



# Leavenworth County Public Works

## Winter Snow and Ice Removal Operations Plan

Revised November 2009

### Overview

The Public Works Department facilitates the removal of snow and ice from the roadways of Leavenworth County to provide passage for emergency responders and access for residents during periods of inclement winter weather. This plan is to be used as a guideline for inclement winter weather operations, but is implemented and executed under the direction of the Director, Road & Bridge Superintendant, and Operations Supervisor. The plans, routes, and procedures will be modified by the Operations Supervisor to best accomplish the mission in the most effective and safe manner possible under the current weather conditions. The department understands that Snow and Ice Removal is expensive, and therefore will exercise an economy of effort to maximize the efficiency and effectiveness of the operation.

### Mission

The Public Works Department will utilize its fleet of Trucks, Motor Graders, and other Heavy Equipment to remove the ice and snow from the road surface to facilitate the passage of residents, motorists, and emergency responders. Economy of effort will be utilized to maximize limited resources in order to facilitate the Snow and Ice Removal Mission

### Execution

**Intent:** It is the intent of the Public Works director to provide the most effective, yet safe, removal of snow and ice from the roadways of Leavenworth County during inclement winter weather. This is to allow for emergency responders to react to calls, the residents to access their homes and work, and traveling motorists to use the roadways according to the seasonal weather conditions. Economy of effort will be utilized to effectively provide adequate service while conserving limited resources. This policy is intended to provide guidance, however real-world conditions are variable and random. Operations Supervisors will have the authority to make decisions based upon their judgment and experience and adjust this plan as needed during operations.

**Concept of Operations:** The Road and Bridge Superintendant will initially assess each winter weather event and outline the operations to the Operations Supervisors (North, South, and/or Bridge-Culvert Supervisor). Coordination will be made with the Director and/or Emergency Manager who will keep the County Administrator and BOCC informed as to the status of Inclement Weather Operation. The Superintendant will determine effort and need of the crew, and will designate an Operations Supervisor. The Operations supervisor will have tasking authority over all crews designated for each shift. In the event the severity of the storm increases or decreases, the Operations Supervisor can increase or decrease crew size as needed, and as outlined their direction from the Superintendant and outlined in this plan. (Note: In the event of Emergency Declaration, the Emergency Manager will stand up the Emergency Operations Center (EOC), which will be staffed by the Director/Deputy Director and



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coordinate with the Superintendent/Operations Supervisor). Snow and Ice Removal Operations will be directed from and coordinated from the County Shop.

**Decision Criteria:** Snow and Ice Removal Operations effort will be determined upon the following factors.

1. Forecast Snow Amounts – This will affect initial response and route passability. For snowfall amounts less than 2" on hard surface roads, and 3" on gravel roads, Limited Operations will in effect.
2. Icy Conditions – In the event of freezing rain and/or Ice Storm Conditions are present, the need for addition effort and chemical treatment may exist.
3. Drifting Snow – The routes and effort may be altered to account for potential problem areas.
4. Storm Intensity in response to peak travel times – The snow removal effort will increase to account for the peak travel times to include, but not limited to, morning work commute, evening work commute, school bus schedules, etc...

**Hard Surface Priority Snow Route System:** As shown on the attached map, the roadways of Leavenworth County have been assigned designations as to priority. Primary Routes (annotated in Green) consist of the Arterial Roads that provide the connectivity between cities and towns, State/Federal Routes, and which typically have the highest traffic volumes. Secondary Routes(annotated in Orange) consist mainly of the collector type roads and provide connectivity between the Local Roads and the Arterial Roads. Secondary roads are cleared once the primary routes are fully open, or when full crew operations commence. Tertiary Routes (annotated in red) consist mainly of local and subdivision roads and will be cleared once secondary routes are fully open.

**Limited Operations:** Limited operations will focus primarily on high intensity areas such as bridges, hills, intersections etc... Focus will remain primarily on the primary routes with a fleet of two to four plows equipped with spreaders and chemical tanks. These operations will occur mainly during off-peak hours (overnight, holidays, etc...) and/or during minor snow fall events.

**Full Operations:** Primary and Secondary routes will be the area of emphasis. All available equipment will be deployed as available, and full snow routes will be manned as outlined in the attached Snow Routes Map. These operations will occur mainly during severe storms (forecast snow amounts greater than 4" and/or icing conditions) and approximately 2 hours prior to peak travel times when road conditions warrant. Once all primary and secondary routes are cleared, tertiary routes will then receive priority.

**Motor Grader Operations:** The approximately 500 miles of local gravel roads are maintained by the motor grader fleet. During inclement winter weather, the 9 township graders and dirt crew grader are districted as indicated on the attached map. This results in approximately 10 equally sized districts that are classified as secondary routes by the plan. To maximize grader efficiency, grader operations are to



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begin approximately one hour prior to sunrise and last a maximum of 12 hours as per the operator safety guidelines. This maximized the available daylight and provides the most efficient and effective utilization of equipment. In most cases when less than 3" of snow fall is predicted, routes will be cleared within 36 hours (two – 12 hour shifts) of the end of the storm. In the event of significant snow fall amounts, greater than 6", these routes may not be cleared within 60 hours (three – 12 hours shifts), however grader routes can be shifted to focus on harder hit areas.

## Operational Support

**Fuel and De-Icing Material:** Primary fueling of equipment will be performed at the County Shop fuel point. Adequate fuel supplies will be kept on site with supplemental deliveries made to sustain up to 72 hours of Snow and Ice Removal Operations. Salt and Sand mixture will be staged at three locations (Pleasant Ridge High School, Tonganoxie Quarry, County Shop) with adequate supply to sustain up to 72 hours of Snow and Ice Removal Operations. Wheel loaders will be staged at salt/sand piles to load equipment during de-icing operations

**Equipment Repair and Service:** Snow and Ice Removal Operations are very equipment intensive, and often lead to equipment breakdowns due to the high level of utilization. The mechanic crew will be re-organized to provide repair and service to any down equipment while operations are commencing. The service truck will be placed into ready status and should be able to deploy to recover any vehicle in need of repair. Snow and Ice removal equipment will take priority over all other, and mechanic schedule will be adjusted to allow for equipment maintenance and repair when vehicles are taken out of service.

### Command & Communications

**Command Structure:** The Road & Bridge Superintendant directs all Snow and Ice Removal Operations. The Superintendant will designate supervisors as Operations Supervisors and give instructions as to the scheme of operations. Operations Supervisor will have authority to assess and evaluate changing road conditions and modify the level of effort based upon their judgment and experience.

**Coordination:** Snow and Ice Removal Operations will require coordination between various departments (Sheriff's Office, EMS, Emergency Management, Etc...) The Operations Supervisor will be expected to make periodic coordination with these departments. In the event that a State of Emergency is declared by the BOCC and Emergency Manager, and the Emergency Operations Center (EOC) is activated, the Director and his staff will facilitate that coordination, with the Operations Supervisor focusing on directing and managing operations.

**Communications:** Communications between vehicles, operators, and other departments is critical. FM radio communication will be the primary link between the crew and the Operations Supervisor at the County Shop. Communication between the Shop and the EOC will be via land-line telephone. Cell



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phone communication should be considered secondary, and utilized as an alternate in the event primary communication means are unavailable.

All Snow and Ice Removal Operations will be documented on event forms, and will be tracked in the STARRoad database. Daily sheets must be accurately filled out to include equipment and tasks.

### **SAFETY**

Snow and Ice removal operations are very intense and often very stressful, therefore safety during these operations is critical. Unsafe practice not only can result in serious injury to yourself, but also can endanger the public and lead to damage to equipment. The primary purpose for Snow and Ice removal operations is to enhance the safety to the travelling public, without safe practice by the supervisors and operators during Snow and Ice Removal Operations, our mission cannot be completed.

Shift Schedule: Maximum continuous operations by an operator shall not exceed 12 hours. The intense nature of Snow and Ice Removal Operations cause significant stress upon the operators. This prolonged period of intensity leads to fatigue, which leads to poor judgment and carelessness. Operators are encouraged to rest as much as possible during off times, and to report for duty ready to work.

(Exception: The Operation Supervisor may authorize up to two additional hours (maximum of 14 hours) if the additional work is in preparation for follow on shifts and not in actual snow and ice removal, e.g. preparing vehicles, making minor repairs, mixing salt/sand, etc...) This exception must be documented on the event form.