January 20, 2021

Fickling & Company
577 Mulberry Street, Suite 1100
Macon, GA 31201

Attn: Mr. Bobby Cleveland, Senior Vice President
P: (478) 803 4136
E: bcleveland@fickling.com

Re: Engineering Summary Report – Lateral Earth Pressures
Lullwater at Langley
Henbet Drive
West Columbia, SC
Terracon Project No. 73205167

Dear Mr. Cleveland:

Terracon is currently preparing a Supplemental Geotechnical Engineering Report to address the geotechnical aspects of the project design phase of the Lullwater at Langley (formerly West Columbia Multi-Family Development). We understand from Mr. Wil Garrett of Novare Group, the lateral earth pressure parameters are needed to further the civil drawings. Therefore, Terracon has provided these parameters in the interim to support Novare Group's effort.

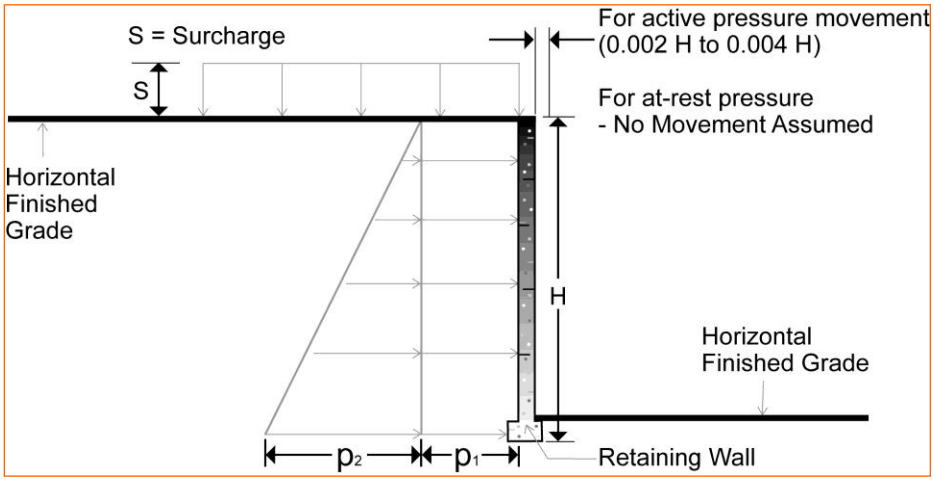
Terracon considers this to an addendum of the Due Diligence Geotechnical Engineering Report (dated February 18, 2021). As such, all limitations associated with that report apply here.

LATERAL EARTH PRESSURES

Lateral Earth Pressure Design Parameters

Reinforced concrete walls with unbalanced backfill levels on opposite sides should be designed for earth pressures at least equal to values indicated in the following table. Earth pressures will be influenced by structural design of the walls, conditions of wall restraint, final grades or sloping of ground adjacent to the walls, surcharges, methods of construction and/or compaction and the strength of the materials being restrained. The recommended design lateral earth pressures provided in this section are for cast-in-place concrete walls only and are not applicable to other wall systems (e.g., segmental block, landscaping walls, etc.).

Two wall restraint conditions are shown in the diagram below. The "at-rest" condition assumes no wall movement and is commonly used for basement walls, loading dock walls, or other walls restrained at the top. Active earth pressure is commonly used for design of free-standing cantilever retaining walls and assumes wall movement. The recommended design lateral earth pressures do not include a factor of safety and the "unsaturated" values do not provide for possible hydrostatic pressure on the walls.



Lateral Earth Pressure Design Parameters				
Earth Pressure Condition [1]	**Coefficient for Backfill Type** [2]	**Surcharge Pressure** [3, 4, 5] **p_1 (psf)**	**Effective Fluid Pressures (psf)** [2, 4, 5]	
			Unsaturated [6]	**Submerged** [6]
At-Rest (Ko)	On-site Sand - 0.50	(0.50)S	(60)H	(90)H
Active (Ka)	On-site Sand - 0.33	(0.33)S	(40)H	(80)H
Passive (Kp)	On-site Sand - 3.00	---	(360)H	(235)H
Sliding Resistance	See table below			

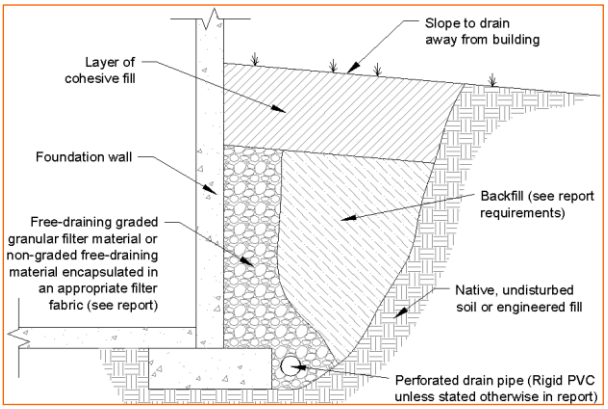
1. For active earth pressure, wall must rotate about base, with top lateral movements 0.002 H to 0.004 H, where H is wall height. For passive earth pressure, wall must move horizontally to mobilize resistance.
2. Uniform, horizontal backfill, compacted to at least 95% of the ASTM D 698 maximum dry density, rendering a maximum unit weight of 120 pcf.
3. Uniform surcharge, where S is surcharge pressure.
4. Loading from heavy compaction equipment is not included.
5. No safety factor is included in these values.
6. To achieve “Unsaturated” conditions, follow guidelines in **Subsurface Drainage for Below-Grade Walls** below. “Submerged” conditions are recommended when drainage behind walls is not incorporated into the design.

All retaining walls should be checked against failure due to overturning, sliding and overall slope stability. Such an analysis can only be performed once the dimensions of the wall and cut/fill scenarios are known. For retaining wall bearing capacity design, we recommend the following parameters.

We recommend the ultimate coefficient of sliding resistance of 0.35 and maximum footing bearing capacity of 2,000 psf.

Subsurface Drainage for Below-Grade Walls

A perforated rigid plastic drain line installed behind the base of walls and extends below adjacent grade is recommended to reduce hydrostatic loading on the walls. The invert of a drain line around an exterior retaining wall should be placed near foundation bearing level. The drain line should be sloped to provide positive gravity drainage to daylight or to a sump pit and pump. The drain line should be surrounded by clean, free-draining granular material having less than 5% passing the No. 200 sieve, such as No. 57 or 67 aggregate. The free-draining aggregate should be encapsulated in a filter fabric. The granular fill should extend to within 2 feet of final grade, where it should be capped with compacted cohesive fill to reduce infiltration of surface water into the drain system.



As an alternative to free-draining granular fill, a pre-fabricated drainage structure may be used. A pre-fabricated drainage structure is a plastic drainage core or mesh which is covered with filter fabric to prevent soil intrusion and is fastened to the wall prior to placing backfill.

CLOSURE

Terracon appreciates the opportunity to be of continued service to Fickling & Company and their designers and look forward to the successful completion of the project. If there are any questions regarding this letter, please contact us.

Sincerely,

Terracon Consultants, Inc.

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