

Heritage Preservation IS Sustainable Development

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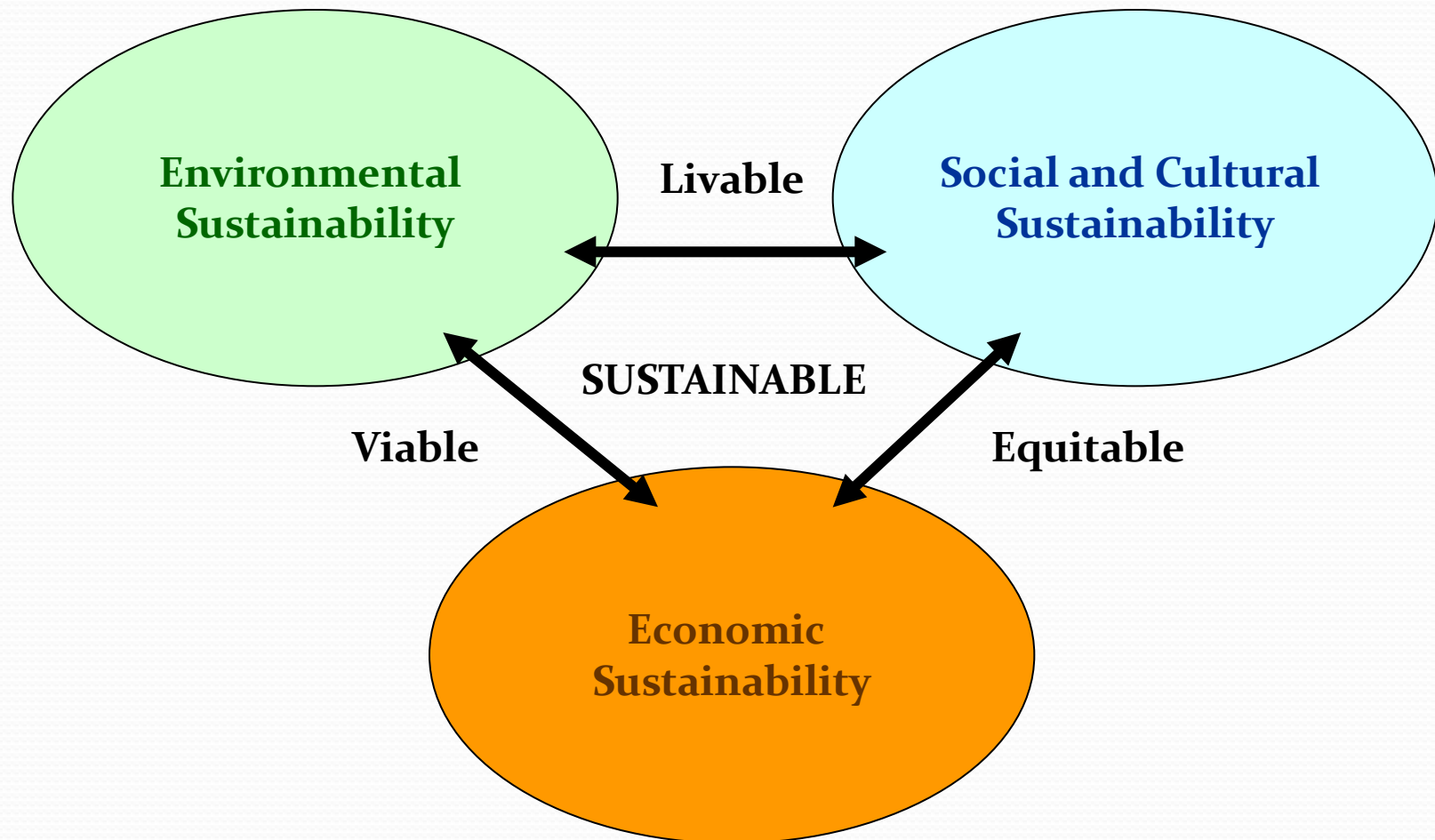
Historic Resources Management Branch

What is Sustainable Development?

- Sustainable Development: “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

U.N. Bruntland Commission 1987

What is Sustainable Development?



Olds Town Council is committed to the *Olds Sustainable Living Initiative* – an integrated approach to municipal decision-making where economic, environmental and social aspects of the community are considered with equal importance.



Preserving Today - Planning Tomorrow
www.olds.ca/sustain.html



Environmental Sustainability



- Perceived Environmental Weakness of Historic Buildings
- Energy savings associated with preservation (projected using embodied energy calculations)
- Avoidance of additional environmental impacts (calculated using life-cycle analysis),
- Avoidance of generating waste through demolition
- Ability of preservation to curb sprawl.

Environmental Sustainability



- Perceived Environmental Weakness of Historic Buildings

Average annual energy consumption Btu/sq. ft Commercial Buildings (non malls)

Before 1920	80,127
1920 – 1945	90,234
1946 – 1959	80,198
1960 – 1969	90,976
1970 – 1979	94,968
1980 – 1989	100,077
1990 – 1999	88,834
2000 – 2003	79,703

Environmental Sustainability



- Embodied Energy
 - Is the entire energy expenditure in creating a building and its constituent materials (initial and recurring)
 - Australia has estimated that the energy already “spent” in constructing that country’s building stock = 10 years total energy consumption of the country

MATERIAL	EMBODIED ENERGY	
	MJ/kg	MJ/m3
Aggregate	0.10	150
Straw bale	0.24	31
Soil-cement	0.42	819
Stone (local)	0.79	2030
Concrete block	0.94	2350
Concrete (30 Mpa)	1.3	3180
Concrete precast	2.0	2780
Lumber	2.5	1380
Brick	2.5	5170
Cellulose insulation	3.3	112
Gypsum wallboard	6.1	5890
Particle board	8.0	4400
Aluminum (recycled)	8.1	21870
Steel (recycled)	8.9	37210
Shingles (asphalt)	9.0	4930
Plywood	10.4	5720
Mineral wool insulation	14.6	139
Glass	15.9	37550
Fiberglass insulation	30.3	970
Steel	32.0	251200
Zinc	51.0	371280
Brass	62.0	519560
PVC	70.0	93620
Copper	70.6	631164
Paint	93.3	117500
Linoleum	116	150930
Polystyrene Insulation	117	3770
Carpet (synthetic)	148	84900
Aluminum	227	515700

NOTE: Embodied energy values based on several international sources - local values may vary.

Case Study: Lougheed Building, Calgary



Case Study:

Lougheed Building, Calgary



- Life Cycle Assessment of environmental impacts:
 - Examines environmental impacts throughout a buildings life
 - Considers impacts beyond embodied energy including embodied primary energy use, global warming potential, solid waste produced, pollutants to air and water and natural resource use
 - Athena Institute in Ottawa, a leading developer of LCA software compared the rehabilitated Lougheed Building to its demolition and replacement by a new LEED standard building of equivalent size

Case Study:

Lougheed Building, Calgary



- The energy consumption of existing renovated building is relatively similar to energy consumption expected for a typical new building. In fact, the estimates indicate that the existing building uses approximately 10% less energy than a new typical design.
- This reflects the positive energy use implications of the high mass envelopes and relatively low window to wall ratios typical of historic buildings
- The avoided impacts (in CO₂ emissions) were equal to the energy needed to heat 1,591 homes for a year
- Embodied energy effects are not overshadowed by operating energy concerns - in fact the opposite is true.

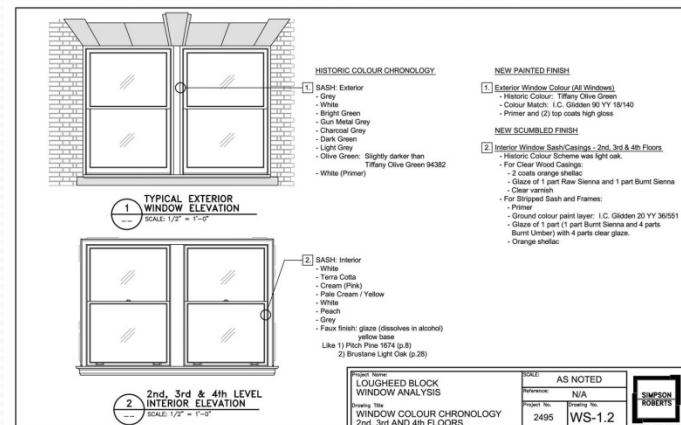
Case Study: Lougheed Building, Calgary



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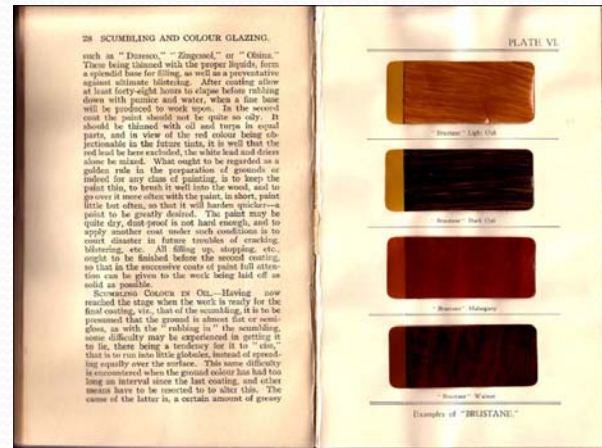
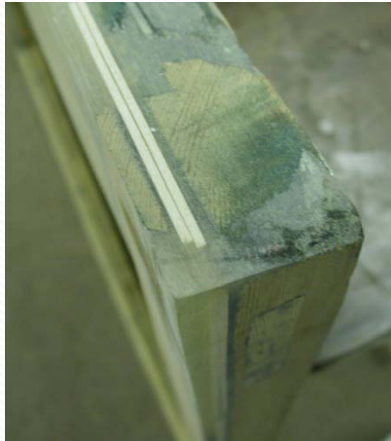


Quarry: salvage 4/5/6th floor
windows for reuse on 2/3 floors



Case Study:

Lougheed Building, Calgary



Environmental Sustainability



Environmental Sustainability

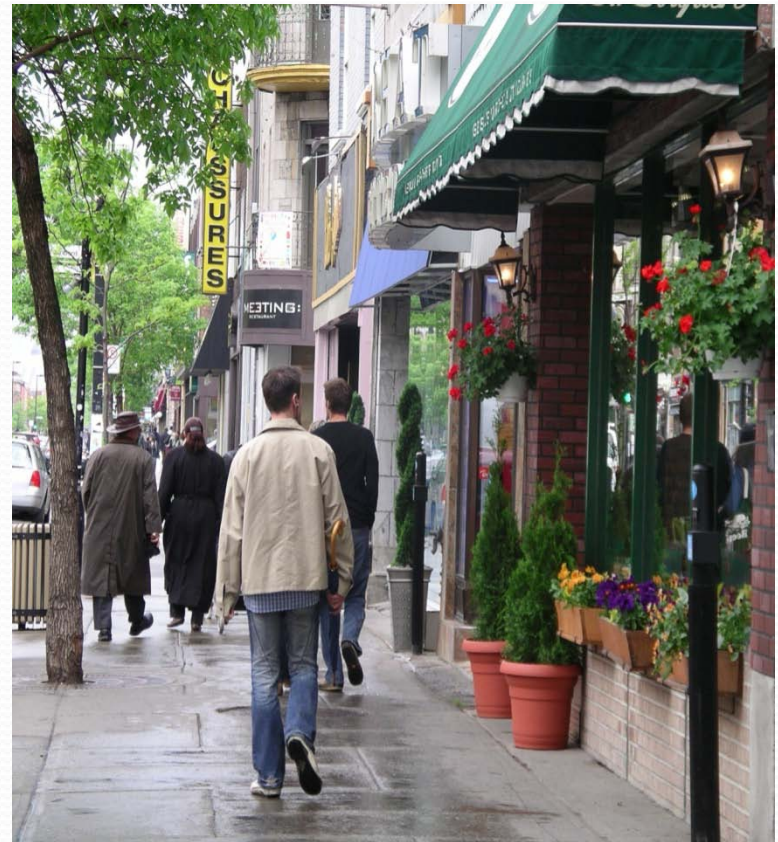


- Landfill

- Construction waste constitutes 25-33% of all land fill
- The US EPA estimates that 27% of existing buildings will be replaced between 2000-2030
- Tearing down a small two story commercial building sends the equivalent of 1,350,000 coke cans to the land fill
- Communities have effective waste recycling programs – why not building recycling programs?

Environmental Sustainability

- Sprawl
 - Encouraging reuse of existing structures reduces pressure for development on the urban fringe
 - Encouraging revitalization in established downtowns focuses investment where substantial past investments have already been made
 - Established neighbourhoods are typically walkable reducing dependence on automobiles



Environmental Sustainability

“The greenest building is the
one already built”

Economic Sustainability



Economic Sustainability

- Recycling existing buildings is labour intensive when compared to new construction. Rehabilitation projects are about 70 % labour -30% materials. New construction is about 50-50%)
- This means that for every \$ invested more jobs are created from rehab than new construction
- Recycling existing buildings spurs increased economic growth but with fewer natural resources than new construction.

Economic Sustainability

- By retaining historic resources downtown revitalization contributes to the diversity and richness of the built environment creating dynamic places that attract talent
- The importance of place in recruiting a work force is well recognized (Richard Florida)



Economic Sustainability

- Historic buildings are small business friendly
- Small businesses create 75-80% of all jobs
- The configuration of smaller old buildings (2500-3500 ft²) are ideal for small business
- Rents are often less in older buildings.



Social and Cultural Sustainability

- By preserving cultural resources heritage preservation promotes cultural diversity – it preserves our “cultural ecosystem”



Social and Cultural Sustainability

- Preservation
 - encourages social interaction and civic engagement
 - promotes social equity – this is especially true for the Main street approach
- Historic communities are valued for their quality of life

Social and Cultural Sustainability



Social and Cultural Sustainability

- Preservation is a generator of affordable housing (Armstrong Block, WEAC)



Social and Cultural Sustainability

- Sustainable Development is critical for economic competitiveness
- Sustainable Development is more than environmental responsibility
- “Green Buildings” and sustainable development are not synonymous
- Historic Preservation and Downtown Revitalization are Sustainable Development
- Development without Heritage Preservation and Downtown Revitalization is not sustainable

Social and Cultural Sustainability

- Smart Growth
 - Create walkable neighbourhoods
 - Encourage neighbourhood and stakeholder collaboration
 - Foster distinctive communities with a distinct sense of place
 - Make development decisions predictable, fair and cost effective
 - Preserve open space and farmland
 - Provide a variety of transportation choices
 - Strengthen and direct development to existing neighbourhoods
 - Take advantage of compact building design

Social and Cultural Sustainability

- “The perspective on stewardship of built heritage needs to shift to a presumption in favour of reuse. As it stands, the burden to demonstrate the case for preservation rests with groups of interested citizens, often seen as an elite. Currently, the challenge is to prove that an old building is so valuable that it ought to be saved; rather the owner/developer should be required to prove that an old building cannot be adapted to new use.”

*Exploring the Connection between Built and Natural Heritage.
Heritage Canada Foundation.*



Creating a Future *for Alberta's Historic Places*

