



Technische Universität München

TUM · MPA BAU · Division Building Materials
Baumbachstr. 7 · 81245 Munich · Germany

European Federation of Foundation Contractors
Ciaran Jennings
Devonshire House Business Centre
29-31 Elmfield Road
Bromley, Kent BR1 1LT, United Kingdom



Centre for Building Materials
(cbm)

Chair of Materials Science
and Testing (MST)

Prof. Dr.-Ing.
Christoph Gehlen

Baumbachstraße 7
81245 Munich
Germany

Tel +49.89.289.27061
Fax +49.89.289.27064

Progress report

No.: 20-F-0107

Subject: R&D project „Rheology and Workability Testing of
Deep Foundation Concrete“

Client: European Federation of Foundation Contractors (EFFC)

**Project
Manager:** Dr.-Ing. Dirk Lowke

**Person
Responsible:** Dipl.-Ing. Thomas Kränkel

WG: Concrete technology

Date: 03/11/15

Our sign
Tk
thomas.kraenkel@tum.de

This report contains:
6 text pages (incl. cover page)

1. Work package 1

State of technology: workability and rheology of Deep Foundation Concretes – tests on construction site

1.1 Bored piles and Diaphragm-Wall – Franki Grondtechnieken B.V. (Franki)

The first concrete testing on construction site was carried out on October, 20th at “Nieuw Lekkerland” near Dordrecht (Netherlands). Franki Grondtechnieken B.V. (Franki) is performing maintenance work on a dike there. Two concrete types were used for this purpose, a concrete type for bored piles and a concrete type for D-Wall elements, see Figure 1. According to Franki both concretes consist of the same mix design, just the designated consistency differs from each other. The concrete for the bored piles was designed in the consistency class F4, the concrete for the D-Wall was in F5.

Both concretes were fully tested regarding their initial dynamic and thixotropic properties as well as their flow retention during the first two hours after placement. Both concretes showed a higher flowability than expected, demonstrated by, for example, lower values for the dynamic yield stress in the rheometer tests and higher values for the slump flow diameter in the slump tests. Furthermore, the concretes showed good flow retention ability up to two hours at rest.



Figure 1: Excavation of a D-Wall element at Nieuw Lekkerland

1.2 D-Wall - Volker Staal en Funderingen B.V. (VSF)

The second concrete testing was carried out on October, 21th at the concrete plant of Lekbeton in Groot-Ammers, also near Dordrecht (Netherlands). Lekbeton was the supplier of the concrete, ordered by VSF in order to build up several D-Wall elements at a near construction site. The concrete testing could not be carried out on site since the concreting was already completed in September. Although it was planned in the research project, to do the concrete testing directly on site, this concrete should nevertheless be incorporated because it is a very special mix design having an extremely high flowability (designed with a con-

