

Municipality of Anchorage

Snow Removal Notice

Updated February 8, 2024

Residential Buildings:

- The MOA is not aware of any significant structural failures in residential buildings this season. However, some buildings could contain roof structure experiencing distress.
- The snow keeps accumulating. Roof snow loads are approaching 90% of the 40 pounds per square foot (psf) design load.
- Should you remove snow from your roof? There are tens of thousands of homes in Anchorage. Since the resilience of construction in Anchorage is variable, there is no one answer that applies to everyone. Most homes should be able to safely support the design snow load of 40 psf. However, given the vast number of homes and variability in construction there likely are buildings that have hidden structural deficiencies/distress where this much weight can be problematic. An owner must assess their situation and make the best decision given what they know. When in doubt, one should err on the side of caution and remove the snow. This will likely reduce one's stress level. For assistance with the decision-making process, we offer the following:
 - Buildings constructed after 1990 should be able to support well in excess of 40 psf given the safety factors used in wood design. This assumes the building has been constructed in accordance with adopted building codes.
 - A substantial portion of homes constructed in this era are two to three stories where the roof deck is 20 to 30 feet off the ground. The roof slope is typically steep (6/12 and steeper). The risk of injury from fall is substantial in such cases; owners need to carefully weigh the difficulty and risks of snow removal from these buildings.
 - Buildings constructed prior to 1990 represent a wide spectrum. Some are well built and while others may have hidden deficiencies and may be experiencing distress.
 - The MOA is discovering that some roof trusses manufactured in the 1970s and 1980s are defective because the metal plates are not properly seated flush with the wood. This may have occurred at the time of manufacture. The teeth on typical metal plates are only $\frac{1}{4}$ inch long. There should be no more than $\frac{1}{32}$ inch gap between the metal plate and the wood. A gap of $\frac{1}{16}$ inch results in a tooth effectiveness of just 60%. We do not know the full extent of this problem.
 - Older buildings may have hidden structural deficiencies.
 - Older buildings are more likely to be experiencing some degree of hidden rot in the roof structure due to roof leaks or from moisture generated inside the building.

- Pitched roofs are inherently more resilient than flat roofs, partly due to the shape of the truss and partly due to robust roof drainage.
- Buildings constructed outside the Anchorage Building Safety Service Area have not gone thru the MOA plan review and inspection process and its unknown whether they were constructed under third party oversight.
- If you are experiencing obvious signs of distress, the snow should be removed as soon as possible. These may include:
 - Sagging roof: Noticeable sagging in the roof is a clear sign the weight of the snow is too much for the structure to bear.
 - Strange noises: Sounds like creaking, popping, or cracking coming from the roof or attic area can indicate the roof is under stress from the snow's weight.
 - Doors and windows that used to open freely stick or jam: If doors or windows begin to stick or can't be opened easily, it may be a sign that the weight of snow is deforming the structure of the house.
 - Ice dams: Ice dams forming at the edge of the roof can create a heavy load on the eaves and lead to water damage as snow melt on the roof finds its way into the structure.
- Finally, what if it just keeps snowing and roof snow loads soar past 40 psf? This is unlikely but possible. People should have a plan and anticipate the need to remove snow from their roof should this occur.

Commercial Buildings:

Primary Concern – Parallel Chord Metal Plate Connected Wood Trusses:

- Last winter and now this winter Anchorage is experiencing wood truss failures.
 - A clear pattern of failure exists.
 - These failures have resulted in catastrophic roof collapse.
 - Roof failures have occurred with 20 to 25 pounds per square foot (psf) of snow on the roof. Note these roofs should be able to support 40 psf, the design snow load.
 - Truss failures are occurring in commercial construction built prior to 1990.
 - The trusses are constructed from wood with metal plate connectors.
 - Failures involve both top and bottom chord bearing parallel cord trusses.
 - Only one failure involved a pitched-roof type of truss.
- If you own a building falling within these parameters, we ask that you not occupy the building until the snow/ice is removed from the roof. Do not allow more than 15 psf of new snow/ice weight to accumulate. This guidance should be followed until the trusses have been thoroughly inspected by an engineer and proven safe or strengthened as necessary.

Reasons:

 - Anchorage has received an exceptional amount of snow this season.

- We estimate typical roof snow loads in Anchorage are approaching 90% of the total design snow load of 40 pounds per square foot, depending on location, melting, etc.
- It is likely we will continue to see more precipitation this winter and we should expect roof snow to continue to accumulate.
- Time matters. When subjecting wood construction to large loads, duration matters. The longer wood is subjected to extreme stress, the greater the chance of failure.
- The MOA estimates there is between 500 and 1,000 buildings in Anchorage that have the roof trusses of immediate concern. Given the large number of buildings and limited snow removal resources, **we ask that snow removal contractors prioritize buildings described in this guidance.**

Secondary Concerns:

- As snow weight continues to accumulate, random failures may start to occur in various types of construction where distress has gone unnoticed. Older flat roof buildings are at more risk. If you have concerns, contact a civil or structural engineer.
- In the unlikely event roof snow loads soar past 40 psf building owners should have a plan and anticipate the need to remove snow should this occur.

Snow Removal:

- It is important that snow be thoughtfully removed so as not to create piles that can overload portions of the roof, or that create unbalanced loads on structural members.
- One should leave a few inches of snow to protect the roof covering. Be careful not to damage plumbing vents, exhaust outlets, ridge vents and other obstacles protruding above the roof deck.
- Make sure that gas meters, electrical services/meters, building exits, ADA ramps, etc are not damaged or blocked from the falling snow.
- If you plan to do the work yourself, please take the necessary precautions to ensure your safety.
- If you hire someone to remove snow, make sure they are licensed, bonded and insured.

Further guidance will be provided as warranted.

For more information, see Handout AG.30 - Snow Removal Guidance:

- <https://www.muni.org/Departments/OCPD/development-services/pages/default.aspx>

Also see Draft Policy S.12 – Wood Truss Roof Framing Due Diligence Investigation:

- https://www.muni.org/Departments/OCPD/development-services/Documents/Draft%20Policy%20S.12%20Wood%20Roof%20Trusses_1.pdf