South Dakota LTAP

MOTOR GRADER OPERATOR TRAINING PROGRAM

How Do We Begin

- Usually a call from a Highway Superintendent or Township board
- Find a host site
- Inviting neighbors to attend (Like to be less than 30 in classroom)
- Will do some hands-on training if time permits
- Find a partner to participate (machinery dealer generally)
- Partner is usually chosen by host county (provide coffee, lunch, rolls)
- Have and will do hands on but to single entity (less than 10 operators)
- Advertise if a dealer requests on behalf of an entity (Often hosts)

Motor Grader Training Knowledge

1. Proper Roadway Crown on a straight flat section should be:
A) 0%
B) 2%
C) 4%
D) 6%

2) Proper crown on rail crossing should be:
A) 0% B) 2% C)4% D)6%

3) Corrugation is commonly caused by:
A) Poor quality gravel
B) Traffic tendencies
C) Weather
D) Crown
E) All of the above

4) Roadway shape should look like:
A)
B)
C)
D)

5) Draw what you picture as a typical section of roadway from fence line to fence line:

Appropriate pitch for performing gravel maintenance:

7) Figuring roadway crown on a 20' top: Formula= ½ the road width X 12" X 4%
A) 2.0
B) 4.8"
C) 3.6"
D) 1.0"

8) How much gravel is acceptable on a bridge deck:
A) 2"
B) 1"
C) 0"
D) Enough to match the roadway

9) When reshaping the roadway, the hinge point should be moved for which purpose only:
A) Better drainage
B) Adjust road width
C) A new place to put the windrow
D) Adjust crown

10) High shoulders contribute to: A) Poor cross section B) Poor drainage C) Safety concerns D) All of the above

Teaching Principals

- Safety
- Machine know how
- Principals of maintenance
- Cutting edges
- Retrievers
- Pulling shoulders (Roadway reshape)
- Soft spot repair
- Regraveling

Safety

- Strobe light or beacon is on at all times
- Direction of blade for highway travel
- Proper signage to warn the public
- Safety clothing when outside the machine
- Texting and cell phone policies
- Drug and alcohol policy and testing

Always remember: warn the public!!

Machine Know How

- Understanding blade functions
- Angle of the moldboard
- Articulation
- Wheel lean
- Side shift
- Circle shift
- Moldboard pitch
- Tandem lock
- General knowledge of cab awareness and features

Maintaining Gravel Roads

Important things to understand about the use of the motorgrader:

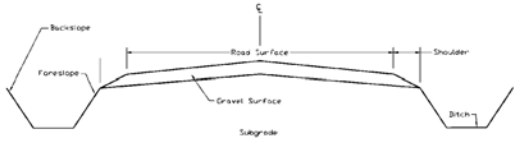
- Moldboard Angle
- Moldboard Pitch
- Motorgrader Stability
- Operating Speed
- Articulation
- Windrows

Principals of Maintenance

- Three pass blading (if required)
- Understanding roadway cross section and crown
- Hinge point
- In-slope
- Back slope
- Knowledge of material
- Compaction and use of water for construction or maintenance

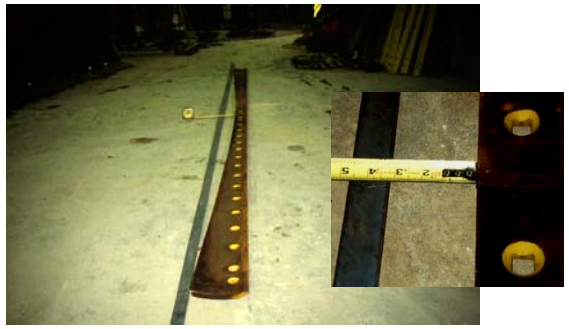
Maintaining Gravel Roads

- Understanding correct shape of the roadway cross-section is the most important knowledge an operator can possess.
- Gravel roads constantly change shape!!! Operators and supervisors have to deal with this.



Cutting Edges

- Type of cutting edges available
- What are you currently using and why
- Importance of a straight cutting edge
- Carbide tips or carbide serrated
- Standard cutting edges vs carbides
- Where each style of blade is useful
- Also discuss the use of scarifier or rippers



Retrievers

- Styles and options for retrievers
- What you use and if it works for you
- Time of year for best results
- Our goals for retrieving
- Recover lost gravel and fines
- Narrow the roadway
- Break up sod before pulling shoulders

Other attachments can be helpful.

Pulling Shoulders

- Preparing to pull shoulders
- Location of machine on the roadway
- Time of year
- Changing the hinge point
- Reshape prior to re-gravel operations
- Drainage issues
- Recover lost material

Maintaining Gravel Roads

Many gravel roads often need a major reshape at certain intervals in their life cycles to restore crown in the surface, a good shoulder line and shape of ditches.

Soft Spot Repair

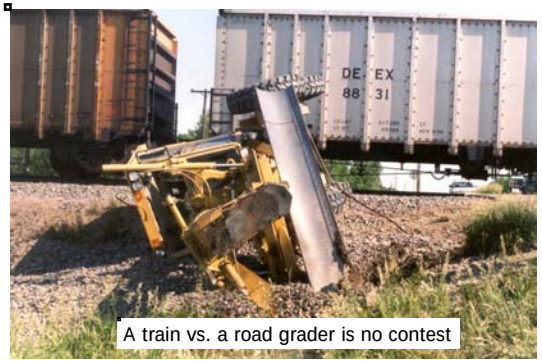
- Identifying the problem
- Best practices
- Fabric installation
- Use of proper material (both fabric and granular)
- Proper means of covering fabric (placement of base)
- Dig outs or healing out of material
- Restoring proper drainage

Re-Graveling

- Use of proper material (usually not the operators decision)
- Reshape of the roadway prior to graveling
- Water and loosening of material prior
- Windrowing new material
- Healing and equalizing
- Splitting and laying new material
- Compaction if that is an option

Special Situations

- Driveways
- Intersections
- Approaches
- Rail Crossings
- Bridge Decks
- Proper Crown for each of the above
- Safety practices for dealing with these



A train vs. a road grader is no contest

Thank You

GREG VAVRA (SD LTAP)