

# Low Salt Design Concepts

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**Salt Week 2026**

January 29, 2026



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Low Salt Strategist

# What I learned from the plow drivers: *We don't design for winter*



Time to fix that oversight!





# Basic Concepts of Low Salt Design

**Speed up  
pavement recovery**



Fast

Slow

**Reduce the repeat offenders**

**Blowing Snow**



**Meltwater Sprawl**

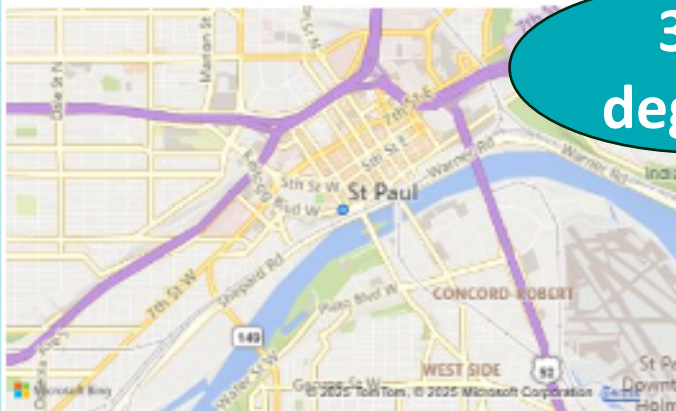


# Use Local WINTER Weather

## Find a Location of Interest

St. Paul

### Location



### Snowfall Statistics

Determined using 30 years of National Snow Analyses published by NOAA's National Operational Hydrologic Remote Sensing Center. Storage Footprint is based on plowed area.

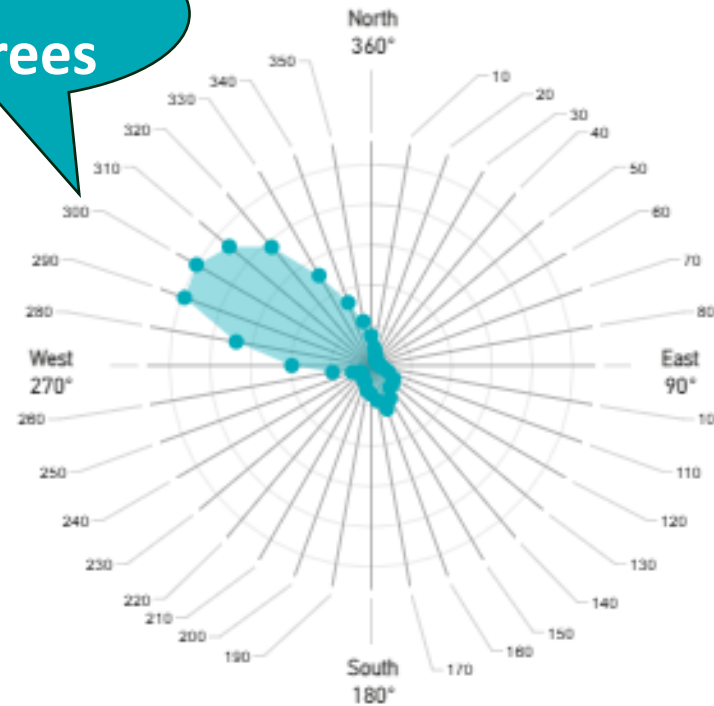
Percentile	Inches of Snowfall	Storage Footprint (Beta)
90th	66.60	27.8%
80th	56.70	23.6%
70th	47.10	19.6%
60th	41.90	17.5%
50th (Median)	38.80	16.2%
40th	36.00	15%
30th	32.50	13.5%
20th	29.90	12.5%
10th	24.30	10.1%

16%

## Wind Directions

The proportion of time that strong winter winds blow from a given direction. The value 360 represents geographic North, 90 indicates East, and so on.

Frequency by Direction

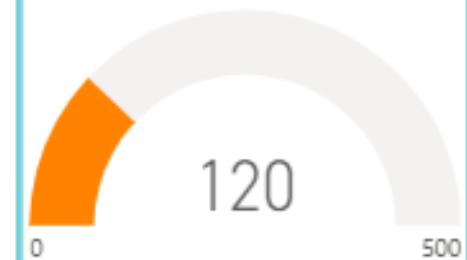


BOLTON & MENK

LSiD  
Low Salt Solutions

## Blowing Snow Hours per Year

Calculated based on strong winter wind direction and average winter snow cover. The observed maximum is 500 hours.



50

## Thaw-to-Freeze

Annual Count and Trend based on satellite analysis.

50  
Count per Year

0.15  
Rate of Change



# Low Salt Issues & Solutions Icons

## Low Salt Issues icons



Drainage



Outsmart the Wind



Pavement Considerations



Plow Access



Salt Storage



Snow Storage



Use the Sun



Vegetation

## Low Salt Solutions icons



Drainage



Outsmart the Wind



Pavement Considerations



Plow Access



Salt Storage



Snow Storage



Use the Sun



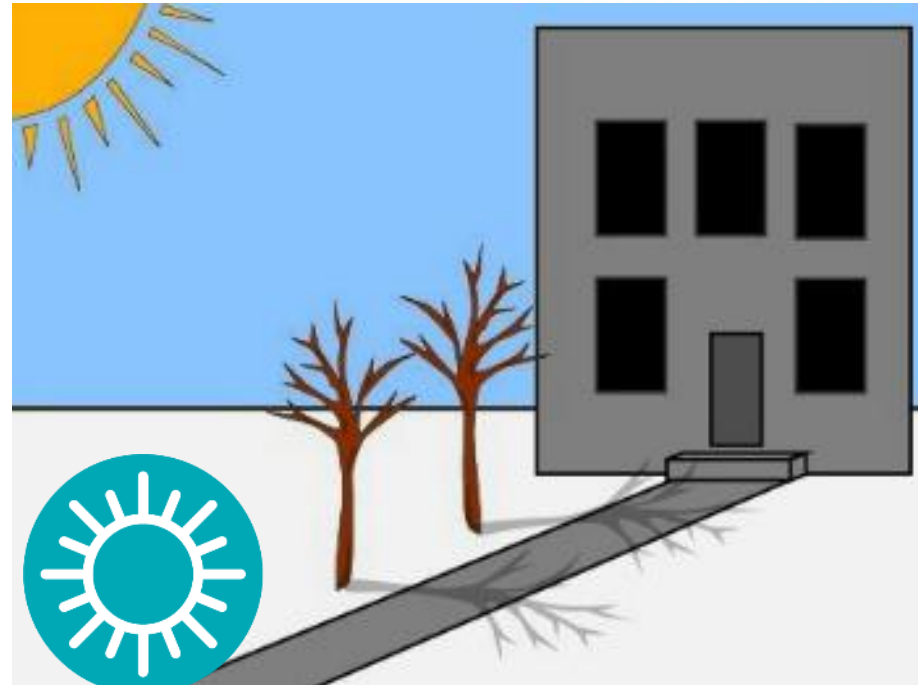
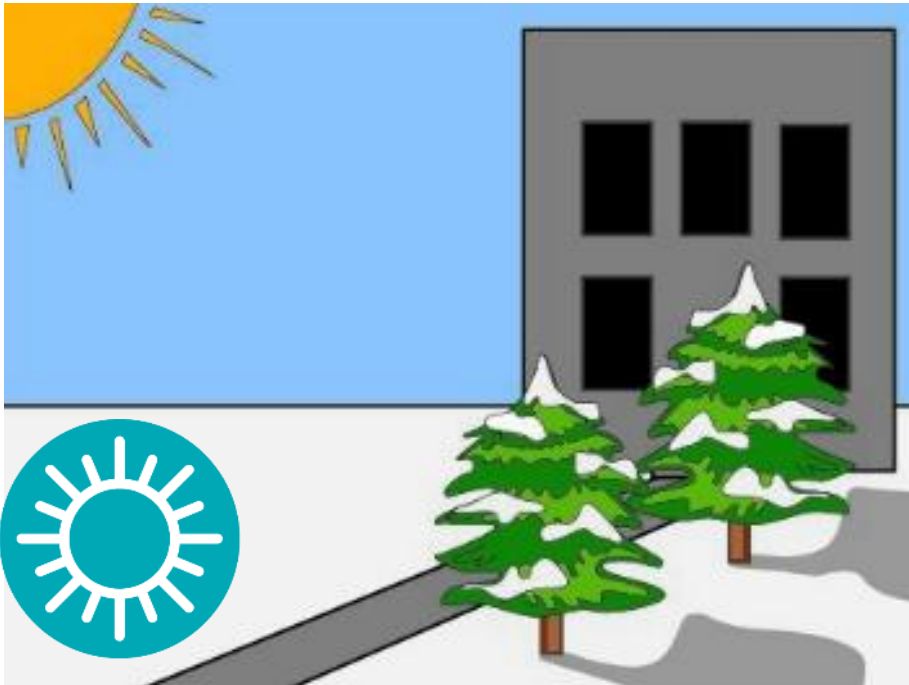
Vegetation

Download Our Issues  
& Solutions Icons



# Use the Sun

*Shade = slower  
pavement recovery*

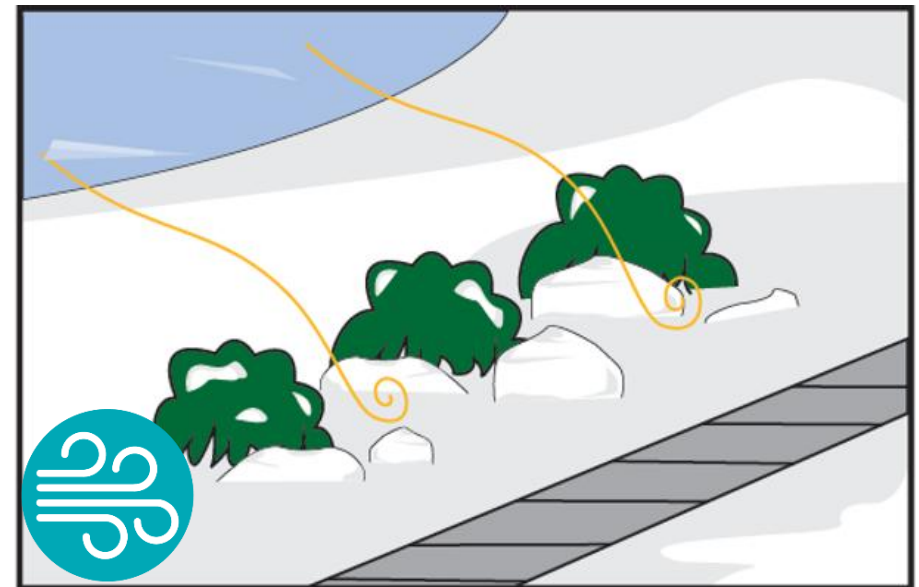
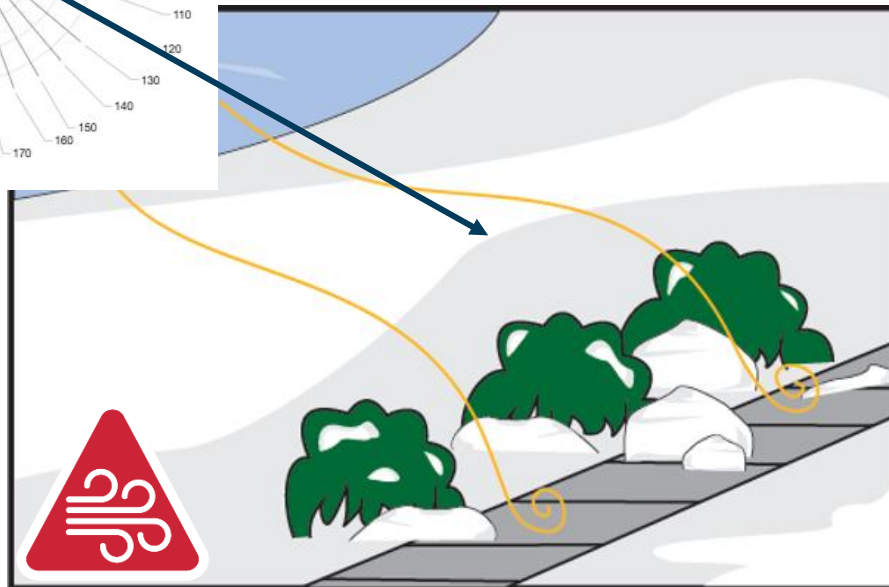
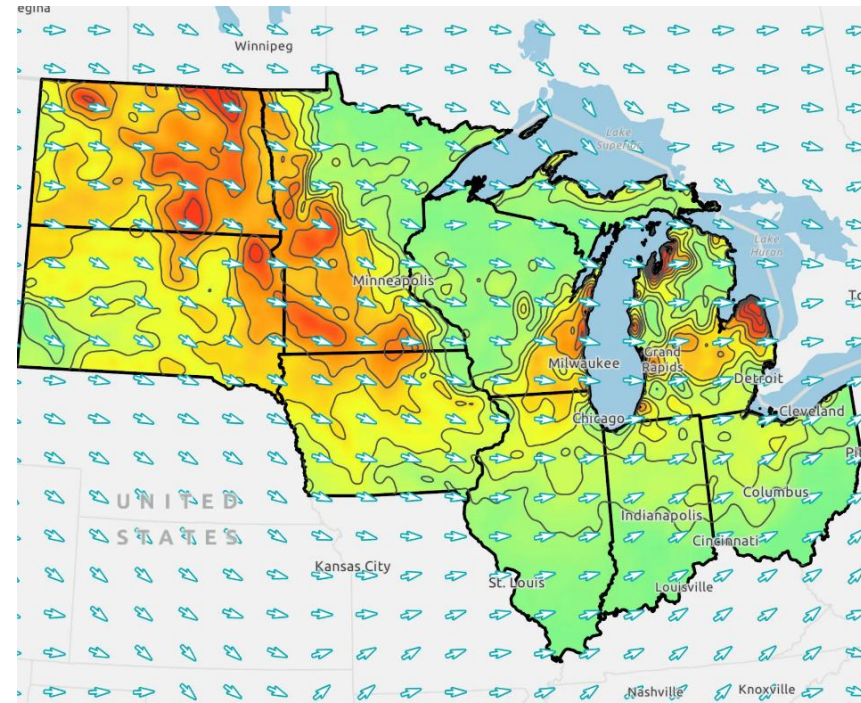
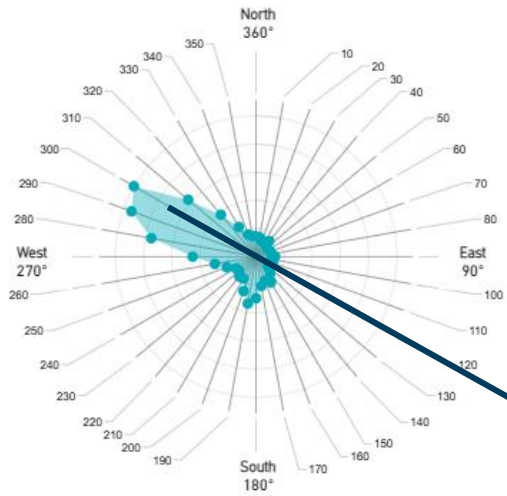




# Outsmart the Wind



Outsmart the  
Wind



# Snow Removal Made Easy



Plow Access



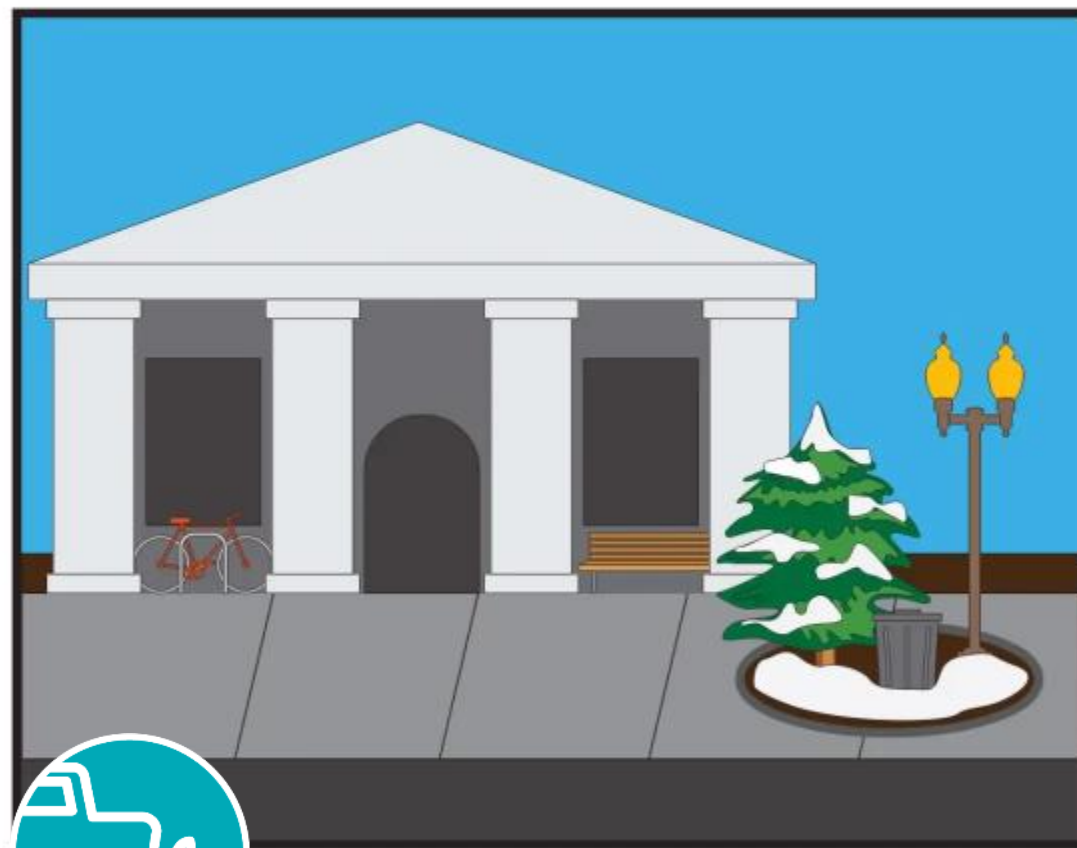
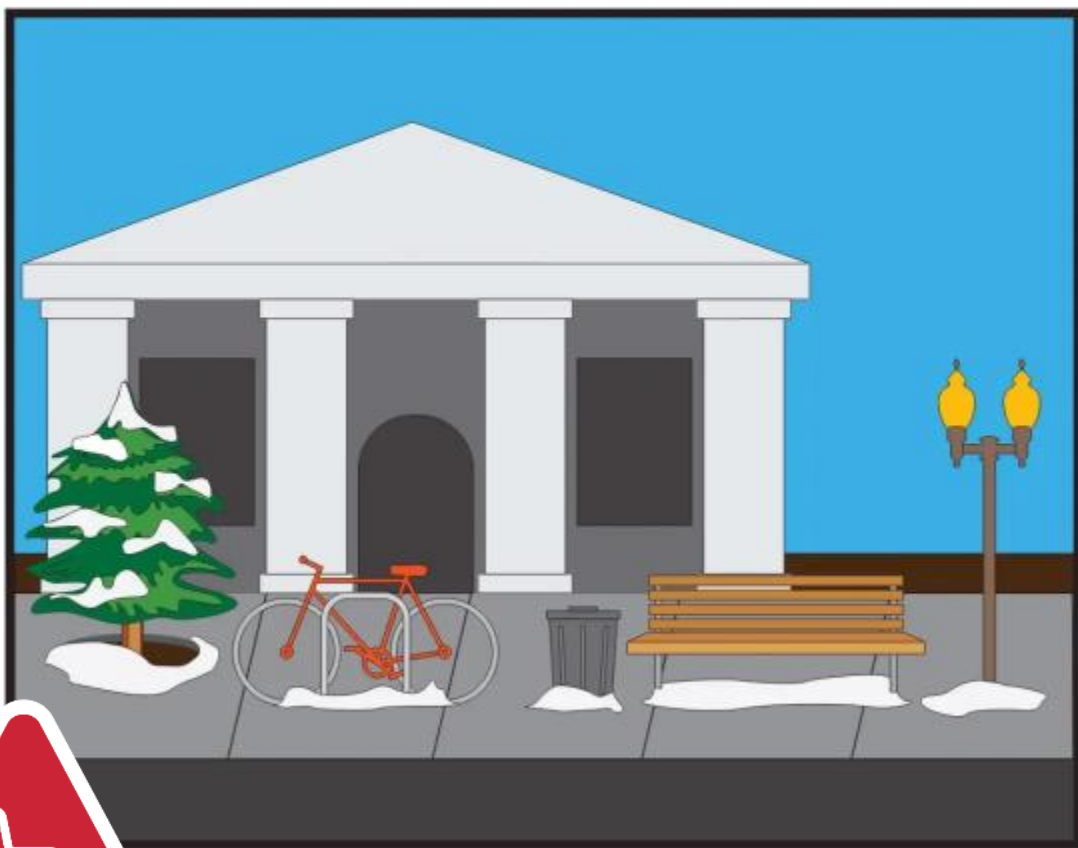




Plow Access

# MAKE IT EASY TO PLOW

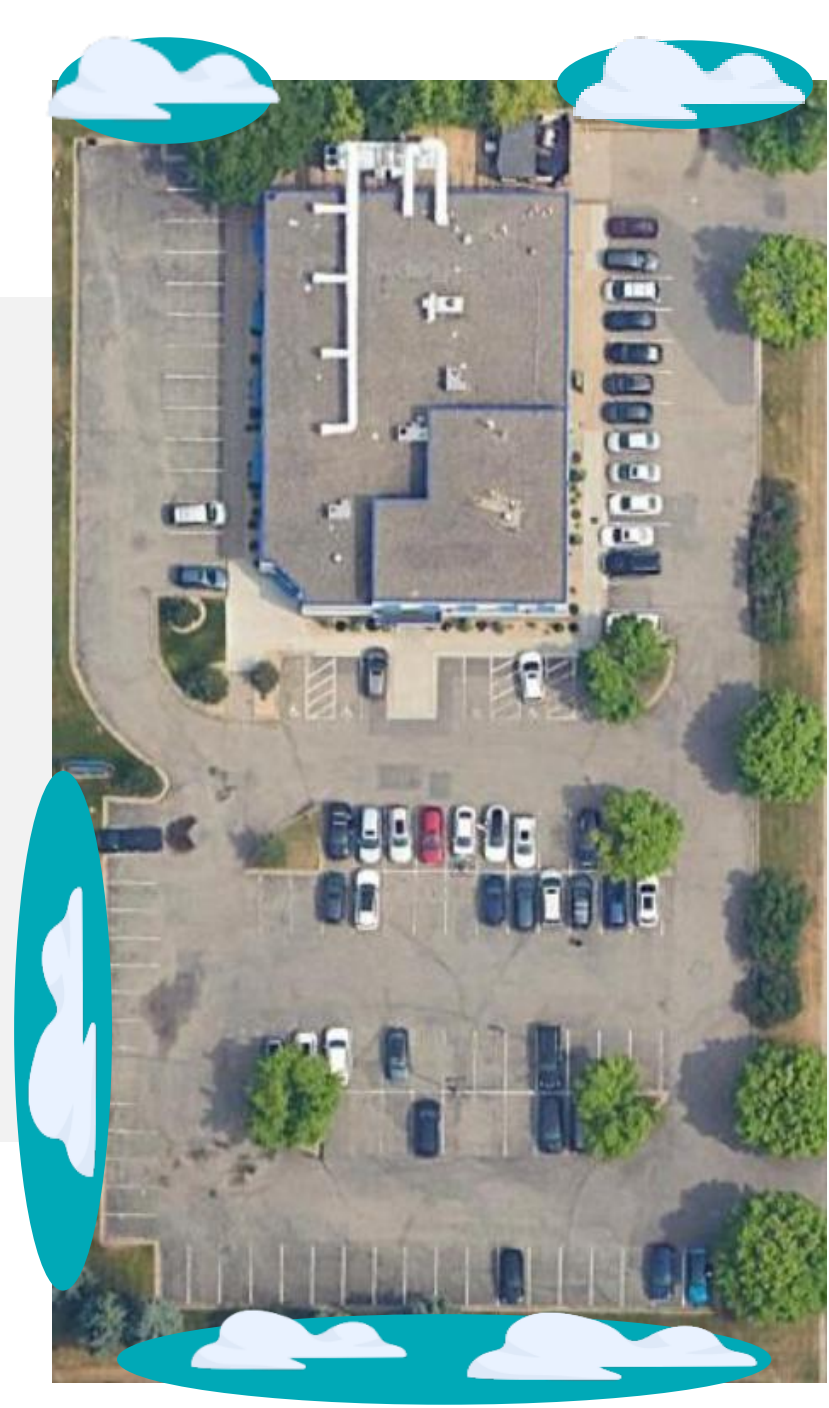
*Group Obstacles*



# Snow Storage

Properly sized

- Mankato MN needs ~**16%** of plow shed
- For an average snowfall winter



Snow Storage





# Design in space for Snow Storage



# Horizontal Drainage

*Reduce meltwater footprint*

## St. Paul

### Thaw-to-Freeze

Annual Count and Trend based on satellite data analysis.

50

Count per Year

0.15

Rate of Change

## Mankato

### Thaw-to-Freeze

Annual Count and Trend based on satellite data analysis.

55

Count per Year

0.30

Rate of Change





# Control meltwater sprawl



High Salt



Low Salt



# Vertical Drainage







# Low Salt Design Guide

## A Guide to Winter Infrastructure Design



Join us in building more  
resilient communities.

Download your free copy:



# Thank You!

We can outwit  
winter!



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# INTELLIGENT WINTER MAINTENANCE

*Wilf Nixon*

*Director of Public Works*

*City of Pella, IA*



# ALL ABOUT INFORMATION



What you  
know



When you  
know it

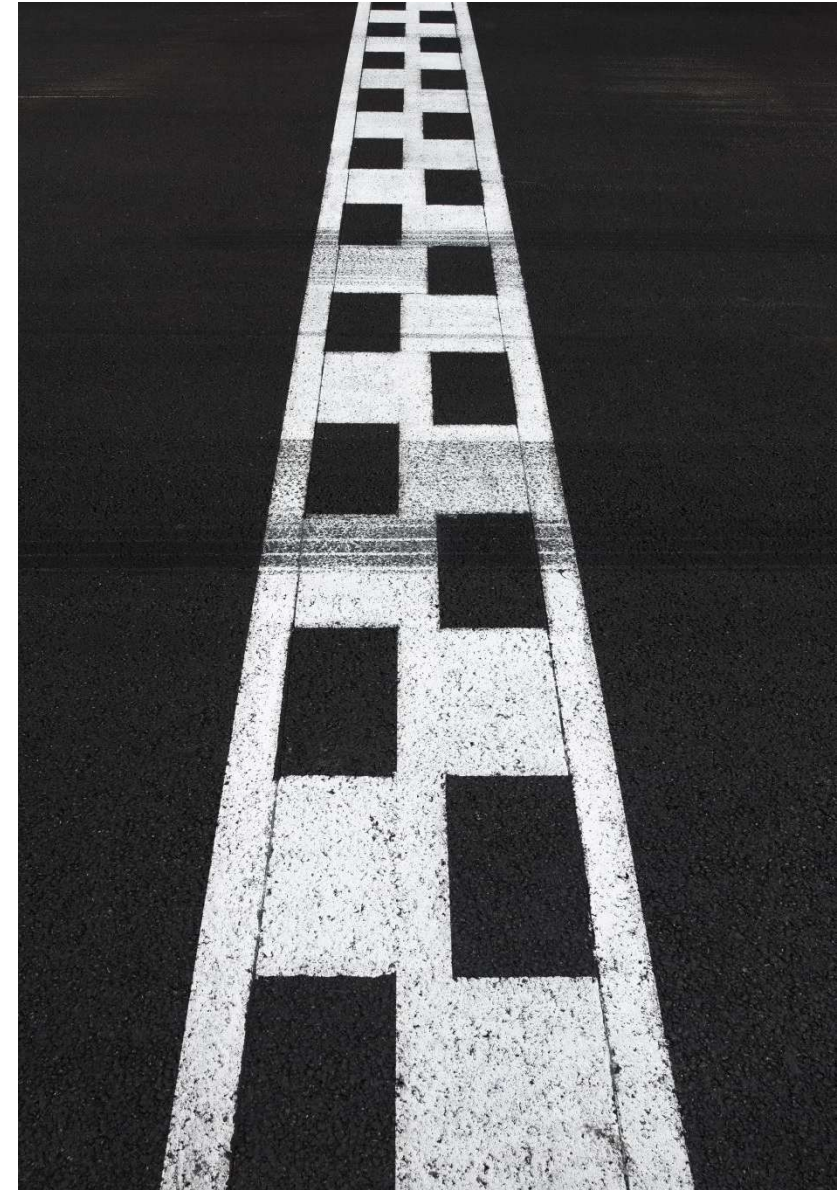


How you use  
it



## WHAT DO YOU NEED TO KNOW?

- Pavement temperature
- Actual (calibrated) spread rate
- Vehicle condition and activity
- Precipitation rate and type
- Storm start, end, and forecast behavior





# WHEN DO YOU NEED TO KNOW IT?

- Right now
- Into the future (especially storm start, and any changes)
- When you are done
- As precisely as possible



## HOW DO YOU USE IT?

To make the right decisions

Which are the right ones?

To salt or not to salt, that is the question?

To plow, to slip; To slip, perchance to crash—ay, there's the thump:





# ISSUES

Analysis paralysis

Inaccuracies in information

Impact of reality

One size fits all

The bleeding edge or technology deficit?

