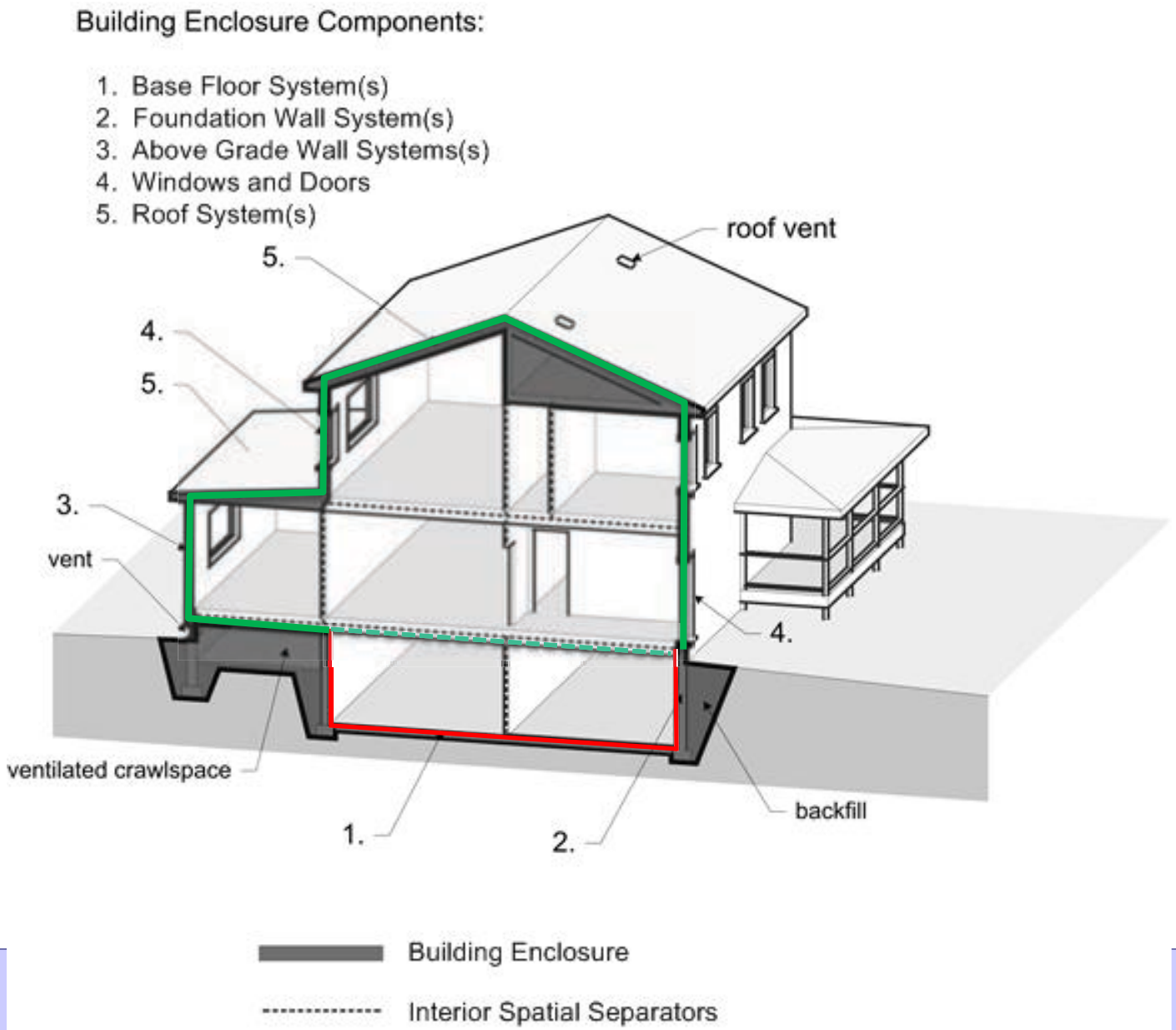
Foundations

August 8, 2019

Basement Insulation Location



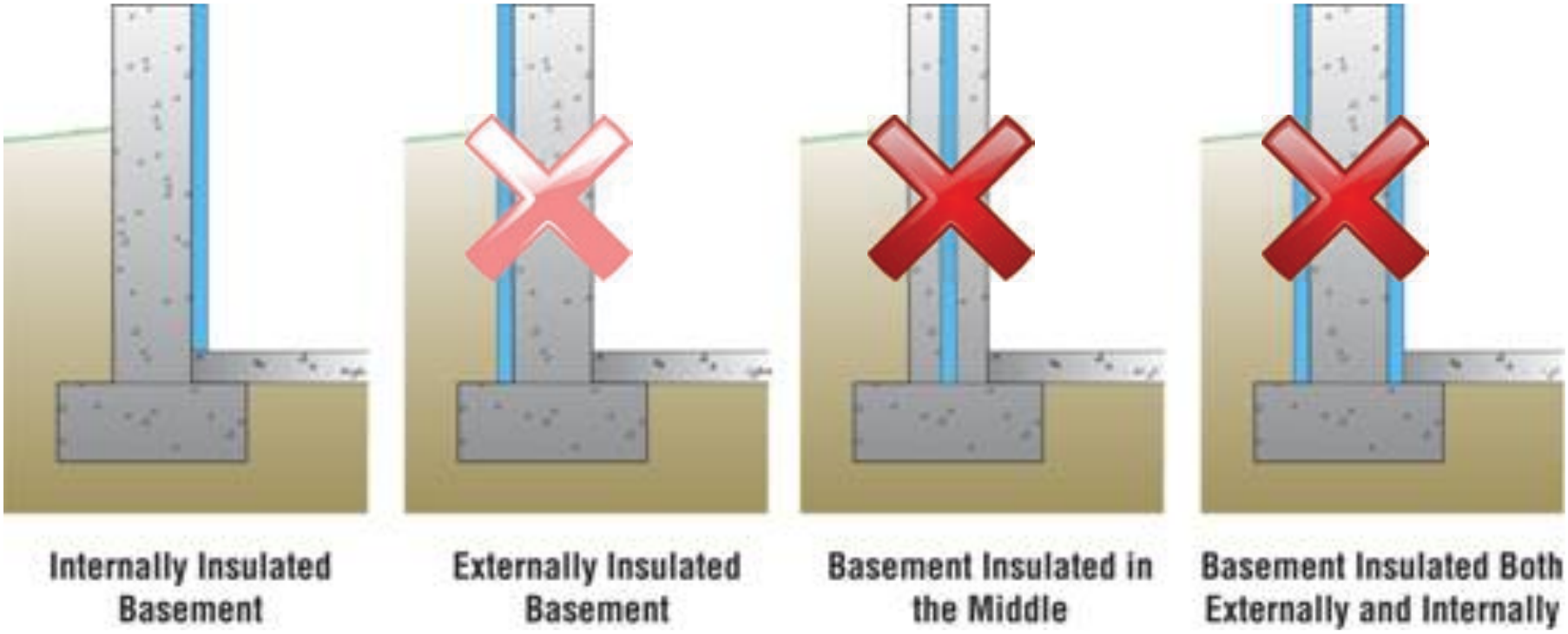
Basement Insulation Location

- 4.6 ACH50; 2129 CFM 50 total;
  1100 CFM 50 through floor

- 8.5 ACH50; 3590 CFM 50 total;
  1740 CFM 50 through floor

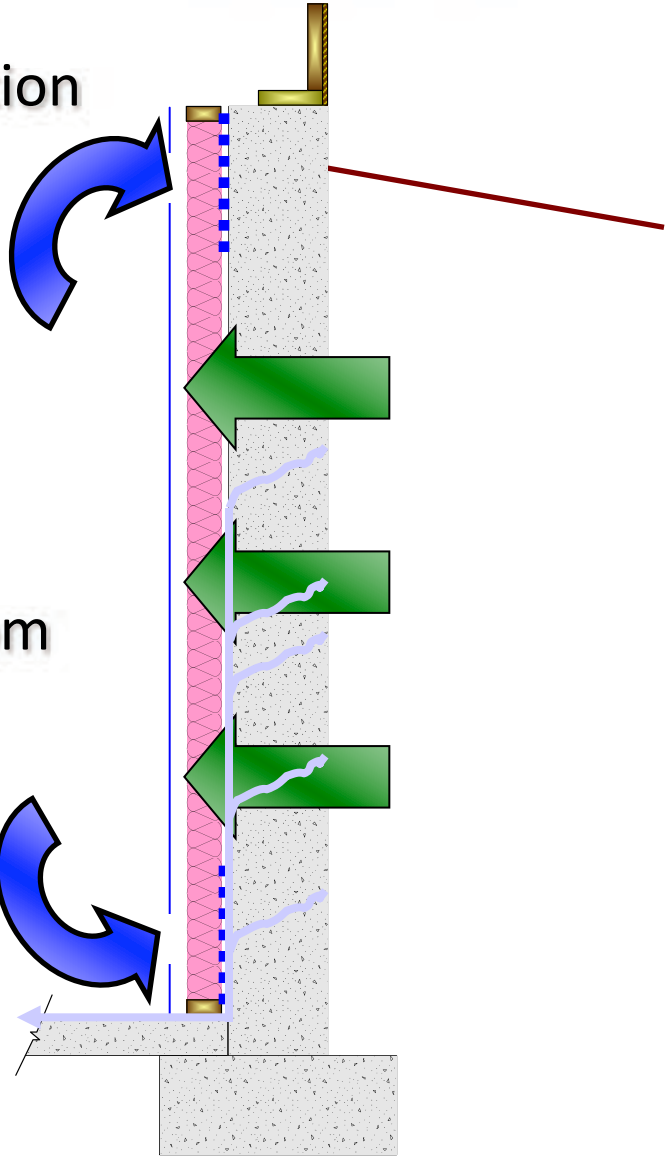
Insulation Location Choices

- Retrofits: interior insulation is often the only available option

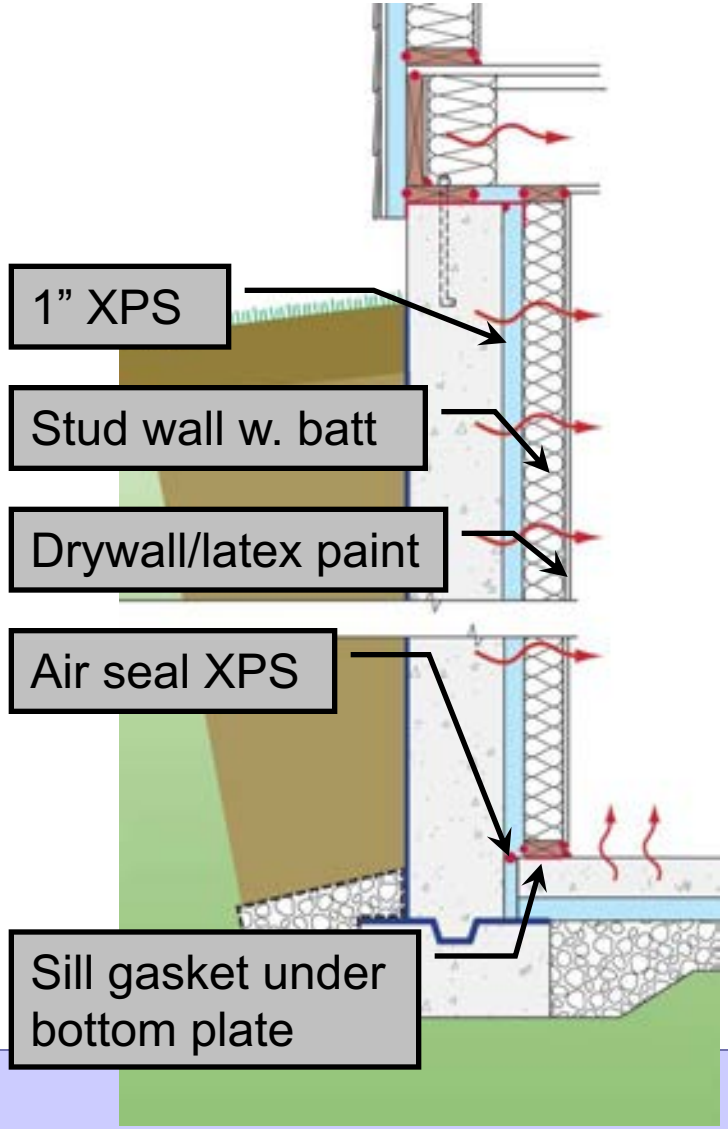


Basement Insulation Problems

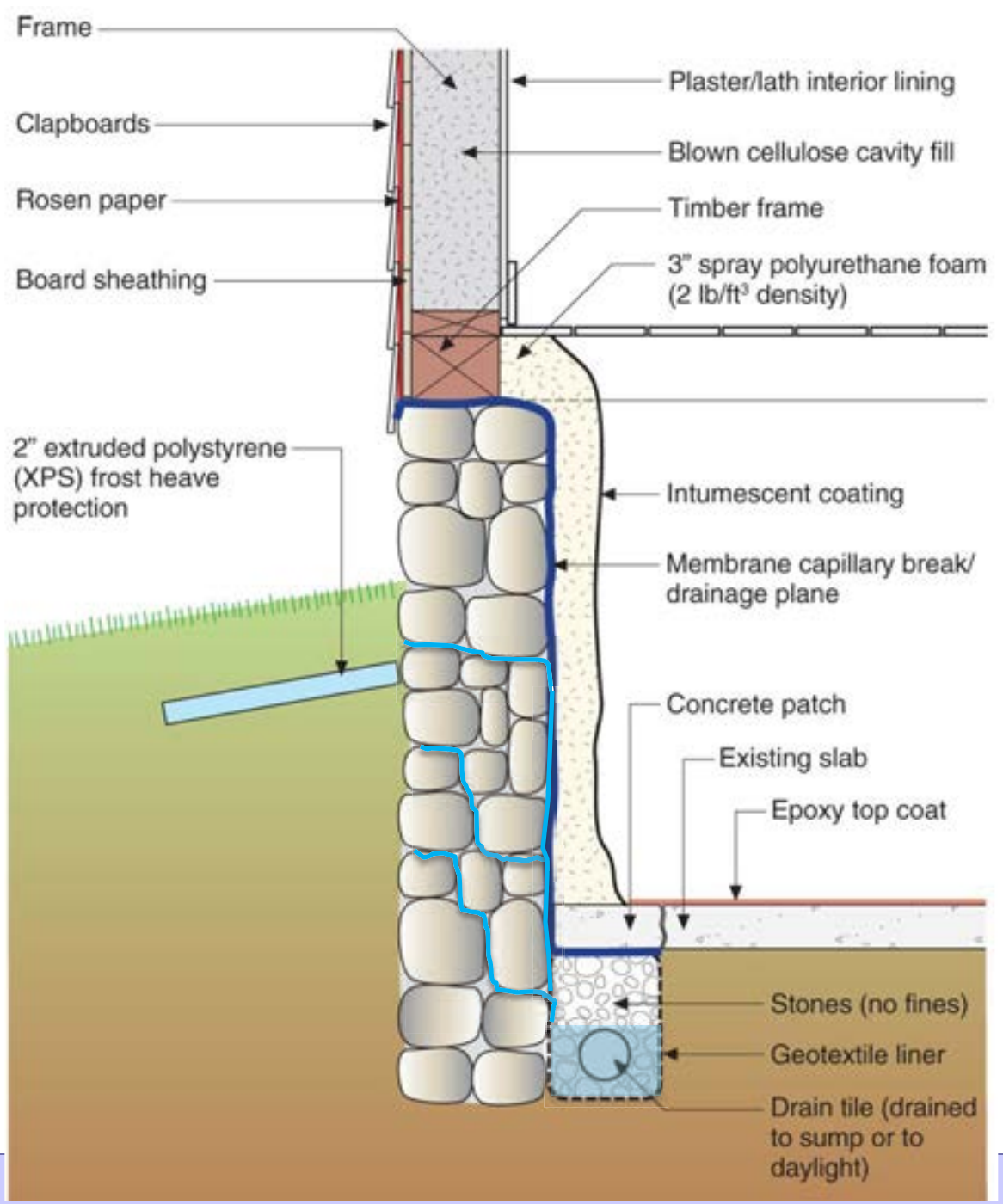
- Wintertime interior moisture condensation (like above-grade walls)
- Condensation at bottom of wall (thermal lag of soil)
- Lack of drying of assembly (moisture from concrete and soil); soil is at 100% RH
- Liquid water through wall



Recommended Wall Assembly



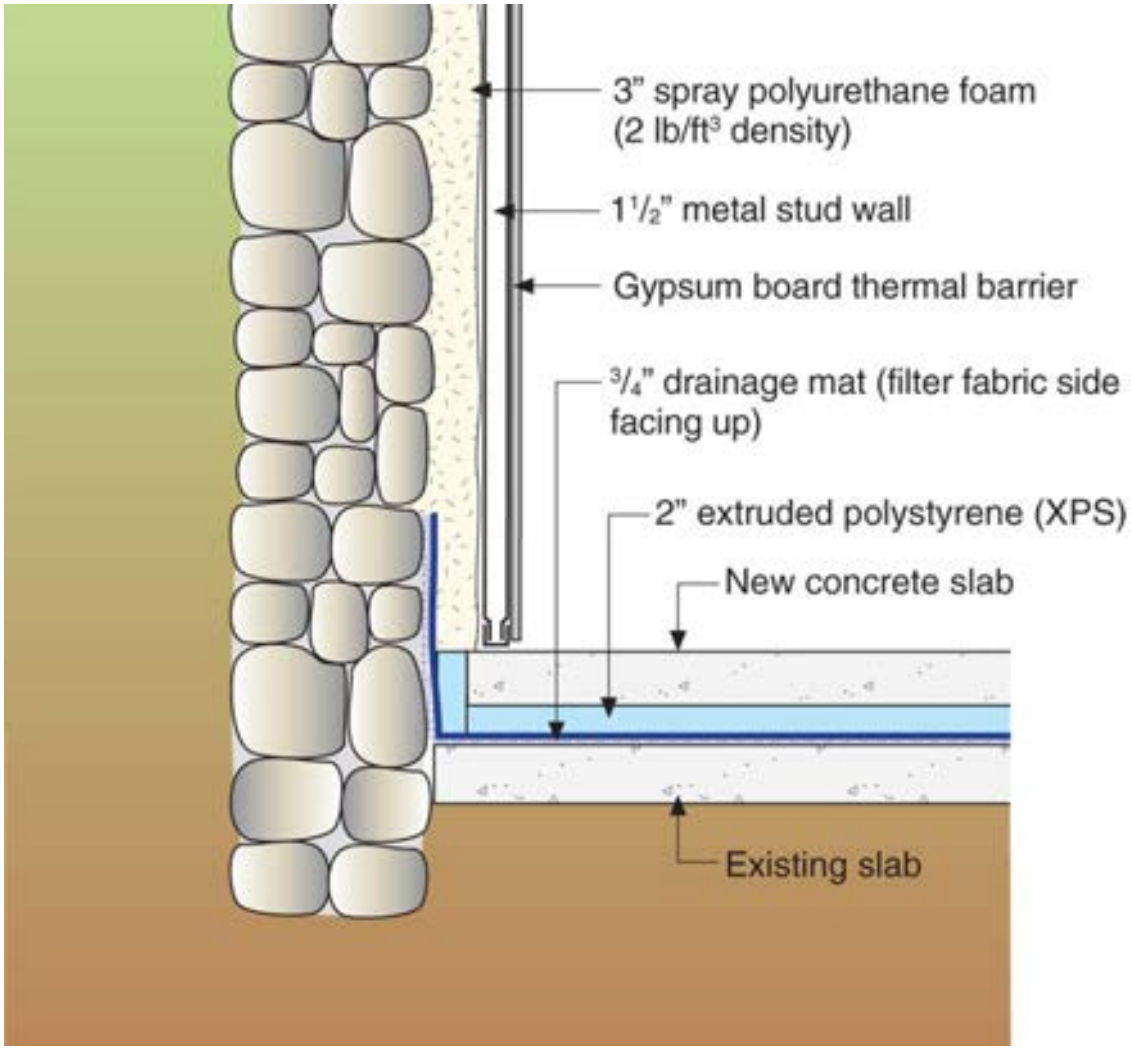
- XPS is moisture tolerant
- Wintertime condensation controlled
- Summertime (bottom of wall) condensation controlled
- Concrete can dry through XPS at a safe rate


Frame
Clapboards
Rosen paper
Board sheathing
Plaster/lath interior lining
Blown cellulose cavity fill
Timber frame
3" spray polyurethane foam
(2 lb/ft³ density)
2" extruded polystyrene
(XPS) frost heave
protection
Intumescent coating
Membrane capillary break/
drainage plane
Concrete patch
Existing slab
Epoxy top coat
Stones (no fines)
Geotextile liner
Drain tile (drained
to sump or to
daylight)

Interior Rubble Retrofit

Alternate Details

- Insulated slab on top of existing slab
- No membrane up wall surface
- Wet vs. dry basement?
- Light gauge steel framing interior wall



Spray foam basement insulation

- Open cell
- Closed cell

Spray Foam “Bathtub”