Minutes of TC218 Conference Call - Sep 22, 2020

Date of Meeting

Tuesday September 22, 2020
3:00 PM (UTC)

Venue

Conference Call – Microsoft Teams

ITEM		Lead by:
1	**Introduction** • Call to order 3:00 PM UTC • Ask for permission: Meeting is recorded. No objection. • Attendance – 26 (list attached)	Giulia
2	**Questionnaire: active members verification** • Total number of members on the TC218 list: 76 • Members who responded: 66 • Response rate: 87% • Preferred time for conference call:	Shahriar
3	**Subcommittee 1 – Terminology** • The definitions (descriptions) of terms are updated and will be distributed to members to review and provide feedbacks before posting it on the website. • A disclaimer is added to the document and was read to the members • This is a living document, so terms can be modified or added after the subcommittee reviews it.	Erol Guler
3	**Subcommittee 3 – Good Construction Practices** • 5 countries have responded (2 from USA, Italy, HK and UK), and the document is reviewed by the subcommittee. • Disclaimer similar to subcommittee 1 to be added in front of the document. • The document will be circulated within the members to review. Members are welcome to add good practices in other countries. • It will be published on the website after 30 days • It is a living document	Giulia (for Dimitri Plantier)

7 AM UTC	12 PM UTC	3 PM UTC
22%	38%	40%

ITEM		Lead by:
4	**New subcommittee – 3 proposals**	Oliver

- **Reinforced Fill Structures as Bridge Abutments**
  (originally proposed as GRS-IBS)
  - Nicola Brusa volunteered to lead the subcommittee
  - Information and data to be collected from National and International technical reports and standards.
  - Erol Guler proposed to expand it to all types of reinforced fill abutments, Ratnakar Mahajan, Richard Bathurst and John Sankey were in favor of his suggestion. John suggested to include steel reinforcements too.

- **Use of Marginal Fill in Reinforced Fill Structures**
  (Originally proposed as Use of marginal fill with high plasticity in Reinforced Fill Structures)
  - Ratnakar volunteers to lead the subcommittee
  - Erol proposed to widen the subject and others had suggestions that can be categorized in two groups:
    - (1) material with natural origin (out-of-spec), and
    - (2) recycled material or industrial waste
  - Many showed interest in this subject.

- **Comparison between traditional structures and RSS:**
    - System behavior
    - pros and cons
    - limitations of traditional structures vs RSS
    - carbon footprint
  - No feedback recorded.

Call for volunteers: send emails to Giulia or Shahriar if you are interested in volunteering in any of these subcommittees.

5	**ICSMGE 2021 Conference in Sidney**	Giulia

State-of-the-Art Lectures

- Suggested title of SOA lecture: Limit State Design for MSE
- Recommended presenter: Dr. Dov Leschinsky, ADAMA Engineering

No SOA lecture from TC218: TC218 will shift the honor lecture to our parallel session

ITEM **Lead by:**

TC Parallel Session

- Suggested title of TC session: TC218 will conduct 2 tracks for our session;
  - (1) Use of Solid Waste Backfills in Reinforced Fill Structures (MSE and RSS) and
  - (2) Sustainability and Carbon Footprint for Reinforced Fill Structures

No titles will be used as not all papers could fit the proposed tracks

- Duration: 1.5 hours each
- Honour Lecture is shifted to Parallel Session
- Submitted **39** paper titles to be reviewed by end of October
- TC218 to form a subcommittee to review submitted papers for parallel sessions.
  - Call for volunteers to follow.

Workshops

Draft title of workshop: Rail and Mining Applications Using MSE Wall Technology
Duration: 4 hours
Anticipated no. of attendees: 30

- Edoardo Zannoni and Dave Woods raised concerns about confidentiality
- John explained that the cases can remain unidentified.

TC218 has to decide whether or not we intend to organize a workshop and grow as Technical Committee but also deal with technical and other logistical matters (such as administration, possible sponsorship and funding).

6 **Invitation for Special Issues for Case Histories** Giulia

Call for Papers for Case Histories in Reinforced Fill Structures that will be published in ISSMGE's International Journal of Geoengineering Case Histories. Interested authors are encouraged to submit a 300-word abstract by 31 October 2020 to Guest Editor Prof. Ivan Damians.

Selected Case Histories will be published on this special issue in November-December 2021.

7 **Presentation of a new BBRI project concerning "Reinforced Fills"** Nicolas Denies

A copy of the presentation is provided as an attachment

8 **Next Meeting & Adjournment** Giulia

Next conference call will be on **Tuesday Dec. 15th, 2020 – 7 AM (UTC)** capturing mainly Asia/Australia.

Meeting ended in 1 hours and 11 minutes.

ITEM		Lead by:
9	Recordings of this meeting is available in the following link: **Link to conference call recording** (CTRL + Click) After 30 days, the file will be available to members upon request before posted before posted on the website (email Shahriar Mirmirani if the file was not accessible)	Shahriar

LIST OF ATTENDEES:

Amarnath Hegde	ahegde@iitp.ac.in	India
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Shahriar Mirmirani	smirmirani@recocanada.com	Canada
Stan Boyle	srb@shanwil.com	United States

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Researches • Develops • Informs

SIMSG ISSMGE

TC211-TC218

FOD/NBN project SOLRENF

Reinforced fills

- with geosynthetics

economie

NBN

Laboratory Geotechnics and Monitoring

Nicolas Denies (nde@bbri.be)

Malek Allani (mal@bbri.be)

Noël Huybrechts (nh@bbri.be)

BGS
BELGIAN GEOSYNTHETICS SOCIETY

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Researches • Develops • Informs

Belgian Building Research Institute

Private research institute founded in 1960 by the National Federation of **Belgian Building Contractors**

Statutory Members: more than 80 000 Belgian building contractors

Building materials and systems

Environment and circular construction

Energy

Comfort, health and safety

Technical installations

Construction 4.0

Geotechnics and Monitoring

- Researches
- Standardization
- Developments (contract researches)
- Technical assistance / consultancy to contractors

Foundations

Retaining walls

Ground anchors

Ground improvement

Micropiles and grouting

Deep soil mixing

Geothermal structures

Monitoring (optical fibers)

BGS
BELGIAN GEOSYNTHETICS SOCIETY

BBRI project SOLRENF

Reinforced fills - with geosynthetics

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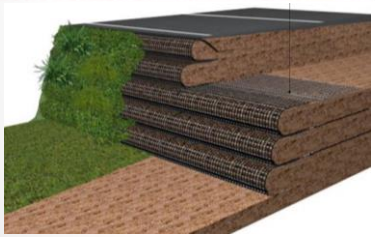
Researches • Develops • Informs



- Since 1960's
- Typical fill material (**sand and gravel**)
- Reinforcements
  - **Steel** bars, meshes, ladders…
  - **Geosynthetics** (geogrids, woven geotextiles and strips)
- Variety of **facings** (polymeric, wood, concrete, gabions…)
  → City-planning and esthetic (local) requirements
- European execution standard – **NBN EN 14475**
- Up to now: no official European design standard **in compliance with Eurocode 7**
- New materials, monitoring techniques, 3D advanced numerical models, test procedures…
- Use of **alternative fill material**: e.g. "poor" cohesive soils and (dredged) sludges possibly stabilized with lime and/or cement – circular economy

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BBRI PROJECT « SOLRENF » - STANDARDIZATION PURPOSES

Topics	Challenges	Purposes
Execution	No Belgian recommendations considering the Belgian market specificities/practices	National application document - NBN EN 14475 and 14490 (**CEN TC 288**) and standards of **CEN TC 396**
Design	No official Belgian design approach in agreement with EU / EC7 (+ numerical methods)	Definition of a design methodology in agreement with the Eurocodes (**CEN TC 250/SC7**)
Tests, QA/QC & monitoring	No test strategy before/during/after execution in agreement with EC7	Integration of the requirements of **EC7**, **CEN TC 341** Geo Testing and **CEN TC 189** Geosynthetics

Redaction of new recommendations in compliance with EC 7 for the **execution,** the **design** and the **controle** of the reinforced fills

Integration in these recommendations in compliance with EC7 of the use of alternative fill materials for **circular economy** such as (stabilized) dredged sludges/sediments or cohesive soils, rubbles, crushed tires…)

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PROJECT « SOLRENF » - TASKS

TASK 1: Execution techniques

No State-of-the Art but:

- Verification of the daily practice **BE-execution techniques** regarding **NBN EN 14475** and **local certification COPRO-rules**
- Identification of the **functional requirements of the materials** (reinforcements, fill materials and facings) regarding Eurocode 7

What is acceptable/economic/innovative for the Belgian market (execution techniques, materials…)

TASK 2: Design

No State-of-the Art but:

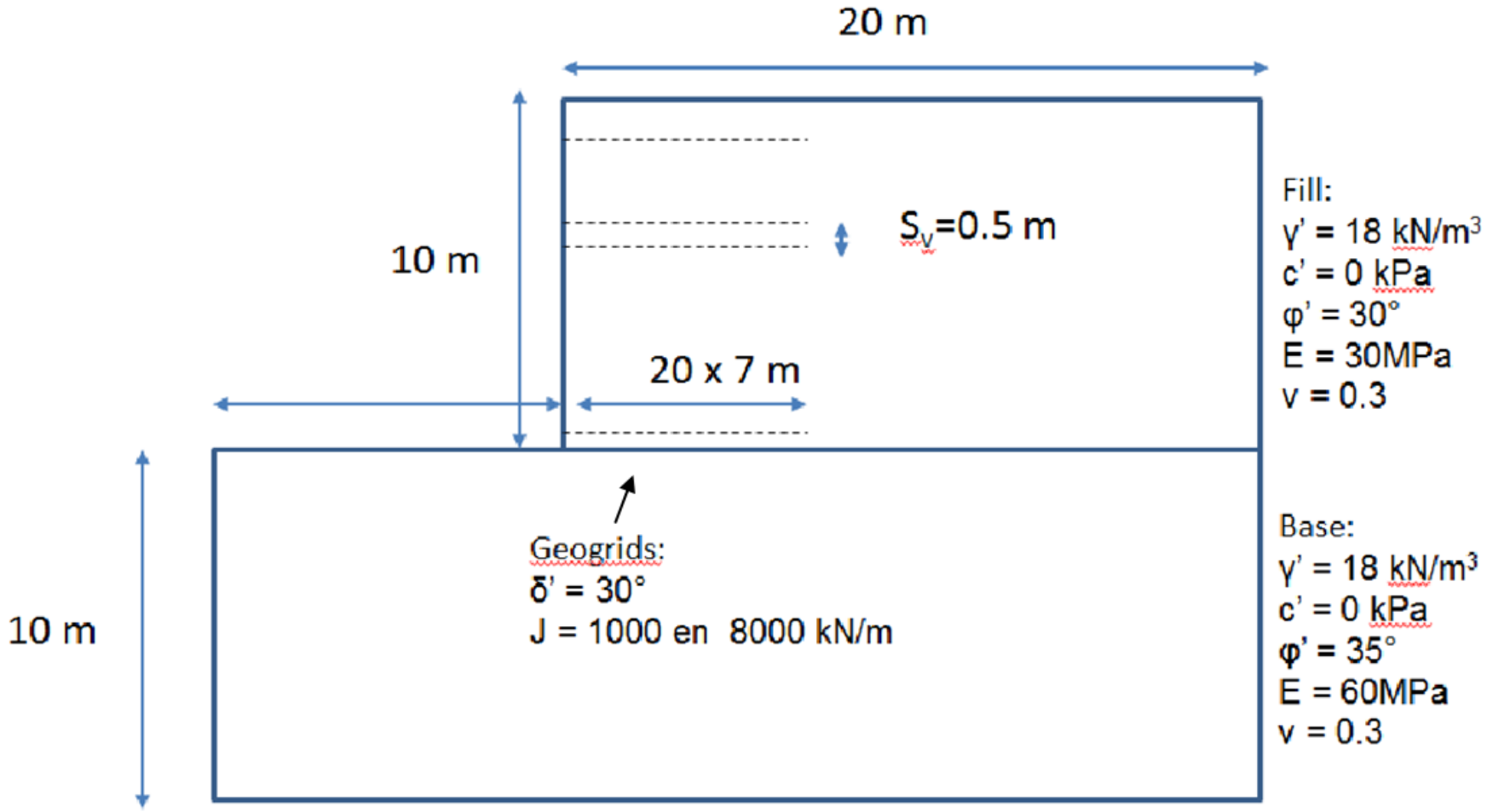
- Computations/exercices to compare **different design methods** available in Europe (EBGEO, CUR, FR standards…)

– **Analytical** and **numerical computations (FEM, FDM, Limite state Geo, slope/w…)**

– based on the BENCHMARK of the BGS task force « design » of 2015

What is acceptable/economic/innovative for the Belgian market (design methods, partial factors…)

PROJECT « SOLRENF » - TASKS



What is acceptable/economic/innovative for the Belgian market (design methods, partial factors…)

PROJECT « SOLRENF » - TASKS

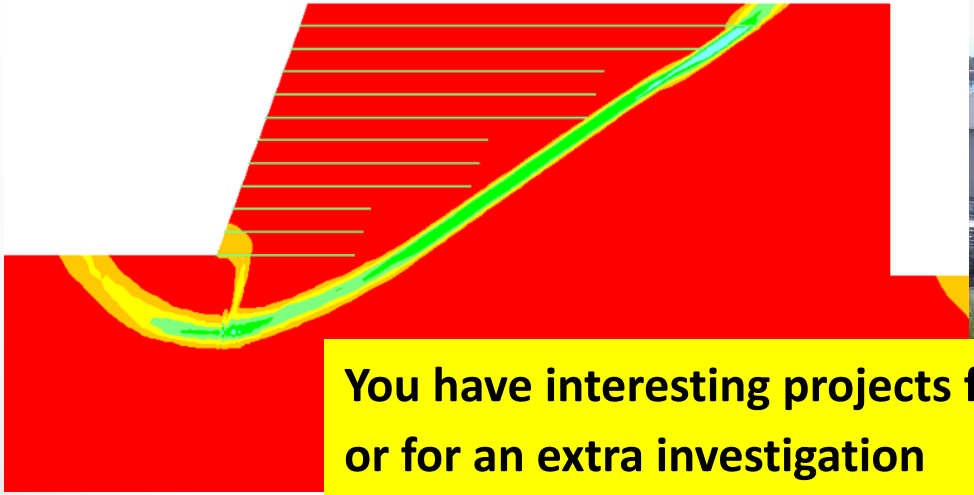
TASK 3 : Numerical methods & « lessons learned from »

1. Analysis of **CASE STUDIES** and **BACK ANALYSIS** with **NUMERICAL MODELS**

2. **PARAMETRIC STUDIES** - Impact of governing factors on the behavior of reinforced fills with geosynthetics

Example: bypass Mechelen – train station

(Denies et al. Rencontres géosynthétiques 2017)



You have interesting projects for a back-analysis or for an extra investigation

→ nicolas.denies@bbri.be

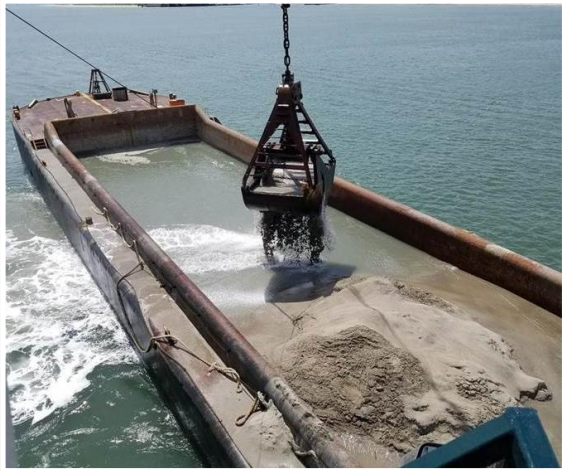
PROJECT « SOLRENF » - TASKS

TASK 4 : « Alternative fill materials »

IDENTIFICATION and comparison of alternative fill materials used in BE and internationaly

Determination of **FUNCTIONAL REQUIREMENTS** for the **ALTERNATIVE FILL MATERIALS**

Characterization of the alternative fill materials → **Eurocode 7** and **local certification**



Stabilized dredged sludges / local cohesive soils

PROJECT « SOLRENF » - TASKS

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PROJECT « SOLRENF » - TASKS

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PROJECT « SOLRENF » - TASKS

TASK 5 : Construction sites – tests and monitoring

Execution of TESTS and in-situ MONITORING within the framework of construction sites or « real-scale » pilot projects

IN-SITU MONITORING – Measurements within the framework of construction sites or « real-scale » pilot projects

LAB TESTS for the characterization of the fill material, geosynthetics, « soil-geosynthetic » interaction, facing elements, connection between reinforcement and facing

Deformations of the reinforcements – OPTICAL FIBERS

In-situ plate tests

Settlements and lateral displacements – topographical measurements and inclinometers

PROJECT « SOLRENF » - TASKS

TASK 5 : Construction sites – tests and monitoring

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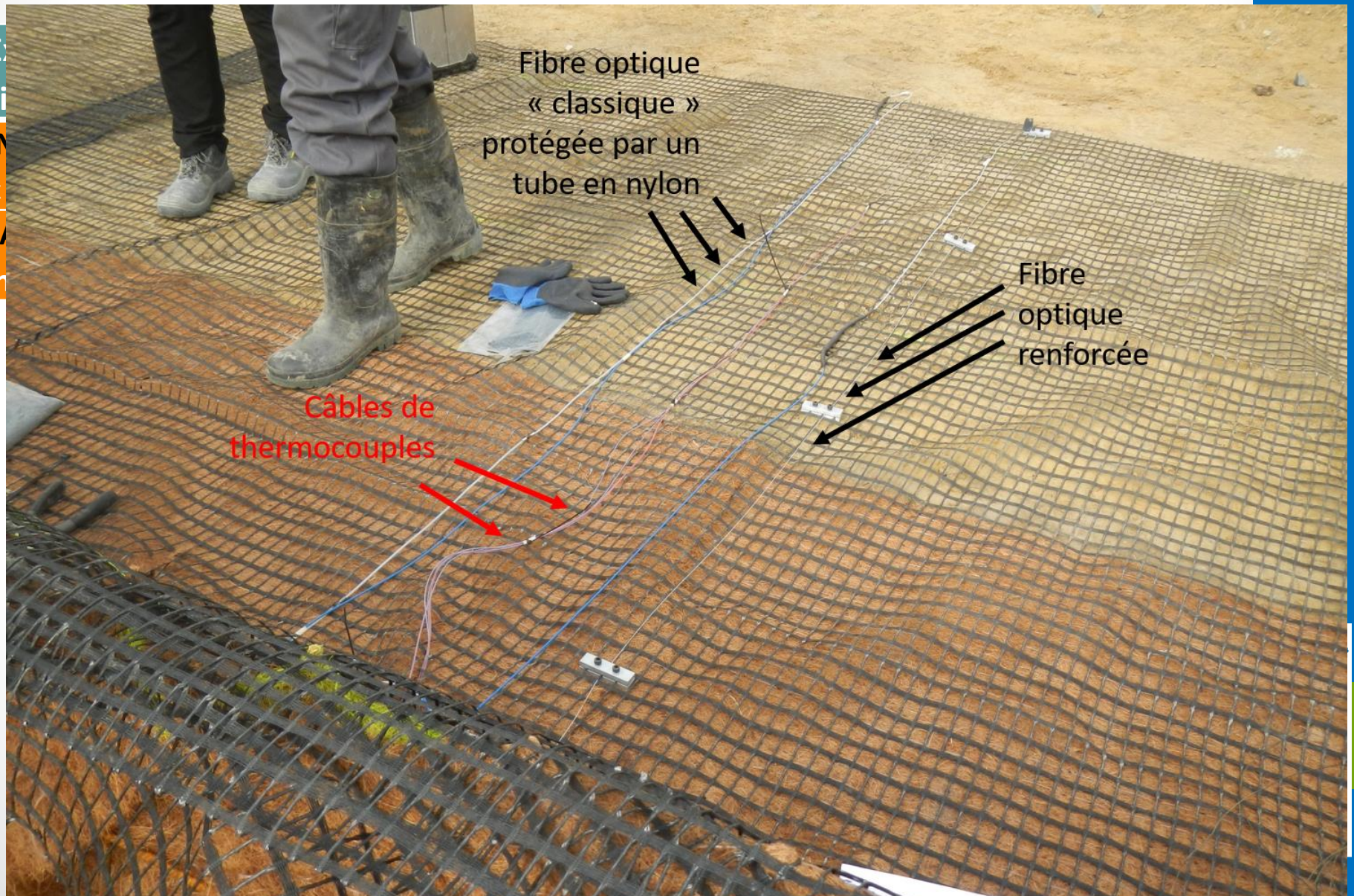

PROJECT « SOLRENF » - TASKS

TASK 5 : Construction sites – tests and monitoring

11èmes Rencontres Géosynthétiques – du 7 au

LES RENCONTRES GÉOSYNTHÉTIQUES

GEOSYNTHETIQUES POUR LE RENFORCEMENT DES SOLS : APPLICATIONS RECENTES ET RECHERCHE EN BELGIQUE

GEOSYNTHETICS FOR SOIL REINFORCEMENT: RECENT APPLICATIONS AND RESEARCH IN BELGIUM

Nicolas Denies[1], Noël Huybrechts[2], Jan Verstraelen[3], Wim Maekelberg[3], Jan Maertens[4]
1 Centre Scientifique et Technique de la Construction - CSTC, Limelette, Belgique
2 Centre Scientifique et Technique de la Construction - CSTC et KU Leuven, Belgique
3 TUC RAIL, Bruxelles, Belgique
4 Jan Maertens BVBA & Chairman Belgian Geosynthetics Society - BGS, Beerse, Belgique

RÉSUMÉ – Les remblais renforcés au moyen de géosynthétiques sont de plus en plus utilisés cor
alternative à des solutions plus classiques de soutènement. Dans le présent article, les aut
présentent tout d'abord les dernières tendances liées au développement de cette technique en Belg
à l'aide de différents cas pratiques. Le cœur de l'article se concentre ensuite sur un cas particuli
conception, la construction et le monitoring, au moyen de fibres optiques, de remblais renforcés réa
dans le cadre du projet « by-pass – Mechelen ».
Mots-clés : Remblais renforcés, cas pratiques, dimensionnement, monitoring, fibres optiques

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PROJECT « SOLRENF » - TASKS

TASK 5 : Construction sites – tests and monitoring

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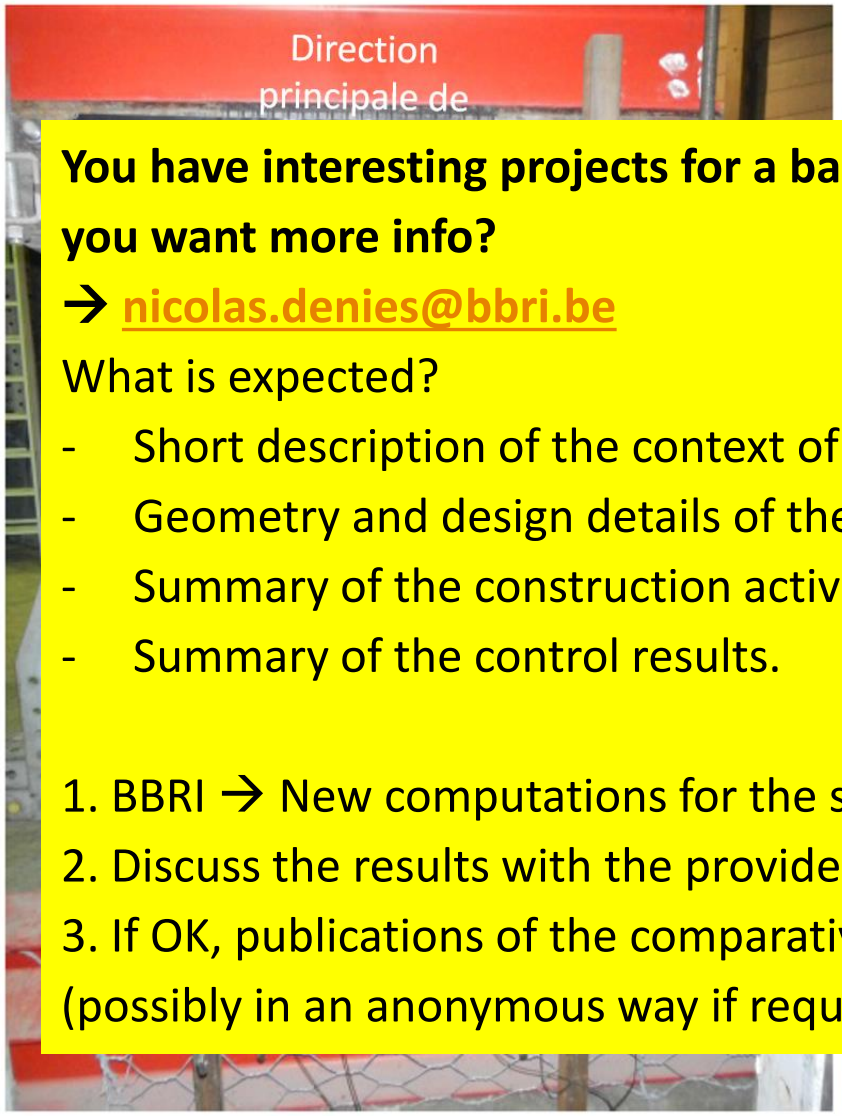
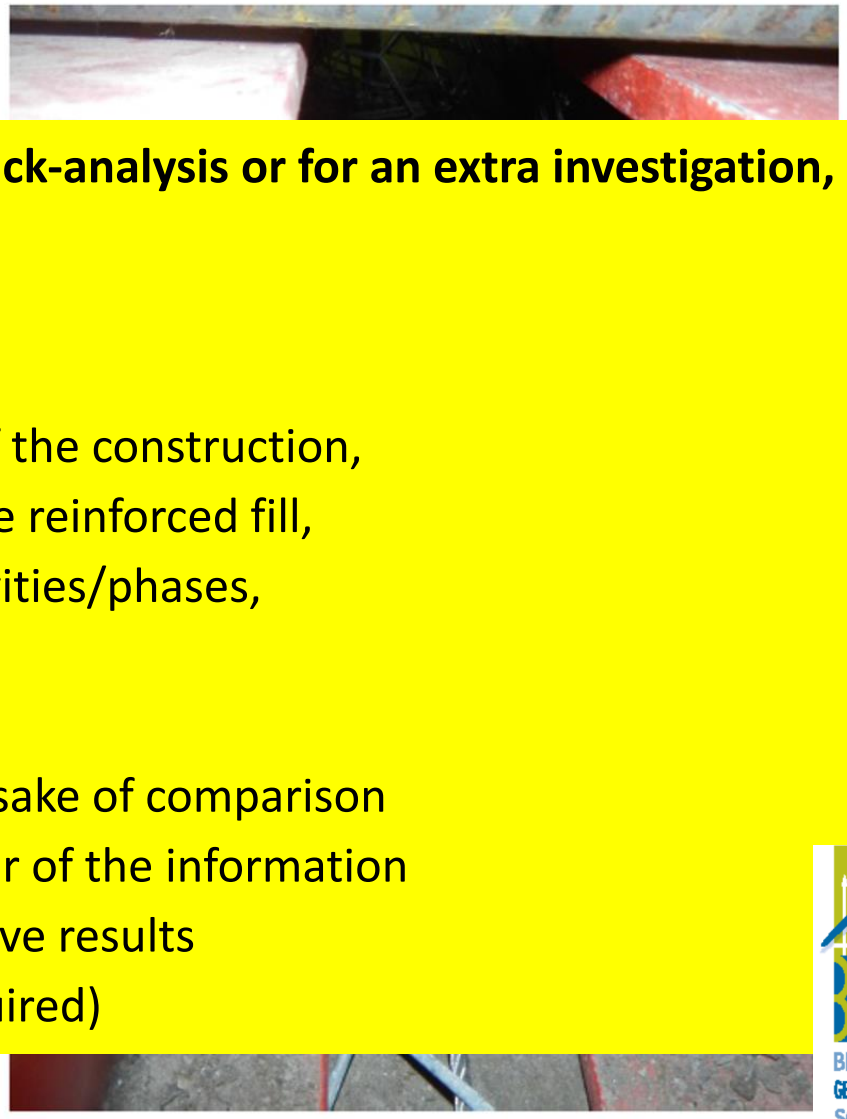
TASK 5 : Construction sites – tests and monitoring





You have interesting projects for a back-analysis or for an extra investigation, you want more info?

→ nicolas.denies@bbri.be

What is expected?

- Short description of the context of the construction,
- Geometry and design details of the reinforced fill,
- Summary of the construction activities/phases,
- Summary of the control results.

1. BBRI → New computations for the sake of comparison
2. Discuss the results with the provider of the information
3. If OK, publications of the comparative results

(possibly in an anonymous way if required)

International Journal of Geoengineering Case Histories

International Society for Soil Mechanics and Geotechnical Engineering

Call for Papers for Special Issue on Reinforced Fill Structures Case Histories

ISSMGE International Journal of Geoengineering Case Histories

TC 218 on Reinforced Fill Structures is pleased to announce a Call for Papers for Case Histories in Reinforced Fill Structures that will be published in ISSMGE's International Journal of Geoengineering Case Histories (https://www.geocasehistoriesjournal.org/). Well-documented case histories with detailed site characterization data and performance/monitoring data to assess field performance are particularly welcome. The MSE and RSS Case histories may relate to:

- Special Retaining Wall and Bridge Abutment Cases
- Railroad Applications
- Sustainable Geotechnics and Carbon Footprint
- Recycled and Amended Marginal Backfills
- Construction Waste Recycled Materials as MSE Backfill
- Extreme Conditions
- Advancements, Developments and State of the Design Practice
- Full-Scale Instrumented Structures
- Serviceability Limit State Pathologies

Interested authors are encouraged to submit a 300-word abstract **by 31 October 2020** to Guest Editor **Ass. Prof. Dr. Ivan P. Damians** (Email: ivan.puig@upc.edu).

Authors will be notified shortly after about the acceptance of their abstract. Submission date of full papers is **15 February 2021**. Please consult the Journal's submission guidelines https://www.geocasehistoriesjournal.org/pub/about/guidelines before you submit your paper. All papers will go through a peer-review process. **Publication of this special issue is expected in November-December 2021.**