

Ada County

Winter Operations

Plan



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1. Purpose

- To minimize road conditions that are hazardous to motorists and pedestrians through effective methods of snow and ice control.
- To improve coordination between the Ada County Highway District (ACHD), the Idaho Transportation Department (ITD), Ada County, and the incorporated cities.
- To work with the paramedics, police, fire and other departments to facilitate the handling of emergencies that arise.
- To work with the school districts to ensure safe travel conditions for school buses and children during operational hours.
- To reduce economic losses to the community caused by workers and business enterprise not being able to get to their jobs, businesses, or make/receive deliveries.
- To restore safe traveling conditions on roadways and sidewalks for the convenience of the general public as soon as possible after each storm or occurrence.
- To be mindful of the environment when using ice control chemicals due the proximity of waterways and watersheds.

2. Planning Factors and Assumptions

2.1.1. Ada County has more than 2200 local roadway miles and 200 state and federal roadway miles.

2.1.2. Ada County is about 1055 square miles in size, with a population of approximately 400,000 people. Within the county there are six incorporated cities: Boise, Eagle, Garden City, Kuna, Meridian, and Star. Terrain ranges from 5900 feet in elevation in the northern mountains, to 2450 feet elevation along the broad southern floodplains.

2.1.3. The climate in Ada County may be described as semiarid (dry and temperate). During most winters periods of stormy and mild weather alternate. "Cold periods" with temperatures of zero degrees or less ordinarily last less than two weeks. Annual precipitation ranges from about ten inches in the southwest to twenty-plus inches in the foothills north and east of Boise.

2.1.4. Although significant improvements have been made in weather forecasting, accurate predictions of the specific effects of winter conditions on the roads in Ada County are not always possible. However weather forecasting is progressively improving in accuracy.

Average Temperature (degrees F), monthly averages - Boise Area, Years: 1971-2000

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average	29.6	36.2	43.2	49.9	57.8	66.3	73.8	73.0	63.3	52.0	39.1	30.0	51.2

Snowfall (inches), monthly averages - Boise Area, Years: 1971-2001

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average	5.0	3.3	1.5	0.3	0.1	0.0	0.0	0.0	0.0	0.1	2.9	6.4	19.6

3. How the Plan Works

3.1. **Notifications and Communications**

- Supervisors will notify staff using an alert and notification roster. Communications between supervisors and field staff will take place through radios and cell phones.
- ACHD and ITD will maintain interagency communication and coordination through telephone and radio, as needed.
- During normal business hours (8 a.m. to 5 p.m.) all calls from the public concerning conditions or problems should be directed to the appropriate office: ACHD office (387-6100); ITD office (334-8000).

3.2. **Who's in Charge**

The Ada County Highway District and Idaho Transportation Department will be in charge of operations within their respective, agreed upon geographic areas of operation.

3.3. **Road Closures**

Although emergency responders may occasionally block traffic on roads, official Road Closures may only be ordered by the governing agencies, as necessary (ACHD, ITD).

3.4. **Level of Service**

The level of service goal for winter storms is to establish and maintain bare pavement; however this may not always be possible or practical. Many factors, including budget, availability of personnel and expendable materials, equipment breakdown, severity of the storm, and other unforeseen circumstances, may affect the level of service that can be provided.

3.5. **Snow Removal and Dumping**

For severe snowstorms (4-6 inches) and depending on temperatures, snow will be plowed off the roadway. For storms with especially deep snow levels, snow may be scooped up, loaded into dump trucks and hauled to selected areas for dumping.

3.5.1. Boise City snow dumping locations include:

- Simplot Sports Complex
- Charles F. McDivitt Youth Sports Complex
- Ivywild Park
- Optimist Youth Sports Complex

3.5.2. Kuna City snow dumping locations include:

- Wastewater reuse farm south of City center 2.5 miles on Swan Falls Road
- Wastewater reuse farm north of City center 4 miles on Lake Hazel Road between Linder and Ten Mile

3.6. Weather

3.6.1. It is essential for ACHD management staff to maintain awareness of the weather, especially during the winter months. This information assists the staff in predicting the amount and type of equipment, staff, and material(s) needed, and also in planning for an expected change in the weather that could affect operational procedures.

3.6.2. Management staff should maintain a vigil on the weather by monitoring winter weather forecasts and conditions through appropriate sources, such as:

- ACHD Remote Weather Information Stations
- National Weather Service (NWS) Boise has the most up to the minute local weather data.
 - NWS phone number: 208 334-9508
 - NWS Boise website <http://www.wrh.noaa.gov/boi/>
- The Weather Channel on cable television may be used primarily for 24 hour advanced forecast.
 - The Weather Channel <http://www.weather.com/>
- Local television and radio stations and Internet sources such as Weather Underground generally are good for a long range forecast.
 - Weather Underground <http://www.wunderground.com/>
- NOAA Weather Alert Radio.

3.6.3. The US National Weather Service in Boise uses the following weather product thresholds as guidance for their forecasts.

Winter Storm Warning	<ul style="list-style-type: none"> • Heavy Snow – 4” in 12 hours, or 6” in 24 hours • Snow and Wind – 2” or more expected with wind \geq 15 mph for 6 hours or more, especially if the temperature is \leq 28 degree F).
Winter Weather Advisory (transportation impacts)	<ul style="list-style-type: none"> • 2” or more in 12 hours covering a wide area • Snow of less than 2” with wind \geq 15 mph and temperatures \leq 28 degrees for 6 hours or more 1” or more of snow with temperatures rising from below 32 degrees to above 32. • Rain changing to snow (even light accumulations) with temperatures dropping from above 32 degrees to below 32 degrees
Boise Metro Area Additional Advisory Criteria	<ul style="list-style-type: none"> • 1/2 inch or more of snow during rush hour (approximately 6 – 9 am, 3 – 6 pm weekdays)
Wind Chill Warning	<ul style="list-style-type: none"> • Wind Chill -20 degrees or below, and

	<ul style="list-style-type: none"> • Wind 10 mph or greater, and • Conditions are expected to last at least one hour
Blizzard Warning	<ul style="list-style-type: none"> • Sustained wind speeds of 35 mph (30 kt) or more and/or frequent gusts to 35 mph (30 kt) or greater; and • Considerable falling and/or blowing snow, i.e., visibility frequently less than one-quarter mile, and • Conditions are generally expected to last three hours or longer.

4. Operations

During the winter period extending generally from the 1st of November through the 1st of April, the principal efforts of ACHD are directed towards control of snow and ice on county roads and streets. The operating procedures take place over four distinct time periods, including:

- Pre-Winter Preparation, Training and Orientation,
- Winter Storm Operations,
- Continuing Winter Operations During Non-Storm Periods, and
- Post-Winter Follow-up.

4.1. *Pre-Winter Preparation, Training and Orientation*

- 4.1.1. Equipment operators should make trial runs before winter to familiarize themselves with the routes, road conditions, obstacles and problem areas. Remember that road conditions change from year to year and obstacles may be present now that were not there before. Plan fall meetings to familiarize the road crew with their winter duties and review all routes with all drivers, in case another crew member must take over the route.
- 4.1.2. During trial runs, identify drains and waterways that must be opened after every storm. Mark other structures, including fire hydrants, guide rails, drop inlets, catch basins and curbing ends that may be hidden from the driver(s). Mark areas that have been consistent sources of complaints in the past. Plan plowing routes to bring trucks back to storage facilities when they are almost empty of deicing material. This saves time and fuel.
- 4.1.3. Review the plowing plan with the full crew in late fall. Identify which new road(s) will be accepted during the winter and plowed by the ACHD.
- 4.1.4. Effective Radio/TV Communication
 - Review the alert notification roster and radio calls with all employees.
 - Check all radio equipment and ensure that working spares are stockpiled at the garage.
 - Review the storm warning system with all affected employees.
- 4.1.5. Equipment - Operation and Maintenance

- 4.1.5.1. The Supervisor is responsible for cross-training of operators in the use of all equipment. Equipment will not be operated by inexperienced personnel without supervision.
- 4.1.5.2. Prior to the onset of winter, the mechanic, Supervisor and all operators will perform a complete inspection of all winter equipment to include at a minimum, the following:
- A check of all wing and plow hydraulic systems to ensure they are operating properly.
 - A check on the condition of moldboards, cutting edges.
 - Operation of snow plow hoists, towers, sanders and controls to include calibration tests for sand and/or salt spreading and operational checks of the computer controlled material feed systems.
 - Brake checks, air and hydraulic hose checks.
 - All vehicle lighting, including wiring and sockets on headlights, taillights, stop lights and turn signals. (Warning lights must be visible from all sides, whether bodies are raised or lowered.)
 - Replacement of side or end-body reflective tape as necessary.
- 4.1.5.3. The mechanic will order and keep on hand an adequate emergency supply of critical equipment, such as tires, spreader repair parts, hydraulic fluid and fittings, tire chains, plow parts, lights.
- 4.1.5.4. The Supervisor and mechanic will ensure that operators perform preventive maintenance on a daily basis to include:
- Inspection of tires for wear
 - Checks on brakes and air systems
 - Checks of hydraulic hoses for leaks
 - Visible structural checks of frames and the pins holding the bed to the frame
 - All electrical equipment, especially lights, wiring and sockets
 - Wipers
 - Plow blade wear
 - Safety equipment checks
- 4.1.6. Materials
- The Supervisor is responsible for ensuring an adequate supply of sand is stockpiled or available prior to the start of winter.
 - The Supervisor is responsible for maintaining an adequate supply of salt, sand, magnesium chloride and calcium chloride throughout the winter.
- 4.1.7. Training
- Training will be conducted annually on the following subjects in support of winter operations:
- The winter snow plan
 - How salt works
 - How and when to use salt and sand
 - Application rates/salt reduction

- Special storm situations
- Special deicing problems
- Winter safety considerations
- Police/Public Works communications
- Parking/towing ordinance (where applicable)
- Public relations/complaint procedure
- ICS training
- Other subjects as appropriate

4.2. Winter Storm Operations

- 4.2.1. ACHD has a general plan for clearing the roads in Ada County. However each storm is unique and the response must be flexible. Shift supervisors must make decisions based upon individual judgment and experience and upon an assessment of current and predicted conditions.
- 4.2.2. A more aggressive snow storm response may be triggered when there are 3 – 4 inches of snow on the ground, temperatures are at or below freezing, and more winter storm activity is on the way. Under these circumstances snow plowing may begin and snow removal from key areas will be considered.
- 4.2.3. Supervisors will contact employees using the alert notification list. Upon reporting for duty employees will perform a pre-startup check of equipment. Once this check is satisfactorily completed road maintenance operations may begin.
- 4.2.4. ACHD has traditionally used a deicer on winter roads to remove or melt snow as it accumulates or shortly thereafter. ACHD’s snow and ice control operations are limited by the resources (budget, personnel, equipment and materials) available for winter maintenance operations. Limited resources do impact the level of service and ability to provide bare roads.
- 4.2.5. Snow removal on state and federal highways is the responsibility of the State of Idaho Transportation Department.
- 4.2.6. ACHD has organized the snow clearing equipment into downtown lanes, collector, and arterial routes for severe operations. These plow routes are depicted on the map, IP-2.01. Each complete route may take several days to complete. The routes have been established to meet the following criteria:
 - Provide the highest priority coverage to the roads with the heaviest usage (major arterials) and a history of the severest conditions and/or accidents. The highest priority roads for each designated route are the following arterial roads: (list priority roads)
 - In the event of an extreme storm incident, equipment failure, or operator absence, ACHD major arterial routes will be cleared first with the remaining usable equipment and available operators.

- Maximize the cycle capability of each vehicle to prohibit unnecessary reload trips for materials at the ACHD garage.
- Plow routes are designed mostly for hills, intersections, schools, and hospitals, as well as fire stations and areas identified by law enforcement.
- Assign an intermediate priority to collector streets with lesser traffic loads and reduced history of accidents. A collector street is one that is or will be used to carry a substantial volume of traffic from a minor street(s) to a major(s) street or community facility. This normally includes the principal entrance street to a large subdivision or group of subdivisions, and the principal circulation street(s) within such subdivisions. Examples include:
 - Because of their location, adjacent to collector streets, some minor streets (not including dead end streets and cul-de-sacs) may be cleared concurrently with or immediately following the collector streets.
 - Dead-end streets and cul-de-sac streets are extremely time consuming. Staffing may not be available to clean these streets during storm events.
 - During the event hours between 9 p.m. and 1:00 a.m. staffing is typically not available unless there is continuous heavy snowfall or continuous icing.
 - Operating Flexibility

It is important to note that this plan and the plow routes are subject to change with each storm. Also, the timeframe for clearing can vary markedly depending upon conditions and continuing effects of the storm. Other factors affecting the plan are:

 - Time of plowing
 - School bus routes
 - Commuter traffic
 - Parked cars
 - Staffing levels
 - Equipment breakdown
 - Assisting fire, emergency medical or law enforcement
 - Type, intensity, or duration of the storm.

4.3. Continuing Operations during Non-Storm Periods

After a storm event or during periods of lessened storm activity, a number of activities need to take place to ensure readiness for subsequent winter storm operations.

- 4.3.1. Equipment needs to be cleaned, inspected, and repaired if necessary. Special attention must be paid to tires, brakes, and shocks, snow plows – including wings, shoes, bearings, augers and spinners.
- 4.3.2. Materials especially deicer, sand, etc., must be re-ordered to ensure an adequate stockpile on site.
- 4.3.3. Plow routes must be driven to identify problems, such as illegal plowing by driveway or parking lot contractors, problem mailboxes, etc. It is the responsibility of the route driver to identify these problems and report them to the ACHD supervisor so that steps can be taken to correct the problem.

- 4.3.4. Wing-back snow on shoulders, especially at intersections (list policy here)
- 4.3.5. It is important that roadway drains and catch-basins be kept open to allow water from melting ice and snow to run off.
- 4.3.6. Following a storm, generally within 5 business days, an investigation should be made of all storm-related complaints.

4.4. Post Winter Follow Up

- 4.4.1. Review winter snow clearing operations as soon as possible in the spring with all in-house personnel and outside groups involved, including but not limited to: fire, law enforcement, schools, industry, the public and elected officials, to determine what went right and what may be improved.
- 4.4.2. After the last storm of the season give all equipment a thorough maintenance check.
 - Remove and wash all equipment
 - Inspect all equipment for damage, wear or improper operation
 - Sandblast and paint all plows, blades and spreader assemblies
 - Order new plow blades and other replacement parts as needed
 - Oil and grease all moving parts before storing equipment.
- 4.4.3. Take stock of material used/left and use for planning purposes for the following season.
- 4.4.4. Identify new equipment needs for improved operations.
- 4.4.5. Schedule summer construction for areas where road defects have resulted in problems in the winter, such as icy patches.
- 4.4.6. Provide the opportunity for employees to attend snow conferences and other events to broaden their understanding of snow clearing operations and to become aware of changes in equipment and technology.
- 4.4.7. Any complaints or requests for service received must be cataloged with the appropriate information. Complaints will be reviewed, investigated, and an appropriate course of action determined.
- 4.4.8. As part of a public education program the following issues must be communicated to the public annually at the start of the winter storm season.
 - Snow should not be blown, plowed, shoveled into ACHD streets/roads.
 - Because of their width, height, and speed, snowplows must be respected. Some drivers will attempt to crowd snowplows, or homeowners may attempt to protect a shoveled driveway by placing objects and/or standing at the entrance. These are very dangerous practices because snowplows lack

maneuverability, which is sometimes made worse by icy conditions and lack of visibility caused by blowing snow.

5. Winter Safety Guidelines

5.1. Operator Safety

5.1.1. Wear Proper Clothing

- Dress in loose fitting layers for the most adverse conditions expected. Loose clothing allows the blood to circulate freely which helps prevent frostbite. Layers can and should be removed while in a heated cab; however, all appropriate clothing, i.e., wet or cold weather outer garments need to be carried in the vehicle each time the vehicle leaves the garage. The gear has to be available in case of an accident, vehicle breakdown or assistance to other drivers.
- Protect your feet by wearing warm, dry boots; keep dry socks and wet weather boots readily available for use. When outside vehicles no insulated boot will keep your feet warm if you remain inactive or motionless for long periods.
- Keep an extra pair of dry gloves in the vehicle.
- When outside the cab wear a cold weather hat that protects the ears from frostbite. Heat loss from the body is more rapid when a hat is not worn.

5.1.2. Prevent Dehydration

- Liquid must be consumed regularly in order to prevent dehydration. By the time a person feels thirsty they are already dehydrated.
- Carry fluids in the vehicle, water, tea, coffee, soup. **Any employee using alcohol on the job or driving under the influence of illegal drugs or alcohol may be subject to immediate suspension or termination.**

5.1.3. Recognize Symptoms of Common Injuries/Life Threatening Conditions

- Wind, in combination with cold temperatures creates an equivalent lower temperature. A 0° F actual temperature with a 15 mph wind is equivalent to a -24° F temperature.
- Initial symptoms of exposure to cold include shivering, numbness, low body temperature, drowsiness and marked muscular weakness.
- Treatment involves getting to a warm area as quickly as possible, re-warming by adding clothing, wrapping in a blanket, drinking of hot liquids.

5.1.4. Frostbite

- Frostbite results when ice crystals form in the fluids and underlying soft tissue of the skin. The effects are more severe if the injured area is thawed and then refrozen. Frostbite is the most common injury resulting from exposure to the cold. Usually the frozen area is small. The nose, cheeks, ears, fingers and toes are most commonly affected.
- Treatment includes:

- Prevent further injury.
- Gradually warm the frostbitten area as soon as possible.
- Seek medical help immediately for severe frostbite.

5.1.5. Snow Blindness

- Snow blindness occurs when the ultraviolet rays of the sun are reflected from a snow covered surface.
- Symptoms include: gritty feeling in the eyes; pain over the eyes; red, watery eyes.
- Prevention: On bright, sunny days use sunglasses that provide UV protection.
- Treatment: Wet compresses applied to the eyes, blindfolding the eyes, rest and recovery. Seek medical care.

5.1.6. Carbon Monoxide Poisoning

- Carbon monoxide is a deadly gas that is difficult to detect because it is colorless and odorless.
- Symptoms include: headache, dizziness, yawning, a sick stomach, and ringing in the ears are symptoms of mild poisoning. Severe poisoning will cause the heart to throb or flutter, followed by unconsciousness and/or death.
- Treatment involves getting ventilation or fresh, outside air. Unconscious victims should be given mouth-to-mouth resuscitation and immediate medical assistance should be obtained.

5.2. **Equipment Safety**

5.2.1. Perform all pre-operation checks of vehicles to ensure that critical vehicle systems are operational before leaving the garage.

5.2.2. Check each vehicle for working safety/emergency equipment onboard to include:

- Flashlight
- Fire extinguisher
- First aid kit
- Safety flares
- Warning signs with reflectors
- Operational communications equipment
- Shovel, hammer, pliers, screwdriver
- Safety vest

5.2.3. Do not exceed appropriate speeds for the conditions, equipment, or operation.

5.3. **Operational Safety**

5.3.1. The ACHD supervisor is responsible for routinely checking fatigue levels and relieving drivers as necessary. In general, operators should not exceed shift lengths of twelve (12) hours, except in extreme emergencies. Supervisors need to pre-qualify drivers to ensure they have the capability and skill to operate assigned equipment.

5.3.2. The maintenance shop will routinely check vehicles to verify operator preventive maintenance and to check on the operational capability of the equipment.

5.3.3. Operators need to be especially aware of the following situations:

- Changes along the route, such as deep ditches, etc.
- Pedestrians in the roadway or where they may be struck by thrown snow.
- Children playing in snow banks or snow forts.
- Inability to see immediately behind equipment, especially when backing up.
- Crowding the centerline.
- Excessive speed.

5.3.4. Safety briefings will be held as part of the snow day session and periodically during the winter, at least on a monthly basis.

IP-1.01 Supervisor Checklist

1. Monitor the weather.
2. Call appropriate crews/personnel in to work.
3. Report to duty in time to provide advice to buses and school districts on road conditions.
4. Handle all incoming calls, radio dispatches.
5. Continue to monitor weather conditions.
6. Resolve issues related to plowing as they are reported to ACHD.
7. Advise crews as to when to do final scraping and/or sanding.
8. Assist as able and do final check of road conditions before sending crews home.
9. Apply sand to trouble spots when doing final check of road conditions.
10. Ensure that all storm data have been properly recorded.
11. Provide final update to police departments.

IP-2.01 Snow Deposit Map – Boise

This map shows locations where snow may be deposited by ACHD.



IP-2.02 Snow Deposit Map – Kuna

