

October 6, 2021

KA No. 112-21076

Mr. Matthew Bush
Wood Investments Companies
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(657) 247-2600 x306
matt@woodinvco.com

**Re: Addendum No. 1 - Geotechnical Engineering Investigation Report
Proposed Apple Bear Retail Center
19439 Bear Valley Road
Apple Valley, California**

Dear Mr. Bush:

Krazan & Associates, Inc. are providing this Addendum No. 1 to our previous Geotechnical Engineering Investigation report for this project (KA Project No. 112-21076) dated September 9, 2021. The purpose of this Addendum is to provide recommendations for Asphalt-Concrete (AC) pavement design and Portland Cement Concrete (PCC) pavement design for the site. At the time of our previous report, R-Value test results were not available.

R-Value Test Results and Pavement Design

Two R-value samples were obtained from the project site at the locations shown on the attached site plan. The samples were tested in accordance with the State of California Materials Manual Test Designation 301. Results of the tests are as follows:

Sample	Depth	Description	R-Value at Equilibrium
1	12-24"	Silty Sand (SM)	56
2	12-24"	Silty Sand (SM)	50

The test results are good and indicate good subgrade support characteristics under dynamic traffic loads. The following table shows the recommended pavement sections for various traffic indices based on an R-value of 50.

Traffic Index	Asphaltic Concrete	Class II Aggregate Base*	Compacted Subgrade**
4.0	2.0"	4.0"	12.0"
4.5	2.5"	4.0"	12.0"
5.0	2.5"	4.0"	12.0"
5.5	3.0"	4.0"	12.0"
6.0	3.0"	4.0"	12.0"
6.5	3.5"	4.0"	12.0"
7.0	4.0"	4.5"	12.0"
7.5	4.0"	5.5"	12.0"

* 95% compaction based on ASTM Test Method D1557 or CAL 216

** 95% compaction based on ASTM Test Method D1557 or CAL 216

If traffic indices are not available, an estimated index of 4.5 may be used for light automobile traffic, and an index of 7.0 for light truck traffic are typical values.

The following recommendations are for light duty and heavy-duty Portland Cement Concrete pavement sections.

**PORTLAND CEMENT PAVEMENT
LIGHT DUTY**

Traffic Index	Portland Cement Concrete***	Class II Aggregate Base*	Compacted Subgrade**
4.5	5.0"	4.0"	12.0"

HEAVY DUTY

Traffic Index	Portland Cement Concrete***	Class II Aggregate Base*	Compacted Subgrade**
7.0	6.5"	4.0"	12.0"

* 95% compaction based on ASTM Test Method D1557 or CAL 216

** 95% compaction based on ASTM Test Method D1557 or CAL 216

***Minimum concrete compressive strength of 3000 psi

It is recommended that any uncertified fill material encountered within pavement areas be removed and/or recompacted. The fill materials should be moisture-conditioned to at or above optimum moisture and recompacted to a minimum of 95 percent of maximum density based on ASTM Test Method D1557. As an alternative, the Owner may elect not to recompact the existing fill within paved areas. However, the Owner should be aware that the paved areas may settle which may require annual maintenance. At a minimum, it is recommended that the upper 12 inches of subgrade soil be moisture-conditioned as necessary and recompacted to a minimum of 95 percent of maximum density based on ASTM Test Method D1557.

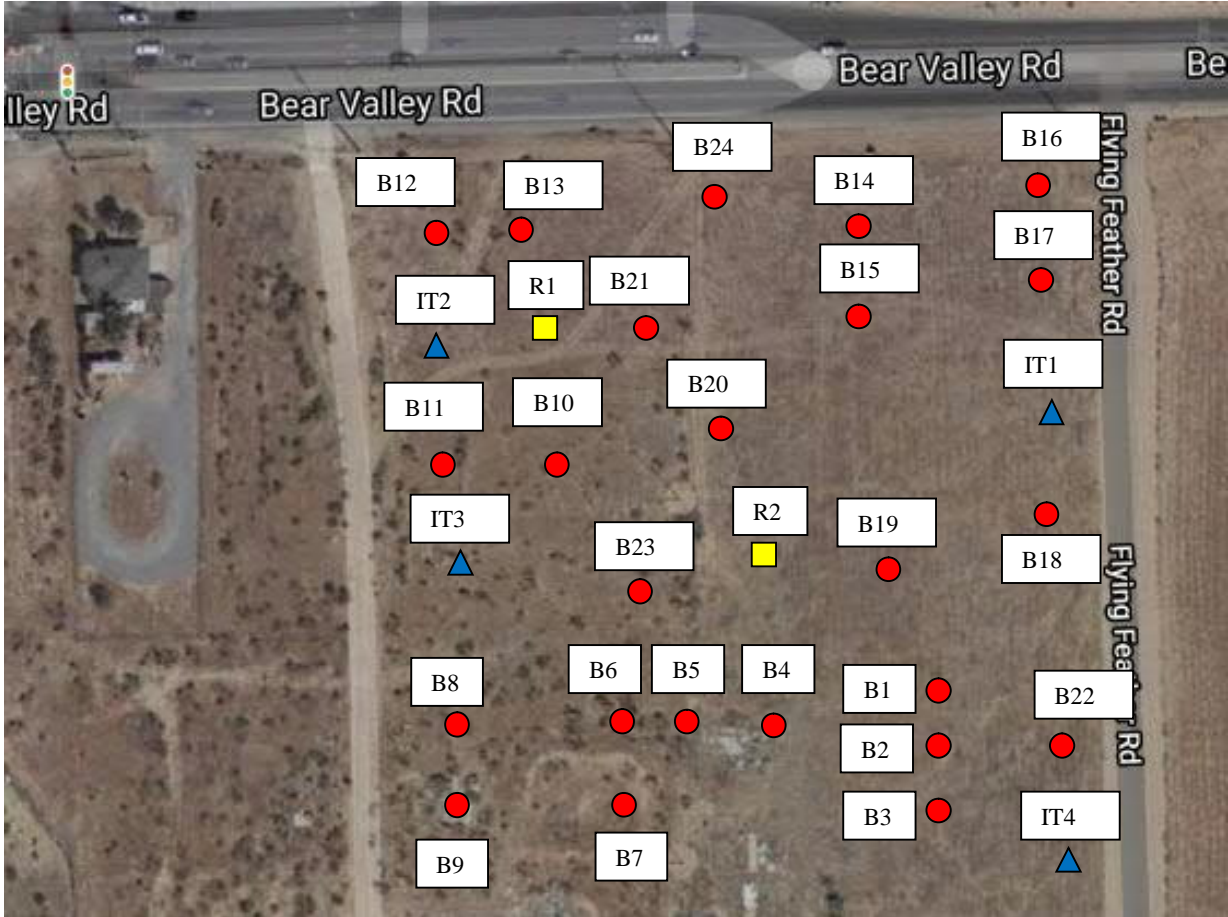
The recommendations and limitations provided in our Geotechnical Engineering Investigation report dated September 9, 2021, shall remain applicable where not superseded by the recommendations provided herein.

If you have any questions, or if we may be of further assistance, please do not hesitate to contact our office at (951) 273-1011.

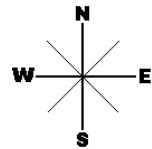


Respectfully submitted,
KRAZAN & ASSOCIATES, INC.

Madison K. Weber, P.E.
Project Engineer
RCE No. 81935



- APPROXIMATE BORING LOCATION
- ▲ APPROXIMATE PERCOLATION/INFILTRATION TEST LOCATION
- APPROXIMATE R-VALUE SAMPLE LOCATION



SITE MAP	Scale: Not to Scale	Date: Sept. 2021	
PROPOSED APPLE BEAR RETAIL CENTER 19439 BEAR VALLEY ROAD APPLE VALLEY, CALIFORNIA	Drawn by: AM	Approved by: MW	
	Project No. 112-21076	Figure No. 2	

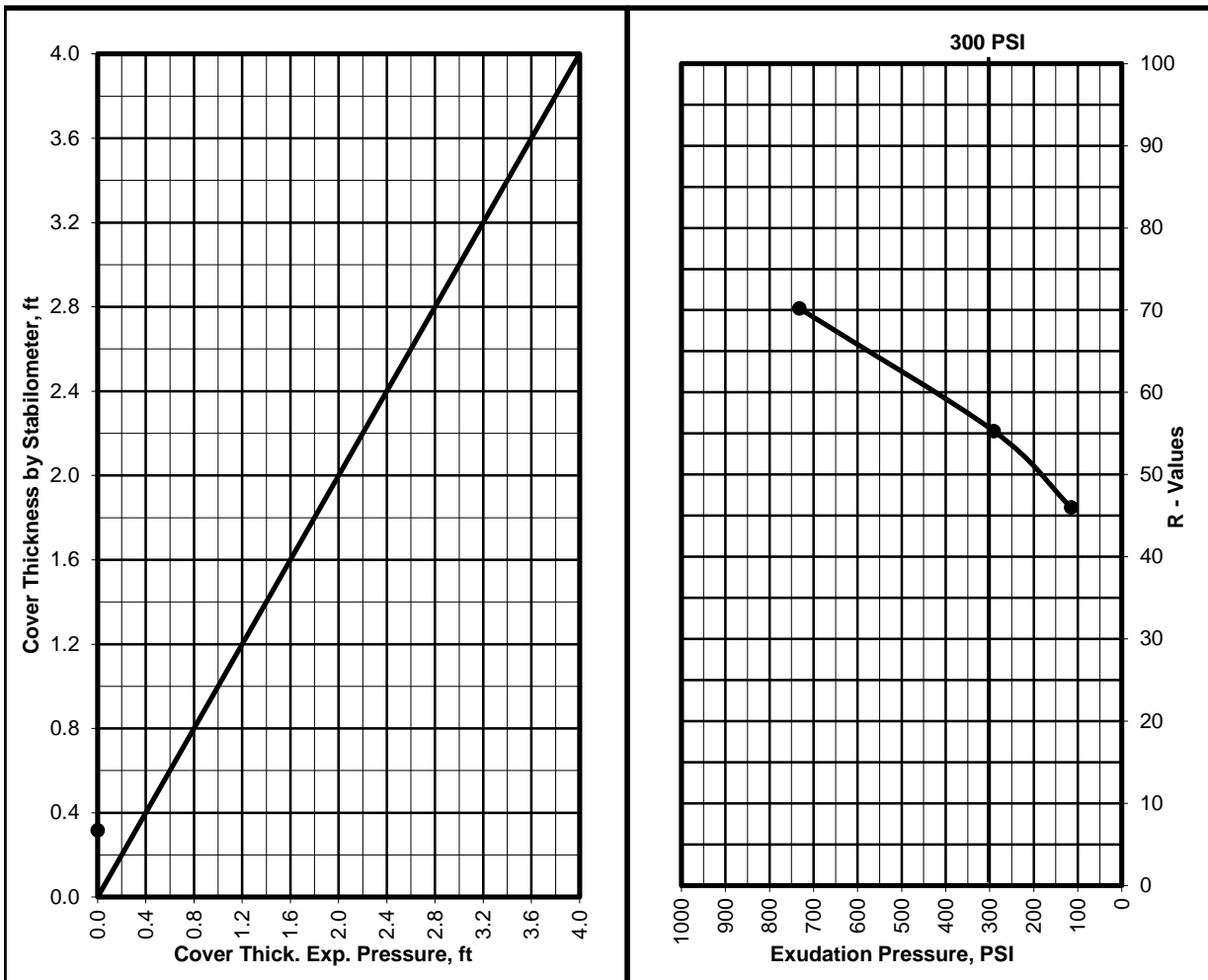
R - VALUE TEST

ASTM D - 2844 / CAL 301

Project Number : 11221076
 Project Name : Apple Bear Retail Center
 Date : 9/1/2021
 Sample Location/Curve Number : R-1
 Soil Classification : Silty Sand

TEST	A	B	C
Percent Moisture @ Compaction, %	12.1	12.7	13.6
Dry Density, lbm/cu.ft.	122.9	120.6	118.1
Exudation Pressure, psi	732.4	290.6	115.4
Expansion Pressure, (Dial Reading)	0	0	0
Expansion Pressure, psf	0	0	0
Resistance Value R	70	55	46

R Value at 300 PSI Exudation Pressure	56
R Value by Expansion Pressure (TI =): 5	Expansion Pressure nil



R - VALUE TEST

ASTM D - 2844 / CAL 301

Project Number : 11221076
 Project Name : Apple Bear Retail Center
 Date : 9/1/2021
 Sample Location/Curve Number : R-2
 Soil Classification : Silty Sand

TEST	A	B	C
Percent Moisture @ Compaction, %	8.2	9.4	10.0
Dry Density, lbm/cu.ft.	122.4	122.0	119.4
Exudation Pressure, psi	697	311	100
Expansion Pressure, (Dial Reading)	0	0	0
Expansion Pressure, psf	0	0	0
Resistance Value R	64	50	40

R Value at 300 PSI Exudation Pressure	50
R Value by Expansion Pressure (TI =): 5	Expansion Pressure nil

