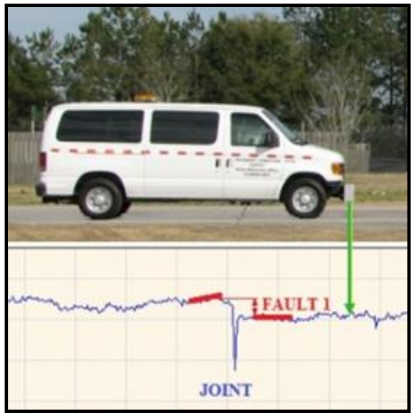


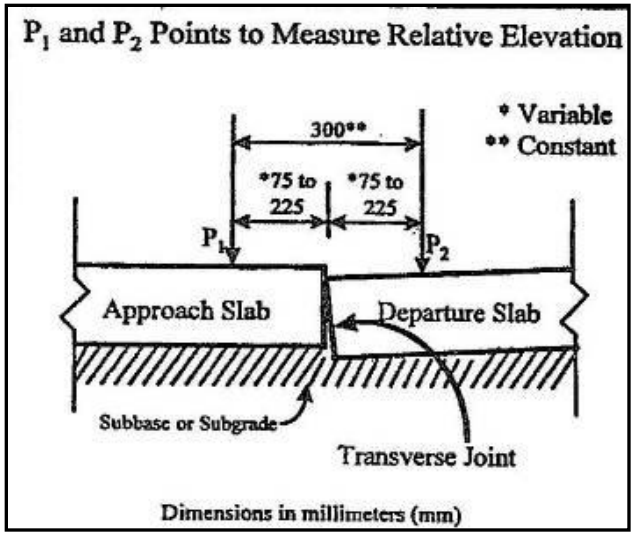
Automated Pavement Faulting Method

Presentation Outline:

- Faulting (AASHTO R-36)
- Manual and Automated Methods
- Automated Faulting Program
- Accuracy and Precision
- Conclusion

Faulting is …

- Difference in elevation across a joint
- Important indicator of pavement performance
- Major impact on pavement life-cycle cost

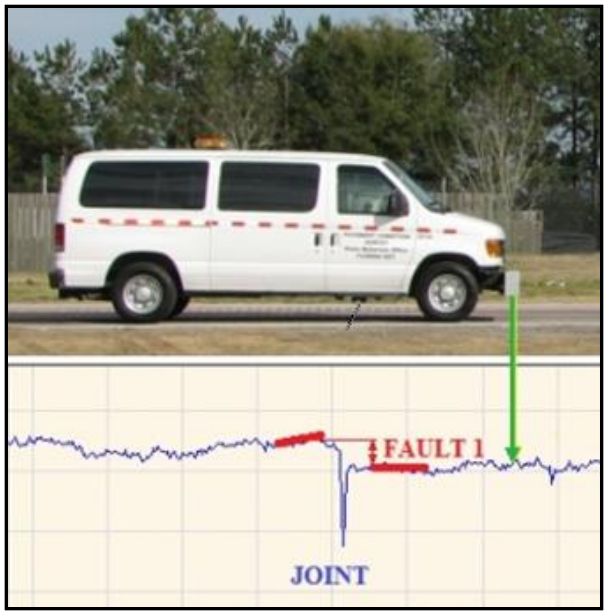


Manual Faulting Measurement

- Slow, tedious and labor intensive
- Exposure to potentially hazardous conditions
- Requires traffic control

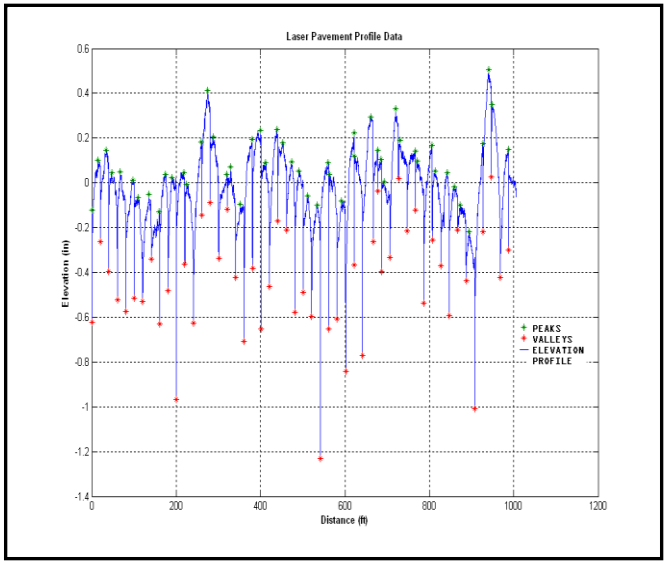
Automated Faulting Measurement

- Faster and Safer
- More efficient
- More cost-effective
- No lane closure



Automated Faulting Program (AFP)

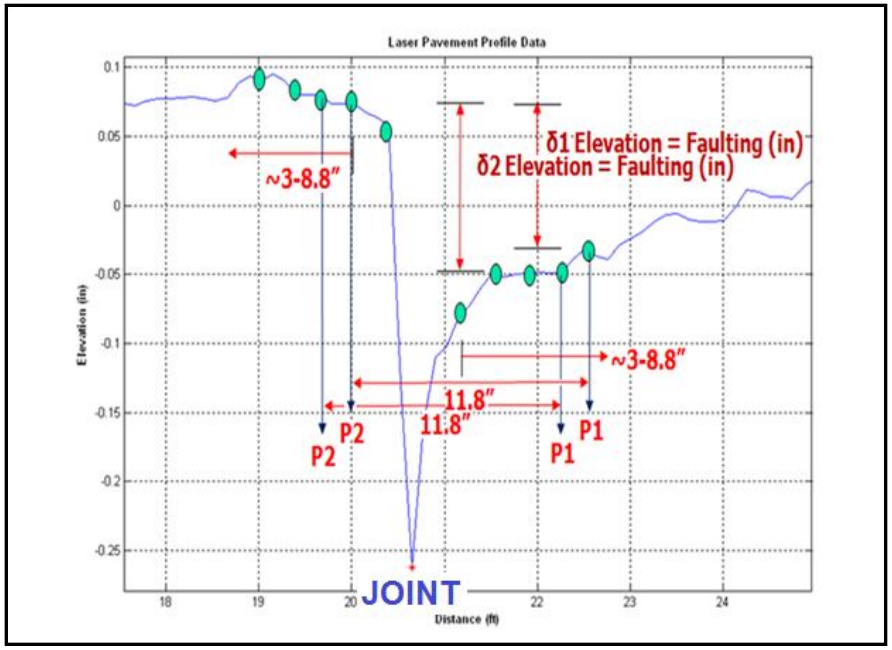
- Uses longitudinal roadway profiles
- Locates transverse joints/cracks
- Calculates faulting automatically



High-Speed Inertial Profiler (HSIP)

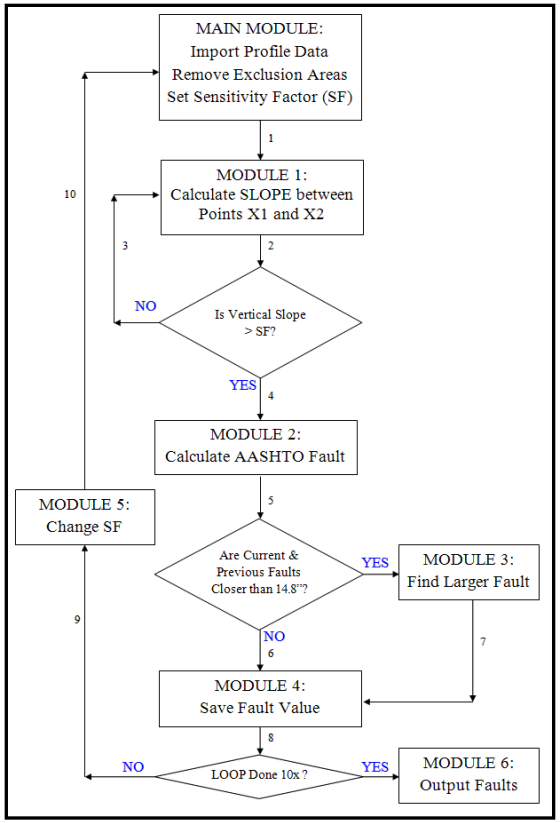
- Distance Measuring Instrument (DMI)
- Data Acquisition System
- Auto-triggering System

Automated Faulting – Principle



Automated Faulting Program (AFP)

- User inputs typical slab length
- Removes exclusions from profile analysis
- Sets value for sensitivity factor (SF)
- Calculates grade between profile points
- Identifies joints
- Calculates faulting per AASHTO R-36 (04)

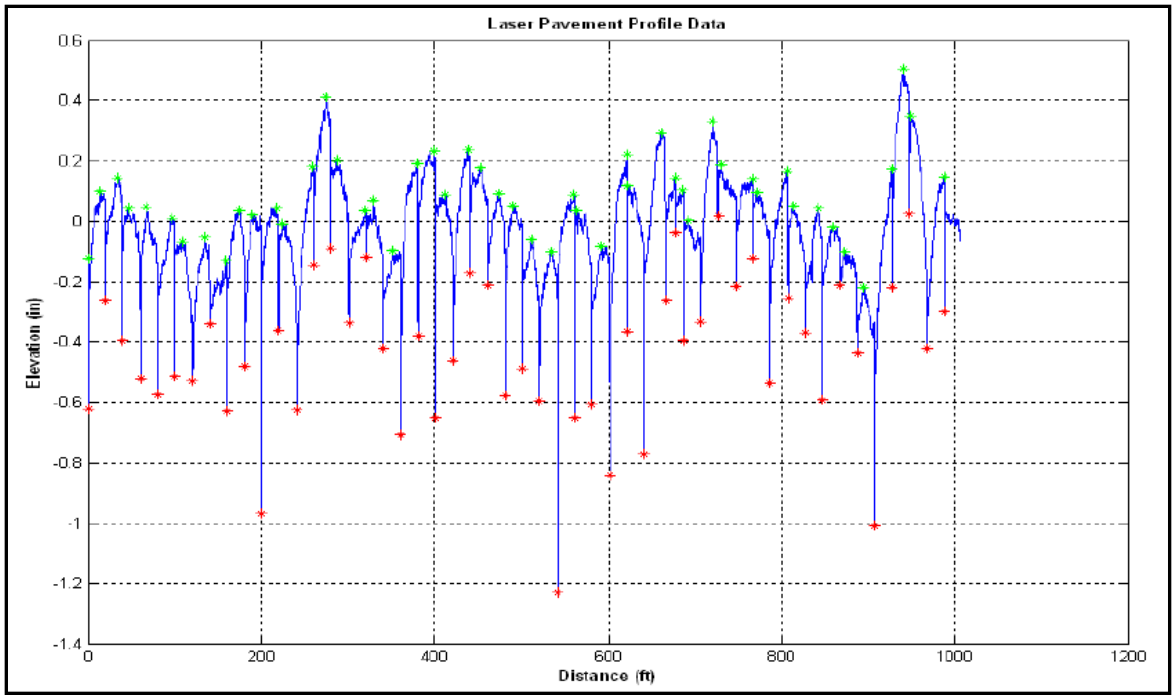


Automated Faulting Program (AFP)

- Adjusts sensitivity factor (SF)
- Recalculates joint location and faulting for SF with yields the best results
- Saves results in Excel

Automated Faulting Accuracy and Precision

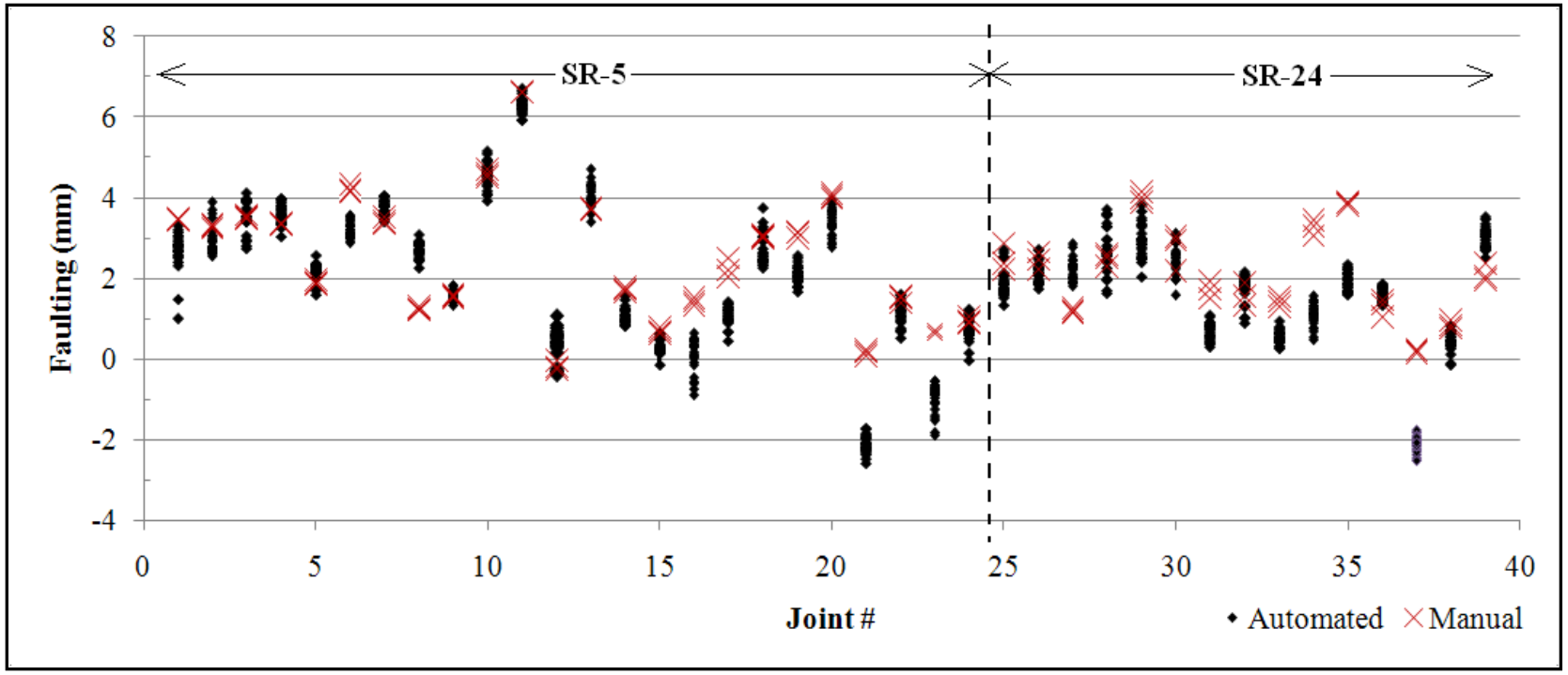
- How accurate, repeatable and reproducible?



Field Validation

- Two 1,000 ft test sections (SR 5 and SR 24)
- 20 ft slabs
- Three replicate faultmeter measurements per joint
- Five repeat passes by five HSIP @ 40 mph

Automated (HSIP) vs Manual (Faultmeter)



Automated Faulting Method Precision (ASTM C 670)

- **Bias:** 0.2 mm (0.01 in.) to 0.7 mm (0.03 in.)
- **Repeatability:** 0.6 mm (0.02 in.)
- **Reproducibility:** 0.9 mm (0.04 in.)

Benefits of Automated Pavement Faulting Method

- **Efficient and cost-effective for Identifying joints and for estimating faulting**
- **Implementable for construction, maintenance and forensic investigations**
- **Network and project level**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Thank You !