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SECTION ACRONYMS/ABBREVIATIONS

Acronym/ Abbreviation	Definition
CAISO	California Independent System Operator
EMF	Electromagnetic Field
LORS	Laws, Ordinances, Regulations and Standards
PG&E	Pacific Gas and Electric
SDG&E	San Diego Gas and Electric

3.0 TRANSMISSION SYSTEM DESIGN, SAFETY AND NUISANCE

3.1 TRANSMISSION SYSTEM DESIGN

The Project will interconnect to the existing Pala substation that occurs on a contiguous PG&E parcel, via an approximately 0.2-mile long, 69 kV, single circuit, underground transmission line. The location of the interconnection is provided in Figure 2.2-7. A typical cross-section for the interconnection is provided in Figure 3.1-1. A one-line diagram is provided in Figure 3.1-2.

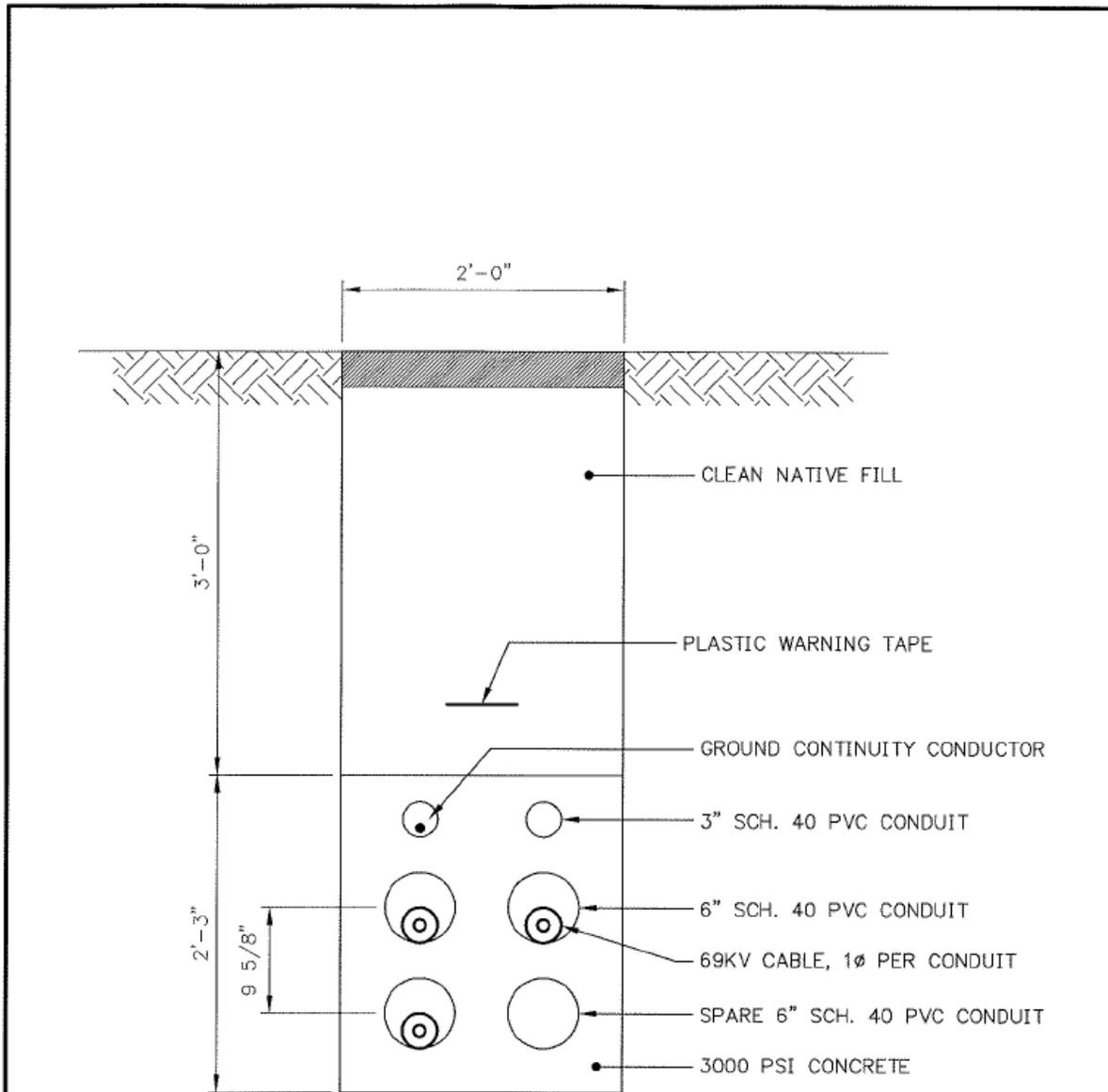
The transmission line will be installed in an underground raceway system, encased with concrete for added protection. Burial depth of the circuit will be in compliance with industry standards and in accordance with good engineering practice. The specified conductor cables will carry the full output of the power plant. The interconnection will be located within an approximately 20-foot-wide right-of-way that will be provided by San Diego Gas and Electric (SDG&E) between the Site and the substation.

The Pala substation was designated by SDG&E in the RFO process as the preferred interconnect point. The Orange Grove Project Site was selected by SDG&E for development to meet growth load requirements in the eastern part of its system. SDG&E recently built a substation adjacent to the Site and included an open bay for interconnection of a potential generating facility. SDG&E has initiated this project on a fast track time-line in order to address reliability concerns that arose out of the summer 2006 heat storm. With normal load growth a repeat heat event in summer 2008 could pose reliability issues for the SDG&E system. Delay or cancellation of the Project would leave the system vulnerable to heat events.

Orange Grove Energy submitted its interconnection request to the California Independent System Operator (CAISO) on April 19, 2007. The request identified the Pala substation as the primary interconnection point. The feasibility study has been completed and the impact study is in progress. CAISO expects to complete the impact study in October 2007. The facility study is expected to be completed in March, 2008. Following the facility study and the completion of the interconnection agreement between the Project and SDG&E, the interconnection facilities will be constructed. The single-circuit Project design and the presence of an open bay at the substation will facilitate interconnection with minimal upgrades to the substation. The interconnection facilities will include all system reinforcement required by CAISO.

The 69 kV system was selected over the 230 kV system for interconnection due to the relatively minor upgrades that will be required. An open bay is available at the 69 kV substation to accommodate the interconnection. Interconnection to the 230 kV system would require more infrastructure improvements. A 230 kV circuit passes approximately 0.25-mile east of the Site, but it does not enter the Pala substation. Connection with the 230 kV circuit would require above ground lines and a new substation.

Figure 3.1-1 – Typical Cross Section – Underground Transmission Line



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J POWER GROUP
 J-POWER USA
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ORANGE GROVE PROJECT

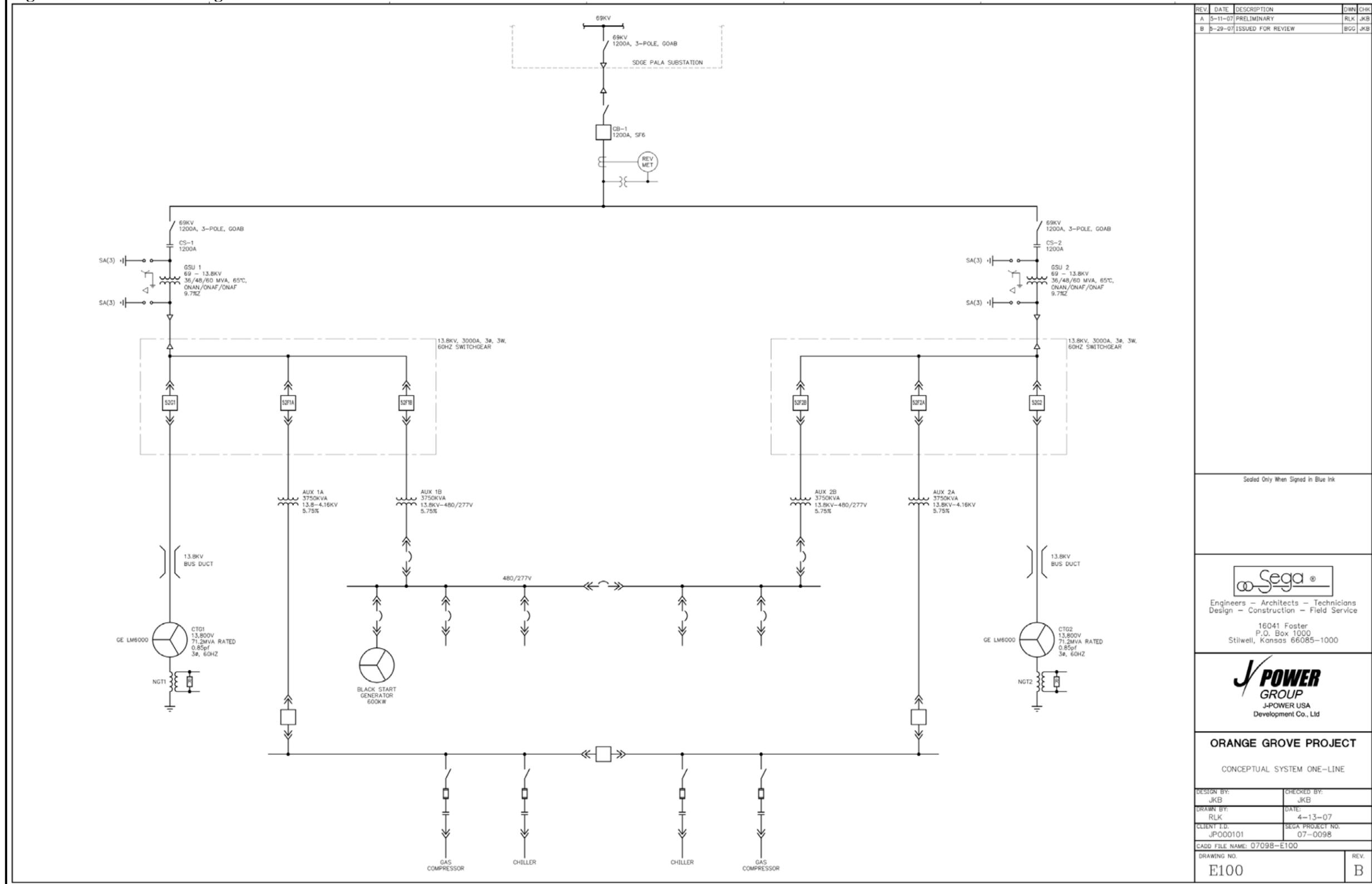
DWG. TITLE: TYPICAL CROSS SECTION—UNDERGROUND TRANSMISSION LINE

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Figure 3.1-2 – One-Line Diagram



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The transmission interconnection route was selected to provide the most practical route to the substation. The interconnection will be constructed in a manner that will minimize environmental impacts, including reclamation of construction disturbance, as described in Chapter 6.0 of this Application. The underground design will reduce visual impacts of the Project as opposed to a more conventional pole or tower line design. The interconnection will be installed by horizontal directional boring beneath the drainage that occurs to the west of the Site in order to avoid impacts to the drainage.

3.2 SAFETY AND NUISANCE

The transmission line interconnection will be constructed to meet applicable laws, ordinances, regulations and standards (LORS) for safety. The Site and transmission line interconnection are located in a rural region with no nearby receptors. The closest population center is located approximately 2.0 miles to the east, at the community of Pala. The closest residence is located approximately 0.4 mile from Project transmission system. The interconnection is within a contiguous SDG&E-owned parcel, and is approximately 200 feet or more from the closest Property boundary.

Underground cabling is designed with insulated conductors and grounded shielding around the conductors such that electromagnetic fields (EMFs) outside of the cable are negligible. Furthermore, the underground cable design prevents the formation of a corona that can lead to audible noise. The transmission line interconnection will be constructed in accordance with applicable electric codes and standards. Considering the underground design, the transmission line interconnection will not generate audible noise, radio television interference, nuisance shocks, or other EMF-related impacts.

3.3 LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

A summary of applicable LORS related to transmission system design, safety and nuisance is provided in Table 3.3-1. The Project will be constructed and operated in accordance with applicable LORS.

No permits are required specific to the transmission line interconnection. The interconnection will be accounted for in the County Major Use Permit. Agency contacts are provided in Table 3.3-2.

Table 3.3-1 – Transmission System Design, Safety and Nuisance LORS

JURIS-DICTION	AUTHORITY	AGENCY	REQUIREMENTS	COMPLIANCE
Federal	Federal Communications Commission Regulations, 47 CFR §15.25, Operating Requirements, Incidental Radiation.	Federal Aviation Administration (FAA).	Mitigation for any device that causes communications interference.	The Project will not cause communications interference.
State	CPUC, General Order 52 Construction and Operation of Power and Communication Lines.	California Public Utilities Commission.	Prevent or mitigate inductive interference.	The Project electrical interconnection will conform to requirements of this order.
	8 CCR §2700 et seq., High Voltage Electric Safety Orders.	California Public Utilities Commission.	Compliance with standards for installation, operation and maintenance of electrical equipment.	The Project electrical interconnection will conform to requirements of this regulation.
	Radio & Television Interference (RI/TVI) Criteria.	California Energy Commission.	RI/TVI mitigation requirements, if applicable.	No radio or TV interference is expected.
	CPUC, General Order 128 Rules for Construction of Underground Electric Supply and Communication Systems	CPUC	Insure adequate service and secure safety to all persons engaged in the construction, maintenance, operation, or use of underground systems and to the public.	Project will be constructed to conform to the requirements of this order.
Local	County Electrical Code (Regulatory Ordinances Title 5, Division 2.)	DPLU	Requires a permit and compliance with codes for electrical work.	Project will satisfy through Major Use Permit process.
Industry	California Independent System Operator (Cal-ISO).	Cal-ISO as reviewer.	Review interconnection study.	CAISO expects to complete the impact study in October 2007.
	IEEE 693, Recommended Practices for Seismic Design of Substations	None applicable.	Recommends design and construction practices	Substation work will implement appropriate practices in accordance with these standards.
	IEEE 80 Guide for Safety in AC Substation Grounding	None applicable.	Provides guidelines for assuring safety through proper grounding of outdoor substations.	Project will be constructed to conform with this guidance.

JURIS-DICTION	AUTHORITY	AGENCY	REQUIREMENTS	COMPLIANCE
	NESC, ANSI C2	None applicable.	Recommends provisions for safety in installation and operation of electric supply stations and overhead and underground supply lines..	Project will be constructed to conform with this guidance.
	IEEE 525 Guide for the Design and Installation of Cable Systems on Substations	None applicable	Recommends design and construction practices.	Project will be constructed to conform to this guideline.
	IEEE 605 Guide for Design of Rigid Bus Structures in Substations	None applicable	Recommends design and construction practices.	Project will be constructed to conform to this guideline.
	IEEE 980 Guide for Containment and Control of Oil Spills in Substations	None applicable	Recommends design and construction practices.	Project will be constructed to conform to this guideline.
	IEEE 998 Guide for Direct Lightning Strokes Shielding of Substations	None applicable	Recommends design and construction practices.	Project will be constructed to conform to this guideline.

Table 3.3-2 – Administrative Agency Contacts and Permit Approval Authorities

AGENCY	AUTHORITY
California Independent System Operator Judy Nickel 916-608-7062 jnickel@caiso.com,	Compliance with interconnection and maintenance requirements
County of San Diego Mr. Gary Pryor, Director Department of Planning and Land Use 5201 Ruffin Road, Suite B Mail Station O-650 San Diego, CA 92123 (858) 694-2962	Major Use Permit; detailed design review, inspection, and code enforcement.