

December 8, 2014



Austin HB Residential Properties, Ltd.
1010 Rio Grande, Suite B
Austin, Texas 78701

Attention: Mr. John McCullough
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Regarding: Supplemental Geotechnical Engineering Recommendations
Creekside on Parmer
Harris Branch Tract E-33, Parmer Lane, West of Cameron Road
Austin, Texas
Terracon Project No. 96145163, Supplemental Letter 1

Dear Mr. McCullough:

This letter provides supplemental geotechnical recommendations for the above referenced project. Geotechnical recommendations for the project were provided in Terracon Report No. 96145163 dated November 11, 2014. Based on the discussions had during the design team meeting on December 4, 2014, we understand that subgrade preparation recommendations to reduce post construction vertical movements (PVR) to about 2 inches is desired. We also understand that subgrade preparation recommendations to reduce the possibility of cracking/distress associated with movements of the on-site clays in the pool area are also desired. Recommendations for these types of subgrade preparation are presented in the following subsections.

1.0 TWO INCH PVR SUBGRADE PREPARATION

The subgrade preparation options presented below should reduce post-construction floor slab movements (PVR) to about two inches.

BUILDINGS 1, 2, 3, 4, 7, 8, 9, 10, 11, 12, 13, 14

Component	Minimum Material Thickness (feet)		
	Option 13	Option 14	Option 15
Select Fill	5½	4½	3½
Moisture Conditioned Subgrade	2	4	6
Minimum Total Thickness	7½	8½	9½



BUILDING 5 & 19 (CLUBHOUSE)

Component	Minimum Material Thickness (feet)	
	Option 16	Option 17
Select Fill	2	1
Moisture Conditioned Subgrade	1	2½
Minimum Total Thickness	3	3½

BUILDINGS 6 & 17

Component	Minimum Material Thickness (feet)		
	Option 18	Option 19	Option 20
Select Fill	4½	3½	2½
Moisture Conditioned Subgrade	2	4	6
Minimum Total Thickness	6½	7½	8½

BUILDINGS 15, 16 & 18

Component	Minimum Material Thickness (feet)		
	Option 21	Option 22	Option 23
Select Fill	6½	5½	4½
Moisture Conditioned Subgrade	2	4	6
Minimum Total Thickness	8½	9½	10½

The following slab foundation design parameters may be used for subgrade prepared as above.

BRAB/WRI/PCI Parameters			
Design Plasticity Index (PI) ^{1,2}	Buildings 1, 2, 3, 4, 7, 8, 9, 10, 11, 12, 13, 14	2-inch PVR Option	46
	Building 5 & 19 (Clubhouse)	2-inch PVR Option	32
	Building 6 & 17	2-inch PVR Option	41
	Buildings 15, 16 & 18	2-inch PVR Option	52
Climatic Rating (C _w)			17
Unconfined Compressive Strength ²			1.0 tsf
Soil Support Index (C) for BRAB ²	Buildings 1, 2, 3, 4, 7, 8, 9, 10, 11, 12, 13, 14	2-inch PVR Option	0.67
	Building 5 & 19 (Clubhouse)	2-inch PVR Option	0.82
	Building 6 & 17	2-inch PVR Option	0.72
	Buildings 15, 16 & 18	2-inch PVR Option	0.63

- The BRAB effective PI is equal to the near surface PI if that PI is greater than all of the PI values in the upper 15 feet; otherwise it is the weighted average of the PI values in the upper 15 feet. The WRI/PCI effective PI is always the weighted average of the PI values in the upper 15 feet.
- For subgrade prepared as in this letter.

Post Tensioning Institute (PTI) Parameters					
Building(s)	PVR Design Option	Edge Moisture Variation Distance, e_m ^{1, 2, 3}		Differential Soil Movement, y_m (Center Lift) ^{2, 3}	
		Center Lift	Edge Lift	Center Lift	Edge Lift
1, 2, 3, 4, 7, 8, 9, 10, 11, 12, 13, 14	2-inch PVR Option	7.8 feet	4.0 feet	1.3 inches	1-inch
5 & 19 (Clubhouse)	2-inch PVR Option	8.3 feet	4.3 feet	1.6 inches	1.1 inches
6 & 17	2-inch PVR Option	7.5 feet	4.0 feet	1.6 inches	1.1 inches
15, 16 & 18	2-inch PVR Option	7.5 feet	3.9 feet	1.2 inches	1-inch

1. The maximum moisture variation distance is termed the edge moisture variation distance, e_m , and is an important factor governing the design of post-tensioned floor slabs. The e_m is related to percent fine clay and climatic conditions as well as other parameters, such as soil fabric factor and unsaturated diffusion coefficient.
2. The differential movements, y_m , and edge moisture variation distances, e_m , were calculated by modeling soil profiles using the commercial software program VOLFLO as recommended by the PTI manual.
3. For subgrade prepared as in this letter.

2.0 SWIMMING POOL SUBGRADE PREPARATION

Based on the proposed site grading plan, we understand that the swimming pool area is to be constructed with a finished elevation of 623.7 feet. Therefore, fills of up to about 4½ feet will be required to achieve the final grade. We recommend that one of the subgrade preparation alternatives provided for Buildings 5 and 19 be used for design.

3.0 CLOSURE

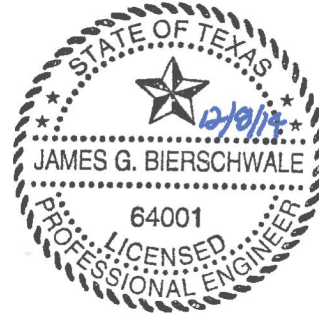
Any other items not specifically addressed in this letter should follow the recommendations outlined in our original Report No. 96145163 dated November 11, 2014. If you have any questions or comments, please contact us.

Sincerely,

Terracon Consultants, Inc.
(TBPE Firm Registration: TX F3272)

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