April 2008

HYDRATION STABILIZING ADMIXTURE TESTING FOR ODOT DRILLED SHAFTS

1. Use either small mechanical lab mixer or mixer trucks for testing.
2. Mix should be designed to reach a 4 to 5-inch slump without the aid of water reducers. Maximum w/c ratio is 0.48 on drilled shaft mixes for the 2008 ODOT Standard Specifications.
3. Mix concrete for minimum of 70 revolutions in a truck or the standard 3-3-2 method in a mechanical mixer. Take the initial slump. Add water, if necessary, to reach a minimum of a 4-inch slump. Re-take slump and concrete temperature.
4. Add any combination of compatible water reducers desired and mix for 10 seconds. Then add the desired Hydration Stabilizing Admixture dosage. Mix for a minimum of 40 revolutions or 2 minutes in the lab mixer.
5. Take slump and concrete temperature.
6. If the job site requires travel beyond 15 minutes from the plant, simulate total travel time with slow drum revolutions and then repeat slump and concrete temperature tests.
7. Place the concrete in a wheelbarrow and cover with a plastic hood. Place the wheelbarrow in the shade and keep it in a temperature-controlled environment, to the extent practical, which mimics the drilled shaft environment with 50 to 60 degrees Fahrenheit being ideal.
8. Take ambient temperature readings with each slump test.
9. Take a slump test every 30 minutes until you have two consecutive 4-inch tests or exceed ½ hour beyond the projected pour duration, whichever comes first. Take a concrete temperature each time.
10. If you are using a truck mixer for the trial, you may vary the Hydration Stabilizing Admixture dosage for a conservative, anticipated and extended slump loss need. Dose the Hydration Stabilizing Admixture with a conservative estimate, mix, remove the sample and test. Dose the truck again with additional Hydration Stabilizing Admixture and repeat the sampling procedure. Dose the truck with a third amount of Hydration Stabilizing Admixture, mix and pull a final sample. This method allows three varying dosages from the same load to provide data for the contractor.
11. Remember, slump loss and time of set are two separate issues once the mix is taken out of suspension (mixing or agitation). Hydration Stabilizing Admixture does NOT extend slump life beyond the initial mix water minus admixtures when the concrete becomes static. The Hydration Stabilizing Admixture will halt hydration and initial set through the dosage level applied both in the suspended state and static state.

ALTERNATIVE TEST METHOD USING REFRIGERATOR

All of the previous steps apply but if a refrigerator is available, the use of the wheelbarrow in Step 6 above can be abandoned and the refrigerator substituted. Please pre-condition the refrigerator temperature to between 52 and 56 degrees and keep it in this temp range during the test. Use 5-gallon containers and fill them at least 75% before placing them in the refrigerator. No other changes from the above procedures apply.

New ODOT 2008 specifications

	HPC 4000	**Drilled Shaft**
Minimum cement	N/A	N/A
Other cementitous	30% minimum	N/A
Silica Fume	4% minimum	N/A
Maximum w/c ratio	.40	.48
Slump range w/ HRWR	3 to 8	7 to 10

Remember, if the cement or aggregates change, the test should be re-taken to safeguard against changes.

Please consult your admixture representative for probable set extender dosages.