



1.0 Hour, HSW

Commercial Building Insulation Applications for Extruded Polystyrene (XPS)

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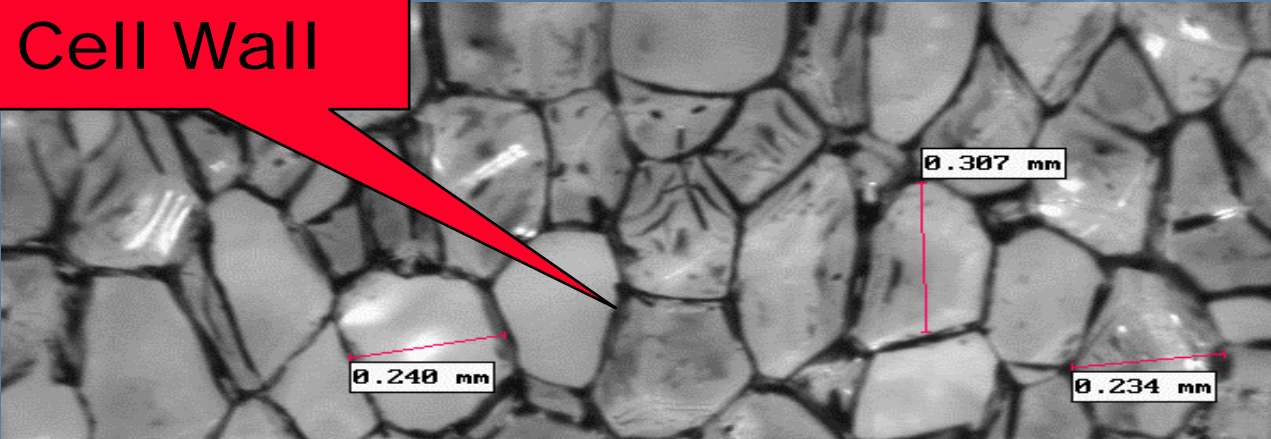
Learning Objectives

For extruded polystyrene, XPS:

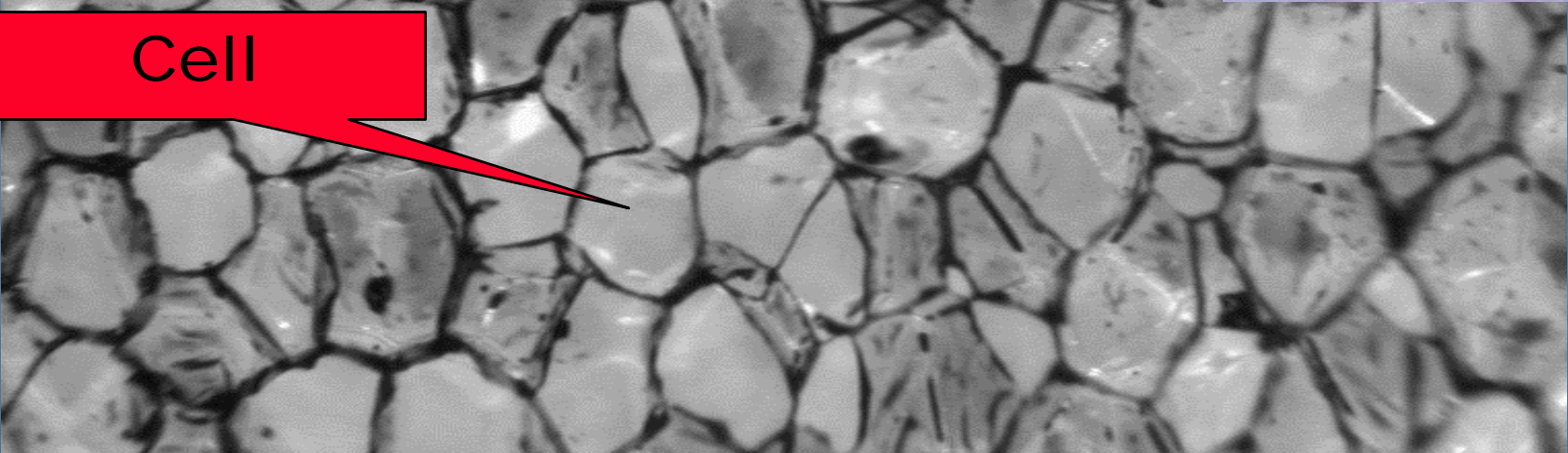
- 1. Understand basic comparison of rigid foam plastic insulation products.**
- 2. Understand physical properties and their relationship to ASTM C578 type categories for specification.**
- 3. Understand proper use in a variety of applications from foundation to roof.**
- 4. Understand building code compliance data.**

Extruded Polystyrene, XPS

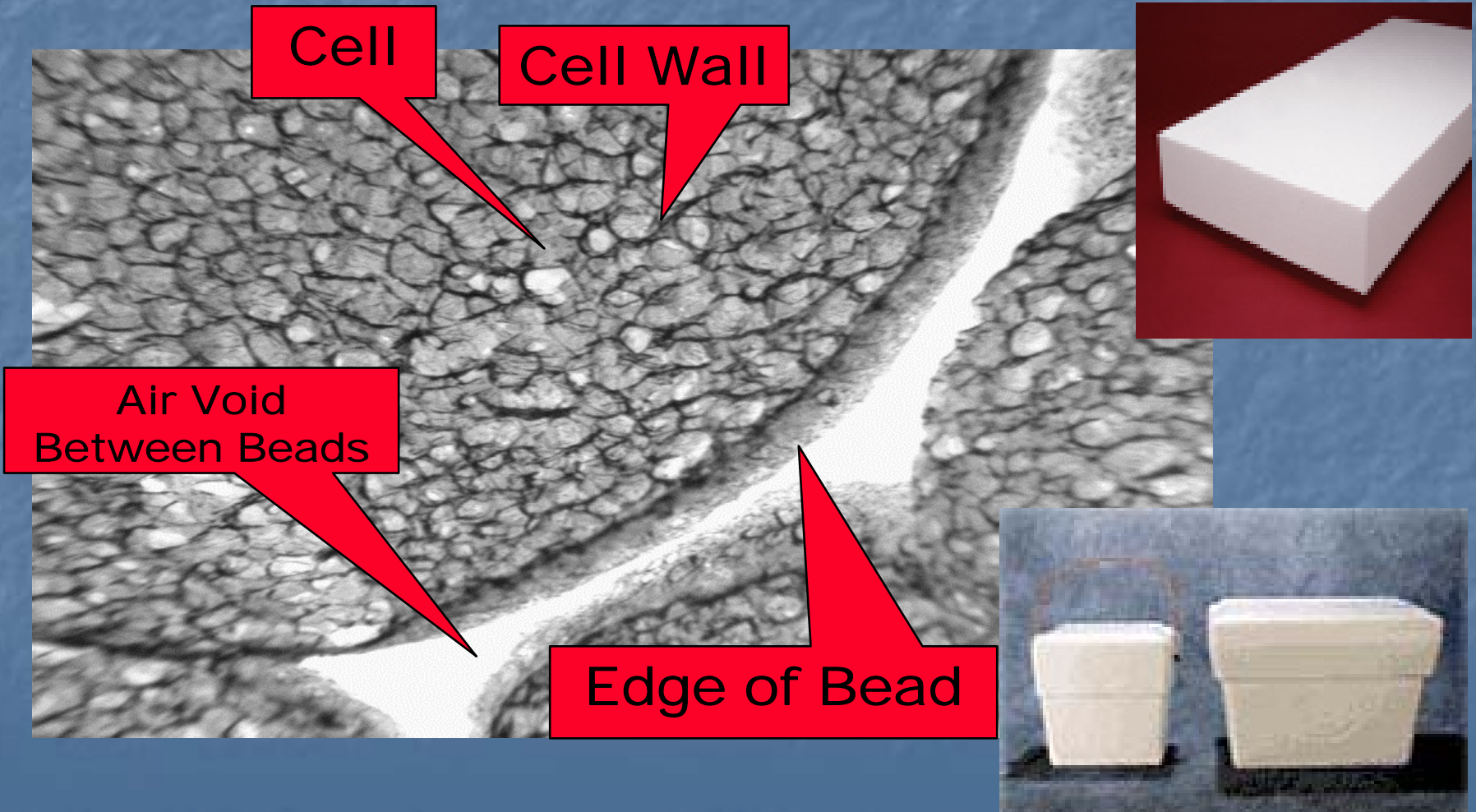
Cell Wall



Cell

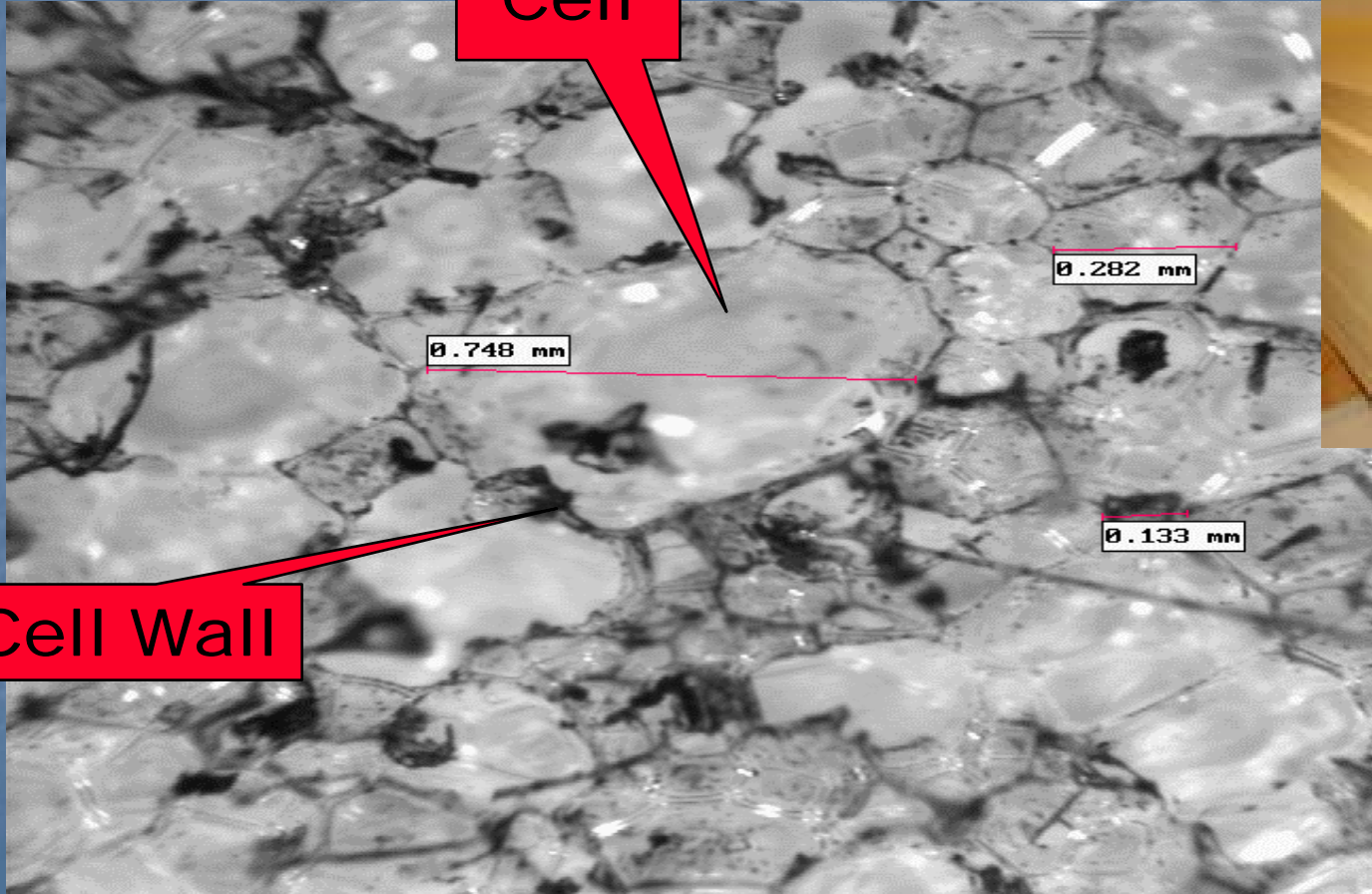


Molded, or, Expanded Polystyrene, EPS

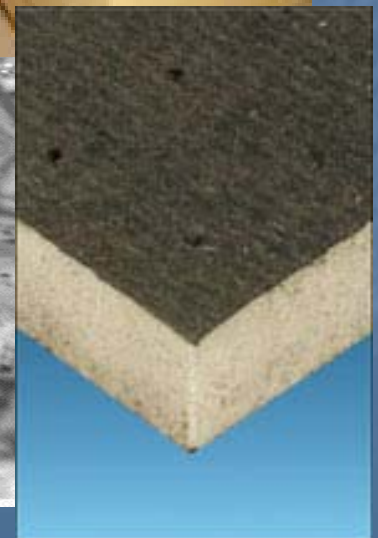


Polyisocyanurate, iso

Cell



Cell Wall

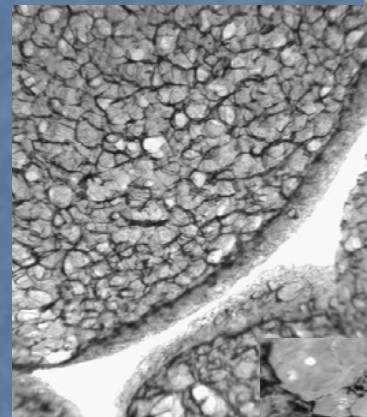
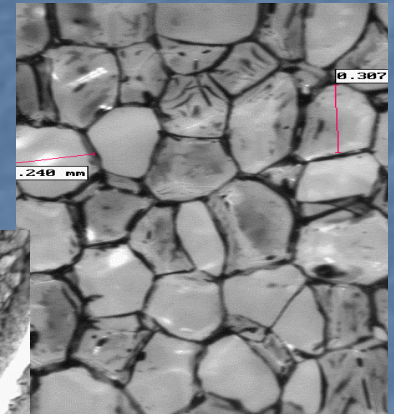


Physical Property Retention

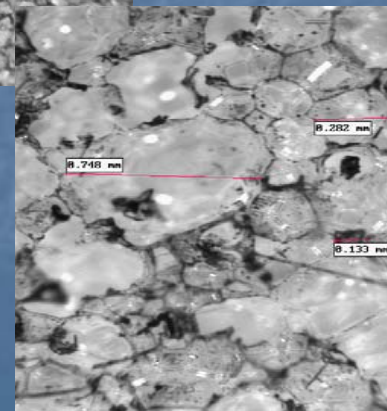
Closed Cell =
Water Resistant

Water absorption
results in loss of R
value.

XPS



EPS



Iso

Commercial Applications

- Foundation / Insulation / Drainage
- Under Slab / Perimeter
- Masonry Cavity Wall
- Interior Furring Systems
- Exterior Insulation Finish Systems (EIFS)
- Steel Stud / Brick Veneer Systems
- Concrete Systems
- Roofing
- High Strength Applications / Civil eng.

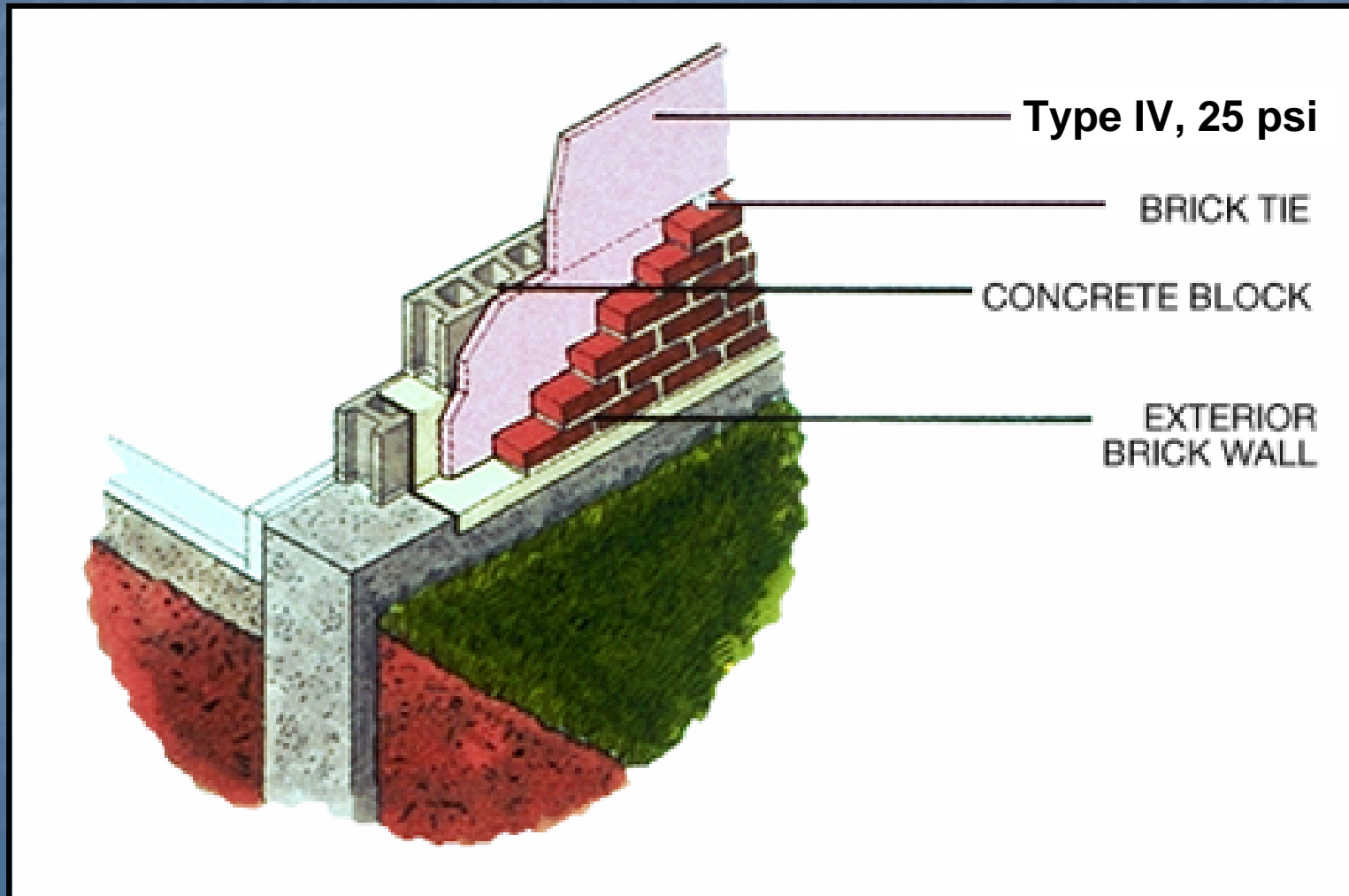
Commercial Under Slab

- Type IV, 25 psi
 - Type VI, 40 psi
 - Type VI, 60 psi
 - Type V, 100 psi
-
- Depending on slab load and subgrade strength

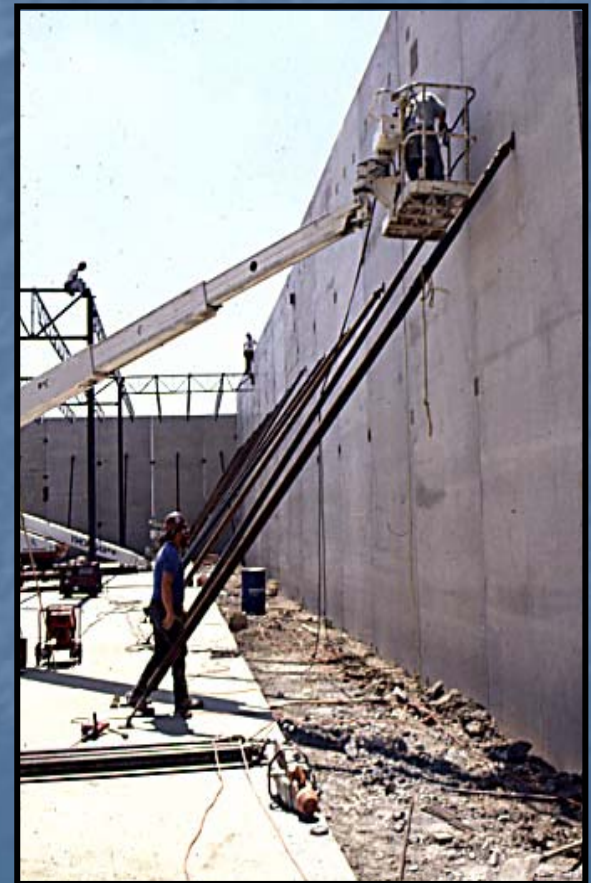
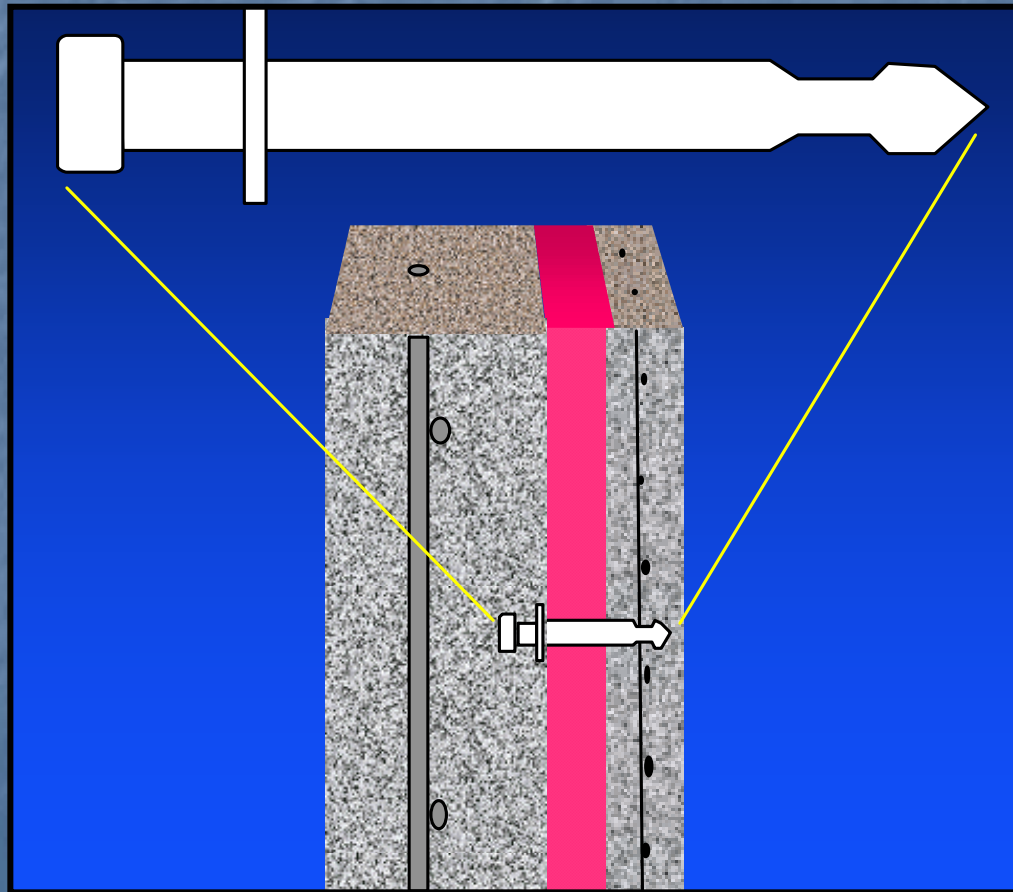


Commercial Cavity Wall

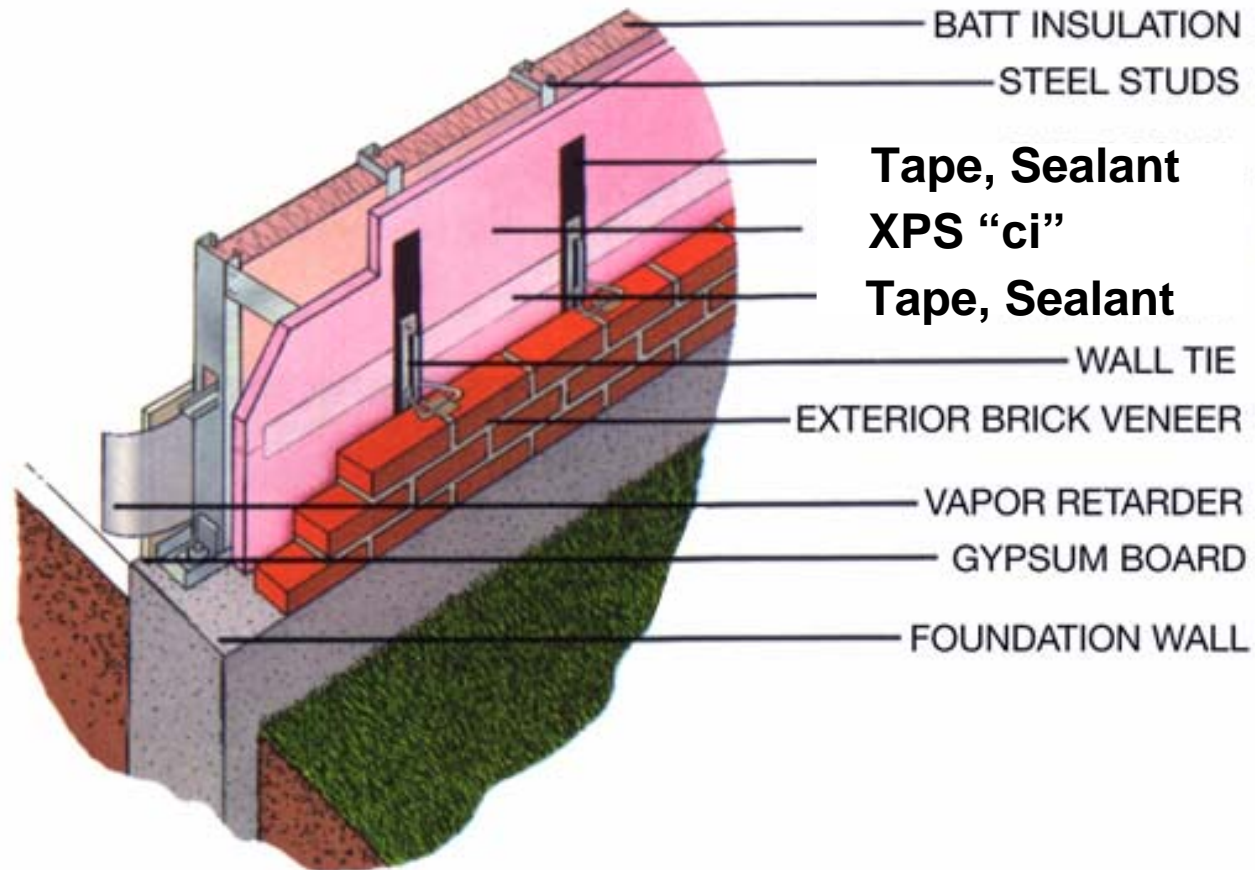
Type X 15 psi or IV, 25 psi



Some manufacturers provide ties, structural performance data, fire and 3rd party listing information, and XPS insulation.



Steel Stud/Brick Veneer

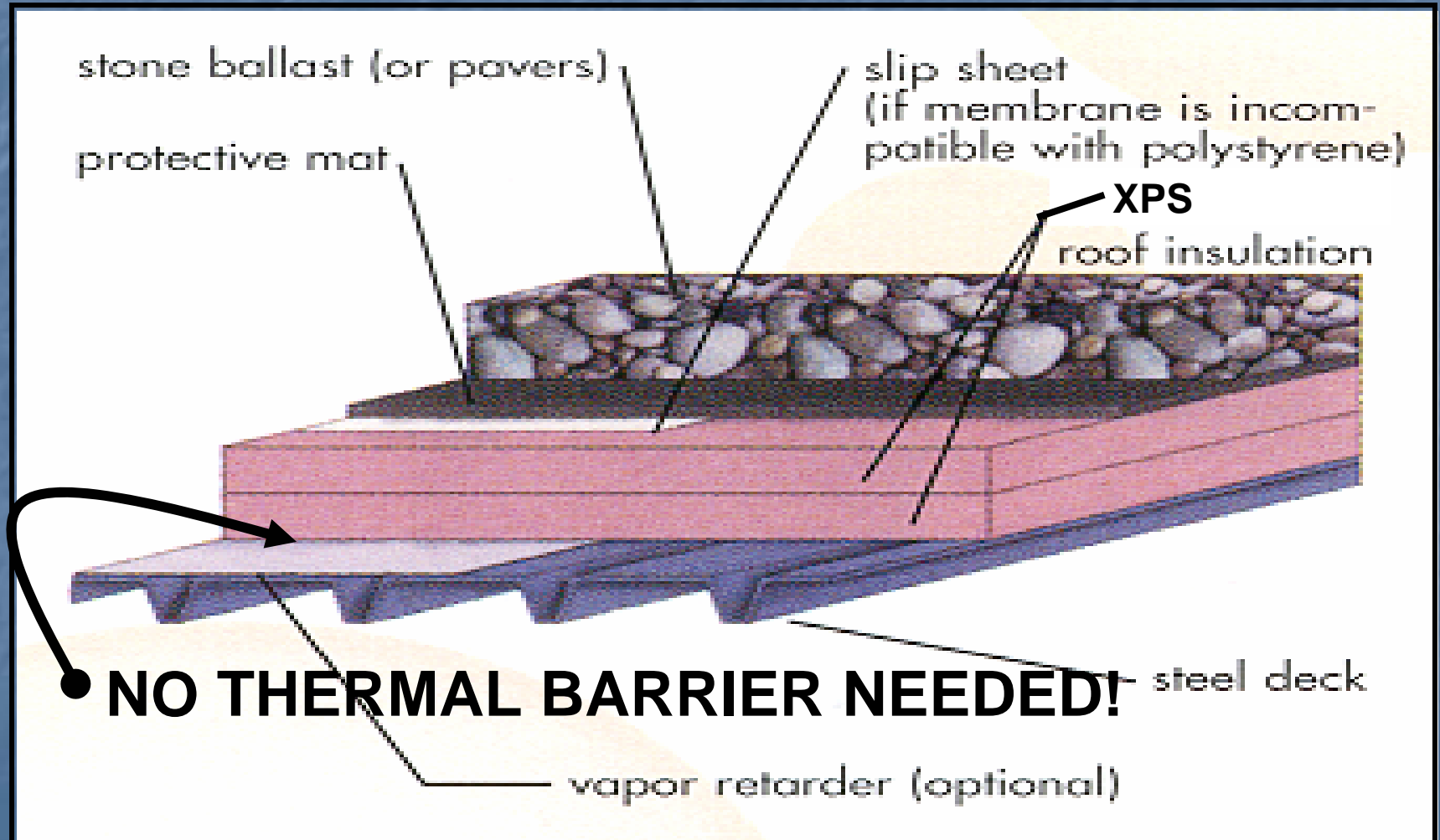


XPS Commercial Roof Insulation

- **Single-ply**
 - ballasted
 - mechanically attached
 - fully adhered
- **Protected Membrane Roofing Assemblies (PRMA)**
- **Metal Roofing**
- **Recover**
- **Hot BUR**

XPS Direct to Deck

Underwriters Laboratories, UL 1256 tested and listed



Building Code Requirements for XPS

- **Flame Spread** < 75, smoke developed < 450, (ASTM E84) and,
- **Listed and labeled** by independent testing agency (UL, SwRI, etc.) and,
- **Thermal Barrier**, must be separated from the building, commonly with 1/2" gypsum board, and,
- **Application based testing:**
 - "ci" over non-comb construction, steel stud
 - Roofing (ASTM E108, UL 1256, etc.)
 - EIFS, etc.