

California
Department of Transportation
Mobile Protection Barrier System

The Balsi Beam



Portable Work Zone Barrier

- As a result of a serious accident, Caltrans' Division of Maintenance began looking into ways to protect its employees on foot.
- Caltrans' Division of Research and Innovation researched concepts for a protection system.
- Caltrans' Division of Equipment designed and built a Portable Work Zone Barrier (Balsi Beam).
- The Balsi Beam has its own dedicated tractor truck to transport it to the worksite at normal highway speeds without the need for any permits.



Balsi Beam

- A working prototype was built in 2003.
- The working prototype was crash tested in 2003 using a small car and a full size pickup truck.
- The result of crash test were very good, for both the Balsi Beam and the impacting vehicles.
- Caltrans currently has a patent pending for this barrier.



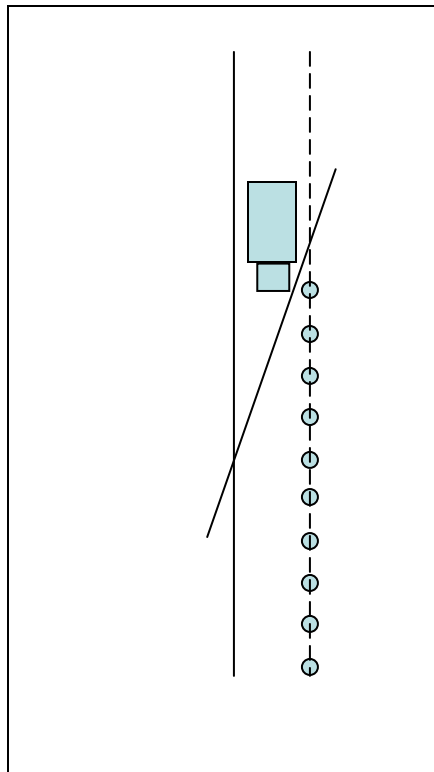
How it Works

- Once on site, the Balsi Beam can be easily set up from the cab of the tractor truck.
- One of the beams is rotated to provide a double beam barrier.
- The beams telescope to provide 30 feet of protected workspace.
- The Balsi Beam can be used both in median and shoulder areas by rotating either of the beams to the other side.

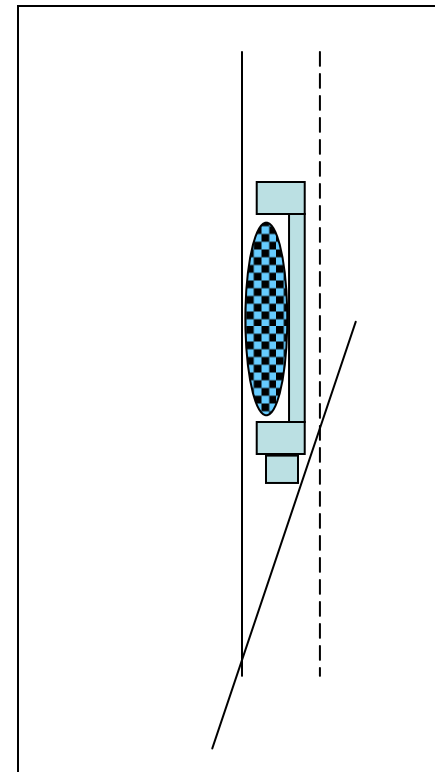


Balsi Beam

Physically Protected Area



Without Balsi Beam



With Balsi Beam

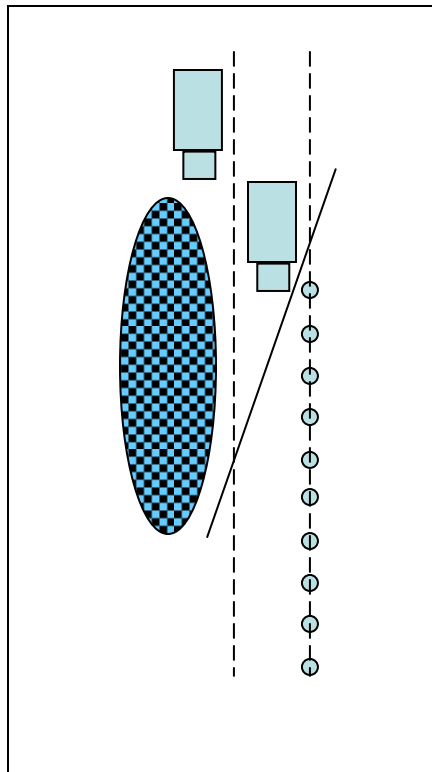
Single Lane Closure



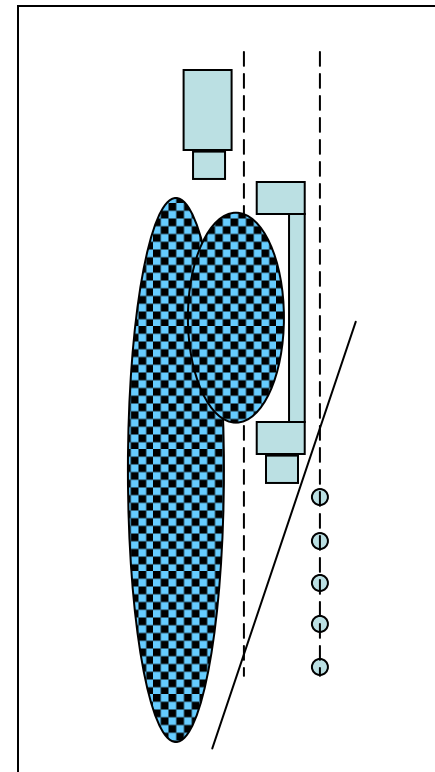


Balsi Beam

Physically Protected Area



Without Balsi Beam



With Balsi Beam

Two Lanes Closure



Balsi Beam



Patent Pending



Balsi Beam



Patent Pending



Balsi Beam



Patent Pending



Balsi Beam



Patent Pending



Balsi Beam



Patent Pending



Balsi Beam





Balsi Beam





Activities to be Evaluated

Appendix A of the TTI study was reviewed with a rating system of Yes - Maybe – No

- Yes identifying activities that the Balsi Beam would be of benefit and needed to be evaluated.
- Maybe identifying activities that may benefit but are either site specific, limited operations or changes in maintenance activities are needed to benefit from the Balsi Beam.
- No identifying activities not suited for use by the Balsi Beam.



Activities to be Evaluated

- ***Litter Pickup – Maybe***, Litter pick up is done by Caltrans, Public Service workers and Private Individuals. Other solutions under research hold greater promise.
- ***Pavement Core Sampling - Maybe***, depending upon the size of the core sample needed the present equipment used may not fit into the work zone.
- ***Pothole Patching – Maybe***, operations within the bridge deck or in limited areas with median barrier and guardrails require evaluation of the Balsi Beam.
- ***Edge/Guardrail Repair – Maybe***, the present equipment used limits where the use of the Balsi Beam is of benefit.



Activities to be Evaluated

- ***Signal/Lighting Installation/Maintenance – Maybe***, the most appropriate usage would be in installation of foundations, maintenance of existing lights are problematic due to the size of lift trucks and positioning of the Balsi Beam within intersection where it creates a greater hazard.
- ***Bridge Seal Repair – Yes***
- ***Irrigation Repair – Yes***
- ***Culvert Repairs – Maybe***, depending on the scope of work, site location and equipment requirements.
- ***Bridge Inspections – Yes***
- ***K Rail, Median repair – Yes***



Activities to be Evaluated

Additional areas identified by other DOT's during the 13 State tour of the Balsi Beam

- *Sign repair*
- *Manhole work*
- *Highway Patrol assistance*
- *Setting of blasting materials*
- *Landscaping*



Continuing Activities

- Continued evaluation of different maintenance activities.
- Risk Assessment and Cost Benefit Study.
- Development and procurement of second Balsi Beam.
- Development of licensing agreements for manufacture and use of the Balsi Beam.



Contact Information

- Steve Takigawa, Chief
Division of Maintenance
(916) 654-5849, Steve_Takigawa@dot.ca.gov
- Lisa Kunzman, Chief
Division of Equipment
(916) 227-9600, Lisa_Kunzman@dot.ca.gov
- Mike Jenkinson, Project Manager
Division of Research and Innovation
(916) 657-3867, Mike_Jenkinson@dot.ca.gov