August 19, 2014

Mr. Tal Journo

*Hydro*FLOW USA

15301 NE 90th. Street

Redmond, WA 98052

Subject: **The effects of *Hydro*FLOW treated water in Structural Concrete**

Laboratory Trial Batch

Dear Mr. Journo

As requested we have performed trial batches to determine the effect of *Hydro*FLOW treated water on both the plastic and hardened states of structural Concrete.

Respectfully,

D. Vance Smith

CMC – President

Testing Methodology

CMC selected a concrete mix design that is used in Structural applications throughout the Las Vegas Valley. The mix design would be used to create trial batches in our laboratory located at 175 Cassia Way, Henderson Nevada. Using identical procedures throughout the entire process we would document and evaluate any changes in both the concrete's hardened and plastic state.

Mixing Water

Mixing water was dispensed into a plastic 80 gallon tub and placed in a temperature controlled room for over 1 week prior to batching. This water maintained a constant temperature and was used throughout the duration of the testing. Untreated tap water with roughly 350 ppm of hardness was used. A water delivery tower was constructed with a 5/8'' X 20' plastic line. Prior to the water entering the mixer it was driven through four coils passing through the ferrite ring of the *Hydro*FLOW device, just before entering the mixer. The baseline trials with untreated water were delivered in the same manner. Treated water was held in the water delivery system with the unit on for 3 minutes after the unit was turned on and prior to opening the discharge valve. Total discharge time was just over 1.25 minutes.

Delivery Tower

*Hydro*FLOW Device

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Coarse and Fine Aggregates

All aggregates were sampled at the Las Vegas Sloan Quarry and complied with ASTM C33. The aggregates were allowed to dry 100% prior to any batching.

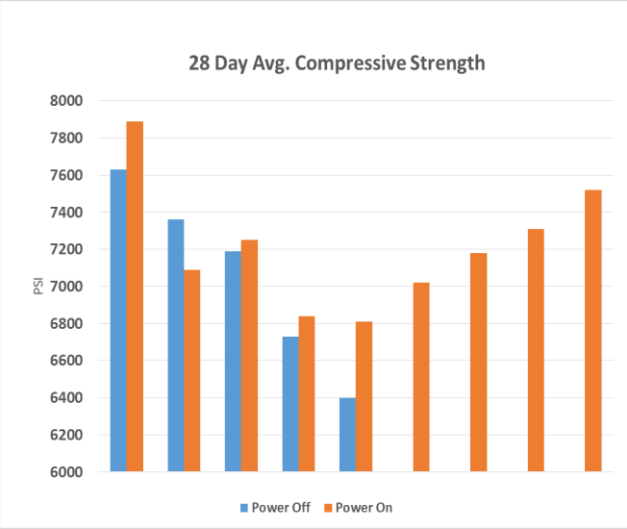
Trial Batch

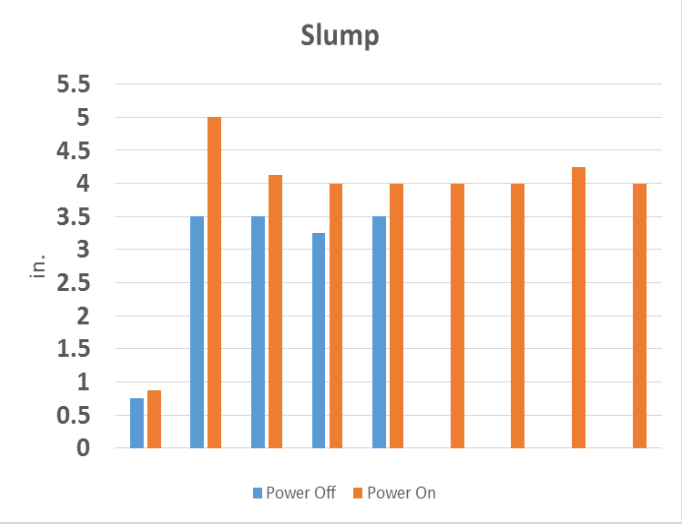
All trial batches were performed in accordance to ASTM/ACI Procedures.

Concrete Testing

Testing was performed by ACI field and Lab certified technicians.

Test results





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Conclusion

In this study we documented an increase in slump when using the water that was treated with the *Hydro*FLOW device. With the increase in slump this system could create a cost savings by reducing materials properties and maintaining workability. We also documented an increase in compressive strength which would result in a cost savings during the concrete production.

We did not document any difference in the concrete shrinkage between treated or untreated. However, using the benefits that were recorded above, the concrete mix could be redesigned to lower the shrinkage and maintain both strength and workability.

Even with this being a small trial we feel comfortable stating that the *Hydro*FLOW device has shown that it can improve and save costs during the concrete production process.

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Exhibit A

Trial Test #1 3-4-14	Trial Batch 1 Power Off	Trial Batch 2 Power On	Trial Batch 3 Power Off	Trial Batch 4 Power On
Slump (in.)	¾	7/8	3 ½	5
Unit Weight (pcf)	156.0	155.6	151.9	152.7
Air Content (%)	2.3	2.2	2.5	2.0
Concrete Mix Temperature (F)	69	70	68	68
Ambient Temperature (F)	68	68	65	65
Water Temperature (F)	66	66	66	66
28 Day Compressive Strength (psi)	7630	7890	7360	7090

Trial Test #2 4-22-14	Trial Batch 1 Power Off	Trial Batch 2 Power On	Trial Batch 3 Power On	Trial Batch 4 Power On	Trial Batch 5 Power Off
Slump (in.)	3 ½	4 1/8	4	4	3 ¼
Unit Weight (pcf)	153.02	152.5	152.7	152.8	152.9
Air Content (%)	2.1	2.2	2.3	2.2	2.2
Concrete Mix Temperature (F)	72	72	73	73	74
Ambient Temperature (F)	75	76	76	73	77
Water Temperature (F)	66	66	66	66	66
28 Day Compressive Strength (psi)	7190	7250	6840	6810	6730

Trial Test #3 5-6-14	Trial Batch 1 Power Off	Trial Batch 2 Power On	Trial Batch 3 Power On	Trial Batch 4 Power On	Trial Batch 5 Power On
Slump (in.)	3 ½	4	4	4 ¼	4
Unit Weight (pcf)	153.0	152.7	152.5	152.3	152.6
Air Content (%)	2.0	2.1	2.0	2.2	2.1
Concrete Mix Temperature (F)	72	72	72	73	74
Ambient Temperature (F)	78	80	84	84	85
Water Temperature (F)	66	66	66	66	66
28 Day Compressive Strength (psi)	6400	7020	7180	7310	7520

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