THE UNIVERSAL RECIPE

or

“How to get your manuscript accepted by persnickety editors”

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(Mumpton, 1990)
KNOW YOUR AUDIENCE

Diversity of Audience

Publication Selectivity

- Many readers (low expertise)
  - Newspaper Article ("Tribune")
  - Professional Magazine ("ENR")
  - Specialty Magazine ("Civil Engineering")
  - Conference Proceeding ("Geotrans")

- Few readers (high expertise)
  - Journal Article (ASCE "JGGE")
  - Textbook

- Many readers (diversified expertise)
  - "Top Tier" Journal ("Science," "Nature")

Let’s not forget proposals, reports, theses, etc.
The Path to Publication

Editor-in-Chief

Ombudsman

Editor #1

Editor #2

Editor #3

Editor #4

Editorial Board (45 Members)

EBM EBM EBM EBM EBM EBM EBM EBM EBM EBM

Reviewer #1

Reviewer #2

Reviewer #3

1) Accept
2) Revise
3) Decline

Author

2/3 majority

1) Accept
2) Revise
3) Decline

Time Line: 0.5 – 3 years

(revised paper)

(ASCE JGGE Model)
Primary Review Criteria

• Is the work original?
• Does the work make a significant contribution?
• Speculative materials?
• Does the abstract contain primary findings and conclusions?
• Are objectives clearly stated?
• Is background adequately covered?
• Is information accurate and consistent?
• Is technical material clearly presented? (Can work be reproduced?)
• Are graphics clearly presented?
• Is text edited to acceptable standards?
• Is the length appropriate? (10,000 w.e. for papers, 3,500 w.e. for notes)
• Are relevant references cited?
• Does the work contain inappropriate commercialism?

ORGANIZATION IS THE KEY
The Universal Recipe

“Disorganized writing may reflect a disorganized investigation. A disorganized investigation is a poor investigation. A poor investigation is of little use to anyone” (Mumpton, 1990)

1) Title
2) Authorship
3) Abstract
4) Introduction (Background)
5) Experimental (Materials and Methods)
6) Results
7) Discussion
8) Conclusions (Summary and Conclusions)
9) Acknowledgements
10) References Cited

- Distinct and meaningful boundaries between each section help the reader follow the flow of the paper – “provide break in the action.”
- Every reader has a preconceived notion of what should and should not be included in each section.
- Allow the reader to collect his/her thoughts and stay focused.
The Universal Recipe

Each “ingredient” should clearly answer a specific question:

1) Title (What is the paper all about?)
2) Authorship (Who performed the work?)
3) Abstract (What are the rationale, methods, results, conclusions?)
4) Introduction/Background (What problem?, Why?, What context?)
5) Materials and Methods (How is the problem been investigated?)
6) Results (What was found out?)
7) Discussion (What to the results mean?)
8) Conclusions (What new knowledge has been gained?)
9) Acknowledgements (Who paid for it?)
10) References Cited (Who else has investigated the problem?)
Title

- Read by every subscriber to the journal!
- Must be concise yet informative (e.g., lab vs. field, modeling vs. measurement)
- Must find balance between precision and generalization
- Typical length is 75 characters (includes spaces)
- Eliminate “waste” words or phrases
  - “A novel method for”
  - “A treatise on”
  - “Preliminary results on”
  - “Musings on”

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Average 87
Examples from JGGE (September 2004):
“Normalizing behavior of unsaturated granular pavement materials”
• 63 characters
• What is normalizing? What type of behavior?, Granular pavement materials?

“Soil water content and dry density by time domain reflectometry”
• 63 characters
• Clearly states what was investigated and how

Examples from UMC Geotechnical Engineering Graduate Students:
“Granular pile – anchors: A new approach for the treatment of expansive soils”
• 76 characters
• Awkward hyphen, new approach?, treatment?, Is this a review paper?, contribution?

“Development and implementation of underwater surface wave testing source”
• 72 characters
• Novelty is implied, nice omission of “the” and “an,” “underwater,” focus is on the SOURCE
Abstract

• Read by most subscribers to the journal. Second only to title.
• Should be a “microcosm” of the entire paper written for non-experts.
• Objectives:
  1) Convey rationale for and scope of the work (Introduction)
  2) Convey materials and methods used (Materials and Methods)
  3) Convey key observations (Results)
  4) Convey key conclusions (Discussion and Conclusions)
• Should be limited to 175-250 words
  • One sentence: about 20-25 words
  • This leaves about 8 - 10 sentences for the entire abstract!
• Most authors write the abstract after writing the paper

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Abstract

Example from JGGE (September 2004):

“Development of Downdrag on Piles and Pile Groups in Consolidating Soil”

Development of pile settlement (downdrag) of piles constructed in consolidating soil may lead to serious pile foundation design problems. The investigation of downdrag has attracted far less attention than the study of dragload over the years. In this paper, several series of two-dimensional axisymmetric and three-dimensional numerical parametric analyses were conducted to study the behavior of single piles and piles in 3×3 and 5×5 pile groups in consolidating soil. Both elastic no-slip and elasto-plastic slip at the pile–soil interface were considered. For a single pile, the downdrag computed from the no-slip elastic analysis and from the analytical elastic solution was about 8–14 times larger than that computed from the elasto-plastic slip analysis. The softer the consolidating clay, the greater the difference between the no-slip elastic and the elasto-plastic slip analyses. For the 5×5 pile group at 2.5 diameter spacing, the maximum downdrag of the center, inner, and corner piles was, respectively, 63, 68, and 79% of the maximum downdrag of the single pile. The reduction of downdrag inside the pile group is attributed to the shielding effects on the inner piles by the outer piles. The relative reduction in downdrag (\( Wr \)) in the 5×5 pile group increases with an increase in the relative bearing stiffness ratio (\( Eb/Ec \)), depending on the pile location in the group. Compared with the relative reduction in dragload (\( Pr \)), \( Wr \) at the corner pile is less affected by the group interaction for a given surcharge load. This suggests that the use of sacrificing piles outside the pile group will be more effective on \( Pr \) than on \( Wr \). Based on the three cases studied, the larger the number of piles in a group, the greater the shielding effects on \( Wr \). Relatively speaking, \( Wr \) is more sensitive to the total number of piles than to the pile spacing within a pile group.

(306 words)
(12 statements)
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Abstract

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(250 words)
(11 statements)
One of the major concerns in stability of reinforced slope using piles (piled-slope) is limiting soil pressure which can be developed in piled slope. Most of the current methods used to calculate the stability of piled-slope are uncoupled analysis, where limiting soil pressure is obtained by using an analytical or a numerical method and after that the limiting soil pressure is used as an additional resistance in slope stability analysis. In this paper, limiting soil pressure generated in piled-slope is investigated using finite element displacement-based method. Homogeneous and isotropic material is assumed for soil in the slope. From observations of results of simplified 2-dimensional plane strain and thin (1-unit thickness) 3-dimensional analyses, it is concluded that factors that affect the loadings of pile in passive loading condition, which is in the case piled slope, are initial stress conditions, pile-soil interface roughness, center-to-center pile spacing to pile diameter ratio, methods of simulating loading condition in the field, and modeling techniques (2D or 3D). In addition, limiting soil pressure obtained using numerical method is compared to existing analytical theories proposed by Ito and Matsui (1975), and three times the Rankine passive pressure (Broms, 1964). It is observed that they do differ significantly in most cases.
Abstract

Statement of Problem

One of the major concerns in stability of reinforced slope using piles (piled-slope) is limiting soil pressure which can be developed in piled slope. Most of the current methods used to calculate the stability of piled-slope are uncoupled analysis, where limiting soil pressure is obtained by using an analytical or a numerical method and after that the limiting soil pressure is used as an additional resistance in slope stability analysis. In this paper, limiting soil pressure generated in piled-slope is investigated using finite element displacement-based method. Homogeneous and isotropic material is assumed for soil in the slope. From observations of results of simplified 2-dimensional plane strain and thin (1-unit thickness) 3-dimensional analyses, it is concluded that factors that affect the loadings of pile in passive loading condition, which is in the case piled slope, are initial stress conditions, pile-soil interface roughness, center-to-center pile spacing to pile diameter ratio, methods of simulating loading condition in the field, and modeling techniques (2D or 3D). In addition, limiting soil pressure obtained using numerical method is compared to existing analytical theories proposed by Ito and Matsui (1975), and three times the Rankine passive pressure (Broms, 1964). It is observed that they do differ significantly in most cases.
Introduction

• Objectives:
  • Capture the attention of the reader – Convince him/her to read on
  • Convey the rationale (statement of problem, background)
    • Cite relevant literature
    • How does past work relate to your work (What remains unsolved?)
  • Clearly state objectives
    • Consider a “This paper....” statement or a “Here, we” statement.
    • If the objectives are not clearly stated, you will lose the reader and
      probably not get him/her back.
    • “I’ve told you what problem I am dealing with; I’ve told you why it is
      important; I’ve told you what we already know about it; Now here is
      what I have done.....”
  • Intro does not usually include observations or conclusions, but might.
## Introduction

**P1: Statement of Problem**

1) “The hazards posed by expansive soils with regard to the construction, maintenance, and performance of civil engineering infrastructure have been well documented.”

**P2: Background**

2) “Developing reliable techniques to measure, model, or predict the complex relationships among volume change, swelling pressure, and moisture content has historically been a highly active subject of applied research in expansive soils.”

**P3: Scope & Objectives**

3) “This paper describes a computer-automated experimental system developed to measure the macroscopic volume change behavior of expansive soils under controlled relative humidity conditions.”
Materials and Methods

Objective: Provide sufficient information for results to be reproduced by others.

Results

Objective: Present NEW information gained without detailed discussion.

Discussion

Objective: Describe what the results mean in light of what we already knew. What are the corresponding implications?

Basic material properties

If this boundary is not clear, it is difficult to determine original CONTRIBUTION.

Need clear boundaries between each of the next three “ingredients”
Results

• Usually contains the bulk of graphs and tables.
• Don’t include results that are not germane to subsequent discussion
• Limit discussion; perhaps point out trends in the data, etc. (e.g., “wavy shape”)
• Try the “Figure X shows” approach.
• Develop a “signature” style for figures/tables and stay consistent.
Discussion

• Most difficult section of the paper to write
  • “HEAD LIKE DRAGON; TAIL LIKE SNAKE”
• What do your results mean?
  • Interpret the results – What is responsible for the trends noted in the results?
  • How do your interpretations agree/contrast with others? (already introduced in the intro)
  • Do not make interpretations that cannot be directly supported (speculative material)
  • What data supports each interpretation?
  • What remains unknown? (many good papers generate more problems than they solve)
Conclusions

• Often “Summary and Conclusions”
• Many readers jump straight to this section

• Summary:
  • Similar to abstract (microcosm of paper)

• Conclusions:
  • Objective: Convey importance of observations and interpretations
  • How does the work contribute to broad understanding?
  • What has come to light that should be investigated in the future?
  • Often bulleted lists of discussion points. Not very exciting but acceptable
Acknowledgements

• Brief and to the point
  • Those providing financial support
  • Those involved but not primary investigators
  • Those providing technical support (e.g., drawings, site access)
  • Those who helped review the paper

References

• Most journals have required FORMAT


• Reconsider obscure references
Some Suggestions

• Create an outline
  • Use the “recipe” and “flesh it out” later (paragraphs, then sentences)
  • Design the paper around the figures
  • Design the investigation around the figures

• Work on “tedious” tasks when you get worn out
  • Format your references
  • Tweak your figure design

• “A SESAME SEED NEED NOT APPEAR LIKE WATERMELON”
  • Don’t lose perspective by suffering the details
  • Only perfect a sentence after you have “spit it out”
  • Print out entire paper/thesis and spread it out on the floor
Some Suggestions (cont.)

• Find a physical way of writing that works for you:
  • Hand writing vs. word processing
  • Single space vs. double space
  • Morning vs. afternoon vs. evening vs. Loehr time

• Have an imaginary conversation with your audience
  • Much easier to speak about your work than write about it

• Campus Writing Program: www.missouri.edu/~pattonmd/

• READ, READ, READ!!! and WRITE, WRITE, WRITE!!!