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

November 16, 2020

Agenda Item No. 9 (Information Item) – Staff Report

Report on Reasonable Care Standards Development

PRESENTER

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SUMMARY

Staff and the Reasonable Care Committee held two workshops and ran a survey on trenchless excavation techniques. While there was agreement in many areas, participants took different approaches to several, such as the use inspection windows. Staff recommend that the Board continue exploring reasonable care in trenchless techniques—specifically in horizontal directional drilling (HDD).

STRATEGIC PLAN

2020 Strategic Objective: Improve Excavation and Location Practice Safety
Strategic Activity: Reasonable Care Standards

BACKGROUND

Statute

Government Code § 4216.18¹ requires the Board to “develop a standard or set of standards relevant to safety practices in excavating around subsurface installations and procedures and guidance in encouraging those practices.” These standards are “not intended to replace other relevant standards... but are to inform areas currently without established standards.”

Board Meetings and Workshop

The Board relaunched the discussion of Reasonable Care Standards at the July 13, 2020² Board meeting after having previously discussed it in 2018 and 2019.

¹ CA Government Code § 4216.18

https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=4216.18&lawCode=GOV

² July 13-14, 2020, Agenda Item No. 7, *Discussion on Reasonable Care Standards Development*, <https://digsafe.fire.ca.gov/media/2432/item-7-discussion-on-reasonable-care-standards-development.pdf>

At the August 10, 2020³, Board meeting staff announced a workshop and survey on reasonable care standards in the field of trenchless excavation. Staff presented the preliminary results of the first workshop and survey in the September 14, 2020 meeting.⁴

DISCUSSION

Survey and Reasonable Care Workshop II Overview

The first workshop on Trenchless Excavation took place on August 27th 2020⁵ and the second workshop on October 29th, 2020.⁶ The online survey ran from August 4th to October 30th, 2020.

Staff spoke with representatives of 35 companies publicly listed as involving trenchless installation and excavation methods through the Department of Industrial Relations, the Contractor Blue Book, and the United Contractors Association. Staff invited organizations to attend the October 29th workshop and to contribute to the ongoing online survey. Following direct outreach, the survey gained 11 responses for a final total of 39 responses.

The second workshop, held by teleconference on October 29th, 2020, brought together 28 non-staff participants. Direct outreach added new participants to this workshop, however it remains the case that trenchless contractors have difficulty making a meeting during business hours that would come at the sacrifice of their working day. The discussion was informative and a demonstration that direct outreach should continue as an ongoing strategy to bring in new stakeholders to the Board's work.

Results

There is widespread agreement in the survey and workshops on these topics:

- On the steps for safe excavation in Government Code 4216 as preparation for trenchless excavation, including potholing (Survey Question Nos. 2-3)
- Potholing all utility crossings where conditions allow (Question Nos. 11-14)
- That deviations in the drill head or bore path may be caused by a wide variety

³ August 10-11, 2020, Agenda Item No. 6, *Discussion of Reasonable Care Standards Workshop*, <https://digsafe.fire.ca.gov/media/2441/august-10-2020-item-6-discussion-of-reasonable-care-standards-workshop.pdf>

⁴ September 14, 2020, Agenda Item No. 18, *Discussion on Reasonable Care Standards Development for Trenchless Excavation Techniques*, <https://digsafe.fire.ca.gov/media/2487/sept-14-2020-item-18-reasonable-care.pdf>

⁵ August 27, 2020, Agenda Item No. 1, *Trenchless Excavation Reasonable Care Workshop*, <https://digsafe.fire.ca.gov/media/2479/trenchless-workshop-agenda-august-27-2020-accessible.pdf>

⁶ October 29, 2020, Agenda Item No. 1, *Workshop: Reasonable Care in Trenchless Excavation*, <https://digsafe.fire.ca.gov/media/2586/rc-workshop-ii-oct-29-2020-agenda-accessible.pdf>

of soil conditions that are managed by numerous adjustments on trenchless projects including drill bits, slurry mixes and additives, rig adjustments, and possibly changes of course (Question Nos. 16-18)

- That problematic soil conditions can generally be identified in advance (Question No. 19-20) except for certain unpredictable elements such as rocks, voids, and buried items (Question No. 4).
- That proper calibration and training on drill tracking technology is a critical step in trenchless excavation and installation (scattered responses throughout the survey and workshops including Questions Nos. 2, 4, and 22).

There are significant variations on three topics:

1. There is widespread familiarity with and the practice to, where conditions allow, maintain open pothole windows and visual inspection of the drill head trajectory at known utility crossings (Question Nos. 5 and 8). However, several survey respondents (Question No. 9 and 10) noted this practice of maintaining borehole windows was only used when required by project owners such as utility operators or only for certain conditions.

While not every respondent specified further, an open pothole is reported to be disruptive for certain methods:

- When a recirculating slurry mix is used in HDD methods especially with large diameter bores (Workshop II)
- With HDD and pipejacking scenarios (Question No. 9 response 30)
- When the method of utility installation is auger and casing boring (Question No. 10 response 29),

The Board has heard from only a few parties on these specific technique interactions, and further research on these methods is necessary to better understand them and the degree of these issues. As 79% of respondents reported using the practice of open pothole windows in general where conditions allow (Question No. 8), these responses point to a generally recommended practice that has important exceptions for the Board to pinpoint.

2. The Board has heard throughout the survey and workshops that trenchless contractors are held to specific requirements by project owners. To develop a complete understanding of existing practices, the Board will need to examine variations in these standards between utility companies. Operators in both workshops expressed a willingness to share these documents with the Board. An investigation into these standards may be a critical part of the Board's work on reasonable care as the Board can learn about existing requirements in addition to existing communication between parties on these types of projects.
3. As reported in Survey Question No. 15, abandoned lines are "Rarely" an

issue for 57% of respondents when using trenchless techniques. However, 30% report that abandoned lines are “Often” a problem and a further 11% say that is the case “Very Often.” Further research will be required on this topic to see if the issue of abandoned lines is a topic to address through reasonable care standards with trenchless excavation.

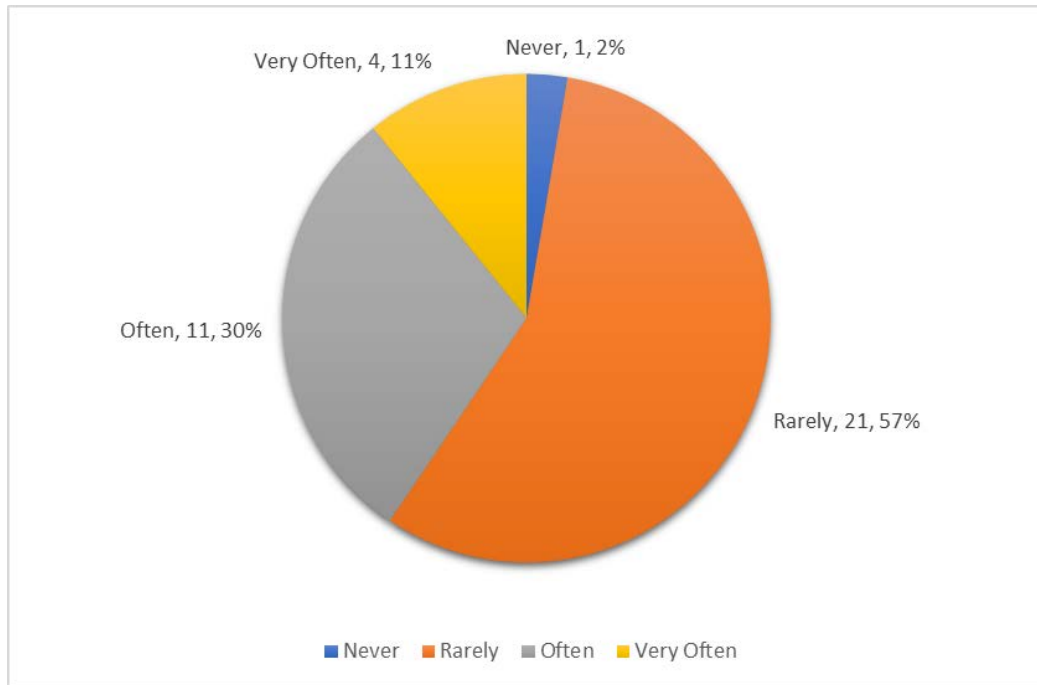


Figure 1: Results for Survey Question No. 15: How often do you encounter unmarked abandoned lines when using trenchless techniques?

Specialization

The variations in these results are somewhat expected because the Board began an inquiry into trenchless methods in general, and the Board is now at a point to begin to approach individual methods and practices where there may exist variations between safety protocols.

Survey Question No. 1 shows that 35 out of 39 respondents have experience with the HDD technique, and staff recommend that owing to the widespread use of the method that the next step is to examine reasonable care for HDD specifically.

Horizontal directional drilling is an excavation method launched from the ground surface that then arcs underground and returns to an exit pit at or near surface level. HDD is therefore more likely to intersect existing facilities in the vertical dimension than trenchless methods such as pipejacking that launch from a shaft excavated beneath ground level. While Government Code 4216 does not directly use the concept of depth, mitigation of the additional risk of vertical crossings with HDD, and any other surface launched trenchless method, warrants further research, in particular the following topics:

Inspection windows: As reported on the survey, there are a wide variety of conditions that may make potholing and inspection windows burdensome or impossible (Survey Questions No. 13-14). As discussed above, respondents have reported open windows as disruptive under certain conditions with HDD. The Board will need to identify what is to the greatest benefit of safety and continue to examine existing practices.

Design and scale: HDD can be used for wide scale of trenchless installations. As discussed in the October 29th workshop, highly engineered and/or large diameter installations have different practices than smaller-scale ones, and where this is the case the Board will need to develop the means to differentiate these methods and the conditions for their use.

Abandoned lines: As discussed above, abandoned lines may be a common issue in general or with certain trenchless methods there may be additional risk. With the widespread adoption of HDD techniques, the Board can continue to investigate if abandoned lines are of concern in trenchless projects.

Operator requirements: The Board will need to find out the similarities in requirements for HDD among operators in order to fully understand existing practices.

Publicly available data on damages: The Board is launching its case management system (CMS) to generate public data on dig-ins through Board investigations. The Board has already heard two cases involving boring activities,⁷ and further data on the nature of damages with these methods will better inform the development of reasonable care standards.

CONCLUSION

With the responses to the online survey and two workshops on general topics of trenchless excavation, the Board is ready to further explore HDD, specifically the topics listed above. The Board has learned about important existing requirements in the field to examine in the coming year as well as points of divergence around potholing. The Board can use this knowledge as a foundation to develop more specific questions around horizontal directional drilling.

RECOMMENDATION

Staff recommend that the Board direct staff in coordination with the Reasonable

⁷ September 14, 2020, Agenda Item No. 10, *Decision on Notice of Potential Violation #20SA1021 – MGE Underground*, <https://digsafe.fire.ca.gov/media/2504/sept-14-2020-item-10-case-20sa1021-mge.pdf>, and Agenda Item No. 11, *Decision on Notice of Potential Violation #20SA1035 – Kleven Construction*, <https://digsafe.fire.ca.gov/media/2505/sept-14-2020-item-11-case-20sa1035-kleven.pdf>

Care Committee to continue research on reasonable care standards on the topic of horizontal directional drilling.

ATTACHMENTS

A: Trenchless Excavation Survey Responses