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 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 connecters 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