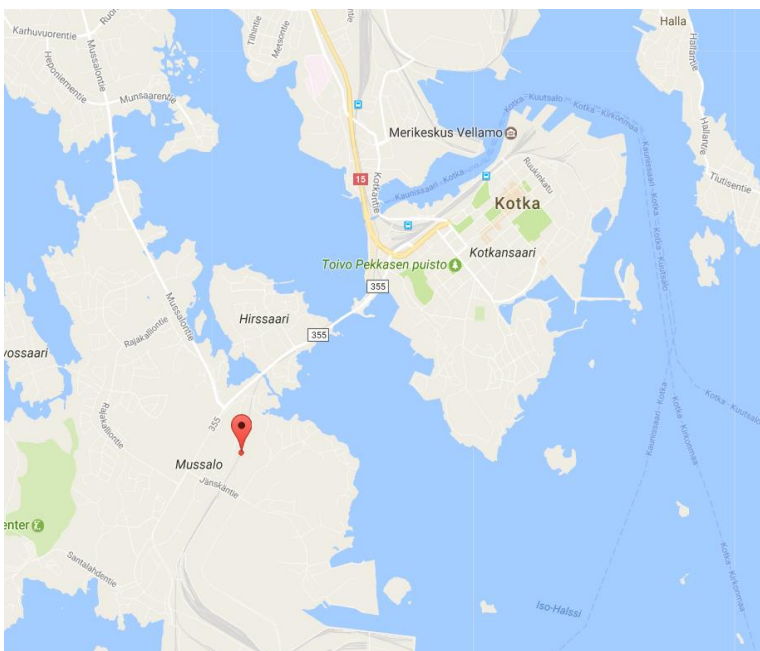


CASE KOTOLAHTI

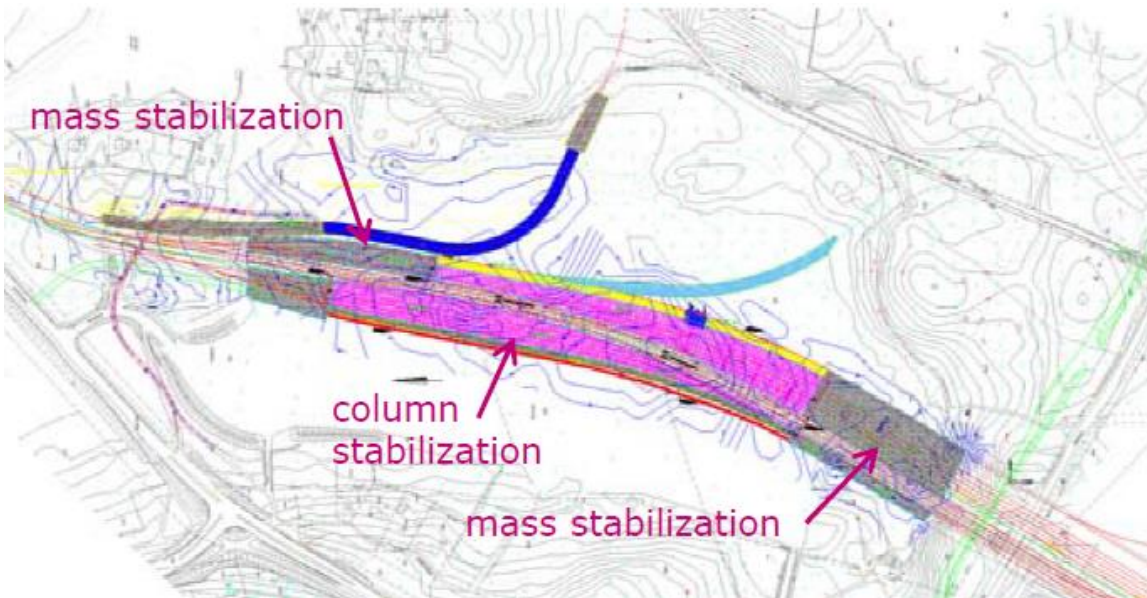
KOTOLAHTI	Key words:
Kotolahti, Kotka, Finland Railway yard	Railway yard, mass stabilization, column stabilization
General information	In Kotolahti a new railway yard was built next to old railway track. The subgrade improvement was done with column stabilization and some parts of the yard were mass stabilized.
Advantages of stabilization	Column stabilization offered a cost effective alternative for traditional pile slab. Mass stabilization enabled avoiding of mass exchange of soft soils at the project area. Large and difficult landfilling of soft surplus soils was avoided with mass stabilization of soft soils.
Project timetable	2009-2010
Volumes and dimensions	Mass stabilization 20 000 m ³ , column stabilization 190 000 m
Geology and stabilized material	Clay, gyttja, peat
Target strength of the stabilized material	Target shear strength 150 kPa in column stabilization and ≈50 kPa in mass stabilization.
Binder(s)	Mass stabilization: the amount of cement is not public (contractors own design), Column stabilization: lime and cement (30:70), binder amounts 120-160 kg/m ³ . In mass stabilization only cement.
Laboratory and field tests	Supplementary geotechnical tests in the laboratory and compressive strength tests for different binder materials. Quality control soundings of deep stabilized layer.
Other	Woven high strength georeinforcement was installed over columns as a basal reinforcement to move the embankment loads to columns with large c/c-spacing.
Long-term follow-up and lessons learned	Old railway track was constructed on mass replacement and in the construction of mass replacement some boulders were moved beside the replacement area. Those boulders were sunk to soft soil causing some problems to deep stabilization beside the railway track.
Sources	Forsman, J,(2015), <i>Mass stabilization in infrastructure and environmental construction</i> , Mass stabilization conference, Lahti
Stabilization contractor	Mass stabilization N&N Oy and column stabilization YIT Oy



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Mass and column stabilization in Kotolahti Railway yard in 2009



Mass and column stabilization areas in Kotolahti railway yard (up) and cross section of mass stabilized area beside old railway track (down).

