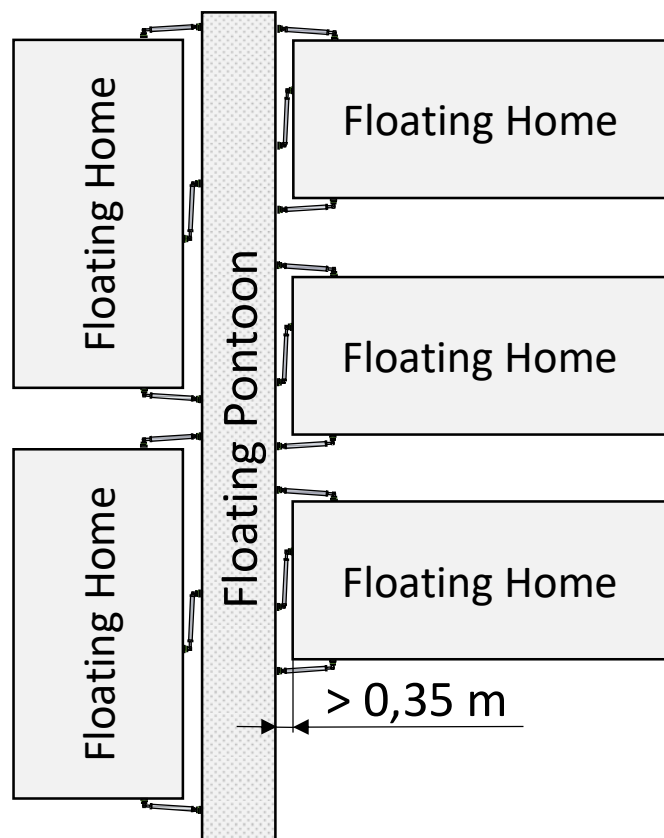


max. Tide:	max. Wind:	max. Current:	sign. Wave:	Break water:
3,0 m	45 m/s	1,5 m/s	0,7 m	Yes

Attachment to the floating pontoon:

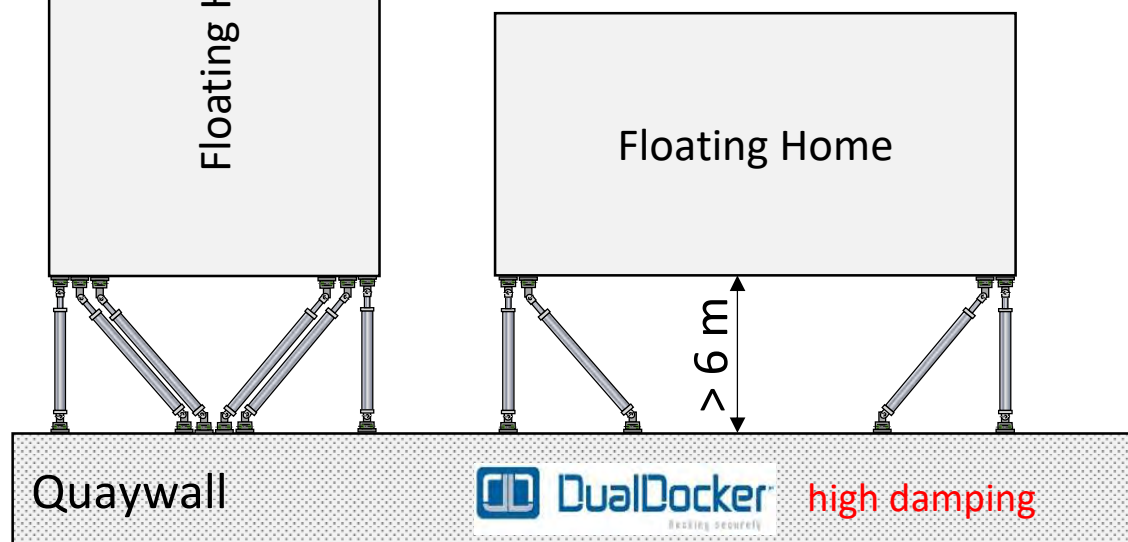
- only one step on board
- incredibly calm location in wind and waves
- best possible safety in storms and waves
- **no impact on the river-, lake- or seabed**



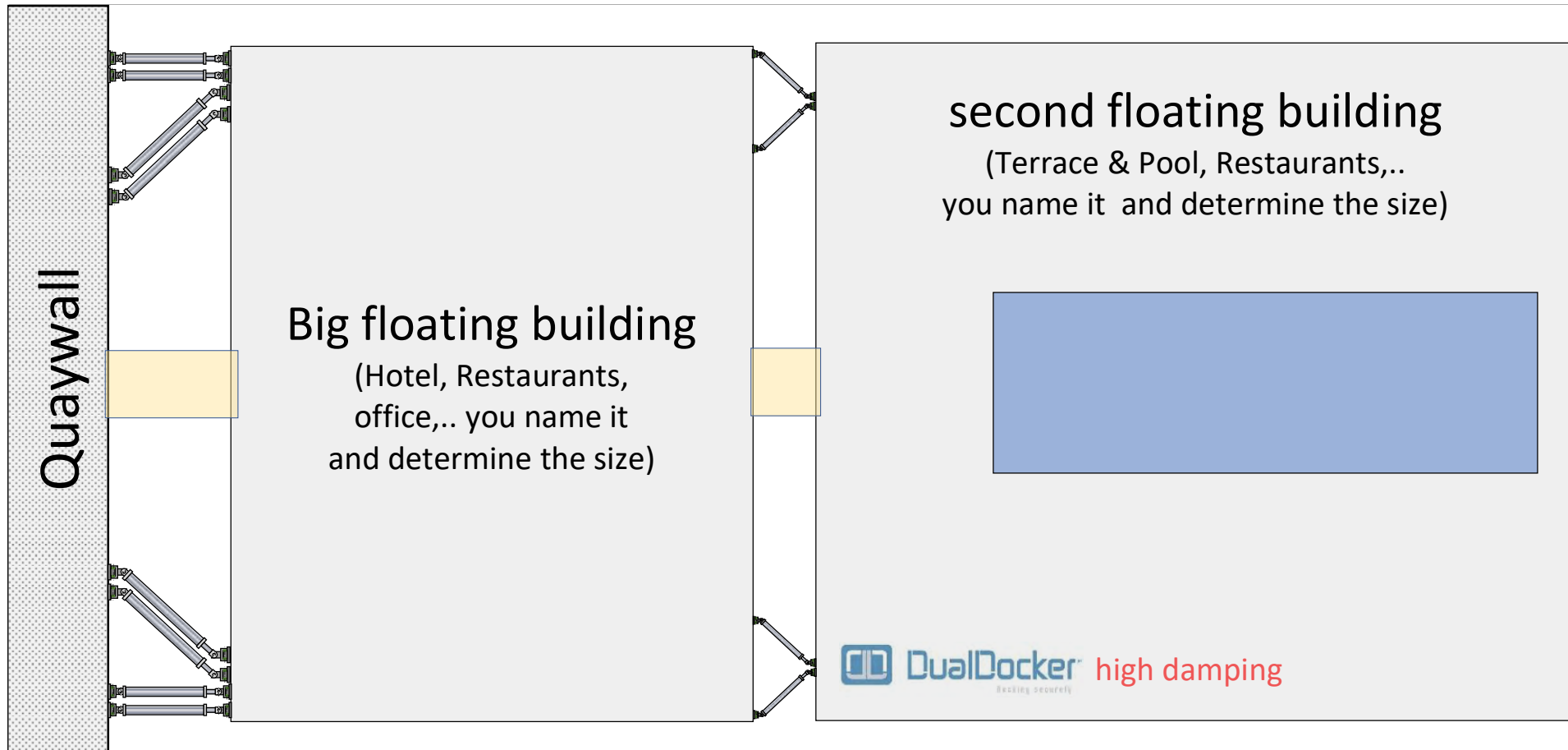
Attachment to the quay wall:

- no impact on the river-, lake- or seabed

DualDocker quantity & dimensions depend on local conditions.



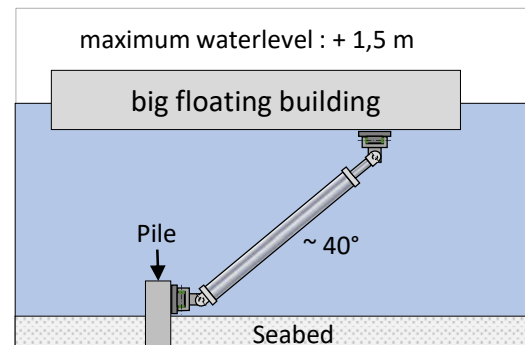
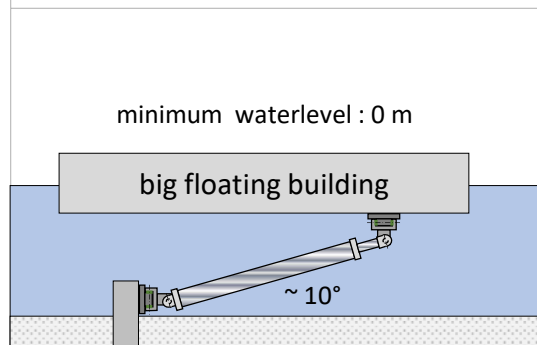
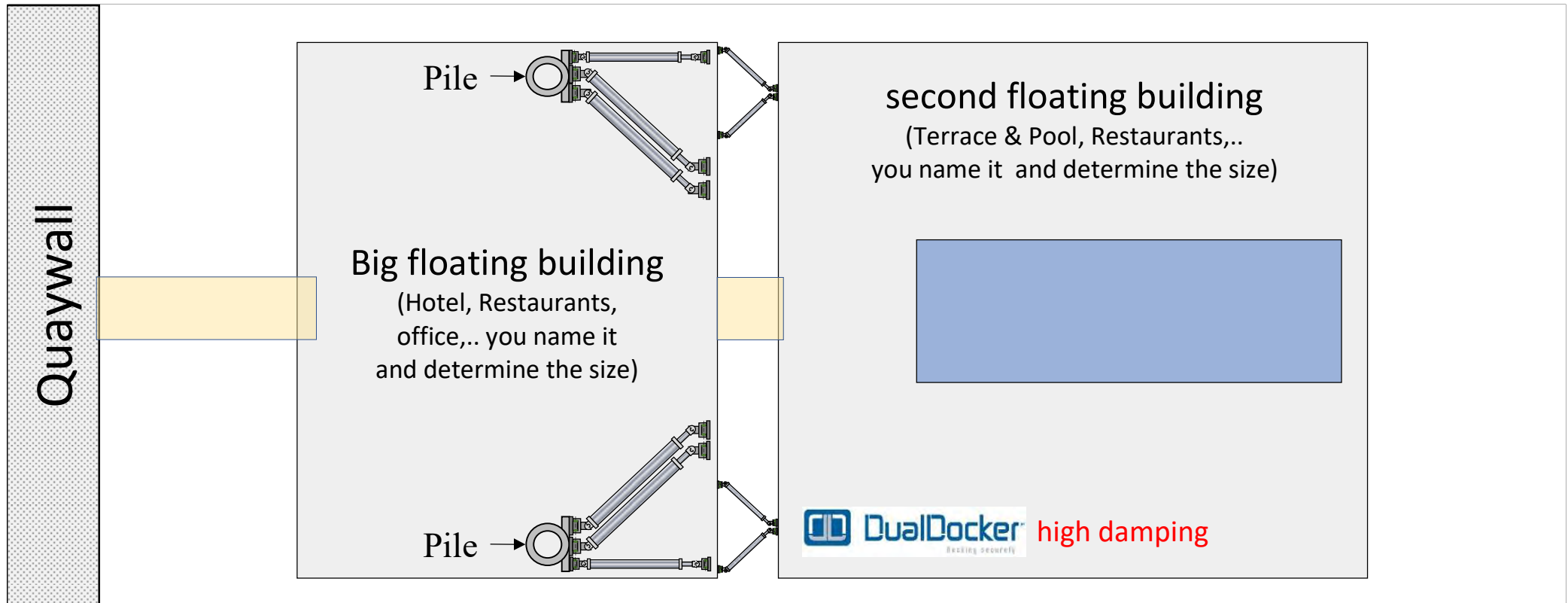
max. Tide:	max. Wind:	max. Current:	sign. Wave:	Break water:
1,5 m	35 m/s	1,0 m/s	0,7 m	No



DualDocker USP:

- DualDocker is free of play at any water level and highly damped
- incredibly stable position in wind & waves
- best possible safety in storms and waves
- **no impact on the river-, lake- or seabed**

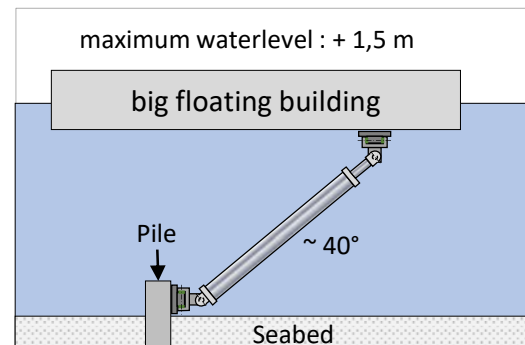
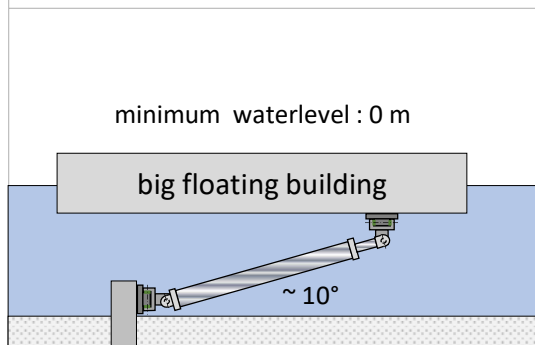
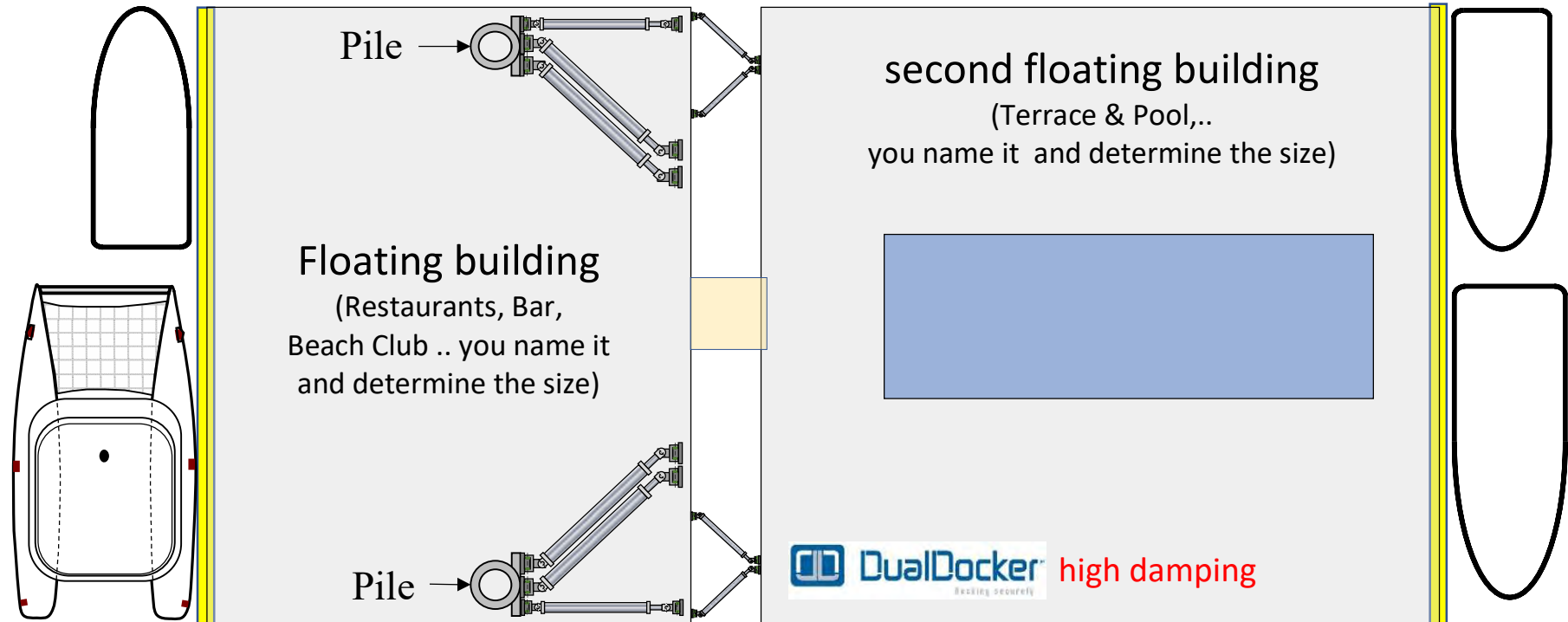
max. Tide:	max. Wind:	max. Current:	sign. Wave:	Break water:
1,5 m	35 m/s	1,0 m/s	0,7 m	No



DualDocker USP:

- The DualDocker's are attached underneath the big floating building.
- DualDocker's are backlash-free regardless of the water level and highly damped.
- incredibly calm location in wind and waves
- best possible safety in a storm with high waves.

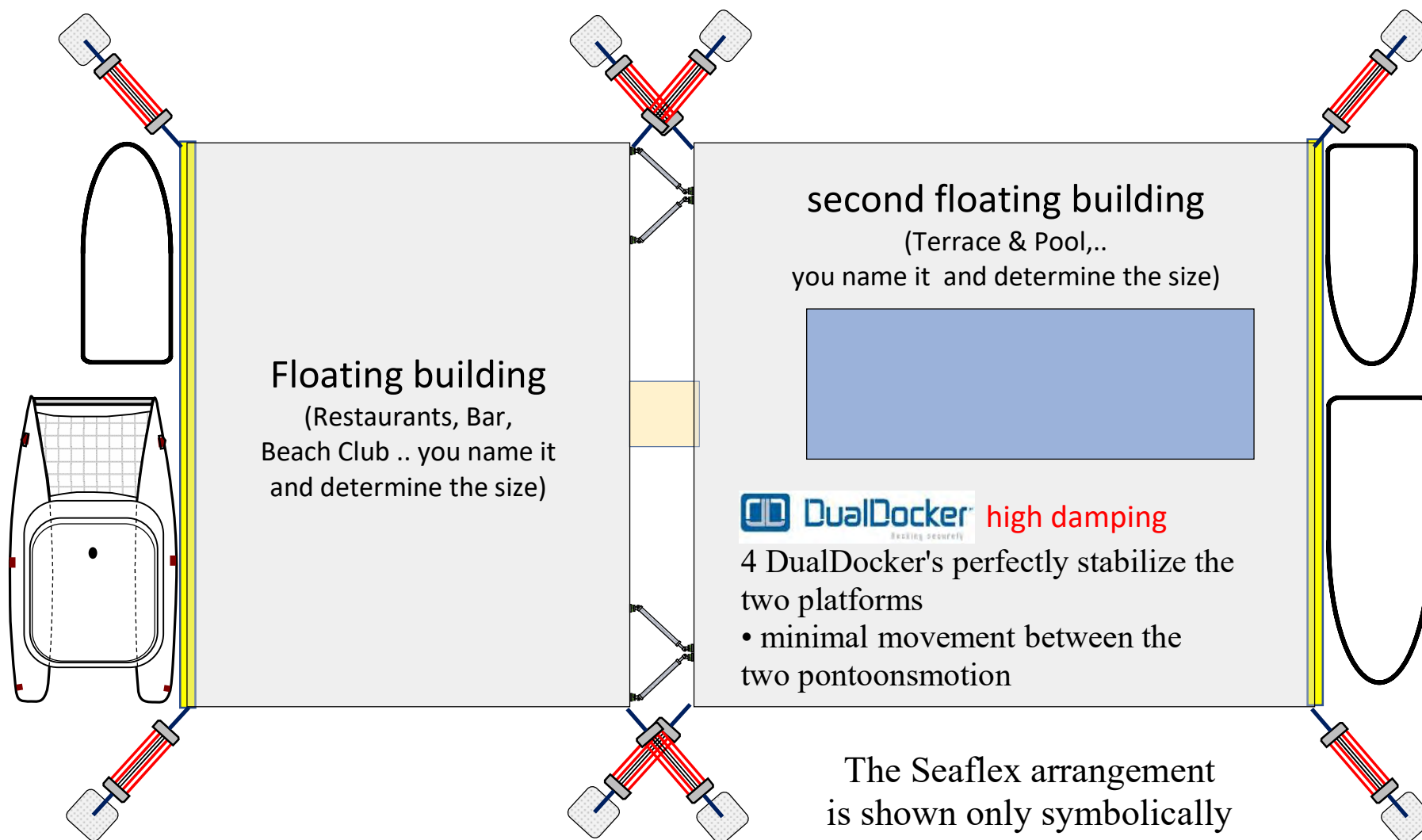
max. Tide:	max. Wind:	max. Current:	sign. Wave:	Break water:
1,5 m	35 m/s	1,0 m/s	0,7 m	No



DualDocker USP:

- The DualDocker's are attached underneath the big floating building.
- DualDocker's are backlash-free regardless of the water level and highly damped.
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max. Tide:	max. Wind:	max. Current:	sign. Wave:	Break water:
1,5 m	35 m/s	1,0 m/s	0,7 m	No



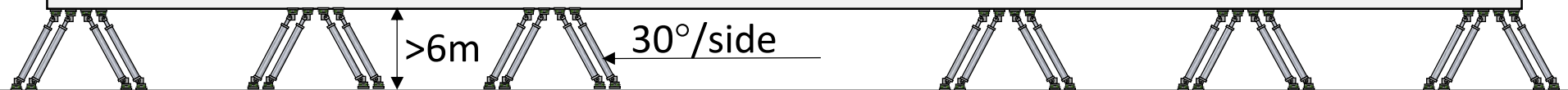
DualDocker USP for big buildings:

- DualDocker is free of play at any water level and highly damped
- incredibly stable position in wind & waves
- the high damping significantly reduces the holding forces
- this means the best possible safety in storms and waves
- **no impact on the river-, lake- or seabed**

Big floating building

100 x 20 x 15 m, 6 500 t.

(Hotel, office, residential building, ... you name it and determine the size)



The quantity and dimensions of the DualDocker's depend on the size of the floating building and on local weather conditions.

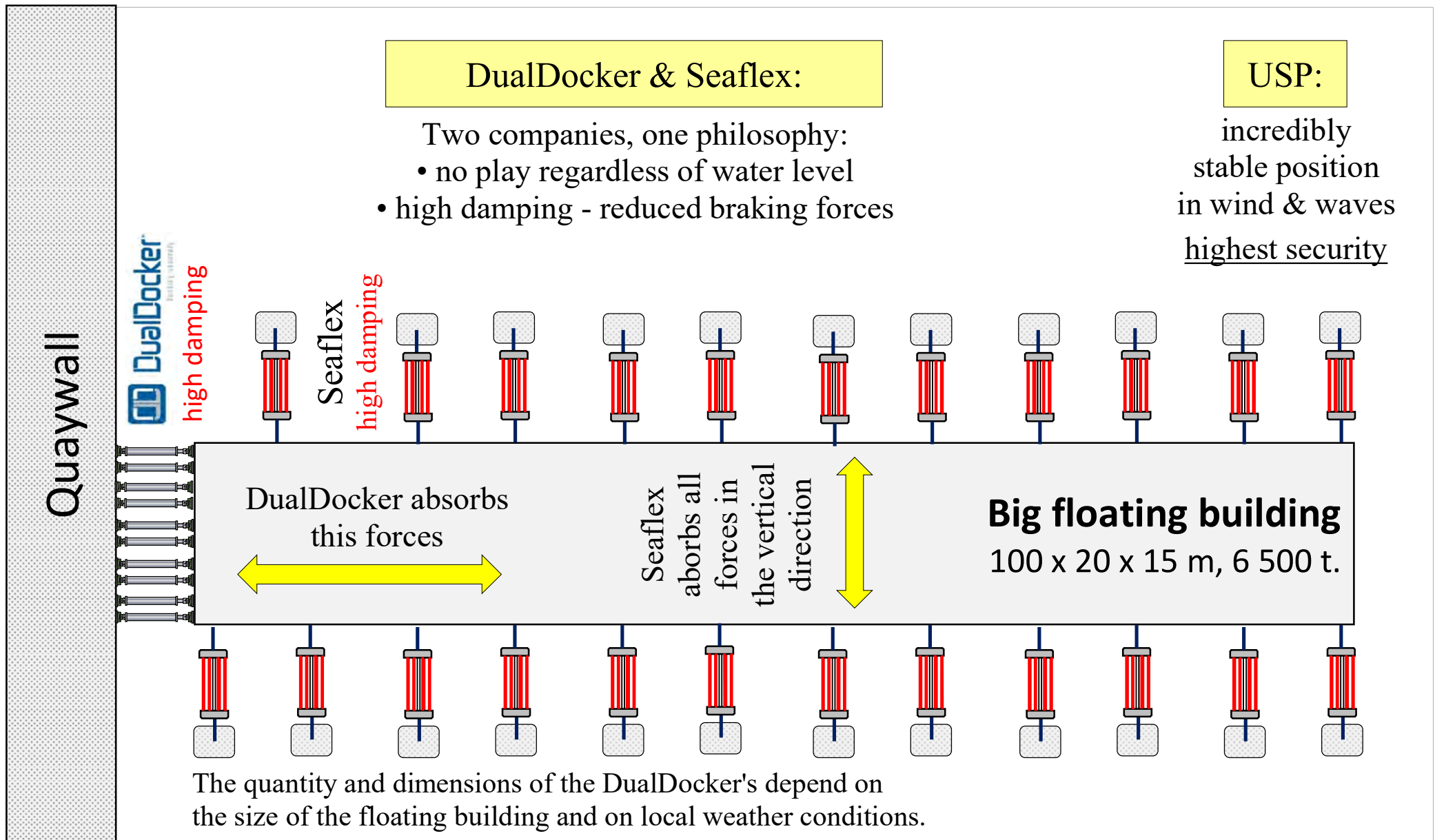
max. Tide:	max. Wind:	max. Current:	sign. Wave:	Break water:
3,0 m	40 m/s	1,5 m/s	1,0 m	No

DualDocker & Seaflex:

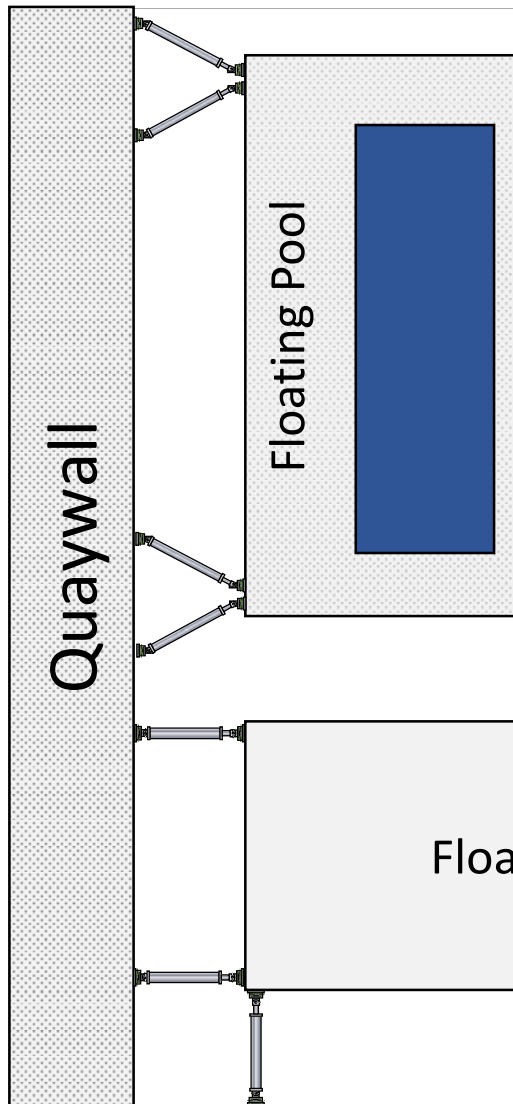
- Two companies, one philosophy:
- no play regardless of water level
 - high damping - reduced braking forces

USP:

incredibly
stable position
in wind & waves
highest security



max. Tide:	max. Wind:	max. Current:	sign. Wave:	Break water:
3,0 m	40 m/s	1,5 m/s	1,0 m	No

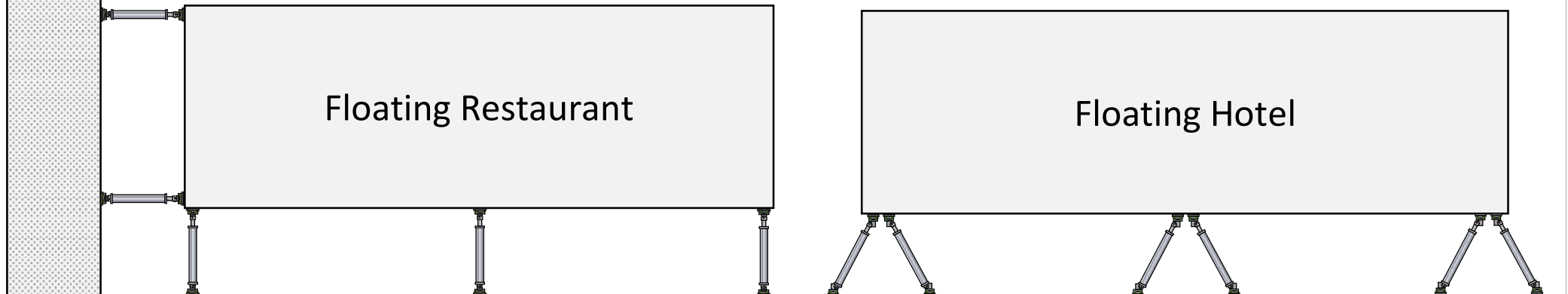


DualDocker USP for floating Pool, Restaurant & Hotel:

- The very calm location in terms of wind & waves is of utmost importance
- Piles always have a few centimeters of play. This leads to unpleasant jerking in choppy waters. DualDocker systems are backlash-free. This means a high level of living comfort.
- The floating buildings will move max. 20 cm in strong wind & waves
- In a storm & high waves, the movement will be a maximum of 30 cm

WHY?

DualDocker is free of play at any water level, is very strong and highly damped.



Quaywall

The quantity and dimensions of the DualDocker's depend on the size of the floating building and on local weather conditions.

Drift ice

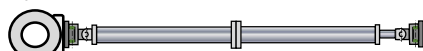
high flow velocity →

flotsam

• **ultra high damping**

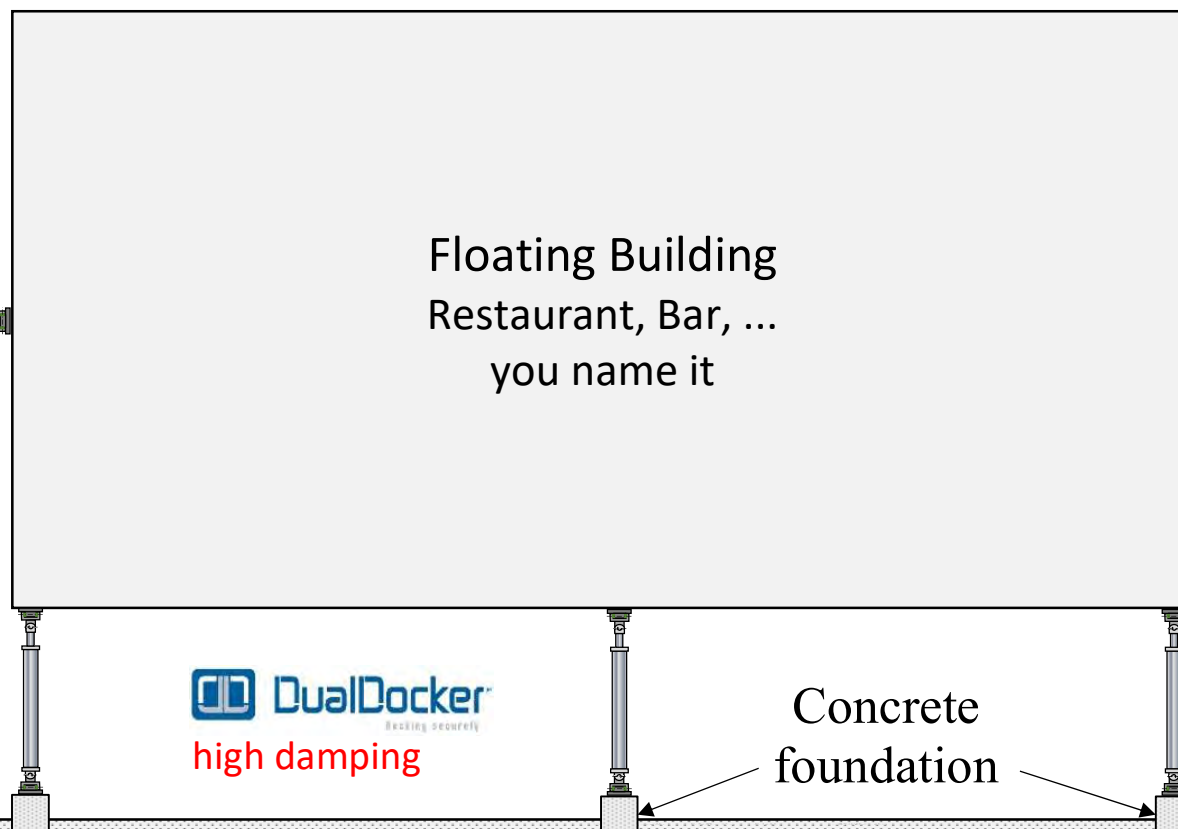
up to $\pm 1\,000$ mm

• significant reduction
of braking forces at
high dynamic forces



Pile

Drift ice



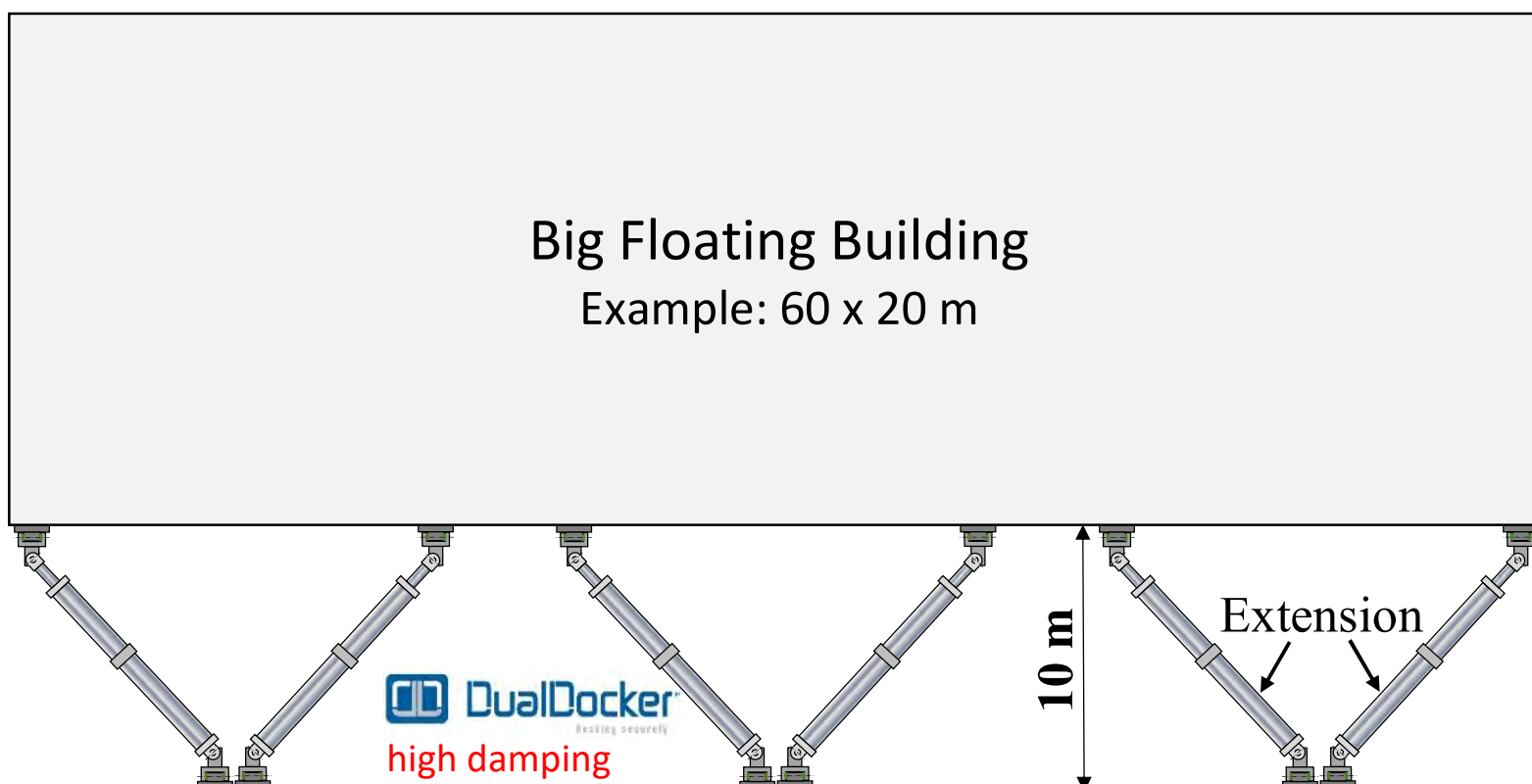
DualDocker
Docking securely
high damping

Concrete
foundation

Quay wall

The quantity and dimensions of the DualDocker's depend on the size of the floating building and on local weather conditions.

Height designation:	minimal water level	normal highest level	maximum flood level
Water level [m] :	0,0 m	3,0 m	10,0 m
Horizontal DualDocker angle:	- 30 °	- 11 °	+ 45 °



The quantity and dimensions of the DualDocker's depend on the size of the floating building and on local weather conditions.

Quaywall

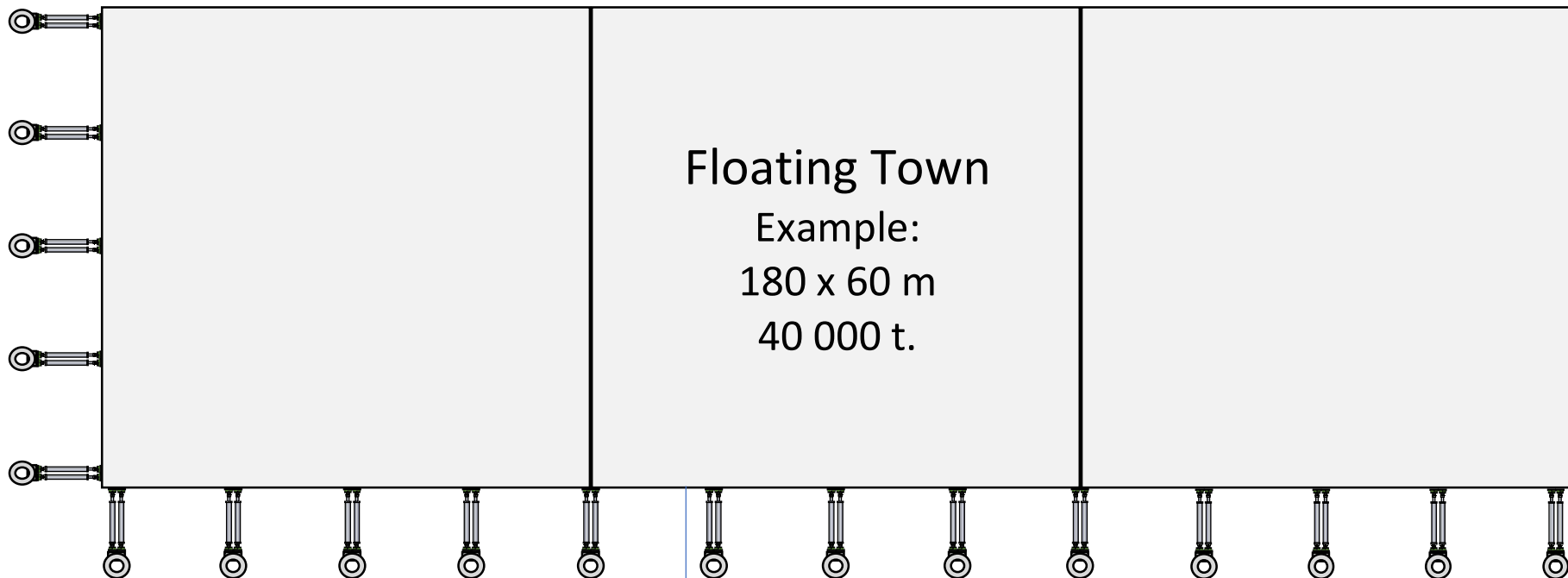
max. Tide:	max. Wind:	max. Current:	sign. Wave:	Break water:
3,0 m	35 m/s	1,5 m/s	1,0 m	No

The floating town in open water:

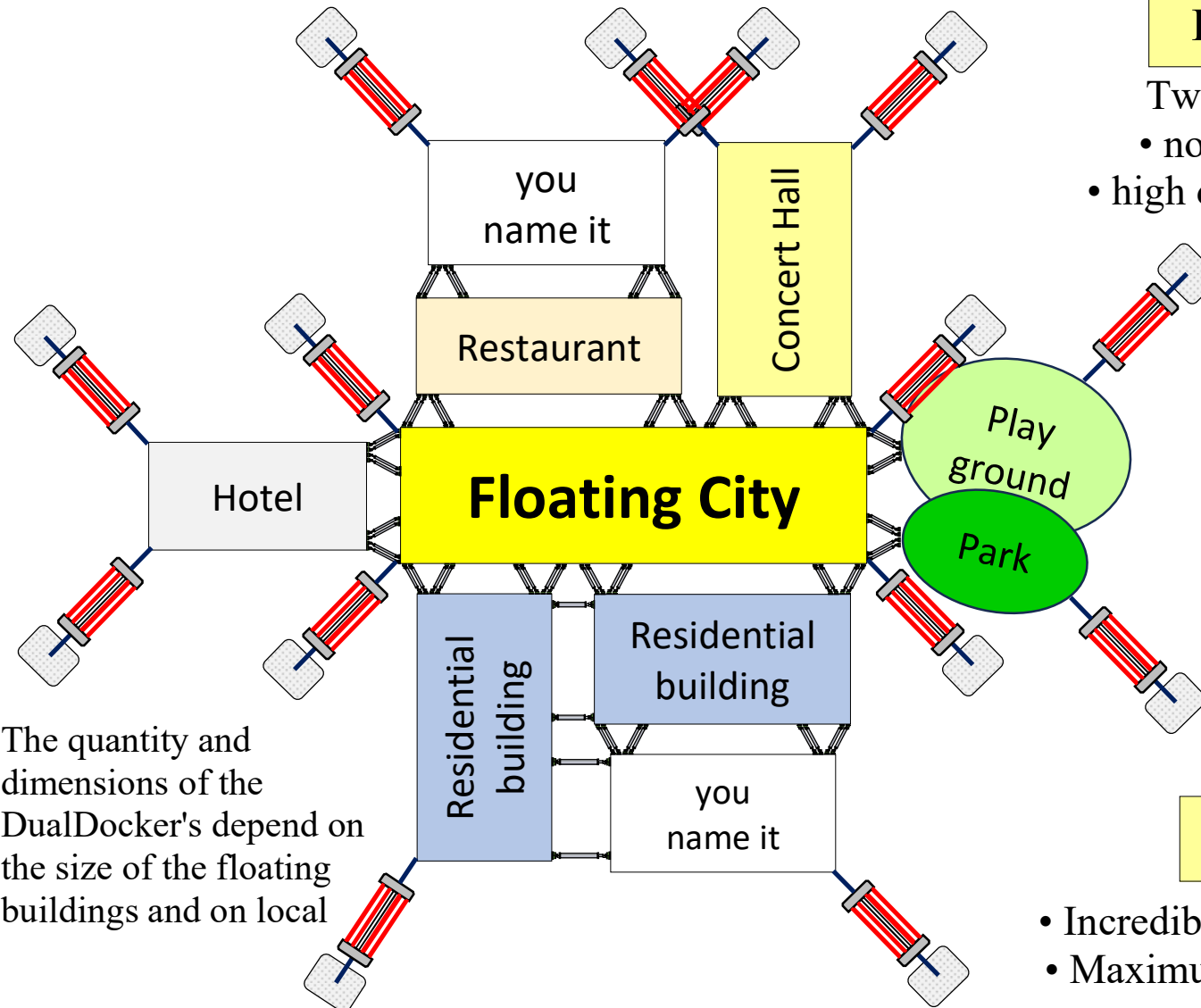
- Attachment with DualDocker's on piles.
- DualDocker systems are highly damped and significantly reduce holding forces.
- The piles then redirect these reduced forces

USP for the floating town :

- incredibly calm location
- best possible safety in storms
- highest safety during earthquakes



The quantity and dimensions of the DualDocker's depend on the size of the floating building and on local weather conditions.



The quantity and dimensions of the DualDocker's depend on the size of the floating buildings and on local

DualDocker & Seaflex:

- Two companies, one philosophy:
- no play regardless of water level
 - high damping - reduced braking forces



DualDocker stabilizes the individual floating buildings, forming a compact unit.

Seaflex high damping

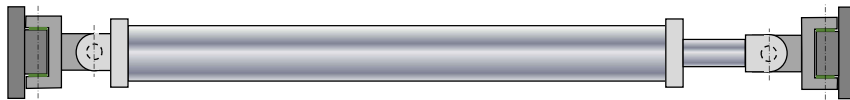
Seaflex secures the compact floating city unit to the seabed

USP for the floating city:

- Incredibly calm location in wind and waves
- Maximum safety in storms and high waves

Standard DualDock:

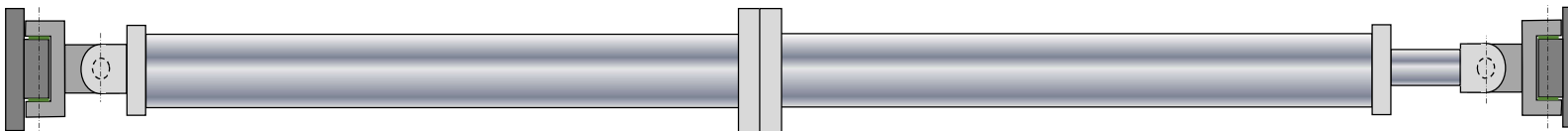
- high damping up to ± 600 mm



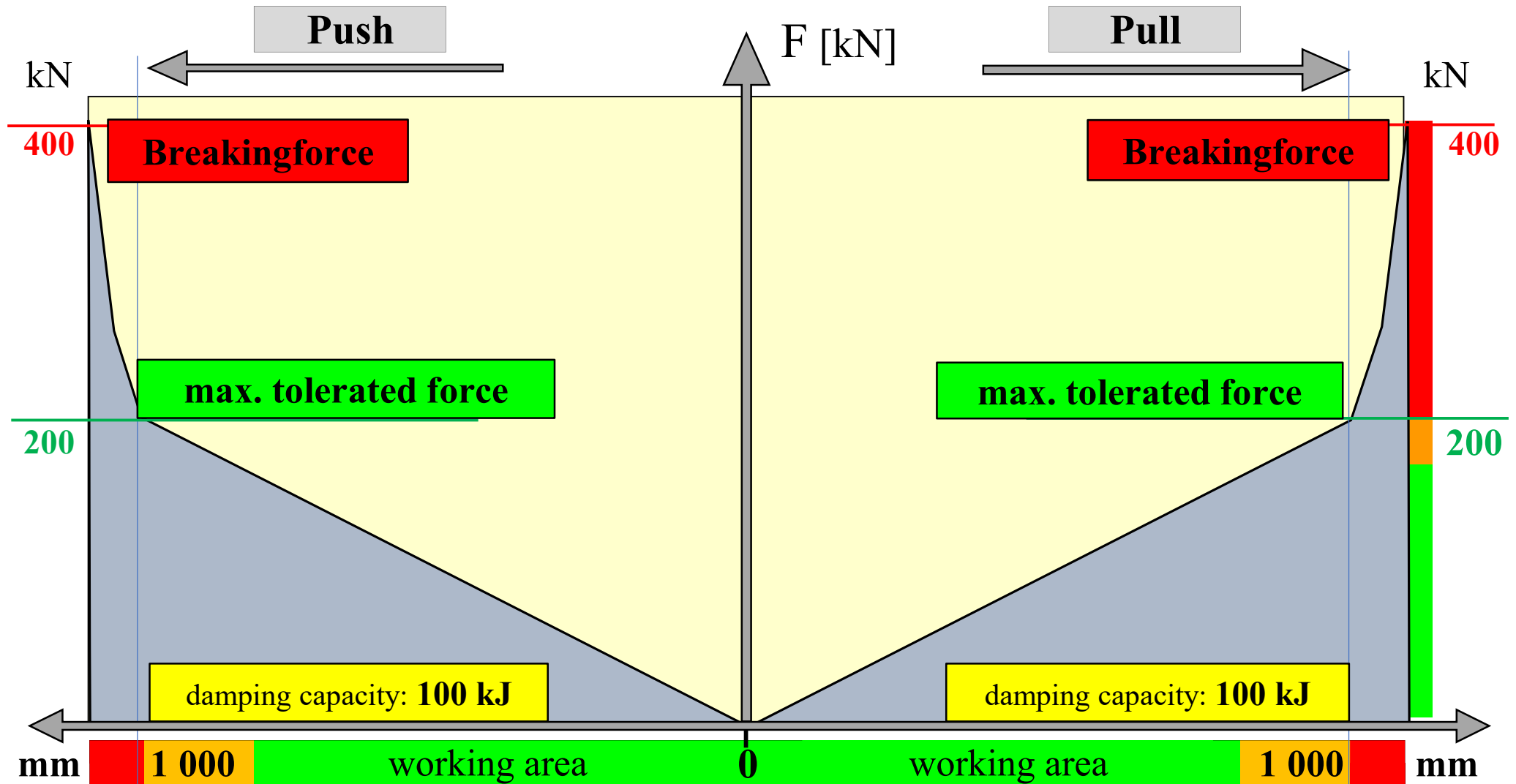
NEW !!!

DualDock with "ultra high" damping:

- ultra high damping up to $\pm 1\,000$ mm
- significant reduction of braking forces at high dynamic forces
- Braking force = kinetic energy divided by braking distance

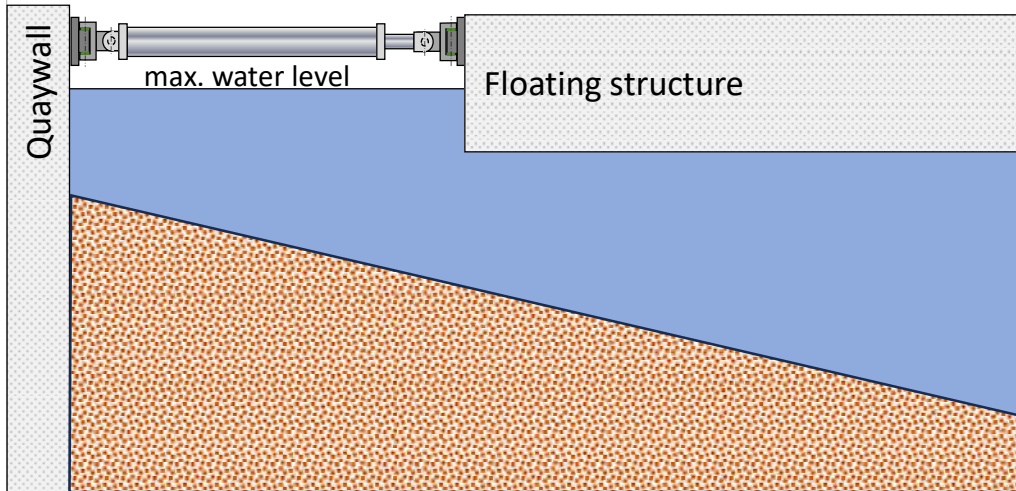


Pull & push: Load displacement diagram (force-distance)

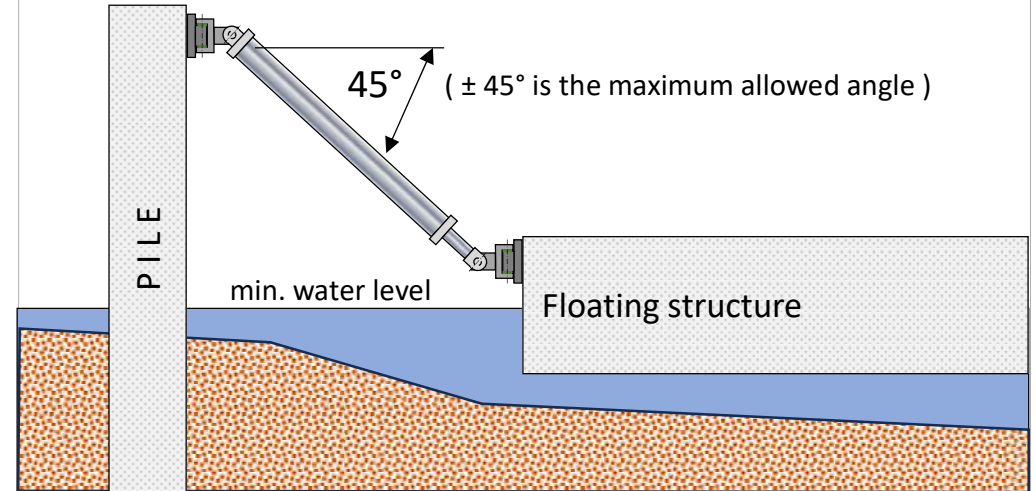


Attachment Types - 1

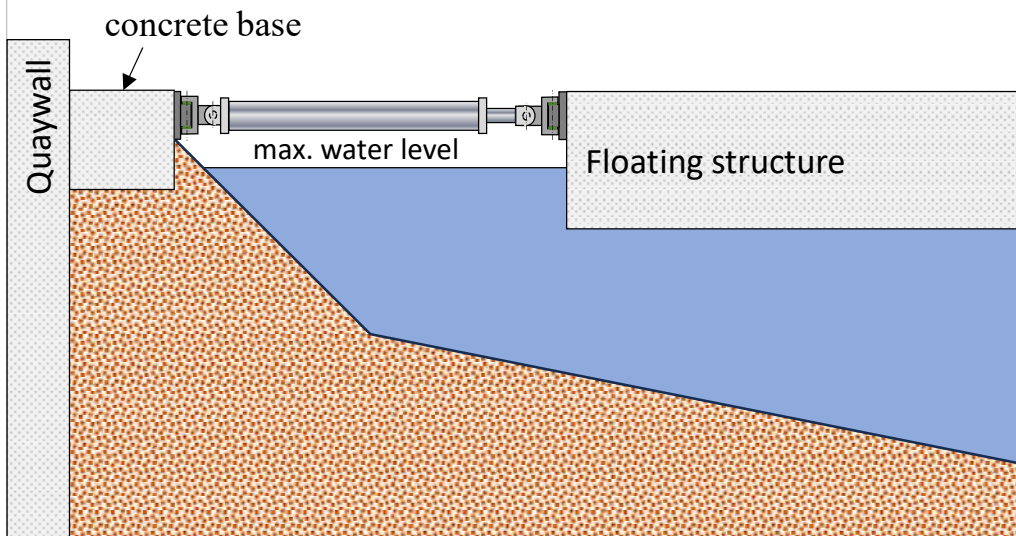
Type of attachment: " Quay wall " DualDocker always "over" waterline



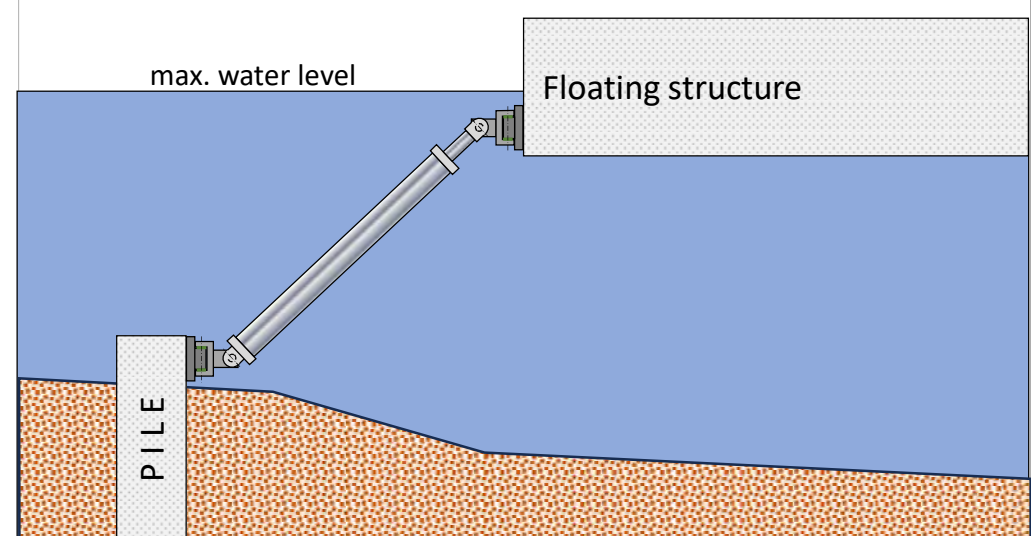
Type of attachment: " P i l e s " DualDocker always "over" waterline



Attachment: " Concrete Base " DualDocker always "over" waterline

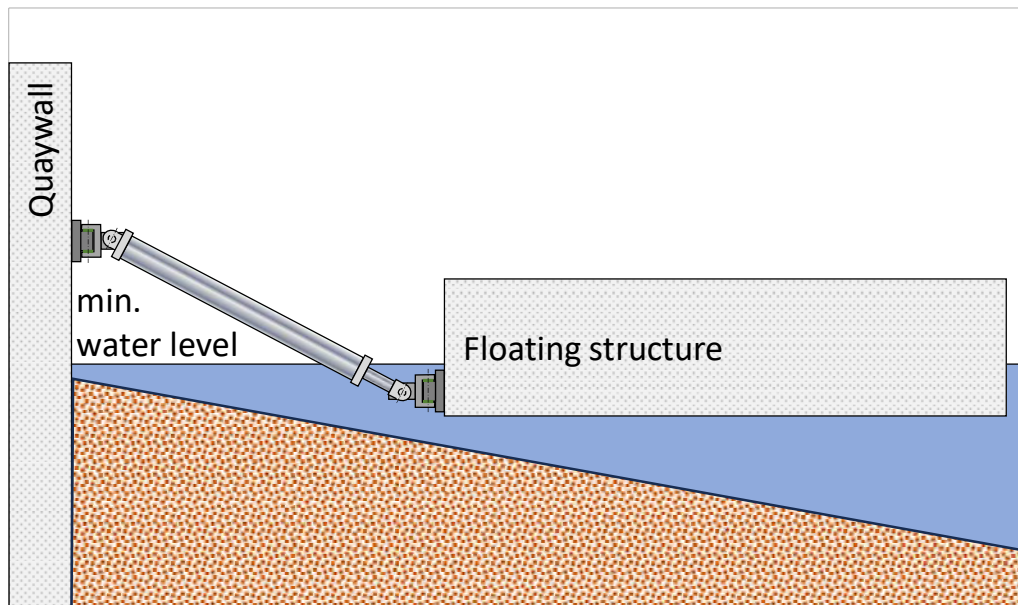
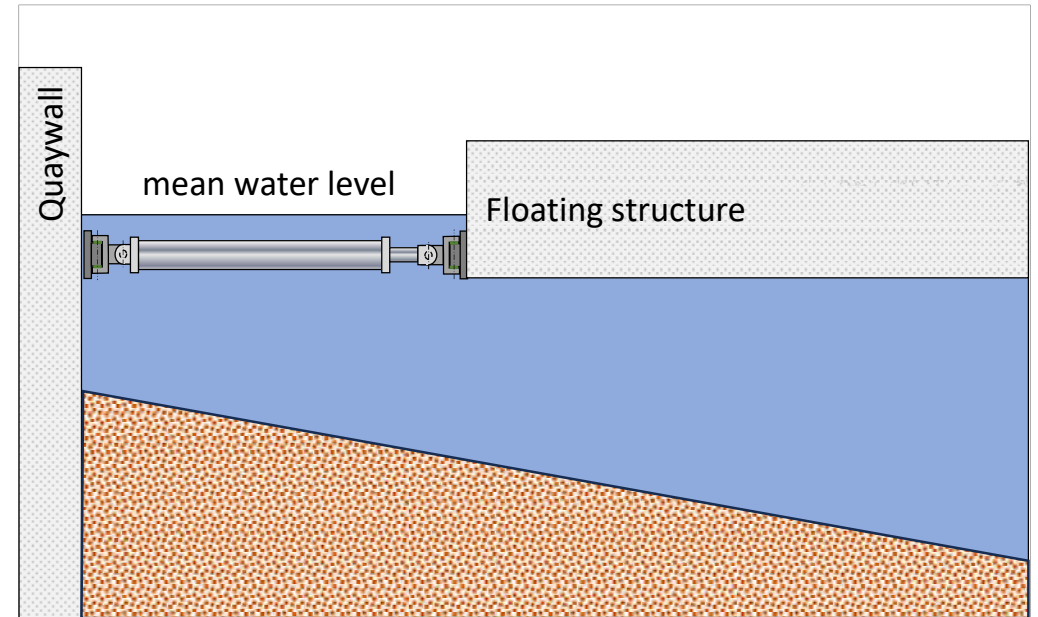
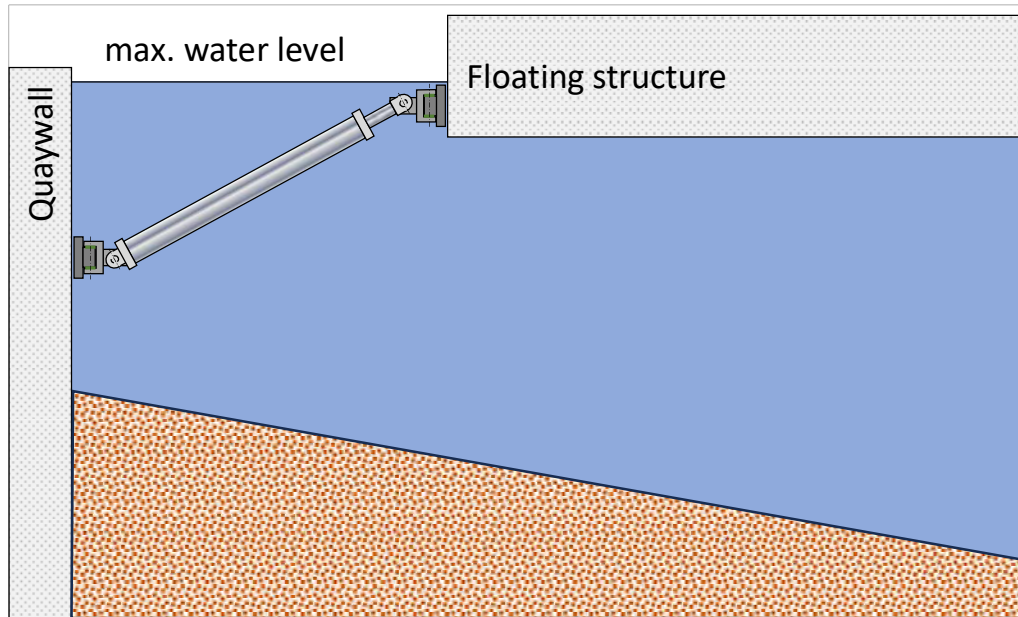


Type of attachment: " P i l e s " DualDocker always "under" waterline



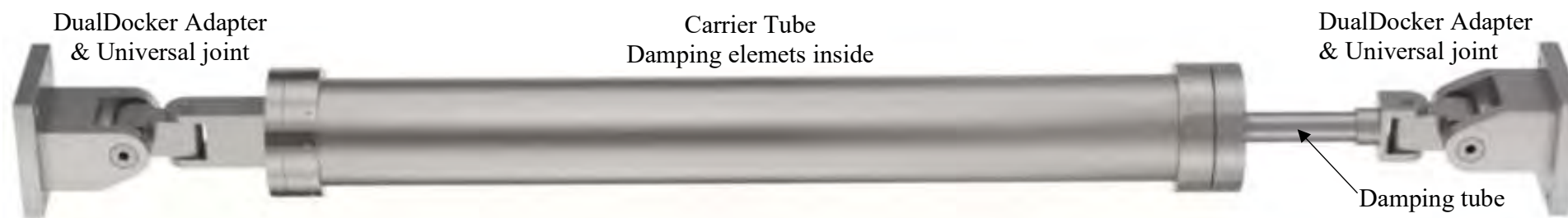
Attachment Types - 2

Interaction: above waterline & underwater



In case of interaction between DualDocker above the waterline and underwater, we strongly recommend the **"high-quality hard-anodizing"** coating.

- the completely DualDocker must be „hard anodized (insight & oversight) and double-sealed“.
- Layer thickness 50 µm
- All contact points are carefully and completely sealed for optimal protection against saltwater.



DualDocker Models: 20 kN, 50 kN, 100 kN, 150 kN, 200 kN, 250 kN

Length: 1 - 8 m; Extensions are available

DualDocker Technology: DualDocker systems are highly damped and free of play (regardless of the water level)

- **Comfort:** Incredibly calm location in 'wind & waves'
- **Reduction of holding forces:** the high damping absorbs the kinetic energy, reducing holding forces by up to 80%!
- **Safety in heavy storms:** This enormous reduction in holding forces means the best possible safety in storms and high waves.
- **Seismic safety:** Studies have confirmed that DualDocker offers maximum safety in earthquakes (due to the high damping and freedom from play).
- **Safety in icy conditions:** Ice pressure and drifting ice cause extremely high static and, above all, dynamic forces.
Ultra highly damped DualDockers absorb the kinetic energy and thus reduce the holding forces to a minimum.
- **Fully mechanical:** no energy source needed (no hydraulics, no oil, no gas, no pneumatics !)
- **Environmentally friendly:** No interference with the underwater world
- **Maintenance-free:** We recommend "cleaning & inspection" as required

Material overview: All materials are saltwater and UV resistant

Type of material	Specification	DualDocker warranty	Expected lifetime	Wear & tear	Material fatigue
Alu-alloy anodised	6060 / T66 & 6082 / T6	2 years	10 years + (*)	low risk	very low risk
Damping elements	Polyurethane	2 years	15 years + (*)	very low risk	low risk
Slide guides	synthetic material	2 years	10 years + (**)	low risk	very low risk
Bolts etc	stainless steel 1.4571	2 years	15 years + (*)	very low risk	very low risk

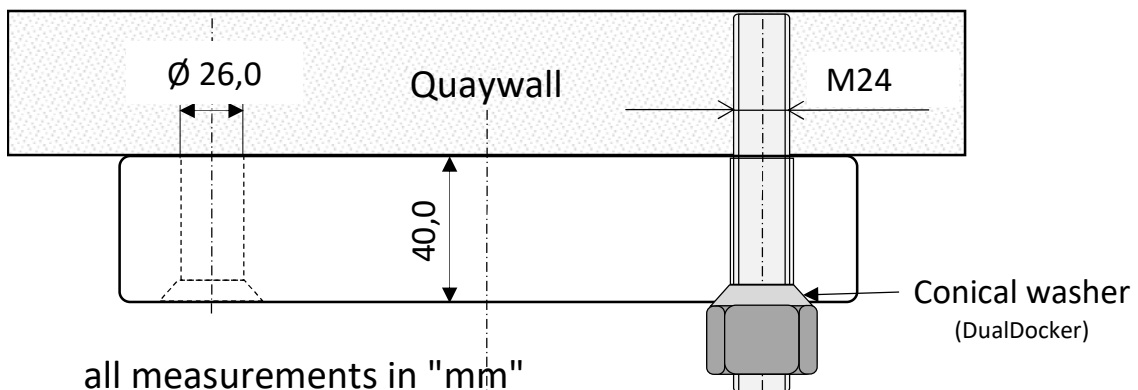
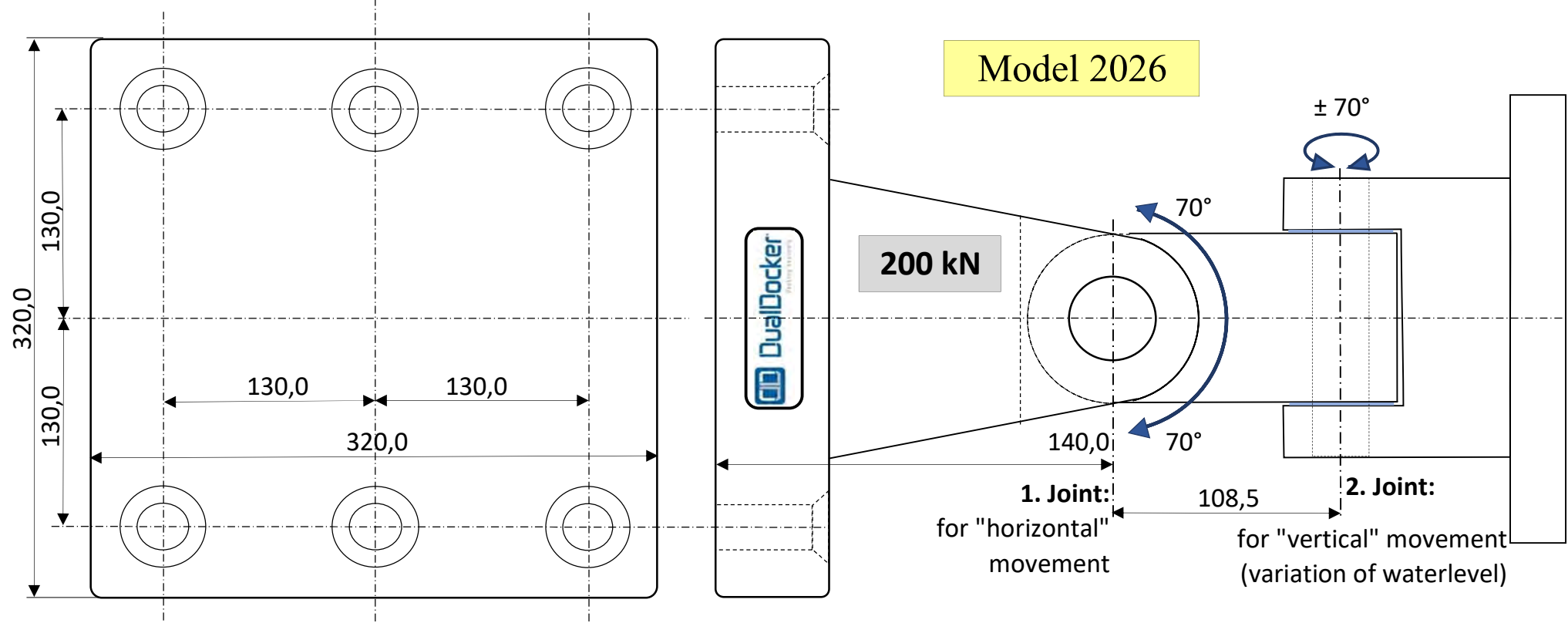
Remarks (*): Depending on local conditions. Requirement: No surface damages; regular maintenance

Remarks (**): Slide guides are subject to 'wear and tear': Life time depends on local conditions and level of strain.

Installation Info:

Install DualDocker either above or below waterline if possible. Do not install the DualDocker's in the area of the waterline.

Changing conditions "saltwater - UV" is critical and can attack the surface. For such applications, we strongly recommend a "high-quality hard-anodized" coating.



Forces transmitted via DualDocker adapter into the pier/quay/pontoon:

Model - 2021	tolerated forces:	breaking forces:
Pull forces :	200 kN	400 kN
Push forces :	200 kN	400 kN
Side forces :	200 kN	400 kN