

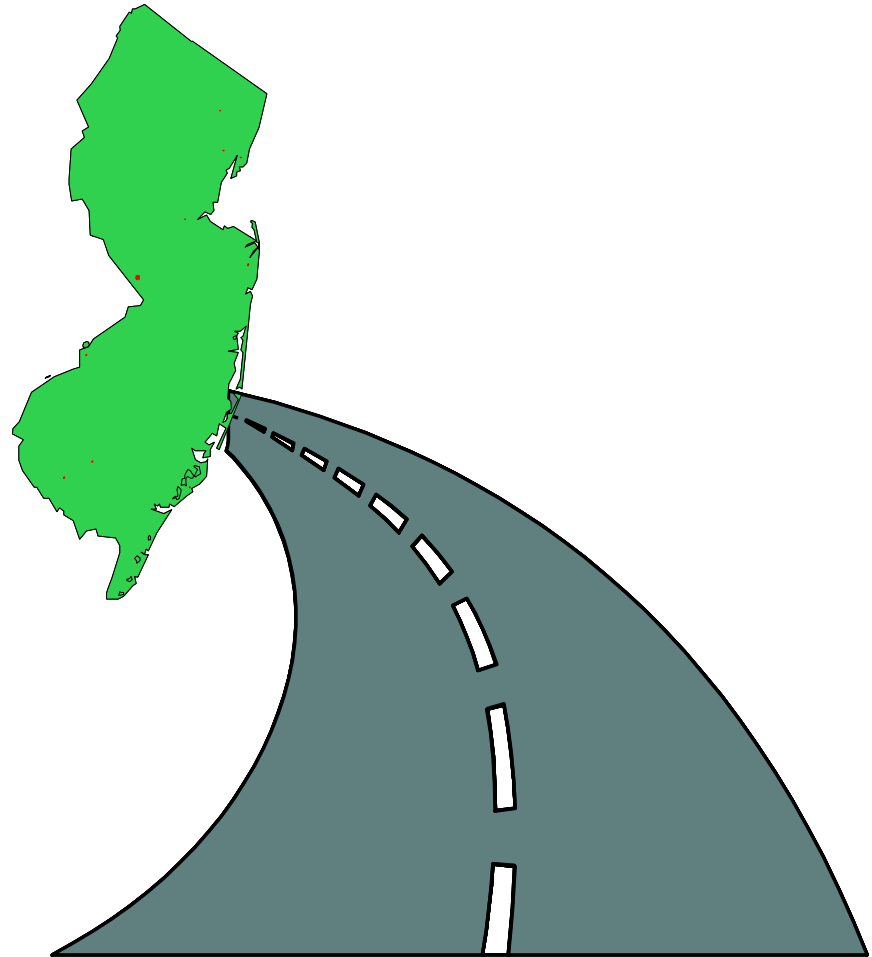
HMA Pavement Construction Issues

- Presented by:

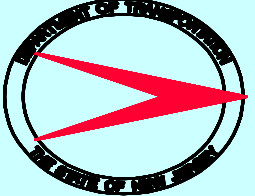
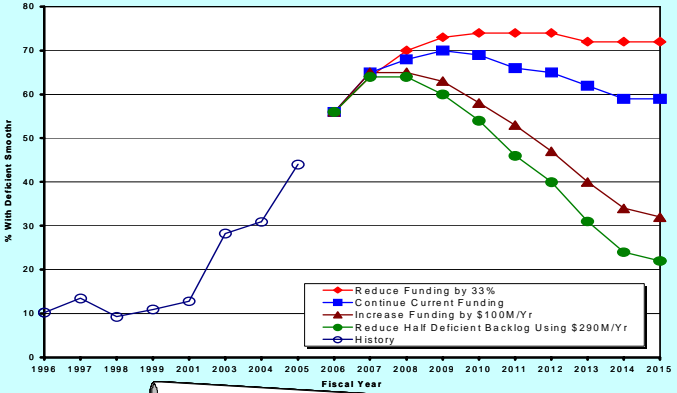
Robert Sauber

**Supervising
Engineer**

**Bureau of
Materials**



Develop a Strategy



Construction requirements

- Lane closure hours and environmental regulations often limit treatment selection
- Select a buildable treatment that provides the largest agency and user benefit
- Constructing pavements during nighttime lane closures reduces quality
- Poor working conditions resulting in loss of talented workers

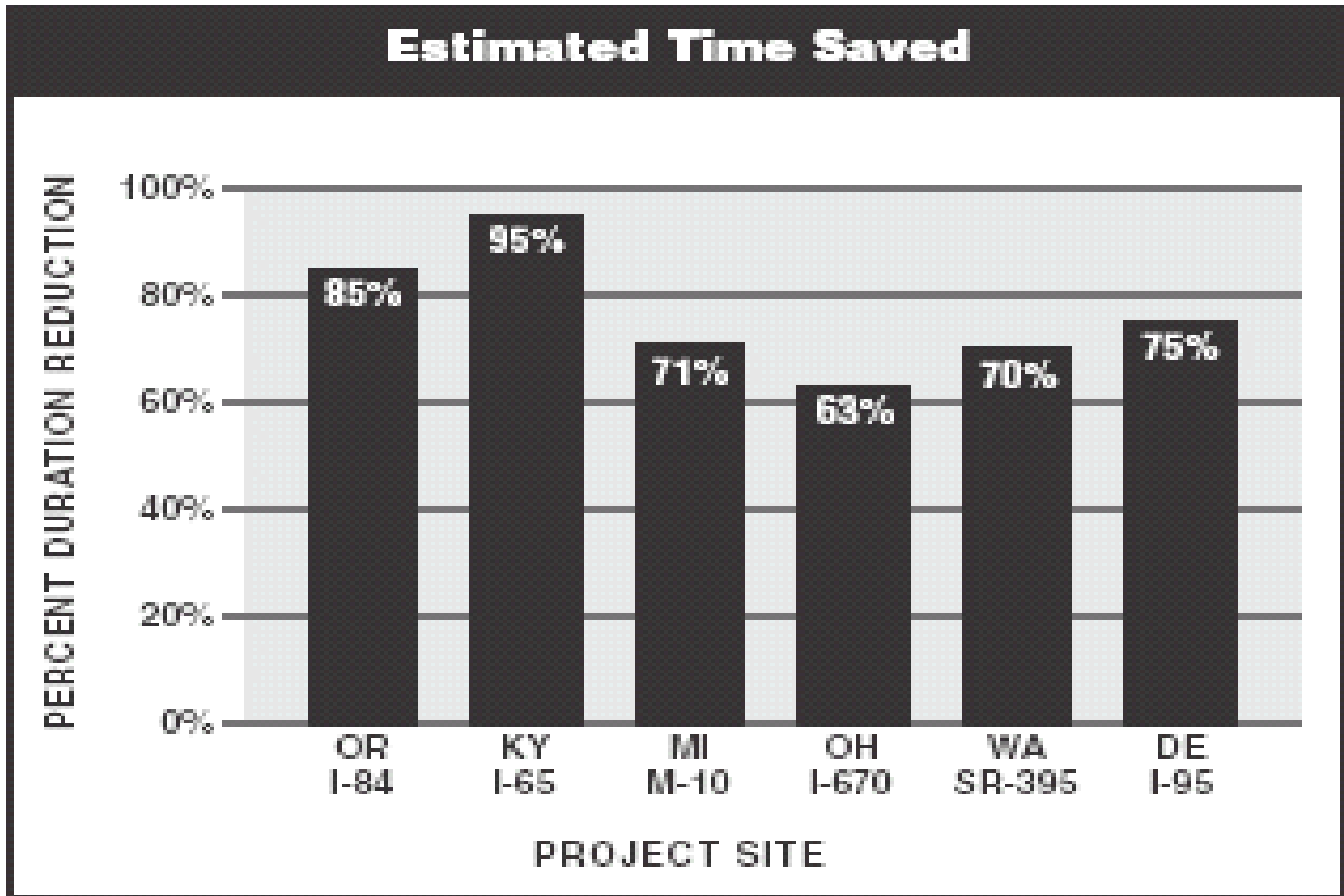
Considerations with Full Road Closure

- Not amendable to all construction situations
 - The availability of adequate alternate routes
- A solid management plan
 - Done on an accelerated schedule
 - Scheduled on a 24-hr. work basis, potential for impacts to local residents are concerned.
 - Ensure all the needs to be met throughout project duration
 - Balance the increased load on the network
 - Increased traffic densities on alternate routes must be assessed, planned for, and managed.

Benefits of Full Closure

- **Reduced project duration**
- **Increased worker productivity**
- **Improved safety**
- **Improved product quality**
- **Positive public sentiment**
- **Increased workspace and flexibility**
- **Reduced impact on construction travelers**
- **Cost savings**

Full Road Closure Time Savings



Milling and Profile Milling

- Milling is used to remove worn out surface material and fix cross slope and profile
 - 2007 Specs eliminates 20+ milling items
 - Ranges now specified; 0-3", >3"-6", >6"
 - Plans should indicate grade control points
- Profile milling is used to remove ruts and corrugation and/or improve smoothness
 - Normally included for bridge undercuts where lane closure time is limited, thick lifts placed

Paver Production Rates (approx.)

- Microsurfacing- up to 7 lane miles/shift
- Novachip- up to 5 lane miles/shift
- HMA- up to 3 lane miles/shift
- Plant production outpaces paver placement
- Number of haul trucks is critical
- MTV helps to reduce the number of trucks

Material Transfer Vehicle

- Helps to maintain consistent paver speed
- Helps mixture and temperature segregation by remixing the material
- Prevents haul trucks from bumping paver
- Stores 1½ loads of material on site

But...

- Extremely heavy when loaded
- Material loses 20°F in the process

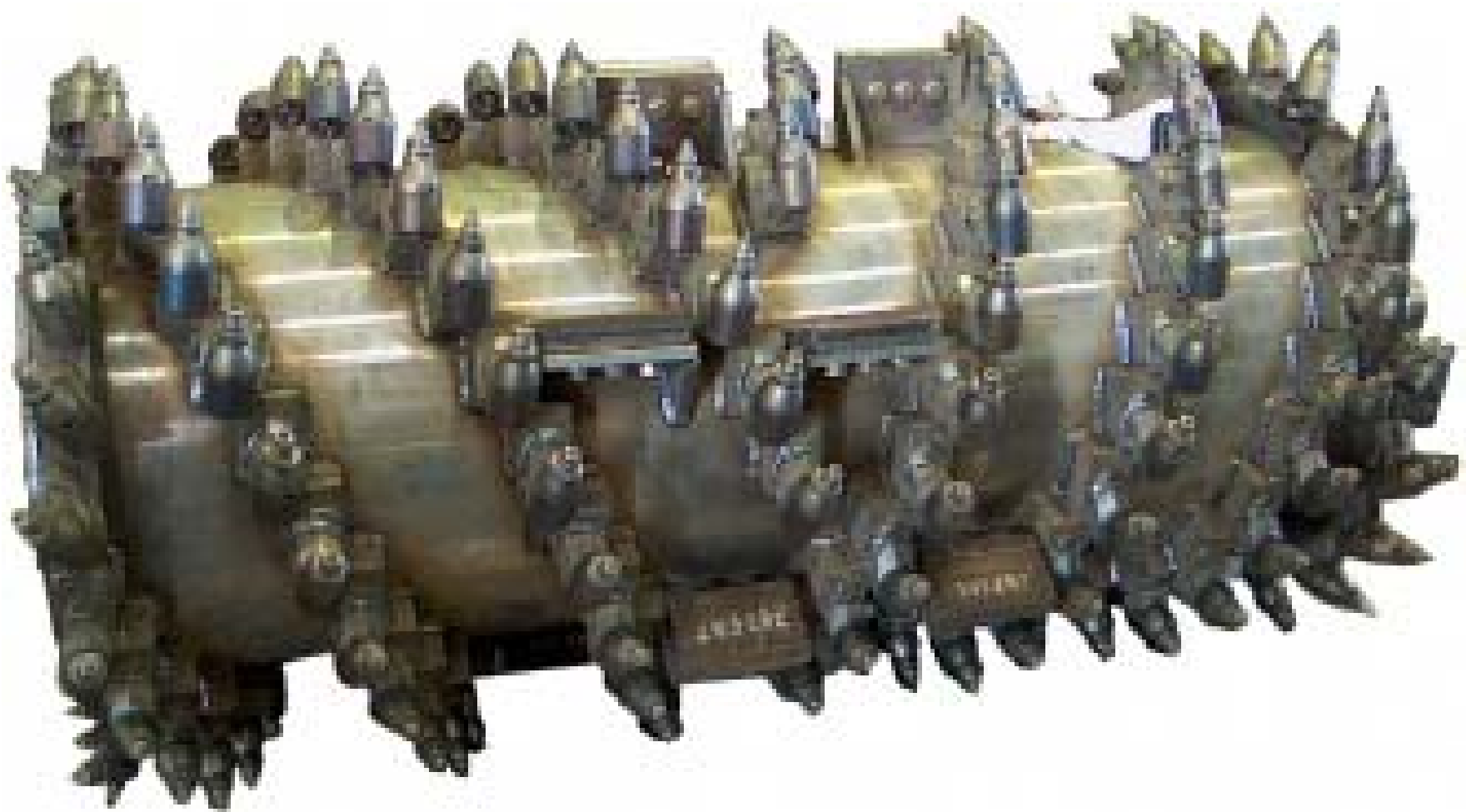
Weather Limitations

- Microsurfacing the most sensitive to cold temperatures or heavy rain
- Open Graded Friction Course and Novachip sensitive to cold weather
- Tack Coat 64-22 will not adhere when surface is damp from rain or milling
- Thicker lifts of HMA should be placed in cool weather

Milling Machine



Cutting Drum



Scabs after milling



Proper Tack Coat Coverage



Poor Tack Coat Coverage



Good/Bad Tack Coat Coverage



Paver Auger



Screed Extension



Paver Hopper



Hopper Insert for MTV



Paver Push Roller & Hitch



Paver Gearbox



Gear Box Streak



Gearbox Streak



Echelon Paving



Bad Longitudinal Joint



Notch Wedge Apparatus



Notch Wedge Joint



Ski used for grade control



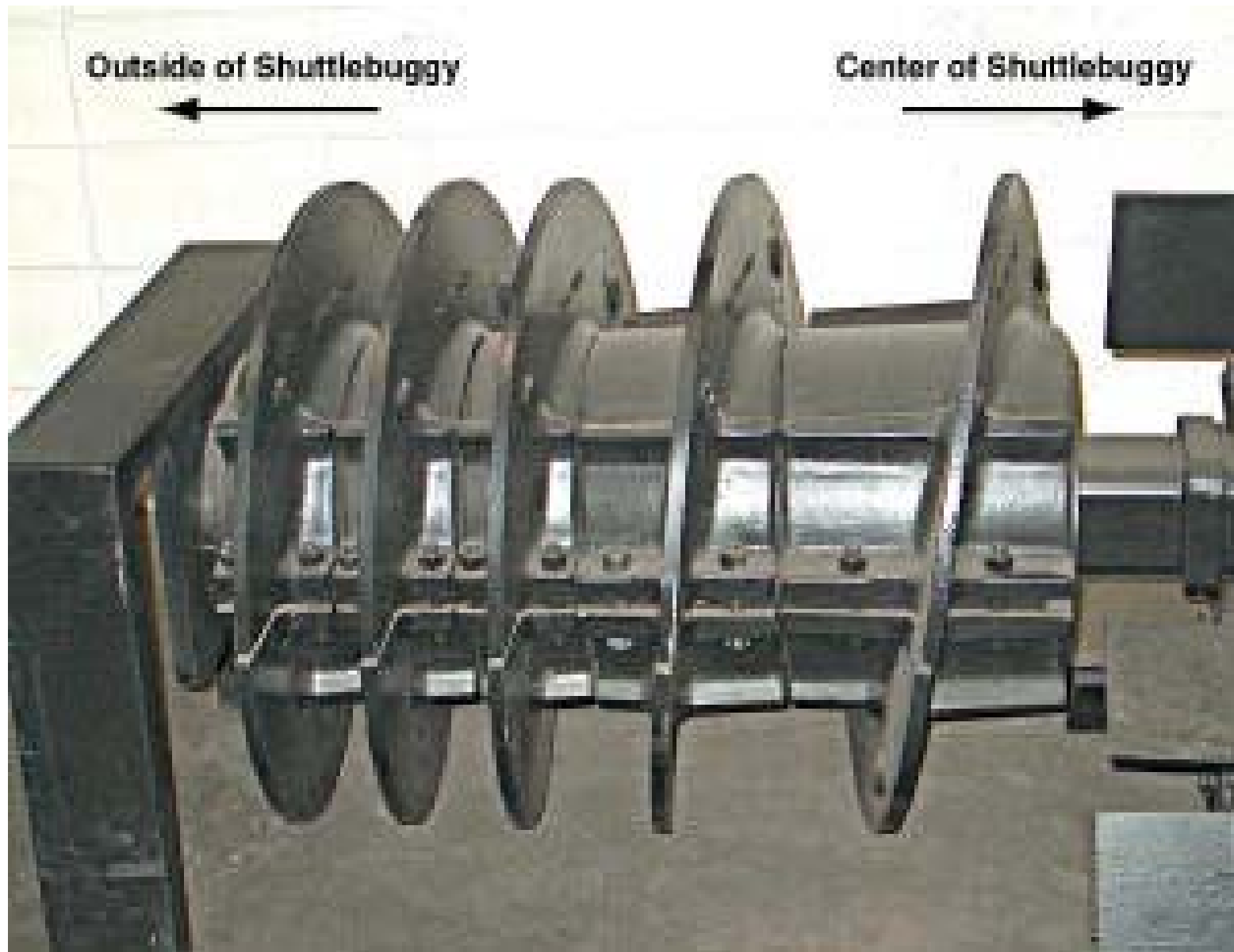
MTV: Blaw Knox MC 30



MTV- Shuttlebuggy



Shuttlebuggy Auger



Steel Wheel Roller- Vibratory



Pneumatic tire roller



Pneumatic tires



Nuclear Density Gauge: QC



Fat Spots- Bleeding or Flushing



Roller Marks



photo courtesy of NCAT

Poor Longitudinal Joint



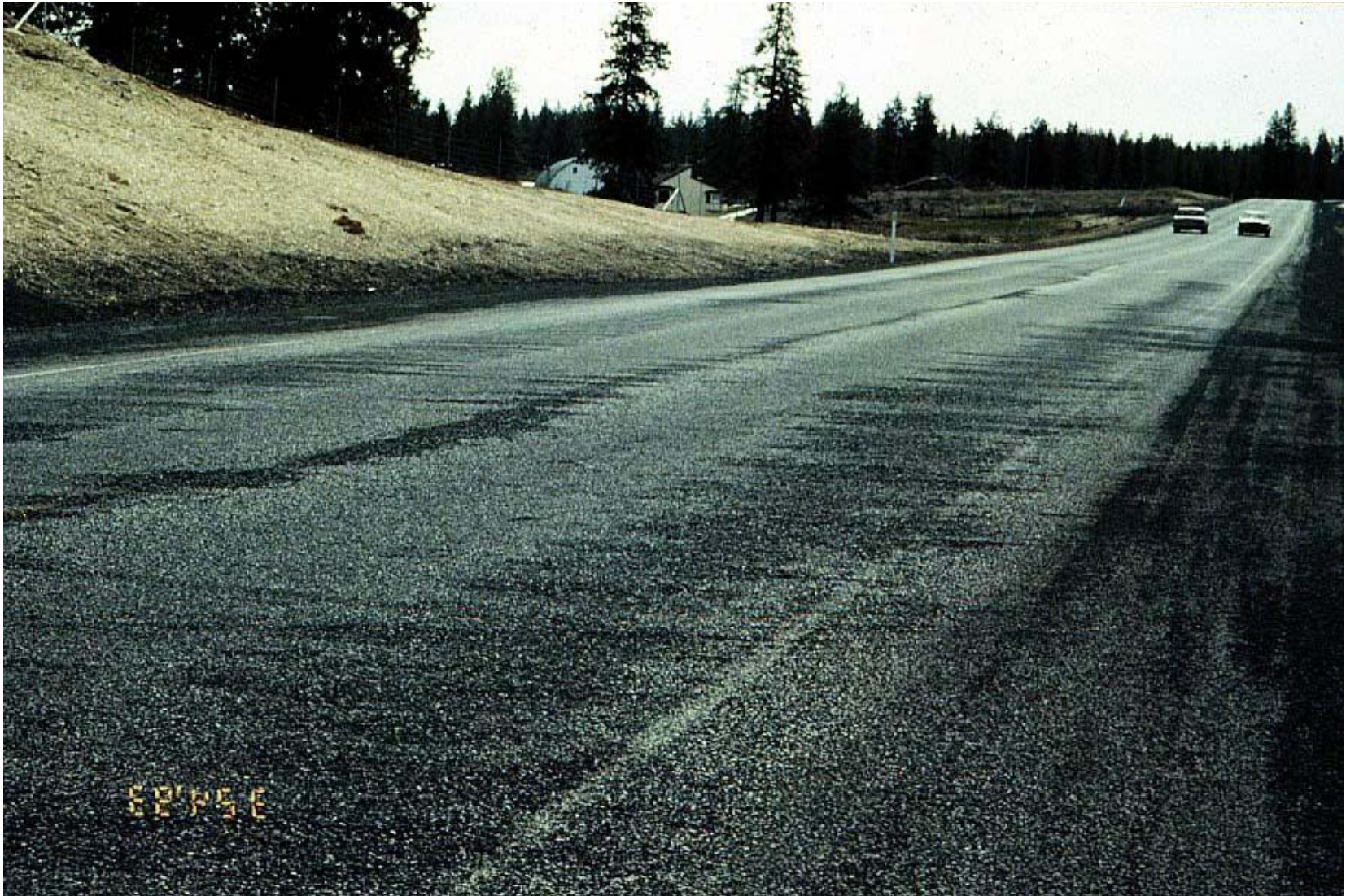
Patched Longitudinal Joint



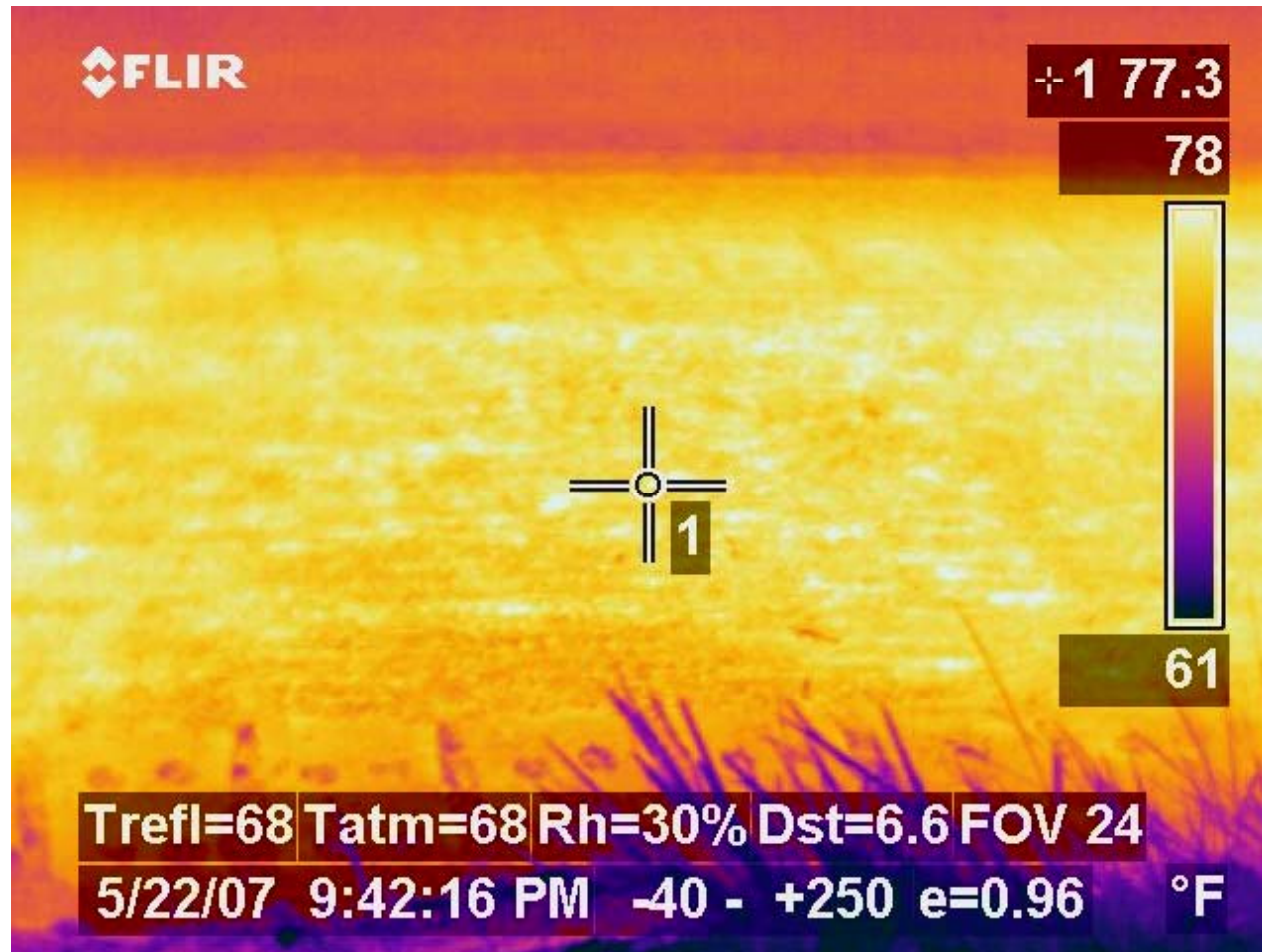
Poor Texture



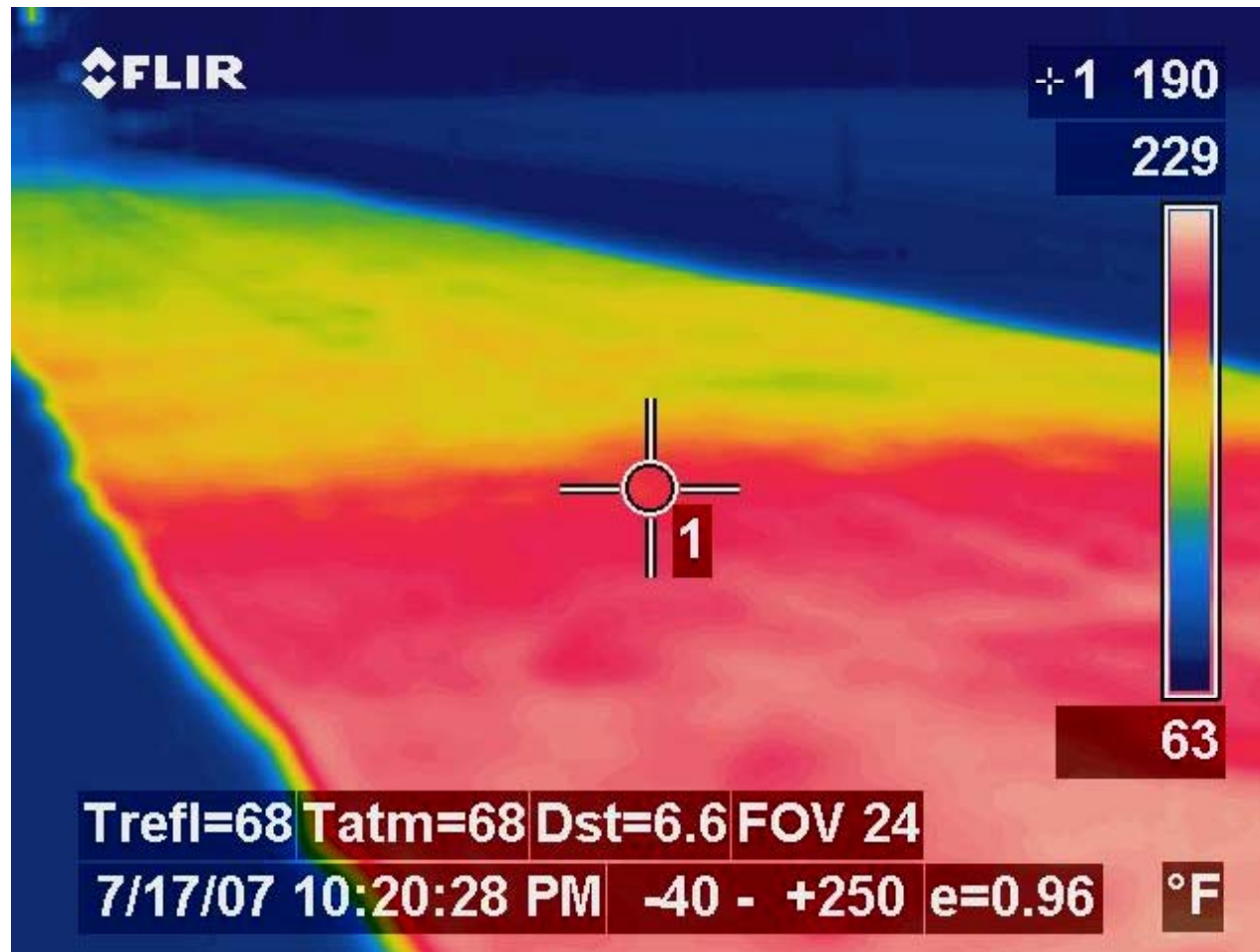
Raveling



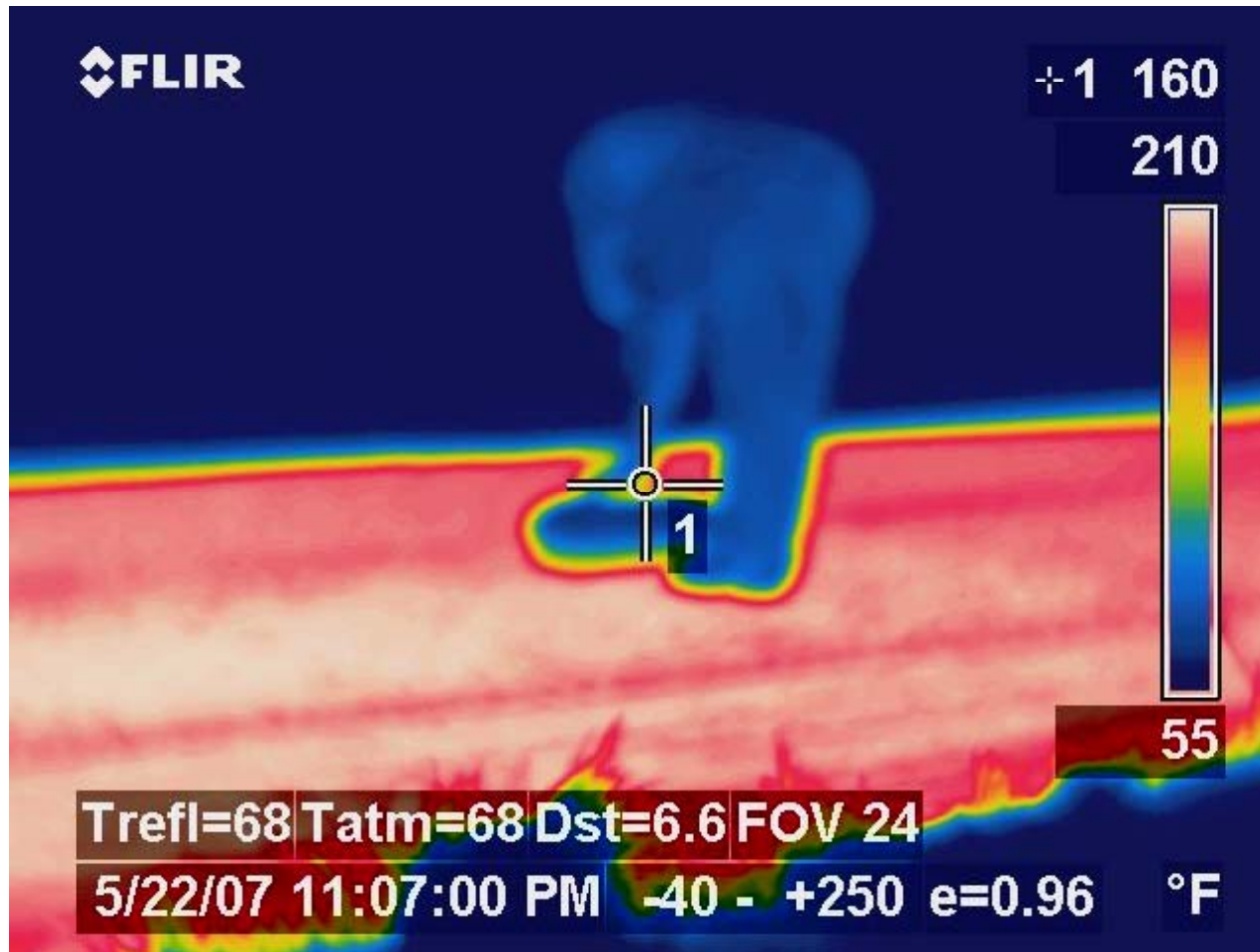
Freshly Placed HMA



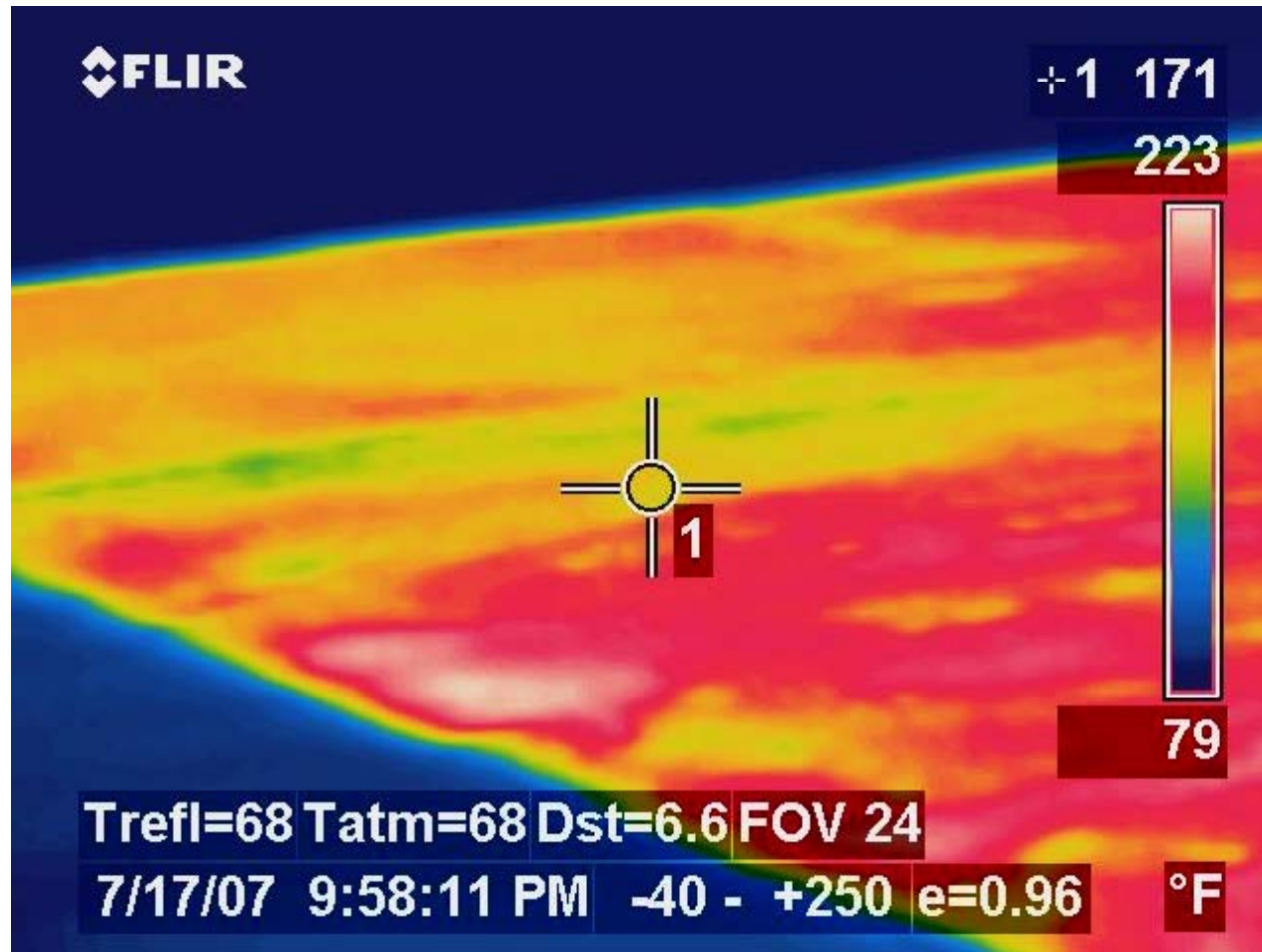
Mat Temp. at Transverse Joint



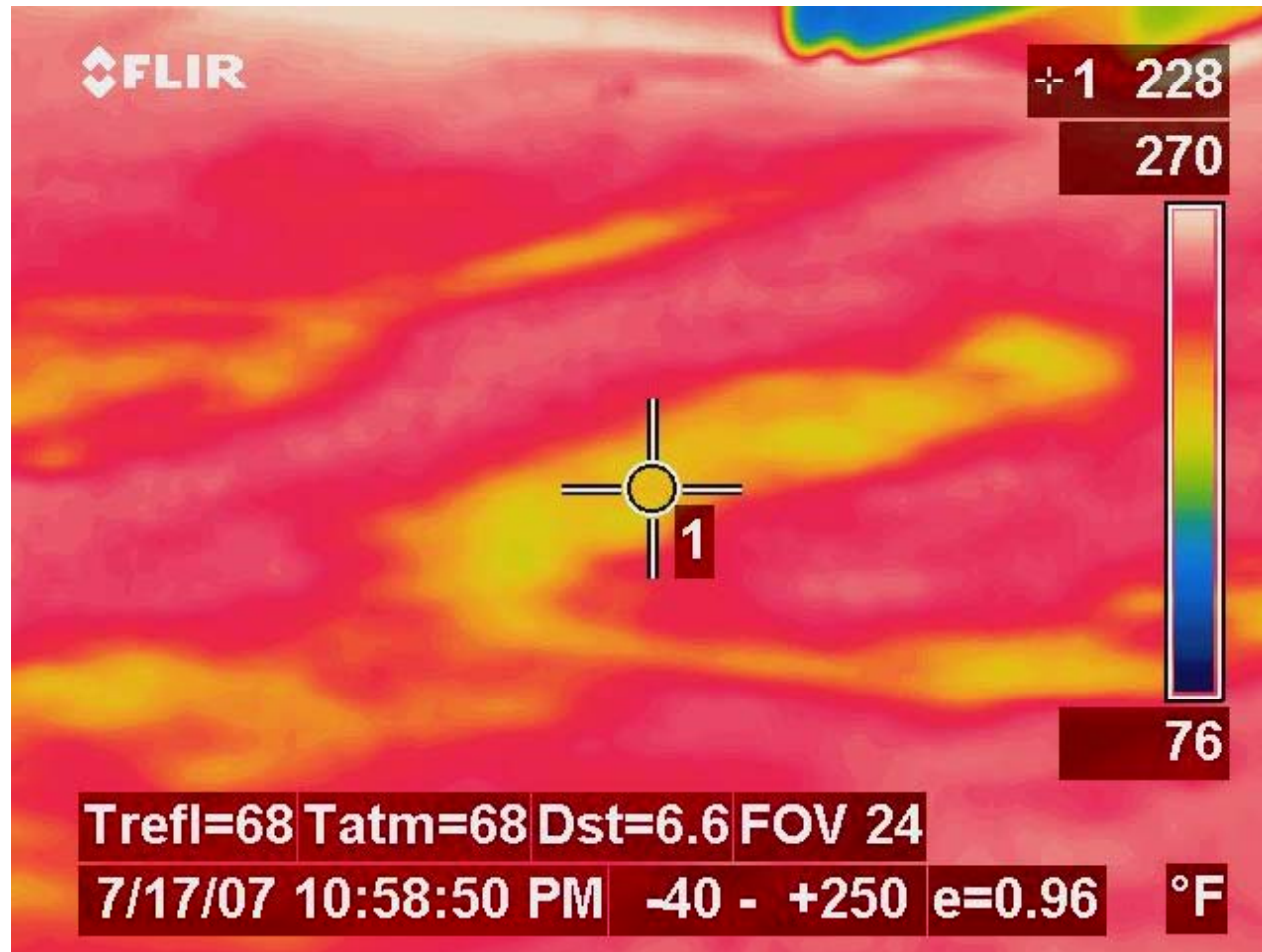
Nuclear Density Testing



Temperature Segregation



Temperature Segregation



MTV Dumping into Paver

