



**2022**

# **CALTRANS / INDUSTRY SAFETY SUMMIT SUMMARY REPORT**

March 2022

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# EXECUTIVE SUMMARY

The Caltrans / Industry Safety Summit (Safety Summit) is an annual forum where participants from Caltrans and industry partners come together to network, share information, and brainstorm safety improvement initiatives. Each year, the Safety Summit is designed to engage participants in dialogue through break-out sessions around the most pertinent safety topics. Historically, these topics include safety incident scenarios, safety innovation, and work zone safety themes. The participants will retrospect the lessons learned from the past incidents and provide initiatives to prevent similar safety incidents from occurring in the future.

The 2022 Safety Summit focused on three themes: **Safety Innovation, Safety Culture, and Safety Specifications**, and includes multiple rounds of small group conversation to allow participants to discuss each theme in depth. Also unique to the 2022 Safety Summit was the inclusion of various keynote presentations from external partners and safety device vendors.

The Summit participants include representatives from Caltrans and external partner agencies, including United Contractors (UCONN); Associated General Contractors of California (AGC California); Southern California Contractors Association (SCCA); California Highway Patrol (CHP); Federal Highway Administration (FHWA); Labor Unions; Local Agencies; and Resident Engineers.

Along with the Division of Construction, Value Management Strategies, Inc. (VMS) virtually facilitated the 2022 Safety Summit for two, half days on February 1<sup>st</sup> & 2<sup>nd</sup>, 2022. This *Summary Report* describes the activities that took place during the Summit and provides the final lists of prioritized safety recommendations in the *Summit Outcomes* section of this report.

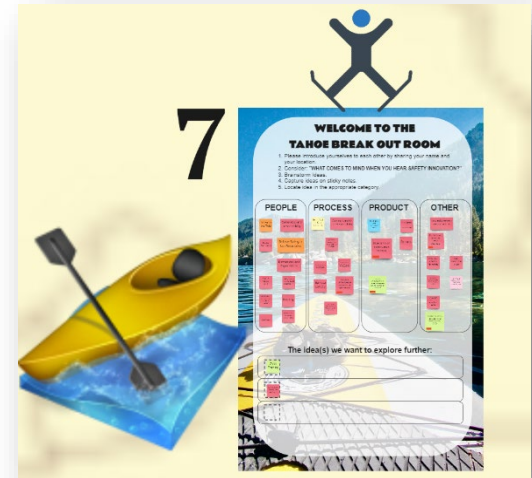
Next steps include submission of this *Summary Report* to the Caltrans Construction Partnering Steering Committee (CCPSC) for review and evaluation of Consolidated Safety Initiatives (page 7 and 8 of this report). Members of the CCPSC include construction industry leaders; contractor associations; the Partnering Program team; Caltrans Construction and Design Division Chiefs; District Construction Deputies, and FHWA. Detailed information regarding next steps can be found in the *Future Action Plan* section of this report.

## PROCESS & METHODOLOGY

Participants used a virtual meeting platform and a virtual, collaborative whiteboard space, to share information and brainstorm safety initiatives. The 2022 Safety Summit focused on three themes: Safety Innovation, Safety Culture, and Safety Specifications. Each theme was introduced to participants via presentation by subject matter experts. All presentation slides are included in *Appendix C: Summit Presentations*. Following each presentation, participants were invited to join breakout discussions to discuss pertinent topics associated with each theme and brainstorm potential safety improvement ideas.

The Safety Summit was opened by Toks Omishakin, Director of Caltrans, followed by opening remarks from Mark Berslin, CEO of United Contractors and Vincent Mammano, Division Administrator of Federal Highway Administration, California Division. Ray Hopkins, Chief of Division of Construction, Caltrans, facilitated the meeting with the help of VMS team.

The Safety Innovations keynote presentation was delivered by Paul Haining, Skanska, Chief Environmental, Health and Safety Officer (summary present in the *Presentation Summaries* section of this report). Additionally, three short safety device presentations were delivered by Synergy Fabricated Innovations, LLC; BarrelMover 5000, LLC; and ARTEC Innovation. Immediately following, participants entered small breakouts to discuss ‘What comes to mind when you hear Safety Innovation?’ All generated ideas were thematically analyzed and can be found in the *Summit Outcomes* section of this report. A comprehensive list of ideas generated can be found in *Appendix D: Safety Summit Raw Data*.



The Safety Culture keynote presentation was delivered by Rachel Carpenter, Caltrans, Chief Safety Officer. For the 2022 Safety Summit, culture was defined as being shared beliefs and practices of people in an organization and is comprised of attitudes, actions, and artifacts. Definitions are as follows:

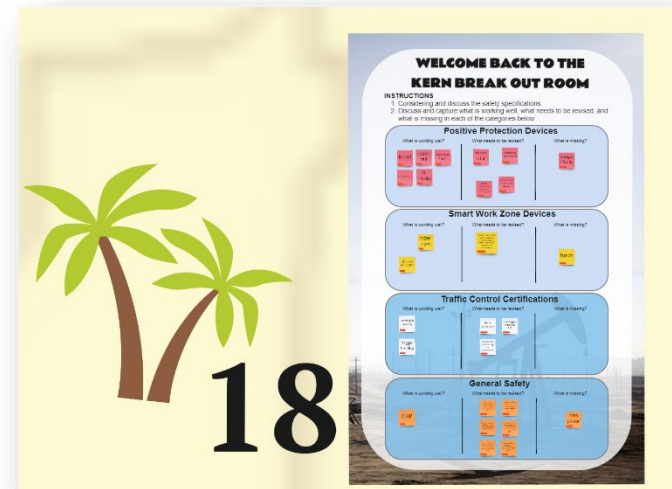
- Actions: shared work and processes
- Attitudes: shared thinking and feeling
- Artifacts: materials objects and products made by or for the people

Immediately following Ms. Carpenter’s presentation, participants entered small breakouts to discuss ‘What safety attitudes, actions, and artifacts are most successful?’ Furthermore, participants were asked to discuss, ‘What safety attitudes, actions, and artifacts may have the greatest impact on influencing public behavior?’ Each breakout was then asked to select one attitude, one action, and one artifact to put forth for voting. Results from voting can be found in the *Summit Outcomes* section of this report. A comprehensive list of ideas generated can be found in *Appendix D: Safety Summit Raw Data*.





The Safety Specifications keynote was delivered by Chuck Suszko, Caltrans, Office Chief of Contract Administration. For the purposes of the 2022 Safety Summit, safety specifications were divided into four categories: Positive Protection Devices, Smart Work Zone Devices, Traffic Control Certifications, and General Safety. Immediately following Mr. Suszko's presentation, participants entered small breakouts to discuss, 'What is working well? What needs revised? What may be missing?' for each of the four safety specifications categories. When breakouts concluded, participants were also asked to submit any big, bold, and new safety specifications they would like to see considered for implementation. A comprehensive list of ideas generated can be found in *Appendix D: Safety Summit Raw Data*.



## PRESENTATION SUMMARIES

### Toks Omishakin, Caltrans

Toks Omishakin, Caltrans Director, opened the Safety Summit by welcoming attendees and thanking them for their participation. Mr. Omishakin presented "Safety First" as the Department's number one goal and discussed the two top initiatives related to work zone safety – positive work zone protection and full closures / expanded work windows. He also discussed successful initiatives generated from previous Safety Summits and encouraged participants to utilize the 2022 Safety Summit as an opportunity to fully engage in breakout discussions in service of achieving the Department's goal of zero deaths.

### Mark Breslin, United Contractors

Mark Breslin, CEO, talked about the importance of prioritizing safety as it reflects our collective belief system. Mr. Breslin expanded to explain how beliefs drive behavior and therefore, our workforce must exhibit true ownership and buy-in when it comes to prioritizing safe working environments. Mr. Breslin emphasized holding one another accountable is the most impactful way to show we care; safety is equivalent to care. He invited participants to reframe how care may be exhibited on the job as we collectively move beyond viewing safety as compliance; rather, safety is leadership.

### Vincent Mammano, FHWA

Vince Mammano, Division Administrator for the California Division of the Federal Highway Administration, reflected on the importance of the Industry and Caltrans partnership, incorporating points Mr. Breslin highlighted in his presentation. Mr. Mammano emphasized the significance of the Safety Summit, calling participants to action. To fortify a culture of safety, he

encouraged active listening and engagement throughout the summit and thanked the Industry and Caltrans for their efforts.

### Asst. Chief David Jenkins & Lt. Noah Hawkins, CHP

Asst. Chief David Jenkins & Lt. Noah Hawkins, CHP Headquarters Special Project Section, presented information on CHP's role in Work Zone Safety. Asst. Chief Jenkins first discussed CHP's geographical jurisdiction and the responsibilities of the Special Projects Section. Lt. Hawkins then reviewed data regarding work zone fatal crashes, fatalities, and general concerns. Lt. Hawkins also reviewed CHP's roles and responsibilities and various initiatives to improve work zone safety including training, education, policy, equipment, and partnerships, and enforcement.

### Veera Nanugonda, Caltrans Division of Construction

Veera Nanugonda, Caltrans, Office Chief of Safety, Insurance and Special Projects, presented a status report on safety initiative updates from the 2018 – 2021 Safety Summits, including the formation of the Safety Summit Task Group (SSTG) because of the 2020 Safety Summit.

### Rachel Carpenter, Caltrans

Rachel Carpenter, Caltrans Chief Safety Officer, spoke on the traffic safety in California and the use of the "Safe System Approach" to accommodate human mistakes and keep impacts on the human body at tolerable levels. Ms. Carpenter also reviewed the Department's 2021 Safe System Commitments and emphasized that culture change must accompany strategy.

### Phillip Phan, Caltrans Division of Construction

Phillip Phan, Caltrans Special Projects Engineer, presented information on the new Caltrans Construction Safety Award Program (CCSAP). Mr. Phan reviewed the award's objectives, evaluation criteria, and recognition levels, in addition to presenting the award's two categories – the Safety Excellence Award and the Safety Innovation Award. Mr. Phan concluded his presentation by reviewing the project types and eligibility, how to apply, and announced the award winners would be recognized at the 2023 Caltrans / Industry Safety Summit.

### Chuck Suszko, Caltrans Division of Construction

Chuck Suszko, Caltrans Office Chief of Contract Administration, presented safety specifications from the 2018 – 2020 Safety Summits, as well as updates on safety specification updates in progress from the 2021 Safety Summit.

## FUTURE ACTION PLAN

Caltrans team collected the safety initiatives as raw data from the break-out sessions. For each theme, Caltrans team devised a different strategy to vote on the initiatives. For Safety Innovation, there was no voting after the break-out sessions and all ideas were collected for further analysis. For Safety Culture, the participants voted on the ideas after the break-out session. For Safety Specifications, the participants submitted one specification for each category: working well, needs revision, and may be missing.

Caltrans team analyzed the raw data of safety initiatives and consolidated them to present them to the CCPSC. The team removed duplicates, merged similar ideas, and paraphrased some ideas for better reader understanding. The team also removed any commentary style ideas that does not have a specific outcome. Consolidated Safety Initiatives are listed below in table A.

Caltrans team will present these Consolidated Safety Initiatives to CCPSC for evaluation and prioritization. Once CCPSC prioritizes the initiatives, the Safety Summit Task Group (SSTG) starts working on them. SSTG is a collaborative forum with participants from Caltrans and industry and was established in 2020 with a specific goal to work on safety summit initiatives. Working groups will be formed as needed in SSTG to work on the initiatives. The progress will be tracked by the SSTG and help the working groups with any specific challenges.

**Table A: Consolidated Safety Initiatives for CCPSC Review**

#	Break-out Theme	Proposed Initiative
1	Safety Specifications	Address storage of mobile barrier devices in project plans
2	Safety Specifications	Approve more products to be used that meet MASH requirements and document their challenges
3	Safety Specifications Safety Innovation	Lane Closures 1. More full closures 2. Longer duration closures 3. More daytime closures)
4	Safety Specifications Safety Innovation Safety Culture	Automated speed enforcement (Legislation change required) 1. Advertise speeding ticket amounts 2. Send warning notices using plate readers 3. Send statistics for education - pilot
5	Safety Specifications	Increase COZEEP and implement stricter enforcement
6	Safety Specifications	Communicate new safety related specifications and policies with local agencies via Local Assistance Program
7	Safety Specifications	Make flagger and traffic control technician training classes more available on Department's authorized list
8	Safety Specifications	Require Safety Quality Control Manager for projects less than \$75 Million
9	Safety Specifications	Use cameras/drones to monitor work zones and identify hazards
10	Safety Specifications Safety Culture Safety Innovation	Proactive citations for speeders/distracted/DUI drivers in work zones

#	Break-out Theme	Proposed Initiative
11	Safety Culture	Require DMV <ol style="list-style-type: none"> <li>1. to comprehensively cover driving in and around work zones in handbook/training such as mover over/slow down law, double fines, vehicles entering/exiting etc.,</li> <li>2. to include work zone safety questions in DMV driver license testing</li> </ol>
12	Safety Culture	Horizontal rumble strips prior to speed reduction zone
13	Safety Culture	CHP, media, & entertainment industry for public influence
14	Safety Culture	"Safety Starts with Me" campaign/training for CT, Contractors, Schools and Public
15	Safety Innovation	Philosophy that safety starts with design and is not only a construction consideration
16	Safety Innovation	Focus on alerting distracted and impaired drivers
17	Safety Innovation	Update current policies to reflect new safety innovations
18	Safety Innovation	Allow construction to use a blue light vehicle (Need legislation change/vehicle code)
19	Safety Innovation	Incorporate other law enforcement agencies to help with the shortage of CHP for COZEEP/MAZEEP
20	Safety Innovation	Traffic break for setting closures
21	Safety Innovation	Require automated cone/barrel placement on all projects
22	Safety Innovation	Require vehicles and cell phones to receive work zone warnings
23	Safety Innovation	Video and artificial intelligence to detect work zone intrusions
24	Safety Innovation	Require cameras on traffic control vehicles
25	Safety Innovation	Use iCone and other connected work zone manufacturers to show all work zones that are taking place in CA in real time and relay information to the public

# SUMMIT OUTCOMES

## Safety Innovation Recommendations

Participants were assigned to small breakout rooms where they were asked to discuss, ‘What comes to mind when you hear Safety Innovation?’ Four, high-level categories were provided to assist with their brainstorming efforts: People, Process, Product, and Other. The following pages contain results from a thematic analysis of all generated ideas. A comprehensive list of ideas generated for each category can be found in *Appendix D: Safety Summit Raw Data*.

PEOPLE	
THEMES	IDEAS
Behavior	<ul style="list-style-type: none"> <li>• Awareness</li> <li>• Behavior identification</li> <li>• Coaching</li> </ul>
Collaboration	<ul style="list-style-type: none"> <li>• Listen to field workers and attempt their solutions</li> <li>• HQ goes to field to build relationships</li> <li>• Close collaboration between industry and public agency</li> <li>• Partner with other states regarding best practices</li> </ul>
Communication	<ul style="list-style-type: none"> <li>• Safety Managers hold weekly meetings</li> <li>• Constant reminders to employees to watch for vehicles</li> <li>• Clear communication and expectations</li> <li>• Open communication between Caltrans, agencies, and the public</li> <li>• Marketing safety</li> </ul>
Culture	<ul style="list-style-type: none"> <li>• Make safety a way of life: Safety at work, safety at home, safety first.</li> <li>• More accountability</li> <li>• Corporate culture shift needed</li> </ul>

Mindset	<ul style="list-style-type: none"> <li>• Believe safety is not restrictive</li> <li>• Change the workforce’s mind to believe safety and practice consistency</li> <li>• Be open to new ideas and suggestions from field staff</li> <li>• Philosophy that safety starts with design and is not a construction consideration</li> </ul>
Reward	<ul style="list-style-type: none"> <li>• Prizes for safety performance</li> <li>• Incentives</li> </ul>
Roles & Responsibilities	<ul style="list-style-type: none"> <li>• No better safety device than a safe worker</li> <li>• Create and groom leaders into the Safety Industry</li> <li>• Designate a safety person for each team</li> <li>• Safety is a leadership role and not another duty as assigned</li> </ul>
Technology	<ul style="list-style-type: none"> <li>• Technology workflow should be tailored to frontline leadership</li> <li>• Get the right tools for our people</li> <li>• Increase adaptation of new technology</li> </ul>
Training	<ul style="list-style-type: none"> <li>• Find new ways to educate staff of numerous hazards in the field (Ex: short videos)</li> <li>• Public safety training</li> <li>• Continuous training and education</li> <li>• More accessible traffic control training</li> </ul>

PROCESS	
THEMES	IDEAS
Collaboration	<ul style="list-style-type: none"> <li>• Integrate contractor and department safety efforts at project level</li> <li>• Engage Design and Traffic in planning and design phases</li> <li>• Share incident data with other divisions and industry</li> <li>• Invite more craft to breakouts like this</li> </ul>

Communication	<ul style="list-style-type: none"> <li>• Advertising speeding ticket amount in work zones</li> <li>• Create an easy process to make suggestions</li> <li>• Communicate closures with community impacted in advance</li> <li>• Focus on alerting distracted and impaired drivers</li> <li>• Conduct safety meetings before commencing work; review the previous day's actions in the work zone to note actions that could have been done in a safer manner</li> <li>• Leverage social media to raise public awareness around work zone safety</li> </ul>
Culture	<ul style="list-style-type: none"> <li>• Caltrans moves slowly</li> <li>• Practicing safety requires continual improvement</li> <li>• Recognize "old school" needs to be updated</li> <li>• Avoid doing things "the way we always have"</li> </ul>
Enforcement	<ul style="list-style-type: none"> <li>• New law dealing with DUI penalties</li> <li>• Automated speed enforcement (e.g. speed cameras)</li> <li>• Pace laps by CHP, COZEEP, or Caltrans vehicles</li> </ul>
New Specification	<ul style="list-style-type: none"> <li>• Develop a new spec for contractors to drive "pace laps" safely</li> </ul>
Pilot	<ul style="list-style-type: none"> <li>• Implement pilot programs for use of products</li> </ul>
Policy	<ul style="list-style-type: none"> <li>• Full closures</li> <li>• Penalties for noncompliance by contractors</li> <li>• Uniform and fair process for competitive testing</li> <li>• Update current policies to reflect new safety innovations</li> <li>• Remove low bid</li> <li>• Remove red tape to piloting innovation</li> </ul>
Process	<ul style="list-style-type: none"> <li>• Streamlined process to promote innovation</li> <li>• Clear process for vendor application to test product</li> <li>• Easier procurement process and budget for Safety Equipment</li> </ul>



Reward	<ul style="list-style-type: none"> <li>• Incentive for meeting safety goals</li> <li>• Contractor safety index taken into consideration in contract awards</li> </ul>
Roles & Responsibilities	<ul style="list-style-type: none"> <li>• Add designated spotter for work crews on foot</li> <li>• Safety inspection for certified person</li> <li>• Deputize Caltrans people to use a blue light vehicle</li> </ul>
Support	<ul style="list-style-type: none"> <li>• Incorporate other law enforcement agencies to help with the shortage of CHP</li> <li>• Traffic break for setting closures</li> <li>• Speed trailers parked next to COZEEP</li> </ul>
Technology	<ul style="list-style-type: none"> <li>• Better site lighting; conscious of lighting in motorist eyes</li> <li>• Require automated cone / barrel placement on all projects</li> <li>• Send speeders automated warning notices until automated ticketing is allowed</li> </ul>
Traffic	<ul style="list-style-type: none"> <li>• Allow traffic delays; slower traffic is safer for work crews</li> </ul>
Training	<ul style="list-style-type: none"> <li>• COZEEP Training for CHP and Caltrans</li> <li>• Operator certifications</li> <li>• OSHA 30-hour training for all staff</li> </ul>

PRODUCT	
THEMES	IDEAS
Communication	<ul style="list-style-type: none"> <li>• Require vehicles and cell phones to receive work zone warnings</li> <li>• More school programs; educate young people about safety</li> </ul>
Pilot	<ul style="list-style-type: none"> <li>• Use pilot programs for products</li> <li>• Cost sharing pilot innovation</li> <li>• Ensure innovative products can conduct proof of concept testing</li> </ul>

Safety Equipment	<ul style="list-style-type: none"> <li>• PPE's</li> <li>• Safety helmets should be required; fatalities seem to stem from TBI</li> <li>• More shadow vehicles</li> <li>• Multilane speed indicators (more than one radar feedback sign)</li> </ul>
Technology	<ul style="list-style-type: none"> <li>• Try barrel / delineator movers</li> <li>• Use ITS to send message to phone/car entering a work zone</li> <li>• Robotics to set and remove temporary signs, cones, etc.</li> <li>• Halo – hard hat lighting for increased visibility of workers</li> </ul>
Video	<ul style="list-style-type: none"> <li>• Video and AI to detect work zone intrusions</li> <li>• Require cameras on all construction vehicles</li> <li>• Use camera for incident data capture, no need for data entry by field staff</li> </ul>

OTHER	
THEMES	IDEAS
Culture	<ul style="list-style-type: none"> <li>• Complete buy in from the top</li> <li>• Organizational support to try things</li> <li>• Time to do safety brainstorming</li> </ul>
Policy	<ul style="list-style-type: none"> <li>• More daytime work windows</li> <li>• Sensor Zone</li> </ul>
Resources	<ul style="list-style-type: none"> <li>• Funds for safety needs separate from contract (CVC)</li> <li>• Replace aging roadway</li> <li>• DUI checkpoints in construction</li> <li>• Law enforcement lights on vehicles</li> </ul>

Roles & Responsibilities	<ul style="list-style-type: none"> <li>• Management directive to address recent incident</li> <li>• Identify who will drive changes</li> </ul>
Technology	<ul style="list-style-type: none"> <li>• Use iCone and other connected work zone manufacturers to show all work zones that are taking place in CA in real time and relay information to the public</li> <li>• Use technology and data from navigation apps</li> <li>• Work zone cameras focused on public; use as public awareness for bad driving habits</li> </ul>
Training	<ul style="list-style-type: none"> <li>• Traffic school for work zone offenders</li> </ul>

## Safety Initiative Success Indicators

Participants were invited to reflect on the question, ‘How do we measure success of our safety initiatives?’ and provide potential ways in which safety initiatives could be more proactively measured (leading indicators) as opposed to reactively measured (lagging indicators). The following pages contain results from a thematic analysis of all generated ideas. A comprehensive list of ideas generated for each category can be found in *Appendix D: Safety Summit Raw Data*.

SAFETY INITIATIVE SUCCESS INDICATORS	
THEMES	IDEAS
Contractor Responsiveness	<ul style="list-style-type: none"> <li>• Contractor responsiveness to identified issues</li> <li>• Contractor staff feel that safety is a priority</li> </ul>
Culture	<ul style="list-style-type: none"> <li>• Staff comfortable talking about delicate safety issues</li> <li>• More accountability</li> <li>• Support from all levels to stop an operation due to safety issue</li> <li>• Change in culture</li> <li>• Increased safety meeting attendance</li> </ul>
Data	<ul style="list-style-type: none"> <li>• Highlight what went right as much as what went wrong</li> <li>• Improved information sharing between agencies</li> </ul>

	<ul style="list-style-type: none"> <li>• Driving behaviors <ul style="list-style-type: none"> <li>○ Track whether speed reduction zones are helping</li> <li>○ Measure vehicle speed to see if drivers are complying</li> <li>○ Track number of tickets for speed in work zone</li> </ul> </li> <li>• Monitor severity of crashes and impact on traffic control devices</li> <li>• Hours worked vs incident ratio</li> <li>• Number of COZEEP enforcement actions</li> </ul>
Staff Sense of Safety	<ul style="list-style-type: none"> <li>• Worker satisfaction</li> <li>• Gauge how comfortable/safe employee feels on-site</li> </ul>
Mindset	<ul style="list-style-type: none"> <li>• Innovative attitude and outlook</li> <li>• Not shying away from innovation</li> <li>• Open to thinking outside the box</li> </ul>
Near Misses	<ul style="list-style-type: none"> <li>• Have an open discussion about near misses and proactively acting</li> <li>• Report near misses, close calls, and intrusions</li> <li>• Have lookouts to monitor intrusions and close calls</li> <li>• Track close calls and lessons learned</li> </ul>
Public	<ul style="list-style-type: none"> <li>• Increase public understanding of work zones</li> </ul>
Safety Index	<ul style="list-style-type: none"> <li>• Proactive safety index</li> <li>• % of time we worry about safety</li> <li>• Benchmark for success</li> <li>• Reduce number of issues/incidents reported on safety inspections weekly</li> <li>• # of workers that go home unharmed</li> </ul>
Technology	<ul style="list-style-type: none"> <li>• AI technology to establish unbiased behavior based on safety data</li> <li>• Cameras to record operations of traffic controls and traffic intrusions</li> <li>• Allow use of full matrix PCMS boards that display or replicate roadside signs</li> </ul>

	<ul style="list-style-type: none"> <li>• SafetyApp to give real time information</li> </ul>
Training	<ul style="list-style-type: none"> <li>• Number of preventative safety training</li> <li>• More training to improve worker knowledge</li> <li>• Require training from Smart Work Zone manufacturers on how to implement/operate their systems</li> </ul>

## Safety Culture Recommendations

Participants were assigned to small breakout rooms where they were asked to discuss, ‘What safety attitudes, actions, and artifacts are most successful?’ Furthermore, participants were asked to discuss, ‘What safety attitudes, actions, and artifacts may have the greatest impact on influencing public behavior?’ Each breakout was then asked to select one attitude, one action, and one artifact to put forth for voting. Each participant was given three votes and encouraged to vote on one idea for each category: attitudes, actions, artifacts. The following pages contain the results from the voting exercise in the form of prioritized attitudes, actions, and artifacts that may significantly influence public behavior. A comprehensive list of ideas generated can be found in *Appendix D: Safety Summit Raw Data*.

ACTIONS	# OF VOTES
Automated Speed Violations - Send notice as a warning - using Plate Readers Send statistics for education - pilot	32
Training	16
Citations for speeders/distracted/UI drivers in work zones	12
Funding for COZEEP	11
Require DMV testing include work zone safety	10
Horizontal rumble strips on highway prior to speed reduction zone	10
Involve all stakeholders in Safety Standdown	8
CHP, media, & entertainment industry for influence / partnering	8
Pilot everything!	6
More social media on public safety & awareness, w/ more 'You Should' instead of 'Don't'	6
Outreach & education: we are not (just) an inconvenience	6

TGSM at beginning of shift Safety Starts with you	4
Posting enforcement ticket numbers in work zones	4
Positive reinforcement (i.e., recognize/reward people, projects, contractors, Districts in a meaningful way.	4
3rd party come drive the project for feedback	4
Utilize the DMV for updated information on road closures, laws, how to prevent accidents etc.	3
Certification of traffic control person with number and photo part of the person's vest	3
Project dots on the roadway to warn traffic that there is construction ahead. Drone could do this, also.	2
Lessons Learned & Incident review	2
Biweekly / Weekly Safety Meetings	1
Project dots on the roadway to warn traffic that there is construction ahead. Drone could do this, also.	1
Accountability and transparency through manager meetings which starts with Safety reporting at beginning of the meetings and discussing incidents for all to learn from and share. Consistent disciplinary actions taking	1
Community / project partnering - have (e.g. have BBQ that allows community residents to interact with project workers management, make driving through area more personal because now they know someone	1
CHP Mtce participate in weekly meetings and safety meetings	0
Safety meetings to set the expectations	0

ATTITUDES	# OF VOTES
"Safety Starts with Me" campaign/training for CT, Contractors, Schools and Public	14
Rewarding safety behavior	13
Influence attitudes by mass media blitzes, make it personal and family related	10
Change perception of roadwork from a nuisance to an improvement for them	10
Need to change public attitude to automated speed enforcement in work zone	9
Message from the top: we will fund safety - it's ok to have CCO's	9
Educating NEW young drivers (driving school) of road safety by utilizing social media platforms	8

Need to make sure Construction activity is taking place when radar speed feedback sign is on to drive public behavior, otherwise they are ignoring it. Shutoff speed feedback signs when no activity is taking place on site.	7
Safety First	6
Innovation is encouraged and harvested at all levels for improving safety	6
Beliefs Drive Behavior	5
When the project superintendent/foreman demonstrates, he is committed to safety	5
Everyone needs to contribute to speaking up	4
Over communicate safety	2
Its the will not the skill	1
Valuing every life, no matter how careless	1
No distracted driving	1
Embrace conflict in safety discussions to encourage true debate	1
Have the general public rate the clarity of any given workzone.	0
Encourage field staff to meet with Contractor personnel each morning to discuss activities	0

ARTIFACTS	# OF VOTES
Public awareness videos and billboards	13
Deploy red and blue lights on jobs	12
Using Technology (such as Drones) for monitoring closures and providing critical mass data (Waze, Big IT data...) to the public	11
Remove the public from the work zone	11
Modernize our tools - the message delivery to the driver	10
Social Media	8
Message: its ok to do CCO's to enhance safety	8
Use of rumble strips and AFADs	8
Write a new specifications to include all new innovations	6
Active feedback to travelers - WZ ahead, speed, etc.	5



Safety messaging blitz to public, employees, and industry on flyers, signs, merchandise, etc.	4
Detailed weekly safety checklists	4
Monetize good driver behavior (e.g. insurance discounts)	2
Accurate traffic advisories	2
Billboard campaign for "My family works here."	2
Uniform PPE	2
Automatic Flagging Asst Devices (AFADs)	1
Hard hat stickers for Safety training reminders.	1
Need to change how safety equipment is budgeted for.	0
Notifying drivers of work zones. automatically	0

## Safety Specifications Recommendations

Participants were assigned to small breakout rooms where they were asked to discuss, ‘What is working well? What needs revised? What may be missing?’ for each of the four safety specifications categories. When breakouts concluded, participants were also asked to submit any big, bold, and new safety specifications they would like to see considered. The following pages contain a consolidated list of safety specifications discussed during each breakout. A comprehensive list of ideas generated can be found in *Appendix D: Safety Summit Raw Data*.

POSITIVE PROTECTION DEVICES	
THEMES	IDEAS
Working Well	<ul style="list-style-type: none"> <li>• Use more truck mounted attenuators / impact attenuator vehicles</li> <li>• Prescribe more full closures</li> <li>• Use more K-rail and other temporary barriers such as steel barrier</li> <li>• Movable and mobile barrier systems</li> </ul>

Recommended Revisions	<ul style="list-style-type: none"> <li>• Include more PPD in the specifications during design</li> <li>• Address the locations to store mobile barrier devices in the project plans</li> <li>• Clarify on the pay items whether in a bid or CCO</li> <li>• Approve more productive to be used that meet MASH requirements and their challenges</li> </ul>
Missing Items (in Specifications / Plans / Policy / Guidance)	<ul style="list-style-type: none"> <li>• Specify the length of mobile barrier</li> <li>• Provide better guidance on the use of PPD, available types, and when and how they can be used</li> <li>• Legislate to use autonomous attenuators</li> <li>• Train all parties on the use of PPD</li> <li>• Implement full closures</li> <li>• Approve more devices in the authorized materials list (AML)</li> </ul>

SMART WORK ZONE DEVICES (SWZD)	
THEMES	IDEAS
Working Well	<ul style="list-style-type: none"> <li>• Speed reduction / use of variable speed signs and radar</li> <li>• Use of Automated Flagger Assisted Devices (AFADs)</li> <li>• End of Queue devices</li> </ul>
Recommended Revisions	<ul style="list-style-type: none"> <li>• Provide specifications and guidance on the use and implementation of variable speed reduction: (24/7), when work is active, CHP and its enforcement</li> <li>• Provide clarification on how many flaggers are needed and the pay items</li> <li>• Clarify on the pay items whether in a bid of CCO</li> </ul>
Missing Items (in Specifications / Plans / Policy / Guidance)	<ul style="list-style-type: none"> <li>• Automated speed enforcement (Legislations)</li> <li>• COZEEP enforcement</li> <li>• Communicate with local agencies via local assistance program</li> <li>• Communicate and share information with small business</li> <li>• Communicate with the public for closures and detours via apps (ex: WAZE)</li> </ul>

	<ul style="list-style-type: none"> <li>• Collect traffic data and provide to TMC and Design to use for future projects</li> </ul>
--	-----------------------------------------------------------------------------------------------------------------------------------

### TRAFFIC CONTROL CERTIFICATIONS (CF, TCT, TCS)

THEMES	IDEAS
Working Well	<ul style="list-style-type: none"> <li>• Certifications has benefits for safer work zones</li> <li>• Standardized training to ensure consistencies</li> <li>• Certifications promotes industry professionalism / excellence</li> </ul>
Recommended Revisions	<ul style="list-style-type: none"> <li>• Clarification for requirements and certification</li> <li>• Training on reading and implementing traffic control plans</li> <li>• Training and certification for all persons handling and inspecting traffic control</li> <li>• Make training classes more available</li> </ul>
Missing Items (in Specifications / Plans / Policy / Guidance)	<ul style="list-style-type: none"> <li>• Communicate Construction Procedure Directives (CPDs) with all contractors, local agencies, and trade unions</li> <li>• Include process on how certifications are verified by Caltrans</li> <li>• Need more trainers for traffic control technicians and traffic control supervisors</li> </ul>

### GENERAL SAFETY

THEMES	IDEAS
Working Well	<ul style="list-style-type: none"> <li>• Double fines in the work zones</li> <li>• Public Information Office (PIO) campaigns through Office of Traffic Safety, Department of Motor Vehicles, Caltrans, and California Highway Patrol</li> <li>• COZEEP</li> <li>• Safety representative – Safety Quality Control Manager (SQCM)</li> </ul>

<p>Recommended Revisions</p>	<ul style="list-style-type: none"> <li>• Training requirement for fall protection, excavation, and check compliance</li> <li>• SQCM for projects less than \$75 Million</li> <li>• COZEEP implementation and enforcement</li> <li>• Training for inspectors in general and including CPDs</li> </ul>
<p>Missing Items (in Specifications / Plans / Policy / Guidance)</p>	<ul style="list-style-type: none"> <li>• Penalties for speeders in the work zones</li> <li>• Training for all, which should include a minimum 8-hour Cal / OSHA and for project safety reviews</li> <li>• Use cameras / drones for work zones to monitor and identify hazards</li> </ul>

# APPENDICES

**Appendix A: Summit Attendees**

**Appendix B: Summit Agenda**

**Appendix C: Summit Presentations**

**Appendix D: Safety Summit Raw Data**

- **Safety Innovation Recommendations Data**
- **Safety Initiative Success Indicators Data**
- **Safety Culture Recommendations Data**
- **Safety Specifications Recommendations Data**
- **Big, Bold & New Safety Specifications**

# APPENDIX A

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# 2022 Caltrans / Industry Construction Safety Summit

## Summit Attendees

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# APPENDIX B

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# 2022 CALTRANS / INDUSTRY SAFETY SUMMIT AGENDA

Be Aware, Be Smart – Safety Starts With You!



DAY 1   TUESDAY, FEBRUARY 1 <sup>st</sup>	
TIME (PST)	TOPIC
8:00 am	Welcome
8:20 am	Director's Safety Vision
9:00 am	Industry Comments
9:20 am	Break
9:30 am	FHWA & CHP Presentations
10:10 am	2020 & 2021 Safety Initiatives Update
10:35 am	Break
10:45 am	Safety Innovation Presentations & Discussions
11:50 am	EXP Foundation
12:00 pm	Adjourn

DAY 2   WEDNESDAY, FEBRUARY 2 <sup>nd</sup>	
TIME (PST)	TOPIC
8:00 am	Welcome
8:30 am	Safety Culture Presentation & Discussions
9:35 am	Break
9:45 am	Safety Culture Discussions, continued
10:05 am	Caltrans Construction Safety Award Program
10:15 am	Safety Specifications Presentation & Discussions
11:00 am	Break
11:10 am	Safety Specifications Discussions, continued
11:50 am	Closing Remarks
12:00 pm	Adjourn



# APPENDIX C

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1

## Welcome to Zoom!

- Utilize the toolbar at the bottom of your screen to:
  - Mute / unmute
  - Turn on / off video
  - View participants
  - Chat
- Utilize the Raise Hand feature within the Participant Panel
- Utilize the Chat Box to engage with one another
  - Chat "Everyone" with comments or questions regarding presentations

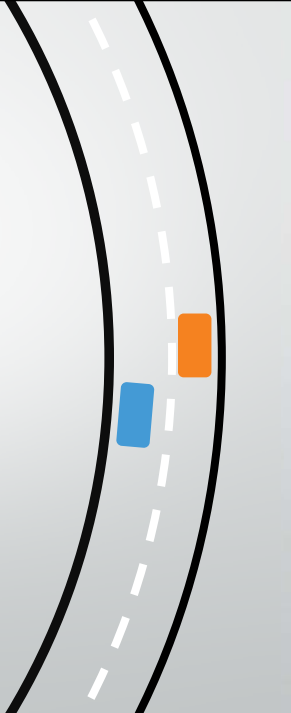
The slide includes three screenshots of the Zoom interface. The top right shows the "Participants (4)" panel with a list of names and icons for Raise Hand, Mute, and Video. The middle right shows the "Chat" window with a red circle around the "Everyone" dropdown menu. The bottom shows the Zoom toolbar with red arrows pointing to the Mute, Stop Video, Participants, Chat, Share Screen, Reactions, and Leave buttons.

2



# Welcome!

Ray Hopkins  
Chief, Caltrans Division of  
Construction  
February 1, 2022



3



# Director's Safety Vision

Toks Omishakin  
Caltrans Director



4



5

# Caltrans Strategic Plan 2020-2024

## Safety First - #1 Goal

- Department's three foundational principles
  - Safety
  - Climate Action
  - Equity
- Year 2050 – First year with zero deaths or serious injuries on our highways

6

## Safety First

- 3 contractor fatalities in 2021
- 2 fatalities within a week in the work zone
- Outreach – Industry/districts for ideas
- Overwhelming response
- Directed staff – on ideas with a 6-month timeframe



7

## Top Initiatives – Work Zone Safety

- Positive work zone protection
- Full closures/expanded work windows



8



## Where Do We Go Next..

- Increase in transportation funding
- More work zones
- Increased need for heightened safety awareness
- Alignment with Caltrans' goal – Safety First



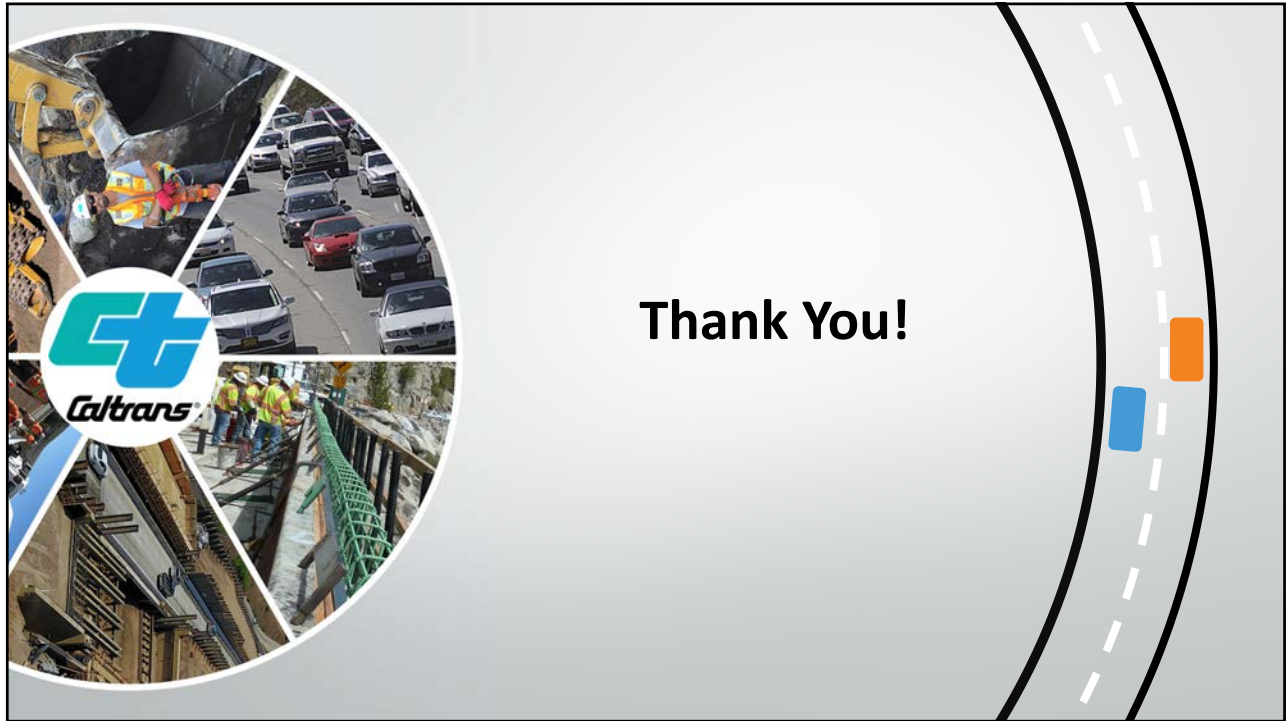
9

## In Summary

- Successful Safety Summit
- Today's breakout sessions
- Recognize project teams with construction safety awards - 2023



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**Thank You!**

11

# **SAFETY IS A FOUR-LETTER WORD**

**BUILDING OUR CULTURE OF BELIEFS,  
SAFETY AND ACCOUNTABILITY**

MARK BRESLIN  
[WWW.BRESLIN.BIZ](http://WWW.BRESLIN.BIZ)

12

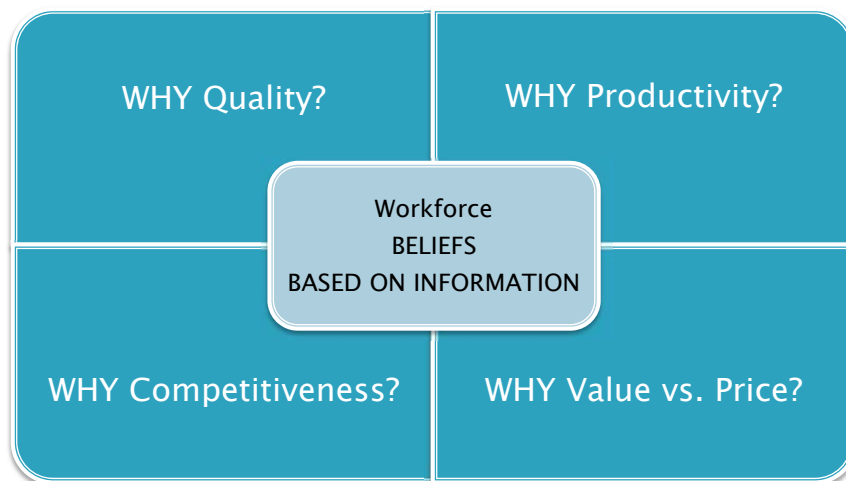
## THE “EXCELLENCE” REALITY

SAFETY OFTEN DETERMINES OUR SUCCESS  
MORE THAN ANY OTHER FACTOR.

IT REFLECTS OUR BELIEF SYSTEM.

13

## BELIEFS DRIVE BEHAVIOR



14

## ENGAGEMENT & BUY-IN = INFORMATION

- ▶ ONLY 30% OF THE WORKFORCE IN THE U.S. RATES THEMSELVES HIGHLY ENGAGED AT WORK.
- ▶ MAYBE SOMEONE HAS TO GIVE THEM A REASON?



DISCRETIONARY EFFORT

OWNERSHIP & BUY IN

15

## OBSTACLES TO SAFETY ACCOUNTABILITY

- ▶ EMOTIONAL/PSYCHOLOGICAL DISCOMFORT
- ▶ DON'T WANT TO BE THE "HEAVY"
- ▶ RELATIONSHIP LEVERAGE & BLURRY LINES
- ▶ INCONSISTENT/SITUATIONAL LEADERSHIP

16



## COACHING & ACCOUNTABILITY

- HAVING THE TOUGH CONVERSATIONS
- PROTECTOR BEFORE FRIEND
- WAITING IS NO SOLUTION

17

## SAFETY AS A FOUR-LETTER WORD

SAFETY = FEAR?

SAFETY = LOVE?

SAFETY = CARE

18

## A LEGACY OF CARING

- ▶ CARING FOR YOUR KIDS
- ▶ CARING FOR YOUR FAMILY
- ▶ CARING FOR YOUR FRIENDS
- ▶ CARING FOR YOUR CO-WORKERS
- ▶ CARING FOR YOUR COMPANY

19

PERSON TO PERSON=  
ACCOUNTABILITY

IT'S NOT COMPLIANCE.

**CARING IS NOT SOFT.  
IT IS THE BEST OF  
WHO WE ARE.**

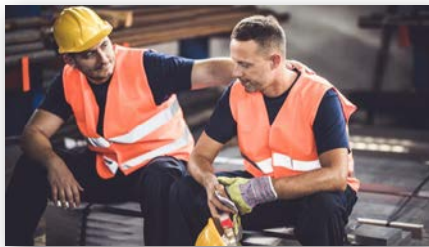
20

## CARE IN ACTION ON THE JOB

1. MOVE BEYOND COMPLIANCE MINDSET: SAFETY IS LEADERSHIP
2. LEADERS FOCUS ON BEHAVIORS AND BELIEFS
3. REJECT THE LEGACY INFLUENCE OF OTHER PEOPLE'S JUDGEMENT

21

## MANAGING, COACHING & MENTORING FOR A SAFE FUTURE



22




# FHWA


Vincent Mammano  
Division Administrator, FHWA




23



# CHP's Role in Work Zone Safety



Dave Jenkins, Assistant Chief  
Enforcement and Planning Division  
Noah Hawkins, Lieutenant  
Special Projects Section



24



**MISSION**  
Provide the highest level of Safety, Service, and Security.

**VISION**  
A trusted leader in law enforcement ensuring California is the safest place to live, work, and travel.

**PHILOSOPHIES**  
The CHP will execute its mission and pursue its vision guided by the Department's organizational and professional values as stated below.

**ORGANIZATIONAL VALUES**  
To accomplish our mission, the Department is committed to the following organizational values as the foundation of its pledge to public Safety, Service, and Security.

- Respect for others
- Fairness
- Ethical practices
- Equitable treatment for all

25

## CALIFORNIA HIGHWAY PATROL

**“ALL ROADS, ALL CODES”**

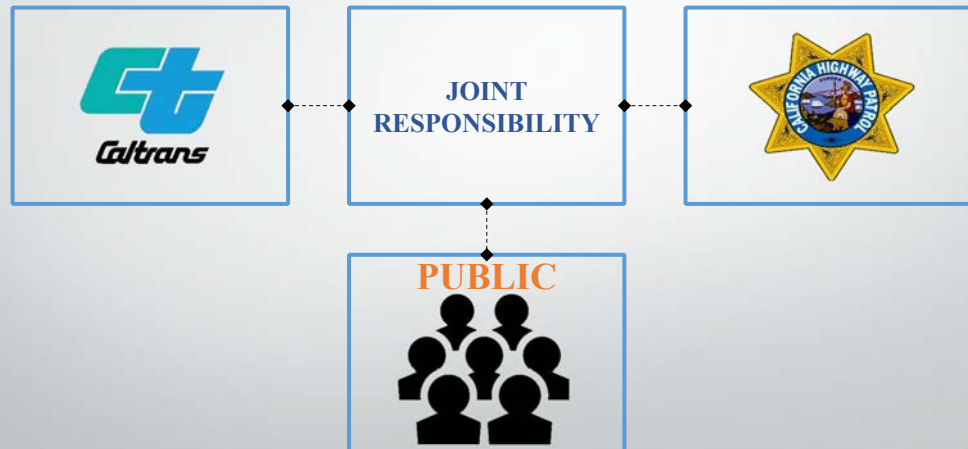
- 8 Field Divisions
- 103 Area Offices
- Headquarters
- Capitol
- 54 CVEFs
- >106,000 miles of roadway
- 6,551 uniform
- 3,332 nonuniform



26



# WORKZONE SAFETY



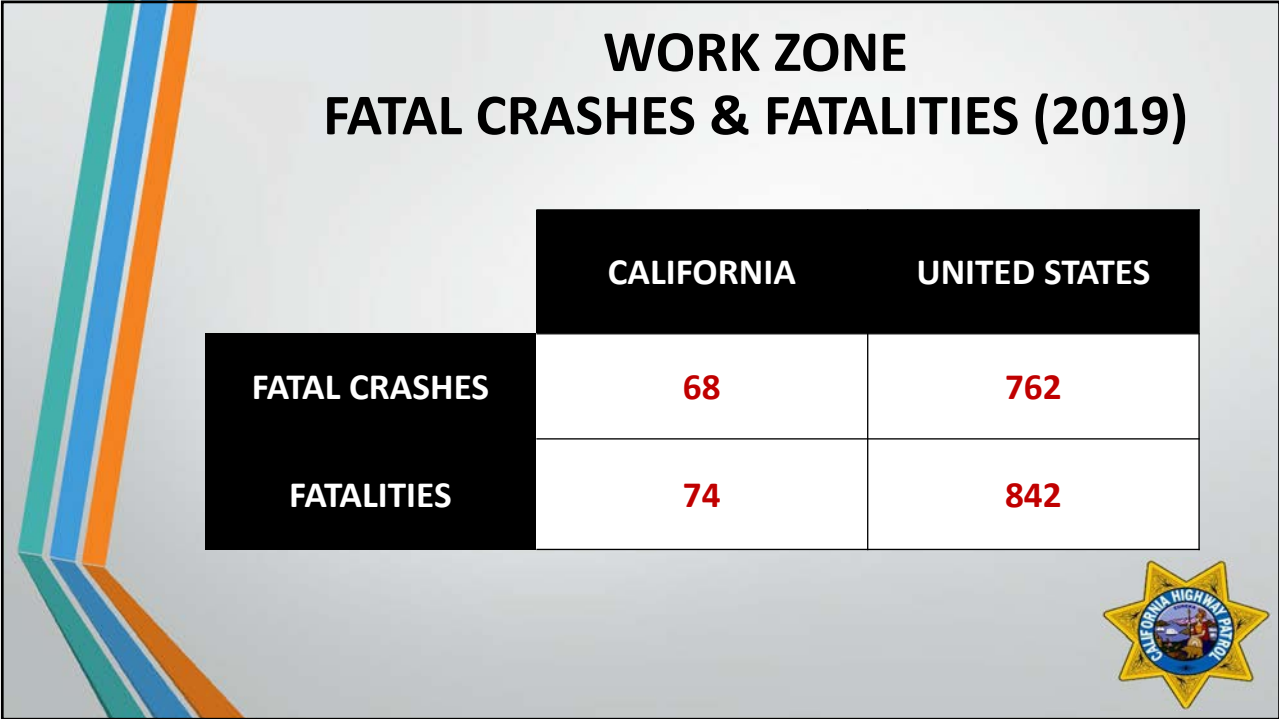
27

# WORK ZONE CONCERNS

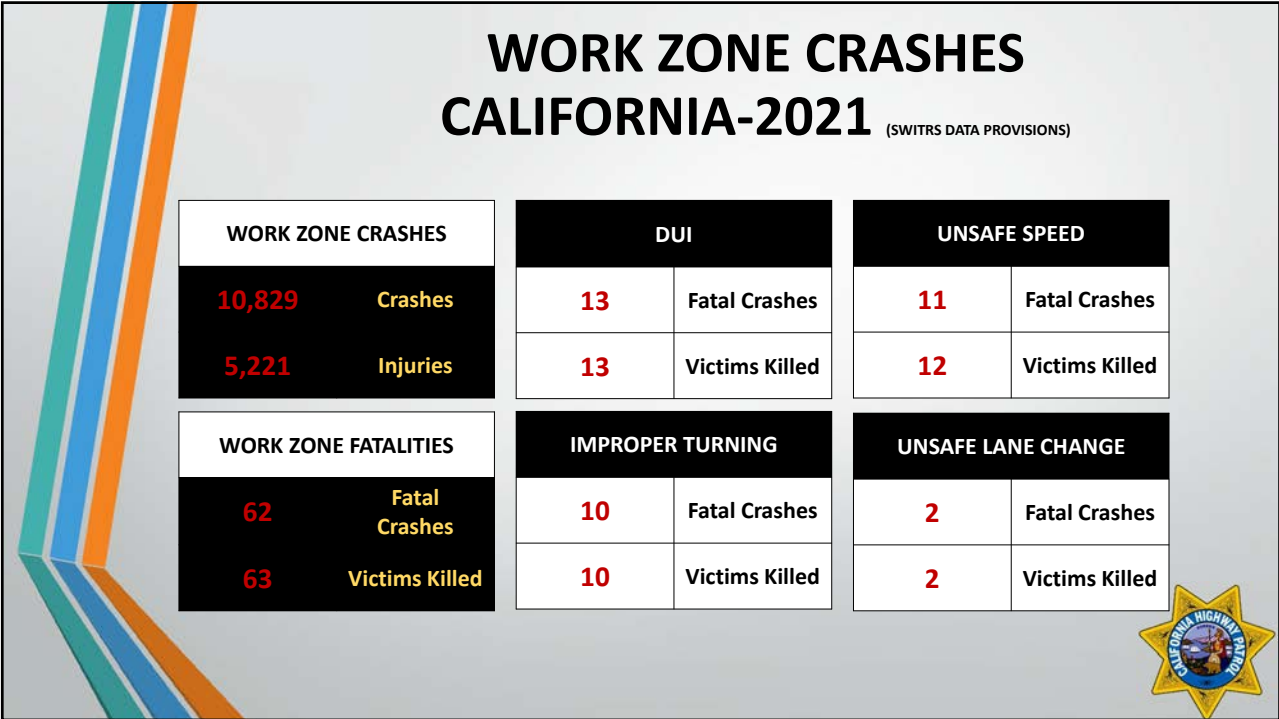
- \_\_\_\_\_ Distracted Drivers
- \_\_\_\_\_ Excessive Speed
- \_\_\_\_\_ Worker Exposure
- \_\_\_\_\_ Situations unfamiliar to drivers
- \_\_\_\_\_ Reduced visibility at night
- \_\_\_\_\_ Impaired Drivers
- \_\_\_\_\_ Driver's experience/capabilities



28



29



30

## CHP ROLES & RESPONSIBILITIES



31

## FHWA

### MOST COMMON LAW ENFORCEMENT SERVICES IN WORK ZONES

TYPE OF SERVICE	TYPE OF ACTIVITIES
Presence	<ul style="list-style-type: none"> <li>Deter speeding and aggressive driving</li> <li>Gain the attention of drivers</li> <li>Protect workers</li> <li>Presence...most common service in work zone</li> </ul>
Enforcement	<ul style="list-style-type: none"> <li>Actively enforce traffic laws in the work zone</li> </ul>
Traffic Control	<ul style="list-style-type: none"> <li>Control traffic where needed and where flaggers cannot (intersections, traffic incident, areas, etc.)</li> <li>May be used in detour situations</li> <li>Direct traffic to keep it moving</li> <li>Requires training and special equipment</li> </ul>
Emergency Assistance	<ul style="list-style-type: none"> <li>Control traffic in and around the incident area</li> <li>Minimize the probability of a secondary crash</li> <li>Report incidents</li> </ul>



32



## TRAINING

- ✓ Academy
- ✓ Break-In
- ✓ SROVT
- ✓ Briefing/Debriefing
- ✓ Contract Distribution
- ✓ Legislative Updates
- ✓ PowerPoint
- ✓ SHSP Work Zone Training Video



33

## EDUCATION



- “Every Contact Is An Opportunity”
- Changeable Message Signs
- Social Media
- Events
- Public Information Officers
- Grants



34

## POLICY / CONTRACT

PRE DETAIL	DURING DETAIL	POST DETAIL
<ul style="list-style-type: none"> <li>✓ Meet with Caltrans to discuss methods of communication</li> <li>✓ Discuss traffic handling and roles</li> <li>✓ Discuss acceptable traffic delays</li> <li>✓ Discuss contingency plans for unanticipated or unacceptable traffic congestion</li> <li>✓ Discuss emergency vehicle routes</li> <li>✓ Discuss patrol vehicle positioning</li> </ul>	<ul style="list-style-type: none"> <li>✓ Proactively patrol the work zone</li> <li>✓ Maintain high visibility</li> <li>✓ Aggressively enforce speed, DUI, and unsafe turning movements</li> <li>✓ Remain alert and vigilant</li> <li>✓ Provide proactive traffic control</li> <li>✓ Monitor traffic congestion levels</li> <li>✓ Communicate regularly Caltrans</li> <li>✓ Assist stranded motorists</li> <li>✓ Don't insist upon or assume stationary duties unless requested</li> <li>✓ Advise Caltrans if leaving work zone</li> </ul>	<ul style="list-style-type: none"> <li>✓ Meet with Caltrans supervisor to debrief detail</li> <li>✓ Discuss future improvement opportunities</li> <li>✓ Provide Caltrans feedback to CHP supervisor</li> </ul>

35

## PERSONNEL & EQUIPMENT



✓ Officers	✓ Other Areas	✓ Radar / Lidar	✓ TMC
✓ Sergeants	✓ Fleet	✓ SPECTER Trailers	✓ CVEF

36

## PARTNERSHIPS



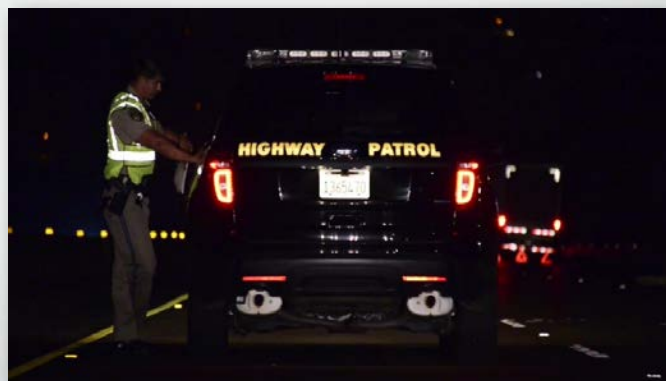
- Zone Enhanced Enforcement Programs
- Strategic Highway Safety Plan
- Workshops, Working Groups, Meetings
- Grant Sponsors
- Task Forces



37

## ENFORCEMENT

- Assigned Units
- Beat Units
- Grant Units
- Air Ops
- TMC
- MREs
- Strike Forces
- SPECTER
- Enhancements



38



## HOW DO WE IMPROVE?

- ✓ Communication
- ✓ Collaboration
- ✓ Innovation
- ✓ Best Practices
- ✓ Warriors Mindset



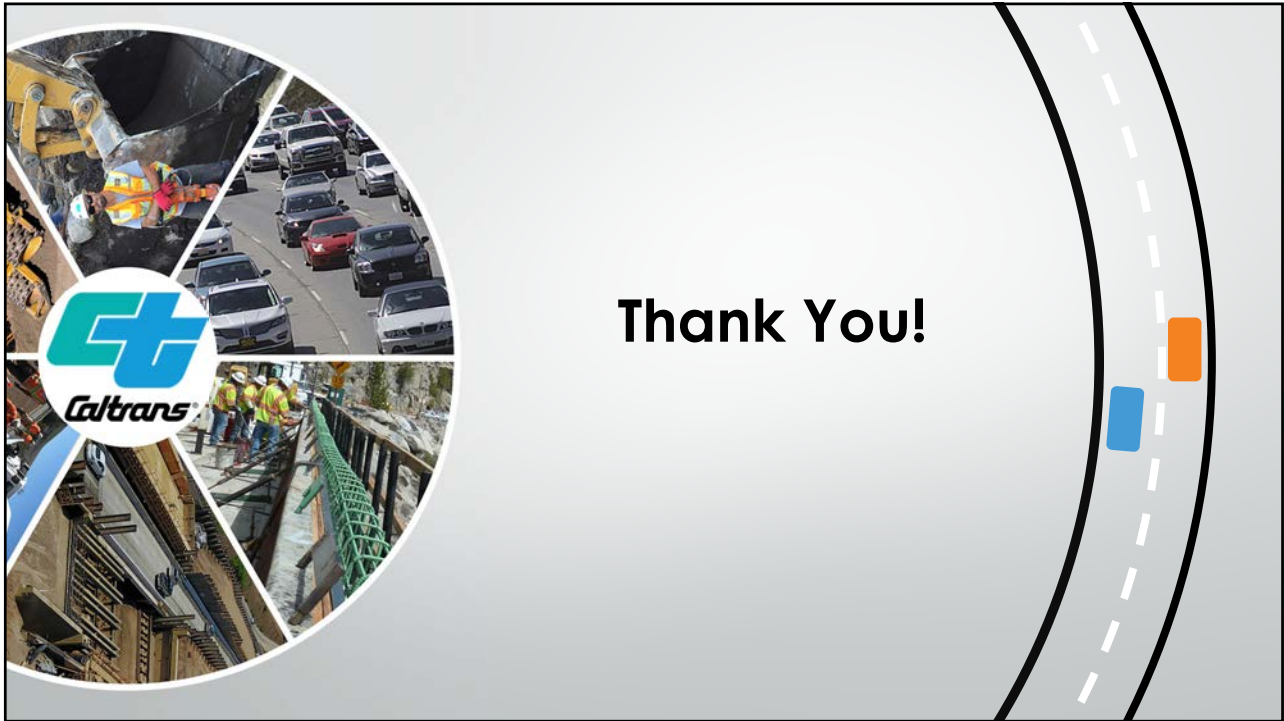
39

SAFETY

SERVICE

SECURITY

40



**Thank You!**

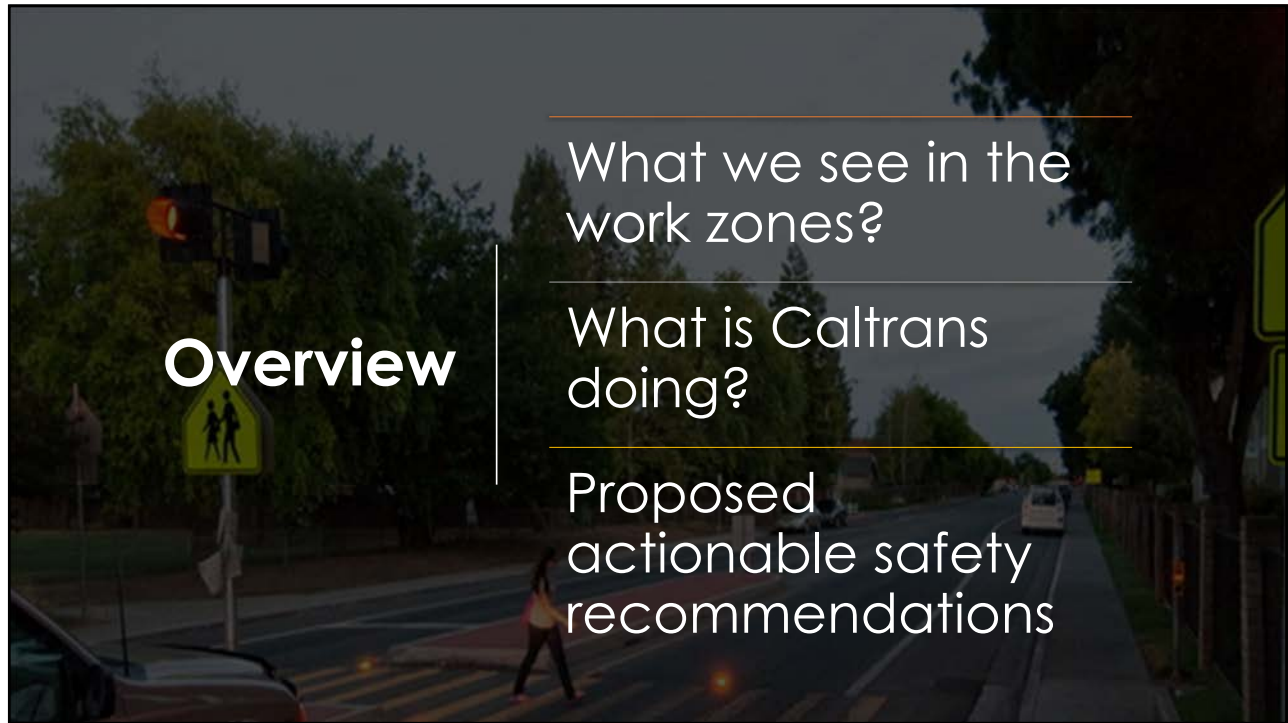
41



## **Safety Initiatives Update**

**Veera Nanugonda**  
Office Chief, HQ Division of  
Construction

42



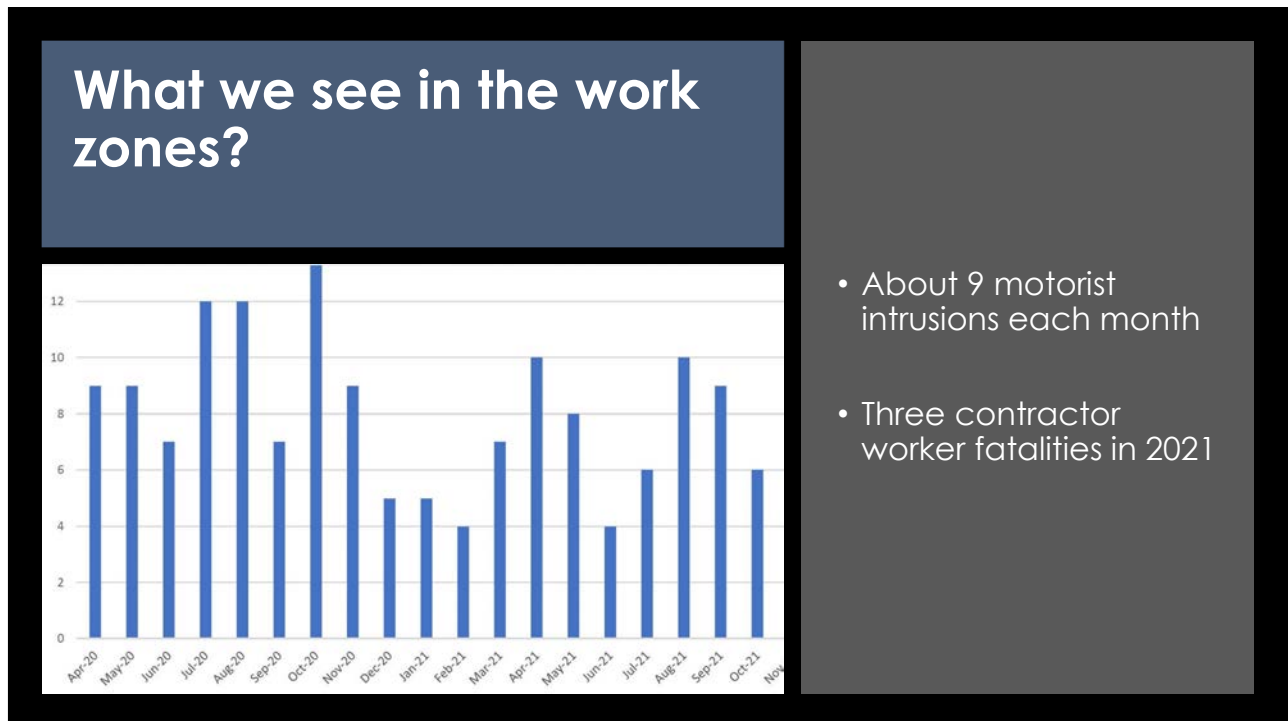
# Overview

What we see in the work zones?

What is Caltrans doing?

Proposed actionable safety recommendations

43



44

# What is Caltrans Doing?

- Positive work zone protection

45

# What is Caltrans Doing?

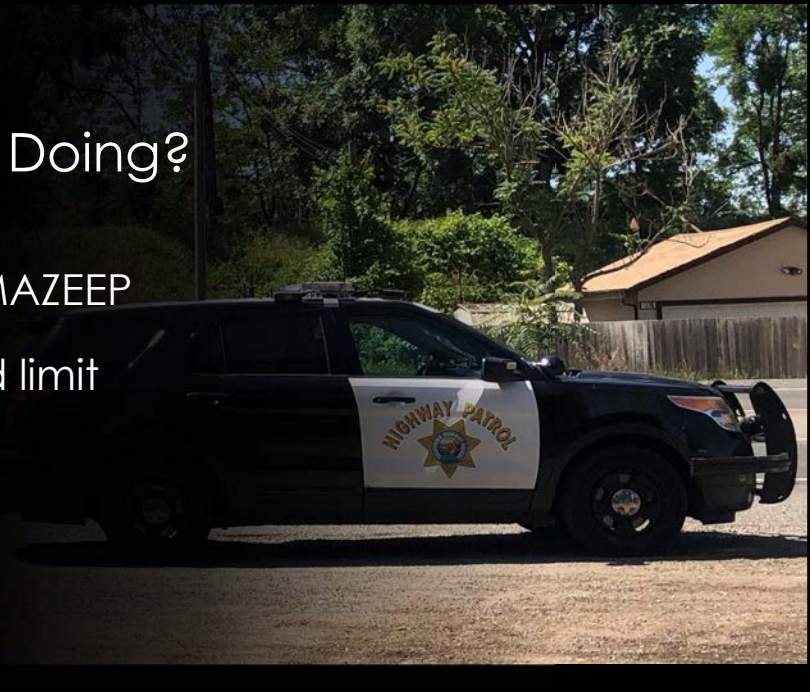
- Expanded work windows

46



## What is Caltrans Doing?

- Use of COZEEP/MAZEEP
- Work zone speed limit reduction
- Traffic breaks



47

## What is Caltrans Doing?

- Traffic control certifications
- Traffic lookouts
- Job hazard analysis



48



## What is Caltrans Doing?

- Traffic drums – in progress
- Ingress/egress of equipment – in progress
- Safety prequalification
- Caltrans construction safety award program

49

## What is Caltrans Doing?

- Utilizing Technology



50

## What is Caltrans Doing?

- Public Outreach Efforts

- Partnered with Office of Traffic Safety
- "Go Safely California" campaign



51

Proposed actionable safety  
recommendations

52

# Safety Summit Task Group (SSTG)



Caltrans/Industry collaboration



Formed after the 2020 Safety Summit



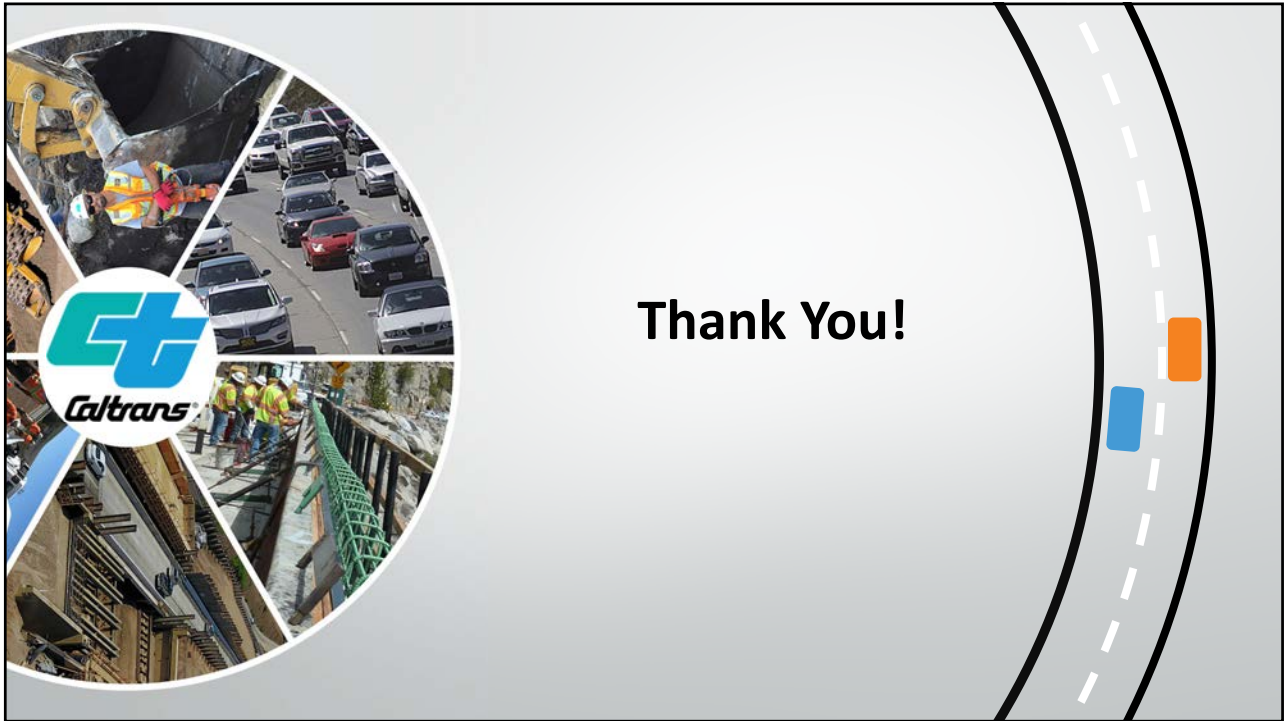
Monthly meetings - safety summit initiatives

53



Thank You  
SSTG

54



55

**SKANSKA**

Partnering For a Better Society

**SKANSKA**

 2022 Caltrans / Industry Safety Summit



**Arrowsight®**

56

## Agenda

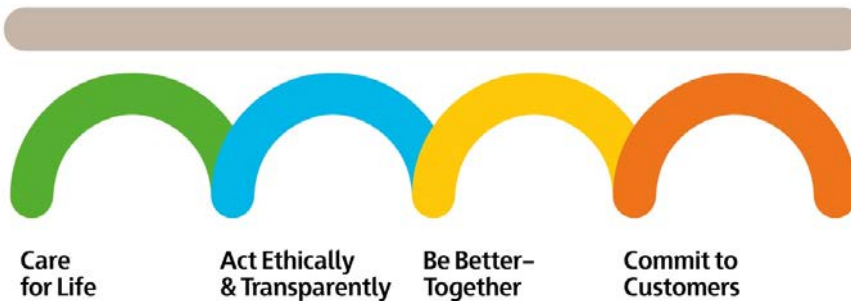
- Care for Life Core Value – People / Systems / Culture
- Safety Journey
- Digitizing PDCA (Plan - Do - Check - Act)
- Remote Video Auditing (RVA) / Artificial Intelligence (AI)
- Results?
  
- Innovation Break – Out Session



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## Who We Are


### Skanska Values




58

## Values Moment



**K** 

Who has had a friend or family member hurt at work? How did that incident affect you? Who do you think would be affected if you got hurt?

 **K**

**K** 

How do we respond when the schedule pressure becomes overwhelming or when our workgroup is highly stressed? In what ways can we deal with the pressure and get the work done without incidents and injuries?

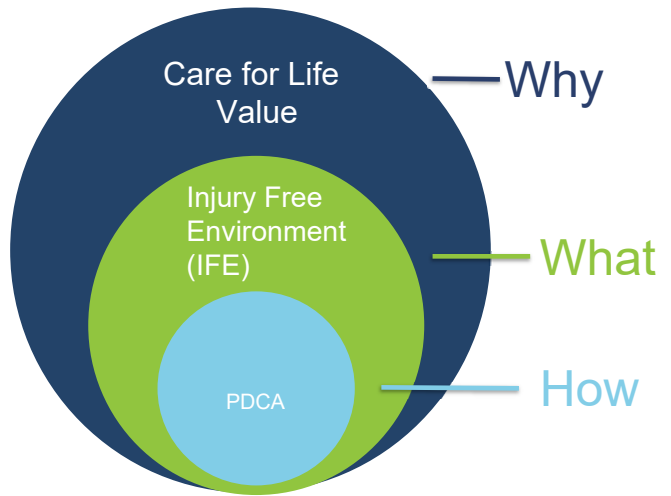
 **K**

## Our Environmental, Health & Safety (EHS) Journey





## Care for Life Workshop



61

## Digitizing PDCA

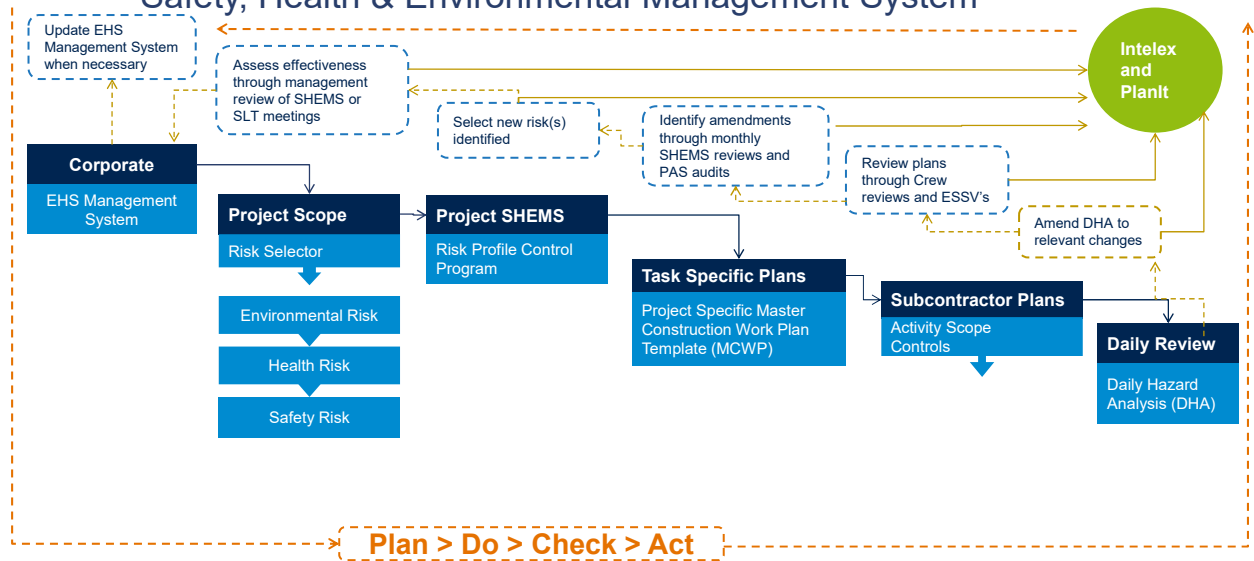


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# Digitizing Safety and Efficiency



## Safety, Health & Environmental Management System





## PlanIt: Digitizing Safety and Efficiency

### Better Accessibility

A web-based program used to build EHS Manuals, construction work plans (CWP) and daily hazard analyses (DHA)

Uniform procedure across the business

Improves collaboration across business units and regions

### Improved Efficiency

Automates certain aspects of CWP and DHA

Takes the guesswork out of project and task planning

Eliminates gaps that lead to inconsistent application of EHS policies and procedures

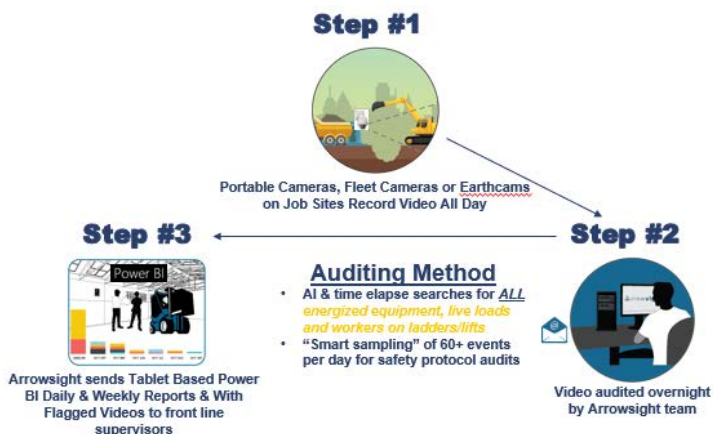
### Strengthens Safety

Supports thoughtful, thorough project and task planning, which improves on-site engagement

Fosters EHS accountability

Solidifies Care for Life culture across all regions

## Remote Video Auditing (RVA) and (AI)



**Arrowsight**  
**GAME FILM FOR BUSINESS**

Hybrid Remote Video Auditing (RVA) & AI  
Workplace Safety Solutions  
*Protecting People From Severe, Life-Changing  
Workplace Injuries*

The graphic features a dark background with a blue lens flare on the left and a person's hands pointing at a blueprint on the right. The Arrowsight logo is prominently displayed in the center.

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### Fully Autonomous & Cell-Enabled

*Multi-Camera Mobile Stands & Solar Boxes & Pelican Cases*

**Mobile Lithium Ion Battery Powered Multi Camera Stands**

**Solar Panel Multi Camera Boxes**

**Powered Pelican Camera Cases That Can Have 6 Cameras Wired Up To 300 Feet**

**Robotic Application**

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The slide is divided into four columns. The first column shows a worker in a safety vest operating a mobile camera stand. The second column shows a solar panel camera box mounted on a utility pole. The third column shows a powered pelican camera case mounted on a pole. The fourth column shows a yellow Boston Dynamics robot.

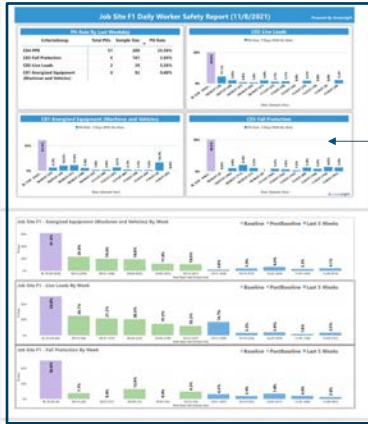
68

# Jobsite Daily Trend Reports & Flagged Videos

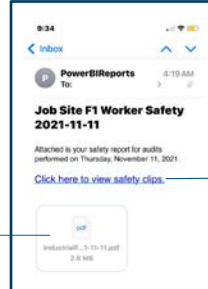
Delivered to Front-line Manager's Phones/Tablets/Laptops  
Prior to Shift Starting



**Step 2: Microsoft Power BI Daily & Weekly Trend Report**



**Step 1: Daily Email to Phone/Tablet/Laptop**



**Step 3: Box.com Daily Flagged Proper & Improper 10 Second "Highlight Film" Video Clips**



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## Earthcam Example



## Compilation Video – All Sites

Arrowsight



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## COVID-19 Social Distancing Hybrid AI and Human Intelligence App



72

72



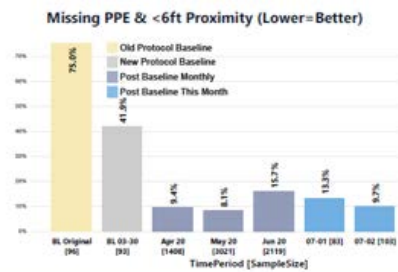
# Ladder Safety: Hybrid AI and Human Intelligence Detection



73

73

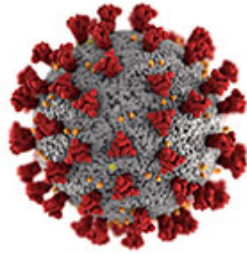
# Remote Video Auditing Results



74

74

# 2020 Results Through COVID-19 ??????



# Events Recorded	>5,300
# People Tested	>4,000
# Positive Cases	>1,400



## 2019 -2020 Lagging Rate Reduction Results

	Skanska USA Civil	Skanska USA Building	Skanska USA
Potential Fatality	24%	37%	28%
Lost Time	71%	15%	43%
Recordable	28%	12%	20%
Restricted	27%	15%	24%
DART	45%	15%	30%
Material Handling	62%	32%	47%

77

77

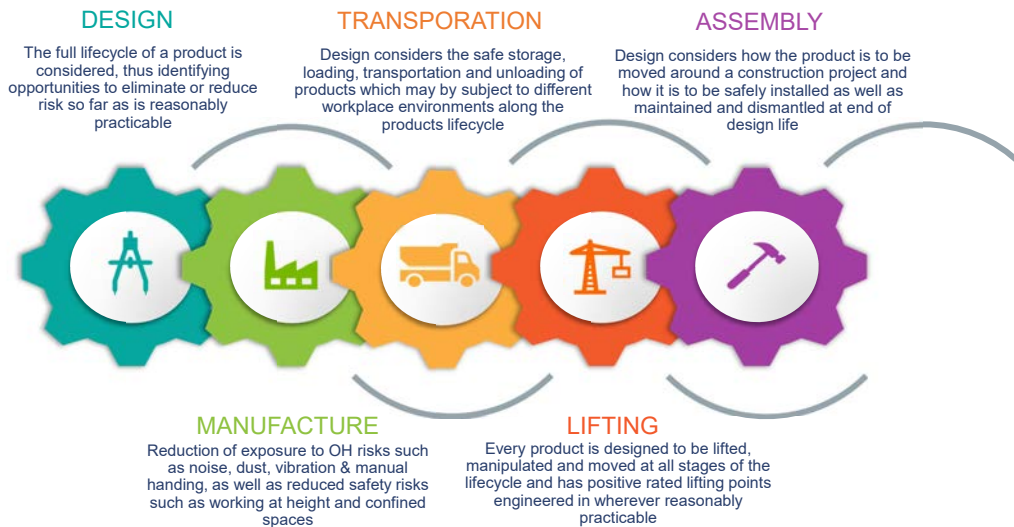


78

# PowerBI Data Analysis



## Process safety approach





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## L300: In-Cab Video



81

81

## Phone Usage Examples

Arrowsight



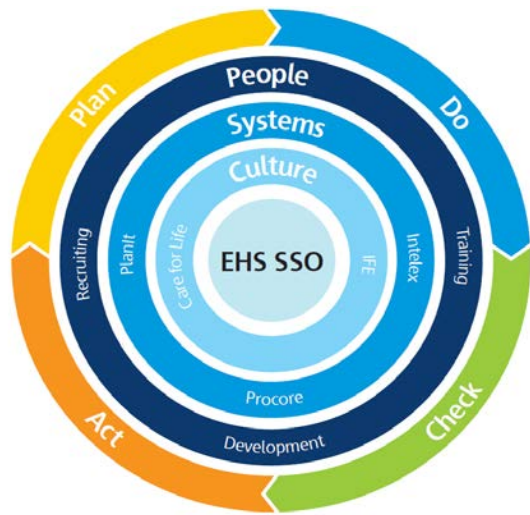
82

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## Safety Shift Team

**Synergy Fabricated Innovations, LLC**  
Marcus Stackpoole, Owner  
Matt Stackpoole, R&D  
Chip Jerome & Scott Lewis,  
Marketing & Business Dev



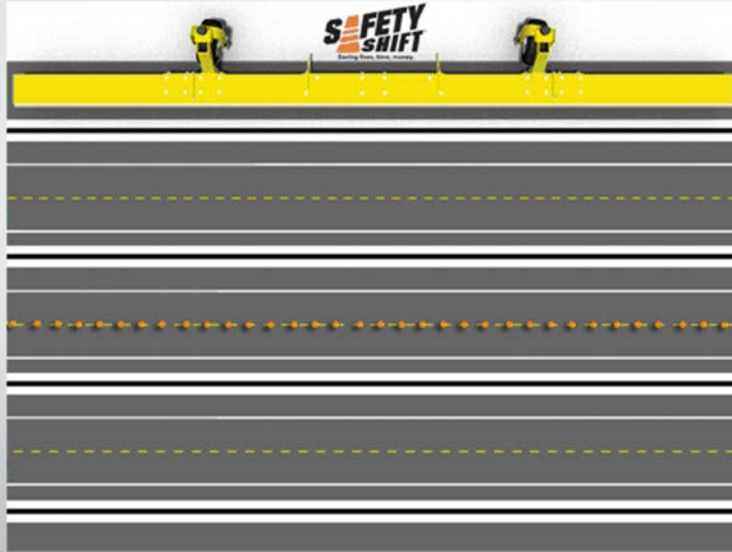
85

## Safety Shift in Action



86

## Safety Shift Animation



87

## Safety Shift Packaging

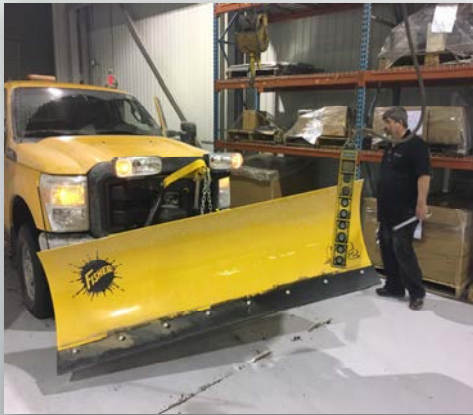
Fully assembled  
Ready to mount  
Approximately 250 pounds



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## Installing Safety Shift



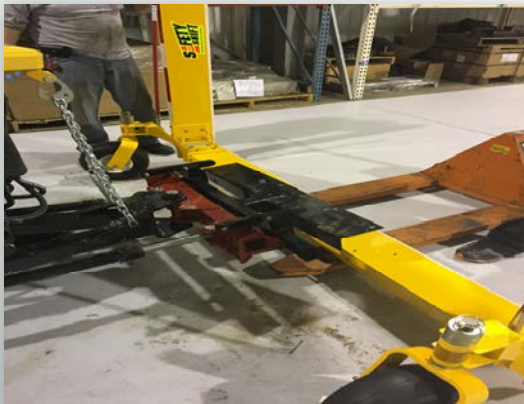
Attaches and operates like a snowplow

Attaches to various snowplow mounts offering customers flexibility to choose the plow mount brand of their choice

Remove plow blade if you already own one or order without the blade

89

## Installing Safety Shift



Custom fabricated mounting plate designed, developed and produced at Synergy Fabricated Innovations, LLC

90

## Installing Safety Shift



Safety Shift full extended is 16 feet

Vertical locators standard

Custom accessories can be quoted  
as desired

91

## Installing Safety Shift



Safety Shift is ready to transport

Only 8 feet when folded

Transport at normal highway  
speeds

92

## Features and Benefits



Simple set up

Easy installation

Saves time to close and open lanes giving heavy equipment more time on the job

Drive directly to job site; very mobile

Durable with many companies using Safety Shift since 2014

Saves money, time and lives

93

## California Plow Mount Installers



Boss



Meyer



Western



\*Let us assist you here!

94

## Distribution & Pricing

Standard per unit pricing is \$9,875 each plus tax and shipping

*\*multiple unit pricing available upon request (5 units or more)*

Standard order lead time 2-4 weeks ARO

Incoterms: FOB Synergy Fabricated Innovations

Owners' Manual available

Replacement parts available as necessary



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## FAQs

- How do I order Safety Shift?
  - Please visit our website [www.safetyshift.com](http://www.safetyshift.com) and we will be happy to assist you or call directly to Chip Jerome at 313-600-1684 / [cjerome5542@gmail.com](mailto:cjerome5542@gmail.com)
- Assembly Required?
  - No, your unit comes ready to use out of crate (weight: 250 lbs).
- Do you provide assistance with setup and operation?
  - Yes, our team will walk you through setup and use.

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## Safety Shift Customers



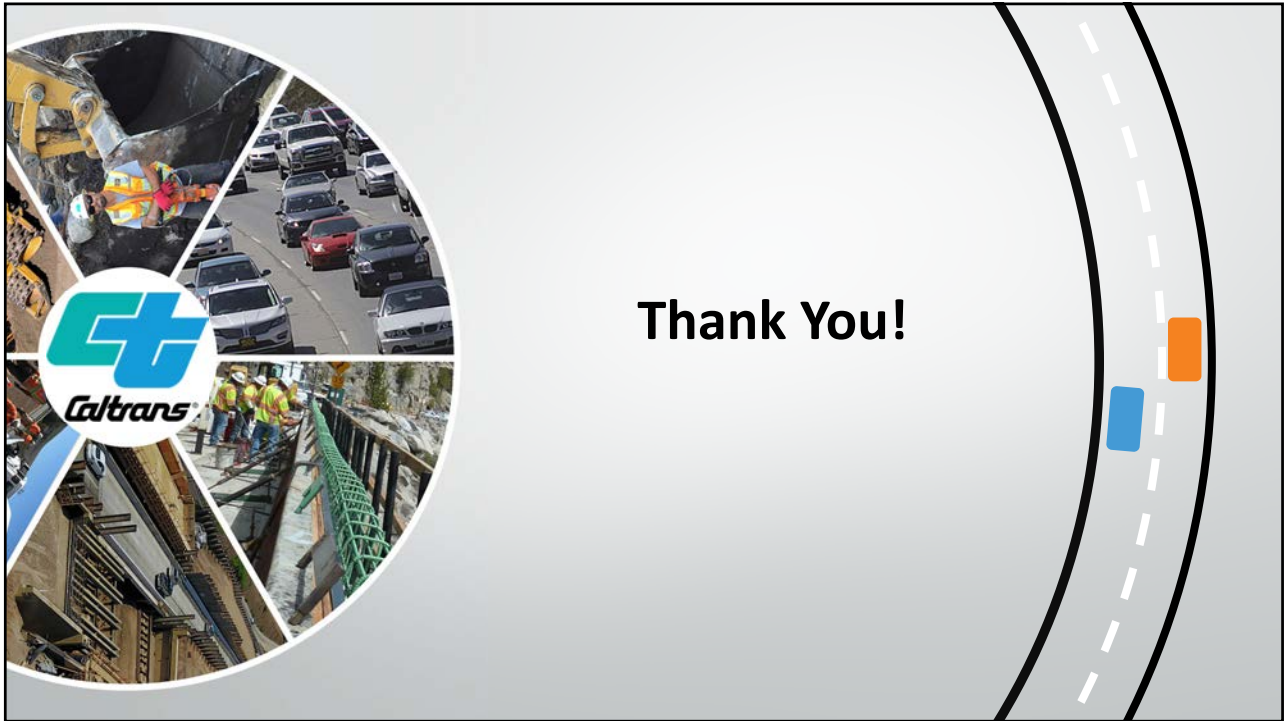
97

## Contact Information

Matt Stackpoole, Vice President R&D  
[matt@synergyprototype.com](mailto:matt@synergyprototype.com)  
(313) 539-9058

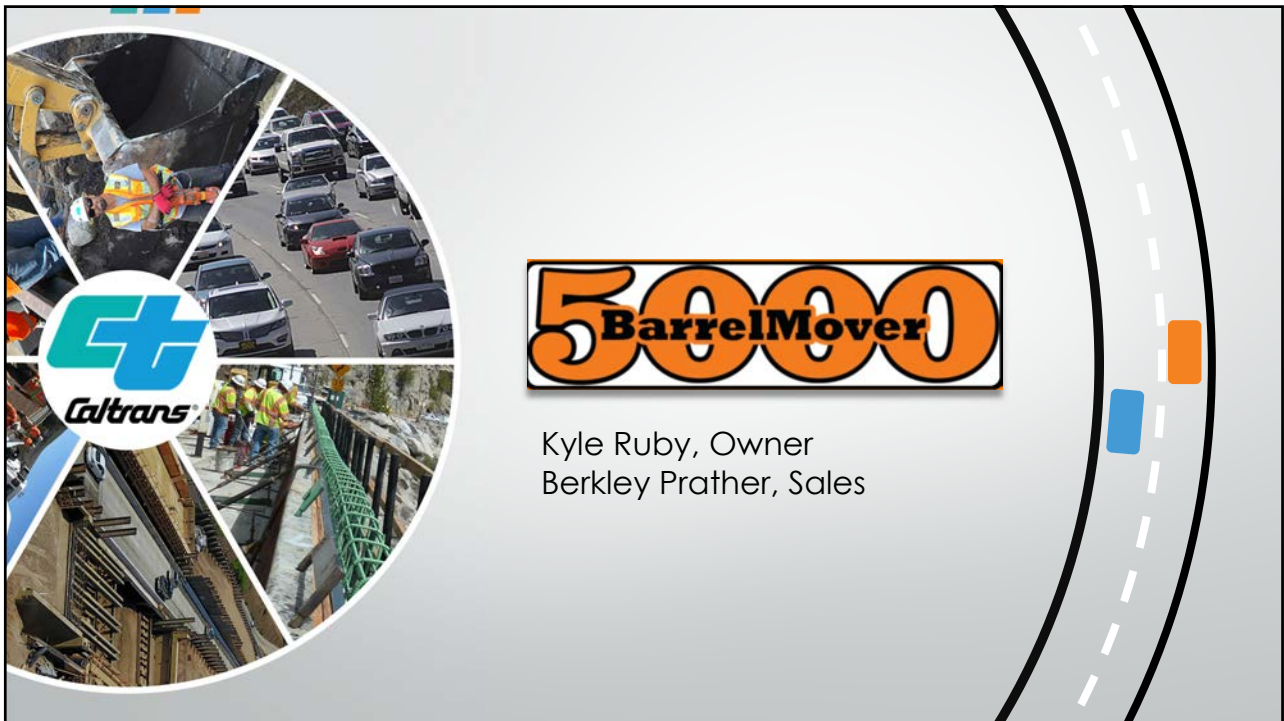
Chip Jerome, Director of Business Development  
[cjerome5542@gmail.com](mailto:cjerome5542@gmail.com)  
(313) 600-1684

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Thank You!

99



Kyle Ruby, Owner  
Berkley Prather, Sales

100



## 2022 Caltrans/Industry Safety Summit

- Save Lives
- Reduce Costs
- Increase Productivity



101



## SAVE LIVES

- Construction workers involved in setting up or removing lane closures are increasingly faced with distracted motorists.
- Daily news reports of automobile accidents involving drug/alcohol or cell phone distractions puts everyone at risk.
- Minimize that risk with the BarrelMover 5000.

102



## REDUCE COSTS

- One operator can do the work of three-four employees, SAFELY, in less than 80% of the time using the BarrelMover 5000.
- Saving money on your traffic control will also keep you competitive when bidding new projects.

103



## INCREASE PRODUCTIVITY

- BarrelMover 5000 can pay for itself within 30 days or less by allowing you to stay productive in the work zone longer each shift.
- Taking down a multi-mile lane closure can take upwards of an hour or more with your workforce on foot.
- Now you can cut the removal time in half and increase your billable items.

104



105

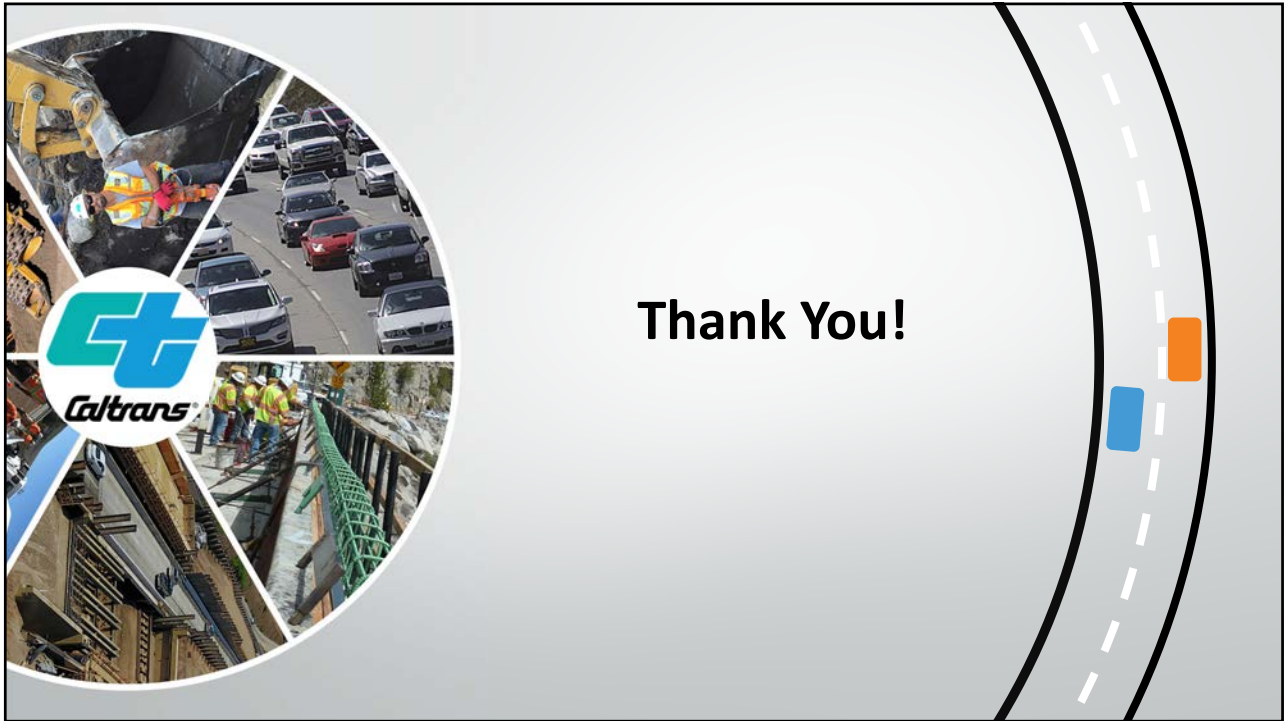
## **CONTACT US TODAY**

**BarrelMover 5000 LLC**  
**90 South Main**  
**Dry Ridge, KY 41035**  
**[barrelmover5000.com](http://barrelmover5000.com)**

**Kyle Ruby-Owner**  
**(859) 393-8201**  
**[kruby@barrelmover5000.com](mailto:kruby@barrelmover5000.com)**

106





**Thank You!**

107



# **The SideWinder**

**ARTEC Innovation**

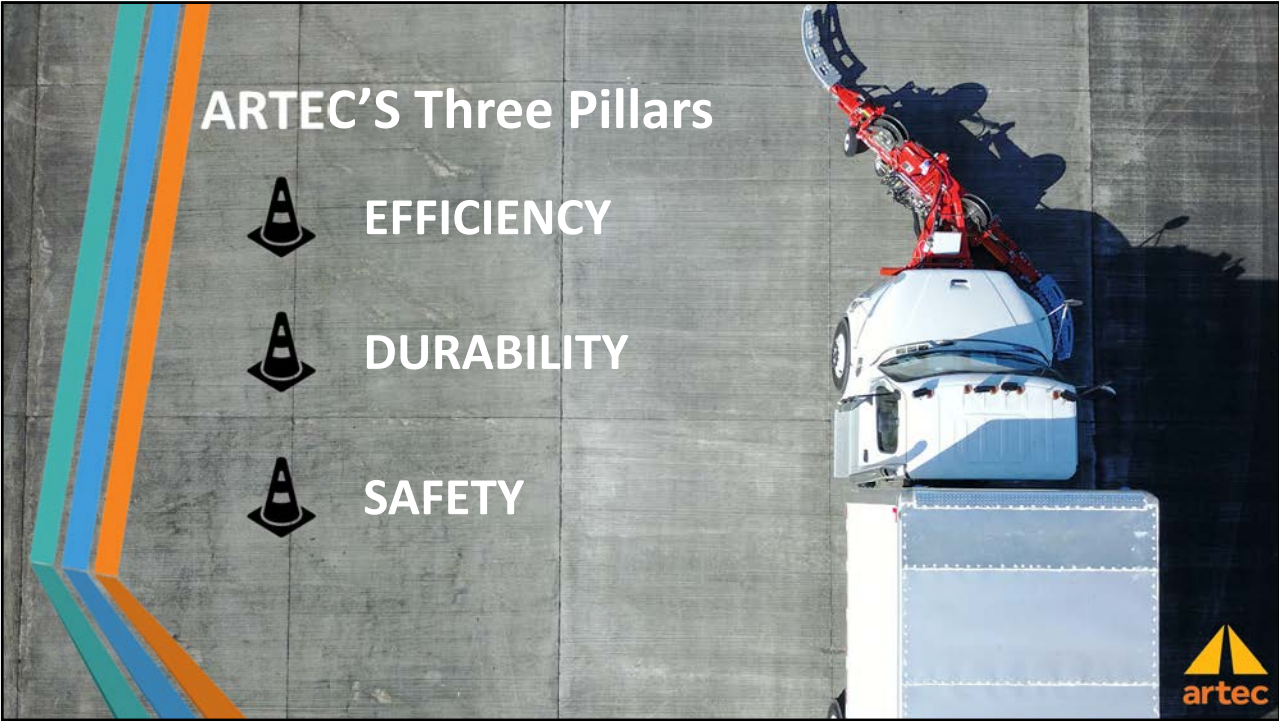
Serge Daignault, President &  
Lead Engineer

Mark Chittim, Account Manager

108



109



110



111



112



## EFFICIENCY – DURABILITY - SAFETY

- Several types of channelizing devices and surfaces
  - Asphalt, concrete and milled surfaces



113

## EFFICIENCY – DURABILITY - SAFETY

- The SideWinder's hydraulic system allows a displacement up to two (2) lanes wide



114

## EFFICIENCY – DURABILITY - SAFETY

- Reduce time of closure set-ups and takedowns by operating at speeds up to 12MPH



115

## DURABILITY

116

## EFFICIENCY – DURABILITY - SAFETY

- Shock-absorbing solutions
  - Steel Sheet Metal frame, suspension and rotating wheels



117

## EFFICIENCY - DURABILITY - SAFETY

- Patented system
- The curved metal flippers ensure smooth capture of the barrels and cones, for long life use.



118

## EFFICIENCY - DURABILITY - SAFETY

- Minimal maintenance for maximum service availability
- No specific maintenance needed



119

**SAFETY**

120



## EFFICIENCY - DURABILITY - SAFETY

- No boots on the ground thanks to the fully hydraulic system and cabin joystick control



VS



121

## EFFICIENCY - DURABILITY - SAFETY

- Quick and precise device positioning results in consistent spacing, safe for workers and all road users



122

## EFFICIENCY - DURABILITY - SAFETY

- The sidewinder truck moves steady in its lane while operating, minimizing moving traffic disturbance
- Minimal lateral movement



123

## THE SIDEWINDER

ARTEC INNOVATION



124

# CONTACT US

**Mark Chittim** – Account Manager

Email: [mchittim@artecinnovation.com](mailto:mchittim@artecinnovation.com)

**Gabriel Germain** – Account Director


Email: [ggermain@artecinnovation.com](mailto:ggermain@artecinnovation.com)

[www.artecinnovation.com](http://www.artecinnovation.com)



Phone: (323) 739-1757



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A circular collage of four images: top-left shows a yellow excavator at a construction site; top-right shows a traffic jam on a highway; bottom-left shows a Caltrans logo (a stylized 'CT' in a blue circle with 'Caltrans' text below it); bottom-right shows construction workers in safety gear working on a bridge or overpass structure.

**Thank You!**

The Artec logo, featuring a stylized yellow triangle above the word "artec" in a lowercase, sans-serif font.A stylized graphic of a road with a dashed white center line and solid black outer lines, curving to the right. Two rectangular markers, one blue and one orange, are placed on the road.

126



# Safety Innovation Breakouts

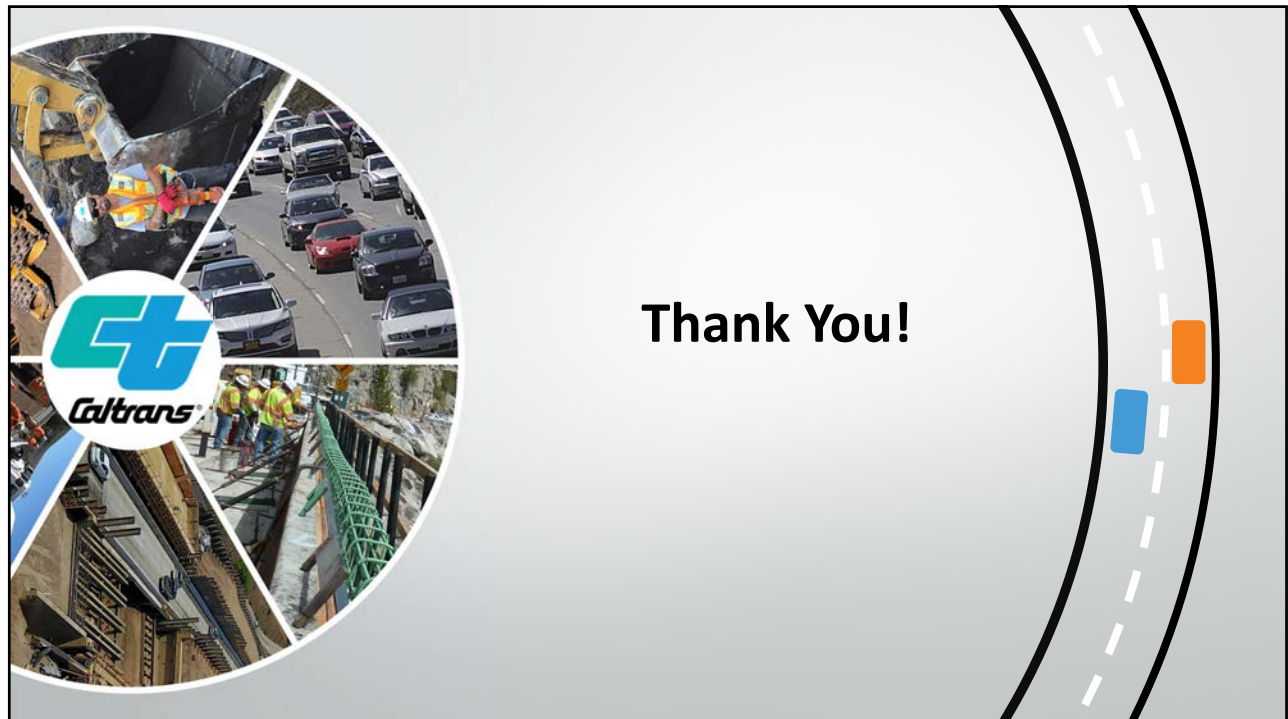
**What comes to mind when you hear "Safety Innovation?"**

Instructions:

1. Independently brainstorm ideas (People, Process, Product & Other)
2. Together, reach consensus on one idea for discussion
3. Focus conversation on one idea until the dialogue feels complete
4. Repeat steps 2 – 3

Timing: 20 – 25 minutes

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129

## Welcome to Zoom!

- Utilize the toolbar at the bottom of your screen to:
  - Mute / unmute
  - Turn on / off video
  - View participants
  - Chat
- Utilize the Raise Hand feature within the Participant Panel
- Utilize the Chat Box to engage with one another
  - Chat "Everyone" with comments or questions regarding presentations

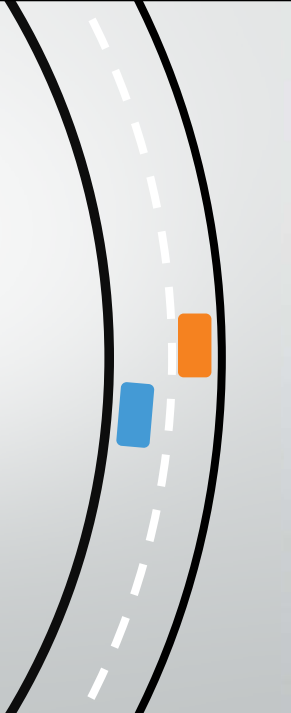
The image includes two screenshots from the Zoom interface. The first is the "Participants (4)" panel, showing a list of participants with their names and status icons. The second is the "Chat" window, showing a text input field with "Everyone" selected and a "File" button. At the bottom, a toolbar contains icons for Mute, Stop Video, Participants, Chat, Share Screen, Breakout Rooms, Reactions, and Leave. Red arrows point upwards from the bottom of the slide to each of these toolbar icons.

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# Welcome!

Ray Hopkins  
Chief, Caltrans Division of  
Construction  
February 2, 2022



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# WHY

*the EXP – Foundation?*

**10X** 

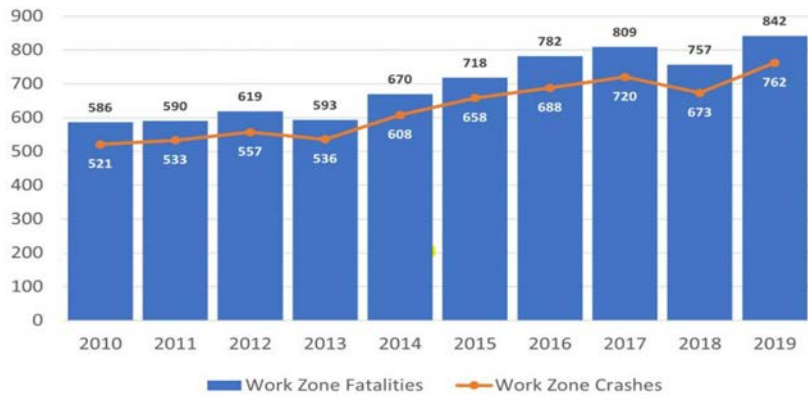
132



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April 22, 2021 | Safety

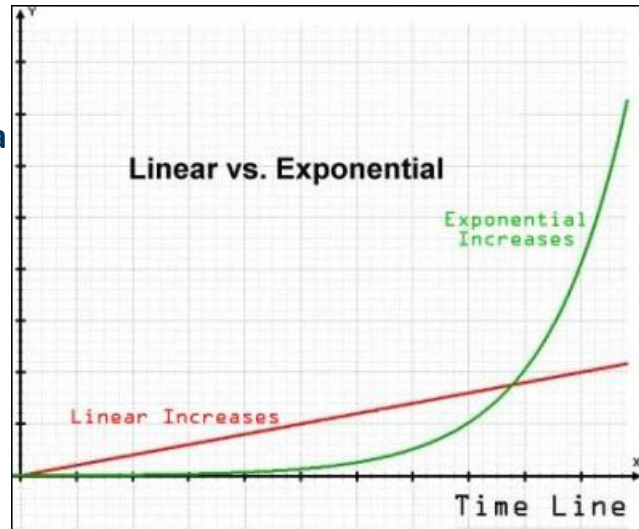
Work Zone Fatalities and Crashes Have Grown at an Average Rate of 4% Per Year Over the Last Decade



Source: National Highway Traffic Safety Administration

134

- ✓ We Can No Longer Afford to Solve Our Work Zone Safety In a Linear Approach
- ✓ Solutions Need to Have Exponential Results & Massive Impact



135

## MISSION

To act as an **Incubator** for projects with **Exponential Outcomes, Impacts, and Results** for the benefit of the public

136

- ✓ Crowd-Source the Best Innovations for Specific Challenges – **Using Incentive Prize**
- ✓ Open-Source the Solutions

137



### The Orteig Prize

- ✓ The first Allied aviator(s) to fly Non-Stop from New York to Paris or vice versa
- ✓ Several famous aviators made unsuccessful attempts
- ✓ Unknown American Charles Lindbergh won the prize in 1927 in his aircraft  
The Spirit of St Luis

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139

 **Exponential Results**



- ✓ The global airline industry **471.8 billion U.S. dollars in 2021**
- ✓ Safety Is Not Even a Question!

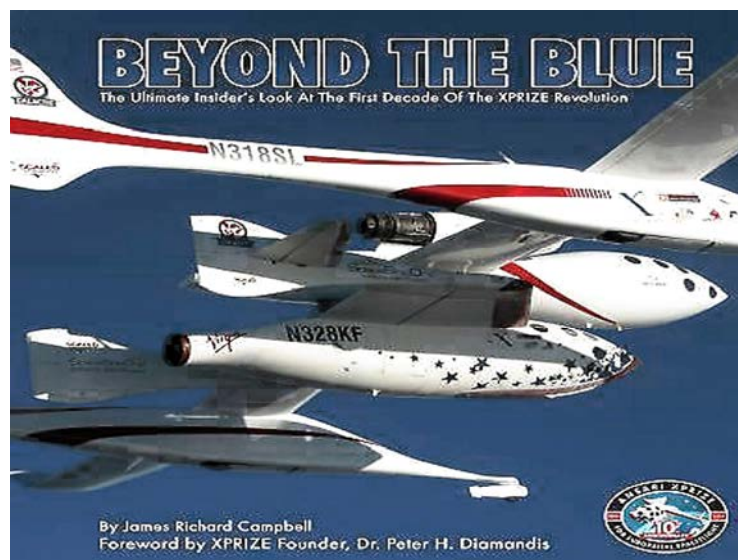
140



# ANSARI XPRIZE®

Space Competition thru the X Prize Foundation US\$10,000,000 prize  
For the first non-government organization to launch a reusable crewed spacecraft into space twice within two weeks.

141



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143

Incentive Prize \$100,000  
For Work Zone Safety



**SAFETY  
FIRST**

A graphic with a black background. At the top right, the text 'Incentive Prize \$100,000 For Work Zone Safety' is written in white. In the center is a yellow hard hat. At the bottom, the words 'SAFETY' and 'FIRST' are written in large, white, hand-drawn, sketchy letters.

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Founding Board Members				
1	Aileen	Cho	Senior Editor	Engineering News Record (ENR)
2	Mike	Ghilotti	President	Ghilotti Bros, Inc. (GBI)
3	Sam	Hassoun	President	Global Leadership Alliance, Inc. (GLA)
4	Ray	Hopkins	Construction Division Chief	Caltrans
5	Randy	Iwasaki	Transportation Leader	Amazon Web Services (AWS)
6	Pat	Lowry	President	Alta Vista Solutions (AVS)
7	Bobby	Reed	President	Capitol Tech Solutions (CTS)
8	Mary	Teichert	President	Teichert, Inc.
Advisory Members				
9	Toks	Omishakin	Director	Caltrans
10	Gary	Strong	CEO	American Red Cross

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- ✓ **Design Safety Work Zone Prize Criteria**
- ✓ **10X Measurable Results**
- ✓ **Open to Teams, Organizations and Individuals**

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## GLA

GLOBAL LEADERSHIP ALLIANCE

Partnering. Facilitated Dispute Resolution. Mediation

- 1. GLA Committed the First \$25K towards the Work Zone Safety Prize**
- 2. GLA is Donating 5% of Partnering Fees to Fund EXP Foundation Projects**

147

- 1. Capturing Safety Innovations through DashTech Software**
- 2. Pilot Caltrans District 8**
- 3. Launch D-8 Safety Award**



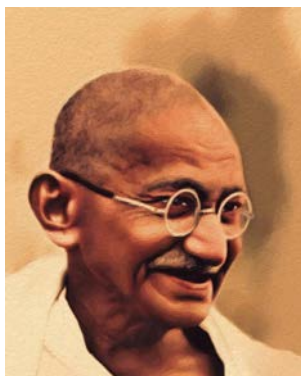
148

## HOW CAN YOU HELP?

1. Get Involved with a Team or Your Organization
2. Help Us Raise the first \$100K Work Zone Safety Prize
3. Contact Ray Hopkins, Vira or Amjad to Participate

149

## Don't Just Wish ..



Be the **CHANGE** you  
want to see in the  
world

*Mahatma Gandhi*

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# Check In

**How do we measure the success of our safety initiatives?**

Instructions:

In small groups, discuss potential leading indicators we may want to consider capturing to measure the effectiveness of our safety initiatives.

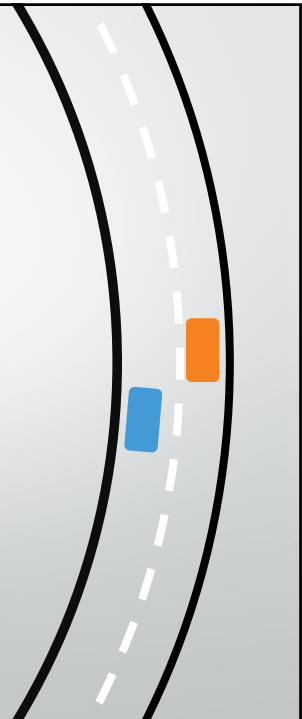
Capture ideas on the Miro board.

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# Safety Culture

Rachel Carpenter  
Caltrans Chief Safety Officer



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# Presentation Overview

- Safety Fatality Trends
- Safe System Approach
- Link with Construction Safety
- Partners in Influencing Culture Change



Safety Data

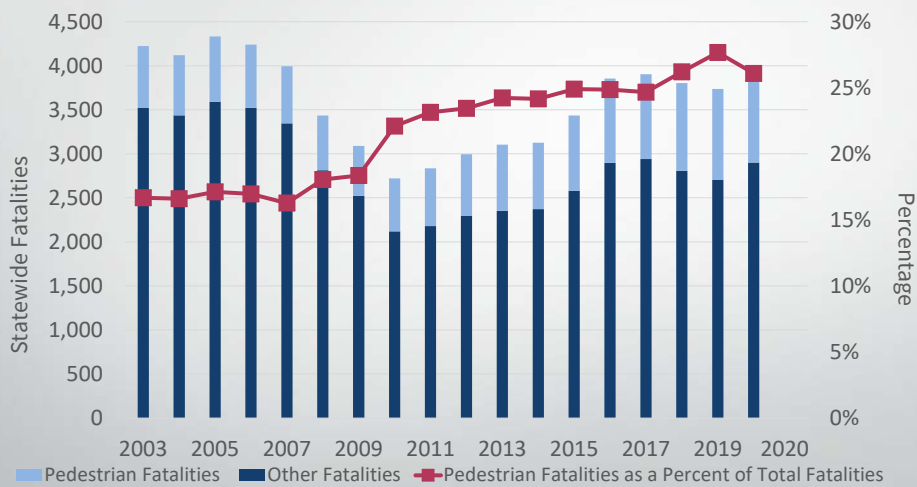
Safe System Approach

Link to Construction Safety

Partners in Culture Change

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# Statewide Fatality Trends



Source: SWITRS Data Jan 2022

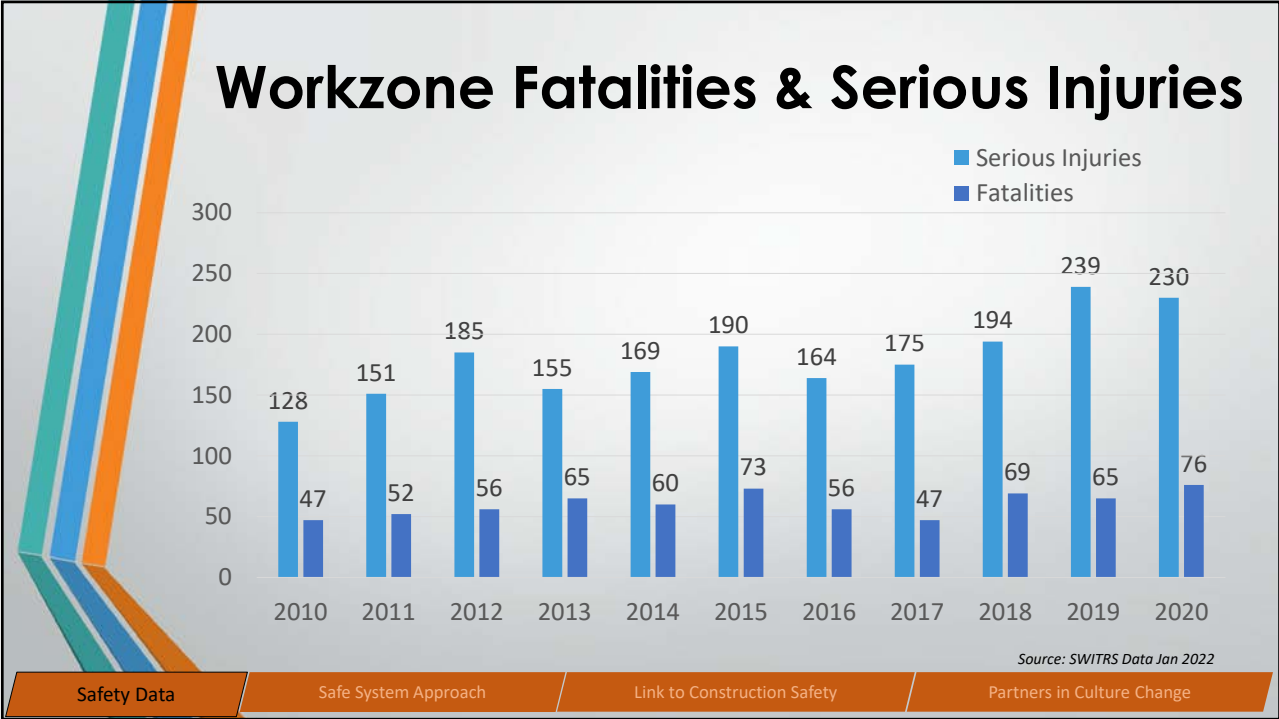
Safety Data

Safe System Approach

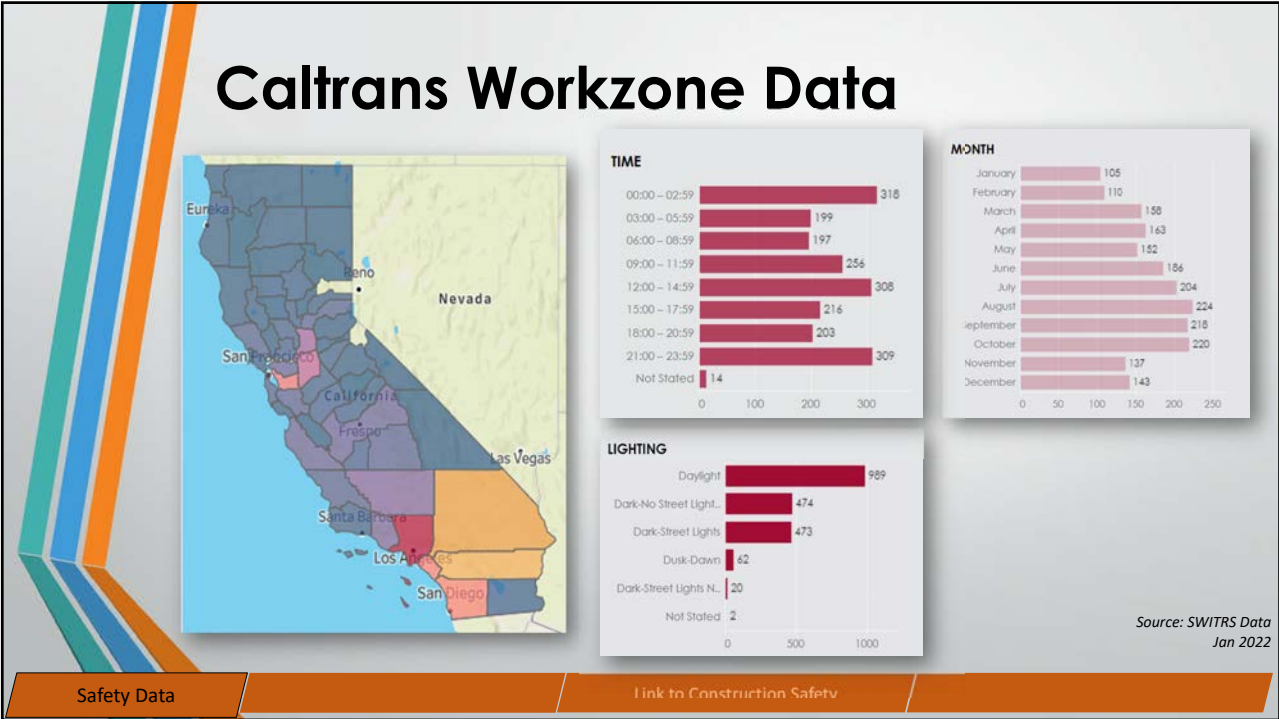
Link to Construction Safety

Partners in Culture Change

154



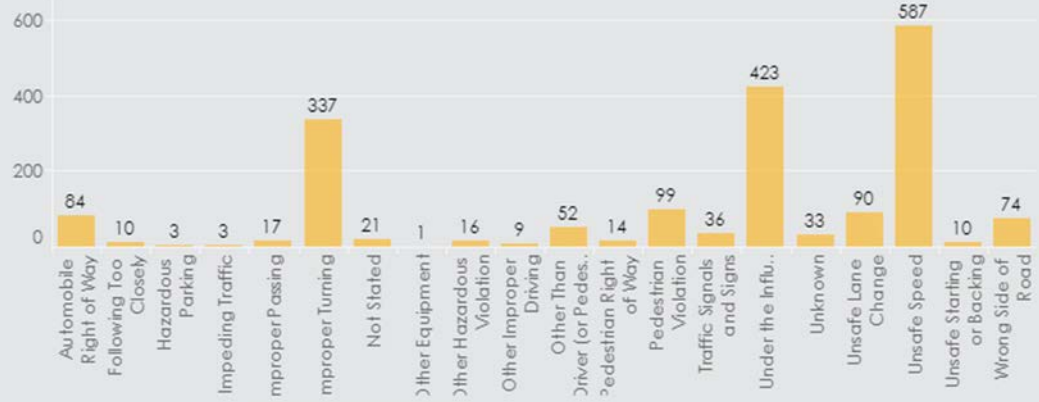
155



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# Caltrans Workzone Data

## PRIMARY CRASH FACTOR



Source: SWITRS Data pulled: Jan 2022

Safety Data

Safe System Approach

Link to Construction Safety

Partners in Culture Change

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# Changing the Trend

We are shifting our safety paradigm by changing our organization, our conversation, and the way we work.



## GOAL

0 lives lost on CA roads

0 workzone deaths and serious injuries

Safety Data

Safe System Approach

Link to Construction Safety

Partners in Culture Change

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# What is a “Safe System Approach?”

The Safe System approach aims to eliminate fatal and serious injuries for all road users by:



**Accommodating human mistakes**



**Keeping impacts on the human body at tolerable levels**

Safety Data

Safe System Approach

Link to Construction Safety

Partners in Culture Change

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# Safe System Principles



**Death/serious injury is unacceptable**



**Responsibility is shared**



**Humans make mistakes**



**Safety is proactive**



**Humans are vulnerable**



**Redundancy is crucial**

Safety Data

Safe System Approach

Link to Construction Safety

Partners in Culture Change

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# Safe System Elements



Safe road users



Safe roads



Safe vehicles



Post-crash care



Safe speeds

Safety Data

Safe System Approach

Link to Construction Safety

Partners in Culture Change

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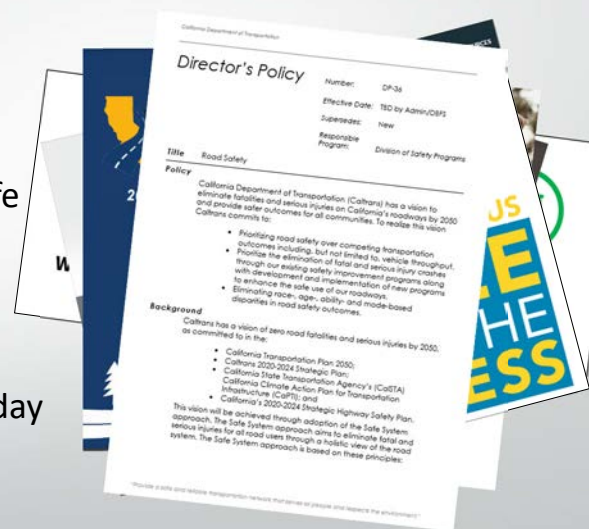
# 2021 Safe System Commitments

**Completed:**

Led the State's public commitment to safety and Safe System approach in visionary documents

**To Do:**

Align visions with the day-to-day operations of Caltrans staff



Safety Data

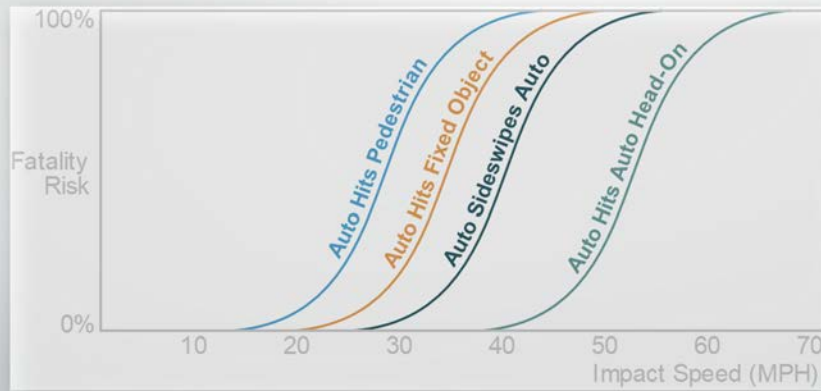
Safe System Approach

Link to Construction Safety

Partners in Culture Change

162

# Human Bodies are Vulnerable



Source: Roads and Traffic Authority of New South Wales

Safety Data

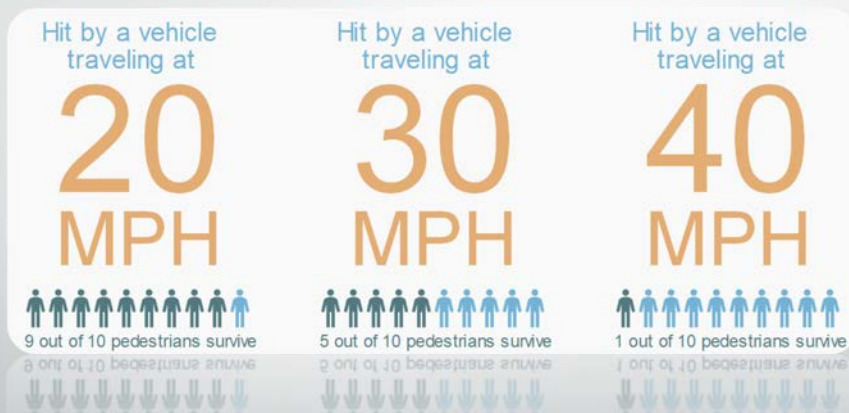
Safe System Approach

Link to Construction Safety

Partners in Culture Change

163

# Survivability On-Foot



Source: Seattle Department of Transportation

Safety Data

Safe System Approach

Link to Construction Safety

Partners in Culture Change

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# Positive Protection for Work Zones

- July 2021, Design Information Bulletin 91 and Guidelines on the Use of Positive Protection in Work Zones
- Risk Based Decision Tool
- Options include:
  - Impact Attenuator Vehicles
  - Temporary Barriers
  - Use of Mitigation Measures
- MASH temporary barrier
- Additional MASH devices approved for use



Safety Data

Safe System Approach

Link to Construction Safety

Partners in Culture Change

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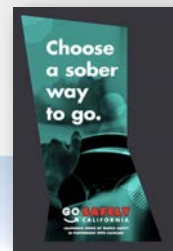
# Changing the Conversation

Go Safely California <https://gosafelyca.org/>

- Anti DUI/Anti Drug
- Anti Speeding
- Distracted Driving
- Wrong Way Driver
- Bike/Peds

## Partners

- Sacramento Kings
- LA Rams
- Oakland Coliseum
- Sac Republic FC
- Impact Teen Drivers
- CHP/Law Enforcement
- iHeart Media Radio/DJ Partnerships



Safety Data

Safe System Approach

Link to Construction Safety

Partners in Culture Change

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## Safe System & Workzones

- Positive Protection
- Safe Users: Public Outreach
- Protect all users, including Bike and Pedestrians through construction zones
- Speed Management
- Develop a Safety Culture



Safety Data

Safe System Approach

Link to Construction Safety

Partners in Culture Change

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## Partners in Leading Safety Culture

- Strategy needs culture change
- Travelers, workers, and organizations
- We are Partners in leadership
- Identify culture-change opportunities




Safety Data

Safe System Approach

Link to Construction Safety

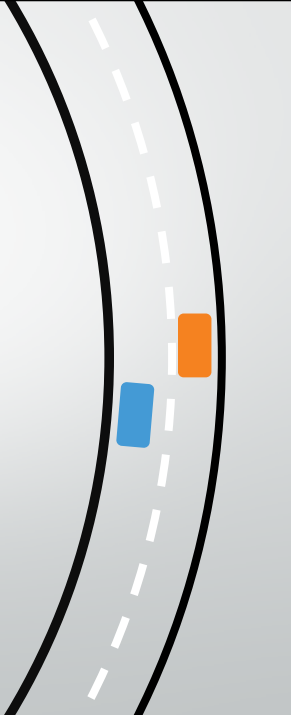
Partners in Culture Change

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**Thank You!**

Contact:  
[rachel.carpenter@dot.ca.gov](mailto:rachel.carpenter@dot.ca.gov)



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## Safety Culture Breakouts

What **attitudes, actions & artifacts** are most successful?

Instructions:

1. Independently brainstorm ideas (attitudes, actions & artifacts)
2. Lean on each other if you get stuck or have questions
3. Regroup in the main room for a new set of instructions

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# Safety Culture Breakouts

What attitudes, actions & artifacts **might have the greatest influence on public behavior?**

Instructions:

1. Discuss ideas currently on the Miro board and add any new ideas
2. Together, identify one attitude, one action, and one artifact to advance for prioritization


171



The graphic features a circular collage on the left showing construction scenes: a yellow excavator, a traffic jam, and workers on a bridge. The Caltrans logo is overlaid on the collage. To the right, the text reads: 'Caltrans Construction Safety Award Program (CCSAP)', 'Phillip Phan, Office of Construction Safety, Insurance, and Special Projects', and 'Construction Safety Awards' with the tagline 'Recognizing excellence for a safer working environment'. A stylized road graphic is on the far right.

## Caltrans Construction Safety Award Program (CCSAP)

Phillip Phan  
Office of Construction Safety,  
Insurance, and Special Projects

 **Construction Safety Awards**  
*Recognizing excellence for a safer working environment*

172

## OVERVIEW

- Background
- Objective
- Categories
- Recognition Levels
- Project Types & Eligibility
- Milestones
- How to Apply
- Industry's Role



173

## BACKGROUND

- 2018 Safety Summit initiative proposal
- Recommendations from the 2021 Safety Summit breakout session



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## OBJECTIVE

- **To Recognize Project Teams:**
  - Who demonstrate superior safety performance
  - Who go above the minimum contractual safety requirements
- **To Acknowledge:**
  - Innovative safety measures



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## CATEGORIES

1. Safety Excellence Award
2. Safety Innovation Award



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## SAFETY EXCELLENCE AWARD EVALUATION CRITERIA

SAFETY EXCELLENCE AWARD		
CRITERIA #	DESCRIPTION	POINTS
1	Superior safety performance	50 max.
2	Going above	50 max.
	<b>BONUS QUESTION</b>	10 max.



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## SAFETY INNOVATION AWARD EVALUATION CRITERIA

SAFETY INNOVATION AWARD		
CRITERIA #	DESCRIPTION	POINTS
1	Innovative technology, work methods, products, materials, ideas, and improvements	60 max.
2	Other creative implementations or adopted enhancements	40 max.
	<b>BONUS QUESTION</b>	10 max.



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## RECOGNITION LEVELS

HARD HAT AWARDS

POINTS



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## PROJECT TYPES & ELIGIBILITY

- **Ongoing & Completed Projects:**  
July 1, 2021 to June 30, 2022
- **Submission Deadline:**  
October 1, 2022



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# MILESTONES

MILESTONES	DATES
CCSAP Presentation	February 1, 2022
Website with Application	March 1, 2022
First Annual Safety Awards	2023 Safety Summit



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# HOW TO APPLY

Apply Online:  
<https://dot.ca.gov/programs/construction/CCSAP>



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## INDUSTRY'S ROLE

- Judging panel
- SWAG sponsor for hard hat squeezezy / stress balls



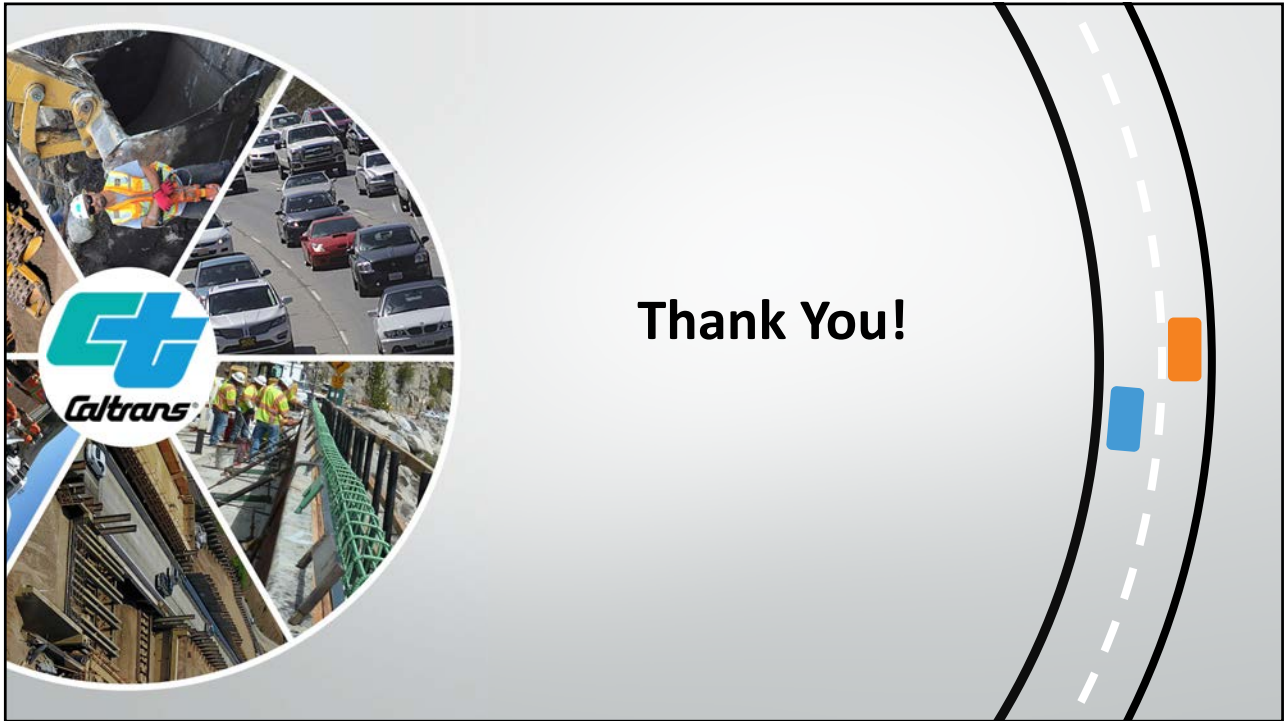
183

## THANK YOU

- QUESTIONS?
- COMMENTS



184



**Thank You!**

185



## **Specifications Update**

**Chuck Suszko  
Caltrans Division of Construction**

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## Specification Updates | 2018 Safety Summit

SMART WORK ZONES WORK ZONE SPEED LIMIT REDUCTION		
Standard	Subject	Description
RSS 12-3.37 RSS 87-20	"Temporary Radar Speed Feedback Sign"	A radar speed feedback sign system must be placed 400 feet in advance of work zone and feedback signs must be placed 400 feet in advance of active work areas within the lane closure for the construction work zone.
SSP 12-4.02C(12)	"Construction Work Zone Speed Limit Reduction"	Specifications for providing, installing, maintaining, and removing traffic control devices for reducing the speed limit in construction work zones.
RSP T18 - T21	Construction Work Zone Speed Limit Reduction: "Freeways and Expressways" "Conventional Highways," "Details," "24/7"	New Standard Plans for Work Zone Speed Reduction

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## Specification Updates | 2018 Safety Summit

SMART WORK ZONES EXPANDED WORK WINDOWS		
Standard	Subject	Description
SSP 12-3.41	"Temporary Automated End of Queue Warning System"	Specifications for furnishing, maintaining, and removing a temporary automated end of queue warning system.
RSS Section 12-4.02C(10)	"End of Queue Monitoring and Warning with Truck Mounted Changeable Message Sign"	Specifications portable changeable message sign truck (PCMST), monitoring the traffic end of queue, and warning approaching traffic.
RSP T26 – T27	"Temporary Automated End of Queue Warning System Type 1) Queue <= 3.5 miles" "Temporary Automated End of Queue Warning System Type 2) Queue <= 7.5 miles"	Standard Plans for End of Queue Warning Systems

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## Specification Updates | 2018 Safety Summit

### SMART WORK ZONES & WORKER SAFETY ENHANCEMENT

Standard	Subject	Description
RSS 12-3.38	"Automated Flagger Assistance Device"	Minimizes flaggers' direct exposure to traffic by allowing them to control traffic from an area away from the traveled way.
RSS 12-4.02	"Buffer Lanes"	Must close the lane adjacent to work area in accordance with the lane requirement charts, to provide a buffer lane for public and worker safety between the work area and the traffic



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## Specification Updates | 2018 Safety Summit

### SAFETY TRAINING & CERTIFICATION

Standard	Subject	Description
RSS 12-4.02C(9) SSP 12-4.02C(9)(c)(i) RSS 12-4.02C(9)(c)(ii)(C)	RSS 12-4.02C(9) SSP 12-4.02C(9)(c)(i) RSS 12-4.02C(9)(c)(ii)(C)	Specification for flaggers, AFAD operators, additional flaggers, advance flaggers and flagger stations.
RSS 12-4.02C(11)	"Traffic Control Technician"	Specification for training, certification, and responsibilities for traffic control technicians.
SSP 12-4.02C(13)	"Traffic Control Supervisor"	Specification for training, certification, and responsibilities for traffic control supervisors.

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## Specification and Plan Standard Updates | 2018 Safety Summit

GENERAL PROJECT SAFETY		
Standard	Subject	Description
RSS 5-1.16	"Project Safety Representative"	Assign a representative to coordinate and manage project safety work.
RSS 5-1.28	"Project Safety Reviews"	Assigned project safety representative must: <ol style="list-style-type: none"> <li>1. Participate in a project safety meeting before starting work</li> <li>2. Perform and document joint safety reviews every other week with the Engineer</li> <li>3. Participate in a post-project safety meeting</li> </ol>

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## Specification Updates | 2018 Safety Summit

SMART WORK ZONES CONSTRUCTION WORK ZONE SPEED LIMIT REDUCTION		
Standard	Subject	Description
RSS 12-3.40	"Variable Speed Limit Sign System" <b>(Implemented April 16, 2021)</b>	Variable speed limit sign systems minimizes workers direct exposure to traffic for placing and removing portable signs, and for covering and uncovering speed limit signs daily.
RSP T22	"Construction Work Zone Speed Reduction on Two Lane Conventional Highways" <b>(Implemented April 16, 2021)</b>	New Standard Plan for Work Zone Limit Speed Reduction on two lane conventional highways.



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## Specification Update | 2020 Safety Summit

### WORKER POSITIVE PROTECTION

Standard	Subject	Description
RSS 12-3.23 & RSS 12-4.02C(7)	"Impact Attenuator Vehicle (IAV)" <b>(Implemented April 16, 2021)</b>	Use a stationary impact attenuator vehicle to protect workers on foot within the work area when the posted speed limit is 55 mph or greater and workers are not protected by a longitudinal positive barrier system.



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## Specification Update | 2020 Safety Summit

### WORKER POSITIVE PROTECTION

Standard	Subject	Description
RSS 12-3.24	"Mobile Barrier Systems" <b>(Implemented April 16, 2021)</b>	Use with a stationary closure for work activities that may include but are not limited to pavement and approach slab replacement, guardrail and barrier repair, bridge deck and joint repair, and traffic loop detector installation.



Concrete Barrier Construction Using Mobile Barrier System for Positive Protection  
Photo Source: Mobile Barriers LLC

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## Specification Update | 2020 Safety Summit

### WORKER POSITIVE PROTECTION

Standard	Subject	Description
RSS 12-3.25	"Movable Barrier Systems" <b>(Implemented April 16, 2021)</b>	Use where lanes shifts are required daily to accommodate directional traffic volume demand or between motorists and construction work to create additional work space for construction activities.



Movable Barrier Separating Traffic  
Photo Source: LINDSAY CORPORATION

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## Specification and Standard Plan Updates | 2018 Safety Summit

### SAFETY TRAINING & CERTIFICATION

Standard	Subject	Description
SSP 12-4.02C(13)	"Traffic Control Supervision" <b>(Implementation April 2021)</b>	Responsible and has full authority to act on behalf of the contractor for administering temporary traffic control.



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## Specification and Plan Standard Updates | 2018 Safety Summit

### Worker Positive Protection

Standard	Subject	Description
RSS 12-3.20	Temporary Barrier Systems <b>(Implementation October 2021)</b>	Revised specification for Type K Temporary Railing to implement use of MASH compliant Temporary Barrier including both precast concrete and steel barrier systems.

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## Specification Update In Progress

### WORK ZONE INTRUSIONS TRAFFIC LOOKOUTS

Standard	Subject	Description
SSP 12-4.02C(14)	"Traffic Lookouts" TBA Traffic Operations	Continuously watch approaching traffic for errant vehicles and other safety hazards.



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## Specification Update In Progress | 2021 Safety Summit

WORK ZONE INTRUSIONS LARGER CHANNELIZING DEVICES		
Standard	Subject	Description
RSS 12-3.03	"Traffic Drums" TBD Traffic Safety	Revised the requirements for Traffic Drums.
RSS 12-4.02C(7)(b)	"Stationary Closures"	Required use of traffic drums for freeway and expressway ramps and connectors.
RSP T10	Traffic Control System Freeways and Expressways	Revised to add traffic drums at conflict areas at entrance and exit ramps.
New RSP T10C & T10D	Traffic Control System Freeways and Expressways – Exit Connector and Entrance Connector	New Standard Plans for using traffic drums for entrance and exit connectors.

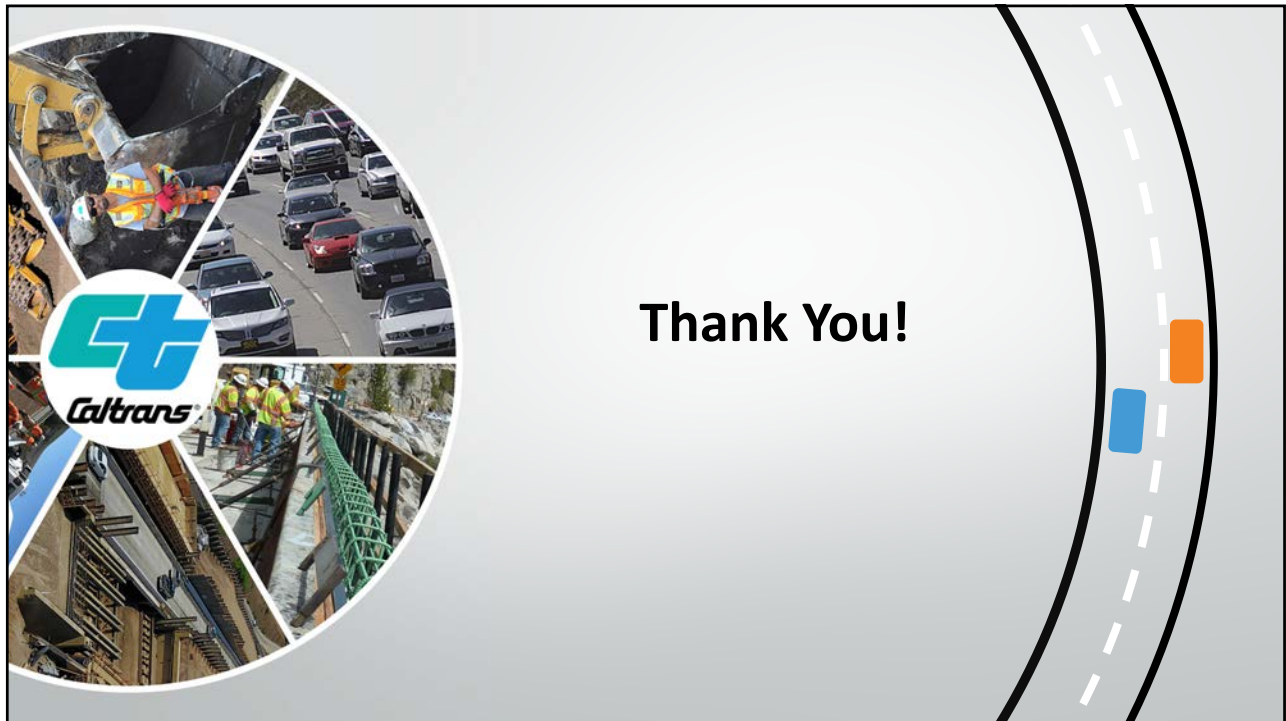
199

## Specification Update In Progress | 2021 Safety Summit

WORK ZONE SAFETY		
Standard	Subject	Description
RSS 12-4.02C(7)(d)	"Traffic Breaks" TBD Traffic Operations	Required traffic break for installation and removal of traffic control system on freeways and expressways when usable shoulder is less than 8 feet.
New Plans T10E & T10F	"Traffic Breaks"	Traffic break details.
TBD	"Construction Work Zone Entrances and Exits"	Requirements for construction work zone entrances and exits.

200





Thank You!

201

## Safety Specifications Breakouts

What is **working well**, what **needs to be revised** & what **is missing**?

Instructions:

Discuss the first two categories of Safety Specifications:

1. Positive Production Devices
2. Smart Work Zone Devices

202



# Safety Specifications Breakouts


What is **working well**, what **needs to be revised** & what **is missing**?

Instructions:

Discuss the last two categories of Safety Specifications:

1. Traffic Control Certifications
2. General Safety

203



What is one gift you have received in the last two days?

204



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# APPENDIX D

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## Safety Innovation Recommendations

PEOPLE
Ali - Change the workforce mind to believe safety and practice consistency
asking the craft employees to recommend areas to improve
Awareness
Be open to new ideas
Be open to suggestions for field staff
behavior identification
behavior identification
Believe Safety is not "Restrictive"
Believe Safety is Not Restrictive
Better Partnering with other states re best practices
Bmello - Technology should be an indicator for thought process to teach not on what to do but how to think about what to do
Bmello -Technology workflows should be tailored around frontline leadership
Change the culture.
Close collaboration between industry and public agency
Close Collaboration with partners
Coaching
Coaching
commit to drivers education in schools
Communication and Thinking for themselves
Constant reminders to employees to be watching for vehicles
Continuation of training & education
Corporate culture shift needed.
Creating and grooming leaders in the Safety industry
Culture
Culture
designate a safety person for each team
development of a culture of safety,
Discipline vs Opportunity
Distractions and Expectations
engage new staff in decision-making
Feelings vs Objective
Finding new ways to educate new staff of the numerous hazards of working in the field (maybe short video examples)
Forward thinking
get workers out of harms way
Getting the right tools for our people
good prizes for safety performance
Good Training

Helping our team members to learn
HQ goes to field to build relationship
Improve management of tc ques
Incentives?
Incorporate the public
Increase adaptation of new technology
learn from each other
Learning to do things in a different way.
Listen to Field
Listen to the Field
Make it part of the culture
make safety a way of life. Safety at work safety at home. Safety first.
Marketing Safety
More accountability
More accessible traffic control training
must work with industry to embrace new technology and innovation for safety.
No better safety device as a safe worker
Open Communication between CT and agencies as well the public
Open Minded
Ownership and Responsibility
Partnership
Partnerships with Departments. Locals, Public, Agencies for ideas
Philosophy that safety starts in the Design and is not a construction consideration
Positive Protection Safety Culture
Public Perception
public safety training
Requirement for all Worksite Traffic Control Personnel (e.g. Flaggers) be: 1) ATSSA Flagger Certified; 2) Traffic Control Technician (TCS) certified and 3) Traffic Control Technician Supervisor (TCS)
Safety is a leadership role and not another duty as assigned
safety managers have weekly meetings
Safety Value #1 ?
Speed Enforcement wolf pack CHP need Guidelines
Thinking outside the box
to listen to field workers more and attempt their solutions
Tony Aoun Side winder
trained workers
Trained workers
Trained workforce
Training
Training
Training - for drivers



Using technology to engage new staff

Working together and collaborating. clear communication and expectations

## PROCESS

Accept traffic delays...slower traffic is safer for work crews

adding designated spotter for work crews on foot

Advertise speeding ticket amounts in work zones

allow for traffic delays

An easy process to make suggestions

Automated Speed Enforcement - Speed Cameras

Automation

Better engagement with Design and Traffic in planning and design phases

Better integrate Contractor and Department safety efforts at project level

Better site lighting, more conscientious of lighting in motorists eyes

Bmello - Plan, Do, Check, Act. Utilizing KPIs for continuous improvement

Caltrans driven policies focusing on increased awareness and safety related decision making

Caltrans moves slowly

change culture

change the "sign-up" process for Cozeep...in favor of assigned Cozeep commensurate with requests

Changing the narrative to make safety a priority

CHP/Caltrans to have a COZEEP Division (Hired on in addition to Volunteer)

Clear process for vendor applications to test product

Clear responsibilities for staff

Combine Maintenance Division and Construction Division safety culture

communication is important

Communication? and Responsibility

Contractor driven procedures to improve safety amongst field decisions

contractor safety index taken into consideration in contract awards

COZEEP Training CHP & CT

Create a scale of risk level within the work zone

Creative way, seeking out different way of doing things

Creative ways to qualify contractors and subs regarding safety performance

deputize Caltrans people to use a blue light vehicle

develop a spec for contractors to drive "pace laps" safely

Don't do things because that is the way that we have always done it

Dynamic Lane Merge

Ease of usage

Easier procurement processes and budget for Safety Equipment

Education Campaigns

Elevated public awareness campaign at all levels; all venues (e.g., elementary schools, etc.)

Emphasis on contractor safety index prior to AWD. ID risk level within the work zone (for worker awareness).

Equity

expand public outreach efforts for highway safety

Focus on alerting distracted and impaired drivers

Full closures

further detailed standards regarding movement of construction equipment on or across open lanes

get more CHP speed enforcement at projects

get more cooperation from CHP from COZEED

Good Training

Hammer (when use)

How to better integrate industry in design

Identify responsibilities for staff

Implement more pilot programs for use of products

implementation

In the morning prior to commencing work review the previous days actions within the work zone with the team and note improvements and actions that could be done in a safer manner. Include those that are new to the work team that day.

Incentive for meeting safety goals

Incentivize safety. \$ per quarter without incidents

incorporate other law enforcement agencies to help with the shortage of CHP

invite of more craft to break outs like this.

Keep Fresh

like this final come around to positive protection, finally!

make sure public is more aware of upcoming closures by posting CMS boards out a week in advance with dates and times

minimize unnecessary guests - we should have employees/employers driving through closures to cut by traffic just because they can. this creates worker complacency

Monitor traffic after changes in traffic control

more buffer zones, I often see people working w/in 6'

MORE TIME - when you do a traffic switch wait a little bit of time before continuing

More time for closures - work always seems to be rushed

more uniformity to closure access / egress

New Ideas that make good ideas better or replace ideas that where not working.

New law dealing with DUI penalties

Not change for sake of "new".

Not doing things "the way we always have"

Operator certifications

OSHA 30 hour training for all staff.

Pace laps by CHP/Cozeep or Caltrans vehicles

penalties for non compliance by contractors

Pre activity safety mtgs
provide a credit card to a person on a project that can pay for effective safety items
Public awareness through social media and tv ads
Really concentrated, continued speed enforcement
Recognize the "Old School" needs to be updated
Refresher Training
Remove Low Bid
Remove red tape to piloting innovation
Require automated cone/barrel placement on all projects
Safety email within CT to bridge the gap between Design/Construction
Safety Inspection by Certified Person
Safety Policies
Send speeders automated warning notices until automated ticketing is allowed
Share incident data with other divisions, industry
Simple Task for Data Collection.
Speed trailers parked next to Cozeep
spotter required when working next to live lane
Streamlined Process to Promote Innovation
Streamlining
Stricter enforcement of speeding violations
The state of the practice for safety is continual improvement. "Safe enough today will not be safe enough later on.
traffic breaks for setting closures
Training
Uniform and fair process for competitive testing
Uniform procedures for Safety Inspection
Uniformity
updating current policies to reflect new safety innovations
use change order process to help with safety elements
Use Liaisons
Use smart work zone technology
Using hands off devices
Utilizing new technology and reviewed processes to improve safety
We need to use technology to keep our workers safe
Well defined process
WZ ITS - warning motorists of trucks entering exiting, slow downs/queueing in WZ

<b>PRODUCT</b>
AC
accelerate traffic barrel pilots
AI Incorporation
Ali - Using new technology like the ones presented in this summit.

all products keep end user involved. How does it affect the people with boots on the ground

Automated Flagger Assistance Devices (AFADS)

Automated Speed Enforcement

automatic radio signal interruption warning of upcoming work zone

Autonomous vehicle safety assist accelerated development

Availability

barrels not cones

Better plans

blue lights on construction vehicles

Bmello - Utilizing AI as an unbiased data system.

Camera Enforcement? For Tickets or require an On-line Training for violators?

Cameras in the work zone! Monitor traffic and operations. Stationary and vehicle or hard hat mounted.

Channelizing Device Displacer

Cones with reflective bases - better visibility for displaced cones

Connect PCMS signs to Waze

Cost sharing to pilot innovation

Develop tool to easily capture all incident data (close calls, accidents, serious injuries and fatalities)

digitizing software for document controls

don't follow signs

Drones

Dynamic smart work zone detours

Ensuring innovative products can conduct proof of concept testing

Halo - hard hat lighting for increased visibility of workers

Howler early warning radar device

I like the idea of cameras capturing work in the work zone and in the driver cab.

Initial Need and secondary needs.

innovative

Intrusion Detection/Surveillance - Lasers, Drones

Liked Cameras with AI

look for ideas for moving lane closures

More innovation like the barrel/cone attenuator trucks that we just saw. Anything to move people away from traffic and machinery.

More school programs - educate when young

More use of Shadow vehicles

MTB-1 more accessible

Multilane speed indicators (more than one radar feedback sign)

need technology to record and report data as to what is working - PDCA

New Products

New products with safety in mind

New products with safety in mind

New technology - scorpions that are two lanes wide or automated gates that are attached to Attenuator that are managed from the cab and can be switched to either side of
New technology and products in construction industry
New Technology Pilots
Opportunity to try products
Positive Barrier Separation
positive Protection
PPE's
Require cameras on all construction vehicles
Require vehicles and cell phones to receive work zone warnings/notices
Robotics such as setting and removing temporary signs, setting cones, etc.
safety Helmets should be required -injury / fatality seems to stem from TBI. this is something that could be a quick fix
Safety Panels
Sensors on Barriers and attenuators - Will show what has been damaged in real time and report it.
Smart hardhats with RFID, GPS and cameras
Tools that get field staff out of harms way
traffic system that keeps track of vehicles point scale that
try more of these barrel/delineator movers, never see this
Use Camera / Technology
Use ITS to send message to phone/car entering work zone
Use of cameras for incident data capture. This results in no need for data entry by field staff
Use of Moveable barriers
Use of Pilots
Use of pilot programs for products
Using technology to reduce worker safety
Using the latest technologies to enhance safety. Maximize utilization of drones.
Utilize virtual conventions for new/improved safety products
utilizing available technology
Video and AI to detect work zone intrusions
video cameras in work zones
Videotaping or recording work zones with speed boards
What can products due that people do now to make it safer
Workers personal lighting
Work zone intrusion alarm
<b>OTHER</b>
\$ available but not taken away if not spent
AI
Automated Driving , Beta testing in real time in live traffic
Automated Driving , Beta testing in real time in live traffic



Big Data
Change Behavior
Complete buy in from the top
connected work zones with real time reporting
cost
Deputize CoZeeep More Help
DUI checkpoints in construction
Fund extra Safety needs Separate from Contract (CVC)
Having research \$\$ in place to evaluate products
How to get good crash data.
Law enforcement lights on vehicles
Liability because of unknow aspects
Management Directive to address recent incident
More AI and ML
more daytime work windows
New safety products
New Technology Pilots
Organizational Support to try things
Pay more for better products - not rely on Low Bid is best.
Provide grant for using new innovative tools
Reconsider Traveling Public "Believe" Speed Zone
Safety is not restrictive
Sensor Zone
Time to do Safety Brainstorming
to replace the aging roadway, increase safety
Traffic School for Work Zone offenders.
Understand Safety has no limits.
Uses technology and data from navigation apps
using iCone and other connected work zone manufacturers to show all work zones that are taking place in CA in real time and relaying that information to the general public.
using technology to save lives
Value Good Data vs data.
Who is going to drive these changes
Work zone cameras focused on public - use as public awareness for bad driving habits



## Safety Initiative Success Indicators Recommendations

<b>SAFETY INITIATIVE SUCCESS INDICATORS</b>
<b># OF INCIDENTS</b>
# of workers that go home unharmed
'% of time we worry about safety'
Ability to recognize jobsite hazards; traffic lookout
Actual data through cameras, etc. Collect data.
actual speed reduction data
AI Camera like Contractor presented yesterday
all stakeholders should be involved in decision making
allow use of full matrix PCMS boards that display or replicate roadside signs.
Annual safety report
Are the speed reduction zones helping? Are we tracking speed reduction?
Are we reporting out near misses and intrusions?
Are we seeing reduction of speed through work zones?
automated enforcement in work zones or speed reduction by CHP in work zones
Being Open to think outside the box.
benchmarks for success
Bip
bmello - AI Technology to establish unbiased behavior-based safety data - Leading indicators
Camera to record operations of traffic control and traffic intrusions
Can we measure if the field staff feel safer?
Change in culture
check on speed
Close calls
Contractor staff feel that safety is a priority
Contractor's responsiveness the a safety issue
Criteria should tie with Zero death/major injuries such as rate of progress
Dashboard to track safety reviews - both contractor and state
<b>DATA</b>
Decrease in injuries, accidents, incidents.
Drive behavior of the traveling public
Enhance Enforcement
employee morale - monthly questionnaires to establish how comfortable they feel on-site.
Employee Satisfaction
Encourage more use of mobile barriers by sponsoring change to Tax Code for equipment depreciation or state-funds to back SBA loans
enhance enforcement
Getting public buy in
getting the work force fully engaged in work zone safety
Have lookouts to monitor intrusions and close calls

Having an open discussion about any near misses that may have occurred and proactively acting on them

Highlight what went right as much as what went wrong

hrs worked? Incident ratio

Identify risks by workers and find ways to minimize, and most importantly avoid, these risks.

improve ACCIDENT DATA COLLECTION AND ACT UPON THE RESULTS

improve data collection pre and post activity

Improved information sharing between agencies

Incidents in construction sites with similar attributes

Increased productivity

Increased safety meeting attendance

Innovative Attitude and Outlook

investigate all injuries and accidents. root causes may have similarities

KPI's

Lee

Measure speed reduction

measure the severity of the incidents and injuries

Measure unsafe conditions to prevent accidents

Measure vehicle speeds to see if drivers are complying

Measuring near misses and close calls

Mentorships

metrics on speed reductions

mg

Michael Tuttle

Miguel

mo

modify payment of IAV from EA to part of the TC system

Monitor close calls, causes, and time in between

Monitor hits on safety devices

Monitor severity of crashes and how equipment was damaged

monitor the severity of the impacts on traffic control devices

More Accountability

More speed enforcement in work zone. Queue Monitoring / Management.

More training to improve worker knowledge

Near miss reporting

near miss reporting incentives

no fatalities

Not shying away from Innovation

Number of COZEEP enforcement actions

Number of incidents reduced

number of preventive safety training

paying attention to drivers' behavior

Proactive Safety Index

public awareness of their responsibilities
public awareness of WZ
Public Perception - Real Time Speed Limits
Public Perception
public understanding of WZ's
public's awareness
Quarterly craft survey of the initiative
queue monitoring, management,
Quick contractor response after identified issue
quiz field people to see if they feel safer.
Radar signs to collect the pre-and post- speed limits data
Radar that warns of intrusions also tracks the intrusion
Real Trust
real-time feedback
reduced number of "close calls"
Reducing fatalities and injuries are zero
Reduction in number of issues reported on weekly safety inspections
Reduction in safety violations
Reduction in work zone speeding
Reduction of incidents
Regular measured safety inspections
Regular surveys for staff re. safety
require training from Smart Work Zone manufactures to implement and operate their systems
Ring Doorbell-type video monitoring to track intrusions and close calls
Safety App to give real time information
Safety MOJO reporting
Safety or Low Bid?
Set up tools to measure speed in the Work Zone
Simple Accurate Data Collection
Site Docs-Safety Mgmt. Software
Software that detects traffic anomalies
space between the public vehicles and workers
SPEED
Speed Camera?
Speed of traffic through work zone
speed reduction
speed reduction signs
Speed Trailers prior
staff comfortable talking about delicate safety issues
Support to the staff from supervisors and RE's
surveys from public
technology toward safety
testing before implementation

Top to bottom authority and awareness to stop an operation for worry of a safety issue and support from leadership for this action

Track Attenuator/Moveable barrier hits

Track near misses and complete root cause

Track number of tickets for speeding in Work zone

Tracking Close Calls and Lessons Learned

Training

Training focused to experienced incidents/close calls

use existing technology

Work Zone Intrusions

worker perception (contractor and CT project staff)

worker satisfaction

Work zone instruction reduction

Zero recordables

## Safety Culture Recommendations

ACTIONS   INTERNAL
"Be Safe" told to staff
Actions Legislature actions for automated speed limit enforcement. Rather than citations, use as an educational tool
All hands meetings from the top down
All-Hands meetings (w/Deputy)
Backup cameras on vehicles
Be willing to try things on a smaller scale
Begin meetings with safety topic
Better partnering with other states re best practices
Biweekly incident review meetings
Bilingual safety in instruction
Buy-in Collection of beliefs
Cameras on contractors' vehicles
CHP enforcement
Communication
Cone Zone Campaign
Construction work plans
Continuous training
Correcting issues in a timely matter. Not get to it when can.
COZEEP Enforcement
COZEEP is working
CT has an innovation SME to promote innovation at the HQ level
CT hired a Chief Safety Officer and Division of Safety Programs this past year.
Daily briefings beginning and/or end of shift
Daily job hazard meetings
Do what you say
Don't allow employees to take chances - traveling public gets bad impression
Don't sacrifice safety for cost.
Educate our employees regarding new plans/specs regarding safety
Eliminate risk in work environment + modify work techniques to prioritize safety
Employee culture is easier to influence than public culture
Encourage people to try things and evaluate. don't allow to be risk averse -- need top-down support
Enforcement on DUIs
Ensure staff are safe on the work site
Ensuring CHP enforcement
Establish clear expectations for safety behaviors
Everyone is responsible
Extend work windows

Feedback "loop" regarding what works
Full Fwy closures with detours
Greater use of speed feedback or pilot speed safety cameras
Have open discussion with Contractor looking ahead
Have someone drive "pace" laps when necessary to help slow traffic
Having knowledgeable safety SME's
Hazzard Assessments
Implementation of DIB91 Positive Protection
Incentive with insurance: driver discounts
Inspect. People do what is checked
Institutionalize safe systems approach
Involvement
JHA's / THA's
Keep sharing safety statistics
Leadership Interaction
Leadership to trust, but verify, safety activities are being met
Leading by example
Long term and short-term goals
Look at pedestrian safety
Management Adopting and Financing New/Innovative Ideas
Mandatory use of radar speed feedback signs on all projects
MAZEEP/COZEEP (CHP Presence)
Mentorships
Messaging we receive in work zones
Model the way - don't wait for others
More positive recognition
Most accidents are due to motorist error
New hire training- Day one, all hands.
New specifications setting safety requirements and standards
Not giving projects to contractors with unacceptable safety record.
Not what we want: Build it per plan & don't ask questions
Notice and recognize the daily positive actions to encourage safe behavior.
Ongoing Education/Training
Open communication
Open communication on current trends and recent incidents
Open Communication-Encourage it, less intimidation
Open to testing and evaluating proof of concept products.
Owner Safety Incentive
Participation
Partnering
Policy changes
Positive Protection devices Specs



Positive Protection in Work Zone
Positive protection measures required by design bulletins
Pre-activity Meetings
Pre-task planning
Procedures, standards, guidance
Public campaigns
Raise awareness
Realtime speed feedback signs
Reduction of distractions while driving
Remind employees to drive slower thru other work zones, especially in co. vehicles
Reporting Near hits and Good Catches
Research BMPs
Retraining for Safety violators
Safety awards
Safety Campaign with Statistics
Safety first attitude => addressing safety as #1 priority
Safety is first topic of discuss.
Safety meetings
Safety meetings Job and hazard specific
Safety Orientation and Relay Safety Culture from very beginning
Safety training
See Something Say something
Signage, striping, and markings in good condition
Social Media
Start every meeting with a safety message
Starting a meeting at all levels with a 'safety' discussion reminded staff & showed commitment
Tail gate meetings
Take 5 for safety before starting new operation
Training
Training
Training
Training
Training & Awareness
Training (Providing)
Training and safety reminders meetings and communication between staff and supervisors
Training our staff on other areas & who the contacts are
Upper management/exec participating in project inspections
We are testing and evaluating new innovative products constantly.
We need to be trust based. If people believe
We need to provide and receive feedback
Weekly audits
Weekly safety buddy system shared responsibility for safe actions every day. know your buddy

Weekly Safety Meetings  
Zone guard barrier rail very effective

## ARTIFACTS | INTERNAL

Acknowledge past mistakes

Audits

Automatic Flagging Asst Devices (AFADs)

Awards

Bring back safety SWAG for CT employees. Fun reminder that safety is a priority.

Cameras

Cards in vest for employees

CEM 0606 Weekly Inspections

CHP COZEEP

Code of safe practice

Communicate safety with stakeholders Outreach, Videos, websites, etc....

Cone Zone

Consistence trainings for new and current staff

Data Collection

Detailed weekly safety checklists

Digital message board w/ reminders

Disincentives for not addressing safety issues promptly

DMV construction zone exam to obtain a driver license

Don't leave message boards lit when nobody working (if not applicable)

Email suggestion box

Ensure that equipment and reminders (posters) are updated

Explore any new ideas especially technology related to enhance safety

Fall protection devices (actually worn)

Halo Lights

IIPP

Implement Innovative solutions for safe roadwork

Incentives for maintaining a safe work zone

Insure no conflict between plans and specifications

Issuing, updating of safety gear - mandatory and promotional/ rewards

Job hazard analysis

Lessons learned written memos

Maintain work zone signage, markings, etc. and make sure lines are clean and visible

Make sure safety meetings are conducted in English and Spanish

Mandatory training

Merch w/ reinforcement of safety importance

Multilane speed radar

My family works in the WZ campaign

Near miss cards with rewards as an incentive to report them

Positive protection measures: qcmb, armor guard
PPE
PPE / Uniform
PPE's
Radar speed data
Safety driven procedures
Safety Incentives
Safety reports done daily and, in both languages,
Safety starts with me!
Satellite phones in remote projects
set policy to dedicate additional budget for traffic safety in work zones in projects
Share Lessons Learned Statewide
Signage for both public and work
Smart forms to alert of issues - active communication
Social media campaigns with influencers
Something in between positive protection & temporary delineation. in terms of protection, cost, and setup time.
Specification development that evolves with available technology
Speed radar feedback devices
Standards change & people keeping doing what they knew
Static messages - need to change regularly
Stop Work Authority
Suggestion cards for workers in the field to fill out
Temp paving and transitions should be smooth and in good condition, otherwise
Thorough project safety reviews
Track and Report Incidents
Tracking matrices for various safety functions for people development
Working with a positive co-worker that shares their experience to help people grow

<b>ATTITUDES   INTERNAL</b>
Acceptance, acknowledge, accepting the innovation. Create buy-in
Always be alert
Believe Priority
Cannot "overcommunicate" Safety...involve EVERYONE in safety meetings and ideas
Challenge: convince drivers that paying attention and not speeding Can make a difference in THEIR safety.
Challenge: convince employees and supervisors we CAN make a difference, but they CAN
Champion safety messaging daily
Collaboration
Collective Improved focus on Safety
Communication
Communications between contractors and Caltrans as well as lessons learned

Connect the latest benefits of new devices clearly to designers to have full buy in.

Create total buy-in by allowing for open door policy. Everyone has the ability to come up with ideas

CT has implemented four pillars of safety to change the culture at the Department

CT is resistant to change, e.g., AFADs

D10 Developed SPI Team to review safety projects to accelerate process to deliver projects sooner

Designated safety person with increased compensation

Disseminate information from HQ regarding safety regularly with field

Don't let things bog down in middle management

Drive to do what's right!

Empathy/ Care

Empower Field Staff to make suggestions

Encourage field staff to meet with Contractor personnel each morning to discuss activities

Enforcement of safety in work zones

Engagement

Ensure safety leadership engaged in developing people's safety attitudes with measurable objectives

Everyone is responsible for Safety

Everyone's opinion is heard

Field employees need to know management's determination regarding safety

Focus on the vision Zero but provide context from today, 10 are not going to make it home today on CA roadways

Foster attitudes through leadership engagement and demonstration of attitudes

Friendly & positive

Funding commitment to COZEEP

Get the information out to all

In Construction: new attitude that there IS enough money for safety

Industry participation input and safety proposals

Ensure that designers think of safety first and implement safety throughout the whole process

Integrated Safety meetings with CT Const. staff, CT Maintenance staff, Contractors, etc...

Investment in safety

Job site observations incentive

Lead by example

Lead by example

Lead by example by supervisors

Leadership commitment to safety

Leadership is committed and supportive

Leadership visible in the field.

Leadership with both public and private

Low bid doesn't really work with safety too w

Make sure everyone goes home safely

Not what we want: The plans were reviewed, and no one commented on it
Open to new ideas
Openness to one another
Operation could be more flexible in longer lane closure and full freeway closures
Personal Tolerance
Positive feedback to workers
Positive reinforcement not punitive
Positive reinforcement on proactive measures
Promote longer work windows and buffer lanes in work zones through public outreach
PSAs notify the public about projects and to promote safety
Publicly acknowledge good employee safety behavior
Reinforce those changes must be made to improve safety for all road users/workers
Remove fear of change
Safe road users
Safety attitudes start from the top. If the foreman does not show it the workers will follow his/her lead
Safety doesn't cost more
Safety first attitude from leadership
Safety focused Leadership
Safety is 24/7 not 9 to 5.
safety is important
Safety is Teamwork Responsibility
Safety needs to be first
Safety starts with Leadership
Safety tagline on all correspondence, media, manuals, etc. as a safety reminder
Safety topics relevant and applicable
See a safety issue say something. don't ignore it.
See something say something / Take prompt action
Setting Safety Policies
Some contractors don't want to change from the old ways of doing things so as to not ruffle feathers in Caltrans
Starts at top with Exec team making job site visits regularly keeping safety at the forefront if the crews minds beginning with tailgate meetings and continuing with observations throughout the shift
Summit that brings leaders together
Tailgate Safety meeting - change in attitudes (not just a mandatory requirement)
Team approach to safety- Caltrans, Contractor, CHP, Local Agencies
Tie compensation/raises/bonuses on safe work performance.
Training (Attending and Learning)
Try new products such as Sure Curb
Try new things
We all are in this together



We are in it together: PM, design, maint, contractors

When the project superintendent/foreman demonstrates, he is committed to safety

### ACTIONS | INFLUENCE PUBLIC BEHAVIOR

Add campaigns, discounts on registration fees, insurance fees for good driving behaviors.

Advanced notice to public for construction changes (use pio)

Allow for other law enforcement to serve as COZEEP/MAZEEP to help with resource needs

Allow more daytime work, drivers are more alert and likely fewer are under the influence

Automated message to all vehicles traveling through a construction zone

Behavioral change

Body camera to pick up safety behaviors

Budget time for people to be able to communicate

Build public acceptance of increased traffic delays and inconvenience to achieve road safety in work zones

Capturing Relevant Data

CHP enforcement

Comprehensive & coordinated effort

Coordinate at local level with partner agencies, industry, CHP on best practices, trends, etc.

Create congestion to reduce speeds

CT vehicles with red light

Dedicated safety lead on job site

Door to door in neighborhoods we work.

Double fine zones

Educate on not to DUIs.

Education

Education

Elementary school programs to start safety culture with young - similar to smoking campaign

Encourage communication & respect

Focused CHP enforcement

Have a true debate

Howler work zone intrusion devices to stop intrusions

I'd like to add to this one that CAS should be removed promptly when no longer needed.

Lessons learned meetings

Let public know about upcoming projects via social media and news channels

Management needs to get the Safety ideas/policies to the field level

Media/Social Media Campaigns

Median rumble strip on 2-way highway

More CHP enforcement in work zones like other States. Should be a fear.

More outreach to schools; start early. Sponsor events, give out merchandise

More speed enforcement



Most of the public still don't know there's a 10 mile per hour speed limit reduction in the work zone
Nav App driver notifications. Warning light triggers notification in real time
Outreach about workers being "people" and having "families"
Persistent maintenance of construction area signs
Pilot use of cameras on roadway (ASE)
Positive barriers or full closures
Post Fatality numbers on CMS
Post License Plate of vehicles going at higher speeds in work zones for real time feedback
Post number of incidents in work zones on portable CMS in the work zone
Presence of CHP
Proactive -- Click it or Ticket type enforcement
Proactive -- Upload dashcam video of bad driving behavior and CHP can take action, track
Proactive Speed Reduction
Promote/public outreach speed limit reduction in work zone
Providing Detour Routes
Public Awareness
Public Information Messaging
Radar Feedback
Reduce distracted driving
Reduce Speed
Require DMV testing include work zone safety
Safety messages on CMS
Share safety messages with the public. "Double Fine in Work zone" or "zero tolerance" for speeding
Speed Reduction
Staff not listening to Contractor input
Texas DOT has vehicles equipped w/ Blue Lights (folks think it is PD)
Ticketing from COZEEP enforcement
Training
USE FSP
Use safety awareness campaigns to reinforce awareness of worker safety to prevent complacency
Use social media for public service announcements
Use social media to influence public
We need to encourage the public to slow down. Signs are not enough

<b>ARTIFACTS   INFLUENCE PUBLIC BEHAVIOR</b>
Active communication to alert the public - Apps
Active warning systems
advertisement Show casing a culture of safety to the public

Advertisement to the public what initiatives are being taken (safety week)
Analyze all near misses and develop an after-action plan
Annual safety award. perpetual trophy
Artifacts tools to the traveling public
Automated flagging systems
Autonomous vehicles
Bi-lingual safety meetings.
Cameras on contactor vehicles
Campaigning
Capturing Critical Mass Data for Proper Decision making for travel routes/detours
Collect speed data to verify work zone speed reduction (available w/speed feedback signs)
Communicate with the public on why certain devices are there and how it impacts them.
Connected Autonomous Vehicles
Documentation of actions taken implementing safety
Educate on financial and other consequences
Engagement & Buy in Information
Enlist cooperation of Insurance companies. Specific discounts for telematics in work zones.
Having tests to see how well the public understands work zones
If speed is the culprit for severe accidents, we need to think about using automated work zone ticketing for speeders with technology
Inform & educate information to the public
Inform the public of new safety initiatives being implemented (CMS, media, e-blast.)
Leaflets Flyers with safety messages
Maintaining work zone signage
Monthly safety report
More public outreach
Need dynamic messaging in lieu of static signage
Notification application
Notify travelers of Active vs Inactive Work zones
On-road notifications CMS
Partner with auto manufactures to implement technology in vehicles for work zone safety
Partner with national, local social media influencers, old media (cable, print, radio) does not get to younger population
PIO's
Positive protection
Positive signage for the public
Posts mounted with red, blue lights used intermittently
Projection of an image on pavement prior to work zone
PSA
Public notifications and educations and outreach
QuickMaps
Smart cars

Social Media
Social Media and apps real time crash information
Social Media to promote safety messages
Speed feedback with ticket information
This needs an education campaign. My company does Traffic Control (mostly flagging) and the Contractors aren't aware of AFADs. The fix would be for Caltrans to specify them into the worksite traffic plan scope of work. This is critical! It would remove the resistance from the Contractors who aren't aware of AFADs.
Tie queue warning into WAZE and other map navigation
Traffic calming measures
Uniform PPE
Using PPE/vehicles properly
Vehicle lockout devices to prevent impaired drivers
Videos, podcasts, social media blitzes, discounts

### ATTITUDES | INFLUENCE PUBLIC BEHAVIOR

Action collaborates with driving apps. i.e. Waze. Uber, Lyft to display Public Awareness messages related to work zone.
Attitudes integral CT policy regarding implementing work zone speed reduction. Too many cases implementing when not meeting the criteria.
Attitudes speaking about everyone goes home at the end of shift
Cameras to track traffic
Changing the public view that "it won't happen to me" crashes can happen to you
Coaching & Accountability
Communicate constantly that speed kills. Don't drink and drive. Don't text and drive.
Communicate effectively with the public on how the latest safety devices and systems are enhancing safety of the public.
Cone Zone Campaign
Construction Work Zone fatigue
COZEEP is a huge element
Create congestion to slow down drivers
Create congestion to slow traffic
DMV
DMV testing for new and old drivers
Documentary or advertisement about consequences of severe accidents due to drunk driving and speeding
Driver Awareness in Traffic Control areas
Driving Impaired - Use of Uber/Lyft as an alternative to driving under the influence
Education by utilizing the DMV. Create good attitudes from the beginning.
Enforce the 55 MPH zones when workers are present
Engaged / active enforcement
FHWA supporting Caltrans in the Safe System Approach

How can reduce stress
Incorporation of safety culture - VZ, Safe Systems Approach into administration priorities, funding legislation
Instill a safety culture across the entire team
Media campaigns
More public education of traveling through work zones
National Recognition of VZ and safety culture
Need to believe in the program - continued discussions about incidents - keep in our conscious
Partner with insurance companies to increase "Safe Driver" incentives
Personalize work zones - use of kids and grandchildren in campaigns
Public awareness towards the dangers on the roadways
Public Believe Need
Public campaign ads with simulated work zone incidents
Public needs to be educated about our attitudes toward safety
Public Outreach
Public perception needs to change from being a nuisance to an inconvenience
Public Safety Campaigns
Publicly recognize in a positive way when people step forward to do the right thing
Real Speed Reduction
Relate our message at personal level
Show speed data in the work zone
Slow for the Cone Zone campaign
Slow for the Cone Zone messages
Speeding is not acceptable in WZ
Striving to change view of roadway construction not as a burden on the public but as a betterment for the common good.
Time Management Skills to plan ahead and not need to speed to get to your destination
Travelers don't know about the WZ dangers to workers

## Safety Specifications Recommendations

<b>POSITIVE PROTECTION DEVICES   WHAT IS WORKING WELL?</b>
Additional mandates/specifications to increase safety
AFADs for longer duration projects
AFAD's work well with longer duration closures
Attenuator trucks
Attenuator
Attenuator Trucks
Attenuator trucks work well...more use should work well
Attenuator vehicles
Automated flagger
CT balsi beam in use by Maint
Full Closures
Full freeway closures
Having clear line items so that everyone is bidding on the same product
I have not seen positive protection devices other than k rail
IAV are working well
Identified the need for temp barrier systems
Impact attenuator vehicles work very well during construction
Impact attenuator usage is good
K rail barrier
K-rail
K-Rail offers less expensive, easy, quick, installation protection
K-Rails
Maint and contractors using attenuators daily; CT Maint acquiring more
Mobile Barriers protected the work zone
More use opportunities of IAV
Movable barrier rail system works well, bit is costly.
Moveable Concrete Barriers
Q-Trucks
Spec changes are good if training is provided to CT and Contractors efficiently.
Steel Barriers
Supplying all PPE with good Quality
Temporary barrier system good protection for workers
Temporary barriers are easy to setup and install
TMA
TMA's
Truck mounted attenuators
Use of positive barriers
Zipper rail
The Zone guard system is working well. Great protection for workers. Impact minimal

<b>POSITIVE PROTECTION DEVICES   WHAT NEEDS TO BE REVISED?</b>
Add more of it into traffic design
Additional attenuators
Are we providing adequate training to designers for MASH compliant barriers?
Can something more be done with Balsi beams?
Can we include industry in training with design?
Certain amount of equipment per footage
Certified TMA operator (Certification Class/Training)
Challenging transition to new MASH systems
Clear on compensation for devices - call out as bid item pay via change order
Consistent interpretation of what is required and when
Crash cushions and lighted message boards get hit A LOT! Can they be changed to help drivers avoid them???
Expand use of mobile barriers
Flexibility for time and need
Getting all divisions on board with evaluation of safety devices during design
Hesitation on using some of the new devices
IAV availability
Is it acceptable to use non crash rated devices within closures
Maintenance of devices during construction is an issue
Maintenance of these devices
Mobile Barrier System is not easy to store
Mobile Barrier System: Not popular with contractors since the system gets distorted when hit and it is not easy to fix. Also, storage of devices is not easy.
More of it
More options needed
More positive barriers need to be used
More reflective material, especially the bottom, of cones, drums, delineators
Movable barrier can be very expensive, investment by industry
Need new CT MASH rail adopted
New protective devices have large offset
NSSP to allow k-rail and default to clear-area offset
Review of buffer lane spec on what activities are exempt
Revise Specs to require TMA to protect workers in work area when active (after setting closure)
Road closures need to be exempt from PWP 1301
Temporary barriers are difficult to maintain (move, get chipped)
TMA TL consistency across Const TL-3 and Maint TL-2
Too soon if DIB 91 (PWP) in preconstruction is working - need to track
Training for both design and construction staff on the implementation of new devices
Training on the usage of the impact attenuator and how to effectively use on the project
Ways to address the cost of the specified safety systems
When Mobile Barrier is struck or damaged, it can be costly and timely to repair



## SMART WORK ZONE DEVICES | WHAT IS WORKING WELL?

Ability to control signs from one component

Adopting Smart Work Zone Devices - Encourage and praise (i.e.: AFAD, etc...)

Adoption speed of technology

AFAD works well and is cost effective

AFADs

AFADs work very well

AFD's working well

Automated flagging

Blue and red Lights

Buffer lanes

Camera detection systems for safety data

End of queue data available to TMC

End of queue devices work well on freeways

Expanded work windows

Maint using AFADs; some mixed response (hassle to set up, etc.)

Mandatory joint tailgate safety meetings daily (or when a operations change) to discuss the daily work, traffic handling, and roles & responsibilities - Take Five minutes to discuss with all including new subs that show up.

PCMS (Permanent and Portable)

Portable Changeable message sign in place of advance flagger

Portable CMS

Portable Radar Feedback signs communicate info

Prime contractor allowing traffic control sub to communicate directly with RE as to where to place traffic control devices.

Queue Warning Type I & II

Real-Time Travel Time/Delay monitoring for public notices

Speed feedback signs

Speed feedback signs/radar

Speed reduction systems

Speed/radar boards help somewhat - Message reading "recording work zone" looks like it works well

Temp Automated End of Queue Warning System

Tie data from speed feedback to enforcement

Tigger signs

Use of ramp intrusion devices

Variable speed limit signs

SMART WORK ZONE DEVICES   WHAT NEEDS TO BE REVISED?
Add to the speed reduction spec the requirement to cover the signs when the hazard is no longer there
Artificial Speed Zones
Automated flagger assistance device clarification in bids the number of operators required
Automated speed/data collection to help enable focusing on problem areas/work zones
be conscious of sign pollution and diminished return with too much signage
Buffer lanes a problem on 3-lane roadways
Capture all lanes with speed limits and radar
Change culture to accept longer delays
Drivers ignore 55mph WZ speed limit reduction
Have no message on Queue Warning system CMS boards when traffic is flowing normally
Implementation in the field of speed work zone reduction is not consistent and confusing to the public
Increased usage of variable speed limit signs
Increased use of QCMB
Is 24/7 reduction always appropriate
Meeting on AFADs pay item discussion so less confusing
More enhanced worker visibility on safety wear.
More training for Maint on benefits of AFADs
Obtain data from speed feedback signs if possible
Permanent or variable speed reduction is dependent on roadway conditions
Portable Speed Feedback signs - Specs and Enforcement
PRFS: need to move these & speed limit signs to the work area
PRFS: Need to turn these off during the non-work times if not needed
Problem: to many signs, the public gets confused
Protection measures left in place during periods of no work and public disregards
QMB Barrier may solve this.
Queue Warning to advise oncoming traffic congestion ahead - Consider keeping after 2 weeks of initial closure
Radar feedback signs are on 24/7; value and message is lost with the public
Radar Speed Feedback signs work well when used properly. Overuse could cause complacency or dismissal.
Real time information to the Public
Security of devices from being stolen
Speed radar - some sort of ticketing increase system, point system that can go toward driving record
Speed Reduction
Speed reduction only during the time that work is active
Speed reductions more effective with CHP presence
Speed zones are not implemented correctly
Theft of smart devices has been an issue - how do we secure?



Realtime work zone information
Reviewing and implementing other countries' practices for work zone safety.
Revise radar feedback sign specs to coincide with actual enforcement by CHP
Rumble strips or speed bumps when down to single lane work is required
Scope of work Safety Spec Sheet
Small businesses could be unable to do all the new specs
Speed detection and automated speed enforcement
Speed enforcement by CHP in work zones is not occurring
<b>SPEED MANAGEMENT TECHNOLOGY</b>
Standard safety messages for work zones
Target small businesses at local/regional Industry Meetings
Training for designers, construction, industry
Training on when/how to implement and use devices
Work zone data exchange (limits, work being conducted and uploaded to a national database)

<b>TRAFFIC CONTROL CERTIFICATIONS   WHAT IS WORKING WELL?</b>
Caltrans checking for certification at the construction site
Can look at ATSSA website to see certifications
Certified flaggers have been beneficial
Certs Promotes industry professionalism/excellence
CT Maint adapting to COVID training limitations by going directly to Districts w/smaller classes
Excellent Step forward for safer work zones.
Flagger certification compliance
Flagger training
Good requirement for the industry
Good training material
Long standing training by ATSSA certified trainers for CT Maint flaggers
On the job training
Promotes Company's commitment to safety
Required Certification
Requirements help keep prime contractors honest for traffic control
Spotters
Standardizing training helps ensure consistent traffic controls
Standardizing training is helping ensure consistent traffic controls
Too soon to tell
Traffic Control supervisors have positive impact

<b>TRAFFIC CONTROL CERTIFICATIONS   WHAT NEEDS TO BE REVISED?</b>
A Traffic Control contractor certification. To teach the contractor what is expected of them.
Appear to be inconsistencies on industry side for certs and other designations
Caltrans and partners might benefit from the same level of training to help ensure compliance

Caltrans and Partners might benefit from the same training to ensure enforcement
Clarification for requirements on when/how to submit certifications
Contractor/REs need to meet more often to discuss safety – 0606 Form
Good certifications, but class availability is limited
HAS CERT HELPED IN GROWTH IN PROFESSION? TO ENCOURGE CLASSIFICATION AND ADVANCEMENT.
Maintenance is not always certified to repair, replace, maintain devices
More availability
More changes are needed to maintain consistency
More clarification for both the contractor and CT as to the requirements
More education for contractors about how online training is not accepted.
More flaggers written into plan
More on-the-job training cert requirements
Need more class availability
Offer training to small contractors
Possibly have CT trained as well
Require those implementing traffic control to have a copy of Plans/Specs
Required training in quality standards for traffic control devices
Revisions to requirements on licensing of traffic control certified contractors. Re-certification or license renewal every X number of years
TC Certifications must be checked by ARE. ARE not aware of this requirement
Training expectations
Training for REs and Contractors on the specifications
Training needs to verify certification requires ability to read Traffic Handling plans

<b>TRAFFIC CONTROL CERTIFICATIONS   WHAT IS MISSING?</b>
A requirement for on-the-job training before you can be certified
Awareness to construction both Caltrans and industry
Bigger contractors can comply while smaller contractors have trouble complying, especially if there is a financial need.
BOTTS DOTS WERE EFFECTIVE FOR CONSTRUCTION ZONES.
Communicate with new/small contractors/subcontractors on certification requirements.
CPDs do not reach all construction employees
Defined KPI's
Designate a safety person on each crew
How long is a TC certification good for and is there continual training required
It there a missing link between contractor licensing requirements and TC certifications
Liability protection when everything is "perfect"...contractors still carry the huge cost of defense when claims arise.
LINK TO ATSSA FLAGGER AND CONSTRUCTION ZONE CERT - LINK ON CALTRANS EXTERNAL WEBSITE
More Maint Supervisors need to be enrolled in Traffic Control Tech/Supervisor training

More outreach to make sure information is shared.
More technician and supervisor trainers
Not clear on if, or how certifications are being checked or enforced. Best practices and lessons learned should be shared
Provide opportunity for local agencies to comment on proposed specs for new devices, etc.
Providing these training virtually
QR/Photo ID to verify certification
Requirement for TC personnel to ensure traffic control devices meet quality standards
REs needs to increase verification of certifications including updated devices
Rewards to individuals for personal equipment: GOOD Boots, etc.
Some form of liability protection for when things are "perfect"...the costs of defense are getting crazy for frivolous lawsuits.
Trade Union engagement
Updates sent out to all Traffic Control contractors

<b>GENERAL SAFETY   WHAT IS WORKING WELL?</b>
BE WORK ZONE ALERT BANNER DISPLAYS
CHP
Communication has improved
Continuous safety training. ADA/safety devices/traffic controls.
COZEEP - wolfpack activities
COZEEP/ MAZEEP
DOUBLE FINES IN WORKZONES
Haven't used the "lookout" spec yet but it should work well
Increased awareness seems to have led to an improved safety culture
Increased use of full closures
JHA are a legal requirement. requiring them is positive.
Job hazard analysis being used by CT Maint
PIO- CAMPAIGNS (OTS, DMV, CT, CHP)
Point of contact for action item follow through
Project safety coordinators assigned by contractor and "owner" on projects
Project safety review has produced positive corrective actions
Required Safety Representative
Safety quality control managers
Safety Representative has had positive impact
Safety reviews close-out/lessons learned
Safety Reviews consistency documented
Spotters
Tail-gate safety meetings
The constant reminders of dangers out in the field
The use of PCMS/Radar Signs/COZEEP/Attenuators



Too soon to tell
Traffic breaks work well

<b>GENERAL SAFETY   WHAT NEEDS TO BE REVISED?</b>
Annual Safety Refresher training needs to include all CPDs
ARE PAVEMENT MARKINGS AND SIGNS ADEQUATE?
attitudes to accept new equipment and processes
AUTOMATED VEHICLES AND WORKZONES DRIVER ATTENTION AND INTERACTION
Bigger presence in the field of Contractor Safety Officer
CHP should be placed in advance of work zone - sitting in the closure allows speeders and drunk drivers to get to close before doing anything
Class 3 all the time
Color of hard hat to identify novice/rookie separation from experienced workers
Contractor understanding that obtaining COZEEP is limited by the number of CHP volunteers, COZEEP isn't a contractual item between CT and the Contractor, but we try to get them
Corrective action documentation
Designated spotter before job starts
DISTRACTED DRIVERS IN WORKZONES AND APPLYING SAME THOUGHTS AS ADDRESSING SPEEDING
ENFORCEMENT OF SPEEDING
ENSURE PROPER APPLICATION OF TEMPORARY STRIPING
Fall protection/ excavations, compliance is terrible
Flaggers should be placed in advance of work zone.
FULL CLOSURES WHEN ACUTE AND FEASIBLE
Funds for additional manpower - we will need operators for all the equipment
Have more standardized training of safety inspectors
Improve on what is existing
Increased reporting on actual incidents and close calls
Information is not getting to staff on the changes that are occurring
Look to change bidding for Safety Related items...perhaps take them out of the total bid cost for determining award or put it into a full CCO approach.
more emphasis with use of electronic devices
More support and field presence from managers and supervisors to field staff
Need more experienced staff on the CT side to cover the area. Ties to COS cost issues & limits.
Need more Law Enforcement - Need to have a division, not voluntary - can you incorporate other agencies other than CHP
Pre-planning at the design phase for staging areas, contractor yards, signage to alert the public as to changed conditions
Pressure to limit Support Costs at Caltrans are impacting the ability to have appropriate staffing levels.
Quality control procedure for safety device in construction site
REMOVING CONSTRUCTION SIGNAGE WHEN THE PROJECT IS OVER OR NOT IN USE

Requiring CHP to set up rag signs when shoulders are less than 8 feet -- COZEEP not always available, memo needs to be clarified
Restrictions for TMA on narrow shoulders
Safety Quality Control manager resume requirements
Safety Reviews consistency documented
SOMETIMES ITS ELEMENTS MAY BE OVERBURDESOME TO A DRIVER
Spec Clarification and Training on excavation plans and use of shoring boxes.
sqcm for lower bid projects. Less than \$75m
Start every single meeting with safety topic to develop focused mindset
Super/foreman being proactive about safety
TEMPORARY STRIPING CAN LOOSE VISIBILITY REVIEW OTHER TYPES OF MARKERS (TYPE A, RAISED MARKERS) FOR VISIBILITY.
The project needs to be designed around safety - the first sentence should always be how are we going to do this safely
Traffic break specs possibly have too many requirements
work should be rewarded to those who do it the safest, not the fastest
Work zone entry and exit points to avoid employee private vehicle usage

#### GENERAL SAFETY | WHAT IS MISSING?

"Stay Behind the Iron"

Awareness to construction both Caltrans and industry

Cal Osha minimum training hours for all Safety Positions

Contractor use of closed equipment at closed ramps

CONTRACTOR/CT CONTACT INFORMATION FOR WORKZONES

Contractors' personal vehicles use in a construction zone

CT Provide a Safety person on each contract with a Big Credit card instead of a Stick to HELP Needs in Field.

Defined KPI's

FRIENDLIER PENALITES FOR SPEEDING

Have traffic control supervisors take more of a communication role of reporting close calls and requesting change orders.

Information sharing between CT and Industry on close calls, near misses, etc.

Limiting construction support budgets reduces ability to have sufficient staffing

Manpower

MASH compliant temporary sign supports for barricades

Means to measure temporary sign retro reflectivity

Missing link between all new specifications coming out and field staff understanding the changes

Missing the connection that Safety costs \$\$, need to break the habit of wanting things cheap.

More specificity for what shall be included in JHA

Need greater criminal consequences for people stealing or defacing TTC items (cones, signs, etc.)

OJT training/apprenticeship following certification. X number hours worked with someone overseeing them before solo work.
penalties for safety violations
Require a quick response team for contractors to be within 2-hours (?) of jobsite if damage/hazard reported
Require maintenance to repair crash cushions within a certain time when NOT in a work zone
Safety focused partnering and trust workshop to build better teams to be more aware. Vulnerability and trust workshops. Need to be truly accepted and modeled from leaders respected by the team to embrace.
Site security and monitoring
SPEED MANAGEMENT TECHNOLOGY
The use of drones in a construction zone
Traffic breaks for setting closures
TRAFFIC SCHOOL FOR WZ OFNEDERS
Training for what to look for in the field for CEM 0606
Training with industry safety reviews
Training/certification for district safety reviewers
True support and understanding that anyone at any level can stop an operation erring on the side of caution to stop an operation and look at what is happening
Use more cameras in work zones to identify hazards
Video site monitoring

<b>BIG, BOLD &amp; NEW SAFETY SPECIFICATIONS</b>
3rd party traffic and construction personnel will not interface with each other
Accelerated construction, full time, round the clock work, full closures
Actual data on what works to encourage continued funding for safety features.
Add Cameras, Big Screens along with Speed Detectors to get public's attention in Work Zones
All jobs that did not use rail would have the option for full freeway closure or daytime work hours
All new vehicles recognize work zones as a hazard and react accordingly autonomously
Allow Complete closures
Armor suits for workers
Automate all traffic control setup
Automated cone placer and remover
Automated Speed Enforcement
Automated speed enforcement - Safety first - not politics
Automatic enforcement - especially speeding
Automotive Industry to be more involved in Work Zone controls.
Speed Control and Awareness Connected and Automated Vehicles
Autonomous Vehicles allowed on California Freeways. Remove the human who makes mistakes!
Auto-pilot control of all vehicles through WZ

Big \$ available separate from CTC or Contract \$
<b>BOLT DOWN RUMBLE STRIPS THAT COULD BE PLACED FOR ANY SPEED TO ALERT MOTORISTS OF WORK AHEAD. THEY COULD EASILY BE REMOVED.</b>
Change public perception about roadwork being a nuisance
<b>Close the highway so there is no traffic</b>
Combine projects and advertise as a corridor project for multiple contractors work collaboratively
<b>COMPLETE CLOSURE OF THE ROADWAY.</b>
Complete closures
Complete closures for facilities while the work is being done and provide a detour route that is multimodal for users
Complete freeway closures with no traffic during the work
Complete roadway long term closures for work
Contractor-led/initiated safety recommendations as bid add-ons
<b>Cozeep staffed as a regular part of CHP scheduling as opposed to OT for whoever wants it.</b>
Crash data that looks at the length of projects, volumes of the facility, type of facility, time of day and duration (WD) to come up with new policies and procedures to implement
Create a Star Trek esque transporter so no one feels the need to drive anymore.
Dangers of using personal vehicles on worksites. Public following workers into closures
Different closure windows for diff activities
Disable cellphones on all roadways
Disable phones in cars
Disable vehicle ignition for intoxicated drivers
Distracted driving
Divert traffic around work zones since they seem to control themselves
<b>Do more full FWY Closures.</b>
Driver education: show videos of work zone people next to live traffic
Everyone drove like their family members were the ones performing the work on the roadway
Fear of Failure is far less expensive than the loss of life
<b>Flying vehicles and jetpacks used to drop traffic control devices so they aren't subject to injury</b>
Full & Complete Closures
Full Closures for certain activities
Full closures for every job
Full Closures to better protect workers and reduce public exposure
Full Closures to public
Full closures with swam maintenance
full closures: remove the public from the worksite
Full freeway closure for every Maintenance/Construction project
Full Lane Closures
Full robotic paving trains
Funding, to try new modern technology and updated. Don't allow money to stop the possibilities

Governed speed and disabled phones
Hardcore and truthful public awareness campaign about consequences
Have a geo fence around every work zone prohibiting cars from entering the work area
Have all work done using robotics, no human feet on the ground.
Have an innovation Office with a Chief and staff to implement safety in all aspects of Caltrans. One person is not enough.
Have More EWC
Hire more CHP officers to work for COZEEP on regular time
Implementing Incentives that does not encourage non-reporting, for 0 incidents/accidents/injuries
Incentive to Contractors to plan safety into Work and Zero accidents
Incentives (\$) for contractors to open up closed lanes early, and temporarily to help public believe their interest is being considered.
Incentives for proactive safety measures by contractor
Incentivize complete closures with expedited construction methods
Increase penalties for people that deface/tag/steal various warning signs, cones, barrels, etc. from work zones as it puts motorists/people at risk when missing
Increase staffing and training for Caltrans Construction. Too restricted by COS support costs-sacrificing for the sake of saving money
Increase video monitoring for theft and defacement of equipment/TTC/signs
Increased development and focus for all private vehicles to be fully autonomous or driver assist with automatic speed setting. Remove human judgement from the situation to increase safety.
Innovative Full Closures
Install in-road (lane line?) technology to alert WZ and smart car tech of work zone intrusion
Install more positive protection barriers in more areas even at the expense of losing lanes and slowing traffic...it DOES make things safer.
INSTALLING SOFTWARE IN NEW VEHICLES THAT WOULD ALERT MOTORIST OF A WORK ZONE AND TO STAY OFF THEIR PHONES, SLOW DOWN, STAY ALERT, AND SHIFT LANES FOR CONSTRUCTION VEHICLES.
Instead of saying NO! ask, Why NOT?
Large financial rewards or bonuses for CT staff that go above and beyond. Not just a pat on the back.
Laser beams enclosing traffic closure so any intrusion is immediately detected and a visual/audible alarm is activated
Letters sent to the public motorist thanking them for driving safely through the WZ
More Day work - less night work. Tolerate longer queues
Longer term full closures of work areas
Long-term shutdown of highways for up to 7 to 30 days
Lots of \$ for positive barriers
Lots of tickets for speeders in work zones
Make California less litigious - fine/punish those who file frivolous lawsuits
Make Safety operations by contractor a separate item that is paid by force account not under the bid.

Mandatory joint daily TGSM on site
Monitor speed of traffic through WZ
More cameras
More CHP enforcement. Fund CHP for manpower.
More full freeway long weekend closures
More full multi day closures
More full multi day closures
More Funds for Enforcement
More law enforcement including (air support).
More positive barriers
More visual aid to drivers on highways.
Movable barrier
New barrier that is MASH compliant and can be moved each shift to new locations to protect workers
New mechanism similar to CMGC to have contractors input during PS&E looking at Safety aspects of doing the work
No active traffic allowed near work zones (i.e. complete detours around work zones.)
No roads only teleportation
Only AI Autonomous vehicles on the road
Only apply speed reductions to ACTIVE work zones to avoid driver fatigue/ignoring work zone alert equipment
People really caring for those working in dangerous environments - change behavior
Pick up on using technology to enhance safety. For example Out Drone program an use of drones
Piloting the newest most innovative safety technologies
Please Updated the Construction Manual to reflex the same requirements in our Std Spec. - mainly for new CT Inspectors benefit.
Portable photo ticketing systems
Possible detours and full closure
PROVEN SAFETY FEATURES WOULD BE FUNDED WITHOUT LIMIT ON ALL PROJECTS AND APPLIED EQUALLY ACROSS THE STATE
Real reward (\$) for Safety needs and success, to individuals and to contractors and CHP.
Real time construction site safety monitor
Reduce traffic speed through lane diets so there are perpetual traffic jams that slow traffic through work zones
Reduction of lanes during construction!
Removable Cable barriers along lane lines in work zones
Remove outside Traffic from the work zone
Remove social media restrictions for CT staff when it comes to safety messaging
Require all drivers to be tested on work zone devices and laws every 4 years
Revise the title "Crossover" to something like "Additional Lane". "Crossover" title is not very clear to the public, they think they are crossing over a bridge or something.
Robotic Equipment



Safety Partnering Meeting
Safety person on all projects with good relationships and \$.
Second that
Shielded work zone (that isn't made of light weight plastic )
Signed Partnering/Safety Charter on all projects
Start every single meeting with safety topic to develop focused mindset
Stiffer penalties for uncooperative contractors.
Suspend driver licenses after 3 strikes for speeding in work zones
Take safety seriously, not just talk about it, take action, make a difference. See something, say something, do something.
Taking traffic out of the traffic control
Teleportation
Test automated flagger devices to close on-ramps to freeways when many nightly closures
The distance between Vision & Reality is ACTION!
Tolerance for driver delays to provide wider work zones for longer work windows
Train both CT employees and contractors on safety simultaneously at the beginning of every project. Fine Contractors for any safety violations and shut down project immediately until remedies are performed
Understanding or how the work has to be complete so that safety practices can be employed
Unlimited funds for safety
Unlimited r/w to built 16-20 lane freeways so there's no congestion
Usage of non human devices for every aspects of traffic control
Use more complete highway closures
Use more weekend long lane closure
Use robots instead of human workers in high risk area
Vehicles automatically slow down in work zones
Video monitoring and recording of job activities to enhance and improve safety.
Waze and google maps shows closures
When public believes we care about them, then they will care about our safety as well.
Work zone specific technologies installed on vehicles similar to the crash avoidance technology that are an option on new vehicles. Also make is a car manufacturer requirement and not optional equipment. Exponential future benefit for our work zones as people buy new cars.
Work zone cameras aimed at the public capturing behaviors