

## **FETC Services Training E-Blast**

### **Snow Loaded Roof Considerations**

With the recent multiple snowstorm incidents in the Northeast, the fire service needs to take a look up before we commit to an interior or exterior operation. The type of structural material, design and condition all play a big part on whether that snow load is going to be a problem for our companies.

Yesterday I took a few minutes to travel around my response district and took an assessment of any potential hazards to my company. I was surprised to find that more than 3/4 of the dwellings in my district were still heavily loaded with snow.



In this photo: Older Farmhouse with a noted sagging porch roof

When we arrive at a reported building fire, the dwelling's snow load should be directly considered when the incident commander determines a strategic plan. The potential of a roof collapse before the fire started should be a consideration as well. The structural support system holding all that snow may be directly or indirectly under attack by "the fire", and that can add to the potential early onset building collapse. Another consideration should be on newer dwellings constructed with a lightweight "truss-roof" system. As seen in many past fire tests, a lightweight truss roof system once assaulted by fire fails at an alarming rate. None of those fire tests were ever conducted with a snow load as seen by our companies this week.



Farmers porch buildup that hinders normal 8/12 pitch roof snow slide

Heat loss from a building may result in some snow loss through melting between storm events. Roofs that allow heat loss to melt

snow are called "warm roofs". This may be by design or lack of proper insulation. Other roof systems remove lost heat before it has a chance to melt the snow. These roofs that prevent heat from reaching the snow are known as "cold" roofs. Sometimes buildings are either unheated during winter months or are intentionally kept at or below freezing so there is no heat loss that results in snow melt or ice build-up.



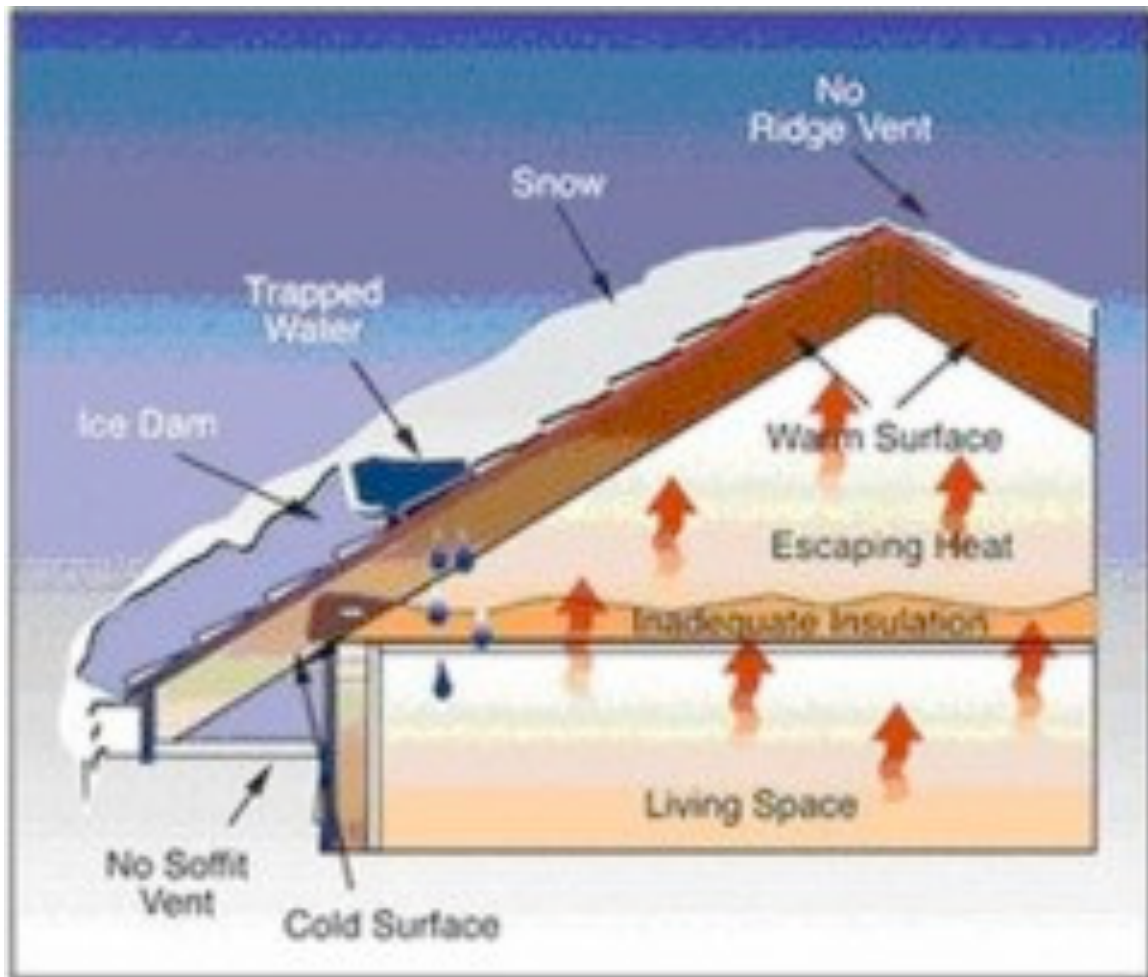
This photo displays both a Warm Roof (on top) and Cold Roof (porch)

One factor that needs to be considered by incident command is how does the FD safely commit to an interior firefight while considering the level of danger? What are the dangers to be considered? Well it is not as easy as what you see from the street. Understanding building construction has never been more important when you add-in snow loads. Do you expect normal tasks like fire suppression and search/rescue to be done quickly

when firefighters encounter delayed ventilation? Interior companies will certainly encounter an under-ventilated fire condition. Interior conditions will not be the same as operating during the spring, summer or fall months. Ladder companies will certainly have a delay in providing vertical ventilation due to lack of access to the roof, snow banks that limit truck access, carrying a ground ladder in deep snow is difficult at best, and access to the physical roof that may be buried 18-36 inches below the snow. Adding firefighters to a potentially overloaded roof can trigger collapse as well. Not too often do we ask the truck company to bring a snow shovel with them to just find the roof's surface. Attempting to stay on the aerial to get the job done safely? Well good luck trying to shovel from there. These delays will definitely change the interior company's exposure to extreme heat build up and unique fire dynamics.



Lightweight Construction – Very Large Farmers Porches are great snow load collectors



Every firefighter on the fire ground from the Fire Chief right down to the newest firefighter needs to stay alert to signs of overhead hazards during the winter month operations. There has been a lot of focus on building collapse lately but staying cognizant to potential heavy snow or ice slides, that can cause serious personal injury or death to responders. This type of overhead assessment must be done on arrival and continued to be monitored as the incident is mitigated.

For you incident commanders, this is an excellent point to add to your exterior safety officer's checklist. We need to also stay alert for any signs of a building weakened by the fire or pre-fire snow loading, listening for strange noises of the building settling under the unusual load, noting any visual signs of sagging roof eaves or

leaning / bowing / separating wall connections, interior wall board cracking or noting water seeping from above are all positive indicators of a potential collapse is pending.

If you choose to go interior and aggressively mitigate from underneath, I highly recommend using my expanded command team approach to managing an incident and assigning an Interior Safety Officer to assess these specific hazards. As we all know, our initial interior companies are many times taxed beyond their control and may miss some of these potentially lifesaving signs of danger ahead.

Bottom line is the fire service should use a strong risk verse gain decision making model, and chose the appropriate model to get the job done as safely as we can.

Take care and stay safe.

FETC Services

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