



INTEGRAL CONSULTANTS

for Buildings & Business

NEWSLETTER for OCTOBER, 2007

OVER SPANNED & UNDER CONSTRUCTED

Although built to building codes, architecturally designed buildings or complexes often result in the building structure being over spanned and under constructed. When the architect designs the style and use of the building, he generally designs it to be aesthetically pleasing to the eye. It is not uncommon for the roof to have a generous amount of hips and valleys as well as the odd roof dormer.

The building design will not specify materials and sizes of lumber to be used in the construction. This is left up to the specifications portion of the building process to provide. Consequently some designs will require a better quality of material and method of construction.

In order to attract buyers at a certain income level a budget for that income level must be met. Therefore inexpensive materials and assembly of the components of the building must be attained. This is a common occurrence with detailed roof construction which results in the following observations.

As the following illustrations show this building has been over spanned and under constructed that are often found in minimal code construction. Once the building cover has reached its life expectancy and they need to be replaced correcting the problem can often be accomplished more economically.

This can be achieved by performing the following work.

1. Obtain all necessary permits
2. Remove shingles
3. Remove existing sheathing
4. Stabilize the engineered trusses over a 10 foot span with 2 x 8 ties as shown in Photo # 2
5. Replace existing rafters with 2"x 8" rafters on edge and tie into truss system as shown in Photo # 1
6. Replace OSB (strand board) with ½" plywood sheathing as shown in Photo # 3
7. Supply and install new roof vents
8. Supply and install new flashing
9. Supply and install aluminum valley flashing
10. Supply and install new roof shingles
11. Remove and dispose of all loss related debris



Photo 1 - Typically 2 x 4 rafters installed on the flat instead of edge



Photo 2 - Typical engineered truss system with long runs of 2 x 4 trusses.



Photo 3 - Typical approved OBS (strand board) roof sheathing with H clips.



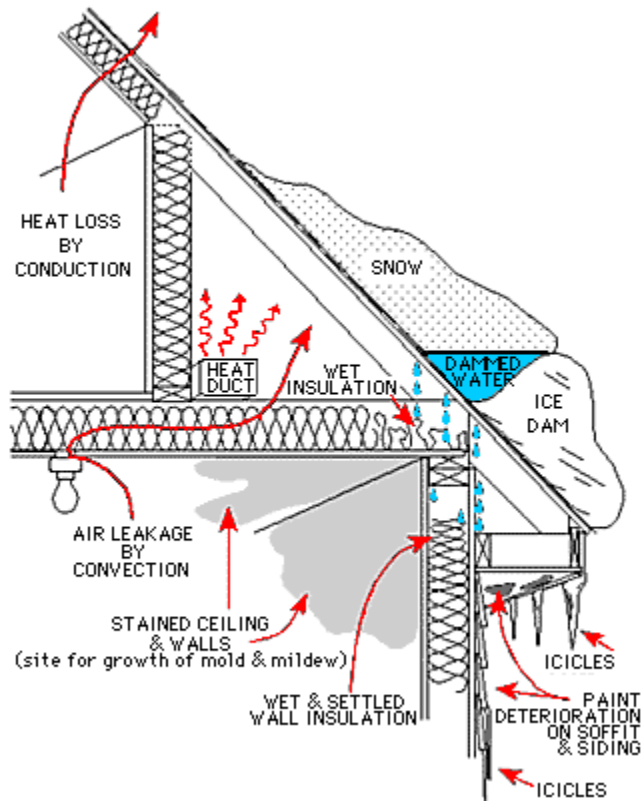
Photo 4 - Typical opening made in OBS (strand board) for roof vent (Note: jagged edges)



Photo 5 - Typical truss lines under composite roof shingles

Please note that this example is a roof structure, however over spanned and under constructed is very common for floor structures as well.

ICE DAMS



Some of you have asked what is an ice dam, and how does it cause damage. The diagram above sort of says it all but here is the chain of events that lead to the above example.

An ice dam is a ridge of ice that forms at the edge of a roof and prevents melting snow (water) from draining off the roof. The water that backs up behind the dam can leak into a home and cause damage to walls, ceilings, insulation, and other areas.



This wintry scene is brought to you by high heat loss. The ice dam at the roof's edge is damage waiting to happen.

Heat tapes are a good idea for the roof, too. Low-temperature tapes provide constant heat to break the snowmelt and freeze cycles. Ice dams form when snow on warm patches of the roof repeatedly melts flows downhill and freezes over the cold parts of the roof and gutters. Eventually a large mass of

ice forms beneath the shingles or tiles. Snowmelt backs up behind these dams and sits in big puddles on the roof, damaging it and causing leaks.

The problem starts with uneven temperatures on the roof caused by heat loss from the building's interior, a problem that may require extra insulation to solve. Gaps around plumbing vents and electrical wiring act like chimneys, siphoning heated interior air into the attic. A warm attic heats the roof, melting snow from the top of the roof down.

Spray-foam insulation is a simple and easy way to seal these gaps. Even if there are no gaps visible, additional insulation may be needed to prevent warm air from rising into the attic.

Specialty heat tapes are available to prevent ice build-up in gutters. If gutters fill with ice, they may start to sag from the weight and even break loose from their mountings.

Does insurance provide coverage for damage caused by ice dams? Check your wordings - you probably do, and do not take this exposure into consideration when explaining coverage, or underwriting a risk, or adjusting a loss.

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