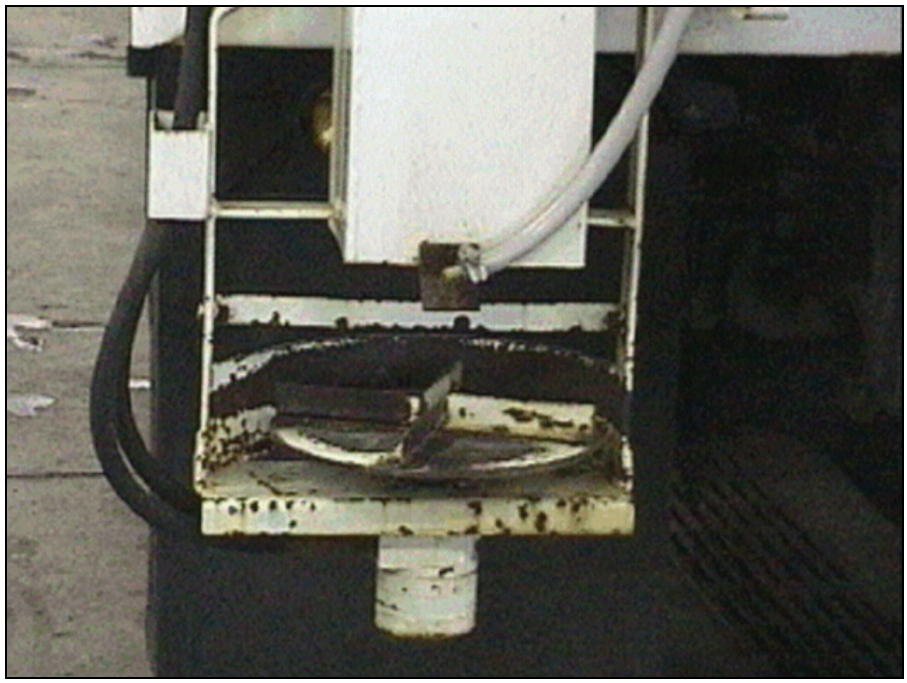

3. Spreading pre-wetted material

a. Ground speed controls should be used to adjust the material flow rate in relation to vehicle speed.

i. As speed increases the flow of material automatically increases to maintain a constant application rate. The same is true as the speed decreases: material flow decreases to keep pace.

ii. In this manner, material is neither wasted nor under-applied.

b. Combination Systems

i. Systems are now available that provide the benefits of both direct applicators and pre-wetting solids combined in one unit. These systems may be used for either type of application.

D. Solid Material Application

1. Advances

a. For decades, salt was spread onto roadways by shoveling it onto the road from the bed of a slow moving truck. Fortunately today we have much more efficient (and easier!) application techniques for solid materials.

2. Spreader Types - dry chemicals are generally applied with:

a. Hopper spreaders

i. Usually slipped into, or mounted onto, dump trucks in the winter and then removed and stored during the other seasons so that the vehicles can be used for other maintenance purposes.

ii. This spreader uses a hydraulic-driven auger to drive dry material to the hopper.

a) The material funneling through the hopper is spread onto the roadway.

b. Tailgate-type dry-material spreader

i. Can be easily attached to, or removed from, the dump truck body.

ii. Consists of an auger-style feed mechanism and a material spreader, plus a mechanism to control the rotational speed of the auger, which governs material rate.

iii. The material is driven from the tailgate auger to an opening over the material spreader from which it is distributed to the pavement.

c. Under tailgate spreaders can be used with standard tailgates. There are two basic types.

i. Single spinner version

a) Provides the advantage of remaining mounted while the truck is used for other maintenance operations, except towing.

ii. Dual spinner version

a) Spins either in a left or right direction but not both directions simultaneously.

b) This spinner can also be easily adapted for other maintenance operations (shoulder or asphalt work).

d. Conveyor Style Dump Bodies

i. Eliminates the need for hoppers on tandems.

ii. Provides greater control of material discharge, especially for other types of maintenance operations (shoulder work or asphalt).

3. Application Rates

a. The application rate of a spreader depends on:

i. The area of the gate opening (conveyor belt dump bodies)

ii. Feed belt or auger speed

iii. Truck speed

iv. Type of material

v. Calibration

4. Controls

a. There are different types of spread rate controls for application rates:

i. No control

ii. Manual control

iii. Automatic control

a) The most effective and efficient way of controlling the material application rate.

b) This device automatically adjusts the application rate in accordance with the truck speed.

1) The spread rate per mile remains constant while the 'pounds per minute' indicator fluctuates with the speed.

5. Zero Velocity Spreaders

a. As mentioned earlier, solids tend to bounce off the roadway. The higher the traveling speed of the truck, the more pronounced these negative effects become.

b. 'Zero-velocity' spreaders were designed to counteract these effects:

i. The faster the vehicle travels, the faster the material is applied in the opposite direction.

ii. The net effect is that the material hits the road at zero speed, as if it was dropped by hand by a person standing still.

E. Plowing and Removal

1. Intent of Plowing

a. To remove as much snow and loose ice as possible from the pavement surface before applying chemicals.

b. Plowing is all that will be necessary if the pavement and snow are both cold and dry and the snow is not adhering to the pavement.

2. Plow types

a. There are many types of snow removal equipment available

i. The most common snow removal equipment used at ODOT are trucks equipped with plows.

b. Snowplows are available in a variety of types including:

i. front plows,

ii. underbody plows and

iii. wing plows.

c. Trucks can be equipped with one or several plows.

d. Various cutting edges are also available in:

i. carbide,

ii. steel,

iii. synthetic polymers and

iv. rubber.

e. Some plows are equipped with shoes to protect the cutting blade from obstructions in the pavement (raised manholes, bridge joints, or steel plates).