WHAT?
WHAT?

A period of initial pavement construction activities followed by a 9 year warranty period (concrete or asphalt).

Pavement condition is monitored and rated yearly during the warranty period with bonuses and penalties applied.

Subsequent construction activities by the contractor may occur during the warranty period.

The purpose is for the contractor to maintain the pavement to certain standards during the warranty and at the end of 9 years leave the roadway in a condition that will extend the roadway life several more years.
WHY?
WHY?
93% of all roadways in WV owned, operated, maintained by WVDOT

6th largest roadway network

36,000+ centerline miles
79,000+ lane miles
7,000+ bridges

2% Interstate
5% US Route
10% WV Route
83% County/Local Route

Total Disbursements Per State-Controlled Mile

<table>
<thead>
<tr>
<th>Rank</th>
<th>Name</th>
<th>Dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>West Virginia</td>
<td>$35,047</td>
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<tr>
<td>2</td>
<td>South Carolina</td>
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<td>3</td>
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<td>Missouri</td>
<td>$57,481</td>
</tr>
</tbody>
</table>
93% of all roadways in WV owned, operated, maintained by WVDOT

36,000+ centerline miles
79,000+ lane miles
7,000+ bridges

6th largest roadway network

mountainous terrain = expensive road construction

least flat state

2% Interstate
5% US Route
10% WV Route
83% County/Local Route

$
WHY?

2007 – 2010: Several high profile pavement failures on interstate resurfacing projects. Only getting a few years of life before rehab/repair was needed.

Finger pointing between WVDOH and Industry. Specifications vs. workmanship.

Regardless of the cause, the overall program was being destroyed by the need to let additional interstate construction contracts to fix the pavement failures.

Something had to change...
HOW?
HOW? (how did we get here)

WVDOD Management directed the investigation of pavement warranties (as well as improving specifications; PWL, joint density)

Researched. Started with 3 year warranties to gain some experience in administration of warranty paving projects.

Initial industry resistance. But we moved forward and completed the projects.

Wanted to try extended warranty period. Could not get surety industry to go beyond a 3 year warranty bond.

Ok with a series of three, 3 year warranty bonds with descending retainage to get to 9 years.

Much resistance from the construction industry and many meetings... but we stuck to our guns and fought through to get a project advertised.
HOW? (how it’s done)

Proprietary Meetings during advertisement period
(WVDOH Specs and Design Directives may be altered with approval)

Warranty Bonds – 3 year

Retainage

Lane Rental in warranty period

Performance Ratings – Penalties/Bonuses
WHERE?
WHERE?
WHERE?
LET'S GO...

MOUNTAINEERS!!!
9 yr warranty 2011

OVERPASS C053 - CLENDENIN
MP 15 - MP 20; $10.6M
9 yr warranty 2011
9 yr warranty 2015
9 yr warranty 2017

OVERPASS CO53 - CLENDENIN
MP 15 – MP 20; $10.6M

BIG OTTER – SERVIA ROAD
MP 39 – MP 44; $12.7M

WHITE SULPHUR GARVEE
MP 179 – MP 182; $9.0M

BLUEFIELD GARVEE
MP 0 – MP 9; $31.5M

EDENS FORK – TUPPERS CREEK
MP 106 – MP 111; $10.6M

KENNA – FAIRPLAIN
MP 129 – MP 133; $7.7M

SILVERTON RECONSTRUCTION
MP 145 – MP 152; $16.5M

BLUE HORIZION – PA STATE LINE
MP 155 – MP 161; $16.6M
RESULTS

Pavement Performance

Annual Reviews

- IRI
- PSR – Pavement Surface Rating; WVDOH / WVU manual rating system

A “distilled” & simplified version of

- Distress Identification Manual for the Long-Term Pavement Performance Program (FHWA-RD-03-031)
- Standard Practice for Roads and Parking Lots Pavement Condition Index Surveys (ASTM D6433-11)

Cost

Tracking all distresses visible from the surface:

(cracking, rutting, raveling, patches, potholes / faulting, scaling, spalling, popouts)
9 yr warranty 2011

OVERPASS C053 - CLENDENIN
MP 15 - MP 20; $10.6M
9 yr warranty 2011
9 yr warranty 2015

OVERPASS CO53 - CLENDENIN
MP 15 - MP 20; $10.6M

BIG OTTER - SERVIA ROAD
MP 39 - MP 44; $12.7M
FULL DEPTH RECONSTRUCTION PROJECTS

- OVERPASS CO53 - CLENDEENIN
  MP 15 – MP 20; $10.6M

- BIG OTTER – SERVIA ROAD
  MP 39 – MP 44; $12.7M

- WHITE SULPHUR GARVEE
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  MP 145 – MP 152; $16.5M

- BLUE HORIZION – PA STATE LINE
  MP 155 – MP 161; $16.6M

9 yr warranty 2011
9 yr warranty 2015
9 yr warranty 2017
non-warranty 2017
RESULTS

Pavement Performance

Cost
9 Year Pavement Warranty Projects
Full Depth Reconstruction (contractor’s choice)
Total Project Cost (6 project average from 9/12/17 letting)
$71/SY

Non-Warranty Projects
Full Depth Reconstruction (WVDOH design)
Total Project Cost (6 project average from 9/12/17 letting)
$70/SY
9 Year Pavement Warranty Projects
$71/SY

Non-Warranty Projects $1/SY
$70/SY $200k/project

Warranty Projects:
• Less Prescriptive (mix, RAP, thickness, MOT)
• Industry Competition
  (so far, asphalt winning bidder on all projects)
• Potential yearly bonuses

Non-Warranty Projects:
Traffic Control Items/Phasing; if equal revises price to $60/SY
(lump sum vs. specific items)
BEST GUESS:
Contractor is including $2.3 million/project to cover the warranty (evaluated with equivalent construction methods & phasing)
So what does this all really mean?
It’s a small data set... but some projections can be made
It’s a small data set… but some projections can be made.

- **Old Spec**: 6 years of pavement life until medium rehab (mill/fill)
- **PWL Spec**: 10 years of pavement life until medium rehab (mill/fill)
- **Warranty**: 14 years of pavement life until medium rehab (mill/fill)

Years of pavement life until medium rehab (mill/fill)
How much does 4 years cost?
How much does 4 years cost?

Total project cost, bid straight up, head to head = $200k

If 4 year gap is less...

and/or

If our designers can incorporate warranty project phasing methods in non-warranty projects to reduce overall project cost...

Then use of long term warranty may not be preferred

Unfortunately, we won’t know the actual results for 10 years.
Final thoughts...

• West Virginia’s circumstances (and maybe our desperation) allowed us to break through the resistance to long term pavement warranties.

• We are learning as we go; far from perfection, still a work in progress

• Industry does not like extended warranties, but they are still bidding and giving us “good” prices

• We are excited to see the comparison of the warranty vs. non-warranty projects in upcoming years
Does the WVDOH plan to continue using long term pavement warranties in the future?

At this time...
ALMOST HEAVEN...