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

Building Science

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Joseph Lstiburek – Rain Control 3

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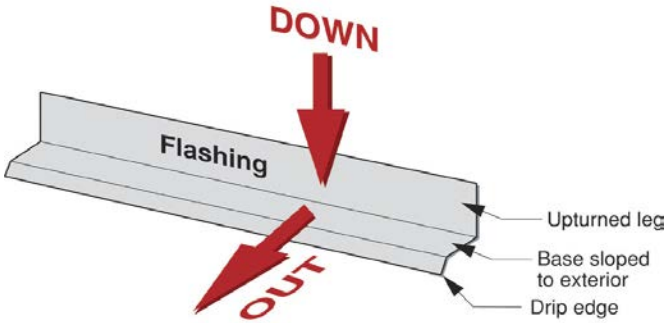
Joseph Lstiburek – Rain Control 5



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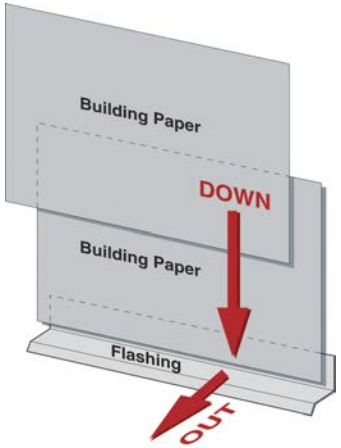

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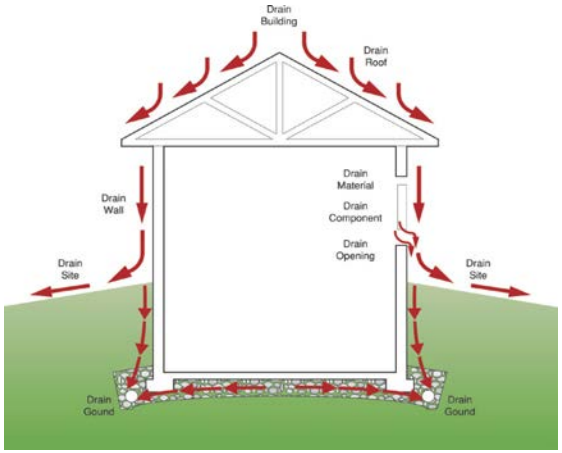

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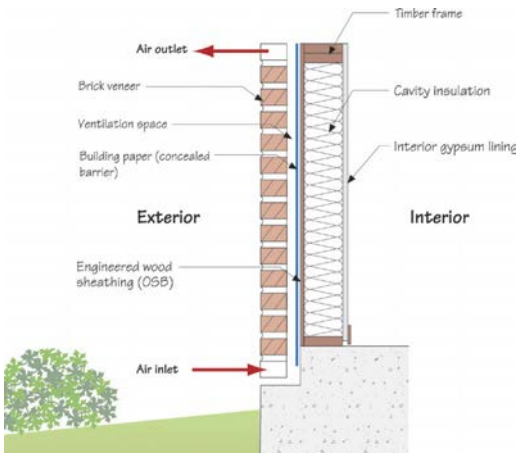

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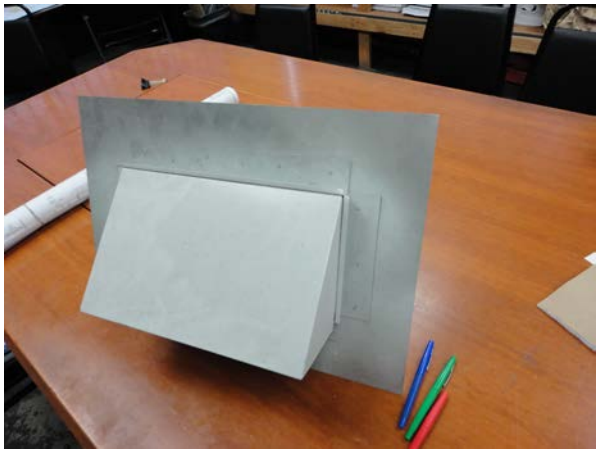
Joseph Lstiburek – Rain Control 13



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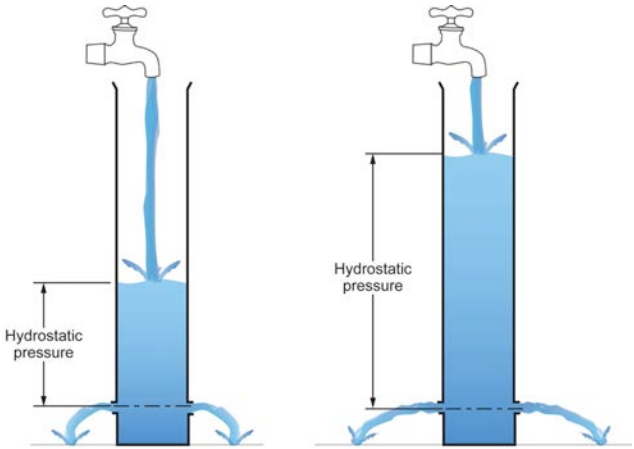

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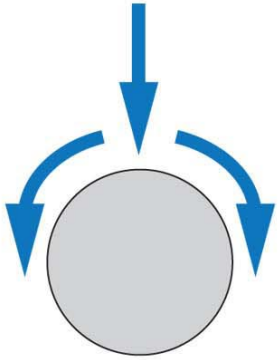
Joseph Lstiburek 17



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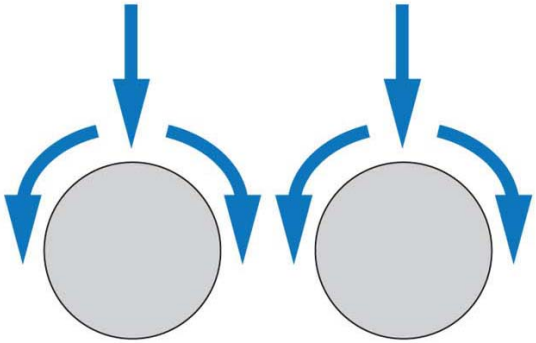

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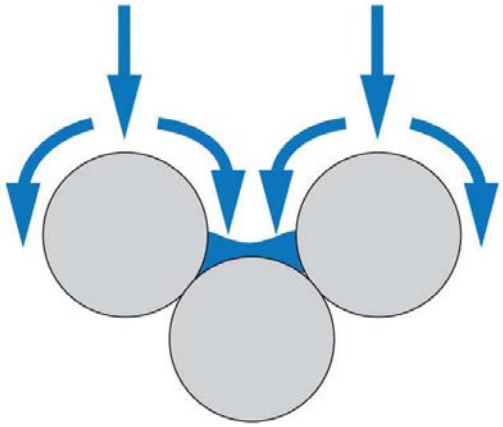

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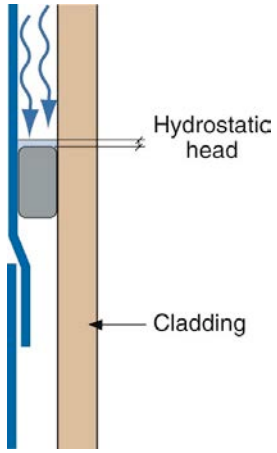

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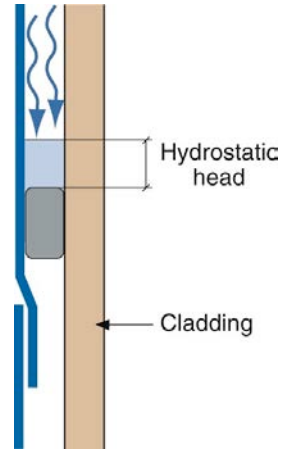

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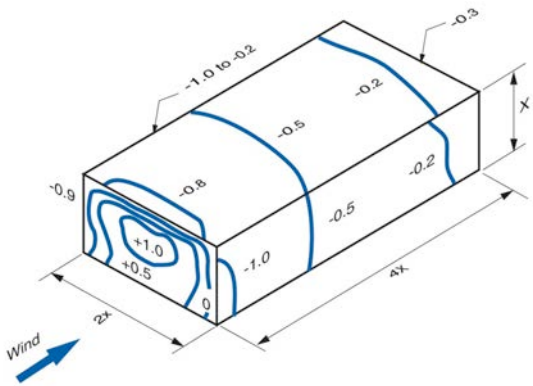

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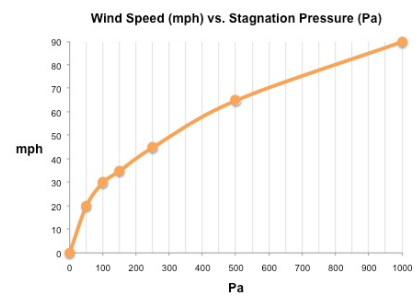
Pascals	mph
50 Pa =	20 mph
100 Pa =	30 mph
150 Pa =	35 mph
250 Pa =	45 mph
500 Pa =	65 mph
1,000 Pa =	90 mph



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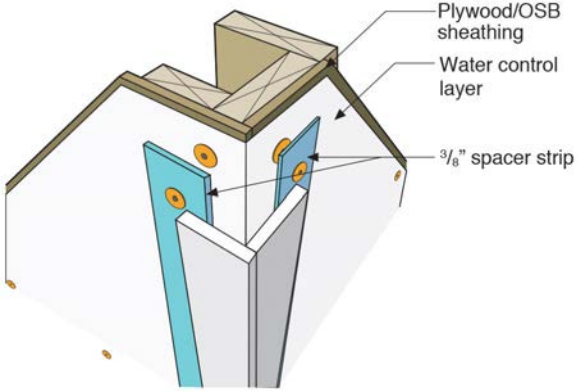
Joseph Lstiburek – Rain Control 26



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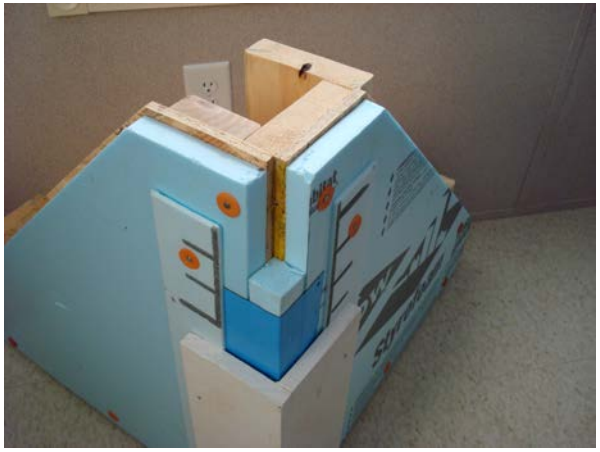

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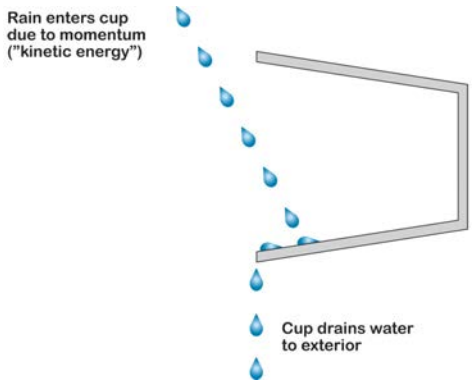

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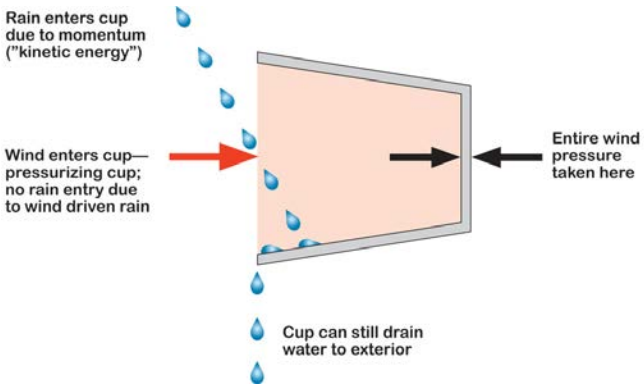
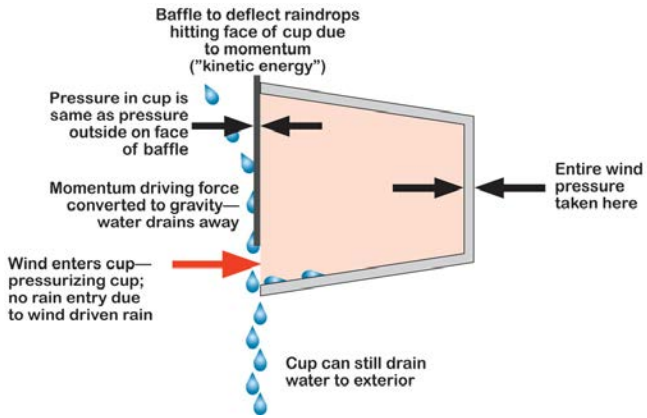
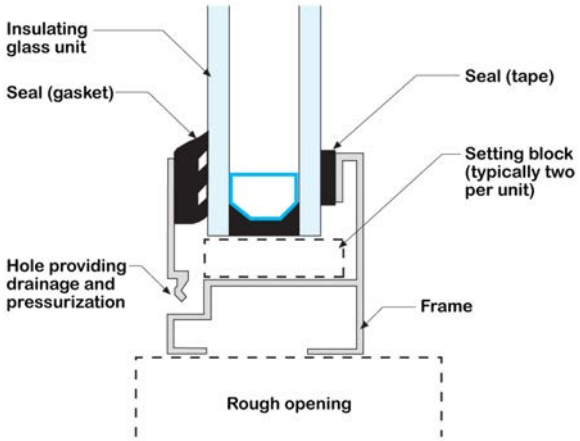


Building Science Corporation 2011
Joseph Lstiburek 31



Building Science Corporation 2011
Joseph Lstiburek 32



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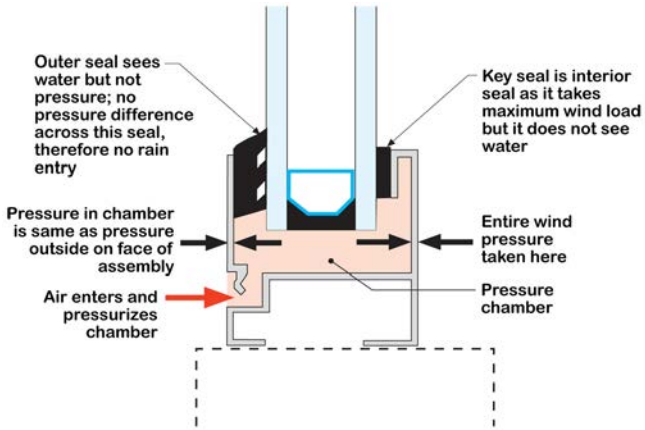

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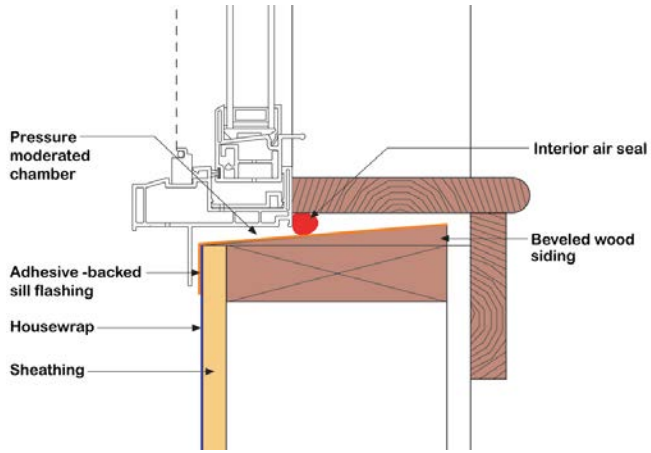

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Building Science Corporation Joseph Lstiburek 37

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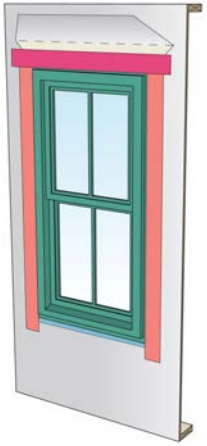

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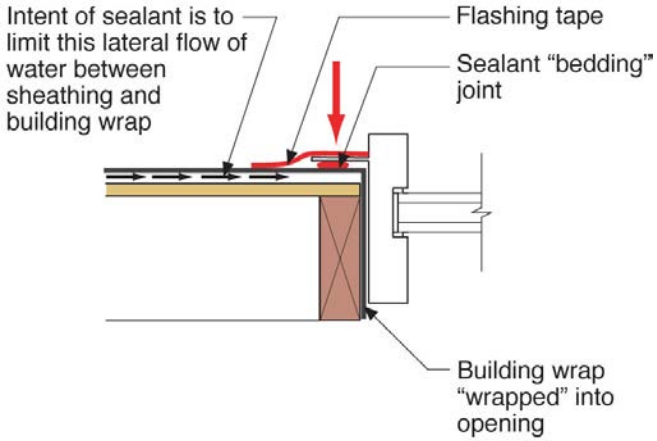

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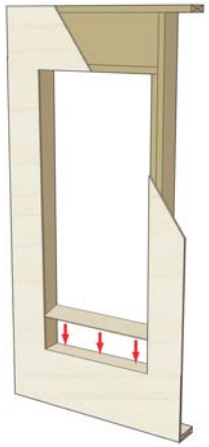

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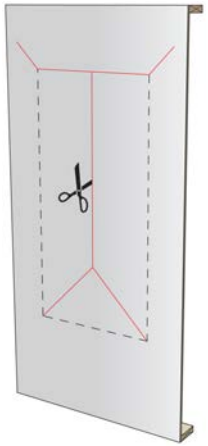

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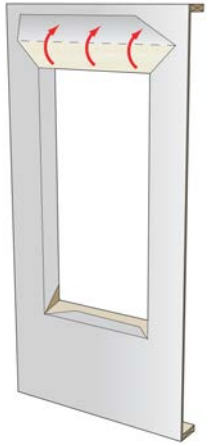

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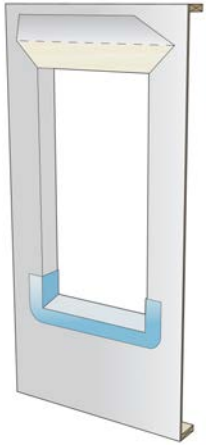

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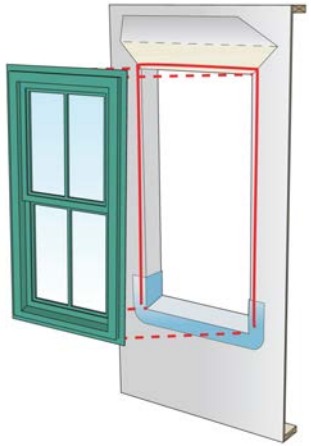

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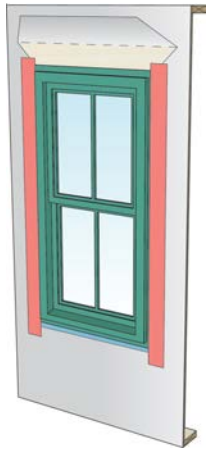

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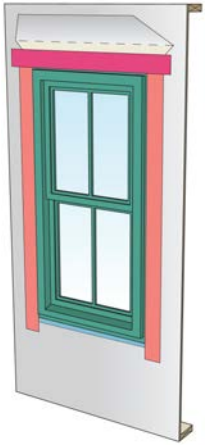

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Building Science Corporation Joseph Lstiburek 48

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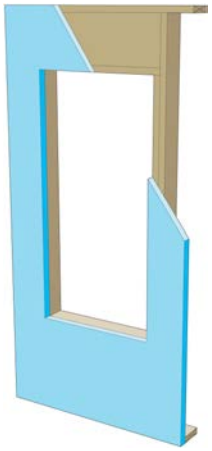
Joseph Lstiburek 51



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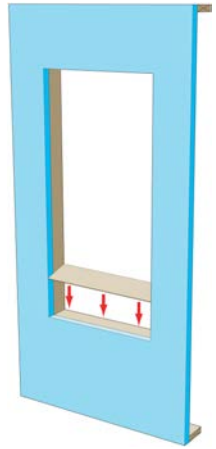

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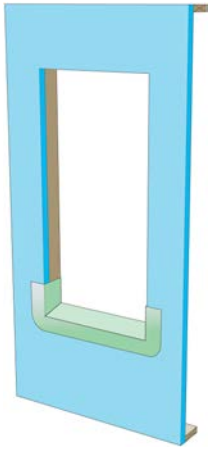

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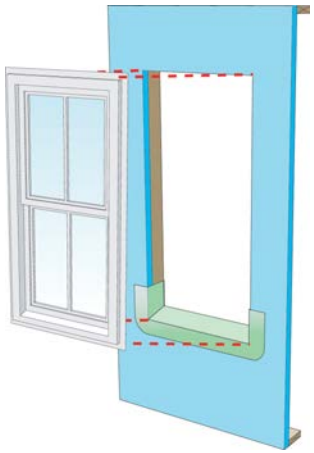

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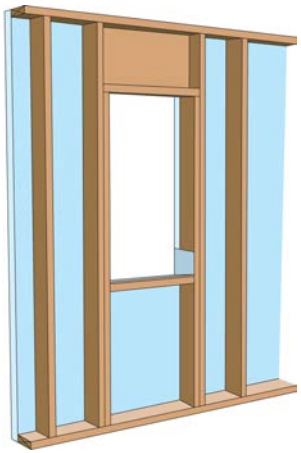
Building Science Corporation Joseph Lstiburek 56

Building Science Corporation Joseph Lstiburek 57

Building Science Corporation Joseph Lstiburek 58



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Building Science Corporation Joseph Lstiburek 60

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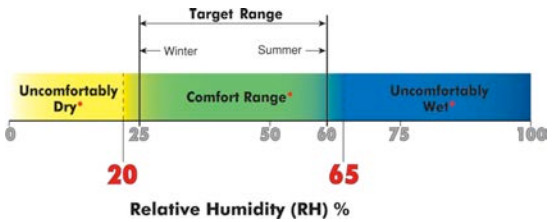
Joseph Lstiburek 61



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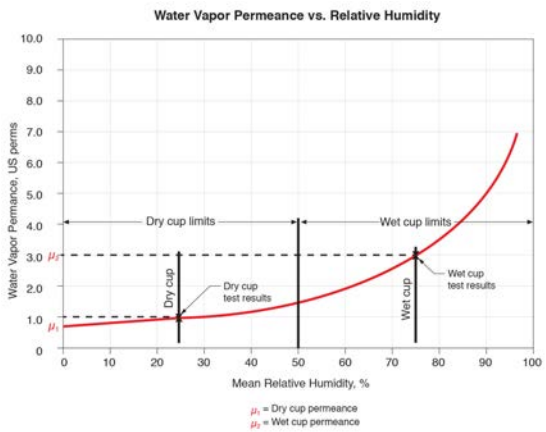

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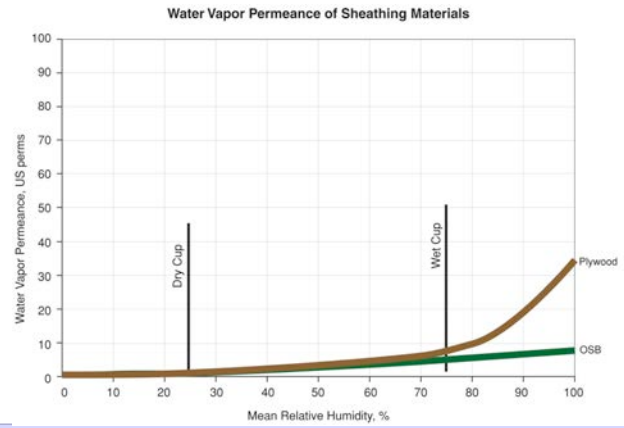
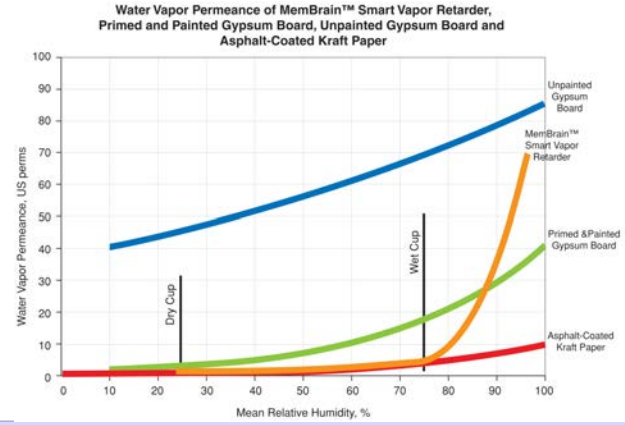
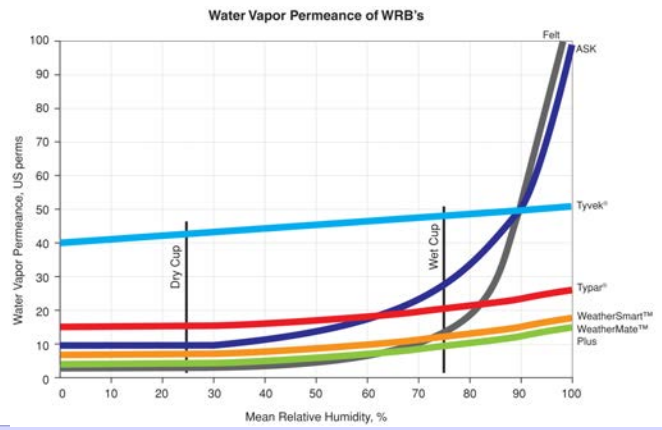
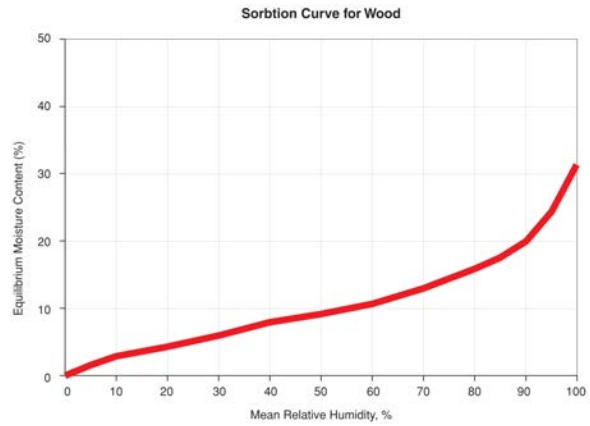
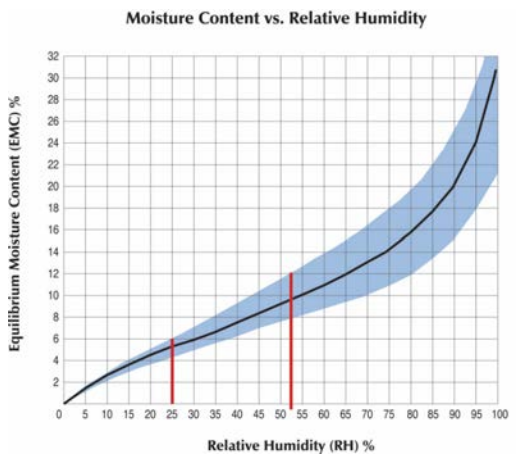

Water Vapor Permeance of Sheathing Materials
Water Vapor Permeance, US perms
Mean Relative Humidity, %
Dry Cup
Wet Cup
Plywood
OSB

65


Water Vapor Permeance of MemBrain™ Smart Vapor Retarder, Primed and Painted Gypsum Board, Unpainted Gypsum Board and Asphalt-Coated Kraft Paper
Water Vapor Permeance, US perms
Mean Relative Humidity, %
Dry Cup
Wet Cup
Unpainted Gypsum Board
MemBrain™ Smart Vapor Retarder
Primed &Painted Gypsum Board
Asphalt-Coated Kraft Paper


Water Vapor Permeance of WRB's
Water Vapor Permeance, US perms
Mean Relative Humidity, %
Dry Cup
Wet Cup
Felt
ASK
Tyvek®
Typar®
WeatherSmart™
WeatherMate™ Plus


Sorbtion Curve for Wood
Equilibrium Moisture Content (%)
Mean Relative Humidity, %



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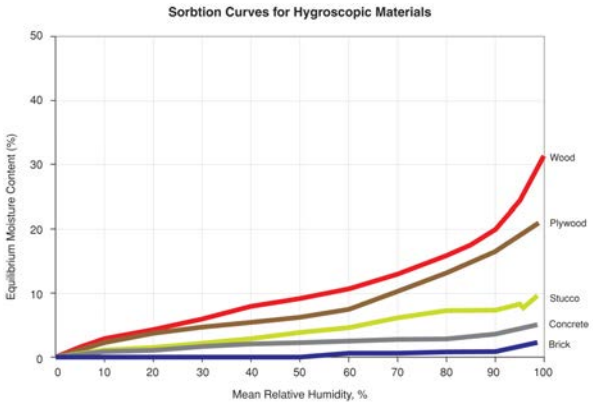

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Joseph Lstiburek 76

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Joseph Lstiburek 77

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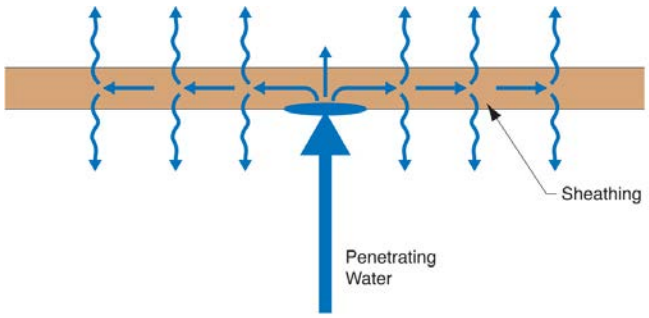
Joseph Lstiburek 78



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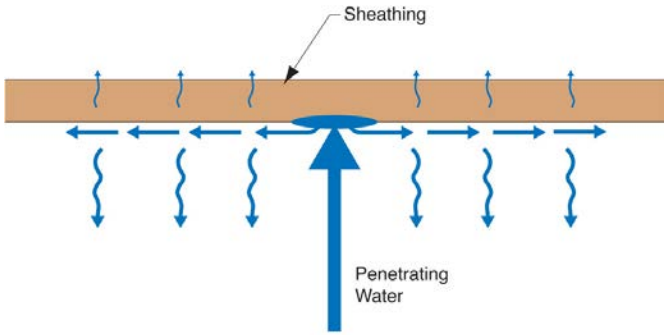

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Rain Screen

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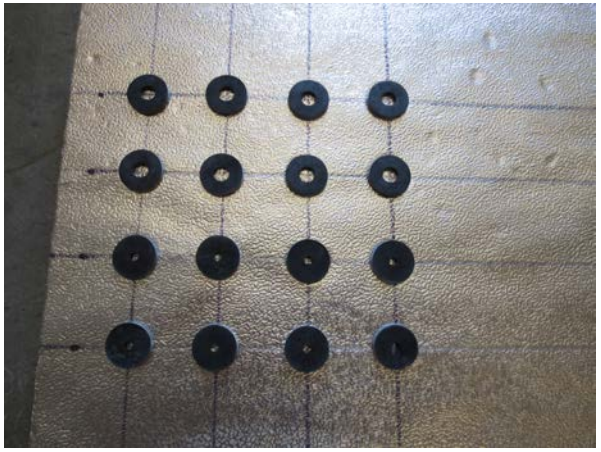

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Beer Screen?

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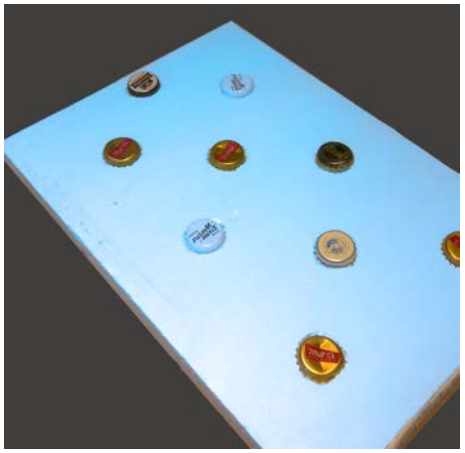

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2010

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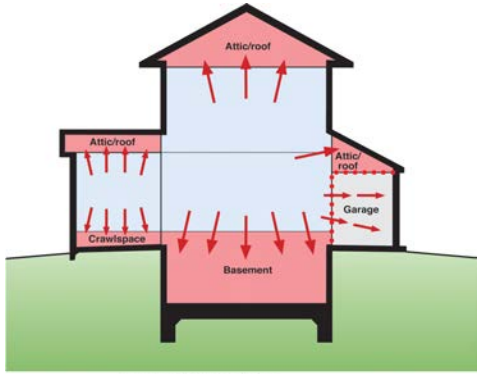

Expansion of Conditioned Space

- Conditioned space boundaries moving towards exterior surfaces of building
- Garage isolated from house by air barrier/pressure boundary
- Garage ventilated and conditioned independently of rest of conditioned spaces

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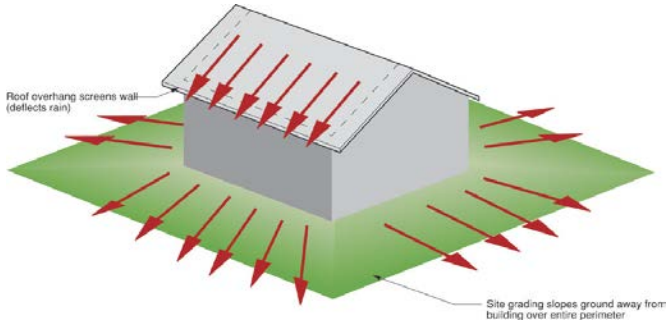

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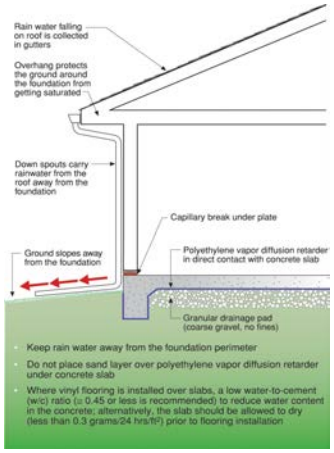
Joseph Lstiburek – Rain Control 89



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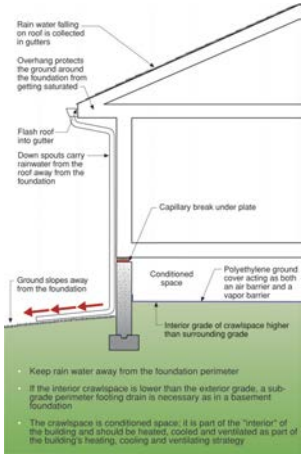
Joseph Lstiburek 90



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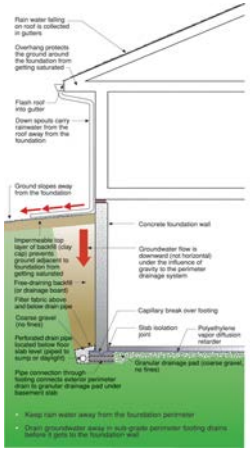
Joseph Lstiburek 91



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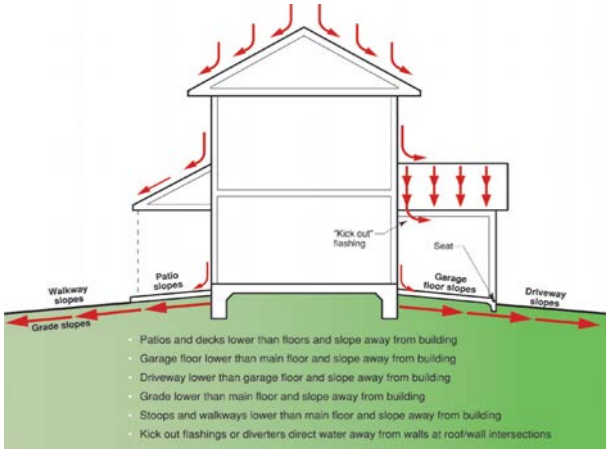
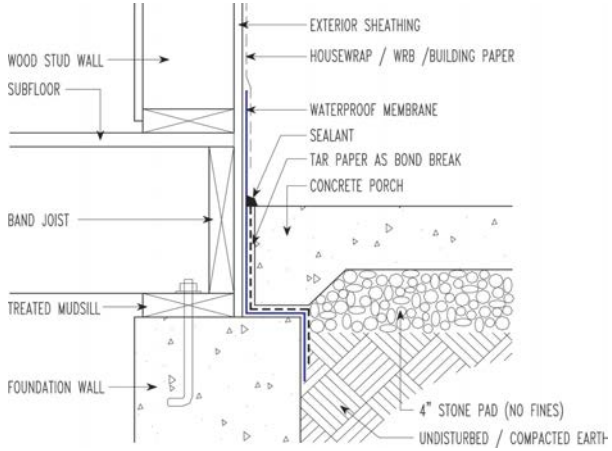
Joseph Lstiburek 93



Building Science Corporation
Joseph Lstiburek 94



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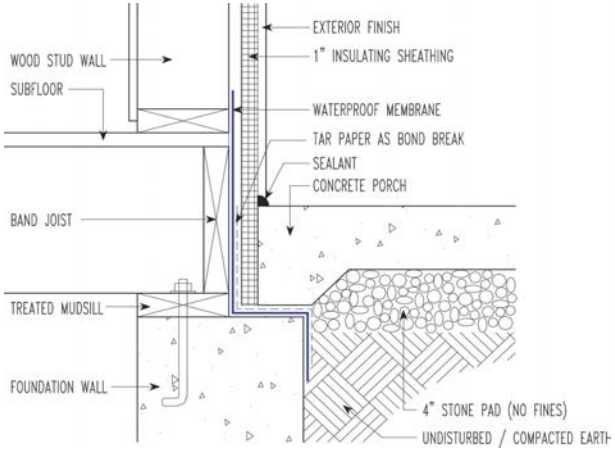
Joseph Lstiburek 95



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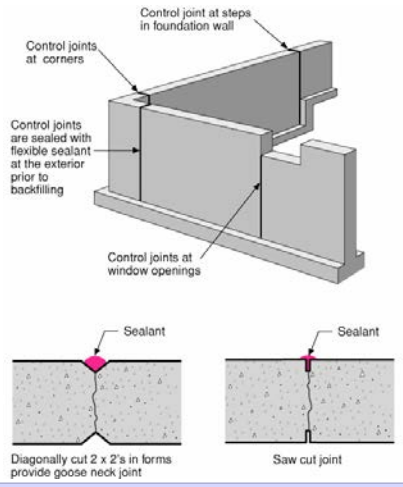
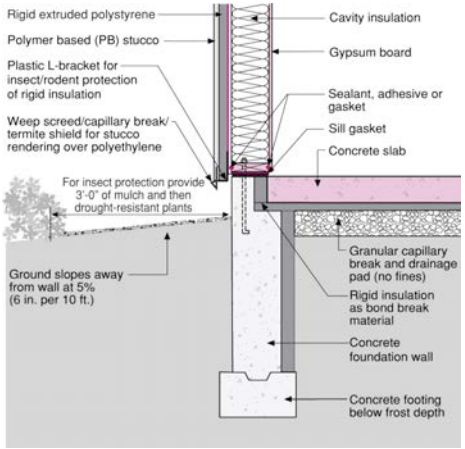
Joseph Lstiburek 96



Building Science Corporation Joseph Lstiburek 97

Building Science Corporation Joseph Lstiburek 98

Building Science Corporation Joseph Lstiburek 99



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Joseph Lstiburek 101

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Joseph Lstiburek 102

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Joseph Lstiburek 104

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Joseph Lstiburek 105

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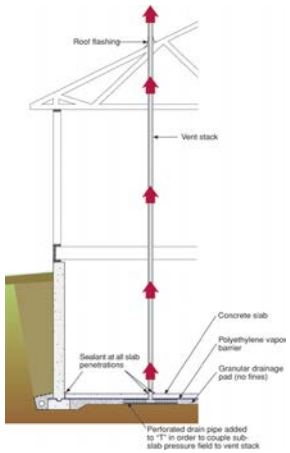
Joseph Lstiburek 106



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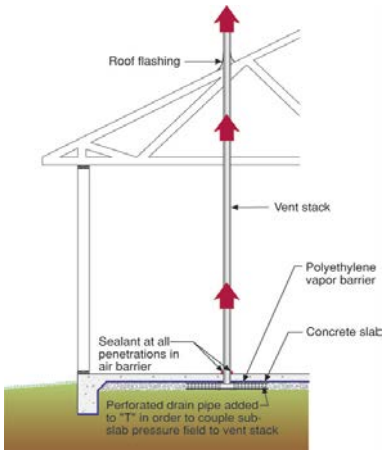
Joseph Lstiburek 107



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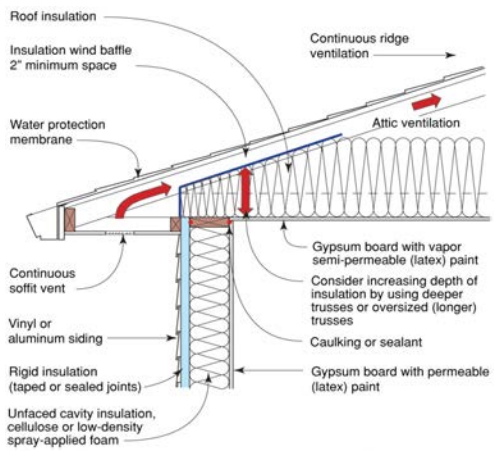
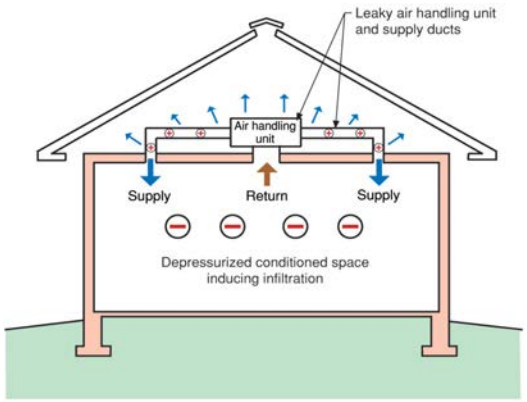
Joseph Lstiburek 108



Building Science Corporation Joseph Lstiburek 109

Building Science Corporation Joseph Lstiburek 110



Note: Colored shading depicts the building's thermal barrier and pressure boundary. The thermal barrier and pressure boundary enclose the conditioned space.

Building Science Corporation Joseph Lstiburek 111

Building Science Corporation Joseph Lstiburek 112

Building Science Corporation

Joseph Lstiburek 113

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Joseph Lstiburek 114

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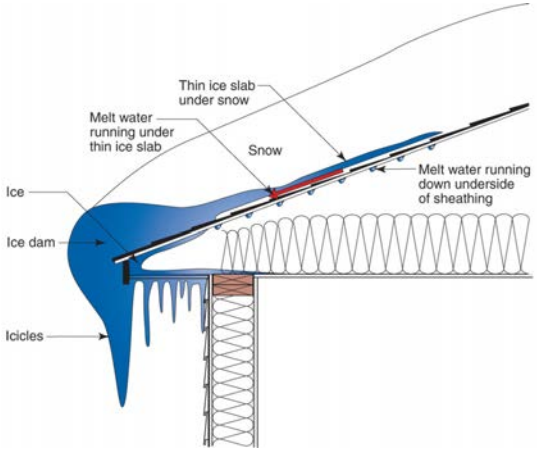
Joseph Lstiburek 115



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Joseph Lstiburek 117

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Joseph Lstiburek 118

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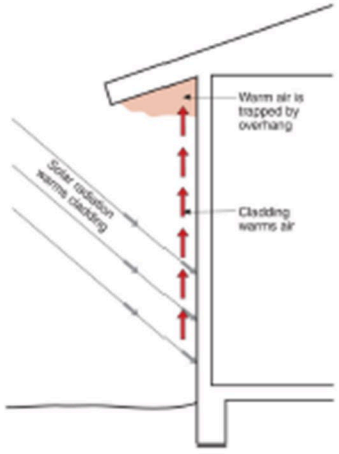
Joseph Lstiburek 124

Building Science Corporation Joseph Lstiburek 125



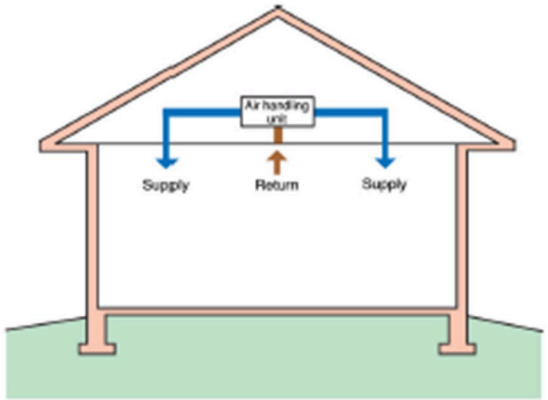
Building Science Corporation Joseph Lstiburek 126

Building Science Corporation Joseph Lstiburek 127

Building Science Corporation Joseph Lstiburek 128

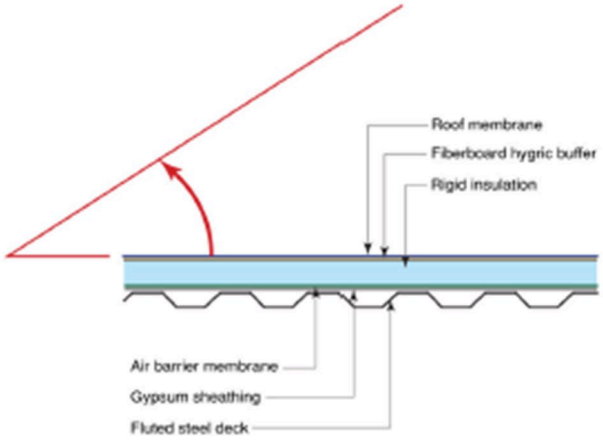
Building Science Corporation Joseph Lstiburek 129

Building Science Corporation Joseph Lstiburek 130

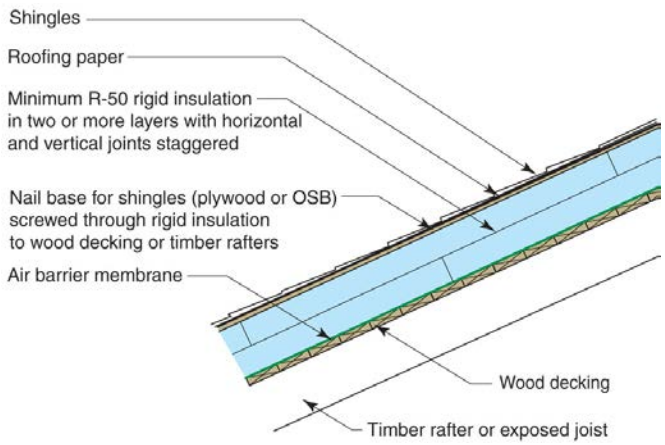


Note: Colored shading depicts the building's thermal barrier and pressure boundary. The thermal barrier and pressure boundary enclose the conditioned space.

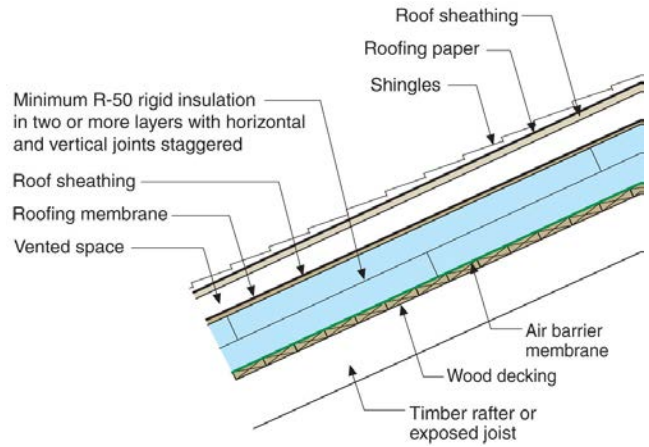
Building Science Corporation Joseph Lstiburek 131



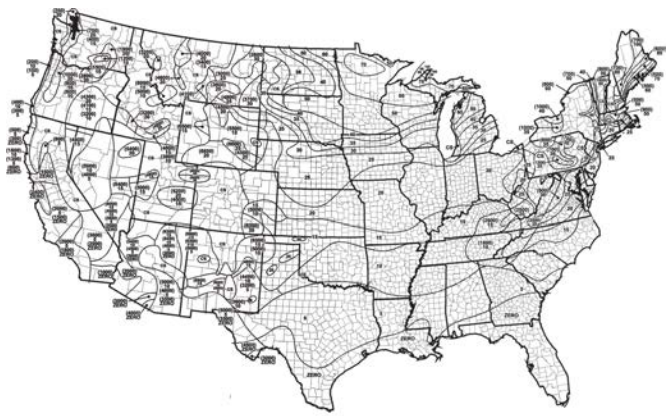
Building Science Corporation Joseph Lstiburek 132



Building Science Corporation Joseph Lstiburek 133



Building Science Corporation Joseph Lstiburek 134



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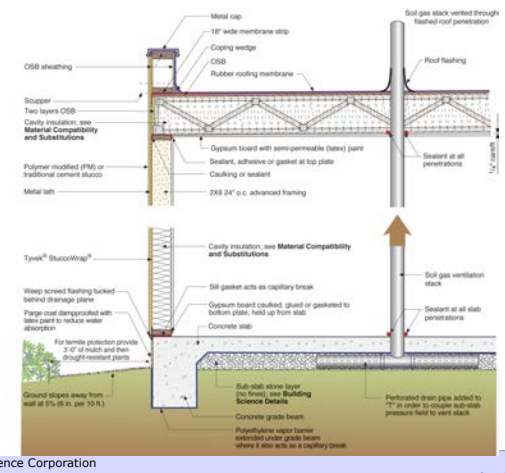

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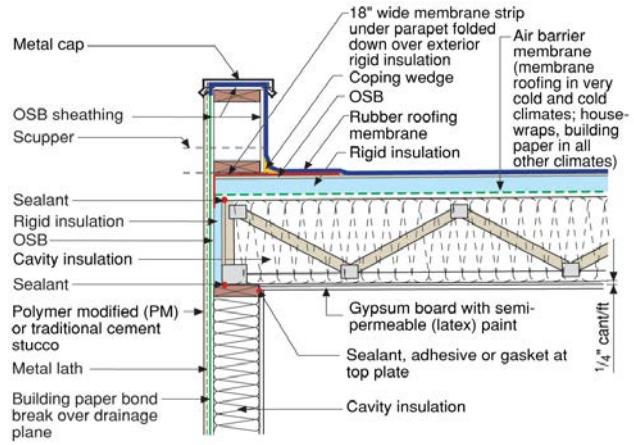

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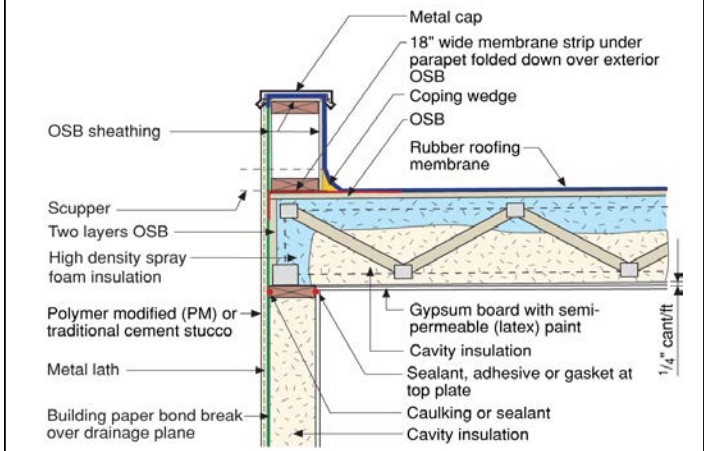

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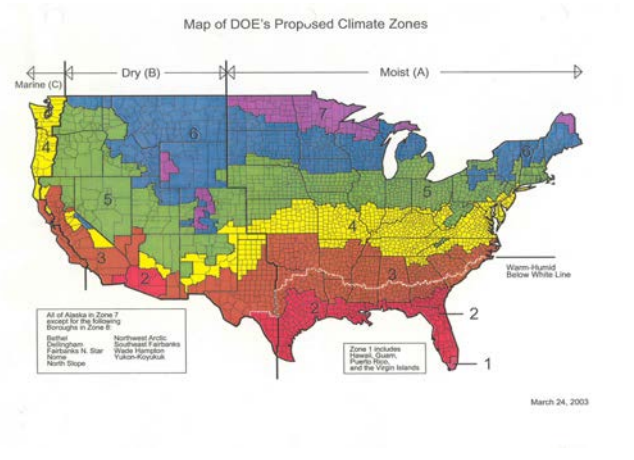

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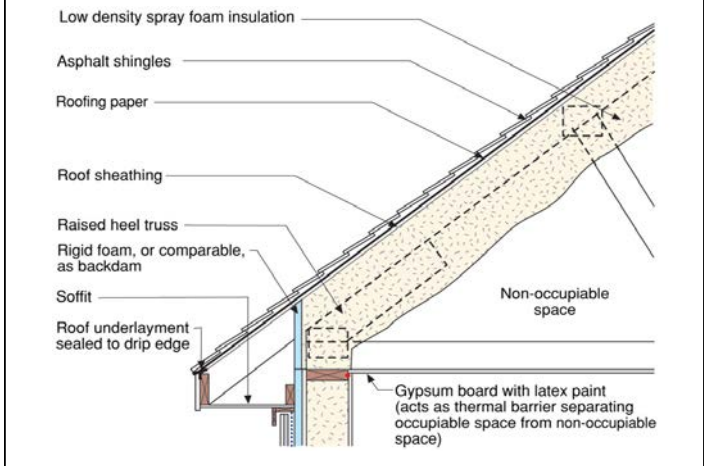

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Joseph Lstiburek 141

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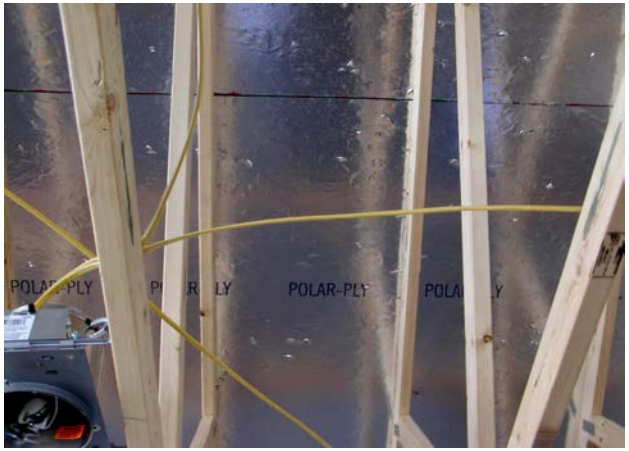
Joseph Lstiburek 142



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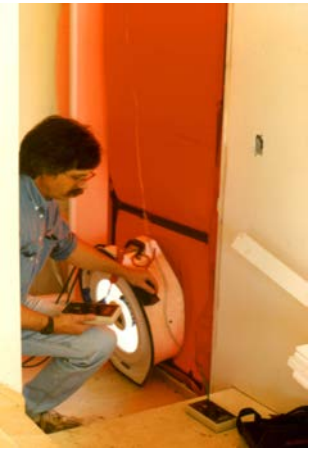

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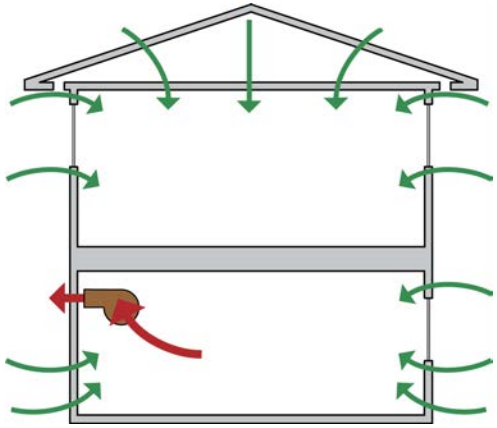

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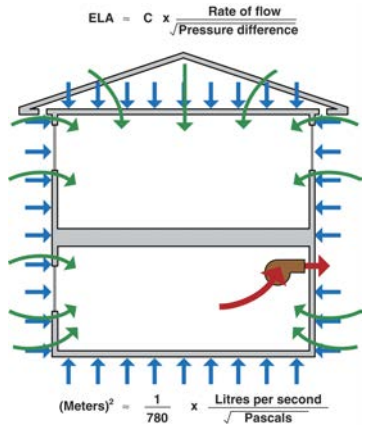

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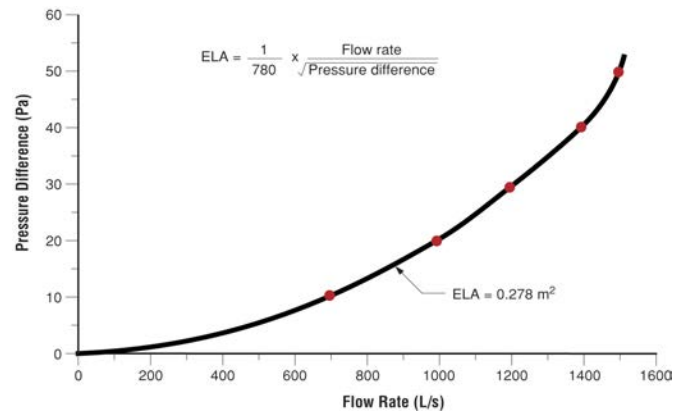

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