RAPORT TEKNIK

PROJEKTI STRUKTURAL

SPITALI RAJONAL GJIROKASTER

<u>LOTI 1</u>: HARTIM I PROJEKT PREVENTIVAVE TË ZBATIMIT PËR DISA SPITALE RAJONALE DHE BASHKIAKE

<u>AUTORITETI KONTRAKTOR</u>: MINISTRIA E SHËNDETËSISË DHE MBROJTJES SOCIALE

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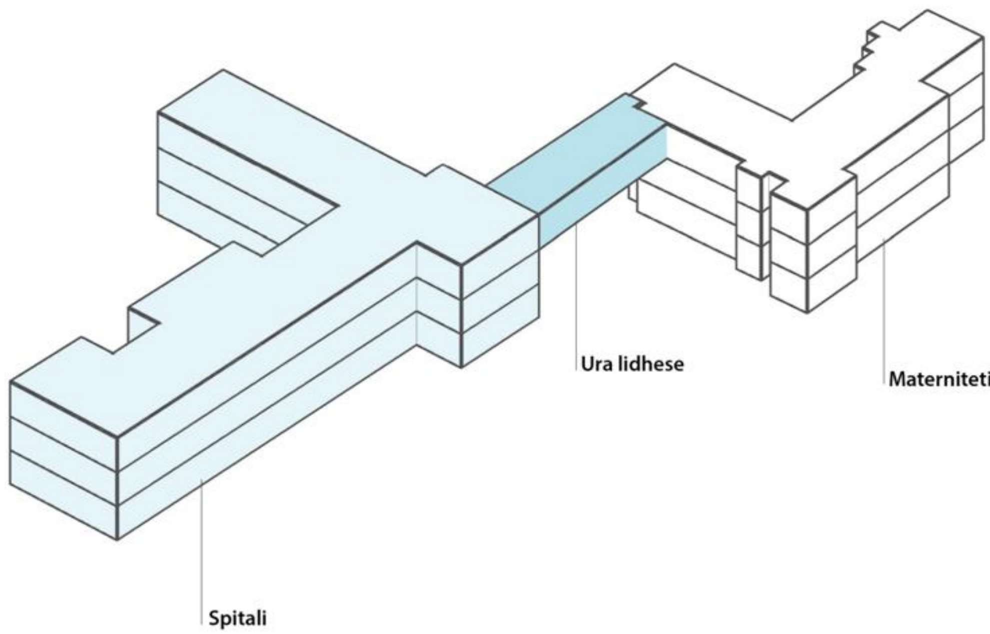
Date: 2024.04.11 22:44:44 +02'00'

2019

1. Hyrje

Llogaritja strukturale e nderhyrjeve ne Spitalin Rajonal Gjirokaster konsiston ne ndertimin e ures lidhese midis spitalit dhe maternitetit, duke siguruar nje lidhje funksionale te objekteve ekzistuese.



Raporti teknik per llogaritjen konstruktive per projekt-idene e objektit, paraqet kushtet teknike te projektimit mbi te cilat eshte bazuar llogaritja me referencat perkatese, perzgjedhjen e parametrave llogarites referuar raporteve teknike te studimeve inxhinierike mbeshtetese, interpretimin e rezultateve dhe paraqitjen e perzgjedhjes perfundimtare te elementeve konstruktive per projekt zbatim.

Raporti teknik duhet te lexohet se bashku me vizatimet teknike te cilat do te jene pjese e paraqitjes perfundimtare te projekt zbatimit te objektit.

Raporti teknik i analizes strukturale te objektit ne fazen e projekt zbatimit do te mbeshtetet ne parametrat e raporteve teknike dhe projekteve te zbatimit te meposhtme:

- Projekti arkitektonik.
- Projekti mekanik.
- Projekti elektrik.

- Projekti i ngrohjes dhe ventilimit.
- Projekti i MKZ.
- Raporti i studimit gjeologjik.
- Raporti i studimit sizmologjik.
- Parametrat ambjentale te zones ku do te ndertohet objekti.

Raporti teknik ne fazen e projek-idese paraqet vleresimin dhe llogaritjen paraprake dhe mbeshtetet mbi raportet teknike te peraferta teknike te zones, projektet e godinave ekzistuese dhe projekt propozimin arkitektonik.

Objekti eshte pozicionuar ne Gjirokaster dhe klasifikohet ne kategorine e veprave civile te ndertesave te kategorizuar ne klasen e rendesise IV sipas EC8 prEN 1998-1:2003 (E) Tab.4.3.

2. Kushtet teknike dhe normativat

Llogaritja dhe projektimi i strukturor i objektit, bazohet ne kushtet teknike te projektimit sipas normativave evropiane te projektimit.

Projektimi sipas normativave Evropiane eshte vleresuar i domosdoshem pasi kushtet teknike te projektimit te strukturave sipas normativave shqiptare nuk jane rinovuar dhe plotesuar prej nje periudhe shume te gjate kohore dhe eshte nje kerkese e Termave te References.

Kushtet teknike te projektimit sipas standartit shqiptar do te perdoren vetem per reference ne lidhje me vlerat lokale si p.sh. parametrat per llogaritjen sizmike, era, debores, kushtet ambjentale etj.

Reference per llogaritjen konstruktive jane:

- **Eurocode 0, ENV 1991-1:1994**
- **Eurocode 1, ENV 1991-2-1:1995**
- **Eurocode 2, EN 1992-1-1:2004(E)**
- **Eurocode 3, EN 1993-1-1:2003**
- **Eurocode 7, EN 1997-1**
- **Eurocode 8, EN 1998-1 (2003)**

3. Projektimi i strukturave

3.1. Kushtet gjeoteknike

Sheshi i ndertimit ne zonen e Gjirokastres klasifikohet nga studimet gjeologjike te peraferta me truallin ku propozohet te realizohet ndertimi si truall i pershtatshem per ndertim. Struktura e propozuar eshte strukture miks me elemente metalike strukturale mbajtes dhe soleta kompozite.

3.2. Sistemi struktural

Struktura konstruktive eshte e tipit kapriate hapesinore e skemes tip tra i vazhduar.

3.3. Modelimi strukturor

Per llogaritjen strukturale eshte perdorur programin llogarites Tower.

Skemat llogaritese te strukturave jane tre dimensionale (3D) gje qe lejon llogaritjen hapesinore te struktures dhe marrjen ne konsiderate te te gjithe faktoreve qe realisht veprojne ne to. Nepermjet llogaritjes merret ndikimi i te gjithe ngarkesave vertikale dhe horizontale qe aktualisht veprojne ne strukturat e ndertimit, ku mund te permendim ndikimin e forcave horizontale te eres, forcave te termetit, ndryshimit te temperatures, çedimet (uljet) e themeleve, ndikimin e forcave vertikale prej ngarkesave te ndryshme (te perhershme, te perkohshme, te vecanta), etj.

Cdo element ne strukture eshte modeluar si element linear prizmatik.

Soletat jane konsideruar diafragma rigjide.

Pllaka e themelit eshte modeluar me sustat e Winkler duke vleresuar truallin sipas parametrave te studimit gjeologjik.

Masat jane llogaritur per ngarkesat gravitacionale me formulen $G+\Psi_E Q$, ku $\Psi_E=\varphi\psi_2$, dhe ψ_2 percaktohet ne varesi te kategorise se ngarkesave te perkohshme sipas tabeles A1.1. EC0 pe EN 1990:2001

Table A1.1 - Recommended values of ψ factors for buildings

Action	ψ_0	ψ_1	ψ_2
Imposed loads in buildings, category (see EN 1991-1-1)			
Category A : domestic, residential areas	0,7	0,5	0,3
Category B : office areas	0,7	0,5	0,3
Category C : congregation areas	0,7	0,7	0,6
Category D : shopping areas	0,7	0,7	0,6
Category E : storage areas	1,0	0,9	0,8
Category F : traffic area, vehicle weight ≤ 30kN	0,7	0,7	0,6
Category G : traffic area, 30kN < vehicle weight ≤ 160kN	0,7	0,5	0,3
Category H : roofs	0	0	0
Snow loads on buildings (see EN 1991-1-3)*			
Finland, Iceland, Norway, Sweden	0,70	0,50	0,20
Remainder of CEN Member States, for sites located at altitude H > 1000 m a.s.l.	0,70	0,50	0,20
Remainder of CEN Member States, for sites located at altitude H ≤ 1000 m a.s.l.	0,50	0,20	0
Wind loads on buildings (see EN 1991-1-4)	0,6	0,2	0
Temperature (non-fire) in buildings (see EN 1991-1-5)	0,6	0,5	0
NOTE The ψ values may be set by the National annex. * For countries not mentioned below, see relevant local conditions.			

Llogaritja e struktures ndahet ne keto nenfaza:

3.3.1 Percaktimi i gjeometrise se struktures.

3.3.2 Percaktimi i parametrave llogarites te betonit dhe çelikut.

3.3.3 Percaktimi i ngarkesave.

3.3.4 Percaktimi i koeficienteve sizmike.

3.3.5 Percaktimi i koeficienteve te kombinimit te ngarkesave.

3.3.6 Llogaritja e struktures eshte realizuar referuar :

a) Llogaritjes sipas gjendjes se pare kufitare, (llogaritja ne aftesi mbajtese) (ULS).

b) Llogaritjes ne fazen e shfrytezimit (SLS.

3.3.1. Percaktimi i gjeometrise se strukturave.

Struktura eshte llogaritur si nje bllok, gje qe diktohet nga permasat planimetrike dhe forma ne plan e struktures.

Gjeometria e strukturave percaktohet ne funksion te zgjidhjes arkitektonike dhe konstruktive. Skemat strukturale plotesojne kerkesat referuar kushteve teknike te projektimit dhe interpretimit te rezultateve te dala pas llogaritjes.

Pozicionimi i elementeve, perzgjedhja dhe kombinimi i tyre sigurojne shtangesine e struktures ne lidhje me sjelljen dhe reagimin e struktures nga veprimi i kombinimit te ngarkesave.

Verehet se sipas skemes se perzgjedhur struktura klasifikohet si frame system sipas EC8 5.12. (1) prEN 1998-1 (2003) per klasifikimin struktural.

3.3.2. Percaktimi i parametrave llogarites te materialeve strukturale.

Strukturat sipas klasifikimit struktural EC0_ENV 1991-1:1994 (2001) sipas Tab.2.1 dhe EC2_EN 1992-1-1:2004(E) sipas 4.4.1.2.(5) per jetegjatesi projektuese 100 vjet jane te klases S5. Jane vleresuar te tilla pasi referuar strukturave ekzistuese te te gjitha spitaleve mosha e strukturave ose eshte afer 50vjet ose ne disa raste i ka kaluar 50vjet. Rikonstruksioni i strukturave ekzistuese te spitaleve konsiston ne rehabilitimin e tyre ne sherbim te popullsise me impakt te larte te rrezikut per perdoruesit, per shkak te sherbimit qe ofrojne, ndihmes qe i jepet popullsise ne raste katastrofash etj.. Per kete arsye eshte vleresuar klasifikimi i strukturave si struktura te klases 5 per kategorine e jetegjatesise.

Table 2.1 - Indicative design working life

Design working life category	Indicative design working life (years)	Examples
1	10	Temporary structures (1)
2	10 to 25	Replaceable structural parts, e.g. gantry girders, bearings
3	15 to 30	Agricultural and similar structures
4	50	Building structures and other common structures
5	100	Monumental building structures, bridges, and other civil engineering structures
(1) Structures or parts of structures that can be dismantled with a view to being re-used should not be considered as temporary.		

3.3.3. Percaktimi i ngarkesave.

Ngarkesat jane percaktuar bazuar ne klasifikimin e ngarkesave sipas Eurokodeve EC1 dhe kombinimi i tyre sipas EC0.

a) Vlerat e ngarkesave konstante jane percaktuar referuar parametrave sipas EC1.

- Betoni i armuar eshte marre ne llogaritje me peshe volumore 25kN/m3.
- Ngarkesa e shtresave mbi solete eshte llogaritur 2kN/m^2.
- Ngarkesa e eres eshte llogaritur 0.3kN/m^2 ne shtytje dhe 0.1kN/m^2 ne thithje.

b) Ngarkesat e perkohshme ne relacionin teknik jane paraqitur me vlerat e tyre referuar ngarkeses uiformisht te shperndare per 1m^2 siperfaqe horizontale. Ngarkesat i referohen Tab.6.1, 6.7, 6.2, 6.8. sipas EC1 prEN 1991-1-1:2001.

Ngarkesa e perkohshme (live load) eshte marre ne llogaritje:

1. Ambjentet e sherbimit per spitalet, kategoria C3, q_k=3kN/m2 dhe Q_k=4kN

2. Ngarkesat horizontale te parapeteve jane marre ne llogaritje nga tabela 6.12 EC1 prEN 1991-1-1:2001

Parametrat jane perzgjedhur nga tabelat e meposhtme:

Table 6.1 - Categories of use

Category	Specific Use	Example
A	Areas for domestic and residential activities	Rooms in residential buildings and houses; bedrooms and wards in hospitals; bedrooms in hotels and hostels kitchens and toilets.
B	Office areas	
C	Areas where people may congregate (with the exception of areas defined under category A, B, and D[1])	**C1**: Areas with tables, etc. e.g. areas in schools, cafés, restaurants, dining halls, reading rooms, receptions. **C2**: Areas with fixed seats, e.g. areas in churches, theatres or cinemas, conference rooms, lecture halls, assembly halls, waiting rooms, railway waiting rooms. **C3**: Areas without obstacles for moving people, e.g. areas in museums, exhibition rooms, etc. and access areas in public and administration buildings, hotels, hospitals, railway station forecourts. **C4**: Areas with possible physical activities, e.g. dance halls, gymnastic rooms, stages. **C5**: Areas susceptible to large crowds, e.g. in buildings for public events like concert halls, sports halls including stands, terraces and access areas and railway platforms.
D	Shopping areas	**D1**: Areas in general retail shops **D2**: Areas in department stores

Table 6.2 - Imposed loads on floors, balconies and stairs in buildings

Categories of loaded areas	q_k [kN/m²]	Q_k [kN]
Category A		
- Floors	1,5 to2,0	2,0 to 3,0
- Stairs	2,0 to4,0	2,0 to 4,0
- Balconies	2,5 to 4,0	2,0 to 3,0
Category B	2,0 to 3,0	1,5 to 4,5
Category C		
- C1	2,0 to 3,0	3,0 to 4,0
- C2	3,0 to 4,0	2,5 to 7,0 (4,0)
- C3	3,0 to 5,0	4,0 to 7,0
- C4	4,5 to 5,0	3,5 to 7,0
- C5	5,0 to 7,5	3,5 to 4,5
category D		
- D1	4,0 to 5,0	3,5 to 7,0 (4,0)
- D2	4,0 to 5,0	3,5 to 7,0

Table 6.12 - Horizontal loads on partition walls and parapets

Loaded areas	q_k [kN/m]
Category A	q_k
Category B and C1	q_k
Categories C2 –to C4 and D	q_k
Category C5	q_k
Category E	q_k
Category F	See Annex B
Category G	See Annex B

NOTE 1 For categories A, B and C1, q_k may be selected within the range 0,2 to 1,0 (0,5)
NOTE 2 For categories C2 to C4 and D q_k may be selected within the range 0,8 kN/m –to 1,0 kN/m.
NOTE 3 For category C5 q_k may be selected within the range 3,0 kN/m to 5,0 kN/m.
NOTE 4 For category E q_k may be selected within the range 0,8 kN/m to 2,0 kN/m. For areas of category E the horizontal loads depend on the occupancy. Therefore the value of q_k is defined as a minimum value and should be checked for the specific occupancy.
NOTE 5 Where a range of values is given in Notes 1, 2, 3 and 4, the value may be set by the National Annex. The recommended value is underlined.
NOTE 6 The National Annex may prescribe additional point loads Q_k and/or hard or soft body impact specifications for analytical or experimental verification.

3.3.4. Percaktimi i koeficienteve sizmike.

a) Referuar studimit sizmologjik per zonen nxitimi maksimal (PGA) eshte **a_{gR}=0.242g per nxitimin horizontal,** sipas EC8 prEN 1998-1 (2003) 4.2.5 pika 5(P) γ_I=1.4.

ag= $\gamma_I \cdot a_{gR}$=1.4·0.242g=0.3388g per nxitimin horizontal te projektimit per truallin tipi C, (reference raporti sizmologjik), perzgjedhim shkallen e duktilitetit mesatar, DCM.

b) Ne llogaritje perdoret Spektri elastik i tipit 1 sipas EC8 prEN 1998-1 (2003).

Per te percaktuar spektrin elastik horizontal perdoren shprehjet e meposhtme :

$0 \le T \le T_B$ $\qquad S_e(T)=a_g \cdot S \cdot [1+T \cdot (\eta \cdot 2.5-1)/T_B]$

$T_B \le T \le T_C$ $\qquad S_e(T)=a_g \cdot S \cdot \eta \cdot 2.5$

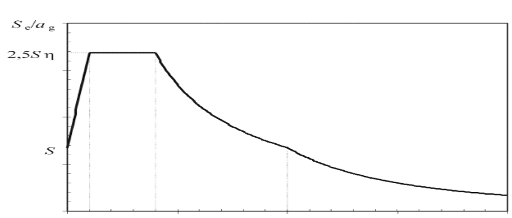
$T_C \le T \le T_D$ $\qquad S_e(T)=a_g \bullet S \bullet \eta \bullet 2.5 \bullet [T_C/T]$

$T_D \le T \le 4s$ $\qquad S_e(T)=a_g \bullet S \bullet \eta \bullet 2.5 \bullet [T_C \bullet T_D/T^2]$

Ku a_g eshte shpejtimimi projektuar i truallit te tipit A (ag= $\gamma_I \cdot a_{gR}$) per shuarje η=5%. Referuar raportit gjeologjik, trualli mund te klasifikohet si truall i kategorise B sipas EC8.

Sipas rekomandimeve te EC8 prEN1998_1_dec2003 tab.3.2 parametrat llogarites per tipin 1 te spektrit elastik jane:

- Trualli ne llogaritje eshte i tipit C, (PGA) a_{gR}=0.242g tipi 1 i spektrit elastik te EC 8 me S=1.15 per truallin e tipit C per spektrin horizontal te projektimit dhe T_B(s)=0.20sek, T_C(s)=0.60sek, T_D(s)=2.0sek η = 1.0 per shuarje 5% sipas raportit teknik te studimit sizmologjik.
- Per objektin nuk merret ne konsiderate efekti i veprimit te komponentes vertikale pasi kondicionet e kerkuara nga EC8 nuk permbushen per llogaritjen e struktures ne diskutim.
- Projektimi sizmik sipas Eurokodit 8 eshte per DC M (Medium).



Forma e spektrit elastik te reagimit te struktures, sipas EC 8

Table 3.2: Values of the parameters describing the recommended Type 1 elastic response spectra

Ground type	S	T_B (s)	T_C (s)	T_D (s)
A	1,0	0,15	0,4	2,0
B	1,2	0,15	0,5	2,0
C	1,15	0,20	0,6	2,0
D	1,35	0,20	0,8	2,0
E	1,4	0,15	0,5	2,0

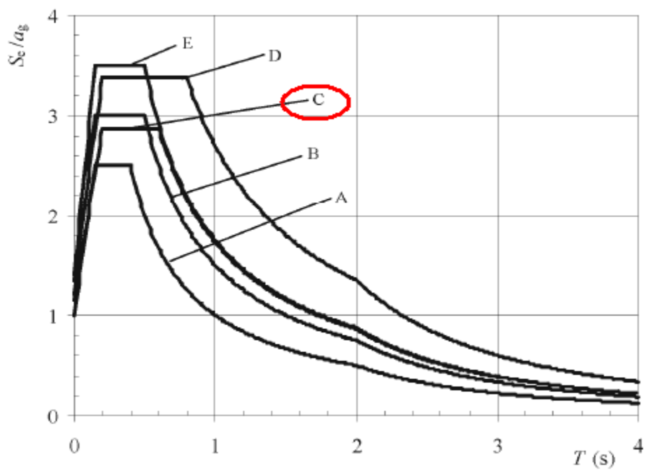


Figure 3.2: Recommended Type 1 elastic response spectra for ground types A to E (5% damping)

Sipas Fig 3.2 EC8

Spektri i projektimit sipas EC 8 per komponentet horizontale, llogaritet me shprehjet:

$0 \leq T \leq T_B$ $\quad$ $S_d(T)=a_g \bullet S \bullet [2/3+(T/T_B)\cdot(2.5/q-2/3)]$

$T_B \leq T \leq T_C$ $\quad$ $S_d(T)=a_g \bullet S \bullet 2.5/q$

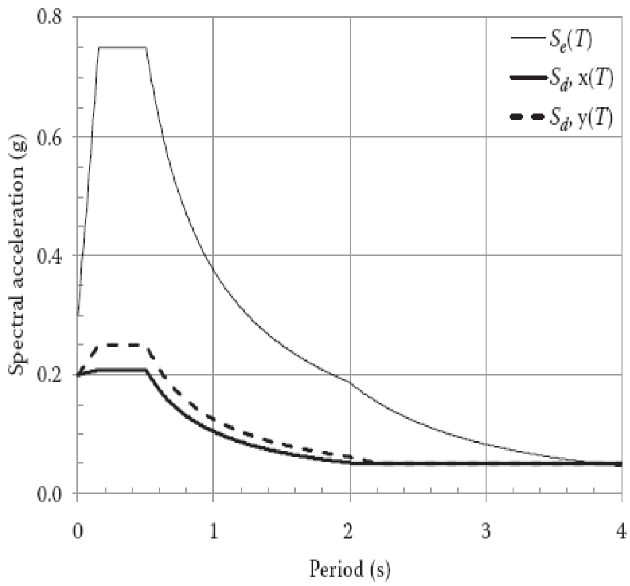
$T_C \leq T \leq T_D$ $\quad$ $S_d(T)=a_g \bullet S \bullet (2.5/q) \bullet [T_C/T]$

$S_d(T) \geq \beta \cdot a_g$

$T_D \leq T$ $S_d(T)=a_g \bullet S \bullet (2.5/q) \bullet [T_C \bullet T_D/T^2]$

$S_d(T) \geq \beta \cdot a_g$

β =0.2 sipas vleres se rekomanduar nga EC8 prEN 1998-1 (2003)



Spektri i projektimit ne X dhe Y me shuarje 5%

Sipas tab.4.3 EC8 prEN1998_1_dec2003, objekti kalasifikohet ne klasen e rendesise IV, koeficienti i rendesise se objektit rekomandohet ne vleren γ_I=1.4 sipas EC8 prEN 1998-1 (2003) 4.2.5 pika 5(P).

Table 4.3 Importance classes for buildings

Importance class	Buildings
I	Buildings of minor importance for public safety, e.g. agricultural buildings, etc.
II	Ordinary buildings, not belonging in the other categories.
III	Buildings whose seismic resistance is of importance in view of the consequences associated with a collapse, e.g. schools, assembly halls, cultural institutions etc.
IV	Buildings whose integrity during earthquakes is of vital importance for civil protection, e.g. hospitals, fire stations, power plants, etc.

NOTE Importance classes I, II and III or IV correspond roughly to consequences classes CC1, CC2 and CC3, respectively, defined in EN 1990:2002, Annex B.

(5)P The value of γ_I for importance class II shall be, by definition, equal to 1,0.

NOTE The values to be ascribed to γ_I for use in a country may be found in its National Annex. The values of γ_I may be different for the various seismic zones of the country, depending on the seismic hazard conditions and on public safety considerations (see Note to **2.1(4)**). The recommended values of γ_I for importance classes I, III and IV are equal to 0,8, 1,2 and 1,4

Koeficienti i sjelljes se struktures

Koeficienti i sjelljes se struktures sipas 5.2.2.2 EC8 prEN 1998-1 (2003) bazohet ne klasifikimin e tipit te struktures. Struktura eshte realizuar me kolona betonarme dhe kapriate metalike tip kuti hapesinore.

Struktura ne teresi klasifikohet ne “inverted pendulum system“ system sipas seksionit 5.1.2 dhe 5.2.2.1 per strukturat betonarme dhe , sipas EC8 prEN1998_1_dec2003.

Koeficienti i sjelljes se struktures eshte:

$q=q_0k_w\geq1.5$

Klasa e duktilitetit eshte DCM.

$q_0=3.0\ \alpha_u/\alpha_1$

$\alpha_u/\alpha_1= 1.1$ sipas drejtimit X

$\alpha_u/\alpha_1= 1.1$ sipas drejtimit Y

$q_0 =2.0$

$k_w=1.00$ sipas 5.2.2.2. pika 11(P) EC8 prEN 1998-1 (2003).

$q =1*2.00=2.00$

Efektet perdredhes aksidentale

Efektet perdredhes aksidentale jane vleresuar sipas EC 8 ne masen $e_{ai}=0.05L_i$ ku L_i eshte dimensioni ne plan i objektit perpendikular me drejtimin e veprimit sizmik.

3.3.5 Percaktimi i koeficienteve te kombinimit te ngarkesave.

Llogaritja dhe projektimi i strukturave eshte realizuar sipas gjendjes kufitare te fundme (ULS), ekuilibrit statik (EQU), projektimit te elementeve strukturale (STR) ,bashkeveprimit truall strukture dhe rezistences se truallit (GEO) dhe llogaritjen ne fazen e sherbimit (SLS). Referenca EC0 (A1.3.) (2001)

Koeficientet per kombinimin e ngarkesave i referohen Tab.A1.1 EC0 EN 1990_FinalDraft_July2001.

Table A1.1 - Recommended values of ψ factors for buildings

Action	ψ_0	ψ_1	ψ_2
Imposed loads in buildings, category (see EN 1991-1-1)			
Category A : domestic, residential areas	0,7	0,5	0,3
Category B : office areas	0,7	0,5	0,3
Category C : congregation areas	0,7	0,7	0,6
Category D : shopping areas	0,7	0,7	0,6
Category E : storage areas	1,0	0,9	0,8
Category F : traffic area, vehicle weight ≤ 30kN	0,7	0,7	0,6
Category G : traffic area, 30kN < vehicle weight ≤ 160kN	0,7	0,5	0,3
Category H : roofs	0	0	0
Snow loads on buildings (see EN 1991-1-3)*			
Finland, Iceland, Norway, Sweden	0,70	0,50	0,20
Remainder of CEN Member States, for sites located at altitude H > 1000 m a.s.l.	0,70	0,50	0,20
Remainder of CEN Member States, for sites located at altitude H ≤ 1000 m a.s.l.	0,50	0,20	0
Wind loads on buildings (see EN 1991-1-4)	0,6	0,2	0
Temperature (non-fire) in buildings (see EN 1991-1-5)	0,6	0,5	0
NOTE The ψ values may be set by the National annex. * For countries not mentioned below, see relevant local conditions.			

Rezultatet paraqiten ne formatin e llogaritjeve kompjuterike ne vijim.

3.3.6 Llogaritja e strukturave

Llogaritja e strukturave eshte realizuar referuar :

a) Llogaritjes sipas gjendjes se pare kufitare, (llogaritja ne aftesi mbajtese). Referenca EC0 (A1.3.) (2001).

b) Llogaritjes sipas gjendjes se dyte kufitare, (llogaritja ne fazen e shfrytezimit, percaktimi i deformacioneve dhe madhesise se hapjes te te plasurave). Referenca EC0 (A1.4.) (2001).

Vlerat kufitare ne llogaritjen ne fazen e sherbimit paraqiten ne Tab.7.1.N te EC2.

Note: The value of w_{max} for use in a Country may be found in its National Annex. The recommended values for relevant exposure classes are given in Table 7.1N.

Table 7.1N Recommended values of w_{max} (mm)

Exposure Class	Reinforced members and prestressed members with unbonded tendons	Prestressed members with bonded tendons
	Quasi-permanent load combination	Frequent load combination
X0, XC1	0,4[1]	0,2
XC2, XC3, XC4	0,3	0,2[2]
XD1, XD2, XS1, XS2, XS3		Decompression

Modelimi i struktures eshte realizuar duke plotesuar kriteret e 4.3.1. te EC8 prEN1998_1_dec2003.

Contents

Basic model properties, Input data - Structure

Database:	PERFUND Ura lidhese Gjirokaster.twp
Analysis date:	22.2.2019
Analysis type:	3D model

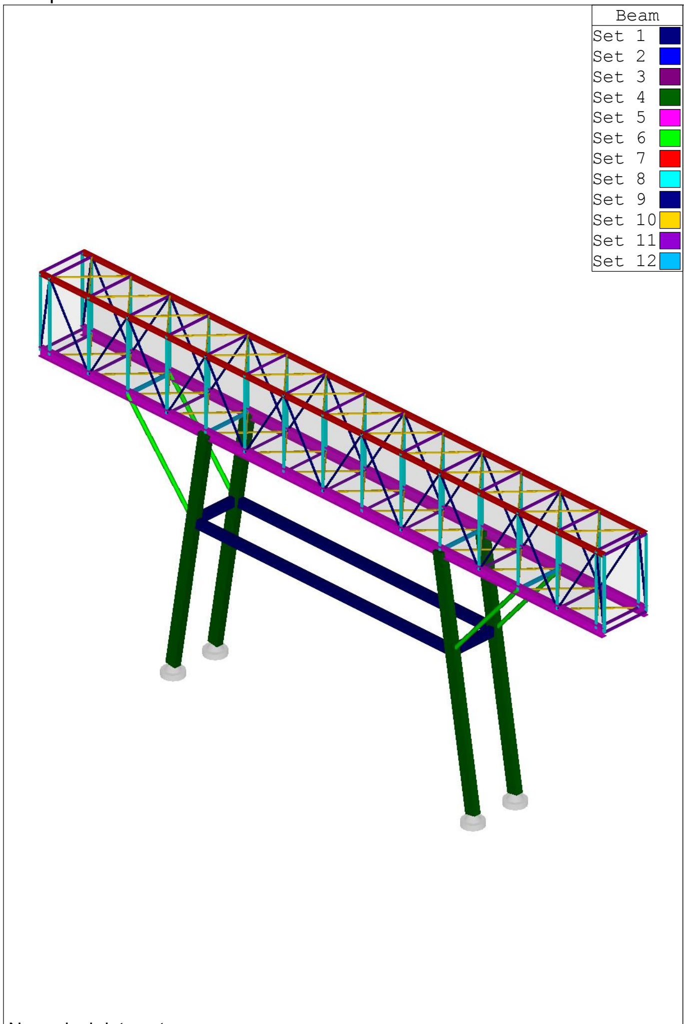
- [X] Linear theory
- [X] Mode Analysis
- [ ] Stability
- [ ] Non-linear theory
- [X] Earthquake analysis
- [X] Beam offset
- [ ] Stage Construction

Model size

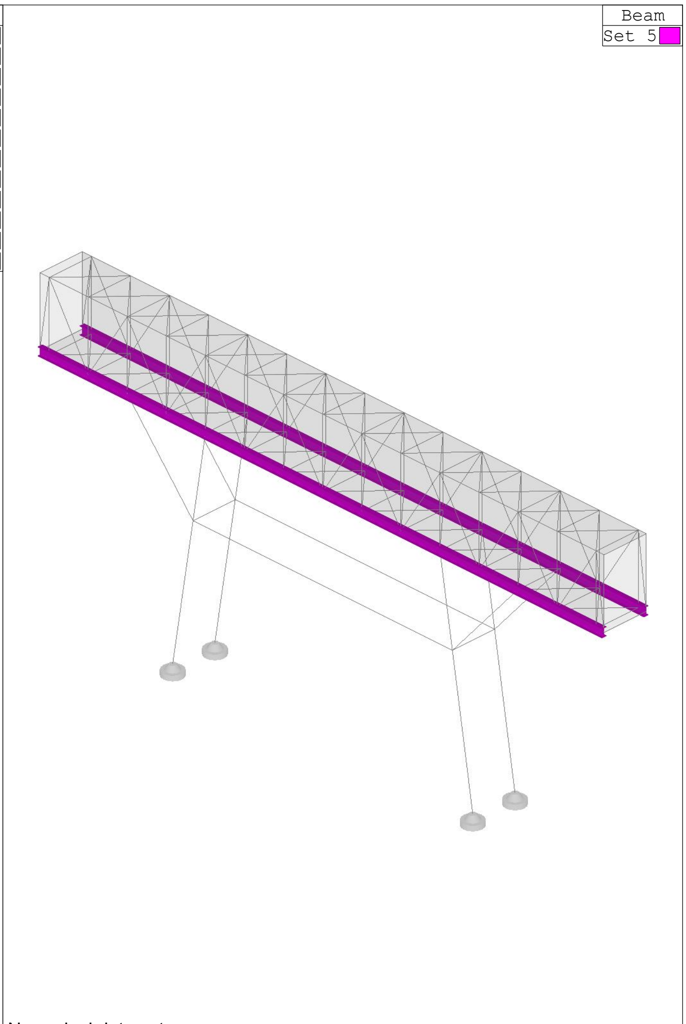
Number of nodes:	817
Number of area elements:	1034
Number of beams:	809
Number of boundary elements:	24
Number of primary loading cases:	6
Number of loading combinations:	10

Units

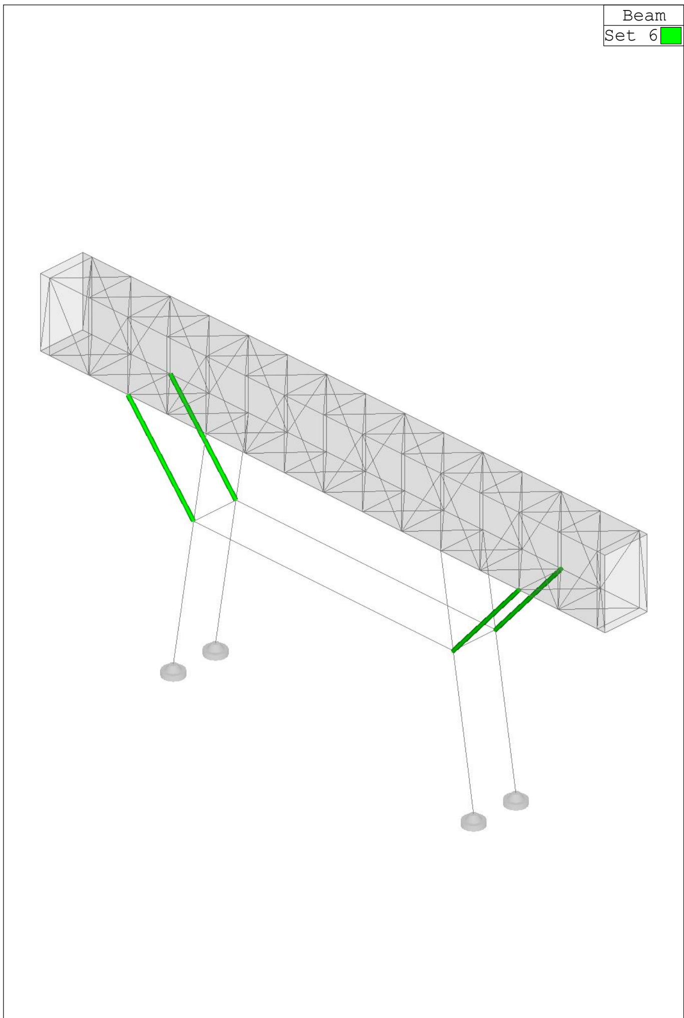
Length:	m [cm,mm]
Force:	kN
Temperature:	Celsius



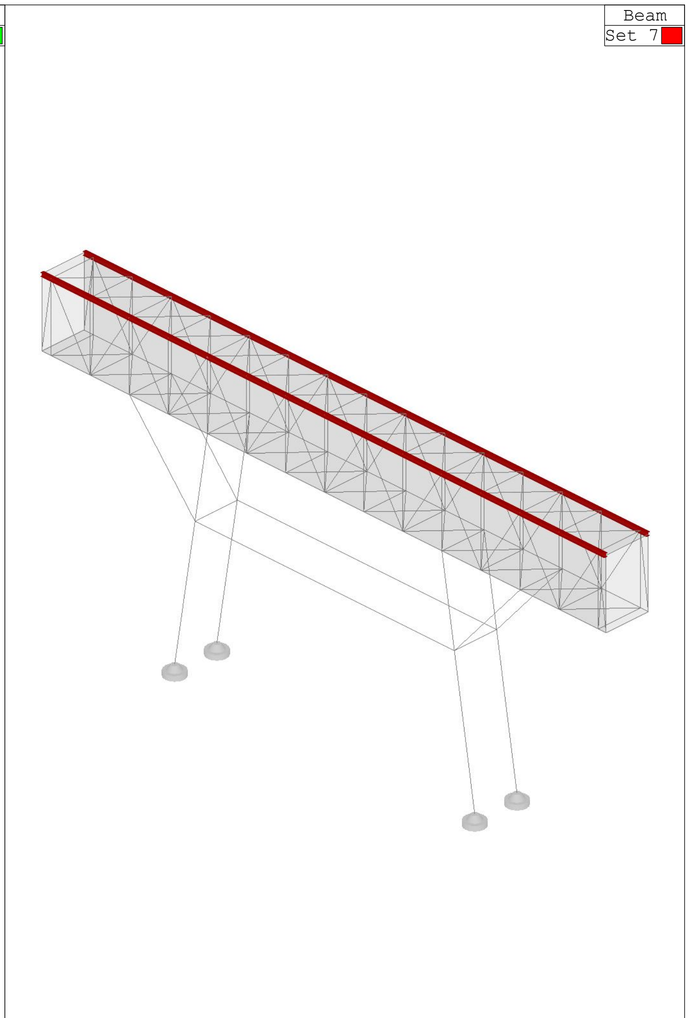
Numerical data set
Beam (1-12)



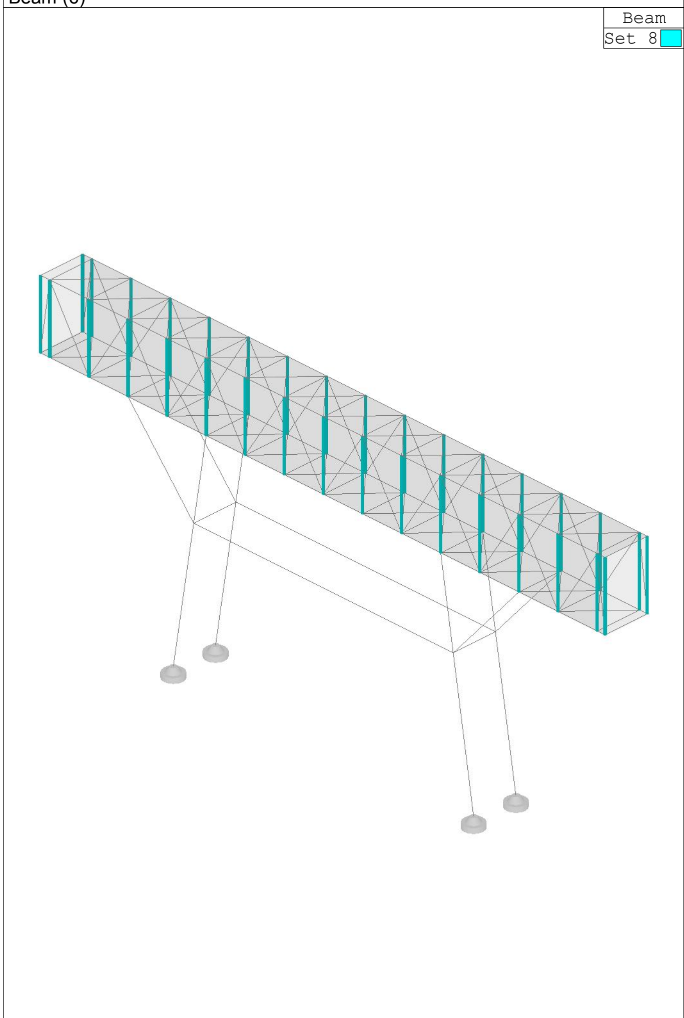
Numerical data set
Beam (5)



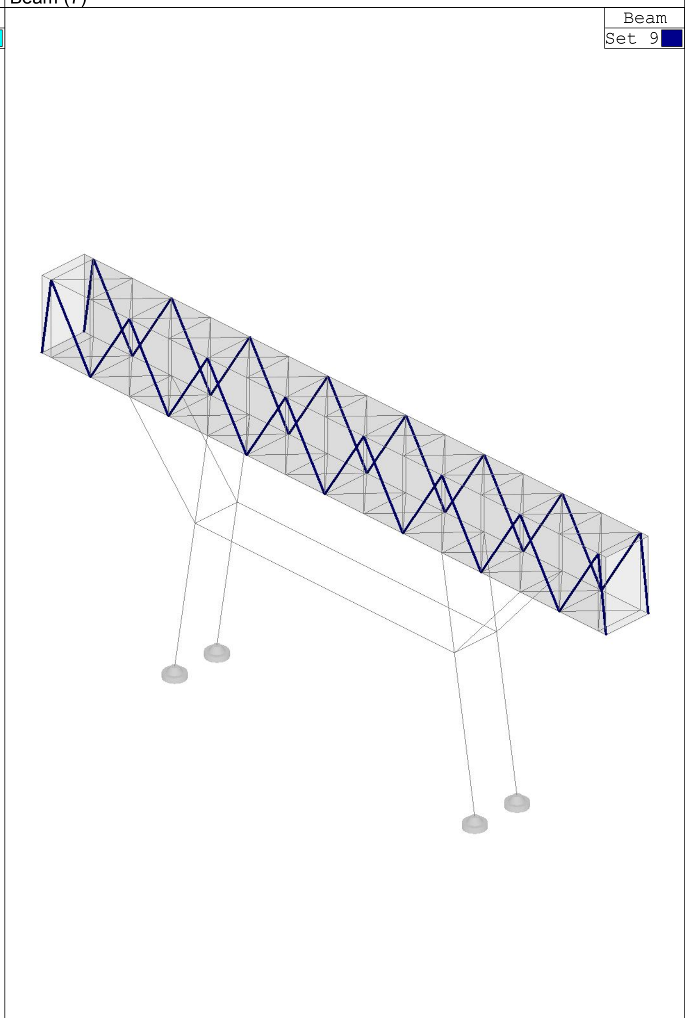
Numerical data set
Beam (6)



Numerical data set
Beam (7)



Numerical data set
Beam (8)



Numerical data set
Beam (9)

Level scheme

Title	z [m]	h [m]
	16.95	4.05
	12.90	4.90

Title	z [m]	h [m]
	8.00	8.00
	0.00	

Table of materials

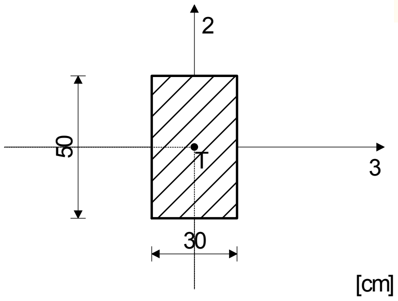
No	Material name	E[kN/m2]	μ	γ[kN/m3]	αt[1/C]	Em[kN/m2]	μm
1	Concrete C 30	3.150e+7	0.20	25.00	1.000e-5	3.150e+7	0.20
2	Steel	2.100e+8	0.30	78.50	1.000e-5	2.100e+8	0.30

Slab sets

No	d[m]	e[m]	Material	Analysis type	Orthotropy	E2[kN/m2]	G[kN/m2]	α
<1>	0.100	0.050	1	Thin slab	Isotrophy			
<2>	0.007	0.004	2	Thin slab	Isotrophy			

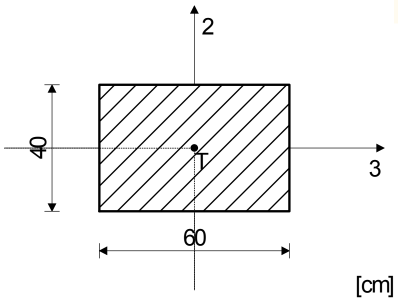
Beam sets

Set: 1 Cross-section: Rectangle



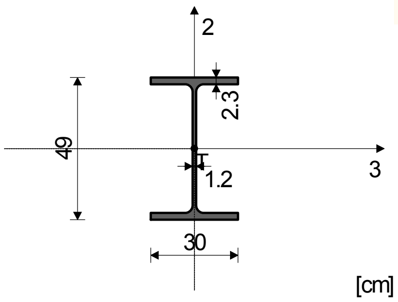
Mat.	P/Z	A1	A2	A3	I1	I2	I3
1		1.500e-1	1.250e-1	1.250e-1	1.000e-9	1.125e-3	3.125e-3

Set: 4 Cross-section: Rectangle



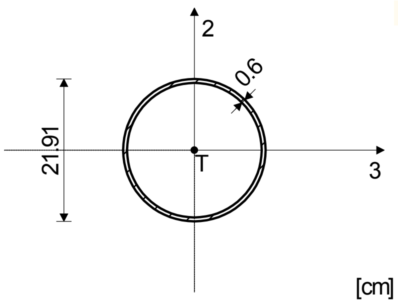
Mat.	P/Z	A1	A2	A3	I1	I2	I3
1		2.400e-1	2.000e-1	2.000e-1	7.512e-3	7.200e-3	3.200e-3

Set: 5 Cross-section: IPBl 500



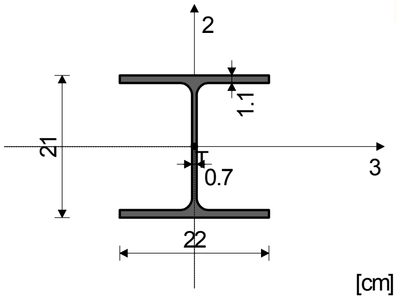
Mat.	P/Z	A1	A2	A3	I1	I2	I3
2		1.980e-2	7.518e-3	1.228e-2	3.100e-6	1.037e-4	8.697e-4

Set: 6 Cross-section: Tube



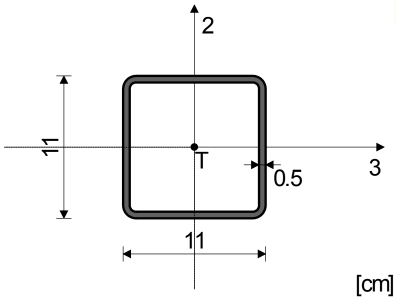
Mat.	P/Z	A1	A2	A3	I1	I2	I3
2		4.017e-3	2.065e-3	2.065e-3	4.564e-5	2.282e-5	2.282e-5

Set: 7   Cross-section: IPBl 220



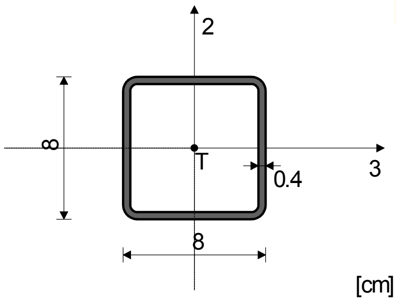
Mat.	P/Z	A1	A2	A3	I1	I2	I3
2		6.430e-3	2.063e-3	4.367e-3	2.860e-7	1.950e-5	5.410e-5

Set: 8   Cross-section: HOP [] 110x110x5



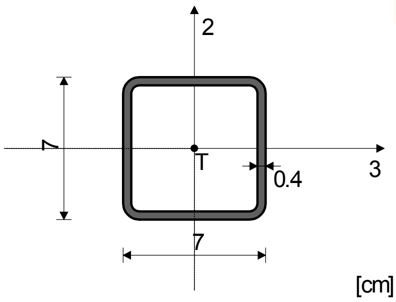
Mat.	P/Z	A1	A2	A3	I1	I2	I3
2		2.036e-3	1.100e-3	1.100e-3	5.788e-6	3.574e-6	3.574e-6

Set: 9   Cross-section: HOP [] 80x80x4



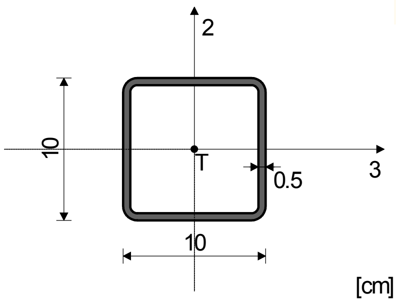
Mat.	P/Z	A1	A2	A3	I1	I2	I3
2		1.175e-3	6.400e-4	6.400e-4	1.756e-6	1.072e-6	1.072e-6

Set: 10   Cross-section: HOP [] 70x70x4



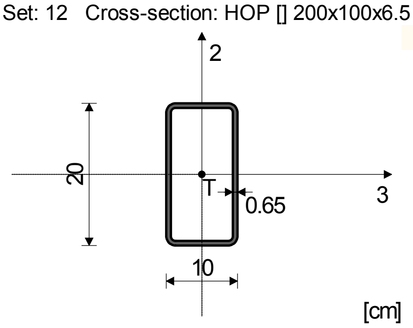
Mat.	P/Z	A1	A2	A3	I1	I2	I3
2		1.015e-3	5.600e-4	5.600e-4	1.150e-6	6.889e-7	6.889e-7

Set: 11   Cross-section: HOP [] 100x100x5



Mat.	P/Z	A1	A2	A3	I1	I2	I3
2		1.836e-3	1.000e-3	1.000e-3	4.287e-6	2.618e-6	2.618e-6

Set: 12   Cross-section: HOP [] 200x100x6.5



Mat.	P/Z	A1	A2	A3	I1	I2	I3
2		3.622e-3	2.600e-3	1.300e-3	1.483e-5	5.957e-6	1.775e-5

Input data - Loading

Loading cases list

No	Title
1	DEAD (g)
2	LIVE C3
3	WIND
4	SX
5	SY
6	SZ
7	Combination: 1.35xI+1.05xII+1.5xIII
8	Combination: 1.35xI+1.5xII+0.9xIII

No	Title
9	Combination: I+1.05xII+1.5xIII
10	Combination: I+1.5xII+0.9xIII
11	Combination: 1.35xI+1.5xIII
12	Combination: 1.35xI+1.5xII
13	Combination: I+1.5xIII
14	Combination: I+1.5xII
15	Combination: 1.35xI
16	Combination: I

Mode Analysis

Load factors for mass calculations

No	Title	Factor
1	DEAD (g)	1.00
2	LIVE C3	0.60
3	WIND	0.00

Mass distribution per levels

Level	Z [m]	Mass [T]
	16.95	24.84
	12.90	83.13
	8.00	31.18
	0.00	9.92
	Σ=	149.07

Natural frequency of structure

No	T [s]	f [Hz]
1	1.2250	0.8163
2	1.1195	0.8933
3	0.5664	1.7655
4	0.4160	2.4039
5	0.2097	4.7676
6	0.2015	4.9621
7	0.1323	7.5609
8	0.1147	8.7208
9	0.1131	8.8406
10	0.1122	8.9093
11	0.1107	9.0340
12	0.1093	9.1458
13	0.1080	9.2610
14	0.1063	9.4039
15	0.1025	9.7560
16	0.1022	9.7869
17	0.1016	9.8454
18	0.0991	10.0862
19	0.0980	10.2085
20	0.0978	10.2211

Earthquake analysis

Earthquake analysis: Eurocode

Soil category:	C
Importance factor:	IV
Ratio ag/g:	0.24
Behaviour factor:	2

Earthquake directional factors:

Title	Kx	Ky	Kz
SX	1.000	0.300	0.300
SY	0.300	1.000	0.300
SZ	0.300	0.300	1.000

SX

Level	Z [m]	Mode 1			Mode 2			Mode 3		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
	16.95	0.00	0.02	0.00	-0.00	16.08	-0.01	48.66	-0.00	-0.04
	12.90	-0.00	0.04	-0.00	0.00	41.91	-0.03	173.64	-0.00	-0.14
	8.00	-0.00	0.01	0.00	0.00	9.91	-0.00	64.84	-0.01	0.00
	0.00	-0.00	0.00	-0.00	0.00	0.00	-0.00	0.00	-0.00	-0.00
	∑=	-0.00	0.07	-0.00	0.00	67.91	-0.03	287.15	-0.01	-0.17

Level	Z [m]	Mode 4			Mode 5			Mode 6		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
	16.95	0.00	-4.71	0.00	-0.00	0.00	-0.00	0.00	0.48	0.00
	12.90	0.00	4.92	0.00	0.00	-0.02	0.00	0.00	-4.24	0.05
	8.00	-0.00	1.96	0.00	0.00	0.02	0.00	0.00	5.74	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	∑=	0.00	2.17	0.01	0.00	0.01	0.00	0.00	1.97	0.05

Level	Z [m]	Mode 7			Mode 8			Mode 9		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
	16.95	-0.00	-0.00	0.00	0.00	-0.07	0.37	0.14	-0.00	0.04
	12.90	0.00	-0.00	0.00	0.01	0.06	-0.15	0.24	-0.00	0.01
	8.00	-0.00	0.00	0.00	-0.00	0.00	0.01	-0.14	0.01	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	∑=	0.00	0.00	0.00	0.01	0.00	0.23	0.25	0.00	0.05

Level	Z [m]	Mode 10			Mode 11			Mode 12		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
	16.95	-0.01	-0.03	0.20	0.03	0.00	-0.01	-0.00	-0.00	0.00
	12.90	-0.01	0.03	-0.03	0.05	0.00	0.00	-0.00	0.00	0.00
	8.00	0.01	0.01	0.01	-0.04	-0.00	-0.00	0.00	-0.00	0.00
	0.00	-0.00	0.00	0.00	0.00	-0.00	-0.00	-0.00	-0.00	0.00
	∑=	-0.01	0.00	0.17	0.05	-0.00	-0.01	-0.00	-0.00	0.00

Level	Z [m]	Mode 13			Mode 14			Mode 15		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
	16.95	0.00	0.00	-0.00	0.01	0.00	0.00	3.05	-0.02	0.19
	12.90	0.00	-0.00	0.01	0.01	-0.00	-0.00	4.71	0.02	0.14
	8.00	-0.00	0.00	0.00	-0.01	0.00	-0.00	-3.81	-0.01	0.01
	0.00	0.00	0.00	0.00	0.00	0.00	-0.00	0.00	-0.00	0.00
	∑=	0.00	0.00	0.01	0.01	0.00	-0.00	3.95	-0.00	0.34

Level	Z [m]	Mode 16			Mode 17			Mode 18		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
	16.95	0.27	0.03	-0.18	1.00	-0.01	0.10	0.00	0.00	-0.00
	12.90	0.42	-0.03	0.09	1.55	0.02	0.04	0.00	-0.00	0.00
	8.00	-0.34	0.01	-0.00	-1.28	-0.00	0.01	-0.00	-0.00	0.00
	0.00	0.00	0.00	-0.00	0.00	-0.00	0.00	0.00	-0.00	0.00
	∑=	0.35	0.00	-0.09	1.27	-0.00	0.15	0.00	-0.00	0.00

Level	Z [m]	Mode 19			Mode 20			All modes		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
	16.95	-0.00	-0.00	0.00	-0.00	-0.00	0.00	53.17	11.75	0.67
	12.90	-0.00	0.00	0.00	-0.00	0.00	-0.00	180.63	42.71	0.00
	8.00	0.00	-0.00	0.00	0.00	0.00	0.00	59.22	17.64	0.03
	0.00	-0.00	-0.00	0.00	-0.00	0.00	0.00	0.00	0.00	0.00
	∑=	-0.00	-0.00	0.00	-0.00	0.00	0.00	293.02	72.10	0.71

SY

Level	Z [m]	Mode 1			Mode 2			Mode 3		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
	16.95	0.01	0.05	0.00	-0.00	53.62	-0.02	14.59	-0.00	-0.01
	12.90	-0.01	0.15	-0.00	0.01	139.75	-0.09	52.06	-0.00	-0.04
	8.00	-0.00	0.03	0.00	0.00	33.04	-0.00	19.44	-0.00	0.00
	0.00	-0.00	0.00	-0.00	0.00	0.00	-0.00	0.00	-0.00	-0.00
	∑=	-0.00	0.23	-0.00	0.01	226.41	-0.11	86.10	-0.00	-0.05

Level	Z [m]	Mode 4			Mode 5			Mode 6		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
	16.95	0.00	-15.67	0.02	-0.00	0.01	-0.00	0.00	1.56	0.00
	12.90	0.00	16.35	0.01	0.00	-0.04	0.00	0.00	-13.89	0.15

	8.00	-0.00	6.52	0.00	0.00	0.06	0.00	0.00	18.77	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	∑=	0.00	7.20	0.03	0.00	0.02	0.00	0.01	6.44	0.15

Level	Z [m]	Mode 7			Mode 8			Mode 9		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
	16.95	-0.00	-0.00	0.00	0.00	-0.06	0.34	0.05	-0.00	0.01
	12.90	0.00	-0.00	0.00	0.01	0.06	-0.14	0.08	-0.00	0.00
	8.00	-0.00	0.00	0.00	-0.00	0.00	0.01	-0.05	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	∑=	0.00	0.00	0.00	0.01	0.00	0.21	0.09	0.00	0.02

Level	Z [m]	Mode 10			Mode 11			Mode 12		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
	16.95	-0.01	-0.04	0.24	0.01	0.00	-0.00	0.00	0.00	-0.00
	12.90	-0.01	0.03	-0.04	0.01	0.00	0.00	0.00	-0.00	-0.00
	8.00	0.01	0.01	0.01	-0.01	-0.00	-0.00	-0.00	0.00	-0.00
	0.00	-0.00	0.00	0.00	0.00	-0.00	-0.00	0.00	0.00	-0.00
	∑=	-0.01	0.00	0.21	0.01	-0.00	-0.00	0.00	0.00	-0.00

Level	Z [m]	Mode 13			Mode 14			Mode 15		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
	16.95	0.00	0.00	-0.00	0.00	0.00	0.00	0.97	-0.01	0.06
	12.90	0.00	-0.00	0.01	0.00	-0.00	-0.00	1.50	0.01	0.04
	8.00	-0.00	0.00	0.00	-0.00	0.00	-0.00	-1.21	-0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	-0.00	0.00	-0.00	0.00
	∑=	0.00	0.00	0.01	0.00	0.00	-0.00	1.25	-0.00	0.11

Level	Z [m]	Mode 16			Mode 17			Mode 18		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
	16.95	0.07	0.01	-0.04	0.32	-0.00	0.03	0.00	0.00	-0.00
	12.90	0.10	-0.01	0.02	0.50	0.00	0.01	0.00	-0.00	0.00
	8.00	-0.08	0.00	-0.00	-0.41	-0.00	0.00	-0.00	-0.00	0.00
	0.00	0.00	0.00	-0.00	0.00	-0.00	0.00	0.00	-0.00	0.00
	∑=	0.08	0.00	-0.02	0.41	-0.00	0.05	0.00	-0.00	0.00

Level	Z [m]	Mode 19			Mode 20			All modes		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
	16.95	0.00	0.00	-0.00	-0.00	-0.00	0.00	16.01	39.46	0.63
	12.90	0.00	-0.00	-0.00	-0.00	0.00	-0.00	54.26	142.41	-0.05
	8.00	-0.00	0.00	-0.00	0.00	0.00	0.00	17.68	58.43	0.02
	0.00	0.00	0.00	-0.00	-0.00	0.00	0.00	0.00	0.00	0.00
	∑=	0.00	0.00	-0.00	-0.00	0.00	0.00	87.95	240.30	0.60

SZ

Level	Z [m]	Mode 1			Mode 2			Mode 3		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
	16.95	0.00	0.02	0.00	-0.00	16.06	-0.01	14.57	-0.00	-0.01
	12.90	-0.00	0.04	-0.00	0.00	41.86	-0.03	51.99	-0.00	-0.04
	8.00	-0.00	0.01	0.00	0.00	9.90	-0.00	19.42	-0.00	0.00
	0.00	-0.00	0.00	-0.00	0.00	0.00	-0.00	0.00	-0.00	-0.00
	∑=	-0.00	0.07	-0.00	0.00	67.82	-0.03	85.98	-0.00	-0.05

Level	Z [m]	Mode 4			Mode 5			Mode 6		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
	16.95	0.00	-4.75	0.01	-0.00	0.00	-0.00	0.00	0.50	0.00
	12.90	0.00	4.96	0.00	0.00	-0.02	0.00	0.00	-4.47	0.05
	8.00	-0.00	1.98	0.00	0.00	0.03	0.00	0.00	6.04	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	∑=	0.00	2.19	0.01	0.00	0.01	0.00	0.00	2.07	0.05

Level	Z [m]	Mode 7			Mode 8			Mode 9		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
	16.95	-0.00	-0.00	0.00	0.01	-0.20	1.12	0.07	-0.00	0.02
	12.90	0.00	-0.00	0.00	0.02	0.20	-0.45	0.12	-0.00	0.00
	8.00	-0.00	0.00	0.00	-0.01	0.00	0.02	-0.07	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	∑=	0.00	0.00	0.00	0.02	0.00	0.69	0.12	0.00	0.03

Level	Z [m]	Mode 10			Mode 11			Mode 12		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
	16.95	-0.03	-0.14	0.82	0.00	0.00	-0.00	-0.00	-0.00	0.00
	12.90	-0.04	0.11	-0.13	0.01	0.00	0.00	-0.00	0.01	0.00
	8.00	0.02	0.04	0.02	-0.00	-0.00	-0.00	0.00	-0.01	0.00
	0.00	-0.00	0.00	0.00	0.00	-0.00	-0.00	-0.00	-0.00	0.00
	∑=	-0.04	0.01	0.71	0.01	-0.00	-0.00	-0.00	-0.00	0.00

Level	Z [m]	Mode 13			Mode 14			Mode 15		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
	16.95	0.00	0.00	-0.01	0.00	0.00	0.00	1.15	-0.01	0.07
	12.90	0.00	-0.01	0.04	0.00	-0.00	-0.00	1.78	0.01	0.05
	8.00	-0.00	0.01	0.00	-0.00	0.00	-0.00	-1.44	-0.00	0.00

Earthquake analysis: Eurocode

	0.00	0.00	0.00	0.00	0.00	0.00	-0.00	0.00	-0.00	0.00
	∑=	0.00	0.00	0.03	0.00	0.00	-0.00	1.49	-0.00	0.13

Level	Z [m]	Mode 16			Mode 17			Mode 18		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
	16.95	0.01	0.00	-0.01	0.40	-0.00	0.04	0.00	0.00	-0.00
	12.90	0.02	-0.00	0.00	0.62	0.01	0.02	0.00	-0.00	0.00
	8.00	-0.01	0.00	-0.00	-0.52	-0.00	0.00	-0.00	-0.00	0.00
	0.00	0.00	0.00	-0.00	0.00	-0.00	0.00	0.00	-0.00	0.00
	∑=	0.01	0.00	-0.00	0.51	-0.00	0.06	0.00	-0.00	0.00

Level	Z [m]	Mode 19			Mode 20			All modes		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
	16.95	-0.00	-0.00	0.00	-0.00	-0.00	0.00	16.20	11.47	2.06
	12.90	-0.00	0.00	0.00	-0.00	0.00	-0.00	54.52	42.71	-0.48
	8.00	0.00	-0.00	0.00	0.00	0.00	0.00	17.39	17.98	0.05
	0.00	-0.00	-0.00	0.00	-0.00	0.00	0.00	0.00	0.00	0.00
	∑=	-0.00	-0.00	0.00	-0.00	0.00	0.00	88.11	72.16	1.63

Distribution factors

Title / Mode				1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16	17	18	19	20
SX				0.000	0.065	0.912	0.002	0.000	0.002	0.000	0.000
0.001	0.000	0.000	0.000	0.000	0.000	0.013	0.001	0.004	0.000	0.000	0.000
SY				0.001	0.848	0.097	0.027	0.000	0.024	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.001	0.000	0.000	0.000
SZ				0.000	0.409	0.518	0.013	0.000	0.013	0.000	0.014
0.001	0.014	0.000	0.000	0.001	0.000	0.012	0.000	0.004	0.000	0.000	0.000

Distribution factors

Mode	UX (%)	UY (%)	UZ (%)	ΣUX (%)	ΣUY (%)	ΣUZ (%)
1	0.00	0.10	0.00	0.00	0.10	0.00
2	0.00	88.98	0.00	0.00	89.07	0.00
3	90.20	0.00	0.00	90.20	89.07	0.00
4	0.00	2.26	0.00	90.20	91.33	0.00
5	0.00	0.01	0.00	90.20	91.34	0.00
6	0.00	2.01	0.00	90.20	93.34	0.00
7	0.00	0.00	0.00	90.20	93.34	0.00
8	0.00	0.00	0.24	90.20	93.34	0.24
9	0.08	0.00	0.00	90.28	93.34	0.24
10	0.00	0.00	0.25	90.29	93.34	0.49
11	0.02	0.00	0.00	90.30	93.34	0.49
12	0.00	0.00	0.00	90.30	93.34	0.49
13	0.00	0.00	0.01	90.30	93.34	0.50
14	0.00	0.00	0.00	90.31	93.34	0.50
15	1.34	0.00	0.01	91.64	93.34	0.51
16	0.13	0.00	0.01	91.77	93.34	0.52
17	0.43	0.00	0.01	92.20	93.34	0.53
18	0.00	0.00	0.00	92.20	93.34	0.53
19	0.00	0.00	0.00	92.20	93.34	0.53
20	0.00	0.00	0.00	92.20	93.34	0.53

Knots' Deflection: max: |Xd|

Node	LC	Xd [mm]	Yd [mm]	Zd [mm]
401	4	15.662	13.077	0.125
384	4	15.661	13.038	0.297
422	4	15.661	13.117	0.298
367	4	15.659	12.999	0.554
440	4	15.659	13.158	0.555

Node	LC	Xd [mm]	Yd [mm]	Zd [mm]
340	4	15.659	13.077	0.125
333	4	15.658	13.048	0.237
357	4	15.658	13.107	0.238
372	4	15.658	13.077	0.009
315	4	15.657	13.018	0.423

Knots' Deflection: max: |Yd|

Node	LC	Xd [mm]	Yd [mm]	Zd [mm]
812	5	4.371	59.921	1.442
817	5	4.379	59.920	1.741
802	5	4.378	59.920	1.740
808	5	4.371	59.873	1.410
795	5	4.378	59.872	1.695

Node	LC	Xd [mm]	Yd [mm]	Zd [mm]
816	5	4.379	59.872	1.696
796	5	4.374	59.830	1.404
785	5	4.378	59.806	1.631
811	5	4.379	59.777	1.605
798	5	4.371	59.754	1.350

Knots' Deflection: max: |Zd|

Node	LC	Xd [mm]	Yd [mm]	Zd [mm]
9	4	15.563	12.527	4.863
3	4	15.561	12.528	4.839
5	4	15.396	12.855	4.839
23	4	15.564	12.528	4.838
34	4	15.367	12.957	4.838

Node	LC	Xd [mm]	Yd [mm]	Zd [mm]
10	4	15.232	13.464	4.838
17	4	15.067	14.251	4.838
47	4	15.169	13.765	4.838
68	4	14.578	16.326	4.837
24	4	14.903	15.081	4.837

Influences in Point Supports

Node	LC	R1 [kN]	R2 [kN]	R3 [kN]	M1 [kNm]	M2 [kNm]	M3 [kNm]
1	1	53.519	-0.061	322.74	0.181	6.647	-0.003
	2	11.845	-0.150	73.593	0.410	-0.689	-0.078
	3	-18.702	-14.690	-115.74	62.381	0.746	-10.103
	4	74.055	16.469	122.57	69.313	275.13	11.927
	5	64.406	54.910	370.77	231.10	82.587	39.766
	6	28.156	16.450	112.06	69.231	82.393	11.913
2	1	53.458	0.073	322.53	-0.171	6.542	0.054
	2	11.799	0.161	73.432	-0.401	-0.776	0.122
	3	18.694	-14.685	115.74	62.369	-0.766	-10.092
	4	74.064	16.496	122.57	69.385	275.20	11.937
	5	64.388	55.000	370.83	231.34	82.605	39.797
	6	28.154	16.477	112.08	69.304	82.412	11.922
271	1	-53.469	-0.074	320.50	0.217	-7.961	0.054
	2	-11.806	-0.161	72.640	0.439	0.211	0.122
	3	18.761	-14.566	-115.57	61.803	-0.354	10.207
	4	74.099	17.514	125.58	73.812	275.14	11.664
	5	64.692	58.393	381.66	246.10	82.728	38.888
	6	28.219	17.493	115.30	73.726	82.406	11.650
334	1	-53.508	0.061	320.64	-0.138	-8.034	-0.001
	2	-11.838	0.151	72.746	-0.375	0.140	-0.076
	3	-18.753	-14.542	115.57	61.740	0.375	10.192
	4	74.093	17.524	125.55	73.838	275.20	11.670
	5	64.679	58.427	381.71	246.19	82.749	38.909
	6	28.215	17.503	115.31	73.752	82.425	11.656

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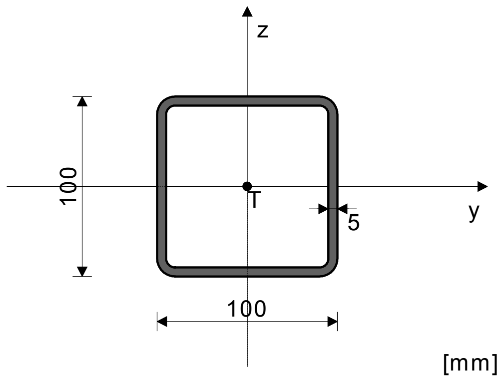
CROSS-SECTION: HOP [] 100x100x5 [Fe 360]
EUROCODE

CROSS-SECTION PROPERTIES



Ax =	18.360 cm2
Ay =	9.180 cm2
Az =	9.180 cm2
Ix =	428.69 cm4
Iy =	261.77 cm4
Iz =	261.77 cm4
Wy =	52.354 cm3
Wz =	52.354 cm3
Wy,pl =	67.750 cm3
Wz,pl =	65.313 cm3
γM0 =	1.100
γM1 =	1.100
γM2 =	1.250
Anet/A =	0.900

(fy = 23.5 kN/cm2, fu = 36.0 kN/cm2)

MEMBER SUBJECT TO AXIAL COMPRESSION AND BENDING
(load 7, at 11.0 cm from the start of the member)

The axial force design value	Nsd =	-3.973 kN
The shear force design value(z-z)	Vsd_z =	-2.093 kN
The bending mom.design value(y-y)	Msd_y =	-1.348 kNm
System length	L =	270.00 cm

5.3 CLASSIFICATION OF CROSS-SECTIONS
Class 1 cross-sections

5.4 RESISTANCE OF CROSS-SECTIONS
5.4.4 Compression

The design plastic resistance	Npl.Rd =	392.24 kN
The design compression resistance	Nc.Rd =	392.24 kN

Requirement 5.16: Nsd <= Nc.Rd (3.97 <= 392.24)

5.4.5 Bending about the y-y axis

The design plastic resistance	Mpl.Rd =	14.474 kNm
The design local buck. resist.	Mo.Rd =	11.185 kNm
The design el.resist.moment	Mel.Rd =	11.185 kNm
The design moment resistance	Mc.Rd =	14.474 kNm

Requirement 5.17: Msd_y <= Mc.Rd_y (1.35 <= 14.47)

5.4.6 Shear

The design pl.shear resist.(z-z)	Vpl.Rd =	113.23 kN

Requirement 5.20: Vsd_z <= Vpl.Rd_z (2.09 <= 113.23)

5.4.9 Bending, shear and axial force
No reduction need be made in the resistance moment
Requirement: Vsd_z <= 50%Vpl.Rd_z

5.4.8 Bending and axial force

Ratio Nsd / Npl.Rd	0.010
Ratio Msd_y / Mpl.Rd_y	0.093

Requirement 5.36: (0.10 <= 1)

5.5. BUCKLING RESISTANCE OF MEMBERS
5.5.1.1 Buckling resistance

Buckling length y-y	l,y =	270.00 cm
Radius of gyration y-y	i,y =	3.776 cm
Slenderness y-y	λ,y =	71.506
Non-dimensional slenderness y-y	λ_y =	0.762
The buckling curve for axis y-y: B	α =	0.340
The reduction factor	χ,y =	0.748
The effective area factor	βA =	1.000
The design buckling resistance	Nb.Rd_y =	293.34 kN

Requirement 5.45: Nsd <= Nb.Rd_y (3.97 <= 293.34)

Buckling length z-z	l,z =	270.00 cm
Radius of gyration z-z	i,z =	3.776 cm
Slenderness z-z	λ,z =	71.506
Non-dimensional slenderness z-z	λ_z =	0.762
The buckling curve for axis z-z: B	α =	0.340
The reduction factor	χ,z =	0.748
The effective area factor	βA =	1.000
The design buckling resistance	Nb.Rd_z =	293.34 kN

Requirement 5.45: Nsd <= Nb.Rd_z (3.97 <= 293.34)

5.5.2 Lateral-torsional buckling of beams

Coefficient	C1 =	1.132
Coefficient	C2 =	0.459
Coefficient	C3 =	0.525
The eff.length fact.for later.restr.	k =	1.000
The eff.length fact.for tors.restr.	kw =	1.000
Coordinate	zg =	0.000 cm
Coordinate	zj =	0.000 cm
Length between lateral restr.points	L =	270.00 cm
The warping constant	Iw =	0.000 cm6
The elast.crit.mom.(l-t buck.)	Mcr =	574.64 kNm
Coefficient	βw =	1.000
The imperfection factor	αLT =	0.210
The non-dimensional slenderness	λLT_ =	0.166
The reduction factor	χLT =	1.000
The design buckling resistance	Mb.Rd =	14.474 kNm

No allowance for l-t buckling is necessary λ_LT<=0.4

5.5.4 Bending and axial compression

The reduction factor	χmin =	0.748
Nsd / ...		0.014
The equiv.unif.mom.fact.flex.buck.	βy =	1.126
Coefficient	μy =	-1.037
Coefficient	ky =	1.013
ky * My / ...		0.094

Requirement 5.51: (0.11 <= 1)

The reduction factor	χ_z =	0.748
Nsd/ ...		0.014
The reduction factor	χLT =	1.000
The equiv.unif.mom.fact.(l-t.buck.)	βM.LT =	1.126
Coefficient	μLT =	-0.021
Coefficient	kLT =	1.000
kLT * My / ...		0.093

Requirement 5.52: (0.11 <= 1)

5.6 SHEAR BUCKLING RESISTANCE

For shear along z-z axis

The relevant width	d =	9.000 cm
The relevant thickness	tw =	0.500 cm
No intermediate transverse stiffeners		
The buckling factor for shear	kτ =	5.340

No check for resistance to shear buckling need be made

Requirement: d / tw <= 69 ε (18.00 <= 69.00)

5.6.7 Interaction between shear force,bend.and axial force

For shear along z-z axis

The design pl.resist.mom.(flanges)	Mf.Rd =	9.000 kNm

Criteria 5.66a and 5.66b are satisfied

5.7 RESISTANCE OF WEBS TO TRANSVERSE FORCES

5.7.7 Flange induced buckling

The factor (class 1 flanges)	k =	0.300
The area of the web	Aw =	5.000 cm2
The area of the compression flange	Afc =	5.000 cm2

Flange induced buckling is prevented

Requirement 5.80: (9.00 <= 268.09)

Check of the shear resistance
(load 11, at 11.0 cm from the start of the member)

The axial force design value	Nsd =	-3.226 kN
The shear force design value(z-z)	Vsd_z =	-2.096 kN
The bending mom.design value(y-y)	Msd_y =	-1.319 kNm
System length	L =	270.00 cm

5.4 RESISTANCE OF CROSS-SECTIONS

5.4.6 Shear

The design pl.shear resist.(z-z)	Vpl.Rd =	113.23 kN

Requirement 5.20: Vsd_z <= Vpl.Rd_z (2.10 <= 113.23)

5.6 SHEAR BUCKLING RESISTANCE

For shear along z-z axis

The relevant width	d =	9.000 cm
The relevant thickness	tw =	0.500 cm
No intermediate transverse stiffeners		
The buckling factor for shear	kτ =	5.340

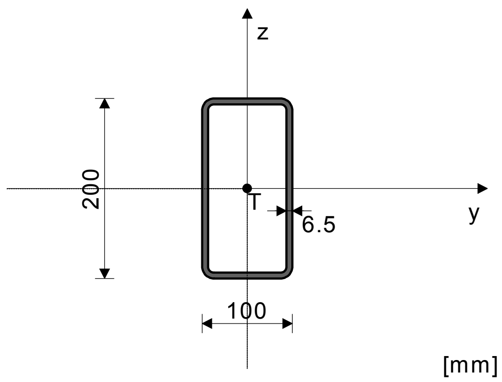
No check for resistance to shear buckling need be made

Requirement: d / tw <= 69 ε (18.00 <= 69.00)

MEMBER 240 - 177

CROSS-SECTION: HOP [] 200x100x6.5 [Fe 360]
EUROCODE

CROSS-SECTION PROPERTIES



Ax =	36.220 cm2	
Ay =	12.073 cm2	
Az =	24.147 cm2	
Ix =	1482.7 cm4	
Iy =	1775.0 cm4	
Iz =	595.69 cm4	
Wy =	177.50 cm3	
Wz =	119.14 cm3	
Wy,pl =	239.42 cm3	
Wz,pl =	142.06 cm3	
γM0 =	1.100	
γM1 =	1.100	
γM2 =	1.250	
Anet/A =	0.900	

(fy = 23.5 kN/cm2, fu = 36.0 kN/cm2)

MEMBER SUBJECT TO AXIAL TENSION AND BENDING
(load 7, at 250.0 cm from the start of the member)

The axial force design value	Nsd =	0.619 kN
The shear force design value(y-y)	Vsd_y =	0.102 kN
The shear force design value(z-z)	Vsd_z =	25.174 kN
The bending mom.design value(y-y)	Msd_y =	-20.753 kNm
The bending mom.design value(z-z)	Msd_z =	-0.065 kNm
System length	L =	270.00 cm

5.3 CLASSIFICATION OF CROSS-SECTIONS
Class 1 cross-sections

5.4 RESISTANCE OF CROSS-SECTIONS
5.4.3 Tension

The design pl.resist.mom.(gross sect.)	Npl.Rd =	773.79 kN
The design ult.resist.(net sect.)	Nu.Rd =	844.94 kN
The design tension resistance	Nt.Rd =	773.79 kN

Requirement 5.13: Nsd <= Nt.Rd (0.62 <= 773.79)

5.4.5 Bending about the y-y axis

The design plastic resistance	Mpl.Rd =	51.150 kNm
The design local buck. resist.	Mo.Rd =	37.921 kNm
The design el.resist.moment	Mel.Rd =	37.921 kNm
The design moment resistance	Mc.Rd =	51.150 kNm

Requirement 5.17: Msd_y <= Mc.Rd_y (20.75 <= 51.15)

5.4.5 Bending about the z-z axis

The design plastic resistance	Mpl.Rd =	30.350 kNm
The design local buck. resist.	Mo.Rd =	25.452 kNm
The design el.resist.moment	Mel.Rd =	25.452 kNm
The design moment resistance	Mc.Rd =	30.350 kNm

Requirement 5.17: Msd_z <= Mc.Rd_z (0.06 <= 30.35)

5.4.6 Shear

The design pl.shear resist.(z-z)	Vpl.Rd =	297.83 kN

Requirement 5.20: Vsd_z <= Vpl.Rd_z (25.17 <= 297.83)

The design pl.shear resist.(y-y)	Vpl.Rd =	148.92 kN

Requirement 5.20: Vsd_y <= Vpl.Rd_y (0.10 <= 148.92)

5.4.9 Bending, shear and axial force
No reduction need be made in the resistance moment
Requirement: Vsd_z <= 50%Vpl.Rd_z i Vsd_y <= 50%Vpl.Rd_y

5.4.8 Bending and axial force
Ratio Msd_y / Mpl.Rd_y 0.406
Requirement 5.36: (0.41 <= 1)

5.5. BUCKLING RESISTANCE OF MEMBERS
5.5.2 Lateral-torsional buckling of beams

Coefficient	C1 =	1.132
Coefficient	C2 =	0.459
Coefficient	C3 =	0.525
The eff.length fact.for later.restr.	k =	1.000
The eff.length fact.for tors.restr.	kw =	1.000
Coordinate	zg =	0.000 cm
Coordinate	zj =	0.000 cm
Length between lateral restr.points	L =	270.00 cm

The warping constant	Iw =	0.000 cm6
The elast.crit.mom.(l-t buck.)	Mcr =	1612.1 kNm
Coefficient	βw =	1.000
The imperfection factor	αLT =	0.210
The non-dimensional slenderness	λLT_ =	0.187
The reduction factor	χLT =	1.000
The design buckling resistance	Mb.Rd =	51.150 kNm

5.5.3 Bending and axial tension

A reduct.factor for vector.effects	ψvec =	0.800
The el.sect.modul.(extr.compr.fibre)	Wcom =	177.50 cm3
An effective design internal mom.	Meff.sd =	20.728 kNm

Requirement 5.50: Meff.sd <= MbRd (20.73 kNm <= 51.15 kNm)

5.6 SHEAR BUCKLING RESISTANCE
For shear along z-z axis

The relevant width	d =	18.700 cm
The relevant thickness	tw =	0.650 cm
No intermediate transverse stiffeners		
The buckling factor for shear	kτ =	5.340

No check for resistance to shear buckling need be made
Requirement: d / tw <= 69 ε (28.77 <= 69.00)

for shear along y-y axis

The relevant width	d =	10.000 cm
The relevant thickness	tw =	0.650 cm
No intermediate transverse stiffeners		
The buckling factor for shear	kτ =	5.340

No check for resistance to shear buckling need be made
Requirement: d / tw <= 69 ε (15.38 <= 69.00)

5.6.7 Interaction between shear force,bend.and axial force
For shear along z-z axis

The design pl.resist.mom.(flanges)	Mf.Rd =	24.042 kNm

Criteria 5.66a and 5.66b are satisfied

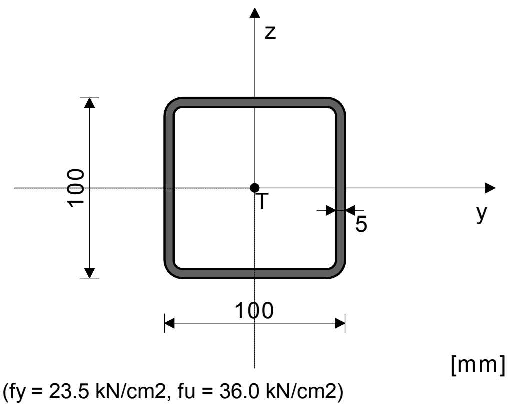
5.7 RESISTANCE OF WEBS TO TRANSVERSE FORCES
5.7.7 Flange induced buckling

The factor (class 1 flanges)	k =	0.300
The area of the web	Aw =	13.000 cm2
The area of the compression flange	Afc =	6.500 cm2

Flange induced buckling is prevented
Requirement 5.80: (14.38 <= 379.13)

MEMBER 125 - 186
CROSS-SECTION: HOP [] 100x100x5 [Fe 360]
EUROCODE

CROSS-SECTION PROPERTIES



Ax =	18.360 cm2
Ay =	9.180 cm2
Az =	9.180 cm2
Ix =	428.69 cm4
Iy =	261.77 cm4
Iz =	261.77 cm4
Wy =	52.354 cm3
Wz =	52.354 cm3
Wy,pl =	67.750 cm3
Wz,pl =	65.313 cm3
γM0 =	1.100
γM1 =	1.100
γM2 =	1.250
Anet/A =	0.900

(fy = 23.5 kN/cm2, fu = 36.0 kN/cm2)

MEMBER SUBJECT TO AXIAL TENSION AND BENDING
(load 7, at 255.0 cm from the start of the member)

The axial force design value	Nsd =	0.577 kN
The shear force design value(y-y)	Vsd_y =	-0.021 kN
The shear force design value(z-z)	Vsd_z =	-0.364 kN
The bending mom.design value(y-y)	Msd_y =	1.233 kNm
The bending mom.design value(z-z)	Msd_z =	0.011 kNm
System length	L =	270.00 cm

5.3 CLASSIFICATION OF CROSS-SECTIONS
Class 1 cross-sections

5.4 RESISTANCE OF CROSS-SECTIONS

5.4.3 Tension
The design pl.resist.mom.(gross sect.) Npl.Rd = 392.24 kN
The design ult.resist.(net sect.) Nu.Rd = 428.30 kN
The design tension resistance Nt.Rd = 392.24 kN
Requirement 5.13: Nsd <= Nt.Rd (0.58 <= 392.24)

5.4.5 Bending about the y-y axis
The design plastic resistance Mpl.Rd = 14.474 kNm
The design local buck. resist. Mo.Rd = 11.185 kNm
The design el.resist.moment Mel.Rd = 11.185 kNm
The design moment resistance Mc.Rd = 14.474 kNm
Requirement 5.17: Msd_y <= Mc.Rd_y (1.23 <= 14.47)

5.4.5 Bending about the z-z axis
The design plastic resistance Mpl.Rd = 13.953 kNm
The design local buck. resist. Mo.Rd = 11.185 kNm
The design el.resist.moment Mel.Rd = 11.185 kNm
The design moment resistance Mc.Rd = 13.953 kNm
Requirement 5.17: Msd_z <= Mc.Rd_z (0.01 <= 13.95)

5.4.6 Shear
The design pl.shear resist.(z-z) Vpl.Rd = 113.23 kN
Requirement 5.20: Vsd_z <= Vpl.Rd_z (0.36 <= 113.23)

The design pl.shear resist.(y-y) Vpl.Rd = 113.23 kN
Requirement 5.20: Vsd_y <= Vpl.Rd_y (0.02 <= 113.23)

5.4.9 Bending, shear and axial force
No reduction need be made in the resistance moment
Requirement: Vsd_z <= 50%Vpl.Rd_z i Vsd_y <= 50%Vpl.Rd_y

5.4.8 Bending and axial force
Ratio Msd_y / Mpl.Rd_y 0.085
Requirement 5.36: (0.09 <= 1)

5.5. BUCKLING RESISTANCE OF MEMBERS
5.5.2 Lateral-torsional buckling of beams
Coefficient C1 = 1.132
Coefficient C2 = 0.459
Coefficient C3 = 0.525
The eff.length fact.for later.restr. k = 1.000
The eff.length fact.for tors.restr. kw = 1.000
Coordinate zg = 0.000 cm
Coordinate zj = 0.000 cm
Length between lateral restr.points L = 270.00 cm
The warping constant Iw = 0.000 cm6
The elast.crit.mom.(l-t buck.) Mcr = 574.64 kNm
Coefficient βw = 1.000
The imperfection factor αLT = 0.210
The non-dimensional slenderness λLT_ = 0.166
The reduction factor χLT = 1.000
The design buckling resistance Mb.Rd = 14.474 kNm

5.5.3 Bending and axial tension
A reduct.factor for vector.effects ψvec = 0.800
The el.sect.modul.(extr.compr.fibre) Wcom = 52.354 cm3
An effective design internal mom. Meff.sd = 1.220 kNm
Requirement 5.50: Meff.sd <= MbRd (1.22 kNm <= 14.47 kNm)

5.6 SHEAR BUCKLING RESISTANCE
For shear along z-z axis
The relevant width d = 9.000 cm
The relevant thickness tw = 0.500 cm
No intermediate transverse stiffeners
The buckling factor for shear kτ = 5.340
No check for resistance to shear buckling need be made
Requirement: d / tw <= 69 ε (18.00 <= 69.00)

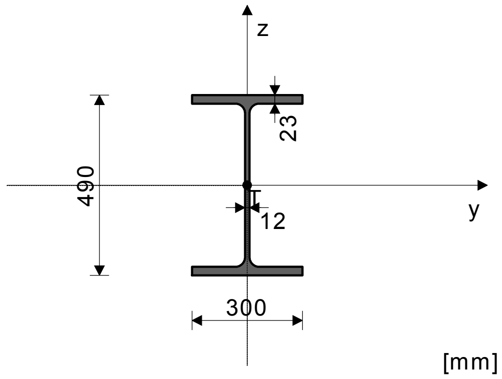
for shear along y-y axis
The relevant width d = 10.000 cm
The relevant thickness tw = 0.500 cm
No intermediate transverse stiffeners
The buckling factor for shear kτ = 5.340
No check for resistance to shear buckling need be made
Requirement: d / tw <= 69 ε (20.00 <= 69.00)

5.6.7 Interaction between shear force,bend.and axial force
For shear along z-z axis
The design pl.resist.mom.(flanges) Mf.Rd = 8.973 kNm
Criteria 5.66a and 5.66b are satisfied

MEMBER 502 - 340

CROSS-SECTION: IPBl 500 [Fe 360]
EUROCODE

CROSS-SECTION PROPERTIES



Ax =	198.00 cm2
Ay =	122.82 cm2
Az =	75.180 cm2
Ix =	310.00 cm4
Iy =	86970 cm4
Iz =	10370 cm4
Wy =	3549.8 cm3
Wz =	691.33 cm3
Wy,pl =	4004.9 cm3
Wz,pl =	1035.0 cm3
γM0 =	1.100
γM1 =	1.100
γM2 =	1.250
Anet/A =	0.900

(fy = 23.5 kN/cm2, fu = 36.0 kN/cm2)

MEMBER SUBJECT TO AXIAL COMPRESSION AND BENDING
(load 12, at 719.6 cm from the start of the member)

The axial force design value	Nsd =	-132.50 kN
The shear force design value(y-y)	Vsd_y =	-3.115 kN
The shear force design value(z-z)	Vsd_z =	77.483 kN
The bending mom.design value(y-y)	Msd_y =	-51.184 kNm
The bending mom.design value(z-z)	Msd_z =	0.454 kNm
System length	L =	750.00 cm

5.3 CLASSIFICATION OF CROSS-SECTIONS
Class 1 cross-sections

5.4 RESISTANCE OF CROSS-SECTIONS
5.4.4 Compression

The design plastic resistance	Npl.Rd =	4230.0 kN
The design compression resistance	Nc.Rd =	4230.0 kN

Requirement 5.16: Nsd <= Nc.Rd (132.50 <= 4230.00)

5.4.5 Bending about the y-y axis

The design plastic resistance	Mpl.Rd =	855.59 kNm
The design local buck. resist.	Mo.Rd =	758.37 kNm
The design el.resist.moment	Mel.Rd =	758.37 kNm
The design moment resistance	Mc.Rd =	855.59 kNm

Requirement 5.17: Msd_y <= Mc.Rd_y (51.18 <= 855.59)

5.4.5 Bending about the z-z axis

The design plastic resistance	Mpl.Rd =	221.11 kNm
The design local buck. resist.	Mo.Rd =	147.69 kNm
The design el.resist.moment	Mel.Rd =	147.69 kNm
The design moment resistance	Mc.Rd =	221.11 kNm

Requirement 5.17: Msd_z <= Mc.Rd_z (0.45 <= 221.11)

5.4.6 Shear

The design pl.shear resist.(z-z)	Vpl.Rd =	657.17 kN

Requirement 5.20: Vsd_z <= Vpl.Rd_z (77.48 <= 657.17)

The design pl.shear resist.(y-y)	Vpl.Rd =	1261.5 kN

Requirement 5.20: Vsd_y <= Vpl.Rd_y (3.12 <= 1261.52)

5.4.9 Bending, shear and axial force
No reduction need be made in the resistance moment
Requirement: Vsd_z <= 50%Vpl.Rd_z i Vsd_y <= 50%Vpl.Rd_y

5.4.8 Bending and axial force

Ratio Nsd / Npl.Rd	0.031
Ratio Msd_y / Mpl.Rd_y	0.060

Requirement 5.36: (0.09 <= 1)

5.5. BUCKLING RESISTANCE OF MEMBERS
5.5.1.1 Buckling resistance

Buckling length y-y	l,y =	750.00 cm
Radius of gyration y-y	i,y =	20.958 cm
Slenderness y-y	λ,y =	35.786
Non-dimensional slenderness y-y	λ_y =	0.338
The buckling curve for axis y-y: A	α =	0.210
The reduction factor	χ,y =	0.968
The effective area factor	βA =	0.786
The design buckling resistance	Nb.Rd_y =	3218.6 kN

Requirement 5.45: Nsd <= Nb.Rd_y (132.50 <= 3218.56)

Buckling length z-z	l,z =	750.00 cm
Radius of gyration z-z	i,z =	7.237 cm
Slenderness z-z	λ,z =	103.63
Non-dimensional slenderness z-z	λ_z =	0.978
The buckling curve for axis z-z: B	α =	0.340
The reduction factor	χ,z =	0.611
The effective area factor	βA =	0.786
The design buckling resistance	Nb.Rd_z =	2030.1 kN

Requirement 5.45: Nsd <= Nb.Rd_z (132.50 <= 2030.11)

5.5.2 Lateral-torsional buckling of beams

Coefficient	C1 =	1.132
Coefficient	C2 =	0.459
Coefficient	C3 =	0.525
The eff.length fact.for later.restr.	k =	1.000
The eff.length fact.for tors.restr.	kw =	1.000
Coordinate	zg =	0.000 cm
Coordinate	zj =	0.000 cm
Length between lateral restr.points	L =	750.00 cm
The warping constant	Iw =	5.64e+6 cm6
The elast.crit.mom.(l-t buck.)	Mcr =	1498.0 kNm
Coefficient	βw =	1.000
The imperfection factor	αLT =	0.210
The non-dimensional slenderness	λLT_ =	0.793
The reduction factor	χLT =	0.800
The design buckling resistance	Mb.Rd =	684.37 kNm

Requirement 5.48: Msd_y <= Mb.Rd (51.18 <= 684.37)

5.5.4 Bending and axial compression

The reduction factor	χmin =	0.611
Nsd / ...		0.051
The equiv.unif.mom.fact.flex.buck.	βy =	1.013
Coefficient	μy =	-0.539
Coefficient	ky =	1.016
ky * My / ...		0.061
The equiv.unif.mom.fact.flex.buck.	βz =	1.067
Coefficient	μz =	-1.329
Coefficient	kz =	1.062
kz * Mz / ...		0.002

Requirement 5.51: (0.11 <= 1)

The reduction factor	χ_z =	0.611
Nsd/ ...		0.051
The reduction factor	χLT =	0.800
The equiv.unif.mom.fact.(l-t.buck.)	βM.LT =	1.013
Coefficient	μLT =	-0.001
Coefficient	kLT =	1.000
kLT * My / ...		0.075
The equiv.unif.mom.fact.flex.buck.	βz =	1.067
Coefficient	μz =	-1.329
Coefficient	kz =	1.062
kz * Mz / ...		0.002

Requirement 5.52: (0.13 <= 1)

5.6 SHEAR BUCKLING RESISTANCE

For shear along z-z axis

The relevant width	d =	44.400 cm
The relevant thickness	tw =	1.200 cm
No intermediate transverse stiffeners		
The buckling factor for shear	kτ =	5.340

No check for resistance to shear buckling need be made

Requirement: d / tw <= 69 ε (37.00 <= 69.00)

5.6.7 Interaction between shear force,bend.and axial force

For shear along z-z axis

The design pl.resist.mom.(flanges)	Mf.Rd =	534.80 kNm

Criteria 5.66a and 5.66b are satisfied

5.7 RESISTANCE OF WEBS TO TRANSVERSE FORCES

5.7.7 Flange induced buckling

The factor (class 1 flanges)	k =	0.300
The area of the web	Aw =	58.800 cm2
The area of the compression flange	Afc =	69.000 cm2

Flange induced buckling is prevented

Requirement 5.80: (37.00 <= 247.48)