Worked example: Composite steel U-girder bridge according to EC 1994-1

Transparent features:

1. **Geometry visualized** including points, lines & surfaces.
2. **FEM-modell using nodal lines & nodal surfaces** can be visualized
3. **Integrating loadeffects in shells and beam** within a given design width allowing deriving equivalent section forces.
4. Modell allows **design of both steel girder and concrete deck in both lontidudinal & transversal direction.**
5. **Several static systems (analysis) used within same modell.**
6. **Automatic traffic load evaluation in both transversal & longitudinal direction.**
7. **Input receipt** of all attributes added by designer.
8. **Locations of load effects** are given at locations defined by **global coordinate system.**

CONTENTS

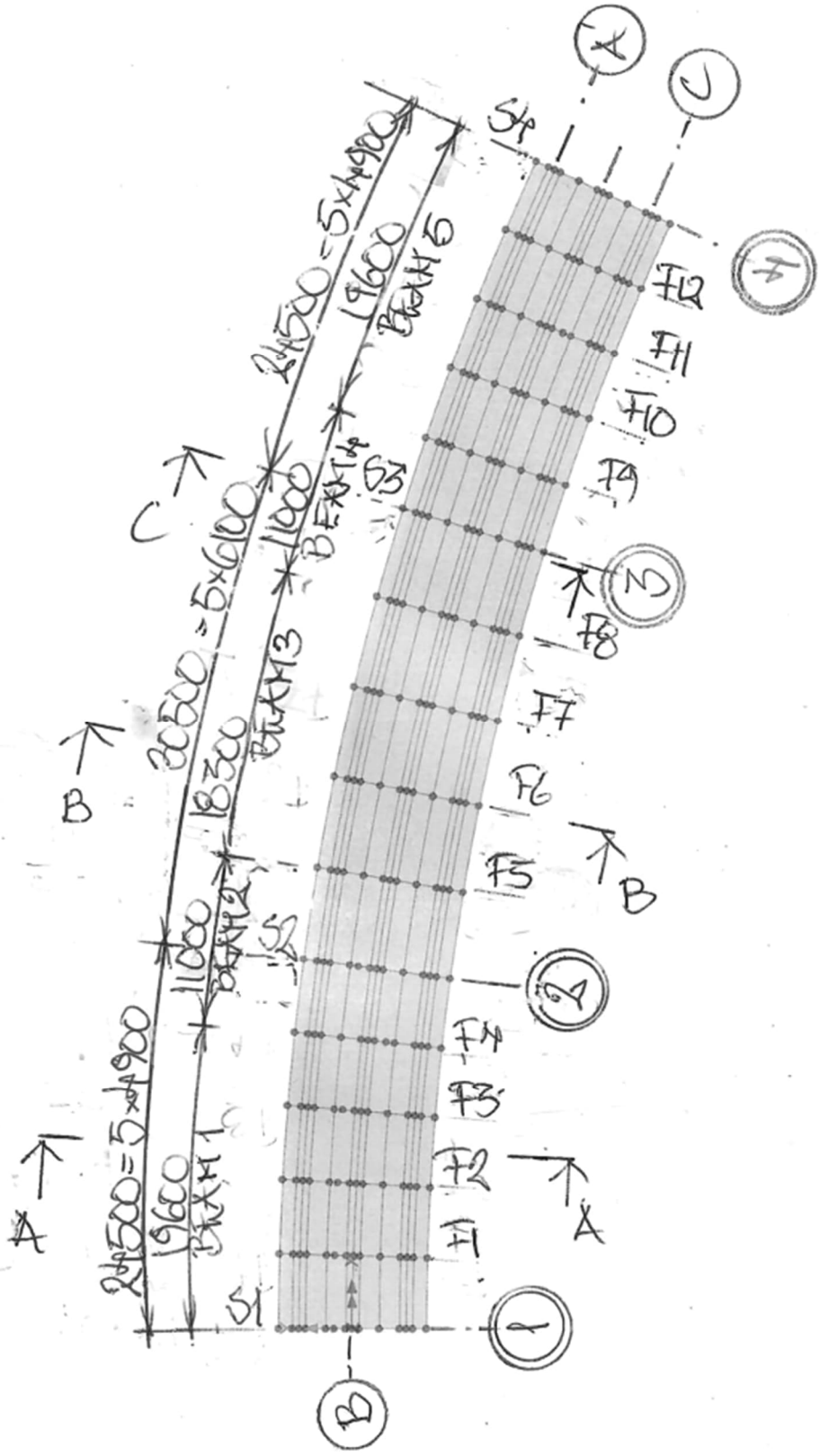
1. GENERAL / MEASUREMENT

1.1 CONSTRUCTION TYPE

Composite steel girders.

Superstructure is modelled using girders modeled as shells (web) and flanges (beam) with deck as shells.

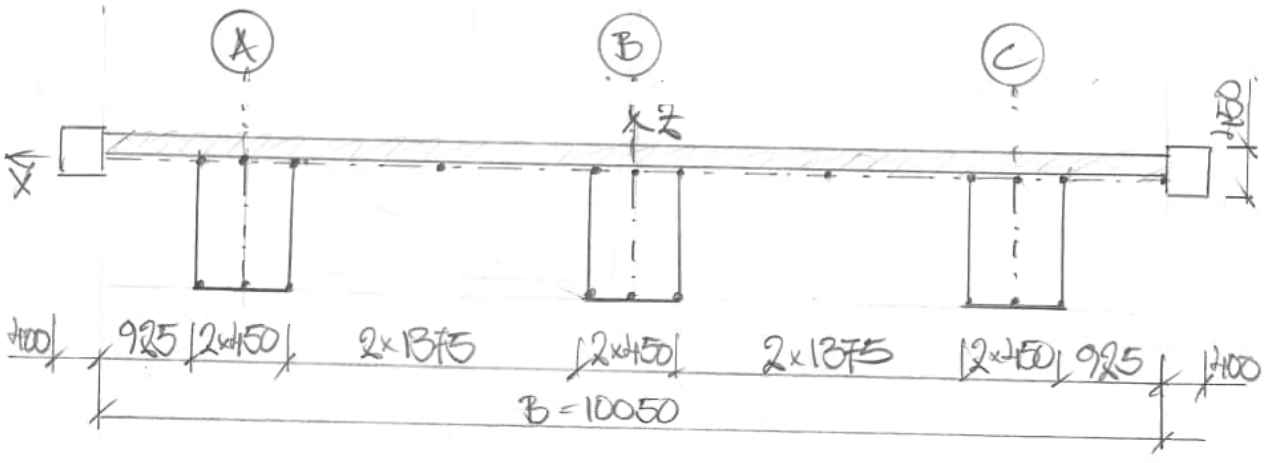
1.2 MEASURMENT



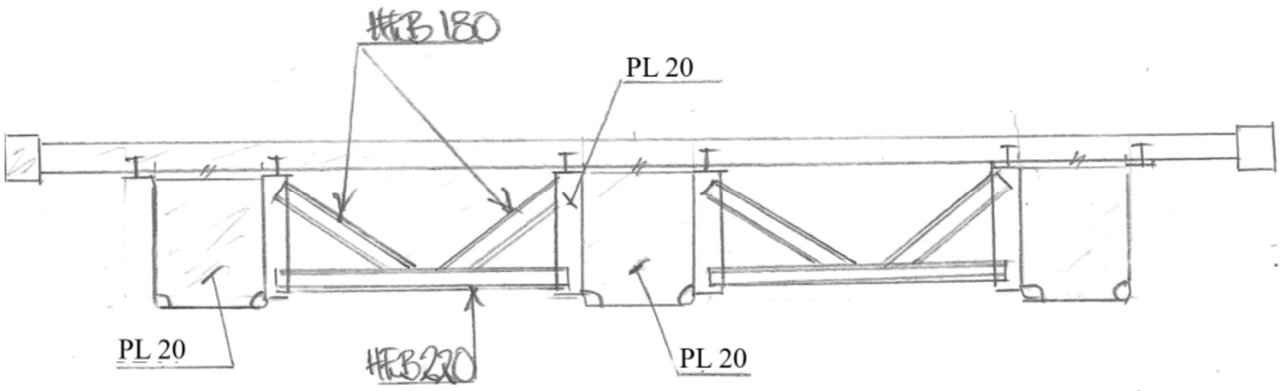
PLAN

Top flanges	200 x 20	200 x 20	200 x 20	200 x 20	200 x 20
Webs	1200 x 12	1200 x 14	1200 x 12	1200 x 14	1200 x 12
Bottom flange	900 x 25	900 x 25	900 x 25	900 x 25	900 x 25

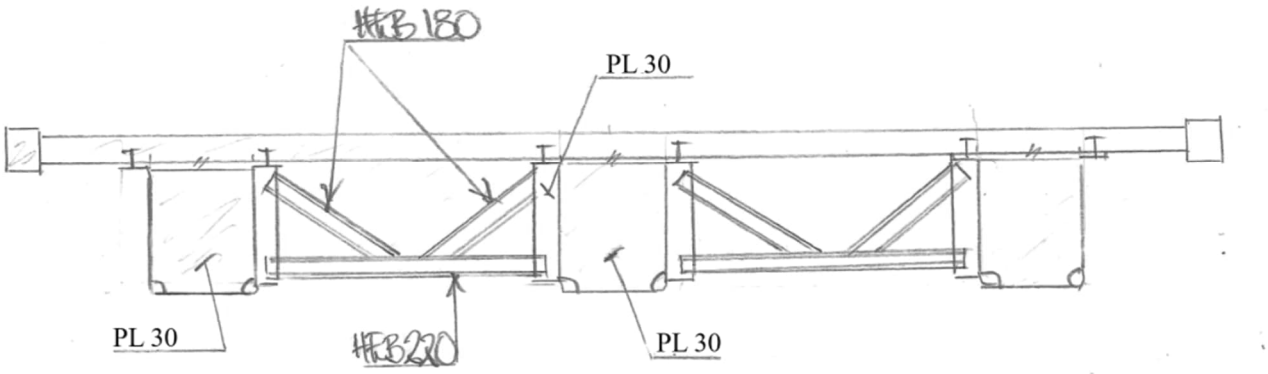
ELEVATION GIRDERS
BEAM 1-5



SECTION A-A
Concrete deck



SECTION B-B
Bracing F (F1-F12)



SECTION C-C
Bracing S (S1-S3)

1.4 CODE DOCUMENTS

Documents	Version	Name
SS-EN 1990-1997	-	Svensk Standard Eurokod 1-7
TRVINFRA-00226	2.0	KRAV, Bro och broliknande konstruktion, Allmänna krav
TRVINFRA-00227	2.0	KRAV, Bro och broliknande konstruktion, Byggande
TRVINFRA-00228	2.0	KRAV, Bro och broliknande konstruktion, Brounderhåll
TRVINFRA-00331	2.0	KRAV, Bro och broliknande konstruktion, Bärighetsberäkning
TSFS 2018:57		Transportstyrelsens föreskrifter och allmänna råd om tillämpning av eurokoder

1.5 TECHNICAL SERVICE LIFE

Technical life span 120 years (L100).

1.6 MATERIAL

Concrete : C35/45 (CEM I 42.5 ”Anläggningscement klass N”)

Reinforcement : B500B

Steel : S355 or S460 (SS-EN 1993-1-1 tabell 3.1)

Surfacing : Type “2aIA” with thickness 110 mm.

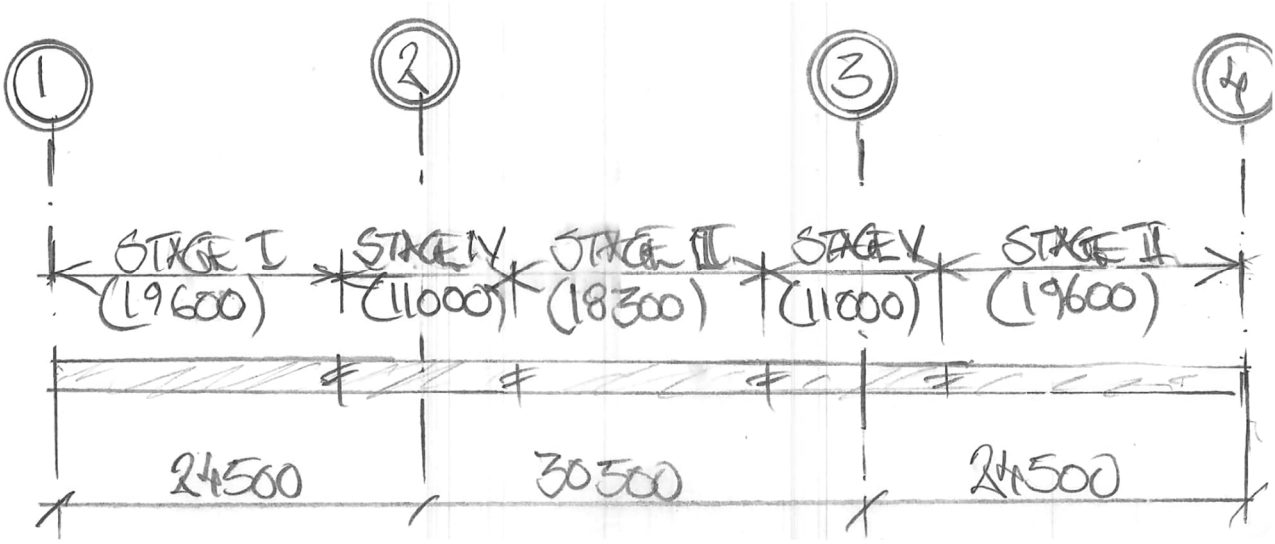
1.7 SAFETY CLASS

Geotechnical resistance: SK 2

Bridge structure : SK 3

1.8 CASTING STAGE

Concrete deck is cast in 5 casting stages seen below.



2. SYSTEM ANALYSIS

2.1 GENERAL

The bridge is a curved steel composite bridge. The bridge has threes spans with a total of 3 U-girders.

Full interaction between steel U-girders and concrete deck is assumed.

No interaction between concrete inside U-girders is assumed. This concrete is not considered to contribute any stiffness, however, only as a load.

No interaction between concrete edge beams and deck is assumed. This concrete is not considered to contribute any stiffness, however, only as a load.

A local coordinate system orientated radial to centre line (R = 183 m).

Static model offers the possibility of staged expansion in the same static calculation. A total of 8 different static systems are used. These are designated Stage I, II, III, IV, V, O:P, O:V and O:TEMP.

The geometric model is the same for these, however, they may have different boundary conditions, material properties, cross-sectional constants and loads. In addition, individual structural parts can also be activated/deactivated.

When determining load effects, the influence of the cracking of the roadway is considered by ignoring the stiffness of the tensile concrete. Only the effect of reinforcement is considered.

Cracking is considered to occur when $\sigma_{SLS-K} > 2f_{ctm}$ according to SS-EN 1994 sections 5.4.2.3 and 1.5.2.12.

Bridge deck is defined by using shell elements applied to horizontal nodal surface in superstructure.

Web of girders are defined by shell element vertical nodal surfaces in superstructure.

Top flanges of girder are defined using beam elements applied to nodal line in superstructure.

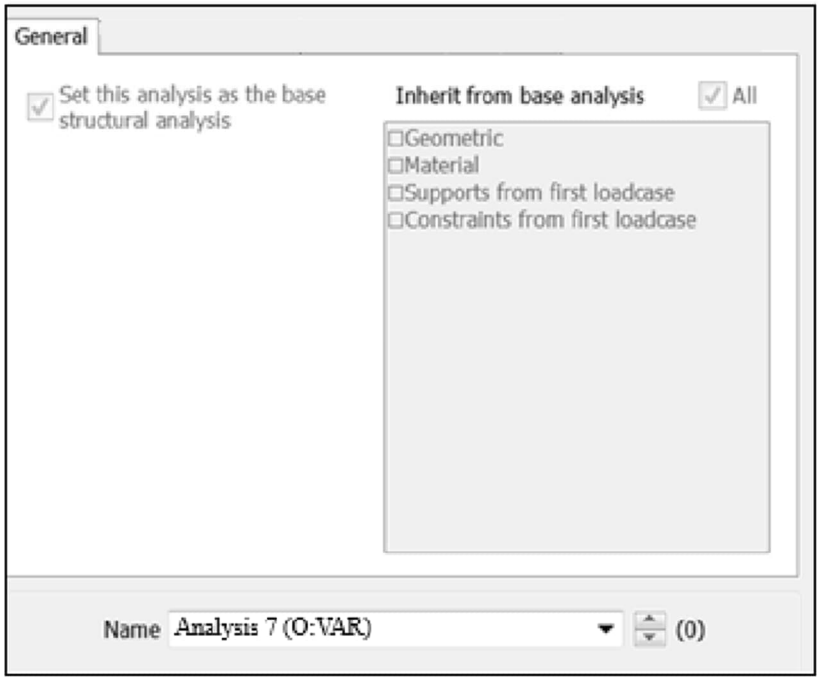
Bottom flanges are defined by shell element vertical nodal surfaces in superstructure

Stiffeners and bracings are defined using beam elements applied to nodal line in superstructure.

.

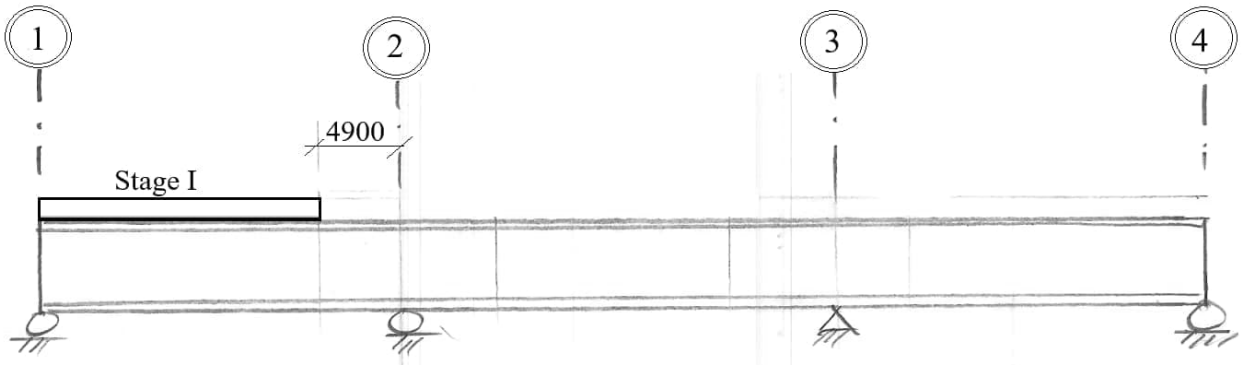
There is a total of 8 analysis.

Analysis 7 is introduced as the “Base Analysis”. It is based on this static system that changes to statics are carried out. It is also this system that is used for traffic load evaluation/VLO.

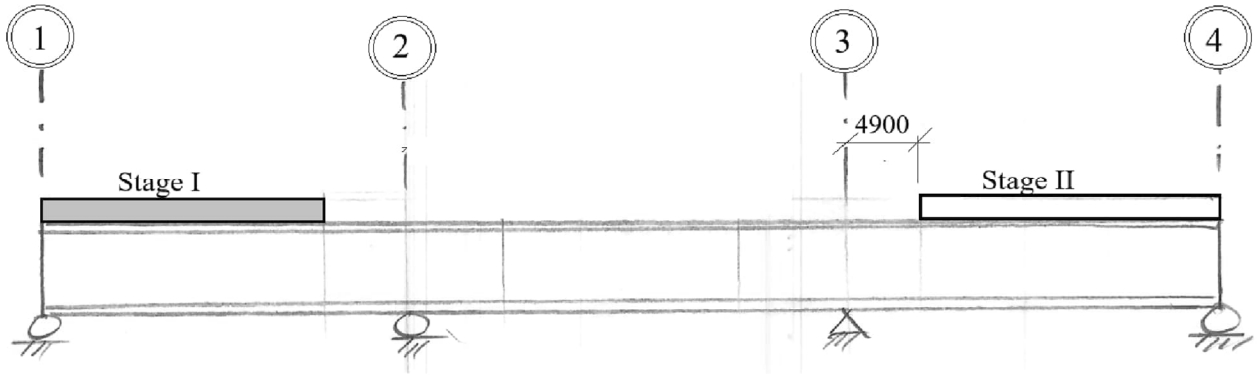


<u>Anlaysisp performed within static model SYSTEM 001</u>
(* = Base analysis)

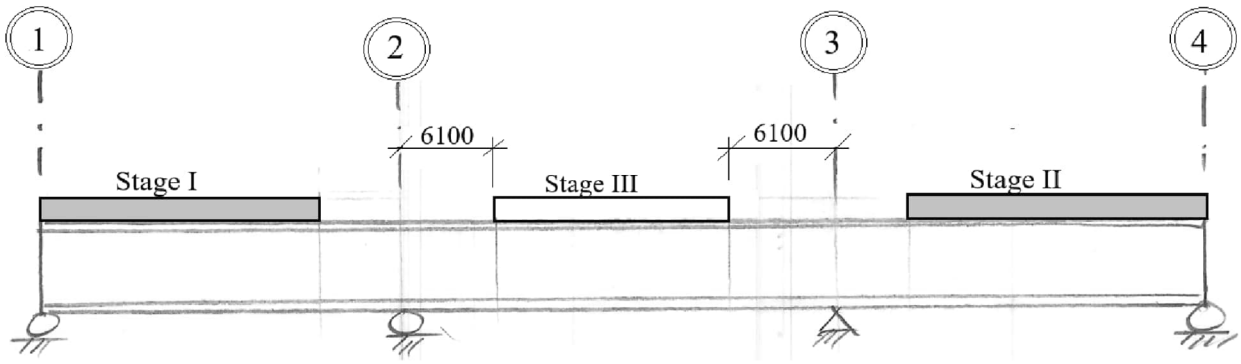
Analysis Nr.	Names	Stage	Casting stage
1	C1	Construction	I
2	C2	Construction	II
3	C3	Construction	III
4	C4	Construction	IV
5	C5	Construction	V
6	O:PERM	Operational	-
7*	O:VAR	Operational	-
8	O:TEMP	Operational	-



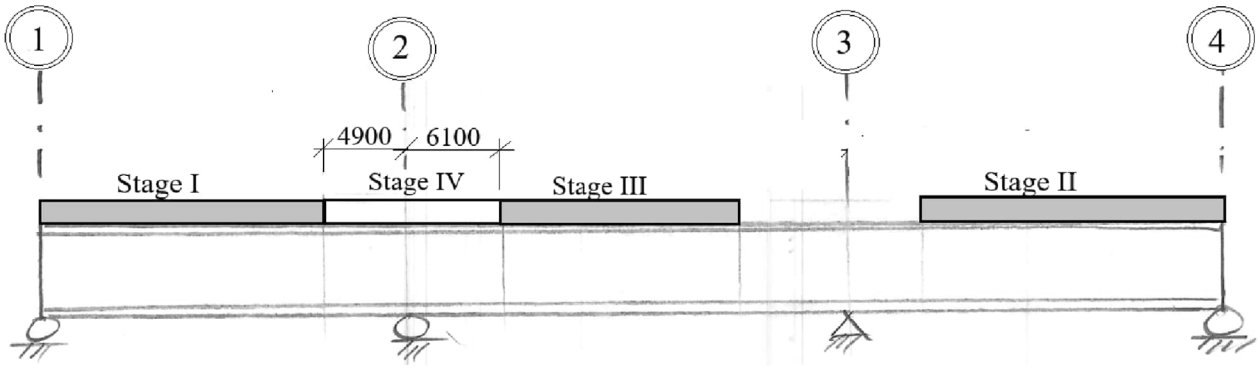
Analysis 1 (C1): Stage I
Construction stage: Wet concrete stage I



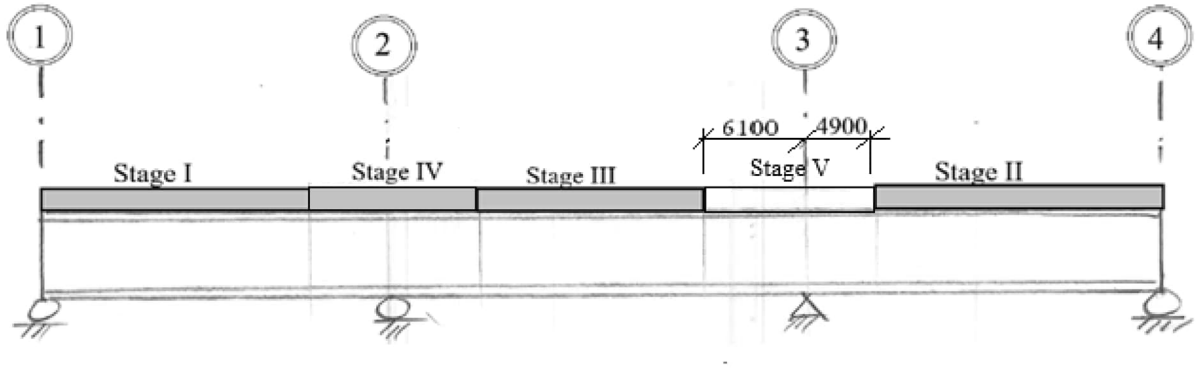
Analysis 2 (C2): Stage II
Construction stage: Wet concrete stage II



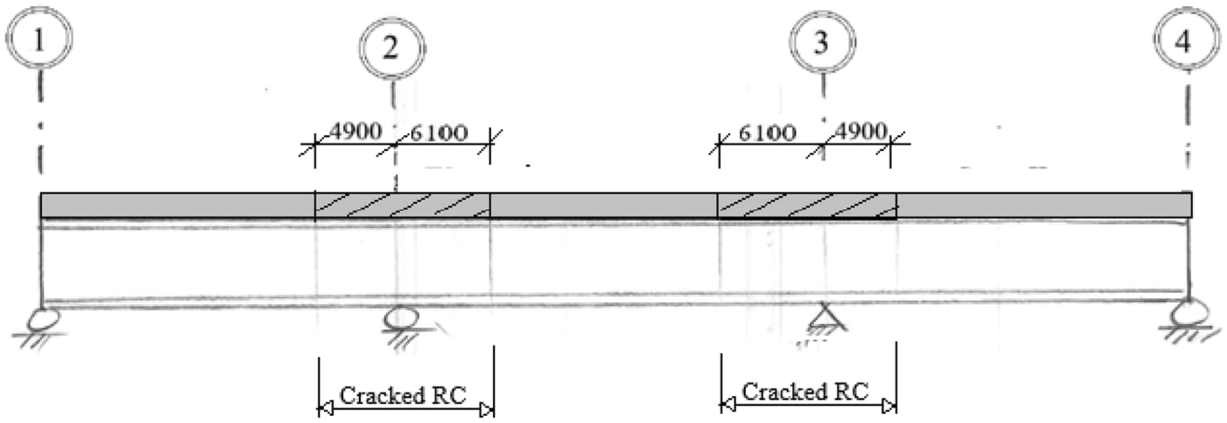
Analysis 3 (C3): Stage III
Construction stage: Wet concrete stage III



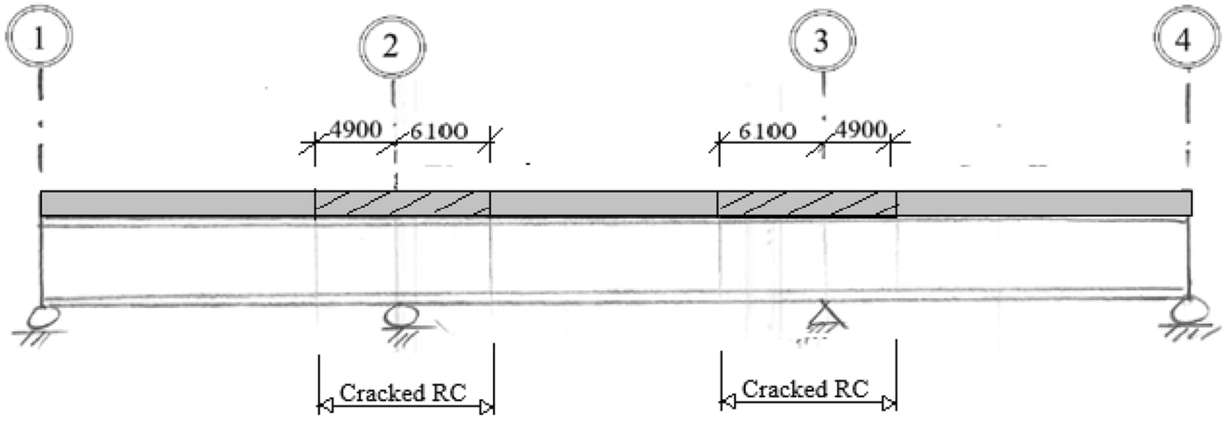
Analysis 4 (C4): Stage IV
Construction stage: Wet concrete stage IV



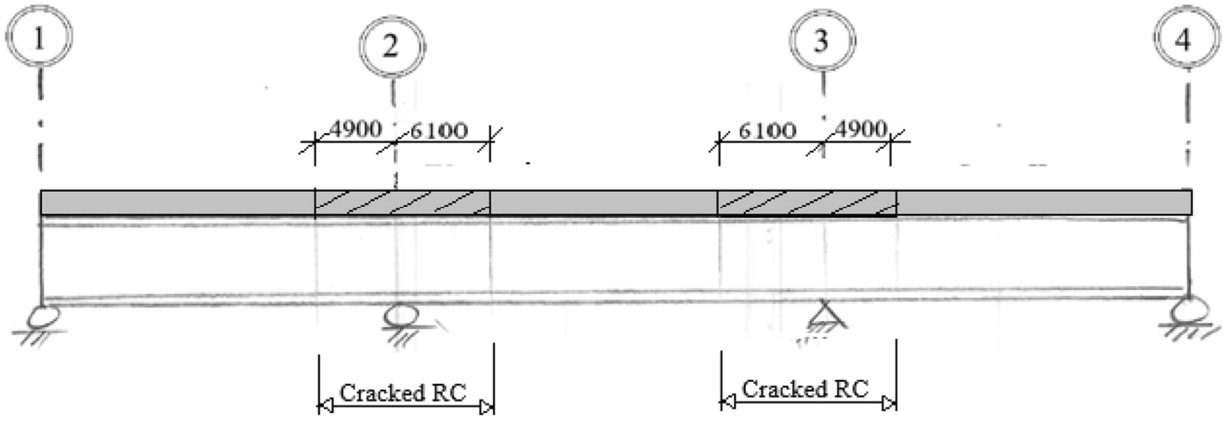
Analysis 5 (C5): Stage V
Construction stage: Wet concrete stage V



Analysis 6 (O:PERM)
Operation bridge: Cracking locally around support 2 & 3



Analysis 7 (O:VAR)
Operation bridge: Cracking locally around support 2 & 3



Analysis 8 (O:TEMP)
Operation bridge: Cracking locally around support 2 & 3

Summary appendices

Appendix	Name
1	Input receipt
2	Results reactions
3	Results longitudinal beams
4	Results bridge deck

2.2 SKETCH SYSTEM ANALYSIS

To describe geometry first POINTS are defined.

Beam elements are defined by applying attributes to LINES.

Shell elements are defined by applying attributes to SURFACES.

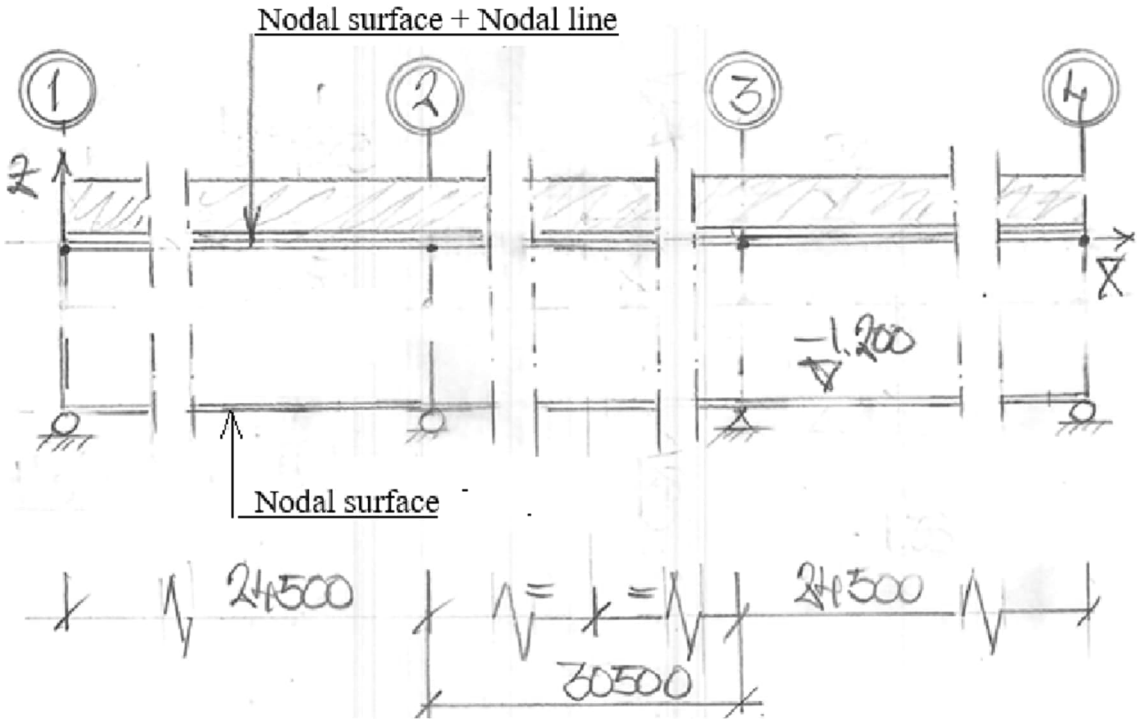
Attached pictures are retrieved from graphical sketches generated by STACTIC MODELL of POINTS, LINES and SURFACES.

All coordinates needed to describe POINTS are found in appendix 1.

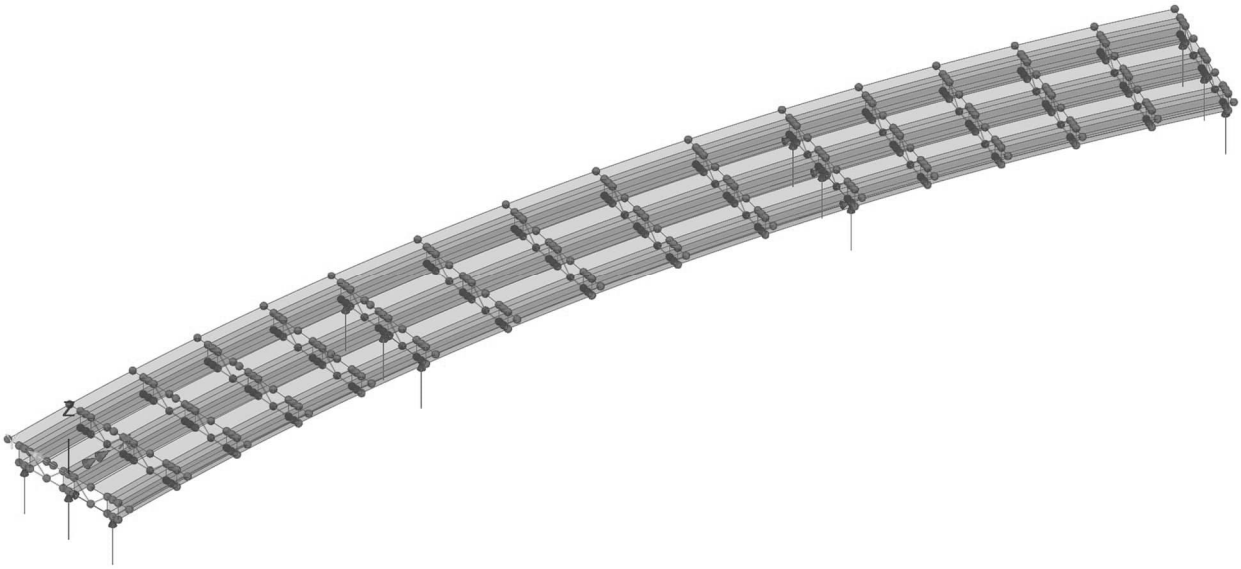
All POINTS needed to describe LINES are found in appendix 1.

All LINES need to describe SURFACE are found in appendix 1.

Superstructure is modelled using Nodal Line and Nodal Surfaces as seen in sketch below

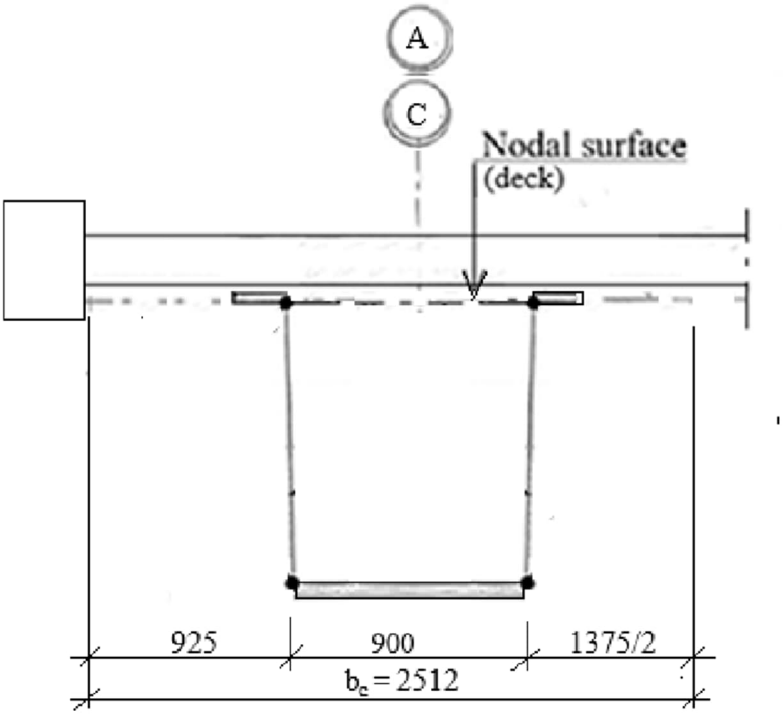


ELEVATION
Principal sketch girders.

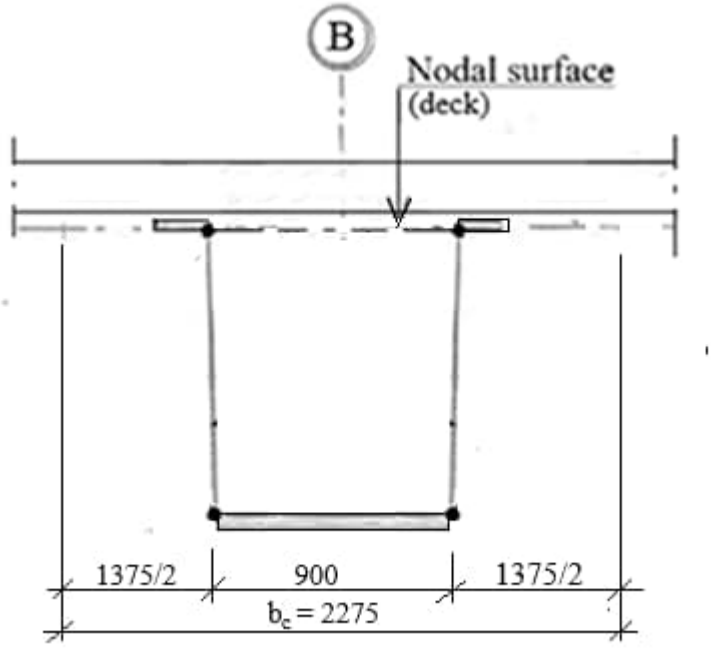


3D sketch
Overview

External beams:

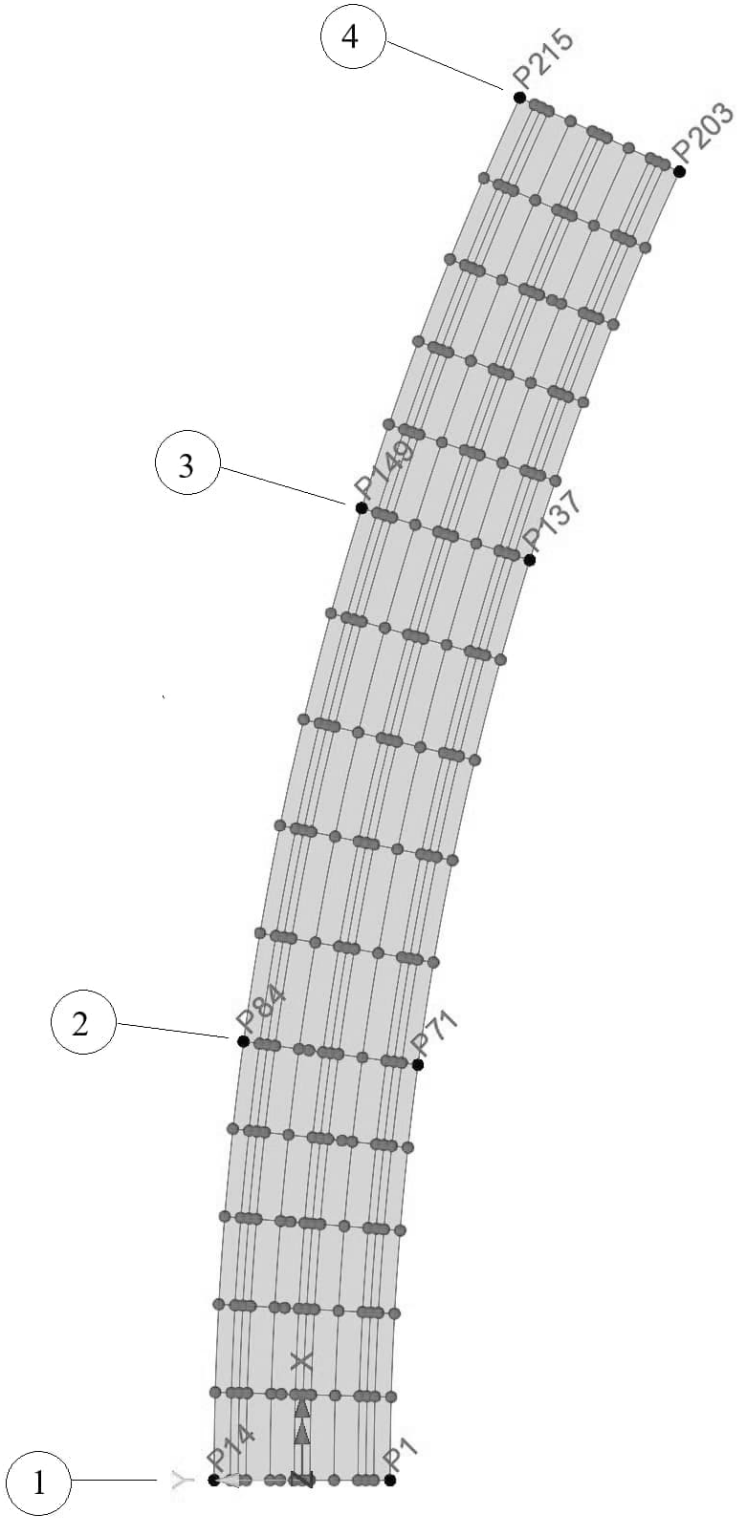


Internal beam:

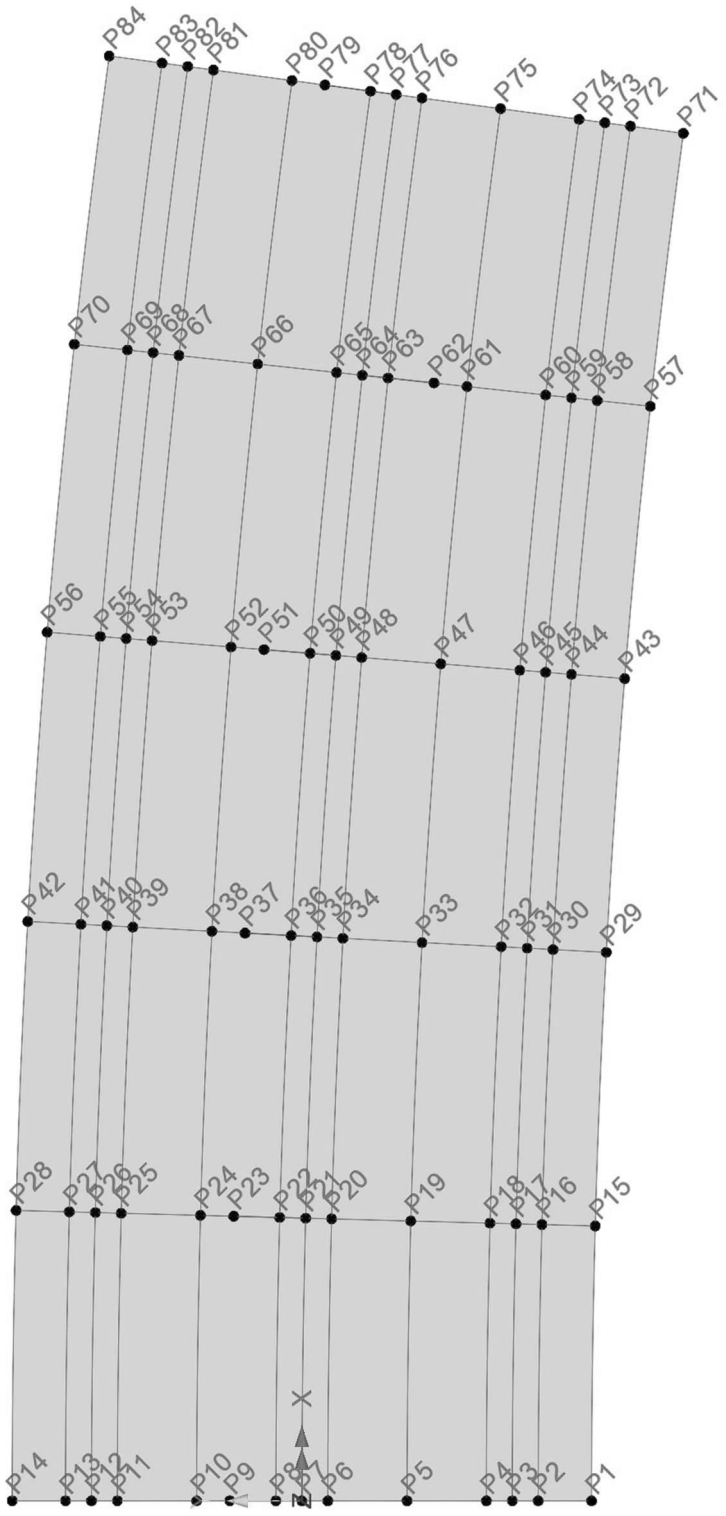


2.2.1 Geometry : POINTS

2.2.1.1 Deck



2D Overview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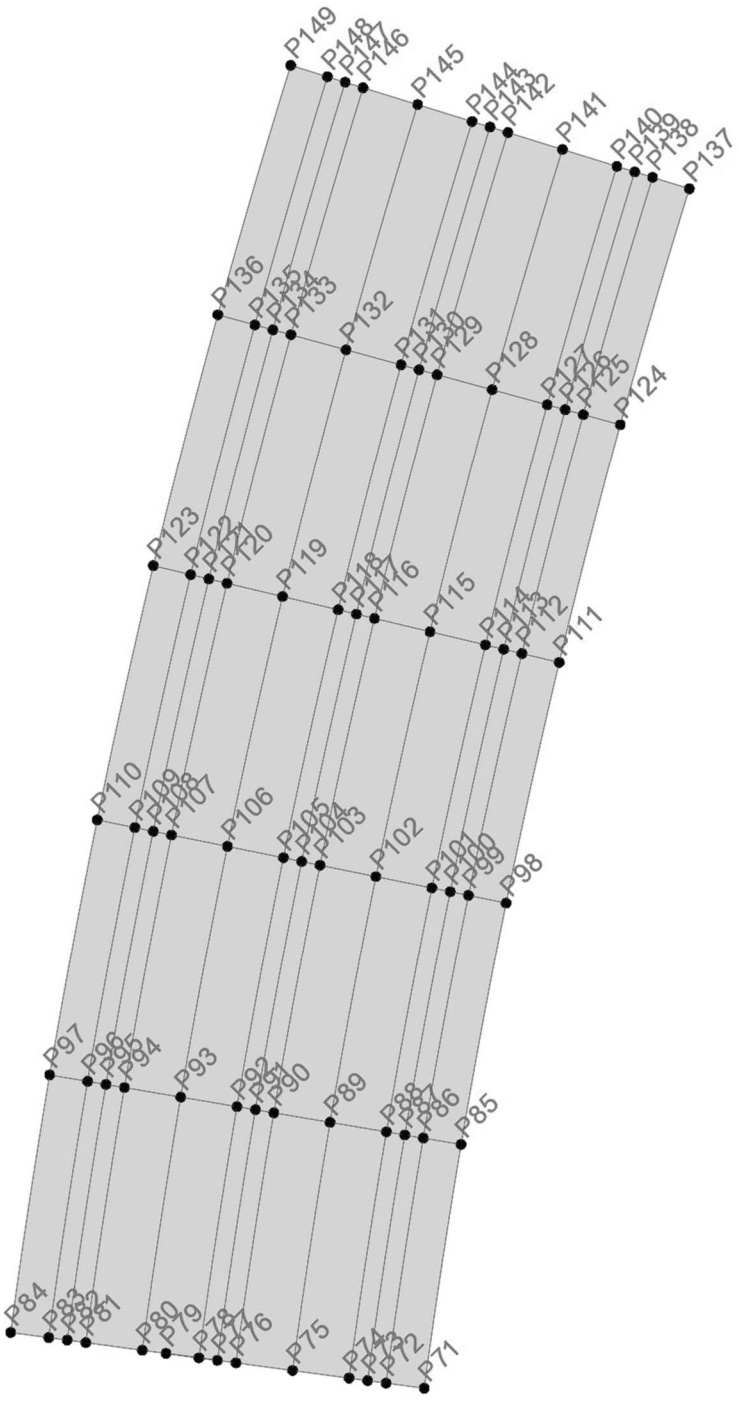
P56 P55 P54 P53 P52 P51 P50 P49 P48 P47 P46 P45 P44 P43
P42 P41 P40 P39 P38 P37 P36 P35 P34 P33 P32 P31 P30 P29
P28 P27 P26 P25 P24 P23 P22 P21 P20 P19 P18 P17 P16 P15
P14 P13 P12 P11 P10 P9 P8 P7 P6 P5 P4 P3 P2 P1

Span 1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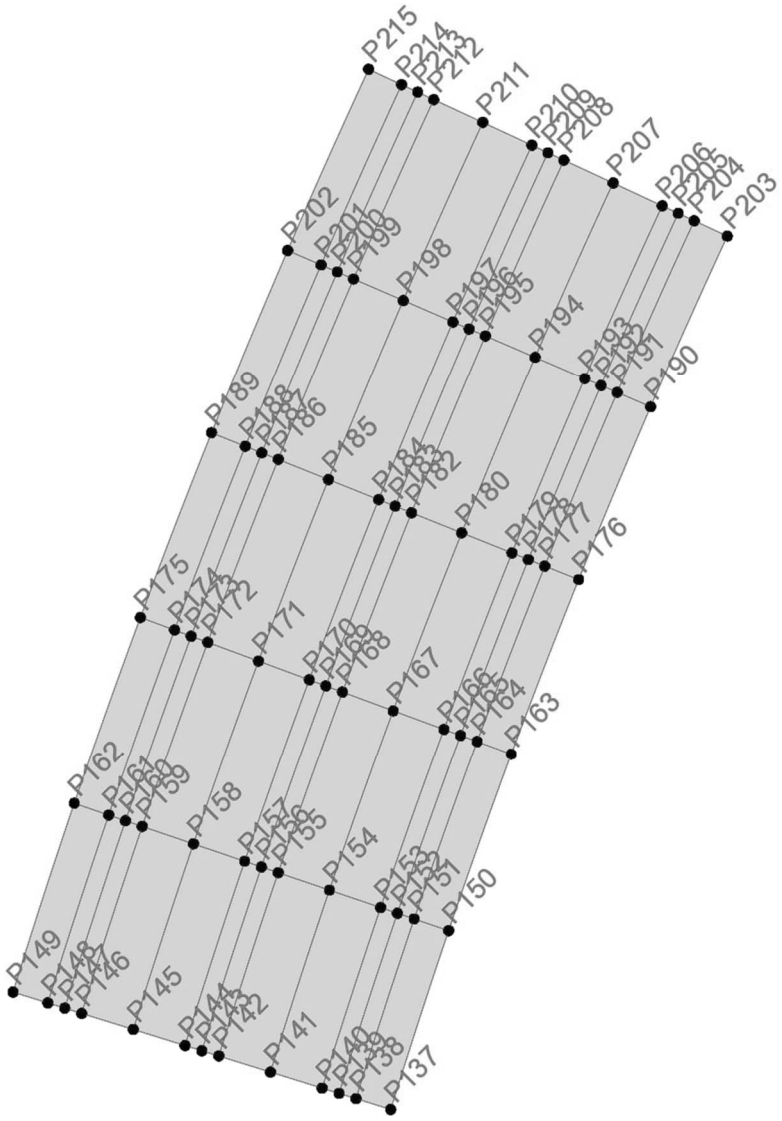
Span 2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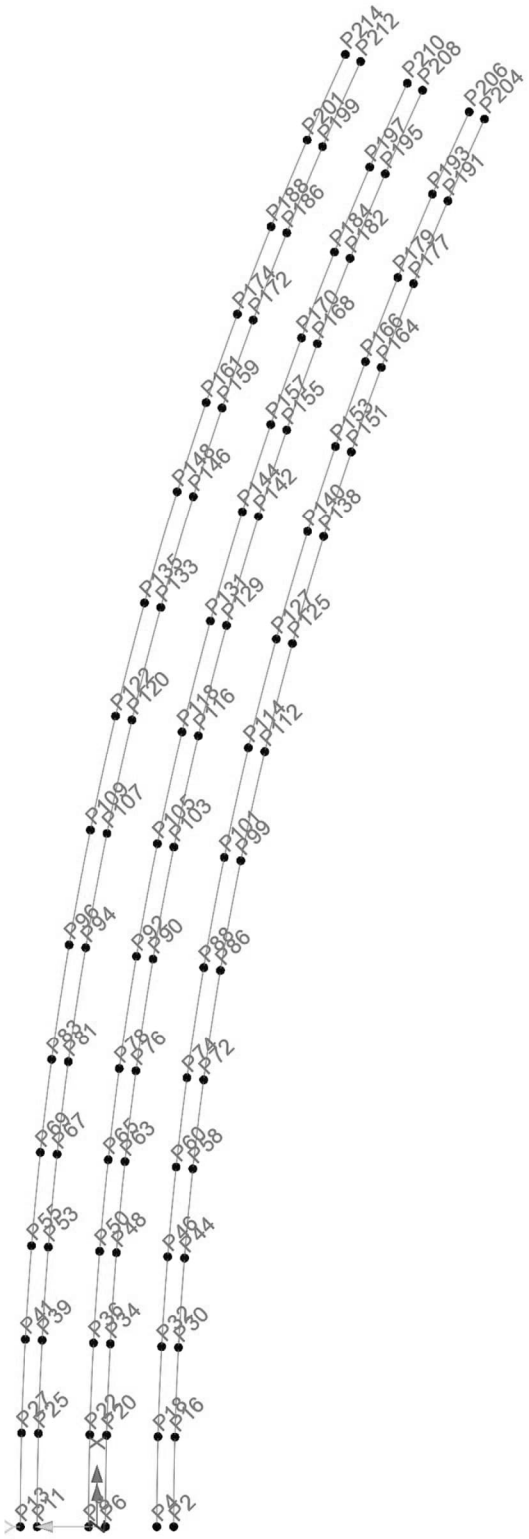
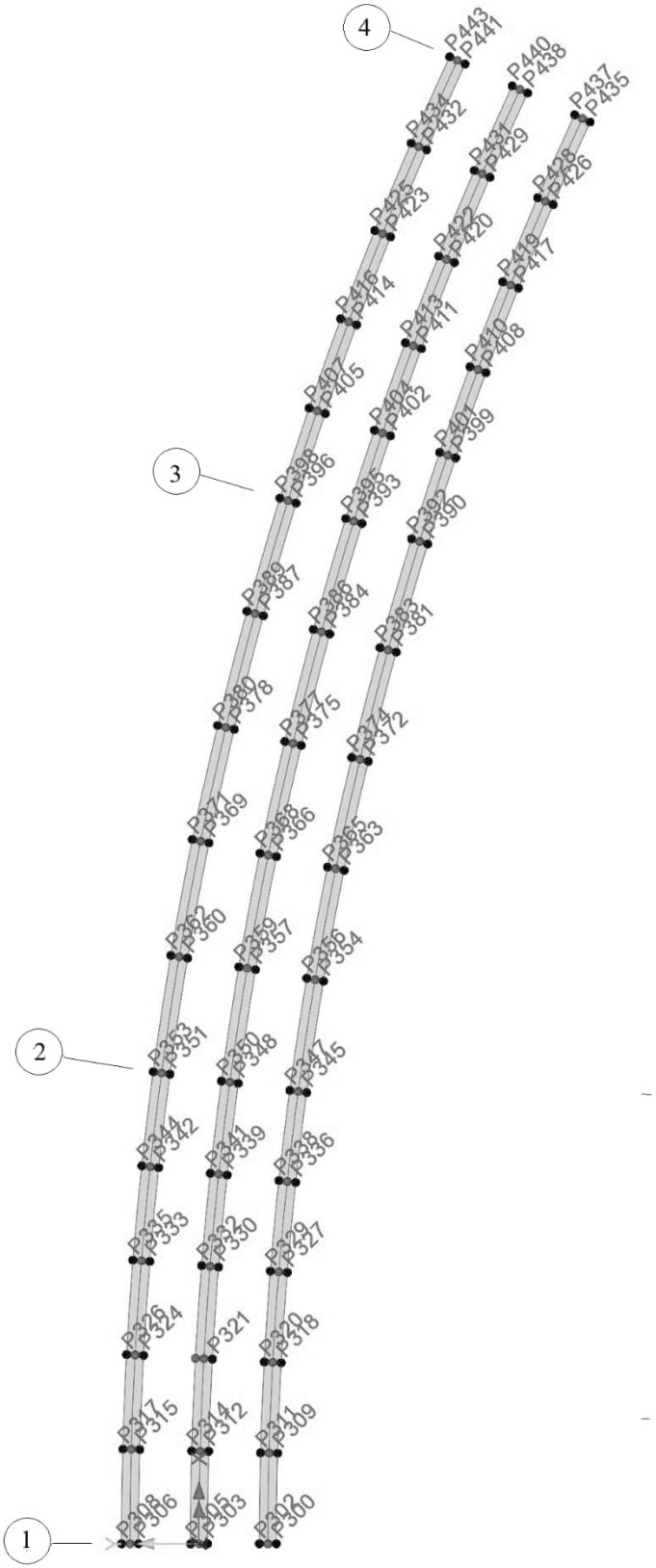
Span 3

2.2.1.2 Girder: top flange



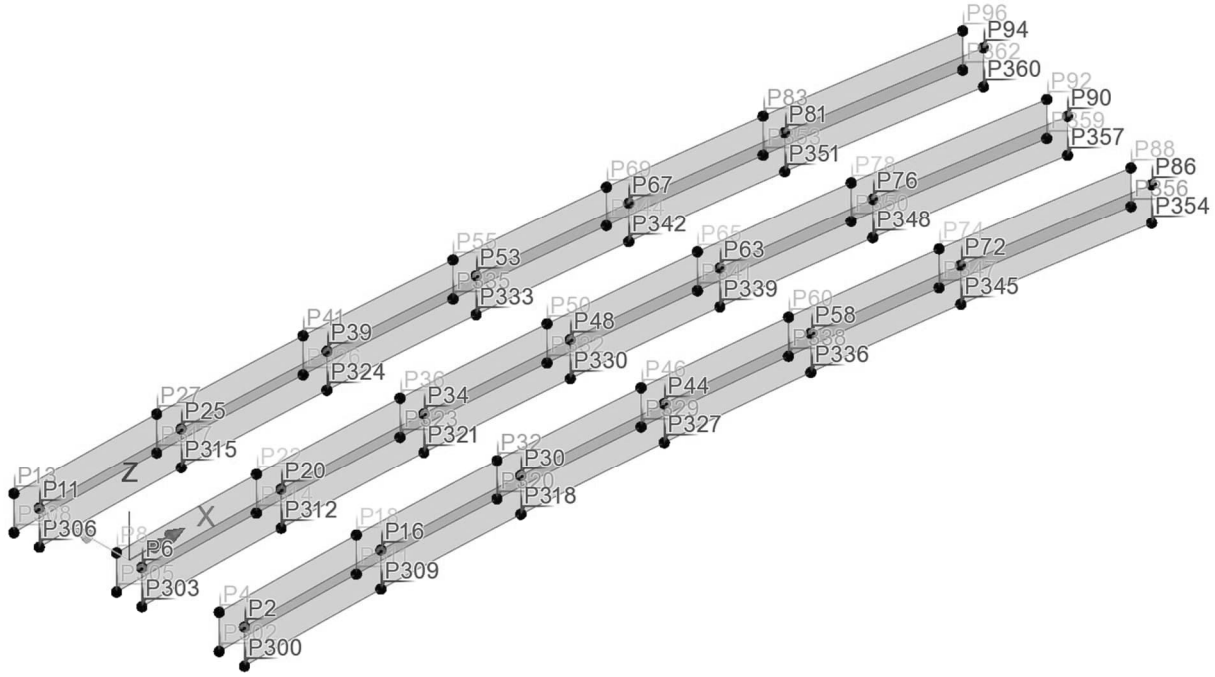
2D Overview

2.2.1.3 Girder: bottom flange

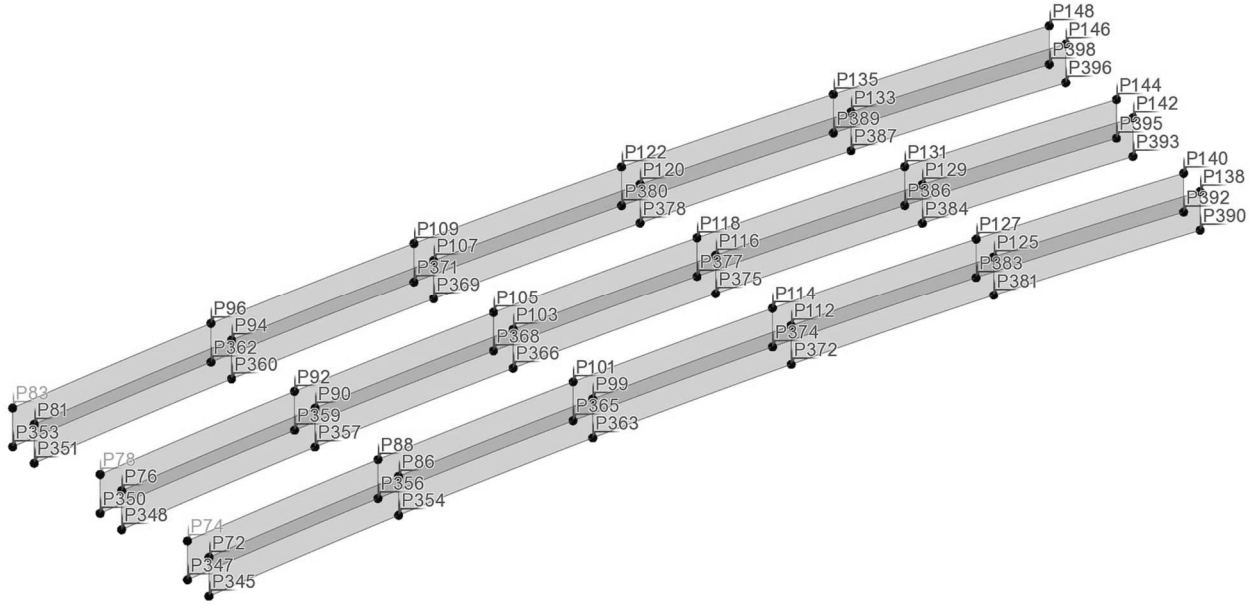


2D Overview

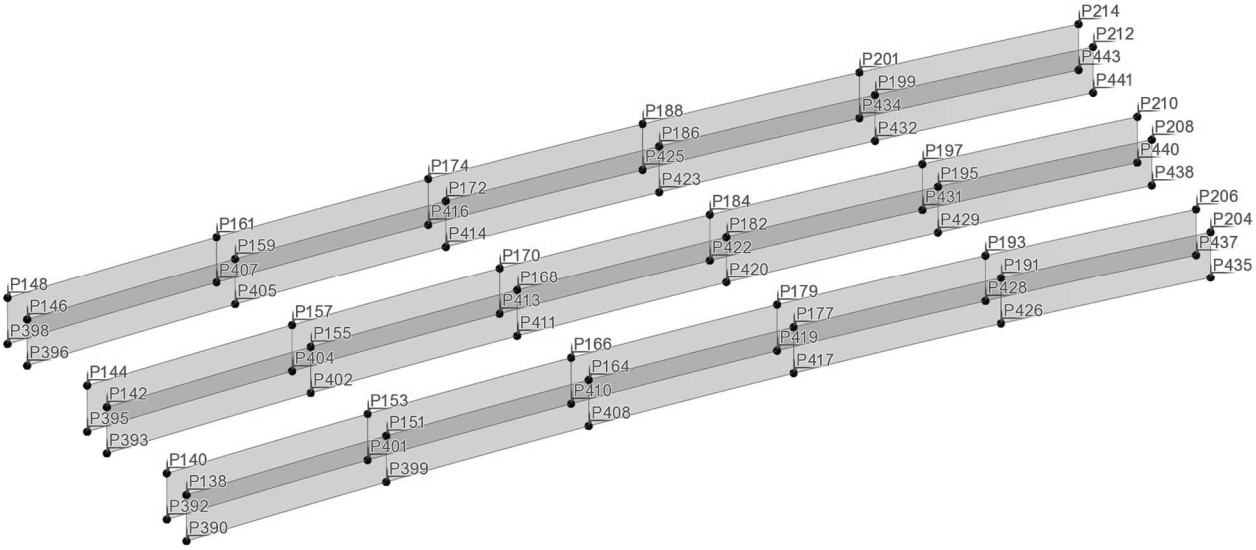
2.2.1.4 Web



Span 1



Span 2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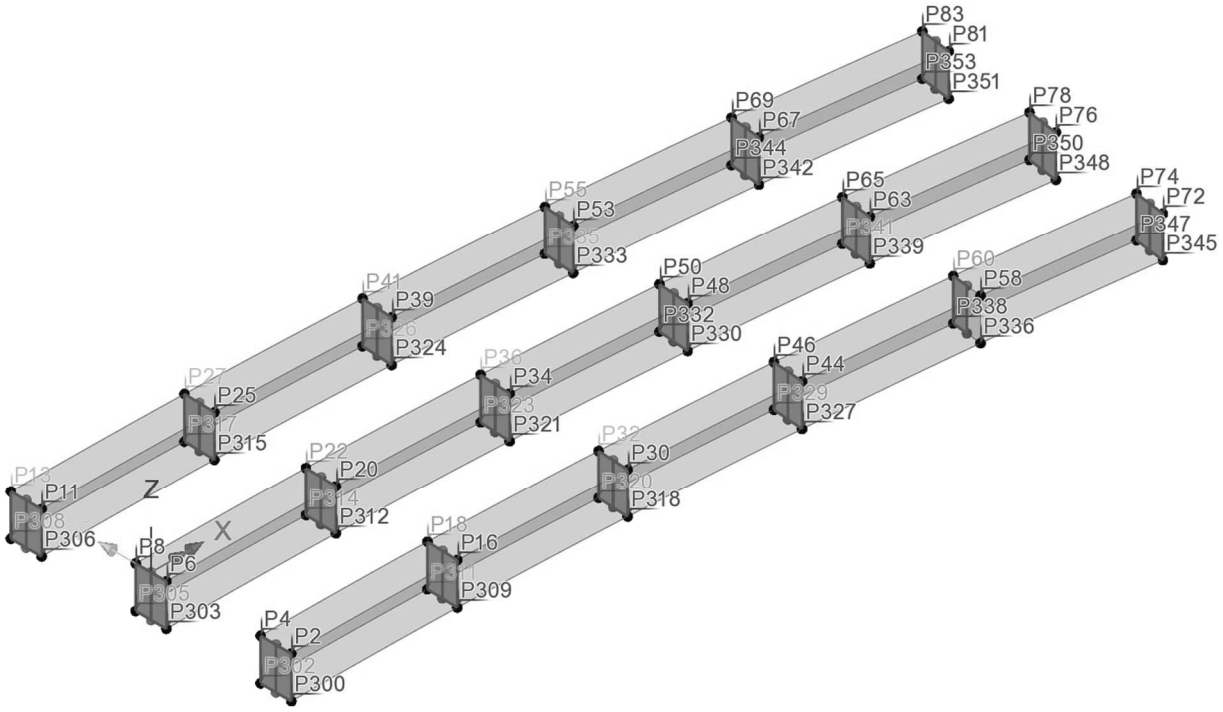
Span 3

2.2.1.5 Inner stiffners: S & F



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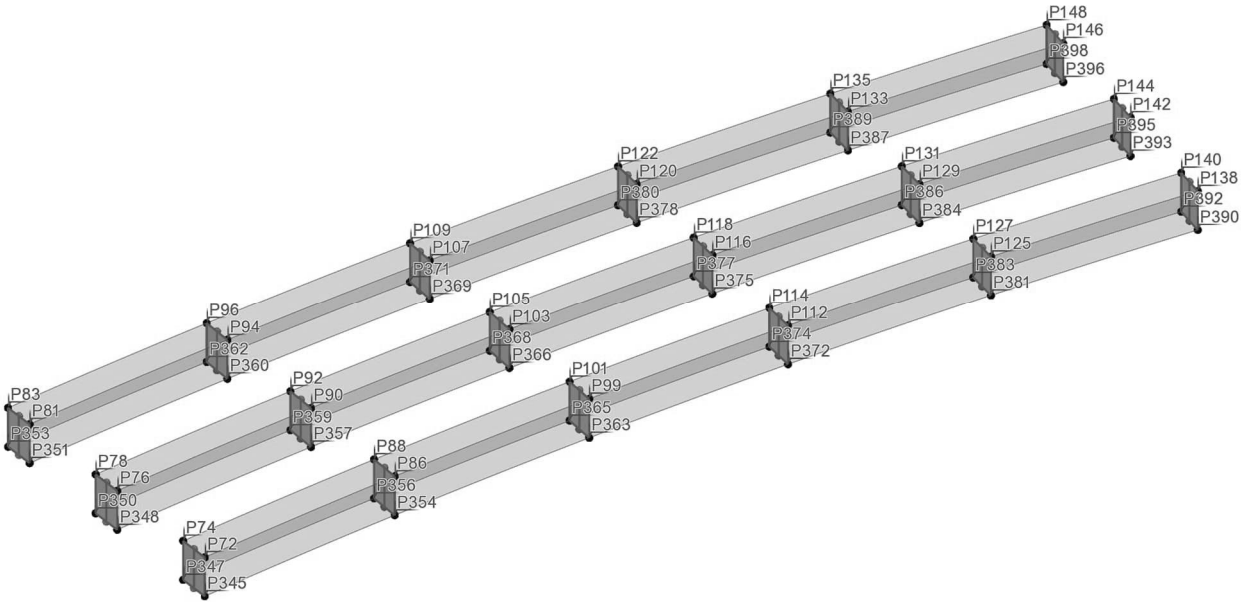

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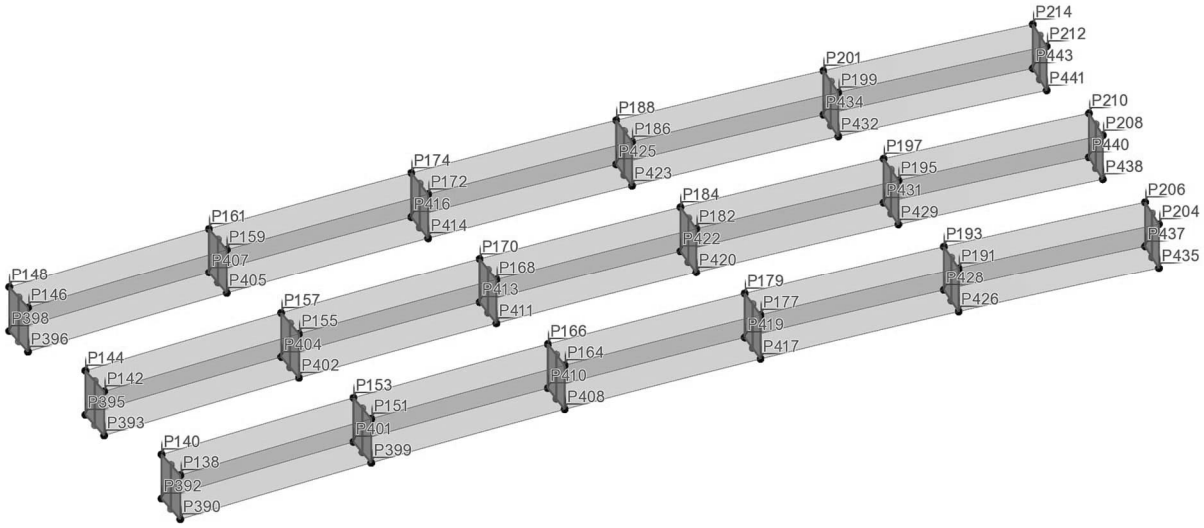
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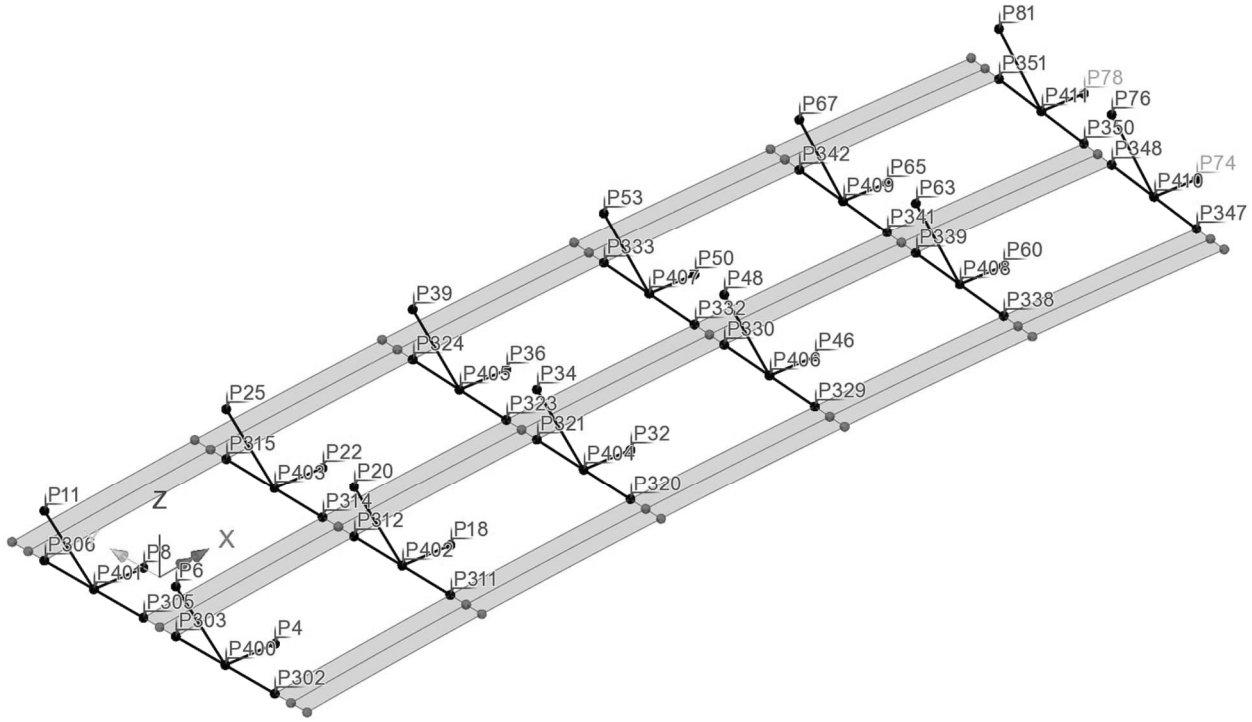
Span 3

2.2.1.6 Bracings



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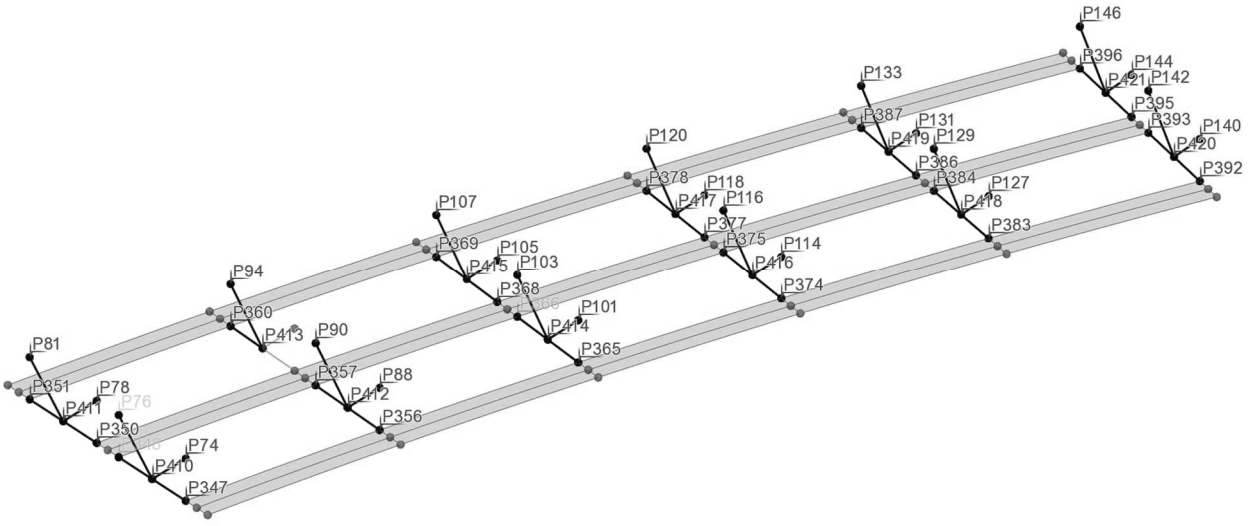

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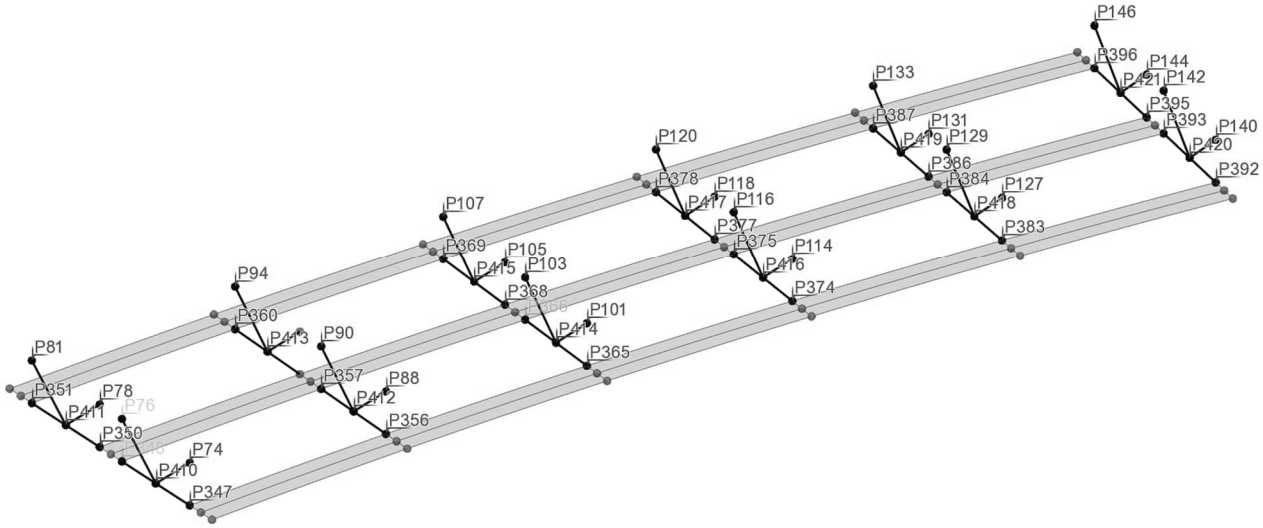
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Span 3

2.2.2 Geometry: LINES

LINES are defined by POINTS, see appendix 1.

2.2.3 Geometry : SURFACES

SURFACES are defined by LINES, see appendix 1.

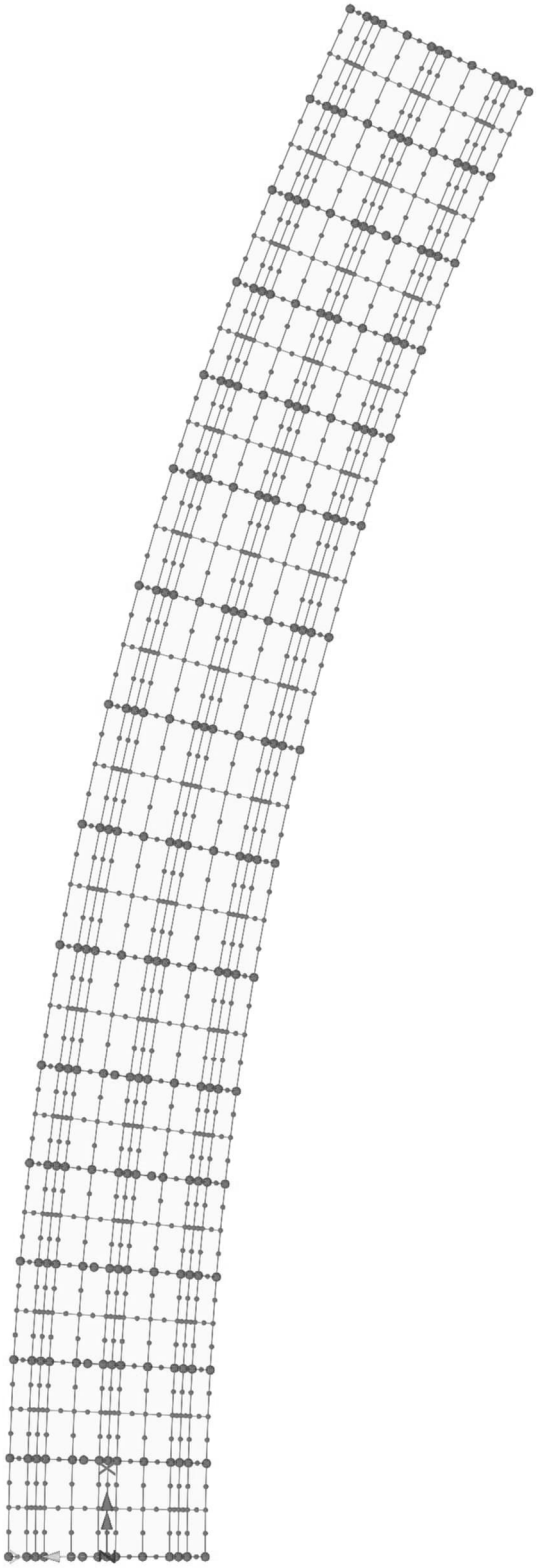
2.3 MESH

2.3.1 MESH: Shell element (QTS8)

Shell elements are used is webs and deck.

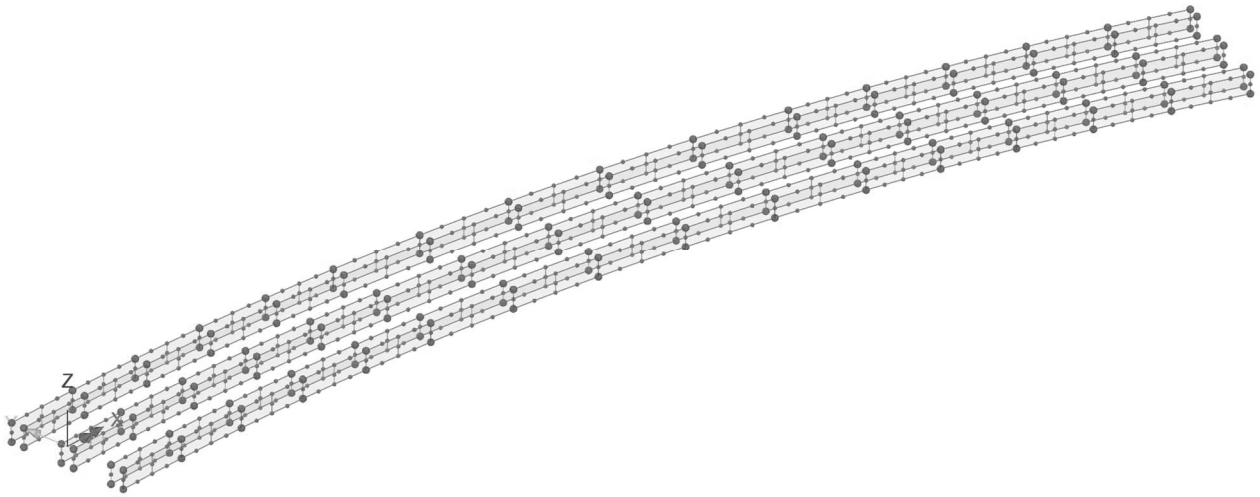
Type	x-divisions	y-divisions
Thick shell	2	1
Thick shell	1	1
-	-	-

Deck:



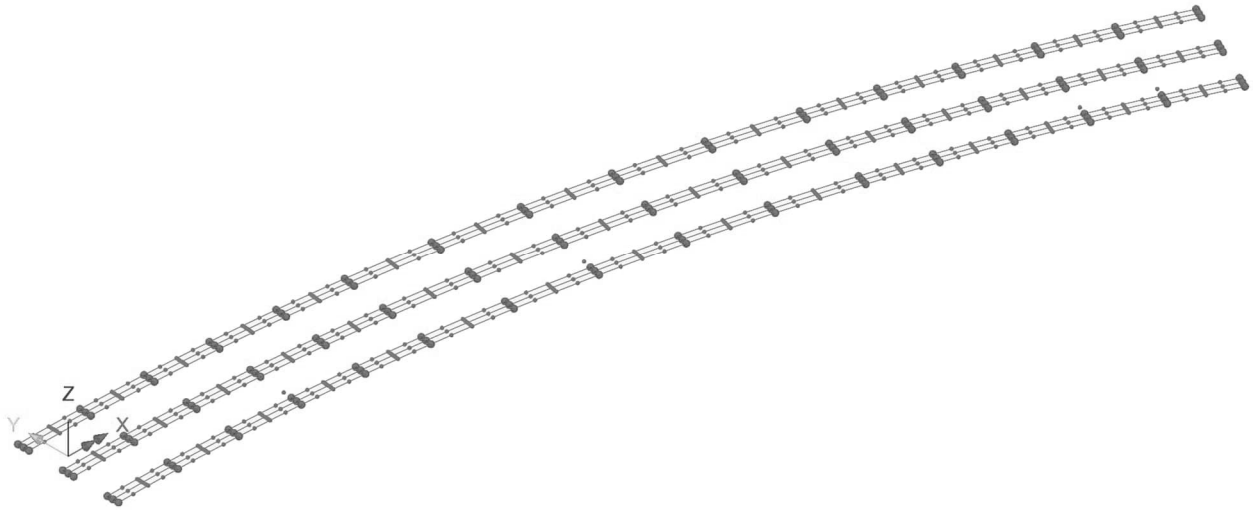
2D Overview

Webs:



3D Overview

Bottom flanges:



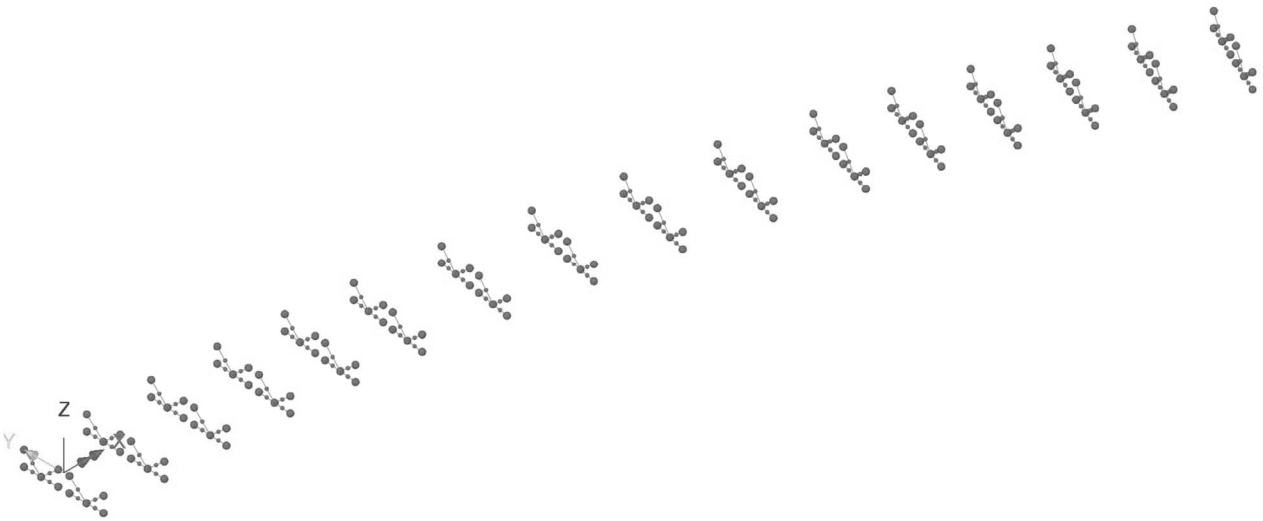
3D Overview

2.3.2 MESH: 3D-beam element (BMI31)

Beam elements are used for flanges and bracings, se table below.

Type	Divisions	End release: Start	End release: End
Thick beam	1	None	None
Thick beam	2	None	None
	-	-	-

Bracings:



3D Overview

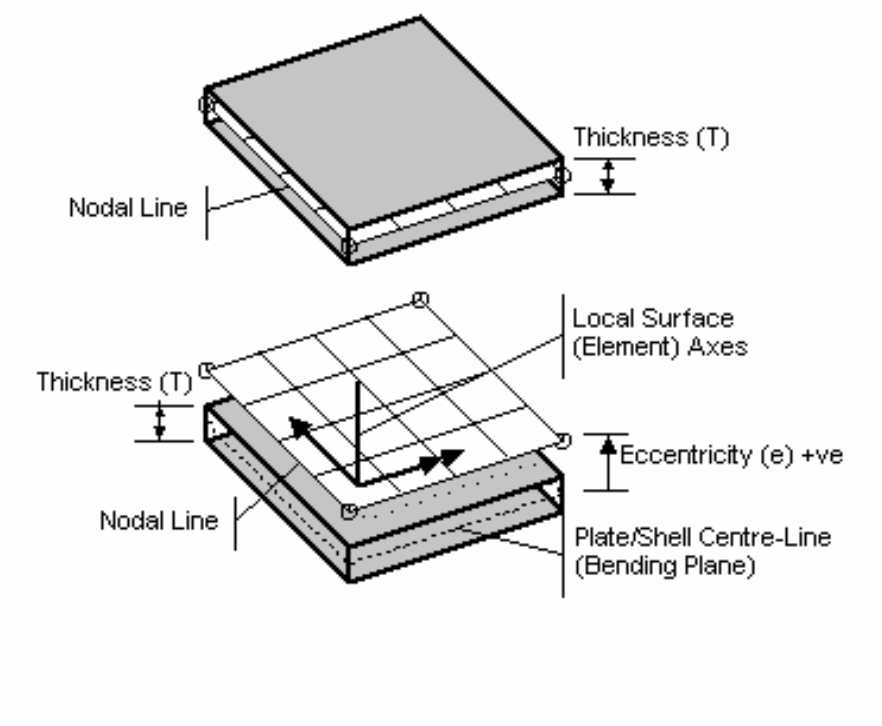
Outer stiffeners:

3D Overview

2.4 CROSS SECTION PROPERTIES

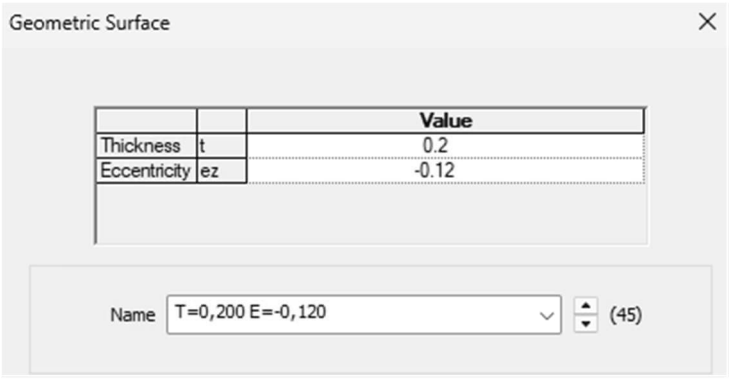
2.4.1 Shell elements

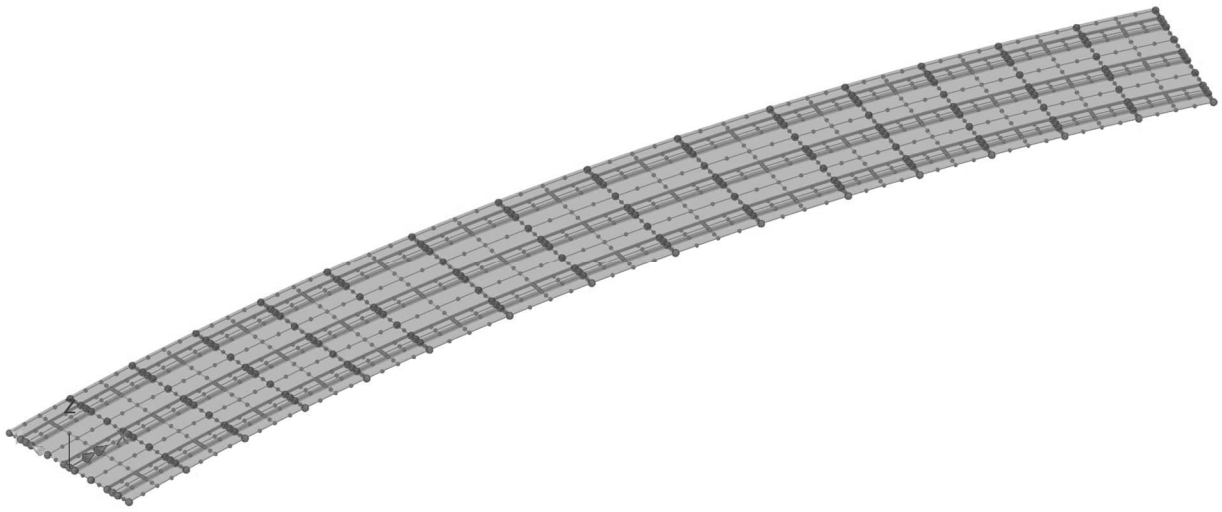
Web and deck are defined as shell elements. Principle figures of geometry is seen below.



Deck :

Deck is given geometric properties seen below.

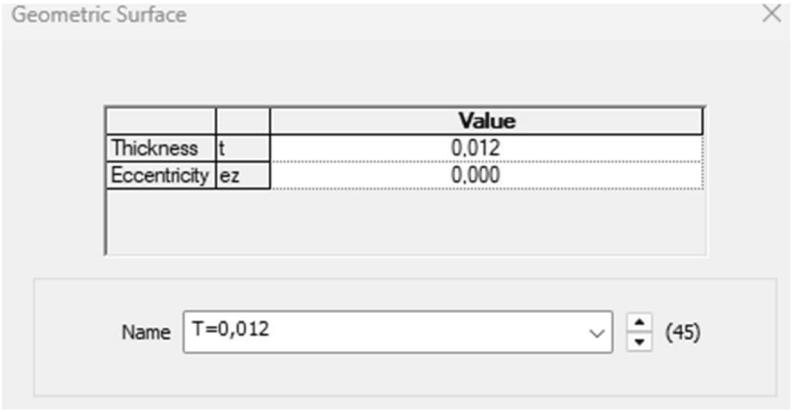


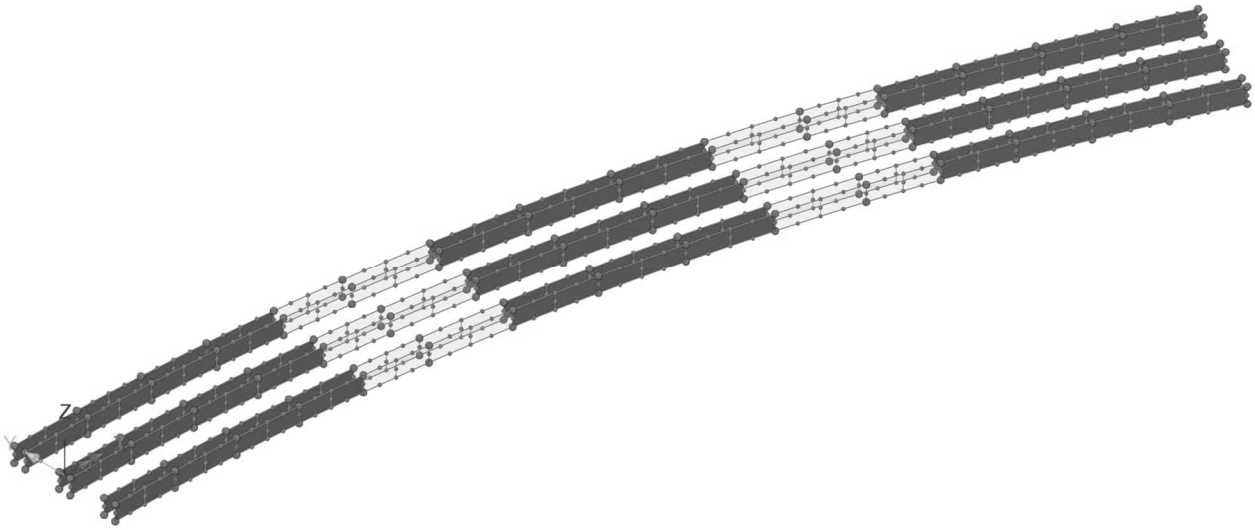


3D Overview

Web (BEAM 1, BEAM 3 & BEAM 5):

Deck is given geometric properties seen below.

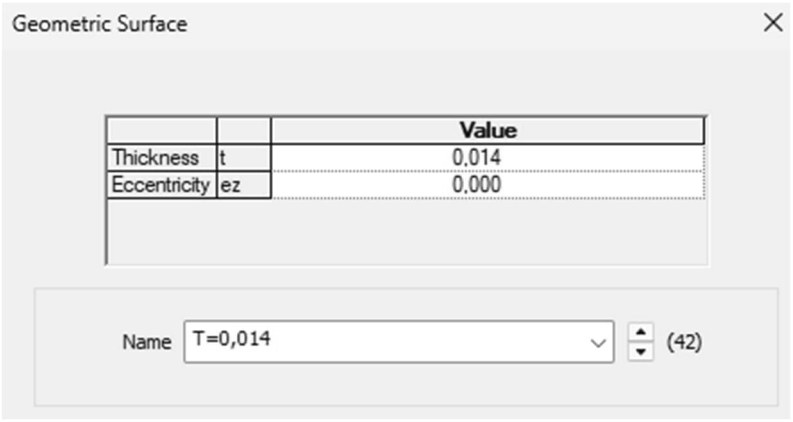


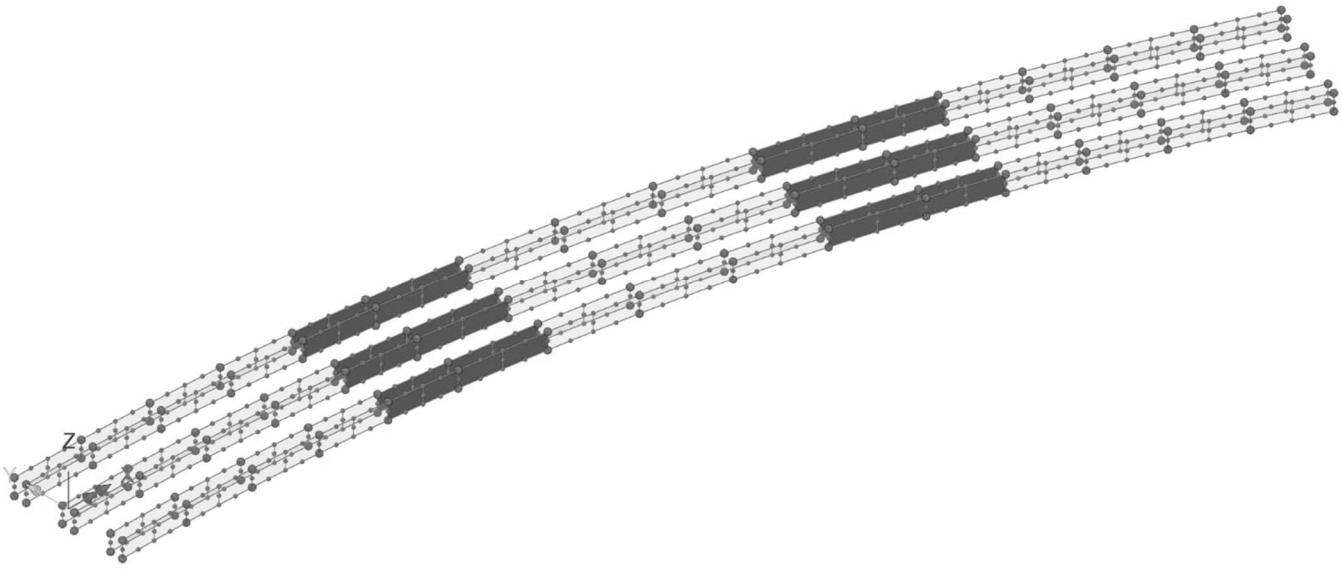


3D Overview

Web (BEAM 2 & BEAM 4):

Deck is given geometric properties seen below.

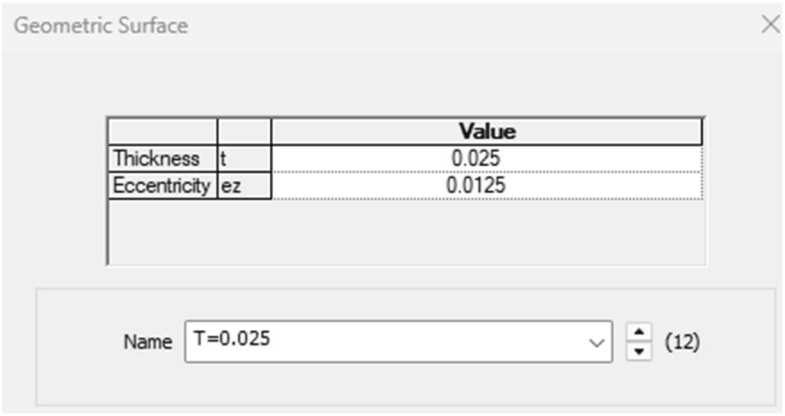


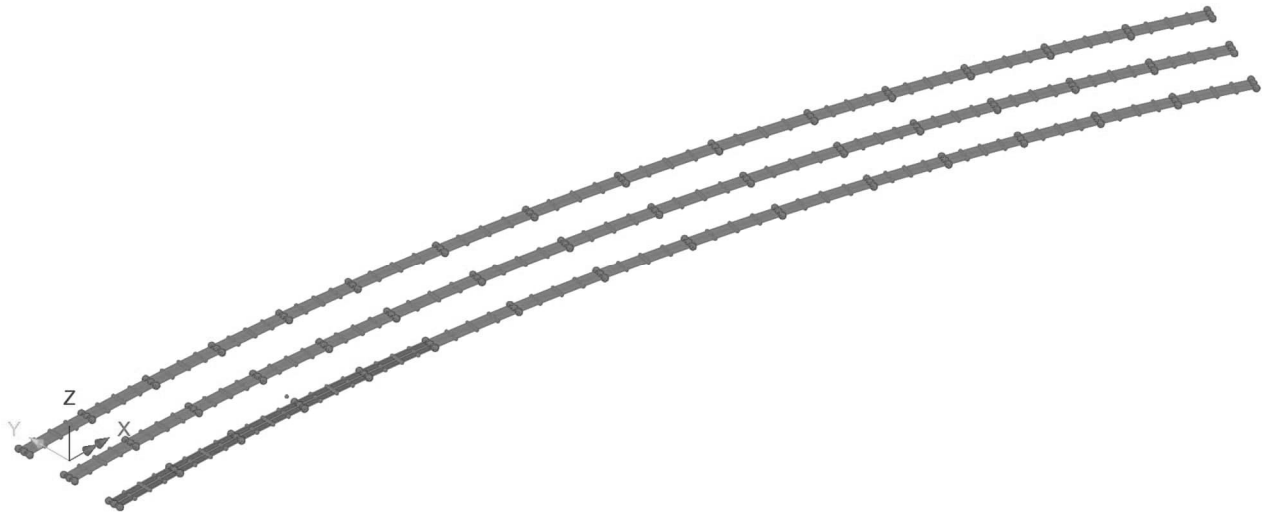


3D Overview

Bottom slab (BEAM 1, BEAM 2, BEAM 3, BEAM 4 & BEAM 5):

Deck is given geometric properties seen below.



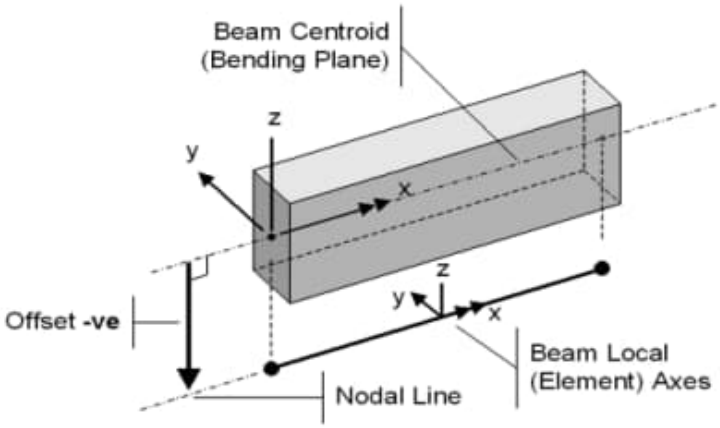


3D Overview

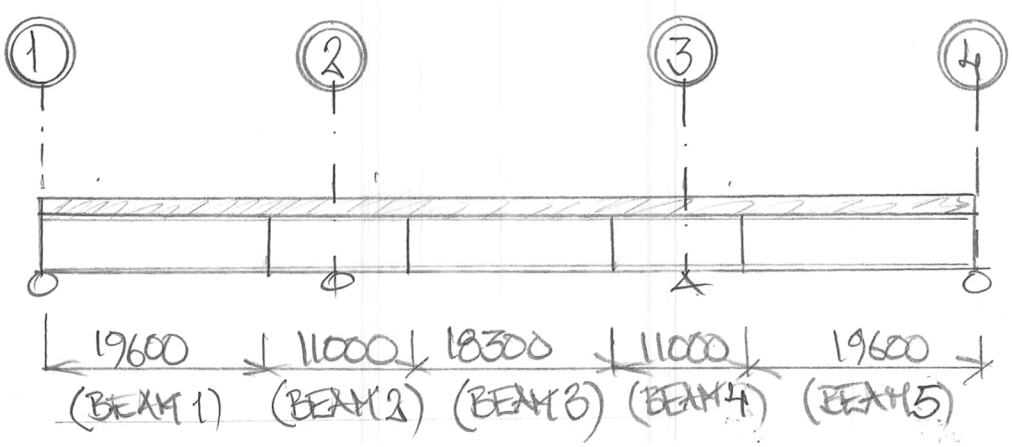
2.4.2 3D-beam elements

Flanges and bracing are as beam elements.

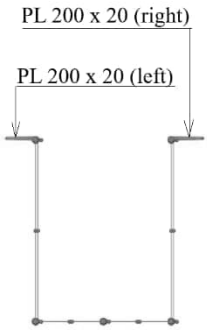
Principal sketch of geometry associated to 3D beam elements are seen below.

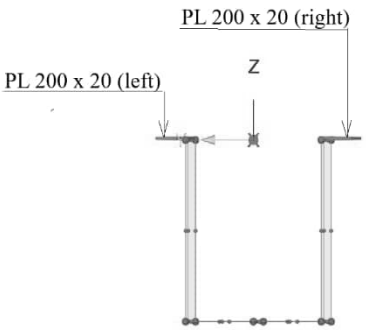


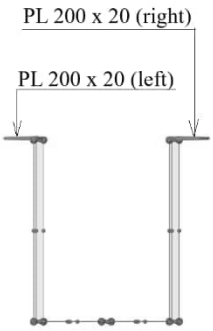
2.4.2.1 Flanges steel girders



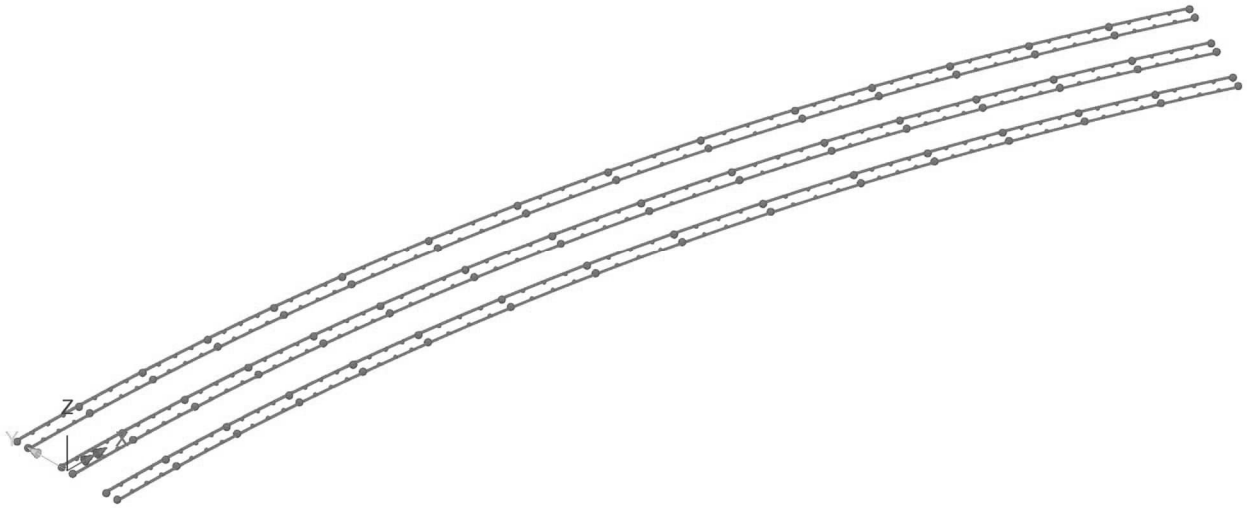
Top flange (BEAM 1, BEAM 2, BEAM , BEAM 4 & BEAM 5):





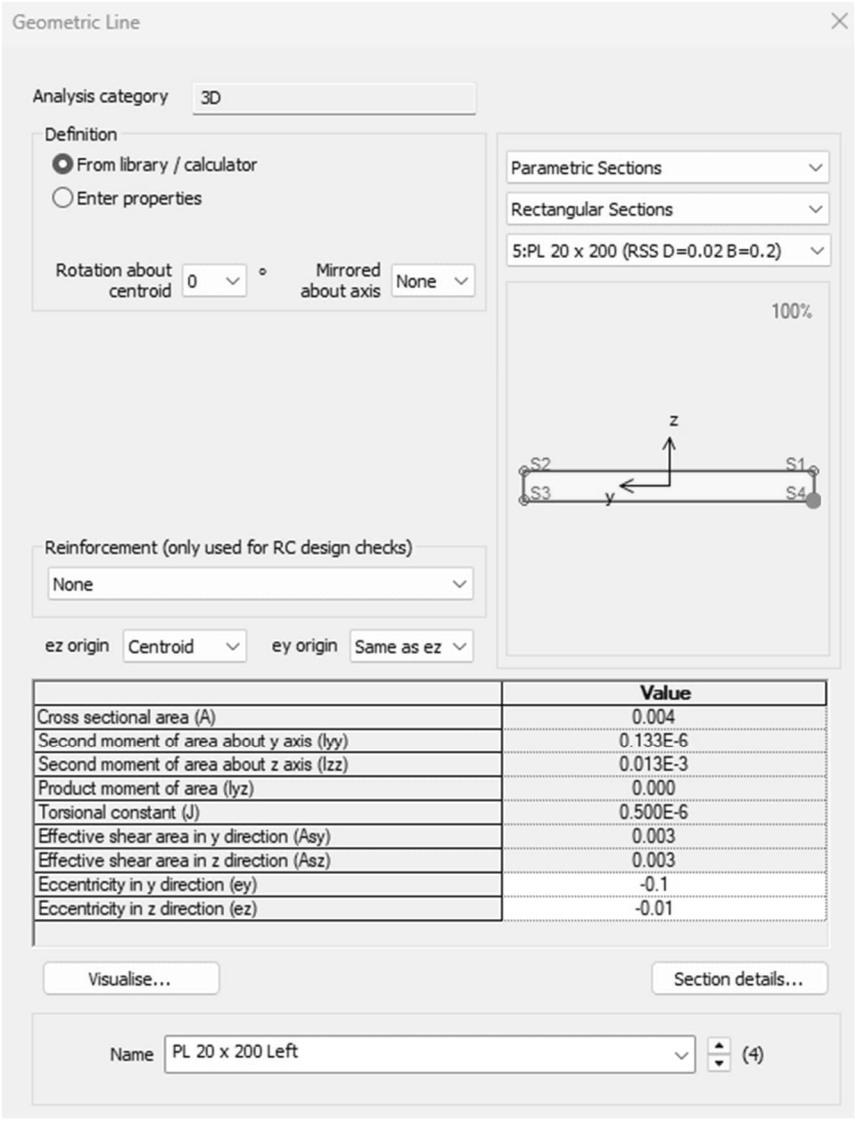


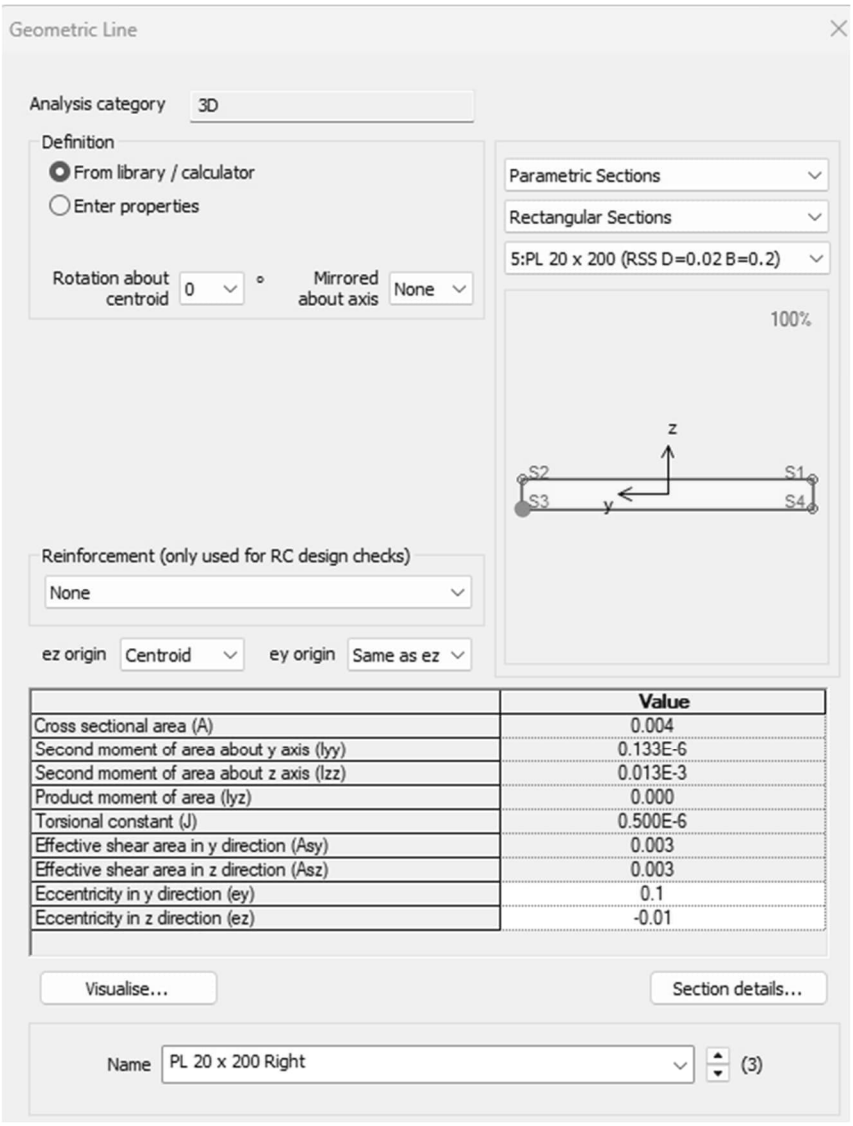
Cross section



3D Overview

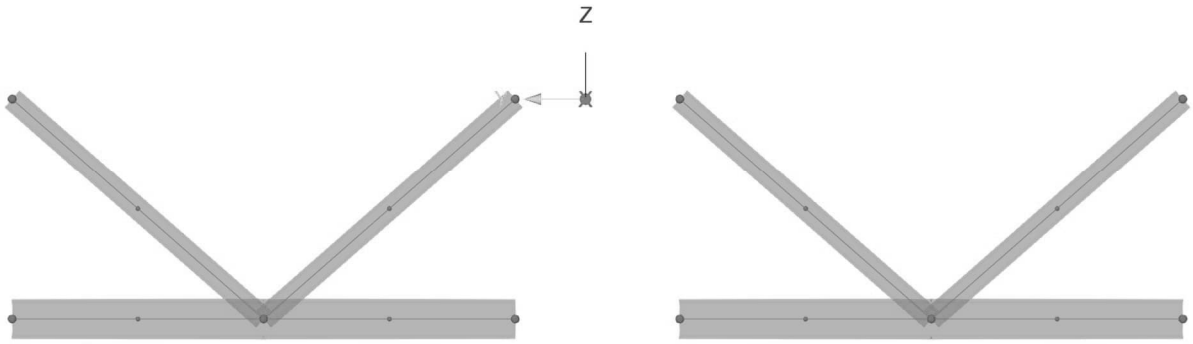
Flange is given geometric properties seen below.




Geometric Line
Analysis category
3D
Definition
From library / calculator
Enter properties
Rotation about centroid
0
Mirrored about axis
None
Parametric Sections
Rectangular Sections
5:PL 20 x 200 (RSS D=0.02 B=0.2)
100%
z
S2
S1
S3
y
S4
Reinforcement (only used for RC design checks)
None
ez origin
Centroid
ey origin
Same as ez
Value
Cross sectional area (A) 0.004
Second moment of area about y axis (Iyy) 0.133E-6
Second moment of area about z axis (Izz) 0.013E-3
Product moment of area (Iyz) 0.000
Torsional constant (J) 0.500E-6
Effective shear area in y direction (Asy) 0.003
Effective shear area in z direction (Asz) 0.003
Eccentricity in y direction (ey) 0.1
Eccentricity in z direction (ez) -0.01
Visualise...
Section details...
Name
PL 20 x 200 Right
(3)

2.4.2.2 Intermediate bracing: type F

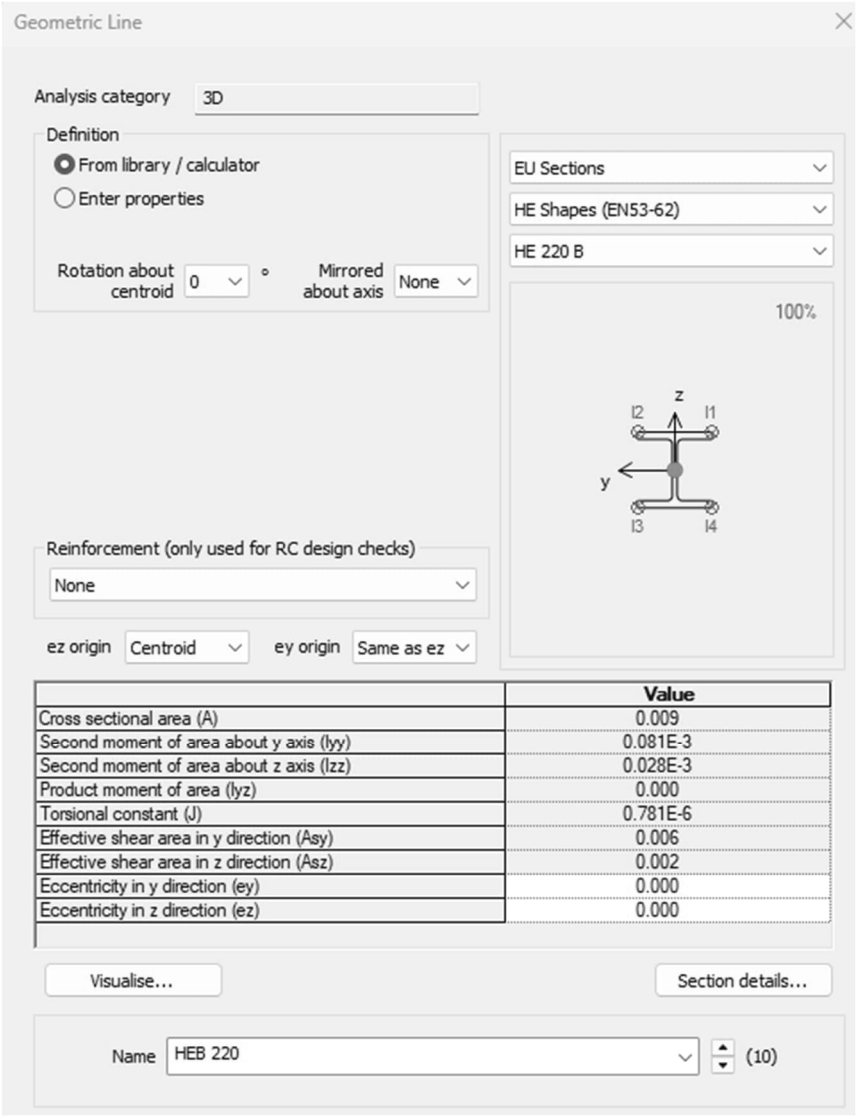
Each bracing consist of 3 parts and are identical at all bracings.

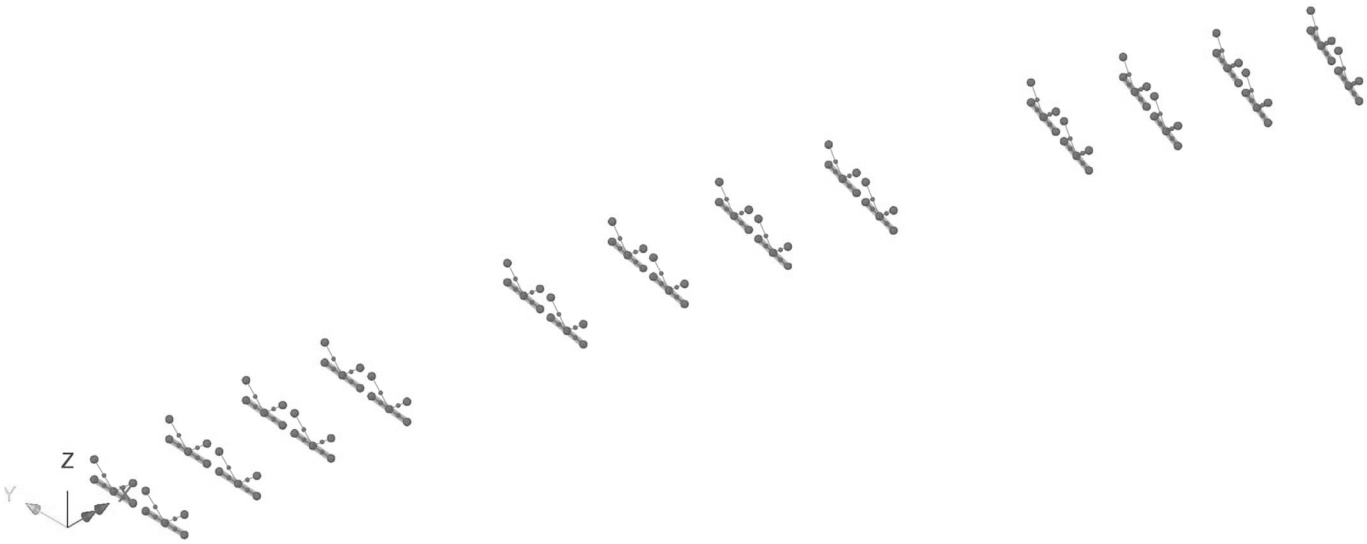


Typ F

Bracings intermediate (F)- horizontal beam (HEB 220):

Beam is given geometric properties seen below.

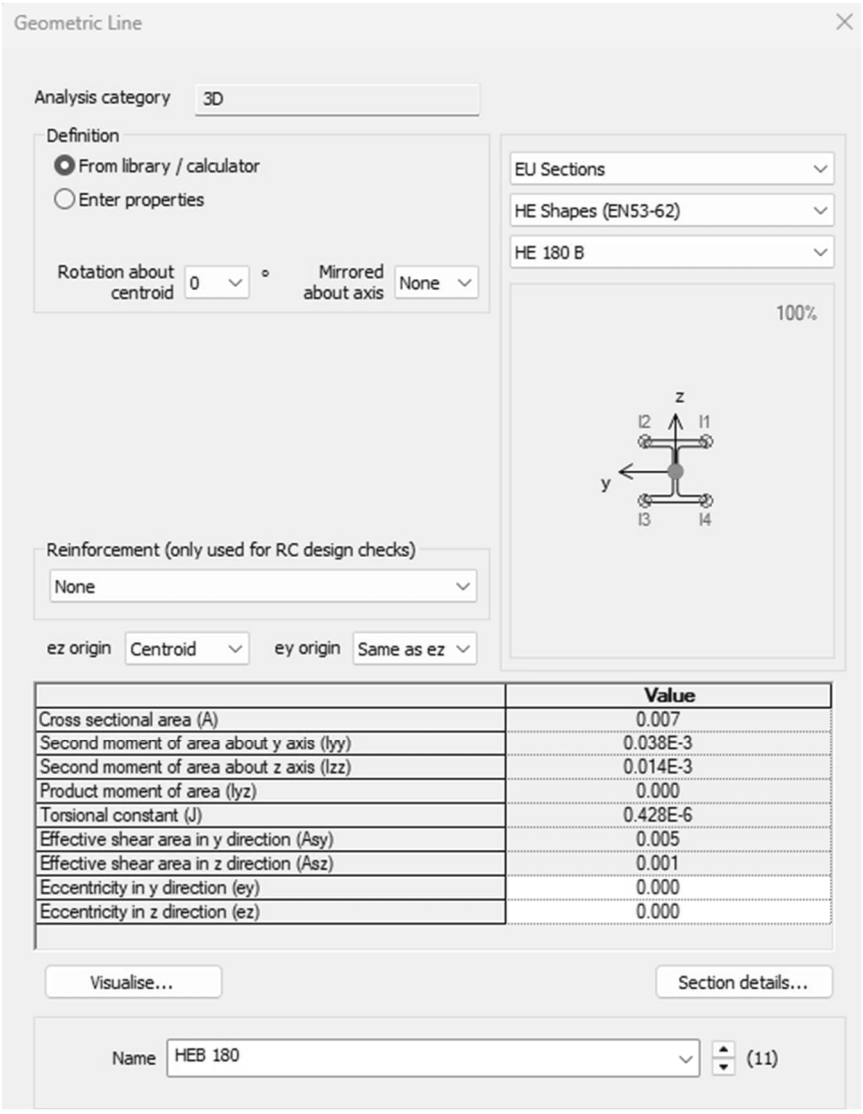


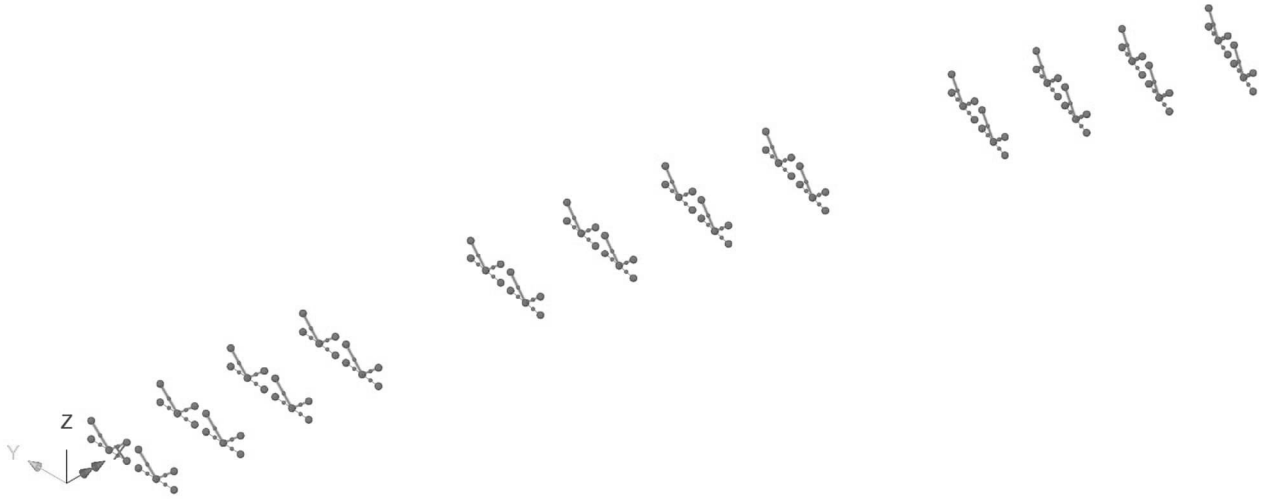


3D Overview

Bracings intermediate (F)- inclined beam (HEB 180):

Beam is given geometric properties seen below.

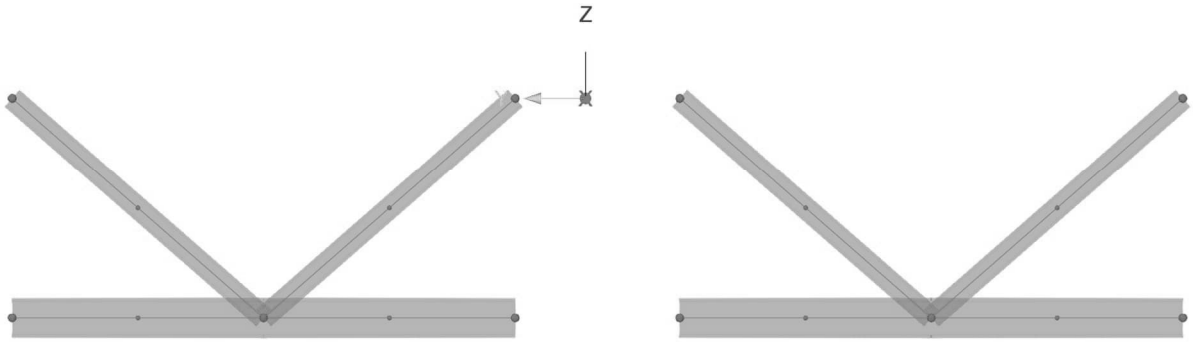




3D Overview

2.4.2.3 Support bracing: type S

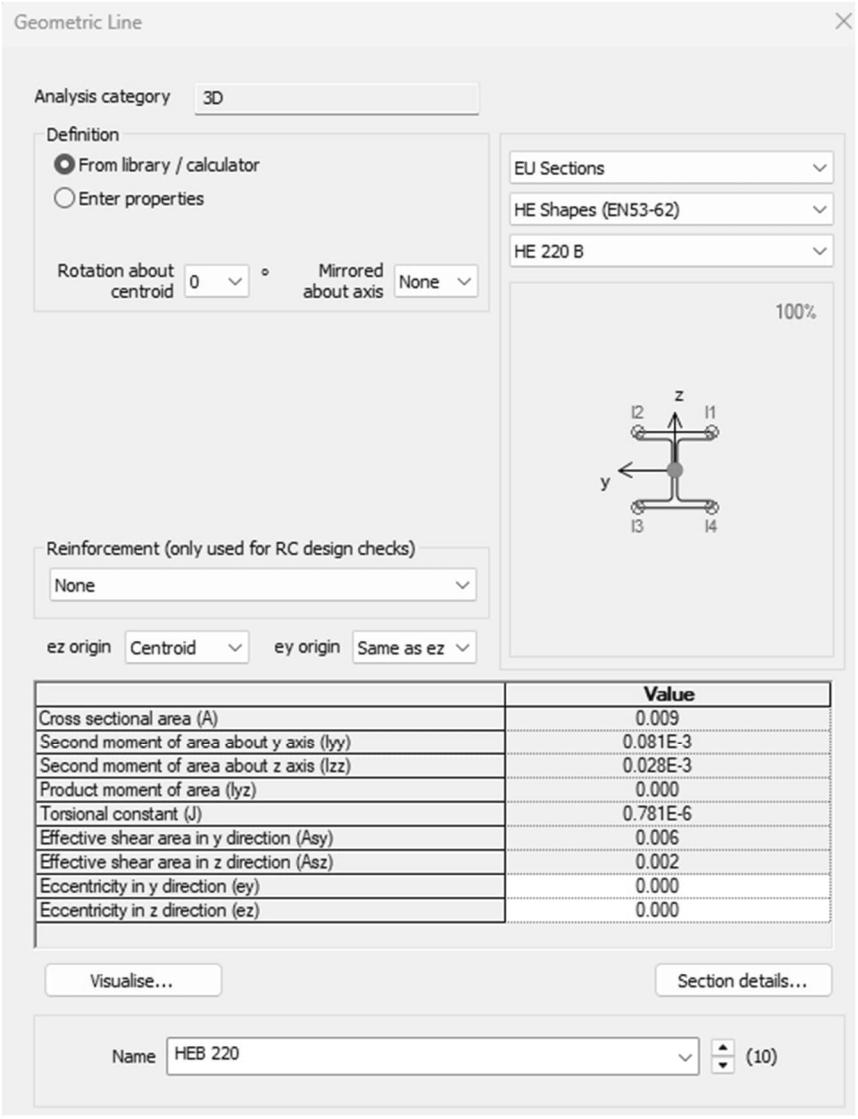
Each bracing consists of 3 part and are identical at all supports.

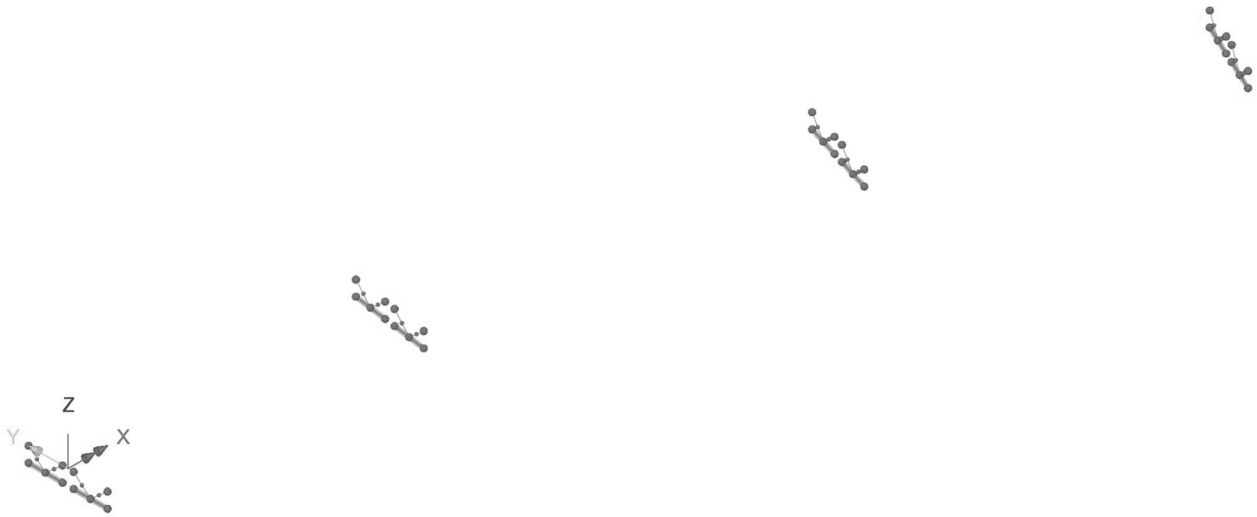


Typ S

Bracings supports (S)- horizontal beam bottom (HEB 220):

Beam is given geometric properties seen below.

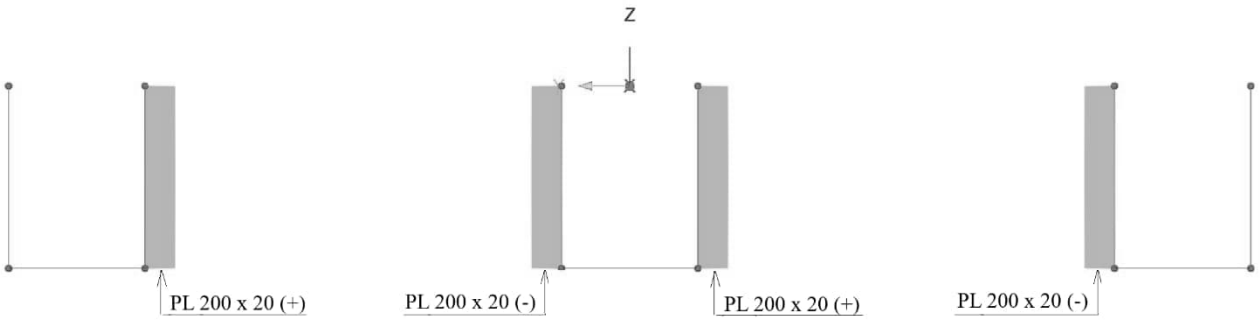




3D Overview

2.4.2.4 Stiffeners (F)

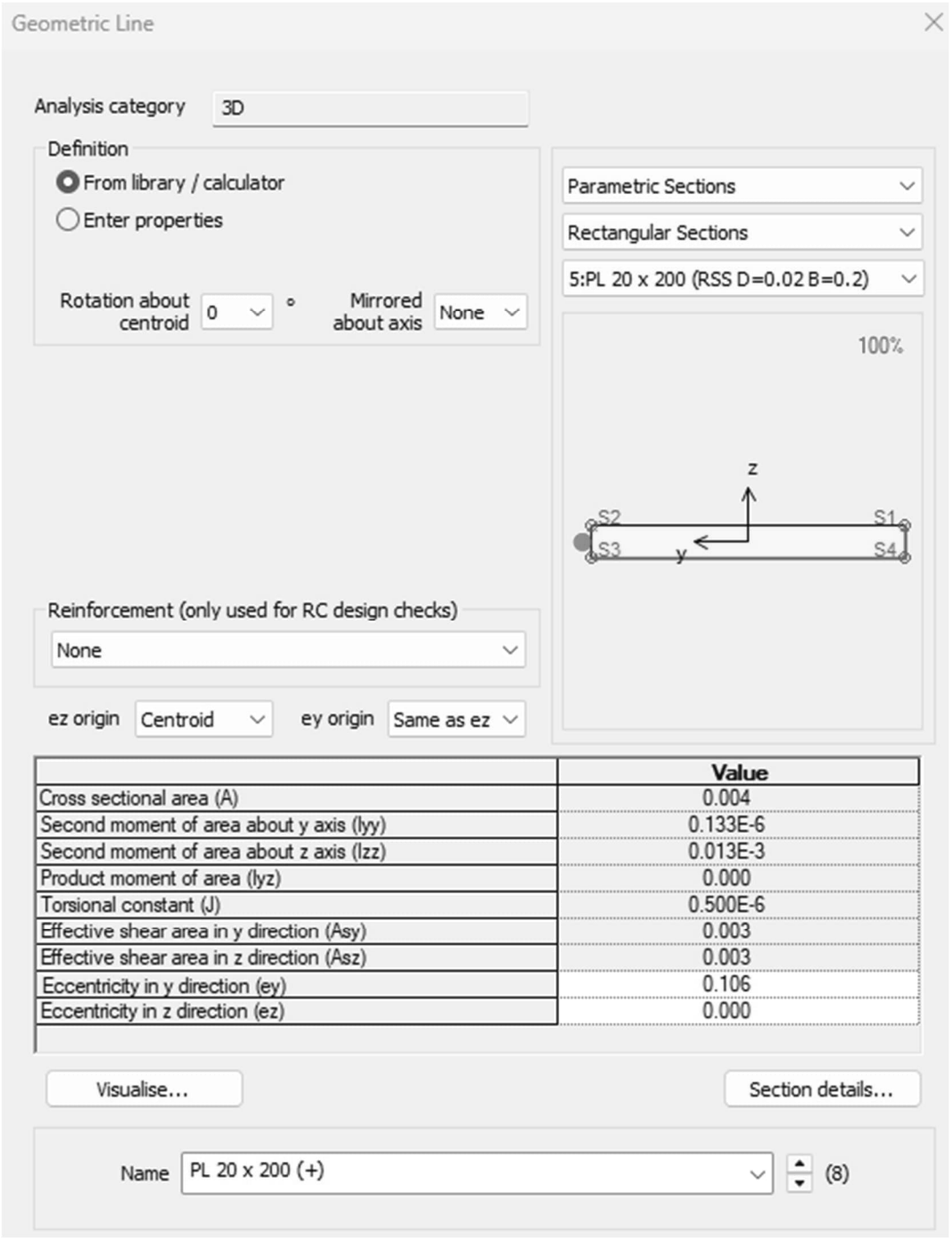
At locations of every bracing (F) stiffeners as seen below are applied.



Stiffener right – PL 200 x 20 (+):

A beam (PL 20 x 200) is placed eccentrically (e_y) as seen below.

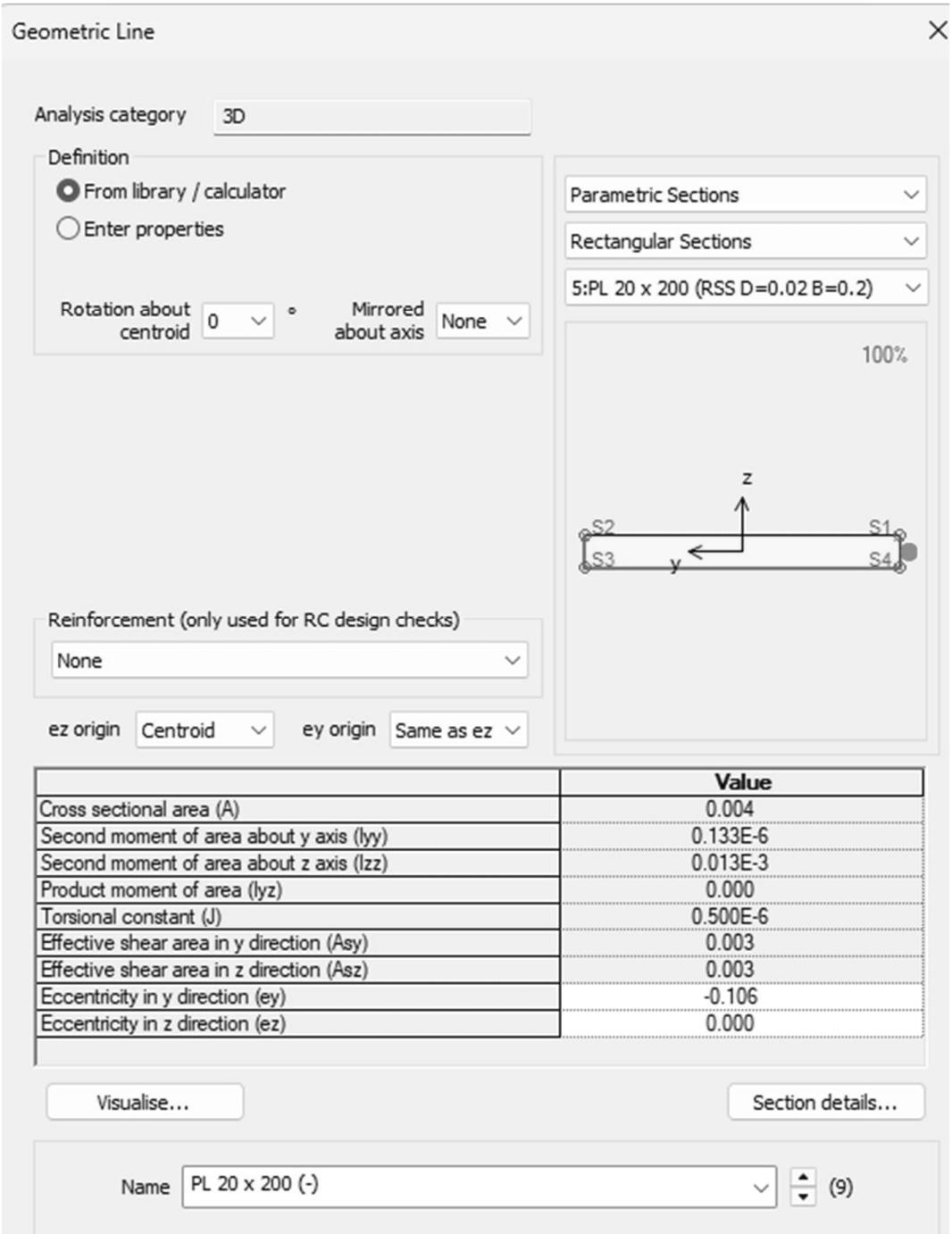
$e_y = 0.5 \cdot (b + t_w) = 0.5 \cdot (200 \text{ mm} + 12 \text{ mm}) = +106 \text{ mm}$.



Stiffener right – PL 200 x 20 (-):

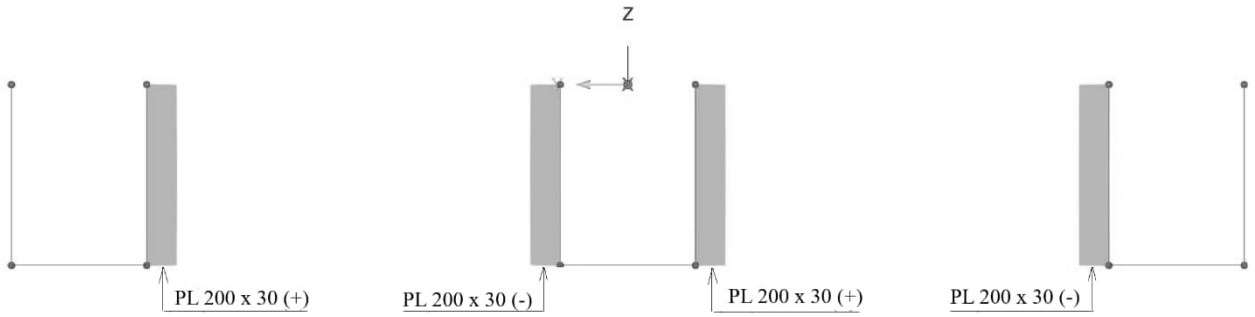
A beam (PL 20 x 200) is placed eccentrically (e_y) as seen below.

$e_y = -0.5 \cdot (b + t_w) = -0.5 \cdot (200\ mm + 12\ mm) = -106\ mm.$



2.4.2.6 Stiffeners (S)

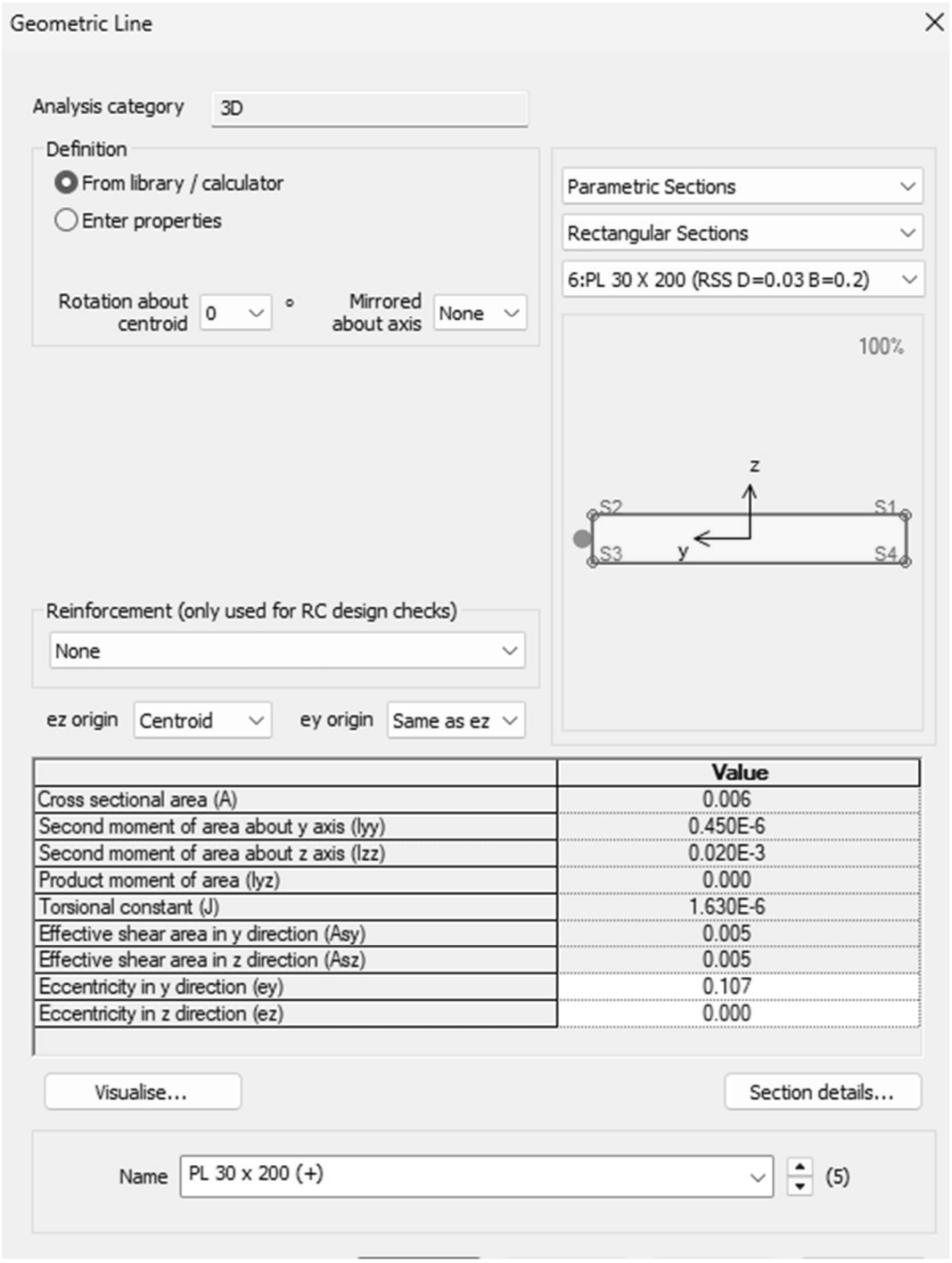
At locations of every bracing (F) stiffeners as seen below are applied.



Stiffener right – PL 200 x 30 (+):

A beam (PL 30 x 200) is placed eccentrically (e_y) as seen below.

$e_y = 0.5 \cdot (b + t_w) = 0.5 \cdot (200 \text{ mm} + 14 \text{ mm}) = +107 \text{ mm}$.



Stiffener right – PL 200 x 30 (-):

A beam (PL 30 x 200) is placed eccentrically (e_y) as seen below.

$e_y = -0.5 \cdot (b + t_w) = -0.5 \cdot (200 \text{ mm} + 14 \text{ mm}) = -107 \text{ mm}$.

Geometric Line

Analysis category 3D

Definition

From library / calculator

Enter properties

Rotation about centroid 0 °

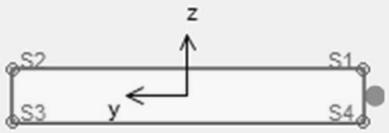
Mirrored about axis None

Parametric Sections

Rectangular Sections

6:PL 30 X 200 (RSS D=0.03 B=0.2)

100%



Reinforcement (only used for RC design checks)

None

ez origin Centroid ey origin Same as ez

	Value
Cross sectional area (A)	0.006
Second moment of area about y axis (Iyy)	0.450E-6
Second moment of area about z axis (Izz)	0.020E-3
Product moment of area (Iyz)	0.000
Torsional constant (J)	1.630E-6
Effective shear area in y direction (Asy)	0.005
Effective shear area in z direction (Asz)	0.005
Eccentricity in y direction (ey)	-0.107
Eccentricity in z direction (ez)	0.000

Visualise... Section details...

Name PL 30 x 200 (-) (6)

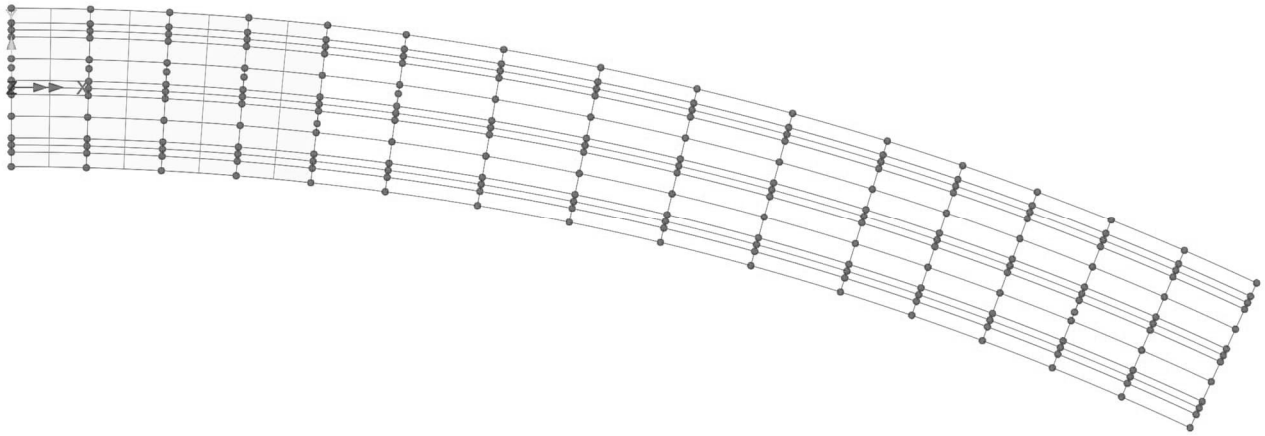
2.5 CASTING STAGES

There are a total of 5 construction and 2 operational stages. In the different phases the roadway is activated/deactivated. Changes are made in relation to system 7 (Base Analysis).

This is handled by applying “Deactivate” in the applicable phases. When applied to a static system, allocation must be made for each individual load case.

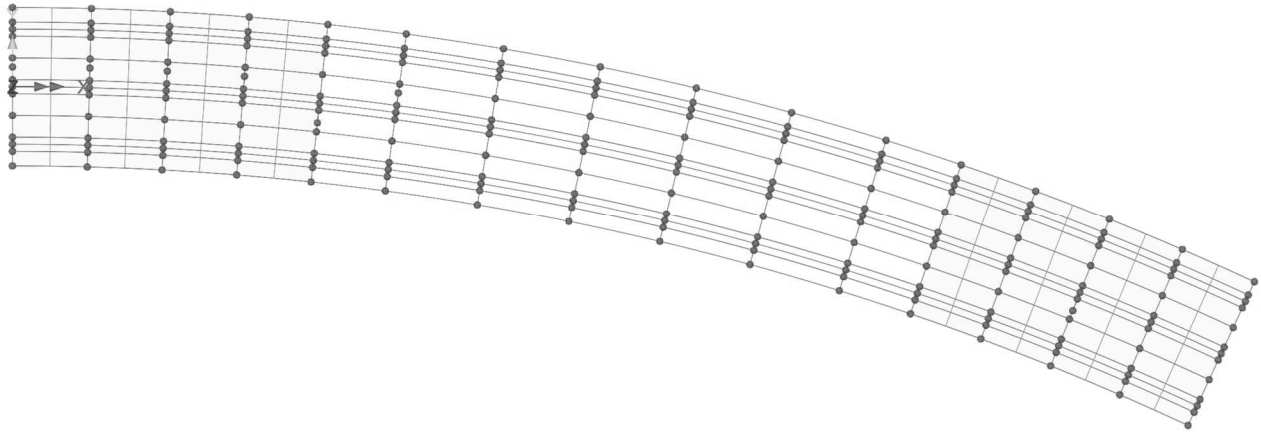
2.5.1 *Analysis 1 (Stage I)*

Deactivate : Stage II-V



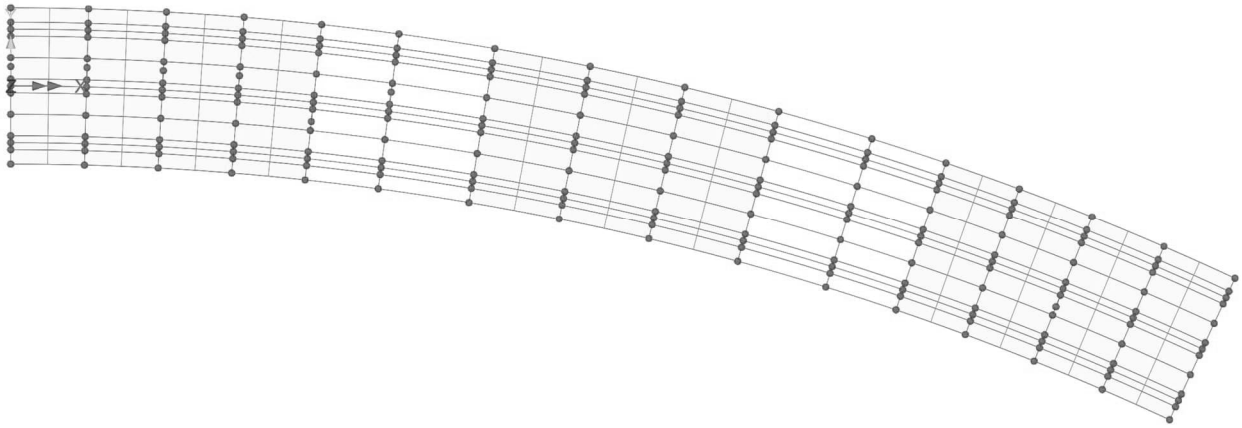
2.5.2 *Analysis 2 (Stage II)*

Deactivate : Stage III-V



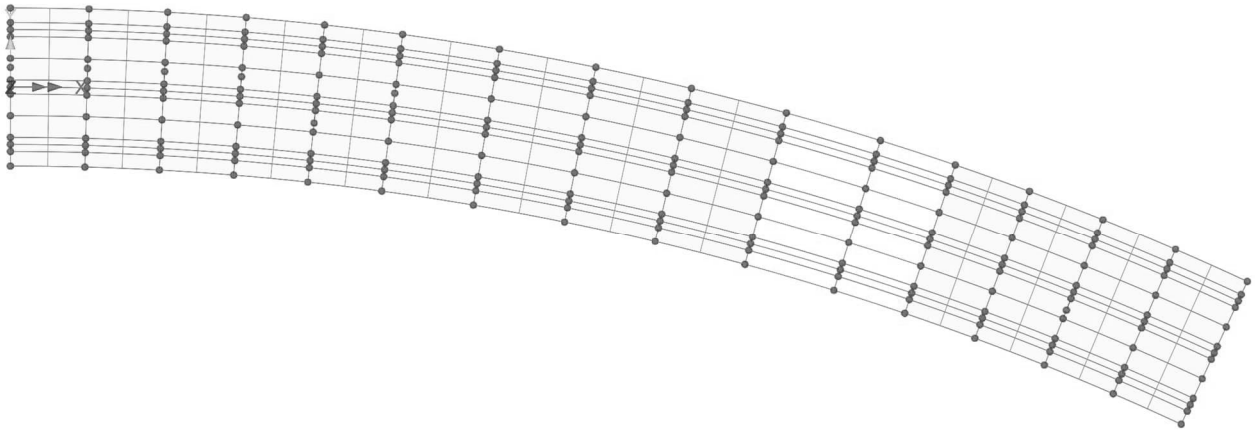
2.5.3 *Analysis 3 (Stage III)*

Deactivate : Stage IV-V



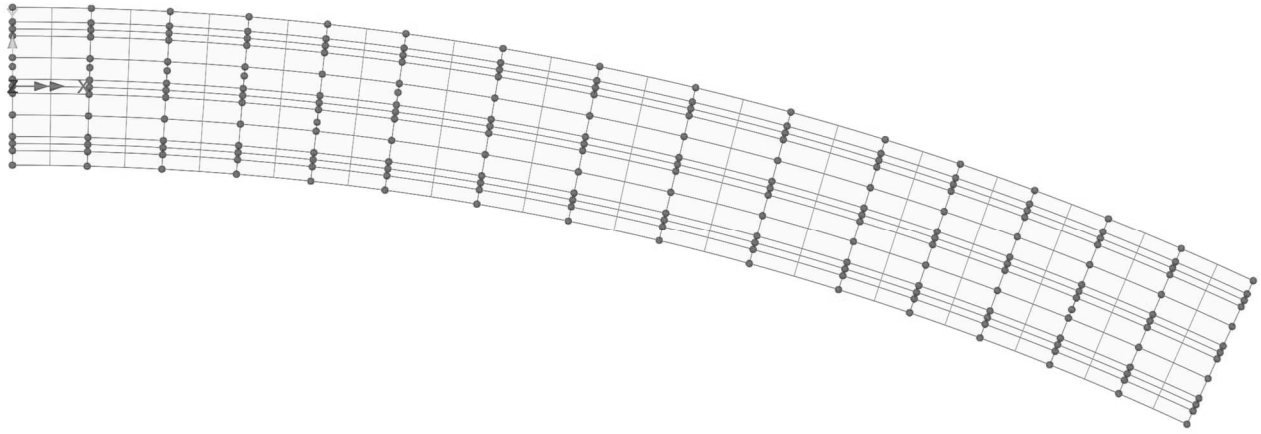
2.5.4 *Analysis 4 (Stage 4)*

Deactivate : Stage V



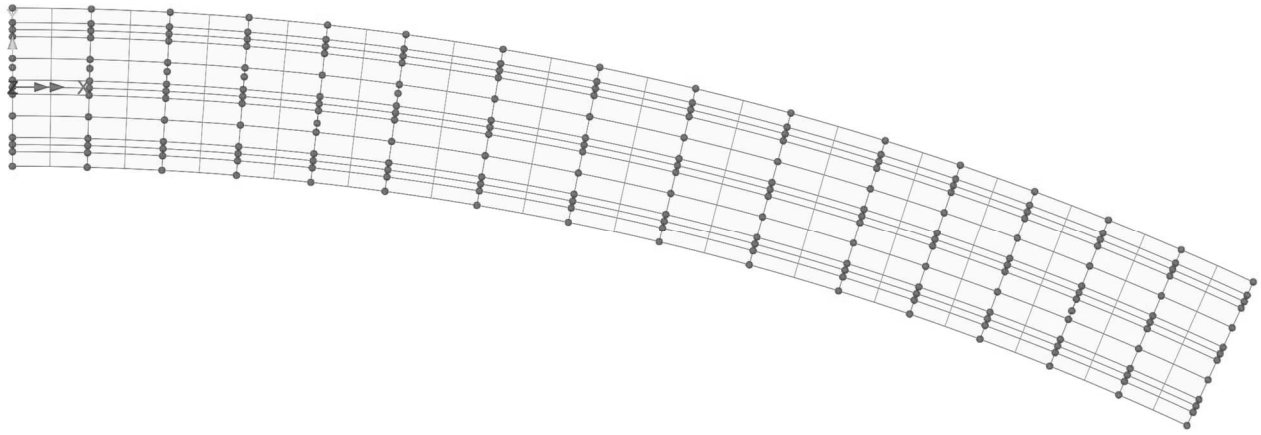
2.5.5 *Analysis 5 (Stage 5)*

Deactivate : None



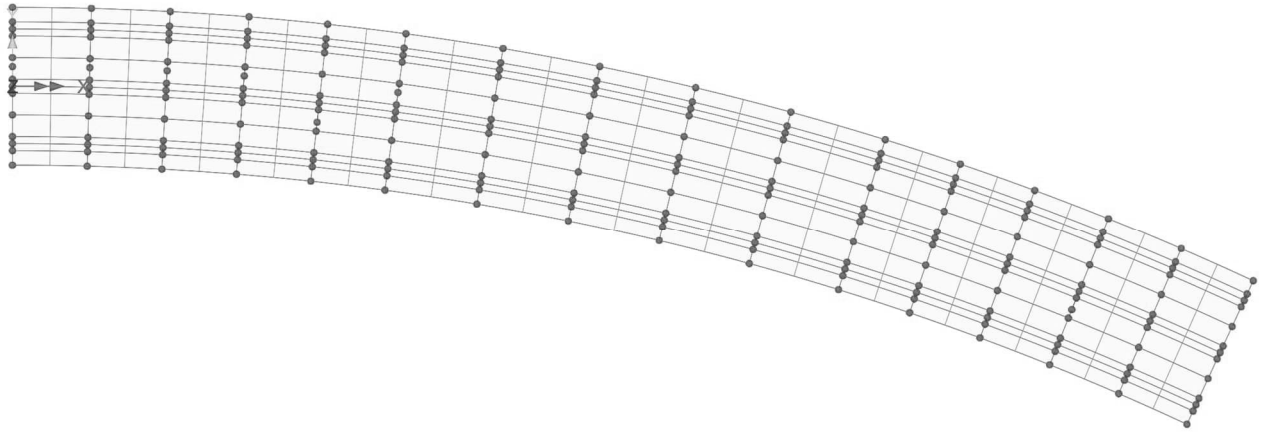
2.5.6 *Analysis 6 (O:PERM)*

Deactivate : None



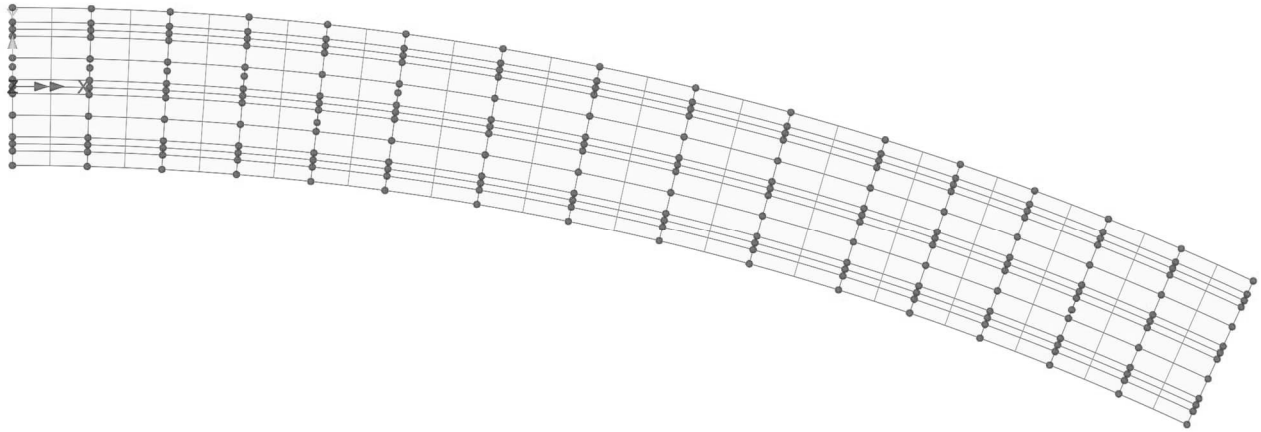
2.5.7 *Analysis 7 (O:VAR)*

Deactivate : None



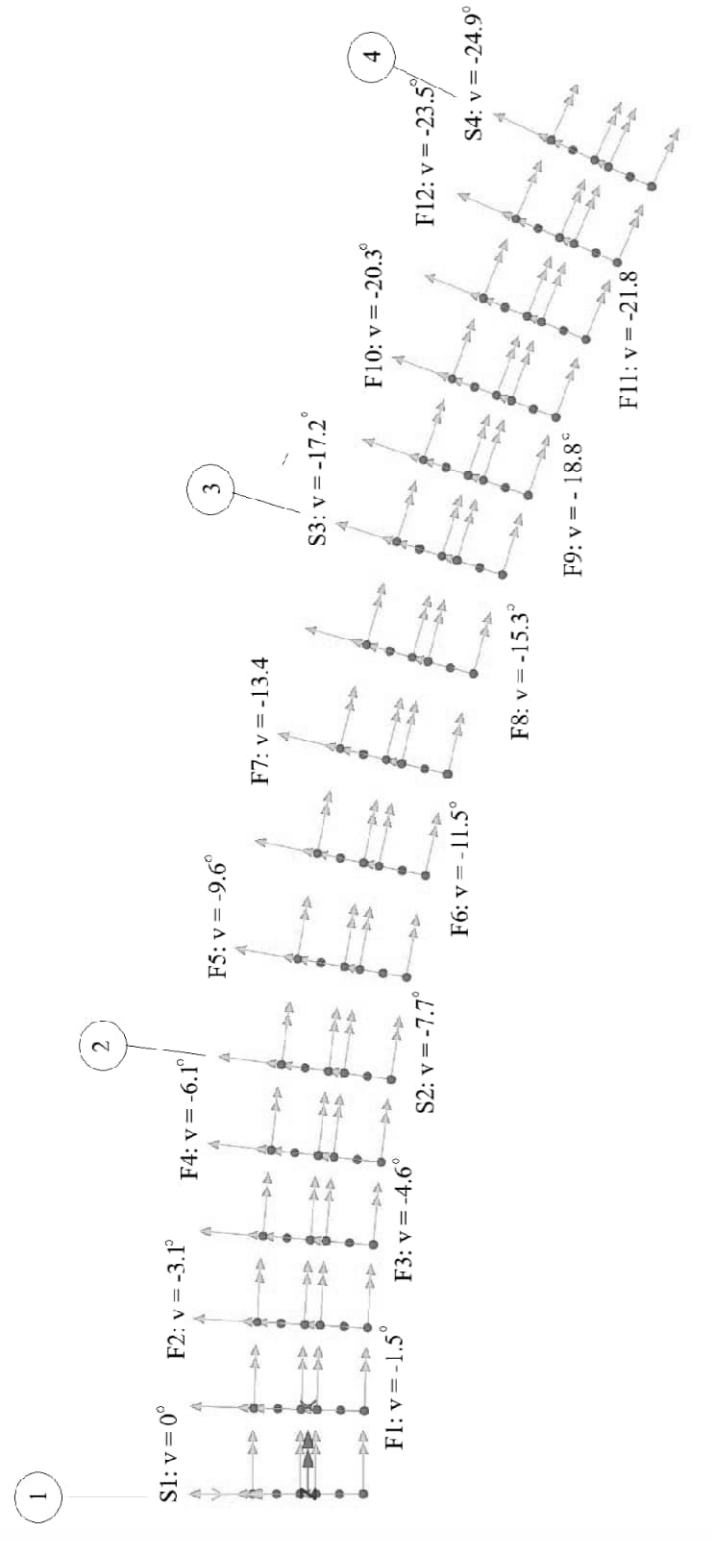
2.5.8 *Analysis 8 (O:TEMP)*

Deactivate : None



2.6 LOCAL COORDINATE SYTEM

When assigning loads and boundary conditions, local coordinate systems are used at each support line as described below.

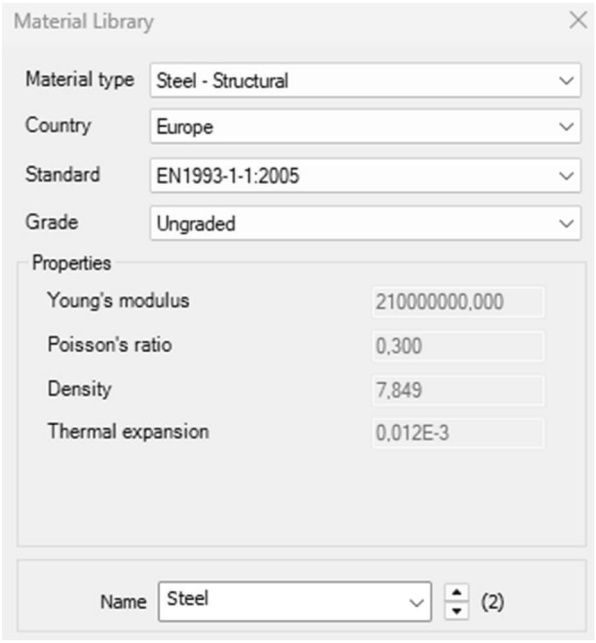


2D Overview

2.7 MATERIAL

2.7.1 Steel

Steel : E_s = 210 GPa



2.7.2 Concrete

In total, there are 7 stages, of which 5 are construction and 2 are operational stages. Considering this, the material properties of concrete deck vary.

Used concrete C35/45: E_{cm} = 34.0 GPa

There several types of concrete as seen in table below. In system analysis to determine load effects only types 3, 5 & 7 are considered.

Type	E	Stage	ϕ	ψ_L	Cross section	Load
1	0[1.)]	Constructional	-	-	Wet	Permanent loads
2	34.0[2.)]	Constructional	0	1.0[3.)]	Uncracked	Permanent loads
3	11.3	Operational	2.0	1.0[3.)]	Uncracked	Permanent loads excl. shrinkage
4	11.3	Operational	2.0	1.0[3.)]	Uncracked	Shrinkage
5	34.0	Operational	0	1.0[3.)]	Uncracked	Variable loads excl. temperature
6	26.2	Operational	0.3	1.0[3.)]	Uncracked	Variable excl. temperature
7	0[1.)]	Operational	-	1.0[3.)]	Cracked	All loads
-	GPa	-	-	-	-	-

Footnote:

1.) Instead, a negligible stiffness is used $E_{cm}/1000$. The effect of reinforcement is not considered when determining load effects in system analysis.

2.) Loads associated to permanent load will also act during operational stage, thus Young´s modulus associated to type 3 is used during system analysis.

3.) Used on safe side in example.

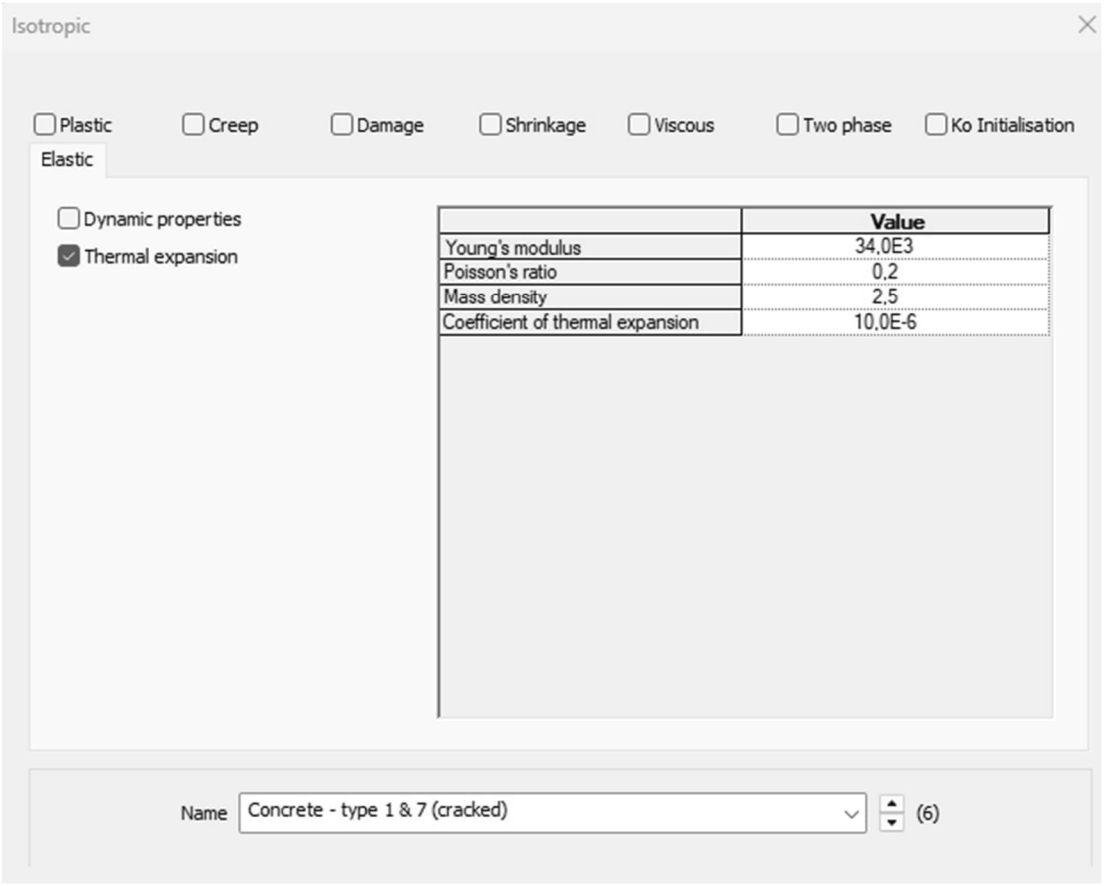
Remark

The effect of rebars and types 4 & 6 will only be considered when applying loads and determining resistance according SS-EN 1994-1.

2.7.2.1 Material : Wet & cracked concrete

The isotropic concrete has negligible stiffness ($E_{cm}/1000$), corresponding to material properties associated to concrete type 1& 7.

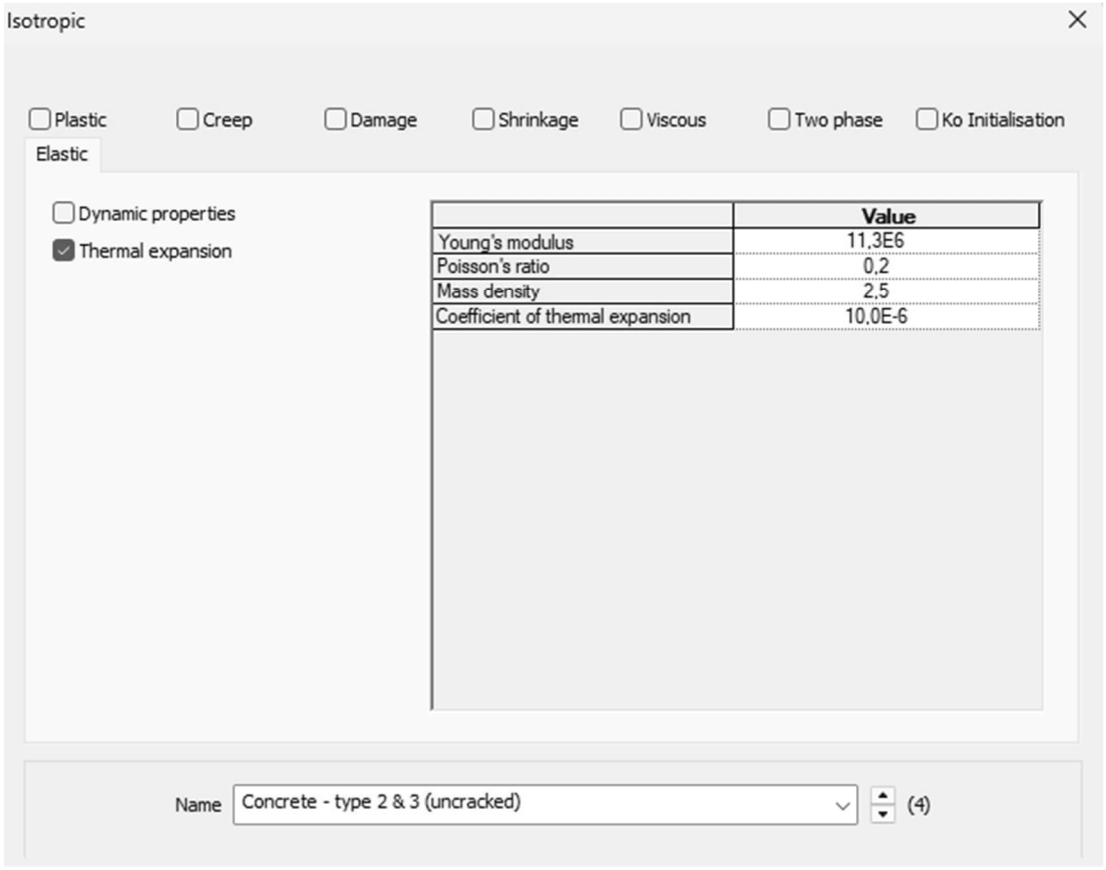
$E = E_{cm}/ 1000 = 34 \cdot 10^6$ kPa / 1000 = $34 \cdot 10^3$ kPa



2.7.2.2 Material : Uncracked concrete - permanent loads

The isotropic concrete material properties associated to concrete type 2 & 3.

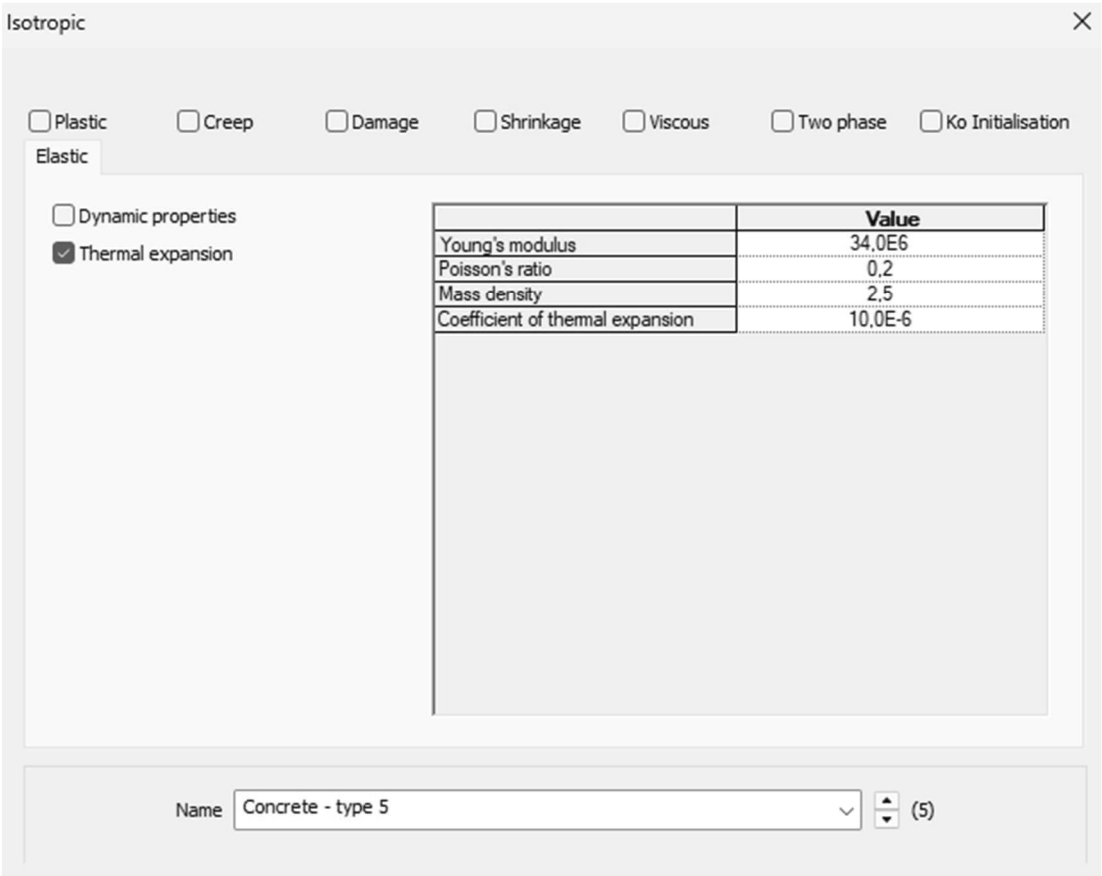
$E = E_{cm} / (1+\psi_L \cdot \phi) = 34 \cdot 10^6$ kPa / $(1+1.0 \cdot 2.0) = 11.3 \cdot 10^6$ kPa



2.7.2.3 Material : Uncracked concrete - variable loads excl. temperature

The isotropic concrete material properties associated to concrete type 5.

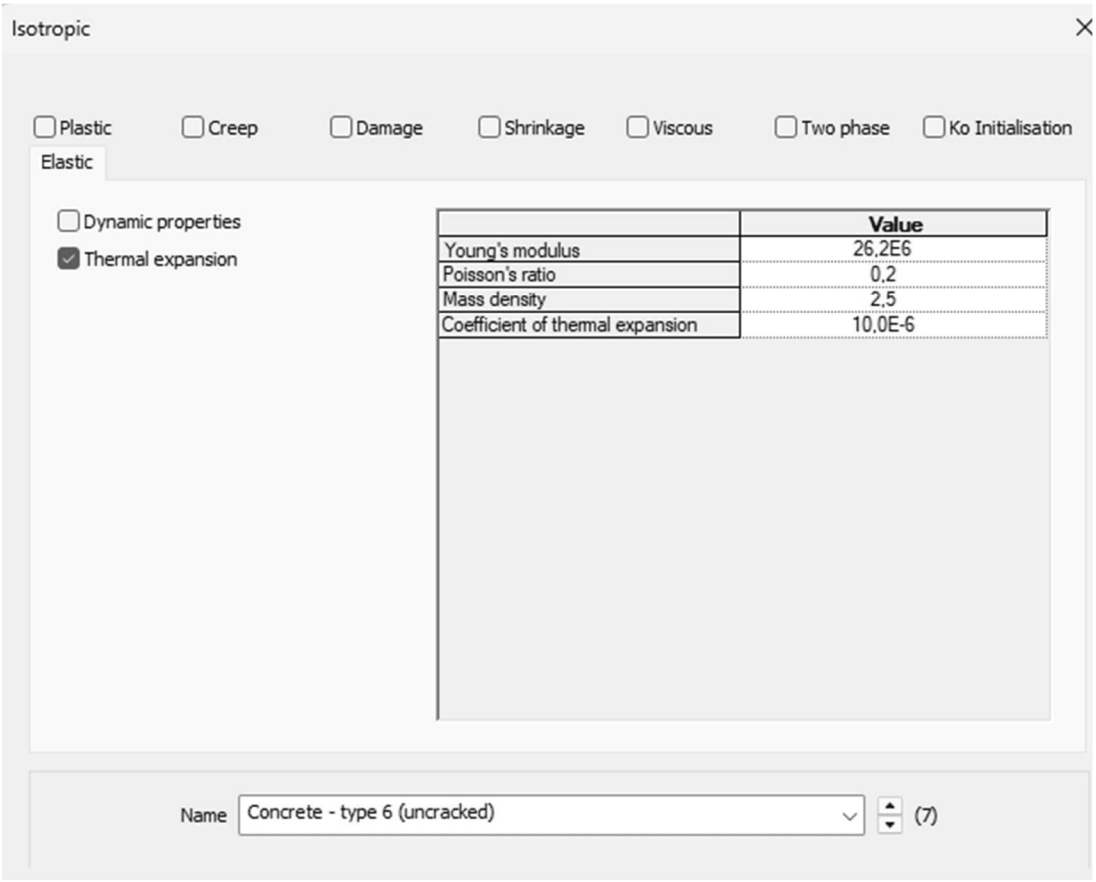
$E = E_{cm} / (1+\psi_L \cdot \phi) = 34 \cdot 10^6$ kPa / (1+ 0) = $34.0 \cdot 10^6$ kPa



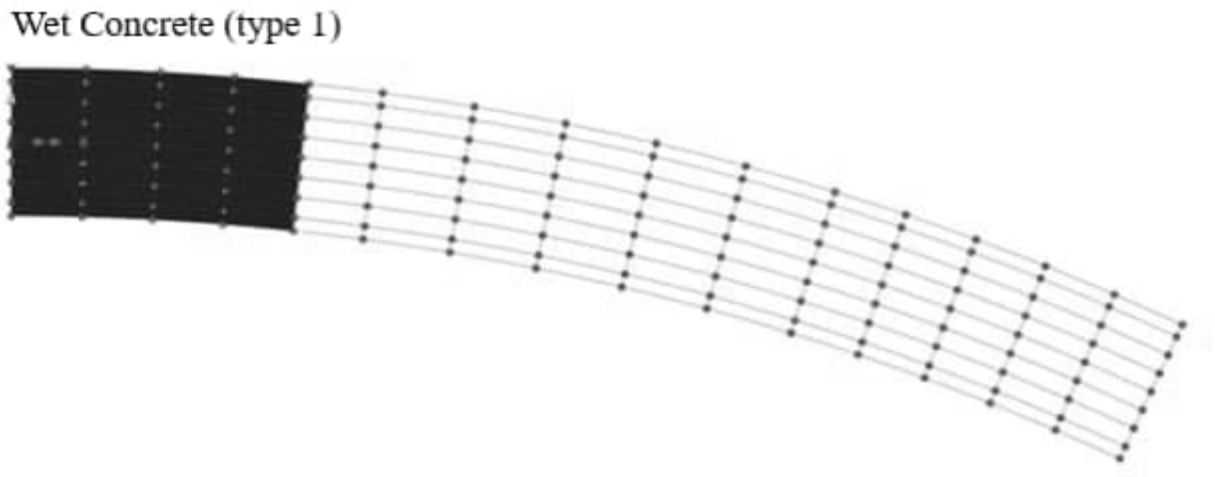
2.7.2.4 Material : Uncracked concrete - temperature

The isotropic concrete material properties associated to concrete type 6.

$E = E_{cm} / (1+\psi_L \cdot \phi) = 34 \cdot 10^6$ kPa / (1+ 1.0·0.3) = $26.2 \cdot 10^6$ kPa

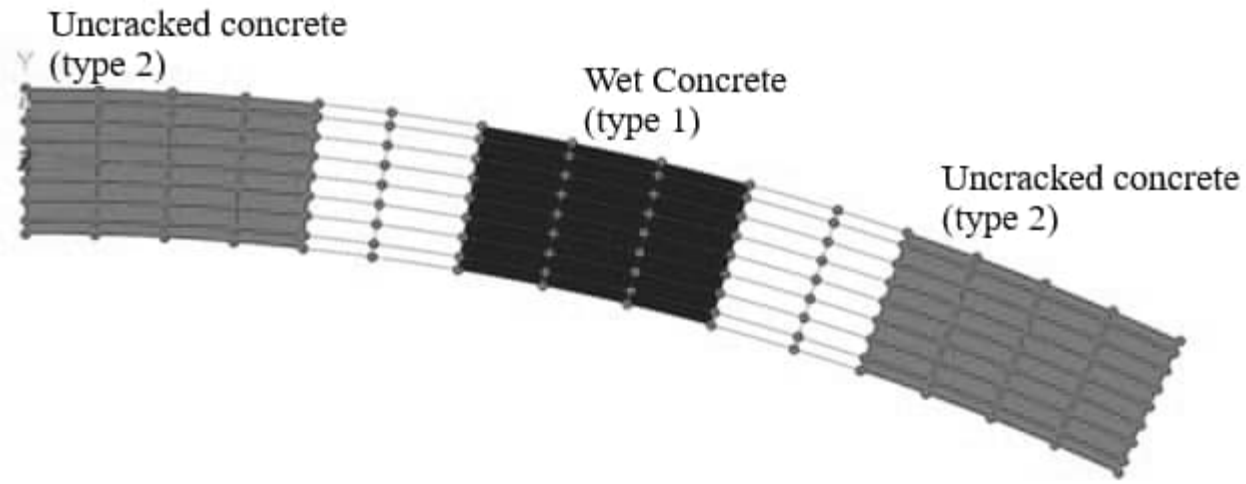


2.7.2.5 *Analysis 1 (Stage I)*

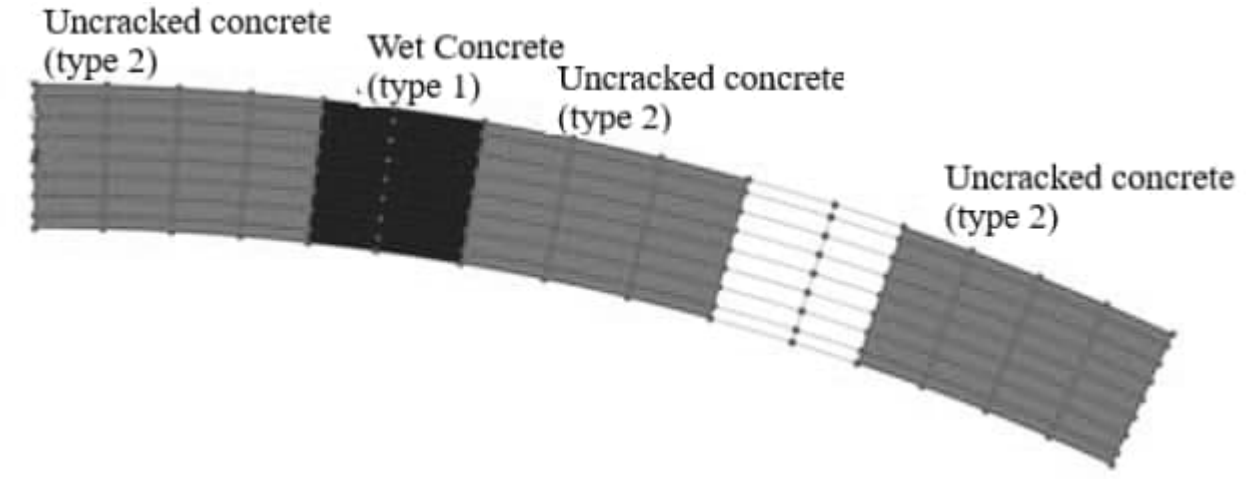


2.7.2.6 *Analysis 2 (Stage II)*

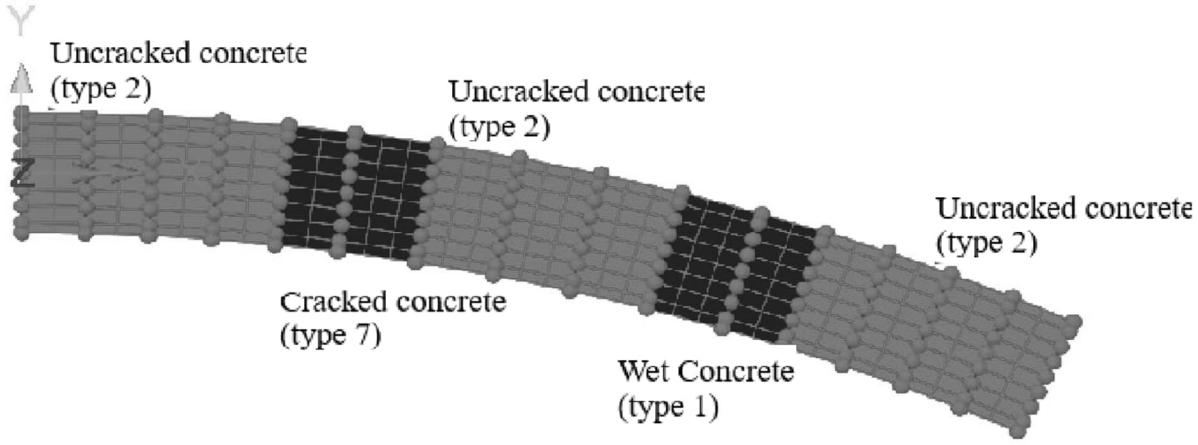
2.7.2.7 *Analysis 3 (Stage III)*



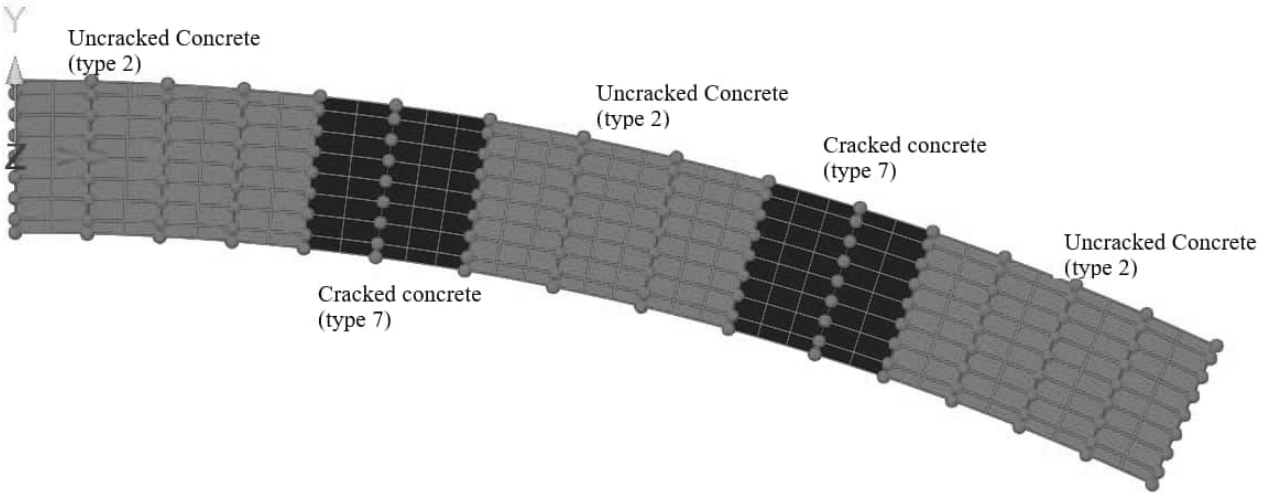
2.7.2.8 *Analysis 4 (Stage IV)*



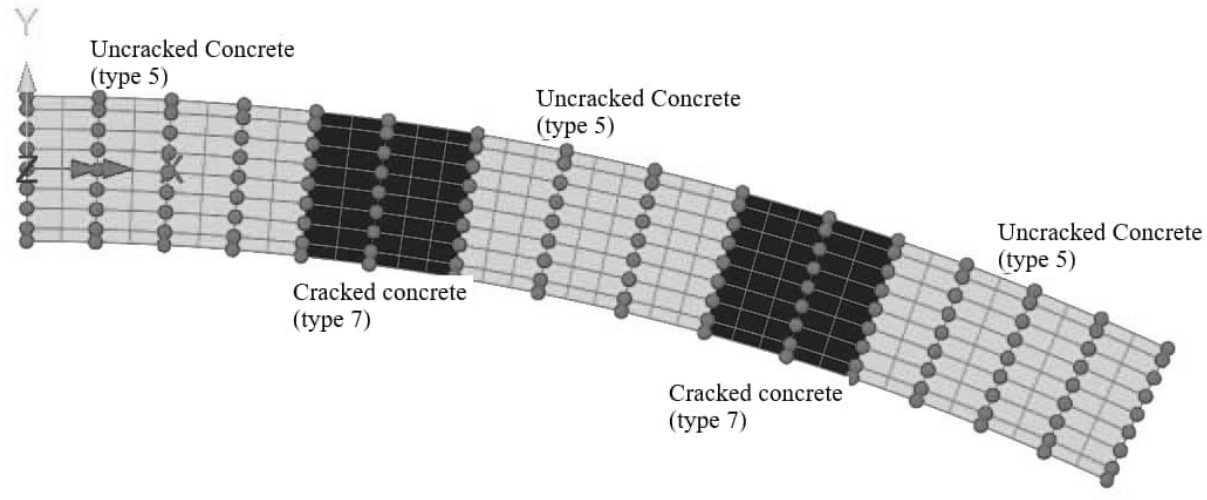
2.7.2.9 *Analysis 5 (Stage V)*



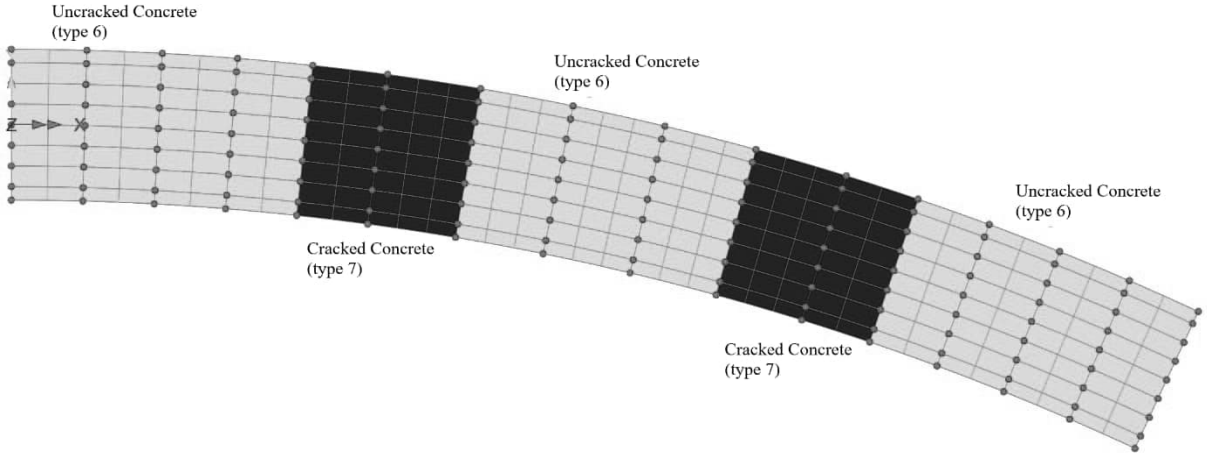
2.7.2.10 *Analysis 6 (O:PERM)*



2.7.2.11 *Analysis 7 (O:VAR)*

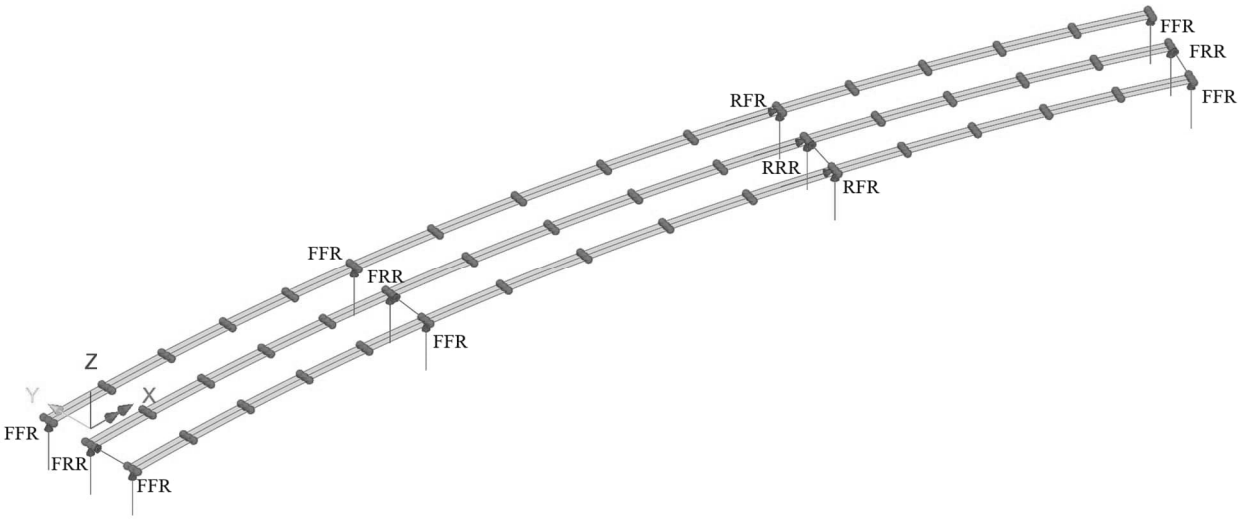


2.7.2.11 *Analysis 8 (O:TEMP)*



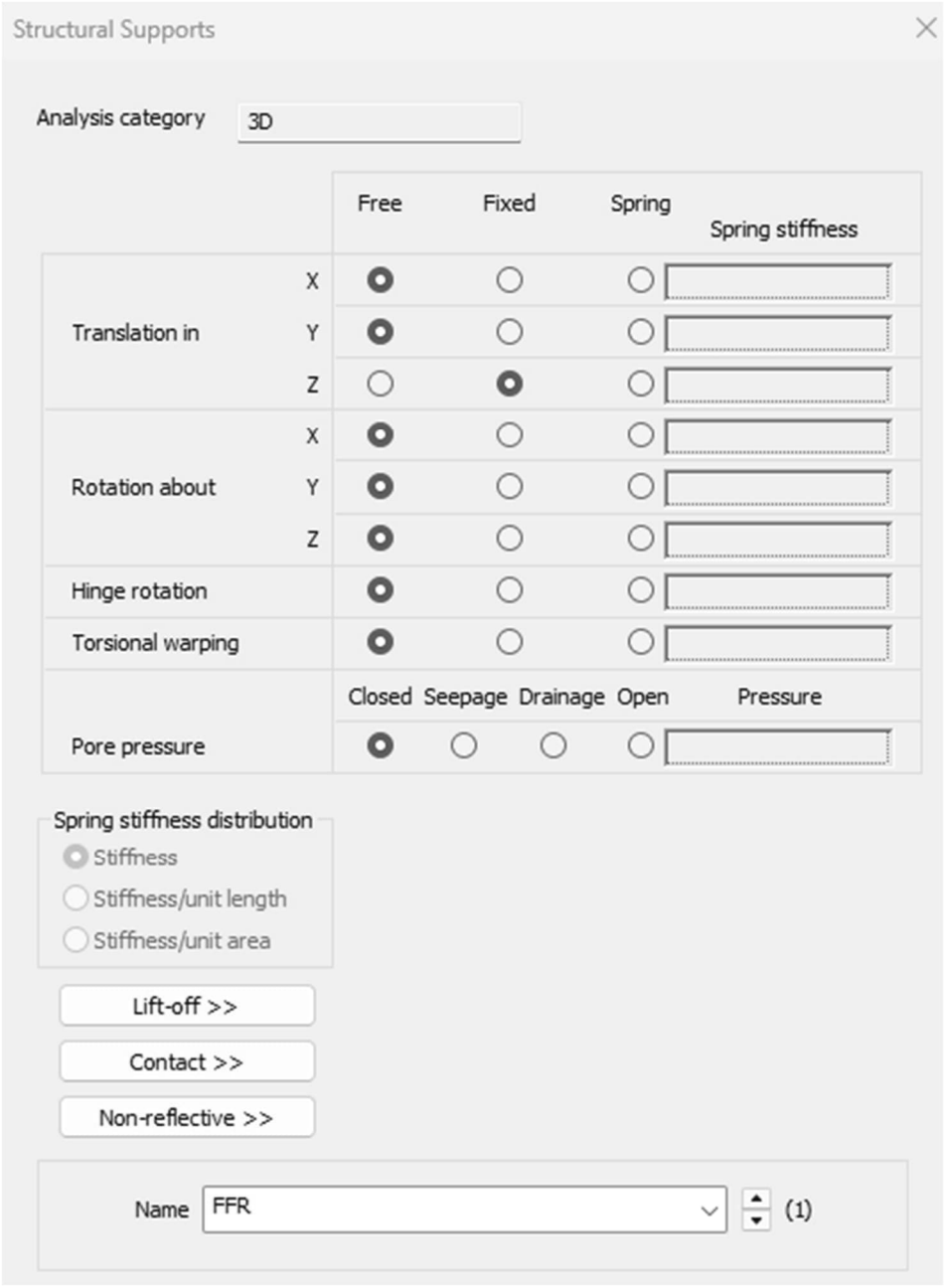
2.8 BOUNDARY CONDITIONS

At every support 4 bearings are defined as seen below. Support 3 is fixed in longitudinal direction.

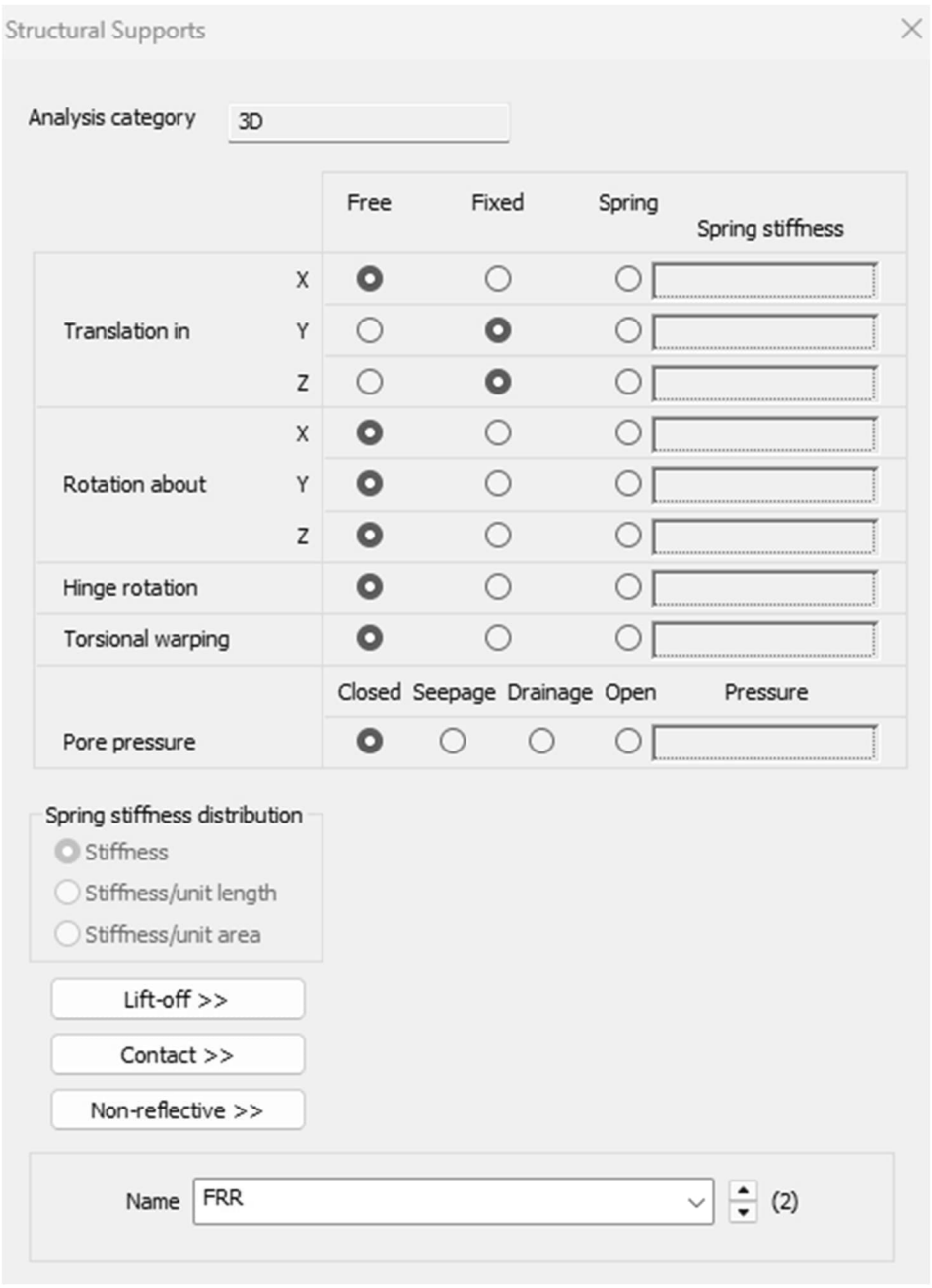


Overview 3D

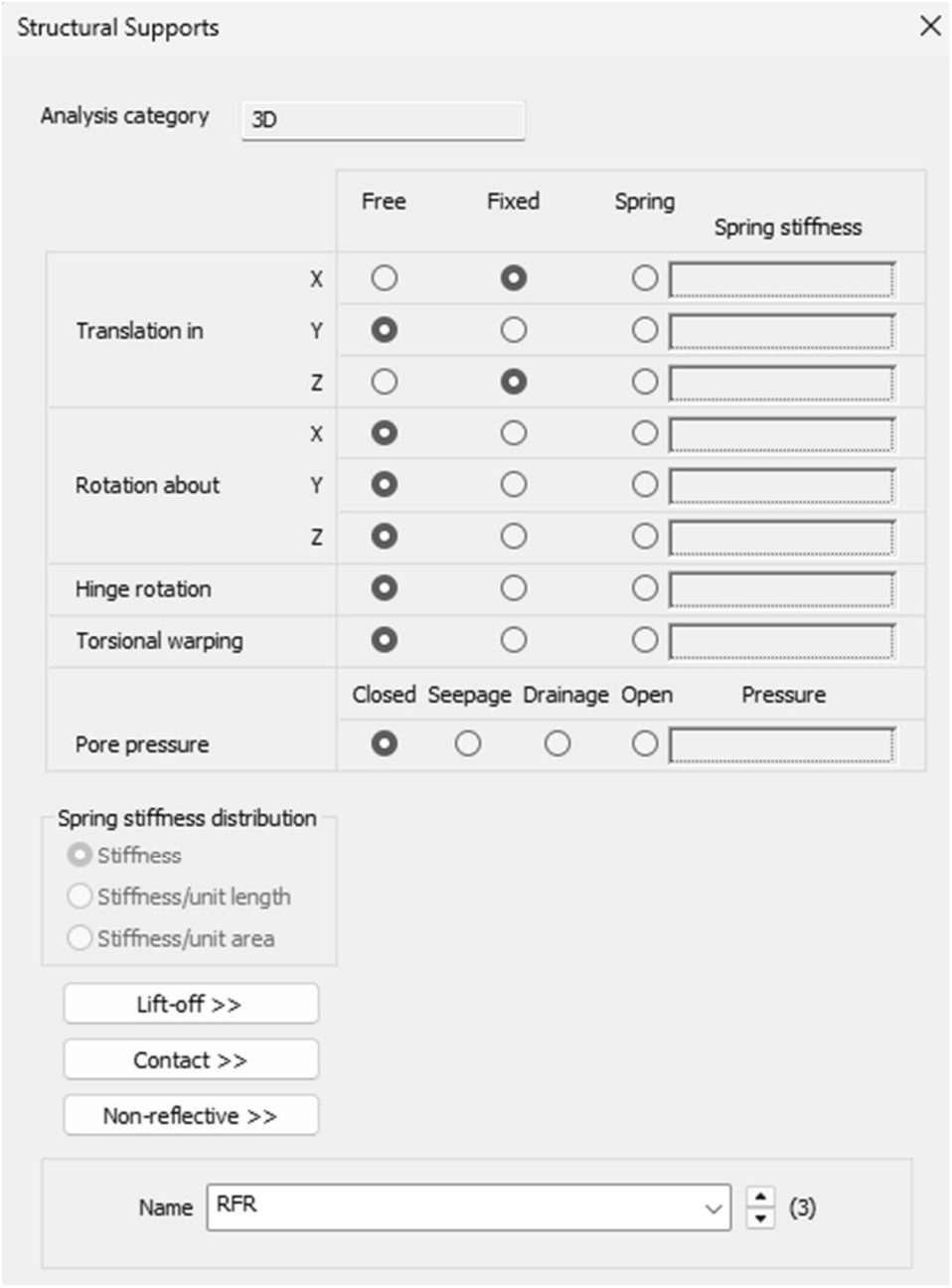
Bearings FFR :



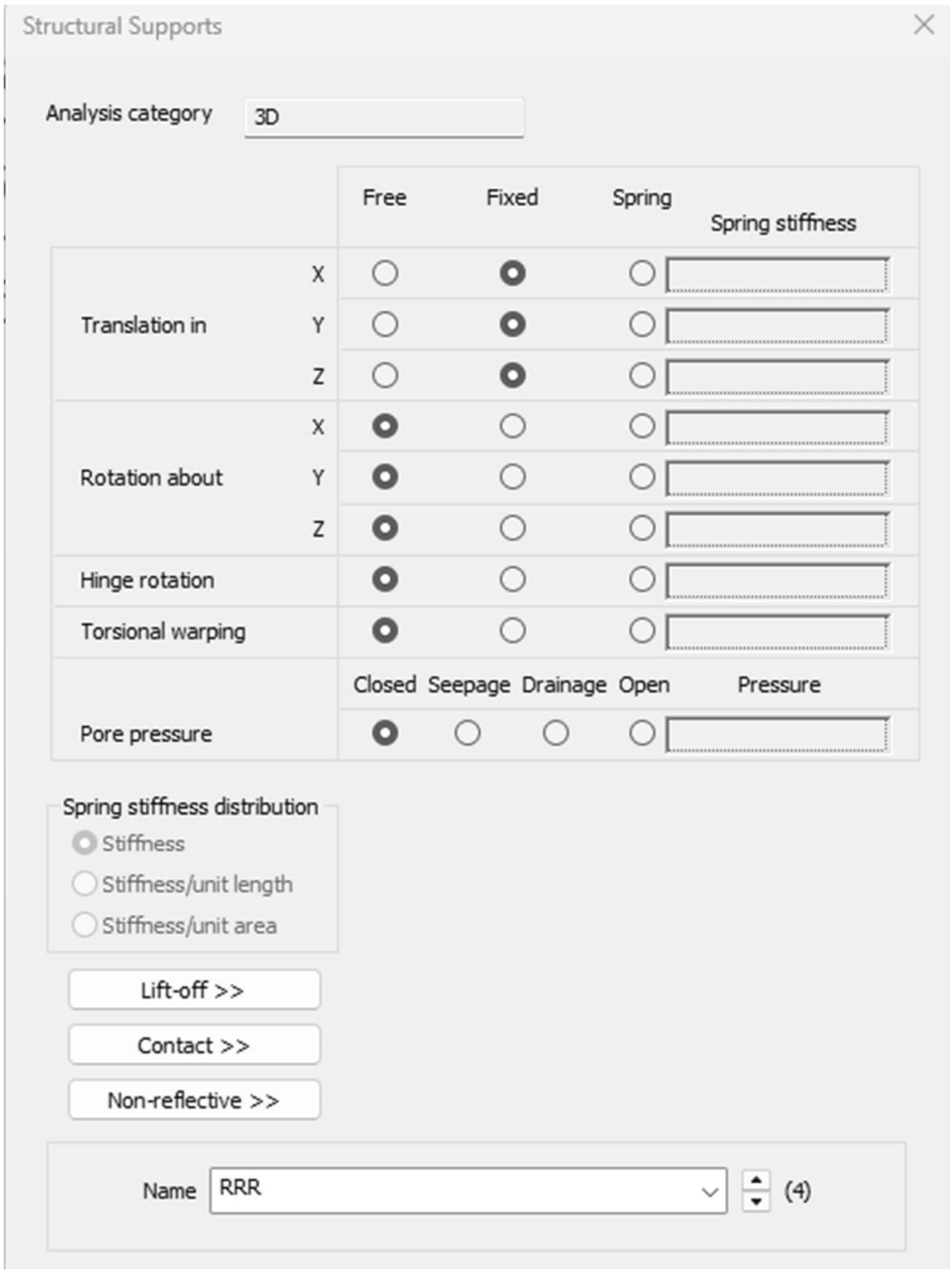
Bearings FRR :



Bearings RFR :



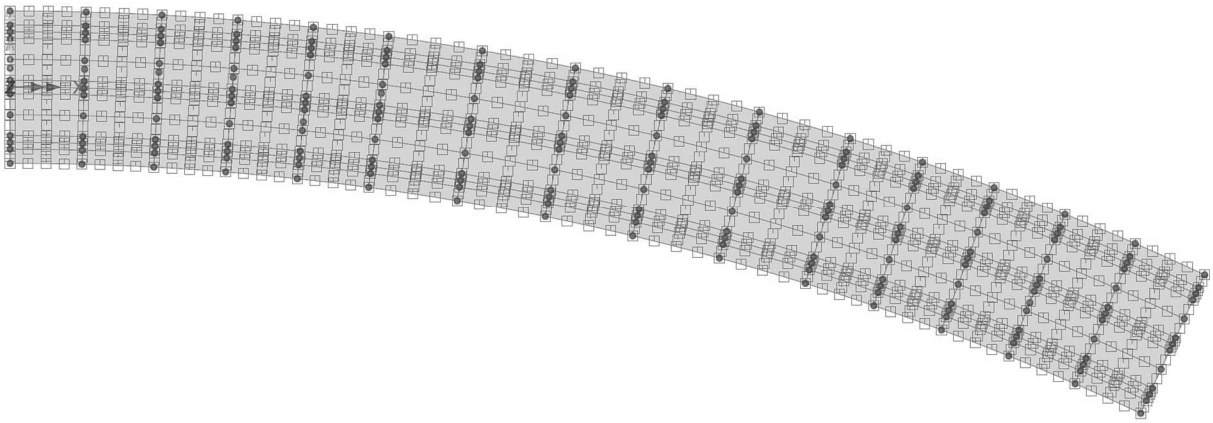
Bearings RRR :



2.9 SEARCH AREA

Discrete load can be applied to structure as geometrical load areas. In static model load areas are termed *Search Area*.

Deck:

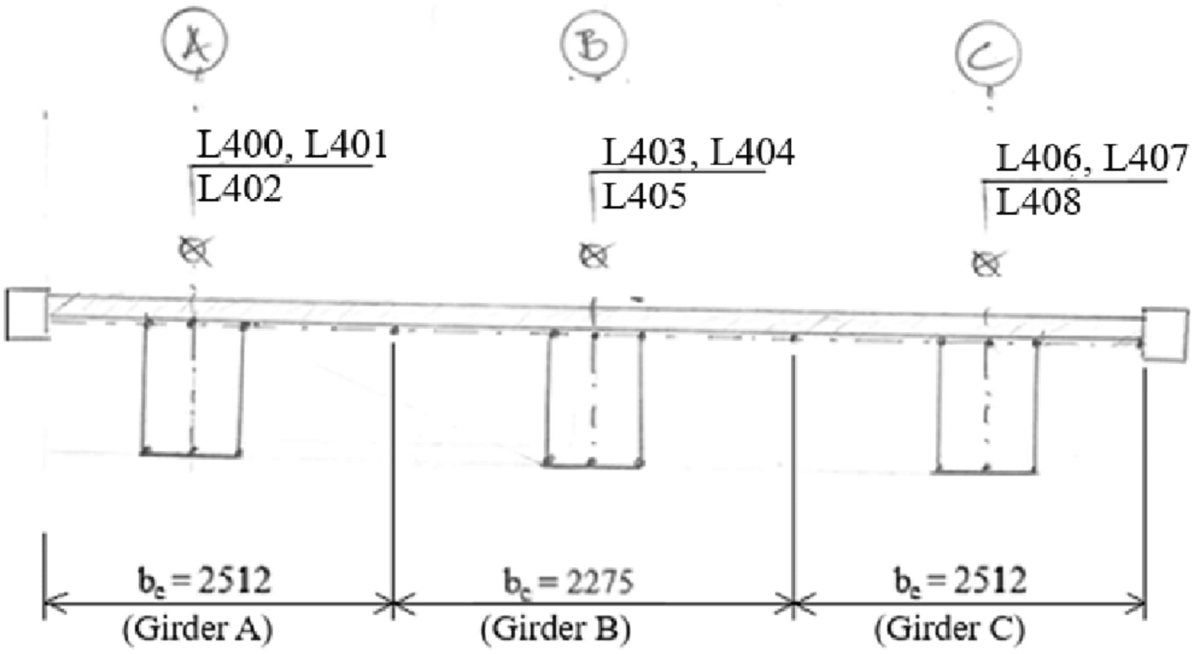


2.10 SLICE RESULTANTS BEAMS/SHELLS

Equivalent section forces will be determined at 4 sub-points for each main beam. This is done by studying load effects in the Nodal surface and Nodal line for the respective girder.

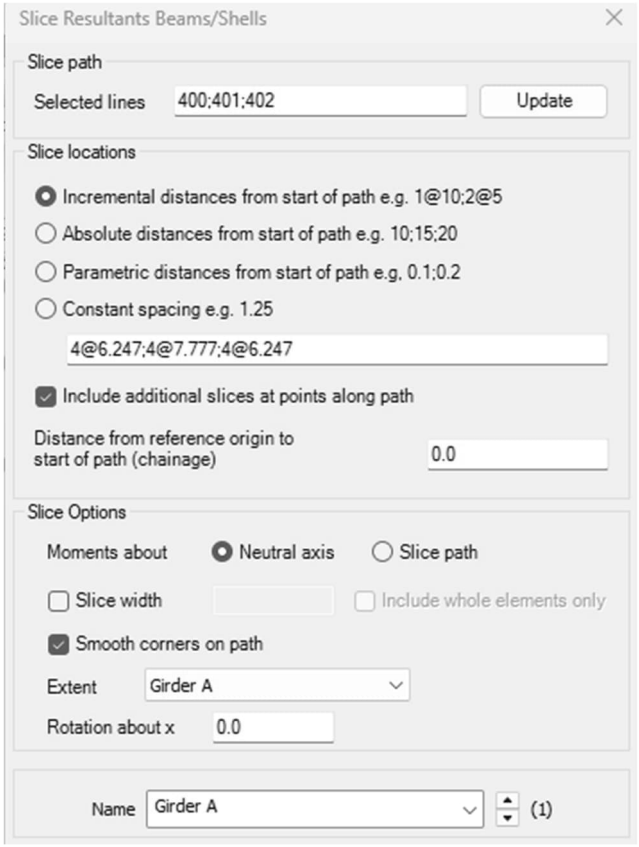
Static model has a script called "Slice Resultant Beams/Shells" to handle this, see the presentation below.

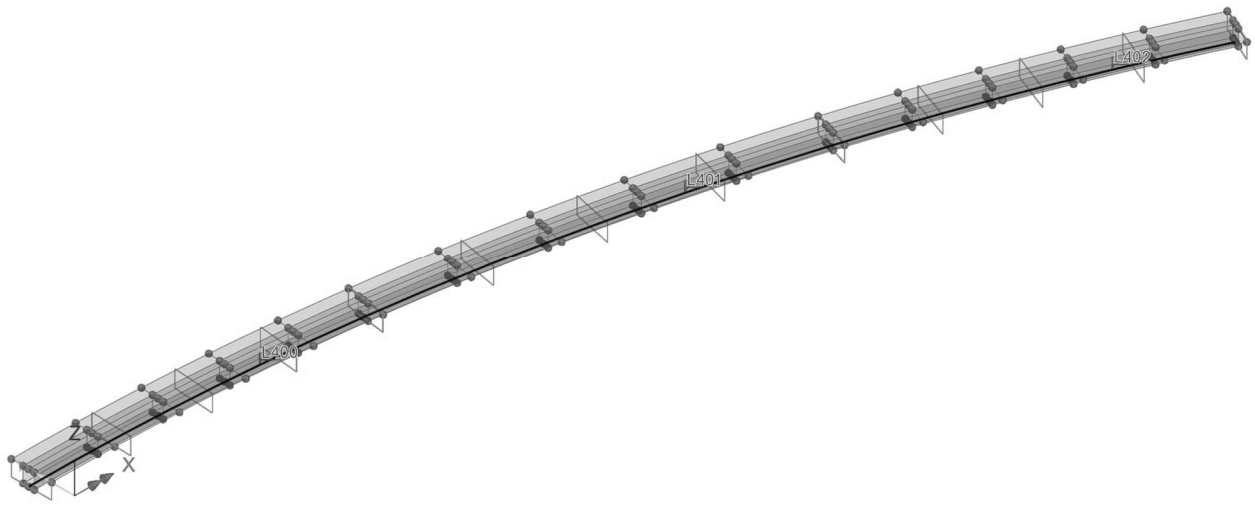
Grider	Path line	Width (b_c)	Extent
A	L400, L401, L402	2.512	Group "Girder A"
B	L403, L404, L405	2.275	Group "Girder B"
C	L406, L407, L408	2.512	Group "Girder C"
-	-	m	-



2.10.1 Slice beam: Girder A

Span 1: 24.989 m = 4 x 6.247 m
Span 2: 31.108 m = 4 x 7.777 m
Span 3: 24.989 m = 4 x 6.247 m

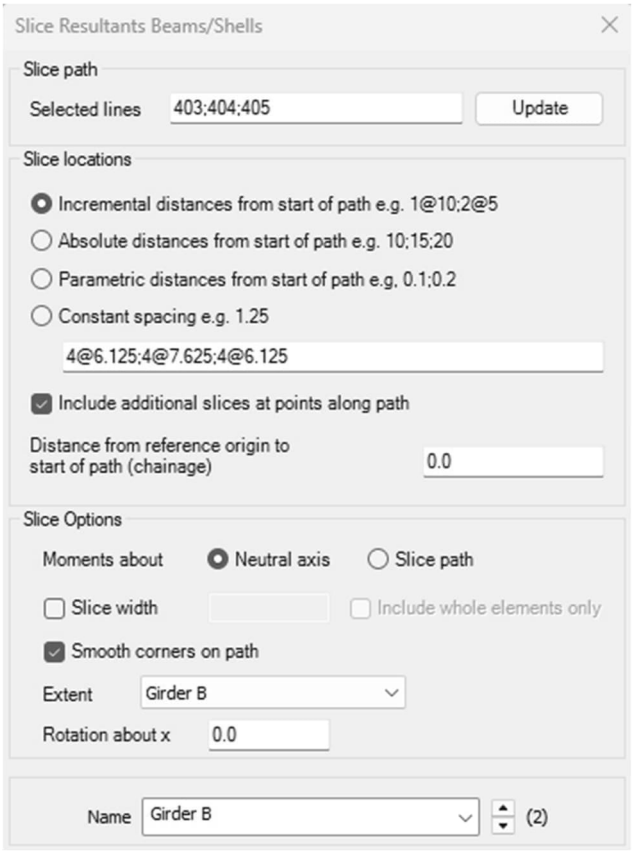


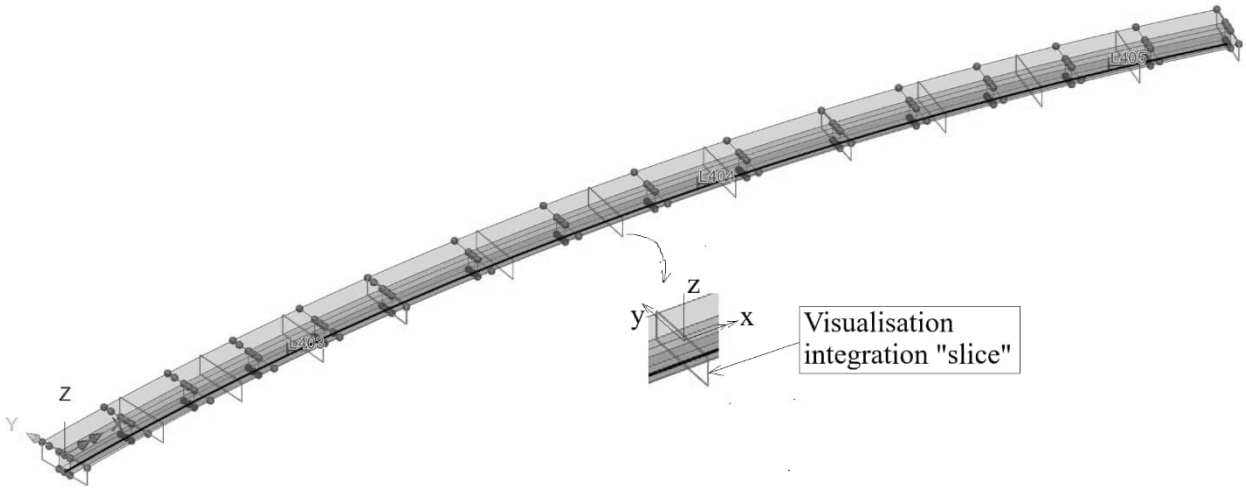


OVERVIEW

2.10.2 Slice beam: Girder B

Span 1: 24.500 m = 4 x 6.125 m
Span 2: 30.500 m = 4 x 7.625 m
Span 3: 24.500 m = 4 x 6.125 m

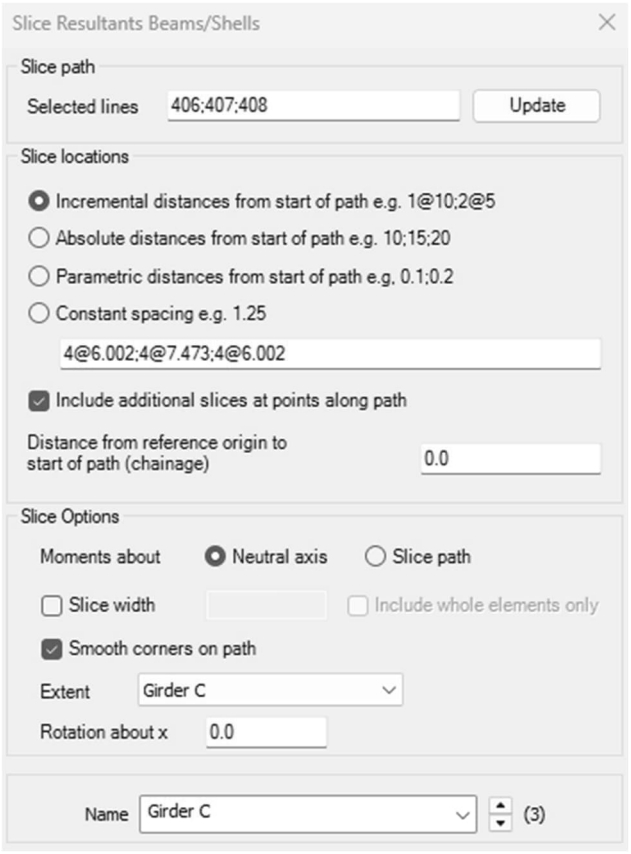


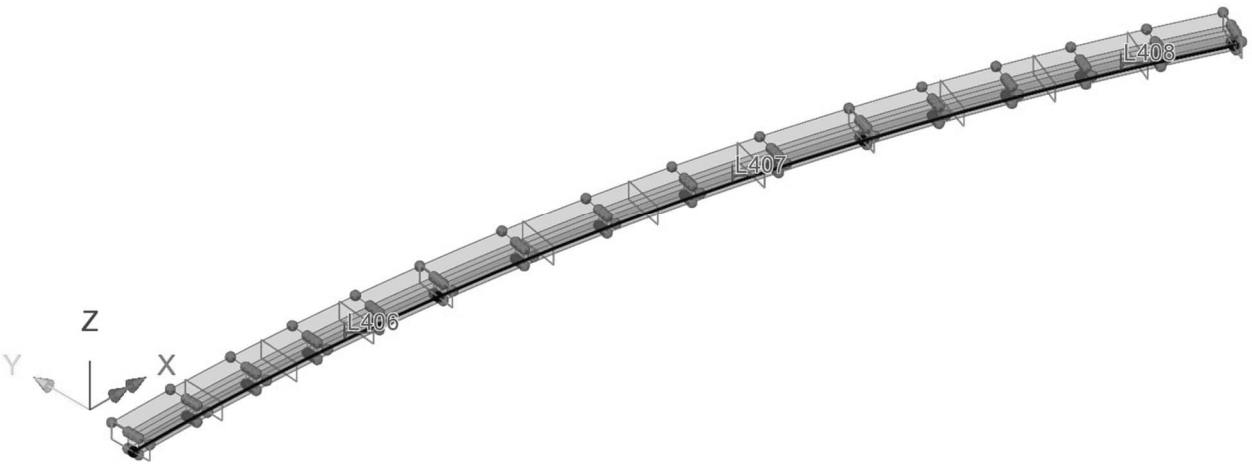


OVERVIEW

2.10.3 Slice beam: Girder C

Span 1: 24.011 m = 4 x 6.002 m
Span 2: 29.892 m = 4 x 7.473 m
Span 3: 24.011 m = 4 x 6.002 m





OVERVIEW

2.11 FLANGE WIDTH

Flange width is determined by SS-EN 1992-1-1 section 5.3.2.1.

No reduction cross section is considered ($\therefore b_{ef} \equiv b$).

3. LOADS

This worked example is only intended to illustrate software, thus the number of loads are simplified, thus only dead weight, surfacing, creep, shrinkage and traffic load is considered. (The effect of formwork is not considered in this example.)

3.1 DEAD WEIGHT

The dead weight is either steel structure or concrete deck. Densities below are applied.

$\gamma_c = 25 \cdot \frac{kN}{m^3}$: concrete

$\gamma_s = 77 \cdot \frac{kN}{m^3}$: steel

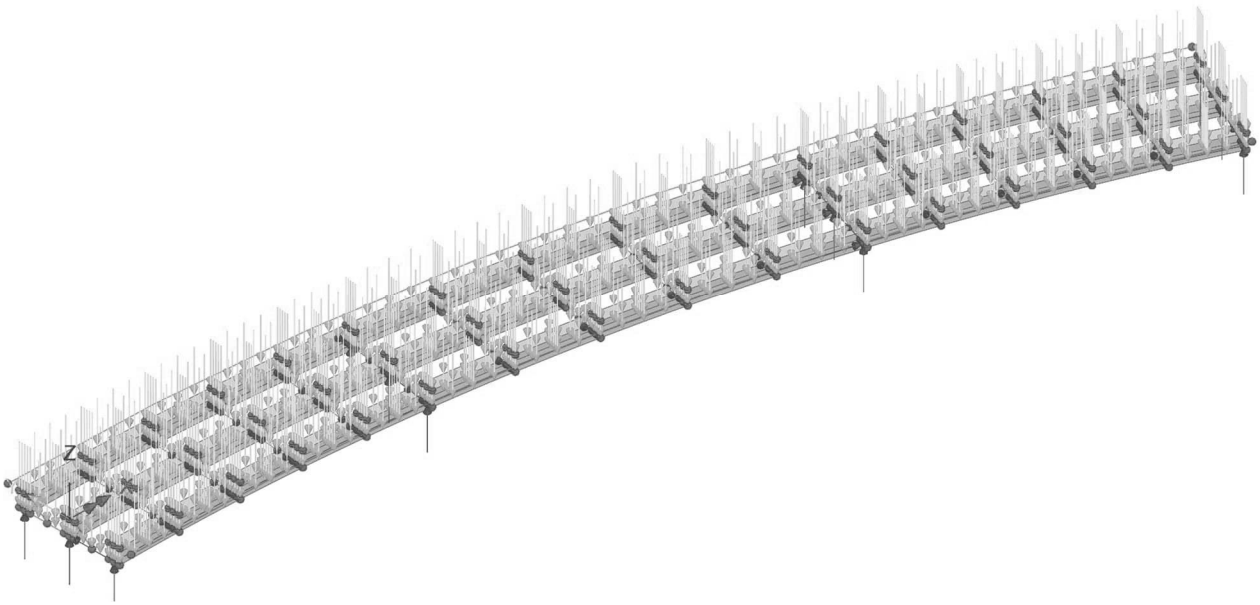
3.1.1 Steel structure (DEAD 1:S)

Load case : DEAD 1:1

Analysis: Analysis 1 (STAGE I)

Structural loading : Body force

Linear acceleration in Z (a_z) : -10 $\frac{m}{s^2}$



Overview 3D

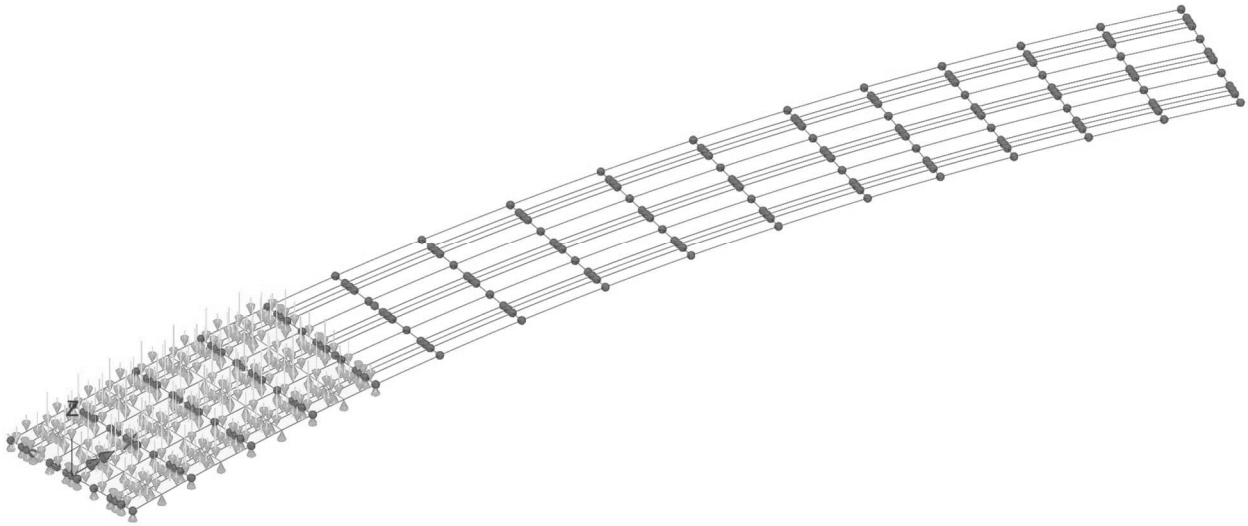
3.1.2 Concrete stage I (DEAD 1:C)

Load case : DEAD 1:C

Analysis: Analysis 1 (STAGE I)

Structural loading : Body force

Linear acceleration in Z (a_z) : -10 $\frac{m}{s^2}$



Overview 3D

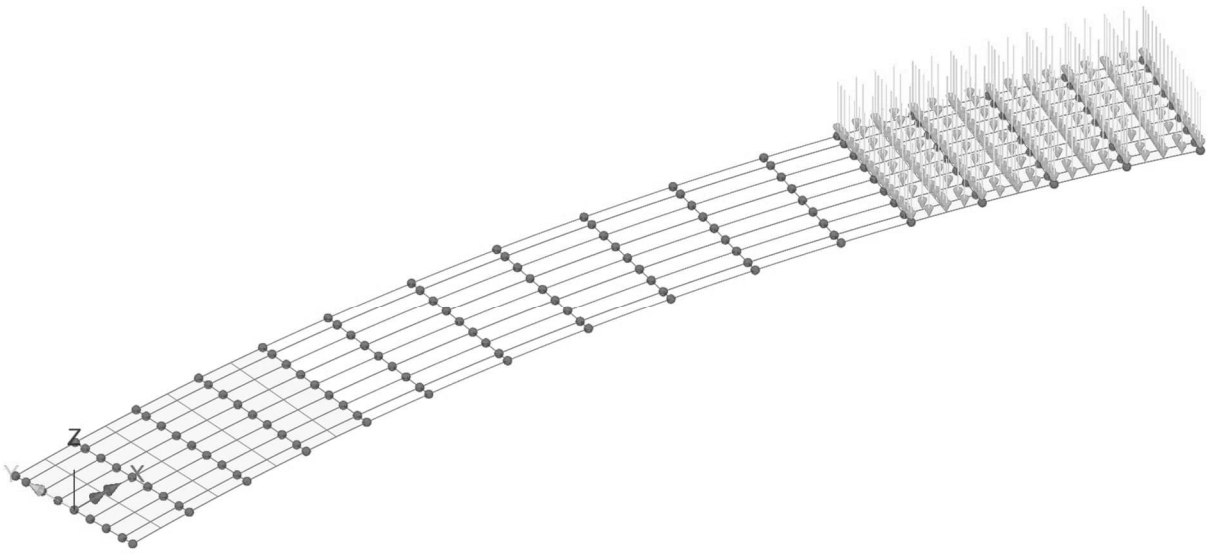
3.1.3 Concrete stage II (DEAD 2:C)

Load case : DEAD 2:C

Analysis: Analysis 2 (STAGE II)

Structural loading: Body force

Linear acceleration in Z (a_z) : -10 $\frac{m}{s^2}$



Overview 3D

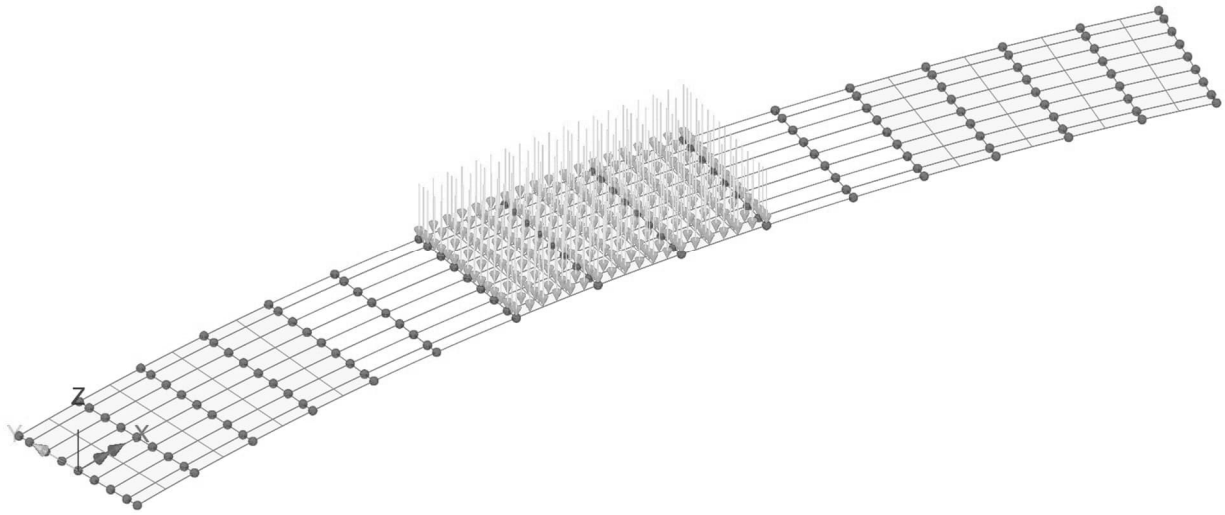
3.1.4 Concrete stage III (DEAD 3:C)

Load case : DEAD 3:C

Analysis: Analysis 3 (STAGE III)

Structural loading: Body force

Linear acceleration in Z (a_z) : -10 $\frac{m}{s^2}$



Overview 3D

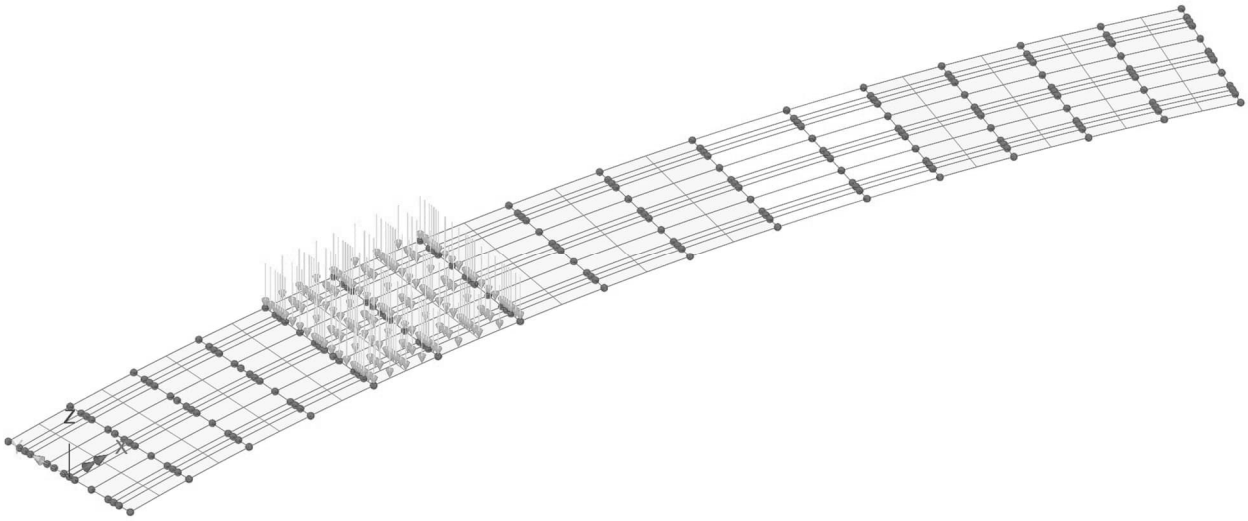
3.1.5 Concrete stage IV (DEAD 4:C)

Load case : DEAD 4:C

Analysis: Analysis 4 (STAGE IV)

Structural loading: Body force

Linear acceleration in Z (a_z) : -10 $\frac{m}{s^2}$



Overview 3D

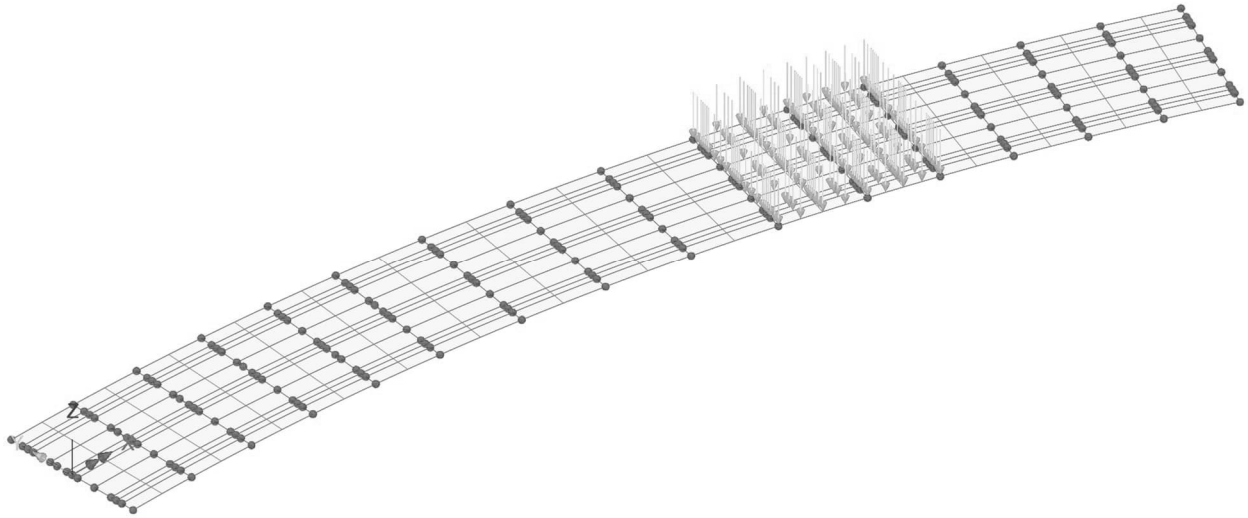
3.1.6 Concrete stage V (DEAD 5:C)

Load case : DEAD 5:C

Analysis: Analysis 5 (STAGE V)

Structural loading: Body force

Linear acceleration in Z (a_z) : -10 $\frac{m}{s^2}$



Overview 3D

3.1.7 Edge beams including railing (DEAD 6)

Along each edge bream a line load is introduced. The load includes weight of edge beam and railing. The edge beam is assumed to be cast after completion stage I-V, thus analysis 6.

$p_{railing} = 0.7 \frac{kN}{m}$: weight railing

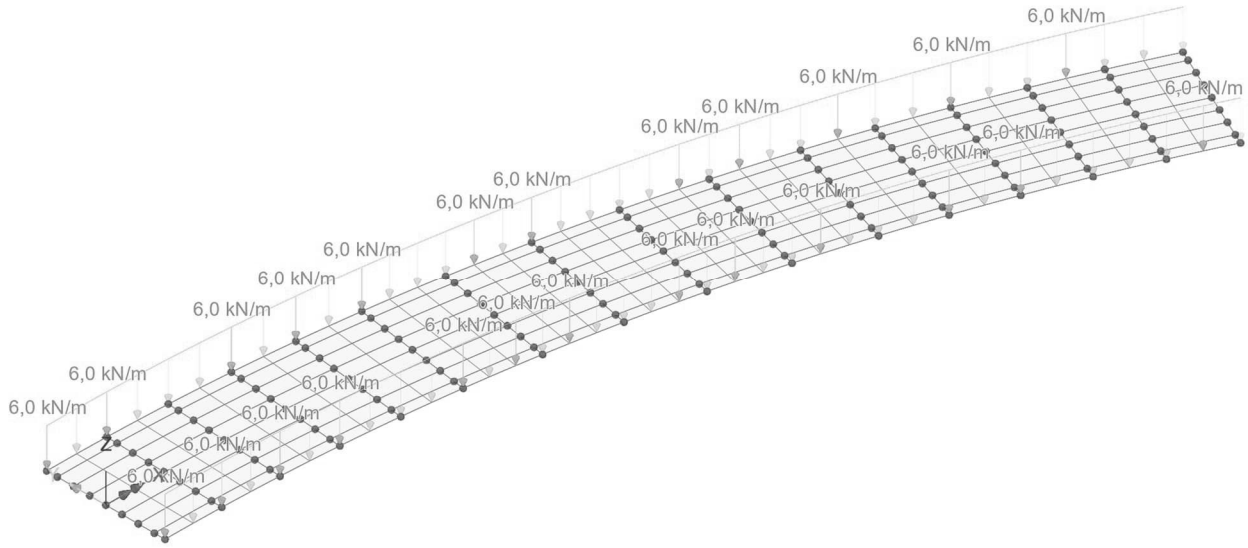
$$\rightarrow p_z = p_{railing} + p_{EB} = 0.7 \frac{kN}{m} + 0.40m \cdot 0.45m \cdot 25 \frac{kN}{m^3} = -6 \frac{kN}{m}$$

Load case : DEAD 6

Analysis: Analysis 6 (O:PERM)

Structural loading : Global distributed

Line load per unit length in Z direction: -6 $\frac{kN}{m}$



Overview 3D

3.1.8 Load combination deadweight (DEAD)

Basic load combination DEAD:

Loadcase	Factor
DEAD 1:S	1.00
DEAD 1:C	1.00
DEAD 2:C	1.00
DEAD 3:C	1.00
DEAD 4:C	1.00
DEAD 5:C	1.00
DEAD 6	1.00

3.2 SURFACING

Thickness pavement with a thickness of 95 mm built as follows:

- Wearing course ABS 11 40 mm
- Combined protective and binder course PGJA 50 mm
- Waterproofing layer 5 mm

$\gamma = 23\frac{kN}{m^3}$: course

$q_{mat} = 0.11kPa$: waterproofing

$$\rightarrow q_{surf} = \gamma \cdot t + q_{matta} = 23\frac{kN}{m^3} \cdot 0.09m + 0.11kPa = 2.2kPa$$

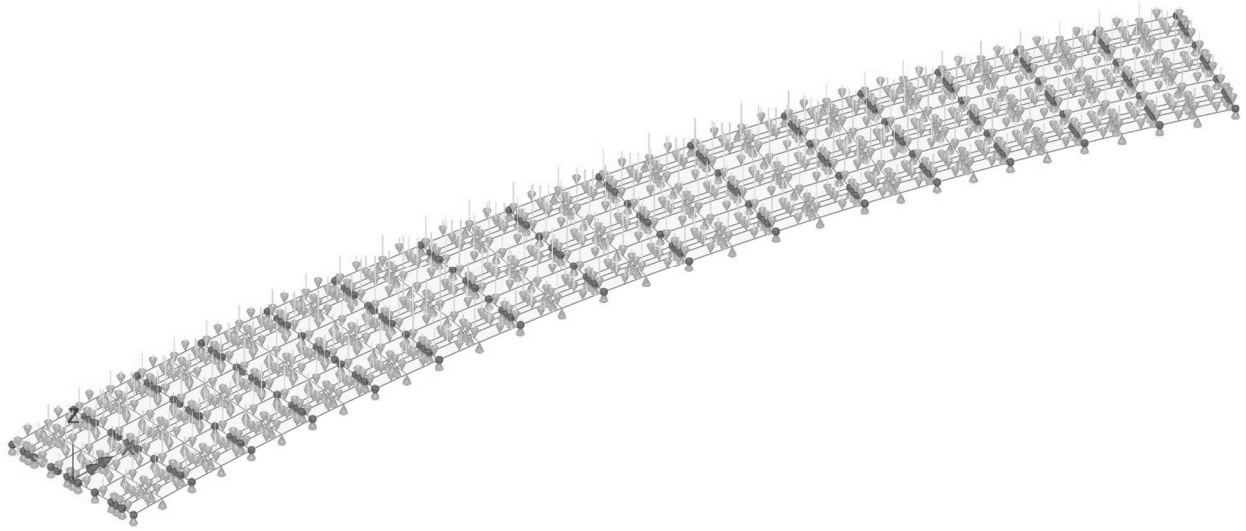
Load : SURF

Analysis: Analysis 6 (O:PERM)

Structural loading : Global distributed

Load per unit area in Z direction (q_z) : -2.2 kPa

Loadcase : SURF



Overview 3D

3.3 CREEP

Total creep is determined according to SS-EN 1992-1-1 §3.1.4 and TRVINFRA-00227 section 7.1.6.4 for RH 80% at time t_1.

Time for first loading (= time when formwork was removed) is termed t_0.

$t_0 = 5\ days$

$t_1 = 120\ years$

On safe side $\phi(t_1, t_0) = 2.0$ is applied.

$$\varepsilon_{cc}(t_1, t_0) = \varphi(t_1, t_0) \cdot \frac{\sigma_c}{E_c}$$

To study the effect concrete stiffness according to SS-EN 1992-1-1 5.8.7 creep values seen below are used.

Load cases	φ
Permanent	2.0
Variable excluding temperature	0
Temperature	0.3*

* = According to Swedish work practice

$$E^{system} = \frac{E_{cm}}{1+\varphi}$$

Instead of adjusting E-modulus the load coefficients are adjusted.

$$f_{shrinkage} = \frac{1}{1 + \varphi_{ef}} = \frac{1}{1 + 2.0} = 0.33$$

$$f_{temp} = \frac{1}{1 + \varphi_{ef}} = \frac{1}{1 + 0.3} = 0.77$$

Note:
According to TRVINFRA-00227 section 7.2.1.1.2.4, no reduction is permitted for uneven temperature across the cross-section. This is because this temperature variation is considered to have a very short duration (only over the day).

3.4 SHRINKAGE

Load applied to Analysis : *Analysis 6*

Total shrinkage according to SS-EN 1992-1-1 §3.1.4 and TRVINFRA-00227 section 7.1.6.4 for RH 80% at time t_1.

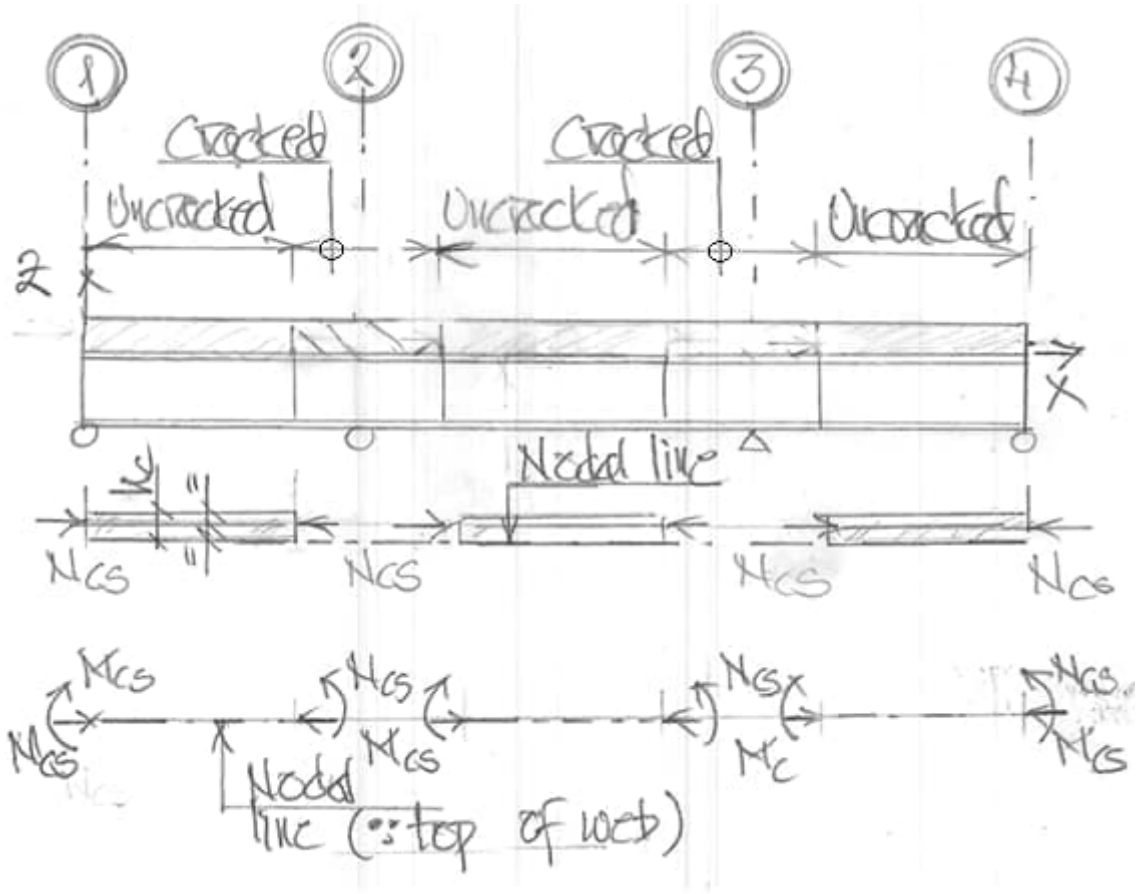
Determination of load effect from shrinkage should consider the reduced concrete stiffness from creep.

$t_s = 0\ days$

$t_1 = 120\ years$

On safe side $\varepsilon_{cs}\ (t_1) = 0.025\%$ is applied.

Shrinkage corresponds to movement due to an imaginary temperature load ∴ T = -25°C but a normal force (N_{cs}) is instead inserted at centre of deck at location of uncracked concrete. These force arises due to prevented movement by steel girder.



Uncracked concrete (girder A & C):

$$0.5N_{cs.1} = \frac{\varepsilon_{cs}}{2} \cdot \frac{E_{cm}}{1 + \psi_L \cdot \phi_{t1}} \cdot h_c \cdot b_c = \frac{0.25 \cdot 10^{-3}}{2} \cdot \frac{34 \cdot 10^6 kPa}{1 + 0.55 \cdot 2.0} \cdot 0.20m \cdot 2.512m = 1017kN$$

$$0.5M_{cs.1} = 0.5N_{cs.1} \cdot (t_c + 0.5h_c) = 1017kN \cdot (0m + 0.5 \cdot 0.20m) = 102kNm$$

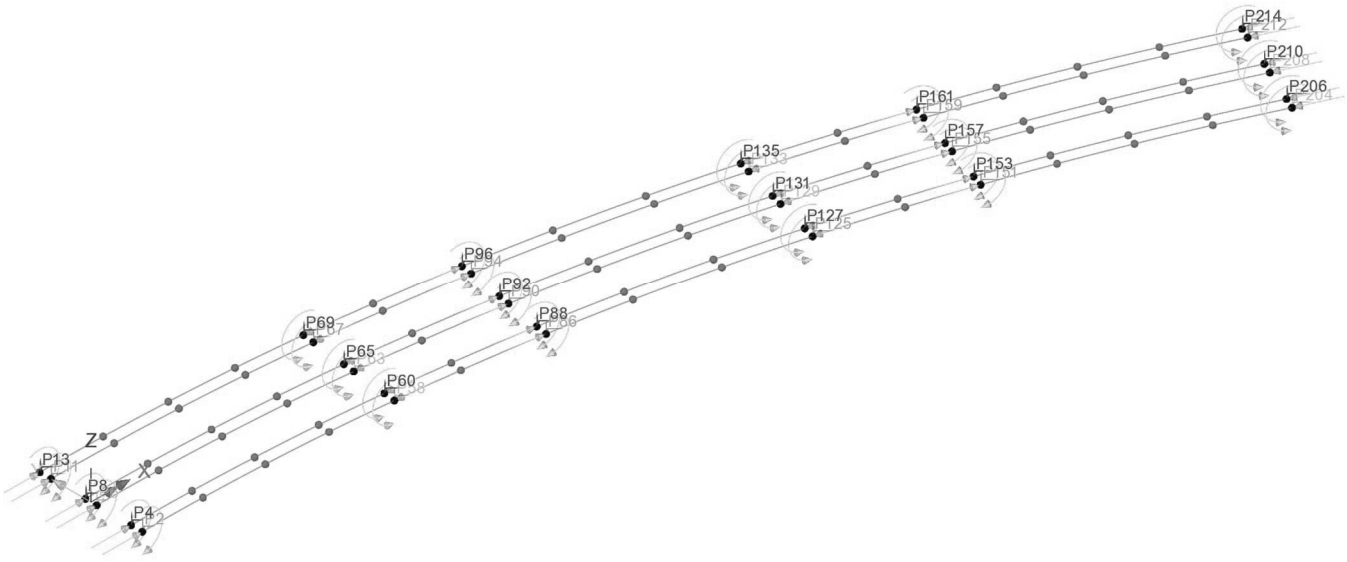
Uncracked concrete (girder B):

$$0.5N_{cs.2} = \frac{\varepsilon_{cs}}{2} \cdot \frac{E_{cm}}{1 + \psi_L \cdot \phi_{t1}} \cdot h_c \cdot b_c = \frac{0.25 \cdot 10^{-3}}{2} \cdot \frac{34 \cdot 10^6 kPa}{1 + 0.55 \cdot 2.0} \cdot 0.20m \cdot 2.275m = 921kN$$

$$0.5M_{cs.2} = 0.5N_{cs.2} \cdot (t_c + 0.5h_c) = 0.5 \cdot 1842kN \cdot (0\ m + 0.5 \cdot 0.20m) = 92kNm$$

Cracked concrete :

$$0.5N_{cs} = 0kN$$



3D Overview

Load : Ncs:1+

Analysis : Analysis 6 (O:PERM)

Structural loading : Internal beam point

Point load in X direction (P_x) : 1017 kN

Point moment around Y direction (M_y) : 102 kNm

Distance along local element (parametric) : 0

Load direction : Element local

Load position : About nodal line

Points: P2, P4, P11, P13, P86, P88, P94, P96, P151, P153, P159 & P161

Load case : SHRINKAGE

Load : Ncs:1-

Analysis : Analysis 6 (O:PERM)

Structural loading : Internal beam point

Point load in X direction (P_x) : -1017 kN

Point moment around Y direction (M_y) : -102 kNm

Distance along local element (parametric) : 1.0

Load direction : Element local

Load position : About nodal line

Points: P58, P60, P67, P69, P125, P127, P133, P135, P204, P206, P212 & P214

Load case : SHRINKAGE

Load : Ncs:2+

Analysis : Analysis 6 (O:PERM)

Structural loading : Internal beam point

Point load in X direction (P_x) : 921 kN

Point moment around Y direction (M_y) : 92 kNm

Distance along local element (parametric) : 0

Load direction : Element local

Load position : About nodal line

Points: P6, P8, P90, P92, P155 & P157

Load case : SHRINKAGE

Load : Ncs:2-

Analysis : Analysis 6 (O:PERM)

Structural loading : Internal beam point

Point load in X direction (P_x) : -921 kN

Point moment around Y direction (M_y) : -92 kNm

Distance along local element (parametric) : 1.0

Load direction : Element local

Load position : About nodal line

Points: P63, P65, P129, P131, P208 & P210

Load case : SHRINKAGE

3.5 TEMPERATURE

Temperature effect bridges according to TSFS section B.3.2.5 and EN 1991-1-5 chapter 6.

Effect in service state see SS-EN 1992-1-1 §2.3.1.2. If used then apply effect of gradual cracking according to SS-EN 1992-1-1 §5.4(3).

Effect in ultimate state is not required according to SS-EN 1992-1-1 §2.3.1.2. If used apply reduced stiffness according to SS-EN 1992-1-1 §5.4(3).

Casting temperature, T_{mont} = +10° C : EN 1991-1-5A.1(3)

Expansion coefficient, $\alpha = 12 \cdot 10^{-6}$

Concrete slab $\Rightarrow$ typ 2

Location : Skellefteå

T_{max} = +34°C : TSFS chapter 8 sketch 8.1
T_{min} = −42°C : TSFS chapter 8 sketch 8.2

Duration coefficients :

Coefficients according to SS-EN 1990/A1 table A2.3

ψ_0 = 0.60
ψ_1 = 0.60
ψ_2 = 0.50

System superstructure:
Analysis 8 is used (see page A2:6).

3.5.1 Even temperature over entire bridge

Even temperature over entire bridge according to EN 1991-1-5 section 6.1.3.3. This temperature variation is seasonal and mainly gives rise to translation relative centre of movement located at support 3 where bearings are fixed.

Function according to SS-EN 1991-1-5 sketch 6.1 (bridge type 2):

$$T_e(T) = \text{linterp}\left[(-50 \quad 0 \quad 30 \quad 50)^T \cdot °C, (-46 \quad 5 \quad 34 \quad 54)^T \cdot °C, T\right]$$

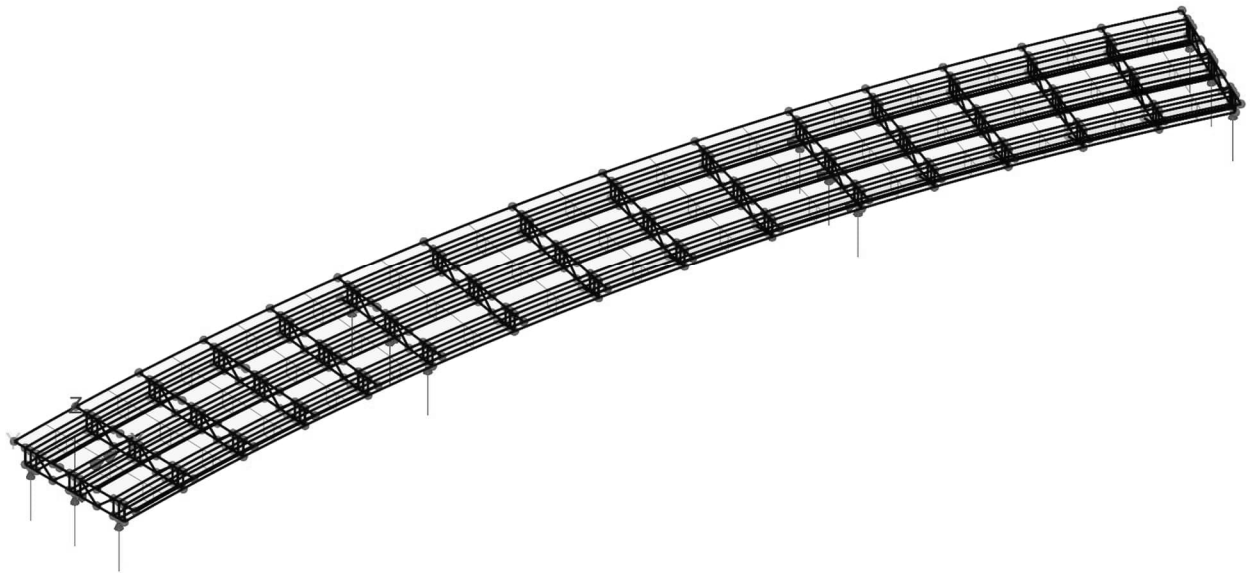
$$T_{e.max} = T_e\left(T_{max}\right) = 38\,°C$$

$$T_{e.min} = T_e\left(T_{min}\right) = -38\,°C$$

$$T^+ = T_{e.max} - T_0 = +38℃ - 10℃ = +28℃$$

$$T^- = T_{e.min} - T_0 = -38℃ - 10℃ = -48℃$$

Since temperature only gives rise to movement it is not added to this design report.



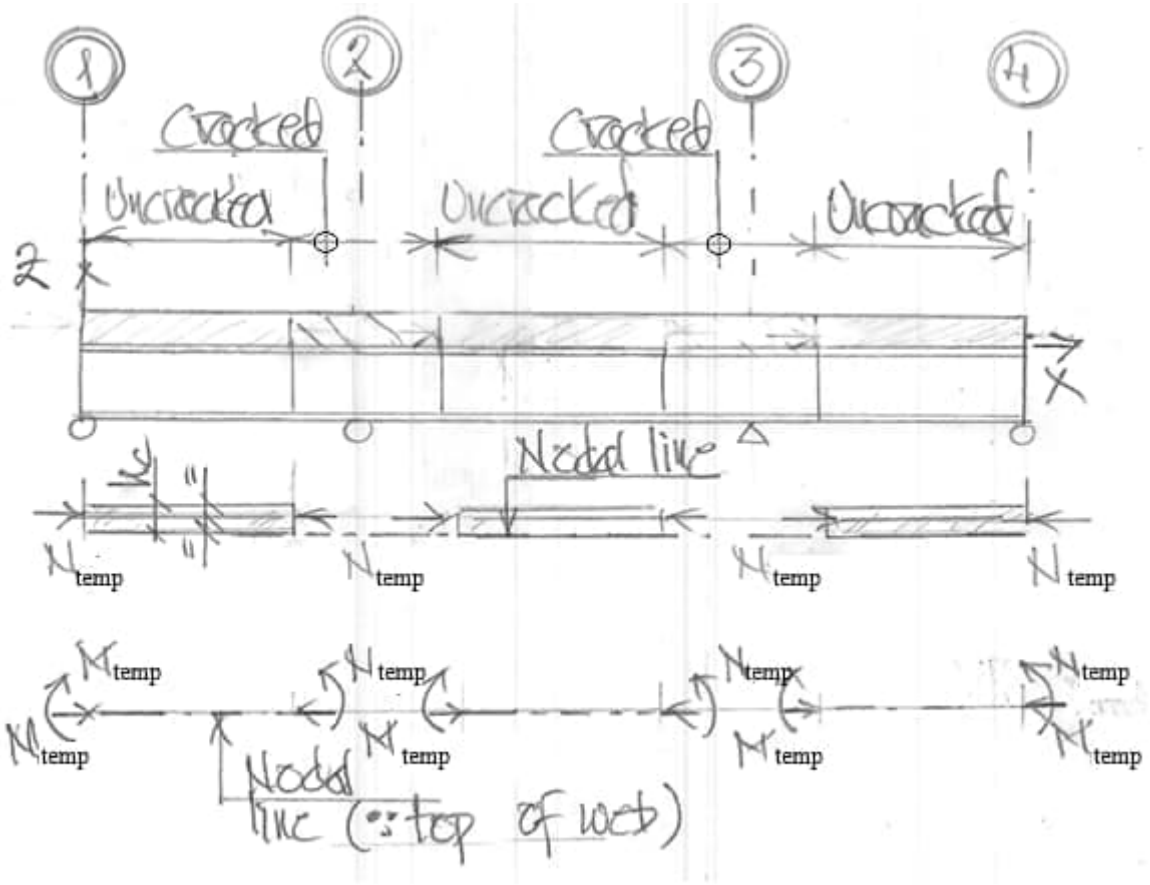
3.5.2 Uneven temperature between parts of cross section (UTEMP)

The linear temperature difference across the cross-section is determined according to the simplified procedure in EN 1991-1-5, clause 6.1.4.2 (method 2). Bridge superstructure type 2 (composite

$\Delta T_{max} = +10°C$: top surface warmer

$\Delta T_{min} = -10°C$: bottom surface warmer

The effect of temperature is disregarded in cracked areas while it is considered in uncracked areas as seen in stech below.



Uncracked concrete (girder A & C):

$$0.5N_{temp.1} = \pm\frac{\alpha}{2}\cdot\frac{E_{cm}}{1+\psi_L\cdot\phi_{t1}}\cdot\Delta T\cdot h_c\cdot b_c = \pm\frac{10^{-5}}{2}\cdot\frac{34\cdot10^6 kPa}{1+1.0\cdot0.3}\cdot 10°C\cdot 0.20m\cdot 2.512m \ldots$$

$$= \pm 656kN$$

$$0.5M_{temp.1} = 0.5N_{temp.1}\cdot(t_c + 0.5h_c) = \pm 656kN\cdot(0\ m + 0.5\cdot 0.20m) = \pm 66kNm$$

Uncracked concrete (girder B):

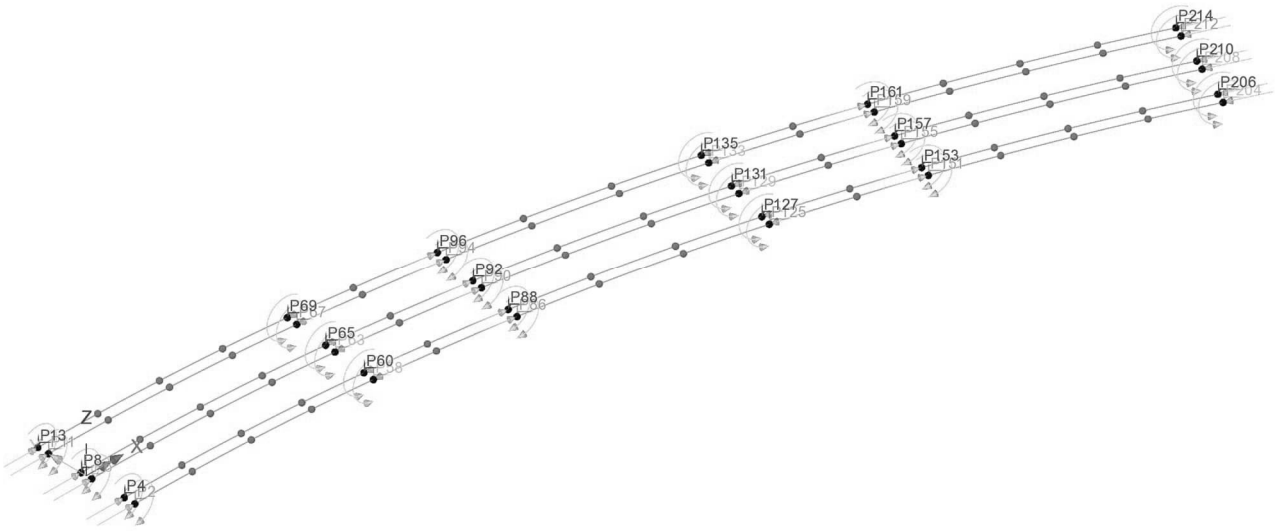
$$0.5N_{temp.2} = \pm\frac{\alpha}{2}\cdot\frac{E_{cm}}{1+\psi_L\cdot\phi_{t1}}\cdot\Delta T\cdot h_c\cdot b_c = \pm\frac{10^{-5}}{2}\cdot\frac{34\cdot10^6 kPa}{1+1.0\cdot0.3}\cdot 10°C\cdot 0.20m\cdot 2.275m \ldots$$

$$= \pm 596kN$$

$$0.5M_{temp.2} = 0.5N_{temp.1}\cdot(t_c + 0.5h_c) = \pm 596kN\cdot(0\ m + 0.5\cdot 0.20m) = \pm 60kNm$$

Cracked concrete :

$$0.5N_{temp} = 0kN$$



3D Overview

Load : Ntemp:1+

Analysis : Analysis 8 (O:TEMP)

Structural loading : Internal beam point

Point load in X direction (P_x) : 656 kN

Point moment around Y direction (M_y) : 66 kNm

Distance along local element (parametric) : 0

Load direction : Element local

Load position : About nodal line

Points: P2, P4, P11, P13, P86, P88, P94, P96, P151, P153, P159 & P161

Load case : UTEMP+

Load : Ntemp:1-

Analysis : Analysis 8 (O:TEMP)

Structural loading : Internal beam point

Point load in X direction (P_x) : -656 kN

Point moment around Y direction (M_y) : -66 kNm

Distance along local element (parametric) : 1.0

Load direction : Element local

Load position : About nodal line

Points: P2, P4, P11, P13, P86, P88, P94, P96, P151, P153, P159 & P161

Load case : UTEMP+

Load : Ntemp:2+

Analysis : Analysis 8 (O:TEMP)

Structural loading : Internal beam point

Point load in X direction (P_x) : 596 kN

Point moment around Y direction (M_y) : 60 kNm

Distance along local element (parametric) : 0

Load direction : Element local

Load position : About nodal line

Points: P63, P65, P129, P131, P208 & P210

Load case : UTEMP+

Load : Ntemp:2-

Analysis : Analysis 8 (O:TEMP)

Structural loading : Internal beam point

Point load in X direction (P_x) : -596 kN

Point moment around Y direction (M_y) : -60 kNm

Distance along local element (parametric) : 1.0

Load direction : Element local

Load position : About nodal line

Points: P63, P65, P129, P131, P208 & P210

Load case : UTEMP+

3.5.3 Uneven temperature across the cross section

The linear temperature difference across the cross-section is determined according to EN 1991-1-5 § 6.1.4.1 for a deck thickness of 100 mm and type 2 (composite bridge).

$k_{1.sur} = 1.00$

$k_{2.sur} = 1.00$

$\Delta T_{\max} = +15°C \cdot k_{1.sur} = +15°C$: top surface warmer

$\Delta T_{\min} = -18°C \cdot k_{2.sur} = -18°C$: bottom surface warmer

Remark

The described uneven temperature across the cross-section is considered to produce a lower load effect than between parts of cross section (UTEMP). For this read the load is not added to design report.

3.5.4 Combination of uniform and uneven temperature

Combination is done according to SS-EN 1991-1-5 section 6.1.5.

For design, however, the safe side is applied, which gives the load combination as shown below.

3.5.4 Kombination av jämn och ojämn temperatur

Kombinering sker enligt SS-EN 1991-1-5 avsnitt 6.1.5.

During design, however $\omega_M = 1.0$ and $\omega_N = 1.0$ are applied on safe side.

Smart Load combination *TEMP :*

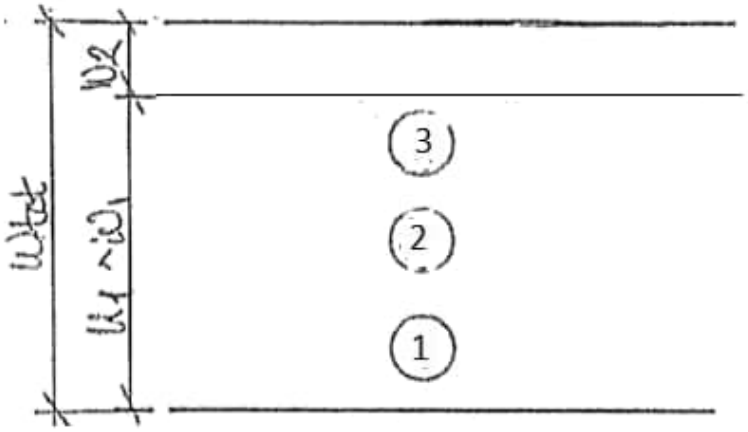
Load case	Permanent factor	Variable factor
UTEMP+	0	+1.00
UTEMP+	0	-1.00

3.6 TRAFFIC

Load applied to Analysis : Analysis 7 (O:VAR)

Evaluation of vertical traffic is performed for LM 1 and LM 2 according to SS-EN 1991-2 section 4.3.

3.6.1 Traffic lane division



Total traffic width : $w_{tot} = 10.05\,m$

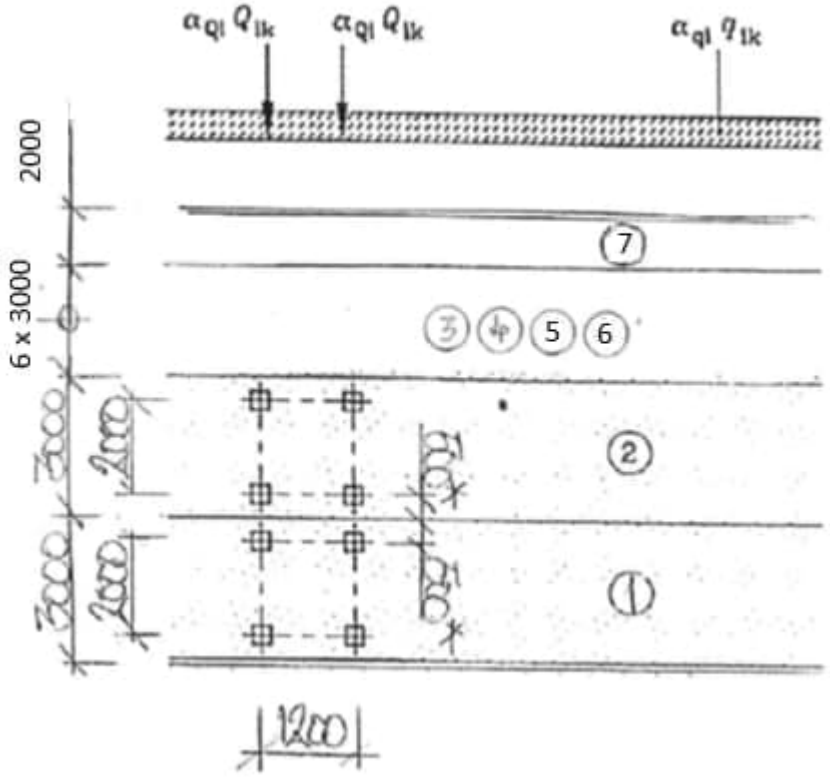
Number of traffic lanes : $n_1 = Integer\left[\frac{w_{tot}}{3.0m}\right] = 3\,lanes$

Full traffic width : $w_1 = 3.0m$

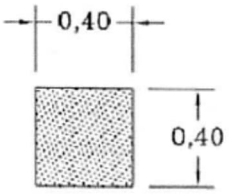
Remaining width : $w_2 = 1.05m$

3.6.2 Load model 1 (LM 1)

Characteristic values according to SS-EN 1991-2 §4.3.2.



* = When studying local effects 250 mm is to be assumed.



Axle loads:

α_Q : national adaptation factor according to TRVFS 2011:12 table 7.1

$Q'_k = \alpha_Q \cdot Q_k$: characteristic value including national adaptation factor

Traffic lane	Q_k	α_Q	Q'_k	Remark
1	300	0,9	270	LM1- 2 x 270 kN
2	200	0,9	180	LM1- 2 x 180 kN
3	100	0	0	No load
-	kN	-	kN	-

Surface loads:

α_q : national adaptation factor according to TRVFS 2011:12 table 7.1

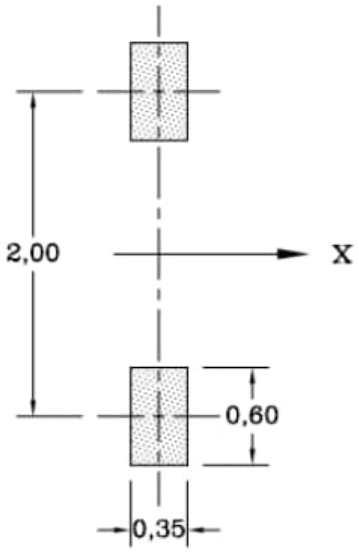
$q'_k = \alpha_q \cdot q_k$: characteristic value including national adaptation factor

Traffic lane	q_k	α_q	q'_k
1	9.0	0.8	7.2
2-3	2.5	1.0	2.5
-	kPa	-	kPa

Remark
Evaluation is performed using Vehicle Load Optimisation (VLO), see section 3.7.4.

3.6.3 Load model 2 (LM 2)

Characteristic vertical load according to SS-EN 1991-2 §4.3.3.



$\beta_Q = \alpha_Q = 0.90$: national adaptation factor

$Q_k = 400$ kN : characteristic value

$Q'_k = \beta_k \cdot Q_k = 360$ kN : characteristic value including national adaptation factor

Tire pressure

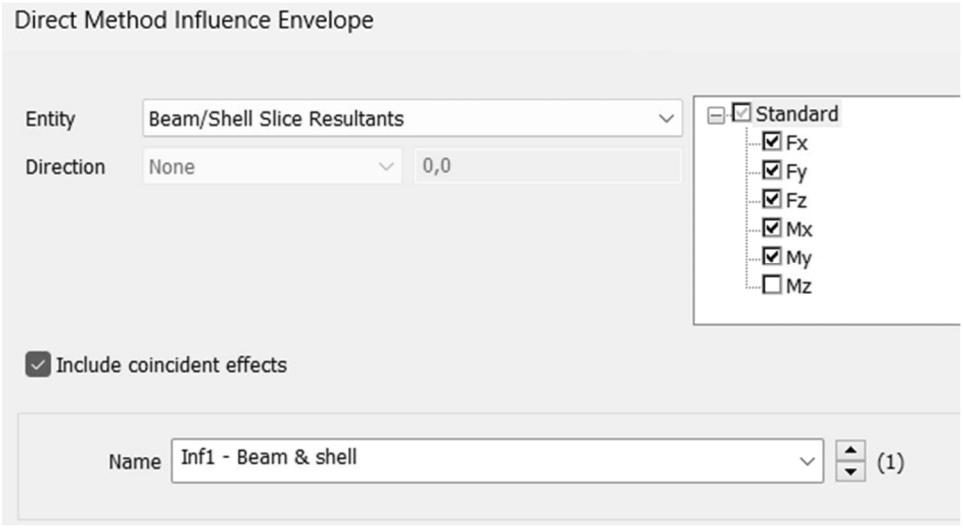
TSFS Chapter 11 Section 4 states that the same contact surface as LM 1 may be used.

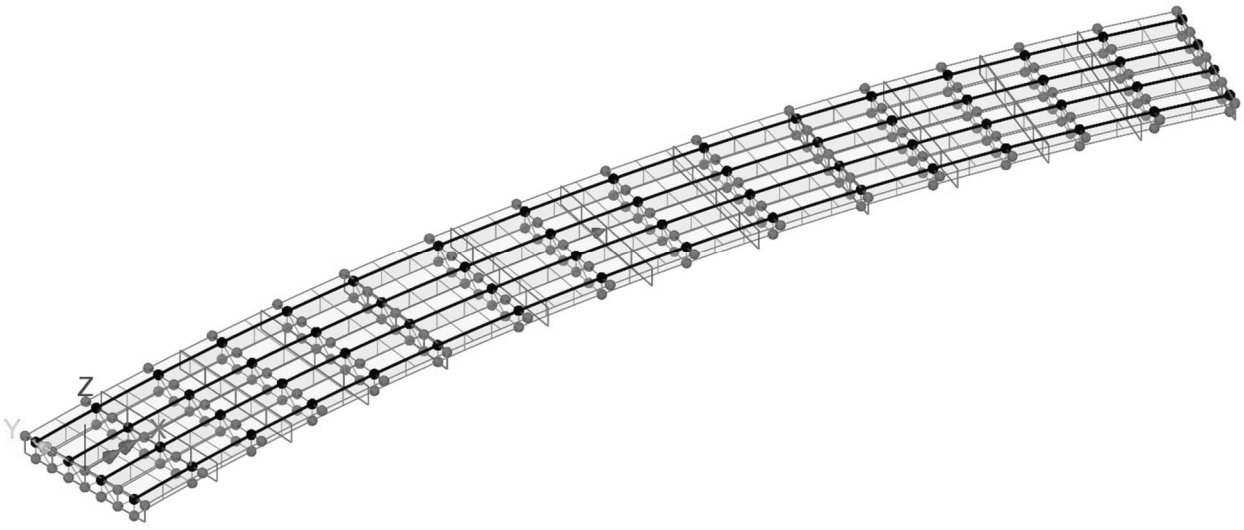
3.6.4 Vehicle Load Optimization (VLO)

3.6.4.1 Influence components

Influence surfaces are created using *Direct Method Influence Envelope.* This is done by applying *Influence components* seen below.

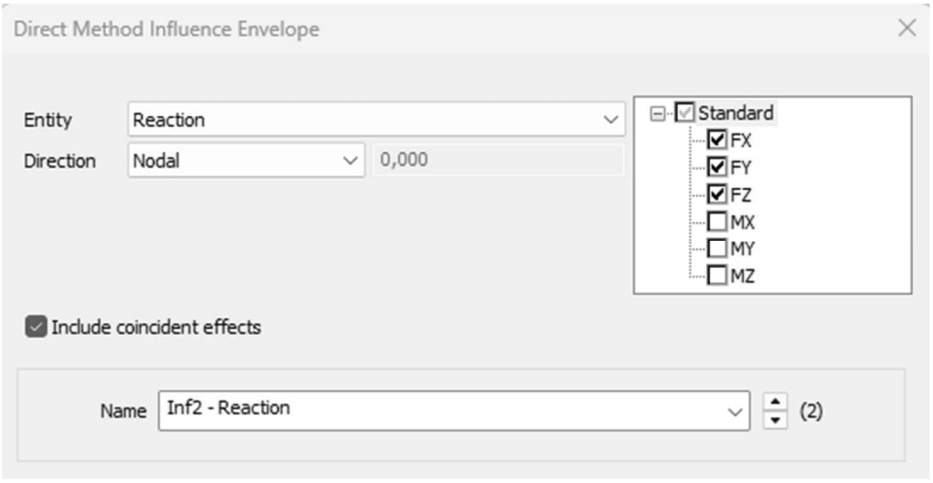
Inf1 – Beam & shells :

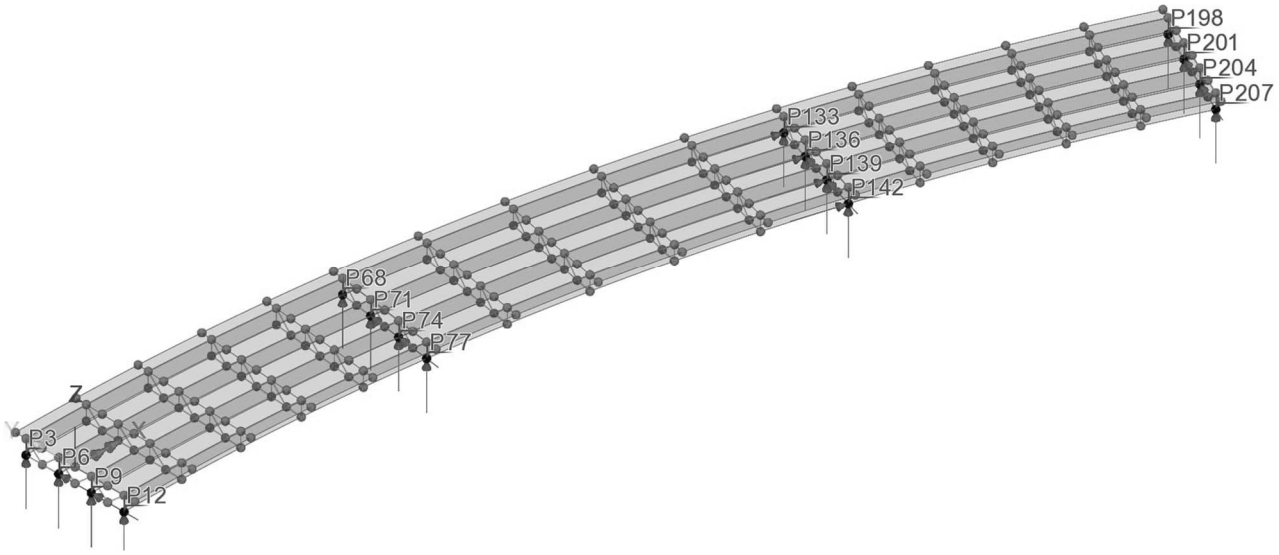




Overview 3D

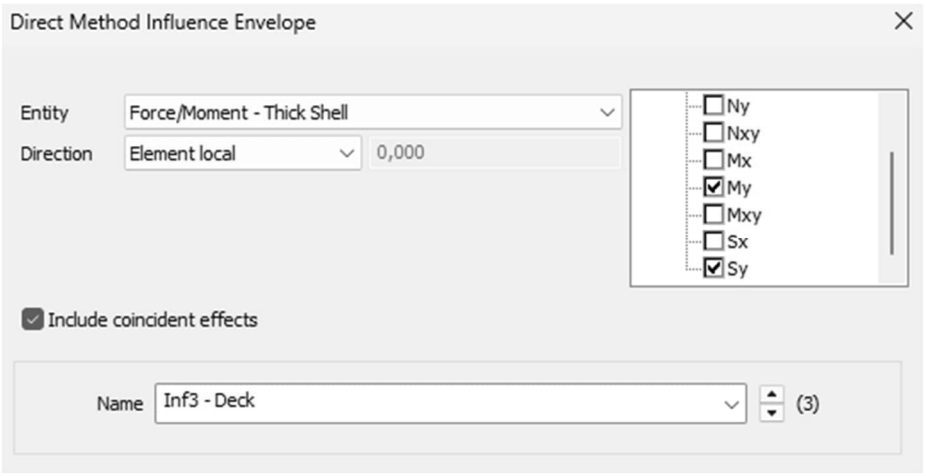
Inf2 – Reactions :

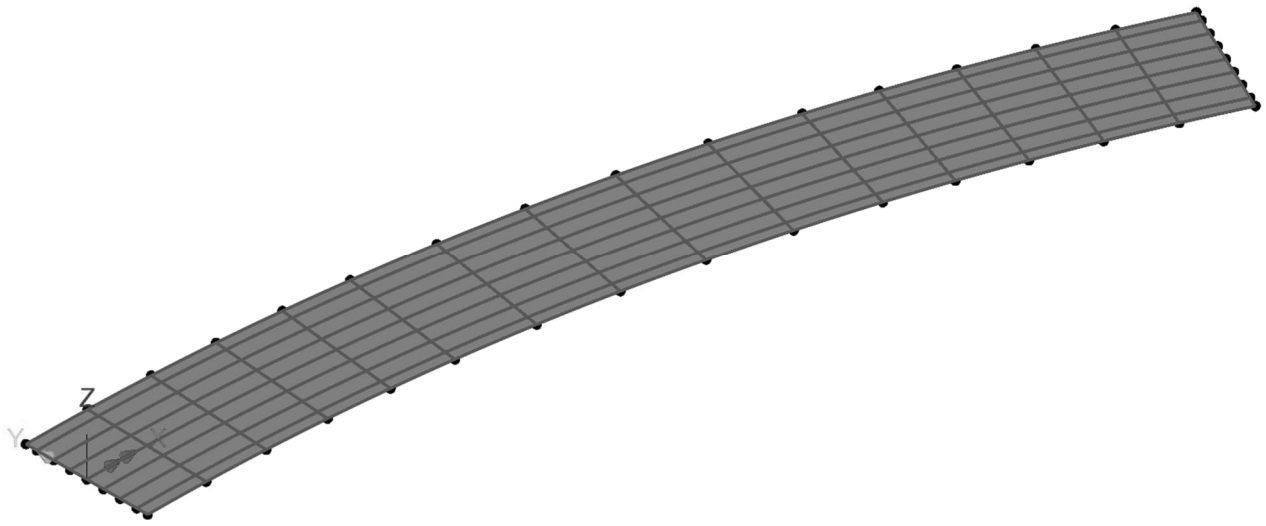




Overview 3D

Inf3 – Deck :





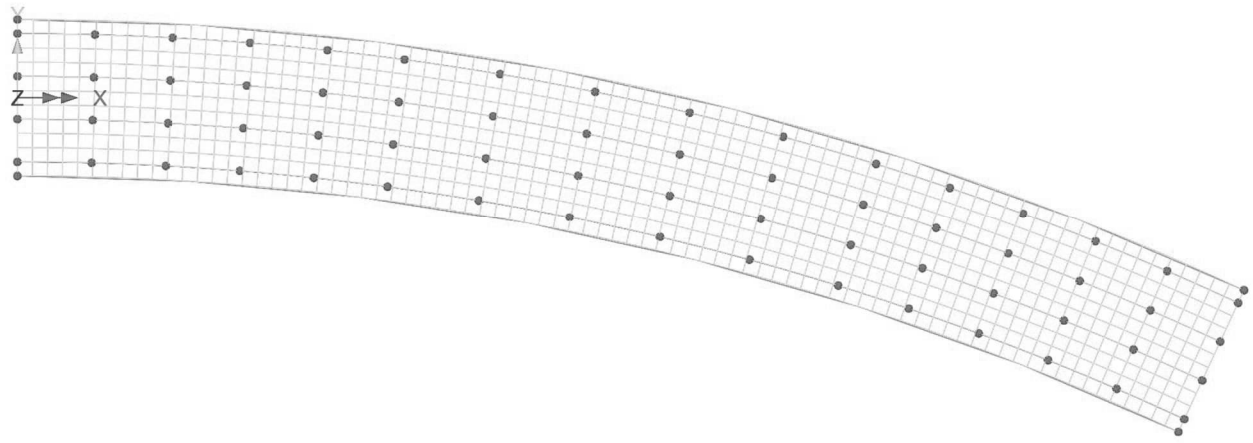
Overview 3D

3.6.4.2 Influence surface analysis

A influence surface is generated for every node grid. Below are the used settings.

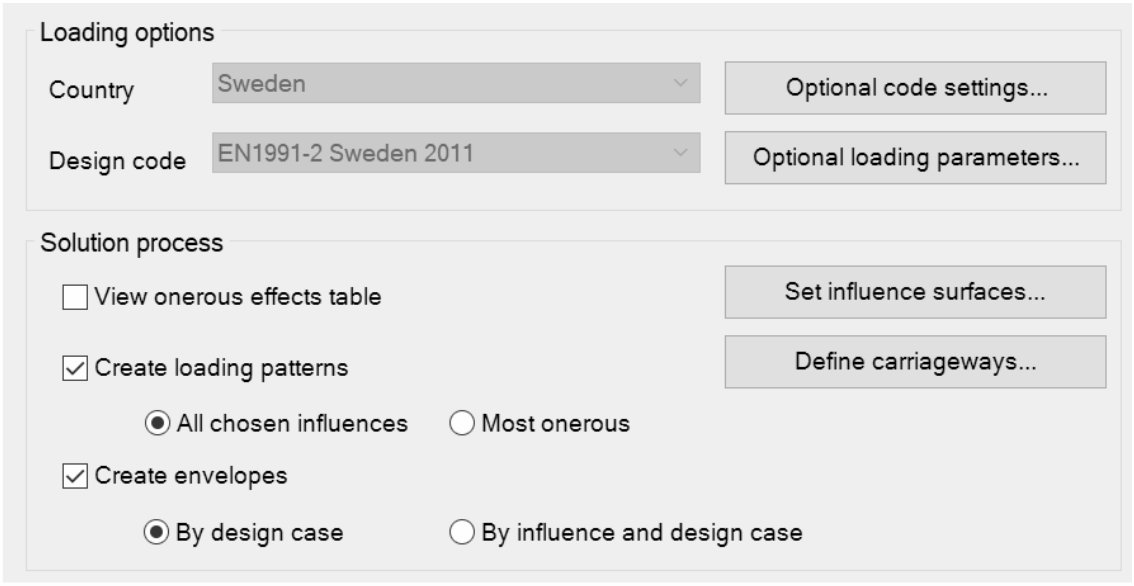
Influence surfaces :

Search area:	Superstructure
Definition type:	Grid
Path:	Centerline X
Transverse width:	10.05 m
Longitudinal spacing (ΔL_x) :	1.0 m
Transversal spacing: (ΔL_y) :	1.0 m



PLAN

3.6.4.3 Traffic load analysis (VLO)



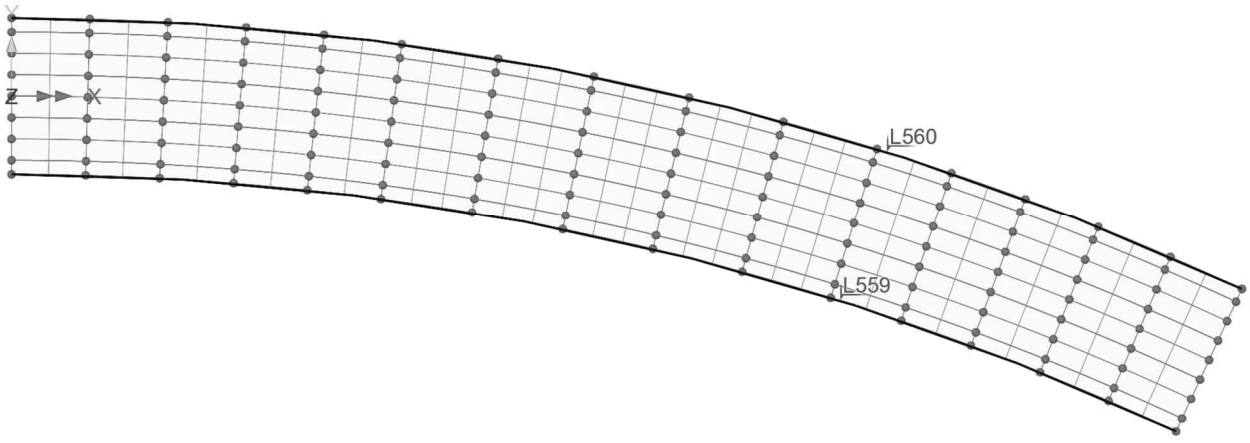
Vehicle longitudinal incremental movement: 0.25 m

Vehicle transverse incremental movement: 0.50 m

Vehicle direction: both

Definition of carriageway (kerbs): L559 & L560

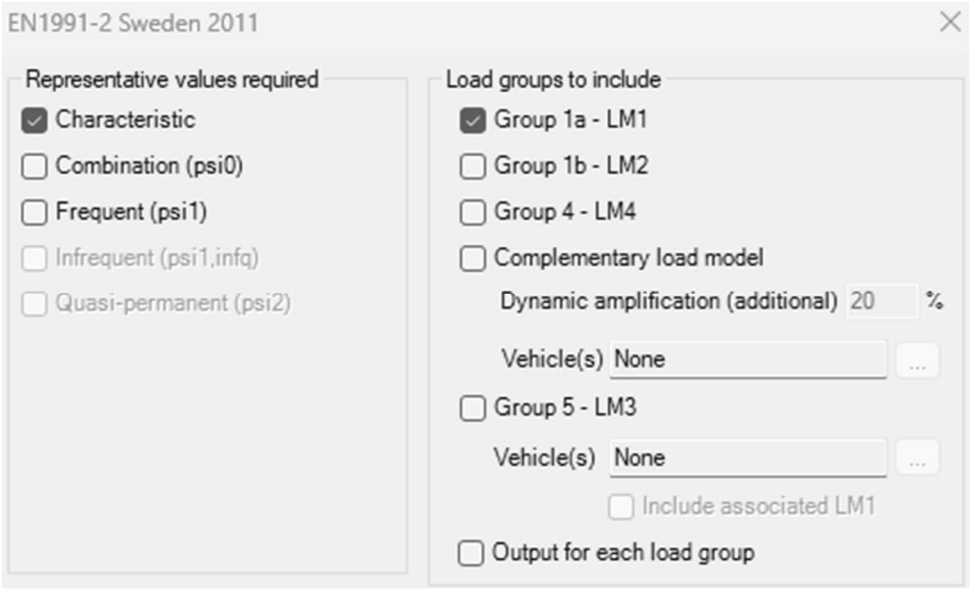
Influence surfaces: Include all (positive & negative)



PLAN

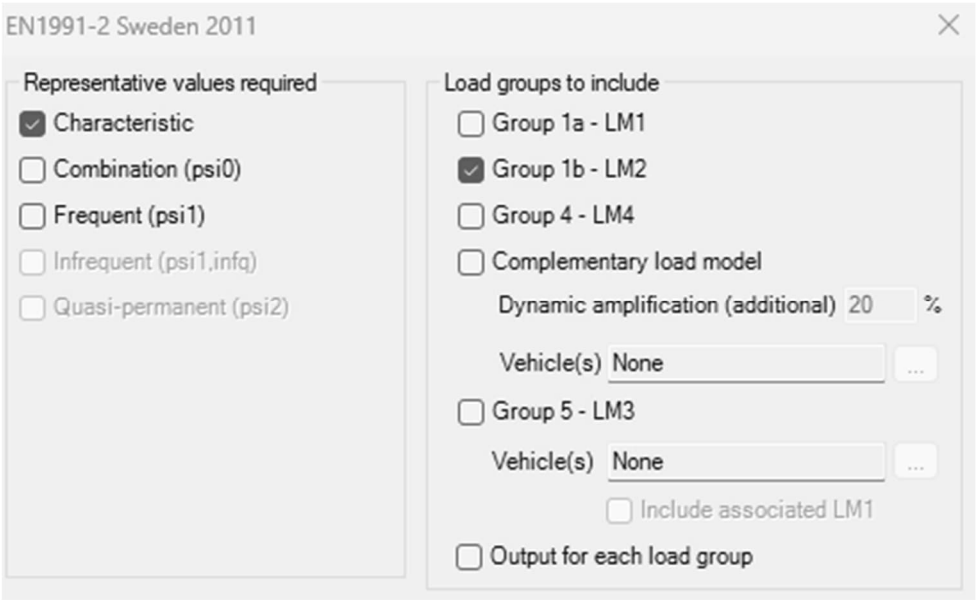
3.6.4.4 Envelope : LM 1

Load model 1 (LM1) defined in SS-EN 1991-2 section 4.3.2.



3.6.4.5 Envelope : LM 2

Load model 2 (LM2) defined in SS-EN 1991-2 section 4.3.3.



3.6.4.6 Combined traffic load (TRAFFIC)

There are a total 2 different traffic loads termed LM 1 and LM 2.

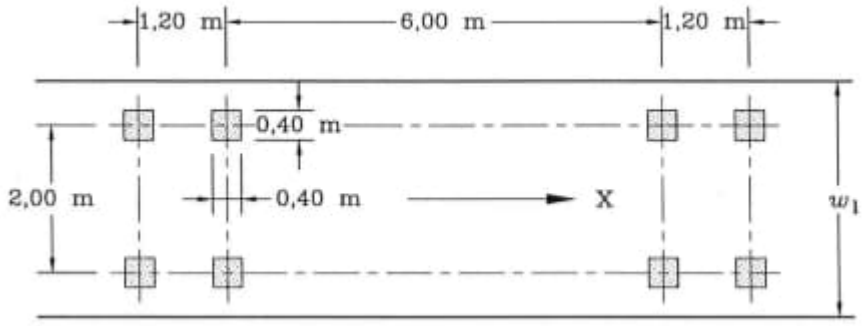
The envelope is used to identify the most onerous load effect.

Envelope TRAFFIC :

Envelope
LM 1
LM 2

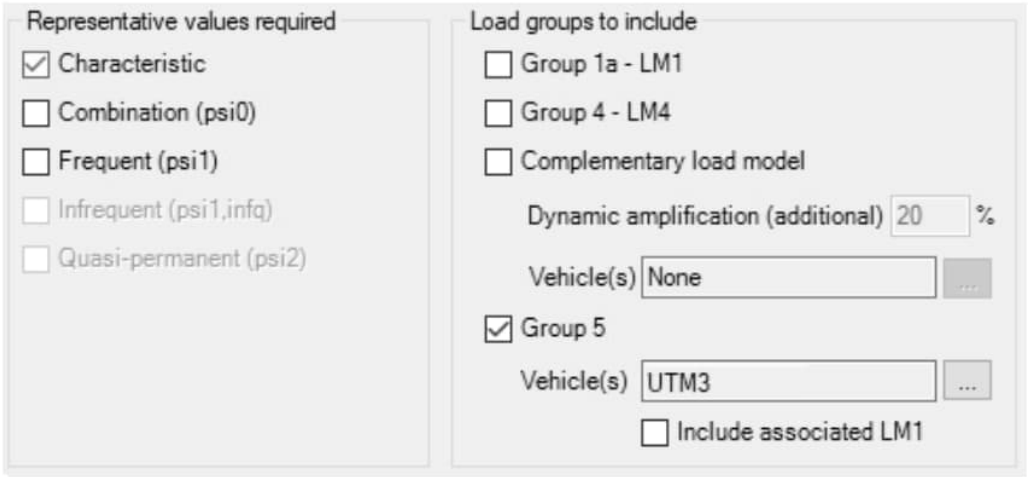
3.6.4.7 Fatigue model

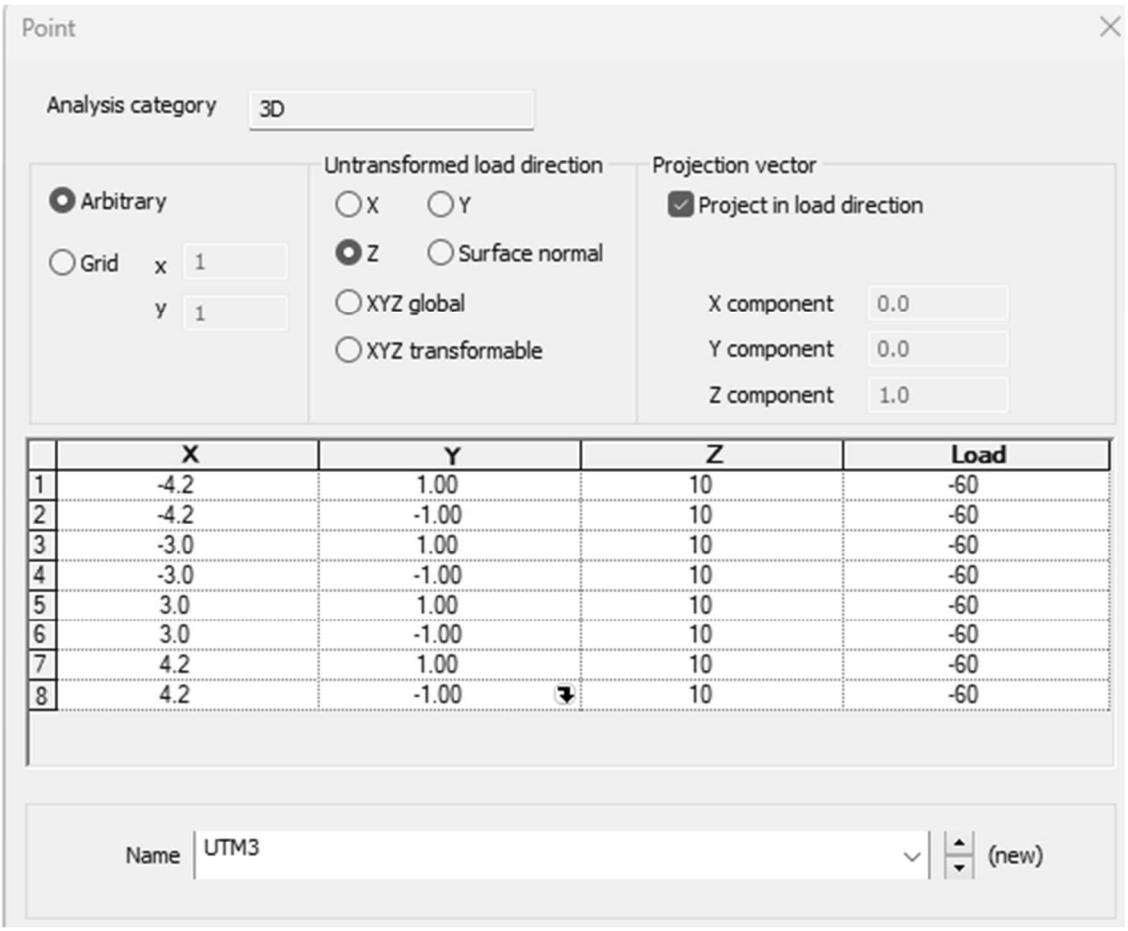
Fatigue model 3 (UTM3) defined in SS-EN 1991-2 section 4.6.4. The load is defined in Group 5 (special vehicle) in present version of software.



Q_k = 120 kN : characteristic value including nation adaptation factors.

The load definition:
The load UTM3 is defined as a special vehicle in "load group 5."





	X	Y	Z	Load
1	-4.2	1.00	10	-60
2	-4.2	-1.00	10	-60
3	-3.0	1.00	10	-60
4	-3.0	-1.00	10	-60
5	3.0	1.00	10	-60
6	3.0	-1.00	10	-60
7	4.2	1.00	10	-60
8	4.2	-1.00	10	-60

3.7 LOAD COMBINATIONS

Verification of load capacity shall be carried out for several limit states as detailed in this section.

Fatigue Limit State:
The risk of fatigue according to the partial factor method is checked using equation 6.69 provided in document SS-EN 1992-1-1.

Other Limit States:
For other limit states, section 6.4.3 of EN-1990 is applied.

Verification of load capacity shall be carried out for several limit states as detailed in this section.

Fatigue Limit State:
The risk of fatigue according to the partial factor method is checked using equation 6.69 provided in document SS-EN 1992-1-1.

Other Limit States:
For other limit states, section 6.4.3 of EN-1990 is applied.

3.7.1 Ultimate Limit States (ULS)

When checking the ultimate limit state, the load factors vary depending on the type of failure as detailed below:

STR: Verification of structural bearing capacity

GEO: Verification of geotechnical bearing capacity

For checking the ultimate limit state, TRVNFRA-00227 section 7.1.6.3 specifies requirements for load combinations as follows.

Design Method D2 (Set B):
Design Method D2 (Set B) according to TSFS 2018:57 Table 4.4 shall be applied for the structural bearing capacity of the construction (STR; SK 3).

Design Method is defined according to EN-1990 equations 6.10a and 6.10b as detailed below.

$$E_{Sd}^{10a} = \sum_{j\geq 1} \gamma_{G.j} \cdot G_{k,j} + \gamma_{Q.1} \cdot \psi_{0,1} \cdot Q_{k.1} + \sum_{i>1} \gamma_{Q.i} \cdot \psi_{0,i} \cdot Q_{k,i} = \psi\gamma_{ULS-A} \cdot (\sum_{j>1} G_{k,j} + \sum_{i>1} Q_{k,i})$$

$$E_{sd}^{10b} = \sum_{j\geq 1} \xi_j \cdot \gamma_{G.j} \cdot G_{k,j} + \gamma_{Q.1} \cdot Q_{k.1} + \sum_{i>1} \gamma_{Q.i} \cdot \psi_{0,i} \cdot Q_{k,i} = \psi\gamma_{ULS-B} \cdot (\sum_{j>1} G_{k,j} + \sum_{i>1} Q_{k,i})$$

Equation 6.10a refers to the (ULS-A) case where the permanent loads are dominant, usually during the construction phase.

Equation 6.10b refers to the (ULS-B) case where the variable loads are dominant.
Design method 2 (set B) according to TSFS 2018:57 table 4.4 shall be applied for the structural capacity (STR; SK3).

A1 (construction loads)
All load factors are greater than set C.

A2 (geotechnical loads)

- Load coefficient earth pressure:

  $\psi\gamma_{\mathrm{ULS-A}} = \gamma_{\mathrm{d}} \cdot 1.35 \cdot \eta_{\mathrm{sup.G}} = 1.0 \cdot 0.89 \cdot 1.35 \cdot 1.1 = 1.49$ ← dimensioning

  $\psi\gamma_{\mathrm{ULS-B}} = \gamma_{\mathrm{d}} \cdot 0.89 \cdot 1.35 \cdot \eta_{\mathrm{sup.G}} = 1.0 \cdot 0.89 \cdot 1.35 \cdot 1.1 = 1.33$

- Load coefficient surcharge:

  $\psi\gamma_{\mathrm{ULS-A}} = \gamma_{\mathrm{d}} \cdot \psi_0 \cdot 1.50 = 1.0 \cdot 0.75 \cdot 1.50 = 1.13$

  $\psi\gamma_{\mathrm{ULS-B}} = \gamma_{\mathrm{d}} \cdot 1.50 = 1.0 \cdot 1.50 = 1.50$ ← dimensioning

Design method D3 (set C) according to TSFS 2018:57 table 4.5 shall be applied for determining geotechnical bearing capacity (GEO; SK 2).

The design method is defined according to EN-1990 equation 6.10a and 6.10b as presented below.

$$E_{Sd}^{10a} = \sum_{j\geq 1} \gamma_{G.j} \cdot G_{k,j} + \gamma_{Q.1} \cdot \psi_{0,1} \cdot Q_{k.1} + \sum_{i>1} \gamma_{Q.i} \cdot \psi_{0,i} \cdot Q_{k,i} = \psi\gamma_{ULS-GA} \cdot (\sum_{j>1} G_{k,j} + \sum_{i>1} Q_{k,i})$$

$$E_{sd}^{10b} = \sum_{j\geq 1} \xi_j \cdot \gamma_{G.j} \cdot G_{k,j} + \gamma_{Q.1} \cdot Q_{k.1} + \sum_{i>1} \gamma_{Q.i} \cdot \psi_{0,i} \cdot Q_{k,i} = \psi\gamma_{ULS-GB} \cdot (\sum_{j>1} G_{k,j} + \sum_{i>1} Q_{k,i})$$

Equation 6.10a refers to the (ULS-A) case where the permanent loads are dominant, usually during the construction phase.

Equation 6.10b (ULS-B) refers to the case where the variable loads are dominant.

Design method 3 (set C) according to TSFS 2018:57 table 4.5 shall be applied for determining geotechnical bearing capacity (GEO).

A1 (construction loads)
All load factors are less than set B.

A2 (geotechnical loads)

- Load coefficient earth pressure: $\psi\gamma_{jord} = \gamma_d \cdot 1.1 \cdot \eta_{sup.G} = 0.91 \cdot 1.1 \cdot 1.1 = 1.10$

- Load coefficient surcharge: $\psi\gamma_{\ddot{o}ver} = \gamma_d \cdot 1.40 = 0.91 \cdot 1.40 = 1.27$

Simplified Design Method ULS:

To limit the number of load combinations, design method D2 (STR) is also applied for checking geotechnical bearing capacity (GEO). This is done by adjusting load coefficients associated with the geotechnical loads.
When applying the geotechnical loads, the earth pressure coefficient corresponding to D2 is applied.

Permanent loads:

Nr	Load		$\psi\gamma_{ULS-A}$	$\psi\gamma_{ULS-B}$
1	Dead weight	max	1.35	1.20
		min	1.00	1.00
2	Surfacing	max	1.45	1.35
		min	0.90	0.90
3	Fillling	max	1.45	1.35
		min	0.90	0.90
4	Earth pressure	max	1.49	1.35
		min	0.90	0.90
5	Water pressure	max	1.35	1.10
		min	1.00	1.00
6	Support settlement	max	1.35	1.20
		min	1.00	1.00
7	Shrinkage	max	1.35	1.20
		min	1.00	1.00

Remark
Equation ULS-B is considered dominant; thus ULS-A is not considered.

Variable loads:

Nr	Load	$\psi\gamma_{ULS-A}$	$\psi\gamma_{ULS-B}$
	Load model LM 1 :		
9	Tandem axel	1.13	1.03/1.50
10	Surface load	0.60	0.60/1.50
11	Braking force	0.84	0.84/1.13
12	Lateral force	0.84	0.84/1.13
13	Centrifugal force	0.84	0.84/1.13
	Load model LM 2 :		
14	Single axel	0	0/1.50
	Complementary load EG A/B :		
15	Vehicle EG A/B	1.13	1.13/1.50
16	Braking force	0.84	0.84/1.13
17	Lateral force	0.84	0.84/1.13
18	Centrifugal force	0.84	0.84/1.13
19	Temperature	0.90	0.90/1.50
	Wind load:		
20	Wind against bridge	0.45	0.45/1.50
21	Wind against vehicles	0.45	0.45/1.50
22	Surcharge	1.13	1.13/1.50

Remark

Equation ULS-B is considered dominant; thus ULS-A is not considered.

Load combination smart *ULS-PERM :*

Load case	Permanent factor	Variable factor
DEAD	1.00	0.20
SURF	0.90	0.45
SHRINKAGE	0	1.20

Load combination smart *ULS-VAR :*
(Load cases to consider : 2 / Variable load cases : 1)

Load case	Permanent factor	Variable factor
TRAFIK	1.03	0.47
TEMP	0.90	0.60

Load combination smart *ULS :*

Load case	Permanent factor	Variable factor
ULS-PERM	1	0
ULS-VAR	0	1

3.14.2 Service limit state (SLS)

The service limit state is divided into 3 load combinations based on their duration. The load combinations are presented below.

Load combination	Duration
SLS:K	Characteristic
SLS:F	Frequent
SLS:Q	Quasi-permanent

Load Combination SLS:K according to EN 1990 equation 6.14b is presented below.

$$E_{Sd} = \sum_{j\geq 1} G_{k,j} + Q_{k.1} + \sum_{i>1} \psi_{0,i} \cdot Q_{k,i} = \psi\gamma_{SLS.K} \cdot (\sum_{j>1} G_{k,j} + \sum_{i>1} Q_{k,i})$$

Load Combination SLS:F according to EN 1990 equation 6.15b is presented below.

$$E_{Sd} = \sum_{j\geq 1} G_{k,j} + \psi_1 \cdot Q_{k.1} + \sum_{i>1} \psi_{2,i} \cdot Q_{k,i} = \psi\gamma_{SLS.2} \cdot (\sum_{j>1} G_{k,j} + \sum_{i>1} Q_{k,i})$$

Load Combination SLS:Q according to EN 1990 equation 6.16b is presented below.

$$E_{Sd} = \sum_{j\geq 1} G_{k,j} + \sum_{i>0} \psi_{2,i} \cdot Q_{k,i} = \psi\gamma_{SLS.Q} \cdot (\sum_{j>1} G_{k,j} + \sum_{i>1} Q_{k,i})$$

When designing, load coefficients according to equations 6.14a, 6.15b, and 6.16b are applied.

Permanent loads:

Nr	Load		$\psi\gamma_{SLS-K}$	$\psi\gamma_{SLS-F}$	$\psi\gamma_{SLS-Q}$
1	Dead weight	max	1.00	1.00	1.00
		min	1.00	1.00	1.00
2	Surfacing	max	1.10	1.10	1.00
		min	0.90	0.90	1.00
3	Fillling	max	1.10	1.10	1.00
		min	0.90	0.90	1.00
4	Earth pressure	max	1.35	1.35	1.35
		min	0.90	0.90	1.00
5	Water pressure	max	1.00	1.00	1,00
		min	1.00	1.00	1.00
6	Support settlement	max	1.00	1.00	1.00
		min	1.00	1.00	1.00
7	Shrinkage	max	1.00	1.00	1.00
		min	1.00	1.00	1.00

Variable loads:

Nr	Load	$\psi\gamma_{SLS-K}$	$\psi\gamma_{SLS-F}$	$\psi\gamma_{SLS-Q}$
	Load model LM 1 :			
9	Tandem axel	0.75/1.00	0/0.75	0
10	Surface load	0.40/1.00	0/0.40	0
11	Braking force	0.56/0.75	0/0.56	0
12	Lateral force	0.56/0.75	0/0.56	0
13	Centrifugal force	0.56/0.75	0/0.56	0
	Load model LM 2 :			
14	Single axel	0.75/1.00	0/0.75	0
	Complementary load EG A/B :			
15	Vehicle EG A/B	0.75/1.00	0/0.75	0
16	Braking force	0.56/0.75	0/0.56	0
17	Lateral force	0.56/0.75	0/0.56	0
18	Centrifugal force	0.56/0.75	0/0.56	0
19	Temperature	0.60/1.00	0.50/0.60	0.50
	Wind load:			
20	Wind against bridge	0.30/1.00	0/0.30	0
21	Wind against vehicles	0.30/1.00	0/0.30	0
22	Surcharge	0.75/1.35	0/0.75	0

Load combination smart *SLS-PERM :*

Load case	Permanent factor	Variable factor
DEAD	1.00	0
SURF	0.90	0.20
SHRINKAGE	0	1.00

Load combination smart *SLS-K-VAR :*
(Load cases to consider : 2 / Variable load cases : 1)

Load case	Permanent factor	Variable factor
TRAFIK	0.75	0.25
TEMP	0.60	0.40

Load combination smart *SLS-F-VAR :*

Load case	Permanent factor	Variable factor
TRAFIK	0	0.75
TEMP	0	0.60

Load combination smart *SLS-K :*

Load case	Permanent factor	Variable factor
SLS-PERM	1	0
SLS-K-VAR	0	1

Load combination smart *SLS-F :*

Load case	Permanent factor	Variable factor
SLS-PERM	1	0
SLS-F-VAR	0	1

Load combination smart *SLS-Q :*

Load case	Permanent factor	Variable factor
DEAD	1.00	0
SURF	0.90	0.20
SHRINKAGE	0	1.00
TEMP	0	0.50

3.14.4 Fatigue load combination

Fatigue is considered according to SS EN 1992-1-1, 6.8.4 and 6.8.6, and SS EN 1992-2, 6.8 and Appendix NN.

The risk of fatigue is checked using a simplified method, denoted as the λ-method.
Load combination according to equation SS-EN 1992-1-1 section 6.8.3 equation 6.69.

In this load combination, the traffic load is considered to consist of UTM, whereby other traffic loads are excluded.

$$E_{Sd} = \sum_{j\geq 1} G_{k,j} + P + \psi_{1,1} \cdot Q_{k,1} + \sum_{i>1} \psi_{2,i} \cdot Q_{k,i} + Q_{fat} = \psi\gamma_{UTM} \cdot (\sum_{j\geq 1} G_{k,j} + P + \sum_{i\geq 1} Q_{k,i} + Q_{fat})$$

Permanent loads:

Nr	Load		$\psi\gamma_{UTM}$
1	Dead weight	max	1.00
		min	1.00
2	Surfacing	max	1.10
		min	0.90
3	Fillling	max	1.10
		min	0.90
4	Earth pressure	max	1.48
		min	0.90
5	Water pressure	max	1.00
		min	1.00
6	Support settlement	max	1.00
		min	1.00
7	Shrinkage	max	1.00
		min	1.00

Variable loads:

Nr	Load	$\psi\gamma_{UTM}$
	Load model LM 1 :	
9	Tandem axel	-
10	Surface load	-
11	Braking force	-
12	Lateral force	-
13	Centrifugal force	-
	Load model LM 2 :	
14	Single axel	-
	Complementary load EG A/B :	
15	Vehicle EG A/B	-
16	Braking force	-
17	Lateral force	-
18	Centrifugal force	-
19	Temperature	0.60
	Wind load:	
20	Wind against bridge	0.30
21	Wind against vehicles	0.30
22	Surcharge	1.01
23	UTM3	1.00

Load combination smart FAT :

Load case	Permanent factor	Variable factor
DEAD	1.00	0
SURF	1.00	0
SHRINKAGE	-	-
UTM 3	-	1.00
TEMP	-	-

Load cases DEAD, SURF and SHRINKAGE are not fatigue loads, thus load coefficient 1.0 is applied.

Load case TEMP is not a fatigue loads, thus load is not considered.

Title: Input receipt

Model Units: kN,m,t,s,C
Report Units: kN,m,t,s,C

Model Title: System 001
Model File: System 001

Clarification of definitions.

In the report, the letter "T" is used to describe a range. The letter is an abbreviation of "to".

See example of assignment below.

Assignment to Lines:
105T110;114T119

This expression means that the assignment occurs to the lines L105 → L110 and L114 → L119.

Assignment to Surfaces:
3T17;19T24
This expression means that the assignment occurs to the surfaces S3 → S17 and S19 → S24.

Table of Contents

1. Points

Point	X coordinate	Y coordinate	Z coordinate
1	0.0	-5.0	0.0
2	0.0	-4.1	0.0
3	0.0	-3.7	0.0
4	0.0	-3.2	0.0
5	0.0	-1.8	0.0
6	0.0	-0.4	0.0
7	0.0	0.0	0.0
8	0.0	0.4	0.0
9	0.0	1.3	0.0
10	0.0	1.8	0.0
11	0.0	3.2	0.0
12	0.0	3.6	0.0
13	0.0	4.1	0.0
14	0.0	5.0	0.0
15	4.8	-5.1	0.0
16	4.8	-4.2	0.0
17	4.8	-3.7	0.0
18	4.8	-3.3	0.0
19	4.9	-1.9	0.0
20	4.9	-0.5	0.0
21	4.9	-0.1	0.0
22	4.9	0.4	0.0
23	4.9	1.2	0.0
24	4.9	1.8	0.0
25	5.0	3.1	0.0
26	5.0	3.6	0.0
27	5.0	4.0	0.0
28	5.0	5.0	0.0
29	9.5	-5.3	0.0
30	9.6	-4.4	0.0
31	9.6	-3.9	0.0
32	9.6	-3.5	0.0
33	9.7	-2.1	0.0
34	9.8	-0.7	0.0
35	9.8	-0.3	0.0
36	9.8	0.2	0.0
37	9.9	1.0	0.0
38	9.9	1.6	0.0
39	10.0	2.9	0.0
40	10.0	3.4	0.0
41	10.0	3.8	0.0
42	10.1	4.8	0.0
43	14.3	-5.6	0.0
44	14.4	-4.7	0.0
45	14.4	-4.2	0.0
46	14.4	-3.8	0.0
47	14.5	-2.4	0.0
48	14.6	-1.0	0.0
49	14.7	-0.6	0.0
50	14.7	-0.1	0.0
51	14.8	0.7	0.0
52	14.8	1.2	0.0
53	14.9	2.6	0.0
54	15.0	3.0	0.0
55	15.0	3.5	0.0
56	15.1	4.4	0.0
57	19.0	-6.0	0.0
58	19.1	-5.1	0.0
59	19.2	-4.7	0.0
60	19.2	-4.2	0.0
61	19.4	-2.9	0.0
62	19.4	-2.3	0.0
63	19.5	-1.5	0.0

Point	X coordinate	Y coordinate	Z coordinate
64	19.6	-1.0	0.0
65	19.6	-0.6	0.0
66	19.8	0.8	0.0
67	19.9	2.1	0.0
68	20.0	2.6	0.0
69	20.0	3.0	0.0
70	20.1	3.9	0.0
71	23.8	-6.6	0.0
72	23.9	-5.7	0.0
73	23.9	-5.3	0.0
74	24.0	-4.8	0.0
75	24.2	-3.4	0.0
76	24.4	-2.1	0.0
77	24.4	-1.6	0.0
78	24.5	-1.2	0.0
79	24.6	-0.4	0.0
80	24.7	0.2	0.0
81	24.9	1.5	0.0
82	24.9	2.0	0.0
83	25.0	2.4	0.0
84	25.1	3.3	0.0
85	29.6	-7.5	0.0
86	29.8	-6.6	0.0
87	29.9	-6.2	0.0
88	29.9	-5.7	0.0
89	30.2	-4.4	0.0
90	30.4	-3.0	0.0
91	30.5	-2.6	0.0
92	30.5	-2.1	0.0
93	30.8	-0.8	0.0
94	31.0	0.6	0.0
95	31.1	1.0	0.0
96	31.1	1.5	0.0
97	31.3	2.4	0.0
98	35.5	-8.6	0.0
99	35.6	-7.7	0.0
100	35.7	-7.2	0.0
101	35.8	-6.8	0.0
102	36.1	-5.5	0.0
103	36.4	-4.1	0.0
104	36.5	-3.7	0.0
105	36.5	-3.2	0.0
106	36.8	-1.9	0.0
107	37.1	-0.5	0.0
108	37.2	-0.1	0.0
109	37.3	0.4	0.0
110	37.5	1.3	0.0
111	41.2	-9.9	0.0
112	41.5	-9.0	0.0
113	41.6	-8.5	0.0
114	41.7	-8.1	0.0
115	42.0	-6.8	0.0
116	42.3	-5.4	0.0
117	42.4	-5.0	0.0
118	42.5	-4.5	0.0
119	42.8	-3.2	0.0
120	43.2	-1.9	0.0
121	43.3	-1.4	0.0
122	43.4	-1.0	0.0
123	43.6	-0.1	0.0
124	47.0	-11.3	0.0
125	47.2	-10.4	0.0
126	47.4	-10.0	0.0
127	47.5	-9.6	0.0
128	47.8	-8.3	0.0
129	48.2	-6.9	0.0

Point	X coordinate	Y coordinate	Z coordinate
130	48.3	-6.5	0.0
131	48.4	-6.1	0.0
132	48.8	-4.7	0.0
133	49.2	-3.4	0.0
134	49.3	-3.0	0.0
135	49.4	-2.5	0.0
136	49.6	-1.6	0.0
137	52.7	-13.0	0.0
138	53.0	-12.1	0.0
139	53.1	-11.7	0.0
140	53.2	-11.3	0.0
141	53.6	-9.9	0.0
142	54.0	-8.6	0.0
143	54.2	-8.2	0.0
144	54.3	-7.8	0.0
145	54.7	-6.5	0.0
146	55.1	-5.1	0.0
147	55.3	-4.7	0.0
148	55.4	-4.3	0.0
149	55.7	-3.4	0.0
150	57.2	-14.5	0.0
151	57.5	-13.6	0.0
152	57.7	-13.2	0.0
153	57.8	-12.7	0.0
154	58.2	-11.4	0.0
155	58.7	-10.1	0.0
156	58.8	-9.7	0.0
157	59.0	-9.3	0.0
158	59.4	-8.0	0.0
159	59.9	-6.7	0.0
160	60.0	-6.3	0.0
161	60.2	-5.8	0.0
162	60.5	-5.0	0.0
163	61.7	-16.1	0.0
164	62.0	-15.2	0.0
165	62.2	-14.8	0.0
166	62.3	-14.4	0.0
167	62.8	-13.1	0.0
168	63.3	-11.8	0.0
169	63.5	-11.4	0.0
170	63.6	-10.9	0.0
171	64.1	-9.6	0.0
172	64.6	-8.4	0.0
173	64.7	-7.9	0.0
174	64.9	-7.5	0.0
175	65.2	-6.6	0.0
176	66.2	-17.8	0.0
177	66.5	-16.9	0.0
178	66.7	-16.5	0.0
179	66.8	-16.1	0.0
180	67.3	-14.8	0.0
182	67.9	-13.5	0.0
183	68.0	-13.1	0.0
184	68.2	-12.7	0.0
185	68.7	-11.4	0.0
186	69.2	-10.1	0.0
187	69.4	-9.7	0.0
188	69.6	-9.3	0.0
189	69.9	-8.4	0.0
190	70.6	-19.6	0.0
191	70.9	-18.8	0.0
192	71.1	-18.3	0.0
193	71.3	-17.9	0.0
194	71.8	-16.7	0.0
195	72.4	-15.4	0.0
196	72.6	-15.0	0.0
197	72.7	-14.6	0.0

Point	X coordinate	Y coordinate	Z coordinate
198	73.3	-13.3	0.0
199	73.8	-12.1	0.0
200	74.0	-11.6	0.0
201	74.2	-11.2	0.0
202	74.5	-10.4	0.0
203	74.9	-21.6	0.0
204	75.3	-20.7	0.0
205	75.5	-20.3	0.0
206	75.7	-19.9	0.0
207	76.3	-18.7	0.0
208	76.8	-17.4	0.0
209	77.0	-17.0	0.0
210	77.2	-16.6	0.0
211	77.8	-15.3	0.0
212	78.4	-14.1	0.0
213	78.6	-13.7	0.0
214	78.7	-13.3	0.0
215	79.1	-12.4	0.0
300	0.0	-4.1	-1.2
301	0.0	-3.7	-1.2
302	0.0	-3.2	-1.2
303	0.0	-0.4	-1.2
304	0.0	0.0	-1.2
305	0.0	0.4	-1.2
306	0.0	3.2	-1.2
307	0.0	3.6	-1.2
308	0.0	4.1	-1.2
309	4.8	-4.2	-1.2
310	4.8	-3.7	-1.2
311	4.8	-3.3	-1.2
312	4.9	-0.5	-1.2
313	4.9	-0.1	-1.2
314	4.9	0.4	-1.2
315	5.0	3.1	-1.2
316	5.0	3.6	-1.2
317	5.0	4.0	-1.2
318	9.6	-4.4	-1.2
319	9.6	-3.9	-1.2
320	9.6	-3.5	-1.2
321	9.8	-0.7	-1.2
322	9.8	-0.3	-1.2
323	9.8	0.2	-1.2
324	10.0	2.9	-1.2
325	10.0	3.4	-1.2
326	10.0	3.8	-1.2
327	14.4	-4.7	-1.2
328	14.4	-4.2	-1.2
329	14.4	-3.8	-1.2
330	14.6	-1.0	-1.2
331	14.7	-0.6	-1.2
332	14.7	-0.1	-1.2
333	14.9	2.6	-1.2
334	15.0	3.0	-1.2
335	15.0	3.5	-1.2
336	19.1	-5.1	-1.2
337	19.2	-4.7	-1.2
338	19.2	-4.2	-1.2
339	19.5	-1.5	-1.2
340	19.6	-1.0	-1.2
341	19.6	-0.6	-1.2
342	19.9	2.1	-1.2
343	20.0	2.6	-1.2
344	20.0	3.0	-1.2
345	23.9	-5.7	-1.2
346	23.9	-5.3	-1.2
347	24.0	-4.8	-1.2
348	24.4	-2.1	-1.2

Point	X coordinate	Y coordinate	Z coordinate
349	24.4	-1.6	-1.2
350	24.5	-1.2	-1.2
351	24.9	1.5	-1.2
352	24.9	2.0	-1.2
353	25.0	2.4	-1.2
354	29.8	-6.6	-1.2
355	29.9	-6.2	-1.2
356	29.9	-5.7	-1.2
357	30.4	-3.0	-1.2
358	30.5	-2.6	-1.2
359	30.5	-2.1	-1.2
360	31.0	0.6	-1.2
361	31.1	1.0	-1.2
362	31.1	1.5	-1.2
363	35.6	-7.7	-1.2
364	35.7	-7.2	-1.2
365	35.8	-6.8	-1.2
366	36.4	-4.1	-1.2
367	36.5	-3.7	-1.2
368	36.5	-3.2	-1.2
369	37.1	-0.5	-1.2
370	37.2	-0.1	-1.2
371	37.3	0.4	-1.2
372	41.5	-9.0	-1.2
373	41.6	-8.5	-1.2
374	41.7	-8.1	-1.2
375	42.3	-5.4	-1.2
376	42.4	-5.0	-1.2
377	42.5	-4.5	-1.2
378	43.2	-1.9	-1.2
379	43.3	-1.4	-1.2
380	43.4	-1.0	-1.2
381	47.2	-10.4	-1.2
382	47.4	-10.0	-1.2
383	47.5	-9.6	-1.2
384	48.2	-6.9	-1.2
385	48.3	-6.5	-1.2
386	48.4	-6.1	-1.2
387	49.2	-3.4	-1.2
388	49.3	-3.0	-1.2
389	49.4	-2.5	-1.2
390	53.0	-12.1	-1.2
391	53.1	-11.7	-1.2
392	53.2	-11.3	-1.2
393	54.0	-8.6	-1.2
394	54.2	-8.2	-1.2
395	54.3	-7.8	-1.2
396	55.1	-5.1	-1.2
397	55.3	-4.7	-1.2
398	55.4	-4.3	-1.2
399	57.5	-13.6	-1.2
400	0.0	-1.8	-1.2
401	0.0	1.8	-1.2
402	4.9	-1.9	-1.2
403	4.9	1.8	-1.2
404	9.7	-2.1	-1.2
405	9.9	1.6	-1.2
406	14.5	-2.4	-1.2
407	14.8	1.2	-1.2
408	19.4	-2.9	-1.2
409	19.8	0.8	-1.2
410	24.2	-3.4	-1.2
411	24.7	0.2	-1.2
412	30.2	-4.4	-1.2
413	30.8	-0.8	-1.2
414	36.1	-5.5	-1.2
415	36.8	-1.9	-1.2

Point	X coordinate	Y coordinate	Z coordinate
416	42.0	-6.8	-1.2
417	42.8	-3.2	-1.2
418	47.8	-8.3	-1.2
419	48.8	-4.7	-1.2
420	53.6	-9.9	-1.2
421	54.7	-6.5	-1.2
422	58.2	-11.4	-1.2
423	59.4	-8.0	-1.2
424	62.8	-13.1	-1.2
425	64.1	-9.6	-1.2
426	67.3	-14.8	-1.2
427	68.7	-11.4	-1.2
428	71.8	-16.7	-1.2
429	73.3	-13.3	-1.2
430	76.3	-18.7	-1.2
431	77.8	-15.3	-1.2
432	73.8	-12.1	-1.2
433	74.0	-11.6	-1.2
434	74.2	-11.2	-1.2
435	75.3	-20.7	-1.2
436	75.5	-20.3	-1.2
437	75.7	-19.9	-1.2
438	76.8	-17.4	-1.2
439	77.0	-17.0	-1.2
440	77.2	-16.6	-1.2
441	78.4	-14.1	-1.2
442	78.6	-13.7	-1.2
443	78.7	-13.3	-1.2
VLO load anchor	0.0	0.0	0.0
1482	24.9	3.0	-1.2
1483	4.8	-2.7	-1.2
1484	9.6	-2.9	-1.2
1485	14.4	-3.2	-1.2
1494	57.7	-12.2	-1.2
1921	53.8	-9.5	-1.2
2321	57.7	-13.2	-1.2
2322	57.8	-12.7	-1.2
2323	58.7	-10.1	-1.2
2324	58.8	-9.7	-1.2
2325	59.0	-9.3	-1.2
2326	59.9	-6.7	-1.2
2327	60.0	-6.3	-1.2
2328	60.2	-5.8	-1.2
2329	62.0	-15.2	-1.2
2330	62.2	-14.8	-1.2
2331	62.3	-14.4	-1.2
2332	63.3	-11.8	-1.2
2333	63.5	-11.4	-1.2
2334	63.6	-10.9	-1.2
2335	64.6	-8.4	-1.2
2336	64.7	-7.9	-1.2
2337	64.9	-7.5	-1.2
2338	66.5	-16.9	-1.2
2339	66.7	-16.5	-1.2
2340	66.8	-16.1	-1.2
2341	67.9	-13.5	-1.2
2342	68.0	-13.1	-1.2
2343	68.2	-12.7	-1.2
2344	69.2	-10.1	-1.2
2345	69.4	-9.7	-1.2
2346	69.6	-9.3	-1.2
2347	70.9	-18.8	-1.2
2348	71.1	-18.3	-1.2
2349	71.3	-17.9	-1.2
2350	72.4	-15.4	-1.2
2351	72.6	-15.0	-1.2
2352	72.7	-14.6	-1.2

2. Lines

Line	Points	Line	Points
1163	7,21	1164	21,35
1165	35,49	1166	49,64
1167	64,77	1168	77,91
1169	91,104	1170	104,117
1171	117,130	1172	130,143
1173	143,156	1174	156,169
1175	169,183	1176	183,196
1177	196,209	1826	8,22
1827	22,36	1828	36,50
1829	50,65	1830	21,22
1831	7,8	1832	35,36
1833	10,24	1834	24,38
1835	38,52	1836	52,66
1837	22,24	1838	8,10
1839	36,38	1840	49,50
1841	64,65	1842	65,66
1843	50,52	1844	11,25
1845	25,39	1846	39,53
1847	53,67	1848	24,25
1849	10,11	1850	38,39
1851	52,53	1852	66,67
1853	12,26	1854	26,40
1855	40,54	1856	54,68
1857	25,26	1858	11,12
1859	39,40	1860	53,54
1861	67,68	1862	13,27
1863	27,41	1864	41,55
1865	55,69	1866	26,27
1867	12,13	1868	40,41
1869	14,28	1870	27,28
1871	13,14	1872	28,42
1873	42,56	1874	56,70
1875	41,42	1876	55,56
1877	69,70	1878	54,55
1879	68,69	1911	63,76
1912	76,90	1913	90,103
1915	65,78	1916	78,92
1917	92,105	1919	76,77
1920	63,64	1921	77,78
1922	91,92	1923	90,91
1924	103,104	1925	104,105
1926	6,20	1927	20,34
1928	34,48	1929	48,63
1930	20,21	1931	6,7
1932	34,35	1933	48,49
1934	75,61	1935	61,47
1936	47,33	1937	33,19
1938	19,5	1939	5,6
1940	19,20	1942	33,34
1944	47,48	1946	61,63
1948	75,76	1963	73,59
1964	60,74	1965	46,60
1966	32,46	1967	18,32
1968	4,18	1970	59,45
1971	45,31	1972	31,17
1973	17,3	1974	58,72
1975	44,58	1976	30,44
1977	16,30	1978	2,16
1979	71,57	1980	57,43
1981	43,29	1982	29,15
1983	15,1	1984	1,2
1985	15,16	1986	2,3
1987	16,17	1988	3,4
1989	17,18	1990	18,19

Line	Points	Line	Points
1991	32,33	1992	4,5
1994	29,30	1996	30,31
1998	31,32	2000	43,44
2002	44,45	2004	45,46
2006	57,58	2008	71,72
2010	58,59	2012	59,60
2013	46,47	2014	60,61
2016	72,73	2018	73,74
2020	74,75	2021	66,80
2022	80,93	2023	93,106
2024	67,81	2025	81,94
2026	94,107	2027	68,82
2028	82,95	2029	95,108
2030	69,83	2031	83,96
2032	96,109	2033	78,80
2034	80,81	2035	81,82
2036	70,84	2037	84,97
2038	97,110	2039	82,83
2040	83,84	2041	96,97
2042	109,110	2043	94,95
2044	95,96	2045	108,109
2046	107,108	2047	106,107
2048	93,94	2049	92,93
2050	105,106	2051	75,89
2052	89,102	2053	74,88
2054	88,101	2055	73,87
2056	87,100	2057	72,86
2058	86,99	2059	71,85
2060	85,98	2061	85,86
2062	86,87	2063	87,88
2068	88,89	2069	101,102
2070	102,103	2071	89,90
2072	98,99	2073	99,100
2074	100,101	2075	103,116
2076	116,129	2077	129,142
2078	142,155	2079	155,168
2080	168,182	2081	182,195
2082	195,208	2083	105,118
2084	118,131	2085	131,144
2086	144,157	2087	157,170
2088	170,184	2089	184,197
2090	197,210	2091	106,119
2092	119,132	2093	132,145
2094	145,158	2095	158,171
2096	171,185	2097	185,198
2098	198,211	2099	107,120
2100	120,133	2101	133,146
2102	146,159	2103	159,172
2104	172,186	2105	186,199
2106	199,212	2107	108,121
2108	121,134	2109	134,147
2110	147,160	2111	160,173
2112	173,187	2113	187,200
2114	200,213	2115	109,122
2116	122,135	2117	135,148
2118	148,161	2119	161,174
2120	174,188	2121	188,201
2122	201,214	2123	110,123
2124	123,136	2125	136,149
2126	162,149	2127	162,175
2128	175,189	2129	189,202
2130	202,215	2131	102,115
2132	115,128	2133	128,141
2134	141,154	2135	154,167
2136	167,180	2137	180,194

Line	Points	Line	Points
2138	194,207	2139	101,114
2140	114,127	2141	127,140
2142	140,153	2143	153,166
2144	166,179	2145	179,193
2146	193,206	2147	100,113
2148	113,126	2149	126,139
2150	139,152	2151	152,165
2152	165,178	2153	178,192
2154	192,205	2155	99,112
2156	112,125	2157	125,138
2158	138,151	2159	151,164
2160	164,177	2161	177,191
2162	191,204	2163	98,111
2164	111,124	2165	124,137
2166	137,150	2167	150,163
2168	163,176	2169	176,190
2170	190,203	2171	111,112
2172	124,125	2173	137,138
2174	150,151	2175	163,164
2176	176,177	2177	190,191
2178	203,204	2179	204,205
2180	191,192	2182	177,178
2184	164,165	2186	151,152
2188	138,139	2190	125,126
2192	112,113	2193	113,114
2194	126,127	2195	139,140
2196	152,153	2197	165,166
2198	178,179	2199	192,193
2200	205,206	2201	114,115
2202	127,128	2203	140,141
2204	153,154	2205	166,167
2206	179,180	2207	193,194
2208	206,207	2209	115,116
2210	128,129	2211	141,142
2212	154,155	2213	167,168
2214	180,182	2215	194,195
2216	207,208	2217	208,209
2218	195,196	2220	182,183
2222	168,169	2224	155,156
2226	142,143	2228	129,130
2230	116,117	2231	117,118
2232	130,131	2233	143,144
2234	131,132	2235	118,119
2236	144,145	2237	156,157
2238	169,170	2239	183,184
2240	196,197	2241	209,210
2242	157,158	2243	170,171
2244	184,185	2245	197,198
2246	210,211	2247	211,212
2248	198,199	2249	212,213
2250	199,200	2251	213,214
2252	200,201	2253	214,215
2254	201,202	2256	185,186
2258	187,188	2260	186,187
2261	119,120	2262	120,121
2263	121,122	2264	122,123
2265	132,133	2266	133,134
2267	134,135	2268	135,136
2269	148,149	2270	147,148
2271	146,147	2272	145,146
2273	158,159	2274	171,172
2276	172,173	2278	159,160
2279	160,161	2280	173,174
2282	188,189	2284	174,175
2286	161,162	2287	306,315
2288	315,316	2289	307,316

Line	Points	Line	Points
2290	306,307	2291	315,324
2292	324,325	2293	316,325
2294	324,333	2295	333,334
2296	325,334	2297	333,342
2298	342,343	2299	334,343
2300	316,317	2301	308,317
2302	307,308	2303	325,326
2304	317,326	2305	334,335
2306	326,335	2307	343,344
2308	335,344	2309	342,351
2310	351,352	2311	343,352
2312	352,353	2313	344,353
2314	351,360	2315	360,361
2316	352,361	2317	361,362
2318	353,362	2319	361,370
2320	370,371	2321	362,371
2322	360,369	2323	369,370
2324	432,441	2325	441,442
2326	433,442	2327	432,433
2328	442,443	2329	434,443
2330	433,434	2331	2345,433
2332	2346,434	2333	2345,2346
2334	2344,432	2335	2344,2345
2336	369,378	2337	378,379
2338	370,379	2339	379,380
2340	371,380	2341	378,387
2342	387,388	2343	379,388
2344	388,389	2345	380,389
2346	388,397	2347	397,398
2348	389,398	2349	387,396
2350	396,397	2351	2335,2344
2352	2336,2345	2353	2335,2336
2354	2326,2335	2355	2327,2336
2356	2326,2327	2357	396,2326
2358	397,2327	2359	2327,2328
2360	2328,398	2361	2336,2337
2362	2328,2337	2363	2337,2346
2364	304,313	2365	313,314
2366	305,314	2367	304,305
2368	313,322	2369	322,323
2370	314,323	2371	322,331
2372	331,332	2373	323,332
2374	331,340	2375	340,341
2376	332,341	2377	339,348
2378	348,349	2379	340,349
2380	339,340	2381	349,350
2382	341,350	2383	349,358
2384	358,359	2385	350,359
2386	348,357	2387	357,358
2388	357,366	2389	366,367
2390	358,367	2391	367,368
2392	359,368	2393	303,312
2394	312,313	2395	303,304
2396	312,321	2397	321,322
2398	321,330	2399	330,331
2400	330,339	2401	2341,2350
2402	2350,2351	2403	2342,2351
2404	2341,2342	2405	2332,2341
2406	2333,2342	2407	2332,2333
2408	2323,2332	2409	2324,2333
2410	2323,2324	2411	393,2323
2412	394,2324	2413	393,394
2414	384,393	2415	385,394
2416	384,385	2417	375,384
2418	376,385	2419	375,376
2420	366,375	2421	367,376

Line	Points	Line	Points
2422	376,377	2423	368,377
2424	385,386	2425	377,386
2426	394,395	2427	386,395
2428	2324,2325	2429	395,2325
2430	2333,2334	2431	2325,2334
2432	2342,2343	2433	2334,2343
2434	2351,2352	2435	2343,2352
2436	2350,438	2437	438,439
2438	2351,439	2440	439,440
2441	2352,440	2442	309,300
2443	300,301	2444	301,310
2445	309,310	2446	301,302
2447	302,311	2448	310,311
2449	318,309	2450	310,319
2451	318,319	2452	311,320
2453	319,320	2454	327,318
2455	319,328	2456	327,328
2457	320,329	2458	328,329
2459	336,327	2460	328,337
2461	336,337	2462	329,338
2463	337,338	2464	345,336
2465	337,346	2466	346,345
2467	338,347	2468	347,346
2469	345,354	2470	354,355
2471	355,346	2472	355,356
2473	356,347	2474	354,363
2475	363,364	2476	364,355
2477	364,365	2478	365,356
2479	2347,435	2480	435,436
2481	436,2348	2482	2347,2348
2483	2338,2347	2484	2348,2339
2485	2338,2339	2486	2329,2338
2487	2339,2330	2488	2329,2330
2489	399,2329	2490	2330,2321
2491	399,2321	2492	390,399
2493	2321,391	2494	391,390
2495	381,390	2496	391,382
2497	381,382	2498	372,381
2499	382,373	2500	372,373
2501	363,372	2502	373,364
2503	373,374	2504	374,365
2505	382,383	2506	383,374
2507	391,392	2508	392,383
2509	2321,2322	2510	2322,392
2511	2330,2331	2512	2331,2322
2513	2339,2340	2514	2340,2331
2515	2348,2349	2516	2349,2340
2517	436,437	2518	437,2349
2519	306,11	2520	315,25
2522	324,39	2524	333,53
2526	342,67	2528	308,13
2529	317,27	2532	326,41
2535	335,55	2537	344,69
2539	351,81	2541	353,83
2543	360,94	2545	362,96
2547	371,109	2549	369,107
2551	432,199	2552	441,212
2554	434,201	2555	443,214
2557	2346,188	2559	2344,186
2561	378,120	2563	380,122
2565	387,133	2567	389,135
2569	398,148	2571	396,146
2573	2335,172	2575	2326,159
2578	2328,161	2580	2337,174
2581	305,8	2582	314,22
2584	323,36	2586	332,50

Line	Points	Line	Points
2588	341,65	2590	339,63
2591	348,76	2593	350,78
2595	359,92	2597	357,90
2599	366,103	2601	368,105
2603	303,6	2604	312,20
2606	321,34	2608	330,48
2611	2341,182	2612	2350,195
2614	2332,168	2616	2323,155
2618	393,142	2620	384,129
2622	375,116	2625	377,118
2627	386,131	2629	395,144
2631	2325,157	2633	2334,170
2635	2343,184	2637	2352,197
2639	438,208	2641	440,210
2642	309,16	2643	2,300
2645	311,18	2646	4,302
2648	318,30	2650	320,32
2652	327,44	2654	329,46
2656	336,58	2658	338,60
2660	345,72	2662	347,74
2664	354,86	2666	356,88
2668	363,99	2670	365,101
2672	2347,191	2673	204,435
2675	2338,177	2677	2329,164
2679	399,151	2681	390,138
2683	381,125	2685	372,112
2688	374,114	2690	383,127
2692	140,392	2694	2322,153
2696	2331,166	2698	2340,179
2700	2349,193	2702	206,437
2705	12,307	2713	82,352
2720	397,147	2729	213,442
2737	304,7	2741	77,349
2754	209,439	2765	143,394
2774	3,301	2779	73,346
2784	205,436	2787	139,391
2789	26,316	2792	40,325
2795	54,334	2798	68,343
2809	95,361	2813	370,108
2819	200,433	2823	2345,187
2829	121,379	2834	134,388
2839	173,2336	2842	160,2327
2843	313,21	2846	322,35
2849	331,49	2852	340,64
2857	358,91	2863	104,367
2874	196,2351	2877	183,2342
2880	169,2333	2883	156,2324
2886	130,385	2889	117,376
2891	310,17	2896	319,31
2901	328,45	2906	337,59
2911	355,87	2916	364,100
2921	2348,192	2924	2339,178
2927	2330,165	2930	2321,152
2933	382,126	2936	373,113
2952	306,401	2953	401,305
2954	303,400	2955	400,302
2956	401,11	2957	401,8
2958	400,6	2959	400,4
2963	411,350	2964	348,410
2965	410,347	2966	411,81
2967	411,78	2968	410,76
2969	410,74	2974	396,421
2975	421,395	2976	393,420
2977	420,392	2978	438,430
2979	430,437	2980	441,431
2981	431,440	2982	421,146

Line	Points	Line	Points
2983	421,144	2984	420,142
2985	420,140	2986	431,212
2987	431,210	2988	430,208
2989	430,206	2998	315,403
2999	403,314	3000	321,404
3001	404,320	3002	312,402
3003	402,311	3004	324,405
3005	405,323	3006	333,407
3007	407,332	3008	330,406
3009	406,329	3010	342,409
3011	409,341	3012	339,408
3013	408,338	3014	403,25
3015	403,22	3016	402,20
3017	402,18	3018	404,32
3019	404,34	3020	405,39
3021	405,36	3022	407,53
3023	407,50	3024	406,48
3025	406,46	3026	409,67
3027	409,65	3028	408,63
3029	408,60	3038	360,413
3039	413,359	3040	357,412
3041	412,356	3042	369,415
3043	415,368	3044	366,414
3045	414,365	3046	378,417
3047	417,377	3048	375,416
3049	416,374	3050	387,419
3051	419,386	3053	418,383
3054	413,94	3055	413,92
3056	412,90	3057	412,88
3058	415,107	3059	415,105
3060	414,103	3061	414,101
3062	416,114	3063	416,116
3064	417,120	3065	417,118
3066	419,133	3067	419,131
3068	418,129	3078	2326,423
3079	423,2325	3080	2323,422
3081	422,2322	3082	2335,425
3083	425,2334	3084	2332,424
3085	424,2331	3086	2344,427
3087	427,2343	3088	2341,426
3089	426,2340	3090	432,429
3091	429,2352	3092	2350,428
3093	428,2349	3094	423,159
3095	423,157	3096	425,172
3097	425,170	3098	424,168
3099	424,166	3100	427,186
3101	427,184	3102	426,182
3103	426,179	3104	429,199
3105	429,197	3106	428,195
3107	428,193	3487	351,411
3488	384,418	3489	418,127
3490	422,155	3491	422,153

3. Surfaces

Surface	Lines	Surface	Lines
1444	1163,1830,1826,1831	1446	1164,1832,1827,1830
1448	1826,1837,1833,1838	1450	1827,1839,1834,1837
1452	1165,1840,1828,1832	1454	1166,1841,1829,1840
1456	1829,1842,1836,1843	1458	1828,1843,1835,1839
1477	1833,1848,1844,1849	1479	1834,1850,1845,1848
1481	1835,1851,1846,1850	1483	1836,1852,1847,1851
1485	1844,1857,1853,1858	1487	1845,1859,1854,1857
1489	1846,1860,1855,1859	1491	1847,1861,1856,1860
1493	1853,1866,1862,1867	1495	1854,1868,1863,1866
1497	1862,1870,1869,1871	1499	1863,1875,1872,1870
1501	1864,1876,1873,1875	1503	1865,1877,1874,1876
1505	1855,1878,1864,1868	1507	1856,1879,1865,1878
1509	1911,1919,1167,1920	1511	1167,1921,1915,1841
1513	1168,1922,1916,1921	1515	1912,1923,1168,1919
1517	1913,1924,1169,1923	1519	1169,1925,1917,1922
1522	1926,1930,1163,1931	1524	1927,1932,1164,1930
1526	1928,1933,1165,1932	1528	1929,1920,1166,1933
1530	1938,1940,1926,1939	1532	1937,1942,1927,1940
1534	1936,1944,1928,1942	1536	1935,1946,1929,1944
1538	1934,1948,1911,1946	1568	1983,1985,1978,1984
1570	1978,1987,1973,1986	1572	1973,1989,1968,1988
1574	1967,1991,1937,1990	1576	1968,1990,1938,1992
1578	1982,1994,1977,1985	1580	1977,1996,1972,1987
1582	1972,1998,1967,1989	1584	1981,2000,1976,1994
1586	1976,2002,1971,1996	1588	1971,2004,1966,1998
1590	1980,2006,1975,2000	1592	1979,2008,1974,2006
1594	1975,2010,1970,2002	1596	1970,2012,1965,2004
1598	1965,2014,1935,2013	1600	1966,2013,1936,1991
1602	1974,2016,1963,2010	1604	1963,2018,1964,2012
1607	1964,2020,1934,2014	1609	1915,2033,2021,1842
1611	2021,2034,2024,1852	1613	2024,2035,2027,1861
1615	2027,2039,2030,1879	1617	2030,2040,2036,1877
1619	2031,2041,2037,2040	1621	2032,2042,2038,2041
1623	2025,2043,2028,2035	1625	2028,2044,2031,2039
1627	2029,2045,2032,2044	1629	2026,2046,2029,2043
1631	2023,2047,2026,2048	1633	1916,2049,2022,2033
1635	2022,2048,2025,2034	1637	1917,2050,2023,2049
1639	2059,2061,2057,2008	1641	2057,2062,2055,2016
1643	2055,2063,2053,2018	1648	2053,2068,2051,2020
1650	2054,2069,2052,2068	1652	2052,2070,1913,2071
1654	2051,2071,1912,1948	1656	2060,2072,2058,2061
1658	2058,2073,2056,2062	1660	2056,2074,2054,2063
1662	2163,2171,2155,2072	1664	2164,2172,2156,2171
1666	2165,2173,2157,2172	1668	2166,2174,2158,2173
1670	2167,2175,2159,2174	1672	2168,2176,2160,2175
1674	2169,2177,2161,2176	1676	2170,2178,2162,2177
1678	2162,2179,2154,2180	1680	2161,2180,2153,2182
1682	2160,2182,2152,2184	1684	2159,2184,2151,2186
1686	2158,2186,2150,2188	1688	2157,2188,2149,2190
1690	2156,2190,2148,2192	1692	2155,2192,2147,2073
1694	2147,2193,2139,2074	1696	2148,2194,2140,2193
1698	2149,2195,2141,2194	1700	2150,2196,2142,2195
1702	2151,2197,2143,2196	1704	2152,2198,2144,2197
1706	2153,2199,2145,2198	1708	2154,2200,2146,2199
1710	2139,2201,2131,2069	1712	2140,2202,2132,2201
1714	2141,2203,2133,2202	1716	2142,2204,2134,2203
1718	2143,2205,2135,2204	1720	2144,2206,2136,2205
1722	2145,2207,2137,2206	1724	2146,2208,2138,2207
1727	2131,2209,2075,2070	1729	2132,2210,2076,2209
1731	2133,2211,2077,2210	1733	2134,2212,2078,2211
1735	2135,2213,2079,2212	1737	2136,2214,2080,2213
1739	2137,2215,2081,2214	1741	2138,2216,2082,2215
1743	2082,2217,1177,2218	1745	2081,2218,1176,2220

Surface	Lines	Surface	Lines
1747	2080,2220,1175,2222	1749	2079,2222,1174,2224
1751	2078,2224,1173,2226	1753	2077,2226,1172,2228
1755	2076,2228,1171,2230	1757	2075,2230,1170,1924
1759	1170,2231,2083,1925	1761	1171,2232,2084,2231
1763	1172,2233,2085,2232	1765	2084,2234,2092,2235
1769	2083,2235,2091,2050	1771	2085,2236,2093,2234
1773	1173,2237,2086,2233	1775	1174,2238,2087,2237
1777	1175,2239,2088,2238	1779	1176,2240,2089,2239
1781	1177,2241,2090,2240	1783	2086,2242,2094,2236
1785	2087,2243,2095,2242	1787	2088,2244,2096,2243
1789	2089,2245,2097,2244	1791	2090,2246,2098,2245
1793	2098,2247,2106,2248	1795	2106,2249,2114,2250
1797	2114,2251,2122,2252	1799	2122,2253,2130,2254
1801	2097,2248,2105,2256	1803	2113,2252,2121,2258
1805	2105,2250,2113,2260	1807	2091,2261,2099,2047
1809	2099,2262,2107,2046	1811	2107,2263,2115,2045
1813	2115,2264,2123,2042	1815	2092,2265,2100,2261
1817	2100,2266,2108,2262	1819	2108,2267,2116,2263
1821	2116,2268,2124,2264	1823	2117,2269,2125,2268
1825	2109,2270,2117,2267	1827	2101,2271,2109,2266
1829	2093,2272,2101,2265	1831	2094,2273,2102,2272
1833	2095,2274,2103,2273	1835	2096,2256,2104,2274
1837	2104,2260,2112,2276	1839	2103,2276,2111,2278
1841	2102,2278,2110,2271	1843	2110,2279,2118,2270
1845	2111,2280,2119,2279	1847	2112,2258,2120,2280
1849	2121,2254,2129,2282	1851	2120,2282,2128,2284
1853	2119,2284,2127,2286	1855	2118,2286,2126,2269
1856	2287,2288,2289,2290	1857	2291,2292,2293,2288
1858	2294,2295,2296,2292	1859	2297,2298,2299,2295
1860	2289,2300,2301,2302	1861	2293,2303,2304,2300
1862	2296,2305,2306,2303	1863	2299,2307,2308,2305
1864	2309,2310,2311,2298	1865	2311,2312,2313,2307
1866	2314,2315,2316,2310	1867	2316,2317,2318,2312
1868	2319,2320,2321,2317	1869	2322,2323,2319,2315
1870	2324,2325,2326,2327	1871	2326,2328,2329,2330
1872	2331,2330,2332,2333	1873	2334,2327,2331,2335
1874	2336,2337,2338,2323	1875	2338,2339,2340,2320
1876	2341,2342,2343,2337	1877	2343,2344,2345,2339
1878	2346,2347,2348,2344	1879	2349,2350,2346,2342
1880	2351,2335,2352,2353	1881	2354,2353,2355,2356
1882	2357,2356,2358,2350	1883	2358,2359,2360,2347
1884	2355,2361,2362,2359	1885	2352,2333,2363,2361
1886	2364,2365,2366,2367	1887	2368,2369,2370,2365
1888	2371,2372,2373,2369	1889	2374,2375,2376,2372
1890	2377,2378,2379,2380	1891	2379,2381,2382,2375
1892	2383,2384,2385,2381	1893	2386,2387,2383,2378
1894	2388,2389,2390,2387	1895	2390,2391,2392,2384
1896	2393,2394,2364,2395	1897	2396,2397,2368,2394
1898	2398,2399,2371,2397	1899	2400,2380,2374,2399
1900	2401,2402,2403,2404	1901	2405,2404,2406,2407
1902	2408,2407,2409,2410	1903	2411,2410,2412,2413
1904	2414,2413,2415,2416	1905	2417,2416,2418,2419
1906	2420,2419,2421,2389	1907	2421,2422,2423,2391
1908	2418,2424,2425,2422	1909	2415,2426,2427,2424
1910	2412,2428,2429,2426	1911	2409,2430,2431,2428
1912	2406,2432,2433,2430	1913	2403,2434,2435,2432
1914	2436,2437,2438,2402	1915	2438,2440,2441,2434
1916	2442,2443,2444,2445	1917	2444,2446,2447,2448
1918	2449,2445,2450,2451	1919	2450,2448,2452,2453
1920	2454,2451,2455,2456	1921	2455,2453,2457,2458
1922	2459,2456,2460,2461	1923	2460,2458,2462,2463
1924	2464,2461,2465,2466	1925	2465,2463,2467,2468
1926	2469,2470,2471,2466	1927	2471,2472,2473,2468
1928	2474,2475,2476,2470	1929	2476,2477,2478,2472
1930	2479,2480,2481,2482	1931	2483,2482,2484,2485
1932	2486,2485,2487,2488	1933	2489,2488,2490,2491
1934	2492,2491,2493,2494	1935	2495,2494,2496,2497

Surface	Lines	Surface	Lines
1936	2498,2497,2499,2500	1937	2501,2500,2502,2475
1938	2502,2503,2504,2477	1939	2499,2505,2506,2503
1940	2496,2507,2508,2505	1941	2493,2509,2510,2507
1942	2490,2511,2512,2509	1943	2487,2513,2514,2511
1944	2484,2515,2516,2513	1945	2481,2517,2518,2515
1946	2287,2520,1844,2519	1947	2291,2522,1845,2520
1948	2294,2524,1846,2522	1949	2297,2526,1847,2524
1950	2301,2529,1862,2528	1952	2304,2532,1863,2529
1953	2306,2535,1864,2532	1954	2308,2537,1865,2535
1955	2309,2539,2024,2526	1956	2313,2541,2030,2537
1957	2314,2543,2025,2539	1958	2318,2545,2031,2541
1959	2321,2547,2032,2545	1960	2322,2549,2026,2543
1961	2324,2552,2106,2551	1962	2329,2555,2122,2554
1963	2332,2554,2121,2557	1964	2334,2551,2105,2559
1965	2336,2561,2099,2549	1966	2340,2563,2115,2547
1967	2341,2565,2100,2561	1968	2345,2567,2116,2563
1969	2348,2569,2117,2567	1970	2349,2571,2101,2565
1971	2351,2559,2104,2573	1972	2354,2573,2103,2575
1973	2357,2575,2102,2571	1974	2360,2578,2118,2569
1975	2362,2580,2119,2578	1976	2363,2557,2120,2580
1977	2366,2582,1826,2581	1978	2370,2584,1827,2582
1979	2373,2586,1828,2584	1980	2376,2588,1829,2586
1981	2377,2591,1911,2590	1982	2382,2593,1915,2588
1983	2385,2595,1916,2593	1984	2386,2597,1912,2591
1985	2388,2599,1913,2597	1986	2392,2601,1917,2595
1987	2393,2604,1926,2603	1988	2396,2606,1927,2604
1989	2398,2608,1928,2606	1990	2400,2590,1929,2608
1991	2401,2612,2081,2611	1992	2405,2611,2080,2614
1993	2408,2614,2079,2616	1994	2411,2616,2078,2618
1995	2414,2618,2077,2620	1996	2417,2620,2076,2622
1997	2420,2622,2075,2599	1998	2423,2625,2083,2601
1999	2425,2627,2084,2625	2000	2427,2629,2085,2627
2001	2429,2631,2086,2629	2002	2431,2633,2087,2631
2003	2433,2635,2088,2633	2004	2435,2637,2089,2635
2005	2436,2639,2082,2612	2006	2441,2641,2090,2637
2007	2442,2642,1978,2643	2008	2447,2645,1968,2646
2009	2449,2648,1977,2642	2010	2452,2650,1967,2645
2011	2454,2652,1976,2648	2012	2457,2654,1966,2650
2013	2459,2656,1975,2652	2014	2462,2658,1965,2654
2015	2464,2660,1974,2656	2016	2467,2662,1964,2658
2017	2469,2664,2057,2660	2018	2473,2666,2053,2662
2019	2474,2668,2058,2664	2020	2478,2670,2054,2666
2021	2479,2673,2162,2672	2022	2483,2672,2161,2675
2023	2486,2675,2160,2677	2024	2489,2677,2159,2679
2025	2492,2679,2158,2681	2026	2495,2681,2157,2683
2027	2498,2683,2156,2685	2028	2501,2685,2155,2668
2029	2504,2688,2139,2670	2030	2506,2690,2140,2688
2031	2508,2692,2141,2690	2032	2510,2694,2142,2692
2033	2512,2696,2143,2694	2034	2514,2698,2144,2696
2035	2516,2700,2145,2698	2036	2518,2702,2146,2700
2037	2519,1858,2705,2290	2038	2705,1867,2528,2302
2040	2539,2035,2713,2310	2041	2713,2039,2541,2312
2043	2720,2270,2569,2347	2044	2571,2271,2720,2350
2046	2552,2249,2729,2325	2047	2729,2251,2555,2328
2049	2737,1831,2581,2367	2050	2591,1919,2741,2378
2051	2741,1921,2593,2381	2052	2603,1931,2737,2395
2055	2639,2217,2754,2437	2056	2754,2241,2641,2440
2059	2618,2226,2765,2413	2060	2765,2233,2629,2426
2063	2643,1986,2774,2443	2064	2774,1988,2646,2446
2065	2660,2016,2779,2466	2066	2779,2018,2662,2468
2067	2673,2179,2784,2480	2068	2681,2188,2787,2494
2069	2787,2195,2692,2507	2070	2784,2200,2702,2517
2071	2520,1857,2789,2288	2072	2522,1859,2792,2292
2073	2524,1860,2795,2295	2074	2526,1861,2798,2298
2075	2789,1866,2529,2300	2076	2792,1868,2532,2303
2077	2795,1878,2535,2305	2078	2798,1879,2537,2307
2079	2543,2043,2809,2315	2080	2809,2044,2545,2317

Surface	Lines	Surface	Lines
2081	2813,2045,2547,2320	2082	2549,2046,2813,2323
2083	2551,2250,2819,2327	2084	2819,2252,2554,2330
2085	2823,2258,2557,2333	2086	2559,2260,2823,2335
2087	2561,2262,2829,2337	2088	2829,2263,2563,2339
2089	2565,2266,2834,2342	2090	2834,2267,2567,2344
2091	2573,2276,2839,2353	2092	2575,2278,2842,2356
2093	2842,2279,2578,2359	2094	2839,2280,2580,2361
2095	2843,1830,2582,2365	2096	2846,1832,2584,2369
2097	2849,1840,2586,2372	2098	2852,1841,2588,2375
2099	2590,1920,2852,2380	2100	2857,1922,2595,2384
2101	2597,1923,2857,2387	2102	2599,1924,2863,2389
2103	2863,1925,2601,2391	2104	2604,1930,2843,2394
2105	2606,1932,2846,2397	2106	2608,1933,2849,2399
2107	2612,2218,2874,2402	2108	2611,2220,2877,2404
2109	2614,2222,2880,2407	2110	2616,2224,2883,2410
2111	2620,2228,2886,2416	2112	2622,2230,2889,2419
2113	2889,2231,2625,2422	2114	2886,2232,2627,2424
2115	2883,2237,2631,2428	2116	2880,2238,2633,2430
2117	2877,2239,2635,2432	2118	2874,2240,2637,2434
2119	2642,1987,2891,2445	2120	2891,1989,2645,2448
2121	2648,1996,2896,2451	2122	2896,1998,2650,2453
2123	2652,2002,2901,2456	2124	2901,2004,2654,2458
2125	2656,2010,2906,2461	2126	2906,2012,2658,2463
2127	2664,2062,2911,2470	2128	2911,2063,2666,2472
2129	2668,2073,2916,2475	2130	2916,2074,2670,2477
2131	2672,2180,2921,2482	2132	2675,2182,2924,2485
2133	2677,2184,2927,2488	2134	2679,2186,2930,2491
2135	2683,2190,2933,2497	2136	2685,2192,2936,2500
2137	2936,2193,2688,2503	2138	2933,2194,2690,2505
2139	2930,2196,2694,2509	2140	2927,2197,2696,2511
2141	2924,2198,2698,2513	2142	2921,2199,2700,2515

4. MESH:Line

Attribute: 5 Title: Element 1
Sub Type = Line Mesh **Element Type = BMI31**

Mesh spacing	Nr. of elements	Start node end releases:	End node end releases:
Uniform	1	None	None

Assignment to Lines: Beta angle = 0.000
2519;2520;2522T2526I2;2539;2543;2549;2552;2559;2561;2565;2571;2573;2575;2581;2582;2584;2586;2590;2591;2593T2603I2;2604T2608I2;2611;2614;2616T2622I2;2625T2641I2;2645;2646;2650T2670I4;2688T2702I2;2952T2959;2963T2969;2974T2989;2998T3029;3038T3051;3053T3068;3078T3107;3487T3491

Attribute: 7 Title: Element 2
Sub Type = Line Mesh **Element Type = BMI31**

Mesh spacing	Nr. of elements	Start node end releases:	End node end releases:
Uniform	2	None	None

Assignment to Lines: Beta angle = 0.000
1826T1829;1844T1847;1862T1865;1911T1913;1915T1917;1926T1929;1964T1968;1974T1978;2024T2026;2030T2032;2053;2054;2057;2058;2075T2090;2099T2106;2115T2122;2139T2146;2155T2162

5. MESH:Surface

Attribute: 1 Title: Element 2 x 1
Sub Type = Surface Mesh Element Type = QTS8

Property	Symbol	Value
Element size	size	0.0
Number of divisions in x	xDivisions	2
Number of divisions in y	yDivisions	1
Transition mesh	transition	false
Allow irregular mesh	allowIrregular	false
Element defined by name	DefinedByName	false
Single feature joint	isSingleFtrJnt	false

Assignment to Surfaces:
1444T1458I2;1477T1519I2;1522T1538I2;1568T1604I2;1607T1643I2;1648T1724I2;1727T1765I2;1769T1855I2;1856T1950;1952T2036

Attribute: 4 Title: Element 1 x 1
Sub Type = Surface Mesh Element Type = QTS8

Property	Symbol	Value
Element size	size	0.0
Number of divisions in x	xDivisions	1
Number of divisions in y	yDivisions	1
Transition mesh	transition	false
Allow irregular mesh	allowIrregular	false
Element defined by name	DefinedByName	false
Single feature joint	isSingleFtrJnt	false

Assignment to Surfaces:
2037;2038;2040;2041;2043;2044;2046;2047;2049T2052;2055;2056;2059;2060;2063T2142

6. Geometric : Line

Attribute: 3 Title: PL 20 x 200 Right (PL 20 x 200 (RSS D=0.02 B=0.2))
Sub Type = Line Geometric
Assigned in: Analysis 7

Property	Symbol	Value
Cross sectional area	A	0.0
Second moment of area about y axis	Iyy	0.0
Second moment of area about z axis	Izz	0.0
Product moment of area	Iyz	0.0
Torsional constant	J	0.0
Eccentricity in local z direction, relative to specified origin	ez0	0.0
Eccentricity in local y direction, relative to specified origin	ey0	0.1
Eccentricity in local z direction, relative to beam centroid	ez	0.0
Eccentricity in local y direction, relative to beam centroid	ey	0.1
Wagner constant 1st moment of square radius about y (Iyr)	Iyr	0.0
Wagner constant 1st moment of square radius about z (Izr)	Izr	0.0
Wagner constant 4th moment of area about origin (Irr)	Irr	0.0
Wagner constant 2nd moment of warping about origin (Iwr)	Iwr	0.0
Effective shear area in local z direction	Asz	0.0
Effective shear area in local y direction	Asy	0.0
Plastic area	Ap	0.0
Plastic modulus for bending about y	Zpy	0.0
Plastic modulus for bending about z	Zpz	0.0
Plastic neutral axis, distance from centroid along y axis	yp	0.0
Plastic neutral axis, distance from centroid along z axis	zp	0.0
Plastic torsional section modulus	Zpt	0.0
Warping torsional constant about shear centre	Cw	0.0
Shear centre about y axis	yo	0.0
Shear centre about z axis	zo	0.0
Monosymmetry constant about y	betay	0.0
Monosymmetry constant about z	betaz	0.0
Radius of gyration about y axis	ky	0.0
Radius of gyration about z axis	kz	0.1
y axis extreme fibre, top	yt	0.1
y axis extreme fibre, bottom	yb	-0.1
z axis extreme fibre, top	zt	0.0
z axis extreme fibre, bottom	zb	0.0
Shape code identifier	Type	1
Breadth of this section	B	0.2
Depth of this section	D	0.0
Element type	elementType	"3D Thick Beam"
Reinforcement	reinforcement	None

Assignment to Lines:
1844T1847;1911T1913;1926T1929;1974T1978;2024T2026;2057;2058;2075T2082;2099T2106;2155T2162

Attribute: 4 Title: PL 20 x 200 Left (PL 20 x 200 (RSS D=0.02 B=0.2))
Sub Type = Line Geometric
Assigned in: Analysis 7

Property	Symbol	Value
Cross sectional area	A	0.0
Second moment of area about y axis	Iyy	0.0
Second moment of area about z axis	Izz	0.0
Product moment of area	Iyz	0.0
Torsional constant	J	0.0
Eccentricity in local z direction, relative to specified origin	ez0	0.0
Eccentricity in local y direction, relative to specified origin	ey0	-0.1
Eccentricity in local z direction, relative to beam centroid	ez	0.0
Eccentricity in local y direction, relative to beam centroid	ey	-0.1
Wagner constant 1st moment of square radius about y (Iyr)	Iyr	0.0
Wagner constant 1st moment of square radius about z (Izr)	Izr	0.0
Wagner constant 4th moment of area about origin (Irr)	Irr	0.0
Wagner constant 2nd moment of warping about origin (Iwr)	Iwr	0.0
Effective shear area in local z direction	Asz	0.0
Effective shear area in local y direction	Asy	0.0
Plastic area	Ap	0.0
Plastic modulus for bending about y	Zpy	0.0
Plastic modulus for bending about z	Zpz	0.0
Plastic neutral axis, distance from centroid along y axis	yp	0.0
Plastic neutral axis, distance from centroid along z axis	zp	0.0
Plastic torsional section modulus	Zpt	0.0
Warping torsional constant about shear centre	Cw	0.0
Shear centre about y axis	yo	0.0
Shear centre about z axis	zo	0.0
Monosymmetry constant about y	betay	0.0
Monosymmetry constant about z	betaz	0.0
Radius of gyration about y axis	ky	0.0
Radius of gyration about z axis	kz	0.1
y axis extreme fibre, top	yt	0.1
y axis extreme fibre, bottom	yb	-0.1
z axis extreme fibre, top	zt	0.0
z axis extreme fibre, bottom	zb	0.0
Shape code identifier	Type	1
Breadth of this section	B	0.2
Depth of this section	D	0.0
Element type	elementType	"3D Thick Beam"
Reinforcement	reinforcement	None

Assignment to Lines:
1826T1829;1862T1865;1915T1917;1964T1968;2030T2032;2053;2054;2083T2090;2115T2122;2139T2146

Attribute: 5 Title: PL 30 x 200 (+) (PL 30 X 200 (RSS D=0.03 B=0.2))
Sub Type = Line Geometric
Assigned in: Analysis 7

Property	Symbol	Value
Cross sectional area	A	0.0
Second moment of area about y axis	Iyy	0.0
Second moment of area about z axis	Izz	0.0
Product moment of area	Iyz	0.0
Torsional constant	J	0.0
Eccentricity in local z direction, relative to specified origin	ez0	0.0
Eccentricity in local y direction, relative to specified origin	ey0	0.1
Eccentricity in local z direction, relative to beam centroid	ez	0.0
Eccentricity in local y direction, relative to beam centroid	ey	0.1
Wagner constant 1st moment of square radius about y (Iyr)	Iyr	0.0
Wagner constant 1st moment of square radius about z (Izr)	Izr	0.0
Wagner constant 4th moment of area about origin (Irr)	Irr	0.0
Wagner constant 2nd moment of warping about origin (Iwr)	Iwr	0.0
Effective shear area in local z direction	Asz	0.0
Effective shear area in local y direction	Asy	0.0
Plastic area	Ap	0.0
Plastic modulus for bending about y	Zpy	0.0
Plastic modulus for bending about z	Zpz	0.0
Plastic neutral axis, distance from centroid along y axis	yp	0.0
Plastic neutral axis, distance from centroid along z axis	zp	0.0
Plastic torsional section modulus	Zpt	0.0
Warping torsional constant about shear centre	Cw	0.0
Shear centre about y axis	yo	0.0
Shear centre about z axis	zo	0.0
Monosymmetry constant about y	betay	0.0
Monosymmetry constant about z	betaz	0.0
Radius of gyration about y axis	ky	0.0
Radius of gyration about z axis	kz	0.1
y axis extreme fibre, top	yt	0.1
y axis extreme fibre, bottom	yb	-0.1
z axis extreme fibre, top	zt	0.0
z axis extreme fibre, bottom	zb	0.0
Shape code identifier	Type	1
Breadth of this section	B	0.2
Depth of this section	D	0.0
Element type	elementType	"3D Thick Beam"
Reinforcement	reinforcement	None

Assignment to Lines:
2519;2539;2552;2571;2591;2603;2618;2639

Attribute: 6 Title: PL 30 x 200 (-) (PL 30 X 200 (RSS D=0.03 B=0.2))
Sub Type = Line Geometric
Assigned in: Analysis 7

Property	Symbol	Value
Cross sectional area	A	0.0
Second moment of area about y axis	Iyy	0.0
Second moment of area about z axis	Izz	0.0
Product moment of area	Iyz	0.0
Torsional constant	J	0.0
Eccentricity in local z direction, relative to specified origin	ez0	0.0
Eccentricity in local y direction, relative to specified origin	ey0	-0.1
Eccentricity in local z direction, relative to beam centroid	ez	0.0
Eccentricity in local y direction, relative to beam centroid	ey	-0.1
Wagner constant 1st moment of square radius about y (Iyr)	Iyr	0.0
Wagner constant 1st moment of square radius about z (Izr)	Izr	0.0
Wagner constant 4th moment of area about origin (Irr)	Irr	0.0
Wagner constant 2nd moment of warping about origin (Iwr)	Iwr	0.0
Effective shear area in local z direction	Asz	0.0
Effective shear area in local y direction	Asy	0.0
Plastic area	Ap	0.0
Plastic modulus for bending about y	Zpy	0.0
Plastic modulus for bending about z	Zpz	0.0
Plastic neutral axis, distance from centroid along y axis	yp	0.0
Plastic neutral axis, distance from centroid along z axis	zp	0.0
Plastic torsional section modulus	Zpt	0.0
Warping torsional constant about shear centre	Cw	0.0
Shear centre about y axis	yo	0.0
Shear centre about z axis	zo	0.0
Monosymmetry constant about y	betay	0.0
Monosymmetry constant about z	betaz	0.0
Radius of gyration about y axis	ky	0.0
Radius of gyration about z axis	kz	0.1
y axis extreme fibre, top	yt	0.1
y axis extreme fibre, bottom	yb	-0.1
z axis extreme fibre, top	zt	0.0
z axis extreme fibre, bottom	zb	0.0
Shape code identifier	Type	1
Breadth of this section	B	0.2
Depth of this section	D	0.0
Element type	elementType	"3D Thick Beam"
Reinforcement	reinforcement	None

Assignment to Lines:
2581;2593;2629;2641;2646;2662;2692;2702

Attribute: 8 Title: PL 20 x 200 (+) (PL 20 x 200 (RSS D=0.02 B=0.2))
Sub Type = Line Geometric
Assigned in: Analysis 7

Property	Symbol	Value
Cross sectional area	A	0.0
Second moment of area about y axis	Iyy	0.0
Second moment of area about z axis	Izz	0.0
Product moment of area	Iyz	0.0
Torsional constant	J	0.0
Eccentricity in local z direction, relative to specified origin	ez0	0.0
Eccentricity in local y direction, relative to specified origin	ey0	0.1
Eccentricity in local z direction, relative to beam centroid	ez	0.0
Eccentricity in local y direction, relative to beam centroid	ey	0.1
Wagner constant 1st moment of square radius about y (Iyr)	Iyr	0.0
Wagner constant 1st moment of square radius about z (Izr)	Izr	0.0
Wagner constant 4th moment of area about origin (Irr)	Irr	0.0
Wagner constant 2nd moment of warping about origin (Iwr)	Iwr	0.0
Effective shear area in local z direction	Asz	0.0
Effective shear area in local y direction	Asy	0.0
Plastic area	Ap	0.0
Plastic modulus for bending about y	Zpy	0.0
Plastic modulus for bending about z	Zpz	0.0
Plastic neutral axis, distance from centroid along y axis	yp	0.0
Plastic neutral axis, distance from centroid along z axis	zp	0.0
Plastic torsional section modulus	Zpt	0.0
Warping torsional constant about shear centre	Cw	0.0
Shear centre about y axis	yo	0.0
Shear centre about z axis	zo	0.0
Monosymmetry constant about y	betay	0.0
Monosymmetry constant about z	betaz	0.0
Radius of gyration about y axis	ky	0.0
Radius of gyration about z axis	kz	0.1
y axis extreme fibre, top	yt	0.1
y axis extreme fibre, bottom	yb	-0.1
z axis extreme fibre, top	zt	0.0
z axis extreme fibre, bottom	zb	0.0
Shape code identifier	Type	1
Breadth of this section	B	0.2
Depth of this section	D	0.0
Element type	elementType	"3D Thick Beam"
Reinforcement	reinforcement	None

Assignment to Lines:
2520T2526I2;2543;2549;2551;2559;2561;2565;2573;2575;2590;2597;2599;2604;2606;2608;2611;2612;2614;2616;2620;2622

Attribute: 9 Title: PL 20 x 200 (-) (PL 20 x 200 (RSS D=0.02 B=0.2))
Sub Type = Line Geometric
Assigned in: Analysis 7

Property	Symbol	Value
Cross sectional area	A	0.0
Second moment of area about y axis	Iyy	0.0
Second moment of area about z axis	Izz	0.0
Product moment of area	Iyz	0.0
Torsional constant	J	0.0
Eccentricity in local z direction, relative to specified origin	ez0	0.0
Eccentricity in local y direction, relative to specified origin	ey0	-0.1
Eccentricity in local z direction, relative to beam centroid	ez	0.0
Eccentricity in local y direction, relative to beam centroid	ey	-0.1
Wagner constant 1st moment of square radius about y (Iyr)	Iyr	0.0
Wagner constant 1st moment of square radius about z (Izr)	Izr	0.0
Wagner constant 4th moment of area about origin (Irr)	Irr	0.0
Wagner constant 2nd moment of warping about origin (Iwr)	Iwr	0.0
Effective shear area in local z direction	Asz	0.0
Effective shear area in local y direction	Asy	0.0
Plastic area	Ap	0.0
Plastic modulus for bending about y	Zpy	0.0
Plastic modulus for bending about z	Zpz	0.0
Plastic neutral axis, distance from centroid along y axis	yp	0.0
Plastic neutral axis, distance from centroid along z axis	zp	0.0
Plastic torsional section modulus	Zpt	0.0
Warping torsional constant about shear centre	Cw	0.0
Shear centre about y axis	yo	0.0
Shear centre about z axis	zo	0.0
Monosymmetry constant about y	betay	0.0
Monosymmetry constant about z	betaz	0.0
Radius of gyration about y axis	ky	0.0
Radius of gyration about z axis	kz	0.1
y axis extreme fibre, top	yt	0.1
y axis extreme fibre, bottom	yb	-0.1
z axis extreme fibre, top	zt	0.0
z axis extreme fibre, bottom	zb	0.0
Shape code identifier	Type	1
Breadth of this section	B	0.2
Depth of this section	D	0.0
Element type	elementType	"3D Thick Beam"
Reinforcement	reinforcement	None

Assignment to Lines:
2582T2588I2;2595;2601;2625;2627;2631T2637I2;2645;2650;2654;2658;2666;2670;2688;2690;2694T2700I2

Attribute: 10 Title: HEB 220 (HE 220 B)
Sub Type = Line Geometric
Assigned in: Analysis 7

Property	Symbol	Value
Cross sectional area	A	0.0
Second moment of area about y axis	Iyy	0.0
Second moment of area about z axis	Izz	0.0
Product moment of area	Iyz	0.0
Torsional constant	J	0.0
Eccentricity in local z direction, relative to specified origin	ez0	0.0
Eccentricity in local y direction, relative to specified origin	ey0	0.0
Eccentricity in local z direction, relative to beam centroid	ez	0.0
Eccentricity in local y direction, relative to beam centroid	ey	0.0
Wagner constant 1st moment of square radius about y (Iyr)	Iyr	0.0
Wagner constant 1st moment of square radius about z (Izr)	Izr	0.0
Wagner constant 4th moment of area about origin (Irr)	Irr	0.0
Wagner constant 2nd moment of warping about origin (Iwr)	Iwr	0.0
Effective shear area in local z direction	Asz	0.0
Effective shear area in local y direction	Asy	0.0
Plastic area	Ap	0.0
Plastic modulus for bending about y	Zpy	0.0
Plastic modulus for bending about z	Zpz	0.0
Plastic neutral axis, distance from centroid along y axis	yp	0.0
Plastic neutral axis, distance from centroid along z axis	zp	0.0
Plastic torsional section modulus	Zpt	0.0
Warping torsional constant about shear centre	Cw	0.0
Shear centre about y axis	yo	0.0
Shear centre about z axis	zo	0.0
Monosymmetry constant about y	betay	0.0
Monosymmetry constant about z	betaz	0.0
Radius of gyration about y axis	ky	0.1
Radius of gyration about z axis	kz	0.1
y axis extreme fibre, top	yt	0.1
y axis extreme fibre, bottom	yb	-0.1
z axis extreme fibre, top	zt	0.1
z axis extreme fibre, bottom	zb	-0.1
Shape code identifier	Type	5
Breadth of this section	B	0.2
Depth of this section	D	0.2
Thickness of flange of this section	tf	0.0
Thickness of web of this section	tw	0.0
Radius of fillet of this section	r	0.0
Element type	elementType	"3D Thick Beam"
Reinforcement	reinforcement	None

Assignment to Lines:
2952T2955;2963T2965;2974T2981;2998T3013;3038T3051;3053;3078;3079T3093;3487;3488

Attribute: 11 Title: HEB 180 (HE 180 B)
Sub Type = Line Geometric
Assigned in: Analysis 7

Property	Symbol	Value
Cross sectional area	A	0.0
Second moment of area about y axis	Iyy	0.0
Second moment of area about z axis	Izz	0.0
Product moment of area	Iyz	0.0
Torsional constant	J	0.0
Eccentricity in local z direction, relative to specified origin	ez0	0.0
Eccentricity in local y direction, relative to specified origin	ey0	0.0
Eccentricity in local z direction, relative to beam centroid	ez	0.0
Eccentricity in local y direction, relative to beam centroid	ey	0.0
Wagner constant 1st moment of square radius about y (Iyr)	Iyr	0.0
Wagner constant 1st moment of square radius about z (Izr)	Izr	0.0
Wagner constant 4th moment of area about origin (Irr)	Irr	0.0
Wagner constant 2nd moment of warping about origin (Iwr)	Iwr	0.0
Effective shear area in local z direction	Asz	0.0
Effective shear area in local y direction	Asy	0.0
Plastic area	Ap	0.0
Plastic modulus for bending about y	Zpy	0.0
Plastic modulus for bending about z	Zpz	0.0
Plastic neutral axis, distance from centroid along y axis	yp	0.0
Plastic neutral axis, distance from centroid along z axis	zp	0.0
Plastic torsional section modulus	Zpt	0.0
Warping torsional constant about shear centre	Cw	0.0
Shear centre about y axis	yo	0.0
Shear centre about z axis	zo	0.0
Monosymmetry constant about y	betay	0.0
Monosymmetry constant about z	betaz	0.0
Radius of gyration about y axis	ky	0.1
Radius of gyration about z axis	kz	0.0
y axis extreme fibre, top	yt	0.1
y axis extreme fibre, bottom	yb	-0.1
z axis extreme fibre, top	zt	0.1
z axis extreme fibre, bottom	zb	-0.1
Shape code identifier	Type	5
Breadth of this section	B	0.2
Depth of this section	D	0.2
Thickness of flange of this section	tf	0.0
Thickness of web of this section	tw	0.0
Radius of fillet of this section	r	0.0
Element type	elementType	"3D Thick Beam"
Reinforcement	reinforcement	None

Assignment to Lines:
2956T2959;2966T2969;2982T2989;3014T3029;3054T3068;3094T3107;3489T3491

7. Geometric: Surface

Attribute: 2 Title: T=0.030
Sub Type = Surface Geometric
Assigned in: Analysis 7

Property	Symbol	Value
Thickness	t	0.0
Eccentricity in local z direction, relative to beam centroid	ez	0.0

Assignment to Surfaces:
2037;2038;2040;2041;2043;2044;2046;2047;2049T2052;2055;2056;2059;2060;2063T2070

Attribute: 7 Title: T=0.020
Sub Type = Surface Geometric
Assigned in: Analysis 7

Property	Symbol	Value
Thickness	t	0.0
Eccentricity in local z direction, relative to beam centroid	ez	0.0

Assignment to Surfaces:
2071T2142

Attribute: 12 Title: T=0.025
Sub Type = Surface Geometric
Assigned in: Analysis 7

Property	Symbol	Value
Thickness	t	0.0
Eccentricity in local z direction, relative to beam centroid	ez	0.0

Assignment to Surfaces:
1856T1945

Attribute: 45 Title: T=0,200 E=-0,120
Sub Type = Surface Geometric
Assigned in: Analysis 7

Property	Symbol	Value
Thickness	t	0.2
Eccentricity in local z direction, relative to beam centroid	ez	-0.1

Assignment to Surfaces:
1444T1458I2;1477T1519I2;1522T1538I2;1568T1604I2;1607T1643I2;1648T1724I2;1727T1765I2;1769T1855I2

Attribute: 46 Title: T=0,012
Sub Type = Surface Geometric
Assigned in: Analysis 7

Property	Symbol	Value
Thickness	t	0.0
Eccentricity in local z direction, relative to beam centroid	ez	0.0

Assignment to Surfaces:
1946T1950;1952T1954;1959T1968;1971;1972;1975T1980;1985T1993;1996T1999;2002T2014;2019T2024;2027T2030;2033T2036

Attribute: 47 Title: T=0,014
Sub Type = Surface Geometric
Assigned in: Analysis 7

Property	Symbol	Value
Thickness	t	0.0
Eccentricity in local z direction, relative to beam centroid	ez	0.0

Assignment to Surfaces:
1955T1958;1969;1970;1973;1974;1981T1984;1994;1995;2000;2001;2015T2018;2025;2026;2031;2032

8. Isotropic material

Attribute: 2 Title: Steel (Ungraded | Steel - Structural | EN1993-1-1:2005)
Sub Type = Isotropic Material

Property	Symbol	Value
Young's modulus	E	210000000.0
Poisson's ratio	nu	0.3
Density	rho	7.8
Coefficient of thermal expansion	alpha	0.0

Assigned in: Analysis 7
Assignment to Lines:
1826T1832;1840;1841;1844T1847;1857T1868;1878;1879;1911T1913;1915T1917;1919T1933;1964T1968;1974T1978;1986T1989;1996;1998;2002
;2004;2010;2012;2016;2018;2024T2026;2030T2032;2035T2043I4;2044T2046;2053;2054;2057;2058;2062;2063;2073T2090;2099T2106;2115T212
2;2139T2146;2155T2162;2179;2180;2182T2192I2;2193T2200;2217;2218;2220T2230I2;2231T2233;2237T2241;2249T2252;2258T2262I2;2263;22
66;2267;2270;2271;2276;2278T2280;2287T2438;2440T2520;2522T2528I2;2529T2535I3;2537T2551I2;2552;2554;2555T2575I2;2578;2580;2581;
2582;2584T2590I2;2591T2603I2;2604T2608I2;2611;2612;2614T2622I2;2625T2641I2;2642;2643;2645;2646;2648T2672I2;2673T2685I2;2688T27
02I2;2705;2713;2720;2729;2737;2741;2754;2765;2774T2784I5;2787;2789;2792T2798I3;2809;2813;2819;2823;2829T2839I5;2842;2843;2846T28
52I3;2857;2863;2874T2889I3;2891T2921I5;2924T2936I3;2937T2940;2949;2952;2953T2959;2963T2969;2974T2989;2998T3029;3038T3051;3053
T3068;3078T3107;3487T3491
Assignment to Surfaces:
1856T1950;1952T2038;2040;2041;2043;2044;2046;2047;2049T2052;2055;2056;2059;2060;2063T2142

Attribute: 4 Title: Concrete - type 2 & 3 (uncracked)
Sub Type = Isotrop

Property	Symbol	Value
Young's modulus	E	11300000.0
Poisson's ratio	nu	0.2
Density	rho	2.5
Coefficient of thermal expansion	alpha	0.0

Assigned in: Analysis 2
Assignment to Surfaces:
1444T1458I2;1477T1507I2;1522T1536I2;1568T1590I2;1594T1600I2

Assigned in: Analysis 3
Assignment to Surfaces:
1444T1458I2;1477T1507I2;1522T1536I2;1568T1590I2;1594T1600I2;1670T1684I2;1702T1708I2;1718T1724I2;1735T1749I2;1775T1781I2;1785T1805I2;1833T1839I2;1845T1853I2

Assigned in: Analysis 4
Assignment to Surfaces:
1444T1458I2;1477T1507I2;1517;1519;1522T1536I2;1568T1590I2;1594T1600I2;1621;1627;1629;1631;1637;1650;1652;1656;1658T1664I2;1670T1684I2;1690T1696I2;1702T1712I2;1718T1724I2;1727;1729;1735T1749I2;1755T1761I2;1765;1769;1775T1781I2;1785T1821I2;1833T1839I2;1845T1853I2

Assigned in: Analysis 5
Assignment to Surfaces:
1444T1458I2;1477T1507I2;1517;1519;1522T1536I2;1568T1590I2;1594T1600I2;1621;1627;1629;1631;1637;1650;1652;1656;1658T1664I2;1670T1684I2;1690T1696I2;1702T1712I2;1718T1724I2;1727;1729;1735T1749I2;1755T1761I2;1765;1769;1775T1781I2;1785T1821I2;1833T1839I2;1845T1853I2

Assigned in: Analysis 6
Assignment to Surfaces:
1444T1458I2;1477T1507I2;1517;1519;1522T1536I2;1568T1590I2;1594T1600I2;1621;1627;1629;1631;1637;1650;1652;1656;1658T1664I2;1670T1684I2;1690T1696I2;1702T1712I2;1718T1724I2;1727;1729;1735T1749I2;1755T1761I2;1765;1769;1775T1781I2;1785T1821I2;1833T1839I2;1845T1853I2

Attribute: 5 Title: Concrete - type 5 (uncracked)
Sub Type = Isotropic Material

Property	Symbol	Value
Young's modulus	E	34000000.0
Poisson's ratio	nu	0.2
Density	rho	2.5
Coefficient of thermal expansion	alpha	0.0

Assigned in: Analysis 7
Assignment to Surfaces:
1444T1458I2;1477T1507I2;1517;1519;1522T1536I2;1568T1590I2;1594T1600I2;1621;1627;1629;1631;1637;1650;1652;1656;1658T1664I2;1670T
1684I2;1690T1696I2;1702T1712I2;1718T1724I2;1727;1729;1735T1749I2;1755T1761I2;1765;1769;1775T1781I2;1785T1821I2;1833T1839I2;184
5T1853I2

Attribute: 6 Title: Concrete - type 1 & 7 (no stiffness)
Sub Type = Isotropic Material
Assigned in: Analysis 1; Analysis 2; Analysis 3; Analysis 4; Analysis 5; Analysis 6; Analysis 7; Analysis 8

Property	Symbol	Value
Young's modulus	E	34000.0
Poisson's ratio	nu	0.2
Density	rho	2.5
Coefficient of thermal expansion	alpha	0.0

Assigned in: Analysis 1
Assignment to Surfaces:
1444T1458I2;1477T1507I2;1522T1536I2;1568T1590I2;1594T1600I2

Assigned in: Analysis 2
Assignment to Surfaces:
1509T1515I2;1538;1592;1602;1604;1607T1619I2;1623;1625;1633;1635;1639T1643I2;1648;1654;1666;1668;1686;1688;1698;1700;1714;1716;1731;1733;1751;1753;1763;1771;1773;1783;1823T1831I2;1841;1843;1855

Assigned in: Analysis 2
Assignment to Surfaces:
1670T1684I2;1702T1708I2;1718T1724I2;1735T1749I2;1775T1781I2;1785T1805I2;1833T1839I2;1845T1853I2

Assigned in: Analysis 3
Assignment to Surfaces:
1517;1519;1621;1627;1629;1631;1637;1650;1652;1656;1658T1664I2;1690T1696I2;1710;1712;1727;1729;1755T1761I2;1765;1769;1807T1821I2

Assigned in: Analysis 4
Assignment to Surfaces:
1509T1515I2;1538;1592;1602;1604;1607T1619I2;1623;1625;1633;1635;1639T1643I2;1648;1654

Assigned in: Analysis 5
Assignment to Surfaces:
1509T1515I2;1538;1592;1602;1604;1607T1619I2;1623;1625;1633;1635;1639T1643I2;1648;1654;1666;1668;1686;1688;1698;1700;1714;1716;1731;1733;1751;1753;1763;1771;1773;1783;1823T1831I2;1841;1843;1855

Assigned in: Analysis 6
Assignment to Surfaces:
1509T1515I2;1538;1592;1602;1604;1607T1619I2;1623;1625;1633;1635;1639T1643I2;1648;1654;1666;1668;1686;1688;1698;1700;1714;1716;1731;1733;1751;1753;1763;1771;1773;1783;1823T1831I2;1841;1843;1855

Assigned in: Analysis 7
Assignment to Surfaces:
1509T1515I2;1538;1592;1602;1604;1607T1619I2;1623;1625;1633;1635;1639T1643I2;1648;1654;1666;1668;1686;1688;1698;1700;1714;1716;1731;1733;1751;1753;1763;1771;1773;1783;1823T1831I2;1841;1843;1855

Attribute: 7 Title: Concrete - type 6 (uncracked)
Sub Type = Isotropic Material

Property	Symbol	Value
Young's modulus	E	26200000.0
Poisson's ratio	nu	0.2
Density	rho	2.5
Coefficient of thermal expansion	alpha	0.0

Assigned in: Analysis 8
Assignment to Surfaces:
1444T1458I2;1477T1507I2;1517;1519;1522T1536I2;1568T1590I2;1594T1600I2;1621;1627;1629;1631;1637;1650;1652;1656;1658T1664I2;1670T1684I2;1690T1696I2;1702T1712I2;1718T1724I2;1727;1729;1735T1749I2;1755T1761I2;1765;1769;1775T1781I2;1785T1821I2;1833T1839I2;1845T1853I2

9. Support

Attribute: 1 Title: FFR
Sub Type = Structural Support
Assigned in: Analysis 7

Property	Symbol	Value
Translation in X	U	"F"
Translation in Y	V	"F"
Translation in Z	W	"R"
Rotation about X	THX	"F"
Rotation about Y	THY	"F"
Rotation about Z	THZ	"F"
Torsional warping	Torsion	"F"
Moment about hinge	L1	"F"
Pore pressure	pore	"C"

Assignment to Points:
301;307;346;352;436;442

Attribute: 2 Title: FRR
Sub Type = Structural Support
Assigned in: Analysis 7

Property	Symbol	Value
Translation in X	U	"F"
Translation in Y	V	"R"
Translation in Z	W	"R"
Rotation about X	THX	"F"
Rotation about Y	THY	"F"
Rotation about Z	THZ	"F"
Torsional warping	Torsion	"F"
Moment about hinge	L1	"F"
Pore pressure	pore	"C"

Assignment to Points:
304;349;439

Attribute: 3 Title: RFR
Sub Type = Structural Support
Assigned in: Analysis 7

Property	Symbol	Value
Translation in X	U	"R"
Translation in Y	V	"F"
Translation in Z	W	"R"
Rotation about X	THX	"F"
Rotation about Y	THY	"F"
Rotation about Z	THZ	"F"
Torsional warping	Torsion	"F"
Moment about hinge	L1	"F"
Pore pressure	pore	"C"

Assignment to Points:
391;397

Attribute: 4 Title: RRR
Sub Type = Structural Support
Assigned in: Analysis 7

Property	Symbol	Value
Translation in X	U	"R"
Translation in Y	V	"R"
Translation in Z	W	"R"
Rotation about X	THX	"F"
Rotation about Y	THY	"F"
Rotation about Z	THZ	"F"
Torsional warping	Torsion	"F"
Moment about hinge	L1	"F"
Pore pressure	pore	"C"

Assignment to Points:
394;1921

10. Search Area

Attribute: 1 Title: Deck
Sub Type = Search Area

Assignment to Surfaces:
1444T1458I2;1477T1519I2;1522T1538I2;1568T1604I2;1607T1643I2;1648T1724I2;1727T1765I2;1769T1855I2

11. Local coordinate systems

Attribute: 1 Title: S1: v = 0
Sub Type = Local Coordinates

Property	Symbol	Value
Attribute type	type	"Cartesian"
Rotation angle	angle	0.0
Origin	originPos[0]	0.0
Origin	originPos[1]	-183.0
Origin	originPos[2]	0.0
Type	plane	"XY_Angle"

Assignment to Points:
301T307I3
Assignment to Lines:
2519;2581;2603;2646

Attribute: 2 Title: S2: v = -7,671
Sub Type = Local Coordinates

Property	Symbol	Value
Attribute type	type	"Cartesian"
Rotation angle	angle	-7.7
Origin	originPos[0]	0.0
Origin	originPos[1]	-183.0
Origin	originPos[2]	0.0
Type	plane	"XY_Angle"

Assignment to Points:
346T352I3

Assignment to Lines:
2539;2591;2593;2662

Attribute: 3 Title: S3: v = -17,220
Sub Type = Local Coordinates

Property	Symbol	Value
Attribute type	type	"Cartesian"
Rotation angle	angle	-17.2
Origin	originPos[0]	0.0
Origin	originPos[1]	-183.0
Origin	originPos[2]	0.0
Type	plane	"XY_Angle"

Assignment to Points:
391T397I3;1921

Assignment to Lines:
2571;2618;2629;2692

Attribute: 4 Title: S4: v =-24,891
Sub Type = Local Coordinates

Property	Symbol	Value
Attribute type	type	"Cartesian"
Rotation angle	angle	-24.9
Origin	originPos[0]	0.0
Origin	originPos[1]	-183.0
Origin	originPos[2]	0.0
Type	plane	"XY_Angle"

Assignment to Points:
436T442I3
Assignment to Lines:
2552;2639;2641;2702

Attribute: 5 Title: F1: v = -1.534
Sub Type = Local Coordinates

Property	Symbol	Value
Attribute type	type	"Cartesian"
Rotation angle	angle	-1.5
Origin	originPos[0]	0.0
Origin	originPos[1]	-183.0
Origin	originPos[2]	0.0
Type	plane	"XY_Angle"

Assignment to Lines:
2520;2582;2604;2645

Attribute: 6 Title: F2: v = -3.068
Sub Type = Local Coordinates

Property	Symbol	Value
Attribute type	type	"Cartesian"
Rotation angle	angle	-3.1
Origin	originPos[0]	0.0
Origin	originPos[1]	-183.0
Origin	originPos[2]	0.0
Type	plane	"XY_Angle"

Assignment to Lines:
2522;2584;2606;2650

Attribute: 7 Title: F3: v = -4.602
Sub Type = Local Coordinates

Property	Symbol	Value
Attribute type	type	"Cartesian"
Rotation angle	angle	-4.6
Origin	originPos[0]	0.0
Origin	originPos[1]	-183.0
Origin	originPos[2]	0.0
Type	plane	"XY_Angle"

Assignment to Lines:
2524;2586;2608;2654

Attribute: 8 Title: F4: v = -6.137
Sub Type = Local Coordinates

Property	Symbol	Value
Attribute type	type	"Cartesian"
Rotation angle	angle	-6.1
Origin	originPos[0]	0.0
Origin	originPos[1]	-183.0
Origin	originPos[2]	0.0
Type	plane	"XY_Angle"

Assignment to Lines:
2526;2588;2590;2658

Attribute: 9 Title: F5: v = -9.581
Sub Type = Local Coordinates

Property	Symbol	Value
Attribute type	type	"Cartesian"
Rotation angle	angle	-9.6
Origin	originPos[0]	0.0
Origin	originPos[1]	-183.0
Origin	originPos[2]	0.0
Type	plane	"XY_Angle"

Assignment to Lines:
2543;2595;2597;2666

Attribute: 10 Title: F6: v = -11.490
Sub Type = Local Coordinates

Property	Symbol	Value
Attribute type	type	"Cartesian"
Rotation angle	angle	-11.5
Origin	originPos[0]	0.0
Origin	originPos[1]	-183.0
Origin	originPos[2]	0.0
Type	plane	"XY_Angle"

Assignment to Lines:
2549;2599;2601;2670

Attribute: 11 Title: F7: v = -13.400
Sub Type = Local Coordinates

Property	Symbol	Value
Attribute type	type	"Cartesian"
Rotation angle	angle	-13.4
Origin	originPos[0]	0.0
Origin	originPos[1]	-183.0
Origin	originPos[2]	0.0
Type	plane	"XY_Angle"

Assignment to Lines:
2561;2622;2625;2688

Attribute: 12 Title: F8: v = -15.310
Sub Type = Local Coordinates

Property	Symbol	Value
Attribute type	type	"Cartesian"
Rotation angle	angle	-15.3
Origin	originPos[0]	0.0
Origin	originPos[1]	-183.0
Origin	originPos[2]	0.0
Type	plane	"XY_Angle"

Assignment to Lines:
2565;2620;2627;2690

Attribute: 13 Title: F9: v = -18.754
Sub Type = Local Coordinates

Property	Symbol	Value
Attribute type	type	"Cartesian"
Rotation angle	angle	-18.8
Origin	originPos[0]	0.0
Origin	originPos[1]	-183.0
Origin	originPos[2]	0.0
Type	plane	"XY_Angle"

Assignment to Lines:
2575;2616;2631;2694

Attribute: 14 Title: F10: v = -20.288
Sub Type = Local Coordinates

Property	Symbol	Value
Attribute type	type	"Cartesian"
Rotation angle	angle	-20.3
Origin	originPos[0]	0.0
Origin	originPos[1]	-183.0
Origin	originPos[2]	0.0
Type	plane	"XY_Angle"

Assignment to Lines:
2573;2614;2633;2696

Attribute: 15 Title: F11: v = -21.822
Sub Type = Local Coordinates

Property	Symbol	Value
Attribute type	type	"Cartesian"
Rotation angle	angle	-21.8
Origin	originPos[0]	0.0
Origin	originPos[1]	-183.0
Origin	originPos[2]	0.0
Type	plane	"XY_Angle"

Assignment to Lines:
2559;2611;2635;2698

Attribute: 16 Title: F12: v = -23.357
Sub Type = Local Coordinates

Property	**Symbol**	**Value**
Attribute type	type	"Cartesian"
Rotation angle	angle	-23.4
Origin	originPos[0]	0.0
Origin	originPos[1]	-183.0
Origin	originPos[2]	0.0
Type	plane	"XY_Angle"

Assignment to Lines:
2551;2612;2637;2700

12. Structural analysis

Attribute: 1 Title: Analysis 1 (Stage I)
Base Analysis : No

Attribute: 2 Title: Analysis 2 (Stage II)
Base Analysis : No

Attribute: 3 Title: Analysis III (Stage III)
Base Analysis : No

Attribute: 4 Title: Analysis IV (Stage IV)
Base Analysis : No

Attribute: 5 Title: Analysis V (Stage V)
Base Analysis : No

Attribute: 6 Title: Analysis 6 (O:PERM)
Base Analysis : No

Attribute: 7 Title: Analysis 7 (O:VAR)
Base Analysis : Yes

Attribute: 8 Title: Analysis 8 (O:TEMP)
Base Analysis : No

13. Deactivate elements

Attribute: 1 Title: Stage II-V
Sub Type = Deactivate

Property	Symbol	Value
Percentage of internal forces to be redistributed	percent	100.0
Stiffness reduction factor	stfscl	0.0
Process constraint equations	createConstr	true
Constraint equation type	constrEquType	"none"
Increments	ninc	1
Basic Deactivation Options	deactType	"activeMesh"
Redistribution of Internal Forces	deactRedist	"number of increments"

Assigned in: Analysis 1
Assignment to Surfaces:
1509T1519I2;1538;1592;1602;1604;1607T1643I2;1648T1724I2;1727T1765I2;1769T1855I2

Attribute: 2 Title: Stage III-V
Sub Type = Deactivate

Property	Symbol	Value
Percentage of internal forces to be redistributed	percent	100.0
Stiffness reduction factor	stfscl	0.0
Process constraint equations	createConstr	true
Constraint equation type	constrEquType	"none"
Increments	ninc	1
Basic Deactivation Options	deactType	"activeMesh"
Redistribution of Internal Forces	deactRedist	"number of increments"

Assigned in: Analysis 2
Assignment to Surfaces:
1509T1519I2;1538;1592;1602;1604;1607T1643I2;1648T1668I2;1686T1700I2;1710T1716I2;1727T1733I2;1751T1765I2;1769T1773I2;1783;1807;1809T1831I2;1841;1843;1855

Attribute: 3 Title: Stage IV-V
Sub Type = Deactivate

Property	Symbol	Value
Percentage of internal forces to be redistributed	percent	100.0
Stiffness reduction factor	stfscl	0.0
Process constraint equations	createConstr	true
Constraint equation type	constrEquType	"none"
Increments	ninc	1
Basic Deactivation Options	deactType	"activeMesh"
Redistribution of Internal Forces	deactRedist	"number of increments"

Asigned in: Analysis 3
Assignment to Surfaces:
1509T1515I2;1538;1592;1602;1604;1607T1619I2;1623;1625;1633;1635;1639T1643I2;1648;1654;1666;1668;1686;1688;1698;1700;1714;1716;1731;1733;1751;1753;1763;1771;1773;1783;1823T1831I2;1841;1843;1855

Attribute: 4 Title: Stage V
Sub Type = Deactivate

Property	Symbol	Value
Percentage of internal forces to be redistributed	percent	100.0
Stiffness reduction factor	stfscl	0.0
Process constraint equations	createConstr	true
Constraint equation type	constrEquType	"none"
Increments	ninc	1
Basic Deactivation Options	deactType	"activeMesh"
Redistribution of Internal Forces	deactRedist	"number of increments"

Assigned in: Analysis 4
Assignment to Surfaces:
1666;1668;1686;1688;1698;1700;1714;1716;1731;1733;1751;1753;1763;1771;1773;1783;1823T1831I2;1841;1843;1855

14. Body load

Attribute: 1 Title: DEAD 1:S
Sub Type = Body Force Load
Assigned in: Analysis 1

Property	Symbol	Value
Linear acceleration in X	AccX	0.0
Linear acceleration in Y	AccY	0.0
Linear acceleration in Z	AccZ	-10.0
Angular velocity about X axis	AngVelX	0.0
Angular velocity about Y axis	AngVelY	0.0
Angular velocity about Z axis	AngVelZ	0.0
Angular acceleration about X axis	AngAccX	0.0
Angular acceleration about Y axis	AngAccY	0.0
Angular acceleration about Z axis	AngAccZ	0.0
Linear acceleration In X fluid phase	lnFlAccX	0.0
Linear acceleration In Y fluid phase	lnFlAccY	0.0
Linear acceleration In Z fluid phase	lnFlAccZ	-10.0

Loadcase ID: 7 Title: DEAD 1:S Factor = 1.0
Assignment to Lines:
400T408;1162;1826;1827T1832;1840;1841;1844T1847;1857T1868;1878;1879;1911T1913;1915T1917;1919T1933;1964T1968;1974T1978;1986T1989;1996;1998;2002;2004;2010;2012;2016;2018;2024T2026;2030T2032;2035T2043I4;2044T2046;2053;2054;2057;2058;2062;2063;2073T2090;2099T2106;2115T2122;2139T2146;2155T2162;2179;2180;2182T2192I2;2193T2200;2217;2218;2220T2230I2;2231T2233;2237T2241;2249T2252;2258T2262I2;2263;2266;2267;2270;2271;2276;2278T2280;2287T2438;2440T2520;2522T2528I2;2529T2535I3;2537T2551I2;2552;2554;2555T2575I2;2578;2580;2581;2582;2584T2590I2;2591T2603I2;2604T2608I2;2611;2612;2614T2622I2;2625T2641I2;2642;2643;2645;2646;2648T2672I2;2673T2685I2;2688T2702I2;2705;2713;2720;2729;2737;2741;2754;2765;2774T2784I5;2787;2789;2792T2798I3;2809;2813;2819;2823;2829T2839I5;2842;2843;2846T2852I3;2857;2863;2874T2889I3;2891T2921I5;2924T2936I3;2937T2940;2949;2952;2953T2959;2963T2969;2974T2989;2998T3029;3038T3051;3053T3068;3078T3107;3487T3491
Assignment to Surfaces:
1856T1950;1952T2038;2040;2041;2043;2044;2046;2047;2049T2052;2055;2056;2059;2060;2063T2142

Attribute: 2 Title: DEAD 1:C
Sub Type = Global Distributed Load
Assigned in: Analysis 1

Property	Symbol	Value
Attribute type	type	"Area"
X Direction	WX	0.0
Y Direction	WY	0.0
Z Direction	WZ	-30.0
Pore pressure flux	pwp	0.0
Keep global	keepGlobal	false

Loadcase ID: 12540 Title: DEAD 1:C Factor = 1.0
Assignment to Surfaces:
1444T1458I2;1477T1507I2;1522T1536I2;1568T1590I2;1594T1600I2

Attribute: 3 Title: DEAD 2:C
Sub Type = Body Force Load
Assigned in: Analysis 2

Property	Symbol	Value
Linear acceleration in X	AccX	0.0
Linear acceleration in Y	AccY	0.0
Linear acceleration in Z	AccZ	-10.0
Angular velocity about X axis	AngVelX	0.0
Angular velocity about Y axis	AngVelY	0.0
Angular velocity about Z axis	AngVelZ	0.0
Angular acceleration about X axis	AngAccX	0.0
Angular acceleration about Y axis	AngAccY	0.0
Angular acceleration about Z axis	AngAccZ	0.0
Linear acceleration In X fluid phase	lnFlAccX	0.0
Linear acceleration In Y fluid phase	lnFlAccY	0.0
Linear acceleration In Z fluid phase	lnFlAccZ	-10.0

Attribute: 14 Title: DEAD 3:C
Sub Type = Body Force Load
Assigned in: Analysis 3

Property	Symbol	Value
Linear acceleration in X	AccX	0.0
Linear acceleration in Y	AccY	0.0
Linear acceleration in Z	AccZ	-10.0
Angular velocity about X axis	AngVelX	0.0
Angular velocity about Y axis	AngVelY	0.0
Angular velocity about Z axis	AngVelZ	0.0
Angular acceleration about X axis	AngAccX	0.0
Angular acceleration about Y axis	AngAccY	0.0
Angular acceleration about Z axis	AngAccZ	0.0
Linear acceleration In X fluid phase	lnFlAccX	0.0
Linear acceleration In Y fluid phase	lnFlAccY	0.0
Linear acceleration In Z fluid phase	lnFlAccZ	-10.0

Loadcase ID: 3 Title: DEAD 3:C Factor = 1.0
Assignment to Surfaces:
1517;1519;1621;1627;1629;1631;1637;1650;1652;1656;1658T1664I2;1690T1696I2;1710;1712;1727;1729;1755T1761I2;1765;1769;1807T1821I2

Attribute: 15 Title: DEAD 4:C
Assigned in: Analysis 4

Sub Type = Body Force Load

Property	Symbol	Value
Linear acceleration in X	AccX	0.0
Linear acceleration in Y	AccY	0.0
Linear acceleration in Z	AccZ	-10.0
Angular velocity about X axis	AngVelX	0.0
Angular velocity about Y axis	AngVelY	0.0
Angular velocity about Z axis	AngVelZ	0.0
Angular acceleration about X axis	AngAccX	0.0
Angular acceleration about Y axis	AngAccY	0.0
Angular acceleration about Z axis	AngAccZ	0.0
Linear acceleration In X fluid phase	lnFlAccX	0.0
Linear acceleration In Y fluid phase	lnFlAccY	0.0
Linear acceleration In Z fluid phase	lnFlAccZ	-10.0

Loadcase ID: 4 Title: DEAD 4:C Factor = 1.0
Assignment to Surfaces:
1509T1515I2;1538;1592;1602;1604;1607T1619I2;1623;1625;1633;1635;1639T1643I2;1648;1654

Attribute: 16 Title: DEAD 5:C
Sub Type = Body Force Load
Assigned in: Analysis 2

Property	Symbol	Value
Linear acceleration in X	AccX	0.0
Linear acceleration in Y	AccY	0.0
Linear acceleration in Z	AccZ	-10.0
Angular velocity about X axis	AngVelX	0.0
Angular velocity about Y axis	AngVelY	0.0
Angular velocity about Z axis	AngVelZ	0.0
Angular acceleration about X axis	AngAccX	0.0
Angular acceleration about Y axis	AngAccY	0.0
Angular acceleration about Z axis	AngAccZ	0.0
Linear acceleration In X fluid phase	lnFlAccX	0.0
Linear acceleration In Y fluid phase	lnFlAccY	0.0
Linear acceleration In Z fluid phase	lnFlAccZ	-10.0

Loadcase ID: 5 Title: DEAD 5:C Factor = 1.0
Assignment to Surfaces:
1666;1668;1686;1688;1698;1700;1714;1716;1731;1733;1751;1753;1763;1771;1773;1783;1823T1831I2;1841;1843;1855

15. Global distributed

Attribute: 4 Title: DEAD 6
Sub Type = Global Distributed Load

Property	Symbol	Value
Attribute type	type	"Length"
X Direction	WX	0.0
Y Direction	WY	0.0
Z Direction	WZ	-6.0
Moment about X axis	MX	0.0
Moment about Y axis	MY	0.0
Moment about Z axis	MZ	0.0
Moment about hinge nodes	Hinge	0.0
Pore pressure flux	pwp	0.0
Keep global	keepGlobal	false

Loadcase ID: 10 Title: DEAD 6 Factor = 1.0
Assigned in: Analysis 6

Assignment to Lines:
1869;1872;1873;1874;1979T1983;2036T2038;2059;2060;2123T2130;2163T2170

Attribute: 5 Title: SURF
Sub Type = Global Distributed Load

Property	Symbol	Value
Attribute type	type	"Area"
X Direction	WX	0.0
Y Direction	WY	0.0
Z Direction	WZ	-2.2
Pore pressure flux	pwp	0.0
Keep global	keepGlobal	false

Loadcase ID: 11 Title: SURF Factor = 1.0
Assigned in: Analysis 6
Assignment to Surfaces:
1444T1458I2;1477T1519I2;1522T1538I2;1568T1604I2;1607T1643I2;1648T1724I2;1727T1765I2;1769T1855I2

16. Beam point load

Attribute: 6 Title: Ncs:1+
Sub Type = Beam Point Load

Property	Symbol	Value
Distance type	type	1
Distance	d	0.0
Point	Load direction	dirType "Local(nodal)"
load in x direction	Px	1017.0
Point load in y direction	Py	0.0
Point load in z direction	Pz	0.0
Moment about x axis	Mx	0.0
Moment about y axis	My	102.0
Moment about z axis	Mz	0.0

Loadcase ID: 12 Title: SHRINKAGE Factor = 1.0
Assigned in: Analysis 6
Assignment to Lines:
1844;1862;1968;1978;2026;2032;2054;2058;2103;2119;2143;2159

Attribute: 7 Title: Ncs:1-
Sub Type = Beam Point Load

Property	Symbol	Value
Distance type	type	0
Load direction	dirType	"Local(nodal)"
Distance	d	1.0
Point load in x direction	Px	-1017.0
Point load in y direction	Py	0.0
Point load in z direction	Pz	0.0
Moment about x axis	Mx	0.0
Moment about y axis	My	-102.0
Moment about z axis	Mz	0.0

Loadcase ID: 12 Title: SHRINKAGE Factor = 1.0
Assigned in: Analysis 6
Assignment to Lines:
1847;1865;1965;1975;2100;2106;2116;2122;2140;2146;2156;2162

Attribute: 8 Title: Ncs:2+
Sub Type = Beam Point Load

Property	Symbol	Value
Distance type	type	1
Load direction	dirType	"Local(nodal)"
Distance	d	0.0
Point load in x direction	Px	921.0
Point load in y direction	Py	0.0
Point load in z direction	Pz	0.0
Moment about x axis	Mx	0.0
Moment about y axis	My	92.0
Moment about z axis	Mz	0.0

Loadcase ID: 12 Title: SHRINKAGE Factor = 1.0
Assigned in: Analysis 6
Assignment to Lines:
1826;1913;1917;1926;2079;2087

Attribute: 9 Title: Ncs:2-
Sub Type = Beam Point Load

Property	Symbol	Value
Distance type	type	0
Load direction	dirType	"Local(nodal)"
Distance	d	1.0
Point load in x direction	Px	-921.0
Point load in y direction	Py	0.0
Point load in z direction	Pz	0.0
Moment about x axis	Mx	0.0
Moment about y axis	My	-92.0
Moment about z axis	Mz	0.0

Loadcase ID: 12 Title: SHRINKAGE Factor = 1.0
Assigned in: Analysis 6
Assignment to Lines:
1829;1853;1929;2076;2082;2084;2090

Attribute: 10 Title: Ntemp:1+
Sub Type = Beam Point Load

Property	Symbol	Value
Distance type	type	1
Load direction	dirType	"Local(nodal)"
Distance	d	0.0
Point load in x direction	Px	656.0
Point load in y direction	Py	0.0
Point load in z direction	Pz	0.0
Moment about x axis	Mx	0.0
Moment about y axis	My	66.0
Moment about z axis	Mz	0.0

Loadcase ID: 8 Title: UTEMP+ Factor = 1.0
Assigned in: Analysis 8
Assignment to Lines:
1844;1862;1968;1978;2026;2032;2054;2058;2103;2119;2143;2159

Attribute: 11 Title: Ntemp:1-
Sub Type = Beam Point Load

Property	Symbol	Value
Distance type	type	0
Load direction	dirType	"Local(nodal)"
Distance	d	1.0
Point load in x direction	Px	-656.0
Point load in y direction	Py	0.0
Point load in z direction	Pz	0.0
Moment about x axis	Mx	0.0
Moment about y axis	My	-66.0
Moment about z axis	Mz	0.0

Loadcase ID: 8 Title: UTEMP+ Factor = 1.0
Assigned in: Analysis 8
Assignment to Lines:
1847;1865;1965;1975;2099;2106;2115;2122;2139;2146;2155;2162

Attribute: 12 Title: Ntemp:2+
Sub Type = Beam Point Load

Property	Symbol	Value
Distance type	type	1
Load direction	dirType	"Local(nodal)"
Distance	d	0.0
Point load in x direction	Px	1596.0
Point load in y direction	Py	0.0
Point load in z direction	Pz	0.0
Moment about x axis	Mx	0.0
Moment about y axis	My	60.0
Moment about z axis	Mz	0.0

Loadcase ID: 8 Title: UTEMP+ Factor = 1.0
Assigned in: Analysis 8
Assignment to Lines:
1826;1913;1917;1926;2079;2087

Attribute: 13 Title: Ntemp:2-
Sub Type = Beam Point Load

Property	Symbol	Value
Distance type	type	0
Load direction	dirType	"Local(nodal)"
Distance	d	1.0
Point load in x direction	Px	-596.0
Point load in y direction	Py	0.0
Point load in z direction	Pz	0.0
Moment about x axis	Mx	0.0
Moment about y axis	My	-60.0
Moment about z axis	Mz	0.0

Loadcase ID: 8 Title: UTEMP+ Factor = 1.0
Assigned in: Analysis 8
Assignment to Lines:
1829;1929;2075;2082;2083;2090

17. Beam/Shell Slicing

Attribute: 1 Title: Girder A
Slice path: L400; L401; L402
Slice locations along path: 4@6.247;4@7.777;4@6.247
Slice width: 2.512
Extent: Girder A
Moment about (Neutral Axis or Slice Path): Neutral axis

Attribute: 2 Title: Girder B
Slice path: L403; L404, L405
Slice locations along path: 4@6.125;4@7.625;4@6.125
Slice width: 2.275
Extent: Girder B
Moment about (Neutral Axis or Slice Path): Neutral axis

Attribute: 3 Title: Girder C
Slice path: L406; L407; L408
Slice locations along path: 4@6.002;4@7,795;4@6,263
Slice width: 2.512
Extent: Girder C
Moment about (Neutral Axis or Slice Path): Neutral axis

18. Direct Method Influence Envelope

Attribute: 1 Title: Inf1 – Beam & Shell
Sub Type = Direct method influence
Entity: Beam/shell
Directions: Fz, My
Assignment to Beam/Shell Slices: Girder A, Grider B, Girder C

Attribute: 2 Title: Inf2 – Reactions
Sub Type = Direct method influence
Entity: Reactions
Directions: FX, FY, FZ
Assignment to Points:
400;401

Attribute: 3 Title: Inf3 – Deck
Sub Type = Direct method influence
Entity: Force/Moment – Thick Shell
Directions: Sy, My

Assignment to Points:
2T11I3;15T24I3;28T37I3;41T50I3;54T63I3;67T76I3;80T89I3;93T102I3;106T115I3;119T128I3;132T141I3;145T154I3;158T167I3;171T180I3;184T193I3;197T206I3

Assignment to Lines:
14T23I3;39T48I3;64T73I3;89T98I3;114T123I3;139T148I3;164T173I3;189T198I3;214T223I3;239T248I3;264T273I3;289T298I3;314T323I3;339T348I3;364T373I3

Attribute: 4 Title: Inf4 – Bracing & stiffners
Sub Type = Direct method influence
Entity: Force/Moment – 3D Thick Beam
Directions: Fx

Assignment to Lines:
559T568I3;584T593I3;609T618I3;634T643I3;659T668I3;684T693I3;709T718I3;734T743I3;759T768I3;784T793I3;809T818I3;834T843I3;859T868I3;884T893I3;909T918I3;934T943I3;945T1148

19. Load groups: Traffic

Load groups : Eurocode Load Modell 1 (LM1)
Type: Tandem axle
Axle load - lane 1: 300 kN
Axle load - lane 2: 200 kN
Axel load - lane 3: 100 kN

Lane load
Surface load - lane 1: 9.0 kPa
Surface load - remaining: 2.5 kPa

Load groups : Eurocode Load Modell 2 (LM2)
Type: Single axle
Axle load: 400 kN

Load groups : Fatigue modell 3 (UTM3)
Type: Quadruple axel
Axle load: 120 kN

20. VLO Analysis

Type: VLO – LM1 ~ Characteristic
Representative values : Charateristic
Design code : EN 1991-2 Sweden 2011
Load groups : LM1
Longitudinal increment : 0.50 m
Transverse increment : 0.50 m
Vehicule direction : Both
Kerbs : L559, L560
UDL alfa factor : 0.8, 1, 1 , 1, 1
TS alfa factor : 0.9, 0.9,0
Influence attributes :
Inf1 – Beam & Shell
Inf2 – Reactions
Inf3 – Deck
Inf4 – Bracings & stiffners

Type: VLO – LM2 ~ Characteristic
Representative values : Charateristic
Design code : EN 1991-2 Sweden 2011
Load groups : LM2
Longitudinal increment : 0.50 m
Transverse increment : 0.50 m
Vehicule direction : Both
Kerbs : L559, L560
TS alfa factor : 0.9
Influence attributes :
Inf1 – Beam & Shell
Inf2 – Reactions
Inf3 – Deck
Inf4 – Bracings & stiffners

Type: VLO – UTM3 ~ Characteristic
Representative values : Charateristic
Design code : EN 1991-2 Sweden 2011
Load groups : UTM3
Longitudinal increment : 0.50 m
Transverse increment : 0.50 m
Vehicule direction : Both
Kerbs : L559, L560
Influence attributes :
Inf1 – Beam & Shell
Inf2 – Reactions
Inf3 – Deck
Inf4 – Bracings & stiffners

21. Basic combination

Loadcase ID: 19 Title: DEAD
Sub Type: Basic Combination

Loadcase File	Results Factor	Title	Type
7	0	1.000	DEAD 1:S
9	0	1.000	DEAD 2:1
2	0	1.000	DEAD 2:C
3	0	1.000	DEAD 3:C
4	0	1.000	DEAD 4:C
5	0	1.000	DEAD 5:C
10	0	1.000	DEAD 6
12540	0	1.000	DEAD 1:C

22. Envelopes

Loadcase ID: 12518 Title: TRAFFIC
Sub Type: Envelope

Loadcase File	Results Title	Type
458	0	Inf1 - Beam & shell ~ LM1 Characteristic (Max)
459	0	Inf1 - Beam & shell ~ LM1 Characteristic (Min)
892	0	Inf1 - Beam & shell ~ LM2 Characteristic (Max)
893	0	Inf1 - Beam & shell ~ LM2 Characteristic (Min)
894	0	Inf1 - Beam & shell ~ EG A Characteristic (Max)
895	0	Inf1 - Beam & shell ~ EG A Characteristic (Min)
896	0	Inf1 - Beam & shell ~ EG B Characteristic (Max)
897	0	Inf1 - Beam & shell ~ EG B Characteristic (Min)
898	0	Inf2 - Reaction ~ LM1 Characteristic (Max)
899	0	Inf2 – Reaction ~ LM1 Characteristic (Min)
900	0	Inf2 – Reaction ~ LM2 Characteristic (Max)
901	0	Inf2 – Reaction ~ LM2 Characteristic (Min)
902	0	Inf2 - Beam & shell ~ EG A Characteristic (Max)
903	0	Inf2 - Beam & shell ~ EG A Characteristic (Min)
904	0	Inf2 - Beam & shell ~ EG B Characteristic (Max)
905	0	Inf2 - Beam & shell ~ EG B Characteristic (Min)
906	0	Inf3 - Deck ~ LM1 Characteristic (Max)
907	0	Inf3 – Deck ~ LM1 Characteristic (Min)
908	0	Inf3 – Deck ~ LM2 Characteristic (Max)
909	0	Inf3 – Deck ~ LM2 Characteristic (Min)
910	0	Inf3 - Beam & shell ~ EG A Characteristic (Max)
911	0	Inf3 - Beam & shell ~ EG A Characteristic (Min)
912	0	Inf3 - Beam & shell ~ EG B Characteristic (Max)
913	0	Inf3 - Beam & shell ~ EG B Characteristic (Min)

Loadcase ID: 12519 Title: FAT

Sub Type: Envelope

Loadcase File	Results Title	Type
458	0	Inf1 - Beam & shell ~ UTM 3 Characteristic (Max)
459	0	Inf1 - Beam & shell ~ UTM 3 Characteristic (Min)
12510	0	Inf2 - Reaction ~ UTM3 Characteristic (Max)
12511	0	Inf2 - Reaction ~ UTM3 Characteristic (Min)
12512	0	Inf3 - Deck ~ UTM 3 Characteristic (Max)
12513	0	Inf3 - Deck ~ UTM 3 Characteristic (Min)

23. Smart combination

+

Loadcase ID: 24 Title: TEMP
Sub Type: Smart Combination
Loadcases to consider: All
Variable Loadcases: All

Loadcase	Results File	Permanent Factor	Variable Factor	Title
8	0	0	1.000	UTEMP+8
0		0	-1.000	UTEMP+

Loadcase ID: 12520 Title: ULS-PERM
Sub Type: Smart Combination
Loadcases to consider: All
Variable Loadcases: All

Loadcase	Results File	Permanent Factor	Variablemm actor	Title
19	0	1.000	0.200	DEAD
11	0	0.900	0.450	SURF
12	0	0.000	1.200	SHRINKAGE

Loadcase ID: 12522 Title: ULS-VAR
Sub Type: Smart Combination
Loadcases to consider: 2
Variable Loadcases: 1

Loadcase	ResultsFile	Permanent Factor	Variable Factor	Title
24	0	0.900	0.600	TEMP (Max)
25	0	0.900	0.600	TEMP (Min)
49925	0	1.030	0.470	TRAFFIK (Max)
49926	0	1.030	0.470	TRAFFIK (Min)

Loadcase ID: 12524 Title: ULS
Sub Type: Smart Combination
Loadcases to consider: All
Variable Loadcases: All

Loadcase	Results File	Permanent Factor	Variable Factor	Title
12520	0	1.000	0.000	ULS-PERM (Max)
12521	0	1.000	0.000	ULS-PERM (Min)
12522	0	0.000	1.000	ULS-VAR (Max)
12523	0	0.000	1.000	ULS-VAR (Min)

Loadcase ID: 12526 Title: SLS-PERM
Sub Type: Smart Combination
Loadcases to consider: All
Variable Loadcases: All

Loadcase	Results File	Permanent Factor	Variable Factor	Title
19	0	1.000	0.000	DEAD
11	0	0.900	0.200	SURF
12	0	0.000	1.000	SHRINKAGE

Loadcase ID: 12528 Title: SLS-K-VAR
Sub Type: Smart Combination
Loadcases to consider: 2
Variable Loadcases: 1

Loadcase	Results File	Permanent Factor	Variable Factor	Title
24	0	0.600	0.400	TEMP (Max)
25	0	0.600	0.400	TEMP (Min)
49925	0	0.750	0.250	TRAFFIK (Max)
49926	0	1.000	0.000	TRAFFIK (Min)

Loadcase ID: 12530 Title: SLS-F-VAR
Sub Type: Smart Combination
Loadcases to consider: All
Variable Loadcases: All

Loadcase	Results File	Permanent Factor	Variable Factor	Title
24	0	0.000	0.600	TEMP (Max)
25	0	0.000	0.600	TEMP (Min)
49925	0	0.000	0.750	TRAFFIK (Max)
49926	0	0.000	0.750	TRAFFIK (Min)

Loadcase ID: 12532 Title: SLS-K
Sub Type: Smart Combination
Loadcases to consider: All
Variable Loadcases: All

Loadcase	Results File	Permanent Factor	Variable Factor	Title
12526	0	1.000	0.000	SLS-PERM (Max)
12527	0	1.000	0.000	SLS-PERM (Min)
12528	0	0.000	1.000	SLS-K-VAR (Max)
12529	0	0.000	1.000	SLS-K-VAR (Min)

Loadcase ID: 12534 Title: SLS-F
Sub Type: Smart Combination
Loadcases to consider: All
Variable Loadcases: All

Loadcase	Results File	Permanent Factor	Variable Factor	Title
12526	0	1.000	0.000	SLS-PERM (Max)
12527	0	1.000	0.000	SLS-PERM (Min)
12530	0	0.000	1.000	SLS-F-VAR (Max)
12531	0	0.000	1.000	SLS-F-VAR (Min)

Loadcase ID: 12536 Title: SLS-Q
Sub Type: Smart Combination
Loadcases to consider: All
Variable Loadcases: All

Loadcase	Results File	Permanent Factor	Variable Factor	Title
19	0	1.000	0.000	DEAD
11	0	0.900	0.200	SURF
12	0	0.000	1.000	SHRINKAGE
24	0	0.900	0.200	TEMP (Max)
25	0	0.900	0.200	TEMP (Min)

Loadcase ID: 24 Title: TEMP
Sub Type: Smart Combination
Loadcases to consider: All
Variable Loadcases: All

Loadcase	Results File	Permanent Factor	VariableFactor	Title	~~Type~~
8	0	1.000	1.000	UTEMP+	
8	0	1.000	-1.000	UTEMP+	

Loadcase ID: 12520 Title: ULS-PERM
Sub Type: Smart Combination
Loadcases to consider: All
Variable Loadcases: All

Loadcase	Results File	Permanent Factor	Variable Factor	Title	~~Type~~
19	0	1.000	0.200	DEAD	
11	0	0.900	0.450	SURF	
12	0	0.000	1.200	SHRINKAGE	

Loadcase ID: 12522 Title: ULS-VAR
Sub Type: Smart Combination
Loadcases to consider: 2
Variable Loadcases: 1

Loadcase	Results File	Permanent Factor	VariableFactor	Title
24	0	0.900	0.600	TEMP (Max)
25	0	0.900	0.600	TEMP (Min)
49925	0	1.030	0.470	TRAFFIK (Max)
49926	0	1.030	0.470	TRAFFIK (Min)

Loadcase ID: 12524 Title: ULS
Sub Type: Smart Combination
Loadcases to consider: All
Variable Loadcases: All

Loadcase	Results File	Permanent Factor	Variable Factor	Title
12520	0	1.000	0.000	ULS-PERM (Max)
12521	0	1.000	0.000	ULS-PERM (Min)
12522	0	0.000	1.000	ULS-VAR (Max)
12523	0	0.000	1.000	ULS-VAR (Min)

Loadcase ID: 12526 Title: SLS-PERM
Sub Type: Smart Combination
Loadcases to consider: All
Variable Loadcases: All

Loadcase	Results File	Permanent Factor	VariableFactor	Title
19	0	1.000	0.000	DEAD
11	0	0.900	0.200	SURF
12	0	0.000	1.000	SHRINKAGE

Loadcase ID: 12528 Title: SLS-K-VAR
Sub Type: Smart Combination
Loadcases to consider: 2
Variable Loadcases: 1

Loadcase	Results File	Permanent Factor	Variable Factor	Title	~~Type~~
24	0	0.600	0.400	TEMP (Max)	
25	0	0.600	0.400	TEMP (Min)	
49925	0	0.750	0.250	TRAFFIK (Max)	
49926	0	1.000	0.000	TRAFFIK (Min)	

Loadcase ID: 12530 Title: SLS-F-VAR
Sub Type: Smart Combination
Loadcases to consider: All
Variable Loadcases: All

Loadcase	Results File	Permanent Factor	Variable Factor	Title	~~Type~~
24	0	0.000	0.600	TEMP (Max)	
25	0	0.000	0.600	TEMP (Min)	
49925	0	0.000	0.750	TRAFFIK (Max)	
49926	0	0.000	0.750	TRAFFIK (Min)	

Loadcase ID: 12532 Title: SLS-K
Sub Type: Smart Combination
Loadcases to consider: All
Variable Loadcases: All

Loadcase	Results File	Permanent Factor	Variable Factor	Title
12526	0	1.000	0.000	SLS-PERM (Max)
12527	0	1.000	0.000	SLS-PERM (Min)
12528	0	0.000	1.000	SLS-K-VAR (Max)
12529	0	0.000	1.000	SLS-K-VAR (Min)

Loadcase ID: 12534 Title: SLS-F
Sub Type: Smart Combination
Loadcases to consider: All
Variable Loadcases: All

Loadcase	Results File	Permanent Factor	Variable Factor	Title	~~Type~~
12526	0	1.000	0.000	SLS-PERM (Max)	
12527	0	1.000	0.000	SLS-PERM (Min)	
12530	0	0.000	1.000	SLS-F-VAR (Max)	
12531	0	0.000	1.000	SLS-F-VAR (Min)	

Loadcase ID: 12536 Title: SLS-Q
Sub Type: Smart Combination
Loadcases to consider: All
Variable Loadcases: All

Loadcase	Results File	Permanent Factor	VariableFactor	Title	~~Type~~
19	0	1.000	0.000	DEAD	
11	0	0.900	0.200	SURF	
12	0	0.000	1.000	SHRINKAGE	
24	0	0.900	0.200	TEMP (Max)	
25	0	0.900	0.200	TEMP (Min)	

Loadcase ID: 12538 Title: FAT
Sub Type: Smart Combination
Loadcases to consider: All
Variable Loadcases: All

Loadcase	Results File	Permanent Factor	VariableFactor	Title	~~Type~~
19	0	1.000	0.000	DEAD	
12	0	0.000	1.000	SHRINKAGE	
12519	0	1.000	0.000	FAT (Max)	
12519	0	1.000	0.000	FAT (Min)	