

See July 16, 1985 letter/final report



February 14, 1985

LOWRY & ASSOCIATES



The Moxie International
Attention: Fred Harrison Giles, President
4548 Auburn Boulevard, Suite 182
Sacramento, CA 95841

WATER ABSORPTION/MOISTURE PENETRATION TESTS
L&a No. 84-357
Lab No. 04453

In accordance with your directions, we have performed a special laboratory testing program to determine the effect of MOXIE 1500 SEALER on concrete with regard to moisture penetration under varying pressures.

The test consisted of measuring the water absorbed and/or forced into both MOXIE 1500 treated and untreated concrete specimens over an extended period with different pressures. A more detailed description of this work is attached.

Testing completed (see attached tabulation) indicates:

- 1) the untreated specimens tend to "leak" between the concrete and the epoxy sealer while the specimens treated with MOXIE 1500 SEALER did not leak under the test pressures.
- 2) the MOXIE 1500 specimens showed significantly less water use (absorption/penetration) than the untreated specimens, whether they were leaking or not.
- 3) moisture penetration through the untreated specimens occurred as dampness on the undersides while the MOXIE 1500 treated samples remained dry on the bottom throughout the testing.
- 4) the MOXIE 1500 SEALER appears to decrease the moisture penetration in the samples in the range of 10 times less water.

Mr. Giles wants us to continue the test at the 60 psig pressure and probably increase the pressure after sufficient data has been obtained.

LOWRY & associates

THOMAS G. CONNELLY

TGC:as

Attachment

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The Moxie International
Page 2
February 14, 1985

MOXIE 1500 MOISTURE PENETRATION
TEST PROCEDURE
L & a No. 84-357
Lab No. 04453

Mr. Frederick Giles, President of The Moxie International devised the test apparatus and procedures to determine the effect of MOXIE treatment on concrete with respect to water penetration under pressure.

The test specimens were made using American River concrete aggregates (1" maximum aggregate size) with 5.0 sacks of cement per cubic yard and no admixtures. Four specimens, 12 inches square by 4 inches thick, were cast with embedded anchor bolts. After the concrete had hardened sufficiently, the forms were stripped. Two specimens were treated with three applications of MOXIE 1500 SEALER and the other two remained untreated. The specimens were allowed to cure and the testing apparatus (8 inch diameter flange with 4 1/2 inch diameter by 12 inches long reservoir pipe plus reducer) attached to anchor bolts in the specimens. Then, the top and sides were epoxy coated to seal the specimens. The reservoir pipes were filled with water and equal air pressure applied to each of the specimens to force the water into the concrete. Periodic determinations were made to see how much water was forced into the concrete. This was done by removing the air pressure from each of the units and measuring the water required to refill the reservoir. The air pressure was then reapplied and the test continued.

LOWRY & ASSOCIATES

The Moxie International
 Page 3
 February 14, 1985

MOXIE 1500 MOISTURE PENETRATION
 LABORATORY TEST RESULTS
 L & a No. 84-357
 Lab No. 04453

DATE	AIR PRESSURE (psig/Ft. H ₂ O)	WATER ADDED (milimeters)				REMARKS
		UNTREATED SPECIMENS		MOXIE TREATED SPECIMENS		
		No. 1	No. 2	No. 3	No. 4	
9/6/84	20/46	3470	3320	3230	3280	No. 1 & 2 leaking under epoxy surface after pressurizing
9/10/84	20/46	2250	2320	160	170	Reapply epoxy to all, sealed w/ no leaks
9/13/84	20/46	78	75	13	10	No. 1 & 2 started leaking again, reapply epoxy.
9/18/84	20/46	210	210	20	20	Small leak No. 1 only
9/21/84	20/46	240	250	15	12	Some leakage No. 1
	40/92	Increased test pressure to 40 psig after refilling, No. 1 & 2 leaking but No. 3 & 4 do not show any leaks				
9/26/84	40/92	2210	1340	90	50	Dampness on bottom of No. 1 & 2
10/2/84	40/92	1350	830	70	50	No. 1 & 2 still leaking after additional epoxy application
10/15/84	40/92	165	115	67	25	Epoxy unsuccessful No. 1 & 2 still leak
10/19/84	40/92	1349	390	30	10	No. 1 & 2 sealed ok.
10/29/84	40/92	180	90	40	25	No. 1 started leaking, add epoxy several times

MOXIE 1500 MOISTURE PENETRATION
 LABORATORY TEST RESULTS
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DATE	AIR PRESSURE (psig/Ft. H ₂ O)	WATER ADDED (millimeters)				REMARKS
		UNTREATED SPECIMENS		MOXIE UNTREATE SPECIMENS		
		No. 1	No. 2	No. 3	No. 4	
11/5/84	40/92	3190	3165	35	20	No. 1 & 2 started leaking, reapply epoxy
11/6/84	40/92	530	360	13	0	No leakage
11/9/84	40/92	1360	960	15	10	No. 1 & 2 leaking again
11/12/84	40/92	1325	680	10	10	same as above
11/16/84	40/92	1520	760	25	15	No. 1 & 2 same leaks
11/19/84	Shut down test to try new method of sealing leaks in Specimens No. 1 & 2. Applied more epoxy with nylon strips and repressurized units on 11/29/84					
11/29/84	40/92	3230	3290	20	42	Start test again
12/11/84	40/92	1480	900	60	25	Very slight leaks in No. 1 & 2, moisture on bottom No. 1
12/18/84	40/92	660	360	40	20	Same leakage but increased moisture on bottoms No. 1 & 2
1/2/85	40/92	1120	560	70	40	same as above
1/10/85	40/92	500	280	40	20	same conditions
	60/138	Increased test pressure to 60 psig after refilling units as shown above.				
1/29/85	60/138	1670	236	120	60	New leaks in No. 1 & 2 with increased pressure
2/13/85	60/138	1140	1250	80	40	same as above