



Transportation Research Division



Technical Report 08-13

*Field Test of a Polyphosphoric Acid (PPA)
Modified Asphalt Binder on Rt. 1 in Perry*

Second Interim Report, April 2012

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Introduction

The Maine Department of Transportation (MaineDOT) uses the Superpave hot mix asphalt process and specifies asphalt binder grades using the Performance Grade criteria. The Department mainly uses asphalt binder grade PG64-28. This is an asphalt binder material that passes the performance tests for high temperatures (rutting potential) at 64 degrees Celsius and passes tests for low temperatures (thermal cracking) at 28 degrees Celsius. It is widely recognized in the industry that the addition of polyphosphoric acid to asphalt can increase the high temperature PG grade to the next higher grade. However, there are concerns among transportation agencies that this PPA could alter the long term performance of the asphalt binder. One of the major asphalt suppliers to MaineDOT paving projects uses PPA to alter their PG58-28 neat asphalt binder into a PG64-28.

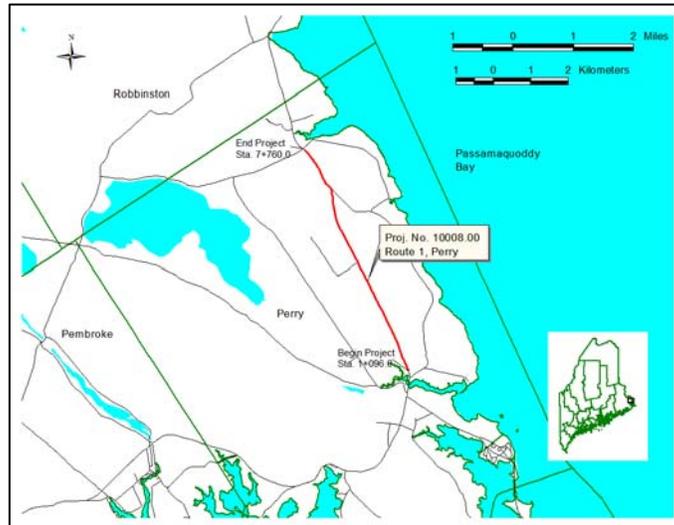
This experimental construction study was established to field test the long term performance of the PPA modified PG64-28 and compare it to the PG58-28 neat asphalt binder.

A highway reconstruction project, NH-1000(800)E, along Rt. 1 in Perry, Maine was selected as a suitable site for this comparison.

Location

The project begins 6.53 km (4.05 mi) south of the Lake Road in Perry, Maine at station 1+096 and proceeds north 6.6 km (4.1 mi). Figure 1 contains a location map.

Figure 1: Project Location Map



Discussion

A full description of the project scope and construction details are contained in the previous report for this experimental project, dated September 2009. In summary this full reconstruction project consists of 550mm (22") Type B Aggregate Base Course, a 75mm (3") Recycled Asphalt Stabilized Base layer and 135mm of Hot Mix Asphalt Pavement. The pavement consists of a 12.5mm nominal aggregate size 60mm thick base layer, a 12.5mm nominal aggregate size 40mm thick binder layer and a 12.5mm nominal aggregate size 35mm thick wearing surface.

The following table describes the location of the different PG Asphalt Binders being evaluated.

Pavement Layer	Stations	PG Binder		Completed
60mm Base	1+096 to 3+000	PG58-28		2007
	3+000 to 5+860		PG64-28	2006
	5+860 to 7+702	PG58-28		2007
40mm Binder	1+096 to 3+000	PG58-28		2007
	3+000 to 5+809		PG64-28	2006
	5+809 to 7+702	PG58-28		2007
35mm Surface	1+096 to 3+105 LT	PG58-28		2007
	1+096 to 3+040 RT	PG58-28		2007
	3+105 to 5+786 LT		PG64-28	2007
	3+040 to 5+786 RT		PG64-28	2007
	5+786 to 7+760	PG58-28		2007

Evaluations

The ride and rutting data was collected in 2008 using the ARAN vehicle. The data showed no anomalies. Visual observations showed that there were no pavement distresses.

Photos



Beginning of Test Section 1
(PG58-28)



End of Test Section 1



Beginning of Test Section 2
(PG64-28)



End of Test Section 2

Conclusions

The test sections are performing well. No pavement distresses have appeared to date. Pavement performance will be evaluated and results reported for at least five years.

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