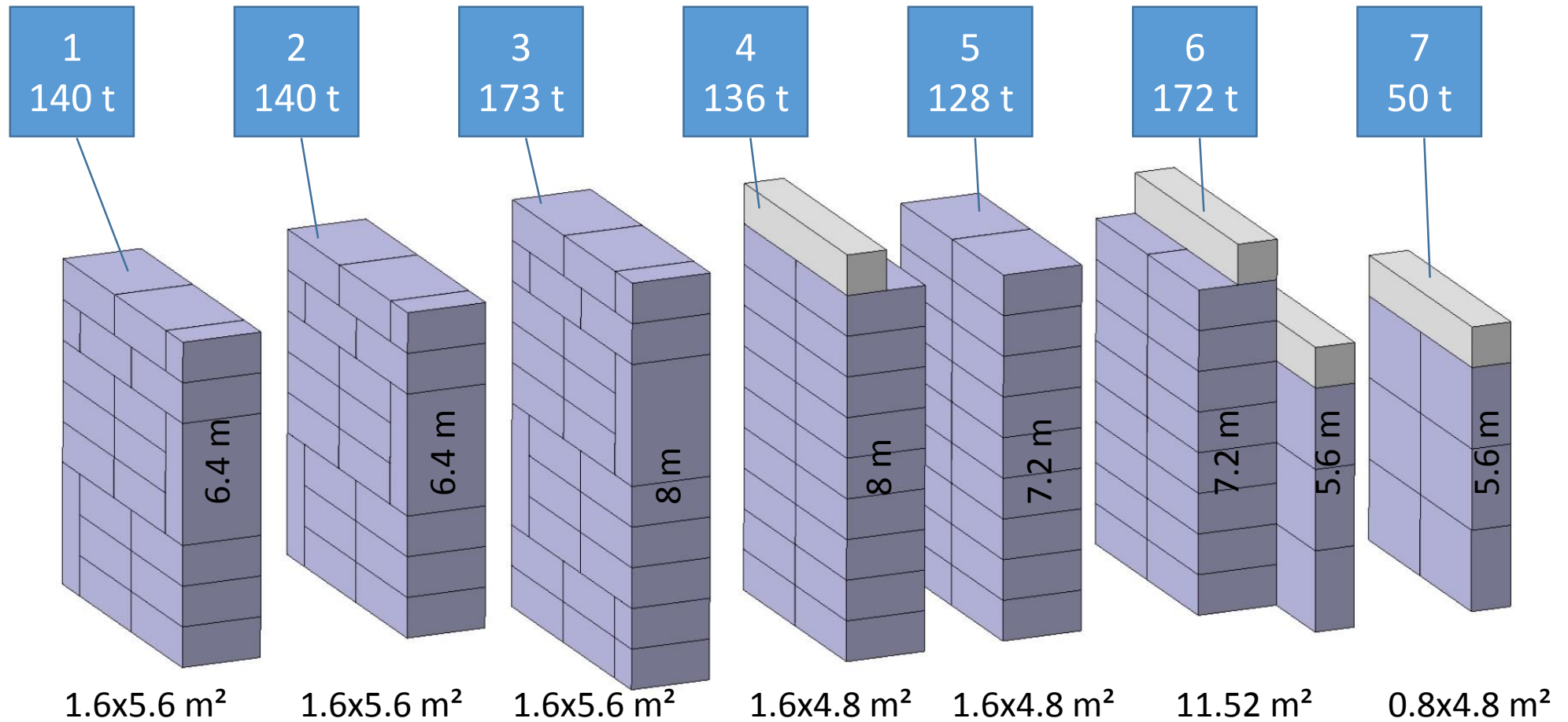


# EHN1 extension

## Platform quay stability improvement

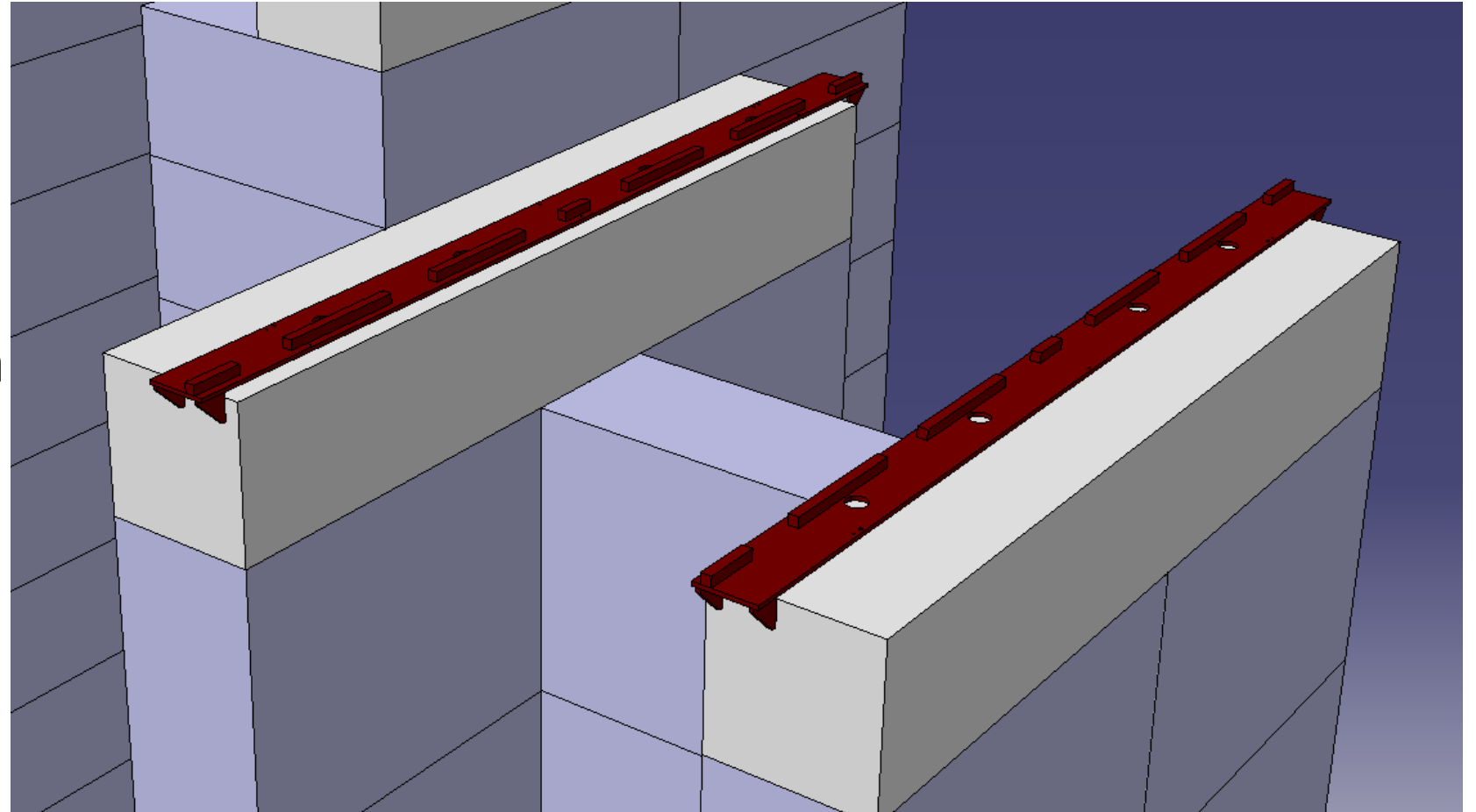
S. Girod

# Installed now: 7 concrete blocks pillars: 939 t

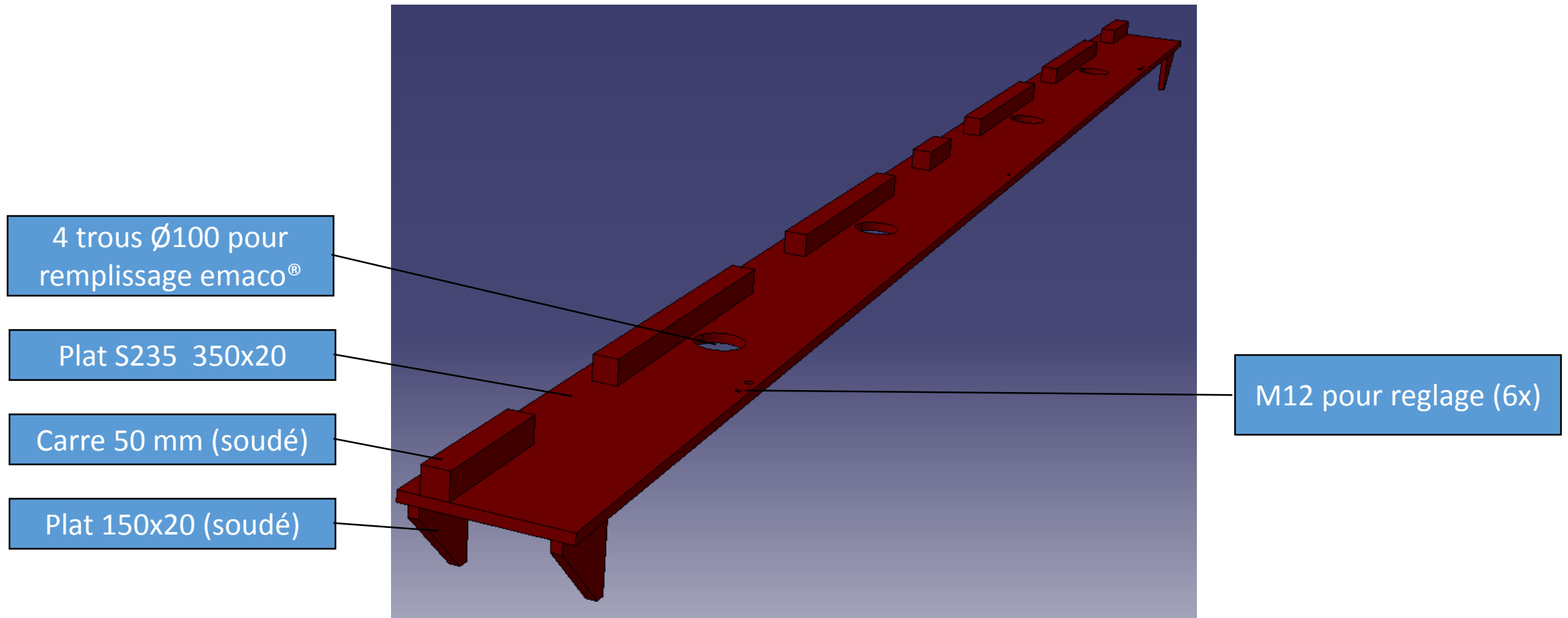


# Stability improvement

1. Installation of a steel basement on each pillar.
2. Height adjustment with 6x M12
3. Emmaco filling under (average gap: 40 mm)

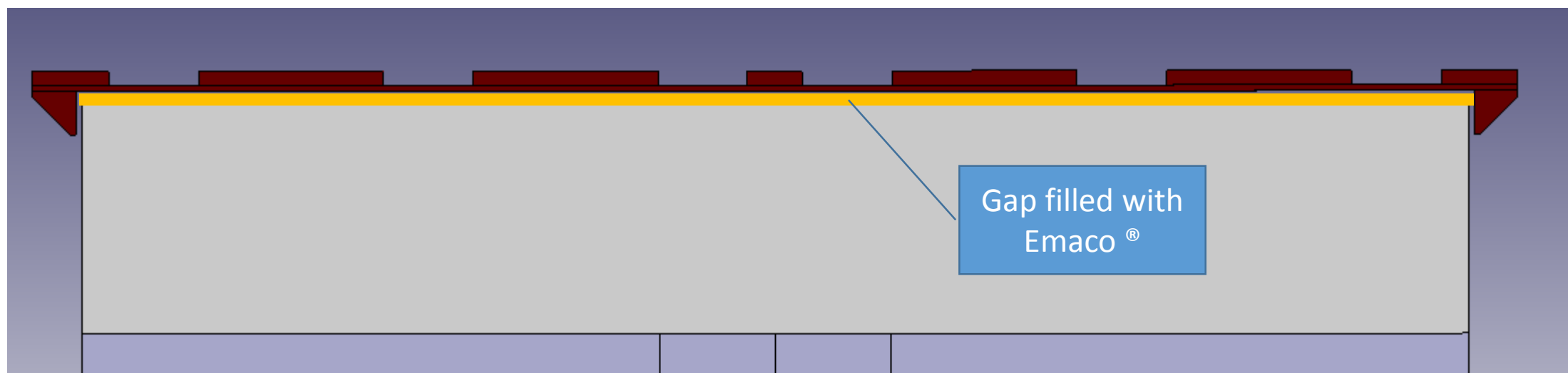


# Detail of a steel basement



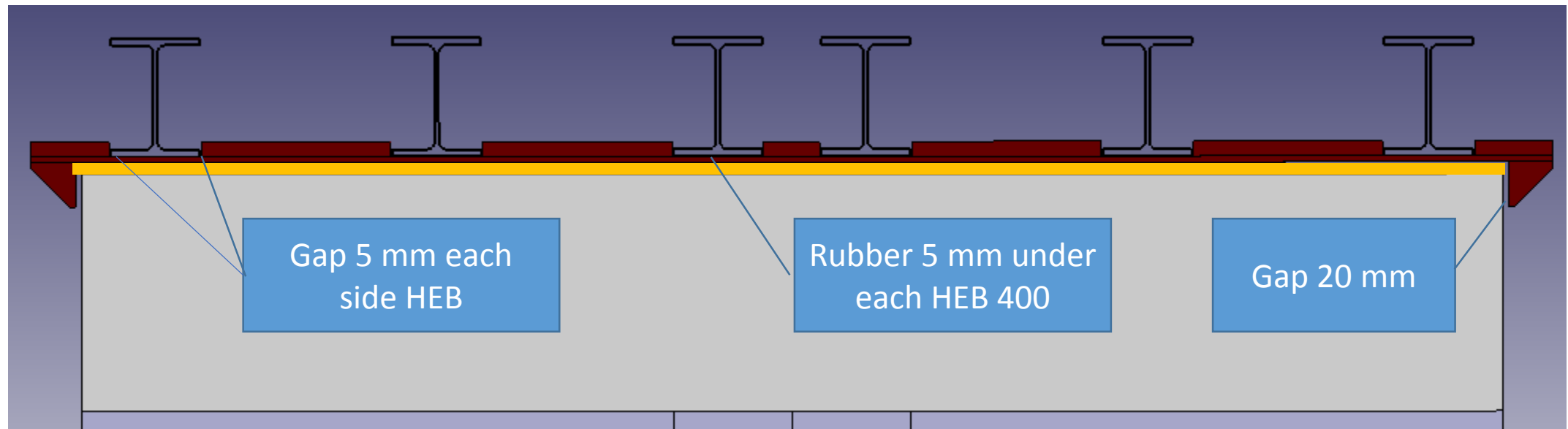
# Detail of steel basement

ST0891649



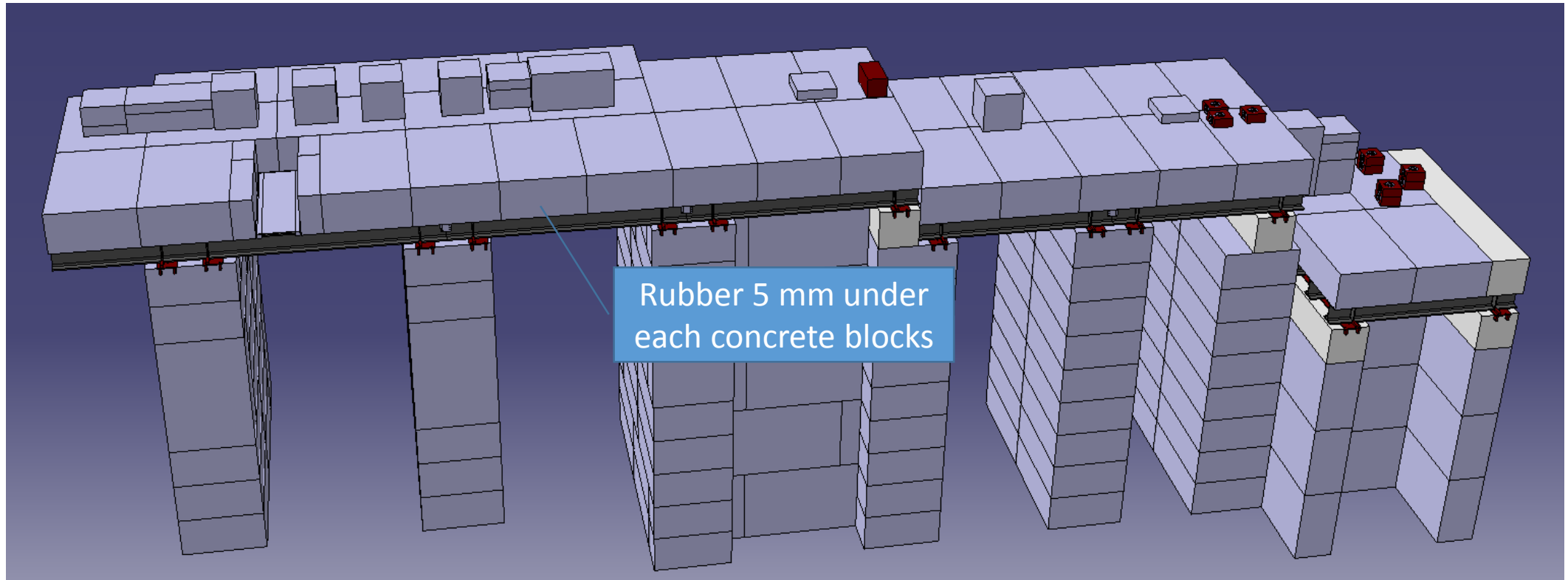
# Stability improvement

HEB 400 installed with rubber under  $\rightarrow$  no edge effect



# Stability improvement

Rubber 5mm under concrete blocks

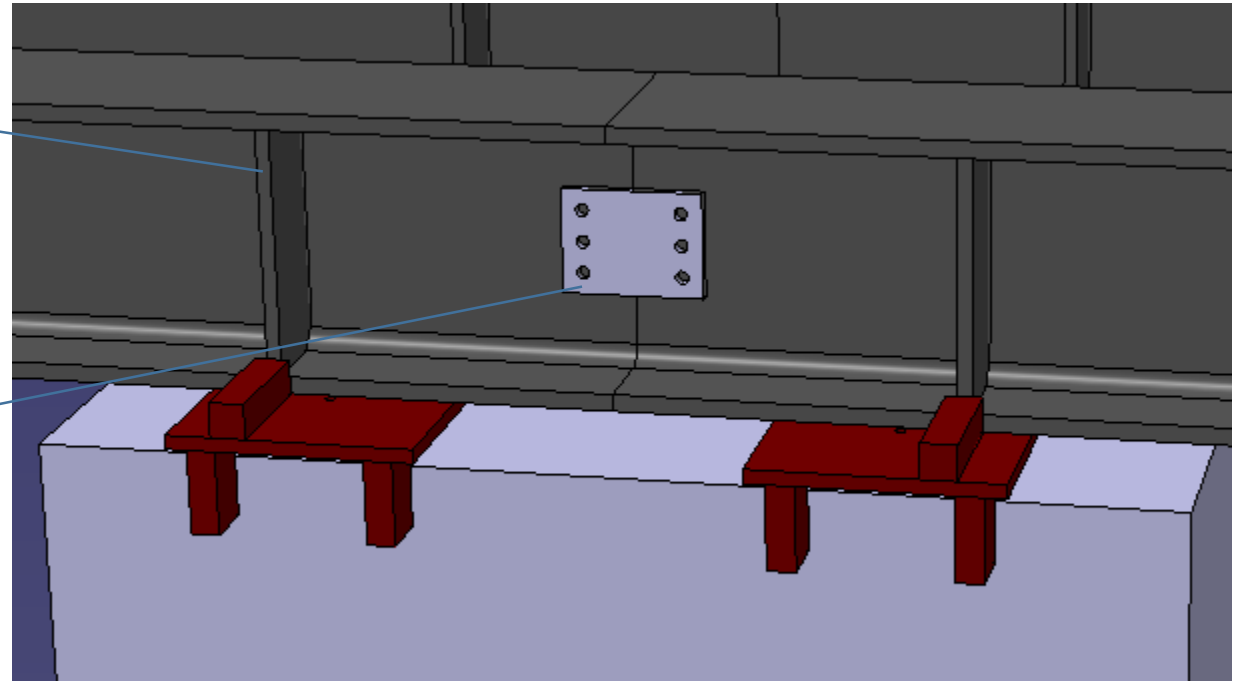


# Other stability improvement on HEB400

## Stiffeners and splice plate connections between HEB 400

Stiffeners welded:  
x172 Flat bar 140x20 mm<sup>2</sup> S235

Splice plate screwed:  
Screws M16 class 8.8, Rm= 800 MPa  
Shear limit 0.6x Rm= 480 MPa  
Section: 2x144 mm<sup>2</sup> / vis  
Max share load for 3 screws: ~400 KN (40t)  
x132 holes Ø18 to be drilled on HEB400



# stability improvement on pillars

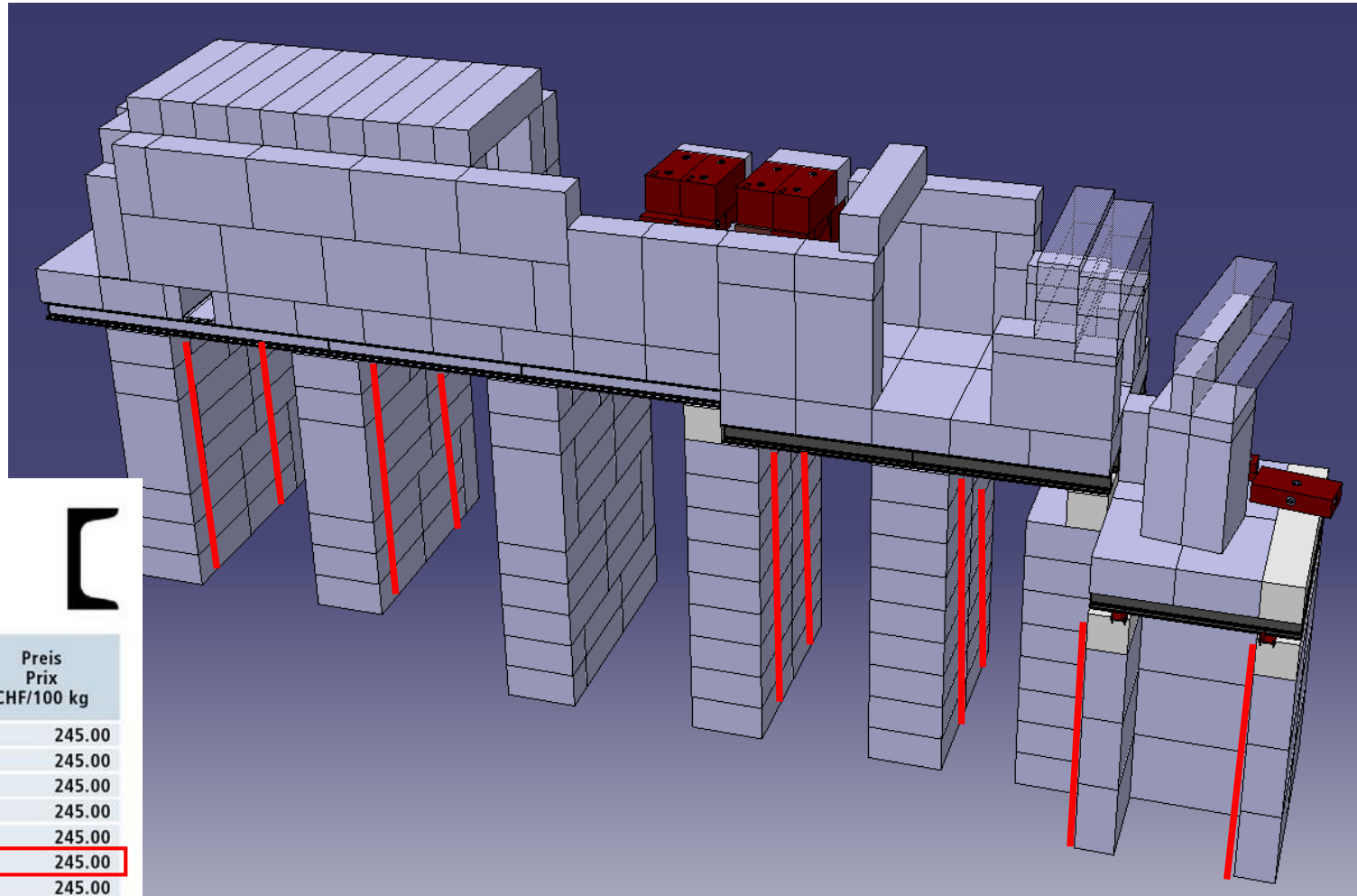
UPN 180x70

1x M16 (hilti HKD) / block

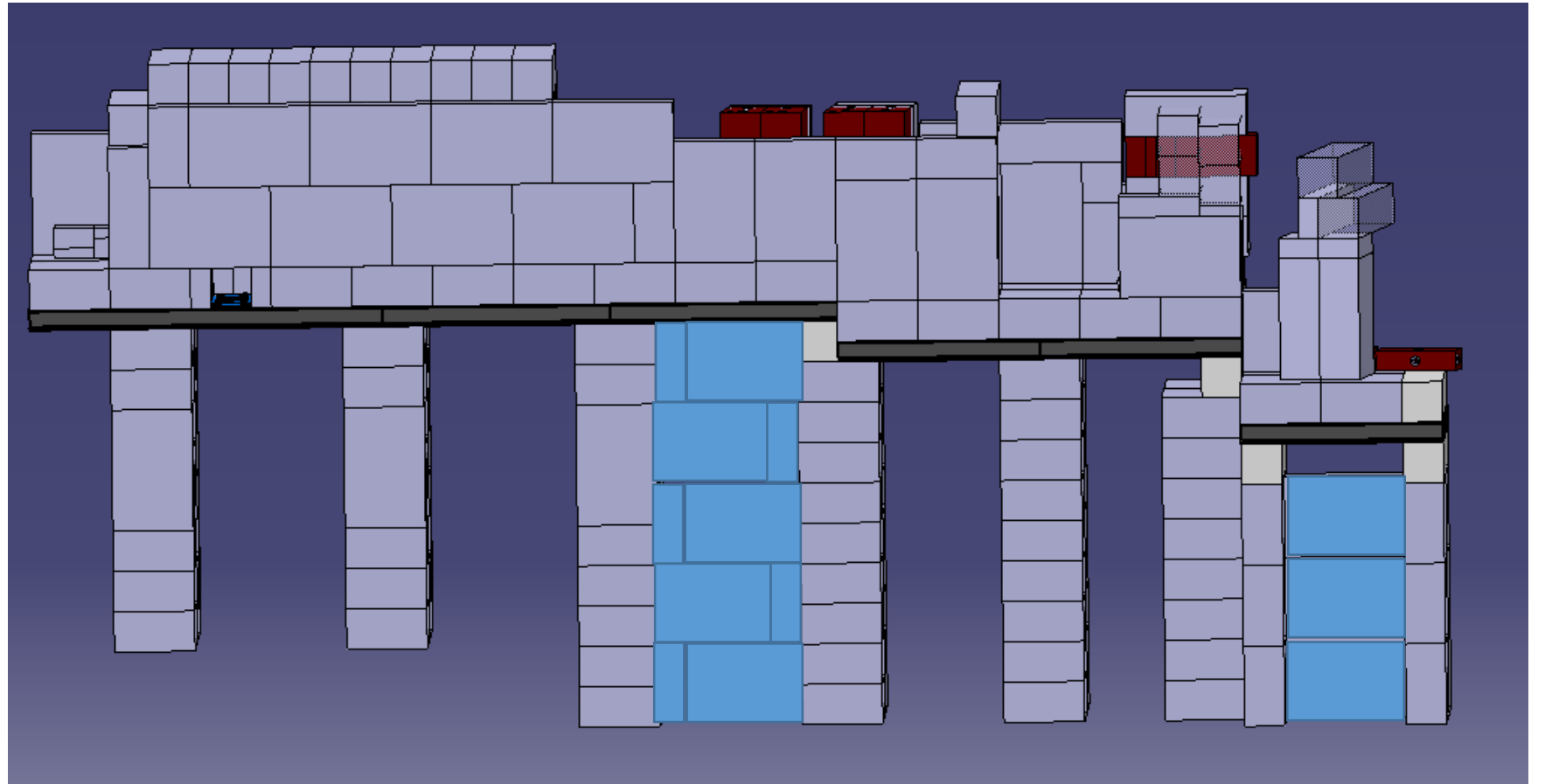
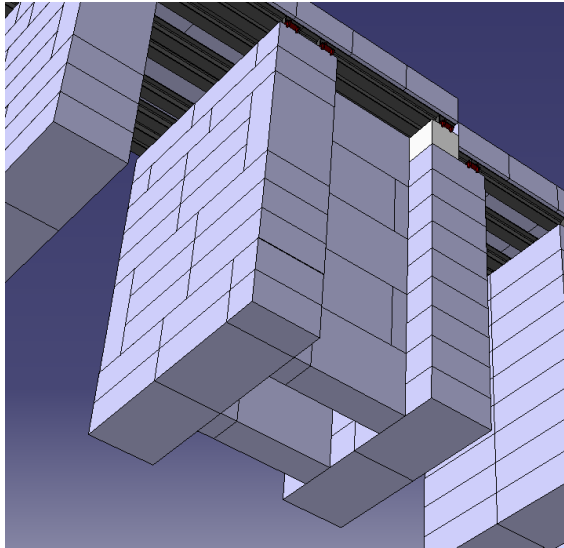
Matiere: 82.8m (1821 kg )

Formstahlträger UNP  
S235JR / EN 10025  
Poutrelle UNP  
S235JR / EN 10025

Profil	Gewicht Poids kg/m	S CHF/100 kg	S + Z CHF/100 kg	Schnitt Coupe CHF/pce	Preis Prix CHF/100 kg
80	8.6	40.20	53.60	11.00	245.00
100	10.6	39.05	52.10	11.50	245.00
120	13.4	36.10	48.10	12.00	245.00
140	16.0	34.00	45.40	16.00	245.00
160	18.8	32.30	43.05	18.00	245.00
180	22.0	30.95	41.25	19.50	245.00
200	25.3	29.05	38.75	20.50	245.00
220	29.4	27.20	36.20	21.50	245.00



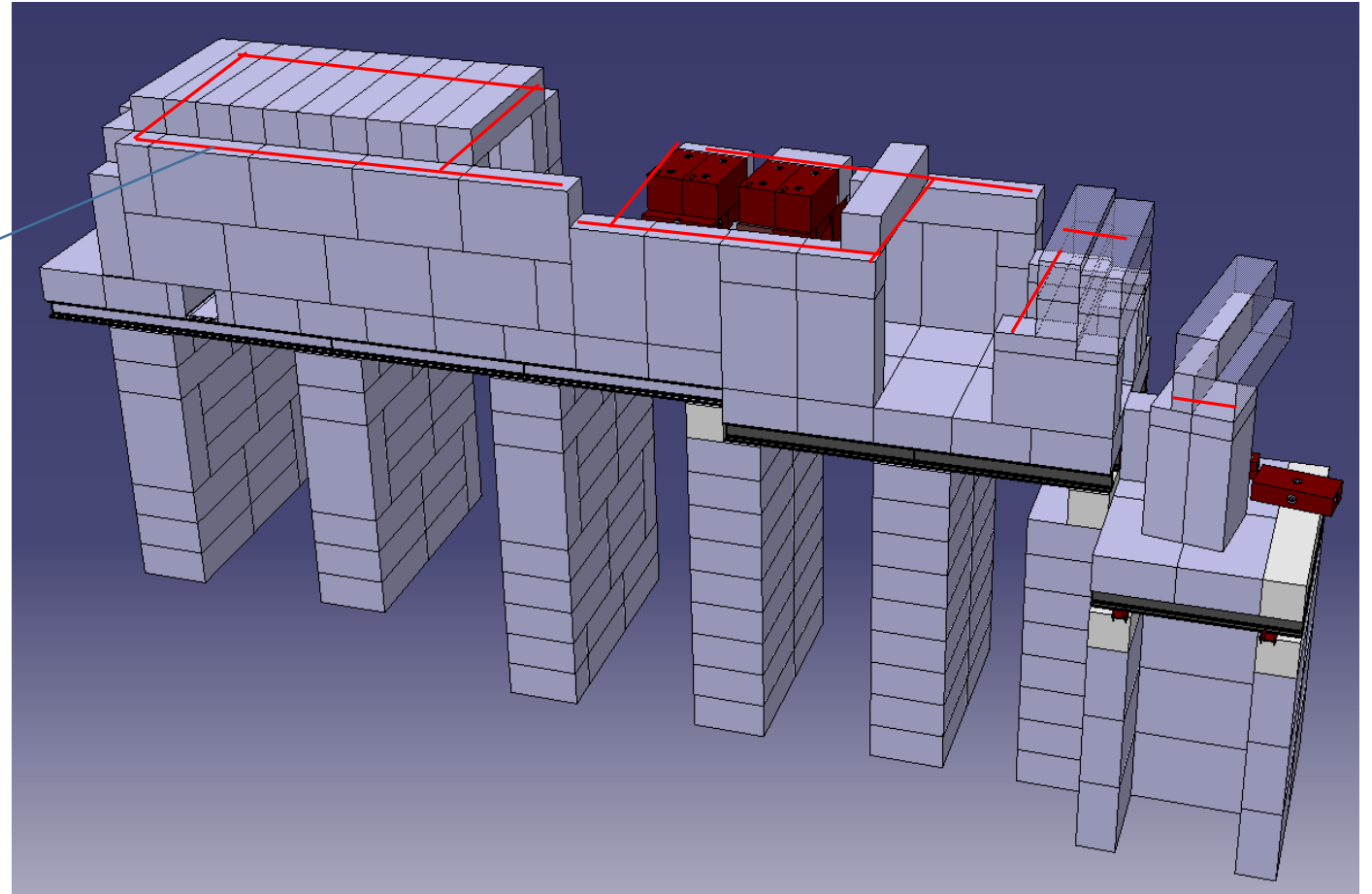
# Pillar stability improvement



# stability improvement on concrete walls

Steel belts on shielding walls.

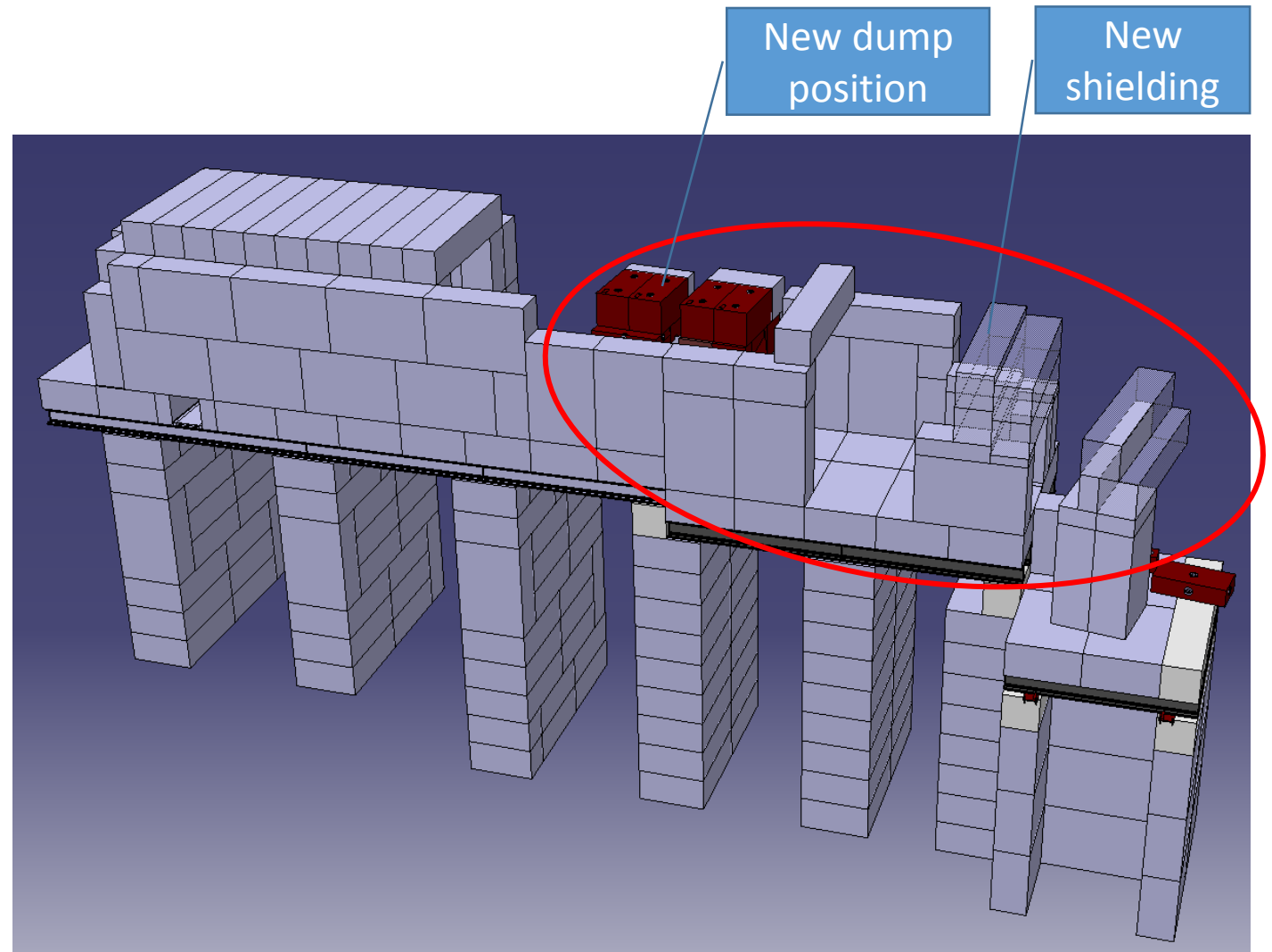
Plat 150x15



# Calculation

New FEA calculation of the HEB steel beams with up to date shielding blocks geometry and new steel basement, stiffeners

→ ongoing



# Budget

Item	Estimated cost [KCHF]
Material for basement, stiffeners, splice (steel, 6t)	15
Preparation drilling, welding 13x steel basement	10
Welding stiffeners on HEB400	10
Drilling for splice plate connections on HEB400	8
Painting	5
Emmaco finning (Dimensione)	16
Material UPN profiles	5
Drilling UPN + installation	5
Steel belts on walls	15
<b>TOT [KCHF]</b>	<b>89</b>

# Planning

Task Name	Start	Finish	Duration	Groupe	Qtr 4, 2017 Oct	Nov	Dec	Qtr 1, 2018 Jan	Feb	Mar	Qtr 2, 2018 Apr	May	Jun	Qtr 3, 2018 Jul
111 <b>Quay</b>	<b>Mon 25/09/17</b>	<b>Fri 06/07/18</b>	<b>195 days</b>											
112 Pilliers quay installation	Mon 25/09/17	Fri 13/10/17	3 wks	EN-HE	EN-HE									
113 Material procurement	Mon 06/11/17	Fri 24/11/17	3 wks	EN-EA		EN-EA								
114 Preparation semelles + UPN	Mon 27/11/17	Fri 08/12/17	2 wks	EN-EA		EN-EA								
115 Installation UPN + semelles	Mon 11/12/17	Fri 22/12/17	2 wks	EN-EA		EN-EA								
116 Scellement EMACO	Mon 08/01/18	Fri 19/01/18	2 wks	SMB-SE-CEB				SMB-SE-CEB						
117 preparation HEB 400 perage + soudure + peinture	Mon 27/11/17	Fri 19/01/18	6 wks	EN-EA		EN-EA		EN-EA						
118 Installation HEB400	Mon 22/01/18	Fri 02/02/18	2 wks	EN-HE				EN-HE						
119 Installation tapis + bloc bord	Mon 05/02/18	Fri 23/02/18	3 wks	EN-HE				EN-HE						
120 Installation grillage	Mon 26/02/18	Fri 09/03/18	2 wks	EN-EA				EN-EA						
121 Installation escalier, passerelle	Mon 26/02/18	Fri 09/03/18	2 wks	SMB-SE-CEB				SMB-SE-CEB						
122 Installation echelles a cables	Mon 12/03/18	Fri 23/03/18	2 wks	EN-EL-BT						EN-EL-BT				
123 Tracage faisceau	Mon 26/03/18	Fri 30/03/18	1 wk	EN-ACE-SU						EN-ACE-SU				
124 Installation aimants + elements faisceaux	Mon 02/04/18	Fri 13/04/18	2 wks	EN-EA						EN-EA				
125 Cablage quai	Mon 16/04/18	Fri 18/05/18	5 wks	EN-EL-BT							EN-EL-BT			
126 Alignement	Mon 21/05/18	Fri 08/06/18	3 wks	EN-ACE-SU								EN-ACE-SU		
127 Raccordement ED aimants	Mon 11/06/18	Fri 15/06/18	1 wk	TE-MSD									TE-MSD	
128 Installation dump + toit +blindage	Mon 18/06/18	Fri 29/06/18	2 wks	EN-HE									EN-HE	
129 Installation ceinturage	Mon 02/07/18	Fri 06/07/18	1 wk	EN-EA										EN-EA