Proof of concept with - static formular calculation :

3,199 m^2 x 0,15 m x 2.400 kg/m3 = 1.151 kg concrete under gravity

(Conrete Weight - Water Weight) 1.400 kg x 100 % / 2.400 kg = 58,3 %

Its all relative - 58,3 % of 1.151 kg = 671 kg we can count for downwards

Density 2.400 kg / m3

Density 1.000 kg / m3
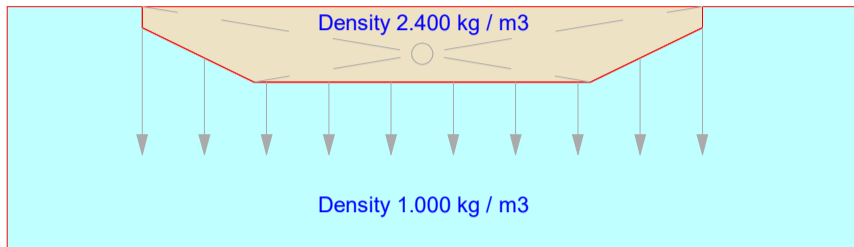
3.453 kg - wants to go downwards

and as we have 3 of these - 1.151 kg x 3 = 3.453 kg - wants to go downwards

Water has 1.000 kg / m3 - but Styrofoam only got 15 kg / m3 ! - lighter then Water

0,694 m^2 0,694 m^2

Stryrofoam Density 15 kg / m3

Water Density 1.000 kg / m3
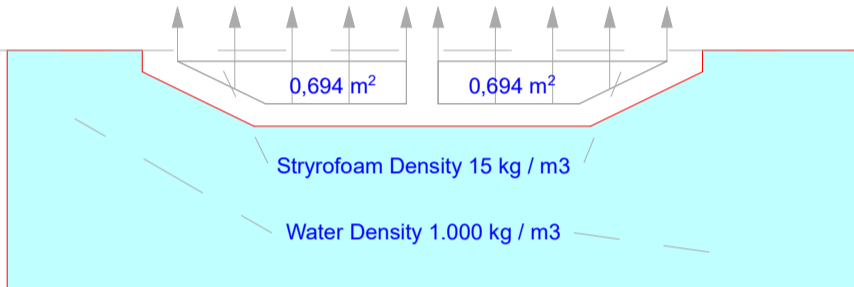
2.188 kg - wants to go upwards

0,694 m2 x 0,8 m x 4 blocks x 15 kg/ m3 = 33,3 kg Styrofoam in Water

0,694 m2 x 0,8 m x 4 blocks x 1.000 kg / m3 = 2220,8 kg Water

2.220,8 kg - 33,3 kg = **2187,5 kg** - **THAT want to go up !!!**

But to be complete - we have to count the Styrofoams frame

1,480 m^2
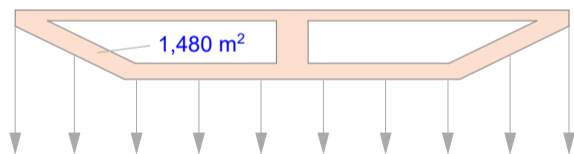
3.315 kg - wants to go downwards

1,48 m2 x 0,8 x 2 frames x 2.400 kg / m3 = 5.683 kg concrete under gravity

but its all relative = 5.683 kg Concrete Weight

Minus 1,480 x 0,8 x 2 frames x 1.000 kg / m3 = 2.368 kg Water Weight

Weigt Difference = 5.683 kg - 2.368 kg = **3.315 kg** that want to go down

3.453 kg + 3.315 kg = 6.768 downwards = 100 %

Minus 2.188 kg that wants to go upwards = 32,32 %

210 mm = 32,32 %

440 mm = 67,68 %

440 mm 210 650 mm
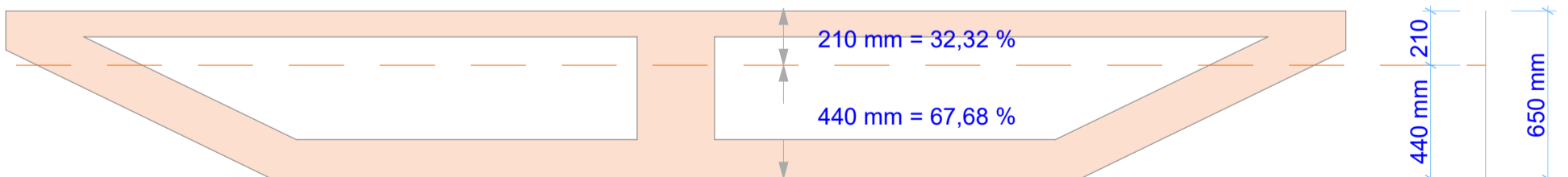
The resulting water line comes exactly as expected

and this is what engineering is about ... Ing. Goebel

The engineers formulars - take you home every day