

# WESEP 594 Seminar

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Civil, Construction and Environmental Engineering

# Who am I?

- My Background
- Education
- Work Experience
- History at ISU
  - Jan. 2000 to present
  - Teaching
  - Service
  - Research
- Anything else?

# My Research program

Sritharan's Research Program at ISU

(2000 to 2009)

Topics	Sponsors	Grad students/Post doc. researchers	Changes/Impact/ Contributions	Selected Scholarship since Last Promotion
Earthquake-resistant design and analysis (continued from PhD research)	NSF, NCHRP	Waugh, To, Vander Werff, Redmond, Staudt, Santiago, Zhao, Levings	T-wall design, improvements to fiber-based analysis, Integral steel-girder/concrete column joint	#28, #33, #34 & #36 in II.F of Vita
Precast Structural systems (continued from post-doctoral work)	Caltrans, PCI PCMAC, NSF	Thiemann, Rahman, Aaleti, Henry, Vernu, Celik, Thomas, Snyder	PreWEC System, Retrofit strategies for inverted T bent cap, 0-shaped energy dissipation connector	#27, #32, #35 & #37 in II.F of Vita
Design of foundations and SFSI (initiated at ISU in 2002)	NSF, PCI, Alaska DOT & PF, AUTC	Shelman, Wotherspoon, Huang, Fanous, Fleming	SFSI and earthquake response under seasonally cold temperatures; ground improvements of soft clay and the effects On foundation response	#26, #31 & #38 in II.F of Vita
Ultra-high performance concrete (initiated at ISU in 2001)	Iowa DOT, IHRB	Abdel-Salam, Ng, Roling, Chetlur, Mekkawy	LRFD design of driven piles; approach slab design	#29 & #30 in II.L and #15 & #16 in II.H of Vita
	ISU, Lafarge and IPC (In-kind)	Murthy	Use of UHPC in seismic design	#11 I.E. a in Vita
Wind Effects/Wind Energy (initiated at ISU in 2005/2008)	FHWA, IHRB	Degan, Vande Voort	Innovative UHPC bridge applications	#11, #14 & #18 in II.H of Vita
	USDA, NOAA, ISU	Goliber, Jungmann, Lewin	Hurricane hazard reductions; Tall wind turbine towers	#1 & #2 in II.L of Vita

Total since 12/99

NSF, NOAA & USDA = \$1.6M  
Iowa agencies = \$1.2M  
Other agencies = \$1.3M

MS students = 20 completed + 5 current  
PhD students = 5 completed + 4 current  
Post-docs = 2 completed + 1 current

Published journal papers = 30  
Conf. papers = 54  
Reports & presentations = 74

# My Involvement in Wind Energy

- Wind Energy initiative  
(<http://www.engineering.iastate.edu/wei>)
- Design of Tall Towers
  - Must withstand large lateral and torsional loads
- Use high performance concrete
- Modularize construction

# Tall Towers

- Why tall towers?
- What is the common tower height?
- How tall is tall?
- Why concrete?
- Why modularize construction?

# How do I do research?

- Identify the problem.....
  - Why do we want to solve?
  - When do we need to solve this?
  - Who will benefit? (Impact; other end products)
  - Who will support the research?
  - Long term interest/potential for impact

# Proposal including research Plan

- Goal
- Objectives
- Tasks
  - Experiments
  - Analysis
- Budgets
- Other.....
- To what extent can research be planned?

# Literature Review

- An important element
- Students seem to place less emphasis
- Focus first on directly related topics
- Identify and work on other areas



# Analytical approach

- Begin here
- Use existing data for validation
- Learn to verify results
- Use the approach to design tests and achieve desirable outcomes

# Experimental program

- Keep it simple as possible
- Don't try to learn the influence of all the variables in one test
- Strike a balance between complexity and likely outcomes

# Collaboration

- Do when it makes sense
- Each person must have a role with specific purpose
- You must work towards achieving synergetic outcomes
- Diversity



Questions?