

General Guides to Publish Well-written Technical Papers

**Jie Han, Ph.D., PE
Glenn L. Parker Professor
of Geotechnical Engineering**

**Department of Civil, Environmental,
and Architectural Engineering
The University of Kansas, USA**

Outline of Presentation

- **Introduction**
- **Paper Publication and Review Processes**
- **Key Requirements for Technical Papers**
- **Presentation**
- **Review Comments and Revisions**
- **Concluding Remarks**

Disclaimer

- The presenter is a non-native English speaker, but has published more than 350 technical papers, mostly in English.
- This presentation was prepared based on the presenter's personal experience and opinions through 20-year editorial board service, graduate student advising, and technical paper co-authorship in geotechnical engineering.
- Different fields, journals, & conferences may have different rules and styles for technical papers.
- Guides discussed in this presentation may not be all applicable.

Technical Paper vs. Fiction

- Technical paper should contain facts with evidence and supporting theory or data.
- Technical paper should be written in a plain language with simple words that are easy to understand and do not need any imagination.
- Fiction does not necessarily contain facts.
- Fiction may be written in a rich and colorful language with difficult or vague words that require imagination.

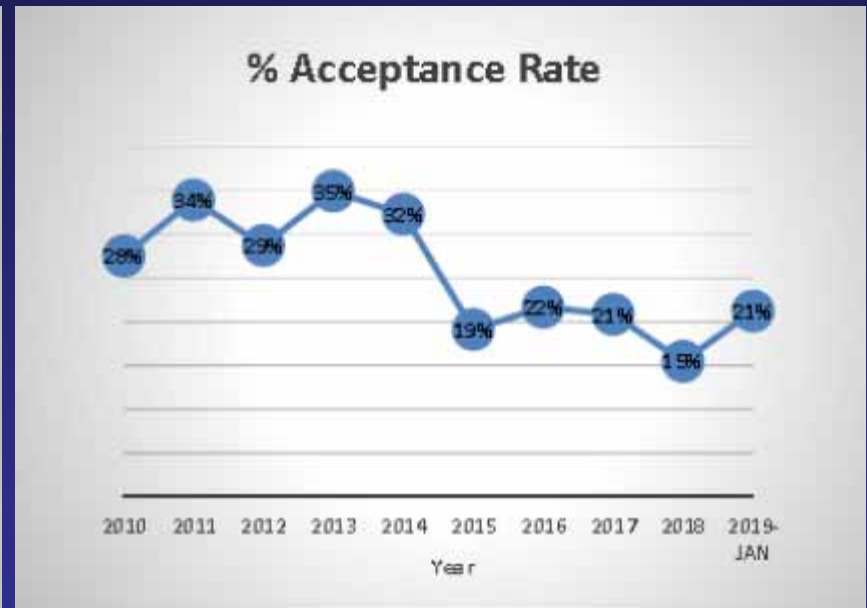
Top-10 Most Cited Technical Papers

<input type="checkbox"/>	Numerical analysis of geosynthetic-reinforced and pile-supported earth platforms over soft soil J Han, MA Gabr Journal of geotechnical and geoenvironmental engineering 128 (1), 44-53	560	2002
<input type="checkbox"/>	Simplified method for consolidation rate of stone column reinforced foundations J Han, SI Ye Journal of Geotechnical and Geoenvironr	231	2001
<input type="checkbox"/>	Design Method for Geogrid-Reinforced Embankment JP Giroud, J Han Journal of Geotechnical and Geoenvironr	230 *	2004
		Impact	Citing Journal
		1	ALL Journals
		2	ALL OTHERS (225)
		3	3.305 J GEOTECH GEOENVI...
		4	GEOTECH SP
<input type="checkbox"/>	3D coupled mechanical and hydraulic modeling of geosynthetic-reinforced column-supported embankment J Huang, J Han Geotextiles and Geomembranes 27 (4), 273-284	136	2009
<input type="checkbox"/>	Design method for geogrid-reinforced embankment JP Giroud, J Han Journal of Geotechnical and Geoenvironr	134	2004
<input type="checkbox"/>	Behavior of interfaces between geosynthetic-reinforced embankment and soil JD Frost, J Han Journal of geotechnical and geoenvironm	121	1999
<input type="checkbox"/>	Numerical analysis of foundation settlement of pile-supported embankment J Han, S Oztoprak, RL Parsons, J Huang Computers and Geotechnics 34 (6), 435-448	116	2007
<input type="checkbox"/>	Investigation of factors influencing settlement of pile-supported embankment under static loading J Han, S Oztoprak, RL Parsons, J Huang Computers and Geotechnics 34 (6), 435-448	114	2010
<input type="checkbox"/>	Coupled mechanical and hydraulic modeling of geosynthetic-reinforced column-supported embankments J Huang, J Han, S Oztoprak Journal of Geotechnical and Geoenvironmental Engineering 135 (8), 1011-1021	101	2009

I am not a big fan of impact factors; however, they do have some implications.

Impact Factor and Acceptance Rate of ASCE JGGE

JGGE = Journal of Geotechnical and Geoenvironmental Engineering



% acceptance rate

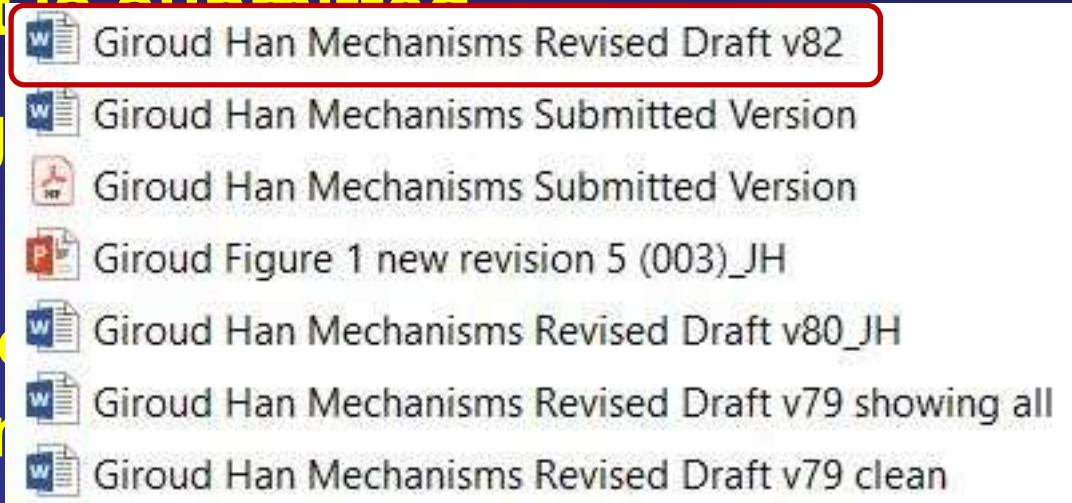
- <10
- <20
- <30
- <40
- >40

Difficulty

- Extremely difficult
- Very difficult
- Difficult
- OK
- Easy

Authorship

- Authors on a paper should have made technical contributions to the study presented.
- All authors should approve a manuscript before it is submitted.
- Rushing to be done to be done
- Correspondence representing correspondence during paper submission, revisions, and future inquiries, and signing a copyright release form.



paper

Publication Process of ASCE JGGE

- Manuscript submission to Publication Office
- Distribution to the Editor-in-Chief
- Assignment to Editor
- Assignment to Associate Editor
- Distribution to at least two reviewers
- Summary of reviewers' comments & recommendation
- Response to the corresponding author w/ comments & recommendations
- Acceptance or decline of the paper

Recommendation Options

- **Accept: Author has no obligation to make changes; 2 or more Accepts in first round**
- **Revise for Editor Only: Practically accepted, some changes recommended before going to press**
- **Revisions Required: Author must make revisions or justify no revisions; often used for split reviews**
- **Decline: Paper cannot be resubmitted; must have 2 or more Decline reviews and cannot have 2 or more accept reviews in first round**

Initial Manuscript Screening

- Decline without review (scope)
- Decline without review (transfer)
- Return without review (grammar/syntax)
- Others

Policy regarding Conference Papers

- Submitted papers contain at least 50% new content.
- The remaining 50% not be verbatim to previously published work.
- What is the novelty and value added in view of what has been published?
- Transportation Research Board (TRB) Annual Meeting Compendium are considered published and cannot be submitted to ASCE for publication without significant additions and revisions. Authors who intend to submit a TRB conference paper to an ASCE journal must opt-out of inclusion in the compendium.”

Technical Paper vs. Technical Note

Technical Paper

- A complete study
- Significant contributions
- < 10,000 words (ASCE)

Technical Note

- A specific study
- Limited contributions
- <5,000 words (ASCE)

Turnaround Time for ASCE JGGE (2010)

- Submission to Editor assignment: **1 day**
- Editor to AE time: **8 days**
- **AE to first reviewer invitation: 27 days (21 in 2009)**
- Invitation to response: **4 days**
- Time to complete review: **41 days**
- AE decision time: **13 days (21 in 2009)**
- Editor/ASCE decision time: **11 days**
- **Total time to decision: 105 days (116 in 2009)**

Average time from receipt to first decision has decreased:
116-116-105 days (2008-2009-2010)

Review Outcomes for Original Submission (2010)

- Accept As Is: 0.4% (91 days) 3.1%
- Revise for Editor Only: 2.7% (182 days)
- RR-TP: 28% (164 days)
- RR-TN: 8% (138 days)
- Decline: 21% (132 days)
- Decline-Scope or Transfer: 23% (10 days)
- RWR Grammar/Syntax: 18% (8 days)

Review Outcomes for First Revision (2010)

- Accept or RE only: 61%
- RR (TN or TP): 29%
- Decline: 9%
- RWR Grammar/Syntax: 1%

Review Outcome for Second Revision - 2007

- **Accept: 97% (28 days avg)**
- **RR-TN: 3% (33 days avg)**

Necessary Components for A Well-Written Paper

- **Proper paper title**
- **Concise abstract with important highlights**
- **Clear and convincing problem statements and research needs**
- **Comprehensive and in-depth literature review**
- **Clear objectives to provide new knowledge**
- **Well-designed experiment, theoretical, or numerical model**
- **Well-analyzed data with meaningful results**
- **Concise conclusions with clear contributions**
- **Excellent presentation of all the above**

Standards of acceptance for ASCE Manuscripts

- Be of value and interest to civil engineers
- Be an original review of past practice, present information of current interest, or probe fields of activities
- Be a thought-provoking study that contributes to the planning, analysis, design, construction, management, or maintenance of civil engineering works
- Contribute to advancement of the profession
- Be free of evident commercialism
- Not have been published previously

Key Requirements for Technical Papers

- **Original**
- **Creative**
- **Theoretical and/or practical contributions**
- **Appropriate literature review**
- **Verifications/ justifications**
- **Conforming journal format**
- **Non-commercial information**

Common Issues in Paper Writing

- **Insufficient literature review**
- **Insufficient basic information**
- **Unclear contributions**
- **Inappropriate citations**
- **Use of non-standard testing procedures**
- **Use of non-standard parameters**
- **Unclear assumptions**
- **No justification/verification**
- **Inappropriate presentation**
- **Grammatical errors and word misuse**

Insufficient Literature Review

Purposes of Literature Review

- Provide the state of knowledge to the readers
- Provide the basis for the current study
- Demonstrate the author's knowledge

Common Problems

- Limited literature review
- Literature review only based on the knowledge in the local region
- Literature review only based on the author's own previous studies

Insufficient Basic Information

General Rules

- Provided basic information sufficient enough for others to repeat the author's tests or calculations to obtain the same results
- Do not assume the readers know the background

Common Problems

- No necessary information (e.g, GWT)
- Unclear soil parameters (e.g., c , ϕ , total, effective, peak, or residual?)
- Unclear testing method (e.g., CD, UU, CU?)

Unclear Contributions

General Rules

- Do not be shy of your contributions
- Do not take others' contributions as yours

Common Problems

- Hard to identify the author's contributions
- Take others' results or formula without crediting their contributions – It is cheating!!
- No support for the author's contributions (e.g., no comparison between the new and old methods)

Inappropriate Citations

General Rules

- Do not over-credit others
- Do not under-credit others

Common Problems

- Cite the author who has not made any contributions to the related study
- Take others' results or formula without crediting their contributions – It is cheating!!
- No quotation mark for copying a sentence

Inappropriate Citations

General Rules

- Do not cite a paper if you have not read it

Example

- A biaxial geogrid study cited studies based on uniaxial geogrids

Use of Non-Standard Testing Procedures

General Rule

- Indicate the deviations from the standard method
- Provide detailed procedures for others to follow

Common Problems

- Provide test results without describing special testing procedures (e.g., plate loading test p-s curve, deformation criteria? loading method?)
- No calibration (e.g., repeatability)
- Scale and boundary effects

Use of Non-Standard Parameters

General Rule

- Avoid using non-standard parameters

Common Problems

- Soil type (not following ASTM or AASHTO)
- c_{cu} and ϕ_{cu} are two obsolete parameters
- a_{1-2} and E_{s1-2} are not common parameters, instead, m_v and D' (constrained modulus) should be used

Unclear Assumptions

General Rule

- Do not assume others can read your mind

Common Problems

- No constitutive model (e.g., elastic material)
- No boundary conditions
- No initial conditions

No Justification

General Rule

- Do not draw any conclusion without any justification, evidence, or data

Common Problems

- Draw conclusions based on personal judgment or guessing
- Make statement without presenting any evidence

No Verification

General Rule

- It is not acceptable if a new theoretical solution is not verified by others' results, or test data or examined by parametric study

Common Problems

- Derive a theoretical solution without any verification or comparison

Applicability and Limitations

General Rule

- All the theoretical and empirical solutions have limitations and conditions

Suggestions

- Be clear about the limitations and conditions
- Examine the solutions at extreme conditions, for example, a solution for treated soils should be also valid for untreated soils if the effect of the treatment is ignored

Presentation

General rule: “write in a style that is brief, active, precise, and simple”

- **“Brevity means avoiding unnecessary words and ideas, and thus yields more precise writing.**
- **An active style is more direct and lively than the passive voice.**
- **Preciseness implies defining all concepts of interest the first time they appear and always refer to them with the **same** word.**
- **A simple style is always better for technical writing.” (Valduriez, 1994)**

Nonprofessional Presentation

General Comment

- Nonprofessional presentation shows the author is not well trained and not serious about research and publication

Examples

- Inconsistent fonts and spacing through the paper (especially figures)

Inappropriate Presentation of Test Data

General Comment

- Variability is the nature of geotechnical eng.

General Problems

- Present smooth curves without data points
- Present correlation without showing R^2

Inappropriate or No Definition of Terminology and Parameters

General Comment

- Do not assume the terminologies or parameters commonly used in one country are also used elsewhere

Examples

- Composite foundations
- Stress concentration ratio

Abbreviation and Acronym

General Comment

- Full name should be provided for the first use, and in the abstract, introduction, and conclusion in the paper.

Examples

- Federal Highway Administration (FHWA)

Grammatical Errors

General Comment

- It takes time to improve English writing skills

General Problems

- Use of long sentences
- Passive vs. active

Suggestion

- Keep a sample paper aside when writing a paper

Active vs. Passive Tense

Avoid using passive tense if active tense is possible

Passive tense is a voice of a “dead man”.

For example, as shown in Figure 1 → Figure 1 shows

Another example:

In this experimental study, the effects of EPS geof foam on the distribution of vertical stresses above a rectangular concrete conduit under static and cyclic footing loads were investigated.

This experimental study investigated the effects of EPS geof foam on the distribution of vertical stresses above a rectangular concrete conduit under static and cyclic footing loads.

Past vs. Present Tense

Different authors have different preference to the use of past or present tense in their writing.

In general, present tense is used to describe current status of research and practice and well-known facts and opinions. Present tense is often used in theoretical derivations.

In general, past tense is used to describe experimental tests conducted by authors and review work done by others in the past.

Over-length Title

General Comment

- Concise title is better than longer title
- Some journals have a limit for total number of characters

Examples

- “Research on Theory and Application of Interaction Principle between Deep Mixing Columns and Surrounding Soils”
- Can be revised as “Interactions of Deep Mixed Columns and Surrounding Soils”

Examples of Long Sentence

Abstract : In this paper, having the Shuangjiangkou hydropower station in the Dadu River as a background, the physical model test of the stability of cavern complex which contains the power house, transformer house and tail water surge chamber as well as other openings under high in-situ stress was generally introduced, including the steel structural frame of the physical model test, the development of the hydraulic pressure system, the development of the rock analogy material, the development of the measuring technology and the measuring elements, the fabricating and embedding technology of the prestress cables and rock bolts, the excavation and measurement of the cavern complex and so on. The measuring results of the test were analyzed and were compared with the results calculated by the numerical simulations. The disciplines of the two are in good agreement. It shows that the expected effects are obtained and can make certain guiding significance to the project.

Edited Sentence

“Avoid complex sentences by breaking them into simpler, connected ones, use the present tense as much as possible, and avoid too many acronyms.” (Valduriez, 1994)

Abstract: ~~+~~ ~~Us~~ ~~In this paper,~~ ~~having~~ the Shuangjiangkou hydropower station in the Dadu River in China as a background, ~~p~~~~the~~ physical model tests were conducted to investigate ~~of~~ the stability of a cavern complex, which contains a ~~the~~ power house, a transformer house, ~~and~~ tail water surge chamber as well as other openings under high in-situ stresses. During the study ~~was generally introduced,~~ ~~including the~~ steel structural frame of the physical model ~~test,~~ ~~the development of~~ the hydraulic pressure system, ~~the development of the~~ rock analogy material, ~~the development of the~~ measuring technology and ~~the measuring~~ elements, ~~the~~ fabricating and embedding technology of ~~the pre-stressed~~ cables and rock bolts were developed, and ~~the~~ excavation and measurement of the cavern complex were implemented and so on. The ~~test~~ ~~measuring~~ results ~~of the test~~ from this study were analyzed and ~~were~~ compared well with ~~the~~ ~~result~~ ~~s~~ from ~~calculated by~~ the numerical simulations. ~~The disciplines of the two are in good agreement.~~ This research ~~It obtained~~ shows that the expected effects ~~are obtained~~ and provided ~~can make certain~~ guidance ~~for~~ ing ~~significance~~ to the design and construction of the power station ~~project.~~

Numbers

- **Avoid starting with a number in a sentence**
- **A number less than ten should be spelled out.**
- **No Arabic number at the beginning of a sentence**
- **Present Point 1 (or A) before Point 2 (B)**
- **1, 1.0, 1.00 have different accuracy implications or requirements (e.g., FS > 1.3 is different from FS >1.30).**
- **Number of decimals should not be more than the accuracy of measurements (e.g., soil specific gravity = 2.65738201).**

Examples of Commonly Misused Expressions

- don't or doesn't – **not formal expression**
- It is or this is – **not a clear expression**
This phenomenon or this result or this data
- the Skempton's equation – **should be Skempton's equation or the Skempton equation**
- Avoid using “the former” and “the latter”

Increase versus Improve

Increase

- related to quantitative change

Improve

- related to qualitative change

For example

- Increase pavement life from 10 years to 20 years
- Improve pavement performance

Redundancy

Do not use words of the same meaning in the same sentence

In addition, there is **also** sufficient length of reinforcement ...

Any Problems?

Figure 5 shows that the load capacity of the pile decreases with an increase of time. **This** is because ...

Many possible interpretations for “this”

- This figure
- This capacity
- This pile
- This time
- **This result**
- **This phenomenon**

Uncommon Symbols or Formats

Do not use uncommon symbols

②-1



2a

1 ~ 2



1 to 2

a/b·c



a/(b·c) or (a/b)·c

References in Text

General Comment

- Different journals may have different styles of references in text (e.g., author's name + year of publication; number of reference)
- Order of references: year of publication (early to later) or order of reference number

Example:

Jenck et al. (2007, 2009), Le Hello and Villard (2009), ASIRI (2012), and Chevalier et al. (2012) confirmed ...

Locations of Tables and Figures

- Tables and figures should be placed in the text after and in immediate connection to where they are first mentioned
- To avoid splitting them between pages, their insertion may be delayed, but not advanced

Locations of Tables and Figures

$$p = \sum_{i=1}^N p_i f_{mi} \quad (1)$$

Where p_i is the p -value for the single pile, f_{mi} is the p -multiplier varying with pile row position, pile spacing, soil types and installation method, and N is the number of piles in the group. Mokwa (2000) summarized a general relationship between p -multiplier and spacing based on the published data, see the Figure 1.

When an embedded pile cap is included in the analyses with a pile group, the cap is modeled by enlarging the top portion of the GEP based on the dimensions of the cap. However, a new p - y curve for pile cap should always be developed.

The LPILE 5.0 plus was used to analyze the pile group using, though the currently popular software GROUP and FLPIER are used for the analysis of pile group. The results at GROUP and FLPIER encountered some problems when using the externally generated pile cap p - y curve (Mokwa et al., 2000) and GROUP didn't account for pile-soil-pile interaction effects due to shaft spacing and the effects due to embedded cap (Zafir and Vanderpool, 1998). In addition, this method is conducive to those who only have LPILE Plus at hand. For the bridge pile foundation, pile caps are always embedded as mentioned previously. Therefore, The GEP approach computed in LPILE is suitable to model the behavior of laterally loaded pile group supporting bridge.

Comparison of GEP predicted results with measured results

The verification of GEP predicted results with measured results in Kentland Farms field in Virginia has been presented in the study of Mokwa (2000). Each pile group consists of four 0.25m diameter, 4.1 m long steel piles (HP10x42) with 0.9 m cap on top. After considering pile head rotation and pile cap response, the predicted results were well fit with the measured.

In order to extend the verification, the other two publications of full-scale test data (Li, 2006; Zafir and Vanderpool, 1998) were selected to further

examine the GEP approach. These two field tests were run on drilled pile group consisting of two size diameter piles, 0.61m (Zafir and Vanderpool, 1998) and 1.58 m (Li, 2006). Different diameters of pile were taken into account, since several studies have shown that diameters had an important influence on pile response (Pender et al., 2007; Reese et al., 2004).

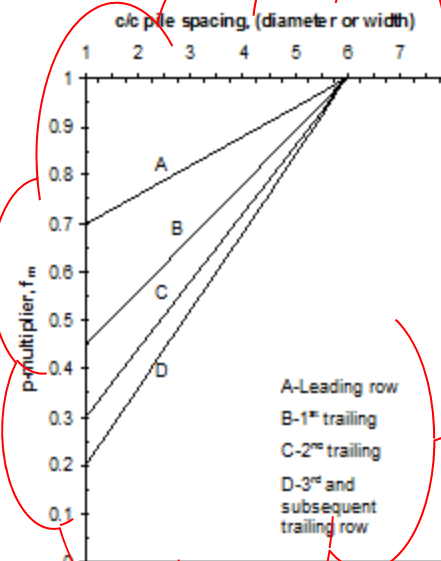


Figure 1 The proposed design charts for p -multiplier (after Mokwa et al., 2000).

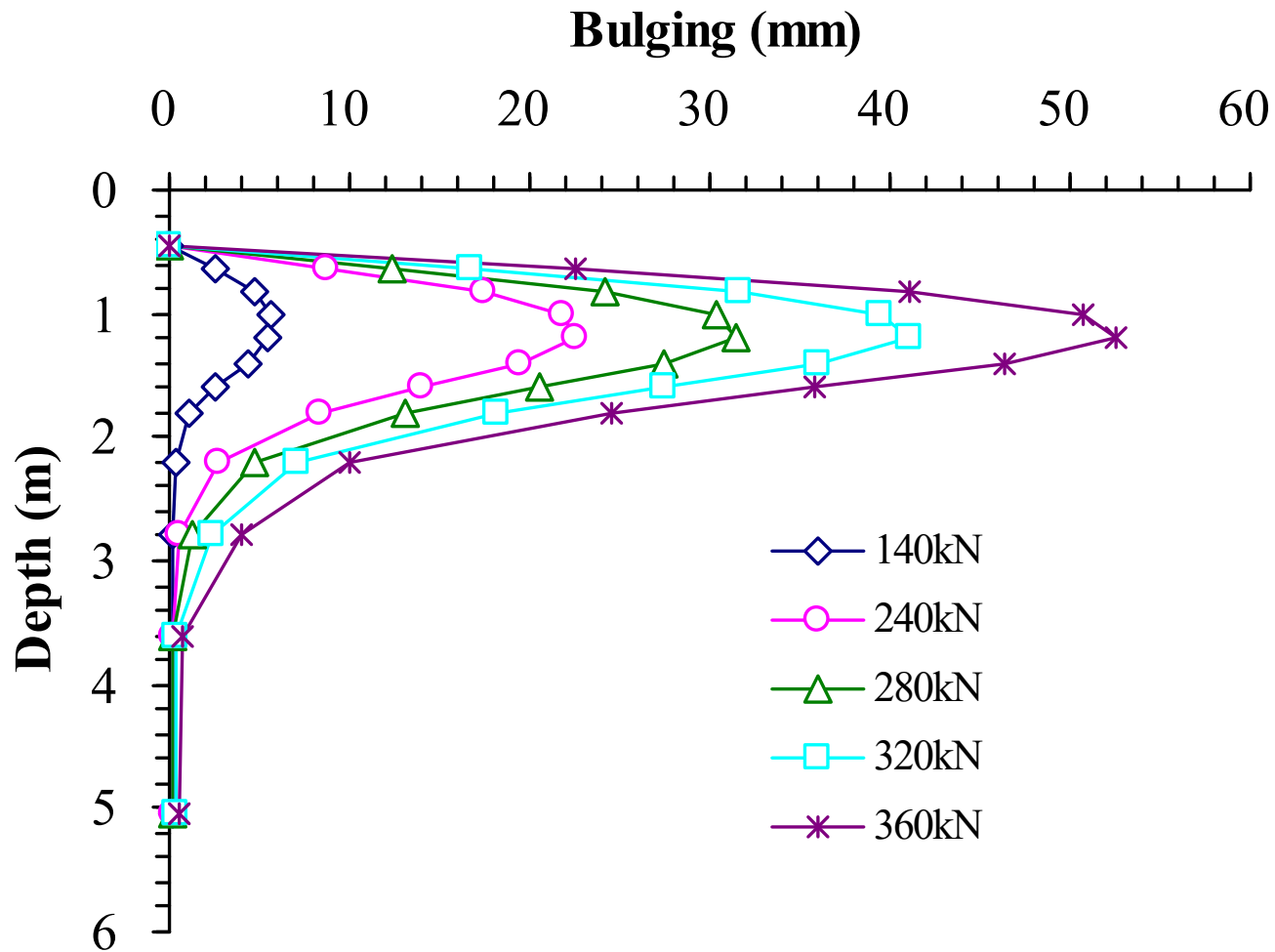
Case study 1

Li (2006) present the results of a lateral load test on 3x2 pile group at a site in Jiayi county, Taiwan. The pile group consists of six 1.58 m diameter, 34 m long drilled piles spaced 3D on centers. The piles were connected by a 12m x 8m x 2m pile cap with its base on the groundline. Since the piles were rigidly embedded into cap, thus the boundary condition of pile head was treated as fixity. Table 1 shows the details of the properties of the group piles. As shown in Table 2, there were 7 layers of soils with low plastic clay and silty sand distributed along the

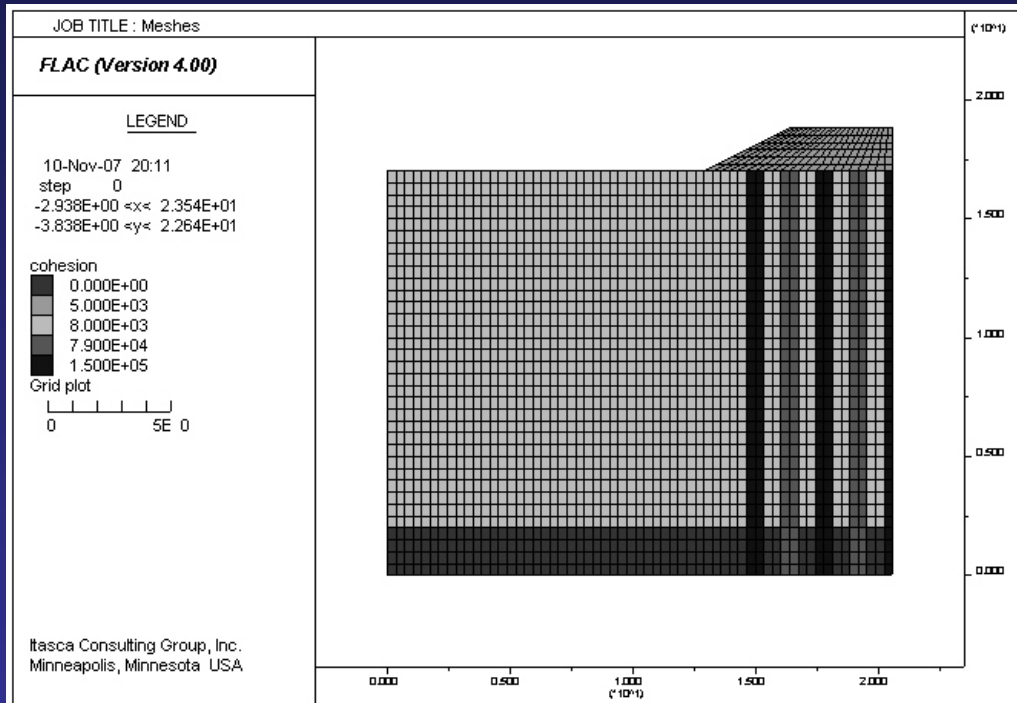
Graphics and Photos in Color

- Graphics and photos may be in color; however, do not use light or pastel colors, such as yellow, light green, etc. as Proceedings Books or journals will be published in black & white

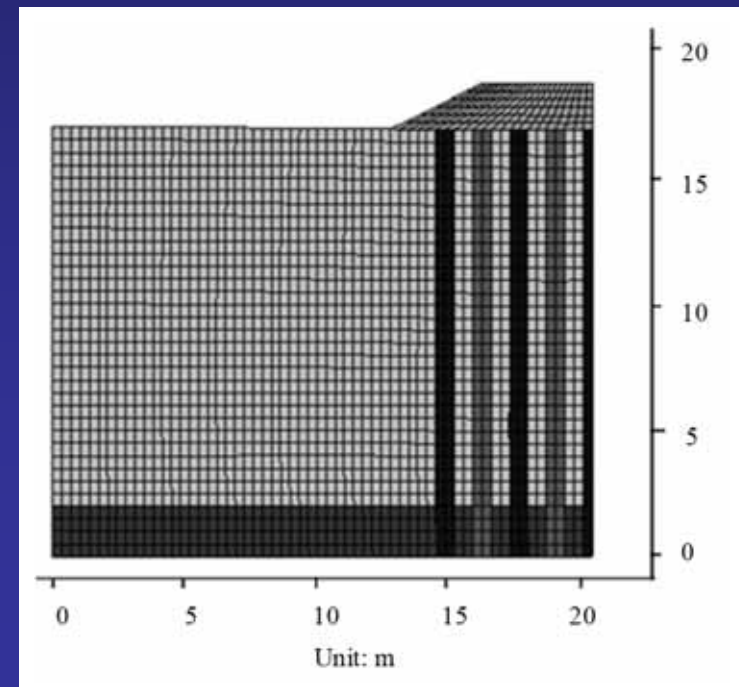
Graphics and Photos in Color



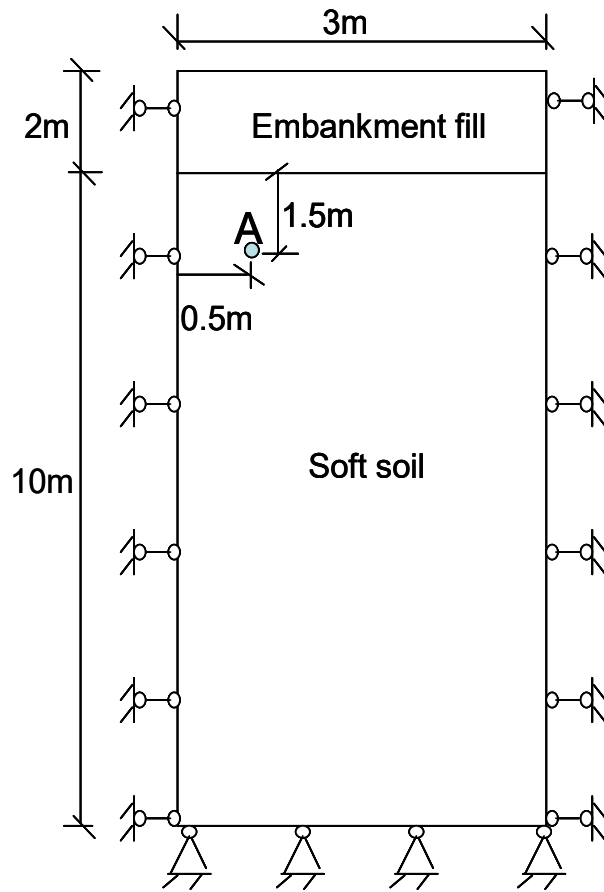
Font Size and Commercial Information



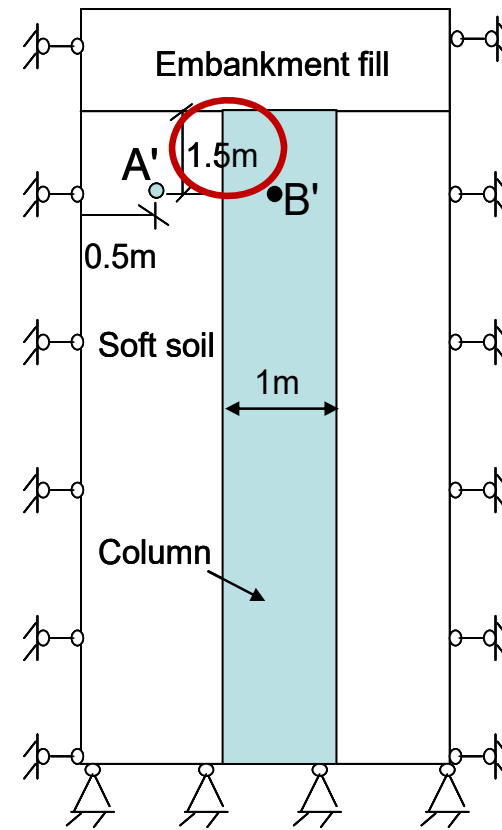
Small fonts with commercial name



Overlap of Font with Drawing

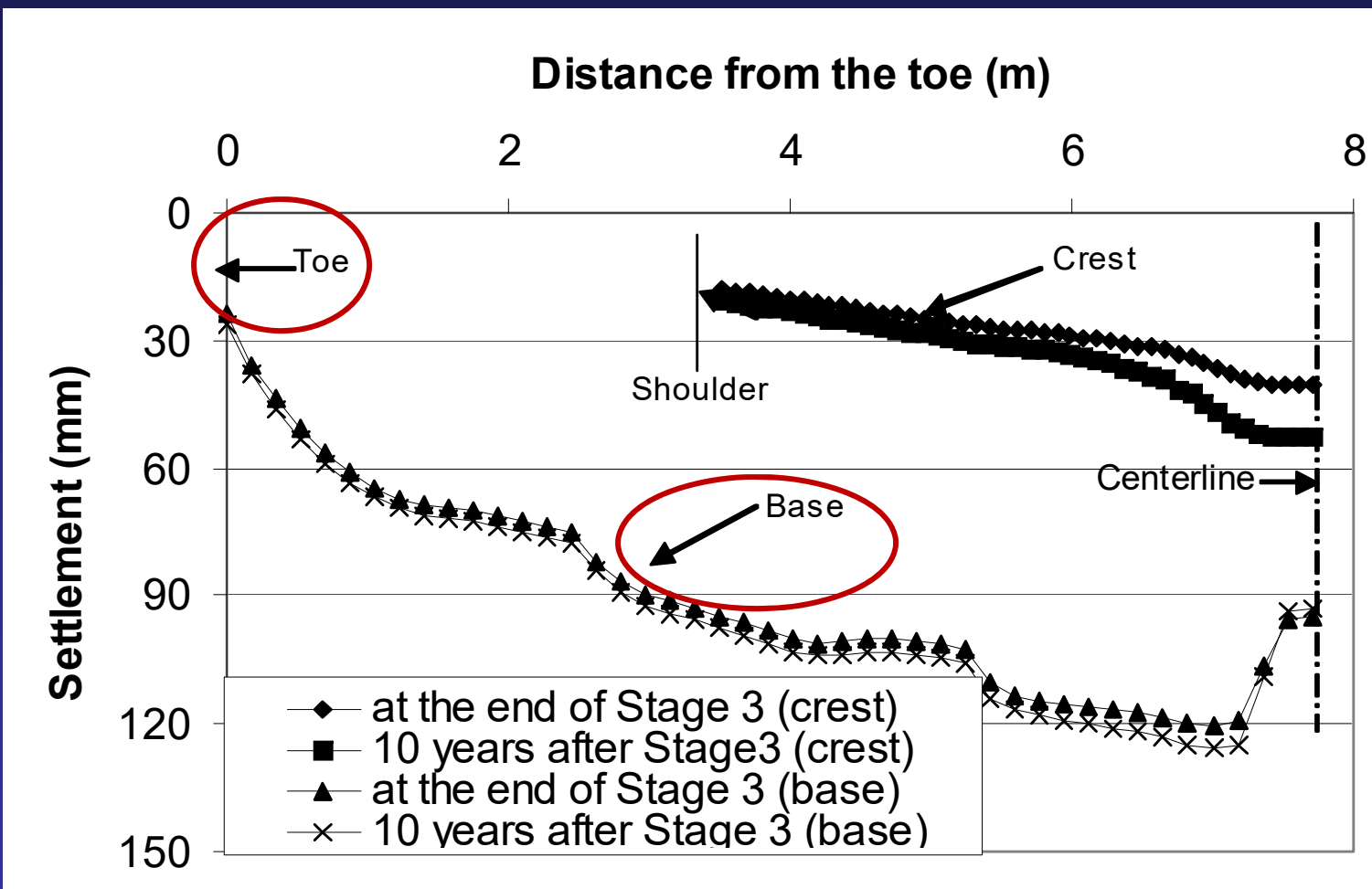


(a) without column

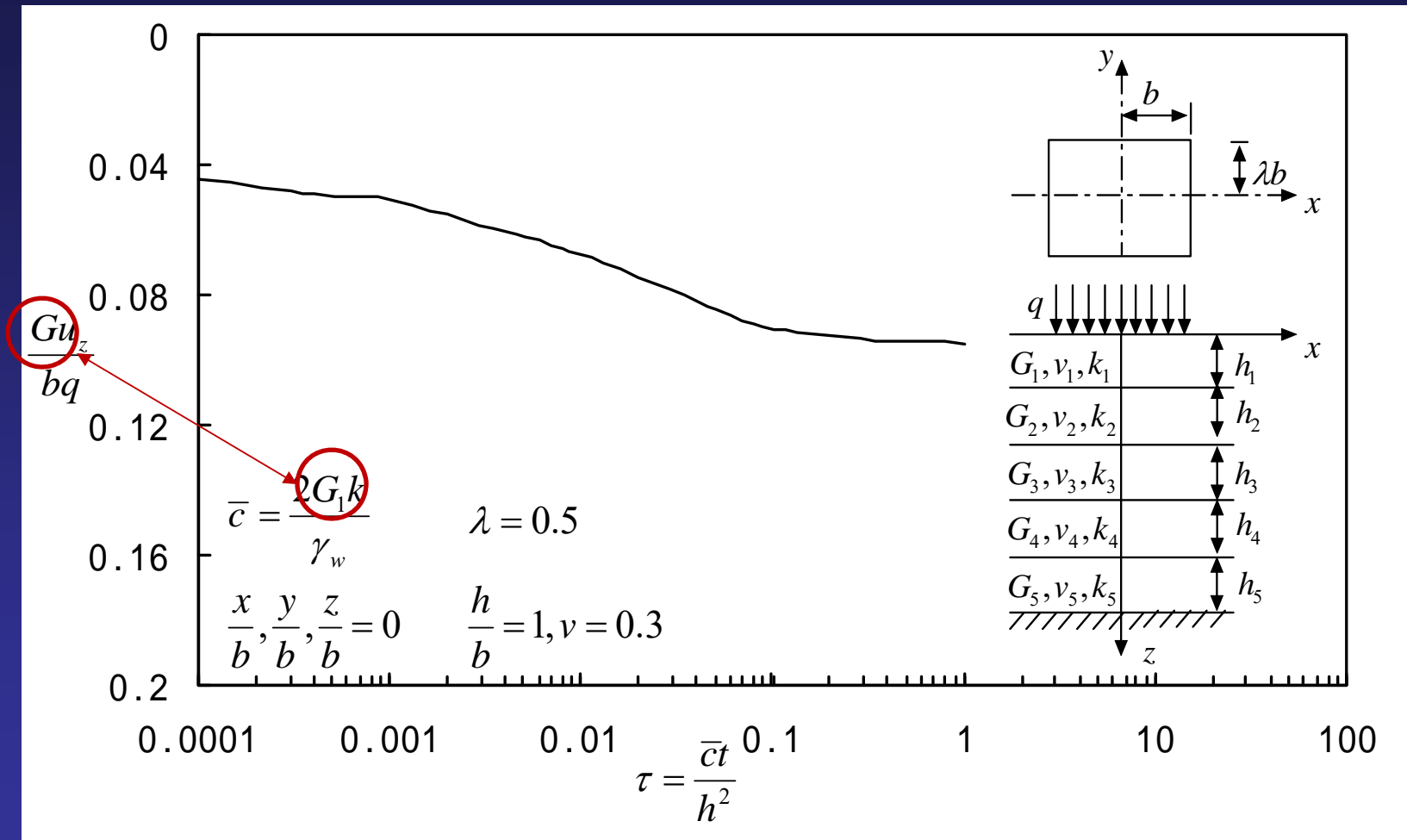


(b) with column

Pointing Arrows to Right Positions

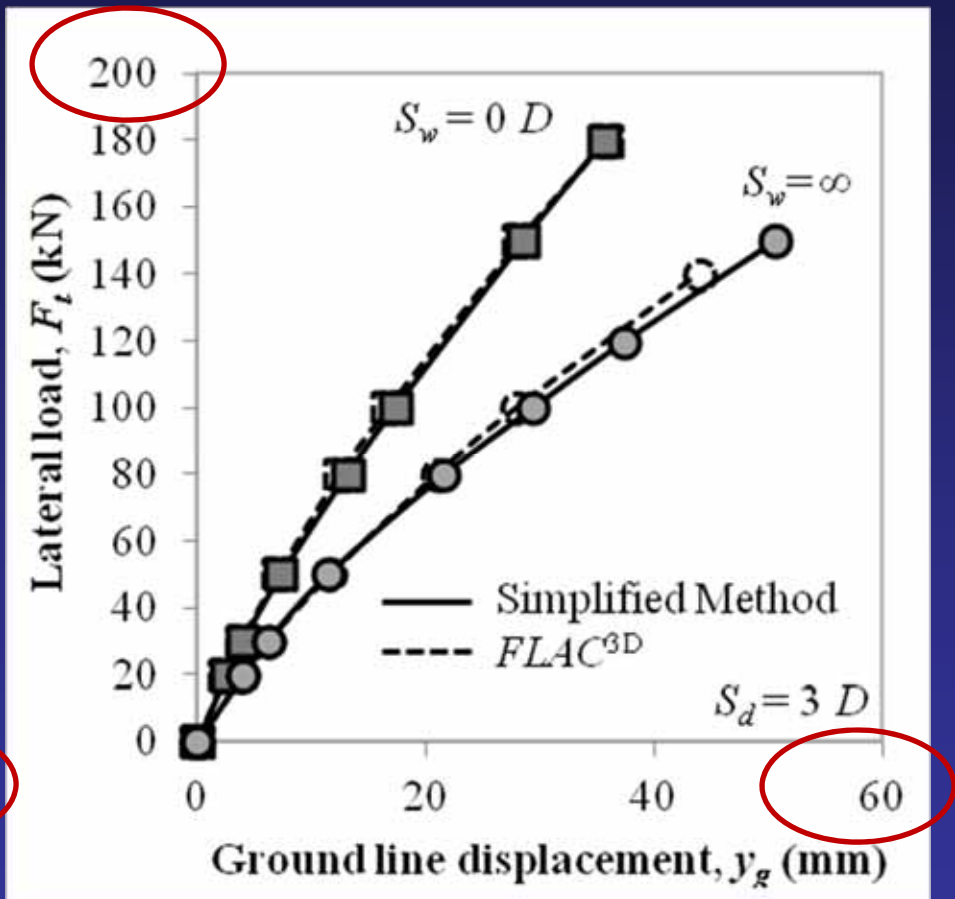
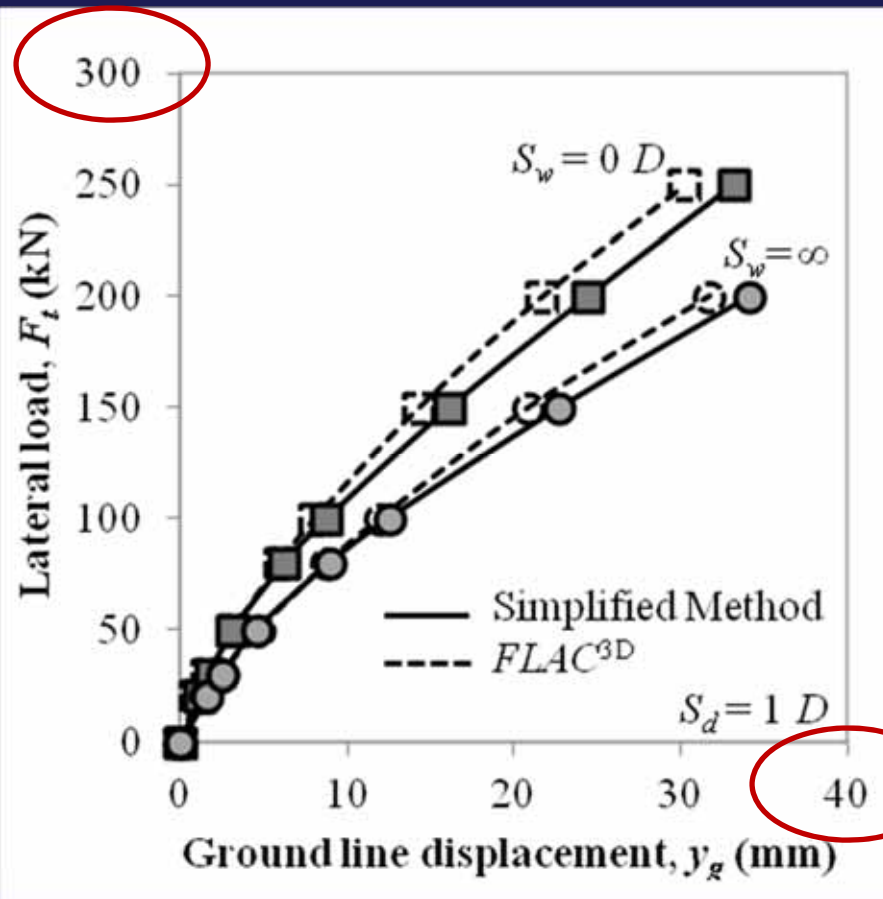


Inconsistent Symbols



G, h, ν = ?

Inconsistent Scales



Inconsistent Units

Based on field studies, the following relationship was developed

$$k = 2E$$

where k = modulus of subgrade reaction (kN/m^3)
 E = elastic modulus of soil (kN/m^2)

Inconsistent Units!

Confusing Designation

Avoid using the same letter or symbol for different meanings

Test A, area of column, A, and cross section A-A

 Test 1, area of column, A, and cross section I-I

Be Careful with Advanced Technologies

Han, J., and Bhandari, A. (2009). "Evaluation of Geogrid-Reinforced Pile-Supported Embankments under Cyclic Loading Using Discrete Element Method." In H. Jie, Z. Gang, R. S. Vernon, and H. Maosong, (Eds.), *ASCE Geotechnical Special Publication No. 188, Advances in Ground Improvement*, Orlando, Florida, 73-82.

Inappropriate Handling of Review Comment

General Comment

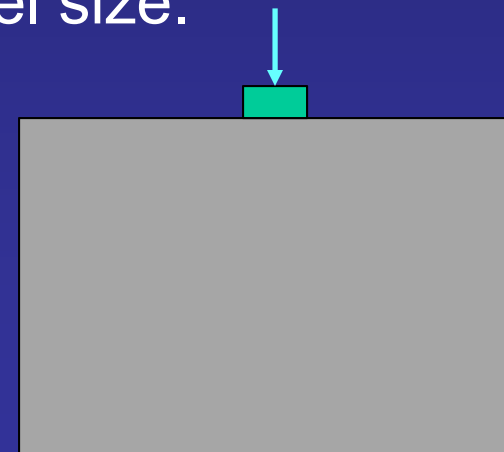
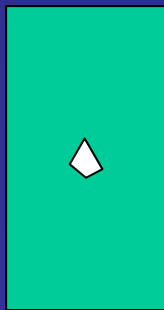
- Understand the intention of each comment
- Treat each review comment seriously
- Think through when you respond
- Do not delete the contents questioned by reviewers without any response

Some Common Review Comments

- Boundary effect
- Scale effect
- Calibration of sensors
- Calibration or verification of numerical models
- Verification of theoretical solutions
- Force equilibrium

Boundary Effect

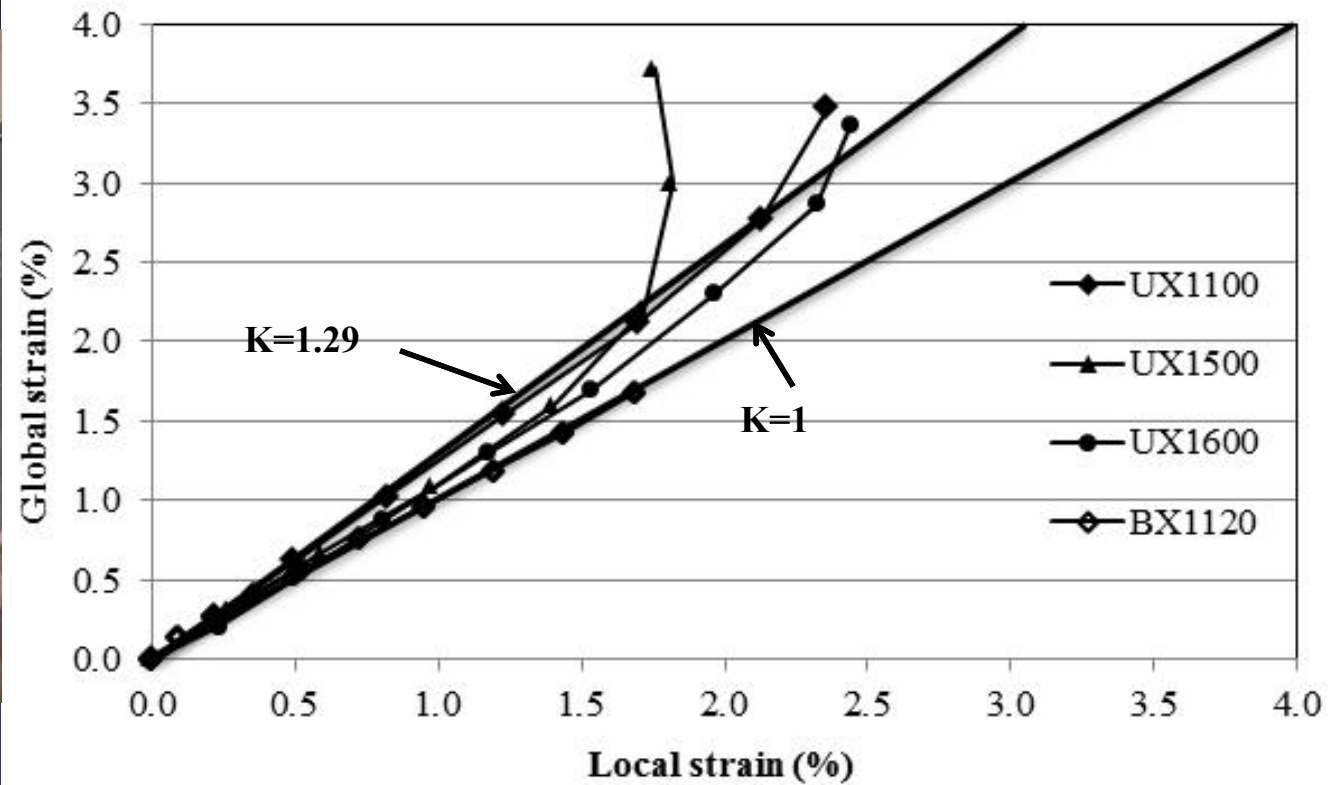
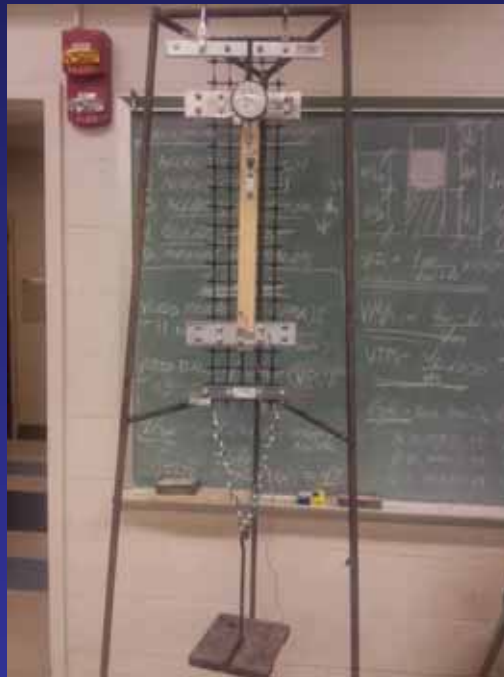
- Typically the size of box, chamber, or sample is at least five to six times the object of interest (e.g., plate size, footing size, particle size, etc.).
- Earth pressures and/or displacements may be measured to demonstrate no effect of boundary.
- A parametric study is needed in numerical analysis to demonstrate the boundary effect is minimal or eliminated by using a large model size.



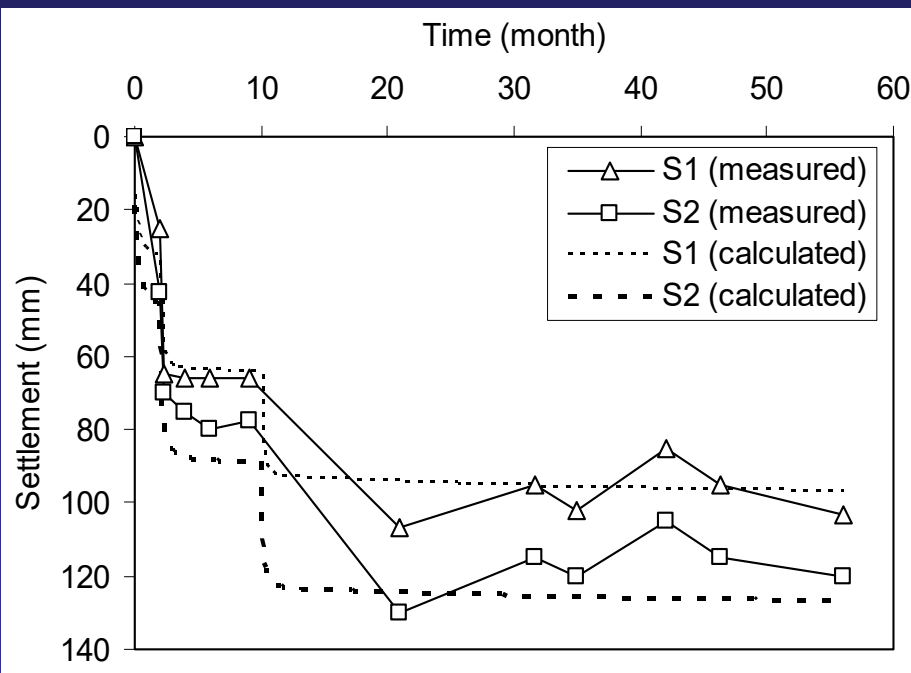
Scale Effect

- Dimensional Analysis, Scaling, and Similarity should be performed to select appropriate parameters.
- Numerical analysis may be used to address the scale effect issue.

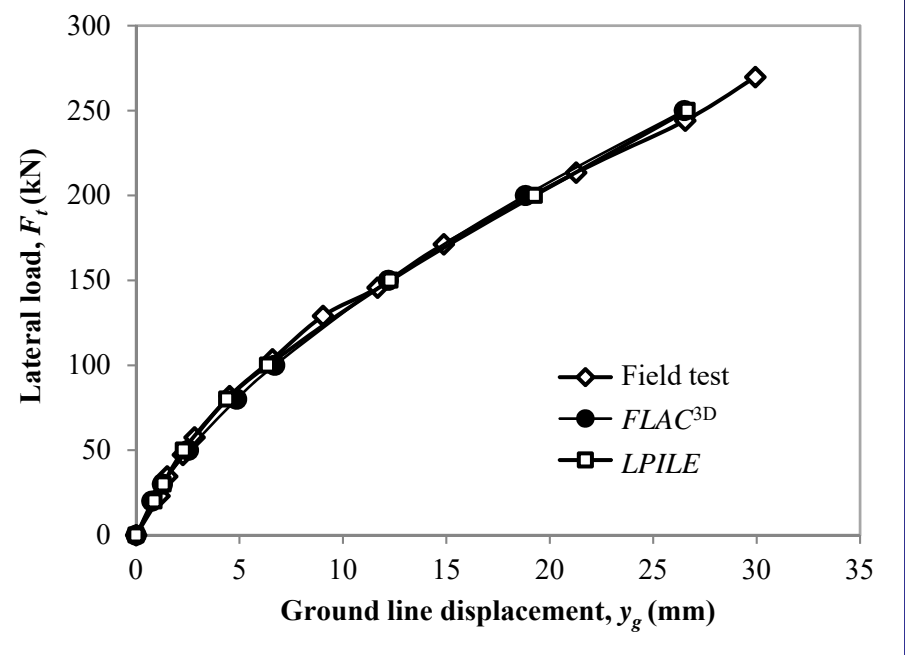
Calibration of Sensors



Calibration or Verification of Numerical Models

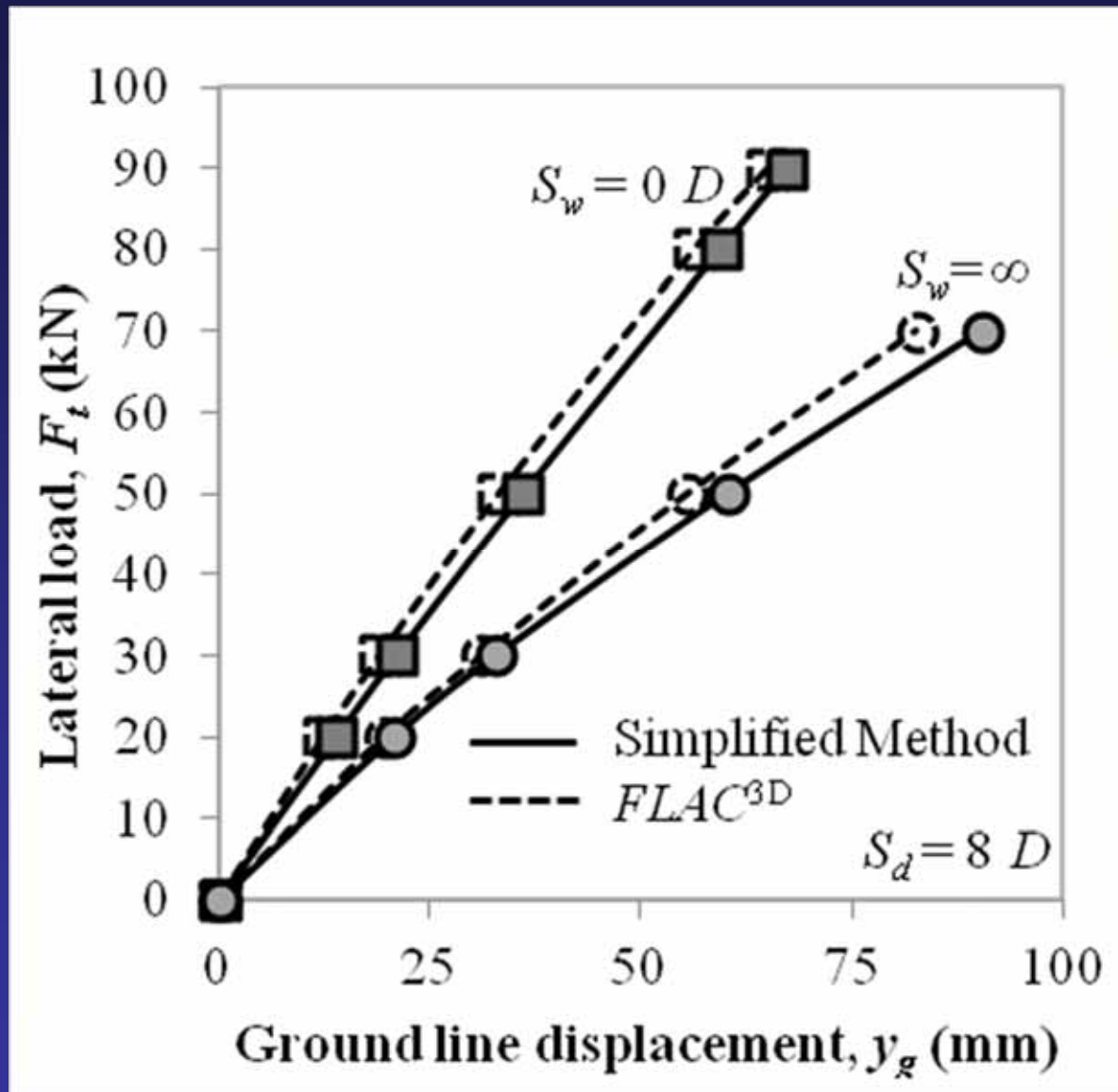


Huang et al. (2009)



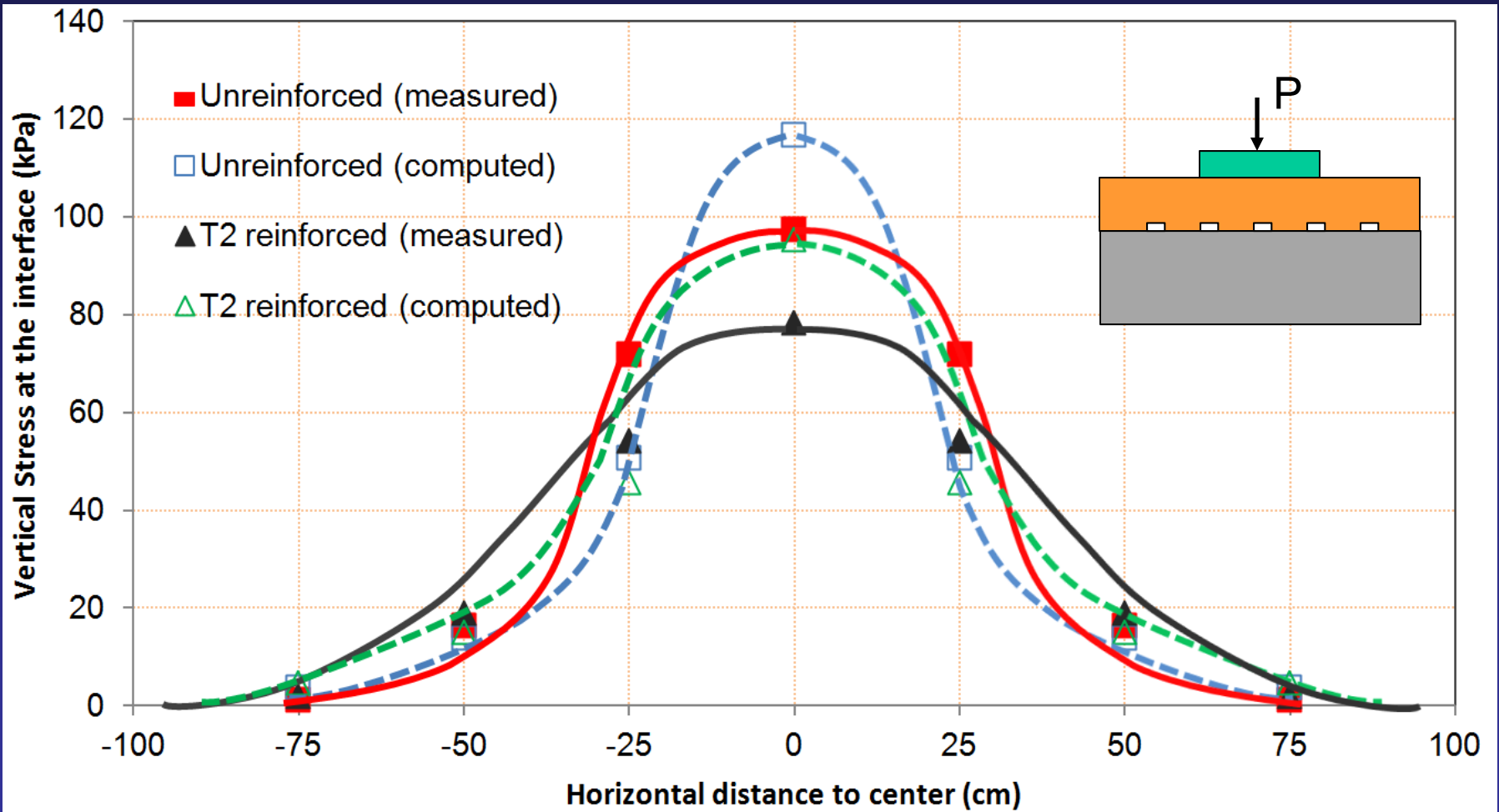
Lin et al. (2014)

Verification of Theoretical Solutions



Lin et al.
(2014)

Force Equilibrium



Qian et al. (2013)

Best Way to Improve Writing

- Keep practicing
- Learn from others
- Learn from mistakes, but do not keep repeating the same mistakes

Concluding Remarks

- Publication of a well-written paper requires time, effort, and patience.
- A well-written paper should not only contain clear contributions to current knowledge but also have excellent presentation.
- A well-written paper with proper handling of review comments and revisions can increase acceptance rate and shorten publication time.
- A well-written paper can also increase the number of citations and make more impacts.
- Improvement of technical writing skills takes time. Practicing and learning is the best way.

Thank you!

Questions?

Contact: jiehan@ku.edu