

Snow and Ice Control Plan

Charlotte Douglas International Airport

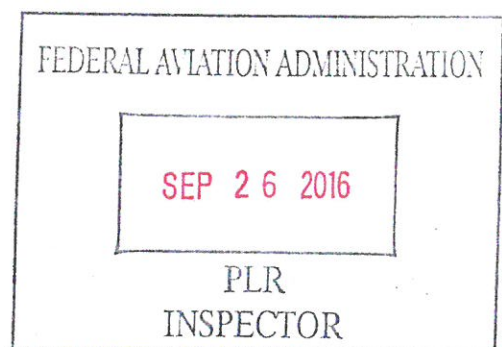


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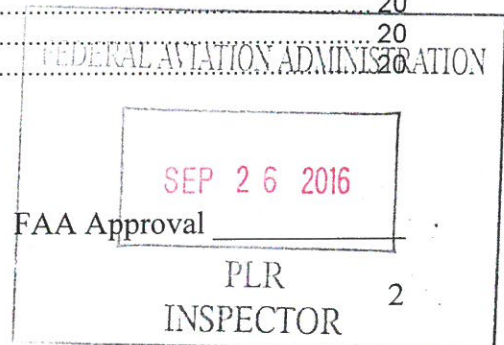
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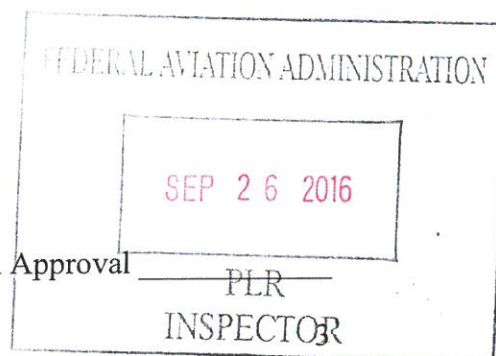
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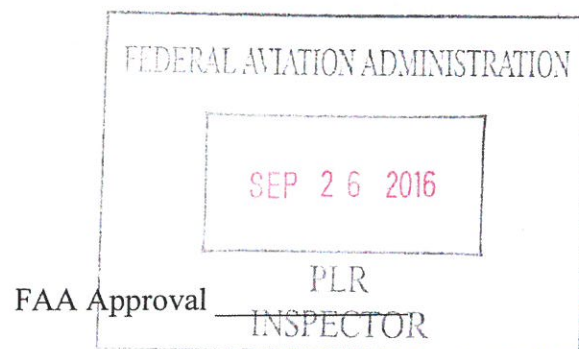
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Phase #1

Pre- and Post-Winter Season Topics

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Chapter 1 - Pre-Season Actions

1.1 Airport Preparation

a) Airport Management Meetings

The Operations Manager will initiate a meeting in October to discuss with airport tenants and carriers the overall operations required for the upcoming inclement weather season. This meeting will discuss roles of various airport personnel, equipment and material inventory, staffing, training, issues from the previous year, and any other topics relevant to the Snow and Ice Control Plan (SICP).

b) Personnel Training

i. Airport Operations

- 1) Each year prior the beginning of the snow season, Airport Operations will conduct training with its personnel to include:
 - (a) Aircraft deicing operations (pad locations)
 - (b) Types of Glycol
 - (c) Deicing Configurations
 - (d) Importance and timing of pre & post event meetings
 - (e) Snow Desk Roles
 - (f) Snow teams and assignments
 - (g) Notification procedures for snow events
 - (h) Condition Reporting updates
 - (i) SNOWTAMS
- 2) Airport Operations will retain their own records in the Airport Operations Office.

ii. Airport Facilities

- 1) Each year prior the beginning of the snow season, Airport Facilities will conduct training with its personnel to include:
 - (a) Table top exercise to go over movement area snow and ice clearing and treatment.
 - (b) Field exercises will be conducted in order of set priorities. These exercises will include all equipment required to remove and treat movement area surfaces.
 - (c) All staff involved with airfield snow and ice removal operations will participate in an airfield movement area training class.

c) Equipment Preparation

CLT has two Bowmonk AFM2 friction testers that will be calibrated, updated and certified once per year, or earlier if the instrument warns of a calibration fault. Each unit will be calibrated after the end of the previous snow season and before the beginning of the next. The most recent calibration information is below

Friction Tester	Latest Calibration
Serial	Date
AF12773	4/15/2016
AF12774	4/15/2016

90 days prior to the snow season, Airport Vehicle Maintenance staff 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

a) SICC Meetings

The Airport has developed two Snow and Ice Control Committees (SICCs). One is dedicated to providing feedback, making recommendations and updating the SICP, while the second is responsible for the Airport Deicing Plan, each with dedicated meetings. Each SICC meets at least annually and is coordinated through the Airport Operations Manager.

Through both SICC groups, the following general topics will be discussed:

- Changes to airport staff, equipment, runway chemicals, and airport clearing procedures;
- Changes to air carrier ground deicing/anti-icing programs;
- Lessons learned from actual events encountered.

Those invited to attend for each SICC include.

b) SICC Members – Airport Snow Removal Operations

The following departments and tenants will be invited to attend the SICC pre and post-season meetings for the SICP.

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- i. CLT Airport Operations
- ii. CLT Airfield Maintenance
- iii. CLT Development & Engineering (D & E)
- iv. CLT Admin & Executive Leadership
- v. CLT Environmental
- vi. FAA (ATCT, Support Staff, Tech Ops)
- vii. Integrated Deicing Solutions (IDS)
- viii. Airline Leadership
- ix. Cargo Carriers
- x. Wilson Air
- xi. CFD Fire
- xii. NCANG

The following topics will be considered and discussed by the above SICC and its members:

- Areas Designated as Priority I;
- Any new airfield infrastructure;
- Clearing operations and follow-up airfield assessments;
- Potentials for pilot or vehicular runway incursions or incidents;
- Staff requirements and qualifications (training);
- Updated training program;
- Streamlined decision making process;
- Response time to keep runways, taxiways and ramp areas operational;
- Communication, terminology, frequencies, and procedures;
- Monitoring and updating of runway surface conditions;
- 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.

A pre-season SICC meeting will take place in the fall of each year to review recommendations made at the last post-season meeting, in reference to the SICIP. The pre-season meeting typically takes place in October of each year.

After each SICC meeting, a copy of the materials covered will be provided to attendees, as well as those not able to attend.

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c) SICC Members – Air Carrier Ground Deicing/Anti-Icing Programs

The following departments and tenants will be invited to attend the SICC pre-and post-season meeting (as well as post-event meetings) to discuss updates to the Deicing Plan.

- i. CLT Airport Operations
- ii. CLT Airfield Maintenance
- iii. CLT Development & Engineering (D & E)
- iv. CLT Admin & Executive Leadership
- v. FAA (ATCT, Support Staff, Tech Ops)
- vi. Integrated Deicing Solutions (IDS)
- vii. Supplemental Contractors
- viii. Airline Leadership
- ix. Cargo Carriers
- x. Wilson Air
- xi. CFD Fire
- xii. NCANG

The following topics will be considered and discussed by the above SICC and its members:

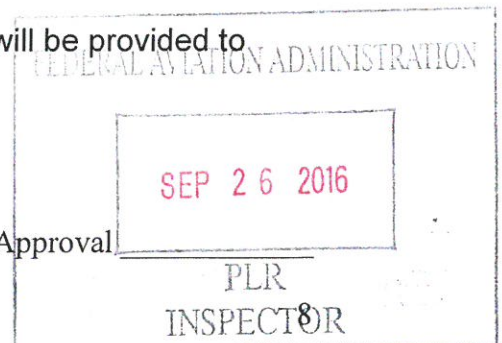
- Air Carrier Ground Deicing/anti-icing programs
 - Assessing all air carriers deicing programs by reviewing airport surface flow strategies;
 - Reviewing ground time and takeoff clearances after deicing;
 - Analyzing and adjusting airplane deicing plans;
 - Maximizing efficiency of operations during icing conditions by identifying locations for airplane deicing;
 - Planning taxi routes to minimize ground times;
 - Developing rates for deiced departures;
 - Allocating departure slots;
 - Determination of airport deicing crew needs;
 - Verifying communications.
 - Any requirements for containment/collection of deicing/anti-icing.

A pre-season SICC meeting will take place in the fall of each year to review recommendations made at the last post-season meeting, in reference to aircraft deicing. The pre-season meeting typically takes place in October of each year.

After each SICC meeting, a copy of the materials covered will be provided to attendees, as well as those not able to attend.

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Chapter 2 - Post-Event/Season Actions

2.1 Post Event.

After each snow event, the Snow Boss shall conduct an after action review. The purpose of this review will be to critique event procedures, identify strengths and areas of needed improvement, and make any necessary adjustments.

All SICC members listed in 1.2(b) and 1.2(c) will be invited to attend each after action review and will be encouraged to provide feedback.

Even though a review is hosted after each snow event, all members of the two SICC's will be encouraged to provide feedback to airport management before and during a snow event as well.

During the snow season, winter operational safety will be emphasized with tenants at the monthly tenant safety meetings. An increased number of vehicles on and around the airfield and ramp, low temperatures, precipitation, and fatigue can more easily lead to accidents and incidents. Ways to mitigate them will be an important, ongoing discussion with the multiple tenants around the airfield.

2.2 Post Season.

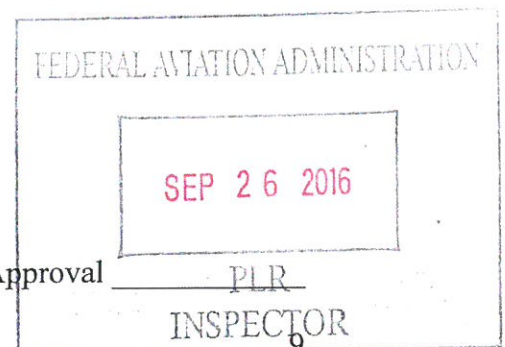
After each snow event and snow season, each SICC will hold a meeting to discuss processes that went well, challenges, and ways to improve for the upcoming events, through both the SICP and Deicing Plan documents. The same topics listed in 1.2(b) and 1.2(c) should be reviewed. The post-season meetings will take place in April or May of each year.

a) Airport Operations

- i. Calibrate Bowmonk AFM2 Friction Testers
- ii. Update SICP
- iii. Update Deicing Plan

b) Airfield Maintenance

- i. After each season, all snow and ice removal equipment will be inspected and reconditioned for the next season.

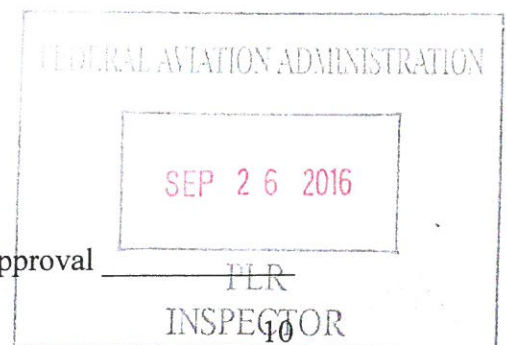


Phase #2

Winter Storm Actions and Procedures

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Chapter 3 - Snow Removal Action Criteria

3.1 Activating Snow Removal Personnel.

a) Clearing Responsibilities

- i. Airport Facilities will clear and treat all priorities on the movement area. Airport Development will clear and treat the ramp areas outside of the tenant spaces.

b) Weather Forecasting

Local weather conditions are monitored continuously by Airport Operations using information provided by:

- o Aviationweather.gov
- o National Weather Service in Greenville, South Carolina
- o Weather Channel
- o Telvent DTN (web-based weather subscription)
- o Local weather providers

CLT does not have surface condition sensors on any runway or taxiway.

c) Chain of Command

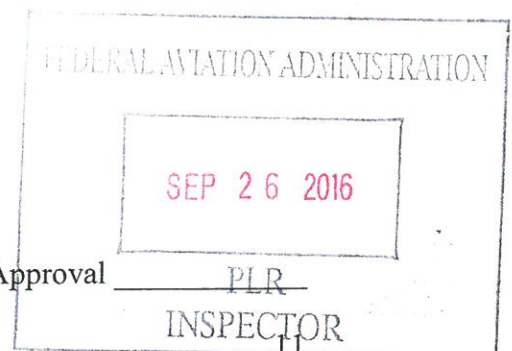
- When forecasts indicate the possibility of snow or freezing precipitation, Airport Operations shall immediately contact the Assistant Aviation Directors of Facilities and Operations (Snow Boss). The above-mentioned management personnel shall determine the required personnel, scope of operations and start time for snow/ice removal operations.
- When snow/ice removal operations appear imminent, the Snow Boss shall conduct a pre-event meeting, which can also be attended via conference call. During this meeting, the Snow Boss will communicate strategies, timelines, and resources to the attendees. Meeting attendees invited will include:
 - i. CLT Airport Operations
 - ii. CLT Airfield Maintenance
 - iii. CLT Development & Engineering (D & E)
 - iv. CLT Admin & Executive Leadership
 - v. FAA (ATCT, Support Staff, Tech Ops)
 - vi. Integrated Deicing Solutions (IDS)
 - vii. Supplemental Contractors
 - viii. Airline Leadership
 - ix. Cargo Carriers
 - x. Wilson Air
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After the meeting, the Snow Operations Boss or his Designee will send out a summary of the meeting, including a plan for the coming day(s), weather forecasts, and other information as necessary.

d) Snow Team Notifications / Callout Procedures / Hold Over

The Snow Boss will determine the start and end times for snow teams. Typically a twelve-hour shift is utilized for each snow team, but the start / end times are subject to change based on operational need.

i. Operations

1. When the Snow Boss determines the need for Snow Teams, Airport Operations via the Operations Manager or his designee will send out activation notifications to personnel.

ii. Airfield Maintenance

1. The Field Maintenance Manager and/or Assistant Manager will initiate a snow shift callout.
2. Each team member will be contacted for each shift and a roll call will be conducted by the shift supervisor.

e) Monitoring Airfield Conditions

The airfield will be monitored and inspected by both Airport Operations and Airfield Maintenance in the following manner:

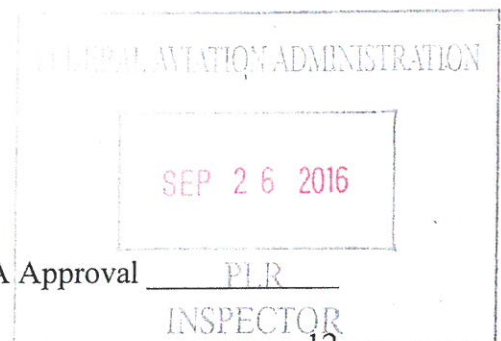
- i. At least one staff from Airport Operations and one staff from Airfield Maintenance will be in the vehicle for:

1. Friction Testing
2. Runway assessments to determine the inputs for the Runway Condition Assessment Matrix (RCAM) and determination of the Runway Condition Code (RwyCC).

Having both departments in the vehicle will allow for a more accurate assessment of field conditions and a more proactive approach to treatment.

- ii. The airfield will be inspected at the following frequencies:

1. After a weather event;
2. After the application of chemicals or sand;
3. After plowing or sweeping operations.



No aircraft shall be allowed to operate on a runway after any of the above events, until an inspection takes place, and a runway assessment is conducted.

Also, the airfield should be inspected at the beginning of each shift of Operations personnel, which will provide the oncoming shift with a current view of the airfield conditions.

In addition, regular, continuous, periodic, and special inspections should be conducted as required and necessary to fulfill FAA and Operations requirements. Regular airfield inspections during snow events will require one maintenance staff and one Operations staff.

iii. To enhance the safety of plowing operations, the following procedures will be followed:

1. The lead vehicle for each Runway and Taxiway plow team will have one Airfield Maintenance and one Airport Operations staff at a minimum, with one driving and one operating the radio.

The above procedure will be followed to increase operational safety during plowing operations, which frequently contain periods of heightened radio traffic, and reduced visibility.

The process for reporting runway conditions to determine Runway Condition Codes (RwyCCs) (when applicable) will be covered below in Chapter 5.

f) Triggers for Initiating Snow Removal Operations

Pre-treatment will begin prior to precipitation only when conditions are relevant. Snow removal operations will begin when contaminants begin accumulating on pavement surfaces.

Precipitation	Depth in Inches
Slush	½"
Wet Snow	½"
Dry Snow	1"
Ice or Freezing Rain	¼"

3.2 Personnel Responsible.

Below is a description of each key personnel and their descriptions:

a) The Assistant Aviation Directors of Operations and Facilities

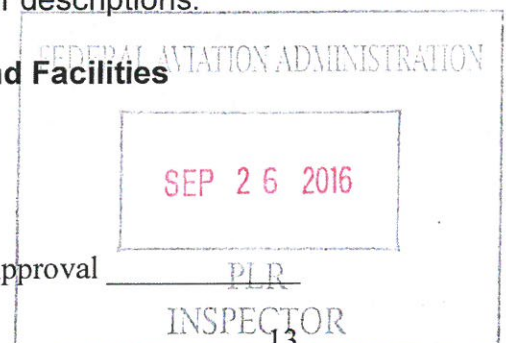
1. Overall plan direction and implementation.

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2. Determining when snow and ice removal operations will begin and end.
2. Establishing priorities for cleaning surfaces based upon field conditions, weather forecasts, and consultation with tenants and the FAA.
4. Determining field conditions and disseminating reports.
5. Providing information to Public Affairs for dissemination to the public.
6. Conducting pre-event meetings, preparedness exercises and post-event after action reviews to assess snow removal readiness, training, and operational conduct.

b) Field Maintenance Manager and Assistant Field Maintenance Manager

Act as the primary Snow/Ice Removal Operations Managers. Other CLT managers may serve in this capacity on a rotating 12-hour basis during actual snow removal operations. They are responsible for snow, slush and ice removal.

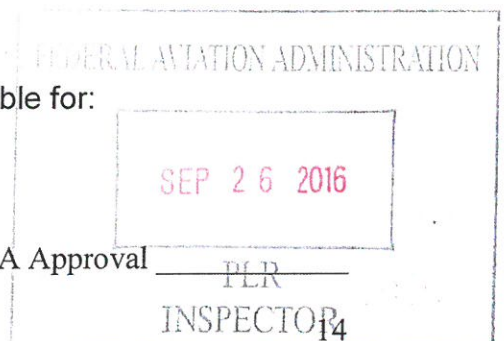
1. Directing the operation of snow removal personnel and equipment.
2. Assisting with CLT snow removal operational procedures.
3. Supervision of snow, slush and ice removal on runways, taxiways, commercial ramps, cargo ramps, pedestrian areas, and AOA vehicle roadways. Inspecting all snow removal equipment prior to and immediately following each snow, slush and ice control event.
3. Procuring equipment and supplies necessary to conduct snow and ice removal operations.
4. Conducting pre-event meetings, preparedness exercises and post-event after action reviews to assess snow removal readiness.
5. Maintenance of airfield lighting systems and directing airfield lighting crews.

c) Airside Operations Manager or his designee

Will establish a Snow Desk which will be responsible for:

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1. Disseminating up-to-date airfield condition reports to necessary parties.
 2. Communicating with airlines, tenants and the FAA regarding the status of the CLT snow removal operations.
 3. Escorting non-airport and contractor vehicles to snow removal sites.
 4. Operation of the snow desk.
 - a. Snow desk will be staffed by Operations Officers in the Airport Operations Control Room conference room. The number for the Snow Desk is 704-359-4333.
 - b. In support of the Snow Desk operation, there will be an additional Operations employee staffing the American Ramp Tower. Their primary function will be to coordinate winter operations with the deicing contractor and with the airlines. The number for the Ramp Tower Desk is 704-359-4332.
 5. Input runway field conditions into the FAA Digital NOTAM Manager and generate RwyCCs as applicable.
 6. Issuing NOTAMS.
 7. Opening and closing runways and taxiways.
- d) **Fleet Manager / Chief Mechanic**
Responsible for the repair, maintenance and installation of all snow removal equipment.
- e) **Assistant Director for Development and Contractor Team Coordinator**
1. Contacting and arranging the use of contracted, supplemental snow removal equipment.
 2. Coordinating and directing the actions of snow removal contractors on the air carrier ramp.

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f) Airport Logistics Coordinator

1. Procurement and acquisition of supplies and commodities prior to, during, and after the snow/ice event.
2. Provide support to the Chief Auto Mechanic with minor repairs and installation of components on snow removal equipment.
3. Accounting for snow/ice removal chemicals

g) Airlines

1. Maintaining and clearing gates.
2. Removed materials must be pushed beyond ramp roadway markings, which will then be removed to designated areas.

3.3 Snow Desk

The Snow Desk, which serves as the Snow Control Center (SCC), is located in the Airport Operations Control Room Conference Room. Airport Operations Officers, along with an Airport Operations Supervisor operate the Snow Desk, 24/7 during a snow event.

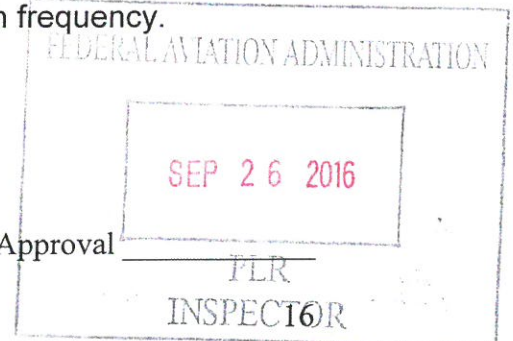
a) Hours of Operations

The Snow Desk is operated 24/7 during a snow event.

b) Methods of Contact

The Snow Desk has the following means of communications:

- i. Dedicated landline Snow Phone (704) 359 – 4333
- ii. Avtec phone / radio console with the following channels
 1. AIR-OP1: Airport Operations
 2. AIRFIELD: Airfield Maintenance
 3. Events: Airfield Operations, Airfield Maintenance, and other dedicated groups can be moved to discrete, separate channels to maintain an acceptable level of traffic on each frequency.



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iii. Webex

Airport Operations can send out an Everbridge Notification to airport tenants informing them of a snow event and invite them to join via:

1. Bridge line
 - a. Number: 1-855-244-8681, Passcode: 738806476#

Through the Bridge line, the snow desk can actively work with tenants to answer questions and provide updates via Webex.

1. Shared webboard: <https://charlotte.webex.com/meet/Airport-ICC>

Through the WebEx platform, the Snow Desk can screen share to show weather maps, snow logs, notes, and other pertinent information.

c) **Field Condition Updates**

In order to maintain a central location for information collection and dissemination, all field conditions are required to go directly from the personnel conducting airfield inspections and assessments to the Snow Desk. The conditions are then disseminated to the ATCT and tenants directly from the snow desk.

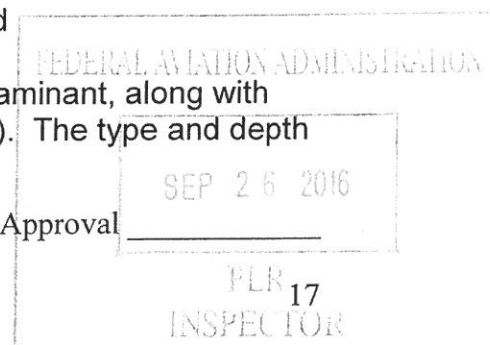
The Snow Desk will:

- i. Record in the Automated Records Management System (ARMS)
 1. Surfaces closed
 2. Surfaces being inspected
 3. Airfield inspections in progress (including Airport Operations & Maintenance staff assigned to each inspection)
- ii. In a dedicated Snow Log, the Snow Desk will record:
 1. Times and widths of airfield surfaces cleared
 2. Conditions at the start of each operations shift
 3. Conditions after each clearing operation
 4. Type and quantity of chemicals and sand applied

Conditions to be collected will include type & depth of contaminant, along with the Outside Air Temperature (OAT) in degrees Celsius (°C). The type and depth

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of contaminant, along with OAT will later be entered into the FAA Digital NOTAM Manager, as outlined below in Chapter 5 to determine if an RwyCC is generated.

iii. Act as the sole source for:

1. Opening and closing runways and taxiways, including disseminating closures through the FAA Digital NOTAM Manager.
2. Coordination between the Runway and Taxiway plow teams, and the ATCT cab.
3. Collecting airfield condition reports, entering conditions into the FAA Digital NOTAM Manager, applying upgrades and downgrades (as applicable), and submitting FICONS.
4. Communicating airfield conditions to the ATCT. Airfield conditions will be disseminated to the ATCT cab (704-359-1080), unless otherwise directed to disseminate to the TRACON (704-359-1020).
5. Disseminating field conditions to air carriers and cargo carriers.

3.4 Airfield Clearing Priorities.

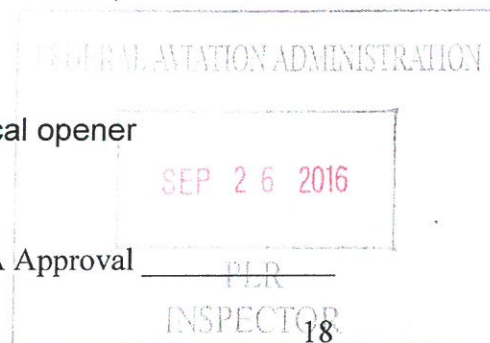
During inclement weather, CLT generally operates in a northern operation for deicing of aircraft, and runway departures/arrivals. Runway 18C/36C will generally be used for arrivals and runway 18L/36R will generally be used for departures. This will provide the most efficient operations during inclement weather. Snow Clearing diagrams are provided in Appendix B, *Snow Clearing Equipment*.

a) Priority 1 (North Ops)

- i. Runway 18C/36C
- ii. Taxiway E
- iii. Appropriate high speeds (E6, E8, and N)
- iv. Runway 18L/36R
- v. Taxiway C
- vi. Taxiway R
- vii. Taxiway A
- viii. Appropriate high speeds (R, M, C10, C11, and C12)
- ix. Taxiway G
- x. ARFF Station 17
- xi. ARFF Station 41
- xii. Field Gate 47 - Badge reader with mechanical opener
- xiii. Deicing Pads

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b) Priority 2 (North Ops)

- i. Runway 18R/36L
- ii. Taxiway N
- iii. Taxiway S
- iv. Taxiway W
- v. Appropriate high speeds (W7 and W8)
- vi. Taxiway M, from F to C
- vii. Taxiway F
- viii. Taxiways E10, V4, V5, C6, and W9

c) Priority 1 (South Ops)

- i. Runway 18C/36C
- ii. Taxiway E
- iii. Appropriate high speeds (E5, E7, and S)
- iv. Runway 18L/36R
- v. Taxiway C
- vi. Taxiway R
- vii. Taxiway A
- viii. Appropriate high speeds (R, M, C5, C4, and C3)
- ix. Taxiway G
- x. ARFF Station 17
- xi. ARFF Station 41
- xii. Field Gate 47 - Badge reader with mechanical opener
- xiii. Deicing Pads

d) Priority 2 (South Ops)

- i. Runway 18R/36L
- ii. Taxiway N
- iii. Taxiway S
- iv. Taxiway W
- v. Appropriate high speeds (W4 and W3)
- vi. Taxiway M, from F to C
- vii. Taxiway F
- viii. Taxiways E10, V4, V5, C6, and W9

e) Priority 2 Non-Movement Areas

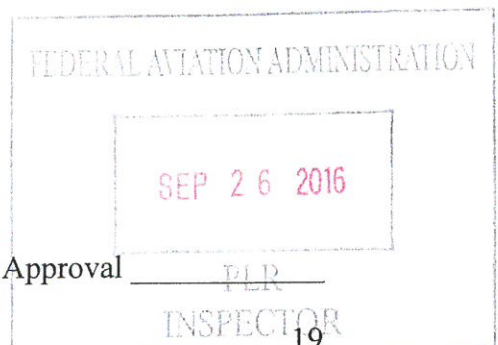
- i. Air Carrier Ramps
- ii. Ramp around A, B, C, D, and E concourses
- iii. Wilson Air Ramp

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3.5 Airfield Clearance Times.

Airfield Clearance times comply with Table 1-1 (below).

Table 1-1. Clearance Times for Commercial Service Airports

<i>Annual Airplane Operations (includes cargo operations)</i>	<i>Clearance Time¹ (hour)</i>
<i>40,000 or more</i>	<i>½</i>
<i>10,000 – but less than 40,000</i>	<i>1</i>
<i>6,000 – but less than 10,000</i>	<i>1½</i>
<i>Less than 6,000</i>	<i>2</i>
<i>General: Commercial Service Airport means a public-use airport that the U.S. Secretary of Transportation determines has at least 2,500 passenger boardings each year and that receives scheduled passenger airplane service [reference Title 49 United States Code, Section 47102(7)].</i>	
<i>Footnote 1: These airports should have sufficient equipment to clear 1 inch (2.54 cm) of falling snow weighing up to 25 lb/ft³ (400 kg/m³) from Priority 1 areas within the recommended clearance times.</i>	

3.6 Snow Equipment List.

A list of snow removal equipment can be found in Appendix A, *Equipment List*. A list of contractor equipment can be found in Appendix C, *Contractor Equipment*.

3.7 Storage of Snow and Ice Control Equipment.

All snow equipment will be properly stored prior to and after a snow and ice event.

3.8 Definitions.

Approved Chemical

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

Ash

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 than falling away as individual snow particles.

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

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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 frost, ice, and any depth of snow, slush, or water.

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.

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.

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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.

Frost

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.

Ice

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:

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- 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'

Oil

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

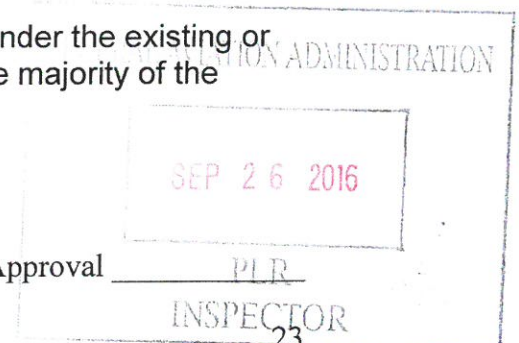
Runway (Primary and Secondary)

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.

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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.

Sand

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

Slush

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.

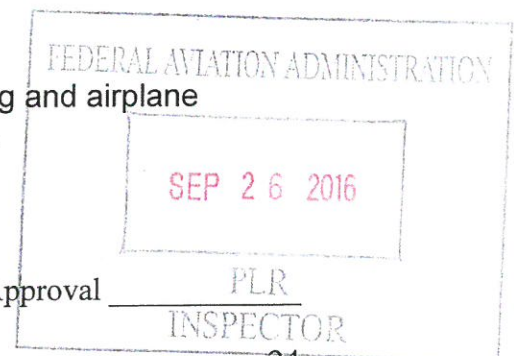
Slippery When Wet Runway

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. 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.

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Chapter 4 - Snow Clearing Operations and Ice Prevention

4.1 Snow Clearing Principals.

a) Ramp and Terminal

CLT hires contractors to clear snow once the airlines have pushed it out of the gate areas. Contractors also clear lead-in paths on the non-movement surfaces. The snow that is cleared is placed in locations that will not create obstructions and will not block or impede pilots' views.

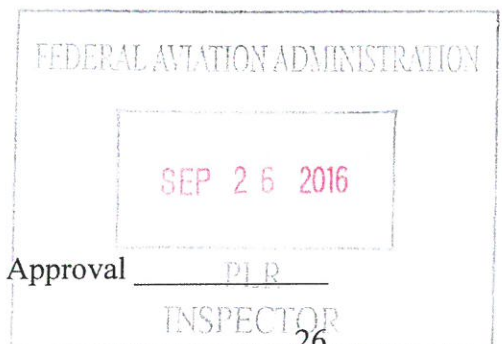
b) Runway and Taxiways

Runway plow teams plow and treat 120 feet wide full length of each runway in a close wing formation. This team consists of 4 Vammas multifunction machines and one deicing unit.

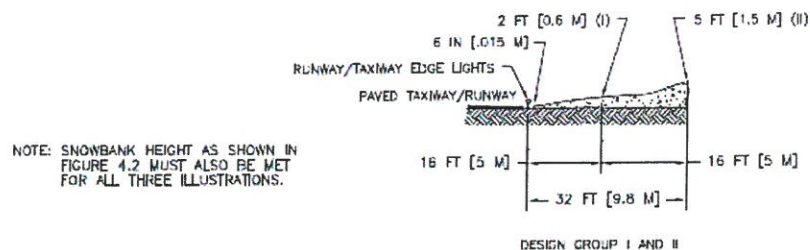
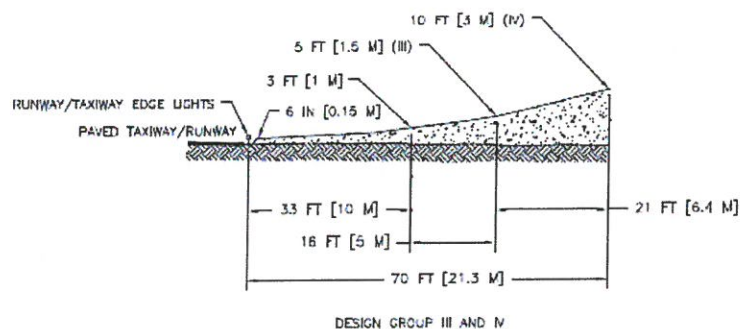
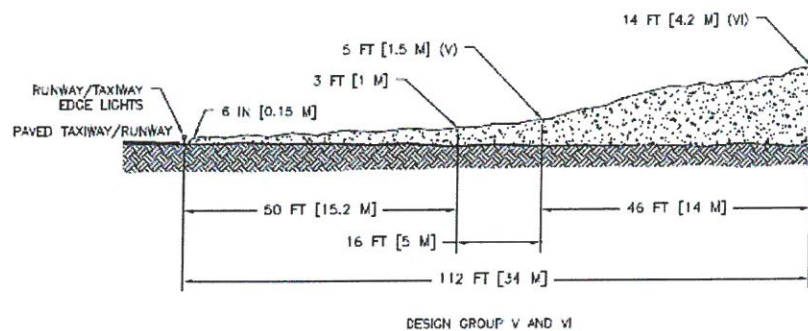
Taxiways plow teams clear and treat 40 feet wide on priority taxiways in close wing formation. This team consists of 1 multifunction machine, 2 dump trucks with plows and 1 deicing unit.

c) Snowbanks

Snowbanks will be addressed using 2 loaders with avalanche plows and 1 rotary plow (in accordance with the diagrams below).



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NOTE: SNOWBANK HEIGHT AS SHOWN IN FIGURE 4.2 MUST ALSO BE MET FOR ALL THREE ILLUSTRATIONS.

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)

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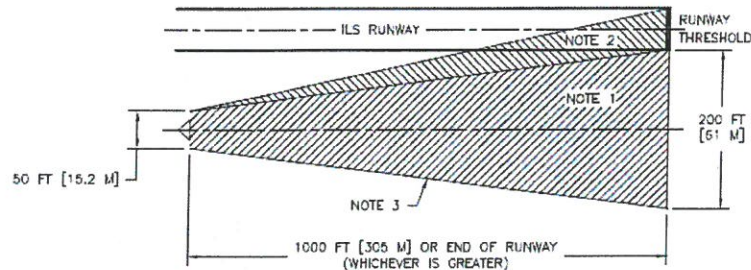
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d) Navigational Aids (NAVAIDs)

NAVAIDs are the responsibilities of the owner or operator. Charlotte Airport only owns and operates the PAPIs on Runway 18R/36L, which are maintained by Airfield Maintenance.



NOTES:

1. CATEGORY I GLIDE SLOPE SNOW CLEARANCE AREA.
2. 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 THAN 2 FEET.

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

* NA (NOT AUTHORIZED)

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

4.2 Controlling Snow Drifts.

CLT does not regularly receive levels of snow that generate snow drifts. If snow drifts are generated, the plow team will clear the areas with a rotary plow.

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4.3 Snow Disposal.

Snow is hauled to a location away from all movement areas to melt.

4.4 Methods for Ice Control and Removal – Chemicals.

CLT uses a solid and liquid deicer.

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

CLT does not typically use sand, but may elect to if needed.

4.6 Surface Incident/Runway Incursion Mitigation Procedures.

Each year, through the SICC's, airfield safety is a topic of discussion. Past year incidents are discussed and lessons learned are carried forward into the next snow season.

3.1(e)(3) discusses mitigation efforts to improve airfield safety during snow and ice removal operations.

Vehicles will be marked and lighted in accordance with the most current version of AC 150/2510-5, *Painting, Marking and Lighting of Vehicles Used on an Airport*.

a) Radio Communication

3.1(e)(3) describes efforts to improve safety with both Operations and Airfield Maintenance personnel in the lead vehicle of the runway and taxiway plow teams.

Each vehicle on the airfield is equipped with a transponder and an ATC radio. Vehicles will be placed on a separate radio frequency as needed to maintain radio traffic at an acceptable level and allow individuals involved in snow and ice clearing the opportunity to focus on the task(s) at hand.

b) Failed Radio Communication

If communication is lost between the snow and ice removal teams and the ATCT, light gun signal procedures will be followed. Also, vehicles can contact the ATCT directly at 704-359-1080 for assistance.

c) Low Visibility and Whiteout Conditions

If whiteout conditions are imminent or occur, the Snow Boss will determine what actions to take, when to stop clearing operations, and when to resume.

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d) **Driver Fatigue**

Shifts are limited to approximately 12 hours to prevent operator fatigue, and no limit to equipment.

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Chapter 5 - Surface Assessment and Reporting

Conducting Surface Assessments:

Airport Operations, Airfield Maintenance, and the Snow Boss will remain aware and monitor all paved surface conditions in order to plan and carry out appropriate maintenance actions in accordance with the SICP. The airport strives to maintain a 'no worse than wet' surface condition.

In complying with Part 139.339, CLT will at a minimum utilize the NOTAM system for collection, dissemination and logs of airport information to air carriers, and other airport users.

NOTAM Manager is used to report airfield conditions.

5.1 Conducting Surface Assessments.

Runway assessments will be made through one Airport Operations and one Airfield Maintenance staff, and / or the Snow Boss.

- Assessments are performed after each snow clearing or treatment operation, at the beginning of each shift, and when requested by the Snow Boss.
- PIREPS, two Bowmonk AFM2 friction readers, and vehicles will be used to conduct assessments of runways, taxiways, and aprons.

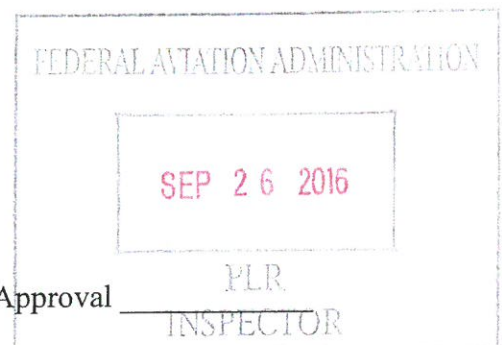
5.2 Applying the Runway Condition Assessment Matrix (RCAM).

a) Determining Runway Conditions

When conducting the runway assessment, with an Operations and Airfield Maintenance staff, the contaminant observed on the surface will be noted and factored into the Runway Condition Assessment Matrix, along with its depth (when applicable), and the OAT. The RCAM can be seen below:

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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
-15°C and Colder outside air temperature: • Compacted Snow	4		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 Warmer than -15°C outside air temperature: • Compacted Snow	3	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	20	Braking deceleration OR directional control is between Medium and Poor.	Medium to Poor
• Ice ²	1	10	Braking deceleration is significantly reduced for the wheel braking effort applied OR directional control is significantly reduced.	Poor
• Wet Ice ² • Slush over ice • Water over Compacted Snow ² • Dry Snow or Wet Snow over ice ²	0	20 or Lower	Braking deceleration is minimal to non-existent for the wheel braking effort applied OR directional control is uncertain.	Nil

1 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: RwyCC:

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. In this case, CLT will 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 (TALPA).

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 RwyCCs

If the observations by CLT 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, CLT may downgrade the RwyCCs. 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 RwyCC given in the RCAM. At these temperatures, CLT will 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 Bowmonk AFM2 friction tester that is operated within allowable parameters.

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.)

CLT will 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 will consider all variables that may affect the runway surface condition, including any precipitation, 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 RwyCC, the monitoring program will confirm continued effectiveness of the treatment.

5.3 Runway Friction Surveys, Equipment, and Procedures.

CLT uses two Bowmonk AFM2 friction testers, listed in 1.1(c).

a) **Conditions Acceptable to Use Decelerometers or Continuous Friction Measuring Equipment to Conduct Runway Friction Surveys on Frozen Contaminated Surfaces.**

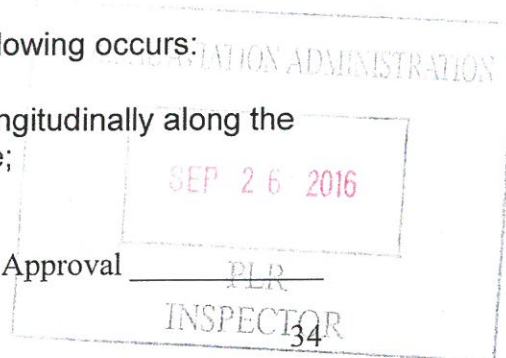
The data obtained from such runway friction surveys are only considered to be reliable when the surface is contaminated under any of the following conditions.

- 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.

CLT conducts friction assessments based on the above information and the guidance provided in the most current version of AC 150/5200-30, *Airport Field Condition Assessments and Winter Operations Safety*, and AC 150/5320-12, *Measurement, Construction, and Maintenance of Skid-Resistant Airport Pavement Surfaces*.

c) How to Conduct

Friction tests using the two Bowmonk AFM2 friction testers will be conducted based on the following:

- Advanced coordination with the ATCT before tests are commenced to allow adequate time to conduct the assessment;
- Lateral locations of 10 feet and 20 feet off of the runway centerline. The worst track is used for the friction assessment. If the worst case condition is found to be consistently limited to one track, future surveys may be limited to this track. Consideration will be given to future and/or seasonal changes in aircraft mix;
- Same direction as arrival aircraft;
- A minimum of three tests are conducted in each zone (touchdown, midpoint, and rollout), then averaged to determine the final number for that zone. The number is rounded up or down to the nearest whole number. Reference Table 5-1, *Friction Survey Example* below (from the most current version of AC 150/5200-30, *Airport Field Condition Assessments and Winter Operations Safety*) for guidance on rounding friction readings;
- A minimum of nine tests will be conducted for each pass;
- The vehicle's speed should be 20 miles per hour.
- The Bowmonk AFM2 friction testers are compatible with anti-lock braking systems (ABS).

Table 5-1. Friction Survey Example

Runway Zone 1 Touchdown	An airport operator obtains four Mu readings in the touchdown zone: 25, 27, 26, and 31. The average of these readings is 27.25, which would be rounded to 27.
Runway Zone 2 Midpoint	Four readings are obtained for the midpoint zone: 26, 28, 28, and 32. The average of 28.5, which would be rounded to 28.
Runway Zone 3 Rollout	After the minimum three readings (29, 30, and 31) are obtained for the rollout zone, ATC instructs the operator to clear the runway. It is not required that an equal number of readings be obtained for each zone, so the three readings are averaged to a reading of 30.

d) Calibration

After the end of each snow season, Airport Operations is responsible for ensuring each of the two Bowmonk AFM2 friction testers is calibrated.

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.

Throughout each shift, Airport Operations and Airfield Maintenance will monitor the airfield conditions and address changes with equipment and/or chemical applications.

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 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: Taxiway and Apron condition reports will occur when contaminants are present on these surfaces via the NOTAM System. NOTAMS

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will be updated as necessary whenever conditions change, such as a contaminant type, depth, percentage, or treatment/width.

Conditions will be reported anytime 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.

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 an 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 the most current version of AC 150/5320-12, *Measurement, Construction, and Maintenance of Skid Resistant Airport Pavement Surfaces*, CLT will report via the NOTAM system an 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 CLT that a downgrade is necessary, the downgrade will be made so that all three runway thirds match (i.e. 3/3/3, 2/2/2, 1/1/1).

The 'Slippery When Wet' 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 action (either pilot reported or by assessment by Airport Operations/Airfield Maintenance) is unsafe for aircraft operations and the surface(s) will be closed immediately when this unsafe condition exists.

Original Date: 12/10/2015
Revision Date: 8/29/2016

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CLT has a Letter of Agreement with the ATCT regarding the Exchange of Braking Action/Friction Measurement Reports and Test Results. This LOA can be found in Appendix D, *Letter of Agreement*.

The Snow Desk will work in conjunction with the ATCT to cease all aircraft operations, and close runway(s) via the NOTAM Manager when a NIL braking action is received, or when a NIL assessment is made.

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 CLT 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, or lane) 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.

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. If braking action cannot be improved, and the surface is not NIL, the airport will continually monitor the runways, taxiways, and aprons to ensure braking does not become NIL.

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.

For continuous monitoring, CLT will have Airport Operations and Airfield Maintenance staff visually inspect and use friction testions, in addition to PIREPs reported from the ATCT to assess airfield conditions, on a rotating basis around the airfield, based on snow clearing operations and conditions.

Original Date: 12/10/2015

Revision Date: 8/29/2016

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SEP 26 2016

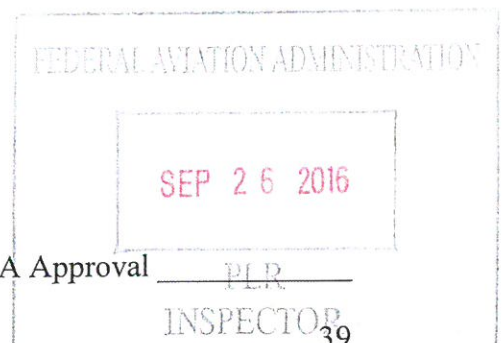
PLR
INSPECTOR 38

5.10 Surface Conditions Not Being Monitored/Reported

Airport Operations and Airfield Maintenance are available 24/7 to monitor the airfield conditions as necessary.

Original Date: 12/10/2015
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Appendix A – Equipment List

Type of Equipment	Qty
Dump Trucks/Snow Plows	7
Standard Truck mounted Snow Plows	7
Foot Snow Plows	2
Walk Behind Snow Blower	1
Rubber Tire Loader, John Deere and Case (with Avalanche box plow attachment)	2
MB North Star Rotary Plow	1
John Deere Utility Vehicle with Snow Blade and Spreader	1
Stake body with Medium Spreader	1
Fresia plow/snow broom/blower	1
Vammas plow/snow broom/blower	4
Truck Mounted Chemical Applicator (500 Gallon)	1
Dump Truck with Sand/Urea Spreader	2
Chemical Applicator (Batts Sprayer, 1100 Gallon and Tyler Ice, 2000 Gallon)	2
Deicing Truck (4000 Gallon)	1

CLT has the above snow removal equipment on site.

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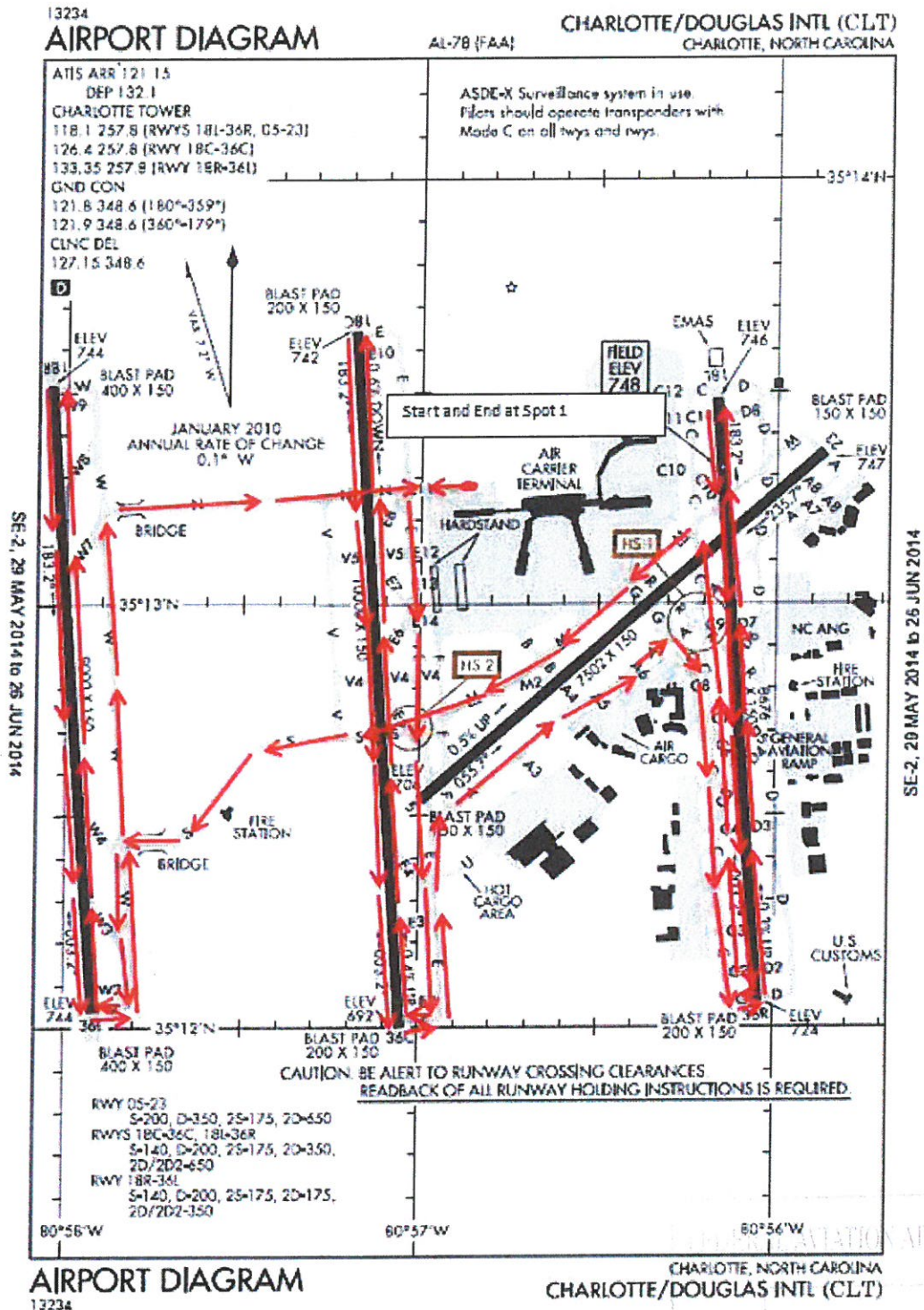
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Snow and Ice Control Plan - Charlotte Douglas International Airport

Appendix B – Snow Clearing Diagrams

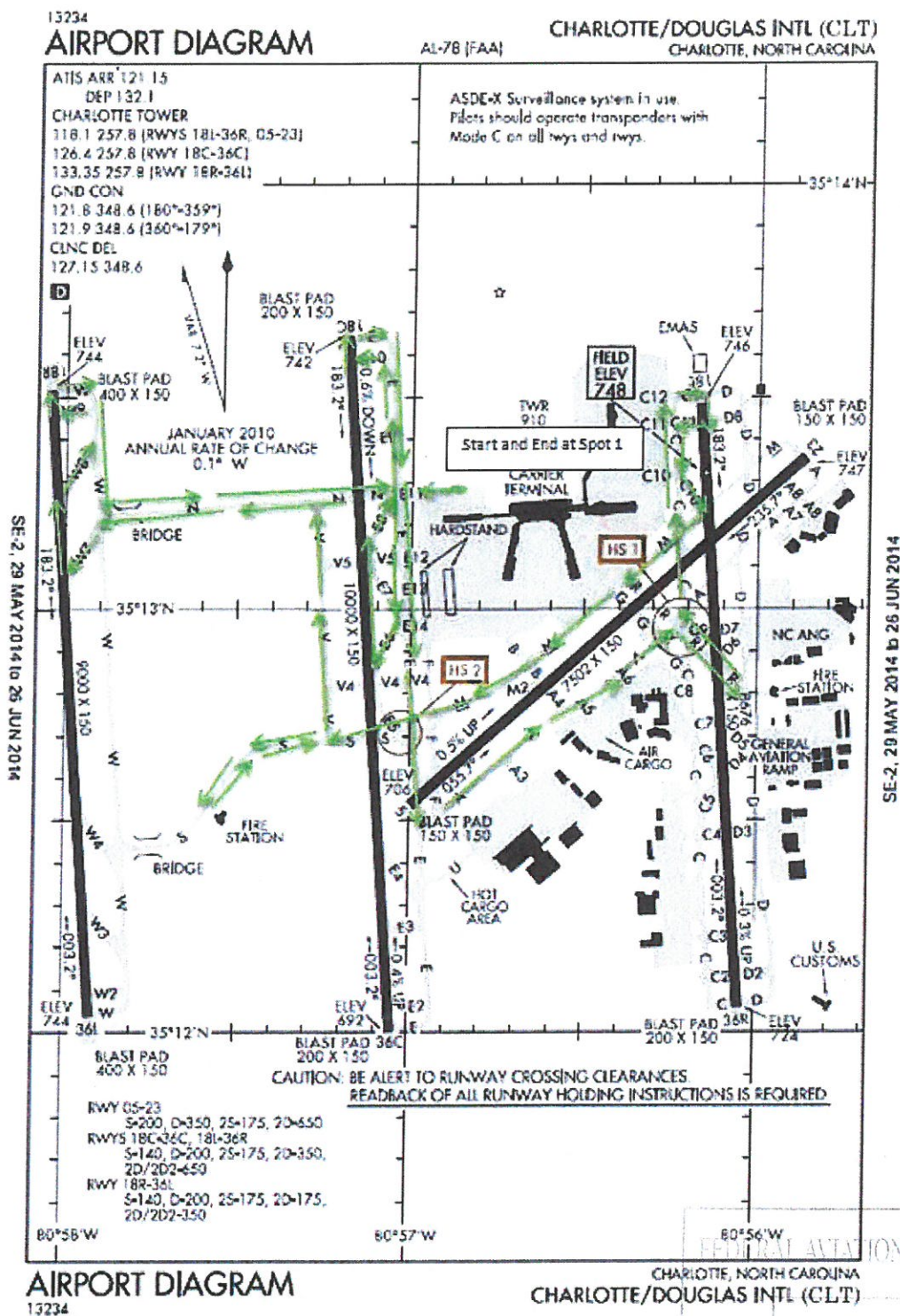
FY15 Runway Team Snow Route South Operations



Original Date: 12/10/2015
Revision Date: 8/29/2016

Snow and Ice Control Plan - Charlotte Douglas International Airport

FY15 Taxiway Team Snow Route Diagram North Operations



Original Date: 12/10/2015
Revision Date: 8/29/2016

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Appendix C – Contractor Equipment

The City of Charlotte (City), Aviation Division, will contract and reserve equipment including operators to have them respond and assist the Aviation Department with snow removal from the Airport Ramp Area on a contingency basis.

Type of Equipment	Qty
Motor Grader	6
650 John Deere Loaders or Equivalent	8
John Deere Skid Steer or Equivalent	4

The City reserves the right to request less or additional equipment at any time.

This equipment is to be mobilized at any time 24/7 to the Airport Ramp Area upon notification from the Airport. The contractor must provide this equipment and operators within four hours of notification. The equipment and operators may be required to work in 12-hour shifts, 24-hours a day until conditions are cleared. This will be the decision of the Airport Snow Boss or designee.

Once mobilized, the equipment and operators will work with City personnel to plow and push snow from the Airport Ramp Area. The City reserves all rights to adjust snow clearing operations based on conditions. Locations may change within the ramp or other areas as determined by the Airport designee.

Under this agreement the City of Charlotte agrees to pay the following fees and rates:

Hourly Working Equipment Rate

If the equipment is used, the City will pay an hourly working equipment rate per hour for each motor grader, per hour for each rubber-tired loader, and per hour for each skid steer used. This rate includes the operator, maintenance, support personnel, and any repairs for each piece of equipment.

Blades

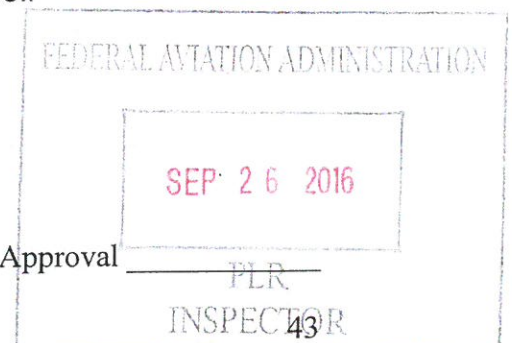
Blades will be provided by the City for all 12-foot moldboards. All blades will be installed by the City and contractor's maintenance personnel.

Fuel

The City will provide fuel for equipment.

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Snow and Ice Control Plan - Charlotte Douglas International Airport

Timesheets for vehicle operators and man-hour utilization reports will be submitted to the City on a weekly basis for calculations of payment.

A list of contacts will be required in the event the equipment is needed. Contact names or numbers are required to be updated during the course of the winter if changes in personnel occur.

The airport will be awarding two contracts for each winter season.

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Appendix D - Letter of Agreement

Charlotte ATC Tower and Charlotte Douglas International Airport

LETTER OF AGREEMENT

Effective Date: October 1, 2016


Subject: Braking Action Reports, Runway Condition Codes (RwyCC) and FICON NOTAM Dissemination

1. Purpose: To establish procedures and define responsibilities for Charlotte ATCT and Charlotte International Airport Operations (CDIA).
2. Cancellation: Letter of Agreement between Charlotte ATCT and CDIA dated September 30, 2003.
3. Procedures: Braking Action Advisories are in effect when any braking action report less than "good" is received. The following actions will be taken:
 - a. As received, CDIA will furnish Runway Condition Codes (RwyCC) to Charlotte ATCT. When a Runway Condition Report (RCR) is received between 1 and 6, CDIA will issue a Field Condition (FICON) NOTAM into the Federal NOTAM System (FNS). (See attachment 1 for Runway Condition Assessment Matrix (RCAM).
 - b. Charlotte ATCT will report runway and taxiway braking action reports received from pilots whenever reports have deteriorated to "good to medium," "medium," "medium to poor," "poor," or "nil" or have improved to "good" to CDIA in a timely manner.

Charlotte ATCT will report to CDIA anytime Two (2) consecutive braking action reports of "poor" are received as evidence that surface conditions may be deteriorating.

In the event of a "Nil" braking action report, Charlotte ATCT will advise CDIA and immediately cease all operations on that runway.

NOTE: When known, include the type of aircraft and time from which the report is received.



For John Greene

John Greene
Manager (Acting)
Charlotte ATC Tower



Brent Cagle
Aviation Director
Charlotte Douglas International Airport

DEC 15 2016

FAA Approval:

PLR 45
INSPECTOR

Original Date: 12/10/2015

Revision Date: 08/29/2016

Attachment 1

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 Warmer than 5° F (-15°C) outside air temperature: • Compacted Snow	3	10	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
• Ice ²	1	21	Braking deceleration is significantly reduced for the wheel braking effort applied OR directional control is significantly reduced.	Poor
• Wet Ice ² • Slush over Ice • Water over Compacted Snow ² • Dry Snow or Wet Snow over Ice ²	0	20 or Lower	Braking deceleration is minimal to non-existent for the wheel braking effort applied OR directional control is uncertain.	Nil

Original Date: 12/10/2015
Revision Date: 08/29/2016

