Pavement Recycling

October 7, 2014
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Pavement Recycling

- What it is
- Types
- When to use it
- Elements of the specifications
- What we have done
- Way Forward
What is it

Simple – Taking existing materials and using them…again.

But not all recycling is equal…..
Types

• RAP (Reclaimed Asphalt Pavement) in Hot Mix
  • Using RAP with the Virgin Mix

Focusing on these types:

• CCPR – Cold Central Plant Recycling
  • Typically 100% RAP processed off site and stabilized (thickness varies)
• CIR – Cold In-Place Recycling
  • Bound asphalt layers mixed in-place and stabilized (3” to 6”)
• FDR – Full Depth Recycling
  • Deep mixing-includes bound and unbound (aggregate/soil) material (6”to12”)


When to use it

• **RAP (Reclaimed Asphalt Pavement) in Hot Mix Asphalt (HMA)**
  • Used since the 1980’s
  • Currently allow up to 30%
  • Contractor Option

• **CCPR – Cold Central Plant Recycling**
  • As a base material replacing a portion of Base Mix/Aggregate Base, shoulder strengthening, can be placed in multiple lifts (3” to 6”)

• **CIR – Cold In-Place Recycling**
  • Pavement has deterioration in the deeper layers (3” to 6”), but only the bound layers – Major Rehabilitation

• **FDR – Full Depth Recycling**
  • Pavement has deep deterioration (6” to 12”) – secondary roads and primary routes where applicable – Major Rehabilitation
CCPR – Cold Central Plant Recycling

Millings being plant processed
CCPR – Cold Central Plant Recycling

Looks Like HMA.....Placed like HMA.... Compacted Like CMA
Cement placed ahead, mixing with asphalt
FDR – Full Depth Recycling

Cement placed ahead, mixing with water
Elements of the Specifications

- Test Strip Prior to full production
- Quality Control Plan
  - Identify team responsible for quality and duties
  - Sampling, Testing and Analysis Plan for QC
  - Quality Control activities – what is being done
  - Actions to meet contract requirements when corrective actions are required
  - How the stabilized material will be protected
- Technical Representative
  - Experienced with the process
  - May be a manufacturer’s representative, consultant or other experienced rep
- Responsible for design of mix (Job Mix Formula)
  - Gradation
  - Density
  - Stabilizing agents
  - Water
What we have done

Since 2008

• FDR, 11 Projects
• CIR, 4 Projects, 3 additional projects advertised, but not awarded (1 over estimate and 2 alternate designs not selected)
• CCPR, 2 Projects (one of which is underway)

Lessons

• CIR – Nighttime work, open to traffic too soon
• Apply to the right project can be very beneficial – an investment
Way Forward

Early Oct 14 – CIR specification to be posted and current FDR specification circulated for feedback

Mid Oct 14 – Draft permissive CCPR spec for Section 200 & 300 circulated

Late Oct 14 – Strengthen Recycling Requirements – Issue Materials Division Memorandum for inclusion in Section 600 – Manuel of Instructions

Late Nov 14 – (Revised – if necessary) FDR Specification posted

Mar 15 – Permissive CCPR spec posted

Approx $50-$60M/year spent on restorative maintenance and reconstruction – first consideration is recycling.

Use of CIR and CCPR is still new and we are learning together to take existing materials and use them…..again
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