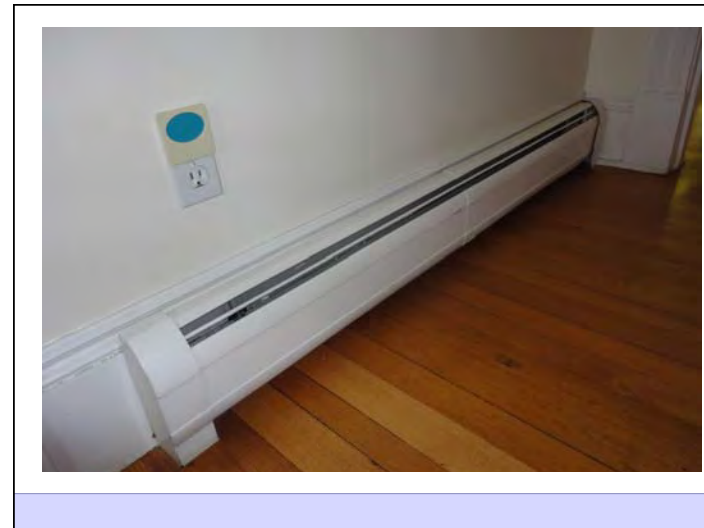


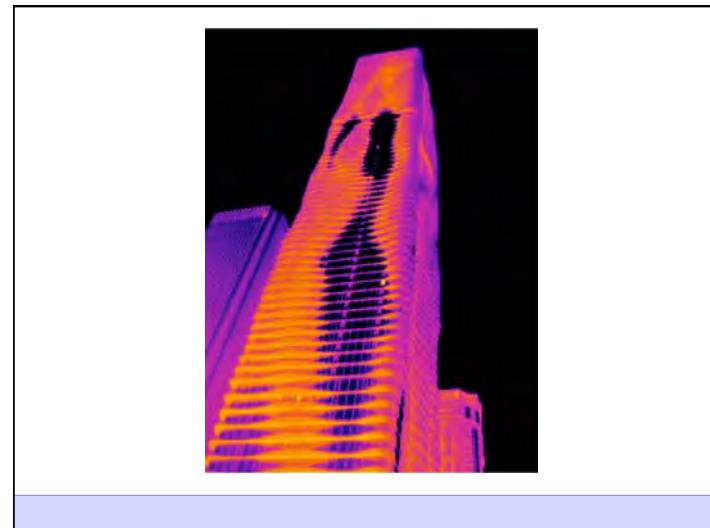
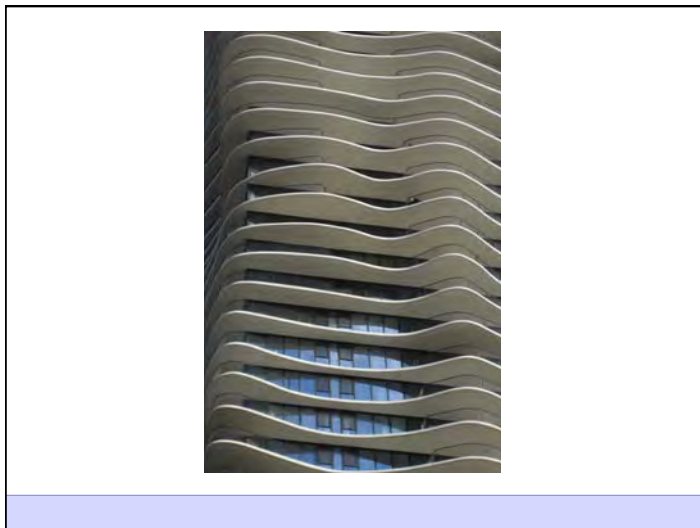
Joseph Lstiburek, Ph.D., P.Eng, ASHRAE Fellow

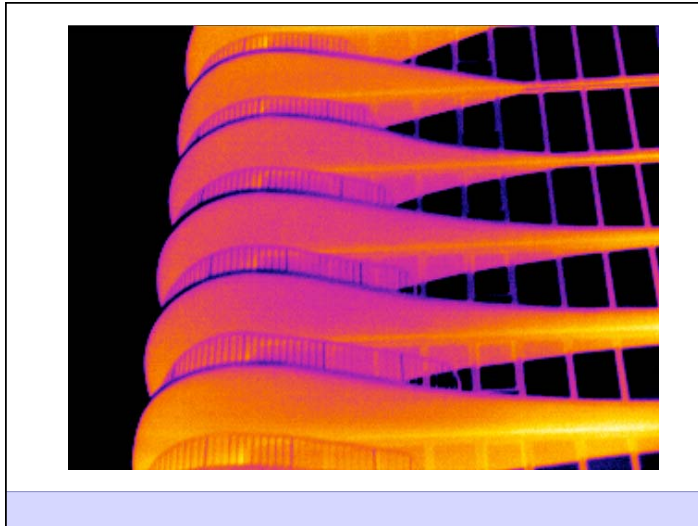
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Life is Tough Enough As it Is...

Life is Tough Enough As it Is...
It's Harder When You Are Stupid

Don't Do Stupid Things

What Is A Building?

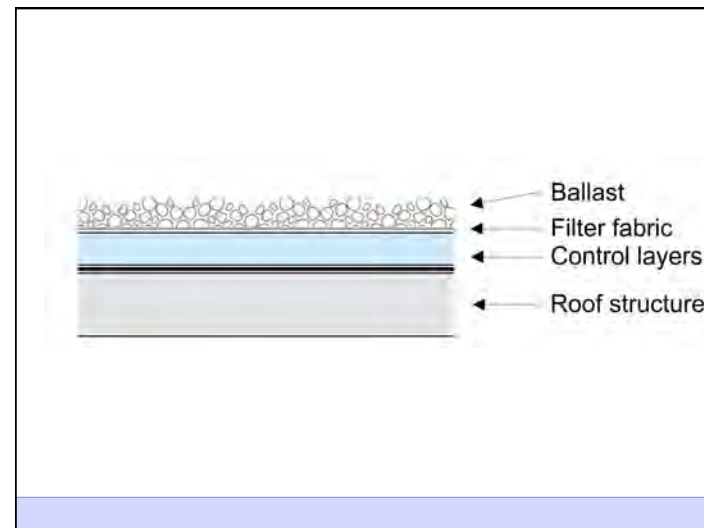
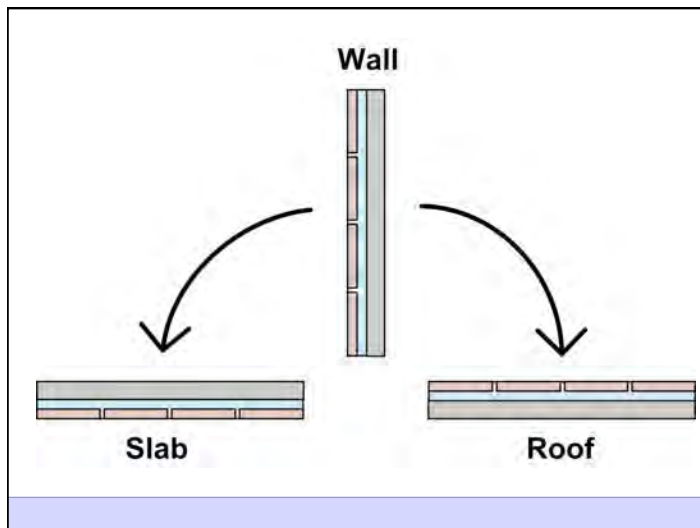
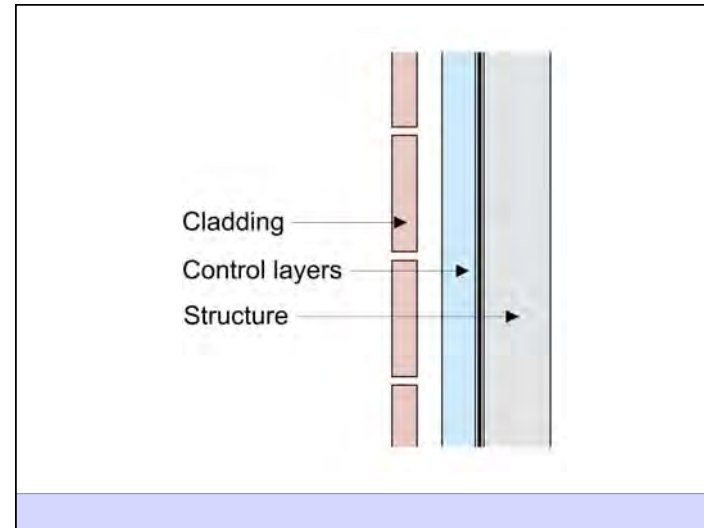
It is an environmental separator

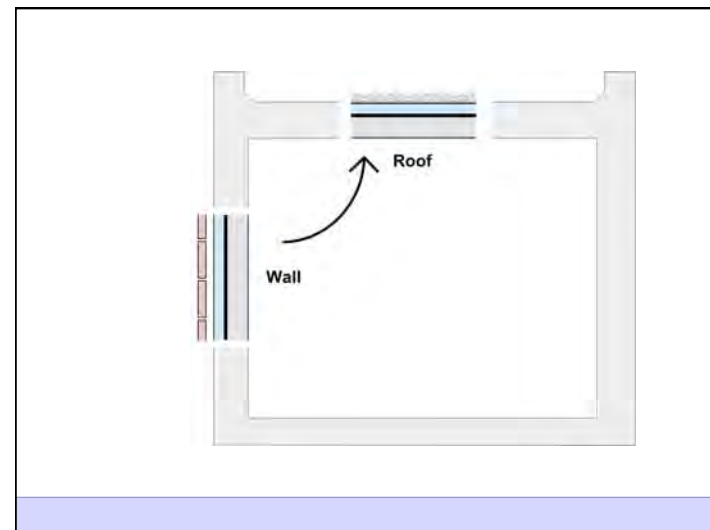
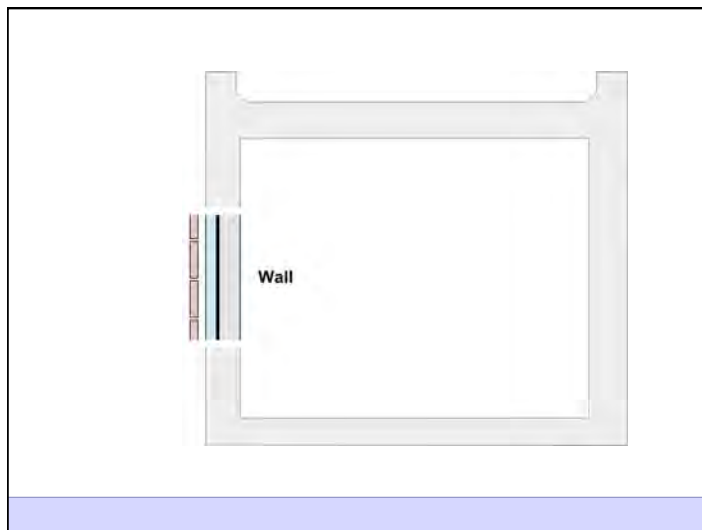
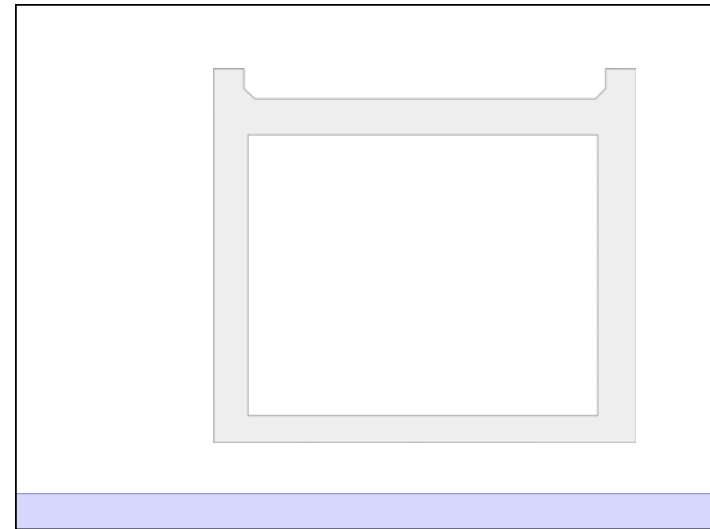
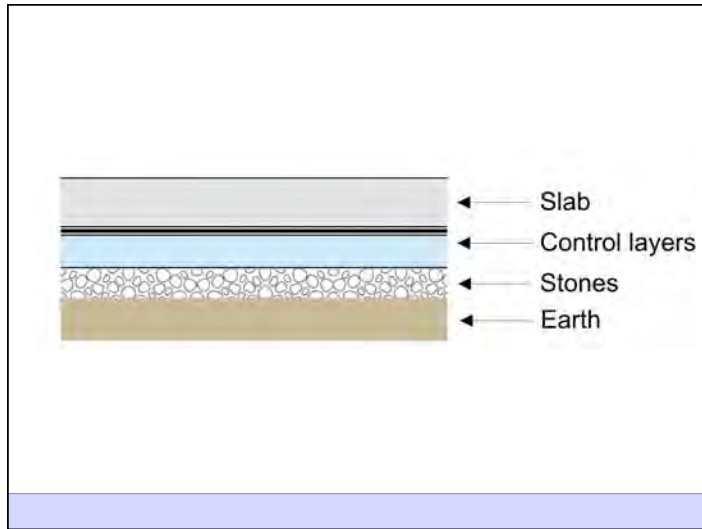
At the most basic level a building provides shelter - shelter from the elements as well as from other dangers. Its' function is to separate the inside from the outside as required by the local environment and the wishes of its occupants. A building creates an interior environment that is different from the exterior environment – it is an environmental separator. This interior environment should be controllable by the occupants in a manner that meets their needs.

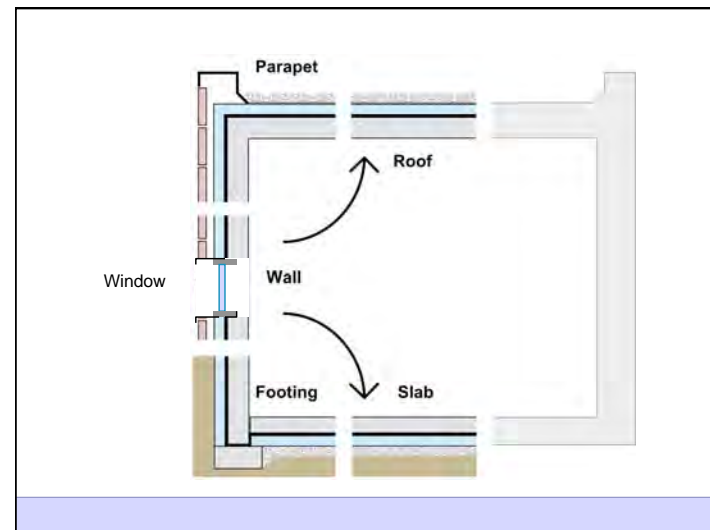
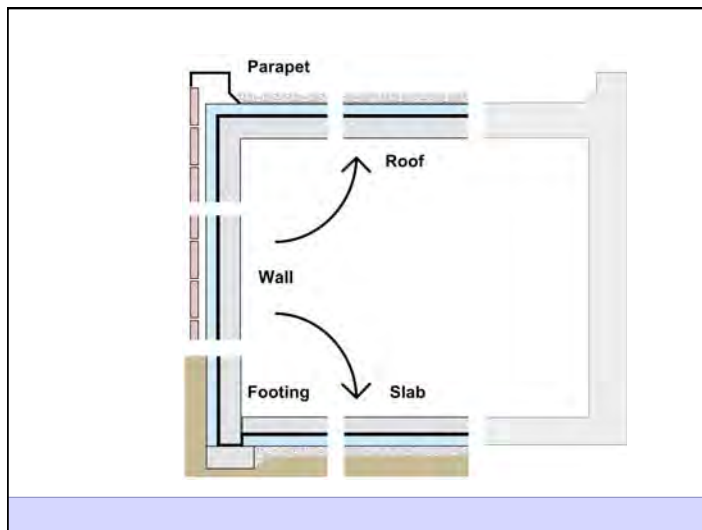
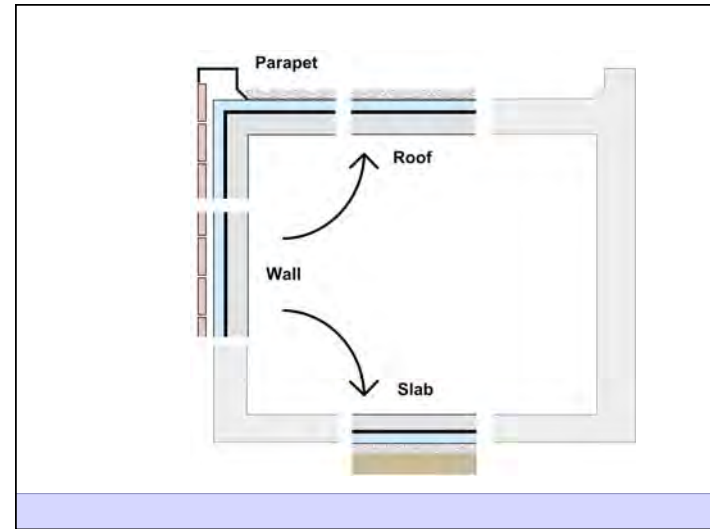
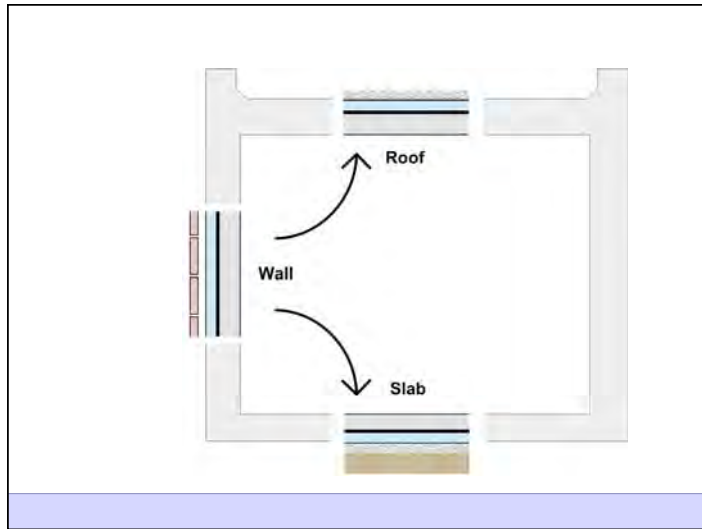
- Control heat flow
- Control airflow
- Control water vapor flow
- Control rain
- Control ground water
- Control light and solar radiation
- Control noise and vibrations
- Control contaminants, environmental hazards and odors
- Control insects, rodents and vermin
- Control fire
- Provide strength and rigidity
- Be durable
- Be aesthetically pleasing
- Be economical

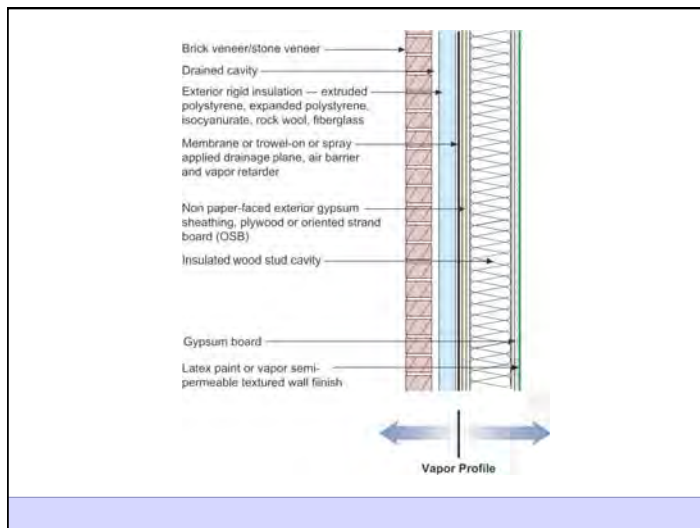
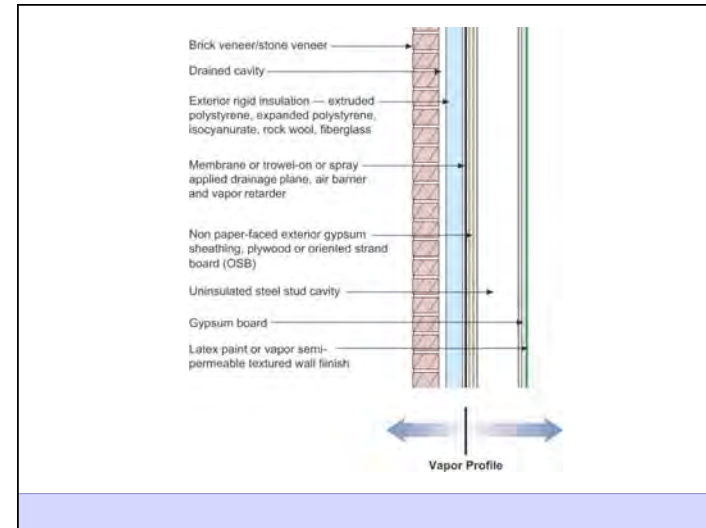
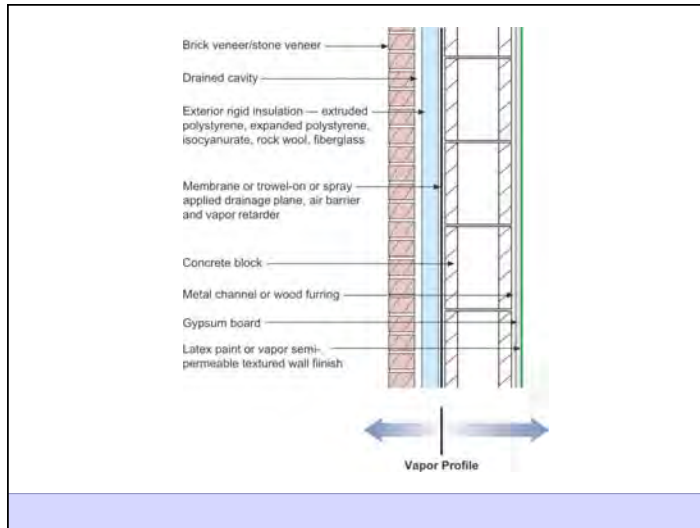
Heat Flow Is From Warm To Cold
Moisture Flow Is From Warm To Cold
Moisture Flow Is From More To Less
Air Flow Is From A Higher Pressure to a
Lower Pressure
Gravity Acts Down

Water Control Layer
Air Control Layer
Vapor Control Layer
Thermal Control Layer








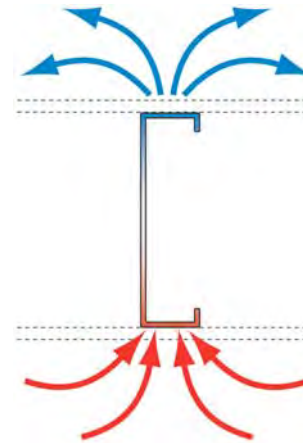
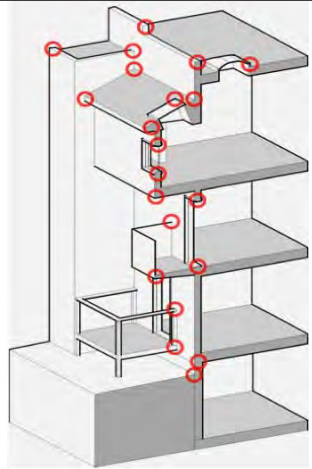


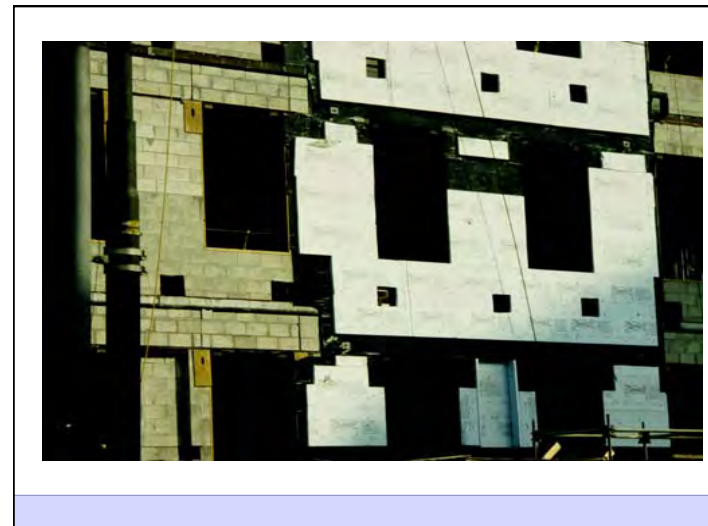
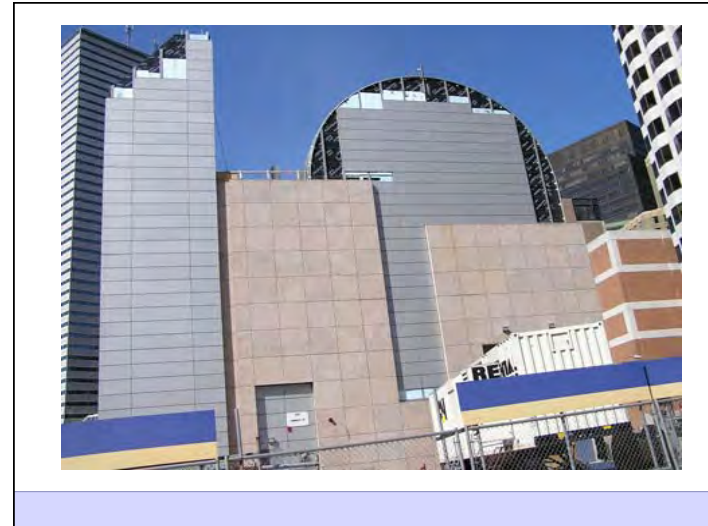
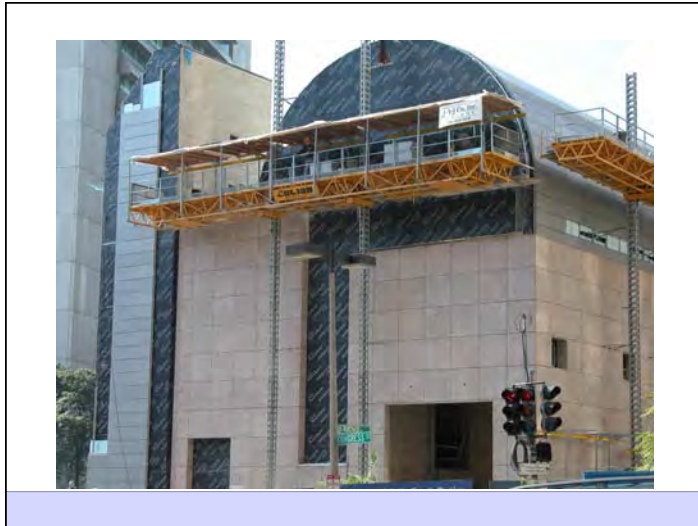
Commercial Enclosure: Simple Layers

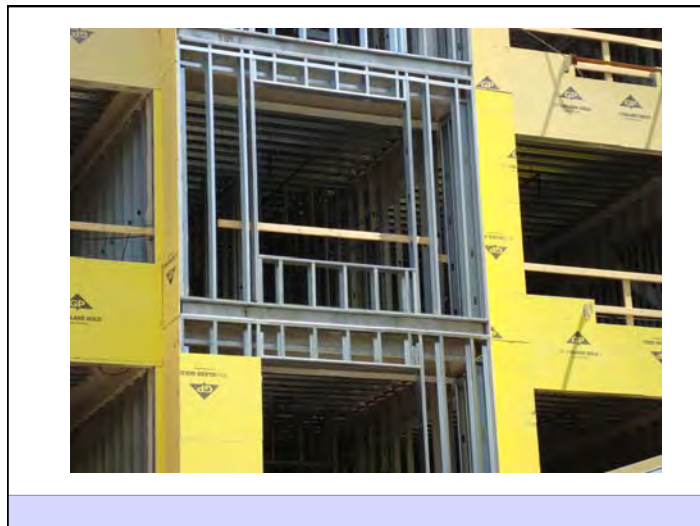
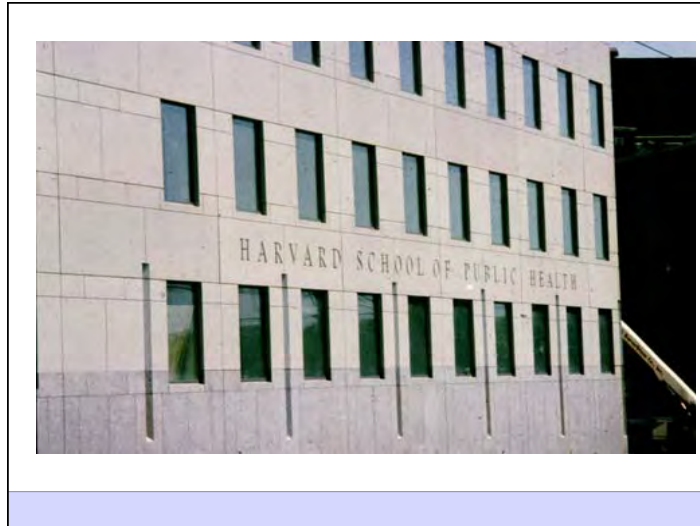
- Structure
- Rain/Air/Vapor
- Insulation
- Finish

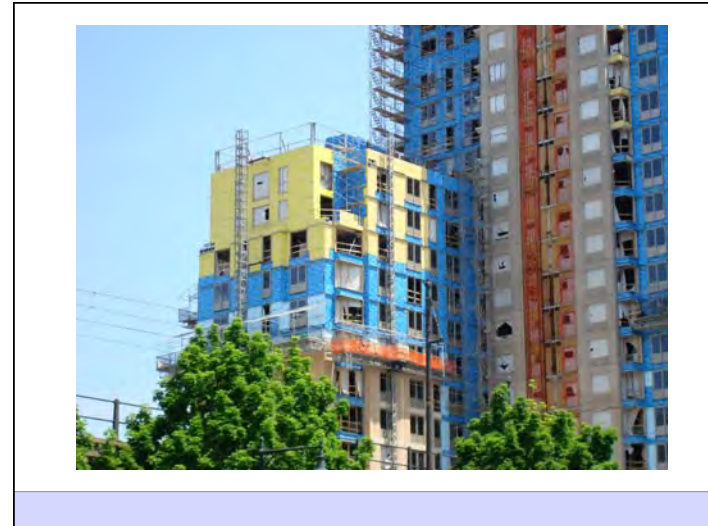
Enclosure Design: Details

- Details demand the same approach as the enclosure.
- Scaled drawings required at 









Don't Do Stupid Things

