

Effect of Batching on the PG Grades of Virgin and RAP Mixes

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Acknowledgements

Testing Materials:

Brox Industries

Continental Paving Co.

Pike Industries

Laboratory Testing:

Peter Moore, Pike Industries

Alan Lugg & Melissa Sytek, NHDOT

The Fears of High-RAP Mixes

- Low end of PG grade will be lost
- Temp. cracking will increase
- Reduced life due to advanced aging
- Bumping may be needed to hold the PG grade
- Co\$t of binder may increase due to bumping or modifiers

Study Goals

- Determine the impact of batching on the low end grade of virgin binder.
- Compare PG Grade of virgin binder mixes with that of various RAP mixes.
- Evaluate impact trends of batching on low end of grade.

Sample Sources

Virgin / RAP

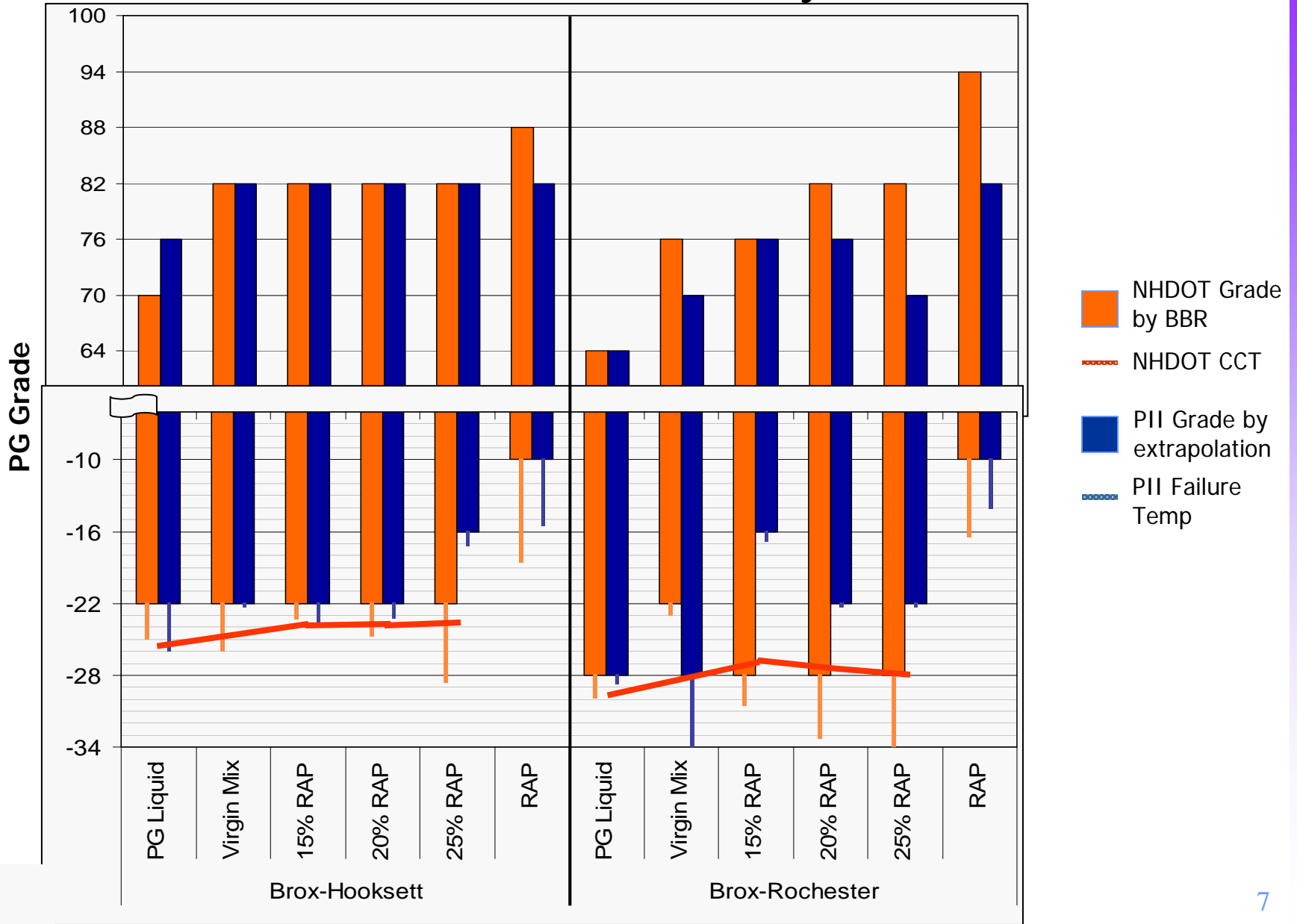
- Brox Industries
 - Rochester, NH PG 64-28 / PG 94-10
 - Hooksett, NH PG 70-22 / PG 88-10
- Continental Paving Co.
 - Londonderry, NH PG 64-28 / PG 82-10
 - Litchfield, NH PG 64-28 / PG 88-10
- Pike Industries
 - Hooksett, NH PG 64-28 / PG 88-10
 - Poland, ME PG 64-28 / PG 76-22

Process

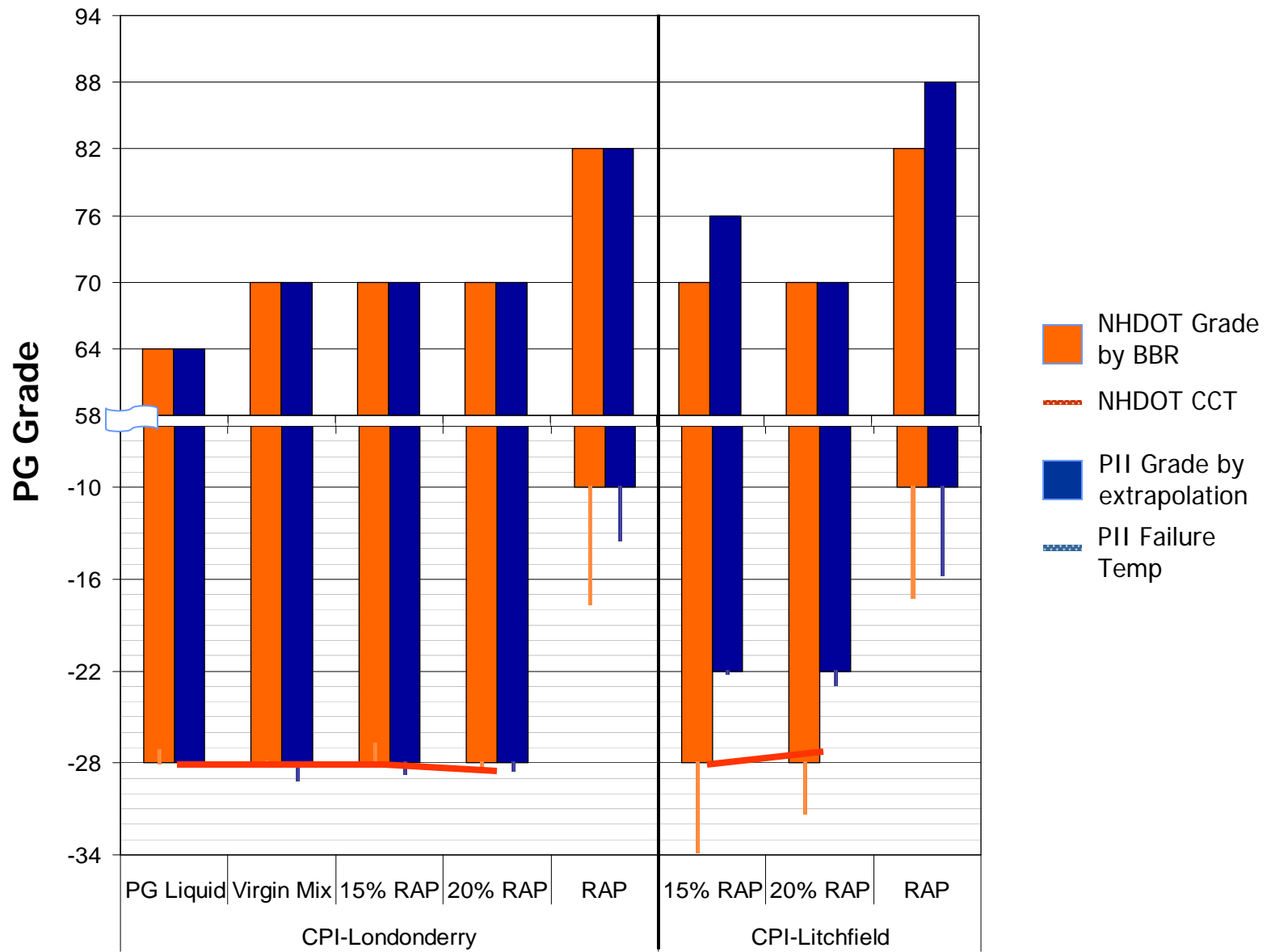
NHDOT and Pike laboratories ran duplicate samples for verification.

- Test virgin binders to confirm original PG Grades.
- Perform Extractions and Absorb Recoveries on RAP samples.
 - Perform DSR, BBR and DTT tests.
- Evaluate low end PG Grades.

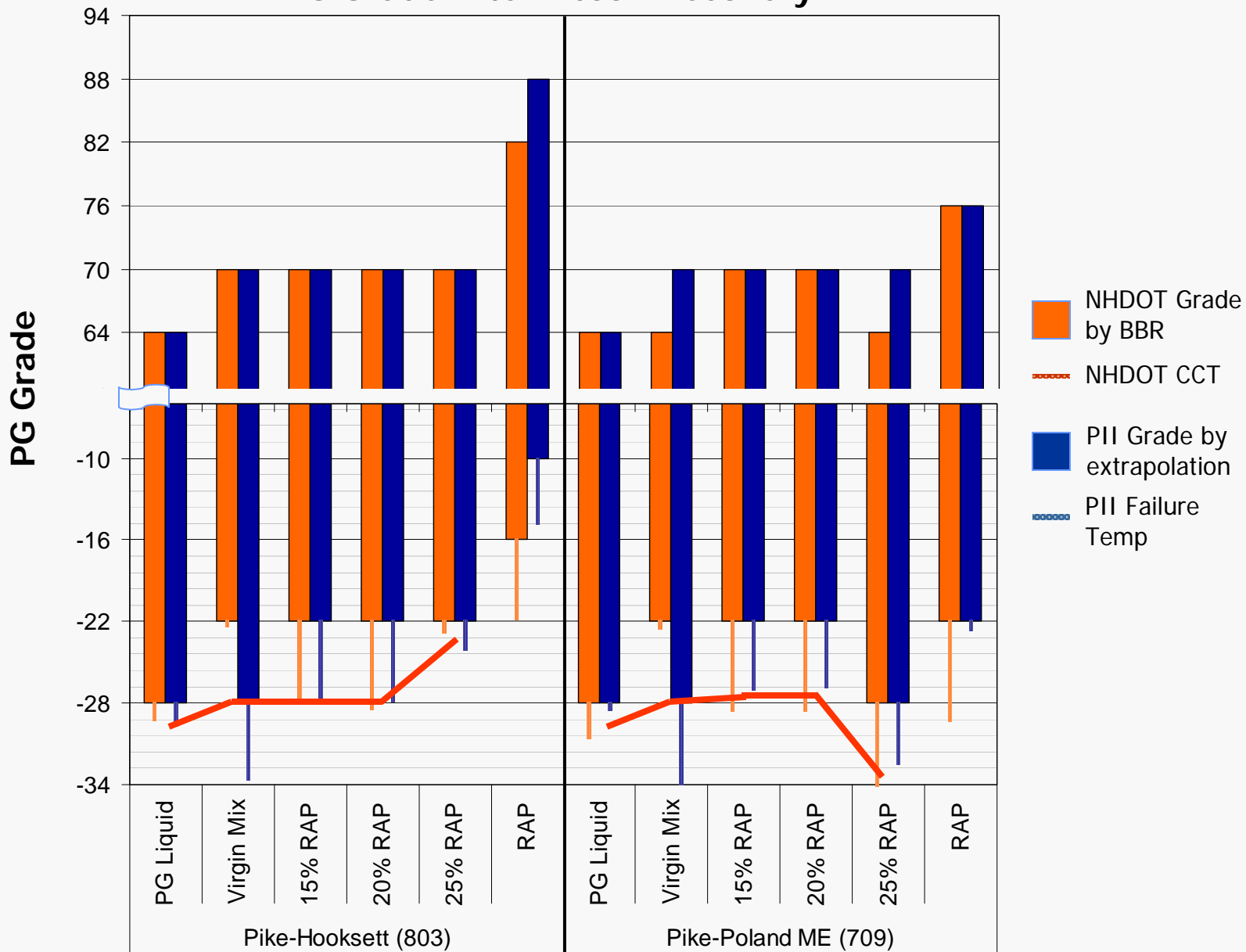
PG Grade After Absorb Recovery



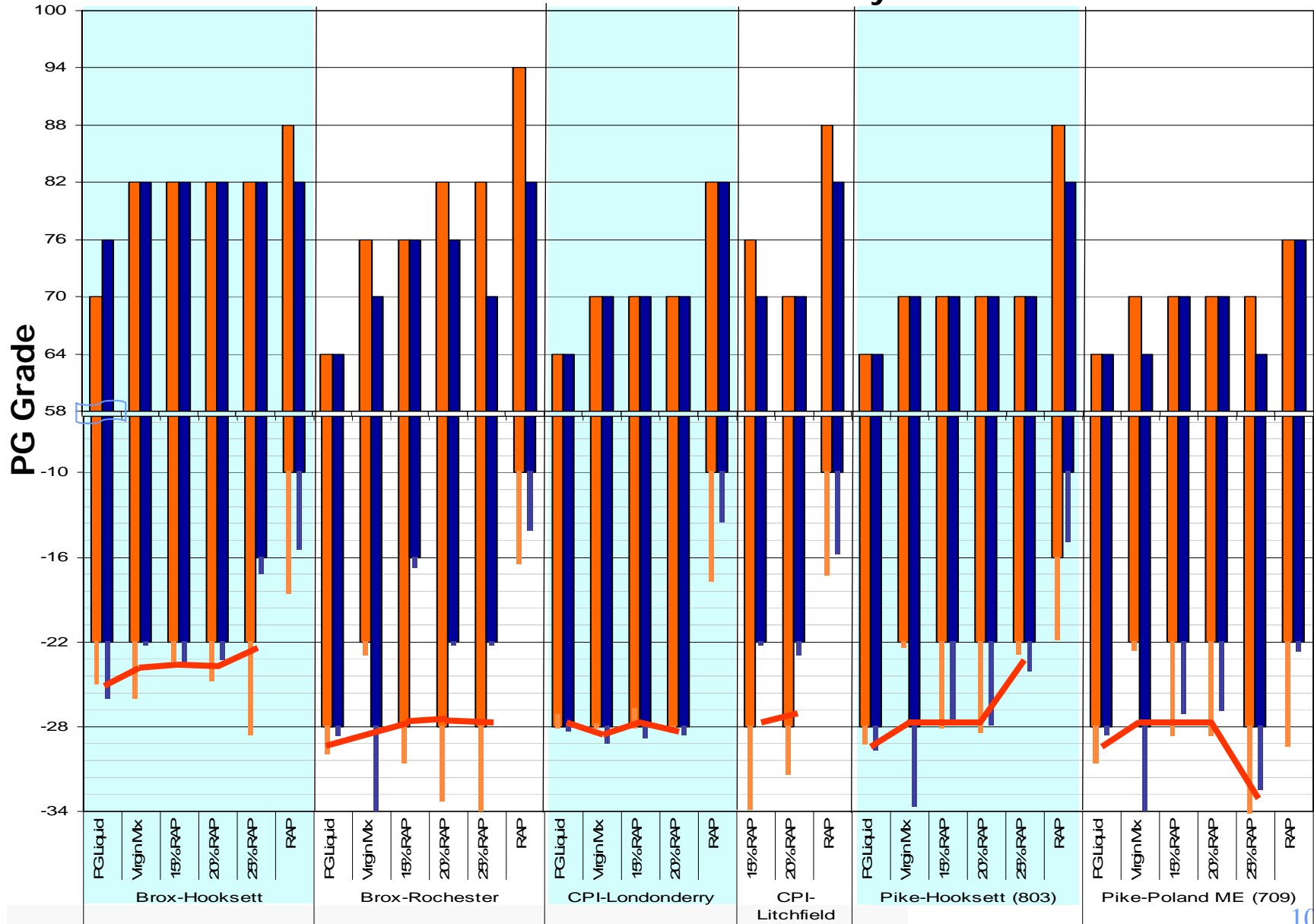
PG Grade After Abson Recovery



PG Grade After Absorb Recovery



PG Grade After Abson Recovery



Summary of Findings

- Virgin binder hardens by 1-2 degrees after batching. (CCT values increase numerically)
- Insignificant additional hardening in RAP mixes up to 25% RAP.
- PG Grade of RAP appears to have little effect on CTT.

Questions?

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