INDOT HISTORY LESSON

1975
- Sand Cone Testing
- Method Specs
- Miles, Tons, Gallons
- Tar
- 1:1 Salt/Sand for Snow and Ice Removal

2001
- Nuclear Gauge Testing
- Quality Assurance
- km, Mg, liters
- Polymer Asphalt
- 1:1 Salt/Sand for Snow and Ice Removal

Notable Dates in History

- 4/19/1775  The shot heard around the world
- 12/7/1941  A date which will live in infamy
- 2/3/1959  The day the music died
- 9/20/96  The day INDOT attended its first Anti Icing seminar

Floodgates Opened

- Quest to Learn More
- Year 2000

Fact Finding Missions

- INDOT Traveled to the Four Corners of the Earth to Gather Information:
  - Hannibal, MO
  - Traverse City, MI
  - Kansas City, MO
  - Roanoke, VA
  - Decatur, IL
Checking It Out!

"MAN - MILES" to Snow & Ice Conferences

<table>
<thead>
<tr>
<th>Year</th>
<th>MidWest</th>
<th>TRB/Year</th>
<th>Snow &amp; Ice</th>
<th>APWA RWIS</th>
<th>IDOT</th>
<th>Other</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>438</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>500</td>
<td>0</td>
<td>938</td>
</tr>
<tr>
<td>2000</td>
<td>2418</td>
<td>1356</td>
<td>3504</td>
<td>2460</td>
<td>2186</td>
<td>0</td>
<td>11924</td>
</tr>
<tr>
<td>2001</td>
<td>2488</td>
<td>2000</td>
<td>1206</td>
<td>4146</td>
<td>9840</td>
<td>0</td>
<td>9840</td>
</tr>
</tbody>
</table>

INDIANA 2000 SNOW CONFERENCE

- June 1, 2000
  Crawfordsville District
- Sharing information we received from the MidWest Snow & Ice Conference
- Sharing information we received from the APWA North American Snow Conference
- Presenting the basics of Anti Icing
- Looking at what we are currently doing and maybe where we need to go

INDOT Direction

Areas for Future Study

- Operating Procedures #2 & #22
- RWIS/Weather Forecasting Systems
- Anti-icing/Liquids
- Training

Options for Future

- Continue as is
- Review Areas in Operations Peer Group Meeting
- Create Winter Operations Team

WHERE DO WE GO FROM HERE?

- Do your own looking. Manuals, Internet, Talking to others.
- Current research project.
- Future research project
- Yet another committee.
- ATTEND CONFERENCES
- FHWA?

TWO things for sure...

1. WE DON’T NEED TO REINVENT THE WHEEL
2. We made it past Y2K, which proves ANYTHING IS POSSIBLE!

Crawfordsville Conference Spinoffs
- Winter Operations Team
- Increased Emphasis on Snow & Ice Removal
- Statewide "Team" Effort
- More Interest in New Technologies and Materials

Effective Use of Teams
- Provide Management Support
- Identify Problem
- Select Team Members
- Success of Previous Team
History
• District Shortfalls
• Annual Equipment Budget Meetings
• NOT ENOUGH!!!
• Created EAC

Process - Work Plan
• Annual Replacement Cost Summary
  • Need for Equipment
  • Purchase or Rental
  • Proper Fleet Size
  • Proper Lifecycle
  • Current Replacement Cost

Resources
• MCMS-Fleet Management System
• MMS-Maintenance Mgmt. System
• Expertise of Committee Members
• Other INDOT Personnel as Needed

Findings - Budget
• 1989 Equipment Budget Adequate: $15.25 Million
• Cuts in 1990, 1993 and 1995 of 5%, 6.9% and 15.2%
• Remainder of 1990's Range from Zero to 5.6% Increase

Findings - Dump Trucks
• Major Funding Problem
• 80% Cost Increase from 1990 to 2000
• Vincennes: 1992 Replacement 35% of Total, 2000 Represents 61%
INDOT Truck Cost History

Dump Trucks II
- Critical for Snow and Ice Removal
- Most Important Function Performed by Maintenance
- Economic Impact of One Day Shut Down Over $108 Million in Lost Wages & Sales
- Impact on Elections

Findings: New Technology/Research
- Funding Not Available
- Example: Anti-icing Equipment
- Traditional Equipment Required
- Need to be Proactive

Findings - Other Needs
- Can Not Ignore Existing Road Maintenance
- FY 99, 00 & 01 Investment in Road Construction: $709, $674 and 672 Million
- One of Each Type of Equipment Needed for All PM Activities is Over $700,000
- Plus Equipment for Emergency Road Repairs, Traffic, Construction, Testing

Recommendations
- Increase Equipment Budget from $14,400,000 to $21,200,000 Starting FY01
- Approve Recommended Fleet Sizes, Life Cycles and Annual Replacement Cost
- Annual Replacement Cost Summary used for Equipment Budget Distribution
- New Budget Line Item (1% of Total) for New Technology/Research Equipment
Results

• $2,000,000 Increase in FY01 Equipment Budget
• 21 Additional Dump Trucks Purchased in FY01 at a Cost of $1,737,393
• Plans for Additional Budget Increases

Successful EAC

• Showed Effectiveness of Teams
• Continue Use of Team Concept

Snow & Ice Removal

• Operations #1 Priority
• Doing Good Job
• Little Use of New Technology
• Little Communication Between Districts
• Consistency
Background

• Deputy Commissioner Bryan Nicol addressed the newly formed INDOT Winter Operations Team at the Materials and Tests Division conference room on July 27. The mission of the INDOT Winter Operations Team is to review and disseminate information which leads to recommendations regarding snow and ice removal materials, equipment and activities.
• Dennis Belter, Operations Support Division, is the chairperson of the team made up of representatives from INDOT’s seven districts and Operations Support Division.

Winter Operations Team Mission Statement

• The mission of the INDOT Winter Operations Team is to review and disseminate information which leads to recommendations regarding snow and ice removal materials, equipment and activities.

Issues

• Policies & Procedures
• Personnel Issues
• Caliber Test Purchase
• Anti-icing
• Preparedness Memo
• Planning
• Trouble Spots
• Weather Services
• RWIS
• Liquids
• Training
• Communications
• ITS
• Equipment
• Annual Snow Conf.
• Materials
• GPS
• Environmental
• Quality Assurance

Progress to Date

• Personnel Issues
• Procedures
• Caliber Tests
• Weather Services

Personnel Issues

• Most Valuable Resource
• Recommendations to Management

Procedures

• Total Storm Management
• Operating Procedure #2 - Revised
• Operations Manual - Purdue Research
• Training Video & Manual - Operations Training Committee
**Caliber Tests**
- New Liquid Material
- Anti-icing and Deicing
- Taper Logs
- Purdue Research Project

**Weather Services**
- Specification Prepared for 7/1/01-6/30/02
- Internet Service
- Pavement Forecasts

**INDOT Winter Operations Team**
- Consistency
- New Technology/Materials
- Leading Edge

**Successes/Surprises/Outcomes**
- INDOT Truck Roadeo
- ITS
- Increased Use of Purdue Research
- Department-wide Involvement

**Snow Roadeo**
Recycle salt-rich wash water to brine maker for subsequent de-icing application.

Research Items

1. Total Storm Management - Proposed Table of Contents
   - Resource Materials
   - Liability and Risk Management
   - Safety for Road Users and Crews
   - Safety and Liability
   - "Lessons Learned" Guidelines
   - Strategies to Support TSM
   - Tools to Support TSM
   - Introduction
   - Total Storm Management (TSM)
   - Post-Storm Activities
   - Special Customer Issues
   - Storm Management
   - Pre-Winter Preparation
   - Operations
   - Weather Information Systems
   - Choosing and Applying Materials for Various Storm Conditions
   - Storing, Handling, and Inventory Monitoring of Materials
   - Material Acquisition
   - Snow and Ice Control Materials
   - Acquiring Snow and Ice Equipment
   - Special Equipment Maintenance and Fleet Management Requirements
   - Support Systems and Equipment for Snow and Ice Control Operations
   - Mobile Snow and Ice Control Equipment
   - Union Settlement Agreement
   - Drug and Alcohol Issues
   - Scheduling and Reporting for Duty
   - Personnel Management Issues
   - Personnel Issues
   - Winter Severity Index
   - Factors That Influence Performance
   - Performance Measures
   - Operational Requirements and Policies for Snow and Ice Control
   - Communications
   - Administration and Management
   - Innovation in the Organization
   - Objectives of Snow and Ice Control Programs
   - Impact of Winter Weather
   - Purpose and Principles of a Winter Maintenance Program

YOU CAN DO IT!!!

Management Support Leads To SUCCESS!