Concrete Pavement Construction: What is Right and What can go wrong

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Concrete pavements that are design properly and constructed with quality workmanship and careful attention to details will outlast their design life.
Stabilized Subgrade – LBR 40

- Difficult to achieve asphalt density
Solution: Increase LBR to $>70$
Dowel Baskets must be well anchored to base and dowels properly aligned
Tie bars away from the Joint and ends of dowel bars.
Concrete Mix (Recommended)

- \( \geq 4000 \) psi
  (req’d 3,000)
- 500 – 600 Lb cementitious
- \( \leq 0.45 \) W/C
- Use 20% fly ash or up to 60% slag
- Slump 1.5”-2” (slipform)

On-site Batch Plant
Concrete Segregation
ADVANCES IN PAVING EQUIPMENT
Stringless Paving
Stringless Control System
Paving machine with dowel implants
Tie Bar implants
MIT- Dowel Alignment Evaluation
Surface Profile Measuring Device
Proper Curing

• Apply as soon as texturing is complete.
• Complete coverage of surface and sides.
• Avoid using hand held sprayer.
• Spray with water intermittently for 1st 48 hours.
Courtesy of ACPA
Maturity Device
Top: Joint Saw Damage due to Sawing too Early.
Bottom: Joint Sawed later with no Raveling.
Uncontrolled crack from delayed joint sawing
Narrow vs. Wide Joints

Narrow joints ≤ ¼” produce quieter pavement

Joints > ½” Generate Noise
Poor Joint Quality Control
Avoid Grinding Ruts
Concrete Paving: Critical Issues

- Proper base preparation
- Best Possible dowel alignment
- Stringline management & control
- Consistent concrete mix properties at plant
- Steady supply of concrete at paver
- Consistent concrete workability at paver
- Proper operation of paving equipment
- Controlled density of concrete – just the right vibration energy
- Well Monitored dowel/tie bar implant system and proper alignment
- Well trained and experienced workers & professionals
Thank You