

Nine years before we opened in the UK our Dutch RoadCem technology was successfully used on a difficult site in Great Yarmouth. The attached report details the the problems and the solutions that RoadCem achieved.



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## RC.20020301.GB.0009

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Country	United Kingdom
Location	Great Yarmouth
Year	2002
Product	RoadCem
Project size	Approx. 100,000 m <sup>2</sup>

### Description

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The project is executed with a local British company on behalf of TESCO Superstores at Great Yarmouth, Norfolk, England. The principal contractor was RG Carter Limited. Site investigation showed 300-600mm topsoil and made ground, overlaying weak superficial deposits up to 17 meters of local Breydon formation, overlying Norfolk Crag. The topsoil was found to be highly organic, with rootlets or made ground consisting generally silty sand, with gravel, cobbles, quartz, wood, ash, rubble and also peaty and soft clayey materials. Shear strength test in the upper organic layers gave results in a range from 8-21 kN/m<sup>2</sup> and standard penetration test "N" values were between 1 and 3. Static Cone Penetration Tests also confirmed the weak nature of the Breydon Formation.

The groundwater table varied, dependent upon tidal flows and localized water level control measures, but was found to be consistently very close to ground level - i.e. within 500mm-600mm.

A part of the process of undertaking preliminary site investigations, trials were conducted (September 2001) to assess the potential use for various forms of ground/soils improvement techniques, to determine the most appropriate method to apply to the infrastructure construction of floor slabs to building areas, and to external pavements, car park and hard standings.

Although soil stabilization, using traditional and standard UK binders (lime, cement) performed better than other ground improvement techniques, it was noted that the under laying soils, and the close to surface groundwater table were sensitive to vibration and impact loading, with a high rate of initial settlement. Once loading was removed, there was only minimal elastic rebound recorded, indicating that the settlement which occurred was largely non-recoverable. The requirement for part of the site to be constructed with pavements which would adopted by the Local Authority, and would therefore require a heavier, stronger and deeper construction formation created a further design complication, increasing the stresses on the soft under laying soils, with an inevitability that there would be likely to be significant settlement of the complete road. Also Environmental assessment was conducted. A suite of analysis was undertaken in accordance with ICRL 59/83 - Assessment of Contaminated land. It was recorded that the majority of determinants tested on solids were significantly below threshold values, with exceptions being recorded in the case of Copper, Zinc and Lead. As result of observations made during site investigation and soil trialing works. PowerCem based RoadCem and binder was the chosen and unique solution for a revolutionary single layer system with excellent physically / mechanically characteristics in a matrix of only 200mm and bridges at certain tension exe points, with just 1,4kg RoadCem and 140 kg OPC. The highly organically and heterogeneous soil was turned into a monolithically non frost susceptible material. The solution with a high Cost Saving aspect and decreased construction time. Profit on Profit on Profit!

