



# Snow and Ice Removal Plan

Henderson County Engineering Department

November 2013

## **“SNOW PLAN” Purpose Statement:**

Henderson County’s plan for prioritized and efficient removal of snow, ice and debris from County Facilities to ensure a safe environment for Citizens and Employees.

The Engineering Department is indirectly integrated into the operations of all the other County Departments during its normal operations. However during Snow and Ice events, Engineering becomes directly integrated; most importantly, with the Emergency Response efforts of the County. Engineering must ensure the Sheriff and Emergency Management Departments are encumbered as little as possible by the effects of weather. Additionally, Engineering is responsible for safe hours of operation for all the remaining Departments during weather events.

Specifically, the purpose of this plan is as follows:

- Provide guidance to County staff and contractors for snow and ice removal operations to assure a safe environment for employees and Citizens.
- Provide the ability for County Departments and other associated organizations to review operations.
- Provide the ability to efficiently review, prepare and train for operations on an annual basis.
- Provide financial accountability for the resources used to removal snow and ice from County facilities.

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### **Annual Snow Meeting:**

An annual "Snow Meeting" will be held in September each year with all staff tasked with responding to weather events, see available personnel below. The County Engineer will lead the meeting and accomplish the following:

1. Review the Snow Plan and make any revisions or updates needed since the previous year's meeting.
2. Train all appropriate personnel on equipment used to address weather events.
3. Test and repair all equipment used to address weather events, see available equipment list below.
4. Review and update if needed the Contractors used to address weather events, see Contractor list below.

### **Prioritized List of Facilities:**

See the attached list of facilities which have been prioritized with the following criteria:

1. Priority One: Bare Pavement Facilities, Remained Clear of Snow & Ice at all times
2. Priority Two: Snow & Ice cleared by and during the facilities hours of operation
3. Priority Three: Snow & Ice cleared when priority #2 facilities have been addressed

### **Available Personnel:**

- Central Services – 13 Employees
- Recreation – 4 Employees
- Solid Waste – 4 Employees @ Stoney Mountain Facility
- Utilities – 2 Employees @ Utility Facilities
- Inmates when Detention Center policy and operations permit

### **Available Equipment:**

- Chevy ½ ton Pick-up w/ Snow Plow & spreader
- Chevy ½ ton Pick-up w/ Snow Plow
- Ford ¾ ton Pick-up w/Snow Plow
- John Deere 1070 Tractor with push blade
- John Deere 870 Tractor with push blade-rear spreader
- John Deere 4500 Backhoe with loader bucket
- Kubota Backhoe with loader bucket
- Ranger 6 x 6 with push blade
- Cub Cadet lawn tractor with 42" push blade
- (2) Rubber tire Loaders – Landfill

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- D5 Dozer – Landfill
- Aebi with broom attachment -Landfill
- (2) Cub Cadet snow blowers – model 317E753F100
- (3) Grass Seed spreaders for Ice Melt
- (6) Plastic Shovels
- (6) Metal Shovels
- (4) Chainsaws

### **Available Materials:**

#### Calcium Chloride

- Use: Asphalt Parking Lots and Driveways; acceptable on sidewalks and steps. Not effective in temperatures under 20 degrees (Blue color is acceptable to -5 degrees).
- Quantity / Price Available: 50 lb bags @ \$12/bag
- Vendors: Ray's Bag
- Inventory Needed: 75 – 100 bags
  - Central Services: 40
  - Human Services: 20
  - Detention Center: 20
  - Historic Courthouse: 20

#### Sand

- Use: traction on ice for all surfaces (leaves significant residue after event requiring clean up)
- Quantity / Price Available:
- Vendors:
- Inventory Needed: 0 bags

#### Ice Melt with Traction Aide

- Use: Safe for all surfaces (leaves residue after event requiring clean up). Use where surfaces re-ice after initial application to provide traction.
- Quantity / Price Available: 40 lb bags @ \$8/bag
- Vendors: Lowes
- Inventory Needed: 25-40 bags
  - Central Services: 25
  - Human Services: 5
  - Detention Center: 5
  - Historic Courthouse: 5

### **Procedures for Removal Operations:**

The following items are important to consider prior to adverse weather event:

- Monitor multiple weather media and Emergency Management Updates during periods of possible weather events.
- Key snow accumulation is 1.5 to 2". Over this threshold, ice melt is not needed until removal down to 1.5 / 2".
- Send Admin Alert to ask that all vehicles left during Event be moved to farthest space in lots away from buildings
- Coordinate with libraries, shelter and other Saturday operating departments to determine if they will be open
- Meeting Room & Recreation Facility Scheduler: review schedule to reschedule or if necessary notify CS to clear snow
- Continuously coordinate with Emergency Shelter and EMS to make sure Contractors are keeping clear

The following items are important to consider during adverse weather

- Snow that is being removed should be stockpiled at the lowest grade of a parking lot when possible. If needed, take a couple parking spaces to store excess snow.
- All handicap parking places, curb cuts, ramps or other similar areas, must be cleared and considered a priority for the sidewalk crews. Steps and walkways for the public or employees should be next on the crews list when going from building to building.
- Traction aid added to ice melt on critical locations where ice melt may not completely remove ice
- For continuing ops while snow is falling, utilize two teams alternating shifts. Make sure both teams have equal and capable equipment operators
- Sidewalks at Green River Library, Etowah Library and Fletcher Library need to be cleared in House

After adverse weather the following need to be considered:

- After City and NCDOT operations entrances may get blocked with plowed snow and need to be re-cleared
- After the bulk of the removal is complete, the icy spots will be monitored and addressed daily if the temperatures stay below freezing.
- Need the barricades to close facilities that can't clean
- Our Facilities need to be cleaned at least as well as the City & State Roads
- Facilities will need sweeping / washing for remaining salt, sand and salt residue

The following are some important points on utilizing chemicals during weather events:

- Often, removing the snow is just the first step in the process of making your driveways and walkways snow and ice-free. Dealing with the ice left behind is the next challenge. Ice does not just freeze on the pavement, it freezes to the

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- pavement. Breaking that bond, or keeping it from forming in the first place, is the task of chemical de-icers or anti-icers.
- A de-icer is a chemical agent that is spread on snow or ice. It does not melt all the snow; it seeps through to the surface of the pavement and melts the ice there, breaking the bond and making it easier to remove the snow.
  - An anti-icer is a chemical agent that is applied before the snowfall begins. It prevents the bonding, thereby facilitating the removal of snow down to the surface of the pavement.
  - There are many chemicals and chemical blends available to use as de-icers and anti-icers. While the chemistry is simple, the choice of which to use is not. Many factors must be considered and much of the information is confusing or even conflicting.
  - For many years, the most common de-icer has been rock salt. The indirect damage and environmental concerns were offset by its cost-effectiveness. Today, more environmentally friendly and considerably more effective chemicals are available.
  - Any de-icing chemical has the potential to harm the environment if misused. Some will chemically attack concrete. All must be used strictly according to the manufacturer's guidelines. Over application of any can damage vegetation; even those products claiming to be made from fertilizing ingredients can cause harm.
  - If you apply the chemicals as precipitation begins, their effectiveness is increased and the amount needed is diminished.

### **Contractor List:**

The attached list of Contractors indicates the name, phone number, location of service, pay rate, date contracted, equipment, and insurance. Also attached are the written quotes for each contractor.

### **References:**

American Public Works Association  
Federal Highway Administration  
North Carolina Department of Transportation  
Material Manufactures Recommendations

### **Appendix:**

1. Prioritized List Facilities
2. Contractor Quotes List w/ quotes



Facility List for Snow & Ice

Type/Desc	Address	City	DEPARTMENT	PRIORITY	UNIT	NOTES
CENTRAL SERVICES / GARAGE	320 WILLIAMS STREET	HENDERSONVILLE	CENTRAL SERVICES	1	CS / P&R	
RESCUE SQUAD BUILDINGS	320 WILLIAMS STREET	HENDERSONVILLE	RESCUE SQUAD	1	CS / P&R	
EMS MAIN OFFICE/GARAGE	820 N. JUSTICE	HENDERSONVILLE	EMS	1	CS / P&R	Hospital Maint Helps
EMS STATION #2	125 VANCE HILL DRIVE	MILLS RIVER	EMS	1	CONTRACT	Carol Whitaker 891-3197, 674-4652
EMS STATION #3	100 COMMERCIAL DRIVE	HENDERSONVILLE	EMS	1	CONTRACT	LEASED TO HC, Billy Hill, 699-3479
EMS STATION #4	1 FIREHOUSE LANE	EDNEYVILLE	EMS	1	CONTRACT	Edneyville FD
LAW ENFORCEMENT CENTER	100 N GROVE STREET	HENDERSONVILLE	SHERIFF	1	CS / P&R	
DETENTION CENTER	375 FIRST AVENUE EAST	HENDERSONVILLE	SHERIFF	1	CS / P&R	
911 / EM / KING STREET BUILDING	100 N KING ST	HENDERSONVILLE	SHERIFF / EMS	1	CS / P&R	INTERIOR PARKING LOT
IMPOUND / EVIDENCE FACILITY	4TH AVENUE EAST	HENDERSONVILLE	SHERIFF	1	CS / P&R	FROM 4TH AVE TO GATE
SNOWBALL LANE PUMP STATION #1	105 SNOWBALL LANE SECT 1	HENDERSONVILLE	UTILITIES	1	ULT	
NEWBERN PUMP STATION #2	25 NEWBERN DR SECTION 1	FLETCHER	UTILITIES	1	ULT	
JOHNSON FARM PUMP STATION #3	40 OLD JOHNSON FARM RD	FLETCHER	UTILITIES	1	ULT	
ROCKWELL PUMP STATION #4	641 ROCKWELL DRIVE	FLETCHER	UTILITIES	1	ULT	
ITT PUMP STATION #5	470 BROADPOINTE DR	MILLS RIVER	UTILITIES	1	ULT	
MOUNTAIN HOME PUMP STATION #6	99 INDUSTRIAL PARK ROAD	MOUNTAIN HOME	UTILITIES	1	ULT	
PRISON PUMP STATION #7	709 MOUNTAIN ROAD	HENDERSONVILLE	UTILITIES	1	ULT	
NAPLES PUMP STATION #8	5825 ASHEVILLE HIGHWAY	NAPLES	UTILITIES	1	ULT	
MUD CREEK PUMP STATION #9	118 W. SWIFT CREEK ROAD	FLETCHER	UTILITIES	1	ULT	RIVER STONE S/D
JUSTICE ACADEMY TREATMENT PLANT	3973 CHIMNEY ROCK ROAD	EDNEYVILLE	UTILITIES	1	ULT	
ANIMAL SHELTER BUILDING	828 STONEY MOUNTAIN ROAD	HENDERSONVILLE	ANIMAL SERVICES / SHERIFF	1	SW/CS	STAFF SERVICES KENNELS DAILY
1995 COURTHOUSE (LESS DETENTION)	200 NORTH GROVE STREET	HENDERSONVILLE	VARIOUS	2	CS / P&R	INCLUDE OVERFLOW LOT ON 4TH
BOARD OF ELECTIONS	75 E CENTRAL STREET	HENDERSONVILLE	ELECTION / COUNTY	2	CS / P&R	LEASED TO HC
COOPERATIVE EXTENSION BUILDING	740 GLOVER STREET	HENDERSONVILLE	COOPERATIVE EXTENSION	2	CS / P&R	
HISTORIC COURTHOUSE	113 MAIN STREET	HENDERSONVILLE	VARIOUS	2	CS / P&R	
HUMAN SERVICES BUILDING	1200 SPARTANBURG HIGHWAY	HENDERSONVILLE	DSS / HEALTH	2	CS / P&R	
JACKSON PARK RECREATION OFFICE	801 GLOVER STREET	HENDERSONVILLE	PARKS & RECREATION	2	CS / P&R	
KING STREET BUILDING	100 N KING ST	HENDERSONVILLE	LAND DEVELOPMENT	2	CS / P&R	FRONT PARKING LOT
LIBRARY, EDNEYVILLE	2 FIREHOUSE LANE	EDNEYVILLE	LIBRARY	2	CONTRACT	Chuck Dalton 458-4641
LIBRARY, ETOWAH	101 Brickyard Rd.	ETOWAH	LIBRARY (NEW)	2	CONTRACT	Tommy Gash 329-4784, CS Sidewalks
LIBRARY, FLETCHER	120 LIBRARY ROAD	FLETCHER	LIBRARY	2	CONTRACT	Town of Fletcher 687-3985
LIBRARY, GREEN RIVER	50 GREENRIVER ROAD	TUXEDO	LIBRARY	2	CONTRACT	The Green Family
LIBRARY, HENDERSONVILLE	301 N. WASHINGTON STREET	HENDERSONVILLE	LIBRARY	2	CS / P&R	
LIBRARY, MILLS RIVER	HOOPER ROAD	MILLS RIVER	LIBRARY	2	Mills River/CS	County Just Clears Sidewalks
OLD ETOWAH BRANCH LIBRARY	245 BRICKYARD ROAD	ETOWAH	WCCA	2	WCCA	LEASED TO WCCA
PARTNERS FOR ECONOMIC DEVELOPMENT	320 KING STREET	HENDERSONVILLE	CHAMBER OF COMMERCE	2	CS / P&R	LEASED TO HCPED
RED CROSS OF HENDERSON COUNTY	203 2ND AVENUE	HENDRSONVILLE	RED CROSS (NON COUNTY)	2	CS / P&R	NOT A COUNTY FACILITY
SOIL AND WATER	999 HIGH COUNTRY LANE / 61	HENDERSONVILLE	SOIL & WATER	2	CONTRACT	LEASED TO HC, BUILDING OWNER
STONEY MOUNTAIN TRANSFER FACILITY	802 STONEY MOUNTAIN ROAD	HENDERSONVILLE	SOLID WASTE	2	SW	
STONEY MTN. ACTIVITY CENTER	802 STONEY MOUNTAIN ROAD	HENDERSONVILLE	PARKS & RECREATION / SW	2	SW	
TRAVEL AND TOURISM	201 SOUTH MAIN STREET	HENDERSONVILLE	TRAVEL & TOURISM	2	CS / P&R	
SIX AVENUE PHYCIATRIC	2110 WOODRIDGE DRIVE	HENDERSONVILLE	MENTAL HEALTH (NON CTY)	2	CS / P&R	
COURT SERVICES CENTER	1347 SPARTANBURG	HENDERSONVILLE	STATE AGENCIES	2	CS / P&R	
HCAAC	708 S GROVE STREET	HENDERSONVILLE	PARKS & RECREATION	2	CS / P&R	
THE CLUBHOUSE	714 6TH AVENUE WEST	HENDERSONVILLE	MENTAL HEALTH	3	CS / P&R	VACANT
ETOWAH PARK	SCHOOL HOUSE ROAD	ETOWAH	PARKS & RECREATION	3	P&R	
OLD EDNEYVILLE PARK	FIRE HOUSE LANE	Edneyville	PARKS & RECREATION	3	P&R	Dalton if needed
NEW EDNEYVILLE PARK	IDA ROGER ROAD	Edneyville	PARKS & RECREATION	3	P&R	
DANA PARK	RIDGE ROAD - DANA PK	DANA	PARKS & RECREATION	3	P&R	
EAST FLAT ROCK PARK	SPARTANBURG HIGHWAY	EAST FLAT ROCK	PARKS & RECREATION	3	P&R	
WEST FELT PARK	NC 280	FLETCHER	PARKS & RECREATION	3	P&R	
LARGE BARN	234 FOXWOOD DRIVE	HENDERSONVILLE	VACANT BUILDINGS	3	SW	