

### Quick Facts

- Over 25 miles (18 acres) of sidewalks must be cleared for each snow event.
- Nearly five miles of streets need snow removal and traction treatment.
- Some 200 building entries need to be shoveled.
- There is only one crew centered around a single shift for snow removal—it is not a 24 hour operation.
- Parking lot snow removal is handled exclusively by Parking Services, not Landscape and Grounds.
- It is impossible to prevent the formation of ice on surfaces—the amount of ice that bonds to the surface and the amount of time it stays on the surface can be lessened, however.
- Rotary brooms are the best implement for removing the maximum amount of snow and ice that is *not* bonded to the surface, thus lessening the amount of time the remaining bonded material (ice) stays on the surface causing problems.
- The average snow event on campus is 2".
- The average winter snow total for the season is about 85-88".
- Record winter snow total for the winter season is 159", which occurred in 1996-97.

# Snow Removal

**Snow removal crew mobilization:** The initiation of snow removal operations goes as follows: If there is any amount of unpacked or unbonded snow on the sidewalks at 3:00 a.m. on any morning, the boiler operator at the Heating Plant calls the Grounds Supervisor. Using the information that the boiler operator provides, and taking into account the current weather conditions and the time of year, the Grounds Supervisor decides whether or not to mobilize the snow removal crew.

**Operational methods:** In a typical scenario, the Grounds Supervisor will call the nine full time Groundskeepers and two to four student employees. They will arrive at the Facilities Services yard at 4:00 a.m. to begin the removal process.

Each semester, disabled students are asked to identify the routes that they take to reach their classes on campus maps. Landscape and Grounds then makes every effort to make sure that those routes are given top priority in the snow removal process. Equal in priority, and often coinciding with the disabled routes, are the main pedestrian and vehicular circulation routes. Particular attention is given to known problem areas, such as hills or places where melt water forms ponds which turn to ice, and these are checked periodically throughout the shift.

A list of priorities for snow removal operations is as follows:

#### 1st Priority:

- Routes, access ramps and parking stalls for the disabled
- Clear and sand primary pedestrian sidewalk routes
- Sanding of street intersections
- Sloping sidewalks
- Street plowing (snowfall > 3")
- Major building entryways

#### 2nd Priority:

- Clear and sand secondary central campus sidewalks
- Secondary building entryways
- Museum of the Rockies parking lot
- Custodial Services quonset access

#### 3rd Priority:

- Peripheral campus sidewalks
- Docks and service drives
- Athletic playing fields

**Operational methods (cont.):** To help make the campus paved surfaces as safe as possible, street sanding operations take place three to four times per day when icy conditions exist. A typical schedule for streets is to sand prior to and after the 8:00 a.m. traffic rush and again around noon. Should conditions warrant a sanding will occur before and after the 5:00 p.m. traffic surge. Special pre-arranged sanding crew call-outs take place when there are large events on campus that create lots of traffic, such as basketball games at the Fieldhouse.

Sidewalks are sanded about half as frequently as are the street intersections. This is because the sand does not disperse as fast as it does in the intersections, and sidewalk sanding operations are so long in duration that more frequent applications are simply not practical. During particularly icy conditions, all of the walks are sanded twice per day, and problem areas are sanded more often. Even when weather and surface conditions are relatively static, street intersections and sidewalks are checked for excessively slippery conditions several times per day.

The custodial crew attends to the entryways of most of the academic buildings from 4:00 p.m. to 7:00 a.m. They shovel snow, chip ice, and spread sand or ice-melting compound as needed.

For an average snow removal operation starting at 4:00 a.m., eighty percent of a typical 2" snowfall can be removed from the walks, disabled parking spaces and service drives before 8:00 a.m.

**Traction measures:** Despite intensive and timely efforts to remove snow from paved surfaces, the development of icy conditions on the walks and streets is unavoidable. Surface conditions may change minute-by-minute during a snowfall, and under the right conditions, the ponding of melt water or any type of foot or wheeled traffic can form new ice after the snow has been removed. In rare instances, icy conditions may develop in just a few minutes everywhere on campus simultaneously. Obviously, the snow removal crew cannot be everywhere at once, so there will always be periods that campus users will be forced to deal with normal winter hazards without the desired level of mitigation. Every snow event requires a total commitment of Landscape and Grounds operators and equipment in a coordinated, team effort. Because these resources are limited, twenty-four hour coverage for every conceivable snow and ice condition is not possible. Even if full, omnipresent coverage was feasible, it would not be reasonable to expect all the problems to be solved.

In conjunction with the University's heavy commitment to making the sidewalks and streets as safe as possible, pedestrians and drivers likewise have the personal responsibility to be careful and use good judgment as they negotiate the campus. A driver's slower approach to an icy intersection because the sand that was applied has thinned out would be prudent, and a pedestrian may want to walk off the icy walk into the snow along the margins for better traction. For a pedestrian, the selection of footwear that has the proper soles for maximum traction in snow and ice is probably the single most important step towards personal winter safety. For faculty and staff ice grippers are available as an extra safety measure. Details can be found at <http://www.montana.edu/wwwsrn/Ice%20Gripper%20Program.pdf>

**Concluding statement:** It is impossible to maintain totally safe conditions on all of the sidewalks, streets and parking lots at all of times in a snowy climate like Montana, the hazards can only be partially mitigated. Montana State University far exceeds what would be considered a reasonable effort to make the campus as safe as possible. It is everyone's responsibility to exercise caution and common sense, regardless of commuting mode, to minimize the risk for all.