

# CWSF 2015 - Fredericton, New Brunswick



## Kyle Teeter

### Earthquakes: Improving Building Resiliency

**Challenge:** Innovation

**Category:** Junior

**Region:** Bluewater

**City:** Markdale, ON

**School:** Macphail Memorial E.S.

**Abstract:** An earthquake simulator and a seismograph were constructed to examine the effects of altering vibrational frequencies and amplitudes of deflection to ameliorate building resiliency during significant seismic events. Diagonal bracing decreased the amplitude of deflection in building models by 52 %. Over 643 tests effectuated the design of a Mechanical Earthquake Countermeasure System to counteract S-wave and Rayleigh wave disturbances using destructive wave interference principles.

#### Biography

Kyle Teeter is a grade eight student at École Macphail Memorial Elementary School in Flesherton, Ontario. He lives on his families' farm near Markdale where he contributes responsibly to the farming duties by driving heavy machinery, handling hay bales, and feeding the cattle. Kyle's previous two science fair projects have both earned him best in fair awards at the Bluewater Regional Science and Technology Fair, junior division. This years' project "Earthquake Test: Improving Building Resiliency" investigated earthquake dynamics and building designs from which a system that could improve a building's resiliency to seismic shock wave events was designed. His prototype system successfully decreased the amplitude of deflection of building models. Kyle loves playing sports for his school's teams; such as track and field, cross country running, soccer, football, volleyball and basketball. He plays minor soccer, representative hockey. His favourite sport is baseball, where he plays for three different teams and umpires the younger divisions. He enjoys school where he participates in Me to We, helps coordinate school events, and has become a positive role model for the younger students. Kyle is interested in mechanical engineering as a career where practical applications ...

#### Awards

#### Value

Excellence Award - Junior - Gold Medal Sponsor: Youth Science Canada	\$250
Western University Scholarship Gold Medallist - \$4000 Entrance Scholarship Sponsor: Western University	\$4 000
Total	\$4 250