

## PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE  
SAN FRANCISCO, CA 94102-3298



October 30, 2018

VIA EMAIL

Mr. Tim Lyons  
Regulatory Case Manager II  
San Diego Gas & Electric Company  
8315 Century Park Court  
San Diego, CA 92123

SUBJECT: Data Request #5 for the SDG&E San Marcos to Escondido TL6975 69kV Project  
Initial Study

Dear Mr. Lyons:

As the California Public Utilities Commission (CPUC) proceeds with our environmental review of San Diego Gas & Electric Company's (SDG&E)'s San Marcos to Escondido TL6975 69kV Project (Project), we have identified additional information required in order to adequately conduct the CEQA review. The CPUC requests SDG&E provide the following information (Data Request #5) by November 6, 2018. Please inform the CPUC if SDG&E cannot meet this deadline request.

In addition to the aforementioned information, the Energy Division may request additional data, as necessary, to prepare a complete an adequate analysis of the potential environmental effects of the Project in accordance with the requirements of CEQA.

Please do not hesitate to call me at (415) 703-1810 if you have any questions.

Sincerely,

A handwritten signature in blue ink that reads "Joyce Steingass".

Joyce Steingass  
Project Manager  
Energy Division, CEQA Unit

cc: David D. Davis, AICP, ESA

Attachment:

1) Data Request #5

**Data Request #5**  
**SDG&E San Marcos to Escondido TL6975 69kV Project**

1. Attached is an administrative draft working version of micropile foundation description and its potential use in this project. Confirm or revise this description to reflect its potential use in this project. Specific attention should be paid to the construction schedule (see sample Table 2-4) and off-road equipment/haul trips for micropile foundations. For illustration to the public, provide a typical or schematic drawing of a micropile foundation that may be used for this project (an example is attached).

## **Concrete Pier Foundations**

Up to 13 pole locations in Segments 2 and 3 may require the use of micropile foundations, in lieu of pier foundations, because of site-specific substrate constraints, site-specific access constraints, and/or to minimize the amount of ground disturbance. Due to the presence of the Santiago geologic formation under Segment 1 and the northern extent of Segment 2 (i.e., poles 55 and 56) and its high potential for yielding paleontological resources, micropile foundations would not be used in these areas.

A micropile foundation consists of several small-diameter, drilled, and grouted reinforced foundations. For electric power line structure support such as that proposed for this Project, a series of up to 16 individual micropiles would be drilled in an 8-foot circular array, as opposed to a larger conventional reinforced concrete pier foundation, as described above. One micropile is typically a small hole up to 8 inches in diameter at the ground line, excavated to a depth of up to 40 feet, depending on the properties of the soil or rock underlying the surface.

The piles would be constructed using high-strength steel casing, high-strength all-thread rebar, and grout. The high-strength all-thread rebar would be inserted into the hole and centered, with the surrounding annulus would be filled with a non-shrink grout. The rebar would protrude above grade to be connected to a transition steel plate that would support the structure above grade. Loads from the above structure would be transferred to the rebar, then transferred from the rebar to the grout to the surrounding soil. The steel casings would project a minimum of 1-foot aboveground and the piles would connect to transition steel plates by either a steel cap or cast-in-place concrete cap connection. A diagram of a typical micropile foundation is provided in Figure 2-\_\_.

The micropiles are typically installed from a platform situated approximately 6 feet above the ground surface. The platforms and all equipment can be placed by a truck-mounted crane. The platform would be supported on four to six telescoping legs that would be adjusted to support the platform on slopes. The drilling process would take place from the platform, and drills would be powered by generators or compressors that would either rest on the platform or be supported nearby on the ground. Following the installation of the micropile foundation, a line or boom truck would be used to remove the form.

Equipment used for the micropile installations would be smaller and more portable than the large drill rigs used for drilled pier excavation and construction. Micropile foundations are more suitable for areas that are inaccessible because of terrain and areas where access may be prohibited because of environmental, resource agency, or CPUC concerns. Micropile foundations are also suitable for rock areas where excavation of the rock for conventional drilled piers would be difficult, entailing the use of blasting or rock breakers with augers or core barrels.

**TABLE 2-2  
PROJECT POLE/STRUCTURE SUMMARY**

<b>Pole Type</b>	<b>Approximate Quantity</b>	<b>Maximum Height Above Ground (feet)</b>	<b>Base Diameter at Grade (feet)</b>	<b>Tip Diameter (inches)</b>
<b>Segment 1 Rebuild</b>				
Pier Foundation	11	100	8	29
Micropile Foundation <sup>b</sup>	0	0	0	0
<b>Segment 2 New Build</b>				
Pier Foundation	11	110	8	29
Micropile Foundation <sup>b</sup>	9	110	8	29
<b>Segment 3 Reconductor/Re-Energize</b>				
Pier Foundation	4	85	8	29
Micropile Foundation	4	85	8	29

NOTES:

b Due to the specific underlying geologic formation (Santiago formation), Segment 1 and Poles 55 and 56 in Segment 2 would not use a micropile foundation.

**TABLE 2-4  
POWER LINE CONSTRUCTION SCHEDULE**

<b>Project Activity</b>	<b>Duration (days)</b>	<b>Anticipated Start and End Date</b>
Micropile foundation construction, approx. 13 poles	45	Segment 2: May 2020 – Aug 2020 Segment 3: May 2020
Pier foundation construction, approx. 26 poles	125	Segment 1: Feb 2020 – May 2020 Segment 2: May 2020 – Aug 2020 Segment 3: May 2020

**TABLE 2-6  
ESTIMATED CONSTRUCTION EQUIPMENT AND PERSONNEL**

<b>Activity</b>	<b>People</b>	<b># of Days<sup>a</sup></b>	<b>Equipment</b>	<b>Quantity</b>	<b>Horsepower Rating</b>	<b>Hours of Use per Day</b>	<b>Additive Hours of Use per Day</b>	<b>Segment Number</b>
Pier Foundation Construction (approx. 26 poles)	3 crews of 4 – 5 (12 – 15 total)	125	air compressor	3	78	4	12	All segments
			boom truck	3	250	3	9	All segments
			drilling rig	3	82	7	21	All segments
			excavator	3	162	4	12	All segments
			forklift	3	83	3	9	All segments
			generator	3	84	3	9	All segments
			loader	3	37	3	9	All segments
			pickup truck	3	250	4	12	All segments
water truck	3	250	3	9	All segments			
Micropile Foundation <sup>b</sup> Construction (approx. 13 poles)	2 crews of 4 - 5 (8 – 10 total)	45	air compressor	2	78	3	6	Segments 2 and 3 <sup>c</sup>
			backhoe	1	97	3	3	Segments 2 and 3 <sup>c</sup>
			crane	2	226	3	6	Segments 2 and 3 <sup>c</sup>
			crew truck	2	250	4	8	Segments 2 and 3 <sup>c</sup>
			flatbed truck	2	250	4	8	Segments 2 and 3 <sup>c</sup>
			forklift	2	83	3	6	Segments 2 and 3 <sup>c</sup>
			fuel truck	1	250	3	3	Segments 2 and 3 <sup>c</sup>
			generator	2	84	4	8	Segments 2 and 3 <sup>c</sup>
			grout plant	1	84	2-3	3	Segments 2 and 3 <sup>c</sup>
			pickup truck	1	250	4	4	Segments 2 and 3 <sup>c</sup>
			tractor/ trailer unit	1	250	3	3	Segments 2 and 3 <sup>c</sup>
water truck	2	250	3	6	Segments 2 and 3 <sup>c</sup>			

NOTES:

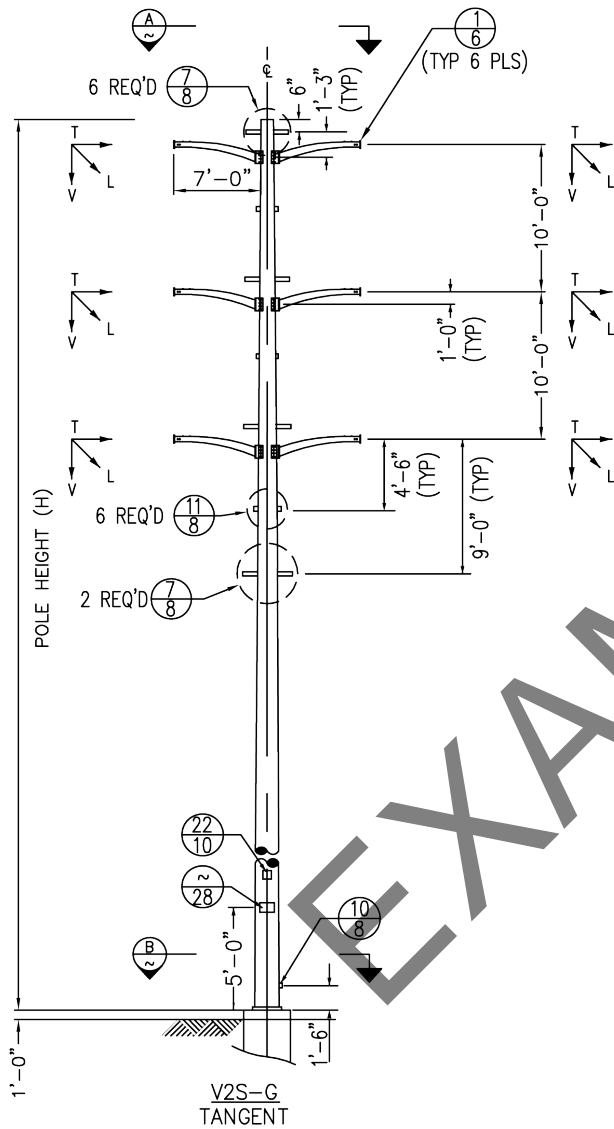
<sup>a</sup> This reflects the additive total of days of a given construction activity. See Section 2.5.1 for the Project's construction sequencing plan.

<sup>b</sup> Micropile foundations would be used in lieu of pier foundations only in limited cases which site-specific substrate and/or access conditions prohibit used on pier foundations, or to minimize ground disturbance.

<sup>c</sup> Segment 1 and Poles 55 and 56 in Segment 2 are excluded from the micropile foundation option as the underlying Santiago geologic formation has high sensitivity for paleontological resources which could not be avoided or salvaged and permanently lost through the drilling process used to install this type of foundation.

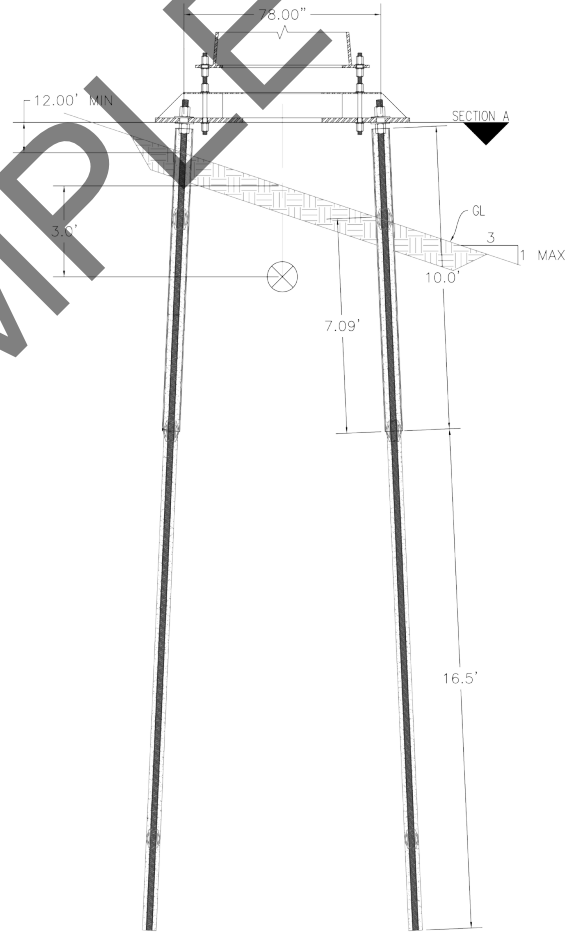
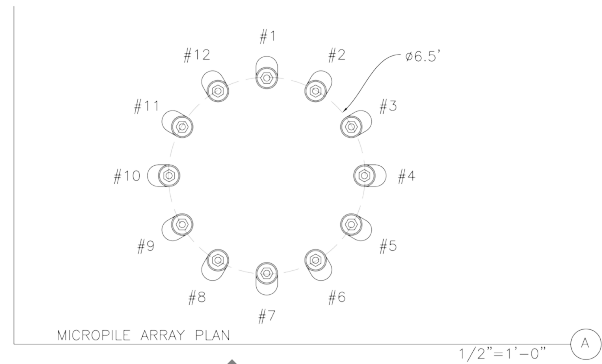
### Tubular Steel Pole - Aboveground

\*Not to Scale



### Micropile Foundation - Belowground

\*Not to Scale



Preliminary and subject to change based on California Public Utilities requirements, final engineering and other factors.