

Project Estação de Campo de Ourique

1. Materials

Reinforcement EC2

Name	Type	ρ [kg/m ³]	E_{mod} [MPa]	G_{mod} [MPa]	α [m/mK]	$f_{y,k}$ [MPa]
B 500B	Reinforcement steel	7850.0	2.0000e+05	8.3333e+04	0.00	500.0

Concrete EN 1992-2

Name	Type	Unit mass [kg/m ³]	E mod [MPa]	Poisson - nu	G mod [MPa]	Thermal exp [m/mK]	Colour
C20/25(EN1992-2)	Concrete	2500.0	3.0000e+04	0.2	1.2500e+04	0.00	■
C30/37(EN1992-2)	Concrete	2500.0	3.2800e+04	0.2	1.3667e+04	0.00	■

2. Subsoils


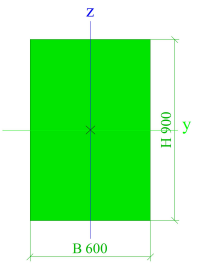
Name	C1x [MN/m ³]	C1z	C1y [MN/m ³]	Stiffness [MN/m ³]	C2x [MN/m]	C2y [MN/m]
Shaft 1	0.0000e+00	Flexible	0.0000e+00	4.0000e-01	0.0000e+00	0.0000e+00
Shaft 2	0.0000e+00	Flexible	0.0000e+00	7.5000e-01	0.0000e+00	0.0000e+00
Shaft 3	1.6200e+00	Flexible	1.6200e+00	8.1000e+00	0.0000e+00	0.0000e+00
Shaft 4	6.7500e+00	Flexible	6.7500e+00	3.3780e+01	0.0000e+00	0.0000e+00
Tunnel North 1	5.6000e+00	Flexible	5.6000e+00	2.8034e+01	0.0000e+00	0.0000e+00
Tunnel North 2	4.0000e+00	Flexible	4.0000e+00	2.0000e+01	0.0000e+00	0.0000e+00
Tunnel South 1	3.6000e+00	Flexible	3.6000e+00	1.8050e+01	0.0000e+00	0.0000e+00
Tunnel South 2	2.1400e+00	Flexible	2.1400e+00	1.0730e+01	0.0000e+00	0.0000e+00


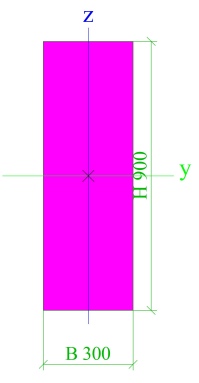
3. Cross-sections

1500X500		
Type	Rectangle	
Detailed	1500; 500	
Shape type	Thick-walled	
Item material	C30/37(EN1992-2)	
Fabrication	concrete	
Colour	■	
A [m ²]	7.5000e-01	
A _y [m ²], A _z [m ²]	6.2715e-01	6.2523e-01
A _L [m ² /m], A _D [m ² /m]	4.0000e+00	4.0000e+00
c _{y,ucs} [mm], c _{z,ucs} [mm]	250	750
α [deg]	0.00	
I _y [m ⁴], I _z [m ⁴]	1.4063e-01	1.5625e-02
i _y [mm], i _z [mm]	433	144
W _{el,y} [m ³], W _{el,z} [m ³]	1.8750e-01	6.2500e-02
W _{pl,y} [m ³], W _{pl,z} [m ³]	0.0000e+00	0.0000e+00
M _{pl,y,+} [Nm], M _{pl,y,-} [Nm]	0.00e+00	0.00e+00
M _{pl,z,+} [Nm], M _{pl,z,-} [Nm]	0.00e+00	0.00e+00
d _y [mm], d _z [mm]	0	0
I _t [m ⁴], I _w [m ⁶]	4.9256e-02	1.8364e-03
β_y [mm], β_z [mm]	0	0
Picture		
1200X300		
Type	Rectangle	
Detailed	1200; 300	


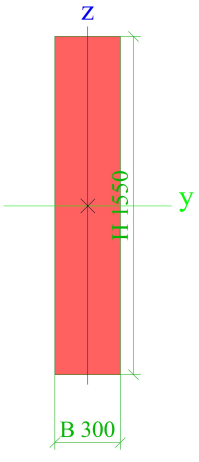
Shape type	Thick-walled	
Item material	C20/25(EN1992-2)	
Fabrication	concrete	
Colour	■	
A [m ²]	3.6000e-01	
A _y [m ²], A _z [m ²]	3.0179e-01	3.0009e-01
A _L [m ² /m], A _D [m ² /m]	3.0000e+00	3.0000e+00
c _{y,ucs} [mm], c _{z,ucs} [mm]	150	600
α [deg]	0.00	
I _y [m ⁴], I _z [m ⁴]	4.3200e-02	2.7000e-03
i _y [mm], i _z [mm]	346	87
W _{el,y} [m ³], W _{el,z} [m ³]	7.2000e-02	1.8000e-02
W _{pl,y} [m ³], W _{pl,z} [m ³]	0.0000e+00	0.0000e+00
M _{pl,y,+} [Nm], M _{pl,y,-} [Nm]	0.00e+00	0.00e+00
M _{pl,z,+} [Nm], M _{pl,z,-} [Nm]	0.00e+00	0.00e+00
d _y [mm], d _z [mm]	0	0
I _t [m ⁴], I _w [m ⁶]	9.0713e-03	2.4554e-04
β_y [mm], β_z [mm]	0	0
Picture		
C900X600		
Type	Rectangle	
Detailed	900; 600	
Shape type	Thick-walled	


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Item material	C20/25(EN1992-2)	
Fabrication	concrete	
Colour		
A [m ²]	5.4000e-01	
A _y [m ²], A _z [m ²]	4.5070e-01	4.5031e-01
A _L [m ² /m], A _D [m ² /m]	3.0000e+00	3.0000e+00
c _{y,ucs} [mm], c _{z,ucs} [mm]	300	450
α [deg]	0.00	
I _y [m ⁴], I _z [m ⁴]	3.6450e-02	1.6200e-02
i _y [mm], i _z [mm]	260	173
W _{el,y} [m ³], W _{el,z} [m ³]	8.1000e-02	5.4000e-02
W _{pl,y} [m ³], W _{pl,z} [m ³]	0.0000e+00	0.0000e+00
M _{pl,y,+} [Nm], M _{pl,y,-} [Nm]	0.00e+00	0.00e+00
M _{pl,z,+} [Nm], M _{pl,z,-} [Nm]	0.00e+00	0.00e+00
d _y [mm], d _z [mm]	0	0
I _t [m ⁴], I _w [m ⁶]	3.8000e-02	1.7444e-04
β _y [mm], β _z [mm]	0	0
Picture		

C900X300		
Type	Rectangle	
Detailed	900; 300	
Shape type	Thick-walled	
Item material	C20/25(EN1992-2)	
Fabrication	concrete	
Colour		
A [m ²]	2.7000e-01	
A _y [m ²], A _z [m ²]	2.2583e-01	2.2509e-01
A _L [m ² /m], A _D [m ² /m]	2.4000e+00	2.4000e+00
c _{y,ucs} [mm], c _{z,ucs} [mm]	150	450
α [deg]	0.00	
I _y [m ⁴], I _z [m ⁴]	1.8225e-02	2.0250e-03
i _y [mm], i _z [mm]	260	87
W _{el,y} [m ³], W _{el,z} [m ³]	4.0500e-02	1.3500e-02
W _{pl,y} [m ³], W _{pl,z} [m ³]	0.0000e+00	0.0000e+00
M _{pl,y,+} [Nm], M _{pl,y,-} [Nm]	0.00e+00	0.00e+00
M _{pl,z,+} [Nm], M _{pl,z,-} [Nm]	0.00e+00	0.00e+00
d _y [mm], d _z [mm]	0	0
I _t [m ⁴], I _w [m ⁶]	6.3830e-03	8.5637e-05
β _y [mm], β _z [mm]	0	0
Picture		

C1550X30		
Type	Rectangle	
Detailed	1550; 300	

Shape type	Thick-walled	
Item material	C20/25(EN1992-2)	
Fabrication	concrete	
Colour		
A [m ²]	4.6500e-01	
A _y [m ²], A _z [m ²]	3.8993e-01	3.8759e-01
A _L [m ² /m], A _D [m ² /m]	3.7000e+00	3.7000e+00
c _{y,ucs} [mm], c _{z,ucs} [mm]	150	775
α [deg]	0.00	
I _y [m ⁴], I _z [m ⁴]	9.3097e-02	3.4875e-03
i _y [mm], i _z [mm]	447	87
W _{el,y} [m ³], W _{el,z} [m ³]	1.2013e-01	2.3250e-02
W _{pl,y} [m ³], W _{pl,z} [m ³]	0.0000e+00	0.0000e+00
M _{pl,y,+} [Nm], M _{pl,y,-} [Nm]	0.00e+00	0.00e+00
M _{pl,z,+} [Nm], M _{pl,z,-} [Nm]	0.00e+00	0.00e+00
d _y [mm], d _z [mm]	0	0
I _t [m ⁴], I _w [m ⁶]	1.2203e-02	5.8273e-04
β _y [mm], β _z [mm]	0	0
Picture		

B700X300		
Type	Rectangle	
Detailed	700; 300	
Shape type	Thick-walled	
Item material	C30/37(EN1992-2)	
Fabrication	concrete	
Colour		
A [m ²]	2.1000e-01	
A _y [m ²], A _z [m ²]	1.7549e-01	1.7509e-01
A _L [m ² /m], A _D [m ² /m]	2.0000e+00	2.0000e+00
c _{y,ucs} [mm], c _{z,ucs} [mm]	150	350
α [deg]	0.00	
I _y [m ⁴], I _z [m ⁴]	8.5750e-03	1.5750e-03
i _y [mm], i _z [mm]	202	87
W _{el,y} [m ³], W _{el,z} [m ³]	2.4500e-02	1.0500e-02
W _{pl,y} [m ³], W _{pl,z} [m ³]	0.0000e+00	0.0000e+00
M _{pl,y,+} [Nm], M _{pl,y,-} [Nm]	0.00e+00	0.00e+00
M _{pl,z,+} [Nm], M _{pl,z,-} [Nm]	0.00e+00	0.00e+00
d _y [mm], d _z [mm]	0	0
I _t [m ⁴], I _w [m ⁶]	4.5909e-03	3.0270e-05
β _y [mm], β _z [mm]	0	0

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Picture		
C2500X500		
Type	Rectangle	
Detailed	2500; 500	
Shape type	Thick-walled	
Item material	C30/37(EN1992-2)	
Fabrication	concrete	
Colour	■	
A [m ²]	1.2500e+00	
A _y [m ²], A _z [m ²]	1.0476e+00	1.0419e+00
A _L [m ² /m], A _D [m ² /m]	6.0000e+00	6.0000e+00
c _{y,UCS} [mm], c _{z,UCS} [mm]	250	1250
α [deg]	0.00	
I _y [m ⁴], I _z [m ⁴]	6.5104e-01	2.6042e-02
i _y [mm], i _z [mm]	722	144
W _{el,y} [m ³], W _{el,z} [m ³]	5.2083e-01	1.0417e-01
W _{pl,y} [m ³], W _{pl,z} [m ³]	0.0000e+00	0.0000e+00
M _{pl,y,+} [Nm], M _{pl,y,-} [Nm]	0.00e+00	0.00e+00
M _{pl,z,+} [Nm], M _{pl,z,-} [Nm]	0.00e+00	0.00e+00
d _y [mm], d _z [mm]	0	0
I _t [m ⁴], I _w [m ⁶]	9.0726e-02	1.1210e-02
β _y [mm], β _z [mm]	0	0
Picture		

B2500X600		
Type	Rectangle	
Detailed	1000; 700	
Shape type	Thick-walled	
Item material	C30/37(EN1992-2)	
Fabrication	concrete	
Colour	■	
A [m ²]	7.0000e-01	
A _y [m ²], A _z [m ²]	5.8434e-01	5.8382e-01
A _L [m ² /m], A _D [m ² /m]	3.4000e+00	3.4000e+00
c _{y,UCS} [mm], c _{z,UCS} [mm]	350	500
α [deg]	0.00	
I _y [m ⁴], I _z [m ⁴]	5.8333e-02	2.8583e-02
i _y [mm], i _z [mm]	289	202
W _{el,y} [m ³], W _{el,z} [m ³]	1.1667e-01	8.1667e-02
W _{pl,y} [m ³], W _{pl,z} [m ³]	0.0000e+00	0.0000e+00
M _{pl,y,+} [Nm], M _{pl,y,-} [Nm]	0.00e+00	0.00e+00
M _{pl,z,+} [Nm], M _{pl,z,-} [Nm]	0.00e+00	0.00e+00
d _y [mm], d _z [mm]	0	0
I _t [m ⁴], I _w [m ⁶]	6.4904e-02	3.0907e-04
β _y [mm], β _z [mm]	0	0
Picture		
B1200X500		
Type	Rectangle	
Detailed	1300; 500	
Shape type	Thick-walled	
Item material	C30/37(EN1992-2)	
Fabrication	concrete	
Colour	■	
A [m ²]	6.5000e-01	
A _y [m ²], A _z [m ²]	5.4317e-01	5.4189e-01
A _L [m ² /m], A _D [m ² /m]	3.6000e+00	3.6000e+00
c _{y,UCS} [mm], c _{z,UCS} [mm]	250	650
α [deg]	0.00	
I _y [m ⁴], I _z [m ⁴]	9.1542e-02	1.3542e-02
i _y [mm], i _z [mm]	375	144
W _{el,y} [m ³], W _{el,z} [m ³]	1.4083e-01	5.4167e-02
W _{pl,y} [m ³], W _{pl,z} [m ³]	0.0000e+00	0.0000e+00
M _{pl,y,+} [Nm], M _{pl,y,-} [Nm]	0.00e+00	0.00e+00
M _{pl,z,+} [Nm], M _{pl,z,-} [Nm]	0.00e+00	0.00e+00
d _y [mm], d _z [mm]	0	0
I _t [m ⁴], I _w [m ⁶]	4.0962e-02	1.0355e-03
β _y [mm], β _z [mm]	0	0
Picture		

Project **Estação de Campo de Ourique**

Explanations of symbols	
A	Area
A _y	Shear Area in principal y-direction - Calculated by 2D FEM analysis
A _z	Shear Area in principal z-direction - Calculated by 2D FEM analysis
A _L	Circumference per unit length
A _D	Drying surface per unit length
C _{Y,UCS}	Centroid coordinate in Y-direction of Input axis system
C _{Z,UCS}	Centroid coordinate in Z-direction of Input axis system
I _{Y,LCS}	Second moment of area about the YLCS axis
I _{Z,LCS}	Second moment of area about the ZLCS axis
I _{YZ,LCS}	Product moment of area in the LCS system
α	Rotation angle of the principal axis system
I _y	Second moment of area about the principal y-axis
I _z	Second moment of area about the principal z-axis
i _y	Radius of gyration about the principal y-axis
i _z	Radius of gyration about the principal z-axis

Explanations of symbols	
W _{el,y}	Elastic section modulus about the principal y-axis
W _{el,z}	Elastic section modulus about the principal z-axis
W _{pl,y}	Plastic section modulus about the principal y-axis
W _{pl,z}	Plastic section modulus about the principal z-axis
M _{pl,y,+}	Plastic moment about the principal y-axis for a positive My moment
M _{pl,y,-}	Plastic moment about the principal y-axis for a negative My moment
M _{pl,z,+}	Plastic moment about the principal z-axis for a positive Mz moment
M _{pl,z,-}	Plastic moment about the principal z-axis for a negative Mz moment
d _y	Shear center coordinate in principal y-direction measured from the centroid - Calculated by 2D FEM analysis
d _z	Shear center coordinate in principal z-direction measured from the centroid - Calculated by 2D FEM analysis
I _t	Torsional constant - Calculated by 2D FEM analysis
I _w	Warping constant - Calculated by 2D FEM analysis
β _y	Mono-symmetry constant about the principal y-axis
β _z	Mono-symmetry constant about the principal z-axis

4. Load cases

Name	Description	Action type	Load group	Direction	Duration	Master load case
	Spec	Load type				
SelfWeight		Permanent Self weight	Dead	-Z		
Additional Permanent		Permanent Standard	Dead			
Imposed Load	Standard	Variable Static	Live		Short	None
Soil Prs		Permanent Standard	Soil			
Water		Permanent Standard	Water			
Temp1	Temperature	Variable Static	Temperature			None
Temp2	Temperature	Variable Static	Temperature			None
Railway Train	Standard	Variable Static	Train		Short	None

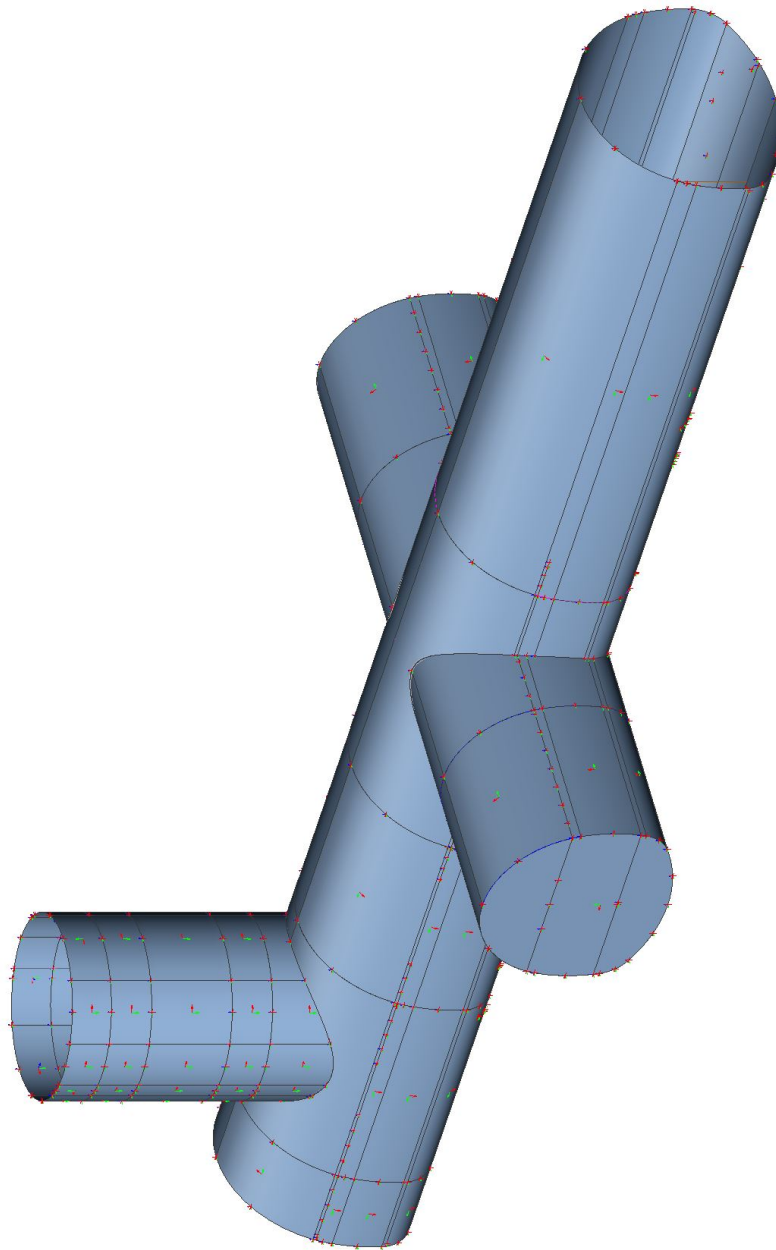
5. Load groups

Name	Load	Relation	Type
Seismic	Seismic	Exclusive	
Accidental	Accidental	Exclusive	
Live	Variable	Standard	Cat C : Congregation
Roof Live	Variable	Standard	Cat H : Roofs
Temperature	Variable	Exclusive	Temperature
Wind	Variable	Standard	Wind
Dead	Permanent		
Soil	Permanent		

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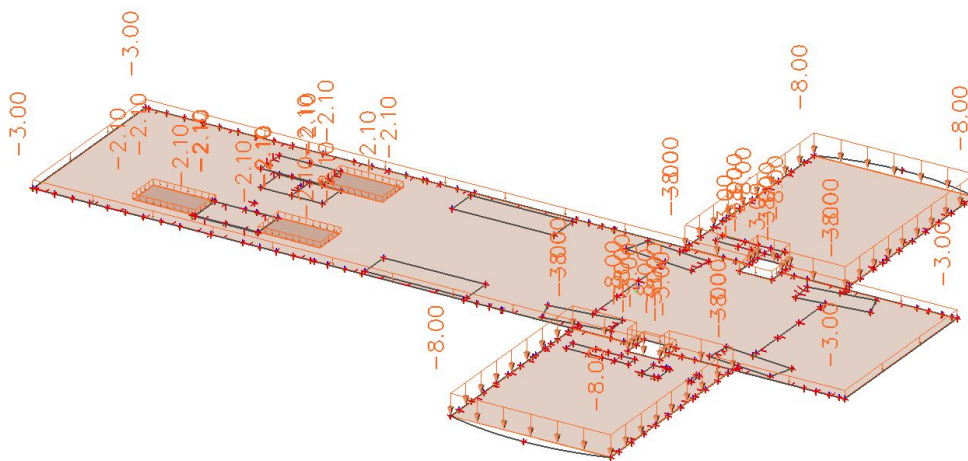
Name	Load	Relation	Type
Water	Permanent		
Train	Variable	Standard	Cat G : Vehicle >30kN

6. Analysis model



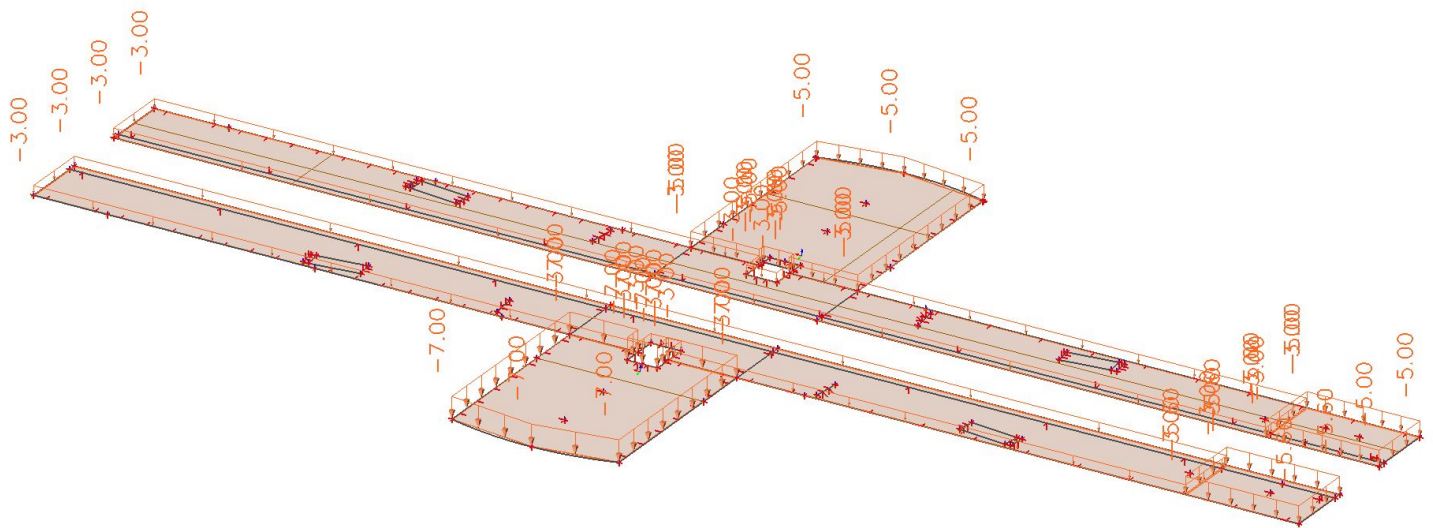
7. Loads

7.1. Additional Permanent / Tot. value



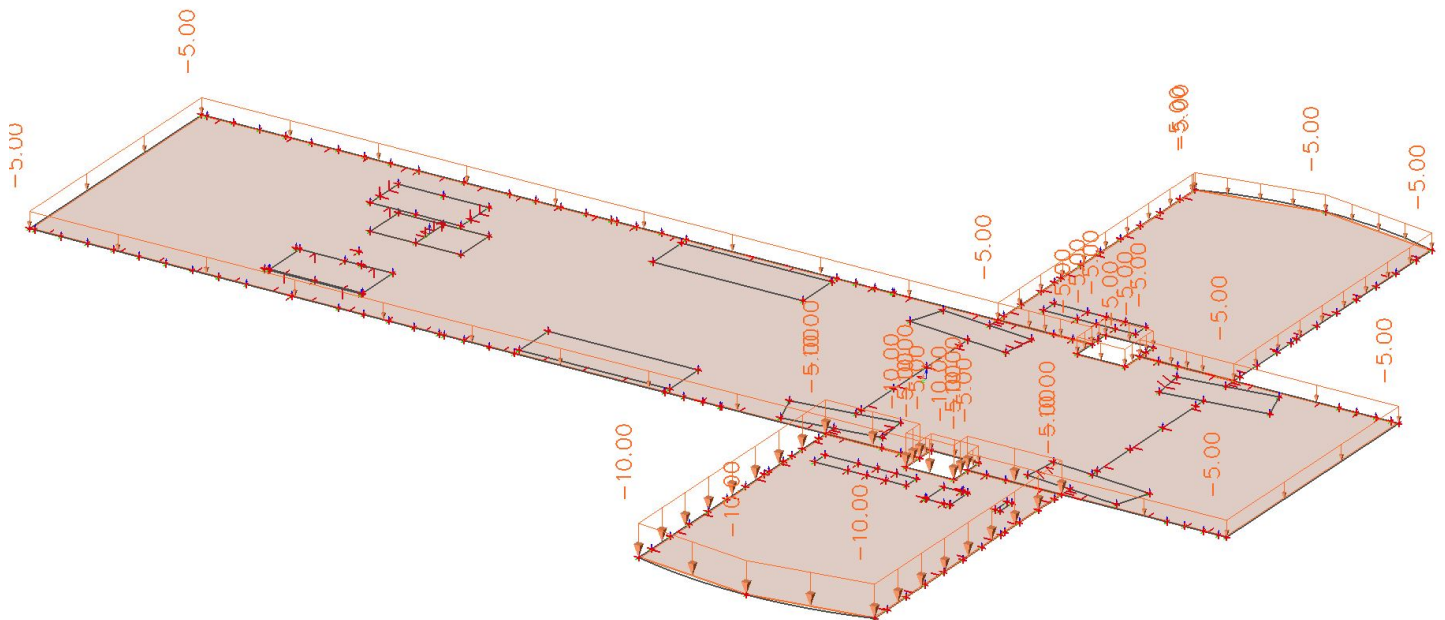
Project Estação de Campo de Ourique

7.2. Additional Permanent / Tot. value

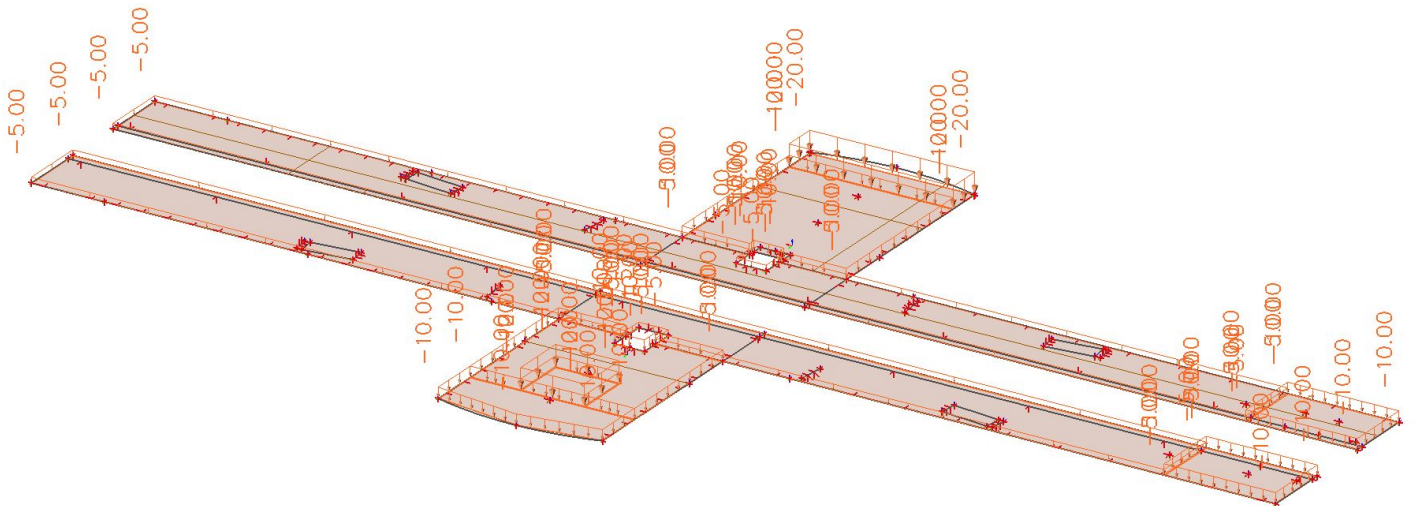


Project Estação de Campo de Ourique

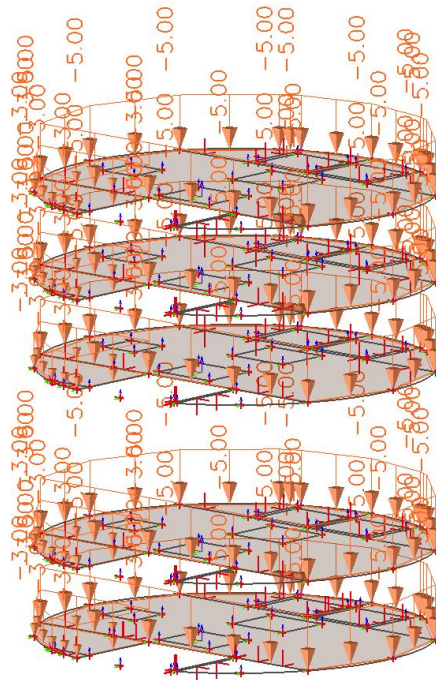
7.3. Imposed Load / Tot. value



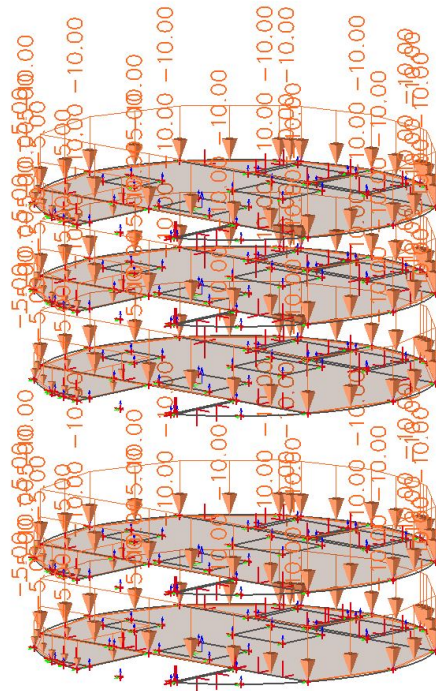
7.4. Imposed Load / Tot. value



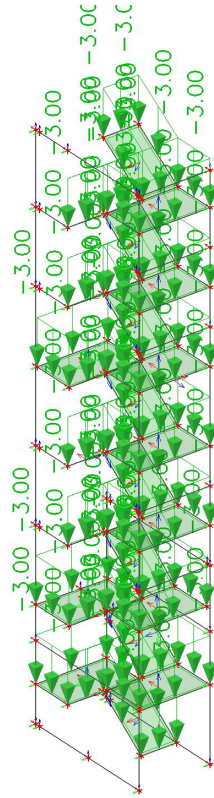
7.5. Additional Permanent / Tot. value



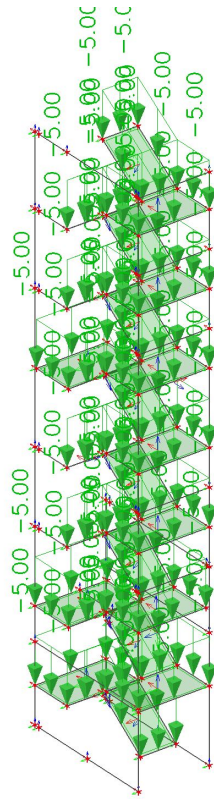
7.6. Imposed Load / Tot. value



7.7. Additional Permanent / Tot. value

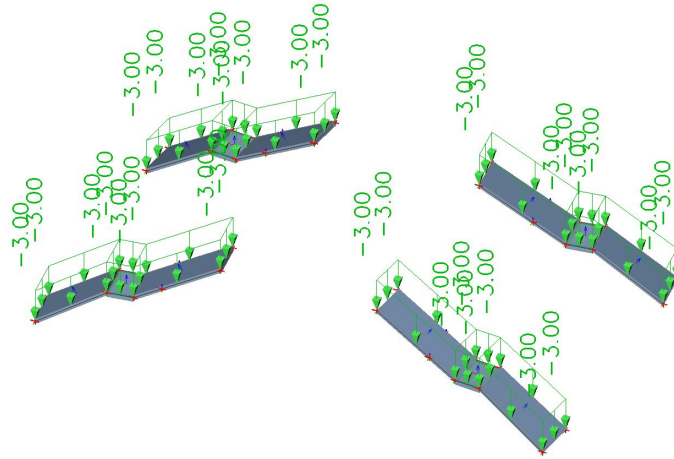


7.8. Imposed Load / Tot. value

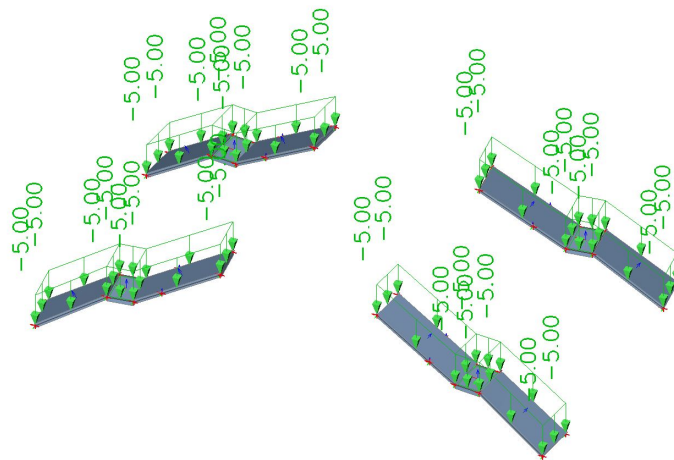


Project Estação de Campo de Ourique

7.9. Additional Permanent / Tot. value

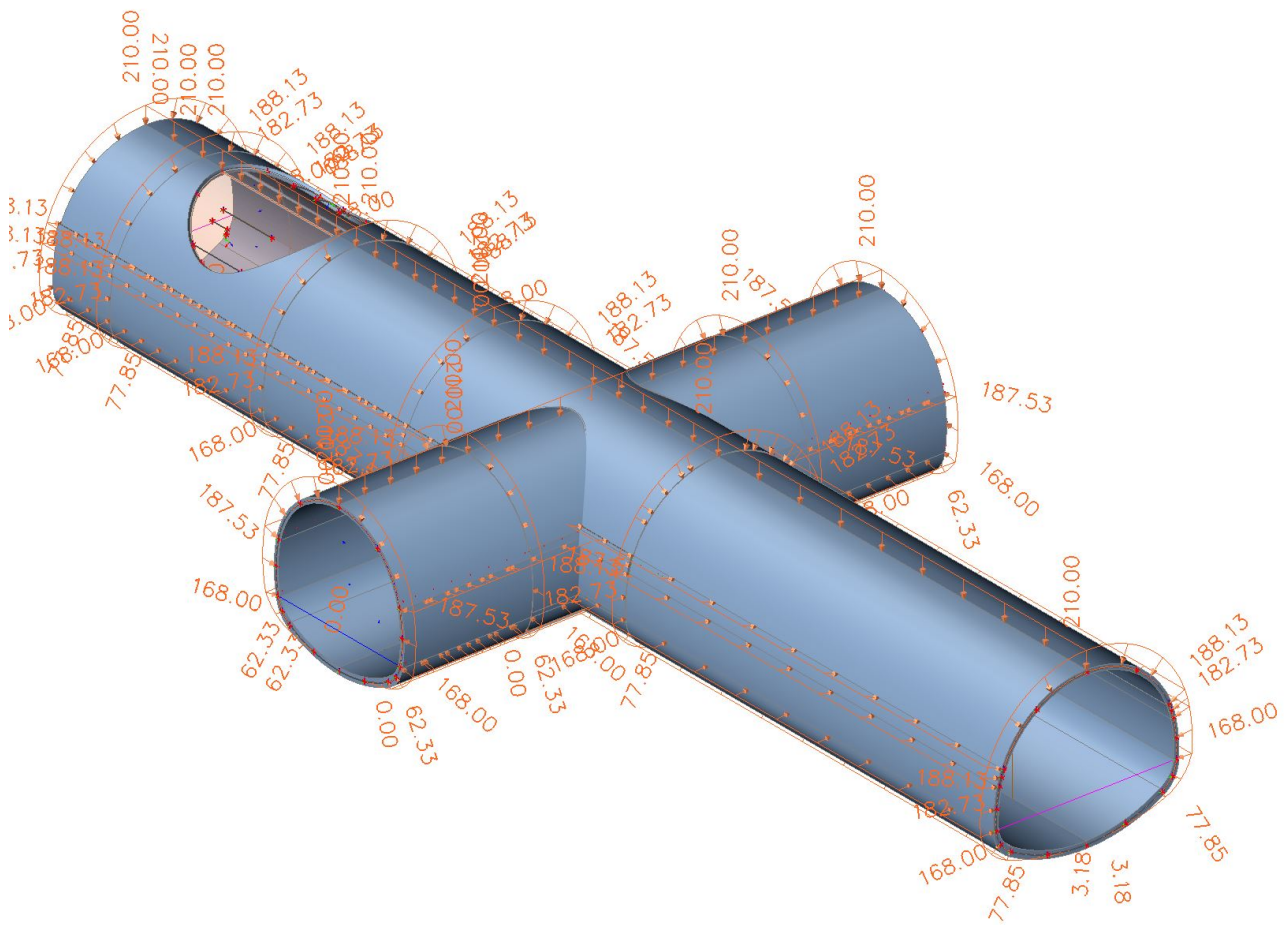


7.10. Imposed Load / Tot. value

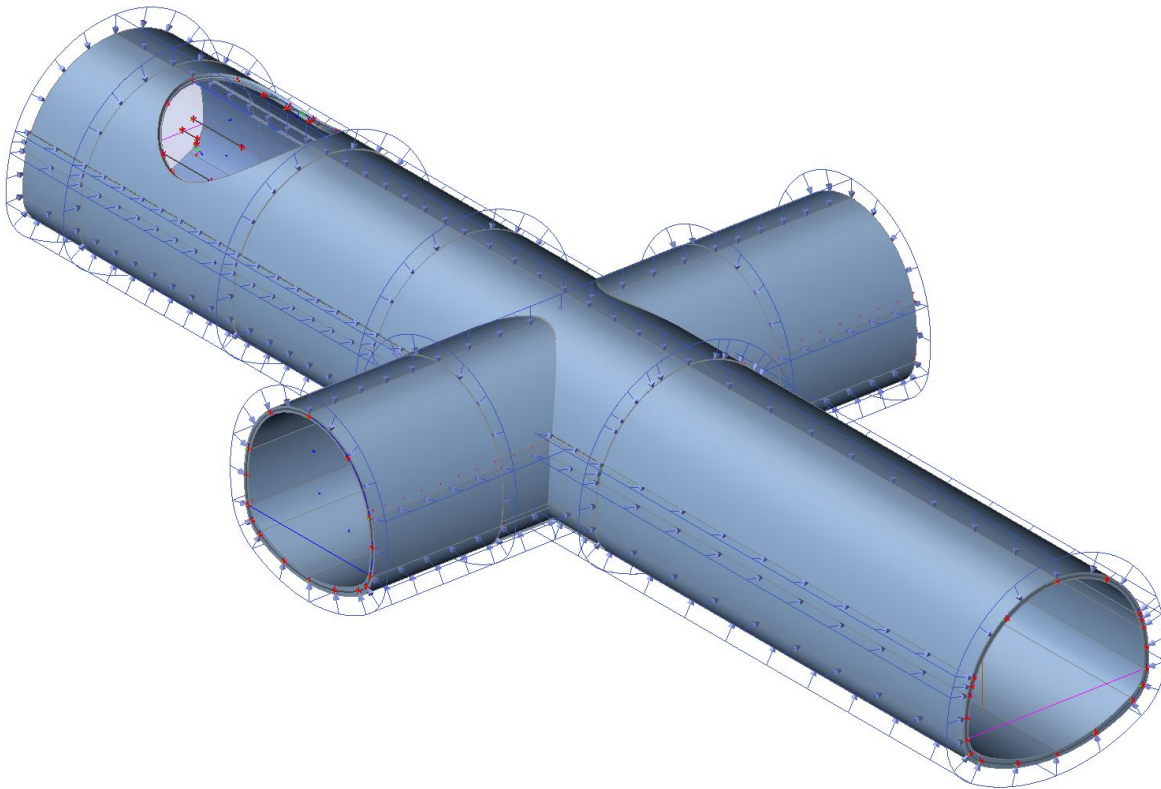


Project **Estação de Campo de Ourique**

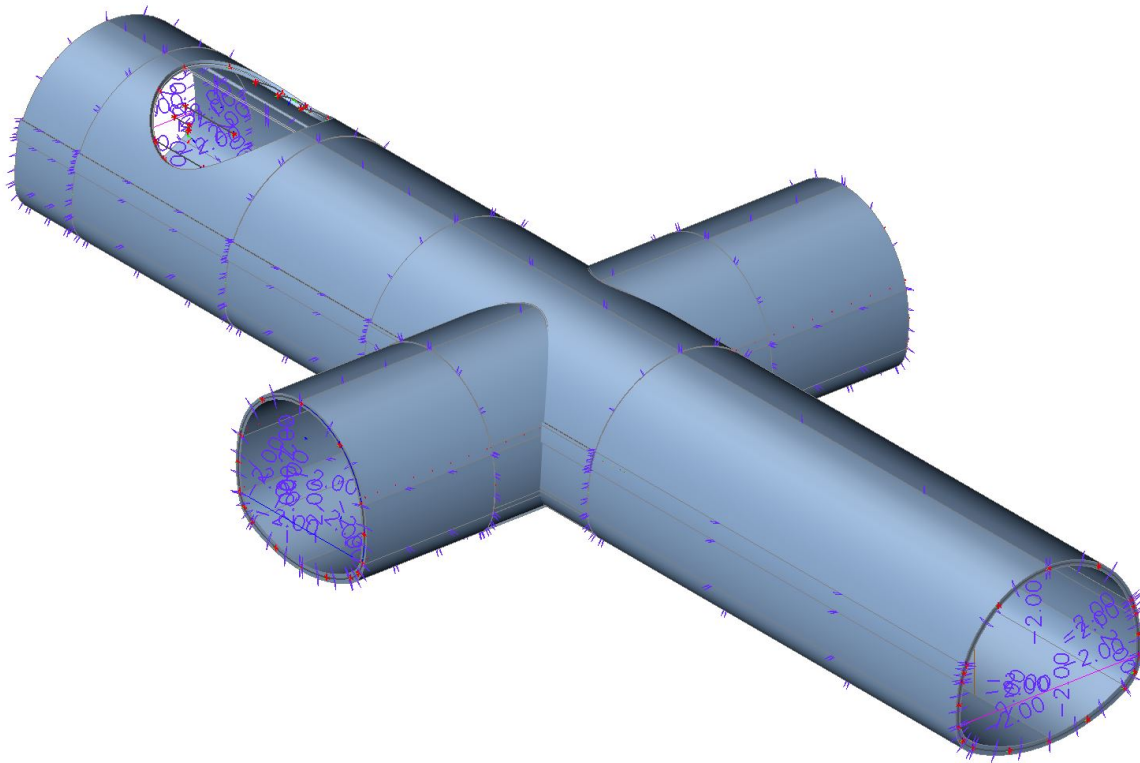
7.11. Soil Prs / Tot. value



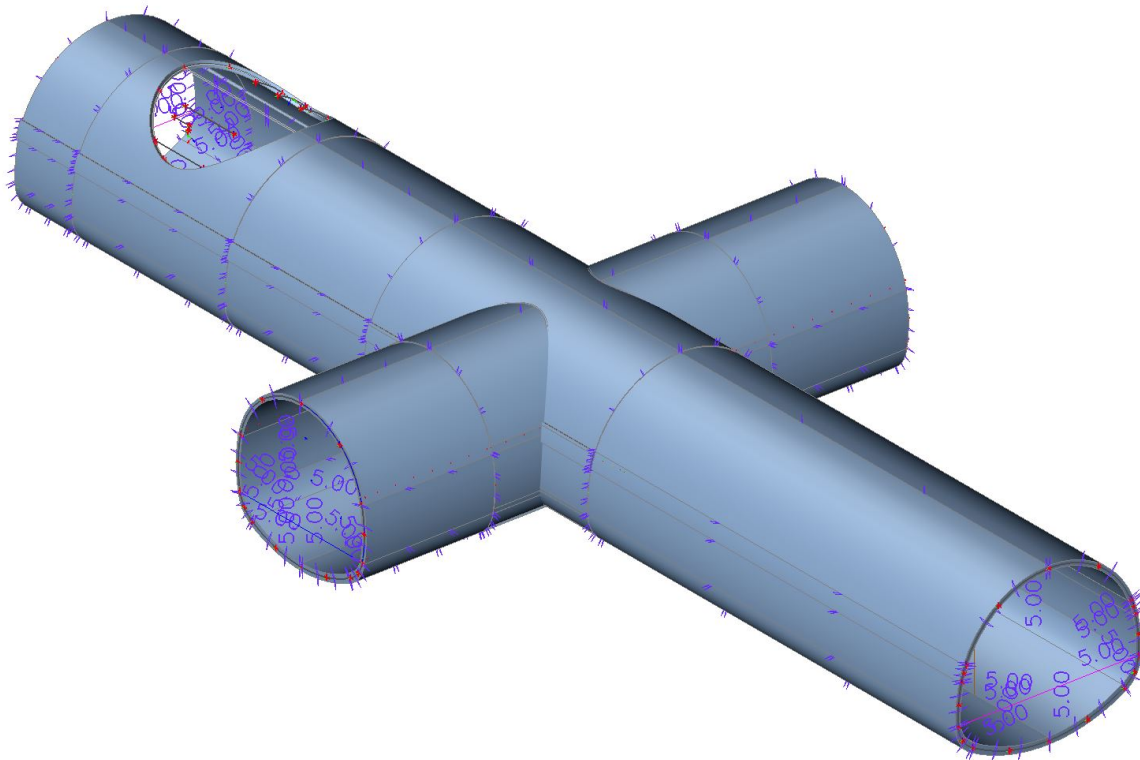
7.12. Water / Tot. value



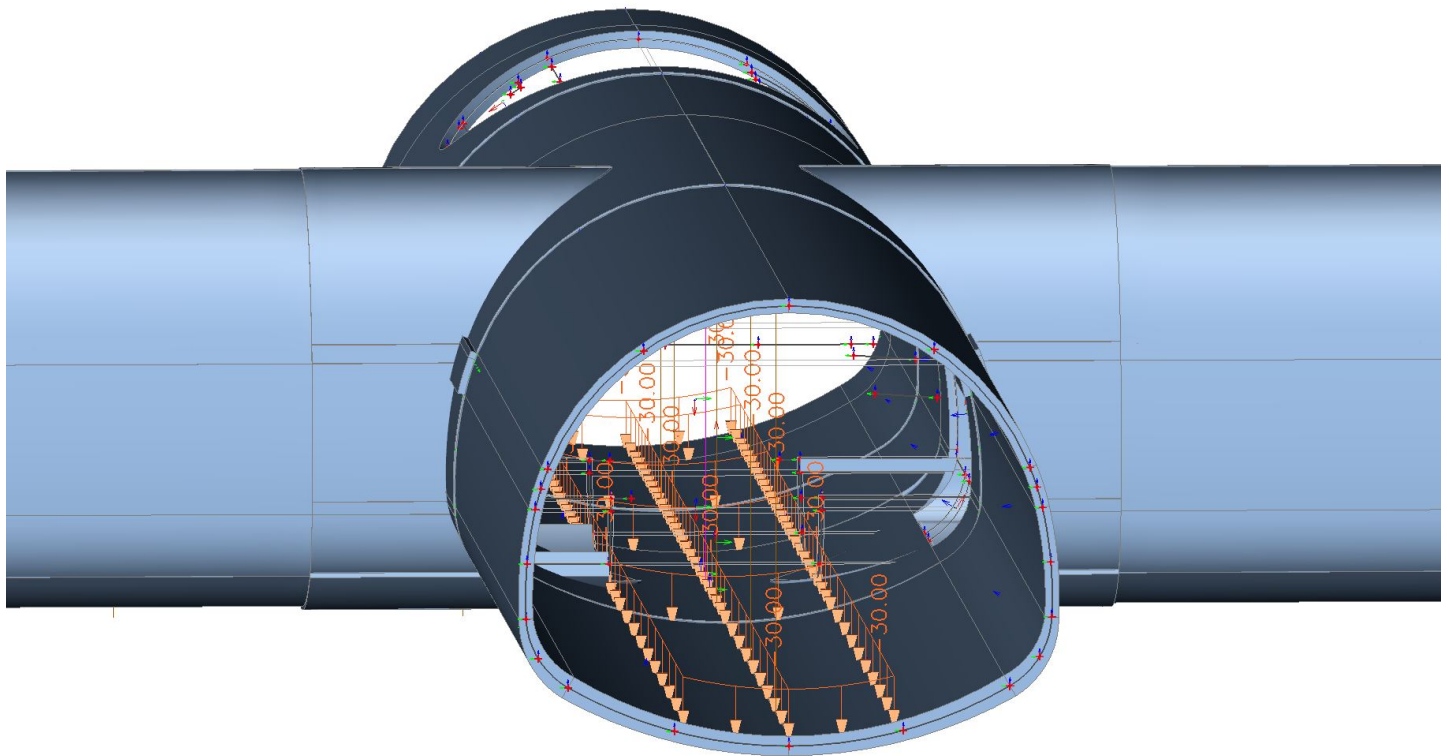
7.13. Temp1 / Tot. value



7.14. Temp2 / Tot. value



7.15. Railway Train / Tot. value

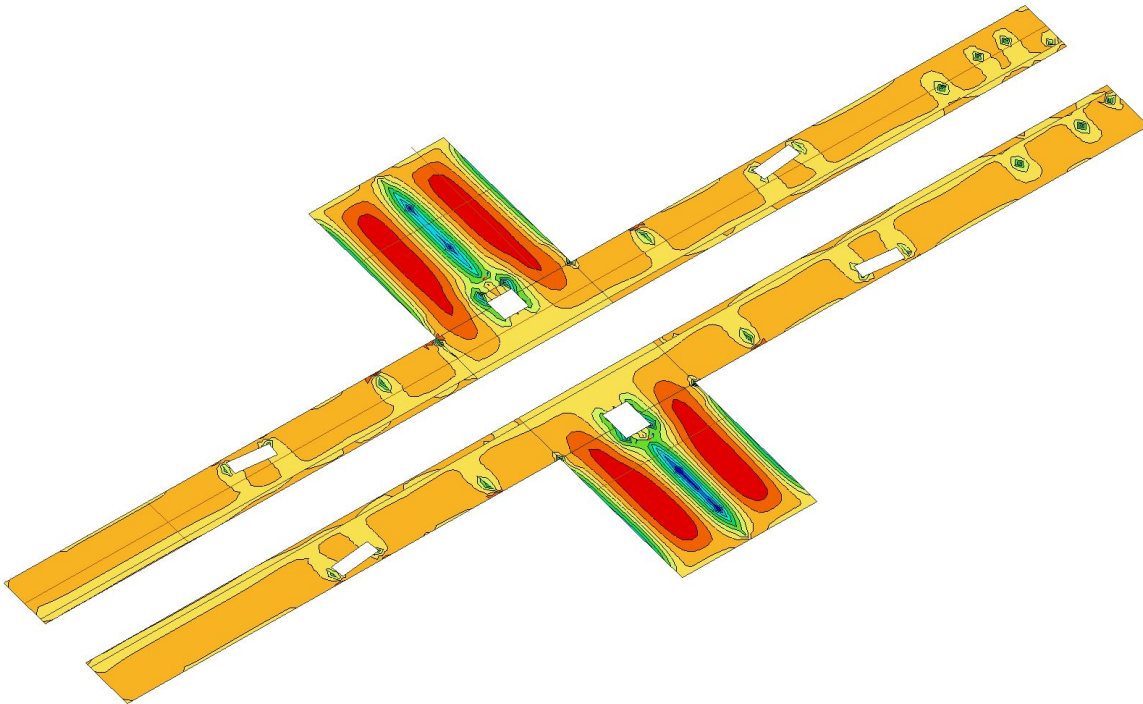
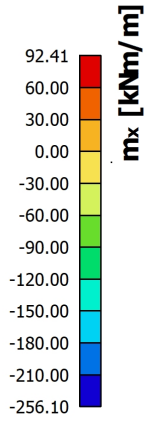


8. Results

8.1. Result picture generator

8.1.1. 2D internal forces; - m_x

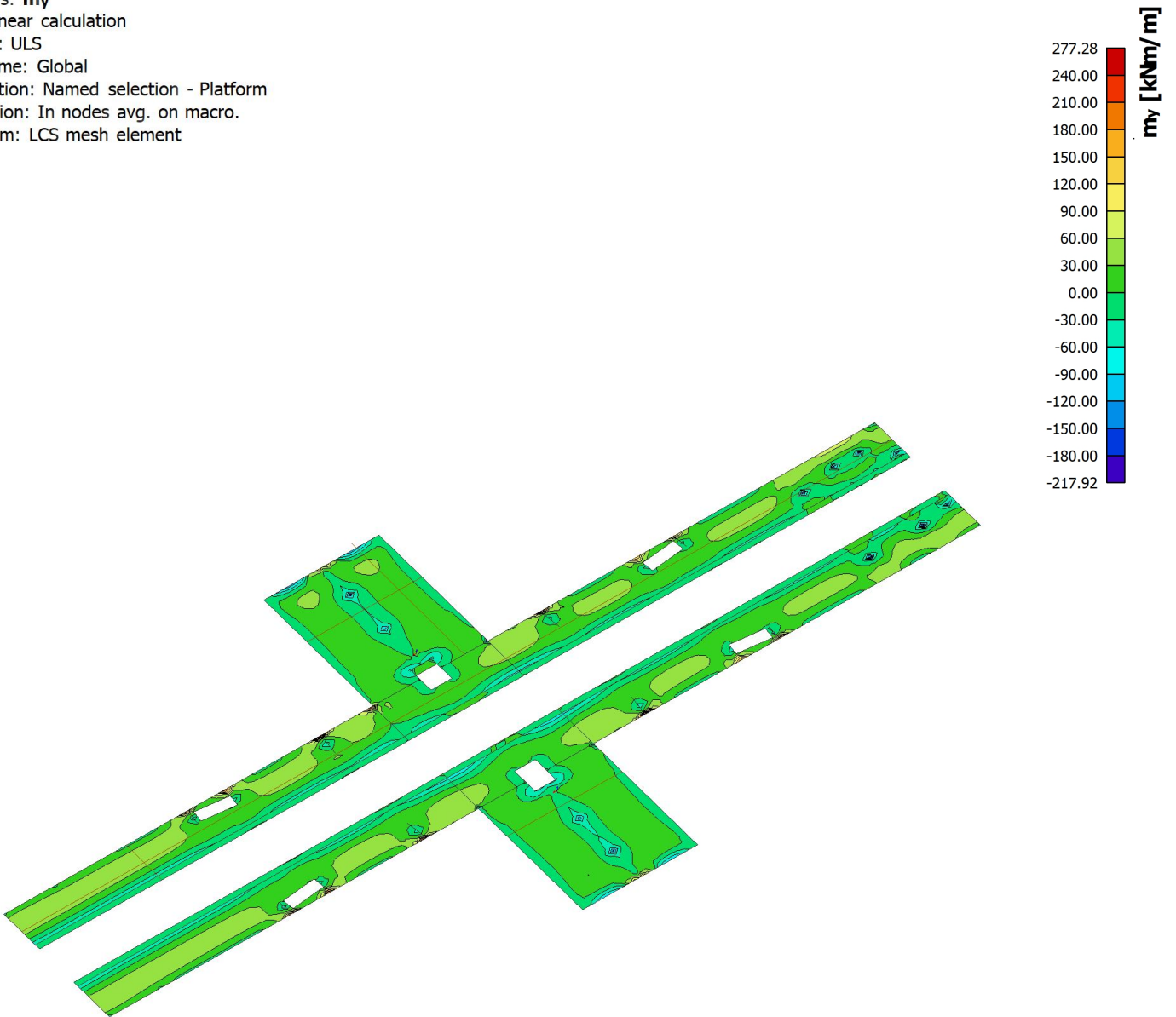
Values: m_x
 Nonlinear calculation
 Class: ULS
 Extreme: Global
 Selection: Named selection - Platform
 Location: In nodes avg. on macro.
 System: LCS mesh element



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8.1.2. 2D internal forces; - m_y

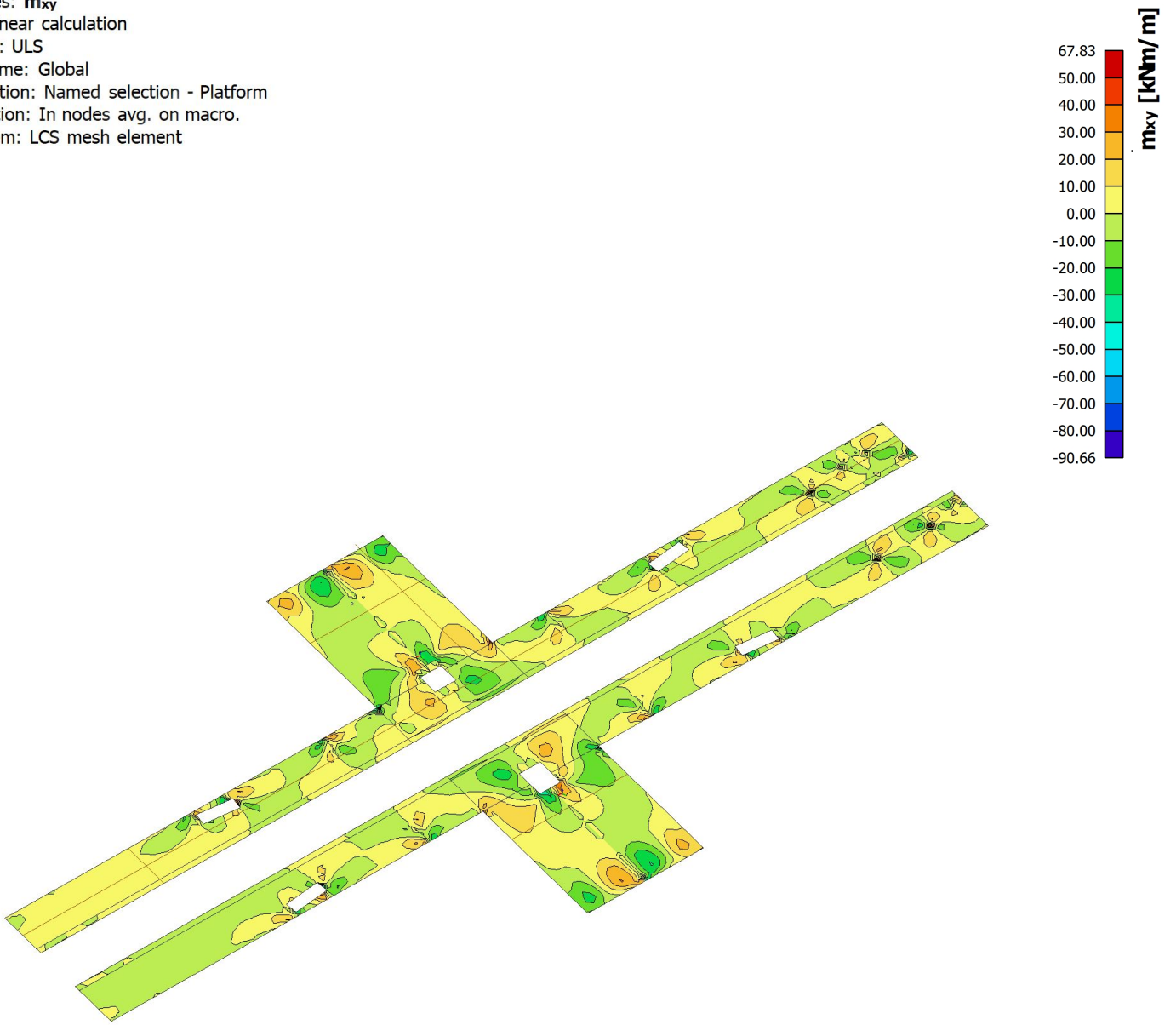
Values: m_y
 Nonlinear calculation
 Class: ULS
 Extreme: Global
 Selection: Named selection - Platform
 Location: In nodes avg. on macro.
 System: LCS mesh element



Project **Estação de Campo de Ourique**

8.1.3. 2D internal forces; - m_{xy}

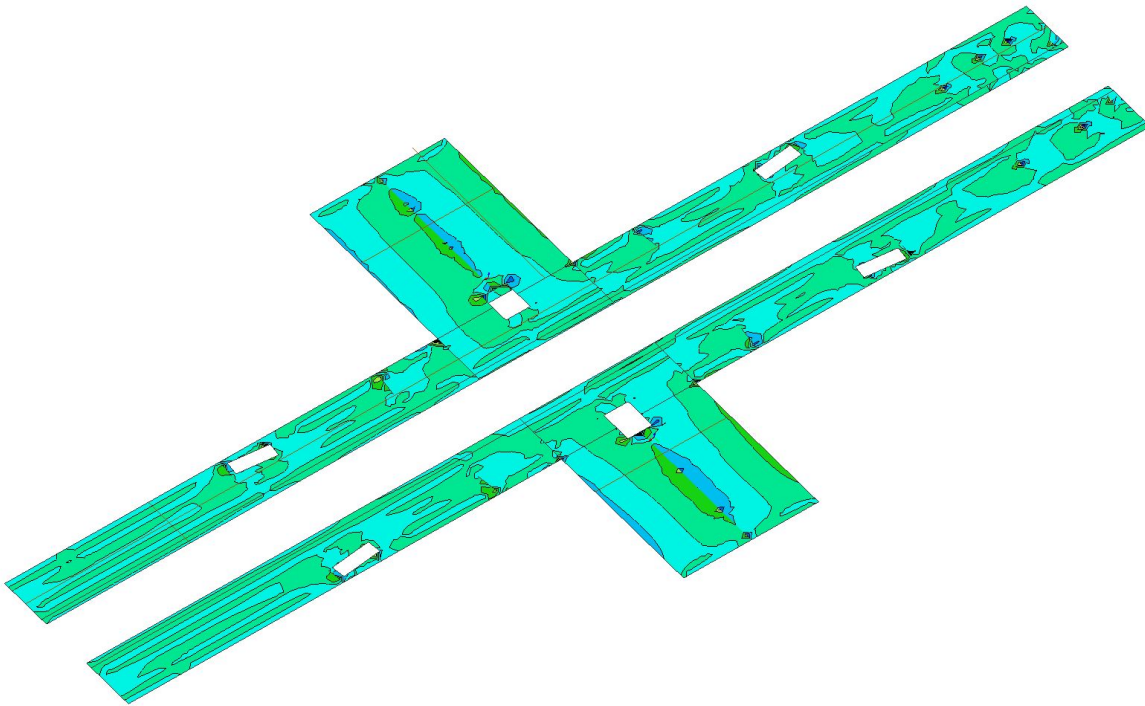
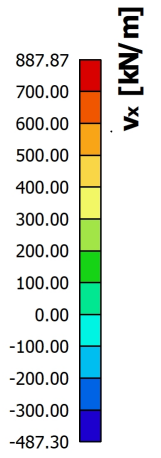
Values: **m_{xy}**
 Nonlinear calculation
 Class: ULS
 Extreme: Global
 Selection: Named selection - Platform
 Location: In nodes avg. on macro.
 System: LCS mesh element



Project **Estação de Campo de Ourique**

8.1.4. 2D internal forces; - v_x

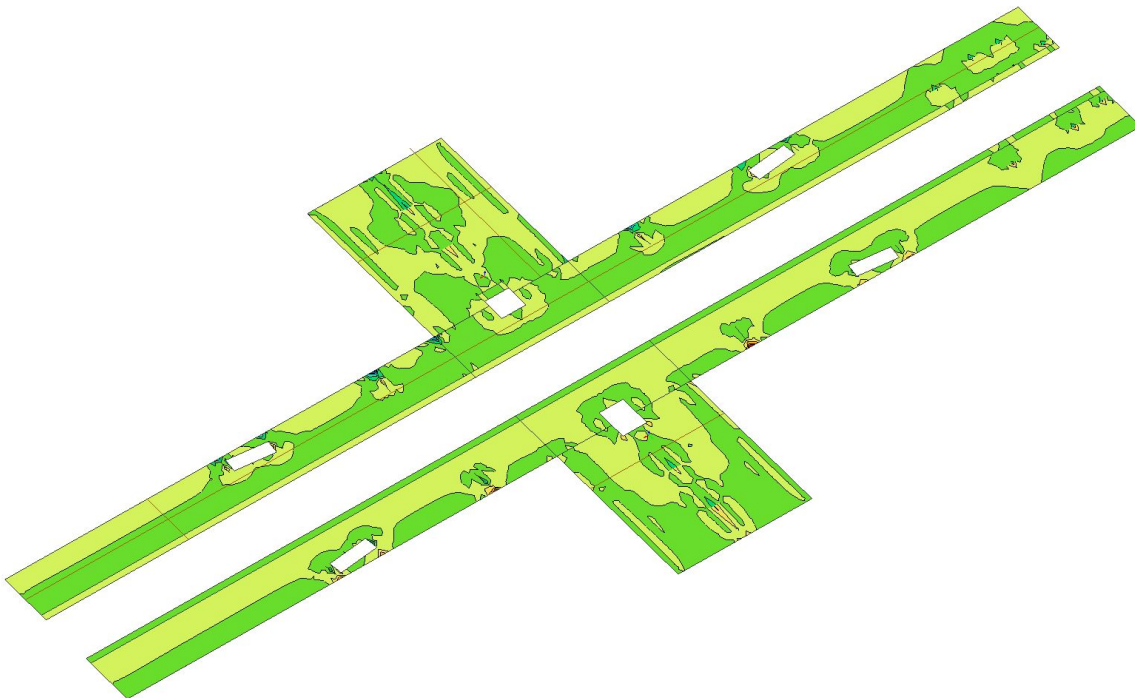
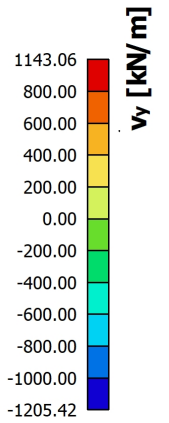
Values: v_x
 Nonlinear calculation
 Class: ULS
 Extreme: Global
 Selection: Named selection - Platform
 Location: In nodes avg. on macro.
 System: LCS mesh element



Project **Estação de Campo de Ourique**

8.1.5. 2D internal forces; - v_y

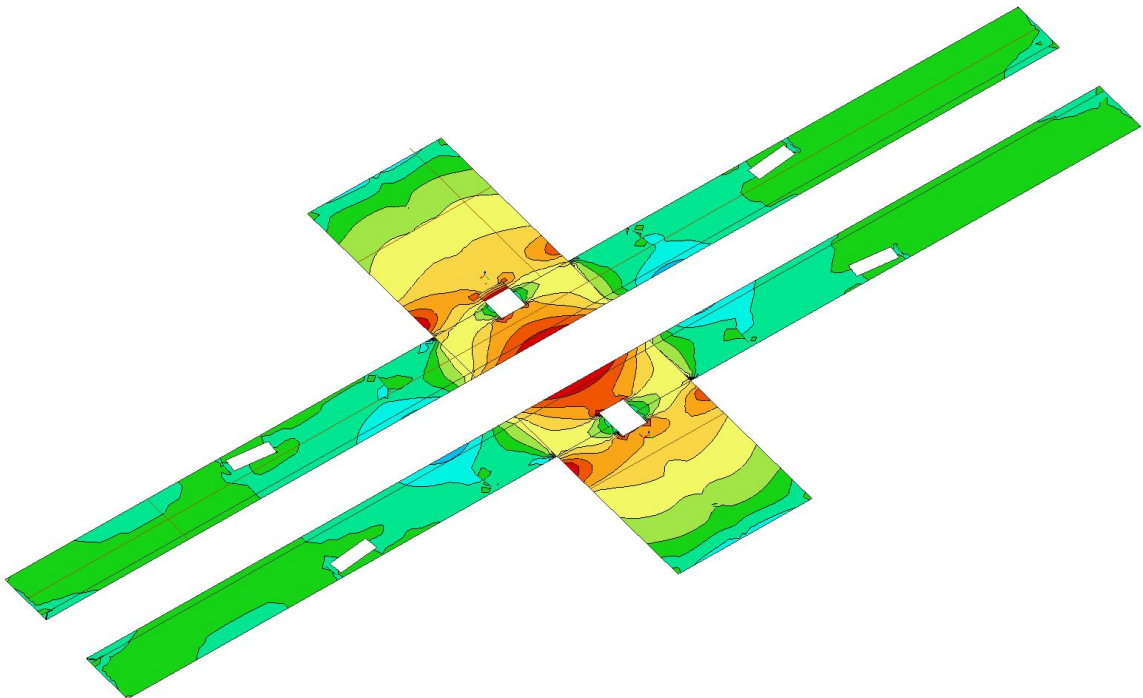
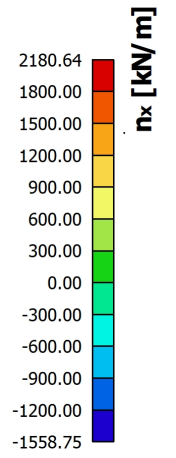
Values: v_y
 Nonlinear calculation
 Class: ULS
 Extreme: Global
 Selection: Named selection - Platform
 Location: In nodes avg. on macro.
 System: LCS mesh element



Project **Estação de Campo de Ourique**

8.1.6. 2D internal forces; - n_x

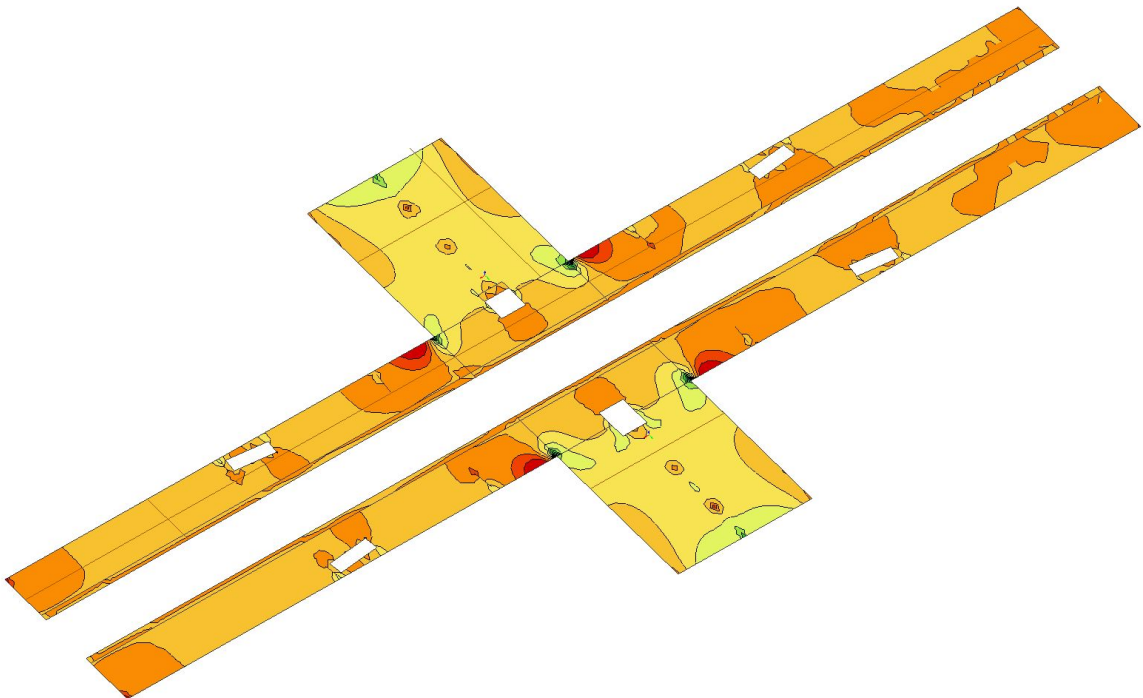
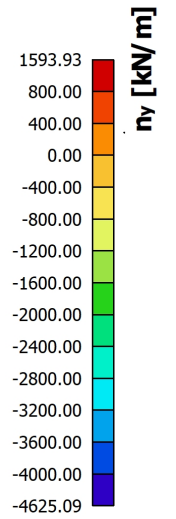
Values: n_x
 Nonlinear calculation
 Class: ULS
 Extreme: Global
 Selection: Named selection - Platform
 Location: In nodes avg. on macro.
 System: LCS mesh element



Project **Estação de Campo de Ourique**

8.1.7. 2D internal forces; - n_y

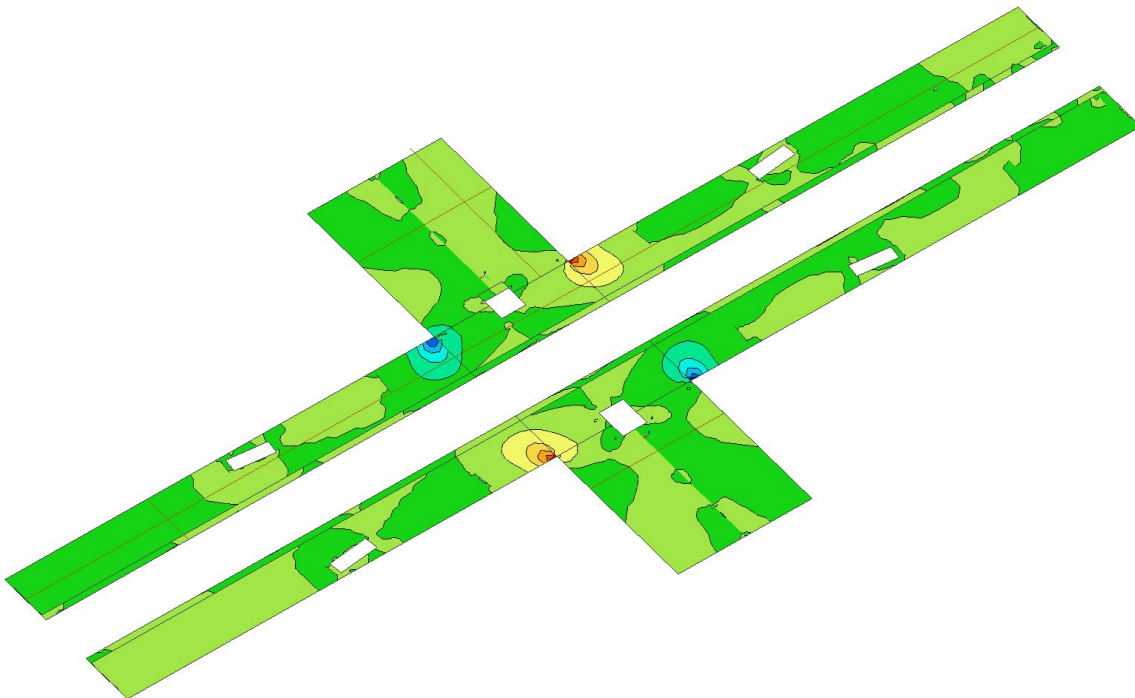
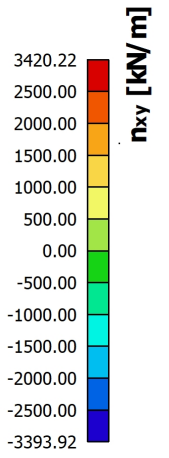
Values: n_y
 Nonlinear calculation
 Class: ULS
 Extreme: Global
 Selection: Named selection - Platform
 Location: In nodes avg. on macro.
 System: LCS mesh element



Project **Estação de Campo de Ourique**

8.1.8. 2D internal forces; - n_{xy}

Values: n_{xy}
 Nonlinear calculation
 Class: ULS
 Extreme: Global
 Selection: Named selection - Platform
 Location: In nodes avg. on macro.
 System: LCS mesh element

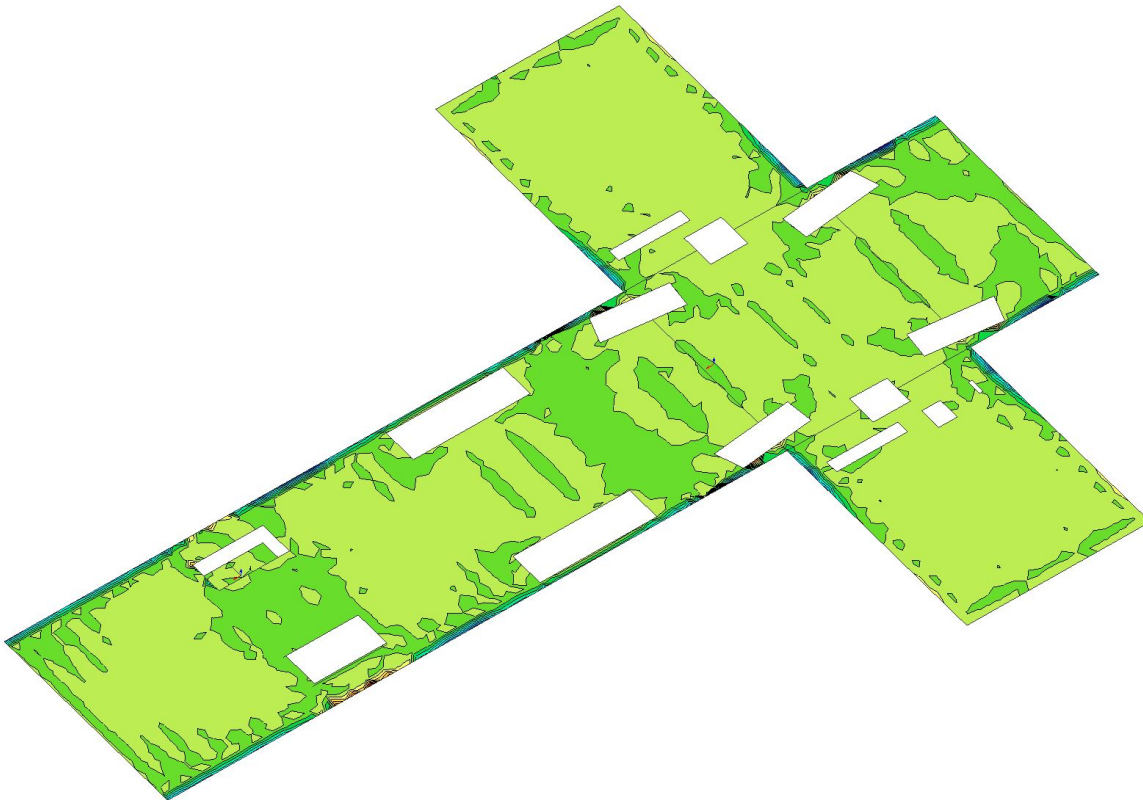
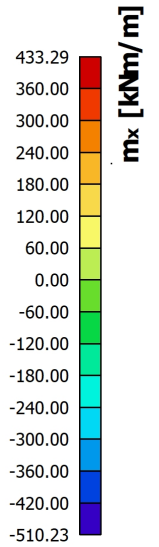


Project **Estação de Campo de Ourique**

8.2. Result picture generator

8.2.1. 2D internal forces; - m_x

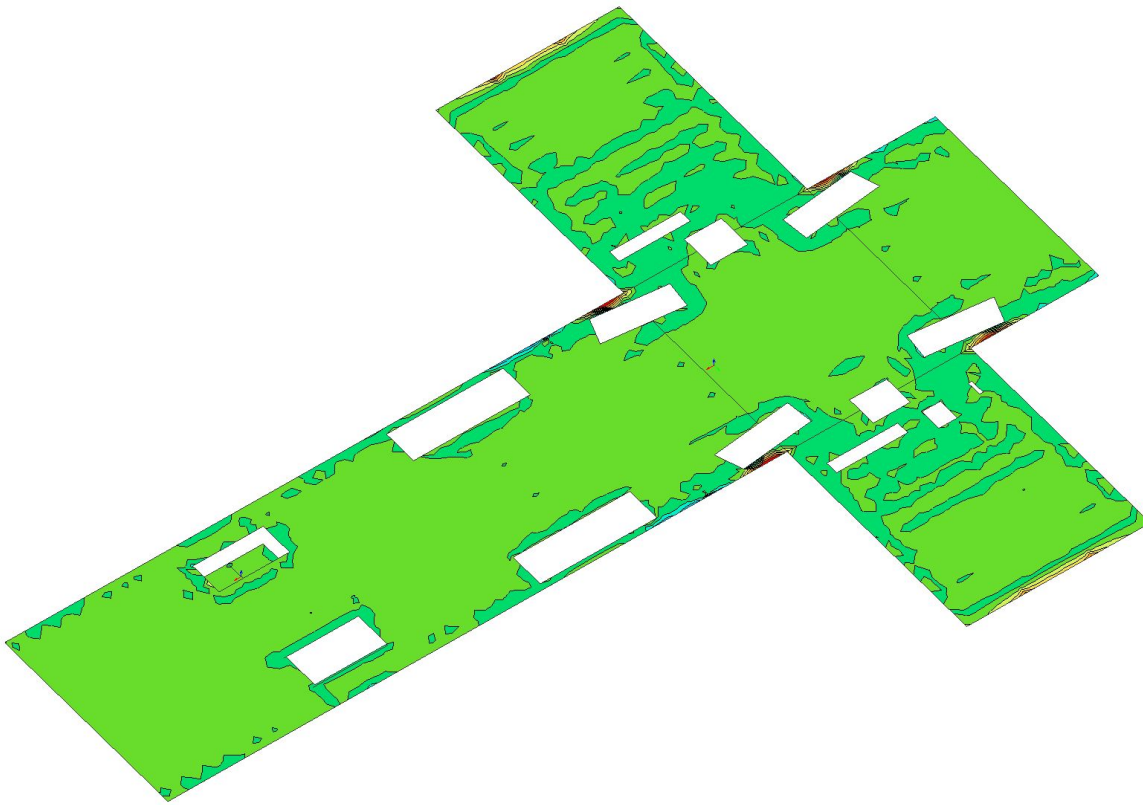
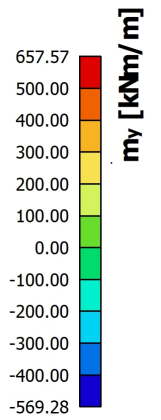
Values: m_x
 Nonlinear calculation
 Class: ULS
 Extreme: Global
 Selection: Named selection -
 Concourse
 Location: In nodes avg.. System: LCS
 mesh element



Project **Estação de Campo de Ourique**

8.2.2. 2D internal forces; - m_y

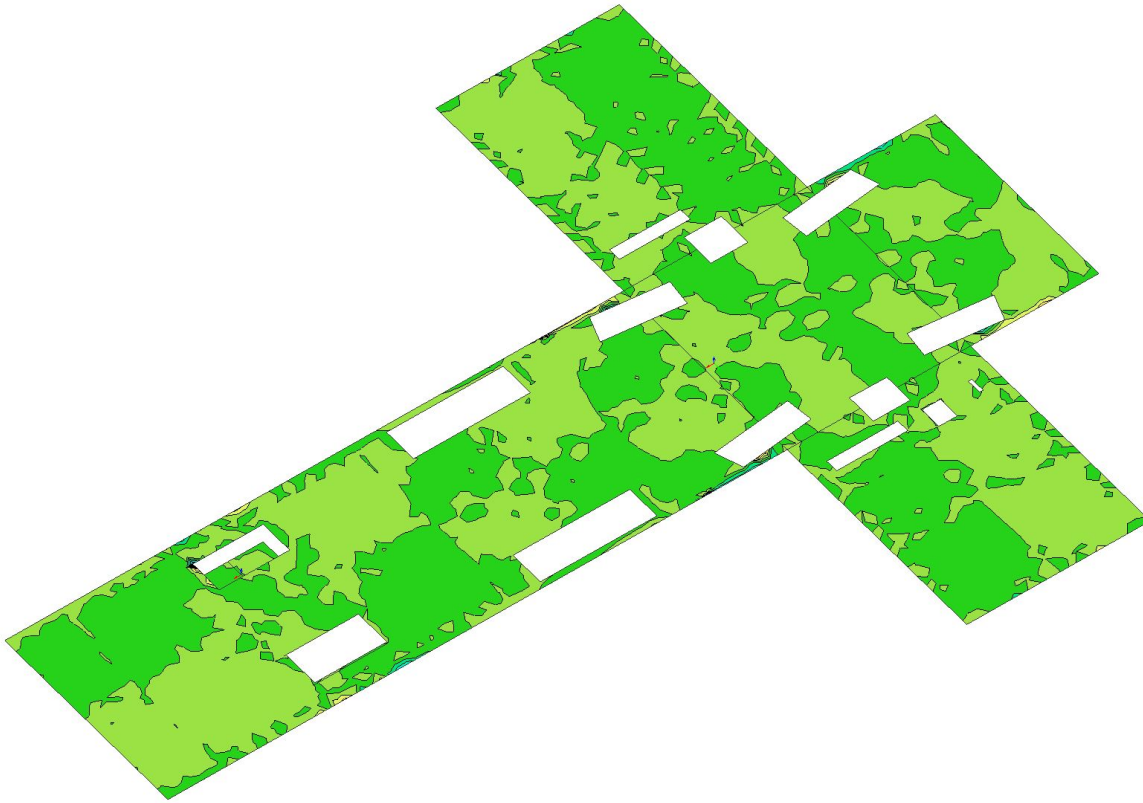
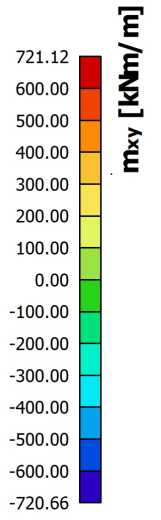
Values: m_y
 Nonlinear calculation
 Class: ULS
 Extreme: Global
 Selection: Named selection -
 Concourse
 Location: In nodes avg.. System: LCS
 mesh element



Project **Estação de Campo de Ourique**

8.2.3. 2D internal forces; - m_{xy}

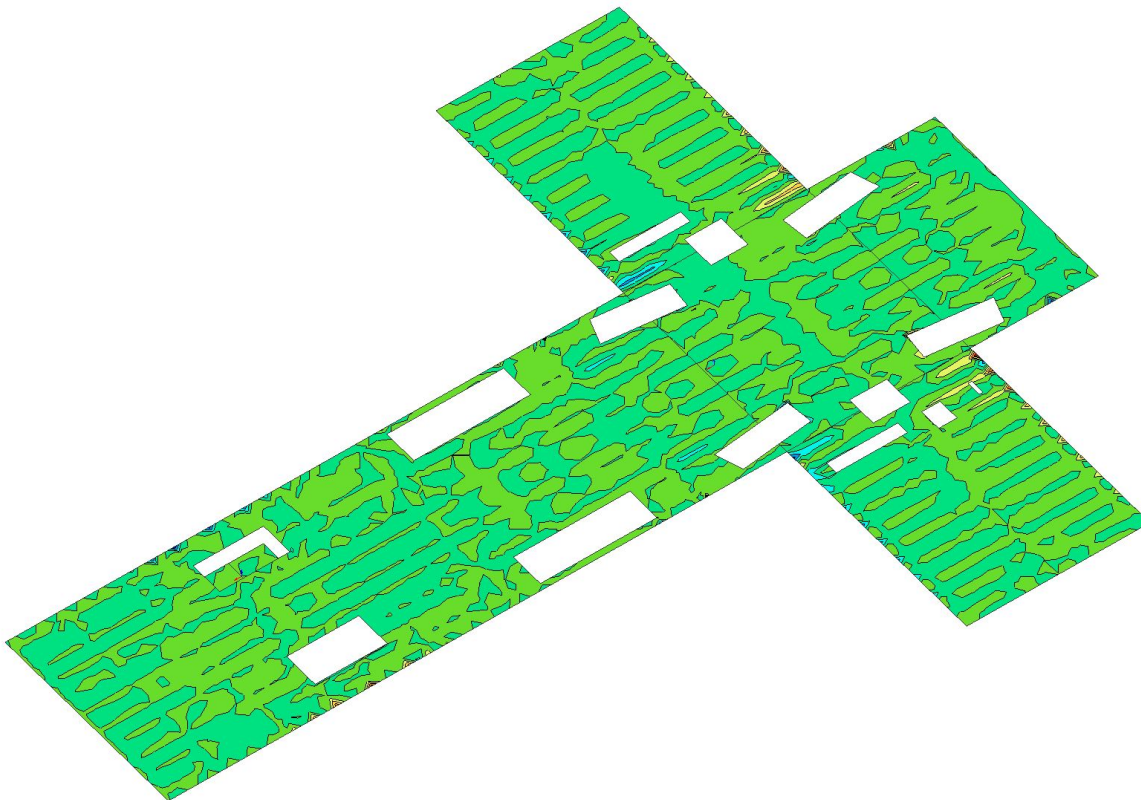
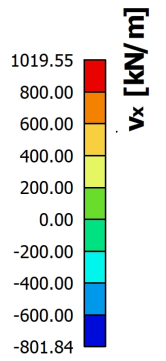
Values: **m_{xy}**
 Nonlinear calculation
 Class: ULS
 Extreme: Global
 Selection: Named selection -
 Concourse
 Location: In nodes avg., System: LCS
 mesh element



Project **Estação de Campo de Ourique**

8.2.4. 2D internal forces; - v_x

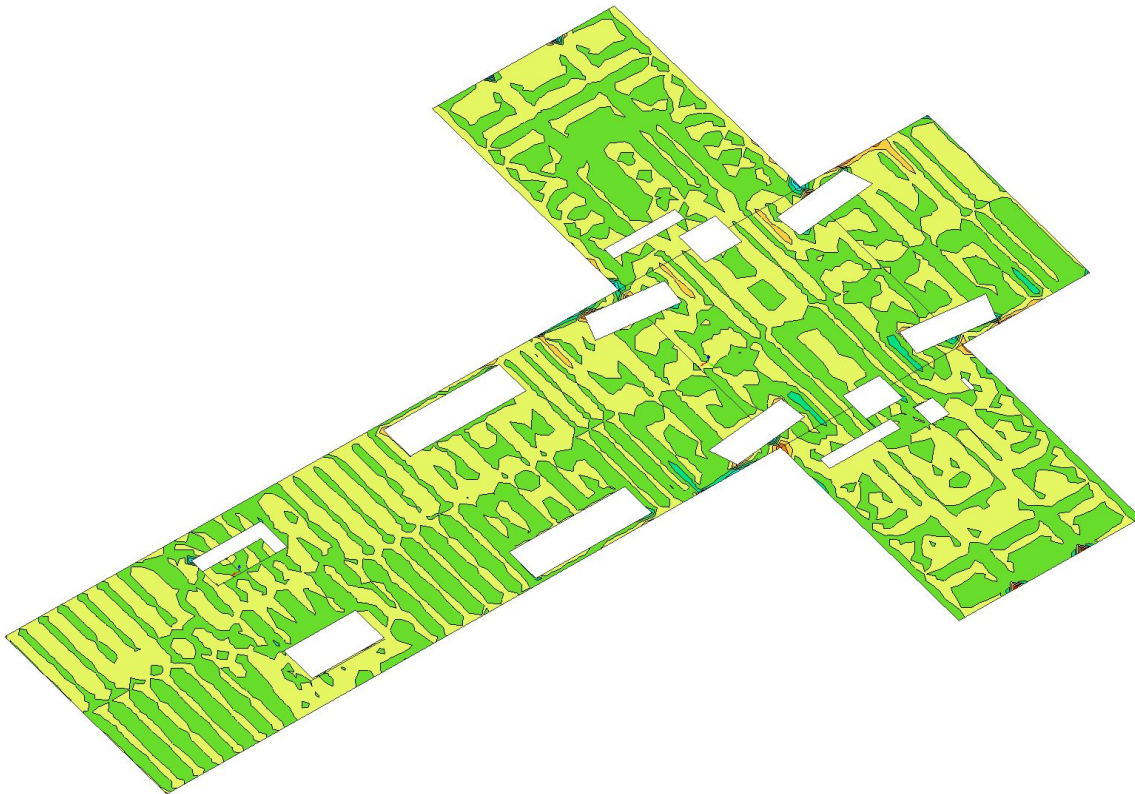
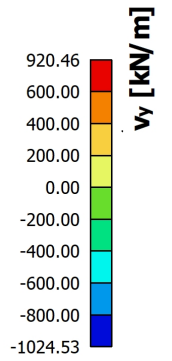
Values: v_x
 Nonlinear calculation
 Class: ULS
 Extreme: Global
 Selection: Named selection -
 Concourse
 Location: In nodes avg., System: LCS
 mesh element



Project **Estação de Campo de Ourique**

8.2.5. 2D internal forces; - v_y

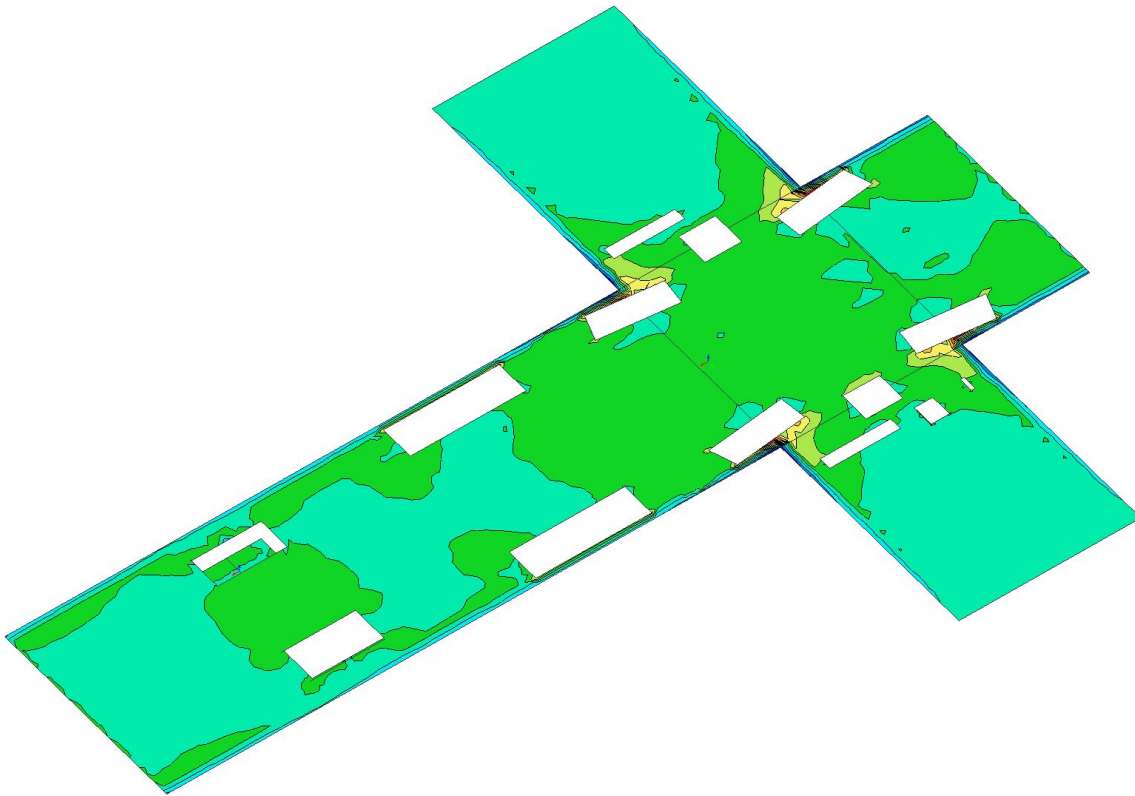
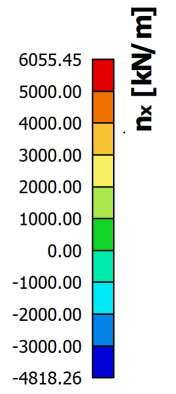
Values: v_y
 Nonlinear calculation
 Class: ULS
 Extreme: Global
 Selection: Named selection -
 Concourse
 Location: In nodes avg.. System: LCS
 mesh element



Project **Estação de Campo de Ourique**

8.2.6. 2D internal forces; - n_x

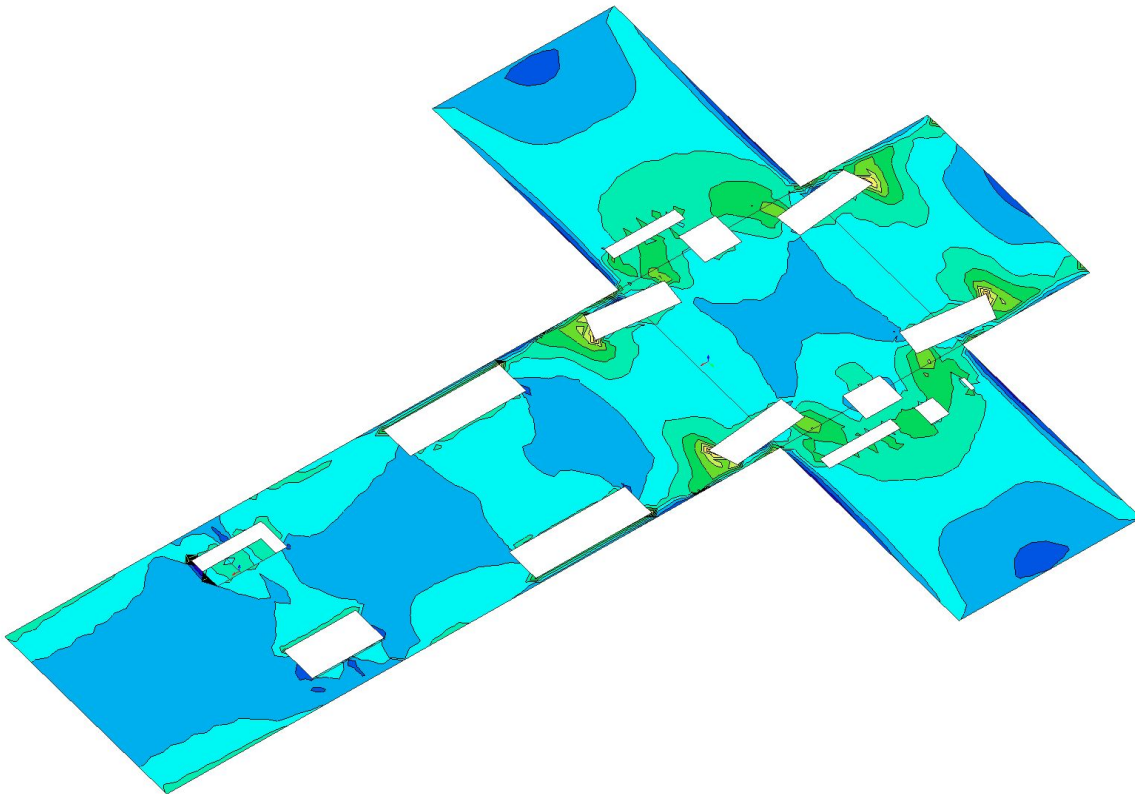
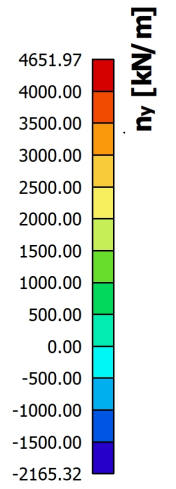
Values: n_x
 Nonlinear calculation
 Class: ULS
 Extreme: Global
 Selection: Named selection -
 Concourse
 Location: In nodes avg.. System: LCS
 mesh element



Project **Estação de Campo de Ourique**

8.2.7. 2D internal forces; - n_y

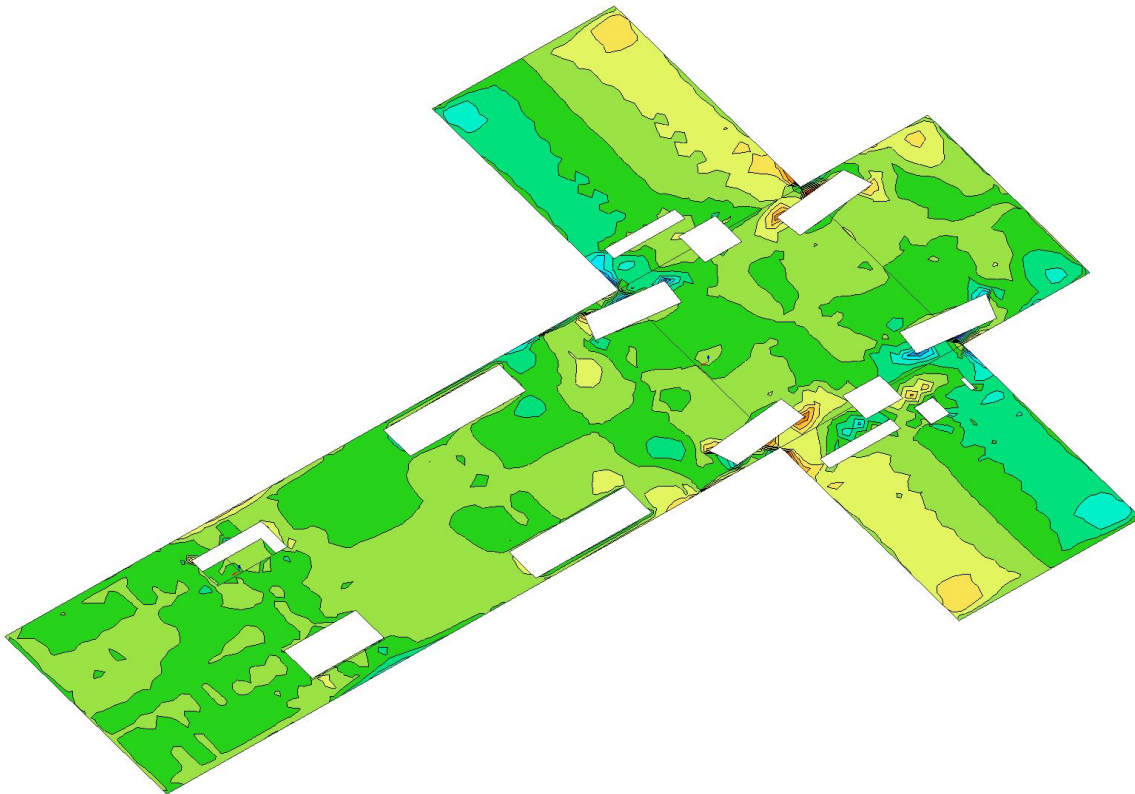
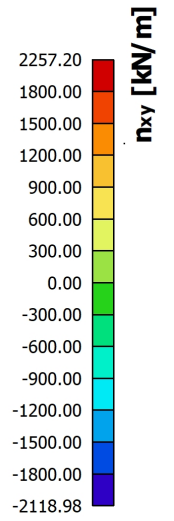
Values: n_y
 Nonlinear calculation
 Class: ULS
 Extreme: Global
 Selection: Named selection -
 Concourse
 Location: In nodes avg.. System: LCS
 mesh element



Project **Estação de Campo de Ourique**

8.2.8. 2D internal forces; - n_{xy}

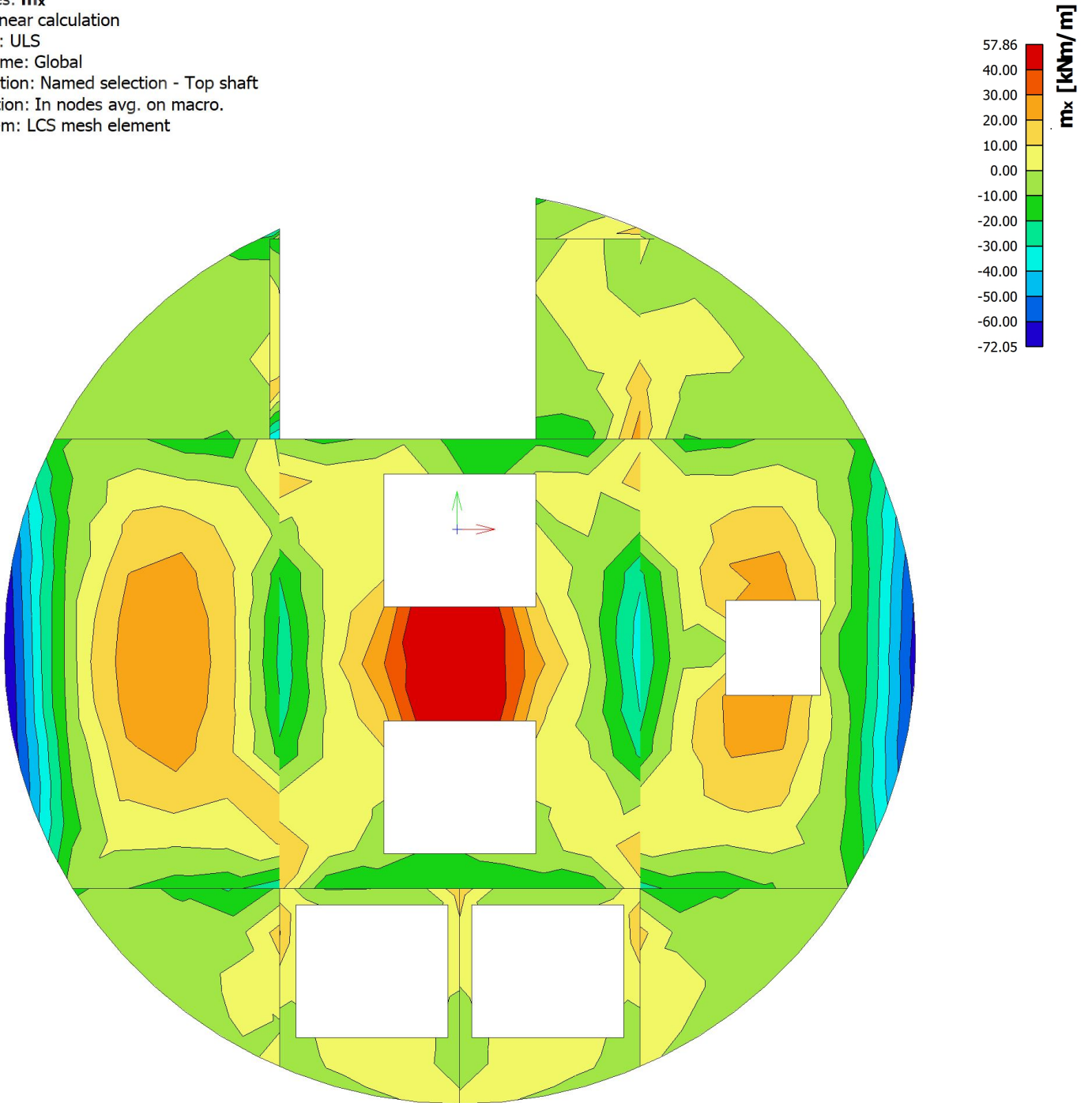
Values: n_{xy}
 Nonlinear calculation
 Class: ULS
 Extreme: Global
 Selection: Named selection -
 Concourse
 Location: In nodes avg.. System: LCS
 mesh element



8.3. Result picture generator

8.3.1. 2D internal forces; - m_x

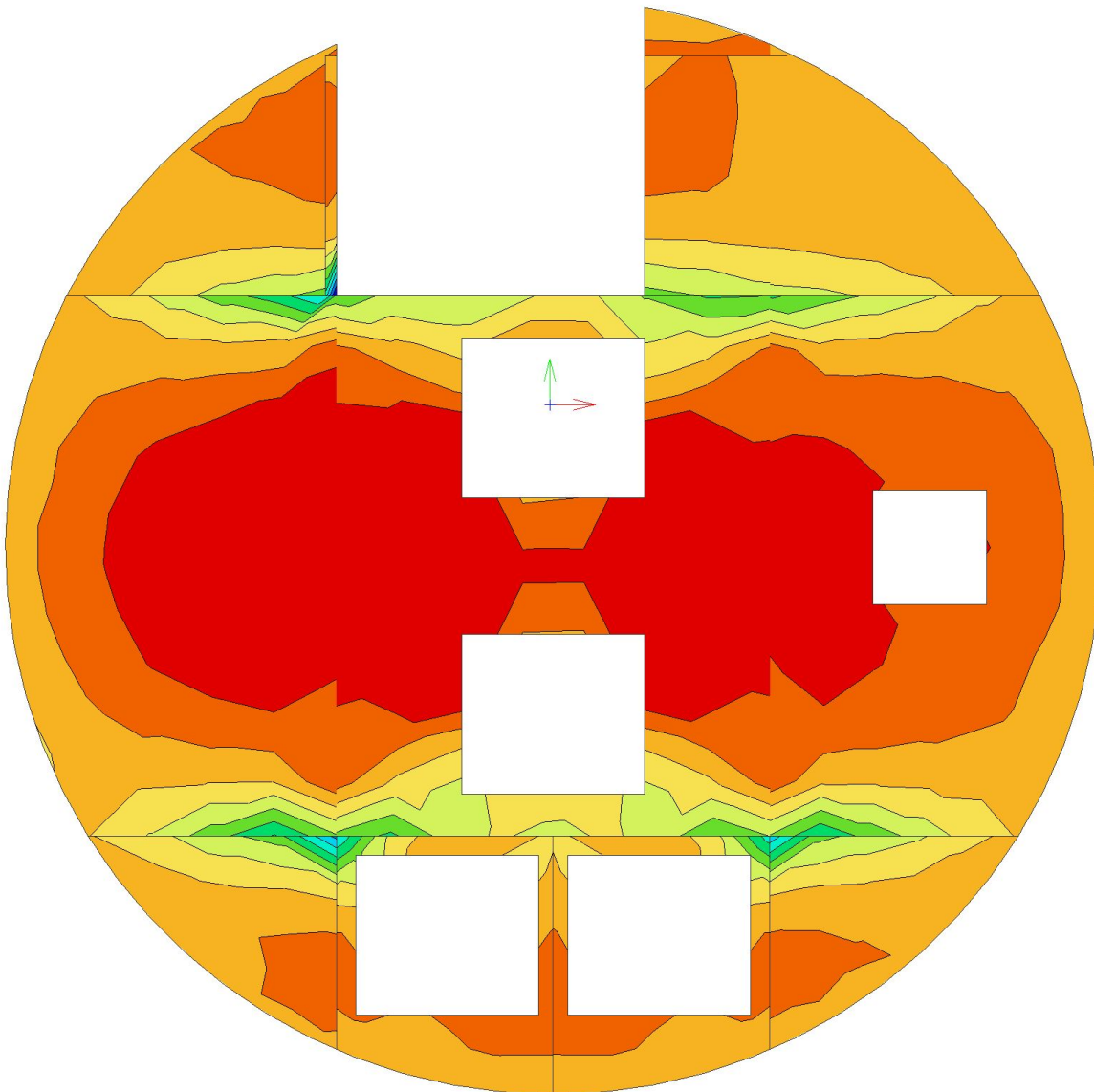
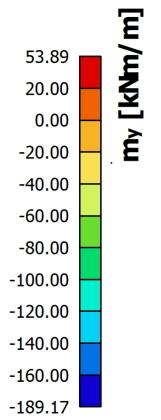
Values: m_x
 Nonlinear calculation
 Class: ULS
 Extreme: Global
 Selection: Named selection - Top shaft
 Location: In nodes avg. on macro.
 System: LCS mesh element



Project **Estação de Campo de Ourique**

8.3.2. 2D internal forces; - m_y

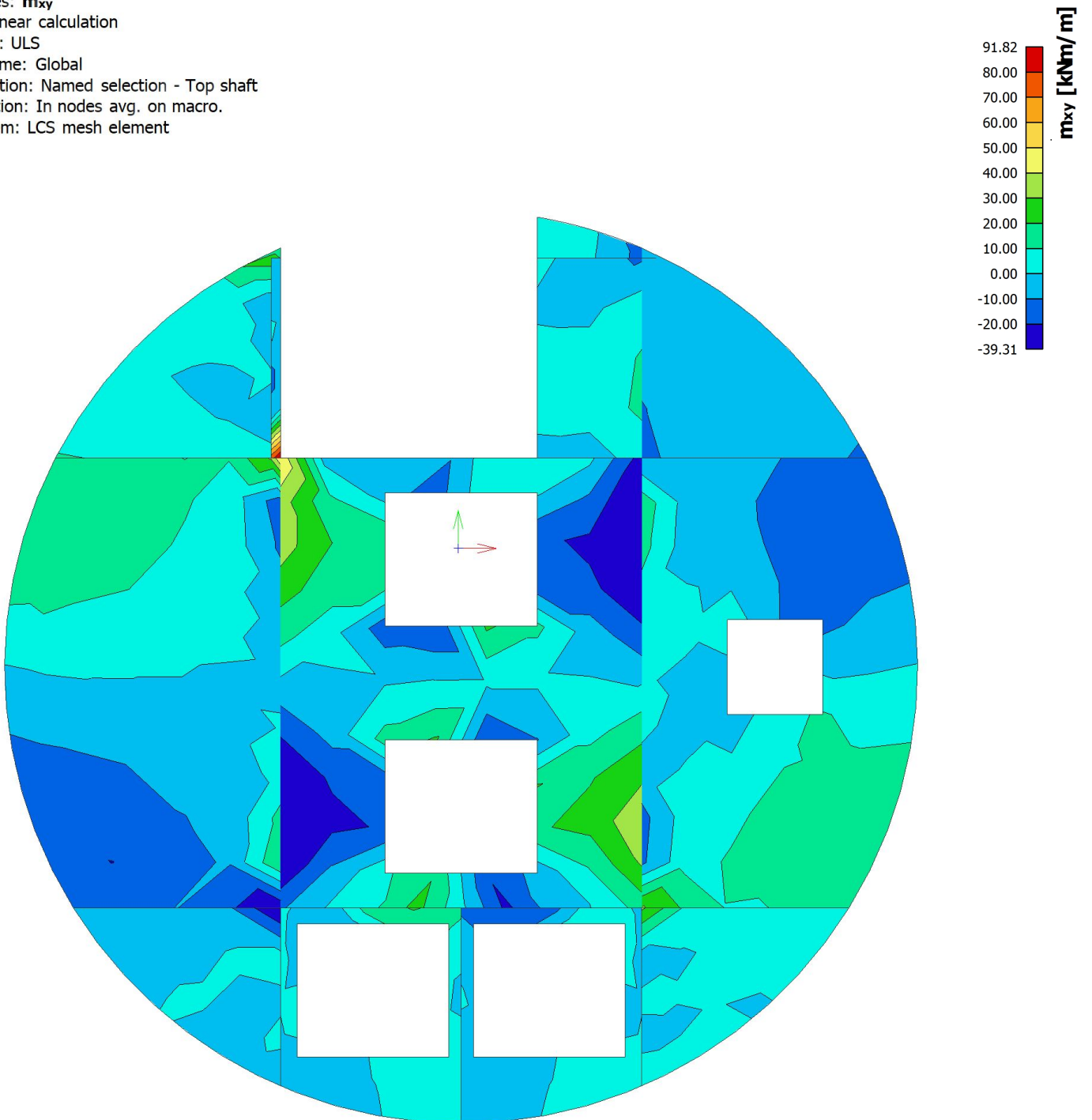
Values: **m_y**
 Nonlinear calculation
 Class: ULS
 Extreme: Global
 Selection: Named selection - Top shaft
 Location: In nodes avg. on macro.
 System: LCS mesh element



Project **Estação de Campo de Ourique**

8.3.3. 2D internal forces; - m_{xy}

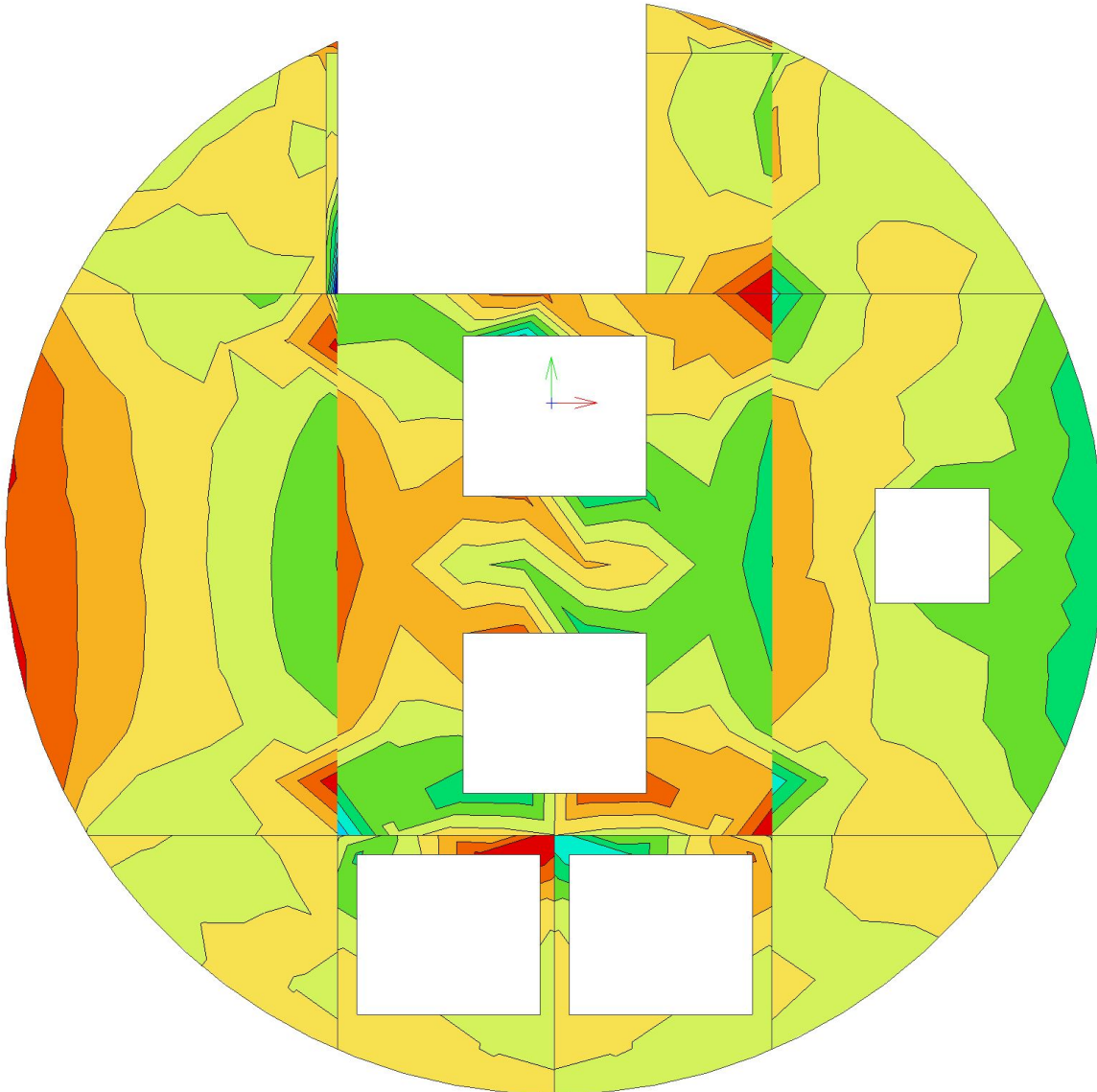
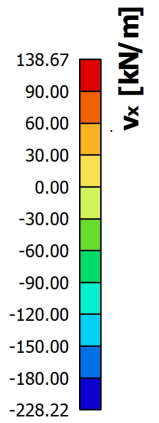
Values: **m_{xy}**
 Nonlinear calculation
 Class: ULS
 Extreme: Global
 Selection: Named selection - Top shaft
 Location: In nodes avg. on macro.
 System: LCS mesh element



Project **Estação de Campo de Ourique**

8.3.4. 2D internal forces; - v_x

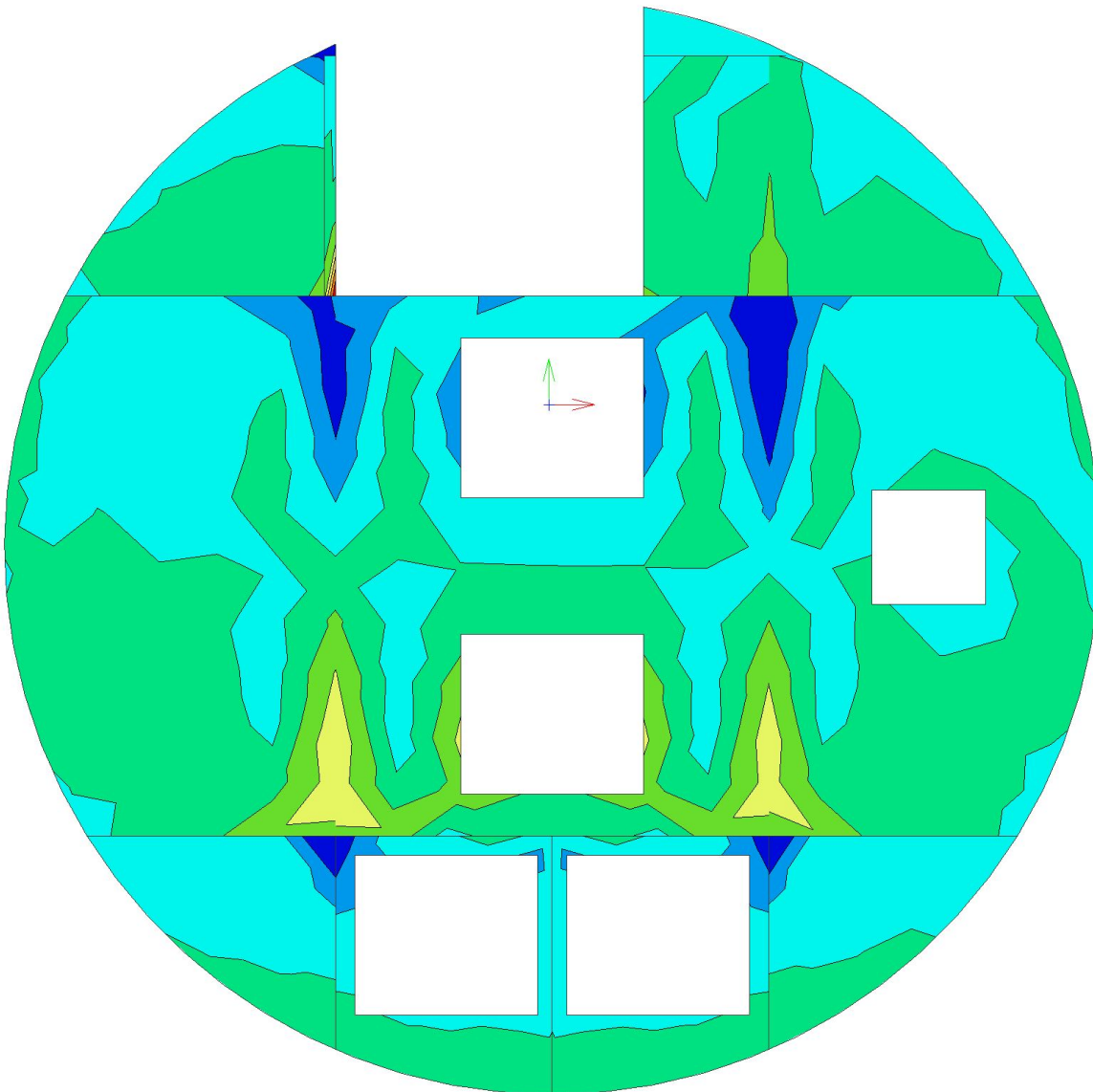
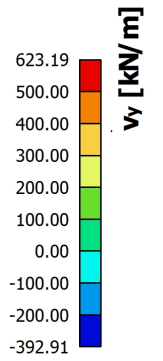
Values: v_x
 Nonlinear calculation
 Class: ULS
 Extreme: Global
 Selection: Named selection - Top shaft
 Location: In nodes avg. on macro.
 System: LCS mesh element



Project **Estação de Campo de Ourique**

8.3.5. 2D internal forces; - v_y

Values: v_y
 Nonlinear calculation
 Class: ULS
 Extreme: Global
 Selection: Named selection - Top shaft
 Location: In nodes avg. on macro.
 System: LCS mesh element



Project **Estação de Campo de Ourique**

8.3.6. 2D internal forces; - n_x

Values: n_x
 Nonlinear calculation
 Class: ULS
 Extreme: Global
 Selection: Named selection - Top shaft
 Location: In nodes avg. on macro.
 System: LCS mesh element

