Understanding Vapor Permeability of Lyons Lake House Shell

Painted drywall interior surface = Class III Vapor Retarded (5-9 perms)

Zip sheathing exterior surface = 12-16 perms coating, OSB = 2-3 perms

Class I Vapor Retarder:	0.1 perm or less
Class II Vapor Retarder:	1.0 perm or less and greater than 0.1 perm
Class III Vapor Retarder	10 perm or less and greater than 1.0 perm

Vapor impermeable	0.1 perm or less
Vapor semi-impermeable	1.0 perm or less and greater than 0.1 perm
Vapor semi-permeable:	10 perms or less and greater than 1.0 perm
Vapor permeable:	greater than 10 perms

While both surfaces are air tight, both surfaces are also vapor semi-permeable. Air leakage moves the bulk of water vapor, so air sealing of both layers is the first step in preventing vapor movement. Diffusion alone is not enough to cause a significant amount of moisture to be introduced into a wall cavity. Without air movement vapor diffusion will be minimal. However if moisture does find its way into the cavity, both surfaces are still semi-permeable which allows that moisture to be driven back out in both directions depending on the season. The high volume of dense pack cellulose in our assembly gives a large capacity to store moisture temporarily, making this system a very durable one

In the winter moist interior air will want to be driven outward and in the summer moist exterior air will want to be driven inward. So seasonally any moisture that has accumulated will be dried back out. The biggest concern for any system is vapor condensation on the interior side of the exterior sheathing

during the winter. Even if our air sealing details leaked, our system has the ability to allow that moisture to dry out once the sheathing warms up.