October 3, 2023 Project No. 22-7452

Xebec Realty, LLC
3020 Old Ranch Parkway, Suite 200
Seal Beach, CA 90740

Attention: Danny Ricks, Development Manager

Subject: Percolation Testing Addendum Letter, Proposed Class A Warehouse Building 19708 and 19768 Kendall Drive, San Bernardino, California.

Danny,

In accordance with your request and authorization, TGR Geotechnical, Inc. (TGR) has prepared this addendum letter in response to the County of San Bernardino comments, which are attached. Our response is based upon our conversation with the reviewer from the Department of Public Works of San Bernardino County. Presented below are the revised percolation test results.

Percolation Testing

Upon completion of drilling and sampling Borings B-2 and B-6 were converted into a field percolation test well. Field percolation testing was performed in general accordance with the with the San Bernardino Technical Guidance for WQMP for sandy soils.

The boreholes were converted to field percolation test wells by placing approximately two inches of gravel at the bottom of the borehole, installing three-inch diameter PVC pipes and backfilling the annular space with gravel. Presoaking was performed prior to percolation testing. A correction factor was applied to account for the placement of gravel.

Infiltration test rates were determined utilizing the referenced County of San Bernardino guidelines. Results of the infiltration testing are summarized in Table 1 below:

Test Location	Test Depth (feet)	Infiltration Rate (inches/hour)
B-2	8 – 13	115.71
B-6	8 – 13	119.12

These results do not include a factor of safety.

Suitability Assessment Safety Factor

Factor values (v), for Factor Category A, were assigned according to the San Bernardino Technical Guidance Document for WQMP, VII.4.

Table 2 (below) presents assigned factor values and the calculated Suitability Assessment Safety Factor (Σp) in Worksheet H from the San Bernardino Technical Guidance Document for WQMP Appendix VII.

Table 2 – Worksheet H

Factor Category		Factor Description	Assigned Weight (w)	Factor Value (v)	Product (p) p = w * v
A	Suitability Assessment	Soil assessment methods	0.25	2	0.5
		Predominant soil texture	0.25	1	0.25
		Site soil variability	0.25	1	0.25
		Depth to groundwater / impervious layer	0.25	1	0.25
		Suitability Assessment Safety Factor, $S_A = \Sigma p$			1.25

The above values should be used in conjunction with Factor Category B parameters (to be determined by others) as specified in Worksheet H of the San Bernardino Technical Guidance Document for WQMP Appendix VII to evaluate the combined safety factor that should be applied to the tested infiltration rates.

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Attachment: Table 1 – Percolation Test Worksheet

County of San Bernardino Review Comments

Distribution: (1) Addressee

Table 1: Percolation Test Worksheet

Test Hole	Total Depth (in)	Initial Depth (in)	Final Depth (in)	ΔWater Level (in)	Initial Time (min)	Final Time (min)	Δ Time (min)	Initial Height of Water (in)	Final Height of Water (in)	Average Height of Water (in)	Infiltration Rate (in/hr)
Presoak: 75 gallons of clear water.											
B-2/P-1	156	96	156	60	0.0	1.05	1.05	60	0	30.00	115.71
	156	96	156	60	0.0	0.98	0.98	60	0	30.00	123.60
	156	96	156	60	0.0	0.98	0.98	60	0	30.00	123.98
	156	96	156	60	0.0	1.02	1.02	60	0	30.00	119.12
	156	96	156	60	0.0	1.02	1.02	60	0	30.00	119.12
	156	96	156	60	0.0	1.05	1.05	60	0	30.00	115.71
Presoak: 75 gallons of clear water.											
B-6/P-2	156	96	156	60.0	0.0	0.98	0.98	60.0	0.0	30.0	123.98
	156	96	156	60.0	0.0	0.98	0.98	60.0	0.0	30.0	123.98
	156	96	156	60.0	0.0	1.02	1.02	60.0	0.0	30.0	119.12
	156	96	156	60.0	0.0	1.05	1.05	60.0	0.0	30.0	115.71
	156	96	156	60.0	0.0	1.00	1.00	60.0	0.0	30.0	121.50
	156	96	156	60.0	0.0	1.02	1.02	60.0	0.0	30.0	119.12

$$I_t = \frac{\Delta H(60r)}{\Delta t(r + 2H_{avg})}$$

ΔH = Change in height

Δt = Time interval

r = Radius

I_t Infiltration Rate

H_{ave} Average Head Height over the time interval

The samples were driven using an automatic 140-pound hammer falling freely from a height of 30 inches. The blow counts for CRS were converted to equivalent SPT blow counts. Soil descriptions were entered on the logs in general accordance with the Unified Soil Classification System (USCS). Driven samples and bulk samples of the earth materials encountered at selected intervals were recovered from the borings. The locations and depths of the soil samples recovered are indicated on the boring logs in Appendix B.

Two (2) percolation test borings, B-2 and B-6, were advanced to a dept et below existing ground surface. Subsequent to percolation testing the bo th excavated soils and surface tamped.

testing was not done in conformance with appendix D of the TGD. Revise testing to follow the required methods of the TGD appendix D

Percolation Testing

Upon completion of drilling and sampling each borehole was converted i st well. Field percolation testing was performed in general accordance with th no Technical Guidance for WQMP for sandy soils.

The boreholes were converted to field percolation test wells by placing approximately two inches of gravel at the bottom of the borehole, installing three-inch diameter PVC pipes and backfilling the annular space with gravel. A correction factor was applied to account for the placement of gravel.

Infiltration test rates were determined utilizing the referenced County of San Bernardino guidelines. Results of the infiltration testing are summarized in Table 1 below:

testing does not match the field sheets.

Table 1 – Infiltration Rates

Test Location	Test Depth (feet)	Infiltration Rate (inches/hour)
B-2	8-13	121.5
B-6	8-13	121.5

Suitability Assessment Safety Factor

Factor values (v), for Factor Category A, were assigned according to the San Bernardino Technical Guidance Document for WQMP, VII.4.

Table 2 (below) presents assigned factor values and the calculated Suitability Assessment Safety Factor (Σp) in Worksheet H from the San Bernardino Technical Guidance Document for WQMP Appendix VII.

Table 2 – Worksheet H

Factor Category		Factor Description	Assigned Weight (w)	Factor Value (v)	Product (p) p = w * v
A	Suitability Assessment	Soil assessment methods	0.25	2	0.5
		Predominant soil texture	0.25	1	0.25
		Site soil variability	0.25	1	0.25

does not match summary

conformance with the appendix D TGD. Revise testing and follow sample data sheet within appendix D for the test method performed.

Table 1: Percolation

Test Hole	Total Depth (in)	Initial Depth (in)	Final Depth (in)	ΔWater Level (in)	Initial Time (min)	Final Time (min)	Δ Time (min)	Initial Height of Water (in)	Final Height of Water (in)	Average Height of Water (in)	Infiltration Rate (in/hr)
B-2/P-1	60	0.0	60.0	60.0	0.0	1.0	1.0	60.0	0.0	30.0	121.50
	60	0.0	60.0	60.0	0.0	1.0	1.0	60.0	0.0	30.0	121.50
	60	0.0	60.0	60.0	0.0	1.0	1.0	60.0	0.0	30.0	121.50
	60	0.0	60.0	60.0	0.0	1.0	1.0	60.0	0.0	30.0	121.50
	60	0.0	60.0	60.0	0.0	1.0	1.0	60.0	0.0	30.0	121.50
	60	0.0	60.0	60.0	0.0	1.0	1.0	60.0	0.0	30.0	121.50
B-6/P-2	60	0.0	60.0	60.0	0.0	1.0	1.0	60.0	0.0	30.0	121.50
	60	0.0	60.0	60.0	0.0	1.0	1.0	60.0	0.0	30.0	121.50
	60	0.0	60.0	60.0	0.0	1.0	1.0	60.0	0.0	30.0	121.50
	60	0.0	60.0	60.0	0.0	1.0	1.0	60.0	0.0	30.0	121.50
	60	0.0	60.0	60.0	0.0	1.0	1.0	60.0	0.0	30.0	121.50
	60	0.0	60.0	60.0	0.0	1.0	1.0	60.0	0.0	30.0	121.50

$$I_t = \frac{\Delta H(60r)}{\Delta t(r + 2H_{avg})}$$

ΔH = Change in height

Δt = Time interval

r = Radius

I_t Infiltration Rate

H_{ave} Average Head Height over the time interval

10 minute intervals after pre-soak data being provided.