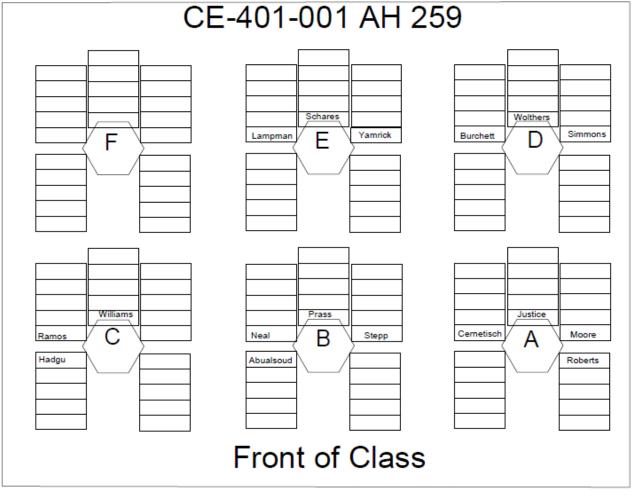


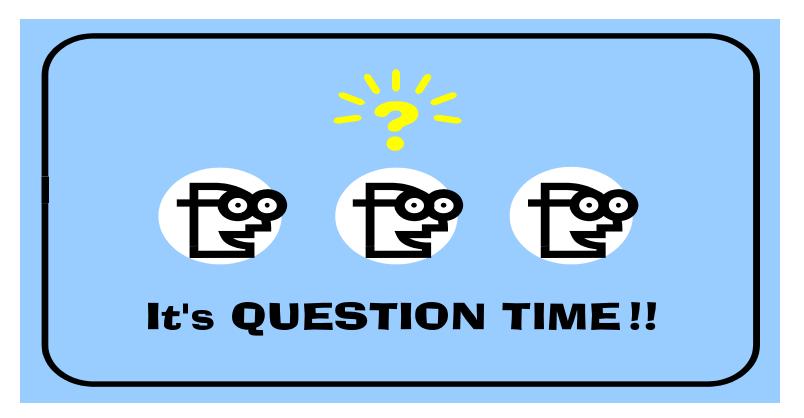
CE 401 Civil Engineering Seminar Seating Chart:

If your Group wants another seating order at your table, be sure to notify me of the preferred order by marking up the hard copy of this seating chart **before** class today.





E 401 Civil Engineering Seminar General Questions:





CE 401 Civil Engineering Seminar ESSAY TEAMS:

ESSAY TEAMS - SECTION 1 Last Update 1/26/2024 7:10	2-Person Teams	(
Unassigned Students Student Formed Teams Assigned Teams	AMBER BLACK RED	
Hadgu Williams Lampman Schares Burchett Simmons Wolthers Ramos Yamrick Cernetisch Moore Neal Stepp Abualsoud Prass Justice Roberts	101 101 102 102 103 103 104 104 105 105 106 106 107 107	



CE 401 Civil Engineering Seminar Discussion Question Activity:

•WEEK 3: DISCUSSION GROUP ACTIVITY

Timely Init	iai Pusis.					Last Update	20-Jaii-24	7:10 AM
Section 1		Week	3	Discussion Quest	tion Activity Rep	ort		
Question	Group	Leader		1	2	3	4	5
1	Α	Roberts		Cernetisch	Justice	Moore	Roberts	
1	В	Prass		Abualsoud	Neal	Prass	Stepp	
1	С	Hadgu		Hadgu	Ramos	Williams		
1	D	Simmons		Burchett	Simmons	Wolthers		
1	Ε	Yamrick		Lampman	Schares	Yamrick		
1	F							
2	Α	Justice		Cernetisch	Justice	Moore	Roberts	
2	С	Ramos		Hadgu	Ramos	Williams		
2	E	Lampman		Lampman	Schares	Yamrick		
3	В	Stepp		Abualsoud	Neal	Prass	Stepp	
3	D	Wolthers		Burchett	Simmons	Wolthers		
3	F							
				Font	Legend			
non-bold	No post m	nade, time for po	sting	remains	non-bold	Late Post befo	ore consensus, 2	20% loss
Bold / Bold	d	Post made wit	hin	Time	Bold	Post is made	after consensu	us, 60% loss
Non-Bold L	eader-No	Consensus Post	ted.	-5 Points	Ital. non-bold	No Post Made	e. 100% loss	



CE 401 Civil Engineering Seminar Quiz 2:

Quiz 2

Range: 4-10; Average 8.5

W/ Text Historic 4-10; Average 8.5

0.514 (19 of 37) Perfect Scores on Quiz 2



CE 401 Civil Engineering Seminar De George Review Questions:

The first quiz question was about the De George model.

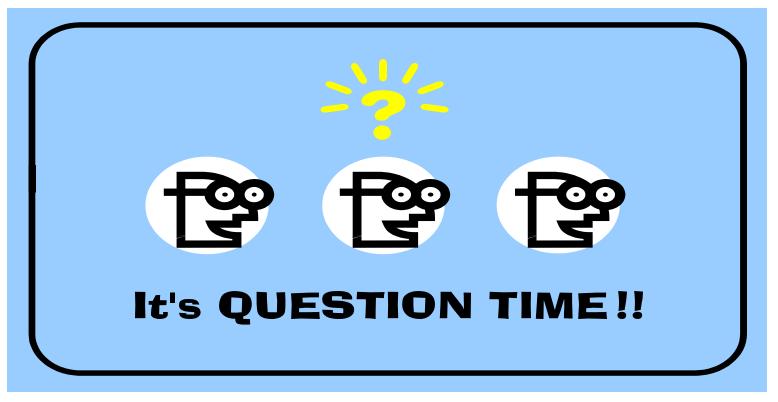
- 22 of 37 got it right
 41% Missed the question
- 14 of 15 of those who missed it, got the part addressing internal exhaustion wrong, and
- 1 of 15 missed got the part about the fundamental structure of De George wrong

Whistle blowing decisions occur on three levels with two options at each level:

- <u>Level 1: No Moral Authority-Only ethically viable option is to remain quiet</u>
- Level 2: Moral Authority but no Moral Duty-Ethically viable to either take action or remain quiet depending on the facts
- Level 3: Moral Duty to Blow the Whistle-Only ethically viable option is to blow the whistle



E 401 Civil Engineering Seminar De George Review Questions:





WHAT DOES "PROJECT FAILURE" MEAN?



WHAT DOES "PROJECT FAILURE" MEAN?

Project failure occurs when the client or stakeholder won't get sufficient return on their investment. This can occur for many reasons including:

- Not delivering the project;
- Delivering a project that does not satisfy expectations;
- Delivering a project late;
- Delivering a project over its budget;
- Delivering a project that does not function as required,
 OR
- Failure occurs during or after construction

https://www.projectmanager.com/blog/top-10-reasons-for-project-failureally



WHAT TYPE OF DAMAGES OCCUR WHEN PROJECTS FAIL?



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Almost Always, the owner's expectations have not been satisfied, damaging client relations.



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Sometimes, there is personal injury



WHAT TYPE OF DAMAGES OCCUR WHEN PROJECTS FAIL?

Almost Always, the owner's expectations have not been satisfied, damaging client relations.

Usually, there is financial loss and property damage

Sometimes, there is personal injury

Occasionally there is loss of life



WHY DO THESE PROJECT FAILURES OCCUR?

Do some failures occur due to errors by design professionals?



WHY DO THESE PROJECT FAILURES OCCUR?

Do some failures occur due to errors by design professionals? Do all failures occur due to errors by design professionals?



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Construction Errors?



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Post Construction Events such as poor/no maintenance?



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Post Construction Events such as poor/no maintenance?

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Construction Errors?

Post Construction Events such as poor/no maintenance?

Post Construction Events such as unanticipated use of the facility?

Post Construction Events such as fires, earthquakes, sinkholes, hurricanes, tornadoes, tsunamis, impact by cars, trucks, ..., airplanes?



WHY DO THESE PROJECT FAILURES OCCUR?

Do some failures occur due to errors by design professionals? Do all failures occur due to errors by design professionals? What causes failures to occur when it is NOT an error by a design professional?

Construction Errors?

Post Construction Events such as poor/no maintenance?

Post Construction Events such as unanticipated use of the facility?

Post Construction Events such as fires, earthquakes, sinkholes, hurricanes, tornadoes, tsunamis, impact by cars, trucks, ..., airplanes?

In this case, there is no evidence that design error caused this failure. I asked about the designer's contributions to see who would recognize this point.

Only 1 of you did this semester.

Why did the rest try to fault designers?



Why did the rest try to fault designers?

I told you in the premise to the question 2 that "the record is silent about design phase decisions, but during construction and facility operation, a litany of decisions ultimately produced this failure." In the text I told you that the owner made this litany of decisions.

Many Engineers share a common tendency, e.g.,

They believe that if something goes wrong on their project, it must be their fault, AND they are ever ready to accept responsibility.

Do not accept responsibility until an investigation reaches that conclusion!!!



1.	Who is the owner of this facility?



- 1. Who is the owner of this facility? Sampoong Group, a Korean developer
- 2. Who designed the original 4 story structure?



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- 2. Who designed the original 4 story structure? Don't know because the designer is never identified in the video, or in any of the written accounts of this failure, but it could have been a D-B Contractor, or the owner's in house design professionals
- 3. Who was the original builder and what happened to that builder?



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 Woosung Construction. <u>Installed the foundations</u>, but when the owner wanted to change to shopping mall and add 5th floor, the owner fired Woosung because Woosung refused to build it that way.
- 4. Who was the new builder and who owned the new builder (company)?



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- 5. The Owner may have been the designer and the builder!!!!!!!! And the briber!!



HAVE YOU LEARNED ABOU	IIT DDAIECT DEI	IVEDA CACLEVICO
HAVE TOO LEARNED ADOL	OI PROJECI DEI	LIVERT STSTEIVIS:



HAVE YOU LEARNED ABO	OUT PROJECT	DELIVERY	SYSTEMS?
Design-Bid-Build (DBB)			



HAVE YOU LEARNED ABOUT PROJECT DELIVERY SYSTEMS?

Design-Bid-Build (DBB)

Design Phase: Owner Hires Prime Designer

Preliminary Design

Final Design

Regulatory Approvals

Construction Bidding: Owner submits Design for Competitive Bidding

Construction Phase: Owner hires contractor to build per plans & specs



- 1. The Design-Bid-Build Project Delivery Process.
 - The Owner Hires the Designer/Design Team?
 - 2. The Owner Hires the Constructor/Builder?



What is the relationship between the Designer and Constructor?



HAVE YOU LEARNED ABOUT PROJECT DELIVERY SYSTEMS?

Design-Bid-Build (DBB)

Design Phase: Owner Hires Prime Designer

Preliminary Design

Final Design

Regulatory Approvals

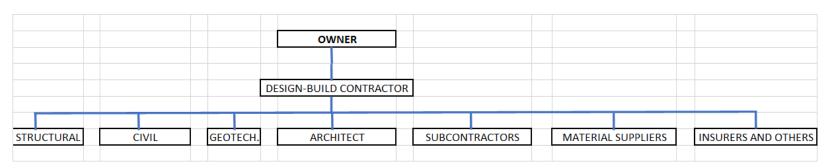
Construction Bidding: Owner submits Design for Competitive Bidding

Construction Phase: Owner hires contractor to build per plans & specs

Design-Build (DB)



- 1. The Design/Build Project Delivery Process.
 - 1. The Owner hires a Design/Build Contractor
 - The DB Contractor does design work in packages, Foundations, Grading and Drainage, Structural Systems, Mechanical/Electrical Systems, Paving, etc.?
 - 3. The DB Contractor does the construction work as the various design packages are released.



As compared to the D-B-B model, what role do design professionals play in the D-B model?



HAVE YOU LEARNED ABOUT PROJECT DELIVERY SYSTEMS?

Design-Bid-Build (DBB)

Design Phase: Owner Hires Prime Designer

Preliminary Design

Final Design

Regulatory Approvals

Construction Bidding: Owner submits Design for Competitive Bidding

Construction Phase: Owner hires contractor to build per plans & specs

Design-Build (DB)

Owner hires Design/Build Contractor

The design/Build contractor

Does design, Construction estimating, and construction in one singular motion.

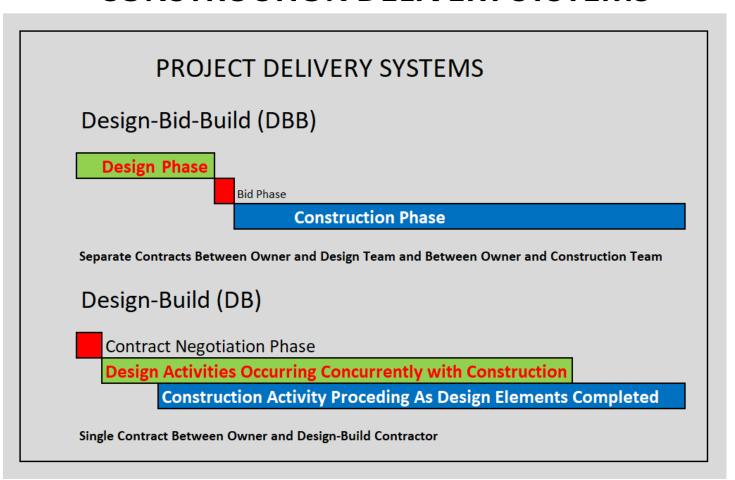
Design Activity Performed Concurrently with Construction Process

Which Delivery System was probably used for Korean project? Which Delivery System was used for the Hyatt project?

See: https://www.levelset.com/blog/design-build/



CONSTRUCTION DELIVERY SYSTEMS





Discussion Question #1

In the video about the Korean shopping center collapse, we learned about a multi-story shopping center collapse that caused great loss of life and personal injury. Over the course of construction and operation, a litany of decisions ultimately produced this failure. The mistakes that led to this failure could have occurred during the design phase, the construction phase, or the post construction phase by either or each of the following parties: The owner, The Design Professionals, or The Construction Team. .

After watching the video about this failure, and reading the summary of this failure, please respond to the following:

- a) Identify the two actions (or failures to act) that you believe contributed most to causing this collapse, and for each of your causes:
 - 1. identify whether the action occurred during the design phase, the construction phase, or post-construction. For each action, you must choose only one phase (no fence-straddling).
 - 2. Identify whether the owner, the design team, or the construction contractor has primary responsibility for the action. For each action, you must choose only one party (no fence-straddling).
- b) In your opinion, which party (owner, designer, or contractor) holds the greatest and which party holds the least responsibility for the mistakes that led to this failure?

A Roberts
B Prass
C Hadgu
D Simmons
E Yamrick
F



- 1. Identify the two actions (or failures to act) during either design, construction, or post construction that you believe contributed most to cause this collapse.
- Changing from Office to Mall use- 60%
 - Column size reduction-
 - Weak slab/column connections-
 - Owner ignoring designer advice-
 - Thinning support beams
- Adding lots of weight at top (5th floor, roof equipment, kitchen)-37%
 - Adding the 5th Floor-
 - Adding AC Units to roof-
 - Not redesigning for escalator, 5th floor, heavier loading -
- Dragging AC units over roof slab when moved- 2%
- -Not closing building when distress seen- 1%
 - Not cause of failure
 - Clearly, expansion of number of injuries and deaths



Discussion Question #1

2. When did each of these changes occur, and who decided to make the change?



- 2. When did each of these changes occur, and who decided to make the change?
 - Changing from office to mall?



- 2. When did each of these changes occur, and who decided to make the change?
 - Changing from office to mall? Owner/Constr.
 - Adding a 5th floor?



- 2. When did each of these changes occur, and who decided to make the change?
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 - Moving the A/C Units on roof?



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 - Moving the A/C Units on roof? Owner/Post Constr.
 - Refusing to Evacuate building?



- 2. When did each of these changes occur, and who decided to make the change?
 - Changing from office to mall? Owner/Constr.
 - Adding a 5th floor? Owner/Constr.
 - Moving the A/C Units on roof? Owner/Post Constr.
 - Refusing to Evacuate building? Owner/Post Constr.



Discussion Question #1

3. In your opinion, which two parties (owner, designers, or constructors) hold the greatest, and least responsibility for the mistakes that led to this failure?



- 3. In your opinion, which two parties (owner, designers, or constructors) hold the greatest, and least responsibility for the mistakes that led to this failure?
 - Who decided to reopen the facility on the day of the collapse after an inspector said to evacuate?



- 3. In your opinion, which two parties (owner, designers, or constructors) hold the greatest, and least responsibility for the mistakes that led to this failure?
 - Who decided to reopen the facility on the day of the collapse after an inspector said to evacuate?
 - What happened to the owner and his son after this collapse?



- 3. In your opinion, which two parties (owner, designers, or constructors) hold the greatest, and least responsibility for the mistakes that led to this failure?
 - Who decided to reopen the facility on the day of the collapse after an inspector said to evacuate?
 - What happened to the owner and his son after this collapse?
 - Who bribed the 12 building inspection officials?



- 3. In your opinion, which two parties (owner, designers, or constructors) hold the greatest, and least responsibility for the mistakes that led to this failure?
 - Who decided to reopen the facility on the day of the collapse after an inspector said to evacuate?
 - What happened to the owner and his son after this collapse?
 - Who bribed the 12 building inspection officials?
 - Why didn't the design professionals involved in this project also go to prison?



Discussion Question #2

The Missouri Court of Appeals affirmed the Board of Registration's finding that Dan Duncan and Jack Gillum were grossly negligent and should each lose their engineering licenses. In affirming the Board's decision, the Court of Appeals said that while customs may shift the practical responsibility for the box beam connection design to the fabricator, customs cannot shift the legal responsibility for that design away from the structural engineer of record. The Court concluded that as a legal matter, the "buck stops" at the structural engineer of record.

- a) In 2 to 3 sentences, explain how you understand the distinction the Court of Appeals made between "practical responsibility" and "legal responsibility" for the design of the box beam connection on the Hyatt project.
- b) In 2 to 3 sentences, explain whether and why the Board's revocation of Mr.

Gillum's and Mr. Duncan's licenses to practice engineering speaks more to duties an engineer owes its client or duties an engineer owes the public.

A Justice

C Ramos

E Lampman



Discussion Question #2

Professional Engineers have duties to protect their clients' interests as well as the public health, safety, and welfare.

- 1. If a professional engineer violates a duty owed to a client, how does a client seek compensation for damages the engineer caused?
- 2. If a professional engineer violates the duty to protect the public health, safety, and welfare:
 - Who is harmed the most?
 - Who brings that engineer to account?
 - Isn't that why the Board of Registration exists?



Discussion Question #2

1. Is the "punishment" imposed by the Profession against engineers like Mr. Gillum and Mr. Duncan the full punishment they receive for their GROSS NEGLIGENCE?



- 1. Is the "punishment" imposed by the Profession against engineers like Mr. Gillum and Mr. Duncan the full punishment they receive for their GROSS NEGLIGENCE?
- 2. How do victims gain compensation for their losses?



- 1. Is the "punishment" imposed by the Profession against engineers like Mr. Gillum and Mr. Duncan the full punishment they receive for their GROSS NEGLIGENCE?
- 2. How do victims gain compensation for their losses?
- 3. Are engineers like Mr. Duncan and Mr. Gillum ever subject to criminal enforcement and prison time for their conduct?



Discussion Question #3

The technical explanation for the Hyatt collapse has been widely published, e.g., "Critical Design Change Responsible for Collapse at Hyatt." The Missouri Court of Appeals affirmed the Board of Registration's finding that Dan Duncan and Jack Gillum were grossly negligent.

- 1.Explain why the structural engineers of record did not recognize the inadequacy of the double-rod connection thereby allowing the use of the double-rod connection. In your answer, please address the following questions at a minimum:
 - Was the analysis of the double-rod connection so complex that the engineers made an error while analyzing it?
 - Did the engineers fail to analyze the double-rod connection?
 - Are there other plausible explanations for the engineers' failure to recognize the inadequacy of the double-rod connection and prevent its use?
- 2.Define "Gross Negligence" and "Negligence?"

3. Was the Board of Registration's finding of Gross Negligence rather than Negligence

or No Negligence with respect to the structural engineers of record appropriate? How did the Board's finding of Gross Negligence affect the sanctions (loss of licenses) imposed by the Board in this case?

B Stepp

D Wolthers

F



Discussion Question #3

 Did the engineers, Gillum and Duncan, lose their engineering licenses as punishment for a finding of legal liability or ethical violations?



- Did the engineers, Gillum and Duncan, lose their engineering licenses as punishment for a finding of legal liability or ethical violations? Ethical Liability-Not doing what they SHOULD have done per Ethical Standards for the Profession BASED ON GROSS NEGLIGENCE.
- 2. How were they held accountable for their legal civil liability, if at all?



- Did the engineers, Gillum and Duncan, lose their engineering licenses as punishment for a finding of legal liability or ethical violations? Ethical Liability-Not doing what they SHOULD have done per Ethical Standards for the Profession BASED ON GROSS NEGLIGENCE.
- How were they held accountable for their legal civil liability, if at all? Civil Lawsuits Settled out of court using a pool of insurance money after the Board's finding of GROSS NEGLIGENCE.
- 3. How were they held accountable for their legal criminal liability, if at all?



- 1. Did the engineers, Gillum and Duncan, lose their engineering licenses as punishment for a finding of legal liability or ethical violations? Ethical Liability-Not doing what they SHOULD have done per Ethical Standards for the Profession BASED ON GROSS NEGLIGENCE.
- How were they held accountable for their legal civil liability, if at all? Civil Lawsuits Settled out of court using a pool of insurance money after the Board's finding of GROSS NEGLIGENCE.
- How were they held accountable for their legal criminal liability, if at all? There was no criminal prosecution for wrongful death



- Negligence Law Overview: (To Put Case in Context)
 - •Four Elements, all must be proven for negligence
 - Duty Owed (to injured party)
 - Duty Breached (by the defendant party)
 - Real Damages
 - Causal Link Between Breach and Damages
 - Negligence occurs with "Absence of Reasonable Care"
 - •What would a reasonably prudent person have done?
 - Is a Reasonable Person Standard for conduct



- Negligence vs Gross Negligence:
 - •All Elements of Negligence plus conduct so egregious that a Jury finds
 - Reckless disregard for the well being of others, or
 - Extreme Carelessness, or
 - A Failure To Use Even Slight Care
 - Engineers in Hyatt Case Lost License based on findings of Gross Negligence
 - Professionals seldom lose licenses due to negligence



- Slides provided by the Kansas City Star
- •An informant appeared to a KC Star reporter at the scene on the night of the collapse with information about the cause of the collapse
- •This informant told the reporter that an approved shop drawing would explain the cause of the collapse



•Slide Presentation:

- •Kansas City Star who won a Pulitzer prize for their coverage of this failure.
- •One reason they won the Pulitzer Prize is information the paper received from a whistle blower the night of the failure.



As you watch the slides, think about this informant:

- •What did this person know?
- •When did this person first know this?
- •How would anyone acquire this knowledge?
- •Who would be in position to acquire this knowledge?
- •What training/expertise is necessary to understand the significance of the shop drawing?
- •What level of moral obligation to blow the whistle before the failure would De George assign to this person?
- •Is this informant a hero or a villain?
- •Why does this person remain anonymous?



E 401 Civil Engineering Seminar Hyatt Regency Questions:

