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24 January 2006

Tony Coe, City Engineer
City of Lafayette
P.O. Box 1968
3675 Mount Diablo Boulevard, Suite 210
Lafayette, California 94549-1968

RE: Addendum 3 to Geotechnical Investigation Report
Proposed City Library
Mt. Diablo Boulevard at First Street
Lafayette, California

Dear Mr. Coe:

We have prepared this addendum letter to provide more specific design recommendations for the retaining walls to be constructed alongside the neighboring property to the east of the proposed new Lafayette Library. In our 21 May 2003 Foundation Exploration Report we provided preliminary geotechnical parameters for all retaining walls to be constructed. However, due to the proposed buildings proximity to existing retaining walls on the neighboring property located at 3483 Mount Diablo Boulevard we are providing additional recommendations for what types of retaining systems would be feasible and specific design recommendations for those types of retaining wall systems.

BACKGROUND

Geotechnical recommendations for the project were provided by Cal Engineering & Geology, Inc. in our report titled, *Foundation Exploration Report for Planned Lafayette City Library Mt. Diablo Boulevard and First Street Lafayette, California*, dated 21 May 2003. Additional geotechnical recommendations for the project were provided in our report titled, *Addendum Foundation Exploration Report New Lafayette City Library Mt. Diablo Boulevard and First Street Lafayette, California*, dated 15 September 2003. The addendum report incorporated the adjoining parcels (3488 and 3486 Golden Gate Way) to the southeast of the original property. On 25 January 2005 we prepared an Addendum 2 to the Geotechnical Investigation and Report that detailed additional foundation recommendations for the new Lafayette City Library based upon the preliminary project plans prepared by Killefer and Flammang, Architects, dated 18 October 2004. The current plans for the new building require below ground retaining wall structures and above ground exterior retaining walls to be constructed in close proximity to an existing retaining wall located on the west and south property lines of 3483 Mount Diablo Boulevard (Figure 1).

The new building retaining wall west of the property line will consist of a single height wall that forms the east wall for the basement and first floor of the building below the Seaborg Garden. The retaining wall will extend approximately 25 feet below the parking lot of the adjacent property and will be

situated about 13 to 14 feet from the property line. The configuration of the new retaining wall relative to the existing retaining wall on the adjacent property is shown on Figure 2.

The building retaining wall structure south of the property line will be constructed as a two tiered structure as shown on Figure 3. The lower part of the wall will extend approximately 25 feet below the adjacent parking lot and will be situated about 13 to 14 feet away from the property line. The upper part of the wall will be situated less than 3 feet away from the property line and the base of the upper part of the wall will be about 14 feet below the adjacent parking lot.

The parking lot on the adjacent parcel is supported by an existing retaining wall just inside the property line. The adjacent parking lot retaining wall retains between 2 and 7 feet of soil. As a result, there will be a space between the new building retaining walls and the existing parking lot retaining wall. The space will need to be filled by constructing an above grade exterior retaining wall between the new building and the downslope side of the existing parking lot retaining wall.

RECOMMENDATIONS

Retaining Walls West of Property Line

Building Retaining Wall

The building retaining wall west of the property line is situated far enough from the property line and existing retaining wall that conventional shoring and construction methods can reasonably be used to construct the retaining walls. We anticipate that a 1V:1H temporary excavation could be made below the base of the existing wall and then shoring piers or other internal bracing methods could be installed to facilitate excavation to the basement elevation and construction of the retaining wall. Figure 4 includes a sketch of this concept. We recommend that the design of the shoring and/or bracing be left to the foundation subcontractor. The design of the permanent retaining wall should be completed using the geotechnical design parameters presented in our geotechnical report and addendums.

Exterior Above Grade Retaining Wall

In our opinion, the exterior, above grade retaining wall between the new building and the existing retaining wall on the adjacent property can be constructed in a variety of ways. The most straight forward method would probably be to construct a reinforced masonry block retaining wall on an L-shaped spread footing. Figure 5 includes a conceptual sketch of how such a retaining wall could be configured. A fence be required above the retaining wall due to the attractive nuisance presented by the gap between the new wall and the adjacent existing retaining wall. We recommend that the following geotechnical parameters be used to design this type of wall for this location:

allowable bearing: 2000 psf
base friction: 0.40
active soil pressure: 40 pcf equivalent fluid pressure
passive pressure: 450 pcf efp at 1 foot below grade

In our opinion, a viable alternative would be to replace the masonry retaining wall and footing with a Lock+Load segmental retaining wall. This type of structure could be used to a retained height of approximately 5 feet without needing to place geogrid reinforcement in the backfill. The Lock+Load

system is preferable to other segmental retaining walls for this application because a fence can be constructed directly above the edge of the wall face. A brochure for the Lock+Load retaining wall system is attached in Appendix A. If a Lock+Load retaining wall system is used to construct this retaining wall, we recommend that the following geotechnical design parameters be used:

foundation materials: $\phi = 36$ degrees, $\gamma = 125$ pcf
backfill: $\phi = 32$ degrees, $\gamma = 125$ pcf

Drainage

We recommend that the surface and subsurface drainage systems for the building and exterior retaining walls be integrated. The primary goal of the drainage system should be to reduce, to the extent possible, the affect of groundwater on the building retaining wall. Figure 6 provides a conceptual surface and subsurface drainage system configuration. Final design of the surface and subsurface drainage and waterproofing systems should be coordinated between the project civil engineer, architect, and structural engineer.

Retaining Walls South of Property Line

Building Retaining Wall

The top tier of the building retaining walls south of the property line will be situated too close to the property line and existing retaining wall to make use of an unshored temporary excavation. It will be necessary to construct a drilled pier shoring system to enable construction of the upper part of the retaining walls below the existing retaining wall on the adjacent property. The design of the shoring piers should account for the subsequent excavation needed to construct the lower part of the retaining wall. Figure 7 includes a sketch of this concept. We recommend that the design of the shoring and/or bracing be left to the foundation subcontractor. The design of the permanent retaining wall should be completed using the geotechnical design parameters presented in our geotechnical report and addendums.

Exterior Above Grade Retaining Wall

In our opinion, the exterior above grade retaining wall between the new building and the existing retaining wall on the south side of the adjacent property should be constructed as a part of the building retaining wall if possible. The wall needs to be located too close to the building retaining wall to allow for construction of a separate retaining wall. The retaining wall will be situated almost directly on top of the shoring piers that will need to be installed to construct the upper part of the building retaining wall in this location. This would result in construction of a single, 30 to 36 inch thick stem wall at this location. Figure 8 shows a conceptual sketch of this alternative.

COMMENT

The recommendations provided in this addendum are based on the understanding that the adjacent property owner is not willing to have fill material placed against the front side of the existing retaining wall below the south and west sides of his parking lot. It should be noted that if it is possible to obtain permission to place fill against the adjacent property's retaining wall, then the building retaining walls could then be backfilled to the finish grades shown on the plans and construction of the exterior

retaining wall described herein would be completely unnecessary. This would simplify construction and reduce costs.

LIMITATIONS

The conclusions and recommendations of this addendum report are based upon information provided to us regarding the proposed improvements, subsurface conditions encountered at the boring locations, our geologic reconnaissance, the results of the laboratory testing program, and professional judgement. We have employed accepted geotechnical engineering and engineering geologic procedures, and our professional opinions and conclusions are made in accordance with generally accepted geotechnical engineering and engineering geologic principles and practices. This standard is in lieu of all other warranties, either expressed or implied.

Cal Engineering & Geology, Inc. should be accorded the opportunity to review the final plans and specifications to determine if the recommendations of this report have been implemented in those documents. The review would be acknowledged in writing.

Field observation and testing services are essential parts of the proposed project. It is important that Cal Engineering & Geology, Inc. be retained to observe the earthwork, footing excavations, and other relevant construction operations. The recommendations of this report are contingent upon this stipulation.

We trust this report provides you with the information required to proceed. If you have any questions, please call us.

Yours truly,


CAL ENGINEERING & GEOLOGY, INC.

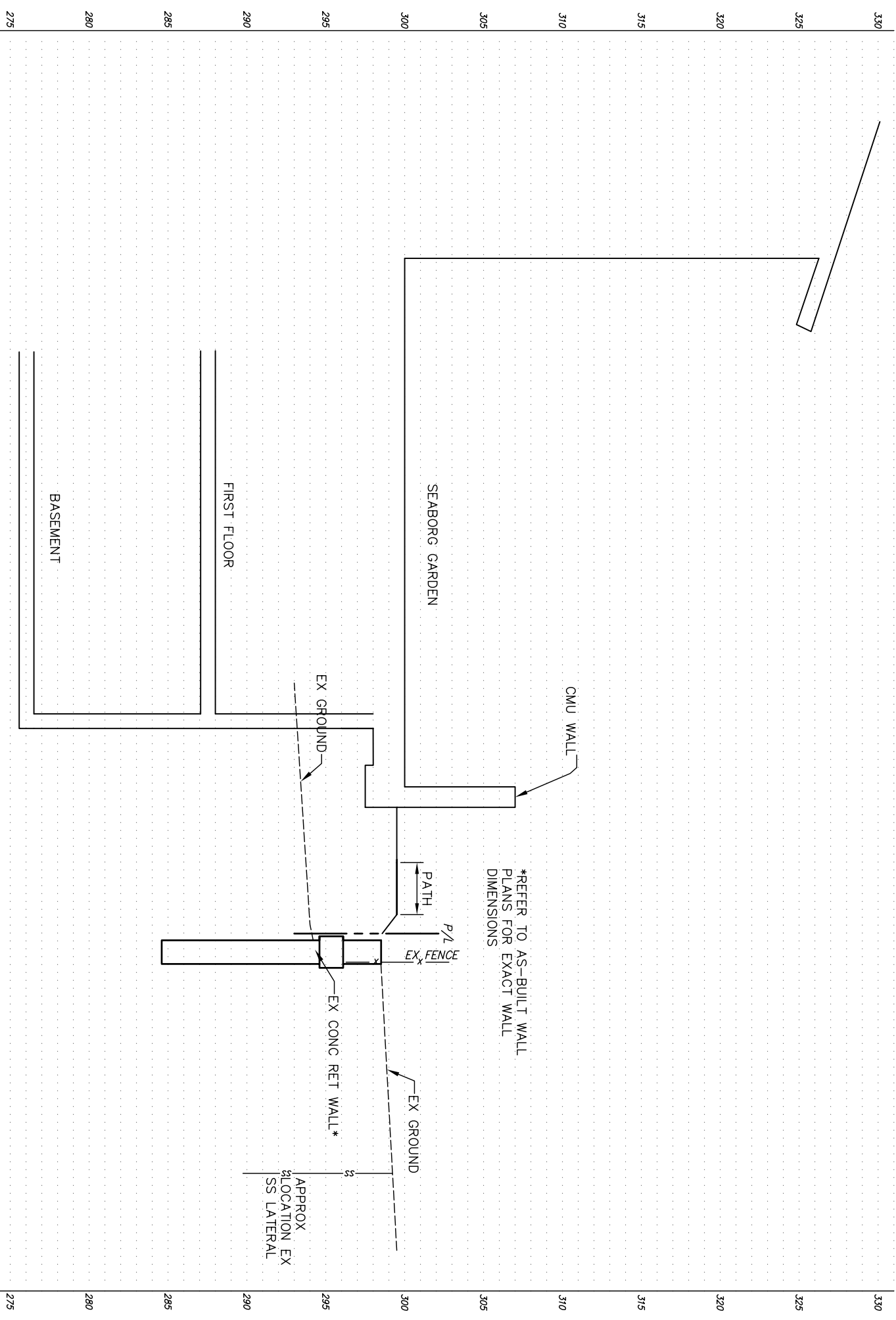
Phillip Gregory, P.E., G.E.
Principal Engineer

attachments: Figures 1-8

NOTE S


1. PLAN ABOVE IS TAKEN FROM THE "LAFAYETTE LIBRARY AND LEARNING CENTER 3491 MOUNT DIABLO BLVD LAFAYETTE, CA 94549 SITE PLAN" DATED 10 OCTOBER 2005, BY KILLEFER FLAMMANN ARCHITECTS, 1625 OLYMPIC BLVD, SANTA MONICA, CA 90909.

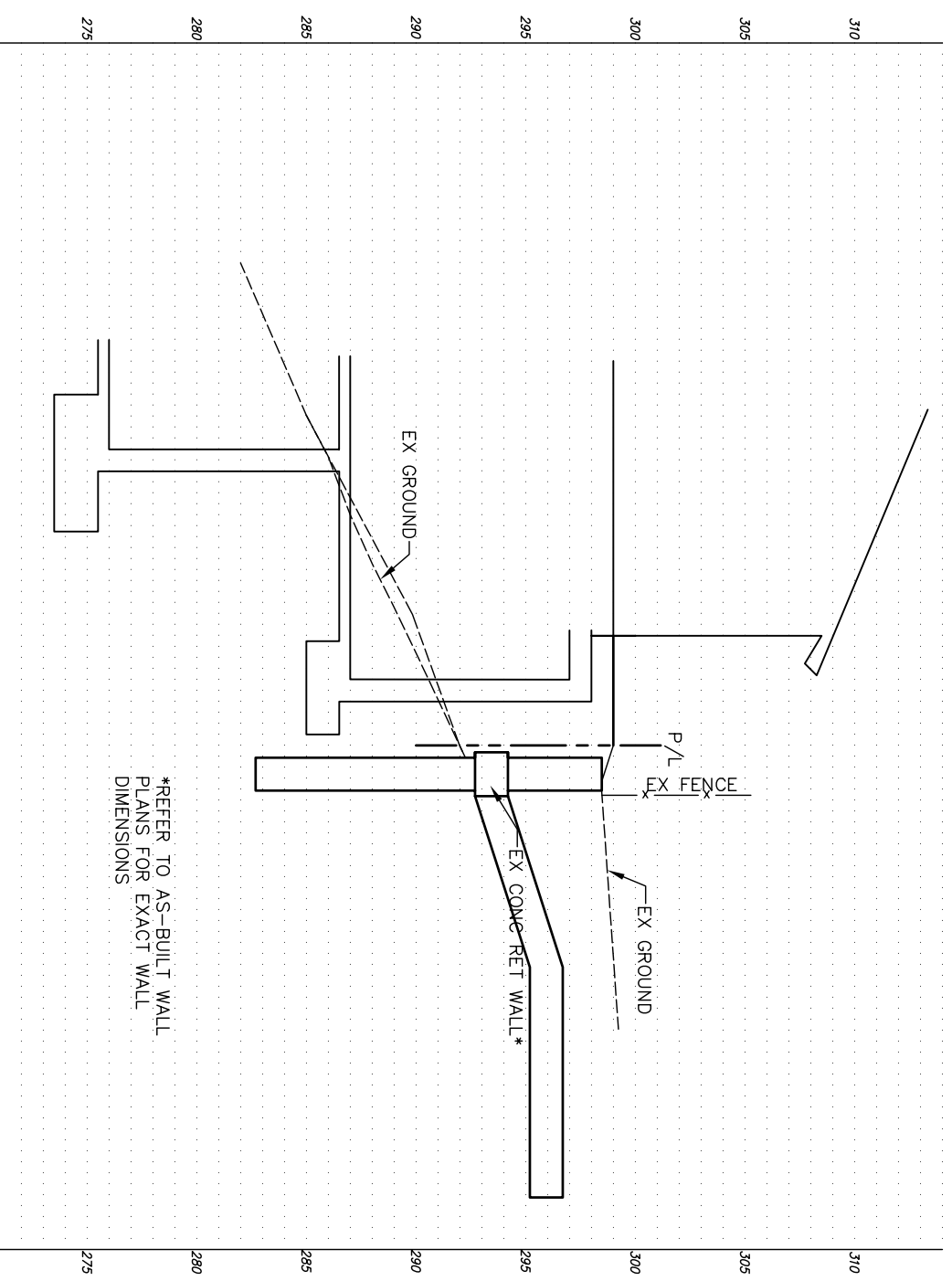
 CAL ENGINEERING & GEOLOGY	DESIGNED	DRAWN	CHECKED	PROJECT NO.	DATE	FIGURE
			P. GREGORY	030401	JANUARY 2005	1
1870 Olympic Blvd. Suite 100 Walnut Creek, CA 94596 Phone: (925) 935-9771						
LAFAYETTE CITY LIBRARY MT. DIABLO BLVD. AT FIRST STREET LAFAYETTE, CALIFORNIA						
SITE PLAN						




SECTION A-A



 <p>CAL ENGINEERING & GEOLOGY</p> <p>1870 Olympic Blvd. Suite 100 Walnut Creek, CA 94596 Phone: (925) 935-9771</p>	DESIGNED	DRAWN	CHECKED	PROJECT NO.	DATE	FIGURE
		E. ZANE	P. GREGORY	030401	JANUARY 2005	2
<p>LAFAYETTE CITY LIBRARY MT. DIABLO BLVD. AT FIRST STREET LAFAYETTE, CALIFORNIA</p> <p>SECTION A-A</p>						



 <p>CAL ENGINEERING & GEOLOGY</p>	DESIGNED	DRAWN	CHECKED	PROJECT NO.	DATE	<p>LAFAYETTE CITY LIBRARY MT. DIABLO BLVD. AT FIRST STREET LAFAYETTE, CALIFORNIA</p>
		E. ZANE	P. GREGORY	030401	JANUARY 2006	
<p>1870 Olympic Blvd. Suite 100 Walnut Creek, CA 94596 Phone: (925) 935-9771</p>		<p>SECTION B-B</p>		<p>FIGURE 3</p>		

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