# Road Maintenance Program
# Oconee County

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# Oconee County Roads

- 725 Roads
- 411 Miles of paved road
- 39 Miles of unpaved road
- $2.2 Million in SPLOST funding
- Ideally $130,000 to repair one mile of road
- Minimum of $2.6 Million per year to maintain assuming preferred conditions and a 20-year average repair life

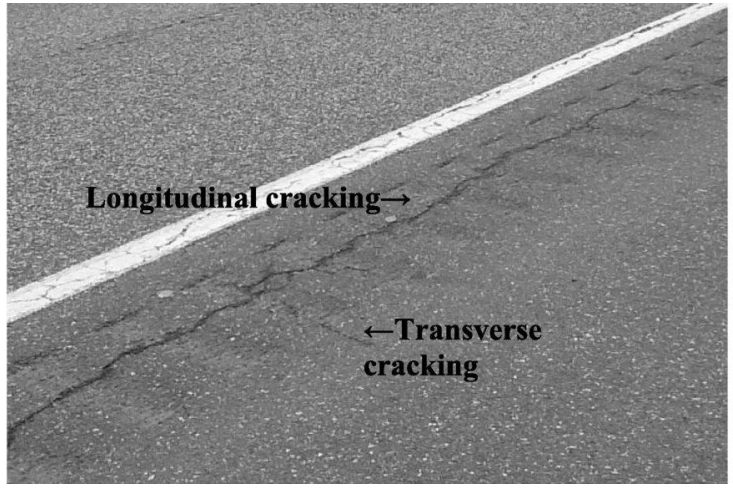
# Identification of Roads for Maintenance

- Assess all roads annually
- Overall rating based on condition and usage
- Identify top 50 roads most in of need repair weighted toward pavement
- Address roads with 40+ mph speeds that constitute safety hazards
- Include some subdivisions
- Balance road maintenance in different regions of county
- Develop a draft fiscally constrained list
- Assign selected roads to repair schedule and perform detailed estimate
- Solicit bids and issue contract

# Road Issues Requiring Maintenance

Alligator Cracking

Block Cracking




Longitudinal & Transverse Cracking

Crack in asphalt core

Slippage

Raveling

Edge Cracking

- Wheel Rut

Water in the road base is the enemy of asphalt!

# Effects of one cold, wet winter

- Whipporwill Road
- Rocky Branch Road
- Total cost $155,000
- Required emergency funds allocation
- Preventative maintenance is key

# Subdivision Roads

- Include some subdivision roads in the maintenance schedule annually
- Plan to resurface all roads when working in a subdivision
- Subdivision roads in the past were not built to modern standards
- Road failures are sometimes due to issues other than water

# Lower Cost Maintenance Programs

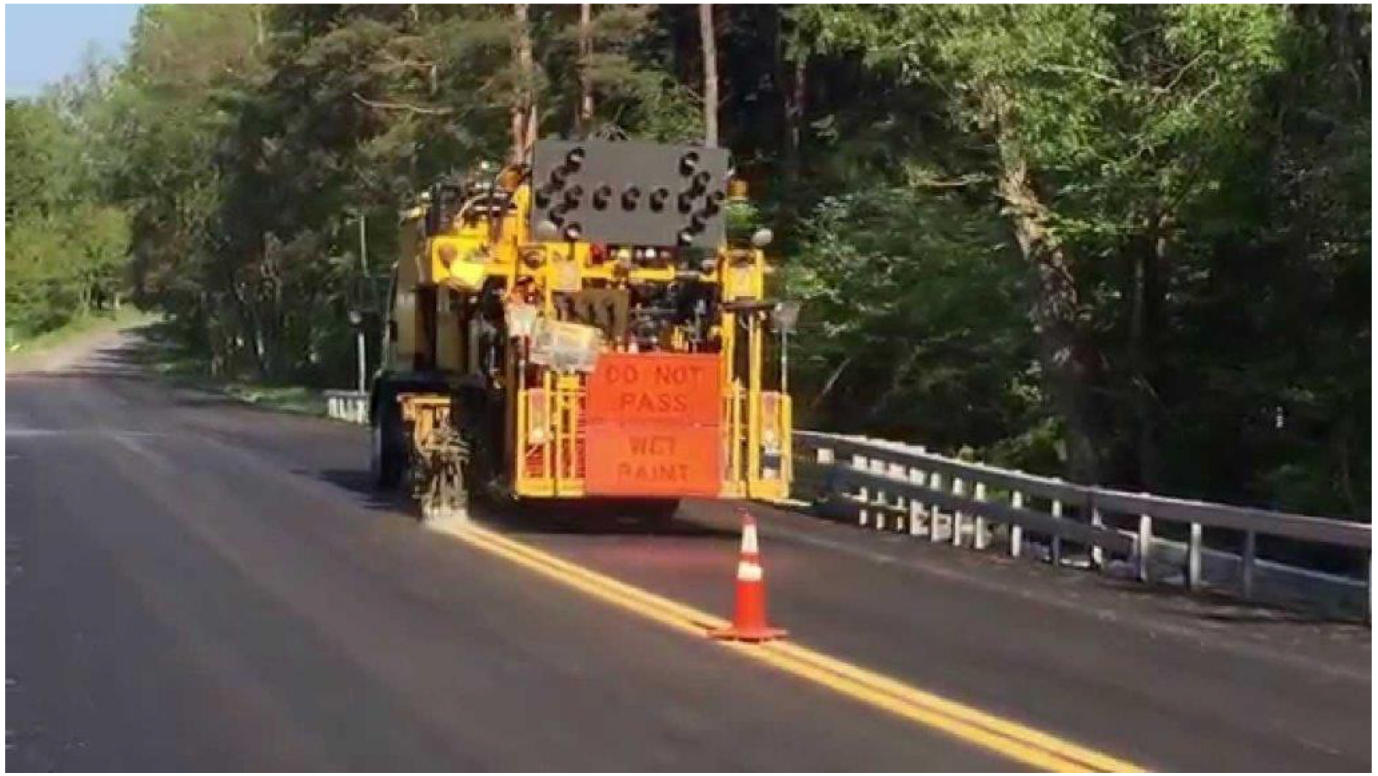
- Many local governments patch and resurface, some only pave over
- Could do 20-22 miles annually with just paving
  - Road surface becomes higher relative to gutters
  - Cracks reflect through at the rate of 1” per year
  - Increased total cost to maintain and repair roads over time
  - 1.5” overlay requires 968 tons of asphalt at ~ $110K/mile

# Oconee County Annual Maintenance Program

- Crack sealing
- Chip sealing
- Striping
- Signage
- Calcium Chloride

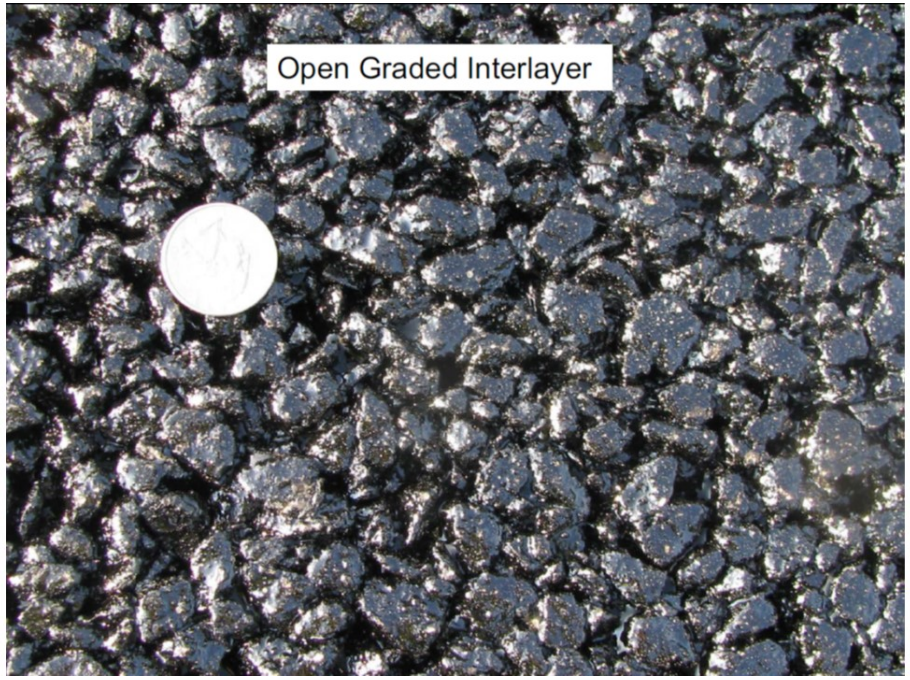
# Annual Maintenance From General Fund

- Crack sealing - 20 miles at cost of $70,000
- Re-stripe 20 miles of road at cost of $55,000
- Apply calcium chloride to 15 miles of gravel road at cost of $60,000
- Replace signage on County roads at cost of $45,000



# State of Art Road Repair: Open Graded Interlayer

- In use in Oconee County now
- Encouraged by GDOT asphalt lab
- Bridges cracks and inhibits reflection
- Replaces chip seal layer
- Bridges cracks and levels in one step
- Atlanta Highway
  - Decreased traditional patching 75%
  - No cracks and excellent ride quality



# Road Maintenance Schedule and Budget

- Goal is to average increased life span of 20 years for roads undergoing repair/maintenance
- $2.6 million needed per year to maintain the inventory we have with minimal repair needs
- Maintenance program historically underfunded; over $2 million only this year and last
- As a result, we have a backlog of roads awaiting repair, and the repairs are more costly

# Building vs Maintaining Roads

- New roads are built to county standards before being accepted
- To build existing road to county standards as part of maintenance program
  - The existing road structure would have to be removed down to 10.5” below the road surface
  - This material would have to be hauled and disposed of
  - Add 880 pounds of graded aggregate base per square yard and compact
  - Put down 2 inches of binder and 1.5 inches of topping
  - 4 miles would use up entire $2.2 million annual budget
  - Utilities, traffic, and access challenges

# Rebuilding one mile of road 20’ wide to County residential subdivision standards:

- 11,733 square yards = 8” GAB = 880 lbs/in = 5,163 tons needed per mile = $123,900 @ $24/ton
- 1,290 tons of binder per mile @ 2” = $129,000 @ $100/ton
- 968 tons of topping @ 1.5” = $106,480 @ $110/ton
- Subtotal = $359,380
- + Mobilization/traffic control/overhead at 20% = $71,876
- Cost per mile $431,256
- Adding trucking and disposal of removed material:
- 1,540 pounds of material per linear foot to be removed – 4,066 tons per mile
- Cost to haul and dispose of removed material 4,066 tons x $25/ton C&D + $5/ton hauling = $121,980
- Total cost to Oconee County to rebuild a road to residential subdivision standards: **<u>$533,200/mile</u>**

# Example Line Item Costs (2018)

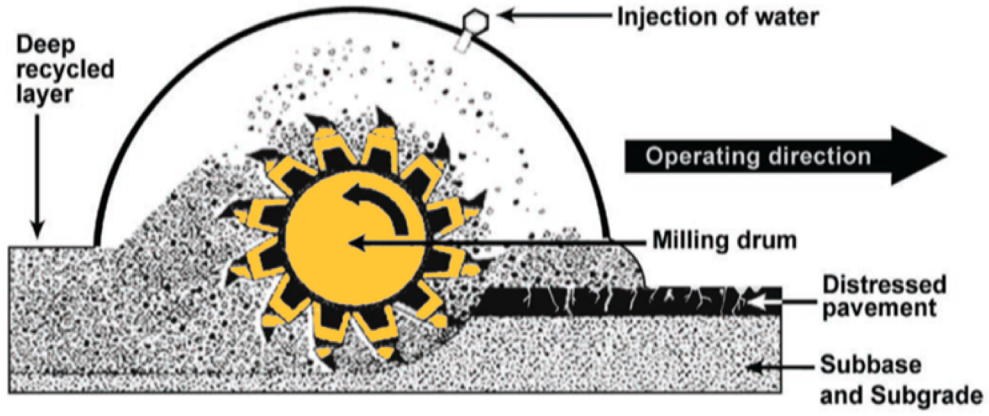
- Patching:  $115.90/ton
- Binder:  $80.91/ton
- OGI:  $96.14/ton
- 9.5mm topping:  $89.26/ton
- 12.5mm topping:  82.68/ton
- Milling asphalt (various depths):  $3.85/SY
- Plus…
- Temporary striping
- Permanent striping (paint or thermoplastic)
- Raised pavement markings
- Traffic control, mobilization, etc.

# How we do it now:

- In 2018 we proposed to patch & resurface 9.72 miles, including the FDR of Meriwether and completely milling out Brookwood Drive, Golf Course Lane, and Founders Lake Drive.
- The total contracted price with CWM is $2,220,639.20 or **<u>$228,460/mile</u>**

# Full Depth Reclamation

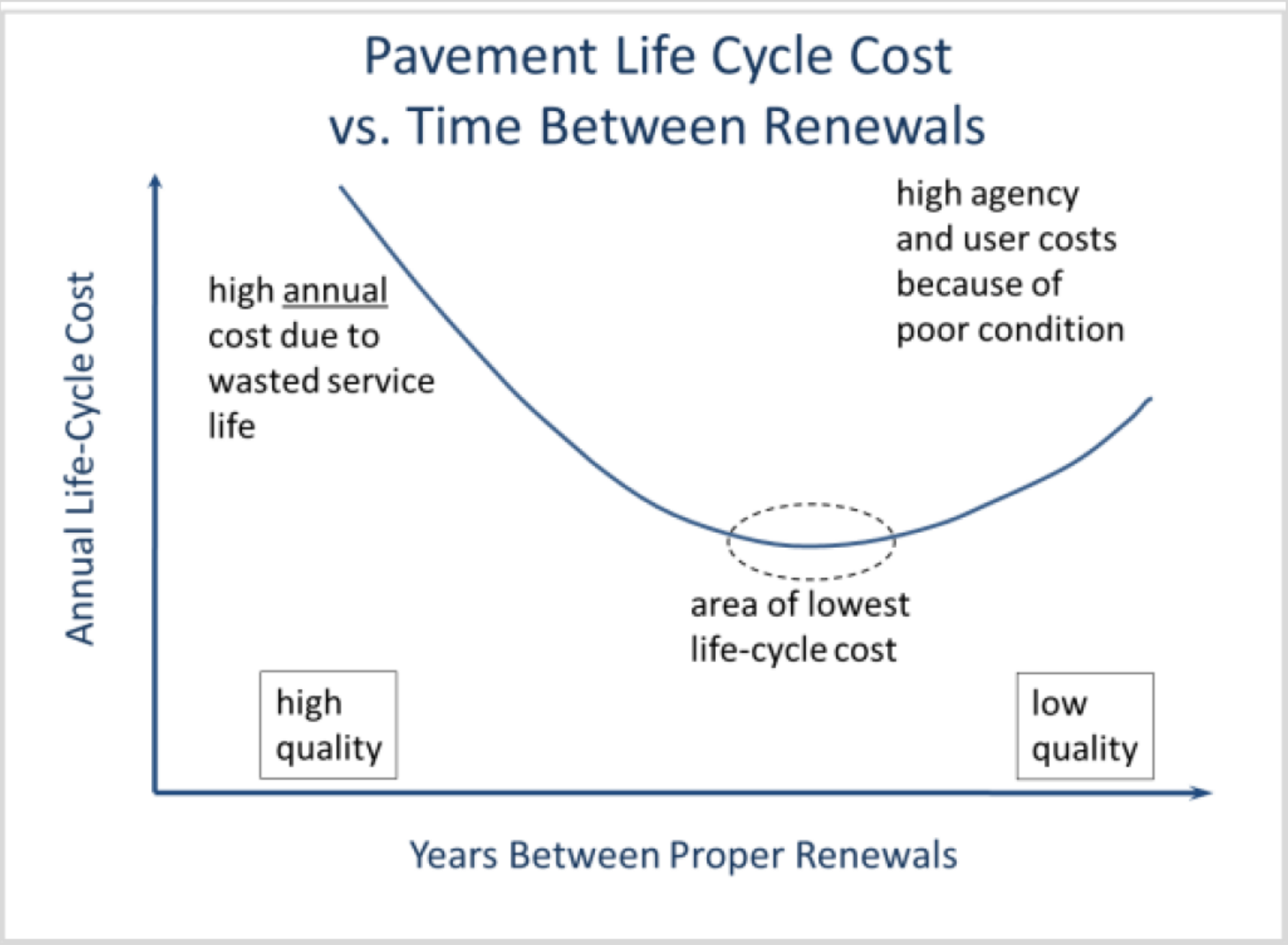
- Pulverizer blends all materials to 9 inch depth below surface together
- Remove 2-3 inches from the top
- Blend base materials and add cement to recycle road into new base
  - Cement-stabilized
  - Far stronger than normal graded aggregate base
  - Can withstand very high loads
  - Level and top; road will be flush with existing gutter
  - Project completed in place with less waste, lower cost, and less disruption



# Range in costs for various approaches:

- Minimalist resurfacing with minimal patching:  $130,000 per mile
- 5% patching with OGI overlay:  $170,900 per mile
- 30% patching with OGI overlay:  $226,300/mile
- 100% mill and replace:  $381,500/mile
- FDR:  $446,700/mile
- Remove and rebuild to County standards:  $533,200/mile

## Lowest Life Cycle Cost



# Moving forward:

- Should the road rating methodology be changed?
  - Currently use GDOT scoring with visual assessment
  - High tech options are available
- Should the project selection process change?
  - Disregard regional approach?
  - Set a budget percentage for subdivision roads?
- 5% patching with OGI overlay: $170,900 per mile
- 30% patching with OGI overlay: $226,300/mile
- 100% mill and replace: $381,500/mile
- FDR: $446,700/mile
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Pavement Survey Van

# Questions?