

# R. Godfrey Consulting

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*Providing Professional Flooring Inspection & Consultation Services since 1982*

July 31, 2019

RGC Project:1919

Stan Barankiewicz II, Esq  
Orbach Huff Suarez & Henderson  
1901 Avenue of the Stars  
Los Angeles. CA 90067

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Transmitted via Email to: [sbarankiewicz@ohslaw.com](mailto:sbarankiewicz@ohslaw.com) and [nheinlein@saugusd.org](mailto:nheinlein@saugusd.org)

Regarding: RGC's Report of finding regarding concrete moisture testing in classrooms A79, A74, D1 and D2 at Bridgeport Elementary School, 23670 Newhall Ranch Road, Valencia California, 91365.

Mr. Barankiewicz

Per RGC's 6-11-19 testing proposal and the modifications of that proposal by counsel in his 7-22-19 email to consultant, RGC placed a total of 8 test sites, or 2 test sites in each of the class rooms A79, A74, D1 and D2. The final rooms selected for testing were approved by counsel after his review of the RGC Testing proposal.

RGC performed the following testing procedures during our July 11-26, 2019 concrete substrate moisture and pH testing. The testing performed was the ASTM F 1869 (Calcium Chloride Dome Test) and the ASTM F 710 (Concrete pH Test).

Day	Date	Work Performed
DAY 1	7-11-19	Remove Carpet Tile, Prep & Grind 2 locations on the substrate each of the 4 rooms. <i>Dome placement was delayed 12 days while RGC waited for placement of Environmental Condition Recorders to be placed in each room to be tested.</i>
Day 2	7-23-19*	Place 2 dome tests in each of 4 rooms. Perform pH, Phenolphthalein, Electronic Moisture Tests, Slab temperature readings and record Interior Temperature and Relative Humidity in each room.
Day 3	7-24-19	No Activity – Test sites must remain in place and undisturbed for 60 to 72 hours.
Day 4	7-25-19	No Activity – Test sites must remain in place and undisturbed for 60 to 72 hours.
Day 5	7-26-19	Remove Test sites, record data and replace carpet tiles to original locations.

The 12-day delay in placing the test domes after the substrate preparation was completed was due to RGC having to await the placement of environmental recording equipment that provides a continual 7/24 record of the Interior Temperature and Relative Humidity in each of the 4 class rooms tested. There were 3 environment recorders placed in each of the 4 rooms evaluated.

Note \*: Typically, a minimum of a 24-hour ventilation period is required between the grinding and preparation of the concrete substrate and the placement of the Calcium Chloride test domes. The 24-hour period allows the prepared areas to ventilate, stabilize and release any moisture buildup in the prepared area. The ASTM F 1869 moisture test standard requires a minimum of 24 hours for ventilation but does not establish any criteria regarding how long the test sites can remain open for ventilation after the concrete preparation has been completed and prior to the placement of the test domes.

The testing is viable as long as the ground concrete test sites remain clean and have not become contaminated during the extended ventilation period. The rooms tested were unoccupied and the only access granted to the test rooms were to the School Custodial Staff, RGC Staff and the Technicians' from Solved It and American Geotechnical, the companies that placed and monitored the environmental condition recording devices.

It is RGC's understanding the HVAC in the 4 rooms tested was fully operational and active on a continual 7/24-hour basis prior to, during and after RGC's testing procedures were completed.

Please review the enclosed "Vapor Emission & pH Test Results" data sheet for details regarding each specific test site and room identification.

Six of the eight sites tested were placed on top of a 20" x 20" ground concrete area. Two of the six ground concrete sites (Sites D1-1 and D2-1) were created by grinding through the UZIN Vapor Barrier down to bare concrete. Test site D1-1 revealed a Moisture Vapor Emission Rate (MVER) of 0.85 lb./k/24. Test site D2-1 revealed a MVER of 1.02 lb./k/24. Both of these MVER are well below the maximum 3.0 lb./k/24 MVER required by the UZIN Warranty.

Test site D1-2 placed over ground concrete (Ground through the UZIN material) exhibited a MVER of 3.21 lb./k/24. Test site D2-2 (Ground through the UZIN material) revealed an MVER of 3.56 lb./k/24. Both of the test results recorded from the ground concrete areas exceed the 3.0 lb./k/24 MVER required in the UZIN warranty. The comparison of the test results of sites placed on top of the UZIN vapor barrier with the test results of the sites placed on top of the bare concrete clearly indicate the UZIN vapor barrier is performing as warranted and has substantially reduced the MVER of the concrete substrate in the areas where the UZIN vapor barrier has been applied.

The test results exhibited by both test sites installed on top of the UZIN material exhibited an MVER considerably below the maximum 3.0 lb./k/24 MVER mandated in the UZIN Warranty. The MVER exhibited by test sites D1-1 and D2-2 would be considered acceptable for the installation of any type of flooring material sold in the flooring industry today.

Test sites A79-1, A79-2, A74-1 and A74-2 exhibited a lowest MVER of 3.58 lb./k/24 and a highest MVER of 4.41 lb./k/24. All the MVER's exhibited at these 4 test sites are considered excessive for the installation of a non-permeable backed flooring material such as Resilient flooring or a carpet backing constructed with a minimal porosity backing system.

The Installation of any new flooring material placed in any areas exhibiting MVER in excess of 3.0 and/or 5.0 lb./k/24 (dependent upon the type of floorcovering and adhesive) should consider the application of a vapor retarder to be placed between the concrete substrate and the backing of the flooring material. The flooring manufacturer's published product specification, Warranty and installation criteria will establish the installation requirements for each individual product and pertaining to individual project site conditions.

Most adhesives used in today's flooring industry will not function effectively at a pH level above 10.0. The 12.0 pH level observed at test sites A79-1, A79-2, A74-1, A74-2, indicate the requirement for use of a vapor retarder or the use of a "best quality" adhesive that will handle elevated pH and vapor emission conditions. The 9.0 pH levels recorded at test sites D1-1 and D2-1 and tested on top of the UZIN vapor barrier indicate the UZIN material is effectively controlling the elevated concrete pH conditions and indicate there is no danger regarding any future adhesive application placed on top of the UZIN vapor barrier.

The Phenolphthalein (Pheno.) levels recorded at the 6 ground concrete test sites are consistent with the concrete alkaline intensity conditions generally observed in the concrete substrates that exhibit an elevated pH level. Any pH level above 10.0 would be considered excessive.

The Water Drop Testing performed at all 8 test sites do not reveal any abnormal permeability of the open concrete areas or the cementitious coating that has been applied to the surface of the UZIN vapor barrier coating.

The concrete substrate temperature readings of the 8 test sites varied from 69 to 76. The substrate surface temperature was consistent with the interior environmental temperatures recorded during our testing.

My electronic moisture content evaluation of the ground concrete and UZIN coated areas at each of the 8 test sites was performed with a Tramex “Concrete Moisture Encounter” (Tramex CME). This testing was performed at the beginning and end of the testing cycles. The CME test results revealed a very stable moisture content. The variation in the readings of the concrete moisture content varied only 0.37 or less than 1.0% over the 15-day test period.

The “Concrete Moisture Encounter” (CME), is a non-invasive moisture meter with eight copper legs. The copper legs are placed directly on the concrete surface. The meter operates on an impedance basis. Low-frequency signals are transmitted into the concrete. The impedance is calculated by the CME, which converts the data into a measurement on the visual scale of the unit. The reading on the visual scale indicates the approximate density of the localized area of concrete that is being evaluated. Theoretically, the higher the reading registered by the meter, the higher the moisture content of the concrete slab.

The meter operates on a relative scale of 0 to 100. Ratings above 35 would generally not be acceptable for resilient flooring materials, applied coatings such as epoxy or materials with non or semi-permeable backing systems. Ratings above 45 would not be conducive for wood flooring or glue-down carpet installations. Natural stone and ceramic tile installation’s susceptibility to moisture are directly related to their individual porosity and the porosity of the concrete substrate, grout material and bonding system utilized in their respective installation procedures.

Any rating of 70 or higher would ensure the long-term degradation and probable failure of most traditional floorcovering systems involving cementitious mortar or adhesive as a component of their respective installation processes.

In addition to the relative scale “0 to 100” increment, the CME has two other levels of scale designed to measure the specific moisture level of concrete (measured 0 to 6) and gypsum materials (measured 0 to 9). After many years of evaluating the moisture content of concrete and gypsum-based material, RGC has chosen to use the relative measurement scale of 0 to 100 during our testing procedures. This scale allows for a finer scale of measurement and is more easily understood by the individuals required to understand our findings.

Electronic moisture meters are excellent tools for use during preliminary testing and evaluation of any concrete sub-flooring moisture conditions. The user should acknowledge that electronic moisture measuring devices provide only estimates of the moisture content of the substance being tested. These electronic meters cannot provide information regarding the level of vapor emission emanating from the material being tested or equate to internal Relative Humidity of the slab being evaluated.



Tramex Concrete Moisture Encounter

Review the enclosed "In Room Test Site Location, Room Temperature & Relative Humidity" data sheet to examine the details regarding the various testing information relating to the individual room location , location of the test sites, room Temperature, Relative Humidity and the specific dates and times pertaining to this information.

Review the Bridgeport Elementary School "Classrooms Tested for Slab Vapor Emissions" site plan to see the campus location and individual status of the rooms evaluated during the RGC moisture testing procedure.

**Conclusion:**

The moisture testing of the 4 rooms at the Bridgeport Elementary School revealed concrete substrates that do not exhibit unusual MVER ratings. While the average MVER of the tests exceed the typical 3.0 lb./k/24 maximum threshold for typical slab moisture conditions, the highest MVER of 4.41 lb./k/24 would be considered typical if not a somewhat low reading in comparison with concrete substrates previously tested in Southern California. The average MVER of the 6 test sites placed on top of the ground concrete is 3.85 lb./k/24. This MVER can be readily managed with a vapor retardant membrane or one of the many sophisticated adhesives that can handle vapor emissions levels up to 10.0 lb./k/24.

Please contact me if you have any questions or require additional input regarding this matter.

Sincerely

Ralph O. Godfrey

Ralph O. Godfrey  
CEO

Encl: Vapor Emission & pH Test results  
In Room Test Site Location, Room Temperature & Relative Humidity Data  
Map – Class Rooms Tested for slab Vapor Emissions  
RGC Invoice 1919-2, Dated 7-26-19 for testing Services

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## VAPOR EMISSION & PH TEST RESULTS

PROJECT: Bridgeport Elementary School  
 LOCATION: 23670 New Hall Ranch Rd. Valencia, CA91355

RGC PROJECT NO: 1919  
 PAGE 1 OF 1

VET PREPARATION DATE: 7/11/19                      PLACEMENT DATE: 7/23/19                      REMOVAL DATE: 7/26/19

INTERIOR TEMPERATURE:

EXTERIOR TEMPERATURE:

See data on enclosed floor plan & test site designations

INTERIOR RELATIVE HUMIDITY (R/H):

EXTERIOR RELATIVE HUMIDITY (R/H):

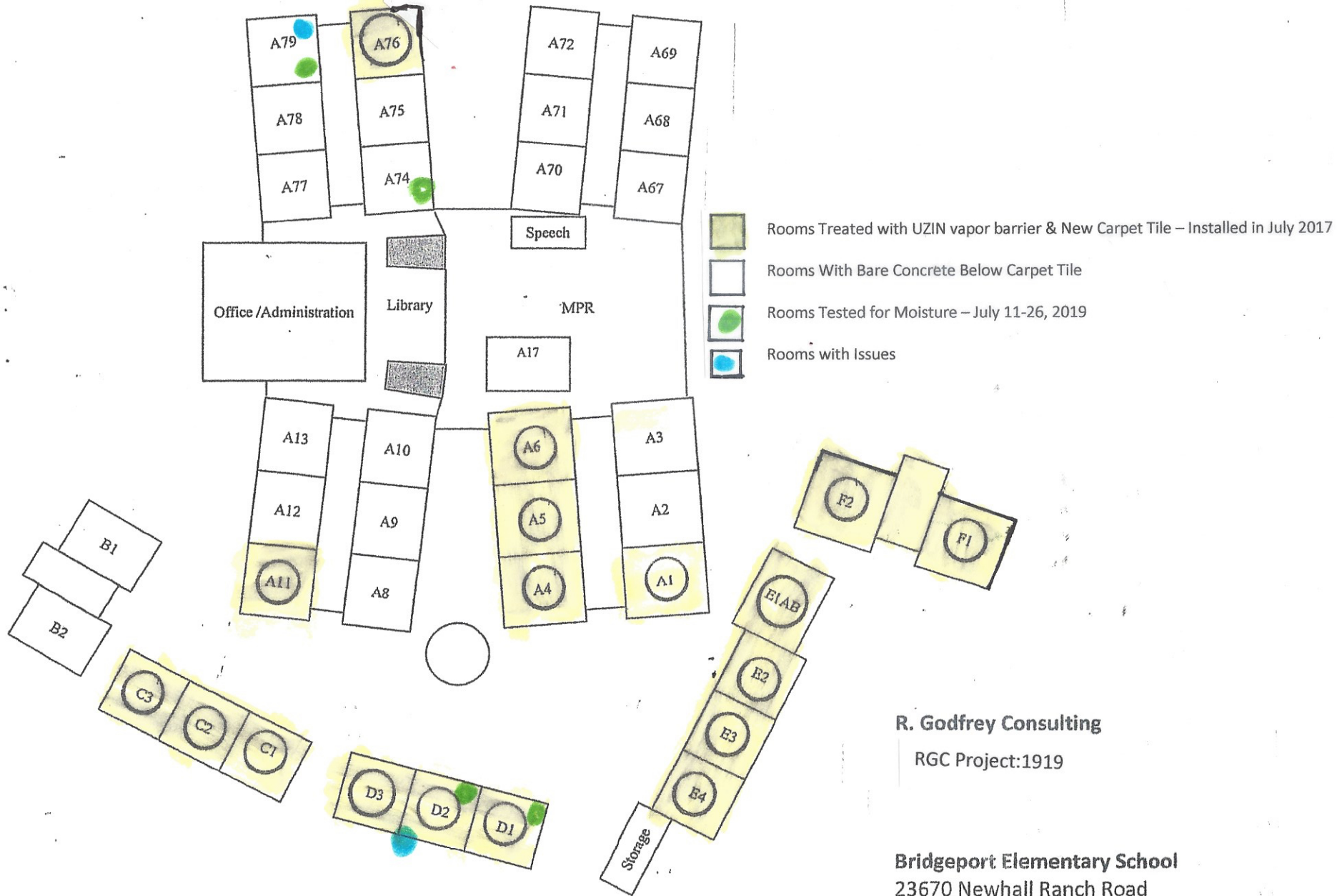
\* VAPOR EMISSIONS RATE = POUNDS PER 1000 SQUARE FEET IN 24 HOURS (LB/K/24)

PHENOLPHTHALEIN RATING: 1 = NOT VISIBLE 2 = LIGHT PINK 3 = DARK PINK 4 = RED 5 = REDDISH PURPLE 6 = DARK PURPLE

Water Drop Test \* Time To Beginning of Absorption-Minimum 1 Minute

SITE NO:	LOCATION	FLOOR COVERING	VET PLACEMENT DATE & TIME	VET REMOVAL DATE & TIME	HOURS OF EXPOSURE	BEGIN WEIGHT (GRAMS)	ENDING WEIGHT (GRAMS)	WEIGHT GAIN (GRAMS)	VAPOR EMISSION RATE* (LB/K/24)	pH LEVEL	PHENO LEVEL START	Water Drop Test *	Concrete Temp.	TRAMEX CME BEGIN	TRAMEX CME END
1	A79-1	Ground concrete	7/23/19 1:10 PM	7/26/19 11:14 AM	70.1	29.30	31.90	2.60	4.41	12	6	60 seconds	74	80	80
2	A79-2	Ground concrete	7/23/19 1:12 PM	7/26/19 11:16 AM	70.1	29.30	31.70	2.40	4.07	12	5	60 seconds	72	78	77
3	A74-1	Ground concrete	7/23/19 1:34 PM	7/26/19 11:18 AM	69.7	29.40	31.50	2.10	3.58	12	5	60 seconds	75	79	78
4	A74-2	Ground concrete	7/23/19 1:37 PM	7/26/19 11:25 AM	69.8	29.60	32.10	2.50	4.26	12	5	120 seconds	74	79	79
5	D1-1	Uzin coating	7/23/19 1:49 PM	7/26/19 12:07 PM	70.3	29.50	30.00	0.50	0.85	9	1	120 seconds	76	70	70
6	D1-2	Ground concrete	7/23/19 1:51 PM	7/26/19 12:09 PM	70.3	29.10	31.00	1.90	3.21	12	4	120 seconds	76	78	78
7	D2-1	Uzin coating	7/23/19 2:04 PM	7/26/19 12:16 PM	70.2	29.20	29.80	0.60	1.02	9	4	120 seconds	69		69
8	D2-2	Ground concrete	7/23/19 2:06 PM	7/26/19 12:18 PM	70.2	29.40	31.50	2.10	3.56	12	3	120 seconds	72	81	80
9															
10															
11															
12															
13	Notations in Red indicate tests in areas treated with UZIN Vapor barrier.														
14															
15															
16															
17															
18															
19															
20															
21															
22															
23															
24															
25															
						AVERAGES			3.12	11.25	4.13	98.00	73.50	76.75	76.38

**R. Godfrey Consulting, Inc.**  
 Bridgeport Elementary School -Classrooms Tested for Slab Vapor Emissions  
 July 11-26, 2019



**R. Godfrey Consulting**  
 RGC Project:1919

**Bridgeport Elementary School**  
 23670 Newhall Ranch Road  
 Valencia, CA 91355



**R. Godfrey Consulting, Inc.**  
**In Room, Test Site location, Room Temperature & Relative Humidity**

R. Godfrey Consulting    Project #: 1919    Date of Testing: July 11-26, 2019    Location: 23670 Newhall Ranch Rd., Valencia, CA.

Building HVAC was active and operational in all rooms tested via ASTM F 1869 Calcium Chloride Dome Test & ASTM F 710 for Concrete pH. Temperature and Relative Humidity conditions were recorded with a Mannix Hand held Hygrometer.

**ROOM #: A79** – All test sites placed over Ground Concrete

Date	Time	Room Temperature	Relative Humidity %	Test site Location	North
7-11-19	12:05PM	80.6F	32.6%		
7-23-19	1:15PM	73.9	55.9%		
7-26-19	11:10AM	75.2	31.0%		

**ROOM #: A74** – All test sites placed over Ground Concrete

Date	Time	Room Temperature	Relative Humidity %	Test site Location	North
7-11-19	12:25PM	76.6F	32.7%		
7-23-19	1:35PM	73.9F	52.5%		
7-26-19	11:20AM	74.1F	51.8%		

**ROOM #: D1** - This substrate treated with the UZIN moisture vapor barrier

Date	Time	Room Temperature	Relative Humidity %	Test site Location	North
7-11-19	1:40PM	80.6F	37.9%		
7-23-19	1:57PM	73.9F	52.5%		
7-26-19	12:20PM	74.1F	51.8%		

The **C** notation indicates test site is placed on top of Ground Concrete.    The **U** notation indicates test site is placed on top of UZIN Vapor Barrier.

**ROOM #: D2** - This substrate treated with the UZIN moisture vapor barrier

Date	Time	Room Temperature	Relative Humidity %	Test site Location	North
7-11-19	2:10PM	73.5%	41.2%		
7-23-19	2:10PM	69.2F	54.0%		
7-26-19	12:10PM	69.9F	58.7%		

The **C** notation indicates test site is placed on top of Ground Concrete.    The **U** notation indicates test site is placed on top of UZIN Vapor Barrier.