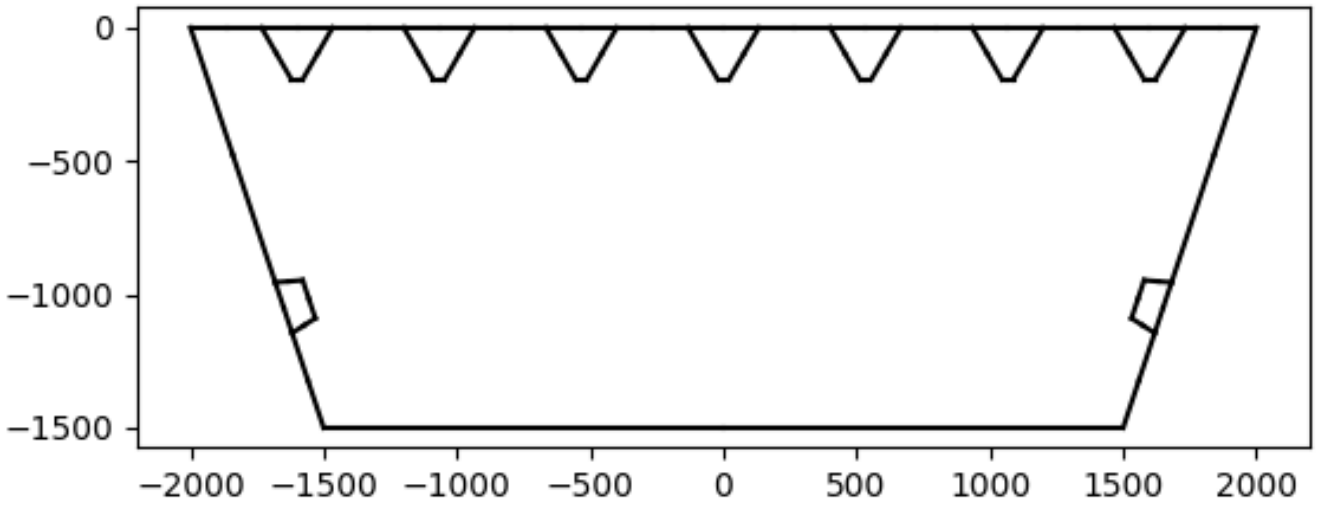
CS Analysis Tool



CONSTANTS

E: 210000

nu: 0.3

f_y: 235

G: 81000

gamma_M1: 1.05

INPUT DATA

b_sup: 4000

CS Analysis Tool

t_deck: 5

b_inf: 3000

t_bottom: 5

h: 1500

t_side: 5

a: 10000

L_e: 15000

bending type: sagging bending

cs position: neither

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

Beta: 0.6161387625504372

Shear lag reduction for flange 3

Shear Lag is not neglectable

Beta: 0.9398496240601504

4.4 Plate elements without longitudinal stiffeners

Iteratively changing the widths until M_Rd_el_eff converges to a limit of 0.005

4.5 Stiffened plate elements with longitudinal stiffeners

Side 2

4.5.2 Plate type behaviour

sigma_cr = 541.5512650144816

Lambda: 0.5547501678920662

Rho_Global: 1.0

4.5.3 Column type buckling behaviour

Column number 8

A_sl=6844.54, A_sl_eff=5842.03, I_sl=3126115.66

sigma_cr_c=94662.87

e1=41.47, e2=29.58

All tension =False

Buckling Values 8

beta_A_c =0.853532440877408

lambda_c_bar =0.046031390500844725

Phi_c =0.47131488386605425

Chi_c =1.063403822546754

Critical buckling values

Chi_c: 1.063403822546754

sigma_cr_c: 94662.87851294536

4.5.4 Interaction between plate and column buckling

all_tension: False

rho_c = 1.063403822546754

Side 3

4.5.4 Interaction between plate and column buckling

all_tension: False

rho_c = 1

Side 4

4.5.2 Plate type behaviour

sigma_cr = 354.8829454449756

Lambda: 0.685290427098525

Rho_Global: 1.0

4.5.3 Column type buckling behaviour

Column number 9

A_sl=6844.54, A_sl_eff=5842.03, I_sl=3126115.66

sigma_cr_c=94662.87

e1=41.47, e2=29.58

All tension =False

Buckling Values 9

beta_A_c =0.8535324408774083

lambda_c_bar =0.04603139050084483

Phi_c =0.47131488386605425

Chi_c =1.063403822546754

Critical buckling values

Chi_c: 1.063403822546754

sigma_cr_c: 94662.87851294501

4.5.4 Interaction between plate and column buckling

all_tension: False

rho_c = 1.063403822546754

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

5. Resistance to shear

stiffened plate; EBPlate

k_tau: 9487.522915434136

eta_3: 0.015907026504099895

7.1 Interaction between shear force, bending moment and axial force

Deck plate is ignored, as it is dimensioned with EC 3-2

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

5. Resistance to shear

stiffened plate; EBPlate

k_tau: 18.262807017543867

eta_3: 0.12294182924697888

7.1 Interaction between shear force, bending moment and axial force

Web -> (7.1) without iterating

eta_3 <= 0.5; no interaction needed

utilisation: -1

Resistance to shear and interaction shear force and bending moment for side 3

5. Resistance to shear

unstiffened plate; (A.5)

k_tau: 7.59

eta_3: 0.1431710197647985

7.1 Interaction between shear force, bending moment and axial force

Flange -> (7.1), comment (5)

eta_3 <= 0.5; no interaction needed

utilisation: -1

Proofing Resistance to shear for each subpanel

5. Resistance to shear

unstiffened plate; (A.5)

k_tau: 7.59

eta_3: 0.13455922910225424

eta_3_panel < 1: pass subpanel

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

5. Resistance to shear

stiffened plate; EBPlate

k_tau: 18.262807017543857

eta_3: 0.1229418292469789

7.1 Interaction between shear force, bending moment and axial force

Web -> (7.1) without iterating

eta_3 <= 0.5; no interaction needed

utilisation: -1

Results:

EI: 2793899Nm^2

interaction side 2: -1

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interaction side 3: -1

interaction side 4: -1

cost: 2072CHF/m