



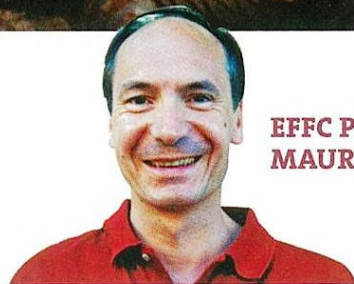
# HEATHROW'S T2B CHALLENGE

FOUNDATIONS PREPARE  
THE WAY FOR NEW  
TERMINAL p10

EUROPEAN PROJECTS p06

MESSINA CROSSING p18

BRIDGE CONSTRUCTION p24



**EFFC PRESIDENT  
MAURICE BOTTIAU p03**



# EUROPEAN FOUNDATIONS

AUTUMN 2011  
MAGAZINE OF THE EFFC



# COMMENT

## REAL COMMUNICATION IS HARD WITH SO MUCH TECHNOLOGY

This is the last time that I will be penning the comment for EF as I am stepping down as president of the EFFC. I am handing over the reins to a safe pair of hands in the form of Trevi managing director Stefano Trevisani.

I believe that regular meetings is one of the strengths of the EFFC. These gatherings allow the European ground engineering industry to get together regularly and talk about the issues and challenges that face our sector. One such challenge is the evolution of communication methods.

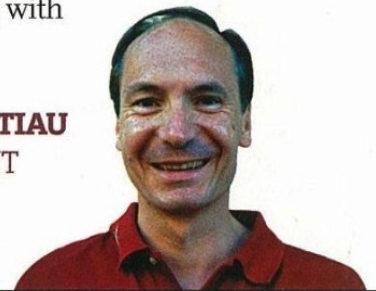
In today's world it is easy for designs to change rapidly on projects both large and small, resulting in multiple versions of documents and communicating and transmitting relevant information between all stakeholders is not easy. Some of the projects I have been involved in recently have used an intranet platform to allow all the stakeholders to have access to the latest information. While this does improve flow of information, physical drawings still need to be produced for use on site.

People – especially our younger engineers – also seem less keen to pick up the phone and talk or arrange a meeting, preferring to fire off emails to each other. Talking allows people to discuss, question and resolve problems very easily, whereas poorly phrased emails can often be misunderstood or misinterpreted.

There is still nothing better than meeting face to face to build up relationships as well as to resolve problems and find new solutions. Modern video or phone conferencing technology means distance and travel costs need not necessarily be a barrier to discussion. We need to try to improve the use of such communication methods, in our companies and also in organisations such as EFFC.

My last message as president, certainly for our younger collaborators, is to keep communicating with each other!

**MAURICE BOTTIAU**  
EFFC PRESIDENT



**EUROPEAN FOUNDATIONS**



foundationworld.org.uk

**EUROPEAN FOUNDATIONS**

PUBLISHED BY  
Emap Inform Ltd  
First Floor  
Greater London House  
Hampstead Road  
London NW1 7EJ

**EFFC**

Forum Court  
83 Copers Cope Rd  
Beckenham  
Kent BR3 1NR  
+44 (0)20 7728 4543

**EDITOR**

Claire Symes  
+44 (0)20 7728 4550  
claire.symes@emap.com

**PRODUCTION**

Andy Bolton  
+44 (0)20 7728 4537  
andy.bolton@emap.com

**ADVERTISING**

Victoria Williams  
+44 (0)20 7728 4524  
victoria.williams@emap.com

The European Federation of Foundation Contractors aims to promote the common interests of members of the federation, to improve standards of workmanship and to maintain high standards of technical competence, safety and innovation. It is also a primary objective of the EFFC to express the point of view of members to the European Commission, national governments, consulting and civil engineers, architects, contractors, professional institutions, public authorities and other interested parties in member countries or abroad.



## Vidin, Bulgaria to Calafat, Romania: Danube Bridge II

More than 9,000m of precast piles and 15,000m of cast insitu piles were needed to construct a new bridge across the River Danube between Vidin in Bulgaria and Calafat in Romania. The structure forms a key link in the Pan European Corridor IV and includes 17km of new roads and railways on the Bulgarian approach and 5km of new road and rail links on the Romanian side.

**MAIN CONTRACTOR FCC CONSTRUCCIONES**  
**GEOTECHNICAL CONTRACTOR TERRATEST GROUP**  
**CLIENT BULGARIAN TRANSPORT MINISTRY**  
**CONTRACT VALUE €8M**  
**OVERALL COST €600M**

Main contractor FCC Construcciones started work on the project in May 2008 and commissioned Terratest to build the foundation for the bridge. The main bridge is 1.73km with a main span of 180m over the navigable channel.



According to Terratest, the piers are founded on a unique pile cap with 24 piles supporting each pier.

The location of the site within the flood zone of the Danube where water levels can vary by up to 7m meant that the plan of

works had to include an emergency evacuation procedure that could be implemented at three hours' notice.

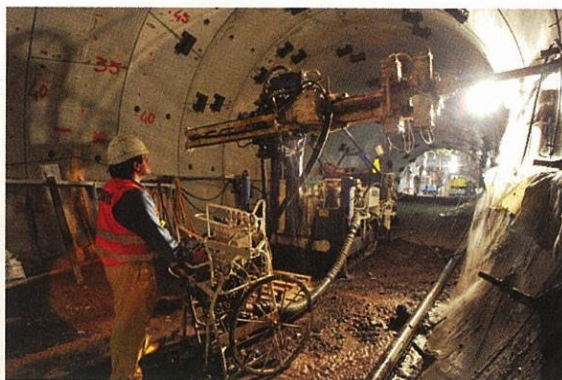
The combination of the minimum tolerances required for pile location – less than 3.5% of the diameter – and the soil conditions were also testing. Location issues were overcome by using a continuous measure control system, but with 24m to 27m long permanent casings installed with a vibration hammer in a sandy soil, progressive hardening effects were induced by the installation method, which made achieving the required lengths challenging.

## Rome, Italy: Rome Metro – Line C

**MAIN CONTRACTOR METRO C**  
**GEOTECHNICAL CONTRACTOR TREVI**  
**CLIENT METROPOLITANE DI ROMA**  
**DESIGNER/CONSULTANT METRO C, ROCKSOIL AND SGS**

Ground freezing techniques have helped to fast track construction of the new Line C on Rome's Metro system. The city's new 25.5km rail link will run through the city from north-west to south-east with 30 stations along the route.

According to Trevi, the peculiar geological characteristics, including silt and clay mixed with sand and gravel, required a preliminary evaluation of the consolidation parameters using a soil freezing technique. The poor consistency



of the water-saturated soil at the construction level 30m below ground ruled out widening the TBM tunnel using conventional methods without any soil improvement.

Trevi chose ground freezing because it avoids the need for excavation and ground improvement by gradually lowering the temperature of the ground water until it freezes.

"The ice then binds the various soil components together, in order to increase the overall strength of the soil

layers and make them watertight," explains Trevi.

Rome's new Line C will be the city's first fully automated Metro system and will be opened in stages from 2014.



# Soilmec

innovation  
for durable  
solutions

CAP  
(Cased Augered Piles)  
technology

**soilmec**   
Drilling and Foundation Equipment



SR-100 CAP

Read this QR  
code with your smartphone.

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