March 10, 2026
Project No: 25-3846

Mr. Sam Sahand, Assoc. Principal
Pasadena Unified School District
351 S. Hudson Ave.
Pasadena, CA 91109

Subject: **Addendum Report for Solar Arrays**
Proposed Campus Improvements
Altadena Arts Magnet School
743 E Calaveras Street
Altadena, CA 91101

Reference: Geotechnical and Geological Engineering Investigation, Proposed Campus Improvements, Altadena Arts Magnet School, 743 E Calaveras Street, Altadena, CA 91101, prepared by Koury Engineering & Testing, Project No. 25-3134, report dated January 22, 2026.

Dear Mr. Sahand:

As part of the proposed campus improvements, there will be a new parking lot constructed within the northeast portion of the site. Koury understands that multiple solar arrays will be installed in the new parking lot.

Based on the preliminary plan provided, we understand the solar arrays will have widths ranging from 18 to 28½ feet and lengths up to about 43 feet. The posts supporting the arrays will have maximum heights of 20 feet and the minimum array clearance from the ground surface will be 8’ 2”.

Based on the Geotechnical Cross Section presented in the reference report, the subsurface conditions in the parking lot consist of fill underlain by alluvium. The fill and alluvium consist mostly of sand with layers of clay. It is our opinion that the proposed solar arrays may be supported on conventional cast-in-drilled-hole (CIDH) concrete pile foundations. For the purpose of preparing this report, we assumed the proposed solar arrays will impose vertical downward loads, uplift loads, horizontal loads, and moments on the posts due to horizontal loads.

Downward and Upward Capacities: The downward and upward capacities of piles are based on the friction resistance between the pile shaft and surrounding soils. For vertical downward and upward capacity resistance calculations, the upper foot of soil should be neglected. For downward side friction resistance, from a depth of 1 to 20 feet we recommend an allowable

skin friction of 250 psf, and for uplift resistance we recommend an allowable skin friction of 125 psf. For clay soils and the lower sand layers, no significant loss of bearing capacity is anticipated during the design seismic event. Some shear resistance may be lost in the upper relatively loose sand layers. Based on our calculations, we anticipate drag load on the order of 11 kips for the upper 12 feet of soil. The allowable downward and upward resistances are summarized in the following table.

Table 4A – Downward, Upward, and Lateral Resistances

Allowable Upward and Downward Resistance			**Allowable Lateral Resistance**		
Soil Depth (ft)	Downward Skin Friction (psf)	Upward Skin Friction (psf)	Soil Depth (ft)	Resistance (psf/ft)	Max Allowable (psf)
0 - 1	Neglect	Neglect	0 - 1	Neglect	Neglect
1 - 20	250	125	1 - 20	267	4000

Lateral Resistance: Lateral loads can be resisted by passive pressure developed against the vertical shafts. For level ground surfaces, an equivalent fluid passive pressure of 267 pcf may be used. The upper 12 inches of soil should be neglected in the passive pressure calculations. A summary of allowable lateral resistances is provided in Table 4A.

Settlement and Lateral Deflection: The total static settlement of the piles is anticipated to be less than ½ inch. As discussed in the reference report, the seismic differential settlement is anticipated to be on the order of ¾-inch in 40 feet. Based on our calculations, the lateral deflection of the pile at usable soil depth is anticipated not to exceed ½ inch, as requested.

Closure: The findings and recommendations presented in this report are based on the results of our field and laboratory investigations combined with professional engineering experience and judgment. The report was prepared in accordance with generally accepted engineering principles and practice. Subsurface variations should be anticipated.

Thank you for the opportunity to be of service.

Respectfully submitted,

KOURY ENGINEERING & TESTING, INC.

Jacques Roy

Jacques B. Roy, P.E., G.E.
Principal Engineer