of stiffener nr 5 on stiffener plate position 4

$a=(-187, 260)$   $p1=(-152, 130)$   $p2=(-152, 130)$   $b=(-117, 0)$   $t=10.0$   $length\_tot=269$

$\sigma_{a\_red}=-87.16$   $\sigma_{b\_red}=-125.65$

stiffener plate on side 1 of stiffener nr 6 on stiffener plate position 2

$a=(-823, 0)$   $p1=(-788, 130)$   $p2=(-788, 130)$   $b=(-753, 260)$   $t=10.0$   $length\_tot=269$

$\sigma_{a\_red}=-125.65$   $\sigma_{b\_red}=-87.16$

stiffener plate on side 1 of stiffener nr 6 on stiffener plate position 3

$a=(-753, 260)$   $p1=(-705, 260)$   $p2=(-705, 260)$   $b=(-657, 260)$   $t=10.0$   $length\_tot=95$

$\sigma_{a\_red}=-87.16$   $\sigma_{b\_red}=-87.16$

stiffener plate on side 1 of stiffener nr 6 on stiffener plate position 4

$a=(-657, 260)$   $p1=(-623, 130)$   $p2=(-623, 130)$   $b=(-588, 0)$   $t=10.0$   $length\_tot=269$

$\sigma_{a\_red}=-87.16$   $\sigma_{b\_red}=-125.65$

stiffener plate on side 1 of stiffener nr 7 on stiffener plate position 2

$a=(-1294, 0)$   $p1=(-1259, 130)$   $p2=(-1259, 130)$   $b=(-1224, 260)$   $t=10.0$   $length\_tot=269$

$\sigma_{a\_red}=-125.65$   $\sigma_{b\_red}=-87.16$

stiffener plate on side 1 of stiffener nr 7 on stiffener plate position 3

$a=(-1224, 260)$   $p1=(-1176, 260)$   $p2=(-1176, 260)$   $b=(-1128, 260)$   $t=10.0$   $length\_tot=95$

$\sigma_{a\_red}=-87.16$   $\sigma_{b\_red}=-87.16$

stiffener plate on side 1 of stiffener nr 7 on stiffener plate position 4

$a=(-1128, 260)$   $p1=(-1093, 130)$   $p2=(-1093, 130)$   $b=(-1058, 0)$   $t=10.0$   $length\_tot=269$

$\sigma_{a\_red}=-87.16$   $\sigma_{b\_red}=-125.65$

stiffener plate on side 1 of stiffener nr 8 on stiffener plate position 2



$a=(-1764, 0)$   $p1=(-1729, 130)$   $p2=(-1729, 130)$   $b=(-1695, 260)$   $t=10.0$   $length\_tot=269$

$\sigma_{a\_red}=-125.65$   $\sigma_{b\_red}=-87.16$

stiffener plate on side 1 of stiffener nr 8 on stiffener plate position 3

$a=(-1695, 260)$   $p1=(-1647, 260)$   $p2=(-1647, 260)$   $b=(-1599, 260)$   $t=10.0$   $length\_tot=95$

$\sigma_{a\_red}=-87.16$   $\sigma_{b\_red}=-87.16$

stiffener plate on side 1 of stiffener nr 8 on stiffener plate position 4

$a=(-1599, 260)$   $p1=(-1564, 130)$   $p2=(-1564, 130)$   $b=(-1529, 0)$   $t=10.0$   $length\_tot=269$

$\sigma_{a\_red}=-87.16$   $\sigma_{b\_red}=-125.65$

stiffener plate on side 2 of stiffener nr 9 on stiffener plate position 2

$a=(-1638, 1445)$   $p1=(-1551, 1398)$   $p2=(-1551, 1398)$   $b=(-1456, 1348)$   $t=10.0$   $length\_tot=206$

$\sigma_{a\_red}=88.34$   $\sigma_{b\_red}=73.98$

stiffener plate on side 2 of stiffener nr 9 on stiffener plate position 3

$a=(-1456, 1348)$   $p1=(-1478, 1260)$   $p2=(-1478, 1260)$   $b=(-1505, 1154)$   $t=10.0$   $length\_tot=200$

$\sigma_{a\_red}=73.98$   $\sigma_{b\_red}=45.26$

stiffener plate on side 2 of stiffener nr 9 on stiffener plate position 4

$a=(-1505, 1154)$   $p1=(-1608, 1154)$   $p2=(-1608, 1154)$   $b=(-1711, 1154)$   $t=10.0$   $length\_tot=206$

$\sigma_{a\_red}=45.26$   $\sigma_{b\_red}=45.26$

stiffener plate on side 3 of stiffener nr 10 on stiffener plate position 2

$a=(-375, 2000)$   $p1=(-398, 1904)$   $p2=(-398, 1904)$   $b=(-425, 1800)$   $t=10.0$   $length\_tot=206$

$\sigma_{a\_red}=170.43$   $\sigma_{b\_red}=140.82$

stiffener plate on side 3 of stiffener nr 10 on stiffener plate position 3

$a=(-425, 1800)$   $p1=(-525, 1800)$   $p2=(-525, 1800)$   $b=(-625, 1800)$   $t=10.0$   $length\_tot=199$

$\sigma_{a\_red}=140.82$   $\sigma_{b\_red}=140.82$

stiffener plate on side 3 of stiffener nr 10 on stiffener plate position 4

$a=(-625, 1800)$   $p1=(-651, 1904)$   $p2=(-651, 1904)$   $b=(-675, 2000)$   $t=10.0$   $length\_tot=206$

$\sigma_{a\_red}=140.82$   $\sigma_{b\_red}=170.43$

stiffener plate on side 3 of stiffener nr 11 on stiffener plate position 2

$a=(675, 2000)$   $p1=(651, 1904)$   $p2=(651, 1904)$   $b=(625, 1800)$   $t=10.0$   $length\_tot=206$

$\sigma_{a\_red}=170.43$   $\sigma_{b\_red}=140.82$

stiffener plate on side 3 of stiffener nr 11 on stiffener plate position 3

$a=(625, 1800)$   $p1=(525, 1800)$   $p2=(525, 1800)$   $b=(425, 1800)$   $t=10.0$   $length\_tot=200$

$\sigma_{a\_red}=140.82$   $\sigma_{b\_red}=140.82$

stiffener plate on side 3 of stiffener nr 11 on stiffener plate position 4

$a=(425, 1800)$   $p1=(398, 1904)$   $p2=(398, 1904)$   $b=(375, 2000)$   $t=10.0$   $length\_tot=206$

$\sigma_{a\_red}=140.82$   $\sigma_{b\_red}=170.43$

stiffener plate on side 4 of stiffener nr 12 on stiffener plate position 2

$a=(1711, 1154)$   $p1=(1608, 1154)$   $p2=(1608, 1154)$   $b=(1505, 1154)$   $t=10.0$   $length\_tot=206$

$\sigma_{a\_red}=45.26$   $\sigma_{b\_red}=45.26$

stiffener plate on side 4 of stiffener nr 12 on stiffener plate position 3

$a=(1505, 1154)$   $p1=(1478, 1260)$   $p2=(1478, 1260)$   $b=(1456, 1348)$   $t=10.0$   $length\_tot=200$

$\sigma_{a\_red}=45.26$   $\sigma_{b\_red}=73.98$

stiffener plate on side 4 of stiffener nr 12 on stiffener plate position 4

$a=(1456, 1348)$   $p1=(1551, 1398)$   $p2=(1551, 1398)$   $b=(1638, 1445)$   $t=10.0$   $length\_tot=206$

$\sigma_{a\_red}=73.98$   $\sigma_{b\_red}=88.34$

moment of inertia including all reductions: 54037465137.15008

center z gross 727.1262325237653

center z reduced 656.3102217340487

