October 28, 2019

IDI Logistics
840 Apollo Street
Suite 100
El Segundo, CA 90245

Attention: Mr. Stephen Hollis
Vice President Construction, Western Region

Project No.: **17G199-3R**

Subject: **Preliminary Environmental Issues – Proposed Bridge Widening**
Rider Street at Perris Valley Storm Drain Channel
Perris, California

References: Geotechnical Investigation, Rider 2 – Proposed Commercial/Industrial Building, NEC Redlands Avenue and Rider Street, Perris, California, prepared for IDI Gazeley by Southern California Geotechnical, Inc. (SCG), SCG Project No. 17G199-1, dated November 22, 2017.

Geotechnical Investigation, Rider 4 – Proposed Commercial/Industrial Building, SEC Redlands Avenue at Morgan Street, Perris, California, prepared for IDI Gazeley by Southern California Geotechnical, Inc. (SCG), SCG Project No. 17G206-1, dated November 30, 2017.

Gentlemen:

In accordance with your request, we have prepared this letter to document the geotechnical issues associated with the proposed bridge construction, as they relate to an Environmental Impact Report (EIR) that is being prepared for the project.

Proposed Development

The existing Rider Street crossing over the Perris Valley Storm Drain (PVSD) Channel includes one travel lane in each direction and is supported by a reinforced concrete box (RCB) culvert. The existing crossing would be replaced and widened to two travel lanes, consistent with its designation as a Secondary Arterial. The proposed bridge span is approximately 235 feet long by 74 feet wide. The PVSD Channel would be soft-bottomed, and the bridge would be supported by concrete piers spaced at 30-foot intervals (on center). For a concrete bridge, the span may go up to 42 feet. The approximate location of the proposed bridge is illustrated on Plate 1 of this report.

Background and Previous Studies

Southern California Geotechnical, Inc. (SCG) recently conducted geotechnical investigations at two (2) adjacent developments, identified as Rider 2 and Rider 4. The reports documenting the results of these investigations are referenced above. The locations of these developments relative to the proposed bridge are illustrated on Plate 1 of this report. Rider 2 consists of a trapezoidal-shaped parcel that is approximately 37.93± acres in size, located immediately north of Rider

Street, at the intersection of Rider Street and Redlands Avenue. Rider 4 is a rectangular-shaped site 37.93± acres in size, located immediately north of Rider 2.
As part of the referenced geotechnical studies, a total of twenty-two (22) borings were advanced to depths of 5 to 50± feet below existing site grades.

Native alluvial soils were encountered at the ground surface at all of the boring locations. The near-surface alluvium generally consists of loose to medium dense silty fine sands and fine sandy silts, extending to depths of 3 to 12± feet below existing site grades. At greater depths, the alluvium consists of stiff to very stiff silty clays and clayey silts. Interbedded layers of medium dense to dense sandy silts and silty sands as well as stiff to very stiff silty clays and clayey silts extend to at least the maximum depth explored of 50± feet. Groundwater was encountered at both Rider 2 and Rider 4 at depths of 33± feet.

Liquefaction evaluations were performed for several deep borings drilled at Rider 2 and Rider 4. The results of these evaluations indicated that potentially liquefiable soils were present at both sites, typically at depths ranging from 28 to 47± feet. The total liquefaction-induced settlements were estimated to range from 0 to 2.62 inches. Differential settlements of 1.5± inches or less were expected to occur over a distance of 100 feet, during the design seismic event.

SCG recommended that the proposed commercial/industrial buildings could be supported on conventional shallow foundations, provided that the structural designs consider the liquefaction-induced settlements, and provided that the owner can accept the risk of minor to moderate repairs after the occurrence of a large earthquake. The geotechnical reports provide detailed recommendations for grading and design of foundations, floor slabs, retaining walls, and pavements.

Potential Environmental Issue Areas

Based on the geotechnical studies performed for the adjacent sites, and the preliminary scope of the proposed bridge widening that was provided to our office, we can make the following statements concerning potential EIR issues at the subject site:

Seismic Hazards

Research of available maps indicates that the subject site is not located within an Alquist-Priolo Earthquake Fault Zone. Furthermore, SCG did not identify any evidence of faulting during the geotechnical investigations. Therefore, the possibility of significant fault rupture on the site is considered to be low.

The subject site is located in an area which is subject to strong ground motions due to earthquakes. The performance of a site-specific seismic hazards analysis was beyond the scope of the previous geotechnical investigations. However, numerous faults capable of producing significant ground motions are located near the subject site. The proposed structures should be designed to resist structural collapse and thereby provide reasonable protection from serious injury, catastrophic property damage and loss of life.

As noted above, the Rider 2 and Rider 4 sites are underlain by minor amounts of potentially liquefiable soils. It is expected that similar soils will underlie the proposed bridge area. The future design-level studies for the bridge site should include site-specific liquefaction

evaluations. It is expected that similar depths of liquefiable soils will be present in the bridge area, and the design of the bridge will need to take the potential liquefication-induced settlements into account. It is expected that the use of CIDH (cast-in-drilled-hole) or driven CISS (cast-in-steel-shell) deep foundations will mitigate the liquefaction potential. It will be necessary to extend these foundations below the depth of liquefiable soils. It will also be necessary to account for downdrag forces.

No significant landslide hazard is expected to exist at the bridge site.

We have been informed that the seismic acceleration ARS curve for the bridge type selection and final design shall be based on the Caltrans on-line application.

Erosion

The soils at the site consist of silts, sands and clays. The sands and silty sands will be subject to erosion if exposed to flowing water. Provisions should be taken to protect exposed slopes from erosion.

Stability

The subject site is not located on an area of inherently unstable soils. However, construction of the bridge is expected to require new slopes or modification of the existing slopes along the channel edges. These slopes should be designed to possess adequate stability under static and seismic conditions.

As noted above, it is expected that some zones of potentially liquefiable soils will exist in the bridge area. Depending upon the depth and extent of the liquefiable layers, there may be a minor potential for subsidence or lateral spreading. These issues should be further explored during the design-level bridge study. In particular, it may be necessary to utilize larger CIDH or CISS foundations to support the abutments if lateral spreading is an issue.

The soils at the Rider 2 and Rider 4 sites were determined to have a potential for only minor consolidation and collapse. Since the proposed bridge will be supported on drilled piers, excessive collapse or subsidence are not expected to be significant issues for the bridge construction.

Expansive Soils

Based on data from Rider 2 and 4, the bridge site is expected to be underlain by low to medium expansive soils. Since the bridge will be supported on CIDH or CISS deep foundations, the presence of expansive soils is not expected to be a significant issue for the bridge construction. Per Caltrans standards, all soils used for backfill and/or embankments at the abutments should be EI < 50 and SE > 20.

Soluble Sulfates

The results of soluble sulfate testing on selected samples of soils from the Rider 2 and Rider 4 sites indicated that the on-site soils contain soluble sulfate concentrations that are

considered to be not applicable, in accordance with American Concrete Institute (ACI) guidelines. Therefore, specialized concrete mix designs are not considered to be necessary, with regard to sulfate protection purposes. It is, however, recommended that additional soluble sulfate testing be conducted during the design-level bridge study to verify the soluble sulfate concentrations of the soils within the bridge area.

Infiltration

As part of the previous studies, SCG performed infiltration testing, for use in storm water planning. Based on the results of this testing, infiltration rates within the near-surface soils at the Rider 2 and 4 sites range from 0.7 to 2.4 inches per minute. The use of on-site storm water or septic water disposal systems is considered feasible, provided that the designs take the infiltration rates into account. Site specific testing should be performed in the specific area of any such system.

Future Study

As mentioned above, it will be necessary to perform a design-level geotechnical investigation for the proposed bridge. We understand that his investigation should include, at a minimum, 1 boring at each abutment, and borings at maximum intervals of 100 feet for pier foundation design.

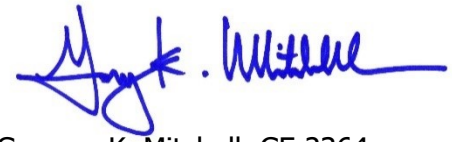
Closure

The comments above are based on data obtained from adjacent sites, and are considered preliminary. A site-specific study should be performed at the bridge site to confirm these statements and to obtain data for the structural design of the bridge.

We sincerely appreciate the opportunity to be of service on this project. We look forward to providing additional consulting services during the course of the project. If we may be of further assistance in any manner, please contact our office.

Respectfully Submitted,

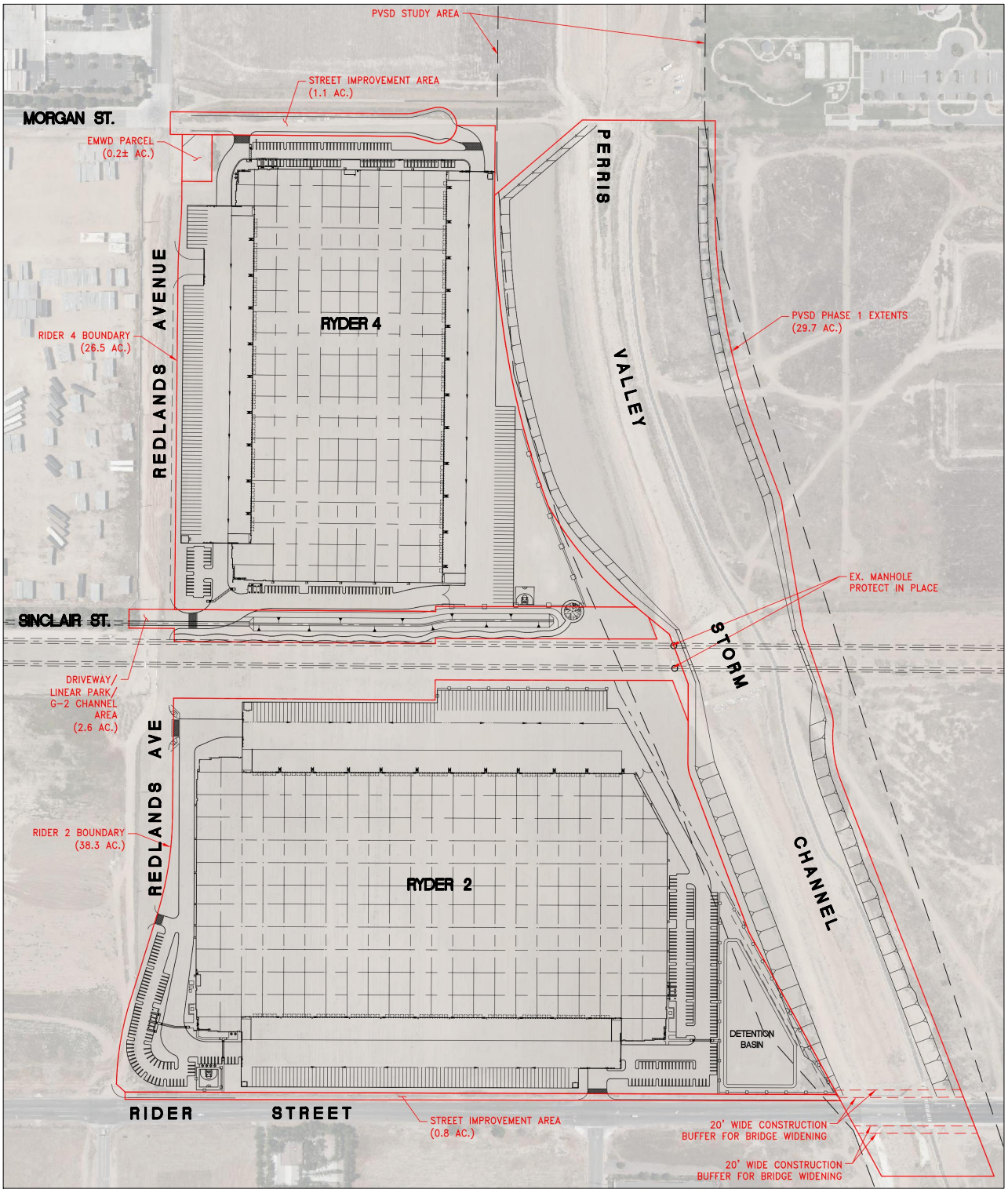
SOUTHERN CALIFORNIA GEOTECHNICAL, INC.



Gregory K. Mitchell, GE 2364
Principal Engineer

Distribution: (1) Addressee

Enclosures: Plate 1 - Site Location Map



NOTE: BASE SITE MAP PREPARED BY ALBERT A. WEBB ASSOCIATES.

SITE LOCATION MAP

PROPOSED BRIDGE WIDENING

PERRIS, CALIFORNIA

SCALE: 1" = 400'

DRAWN: PM
CHKD: GKM

SCG PROJECT 17G199-3

PLATE 1

SoCalGeo

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