

# Briefings

A publication of the Airport Technical Assistance Program of the Center for Transportation Studies at the University of Minnesota

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## Preparing your airport for snow and ice

Expeditious and effective snow removal along with clear lines of communication are key to keeping airport users safe during Minnesota winters.

### Planning

Winter is coming; it comes every year at about the same time, in fact! So having a plan and being prepared is essential to proper airport management. The airport's maintenance staff should begin by developing a step-by-step document outlining how snow and ice control operations will happen. The plan should include timing, plowing methods and equipment, chemicals, application rates, contact information, procedures for closing runways and issuing NOTAMs, and staff assignments.

Many airports work with local city or county staff for snow removal. If that's the case, include those maintenance staff in the planning: invite them to the airport to discuss snow removal and the airport's

plan before the weather changes. It's especially important to discuss airport safety procedures, imaginary surfaces, radio operations, and NOTAM requirements. These often differ from standard roadway procedures and are not something everyone is familiar with.

A snow removal plan can be as informal as a one-page document with a bulleted list of important considerations and timeline components. It should outline proper equipment and materials to be used, assign movement area priorities, define responsibilities for both clearing and assessing runway conditions, identify the snow disposal site, and specify who can make decisions regarding snow placement. The plan should also state who is responsible for issuing



any required NOTAMs. An effective snow removal plan reduces response time and maximizes the availability of runways and taxiways. Lastly, the plan should note how team members will be notified when a snow event occurs and establish a timetable for snow removal.

For additional guidance on preparing for snow removal season, see FAA Advisory Circular 150/5200-30A, *Airport Winter Safety and Operations*.

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## Jump-starting the snow plan process

As you begin creating a snow removal plan for your airport, consider the following questions to inform the process:

- In what order should airport operations areas be cleared?
- Who is responsible for clearing each area?
- What equipment and materials should be used?
- Where will snow be stored?
- Who closes the runway and issues the NOTAM? What are the closure procedures for the runway and other paved areas used by airplanes?
- Who is responsible for initiating the snow-clearing event?
- What weather forecasting methods will be used to get accurate and timely information?
- How will staff ensure markings, signs, and lighting systems are visible and legible after clearing operations? Are touchdown markings addressed in the procedures?
- What happens if there's an airfield accident involving snow-clearing crews,

- airplanes, or other airport vehicles?
- What is the plan for identifying needed post-season improvements?

In addition, make sure your snow plan includes a map of the airport showing required access for both planes and automobiles, a prioritized list of areas to be cleared of snow, and a map showing boundaries and hold lines for airplane operating areas. Make copies of the plan for all staff at the airport (or elsewhere) who will play a role in snow removal operations.

# An airport's story: St. Cloud Regional Airport

Central Minnesota's St. Cloud Regional Airport opened in 1970 as a municipal airport that is owned and operated by the City of St. Cloud. Spanning nearly 1,400 acres, this transport category airport houses large civil airplanes and helicopters while also offering several hangar bays for lease.



Commercial airline Allegiant offers domestic flights to Phoenix and Fort Myers through the airport, but getting daily mainline service to a hub is a challenge the airport is currently facing. According to airport director Bill Towle, the airport hasn't always had access to a mainline carrier. "The airport lost air service in 2010 and was

able to attract another mainline carrier in 2014 only to have that carrier discontinue service a year later," he said.

An army aviation support facility, also located at this airport, houses some of the National Guard's aircrafts and helicopters. The juxtaposition of commercial and private flights going into and out of the airport enables the city to generate significant revenue, working to stimulate the economy in the area.

Changes to the airport have helped stimulate its success, but have also added some growth-related issues. "The airport is growing fairly quickly and it has been challenging to provide enough hangar space for those wanting to base their aircraft here, especially large corporate aircraft," Towle said. He added that the airport is in the process of expanding the general aviation hangar area, which will help alleviate this issue.

The airport recently received attention after undergoing a large construction project that extended its main runway

(Runway 31), for which it received the Minnesota Council of Airports (MCOA) 2017 Project of the Year Award in the category of Commercial Service. Towle says the award "reinforces the fact that this was an important project that added value to the aviation community." The project was successfully completed through the cooperation of the City of St. Cloud, consultant Mead & Head, and contractor S.M. Hentges & Sons.

The runway expansion will improve the safety of landings and takeoffs, especially in an area that experiences many days of winter snow and ice. "The extension provides a safer environment for aircraft to operate in by providing additional runway length, even if they don't require it all the time," Towle said.

In addition, this extension will allow larger and faster airplanes to take off and land on the main runway, making the airport a much more desirable location for commercial airlines or simply newer aircraft models.

## Team effort keeps MSP open when the snow flies

A recent interview with Charlie Beuning, assistant manager of field maintenance for Metropolitan Airports Commission (MAC), offered some tips about dealing with snow and ice.

The snow removal team at the Minneapolis-St. Paul International Airport (MSP) is sometimes asked to work for days—around the clock—to keep the airport open during a major snow event. The team's equipment may be larger and more expensive, but their mission is the same as that of the lone maintenance worker at a general aviation airport: keep the runways safe for aircraft operations.

After every major snow event, the MAC staff holds a snow critique where they review operations, what went right, and what could be improved. Snow removal at MSP is big business: time is money. So the MAC maintenance staff is under pressure to remove the snow and ice quickly.

But safety is critical, too—and always the most important factor in its removal plan, Beuning says.

Beuning values the expertise of the operators when planning for winter each year and believes it is most important to listen to them; they know what they are doing and have great insight into ways to improve operations, he says. Staff members are assigned to equipment based on expertise, not the number of years they've been plowing snow. And the MAC takes a team approach: employees have significant input and help make decisions about the way snow is removed. MAC staff routinely hold dry runs during the summer and fall to practice snow removal patterns and identify ways to increase speed and efficiency. By improving their operations, they've reduced the time it takes to clear a runway, allowing landings and takeoffs to resume more quickly, Beuning says.



The MAC has some of the best equipment in the region, and it welcomes industry visitors who'd like to see specific plows and brooms "in person" before ordering. Beuning says there's a trend for multi-functional equipment, or MFE. Beuning's team equips its plows with a tow-behind broom, allowing one piece of equipment and one operator to clear the snow more quickly and in one pass.

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### Before the snow season starts

- Develop a snow removal plan.
- Train all personnel (both airport and local maintenance staff who will be assisting) in equipment operations, communication techniques and terminology, radio use, marking, lighting, signs, and the airport layout.
- Make practice runs with the equipment before allowing access to the movement areas. Practice during the summer when there are fewer distractions and when sightlines are best.
- Plan for snow storage when developing airport improvement projects such as parking lots and aprons.
- Specify in your leases the areas that will be cleared by the airport and those that will be cleared by each hangar tenant.

### During a snow event

- Make radios readily available to plow operators and educate operators on the required and proper radio communication procedures with pilots.
- Instruct plow operators to give aircraft the right-of-way at all times.
- Instruct plow operators to use truck lights and rotating beacons to improve visibility.

In training, remind staff that the visibility from inside their truck may be quite different than the visibility from the air or from

### 9 tips to avoid runway incursions when plowing:

1. Know the airport and its boundaries, particularly the location of taxiways and runways, since some signs may be covered with snow.
2. Check NOTAMs to ensure the runway has been closed before moving onto it for plowing.
3. Listen to the radio carefully and communicate your movements clearly.
4. Repeat back any communications from pilots.
5. Note required clearances indicated on snow removal maps.
6. Maintain situational awareness.
7. Understand signs, lighting, and markings.
8. Never assume anything.
9. Take extra care in low-visibility conditions.

a landing plane. Also remind them that snow removal operations such as plowing, sweeping, and snow blowing can reduce visibility to near zero in the immediate area. The noise level inside a snowplow may be very high, so train operators in using the radio effectively in non-optimal conditions.

Runway contaminants such as snow and ice can make the surface slippery. Remind operators to allow for additional stopping distance near planes and wings that extend far beyond the plane itself.

Communication is another important piece of winter preparations. Before the snow flies, meet with local pilots, hangar tenants, airport users, and fixed-based operators, as well as emergency aircraft operators such as medical helicopters that use the airport, to discuss their concerns. Cover the strategy for winter operations, address any lingering concerns from the previous winter season, and inform them of any limitations. In addition, make sure these users know where to find information, updates, and answers to their questions during winter events. Confirm that tenants know which areas of the airport they are required to keep clear of snow.

### Removal strategies

Issue a NOTAM when more than an inch of snow will fall on the runway. Always check to make sure your NOTAMs are posted before plowing and removed when the event is over.

When closing a runway for plowing, keep it closed until plowing operations are complete. An aircraft attempting to land while plows are working creates a dangerous situation. When removing snow around lights, advise pilots and airport users that operators are on the airfield. If an aircraft is circling to land and the runway is usable, leave the runway while it lands and then resume work.

Remember to clear the sides and ends of the runway as part of the snow removal operation. Pilots need to see the runway lights from the air, and snow banks should be far enough back to provide plenty of wingtip clearance. Never pile snow off the ends of the runway; always push it to the sides, even beyond the runway ends.

It's critical to plow around lights and NA-

## MnDOT Office of Aeronautics News

The State Aviation System Plan (SASP) website is now live! You can find it at <http://www.dot.state.mn.us/aero/planning/sasp.html>.

We're in the process of updating Minnesota's SASP, which is part of our "family of plans" stemming from the Minnesota GO 50-year Vision. The purpose of the SASP is to set goals for the state's aviation system, identify aviation needs, and create a vision for the future.

You can currently review the Public Involvement Plan and take our survey. As the project develops, the website will be updated.



VAIDs. Clear the sensors on the automated weather observing station and provide access to the beacon and other NAVAIDs for maintenance and visibility. A plow operator sitting on the runway end should be able to see the PAPI lights for that runway. Snow banks in front of NAVAIDs can make them unusable and affect their accuracy.

Use caution when plowing around lights and signs; they are mounted to break away when hit, so they can easily be dislodged by the force of snow being plowed against them. Check NAVAIDs and light couplings after plowing to identify any damage that has occurred and to make sure they're operating correctly.

Finally, remember to clear more than just the main runway or you'll leave pilots with no way to move off of it. A good strategy is to plow the main runway first, followed by the taxiways, aircraft loading areas, public roadways, secondary runways and taxiways, hangar taxi lanes, and vehicle parking areas. If you must stop before the plowing is complete, be sure to issue a NOTAM for the surfaces that have not been plowed.

# Mark your calendars for these aviation events!

## Fall Fly-Around

This year, AirTAP is introducing a new twist on the Fall Forum! Instead of the traditional two-day event, we'll be hosting a one-day Fall Fly-Around for general airport managers in three locations across Minnesota. This format means we can bring you critical information and technical training in a more casual and intimate environment.



Morning sessions will be held indoors and cover topics such as airport surfaces, NOTAMs, and agricultural issues. Afternoons will be spent outdoors for field activities, including using range finders, inspecting lighted windsocks, and install-

ing LED panels. Please dress appropriately for the weather.

The Fall Fly-Around will be held from 10 a.m. to 2 p.m. on October 10 in Fairmont, Oct. 17 in Eveleth, and Oct. 31 in Morris. For more details and to register, visit [www.airtap.umn.edu/events](http://www.airtap.umn.edu/events). The event is free but space is limited, so register early.

## 2018 Minnesota Airports Conference

The next Minnesota Airports Conference will be held April 18–20, 2018, at the Duluth Entertainment Convention Center.

This annual event aims to deliver the most up-to-date and advanced information for Minnesota aviation professionals and provide an opportunity for industry and government officials to exchange ideas on funding, trends, airport management, operations, maintenance, and best practices. Held in conjunction with the Minnesota Council of Airports annual meeting, the conference includes technical and safety presentations, an industry

trade show, and an awards and recognition program.

The 2018 conference will also commemorate a significant anniversary for Minnesota, its airports, and the communities they serve. In 1943, the Minnesota Aeronautics Commission became the Minnesota Department of Aeronautics. In the same year, a constitutional amendment was proposed (and ultimately passed in 1944) that would allow the state to collect taxes and build airports.

Conference registration will be available in early 2018, with details at [www.airtap.umn.edu](http://www.airtap.umn.edu). Please join us for this engaging learning experience and a celebration of the 75th anniversary of a historic moment in Minnesota aviation!



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