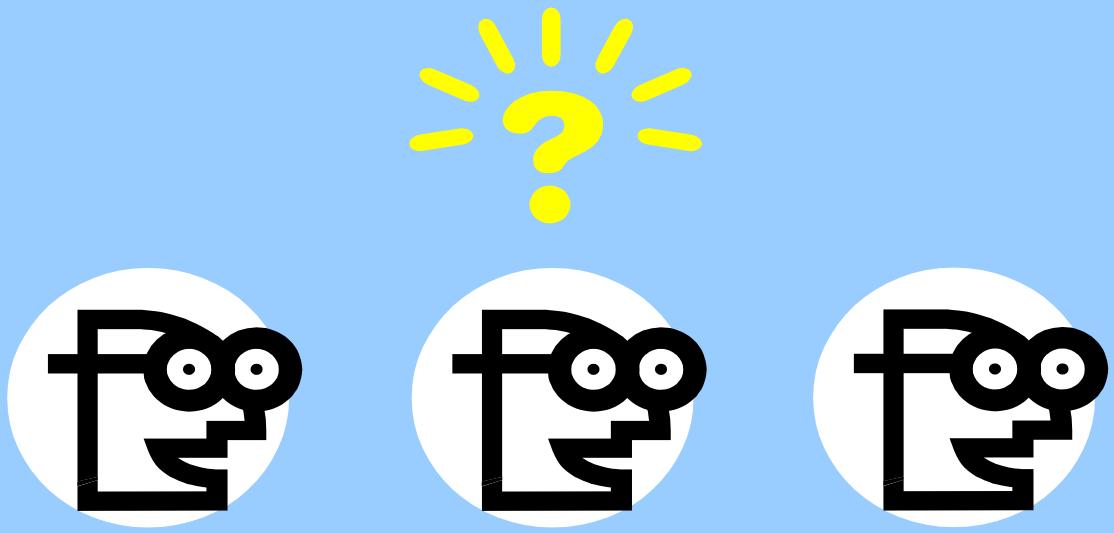
Teacher Course Evaluation (TCE)

- **Dr. Bryson has asked that all professors allocate 10 minutes at the beginning of class to complete the Teacher Course Evaluation (TCE).**
- **If you have not already done so, please take up to 10 minutes to do this on either your phone or tablet.**
- **I will return to the classroom at 8:10 to begin class.**

Conflict Resolution Workshop
Construction Jobsite Safety



It's QUESTION TIME!!

Overview For Final Class

- **Final Grades**
  - **I will post tentative final grades on the CE-401 website before the end of the day.**
  - **Bring any discrepancies to my attention ASAP because all discrepancies must be resolved by Wednesday, April 30**
  - **Will send final grades to Registrar next Friday, May 2**
- **Today:**
  - **Construction Jobsite Safety Concerns for Engineers**
  - **Tips For Engineers**

Construction Job Site Safety Discussion Group Activity

Timely Initial Posts: 100.0% — **Last Update 25-Apr-25 7:05 AM**

Section 1 — **Week 14** — **Discussion Question Activity Report**

Question	Group	Leader	1	2	3	4	5
1	A	Holliday	Holliday	Shuman	Stone	Watterson	
1	B	Steigerwald	Ehrsam	Little	Steigerwald		
1	C	Smith	DeYoung	Hornbeck	Smith		
1	D	Vargas	Hawkins	Malone	Vargas		
1	E	Graham	Casolare	Graham	Leach		
1	F						
2	A	Stone	Holliday	Shuman	Stone	Watterson	
2	B	Little	Ehrsam	Little	Steigerwald		
2	C	Hornbeck	DeYoung	Hornbeck	Smith		
2	D	Malone	Hawkins	Malone	Vargas		
2	E	Leach	Casolare	Graham	Leach		
2	F						
3	A	Shuman	Holliday	Shuman	Stone	Watterson	
3	B	Ehrsam	Ehrsam	Little	Steigerwald		
3	C	DeYoung	DeYoung	Hornbeck	Smith		
3	D	Hawkins	Hawkins	Malone	Vargas		
3	E	Casolare	Casolare	Graham	Leach		
3	F						

Font Legend

non-bold	No post made, time for posting remains	non-bold	Late Post before consensus, 20% loss
Bold / *Bold*	**Post made within Time**	**Bold**	**Post is made after consensus, 60% loss**
Non-Bold Leader-No Consensus Posted, -5 Points		*Ital. non-bold*	*No Post Made, 100% loss*

Construction Job Site Safety Discussion Question #1

Jobsite safety creates major liability exposure for those involved with the construction process. At one level, willful neglect or disregard for worker safety could create criminal liability, and trends over the last 2 decades in the US has been expanding criminal liability exposure. The workplace safety statute and regulatory climate create liability for unsafe work practices and conditions. Finally, Tort Law (primarily negligence) poses liability exposure.

With this background, rank the following participants in the construction process from highest to lowest liability exposure due to construction jobsite safety issues indicating 1 for the party with the most and 3 for the party with the least, and 2 for the intermediate risk exposure party:

2-16-15 Owner:	**2.4**
1-15-17 Design Team:	**2.5**
30-2-1 Construction Team:	**1.1**

Liability Exposure: Potential Liability Loss x Probability of the event.

Not the same as LIABILITY

Construction Job Site Safety Discussion Question #1

Section 1			
Group	Owner	Designer	Contractor
A	0-2-2	0-2-2	4-0-0
B	0-2-1	0-1-2	3-0-0
C	0-2-1	0-1-2	3-0-0
D	0-1-2	0-2-1	3-0-0
E	0-1-2	0-2-1	3-0-0
F	0-0-0	0-0-0	0-0-0
Total	0-8-8	0-8-8	16-0-0
Both %	45.5%	45.5%	90.9%

Section 2			
Group	Owner	Designer	Contractor
A	0-3-1	0-1-3	4-0-0
B	2-1-1	0-1-3	2-2-0
C	0-0-3	0-3-0	3-0-0
D	0-2-1	0-1-2	3-0-0
E	0-2-1	1-1-1	2-0-1
F	0-0-0	0-0-0	0-0-0
Total	2-8-7	1-7-9	14-2-1
Both	2-16-15	1-15-17	30-2-1

Construction Job Site Safety Discussion Question #1

		Section 1	
Group	**Owner**	**Designer**	**Contractor**
A: 4 of 4	2.50	2.50	1.00
B: 3 of 3	2.33	2.67	1.00
C: 3 of 3	2.33	2.67	1.00
D: 3 of 3	2.67	2.33	1.00
E: 3 of 3	2.67	2.33	1.00
F: 0 of 0			
Section 1	2.50	2.50	1.00

		Section 2	
Group	Owner	Designer	Contractor
A: 4 of 4	2.25	2.75	1.00
B: 4 of 4	1.75	2.75	1.50
C: 3 of 3	3.00	2.00	1.00
D: 3 of 3	2.33	2.67	1.00
E: 3 of 3	2.33	2.00	1.67
F: 0 of 0			
Section 2	2.33	2.43	1.23
Both Sect's	2.39	2.48	1.12

Construction Job Site Safety

Rank the participants in the construction process from highest to lowest liability exposure due to construction jobsite safety issues

- **Why does construction team have most? Smith-C**
- **Why does construction team have least? No One-**

Construction Job Site Safety

Rank the participants in the construction process from highest to lowest liability exposure due to construction jobsite safety issues

- **Why does construction team have most? Smith-C**
- **Why does construction team have least? No One-**
- **Why does the Design team have most? Watterson-A**
- **Why does the Design team have least? No One-**

Construction Job Site Safety

Rank the participants in the construction process from highest to lowest liability exposure due to construction jobsite safety issues

- **Why does construction team have most? Smith-C**
- **Why does construction team have least? No One-**
- **Why does the Design team have most? Watterson-A**
- **Why does the Design team have least? No One-**
- **Why does the Owner have the Most? No One-**
- **Why does the Owner have the Least? Casolare -E**

Construction Job Site Safety Source of Liability Exposure

Engineers have duty to protect workers

- **Carvalho v. Toll Bros. & Developers, 651 A. 2d 492 (NJ Sup App Div 1995)**
  - Duty not from Contract Law but Tort Law
  - Matter of Social Policy
- **Peck v. Horrocks Engineers Inc., 106 F3d 949 (10th Cir. 1997). Utah Case**
  - Utah rejected the Social Policy Duty found by NJ Court
    - Engineer, doing construction inspection, owes contractor employees NO DUTY
    - Distinguishing factors:
      - Engineer had no scheduling responsibilities
      - Contract specifically excluded job site safe responsibility

Construction Job Site Safety Source of Liability Exposure

- **Engineers Are Exposed To Job Safety Liability**
  - Construction Industry Can and Should do better
  - Contractors need greater commitment to safety
  - Designers need greater commitment to safety
  - Statutes Provide enforcement, but lack focus
- **Sources of Liability Exposure:**
  - Regulatory Exposure:
  - Criminal Exposure:
  - Tort Exposure:

Construction Job Site Safety Source of Liability Exposure

Regulatory Exposure:

- **Enforcement Actions by OSHA:**
  - Began with a Contractor Focus, but ineffective because fines were less costly to the contractors than compliance
  - Want to shift enforcement focus to Architects/Engineers
    - Tried in Skidmore Case in 1977, but
    - Court Held: Unless A/E engages in supervisory authority, they are not responsible
  - Not deterred, Moved to CH2MHill Case and gained ground
    - Milwaukee Tunnel Explosion, late 1980s
    - Court Held: Standards apply to Engineer despite contract exclusions because of their presence on the job site during construction
    - 7th Circuit Court of Appeals Reversed the CH2MHill Decision in 1999, but not convinced that OSHA is finished With Design Professionals
  - If you have a construction presence and know of an OSHA Violation, OSHA May Cite You for Failure To Correct Violation

Construction Job Site Safety Source of Liability Exposure

Criminal Exposures

- **Being Used in Some Jurisdictions to deter unsafe work practices**
  - Engineers have been indicted for Reckless Homicide, and Assault and Battery
  - Been used in at least 14 States, seeking prison terms for employees who ignore job site safety issues
  - Criminal sanctions don’t apply well to businesses, only individuals.

Construction Job Site Safety Source of Liability Exposure

Tort Law Exposures

- **Regardless of Regulatory or Criminal Enforcement, Engineers exposed to tort action by injured workers**
  - Contractor Employee injured or killed in trench collapse
    - Contractor work methods violate OSHA Rules, per se Negligence!
    - Contractor forces workers inside trench to protect employment status
    - Collapse occurs, injuring or killing the worker
  - Who Does the injured worker or his heirs sue for damages?

Construction Job Site Safety Source of Liability Exposure

Tort Law Exposures

- **Regardless of Regulatory or Criminal Enforcement, Engineers exposed to tort action by injured workers**
  - Contractor Employee injured or killed in trench collapse
  - Who Does the injured worker/family sue for damages?
    - Contractor is the at fault party
    - Contractors' liability exposure limited by Workers' Compensation Statute.
  - Plaintiff forced to look toward other parties for compensation of losses.
    - Owner is exposed, if on site or aware of violation
    - Engineer/Architect is exposed, if on site or aware of violation

Construction Job Site Safety Source of Liability Exposure

- **Construction among the most dangerous work in the US.**
  - **Construction is inherently dangerous**
    - **Many injuries and deaths are indeed accidental, i.e. happening by chance or accident; not planned; unexpected**
    - **Slip and Fall**
    - **Blunt force trama**
  - **Trench collapse deaths cannot be classified as "accidental" because they are "completely preventable."**
- **Why do trench collapse deaths and injuries continue to occur every year?**

Construction Job Site Safety Source of Liability Exposure

J Occup Med 1988 Jul;30(7):552-5.

Deaths from trench cave-in in the construction industry

A Suruda 1 , G Smith, S P Baker

Abstract

At least 70 US construction workers die each year in trench cave-ins, and Occupational Safety and Health Administration (**OSHA**) **standards for work in trenches have been criticized as hard to understand and inadequate**. This study examined 306 fatal cases, obtained mainly from OSHA investigations, from 1974 to 1986. **Most of the deaths occurred in shallow trenches while digging sewer lines and were caused by failing to shore or brace the walls of the trench**. The risk of cave-in death was higher in young workers and those in small firms; only 12% of the deaths were in unionized companies. OSHA issued citations in 94% of the cases, with fines ranging up to $58,400; **the average fine was $1,991 per death. Death due to cave-in is a significant risk for construction workers and can be prevented by proper protective measures.**

https://jordanbarab.com/confinedspace/2023/03/07/jail-trench-collapse/ **For more recent information, such as, "The average penalty for a trenching violation in the construction industry is around $5,000." which is UP from about $2000 between 1974 and 1986.**

Construction Job Site Safety
An Issue Affecting Engineers

Dr. David Michaels, assistant secretary of labor for the Occupational Safety and Health Administration (OSHA) about trench collapse deaths. (Nov. 22, 2016)

"There is no excuse.
These fatalities are completely preventable by complying with OSHA standards that every construction contractor should know."

Construction Job Site Safety
An Issue Affecting Engineers

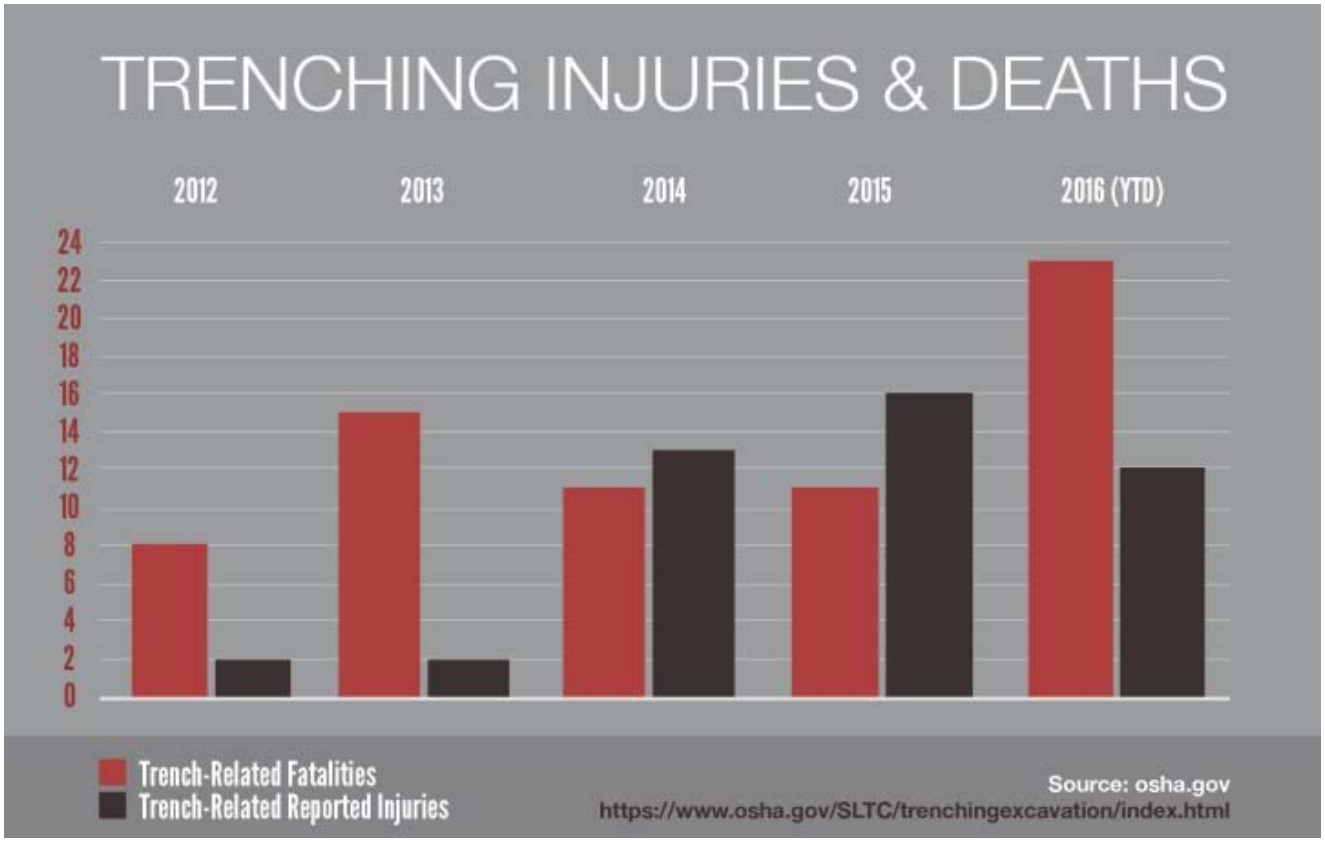
OSHA Criminal Prosecutions of Workplace Fatalities

Since the creation of the federal Occupational Safety and Health Administration (OSHA) 32 years ago, there have been more than 200,000 workplace-related deaths. However, OSHA has referred only 151 cases to the Justice Department for criminal prosecution -- and the maximum penalty companies face for a "willful violation" of OSHA laws is a misdemeanor. Federal prosecutors have declined to pursue two-thirds of these cases, and only eight of them have resulted in prison sentences for company officials. (2003)

https://www.pbs.org/wgbh/pages/frontline/shows/workplace/osha/referrals.html

Construction Job Site Safety
An Issue Affecting Engineers

"Trench deaths have more than doubled nationwide since last year ..” (2016)



Construction Job Site Safety
An Issue Affecting Engineers

- **Sources of Liability Exposure:**

  - **PA Contractor fined after trench collapse death**

Construction Job Site Safety
An Issue Affecting Engineers

- **Sources of Liability Exposure:**

Construction Job Site Safety
An Issue Affecting Engineers

- **Sources of Liability Exposure:**

Construction Job Site Safety
An Issue Affecting Engineers

- **Sources of Liability Exposure:**
  - Collapsed 20 ft Deep Trench with Recovery Workers on Todds Road in Lexington
  - 2016
  - 22 Years Old Father of 3

- https://www.wkyt.com/content/news/Family-remembers-man-killed-in-Lexington-trench-collapse-378330841.html

Construction Job Site Safety Discussion Question #2

Consider the following facts:

1. **Construction work underway for new industrial facility (Large Major Corporate Owner) and the project requires new service pipelines in trenches up to 8 feet deep.**
2. **The owner has hired a geotechnical engineer to be onsite during the earthwork activities for construction monitoring and testing services.**
3. **The geotechnical engineer assigns a project engineer with 2 years experience to the project for full time monitoring, and this engineer is present while the contractor performs the pipeline trenching. The project engineer's responsibility during the pipeline construction is**
   - **To verify that the contractor prepared the bedding for the pipe,**
   - **To verify that the contractor installed the correct pipe type and size, and**
   - **To test the backfill for proper compaction.**
4. **Contractor's site superintendent regularly directs laborers to enter the 8 foot deep, unshored trench to prepare bedding and install the piping.**
5. **One day, a section of the trench collapses upon laborers, resulting in the death of the a laborer, leaving a surviving widow (30 years old) and two children, 3 and 7 years old.**
6. **OSHA imposes a fine on the Contractor for violating safety regulations that require any trench excavation greater than 5 feet deep to be shored if workers must enter the trench, and Contractor paid the fine.**

Construction Job Site Safety Discussion Question #2

7. **The Contractor's Workers Compensation Insurance company pays the widow a lump sum amount, as specified by the Workers Compensation Statute ($50,000 in KY), which includes burial expenses, and $337.50 per week to replace her husband's lost income of $450 per week at the time of his death.**
   - **The weekly benefit is based on her marital status and two children.**
   - **The weekly benefits for the widow ($202.50, or $10,530/year) continue until she dies or remarries, and (how many years before remarrying, or will she continue at this level for the rest of her life?)**
   - **The weekly benefits for the children ($67.50 each, or $3,510/year) continue until they become 18 years of age. To age 18, $91,260.**
   - **If Widow's benefits last X years and both children live to age 18, she and her children will receive in addition to the statutory lump sum:**
     - **5 years $143,910 (PV $129,085, 2.0% Inflation)**
     - **10 years $195,560 (PV $174,039, 2.0% Inflation)**
     - **20 years $301,860 (PV $251,633, 2.0% Inflation)**
     - **40 years $512,460 (PV $367,506, 2.0% Inflation)**
   - **The Construction Team Ultimately Pays for this Liability plus Fines**

Construction Job Site Safety Discussion Question #2

8. **The Widow concludes that the compensation for her husband's death is not sufficient to raise and educate her children and since her husband's death was a wrongful death, she seeks legal advice.**
9. **Based on these facts, who can she sue for damages caused to her family due to her husband's wrongful death? Consider these potential defendants: Geotechnical Engineering Company, the Project Engineer who was onsite during the construction, the Owner, the Contractor company, or the Contractor's superintendent. In your answer, explain why the party, or parties, you sue are liable for her loss?**

Based on these facts, who can she sue for damages caused to her family due to her husband's wrongful death? Consider these potential defendants: Geotechnical Engineer, Owner, or Contractor (Employer). In your answer, explain why the party you sue should be held liable for her loss?

Construction Job Site Safety Discussion Question #2

Who might the Widow consider suing:

Construction Job Site Safety Discussion Question #2

Who might the Widow consider suing:

- **Contractor's superintendent**
  - **Ordered husband into trench**
  - **Knew or should have known OSHA requires shoring**

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- **Contractor's superintendent**
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  - **Knew or should have known OSHA requires shoring**
- **Contractor (husband's employer)**
  - **Vicarious Liability for acts of employee**
  - **Had duty to comply with OSHA shoring requirement**
  - **Purchases Workers Compensation Insurance Per State Law**

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- **Geotechnical engineer's on-site representative**
  - **On site presence, but no specific job safety job responsibility**
  - **Required to enter trench to perform density testing of backfill**
  - **Knew or should have known unshored trench violates OSHA regulations**

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- **Geotechnical Engineering firm (on site and either knew or should have known of the unsafe condition with a duty to protect workers)**
  - **Vicarious Liability for acts of employee**
  - **Management may or may not be on site during trenching operations**
  - **No contractual duty regarding contractor means and methods or job site safety**

Construction Job Site Safety Discussion Question #2

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  - **Vicarious Liability for acts of employee**
  - **Management may or may not be on site during trenching operations**
  - **No contractual duty regarding contractor means and methods or job site safety**
- **Owner**
  - **No job site presence**
  - **No evidence of actual knowledge about safety regulation violation on job site.**

Construction Job Site Safety Discussion Question #2

The Widow could consider suing:

- **Contractor's superintendent (ordered husband into trench)**
- **Contractor (husband's employer)**
- **Geotechnical engineer's on-site representative (on site and either knew or should have known of the unsafe condition with a duty to protect workers)**
- **Geotechnical Engineering firm (on site and either knew or should have known of the unsafe condition with a duty to protect workers)**
- **Owner (Not on site, no evidence of knowledge, actual or imputed)**

Of these, which ones can she NOT sue?

Construction Job Site Safety Discussion Question #2

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- **Geotechnical engineer's on-site representative (on site and either knew or should have known of the unsafe condition with a duty to protect workers)**
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Of these, which probably don't have DEEP POCKETS?

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Of these, which may not have legal liability?

Construction Job Site Safety Discussion Question #2

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Of these, which ones can she NOT sue?

Of these, which probably don't have DEEP POCKETS?

Of these, which may not have legal liability?

•That Leaves Only the Geotechnical Firm!!!!

Construction Job Site Safety Discussion Question #3

Consider all the same facts given in question 2, except add the following fact to the others.

> **At least one week prior to the trench collapse, the project engineer on site observed the non-compliant, unshored trench conditions.**

How would the following hypothetical actions by the parties affect your answer to question 2?

Construction Job Site Safety Discussion Question #3

Consider all the same facts given in question 2, except add the following fact to the others.

At least one week prior to the trench collapse, the project engineer on site observed the non-compliant, unshored trench conditions.

How would the following hypothetical actions by the parties affect your answer to question 2?

1. The project engineer looks the other way and tells nobody about his observation.

Construction Job Site Safety Discussion Question #3

Consider all the same facts given in question 2, except add the following fact to the others.

At least one week prior to the trench collapse, the project engineer on site observed the non-compliant, unshored trench conditions.

How would the following hypothetical actions by the parties affect your answer to question 2?

1. **The project engineer looks the other way and tells nobody about his observation.**
2. **The project engineer calls his immediate supervisor, who is a senior geotechnical engineer with the Geotechnical Engineering company, to communicate his observation and express concern about the safety of the laborers in the trench as well as his own safety when he enters the trench to run compaction tests on the backfill. The senior engineer tells the project engineer to stay out of the trench for testing unless it is either shored or the depth is less than 3 feet.**

Construction Job Site Safety Discussion Question #3

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3. **The actions in #2 and the senior geotechnical engineer calls the contractor's superintendent about the OSHA violation and says, "He really should get that corrected."**

Construction Job Site Safety Discussion Question #3

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3. **The actions in #2 and the senior geotechnical engineer calls the contractor's superintendent about the OSHA violation and says, "He really should get that corrected."**
4. **The actions in #3 and the senior geotechnical engineer calls the owner and advises the owner about the OSHA violation. The senior geotechnical engineer recommends that the owner stop construction until the contractor eliminates the OSHA violation, but the owner does nothing to stop the work.**

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4. **The actions in #3 and the senior geotechnical engineer calls the owner and advises the owner about the OSHA violation. The senior geotechnical engineer recommends that the owner stop construction until the contractor eliminates the OSHA violation, but the owner does nothing to stop the work.**
5. **The actions in #4 and the senior geotechnical engineer documents the phone calls to the contractor's superintendent and owner with a letter and advises the owner that if the OSHA violation remains unresolved, the geotechnical engineering company will resign from the project and notify OSHA..**

Construction Job Site Safety Discussion Question #2

The senior geotechnical engineer documents the phone calls to the contractor's superintendent and owner with a letter and advises the owner that if the OSHA violation remains unresolved, the geotechnical engineering company will resign from the project and notify OSHA.

There is wide agreement that after the geotechnical engineering company does the above, the geotechnical engineering company's liability exposure is substantially reduced, if not eliminated.

WHY?

EITHER

the Owner will insist that the Contractor comply with the law which removes the high risk associated with unshored trenches,

OR

The Geotechnical Company resigns from the job and reports the violation to OSHA which eliminates the risk for the Geotechnical Company and substantially reduces the risk for everyone else.

Construction Job Site Safety Discussion Question #2

What are the damages?

Construction Job Site Safety Discussion Question #2

What are the damages?

1. **Real Financial/Economic Damages, probably over $1 million**
   - **Lost Financial Support, current $ basis, about $900,000**
   - **Lost Inheritance**
   - **Medical Expenses, Funeral and Burial Costs.**
2. **Real Non-Economic Damages**
   - **Pain and Suffering**
   - **Pain and Suffering of Family Members?**
   - **Loss of Consortium?**
   - **Loss of Instruction and Guidance?**
3. **Punitive Damages A multiple of Real Damages**

Exposure for Design Team and Owner: Several Million, Less the W/C Payout the widow and the children have already received. However, the contractor's Workers' Compensation Insurer could recover all its expenses from the defendant with subrogation.

Construction Job Site Safety Discussion Question #2

What are the damages? Your Group Consensus Values

Section 1 Damages	
Group	Damages
A	$1,000,000
B	$1,000,000
C	$1,000,000
D	$1,000,000
E	$5,000,000
F	
Total	$1,800,000

Section 2 Damages	
Group	Damages
A	$5,000,000
B	$1,000,000
C	$1,000,000
D	$1,000,000
E	$1,000,000
F	
Total	$1,800,000
Both	$1,800,000

- Real Financials Damages: $1,000,000 Reasonable Est.
- Real Non-economic Damages: $ 500,000 Guess but logical
- Punitive Damages ?????: $5,000,000 No Possible Idea

Construction Job Site Safety Discussion Question #2

Who Can Be Compensated for Damages?

1. **Spouse**
   - **Loss of Consortium**
   - **Loss of Instruction and Guidance**
   - **Financial Impacts**
2. **Minor Children**
   - **Loss of Consortium**
   - **Loss of Instruction and Guidance**
   - **Financial Impacts**
3. **Parents**
   - **Loss of Consortium**

Construction Job Site Safety Discussion Question #2

Who Pays the Damages?

1. **Construction Team: The W/C benefit, <u>and no more</u>**
2. **Design Team: Probably the Balance based on the original fact pattern except as modified below.**
3. **Owner: Nothing unless the Design Team handles their responsibilities properly by creating an owner duty to act to prevent the death, and reporting the non-compliance to OSHA, if not eliminated.**

<u>Who has the highest liability exposure?</u>

Construction Job Site Safety Discussion Question #2

Who has the highest liability exposure?

If Plaintiff Damages Are:	Design Team and/or Owner Liability Exposure	Percentage of Construction Team Exposure
$1,000,000.00	$437,540.00	78%
$1,124,920.00	**$562,460.00**	**100%**
$1,200,000.00	$637,540.00	113%
$1,300,000.00	$737,540.00	131%
$1,400,000.00	$837,540.00	149%
$1,500,000.00	$937,540.00	167%
$1,750,000.00	$1,187,540.00	211%
$2,000,000.00	$1,437,540.00	256%
$2,500,000.00	$1,937,540.00	344%
$3,000,000.00	**$2,437,540.00**	**433%**
$4,000,000.00	$3,437,540.00	611%

BUT!!!

Construction Job Site Safety Discussion Question #2

Who has the highest liability exposure?

- **BUT!!! If the Workers' Compensation insurer successfully subrogates the claim, they can get reimbursed for all money paid on the claim from the Tortfeasors (Design Team and/or Owner)**
- **That puts 100% of the liability exposure on the design team and/or owner, and 0% for the construction team**

Construction Job Site Safety Source of Liability Exposure

Suggestions For Our Industry

- **States should modify Workers' Compensation Statutes to encourage employer conduct that strengthens employee protection.**
  - **Close the employers' liability shield when an employer's negligence causes injury or death to an employee.**
  - **Increase employers' insurance premiums after violations of OSHA regulations.**
  - **Require employers with multiple OSHA violations to post cash bonds to provide financial security against additional violations.**

- **Why haven't these changes been implemented?**

Construction Job Site Safety Source of Liability Exposure

Suggestions For Our Industry

- **OSHA should increase the civil penalties for violation of OSHA trenching and shoring regulations to provide a stronger deterrence for willful violation of these regulations.**
  - **A relatively small percentage of unsupported trenches fail, and**
  - **Many contractors conclude it is less costly to take the risk of trench collapse and pay the occasional fine than the cost to comply with OSHA requirements on every construction project that requires trenching. (Closer Look)**
- **More local and state prosecutors should pursue criminal actions against the construction personnel who willfully violate these regulations at the expense of worker injuries and deaths.**

Construction Job Site Safety Source of Liability Exposure

Contractor Choices (Closer Look)

- **Many contractors conclude it is less costly to take the risk of trench collapse and pay the occasional fine than the cost to comply with OSHA requirements on every construction project that requires trenching. See https://trenching-cost-calculator.engimarket.com/**
  - **an annual average fatality rate of 0.18 per 100,000 FTE**
  - **54 average trenching deaths per year**

Construction Job Site Safety Source of Liability Exposure

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  - **Bracing Costs, per Foot, $30 to $100 = $15,800,000 to $52,800,000**

Construction Job Site Safety Source of Liability Exposure

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  - **Assume: 100 miles of trenching per year, about 10,000 feet per fatality**
  - **Bracing Costs, per Foot, $30 to $100 = $15,800,000 to $52,800,000**
  - **Cost savings per death by not bracing: $0.5 to 1.0 million per fatality**
  - **Average OSHA Fine per fatality: $1,991 per death in 1988 ($5,500 Adjusted For Inflation, 1987-2024)**

Construction Job Site Safety Source of Liability Exposure

Tips For Engineers

- **Do Not Accept Responsibility for Contractor means, methods, or job site safety**
  - All construction contracts should include this language
  - Have contractor indemnify the owner, designers against claims of bodily injury or property damage from construction accidents
  - Have contractor waive his Workers' Compensation Immunity if Contractor Negligence or worse causes the Injury or Death.

Construction Job Site Safety Source of Liability Exposure

Tips For Engineers

- **Do Not Accept "Stop Work" Authority**
  - If you have "authority" you have corresponding "Responsibility"
  - Only the owner should have the "Stop Work" authority
  - Design Professional should give owner appropriate advice relative to known safety violations and the need to stop work until corrected
  - **What if the owner refuses to stop work when recommended?**

Construction Job Site Safety Source of Liability Exposure

Tips For Engineers

- **Have contractor name owner and designers as additional insureds on contractors' insurance**
- **Train all employees about actions and statements that can expose the firm to this liability.**
- **Understand your responsibility for your safety and employees' safety on the job**

Construction Job Site Safety Source of Liability Exposure

Tips For Engineers

- **If you see an unsafe condition, DO NOT SIMPLY LOOK THE OTHER WAY!!**
  - **Adopt an appropriate policy for your firm**
  - **Be sure all your employees know the policy and the reasons for the policy**
  - **Be clear that violation of the policy is grounds for dismissal for cause**

Construction Job Site Safety Source of Liability Exposure

The following documents address trench collapse in the US. You are welcome to copy any you want for your files and records.

2016 - Ohio worker's death highlights grim

2016 national stat trench collapse fatalities have more than doubled Occupational Safety and Health Administration.pdf

fy15_federal-state_summaries_14_Trenching.pdf

Kentucky Worker Killed in Trench Collapse.pdf

Trench_Safety_Accidents.pdf

Trenching and Excavation Safety.pdf

Two Workers Killed 161004.pdf

Trenching.pdf

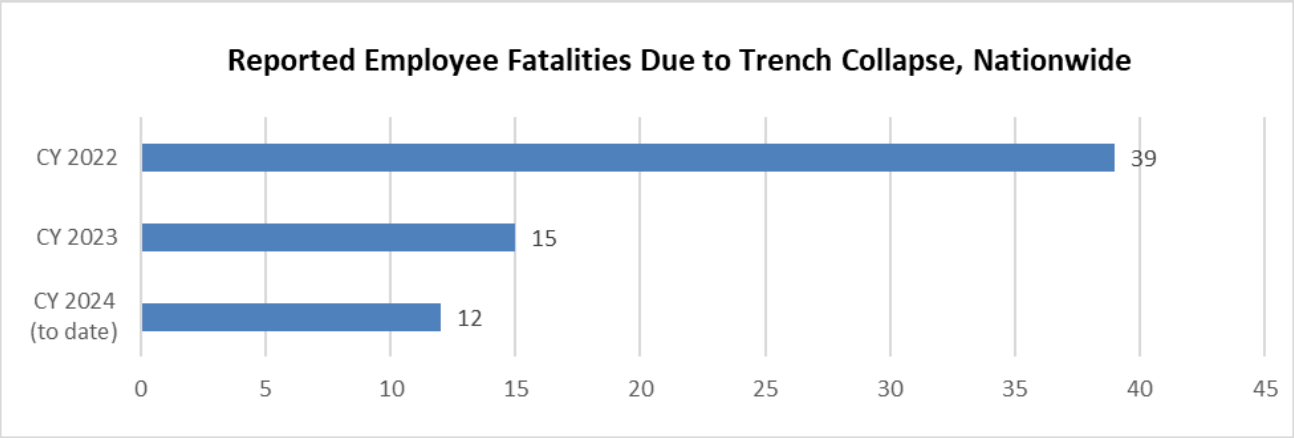
Construction Job Site Safety Recent Trench Death Trends:

National reporting by federal and state OSHA programs show worker deaths in trench collapses declined nearly 70 percent since calendar year 2022. Fatalities decreased from 39 in 2022 to 15 in 2023 and, to date (Nov 4, 2024), 12 in calendar year 2024. **These decreases follow intensive outreach and education by OSHA and industry partners, work by state plans and aggressive enforcement under a "zero tolerance" policy for unprotected trenches, including immediate inspections and referrals for criminal prosecution where warranted.**

https://www.osha.gov/news/newsreleases/osha-national-news-release/20241104

Construction Job Site Safety Recent Trench Death Trends:

https://www.osha.gov/news/newsreleases/osha-national-news-release/20241104



This is the most encouraging results I have ever seen for trench collapse deaths.

I hope this trend continues until this matter is no longer a burden on the industry

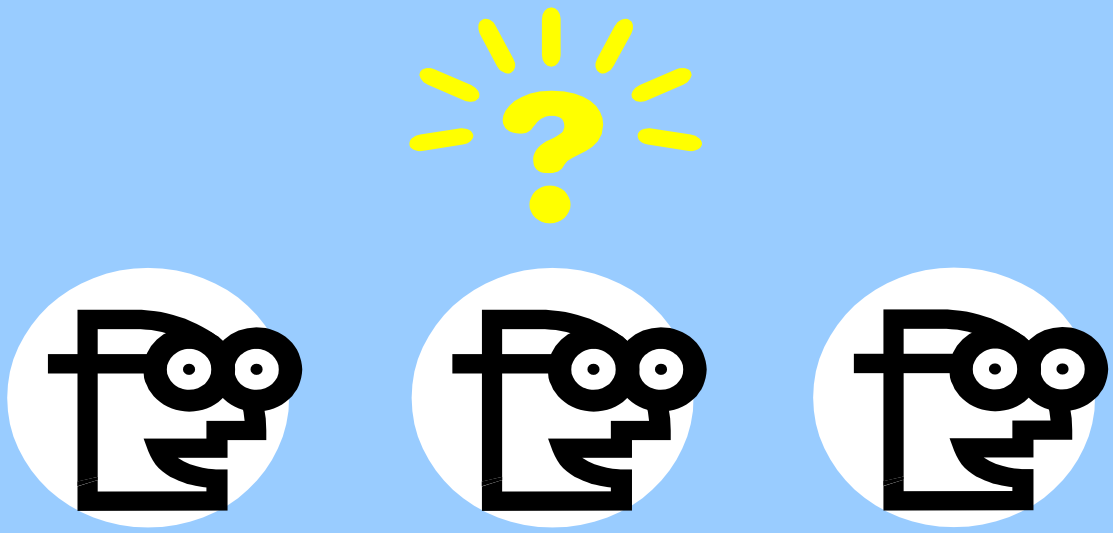
I suggest a cautious wait and see posture before celebrating

Construction Job Site Safety Review of Torts/Negligence

You have had a lot coming at you and confusion is not surprising. One last chance to clarify some points that are confusing some of you

- **Three types of Torts:**
  - **Intentional Torts: Assault, Battery, False Imprisonment, ..**
  - **Strict Liability Torts: Damage caused by inherently dangerous activity like blasting, animal bites/attacks**
  - **Negligence: Duty, Breach, Causation, Real Damage**
- **Negligence does not require intent!!!**
  - **If someone acts with an intent to do wrong, it is not negligence, it is something much more serious than negligence.**

Construction Job Site Safety
Closing Statement



It's QUESTION TIME!!

Closing Remarks

- **Thank you for your participation and attention this semester.**
- **Your CE-401 journey is finally over, but <u>your</u> life and professional journeys are just beginning**
  - **I hope each of you enjoy a long, successful, and prosperous career and life.**
  - **I hope your experiences in CE-401 will help you along the way.**
- **If any issues arise that you believe I can assist, please never hesitate to reach out.**