

# Mix Aging Study

## Aging Methods

Aging Method	Aging Condition
Loose Mix + PAV	As-Recovered (after 2 hrs at 135°)
	As-Recovered + PAV (Blending Chart)
	As-Recovered + 2PAV
Loose Mix	12 hrs at 135°C
	24 hrs at 135°C
Compacted Mix	5 days at 85°C (AASHTO R30) – <i>Test results pending</i>
	10 days at 85°C
	20 days at 85°C

# Mix Aging Study

## Description of Work

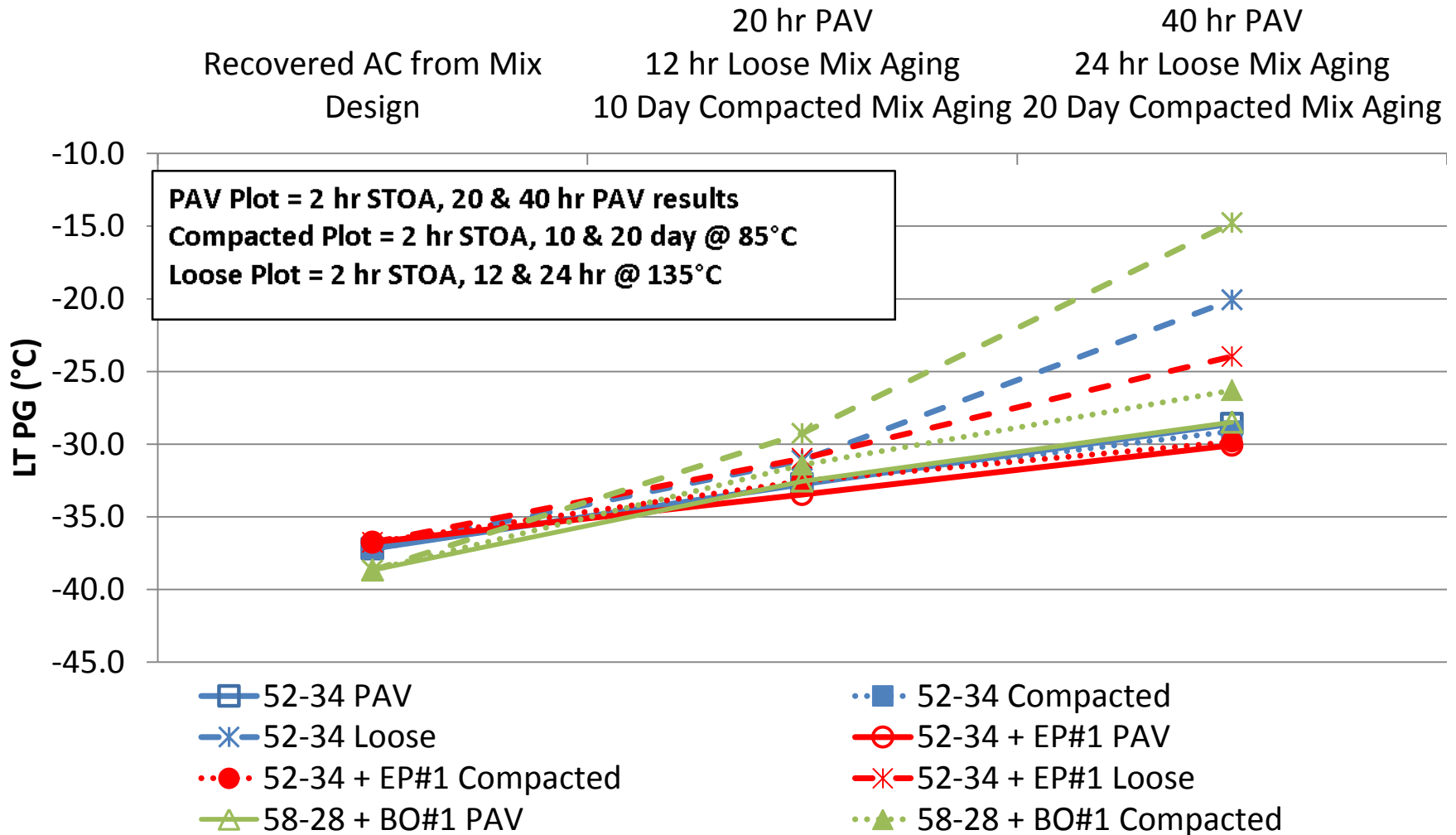
- After the prescribed aging protocol asphalt binder was extracted and recovered from mix.
- Recovered residue evaluated using:
  - DSR: 25 mm and 4mm Parallel Plate
  - Iatroscan: Determine composition
- Future work will use torsion bar modulus on compacted mix samples.

# Results – Case #1 Summary – LT PG

Binder	Intermediate Aging			Extended Aging		
	20 hr PAV	12 hr Loose	10 Day Compacted	40 hr PAV	24 hr Loose	20 Day Compacted
PG 52-34	-32.8	-31.1	-32.7	-28.6	-20.1	-29.1
PG 52-34 + 5% EP#1	-33.5	-31.0	-32.5	-30.1	-24.0	-29.8
PG 52-34 + 2.5% BO#1+ 5% EP#1	-36.2	-33.6	-36.3	-32.9	-25.7	-30.4
PG 58-28 + 5% BO#1	-32.6	-29.3	-31.4	-28.5	-14.8	-26.3
PG 58-28 + 5% BO#2	-33.1	-26.2	-28.2	-27.7	-12.2	-20.6
<b>Average</b>	<b>-33.6</b>	<b>-30.2</b>	<b>-32.2</b>	<b>-29.6</b>	<b>-19.3</b>	<b>-27.3</b>
<b>Max</b>	<b>-32.6</b>	<b>-26.2</b>	<b>-28.2</b>	<b>-27.7</b>	<b>-12.2</b>	<b>-20.6</b>
<b>Min</b>	<b>-36.2</b>	<b>-33.6</b>	<b>-36.3</b>	<b>-32.9</b>	<b>-25.7</b>	<b>-30.4</b>
<b>Range</b>	<b>3.68</b>	<b>7.42</b>	<b>8.14</b>	<b>5.19</b>	<b>13.51</b>	<b>9.81</b>

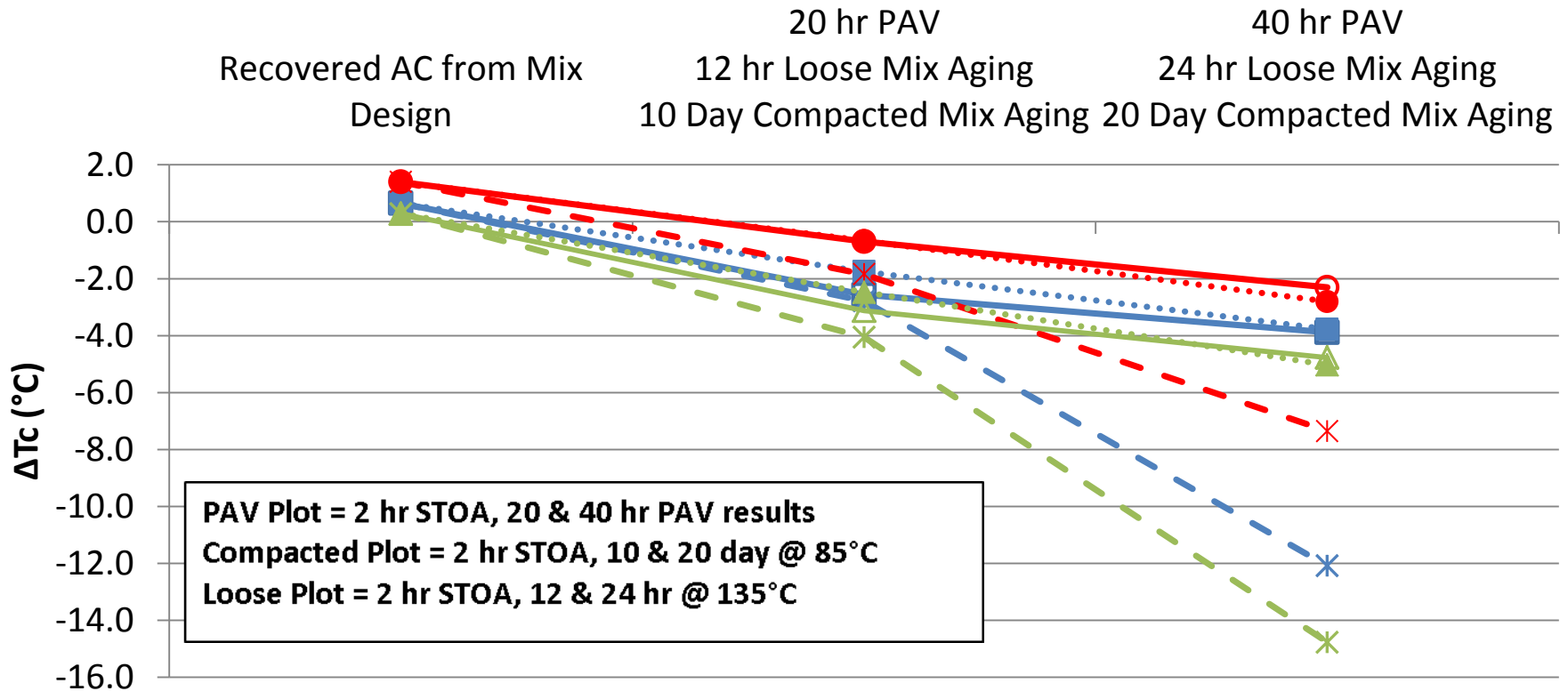
# Results – Case #1 LT PG

PG 52-34, PG 52-34 + EP#1, PG 58-28 + BO#1



# Results – Case #1 $\Delta T_c$

PG 52-34, PG 52-34+EP#1, PG 58-28+BO#1



- 52-34 PAV
 ··■·· 52-34 Compacted
—\*— 52-34 Loose
- 52-34 + EP#1 PAV
 ··●·· 52-34 + EP#1 Compacted
—\*— 52-34 + EP#1 Loose
- △— 58-28 + BO#1 PAV
 ··▲·· 58-28 + BO#1 Compacted
—\*— 58-28 + BO#1 Loose