

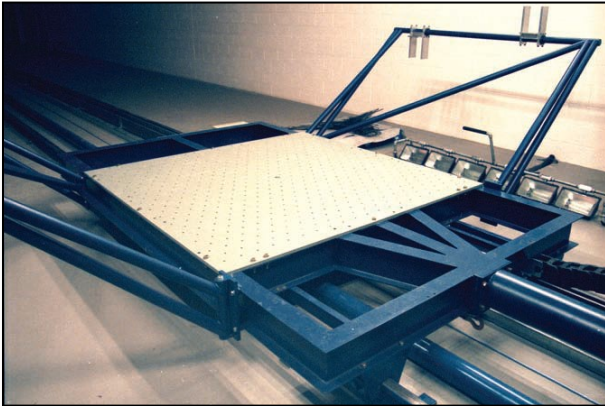


## Decelerator Sled Systems

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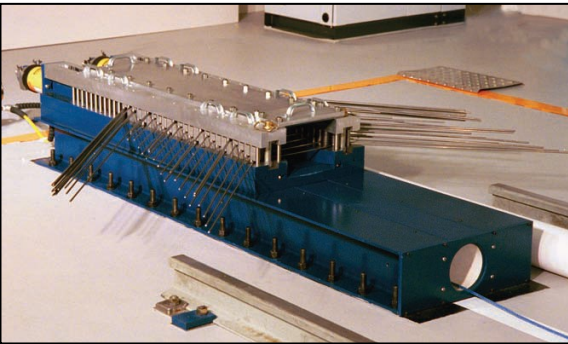
Seattle Safety believes its bending metal decelerator sleds are the best overall approach, and offer the highest overall performance of any decelerator sled available at any price.

Seattle Safety has produced Decelerator sled systems and ServoSled reverse-acceleration catapult-type sled systems for customers in the USA, Europe, Asia, and South America. Thousands of tests a year are run on Seattle Safety decelerator sleds, the system is completely proven, impact velocities are accurate and consistent, and most importantly the pulses are predictable and repeatable. With its robust design and requiring minimal maintenance, the Seattle Safety decelerator sled is exactly what you need.



### Sled

The sled is designed to accommodate high payload weights and a variety of test fixtures, yet it is easily rolled by hand. An optional rotatable plate can be attached to allow test articles to be mounted at different yaw angles. Data acquisition system and accelerometers are mounted below the sled top surface for protection and convenience.



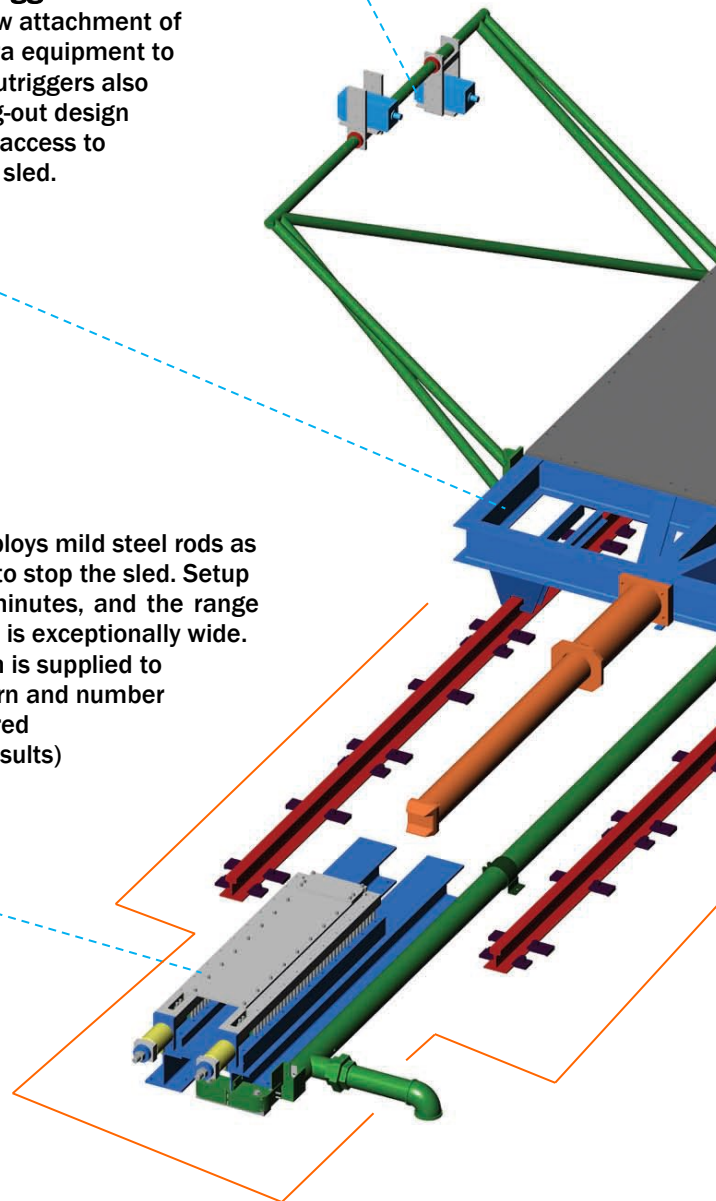
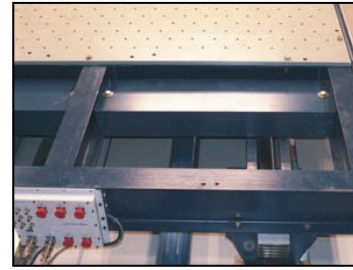
### Decelerator

The decelerator employs mild steel rods as an energy absorber to stop the sled. Setup typically takes 15 minutes, and the range of achievable pulses is exceptionally wide. A computer program is supplied to determine the pattern and number of wires for the desired crash pulse. (See Results)



### Camera Outriggers

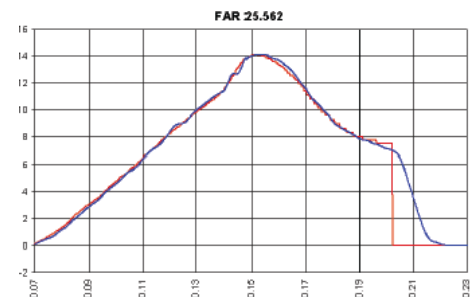
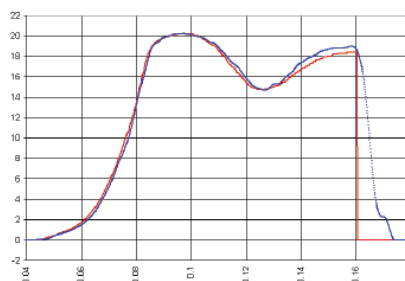
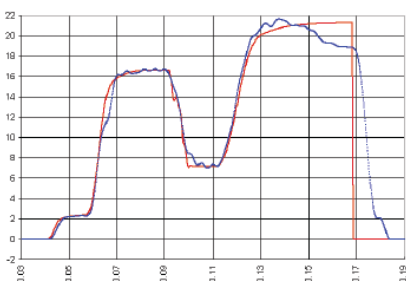
Outriggers allow attachment of optional camera equipment to the sled. The outriggers also feature a swing-out design to allow better access to payload on the sled.



### Results

The charts below show the correlation between the pulse predicted by the Seattle Safety wire pattern program and actual pulses acquired in test. The predictability, accuracy, repeatability, and flexibility of our pulses rank the Seattle Safety system among the best at any price, accelerator or decelerator type.

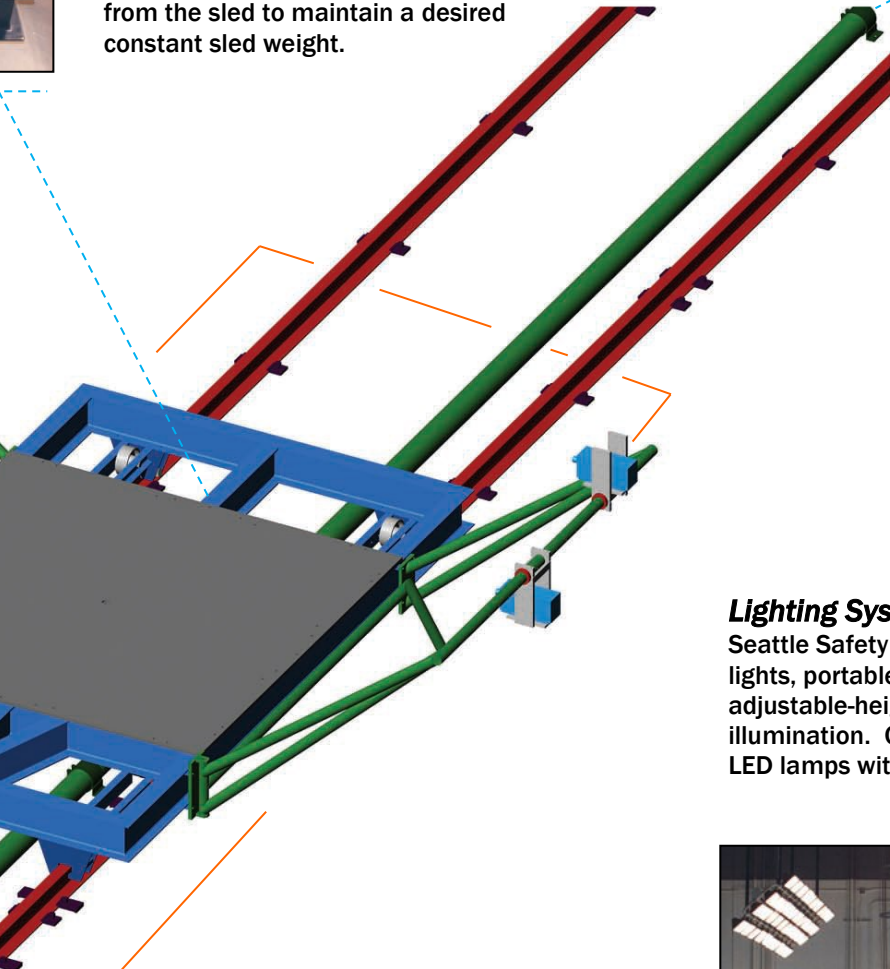
— Prediction — Sled Accelerometer





### Sled Ballast

Weight can be added or subtracted from the sled to maintain a desired constant sled weight.



### Pneumatic Accelerator

The system uses pressurized air to propel the sled to desired velocities. Accuracy within 0.5% and repeatability within 0.25% are typical, and no civil work is required for installation. Firing pressure is remotely monitored and automatically maintained.



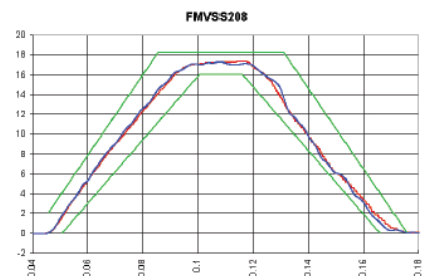
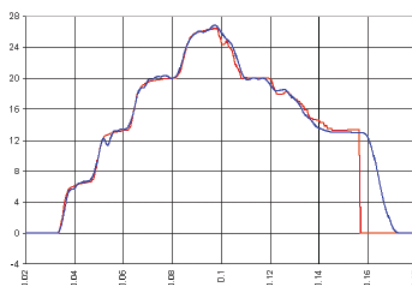
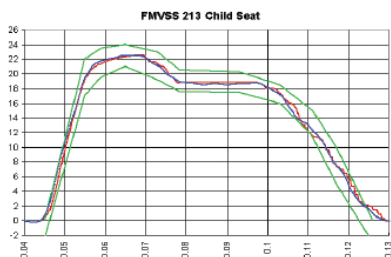
### Lighting Systems

Seattle Safety manufactures overhead lights, portable floor lights, and portable adjustable-height lights for impact zone illumination. Our most recent designs use LED lamps with an option for dimming.



### Reaction Block

The system reaction block is fully below grade, reducing site impact and civil work cost. Sled relocation to a new site is greatly simplified.



## Specifications for Seattle Safety Manufactured Equipment

The Seattle Safety decelerator sled system is available in six basic versions. Other sizes and capacities can be produced as a custom order. Seattle Safety provides the equipment described below along with on-site installation and training.

System Model	Peak Force	Stroke	Peak g-Force	Max. Energy	Max. Velocity	Max. Payload	Std. Sled Size
D1000-3.7	1000 kN	1.9 m	115 g	340 kN-m	100 kph	4000 kg	2.2 m x 3.7 m
	225,000 lb	74 in.		250,000 ft-lb	62 mph	8800 lb	86 in. x 144 in.
D1000-3.0	1000 kN	1.9 m	187 g	340 kN-m	127 kph	4000 kg	1.5 m x 3.0 m
	225,000 lb	74 in.		250,000 ft-lb	79 mph	8800 lb	60 in. x 118 in.
D780-3.7	780 kN	1.9 m	90 g	285 kN-m	91 kph	4000 kg	2.2 m x 3.7 m
	175,000 lb	74 in.		210,000 ft-lb	57 mph	8800 lb	86 in. x 144 in.
D780-3.0	780 kN	1.9 m	146 g	285 kN-m	116 kph	4000 kg	1.5 m x 3.0 m
	175,000 lb	74 in.		210,000 ft-lb	72 mph	8800 lb	60 in. x 118 in.
D400-3.0	400 kN	1.6 m	82 g	147 kN-m	87 kph	2000 kg	1.5 m x 3.0 m
	90,000 lb	63 in.		108,000 ft-lb	54 mph	4400 lb	60 in. x 118 in.
D400-2.5	400 kN	1.6 m	120 g	147 kN-m	105 kph	2000 kg	1.25 m x 2.5 m
	90,000 lb	63 in.		108,000 ft-lb	65 mph	4400 lb	47 in. x 98 in.

**Decelerator** – Mounts to submerged reaction block flush with adjacent floor. Double pulse capable. Highly accurate and flexible wire pattern software included.

**Pneumatic Accelerator** – Low, near-constant acceleration, typically 0.2–0.4 g with 0-g coast. Variable lengths to suit customers' needs. No civil work typically required.

**Sled** – Payload attaches directly to sled or to interchangeable, rotatable yaw plate with customer-specified hole pattern.

**Track** – Variable lengths made to suit customers' needs. 117–189 ft (36–58 m) to date. No civil work required.

**Firing** – Control valving, gauging, and safety interlock firing switches provided.

**Photographic Floodlights** – Lighting systems range in capacity from 0.4–200 kW. Types include overhead suspended banks, low-profile portable floor units, adjustable-height portable units, film pit lights, and onboard lights. Also available are computer control and power actuation of overhead suspended banks and integrated time zero strobes.

**Camera Outriggers** – Hinge-mounted camera outriggers have low profiles and allow easy sled access.

**Test Article Fixturing** – Established design and manufacturing capability of a wide variety of innovative and convenient customized test article fixturing.

## OEM and System Integration

Carefully selected data acquisition, photometric, transducer, and dummy equipment is provided with the systems at competitive prices. OEM equipment includes integration, setup, and training.

**Data Acquisition** – Onboard cordless data acquisition systems are expandable in 8-channel blocks and are SAE J211 compliant. Includes installation on sled, triggering, and full integration.

**High-Speed Video** – A range of high-speed video solutions for both high-g and off sled. Digitization software, SAE J211 compliance, triggering, and integration are available.

**Transducers** – SAE J211 compliant dummy transducers, sled accelerometers, string pots, and test fixture load cells. Connectors and integration into Seattle Safety supplied data acquisition provided. Installation included.

**Dummies** – Fully compliant test dummies are available. Installation of Seattle Safety OEM transducers included.

**Triggering** – A highly reliable triggering system with either Seattle Safety supplied data acquisition or high-speed video.

**Software Integration** – Seattle Safety is experienced in complete control of sleds, lights, data acquisition, cameras, and other equipment, as well as post-test automated test report generation and analysis using Diadem.



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