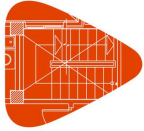


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**Project:**  
**Location:**  
**Developer:**

## 1. PROJECT DATA

Concrete: C25/30  
 Steel: S-400  
 Cover: 4.00 cm

Limit states

Fracture U.L.S. Concrete	EC
	Snow: Remaining CEN Member States, H <= 1000 m

## 2. BEAM DESCRIPTION

Beam geometry

Ref.	Depth (m)	Support width (m)		Span between axes (m)	Width (m)	Type of support
		Left	Right			
Beam 149 (30x200)	2.00	0.20	0.20	1.68	0.30	Not stiffened
Beam 150 (30x200)	2.00	0.20	0.20	1.68	0.30	Not stiffened
Beam 151 (30x200)	2.00	0.20	0.20	1.68	0.30	Not stiffened
Beam 152 (30x200)	2.00	0.20	0.20	1.68	0.30	Not stiffened
Beam 153 (30x200)	2.00	0.20	0.20	1.68	0.30	Not stiffened

Loads on beams

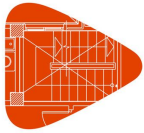
Ref.	Loadcase	Pp
Beam 149 (30x200)	Self weight	Yes
Beam 150 (30x200)	Self weight	Yes
Beam 151 (30x200)	Self weight	Yes
Beam 152 (30x200)	Self weight	Yes
Beam 153 (30x200)	Self weight	Yes

Abbreviations used

- Sw: The self weight is generated in this loadcase

Beam reinforcement

Ref.	Longitudinal reinf.	Base reinf. of the web		Additional web reinf.
		Vertical	Horizontal	
Beam 149 (30x200)	2Ø12 Width: 0.20 m	Ø12@25	Ø12@25	Horiz. longit.: 0.50 m Vert. longit.: 0.84 m Width: 0.34 m
Beam 150 (30x200)	2Ø12 Width: 0.20 m	Ø12@25	Ø12@25	Horiz. longit.: 0.50 m Vert. longit.: 0.84 m Width: 0.34 m
Beam 151 (30x200)	2Ø12 Width: 0.20 m	Ø12@25	Ø12@25	Horiz. longit.: 0.50 m Vert. longit.: 0.84 m Width: 0.34 m
Beam 152 (30x200)	2Ø12 Width: 0.20 m	Ø12@25	Ø12@25	Horiz. longit.: 0.50 m Vert. longit.: 0.84 m Width: 0.34 m



**Project:**  
**Location:**  
**Developer:**

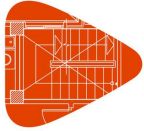
Ref.	Longitudinal reinf.	Base reinf. of the web		Additional web reinf.
		Vertical	Horizontal	
Beam 153 (30x200)	2Ø12 Width: 0.20 m	Ø12@25	Ø12@25	Horiz. longit.: 0.50 m Vert. longit.: 0.84 m Width: 0.34 m

### 3. DETAILED QUANTITIES

Reference: Beam 149 (30x200)		S-400	Total
Name of reinf.		Ø12	
Base web - Vertical reinf.	Length (m)	18x2.34	42.12
	Weight (kg)	18x2.08	37.40
Base web - Horizontal reinf.	Length (m)	18x2.16	38.88
	Weight (kg)	18x1.92	34.52
Base web - Vertical additional reinforcement	Length (m)	4x1.88	7.52
	Weight (kg)	4x1.67	6.68
Base web - Left horizontal additional reinforcement	Length (m)	1x1.59	1.59
	Weight (kg)	1x1.41	1.41
Base web - Right horizontal additional reinforcement	Length (m)	1x1.59	1.59
	Weight (kg)	1x1.41	1.41
Longitudinal	Length (m)	4x2.66	10.64
	Weight (kg)	4x2.36	9.45
Total	Length (m)	102.34	
	Weight (kg)	90.87	90.87
Total with steel leftovers (10.00%)	Length (m)	112.57	
	Weight (kg)	99.96	99.96

Reference: Beam 150 (30x200)		S-400	Total
Name of reinf.		Ø12	
Base web - Vertical reinf.	Length (m)	18x2.34	42.12
	Weight (kg)	18x2.08	37.40
Base web - Horizontal reinf.	Length (m)	18x2.16	38.88
	Weight (kg)	18x1.92	34.52
Base web - Vertical additional reinforcement	Length (m)	4x1.88	7.52
	Weight (kg)	4x1.67	6.68
Base web - Left horizontal additional reinforcement	Length (m)	1x1.59	1.59
	Weight (kg)	1x1.41	1.41
Base web - Right horizontal additional reinforcement	Length (m)	1x1.59	1.59
	Weight (kg)	1x1.41	1.41
Longitudinal	Length (m)	4x2.66	10.64
	Weight (kg)	4x2.36	9.45
Total	Length (m)	102.34	
	Weight (kg)	90.87	90.87
Total with steel leftovers (10.00%)	Length (m)	112.57	
	Weight (kg)	99.96	99.96

Reference: Beam 151 (30x200)		S-400	Total
Name of reinf.		Ø12	
Base web - Vertical reinf.	Length (m)	18x2.34	42.12
	Weight (kg)	18x2.08	37.40

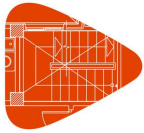


**Project:**  
**Location:**  
**Developer:**

Reference: Beam 151 (30x200)		S-400	Total
Name of reinf.		Ø12	
Base web - Horizontal reinf.	Length (m)	18x2.16	38.88
	Weight (kg)	18x1.92	34.52
Base web - Vertical additional reinforcement	Length (m)	4x1.88	7.52
	Weight (kg)	4x1.67	6.68
Base web - Left horizontal additional reinforcement	Length (m)	1x1.59	1.59
	Weight (kg)	1x1.41	1.41
Base web - Right horizontal additional reinforcement	Length (m)	1x1.59	1.59
	Weight (kg)	1x1.41	1.41
Longitudinal	Length (m)	4x2.66	10.64
	Weight (kg)	4x2.36	9.45
Total	Length (m)	102.34	
	Weight (kg)	90.87	90.87
Total with steel leftovers (10.00%)	Length (m)	112.57	
	Weight (kg)	99.96	99.96

Reference: Beam 152 (30x200)		S-400	Total
Name of reinf.		Ø12	
Base web - Vertical reinf.	Length (m)	18x2.34	42.12
	Weight (kg)	18x2.08	37.40
Base web - Horizontal reinf.	Length (m)	18x2.16	38.88
	Weight (kg)	18x1.92	34.52
Base web - Vertical additional reinforcement	Length (m)	4x1.88	7.52
	Weight (kg)	4x1.67	6.68
Base web - Left horizontal additional reinforcement	Length (m)	1x1.59	1.59
	Weight (kg)	1x1.41	1.41
Base web - Right horizontal additional reinforcement	Length (m)	1x1.59	1.59
	Weight (kg)	1x1.41	1.41
Longitudinal	Length (m)	4x2.66	10.64
	Weight (kg)	4x2.36	9.45
Total	Length (m)	102.34	
	Weight (kg)	90.87	90.87
Total with steel leftovers (10.00%)	Length (m)	112.57	
	Weight (kg)	99.96	99.96

Reference: Beam 153 (30x200)		S-400	Total
Name of reinf.		Ø12	
Base web - Vertical reinf.	Length (m)	18x2.34	42.12
	Weight (kg)	18x2.08	37.40
Base web - Horizontal reinf.	Length (m)	18x2.16	38.88
	Weight (kg)	18x1.92	34.52
Base web - Vertical additional reinforcement	Length (m)	4x1.88	7.52
	Weight (kg)	4x1.67	6.68
Base web - Left horizontal additional reinforcement	Length (m)	1x1.59	1.59
	Weight (kg)	1x1.41	1.41
Base web - Right horizontal additional reinforcement	Length (m)	1x1.59	1.59
	Weight (kg)	1x1.41	1.41
Longitudinal	Length (m)	4x2.66	10.64
	Weight (kg)	4x2.36	9.45

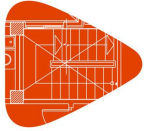


**Project:**  
**Location:**  
**Developer:**

Reference: Beam 153 (30x200)		S-400	Total
Name of reinf.		Ø12	
Total	Length (m)	102.34	90.87
	Weight (kg)	90.87	
Total with steel leftovers (10.00%)	Length (m)	112.57	99.96
	Weight (kg)	99.96	

Quantities summary (including steel leftovers)

Element	S-400 (kg)	Concrete (m <sup>3</sup> )
	Ø12	C25/30
Reference: Beam 149 (30x200)	99.96	1.13
Reference: Beam 150 (30x200)	99.96	1.13
Reference: Beam 151 (30x200)	99.96	1.13
Reference: Beam 152 (30x200)	99.96	1.13
Reference: Beam 153 (30x200)	99.96	1.13
Total	499.80	5.63

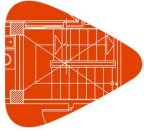


**Project:**  
**Location:**  
**Developer:**

## 4. CODE CHECKS

Reference: Beam 149 (30x200)		
Code checks	Values	Status
Clear cover: <i>Code EC-2, Article 4.4.1.2</i>	Minimum: 1.2 cm Calculated: 4 cm	Verified
Minimum bar spacing: <i>Code EC-2, Article 8.2 (2)</i> <ul style="list-style-type: none"> <li>- Bottom longitudinal reinforcement:</li> <li>- Vertical base reinforcement of the web:</li> <li>- Horizontal base reinforcement of the web:</li> <li>- Base reinforcement of the web:</li> </ul>	Minimum: 2.5 cm Calculated: 18.9 cm Calculated: 23.8 cm Calculated: 23.8 cm Calculated: 17.2 cm	Verified Verified Verified Verified
Maximum bar spacing: <i>Criteria of CYPE</i> <ul style="list-style-type: none"> <li>- Bottom longitudinal reinforcement:</li> <li>- Vertical base reinforcement of the web:</li> <li>- Horizontal base reinforcement of the web:</li> </ul>	Maximum: 30 cm Calculated: 20.1 cm Calculated: 25 cm Calculated: 25 cm	Verified Verified Verified
Reaction check at supports: <i>Article 2.5.3.6.3 of EC-2</i> <ul style="list-style-type: none"> <li>- Left:</li> <li>- Right:</li> </ul>	Maximum: 599.98 kN Calculated: 16.677 kN Calculated: 16.677 kN	Verified Verified
Minimum beam width: <i>Article 59.2 of the EH-91 code</i>	Minimum: 0.5 cm Calculated: 30 cm	Verified
Bottom longitudinal reinforcement: <ul style="list-style-type: none"> <li>- Area: <i>Article 2.5.3.6.3 of EC-2</i></li> <li>- Layout width of the bars: <i>Article 2.5.3.6.3 of EC-2</i></li> <li>- Reinforcement layout:</li> </ul>	Minimum: 0.1 cm <sup>2</sup> Calculated: 4.6 cm <sup>2</sup> Minimum: 20.1 cm Calculated: 20.1 cm	Verified Verified Verified
Base reinforcement of the web: <i>Article 5.4.5 of EC-2</i> <ul style="list-style-type: none"> <li>- Area vertical bars:</li> <li>- Area horizontal bars:</li> </ul>	Minimum: 9 cm <sup>2</sup> /m Calculated: 9.1 cm <sup>2</sup> /m Calculated: 9.1 cm <sup>2</sup> /m	Verified Verified
Additional web reinforcement: <ul style="list-style-type: none"> <li>- Length of the horizontal bars: <i>Criteria of CYPE</i></li> <li>- Length of the vertical bars: <i>Criteria of CYPE</i></li> <li>- Layout width of the bars: <i>Criteria of CYPE</i></li> <li>- Reinforcement layout:</li> </ul>	Minimum: 50.2 cm Calculated: 50.3 cm Minimum: 83.7 cm Calculated: 83.8 cm Minimum: 33.5 cm Calculated: 33.5 cm	Verified Verified Verified Verified
All the checks have been verified		

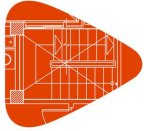
Reference: Beam 150 (30x200)		
Code checks	Values	Status
Clear cover: <i>Code EC-2, Article 4.4.1.2</i>	Minimum: 1.2 cm Calculated: 4 cm	Verified
Minimum bar spacing: <i>Code EC-2, Article 8.2 (2)</i> <ul style="list-style-type: none"> <li>- Bottom longitudinal reinforcement:</li> <li>- Vertical base reinforcement of the web:</li> </ul>	Minimum: 2.5 cm Calculated: 18.9 cm Calculated: 23.8 cm	Verified Verified



**Project:**  
**Location:**  
**Developer:**

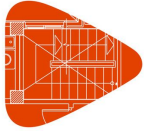
Reference: Beam 150 (30x200)		
Code checks	Values	Status
- Horizontal base reinforcement of the web: - Base reinforcement of the web:	Calculated: 23.8 cm Calculated: 17.2 cm	Verified Verified
Maximum bar spacing: <i>Criteria of CYPE</i> - Bottom longitudinal reinforcement: - Vertical base reinforcement of the web: - Horizontal base reinforcement of the web:	Maximum: 30 cm Calculated: 20.1 cm Calculated: 25 cm Calculated: 25 cm	Verified Verified Verified
Reaction check at supports: <i>Article 2.5.3.6.3 of EC-2</i> - Left: - Right:	Maximum: 599.98 kN Calculated: 16.677 kN Calculated: 16.677 kN	Verified Verified
Minimum beam width: <i>Article 59.2 of the EH-91 code</i>	Minimum: 0.5 cm Calculated: 30 cm	Verified
Bottom longitudinal reinforcement: - Area: <i>Article 2.5.3.6.3 of EC-2</i> - Layout width of the bars: <i>Article 2.5.3.6.3 of EC-2</i> - Reinforcement layout:	Minimum: 0.1 cm <sup>2</sup> Calculated: 4.6 cm <sup>2</sup> Minimum: 20.1 cm Calculated: 20.1 cm	Verified Verified Verified
Base reinforcement of the web: <i>Article 5.4.5 of EC-2</i> - Area vertical bars: - Area horizontal bars:	Minimum: 9 cm <sup>2</sup> /m Calculated: 9.1 cm <sup>2</sup> /m Calculated: 9.1 cm <sup>2</sup> /m	Verified Verified
Additional web reinforcement: - Length of the horizontal bars: <i>Criteria of CYPE</i> - Length of the vertical bars: <i>Criteria of CYPE</i> - Layout width of the bars: <i>Criteria of CYPE</i> - Reinforcement layout:	Minimum: 50.2 cm Calculated: 50.3 cm Minimum: 83.7 cm Calculated: 83.8 cm Minimum: 33.5 cm Calculated: 33.5 cm	Verified Verified Verified Verified
All the checks have been verified		

Reference: Beam 151 (30x200)		
Code checks	Values	Status
Clear cover: <i>Code EC-2. Article 4.4.1.2</i>	Minimum: 1.2 cm Calculated: 4 cm	Verified
Minimum bar spacing: <i>Code EC-2. Article 8.2 (2)</i> - Bottom longitudinal reinforcement: - Vertical base reinforcement of the web: - Horizontal base reinforcement of the web: - Base reinforcement of the web:	Minimum: 2.5 cm Calculated: 18.9 cm Calculated: 23.8 cm Calculated: 23.8 cm Calculated: 17.2 cm	Verified Verified Verified Verified
Maximum bar spacing: <i>Criteria of CYPE</i> - Bottom longitudinal reinforcement: - Vertical base reinforcement of the web: - Horizontal base reinforcement of the web:	Maximum: 30 cm Calculated: 20.1 cm Calculated: 25 cm Calculated: 25 cm	Verified Verified Verified



**Project:**  
**Location:**  
**Developer:**

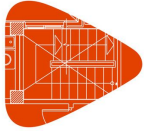
Reference: Beam 151 (30x200)		
Code checks	Values	Status
<b>Reaction check at supports:</b> <i>Article 2.5.3.6.3 of EC-2</i> - Left: - Right:	Maximum: 599.98 kN Calculated: 16.677 kN Calculated: 16.677 kN	Verified Verified
<b>Minimum beam width:</b> <i>Article 59.2 of the EH-91 code</i>	Minimum: 0.5 cm Calculated: 30 cm	Verified
<b>Bottom longitudinal reinforcement:</b> - Area: <i>Article 2.5.3.6.3 of EC-2</i> - Layout width of the bars: <i>Article 2.5.3.6.3 of EC-2</i> - Reinforcement layout:	Minimum: 0.1 cm <sup>2</sup> Calculated: 4.6 cm <sup>2</sup> Minimum: 20.1 cm Calculated: 20.1 cm	Verified Verified Verified
<b>Base reinforcement of the web:</b> <i>Article 5.4.5 of EC-2</i> - Area vertical bars: - Area horizontal bars:	Minimum: 9 cm <sup>2</sup> /m Calculated: 9.1 cm <sup>2</sup> /m Calculated: 9.1 cm <sup>2</sup> /m	Verified Verified
<b>Additional web reinforcement:</b> - Length of the horizontal bars: <i>Criteria of CYPE</i> - Length of the vertical bars: <i>Criteria of CYPE</i> - Layout width of the bars: <i>Criteria of CYPE</i> - Reinforcement layout:	Minimum: 50.2 cm Calculated: 50.3 cm Minimum: 83.7 cm Calculated: 83.8 cm Minimum: 33.5 cm Calculated: 33.5 cm	Verified Verified Verified Verified
All the checks have been verified		
Reference: Beam 152 (30x200)		
Code checks	Values	Status
<b>Clear cover:</b> <i>Code EC-2, Article 4.4.1.2</i>	Minimum: 1.2 cm Calculated: 4 cm	Verified
<b>Minimum bar spacing:</b> <i>Code EC-2, Article 8.2 (2)</i> - Bottom longitudinal reinforcement: - Vertical base reinforcement of the web: - Horizontal base reinforcement of the web: - Base reinforcement of the web:	Minimum: 2.5 cm Calculated: 18.9 cm Calculated: 23.8 cm Calculated: 23.8 cm Calculated: 17.2 cm	Verified Verified Verified Verified
<b>Maximum bar spacing:</b> <i>Criteria of CYPE</i> - Bottom longitudinal reinforcement: - Vertical base reinforcement of the web: - Horizontal base reinforcement of the web:	Maximum: 30 cm Calculated: 20.1 cm Calculated: 25 cm Calculated: 25 cm	Verified Verified Verified
<b>Reaction check at supports:</b> <i>Article 2.5.3.6.3 of EC-2</i> - Left: - Right:	Maximum: 599.98 kN Calculated: 16.677 kN Calculated: 16.677 kN	Verified Verified
<b>Minimum beam width:</b> <i>Article 59.2 of the EH-91 code</i>	Minimum: 0.5 cm Calculated: 30 cm	Verified
<b>Bottom longitudinal reinforcement:</b>		



**Project:**  
**Location:**  
**Developer:**

Reference: Beam 152 (30x200)		
Code checks	Values	Status
- Area: <i>Article 2.5.3.6.3 of EC-2</i>	Minimum: 0.1 cm <sup>2</sup> Calculated: 4.6 cm <sup>2</sup>	Verified
- Layout width of the bars: <i>Article 2.5.3.6.3 of EC-2</i>	Minimum: 20.1 cm Calculated: 20.1 cm	Verified
- Reinforcement layout:		Verified
Base reinforcement of the web: <i>Article 5.4.5 of EC-2</i>	Minimum: 9 cm <sup>2</sup> /m Calculated: 9.1 cm <sup>2</sup> /m	Verified
- Area vertical bars:	Calculated: 9.1 cm <sup>2</sup> /m	Verified
- Area horizontal bars:	Calculated: 9.1 cm <sup>2</sup> /m	Verified
Additional web reinforcement:		
- Length of the horizontal bars: <i>Criteria of CYPE</i>	Minimum: 50.2 cm Calculated: 50.3 cm	Verified
- Length of the vertical bars: <i>Criteria of CYPE</i>	Minimum: 83.7 cm Calculated: 83.8 cm	Verified
- Layout width of the bars: <i>Criteria of CYPE</i>	Minimum: 33.5 cm Calculated: 33.5 cm	Verified
- Reinforcement layout:		Verified
All the checks have been verified		

Reference: Beam 153 (30x200)		
Code checks	Values	Status
Clear cover: <i>Code EC-2. Article 4.4.1.2</i>	Minimum: 1.2 cm Calculated: 4 cm	Verified
Minimum bar spacing: <i>Code EC-2. Article 8.2 (2)</i>	Minimum: 2.5 cm	
- Bottom longitudinal reinforcement:	Calculated: 18.9 cm	Verified
- Vertical base reinforcement of the web:	Calculated: 23.8 cm	Verified
- Horizontal base reinforcement of the web:	Calculated: 23.8 cm	Verified
- Base reinforcement of the web:	Calculated: 17.2 cm	Verified
Maximum bar spacing: <i>Criteria of CYPE</i>	Maximum: 30 cm	
- Bottom longitudinal reinforcement:	Calculated: 20.1 cm	Verified
- Vertical base reinforcement of the web:	Calculated: 25 cm	Verified
- Horizontal base reinforcement of the web:	Calculated: 25 cm	Verified
Reaction check at supports: <i>Article 2.5.3.6.3 of EC-2</i>	Maximum: 599.98 kN	
- Left:	Calculated: 16.677 kN	Verified
- Right:	Calculated: 16.677 kN	Verified
Minimum beam width: <i>Article 59.2 of the EH-91 code</i>	Minimum: 0.5 cm Calculated: 30 cm	Verified
Bottom longitudinal reinforcement:		
- Area: <i>Article 2.5.3.6.3 of EC-2</i>	Minimum: 0.1 cm <sup>2</sup> Calculated: 4.6 cm <sup>2</sup>	Verified
- Layout width of the bars: <i>Article 2.5.3.6.3 of EC-2</i>	Minimum: 20.1 cm Calculated: 20.1 cm	Verified
- Reinforcement layout:		Verified
Base reinforcement of the web: <i>Article 5.4.5 of EC-2</i>	Minimum: 9 cm <sup>2</sup> /m Calculated: 9.1 cm <sup>2</sup> /m	Verified
- Area vertical bars:	Calculated: 9.1 cm <sup>2</sup> /m	Verified



**Project:**  
**Location:**  
**Developer:**

Reference: Beam 153 (30x200)		
Code checks	Values	Status
- Area horizontal bars:	Calculated: 9.1 cm <sup>2</sup> /m	Verified
Additional web reinforcement:		
- Length of the horizontal bars: <i>Criteria of CYPE</i>	Minimum: 50.2 cm Calculated: 50.3 cm	Verified
- Length of the vertical bars: <i>Criteria of CYPE</i>	Minimum: 83.7 cm Calculated: 83.8 cm	Verified
- Layout width of the bars: <i>Criteria of CYPE</i>	Minimum: 33.5 cm Calculated: 33.5 cm	Verified
- Reinforcement layout:		Verified
All the checks have been verified		