



Cold In-Place and Cold Central Plant Best Practices

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❖ Lecture Details

- *Cold in-place recycling (CIR) and cold central plant recycling (CCPR) are cost-effective in-place pavement recycling techniques that improve serviceability for roads and streets. This session will cover the basics of project selection, construction techniques, additive selection, and cost and will provide case studies of CIR and CCPR applications.*
- *Identify suitable candidates for each process*
- *Understand the elements for a successful project*
- *Present typical cost savings that can be realized with these recycling technologies.*

❖ Cold Recycling (CR) is a method of reconstructing the pavement base using up to 100% recycled material

- **Constructed in place, or use stockpiled RAP**
- **Combination of:**
 - **RAP**
 - **Binder 2.0-2.5%**
 - **Water, acts as lubrication to achieve proper compaction**
 - **~1% active filler (cement/lime/etc) sometimes to achieve early stiffness**
- **CR is a marriage of geotechnical and asphalt materials work.**
- **How is it like HMA?**
 - **Provides a flexible base material**
 - **Contains AC binder**
 - **RAP binder**
 - **Foam or emulsified binder (recycling agent)**
 - **Can be placed using conventional paving equipment**
 - **Uses the Indirect Tensile Test or Marshall Stability Test for design**
- **How is it NOT like HMA?**
 - **Add water to achieve optimum moisture content**
 - **An active filler is often added to aid in strength/stiffness**
 - **Recommend focusing on density, not air voids**
 - **Variability in RAP can lead to faulty air void estimates**
 - **Allow the material to cure before placing an overlay**
 - **Reduce moisture content**
 - **Set amount of time**
- **Emulsion technology has changed since CR started to begin in the 70-80s due to the oil embargo. Curing doesn't take 3-7 days like it used to. They can be engineered and can cure in hours if necessary.**
- **What can we correct?**
 - **Rutting not caused by subgrade/base failure**
 - **Top-down cracking**
 - **Bottom-up fatigue cracking**
 - **Stripping?**
 - **Yes, but solve the drainage problem first**
 - **New pavements?**
 - **Absolutely, use existing stockpiles of RAP or haul in material and recycle it in place**
- **Not recommended to use an MTV when paving CCPR. Material can clog the MTV.**