California Underground Facilities Safe Excavation Board ("Dig Safe Board")

July 13, 2020

Agenda Item No. 5 (Information Item) – Staff Report

Update on Education in-lieu of Fines Course

PRESENTER

Jenni Reed, Policy & Data Analyst

SUMMARY

Since late 2018, Dig Safe Board ("Board") staff has engaged in a process of research and iterative development in cooperation with the Education Committee to produce the Board's Education inlieu of Fines Course. This report serves to provide the Board with an overview of the content and structure of the course, the principles that guided staff's creation of the course, as well as a sampling of the course materials. Following any refinements identified during the internal testing process, the course will be finalized and ready for implementation.

STRATEGIC PLAN

2020 Strategic Objective: Foster Compliance with New and Existing Laws Through Education and Outreach Strategic Activity: Finalize an Education Course

BACKGROUND

The Dig Safe Act of 2016 (SB 661, Chapter 809, Statutes of 2016 ("the Act")¹), calls for the Board to coordinate the state's education and outreach activities that encourage safe excavation practices. The Legislature also directed the Board to enforce California's safe digging laws progressively, providing the opportunity to educate violators about safe digging practices where appropriate. The Board's 2019 Plan² established the creation of a relevant, affordable educational course to offer violators in-lieu of fines. As discussed in the Board's 2018 Results Report³, "the curriculum is expected to focus on case studies of past dig-in accidents in California and across the nation to provide context, and will emphasize the importance of communication, and how different work practices related to underground facilities affect one another." Development of such a course educational course.

¹ SB 661, Chapter 809, Statutes of 2016:

https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB661

² 2019 Annual Plan: <u>https://digsafe.fire.ca.gov/media/2092/agenda-item-9-2019-plan.pdf</u>

³ 2018 Results Report: <u>https://digsafe.fire.ca.gov/media/2091/agenda-item-9-2018-results-report.pdf</u>

The Board's Enforcement Philosophy⁴, adopted in January of 2019, guided staff's approach to the course.

DISCUSSION

Purpose of the Course

This course examines, through the lens of three case studies, how individuals' knowledge and actions impact safety around underground facilities. To help attendees improve their ability to protect themselves and others, the course applies a pattern of inquiry to each case study: How did events diverge from the basic steps for safe excavation? How did communication make or break safe practices? What violations are observed?

By design, every aspect of the course is intended to answer the student's question, "Why should I care?" Although the details vary, the common thread running through every answer is, "You should care, because your personal safety and the safety of those you care about is at stake."

Contents of the Course

The course has been developed to focus on human factors and motivating a safety mindset, as opposed to training on specific technical skills and procedures. Topics such as the USA ticket, maps, markings, and organizational policies are examined as safety tools that must be understood and managed as forms of communication to be effective.

The resulting course curriculum is built on principles that empower the individual to protect themselves and others, namely:

- Provide a fundamental understanding of the basic safe excavation process laid out in Government Code 4216;
- Increase the value participants place on knowing and using safe practices, with an emphasis on open communication between parties; and
- Impress upon participants the reality that unsafe digging practices endanger lives.

Guided by these principles, the course lessons consider how the actions of individuals impact outcomes. In Paso Robles, California, an excavator struck a water line in 2008, flooding a trench and killing two people. In Kansas City, Missouri, a gas distribution line was struck in 2013, causing an explosion that killed one and injured 15 others. In Walnut Creek, California, a high-priority petroleum pipeline was struck in 2004, causing an explosion that killed five, and injured four others. In all three cases, there were a variety of opportunities where multiple individuals involved could have averted tragedy.

The course materials make up a self-contained kit, which includes the Instructor Guide, Student Workbook, PowerPoint slide deck, group activity materials, and a USB drive with all the tools and resources necessary to deliver the course.

⁴ Board Policy B-05: Enforcement Philosophy: <u>https://digsafe.fire.ca.gov/media/2060/policy-b-05-enforcement-philosophy.pdf</u>

Next Steps

Staff have begun internal testing and expect the process to take approximately four to six weeks. Given current recommendations on social distancing and limiting in-person events, staff are preparing to deliver the course virtually if needed.

CONCLUSION

The education course is complete and, following internal testing, will be available for release in late August to early September.

ATTACHMENTS

- A: Excerpt from Lesson Plan Unit 2 Paso Robles Case Study
- B: Excerpt from Student Workbook Case Study One: Paso Robles

UNIT 2 – PASO ROBLES CASE STUDY

OBJECTIVES AND RESOURCES

Knowledge Objectives

After delivering this unit, students will:

- Describe the facts and understand the contributing factors of the Paso Robles 2008 accident
- Describe the three ways an operator may respond to a ticket notification
- Understand maps and field markings as a form of communication, including the ways in which they may be vulnerable to miscommunication
- Describe how to recognize and effectively respond to a safety work stoppage
- Recognize the violations of GOV 4216 in the Paso Robles accident and know how to look up each relevant code section
- Describe some of the benefits of formalizing safety policies

Special Materials

- 5Ws Paso Robles Fact Boards
- Safety Policy Elements Class Activity Kit

Student Workbook Path

- Page 9 Paso Robles Case Intro
- Page 10/1..... 5 W's note spaces
- Page 12 Paso Robles Safe Steps Review
- Page 13/14.... Maps vs Markings note spaces and prompts
- Page 14 Mandatory Electronic Positive Response callout
- Page 15 Safety Work Stoppages: Obstacles & Solutions for Speaking Up (*Activity*)
- Page 16/17 ... Safety Work Stoppage/Safety Policy note spaces and prompts
- Page 18 Paso Robles Violations note spaces and prompts
- Page 19 Safety Policy Elements (Activity)

TEACHING TIPS

- It is possible that people in the class may have personal connections to the case studies being discussed in the course. A call-out has been included at the start of Lesson 3, reminding you to acknowledge this to the class.
- If students seem hesitant to participate in discussion, you can provide a little more direct information in this first case study. Gradually increasing the prompts for discussion as you move through the course can allow the class time to ease into greater participation.
- If it is clear from the start of the class that one student will tend to monopolize participation, consider gently incorporating direct questioning. For example, if you identify a student with relevant subject matter knowledge, you might want to encourage the student to share his/her experiences as related to the discussion topic.
- In Lesson 7, avoid getting pulled into providing specific guidance on any questions regarding unsafe work environments. Remain consistent in pointing to the contact information provided

for OSHA and Dig Safe Board Complaints as the proper way students should handle any such concerns.

• In Lesson 8, and generally throughout the course, be careful not to put students on the spot with reading aloud. When it is time to read through code sections, if no one volunteers, the Instructor should read the section aloud for the class.

Reading and Preparation

• Foundational Documents – Paso Robles Case Study (Course Kit Jump Drive)

PRESENTATION OVERVIEW

Unit 2 – Paso Robles Case	Activity Type(s)	Time	
• Lesson 3			
Paso Robles Media Presentation	Video	minutes	
Notes			
• Lesson 4			
Paso Robles Outcome	Lecture/Discussion	minutes	
Notes			
• Lesson 5			
Safe Excavation Steps Review 1	Lecture/Discussion	minutes	
Notes	L	L	

• Lesson 6		
Communication – Maps v Markings	Lecture/Discussion	minutes
Notes		
• Lesson 7		
Communication – Work Stoppage	Lecture/Discussion	minutes
Notes	I	1
• Lesson 8		
Violations -	Lecture/Discussion	minutes
Paso Robles		
Notes	L	

• Lesson 9			
Paso Robles Activity: Work Stoppage Procedure	Activity/Discussion	minutes	
Notes			

LESSON PLANS

3. Paso Robles Media Presentation

Time: 10 Minutes

Method of Instruction: Classroom Presentation

Learning Objectives: Describe the facts of the Paso Robles 2008 accident

Slide Number(s): 17 - 18

Relevance:

- Introduces students to the facts of the Paso Robles case in a way that feels personal and draws them into thinking critically about the accident.

Presentation:	Application:
A. The first case presented for discussion is a	Slide 17
fatal dig-in that took place in Paso Robles in	
2008.	
1. There may be people in the room who were	Ask whether anyone in the room is familiar with
working in the industry at the time of this	this incident.
accident, or who are familiar with it.	
The content covered in the video may be	Let students know that if they are upset by any
sensitive to some people, whether through	of the case study videos presented in the class,
personal connection to the actual event or	it is ok if they need to step away for a minute.
to other accidents.	
B.A short media presentation will familiarize	Direct students to pages 11 - 12 in their
students with the circumstances of the	workbooks, where they can take notes for
accident.	reference in the discussion that will follow.
1. Following the media presentation, there will	
be a class review of the Who, What,	Slide 18
Where, When, Why-style facts of the case.	Dim lights. Play video.

4. Paso Robles Outcome

Time: 10 Minutes

Method of Instruction: Classroom Presentation / Discussion

Learning Objectives: The group will have a shared understanding of the facts and circumstances of the Paso Robles case, including significant contributing factors.

Special Materials: Pre-Populated Case Fact Poster Cards

Slide Number(s): 19

Relevance:

- Review of the video content will solidify the facts of the case for the class.
- Utilization of group discussion will set an open tone and give students the confidence that everyone participating is referencing a common set of facts

Presentation:	Application:
A. <u>When</u> :	Slide 19
1. 8:40 pm, October 2, 2008	Lead class in discussion to elicit the 5W facts of
2. In the evening/dark	the case.
 B. <u>Where</u>: Paso Robles, CA Busy intersection In a trench Inside a pipe C. <u>Who</u>: County of San Luis Obispo (Project Owner) Large Construction Company (Excavator) City of Paso Robles Water Department (Facility Operator) City of Paso Robles Water Department (Facility Operator) Fatalities: 26-year-old, new to construction, stepson to second foreman 38-year-old veteran worker Other workers: Foreman-in-Charge Second Foreman City Water Representative Project Inspector D. <u>What</u>: Large water expansion project Excavator bucket strike on pressurized 8" water main flooded a trench, drowning two workers inside a 36" pipe under construction 	When the class has named all or most of the first W facts, hang up that W poster for the class to reference, and move on to the next W. Prompts, if needed: "When did this take place? Time of day? Season?" "Where did the accident happen?" "Who were the different parties involved? Who were the key people/roles?" "What happened?" "Why was the pipe struck? What do you think led to this outcome?"

 E. <u>Why</u>: 1. The water line was not potholed, and its location was not otherwise verified by the excavator, despite verbal and written information provided by Water Dept. stating that an 8" water line would be in conflict 	
with the excavation. 2. Miscommunications between the excavator and the Water Dept. representative on whether a map was sufficient and expectations that the line be marked following a walkthrough.	
 Internal communication failure between excavation foreman and potholing foreman. Map confusion – Lack of legend/orienting features on "zoomed in" map; Disagreement between workers on site on 	
 how maps should be read. 5. Internal communication failure between crew members regarding policy that excavation should not occur while workers are inside the pipe. 6. Lack of usual standby resource from Water 	When all the Ws have been covered, transition to discussion of how things could have turned out differently.
are inside the pipe. 6. Lack of usual standby resource from Water Dept.	to discussion of how things could have turned out differently.

5. Paso Robles - Review Safe Excavation Process

Time: 10 Minutes

Method of Instruction: Classroom Presentation / Discussion

Learning Objectives: Identify where the Paso Robles events departed from the steps for safe excavation.

Slide Number(s): 20

Relevance:

- Applying the Steps for Safe Excavation to a real-world scenario provides students with an opportunity to better understand the steps for application in their daily work.

Presentation:	Application:	
A. The Steps for Safe Excavation reflect the	Slide 20	
basic process for safely identifying and	Ask the class to identify which steps were not	
avoiding buried facilities.	properly observed in the Paso Robles accident,	
 In Paso Robles, the excavator did not 	utilizing the classroom visual to locate/track the	
determine the exact location of the water	discussion along the Safe Excavation Process	
line. (Step 3: Determine Exact Location of	flow.	
Facility)		
2. When questions were raised by the second		
foreman and the project inspector, the		
foreman-in-charge did not reach out to the		
Water Department for confirmation/		
clarification. (Step 4: Any Questions?)		
3. The excavator did not respect the safety		
the neth of a processized water main (Step		
6: Excavate with Care)		
B. The steps that were not observed can be	Ask the class to identify/describe the	
tracked through a series of communication	communication failures that impacted the	
errors	unobserved Steps for Safe Excavation	
1 Requests for markings in addition to the		
maps were either misunderstood or	Ask the class why they think markings were	
ignored.	requested, even though the City had provided a	
2. Foreman-in-charge did not follow up on his	тар.	
email to the potholing foreman, and the	How could the foreman-in-charge have been	
water line was never potholed.	better prepared for questions in the field	
3. When questions arose during the	regarding buried facilities? (Looking for: Contact	
excavation, attempts to contact the	information on hand for potholing foreman and	
potholing foreman were unsuccessful, and	Water Dept. standby person.)	
no attempts were made to contact the City		
Water Rep. who was usually present on		
standby.		
4. The excavator did not follow its policy of not	14/1 and the internet communication for the	
excavating when workers were inside the	where were the internal communication failures	
pipe.	regarding workers being inside the pipe?	

Case Study One: Paso Robles

The October 2008 accident occurred in a busy intersection in Paso Robles, California. A construction crew was installing a water line for San Luis Obispo County, when the bucket of an excavator digging to lengthen the trench struck an 8-inch water line. The strike caused a leak that flooded the trench. Two men working below in the trench were trapped inside the pipe by the rushing water and drowned. The crew was provided a map of the water line by the city, but the map did not include a legend or other orienting features.





Case Facts: Paso Robles

As you listen to the video presentation and participate in the discussion that follows, use the spaces below to note the basic facts of the Paso Robles case.

WHO:		

WHAT:

WHEN:

WHERE:	
WHY:	
When E	
Where Why	
Who Who	

Applying Basic Steps for Safe Excavation to Paso Robles

The basic steps for safe excavation reflect the central process for safely identifying and avoiding buried facilities. Where did events in the Paso Robles case depart from the safe excavation steps? Use the diagram to determine the steps not followed and note them in the box below.



