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Building Science

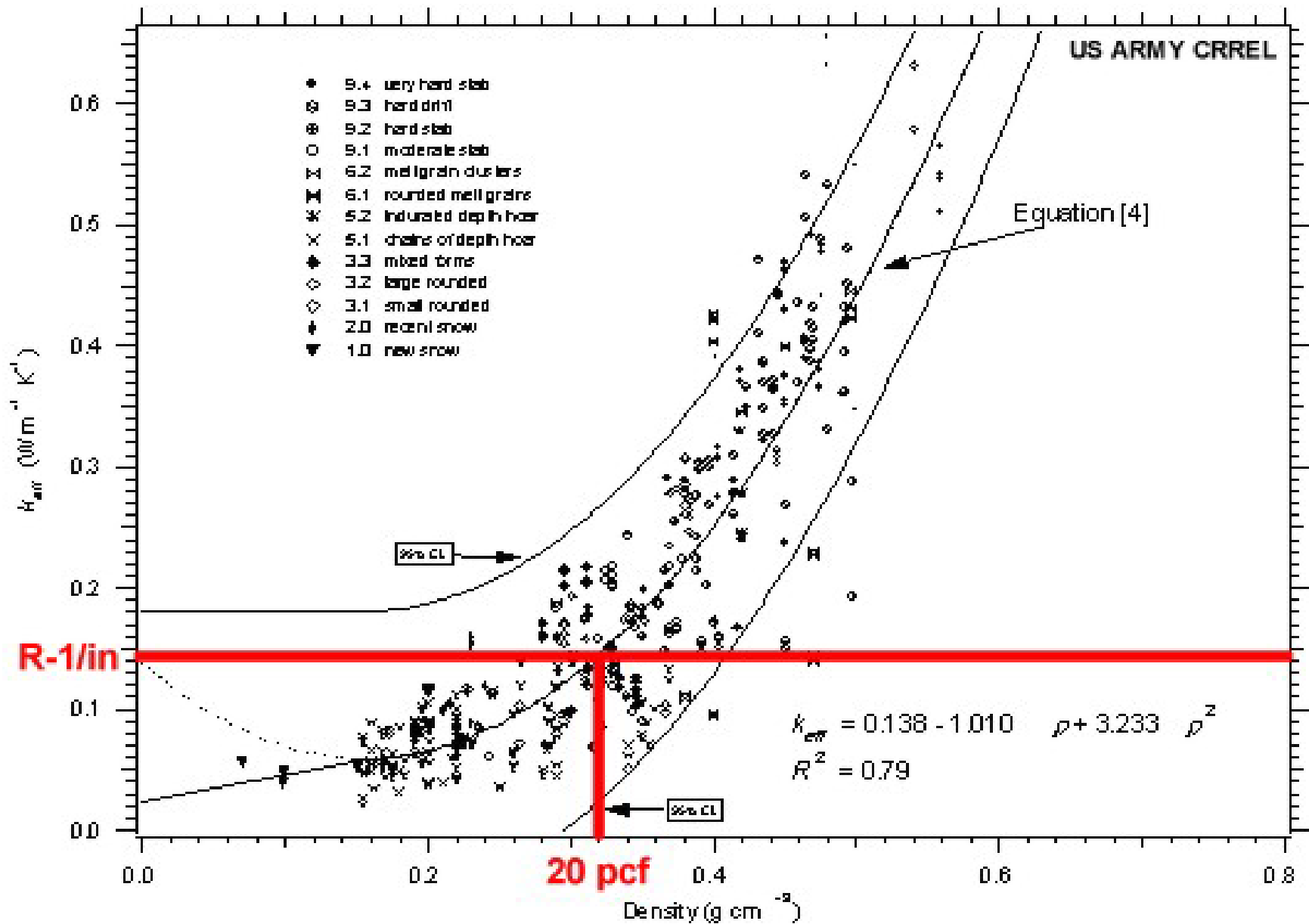
History

www.buildingscience.com

A Trip Down Memory Lane



Photo by Virgile Lafreniere, Northwest Territories, 2007



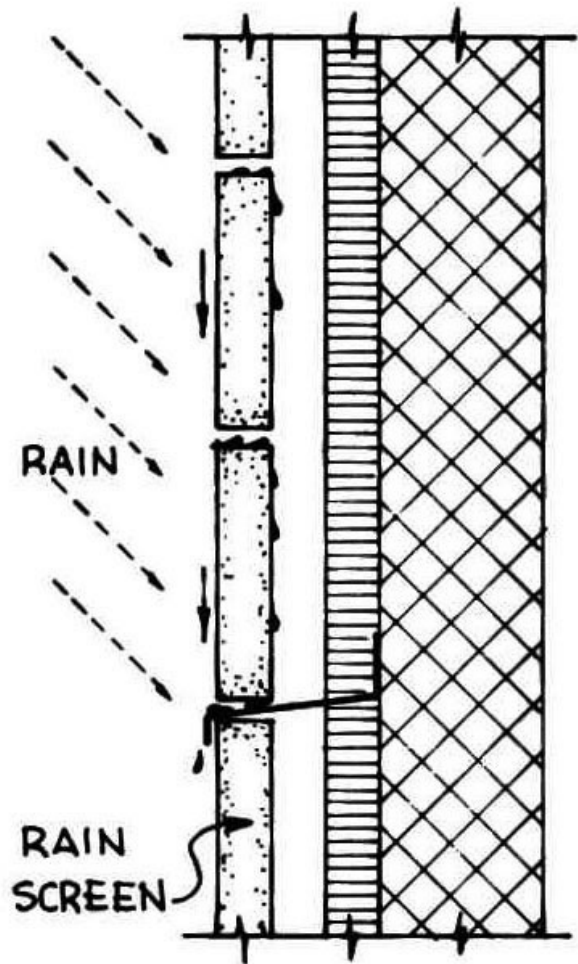
Super Insulated
Airtight
Ventilated

MIT – Solar I - Cambridge - 1939

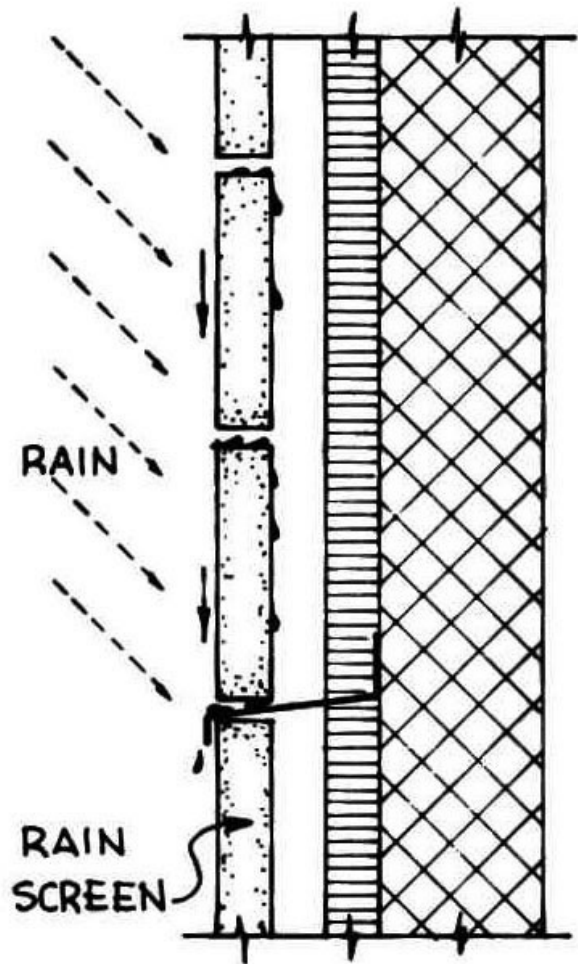


Neil Hutcheon - Canada – 1953
enclosure fundamentals
airtightness

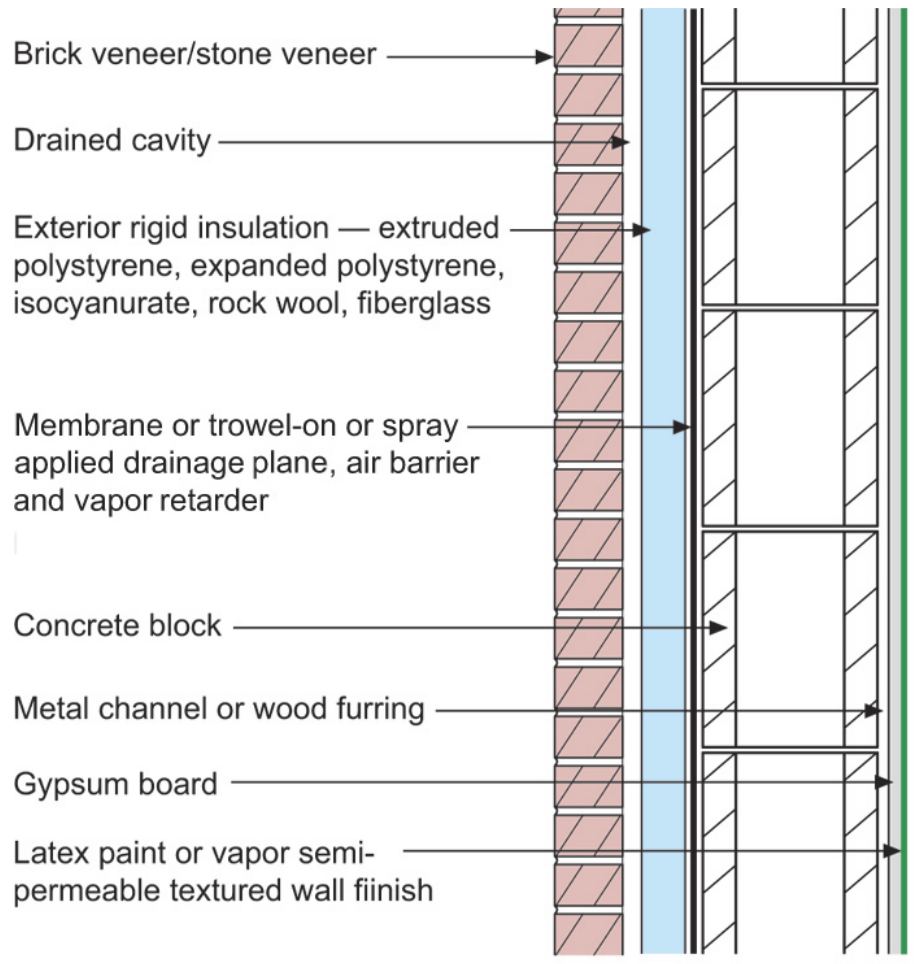
Neil Hutcheon - Canada – 1964
perfect wall



**WATER THAT PENETRATES
IS DIVERTED OUTWARD
BY FLASHINGS**



WATER THAT PENETRATES IS DIVERTED OUTWARD BY FLASHINGS



Arkansas Project - USA - 1974

Harry Tschumi

Les Blades

Frank Holtzclaw

Provided a utility bill guarantee...

Arkansas Project - USA - 1974

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Provided a utility bill guarantee...

Airtight construction – sealed

polyethylene/sealed exterior sheathing and

lots of insulation and double glazed

windows limited to 8 percent glazing area

and electric heat pumps and DHW

Advanced framing – 2x6 @ 24 inch R-20

Lyngby House - Denmark - 1975



Lyngby House - Denmark – 1975

Null-Energi-Haus

Vagn Korsgaard – Technical University of
Denmark

Double walls, R-40 walls, R-60 roof

Air to air heat exchanger

Double glazed windows with insulating shutters

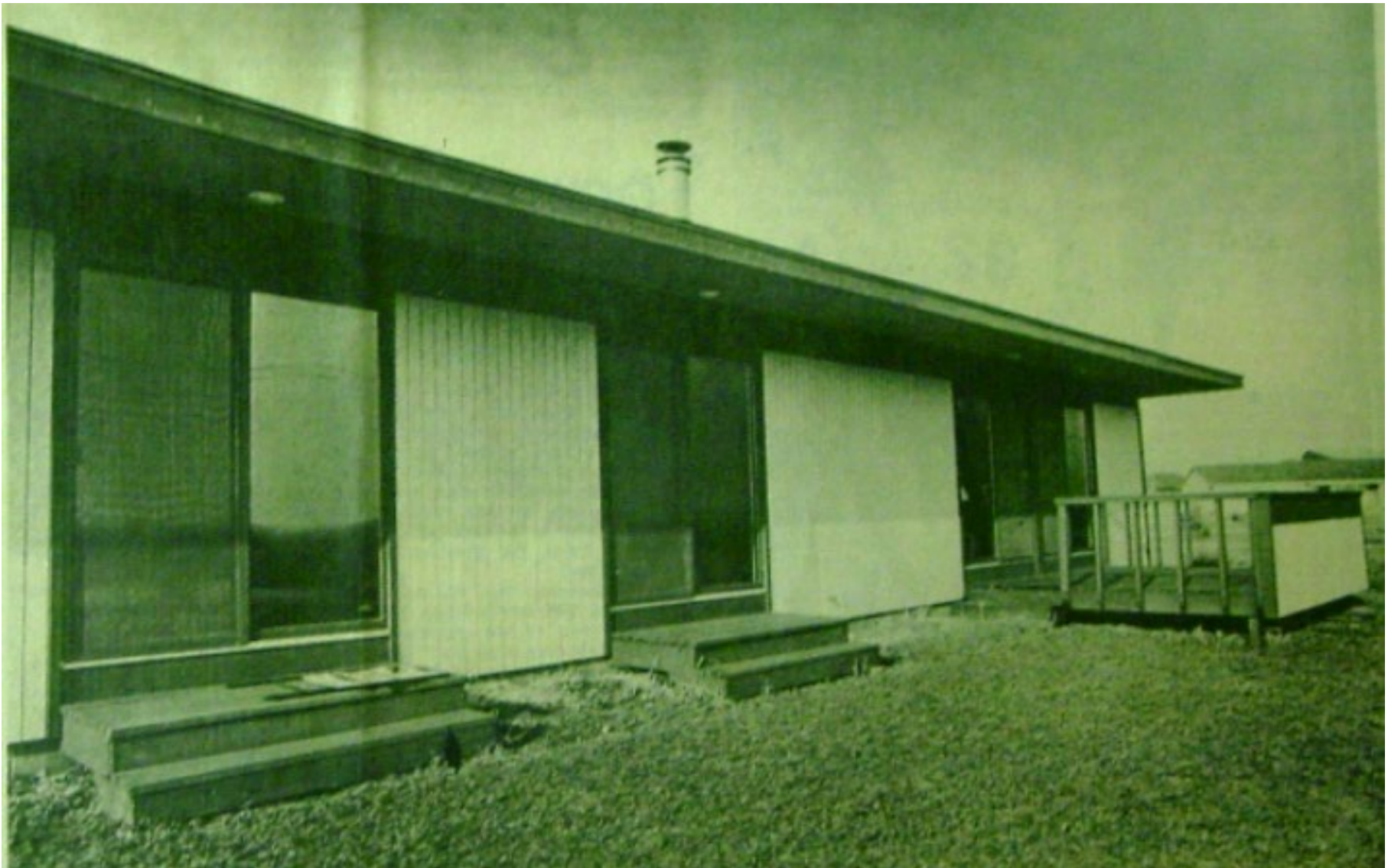
Solar thermal – 8,000 gal storage tank

Provident House - Canada – 1976



Provident House - Canada – 1976
Zero Energy House
Frank Hooper – University of Toronto
King City
Solar thermal 70,000 gal storage
(entire basement)

Lo Cal House - USA - 1976



Lo Cal House - USA – 1976
Wayne Shick and Bud Konzo
R-30 double stud walls
R-30 vented roof
Triple glazed windows
Air to air heat exchanger

Saskatchewan Conservation House - 1977



Saskatchewan Conservation House – 1977

R-40 double stud walls

R-60 ceiling

Triple glazed windows

Air to air heat exchanger

0.8 ach@50 Pa

Leger House - USA - 1977



Leger House - USA – 1977

Double wall – R 40 walls R 60 ceiling

Airtight construction

Air to air heat exchanger

MIT – Solar V - Cambridge - 1978



MIT – Solar V - Cambridge – 1978

House itself was the solar collector

Reflective interior blinds

Phase change ceiling tiles to store heat

Balcomb House – Santa Fe - 1979





Balcomb House – Santa Fe – 1979

Mass and glass

Sun spaces and solar orientation

Rock bed heat storage

Parade of Homes - Saskatoon - 1980



Parade of Homes - Saskatoon – 1980

10 houses

Average ach@50 Pa was 1.0

Double walls – R-40 walls R-60 ceilings

Air to air heat exchangers

R-2000 Program – 1982

Nationwide Canadian Program

Performance requirements

1.5 ach@50 Pa

Controlled ventilation via HRV's

Sealed combustion appliances

Strapped wall construction typical

Insulated sheathing



Buffalo Homes - Montana - 1985



Dumont House - Saskatoon - 1990





Passivhaus – Darmstadt - Kranichstein – 1991



Passivhaus – Darmstadt - Kranichstein – 1991

Super Insulated

Air tight

Air to air heat exchanger

Subsoil heat exchanger

How I Spent 1979, 1980 and 1981



Carnarvon







Schomberg









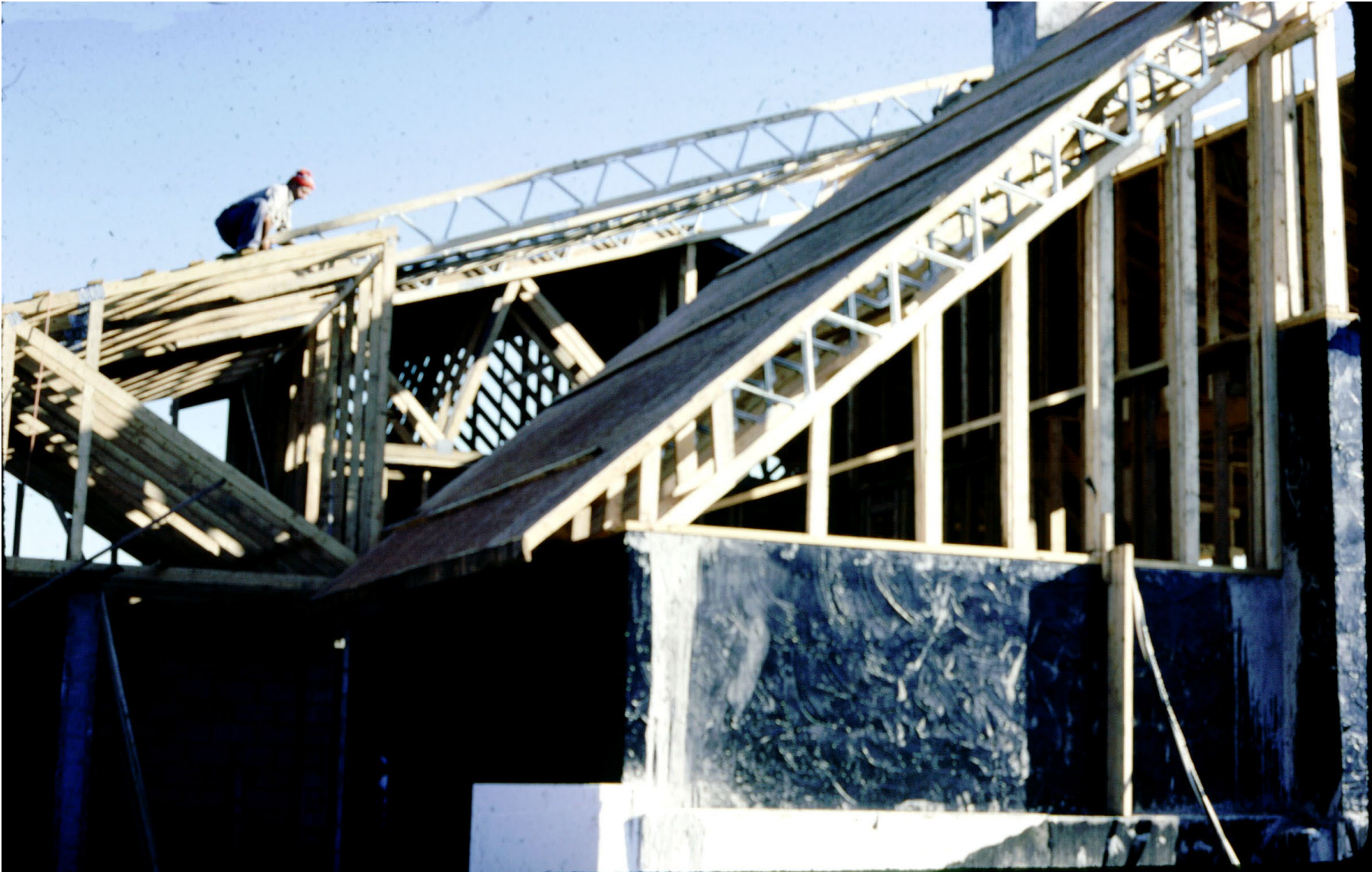




King City

















Peterborough















Collingwood



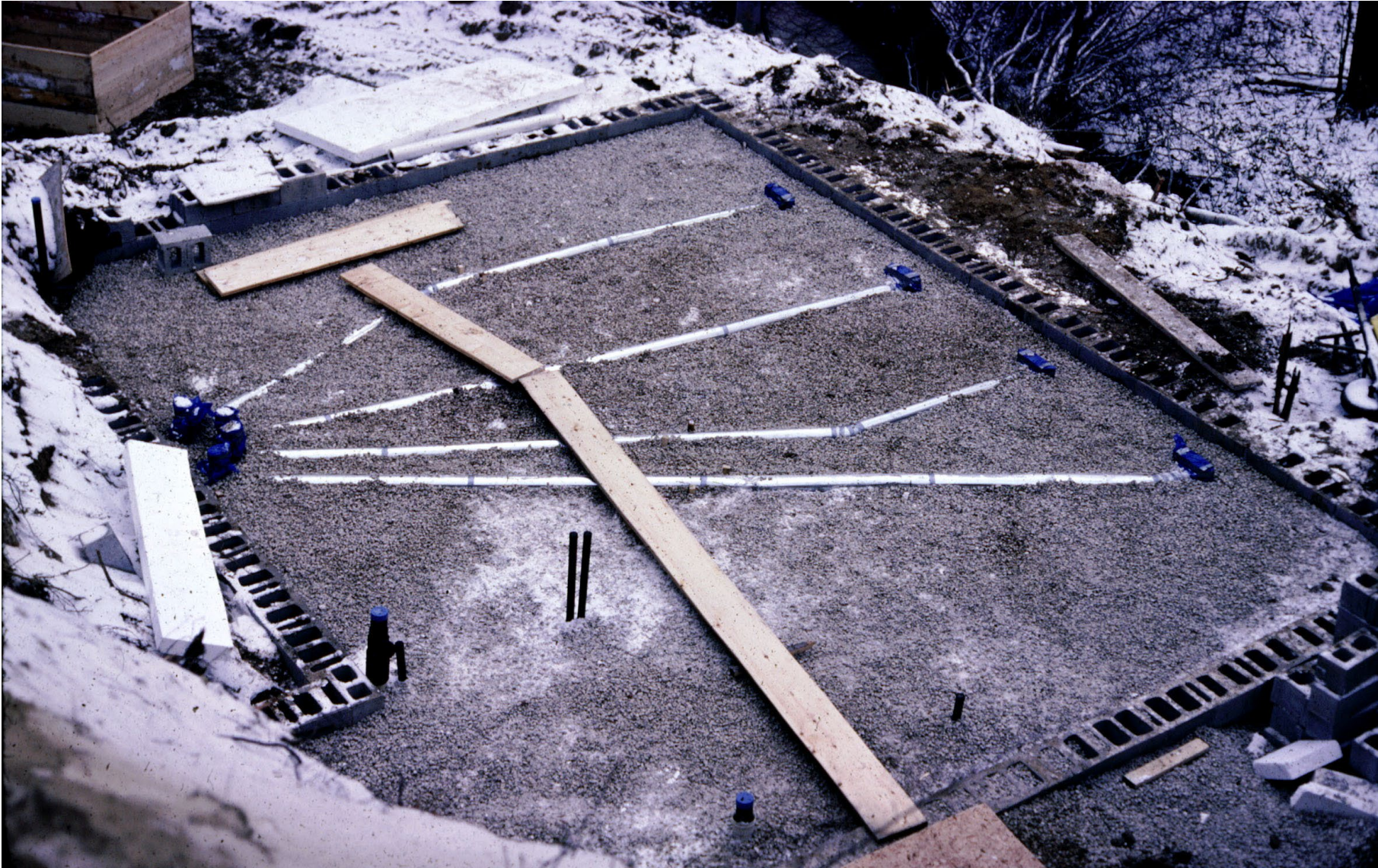












Newmarket





















Liverpool, NS

















Brampton















Unionville

























Creemore



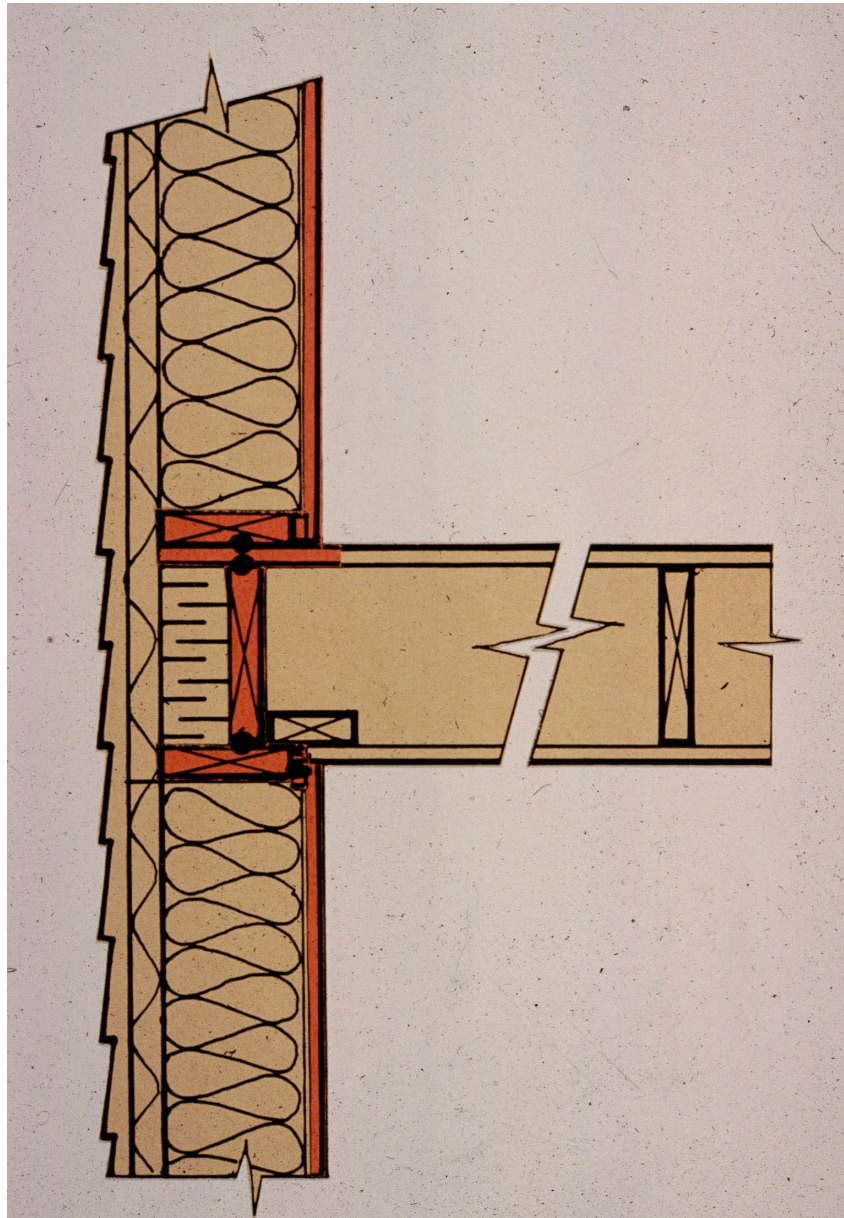














Eastern Townships, PQ

























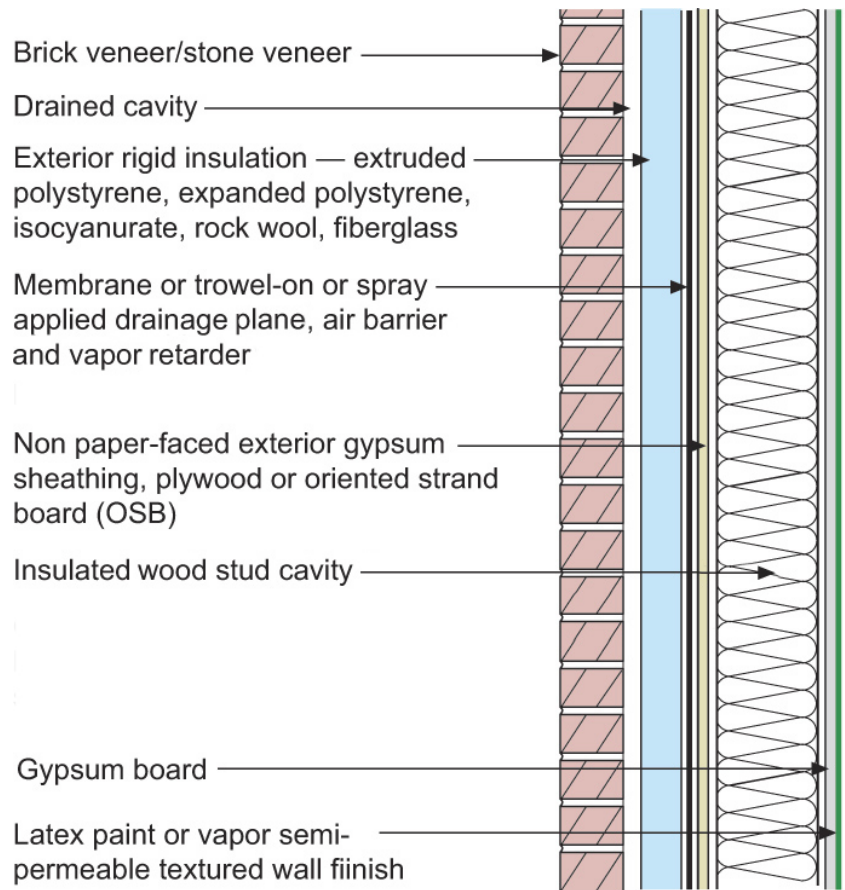








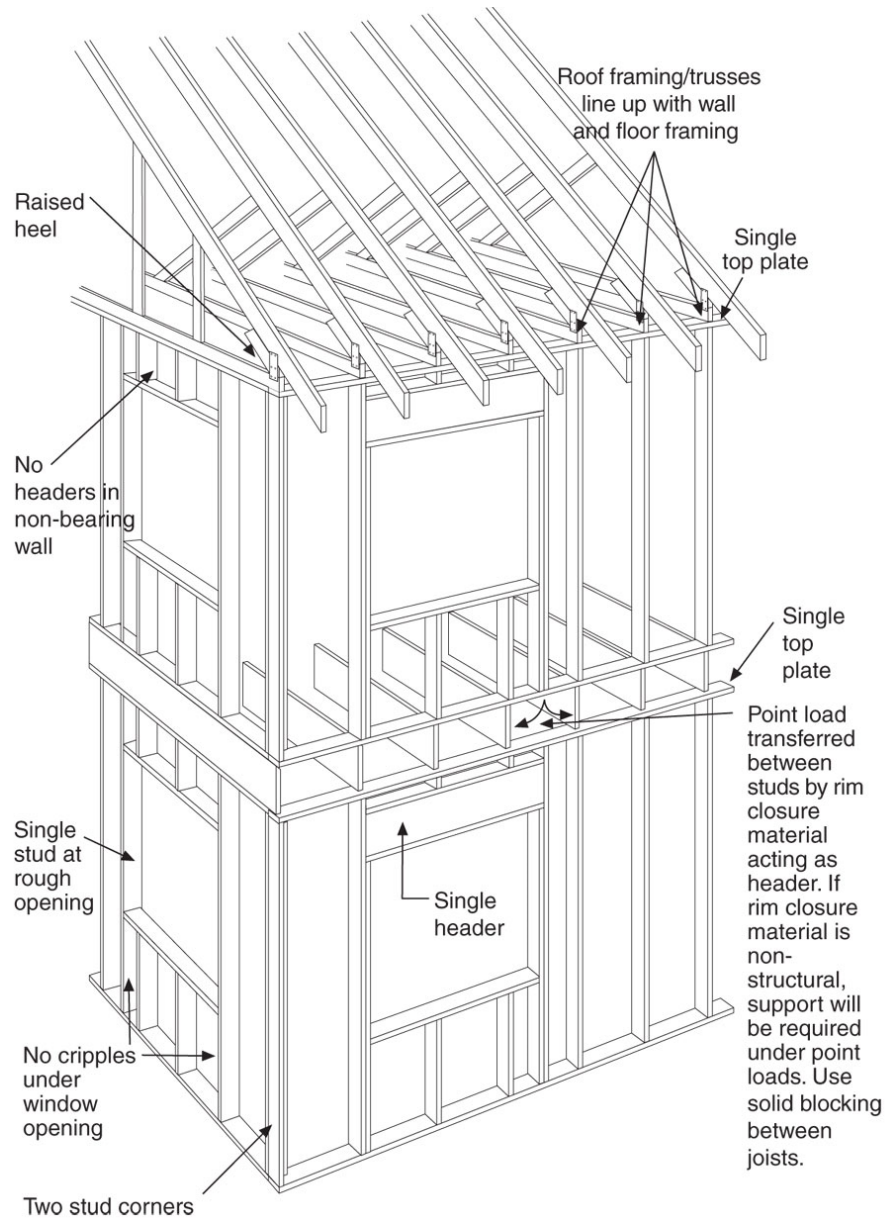






Ten Years Later.....1990

Building America Program











Thirty Years Later.....

Westford House.....





















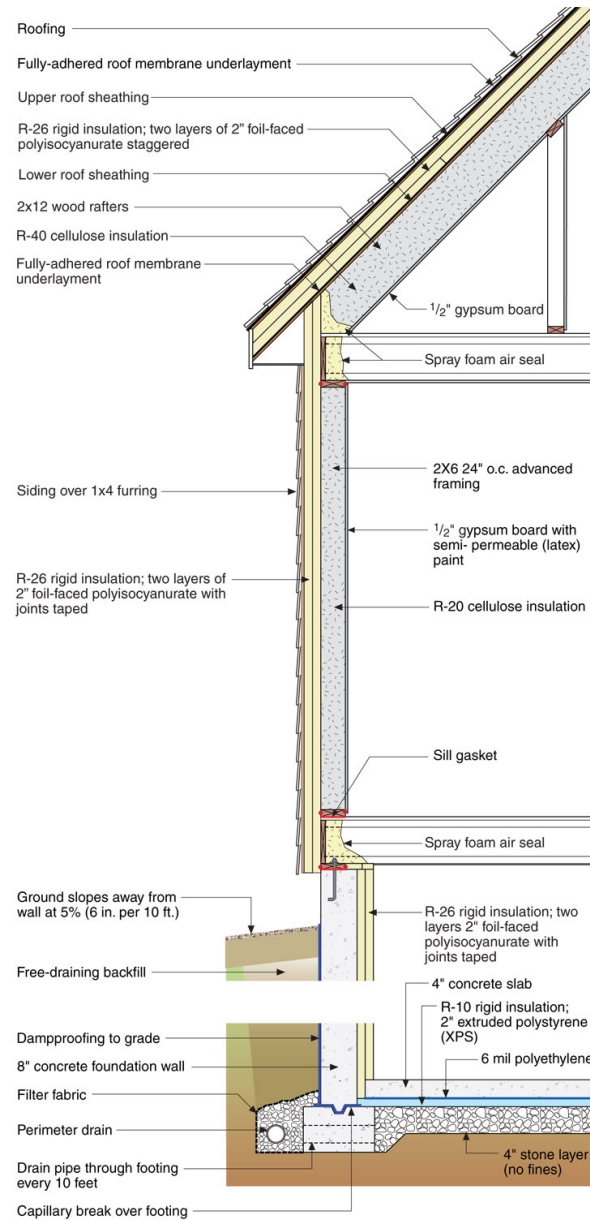












Net Zero Retrofit.....

























































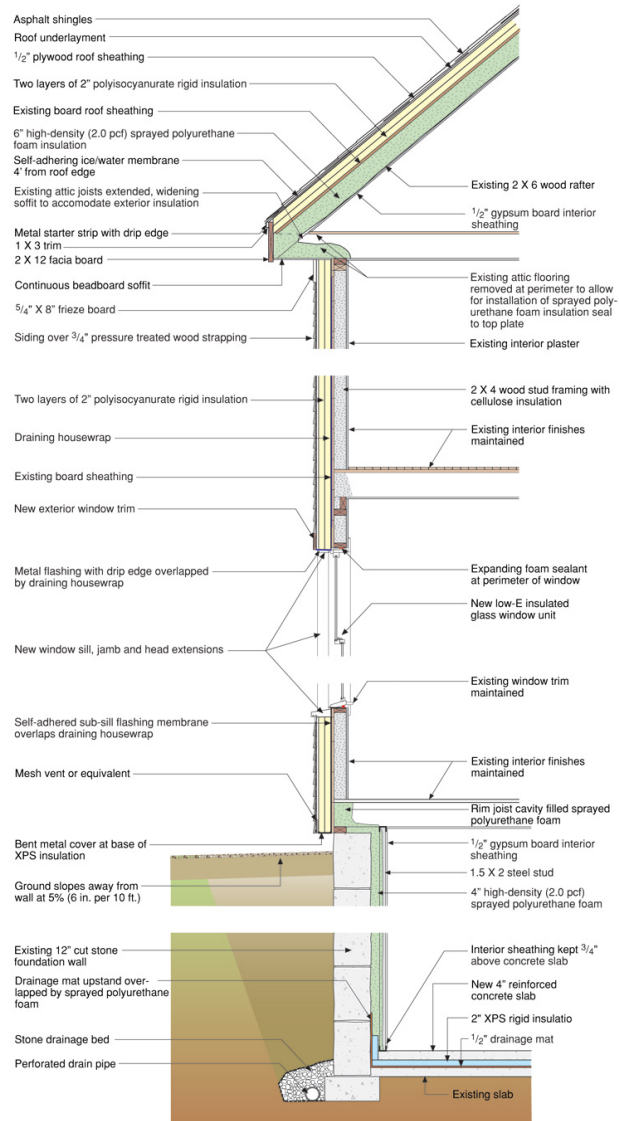












NIST Net Zero Demonstration.....































