I.1 - Lateral restraints

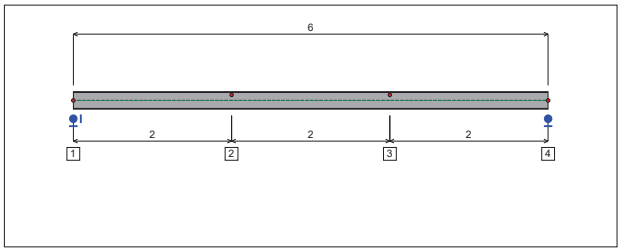

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 2 m

Vertical position from the shear centre : z = 7 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 4 m

Vertical position from the shear centre : z = 7 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 4 :

Type : Ponctual

Abscissa from the left end of the beam : x = 6 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

I.2 - Loads

Type of loading : External

The weight of the beam is not taken into account.

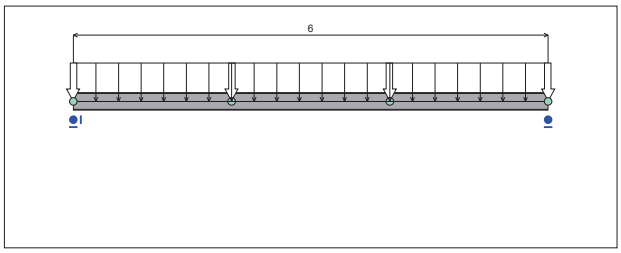

Figure 2 : Profile in long with loads.

- Concentrated loads :

Table 1 : Concentrated loads.

x(m)	z(*)(cm)	F_x(kN)	F_z(kN)	M_y(kN.m)	Active
2	0	0	-36,48	0	Yes
4	0	0	-36,48	0	Yes

(*) Vertical position from the shear centre

- Distributed loads :

Table 2 : Distributed loads.

x_1(m)	z_1(*)(cm)	$q_{x,1}$(kN/m)	$q_{z,1}$(kN/m)	x_2(m)	z_2(*)(cm)	$q_{x,2}$(kN/m)	$q_{z,2}$(kN/m)	Active
0	0	0	-0,351	6	0	0	-0,351	Yes

(*) Vertical position from the shear centre

II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : Yes

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	x(M_{max}) [m]	$N_{max,cr}$ [kN]	x(N_{max}) [m]
1	2,362	176,05	3	0	3

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	x(M_{max}) [m]	$N_{max,cr}$ [kN]	x(N_{max}) [m]
1	2,362	176,05	3	0	3

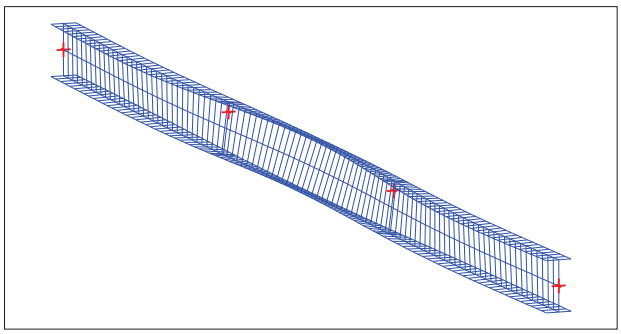

Figure 3 : Mode shape in 3D (Mode 1).

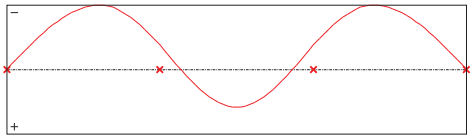

Figure 4 : Lateral displacement compopent of the shear centre (Mode 1).

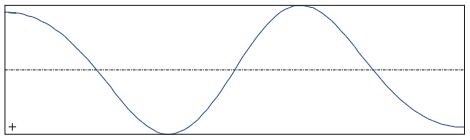

Figure 5 : Rotation in lateral flexure component of the shear centre (Mode 1).

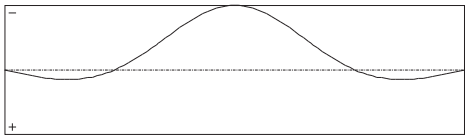

Figure 6 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

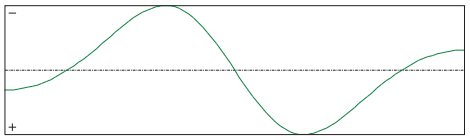

Figure 7 : Warping compopent of the shear centre (Mode 1).

I.1 - Lateral restraints

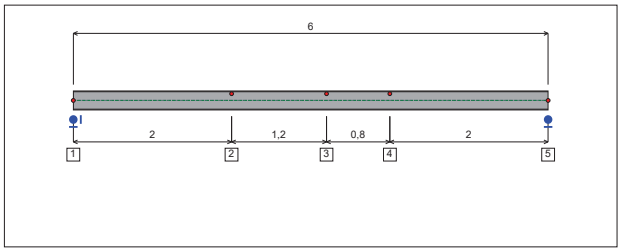

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 2 m

Vertical position from the shear centre : z = 8,5 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3,2 m

Vertical position from the shear centre : z = 8,5 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 4 :

Type : Ponctual

Abscissa from the left end of the beam : x = 4 m

Vertical position from the shear centre : z = 8,5 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 5 :

Type : Ponctual

Abscissa from the left end of the beam : x = 6 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

I.2 - Loads

Type of loading : External

The weight of the beam is not taken into account.

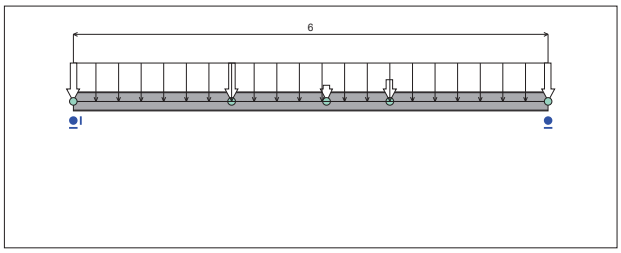

Figure 2 : Profile in long with loads.

- Concentrated loads :

Table 1 : Concentrated loads.

x(m)	z(*)(cm)	F_x(kN)	F_z(kN)	M_y(kN.m)	Active
2	0	0	-61,88	0	Yes
3,2	0	0	-10,32	0	Yes
4	0	0	-34,38	0	Yes

(*) Vertical position from the shear centre

- Distributed loads :

Table 2 : Distributed loads.

x_1(m)	z_1(*)(cm)	$q_{x,1}$(kN/m)	$q_{z,1}$(kN/m)	x_2(m)	z_2(*)(cm)	$q_{x,2}$(kN/m)	$q_{z,2}$(kN/m)	Active
0	0	0	-0,486	6	0	0	-0,486	Yes

(*) Vertical position from the shear centre

II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : No

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	4,2	491,46	2	0	2

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	4,2	491,46	2	0	2

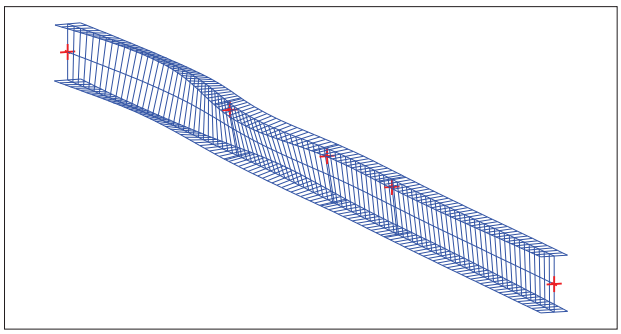

Figure 3 : Mode shape in 3D (Mode 1).

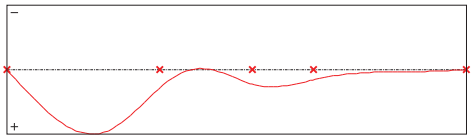

Figure 4 : Lateral displacement compopent of the shear centre (Mode 1).

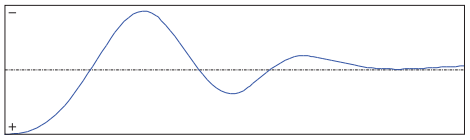

Figure 5 : Rotation in lateral flexure component of the shear centre (Mode 1).

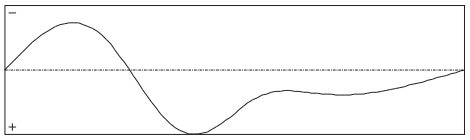

Figure 6 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

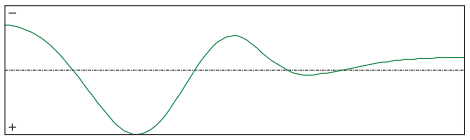

Figure 7 : Warping compopent of the shear centre (Mode 1).

I.1 - Lateral restraints

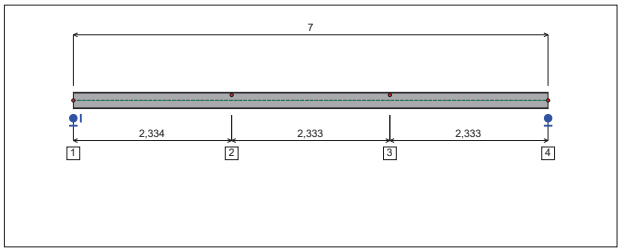

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 2,334 m

Vertical position from the shear centre : z = 8 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 4,667 m

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Vertical position from the shear centre : z = 8 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 4 :

Type : Ponctual

Abscissa from the left end of the beam : x = 7 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

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I.2 - Loads

Type of loading : External

The weight of the beam is not taken into account.

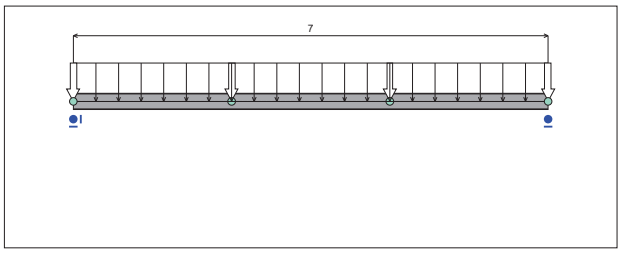

Figure 2 : Profile in long with loads.

- Concentrated loads :

Table 1 : Concentrated loads.

x(m)	z(*)(cm)	F_x(kN)	F_z(kN)	M_y(kN.m)	Active
2,334	0	0	-36,52	0	Yes
4,667	0	0	-36,52	0	Yes

(*) Vertical position from the shear centre

- Distributed loads :

Table 2 : Distributed loads.

x_1(m)	z_1(*)(cm)	$q_{x,1}$(kN/m)	$q_{z,1}$(kN/m)	x_2(m)	z_2(*)(cm)	$q_{x,2}$(kN/m)	$q_{z,2}$(kN/m)	Active
0	0	0	-0,419	7	0	0	-0,419	Yes

(*) Vertical position from the shear centre

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II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : No

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	x(M_{max}) [m]	$N_{max,cr}$ [kN]	x(N_{max}) [m]
1	2,3	201,88	3,5	0	3,5

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	x(M_{max}) [m]	$N_{max,cr}$ [kN]	x(N_{max}) [m]
1	2,3	201,88	3,5	0	3,5

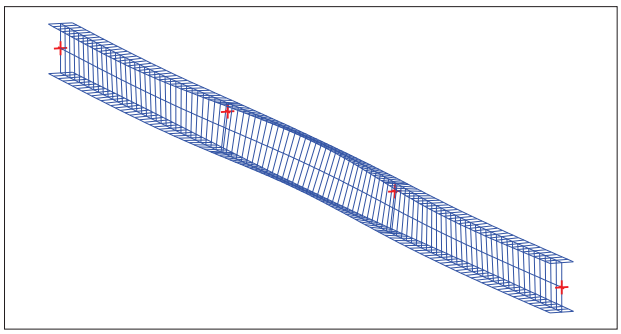

Figure 3 : Mode shape in 3D (Mode 1).

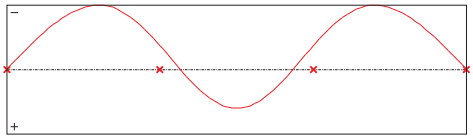

Figure 4 : Lateral displacement compopent of the shear centre (Mode 1).

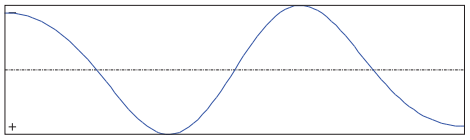

Figure 5 : Rotation in lateral flexure component of the shear centre (Mode 1).

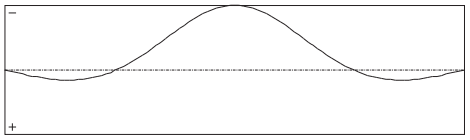

Figure 6 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

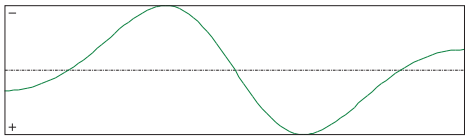

Figure 7 : Warping compopent of the shear centre (Mode 1).

I.1 - Lateral restraints

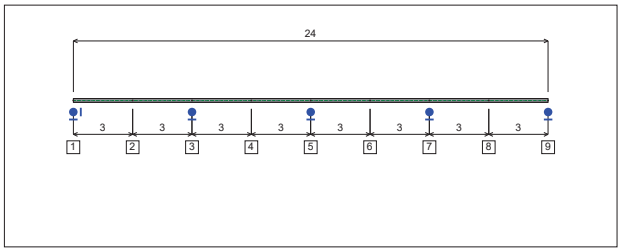

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 6 m

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Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 4 :

Type : Ponctual

Abscissa from the left end of the beam : x = 9 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 5 :

Type : Ponctual

Abscissa from the left end of the beam : x = 12 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 6 :

Type : Ponctual

Abscissa from the left end of the beam : x = 15 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 7 :

Type : Ponctual

Abscissa from the left end of the beam : x = 18 m

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Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 8 :

Type : Ponctual

Abscissa from the left end of the beam : x = 21 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 9 :

Type : Ponctual

Abscissa from the left end of the beam : x = 24 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

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I.2 - Loads

Type of loading : Internal

- Moment diagram :

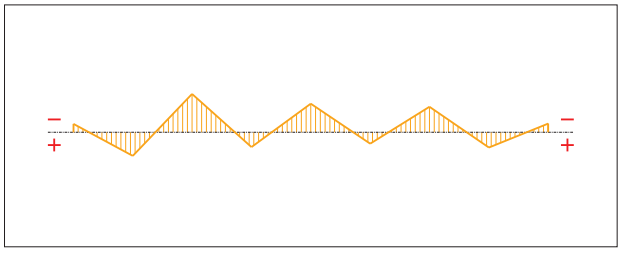

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	-5,91
3	16,62
6	-27,06
9	10,4
12	-20,12
15	8
18	-17,99
21	10,82
24	-6,07

- Axial force diagram :

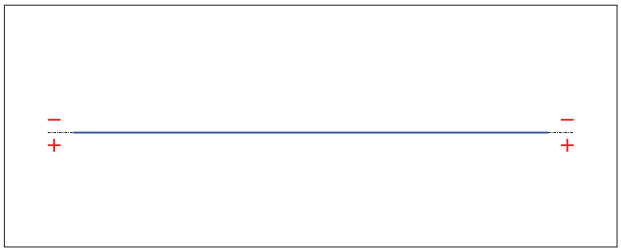

Figure 3 : Axial force diagram.

Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	0
24	0

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : Yes

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	3,131	-84,74	6	0	6

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	3,131	-84,74	6	0	6

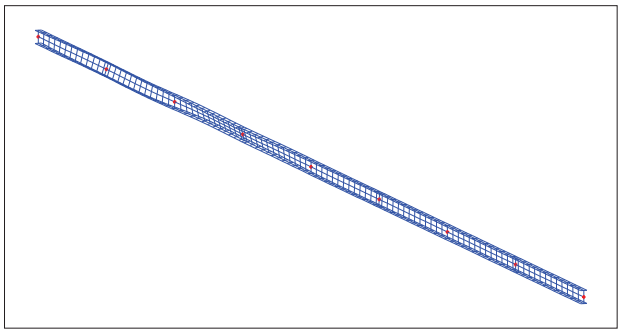

Figure 4 : Mode shape in 3D (Mode 1).

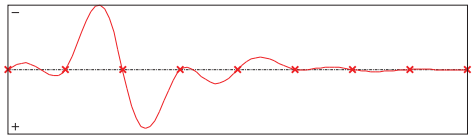

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

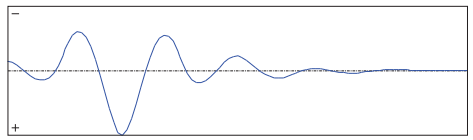

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

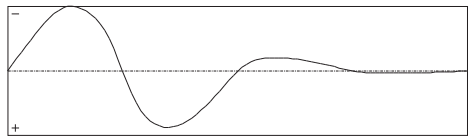

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

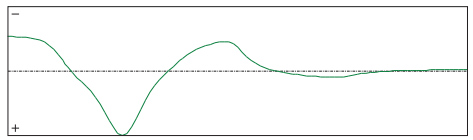

Figure 8 : Warping compopent of the shear centre (Mode 1).

I.1 - Lateral restraints

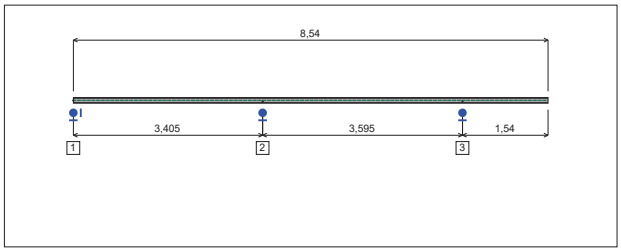

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :

v	: Fixed
θ	: Fixed
v'	: Free
θ'	: Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3,405 m

Vertical position from the shear centre : z = -2 cm

Restraint conditions :

v	: Fixed
θ	: Fixed
v'	: Free
θ'	: Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 7 m

Vertical position from the shear centre : z = -2 cm

Restraint conditions :

v	: Fixed
θ	: Fixed
v'	: Free
θ'	: Free

I.2 - Loads

Type of loading : Internal

- Moment diagram :

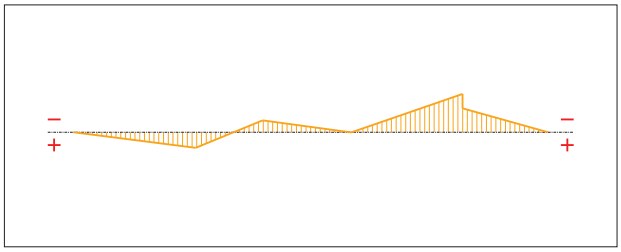

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	0
2,2	1,64
3,405	-1,25
5	0,01
7	-4,03
7	-2,52
8,54	0

- Axial force diagram :

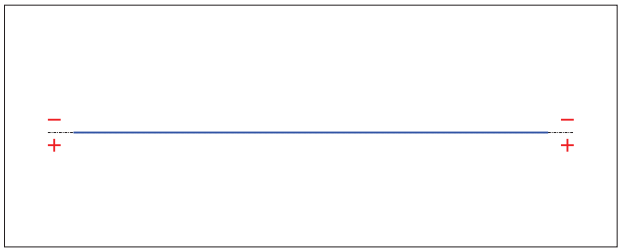

Figure 3 : Axial force diagram.

Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	0
8,54	0

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : Yes

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	37,18	-143,65	6,917	0	6,917

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	37,18	-143,65	6,917	0	6,917

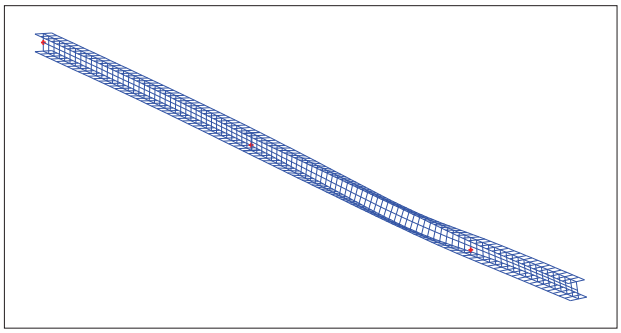

Figure 4 : Mode shape in 3D (Mode 1).

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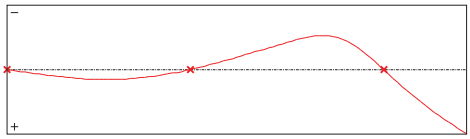

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

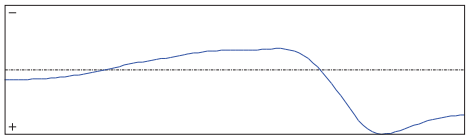

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

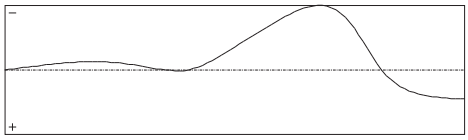

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

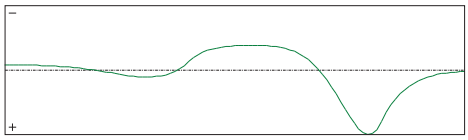

Figure 8 : Warping compopent of the shear centre (Mode 1).

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I.1 - Lateral restraints

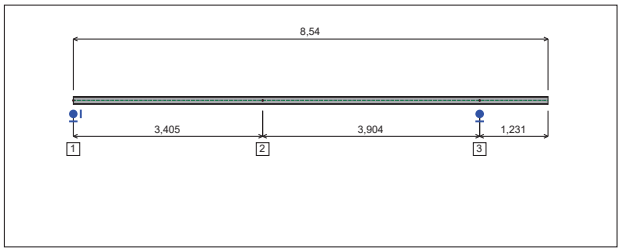

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3,405 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 7,309 m

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Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

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I.2 - Loads

Type of loading : Internal

- Moment diagram :

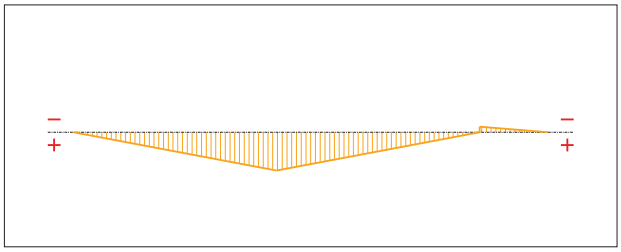

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	0
3,655	37,96
7,309	0
7,309	-5,57
8,54	0

- Axial force diagram :

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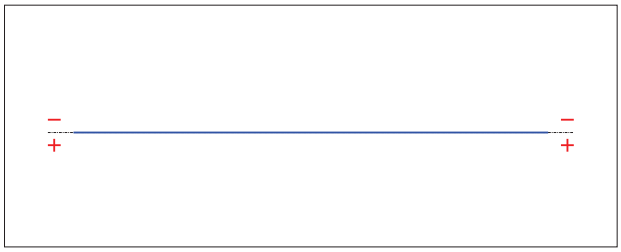

Figure 3 : Axial force diagram.

Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	0
8,54	0

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : No

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	6,243	235,88	3,672	0	3,672

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	6,243	235,88	3,672	0	3,672

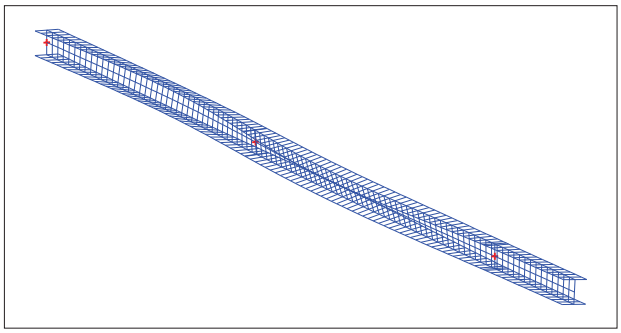

Figure 4 : Mode shape in 3D (Mode 1).

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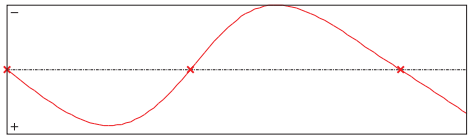

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

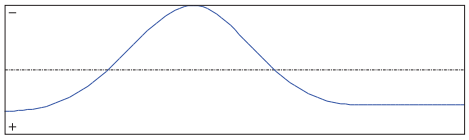

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

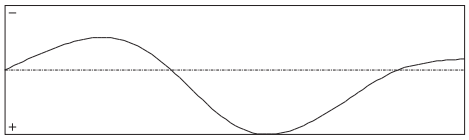

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

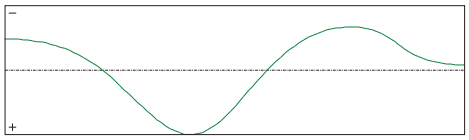

Figure 8 : Warping compopent of the shear centre (Mode 1).

I.1 - Lateral restraints

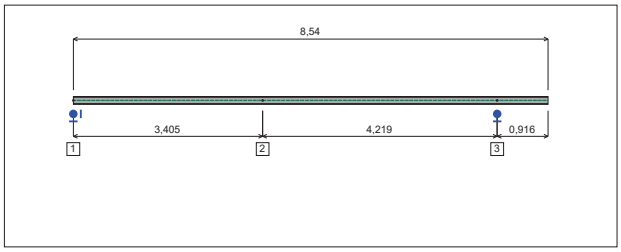

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3,405 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 7,624 m

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Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

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I.2 - Loads

Type of loading : Internal

- Moment diagram :

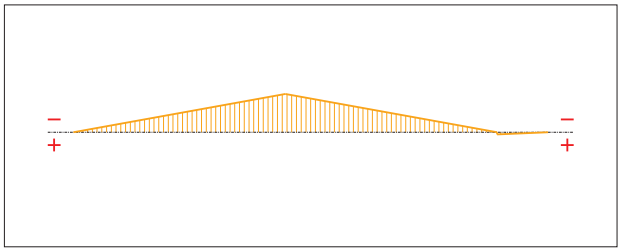

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	0
3,812	-40,34
7,624	0
7,624	2,21
8,54	0

- Axial force diagram :

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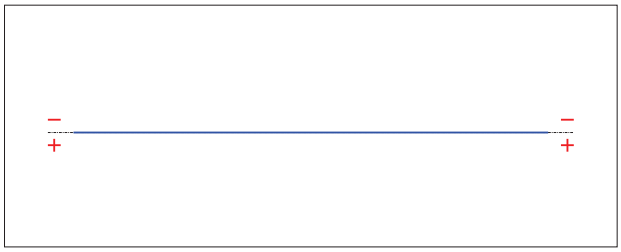

Figure 3 : Axial force diagram.

Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	0
8,54	0

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : No

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	5,435	-217,47	3,843	0	3,843

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	5,435	-217,47	3,843	0	3,843

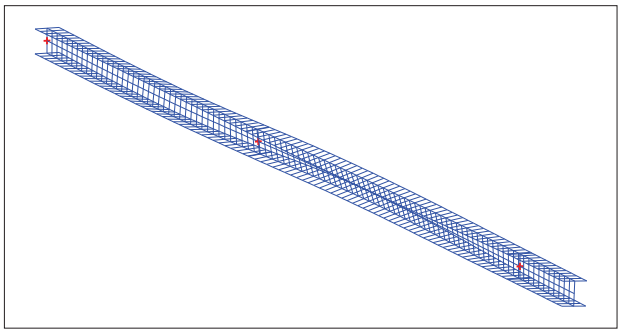

Figure 4 : Mode shape in 3D (Mode 1).

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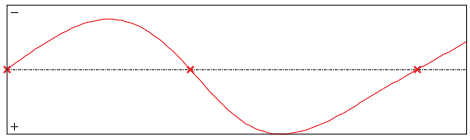

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

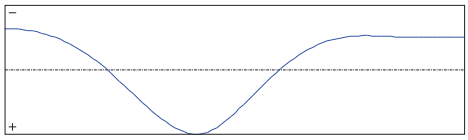

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

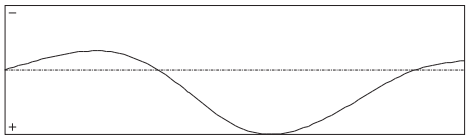

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

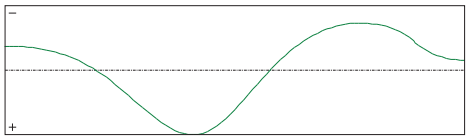

Figure 8 : Warping compopent of the shear centre (Mode 1).

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I.1 - Lateral restraints

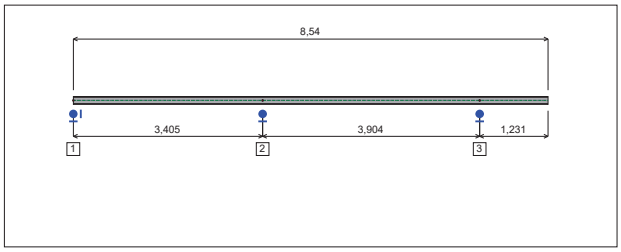

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3,405 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 7,309 m

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Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

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I.2 - Loads

Type of loading : Internal

- Moment diagram :

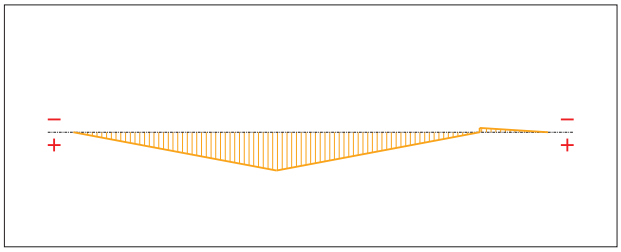

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	0
3,655	47,5
7,309	0
7,309	-5,3
8,54	0

- Axial force diagram :

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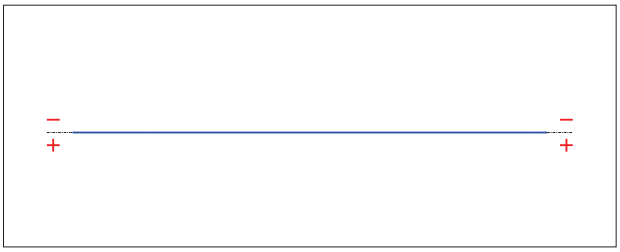

Figure 3 : Axial force diagram.

Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	0
8,54	0

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : No

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	5,016	237,13	3,672	0	3,672

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	5,016	237,13	3,672	0	3,672

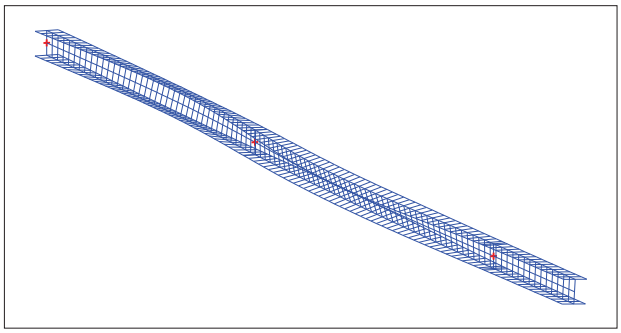

Figure 4 : Mode shape in 3D (Mode 1).

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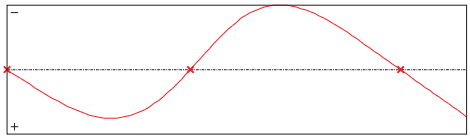

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

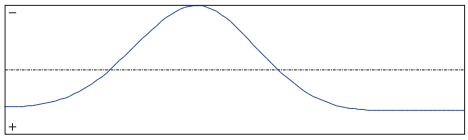

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

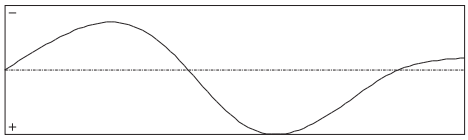

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

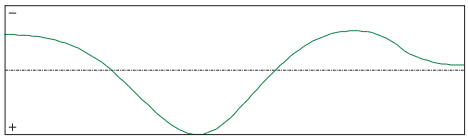

Figure 8 : Warping compopent of the shear centre (Mode 1).

I.1 - Lateral restraints

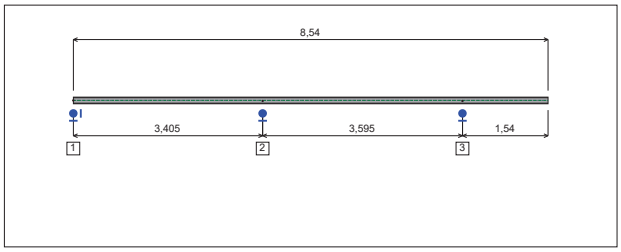

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3,405 m

Vertical position from the shear centre : z = -1 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 7 m

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Vertical position from the shear centre : z = -1 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

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I.2 - Loads

Type of loading : Internal

- Moment diagram :

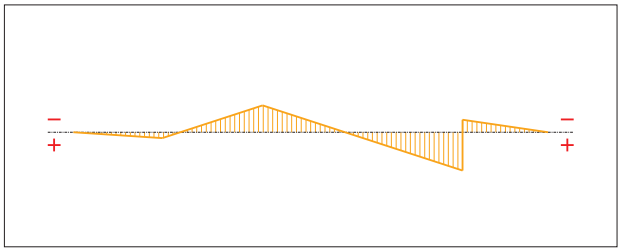

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	0
1,6	0,7
3,405	-3,2
7	4,56
7	-1,49
8,54	0

- Axial force diagram :

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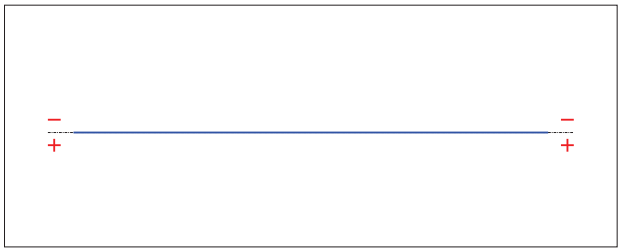

Figure 3 : Axial force diagram.

Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	0
8,54	0

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : Yes

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	54,86	240,4	6,917	0	6,917

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	54,86	240,4	6,917	0	6,917

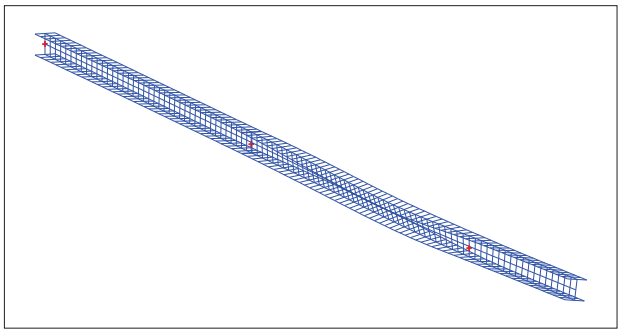

Figure 4 : Mode shape in 3D (Mode 1).

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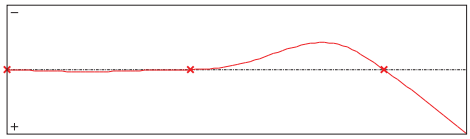

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

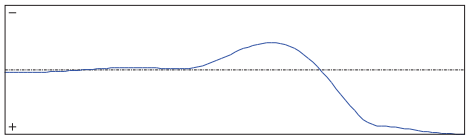

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

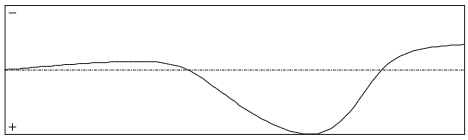

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

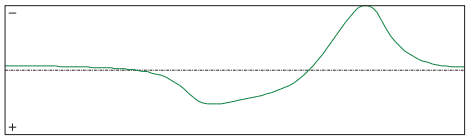

Figure 8 : Warping compopent of the shear centre (Mode 1).

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I.1 - Lateral restraints

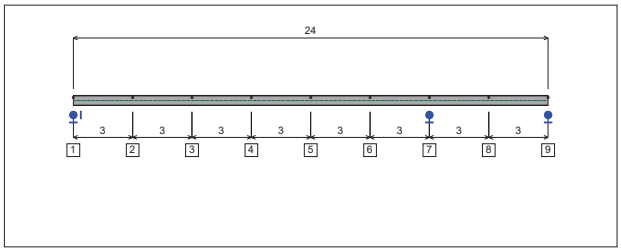

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 15 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3 m

Vertical position from the shear centre : z = 15 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 6 m

Vertical position from the shear centre : z = 15 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 4 :

Type : Ponctual

Abscissa from the left end of the beam : x = 9 m

Vertical position from the shear centre : z = 15 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 5 :

Type : Ponctual

Abscissa from the left end of the beam : x = 12 m

Vertical position from the shear centre : z = 15 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 6 :

Type : Ponctual

Abscissa from the left end of the beam : x = 15 m

Vertical position from the shear centre : z = 15 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 7 :

Type : Ponctual

Abscissa from the left end of the beam : x = 18 m

Vertical position from the shear centre : z = 15 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 8 :

Type : Ponctual

Abscissa from the left end of the beam : x = 21 m

Vertical position from the shear centre : z = 15 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 9 :

Type : Ponctual

Abscissa from the left end of the beam : x = 24 m

Vertical position from the shear centre : z = 15 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

I.2 - Loads

Type of loading : Internal

- Moment diagram :

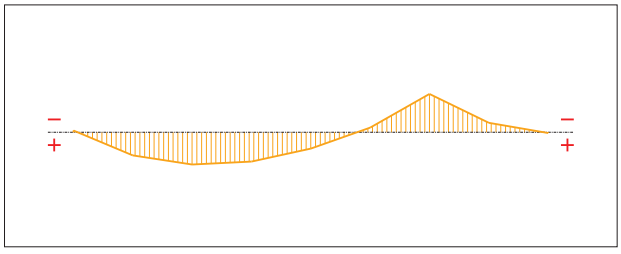

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	-16,54
3	218,5
6	304,29
9	276,68
12	153,61
15	-43,55
18	-361,77
21	-89,16
24	7,33

- Axial force diagram :

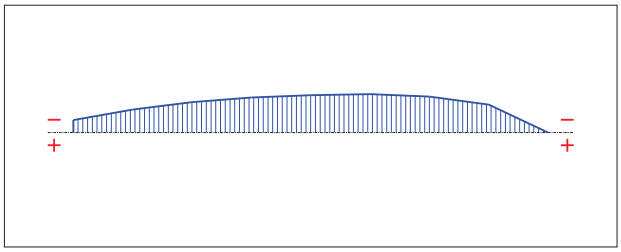

Figure 3 : Axial force diagram.

Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	-51,77
3	-95,75
6	-126,47
9	-145,44
12	-155,23
15	-159,59
18	-149,29
21	-115,99
24	0

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

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II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : Yes

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	2,965	-1072,7	18	-159,59	15

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	2,965	-1072,7	18	-159,59	15

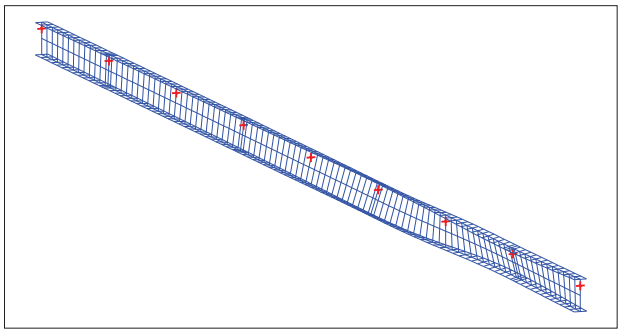

Figure 4 : Mode shape in 3D (Mode 1).

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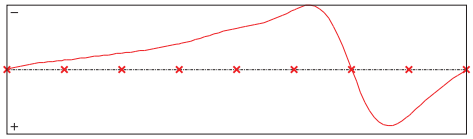

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

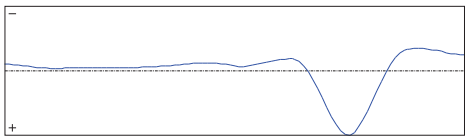

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

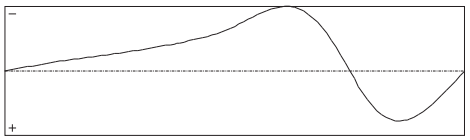

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

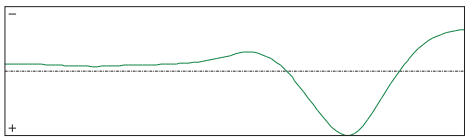

Figure 8 : Warping compopent of the shear centre (Mode 1).

I.1 - Lateral restraints

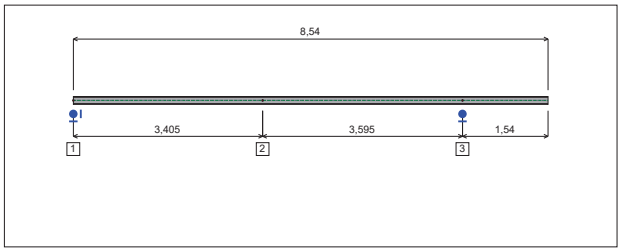

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3,405 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 7 m

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Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

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I.2 - Loads

Type of loading : Internal

- Moment diagram :

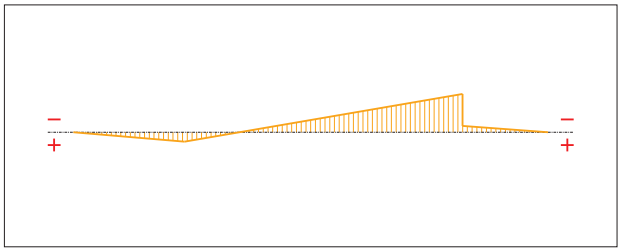

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	0
2	8,85
7	-36,04
7	-6,01
8,54	0

- Axial force diagram :

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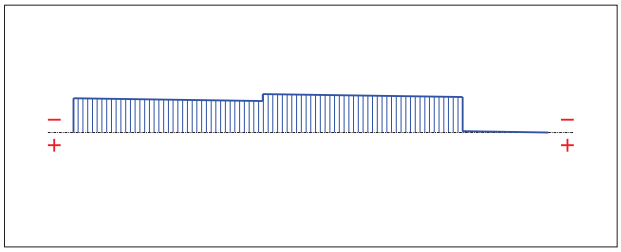

Figure 3 : Axial force diagram.

Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	-92,98
3,405	-85,29
3,405	-104,16
7	-96,21
7	-3,7
8,54	0

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : Yes

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	5,621	-198,41	6,917	-104,16	3,405

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	5,621	-198,41	6,917	-104,16	3,405

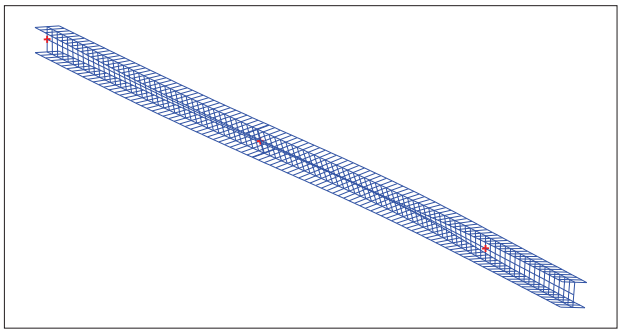

Figure 4 : Mode shape in 3D (Mode 1).

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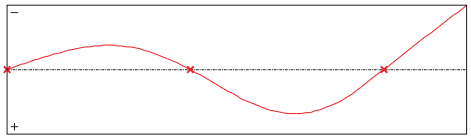

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

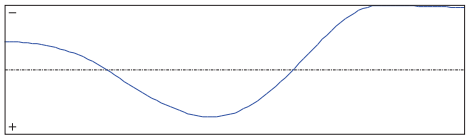

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

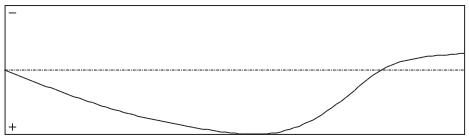

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

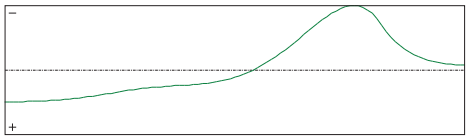

Figure 8 : Warping compopent of the shear centre (Mode 1).

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I.1 - Lateral restraints

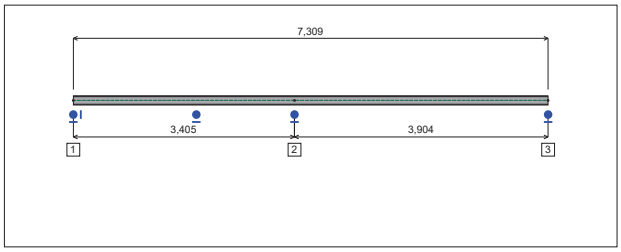

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3,405 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 7,309 m

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Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

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I.2 - Loads

Type of loading : Internal

- Moment diagram :

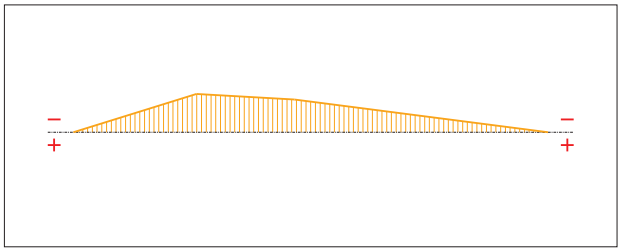

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	0
1,894	-16,38
3,405	-13,97
7,309	0

- Axial force diagram :

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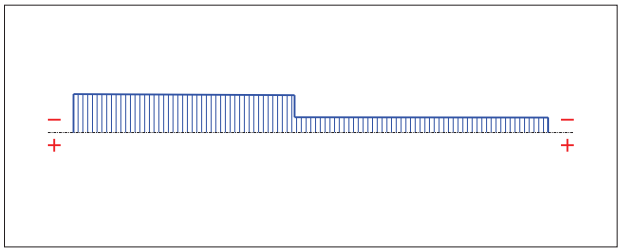

Figure 3 : Axial force diagram.

Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	-310,87
3,405	-302,17
3,405	-122,94
7,309	-121,17

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : Yes

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	9,996	-163,63	1,9	-310,87	0

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	9,996	-163,63	1,9	-310,87	0

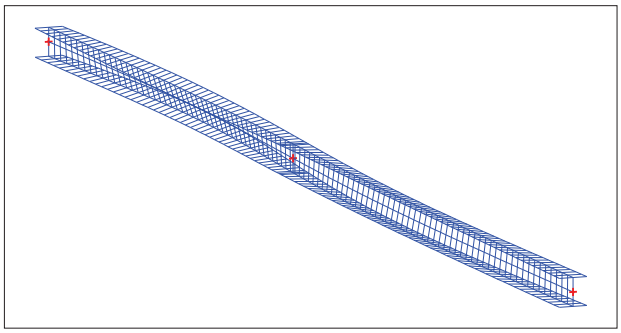

Figure 4 : Mode shape in 3D (Mode 1).

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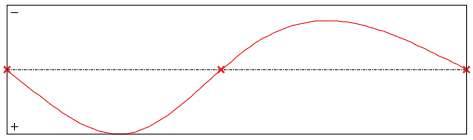

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

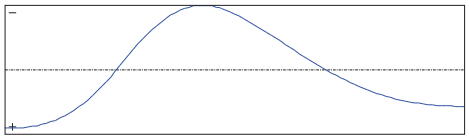

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

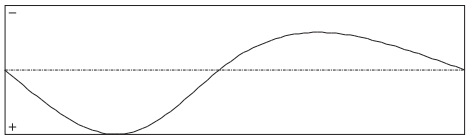

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

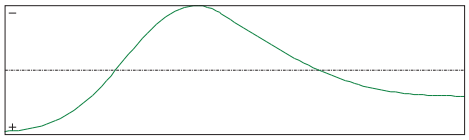

Figure 8 : Warping compopent of the shear centre (Mode 1).

I.1 - Lateral restraints

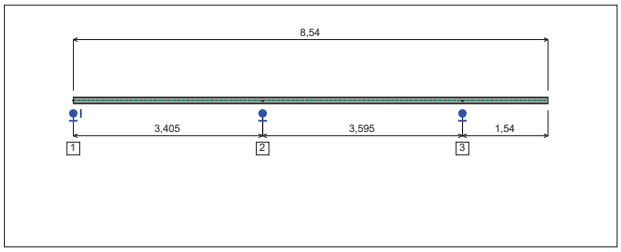

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3,405 m

Vertical position from the shear centre : z = -1 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 7 m

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Vertical position from the shear centre : z = -1 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

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I.2 - Loads

Type of loading : Internal

- Moment diagram :

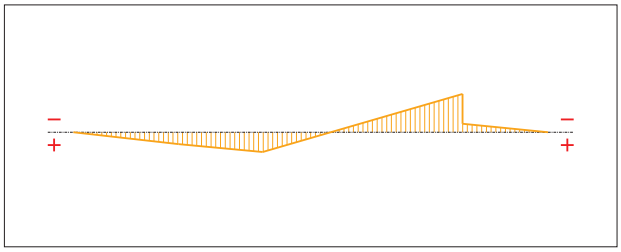

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	0
1,894	7,17
3,405	11,89
7	-23,16
7	-5,14
8,54	0

- Axial force diagram :

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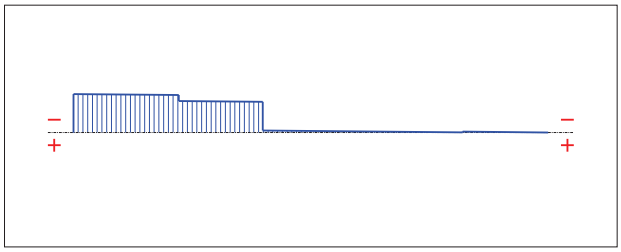

Figure 3 : Axial force diagram.

Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	-162,99
1,894	-158,85
1,894	-133,67
3,405	-130,3
3,405	-8,41
7	-0,32
7	-3,47
8,54	0

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : Yes

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	10,04	-224,38	6,917	-162,99	0

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	10,04	-224,38	6,917	-162,99	0

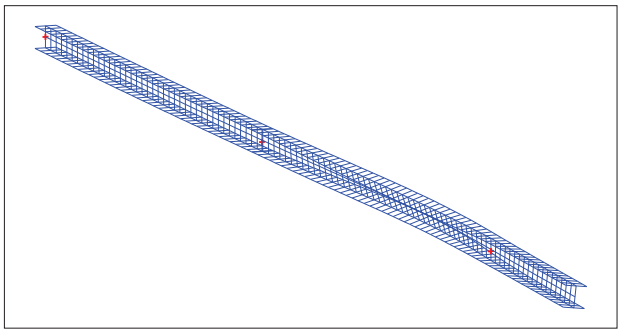

Figure 4 : Mode shape in 3D (Mode 1).

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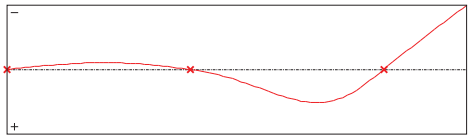

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

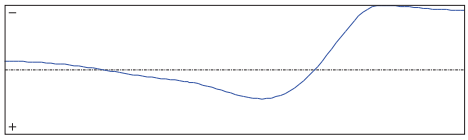

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

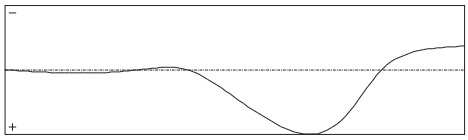

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

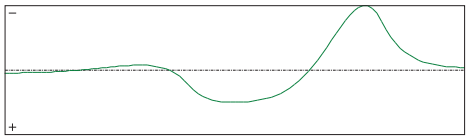

Figure 8 : Warping compopent of the shear centre (Mode 1).

I.1 - Lateral restraints

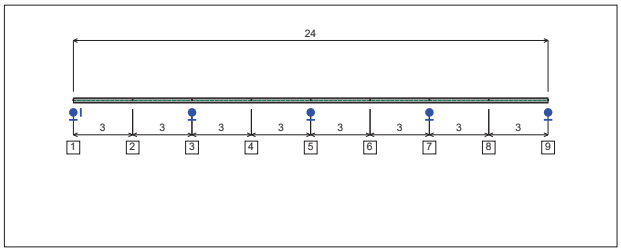

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 2 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3 m

Vertical position from the shear centre : z = 2 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 6 m

Vertical position from the shear centre : z = 2 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 4 :

Type : Ponctual

Abscissa from the left end of the beam : x = 9 m

Vertical position from the shear centre : z = 2 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 5 :

Type : Ponctual

Abscissa from the left end of the beam : x = 12 m

Vertical position from the shear centre : z = 2 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 6 :

Type : Ponctual

Abscissa from the left end of the beam : x = 15 m

Vertical position from the shear centre : z = 2 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 7 :

Type : Ponctual

Abscissa from the left end of the beam : x = 18 m

Vertical position from the shear centre : z = 2 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 8 :

Type : Ponctual

Abscissa from the left end of the beam : x = 21 m

Vertical position from the shear centre : z = 2 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 9 :

Type : Ponctual

Abscissa from the left end of the beam : x = 24 m

Vertical position from the shear centre : z = 2 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

I.2 - Loads

Type of loading : Internal

- Moment diagram :

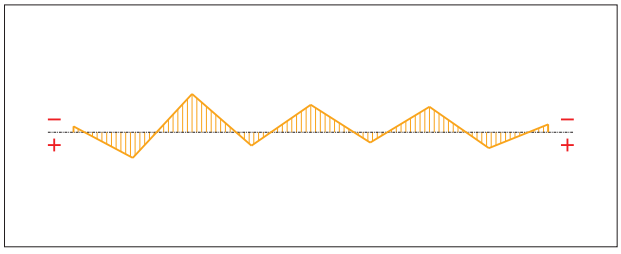

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	-9,64
3	42,37
6	-63,5
9	22,22
12	-45,59
15	17,07
18	-42,12
21	26,35
24	-13,15

- Axial force diagram :

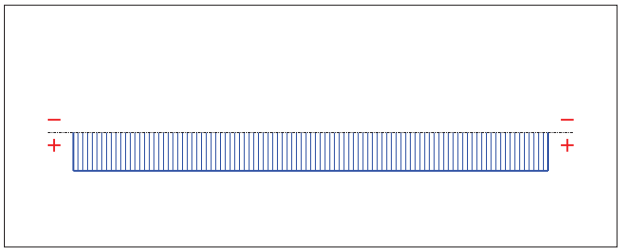

Figure 3 : Axial force diagram.

Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	59
24	59

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

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II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : Yes

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	2,927	-185,88	6	59	0

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	2,927	-185,88	6	59	0

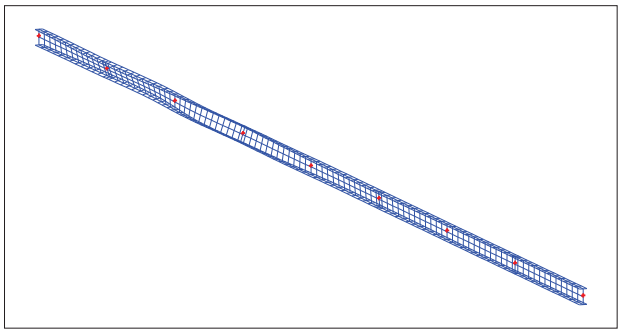

Figure 4 : Mode shape in 3D (Mode 1).

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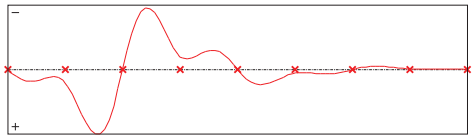

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

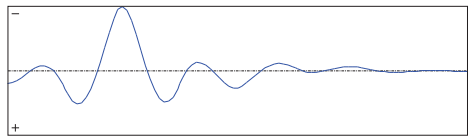

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

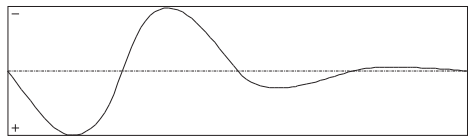

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

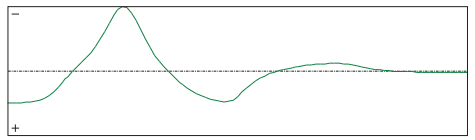

Figure 8 : Warping compopent of the shear centre (Mode 1).

I.1 - Lateral restraints

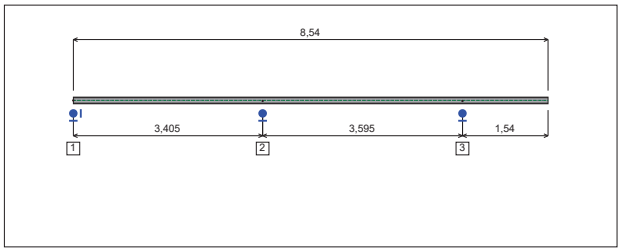

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :

v : Fixed
θ : Fixed
v' : Free
θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3,405 m

Vertical position from the shear centre : z = -1 cm

Restraint conditions :

v : Fixed
θ : Fixed
v' : Free
θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 7 m

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Vertical position from the shear centre : z = -1 cm

Restraint conditions :

v : Fixed
θ : Fixed
v' : Free
θ' : Free

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I.2 - Loads

Type of loading : Internal

- Moment diagram :

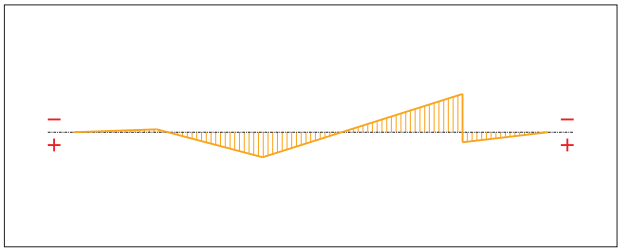

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	0
1,5	-0,88
3,405	7,45
7	-11,44
7	2,99
8,54	0

- Axial force diagram :

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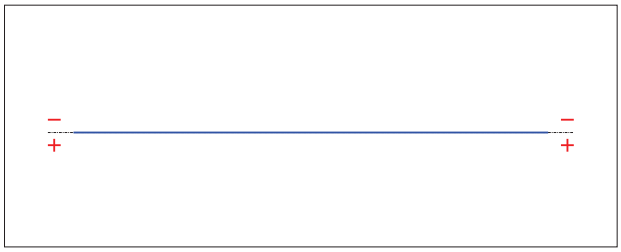

Figure 3 : Axial force diagram.

Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	0
8,54	0

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : Yes

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	21,56	-237,33	6,917	0	6,917

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	21,56	-237,33	6,917	0	6,917

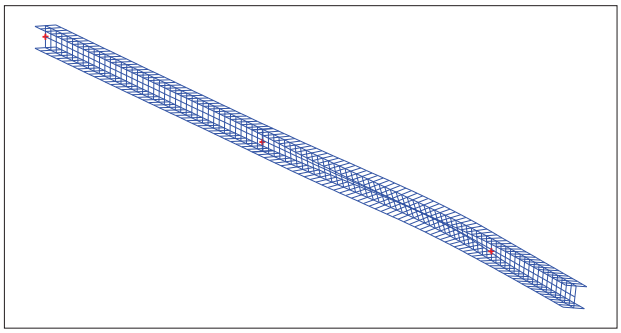

Figure 4 : Mode shape in 3D (Mode 1).

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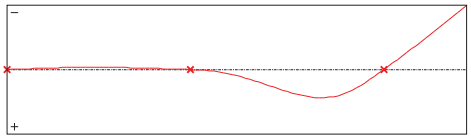

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

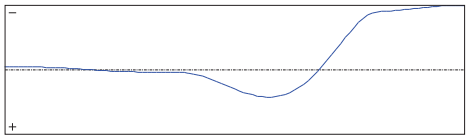

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

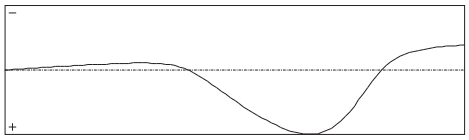

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

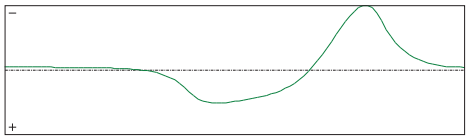

Figure 8 : Warping compopent of the shear centre (Mode 1).

I.1 - Lateral restraints

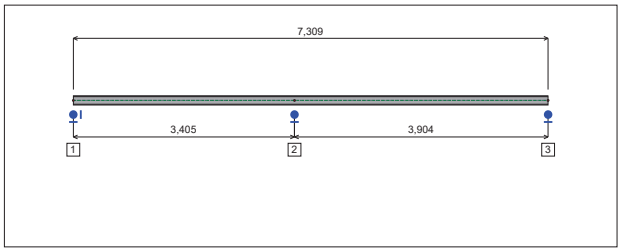

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3,405 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 7,309 m

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Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

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I.2 - Loads

Type of loading : Internal

- Moment diagram :

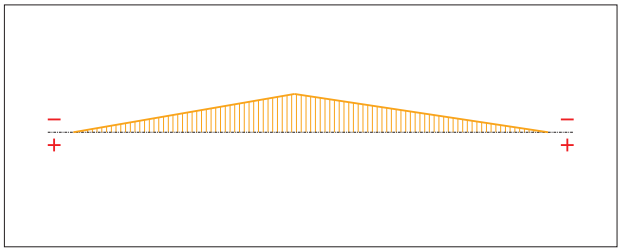

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	0
3,405	-9,78
7,309	0

- Axial force diagram :

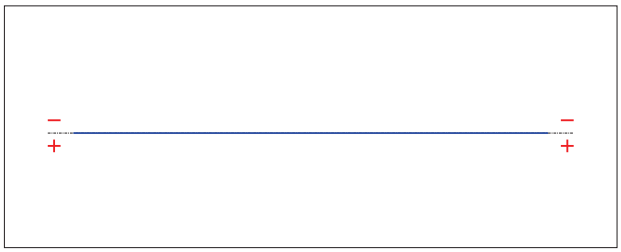

Figure 3 : Axial force diagram.

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Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	0
7,309	0

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : Yes

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	24,13	-235,94	3,405	0	3,405

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	24,13	-235,94	3,405	0	3,405

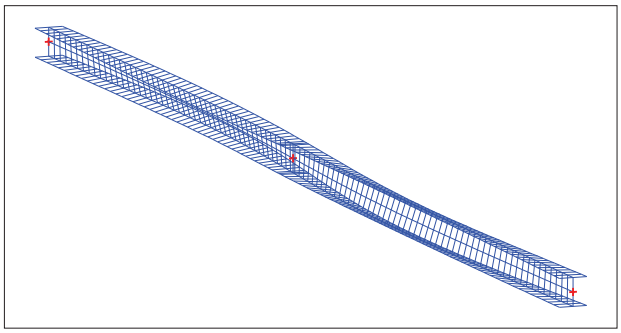

Figure 4 : Mode shape in 3D (Mode 1).

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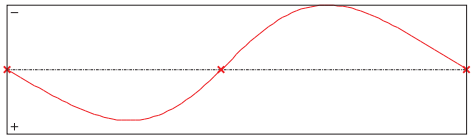

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

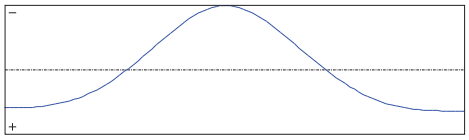

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

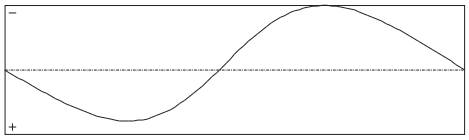

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

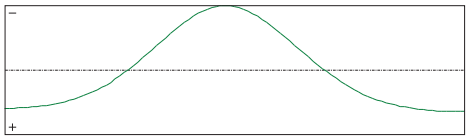

Figure 8 : Warping compopent of the shear centre (Mode 1).

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I.1 - Lateral restraints

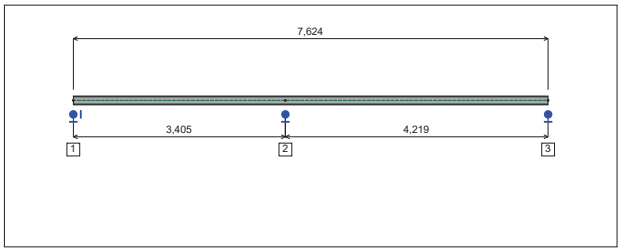

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3,405 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 7,624 m

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Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

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I.2 - Loads

Type of loading : Internal

- Moment diagram :

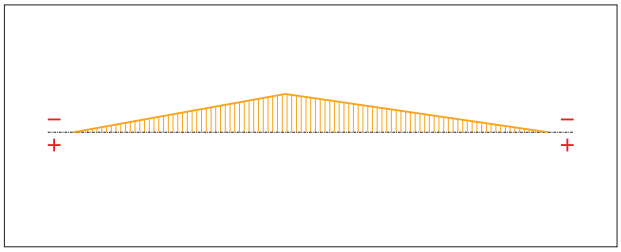

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	0
3,405	-9,12
7,624	0

- Axial force diagram :

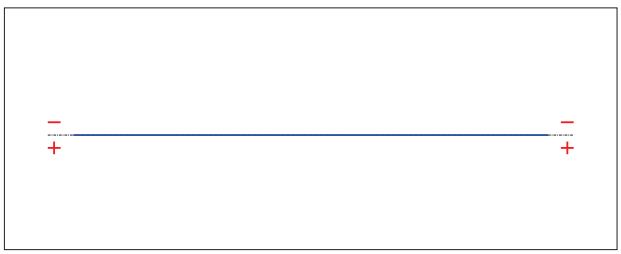

Figure 3 : Axial force diagram.

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Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	0
7,624	0

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : No

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	24,59	-224,26	3,405	0	3,405

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	24,59	-224,26	3,405	0	3,405

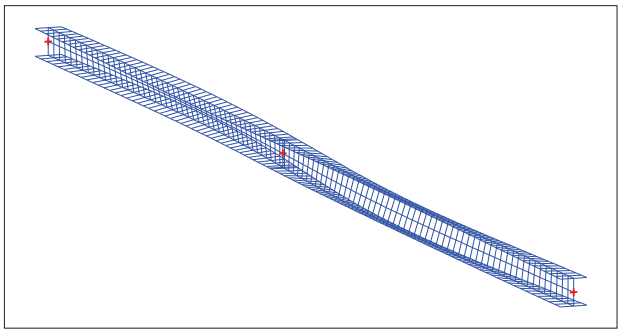

Figure 4 : Mode shape in 3D (Mode 1).

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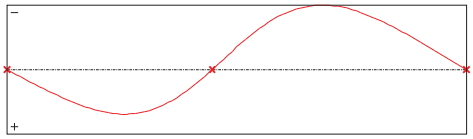

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

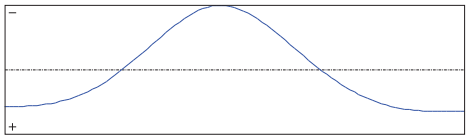

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

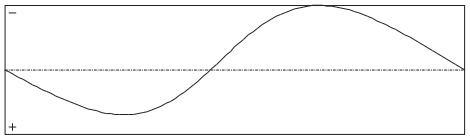

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

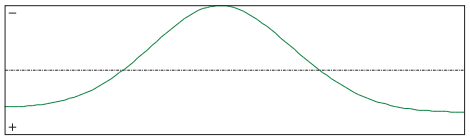

Figure 8 : Warping compopent of the shear centre (Mode 1).

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I.1 - Lateral restraints

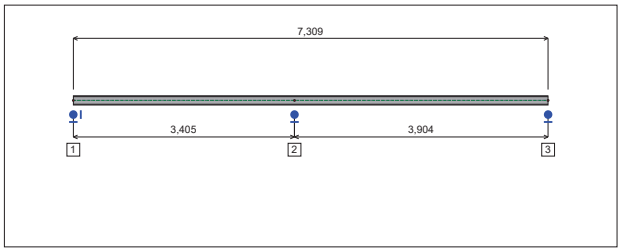

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3,405 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 7,309 m

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Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

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I.2 - Loads

Type of loading : Internal

- Moment diagram :

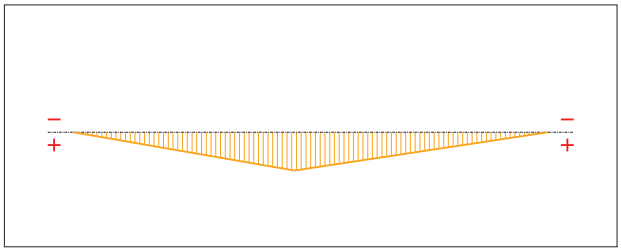

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	0
3,405	11,48
7,309	0

- Axial force diagram :

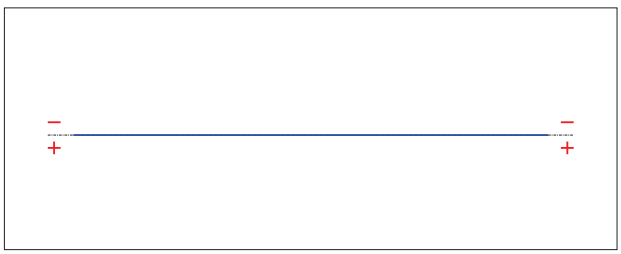

Figure 3 : Axial force diagram.

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Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	0
7,309	0

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : No

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	20,55	235,94	3,405	0	3,405

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	20,55	235,94	3,405	0	3,405

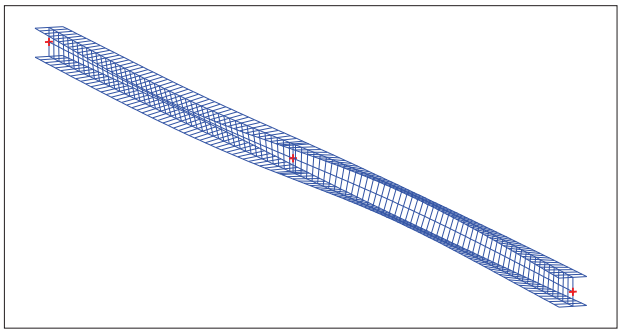

Figure 4 : Mode shape in 3D (Mode 1).

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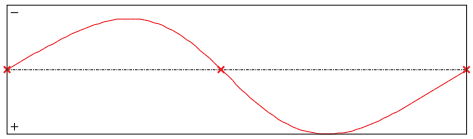

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

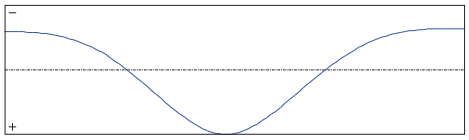

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

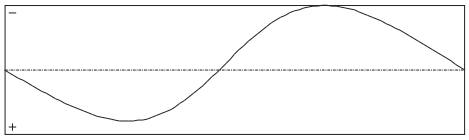

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

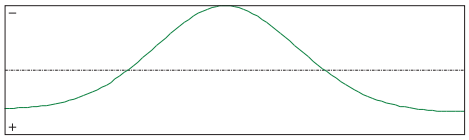

Figure 8 : Warping compopent of the shear centre (Mode 1).

I.1 - Lateral restraints

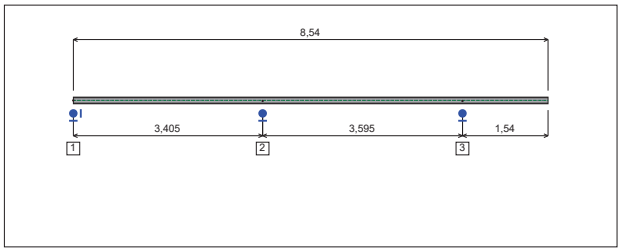

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3,405 m

Vertical position from the shear centre : z = -1 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 7 m

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Vertical position from the shear centre : z = -1 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

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I.2 - Loads

Type of loading : Internal

- Moment diagram :

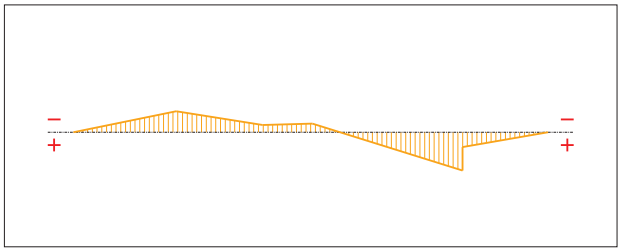

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	0
1,85	-9,82
3,405	-3,4
4,3	-4
7	17,89
7	6,95
8,54	0

- Axial force diagram :

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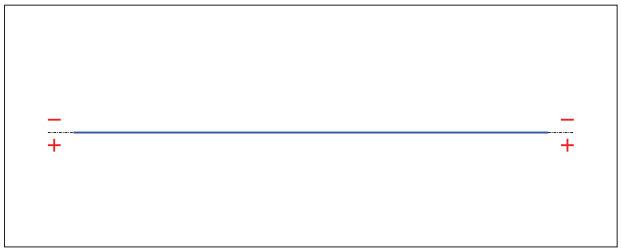

Figure 3 : Axial force diagram.

Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	0
8,54	0

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : Yes

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	13,66	235,27	6,917	0	6,917

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	13,66	235,27	6,917	0	6,917

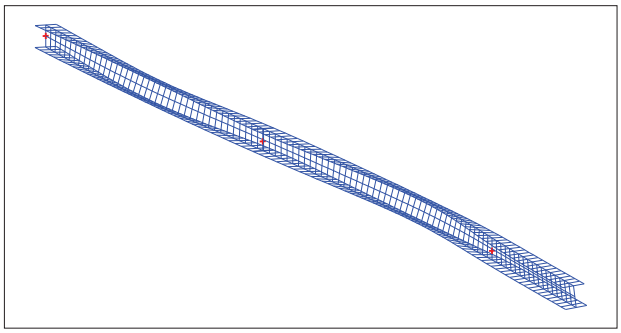

Figure 4 : Mode shape in 3D (Mode 1).

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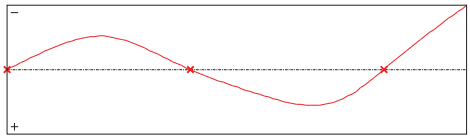

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

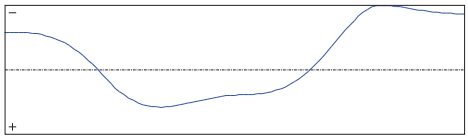

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

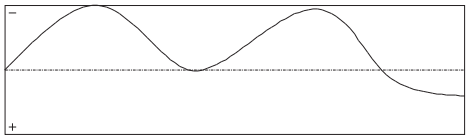

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

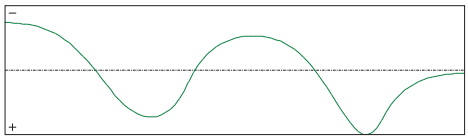

Figure 8 : Warping compopent of the shear centre (Mode 1).

I.1 - Lateral restraints

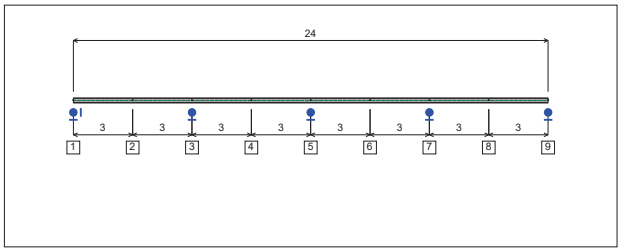

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 2 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3 m

Vertical position from the shear centre : z = 2 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 6 m

Vertical position from the shear centre : z = 2 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 4 :

Type : Ponctual

Abscissa from the left end of the beam : x = 9 m

Vertical position from the shear centre : z = 2 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 5 :

Type : Ponctual

Abscissa from the left end of the beam : x = 12 m

Vertical position from the shear centre : z = 2 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 6 :

Type : Ponctual

Abscissa from the left end of the beam : x = 15 m

Vertical position from the shear centre : z = 2 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 7 :

Type : Ponctual

Abscissa from the left end of the beam : x = 18 m

Vertical position from the shear centre : z = 2 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 8 :

Type : Ponctual

Abscissa from the left end of the beam : x = 21 m

Vertical position from the shear centre : z = 2 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 9 :

Type : Ponctual

Abscissa from the left end of the beam : x = 24 m

Vertical position from the shear centre : z = 2 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

I.2 - Loads

Type of loading : Internal

- Moment diagram :

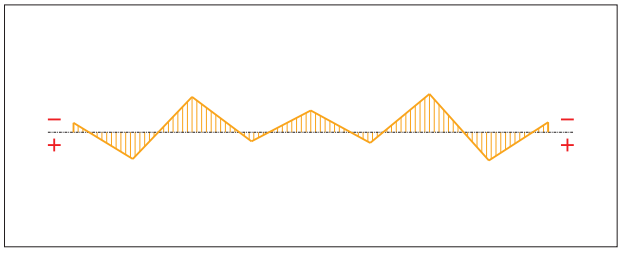

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	-13,81
3	38,94
6	-51,4
9	13,17
12	-31,63
15	15,42
18	-55,8
21	41,09
24	-14,68

- Axial force diagram :

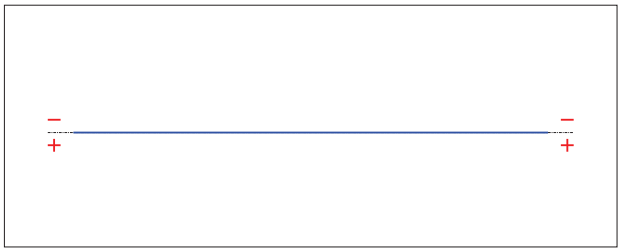

Figure 3 : Axial force diagram.

Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	0
24	0

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

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II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : Yes

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	3,16	-176,33	18	0	18

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	3,16	-176,33	18	0	18

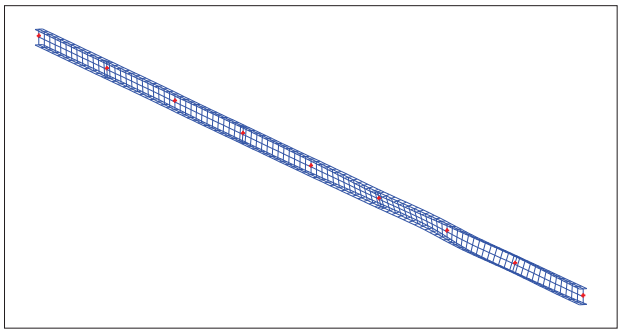

Figure 4 : Mode shape in 3D (Mode 1).

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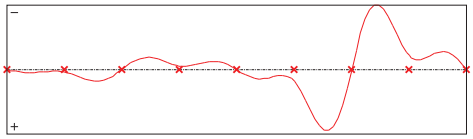

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

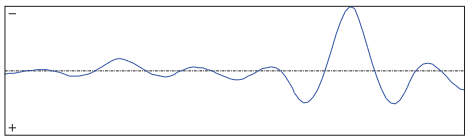

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

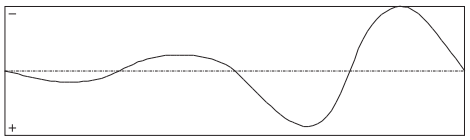

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

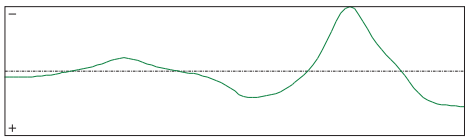

Figure 8 : Warping compopent of the shear centre (Mode 1).

I.1 - Lateral restraints

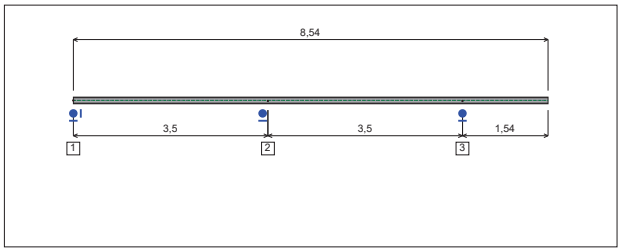

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :

v	: Fixed
θ	: Fixed
v'	: Free
θ'	: Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3,5 m

Vertical position from the shear centre : z = -1 cm

Restraint conditions :

v	: Fixed
θ	: Fixed
v'	: Free
θ'	: Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 7 m

Vertical position from the shear centre : z = -1 cm

Restraint conditions :

v	: Fixed
θ	: Fixed
v'	: Free
θ'	: Free

I.2 - Loads

Type of loading : Internal

- Moment diagram :

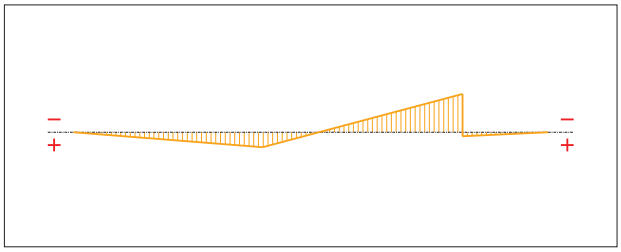

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	0
3,405	3,89
7	-9,99
7	1,05
8,54	0

- Axial force diagram :

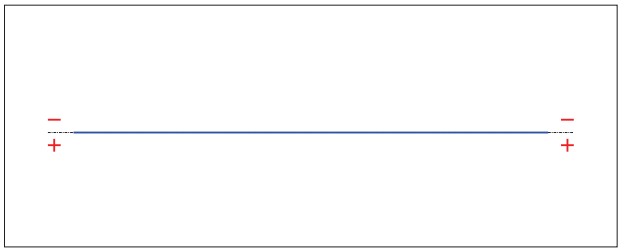

Figure 3 : Axial force diagram.

Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	0
8,54	0

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : Yes

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	22,4	-216,66	6,917	0	6,917

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	22,4	-216,66	6,917	0	6,917

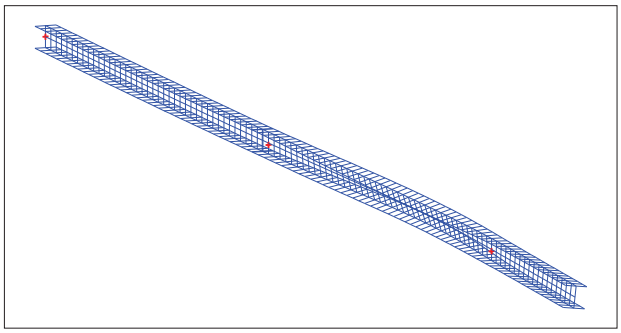

Figure 4 : Mode shape in 3D (Mode 1).

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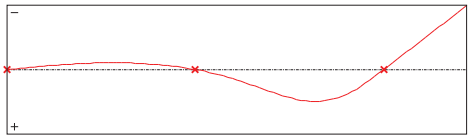

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

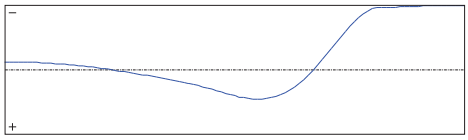

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

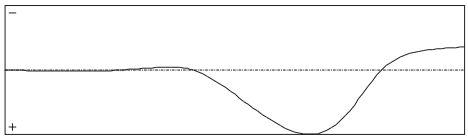

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

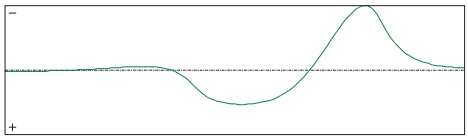

Figure 8 : Warping compopent of the shear centre (Mode 1).

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I.1 - Lateral restraints

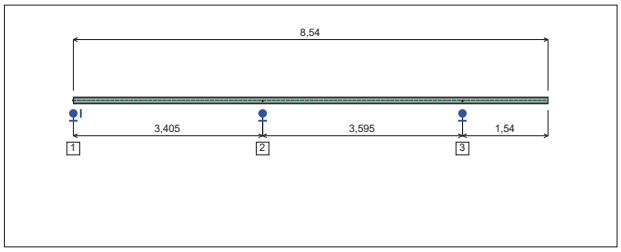

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3,405 m

Vertical position from the shear centre : z = -1 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 7 m

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Vertical position from the shear centre : z = -1 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

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I.2 - Loads

Type of loading : Internal

- Moment diagram :

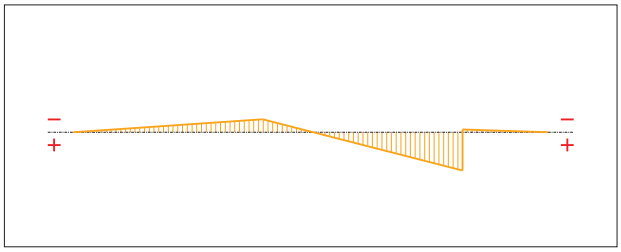

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	0
3,405	-4,54
7	13,41
7	-0,95
8,54	0

- Axial force diagram :

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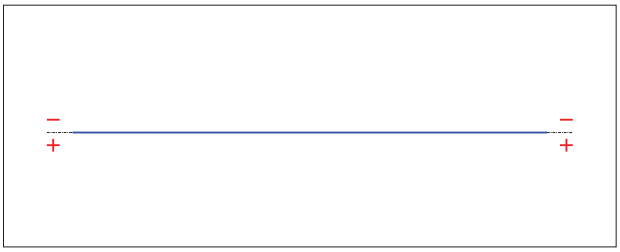

Figure 3 : Axial force diagram.

Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	0
8,54	0

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : Yes

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	16,02	208,27	6,917	0	6,917

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	16,02	208,27	6,917	0	6,917

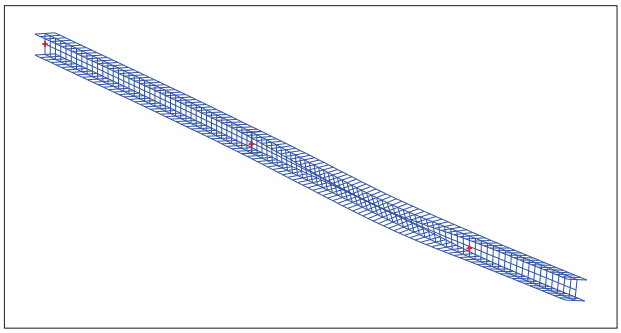

Figure 4 : Mode shape in 3D (Mode 1).

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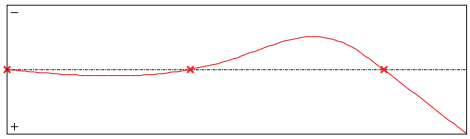

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

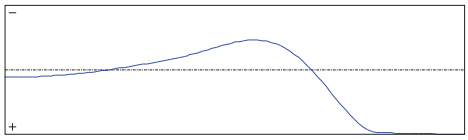

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

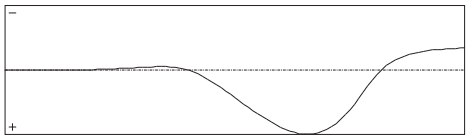

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

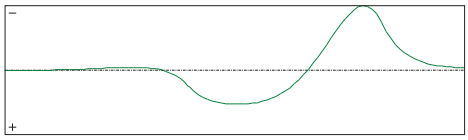

Figure 8 : Warping compopent of the shear centre (Mode 1).

I.1 - Lateral restraints

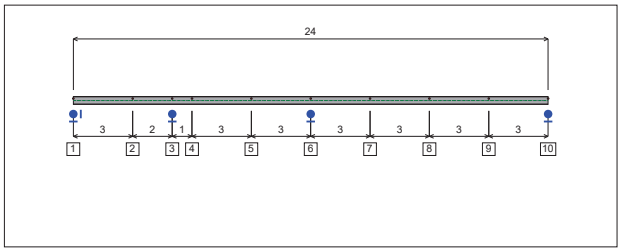

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 10 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3 m

Vertical position from the shear centre : z = 10 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 5 m

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Vertical position from the shear centre : z = 10 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 4 :

Type : Ponctual

Abscissa from the left end of the beam : x = 6 m

Vertical position from the shear centre : z = 10 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 5 :

Type : Ponctual

Abscissa from the left end of the beam : x = 9 m

Vertical position from the shear centre : z = 10 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 6 :

Type : Ponctual

Abscissa from the left end of the beam : x = 12 m

Vertical position from the shear centre : z = 10 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 7 :

Type : Ponctual

Abscissa from the left end of the beam : x = 15 m

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Vertical position from the shear centre : z = 10 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 8 :

Type : Ponctual

Abscissa from the left end of the beam : x = 18 m

Vertical position from the shear centre : z = 10 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 9 :

Type : Ponctual

Abscissa from the left end of the beam : x = 21 m

Vertical position from the shear centre : z = 10 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 10 :

Type : Ponctual

Abscissa from the left end of the beam : x = 24 m

Vertical position from the shear centre : z = 10 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

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I.2 - Loads

Type of loading : Internal

- Moment diagram :

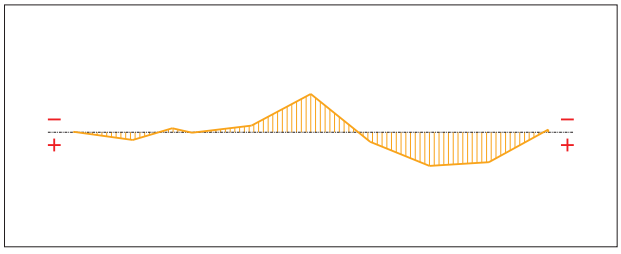

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	-3,17
3	51,03
5	-26,97
6	3,21
9	-44,02
12	-253,96
15	63,79
18	222,55
21	198,59
24	-17,88

- Axial force diagram :

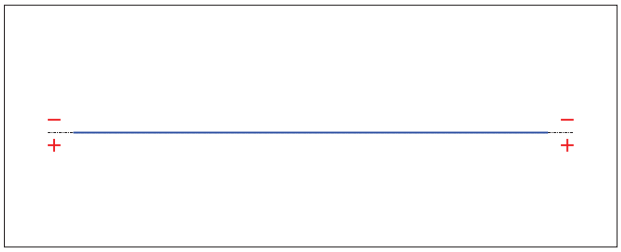

Figure 3 : Axial force diagram.

Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	0
24	0

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

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II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : Yes

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	2,868	-728,37	12	0	12

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	2,868	-728,37	12	0	12

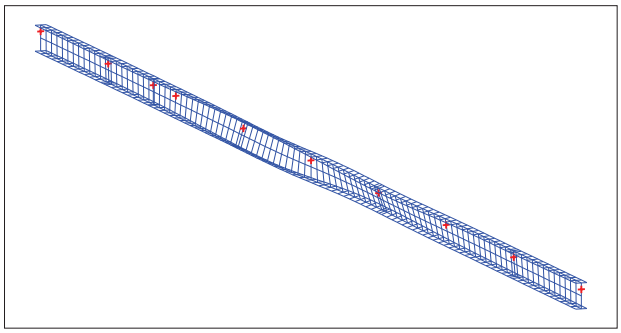

Figure 4 : Mode shape in 3D (Mode 1).

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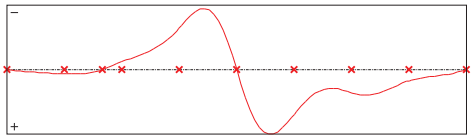

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

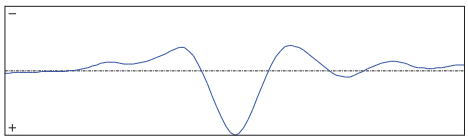

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

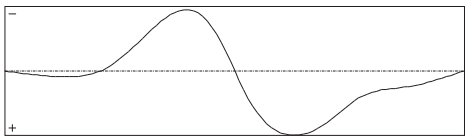

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

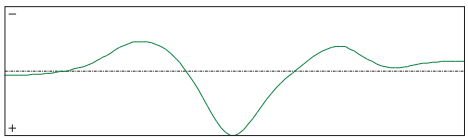

Figure 8 : Warping compopent of the shear centre (Mode 1).

I.1 - Lateral restraints

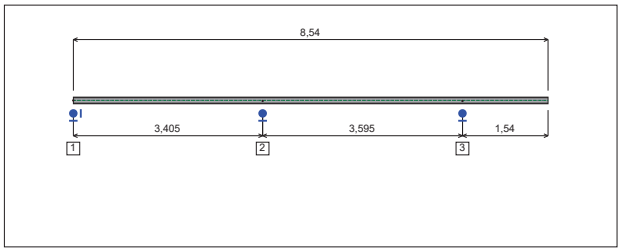

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3,405 m

Vertical position from the shear centre : z = -1 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 7 m

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Vertical position from the shear centre : z = -1 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

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I.2 - Loads

Type of loading : Internal

- Moment diagram :

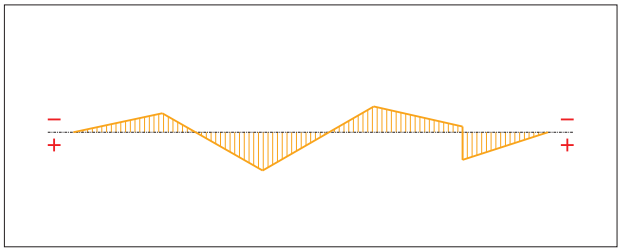

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	0
1,6	-1,63
3,405	3,28
5,405	-2,21
7	-0,49
7	2,36
8,54	0

- Axial force diagram :

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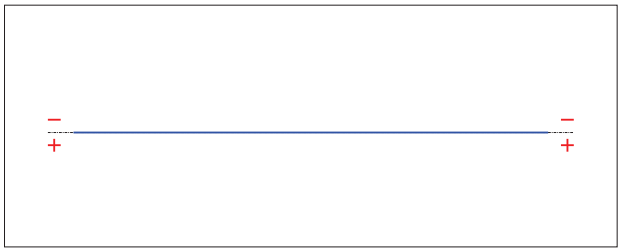

Figure 3 : Axial force diagram.

Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	0
8,54	0

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : No

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	60,76	199,31	3,405	0	3,405

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	60,76	199,31	3,405	0	3,405

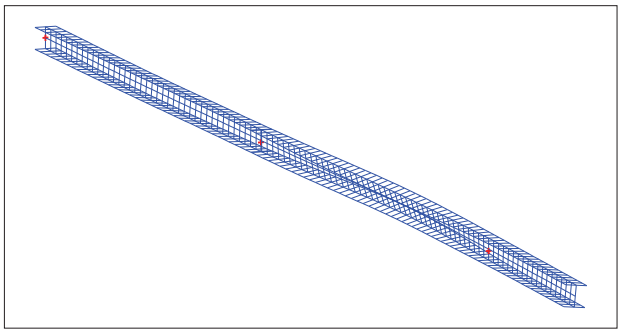

Figure 4 : Mode shape in 3D (Mode 1).

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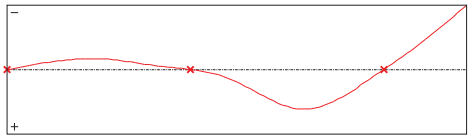

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

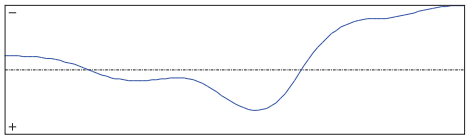

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

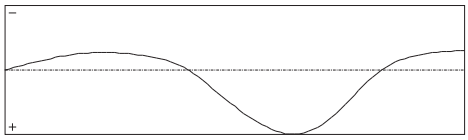

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

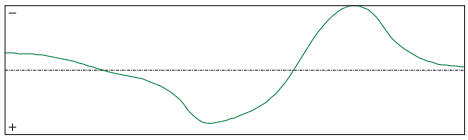

Figure 8 : Warping compopent of the shear centre (Mode 1).

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I.1 - Lateral restraints

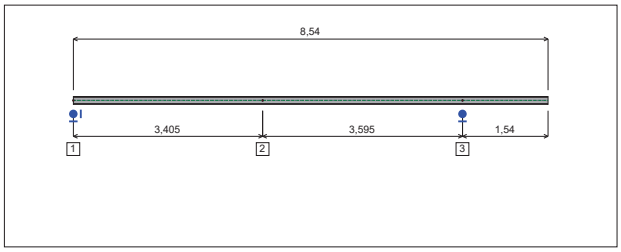

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3,405 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 7 m

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Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

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I.2 - Loads

Type of loading : Internal

- Moment diagram :

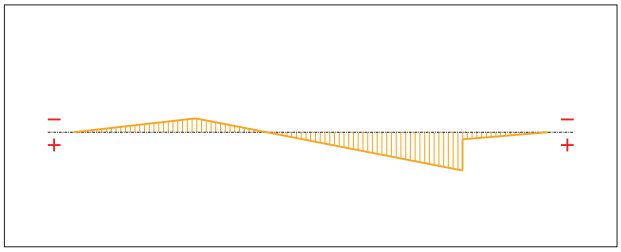

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	0
2,2	-15,79
7	43,74
7	8,12
8,54	0

- Axial force diagram :

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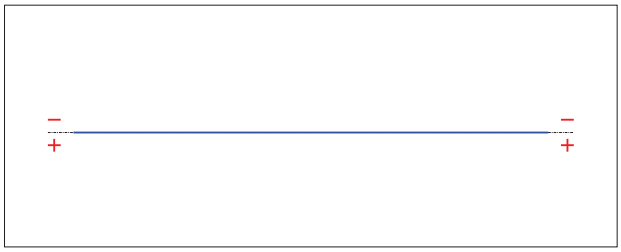

Figure 3 : Axial force diagram.

Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	0
8,54	0

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : No

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	4,843	206,85	6,917	0	6,917

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	4,843	206,85	6,917	0	6,917

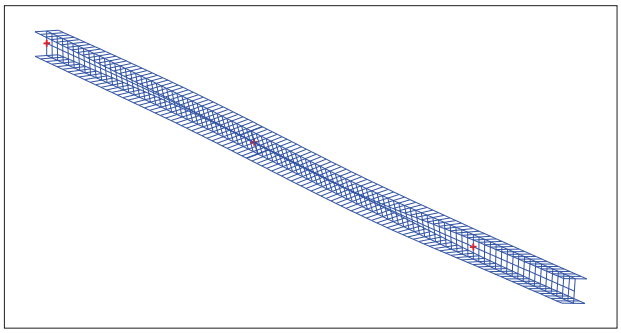

Figure 4 : Mode shape in 3D (Mode 1).

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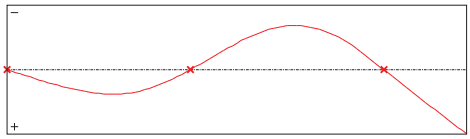

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

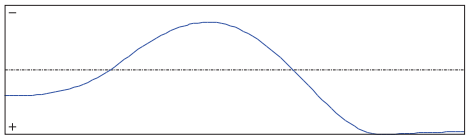

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

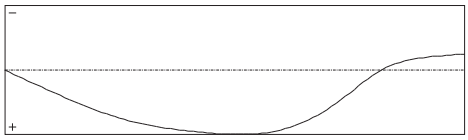

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

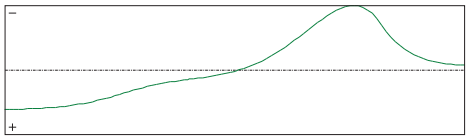

Figure 8 : Warping compopent of the shear centre (Mode 1).

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I.1 - Lateral restraints

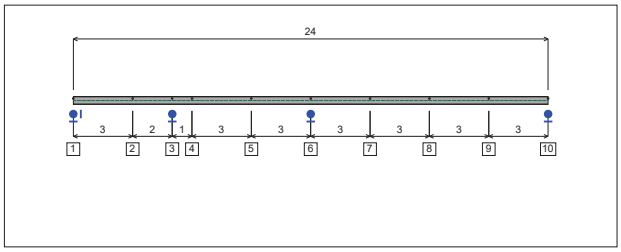

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 10 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3 m

Vertical position from the shear centre : z = 10 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 5 m

Vertical position from the shear centre : z = 10 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 4 :

Type : Ponctual

Abscissa from the left end of the beam : x = 6 m

Vertical position from the shear centre : z = 10 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 5 :

Type : Ponctual

Abscissa from the left end of the beam : x = 9 m

Vertical position from the shear centre : z = 10 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 6 :

Type : Ponctual

Abscissa from the left end of the beam : x = 12 m

Vertical position from the shear centre : z = 10 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 7 :

Type : Ponctual

Abscissa from the left end of the beam : x = 15 m

Vertical position from the shear centre : z = 10 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 8 :

Type : Ponctual

Abscissa from the left end of the beam : x = 18 m

Vertical position from the shear centre : z = 10 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 9 :

Type : Ponctual

Abscissa from the left end of the beam : x = 21 m

Vertical position from the shear centre : z = 10 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 10 :

Type : Ponctual

Abscissa from the left end of the beam : x = 24 m

Vertical position from the shear centre : z = 10 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

I.2 - Loads

Type of loading : Internal

- Moment diagram :

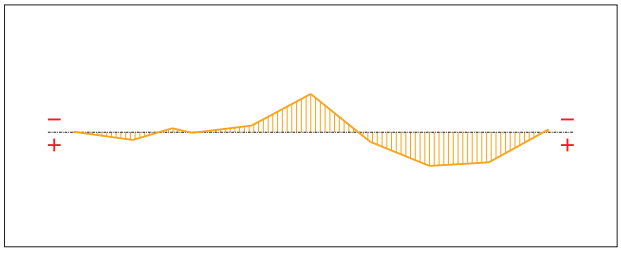

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	-2,7
3	45,46
5	-23,85
6	3,15
9	-38,82
12	-224,5
15	55,9
18	196,77
21	175,87
24	-15,49

- Axial force diagram :

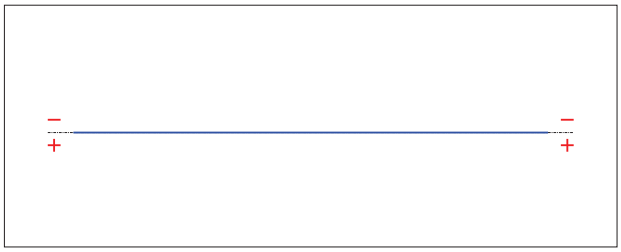

Figure 3 : Axial force diagram.

Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	0
24	0

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

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II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : Yes

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	3,243	-728,02	12	0	12

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	3,243	-728,02	12	0	12

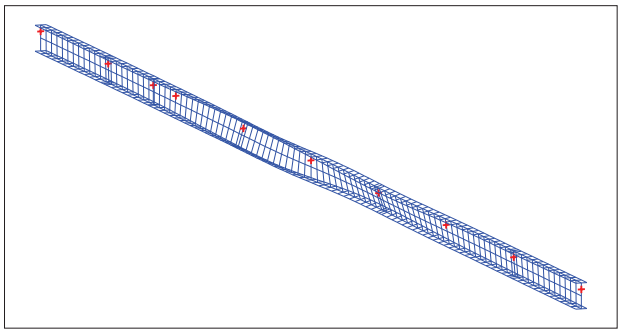

Figure 4 : Mode shape in 3D (Mode 1).

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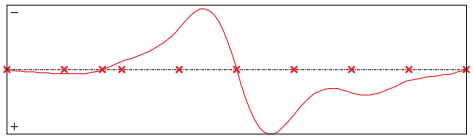

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

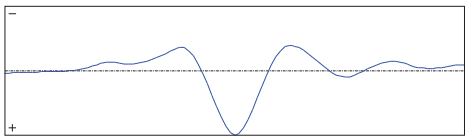

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

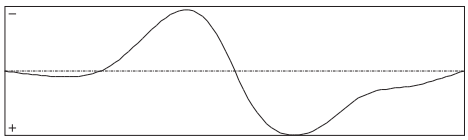

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

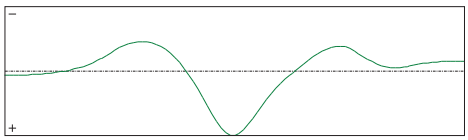

Figure 8 : Warping compopent of the shear centre (Mode 1).

I.1 - Lateral restraints

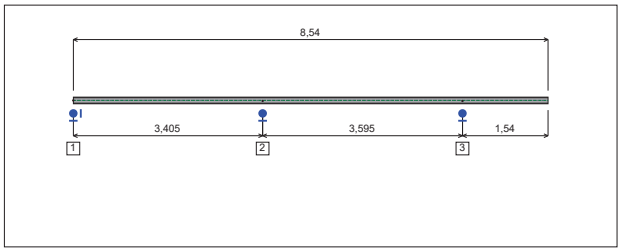

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3,405 m

Vertical position from the shear centre : z = -1 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 7 m

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Vertical position from the shear centre : z = -1 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

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I.2 - Loads

Type of loading : Internal

- Moment diagram :

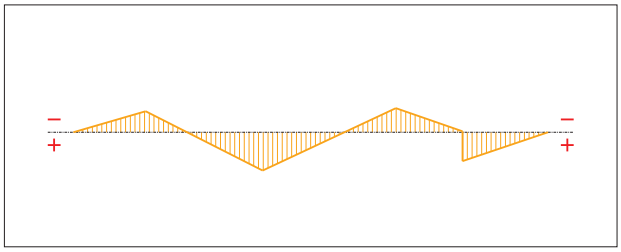

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	0
1,3	-1,71
3,405	3,13
5,8	-1,97
7	-0,07
7	2,36
8,54	0

- Axial force diagram :

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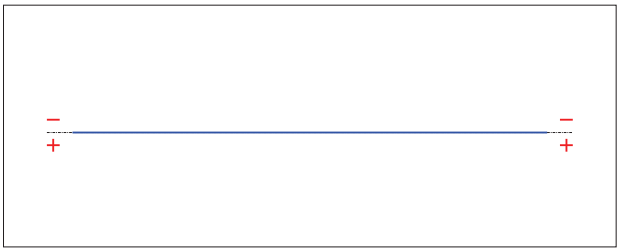

Figure 3 : Axial force diagram.

Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	0
8,54	0

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : No

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	72,59	227,21	3,405	0	3,405

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	72,59	227,21	3,405	0	3,405

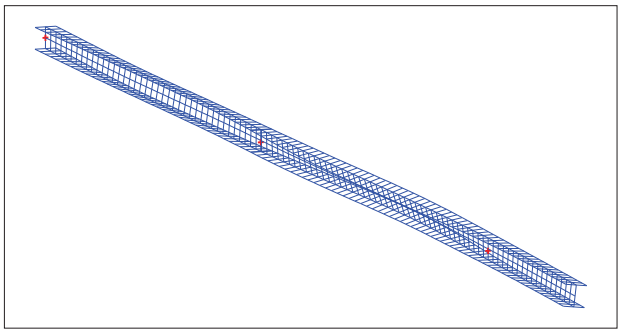

Figure 4 : Mode shape in 3D (Mode 1).

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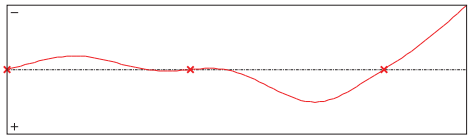

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

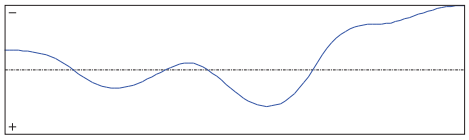

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

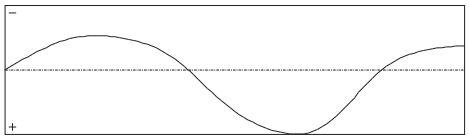

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

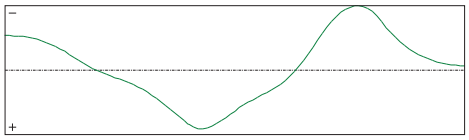

Figure 8 : Warping compopent of the shear centre (Mode 1).

I.1 - Lateral restraints

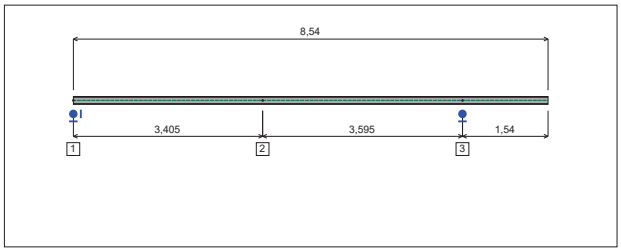

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3,405 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 7 m

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Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

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I.2 - Loads

Type of loading : Internal

- Moment diagram :

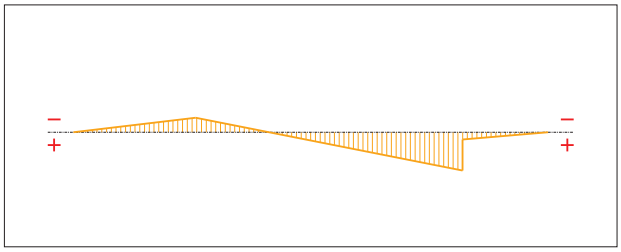

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	0
2,2	-16,16
7	42,5
7	8,12
8,54	0

- Axial force diagram :

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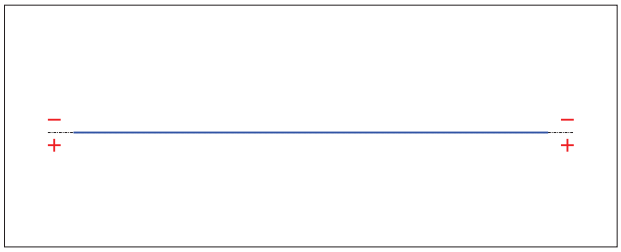

Figure 3 : Axial force diagram.

Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	0
8,54	0

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : No

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	4,957	205,66	6,917	0	6,917

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	4,957	205,66	6,917	0	6,917

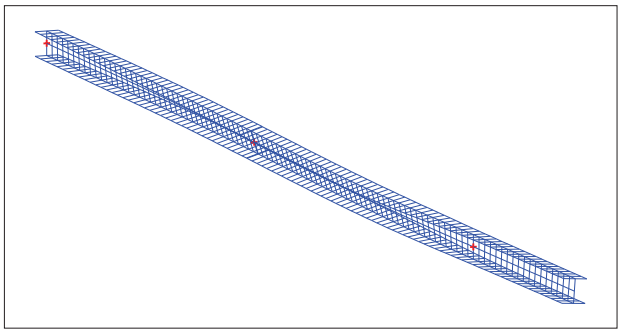

Figure 4 : Mode shape in 3D (Mode 1).

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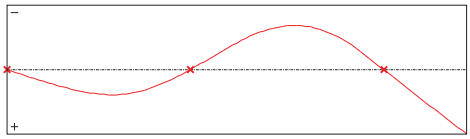

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

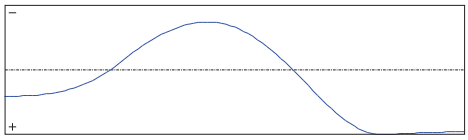

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

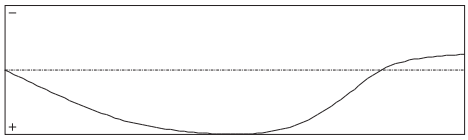

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

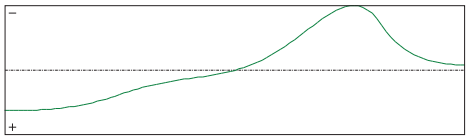

Figure 8 : Warping compopent of the shear centre (Mode 1).

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I.1 - Lateral restraints

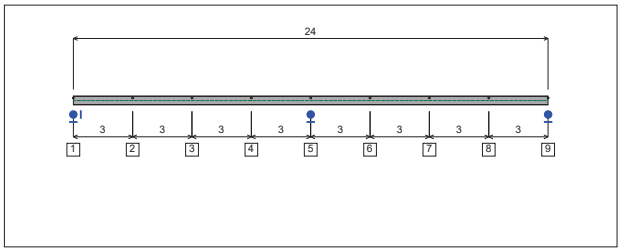

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 12,5 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3 m

Vertical position from the shear centre : z = 12,5 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 6 m

Vertical position from the shear centre : z = 12,5 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 4 :

Type : Ponctual

Abscissa from the left end of the beam : x = 9 m

Vertical position from the shear centre : z = 12,5 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 5 :

Type : Ponctual

Abscissa from the left end of the beam : x = 12 m

Vertical position from the shear centre : z = 12,5 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 6 :

Type : Ponctual

Abscissa from the left end of the beam : x = 15 m

Vertical position from the shear centre : z = 12,5 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 7 :

Type : Ponctual

Abscissa from the left end of the beam : x = 18 m

Vertical position from the shear centre : z = 12,5 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 8 :

Type : Ponctual

Abscissa from the left end of the beam : x = 21 m

Vertical position from the shear centre : z = 12,5 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 9 :

Type : Ponctual

Abscissa from the left end of the beam : x = 24 m

Vertical position from the shear centre : z = 12,5 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

I.2 - Loads

Type of loading : Internal

- Moment diagram :

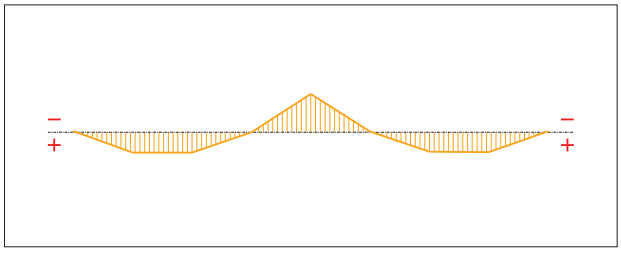

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	-9,65
3	188,58
6	188,22
9	-0,47
12	-353,86
15	-6,32
18	179,76
21	182,96
24	-9,15

- Axial force diagram :

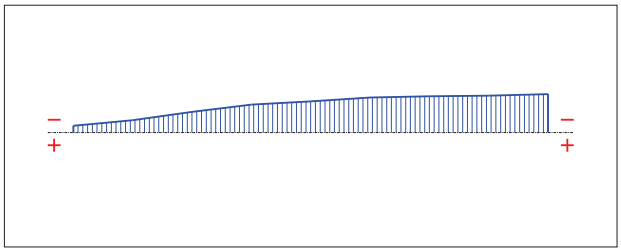

Figure 3 : Axial force diagram.

Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	-4,16
3	-7,59
6	-12,65
9	-17,09
12	-19,08
15	-21,5
18	-22,21
21	-22,6
24	-23,56

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : Yes

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	2,519	-891,51	12	-23,48	23,76

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	2,519	-891,51	12	-23,48	23,76

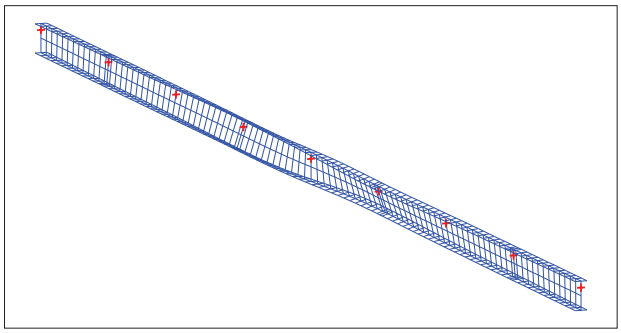

Figure 4 : Mode shape in 3D (Mode 1).

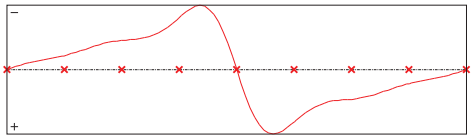

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

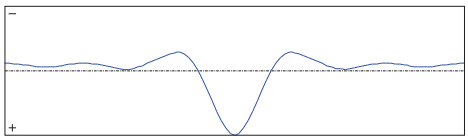

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

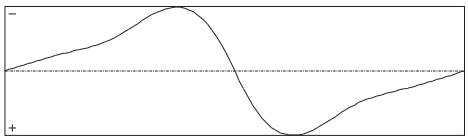

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

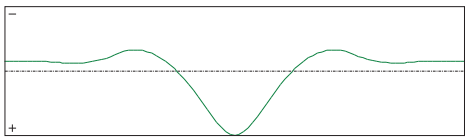

Figure 8 : Warping compopent of the shear centre (Mode 1).

I.1 - Lateral restraints

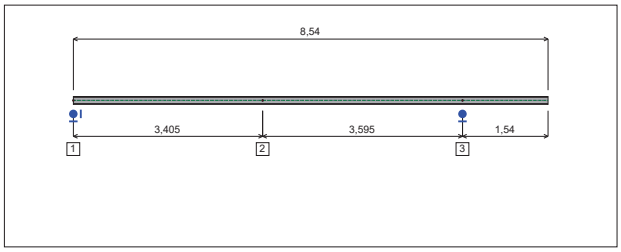

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3,405 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 7 m

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Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

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I.2 - Loads

Type of loading : Internal

- Moment diagram :

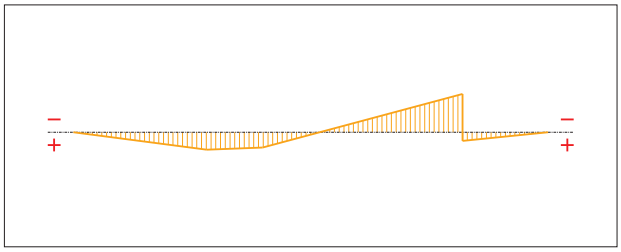

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	0
2,4	14,2
3,405	12,38
7	-31,21
7	6,99
8,54	0

- Axial force diagram :

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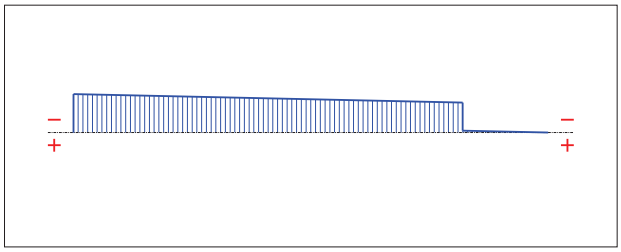

Figure 3 : Axial force diagram.

Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	-90,45
7	-70,32
7	-4,33
8,54	0

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : Yes

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	7,085	-214,01	6,917	-90,45	0

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	7,085	-214,01	6,917	-90,45	0

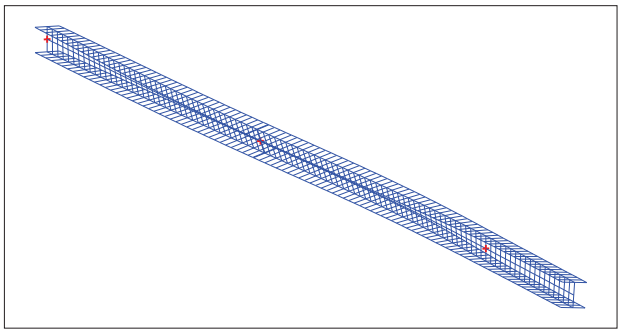

Figure 4 : Mode shape in 3D (Mode 1).

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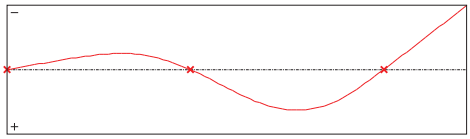

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

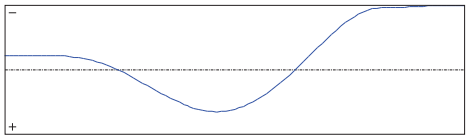

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

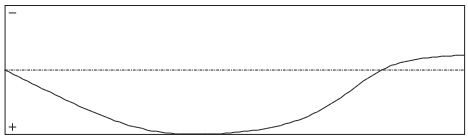

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

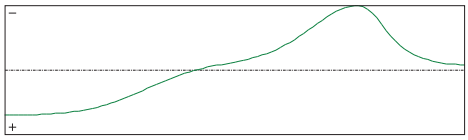

Figure 8 : Warping compopent of the shear centre (Mode 1).

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I.1 - Lateral restraints

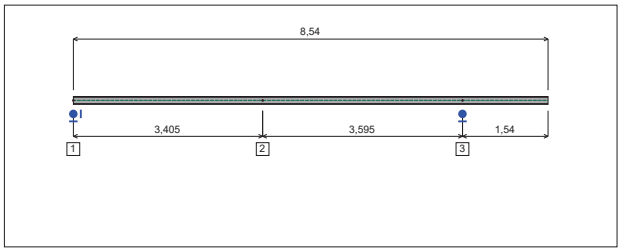

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3,405 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 7 m

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Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

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I.2 - Loads

Type of loading : Internal

- Moment diagram :

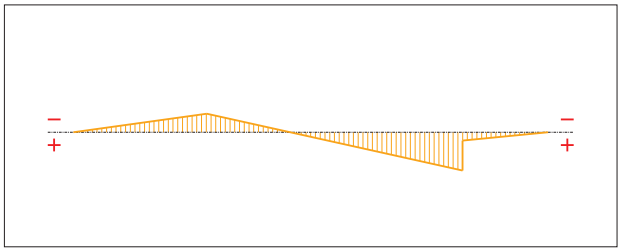

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	0
2,4	-18,17
7	37,63
7	8,11
8,54	0

- Axial force diagram :

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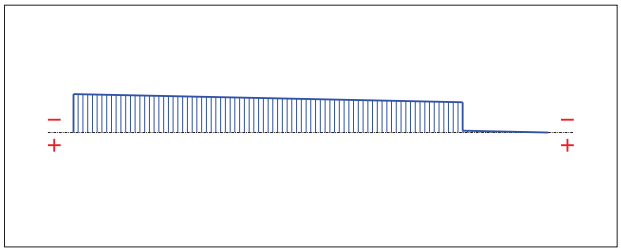

Figure 3 : Axial force diagram.

Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	-94,2
7	-74,26
7	-4,21
8,54	0

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : Yes

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	5,217	191,07	6,917	-94,2	0

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	5,217	191,07	6,917	-94,2	0

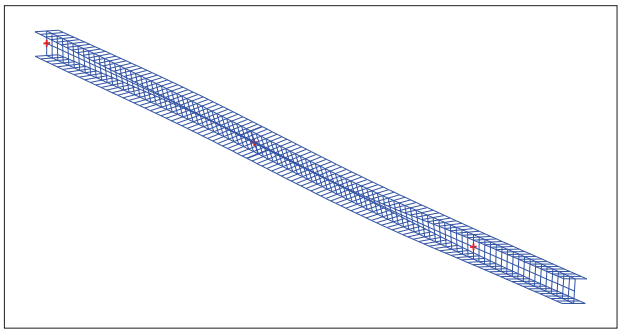

Figure 4 : Mode shape in 3D (Mode 1).

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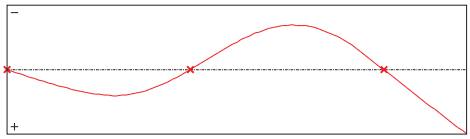

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

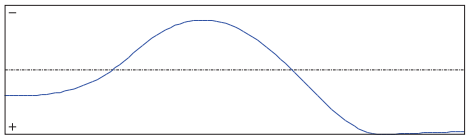

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

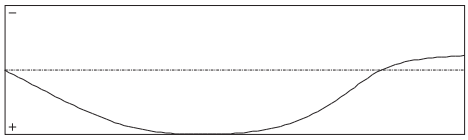

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

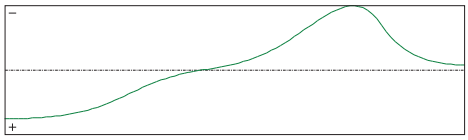

Figure 8 : Warping compopent of the shear centre (Mode 1).

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I.1 - Lateral restraints

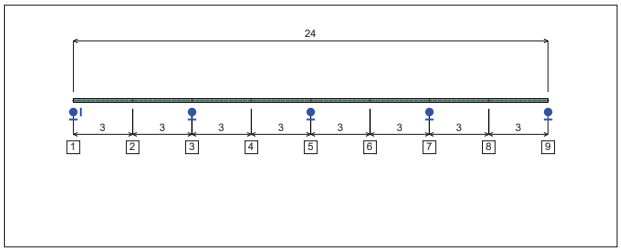

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 6 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 4 :

Type : Ponctual

Abscissa from the left end of the beam : x = 9 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 5 :

Type : Ponctual

Abscissa from the left end of the beam : x = 12 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 6 :

Type : Ponctual

Abscissa from the left end of the beam : x = 15 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 7 :

Type : Ponctual

Abscissa from the left end of the beam : x = 18 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

- Restraint No. 8 :

Type : Ponctual

Abscissa from the left end of the beam : x = 21 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Free
- v' : Free
- θ' : Free

- Restraint No. 9 :

Type : Ponctual

Abscissa from the left end of the beam : x = 24 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :
- v : Fixed
- θ : Fixed
- v' : Free
- θ' : Free

I.2 - Loads

Type of loading : Internal

- Moment diagram :

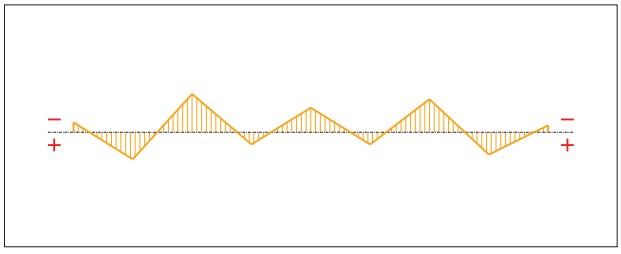

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	-6,8
3	18,65
6	-26,42
9	8,41
12	-16,97
15	8,34
18	-22,76
21	15,46
24	-4,81

- Axial force diagram :

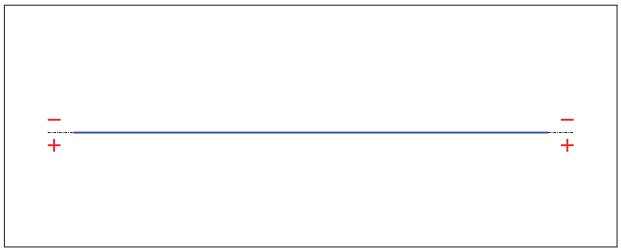

Figure 3 : Axial force diagram.

Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	0
24	0

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

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II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : No

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	3,183	-84,09	6	0	6

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	3,183	-84,09	6	0	6

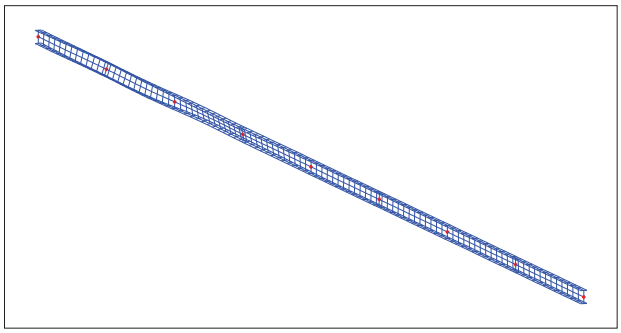

Figure 4 : Mode shape in 3D (Mode 1).

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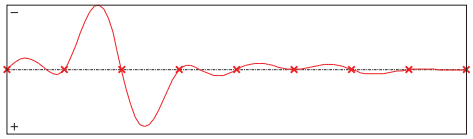

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

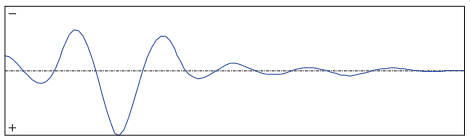

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

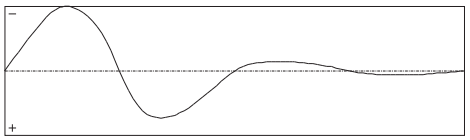

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

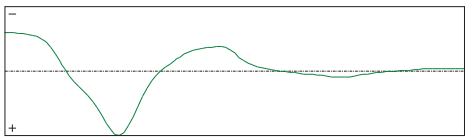

Figure 8 : Warping compopent of the shear centre (Mode 1).

I.1 - Lateral restraints

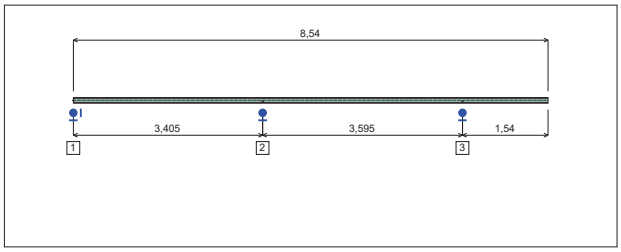

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :

v : Fixed
θ : Fixed
v' : Free
θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3,405 m

Vertical position from the shear centre : z = -2 cm

Restraint conditions :

v : Fixed
θ : Fixed
v' : Free
θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 7 m

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Vertical position from the shear centre : z = -2 cm

Restraint conditions :

v : Fixed
θ : Fixed
v' : Free
θ' : Free

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I.2 - Loads

Type of loading : Internal

- Moment diagram :

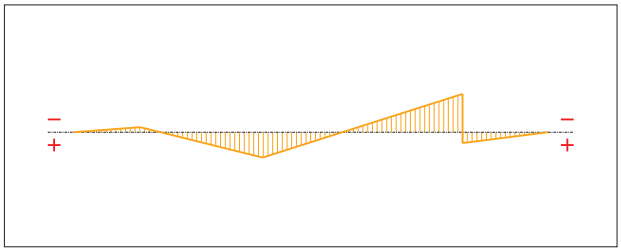

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	0
1,2	-0,54
3,405	2,73
7	-4,13
7	1,17
8,54	0

- Axial force diagram :

LTBeamN v 1.0.3 | cticm

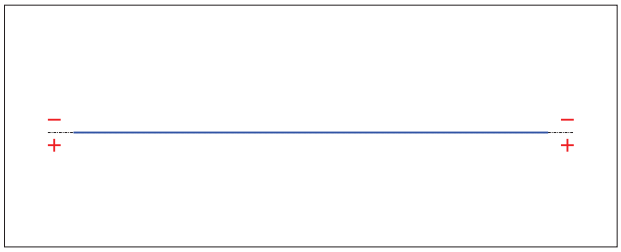

Figure 3 : Axial force diagram.

Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	0
8,54	0

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : No

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	33,05	-131,3	6,917	0	6,917

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	33,05	-131,3	6,917	0	6,917

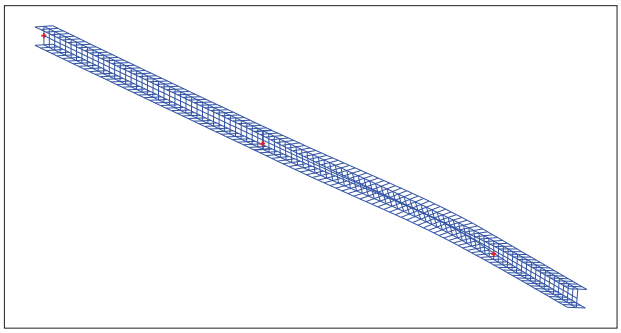

Figure 4 : Mode shape in 3D (Mode 1).

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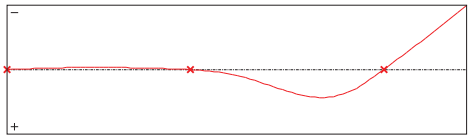

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

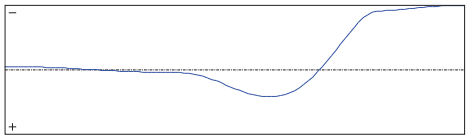

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

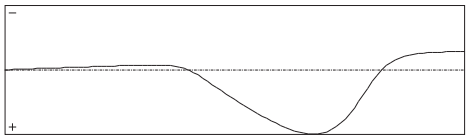

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

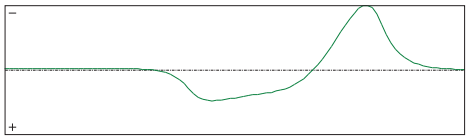

Figure 8 : Warping compopent of the shear centre (Mode 1).

I.1 - Lateral restraints

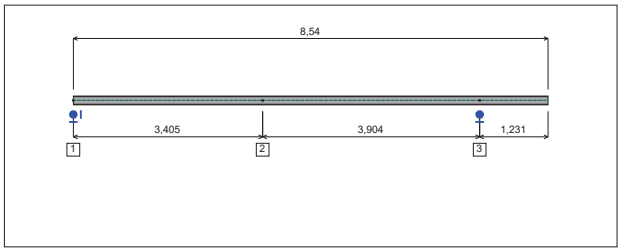

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :

v : Fixed
θ : Fixed
v' : Free
θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3,405 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :

v : Fixed
θ : Free
v' : Free
θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 7,309 m

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Vertical position from the shear centre : z = 0 cm

Restraint conditions :

v : Fixed
θ : Fixed
v' : Free
θ' : Free

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I.2 - Loads

Type of loading : Internal

- Moment diagram :

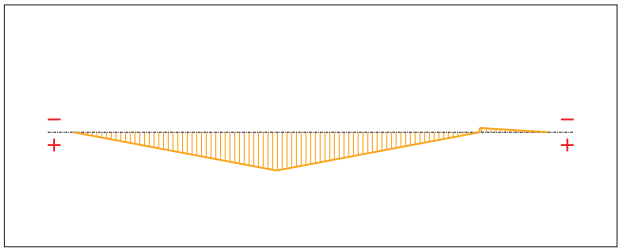

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	0
3,655	36,81
7,309	0
7,309	-4,09
8,54	0

- Axial force diagram :

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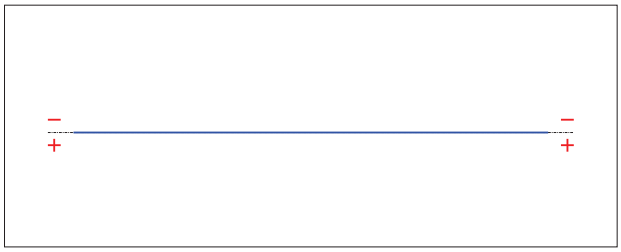

Figure 3 : Axial force diagram.

Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	0
8,54	0

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : No

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	10,6	388,41	3,672	0	3,672

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	10,6	388,41	3,672	0	3,672

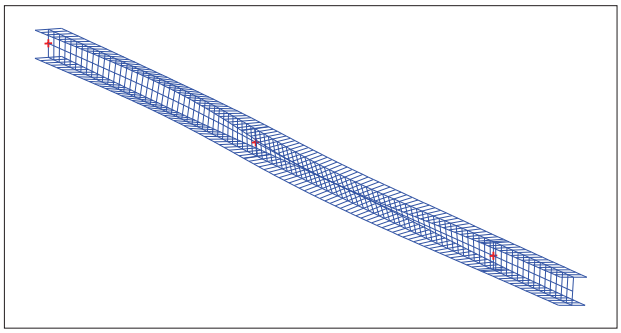

Figure 4 : Mode shape in 3D (Mode 1).

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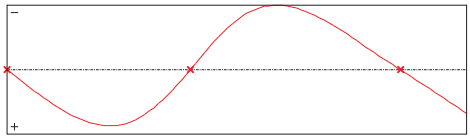

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

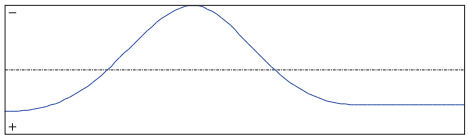

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

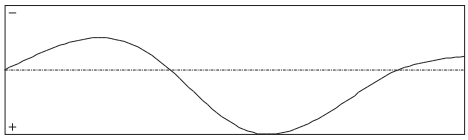

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

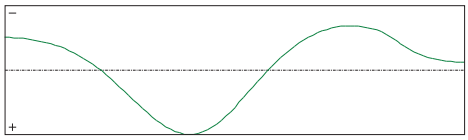

Figure 8 : Warping compopent of the shear centre (Mode 1).

I.1 - Lateral restraints

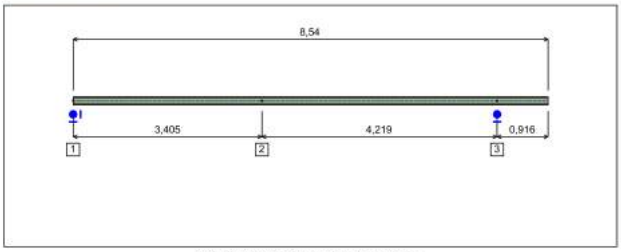

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :

v : Fixed
θ : Fixed
v' : Free
θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3,405 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :

v : Fixed
θ : Free
v' : Free
θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 7,624 m

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Vertical position from the shear centre : z = 0 cm

Restraint conditions :

v : Fixed
θ : Fixed
v' : Free
θ' : Free

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I.2 - Loads

Type of loading : Internal

- Moment diagram :

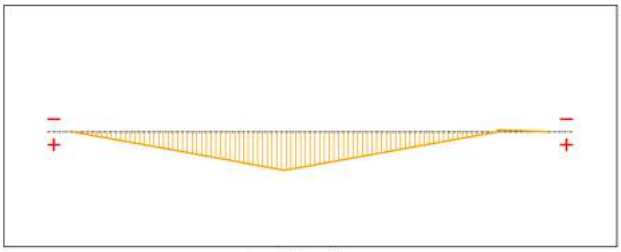

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	0
3,812	39,97
7,624	0
7,624	-2,21
8,54	0

- Axial force diagram :

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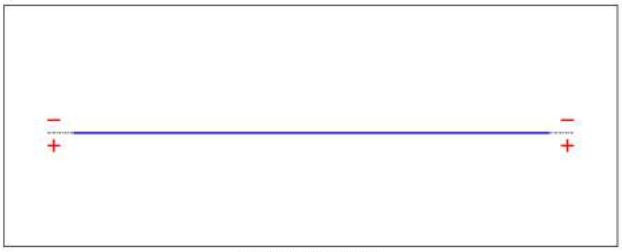

Figure 3 : Axial force diagram.

Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	0
8,54	0

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : No

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	5,485	217,47	3,843	0	3,843

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	5,485	217,47	3,843	0	3,843

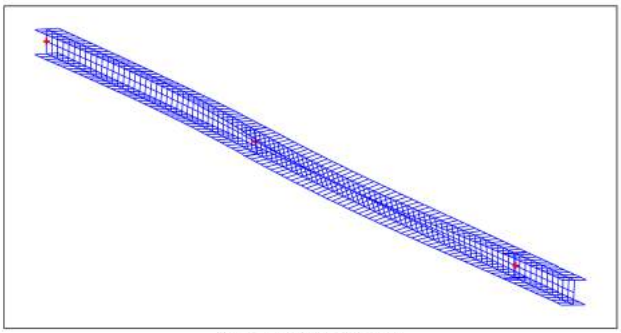

Figure 4 : Mode shape in 3D (Mode 1).

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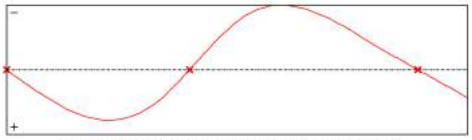

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

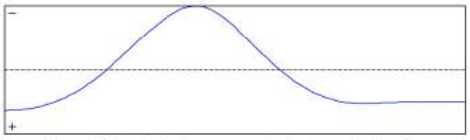

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

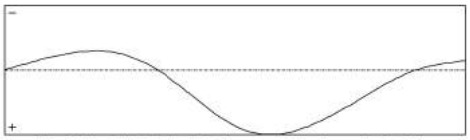

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

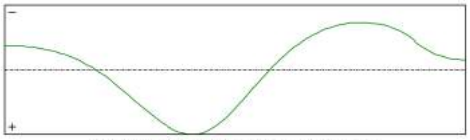

Figure 8 : Warping compopent of the shear centre (Mode 1).

I.1 - Lateral restraints

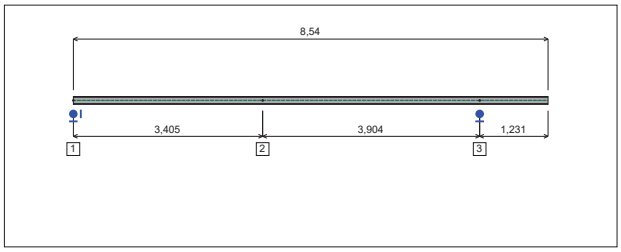

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :

v : Fixed
θ : Fixed
v' : Free
θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3,405 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :

v : Fixed
θ : Free
v' : Free
θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 7,309 m

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Vertical position from the shear centre : z = 0 cm

Restraint conditions :

v : Fixed
θ : Fixed
v' : Free
θ' : Free

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I.2 - Loads

Type of loading : Internal

- Moment diagram :

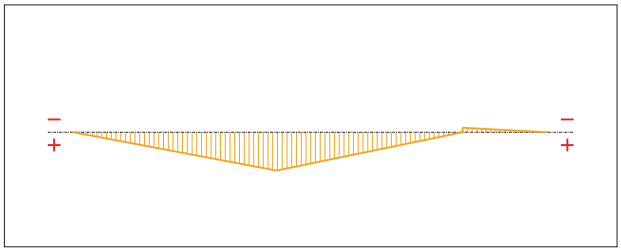

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	0
3,655	31,13
7	0
7	-3,59
8,54	0

- Axial force diagram :

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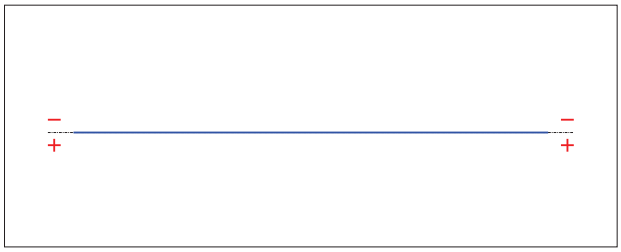

Figure 3 : Axial force diagram.

Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	0
8,54	0

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : No

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	7,849	243,09	3,672	0	3,672

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	7,849	243,09	3,672	0	3,672

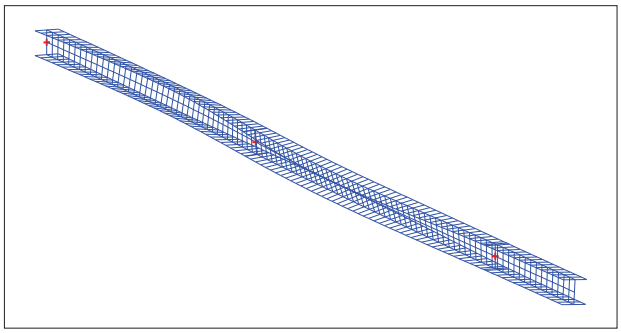

Figure 4 : Mode shape in 3D (Mode 1).

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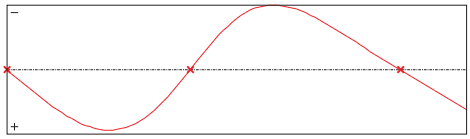

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

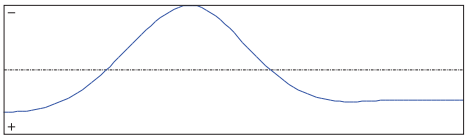

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

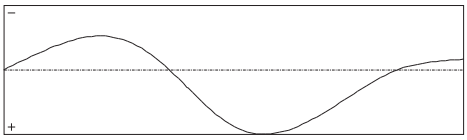

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

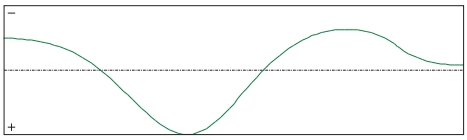

Figure 8 : Warping compopent of the shear centre (Mode 1).

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I.1 - Lateral restraints

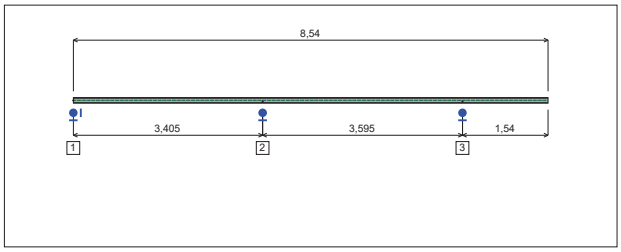

Figure 1 : Profile in long with restraint numbers.

- Restraint No. 1 :

Type : Ponctual

Abscissa from the left end of the beam : x = 0 m

Vertical position from the shear centre : z = 0 cm

Restraint conditions :

v : Fixed
θ : Fixed
v' : Free
θ' : Free

- Restraint No. 2 :

Type : Ponctual

Abscissa from the left end of the beam : x = 3,405 m

Vertical position from the shear centre : z = -2 cm

Restraint conditions :

v : Fixed
θ : Fixed
v' : Free
θ' : Free

- Restraint No. 3 :

Type : Ponctual

Abscissa from the left end of the beam : x = 7 m

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Vertical position from the shear centre : z = -2 cm

Restraint conditions :

v : Fixed
θ : Fixed
v' : Free
θ' : Free

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I.2 - Loads

Type of loading : Internal

- Moment diagram :

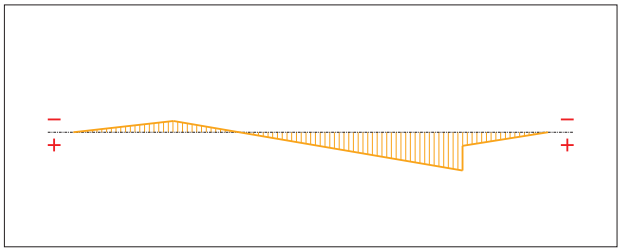

Figure 2 : Moment diagram.

Active : Yes

Table 1 : Moment diagram.

x(m)	M(kN.m)
0	0
1,8	-2,05
7	6,94
7	2,45
8,54	0

- Axial force diagram :

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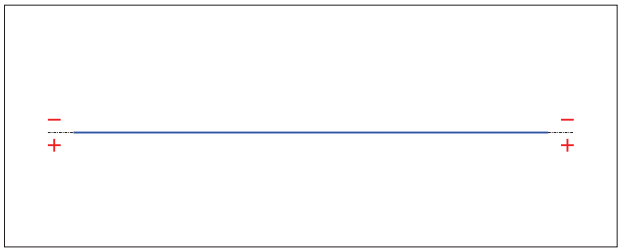

Figure 3 : Axial force diagram.

Active : Yes

Table 2 : Axial force diagram.

x(m)	N(kN)
0	0
8,54	0

- Eccentric concentrated loads :

No load has been defined.

- Eccentric distributed loads :

No load has been defined.

II - LTB CALCULATION

Requested number of modes : 1

Blocked moment diagram : No

Blocked axial force diagram : No

II.1 - LTB modes

Table 3 : LTB modes.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	13,51	91,86	6,917	0	6,917

II.2 - Mode shapes

- Mode 1

Table 4 : Mode 1.

Mode	μ_{cr}	$M_{max,cr}$ [kN.m]	$x(M_{max})$ [m]	$N_{max,cr}$ [kN]	$x(N_{max})$ [m]
1	13,51	91,86	6,917	0	6,917

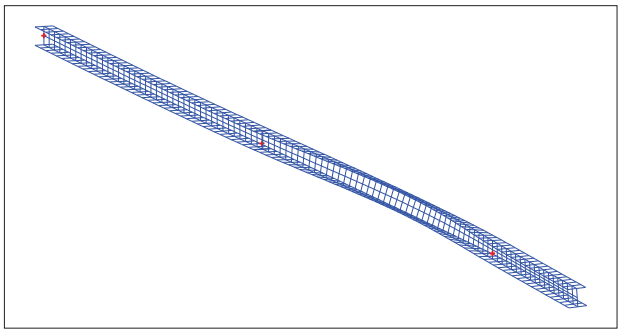

Figure 4 : Mode shape in 3D (Mode 1).

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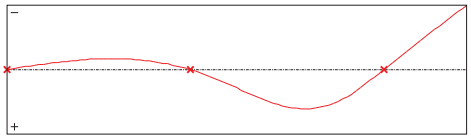

Figure 5 : Lateral displacement compopent of the shear centre (Mode 1).

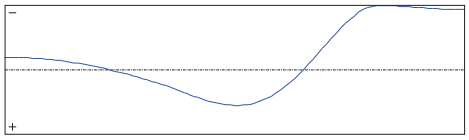

Figure 6 : Rotation in lateral flexure component of the shear centre (Mode 1).

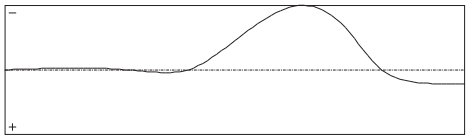

Figure 7 : Longitudinal rotation (torsion) component of the shear centre (Mode 1).

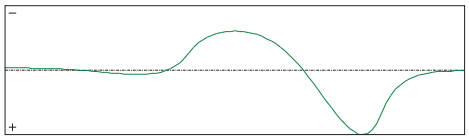

Figure 8 : Warping compopent of the shear centre (Mode 1).

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