

## LTL Hazard Data Collection – Phase 1

### Appendix II – Phase 2 Staged Events Examples

#### I. Staged Handling Scenarios

##### A. Pallet Marshalling:

###### 1. Forklift:

- a) Place ILP on a rough concrete floor
- b) Record forces while the forklift enters the pallet and continues driving forward causing the pallet to slide along the floor. (*minimum of 5 replicates*)

###### 2. Electric Pallet Jack:

- a) Place ILP on a rough concrete floor
- b) Record forces while the forklift enters the pallet and continues driving forward causing the pallet to slide along the floor. (*minimum of 5 replicates*)

##### B. Bump loading:

1. Place instrumented unit load on forklift with forks parallel to the ground then use it to impact other freight loaded tightly against the nose of a trailer with reasonable force. (minimum of 5 replicates)
2. Repeat with forks tilted forward and backward. (minimum of 5 replicates)
3. Repeat with Electric Pallet Jack. (minimum of 5 replicates)

##### C. Pallet train:

1. Place instrumented unit load on forklift then use it to push three, 1500 Lbs. pallet loads along a concrete surface with expansion joints. (minimum of 5 replicates)

## II. Staged Transit Scenarios: Freight to Freight Contact

### A. Stopping

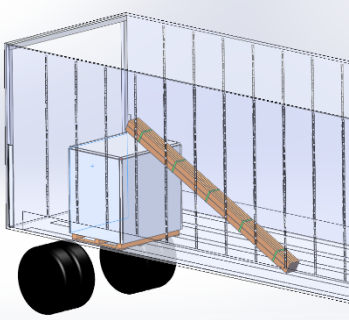
1. Place a pallet load of water bottles behind the IPL. Record the response while braking aggressively. (minimum of 5 replicates)

### B. Turning

1. Place a pallet load of water bottles beside the IPL. Record the response while aggressively turning in the in the direction of the water bottles (minimum of 5 replicates)

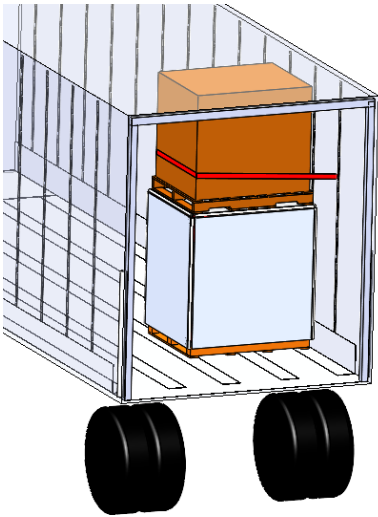
### C. Leaning freight

1. Place a ~120 Lbs strapped bundle of 12' - 2x4s on the IPL with one end resting on the trailer floor.
2. Drive down a rough road and over speed bumps. (minimum of 5 replicates)



### D. Top Load

1. Place a ~1000 pallet load on top of the IPL. Loosely strap top load to wall to prevent falling. Record the response while driving (minimum of 5 replicates):
  - a) Along a rough road
  - b) Over speed bumps
  - c) braking aggressively
  - d) turning aggressively



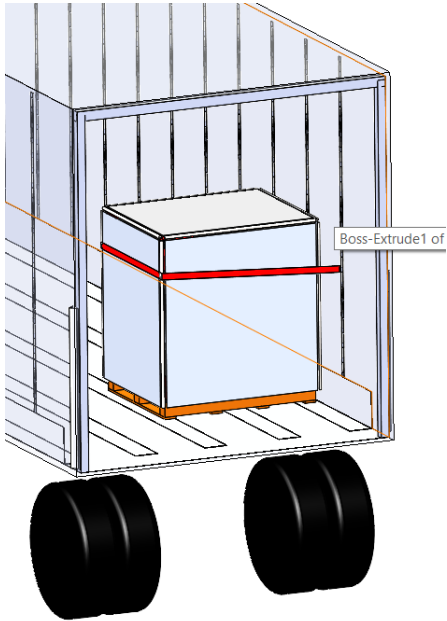
### III. Staged Transit Scenarios: Freight to Securement Contact

#### A. Straps (minimum of 5 replicates)

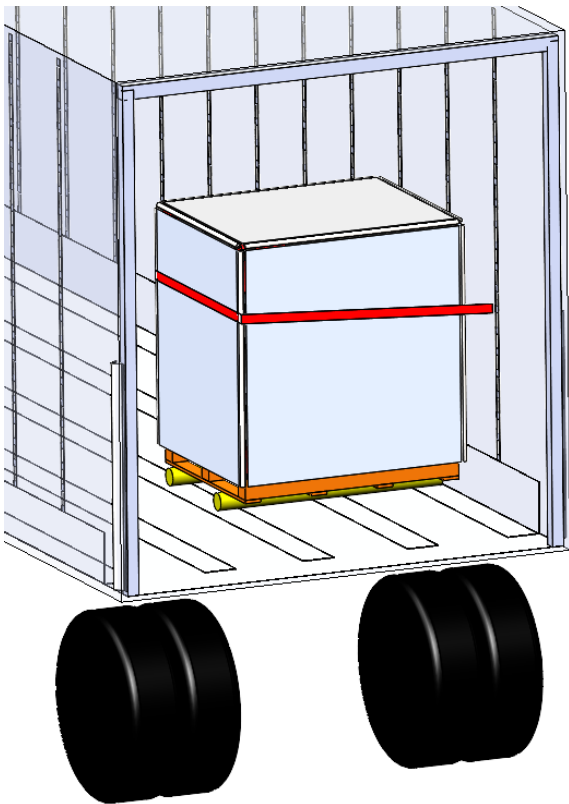
1. Place IPL with the 40" dimension against the straight truck wall. Strap to wall with connectors placed 60" apart and centered around the IPL.

Record the response while driving:

- a) braking aggressively
- b) turning aggressively



2. Repeat step 1 with pallet load testing two 4" fence posts running perpendicular to the straight truck wall to simulate a low coefficient load.

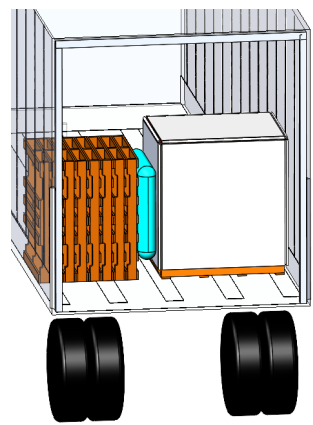


B. Decking beams (minimum of 5 replicates)

1. Place IPL with the 40" dimension against the trailer wall and immediately behind a decking beam place ~48" from the floor. Record the response while driving braking aggressively.
2. Repeat step 1 with pallet load testing two 4" fence posts running perpendicular to the truck wall to simulate a low coefficient load. Set IPL 6" away from the decking beam.

C. Airbags (minimum of 5 replicates)

1. Place IPL with the 40" dimension against the truck wall.
2. Place empty pallets next to IPL as needed to create a 3-8" space between the IPL and Pallets across the truck width.
3. Place a corrugated sheet against the last pallet.
4. Install a 36"x36" inflatable dunnage bag between the corrugated and IPL.
5. Inflate dunnage bag to ~1.5 PSI.
6. Record the response while:
  - a) braking aggressively
  - b) turning aggressively in both directions



D. Leaning Dunnage Pallets (minimum of 5 replicates)

1. Place IPL with the 40" dimension against the truck wall.
2. Place empty pallets leaning against the IPL across the truck width.
3. Record the response while:
  - a) braking aggressively
  - b) turning aggressively in both directions

