



COUNCIL OF ICF INDUSTRIES



## ***Insulating Concrete Forms***

***A solution to current and future Energy and Building Codes in North America***

***PNWER 2016 Annual Summit  
July 17 – 21, 2016  
Calgary, Alberta***

***Presented by: Kevin Davis***



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# Who is the CICFI?

The Council of ICF Industries (CICFI) is the North American non-profit trade association for the Insulated Concrete Form industry and was founded in 2014 by a dedicated group of manufacturers with the interest of improving the quality and acceptance of Insulated Concrete Form construction.

The mission of the CICFI is to promote and enhance the social, environmental and economic value of insulating concrete forms in the North American marketplace.



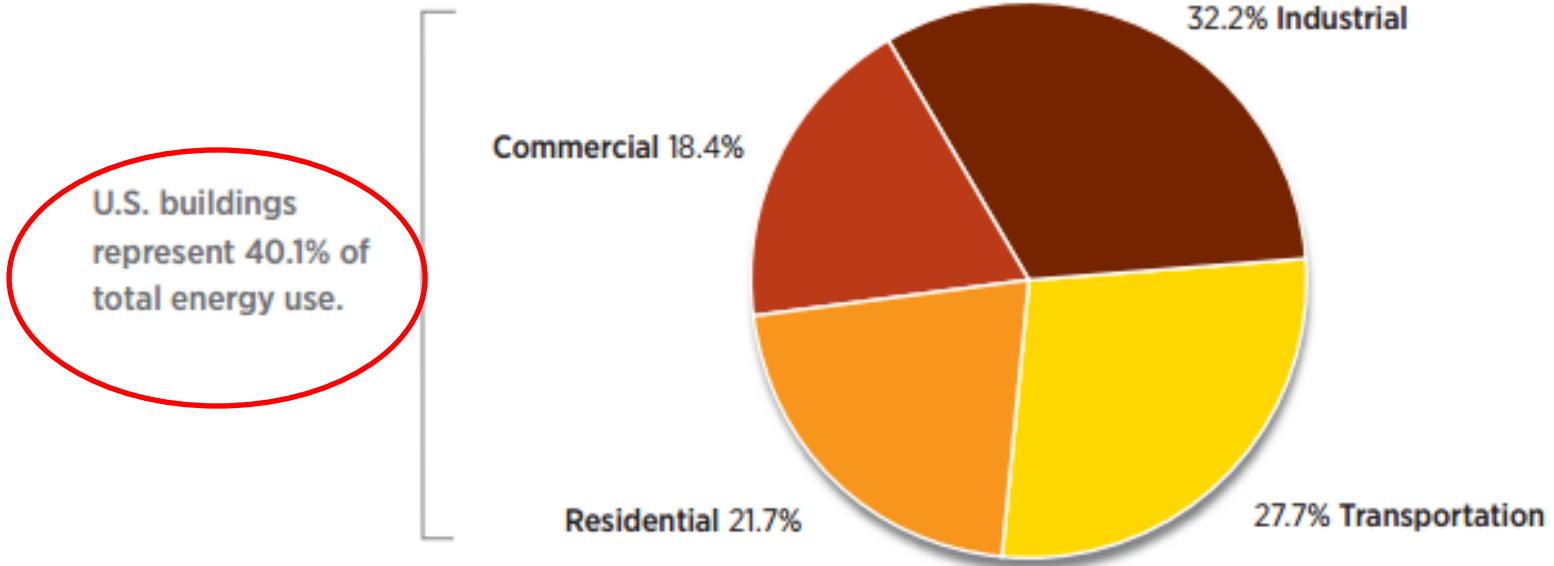


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## Environmental Role of Buildings

**FACT #1: Our buildings consume the largest percentage of our total energy use**

U.S. Energy Consumption, 2013: 97.4 Quadrillion Btu



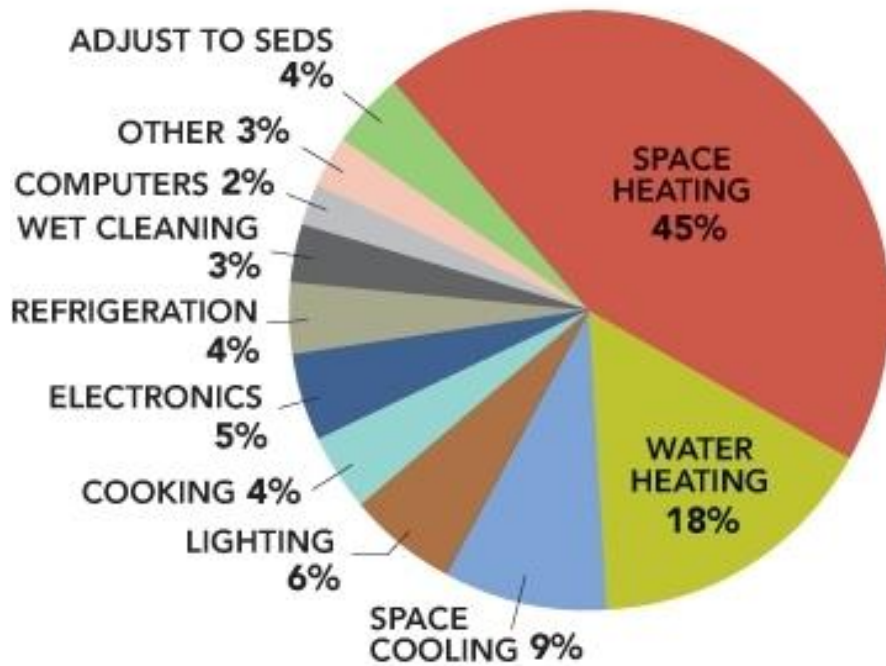
Source: US Energy Information Agency



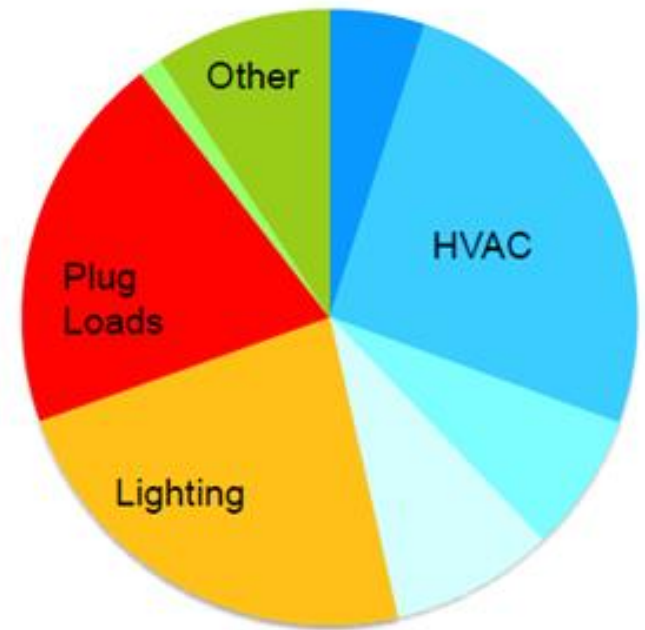
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# Environmental Role of Buildings

FACT #2: The “Appetite for Energy” of our buildings is driven 50% by space heating & cooling demands



Residential Building



Standard Commercial Building

Source: US Energy Information Agency



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# The Secret Is In Our Name

## “Insulating”



Two layers of high value EPS insulation provide **continuous thermal barrier**

## “Concrete”

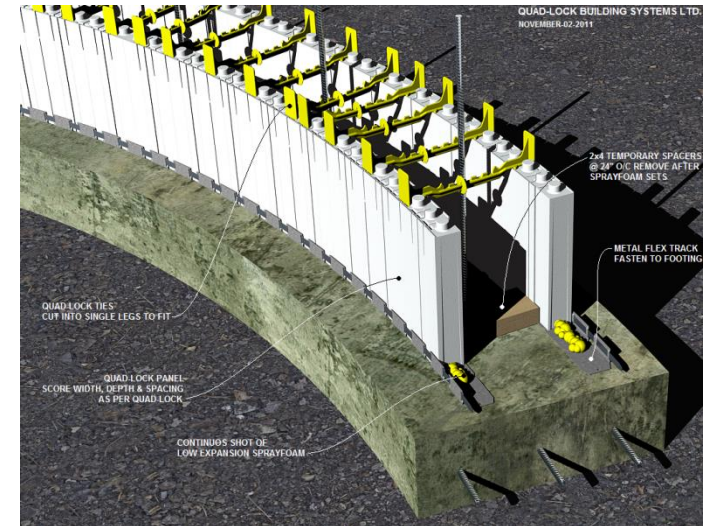
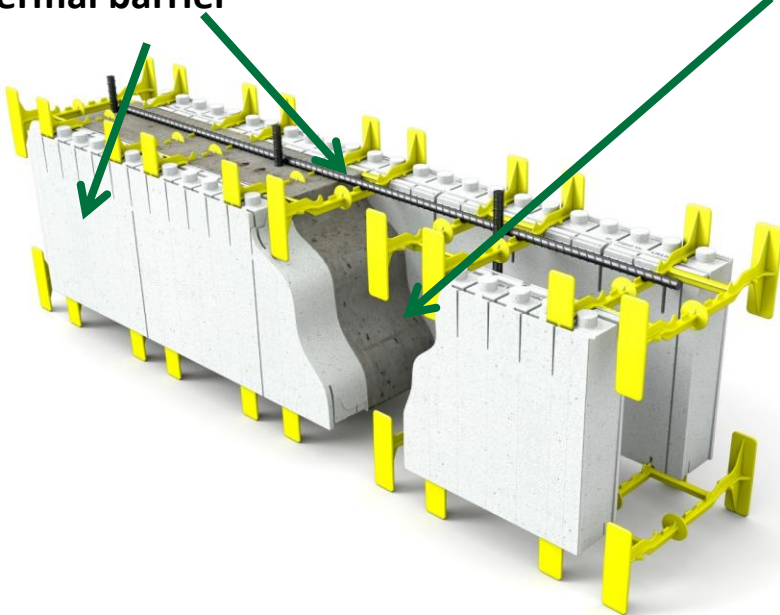


Reinforced concrete provides **durable structure & protection of occupants**

## “Forms”



Lightweight EPS forms are **easily shaped & adapted to architectural designs**





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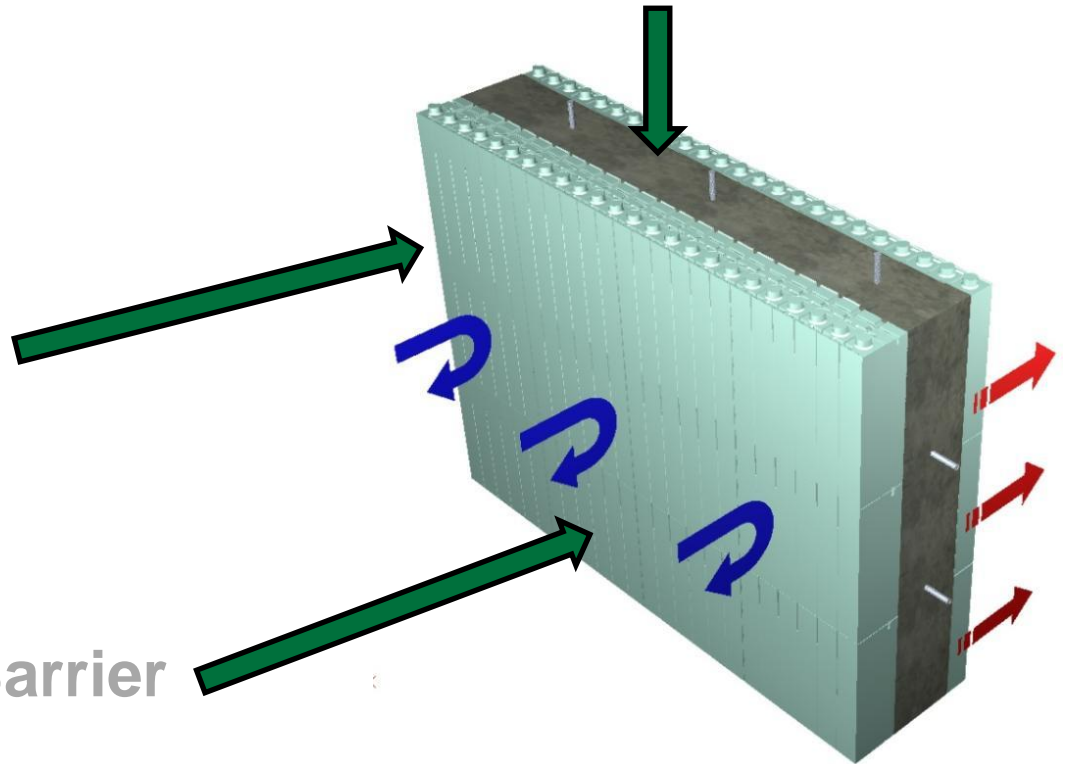
# How do ICFs control heat gain/loss?

Strategic use of 3 unique qualities:

High R-Value & Unbroken Insulation Layers

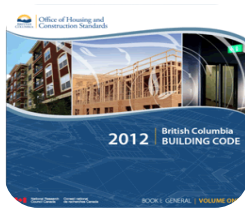
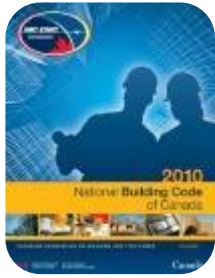
Zero Porosity Concrete Air Barrier

High Mass for Thermal Storage





# Relevant Codes and Standards: Canada



## National Building Code of Canada or Provincial Codes

- Parts 3, 4, 5 & 9
- Post-Disaster Category



## CAN/CSA A23.3

- Design of Concrete Structures



## 2011 National Model Energy Code for Buildings



## ASCE 7

- Minimum Design Loads for Buildings



## ASCE 24-05

- Flood Resistant Design & Construction



# Relevant Codes and Standards: USA



**INTERNATIONAL  
CODE COUNCIL®**

## **International Residential Code**

- Chapters 3, 6 & 11



**INTERNATIONAL  
CODE COUNCIL®**

## **International Building Code**

- Chapters 16 & 19



**INTERNATIONAL  
CODE COUNCIL®**

## **International Energy Conservation Code**



American Concrete Institute®

## **ACI 318**

- Building Requirements for Structural Concrete



## **ASCE 24-05**

- Flood Resistant Design & Construction



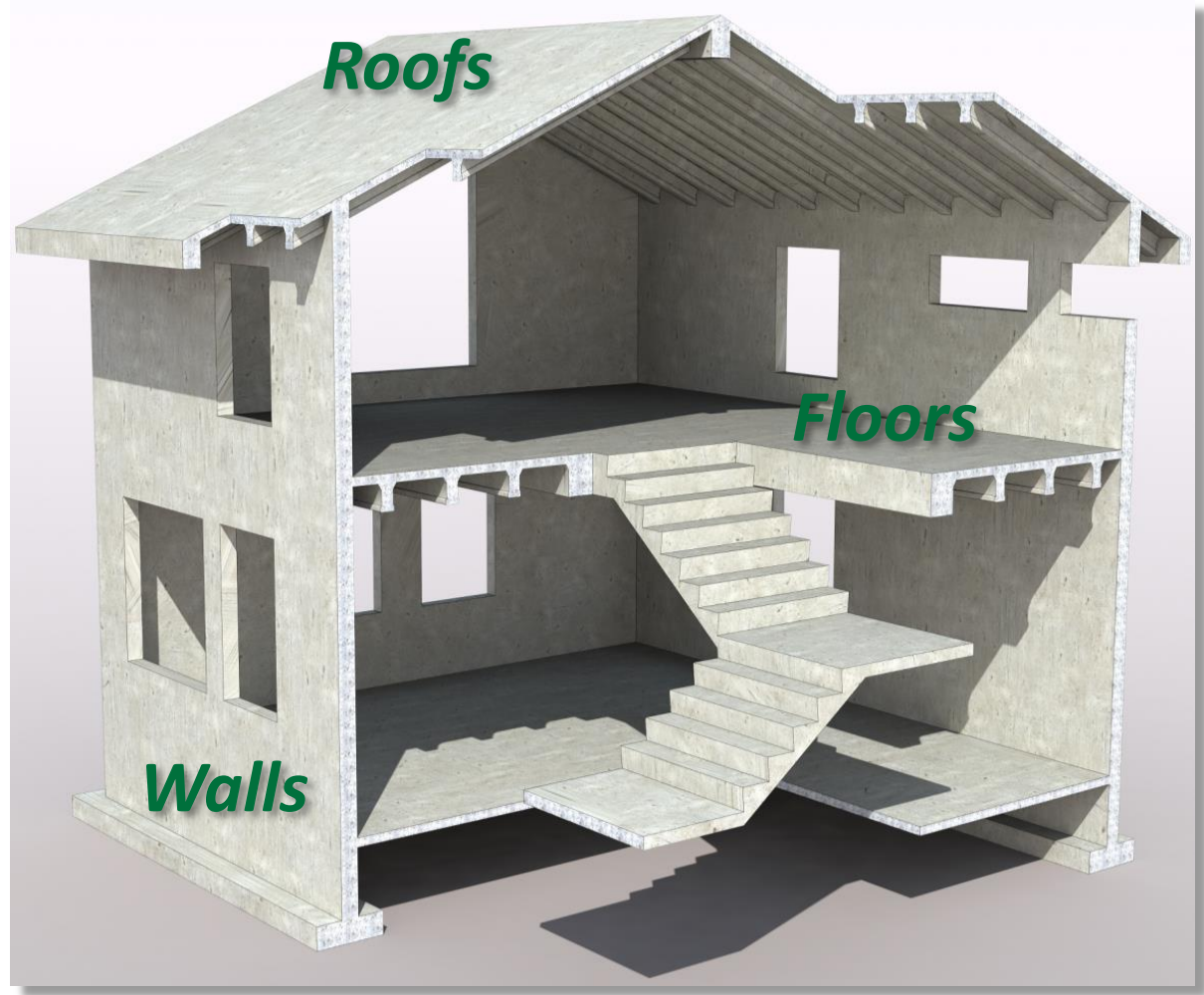
# Desired Characteristics of Building Shells

Desired Characteristics <i>** Code Mandated</i>	Wood Frame	Steel Frame	Conv. Concrete	ICF Concrete
Moisture Resistant**	↓	\$\$	Yes	Yes
Wind Resistant**	\$\$	\$	Yes	Yes
Seismic Resistant**	\$\$	\$	Yes	Yes
Thermal Continuity**	\$	\$\$	\$\$	Yes
Fire Resistant**	↓	\$\$	Yes	Yes
Safe/Non-toxic**	Yes	Yes	Yes	Yes
Impact Resistant	↓	↓	Yes	Yes
Adaptable to Design & Utilities	\$	\$\$	\$\$	Yes

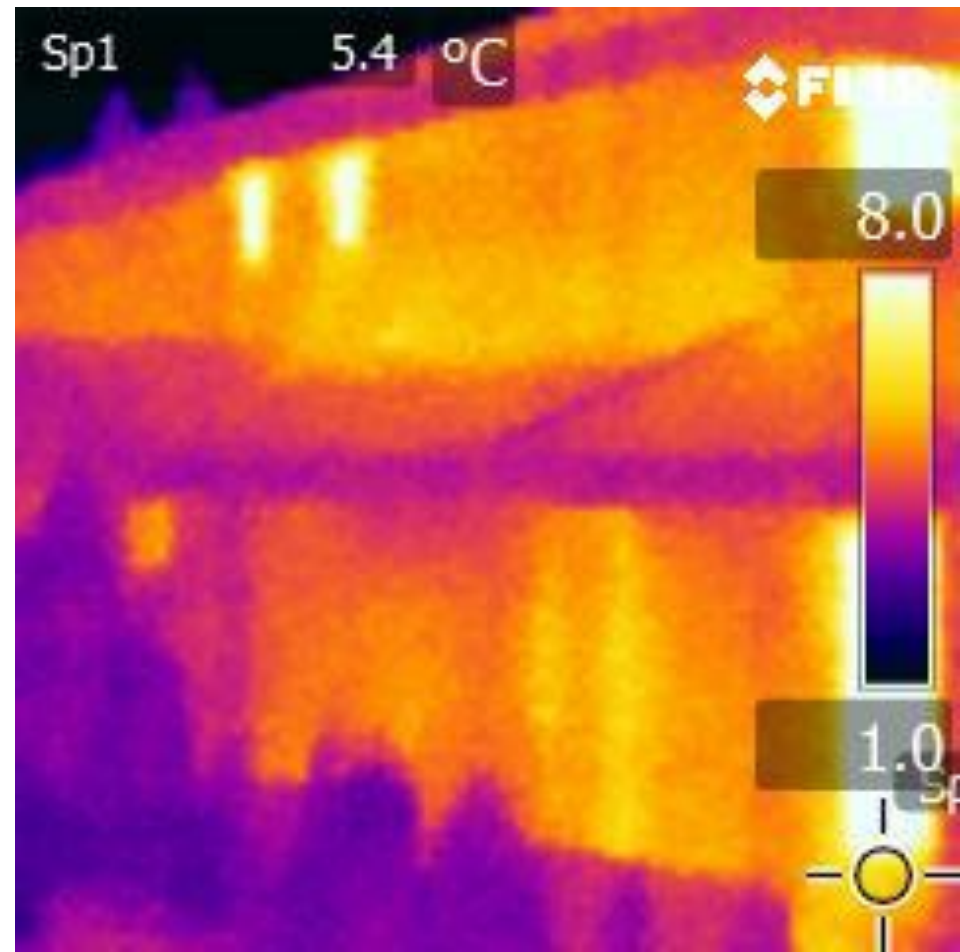
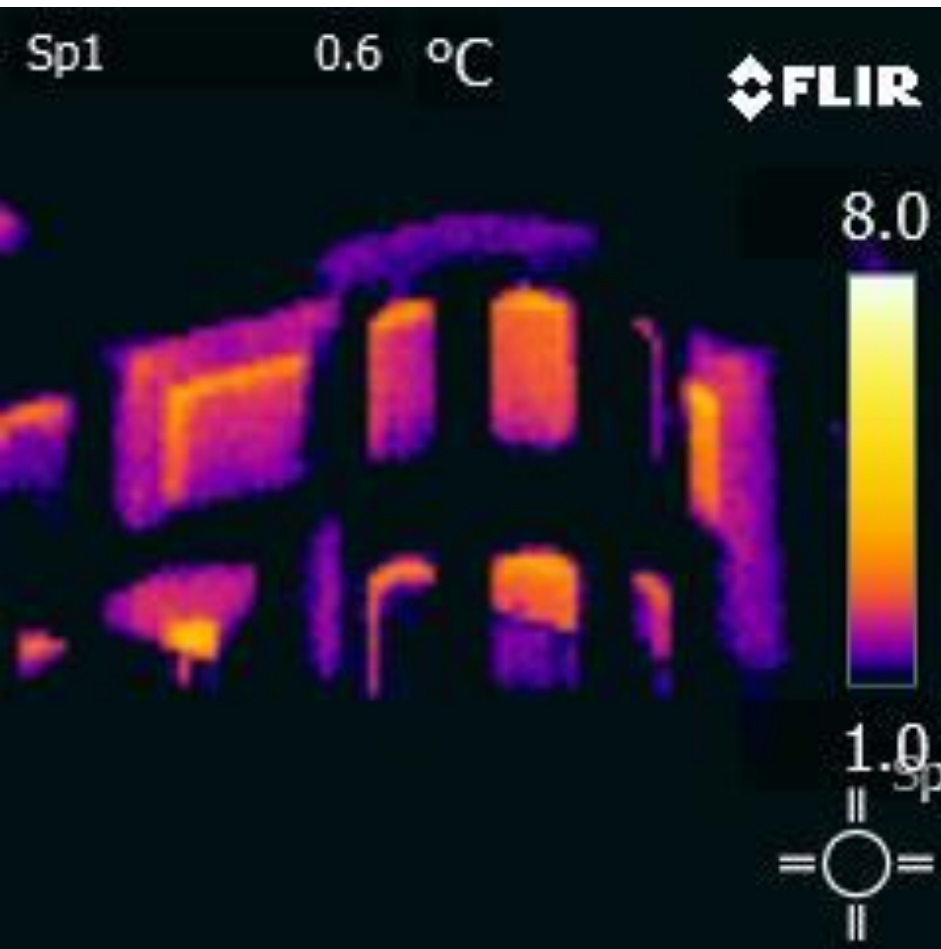


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# ICF Complete Concrete Building Enclosure



# ICF vs. Neighbors





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# Fort McMurray





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# Fort McMurray





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# Fort McMurray





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# Fort McMurray



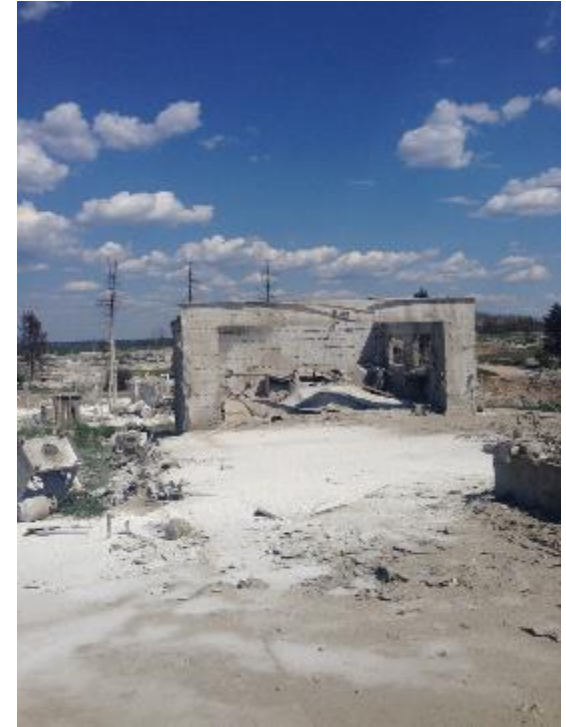
Before

After



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# Fort McMurray







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## Rebuild Fort McMurray Stronger

### Situation Analysis

- Approximately 2000 homes to be rebuilt
- Previous building inventory built to various building codes
- Site demolition and clean up ongoing





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## Rebuild Fort McMurray Stronger

### Challenges

- Capacity (contractors and materials)
- Building codes / standards / permitting
- Training
- Costs (materials / freight)
- Insurance coverage / project funding





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## Rebuild Fort McMurray Stronger

### Next Steps

- Developing a structured approach
- Estimating and scheduling
- Training
- YMM Home Show on August 20th





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## Rebuild Fort McMurray Stronger



A traditional basement foundation can be built in about 60% of the time of a poured in place foundation. Although the concrete costs are similar, elimination of secondary framing and insulation steps save both time and money.





# Edgewater Development, Squamish, BC





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## Edgewater Development, Squamish, BC

- 36 Unit, three storey townhome development built in 2005
- Home with a Difference Award Winner
- Documented 40 – 70% energy savings versus local comparable developments
- Sound performance exceptional (backs onto a railway line)
- Speed of construction / design flexibility



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# Edgewater Place, Milwaukie, OR





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Edgewater Place, Milwaukie, OR

- Multiple wall thicknesses used to achieve various building attributes
- Concrete floors
- Average build time of 10 days per floor
- High STC performance to dampen local railway station noise
- Developer saved \$400K on construction costs (time / materials / sub-trades)





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## Calgary ICF Projects



Heninger Toyota



A Unique Personal Residence

Contact Information:

Kevin Davis

Email: [kevin.davis@quadlock.com](mailto:kevin.davis@quadlock.com)

Phone: (604)590-3111 extension 244

Mobile: (604)314-1065