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## MEMORANDUM

To: Mr. Mike Roberts (Clearview Investments)  
From: James F. Davis, P.E., Lawrence F. Johnsen, P.E. (GZA)  
Date: November 29, 2022  
File No.: 05.0047073.00  
Re: Proposed Improvements on Neighboring Bulkhead  
Delamar Residences  
Stamford, Connecticut

GZA GeoEnvironmental, Inc. (GZA) is pleased to provide this Memorandum regarding the impact of the proposed improvements to the neighboring bulkhead at the Delamar Residences located at 68-70 Seaview Avenue in Stamford, Connecticut (Site). This Memorandum is subject to the Limitations included as **Appendix A**.

The Site is currently developed with an approximate 40,000-square foot, up to 6-story building that is bound by Wescott Cove to the north and east, and by Marina Bay Condominiums to the west and south. A bulkhead is located along the eastern edge of the parcel along Wescott Cove. At the southern corner of the lot, there is an approximate 3,600-square foot grassed area that is planned to be redeveloped. The redevelopment will include an approximate 225-foot long retaining wall between 2.1 and 6.3 feet tall, raising grades to El. 14 to 14.5 feet (2.3 to 4.5 feet of grade raise), construction of an 875-square-foot pool and construction a stormwater retention system. The proposed improvements are shown on the attached **Site Grading and Layout Plan**.

The existing bulkhead is constructed of steel sheeting with tiebacks. The length and size of the sheeting and tiebacks are unknown. Calculations were not made available and are not known to exist for the bulkhead. We understand Marina Bay Condominiums have requested an engineering evaluation of the impact of the proposed improvements to their bulkhead. GZA's analysis and conclusions are provided below.

### BULKHEAD EVALUATION

The Marina Bay Condominium bulkhead at the southern property line is located about 33 feet from the proposed retaining wall. GZA used the computer program Shoring Suite to model the existing conditions at the neighboring bulkhead. The existing conditions were estimated based on field measurements (depth of mudline and tieback location below top of sheeting) and a test boring completed on November 22, 2022. The existing conditions model is provided in **Appendix B**.

GZA added the proposed retaining wall and backfill to the existing conditions, which is provided in **Appendix C**. The new retaining wall was assumed to be a modular block wall, such as Versa-Lok, which has a unit weight of about 115 pcf when filled with aggregate. The two feet of new fill behind the wall was assumed to have a unit weight of 120 pcf. For simplicity, the modular block wall and the new fill were modeled concurrently as a 2-foot grade raise because of their similar unit weights.

GZA was unable to evaluate the effect of the proposed conditions on the factor of safety of the existing bulkhead because the bulkhead conditions are unknown (sheeting depth and tieback information). Therefore, GZA compared the existing and proposed loading conditions



on the bulkhead to evaluate if there will be a change in bulkhead loading. A summary of the two models are tabulated below.

Depth Below Sheeting (z)	Lateral Pressure Existing Conditions	Lateral Pressure Proposed Conditions
0 feet	0 psf	0 psf
5.4 feet	180 psf	180 psf
10.8 feet	270 psf	270 psf
13.3 feet	300 psf	300 psf
26.6 feet	560 psf	560 psf

## CONCLUSION

GZA's model shows the proposed grade raise and retaining wall will not change the loading conditions to the existing Marina Bay bulkhead, which is located about 33 feet from the proposed improvements.

## CLOSING

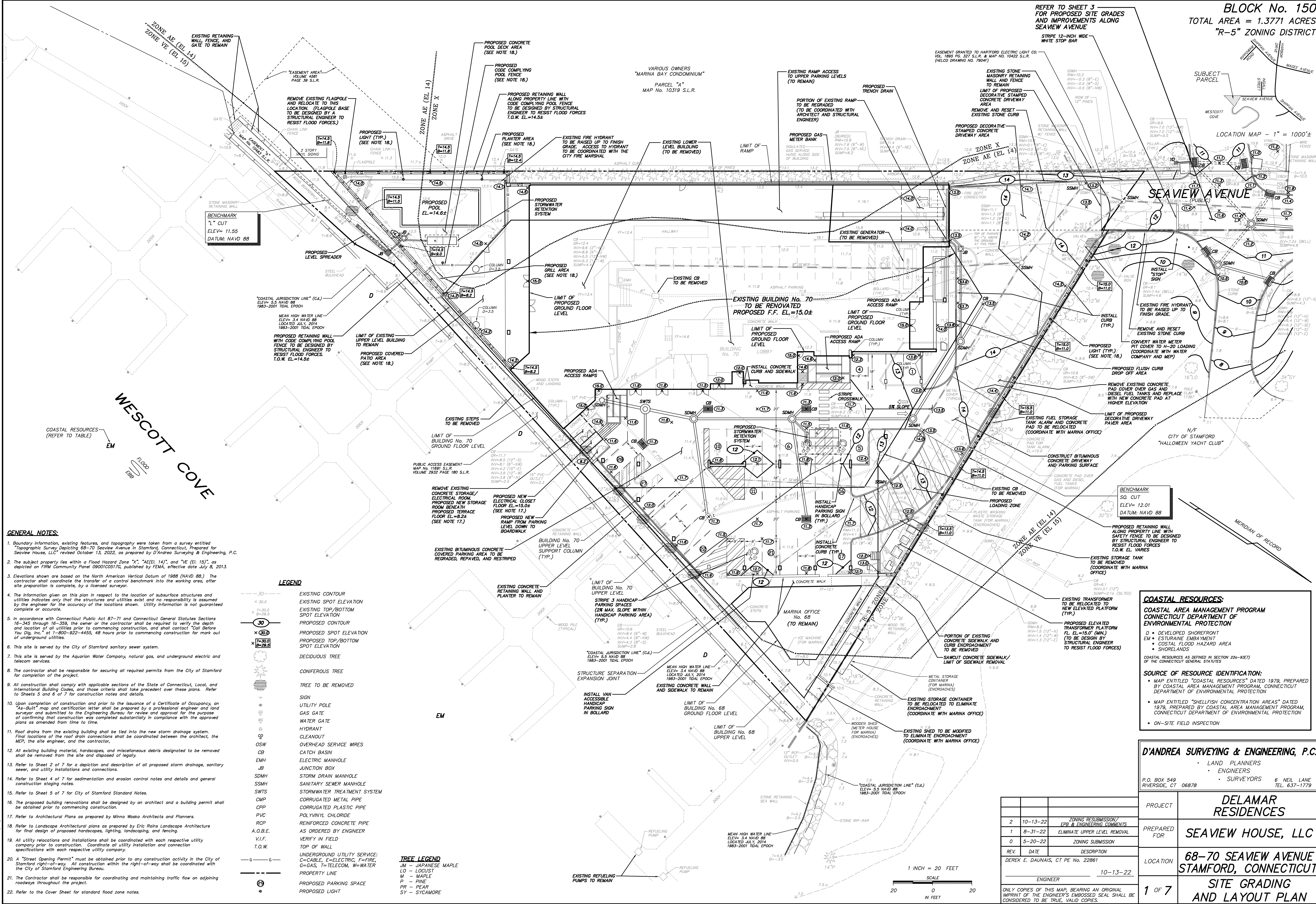
We trust this provides the information you require at this time. We appreciate the opportunity to provide support on this project. Please call Jim Davis (860) 462-3016 or Larry Johnsen (203) 258-0058 for additional information or with any questions.

Attachments: Site Grading and Layout Plan  
Appendix A – Limitations  
Appendix B – Existing Conditions Shoring Suite Analysis  
Appendix C – Proposed Conditions Shoring Suite Analysis



## **SITE GRADING AND LAYOUT PLAN**

**BLOCK No. 150**  
TOTAL AREA = 1.3771 ACRES  
"R-5" ZONING DISTRICT



<b>GENERAL NOTES:</b>		
1.	Boundary information, existing features, and topography were taken from a survey entitled "Topographic Survey Depicting 68-70 Seaview Avenue in Stamford, Connecticut, Prepared for Seaview House, LLC" revised October 13, 2022, as prepared by D'Andrea Surveying & Engineering, P.C. as depicted on FIRM Community Panel 09001C0517G, published by FEMA, effective date July 8, 2013.	
2.	The subject property lies within a Flood Hazard Zone "X", "AE(EL 14)", and "VE (EL 15)", as depicted on FIRM Community Panel 09001C0517G, published by FEMA, effective date July 8, 2013.	
3.	Elevations shown are based on the North American Vertical Datum of 1988 (NAVD 88). The contractor shall coordinate the transfer of a control benchmark into the working area, after site preparation is complete, by a licensed surveyor.	
4.	The information given on this plan in respect to the location of subsurface structures and utilities indicates only that the structures and utilities exist and no responsibility is assumed by the engineer for the accuracy of the locations shown. Utility information is not guaranteed complete or accurate.	
5.	In accordance with Connecticut Public Act 87-71 and Connecticut General Statutes Sections 16-343 through 16-353, the owner or the contractor shall be required to verify the depth and location of all utilities prior to commencing construction, and shall contact "Call Before You Dig, Inc." at 1-800-922-4455, 48 hours prior to commencing construction for mark out of underground utilities.	
6.	This site is served by the City of Stamford sanitary sewer system.	
7.	This site is served by the Aquarion Water Company, natural gas, and underground electric and telecom services.	
8.	The contractor shall be responsible for securing all required permits from the City of Stamford for completion of the project.	
9.	All construction shall comply with applicable sections of the State of Connecticut, Local, and International Building Codes, and those criteria shall take precedent over these plans. Refer to Sheets 5 and 6 of 7 for construction notes and details.	
10.	Upon completion of construction and prior to the issuance of a Certificate of Occupancy, an "As-Built" map and certification letter shall be prepared by a professional engineer and land surveyor and submitted to the Engineering Bureau for review and approval for the purpose of confirming that construction was completed substantially in compliance with the approved plans as amended from time to time.	
11.	Roof drains from the existing building shall be tied into the new storm drainage system. Final locations of the roof drain connections shall be coordinated between the architect, the MEP, the site engineer, and the contractor.	
12.	All existing building material, hardscapes, and miscellaneous debris designated to be removed shall be removed from the site and disposed of legally.	
13.	Refer to Sheet 2 of 7 for a depiction and description of all proposed storm drainage, sanitary sewer, and utility installations and connections.	
14.	Refer to Sheet 4 of 7 for sedimentation and erosion control notes and details and general construction staging notes.	
15.	Refer to Sheet 5 of 7 for City of Stamford Standard Notes.	
16.	The proposed building renovations shall be designed by an architect and a building permit shall be obtained prior to commencing construction.	
17.	Refer to Architectural Plans as prepared by Minno Wasko Architects and Planners.	
18.	Refer to Landscape Architectural plans as prepared by Eric Rains Landscape Architecture for final design of proposed hardscapes, lighting, landscaping, and fencing.	
19.	All utility relocations and installations shall be coordinated with each respective utility company prior to construction. Coordinate all utility installation and connection specifications with each respective utility company.	
20.	A "Street Opening Permit" must be obtained prior to any construction activity in the City of Stamford right-of-way. All construction within the right-of-way shall be coordinated with the City of Stamford Engineering Bureau.	
21.	The Contractor shall be responsible for coordinating and maintaining traffic flow on adjoining roadways throughout the project.	
22.	Refer to the Cover Sheet for standard flood zone notes.	

<b>LEGEND</b>		
---	EXISTING CONTOUR	
x 30.0	EXISTING SPOT ELEVATION	
x T=30.0	EXISTING TOP/BOTTOM SPOT ELEVATION	
---	PROPOSED CONTOUR	
x 30.0	PROPOSED SPOT ELEVATION	
x T=30.0	PROPOSED TOP/BOTTOM SPOT ELEVATION	
---	DECIDUOUS TREE	
---	CONIFEROUS TREE	
---	TREE TO BE REMOVED	
---	SIGN	
---	UTILITY POLE	
---	GAS GATE	
---	WATER GATE	
---	HYDRANT	
---	CLEANOUT	
---	OVERHEAD SERVICE WIRES	
---	CATCH BASIN	
---	ELECTRIC MANHOLE	
---	JUNCTION BOX	
---	STORM DRAIN MANHOLE	
---	SANITARY SEWER MANHOLE	
---	STORMWATER TREATMENT SYSTEM	
---	CORRUGATED METAL PIPE	
---	CORRUGATED PLASTIC PIPE	
---	POLYVINYL CHLORIDE	
---	REINFORCED CONCRETE PIPE	
---	AS ORDERED BY ENGINEER	
---	VERIFY IN FIELD	
---	TOP OF WALL	
---	UNDERGROUND UTILITY SERVICE:	
---	C=CABLE, E=ELECTRIC, F= FIRE,	
---	G=GAS, T=TELECOM, W=WATER	
---	PROPERTY LINE	
---	PROPOSED PARKING SPACE	
---	PROPOSED LIGHT	

<b>COASTAL RESOURCES:</b>		
<b>COASTAL AREA MANAGEMENT PROGRAM</b>		
<b>CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION</b>		
D = DEVELOPED SHOREFRONT		
EM = ESTUARINE EMBAYMENT		
C = COSTAL FLOOD HAZARD AREA		
S = SHORELANDS		
COASTAL RESOURCES AS DEFINED IN SECTION 22b-93(7) OF THE CONNECTICUT GENERAL STATUTES		
<b>SOURCE OF RESOURCE IDENTIFICATION:</b>		
• MAP ENTITLED "COASTAL RESOURCES" DATED 1979, PREPARED BY COASTAL AREA MANAGEMENT PROGRAM, CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION		
• MAP ENTITLED "SHELLFISH CONCENTRATION AREAS" DATED 1979, PREPARED BY COASTAL AREA MANAGEMENT PROGRAM, CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION		
• ON-SITE FIELD INSPECTION		

<b>D'ANDREA SURVEYING &amp; ENGINEERING, P.C.</b>		
• LAND PLANNERS		
• ENGINEERS		
• SURVEYORS		
P.O. BOX 549	6 NEIL LANE	
RIVERSIDE, CT 06878	TEL. 637-1779	

<b>PROJECT</b>		<b>DELAMAR RESIDENCES</b>
<b>PREPARED FOR</b>		<b>SEAVIEW HOUSE, LLC</b>
<b>LOCATION</b>		<b>68-70 SEAVIEW AVENUE STAMFORD, CONNECTICUT</b>
<b>1 OF 7</b>		<b>SITE GRADING AND LAYOUT PLAN</b>

REV.	DATE	DESCRIPTION
2	10-13-22	ZONING RESUBMISSION/FPB & ENGINEERING COMMENTS
1	8-31-22	ELIMINATE UPPER LEVEL REMOVAL
0	5-20-22	ZONING SUBMISSION
REV.	DATE	DESCRIPTION
	DEREK E. DAUNAIS, CT PE No. 22861	10-13-22
	ENGINEER	
ONLY COPIES OF THIS MAP, BEARING AN ORIGINAL IMPRINT OF THE ENGINEER'S EMBOSSED SEAL SHALL BE CONSIDERED TO BE TRUE, VALID COPIES.		



## **APPENDIX A LIMITATIONS**



## USE OF REPORT

1. GZA GeoEnvironmental, Inc. (GZA) prepared this report on behalf of, and for the exclusive use of our Client for the stated purpose(s) and location(s) identified in the Proposal for Services and/or Report. Use of this report, in whole or in part, at other locations, or for other purposes, may lead to inappropriate conclusions; and we do not accept any responsibility for the consequences of such use(s). Further, reliance by any party not expressly identified in the contract documents, for any use, without our prior written permission, shall be at that party's sole risk, and without any liability to GZA.

## STANDARD OF CARE

2. GZA's findings and conclusions are based on the work conducted as part of the Scope of Services set forth in Proposal for Services and/or Report, and reflect our professional judgment. These findings and conclusions must be considered not as scientific or engineering certainties, but rather as our professional opinions concerning the limited data gathered during the course of our work. If conditions other than those described in this report are found at the subject location(s), or the design has been altered in any way, GZA shall be so notified and afforded the opportunity to revise the report, as appropriate, to reflect the unanticipated changed conditions.
3. GZA's services were performed using the degree of skill and care ordinarily exercised by qualified professionals performing the same type of services, at the same time, under similar conditions, at the same or a similar property. No warranty, express or implied, is made.
4. In conducting our work, GZA relied upon certain information made available by public agencies, Client and/or others. GZA did not attempt to independently verify the accuracy or completeness of that information. Inconsistencies in this information which we have noted, if any, are discussed in the Report.

## SUBSURFACE CONDITIONS

5. The generalized soil profile(s) provided in our Report are based on widely-spaced subsurface explorations and are intended only to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized, and were based on our assessment of subsurface conditions. The composition of strata, and the transitions between strata, may be more variable and more complex than indicated. For more specific information on soil conditions at a specific location refer to the exploration logs. The nature and extent of variations between these explorations may not become evident until further exploration or construction. If variations or other latent conditions then become evident, it will be necessary to reevaluate the conclusions and recommendations of this report.
6. In preparing this report, GZA relied on certain information provided by the Client, state and local officials, and other parties referenced therein which were made available to GZA at the time of our evaluation. GZA did not attempt to independently verify the accuracy or completeness of all information reviewed or received during the course of this evaluation.
7. Water level readings have been made in test holes (as described in this Report) and monitoring wells at the specified times and under the stated conditions. These data have been reviewed and interpretations have been made in this Report. Fluctuations in the level of the groundwater however occur due to temporal or spatial variations in areal recharge rates, soil heterogeneities, the presence of subsurface utilities, and/or natural or artificially induced perturbations. The water table encountered in the course of the work may differ from that indicated in the Report.
8. GZA's services did not include an assessment of the presence of oil or hazardous materials at the property. Consequently, we did not consider the potential impacts (if any) that contaminants in soil or groundwater may have on construction activities, or the use of structures on the property.



9. Recommendations for foundation drainage, waterproofing, and moisture control address the conventional geotechnical engineering aspects of seepage control. These recommendations may not preclude an environment that allows the infestation of mold or other biological pollutants.

#### **COMPLIANCE WITH CODES AND REGULATIONS**

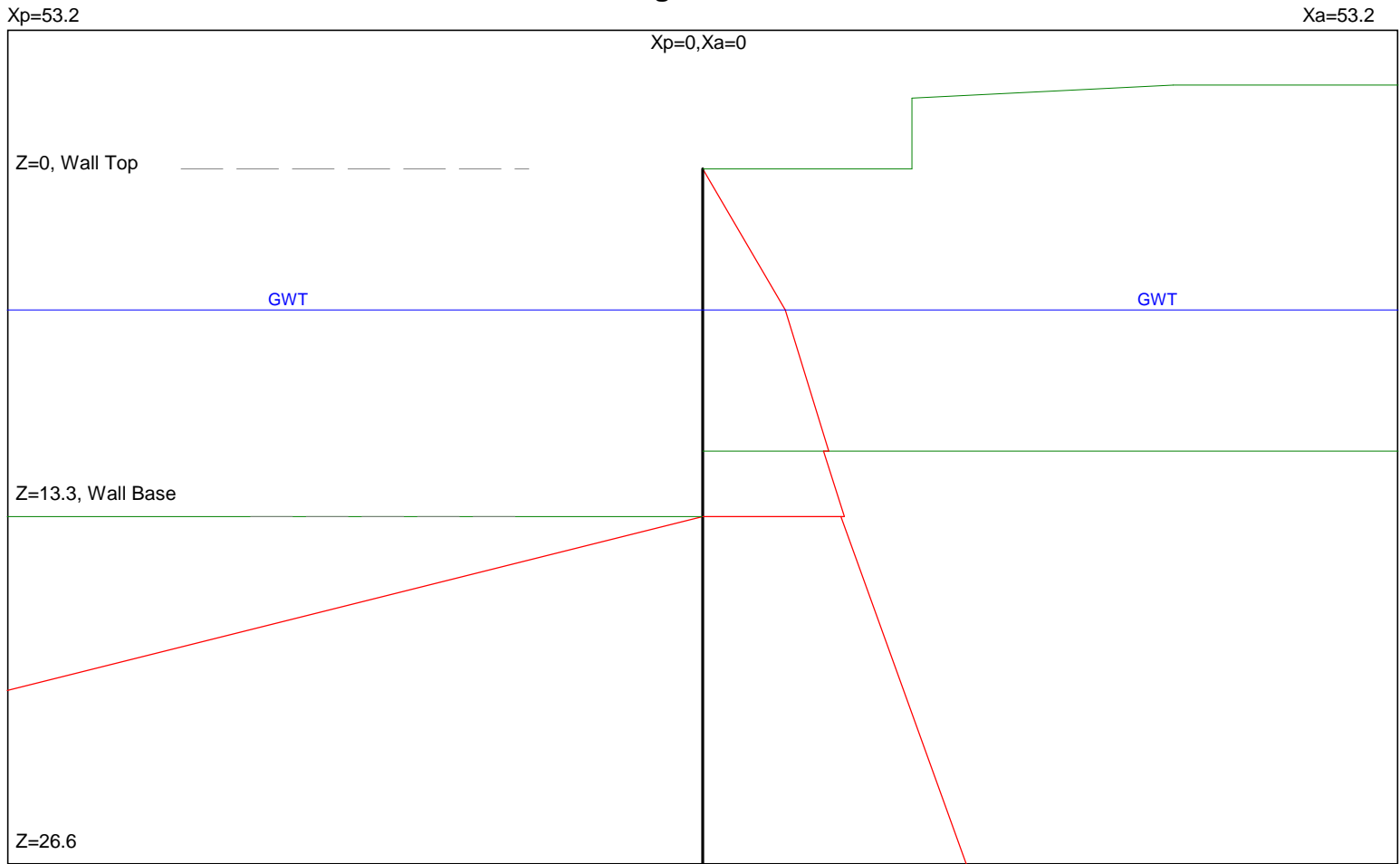
10. We used reasonable care in identifying and interpreting applicable codes and regulations. These codes and regulations are subject to various, and possibly contradictory, interpretations. Compliance with codes and regulations by other parties is beyond our control.



**APPENDIX B**  
**EXISTING CONDITIONS SHORING SUITE ANALYSIS**

# Delamar Residences, Stamford, CT

## Existing Conditions



<EarthPres> CIVILTECH SOFTWARE www.civiltech.com \* Licensed to 4324324234 3424343

UNITS: DEPTH/DISTANCE: ft, UNIT WEIGHT: pcf, FORCE: kip/ft, PRESSURE: ksf, SLOPE: kcf

Date: 11/29/2022

File: C:\Users\jon.jagello\Desktop\Delamar Residences - J Davis\Existing Conditions.ep8

### \* INPUT DATA \*

Wall Height=13.3 Total Soil Types= 2

Soil No.	Weight	Saturate	Phi	Cohesion	Nspt	Type	Description
1	110.0	120.0	33.00	0.0	0	4	Sand
2	115.0	125.0	34.00	0.0	0	4	Sand

Ground Surface at Active Side:

Line	Z1	Xa1	Z2	Xa2	Soil No.	Description
1	0.0	0.0	0.0	16.0	1	Sand
2	0.0	16.0	-2.7	16.0	1	Sand
3	-2.7	16.0	-3.2	36.0	1	Sand
4	-3.2	36.0	-3.2	800.0	1	Sand
5	10.8	0.0	10.8	800.0	2	Sand

Water Table at Active Side:

Point	Z-water	X-water
1	5.4	0.0
2	5.4	800.0

Ground Surface at Passive Side:

Line	Z1	Xp1	Z2	Xp2	Soil No.	Description
1	13.3	0.0	13.3	800.0	2	Sand

Water Table at Passive Side:

Point	Z-water	X-water
1	5.4	0.0
2	5.4	800.0

Wall Friction Options: 1.\* No wall friction

Wall Batter Angle = 0

Apparent Pressure Conversion: 1.\* Default (Terzaghi and Peck)\*

Water Density = 62.4

Water Pressure: 2. Seepage at wall tip

### **\* OUTPUT RESULTS \***

Total Force above Base= 2.36 per one linear foot (or meter) width along wall height

Total Static Force above Base= 2.36

Driving Pressure above Base - Output to Shoring - Multiplier of Pressure = 1

Z1	Pa1	Z2	Pa2	Slope	Coef.
0.00	0.00	5.40	0.18	0.0324	0.2947
5.40	0.18	10.80	0.27	0.0170	0.2947
10.80	0.26	13.30	0.30	0.0177	0.2827

Driving Pressure below Base - Output to Shoring - Multiplier of Pressure = 1

Z1	Pa1	Z2	Pa2	Slope	Ka or Ko
13.30	0.29	26.60	0.56	0.0200	0.3197

Passive Pressure below Base - Output to Shoring - Multiplier of Pressure = 1

Z1	Pp1	Z2	Pp2	Slope	Kp
13.30	0.00	26.60	2.94	0.221	3.5371

UNITS: DEPTH/DISTANCE: ft, UNIT WEIGHT: pcf, FORCE: kip/ft, PRESSURE: ksf, SLOPE: kcf

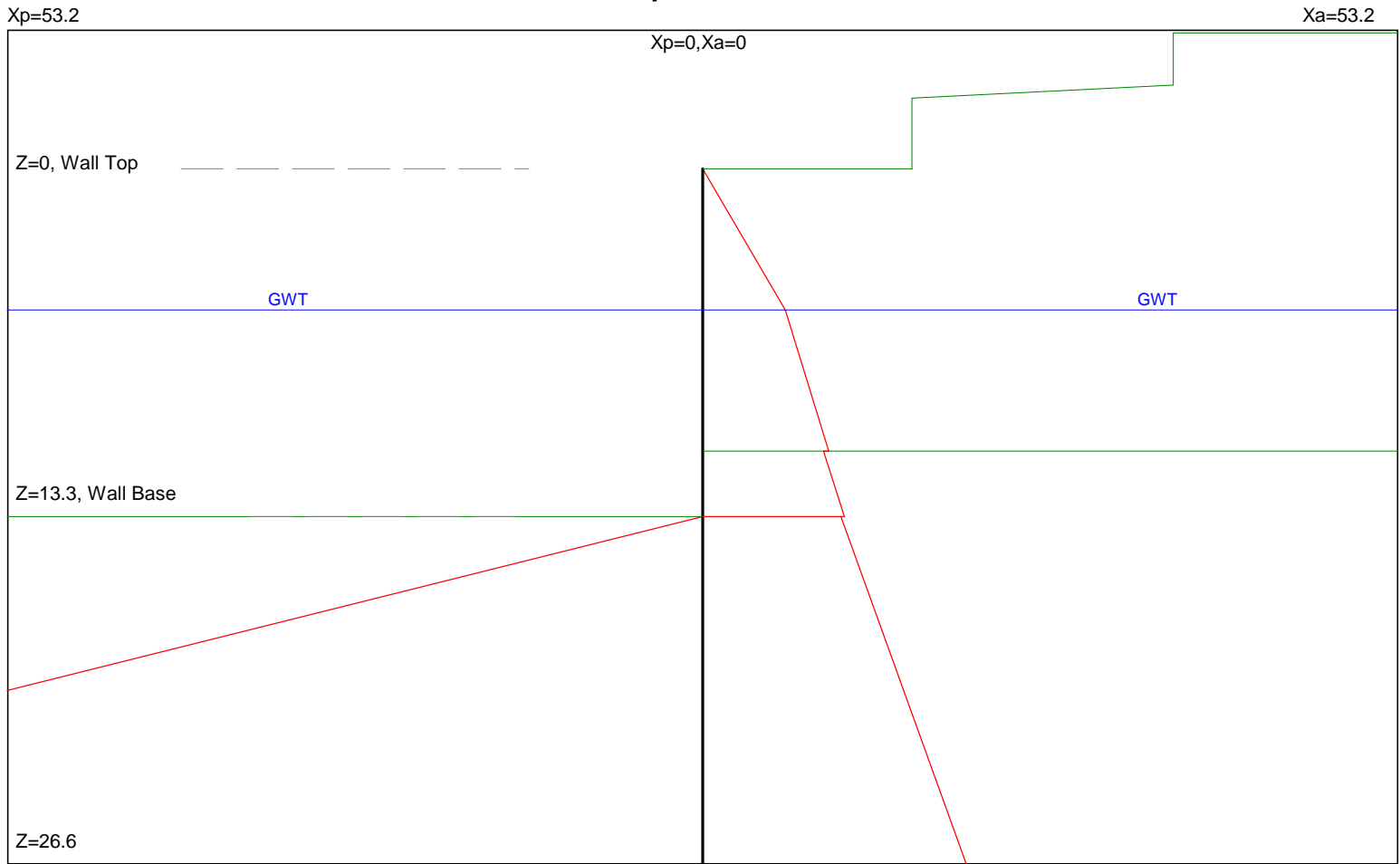
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**APPENDIX C**  
**PROPOSED CONDITIONS SHORING SUITE ANALYSIS W/ RETAINING WALL**

# Delamar Residences, Stamford, CT

## Proposed Fill



<EarthPres> CIVILTECH SOFTWARE www.civiltech.com \* Licensed to 4324324234 3424343

UNITS: DEPTH/DISTANCE: ft, UNIT WEIGHT: pcf, FORCE: kip/ft, PRESSURE: ksf, SLOPE: kcf

Date: 11/29/2022

File: C:\Users\jon.jagello\Desktop\Delamar Residences - J Davis\Proposed Fill.ep8

### \* INPUT DATA \*

Wall Height=13.3 Total Soil Types= 2

Soil No.	Weight	Saturate	Phi	Cohesion	Nspt	Type	Description
1	110.0	120.0	33.00	0.0	0	4	Sand
2	115.0	125.0	34.00	0.0	0	4	Sand

Ground Surface at Active Side:

Line	Z1	Xa1	Z2	Xa2	Soil No.	Description
1	0.0	0.0	0.0	16.0	1	Sand
2	0.0	16.0	-2.7	16.0	1	Sand
3	-2.7	16.0	-3.2	36.0	1	Sand
4	-3.2	36.0	-5.2	36.0	1	Sand
5	-5.2	36.0	-5.2	800.0	1	Sand
6	10.8	0.0	10.8	800.0	2	Sand

Water Table at Active Side:

Point	Z-water	X-water
1	5.4	0.0
2	5.4	800.0

Ground Surface at Passive Side:

Line	Z1	Xp1	Z2	Xp2	Soil No.	Description
1	13.3	0.0	13.3	800.0	2	Sand

Water Table at Passive Side:

Point	Z-water	X-water
1	5.4	0.0
2	5.4	800.0

Wall Friction Options: 1.\* No wall friction

Wall Batter Angle = 0

Apparent Pressure Conversion: 1.\* Default (Terzaghi and Peck)\*

Water Density = 62.4

Water Pressure: 2. Seepage at wall tip

### **\* OUTPUT RESULTS \***

Total Force above Base= 2.36 per one linear foot (or meter) width along wall height

Total Static Force above Base= 2.36

Driving Pressure above Base - Output to Shoring - Multiplier of Pressure = 1

Z1	Pa1	Z2	Pa2	Slope	Coef.
0.00	0.00	5.40	0.18	0.0324	0.2947
5.40	0.18	10.80	0.27	0.0170	0.2947
10.80	0.26	13.30	0.30	0.0177	0.2827

Driving Pressure below Base - Output to Shoring - Multiplier of Pressure = 1

Z1	Pa1	Z2	Pa2	Slope	Ka or Ko
13.30	0.29	26.60	0.56	0.0200	0.3197

Passive Pressure below Base - Output to Shoring - Multiplier of Pressure = 1

Z1	Pp1	Z2	Pp2	Slope	Kp
13.30	0.00	26.60	2.94	0.221	3.5371

UNITS: DEPTH/DISTANCE: ft, UNIT WEIGHT: pcf, FORCE: kip/ft, PRESSURE: ksf, SLOPE: kcf

Date: 11/29/2022 File Name: C:\Users\jon.jagello\Desktop\Delamar Residences - J Davis\Proposed Fill.ep8