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Charting the Course to Sustainable Business in the Canadian Cement and Concrete Industries	
Train-the-Trainers Session, [Place, Venue, Date]	
	

Notes

- Welcome to this half-day training session that will provide you with:
 - an overview of why the concepts of “sustainable development” and “sustainable design” are getting more play time in the industry and with your customers;
 - what it’s all about (including the LEED® Green Building Rating System);
 - how it will impact you;
 - what are the business drivers and opportunities/threats; and,
 - what can you do personally to prepare yourself.
- Session is organized in two modules –
 1. “Towards Sustainability in the Canadian Cement and Concrete Industries” Module 1 – 90 minutes (1.5 hrs)
 2. “An Overview of LEED Canada NC: Cement and Concrete Contributions” Module 2 – 180 minutes (3 hrs)
- Summaries of both modules that make up this workshop are provided in the Participants Workbook in front of you.

NOTES


Setting the Context	
• What?	• Training to help you understand and take advantage of sustainable development as business issue.
• Who?	• Industry sales and technical professionals involved in business development and meeting client needs.
• Why?	• More and more key clients are demanding “sustainable” products and asking for “sustainability” information.
• How?	• Provide you with information on what clients are seeking and get you thinking about a proactive approach .

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- More people, be they sales, technical, or senior management are getting questions from customers, community members, regulators, NGOs and other stakeholders like:
 - “What does your company do to support sustainable development?” OR
 - “How do concrete products support sustainable buildings or sustainable communities?”
- **The main objective of this module is to equip you to respond to questions by providing knowledge, resources, and new insight on issues around what sustainable development is, and how it can benefit the way you conduct business.**
- **In other words, understand why your clients are demanding it, and what it will mean moving forward to your business and individual job.**
- The market is becoming more sensitized to sustainability and what it means in operations and products – they are looking at environmental/social impacts at “big picture” level from production through product performance to “end of life” and disposal.
- The vast majority of companies in the past have tended to view sustainable development issues as a diversion from their mainstream activity.
- RESPONDING TO SD IS NO LONGER AN OPTION, BECAUSE THE “MAINSTREAM ACTIVITIES” AT THE CORE OF THE BUSINESS ARE DEMANDING IT (architects, engineers, contractors, and their clients, developers, government, communities in which we operate, etc.).
- Companies that are performing in a more sustainable way, and backing up their products with knowledge and timely, accurate information about the sustainability of their products and operations are getting further ahead.
- Contingent on you to know what you are doing to respond, and what your competitors, both within and outside your immediate industry, are doing.


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The Training Modules	
	<ul style="list-style-type: none">• Module 1: Sustainable Development as an Industry Business Issue• Module 2: Leadership in Energy and Environmental Design (LEED®): Concrete and Cement Contributions• Module 3: Sustainable Development and Cement Manufacturing• Module 4: Sustainable Development and Concrete Manufacturing• Module 5: How to Bring Sustainable Thinking to Your Company• Module 6: Sustainable Communities - An Innovative Approach to Marketing Concrete
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Notes

- These are the sustainable development related modules identified by the Cement Association Training Working Group.
- These modules will be developed and rolled out over the next couple of years to continue to build on our knowledge.
 - The third and fourth modules will deal with sustainability issues and opportunities associated with cement and concrete
 - The fifth module will deal with the training, education, and strategic dimensions of SD – how to develop that vision and make it happen.
 - The sixth module will deal with sustainable communities – what is driving this movement, and how it’s an opportunity to “supersize” sustainability opportunities.

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g3 Session Agenda	
Section	Time
1. Sustainable Development (SD): What is it and why is it a business issue?	15 min.
2. What does SD mean for <u>me</u> ? Why should SD be a concern?	15 min.
3. What do I need to know and what is the message we need to deliver?	25 min.
Discussion/Activity and Closing Comments: Where do we need to go as an industry?	15 min.
~70 min.	
...break – then Module 2 – which covers how concrete applies to LEED®	
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This is the roadmap for the first module and estimated timing.

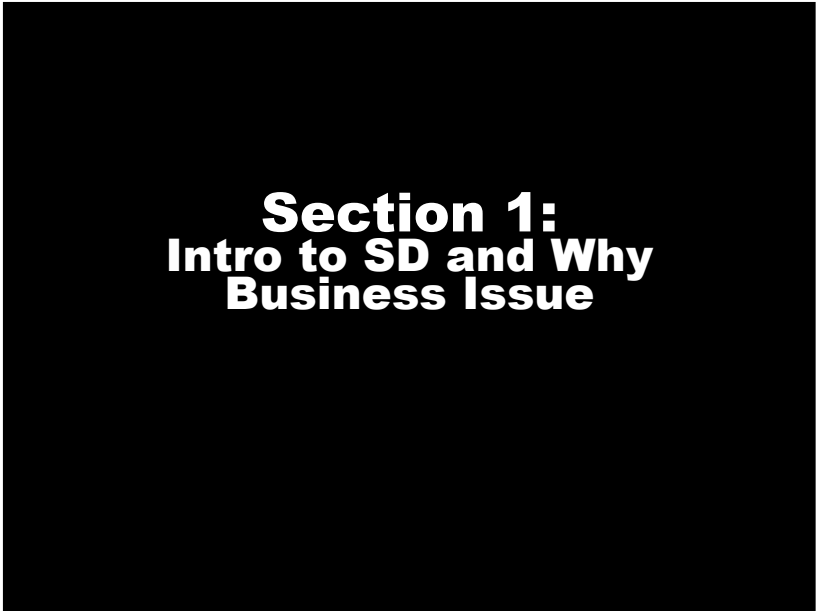
1. How environmental issues are impacting us and what SD is all about, especially as a business issue – since we’re all here as business people. (15 minutes)
2. What SD means for you? Why should SD be a concern from a corporate and personal perspective (drivers), and what are some of the things you can do to prepare yourself to take advantage of opportunities presented by SD? (15 minutes)
3. What information do I need to know and what message do I need to deliver to my clients? (25 minutes)
 - Recognize that different clients have different needs
 - What is the strong sustainability and “high performance” message we can deliver?
 - How can we “animate” concrete and allow clients to see new possibilities?
 - Be aware of and have data to dispel myths/misinformation about concrete – set the record straight!
4. Discussion to talk about your thoughts on what are the threats and opportunities posed by SD, and where we need to go as an industry (15 minutes).

Slide 4

g3 Shortened session, as per comments received in pilot. Should be under 60 minutes all together. Adjust session timing of sections once completed.

gmarett, 1/16/2007

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Section 1

Sustainable Development: What is it and why is it a business issue?

- What is sustainable development (SD)?
- Why is SD an industry concern?

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- This section very briefly discusses the sustainable development concept at the 10,00 foot level and then translates this into why it's a competitiveness issue for our industry– what are some of the trends.
- It will help you answer questions like:
 - What is “sustainable development”?
 - Why is SD an industry concern?

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- You've probably heard about reports of global warming, environmental impacts, and seen movies or other documentaries such as Al Gore's "An Inconvenient Truth" documenting the real environmental impacts that are being created as our economy grows and other parts of the world become more industrialized?
- You've probably also heard of the term "sustainable development".
- How do these things fit together?

NOTE: As introductory activity, to solicit participation and icebreaker while setting positive mood for workshop.

- Ask: What does sustainable development mean to you, or what words, phrases or issues pop to mind?
- Ask: What does sustainable development mean for your company, in your own words?
- [Write ideas noted on flip chart, then]
- Yes, these are all issues we are faced with, and some common themes in your comments are ...[described themes, likely our human impact, our responsibility, and the limits of the biosphere or the earth in terms of what we take out, and what we put in].

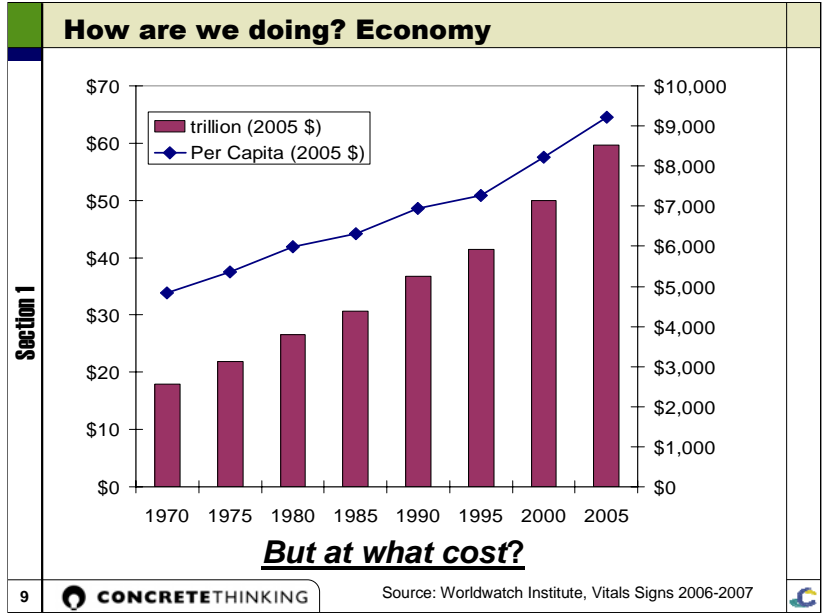
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What is Sustainable Development?	
Section 1	<h3>Sustainable Development Defined</h3> <p>“development that meets the needs of the present without compromising the ability of future generations to meet their own needs”</p> <p>World Commission on Environment and Development's (the Brundtland Commission) report, <i>Our Common Future</i>, (Oxford University Press, 1987)</p>
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Notes

- The traditional definition that we use as an industry is “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”.
- This is the definition from 1987 “Brundtland Commission” – captures idea that we need to meet our current needs, but we can’t do it in a way that uses all resources and wrecks planet for our children and grandchildren.
- SD has been interpreted to cover virtually all aspects of corporate approaches to economic development, environmental protection and social responsibility.
- Companies have adopted a variety of phrasings, including terms such as corporate responsibility, sustainable growth, and global corporate citizenship, to capture the essence of their own journeys towards achieving SD goals.
- This session is about clarifying what it means to our industries from a competitive viewpoint, and how we can move towards implementing it in practice.
- We’re seeing that human environmental impacts are occurring, and we have an opportunity to “do well by doing good” - creating a competitive advantage by the way we position ourselves in response to the SD drivers.
- Other nations are developing much more rapidly than we are and demanding their share:
 - For example, China – a country of some 1.3 billion, had 10% economic growth in 2005, India’s economy, supporting 1 billion people, grew at 7.6% (World Factbook, 2006).
 - To support this level of growth, they are ramping up their resource consumption, and as a result, their pollution.
 - This has real effects on us – in a global economy, we are all competing for the same resources.
- What are the indications that sustainable development is something we should be paying attention to?

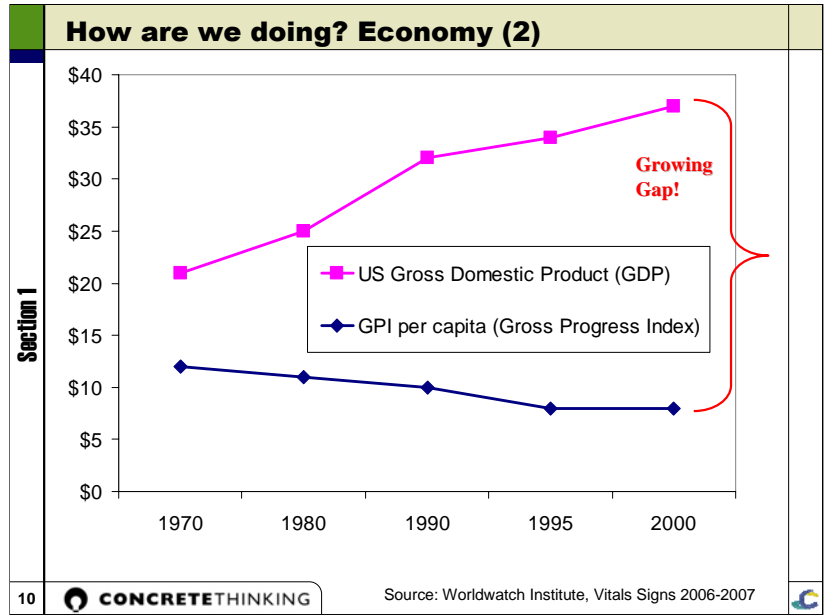
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- If you look at economic growth, which seems like a natural place to start, looks like we are doing pretty well...
- **Global economy** reached another new peak, with the gross world product hitting \$59.6 trillion in 2005.
- **Oil** use grew 1.3 percent in 2005, to 3.8 billion tons (83.3 million barrels a day).
- BUT...
- The key question is...at what cost?

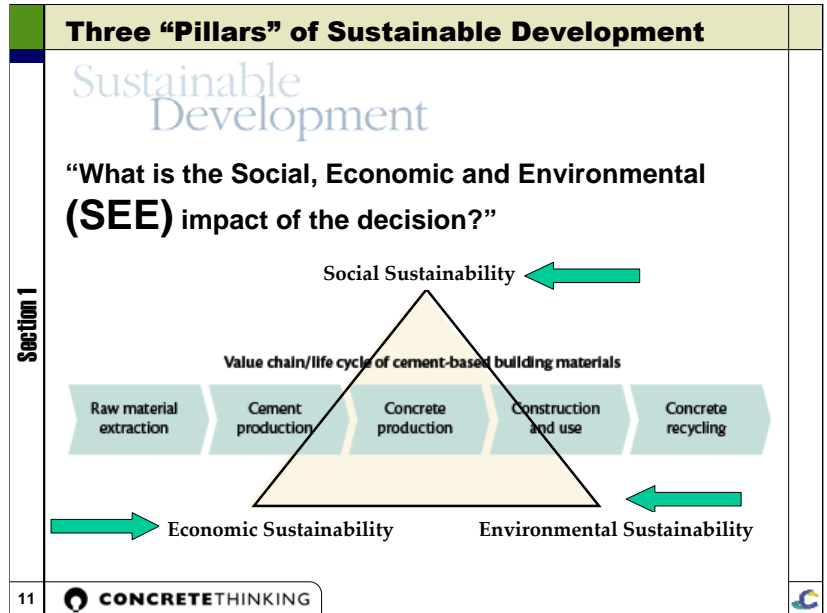
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- This graphic tells a more balanced story (data on GPI done regionally and not nationally in Canada, but would show similar story).
- This shows US gross domestic product (GDP) per capita (pink line) versus the gross progress index (GPI) per capita as the blue line.
- Gross progress index (GPI) is similar to GDP as an economic measure, but it subtracts out the environmental and social “bads” such as crime, and environmental impacts, such as effects of global warming, resource depletion, pollution and ecosystem degradation, etc.
- For example, the Exxon Valdez in Alaska in 1989 added hundreds of millions to GDP (clean ups, legal fees, etc.), but resulted in a negative on GPI (due to environmental and social impacts – such as lost fishery work).
- In other words, depends how you view it...
- What are the factors that are subtracted out in the GPI? (next slide)

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From a business perspective...

- **Sustainable Development** is development that attempts to bridge the divide between economic growth and environmental protection, while taking into account other issues like community relations and health & safety.
- It seeks to develop means of supporting economic growth while supporting the environment, being responsive to communities in which we operate, all while using the fewest resources possible (energy, raw materials).
- All of the economic, social and environmental systems must be simultaneously balanced.
- Satisfying any one of these three pillars without also satisfying the others is deemed insufficient.
- **Sustainable development is often misinterpreted as focusing solely on environmental issues.**
- In reality, it is a much broader concept that encompass three general policy areas: economic, environmental and social (also referred to as the three “P’s” or “people, planet, profits”).
- Several United Nations texts refer to the "interdependent and mutually reinforcing pillars" of sustainable development as economic development, social development, and environmental protection.
- Industry is starting to pay attention, and sustainable development is rapidly becoming a factor in decision-making in the building world.

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Why is SD the Answer?	
Section 1	1. Combines business drivers with environmental performance and outcomes.
	2. Recognizes business realities (not “all or nothing” approach).
	3. Recognizes environmental limits.
	4. Proactive approach to employee and community relations.
	5. Helps us understand relationships and tradeoffs and make best possible long-term decisions.
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- About realizing that business realities and environmental progress not mutually exclusive.
- Recognizes SD as competitiveness issue that can differentiate products, but operational costs is applied intelligently.
- Recognizes that in the mid-long term, resources will become a limiting factor, and those industries an companies that positioning and investment now will be those that thrive when facing future resource limits and environmental challenges.
- Integrates thinking about importance of people – employees, communities and other stakeholders that our businesses rely on. Without them, our businesses do not exist. Not an inconvenience, but reason behind our businesses.
- Make decisions with longer-term viewpoint – are we doing what is best for the company in the long term, and making the right investments?

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Why is SD a concrete industry concern?



Wood, Steel, and Plastics Initiatives



Section 1

“Steel, aluminum and concrete come from materials extracted from the earth, which can never be renewed or replaced. Even recycled steel contains a large portion of virgin materials. Plastics come from non-renewable petroleum products.”

**If we don't position ourselves....
Our competitors will!**

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- **It's first and foremost a competitiveness issue...how we position ourselves in marketplace.**
- Competition structural materials are not sitting on their laurels.
- We have the Wood industry “Green by Design” [click]
- The Plastics Industry touting their products contributions to green building [click]
- Steel as a strong, recyclable material [click]
- [Click for excerpts of reports (x4)]
- If we don't position ourselves....Our competitors will!



- We are in a major market transformation in which clients are seeking sustainable alternatives.
- These organizations are all putting out materials aimed at educating their customers (who are same as yours) about inherent sustainability advantages of their materials from their own viewpoints.
- They sell their own story by talking about recycled content, thermal resistance using their own studies, renewable resources, greenhouse gas reductions, low embodied energy, etc.
- Competitor industries doing Sustainability Advocacy include:
 - Steel Structures Education Foundation
 - Canadian Steel Producers Association
 - Canadian Institute for Steel Construction
 - Canadian Plastics Industry Association
 - Canadian Wood Council
 - BC Forest Products
- We will discuss later what the cement and concrete allies are doing to counter this, but it is really up to the people in the industry to be knowledgeable in these areas of “sustainable performance” to be able to create a competitive advantage.
- We need to debunk concrete myths - arm ourselves with information about the sustainability benefits of our products.

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Section 1

- First clip (2 minutes)

Teresa Coady, Bunting Coady Architects

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Section 2:
What does SD mean for me?
Why should SD be a concern?

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Section 2

**What does SD mean for me?
Why should SD be a concern?**

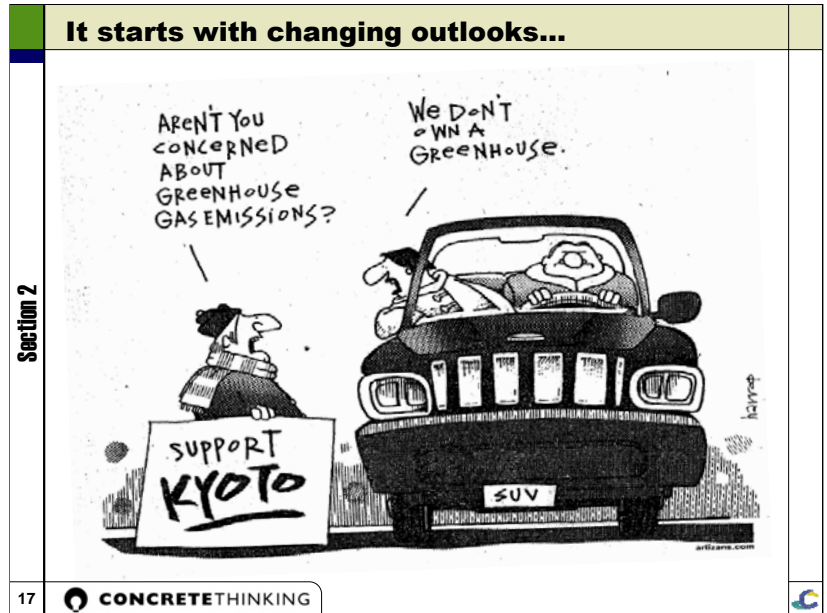
- Why should sustainable development be a concern?
 - To me personally?
 - To my company executives?

Notes

- We've seen a bit how sustainability is becoming a "competitiveness" issue.
- But how does this affect me and why should it be a concern?
 - Personally
 - From corporate perspective
- What can I do?


NOTES



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- We need to collectively get beyond the attitude portrayed in this cartoon, recognize that we contribute to environmental impacts, but that we are also key to achieving solutions...
- Even more importantly from a business perspective, its and opportunity and a competitiveness issue...(NEXT SLIDE).

NOTES

Why is this a concrete industry concern?	
Section 2	<p>Pretend for a minute...</p> <ul style="list-style-type: none"> • I am an architect – designing a four storey office building and I am still considering structural materials... • You visit my office hearing that this is a LEED® project that will incorporate sustainable design • I have heard from the competition.... <ul style="list-style-type: none"> ➢ Wood tells me... ➢ Steel tells me...
	
	<p><u>Convince me why I should use concrete on the project?</u></p>
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Notes

NOTE: As moderator, take on role of architect, and summarize in an animated way the benefits of wood and steel...

- Joe from Canadian Wood Truss Association (CWTA) came to see me and told me that wood is the only building material that comes from a renewable resource, and that sustainable forestry ensures a continuous supply so that we don't overharvest or degrade the environment.
- He also told me it takes 21 times more energy to produce the materials for a 4" raised concrete slab than for a raised wood floor.
- The concrete design required 1.7 times more energy than the wood option, and the steel design 2.4 times more energy.

- Ann from Acme Steel came for a visit and presented the SD benefits of steel. She tells me the steel industry has reduced its energy consumption on several steel processes and its CO₂ emission by more than 20% since 1990 and the amount of energy required to produce a ton of steel decreased by almost 45% from 1975 to 2001.
- The integrated mill produces steel with the BOF (Basic Oxygen Furnace) while the mini-mill's process is based on the EAF (Electric Arc Furnace). The BOF uses 25% recycled steel (up to 35%) and the EAF is fed 90% recycled steel (up to 100%). Adding the post-consumer and half the post-industrial recycled contents will generally provide a 15-20% LEED® value for a BOF and 75-90% for an EAF.


So tell me how concrete stacks up against this stuff they've told me...

[RECORD ON FLIP CHART]

This is a good start...

- We'll learn a bit more about concrete benefits throughout the rest of this module and the next so that you can really "wow" them with your response next time.


NOTES

Why is this a concrete industry concern?	
Section 2	<u>Environmental Characteristics</u>
	Wood is..... Renewable
	Steel is..... Recyclable
	Concrete.....= Durable =..... <u>Sustainable!</u>
<u>This is the message we want to stick in our customers minds!</u>	
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- Continuing on why this is a competitiveness concern, it is not only about “doing the right thing” – it is about moving product, otherwise, it would probably not get as much attention.
- As a quick answer, try and think of environmental characteristics associated with these building materials...
- Wood is....[Click]...[Ask for response]... renewable. Harvested to grow again – is constantly replenishable as long as harvested below yield.
- Steel is....[Click].. [Ask for response]... recyclable. Has 20-90% recycled content, and can be recycled back into original product.
- And some of the message the competitors are delivering:
 - Wood products can have low levels of volatile organic compounds (VOCs) that affect indoor air quality, can be sustainably harvested (below rate of regrowth and minimizing impacts) based on the Forest Stewardship Council (FSC) criteria, and can have recycled content.
 - Steel has high recycled content (20-90%), and can in turn be recycled.
 - Wood and steel can be reused.
- Concrete is....[Click].. sustainable. Durable, recyclable, energy efficient, resource efficient, low maintenance, flexible – we want all of these things to come out, but....[Click]... sustainable is the word association we are after.
- The last message – that concrete is a sustainable choice, is the message we want to stick in our customers minds, but is a message that is far from clearly heard and understood in the design and construction community.
- WE NEED TO CHANGE THIS!
- Some are getting the association between “durability” and “sustainability,
- CAC market Research – engineers, contracts, owners, public (buyers) – when asked what is the most sustainable building material, unanimously answered concrete.
- but we need to go farther.

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Why Clients are demanding it...	
Section 2	<ul style="list-style-type: none">• “Lifecycle” management<ul style="list-style-type: none">➢ Reducing overall environmental impacts at all stages (extracting, manufacture, use, disposal)• Sustainable building movement (including LEED®)<ul style="list-style-type: none">➢ Save money on energy and water➢ Reduce site impact (e.g., erosion/stormwater control)➢ Improve indoor environmental quality for occupants (e.g, air quality, light & views, noise control)➢ Reduce environmental impacts of materials by using locally produced products that are durable, contribute to above benefits, contain recycled content, and are recyclable themselves.
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Notes

- Looking at why clients are demanding sustainable products and buildings...
- They are increasingly looking at the lifecycle impacts of the product that is purchased (mainly major multi-nationals that are doing this) – going “upstream” and “downstream” to look at overall environmental/cost benefits. [Click]
- Clients are demanding sustainable products and are setting explicit standards in attempting to achieve the highest cost-effective level of sustainability in their buildings. These are some of the benefits they are after. [Click through green building benefits]
 - Energy – using thermal mass, tighter envelopes, integration of passive/active heating/cooling and lighting features.
 - Use of lower flow fixtures and low impact landscaping saves water
 - Reduce site impact through carefully planning and design of hardscapes.
 - Indoor environmental quality (thermal comfort, ventilation, light, acoustics)
 - Materials that use local inputs, are reused, contain recycled content, or are recyclable at end of life.
- The Leadership in Energy and Environmental Design (LEED®) green building rating system is the most recognized system, and is the subject of the second module.

NOTES

Why SD is a concern to Company Executives...	
Section 2	1. Compliance 
	2. Stock Price and Access to Capital 
	3. Process Cost Savings (resource efficiency) 
	4. Reputation (Compliance +) 
	5. Product Innovation 
	6. Product Placement and Marketing 
	7. Human Resources: EH&S and Retention 

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Notes

- Why is SD a concern in the boardroom? The people in the boardroom's are beginning to pay attention to this, and it is not out of the kindness of their hearts (in most cases), but for hard and fast business reasons.
- No matter how important environmental and social considerations are, the business community understands money better than anything else.

Compliance

- For managing risk, companies want to stay on right side of environmental laws, and if they've been good in this regard, also gives them leverage with regulators with regard to flexibility, open communication, etc.
- Those that are frequent transgressors end up paying fines or worse (legal indictments of senior management), and do not get the regulatory latitude.
- The right and ability to operate a corporation is given by the people (stakeholders, shareholders, employees) and governments.

Stock Price and Access to Capital

- In last 5 years or so, "sustainability indices" in investment world that rank publicly-traded companies on their sustainability performance. These include the Dow Jones Sustainability Index and Innovest Strategic Value Advisors Inc.'s Global 100 ranking.
- Many of these have matched or exceeded "standard" stock indices over past 5 years. For example, The Global 100 outperformed the Morgan Stanley Capital International World Index by 13.5% in the year ending December 31, 2005, and 7.1% in the past five years.
- Lenders like this, and are also more likely to lend (with favourable terms) to companies that show regulatory compliance.

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Notes (same slide continued...2)

Cost Savings

- Investing in alternative fuels and resource efficiency may take some upfront investment, but with rising energy prices, payoffs and ROI on many of these projects is favourable.
 - e.g., alternative solid fuel circuits that replaces part of fossil fuel need during clinker production.
- This just makes good business sense, but where it can be combined with environmental benefits, we are getting ahead on the sustainability agenda.

Reputation

- The “right to operate” for a corporation is given by the people (stakeholders, shareholders, employees) and governments.
- In a sense, the “right to operate” is also given by the earth, in the form of resources and ability to absorb and filter a certain amount of our “waste” products. The “right to operate” can be revoked if either elements not taken care of in long term.
- Companies, sensing pressure and increased scrutiny and potential risk from government regulations, investors, shareholders, and the communities in which they operate, have been increasingly paying attention to how they respond, or are perceived as responding, to environmental and social issues and go “beyond compliance”.
- Corporate social responsibility (CSR) is closely linked in proposing that enterprises should be obliged to make decisions based not only on the financial/economic factors but also on the social and environmental consequences of their activities.
- Increased accountability and more open reporting, including sustainability reporting, is becoming more common as a means to communicate commitment and performance on SD issues.

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Why SD is a concern to Company Executives...	
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Notes (same slide continued...3)

Product Innovation

- Companies increasingly focused on developing products that have more environmental benefit in their application in the built environment
- Examples include:
 - Concrete products that incorporate varying amount of Supplementary Cementitious Materials (SCMs), including fly ash and slag that are by-products from other industries.
 - Use in remediating contaminated soils through solidification/stabilization (S/S): whereby cement is used to bind wastes and contaminated soils in a form that is safe and stable. Increasingly seen as cost effective way to rehabilitated contaminated lands.
 - Other examples in module 2.

Product Placement and Marketing

- Increasingly, the sustainability characteristics of products, along with innovations and other characteristics can help place product and assist in marketing efforts. If a client has a choice between two comparable products, and one salesperson knows the sustainability angle and other doesn't – guess who gets the order?



Human Resources

- More people place environmental performance as a consideration in where they choose to work. WBCSD entire did study on this issue.

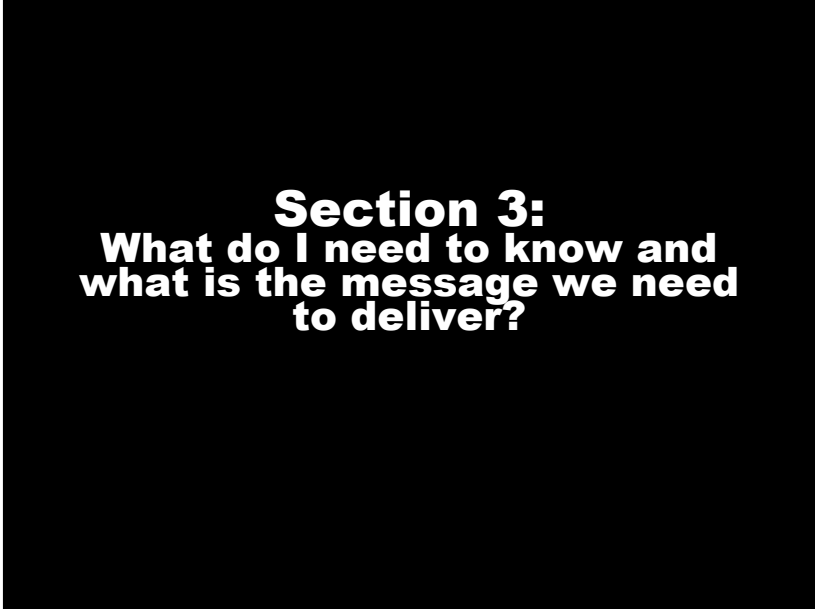
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Section 2

- Second clip (2 minutes)
Alan Kreisberg, CAC

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Section 3

What do I need to know and what is the message we need to deliver?

- What sustainable product benefits can we deliver to clients?
- How can I take advantage of these opportunities?

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- Now that we've talked about the "what" and "why", this section is about the "how"
 - How to "sell" sustainability benefits of concrete to client
 - How to redefine clients to move up the value chain – to place product earlier in the design stage.
 - How to communicate a consistent message regarding the most beneficial message regarding the sustainability of concrete.

NOTES

Section 3

Top 10 Sustainable Benefits of Concrete Buildings

1. Concrete buildings last longer and are less expensive to maintain
2. Concrete is locally produced
3. Concrete buildings use less energy
4. Concrete is an inert, environmentally-friendly material
5. Concrete is 100% recyclable
6. Concrete effectively uses by-products from other industries
7. Concrete choices are limitless and can match almost any needs
8. Concrete buildings require fewer finishes
9. Concrete buildings are more adaptable for change of use
10. Concrete's light colour helps to reduce urban heat island effect

Notes

1. Concrete buildings last longer and are less expensive to maintain
 - Durability is the ability of concrete to resist weathering action, chemical attack, and abrasion while maintaining its desired engineering properties. Different concretes require different degrees of durability depending on the exposure environment and the properties desired.
 - Resistance to alkali-aggregate reaction, chemical resistance, corrosion of reinforcement, freeze-thaw, fire, erosion, etc.
 - For instance, concrete used for the Confederation Bridge across the Northumberland Strait between Prince Edward Island and New Brunswick was specifically designed resist freezing and thawing, seawater exposure, and abrasion from floating ice. With a design life of 100 years, the use of high performance concrete and careful attention to production and construction practices were imperative. Over 400,000 cubic meters (520,000 cubic yards) of concrete was used for the structure.
 - Resources: "PCA Specifier's Guide to Durable Concrete", related ASTM/CSA test methods, including CSA S478-Durability in Buildings (recognize in LEED® rating system).
2. Concrete is locally produced.
 - Ready-mix and precast plants generally use aggregates that are extracted within 160 km (100 miles) of the plant.
 - Cement and supplementary cementitious materials used for buildings are often manufactured within 800 km (500 miles) of a job site.
 - Reinforcing steel is also often manufactured within 800 km (500 miles) of a job site, and is typically made from recycled materials from the same region.

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Section 3

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CONCRETETHINKING



Notes (same slide continued...2)

3. Concrete buildings use less energy.
 - Concrete structures have high thermal mass – which creates a heat-storage “sink” to moderate daily temperature swings and save on heating and cooling.
 - Thermal mass can make a significant contribution to energy savings by reducing peak heating and cooling loads; this is demonstrated when mass is incorporated into an energy consumption simulation program. In module 2, we will get into examples of this in the context of the LEED® green building rating system.
4. Concrete is an inert, environmentally-friendly material.
5. Concrete is 100% recyclable.
 - Concrete can be crushed on or off-site for aggregate as road base or construction fill, decreasing need for virgin mined aggregates.
 - Application of being research to recycle back into production process.
6. Concrete effectively uses by-products from other industries.
 - Supplementary cementitious materials (SCMs), such as fly ash, silica fume, and slag cement, are by-products from other industries, such as power generation. LEED® Canada– NC gives credit for SCMs (under recycled content) due to their light weight and reduced environmental impact relative to Portland cement. Rebar is also made of recycled steel.
7. Concrete choices are limitless and can match almost any needs.
 - One thing as an industry we need to convey better is the almost endless palette of concrete products available to architects and engineers.
 - It is not a one-dimensional product, but there are precast, cast-in-place, ICF, pipe, interlock and masonry applications.

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Section 3

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6. Concrete effectively uses by-products from other industries
7. Concrete choices are limitless and can match almost any needs
8. Concrete buildings require fewer finishes
9. Concrete buildings are more adaptable for change of use
10. Concrete's light colour helps to reduce urban heat island effect

CONCRETETHINKING



Notes (same slide continued...3)

8. Concrete building require fewer finishes.
 - Choices can be made to colour or treat the product in the manufacturing process, reducing finishing requirements with products that could degrade indoor air quality.
 - Also, having exposed materials and fewer finishes reduces the building's overall environmental impact. Self-compacting technology enables high quality exposed finishes.
9. Concrete buildings are more adaptable for change of use.
 - Durability means that a concrete structure can be selectively demolished and the core and shell reuse as the basis of new, adapted structures.
10. Concrete's light colour helps to reduce urban heat island effect.
 - Using lighter colour concrete can not only reflect heat and reduce cooling needs during summer, but also reduced the "heat island effect", where in urban areas, darker paved surfaces absorb and reradiate heat, raising air temperatures relative to surrounding "green areas" (where more plant means more of sun's energy absorbed, but not reradiated). Heat islands create high energy peaks for cooling in cities.

NOTES

Section 3

Top 10 Sustainable Benefits of Concrete Roads



1. Concrete lasts longer and are less expensive to maintain
2. Concrete roads reduce fuel consumption of heavy trucks
3. Concrete roads require less maintenance
4. Concrete requires less virgin aggregate for road base
5. Concrete is 100% recyclable
6. Concrete uses industrial waste from other industries
7. Concrete roadways require less lighting
8. Concrete pavements can be designed to return runoff back to the water table
9. Concrete is a locally produced
10. Concrete's light colour helps to reduce urban heat island effect

CONCRETETHINKING


Notes

[Depending on audience, this slide can be used as alternative → right click and select “Unhide”]


NOTES

Section 3

Top 10 Sustainable Benefits of Concrete



1. Concrete lasts longer and is less expensive to maintain
2. Concrete is a locally produced in every Canadian community.
3. Concrete buildings and roads use less energy
4. Concrete is an environmentally-friendly material
5. Concrete is 100% recyclable
6. Concrete effectively reuses by-products from other industries
7. Concrete is inert
8. Concrete buildings require less finishes
9. Concrete buildings are adaptable for new tenants
10. Concrete's reflective surfaces help to minimize the urban heat island effect




CONCRETETHINKING

Notes


[Depending on audience, this slide can be used as alternative → right click and select “Unhide”]

NOTES

Cement Industry Position on SCMs	
Section 3	<ul style="list-style-type: none">• Supplementary Cementitious Materials (SCM) used for almost 20 years to further reduce concrete's embodied energy.• Used <u>judiciously</u>, SCMs can enhance long-term concrete properties as well.• Substitution of:<ul style="list-style-type: none">➤ fly ash for more than 30%➤ slag cement for more than 35% of the Portland cement <p>→ <i>high volume application and its suitability for intended use should be pre-qualified!</i></p>
32	

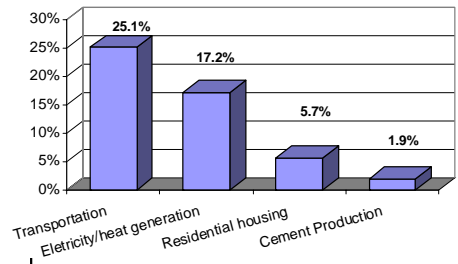
NOTES

Concrete Facts – CO₂ emissions




Section 3

- Climate change is increasingly an issue of public concern.
- **Myth:** cement accounts for a large amount of Canada's CO₂ emissions.
- **Fact:** cement production accounts for 1.92% of CO₂ emission in Canada



Sector	Percentage
Transportation	25.1%
Electricity/heat generation	17.2%
Residential housing	5.7%
Cement Production	1.9%

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Notes

- Public are increasingly concerned about climate change (and CO₂ emissions) as a major public concern.
- A poll of 33,237 people from all major regions of the world (30 countries) conducted by GlobeScan Incorporated between October 2005 and January 2006, found that a 90% of people in all countries polled believe that “climate change or global warming, due to the greenhouse effect” is a serious problem.
- This is one example where we need to set the record straight, along with the benefits of concrete products that we will discuss in a few slides.

NOTES

Section 3

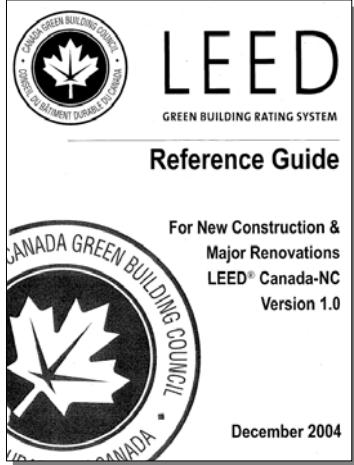

Top 10 Sustainable Benefits of Concrete Roads



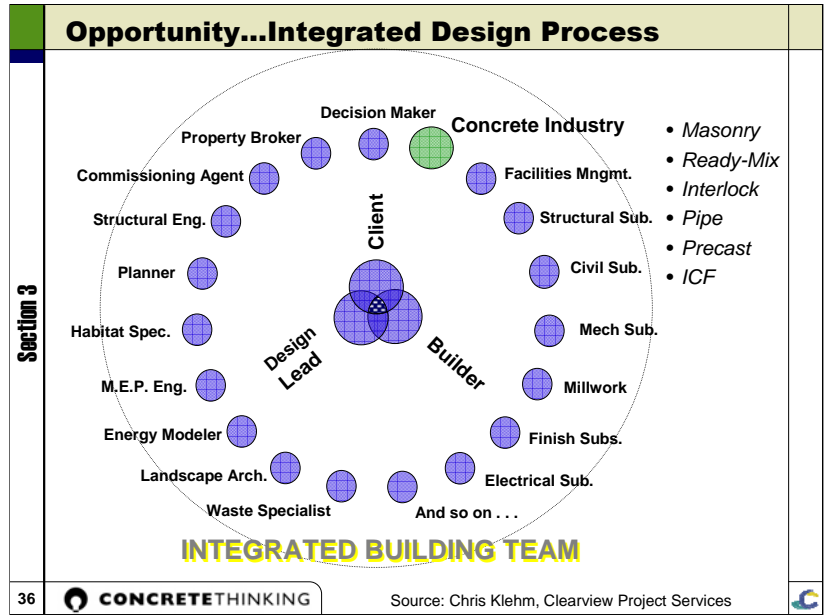
1. Concrete lasts longer and are less expensive to maintain
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9. Concrete is a locally produced
10. Concrete's light colour helps to reduce urban heat island effect

CONCRETETHINKING

NOTES

LEED® as Major Demand Driver	
Section 3	<div style="display: flex; align-items: center;"><ul style="list-style-type: none">• LEED® is recognized green building rating system.• Leadership in Energy and Environmental Design.• Credits towards rating levels for incorporating building construction methods and materials that are energy and resources efficient.• Major public and private developers are mandating LEED®.</div>
35	

NOTES



Notes

- The opportunity starts with the integrated design process (IDP)...which is commonplace on many building projects that are incorporating sustainable design, either LEED® or non-LEED®.
- IDP has all design team and other participants around the table to provide design suggestions to meet sustainability goals of project...
- What's missing from this picture?
- Concrete industry can add value through technical design expertise at the table
- As an industry and among companies, we are sitting on a vast amount of technical expertise and information that can be brought to the table.
- New “knowledge” economy built on supporting products with service and “intelligence”
- Wouldn't it be a great opportunity to do this and have our say before the decisions are made...
- Industry is working on making this happen.
- While we aren't fully there yet, there are things we can do to prepare and educate ourselves.
- Increasingly in the future, your professional position may be advanced by educating yourself and being able to respond to the growing client demand for products that support sustainable design.

NOTES

Opportunity...Move upstream to place product

- Current “receive order & deliver” model
- Opportunities to move “upstream”

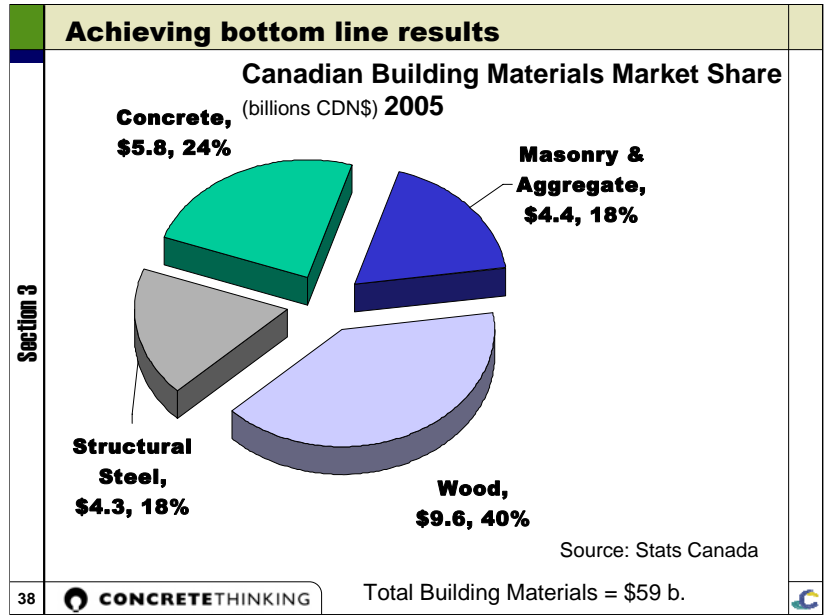
Section 3

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Notes

- This graphic shows the position we are generally in as businesses, where we receive order and deliver. [Click]
- Few exceptions where we work “upstream”, but not universal. [Click]
- As we move up the project chain, we have more of an ability to influence the design decisions and application of concrete products in projects, particularly sustainable design projects that employ an integrated design process (IDP).
- This is a huge product placement opportunity, and an ability to influence and work with our clients...

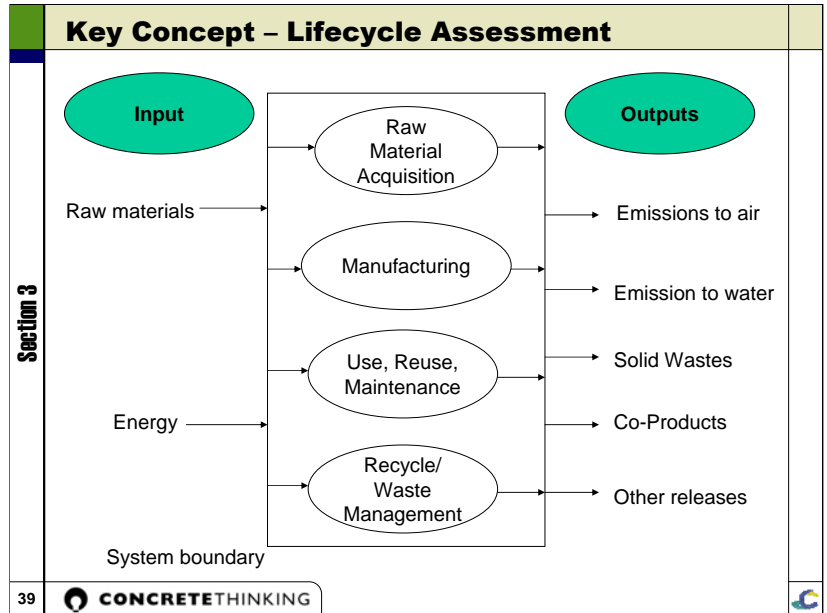
NOTES



Notes

- Pie chart shows Canadian total building material sales for concrete, masonry & aggregate, wood and structural steel in 2005.
- Idea is to grow the green and blue slices by excelling at “selling” the sustainability benefits as well as other performance and price elements of our products.

NOTES



Notes

- A key concept in sustainable building that is **essential** to understand in selling sustainable attributes of concrete is “lifecycle assessment”.
- To get total and accurate picture of the how a material contributes to sustainability, we need to consider the “cradle-to-grave” impact of a building material – extraction, processing, construction, operation, demolition and recycling/disposal impacts.
- Life cycle assessment (LCA) is means to determine operating and “embodied” impacts of a material or building.
- Embodied impacts are total impacts during raw material extraction, manufacturing, transport, and disposal of a material. Does not include operational impacts, which are those from energy consumption/emission and other environmental impacts (e.g., cost of replacement due to early failure) during life of building.
- Concrete can help reduce operating energy and is competitive on embodied energy (when you consider durability).
- Use right concrete product for right application, and all concrete can be sustainable concrete.
- Wood and other industries tell story based on embodied energy only, without considering the operating energy. When you consider operating energy and full life cycle, the sustainable benefits of concrete stand out.
- We will see example in next slides.

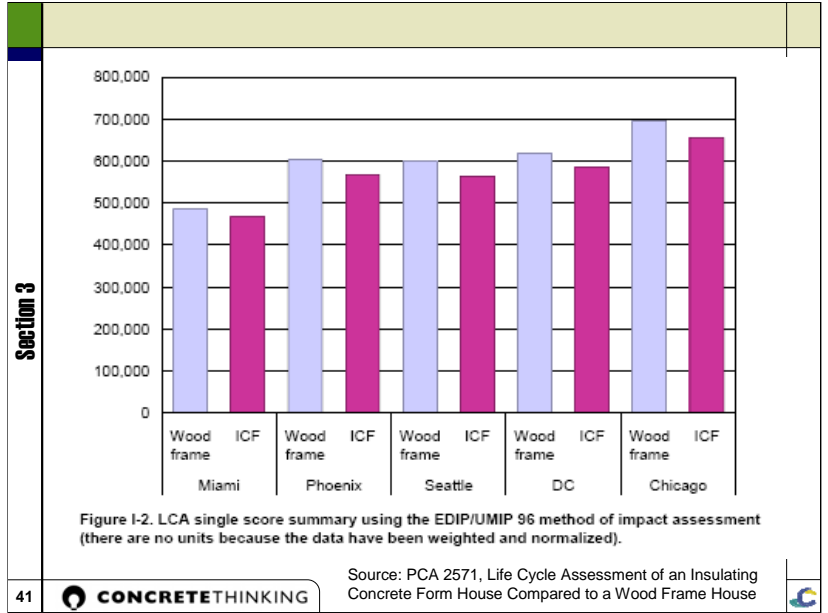
NOTES

LCA Example – Wood Frame/ICF House	
Section 3	
	<ul style="list-style-type: none"> • 2003 PCA Study compared a wood-framed wall and an insulating concrete form (ICF) wall. • the environmental impact in each category is greater (worse) for the wood house than for the ICF house. • most significant environmental impacts not from construction products but from production/use of electricity and natural gas. • largest impacts: <ul style="list-style-type: none"> ➢ depletion of fossil fuel reserves (categorized as damage to natural resources) ➢ release to the air of respiratory inorganics (categorized as damage to human health).
40	
	Source: PCA 2571, Life Cycle Assessment of an Insulating Concrete Form House Compared to a Wood Frame House

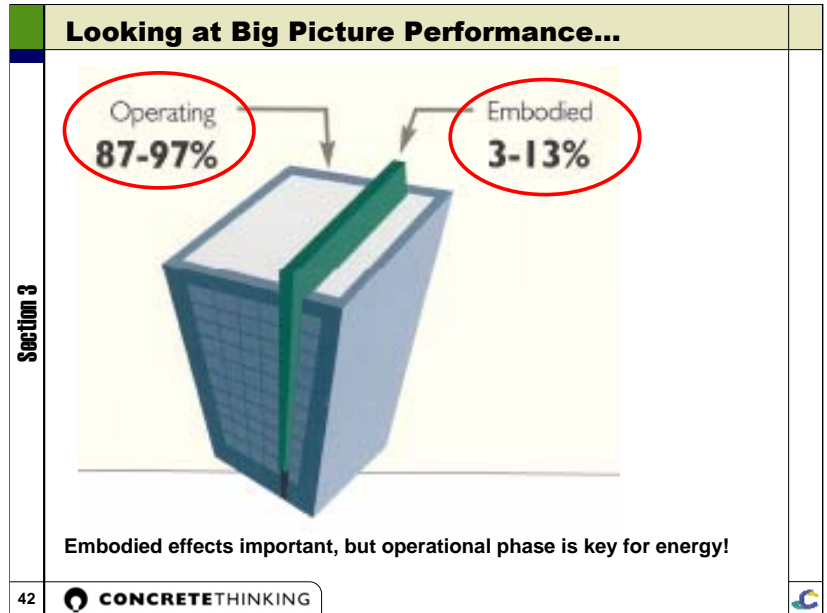
Notes

- 2003 PCA Study compared a wood-framed wall and an insulating concrete form (ICF) wall. The LCA was carried out according to the guidelines of the ISO 14040 series.
- The LCA software tool, SimaPro, was then used to perform a life cycle impact assessment. Impact assessment is not completely scientific; so three different methods were used: Eco-Indicator 99, EDIP/UMIP 96, and EPS 2000.
- The results show that in almost all cases, for a given climate, the environmental impact in each category is greater (worse) for the wood house than for the ICF house. The most significant environmental impacts are not from construction products but from the production and household-use of electricity and natural gas.
- Furthermore, the largest impacts are in the form of depletion of fossil fuel reserves (categorized as damage to natural resources) and release to the air of respiratory inorganics (categorized as damage to human health).

NOTES



NOTES



Notes



- Concrete has something of a bad rap in some circles.
- Some argue that cement production releases CO₂, that the embodied energy of the material (energy that goes into manufacturing and production) is too high
- BUT...do they consider
 - Aggregate can be obtained locally, for low transportation costs and at low pollution
 - While cement does have high embodied energy, it is only a fraction of concrete (~10%), and embodied energy is only a fraction of energy used to heat and cool buildings.
 - Concrete can also contain supplementary cementitious mixtures, industrial byproducts that would otherwise be landfilled.
 - High thermal mass – energy efficiency and comfort
 - Durability and longevity -100 year lifespan for some structures.
 - Material's light colour can provide reflectivity that reduces air conditioning loads
 - When demolished, much of concrete material can be recycled or reused.

NOTES

Section 3

- Third clip (2 minutes)

Thomas Mueller, CaGBC

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NOTES

Our Clients should see the possibilities

Section 3



Tenerife Auditorium, South Africa
Cement and Concrete Institute SA




CN Tower

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Notes

- Our clients should see the possibilities of concrete in terms of design aesthetics/flexibility, structural characteristics, and sustainability, as a whole package. Our R&D and innovations should include focus on meeting clients demands for sustainable construction!

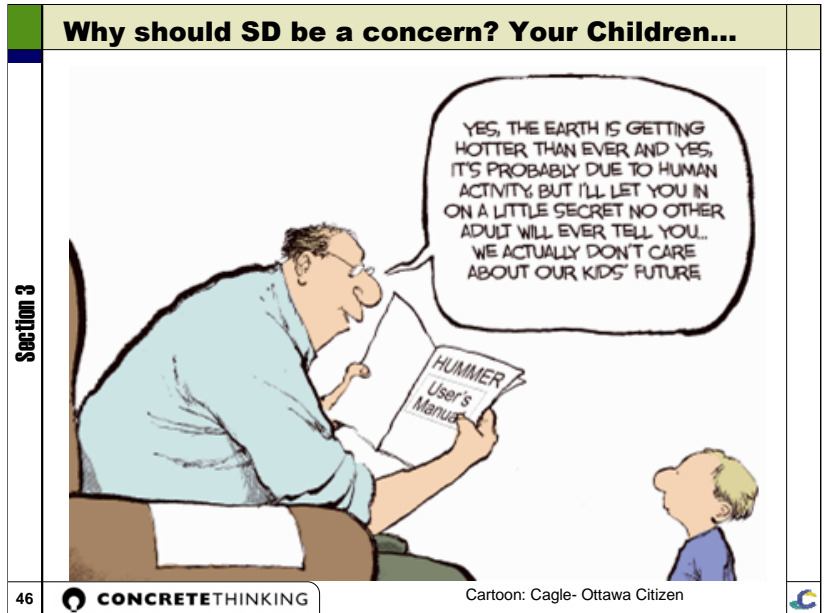
NOTES

Section 3	Recap: Why should SD be a concern?
	<ul style="list-style-type: none">• Why should SD, a global scale issue, concern me?<ul style="list-style-type: none">➤ Why should sustainable development be a concern?<ul style="list-style-type: none">- Increasingly recognized/demanded by clients- To advance your company and industry's position- To advance your own position- We all have a role to play- For your children <p style="text-align: center;"><i>Think global, act local!</i></p>
45	

Notes

- Fact is, we all have a role to play, individually in our family role, in our community, companies, and nations. We are an increasingly globalized world.
- Why should SD concern you?
 - Increasingly rewarded or demanded by clients – sustainable building and life-cycle environmental management are two key drivers of this, as we will see.
 - Your company's success and your own position will depend on it – with the green building movement exploding, market share will depend on maximizing the number and extent of product benefits. "Knowledge is like money: to be of value it must circulate, and in circulating it can increase in quantity and, hopefully, in value." This applies to SD knowledge within your company and within the industry.
 - To move product, the more we know about what's coming and latest trends, the better off we are. Knowledge gives choice. It may contribute to your own success to know the sustainable design aspects of your products better than the competitor.
 - We are living in an increasingly connected world - we all have a role to play – the saying "think global, act local" applies here – where we think about big picture repercussion of our daily activities.
 - And last, but not least, we have a duty to our children and to future generations morally to take care in what we do
 - I have a two year old [Alternate: if you have children...], and certainly wouldn't want him to get this impression of me....[next slide...hummer cartoon].
 - Do we really want our children and grandchildren to look back on us 50 years from now with contempt?

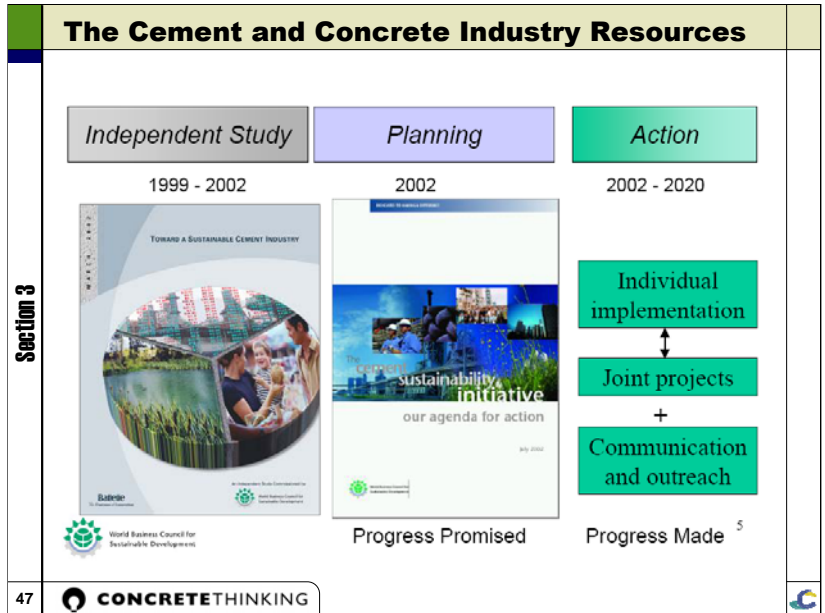
NOTES



Notes

- Another reason...
- It makes common sense financially – chances are, you are probably already incorporating more sustainable behaviour at home, which has become routine. Example, changing lightbulbs to compact fluorescents bulbs at home can cut 75% of energy use – putting in insulation, recycling, biking to work, etc.
- While I use home activities and adjustments as an analogy, we are here to talk about business. We don't put in \$20,000 geothermal heat pumps, but start with ideas that make sense - the low hanging fruit first, and build on small victories.
- Also, as members of corporations, your survival in the long term depends on taking action now. As we will see in more detail, smart business are paying attention for business reasons.
- Next, provide some perspective on why some corporations are doing it and what are the “market drivers”.
- Its important for you to hear the client, expert and cement and concrete perspective on why this is important and what are the trends.

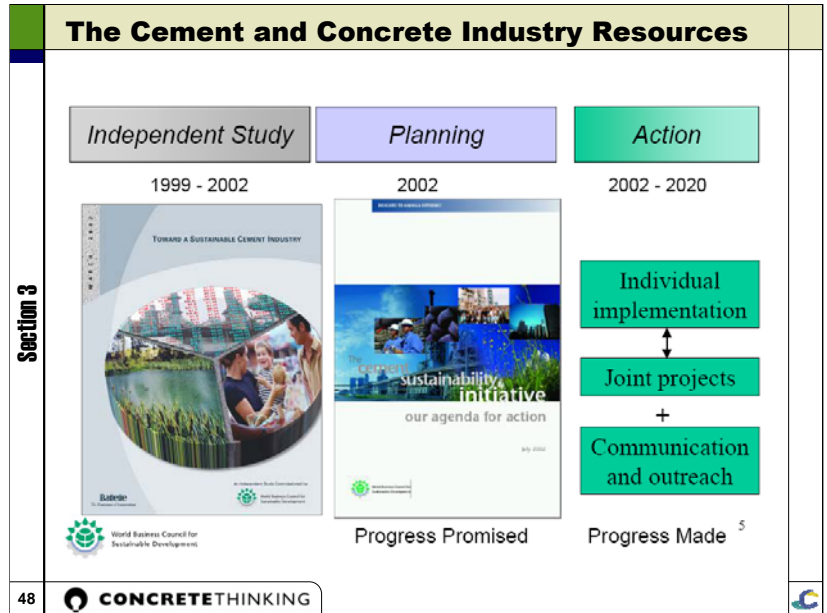
NOTES



Notes

- WBCSD group of leading companies that realize sustainable development is opportunity and risk, realize that issue bigger than each of them in isolation – concerted industry-wide effort required.
- Industry has chosen to adopt an agenda for sustainable development for three reasons:
 - to prepare ourselves for a more sustainable future;
 - to meet the expectations of stakeholders; and
 - to individually identify and capitalize on new market opportunities.
- The purpose of the initiative is to:
 - explore what sustainable development means for us and the cement industry.
 - identify and facilitate actions that we can take as a group and individually to accelerate the move toward sustainable development.
- Initiative is part of a long-term change management effort, moving from research to understanding, to commitments for action to implementation at individual companies and facilities.
- First phase was series of research studies on key issues -
- Project includes:
 - Climate Change Management – how to reduce emission of greenhouse gases (GHG), primarily CO₂, without compromising competitiveness.
 - Company Promotion of Sustainable Development Alignment – the strategy side of aligning companies with SD.
 - Industrial Ecology in Cement Industry – using waste resources or by-products from outside or within industry in operations or products (e.g., biofuels or waste tires).
 - What Life Cycle Assessment (LCA) can tell us about the Cement Industry – knowing what stage of production and use are the most environmentally impacting to know where to focus industry efforts.
 - How Innovation Can Help The Cement Industry Move Towards More Sustainable Practices – how to create process/product innovations and overcome obstacles.
- *Action* Phase, each company is implementing best practices.
- Goal is to pool resources to deal with many of these issues pre-competitively to advance the overall industry responsiveness to SD.
- Of particular interest is an on-line dialogue about the strengths and weaknesses of concrete as a construction material in several areas of sustainable performance such as energy, environmental impact, indoor air quality etc. from the perspective of different stakeholders.

NOTES



Notes (Continued)


NOTE: below for information only.

1. Climate protection: Implement an industry protocol, developed as part of the research program, for monitoring and reporting CO2 emissions from the cement manufacturing process. Each company will set individual CO2 emissions targets.
2. Fuels and raw materials: Develop guidelines for responsible use of all fuels and raw materials in cement kilns.
3. Employee health and safety: A Health and Safety Task Force will ensure delivery of effective systems of measuring, monitoring and reporting on health and safety performance. Companies will share their experiences to identify causes of accidents and to reduce injuries.
4. Emissions reduction: Develop an industry protocol for measuring, monitoring and reporting emissions, and individual companies will publicly report emissions targets.
5. Local impacts: Create guidelines for Economic and Social Impact Assessment by cement companies.
6. Internal business processes: Integrate sustainable development as a set of principles into management systems, relationships with business partners and relationships with civil society.
7. Reporting progress: There has been an interim progress report on all of this work, with a full report to be published in 2007. Individual companies will continue to report their progress on their own activities.

NOTES

Cement and Concrete Initiatives

Section 3



The Guide to Sustainable Design with Concrete is a tool developed to assist the design community in their own toward sustainable design.


FEATURING IN-DEPTH INFORMATION ON:

- The 2017 Concrete 100
- Greening (GEP) quality
- The advantages of concrete and masonry used in sustainable design
- Local concrete products benefits
- Green building with concrete



Download your free copy of the guide today at <http://concrete.ca> or contact us at info@concrete.ca or a sales representative at a site of the CAC office.

Concrete Association of Canada
Association Canadienne du Béton
www.concrete.ca

Sustainable Community Showcase



Program Guide

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Notes

- Countering the other structural material campaigns, Cement Association and other concrete allies have been championing the cause of sustainability and trumpeting the virtues of concrete as a sustainable material.
- A large goal for this year is to forge ahead on mission to go beyond sustainable buildings to support thinking of concrete within concept of sustainable communities.
- Sustainable communities embody principles of sustainable building at larger scale, and mix building types and change in lifestyle trends and preferences of buyers and developers mean a confluence of factors are coming together to make construction of sustainable communities possible.
- Creating mixed use, walkable communities that are energy efficient, self-sustaining as much as possible (waste water treatment, energy generation, etc.).

The cement and concrete industry soliciting partner “showcase” projects, recognizing that:

- 1) Municipalities and developers are audiences that the industry has not addressed under previous program efforts.
 - 2) Municipalities and developers are both major influencers and purchasers of concrete products.
 - 3) Concrete industry is a natural partner for both municipalities and developers
 - 4) Communities represent an opportunity to bring the entire concrete industry together towards a common marketing effort where every concrete product has a role to play.
- Team cement/concrete industry reps with projects to help jointly promote and position technologies and benefits of the project to buyers.
 - Based on recent CAC focus group research showing that concrete largely viewed by developers and condo buyers as sustainable material.
 - Additional resources to help you learn and promote concrete sustainability are provided in your guide, including:

NOTES

Industry's Commitment to Sustainability		
Section 3	An Industry Effort	
	 Cement Manufacturing	 Ready Mixed or Cast-in-place Concrete
	 Precast Concrete	 Concrete Pipe
	 Insulating Concrete Forms	 Masonry
		 Interlocking Concrete Pavement
	50	

Notes

- Other partners are putting out variety of educational and technical materials on sustainability of their products.
- Important to recognize the diversity of our industry, and that, while we all work in slightly different markets, we all face the same challenges when it comes to making sustainability work in a competitive business atmosphere.
- We can advance farther collectively on these issues by working together than we could working independently.

NOTES



NOTES

Questions, Comments and Discussion...



- How do you think SD will change your life?
- What part of sustainability is the biggest opportunity/threat to our industry?

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 CONCRETETHINKING



Notes

- It is corporations' ability and willingness to interpret sustainability and define what it will mean to their business that is producing value for these companies, the earth and the customers that they serve.
- Questions for discussion:
 - What needs to happen to move the industry along the SD path (as an industry, individual companies, or individuals, or externally – to business or political environment)?
 - How would you answer someone who asked you “what are you doing as an industry or company with respect to sustainable development?”
 - Have you seen anything in your job, any indicators that this is an important emerging issue, either developments within or outside your company (clients, communities, etc.)?
- NOTE: Leader can write ideas on flip chart, and ask participants to flesh out why they answered in a certain way, or redirect the suggestion to others (i.e., does anyone else have any other different ideas along those lines?)
 - Example follow-up questions:
 - How about local stewardship – what is our responsibility to the local community?
 - How about our products – what are we doing to innovate to reduce environmental impacts?

NOTES



Notes

- This is to remind us that it's about listening to and responding to the clients changing needs, which are increasingly focused around sustainability, as well as traditional dimensions,..
- and finding ways to become trusted partners and “idea people” rather than just material manufacturers/providers.

NOTES

**WORKING TOGETHER...
TOWARDS A SUSTAINABLE FUTURE**



Cement Association of Canada
Association Canadienne du Ciment
(613) 236-9471



CCPA ACTB
Canadian Concrete Pipe Association
Association des Canadiennes de Fabricants de Tuyaux de Béton
(905) 877-5369
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CRMCA
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CPCI
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Concrete Institute
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www.cpci.ca



ICPI
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Notes

- Thank participants
- Request that they complete an evaluation form (or wait until end of second module if both are given together) and return or simply leave on table.
- Refer to CAC Offices and that participants can call with any questions.
- We hope that you will use this material in-house to educate your sales forces and others.