Decelerator Sled Systems

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.

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.

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.

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)
**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.
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.

### 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.

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### Specifications for Seattle Safety Manufactured Equipment

#### 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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