

Improving County Road Conditions Through Gravel



February __, 2025

Presented by Kevin Stack, P.E.

Berrien County Road Department

Capacity Background Info

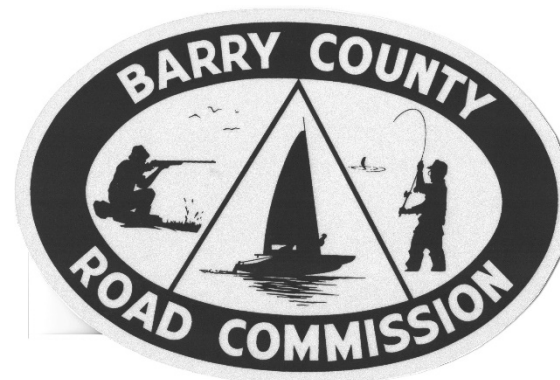
Berrien

- Con: must purchase gravel from independent pits and contractors
 - Does NOT own gravel pit
- Pro: contractor hauls gravel
 - *Can order inventory to be on hand for maintenance to transport/use.



Barry

- Pro: own gravel pit
- Pro/Con: own staff transports gravel



Know your Capacity: **Internal**

- Grader
 - Prep work
 - Base course shaping
- Gradall / Excavator
 - Ditching
 - Drainage work
- Dump truck
 - Gravel or material delivery
- Rollers
 - Compaction (sheep, steel, etc)
- Chloride / Dust Control
- Water truck
- Sealcoat Operations



Know your Capacity

Internal

- Gravel hauling capacity: Small
 - BCRD Trucks: 12 tons a load



External

- Gravel hauling capacity: Larger
 - Contractor Trucks: 50 tons a load with trains



Know your Capacity

Internal

- Grading
 - Prep work
 - Shaping
- Rolling/Compaction



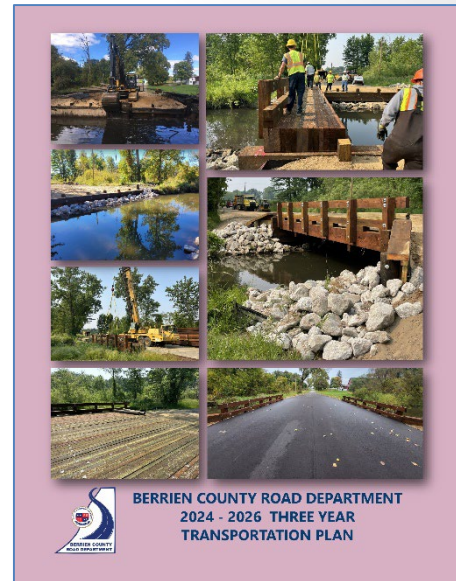
External

- Pulverizing/Base Crushing



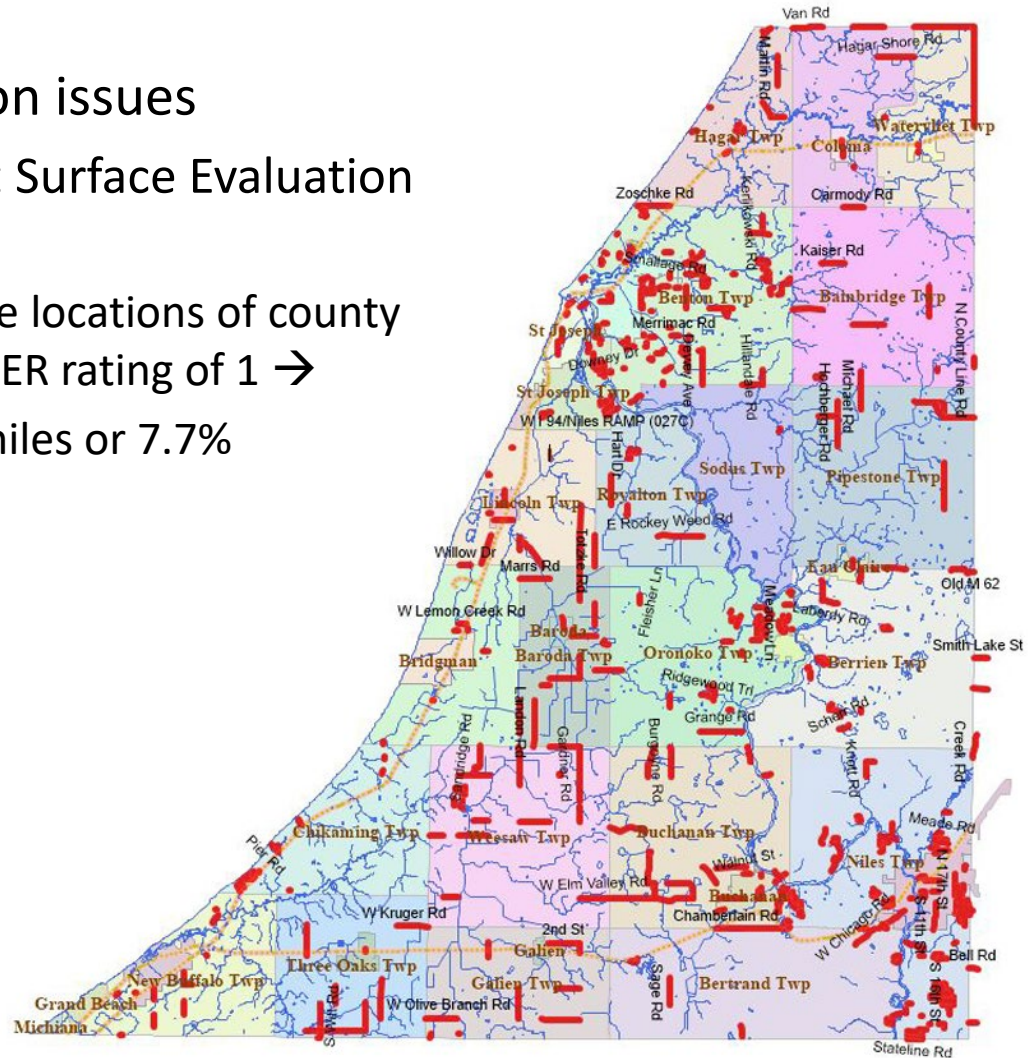
Asset Management

- Define your strategic plan
 - How often will you regravell a road?
 - How thick will that gravel be?
 - Consideration of roads with PASER rating of 1
 - Grind, gravel, prime and double seal treatment type
 - Split year reconstruct treatment
 - Year 1: grind and gravel (return to unpaved surface)
 - Year 2: prime and double seal (return to hard surface)
 - Dust control for preserving gravel
 - Sealcoat
 - Use of different aggregates: limestone, trap rock or blast furnace slag



Know your Network

- Paved road condition issues
 - PASER – Pavement Surface Evaluation and Rating
 - Red lines indicate locations of county roads with a PASER rating of 1 →
 - 113 centerline miles or 7.7%





22A Gravel

- Gravel road base
- \$12/ton
- Sieve Analysis:

1"	100%
3/4"	90 – 100%
3/8"	65 – 85%
No. 8	30 – 50%
No. 200	4 – 8 %



23A Gravel

- Shoulder gravel
- Sieve Analysis:

1"	100%
3/4"	-
3/8"	60 – 85%
No. 8	25 – 60%
No. 200	9 – 16 %



22A Slag

- Strong road base
- \$32/ton
- Requires lower quantity for regravelling



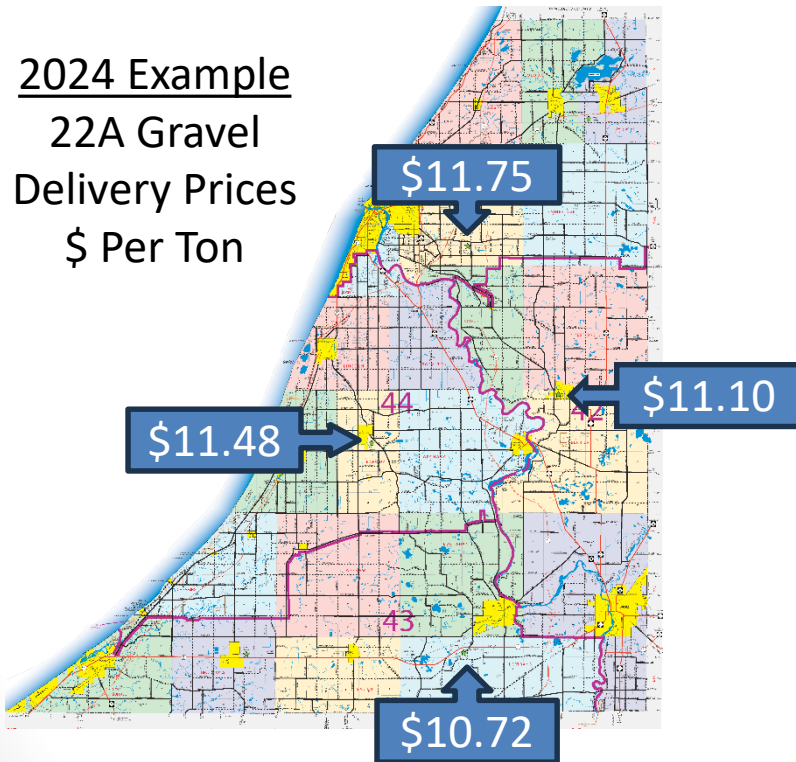
Know your Cost Efficiency

Example Costs for 22A Gravel in 2024

Internal

- Contractor delivers to garage

2024 Example
22A Gravel
Delivery Prices
\$ Per Ton

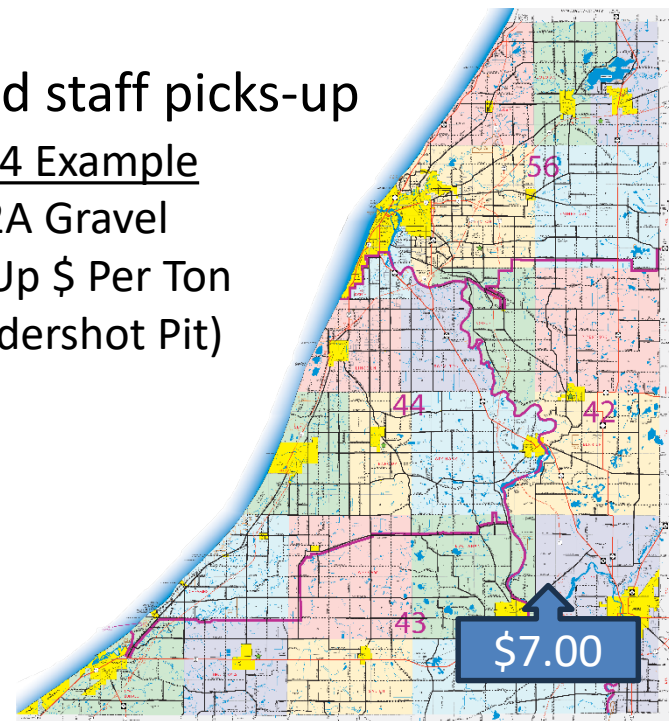


- Road staff moves piles to a project location in 12-ton loads


External

- Contractor delivers to project site in 50-ton loads with trains
 - \$13.14 Per SYD

- Road staff picks-up
2024 Example
22A Gravel
Pick-Up \$ Per Ton
(Hendershot Pit)



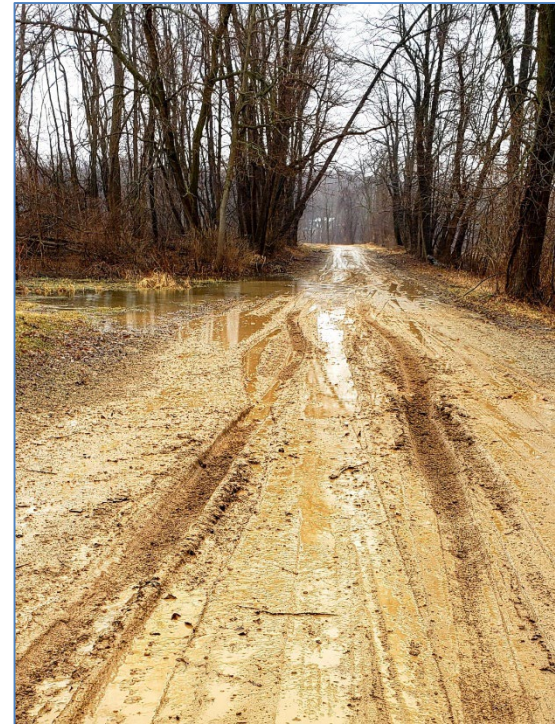
Dust Control/Treatment

- Liquid calcium chloride treatments
 - Two applications*
 - May
 - August
 - **Contractor (External)** 
 - Larger trucks
 - Faster/more miles applied
 - Flow metered
 - **Road Agency application (Internal)**
 - Our schedule
 - Dead ends/difficult locations
- Dust Stop



Winter Plowing / Spring Thaw

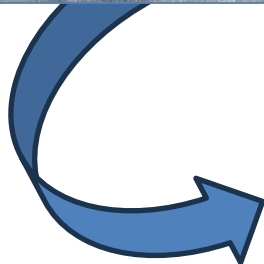
- Careful to not over plow or disperse gravel off the road
 - Recrown/reclaim in spring



Grind & Gravel

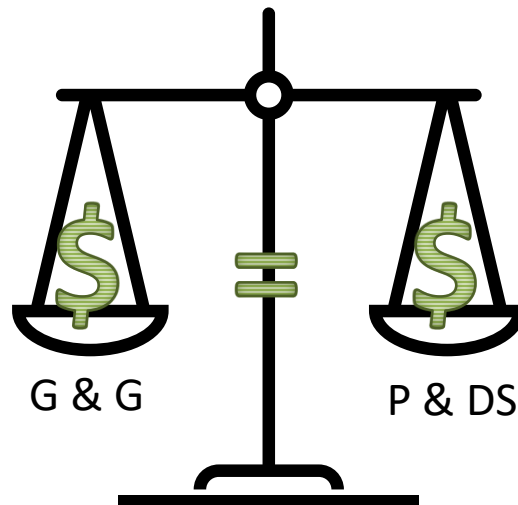


- BCRD “Bread and Butter”
 - Additional option to follow with prime and double sealcoat
 - Or G, G, P & DS: Grind, Gravel, Prime & Double Seal



G, G, P & DS

- G Grind, G Gravel, P Prime & D Double S Seal
 - Approx. cost to Prime & Double Seal = Grind and Gravel treatment
 - Restores the road to a hard surface
 - Recommended to sealcoat or “add the third layer” in ~5 years to protect gravel base and to extended good condition





1) G Grind



2) G Gravel



4) D Double
S Seal



3) P Prime



Thank you!

Questions?

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