THAT'S THE WAY WE'VE ALWAYS DONE IT
CDOT Roads State Highway System (as of 2006/2007)

- Center-line miles 9,161
- Lane-miles 23,106
- 3,775 Bridges
- Vehicle-miles traveled 28.6 billion

Vehicle miles traveled (VMT) on all Colorado roads were 48.6 billion; VMT on state highways accounts for 59% of this total.

The interstate system accounts for 10% of the total state system mileage, yet 40% of all VMT takes place on the interstate system.

- 1,800 maintenance workers statewide
- CDOT has approximately 950 snowplows statewide. We also use Loaders, Motor graders, Dozers, Helicopters and snow blowers to help combat snow.
MDSS PFS – EIGHT STATES
After the 2004/05 Season

I-70 Rifle to Glenwood Springs and Highway 82 from Glenwood Spring to Aspen

I-25 South of Denver on Monument Hill
For 2005/06 CDOT added one route on I-25 N. of Denver
2006/07 CDOT added more routes
Today, CDOT has routes in every region

Approximately 400 registered users for the GUI
MDSS interface

214 units equipped so far.
“Winter” is defined in the model as Oct 15th thru May 8th each year so we are through the end of the defined winter period.

Several sections with high country highways will still incur approx $860,000 in costs in May and June.
Overhead Loaded Cost Per Plow Mile
FY 2008

<table>
<thead>
<tr>
<th>Maintenance Sections</th>
<th>Dollars / plow mile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aurora</td>
<td>$12.27</td>
</tr>
<tr>
<td>Pueblo</td>
<td>$8.59</td>
</tr>
<tr>
<td>Grand Jct</td>
<td>$11.06</td>
</tr>
<tr>
<td>Craig</td>
<td>$8.15</td>
</tr>
<tr>
<td>Greeley</td>
<td>$7.18</td>
</tr>
<tr>
<td>Durango</td>
<td>$11.20</td>
</tr>
<tr>
<td>Alamosa</td>
<td>$6.89</td>
</tr>
<tr>
<td>Denver</td>
<td>$9.06</td>
</tr>
</tbody>
</table>
Snow Plowing, Sanding & Deicing

![Bar Chart Showing Labor Days for FY 98 to FY 06]
Cost Per Plow Mile

<table>
<thead>
<tr>
<th>FY 97</th>
<th>FY 98</th>
<th>FY 99</th>
<th>FY 00</th>
<th>FY 01</th>
<th>FY 02</th>
<th>FY 03</th>
<th>FY 04</th>
<th>FY 05</th>
<th>FY 06</th>
<th>FY 07</th>
<th>FY 08</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.48</td>
<td>4.76</td>
<td>4.81</td>
<td>4.84</td>
<td>5.11</td>
<td>5.31</td>
<td>5.49</td>
<td>5.15</td>
<td>5.59</td>
<td>5.62</td>
<td>6.04</td>
<td>6.87</td>
</tr>
</tbody>
</table>

Total Cost Per Lane Mile

Material Cost Per Lane Mile
Snow and Ice MPA 400 Totals

FY 00
FY 01
FY 02
FY 03
FY 04
FY 05
FY 06
FY 07
FY 08 *

MPA 400 Total Cost
Average cost quotes from statewide, cost will vary around the state.

- **$3$ - Sand/Salt @ $25.35 per ton
  - Single axle load @ 8 tons = $202.80

- **$3$ - Mag Chloride @ $.62 cents per gallon
  - 1600 gallon mag tank = $992.00

- **$3$ - Caliber 1000 @ $.76 cents per gallon
  - 1800 gallon tank = $1,368.00

- **$3$ - Ice Slicer @ $102.88 per ton
  - Single axle load @ 10 tons = $1028.80

- **$3$ - APEX @ $.72 per gallon
  - 1600 gallon tank = $1152.00
After one season
Sedimentation build up
Sand Shed in Deer Trail
The goal - perfectly treated roads, providing safe travel and seamless corridors at the best cost.
Benefits of utilizing an MDSS

- Save time- allowing time for other activities
- Less training time
- Save material
- Reduce materials going back into the environment
- Reduce equipment time
- Improve Safety
- Improve LOS and have consistency between areas
- Save money
- Use as a training tool and debriefing tool
- 24 hour support
- In vehicle information makes your truck a tactical operations weapon
- The GUI is intuitive and user configurable
Challenges/Lessons Learned

- Training
- Size of deployment
- Set up
- Training
- AVL
- Oversight
- IT
- Tracking
Future applications of MDSS &/or AVL

- Text alerts to cell phones, e-mail and PDA’s
- Bridge de-icing systems
- More RWIS sites
- Near Real time traffic link to MDSS
- MODSS- Other maintenance activities
  - Weed spraying
  - Mowing operations
  - Surface treatment projects etc.
- ERP linked to the AVL- to populate work orders
- AVL driven mapping and inventory
- ?? ?? ??