

structures must be checked daily.

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## **2.2 SNOW REMOVAL**

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### **Introduction**

In areas where winter weather affects the operation of a parking structure, removal of snow and ice is necessary, if not paramount, for functional performance, the public's safety, and the long-term durability of the structure. Snow and ice removal can be difficult depending on the size, timing, and type of storm, and also the area to be maintained. For these reasons, knowing with what and how to remove snow and ice can greatly affect the operation of the structure. The basic parameters for snow and ice removal include planning, proper equipment, chemical deicers, written procedures, and how-to instruction for snow removal personnel.

### **A. Planning**

When removing snow and ice, planning plays an important role for a successful operation. Basic planning and specifications for snow removal begins during the initial design phase of the parking structure. The owner, architect, engineer, contractor, and precast/prestress concrete manufacturer must all be involved in determining how snow and ice will be removed. Operations such as removal of snow and ice from the deck surface, storage of snow and ice, and the use of certain types of equipment can cause major functional and performance problems to the structure if not properly addressed during the initial design phase.

When an architect begins considering the location and layout of a parking structure, snow and ice removal operations should be based on local climate conditions. Anticipated maximum snow fall and frequency will influence planning strategies. Once parameters for snow and ice removal have been established, features for storage or removal must be designed into the structure.

Removal of snow is typically handled by moving the snow to a snow chute or snow melting equipment, or by moving to and through a gate opening in exterior spandrels.

Storage of snow requires strict operating procedures and protected dumping zones to ensure the safety of workers, pedestrians, and vehicles. Multi-level parking structures also require special procedures to prevent the penetration of falling snow onto lower structure levels. The number of dumping locations depends on the parking structure size, anticipated snow fall rate, and adjacent property locations.

When snow is stored on the top level of a parking structure, it is essential that equipment operators be provided with detailed storage guidelines before each clearing operation. If guidelines are not provided in the original design, a structural engineer must generate guidelines for maximum storage-pile size, location, and height. Consideration should also be given to obstruction of sight lines, loss of parking spaces, and the deleterious effects of concentrated salts and deicers.

Snow melting equipment comes in various forms. Before a piece of equipment is chosen, the structure needs to be checked to ensure that structural components can safely support the equipment's maximum

