INTERSTATE RUBBLIZATION AND STAGE CONSTRUCTION

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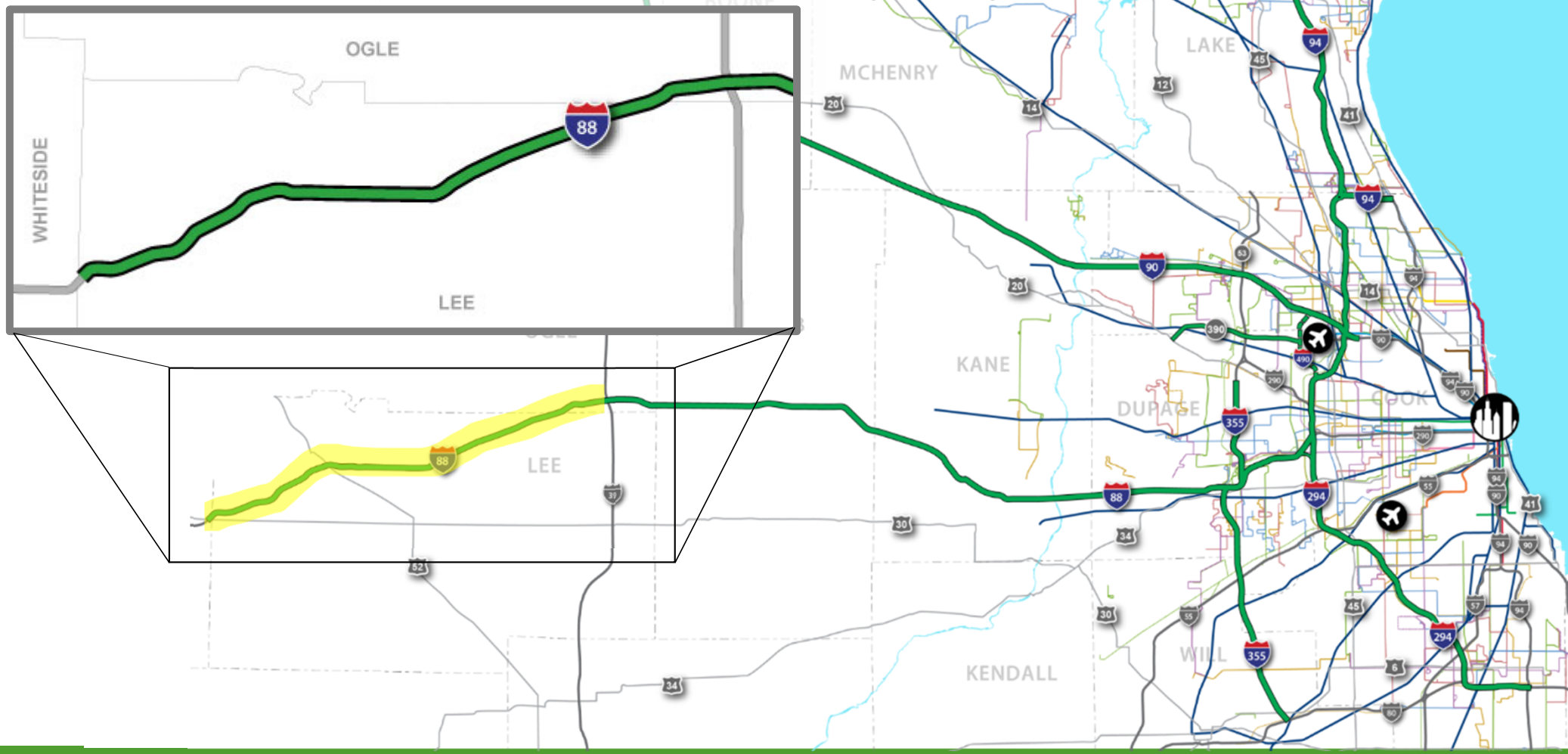
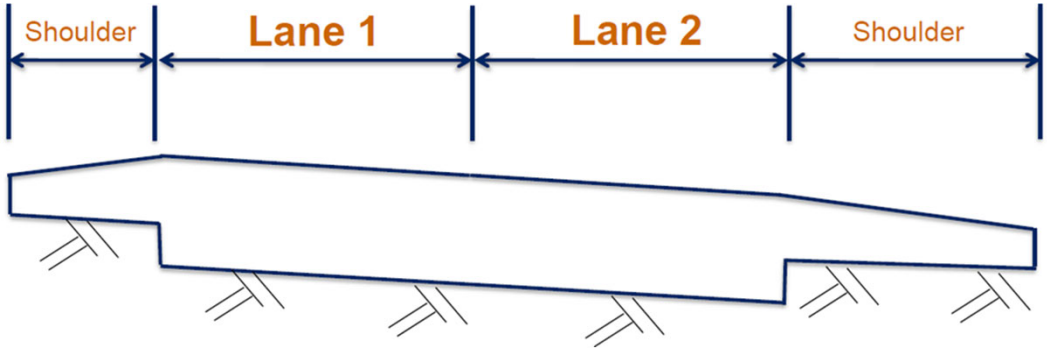
REAGAN MEMORIAL TOLLWAY (I-88)



REAGAN MEMORIAL TOLLWAY (I-88)

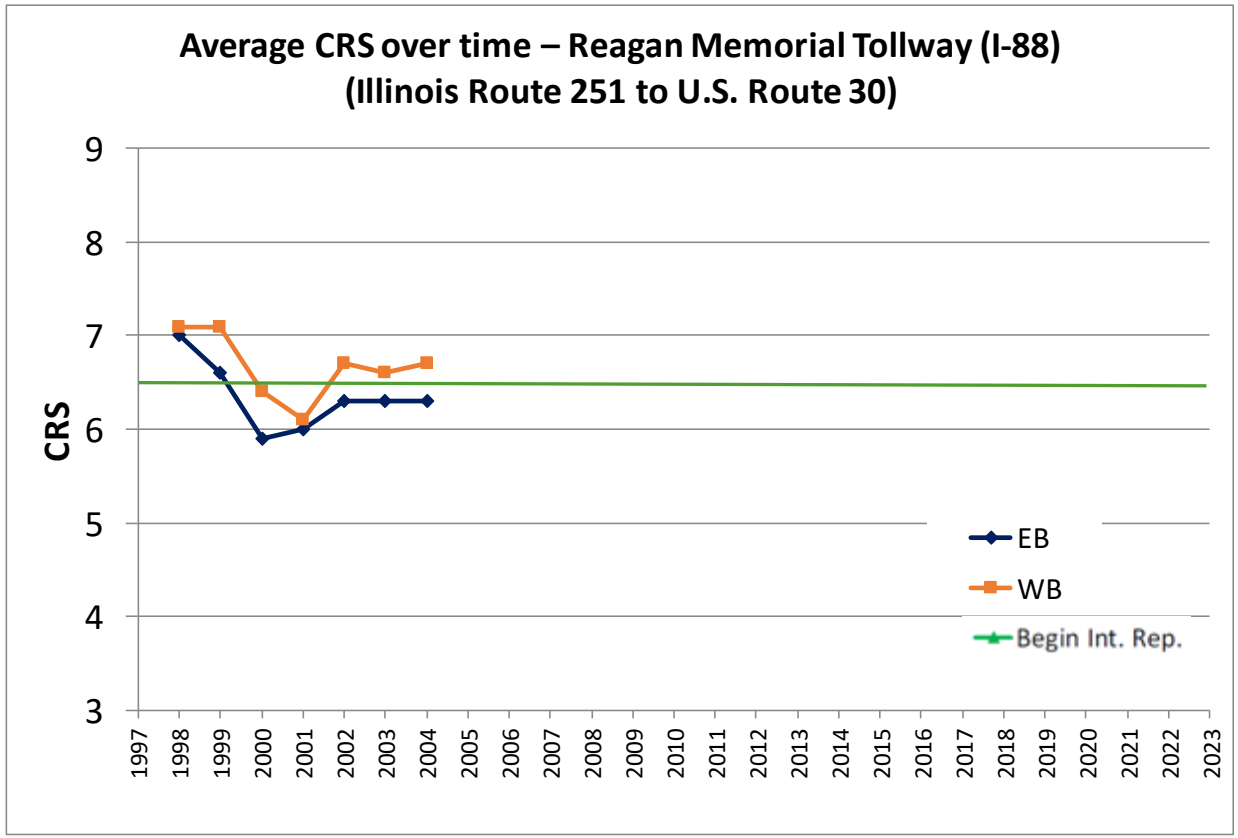
Original pavement

- Built in 1974
- 14-inch JCP – monolithic pavement over subgrade
- Concrete repairs in 1991
- Asphalt overlay in 1993
- Asphalt repairs in 2001, 2003

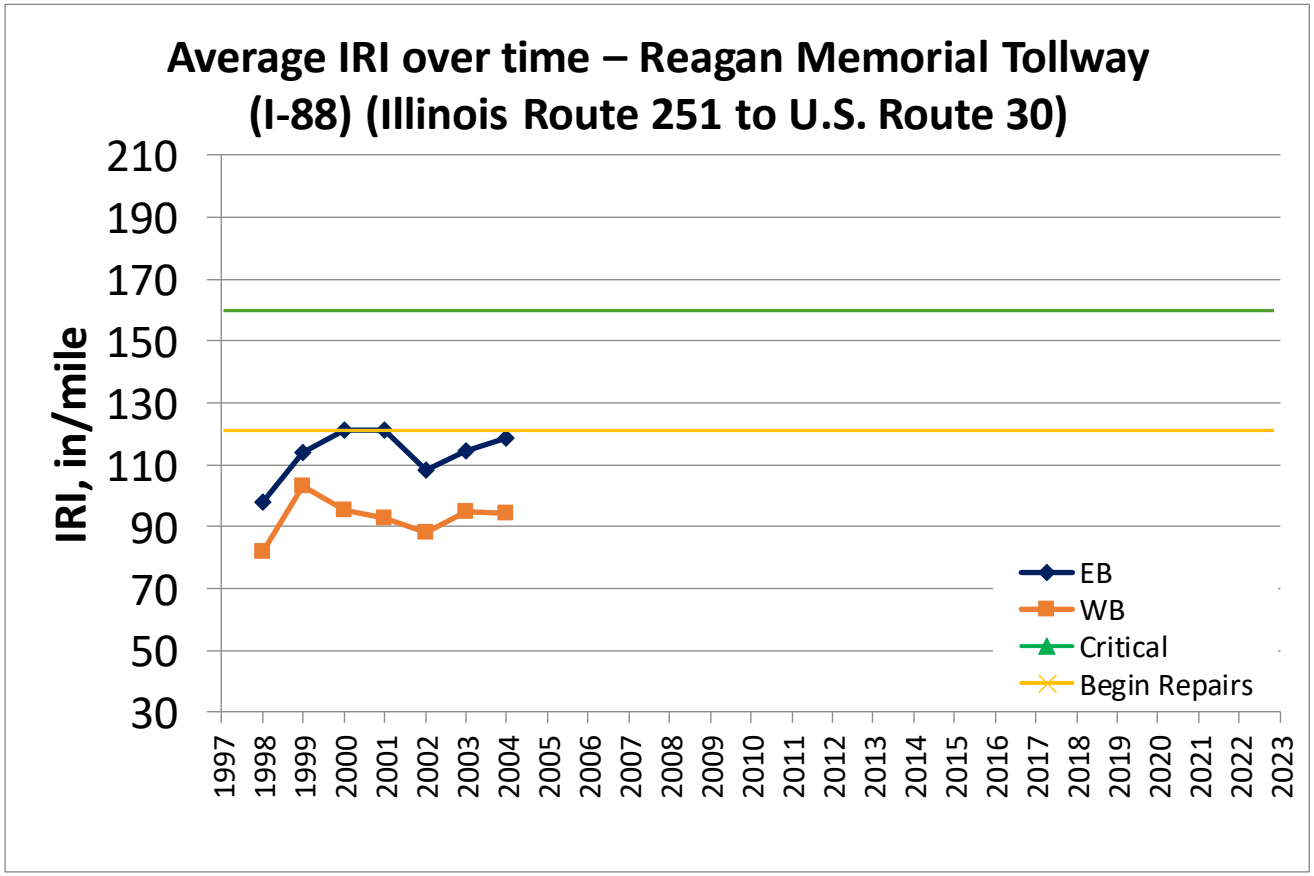


Original cross-section

PAVEMENT CONDITION – CRS – 2004



SMOOTHNESS – IRI – 2004



REAGAN MEMORIAL TOLLWAY (I-88)

Pavement Conditions – 2004

REAGAN MEMORIAL TOLLWAY (I-88)

Pavement Conditions – 2004

Severe D-cracking of underlying PCC

REAGAN MEMORIAL TOLLWAY (I-88)

Pavement Conditions – 2004

Severity of the problem

THE REAL ISSUE

Intermittent repairs

Shoulders coming apart

Blow-ups more common

Estimate: Un-maintainable winter

Programmed for mill-overlay in 2007

SOLUTION

Stage construction

- Build initial pavement cross section
- Monitor performance
- Complete the pavement at the right time

Illinois Tollway solution: Rubblization and overlay

ILLINOIS TOLLWAY RUBBLIZATION EXPERIENCE

Test sections: 1998 – 8-inch HMA

Regularly evaluated and tested

- Cracking – only in transition
- Rutting – < 0.15 inch
- Longitudinal cracking – an issue

No structural distress

FWD – Strain in bottom of HMA 60-80

με

STAGE 1 CONSTRUCTION – 2005

Rubblize existing pavement

Install underdrains

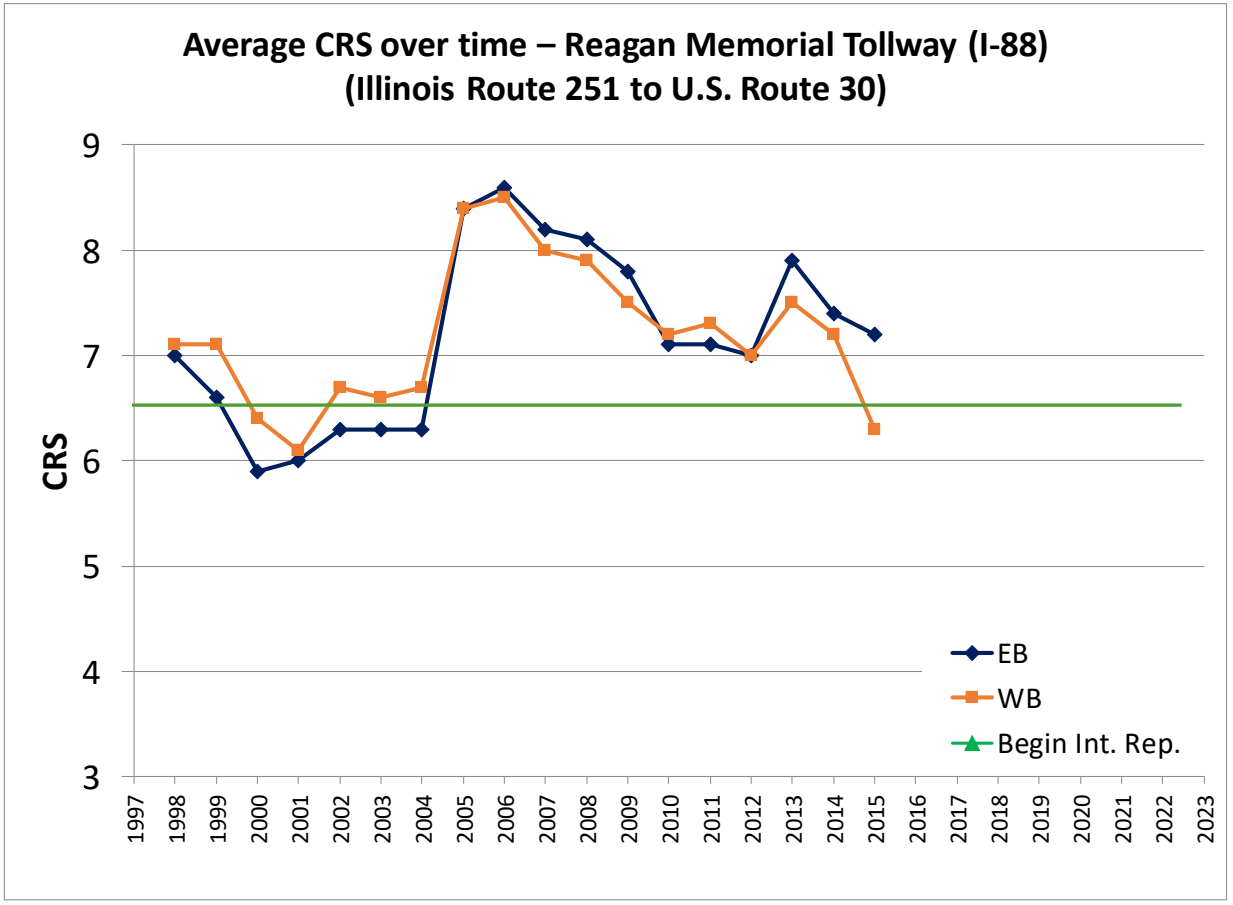
6-inch new HMA pavement

- 4-inch dense-graded binder mix with SBS polymer
- 2-inch dense-graded surface mix with SBS polymer

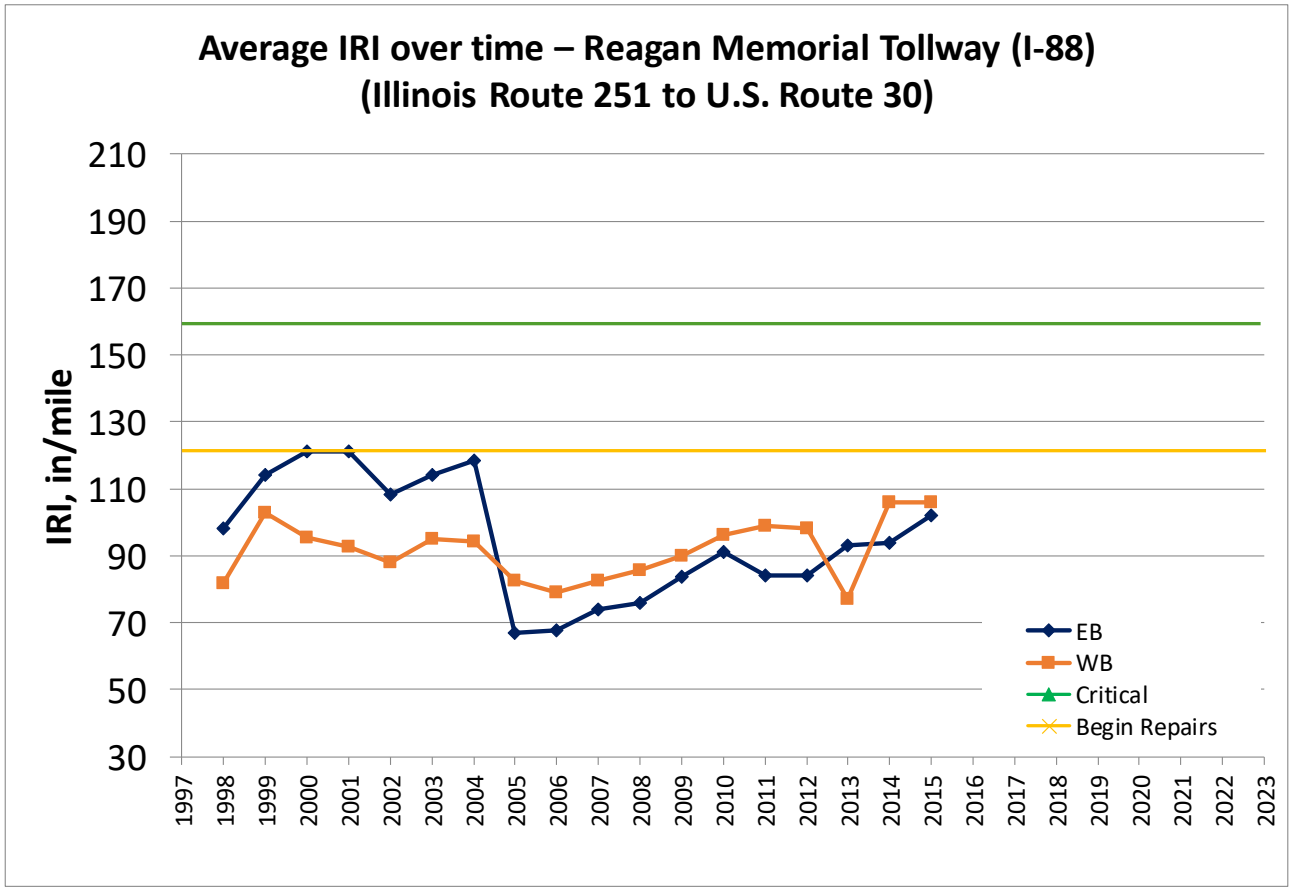
Use up less than 30 percent of fatigue life

Project bids – $30 million under budget

PAVEMENT CONDITION – CRS – 2015



SMOOTHNESS – IRI – 2015



CRACKING EVALUATION – 2011

Top-down cracking

Cracking isolated to the surface (N105 dense-graded)

STAGE 2 CONSTRUCTION – 2015

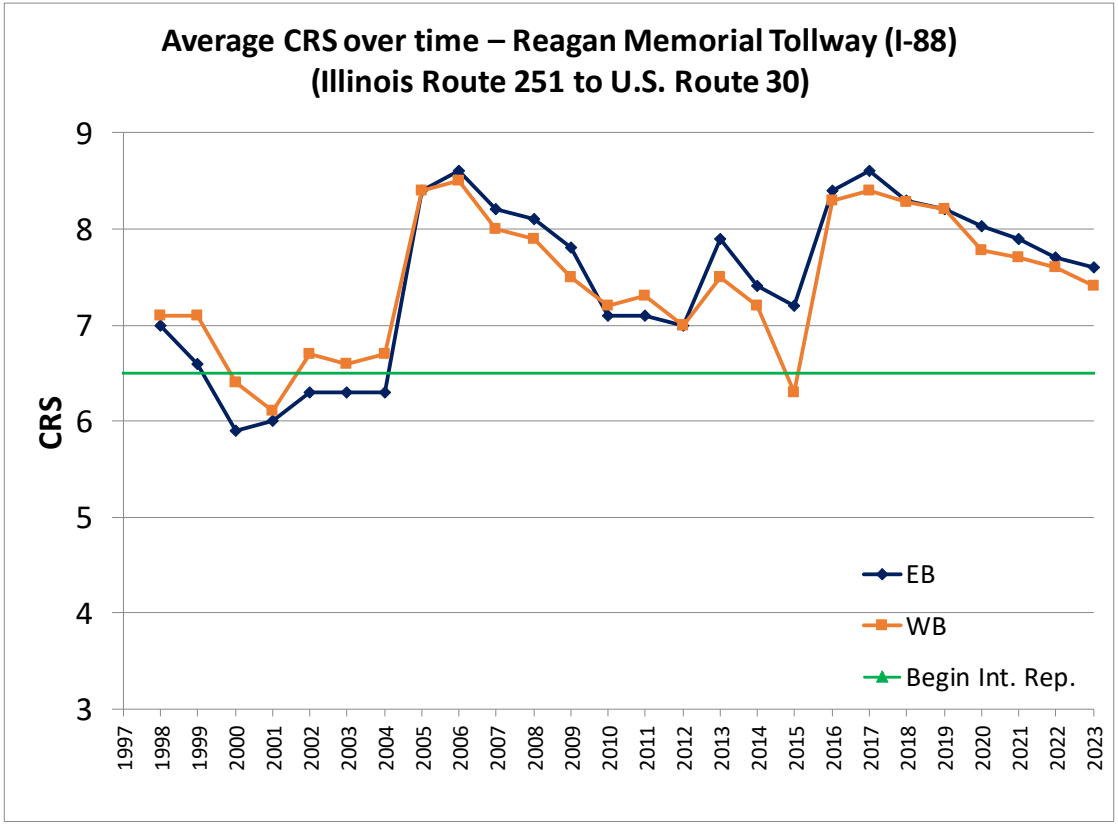
Mill the deteriorated 2-inch surface course

Add 6 inches of new HMA pavement

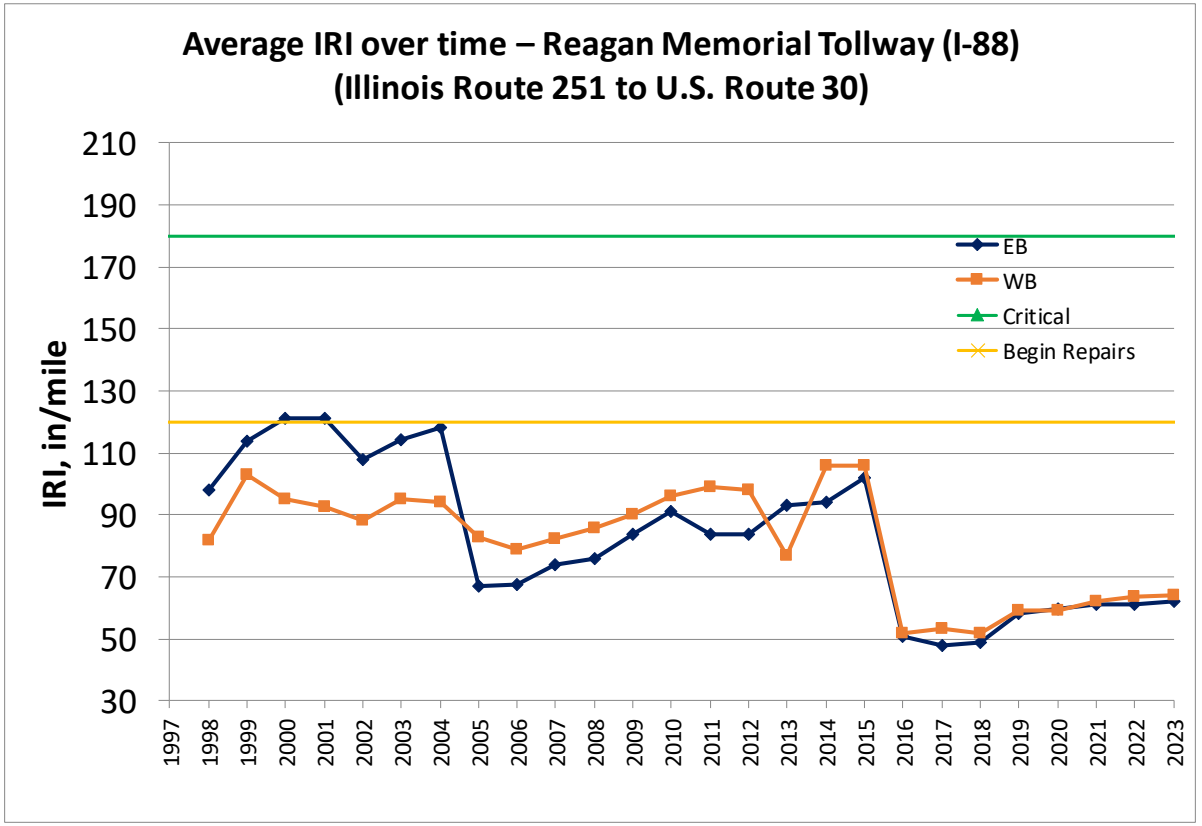
- 2-inch dense-graded N70 19mm binder mix
- 2-inch dense-graded N90 19mm binder mix
- 2-inch modified SMA 12.5mm surface mix

Pavement reconstruction under bridges – 11-inch full-depth asphalt

PAVEMENT CONDITION – CRS



SMOOTHNESS – IRI



STAGE CONSTRUCTION – CONCLUSIONS

Viable option for pavement rehabilitation

Able to monitor actual conditions, versus design assumption of pavement strength

Can take advantage of materials and construction improvements

- SMA
- Paver improvements
- (And now, longitudinal joint sealant and other technologies)


THANK YOU