

Pathway and Retaining Wall NW Edge of Lake



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HISTORY

10–12 years ago

- Cracks in pathway filled in with asphalt/tar
- Retaining wall leaning observed near sewer cover, retaining wall rebuilt in that area



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HISTORY

During the last 10 years

- Cracks in walkway filled in with crushed granite chips, most recently with sand
- Not really long term, filler either subsides or washes away
- HOA insurance carrier has expressed concerns of potential injury claims
- City of Fairfield repaired subsiding section of Lagunita Court near lake



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2024

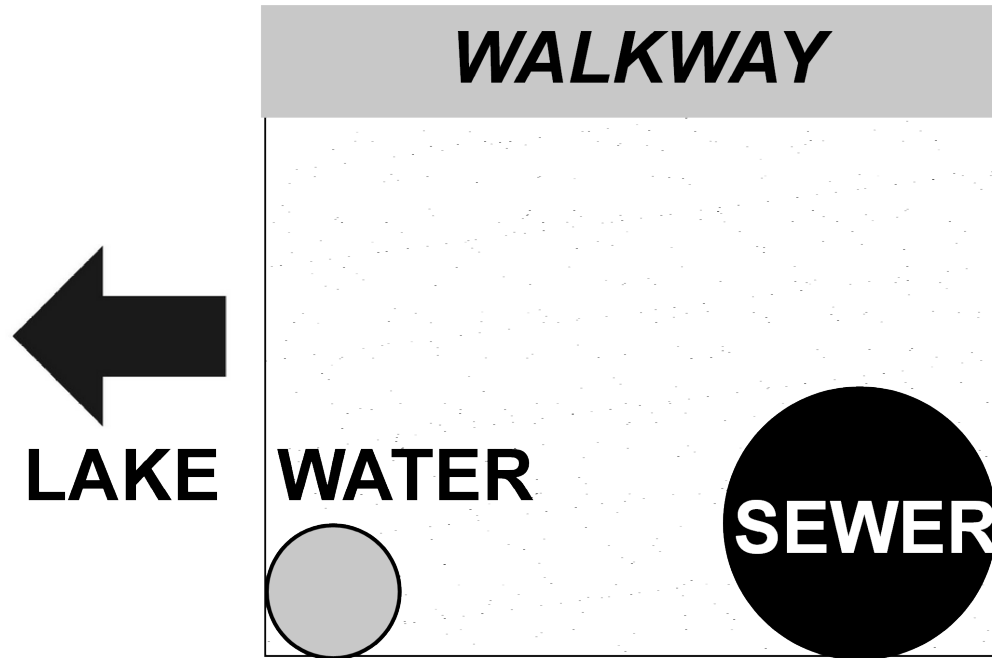
Retained geotechnical engineering consultant to evaluate subsurface conditions and offer recommendations

- KC Geotechnical Engineering Consultants report
- The remaining presentation reviews the methodology, provides the findings, and offers recommendations



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Known layout under walkway



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3 boreholes were drilled



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Boring 1



LOG OF TEST BORING										
BORING NO.: 1										
PROJECT: Paradise Cove Pathway					PROJECT NO.: VV5697					
CLIENT: C&C Property Management					DATE: 01/16/24					
LOCATION: Lagunita Ct. & Avenida Del Lago Way					ELEVATION:					
DRILLER: California Geo-Tech					LOGGED BY: DS					
DRILL RIG: B24					BORING DIAMETER: 4"					
DEPTH TO WATER: INITIAL  :					FINAL:  :		AFTER:		HRS	
DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEO TECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	Q _p (t.s.f.) Penetrometer	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, σ &c. Gradation)
0				2" of Asphalt over 4" Sandy Gravels	CL/CH					
1-1				Olive CLAY with Claystone Fragments; moist, stiff. (NATIVE?)			12	81.4	36.7	1.75
1-2				Olive CLAYSTONE; completely weathered, friable to weak.	Rx	19	87.0	33.4		LL=75 PI=48 UCC=3,762 psf
5				Olive CLAYSTONE; highly to completely weathered, weak to moderately strong.	Rx					
1-3						29	91.1	31.5		
1-4				As Above.		34	93.6	29.0		
15				Olive CLAYSTONE; highly weathered, moderately strong.	Rx					
1-5						50-6"				
20				Boring Terminated @ 19'. No Groundwater Encountered.						
25										
This information pertains only to this boring and is not necessarily indicative of the whole site.										

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- 2 inches of asphalt
- 4 inches of sandy gravel (dirty base rock)
- Stiff, very highly to critically expansive clay, down to 4 feet below the surface
- completely weathered and friable to weak claystone bedrock to the maximum depth explored of 19 feet below the surface



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Boring 2

LOG OF TEST BORING										
BORING NO.: 2										
PROJECT: Paradise Cove Pathway				PROJECT NO.: VV5697						
CLIENT: C&C Property Management				DATE: 01/16/24						
LOCATION: Lagunita Ct. & Avenida Del Lago Way				ELEVATION:						
DRILLER: California Geo-Tech				LOGGED BY: DS						
DRILL RIG: B24				BORING DIAMETER: 4"						
DEPTH TO WATER: INITIAL $\frac{1}{2}$:				FINAL: $\frac{1}{2}$: AFTER: HRS						
DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	Qp (t.s.f.) Penetrometer	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ϕ & c Gradation)
0				2" of Asphalt over 4" of Sandy Gravel.	CH					
				Olive CLAY with Claystone Fragments; moist, firm to stiff. (FILL?)	CH					
2-1				Olive Sandy CLAY with Claystone Chunks; moist, stiff.	Rx	13	87.7	29.0	1.75	$\phi=25^\circ$ c=536 psf
5				Olive CLAYSTONE; completely weathered, friable to weak.	Rx	25	95.8	27.4		
2-2					Rx					
10				Olive CLAYSTONE; highly to completely weathered, moderately strong.	Rx	53	101.3	24.3		
2-3					Rx					
15				Olive CLAYSTONE; highly to completely weathered, weak to moderately strong.	Rx	25	99.2	26.7		
2-4										
20				As Above; moderately strong.		50-5"	104.1	23.6		
2-5				Boring Terminated @ 21.5'. No Groundwater Encountered.						
25										

This information pertains only to this boring and is not necessarily indicative of the whole site.



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- 2 inches of asphalt
- 4 inches of sandy gravel (dirty base rock)
- stiff highly expansive sandy clay fill and stiff native sandy clay down to 4 feet
- highly to completely weathered and friable to moderately strong claystone bedrock down to the maximum depth explored of 21.5 feet below the surface



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Boring 3



LOG OF TEST BORING										
BORING NO.: 3										
PROJECT: Paradise Cove Pathway					PROJECT NO.: VV5697					
CLIENT: C&C Property Management					DATE: 01/16/24					
LOCATION: Lagunita Ct. & Avenida Del Lago Way					ELEVATION:					
DRILLER: California Geo-Tech					LOGGED BY: DS					
DRILL RIG: B24					BORING DIAMETER: 4"					
DEPTH TO WATER: INITIAL  :					FINAL:  :		AFTER:		HRS	
DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	Qp (t.s.f.) Penetrometer	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ϕ &c. Gradation)
0				2" of Asphalt over 4" of Sandy Gravel.	CH					
3-1				Olive CLAY with Claystone Chunks; moist, very stiff. (NATIVE)	Rx	16	92.1	29.1	2.5	LL=59 PI=38 UCC=3,554 psf ϕ =22° c=790 psf
3-2				Olive CLAYSTONE; completely weathered, friable to weak.	Rx	21	94.7	27.6		
3-3				Olive CLAYSTONE; highly weathered, weak to moderately strong.	Rx	43	101.3	24.6		
3-4				As Above; moderately strong.		50-5.5"	103.8	22.4		
15				Boring Terminated @ 14.5'. No Groundwater Encountered.						
20										
25										
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- 2 inches of asphalt
- 4 inches of sandy gravel (dirty base rock)
- very highly to critically expansive very stiff native clay with claystone chunks down to 3 feet
- completely to highly weathered and friable to moderately strong claystone bedrock down to the maximum depth explored of 14.5 feet below the surface



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SUMMARY

- Distressed pathway and retaining wall result from soil movements related to very highly to critically expansive subsurface clay and claystone, along with long-term lateral spreading and down slope soil creep forces of the adjacent pond embankment.
- Settlement of the sanitary sewer trench backfill also has contributed to distress of the pathway and leaning retaining wall.



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SUMMARY (cont'd)

- Walkway has an insufficient pavement section and no underlying reinforcement to withstand seasonal shrinking swelling of the very highly expansive materials and lateral soil creep of the adjacent pond embankment.
- Retaining wall constructed without geogrid reinforcement to resist lateral earth pressures.



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RECOMMENDATIONS — WALKWAY

- Removed and replace walkway with a new asphalt concrete and aggregate base section with underlying geogrid reinforcement.



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RECOMMENDATIONS — RETAINING WALL

- Repair/restrain retaining wall by reconstruction with the same block materials, adding geogrid reinforcement between the keystone blocks — will require removal of the wood fence and excavation into the adjacent residential yard areas.

or

- New reinforced concrete or masonry block wall supported on a drilled pier foundation system in place of the existing wall.



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WHO IS RESPONSIBLE

- We are past the typical 10-year period where claims could be made against the developer
(Even if we were in the time period, negotiations and legal action could have been protracted as evidenced in the suit that resulted in funding for the dock and entryway improvements; these amenities were described during the initial sales, but not delivered.)



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WHO IS RESPONSIBLE

- City of Fairfield since they issued the permits and signed off on the completed work
(HOA attorney advises any claims would be unsuccessful because of “eminent domain.” The best we can hope for is to negotiate reduced permit and inspection fees since these will be required for the remedial work.)



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WHO IS RESPONSIBLE

- Adjacent homeowners since they will benefit from the remedial work on the retaining wall
(There is evidence that the retaining wall deficiencies have already caused issues at the adjacent properties, and the HOA attorney advises that the HOA should remedy those since the problem arises on the HOA side of the property line.)



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NEXT STEPS

- Recommended options are being priced, remedial work is likely expensive
- Depending on the costs and community interest, the recommended steps may have to be simplified, e.g., removing the existing walkway and mitigating the subsurface without replacing the walkway, or having an unpaved walkway until Reserve funding is built up



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