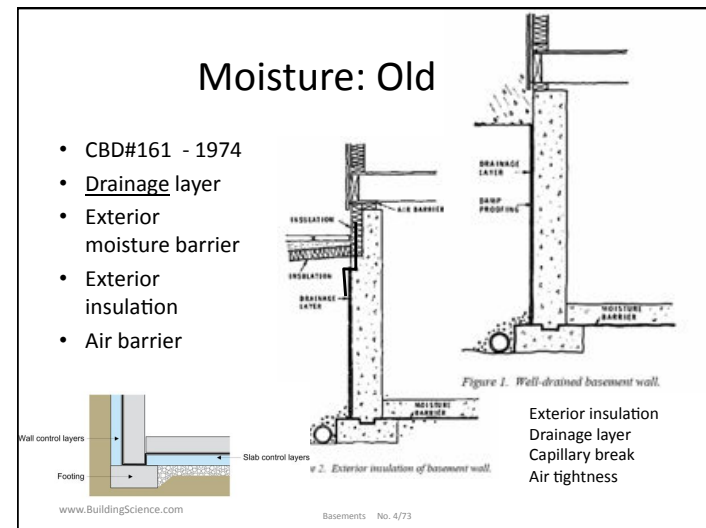
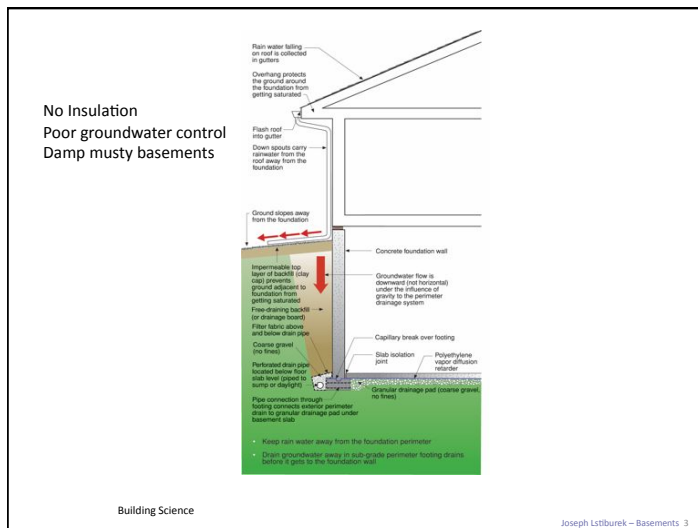
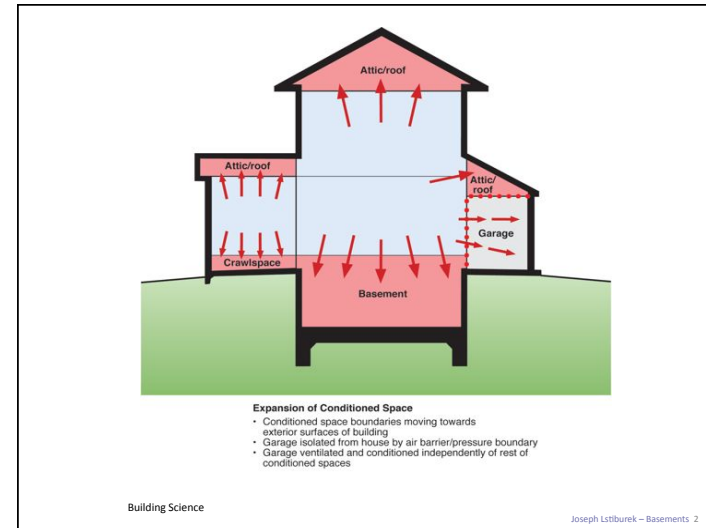


The Good, The Bad, the Downright ugly

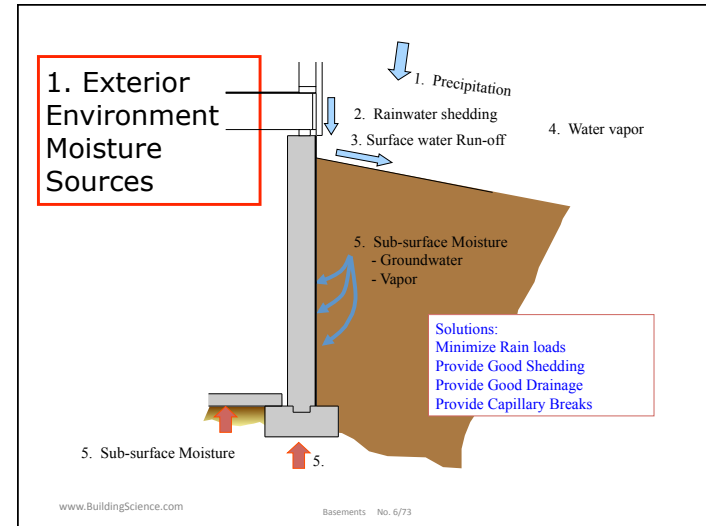
Dr John Straube, P.Eng
University of Waterloo

Building Science Corporation



How does my basement get wet?

- Let me count the ways
 - Construction moisture
 - Groundwater
 - Air leakage condensation



1. Controlling Exterior Moisture Sources

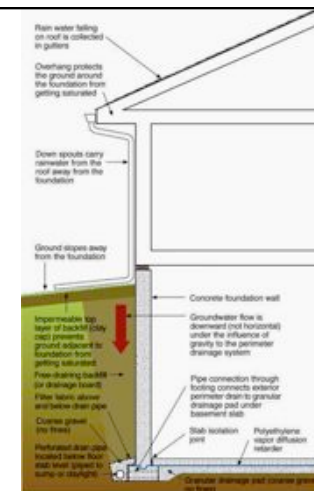
- Same approach as above-grade rain control
 - Deflection
 - Overhangs, slopes, gutters
 - Drainage/Exclusion/Storage
 - Three strategies for the enclosure
 - Drying
 - Remove built-in incidental moisture

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Surface Drainage

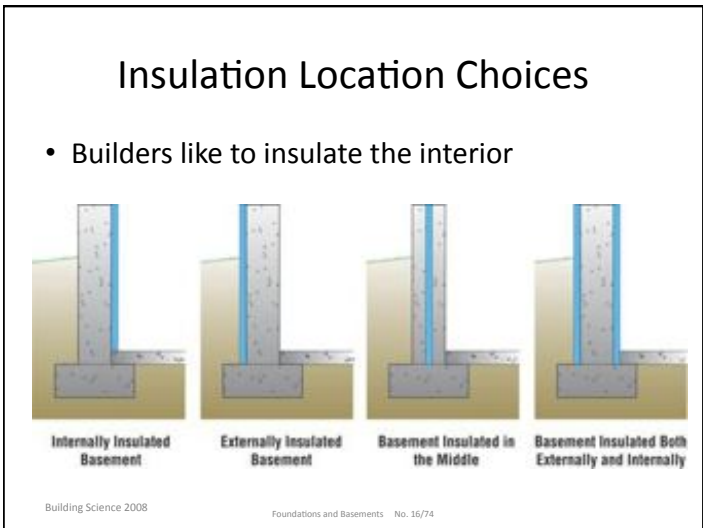
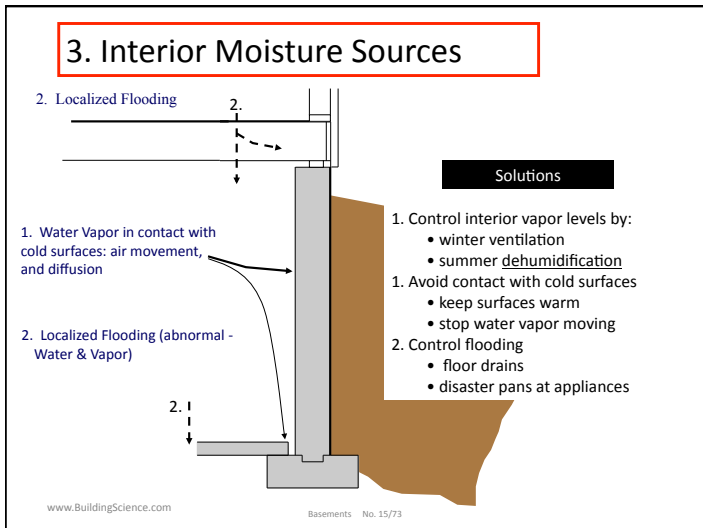
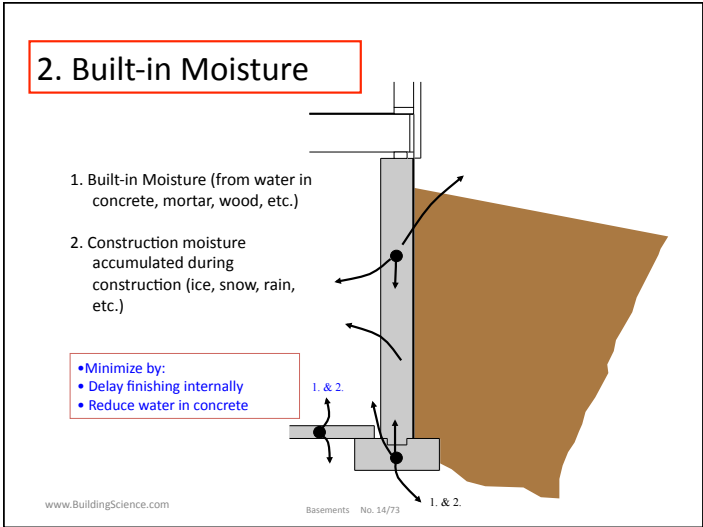
- First step
 - Common problem
- Overhang
- Gutters
- Downspouts
- Sloped grade
- Perimeter drain

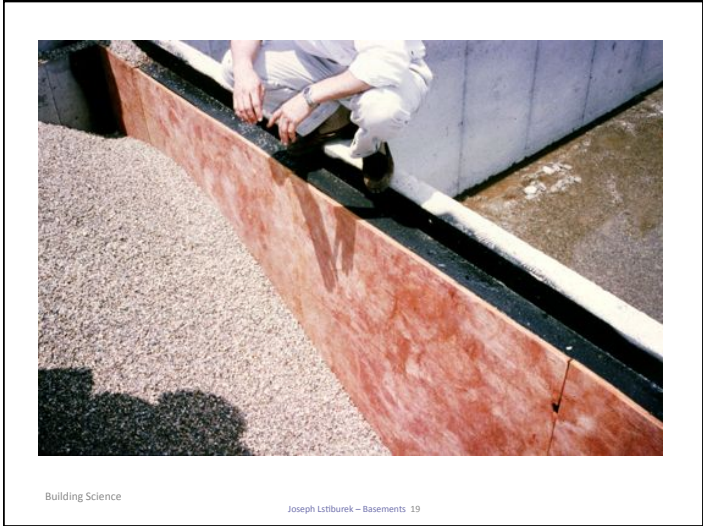
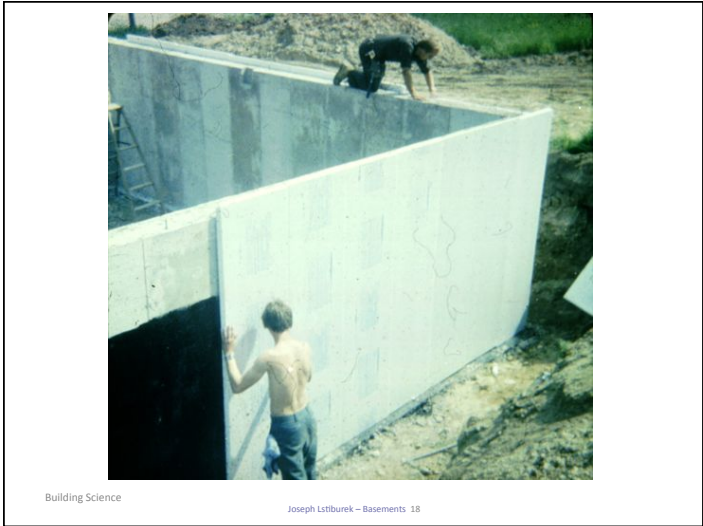
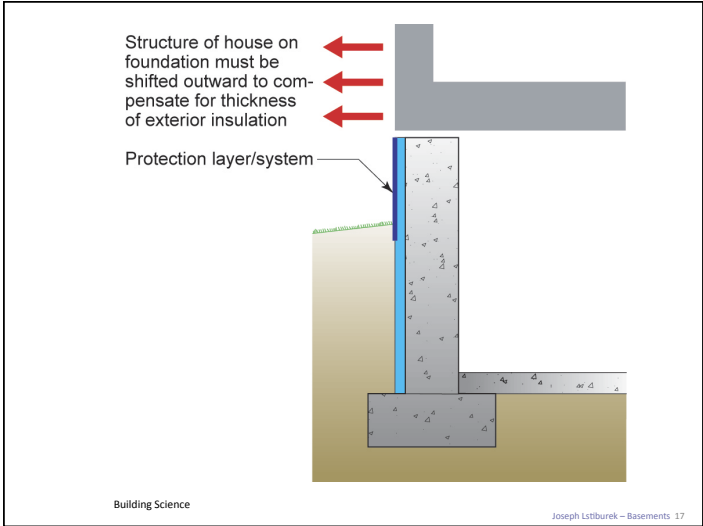


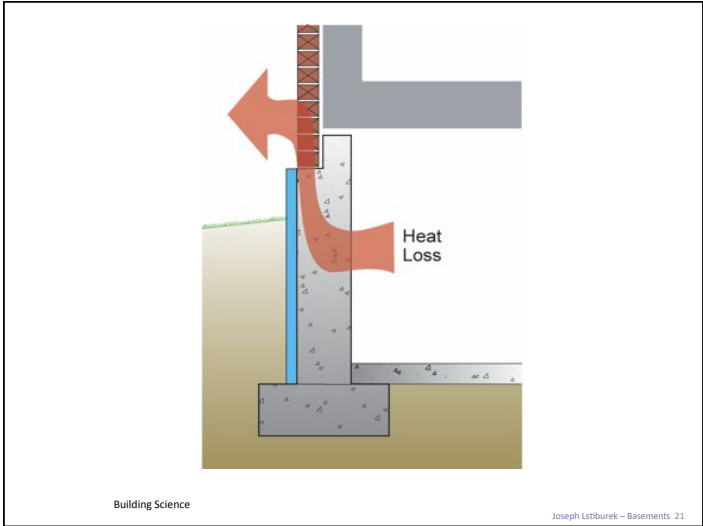
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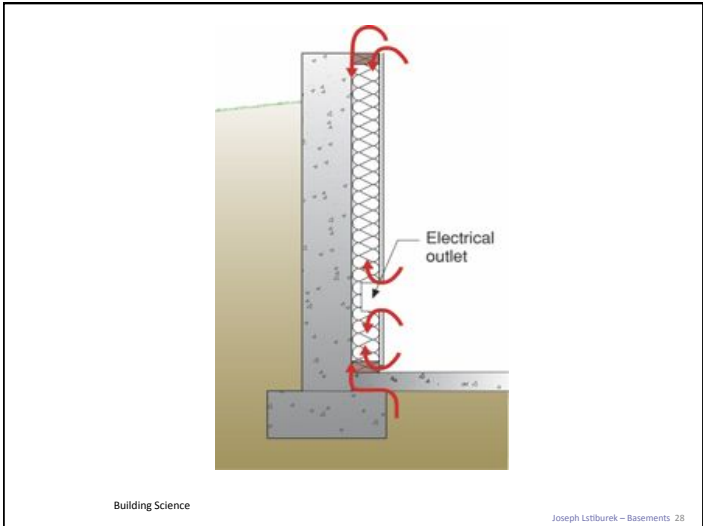
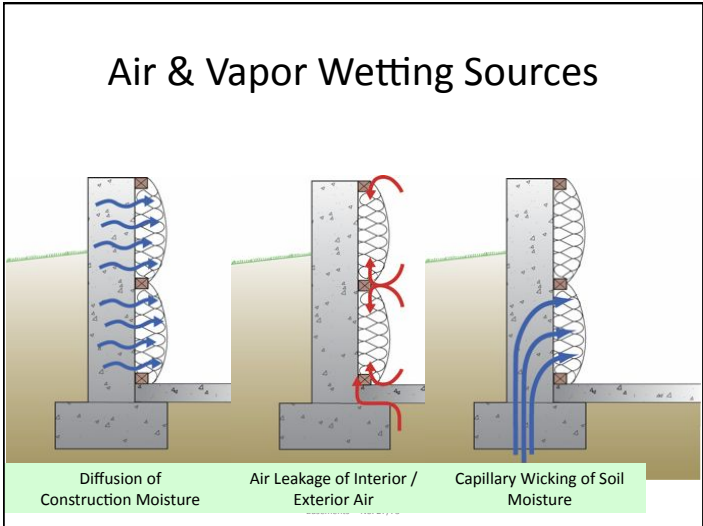
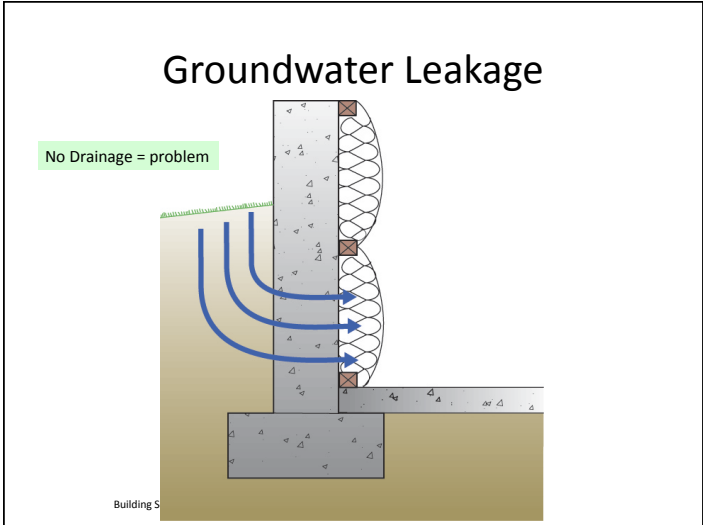
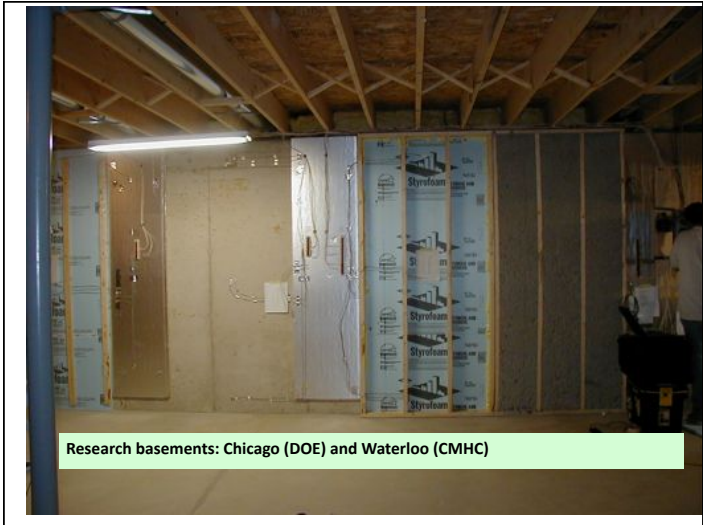
Basements No. 8/73

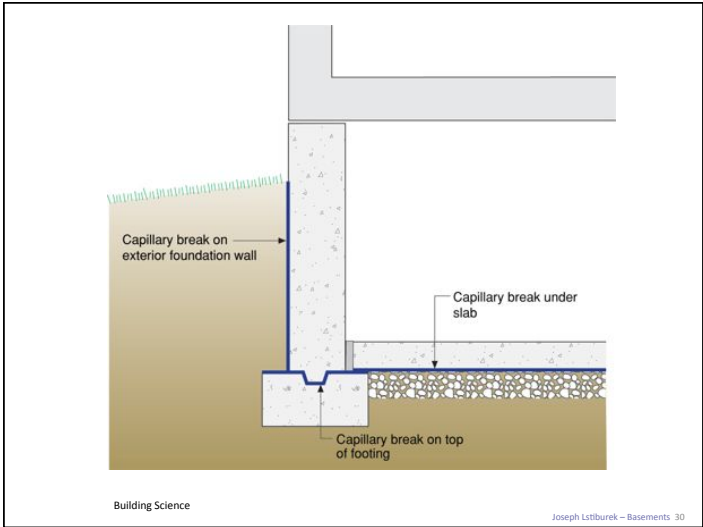
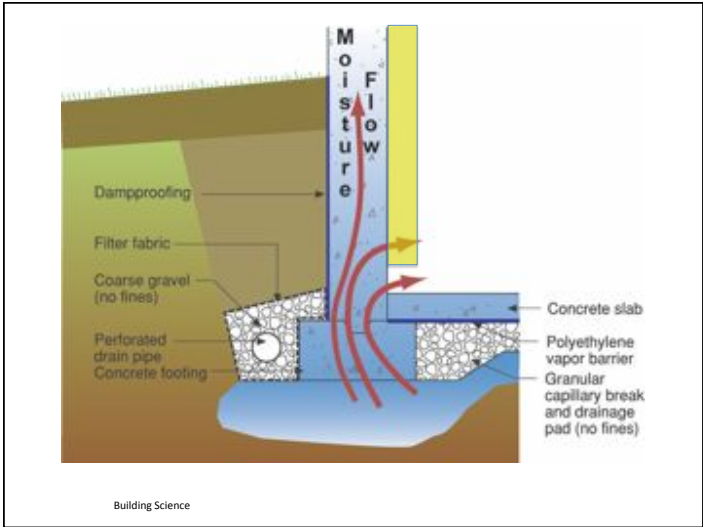


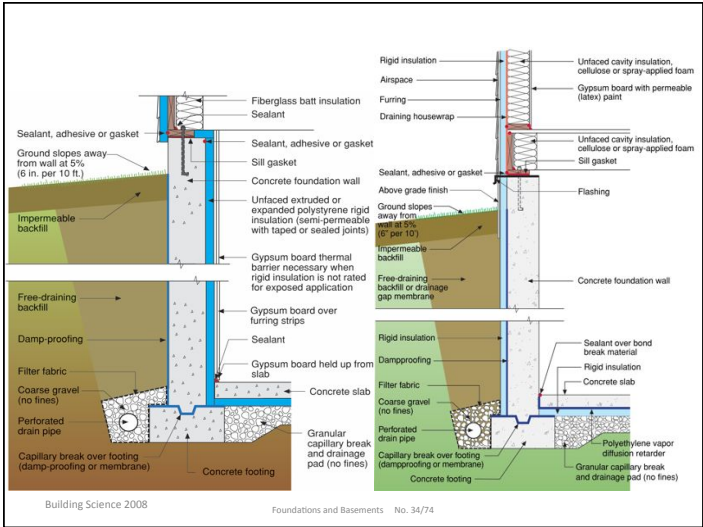












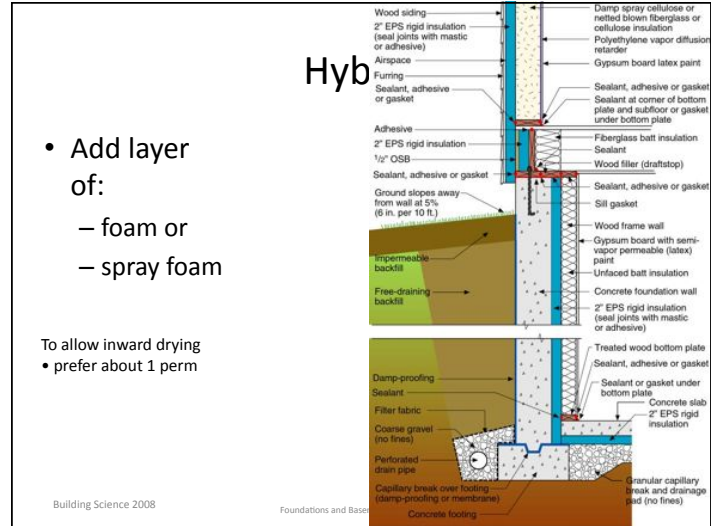
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Basements



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Joseph Listburek - Basements 37



- Add layer of:
 - foam or
 - spray foam

- To allow inward drying
- prefer about 1 perm

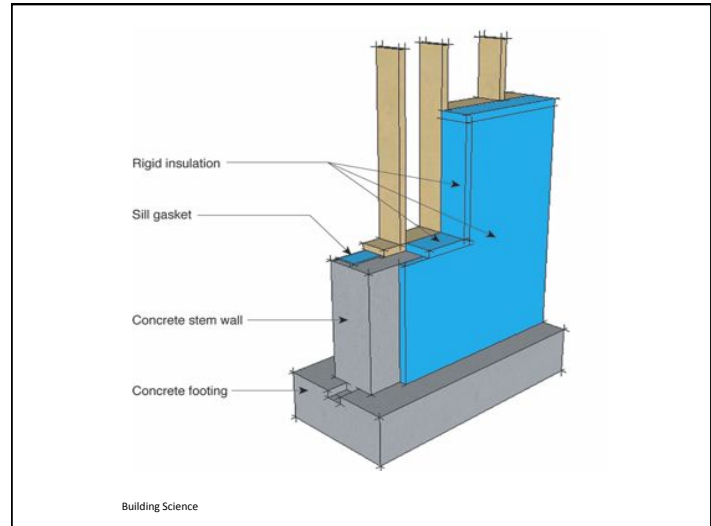
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Foundations and Basements

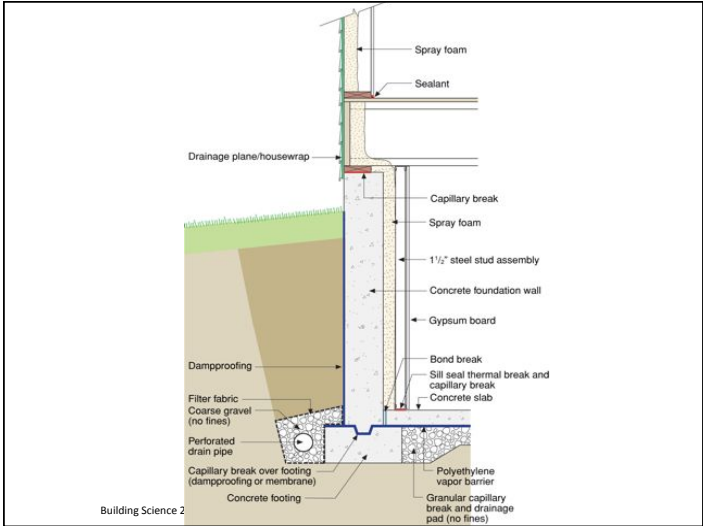


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Foundations and Basements No. 39/74

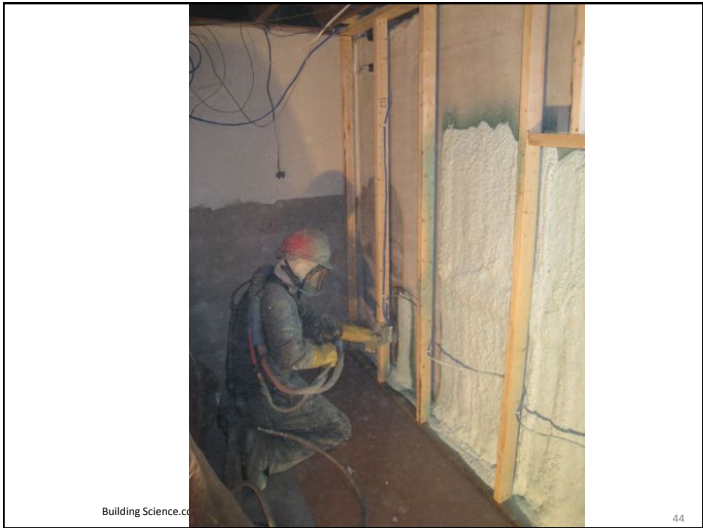


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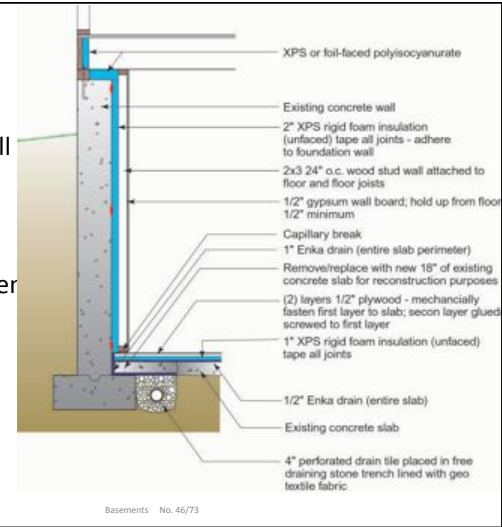
Spray foam base

- Open cell
 - Climate specific
- Closed cell





- Retrofit wall & slab
- Solves damp & cold basements summer & winter



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Basements No. 46/73

Insulated Concrete Forms (ICF)

- If you afford it, use them –
 - cap break,
 - insulation,
 - vapor retarder,
 - above grade



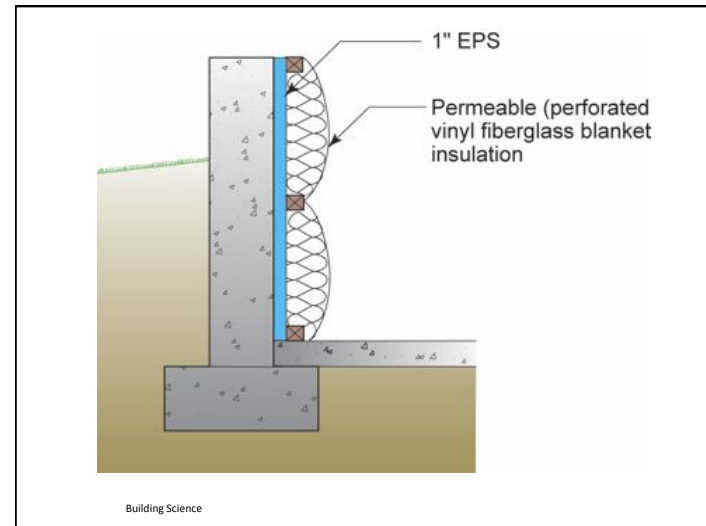
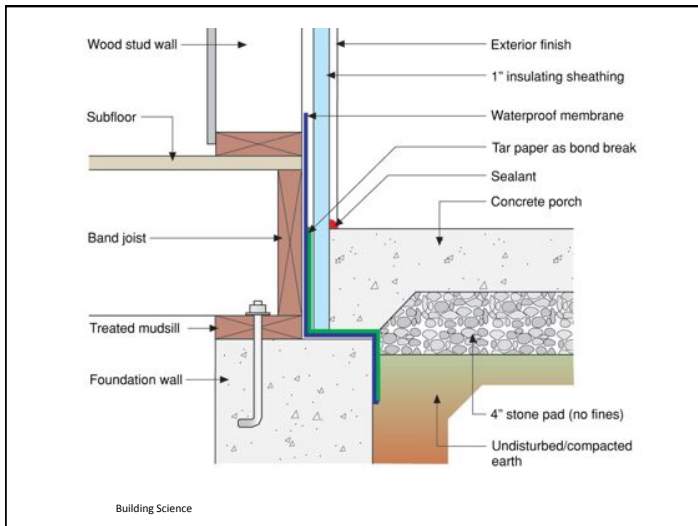
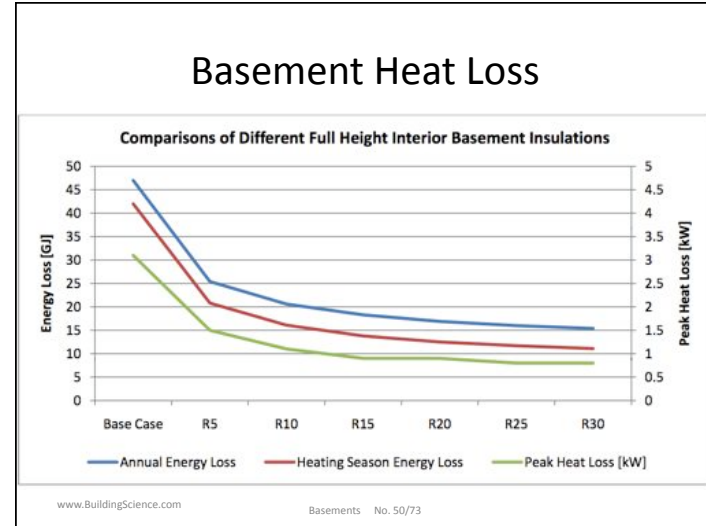
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Thermomass

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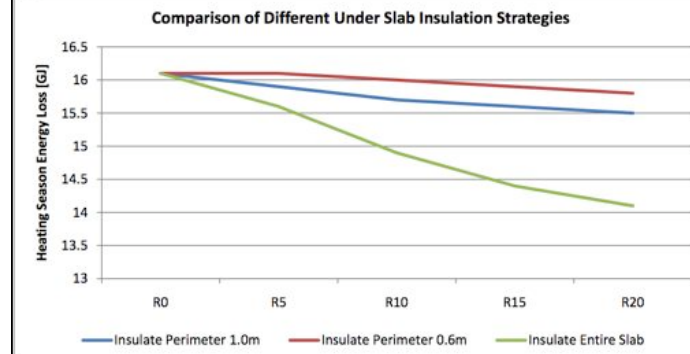
Slabs

- Slabs can loose significant energy
 - Currently the only uninsulated part of many buildings
- Keep warm (comfort & condensation)
- Control wicking and diffusion
- Make softer
- Consider floods

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Basements No. 53/73

Slab heat loss



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Basements No. 54/73



