

## Evaluation of Portland Limestone Cement

Two MS students wanted to do a special problems. We had some control mixtures (TDOT Class A & D) from a TCA project to evaluate beneficiated fly ash and thought we could use the control mixtures to evaluate the effect of PLC on common TDOT mixtures (A & D). Six 0.85-ft<sup>3</sup> batches per mixture will be used for the comparison. Testing protocol is shown in Table 2. The results will be compared statistically.

**Table 1: Mixtures Used to Evaluate PLC**

Component	TDOT Class A Control	TDOT Class A PLC	TDOT Class D Control	TDOT Class D PLC
Type I PC, (lbs/CY)	423	0	465	0
PLC (lbs/CY)	0	423*	0	465*
Fly Ash, (lbs/CY)	141	141	155	155
No. 57 Stone, (SSD lbs/CY)	1747	1747*	1849	1849*
River Sand, (SSD lbs/CY)	1270	1270*	1112	1112*
Water, (lbs/CY)	242.5	242.5	229.5	229.5
Design Percent Air	6	6	7	7
Air Entrainment, (oz/cwt)	2.5	TBD	2.8	TBD
Mid-Range Water Reducer, (oz/cwt)	7.6	TBD	3.1	TBD
High-Range Water Reducer, (oz/cwt)	0	TBD	4.5	TBD

\* - depending on PLC specific gravity

**Table 2: Test Methods and Number of Samples Used to Evaluate PLC**

Purpose	Test Method	Frequency	Specimens
Compressive strength development	Compressive Strength (AASHTO T22)	3 @ 7, 14, 28 and 56 days	4 x 8 cylinders
Stiffness development	Static Modulus of Elasticity (ASTM C 469)	1 of 3 @ 28 and 56 days	4 x 8 cylinders
Chloride permeability development	Surface Resistivity (AASHTO T 95-11)	3 @ 7, 14, 28, and 56 days	Use 56-day 4 x 8 cylinders for these tests
Freeze-thaw Durability Indicator	Hardened Concrete Absorption (ASTM C642)	3 @ 56 days	3 x 6 cylinders

