

City of Joliet



Anti – Icing/De-Icing Program

MIKE EULITZ – ROADWAYS ENGINEER

The Beginning

- The City of Joliet has approximately 513 centerline miles of roadway.
- From 2003 to 2007 the City of Joliet used rock salt and calcium chloride to treat the roadways in the city of Joliet.
- From 2003 through 2008 the City of Joliet had 43 snow fighting trucks on the road.
- This meant that each truck driver was responsible for 11.9 centerline miles of roadway to treat and clear during a snow event.

CHALLENGES RELATED TO SNOW AND ICE TREATMENT AND REMOVAL

1. RESIDENT EXPECTATIONS
2. CITY COUNCIL EXPECTATIONS
3. SALT AVAILABILITY AND DELIVERY CHALLENGES
4. TRUCK AVAILABILITY
5. MANPOWER
6. DRIVER EDUCATION



YEAR	SNOW (IN.)	CALL OUTS	SALT USAGE (TONS)	SALT PER INCH	SALT PER CALL OUT
'03-'04	21.4	13	6652	311	512
'04-'05	22.2	11	5713	258	520
'05-'06	22.8	9	5566	245	619
'06-'07	31.3	11	8850	283	805
'07-'08	46.4	20	12188	263*	610*

* - CUT SALT BY 25% WITH GRIT FROM JANUARY TO END OF SEASON DUE TO LACK OF SALT AVAILABLE.

**HOW DO WE SLOW DOWN OR
REVERSE THE TREND??**

IN THE WINTER SEASON OF 2007-2008 THE CITY OF JOLIET BEGAN TO CUT THE USE OF SALT BY THE FOLLOWING:

1. CUT SALT WITH 25% MIXTURE OF GRIT FOR ALL STREETS IN JANUARY OF 2008
2. CUT SALT WITH A 25% MIXTURE OF GRIT FOR ALL NEIGHBORHOOD STREETS IN THE WINTER SEASON OF 2008-2009.
3. CUT SALT WITH A 50% MIXTURE OF GRIT ON NEIGHBORHOOD STREETS AND INTRODUCING THE USE OF BEET JUICE MIXED WITH OUR CURRENT SALT PILES AT THE BEGINNING OF THE SEASON IN THE WINTER SEASON OF 2009-2010.

YEAR	SNOW (IN.)	CALL OUTS	SALT USAGE (TONS)	SALT PER INCH	SALT PER CALL OUT
'07-'08	46.4	20	12188	263	610
'08-'09	38.4	20	7404	194	371
'09-'10	41.6	20	9299	224	465

2008 – 2009 CHALLENGES

1. CUTTING THE SALT SUPPLY WITH GRIT WAS IN EFFECT BEGINNING TO CAUSE AN INCREASE IN SALT USE.
2. THE USE OF GRIT WAS CREATING ADDITIONAL MAINTENANCE ISSUES IN THE SPRING RELATED TO CLEANING THE STREETS.
3. THE USE OF GRIT WAS NOT VIEWED SATISFACTORILY BY THE RESIDENTS OF THE CITY BASED ON EXPECTATIONS.
4. REDUCTION IN WORKFORCE DUE TO DOWNTURN IN ECONOMY

RESULTS FROM 3 YEAR STUDY ON USE OF GRIT

THE CITY DETERMINED THAT GRIT ALONE WAS NOT THE ANSWER IN THE REDUCTION OF SALT USE AND GAINING A SATISFACTORY RESULT IN THE SNOW FIGHTING EFFORT.

THE DOWNTURN IN THE ECONOMY AND SUBSEQUENT REDUCTION IN FORCE RESULTED IN A WORKFORCE REDUCTION FROM 43 TRUCKS ON THE ROAD TO 32 TRUCKS ON THE ROAD.

THIS RESULTED IN EACH TRUCK DRIVER BEING RESPONSIBLE FOR 16 CENTERLINE MILES OF ROADWAY COMPARED TO 12.

THE CITY BEGAN TO EXPERIMENT WITH THE USE OF CHEMICAL MIXTURE OF BEET JUICE AND SALT BRINE IN THE WINTER SEASON OF 2010-2011.

BEGINNING THE WINTER SEASON OF 2011-2012 THE CITY OF JOLIET ROADWAYS DIVISION PURCHASED ITS OWN SALT BRINE MAKING EQUIPMENT.

THE CITY THEN BEGAN MIXING ITS OWN “COCKTAIL” FOR ANTI-ICING/DE-ICING COMPRISED OF SALT BRINE AND BEET JUICE.

IMMEDIATE BENEFITS WERE RECOGNIZED NOT THE LEAST OF WHICH WAS A REDUCTION IN LABOR COSTS AND SALT USAGE.

IN THE FINAL ITERATION THE CITY OF JOLIET HAS SETTLED ON A “COCKTAIL” CONSISTING OF A 75-15-10 RATIO OF SALT BRINE-BEET JUICE-CALCIUM CHLORIDE.

ANTI – ICING TECHNIQUES PERFORMED IN THE CITY

ANTI ICE TRUCKS TREAT HILLS AND BRIDGE APPROACHES

ANTI ICE TRUCKS TREAT MAIN ROUTES THROUGHOUT THE CITY

ANTI ICING IS BEING EXPANDED TO INCLUDE SELECT NEIGHBORHOODS UNTIL ADDITIONAL FUNDING IS AVAILABLE TO EXPAND THE ANTI ICING FLEET

PROVIDED SUFFICIENT VEHICLE FLEET AND MANPOWER BECOME AVAILABLE THE ANTI ICING PROGRAM WILL ENCOMPASS THE ENTIRE CITY OF JOLIET









YEAR	SNOW IN INCHES	TOTAL SALT (TONS)	SALT USAGE TONS/INCH SNOWFALL
'08-'09	38	7404	193
'09-'10	41.6	9299	224
'10-'11	44	9152	208
'11-'12	21	4909	234
'12-'13	20	4899	245

THE PAST 5 YEARS HAVE RESULTED IN A 23% REDUCTION IN SALT USAGE PER INCH SNOWFALL BY USING ANTI ICING AND DEICING TECHNIQUES

YEAR	CALL OUTS	OT COSTS	COST/CALL OUT
'08-'09	20	\$481,000	\$24,050
'09-'10	20	\$447,443	\$22,372
'10-'11	19	\$509,563	\$26,819
'11-'12	9	\$185,648	\$20,628
'12-'13	11	\$217,668	\$19,788

ANTI-ICING TECHNIQUES HAVE RESULTED IN A 35% DECREASE IN OVERTIME COSTS PER CALL OUT OVER THE PAST TWO YEARS.

QUESTIONS?

THANK YOU

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CITY OF JOLIET