



E-Z Cruise™ Transit Bus Evaluation

Global Z Axis Positions (Bounce Analysis)



- Prepared by Rich Bohde
- June 04, 2004 (Updated 08-25-04)





E-Z Ride Bus Evaluation



Objectives

- **Instrument Bus**
- **Measure Bounce (Low Frequency Vertical Motion: 0-2 Hz)**
- **Quantify Bounce Reduction with E-Z Cruise™ Installed**



E-Z Cruise™ Bus Evaluation



Methods

- Accelerometers installed on drivers seat track and first passenger seat track
- Vertical Bounce accelerations (Z axis) to be measured
- Road course of 14 minute drive containing multiple road/driving conditions



Accelerometer Placement



Instrumented to Measure the Sway at Lower Frequencies

Channel 9



Channel 12





Directions of Measurement



Capture the Vertical Motion at Lower Frequencies
at Drivers Seat an Passenger Seat

Channel 9



Channel 12

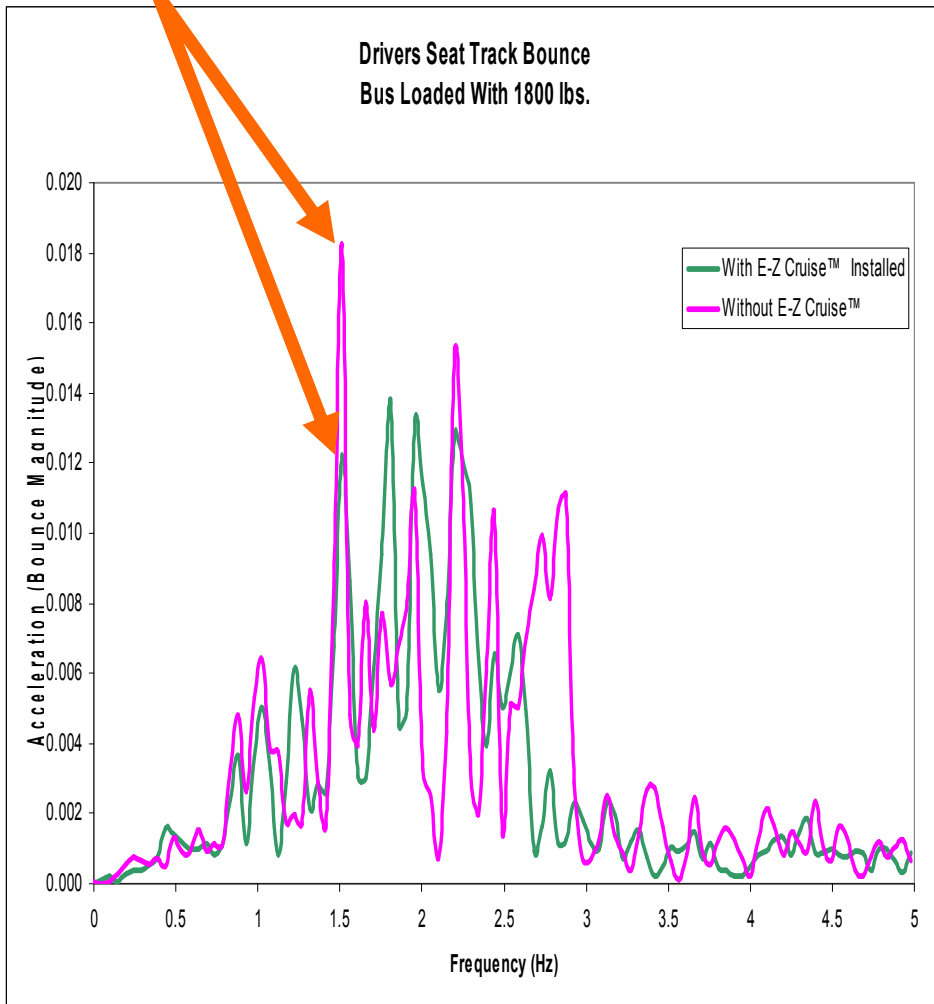




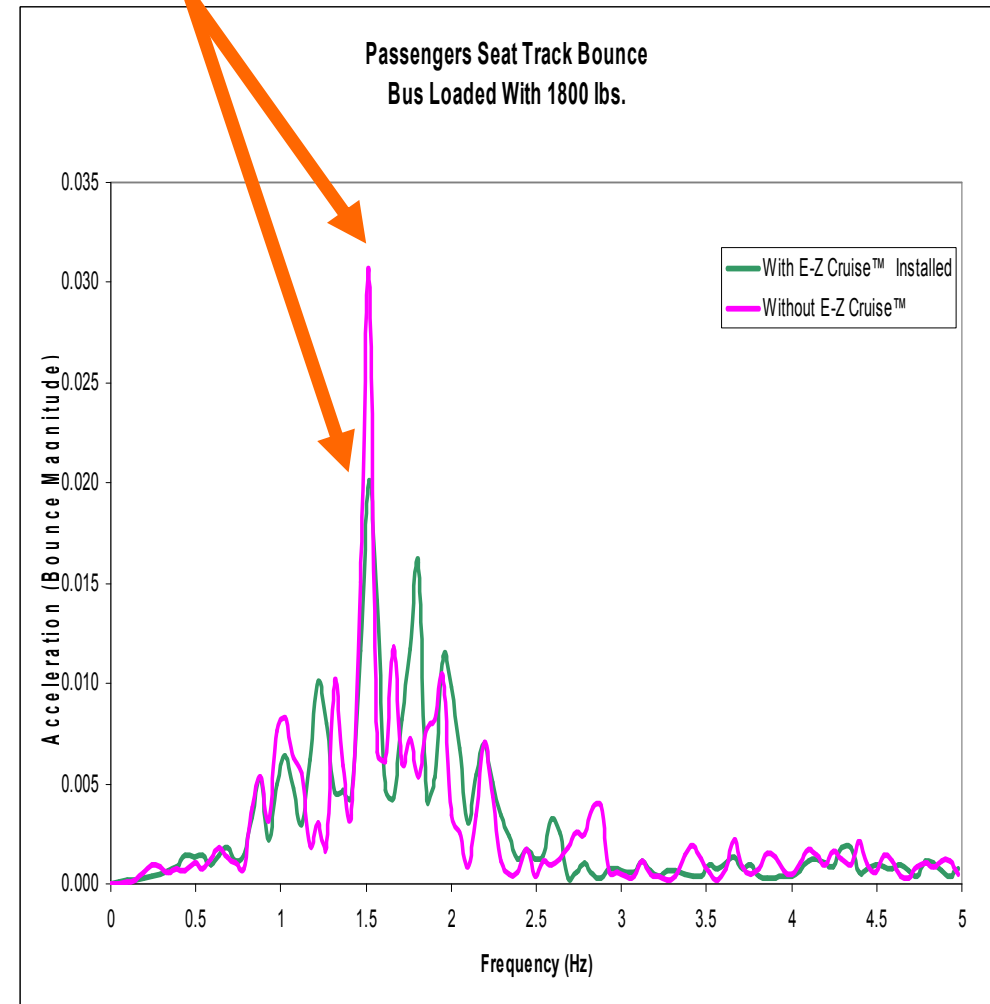
Highway Driving 55 mph (N US 15)



49% Reduction PEAK BOUNCE MAGNITUDE



52% Reduction PEAK BOUNCE MAGNITUDE



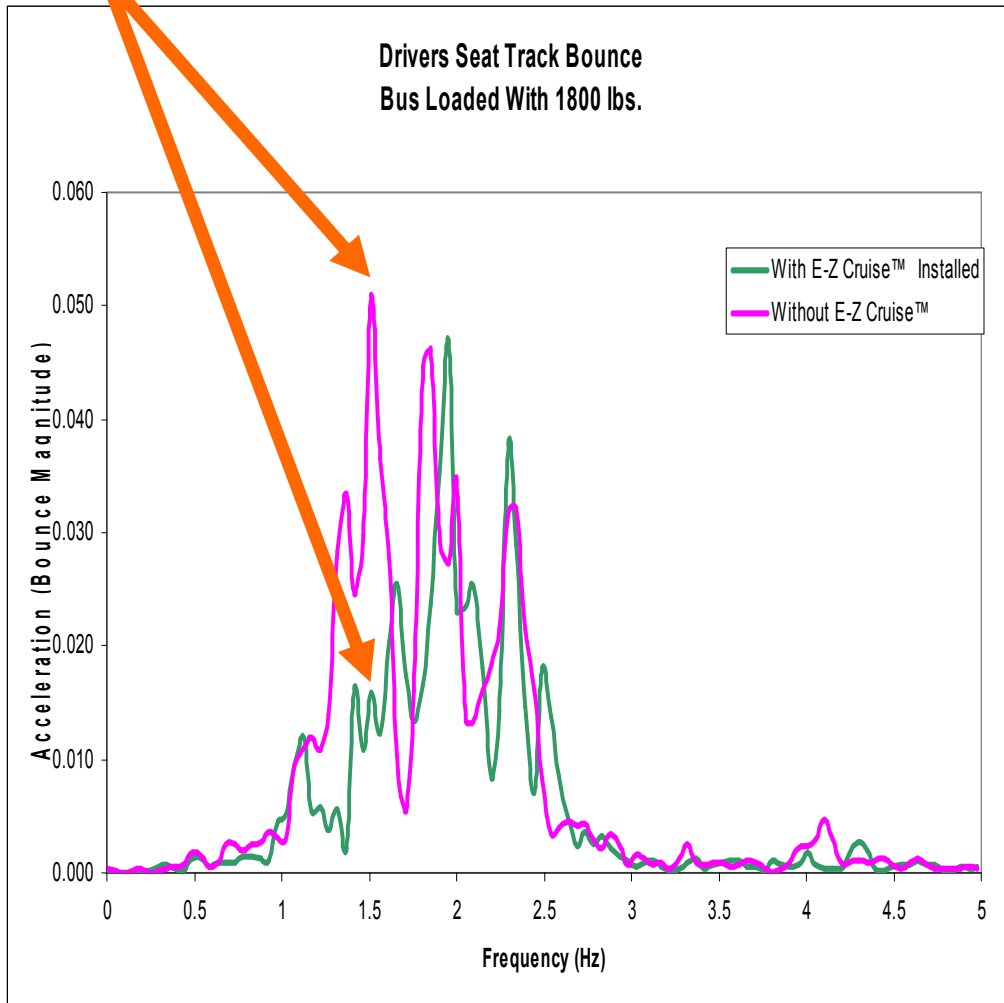


Ascending Sweeping RH Curve, Bridge, Descending Sweeping LH Curve, Highway Speed (N US 15)



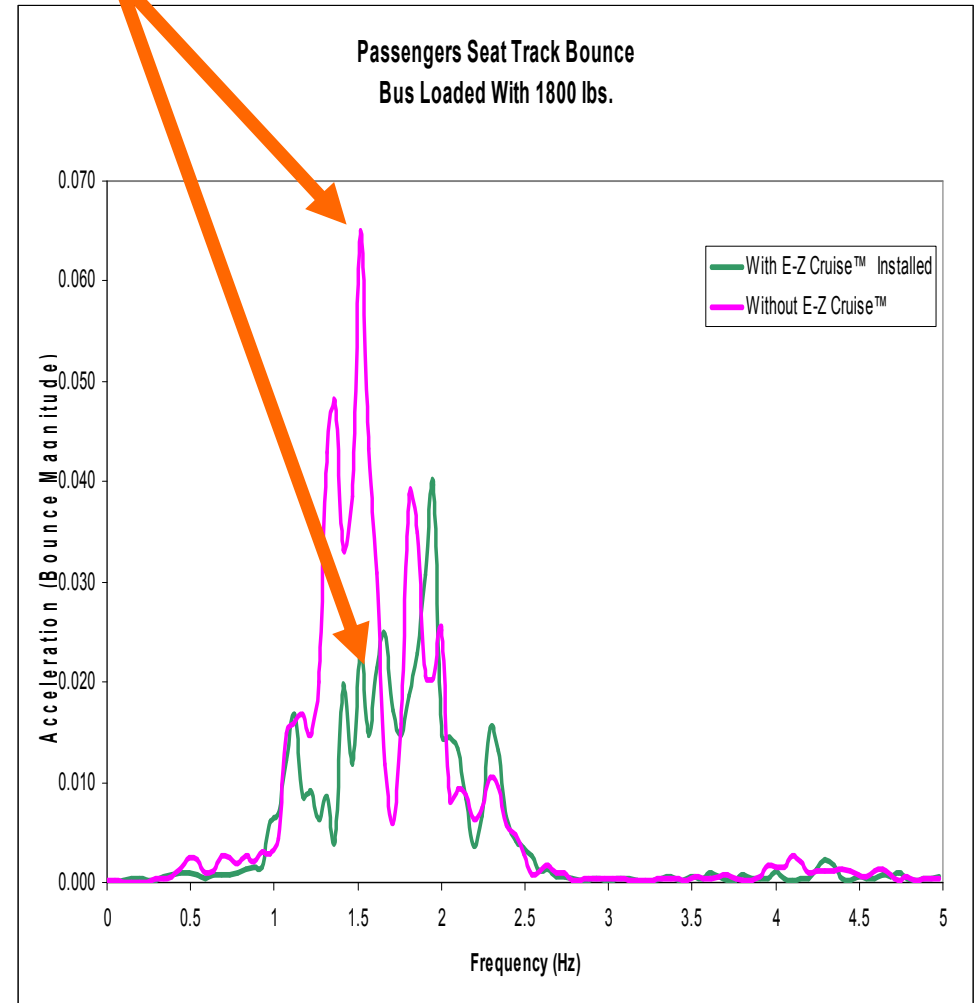
69% Reduction

PEAK BOUNCE MAGNITUDE



65% Reduction

PEAK BOUNCE MAGNITUDE





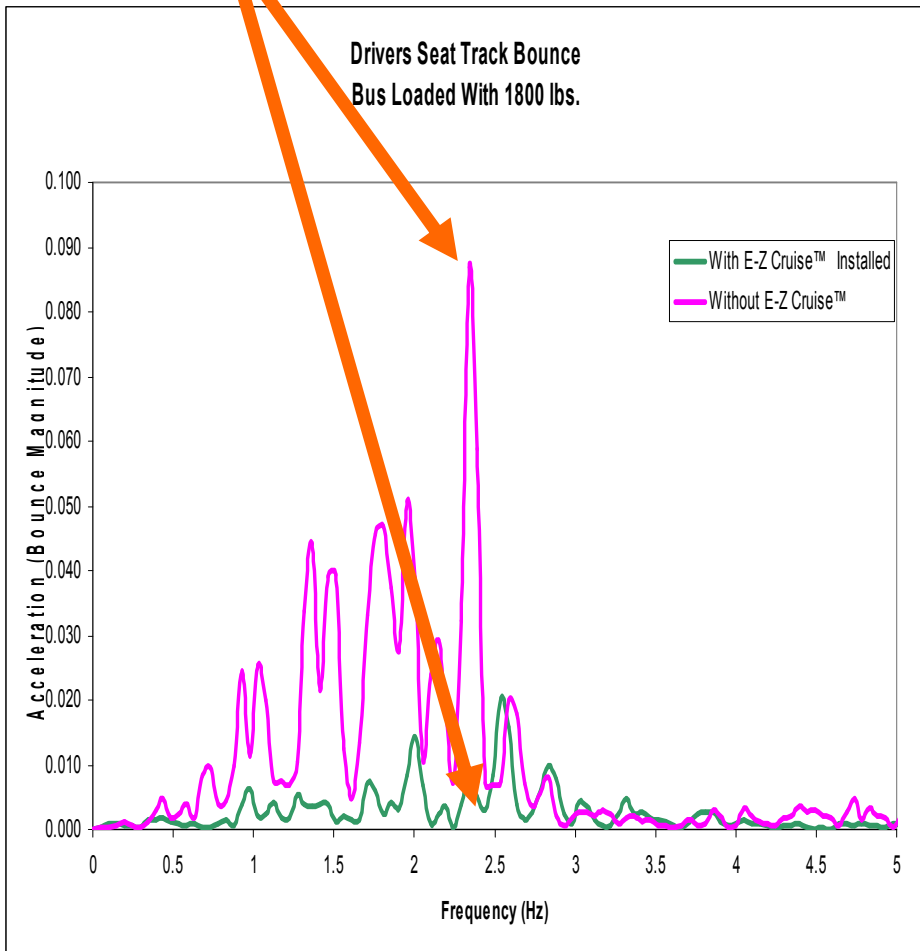
RH Turn, Cross RR Tracks, Stop 2ND RR Track

(Milford Junction from North Old 15)



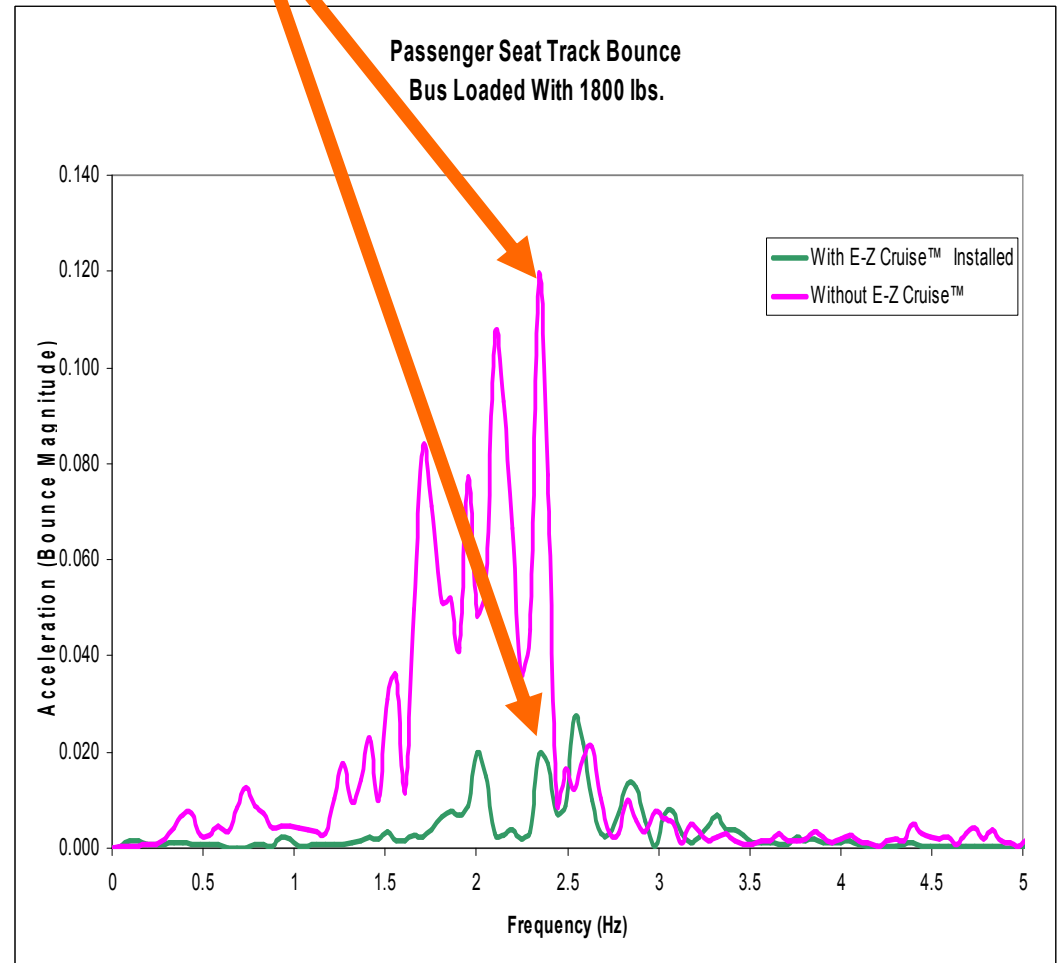
90% Reduction

PEAK BOUNCE MAGNITUDE



84% Reduction

PEAK BOUNCE MAGNITUDE



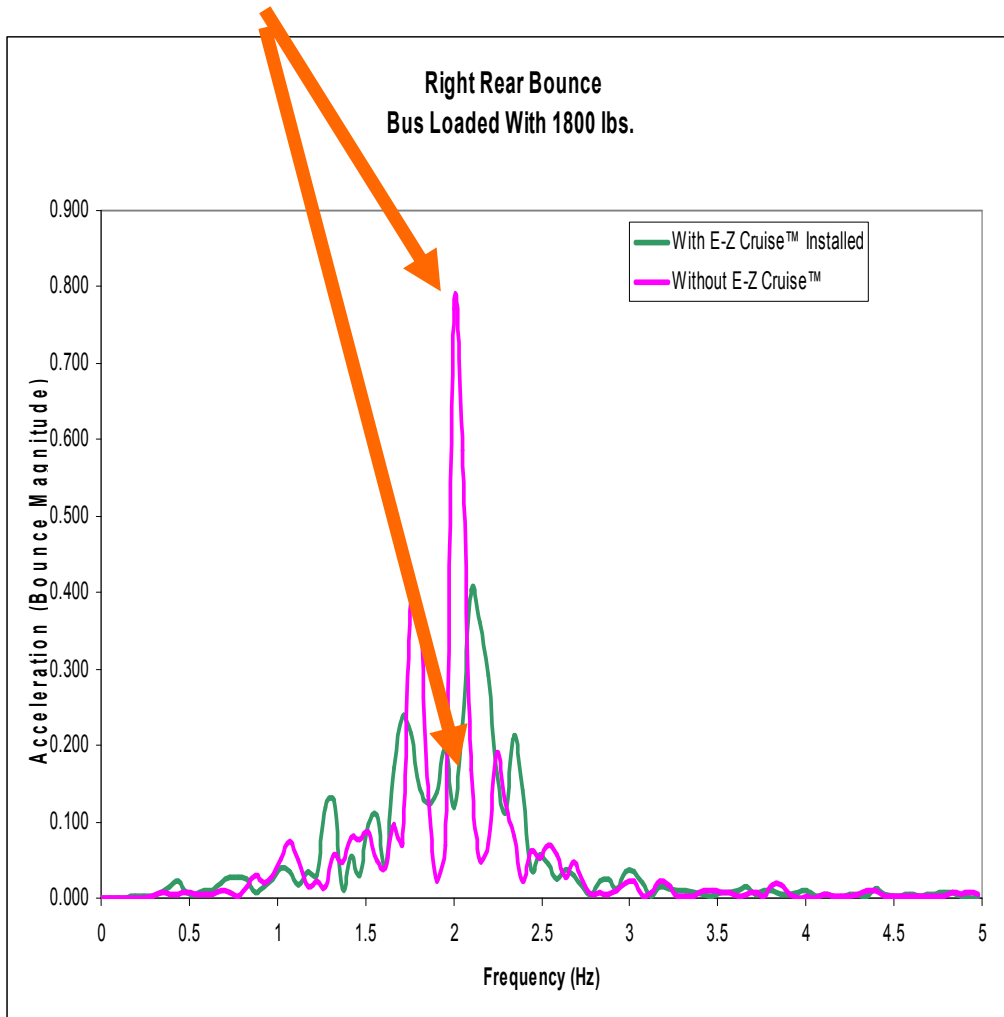


Stop, LH Turn, LH Turn, Cross RR Tracks, Stop (Milford Junction)



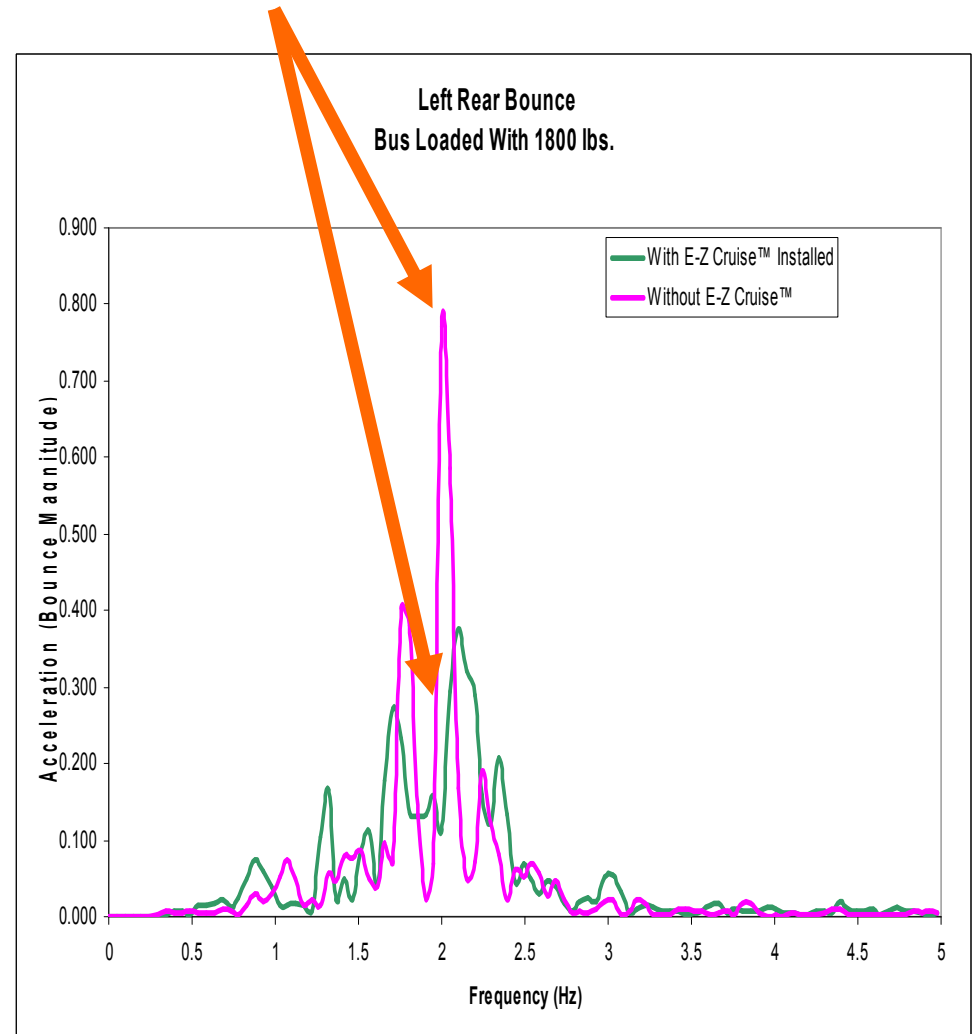
61% Reduction

PEAK BOUNCE MAGNITUDE



45% Reduction

PEAK BOUNCE MAGNITUDE



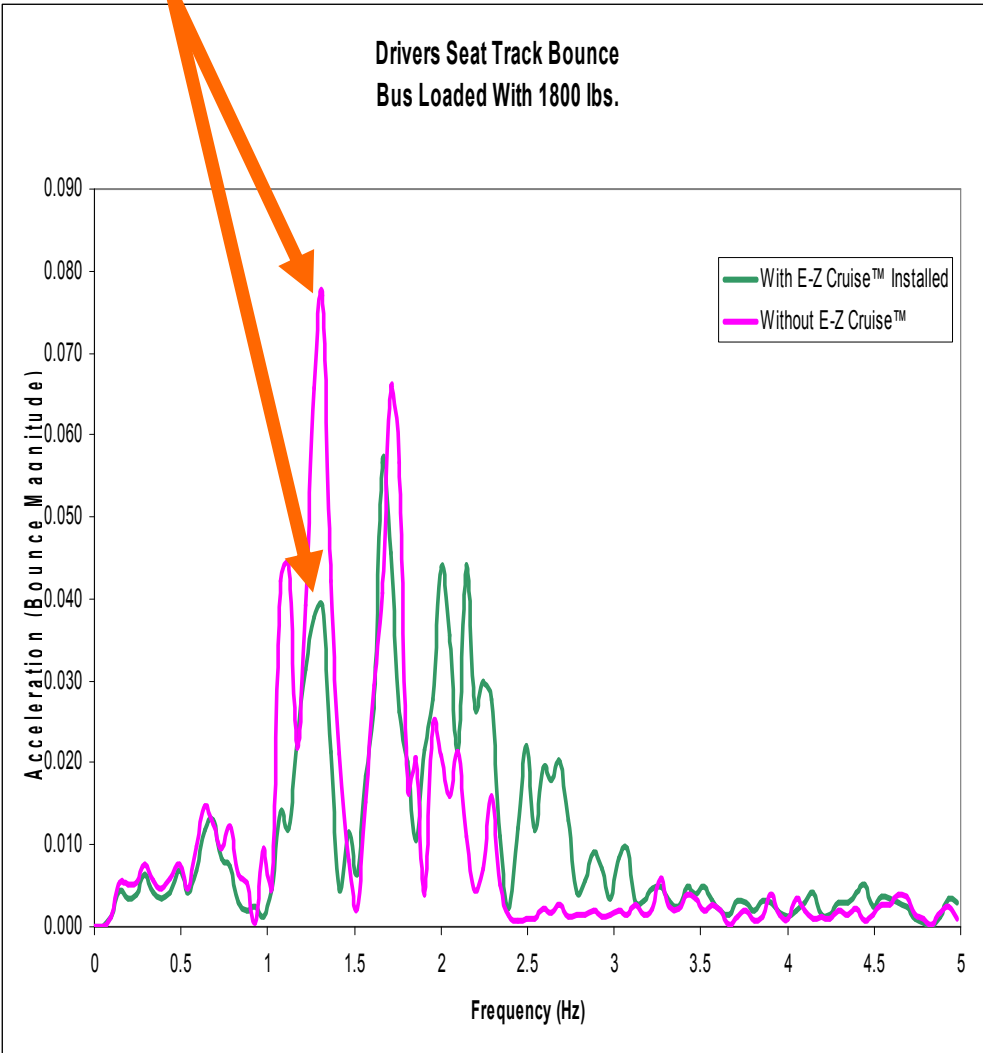


Southbound on Chip and Seal (Old 15)



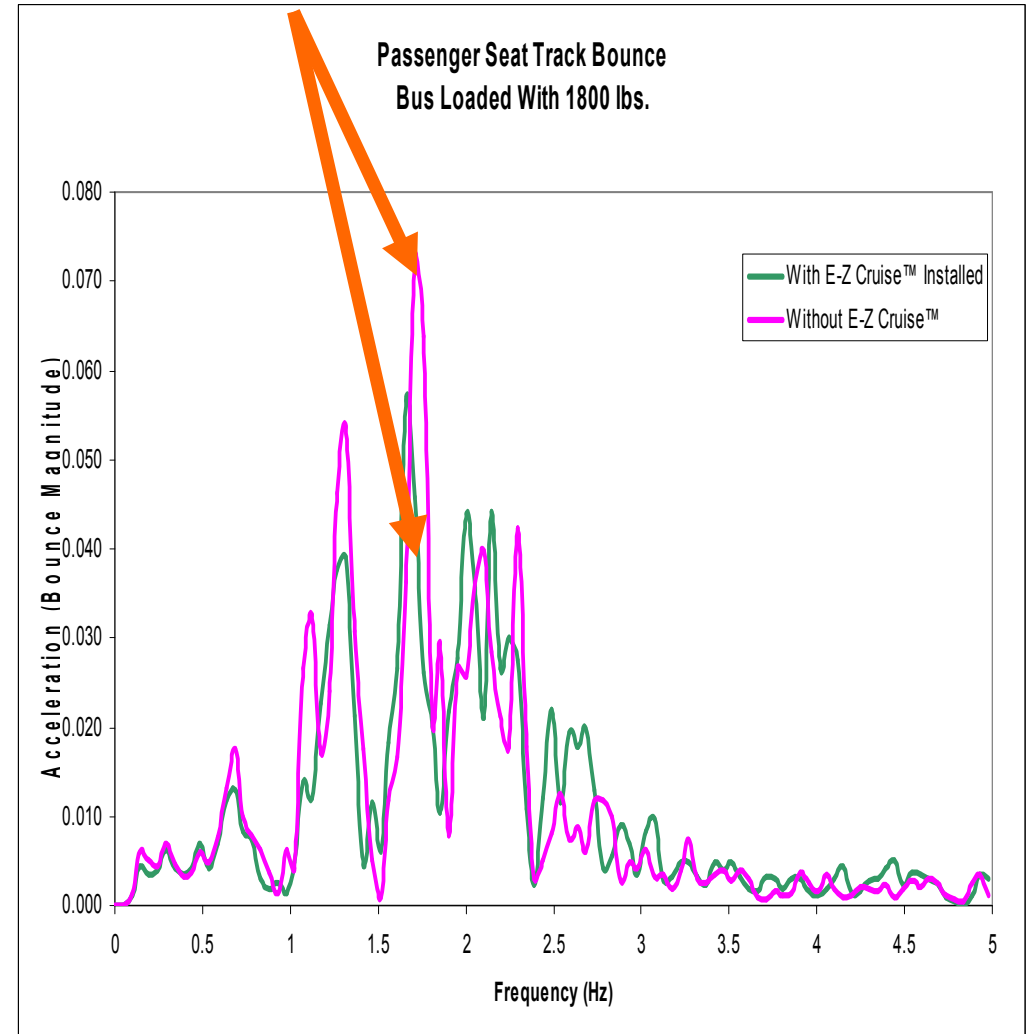
23% Reduction

PEAK BOUNCE MAGNITUDE



37% Reduction

PEAK BOUNCE MAGNITUDE





E-Z Cruise™ Bus Evaluation



Conclusions

- **The E-Z Cruise™ System Provides a Much More Stable Ride With Respect to Bounce**
- **Data Shows Up to 90% Reduction in Peak Bounce Magnitude for Certain Events**