



SHRP2 SOLUTIONS
TOOLS FOR THE ROAD AHEAD

GPR Rolling Density Meter (RDM) Peer Exchange

WSDOT – RDM Experience

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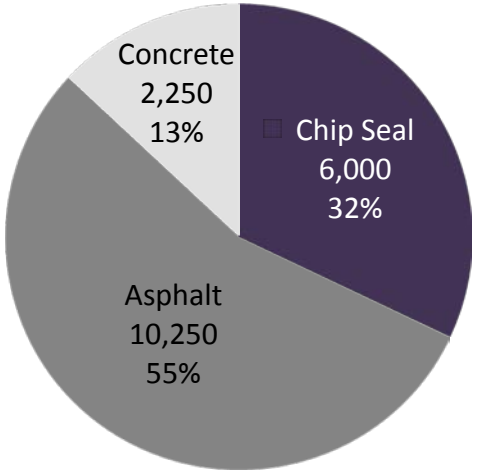
U.S. Department of Transportation
Federal Highway Administration

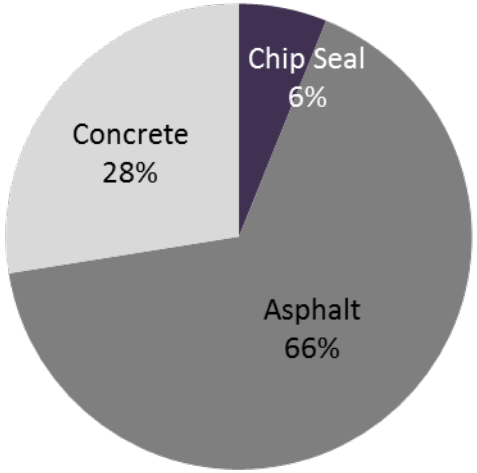
American Association of State Highway and Transportation Officials
AASHTO

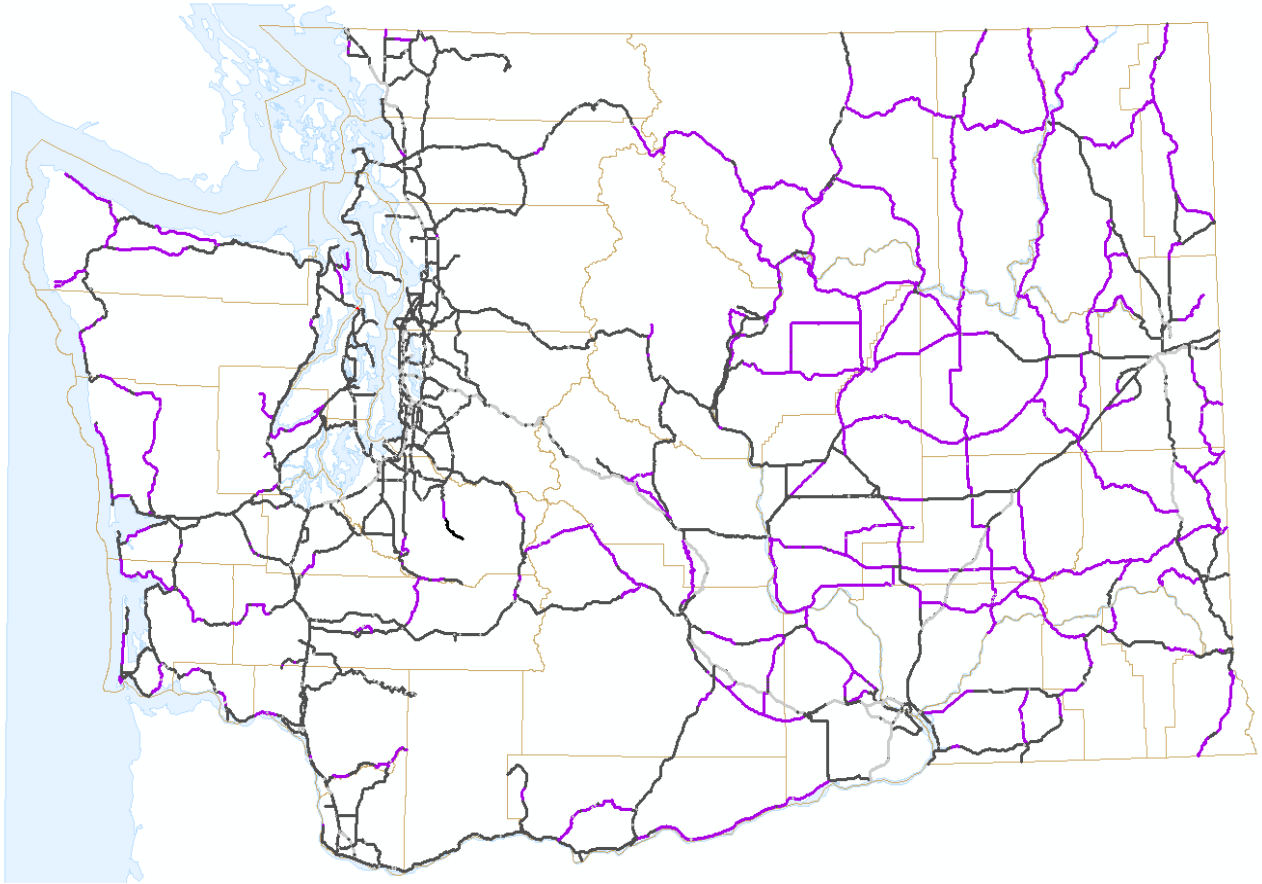
Washington Highway System

Statewide Lane Miles



Statewide VMT





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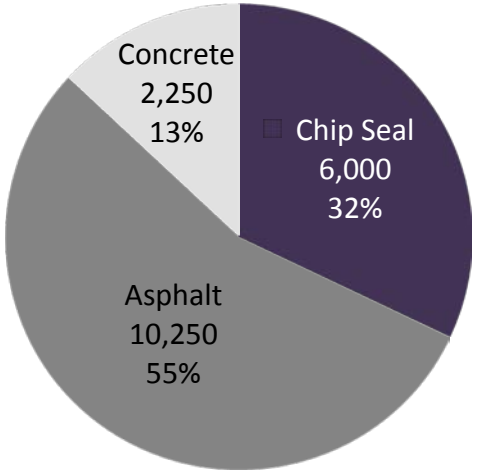

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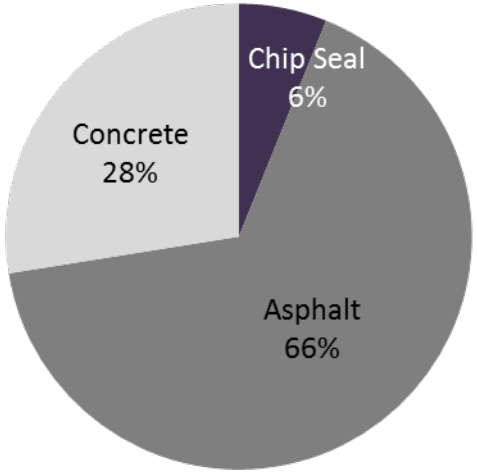
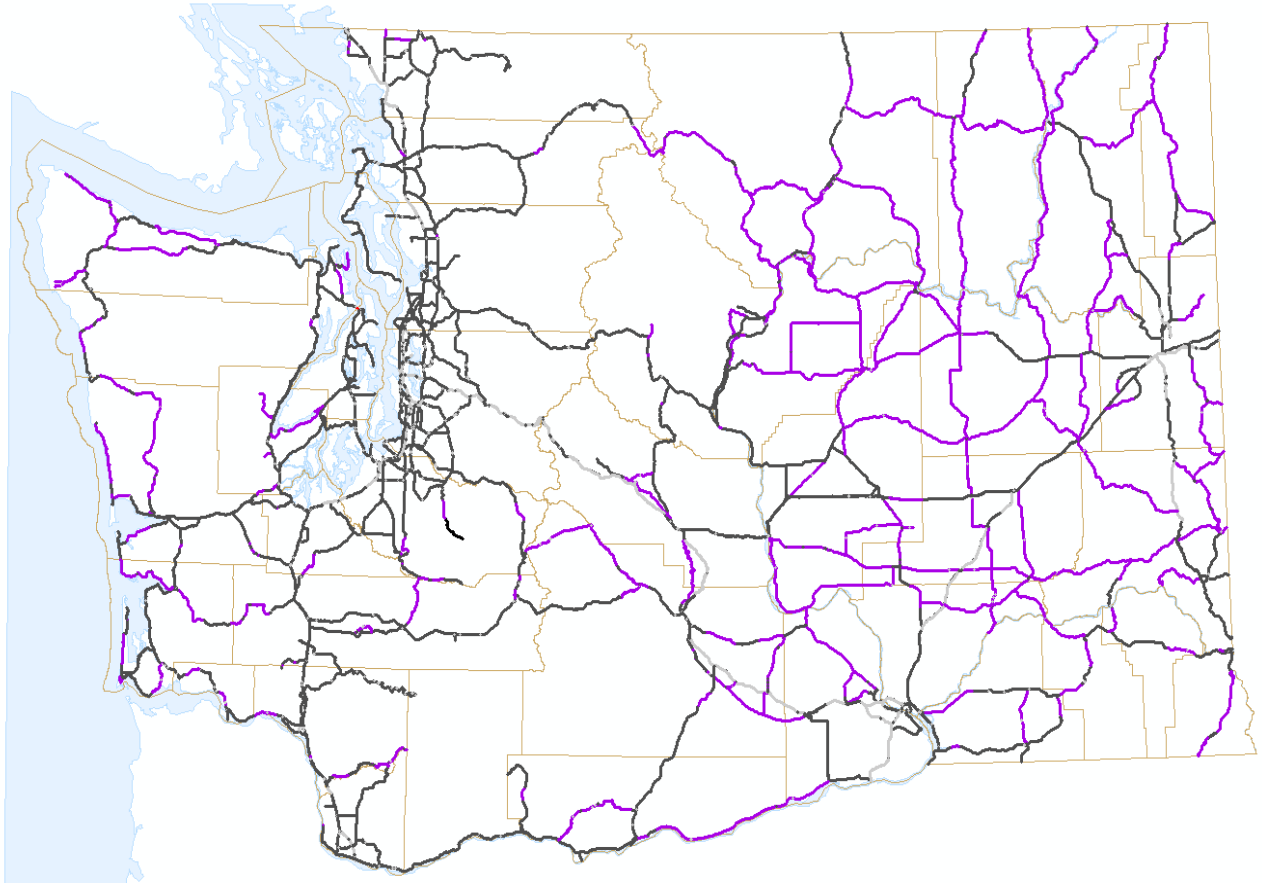




Washington Density Testing

- Nuclear Density
  - Backscatter
  - Correlated to cores
  - Limited testing locations
    - <20K tons = 100 tons
    - 20K–30K tons = 150 tons
    - >30K tons = 200 tons
      - » Small representation of what's occurring

Washington Performance

- Pavement Design
  - Most roadways are designed thick enough
    - Drives distress to the top lift
  - Rehabilitation is generally 0.15’ grind and inlay

Washington Distress

GPR Data Collection 2017

- Wanted to get familiar with the device in 2017
  - 2 in the South Central Region
  - 2 in the Eastern Region
  - 1 in the Southwest Region (bridge)

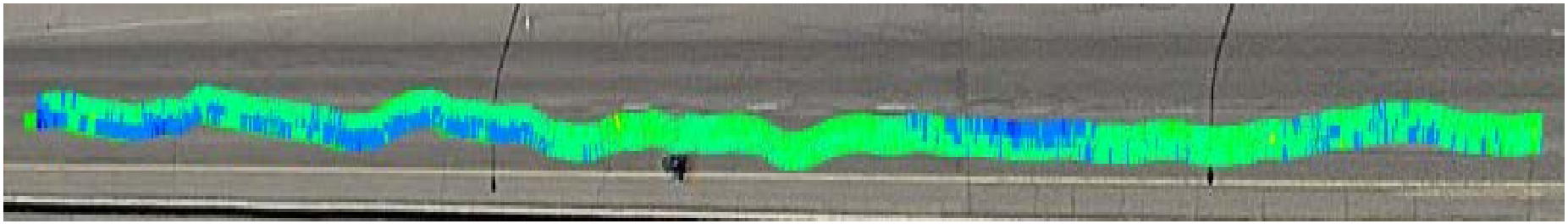
GPR Interest/Findings

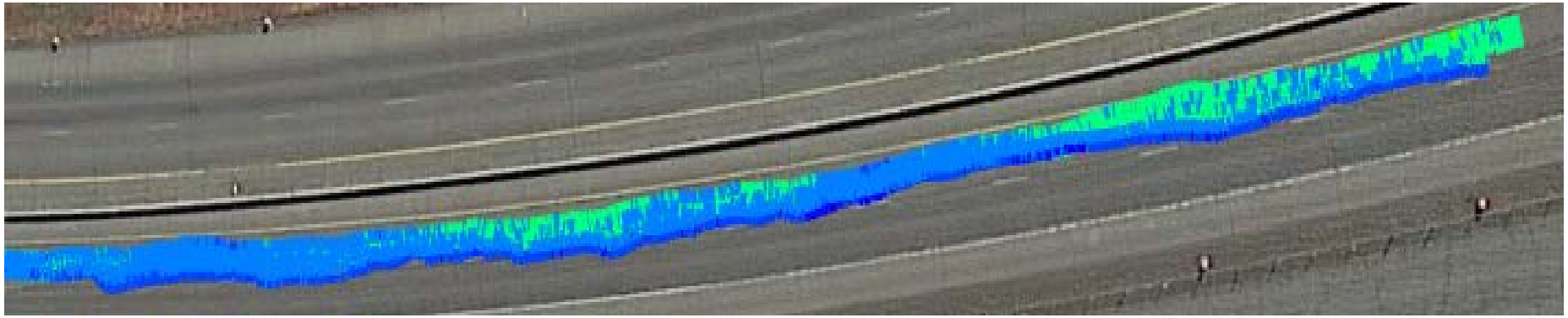
- What we wanted to learn
  - Can we measure density?
  - Can we measure uniformity?
  - Can we locate low density locations?

- What we found
  - Correlates well to density
  - Can measure uniformity
  - Can locate low density areas for testing
  - Can see the results of construction techniques

Initial Findings (cont.)

- Construction process aid
  - Trucking
  - Compaction process

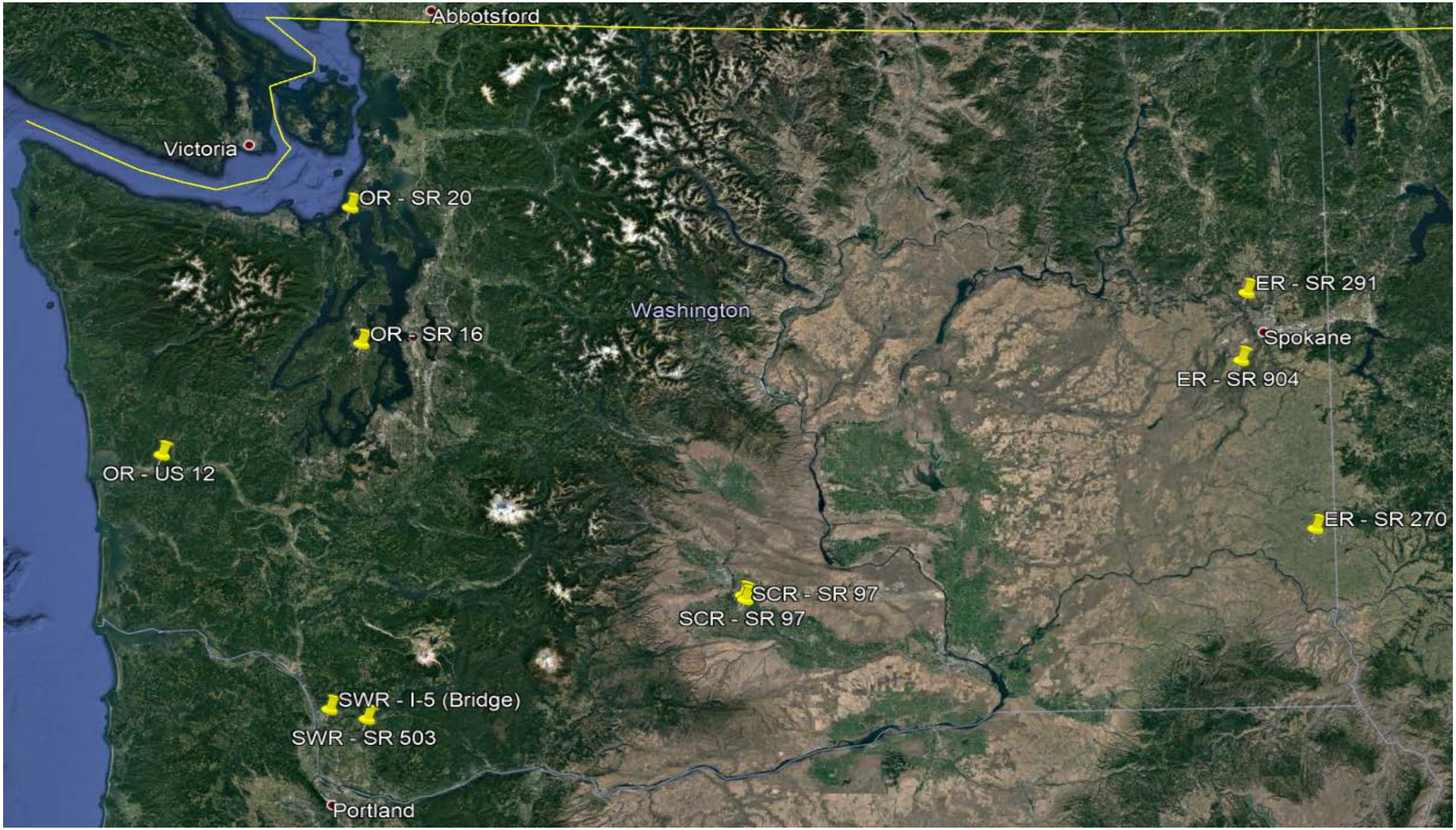




GPR Data Collection 2018

- Continue to collect data
  - 3 in the Olympic Region
  - 1 in the Eastern Region
  - 1 in the South Central Region
  - 2 in the South West Region

GPR Data Collection Locations



GPR Data Collection 2018

- We continue to collect data
  - RDM results to compare with collected cores and density measurements
- Looking at potential use of RDM for acceptance
  - Direct measurement of density to use in pay factor (>91.5%)
  - Uniformity measurement to determine pay factor

Enhancement Opportunities

- Better GPS
- Density input parameters (modifiable)
  - Based on LSL and USL requirements
  - Density measurement to use as pay factor
    - % of tonnage
  - Uniformity measurement to determine pay factor
    - % of roadway within limits
- Wi-Fi data transfer
- App for real-time viewing and reporting