

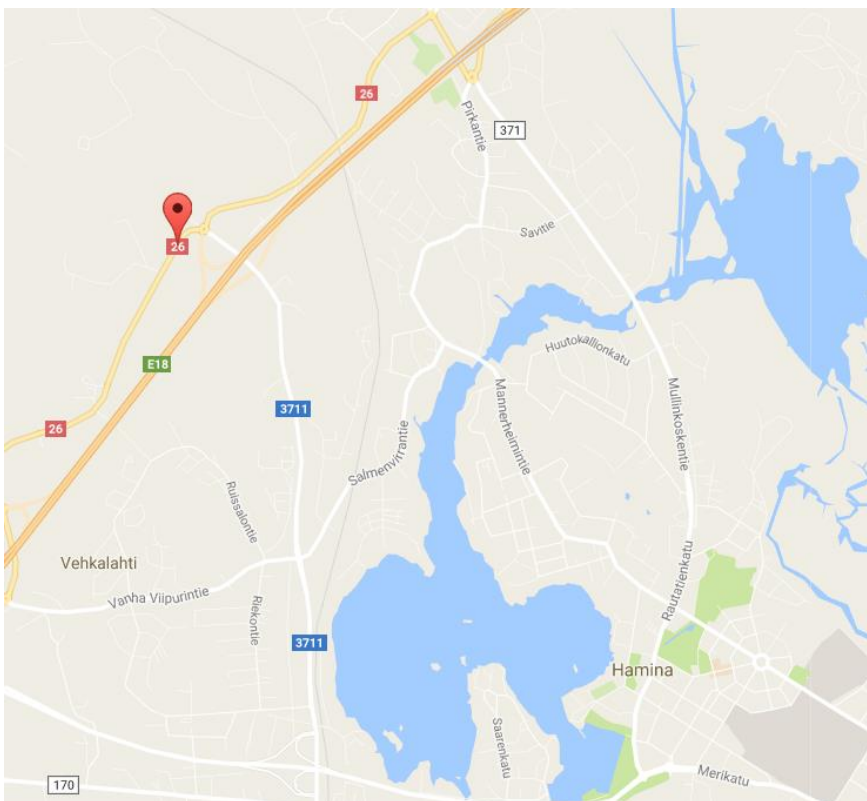
HAMINA D-STATION

Salmenkylä, Hamina, Finland
 Fuel station subgrade reinforcement

Key words:

access road, parking field, mass stabilization

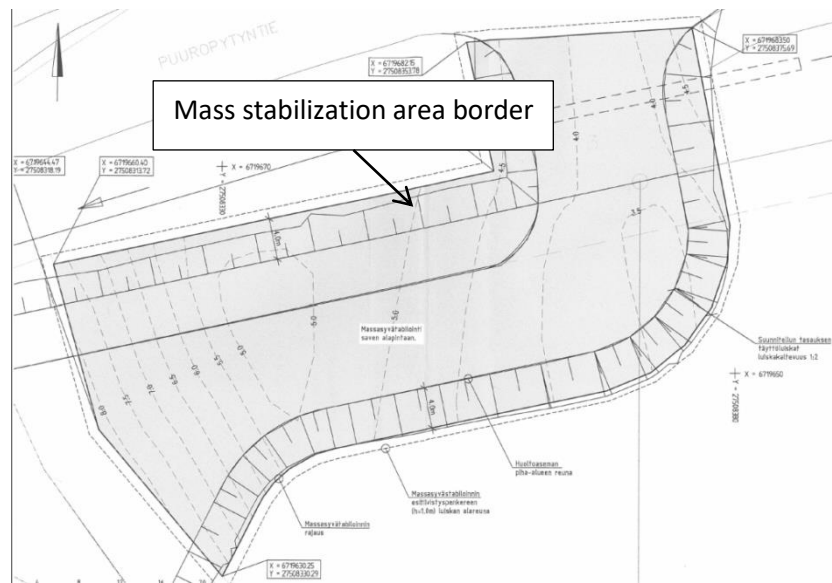
General information	The subgrade improvement of the fuel station in Hamina Salmenkylä was carried out with mass stabilization. The soil type in project area was mixture of poor quality clay and mud and the construction with traditional methods e.g. pile slab, mass replacement of light weight fill would have been unpractical or too expensive solutions.
Advantages of stabilization	With mass stabilization poor quality mass excavation and replacement or other more expensive solutions were avoided.
Project timetable	2014
Volumes and dimensions	Stabilized volume was approximately 7400 m ³ .
Geology and stabilized material	Clay and mud layer 0 - 7 meters, sand, glacial till and bed rock under clay layer
Target strength of the stabilized material	Shear strength 40 kPa
Binder(s)	Nordkalk GTC 75 kg/m ³ (gypsum + lime (waste) + cement). The portion of recycled material is 40 to 45 %. The CO ₂ -emission of GTC is clearly lower than emission of Lime+Cement -binder.
Laboratory and field tests	Quality control after hardening time with column penetrometer, the target shear strength was achieved.
Other	Target shear strength was easily achieved.
Long-term follow-up and lessons learned	-
Sources	Forsman, J, (2015), <i>Mass stabilization in infrastructure and environmental construction</i> , Mass stabilization conference, Lahti.
Stabilization contractor	Lemminkäinen Oy



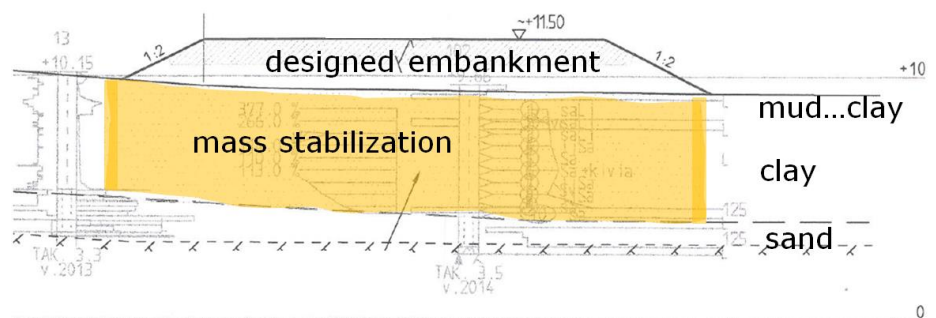
Situation before mass stabilization at project area



Mass stabilization plans



Cross section of the mass stabilized layer under embankment



Quality control sounding
results (column penetrom-
eter)

