VEDLEGG A

Vekt av stivere

$A_{stiver} := 1383\ mm^2$ $d := 650\ mm$ $Vekt_{steel} := 8000\ kg \cdot m^{-3}$

$H := 8000\ mm$ $L := 37300\ mm$ $B := 15300\ mm$

Inne og lastedekk:

$$N := \frac{B}{d} - 1 = 22.538$$

$$V := A_{stiver} \cdot L = 0.052\ m^3$$

$$V_{tot} := N \cdot V = 1.163\ m^3$$

$$Vekt := V_{tot} \cdot Vekt_{steel} \cdot g = 91.215\ kN$$

Stivere på langside:

$$N := \frac{H}{d} - 1 = 11.308$$

$$V := A_{stiver} \cdot L = 0.052\ m^3$$

$$V_{tot} := N \cdot V = 0.583\ m^3$$

$$Vekt := V_{tot} \cdot Vekt_{steel} \cdot g = 45.763\ kN$$

Stivere på kortside:

$$N := \frac{H}{d} - 1 = 11.308$$

$$V := A_{stiver} \cdot B = 0.021\ m^3$$

$$V_{tot} := N \cdot V = 0.239\ m^3$$

$$Vekt := V_{tot} \cdot Vekt_{steel} \cdot g = 18.771\ kN$$

VEDLEGG B

Vindlast

$U_{min} := 15\ \frac{m}{s}$ $p := 0.20$ $U_{ref} := 10\ \frac{m}{s}$ $z_h := 70\ m$ $z_r := 10\ m$

ULS VIND Årlig sannsynlighet for å oppstå: 10^{-2}=35m/s
Oseberg Metocean Table 2.9

$U_0 := 35\ \frac{m}{s}$

$U_{cor} := U_0 + p \cdot (U_0 - U_{min}) = 39\ \frac{m}{s}$ NORSOK N003 6.4.2 (6)

$C := 5.73 \cdot 10^{-2} \cdot \left(1 + \left(1.5 \cdot \frac{U_{cor}}{U_{ref}}\right)\right)^{0.5} = 0.15$ NORSOK N003 6.4.3

$U_z := U_{cor} \cdot \left(1 + C \cdot \ln\left(\frac{z_h}{z_r}\right)\right) = 50.381\ \frac{m}{s}$ NORSOK N003 6.4.3(8)

$I_u := 0.06 \cdot \left(1 + 0.43 \cdot \frac{U_{cor}}{U_{ref}}\right) \cdot \left(\frac{z_h}{z_r}\right)^{-0.22} = 0.105$ NORSOK N003 6.4.3(9)

$U_{ztULS} := U_z \cdot \left(1 - \left(0.41\ I_u \cdot \ln\left(\frac{3}{3600}\right)\right)\right) = 65.713\ \frac{m}{s}$ NORSOK N003 6.4.3(7)

ALS VIND Årlig sannsynlighet for å oppstå: 10^{-4}=40m/s
Oseberg Metocean Table 2.9

$U_0 := 40\ \frac{m}{s}$

$U_{cor} := U_0 + p \cdot (U_0 - U_{min}) = 45\ \frac{m}{s}$ NORSOK N003 6.4.2 (6)

$C := 5.73 \cdot 10^{-2} \cdot \left(1 + \left(1.5 \cdot \frac{U_{cor}}{U_{ref}}\right)\right)^{0.5} = 0.16$ NORSOK N003 6.4.3

$U_z := U_{cor} \cdot \left(1 + C \cdot \ln\left(\frac{z_h}{z_r}\right)\right) = 58.968\ \frac{m}{s}$ NORSOK N003 6.4.3(8)

$I_u := 0.06 \cdot \left(1 + 0.43 \cdot \frac{U_{cor}}{U_{ref}}\right) \cdot \left(\frac{z_h}{z_r}\right)^{-0.22} = 0.115$ NORSOK N003 6.4.3(9)

$U_{ztALS} := U_z \cdot \left(1 - \left(0.41\ I_u \cdot \ln\left(\frac{3}{3600}\right)\right)\right) = 78.642\ \frac{m}{s}$ NORSOK N003 6.4.3(7)

Formfaktor - Vind

Bruker Tabell 5.5 ref. DNV-RP-C205

$l := 37300$ $w := 15300$ $h := 8000$

$\frac{l}{w} = 2.438$ Ligger midt mellom 2 og 3. Velger størst mulig for begge

Vind mot kortside: $b := 15300$ $d := 37300$

$\frac{b}{d} = 0.41$

$\frac{h}{b} = 0.523$ $C_{kortside} := 0.75$ Bruker l/w lik 2 her (mest konservativt)

Vind mot langside: $b := 37300$ $d := 15300$

$\frac{b}{d} = 2.438$

$\frac{h}{b} = 0.214$ $C_{langside} := 1.1$ Bruker l/w lik 3 her (mest konservativt)

Vindtrykk

$\rho_a := 1.226 \ \frac{kg}{m^3}$ Massetettheten til luft

$q_{ULS} := \frac{1}{2} \cdot \rho_a \cdot U_{ztULS}^{\ 2} = 2.647 \ \frac{kN}{m^2}$

$q_{ALS} := \frac{1}{2} \cdot \rho_a \cdot U_{ztALS}^{\ 2} = 3.791 \ \frac{kN}{m^2}$ 5.2.1 DnV-RP-C205

$q_{ULSsør} := q_{ULS} \cdot C_{kortside} = (1.985 \cdot 10^3)\ Pa$

$q_{ULSnord} := q_{ULS} \cdot C_{kortside} = (1.985 \cdot 10^3)\ Pa$

$q_{ULSøst} := q_{ULS} \cdot C_{langside} = (2.912 \cdot 10^3)\ Pa$

$q_{ULSvest} := q_{ULS} \cdot C_{langside} = (2.912 \cdot 10^3)\ Pa$

$q_{ALSsør} := q_{ALS} \cdot C_{kortside} = (2.843 \cdot 10^3)\ Pa$

$q_{ALSnord} := q_{ALS} \cdot C_{kortside} = (2.843 \cdot 10^3)\ Pa$

$q_{ALSøst} := q_{ALS} \cdot C_{langside} = (4.17 \cdot 10^3)\ Pa$

$q_{ALSvest} := q_{ALS} \cdot C_{langside} = (4.17 \cdot 10^3)\ Pa$

Last på søyler

Antar at hver søyle tar halvparten av lasten ut til hver side

Lastbredder langside

$s1 := 2662.5\ mm$
$s2 := 5325.0\ mm$
$s3 := 5162.5\ mm$
$s4 := 5500.0\ mm$
$s5 := 5500.0\ mm$
$s6 := 5162.5\ mm$
$s7 := 5325.0\ mm$
$s8 := 2662.5\ mm$

Lastbredder kortside

$s9 := 2550.0\ mm$
$s10 := 5100.0\ mm$
$s11 := 5100.0\ mm$
$s12 := 2550.0\ mm$

ULS

Øst og Vest

$qs1 := s1 \cdot q_{ULSøst} = 7.752\ \frac{kN}{m}$

$qs2 := s2 \cdot q_{ULSøst} = 15.505\ \frac{kN}{m}$

$qs3 := s3 \cdot q_{ULSøst} = 15.032\ \frac{kN}{m}$

$qs4 := s4 \cdot q_{ULSøst} = 16.014\ \frac{kN}{m}$

$qs8 := qs1$
$qs7 := qs2$
$qs6 := qs3$
$qs5 := qs4$

Nord og Sør

$qs9 := s9 \cdot q_{ULSsør} = 5.062\ \frac{kN}{m}$

$qs10 := s10 \cdot q_{ULSsør} = 10.125\ \frac{kN}{m}$

$qs11 := qs10$
$qs12 := qs9$

ALS

Øst og Vest

$qs1 := s1 \cdot q_{ALSøst} = 11.103 \ \frac{kN}{m}$

$qs2 := s2 \cdot q_{ALSøst} = 22.207 \ \frac{kN}{m}$

$qs3 := s3 \cdot q_{ALSøst} = 21.529 \ \frac{kN}{m}$

$qs4 := s4 \cdot q_{ALSøst} = 22.936 \ \frac{kN}{m}$

$qs6 := qs3 = 21.529 \ \frac{kN}{m}$

$qs5 := qs4 = 22.936 \ \frac{kN}{m}$

$qs7 := qs2 = 22.207 \ \frac{kN}{m}$

$qs8 := qs1 = 11.103 \ \frac{kN}{m}$

Nord og Sør

$qs9 := s9 \cdot q_{ALSsør} = 7.251 \ \frac{kN}{m}$

$qs10 := s10 \cdot q_{ALSsør} = 14.501 \ \frac{kN}{m}$

$qs11 := qs10 = 14.501 \ \frac{kN}{m}$

$qs12 := qs9 = 7.251 \ \frac{kN}{m}$

Overslag - vind på tak

Tabell 7.1 NS-EN 1991 1-4

$Ffs := -0.2$

oppoverrettet - Over hele taket

$qALS := Ffs \cdot q_{ALS} = -0.758 \ \frac{kN}{m^2}$

$qULS := Ffs \cdot q_{ULS} = -0.529 \ \frac{kN}{m^2}$

$Fft := 1.8$

Nedoverrettet konservativt verst over hele taket

$qALS := Fft \cdot q_{ALS} = 6.824 \ \frac{kN}{m^2}$

$qULS := Fft \cdot q_{ULS} = 4.765 \ \frac{kN}{m^2}$

Eksplosjon

Oppgitt trykk på 15bar $q_{blastE} := 15 \frac{kN}{m^2}$

$qs1 := s1 \cdot q_{blastE} = 39.938 \frac{kN}{m}$

$qs2 := s2 \cdot q_{blastE} = 79.875 \frac{kN}{m}$

$qs3 := s3 \cdot q_{blastE} = 77.438 \frac{kN}{m}$

$qs4 := s4 \cdot q_{blastE} = 82.5 \frac{kN}{m}$

$qs6 := qs3 = 77.438 \frac{kN}{m}$

$qs5 := qs4 = 82.5 \frac{kN}{m}$

$qs7 := qs2 = 79.875 \frac{kN}{m}$

$qs8 := qs1 = 39.938 \frac{kN}{m}$

Vedlegg C
Reduksjonsfaktor nyttelast

Totalt areal

$L := 37.3\ m$
$B := 15.3\ m$

$A_{tot} := L \cdot B = 570.69\ m^2$

Dimensjoner av utstyret inkludert service space til sikker side

$L_{Boiler} := 8.71\ m$ $L_{SFCtrans} := 5.2\ m$
$B_{Boiler} := 4.83\ m$ $B_{SFCtrans} := 3.53\ m$

$L_{SFCconv} := 12.23\ m$ $L_{Boilertrans} := 3.9\ m$ $L_{GIS} := 15.3\ m$
$B_{SFCconv} := 1.18\ m$ $B_{Boilertrans} := 2.75\ m$ $B_{GIS} := 7.3\ m$

Antall av utstyr

$n_{SFCtrans} := 2$ $n_{SFCconv} := 2$ $n_{Boiler} := 1$ $n_{Boilertrans} := 1$

$n_{GIS} := 1$

Totalt areal av alt utstyr

$A_{Boiler} := n_{Boiler} \cdot L_{Boiler} \cdot B_{Boiler} = 42.069\ m^2$
$A_{Boilertrans} := n_{Boilertrans} \cdot L_{Boilertrans} \cdot B_{Boilertrans} = 10.725\ m^2$
$A_{SFCtrans} := n_{SFCtrans} \cdot L_{SFCtrans} \cdot B_{SFCtrans} = 36.712\ m^2$
$A_{SFCconv} := n_{SFCconv} \cdot L_{SFCconv} \cdot B_{SFCconv} = 28.863\ m^2$
$A_{GIS} := n_{GIS} \cdot L_{GIS} \cdot B_{GIS} = 111.69\ m^2$

Netto-Areal i modulen

$A_{netto} := A_{tot} - A_{SFCconv} - A_{SFCtrans} - A_{Boiler} - A_{Boilertrans} - A_{GIS} = 340.631\ m^2$

Reduksjonsfaktor for nyttelast på nivå 1

$B_{red} := min\left(1, 0.5 + \frac{3\ m}{A_{netto}^{0.5}}\right) = 0.663$ NORSOK N-003 Table 1

GeniE V8.3-24	Report: ULS_Code_Check1	Model Id: ULS_Code_Check1	Sign: ofseist4
		Description: ULS_Code_Check1	Date: 21-May-2023
		Model file name: C:/users/ofseist4/OneDrive - Aibel	Last saved: 21-May-2023 18:42:33

Table of Contents

1 Cc_ULS : Frame Code Check

Description : Capacity Manager

1.1 Cc_ULS.run(1) : Frame Code Check

Description : Norsok N-004 2013

General options

Code	Norsok 2013
CapendIncluded	true
UseCommentary663	true
MaterialFactor	1.15
Use Fixed Material Factor	false
Azimuthal Tolerance Angle	5
Ind. Brace Can Distance	false
Use Joint Geometric Limits	Not checked

General options

Code	EN 1993-1-1
GammaM0	1
GammaM1	1
Method1	true
NationalAnnex	Standard

1.1.1 Cc_ULS.run(1) : Summary Results

Cc_ULS.run(1) : Summary Results

- Sorted by Set (Ascending)

- Run : Cc_ULS.run(1)
- Worst LoadCase per Capacity Model (Member or Joint)
- Worst SubCheck per Capacity Model (Member or Joint)
- Worst Position along Member / Worst Brace Member of Joint
- Worst 3 Members / Joints per Set

Set	Count	UfTot > 1.33	UfTot > 1.00	UfTot > 0.80	UfTot > 0.50	UfTot > 0.01	Below	CapModel	LoadCase	Position	Status	UfTot	Run
Total	77	0	0	3	27	47	0	Bm16	ULS_a_E	0.00	OK	0.85	Cc_ULS.run(1)
Total								Bm174	ULS_a_W	0.00	OK	0.81	Cc_ULS.run(1)
Total								Bm175	ULS_a_W	0.00	OK	0.80	Cc_ULS.run(1)
Total								Bm24	ULS_a_E	0.71	Failed(geo)	0.42	Cc_ULS.run(1)
Total								Bm22	ULS_a_W	0.71	Failed(geo)	0.41	Cc_ULS.run(1)

Vedlegg E
Kontrollberegning

Lastberegninger for bjelken blir utført med lastfaktor fra ULSa siden det er der den er mest utnyttet. Dette er I900x300x20x25 bjelken midt på lastedekke

Bjelkens dimensjoner og flytespenning

$h := 900\ mm$ $w := 300\ mm$ $tw := 20\ mm$ $tf := 25\ mm$

$\gamma_{M0} := 1.15$ NORSOK N:004 Table 5

$fy := 420\ \frac{N}{mm^2}$ NS-EN 1993-1-1 Tab. 3.1

$fyd := \frac{fy}{\gamma_{M0}} = 365.217\ \frac{N}{mm^2}$

Lengde Bjelke
$L := 15.3\ m$

Lastbredde

$L_{bredde} := 4\ m$ Antar lastbredde halveis ut på begge sider av bjelken

karakteristiske laster	Lastfaktorer	Total last
$F_{Truck} := 73\ kN$	$L_{truck} := 1.3$	$F_{Truck} := F_{Truck} \cdot L_{truck} = 94.9\ kN$
$Q_{vind} := 4.76\ \frac{kN}{m^2}$	$L_{vind} := 0.7$	$Q_{vind} := Q_{vind} \cdot L_{vind} \cdot L_{bredde} = 13.328\ \frac{kN}{m}$
$Q_{lastdekke} := 22\ \frac{kN}{m^2}$	$L_{lastdekke} := 1.3$	$Q_{lastdekke} := Q_{lastdekke} \cdot L_{lastdekke} \cdot L_{bredde} = 114.4\ \frac{kN}{m}$
$Q_{egen} := 6.17\ \frac{kN}{m}$	$L_{egen} := 1.3$	$Q_{egen} := Q_{egen} \cdot L_{egen} = 8.021\ \frac{kN}{m}$

$Q_{tot} := Q_{vind} + Q_{lastdekke} + Q_{egen} = 135.749\ \frac{kN}{m}$ $F_{Truck} = 94.9\ kN$

Bjelken som blir regnet på vil virke som fritt opplagt siden den har ingen måte å overføre momentene på videre ned i konstruksjonen.

$$M_{Ed} := \frac{\left(Q_{tot} \cdot L^2\right)}{8} + \frac{\left(F_{Truck} \cdot L\right)}{4} = \left(4.335 \cdot 10^3\right)\ \boldsymbol{kN \cdot m}$$ (Sintef Bjelkeformler)

$$V_{Ed} := \frac{\left(Q_{tot} \cdot L\right)}{2} + \frac{F_{Truck}}{2} = \left(1.086 \cdot 10^3\right)\ \boldsymbol{kN}$$

Sjekker videre bjelkens tverrsnittsklasse ved NS-EN 1993-1-1 Tabell 5.2 (1)

Steg:

$$\varepsilon_{S420} := 0.75$$

$$c := h - 2 \cdot tf = 0.85\ \boldsymbol{m}$$

Bruker tabell med bare bøyning siden det er lite aksialkraft som virker på bjelken

Test tverrsnittsklasse 1:

$\frac{c}{tw} = 42.5$ < $72 \cdot \varepsilon_{S420} = 54$ Dette er innenfor kravet og dermed er steget i tverrsnittsklasse 1

Videre sjekkes tverrsnittsklasse for flensene i henhold til tabell 5.2 (2)

$$c := \frac{w}{2} - tw = 0.13\ \boldsymbol{m}$$

$\frac{c}{tf} = 5.2$ < $9 \cdot \varepsilon_{S420} = 6.75$ Dette opprettholder kravet og dermed er flensen i tverrsnittsklasse 1

Dette vil si at hele bjelken er i tverrsnittsklasse 1 og det er mulig å bruke plastisk kapasitet

Regner videre ut momentkapasiteten til

$$W_{pl} := \frac{1}{4} \cdot w \cdot h^2 - 2 \cdot \frac{1}{4} \cdot \left(\frac{w}{2} - \frac{tw}{2}\right) \cdot \left(h - 2 \cdot tf\right)^2 = \left(1.018 \cdot 10^7\right)\ \boldsymbol{mm^3}$$

$$M_{Rd.pl} := W_{pl} \cdot fyd = \left(3.716 \cdot 10^3\right)\ kN \cdot m \qquad (6.13)$$

$$U_{moment} := \frac{M_{Ed}}{M_{Rd.pl}} = 1.167 \qquad (6.12)$$

Dette er litt for høgt, men siden truck og lastdekke ikke kan opptre samtidig prøver dermed å ta vekk trucklasten fra dette området

$$M_{Ed} := M_{Ed} - \frac{\left(F_{Truck} \cdot L\right)}{4} = \left(3.972 \cdot 10^3\right)\ kN \cdot m$$

$$U_{moment} := \frac{M_{Ed}}{M_{Rd.pl}} = 1.069 \qquad (6.12)$$

Bjelken er fasthold om vipping i overflens siden platene avstiver i denne retningen og det er ikke fare fir vipping i underflens siden det ikke er noen oppadrettet last som er dimensjonerende

Sjekker videre for Skjærkraft:

$$A_V := h \cdot tw = 0.018\ m^2$$

$$V_{Rd} := \frac{\left(A_V \cdot fyd\right)}{\sqrt[2]{3}} = \left(3.795 \cdot 10^3\right)\ kN \qquad (6.18)$$

$$U_V := \frac{V_{Ed}}{V_{Rd}} = 0.286 < 1.0 \qquad (6.17)$$

Aksialkraft på denne bjelken er så liten at den neglisjeres i overslagsberegningene

Trenger dermed ikke sjekke for kombinert aksial og bøying

Overslagsberegning verst utnyttet søyle I600x500x20x35

Siden beregningene med lastvirkninger på denne søylen vil bli for komplekse på grunn av at de mindre søylene ikke tar opp like mye krefter vil lastvirkningene forenklet bli hentet ut fra GeniE

Dimensjoner til søylen

$h := 600\ mm$ $w := 500\ mm$ $tw := 20\ mm$ $tf := 35\ mm$

$E := 210000\ \frac{N}{mm^2}$

Lastvirkninger:

$M_{Ed} := 2500\ kN \cdot m$

$V_{Ed} := 410\ kN$

$N_{Ed} := 5400\ kN$

Sjekker videre hvilke tverrsnittsklasse profilet er i. Siden søylen har betydelig bøying og trykk er det konservativt å bruke ruten med bare trykk for klassifisering av tverrsnitt.

Sjekker først for steget:
Tabell 5.2 (1)

$\varepsilon_{S420} = 0.75$

$c := h - 2 \cdot tf = 0.53\ m$

Sjekker mot kravet i tverrsnittsklasse 1

$\frac{c}{tw} = 26.5$ > $33 \cdot \varepsilon_{S420} = 24.75$ ->Er ikke tv.sn.kl 1

Sjekker mot kravet i tv.sn.kl 2

$\frac{c}{tw} = 26.5$ < $38 \cdot \varepsilon_{S420} = 28.5$ -> Er innafor tv.sn.kl 2

Sjekker videre flensen: tabell 5.2(2)

$$c := \frac{w}{2} - \frac{tw}{2} = 0.24\ m$$

Sjekker krav i tv.sn.kl 1

$\frac{c}{tf} = 6.857$ > $9 \cdot \varepsilon_{S420} = 6.75$ Er akkurat ikke innenfor

Sjekker dermed krav for tv.sn.kl. 2

$\frac{c}{tf} = 6.857$ < $10 \cdot \varepsilon_{S420} = 7.5$ Flensen er også i tv.sn.kl. 2

Dette betyr at søylen er i tv.sn.kl 2 og det er mulig å regne med plastiske kapasiteter

Sjekker først momentkapasitet

$$W_{pl} := \frac{1}{4} \cdot w \cdot h^2 - 2 \cdot \frac{1}{4} \cdot \left(\frac{w}{2} - \frac{tw}{2} \right) \cdot (h - 2 \cdot tf)^2 = \left(1.129 \cdot 10^7\right)\ mm^3$$

$$M_{Rd.pl} := fyd \cdot W_{pl} = \left(4.124 \cdot 10^3\right)\ kN \cdot m \qquad (6.13)$$

$$U_M := \frac{M_{Ed}}{M_{Rd.pl}} = 0.606 \qquad (6.12)$$

Søylen er også fastholdt om vipping på grunn av platen. Samtidig vil platene og stiverene fastholde for knekking om svak akse

Sjekker videre søylen for skjærpåkjenningene

$$A_V := h \cdot tw = 0.012\ m^2$$

$$V_{Rd.pl} := \frac{(A_V \cdot fyd)}{\sqrt[2]{3}} = \left(2.53 \cdot 10^3\right)\ kN \qquad (6.18)$$

$$U_V := \frac{V_{Ed}}{V_{Rd.pl}} = 0.162 \qquad (6.17)$$

Søylen har veldig god kapasitet for skjærpåkjenninger

Sjekker for aksialpåkjenninger

$A := (h - 2 \cdot tf) \cdot tw + 2 \cdot w \cdot tf = (4.56 \cdot 10^4)\ mm^2$

$N_{Rd} := A \cdot fyd = (1.665 \cdot 10^4)\ kN$ (6.6)

$U_N := \frac{N_{Ed}}{N_{Rd}} = 0.324$ (6.5)

Sjekker dermed for kombinert trykk og bøying formel (6.2)

$\frac{N_{Ed}}{N_{Rd}} + \frac{M_{Ed}}{M_{Rd.pl}} = 0.93 < 1.0$ -> Ok (6.2)

Siden søylen er i trykk er det nødvendig å sjekke for knekking om sterk akse

$L := 8\ m$

$L_{cr} := 0.7 \cdot L = 5.6\ m$ Konservativ knekklengde på 0.7*L siden søylen er fast innspent i topp og bunn.

$I := \frac{1}{12} \cdot w \cdot h^3 - 2 \cdot \frac{1}{12} \cdot \left(\frac{w}{2} - \frac{tw}{2}\right) \cdot (h - 2 \cdot tf)^3 = 0.003\ m^4$

$i := \sqrt{\frac{I}{A}} = 0.258\ m$ Treghetsradien

$\lambda := \frac{L_{cr}}{i} = 21.671$

$\lambda_s := \frac{\lambda}{\pi} \cdot \sqrt{\frac{fy}{E}} = 0.308$ (6.50)

Går videre inn i tabell 6.2 for sveiste profiler og finner ut at kurve b er den som må blir brukt
Leser videre av på Fig. 6.4

$\chi := 0.95$

$N_{bRd} := N_{Rd} \cdot \chi = (1.582 \cdot 10^4)\ kN$ (6.47)

$$U_{knekk} := \frac{N_{Ed}}{N_{bRd}} = 0.341 \qquad (6.46)$$

Skal videre sjekke for formel (6.61) for stabilitets kontroll, men trenger først å regne ut Kyy og Cmy

Går inn i Tab.B3

Momentdiagrammet er lineært og motsatt fortegn i hver ende

$$\psi := -1$$

$$c_{my} := \max\left(0.6 + 0.4 \cdot \psi, 0.4\right) = 0.4$$

Videre inn i Tab.B1

$$K_{yy} := min\left(c_{my} \cdot \left(1 + \left(\lambda_s - 0.2\right) \cdot \frac{N_{Ed}}{N_{bRd}}\right), c_{my} \cdot \left(1 + 0.8 \cdot \frac{N_{Ed}}{N_{bRd}}\right)\right) = 0.415$$

Sjekker videre for formel (6.61) Prøver først konservativt uten Kyy faktoren

$$\frac{N_{Ed}}{N_{bRd}} + \frac{M_{Ed}}{M_{Rd.pl}} = 0.948 \ < \ 1.0 \qquad (6.61)$$

Med Kyy faktoren:

$$\frac{N_{Ed}}{N_{bRd}} + K_{yy} \cdot \frac{M_{Ed}}{M_{Rd.pl}} = 0.593$$

Søylen har god kapasitet med Kyy faktor

GeniE V8.3-24	Report: ALS_Code_Check1	Model Id: ALS_Code_Check1	Sign: ofseist4
		Description: ALS_Code_Check_1	Date: 21-May-2023
		Model file name: C:/users/ofseist4/OneDrive - Aibel	Last saved: 21-May-2023 18:44:54

Table of Contents

1 Cc_ALS : Frame Code Check

Description : Capacity Manager

1.1 Cc_ALS.run(1) : Frame Code Check

Description : Norsok N-004 2013

General options

Code	Norsok 2013
CapendIncluded	true
UseCommentary663	true
MaterialFactor	1.15
Use Fixed Material Factor	false
Azimuthal Tolerance Angle	5
Ind. Brace Can Distance	false
Use Joint Geometric Limits	Not checked

General options

Code	EN 1993-1-1
GammaM0	1
GammaM1	1
Method1	true
NationalAnnex	Standard

1.1.1 Cc_ALS.run(1) : Summary Results

Cc_ALS.run(1) : Summary Results

- Sorted by Set (Ascending)

- Run : Cc_ALS.run(1)
- Worst LoadCase per Capacity Model (Member or Joint)
- Worst SubCheck per Capacity Model (Member or Joint)
- Worst Position along Member / Worst Brace Member of Joint
- Worst 3 Members / Joints per Set

Set	Count	UfTot > 1.33	UfTot > 1.00	UfTot > 0.80	UfTot > 0.50	UfTot > 0.01	Below	CapModel	LoadCase	Position	Status	UfTot	Run
Total	77	0	0	1	26	50	0	Bm22	ALS_Blast_E	0.10	Failed(geo)	0.81	Cc_ALS.run(1)
Total								Bm16	ALS_Blast_E	0.00	OK	0.72	Cc_ALS.run(1)
Total								Bm174	ALS_Storm_W	0.00	OK	0.67	Cc_ALS.run(1)
Total								Bm24	ALS_Storm_E	0.71	Failed(geo)	0.37	Cc_ALS.run(1)

Vedlegg G
Sveis

Alle lastvirkninger for knutepunktene er hentet fra GeniE

Knutepunkt mellom Hovedramme (I900x500) og tverrgående bjelke (I900x300)

S420 stål for begge profil. Sveis skal ha bedre kapasitet enn profil.

$fu_{420} := 520 \cdot \frac{N}{mm^2}$ NS-EN 1993 1-1 Tabell 3.1

$\beta_w := 1.0$ NS-EN 1993 1-8 Tabell 4.1

$\gamma_{M2} := 1.3$ NORSOK N:004 Table 5

$\gamma_{M0} := 1.15$ NORSOK N:004 Table 5

$f_{vwd} := \frac{fu_{420}}{\sqrt{3} \cdot \beta_w \cdot \gamma_{M2}} = 230.94\ MPa$ NS-EN 1993 1.8 (4.4)

$h_{I900} := 900\ mm$ $w_{I900} := 500\ mm$ $tw_{I900} := 25\ mm$ $tf_{I900} := 30\ mm$

$h_{I850} := 900\ mm$ $w_{I850} := 300\ mm$ $tw_{I850} := 20\ mm$ $tf_{I850} := 25\ mm$

Regner videre ut arealet av flens og steg

$A_{flens} := w_{I850} \cdot tf_{I850} = 0.008\ m^2$

$A_{steg} := \left(h_{I850} - 2 \cdot tf_{I850}\right) \cdot tw_{I850} = 0.017\ m^2$

$M_{yEd} := 1022\ kN \cdot m$ $V_{Ed} := 950\ kN$ $N_{Ed} := 754\ kN$

Regner ut normalkraften som vil oppstå på flensene

$N_{Moment} := \frac{M_{yEd}}{h_{I850} - tw_{I850}} = \left(1.161 \cdot 10^3\right)\ kN$ Gjør momentpåvirkningen om til et kraftpar som virker på flensene

$N_{Flens} := N_{Moment} + \frac{N_{Ed}}{2} = \left(1.538 \cdot 10^3\right)\ kN$ Påført trykk på flenser

$f_{yk} := 420 \cdot N \cdot mm^{-2}$ NS-EN 1993-1-1 Tab. 3.1

$f_{yd} := \frac{f_{yk}}{\gamma_{M0}} = 365.217\ N \cdot mm^{-2}$ Dimensjonerende flytespenning for S420 stål

Sjekker videre om steget har nok skjærkapasitet til å ta opp skjærkreftene

$V_{Rd.pl} := \frac{f_{yk}}{\sqrt{3} \cdot \gamma_{M0}} \cdot h_{I850} \cdot tw_{I850} = \left(3.795 \cdot 10^3\right)\ kN$ NS-EN 1993-1-1 formel (6.18)

$V_{Rd.pl} > 2 \cdot V_{Ed}$ Får dermed ingen reduksjon for skjærknekking

Kontrollerer videre om flensene har god nok kapasitet til å ta opp trykket fra normalkraft og momentet

Trykkapasitet for en flens

$N_{Rdflens} := A_{flens} \cdot f_{yd} = \left(2.739 \cdot 10^3\right)\ kN$ NS-EN 1993 1-1 formel(6.6)

$N_{Rdflens} > N_{flens}$

$U_{flens} := \frac{N_{Flens}}{N_{Rdflens}} = 0.562$ NS-EN 1993-1-1 formel (6.5)

Dobbeltsjekker GeniE sine beregninger på grunnmateriale siden er mulig programmet ikke bruker samme lastfordeling som tiltenkt for sveisene, men ser at grunnmateriale/profilene holder for de påførte kreftene.

Bruker buttsveis med full gjennombrenning i flenser, siden flensene til de to profilene må sveises sammen i knutepunktet

$S_{vert} := 2 \cdot \left(h_{I850} - \left(2 \cdot tf_{I850}\right)\right) = 1.7\ m$ $S_{hor} := 2 \cdot w_{I850} - tw_{I850} = 0.58\ m$

Formelen for minstemålet av sveis kommer fra å sette sveisenskapasitet lik stegets eller flensens kapasitet

$a_{minV} := \frac{V_{Rd.pl}}{f_{vwd} \cdot S_{vert}} = 9.668\ mm$ Utbedret fra NS-EN 1993-1-8 formel(4.3)

$a_{steg} := 10\ mm$ Prøver videre med a=11mm langs steg

$F_W := f_{vwd} \cdot a_{steg} \cdot S_{vert} = \left(3.926 \cdot 10^3\right)\ kN$ NS-EN 1993-1-8 formel (4.3)

$U_{steg} := \frac{V_{Ed}}{F_W} = 0.242$ Veldig god kapasitet på sveisene

Knutepunkt mellom søyle (I_600_500_20_35) og Hovedramme (I_900_500_25_30)

$M_{Ed} := 2475\ kN \cdot m$ $N_{Ed} := 5400\ kN$ $V_{Ed} := 410\ kN$

$h_{I600} := 600\ mm$ $w_{I600} := 500\ mm$ $tw_{I600} := 20\ mm$ $tf_{I600} := 35\ mm$

$$N_{Ed.moment} := \frac{M_{Ed}}{h_{I600} - tf_{I600}} = \left(4.381 \cdot 10^3\right)\ kN$$

$N_{Ed.tot} := N_{Ed} + N_{Ed.moment} = \left(9.781 \cdot 10^3\right)\ kN$ Totalt trykk på flensene

$$N_{Ed.per} := \frac{N_{Ed}}{2} + N_{Ed.moment} = \left(7.081 \cdot 10^6\right)\ N$$

$$V_{Rd.pl} := \frac{f_{yk}}{\sqrt{3} \cdot \gamma_{M0}} \cdot h_{I600} \cdot tw_{I600} = \left(2.53 \cdot 10^3\right)\ kN$$ NS-EN 1993-1-1 formel (6.18)

$U_{skjær} := \frac{V_{Ed}}{V_{Rd.pl}} = 0.162$ $V_{Rd.pl} > 2 \cdot V_{Ed}$ Kan dermed se vekk fra reduksjon pga. skjærknekking

$A_{steg} := \left(h_{I600} - 2 \cdot tf_{I600}\right) \cdot tw_{I600} = 0.011\ m^2$

$A_{flens} := w_{I600} \cdot tf_{I600} = 0.018\ m^2$

$$N_{Rd.flens} := A_{flens} \cdot f_{yd} = \left(6.391 \cdot 10^3\right)\ kN$$ NS-EN 1993 1-1 formel(6.10)

$$U_{Flens} := \frac{N_{Ed.per}}{N_{Rd.flens}} = 1.108$$ NS-EN 1993 1-1 formel(6.9)

Ved denne lastfordelingen har ikke flensen god nok kapasitet. Bør dermed heller la hele tverrsnittet ta opp normalspenningene. Dette virker greit siden det er lite skjærkraft som virker på søylen

Prøver dermed ny beregning med normalspenning fordelt over hele, finner dermed spenningene

$$\sigma_N := \frac{N_{Ed}}{\left(A_{steg} + 2 \cdot A_{flens}\right)} = 118.421\ MPa$$

$$\sigma_{Mom} := \frac{N_{Ed.moment}}{A_{flens}} = 250.316\ MPa$$

$U_{flens} := \frac{\left(\sigma_N + \sigma_{Mom}\right)}{} = 1.01$ <1.0 Dermed er den innenfor

f_{yd}

Lastfordelingen som er tiltenkt er ikke tilstrekkelig for søylen. Dermed er det sett på som nødvendig å fordele bøyespenning og aksialspenning over hele tverrsnittet. Siden dette lastbilde holde i vedlegget om kontrollberegning er det ikke nødvendig å kontrollere på nytt. Prøver uansett å regne med kilsveis.

$\frac{A_{flens}}{A_{steg}} = 1.651$ >0.6 Kan bruke formel (6.21)

$\tau_V := \frac{V_{Ed}}{A_{steg}} = 38.679\ MPa$ (6.21)

$\frac{A_{flens}}{A_{steg}} = 1.651$ >0.6

Finner dermed sveiselengder for steget og flensene

$S_{hor} := 2 \cdot w_{I600} - tw_{I600} = 0.98\ m$ $S_{vert} := 2 \cdot \left(h_{I600} - tf_{I600}\right) = 1.13\ m$

Regner trykkapasiteten til flensen

$N_{Rdflens} := \frac{f_{yk}}{\gamma_{M0}} \cdot A_{flens} = \left(6.391 \cdot 10^3\right)\ kN$ NS-EN 1993-1-1 formel (6.8)

Regner minste a-mål for flensene

$a_{flens} := \frac{N_{Rdflens}}{f_{vwd} \cdot S_{hor}} = 28.24\ mm$ NS-EN 1993-1-8 utbredt fra formel (4.2)

$a_{flens} := 29\ mm$

Siden trykkraften virker normalt på flens vil den ha litt bedre kapasitet. Men bruker a=29mm i videre beregninger.

Sjekker videre a-mål for stegsveisene

Stegsveiser:

$a_{steg} := \frac{V_{Rd.pl}}{f_{vwd} \cdot S_{vert}} = 9.696\ mm$ NS-EN 1993-1-8 formel (4.3)

$a_{steg} := 10\ mm$

Trenger en sveis på 10 mm for å ha like god kapasitet som steget

$$F_{WRD} := \frac{\left(fu_{420} \cdot S_{vert}\right) \cdot a_{steg}}{\sqrt{3} \cdot \gamma_{M2} \cdot \beta_w} = \left(2.61 \cdot 10^3\right)\ kN$$

NS-EN 1993-1-8 formel (4.3)

$$U_{steg} := \frac{V_{Ed}}{F_{WRD}} = 0.157$$

$N_{sveisRd} := f_{vwd} \cdot a_{flens} \cdot S_{hor} = \left(6.563 \cdot 10^3\right)\ kN$

NS-EN 1993-1-8 formel(4.3)

$$U_{flens.sveis} := \frac{N_{Ed.per}}{N_{sveisRd}} = 1.079$$

Flenssveiser a=29mm
Stegsveiser a=10mm

Knutepunkt mellom HE300B og I850x300x25x30

$fu_{S355} := 490 \cdot \frac{N}{mm^2}$ NS-EN 1993 1-1 Tabell 3.1

$\beta_W := 0.9$ NS-EN 1993 1-8 Tabell 4.1

$\gamma_{M2} := 1.25$ NS-EN 1993 1.1 NA.6.1(1)2B

$fy_{S355} := 355 \frac{N}{mm^2}$ NS-EN 1993 1-1 Tabell 3.1

$\gamma_{M0} := 1.15$ NS-EN 1993 1.1 NA.6.1(1)2B

$h_{HE300B} := 300\ mm$ $w_{HE300B} := 300\ mm$ $tw_{HE300B} := 11\ mm$ $tf_{HE300B} := 19\ mm$

$r_{HE300B} := 27\ mm$

$h_{I850} := 900\ mm$ $w_{I850} := 300\ mm$ $tw_{I850} := 25\ mm$ $tf_{I850} := 30\ mm$

$My_{ED} := 185\ kN \cdot m$

$V_{ED} := 312\ kN$

$f_{vwd} := \frac{fu_{S355}}{\sqrt[2]{3} \cdot \beta_W \cdot \gamma_{M2}} = 251.468\ MPa$ NS-EN 1993 1.8 (4.4)

Areal per flens

$A_{flens} := w_{HE300B} \cdot tf_{HE300B} = 0.006\ m^2$

$Sveis_{flenshor} := w_{HE300B} \cdot 2 - \left(tw_{HE300B} + r_{HE300B}\right) = 0.562\ m$

Kraftpar fra momentet

$N_{Ed.flens} := \frac{My_{ED}}{h_{HE300B} - tw_{HE300B}} = 640.138\ kN$

Flensens trykkakapasitet

$N_{FlensRd} := \frac{fy_{S355}}{\gamma_{M0}} \cdot A_{flens} = \left(1.76 \cdot 10^3\right)\ kN$ NS-EN 1993-1-1 formel (6.8)

$U_{flens} := \frac{N_{Ed.flens}}{N_{FlensRd}} = 0.364 \qquad U_{flens} < 1.0$ Flensens utnyttelse

$a_{flens} := \frac{N_{FlensRd}}{f_{vwd} \cdot Sveis_{flenshor}} = 12.45\ mm$ utbedret fra NS-EN 1993-1-8 formel (4.2)

$a_{flens} := 13\ mm$

Bruker videre a=13 mm selv om sveisen har litt reservekapasitet

Sjekker videre trykk-kapasiteten til sveisene

$N_{sveisRd} := f_{vwd} \cdot a_{flens} \cdot Sveis_{flenshor} = \left(1.837 \cdot 10^3\right)\ kN$ NS-EN 1993-1-8 formel (4.3)

Ser at sveisene fortsatt har bedre kapasitet enn flensen, dermed fortsetter med a=14mm

$U_{flenssveis} := \frac{N_{Ed.flens}}{N_{sveisRd}} = 0.348$ Sveisen har god kapasitet til å ta lastvirkningene som oppstår.

Det blir dermed brukt a=13mm på flenssveisene

Sjekker videre nødvendig a-mål for stegsveisene

$A_{steg} := h_{HE300B} \cdot tw_{HE300B} = 0.003\ m^2$

$V_{stegRD} := \frac{fy_{S355}}{\gamma_{M0} \cdot \sqrt{3}} \cdot A_{steg} = 588.144\ kN$ NS-EN 1993-1-1 formel (6.18)

$Sveis_{steg} := 2 \cdot \left(h_{HE300B} - 2 \cdot \left(tf_{HE300B} + r_{HE300B}\right)\right) = 0.416\ m$ Sveist lengde langs steget

$a_{steg} := \frac{V_{stegRD}}{f_{vwd} \cdot Sveis_{steg}} = 5.622\ mm$ utarbeidet fra NS-EN 1993-1-8 formel (4.3)

Bruker a-mål=6mm videre i beregningene, har ingen reservekapasitet

$a_{steg} := 6\ mm$

Sjekker skjærkapasiteten til sveisene

$$F_{WRD} := \frac{\left(fu_{S355} \cdot Sveis_{steg}\right) \cdot a_{steg}}{\sqrt{3} \cdot \gamma_{M2} \cdot \beta_W} = 627.664\ kN$$ NS-EN 1993-1-8 formel (4.3)

$$F_{WRD} > V_{ED}$$ NS-EN 1993-1-8 formel (4.2)

Sjekker videre utnyttelsen av sveisene

$$U_{sveis.skjær} := \frac{V_{ED}}{F_{WRD}} = 0.497$$

Sveisene vil dermed bli sveist med kilsveis med a-mål som vist under:

$a_{steg} = 6\ mm$

$a_{flens} = 13\ mm$

Knutepunkt mellom HE400B søyle og hovedramme (I900x500x25x30)

$M_{Ed} := 40\ kN \cdot m$

$N_{Ed} := 1140\ kN$

$V_{Ed} := 77\ kN$

Dimensjoner HE400B

$h_{HE400B} := 400\ mm$ $w_{HE400B} := 300\ mm$ $r_{HE400B} := 27\ mm$

$tw_{HE400B} := 13.5\ mm$ $tf_{HE400B} := 24\ mm$

Regner videre opptredende lastvirkninger og gjør momentet om til et kraftpar som virker på flensene

$$N_{moment} := \frac{M_{Ed}}{h_{HE400B} - tf_{HE400B}} = 106.383\ kN$$

$$N_{tot} := N_{moment} + N_{Ed} = \left(1.246 \cdot 10^3\right)\ kN$$

$$N_{per.flens} := \frac{N_{Ed}}{2} + N_{moment} = 676.383\ kN$$

Arealer for steg og flens

$$A_{steg} := \left(h_{HE400B} - 2 \cdot tf_{HE400B}\right) \cdot tw_{HE400B} = 0.005\ m^2$$

$$A_{flens} := w_{HE400B} \cdot tf_{HE400B} = 0.007\ m^2$$

Regner videre kapasitetene til profilet

$$N_{FlensRd} := \frac{fy_{S355}}{\gamma_{M0}} \cdot A_{flens} = \left(2.223 \cdot 10^3\right)\ kN$$

$$V_{stegRD} := \frac{fy_{S355}}{\gamma_{M0} \cdot \sqrt[2]{3}} \cdot A_{steg} = 846.928\ kN$$

Sjekker videre utnyttelsen til flensen og steget i forhold til opptredende krefter

$$U_{flens} := \frac{N_{per.flens}}{N_{FlensRd}} = 0.304$$

$$U_{steg} := \frac{V_{Ed}}{V_{stegRD}} = 0.091$$

Lengder for sveisene

$$S_{Hor} := 2 \cdot w_{HE400B} - tw_{HE400B} - r_{HE400B} = 0.56\ m$$

$$S_{vert} := 2 \cdot \left(h_{HE400B} - 2 \cdot tw_{HE400B} - r_{HE400B}\right) = 0.692\ m$$

Videre beregnes a-mål for kilsveisene

Flenssveiser nødvendig a-mål:

$$a_{flens} := \frac{N_{FlensRd}}{f_{vwd} \cdot S_{Hor}} = 15.797\ mm$$

Bruker videre a=16mm

Stegsveiser nødvendig a-mål

$$a_{steg} := \frac{V_{stegRD}}{f_{vwd} \cdot S_{vert}} = 4.867\ mm$$

Bruker videre a-mål på 5mm på steget

Valgt a-mål for sveisene

$$a_{flens} := 16\ mm$$

$$a_{steg} := 5\ mm$$

Sjekker videre om disse sveisene har nok kapasitet til å ta opp de opptredende lastvirkningene.

$N_{sveisRd} := f_{vwd} \cdot a_{flens} \cdot S_{Hor} = \left(2.251 \cdot 10^{3}\right)$ **kN** Flenssveisenes aksialkapasitet

$Fw_{Rd} := \frac{\left(fu_{S355} \cdot S_{vert}\right) \cdot a_{steg}}{\sqrt{3} \cdot \gamma_{M2} \cdot \beta_W} = 870.08$ **kN** Stegsveisenes Skjærkapasitet

$U_{flens} := \frac{N_{per.flens}}{N_{sveisRd}} = 0.3$

$U_{steg} := \frac{V_{Ed}}{Fw_{Rd}} = 0.088$

VEDLEGG H

```
//Exported using: GeniE V8.3-24 started 21-May-2023 18:49:17

//Units

GenieRules.Units.setOutputUnits("m", "kN", "delC");

GenieRules.Units.setInputUnit(Angle, "deg");

GenieRules.Units.setInputUnit(Force, "kN");

GenieRules.Units.setInputUnit(Length, "m");

GenieRules.Units.setInputUnit(TempDiff, "delC");


//***** PROPERTIES *****//

//Sections

HE300B = ISection(0.3 m, 0.3 m, 0.011 m, 0.019 m, 0.027 m);

// NVS lib : HE 400 B NS-EN 10034

HE400B = ISection(0.4 m, 0.3 m, 0.0135 m, 0.024 m, 0.027 m);

HE400B.libraryGeneralSection = GeneralSection(0.0198 m^2, 3.57e-06 m^4, 0.0005768 m^4,
0.0001082 m^4, 0 m^4, 0.00016539705 m^3, 0.00288 m^3, 0.000721 m^3, 0.009474824771 m^2,
0.004818848903 m^2, 0 m, 0 m, 0.001615864193 m^3, 0.000548019 m^3);

HE400B.description = "NVS lib : HE 400 B NS-EN 10034";

I_600_500_20_35 = ISection(0.6 m, 0.5 m, 0.02 m, 0.035 m);

I_900_300_20_25 = ISection(0.9 m, 0.3 m, 0.02 m, 0.025 m);

I_900_500_25_25 = ISection(0.9 m, 0.5 m, 0.025 m, 0.03 m);

Sct1 = BoxSection(0.6 m, 0.6 m, 0.1 m, 0.1 m);


//Materials

Dummy_Stiff = MaterialLinear(420000 kPa, 7.85 tonne/m^3, 2.1e+10 kPa, 0.3, 1.2e-05 delC^-1, 3e-05
kN*s/m);

S355 = MaterialLinear(355000 kPa, 7.85 tonne/m^3, 210000000 kPa, 0.3, 1.2e-05 delC^-1, 3e-05
kN*s/m);

S420 = MaterialLinear(420000 kPa, 7.85 tonne/m^3, 210000000 kPa, 0.3, 1.2e-05 delC^-1, 3e-05
kN*s/m);

Shear_Plate = MaterialShear(100, 7.85 tonne/m^3, 210000000 kPa, 0.3, 1.2e-05 delC^-1, 3e-05
kN*s/m);
```

```
//Thicknesses
Tck3 = Thickness(0.1 m);
Tck_08mm = Thickness(0.008 m);
Tck_10mm = Thickness(0.01 m);

//MeshDensities and NumberOfElements
MeshProperty1 = MeshDensity(500 m);
MeshProperty2 = MeshDensity(0.5 m);
MeshProperty3 = MeshDensity(1 m);
MeshProperty4 = MeshDensity(1 m);
MeshProperty4.setDefault();

//***** RULES *****//
//Compatibility Rules
GenieRules.Compatibility.version = "V8.3-24";
GenieRules.Compatibility.enable(SetDefaultNames, true);
GenieRules.Compatibility.enable(CaseInsensitiveFunctions, true);
GenieRules.Compatibility.enable(JournalledDefaultPrefix, true);
GenieRules.Compatibility.enable(SimplifyTopologyEnhancedVertexRemoval, true);
GenieRules.Compatibility.enable(PlateSnapping, true);
GenieRules.Compatibility.enable(PlateSortingCOGFirst, true);
GenieRules.Compatibility.enable(CurveSnapping, true);
GenieRules.Compatibility.enable(DefaultLongFemNames, true);
GenieRules.Compatibility.enable(DefaultEccentricHinghes, true);
GenieRules.Compatibility.enable(AutomaticallySaveModelAfterAnalysis, false);
GenieRules.Compatibility.enable(ValidateTransforms, true);
GenieRules.Compatibility.enable(CheckPlatesForErrorsDuringCreation, true);
GenieRules.Compatibility.enable(UseTopologySimplificationVersion7, true);
GenieRules.Compatibility.enable(UseSpliceVersionV, true);
GenieRules.Compatibility.enable(PreferLinearDependencies, true);
```

```
GenieRules.Compatibility.enable(PostponeFEMFileWrite, true);
GenieRules.Compatibility.enable(PostponeLoadApplication, true);
GenieRules.Compatibility.enable(UseSestra10, true);
GenieRules.Compatibility.enable(BucklingCapacityForSegmentedMembers, true);
GenieRules.Compatibility.enable(AlternativeJointBraceClassification, true);
GenieRules.Compatibility.enable(UseAutoSegmentation, true);
GenieRules.Compatibility.enable(AccurateCorrosionAddition, true);
GenieRules.Compatibility.enable(ParallellMeshing, false);

//Connected Move Rules
GenieRules.ConnectedMove.useStructuralPoints = false;
GenieRules.ConnectedMove.defaultConnected = false;
GenieRules.ConnectedMove.rearrangeXJoints = false;

//Geometry Rules
GenieRules.Geometry.beamTopologySnapping = true;
GenieRules.Geometry.guideCurveTopologySnapping = true;
GenieRules.Geometry.creationGrouping = cgGroupingOff;
GenieRules.Geometry.AssemblyType = LegacyAssembly;

//Joint Creation Rules
GenieRules.JointCreation.autoGenerate = false;
GenieRules.JointCreation.selectionAware = false;
GenieRules.JointCreation.exclude(geFreeThroughBeams, true);
GenieRules.JointCreation.exclude(geThroughBeamPure, true);
GenieRules.JointCreation.exclude(geThroughBeams, false);
GenieRules.JointCreation.exclude(geFreeBeamEnds, true);
GenieRules.JointCreation.exclude(ge2BeamAligned, true);
GenieRules.JointCreation.exclude(geBeamEnds, false);

//JointDesign Rules
```

```
GenieRules.JointDesign.setDefaultCanRule(0.25, 0.3 m);
GenieRules.JointDesign.setDefaultStubRule(1, 0.6 m);
GenieRules.JointDesign.coneAngle = 9.462322207 deg;
GenieRules.JointDesign.minimumGap = 0.0508 m;
GenieRules.JointDesign.gapTolerance = 0.001 m;
GenieRules.JointDesign.planeTolerance = 1 deg;
GenieRules.JointDesign.braceAngleMoveLimit = 10 deg;
GenieRules.JointDesign.chordAlignmentTolerance = 5 deg;
GenieRules.JointDesign.flushBraces = false;
GenieRules.JointDesign.flushBraces = false;
GenieRules.JointDesign.iterations = 2;
GenieRules.JointDesign.AutoAdjustSegmentLength = false;

//Local Joint Flexibility (LJF) Rules
GenieRules.LJF.method = ljfBuitrago1993;
GenieRules.LJF.setLimit(ljfAxial, 0.1, 5);
GenieRules.LJF.setLimit(ljfIPB, 0.1, 5);
GenieRules.LJF.setLimit(ljfOPB, 0.1, 5);

//Meshing rules
GenieRules.Meshing.elementType = mp1stOrder;
GenieRules.Meshing.superElementType = 1;
GenieRules.Meshing.autoSimplifyTopology = true;
GenieRules.Meshing.autoSplitPeriodicGeometry = false;
GenieRules.Meshing.repairSplitTopology = false;
GenieRules.Meshing.preference(mpPreferRectangularMesh, true);
GenieRules.Meshing.preference(mpAllowTriangularElements, true);
GenieRules.Meshing.preference(mpPreferPointMassAsNodeMass, true);
GenieRules.Meshing.preference(mpUseDrillingElements, false);
GenieRules.Meshing.preference(mpUseEccentricHinges, true);
GenieRules.Meshing.eliminateInternalEdges = true;
```

```
GenieRules.Meshing.eliminateInternalVertices = true;
GenieRules.Meshing.preference(mpIncludeUnusedProperties, false);
GenieRules.Meshing.preference(mpEliminateInternalEccentricities, false);
GenieRules.Meshing.preference(mpIgnoreFilletRadius, false);
GenieRules.Meshing.preference(mpPreferLinearDependencies, true);
GenieRules.Meshing.preference(mpUseLongLoadcaseNames, true);
GenieRules.Meshing.preference(mpUseLongSetNames, true);
GenieRules.Meshing.preference(mpUseLongPropertyNames, true);
GenieRules.Meshing.preference(mpMeshDensityRounded, false);
GenieRules.Meshing.scantlings = msGross;
GenieRules.Meshing.ignoreEccentricities = false;
GenieRules.Meshing.useCocentricBeams = false;
GenieRules.Meshing.faceMeshStrategy = AdvancingFrontQuadMesher;
GenieRules.Meshing.edgeMeshStrategy = UniformDistributionEdge;
GenieRules.Meshing.activate(mpMaxAngle, mpFail, true);
GenieRules.Meshing.setLimit(mpMaxAngle, mpFail, 179 deg);
GenieRules.Meshing.activate(mpMaxAngle, mpSplit, false);
GenieRules.Meshing.setLimit(mpMaxAngle, mpSplit, 165 deg);
GenieRules.Meshing.activate(mpMinAngle, mpFail, false);
GenieRules.Meshing.setLimit(mpMinAngle, mpFail, 1 deg);
GenieRules.Meshing.activate(mpMinAngle, mpSplit, false);
GenieRules.Meshing.setLimit(mpMinAngle, mpSplit, 15 deg);
GenieRules.Meshing.activate(mpMaxRelativeJacobi, mpFail, false);
GenieRules.Meshing.setLimit(mpMaxRelativeJacobi, mpFail, 10);
GenieRules.Meshing.activate(mpMaxRelativeJacobi, mpSplit, false);
GenieRules.Meshing.setLimit(mpMaxRelativeJacobi, mpSplit, 5);
GenieRules.Meshing.activate(mpMinNormalizedJacobi, mpFail, false);
GenieRules.Meshing.setLimit(mpMinNormalizedJacobi, mpFail, 0);
GenieRules.Meshing.activate(mpMinNormalizedJacobi, mpSplit, false);
GenieRules.Meshing.setLimit(mpMinNormalizedJacobi, mpSplit, 0.2);
GenieRules.Meshing.activate(mpMinEdge, false);
```

```
GenieRules.Meshing.setLimit(mpMinEdge, 0.1);
GenieRules.Meshing.activate(mpMinEdgeByLength, false);
GenieRules.Meshing.setLimit(mpMinEdgeByLength, 0 m);
GenieRules.Meshing.activate(mpMinNonConceptualEdge, false);
GenieRules.Meshing.setLimit(mpMinNonConceptualEdge, 1);
GenieRules.Meshing.activate(mpMaxChord, false);
GenieRules.Meshing.setLimit(mpMaxChord, 0.2);
GenieRules.Meshing.activate(mpMaxTwistAngle, mpFail, false);
GenieRules.Meshing.setLimit(mpMaxTwistAngle, mpFail, 30 deg);
GenieRules.Meshing.activate(mpMaxTwistAngle, mpSplit, false);
GenieRules.Meshing.setLimit(mpMaxTwistAngle, mpSplit, 10 deg);
GenieRules.Meshing.activate(mpMinMaxDensityRatio, false);
GenieRules.Meshing.setLimit(mpMinMaxDensityRatio, 0.1);
GenieRules.Meshing.basicLCfactor = 1;
GenieRules.Meshing.analysisFolders = true;
GenieRules.Meshing.preference(mpAdjustNumberOfElements, true);
GenieRules.Meshing.useUniformizedFaceParameterization = false;
GenieRules.Meshing.longitudinalMassOnNonStructuralElements = true;

//Tolerances Rules
GenieRules.Tolerances.angleTolerance = 2 deg;
GenieRules.Tolerances.pointTolerance = 0.01 m;
GenieRules.Tolerances.useTolerantModelling = true;

//Set Rules
GenieRules.Sets.scriptCompact = true;

//Beam Creation Rules
GenieRules.BeamCreation.DefaultCurveOffset = ReparameterizedBeamCurveOffset(NoCurveOffset());
GenieRules.BeamCreation.DefaultCurveOrientation = CustomizableCurveOrientation();
```

```
//Beam Creation Rules
GenieRules.Transformation.CopyTransformerMethod = tmUseModelTransformer;

//***** STRUCTURE *****//
//Beams
Dummy_Stiff.setDefault();
Sct1.setDefault();
Bm210 = Beam(Point(10.65 m,0 m,-0.5 m), Point(10.65 m,0 m,0 m));
Bm210.meshDensity = MeshProperty3;
Bm210.CurveOffset = ReparameterizedBeamCurveOffset(NoCurveOffset());

Bm211 = Beam(Point(10.65 m,15.3 m,-0.5 m), Point(10.65 m,15.3 m,0 m));
Bm211.meshDensity = MeshProperty3;
Bm211.CurveOffset = ReparameterizedBeamCurveOffset(NoCurveOffset());

Bm212 = Beam(Point(26.65 m,0 m,-0.5 m), Point(26.65 m,0 m,0 m));
Bm212.meshDensity = MeshProperty3;
Bm212.CurveOffset = ReparameterizedBeamCurveOffset(NoCurveOffset());

Bm213 = Beam(Point(26.65 m,15.3 m,-0.5 m), Point(26.65 m,15.3 m,0 m));
Bm213.meshDensity = MeshProperty3;
Bm213.CurveOffset = ReparameterizedBeamCurveOffset(NoCurveOffset());


S355.setDefault();
HE300B.setDefault();
Bm11 = Beam(Point(26.65 m,1.65 m,0 m), Point(22.65 m,1.65 m,0 m));
Bm11.localSystem = LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m));
Bm11.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);
Bm11.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m,
stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);
```

Bm147 = Beam(Point(30.65 m,4.05 m,0 m), Point(26.65 m,4.05 m,0 m));

Bm147.meshDensity = MeshProperty3;

Bm147.localSystem = LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m));

Bm147.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm147.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m, stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);

Bm148 = Beam(Point(30.65 m,1.65 m,0 m), Point(26.65 m,1.65 m,0 m));

Bm148.meshDensity = MeshProperty3;

Bm148.localSystem = LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m));

Bm148.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm148.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m, stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);

Bm153 = Beam(Point(6.65 m,1.65 m,0 m), Point(10.65 m,1.65 m,0 m));

Bm153.meshDensity = MeshProperty3;

Bm153.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm153.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m, stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);

Bm154 = Beam(Point(6.65 m,4.05 m,0 m), Point(10.65 m,4.05 m,0 m));

Bm154.meshDensity = MeshProperty3;

Bm154.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm154.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m, stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);

Bm155 = Beam(Point(6.65 m,13.65 m,0 m), Point(10.65 m,13.65 m,0 m));

Bm155.meshDensity = MeshProperty3;

Bm155.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm155.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m, stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);

```
Bm158 = Beam(Point(6.65 m,12.05 m,0 m), Point(10.65 m,12.05 m,0 m));

Bm158.meshDensity = MeshProperty3;

Bm158.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm158.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m,
stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);


Bm164 = Beam(Point(26.65 m,6.45 m,0 m), Point(30.65 m,6.45 m,0 m));

Bm164.meshDensity = MeshProperty3;

Bm164.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm164.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m,
stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);


Bm165 = Beam(Point(10.65 m,6.45 m,0 m), Point(6.65 m,6.45 m,0 m));

Bm165.meshDensity = MeshProperty3;

Bm165.localSystem = LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m));

Bm165.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm165.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m,
stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);


Bm166 = Beam(Point(6.65 m,6.45 m,0 m), Point(3.65 m,6.45 m,0 m));

Bm166.meshDensity = MeshProperty3;

Bm166.localSystem = LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m));

Bm166.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm166.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m,
stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);


Bm36 = Beam(Point(26.65 m,4.05 m,0 m), Point(22.65 m,4.05 m,0 m));

Bm36.localSystem = LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m));

Bm36.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm36.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m,
stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);


Bm37 = Beam(Point(26.65 m,6.45 m,0 m), Point(22.65 m,6.45 m,0 m));
```

Bm37.localSystem = LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m));

Bm37.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm37.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m, stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);

Bm38 = Beam(Point(22.65 m,6.45 m,0 m), Point(18.65 m,6.45 m,0 m));

Bm38.localSystem = LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m));

Bm38.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm38.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m, stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);

Bm41 = Beam(Point(14.65 m,1.65 m,0 m), Point(10.65 m,1.65 m,0 m));

Bm41.localSystem = LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m));

Bm41.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm41.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m, stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);

Bm43 = Beam(Point(14.65 m,4.05 m,0 m), Point(10.65 m,4.05 m,0 m));

Bm43.localSystem = LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m));

Bm43.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm43.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m, stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);

Bm44 = Beam(Point(18.65 m,6.45 m,0 m), Point(14.65 m,6.45 m,0 m));

Bm44.localSystem = LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m));

Bm44.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm44.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m, stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);

Bm45 = Beam(Point(14.65 m,6.45 m,0 m), Point(10.65 m,6.45 m,0 m));

Bm45.localSystem = LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m));

Bm45.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm45.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m, stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);

Bm49 = Beam(Point(14.65 m,13.65 m,0 m), Point(10.65 m,13.65 m,0 m));

Bm49.localSystem = LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m));

Bm49.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm49.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m, stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);

Bm51 = Beam(Point(14.65 m,12.05 m,0 m), Point(10.65 m,12.05 m,0 m));

Bm51.localSystem = LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m));

Bm51.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm51.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m, stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);

Bm52 = Beam(Point(3.65 m,6.45 m,0 m), Point(0 m,6.45 m,0 m));

Bm52.localSystem = LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m));

Bm52.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm52.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m, stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);

Bm67 = Beam(Point(10.65 m,8.85 m,0 m), Point(14.65 m,8.85 m,0 m));

Bm67.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm67.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m, stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);

Bm68 = Beam(Point(26.65 m,8.85 m,0 m), Point(22.65 m,8.85 m,0 m));

Bm68.localSystem = LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m));

Bm68.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm68.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m, stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);

Bm69 = Beam(Point(26.65 m,13.65 m,0 m), Point(22.65 m,13.65 m,0 m));

```
Bm69.localSystem = LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m));

Bm69.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm69.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m,
stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);



HE400B.setDefault();

Bm10 = Beam(Point(31.975 m,0 m,8 m), Point(31.975 m,0 m,0 m));

Bm10.meshDensity = MeshProperty3;

Bm10.localSystem = LocalSystem(Vector3d(0 m,0 m,1 m), Vector3d(0 m,-1 m,0 m));

Bm10.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);


Bm176 = Beam(Point(21.65 m,0 m,0 m), Point(21.65 m,0 m,8 m));

Bm176.meshDensity = MeshProperty3;

Bm176.localSystem = LocalSystem(Vector3d(0 m,0 m,1 m), Vector3d(0 m,-1 m,0 m));

Bm176.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);


Bm25 = Beam(Point(37.3 m,0 m,0 m), Point(37.3 m,0 m,8 m));

Bm25.meshDensity = MeshProperty3;

Bm25.localSystem = LocalSystem(Vector3d(0 m,0 m,1 m), Vector3d(0 m,-1 m,0 m));

Bm25.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);


Bm26 = Beam(Point(37.3 m,15.3 m,0 m), Point(37.3 m,15.3 m,8 m));

Bm26.meshDensity = MeshProperty3;

Bm26.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);


Bm27 = Beam(Point(0 m,0 m,0 m), Point(0 m,0 m,8 m));

Bm27.meshDensity = MeshProperty3;

Bm27.localSystem = LocalSystem(Vector3d(0 m,0 m,1 m), Vector3d(0 m,-1 m,0 m));

Bm27.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);
```

```
Bm28 = Beam(Point(0 m,15.3 m,0 m), Point(0 m,15.3 m,8 m));
Bm28.meshDensity = MeshProperty3;
Bm28.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm29 = Beam(Point(5.325 m,0 m,0 m), Point(5.325 m,0 m,8 m));
Bm29.meshDensity = MeshProperty3;
Bm29.localSystem = LocalSystem(Vector3d(0 m,0 m,1 m), Vector3d(0 m,-1 m,0 m));
Bm29.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm30 = Beam(Point(15.65 m,15.3 m,0 m), Point(15.65 m,15.3 m,8 m));
Bm30.meshDensity = MeshProperty3;
Bm30.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm31 = Beam(Point(31.975 m,15.3 m,8 m), Point(31.975 m,15.3 m,0 m));
Bm31.meshDensity = MeshProperty3;
Bm31.localSystem = LocalSystem(Vector3d(0 m,0 m,1 m), Vector3d(0 m,1 m,0 m));
Bm31.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm32 = Beam(Point(5.325 m,15.3 m,0 m), Point(5.325 m,15.3 m,8 m));
Bm32.meshDensity = MeshProperty3;
Bm32.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm4 = Beam(Point(15.65 m,0 m,0 m), Point(15.65 m,0 m,8 m));
Bm4.meshDensity = MeshProperty3;
Bm4.localSystem = LocalSystem(Vector3d(0 m,0 m,1 m), Vector3d(0 m,-1 m,0 m));
Bm4.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm40 = Beam(Point(21.65 m,15.3 m,0 m), Point(21.65 m,15.3 m,8 m));
Bm40.meshDensity = MeshProperty3;
Bm40.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);
```

```
Bm42 = Beam(Point(37.3 m,5.1 m,0 m), Point(37.3 m,5.1 m,8 m));
Bm42.meshDensity = MeshProperty3;
Bm42.localSystem = LocalSystem(Vector3d(0 m,0 m,1 m), Vector3d(1 m,0 m,0 m));
Bm42.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm46 = Beam(Point(37.3 m,10.2 m,0 m), Point(37.3 m,10.2 m,8 m));
Bm46.meshDensity = MeshProperty3;
Bm46.localSystem = LocalSystem(Vector3d(0 m,0 m,1 m), Vector3d(1 m,0 m,0 m));
Bm46.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm47 = Beam(Point(0 m,5.1 m,0 m), Point(0 m,5.1 m,8 m));
Bm47.meshDensity = MeshProperty3;
Bm47.localSystem = LocalSystem(Vector3d(0 m,0 m,1 m), Vector3d(-1 m,0 m,0 m));
Bm47.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm48 = Beam(Point(0 m,10.2 m,0 m), Point(0 m,10.2 m,8 m));
Bm48.meshDensity = MeshProperty3;
Bm48.localSystem = LocalSystem(Vector3d(0 m,0 m,1 m), Vector3d(-1 m,0 m,0 m));
Bm48.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);


I_900_300_20_25.setDefault();
Bm5 = Beam(Point(6.65 m,0 m,0 m), Point(6.65 m,15.3 m,0 m));
Bm5.meshDensity = MeshProperty3;
Bm5.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);
Bm5.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m,
stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);


S420.setDefault();
I_600_500_20_35.setDefault();
```

```
Bm174 = Beam(Point(26.65 m,0 m,8 m), Point(26.65 m,0 m,0 m));
Bm174.meshDensity = MeshProperty3;
Bm174.localSystem = LocalSystem(Vector3d(0 m,0 m,1 m), Vector3d(0 m,-1 m,0 m));
Bm174.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm175 = Beam(Point(10.65 m,0 m,0 m), Point(10.65 m,0 m,8 m));
Bm175.meshDensity = MeshProperty3;
Bm175.localSystem = LocalSystem(Vector3d(0 m,0 m,1 m), Vector3d(0 m,-1 m,0 m));
Bm175.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm35 = Beam(Point(26.65 m,15.3 m,8 m), Point(26.65 m,15.3 m,0 m));
Bm35.meshDensity = MeshProperty3;
Bm35.localSystem = LocalSystem(Vector3d(0 m,0 m,1 m), Vector3d(0 m,1 m,0 m));
Bm35.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm39 = Beam(Point(10.65 m,15.3 m,0 m), Point(10.65 m,15.3 m,8 m));
Bm39.meshDensity = MeshProperty3;
Bm39.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);


I_900_300_20_25.setDefault();
Bm1 = Beam(Point(0 m,15.3 m,0 m), Point(0 m,0 m,0 m));
Bm1.meshDensity = MeshProperty3;
Bm1.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);
Bm1.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.8 m, 1, 1, 1, 1, 0.8 m,
stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);

Bm12 = Beam(Point(3.65 m,0 m,8 m), Point(3.65 m,15.3 m,8 m));
Bm12.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);
Bm12.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m,
stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);
```

Bm13 = Beam(Point(7.15 m,0 m,8 m), Point(7.15 m,15.3 m,8 m));

Bm13.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm13.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m, stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);

Bm14 = Beam(Point(10.65 m,0 m,8 m), Point(10.65 m,15.3 m,8 m));

Bm14.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm14.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m, stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);

Bm15 = Beam(Point(14.65 m,0 m,8 m), Point(14.65 m,15.3 m,8 m));

Bm15.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm15.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m, stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);

Bm16 = Beam(Point(18.65 m,0 m,8 m), Point(18.65 m,15.3 m,8 m));

Bm16.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm16.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m, stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);

Bm17 = Beam(Point(22.65 m,0 m,8 m), Point(22.65 m,15.3 m,8 m));

Bm17.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm17.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m, stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);

Bm18 = Beam(Point(26.65 m,0 m,8 m), Point(26.65 m,15.3 m,8 m));

Bm18.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm18.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m, stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);

Bm19 = Beam(Point(30.15 m,0 m,8 m), Point(30.15 m,15.3 m,8 m));

Bm19.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm19.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m, stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);

```
Bm20 = Beam(Point(33.65 m,0 m,8 m), Point(33.65 m,15.3 m,8 m));

Bm20.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm20.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m,
stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);


Bm21 = Beam(Point(0 m,15.3 m,8 m), Point(0 m,0 m,8 m));

Bm21.meshDensity = MeshProperty3;

Bm21.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm21.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.8 m, 1, 1, 1, 1, 0.8 m,
stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);


Bm23 = Beam(Point(37.3 m,0 m,8 m), Point(37.3 m,15.3 m,8 m));

Bm23.meshDensity = MeshProperty3;

Bm23.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm23.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.8 m, 1, 1, 1, 1, 0.8 m,
stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);


Bm3 = Beam(Point(37.3 m,0 m,0 m), Point(37.3 m,15.3 m,0 m));

Bm3.meshDensity = MeshProperty3;

Bm3.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm3.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.8 m, 1, 1, 1, 1, 0.8 m,
stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);


Bm33 = Beam(Point(14.65 m,0 m,0 m), Point(14.65 m,15.3 m,0 m));

Bm33.meshDensity = MeshProperty3;

Bm33.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm33.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m,
stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);


Bm34 = Beam(Point(22.65 m,0 m,0 m), Point(22.65 m,15.3 m,0 m));

Bm34.meshDensity = MeshProperty3;

Bm34.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);
```

Bm34.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m, stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);

Bm50 = Beam(Point(3.65 m,0 m,0 m), Point(3.65 m,15.3 m,0 m));

Bm50.meshDensity = MeshProperty3;

Bm50.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm50.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m, stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);

Bm6 = Beam(Point(10.65 m,0 m,0 m), Point(10.65 m,15.3 m,0 m));

Bm6.meshDensity = MeshProperty3;

Bm6.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm6.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m, stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);

Bm66 = Beam(Point(33.975 m,0 m,0 m), Point(33.975 m,15.3 m,0 m));

Bm66.meshDensity = MeshProperty3;

Bm66.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm66.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m, stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);

Bm7 = Beam(Point(18.65 m,0 m,0 m), Point(18.65 m,15.3 m,0 m));

Bm7.meshDensity = MeshProperty3;

Bm7.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm7.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m, stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);

Bm8 = Beam(Point(26.65 m,0 m,0 m), Point(26.65 m,15.3 m,0 m));

Bm8.meshDensity = MeshProperty3;

Bm8.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm8.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m, stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);

```
Bm9 = Beam(Point(30.65 m,0 m,0 m), Point(30.65 m,15.3 m,0 m));

Bm9.meshDensity = MeshProperty3;

Bm9.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm9.buckling = BucklingFactor(bucklingLengthOptionBeamLength, 0.1 m, 1, 1, 1, 1, 0.8 m,
stiffenerSpacingOptionNone, 1, 0.1 m, unbracedLengthOptionNone);



I_900_500_25_25.setDefault();

Bm22 = Beam(Point(0 m,0 m,8 m), Point(37.3 m,0 m,8 m));

Bm22.meshDensity = MeshProperty3;

Bm22.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);


Bm24 = Beam(Point(37.3 m,15.3 m,8 m), Point(0 m,15.3 m,8 m));

Bm24.meshDensity = MeshProperty3;

Bm24.localSystem = LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m));

Bm24.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);


Bm59 = Beam(Point(0 m,0 m,0 m), Point(10.65 m,0 m,0 m));

Bm59.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm60 = Beam(Point(10.65 m,0 m,0 m), Point(26.65 m,0 m,0 m));

Bm60.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm61 = Beam(Point(37.3 m,0 m,0 m), Point(26.65 m,0 m,0 m));

Bm61.localSystem = LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m));

Bm61.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);


Bm62 = Beam(Point(0 m,15.3 m,0 m), Point(10.65 m,15.3 m,0 m));

Bm62.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm64 = Beam(Point(10.65 m,15.3 m,0 m), Point(26.65 m,15.3 m,0 m));

Bm64.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);

Bm65 = Beam(Point(26.65 m,15.3 m,0 m), Point(37.3 m,15.3 m,0 m));

Bm65.CurveOffset = AlignedCurveOffset(frFlushTop, 0 m);
```

```
//Plates

Shear_Plate.setDefault();

Tck_08mm.setDefault();

Pl3 = Plate(Point(0 m,0 m,0 m), Point(37.3 m,0 m,0 m), Point(37.3 m,0 m,8 m), Point(0 m,0 m,8 m));


Pl4 = Plate(Point(37.3 m,15.3 m,0 m), Point(37.3 m,15.3 m,8 m), Point(37.3 m,0 m,8 m), Point(37.3
m,0 m,0 m));


Pl5 = Plate(Point(0 m,15.3 m,0 m), Point(0 m,15.3 m,8 m), Point(37.3 m,15.3 m,8 m), Point(37.3
m,15.3 m,0 m));


Pl6 = Plate(Point(0 m,0 m,0 m), Point(0 m,0 m,8 m), Point(0 m,15.3 m,8 m), Point(0 m,15.3 m,0 m));



Tck_10mm.setDefault();

Pl1 = Plate(Point(0 m,15.3 m,0 m), Point(0 m,0 m,0 m), Point(37.3 m,0 m,0 m), Point(37.3 m,15.3 m,0
m));

Pl1.meshDensity = MeshProperty3;


Pl2 = Plate(Point(0 m,15.3 m,8 m), Point(37.3 m,15.3 m,8 m), Point(37.3 m,0 m,8 m), Point(0 m,0 m,8
m));

Pl2.meshDensity = MeshProperty3;



//Supports

Sp1 = SupportPoint(Point(10.65 m,0 m,-0.5 m));

Sp1.boundary = BoundaryCondition(Fixed, Fixed, Fixed, Free, Free, Free);


Sp2 = SupportPoint(Point(26.65 m,0 m,-0.5 m));

Sp2.boundary = BoundaryCondition(Fixed, Fixed, Fixed, Free, Free, Free);
```

Sp3 = SupportPoint(Point(26.65 m,15.3 m,-0.5 m));

Sp3.boundary = BoundaryCondition(Fixed, Fixed, Fixed, Free, Free, Free);

Sp4 = SupportPoint(Point(10.65 m,15.3 m,-0.5 m));

Sp4.boundary = BoundaryCondition(Fixed, Fixed, Fixed, Free, Free, Free);

//***** GUIDING GEOMETRY *****//

//Guiding Geometry

GuidePlane_Bottom = GuidePlane(Point(0 m,0 m,0 m), Point(37.3 m,0 m,0 m), Point(37.3 m,15.3 m,0 m), Point(0 m,15.3 m,0 m), 8, 19, 0.3565683646, 0.2144772118, 0.2144772118, 0.2144772118, 0.2144772118, 0.2144772118, 0.2144772118, 0.3565683646, 0.1111111111, 0.1045751634, 0.1045751634, 0.1045751634, 0.1045751634, 0.1045751634, 0.1045751634, 0.1045751634, 0.1045751634, 0.1045751634, 0.1045751634, 0.1045751634, 0.1045751634, 0.1045751634, 0.1045751634, 0.1045751634, 0.1045751634, 0.1045751634, 0.1111111111);

GuidePlane_Top = GuidePlane(Point(0 m,0 m,8 m), Point(37.3 m,0 m,8 m), Point(37.3 m,15.3 m,8 m), Point(0 m,15.3 m,8 m), 10, 19, 0.1957104558, 0.1876675603, 0.1876675603, 0.2144772118, 0.2144772118, 0.2144772118, 0.2144772118, 0.1876675603, 0.1876675603, 0.1957104558, 0.1111111111, 0.1045751634, 0.1045751634, 0.1045751634, 0.1045751634, 0.1045751634, 0.1045751634, 0.1045751634, 0.1045751634, 0.1045751634, 0.1045751634, 0.1045751634, 0.1045751634, 0.1045751634, 0.1045751634, 0.1045751634, 0.1045751634, 0.1045751634, 0.1111111111);

//***** ENVIRONMENT *****//

//***** EQUIPMENTS *****//

//Equipents

GA_Boiler_Skid = PrismEquipment(8.71 m, 4.83 m, 5.918 m, 39 tonne);

GA_Boiler_Skid.centreOfGravity(Vector3d(0.069 m,0.292 m,2.033 m));

GA_Boiler_Skid.clearFootprint();

GA_Boiler_Skid.addToFootprint(4.055 m, 4.355 m, 2.115 m, 2.415 m);

GA_Boiler_Skid.addToFootprint(4.055 m, 4.355 m, -2.415 m, -2.115 m);

GA_Boiler_Skid.addToFootprint(-4.355 m, -4.055 m, 2.115 m, 2.415 m);

GA_Boiler_Skid.addToFootprint(-4.355 m, -4.055 m, -2.415 m, -2.115 m);

GA_Boiler_Transformer = PrismEquipment(3.9 m, 2.75 m, 3.7 m, 38 tonne);

GA_Boiler_Transformer.centreOfGravity(Vector3d(0.29 m,0.075 m,1.46 m));

```
GA_Boiler_Transformer.clearFootprint();
GA_Boiler_Transformer.addToFootprint(-1.165 m, -0.835 m, -0.93 m, -0.69 m);
GA_Boiler_Transformer.addToFootprint(-1.165 m, -0.835 m, 0.69 m, 0.93 m);
GA_Boiler_Transformer.addToFootprint(0.835 m, 1.165 m, -0.93 m, -0.69 m);
GA_Boiler_Transformer.addToFootprint(0.835 m, 1.165 m, 0.69 m, 0.93 m);
GA_GIS = PrismEquipment(12.5 m, 4.5 m, 4.111 m, 35.1 tonne);
GA_GIS.centreOfGravity(Vector3d(0 m,0 m,2.055 m));
GA_SFC_Converter = PrismEquipment(12.23 m, 1.176 m, 2.501 m, 12.1 tonne);
GA_SFC_Converter.centreOfGravity(Vector3d(0 m,0 m,1.25 m));
GA_SFC_Converter_2 = PrismEquipment(12.23 m, 1.176 m, 2.501 m, 12.1 tonne);
GA_SFC_Converter_2.centreOfGravity(Vector3d(0 m,0 m,1.25 m));
GA_SFC_Transformer = PrismEquipment(5.2 m, 3.53 m, 3.924 m, 72 tonne);
GA_SFC_Transformer.centreOfGravity(Vector3d(-0.235 m,-0.135 m,2.2 m));
GA_SFC_Transformer.clearFootprint();
GA_SFC_Transformer.addToFootprint(0.835 m, 1.165 m, 1.046 m, 1.356 m);
GA_SFC_Transformer.addToFootprint(0.835 m, 1.165 m, -1.356 m, -1.046 m);
GA_SFC_Transformer.addToFootprint(-1.165 m, -0.835 m, 1.046 m, 1.356 m);
GA_SFC_Transformer.addToFootprint(-1.165 m, -0.835 m, -1.356 m, -1.046 m);
GA_SFC_Transformer_2 = PrismEquipment(5.2 m, 3.53 m, 3.924 m, 72 tonne);
GA_SFC_Transformer_2.centreOfGravity(Vector3d(-0.235 m,-0.135 m,2.2 m));
GA_SFC_Transformer_2.clearFootprint();
GA_SFC_Transformer_2.addToFootprint(0.835 m, 1.165 m, 1.046 m, 1.356 m);
GA_SFC_Transformer_2.addToFootprint(0.835 m, 1.165 m, -1.356 m, -1.046 m);
GA_SFC_Transformer_2.addToFootprint(-1.165 m, -0.835 m, 1.046 m, 1.356 m);
GA_SFC_Transformer_2.addToFootprint(-1.165 m, -0.835 m, -1.356 m, -1.046 m);
Last_Dekke = PrismEquipment(37.3 m, 15.3 m, 4 m, 1260 tonne);
Last_Mellom_Utstyr = PrismEquipment(37.3 m, 15.3 m, 2 m, 190 tonne);
Last_Stivere_East = PrismEquipment(37.3 m, 8 m, 0.1 m, 15 tonne);
Last_Stivere_Nord = PrismEquipment(8 m, 15.3 m, 0.1 m, 6 tonne);
Last_Stivere_South = PrismEquipment(8 m, 15.3 m, 0.1 m, 6 tonne);
Last_Stivere_West = PrismEquipment(37.3 m, 8 m, 0.1 m, 15 tonne);
```

```
Last_Top = PrismEquipment(37.3 m, 15.3 m, 4 m, 1260 tonne);
Nedadrettet_ALS_vind = PrismEquipment(37.3 m, 15.3 m, 1 m, 389.5 tonne);
Nedadrettet_Vind_ULS = PrismEquipment(37.3 m, 15.3 m, 1 m, 272 tonne);
Stivere_Inne = PrismEquipment(37.3 m, 15.3 m, 1 m, 25 tonne);
Stivere_Oppe = PrismEquipment(37.3 m, 15.3 m, 1 m, 25 tonne);

//***** REGULAR SETS ( Create ) *****//
//Regular Sets
Platesett = Set();

//***** DYNAMIC SETS ( Create ) *****//
//Dynamic Sets

//***** LOAD MODELLING AND ANALYSIS *****//
LC_Utstyr = LoadCase();
LC_Utstyr.setFemLoadcase(1);
LC_Utstyr.designCondition(lcOperating);
LC_Grav = LoadCase();
LC_Grav.setFemLoadcase(2);
LC_Grav.designCondition(lcOperating);
LC_Nyttelast_Topp = LoadCase();
LC_Nyttelast_Topp.setFemLoadcase(3);
LC_Nyttelast_Topp.designCondition(lcOperating);
LC_Wind_N = LoadCase();
LC_Wind_N.setFemLoadcase(4);
LC_Wind_N.designCondition(lcOperating);
LC_Wind_S = LoadCase();
LC_Wind_S.setFemLoadcase(5);
LC_Wind_S.designCondition(lcOperating);
LC_Wind_E = LoadCase();
LC_Wind_E.setFemLoadcase(6);
```

```
LC_Wind_E.designCondition(lcOperating);
LC_Wind_W = LoadCase();
LC_Wind_W.setFemLoadcase(7);
LC_Wind_W.designCondition(lcOperating);
LC_Eksplosjon = LoadCase();
LC_Eksplosjon.setFemLoadcase(8);
LC_Eksplosjon.designCondition(lcOperating);
LC_Last_mellom_utstyr = LoadCase();
LC_Last_mellom_utstyr.setFemLoadcase(9);
LC_Last_mellom_utstyr.designCondition(lcOperating);
LC_Storm_E = LoadCase();
LC_Storm_E.setFemLoadcase(10);
LC_Storm_E.designCondition(lcOperating);
LC_Storm_W = LoadCase();
LC_Storm_W.setFemLoadcase(11);
LC_Storm_W.designCondition(lcOperating);
LC_Storm_N = LoadCase();
LC_Storm_N.setFemLoadcase(12);
LC_Storm_N.designCondition(lcOperating);
LC_Storm_S = LoadCase();
LC_Storm_S.setFemLoadcase(13);
LC_Storm_S.designCondition(lcOperating);
ALS_Blast_E = LoadCombination();
ALS_Blast_E.designCondition(lcOperating);
ALS_Blast_E.convertLoadToMass = false;
ALS_Blast_E.globalScaleFactor = 1;
ALS_Storm_E = LoadCombination();
ALS_Storm_E.designCondition(lcOperating);
ALS_Storm_E.convertLoadToMass = false;
ALS_Storm_E.globalScaleFactor = 1;
ALS_Storm_N = LoadCombination();
```

```
ALS_Storm_N.designCondition(lcOperating);
ALS_Storm_N.convertLoadToMass = false;
ALS_Storm_N.globalScaleFactor = 1;
ALS_Storm_S = LoadCombination();
ALS_Storm_S.designCondition(lcOperating);
ALS_Storm_S.convertLoadToMass = false;
ALS_Storm_S.globalScaleFactor = 1;
ALS_Storm_W = LoadCombination();
ALS_Storm_W.designCondition(lcOperating);
ALS_Storm_W.convertLoadToMass = false;
ALS_Storm_W.globalScaleFactor = 1;
LC_all = LoadCombination();
LC_all.designCondition(lcOperating);
LC_all.convertLoadToMass = false;
LC_all.globalScaleFactor = 1;
SLS_w = LoadCombination();
SLS_w.designCondition(lcOperating);
SLS_w.convertLoadToMass = false;
SLS_w.globalScaleFactor = 1;
ULS_a_E = LoadCombination();
ULS_a_E.designCondition(lcOperating);
ULS_a_E.convertLoadToMass = false;
ULS_a_E.globalScaleFactor = 1;
ULS_a_N = LoadCombination();
ULS_a_N.designCondition(lcOperating);
ULS_a_N.convertLoadToMass = false;
ULS_a_N.globalScaleFactor = 1;
ULS_a_S = LoadCombination();
ULS_a_S.designCondition(lcOperating);
ULS_a_S.convertLoadToMass = false;
ULS_a_S.globalScaleFactor = 1;
```

```
ULS_a_W = LoadCombination();
ULS_a_W.designCondition(lcOperating);
ULS_a_W.convertLoadToMass = false;
ULS_a_W.globalScaleFactor = 1;
ULS_b_E = LoadCombination();
ULS_b_E.designCondition(lcOperating);
ULS_b_E.convertLoadToMass = false;
ULS_b_E.globalScaleFactor = 1;
ULS_b_N = LoadCombination();
ULS_b_N.designCondition(lcOperating);
ULS_b_N.convertLoadToMass = false;
ULS_b_N.globalScaleFactor = 1;
ULS_b_S = LoadCombination();
ULS_b_S.designCondition(lcOperating);
ULS_b_S.convertLoadToMass = false;
ULS_b_S.globalScaleFactor = 1;
ULS_b_W = LoadCombination();
ULS_b_W.designCondition(lcOperating);
ULS_b_W.convertLoadToMass = false;
ULS_b_W.globalScaleFactor = 1;
LC_Utstyr.excludeSelfWeight();
LC_Utstyr.includeStructureMassWithRotationField();
LC_Utstyr.meshLoadsAsMass(false);
//  Equipments
LC_Utstyr.placeAtPoint(GA_Boiler_Skid, Point(18.635 m,11.25 m,0 m), LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m)));
LC_Utstyr.placeAtPoint(GA_Boiler_Transformer, Point(10.95 m,12.85 m,0 m), LocalSystem(Vector3d(-1 m,0 m,0 m), Vector3d(0 m,0 m,1 m)));
LC_Utstyr.placeAtPoint(GA_GIS, Point(33.97 m,7.85 m,0 m), LocalSystem(Vector3d(0 m,1 m,0 m), Vector3d(0 m,0 m,1 m)));
LC_Utstyr.placeAtPoint(GA_SFC_Converter, Point(23.15 m,6.45 m,0 m), LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m)));
```

```
LC_Utstyr.placeAtPoint(GA_SFC_Converter_2, Point(7.65 m,6.45 m,0 m), LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m)));

LC_Utstyr.placeAtPoint(GA_SFC_Transformer, Point(10.87 m,2.85 m,0 m), LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m)));

LC_Utstyr.placeAtPoint(GA_SFC_Transformer_2, Point(26.4 m,2.85 m,0 m), LocalSystem(Vector3d(-1 m,0 m,0 m), Vector3d(0 m,0 m,1 m)));



LC_Grav.includeSelfWeight();

LC_Grav.includeStructureMassWithRotationField();

LC_Grav.meshLoadsAsMass(false);

//  Equipments

LC_Grav.placeAtPoint(Last_Stivere_East, Point(18.65 m,0 m,4 m), LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,-1 m,0 m)));

LC_Grav.placeAtPoint(Last_Stivere_Nord, Point(37.3 m,7.65 m,4 m), LocalSystem(Vector3d(0 m,0 m,-1 m), Vector3d(1 m,0 m,0 m)));

LC_Grav.placeAtPoint(Last_Stivere_South, Point(0 m,7.65 m,4 m), LocalSystem(Vector3d(0 m,0 m,-1 m), Vector3d(1 m,0 m,0 m)));

LC_Grav.placeAtPoint(Last_Stivere_West, Point(18.65 m,15.3 m,4 m), LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,-1 m,0 m)));

LC_Grav.placeAtPoint(Stivere_Inne, Point(18.65 m,7.65 m,0 m), LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m)));

LC_Grav.placeAtPoint(Stivere_Oppe, Point(18.65 m,7.65 m,8 m), LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m)));



LC_Nyttelast_Topp.excludeSelfWeight();

LC_Nyttelast_Topp.includeStructureMassWithRotationField();

LC_Nyttelast_Topp.meshLoadsAsMass(false);

//  Loads

Forklift1 = PointLoad(LC_Nyttelast_Topp, Point(18.65 m,7.65 m,8 m), 0 kN, 0 kN, -72.8 kN, 0 kN*m, 0 kN*m, 0 kN*m);


//  Equipments
```

```
LC_Nyttelast_Topp.placeAtPoint(Last_Top, Point(18.65 m,7.65 m,8 m), LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m)));

LC_Nyttelast_Topp.constantLoad(Last_Top);



LC_Wind_N.excludeSelfWeight();

LC_Wind_N.includeStructureMassWithRotationField();

LC_Wind_N.meshLoadsAsMass(false);

//  Loads

WindN_s10 = LineLoad(LC_Wind_N, FootprintLine(Point(37.3 m,5.1 m,0 m), Point(37.3 m,5.1 m,8 m)), Component1dLinear(Vector3d(-10.5 kN/m, 0 kN/m, 0 kN/m), Vector3d(-10.5 kN/m, 0 kN/m, 0 kN/m)));

WindN_s11 = LineLoad(LC_Wind_N, FootprintLine(Point(37.3 m,10.2 m,0 m), Point(37.3 m,10.2 m,8 m)), Component1dLinear(Vector3d(-10.5 kN/m, 0 kN/m, 0 kN/m), Vector3d(-10.5 kN/m, 0 kN/m, 0 kN/m)));

WindN_s12 = LineLoad(LC_Wind_N, FootprintLine(Point(37.3 m,15.3 m,0 m), Point(37.3 m,15.3 m,8 m)), Component1dLinear(Vector3d(-5.5 kN/m, 0 kN/m, 0 kN/m), Vector3d(-5.5 kN/m, 0 kN/m, 0 kN/m)));

WindN_s9 = LineLoad(LC_Wind_N, FootprintLine(Point(37.3 m,0 m,0 m), Point(37.3 m,0 m,8 m)), Component1dLinear(Vector3d(-5.5 kN/m, 0 kN/m, 0 kN/m), Vector3d(-5.5 kN/m, 0 kN/m, 0 kN/m)));


//  Equipments

LC_Wind_N.placeAtPoint(Nedadrettet_Vind_ULS, Point(18.65 m,7.65 m,8 m), LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m)));



LC_Wind_S.excludeSelfWeight();

LC_Wind_S.includeStructureMassWithRotationField();

LC_Wind_S.meshLoadsAsMass(false);

//  Loads

WindS_s10 = LineLoad(LC_Wind_S, FootprintLine(Point(0 m,10.2 m,0 m), Point(0 m,10.2 m,8 m)), Component1dLinear(Vector3d(10.5 kN/m, 0 kN/m, 0 kN/m), Vector3d(10.5 kN/m, 0 kN/m, 0 kN/m)));

WindS_s11 = LineLoad(LC_Wind_S, FootprintLine(Point(0 m,5.1 m,0 m), Point(0 m,5.1 m,8 m)), Component1dLinear(Vector3d(10.5 kN/m, 0 kN/m, 0 kN/m), Vector3d(10.5 kN/m, 0 kN/m, 0 kN/m)));
```

```
WindS_s12 = LineLoad(LC_Wind_S, FootprintLine(Point(0 m,0 m,0 m), Point(0 m,0 m,8 m)), Component1dLinear(Vector3d(5.5 kN/m, 0 kN/m, 0 kN/m), Vector3d(5.5 kN/m, 0 kN/m, 0 kN/m)));

WindS_s9 = LineLoad(LC_Wind_S, FootprintLine(Point(0 m,15.3 m,0 m), Point(0 m,15.3 m,8 m)), Component1dLinear(Vector3d(5.5 kN/m, 0 kN/m, 0 kN/m), Vector3d(5.5 kN/m, 0 kN/m, 0 kN/m)));


// Equipments

LC_Wind_S.placeAtPoint(Nedadrettet_Vind_ULS, Point(18.65 m,7.65 m,8 m), LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m)));




LC_Wind_E.excludeSelfWeight();

LC_Wind_E.includeStructureMassWithRotationField();

LC_Wind_E.meshLoadsAsMass(false);

// Loads

WindE_s1 = LineLoad(LC_Wind_E, FootprintLine(Point(0 m,0 m,0 m), Point(0 m,0 m,8 m)), Component1dLinear(Vector3d(0 kN/m, 8 kN/m, 0 kN/m), Vector3d(0 kN/m, 8 kN/m, 0 kN/m)));

WindE_s2 = LineLoad(LC_Wind_E, FootprintLine(Point(5.325 m,0 m,0 m), Point(5.325 m,0 m,8 m)), Component1dLinear(Vector3d(0 kN/m, 15.5 kN/m, 0 kN/m), Vector3d(0 kN/m, 15.5 kN/m, 0 kN/m)));

WindE_s3 = LineLoad(LC_Wind_E, FootprintLine(Point(10.65 m,0 m,0 m), Point(10.65 m,0 m,8 m)), Component1dLinear(Vector3d(0 kN/m, 15.5 kN/m, 0 kN/m), Vector3d(0 kN/m, 15.5 kN/m, 0 kN/m)));

WindE_s4 = LineLoad(LC_Wind_E, FootprintLine(Point(15.65 m,0 m,0 m), Point(15.65 m,0 m,8 m)), Component1dLinear(Vector3d(0 kN/m, 16.5 kN/m, 0 kN/m), Vector3d(0 kN/m, 16.5 kN/m, 0 kN/m)));

WindE_s5 = LineLoad(LC_Wind_E, FootprintLine(Point(21.65 m,0 m,0 m), Point(21.65 m,0 m,8 m)), Component1dLinear(Vector3d(0 kN/m, 16.5 kN/m, 0 kN/m), Vector3d(0 kN/m, 16.5 kN/m, 0 kN/m)));

WindE_s6 = LineLoad(LC_Wind_E, FootprintLine(Point(26.65 m,0 m,0 m), Point(26.65 m,0 m,8 m)), Component1dLinear(Vector3d(0 kN/m, 15.5 kN/m, 0 kN/m), Vector3d(0 kN/m, 15.5 kN/m, 0 kN/m)));

WindE_s7 = LineLoad(LC_Wind_E, FootprintLine(Point(31.975 m,0 m,0 m), Point(31.975 m,0 m,8 m)), Component1dLinear(Vector3d(0 kN/m, 15.5 kN/m, 0 kN/m), Vector3d(0 kN/m, 15.5 kN/m, 0 kN/m)));

WindE_s8 = LineLoad(LC_Wind_E, FootprintLine(Point(37.3 m,0 m,0 m), Point(37.3 m,0 m,8 m)), Component1dLinear(Vector3d(0 kN/m, 8 kN/m, 0 kN/m), Vector3d(0 kN/m, 8 kN/m, 0 kN/m)));


// Equipments

LC_Wind_E.placeAtPoint(Nedadrettet_Vind_ULS, Point(18.65 m,7.65 m,8 m), LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m)));
```

```
LC_Wind_W.excludeSelfWeight();

LC_Wind_W.includeStructureMassWithRotationField();

LC_Wind_W.meshLoadsAsMass(false);

//  Loads

WindW_s1 = LineLoad(LC_Wind_W, FootprintLine(Point(37.3 m,15.3 m,0 m), Point(37.3 m,15.3 m,8
m)), Component1dLinear(Vector3d(0 kN/m, -8 kN/m, 0 kN/m), Vector3d(0 kN/m, -8 kN/m, 0 kN/m)));

WindW_s2 = LineLoad(LC_Wind_W, FootprintLine(Point(31.975 m,15.3 m,0 m), Point(31.975 m,15.3
m,8 m)), Component1dLinear(Vector3d(0 kN/m, -15.5 kN/m, 0 kN/m), Vector3d(0 kN/m, -15.5 kN/m,
0 kN/m)));

WindW_s3 = LineLoad(LC_Wind_W, FootprintLine(Point(26.65 m,15.3 m,0 m), Point(26.65 m,15.3
m,8 m)), Component1dLinear(Vector3d(0 kN/m, -15.5 kN/m, 0 kN/m), Vector3d(0 kN/m, -15.5 kN/m,
0 kN/m)));

WindW_s4 = LineLoad(LC_Wind_W, FootprintLine(Point(21.65 m,15.3 m,0 m), Point(21.65 m,15.3
m,8 m)), Component1dLinear(Vector3d(0 kN/m, -16.5 kN/m, 0 kN/m), Vector3d(0 kN/m, -16.5 kN/m,
0 kN/m)));

WindW_s5 = LineLoad(LC_Wind_W, FootprintLine(Point(15.65 m,15.3 m,0 m), Point(15.65 m,15.3
m,8 m)), Component1dLinear(Vector3d(0 kN/m, -16.5 kN/m, 0 kN/m), Vector3d(0 kN/m, -16.5 kN/m,
0 kN/m)));

WindW_s6 = LineLoad(LC_Wind_W, FootprintLine(Point(10.65 m,15.3 m,0 m), Point(10.65 m,15.3
m,8 m)), Component1dLinear(Vector3d(0 kN/m, -15.5 kN/m, 0 kN/m), Vector3d(0 kN/m, -15.5 kN/m,
0 kN/m)));

WindW_s7 = LineLoad(LC_Wind_W, FootprintLine(Point(5.325 m,15.3 m,0 m), Point(5.325 m,15.3
m,8 m)), Component1dLinear(Vector3d(0 kN/m, -15.5 kN/m, 0 kN/m), Vector3d(0 kN/m, -15.5 kN/m,
0 kN/m)));

WindW_s8 = LineLoad(LC_Wind_W, FootprintLine(Point(0 m,15.3 m,0 m), Point(0 m,15.3 m,8 m)),
Component1dLinear(Vector3d(0 kN/m, -8 kN/m, 0 kN/m), Vector3d(0 kN/m, -8 kN/m, 0 kN/m)));


//  Equipments

LC_Wind_W.placeAtPoint(Nedadrettet_Vind_ULS, Point(18.65 m,7.65 m,8 m),
LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m)));



LC_Eksplosjon.excludeSelfWeight();

LC_Eksplosjon.includeStructureMassWithRotationField();

LC_Eksplosjon.meshLoadsAsMass(false);
```

```
// Loads

Blast_s1 = LineLoad(LC_Eksplosjon, FootprintLine(Point(0 m,0 m,0 m), Point(0 m,0 m,8 m)),
Component1dLinear(Vector3d(0 kN/m, 40 kN/m, 0 kN/m), Vector3d(0 kN/m, 40 kN/m, 0 kN/m)));

Blast_s2 = LineLoad(LC_Eksplosjon, FootprintLine(Point(5.325 m,0 m,0 m), Point(5.325 m,0 m,8 m)),
Component1dLinear(Vector3d(0 kN/m, 80 kN/m, 0 kN/m), Vector3d(0 kN/m, 80 kN/m, 0 kN/m)));

Blast_s3 = LineLoad(LC_Eksplosjon, FootprintLine(Point(10.65 m,0 m,0 m), Point(10.65 m,0 m,8 m)),
Component1dLinear(Vector3d(0 kN/m, 78 kN/m, 0 kN/m), Vector3d(0 kN/m, 78 kN/m, 0 kN/m)));

Blast_s4 = LineLoad(LC_Eksplosjon, FootprintLine(Point(15.65 m,0 m,0 m), Point(15.65 m,0 m,8 m)),
Component1dLinear(Vector3d(0 kN/m, 82.5 kN/m, 0 kN/m), Vector3d(0 kN/m, 82.5 kN/m, 0 kN/m)));

Blast_s5 = LineLoad(LC_Eksplosjon, FootprintLine(Point(21.65 m,0 m,0 m), Point(21.65 m,0 m,8 m)),
Component1dLinear(Vector3d(0 kN/m, 82.5 kN/m, 0 kN/m), Vector3d(0 kN/m, 82.5 kN/m, 0 kN/m)));

Blast_s6 = LineLoad(LC_Eksplosjon, FootprintLine(Point(26.65 m,0 m,0 m), Point(26.65 m,0 m,8 m)),
Component1dLinear(Vector3d(0 kN/m, 78 kN/m, 0 kN/m), Vector3d(0 kN/m, 78 kN/m, 0 kN/m)));

Blast_s7 = LineLoad(LC_Eksplosjon, FootprintLine(Point(31.975 m,0 m,0 m), Point(31.975 m,0 m,8
m)), Component1dLinear(Vector3d(0 kN/m, 80 kN/m, 0 kN/m), Vector3d(0 kN/m, 80 kN/m, 0
kN/m)));

Blast_s8 = LineLoad(LC_Eksplosjon, FootprintLine(Point(37.3 m,0 m,0 m), Point(37.3 m,0 m,8 m)),
Component1dLinear(Vector3d(0 kN/m, 40 kN/m, 0 kN/m), Vector3d(0 kN/m, 40 kN/m, 0 kN/m)));



LC_Last_mellom_utstyr.excludeSelfWeight();

LC_Last_mellom_utstyr.includeStructureMassWithRotationField();

LC_Last_mellom_utstyr.meshLoadsAsMass(false);

// Equipments

LC_Last_mellom_utstyr.placeAtPoint(Last_Mellom_Utstyr, Point(18.65 m,7.65 m,0 m),
LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m)));

LC_Last_mellom_utstyr.constantLoad(Last_Mellom_Utstyr);



LC_Storm_E.excludeSelfWeight();

LC_Storm_E.includeStructureMassWithRotationField();

LC_Storm_E.meshLoadsAsMass(false);

// Loads

StormE_s1 = LineLoad(LC_Storm_E, FootprintLine(Point(0 m,0 m,0 m), Point(0 m,0 m,8 m)),
Component1dLinear(Vector3d(0 kN/m, 11.5 kN/m, 0 kN/m), Vector3d(0 kN/m, 11.5 kN/m, 0 kN/m)));
```

```
StormE_s2 = LineLoad(LC_Storm_E, FootprintLine(Point(5.325 m,0 m,0 m), Point(5.325 m,0 m,8 m)), Component1dLinear(Vector3d(0 kN/m, 22.5 kN/m, 0 kN/m), Vector3d(0 kN/m, 22.5 kN/m, 0 kN/m)));

StormE_s3 = LineLoad(LC_Storm_E, FootprintLine(Point(10.65 m,0 m,0 m), Point(10.65 m,0 m,8 m)), Component1dLinear(Vector3d(0 kN/m, 22 kN/m, 0 kN/m), Vector3d(0 kN/m, 22 kN/m, 0 kN/m)));

StormE_s4 = LineLoad(LC_Storm_E, FootprintLine(Point(15.65 m,0 m,0 m), Point(15.65 m,0 m,8 m)), Component1dLinear(Vector3d(0 kN/m, 23.5 kN/m, 0 kN/m), Vector3d(0 kN/m, 23.5 kN/m, 0 kN/m)));

StormE_s5 = LineLoad(LC_Storm_E, FootprintLine(Point(21.65 m,0 m,0 m), Point(21.65 m,0 m,8 m)), Component1dLinear(Vector3d(0 kN/m, 23.5 kN/m, 0 kN/m), Vector3d(0 kN/m, 23.5 kN/m, 0 kN/m)));

StormE_s6 = LineLoad(LC_Storm_E, FootprintLine(Point(26.65 m,0 m,0 m), Point(26.65 m,0 m,8 m)), Component1dLinear(Vector3d(0 kN/m, 22 kN/m, 0 kN/m), Vector3d(0 kN/m, 22 kN/m, 0 kN/m)));

StormE_s7 = LineLoad(LC_Storm_E, FootprintLine(Point(31.975 m,0 m,0 m), Point(31.975 m,0 m,8 m)), Component1dLinear(Vector3d(0 kN/m, 22.5 kN/m, 0 kN/m), Vector3d(0 kN/m, 22.5 kN/m, 0 kN/m)));

StormE_s8 = LineLoad(LC_Storm_E, FootprintLine(Point(37.3 m,0 m,0 m), Point(37.3 m,0 m,8 m)), Component1dLinear(Vector3d(0 kN/m, 11.5 kN/m, 0 kN/m), Vector3d(0 kN/m, 11.5 kN/m, 0 kN/m)));


//  Equipments

LC_Storm_E.placeAtPoint(Nedadrettet_ALS_vind, Point(18.65 m,7.65 m,8 m), LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m)));



LC_Storm_W.excludeSelfWeight();

LC_Storm_W.includeStructureMassWithRotationField();

LC_Storm_W.meshLoadsAsMass(false);

//  Loads

StormW_s1 = LineLoad(LC_Storm_W, FootprintLine(Point(37.3 m,15.3 m,0 m), Point(37.3 m,15.3 m,8 m)), Component1dLinear(Vector3d(0 kN/m, -11.5 kN/m, 0 kN/m), Vector3d(0 kN/m, -11.5 kN/m, 0 kN/m)));

StormW_s2 = LineLoad(LC_Storm_W, FootprintLine(Point(31.975 m,15.3 m,0 m), Point(31.975 m,15.3 m,8 m)), Component1dLinear(Vector3d(0 kN/m, -22.5 kN/m, 0 kN/m), Vector3d(0 kN/m, -22.5 kN/m, 0 kN/m)));

StormW_s3 = LineLoad(LC_Storm_W, FootprintLine(Point(26.65 m,15.3 m,0 m), Point(26.65 m,15.3 m,8 m)), Component1dLinear(Vector3d(0 kN/m, -22 kN/m, 0 kN/m), Vector3d(0 kN/m, -22 kN/m, 0 kN/m)));

StormW_s4 = LineLoad(LC_Storm_W, FootprintLine(Point(21.65 m,15.3 m,0 m), Point(21.65 m,15.3 m,8 m)), Component1dLinear(Vector3d(0 kN/m, -23.5 kN/m, 0 kN/m), Vector3d(0 kN/m, -23.5 kN/m, 0 kN/m)));
```

```
StormW_s5 = LineLoad(LC_Storm_W, FootprintLine(Point(15.65 m,15.3 m,0 m), Point(15.65 m,15.3 m,8 m)), Component1dLinear(Vector3d(0 kN/m, -23.5 kN/m, 0 kN/m), Vector3d(0 kN/m, -23.5 kN/m, 0 kN/m)));

StormW_s6 = LineLoad(LC_Storm_W, FootprintLine(Point(10.65 m,15.3 m,0 m), Point(10.65 m,15.3 m,8 m)), Component1dLinear(Vector3d(0 kN/m, -22 kN/m, 0 kN/m), Vector3d(0 kN/m, -22 kN/m, 0 kN/m)));

StormW_s7 = LineLoad(LC_Storm_W, FootprintLine(Point(5.325 m,15.3 m,0 m), Point(5.325 m,15.3 m,8 m)), Component1dLinear(Vector3d(0 kN/m, -22.5 kN/m, 0 kN/m), Vector3d(0 kN/m, -22.5 kN/m, 0 kN/m)));

StormW_s8 = LineLoad(LC_Storm_W, FootprintLine(Point(0 m,15.3 m,0 m), Point(0 m,15.3 m,8 m)), Component1dLinear(Vector3d(0 kN/m, -11.5 kN/m, 0 kN/m), Vector3d(0 kN/m, -11.5 kN/m, 0 kN/m)));


//  Equipments

LC_Storm_W.placeAtPoint(Nedadrettet_ALS_vind, Point(18.65 m,7.65 m,8 m), LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m)));




LC_Storm_N.excludeSelfWeight();

LC_Storm_N.includeStructureMassWithRotationField();

LC_Storm_N.meshLoadsAsMass(false);

//  Loads

StormN_s10 = LineLoad(LC_Storm_N, FootprintLine(Point(37.3 m,5.1 m,8 m), Point(37.3 m,5.1 m,0 m)), Component1dLinear(Vector3d(-15 kN/m, 0 kN/m, 0 kN/m), Vector3d(-15 kN/m, 0 kN/m, 0 kN/m)));

StormN_s11 = LineLoad(LC_Storm_N, FootprintLine(Point(37.3 m,10.2 m,8 m), Point(37.3 m,10.2 m,0 m)), Component1dLinear(Vector3d(-15 kN/m, 0 kN/m, 0 kN/m), Vector3d(-15 kN/m, 0 kN/m, 0 kN/m)));

StormN_s12 = LineLoad(LC_Storm_N, FootprintLine(Point(37.3 m,15.3 m,8 m), Point(37.3 m,15.3 m,0 m)), Component1dLinear(Vector3d(-7.5 kN/m, 0 kN/m, 0 kN/m), Vector3d(-7.5 kN/m, 0 kN/m, 0 kN/m)));

StormN_s9 = LineLoad(LC_Storm_N, FootprintLine(Point(37.3 m,0 m,8 m), Point(37.3 m,0 m,0 m)), Component1dLinear(Vector3d(-7.5 kN/m, 0 kN/m, 0 kN/m), Vector3d(-7.5 kN/m, 0 kN/m, 0 kN/m)));


//  Equipments

LC_Storm_N.placeAtPoint(Nedadrettet_ALS_vind, Point(18.65 m,7.65 m,8 m), LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m)));
```

```
LC_Storm_S.excludeSelfWeight();

LC_Storm_S.includeStructureMassWithRotationField();

LC_Storm_S.meshLoadsAsMass(false);

//  Loads

StormS_s10 = LineLoad(LC_Storm_S, FootprintLine(Point(0 m,10.2 m,0 m), Point(0 m,10.2 m,8 m)),
Component1dLinear(Vector3d(15 kN/m, 0 kN/m, 0 kN/m), Vector3d(15 kN/m, 0 kN/m, 0 kN/m)));

StormS_s11 = LineLoad(LC_Storm_S, FootprintLine(Point(0 m,5.1 m,0 m), Point(0 m,5.1 m,8 m)),
Component1dLinear(Vector3d(15 kN/m, 0 kN/m, 0 kN/m), Vector3d(15 kN/m, 0 kN/m, 0 kN/m)));

StormS_s12 = LineLoad(LC_Storm_S, FootprintLine(Point(0 m,0 m,0 m), Point(0 m,0 m,8 m)),
Component1dLinear(Vector3d(7.5 kN/m, 0 kN/m, 0 kN/m), Vector3d(7.5 kN/m, 0 kN/m, 0 kN/m)));

StormS_s9 = LineLoad(LC_Storm_S, FootprintLine(Point(0 m,15.3 m,0 m), Point(0 m,15.3 m,8 m)),
Component1dLinear(Vector3d(7.5 kN/m, 0 kN/m, 0 kN/m), Vector3d(7.5 kN/m, 0 kN/m, 0 kN/m)));


//  Equipments

LC_Storm_S.placeAtPoint(Nedadrettet_ALS_vind, Point(18.65 m,7.65 m,8 m),
LocalSystem(Vector3d(1 m,0 m,0 m), Vector3d(0 m,0 m,1 m)));



ALS_Blast_E.addCase(LC_Utstyr, 1);

ALS_Blast_E.addCase(LC_Grav, 1);

ALS_Blast_E.addCase(LC_Nyttelast_Topp, 1);

ALS_Blast_E.addCase(LC_Eksplosjon, 1);


ALS_Storm_E.addCase(LC_Utstyr, 1);

ALS_Storm_E.addCase(LC_Grav, 1);

ALS_Storm_E.addCase(LC_Nyttelast_Topp, 1);

ALS_Storm_E.addCase(LC_Storm_E, 1);


ALS_Storm_N.addCase(LC_Utstyr, 1);

ALS_Storm_N.addCase(LC_Grav, 1);

ALS_Storm_N.addCase(LC_Nyttelast_Topp, 1);
```

```
ALS_Storm_N.addCase(LC_Storm_N, 1);
ALS_Storm_N.EquipmentRep = EquipmentAsLineLoads;


ALS_Storm_S.addCase(LC_Utstyr, 1);
ALS_Storm_S.addCase(LC_Grav, 1);
ALS_Storm_S.addCase(LC_Nyttelast_Topp, 1);
ALS_Storm_S.addCase(LC_Storm_S, 1);

ALS_Storm_W.addCase(LC_Utstyr, 1);
ALS_Storm_W.addCase(LC_Grav, 1);
ALS_Storm_W.addCase(LC_Nyttelast_Topp, 1);
ALS_Storm_W.addCase(LC_Storm_W, 1);

LC_all.addCase(LC_Utstyr, 1);
LC_all.addCase(LC_Grav, 1);
LC_all.addCase(LC_Nyttelast_Topp, 1);
LC_all.addCase(LC_Wind_N, 1);
LC_all.addCase(LC_Wind_S, 1);
LC_all.addCase(LC_Wind_E, 1);
LC_all.addCase(LC_Wind_W, 1);
LC_all.addCase(LC_Eksplosjon, 1);
LC_all.addCase(LC_Last_mellom_utstyr, 1);
LC_all.addCase(LC_Storm_E, 1);
LC_all.addCase(LC_Storm_W, 1);
LC_all.addCase(LC_Storm_N, 1);
LC_all.addCase(LC_Storm_S, 1);
LC_all.EquipmentRep = EquipmentAsLineLoads;


SLS_w.addCase(LC_Utstyr, 1);
```

```
SLS_w.addCase(LC_Grav, 1);
SLS_w.addCase(LC_Nyttelast_Topp, 1);
SLS_w.addCase(LC_Wind_E, 1);
SLS_w.addCase(LC_Last_mellom_utstyr, 1);
SLS_w.EquipmentRep = EquipmentAsLineLoads;


ULS_a_E.addCase(LC_Utstyr, 1.3);
ULS_a_E.addCase(LC_Grav, 1.3);
ULS_a_E.addCase(LC_Nyttelast_Topp, 1.3);
ULS_a_E.addCase(LC_Wind_E, 0.7);
ULS_a_E.addCase(LC_Last_mellom_utstyr, 1.3);

ULS_a_N.addCase(LC_Utstyr, 1.3);
ULS_a_N.addCase(LC_Grav, 1.3);
ULS_a_N.addCase(LC_Nyttelast_Topp, 1.3);
ULS_a_N.addCase(LC_Wind_N, 0.7);
ULS_a_N.addCase(LC_Last_mellom_utstyr, 1.3);
ULS_a_N.EquipmentRep = EquipmentAsLineLoads;


ULS_a_S.addCase(LC_Utstyr, 1.3);
ULS_a_S.addCase(LC_Grav, 1.3);
ULS_a_S.addCase(LC_Nyttelast_Topp, 1.3);
ULS_a_S.addCase(LC_Wind_S, 0.7);
ULS_a_S.addCase(LC_Last_mellom_utstyr, 1.3);

ULS_a_W.addCase(LC_Utstyr, 1.3);
ULS_a_W.addCase(LC_Grav, 1.3);
ULS_a_W.addCase(LC_Nyttelast_Topp, 1.3);
ULS_a_W.addCase(LC_Wind_W, 0.7);
```

```
ULS_a_W.addCase(LC_Last_mellom_utstyr, 1.3);

ULS_b_E.addCase(LC_Utstyr, 1);
ULS_b_E.addCase(LC_Grav, 1);
ULS_b_E.addCase(LC_Nyttelast_Topp, 1);
ULS_b_E.addCase(LC_Wind_E, 1.3);
ULS_b_E.addCase(LC_Last_mellom_utstyr, 1);

ULS_b_N.addCase(LC_Utstyr, 1);
ULS_b_N.addCase(LC_Grav, 1);
ULS_b_N.addCase(LC_Nyttelast_Topp, 1);
ULS_b_N.addCase(LC_Wind_N, 1.3);
ULS_b_N.addCase(LC_Last_mellom_utstyr, 1);
ULS_b_N.EquipmentRep = EquipmentAsLineLoads;


ULS_b_S.addCase(LC_Utstyr, 1);
ULS_b_S.addCase(LC_Grav, 1);
ULS_b_S.addCase(LC_Nyttelast_Topp, 1);
ULS_b_S.addCase(LC_Wind_S, 1.3);
ULS_b_S.addCase(LC_Last_mellom_utstyr, 1);

ULS_b_W.addCase(LC_Utstyr, 1);
ULS_b_W.addCase(LC_Grav, 1);
ULS_b_W.addCase(LC_Nyttelast_Topp, 1);
ULS_b_W.addCase(LC_Wind_W, 1.3);
ULS_b_W.addCase(LC_Last_mellom_utstyr, 1);

//Analyses
Analyse = Analysis(true);
Analyse.add(MeshActivity());
```

```
Analyse.step(1).beamsAsMembers = true;
Analyse.step(1).smartLoadCombinations = true;
Analyse.step(1).writeLoadCombinationsOnFirstLevelAsBSELL = false;
Analyse.step(1).writeComputedLoadCasesIntoCombinationBSELL = true;
Analyse.step(1).includeLoadsOnMesh = false;
Analyse.step(1).needsRemeshLoads = false;
Analyse.step(1).multithreadedLoadApplier = true;
Analyse.step(1).multithreadedMesher = false;
Analyse.step(1).writeFEMFile = false;
Analyse.step(1).usePartialMesher = true;
Analyse.step(1).lockMeshedConcepts = true;
Analyse.step(1).pileBoundaryCondition = pmPileSoilInteraction;
Analyse.step(1).nodeNumberFromJointName = false;
Analyse.step(1).elementNumberFromBeamName = false;
Analyse.step(1).regenerateMeshOption = anConditionalRegenerateMesh;
Analyse.add(LinearAnalysis());
Analyse.step(2).warpCorrection = true;
Analyse.step(2).continueOnError = false;
Analyse.step(2).useMultifrontSolverLDL = false;
Analyse.step(2).useSubset = false;
Analyse.step(2).resultFileFormat = SIN_Norsam;
Analyse.step(2).setStaticAnalysis();
Analyse.step(2).useSestra10 = false;
Analyse.step(2).stressStiffening = false;
Analyse.step(2).setIncludeLoadsFromInterfaceFiles(true);
Analyse.step(2).setIncludeBeamElementForcesAndMoments(true);
Analyse.step(2).setIncludeShellElementStresses(true);
Analyse.add(LoadResultsActivity());

Analysis1 = Analysis(true);
Analysis1.add(MeshActivity());
```

```
Analysis1.step(1).beamsAsMembers = true;
Analysis1.step(1).smartLoadCombinations = true;
Analysis1.step(1).writeLoadCombinationsOnFirstLevelAsBSELL = false;
Analysis1.step(1).writeComputedLoadCasesIntoCombinationBSELL = true;
Analysis1.step(1).includeLoadsOnMesh = false;
Analysis1.step(1).needsRemeshLoads = true;
Analysis1.step(1).multithreadedLoadApplier = true;
Analysis1.step(1).multithreadedMesher = false;
Analysis1.step(1).writeFEMFile = false;
Analysis1.step(1).usePartialMesher = true;
Analysis1.step(1).lockMeshedConcepts = true;
Analysis1.step(1).pileBoundaryCondition = pmPileSoilInteraction;
Analysis1.step(1).nodeNumberFromJointName = false;
Analysis1.step(1).elementNumberFromBeamName = false;
Analysis1.step(1).regenerateMeshOption = anConditionalRegenerateMesh;
Analysis1.add(LinearAnalysis());
Analysis1.step(2).warpCorrection = true;
Analysis1.step(2).continueOnError = false;
Analysis1.step(2).useMultifrontSolverLDL = false;
Analysis1.step(2).useSubset = false;
Analysis1.step(2).resultFileFormat = SIN_Norsam;
Analysis1.step(2).setStaticAnalysis();
Analysis1.step(2).useSestra10 = false;
Analysis1.step(2).stressStiffening = false;
Analysis1.step(2).setIncludeLoadsFromInterfaceFiles(true);
Analysis1.step(2).setIncludeBeamElementForcesAndMoments(true);
Analysis1.step(2).setIncludeShellElementStresses(true);
Analysis1.add(LoadResultsActivity());

Analysis2 = Analysis(true);
Analysis2.add(MeshActivity());
```

```
Analysis2.step(1).beamsAsMembers = true;
Analysis2.step(1).smartLoadCombinations = true;
Analysis2.step(1).writeLoadCombinationsOnFirstLevelAsBSELL = false;
Analysis2.step(1).writeComputedLoadCasesIntoCombinationBSELL = true;
Analysis2.step(1).includeLoadsOnMesh = false;
Analysis2.step(1).needsRemeshLoads = true;
Analysis2.step(1).multithreadedLoadApplier = true;
Analysis2.step(1).multithreadedMesher = false;
Analysis2.step(1).writeFEMFile = false;
Analysis2.step(1).usePartialMesher = true;
Analysis2.step(1).lockMeshedConcepts = true;
Analysis2.step(1).pileBoundaryCondition = pmPileSoilInteraction;
Analysis2.step(1).nodeNumberFromJointName = false;
Analysis2.step(1).elementNumberFromBeamName = false;
Analysis2.step(1).regenerateMeshOption = anConditionalRegenerateMesh;
Analysis2.add(LinearAnalysis());
Analysis2.step(2).warpCorrection = true;
Analysis2.step(2).continueOnError = false;
Analysis2.step(2).useMultifrontSolverLDL = false;
Analysis2.step(2).useSubset = false;
Analysis2.step(2).resultFileFormat = SIN_Norsam;
Analysis2.step(2).setStaticAnalysis();
Analysis2.step(2).useSestra10 = false;
Analysis2.step(2).stressStiffening = false;
Analysis2.step(2).setIncludeLoadsFromInterfaceFiles(true);
Analysis2.step(2).setIncludeBeamElementForcesAndMoments(true);
Analysis2.step(2).setIncludeShellElementStresses(true);
Analysis2.add(LoadResultsActivity());


//***** LOAD INTERFACES *****//
```

```
//Load interfaces
Blast = LoadInterface();
Blast.add(Bm10);
Blast.add(Bm174);
Blast.add(Bm175);
Blast.add(Bm176);
Blast.add(Bm25);
Blast.add(Bm27);
Blast.add(Bm29);
Blast.add(Bm4);
LI_bjelker = LoadInterface();
LI_bjelker.addEquipment(Stivere_Oppe, LC_Grav);
LI_bjelker.addEquipment(Last_Top, LC_Nyttelast_Topp);
LI_bjelker.addEquipment(Nedadrettet_Vind_ULS, LC_Wind_E);
LI_bjelker.add(Bm12);
LI_bjelker.add(Bm13);
LI_bjelker.add(Bm14);
LI_bjelker.add(Bm15);
LI_bjelker.add(Bm16);
LI_bjelker.add(Bm17);
LI_bjelker.add(Bm18);
LI_bjelker.add(Bm19);
LI_bjelker.add(Bm20);
LI_bjelker.add(Bm21);
LI_bjelker.add(Bm23);
LI_Boiler_Skid = LoadInterface();
LI_Boiler_Skid.addEquipment(GA_Boiler_Skid, LC_Utstyr);
LI_Boiler_Skid.add(Bm33);
LI_Boiler_Skid.add(Bm34);
LI_Boiler_Skid.add(Bm49);
LI_Boiler_Skid.add(Bm67);
```

```
LI_Boiler_Skid.add(Bm68);
LI_Boiler_Skid.add(Bm69);
LI_Boiler_TRAFOR = LoadInterface();
LI_Boiler_TRAFOR.addEquipment(GA_Boiler_Transformer, LC_Utstyr);
LI_Boiler_TRAFOR.add(Bm155);
LI_Boiler_TRAFOR.add(Bm158);
LI_Boiler_TRAFOR.add(Bm49);
LI_Boiler_TRAFOR.add(Bm51);
LI_Boiler_TRAFOR.add(Bm6);
LI_GIS = LoadInterface();
LI_GIS.addEquipment(GA_GIS, LC_Utstyr);
LI_GIS.add(Bm66);
LI_SFC_CONV_1 = LoadInterface();
LI_SFC_CONV_1.addEquipment(GA_SFC_Converter, LC_Utstyr);
LI_SFC_CONV_1.add(Bm164);
LI_SFC_CONV_1.add(Bm34);
LI_SFC_CONV_1.add(Bm37);
LI_SFC_CONV_1.add(Bm38);
LI_SFC_CONV_1.add(Bm44);
LI_SFC_CONV_1.add(Bm7);
LI_SFC_CONV_1.add(Bm8);
LI_SFC_CONV_2 = LoadInterface();
LI_SFC_CONV_2.addEquipment(GA_SFC_Converter_2, LC_Utstyr);
LI_SFC_CONV_2.add(Bm165);
LI_SFC_CONV_2.add(Bm166);
LI_SFC_CONV_2.add(Bm45);
LI_SFC_CONV_2.add(Bm5);
LI_SFC_CONV_2.add(Bm50);
LI_SFC_CONV_2.add(Bm6);
LI_SFC_TRAFOR_1 = LoadInterface();
LI_SFC_TRAFOR_1.addEquipment(GA_SFC_Transformer_2, LC_Utstyr);
```

```
LI_SFC_TRAFOR_1.add(Bm11);
LI_SFC_TRAFOR_1.add(Bm147);
LI_SFC_TRAFOR_1.add(Bm148);
LI_SFC_TRAFOR_1.add(Bm36);
LI_SFC_TRAFOR_1.add(Bm8);
LI_SFC_TRAFOR_2 = LoadInterface();
LI_SFC_TRAFOR_2.addEquipment(GA_SFC_Transformer, LC_Utstyr);
LI_SFC_TRAFOR_2.add(Bm153);
LI_SFC_TRAFOR_2.add(Bm154);
LI_SFC_TRAFOR_2.add(Bm41);
LI_SFC_TRAFOR_2.add(Bm43);
LI_SFC_TRAFOR_2.add(Bm6);
LI_Stivere_East = LoadInterface();
LI_Stivere_East.addEquipment(Last_Stivere_East, LC_Grav);
LI_Stivere_East.add(Bm10);
LI_Stivere_East.add(Bm174);
LI_Stivere_East.add(Bm175);
LI_Stivere_East.add(Bm176);
LI_Stivere_East.add(Bm25);
LI_Stivere_East.add(Bm27);
LI_Stivere_East.add(Bm29);
LI_Stivere_East.add(Bm4);
LI_Stivere_Nord = LoadInterface();
LI_Stivere_Nord.addEquipment(Last_Stivere_Nord, LC_Grav);
LI_Stivere_Nord.add(Bm25);
LI_Stivere_Nord.add(Bm26);
LI_Stivere_Nord.add(Bm42);
LI_Stivere_Nord.add(Bm46);
LI_Stivere_South = LoadInterface();
LI_Stivere_South.addEquipment(Last_Stivere_South, LC_Grav);
LI_Stivere_South.add(Bm27);
```

```
LI_Stivere_South.add(Bm28);
LI_Stivere_South.add(Bm47);
LI_Stivere_South.add(Bm48);
LI_Stivere_West = LoadInterface();
LI_Stivere_West.addEquipment(Last_Stivere_West, LC_Grav);
LI_Stivere_West.add(Bm26);
LI_Stivere_West.add(Bm28);
LI_Stivere_West.add(Bm30);
LI_Stivere_West.add(Bm31);
LI_Stivere_West.add(Bm32);
LI_Stivere_West.add(Bm35);
LI_Stivere_West.add(Bm39);
LI_Stivere_West.add(Bm40);
Storm_E = LoadInterface();
Storm_E.add(Bm10);
Storm_E.add(Bm174);
Storm_E.add(Bm175);
Storm_E.add(Bm176);
Storm_E.add(Bm25);
Storm_E.add(Bm27);
Storm_E.add(Bm29);
Storm_E.add(Bm4);
Storm_N = LoadInterface();
Storm_N.add(Bm25);
Storm_N.add(Bm26);
Storm_N.add(Bm42);
Storm_N.add(Bm46);
Storm_S = LoadInterface();
Storm_S.add(Bm27);
Storm_S.add(Bm28);
Storm_S.add(Bm47);
```

```
Storm_S.add(Bm48);
Storm_W = LoadInterface();
Storm_W.add(Bm26);
Storm_W.add(Bm28);
Storm_W.add(Bm30);
Storm_W.add(Bm31);
Storm_W.add(Bm32);
Storm_W.add(Bm35);
Storm_W.add(Bm39);
Storm_W.add(Bm40);
Wind_E = LoadInterface();
Wind_E.add(Bm10);
Wind_E.add(Bm174);
Wind_E.add(Bm175);
Wind_E.add(Bm176);
Wind_E.add(Bm25);
Wind_E.add(Bm27);
Wind_E.add(Bm29);
Wind_E.add(Bm4);
Wind_N = LoadInterface();
Wind_N.add(Bm25);
Wind_N.add(Bm26);
Wind_N.add(Bm42);
Wind_N.add(Bm46);
Wind_S = LoadInterface();
Wind_S.add(Bm27);
Wind_S.add(Bm28);
Wind_S.add(Bm47);
Wind_S.add(Bm48);
Wind_W = LoadInterface();
Wind_W.add(Bm26);
```

```
Wind_W.add(Bm28);
Wind_W.add(Bm30);
Wind_W.add(Bm31);
Wind_W.add(Bm32);
Wind_W.add(Bm35);
Wind_W.add(Bm39);
Wind_W.add(Bm40);

//***** MODEL VIEWS *****//
//***** SETS ( Fill ) *****//
//Regular Sets
Platesett.add(Pl1);
Platesett.add(Pl2);
Platesett.add(Pl3);
Platesett.add(Pl4);
Platesett.add(Pl5);
Platesett.add(Pl6);
```