



### Compaction

Densification of granular material (compaction) is often required in areas subject to vibrations such as earthquake loading or traffic movement. Compaction is executed during the construction phase of a project to avoid post construction settlements or liquefaction (the loss of strength of the granular material) during for example an earthquake. It improves the load-settlement behavior of the material, making it suitable to reduce foundation settlements of structures.

All compaction methods make use of the same principle: introducing high local vibrations into the soil body. These high vibrations densify the granular material when larger than the interparticle resistance. As the vibration energy reduces with the distance to the vibration source, the effect of compaction is bound to physical limits depending on various parameters. In order to have a solution for each case, Cofra has three compaction techniques within its portfolio.

### Our solutions

- Cofra Roller Compaction (CRC)
- Cofra Dynamic Compaction (CDC)
- Dynamic Compaction (DC)
- Cofra Vibro Compaction (CVC)



GROUND IMPROVEMENT SEGMENT	PEAT	SOFT CLAY	CLAY	STIFF CLAY	SILT	SILTY SAND/ SANDY SILT	SAND	GRAVEL	
	CONSOLIDATION								
	ELEMENTS								
	COMPACTION								





**Cofra**

Cofra is an innovative contractor specializing in ground improvement techniques and membrane constructions. Innovation, professionalism and customer focus are embedded in our DNA. Thanks to our high level of experience and expertise we can provide in house the entire process from design to implementation. All based on the Cofra ‘Way of working’ in which quality and safety are key values. Cofra, as well as sister company Geotechnics, joined in 2006 Royal Boskalis Westminster, leading dredging and marine experts. Cofra’s markets are infrastructure, dredging, mining, construction, waste management, flood protection, environmental and warehousing.

For further information about the consolidation segment and other Cofra techniques see our website

[www.cofra.com](http://www.cofra.com)

SEGMENT	CONSOLIDATION	COMPACTION	ELEMENTS	BARRIERS
<b>PURPOSE</b>	<ul style="list-style-type: none"> <li>- Accelerate settlement</li> <li>- Increase strength of subsoil</li> <li>- Reduce residual settlement</li> </ul>	<ul style="list-style-type: none"> <li>- Increase density</li> <li>- Increase bearing capacity</li> <li>- Increase safety against liquefaction</li> </ul>	<ul style="list-style-type: none"> <li>- Transfer load to bearing strata</li> <li>- Increase bearing capacity</li> <li>- Increase safety against liquefaction</li> <li>- Reduce residual settlements</li> </ul>	<ul style="list-style-type: none"> <li>- Obstruct waterflow</li> <li>- Obstruct sediment erosion</li> <li>- Non-structural elements</li> <li>- Prevent spreading pollution</li> </ul>
<b>ACTIVITIES</b>	<ul style="list-style-type: none"> <li>- Prefabricated Vertical Drains (PVD)</li> <li>- Vacuum Consolidation (BeauDrain)</li> </ul>	<ul style="list-style-type: none"> <li>- Cofra high impact Roller Compaction (CRC)</li> <li>- Cofra Dynamic Compaction (CDC)</li> <li>- Dynamic Compaction (DC)</li> <li>- Cofra Vibro Compaction (CVC)</li> </ul>	<ul style="list-style-type: none"> <li>- Geotextile Encased Columns (GEC)</li> <li>- Cofra Stone Columns (CSC)</li> <li>- Dynamic Replacement (DR)</li> <li>- Concrete columns (AuGeo)</li> </ul>	<ul style="list-style-type: none"> <li>- HDPE vertical barrier (up to 30m depth) (Geolock)</li> <li>- Vertical Sand Barrier (anti piping) (VZG)</li> <li>- Trenched MIP walls</li> <li>- Trenched liner barrier (up to 5m depth)</li> <li>- Liners</li> </ul>
<b>MARKETS</b>	<ul style="list-style-type: none"> <li>- Infra (roads, railroads, airports, ports)</li> <li>- Dredging (Reclamations, breakwaters)</li> <li>- Mining (Tailing ponds)</li> <li>- Construction (Housing and industrial estates)</li> </ul>	<ul style="list-style-type: none"> <li>- Infra (roads, railroads, airports, ports)</li> <li>- Dredging (Reclamations, breakwaters)</li> <li>- Mining (roads, remediation)</li> <li>- Construction (Housing and industrial estates)</li> </ul>	<ul style="list-style-type: none"> <li>- Infra (roads, railroads, airports, ports)</li> <li>- Dredging (Reclamations, breakwaters)</li> <li>- Construction (Housing and industrial estates)</li> </ul>	<ul style="list-style-type: none"> <li>- Waste management (landfills)</li> <li>- Mining (Tailing ponds)</li> <li>- Infra (Aqueducts)</li> <li>- Flood protection (anti piping)</li> <li>- Environmental</li> </ul>