Montana's Tow Plow Implementation: A Case Study

Presented to the PNS

06/8/2016

Tony F. Strainer

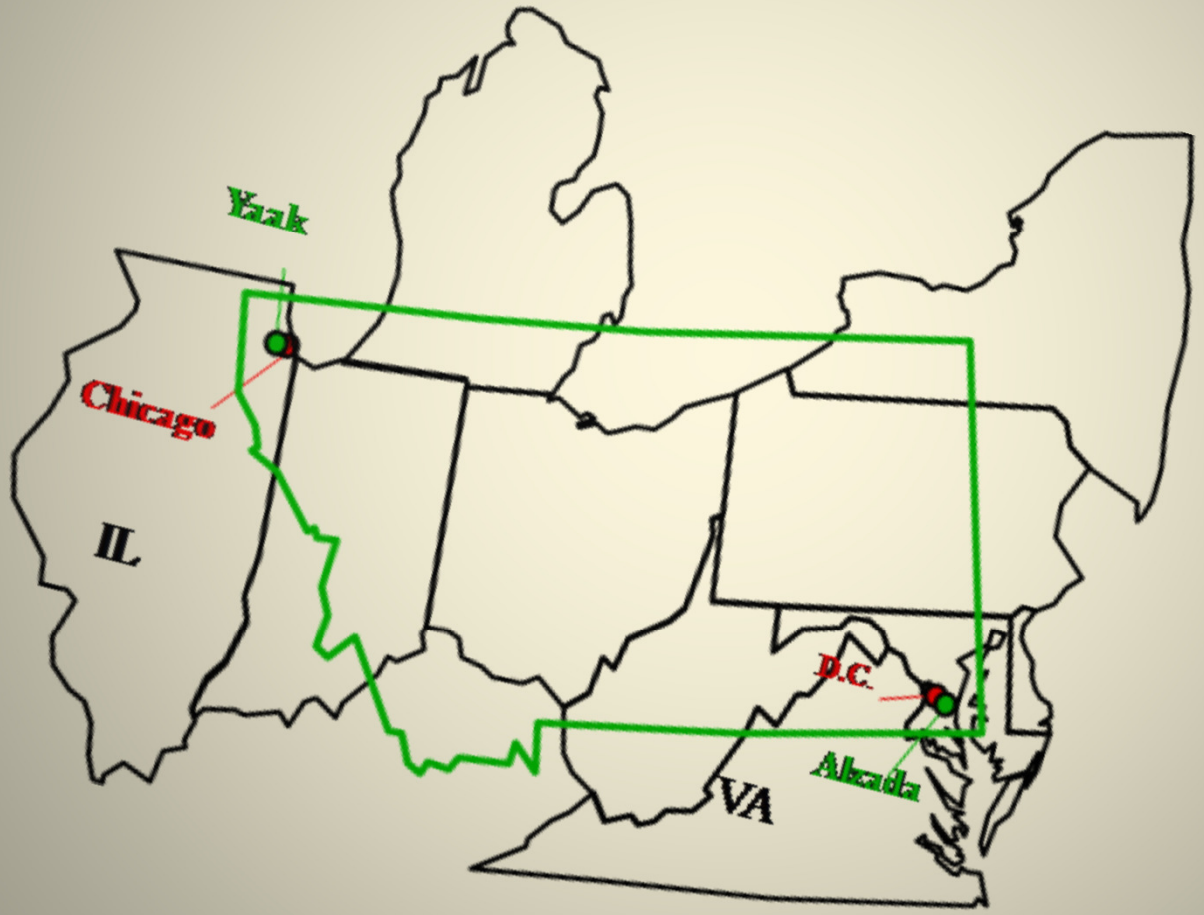
MONTANA MDT DEPARTMENT OF TRANSPORTATION

Presentation Outline

- Facts about the Big Sky State
- Current State of Practice
- Why Tow Plows?
- Fabrication
- Public Involvement
- Training
- Current and Future Deployment
- Efficiencies
- Lessons Learned

MONTANA
MDT
DEPARTMENT OF TRANSPORTATION

Facts about the Big Sky State



Facts about the Big Sky State

- 4th largest state in the union in size
- 44th in population
- Average snow fall 11” to 220”
- Combination of passes and prairies

MONTANA
MDT
DEPARTMENT OF TRANSPORTATION

Facts about the Big Sky State

- 125 section houses
- 550-600 FTE
- 25,000 lane miles of state maintained Highways
- 1999-2000 Maintenance became responsible for paved secondary roads
- Fiscal year 2014 plowed 4,173,997 plow miles

MONTANA MDT DEPARTMENT OF TRANSPORTATION

Current State of Practice

- Needed a way to optimize current resources to stay efficient and effective

  -Increased plow fleet size

  -Purchased larger plows

  -Increased the amount of salt in the sand—from 2% up to 15%

  -Added wings to plow trucks

MONTANA MDT DEPARTMENT OF TRANSPORTATION

Current State of Practice

- Added deicing chemical to Montana's winter maintenance practices
- Added onboard equipment for winter chemical use
- Introduction of magnesium chloride—Why MDT became involved with PNS
- Salt Brine

MONTANA MDT DEPARTMENT OF TRANSPORTATION

Current State of Practice

- What are our next options
  - Looked at different chemicals (costly)
  - Maximize personnel coverage
  - Equipment changes—State of the Art

MONTANA MDT DEPARTMENT OF TRANSPORTATION

Why Tow Plows?

- They do the work of 2-3 trucks depending on route type —one FTE needed
- Gives more capacity to haul liquids and solids
- Fuel efficiencies
- Frees up trucks to service other routes
- Initially purchased 10 tow plows

MONTANA MDT DEPARTMENT OF TRANSPORTATION

Fabrication

Purchase chassis and cab

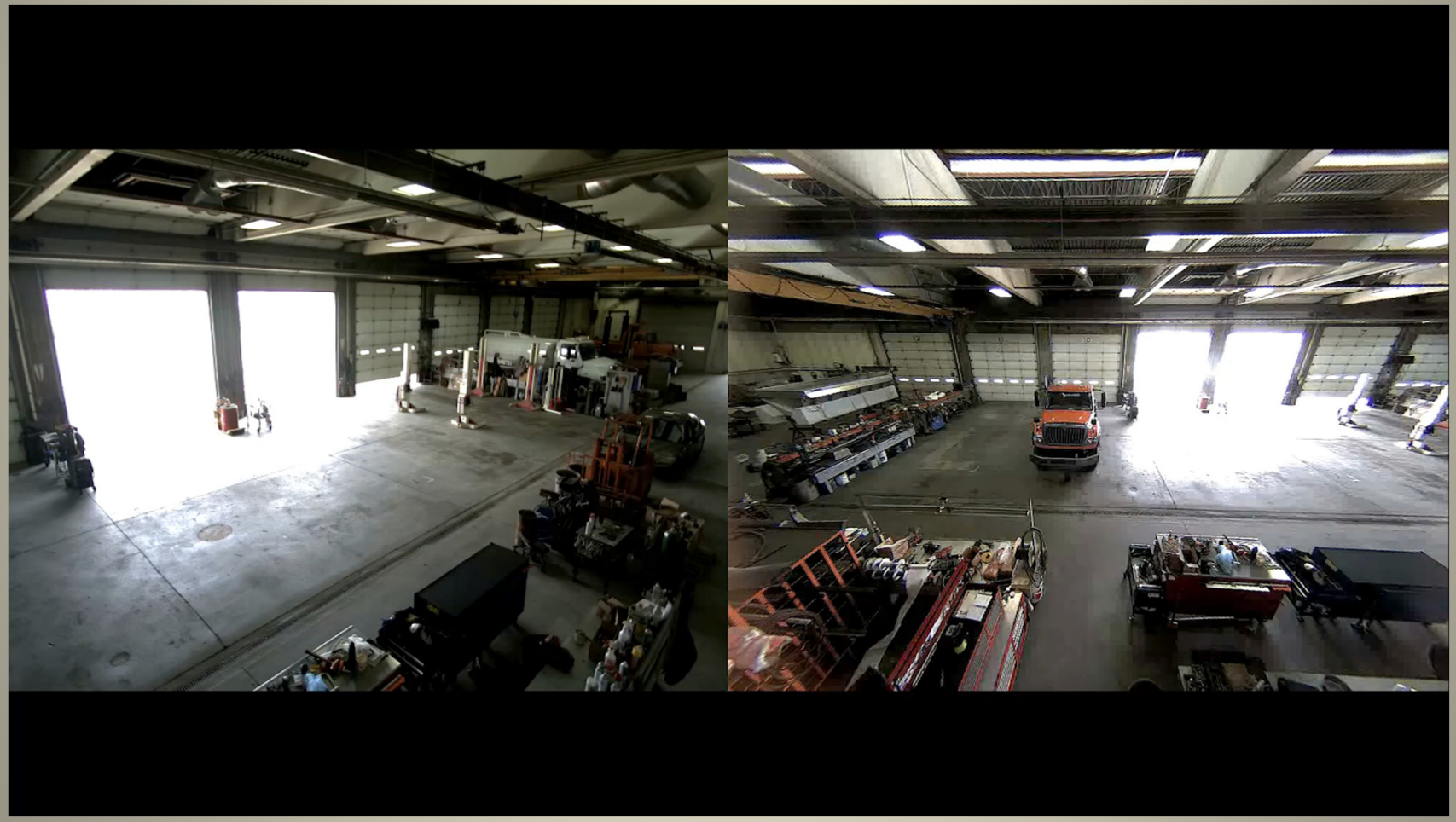
- Fabricate majority of the framework for plows and wings
- Manufacture and install all hydraulics and electrical associated with the unit
- Install all additional lighting packages
- Fabricate and install air foils for both units

MONTANA MDT DEPARTMENT OF TRANSPORTATION

Fabrication(Cont.)

- Truck purchase price is $96,337.00
- Finished truck cost is $145,996.00
- If we were to purchase the truck finished, the cost would be approximately $230,000.00
- For every two trucks built the savings from in house fabrication essentially provides MDT a free truck

Central Shop



Fabrication(Cont.)

- Challenges
  - Make it user friendly and comfortable for the driver
  - Increase hydraulic capacity, making it similar to what MDT already uses for compatibility
  - Had to make the tow plow serviceable for the shops
  - Addition of on-board cameras

MONTANA MDT DEPARTMENT OF TRANSPORTATION

Fabrication(Cont.)

Fabrication(Cont.)

Training

Training Cont.

- Train drivers ahead of implementation
  - Classroom Training
  - Obstacle course
- Having mechanics share common issues and problems statewide
- Training the public

MONTANA MDT DEPARTMENT OF TRANSPORTATION

Public Involvement

- Social media/MDT web page
- PSA's
- State and County Fairs
- News stories/ interviews and ride-alongs with local news staff

Current and Future Deployment

- We currently have 13 tow plows in the field
- Planning on having an additional 4 in the field for the 2016-2017 winter season
- We have identified potentially 25 areas that we feel would benefit from the addition of a tow plow

MONTANA MDT DEPARTMENT OF TRANSPORTATION

Efficiencies

- Terrific resource for in-town cleaning
- Can do the work of 3 trucks on the interstate
- Increases our capacity for solids and liquids per unit

MONTANA MDT DEPARTMENT OF TRANSPORTATION

Lessons Learned

- Units need to be housed
- Updated lighting package
- Addition of air foil to tow plow
- Laser for plow tracking
- Additional hydraulic filter
- Additional hydraulic return line

MONTANA
MDT
DEPARTMENT OF TRANSPORTATION

Lessons Learned (Cont.)

- Hoist lockout feature
- Addition of panic button
- 2 way radio foot activated switch

MONTANA
MDT
DEPARTMENT OF TRANSPORTATION

Lessons Learned (Cont.)

Thank you for your time

Questions?

Tony Strainer

Maintenance Review Supervisor

tstrainer@mt.gov

(406)444-7604

MONTANA MDT DEPARTMENT OF TRANSPORTATION