February 12, 2020
T6030

TO: Anne Quasarano
Senior Civil Engineer
PUBLIC WORKS DEPARTMENT/ENGINEERING DEPARTMENT
CITY OF FREMONT
P.O. Box 5006
Fremont, California 94537-5006

SUBJECT: **Geotechnical Peer Review**
RE: Pape' Machinery
Task Order No. 6 (PLN2019-00337)
43510 Osgood Road

At your request, we have completed a geotechnical peer review of the planning permit application for the proposed Pape Equipment Facility using the following:

- Cornerstone Earth Group, Geotechnical Investigation (report), Pape' Equipment Facility, 43510 Osgood Road, Fremont California, dated January 15, 2020; and

- California Geologic Survey, Guidelines for Evaluating and Mitigating Seismic Hazards in California – Special Publication 117A prepared by the re-adopted September 11, 2008.

In addition, we have reviewed pertinent technical maps from our office files.

DISCUSSION

We understand that the applicant proposes to construct a new construction dealership including a 45,000- to 50,000-square foot office, warehouse and service building at 43510 Osgood Road, in Fremont, California. We also understand that the proposed project will have parking, driveway, and a gravel storage area. We further understand that warehouse building will have slab-on-grade floors.

The project is located within a California Geological Survey liquefaction hazard zone, but not an earthquake-induced landslide hazard zone. While the project site does not appear to not located within a State designated Alquist Priolo/ Fault Rupture zone, the eastern property line appears to be coincident to the western boundary of the Hayward Earthquake Fault Study Zone.

SITE CONDITIONS

The Geotechnical Consultant investigated the subsurface conditions at the site by means of three borings, four CPT's, and 15 or 16 shallow test pits all located in the 7-3/4-acre site. The Geotechnical Consultant logged stiff to very stiff clays with interbeds of medium dense to dense sands, to the depths explored. The site is relatively level, and located less than 0.2 km southwest of the closest mapped trace of the Hayward Fault (other side of Freeway 680). The Geotechnical Consultant identified various geologic and seismic hazards at the site including several feet of undocumented fill overlying the site, liquefaction, shallow groundwater, moderately expansive soils and strong ground shaking.

GEOTECHNICAL EVALUATIONS

The Geotechnical Consultant has advanced ten borings and six CPT's to a maximum depth of about 50.5 feet, and completed liquefaction analysis. The Geotechnical Consultant calculated roughly 3/4-inch of post liquefaction settlement at the ground surface and 1/2-inch of differential settlement.

The Geotechnical Consultant recommends supporting the warehouse on shallow, spread footing type foundations bearing 18 inches below lowest adjacent grade. The Geotechnical Consultant calculated settlement under static building loads of 1-1/2-inches to 1-2/3-inches, and 3/4-inch to 1-inch of differential settlement between adjacent foundation elements. The Geotechnical Consultant provided seismic design parameters in accordance with 2019 California Building Code and ASCE 7-16, and the liquefaction/seismic induced settlement analysis was based on a PGA of 1.01.

The Geotechnical Consultant has also recommended that undocumented fill (estimated at up to 3 feet) should be removed.

CONCLUSIONS AND RECOMMENDED ACTIONS

The proposed site development is constrained by seismic induced settlement due liquefaction, and very strong ground shaking. The Geotechnical Consultant has completed a site investigation in general conformance with State requirements. We concur with the Geotechnical Consultant that there is a potential for seismic induced settlement likely resulting in relatively moderate potential for total and differential settlement. We conclude that the submitted report satisfactorily addresses requirements associated with State seismic hazard zones. We recommend that the following conditions be attached to geotechnical approval of building permit applications:

1. **Geotechnical Plan Review** - The applicant's geotechnical consultant should review and approve all geotechnical aspects of the project building plans (i.e., site preparation and grading, site drainage improvements and design parameters for foundations) to ensure that their recommendations have been properly incorporated.

   The Geotechnical Consultant should clarify if there is a recommended minimum thickness of engineered fill below the bottom of the proposed spread footing foundation.

   The results of the plan review should be summarized by the Geotechnical Consultant in a letter and submitted to the City Engineer for review and along with other documents for building permit plan-check.

2. **Geotechnical Construction Inspections** - The Geotechnical Consultant should inspect, test (as needed), and approve all geotechnical aspects of the project construction. The inspections should include, but not necessarily be limited to: site preparation and grading, site surface and subsurface drainage improvements, and excavations for foundations prior to the placement of steel and concrete.

   The results of these inspections and the as-built conditions of the project should be described by the Geotechnical Consultant in a letter and submitted to the City Engineer for review prior to final (as-built) project approval.

LIMITATIONS

This geotechnical peer review has been performed to provide technical advice to assist the City with its discretionary permit decisions. Our services have been limited to an independent review the referenced geotechnical report to determine the adequacy of the liquefaction hazard evaluation and any associated mitigation measures. Our opinions and conclusions are made in accordance with generally accepted principles and practices of the geotechnical profession. This warranty is in lieu of all other warranties, either expressed or implied.

Respectfully submitted,

COTTON, SHIRES AND ASSOCIATES, INC.
CITY GEOTECHNICAL CONSULTANT

Ted Sayre
Principal Engineering Geologist
CEG 1795

David T. Schrier
Principal Geotechnical Engineer
GE 2334

TS:DTS:st