

OFFICE NEWS

Our Annual Sintra Seminar

Sintra Engineering continues its annual offering of a seminar for insurance adjusters, lawyers, and risk managers. This year's seminar is entitled:

Difficult Disputes - Case Studies from the Forensic Engineering Files (Part 1 & 2)

Edmonton	Calgary
April 19, 2007	April 24, 2007
Grant MacEwan College	Ramada Hotel Downtown
AIC ID#10378	AIC ID#10379
8.0 hrs of CE Credits	8.0 hrs of CE Credits

The seminar will be presented using an interactive, case-based format with actual files that Sintra Engineering has been retained to work on. These are cases that eventually proceeded to trial. Seminar attendees will gain insight into how the engineering analysis conducted during an investigation can impact the liability issues surrounding a case.

Please contact Sintra Engineering at 780-420-1551 or toll free at 1-877-244-6251 for more information or to register.



Free Seminars at Your Office... And We'll Buy Lunch!

Sintra Engineering has been involved in some pretty unique and interesting investigations and we'd like to share that experience to help you better understand how forensic engineering analysis can help you resolve liability and subrogation claims. Our lunch-hour presentations are based on actual cases that have eventually proceeded to trial. We would be pleased to buy your staff lunch and present a seminar on any of the following topics:

ACCIDENT RECONSTRUCTION

- **Where's the Info?** – we show how we can perform an accident reconstruction in cases with limited information (i.e. no police or scene information).
- **The Whole Package** – we walk you through a complete accident reconstruction and get you to decide who was at fault.
- **Was It Really That Bad?** – we show how a biomechanical assessment can help answer the question 'could that accident have caused those injuries?'
- **I Didn't See It!** – we show how we can recreate the conditions affecting visibility to help answer the question: could the driver have seen the hazard in the time leading up to the collision?

PROPERTY LOSS

- **From Fixtures to Faucets to Furnaces and More** – we show how we investigate technical failures to determine why the failures occurred and who was responsible.
- **Burning More Than Just Rubber** – we walk you through how our engineers determine the origin and cause of a vehicle fire.
- **Answers Out of the Ashes** – we demonstrate how we can come up with probable cause and origin from sifting through ashes and debris.

All seminars have been approved for 1.0 hours AIC Continuing Education credit.

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BIOMECHANICAL ENGINEERING

Bridging the Gap



Have you ever had a file come across your desk where the question of injury – either causation or severity – is beyond the scope of a standard engineering analysis? Does a medical assessment not quite address the issue either? If the answer is yes to either question, then a biomechanical assessment is likely what you need. A biomechanical engineer can bridge the gap between an engineering analysis and a separate medical assessment.

Engineers can conclude how a collision occurred and comment on the possibility for injury based on the facts available to them. Medical experts can comment on the extent of injury and hypothesize how an injury occurred. Essentially, a biomechanical engineer provides good value by offering you two expert opinions for the price of one.

Generally speaking, a biomechanical engineer is retained later on in the claim settlement process. The need for a biomechanical engineer arises when an adjuster or lawyer questions the legitimacy of injuries claimed. In the case of vehicle or vehicle-pedestrian collisions, it is necessary to first have an accident reconstruction completed prior to a biomechanical assessment. At Sintra Engineering, a biomechanical engineer is also able to complete an accident reconstruction. This is beneficial in that the biomechanical engineer can ensure that the collision dynamics used as variables in the biomechanical assessment are accurate. Furthermore, a biomechanical engineer who is familiar with the characteristics of vehicle interiors and restraint systems (e.g. seat belts

and air bags) as well as the dynamics of occupants in a collision is beneficial in the assessment of injury causation and answering questions related to seat belt use, injury potential, injury mechanisms, and occupant seating positions.

So what exactly do you get in a biomechanical engineering assessment? You get expert opinion on whether or not the injuries claimed were sustained from the incident in question. To accomplish this, a biomechanical engineer collects as much information as possible about the incident and about the individual's actions before, during, and after the incident. For example, in the case of a vehicle collision, a passenger out of position prior to the collision (e.g. seat back reclined while sleeping, leaned forward to pick something up off the floor) could greatly affect their motion and injury potential. A review of medical documents for the individual pre- and post-accident provides useful information for a biomechanical assessment. The specific description of the type, location, and extent of the injuries helps determine how they may have occurred. Knowledge of pre-existing

Bridging the Gap Cont'd.

conditions gives insight into the individual's potentially increased susceptibility to injury or indicates that the injuries claimed may be a continuation or exacerbation of a previous condition. This information is then analyzed and used to generate an expert opinion on the potential extent of injury.

Soft tissue injuries can be more difficult to assess than more concrete injuries, such as fractures or abrasions. The presence of a soft tissue injury can be difficult to verify as it is usually based on reporting by the individual and each person's sensitivity to or tolerance of pain varies. In such cases, a person's symptoms can only be compared to compilations of injury symptoms statistics from published literature. Sintra Engineering's biomechanical engineers can conclude the likelihood of injury symptom occurrence as a function of vehicle speed change in low-speed collisions and the likelihood of the injury symptoms lasting longer than a specified duration. This can help resolve a case where the injuries claimed are in question.

Biomechanical engineering is a relatively new and constantly evolving field of engineering. Remaining up-to-date with current research is essential. Our biomechanical engineering division reviews current published periodicals, belongs to several biomechanical societies (e.g. Association for the

Advancement of Automotive Medicine, International Research Council on the Biomechanics of Impact, International Society of Biomechanics) and attends and presents at biomechanical conferences.

BIOMECHANICAL ENGINEERING

I've Fallen And I...

Hurt Everywhere!?

A biomechanical engineering assessment can be useful in other accident scenarios such as evaluation of the circumstances surrounding a person who has slipped, tripped or fallen. The circumstances of the incident and the claim determine the issues we are asked to address. The following are some examples of questions that we can provide insight into in a slip, trip or fall incident:

Are the injuries consistent with the incident description?

An example scenario could be an individual who is in an automobile collision and then, at a later date, experiences a trip and fall incident.

With sufficient information, the two events can be evaluated to determine if the person was more susceptible to the injuries reported to have been caused by the trip and fall because of the automobile collision or, on the other hand, if the injuries claimed to be sustained in the trip and fall were solely a result of the automobile collision.



What caused the injury and can it be attributed to the person, the environment, or both?

The surface properties and contour of the surface can be assessed to evaluate if the surface contributed to the slip, trip and fall. Sintra Engineering's property loss engineers

can provide information to the biomechanical engineer regarding applicable codes or standards for the surface or structure in question. This information can be used to compare likely injury outcomes for a surface or structure that was not up to code versus one that was compliant. Considering the person's footwear and whether or not the person was carrying anything that could have affected their balance is important in determining what factors contributed to the slip or trip.

Did the person have a pre-existing condition that contributed to his/her instability?

A person may have a medical condition (e.g. muscular degenerative diseases, drop-foot due to stroke, knee instability due to previous ligamentous injury) which may affect their ability to walk thus increasing the likelihood of a slip or trip and/or may affect their ability to react to prevent a potential fall.

In order to perform a biomechanical analysis of a slip/trip and fall, several pieces of information are required:

- Examination of the site - allows for assessment and/or measurement of the property's surfaces and the surrounding environment.
- Witness statements - detailed information on the individual's actions leading up to and following the incident can shed light on the conditions at the time of the incident and may bring to light details about the environment that would not have been present when the site was examined (ie. ice, rain, or loose objects on the ground).
- Medical documentation pre- and post-incident - is used for assessing the contribution of pre-existing medical conditions and the correlation and severity of injuries reportedly sustained.



PROFILE OF REBECCA MOSS, M.Sc., P.Eng.

Rebecca Moss, M.Sc., P.Eng., is Sintra Engineering's resident biomechanical expert. In school, Rebecca was fascinated by both physics and biology. She decided to combine the two by first studying mechanical engineering at the University of Alberta, and following it up with a masters degree in biomechanical engineering at the University of Calgary where she worked in the Human Performance Laboratory. Rebecca also performs accident reconstructions. Not only does Rebecca know a lot about the biomechanics of injury, she also knows a lot of people. The running joke in the office is that there are two degrees of separation between Rebecca Moss and any other person. If you haven't had a chance to meet Rebecca yet, give her a call, she'd be happy to chat with you about your biomechanical related forensic engineering needs. Of course, if you call to talk about your favourite book, hiking, snowshoeing, or cross-country skiing, you'll also find a willing listening ear.

OFFICE NEWS

Milestone: We're 10 Years Old!
Sintra Engineering's 10th Anniversary

The month of May marks Sintra Engineering's 10th year of operation. Sintra began back in 1997, occupying just a small piece of its current office space. At that time, we employed two engineers and had a focus on doing really great work and developing great relationships with our clients. Fast forward 10 years and the focus is still the same, only now Sintra employs 10 engineers, who are still focused on providing our clients with technically complete, easy-to-understand expert opinions, and a support staff of four, who are committed to ensuring that our clients are completely satisfied.



No business lasts without the support of its clients. The ownership and staff of Sintra Engineering would like to thank all those who have trusted us, over the past 10 years, to provide them with expert opinions to help in the claims settlement process. **Cheers!**