Snow and Ice Control Plan

Rosecrans Memorial Airport Saint Joseph, MO

Developed by:

City of Saint Joseph, MO Public Works Dept., Aviation Division 100B NW Rosecrans Rd Saint Joseph, MO 64503

> Abraham Forney Airport General Manager

> > FAA Approved M. Cozad

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ISSUE	REMOVE		INSERT			
<u>DATE</u>	Page/Exhibit #	FAA Approval Date	Page/Exhibit #	<u>FAA</u> <u>Approval</u> <u>Date</u>		
Sept 2019			Update All Pages	Sept 17,2019		
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Record of Revisions

Phase #1: Pre- and Post-Winter

Season Topics

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Chapter 1. Pre-Season Actions

1.1 Airport Preparation

a) Airport Management Meetings

The Airport Operations Manager will typically initiate a meeting the month of September timeframe to discuss equipment and material inventory, repair needs, staffing, budget, training, previous years issue's, and any other topics associate with snow and ice control and its plan.

b) Personnel Training

All airport personnel receive annual, recurrent snow removal training. All training for airport personnel is conducted by the Airport Operations Manager. Training records are maintained by the Office Manager.

- The Airport Manager, Airport Operations Manager, Airport Maintenance Specialists are trained annually in the following areas for performance of their daily duties.
 - Airport Certification Manual (ACM)
 - Part 139 maintenance criteria for maintaining paved areas, safety areas, airfield marking, signs, lighting, obstruction lighting, ILS critical areas, traffic and wind indicators
 - Electrical safety practices
 - FAA Standards for Airfield Markings, Signs and Lighting
 - o Operational Safety on Airports During Construction
 - o Ground Vehicle/Pedestrian Operations on the Movement Area
 - Wildlife Hazard Management
 - Snow and Ice Control Plan
 - Airport Condition Reporting
 - Issuing NOTAMS through the NOTAM Manager
 - Responsibilities in the Airport Emergency Plan (AEP)
- Training specific to snow removal will include:
 - The full content of the SICP
 - Specific scenarios and plowing patterns through the use of maps, whiteboards, and models
 - Review of equipment operation and specifications for all possible snow removal equipment as well as hands on training
 - Special procedures training for "whiteout" conditions as well as if radio signal is lost between drivers and/or the ATCT
 - Instruction for proper communications and procedures for when the ATCT is not in operation
 - Guidelines for the conditions necessitating pavement closures and when they can be re-opened
 - Examples of common runway incursions during snow removal operations

c) Equipment Preparation

The airports BowMonk AFM2 Friction Tester will be calibrated, updated and certified annually prior to the winter season.

Approximately 60 days prior to snow season the Airport Operations Manager will inspect and prepare each piece of snow removal equipment. Required fluids, replacement parts, and snow removal equipment components will be inventoried and stockpiled.

1.2 Snow and Ice Control Committee (SICC) Meetings.

The Rosecrans Memorial Airport has developed a Snow and Ice Control Committee (SICC) that provides feedback and recommendations regarding snow and ice removal operations and the Snow and Ice Control Plan (SICP) updates at the Rosecrans Memorial Airport. The SICC is chaired by the Airport General Manager and includes the Airport Operations Manager, Airport Maintenance Specialists, and representatives from our local Air Traffic Control Tower, FBO, 139AW airfield support and operations, and other airport businesses and tenants.

During the month of August the Airport will begin notifying tenants and airport users to review and provide comments to be discussed at the season kick-off meeting in September/October.

The following topics should be discussed in the SICC:

- Airport Clearing Operations Discussion Topics
 - Areas Designated as Priority I area, any new airfield infrastructure
 - Clearing operations and follow-up airfield assessments
 - Potentials for pilot or vehicular runway incursions or incidents
 - o Staff requirements and qualifications (training)
 - Update training program
 - Streamline decision making process
 - Response time to keep runways, taxiways and ramp areas operational
 - o Communication, terminology, frequencies, and procedures
 - Monitoring and updating of runway surface conditions
 - o Issuance of NOTAMS and dissemination to ensure timely notification
 - Equipment inventory
 - Status of procurement contracts, including storage of materials
 - Validation of deicer certification letters from vendors (if applicable)
 - Procedures for storm water runoff mitigation
 - Snow hauling/disposing, snow dumps
 - New runoff requirements for containment or collection
 - Changes to contract service for clearing ramps
- Any requirements for containment/collection of deicing/anti-icing.

• Review and discuss lessons learned and new procedures based on the previous seasons experiences

Chapter 2. Post-Event/Season Actions

2.1 Post Event.

After each snow event, airport management will determine if necessary and host a meeting or teleconference as required. Participants as a minimum will be Air Traffic, ANG and FBO to discuss any issues.

All members of the SICC will be encouraged to provide feedback to airport management before, during or following each snow event. After a significant event or a challenging operation, a separate SICC meeting will be held.

2.2 Post Season.

After each snow season the airport authority will determine SICC meeting is will be held, typically in the spring to review the snow season issues and recommendations for changes. The same topics as pre-season should be reviewed.

The Airport Operations Manager will inspect and repair equipment as needed, send the BowMonk in for calibration, and update the SICP if needed.

Phase #2: Winter Storm Actions and

Procedure

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Chapter 3. Snow Removal Action Criteria

3.1 Activating Snow Removal Personnel.

- The Airport Manager or his designated representative, normally the Airport Operations Manager is responsible for the following:
 - Determining when snow removal or anti-icing operations will commence., based on inputs including but not limited to evaluation of existing field conditions, past, current and forecast weather, PIREP's and ATCT inputs.
 - Activation of the Snow Control Center (SCC)
 - Implementing continuous monitoring procedures of runway conditions during snow or ice storms to determine presence of snow, ice, or slush and their depth, and to determine the coefficient of friction by use of airport vehicles and the BowMonk friction meter.
 - Keeping NAVAID critical areas free and clear and notifying the local FAA Airway Facilities staff of status at Rosecrans Memorial Airport.
 - Disseminating timely airport information and runway conditions through the Notice to Airman (NOTAM) system by using the NOTAM Manager or calling Flight Service at 1-877-487-6867.
 - Informing ATCT at 236-3682, the FBO at 233-3444 and 139AW at 236-3260 as a minimum.
- The Airport Operations Manager is responsible for the efficient operation of snow and ice removal equipment. All equipment must be inspected prior to deployment to ensure proper operation. Equipment should be properly sheltered to ensure complete, prompt readiness for snow removal operations. A 72-hour supply of fuels should normally be stored in the event a prolonged storm occurs. All equipment will be inspected for damage and/or maintenance needs after each snow and ice removal event.

a) Weather Forecasting

- The Airport Manager and Airport Operations Manager will monitor weather patterns and conditions as soon as indications of impending weather become evident.
- Primary weather services used are Weather or Not, Weather Underground, and the National Weather Service.
- The Rosecrans Memorial Airport does not have surface sensors but the Weather or Not program does routinely predict pavement temperatures which is a useful tool in our decision making process

b) Chain of Command

• Rosecrans Memorial Airport is owned by the City of St. Joseph, which operates on a city manager style of government. The airport operates

as a division of the Department of Public Works and Transportation. The Airport is under the direct supervision of the Airport Manager, who is appointed by the Public Works Director.

- The line of succession for Rosecrans Memorial Airport is:
 - City Manager
 - Director of Public Works and Transportation
 - Airport Manager
 - Airport Operations Manager
 - Airport Maintenance Specialists
- The Airport Manager and Airport Operations Manager will monitor weather and airfield conditions during potential storms.
- The Airport Operations Manager or his designee will perform an inspection of the airfield to assess conditions every 30 minutes during the occurrence of an event, if snow removal operations are not already underway.
- The Airport Operations Manager when directed by the Airport Manager or in the interest of safety if no contact with Airport Manager, will perform a Recall of Airport staff to initiate pre-emptive and/or removal operations.
- Normally the maximum continuous work period will not exceed 16 hours and rest periods will be planned as 8 hours minimum.

c) Triggers for Initiating Snow Removal Operations

Snow removal operations will begin when contaminants begin accumulating on pavement surfaces. The Airport Operations Manager will determine the equipment to be mobilized dependent on current conditions and forecast for the event.

Precipitation	Depth in Inches
Slush	0.5
Wet Snow	1.0
Dry Snow	2.0
Ice or Freezing Rain	Incident dependent

The amounts above are based on the locally based Lockheed C-130 and Bombardier Challenger. These are only a guide and weather conditions may require different initiation requirements

3.2 Personnel Responsible.

The Airport Manager and Airport Operations Manager will determine when to activate the SCC and initiate clearing operations. While awaiting deployment the Airport Maintenance specialists will inspect all possible equipment to be used and start any equipment stored outdoors to ensure it can warm to the proper operating temperature.

3.3 Snow Control Center (SCC).

The Airport Managers office has a view of the majority of the airfield and when the manager is present will be the SCC. If the manager is not present or becomes unable to command the SCC, the Airport Operations Manager will assume command and conduct the SCC activities from the vehicle he is operating.

The SCC will notify airfield tenants such as ATCT, FBO, and ANG that the SCC is activated and snow clearing operations are commencing.

The SCC will also issue any applicable NOTAMS; communicate field conditions with parties mentioned above and other aircraft and/or pilots operating in the area.

The SCC operations are a dynamic and constantly changing set of procedures, principles and priorities that require dedicated oversight and management.

3.4 Airfield Clearing Priorities.

Rosecrans size and operations allow for usage of all three priorities to better divide the order of events.

Priority 1 (RED) Includes Runway 17/35, the turnoffs at either end of the runway onto Taxiway A, Taxiway A full length, and the Taxiway A3 turnoff. A portion of the ramp from the center east and from A2 north will be included as indicated on the map. This allows an emergency aircraft to land, taxi, and park. Also included in Priority 1 is the ARFF route from the ARFF station to Taxiway A as well as Gate 1 for mutual aid emergency responders.

Priority 2 (BLUE) includes Taxiways A1 and A2, Taxiway B east of 17/35, Taxiway C, and LifeNet due to critical emergency requirement.

Priority 3 (GREEN) includes the remaining apron areas, T-hangars, Taxiway D, and the crosswind Runway 13/31. Additionally the landside terminal parking lot, sidewalks, and access roads will be cleared upon airfield snow removal completion.



3.5 Airfield Clearance Times.

Rosecrans airport falls in the less than 40,000 annual operations area of the below table and under normal staffing and equipment operations we should be able to comply with the listed clearance time of 3 hours.

Annual Airplane Operations (includes cargo operations)	Clearance Time ¹ (hour)				
40,000 or more	2				
10,000 – but less than 40,000	3				
6,000 – but less than 10,000	4				
Less than 6,000	6				
General: Although not specifically defined, Non-Commercial Service Airports are airports that are not classified as Commercial Service Airports [see Table 1-1,general note].					
Footnote 1: These airports may wish to have sufficient equipment to clear 1 inch (2.54 cm) of falling snow weighing up to 25 lb/ft ³ (400 kg/m ³) from Priority 1 areas within the recommended clearance times.					

Table 1-2.	Clearance	Times i	for	Non-Commercial	Service	Airports
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3.6 Snow Equipment List.

Vehicle #	Vehicle Description	Plow/Broom Size
950-00	2019 Ford 1-Ton Pick-up w/Snow Plow	8' Blade
950-02	2020 Ford 3/4-Ton Pick-up w/Snow Plow	8.5' Blade
950-04	1996 GMC 5 Ton w/Snow Plow	11' Blade
950-05	1996 GMC 5 Ton w/Snow Plow	10' Blade
950-06	2007 H2718B Snow Broom/Blower	18' Broom/ 11' Blower
950-07	Model 3200 Sweepster Snow Broom	18' Broom
950-08	1982 Oshkosh 29-ton Snow Blower	11' Blower
		10' Pushor / 8'Potory
950-21	2018 S650 Bobcat	Broom

3.7 Storage of Snow and Ice Control Equipment.

Equipment is stored in several locations, some heated and some outside but covered. Generally the newer larger snow brooms are located indoors as well as our deicing fluid. Trucks with plows are normally outside and covered.

3.8 Definitions.

Airside Urea.

(Otherwise known as "Carbamide") The approved specifications are SAE AMS 1431, Compound, Solid Runway and Taxiway Deicing/Anti-Icing, and MIL SPEC DOD-U-10866, Technical Urea. Agricultural grade urea that meets any of these specifications, called airside urea, is acceptable.

Approved Chemical.

A chemical, either solid or liquid, that meets a generic SAE or MIL specification.

<u>Ash.</u>

A grayish-white to black solid residue of combustion normally originating from pulverized particulate matter ejected by volcanic eruption.

Compacted Snow.

Snow that has been compressed and consolidated into a solid form that resists further compression such that an airplane will remain on its surface without displacing any of it. If a chunk of compressed snow can be picked up by hand, it will hold together or can be broken into smaller chunks rather that falling away as individual snow particles.

Note: A layer of compacted snow over ice must be reported as compacted snow only.

Example: When operating on the surface, significant rutting or compaction will not occur. Compacted snow may include a mixture of snow and embedded ice; if it is more ice than compacted snow, then it should be reported as either ice or wet ice, as applicable.

Contaminant.

A deposit such as frost, any snow, slush, ice, or water on an aerodrome pavement where the effects could be detrimental to the friction characteristics of the pavement surface.

Contaminated Runway.

For purposes of generating a runway condition code and airplane performance, a runway is considered contaminated when more than 25 percent of the runway surface area (within the reported length and the width being used) is covered by When runway contaminants exist, but overall coverage is 25 percent or less, the contaminants will still be reported. However, a runway condition code will not be generated.

While mud, ash, sand, oil, and rubber are reportable contaminants, there is no associated airplane performance data available and no depth or Runway Condition Code will be reported.

Exception: Rubber is not subject to the 25 percent rule, and will be reported as Slippery When Wet when the pavement evaluation/friction deterioration indicates the averaged Mu value on the wet pavement surface is below the Minimum Friction Level classification specified in Table 3-2 of FAA Advisory Circular 150/5320-12 (current edition).

Dry (Pavement).

Describes a surface that is neither wet nor contaminated.

Dry Runway.

A runway is dry when it is neither wet, nor contaminated. For purposes of condition reporting and airplane performance, a runway can be considered dry when no more than 25 percent of the runway surface area within the reported length and the width being used is covered by:

Visible moisture or dampness, or

Frost, slush, snow (any type), or ice.

A FICON NOTAM must not be originated for the sole purpose of reporting a dry runway. A dry surface must be reported only when there is need to report conditions on the remainder of the surface.

Dry Snow.

Snow that has insufficient free water to cause it to stick together. This generally occurs at temperatures well below 32° F (0° C). If when making a snowball, it falls apart, the snow is considered dry.

Eutectic Temperature/Composition.

A deicing chemical melts ice by lowering the freezing point. The extent of this freezing point depression depends on the chemical and water in the system. The limit of freezing point depression, equivalent to the lowest temperature that the chemical will melt ice, occurs with a specific amount of chemical. This temperature is called the eutectic temperature, and the amount of chemical is the eutectic composition. Collectively, they are referred to as the eutectic point.

FICON (Field Condition Report).

A Notice to Airmen (NOTAM) generated to reflect Runway Condition Codes, vehicle braking action, and pavement surface conditions on runways, taxiways, and aprons.

Fluid Deicer/Anti-Icers.

The approved specification is SAE AMS 1435, Fluid, Generic Deicing/Anti-icing, Runways and Taxiways.

<u>Frost.</u>

Frost consists of ice crystals formed from airborne moisture that condenses on a surface whose temperature is below freezing. Frost differs from ice in that the frost crystals grow independently and therefore have a more granular texture.

Note: Heavy frost that has noticeable depth may have friction qualities similar to ice and downgrading the runway condition code accordingly should be considered. If driving a vehicle over the frost does not result in tire tracks down to bare pavement, the frost should be considered to have sufficient depth to consider a downgrade of the runway condition code.

Generic Solids.

The approved specification is SAE AMS 1431, Compound, Solid Runway and Taxiway Deicing/Anti-Icing.

lce.

The solid form of frozen water to include ice that is textured (i.e., rough or scarified ice).

A layer of ice over compacted snow must be reported as ice only.

Layered Contaminant.

A contaminant consisting of two overlapping contaminants. The list of layered contaminants has been identified in the RCAM and include:

- Dry Snow over Compacted Snow
- Wet Snow over Compacted Snow
- Slush over Ice
- Water over Compacted Snow
- Dry Snow over Ice
- Wet Snow over Ice
- Mud.
- Wet, sticky, soft earth material.

Multiple Contaminants.

A combination of contaminants (as identified in the RCAM) observed on paved surfaces. When reporting multiple contaminants, only the two most prevalent / hazardous contaminants are reported. When reporting on runways, up to two contaminant types may be reported for each runway third. The reported contaminants may consist of a single and layered contaminant, two single contaminants, or two layered contaminants. The reporting of "multiple contaminants" represent contaminants which are located adjacent to each other, not to be confused with a "layered contaminant" which is overlapping. For example:

- Single contaminant and Layered contaminant. 'Wet' and 'Wet Snow over Compacted Snow'
- Single contaminant and Single contaminant. 'Wet Snow' and 'Slush'
- Layered contaminant and Layered contaminant.
 'Dry Snow over Compacted Snow' and 'Dry Snow over Ice'

<u>Oil.</u>

A viscous liquid, derived from petroleum or synthetic material, especially for use as a fuel or lubricant.

Runway (Primary and Secondary).

Primary.

Runway(s) being actively used or expected to be used under the existing or anticipated adverse meteorological conditions, where the majority of the takeoff and landing operations will take place.

Secondary.

Runway(s) that supports a primary runway and is less operationally critical. Takeoff and landing operations on such a runway are generally less frequent than on a primary runway. Snow removal operations on these secondary runways should not occur until Priority 1 surfaces are satisfactorily cleared and serviceable.

Runway Condition Assessment Matrix (RCAM).

The tool by which an airport operator will assess a runway surface when contaminants are present.

Runway Condition Code (RwyCC).

Runway Condition Codes describe runway conditions based on defined contaminants for each runway third. Use of RwyCCs harmonizes with ICAO Annex 14, providing a standardized "shorthand" format (Eg: 4/3/2) for reporting. RwyCC (which replaced Mu values) are used by pilots to determine landing performance calculations.

<u>Sand.</u>

A sedimentary material, finer than a granule and coarser than silt.

<u>Slush.</u>

Snow that has water content exceeding a freely drained condition such that it takes on fluid properties (e.g., flowing and splashing). Water will drain from slush when a handful is picked up. This type of water-saturated snow will be displaced with a splatter by a heel and toe slap-down motion against the ground.

Slush over Ice.

See individual definitions for each contaminant.

Slippery When Wet Runway.

A wet runway where the surface friction characteristics would indicate diminished braking action as compared to a normal wet runway.

Slippery When Wet is only reported when a pavement maintenance evaluation indicates the averaged Mu value on the wet pavement surface is below the Minimum Friction Level classification specified in Table 3-2 of FAA Advisory Circular 150/5320-12 (current edition). Some contributing factors that can create this condition include: Rubber buildup, groove failures/wear, pavement macro/micro textures.

Water.

The liquid state of water. For purposes of condition reporting and airplane performance, water is greater than 1/8-inch (3mm) in depth.

Wet Runway.

A runway is wet when it is neither dry nor contaminated. For purposes of condition reporting and airplane performance, a runway can be considered wet when more than 25 percent of the runway surface area within the reported length and the width being used is covered by any visible dampness or water that is 1/8-inch or less in depth.

Wet Ice.

Ice that is melting, or ice with a layer of water (any depth) on top.

Wet Snow.

Snow that has grains coated with liquid water, which bonds the mass together, but that has no excess water in the pore spaces. A well-compacted, solid snowball can be made, but water will not squeeze out.

Chapter 4. Snow Clearing Operations and Ice Prevention

4.1 Snow Clearing Principals.

a) Ramp and Terminal

The priorities for clearing are situation dependent. These areas are a joint responsibility of the airport staff and tenants.

Drifted or windrowed snow will be removed promptly from ramp surfaces.

In the event of heavy snow accumulation, the height of snow banks alongside useable runway, taxiway, and ramp surfaces must be such that all aircraft propellers, engine pods, rotors and wingtips, will clear each snowdrift and snow bank when the aircraft's landing gear traverses any full strength portion of the movement area.

Signs and lights should be checked by the Airport Operations Manager for visibility and should be cleared as appropriate.

In the event that the snow removal crew is unable to comply promptly with the requirements stated above, the Director of Public Works and Transportation, Airport Manager or his representative will utilize the Notice to Airman system to describe the conditions and will promptly notify the Control Tower, and other airport users.

Plowing crews shall maintain a minimum of 75 feet distance between plows and be extremely careful of runway edge lights, threshold lights, and approach lights.

b) Runway and Taxiways

The Instrument Runway 17/35 is our primary priority for clearing operations. It is situation dependent but as a minimum normally we will have a broom and either another broom or plow on runway operations. Depending on the storm amounts and type, the combination and number of vehicles is subject to change. Our goal is to clear full width unless other factors preclude.

Drifted or windrowed snow will be removed completely and promptly from the runway and taxiway.

In the event of heavy snow accumulation, the height of snow banks alongside useable runway taxiway, and ramp surfaces must be such that all aircraft propellers, engine pods, rotors and wingtips, will clear each snowdrift and snow bank when the aircraft's landing gear traverses any full strength portion of the movement area.

All runway and taxiway signs and lights should be checked by the Airport for visibility and cleared as appropriate.

Plowing crews shall maintain a minimum of 75 feet distance between plows and be extremely vigilant of runway edge lights, threshold lights, and approach lights.

c) Snowbanks

Snow Bank Height Profiles – See Figure 4-1. Maximum allowable snow bank height based on Group IV aircraft as defined in Figure 4-1 should be checked frequently by the Supervisor. Snow bank heights should be lower than this when possible.



Figure 4-1. Snow Bank Profile Limits Along Edges of Runways and Taxiways with the Airplane Wheels on Full Strength Pavement (see Figure 4-2 guidance)

d) NAVAIDs

The glide slope area should be evaluated by the Supervisor and cleared as shown in Figure 4-2. Contact should be made with the Airway Facilities Manager or his representative at 232-3414 before moving equipment into the ground plane area.

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NOTES:

1. CATEGORY I GLIDE SLOPE SNOW CLEARANCE AREA.

 CATEGORY II AND III GLIDE SLOPE SNOW CLEARANCE AREA. THE AREA DEPICTED UNDER NOTE 1 SHALL ALSO BE CLEARED.

3. THE DEPTH OF SNOWBANKS ALONG THE EDGES OF THE CLEARED AREA SHALL BE LESS THEN 2 FEET.

[
ACTION TAKEN	SNOW DEPTH					
	SBR <6 IN [15 cm]	SBR 6 TO 8 IN [15 TO 20 cm]	SBR >8 IN [20 cm]			
	NR. CEGS <18 IN [45 cm]	NR. CEGS 18 TO 24 IN [45 TO 60 cm]	NR. CEGS <24 IN [60 cm]			
SNOW REMOVAL (SEE ABOVE FIGURE)	REMOVAL NOT REQUIRED RESTORE FULL SERVICE AND CATEGORY.	ILS CATEGORY I REMOVE SNOW 50 FT [15M] WIDE AT MAST WIDENING TO 200 FT [60M] WIDE AT 1000 FT [300M] OR END OF RUNWAY TOWARD MIDDLE AMRKER. ILS CATEGORIES II AND III AS ABOVE PLUS WIDEN THE AREA TO INCLUDE A UINE FROM THE MAST TO THE FAR EDGE OF RUNWAY THRESHOLD.				
NO SNOW REMOVAL	RESTORE FULL SERVICE	ALL CATEGORIES	ALL CATEGORIES			
	AND CALLOURT.	RESTORE TO CATEGORY I SERVICE, CATEGORY D AIRCRAFT MINIMA RAISED TO LOCALIZER ONLY.	APPROACH RESTRICTED TO LOCALIZER ONLY MINIMA.			
		TYPICAL NOTAM TEXT:	TYPICAL NOTAM TEXT:			
		"DUE TO SNOW ON THE IXXX (APPROPRIATE DENTIFER, GLDE SLOPE, MINIMA TEMPORARURY RAISED TO LOCALIZER ONLY FOR CATEGORY D AIRCRAFT" IF APPLICABLE, "CATEGORY II NA", OR "CATEGORY II NA".	"DUE TO SNOW ON THE IXXX (APPROPRIATE IDENTIFER) CUDE SLOPE, MINIMA TEMPORARILRY RAISED TO LOCALIZER ONLY.			
		* NA (NOT AUTHORIZED)				

Figure 4-2. ILS CAT I and CAT II/III Snow Clearance Area Depth Limitations

4.2 Controlling Snow Drifts.

In order to minimize the amount of drifting across the north end of the GA Apron, snow fence will be installed prior to the beginning of the snow season. The fence will be installed approximately 100' north of the apron and go the full width of the apron while still remaining outside the Taxiway A safety area.

4.3 Snow Disposal.

When large quantities of snow accumulate, airport personnel shall first try to distribute off pavement and safety areas as best as possible with rotary plows. If the amount of snow is too great the snow will be relocated to an acceptable area with front end loaders.

4.4 Methods for Ice Control and Removal–Chemicals.

In the event of icing conditions NewDeal solid deicer will be applied to the airfield as needed. NewDeal is a Sodium Formate/Acetate blend and will be applied with the use of a truck bed mounted spreader. The Airport Manager or his designee, through forecasting and observation will attempt to ensure the NewDeal is used as an anti-ice treatment rather than a de-ice treatment. If ice has already adhered to the pavement then de-icing with the NewDeal will be performed as needed.

4.5 Sand (for the purposes of treating a winter surface).

Sand is not used at Rosecrans Memorial Airport.

4.6 Surface Incident/Runway Incursion Mitigation Procedures.

All staff is required to have a pre-operations safety briefing prior to commencing operation of snow removal machinery. This briefing is conducted by the Airport Manager or the Airport Operations Manager.

Vehicles will be marked and lighted in accordance with AC 150/2510-5(current edition), Painting, Marking and Lighting of Vehicles Used on an Airport.

a) Radio Communication

The SCC is equipped with a land mobile radio base programmed to communicate with airport staff. The SCC also has a VHF scanner operating and a VHF transceiver radio to monitor either the ATCT through ground (121.9) or CTAF (126.9) when the tower is not in operation. All airport vehicles and staff are equipped with radios to monitor appropriate frequencies, normally ATCT. Each vehicle is responsible for monitoring communications and maintaining situational awareness. Each equipment operator is provided a headset to wear that is transmit/receive capable. The SCC when located in the primary location maintains control and communicates with individual operators as required.

b) Failed Radio Communication

ATCT has a light gun and standard communications out light signals are employed. ATCT also has the phone numbers for airport staff and can use as alternate communications source if needed. Another effective method is ATCT will flash the airfield lighting on and off repeatedly until they can determine they have the attention of required vehicles. All vehicle operators are briefed if on the runway and communications are lost; to expeditiously clear the runway in a safe manner. If not on a runway, hold position until communications is restored.

c) Low Visibility and Whiteout Conditions

Upon determination or unsafe conditions, the SCC or ATCT will announce whiteout conditions over the radio. All vehicle operators will expeditiously clear the runway in a safe manner. If not on a runway, the operator will hold position until positive position is determined and a safe evacuation route can be determined. Upon visibility returning to a safe standard the SCC will call for operators to resume their duties.

d) Driver Fatigue

All operators are briefed and encouraged to implement good self-monitoring measures as well as added emphasis on the buddy system. Work breaks will be actively directed by the SCC as needed based on the conditions. Normally night operations will be avoided but if required increased emphasis is placed on all operations. Although not an absolute; 14 hours continuous duty will normally be the maximum airport staff operations shift for operating any machinery.

Chapter 5. Surface Assessment and Reporting

5.1 Conducting Surface Assessments:

Rosecrans Memorial Airport personnel will remain aware and monitor all paved surface conditions in order to plan and carry out appropriate maintenance actions in accordance with the Snow and Ice Control plan. The airport strives to maintain a 'no worse than wet' surface condition.

Rosecrans personnel in complying with Part 139.339, at a minimum, will utilize the NOTAM system for collection, dissemination and logs of airport information to air carriers, and other airport users through the use of the NOTAM Manager.

When an event begins the Airport Manager or Airport Operations Manager will begin conducting surface assessments. If conditions do not require airfield snow/ice removal procedures the Airport Manager or Airport Operations Manager will ensure an assessment is made at no more than 30 minute increments on all open pavement areas.

In performing these assessments all contributing resources will be used if appropriate for the conditions. Either the Airport Manager or Airport Operations Manager's vehicle will be used to drive the airfield to perform the assessment. If conditions allow a friction test will be performed on the runway and all PIREPS will be taken in consideration of the assessment as well.

5.2 Applying the Runway Condition Assessment Matrix (RCAM).

a) Determining Runway Conditions

The Airport Manager will use the following definitions and their experience in determining the runway condition and type of contaminant if present.

- **Ash-** is a grayish-white to black solid residue of combustion normally originating from pulverized particulate matter ejected by volcanic eruption.
- **Compacted snow-** is snow that has been compressed and consolidated into a solid form that resists further compression such that an airplane will remain on its surface without displacing any of it. If a chunk of compressed snow can be picked up by hand, it will hold together or can be broken into smaller chunks rather that falling away as individual snow particles.
- Use the term "DRY" to describe runway/pavement surfaces that are neither wet nor contaminated. A FICON NOTAM must not be originated for the sole purpose of reporting a dry runway. A dry runway surface should be reported only when there is need to report conditions on the remainder of the surface.

- **Dry snow-** is snow that has insufficient free water to cause it to stick together. This generally occurs at temperatures well below 32° F (0° C). If when making a snowball, it falls apart, the snow is considered dry.
- **Frost-** consists of ice crystals formed from airborne moisture that condenses on a surface whose temperature is below freezing. Frost differs from ice in that the frost crystals grow independently and therefore have a more granular texture.
- **Ice-** is the solid form of frozen water including ice that is textured (i.e., rough or scarified ice).
- **Mud-** is wet, sticky, soft earth material.
- **Oil-** is a viscous liquid, derived from petroleum or synthetic material, especially for use as a fuel or lubricant.
- **Sand-** is a sedimentary material, finer than a granule and coarser than silt.
- **Slush-** is snow that has water content exceeding a freely drained condition such that it takes on fluid properties (e.g., flowing and splashing). Water will drain from slush when a handful is picked up. This type of water-saturated snow will be displaced with a splatter by a heel and toe slap-down motion against the ground.
- **Water-** is the liquid state of water. For purposes of condition reporting and airplane performance, water is greater than 1/8-inch (3mm) in depth.
- Wet- A runway is wet when it is neither dry nor contaminated. For purposes of condition reporting and airplane performance, a runway can be considered wet when more than 25 percent of the overall runway length and width coverage or cleared width being used is covered by any visible dampness or water that is 1/8-inch (3 mm) or less in depth.
- Wet ice- is ice that is melting, or ice with a layer of water (any depth) on top.
- Wet snow- is snow that has grains coated with liquid water, which bonds the mass together, but that has no excess water in the pore spaces. A well-compacted, solid snowball can be made, but water will not squeeze out.

In accordance with AC 150/5200-30(current edition) some conditions may require reporting of multiple or layered contaminants.

- When reporting multiple contaminants, only the two most prevalent contaminants are reported. When reporting on runways, up to two contaminant types may be reported for each runway third. The Runway Condition Code (when applicable) will be based on the most hazardous contaminant, when both contaminants are not from the same category in the RCAM. The reported contaminants may consist of a single and layered contaminant, two single contaminants, or two layered contaminants. The reporting of "multiple contaminants" represent contaminants which are located adjacent to each other, not to be confused with a "layered contaminant" which is overlapping.
- A layered contaminant is a contaminant consisting of two overlapping contaminants. The RCAM identifies the approved list of layered contaminants, including:
 - Dry Snow over Compacted Snow
 - Wet Snow over Compacted Snow
 - Slush over Ice
 - Water over Compacted Snow
 - o Dry Snow over Ice
 - Wet Snow over Ice

Assessment Criteria		Downgrade Assessment Criteria			
Runway Condition Description	Code	Mu (µ) 1		Vehicle Deceleration or Directional Control Observation	Pilot Reported Braking Action
• Dry	6	40 or Higher			-
 Frost Wet (Includes Damp and 1/8 inch depth or less of water) 1/8 inch (3mm) depth or less of: Slush Dry Snow Wet Snow 	5			Braking deceleration is normal for the wheel braking effort applied AND directional control is normal.	Good
5° F (-15°C) and Colder outside air temperature: • Compacted Snow	4	39		Braking deceleration OR directional control is between Good and Medium.	Good to Medium
 Slippery When Wet (wet runway) Dry Snow or Wet Snow (Any depth) over Compacted Snow Greater than 1/8 inch (3mm) depth of: Dry Snow Wet Snow Wet Snow Warmer than 5° F (-15°C) outside air temperature: Compacted Snow 	3	to 30		Braking deceleration is noticeably reduced for the wheel braking effort applied OR directional control is noticeably reduced.	Medium
Greater than 1/8 (3mm) inch depth of: • Water • Slush	2		29	Braking deceleration OR directional control is between Medium and Poor.	Medium to Poor
• loe ²	1		0 21	Braking deceleration is significantly reduced for the wheel braking effort applied OR directional control is significantly reduced.	Poor
 Wet loe ² Slush over loe Water over Compacted Snow ² Dry Snow or Wet Snow over loe ² 	0	20 or Lower		Braking deceleration is minimal to non-existent for the wheel braking effort applied OR directional control is uncertain.	Nil

APPENDIX F. RUNWAY CONDITION ASSESSMENT MATRIX (RCAM) (FOR AIRPORT OPERATORS' USE ONLY)

The correlation of the Mu (μ) values with runway conditions and condition codes in the Matrix are only approximate ranges for a generic friction measuring device and are intended to be used only to downgrade a runway condition code; with the exception of circumstances identified in Note 2. Airport operators should use their best judgment when using friction measuring devices for downgrade assessments, including their experience with the specific measuring devices used.

² In some circumstances, these runway surface conditions may not be as slippery as the runway condition code assigned by the Matrix. The airport operator may issue a higher runway condition code (but no higher than code 3) for each third of the runway if the Mu value for that third of the runway is 40 or greater obtained by a properly operated and calibrated friction measuring device, and all other observations, judgment, and vehicle braking action support the higher runway condition code. The decision to issue a higher runway condition code than would be called for by the Matrix cannot be based on Mu values alone; all available means of assessing runway slipperiness must be used and must support the higher runway condition code. This ability to raise the reported runway condition code to a code 1, 2, or 3 can only be applied to those runway conditions listed under codes 0 and 1 in the Matrix.

The airport operator must also continually monitor the runway surface as long as the higher code is in effect to ensure that the runway surface condition does not deteriorate below the assigned code. The extent of monitoring must consider all variables that may affect the runway surface condition, including any precipitation conditions, changing temperatures, effects of wind, frequency of runway use, and type of aircraft using the runway. If sand or other approved runway treatments are used to satisfy the requirements for issuing this higher runway condition code, the continued monitoring program must confirm continued effectiveness of the treatment.

Caution: Temperatures near and above freezing (e.g., at 26.6° F (-3°C) and warmer) may cause contaminants to behave more slippery than indicated by the runway condition code given in the Matrix. At these temperatures, airport operators should exercise a heightened level of runway assessment, and should downgrade the runway condition code if appropriate.

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Step 1: Runway Condition Code (RwyCC) Applicability:

If 25 percent or less of the overall runway length and width or cleared width is covered with contaminants, RwyCCs must not be applied, or reported. Personnel will simply report the contaminant percentage, type and depth for each third of the runway, to include any associated treatments or improvements. *Or*

If the overall runway length and width coverage or cleared width is greater than 25 percent, RwyCCs must be assigned, and reported, informing airplane operators of the contaminant present, and associated codes for each third of the runway. (The reported codes, will serve as a trigger for all airplane operators to conduct a takeoff and/or landing performance assessment).

Step 2: Apply Assessment Criteria

Based on the contaminants observed, the associated RwyCC from the RCAM for each third of the runway will be assigned.

Step 3: Validating Runway Condition Codes

If the observations by airport personnel determine that RwyCCs assigned accurately reflect the runway conditions and performance, no further action is necessary, and the RwyCCs generated may be disseminated.

b) Downgrade Assessment Criteria

When observations indicate a more slippery condition than generated by the RCAM, the airport operator may downgrade the RwyCC(s). When applicable, the downgrade of RwyCCs may be based on friction (μ) readings, vehicle control or pilot reported braking action or temperature.

NOTE: Temperatures near and above freezing (e.g., at negative 26.6° F (-3° C) and warmer) may cause contaminants to behave more slippery than indicated by the runway condition code given in the RCAM. At these temperatures, airport operators should exercise a heightened awareness of airfield conditions, and should downgrade the RwyCC if appropriate.

c) Upgrade Assessment Criteria Based on Friction Assessments.

RwyCCs of 0 or 1 may only be upgraded when the following requirements are met.

- 1. All observations, judgment, and vehicle braking action support the higher RwyCC, and
- 2. Mu values of 40 or greater are obtained for the affected third(s) of the runway by a calibrated friction measuring device that is operated within allowable parameters.

- 3. This ability to raise the reported RwyCC to no higher than a code 3 can only be applied to those runway conditions listed under code 0 and 1 in the RCAM. (See footnote 2 on the RCAM.)
- 4. The airport operator must also continually monitor the runway surface as long as the higher code is in effect to ensure that the runway surface condition does not deteriorate below the assigned code.
 - a. The extent of monitoring must consider all variables that may affect the runway surface condition, including any precipitation conditions, changing temperatures, effects of wind, frequency of runway use, and type of aircraft using the runway.
 - b. If sand or other approved runway 'treatments are used to satisfy the requirements for issuing the higher runway condition code, the monitoring program must confirm continued effectiveness of the treatment.

5.3 Runway Friction Surveys, Equipment, and Procedures.

The airport employs a BowMonk AFM II for measuring surface conditions. The ANG also owns a BowMonk AFM II and routinely both are used and results compared. In the event of discrepancies normally the airport equipment readings are transmitted.

a) 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.

- Ice or wet ice.
- Compacted snow at any depth.
- Dry snow 1 inch or less.
- Wet snow or slush 1/8 inch or less.

b) When to Conduct

Friction assessments should be conducted if any of the following occurs:

- When the central portion of the runway, centered longitudinally along the runway centerline, is contaminated 500 feet or more.
- After any type of snow removal operations or chemical application (including sanding)

• Immediately following any aircraft incident or accident on the runway.

c) How to Conduct

The following are the procedures generally used but can vary based on conditions and airfield operations.

- 10 feet laterally from runway centerline
- Same direction as arrival aircraft
- Goal is to complete entire friction test in one uninterrupted pass
- Normally 3 tests are completed in each of the following runway zones; touchdown (500-2,000 feet), midpoint (3,000-5,000 feet) and rollout zone (6,000-8,000 feet).

d) Calibration

The BowMonk friction meter is calibrated annually prior to the winter season by Sherwin Industries. Normally the Airport Operations Manager completes the process but it may be assigned to other staff if required.

5.4 Taxiway, Apron, and Holding Bay Assessments.

Assessments to these surfaces will occur when contaminants are present, and whenever a contaminant is present on the surface. Assessments will occur anytime the pavement is worse than wet. Surfaces will be monitored on a regular, continual basis.

5.5 Surface Condition Reporting.

Personnel responsible for implementing the SICP will carefully monitor changing airfield conditions and disseminate information about those conditions via the NOTAM System in a timely manner to airport users.

Runway: Runway condition reports will occur when contaminants are present on a runway surface via the Federal NOTAM System. Condition Reports and RwyCCs will be updated as necessary whenever conditions change, such as a contaminant type, depth, percentage or treatment/width change.

Taxiway, Apron or Holding Bay: Taxiway, Apron or Holding bay condition reports will occur when contaminants are present on these surfaces via the Federal NOTAM System. NOTAMS will be updated as necessary whenever conditions change, such as a contaminant type, depth, percentage or treatment/width change.

Any time a change to the surface conditions occurs which could be any of the following:

- active snow event
- plowing/brooming/deicing/sanding
- rapidly rising or falling temperatures
- rapidly changing conditions

Accurate and timely condition assessments:

- The Airport Manager or his designee will begin continuous monitoring of the runway when a snow event has begun through the use of vehicle inspections, ATCT observations, ANG operations and other pilot communications.
- The Airport Manager or Airport Operations Manager will disseminate any information that is not NOTAM worthy to the Tenants by phone.
- NOTAMS are filed by the operator of the SCC and will be issued using the NOTAM Manager system. In the event of an internet outage the NOTAMS will be phoned directly to Lockheed Martin FSS (877) 487-6867.

The term 'DRY' is used to describe a surface that is neither wet nor contaminated. While a FICON NOTAM is not generated for the sole purpose of reporting a dry runway, a dry surface will be reported when there is need to report conditions on the remainder of the surface. (For example: snow is present on the first two thirds of the runway.)

5.6 Reportable Contaminants without Performance Data.

If present, unable to be removed, and posing no hazard, mud will be reported with a measured depth. Ash, oil, sand, and rubber contaminants will be reported without a measured depth. These contaminants will not generate a RwyCC.

5.7 Slippery When Wet Runway.

For runways where a friction survey (for the purposes of pavement maintenance) indicates the averaged Mu value at 40 mph on the wet pavement surface failed to meet the minimum friction level classification specified in AC 150/5320-12(current edition), the airport will report via the NOTAM system a RwyCC of '3' for the entire runway (by thirds: 3/3/3) when the runway is wet.

A runway condition description of 'Slippery When Wet' will be used for this condition.

If it is determined by the airport that a downgrade is necessary, the downgrade will be made to all three runway thirds match (i.e. 3/3/3, 2/2/2, 1/1/1).

The NOTAM will be cancelled when the minimum runway friction level classification has been met or exceeded.

5.8 Requirements for Closures.

Runways receiving a NIL braking (either pilot reported or by assessment by the airport) are unsafe for aircraft operations and will be closed immediately when this unsafe condition exists.

In accordance with FAA directives and the local LOA between airport and ATCT the runway will be closed and operations suspended by ATCT. ATCT will immediately notify airport SCC who will conduct an assessment before the next operation.

When previous PIREPs have indicated GOOD or MEDIUM braking action, two consecutive POOR PIREPS should be taken as evidence that surface conditions may be deteriorating. If the airport operator has not already instituted its continuous monitoring procedures, an assessment should occur before the next operation. If the airport operator is already continuously monitoring runway conditions, this assessment should occur as soon as air traffic volume allows.

The airport will maintain available airport surfaces in a safe operating condition at all times and provide prompt notifications when areas normally available are less than satisfactorily cleared for safe operations. If a surface (runway, taxiway, apron, lane or holding bay) becomes unsafe due to a NIL (by braking action or assessment) or otherwise unsafe hazard or condition, the surface will be closed until the condition no longer exists and is safe.

5.9 Continuous Monitoring and Deteriorating Conditions.

Continuous monitoring will normally begin upon activation of the SCC. Continuous monitoring is a collaborative effort that includes but is not limited to airport staff, ATCT, ANG operations and other pilot communications. Under deteriorating conditions, the airport will take all reasonable steps using available equipment and materials that are appropriate for the condition to improve the braking action.

Including but not limited to:

- Frozen or freezing precipitation.
- Falling air or pavement temperatures that may cause a wet runway to freeze.
- Rising air or pavement temperatures that may cause frozen contaminants to melt.

- Removal of abrasives previously applied to the runway due to wind or airplane effects.
- Frozen contaminants blown onto the runway by wind.

5.10 Surface Conditions Not Being Monitored/Reported

Regular staffing hours for airport personnel are 0700L – 1530L seven days a week. The ATCT is in operation from 0700L – 1900L Mon-Fri and 0800L – 1800L Sat and Sun. The Airport Manager will monitor forecasts and schedule personnel accordingly in order to ensure the airport is properly monitored during a snow event. If no airport personnel are on duty and winter precipitation begins the ATCT will contact the Airport Manager.

However in order to avoid erroneous condition assessments during the year the Airport Manager has published in the Master Record "CONDITIONS NOT MONITORED DLY 0700-1530L". For any temporary changes to these hours a NOTAM will be issued stating the new hours.