



Snow and Ice Control Plan 2014/2015 Winter Season



**TED STEVENS ANCHORAGE INTERNATIONAL AIRPORT
PHONE LIST
2014/2015**

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Automatic Weather Observation Station (AWOS)	248-2033
ANC ATIS	243-2847
LHD ATIS	245-5432

SNOW AND ICE CONTROL PLAN
2014/2015 WINTER SEASON
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2014/2015 WINTER SEASON**

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To view the complete Airport Operations Manual, go to:
<http://www.dot.state.ak.us/anc/business/operations/index.shtml>

To download the 2014-2015 Snow Plan or the Monthly Deicer Report form, go to:
<http://www.dot.state.ak.us/anc/business/airfieldMaintenance/index.shtml>

This Snow and Ice Control Plan is intended to give an overview of the operating procedures followed during snow or ice events and the post-storm cleanup actions taken at Ted Stevens Anchorage International Airport. This plan does not include all situations and in some cases we may alter procedures to ensure the safe operation of the airport.

The men and women of Airfield Maintenance, Facility Maintenance, and Airport Operations form a proud ANC team that works long hours throughout the long cold Alaska winter. Our team is five time recipient of the prestigious Balchen/Post Award. This award recognizes snow removal crews for outstanding achievements in airport snow and ice control.

We look forward to serving you, our customer, and hope this plan is of interest to you.

If you require further information please contact us at:

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SECTION 1

INTRODUCTION

1.01 INTRODUCTION

This snow and ice control plan incorporates the requirements established by the Federal Aviation Administration (FAA), Federal Air Regulation (FAR) Part 139, and the Airport Certification Manual (ACM). This plan provides for snow and ice control measures and procedures at the Ted Stevens Anchorage International Airport (ANC) and will be used by authorized airport personnel. All previous snow and ice removal plans are superseded by this plan.

ANC is owned and operated by the State of Alaska and is the largest airport in Alaska. The airport is divided into two (2) separate and distinct segments (Anchorage International Airport and the Lake Hood Complex). The Airport provides a network of airport services for all aircraft.

Anchorage International Segment - Consists of three (3) paved runways, each 10,500 feet or longer, as well as three major taxiways, numerous shorter taxiway segments and parking aprons to service international flights, fixed based operations, and other commercial and general aviation aircraft. Public entry to the airport Aircraft Operating Areas (AOA) is restricted to those having appropriate passes and identification. All equipment and personnel that utilize runways or other controlled surfaces are to be radio equipped and understand Standard Operating Procedures (SOP's) for communicating with the Anchorage Airport Air Traffic Control Tower (ATCT). All airport personnel must attend annual training and be tested before being allowed to operate equipment on the movement area.

Lake Hood Segment - Contains the Lake Hood seaplane base, a 2,000-foot gravel runway, and taxiways that provide services for general aviation aircraft. Lakes Hood & Spenard are groomed for ski operations during winter months when the ice thickness exceeds 12 inches. If required, the lake will be groomed before the official opening.

1.02 WEATHER

Based on historical data, snow can be expected from October through April. November through January will yield the greatest snowfall accumulations. Surrounded on two sides by the warm water of Cook Inlet, other conditions may be expected to occur at ANC. Among these conditions are freezing rain, which may occur anytime during winter months, dense fog, and ice fog which rolls in from Cook Inlet. These conditions are quite common and are cause for concern to those involved with Airport ground operations. Deviations from standard snow removal procedures may be conducted during these conditions to more effectively respond to requirements.

The following chart lists the average monthly snowfall accumulation compiled from statistics for the past 50 years.

January	10.7"	July	.0"
February	11.5"	August	.0"
March	9.0"	September	.3"
April	4.8"	October	7.3"
May	0.4"	November	10.7"
June	.0"	December	14.8"

SECTION 2 SNOW AND ICE CONTROL PLAN

2.01 IMPLEMENTATION

1. Purpose - This plan is established for snow and ice removal procedures and is designed to maintain operational capabilities and provide safety for airport users during winter conditions.
2. Conditions for Execution - This plan will be executed whenever the potential or accumulation of snow/ice threatens the Airport's operational capabilities or the safety of the airport users.

2.02 LANDSIDE FACILITIES

Numerous roads and state maintained parking lots are contained within the airport boundaries to provide access to airport service areas. All airport snow/ice control operations will be performed by ANC Airfield Maintenance personnel except for leased areas or by Airport Manager approved and bonded private contractors hired by Air Carriers in times of extreme winter conditions. Airfield Maintenance personnel will normally clear contiguous sidewalks and the close-in areas around the public side of terminals. All airport controlled vehicle parking lots are maintained by Airfield Maintenance.

Airfield snow/ice removal from essential aircraft movement areas will take priority over all other airport service areas.

2.03 ASSIGNMENT OF OPERATIONAL FORCES

1. Airfield Maintenance will conduct snow removal operations at ANC except in leased areas. Operations Officers will assist in the overall coordination and reporting of winter operations.
2. Airport personnel will be utilized 24 hours per day, 7 days per week, to provide adequate services to accomplish these objectives.
3. Airfield Maintenance employees will be limited to 12 hour shifts unless otherwise approved by the Airfield Maintenance Manager.
4. Additional contract personnel may also be used by the airport for landside areas such as parking areas or snow haul operations.
5. All vehicle parking lots will be the responsibility of Airfield Maintenance with assistance from contractors.
6. Deployment – Snow/ice removal operations will be performed in accordance with the listed priority sequences.

2.04 COMMENCEMENT

Snow/ice control operations will commence upon receipt of either snow or ice accumulation on runway and taxiway surfaces, or sooner if weather conditions are expected to develop.

2.05 NOTAMS

ANC utilizes the United States Digital Notice to Airmen (NOTAM) System for reporting airport condition information. NOTAMs for airfield conditions during winter operations will be published by ANC Operations in accordance with JO 7930.2N Notices to Airmen; AC 150/5200-28D Notices to Airmen (NOTAMS) for Airport Operators; and AC 150/5200-30C, Airport Winter Safety and Operations.

Continuous snow removal operations will be initiated when snow or freezing precipitation begins to accumulate on the airfield surfaces.

1. ANC Operations will notify ANC ATCT when continuous snow removal is initiated and terminated. Airport users will be notified through the NOTAM system using the following NOTAMs:

ANC AD ALL SURFACES WORK IN PROGRESS SNOW REMOVAL.
YYMMDDHHMM-YYMMDDHHMMEST

ANC RWY 15/33 SOUTH 50 FT CLSD EXC TAXI. YYMMDDHHMM-
YYMMDDHHMMEST.

ANC RWY 15 DECLARED DISTANCES: RWY 15 TORA 10760FT
TODA 10760FT ASDA 10044FT LDA 10044FT. YYMMDDHHMM-
YYMMDDHHMMEST.

ANC RWY 33 DECLARED DISTANCES: RWY 15 TORA 10760FT
TODA 10760FT ASDA 10044FT LDA 10044FT. YYMMDDHHMM-
YYMMDDHHMMEST.

2. The second NOTAMs allows snow removal crews to operate without restriction on the RWY 7L/25R safety area separating the men and equipment working on Runway 7L/25R from the safety area for Runway 15/33. The third and fourth NOTAMs provide Distance Available for RWY's 15 and 33 during snow removal. NOTE: When return to normal status is estimated, the DTG is followed by EST.
3. NOTAMs will also be used to notify airport users of the conditions and availability of facilities, equipment and surfaces.
4. Surface condition reports will include surface contaminants, i.e., standing water, snow, slush or ice accumulation; frictions measurements and a time stamp when the condition was observed. Friction measurements will be obtained using either a TES MK 3 Electronic or Tapley Manual Decelerometer (TAP) and identified on the NOTAM.
5. Surface Condition NOTAMs will have surface contaminants with depth, the surface covered (full or partial runway), a DTG for the time observed and DTGs for the NOTAM issue and cancelation period. Note: The time stamp for the surface observation may not be the same as the NOTAM's DTG.

RWY 15/33 FICON PATCHY THIN FROST **OBSERVED AT
YYMMDDHHMM.** YYMMDDHHMM-YYMMDDHHMMEST

NOTAMs for partial runway conditions may now be transmitted with a definition of the partial surface:

RWY 15/33 **NORTH 2700FT** FICON PATCHY THIN FROST OBSERVED
AT YYMMDDHHMM. YYMMDDHHMM-YYMMDDHHMMEST

6. Surface Friction NOTAMs will report the surface measured, FICON, the measuring device used, measurements, a DTG for the time observed and DTGs for the NOTAM issue and valid period. Note: The time stamp for the surface observation may not be the same as the NOTAM's DTG.

RWY 33 FICON TES MK3 MU 40/30/40 **OBSERVED AT 1312211100.**
1312111105-1312111500EST

2.06 DEVIATIONS

Certain operational requirements will at times dictate deviations from established priorities. These deviations will be minimized in support of operational requirements. Any request for deviations should be made to the Airport Operations Office at **266-2600, 748-2600 (cell)**. If contact cannot be made through this telephone number, requests may be made through Airfield Maintenance at **266-2425, 266-2429, 748-2306 (cell)**.

1. The Airfield Maintenance Foreman, Airfield Maintenance Manager, Airport Operations Manager, or the Duty Manager (Airport 10) may direct deviations from the priority sequence once snow removal operations have begun. These deviations will be coordinated and agreed upon to insure a high degree of safety. The Airfield Maintenance Foreman is the only personnel having up-to-the-minute knowledge of work completion, equipment use, equipment status, and personnel availability. Volume, types of precipitation, wind direction and velocity, drifting snow, obstructions and runway/NAVAID availability are influencing factors to be considered in the decision making process for all deviations.

2.07 OPERATIONAL PROCEDURES

Snow Removal Operations normally begin in early October and extend through early May. During this period, the Airfield Maintenance Section will maintain 24 hours per day, 7 days per week coverage to insure immediate readiness response capability. Response capabilities are maintained throughout the winter season to insure timely response during all periods of inclement weather or freezing precipitation.

Continuous Snow Removal Operations will commence upon receipt of either snow or ice accumulation on the runway and taxiway surfaces, or sooner if weather conditions are expected to develop. ANC Operations will notify ANC ATCT, and publish the NOTAMs to allow rotating runway closures outlined in paragraph 2.05 for continuous snow removal and notify airport users. Airfield Maintenance will conduct snow removal operations to keep ANC open and functional. Airport users can expect under continuous snow removal operations to have snow removal personnel requesting frequent runway closures, priority crossings and turnarounds. Using the continuous snow removal operations allows ANC and ATCT greater flexibility in opening and closing runways under heavy snow conditions.

2.08 PRIORITIES

Priorities for snow removal and ice control are established in accordance with existing requirements and regulations governing the operations of ANC, to include FAR *Part 139*, *current FAA Advisory Circulars* and the Airport Certification Manual. Priorities are established to ensure safety of aircraft during landing, takeoff, and taxiing movements, as well as accessibility to operational areas.

1. **PRIORITY 1** will be limited to instrument runways, taxiways with direct access to Priority 1 runways, emergency response avenues for crash/rescue vehicles, mutual aid access points, and limited access points to operations areas. Glide slope areas will also be considered Priority 1 areas and will be cleaned as soon as possible upon receipt of a request from FAA personnel or upon coordination between ANC and the FAA. The glide slope and localizer on Runway 15 is not considered a Priority 1 area unless Runway 7R/7L ILS is inoperative for an extended period or wind/visibility requirements dictate. It becomes critical when the depth of snow for the glide slope is 18 inches. When the depth reaches 24 inches it shuts down. There is no depth requirement for the localizer except when the snow or wind drifts interfere with the signal which is approximately 4 feet in depth. FAA Maintenance notifies Airfield Maintenance as the snow depth approaches action levels.
2. **PRIORITY 1A** includes other runways, taxiways and Runway 15/33 unless a priority change is directed by weather conditions or the Runway 7R/7L ILS is inoperative or unavailable.
3. **PRIORITY 2** is ramp cleaning and will begin with the cleaning of main lead-in lines and taxi lines to the North and South Terminals, and to the refueling areas. Initial cleaning will also include the cleaning of access ways for small aircraft taxiing to Lima and Alpha concourse gates. This will also include ground support access roads and other taxiways not included in Priorities 1 and 1A. Due to the different types of equipment required, ramp-cleaning operations will normally begin simultaneously with Priority 1 areas if adequate personnel are available.
4. **PRIORITY 3** will include public access roads, public access areas to the terminals, and all other roads and areas where a need and responsibility for snow removal exist. If adequate personnel are available sanding and snow clearing operations will commence simultaneously on public roads and walkways.

Priority 3 operations will include the hauling of snow from ramp areas. During ramp cleaning operations, snow will be piled in specific locations on the ramp to expedite cleaning. When required a NOTAM will be issued on snow pile locations. As a final cleanup procedure after each snowfall, snow will be hauled from holding areas on the ramps to designated snow dump areas.

5. **PRIORITY 3A** will include movement areas not essential to keeping the airport open, these areas will be cleaned after the weather event has ended and all essential movement surfaces including the main access roads to the airport have been cleaned. These areas may be cleaned in conjunction with Priority 3 areas if sufficient resources are available.

2.09 SEQUENCE

Snow removal operations will begin immediately at the onset of a snowfall and will continue until snow is completely removed from all areas of responsibility. Snow removal will begin on those areas listed as Priority 1 and 1A, and will continue until snowfall has ended and those areas are free of snow (see Sheet 1 of the Appendix). Snow removal

operations may also be conducted simultaneously in Priority 2, 3, and 3A areas dependent upon prevailing conditions, manpower and equipment availability. In any event, Priority 1 areas will be maintained in a safe condition prior to the commitment of resources to lower priority areas. The application of sand and chemicals will normally be conducted simultaneously with snow removal dependent on pavement surface conditions to maintain safe braking and taxiing friction for aircraft.

Actual snow removal procedures for runways and taxiways will normally begin with sweeping operations accomplished by runway brooms towed by 5th wheel trucks equipped with rubber plow blades. Rubber-edged or poly-edged blades are utilized to remove the majority of snow from paved surfaces and limit damage to lighting systems and pavement. The utilization of runway brooms behind trucks results in a mostly snow-free surface. Runway brooms are followed by a snow blower(s) to pick up any windrows and cast the snow over runway or taxiway lights. If the friction test taken by Airfield Foreman reveal slick pavement surface conditions; sand, sodium acetate, sodium formate, potassium acetate, or any combination of the four compounds will be applied to improve braking action. FAA approved liquid deicer or solid deicing chemicals may be applied to improve friction as a deicer or an anti-icer.

Snow removal on the ramp areas will begin with the use of loader mounted plows to clean ramp taxi lanes and nose lines leading to aircraft parking gates and refueling areas. When substantial snow events occur or are forecasted to occur (2 or more inches) the following parking spots will be closed and utilized as temporary snow storage areas. Spots RON 2, 3, 4, 14, PAPA 1, as well as Gate N2.

Sand will then normally be applied to improve braking and turning capabilities of the aircraft. Ramp areas will then be cleaned with loader mounted plows, which will remove the majority of snow and push it to a designated storage area. If required a final cleaning of ramps will be conducted utilizing graders equipped with steel blades to complete removal of compacted snow and ice. Ramps will be sanded or treated as required.

Service access roads and perimeter roads will be cleaned using steel-bladed graders and sanded as required. During the sanding of roads, particular emphasis will be placed on the sanding of stop signs, curves, and hills where loss of control by vehicle operators might occur. Snow removal of other areas will be conducted contingent upon equipment availability and prevailing conditions.

Removal of temporary snow piles is determined by priority area in the snow plan. Storage may be temporary (awaiting haul to a final location) or final based on the specific location, activities in progress, weather conditions, and accumulation.

Temporary and final snow disposition sites for all priority areas are identified in the Appendix. Snow from leaseholds cannot be placed in taxiways, taxi lanes, roadways, water bodies, wetlands, or areas where it may disrupt flow of airport drainage systems. If this occurs leaseholders will be responsible for removal of snow and for any damage incurred to the drainage system or thaw pipes. **This applies to all leaseholds including Lake Hood/Lake Spenard lease lots.** Dedicated airport snow disposal sites for all snow removal operations are located on Sheet 2 of the Appendix. Tenants are responsible for their own leasehold snow removal (see *Compendium of Operational Orders in the Attachments*

section). Tenants are also responsible for any spillage onto their leasehold from snow removal operations. Use of other specific airport sites is subject to Airport Manager approval and environmental permit restrictions. All joint use snow storage sites require tenants to receive annual approval from Airfield Maintenance 266-2425 prior to use. All users will be required to participate in a cleanup of the site in the spring. Failure to provide sufficient personnel to aide in clean up may result in loss of future use. Tenant use of airport snow sites will require each vehicle to display a decal issued from Airfield Maintenance Section. Decals will be available at the Airfield Maintenance complex October 10th through November 1st. Tenants will ensure that no solid waste is contained in the snow. Due to significant reductions in available snow disposal locations, from environmental restrictions and development, it is unlikely the airport can accommodate all tenant snow. Airport common use area snow removal has priority.

A determination of (clean) Landside Snow or (dirty) AOA Airside Snow must be made on snow that is pushed into piles and left until such time as it is hauled to snow disposal sites. Snow which contains deicing chemicals is classified as “AOA Airside Snow” by the airport. This snow must be removed to storage areas farthest from Lake Hood & Spenard water bodies and away from sensitive environments. Snow within the airport operations areas must be disposed of in dedicated snow storage areas within the airfield boundaries. Snow from areas such as parking lots, administrative areas, and small aircraft parking can be disposed of in the approved storage location. Tenants will ensure that no solid waste is contained in the snow. See Sheet 2 in the Appendix for locations of airport snow disposal sites. Snow cannot be placed in taxiways, taxi lanes, roadways, water bodies, wetlands, or disrupt flow of drainage systems. Leaseholders who push snow from their lease lots will be charged for the removal of this snow.

Any snow contaminated with petroleum/fuel must be treated as a spill and operators must follow all spill reporting and clean up procedures. Airfield operators should take preventative measures to minimize and prevent spills.

2.10 ICE CONTROL OPERATIONS

Ice control will begin immediately prior to freezing precipitation and continue until ice has been removed or dissipated from operational areas. Temperatures during icing conditions will normally dictate use of solid deicers, liquid deicer fluid or mechanical means to remove ice from paved surfaces and prevent ice buildup. Ice control will proceed in accordance with established airport priorities. Only sand meeting FAA specifications will be used within the aircraft operation area (AOA).

Liquid deicer or other deicing chemicals may be applied as an anti-icer to prevent ice buildup. Sand is utilized for ice control in conjunction with, or separately from, ice control chemicals to prevent slick surface conditions. If ice buildup on paved surfaces exceeds one/eighth inch in thickness, the use of snow brooms and steel-bladed graders is necessary to reduce ice buildup to a thickness where ice control chemicals will be effective.

Sand is used for ice control on public access areas and may be coated with liquid deicer upon application.

Calcium chloride, sodium chloride, or other metal corrosive chemicals are never utilized on any airfield surfaces where there might be exposure to aircraft.

See Compendium of Operational Orders in the Attachments section for deicing reporting requirements.

2.11 COMMUNICATION

A critical factor during all snow removal operations conducted on active runways, taxiways and in other controlled areas is communication. All snow removal vehicles operating in movement areas will be equipped with two-way radios allowing communication with the Anchorage Airport Air Traffic Control Tower (ATCT). In addition, vehicles and equipment will normally be equipped with two-way Airfield Maintenance radios allowing communication between operators, supervisors, and Airport Operations. Communications with ATCT will be as brief and concise as possible. Each state vehicle has an established call sign that remains with the vehicle. Whenever possible, where there are multiple vehicles operating on a given controlled airfield area, one vehicle, normally the lead vehicle, will be the focal point for communications with the tower. All other vehicle operators will monitor the appropriate frequency and react in accordance with the controller or lead vehicle instructions.

Under no circumstances will any vehicle or equipment operator proceed onto controlled airfield areas without a clear understanding of permission to do so from ATCT.

2.12 EMERGENCY WARNING DEVICES

All vehicles and equipment operating on the AOA's will be equipped with flashing yellow beacons, clearly visible from all directions. Flashing beacons and running lights will be utilized at all times while operating unless the lights potentially or actually impair pilot's or other operator's visual acuity.

2.13 RUNWAY CLOSURES

During winter months; runway closures are a common occurrence. Runways may be closed for the following reasons:

- A. Snow Removal – During periods of heavy flight activity, every reasonable effort will be made to schedule and direct snow removal and maintenance operations to minimize potential vehicle/aircraft conflicts and optimize safety. However, during periods of active snowfall, freezing rain and low visibility, limited access to runways by maintenance equipment may result in a buildup of snow and slush on the runway surface. In the event that accumulation reaches sufficient depth or the potential to present a safety hazard to aircraft during takeoff and landing operations, the subject runway must be closed for snow removal and a NOTAM published. Runway closures are necessary for the removal of accumulations of snow due to the hazard presented by degraded surface conditions and snow berms generated during cleaning operations.

During continuous snow removal, one NOTAM will cover rotating runway closures. Verbal coordination with ATCT will be done by Airport Operations. Additionally, during low visibility operations, every precaution should be taken by shift leaders and equipment operators to maintain the highest standards of safety. Equipment operators should call for adequate runway/taxiway lighting levels and use ATCT ground radar as required. During CAT III conditions, shift leaders should brief/review safety procedures before start of shift.

In the event that the primary instrument runway (Runway 7R/25L) must be closed for snow removal, careful coordination must be maintained between Airport Operations, Airfield Maintenance, and ATCT.

With the exception of emergencies, prior to the closure of Runway 7R, Runway 7L must be cleaned, sanded, and made ready for the landing of aircraft. Aircraft may coordinate a Runway 15 approach should they elect not to use the CAT II approach to Runway 7L.

B. Ice Control - Ice buildup on runway surfaces presents a severe hazard to landing aircraft. Loss of braking friction may warrant the closure of a runway until braking friction has improved. Expedient action will be taken to alleviate ice hazards utilizing all materials and resources available to the Airfield Maintenance Section. Specific actions are detailed below in accordance with the current Letter of Agreement between ANC and ANC Air Traffic Control Tower. In general, runways will be NOTAM closed due to braking action reports for the following reasons:

1. After two consecutive “poor” braking reports received by the Air Traffic Control Tower, the Field Maintenance Foreman or Operations Officer will evaluate the runway.
2. Nil Braking Report by Aircraft. When a nil braking pilot report is received from a landing aircraft, action must be taken immediately to insure the safety of subsequent aircraft landings. ATCT, upon receipt of a nil braking action pilot report, will immediately cease all operations on the affected area and notify Airport Operations of the report and the location of the affected area. Airport Operations will immediately notify Airfield Maintenance Foreman by radio or telephone of the condition report and its problem area. The runway will be closed by Airport Operations and/or Airfield Maintenance supervisory personnel until inspection and, if required, corrective action completed. If an inspection of the runway (utilizing the friction meter decelerometer) indicates a braking friction in excess of .20, the runway will immediately be reopened and ATCT and Airport Operations will be notified of current friction readings. As a follow-up action, friction readings on the subject runway will be recorded on a Runway Condition Report and transmitted through the U.S. NOTAM System. If inspection by friction meter reveals the braking friction of a runway surface is .20 or less, the runway will remain closed until braking action is improved to a reading greater than .20 and a NOTAM published. After improvement of greater than .20, the runway will be reopened and NOTAM rescinded. ATCT and

Airport Operations will be notified of updated readings and a follow-up Runway Condition Report on the subject runway will be filed.

3. Nil Braking Action Disclosed by Friction Meter During Runway Condition Checks. If a friction test on a runway reveals a reading of .20 or less on the friction meter, the subject runway will be closed immediately by the Airfield Maintenance Foreman or Airport Operations and a NOTAM published. Expedient follow-up actions will be taken to return runway surface to an operational condition.

C. Disabled Aircraft, Equipment on Runway, Obstacles on Runway Presenting Safety Hazard. Under the above conditions, the runway will be closed by Airport Operations or Airfield Maintenance and a NOTAM published. The runway will remain closed until the existing safety hazard is eliminated.

2.14 TAXIWAYS

Taxiways will be maintained in accordance with snow removal priorities. Taxiways that are covered with a sufficient accumulation of snow to present a hazard to taxiing aircraft will be NOTAM closed until corrective action can be taken.

Taxiways with ice conditions which have a braking friction action of .20 or less will be closed and a NOTAM published by Airport Operations until corrective actions can be taken. Primary taxiways that allow access between runways and terminal area will remain open except for extreme emergency situations. NOTAMs will be issued on factors affecting safe taxiing of aircraft (poor braking action or excessive snow depth) and expedient action will be taken by Airfield Maintenance personnel to alleviate unsafe conditions contingent upon personnel and equipment availability and runway maintenance requirements.

SECTION 3 PRIORITY AREAS

3.01 PRIORITIES

Priorities are grouped into six areas. Specific areas within each priority are listed in cleaning sequence in accordance with their effect on the safety and accessibility of airport operations. A color-coded map of airport priority areas is provided in the Appendix on Sheet 1. The following priorities for snow operations and color codes will be in effect.

PRIORITY 1 AREAS:	RED
PRIORITY 1A AREAS:	BLUE
PRIORITY 2 AREAS:	GREEN
PRIORITY 3 AREAS:	YELLOW
PRIORITY 3A AREAS:	ORANGE

3.02 PRIORITY SEQUENCE

1. PRIORITY 1
 - Runway 7R/25L
 - Kilo Taxiway east of 15/33
 - Romeo Taxiway
 - Echo Taxiway between 7R and the Ramp
 - Golf Taxiway
 - Delta Taxiway
 - Charlie Taxiway
 - 7R/7L Glide Slope and Localizer (as requested by FAA)
 - Fire Station 1
 - Mutual Aid Access Points
 - Quebec Taxiway

2. PRIORITY 1A
 - Alpha Taxiway
 - Runway 7L/25R
 - Runway 33/15 (may become Priority 1 based on conditions)
 - Runway 33 Blast pad
 - Kilo Taxiway from 15/33 to Hotel
 - Lima from Echo to Romeo
 - Foxtrot Taxiway
 - Golf 1 Taxiway
 - Mike Taxiway
 - Hotel and Tango Taxiway
 - Uniform and Sierra Taxiway
 - Zulu Taxiway
 - Runway 15 Glideslope (may become Priority 1 based on conditions)

3. PRIORITY 2

All other taxiways not included in Priorities 1 or 1A
Ramps
Service Vehicle Access Roads inside the AOA
Aircraft Run-up Areas
South Air Park
Lake Hood Strip
North Air Park
Runway 15 Overrun

4. PRIORITY 3

Public Access Roads
Public Access to International and Domestic Terminals
Perimeter Roads
Service Vehicle Access Roads outside the AOA
FAA Sites (upon request) Snow Dumps (see Appendix, Sheet 2)
All other areas requiring snow removal not included in Priorities 1, 1A, and 2.

5. PRIORITY 3A

Kilo west of Hotel
Juliet, Yankee and Whiskey
Sierra, Tango and Uniform west of 15/33
Lima and Bravo

SECTION 4 FRICTION MEASUREMENTS

4.01 TESTING

Friction tests will be taken by each Airfield Maintenance Foreman or another designated employee at the beginning of each shift and as often as required throughout the shift, dependent on weather conditions. Results will be entered and reported through the TRACR II computer based reporting system. A back-up paper form will be utilized to record results if the TRACR system is not available. Friction tests will be taken with an electronic or manual decelerometer. The following is adopted as standard operating procedure for performing braking action tests at ANC.

4.02 CRITERIA FOR FRICTION TESTS

1. Friction tests will be conducted at the start of each shift, unless runway and taxiway surfaces are determined by visual inspection to be dry.

2. Friction tests will be conducted when there is a significant change in the weather, or as surface conditions change that would indicate poor braking action.
3. Each time a runway is cleared of snow.
4. Each time a runway is swept following anti-icing or deicing.
5. Following every aircraft incident or accident.
6. Whenever the Airfield Maintenance Foreman estimates friction MU values to be .40 or below.
7. As requested by Airport Operations.
8. A friction test will be made when the presence of unusual conditions is not covered by a NOTAM, or when one of the following conditions exist:
 - a. Ice on taxi or takeoff surfaces.
 - b. Wet ice on taxi or takeoff surfaces.
 - c. Compacted snow on taxi or takeoff surfaces.
 - d. Wet snow or slush on taxi or takeoff surfaces.
 - e. Dry snow on taxi or takeoff surfaces (not exceeding 1 inch).

4.03 PRE-TEST CHECK FOR MANUAL DECELEROMETER

1. Check vehicle brakes to insure they are working properly.
2. Check tires to insure they are properly inflated; they must have adequate tread, and non-studded tires.
3. Mechanical decelerometer - with the decelerometer meter in "free" position, move vehicle to level ground and shift to neutral. View window on meter should indicate "LEVEL". If it does not:
 - a. Check again to insure meter is in "free" position.
 - b. Loosen wing nuts and manually adjust until meter indicates "LEVEL".
 - c. Re-tighten wing nuts using care to maintain a "LEVEL" reading in view window.

Note: Unless performing actual testing, travel will be done with meter in "free" position.

4.04 TESTING PROCEDURES

1. All braking tests will be performed at 20 m.p.h.
2. Vehicle brakes will be applied in such a manner as to avoid wheel lockup.
3. Tests on runway surfaces will be taken approximately 20 feet either side of centerline.
4. Test readings will be taken in each third of runway and averaged for reading on that third.
5. Tests of taxiway surfaces will be taken approximately ten (10) to fifteen (15) feet either side of centerline.
6. Conditions Acceptable to Use Decelerometers or Continuous Friction Measuring Equipment to Conduct Runway Friction Surveys on Frozen Contaminated Surfaces. The data obtained from such runway friction surveys are only considered to be reliable when the surface is contaminated under any of the following conditions.
 - a. Ice or wet ice. Wet ice is a term used to define ice surfaces that are covered with a thin film of moisture caused by melting. The liquid water film deposit is of minimal depth of 0.04 inch (1 mm) or less, insufficient to cause hydroplaning.

- b. Compacted snow at any depth.
- c. Dry snow 1 inch or less.
- d. Wet snow or slush 1/8 inch or less.

It is not acceptable to use decelerometer or continuous friction measuring equipment to assess any contaminants outside of these parameters.

- 7. If sand or deicing chemicals are applied to remedy slick areas, a second friction test will be conducted following application.

4.05 TEST LOCATIONS

All braking action tests will normally begin and run the following sequence (The Airfield Maintenance Foreman may adjust sequence as needed due to weather and traffic conditions):

- 1. Begin at Alpha Taxiway and proceed west on Kilo Taxiway - three tests:
 - a. Just west of Charlie
 - b. Just short of Runway 33 approach, east side.
 - c. Just short of Juliet
- 2. Runway 7R - six tests maximum, three tests minimum; as weather or surface conditions warrant (driving eastbound from 7R threshold):
 - a. Touchdown
 - b. Midpoint
 - c. Rollout
- 3. Runway 25R - six tests maximum, three tests minimum; as weather or surface conditions warrant (driving westbound):
 - a. Touchdown
 - b. Midpoint
 - c. Rollout
- 4. Golf Taxiway - Two Tests - Test 1 to be taken just as you turn off 7R, between 7R and 7L. Test 2 to be taken between 7L and Kilo Taxiway.
- 5. Delta Taxiway - Two Tests - Test 1 to be taken just as you turn off 7R, between 7R and 7L. Test 2 to be taken between 7L and Kilo Taxiway.
- 6. Runway 33 - five tests maximum, three minimum; as weather or surface conditions warrant (driving northbound):
 - a. Touchdown
 - b. Midpoint
 - c. Rollout
- 7. Romeo Taxiway - three tests - (driving southbound):
 - a. Between Taxiways Quebec and Tango
 - b. Between Taxiways Tango and Papa
 - c. At Mike intersection on Romeo
- 8. Taxiway Mike - One test - to be taken halfway between Romeo taxiway and the ramp.
- 9. Taxiway Lima - One test - to be taken halfway between Romeo taxiway and the ramp.

4.06 RECORDING TEST RESULTS

1. When recording results, only the decimal measured coefficient of friction will be entered. An estimate of braking action based on the lowest decimal will be entered in the column provided on the form where estimates of braking action are to be entered. Estimates of braking action to be entered will be the decimal equivalent of braking action provided in the scale on the form.
Note: If surface is dry by visual inspection, indicate dry in the appropriate column. A reading need not be taken under dry conditions.
2. Enter the appropriate conditions for ramps.

4.07 COMPLETING THE PAPER FORM (Only if TRACR II is Offline)

1. Appropriate remarks to enter into remark section would be pertinent information such as ground and air temperatures, wind speed, applications of sand or chemical deicers, and hazards as noticed during friction tests.
2. Check appropriate notifications.
3. Circle the appropriate runway or taxiway heading. Example: 7R/25L - if you start at the 7R end, circle 7R. Line out 25L.
4. Note the local time at the end of the test.
5. Sign and date (print your name).
6. Turn copy #1 into Airport Operations for dissemination.
7. Post copy #2 at Airfield Maintenance Office.
8. Attach electronic printout to copy #2 (if applicable).

SECTION 5 ASSETS

5.01 MATERIALS

A required amount of sand, solid deicer, liquid deicer, and other related snow and ice control assets will be established prior to October 1st each year. Materials and equipment items will be replenished during snow removal season dependent on utilization. A critical material level has been established. Material assets reaching critical levels will be reordered immediately depending on time of season and material deficiencies will be brought to the attention of the Airport Manager.

Solid Deicers will not be used on taxiways west of RWY 15/33 or on ramps except when safety dictates its use.

SNOW REMOVAL MATERIAL REQUIREMENTS

NOMENCLATURE	AMOUNT REQUIRED	CRITICAL LEVEL
Runway Sand	6,000 tons	1000 tons
Solid Deicer	2000 tons	500 tons
Liquid Deicer	180,000 gallons	30,000 gallons
Broom Bristles	100 sets	35 sets
Cutting Edges, Graders	260 sets	50 sets
Ice Blades, Graders	86 sets	30 sets
Shear Pins, Blowers	50 each Blower	25 each Blower
Rubber Blades	40 sets	10 sets
Sand Truck Chains (auger)	1 set per vehicle	1 set

5.02 EQUIPMENT

A minimum amount of snow removal equipment will be identified by October 1st each year. Equipment will be maintained in a state of readiness throughout the snow removal season. If equipment assets fall below satisfactory level in any category, rental equipment will be utilized.

SNOW REMOVAL EQUIPMENT REQUIREMENTS

<u>Assigned Equipment</u>	<u>Optimum Operations</u>	<u>Satisfactory Operations</u>	<u>Critical Operations</u>
Runway Plow Trucks	15	7	5
Graders	7	5	4
Runway Brooms	18	9	6
Blowers	8	6	5
Loaders	11	8	6
Sand Trucks	6	4	4
Belly Sand Trailer	1	1	0
Dump Trucks	9	6	4
Dozers	4	2	1
Deicer Trucks	4	2	1

5.03 PERSONNEL

The following list of personnel is established by job description and skill level.

A. <u>Job Description</u>	<u>Positions Available</u>
<u>Administration:</u>	
Manager, Airfield Maintenance	1
Assistant Manager, Airfield Maintenance	1
Operations Manager	1

Operations Officers	7
Administrative Assistant	2
<u>Electricians:</u>	
WG 50 - Electrical Foreman	1
WG 51 - Electricians	9
WG 51 – Radio Technician	1
<u>Equipment Mechanics:</u>	
WG 51 - Auto Shop Foreman	1
WG 53 - Heavy Duty Mechanics	15
WG 53 - Light Duty Mechanic	1
WG 54 – Stocks & Parts Lead	2
<u>Snow Removal Personnel:</u>	
WG 49 - International Airport Foreman	3
WG 53 - Heavy Duty Equipment Operator	39
WG 54 - Medium Duty Equipment Operator	6
WG 54 – Maintenance Generalist	1
WG 56 - Light Duty Equipment Operator	4
WG 58 – Laborers	9

EXHIBIT 1

ASPHALT, GRASSLAND & FIXTURES INFORMATION

Runways	SQ. FT.	ACRES	LIGHTS	SIGNS
15/33	3,068,792	76.71	356	28
7L/25R	2,902,589	72.56	480	31
7R/25L	3,871,587	96.78	518	30
	9,842,968	246.07	1,612	81
Taxiways	SQ. FT.	ACRES	LIGHTS	SIGNS
A	124,000	2.85	49	2
B	52,000	1.19	44	2
C	391,350	7.58	161	7
D	32,000	0.73	178	5
E	266,000	6.11	243	13
F	244,000	5.60	97	5
G	320,540	6.72	160	6
G1	407,240	9.35	66	3
H	230,000	5.28	79	5
J	375,785	8.63	138	3
K	2,298,000	52.75	760	22
L	397,378	9.12	74	5
M	409,488	9.40	231	5
P	203,330	4.67	101	1
Q	212,000	4.87	98	3
R	2,426,530	53.40	585	18
S	779,629	17.90	165	6
T	634,410	14.56	230	7
U	611,470	14.04	215	7
V	226,000	5.19	67	5
W	329,265	7.56	115	2
Y	2,260,000	51.88	262	11
Z	231,400	5.31	111	2
Total Taxiway	13,272,365	304.69	4,239	146
			5,851	227
General Aviation	1,509,055	34.64		
Ramp Area	4,533,800	104.08		
Remote Fuel Apron	580,971	13.34		
North Remote Fuel Apron (Under Const.)	459,750	10.55		
Road Lane Miles (62 mi.)	3,928,320	90.18		
	11,878,616	272.70		
	SQ. FT	ACRES		
Asphalt Total	33,456,286	836		
Maintained Grassland Total	37,660,000	941		
GRAND TOTALS	71,116,286	1,777		
Airport Perimeter Fence	18.5 miles			

EXHIBIT 2

Excerpts from the Compendium of Operational Orders (Airport Operations Manual)

Snow Disposal

- The snow disposal policies and procedures have been developed to reduce contamination, foreign object damage, and wildlife attractants.
- Only snow from airport property and airport leased lots can be disposed of on airport property in designated disposal sites. Snow shall not be disposed of in runway or taxiway safety areas, ramps, aprons, roadways, or any surface other than designated snow disposal sites.
- Airport tenants utilizing snow removal contractors must submit a letter with a request for the contractor to be issued a snow disposal permit prior to using airport designated snow disposal sites. All vehicles/equipment used to haul snow to disposal sites must have a current ramp pass and a snow disposal permit issued by the Airfield Maintenance Department. The license or VIN number of the vehicle must be shown on the permit. The snow disposal permit must be prominently displayed in the windshield of the vehicle along with the ramp pass.
- Hauling operators will make every effort to dispose of only clean snow at disposal sites. The snow must be free of contaminants and solid objects. Upon the request of Airport Management, airport tenants will provide crews for cleanup of any solids or contaminants deposited in snow disposal sites used by the tenant or their contractors.

Enforcement

Airport Operations and Airfield Maintenance will monitor hauling operations and periodically check snow disposal permits. Persons found disposing of snow in airport disposal sites without a snow disposal permit or disposing of snow in unauthorized areas will immediately forfeit their vehicle ramp permit. Persons disposing of snow in unauthorized locations will be subject to billing for removal of the snow. Any individual disposing of off airport snow in the snow disposal areas will lose their snow disposal permit and will not be issued a permit in the future.

Compliance

Failure to comply with this policy may subject responsible parties to denial of the right to obtain a vehicle ramp pass or future use of airport snow disposal areas.

Driving Regulations

- Yield the right-of-way to large vehicles and snow removal equipment. They are more difficult to stop and may have reduced visibility.

Use of Sand on the AOA

Tenants are responsible for clearing snow and controlling ice on the leases located within the AOA. Only FAA approved sand is authorized for use within the AOA. Tenants are required to comply with the FAA Advisory Circular 150/5200-30A, Change 4. This circular identifies FAA approved de-icing chemicals and sand available for use in the airport environment. Snow and ice control products containing salt are prohibited on all AOA leaseholds.

Any tenant found using unapproved sand will be required to cease operations until all of the unauthorized sand is removed from the leasehold. The airport will directly charge any tenant not in compliance for

expenses incurred to recover unapproved materials from the taxiways and runways. Any questions on this policy can be directed to the Airfield Maintenance Manager at 266-2427.

EXHIBIT 3

AIRPORT NOTICE

2008-71

TO: All Airport Airlines and Tenants

DATE: October 10, 2008

SUBJECT: East Air Park Deicing Operational Order

Purpose:

It is the responsibility of the Airport to ensure that winter deicing operations do not cause a violation of State of Alaska Water Quality Standards (WQS) or Federal EPA National Pollutant Discharge Elimination System (NPDES) requirements. This operational order details the requirements for Airport tenants to use only aircraft deicing equipment that will minimize the deicing chemical discharges in areas that drain to Lakes Hood and Spenard (East Air Park).

Discussion:

Tenants are responsible for clearing snow and controlling ice build-up on their leases, including precipitation that falls upon their aircraft. Aircraft specific deicing operations are detailed by the FAA, but the efficiency of tenant's equipment is highly variable. To control for this, on aircraft classified as FAA Design Group V or larger, tenant's must use deicing equipment that is equipped with one or more of the following deicing chemical reduction tools: forced air, proportional mix nozzles, low flow nozzles, radiant deicing, or any FAA and Airport approved method that, on average, substantially reduces deicing chemical discharges. This order does not mean that aircraft smaller than FAA Design Group V should avoid these additional reduction techniques where possible, only that it is required on the larger aircraft.

Policy:

Only FAA and Airport approved deicing equipment may be used on Design Group V Aircraft and in East Air Park where deicing discharges flow to Lakes Hood and Spenard. Specific questions about approval of individual tenants' and operators' deicing equipment may be directed to ANC Operations.

Any tenant or operator found using unauthorized deicing equipment will be required to cease operations until arrangements can be made to deice with the proper equipment or move the aircraft to a location where discharges from traditional deicing will not impact the lakes.

Future Action:

In the future, the Airport will re-evaluate this order and may expanding and/or changing this restriction for subsequent deicing seasons.

Thank you.

John Parrott
Airport Manager

EXHIBIT 4

AIRCRAFT DEICING/ANTI-ICING

Tenants are responsible for the proper management of deicing and anti-icing fluids; this includes the proper storage, handling, and application of these chemicals. Tenants should also strive to reduce to the lowest possible extent, the discharge of glycol to the environment during deicing and anti-icing activities. It is suggested that Propylene Glycol be used. The use of Ethylene Glycol is strongly discouraged.

1. Standard Precautions

Maintain all equipment involved in the storage and application of deicing and anti-icing fluids and ensure proper training of all personnel involved in the use of these fluids. Specifically, the tenants must:

Develop and implement an effective preventative maintenance program to ensure the leak-free proper operation of all deicing/anti-icing equipment; including trucks, tanks, pumps, piping, hoses, and fittings.

Apply only enough deicing/anti-icing fluid to ensure the safe operation and movement of aircraft, vehicles, equipment, and personnel.

Train all personnel involved in the management and application of deicing and anti-icing fluids. Training must include proper procedures for preventive maintenance of all deicing/anti-icing equipment.

2. Airport Reporting Requirements

To comply with water quality regulations and our National Permit Discharge Elimination System (NPDES) permit the airport is required to report to the Alaska Department of Environmental Conservation (ADEC) the amount and type of deicing chemicals used for aircraft deicing and runway maintenance. To accomplish this airline tenants and ground services providers are requested to submit monthly reports quantifying the amount of deicing chemicals they have used on [the reporting form](#) at the end of this document. A link to the form can also be found on the [website for Ted Stevens Anchorage International Airport](#).

These reports provide valuable information for airlines, ground services providers and the airport to assess environmental impacts and establish costs associated with deicing activities.

Please complete the form monthly and submit it electronically or by fax to Airport Environmental in a timely manner.

3. Storage

All deicing/anti-icing fluids must be stored in containers in good condition (i.e., no rust, dents, or leaks). Secondary containment is recommended for all glycol storage containers. Tenants are reminded that storage of glycols may be subject to [EPCRA](#) (Emergency Planning and Community Right to Know Act) reporting requirements. It is each tenant's responsibility to make this determination and comply with the regulations if required.

4. Accidents/Releases

Unintentional releases of glycol used for deicing purposes are considered reportable spills. Report all accidental/unintentional releases to any of the following numbers:

Airport Environmental	266-2546
Airport Dispatch	266-2411
Airport Operations	266-2600

The most common unintentional release of deicing fluids is from leaking equipment. Please maintain trucks and equipment and promptly stop and repair any leaks. Use caution not to overfill deicing trucks and remember to allow for thermal expansion of the glycol mixture when it is heated for application.

Tenants must maintain adequate supplies of spill response equipment and materials in accessible locations near areas where spills may be likely to occur. Employees must be trained to the appropriate level for spill response and prevention. Tenants must take all necessary steps to ensure that a spill is not allowed to spread to the point where there is a possibility of property damage, personal injury, or damage to the environment.

EXHIBIT 5

Ted Stevens Anchorage International Airport AIRCRAFT AND AIRFIELD DEICING CHEMICAL USAGE 2014 - 2015 Monthly Report

Company Name: _____ Date: _____
Month / Year

Name and Phone Number of

Person Filling out This Form: _____
Name Phone

Chemical Name		Amount Used (Choose appropriate units of measure)		
		Gallons	Lbs	Tons
<i>Propylene Glycol</i>	Ratio Glycol /Water:			
	Type 1 – 100%	_____		
	Type 1 60/40:	_____		
	Type 1 50/50:	_____		
	Type 1 40/60:	_____		
	Type 1 - ___/___	_____		
	Type II & IV:	_____		
<i>Ethylene Glycol</i>	Ratio Glycol /Water:			
	Type 1 – 100%	_____		
	Type 1 60/40	_____		
	Type 1 50/50	_____		
	Type 1 40/60	_____		
	Type II & IV	_____		
Sodium Acetate/Formate				
Potassium Acetate				
Other: _____				

Please mail, E-mail or fax completed form to:

**Ted Stevens Anchorage International Airport
 Environmental Section
 P.O. Box 196960
 Anchorage Alaska 99516-6960**

**Phone: 266-2467 Fax 266-2622
tracy.mitchell@alaska.gov**