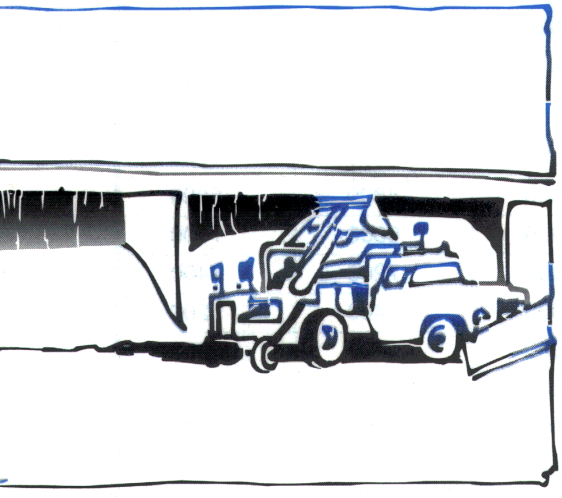
5/ KNOW DIFFERENT TYPES OF SNOW

In spots where unusual drifting is expected, place one or more rows of fence, with the second line parallel to and about 50 feet from the first.

What about "self-help" barrels? Many public works agencies place "self-help" salt barrels at critical points where motorists are likely to have tough going during winter.

Eliminate runoff from stored salt. Improper stockpiling of salt is responsible for about 80 percent of environmental problems sometimes associated with salt use. Rain and melting snow can carry salt from uncovered piles into the ground and nearby bodies of water and possibly cause chloride build-up.

Salt piles ***must*** be covered. Salt users usually prefer permanent structures on asphalt pads with proper drainage. Temporary waterproof coverings can be effective if tended carefully. Covering salt also helps avoid loss of material through leaching and caking. Also, salt without cakes and lumps spreads with no difficulty.



Snow occurs when water vapor in an air mass is cooled below freezing. Density of snow varies greatly. Some storms produce "wet" snow like wet sand, others "dry" snow like sawdust. Wet or heavy snow can often be plowed away. Time is of the essence. Use of reliable weather forecasting services allows for crew readiness in advance of storms. Salt should be applied as soon as snow or ice begins to accumulate.

Winter storms produce a number of hazardous conditions other than snow. Even without rain, ice may occur when

STORMFIGHTING GUIDELINES

The following chart is a guideline to combat various types of storms. Local conditions and policies will be the final determining factor.

Condition 1 **Temperature** Near 30 **Precipitation** Snow, sleet or freezing rain **Road Surface** Wet	If snow or sleet, apply salt at 500 lbs. per two-lane mile. If snow or sleet continues and accumulates, plow and salt simultaneously. If freezing rain, apply salt at 200 lbs. per two-lane mile. If rain continues to freeze, re-apply salt at 200 lbs. per two-lane mile. Consider anti-icing procedures.
Condition 2 **Temperature** Below 30 or falling **Precipitation** Snow, sleet or freezing rain **Road Surface** Wet or Sticky	Apply salt at 300-800 lbs. per two-lane mile, depending on accumulation rate. As snowfall continues and accumulates, plow and repeat salt application. If freezing rain, apply salt at 200-400 lbs. per two-lane mile. Consider anti-icing and de-icing procedures as warranted.
Condition 3 **Temperature** Below 20 and falling **Precipitation** Dry Snow **Road Surface** Dry	Plow as soon as possible. Do not apply salt. Continue to plow and patrol to check for wet, packed or icy spots; treat them with heavy salt applications.
Condition 4 **Temperature** Below 20 **Precipitation** Snow, sleet or freezing rain **Road Surface** Wet	Apply salt at 600-800 lbs. per two-lane mile, as required. If snow or sleet continues and accumulates, plow and salt simultaneously. If temperature starts to rise, apply salt at 500-600 lbs. per two-lane mile, wait for salt to react before plowing. Continue until safe pavement is obtained.
Condition 5 **Temperature** Below 10 **Precipitation** Snow or freezing rain **Road Surface** Accumulation of packed snow or ice	Apply salt at rate of 800 lbs. per two-lane mile or salt-treated abrasives at rate of 1500 to 2000 lbs. per two-lane mile. When snow or ice becomes mealy or slushy, plow. Repeat application and plowing as necessary.

Note: The light, 200-lb. application called for in Condition 1 and 2 must be repeated often for the duration of the condition.

moist air contacts a cold surface, particularly on bridge decks. Rain may freeze as it falls on pavement. Frozen rain falls as sleet or hail; it may stick to pavements.

There are roughly five major kinds of storms. Each requires a somewhat different approach. Everyone on the maintenance force should know these basic kinds of storms and how to combat them.

Most storms occur under Conditions 1, 2, or 3. But variations in temperature, precipitation, pavement condition or other factors are common. Management must depend upon well-trained maintenance crews to use initiative and imagination in coping with unforeseen problems.

Pavement will often "freeze dry" following a storm, if the last salt application is properly timed. Often, moisture on the pavement will turn to vapor and disappear as it freezes, leaving a completely clear, dry surface.

Keep an eye on the weather. Proper preparation for a storm is not possible unless management anticipates when it will arrive, how long it will last and the nature of its special characteristics. Arrange with the U.S. Weather Bureau, a local airport weather station or a private forecasting service to get complete, detailed reports during winter. Some maintenance departments hire a private forecaster to assure a balanced and more localized weather picture. Some progressive agencies are using pavement sensors and local weather instruments to receive instantaneous road and atmospheric conditions for more precise snow and ice control operations.

Any changes in weather conditions should be relayed to all personnel. If late afternoon reports indicate possibility of overnight snowfall, prepare equipment by attaching snowplows and spreaders before the workday ends. If weather forecasts indicate, a certain portion of the work force should remain on duty to start fighting the storm when it arrives. If the forecast indicates snow during the night, the work force should be sent home to get some rest, but alerted that they may be called back during the night. Arrange with the highway patrol, local police, sheriff's department or weather service to notify key personnel of storms that develop late at night. Ensure that someone is responsible for relaying the alert to the entire maintenance force, if and when the need arises.

POUNDS OF ICE MELTED PER POUND OF SALT

Temperature Degrees F.	One Pound of Sodium Chloride (Salt)
30	46.3 lbs. of ice
25	14.4 lbs. of ice
20	8.6 lbs. of ice
15	6.3 lbs. of ice
10	4.9 lbs. of ice
5	4.1 lbs. of ice
0	3.7 lbs. of ice
-6	3.2 lbs. of ice

APPLICATION OF SALT

Rate of Application Per Two-Lane Mile	Coverage Per Cu. Yd. of Salt Per Two-Lane Mile
800 lbs.	2 1/2
700 lbs.	2 3/4
600 lbs.	3
500 lbs.	4
400 lbs.	5
300 lbs.	6
200 lbs.	10

NOTE: Salt meeting ASTM Specification D632 weighs approximately 80 lbs. per cubic foot.