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STATE FIRE MARSHAL

MEMORANDUM

To: Heads of Fire Department

From: Stephen D. Coan
State Fire Marshal

Date: February 12, 2015

RE: **Technical Rescue Teams – Structural Collapse**

Due to the heavy snow loads we are currently experiencing on roofs and several structural collapse incidents that have already occurred in the Commonwealth, a conference call consisting of Fire Chiefs Association of Massachusetts President Chief Jack Grant, Chief Kevin Nord Co-Chair FCAM's Technical Rescue Committee, Department of Public Safety Commissioner Tom Gatzunis and DFS senior staff was convened to discuss availability of resources. As a result, the following advisory as reviewed by all parties is forwarded for your reference concerning the availability of Technical Rescue resources.

Once the need for assistance from a Technical Rescue Team (TRT) with structural collapse capability is determined, notify your local mutual aid dispatch centers and request the assets through the Massachusetts Emergency Management Agency/NAWAS and request a Structural Collapse Team response.

If there are any questions related to the safety of personnel when entering any partially or completely collapsed building, advise all personnel to stay out of the building(s) and establish a collapse zone. Then wait until the TRT assets arrive on scene to assist you in the development of a strategic plan with regard to the mitigation of the incident.
The following Information will be required when requesting the TRT assets:

- Incident Commander
- Size and type of construction of collapse
- Estimate of victims
- Staging area

MEMA/NAWAS will dispatch the closest available team to respond to your location:

- Northeastern Massachusetts Technical Rescue Team (Essex) will cover Fire District 5, District 6, District 15, District 14(communicates north of the Mass Pike), District 8, District 9 and District 12 (north of the Mass Pike)
- Southeastern Massachusetts Technical Rescue Team (Barnstable, Bristol, Norfolk Plymouth) assets will cover Fire District 1, District 2, District 3, District 4, Fire District 7, Fire District 10, Fire District 11, District 12 (south of the Mass Pike) and District 14 (south of the Mass Pike),
- UASI will cover District 13 and other areas as needed

Teams should be deployed for trapped or confirmed missing persons. Teams will report to the Incident Commander and the designated staging area.

Teams will respond with the following assets:

1 Liaison Chief, 1 Ops Chiefs, 1 Safety Chief
2 Communications Leaders/Technicians
40 Structural Collapse Technicians
Structural Collapse Trailer(s)
Search Technicians with K9
(1) Structural Engineer thru MEMA/DPS
Department of Fire Services Rehab Unit

Structural collapse teams are trained in technical rope, confined space, trench and structural collapse operations.

The Search component has K9, electronic audible & optical search devices.

If obvious hazards exist such as natural gas leaks, electrical, water etc., notify the appropriate utilities to control the hazard without entering the building in question.

The Technical Rescue Teams are well equipped and trained to break and breach concrete, burn or cut steel and rebar as well as lifting of heavy objects and building wall shoring systems.

I have also attached for your reference a fact sheet from the Department of Public Safety concerning potential roof collapse. This document may be helpful for your departments use and for outreach to local/regional media.

If you have any questions or concerns in regards to this matter please feel free to reach out to me directly at Stephen.Coan@state.ma.us or 978-567-3111.

Commonwealth of Massachusetts

Department of Public Safety

E-Memo ~ February 12, 2015

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Public Safety Advisory

On Potential Roof Collapses

Dangers Associated With Heavy Snow Loads on Roofs

The recent prolonged cold weather and repeated snowstorms have contributed to severe roof load conditions. Compounding the situation is the short-term weather forecast of potentially two more snowstorms over the next few days.

Homeowners, tenants, and businesses need to be cognizant of the danger posed by heavy snow loads on roofs, and the warning signs of potential structural weaknesses. In some instances, the risks posed by accumulated snow on roofs can be mitigated by safely removing snow from roofs of both commercial buildings and homes. Because temperatures are expected to remain cold for at least the next few days, and more snow may fall as early as this Thursday, efforts should be undertaken now to safely remove snow from roofs.

Removing snow from rooftops will minimize the likelihood of structural collapse. Flat and low pitched roofs, most often found on industrial buildings, but are also used in certain home designs, are at the greatest risk of buckling under heavy snow and ice accumulations.
Lower roofs, where snow accumulates from higher roofs are also vulnerable.

Tips for Homeowners in removing snow and ice from roofs and other areas

- **DO's**
- Use a snow rake for pitched roofs (available at most hardware stores) to remove snow from your roof.
- Start from the edge and work your way into the roof.
- Try to shave the snow down to a 2 or 3 inches on the roof instead of scraping the roof clean, which will risk damage to your shingles or other roof covering.

Keep in mind that any metal tool could conduct electricity if it touches a power line.
Also, metal tools will do more damage to your roof.
Shovel snow from flat roofs throwing the snow over the side away from the building.
Most plastic shovels are better, except for the ones with curved blades-those too will do some damage to your roof.

- Remove large icicles carefully if they're hanging over doorways and walkways. Consider knocking down icicles through windows using a broom stick.
- Wear protective headgear and goggles when performing any of these tasks.
- Consider hiring professionals to do the job. The combination of heights plus ice makes this one of the more dangerous house chores.
- If you don't hire professionals, at least have someone outside with you in case anything does go wrong

- Keep gutters and drains clean, free of ice and snow and keep downspouts clean at ground level.

Tips for Homeowners in removing snow and ice from roofs and other areas

- **DON'T's**
- Unless approved by a registered professional engineer, don't add your weight or the weight of equipment to the roof.
- Don't use a ladder since ice tends to build up on both the rungs of the ladder and the soles of your boots.
- Don't use electric heating devices like hair dryers or heat guns to remove snow and ice.
- Don't use open-flame devices to remove snow and ice.

According to Meteorologist Tony Petrarca, a cubic foot of dry snow weighs about seven pounds, while a cubic foot of wet snow weighs anywhere from 12 to 18 pounds. So, if it's possible, hire someone to help with all of the snow clearing.

How to Recognize Problems with Roofs

- Sagging roofs
- Severe roof leaks
- Cracked or split wood members
- Bends or ripples in supports
- Cracks in walls or masonry
- Sheared off screws from steel frames
- Sprinkler heads that have dropped down below ceiling tiles
- Doors that pop open
- Doors or windows that are difficult to open
- Bowed utility pipes or conduit attached at ceiling
- Creaking, cracking or popping sounds

Other Safety Tips for Homeowners

- Make sure smoke alarms and carbon monoxide detectors are working.
- Check outside fuel and dryer exhaust vents, making sure that they are not obstructed by snow or ice. Never use cooking equipment intended for outside use indoors as a heat source or cooking device. Never use your oven for heat.
- Clear snow away from furnace and dryer exhaust vents to prevent carbon monoxide poisoning.

- Ice dams can cause major damage to a home or building. Ice dams occur after a heavy snowfall, followed by several days or even weeks of very cold weather. An ice dam is a wall of ice that forms at the edge of the roof, usually at the gutters or soffit. When it forms, the water backs up behind the ice dams and creates a pool. This pool of water can leak into your home and cause damage to your walls, ceilings, insulation and other areas. Please refer to the following link where ***WT Phalen Insurance*** provides additional information and guidance about how to cope with ice dams.

  http://www.wtphelan.com/index.cfm/pid/10799/cdid/10903
- Space heaters need space, so use them in a 3-foot circle of safety; free of anything that may catch fire. Space heaters are not designed to replace your central heating system; they are only designed to provide a little extra heat on a temporary basis. So be sure to turn them off when you leave room or go to bed at night.

- Clear snow away from downspouts so water has a place to go.
- Do not be tempted to use a heat gun or open flame torch to melt the ice; the risk of starting a fire is huge.
- Also, please remember to shovel-out fire hydrants in\around your area in case of emergency. See the Massachusetts Emergency Management web link below for additional information about winter and fire safety tips.

http://www.mass.gov/eopss/agencies/mema/

- If you feel you are in immediate danger, get outside and call 9-1-1.

Tips for businesses in removing snow and ice from roofs and other areas

- **DO's**
- **The same tips apply. However, if you are going to use a snow blower, make sure that it has been approved by a structural engineer to be used on a roof, and that the blower is set to a high level above the roof so as not to damage roof membrane.**
- Use a snow rake for pitched roofs (available at most hardware stores) to remove snow from your roof.
- Start from the edge and work your way into the roof.
- Try to shave the snow down to a 2 or 3 inches on the roof instead of scraping the roof clean, which will risk damage to your shingles or other roof covering.

Keep in mind that any metal tool could conduct electricity if it touches a power line.
Also, metal tools will do more damage to your roof.
Shovel snow from flat roofs throwing the snow over the side away from the building.
Most plastic shovels are better, except for the ones with curved blades-those too will do some damage to your roof.

- Remove large icicles carefully if they're hanging over doorways and walkways.
- Wear protective headgear and goggles when performing any of these tasks.

- Keep gutters, downspouts and drains clean.

How to Recognize Problems with Roofs in Commercial Buildings

- Many of the same apply - added
- Sagging roof steel - visually deformed
- Severe roof leaks
- Cracked or split wood members
- Bends or ripples in metal supports
- Cracks in walls or masonry
- Cracks in welds of steel construction
- Sheared off screws from steel frames
- Sprinkler heads pushed down below ceiling tiles
- Water puddles where it never has before
- Doors that pop open
- Doors or windows that are difficult to open
- Bowed utility pipes or conduit attached at ceiling
- Creaking, cracking or popping sounds

What to do if you have problems

- Call your local building or fire official.
- If there is imminent danger, evacuate the building and call 911.

What other assistance is available?

- Many fire departments have regional technical rescue teams available to local departments in case of collapse.
- Massachusetts Task Force 1 is an Urban Search and Rescue Team in Beverly. The team is comprised of Police, Fire, EMS and Civilians who respond to major disasters under a contract with the Federal Emergency Management Agency (FEMA). Currently there are 150 people on the MATF-1 team.

Sincerely,

Department of Public Safety