

upcoming weather conditions and storms. For additional information regarding station locations within New Hampshire please visit the DOT informational poster on RWIS at: http://www.nh.gov/dot/org/projectdevelopment/materials/research/projects/documents/12323i_poster.pdf

5.2.2 Pavement Temperature

The two most critical factors that can produce a winter road hazards are pavement temperature and the dew point/precipitation rate. Pavement temperature, not air temperature, is the deciding factor for treatment type and duration. The pavement temperature directly effects the formation, development, and breaking of a bond between fallen or compacted precipitation and the road surface. The pavement temperature also determines the effectiveness of any applied chemicals. Pavement temperatures can be significantly affected by the following:

- Air temperature trends - may indicate what the pavement temperatures are likely to do.
- Subsurface temperatures - warm subsurface temperatures (typically in the fall) will help pavement hold heat and keep the pavement temperature from dropping. During the winter and spring, pavement temperatures will drop quickly because the ground is still cold. Pavement temperatures can be considerably colder then the air temperature in the spring, creating frost and ice conditions.
- Time of day - The amount of sunlight and the angle at which the sunlight hits the road will influence the pavement temperature and the melting effectiveness of any chemical that has been applied.
- Cloud cover - Daytime cloud cover can cause pavement temperatures to cool. During the night, lack of cloud cover causes heat to escape and cooling to occur.
- Wind speed and direction - can have either a warming or cooling effect.
- Precipitation rate - the amount of precipitation; whether it is snow, freezing rain, or sleet that falls within a given time will affect the temperature of the pavement.

Black ice or frost will form on a very cold pavement surface when air has cooled to its dew point. The dew point is the saturation temperature of the air. The higher the dew point, the greater the moisture in the air. The lower the dew point, the drier the air. When the air temperature is cooled to the dew point, water vapor in the air will condense into either a liquid or a solid.

It is essential to know the current pavement temperature, dew point, and weather forecast to accurately treat snow and ice problems.

5.2.3 Traffic, Road Surface, Beat

Vehicles can affect the pavement surface in many ways. Vehicles can compact the snow, abrade it, displace it or disperse. Heat from tire friction, engines, and exhaust can add measurable heat to the pavement surface. Vehicle action and road surface can influence, both positively and negatively, the effectiveness of snow and ice control. The volume of vehicle traffic should be considered when establishing levels of response.

Road surfaces such as asphalt, porous pavement, or gravel and locations such as intersections, bridges, shaded areas, steep grades, sharp curves, on/off ramps, and areas near high traffic facilities should be given special consideration along with areas prone to snow drifting or that experience sudden icing.

Have efficient and effective beats planned for your staff and prepare procedures for call outs and call backs. Have a description of beat length, the average time to run the beat along with the amount of chemical needed to complete it.

Road variables to take into consideration include:

- Geometrics – bridge decks, steep grades or sharp curves will influence the application rate required.
- Cold Spots – Cold spots at higher elevations or in shaded areas may require application and treatment techniques that are different from the rest of the route.
- Pavement Surface – surface consistency and variation will affect the types of equipment and techniques used.
- Lanes – the number of lanes being treated will effect the cycle time of the beat.
- Speed – truck speed will vary considerably due to traffic, buildings, pedestrians, and road type.
- Time of day – The amount of sunlight and the angle at which the sunlight hits the road.

**NH Road Salt Application Rates for Deicing Parking Lots
(Pounds per 1000 sq.ft.)**

Pavement Temp. (°F) and Trend (↑ ↓)	Weather Condition	Maintenance Actions	Application Rate (lbs/per 1000 sq.ft.)			
			Salt Prewet/ Pretreated with salt brine	Salt Prewet/ Pretreated with other blends	Dry salt	Winter sand
>30 ↑	Snow	Plow, treat intersections only	4.5	4	4.5	Not recommended
	Frz. Rain	Apply chemical	5.75	5.25	6.5	Not recommended
30 ↓	Snow	Plow and apply chemical	5.75	5.25	6.5	Not recommended
	Frz. Rain	Apply chemical	6.5	5.75	7	Not recommended
25 - 30 ↑	Snow	Plow and apply chemical	5.75	5.25	6.5	Not recommended
	Frz. Rain	Apply chemical	6.5	5.75	7	Not recommended
25 - 30 ↓	Snow	Plow and apply chemical	5.75	5.25	6.5	Not recommended
	Frz. Rain	Apply chemical	7	6.5	8.25	10.5
20 - 25 ↑	Snow or frz. Rain	Plow and Apply chemical	7	6.5	8.25	10.5 for frz. Rain
20 - 25 ↓	Snow	Plow and apply chemical	5.75	7.5	9.5	Not recommended
	Frz. Rain	Apply chemical	7	7.5	10	10.5
15 - 20 ↑	Snow	Plow and apply chemical	7.5	7.5	9.5	Not recommended
	Frz. Rain	Apply chemical	8.75	7.5	10	10.5
15 - 20 ↓	Snow or Frz. Rain	Plow and apply chemical	8.25	7.5	10	10.5 for frz. Rain
0 to 15 ↑↓	Snow	Plow, treat with blends, sand hazardous areas	Not recommended	10	Not recommended	13 and spot-treat as needed
< 0	Snow	Plow, treat with blends, sand hazardous areas	Not recommended	23	Not recommended	13 and spot-treat as needed

Table 19. Application Rates for Deicing

These rates are based on road application guidelines (Mn Snow & Ice Control Field Handbook, Manual 2005-1). Develop your own application rates by adjusting your current rates incrementally downward toward these guidelines. Where temperature categories overlap, select the rate most applicable to your situation.

**NH Road Salt Application Rates for Deicing Roads
(Pounds per Lane Mile)**

Pavement Temp. (°F) and Trend (↑ ↓)	Weather Condition	Maintenance Actions	Application Rate (lbs/per lane mile)			
			Salt Prewet/ Pretreated with salt brine	Salt Prewet/ Pretreated with other blends	Dry salt	Winter sand
>30 ↑	Snow	Plow, treat intersections only	150	125	150	Not recommended
	Frz. Rain	Apply chemical	175	150	200	Not recommended
30 ↓	Snow	Plow and apply chemical	175	150	200	Not recommended
	Frz. Rain	Apply chemical	200	175	225	Not recommended
25 - 30 ↑	Snow	Plow and apply chemical	200	175	225	Not recommended
	Frz. Rain	Apply chemical	225	200	225-275	Not recommended
25 - 30 ↓	Snow	Plow and apply chemical	250	200	275	Not recommended
	Frz. Rain	Apply chemical	275	250	275-300	450
20 - 25 ↑	Snow or frz. Rain	Plow and Apply chemical	275	275	275-300	450 for frz. Rain
20 - 25 ↓	Snow	Plow and apply chemical	275	250	300-325	Not recommended
	Frz. Rain	Apply chemical	300	275	325-400	450
15 - 20 ↑	Snow	Plow and apply chemical	300	275	325	Not recommended
	Frz. Rain	Apply chemical	300-375	275-350	325-400	450
15 - 20 ↓	Snow or Frz. Rain	Plow and apply chemical	325	300	350	450 for frz. Rain
0 to 15 ↑↓	Snow	Plow, treat with blends, sand hazardous areas	Not recommended	300-350	Not recommended	600 and spot-treat as needed
< 0	Snow	Plow, treat with blends, sand hazardous areas	Not recommended	350-500	Not recommended	600 and spot-treat as needed

Table 19. Application Rates for Deicing

These rates are based on road application guidelines (Mn Snow & Ice Control Field Handbook, Manual 2005-1). Develop your own application rates by adjusting your current rates incrementally downward toward these guidelines. Where temperature categories overlap, select the rate most applicable to your situation.