Hot In-Place Recycling
What is HIR?

Hot In-Place Recycling (HIR) is an on-site, in-place, pavement rehabilitation method that consists of heating, scarifying, softening, mixing, placing and re-compacting the existing bituminous pavement.
What is HIR?

The three sub-categories of HIR are:

- Surface Recycling
- Repaving
- Remixing
The Surface is Critical

- Aging of asphalt pavement occurs most rapidly at the surface
  - Ruts, Shoves & Bumps
  - Patches & Utility Cuts
  - Reflective & Shrinkage Cracks
  - Weathering, Bleeding & Raveling
  - Pavement Geometry
Today’s equipment can provide better heat to the asphalt pavement, allowing greater heat penetration while minimizing damage to the asphalt binder.
Today’s equipment can uniformly add Aggregate or New HMA to the existing material to upgrade the quality of the newly recycled material if needed or specified.
Weather Limitations

- Pavement free of standing water
- Air temperature of 50 F and rising
- Night work increases requirements
Pavement Heating

Plus 50 Degrees F
Plus 100 Degrees F
Plus 150 Degrees F
Excess of 350 Degrees F
Material Advances

► High Penetration Asphalt Rejuvenators can be added to bring the aged, stiff bitumen liquid in the mix back to life.
Material Advances

► New hot mix asphalt or virgin aggregate specially designed for the individual project, can be added as required to improve quality.
Material Advances

Chip seals, micro surface, slurry seals, nova chip or thin overlays can be added during or after completion of the hot in place recycling process.
HIR Requirements

► Base in good condition
► Asphalt roadway 20’ wide or wider
► Excessive crack filler or pot hole patching can be addressed by premilling
► Roadway must have enough strength to support the equipment
Hot In-Place Recycling

- Treats surface to a depth of 1 inch or greater
- Allows several different surface treatments to be added during or after the HIR process
- Adds additional binder/modifier
- Adds additional hot mix asphalt
- Increase structural coefficient
Project Considerations

- Uniformity
- Depth of existing HMA
- Presence of Chip Seals
- Asphalt content (bleeding)
- Asphalt properties
- Traffic
- Types of pavement distress
- Environment
HIR Benefits

- Repairs Distress
- Extends Life
- Improves Ride Quality
- Eliminate need for a leveling course
- Improved Bonding
- Environmentally friendly
- Cost savings
Types of HIR

- Surface Recycling
- Surface Repaving
- Remixing
Surface Recycling
Surface Recycling

- Heating, reworking and rejuvenating the top one inch of an existing asphalt pavement in preparation of either a seal coat, micro-surfacing or overlay.
Surface Repaving
Surface Repaving

- Heating, reworking and rejuvenating the top one inch of an existing asphalt pavement and simultaneously applying an overlay while the temperature of the recycled layer is 200°F.
Remixing
Remixing

- Heating, reworking and rejuvenating the top 1 to 2 inches of an existing asphalt pavement adding virgin aggregate and/or admix and mixing the newly recycled material in a pugmill or drum mixing plant prior to laying, either as a binder or surface course.
Questions ??