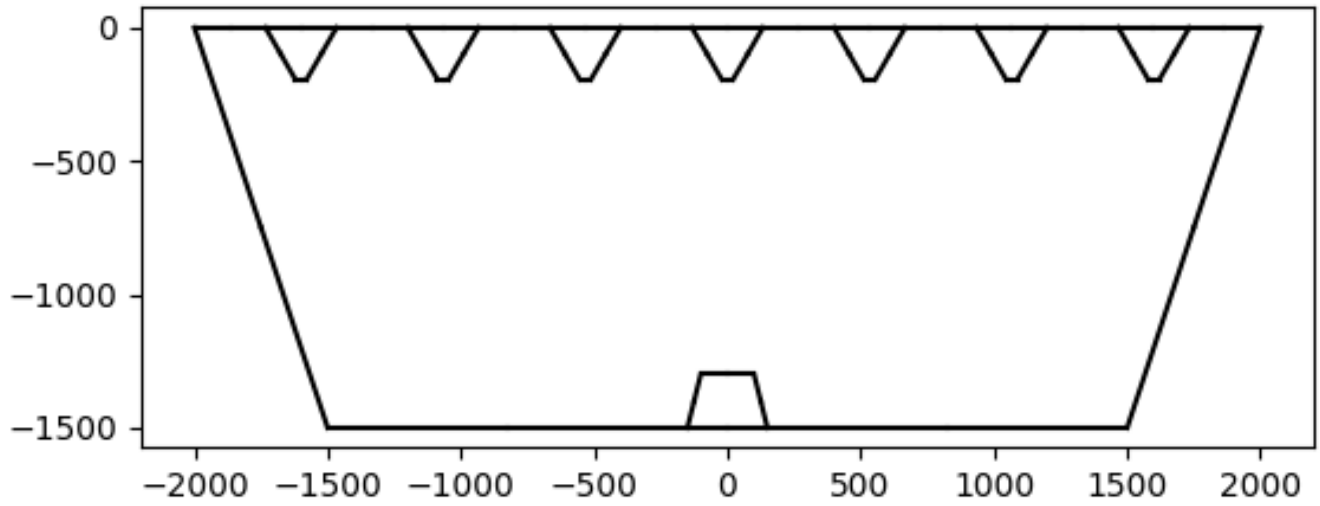


CS Analysis Tool



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: 0.9173257837904699

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

CS Analysis Tool

Side 2

4.5.4 Interaction between plate and column buckling

all_tension: False

$\rho_c = 1$

Side 3

4.5.2 Plate type behaviour

$\sigma_{cr} = 372.4373042827402$

Lambda: 0.5548154942868491

Rho_Global: 1.0

4.5.3 Column type buckling behaviour

Column number 8

$A_{sl}=11311.55$, $A_{sl_eff}=5518.29$, $I_{sl}=13625049.83$

$\sigma_{cr_c}=249651.92$

$e_1=96.75$, $e_2=35.9$

All tension =False

Buckling Values 8

$\beta_{A_c}=0.48784569221598767$

$\lambda_{c_bar}=0.02142928655464255$

$\Phi_c=0.4669902232800209$

$\chi_c=1.0712504611120048$

Critical buckling values

χ_c : 1.0712504611120048

σ_{cr_c} : 249651.9209402946

4.5.4 Interaction between plate and column buckling

CS Analysis Tool

all_tension: False

rho_c = 1.0712504611120048

Side 4

4.5.4 Interaction between plate and column buckling

all_tension: False

rho_c = 1

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

5. Resistance to shear

stiffened plate; EBPlate

k_tau: 9484.433575036617

eta_3: 0.15468216852472

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

unstiffened plate; (A.5)

k_tau: 5.965

eta_3: 2.1511872325957864

7.1 Interaction between shear force, bending moment and axial force

Web -> (7.1) without iterating

7.1 Interaction between shear force, bending moment and axial force

Web -> (7.1) without iterating

CS Analysis Tool

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

5. Resistance to shear

stiffened plate; EBPlate

k_tau: 35.497382506612226

eta_3: 0.6628957743989475

7.1 Interaction between shear force, bending moment and axial force

Flange -> (7.1), comment (5)

eta_3 > 0.5; interaction needed

eta_1: 0.004188190785272593

utilisation: 0.11032832405340384

Proofing Resistance to shear for each subpanel

5. Resistance to shear

unstiffened plate; (A.5)

k_tau: 5.795625

eta_3: 0.7449413417527475

eta_3_panel < 1: pass subpanel

5. Resistance to shear

unstiffened plate; (A.5)

k_tau: 5.3625

eta_3: 0.01875094394488288

eta_3_panel < 1: pass subpanel

5. Resistance to shear

unstiffened plate; (A.5)

CS Analysis Tool

k_tau: 5.795625

eta_3: 0.7449413417527475

eta_3_panel < 1: pass subpanel

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

5. Resistance to shear

unstiffened plate; (A.5)

k_tau: 5.965

eta_3: 2.1511872325957864

7.1 Interaction between shear force, bending moment and axial force

Web -> (7.1) without iterating

7.1 Interaction between shear force, bending moment and axial force

Web -> (7.1) without iterating

Results:

EI: 3090109Nm²

interaction side 2: 4.653897094789854

interaction side 3: 0.11032832405340384

interaction side 4: 4.653897094789854

cost: 1961CHF/m

CS Analysis Tool

