

**EFFC Technical Working Group****15<sup>th</sup> Meeting, Brussels, April 16 & 17, 2015****Venue:** Office WTCB, Lozenberg 7, 1932 Sint-Stevens-Woluwe (Brussels)**Times**

Wed. 15.04.2015	19:00	welcome dinner
Thu. 16.04.2015	09:30 - 12:00	presentation Eiffage and WTCB
	12:00 - 13:00	lunch
	13:00 - 15:00	meeting general
	15:00 - 15:30	coffee break
	15:30 - 17:00	discussion session
	17:00 - 17:30	meeting general
	19:00	dinner
Fri. 17.04.2015	09:00 - 10:45	meeting
	10:45 - 11:15	coffee break
	11:15 - 13:00	meeting
	13:00 - 14:00	lunch
	14:00 - 15:00	available extra time for the meeting

**Present:**

Austria	T. Kirchmaier	TK	Keller Grundbau GmbH SEE
Belgium	M. Verlinden	MVE	Fondedile Eyfrage
Denmark	O. Møller	NOM	Per Aarsleff A/S
France	B. Leconte	BLE	Soletanche Bachy France
Germany	G. Dausch	GDA	Bilfinger & Berger
Germany	T. Garbers	TGA	Franki Grundbau GmbH
Italy	M. Sieppi	MSI	Trevi S.p.A.
Netherlands	B.J. Admiraal	BAD	Volker Staal en Funderingen
Poland	J. Rybak	JR	Wroclaw University of Technology
Portugal	I. Rosa	IRA	Teixeira Duarte Engenharia e Construções S.A.
Romania	L. Sata	SLL	Soletanche Bachy Fundatii (SBR)
Spain	G. Marote Ramos	GMR	Terratest.
Sweden	J. Romell	JRL	Skanska Sverige AB
Switzerland	D. Moore	MDU	Implenla Bau AG Spezialtiefbau
U.K.	D. Hard	DHA	Bachy Solétanche Ltd.

**Guests:**

Part time only

Belgium	N. Huybrechts	NH	WTCB
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**Regrets:**

Hungary	T. Kaltenbacher	TKB	Hidepitö Solétanche Bachy Foundation
Italy	F. Rettondini	VRE	VIPP Lavori Speciali.

### **Presentations on “Eiffage” & “Fondedile”**

Presentation by M Verlinden on the history and structure of the Eiffage group, followed by a presentation of the Fondedile organisation specifically.

This covered past, current and future projects. Of particular interest was the ongoing contract for trial panels installed as part of enabling works for the future Oosterweel Tunnel project and the work done investigating potential instability of diaphragm wall panels within uncompacted fill material.

### **Presentation “WTCB”**

Presentation by N Huybrechts of the WTCB. This covered the structure, goals and current research of the organisation.

## 1. **Opening**

- Members, attendance

N 001/15

Apologies received from Tamas Kaltenbacher (HU)

A quick introduction of themselves was made by the TWG members for the benefit of the new individuals present.

B Admiraal explained his intention to make some changes to the meeting compared to the previous years. This would relate to the use of discussion sessions for some topics plus rather than running through the minutes from the last EFFC AGM he would show the presentation given at that meeting about the EFFC structure and goals.

- Adoption of the Agenda

N 002/15

The agenda was adopted with the note that the finishing time for the first day would be brought forward from 1800 to 1715 if possible, to allow time to return to the hotels prior to being collected by the bus for the trip to the evening meal.

## 2. **Minutes 14th TWG meeting, Zürich, May 8<sup>th</sup> & 9<sup>th</sup> 2014**

N 022/14

Minutes of the previous meeting in 2014 tabled and accepted by the TWG without amendment.

BAD apologised for the delay in sending out the minutes of the previous meeting. He had sent them to the EFFC secretariat to issue but this had not been actioned. Upon being made aware of this he had sent them out himself.

There was then a discussion on how best to issue the documentation to the TWG in advance of the meetings. Previously all documents have been emailed to the members but it was suggested that some sort of web based site would be better suited. The question was whether this should be managed through the EFFC (using the members area of the website) or through the TWG themselves. BAD explained that the EFFC do not currently have the platform to do this. The action was left that BAD would look into setting up a Dropbox account where the TWG documents could be stored. This would mean some degree of regular housekeeping to ensure the documents were up to date, and that the account was not filled up but this was not seen as a significant problem to manage.

An additional observation was made that documents should have nomenclature for both CEN/TC 288 and TWG where appropriate.

### 3. **EFFC**

#### 3.1. EFFC, AGM, 10.10.2014, Bucharest

Minutes

*N 003/15*

Minutes for this meeting were not reviewed

#### Presentation on EFFC

BAD showed the presentation that was delivered at the EFFC AGM. This ran through the organisation of the EFFC and the aims of the different groups within it.

The EFFC currently has 16 – 20 countries within it, representing approximately 450 contractors. As well as the Executive Committee there are Working Groups set up covering Technical, Contracts, Sustainability and Health and Safety.

There are Special Projects that are financed through a levy.

In 2015 the specific projects to be included within this group are the Carbon Calculator, CEN/TC 288, EN 16228 - Drilling and foundation equipment - Safety, the Concrete Task Group and upgrading to a new website.

Within the remit of the TWG lies the following CEN Technical Groups:

- CEN/TC 288 Geotechnical Execution codes
- CEN/TC 104 Concrete
- CEN/TC 250 Design
- CEN/TC 341 Geotechnical Testing
- CEN/TC 396 Earthworks
- CEN/TC 189 Geosynthetics

There is also the Concrete Working Group in conjunction with the DFI.

There is an ISO group (ISO TC 182) for testing of Ground Anchors that has been created out of the previous CEN/TC 341 on this subject. TC 341 will adopt the work produced by ISO TC 182, where the convenor & secretariat of the WG for ground anchors have shifted across to ISO TC 182.

There is currently a question as to whether there will be a formal vote required or whether the completed document will go straight into adoption.

This arrangement has come about due to a change in regulations of the Vienna Agreement (cooperation between ISO and CEN) whereby for any new or reactivated project the ISO committee can decide whether ISO or CEN which will take the lead. If the resulting document is an EN ISO then it will become compulsory to adopt for CEN members.

In the case of testing for Ground Anchors, upon reactivation the majority of non-European members voted for ISO to lead and so therefore ISO TC 182 was created.

There is also now guidance from CEN that bans collaboration between TC's. This would mean that TC 288 would no longer be able to make agreements with CEN/TC 104 over concrete for geotechnical applications.

- 3.2. EFFC, Executive Meeting, 8.04.2015, Zürich  
Minutes  
Minutes for this meeting were not reviewed

N 004/15

4. **CEN/TC 288**

- 4.1 CEN/TC 288 Meeting, 26./27.06.2014, Paris  
The Chairman of TC 288 is Christian Gilbert.

N 006/15

The question was raised in the TWG as to the number of companies in the EFFC who were also represented on TC 288, and how were countries ensuring they were represented on TC 288.

Most countries were represented on TC 288 although some stated there were issues over finances that made this difficult.

The general feeling around the room was that TC 288 was a better forum for achieving influence on outcomes at CEN level than the EFFC TWG.

- 4.2 Liaison with CEN/TC 250/SC 7: EN 1997-1 Geotechnical Design

- Evolution groups, preparing systematic review from 2013 [all]

The evolution groups will be disbanded in 2015. They will hand their work over to the Task Groups (TG) 1 to 6. Within the task groups are Project Groups. The work is expected to start in 2015 and be finished in 2020.

- 4.3 Status of execution codes

Resolutions on 1536 & 1538: These have been approved post removal of concrete references.

Resolutions on EN 12699 & EN 14199: These have been sent out for formal vote & have been accepted by CEN. Approval is expected in the June 2015 meeting.

There followed a discussion on the CEN processes and when formal voting took place in relation to the approval to publish at TC 288.

A current status of execution codes and the review dates was requested and the following information tabled:

EN 12716 (Jetting) work group 17 is active

EN 12063 (Sheet-pile walls) systematic review completed & approved

EN 14490 (Soil nailing) systematic review completed & approved

EN 14679 (Deep mixing) systematic review completed & approved

EN 14731 (Ground treatment by deep vibration) systematic review completed & approved

EN 12715 (Grouting) decision made at TC 288 meeting in 2014 that the document was required. Request made to countries to supply candidates. Decision in June 2015 as to whether WG can start & associated timescale.

In 2016 the systematic review for Reinforced Earth is due, and in 2017 the review for Vertical Drains.

A clarification was made on the advice that should be fed back to National bodies with regards to tactics used on voting. Some countries abstain rather than say yes to approve, as they either do not have a view as it is not a technique considered relevant to their country or time to review. This is preferable to just saying yes, as in that case it provides a positive vote that could lead to a vote being passed even if there are objections from countries who do use the document.

The submission of a No vote also requires someone to be prepared to address the issues raised. If no one can be found to resolve the objections the document may get passed anyway.

#### Discussion Items

The original intention had been for the TWG to split into groups to discuss several specific items and then report back. It was decided that due to the relatively small numbers that would be in each group, a more productive approach would be to stick to all the members in one room.

#### 4.4 Liaison with CEN/TC 341: Testing of Anchors EN-ISO 22477-5 N 007/15 + N 007a/15

[O. Møller] / DISCUSSION

The title of this document has been changed to Testing of Grouted Anchors, the reference to pre-stressed and the ground have been removed.

This document has been reactivated yet again following the inaction from TC 341.

It was voted for as an ISO document (as per new system) but there are no countries involved from outside CEN.

The meeting of the working group was attended by UK, Sweden, France, Finland, Germany, Norway, Holland, Denmark. This has resulted in a very long list of comments on the current document. These cover a wide range of topics with no main themes identified.

The aim was to finalise the document in June 2015.

There was discussion over what comprises a “grouted anchor” and a “ground anchor”. For a definition and correlation between these refer to EN1997-1 cl 8.1.2.

BLE explained that in France they are in the process of updating the previous TA95 approach to reflect the Eurocode approach but this is a complex process.

OM circulated a document that outlined his understanding of the current anchor design approach as given in the Eurocode.

There was then a revisit to the topic of the document that the FIB are proposing to produce to cover the design and construction of anchors. Apparently the FIB are saying they do not wish to create a new document but would reference existing documents and then add in what they feel is not included.

As this document is now EN-ISO it should in theory address areas which previously they could say were outside CEN.

BAD actioned to meet with the FIB chairman in June 2015 to try and clarify the situation and avoid conflict.

#### 4.5 Liaison with CEN/TC 296: Earthworks

There was no discussion on this document. Currently there is no one within the EFFC TWG who had declared an interest in supporting this group. The previous representative was Yves Legend but it was not clear if anyone had stepped in to replace him following his retirement.

## 5. **Special geotechnical works standards**

### 5.1 EN 12699: Displacement Piles and EN 14199: Micropiles

- progress of revisions

Formal vote completed. At the TC 288 meeting in June 2015 these will be ratified and then sent to CEN for publishing. There are some editorial changes being made post voting and prior to publishing. The documents are expected to be published before the end of 2015.

Note: the issue of corrosion protection is not well covered within the documents. The WG that put them together is not happy with this as it could have been improved to present a solution in line with that used for soil nails, but due to differences of opinion within the WG it was not done.

### 5.2 EN 12716: Jet grouting

**N 008/15**

[G. Dausch]

- progress of revisions

GDA gave a presentation on the status of the working group and the current execution code document.

The current document is 14 years old and so ready for review. After an initial delay in finding a convener the working group has now been assembled and initial editing is intended to be complete in Spring 2016.

This timetable is to fit with an intended review and acceptance at the TC 288 meeting in June 2016, leading to a formal vote in 2017.

Currently there are 3 meetings planned during the course of 2015 and it is felt that due to the amount of work to be done on the document there may be additional meetings required.

A key point to be resolved is the exact scope in terms of the amount of detail that is to be placed in the document as it was not felt that contractors will be particularly keen to supply experience that will then be available to consultants. The amount of detail in terms of parameters to be included was also felt to be an area which would need discussion to resolve, as contractors would not want to be constrained and consultants would want as much detail as possible.

The feeling of the working group is that the current document is in places more of a handbook than an execution code and it is the intention to remove these sections as the material is now available elsewhere. There will be more emphasis placed, however, on how the quality and workmanship can be effected by parameters and method – this will be addressed in an Appendix with an overview and range of values rather than exact numbers.

One point to be clarified is the use of nomenclature to ensure this revised execution code is in line with the terminology used in others such as EN 1536, EN 1538 and EN 14199.

The TWG had some discussion over what should be included within the scope of this document, which centred around the pressure used during jetting and how to separate jet grouting from low pressure (100bar) grouting. It was suggested that this should be brought up at the next meeting of the EN 12716 working group in order to clarify what would fall under this document and what would be under EN 12715 (grouting).

### 5.3 EN 12715: Grouting

[all] / DISCUSSION

- call for experts

4 countries (NL, D, CH, GB) are sending experts and Austria has put forward an individual while other countries are still in the process of finding representatives. A first meeting will take place just before the TC 288 meeting in June 2015.

### 5.4 Other issues

The current schedule of revision of documents is based on a rolling programme, where currently the areas under review are jet grouting (under way) and grouting (about to commence). This means that next year there is a slot for another topic to be started. The potential topics next in line are soil nails or sheet piles. There are some countries that have said that they wish these documents to be reviewed but in order for this to happen they need to ensure that their national representative is at the TC 288 meeting to make this happen. It would also require one of the interested countries to be ready to take on the role of convenor, or to organise the systematic review, though this should not be the factor that drives whether a country pushes for a review of the documents or not.

## **6 Conflicts with EN1990 eurocodes**

### 6.1 General

In this new subject for the agenda room is made for discussion on this issue:

### 6.2 EN 1992

[all]

### 6.3 EN 1993

[all]

### 6.4 EN 1090

*N 009/15*

[all] / DISCUSSION

BAD presented a note he had prepared material that covered the requirements of CE marking and the potential relevance to piling under the limits of EN 1090.

The main issue to be discussed was whether site prepared steel piles would need to meet the needs of CE marking, and if so how could this be implemented.

The discussions resulted in a general feeling that it would not be possible under site conditions to produce a CE product, however it was not felt that this was the intention. The individual parts might be CE marked but the final product would not need to be. Joining of steel sections would still have to be in accordance with standards and execution codes.

Precast piles, fabricated under factory conditions could be CE marked and this was not viewed as a problem.

### 6.5 Other standards

[all]

## **7 Other technical issues**

### **7.1 Concrete in special foundations**

**N 010/15**

- EFFC task group Concrete

The DFI has now joined forces with the EFFC in the production of this document.

The intention is for this to be a state of the art investigation into concrete behaviour and will focus on tremie concrete.

There is a large amount of information that has already been brought together and the task group are endeavouring to compress this into approximately 25 pages + annexes.

The report is only the first stage as it is necessary to incorporate valid site experience as well. To this end a programme of site based testing will be carried out under the control of Munich University, backed up by laboratory based testing. Sponsorship for this has been raised through EFFC member's und DFI.

Following this the next step is further investigation into the properties of fresh concrete with a view to adding in more detailed advice on the type of mix best suited to a particular technique (diaphragm walling, piling etc). Linked to this the intention is to supply advice on the type and level of testing that should be used/specified by the Client.

The timeline for this project is to get the initial document out in June 2015, and all the initial site based testing to be concluded by the end of 2016. The final document is expected to take 2 years to produce.

As the document is currently focussed on tremie concrete, if members of the TWG have guidelines or data on other types (CFA or free fall for instance) then it should be forwarded to BAD who will ensure it is passed on to the Task Group.

## **8 Working platform certificates**

- Presentation on FPS working platform certificate as used in the UK [DHA]

As there is interest from the EFFC in adopting a similar system to that used in the UK DHA was asked to present an overview of the process used in the UK and what information is required to prepare and issue the certificate. This included the roles of the Platform Designer and the Piling Contractor, who may or may not be the same organisation.

Also covered was the information listed on the certificate and the limitations of the BRE470 approach used to derive platform thicknesses.

In Spain there has been developed a similar system. GMA will send a document. **N 011/15**

## **9 Developments on special geotechnical works and foundations**

- Members are requested to give short reports (approx. 10 mins.) [all]

**Germany** – GDA presented the latest guidelines relating to the risk of rig strike UXB (buried ordnance). These lay out procedures and responsibilities. This is a topic that most of the other member countries have experience with and there are varying levels of formality around how they approach this risk. **N 012/15**

A second point was then brought up regarding the noise produced construction sites and new limits that are being introduced in Germany to try and reduce the impact on surrounding properties & parties. There was again discussion around the room as this is found to be an increasing problem. The use of electric rigs and pumps can mitigate but it was acknowledged that clanking Kelly bars is usually perceived as the worst noise, even if within limits. In Germany a working group is being brought together to try and address the overall issue of site noise and try to produce some advice for contractors and clients.

**Switzerland** – MDU presented a site in Zurich for a basement requiring retained heights of between 20 and 26m, incorporating multiple layers of ground anchors, buttress walls and post tensioning of diaphragm walls. The high retained heights and tight limits to the site boundary had resulted in a complex but interesting solution.

*N013/15*

**Denmark** – NOM presented the new approach that the Danish NA will use for geotechnical design of ground anchors, based on a partial factor approach. A fifth load case has been introduced to cover the situation where water pressure is dominant, to ensure that water pressure is not being factored unnecessarily. This applies to Design Approach 3.

*N 014/15*

**Poland** – JR presented the results of monitoring research done on site to assess noise and vibration levels produced when driving piles, with a view to advising Clients on the best way to minimise the effects of their project on adjacent properties. He then also presented work done on a pile loading system that could be used as an alternative to an Osterberg type test. This used two tubes, one inside the other and uses the friction on the outside of the outer tube to create resistance to load applied to the toe of the inner. The movement of the two casings was measured using laser scanning as well as optical survey techniques.

*N 015/15*

**Italy** – MSI presented the ground improvement works carried out to stabilise 5 miles of levees in New Orleans. The works were carried out under an ECI contract that allowed the opportunity to develop the solution through full scale testing and validation of the design. The ground improvement was soil mix columns produced using twin and single auger rigs.

*N 016/15*

## **10 Any other business**

- 10.1 GDA questioned whether there is a compliance issue with holding these meetings. Specifically if it needs to be highlighted to outsiders that the EFFC TWG meetings are technical meetings and not a cartel. What would be needed to do this, in terms of guidelines or rules?
- 10.2 Proposed topics for the next meeting: methods of investigating panel joints & in situ pile investigation.
- 10.3 Date and place of next TWG meeting: Wroclaw, Poland 12<sup>th</sup>-13<sup>th</sup> May 2016 (TBC)

## **11 Closure**

The meeting closed with a vote of thanks to Marc for a well organised and successful meeting.