

What's in your Gravel??

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Gravel Uses

- o Base material?
- o Drains?
- o Foundation support?
- o Driving surfacing?

Surface Characteristics

- o What do most of your gravel roads look or act like?
 - o Do they have a lot of “float” on them?
 - o Are they wash boarded?
 - o Is there rutting?
 - o Does it look like the dust bowl of the 1930’s under traffic?
 - o Are they packed tight on the surface?

Physical Properties

- o What is gravel made of?
 - o Rock
 - o Rounded
 - o Fractured faces
 - o Sand
 - o Blow sand
 - o Crushed or natural fractured sand (FAA)
 - o Fines (minus 200 Sieve)
 - o Silt
 - o Clay (PI)
 - o Topsoil
 - o Shale
 - o Scoria

What should a good Gravel have for a driving Surface?

- o Rock ($\approx 1/2''$ to $\approx 3/4''$)
- o Intermediate aggregate (\approx No. 4 to \approx No. 40 sieve)
- o Fines (\approx No. 200 sieve and smaller)
 - o Smaller – needs to have a certain amount of PI (Plasticity Index)
- o Maybe an Additive?

Benefits of good gravel

- o Reduced Maintenance costs
 - o Less blading
 - o Less spot graveling
 - o Reduced wash boarding to fix
- o Reduced long term capital expenditures
 - o Gravel purchases
 - o Equipment
 - o Dust suppressants
- o Reduced Dust
- o Better driving surface
- o Safer

What does your gravel spec look like now?

Sieve Size	NDDOT CI 13	MT Gravel Surfacing	SD/FHWA Gravel Roads Manual	Proposed Gravel Surfacing
1"	100	100		100
3/4"	70-100	80-90	100	70-100
1/2"		60-80		
3/8"				
No. 4	38-75	50-70	50-78	38-75
No. 8	22-62	37-60	37-67	22-62
No. 10				
No. 30	12-45			12-45
No. 40		13-35	13-35	
No. 200	7-15	4-18	4-15	7-15
PI		4-12	4-12	4-12
Shale (max %)	12.0			12.0
LA Abrasion (max %)	50		40	50
NDDOT 4, Fractured Faces	10			10

How do you make the Transition to good gravel?

- o Change your specification and start using it, or
- o Need to try it first
 - o Get someone else to pay for it
 - o Like the Air Force

Trial Project

- o Defense Access Road Program
 - o Funding for maintenance of TE Routes
 - o 300 miles of gravel roads in 8 Counties in ND
 - o FHWA works with the Air Force
 - o NDDOT typically manages the projects
- o 2016 Graveling project
 - o 40 miles in 5 counties
 - o Modified Cl 13 specified
 - o PI requirement of 4-9
 - o FHWA and the Air Force will monitor the project

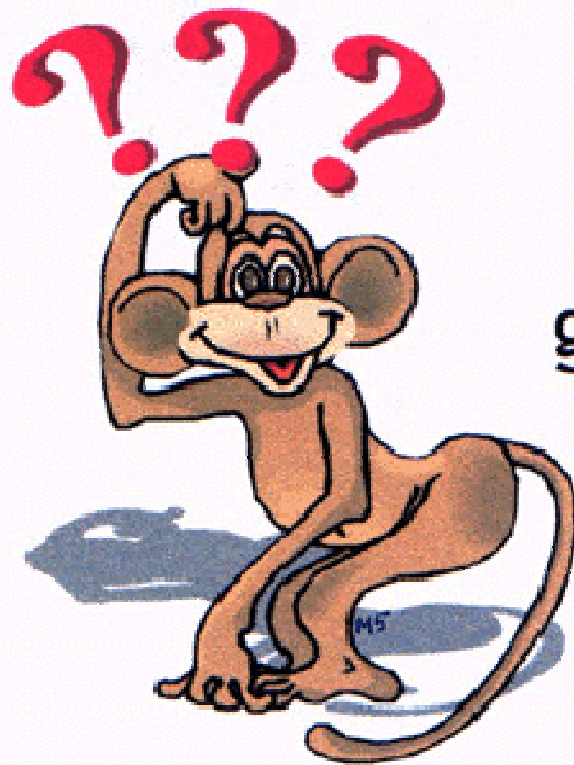
Trial Project



How do you make the Transition to good gravel?

- o Changing the specification?
 - o Get NDDOT to change the Cl 13 spec (add PI), or
 - o Get NDDOT to add new Spec (Cl ?) specifically for gravel surfacing, or
 - o Add a plan note in your plans to modify the spec, or
 - o Modify the gravel spec in each county to what works for each county?
- o Do some training on blading/maintenance with the different material!

Questions?



Questions
are
guaranteed in
life;
Answers
aren't.