P2SL Construction Safety Research Group Formation Meeting

A meeting was held 10/23/15 at UC Berkeley to form a P2SL Construction Safety Research Group. P2SL Research Groups consist of companies that agree to participate in doing the research and to share its cost: $80,000/year—enough to fund a graduate student researcher, to pay expenses of the research, and to contribute to P2SL overhead. Research Groups are formed by P2SL member companies, but funding can be divided among an indefinite number of companies, including non-members. The research is proposed to extend from January 1, 2016 through December 31, 2018, with Group meetings every 4th month during that time.

Attendees + Other Interested Parties

	First	Last Name	Affiliation	Email
1	Sigmund	Aslesen	P2SL - UC Berkeley	sigmund.aslesen@berkeley.edu
2	Hira	Bakhsh	Turner Construction	hbakhsh@berkeley.edu
3	Glenn	Ballard	P2SL - UC Berkeley	ballard@ce.berkeley.edu
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8	Doanh	Do	P2SL - UC Berkeley	doanhqdo@gmail.com
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11	Dan	Galvez	LBNL	dcgalvez@lbl.gov
12	Zachary	Gill	Southland Industries	zgill@southlandind.com
13	Greg	Howell	P2SL - UC Berkeley	gah2343@me.com
14	David	Johnson	Turner Construction Company	dcjohnson@tcco.com
15	Bobby	Kheny	P2SL - UC Berkeley	bkheny@berkeley.edu
16	Thomas	LaMay	Turner Construction Company	tlamay@tcco.com
17	Will	Lichtig	Boldt	Will.Lichtig@boldt.com

18	Hal	Macomber	Lean Project Consulting	online	hmacomber@leanproject.com
19	Jason	Martin	Boldt		Jason.Martin@boldt.com
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22	Nawy	Skhmot	P2SL - UC Berkeley		nawras.skhmot@gmail.com
23	Iris	Tommelein	P2SL - UC Berkeley		tommelein@berkeley.edu
24	Jonathan	Zimmermann	P2SL - UC Berkeley		jonathan.zimmermann@berkeley.edu
25	Deborah	Read	ErgoFit Consulting	online	ErgoGirl@ergofitconsulting.com

Interested but could not attend:

26	David	Long	Lean Project Consulting	longd2@me.com
27	Rodney	Spencley	DPR	Rodneys@dpr.com
28	Guy	Skillet	P2SL - UC Berkeley	guyskillett@gmail.com
29	Juan	Jurado	Suffolk Construction	jjurado@suffolk.com
30	Noriel	Bargo	West Builders	nbargo@westbuilders.net

Desired Outcomes of the Meeting:

- Get feedback on our early thinking about research objectives and methodology.
- Enlist companies to participate in P2SL's safety research and to share its cost.

Meeting Agenda:

9:00 Start Up
- -Desired Outcomes & Agenda of this meeting
- -Self introductions
- -Overview of Existing P2SL Research Groups
- -Time Frame for this safety research

9:20 Present/Discuss—Research Questions
10:00 Present/Discuss—Research Methodology
10:40 Break
11:00 Who's in? What would it take for you to enlist?
11:50 Plus/Delta
12:00 Adjourn

Broad Objectives of the Research

1) to learn how best to prevent putting people into hazard, and
2) recognizing that there will inevitably be plan failures, to learn how to prevent injury when people are put into hazard, and
3) to learn how to learn from plan failures.

What's needed from each company:

- Money (e.g., if 10 companies participate, each could contribute $8K/year to P2SL. Who pays what is up to the companies to decide)
- Access to information: people, records, opportunities to observe work and meetings
- Willingness to do and share experiments
- Feedback and steering: TVD Research Group meetings every 4 months where findings are presented and reviewed

Research Questions/Methods Discussed in the Meeting

1. Is there a statistically significant correlation between Last Planner practices and accident rates? If so, why?
2. How to better incorporate safety considerations into phase/pull planning
   - esp. How to2 recognize hazardous situations
4. How to document training workers have received?
5. What trades are trained in safety (what/how much) e.g., OSHA 10 vs. OSHA 30
6. With what frequency do different trades get hurt in their own work (e.g., cut with a saw) vs. hurt by other trades' work
7. How to design for safety in Construction, Maintenance, and Use of constructed assets? It was noted that Prevention by Design does not (enough) focus on construction.
8. Form study groups to develop a shared understanding of what's known/thought about safety
   a) Books and YouTubes by Prof. Sydney Dekker
   b) Power to the Edge [BOOK]
   c) Team of Teams [BOOK]
   d) Managing the Unexpected [BOOK]
   e) Papers by Prof. Takis Mitropoulos (Takis participated in the meeting by internet)
   f) p2sl.berkeley.edu/2015-10-23 has folder with references
9. How to mitigate the negative impact of "Need to get it done quickly"?
10. Who is responsible for safety? GC, sub, foremen, superintendents, others? All?
11. Collect what we know and test.
12. Overtime and sustained overwork work impact on safety
    a. # accidents or # fatalities vs. hours worked per week
13. How low to go in bringing in craft workers, apprentices, … [into safety training program]
14. How to respond to unplanned situations? Can you stop the line and get help?
15. "you fight how you practice" – what can we practice (more or better)
16. Apprentice training
    a. What is it? What do they learn in classroom vs on site?
    b. How well-rounded is their skills development?
    c. Do they proceed through a work rotation vs do the same thing over and over?
    d. How to engage journeymen in apprentice safety training?
17. How does safety performance change based on where work is done, on-site vs off-site, prefab, shop conditions

18. How to track and use data
19. How to create safer behavior
20. How to categorize incidents based on the Cynefin framework?
21. How often do we put workers in potentially harmful situations? # of near misses? Why do we not have even more accidents? Seduction of success may lower alertness.
22. Hypothesis: All safety incidents are result of failure of poor planning
    a. e.g., design & plan work so that workers are not exposed (prevent)
    b. but recognize design nor planning are perfect
    c. therefore need some way of preventing the "unleashing of harm"; build resilience
        i. leadership action
        ii. attune worker to conditions
23. Pull the chord (andon) – when actual is different from planned, how do we make the system respond when it is tested?
24. How to educate and raise the bar for all (union, non-union)
25. Defer to expertise at the moment (not necessarily hierarchy), i.e., leadership moves
26. Study the conditions in which incidents happen
    a. E.g., worker "off doing own things" so there is no "team moment" to look out for one another
27. Confidence vs competence
    a. Culture: "what you can get away with" and "can-do"
28. Will the research include occupational injuries and environmental impacts as well as injuries? YES.

Path forward

All companies present agreed to recommend participation and financial support of the Safety Research Group to their decision makers. P2SL agreed to outline meeting minutes and research plan, and send to company representatives by close of business Wednesday, October 28, 2015. Company representatives agreed to communicate their in/out decision by Wednesday November 4, 2015.

P2SL also agreed to invite trade unions to join and also to contact Cal/OSHA.

Please send corrections to Glenn Ballard, ballard@ce.berkeley.edu