

“Rounding the Corner”

For Tribal Housing



Living Stone Lodge

PRESENTED TO

The U.S. Department of Energy (DOE) Office of Indian Energy



Project Goals

- Design & Build a Net-Zero Energy Home Design for Native American Families.
- Commercialize plans, kits, and instructions for tribes across the United States.



The Modern Earth Lodge

The Concept

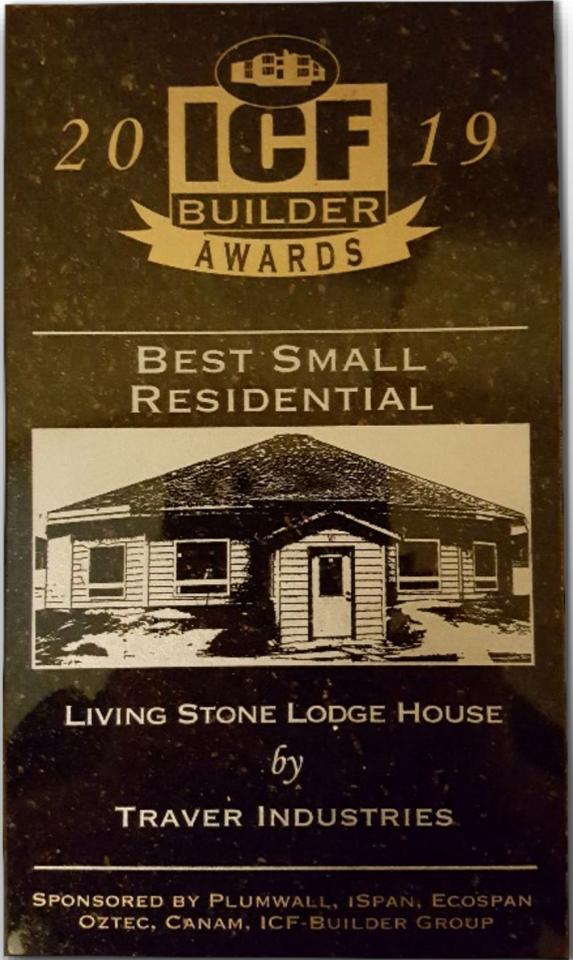


The Modern Earth Lodge

The Reality



1st Place - 2019 ICF Builder Awards



Initial Performance Results



The Model Home Comparison Report

Home Energy Science



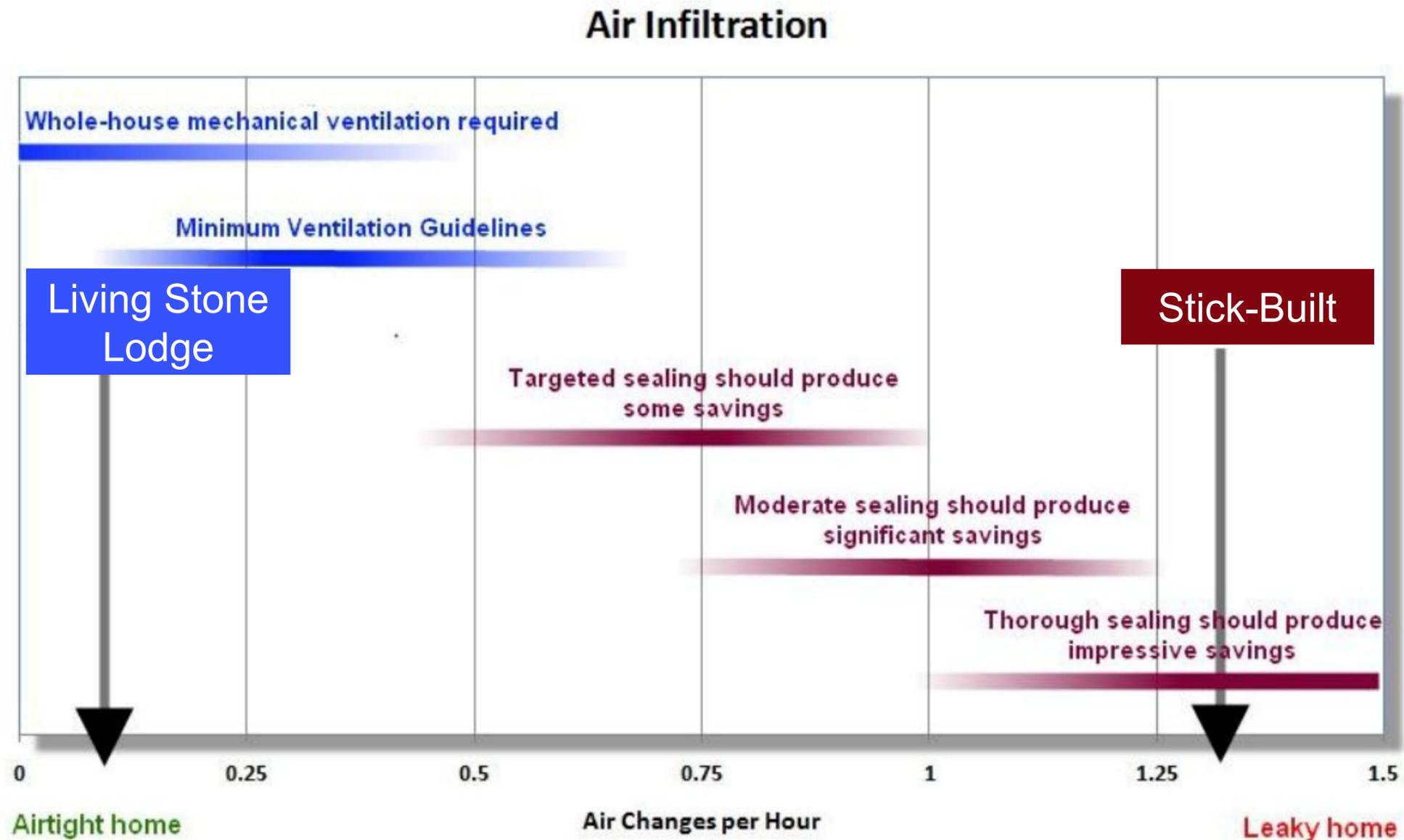
1855 Thomas Drive
Larimore, ND 58251
701-330-6680
henry@HomeEnergyScience.com



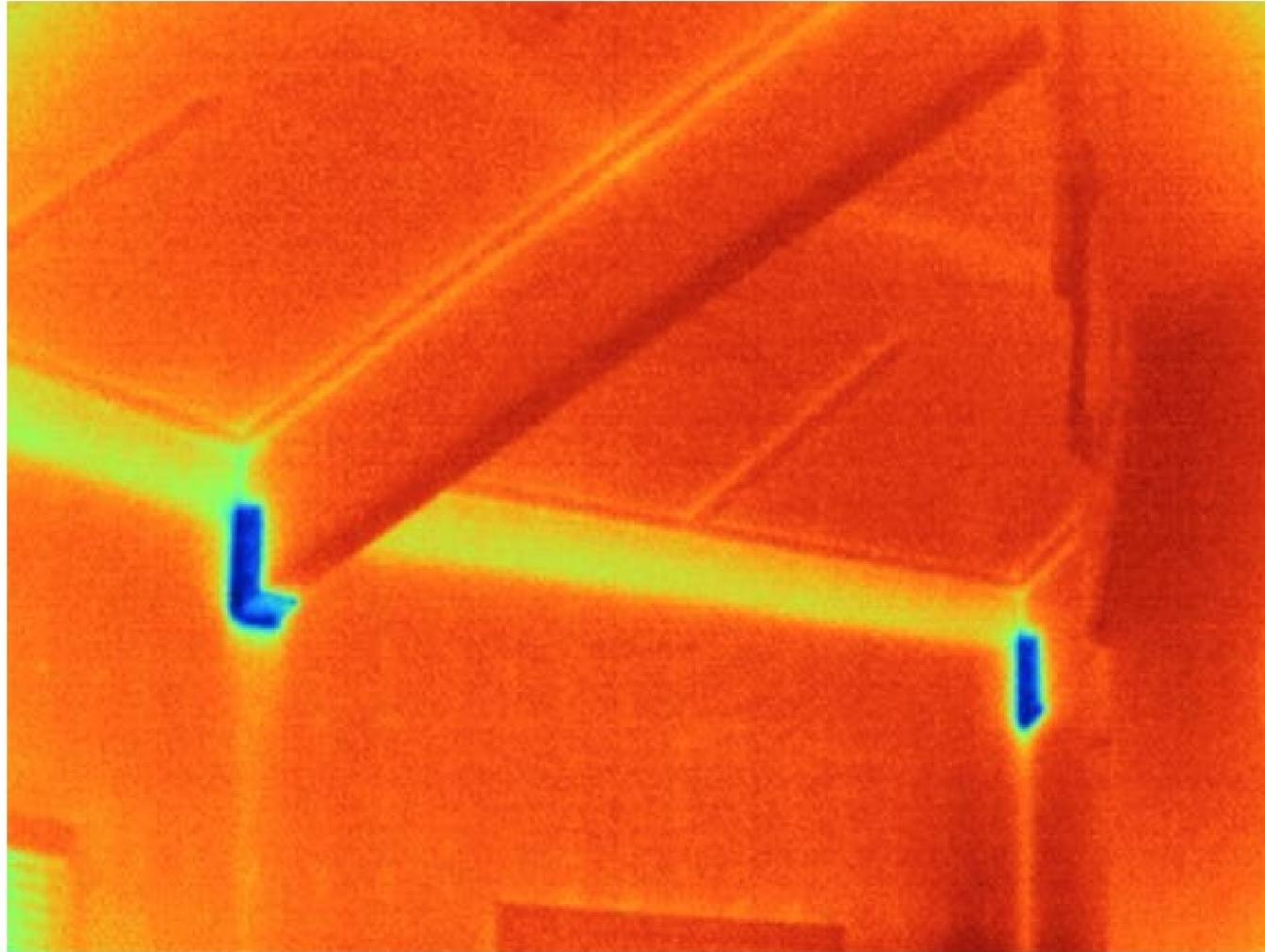
Home Energy Science is an ENERGY STAR partner

Air Infiltration

The ICF/SIP home is on the left, stick-built on the right. These homes are on opposite sides of the infiltration scale.

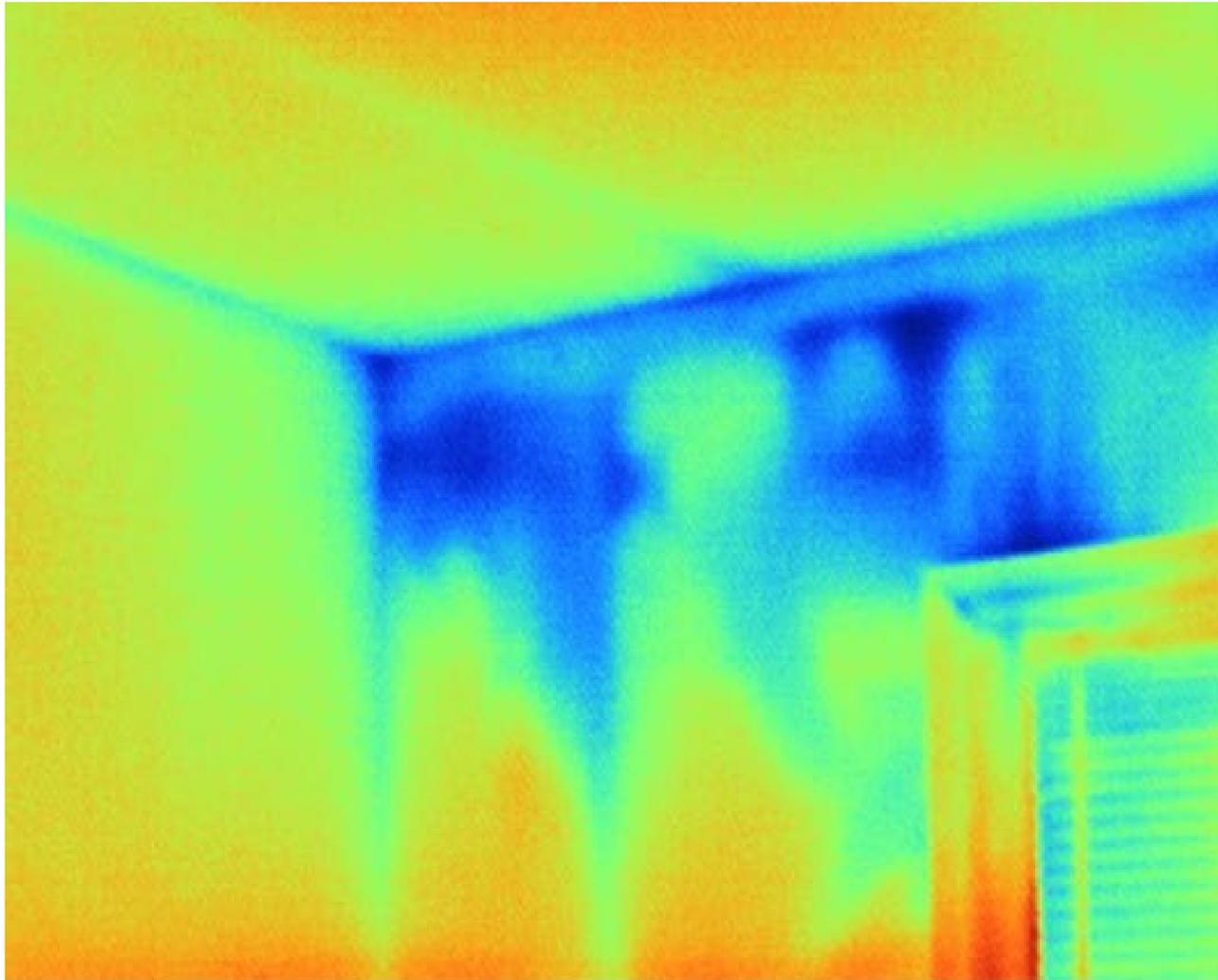


Living Stone Lodge IR Image



This IR image (above) shows the uniform warmth of the ICF walls and SIP roof of the Travers residence. In these images, warm surfaces are red. Yellow is slightly cooler. Blue surfaces are the coolest.

Stick Frame IR Image



Construction Process: The Building Envelope



Pouring Monolithic Slab

LESSON LEARNED

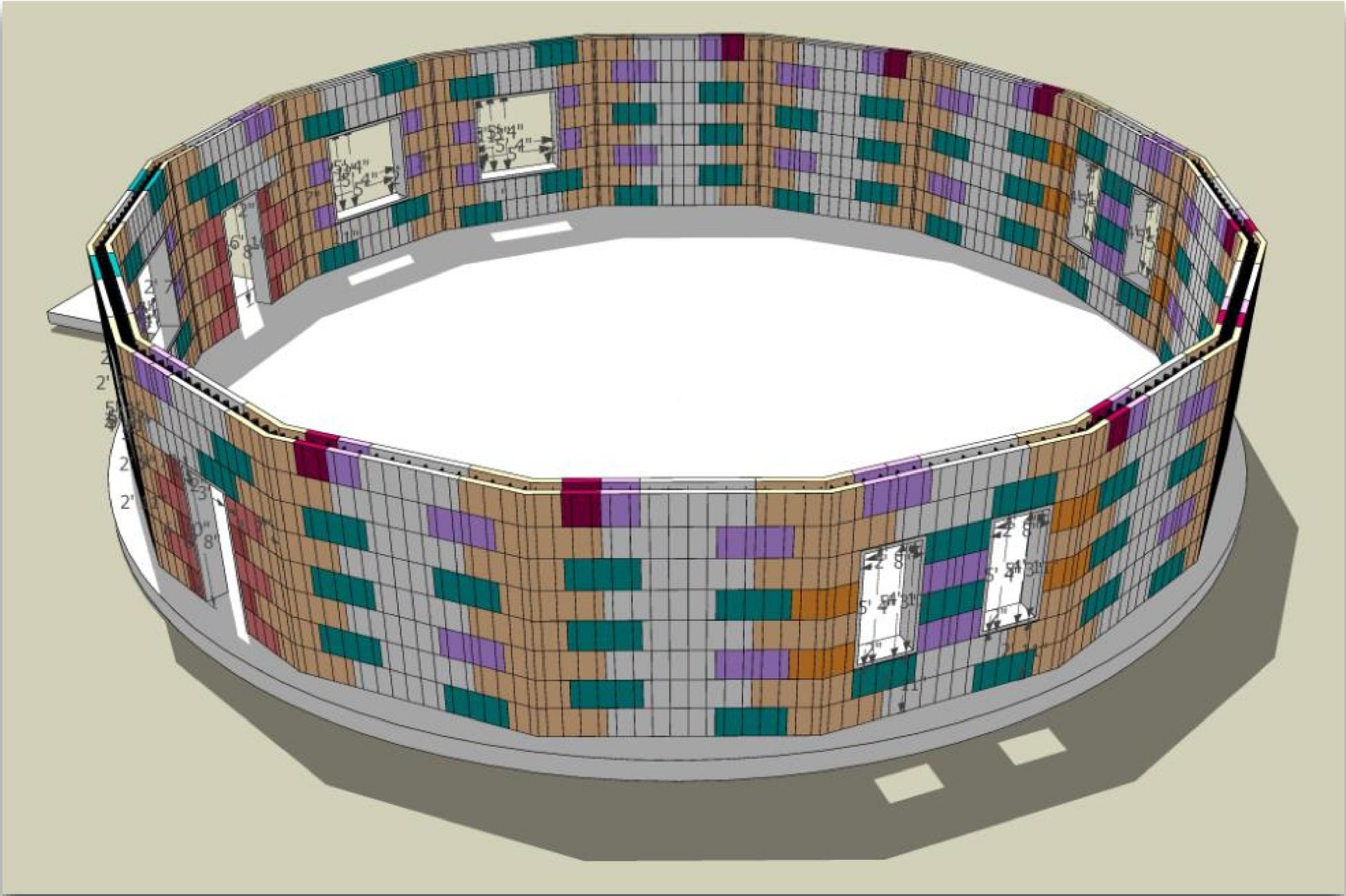
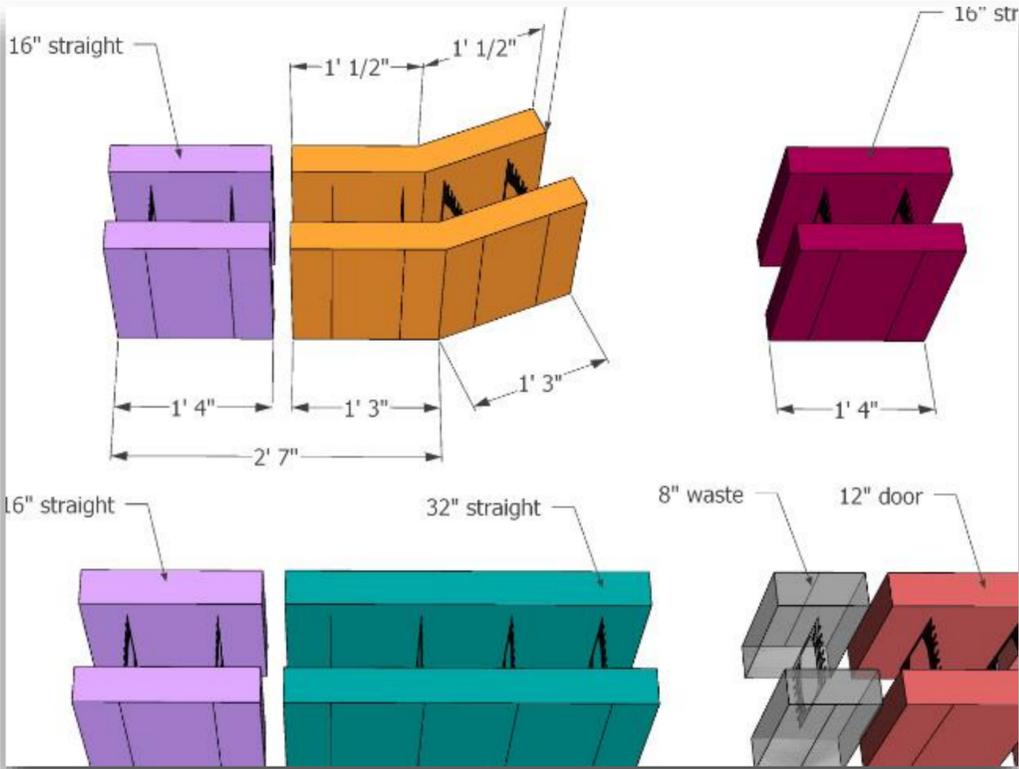
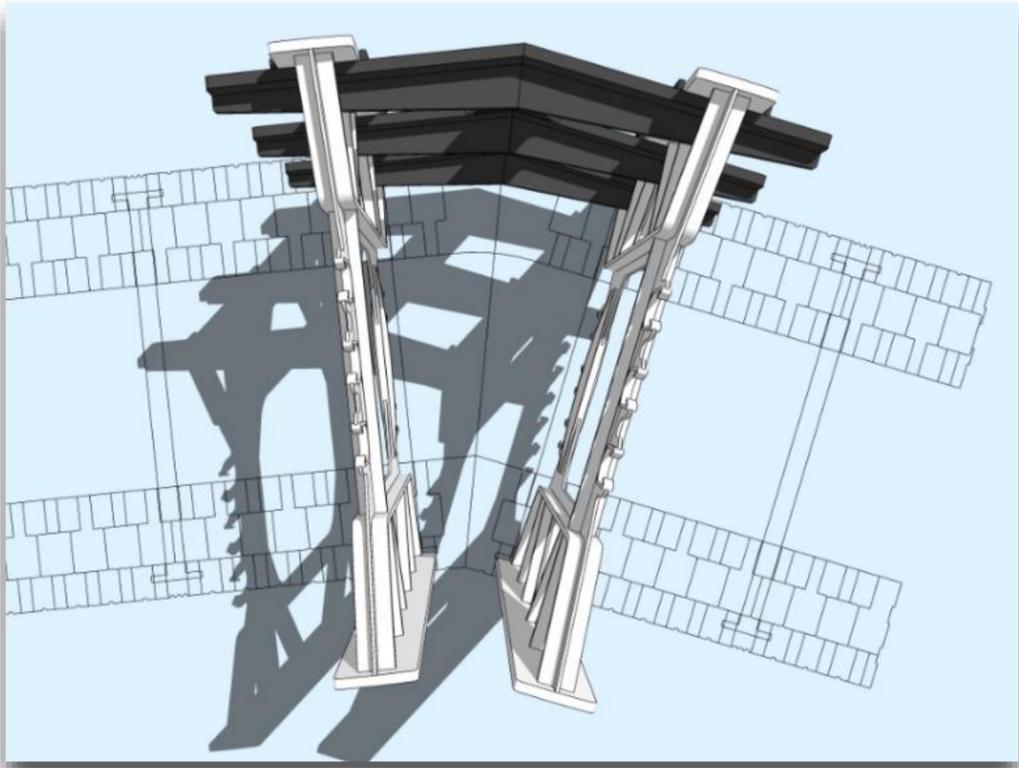


Building with ICF Blocks



Precut ICF Blocks - Commercialization

No-Waste Solution



Utilities Piping VS New Flexible Opening

LESSON LEARNED



Roof Beams



Installing Precut VS Custom Cut Roof Beams

LESSON LEARNED



Installing 1-Piece VS 2-Piece SIPS Panels

LESSON LEARNED

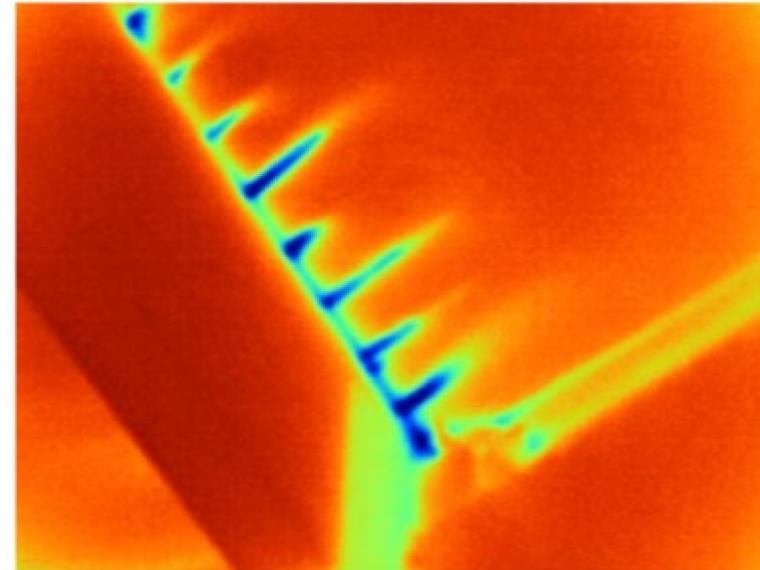


Completing the Building Envelope



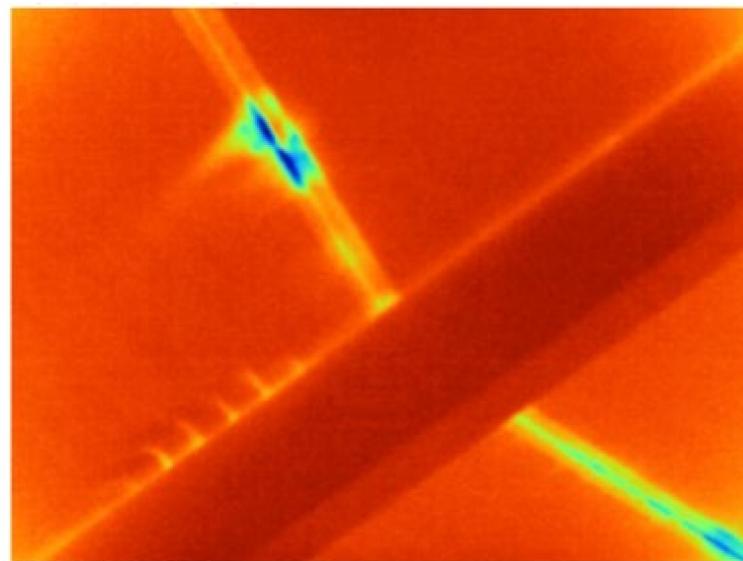
Blower Door & Thermal Imaging Test

LESSON LEARNED



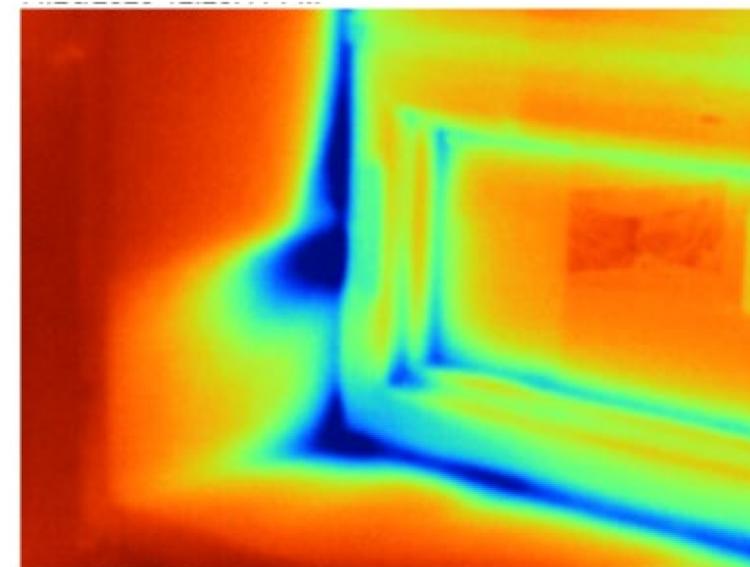
Visible Light Image

IR000001.IS2
11/20/2020 12:13:03 PM



Visible Light Image

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Visible Light Image

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Renewable Energy Technologies



Ground Mounted Solar Panels



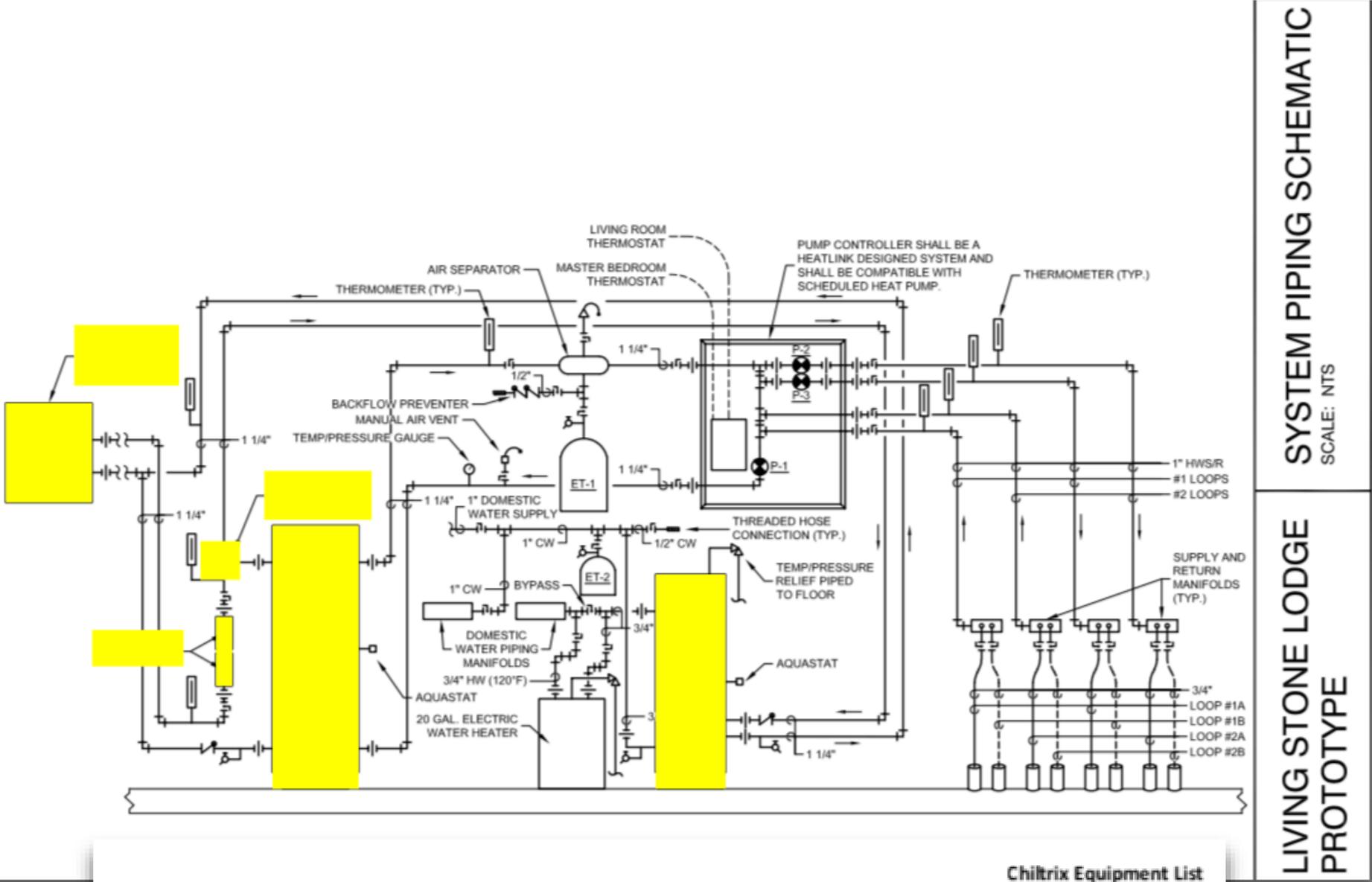
GEO THERMAL WELLS



2 wells per home - 300' deep



AIR SOURCE HEAT PUMP



Chiltrix Equipment List

Item	Qty	\$/Unit	Total	Description
CX34	1	\$ 4,289.00	\$ 4,289.00	2 ton cooling, 3 ton heating air to water heat pump
Standard Controller	1	\$ -	\$ -	Standard wired controller included with CX34
Wifi/BACnet Gateway	1	\$ 499.00	\$ 499.00	Upgrade to allow the system to be monitored remotely
V18 Inline Heater	2	\$ 399.00	\$ 798.00	5500w (18,000btu/hr) inline backup heater
VCT37 Buffer Tank	1	\$ 1,159.00	\$ 1,159.00	37-gallon vertical stainless steel buffer tank
DHW80 Tank	1	\$ 1,899.00	\$ 1,899.00	Duplex stainless steel 80-gallon indirect water heater
DN25 Valve	1	\$ 162.00	\$ 162.00	G1 3-way control valve required for DHW heating
HSE Corn Glycol	1	\$ 129.95	\$ 129.95	100% Propylene glycol 5-gallon concentrate
Total			\$ 8,935.95	



Partnerships



Partners...it takes a team



**Councilman Cory Spotted Bear
Twin Buttes South Segment**



**Chairman Mark N. Fox
Mandan, Hidatsa, and Arikara Nation**

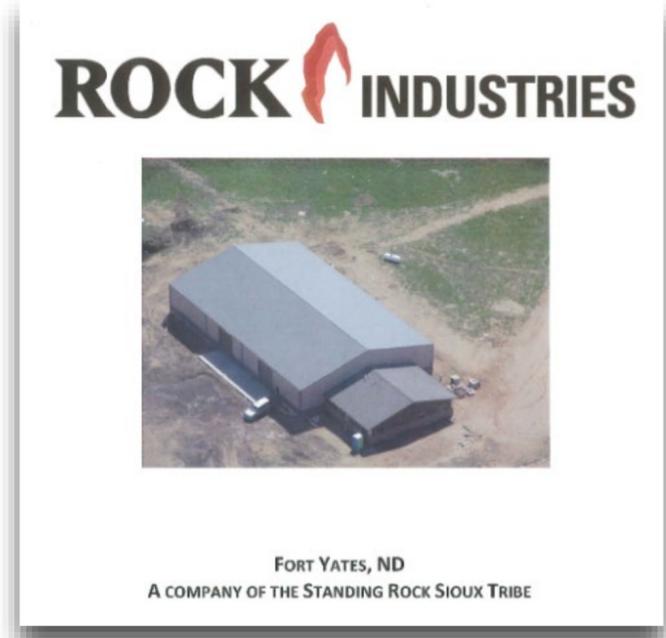
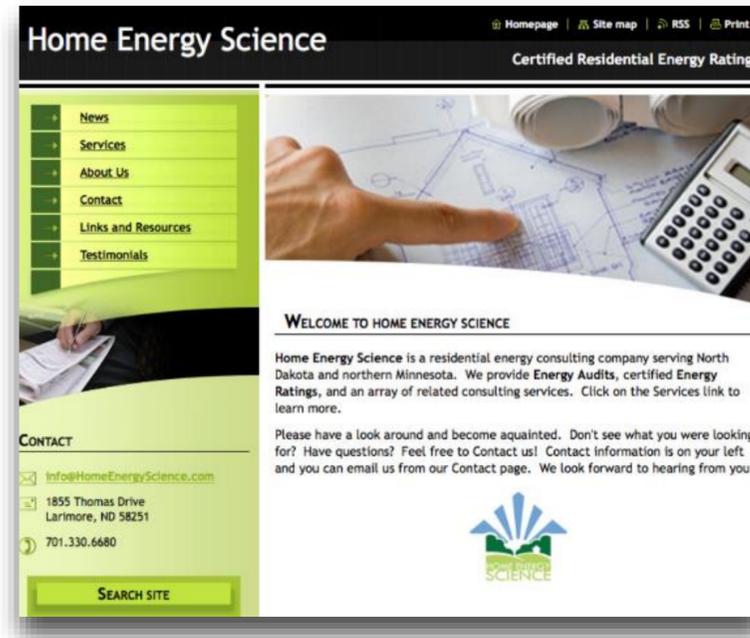
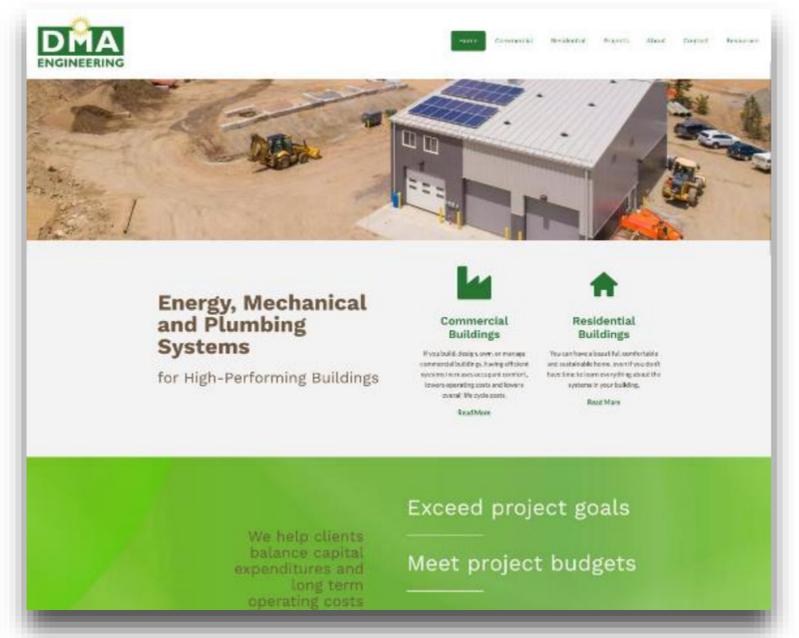
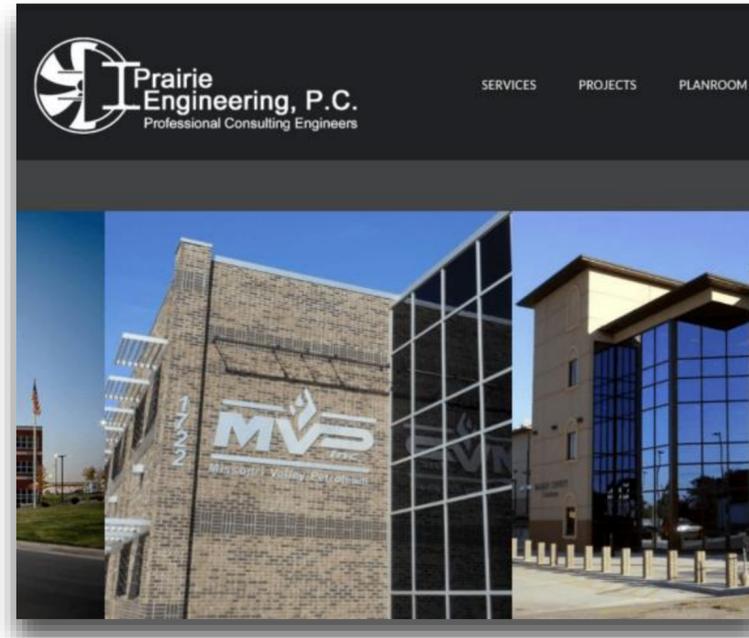


Living Stone Lodge Team

- Tribal Council
- Engineers
- Architects
- Local Workers
- Volunteers
- Tribal Finance Office
- Tribal Grant Office
- State Grant Partners
- Vendors



Professional Partners...it takes a team



Partners...it takes a team



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For Tribal Housing



Living Stone Lodge

LivingStoneLodgeND.org

