



## EFFC Technical Working Group

### 16<sup>th</sup> Meeting, Wroclaw, May 12 & 13, 2016

Venue: Wroclaw University of Technology, 27 Wybrzeze Wyspianskiego St., 50-370 Wroclaw

#### Times

Wed. 11.05.2016	18.45 20:30 – 22.00	Walking tour welcome dinner
Thu. 12.05.2015	09:30 - 13:30 14:00 - 15:30 15:30 - 15:45 15:45 - 17:00  18:00	Sightseeing trip and lunch meeting general coffee break meeting general  dinner
Fri. 13.05.2015	08:30 - 09:45 09:45 – 10:00 10:00 – 11:15 11:15 – 11:30 11:30 – 13:00 13:00 – 14:00 14:00 – 15:00	meeting coffee break meeting coffee break meeting lunch available extra time for the meeting

#### Present:

Austria	T. Kirchmaier	TK	Keller Grundbau GmbH SEE
Belgium	M. Verlinden	MVE	Fondedile Eyfrage
Czech Republic	V. Racansky	VRA	Keller Grundbau Ges.mbh
Denmark	O. Møller	NOM	Per Aarsleff A/S
France	S. Darson Balleur	SDB	Soletanche Bachy France
France	P. Schmitt	PS	Soletanche Bachy France
Germany	G. Dausch	GDA	Bilfinger & Berger
Germany	T. Garbers	TGA	Franki Grundbau GmbH
Hungary	E. Chovanyecz	ECH	Hidepitö Solétanche Bachy Foundation
Italy	Andrea Rigazio	ARI	Icop
Italy	Bruno Vingiani	BVI	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.
Spain	G. Marote Ramos	GMR	Terratest.
Sweden	J. Romell	JRL	Skanska Sverige AB
Switzerland	D. Moore	MDU	Implenia Bau AG Spezialtiefbau
U.K.	D. Hard	DHA	Bachy Solétanche Ltd.

#### Regrets:

Hungary	T. Kaltenbacher	TKB	Hidepitö Solétanche Bachy Foundation
Italy	F. Rettondini	VRE	VIPP Lavori Speciali.
Romania	L. Sata	SLL	Soletanche Bachy Fundatii (SBR)

Met opmaak: Nederlands (standaard)

# Agenda

## 1. Opening

- Welcome

- Adoption of the Agenda N 001/16

BAD checked if the information circulated by the Secretariat in advance of the meeting had been received by all, and if there had been any issues with downloading the documents. The general response was that the process had worked fine.

An observation was made that if the document references were to start with the year rather than ending with it, it would make sorting through them easier.

The agenda was then presented and key points highlighted by BAD before being accepted for the meeting.

- Members, attendance N 002/16

Apologies received from Tamas Kaltenbacher (HU) and Lorand Sata (RO).

As there were some new individuals present, each of the representatives briefly introduced themselves.

A request was made for the contact list for the group to be updated to reflect the changes in attendees. In order for this to be done it requires the agreement of all to have their details released. This was raised and no one present objected to their details being circulated.

## 2. 14th TWG meeting, Brussels, April 16&17, 2015

- Minutes TWG meeting, 16./17.04.2015 N 003/16

The minutes of the previous TWG meeting were presented for comments.

NOM asked for an update on the action that had been left with BAD to contact FIB about their proposed anchor document. The concern remained in the TWG that this document was attempting to recreate what was already going to be covered in respective Eurocodes and Execution Standards. BAD reported that he had spoken to the Chairman of FIB and they maintained that they did not intend their document to conflict with the Eurocodes, and that currently there was no action with their document.

There seemed to be a lack of awareness of FIB and their activities within the EFFC at all levels, up to and including the Executive and there was a concern that this was the case.

BAD had restated the concerns of the EFFC to FIB and our position that any document that they produced needed to fit within the framework of existing standards.

BAD to follow this up again in 2016 to check if more action required from EFFC to prevent a clash.

The minutes from the previous meeting were then accepted, with an observation that it would be useful to receive them earlier in the future, if possible.

## 3. EFFC

### 3.1 EFFC, Executive Meeting, 10.04.2015, Zürich

- Minutes N 004/16

The minutes were not read through in detail but there were no questions raised on them.

3.2 EFFC, AGM, 25.09.2015, Berlin

- Minutes N 005/16  
The main action at the AGM was the change of Chairman to Hans-Joachim Bliss.  
The minutes were not read through in detail but there were no questions raised on them.

4. **CEN TC288**

4.1 CEN/TC 288 Meeting, 25./26.06.2015, Stockholm

- Decisions N 006/16  
WG16 Micropiles has been disbanded as there is no further need for it.  
~~The Jet Grouting working-ing group was-is~~ ready to launch ~~the work item, although the work but~~ is still not officially in progress ~~although workand~~ has been ongoing for the last couple of years  
~~The~~ Sheetpile standard. There has been a request for a review and so a conveynor has been appointed. A call for national experts ~~to join will be forthcomingwas~~ included in document N662.  
Soil nailing – no wish for a review at present  
There were a large amount of discussions at the TC\_288 meeting regarding diaphragm wall concrete but the overlap with the EFFC Concrete Group means that the actions will remain with the ~~EFFC~~ body rather than TC\_288.

4.2 Liaison with CEN/TC SC250: EN 1997-1 Geotechnical Design

- Evolution groups, preparing systematic review from 2013 [all]  
PS gave a presentation on the Evolution Groups and the proposed structure of the new Eurocode 7.  
All countries had previously made comments on what changes they felt were required to EC7 and as a result of that ~~precessprocess~~; three ~~Evolution-working~~ groups have been created.  
Part 1 (~~WG 1~~) will cover General Rules & Guidelines, Part 2 (~~WG 2~~) will cover site Investigation and Part 3 (~~WG 3~~) will cover Design of Geotechnical Structures.  
In Phase 1, project teams will rewrite the Part 1 on general rules. Phase 2 will cover the individual chapters such as piles, retaining structures slopes etc. The final Phase 3 will cover the new sections on Rock Mechanics and Dynamic design which are not currently covered in the code.  
The chapters will be written by project teams who will use task groups to provide source material and feedback on the content of each chapter.  
The new Part 2 will concentrate on the processes for site investigation and how to produce a ground model, but will not cover actual design method (which will be in Parts 1 & 3). The ground model is a new concept that is being put in to aid identification of which parameters are needed for the scheme, and so what is the best site investigation scope to be performed. This means the ground model will have several distinct stages as the project develops.  
Part 3 will require a lot more work as the goal is try and improve the harmonisation and remove the current Design Approaches. The proposed new design approach will use a choice of either Material Factor, Resistant Factor or Effect Factor, so effectively still ~~give-giving~~ 3 methods.

The large number of tables (27) currently in the Eurocode will be combined into a single large one. Rather than a National Annex the intention is for countries to just apply a factor to the table values, if they wish to.

There will be new factors in the form a Hazard Factor and an Importance Factor to take into account in the design the level of geotechnical risk and the importance of the structure. These would be applied to the factors in the table.

This is currently the concept and still needs to be agreed between the members of the project team.

Current progress is that Parts 1 and 2 are underway but not Part 3 due to the need to agree on the revised design approach.

There is an official programme that covers the next 3 years but it was not available at the meeting.

4.3 Liaison with TC341: testing of geotechnical structures EN-ISO 22477 [all]

The production of 22477-5 has been shifted across to ISO/TC\_182. Some initial work has been done with the restructured document sent out to ~~a~~the working group for comments. These are to be returned by end of May 2016. These comments will then be reviewed and the document issued for public comment before the end of 2016. The formal vote will not occur until after the public comments have been received. The final version for the formal vote should be expected in 2017, with a view to being published by the end of 2017.

Testing of piles – the formal vote as to whether to reactivate this working group has not been completed and so there is no progress.

There was a question from VRA as to whether the documents had answered if a tension ~~minipile-micro-pile~~ should be considered as an anchor as the Austrian national documents designate it as such. NOM clarified that the definition of what is classified as an anchor is ~~dealt with in in a separate of the main the main~~ Eurocode. It was also observed that there should not be a National Annex for the testing standard, only for the main Eurocode.

4.4 Liaison with CEN/TC 296: Earthworks [ ? ]

There is still not a link between the TWG and TC296. PS to follow up with Yves Legendre.

4.4.1 Liaison with CEN/TC 350 Sustainability of construction works N 007/16

A new item on the agenda that has been brought in as a result of it becoming part of the EFFC Business Plan.  
If there are any particular issues they are to be passed on to Bartho so that they can be fed into TC\_288.

5. **EFFC Concrete Task Group**

5.1 EFFC/DFI Best Practice Guide to Tremie Concrete for Deep Foundations N 008/16 & N009/16

The guide has now been issued at Rev 1.0 and the next phase of the field and lab trials are now underway

5.2 R&D program [S. Darson]

A presentation was given by SDB. This covered the background to the issues surrounding the use of concrete in geotechnics vs that in main stream civil engineering, and the changes in materials technology that has shifted concrete from a 3 part material to a 5 part material.

It then covered the constituent parts of modern concrete and how they effect the properties. A key constituent is the rapidly changing field of ~~plasticisers~~plasticisers & retarders where manufacturers are producing new ~~products~~products all the time, and the end user has very little appreciation of how they interact with the other components. The data as supplied normally refers to a family of products and

Met opmaak: Engels (Verenigd Koninkrijk)

so it is hard to assess if what is being proposed will have a negative effect upon the workmanship.

This is the reason that the new EFFC concrete guide focusses particularly on testing and understanding the behaviour of a mix with time.

The current R&D process is to try and establish whether the proposed tests are the best to give the required information, and what are the important characteristics to measure and monitor.

There are 3 parallel series of testing being carried out in France, Germany and the USA. These tests are a mixture of field trials on live projects, and laboratory testing. This mixture will allow verification of the most practical tests for site use, whilst the lab work will allow a more thorough assessment of which parameters are most relevant and how the changes in mix design effects them.

This testing is programmed to be complete by the end of 2016 so that the results can then be reviewed and any amendments to the guide be made during 2017.

Initial data is in from the USA but no conclusions yet. Good data is however being gathered on both the behaviour on site and how the tests can be used to measure the properties.

Some of the sites where testing is being carried out had experienced problems with „sticky“ concrete during placement and so uncovering these piles to see if this has resulted in actual defects was planned.

The question was asked: ~~as to~~ whether the ground conditions should be taken into account when assessing potential issues such as bleed. The ability of water in the concrete to flow horizontally into the ground might result in a different behaviour than where only vertical flow up through or around the piles was possible. There was not a definitive answer ~~arrived at~~ to this point.

A series of videos ~~was/were~~ then presented by IRA, showing major bleed in piles and diaphragm wall panels. These were both immediately after placement and also some hours later. One showed the voids left in an exposed pile by this process.

There then followed a lively discussion on the process by which the guide had been published, and especially the way in which ~~commnets~~ ~~comments~~ had been addressed, or not. The particular concern from the TWG was that although comments had been requested there was no option given to see the revised version before it was published. Given the large number of comments ~~that had been~~ submitted it was felt ~~that~~ there should have been at least one more iteration for the members to comment on. It was commented that a small group of individuals appeared to have had the final say on which comments to adopt with no oversight from the wider membership. There was a feeling that the review process should have been more in line with that used for the execution ~~at~~ ~~standards~~ ~~standards~~ etc. BAD stated that these concerns and comments should be ~~returned~~ ~~passed on~~ to the main EFFC Executive to try and ensure that a more acceptable process was adopted for ~~future~~ ~~the~~ ~~revisions~~ ~~of~~ the guide.

Despite the ~~commnets~~ ~~comments~~, there was a recognition by the TWG that a lot of good work had been done in the production of the guide, and ~~that~~ was continuing in the R&D programme.

It was also pointed out this is a guidance document and not a standard although there was a desire to ensure that the ~~execution standard~~ ~~see~~ were in alignment with the guide once the R&D was complete and the conclusions reached.

Met opmaak: Engels (Verenigd Koninkrijk)

Met opmaak: Engels (Verenigd Koninkrijk)

This survey was sent out shortly before the TWG meeting and there had not been sufficient time for responses to be gathered. BAD asked for responses to be returned as soon as possible and by the third week in June at the latest.

#### 5.4 revisions to ICE Specification

DHA gave a short presentation on the proposed amendments to the Institution of Civil Engineers Specification for Piling and Embedded Retaining Walls (ICE SPERW). In the UK this is the default specification for foundation works and covers a wide range of subjects including pile testing and support fluid properties as well as chapters on individual techniques.

The revision to the document is being carried out by teams comprising of a mixture of contractors, consultants and client bodies.

The main revisions cover the chapters on concrete and support fluids. The former has been changed to align with the EFFC guide, and the latter has been updated to include properties for polymer which were not previously presented. The values for bentonite have also been revised.

The document is currently out for comment and so the changes presented are not necessarily the final version as there are comments expected back from the industry.

There was considerable interest and comment from the TWG on some of the figures presented. In particular the values for bentonite properties and their suitability were questioned.

### 6. Special geotechnical works standards

#### 6.1 EN 12716: Jet ~~grouting~~Grouting [G. Dausch]

- WG17: progress of revisions

The original document EN\_12716:2001-12 was more of a handbook than an execution standard. The intention of the revision is to remove a lot of the reference material to shorten it and return it an execution standard.

The work group consists of 16 members and the process started in 2014. The editorial work is now nearly completed. The intention is to ~~launch the work item at the TC 288 meeting in send the revised document to CEN in June 2016, at preliminary status, it is not currently clear the exact process to get from this to a published document.~~

There is the intention to create a new Task Group from within TC\_288 to create an annex to the document to cover Design Rules. This will need to separate out the Norwegian approach which uses jet grouting columns as unreinforced piles. A liaison with CEN/TC\_250/SC7/WG3 will look into this. The decision to launch this liaison group will be taken at the TC\_288 meeting in June 2016.

This annex will cover design rules, and due to the complicated nature of this subject there is a concern that it will take longer to prepare than the main execution standard, and it is not intended that this should be delayed to wait for the annex.

Accordingly the intention is to issue the ~~main~~-standard and the annex will be developed with the liaison group independently and issued subsequently as an amendment.

This process needs to be confirmed as acceptable with CEN.

#### 6.3 EN 12715: Grouting [D. Moore]

- WG18: progress of revisions

Met opmaak: Duits (Zwitserland)

Met opmaak: Duits (Zwitserland)

The systematic review started 2013, with a decision to revise being taken in 2014. Actual work on the revision started in 2015 and the first 5 chapters have now been completed. At present there is a disagreement in the group over the topic of ground investigation as this appears to overlap with the EC7 ~~Evo-WG2~~group. This is currently not resolved.

The discussion then moved to a more general topic of the fact that each of the execution codes has repetition of information in it, but there is not currently a standard format for this common information. It was felt that the current bored pile execution code was a good example that could be used as template.

The question was whether there should be a standard wording for an execution code that is then modified for additions for the particular topic of that code.

Additionally are there some subjects that are actually only carried out by one country and so an execution code would be unnecessary as that particular country could source its own rules? No specifics were offered on this.

6.3 EN 12063: Sheet-pile walls [all]

- call for experts for WG19: revision of EN 12063 - 1999 N 010/16

A conveynor ~~is was to be~~ put forward ~~from by~~ Balineau (France), ~~and accepted Mr. Duplaine. A~~ request for national experts ~~will then be made~~ was made in document N 662.

One of the key issues that will need to be addressed is that of welding and this may require consulting with other TCs.

6.4 EN 14475: Reinforced fill [all]

- systematic review of EN 14475 - 2006 N 011/16

There was a discussion as to whether this document requires a review or not. There was not particular push for this to occur. ~~National bodies are to respond before July 2016 when the decision whether to proceed with a review or not will be taken. The results of the systematic review from March 15<sup>th</sup> 2016 are as follows:~~

- 5 Confirmation

- 2 revision

- 11 Abstention

6.5 CEN/TC 288 [all]

- call for experts for liaison with CEN/TC 250/SC 7/WG 3 N 014/16

A task group consisting of members from TC 288 and CEN/TC 250/SC7/WG3 is planned. A call for experts will be published shortly. (s. 6.1 WG 17: progress of revisions)

A paper has been prepared by Christian Gilbert on the topic of concrete cover. This will be discussed at the next TC 288 meeting but the opinion was that the way forward is to specify a nominal value of 75mm and then a minimum dictated by durability, such as 40mm. The minimum should not be specified as 75mm, and then increased for tolerance.

6.6 Other issues concerning standards and guidelines [all]

Requirements in the design codes may affect custom detail-engineering according to the old national standards. Some of these "new" requirements are conflicting with possibilities or quality issues in geotechnical structures. In this new subject for the agenda room is made for discussion on this issue

### Diaphragm Wall joints

The subject was raised, ~~of~~ what is watertight, what can be done to assess a joint and is it felt that a specific document is required to address these points?

In the UK the ICE SPERW has clear guidelines on this. Austria has its own guidelines to address the same topic.

It was felt that a sensible first step would be to draw together the available information and look at what is the current state of the art.

Another option was that there should ~~there~~ be values or guidance on seepage in EN1538, ~~?~~

A vote was held as to whether it was felt that a Task Group should be set up to look into this topic – the majority of the TWG were in favour.

A chairman will be chosen in due course but the first step is to present this suggestion to the EFFC Executive for approval and then the exact makeup of the group can be decided.

There would be a need to set out the goals of this Task Group and it was left with GMR to do so and circulate to the TWG for agreement.

### BIM

The subject of BIM was raised by GDA, and how is it influencing the member's works, if at all?

The subject is currently being looked at by the EFFC Contractual Working Group.

It was decided to put this on the agenda for the next TWG meeting to discuss in more depth to better understand how it is being implemented in the different countries.

BAD requested that examples both good and bad should be ~~brought presented to this~~ to show how it can relate to technical issues in foundations and geotechnics.

The discussion showed that most countries are becoming more aware of this topic and need to comply, but most Clients don't know what they actually want when they specify a BIM compliant project.

The question was asked, if there were specific standards on this subject? In the UK there is PAS 1192.

## **7. Organisation procedures TWG**

- 7.1 At this moment there is no procedure at all for the organisation of our committee or rules in case of reorganisation. Do we need such procedures and, if yes, in what form, etc.?

N 012/16

BAD put forward proposals for the organisation of the TWG going forward as currently there is no formal process as to what is on the agenda or how the Chairman is chosen.

Historically the Chair of both the TWG and TC 288 were the same individual, though this is not currently the situation. There is also an unofficial agreement that a Contractor would hold the Chair of TC 288.

The proposal from BAD is that the Chairman of the TWG would hold the position for a fixed term. After discussion within the group it was felt that 4 years would be a suitable duration with the option of this being extended to a second term to give a maximum period in office of 8 years.

BAD has served 4 years already and is not looking to step down so the TWG was happy for him to continue in place for another 4 years period.

The discussion moved on to the position of a Vice Chairman as BAD felt that the introduction of such a role would be beneficial. ~~They~~ ~~He~~ /~~she~~ would provide support to the Chairman during the ~~4-year~~4-year cycle, with a view to then moving on to be ~~come~~ the next Chairman when that individual stood down. This would provide a degree of continuity to the process and aid the hand over to a new Chairman.

It was not discussed what the procedure would be if the Vice Chairman did not want to take up the role of Chairman, or if another individual wanted to put themselves forward for that position.

The questions was then asked if there was anyone present who wished to put themselves forward for the role of Vice chairman.

Several individuals expressly ruled themselves out from the role: MVE, JRL, JR, ECH.

There were suggestions from the group that GMR, DHA or SDB might want the role.

GMR ruled himself out. SDB also declined due her current commitments on the Concrete Working Group.

In the light of no one stepping forward, BAD said he would follow up with possible individuals after the meeting.

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

Members ~~are~~ ~~were~~ given ~~an~~ opportunity to give ~~a~~ short report on developments in their country or company (approx. 10 mins.) [all]

There were no presentations from any members. BAD expressed a hope that there would be presentations in next year's meeting in this section.

## **9 Any other business**

### 9.1 Date and place of next TWG meeting

The next meeting will take place in the Netherlands, near Amsterdam. The proposed date is 6<sup>th</sup> – 7<sup>th</sup> April 2017.

It is proposed that the meeting in 2018 will be held in Portugal but no date was set.

### 9.2 Compliance

GDA raised the point that at the last meeting the issue of compliance in front of third parties was raised but had not been addressed subsequently. The concern was that there was a need to be able to confirm to an outside organisation, if needed, that this was a technical meeting and not one that concerned commercial or contractual matters.

Was this a separate document or just a phrase that could be added in to the minutes of meeting?

There was general agreement that this was an issue that should be addressed and so it needed to be recorded as such in the minutes.

### 9.3 There was request for the minutes to be issued sooner after the meeting than had been the case previously. An undertaking was made to try and improve on this and issue the minutes before the summer break.

## **10 Closure**

The meeting was closed by BAD with a general vote of thanks to JR for his hosting of the meeting.