# Regular Meeting of the Abatement Appeals Board December 17, 2025

Agenda Item C1
Appellant Statement

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#### Sent via Email Only

Abatement Appeals Board of the City and County of San Francisco 49 South Van Ness Avenue, Suite 400 San Francisco, CA 94103

Appellant's Statement
Appeal to the Abatement Appeals Board
Order No. 202424763A

#### I. Introduction

The Order of Abatement and Assessment of Costs should be reversed because Appellant, Mark Lauden Crosley Family Trust ("Appellant"), owner of 4757 19<sup>th</sup> Street, San Francisco, CA 94114, has no duty to maintain and repair his neighbor's retaining wall, built to support fill brought in to alter the natural grade and create an elevated flat yard for his neighbor. The law is clear that the party that altered the natural grade and caused the need for the wall is the party that should maintain the wall, even if the wall encroaches over the property line. As discussed below, 46 Eagle is clearly the party that altered the natural grade by bringing in fill, and the wall (which is a part of a system of three walls built to support the elevated yard of 46 Eagle) is its owner's responsibility to maintain.

The City originally, and correctly, issued an NOV to the owner of 46 Eagle Street, Scott Guerin, as the owner of the retaining wall in question in 2021, reference NOV 202172279. However, through a series of misleading actions and misstatements of law, the City was convinced to issue an NOV to the Appellant in 2024. This manipulation of the City should not stand. Though the City may be tempted to go forward with the NOV against Appellant and let the neighbors fight over liability in civil court, this would be a wrong and inequitable result.

Mr. Guerin of 46 Eagle should, in equity, take responsibility for fixing the wall, as such fix directly affects the integrity of 46 Eagle's yard, other walls, and foundation. The wall has little effect on Appellant's property, and Appellant would be fine if the wall was taken out and the land returned to its natural grade. Because Mr. Guerin has the most at stake in fixing the wall, in equity, he should be made responsible for fixing the wall, or removing the wall (and fill).

#### II. Background

Appellant purchased his home at 4757 19<sup>th</sup> Street in 1989, and has lived there for the last 36 years. The retaining wall at the back of his property, which marks the beginning of his neighbor's yard, was already an old wall in 1989. The wall was likely built at the same time as the home on 46 Eagle Street, in the 1920s, around fill that was brought in at the time of construction to elevate and level 46 Eagle's back yard.

Scott Guerin, owner of 46 Eagle, purchased his property in November 2020. At the time, it was an open and obvious condition that the wall supporting 46 Eagle's back yard needed to be repaired,

and such condition was likely factored into the purchase price of the property. Mr. Guerin initially communicated to his neighbors that the wall was his, and only his responsibility.

In 2021, the City issued NOV 202172279 to Mr. Guerin of 46 Eagle, for the wall defects.

Mr. Guerin hired SFT Construction to address the issue. The resulting April 2022 report obtained by SFT Construction indicated that fill had been brought in to elevate 46 Eagle's back yard. This geotechnical report admits that the fill brought in to 46 Eagle's yard has settled and creeped, placing pressure on the insufficient retaining wall built to contain the fill: "Based on our observations it is likely that fill materials were not placed and compacted according to accepted modern standards. Improperly placed fill soils will settle and creep especially if loads are applied directly to them from shallow foundations (such as footings or slabs)." See Geotechnical Report, attached as Exhibit A. The Geotechnical Report is for 46 Eagle, and is called "Guerin Residence Wall," illustrating that as of April of 2022, Mr. Guerin admitted that the wall was his.

Unknown to Appellant, this same contractor, SFT Construction, pulled a building permit<sup>1</sup> in 2022 to repair the wall <u>using Appellant's address</u>, despite the fact that he was working for Mr. Guerin. The permit described the project as "RETAINING WALL REPLACEMENT OF UPHILL SOUTH NEIGHBOR 46 EAGLE ST. REF 202211156523. SHARED FOUNDATION SYSTEM-CONCRETE RETAINING WALL, GRADE BEAM, DRILLED PIERS." Appellant never saw this permit, and from the description of "shared foundation system-concrete retaining wall", believes that the contractor was planning to repair both the wall and possibly the other two walls surrounding 46 Eagle, and/or that the replacement wall was engineered to support the existing foundation of the home at 46 Eagle. This permit lapsed in 2023 and was cancelled in June of 2024. Appellant is informed that the City was led to believe that Appellant was the one who pulled the building permit that then lapsed. This is not true. Appellant has never met Mr. Torabian, did not hire him, and did not authorize him to pull a permit.

Upon information and belief, Mr. Guerin let the building permit lapse because the estimates he received for the work on this "shared foundation system-concrete retaining wall" were so high. Around this time, Mr. Guerin began to approach his neighbors, telling them that they were equally responsible for the costs to repair his walls. Appellant objected. Upon information and belief, Mr.

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<sup>&</sup>lt;sup>1</sup> Permit PA 202211287199, pulled by Guerin's contractor, Farzad Torabian of the SFT Construction Corp (License # 1009086, 322 6<sup>th</sup> St., San Francisco, CA 94103-0000, phone # 415-707-1046)

Guerin also began a campaign with the City to convince it that he was not responsible for the wall, and approached the City with a 2021 survey of his property that purported to show that part of the wall crossed from Mr. Guerin's property onto appellant's property. On information and belief, the City, convinced by this evidence (and a faulty principle of law repeated to Appellant that the downhill neighbor is always responsible for maintaining a retaining wall), issued NOV 20242476.

- III. Legally, 46 Eagle is Responsible to Maintain and Repair the Wall
- A. The Party Whose Actions Required Construction of the Wall is Liable for Maintenance of the Wall Here, that is the Uphill Neighbor Who Brought in Fill

The common law rule regarding retaining wall maintenance and repair is that the party whose actions required construction of the wall by altering its natural state is liable for the maintenance of the wall. *Puckett v. Sullivan* (1961) 190 Cal.App.2d 489, 493 (landowner not entitled to lateral support of altered land) (see also 1 Am.Jur.2d Adjoining Landowners § 40). If such work was negligently done by a previous owner, the current owner remains liable for maintenance and repair. *Philadelphia Indemnity Insurance Company v. Lakeside Heights Homeowners Association* (N.D. Cal. 2015) 110 F.Supp.3d 965, 976. Here, Mr. Guerin's own Geotechnical Report proves that bringing in fill to 46 Eagle's yard necessitated the creation of the wall, and that said fill was not properly compacted leading to the settling and creep, and therefore the owner of 46 Eagle remains responsible for maintenance and repair of the wall.

Appellant is informed and believes that the City contends that, as the downhill neighbor, Appellant is responsible for ensuring that his neighbor's land does not fall onto his own. This is legally false. While it is true that it is most often the case that retaining walls are necessitated by the downhill neighbor's excavation, in which case the downhill neighbor becomes liable for building and maintaining the wall, *here the situation is the opposite*. Because the uphill property, 46 Eagle, brought the fill to elevate its yard, the owner of 46 Eagle is responsible for providing his own lateral support. Land that is not in its natural state is not entitled to lateral support from neighboring land. Guerin is responsible for the retaining wall, as his predecessor's actions necessitated its creation.

It is **not** the case that 4757 19<sup>th</sup> Street ever excavated below the natural grade, thereby undermining the support of 46 Eagle Street. As the drawing attached as <u>Exhibit B</u> shows, 4757 19<sup>th</sup> Street's yard is still close to or slightly above the natural grade. Therefore, legally, 46 Eagle Street is

responsible for providing support for its own artificially elevated back yard, and ensuring the fill they brought in does not collapse onto Appellant's property.

#### B. The Surveys are Irrelevant to the Issue of Liability for the Wall

The owner of 46 Eagle, instead of fixing the wall in response to the 2021 NOV, attempted to shift responsibility onto Appellant by providing a faulty survey to the City. See 2021 Survey, attached as Exhibit C. Appellant then commissioned their own survey, which conflicts in that it shows a smaller portion of the wall crosses over onto Appellant's property. See 2025 Survey, attached as Exhibit D. However, the City need not determine which survey is accurate. The location of the wall only matters if the wall was not required to be built because of altered natural grade, which is not the case here. The rule that the party whose acts altered the natural grade and necessitated creation of the wall retains responsibility to maintain the wall holds even where the wall encroaches onto another property. Because 46 Eagle is the property that altered the natural grade, even if there is a slight encroachment onto the neighbor's land of the wall created to support that alteration, the owner of 46 Eagle remains liable for the maintenance of the entirety of the structure created to support his artificially elevated yard. The City should not have changed its position regarding which party was responsible for wall repair based on Mr. Guerin's arguments and the survey. Appellant cannot and should not be held responsible for maintaining a structure was created to support his neighbor's alteration of the natural grade, even though a small sliver of part of the wall illegally encroaches onto his property.

## IV. Equitably, the Owner of 46 Eagle Should Repair the Wall to Maintain the Integrity of His Other Walls and Foundation, As Reflected in the Initial Building Permit

The City is attempting to force Appellant to remedy the problematic wall -- of which >95% is on the properties of 46 Eagle Street and 50 Eagle Street and was constructed because of their raised elevations above natural grade -- without any direction as to how the City expects him to do so, then sort out financial responsibility for such in a civil suit between the parties. This is impossible, as Appellant is retired, living on Social Security, and cannot afford to front the costs to fix the retaining wall, which is not even his responsibility.

<sup>&</sup>lt;sup>2</sup> While the City need not make a decision regarding the accuracy of the surveys to determine this issue, Appellants note that 46 Eagle's surveyor never accessed Appellant's property to conduct this survey, and the survey has multiple flaws, including measuring the location of the wall at its top, not its base, and this is significant given the significant lean of the wall. The wall is also clearly the wrong shape on this survey.

The rule of law – that the party responsible for the need to create the retaining wall also must maintain it – follows the equity here. Mr. Guerin should fix the wall, because he needs it to support his elevated flat yard (which was created by bringing in improperly compacted fill), and its integrity impacts his other walls and possibly foundation. Appellant does not need the wall, and would return the land to its natural grade.

If the City pursues the NOV issued to 46 Eagle, 46 Eagle will front the cost of fixing the wall and then seek recompense in a civil action, which Appellant believes would be denied. However, if the City pursues fixing the wall through Appellant's NOV, Appellant will have to be responsible for fixing the wall, front the cost of such, and, when fixing the wall, the owner of 46 Eagle will be trying to micromanage the process in order to protect the support for his elevated yard, other walls, and foundation. Appellant is not as well placed as Mr. Guerin to fix the wall and protect the other walls ringing 46 Eagle, or 46 Eagle's foundation.

# V. Appellant Should not be Held Responsible for Costs Incurred by the City in this Dispute, as it was his Neighbor Who has Actively Misled the City

The City has sent Appellant an Assessment of Costs for Code Violations Outstanding. They claim he owes the City \$4,245.23. Appellant requests that this be vacated, as the Code Violation is not his. It's his neighbor's, Mr. Guerin, who is the owner of 46 Eagle Street and the recipient of the initial 2021 NOV for the retaining wall which is obviously his and built to support his yard.

The City does not normally charge costs, but did so in this case because of the time spent on this matter. But that time is the result of Mr. Guerin's actions since his 2021 NOV, not Appellant's. Appellant did not receive a citation until 2024, and only after Mr. Guerin campaigned - with a faulty survey and a misleading building permit pulled at Appellant's address- for the City to wrongfully draw Appellant into this matter. Another uphill neighbor, Jim Conte of 50 Eagle, whose house rests on the West side of the 3-sided retaining wall, and who therefore stands to incur the most cost in fixing the faulty wall, has joined this campaign in order to spread the costs that should rightfully be incurred by him to his neighbors. Appellant should not be held responsible for this behavior, or the extra work it has cost the City.

Respectfully Submitted,

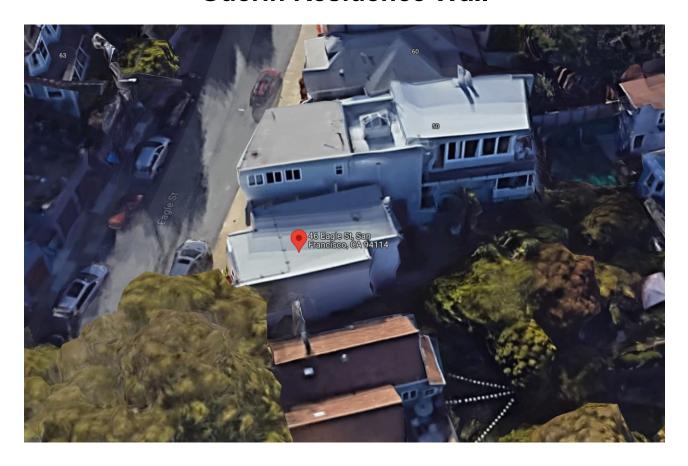
Elizabeth Brekhus, Appellant Mark Lauden Crosley Family Trust

# EXHIBIT A

# EXHIBIT A

Geotechnical & Geoenvironmental Consultants

# Geotechnical Investigation Guerin Residence Wall



46 Eagle Street, San Francisco, California



#### Geotechnical & Geoenvironme Consultants

April 6, 2022 Project No. 22111.001

Mr. Farzad Torabian SFT Construction 322 6<sup>th</sup> Street, Suite 4 San Francisco, CA 94103

RE: Geotechnical Investigation – 46 Eagle Street, San Francisco, CA

Dear Mr. Torabian:

In accordance with your authorization, Peters & Ross has completed a geotechnical investigation for the above referenced project. The accompanying report presents the results of our field investigation and engineering analyses. Based on this information, it is Peters & Ross' opinion that the site is suitable for the planned back replacement retaining wall and future house addition.

#### Peters & Ross should be retained:

- to review geotechnical aspects of project plans and specifications,
- to provide supplemental recommendations should significant changes in the planned replacement retaining wall and addition be made, and
- to provide geotechnical engineering observation and testing services during construction, in order to check that the recommendations presented in this report are properly implemented into the completed project.

We appreciate the opportunity to provide geotechnical engineering services to you. If you have any questions, please call.

Very truly yours, PETERS & ROSS

Peter K. Mundy, P.E., G.E. Geotechnical Engineer 2217

#### INTRODUCTION

This report presents the results of a geotechnical investigation performed by Peters & Ross for the proposed replacement rear retaining wall and future back addition at 46 Eagle Street in San Francisco, California. The location of the site is shown on the Site Vicinity Map (Figure 1). The ground surface topography near the site is shown on Figure 2.

#### **Project Description**

The site consists of a developed downslope 0.043-acre lot, located on the north side of Eagle Street. A two-story wood-frame house built in 1926 occupies the central portion of the lot. Current plans are to replace the back retaining wall. Future plans may include building a back addition.

#### **Scope of Services**

Peters & Ross scope of services for the project was presented in our proposal dated January 31, 2022. Our services on the project were limited to the following:

- Drilling three exploratory test borings
- Logging and obtaining samples of the materials encountered in the test borings
- Performing laboratory tests on selected samples
- Performing engineering analyses sufficient to develop conclusions and recommendations regarding:
  - 1. Site geology and seismicity
  - 2. Soil and groundwater conditions
  - 3. Site preparation, excavation, and grading
  - 4. The most appropriate foundation type(s) for the replacement retaining wall and possible addition
  - 5. Geotechnical design parameters for the recommended foundation type(s)
  - 6. Lateral earth pressures for retaining wall design
  - 7. Subgrade preparation for concrete slabs-on-grade
  - 8. Geotechnical aspects of site drainage
  - 9. Construction considerations
- Preparing this report.

#### FIELD EXPLORATION AND LABORATORY TESTING

Subsurface conditions were explored by drilling two exploratory test borings and one hand auger to a maximum depth of 11 feet using a portable hydraulic auger operated by DeNovo Drilling of Richmond, California on February 22, 2022. The locations of the test borings and hand auger are shown on the Site Plan (Figure 3). Samples of the materials

encountered in the borings were obtained at frequent depth intervals, for field classification and laboratory testing. A description of the drilling and sampling equipment used and other details of the subsurface exploration, as well as a log of the test borings, are presented in Appendix A. The laboratory tests performed are discussed in Appendix B.

#### SITE CONDITIONS

#### **Site Geology and Seismicity**

The site is located within the California Coast Ranges geomorphic province, which is dominated by northwest-trending faults and folds. Geologic mapping by the U.S. Geological Survey (Schlocker 1974) shows that the site is underlain by Quaternary age undivided surficial deposits consisting of poorly graded sand, clayey sand, and silty sand. Preliminary photointerpretive landslide maps by Schlocker (1974) and the State of California SHZR 43 (2000) show no landslides on the property.

Seismologists and geologists recognize the San Francisco Bay Area as an area of high seismic activity. Several major active fault systems are located near the site. These include the San Andreas Fault about 9 km to the southwest and the Hayward Fault about 21 km to the northeast. It is reasonable to assume that the site will be subjected to at least one moderate to severe earthquake that will cause strong groundshaking. Strong ground shaking from a major earthquake is a hazard that cannot be eliminated but the effects can be reduced by the observation of sound construction practices using the current seismic design codes.

#### **Subsurface Conditions**

Generally, 2 to 5.5 feet of clayey sand with concrete and masonry debris fill materials were encountered. In Borings B-1 and HA-1, 2.5 to 4.5 feet of dark brown sandy lean clay were encountered underneath the fill materials. A washed sieve test in Boring B-1 at a depth of 7.5 feet showed that the sandy lean clay had 59 percent passing the number 200 sieve. In Boring B-2 the dark brown sandy lean clay was not encountered. In both borings and the hand auger, 1 to 2.5 feet of reddish brown sandy lean clay (completely weathered bedrock) was encountered. Atterberg limits tests indicate that the reddish brown sandy lean clay in Boring B-2 at a depth of 7.5 feet has a liquid limit of 32 percent and a plasticity index of 15 percent with 67 percent passing the number 200 sieve which indicate a low expansion potential (expansive soils shrink and swell in response to moisture changes). The reddish brown sandy lean clay was underlain by chert bedrock which extended to the depths explored.

#### Groundwater

Groundwater was not encountered in any of the borings. The boreholes were backfilled with cuttings. It should be noted that fluctuations in the groundwater level may occur due

to variations in rainfall, temperature, and other factors not evident at the time the measurements were made.

#### CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the field investigation, laboratory testing, and engineering analyses, it is Peters & Ross' opinion that the site is suitable for the replacement site retaining wall and proposed addition from a geotechnical perspective. The primary geotechnical concern that needs to be addressed is the presence of existing fill. Specific recommendations for foundation design are presented below.

#### 1. Presence of Existing Fill

Peters & Ross found little to no information about the 1920s grading operations associated with the subject property. Based on our observations it is likely that fill materials were not placed and compacted according to accepted modern standards. Improperly placed fill soils will settle and creep especially if loads are applied directly to them from shallow foundations (such as footings or slabs). Therefore, we recommend that the planned replacement wall be supported on drilled pier foundations that extend through the fill and are embedded into the underlying chert bedrock.

#### 2. Seismic Concerns

In accordance with Section 1613 of the 2019 California Building Code, Peters & Ross classifies the site as a C Site Class and a Seismic Design Category of D, with a latitude of 37.758 degrees and a longitude of -122.443 degrees. The CBC parameters presented in the following table should be used for seismic design.

SITE CLASS B - PERIOD (sec)	0.2	1.0
SPECTRAL RESPONSE S <sub>S</sub> , S <sub>1</sub>	1.500	0.605
SITE COEFFICIENT Fa, Fv (SITE CLASS C)	1.2	1.4
MAXIMUM SPECTRAL RESPONSE $S_{MS}$ , $S_{M1}$	1.800	0.847
DESIGN SPECTRAL RESPONSE S <sub>DS</sub> , S <sub>DI</sub>	1.200	0.565
RISK COEFFICIENT C <sub>rs</sub> , C <sub>r1</sub>	0.912	0.894

The site is not within an Alquist-Priolo Earthquake Fault Zone, and therefore the risk of fault rupture at the site is remote. No loose, clean sands were observed in the exploratory test borings. Therefore, the risk of significant foundation settlement due to liquefaction or densification during a large magnitude earthquake is low.

#### 3. <u>Site Preparation, Excavation, and Grading</u>

#### 3.1 Clearing and Site Preparation

All structures, flatwork, foundations, and any trees or shrubs identified for demolition should be demolished and removed from the site. Holes resulting from the removal of

any obstructions that extend below the proposed finished grade should be cleared and backfilled with suitable material compacted to the requirements given below under <u>Compaction</u>. We recommend that the excavations to remove deleterious material be carried out under the observation of the soil engineer, so that these excavations will be properly backfilled.

#### 3.2 Subgrade Preparation

After the site has been properly cleared and stripped and any necessary excavations made, the exposed soils which will receive structural fill or slabs-on-grade should be scarified to a depth of 6 inches, moisture conditioned to slightly above optimum water content and compacted to the requirements for structural fill.

#### 3.3 Material for Fill

All on-site soils below the stripped layer having an organic content of less than 3 percent by volume are suitable for use as fill. Fill placed at the site, should not contain rocks or lumps larger than 6 inches in greatest dimension with not more than 15% larger than 2.5 inches. Import fill should be predominantly granular with a plasticity index of 12 or less.

#### 3.4 <u>Compaction</u>

All structural fill less than 5 feet thick should be compacted to at least 90% relative compaction as determined by ASTM Test Designation D 1557-latest edition. Structural fill or wall backfill greater than 5 feet high should be compacted to at least 95% relative compaction. Fill material should be first moisture conditioned to 3 percent above optimum moisture, then spread and compacted in lifts not exceeding 8 inches in uncompacted thickness. We should note that if construction proceeds during or immediately after the wet winter months, it may require time to dry the on-site soils to be used as fill, since their moisture content will probably be appreciably above optimum.

#### 3.5 Trench Backfill

Pipeline trenches should be backfilled with fill placed in lifts not exceeding 8 inches in uncompacted thickness. Backfill should be compacted to 90% relative compaction. If imported granular soil is used, sufficient water should be added during the trench backfilling operations to prevent the soil from "bulking" during compaction. All compaction operations should be performed by mechanical means only. We recommend against jetting unless the backfill material is granular (sand or gravel) and the water used in jetting is able to rapidly flow out of the trench.

#### 3.6 Drainage

Positive surface drainage should be provided adjacent to the residence/addition, and site wall so as to direct surface water away from the foundations into closed pipes that discharge to an approved drainage facility. Flexible drainpipe (flexline), 2000-pound

crush pipe, leach field, and ASTM F810 pipe are not recommended for use in the surface water drainage system because of the likelihood of damage to the pipe during installation due to the weak strength of these pipes. In addition, these drainpipes are sometimes difficult to clean with mechanical equipment without damaging the pipe. We recommend the use of Schedule 40 PVC, SDR 35 PVC or ABS, Contech A-2000 PVC drainpipe, or equivalent for the drain system. Ponding of surface water should not be allowed in any areas adjacent to the residence/addition or site wall. Concentrated flows of water should not be allowed across any slopes as erosion or weakening of surface soils could occur.

We also recommend that rainwater collected on the roofs of the residence/addition and in landscaped areas be transported through gutters, downspouts, and closed pipes that connect to suitable discharge facilities. We should note that suitable discharge facilities do not include so called "dry wells" and these should be avoided.

Some nominal maintenance of the drainage facilities should be expected after the initial construction has been completed. Should ownership of this property change hands, the new owner should be informed of the existence of this report, not adversely change the grading or drainage facilities, and understand the importance of maintaining proper surface drainage.

#### 4. Foundations

#### 4.1 Drilled Pier and Grade Beam Foundation System

Peters & Ross recommends that the replacement rear wall and proposed addition be supported on drilled, cast-in-place, straight-shaft piers. Drilled piers should be designed to develop their load carrying capacity through friction between the sides of the piers and the surrounding subsurface materials. Friction piers should have a minimum diameter of 16 inches, and there should be a minimum center-to-center spacing of at least 3 pier diameters between adjacent piers.

The piers should generally extend to a minimum depth of 10 feet below the bottom of the grade beam with at least 8 feet of embedment into the chert bedrock. Since chert bedrock was encountered at depths of 7.5 to 10.0 feet, the piers should generally extend to a minimum depth of about 15.5 to 18.0 feet below the bottom of the grade beam. Peters & Ross should observe the drilling of the piers to ensure that minimum embedment is achieved in the field.

To determine whether these depths are adequate to carry the structural loads of the residence, the following allowable skin friction values should be used. Starting at a depth of 3 feet use an allowable friction value of 500 pounds per square foot for dead plus live loads and 650 pounds per square foot for all loads, including wind or seismic. In bedrock use an allowable friction value of 800 pounds per square foot for dead plus live loads and 1100 pounds per square foot for all loads, including wind or seismic. Up to 2/3 of the allowable dead plus live load capacity can be used to resist uplift forces.

Lateral loads on the piers may be resisted by passive pressures acting against the sides of the piers. We recommend an allowable passive pressure equal to an equivalent fluid weighing 400 pounds per square foot per foot of depth to a maximum value of 4000 pounds per square foot. This value can be assumed to be acting against 2.0 times the diameter of the individual pier shafts starting at a depth of 3 feet.

The bottom of pier excavations should be reasonably free of loose cuttings and soil fall-in prior to installing reinforcing steel and placing concrete. It is our recommendation that the contractor be made aware of the subsurface conditions outlined in this report and that he obtain construction equipment appropriately sized to perform the recommended work. In particular, the piers must extend a minimum of 15.5 to 18.0 feet below the existing ground surface into hard chert bedrock. Where hard layers of bedrock are encountered, the contractor should use appropriate drilling techniques such as a core barrel to achieve the required depths. Any accumulated water in pier excavations should be removed prior to placing reinforcing steel and concrete, or the concrete should be tremied from the bottom of the hole.

#### 4.2 <u>Future Performance of Possible Addition</u>

Even well designed and constructed foundations typically experience small post-construction settlements. In a new structure, these small settlements usually do not cause noticeable building distress, such as sheetrock cracks, because adjacent portions of a new structure tend to settle relatively uniformly. When a new foundation is constructed adjacent to an older foundation, small settlements of the new foundation may cause some noticeable distress near the transition between the new and old foundations, since the older foundation does not experience significant new settlement. In some situations where the older foundations are experiencing ongoing movements due to expansive soils, fill settlement, and/or hillside creep and the new foundations are designed to resist these movements, building distress can occur at the transition between the older and newer portions of the structure due to ongoing movements of the older portion. The homeowner should anticipate some post-construction distress, particularly near these transition areas.

#### 5. Replacement Retaining Wall

Retaining wall foundations should be designed in accordance with the recommendations of the previous subsections. Retaining walls should be designed using soil pressures corresponding to an equivalent fluid weight of 35 pcf for level backfill, 45 pcf for backfill sloped at 3:1, and 60 pcf for backfill sloped at 2:1. These fluid weights should be increased by 20 pcf for restrained walls. For surcharge loads increase design pressures behind the wall by an additional uniform pressure equivalent to one-half (for restrained condition) or one-third (for unrestrained condition) of the maximum anticipated surcharge load applied to the surface behind the wall. For walls exceeding 6 feet use a seismic force of  $12H^2$  in pounds applied at 0.5H.

The above pressures assume that sufficient drainage will be provided behind the walls to prevent the build-up of hydrostatic pressures from surface and subsurface water

infiltration. Adequate drainage may be provided by a subdrain system consisting of a 4-inch, rigid, perforated pipe, bedded in <sup>3</sup>/<sub>4</sub> inch, clean, open graded rock. The recommended location of the subdrain pipe is behind the heel of the footing. Although we have observed that the subdrain pipe is often placed on top of the heel of the footing, it has been our experience that this may lead to moisture seeping through the wall resulting in dampness and staining on the opposite wall face despite the application of waterproofing. However, if such seepage or dampness is acceptable (in front of landscape walls, for example), then the subdrain pipe may be placed on top of the heel of the footing. To prevent ponding of water on top of the heel of the footing, we recommend that the top of the heel be sloped to drain away from the wall with a minimum positive gradient of 5 percent. The perforated drainpipe should slope to drain with a minimum positive gradient of 2 percent.

The entire rock/pipe unit should be wrapped in an approved, non-woven, polyester geotextile such as Mirafi 140N or 140NL, or a 4-ounce equivalent. The rock and fabric placed behind the wall should be at least one foot in width and should extend to within one foot of finished grade. The upper one foot of backfill (6 inches for walls less than 5 feet in height) should consist of on site, compacted, relatively impervious soils (an impermeable plug). Alternatively, the wrapped rock could be replaced with a MiraDrain system with appropriately selected waterproofing. The subdrain pipe should be connected to a system of closed pipes that lead to suitable discharge facilities.

We should note that flexible, perforated pipe (flexline), 2000 Pound Crush, Leachfield, and ASTM F810 pipe are not acceptable for use in the subdrain because of the likelihood of damage to the pipe during installation and the difficulty of future cleaning with mechanical equipment without damaging the pipe. We recommend the use of Schedule 40 PVC, SDR 35 PVC or ABS, Contech A-2000 PVC drainpipe, or equivalent for the drain system. The subdrain pipe should be connected to a system of closed pipes (non-perforated) that lead to suitable discharge facilities. At the location where the perforated subdrain pipe connects with the solid discharge drainpipe, drainrock backfill should be discontinued. A "clay plug" should be constructed out of relatively impervious soils to direct collected water into the perforated pipe and minimize the potential for water collecting around the solid drainpipe and saturating the adjacent soils. We recommend that waterproofing be applied to any proposed retaining walls where applicable. The specification of the type of waterproofing and the observation of its installation should be performed by the architect and/or structural engineer.

In addition, the "high" end and all 90 degree bends of the subdrain pipe should be connected to a riser which extends to the surface and acts as a cleanout. The number of cleanouts can be reduced by installing "sweep" 90-degree bends or pairs of 45-degree bends in succession instead of using "tight" 90-degree bends. "Sweep" 90-degree bends are similar to those used in sanitary sewer pipe connections.

#### 6. Exterior Concrete Slabs-on-Grade

We recommend that any slabs-on-grade be supported on a minimum of 9 inches of imported, compacted, non-expansive fill. The subgrade should be recompacted to at least 90 percent relative compaction at a moisture content of 3 percent above optimum. The subgrade should be kept moist until the slab is poured. In any slab area where minor floor wetness would be undesirable, at least 4 inches of <sup>3</sup>/<sub>4</sub> inch gravel should be placed over the prepared subgrade, to provide a capillary moisture break. A 10-mil thick vapor barrier blanketed with 2 inches of clean sand should be placed over the gravel. This can be used in lieu of the upper 6 inches of the non-expansive fill.

The slab should have a minimum thickness of 4-inches and should be reinforced with steel reinforcing bars rather than welded wire mesh. At a minimum, slab reinforcement should consist of No. 4 bars on 16-inch centers in both directions, placed at the center of the slab thickness. Spacers should be placed beneath the mesh of reinforcing bars, to maintain their positioning near the center of the slab during the concrete pour. Score joints should be provided at a maximum spacing of 10 feet in both directions. The slabs should be appropriately reinforced according to structural requirements; concentrated loads may require additional reinforcing.

Exterior slabs should be structurally independent from the perimeter grade beams or footings and be free floating. The use of free floating slabs for interior floors may result in damage to the proposed architectural finishes. Peters & Ross should be contacted if interior slabs are proposed.

#### 7. Plan Review and Geotechnical Engineering Services during Construction

Peters & Ross should review project plans, to check that the geotechnical engineering recommendations contained in this report are properly incorporated. Peters & Ross should provide geotechnical observation and testing services during construction, to check that geotechnical aspects of the work are completed in accordance with the plans. These services should include observing site excavations and grading, testing the compaction of fill, observing pier drilling and measuring pier depths, observing drainage, and checking retaining wall back drains. In addition, Peters & Ross should provide consultation regarding geotechnical concerns that arise during construction. Peters & Ross cannot accept responsibility for geotechnical aspects of construction that are not observed by its staff.

We will make every reasonable effort to accommodate the contractor's work schedule during construction, so that necessary observations and tests can be performed in a timely manner to avoid construction delays. However, since our field services are often required on several projects concurrently, we request that 48 hours advance notice be given for site visits, in order to minimize scheduling conflicts.

Guerin Residence Wall Project No. 22111.001

#### **LIMITATIONS**

Peters & Ross services consist of professional opinions and recommendations that are made in accordance with generally accepted geotechnical engineering principles and practices. The opinions and recommendations presented in this report are based on a site reconnaissance, review of published and unpublished geologic maps, two exploratory test borings and one hand auger, laboratory testing, engineering analyses, and a preliminary layout of the replacement retaining wall and proposed addition provided by Mr. Scott Guerin, owner. This warranty is in lieu of all other warranties either expressed or implied.

Subsurface conditions commonly vary significantly from those encountered at the test boring locations. Unanticipated, adverse soil conditions encountered during construction often require additional expenditures to achieve a properly constructed project. It is advised that a contingency fund be established to accommodate possible consulting and construction cost increases due to unanticipated conditions.

#### LIST OF FIGURES

Figure 1 Site Vicinity Map
Figure 2 Topographic Map
Site Plan

Figure 3 Site Plan

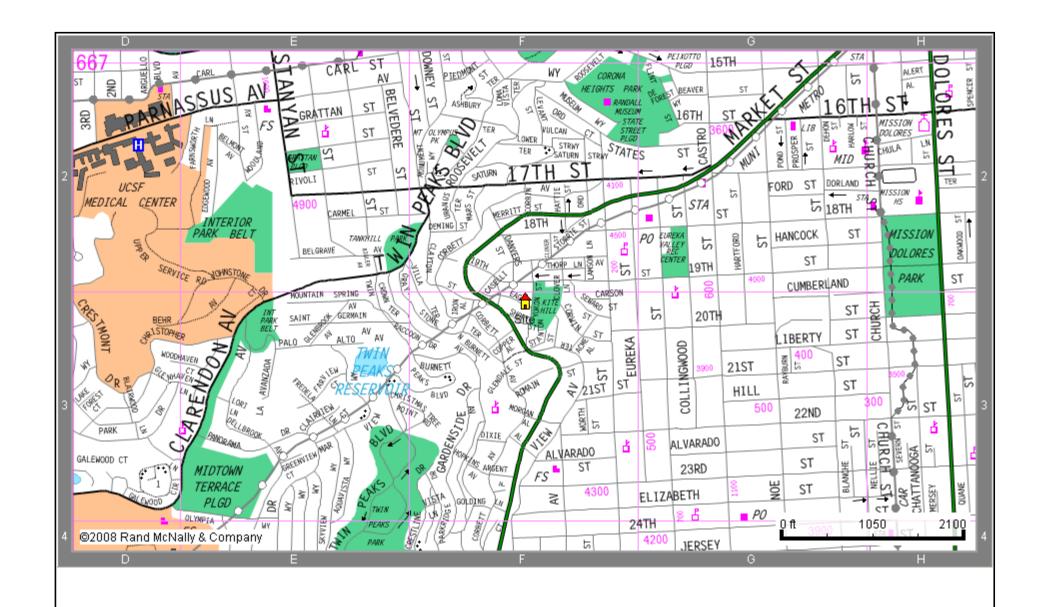
#### **APPENDICES**

Appendix A Field Investigation Appendix B Laboratory Testing

#### **DISTRIBUTION**

5 copies: Mr. Farzad Torabian

SFT Construction 322 6<sup>th</sup> Street, Suite 4 San Francisco, CA 94103

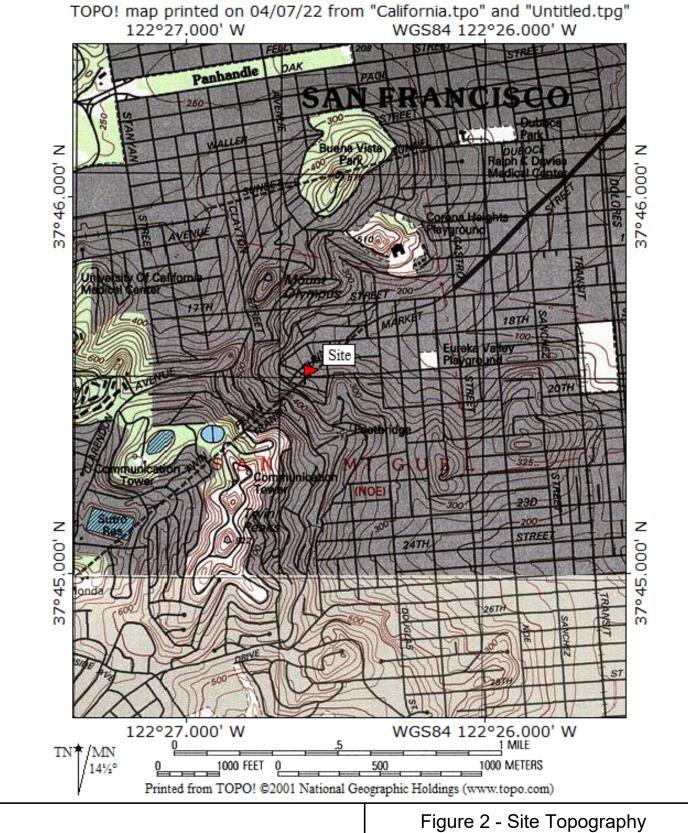


Geotechnical and Geoenvironmental Consultants 114 Hopeco Road Pleasant Hill, CA 94523 tel. (925) 942-3629 fax. (925) 665-1700 PetersRoss@aol.com

### Figure 1 - Site Vicinity Map

PROJECT No.					
22111.001					
DATE					
April 2022					

Guerin Residence Wall 46 Eagle Street San Francisco, California

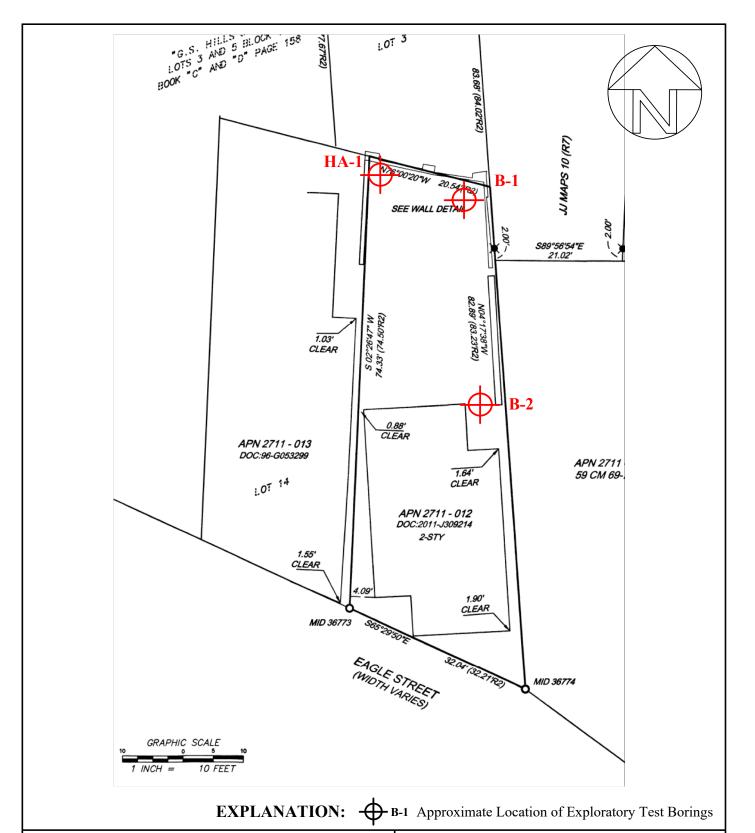


Geotechnical and Geoenvironmental Consultants

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PROJECT No.
22111.001
DATE
April 2022

Guerin Res. Wall 46 Eagle Street San Francisco, CA



Geotechnical and Geoenvironmental Consultants 114 Hopeco Road Pleasant Hill, CA 94523 tel. (925) 942-3629 fax. (925) 665-1700 PetersRoss@aol.com

### Figure 3 - Site Plan

PROJECT No.
22111.001
DATE
April 2022

Guerin Res. Wall 46 Eagle Street San Francisco, CA

#### APPENDIX A – FIELD INVESTIGATION

Peters & Ross explored subsurface conditions at the site by drilling two exploratory test borings and one hand auger to a maximum depth of 11 feet. The locations of the exploratory test borings are shown on the Site Plan.

The borings were drilled using a 3.5-inch-diameter portable hydraulic auger operated by DeNovo Drilling of Richmond, California. Our field engineer continuously logged the materials encountered. The boring logs show the materials encountered and are included in this Appendix. Soils are classified in accordance with the Unified Soil Classification System.

The boring logs indicates Peters & Ross interpretation of subsurface conditions encountered at the locations and times the borings were drilled and may not be representative of subsurface conditions at other locations and times. Stratification lines represent the approximate boundaries between soil and rock types. The transitions between soil and rock layers are often gradual.

Samples of the materials encountered were obtained at frequent depth intervals, for visual classification and laboratory testing. Samples were obtained using a Modified California sampler (outer diameter of 3.0 inches, inner diameter of 2.5 inches) with thin-wall brass sampler liners, and a Standard Penetration Test sampler (outer diameter of 2.0 inches, inner diameter of 1.375 inches). The samplers were driven using a 140-pound safety hammer lifted and dropped 30 inches using a rope and cathead system.

#### **Peters & Ross Geotechnical Services**

114 Hopeco Road, Pleasant Hill, CA 94523 925-942-3629 PetersRoss@aol.com

Page: 1 of 1

Project Name: Guerin Residence Wall

Location: 46 Eagle St., San Francisco, CA

Client: SFT Construction

Drilling Method: Portable Hydraulic Auger w/ 3.5" SFA

Elevation: 0

Date Drilled: 2/22/2022

Water Level: Not Encountered

Remarks: Samplers driven with 140 lb. safety hammer lifted and dropped 30 inches using a rope and cathead system.

ELEVATION	DESCRIPTION	SYMBOL	DEPTH (ft)	SAMPLE TYPE	BLOWS/FT.	MOISTURE (%)	DRY DENSITY (pcf)	UNCONFINED STRENGTH (tsf)	REMARKS
EI	C 10 5	S	<u> </u>	Š	B	Σ	2 5	i S	,
	Ground Surface  Sandy Lean CLAY (CL-FILL) brown, moist to wet, soft, some concrete and masonry debris, roots		-0 - -1 - -2						
			-3 - -4 -	SS	5	9			
	Sandy Lean CLAY (CL) dark brown, soft to stiff, roots, wet		-5 - -6						
	Sandy Lean CLAY (CL) reddish brown, some rock fragments, wet, stiff,			SS	3	17			-200 = 59 percent
	(completely weathered chert bedrock)		_ 9						
	Chert (Bedrock) reddish brown, fractured, weathered, moderate to hard hardness		- -10	SS	50 3"	15			
	End of Log		-11 - -12						Drilling Refusal
	Notes:		- -13						
	Penetration resistance values are not standard N values, th     Stratification lines represent the approximate boundaries be     Groundwater was not encountered during drilling and the be     SS = 2 inch OD Standard Pentration Test sampler without lines.	etween moring was	aterial ty	oes, the tr	ansitions		radual.	1 3	
		Į,	-15		j.				

#### **Peters & Ross Geotechnical Services**

114 Hopeco Road, Pleasant Hill, CA 94523 925-942-3629 PetersRoss@aol.com

Page: 1 of 1

Project Name: Guerin Residence Wall

Location: 46 Eagle St., San Francisco, CA

Client: SFT Construction

Drilling Method: Portable Hydraulic Auger w/ 3.5" SFA

Elevation: 0

Date Drilled: 2/22/2022

Water Level: Not Encountered

Remarks: Samplers driven with 140 lb. safety hammer lifted and dropped 30 inches using a rope and cathead system.

		-		ř				_	T-
ELEVATION	DESCRIPTION	SYMBOL	DEPTH (ft)	SAMPLE TYPE	BLOWS/FT.	MOISTURE (%)	DRY DENSITY (pcf)	UNCONFINED STRENGTH (tsf)	REMARKS
	Ground Surface		-0						
	Sandy Lean CLAY (CL-FILL) brown, moist to wet, soft, some concrete and masonry debris, roots		- -1 - -2						
			-3 - -4	SS	2	9			
:			— 5 —						
1	Sandy Lean CLAY (CL) reddish brown, some rock fragments, wet, stiff,								
	(completely weathered chert bedrock)		-6 - -7	SS	16	17			LL=32%, PI=15% -200 = 59 percent
	Chert (Bedrock) reddish brown, fractured, weathered, moderate to hard hardness		- -8 -						
			<b>-</b> 9	SS	50	1.5			
			_ `		6"	15		1010001	
	End of Log		-10						
			-11						
			12						
			— —13						
	Ē.				,				
	Notes:  1. Penetration resistance values are not standard N values, th 2. Stratification lines represent the approximate boundaries be 3. Groundwater was not encountered during drilling and the be 4. SS = 2 inch OD Standard Pentration Test sampler without I	etween moring was	aterial ty	pes, the ti	ransitions	e field. may be gi	radual.		
	-		-15						
		1			D.		L		L

#### **Peters & Ross Geotechnical Services**

114 Hopeco Road, Pleasant Hill, CA 94523 925-942-3629 PetersRoss@aol.com

Page: 1 of 1

Project Name: Guerin Residence Wall

Location: 46 Eagle St., San Francisco, CA

Client: SFT Construction

Drilling Method: Portable Hydraulic Auger w/ 3.5" SFA

Elevation: 0

Water Level: Not Encountered

Remarks: Grab samples classified from the 3.5 inch diameter hand auger.

ELEVATION	DESCRIPTION	SYMBOL	DEPTH (ft)	SAMPLE TYPE	BLOWS/FT.	MOISTURE (%)	DRY DENSITY (pcf)	UNCONFINED STRENGTH (tsf)	REMARKS
	Ground Surface		-0						
	Sandy Lean CLAY (CL-FILL) brown, moist to wet, soft, some concrete and masonry debris, roots		- -1						
	Sandy Lean CLAY (CL) dark brown, soft to stiff, roots, wet		-2 -3 4 5 6						
	Sandy Lean CLAY (CL) reddish brown, some rock fragments, wet, stiff, (completely weathered chert bedrock)		_ 7						
	Chert (Bedrock) reddish brown, fractured, weathered, moderate to hard hardness		_8 _						Drilling Refusal
	End of Log		_9						
			,						
			_						
			-10						
			_						
			-11						
			-						
			<del>-</del> 12						
			-						
			<del>-13</del>						
			-						
	Notes:  1. Stratification lines represent the approximate boundaries bet 2. Groundwater was not encountered during drilling and the bo	ween ma	nterial typ	es, the tra	ansitions r	nay be gr	adual.		
			ı -						
			-15						

#### APPENDIX B - LABORATORY TESTING

Laboratory tests were performed on representative samples of the materials encountered in the test borings, to achieve a quantitative and qualitative evaluation of the physical and mechanical properties of the materials that underlie the site. The tests were performed in B. Hillebrandt Soils Testing, Inc. lab located in Alamo, California. The tests included moisture content determinations and #200 washed sieve tests. The test results are presented on the boring logs in Appendix A. Test reports provided by the testing laboratory are included in this Appendix. Brief descriptions of the tests performed follow.

Moisture Content/Dry Density (ASTM 2937): Performed on undisturbed samples to determine the moisture content (the ratio of the weight of water to the weight of solids in the field sample, expressed as a percentage) and dry density (the ratio of the weight of solids in the field sample to its volume, expressed in pounds per cubic foot).

**#200 Washed Sieve Test (ASTM D-1140):** Performed on undisturbed or disturbed samples to determine the fine-grained (silt and clay) fraction of the materials. The fine-grained fraction is used to classify the soils according to the Unified Soils Classification System.

Atterberg Limits Test (ASTM D-4318): Performed on undisturbed or disturbed samples to determine the liquid limit (LL) and plastic limit (PL) of the samples. These limits are used to classify fine-grained soils and to evaluate the plasticity index (PI), the moisture content range over which the material exhibits plasticity. Atterberg limits correlations also provide an indication of the compressibility and expansion potential of the sample.

### B. HILLEBRANDT SOILS TESTING, INC. 29 Sugarloaf Terrace, Alamo, CA 94507 - Tel: (510) 409-2816 - Fax: (925) 891-9267 - Email: soiltesting@aol.com

#### LAB RESULTS SUMMARY FORM

22111.001+

Project Number: Requested By: Project Name: 46 Eagle Street, San Francisco Request Date: 2/25/22 Results Due By: Throw Samples Out On: PΜ

Reque	stea By:		PIVI		Ke	quest	Date:	212312	2					Throw	Samples Out On:
					Α	tterbe	g		-200		Comp	action			
Boring #	Sample Depth (feet)	Dry Density (pcf)	Moisture Content (%)	TxUU Shear Strength (psf)	Liquid Limit	Plastic Limit	Plasicity Index	Passing #4 Sieve (%)	Passing #40 sieve (%)	Passing #200 sieve (%)	Maximum Dry Density (pcf)	Optimum Moisture (%)	Pocket Penetrometer (tsf)	Torvane (tsf)	Remarks
B-1	4.5		8.9												
B-1	7.5		17.0					89	80	59					
B-1	10.5		14.8												
B-2	4.5 7.5		20.3		00		4-		00						
B-2 B-2	7.5 9.5		17.4 3.7		32	17	15	93	82	67					
D-2	9.0		3.1												
B-3	2.0		7.1												
B-3	3.0		7.2												
B-3	4.0		12.8 12.5												
B-3 B-3	5.0 6.0		12.5												
D-3	0.0		14.6												
								1							

### B. HILLEBRANDT SOILS TESTING, INC.

29 Sugarloaf Terrace, Alamo, CA 94507 - Tel: (510) 409-2916 - Fax: (925) 891-9267 - Email: soiltesting@aol.com

#### **MOISTURE CONTENT WORKSHEET**

Job #: 22111.001+

Job Name: 46 Eagle Street, San Francisco

Date: 2/25/22 Tested by: B. Hillebrandt

		Ī			I			Ī	1
Additional Tests:		-200			PI, -200				
Boring #:	B-1	B-1	B-1	B-2	B-2	B-2	HA-1	HA-1	HA-1
Depth:	4.5	7.5	10.5	4.5	7.5	9.5	2.0	3.0	4.0
Sample Description:	Dark brown clayey SAND	Dark brown sandy CLAY	Dark yellowish brown sandy CLAY	Dark brown sandy CLAY	Dark yellowish brown sandy lean CLAY	Dark brown well graded SAND with silt	Dark brown silty SAND with gravel	Dark brown silty SAND with gravel	Dark brown sandy CLAY with gravel
Can #:	360	311	422	418	423	406	116	400	385
Wet Sample + can	182.5	232.2	209.6	193.3	180.8	245.0	328.9	270.4	232.4
Dry Sample + can	170.3	204.2	186.8	166.3	158.9	237.5	309.3	254.4	209.7
Weight can	32.7	39.5	32.6	33.0	32.7	33.0	34.6	32.8	32.8
Weight water	12.2	28	22.8	27	21.9	7.5	19.6	16	22.7
Weight Dry Sample	137.6	164.7	154.2	133.3	126.2	204.5	274.7	221.6	176.9
WATER CONTENT (%)	8.9%	17.0%	14.8%	20.3%	17.4%	3.7%	7.1%	7.2%	12.8%

### B. HILLEBRANDT SOILS TESTING, INC.

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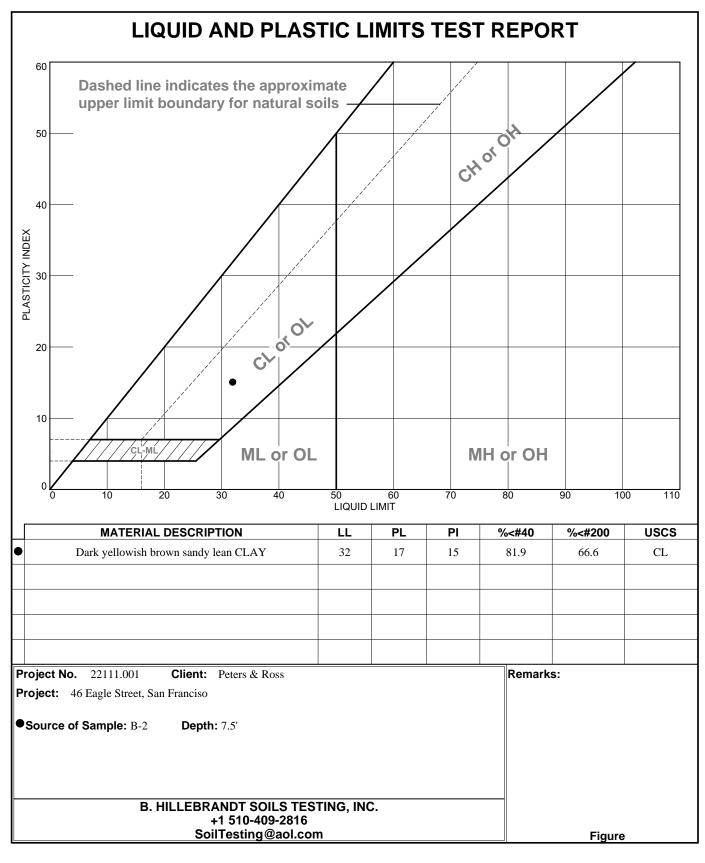
#### **MOISTURE CONTENT WORKSHEET**

Job #: 22111.001+

Job Name: 46 Eagle Street, San Francisco

Date: 2/25/22 Tested by: B. Hillebrandt

	I			I	I	I	I	I
Additional Tests:								
Boring #:	HA-1	HA-1						
Depth:	5.0	6.0						
Sample Description:	Reddish brown sandy CLAY	Dark brown sandy CLAY						
Can #:	357	394						
Wet Sample + can	223.8	202.0						
Dry Sample + can	202.5	180.4						
Weight can	32.5	32.7						
Weight water	21.3	21.6	 					
Weight Dry Sample	170	147.7						
WATER CONTENT (%)	12.5%	14.6%						



#### LIQUID AND PLASTIC LIMIT TEST DATA

4/1/2022

Client: Peters & Ross

**Project:** 46 Eagle Street, San Franciso

**Project Number: 22111.001** 

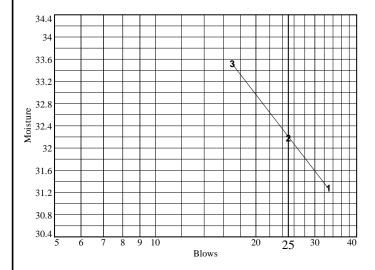
Location: B-2 Depth: 7.5'

Material Description: Dark yellowish brown sandy lean CLAY

%<#40: 81.9 %<#200: 66.6 USCS: CL AASHTO: A-6(8)

Tested by: BH

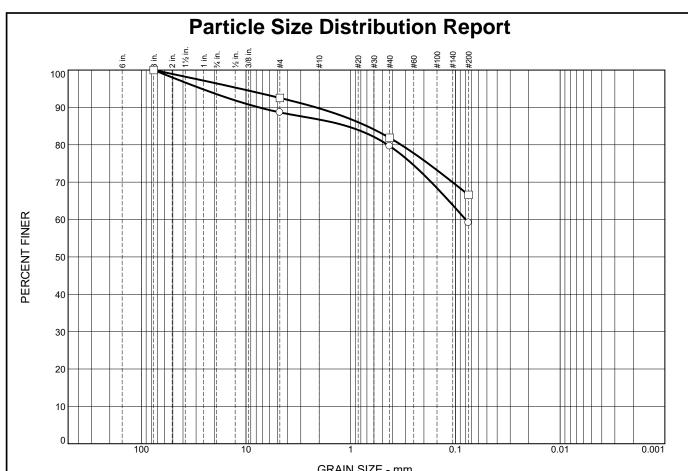
•	Liquid Limit Data									
Run No.	1	2	3	4	5	6				
Wet+Tare	28.07	30.07	27.41							
Dry+Tare	24.01	25.51	23.33							
Tare	11.03	11.34	11.16							
# Blows	33	25	17							
Moisture	31.3	32.2	33.5							



Liquid Limit= _	32
Plastic Limit=	17
Plasticity Index=	15
Natural Moisture=	17.4
Liquidity Index=	0.0

	Plastic Limit Data										
Run No.	1	2	3	4							
Wet+Tare	19.75	18.56									
Dry+Tare	18.53	17.51									
Tare	11.23	11.30									
Moisture	16.7	16.9									

\_\_\_\_ B. Hillebrandt Soils Testing, Inc. \_\_\_\_



_					RAIN SIZE -	1111111.		
	0/ .3"	% Gravel			% Sand	b	% Fines	
	% +3"	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
	0.0	6.5	4.8	1.9	7.1	20.6	59.1	
]	0.0	3.6	3.9	2.8	7.8	15.3	66.6	

	SOIL DATA											
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	uscs							
0	B-1		7.5'	Dark brown sandy CLAY	CL							
	B-2		7.5'	Dark yellowish brown sandy lean CLAY	CL							

B. HILLEBRANDT SOILS TESTING, INC.
+1 510-409-2816
SoilTesting@aol.com
Client: Peters & Ross
Project: 46 Eagle Street, San Franciso
Project No.: 22111.001
Figure

Tested By: BH

#### **GRAIN SIZE DISTRIBUTION TEST DATA**

4/1/2022

Client: Peters & Ross

**Project:** 46 Eagle Street, San Franciso

Project Number: 22111.001

Location: B-1 Depth: 7.5'

Material Description: Dark brown sandy CLAY

USCS: CL Tested by: BH

Siev		

Dry Sample and Tare (grams)	Sample Pan and Tare Tare Weight		Sieve Opening Size	Percent Finer	
204.20	39.50	0.00	3"	0.00	100.0
			#4	18.65	88.7
			#40	33.51	79.7
			#200	67.28	59.1

#### **Fractional Components**

	Cobbles	Gravel				Sa	nd	Fines			
L		Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
	0.0	6.5	4.8	11.3	1.9	7.1	20.6	29.6			59.1

D <sub>5</sub>	D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>40</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
							0.0798	0.4437	1.0922	7.5025	26.5443

Fineness Modulus 1.31

\_\_ B. Hillebrandt Soils Testing, Inc. \_\_\_\_\_

#### **GRAIN SIZE DISTRIBUTION TEST DATA**

4/1/2022

Client: Peters & Ross

**Project:** 46 Eagle Street, San Franciso

**Project Number: 22111.001** 

Location: B-2 Depth: 7.5'

Material Description: Dark yellowish brown sandy lean CLAY

USCS: CL Tested by: BH

Sieve	<b>Test</b>	Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
158.90	32.70	0.00	3"	0.00	100.0
			#4	9.42	92.5
			#40	22.90	81.9
			#200	42.16	66.6

#### **Fractional Components**

Cabbles	Gravel				Sa	nd	Fines			
Cobbles	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	3.6	3.9	7.5	2.8	7.8	15.3	25.9			66.6

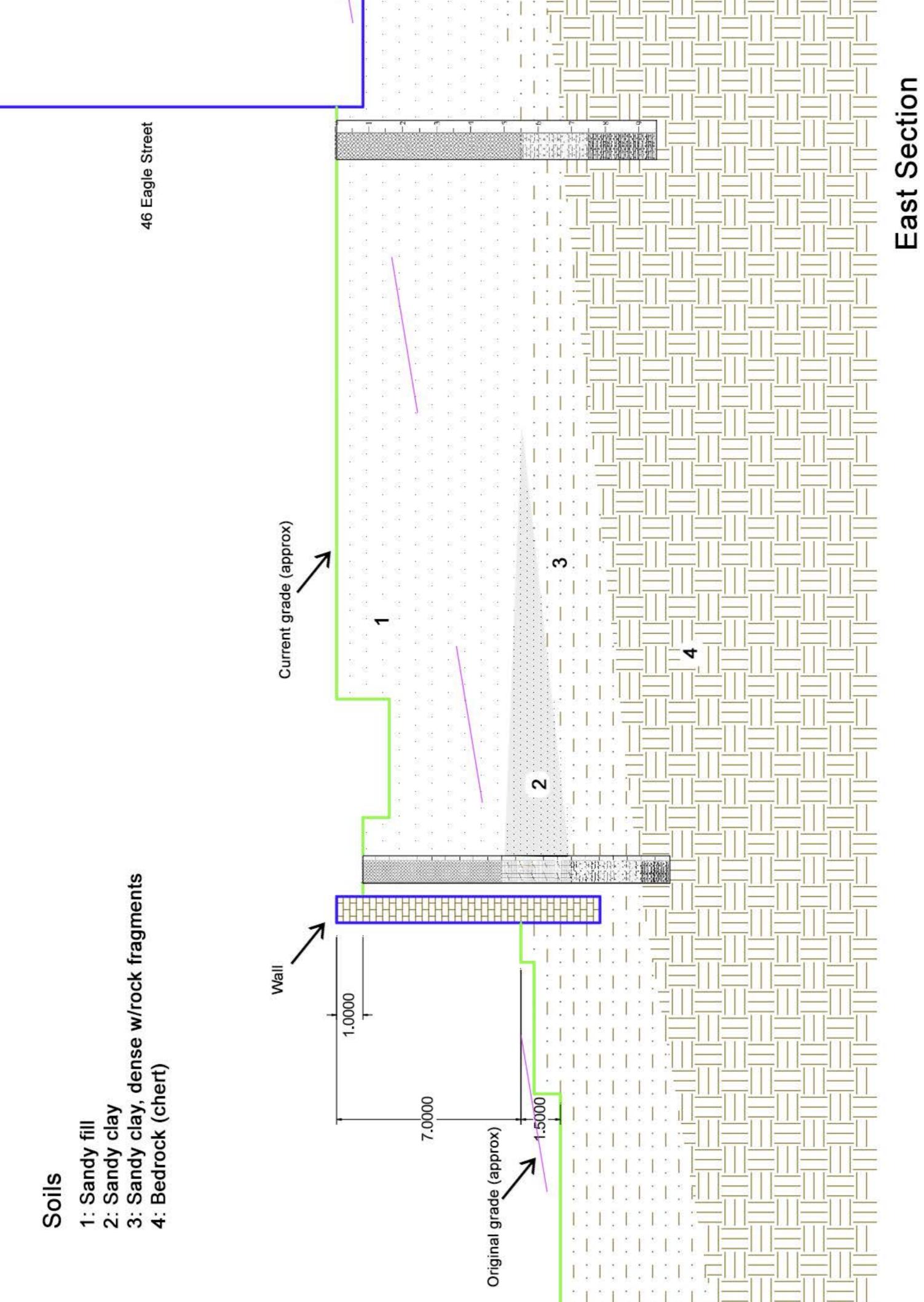
D <sub>5</sub>	D <sub>10</sub>	D <sub>15</sub>	D <sub>20</sub>	D <sub>30</sub>	D <sub>40</sub>	D <sub>50</sub>	D <sub>60</sub>	D <sub>80</sub>	D <sub>85</sub>	D <sub>90</sub>	D <sub>95</sub>
								0.3306	0.7004	2.1459	11.2988

Fineness Modulus

\_ B. Hillebrandt Soils Testing, Inc. \_\_\_\_\_

# EXHIBIT B

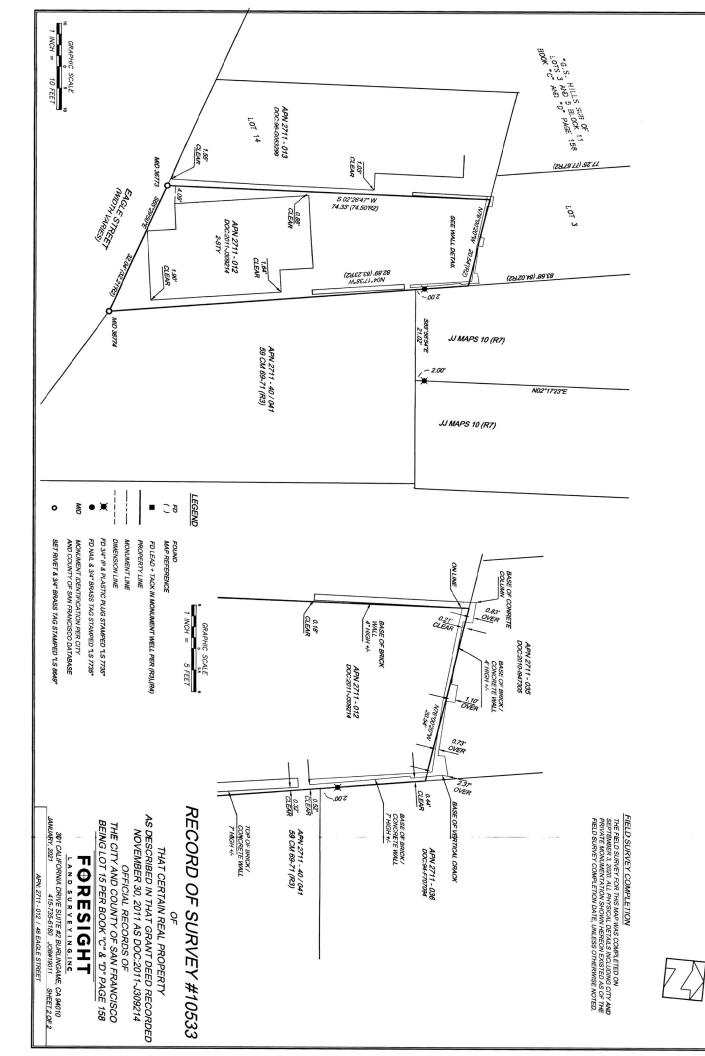
# EXHIBIT B



East Section (looking east)

# EXHIBIT C

# EXHIBIT C



# EXHIBIT D

# EXHIBIT D

