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CHAPTER 3 – PROJECT DESCRIPTION

3.0 PROJECT LOCATION

The proposed East County (ECO) Substation Project (Proposed Project) is located in the southeastern portion of San Diego County, California. The proposed ECO Substation, which is the primary component of the Proposed Project, is situated approximately 0.5 mile north of the United States (U.S.)-Mexico border, 0.5 mile west of the Imperial County border, and 70 miles east of downtown San Diego, as shown in Figure 3–1: Project Location Map.

For the purposes of this document and to better describe the location, the Proposed Project is divided into the following five components:

1. 500/230/138 kilovolt (kV) ECO Substation
2. Southwest Powerlink (SWPL) loop-in, a short loop-in of the existing SWPL transmission line to the proposed ECO Substation
3. 138 kV transmission line, approximately 13.3 miles in length, running between the proposed ECO Substation and the rebuilt Boulevard Substation
4. Boulevard Substation rebuild
5. White Star Communication Facility rebuild

The locations of these components are depicted in Figure 3–1: Project Location Map and described in more detail as follows.

3.0.0 ECO Substation

The proposed substation site is located on the south side of Interstate (I-) 8, east of the town of Jacumba, on the west side of the Jacumba Mountain range (an extension of the Sierra de Juárez range) within the In-Ko-Pah Gorge U.S. Geological Survey quadrangle. Old U.S. Highway 80 is located just north of the site and the U.S.-Mexico border is located to the south, as shown in Figure 3–1: Project Location Map. Privately owned, undeveloped land borders the western and southern sides of the site, and undeveloped land managed by the Bureau of Land Management (BLM) is located to the east. The site can be accessed by traveling east from San Diego on I-8, exiting at In-Ko-Pah Park Road, and heading west on Old U.S. Highway 80 until it intersects the SWPL.

The ECO Substation will be located entirely on privately owned, undeveloped land. San Diego Gas & Electric Company (SDG&E) will acquire up to six parcels to construct the Proposed Project, totaling approximately 498 acres of land, of which the fenced portion of the ECO Substation will encompass approximately 58 acres.

3.0.1 SWPL Loop-In

The SWPL loop-in will be constructed in the same general location as the ECO Substation. A short loop to connect the existing 500 kV SWPL transmission line into the new substation will begin along the existing SWPL right-of-way (ROW), traverse south for approximately 1,200 feet, then will turn west for 250 feet, and enter at the east side of the new substation. The existing SWPL transmission line and new substation are shown in Figure 3–1: Project Location

Map. Structures associated with this loop will be located on land acquired for the new substation and within SDG&E's existing SWPL ROW.

3.0.2 138 kV Transmission Line

An approximately 13.3-mile-long 138 kV transmission line will be constructed from the ECO Substation to the rebuilt Boulevard Substation (located within the unincorporated community of Boulevard in southeastern San Diego County), as shown in Figure 3–1: Project Location Map. The line will travel west out of the ECO Substation for approximately 300 feet and then turn north until reaching the SWPL. The 138 kV line will then continue parallel to the south side of the SWPL for approximately 5.7 miles. At this point, the line will cross under the SWPL and continue parallel for approximately 3.2 miles along its north side until it intersects with an existing dirt access road. At this point, the line will turn to the northwest for approximately 750 feet before turning and continuing generally north for approximately 1.5 miles. The line will then turn east for approximately 0.6 mile, north for approximately 0.3 mile, and northwest for approximately 0.3 mile until it crosses over Tule Jim Lane. The line will then run north along the west side of Tule Jim Lane for approximately 1.3 miles until it crosses Eady Lane. At this point, the line will change from an aboveground line to an underground line and turn northeast for approximately 0.1 mile until it enters the rebuilt Boulevard Substation. A set of detailed route maps of the 138 kV transmission line are provided in Attachment 3-A: 138 kV Transmission Line Route Map.

The new 138 kV transmission line will require an approximately 100-foot-wide permanent ROW (50 feet on either side of the centerline). Approximately nine miles of the new transmission line that parallels the SWPL will be adjacent to SDG&E's existing easements. This area is predominantly privately owned, undeveloped open space. For more detailed information about the temporary ROW requirements, refer to Section 3.6 Permanent Land/Right-of-Way Requirements.

3.0.3 Boulevard Substation Rebuild

The existing Boulevard Substation and its rebuild site are located approximately 12 miles northwest of the proposed ECO Substation site, as shown in Figure 3–1: Project Location Map. SDG&E has acquired one 8.5-acre parcel immediately east of the existing Boulevard Substation to rebuild the substation. Nine existing structures located on this property will be removed prior to substation construction. In addition, the existing Boulevard Substation will be dismantled and removed after the new substation is put in service. Single-family residences on large lots surround the existing and rebuilt substation sites. The site can be accessed by traveling east from San Diego on I-8, heading south on Highway 94 (Jewel Valley Road), and then heading west on Old U.S. Highway 80.

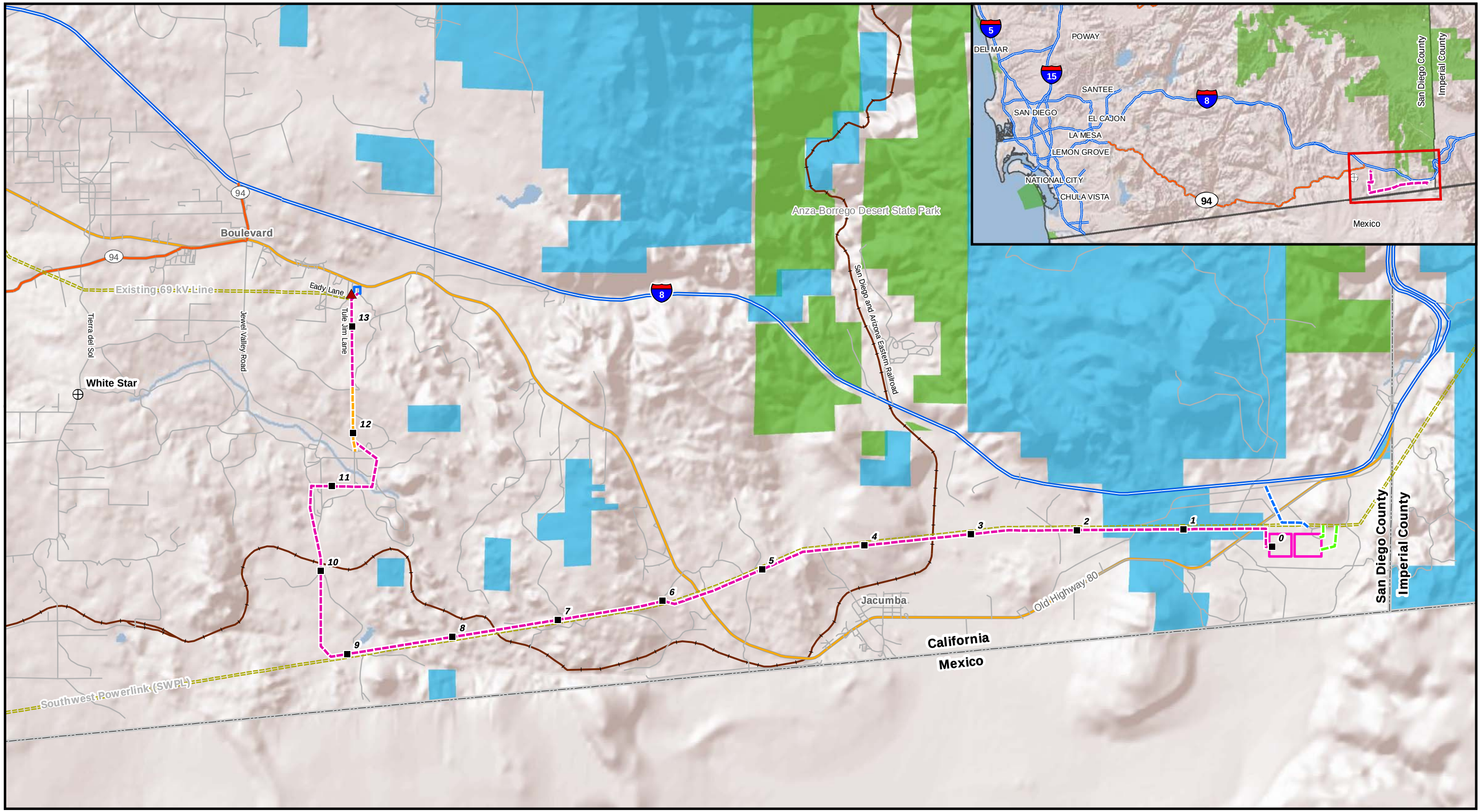

Figure 3-1: Project Location Map

East County Substation Project

- Proposed SWPL Loop-In
- Proposed 138 kV Line
- Proposed 12 kV Temporary Distribution Tap
- 445 Circuit Collocated with 138 kV Line
- Existing Transmission Line
- Proposed ECO Substation
- Boulevard Substation Rebuild
- Existing Boulevard Substation
- Proposed 138 kV Line Milepost
- Communication Facility
- Bureau of Land Management
- California State Park
- Interstate
- Highway
- Local Road
- Major Road
- Railroad

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3.0.4 White Star Communication Facility Rebuild

The communication path for the Proposed Project will be from the ECO Substation to the existing White Star Communication Facility on Tierra Del Sol Road, at which point SDG&E will lease two existing T1 lines from White Star to Monument Peak. SDG&E will then intercept the leased circuits into SDG&E's network at Monument Peak for transmission back to the City of San Diego. The communication facilities at the ECO Substation will be constructed within the fenced area of the substation and are discussed as part of the ECO Substation project component throughout this document.

The existing White Star Communication Facility and its rebuild site are located approximately 14 miles northwest of the proposed ECO Substation. The scope of work at the White Star Communication Facility includes the removal of an existing equipment enclosure, removal of two wood poles, height reduction of an existing pole, installation of a new steel monopole, and installation of a new equipment enclosure. No new land rights will be required for the installation or reconstruction of these facilities; however, because the new White Star Communication Facility will be connected to existing facilities owned by San Diego County, the existing lease agreement will be modified.

3.1 EXISTING SYSTEM

The existing 500 kV SWPL transmission line originates near Phoenix, Arizona at the Palo Verde Switchyard, owned by Arizona Public Service Company, and terminates at SDG&E's Miguel Substation south of the City of San Diego. This line loops into the North Gila Substation in western Arizona and the Imperial Valley Substation near El Centro, California in Imperial County. This is the only 500 kV transmission line in SDG&E's electric service territory and it has been in operation since 1984. Figure 3–2: Schematic Diagram of the Existing and Proposed System provides a schematic drawing of the system as it is currently configured and as it will be configured after construction of the Proposed Project. Figure 3–3: Map of the Existing and Proposed System illustrates the transmission system before and after the addition of the Proposed Project facilities.

3.2 PROJECT OBJECTIVES

The six primary objectives of the Proposed Project are as follows:

1. Provide an interconnection hub for renewable generation that eliminates the need for multiple generator-owned or -operated switching stations along SDG&E's existing SWPL 500 kV transmission line.

2. Expand the interconnection capability of the southeastern transmission system to accommodate all of the region's planned renewable generation (based on data in the California Independent System Operator [CAISO] Generator Interconnection Queue as of June 2009) and provide for future as-yet-unplanned generation, thus increasing opportunities for California investor-owned utilities to meet or exceed California's renewable energy source mandate of 20 percent by 2010 and Governor Schwarzenegger's proposed goal of 33 percent renewable energy sources by 2020.

3. Facilitate interconnection of renewable generation sources in the Boulevard area.

4. Create a Supervisory Control and Data Acquisition (SCADA)-controlled, normally open loop in the southeastern transmission system to improve control, increase operational flexibility, and enhance the reliability of the regional transmission system.

5. Provide a second source for the southeastern transmission system that avoids the vulnerability of common structure outages, thus increasing the reliability of electrical service for Boulevard, Jacumba, and the other surrounding communities.

6. Maximize the use of existing utility ROWs and access roads and follow Garamendi Principles[1] for the transmission component of the Proposed Project.

Chapter 2 – Project Purpose and Need provides greater detail regarding the Proposed Project's various components and objectives.

3.3 PROPOSED PROJECT

The Proposed Project includes five components:

1. Construction of a new 500/230/138 kV electric substation (ECO Substation)

2. Loop-in of the existing 500 kV SWPL transmission line into the new substation, which will require installation of transmission structures outside of the fenced area at the ECO Substation, but within the newly acquired SDG&E property

3. Construction of a new, approximately 13.3-mile-long 138 kV transmission line from the ECO Substation to the rebuilt Boulevard Substation, including the placement of a 0.646-inch diameter, 48-strandall-dielectric self-supporting fiber optic cable to provide critical communication services

4. Rebuild of the Boulevard Substation on a new 8.5-acre parcel to provide 138 kV and 69 kV interconnection capability and 12 kV service

5. Construction of a microwave communication relay system, comprised of new towers and control buildings at the ECO Substation and White Star Communication Facility and the leasing of existing T1 lines from San Diego County

[1] California Senate Bill 2431, Chapter 1457, declared that it is in the best interest of the state to conduct transmission siting according to the following principles ("Garamendi Principles"):
1. Encourage the use of existing ROW by upgrading existing transmission facilities where technically and economically justifiable.
2. When construction of new transmission line is required, encourage expansion of existing ROW, when technically and economically feasible.
3. Provide for the creation of new ROW when justified by environmental, technical, or economic reasons as determined by the appropriate licensing agency.
4. Where there is a need to construct additional transmission capacity, seek agreement among all interested utilities on the efficient use of that capacity.

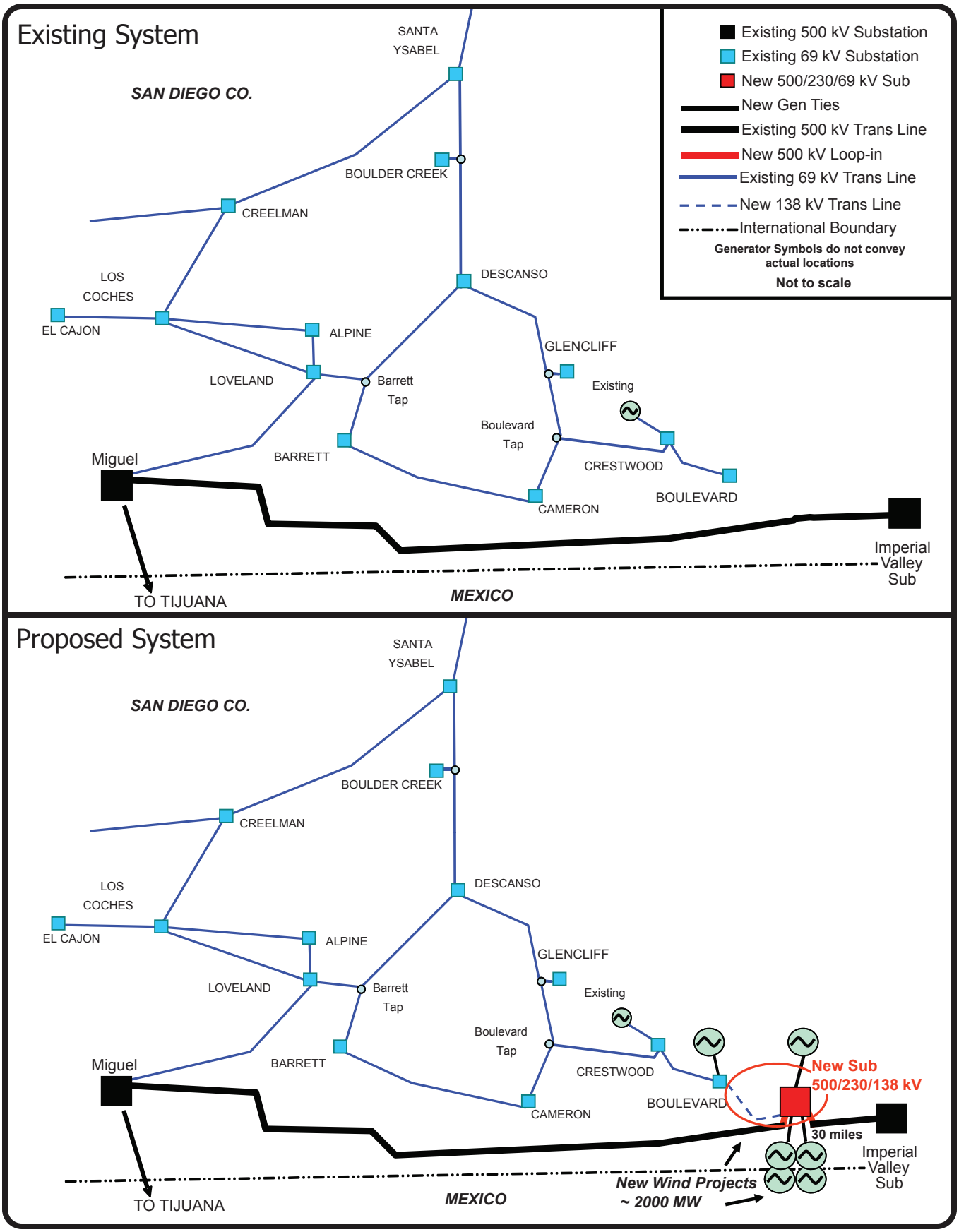

Figure 3-2: Schematic Diagram of the Existing and Proposed System

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Figure 3–3: Map of the Existing and Proposed System

Figure 3–3: Map of the Existing and Proposed System has been omitted from this document due to its confidential nature.

These components are described in more detail in Section 3.5 Project Components and are shown in Figure 3–1: Project Location Map.

3.4 CONNECTED ACTIONS

The Proposed Project is also being analyzed under the National Environmental Policy Act (NEPA) because the 138 kV transmission line component crosses BLM-managed land for approximately 1.5 miles. Under the NEPA, 40 Code of Federal Regulations Section 1508.25(a)(l), projects are considered "connected actions" if they are automatically triggered by the proposed action, cannot or will not proceed unless the proposed action occurs first or simultaneously, or are interdependent parts of a larger action and depend upon the larger action for their justification. The Energia Sierra Juarez Gen-Tie Project may be considered connected to the ECO Substation, and therefore, is described in further detail in the following section.

3.4.0 Energia Sierra Juarez Gen-Tie Project

The proposed Energia Sierra Juarez Gen-Tie Project is a 500 kV or 230 kV transmission line that will electrically interconnect up to 1,250 megawatts (MW) of renewable generation in the vicinity of La Rumorosa (located in Baja California, Mexico) with the Imperial Valley-Miguel segment of the SWPL 500 kV transmission line.

The proposed transmission line will consist of either a new, double-circuit 230 kV transmission line or single-circuit 500 kV transmission line on lattice towers, extending south from the point of interconnection with SWPL approximately one mile to the U.S.-Mexico border. From the border, the proposed transmission line will continue south for approximately two miles to its origination point at a new 230 kV or 500 kV ring bus. The portion of the proposed transmission line located in the U.S. (approximately one mile) will be constructed, owned, operated, and maintained by Energia Sierra Juarez U.S., Limited Liability Company (LLC), a wholly-owned subsidiary of Sempra Generation.

In its application for a Presidential Permit (submitted to the U.S. Department of Energy [DOE] on December 18, 2007), Energia Sierra Juarez U.S., LLC described a future SWPL loop-in substation that would allow one or two interconnection positions. The proposed ECO Substation would serve as the substation necessary for the Energia Sierra Juarez Gen-Tie Project to connect to the existing SWPL. The DOE is currently preparing the project's Environmental Impact Statement, which is anticipated to be issued in the fall of 2009. The Notice of Intent was filed with the DOE on February 25, 2009 and public scoping comments are available on the project's website.[2] At this time, the Scoping Report is pending.

3.5 PROJECT COMPONENTS

3.5.0 ECO Substation

The new ECO Substation will occupy approximately 58 acres, which will be enclosed by a chain-link fence around the perimeter of the substation. In addition, a 20-foot buffer around the perimeter of the substation pads will be maintained. Construction will require permanent cut and

[2] http://www.esjprojecteis.org/

fill slopes in the area surrounding the substation that may occupy an additional 25 acres. In addition, a new access road, drainage facilities for the site, and a design/construction buffer of approximately 100 to 150 feet around the substation will be included in the Proposed Project design. The substation will be split into two separate yards—a 500 kV yard and a 230/138 kV yard—at offset elevations, as shown in Figure 3–4: ECO Substation Temporary and Permanent Impact Areas, Figure 3–5: ECO Substation Layout, and Figure 3–6: ECO Substation Profile Drawing. The fenced area of the 500 kV yard will occupy roughly 32 acres (approximately 1,290 feet by 1,080 feet). The fenced area of the 230/138 kV yard will occupy roughly 26 acres (approximately 1,060 feet by 1,080 feet).

The electrical facilities to be installed include 500 kV, 230 kV, and 138 kV air-insulated electrical buses, steel support structures, transformers, capacitors, reactors, circuit breakers, disconnect switches, communication equipment, control equipment, and protective relays. More specifically, the initial arrangement of the substation will consist of:

- Two 500 kV bays in a ring bus configuration
- One 500/230 kV transformer bank (three single-phase units with one operational spare)
- Three 230 kV bays in a breaker-and-a-half bus configuration
- One 230 kV shunt capacitor
- One 230/138 kV transformer bank
- Two 138 kV bays in a double-bus/double-breaker bus configuration
- One 12 kV, 180 megavolt ampere reactive (MVAR) shunt reactor bank
- One microwave communication tower

Other facilities will include metering, SCADA, security, and communications equipment. In addition, two single-story relay/control buildings, a single-story storage building, and a fire-suppression system with associated hydrants and an approximately 120,000-gallon water tank will be installed. The water tank will be approximately 15 feet in height and 30 feet in diameter and will also be utilized for landscape irrigation. A stationary generator, to be used as a backup to the station lights and power transformers, will also be installed. The anticipated substation equipment will be fully contained within the fenced area and is depicted in Figure 3–5: ECO Substation Layout. In addition, a retention basin will be constructed near the northwestern corner of the 230/138 kV yard, adjacent to the northern side of the substation. After construction, the basin will be used for 500 kV yard stormwater retention. A second retention basin will be constructed along the western side of the ECO Substation for collection of drainage from the 230/138 kV yard. The retention basins are anticipated to be approximately 1.2 and 1.9 acres in size, respectively; however, the final design of the retention basins will be determined after consultation with San Diego County to ensure adequate sizing to accommodate stormwater flows. The locations of the retention basins are depicted in Figure 3–7: ECO Substation and SWPL Loop-In Vicinity Map.

The substation will be designed so that it will ultimately be expanded to include the following components:

- Five 500 kV bays in a breaker-and-a-half bus configuration
- Nine 230 kV bays in a breaker-and-a-half bus configuration

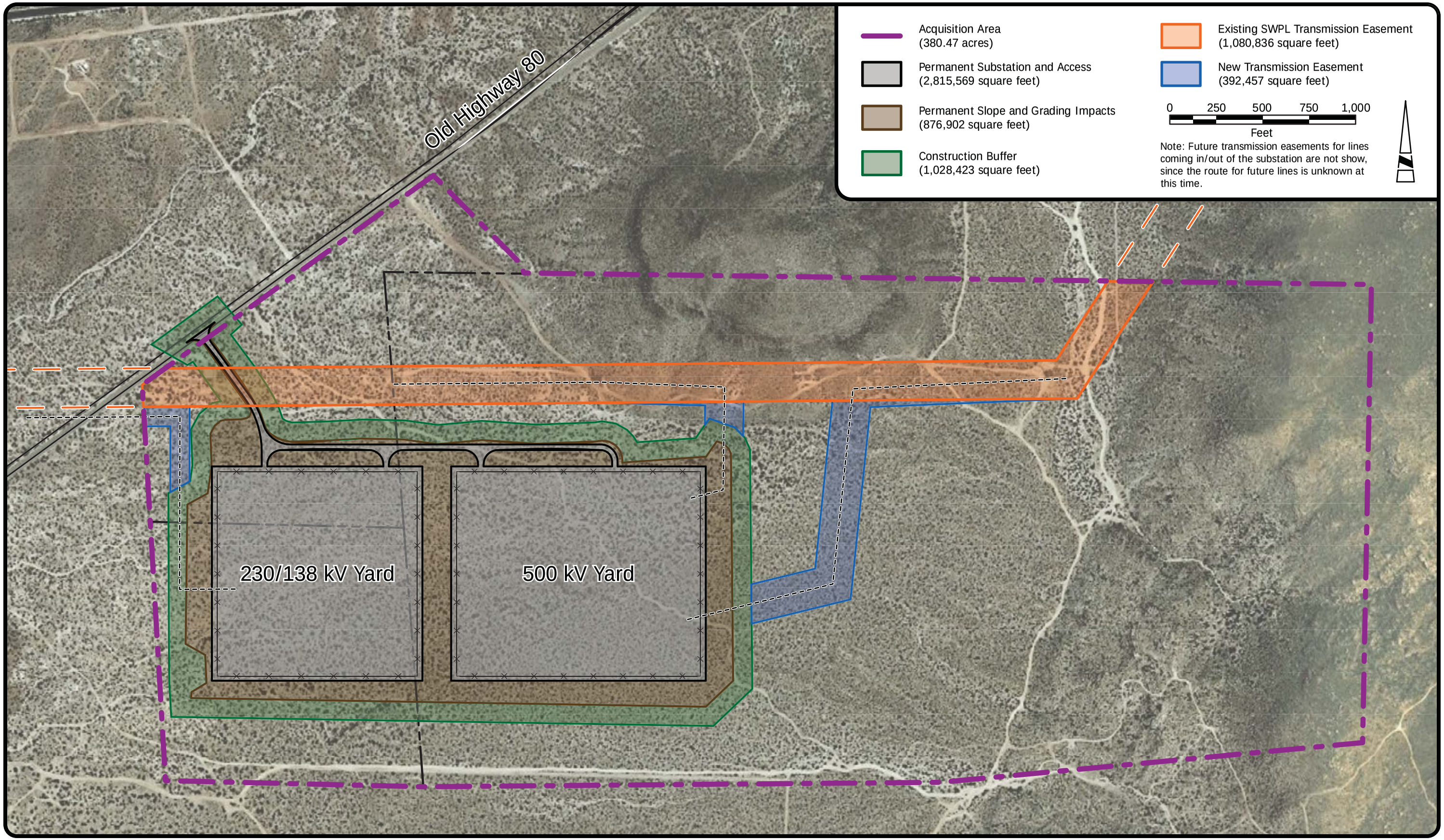

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Figure 3-4: ECO Substation Temporary and Permanent Impact Areas

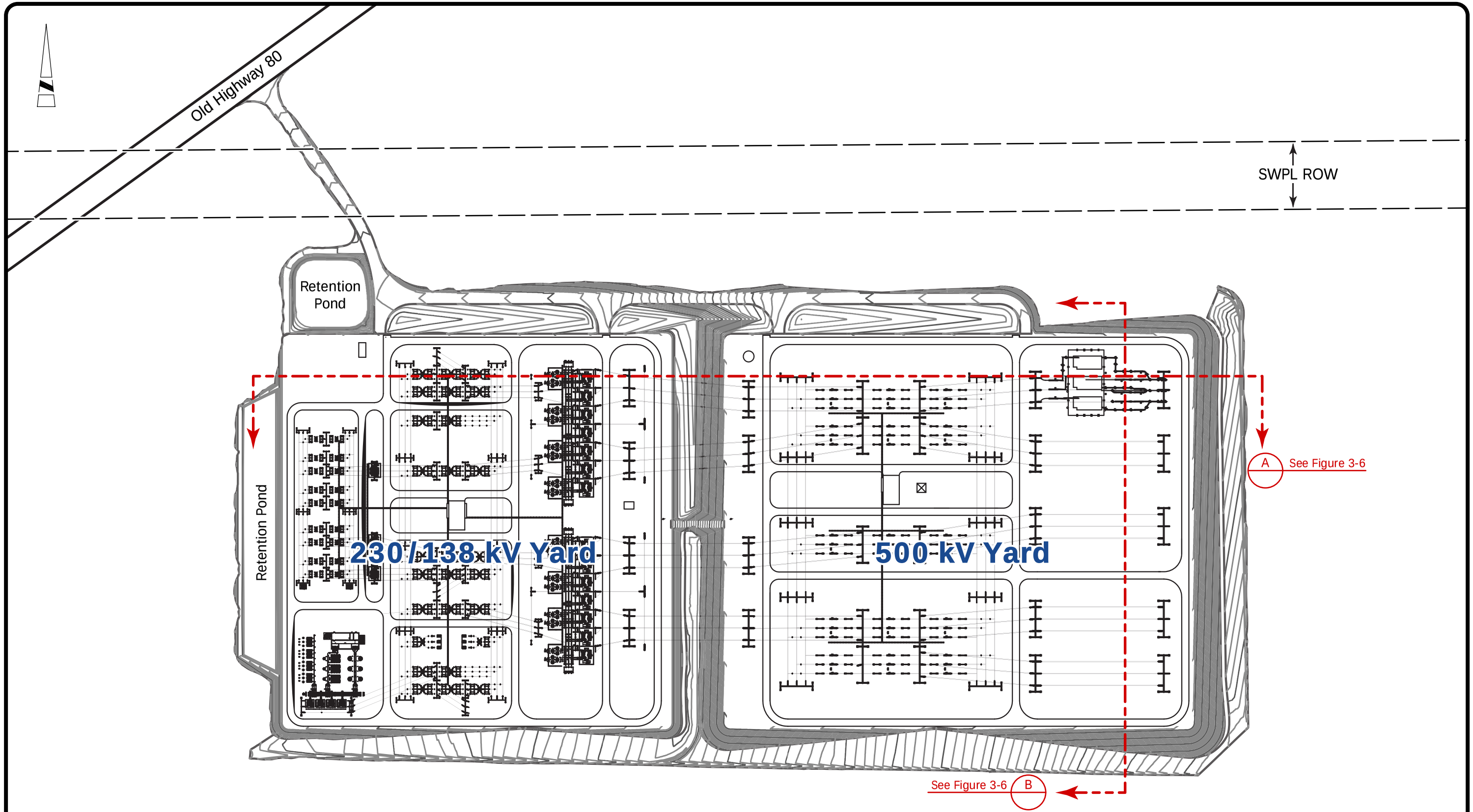
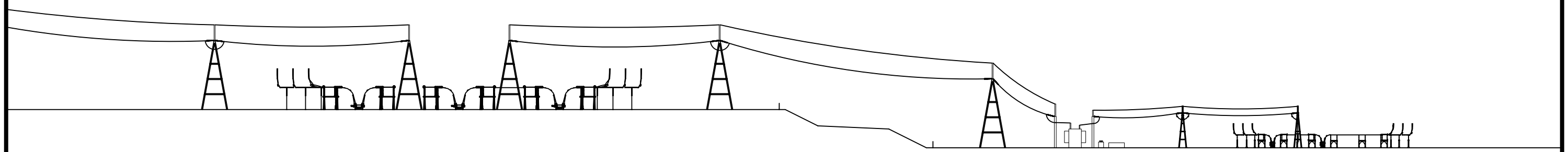


Figure 3-5: ECO Substation Ultimate Layout



ELEVATION A
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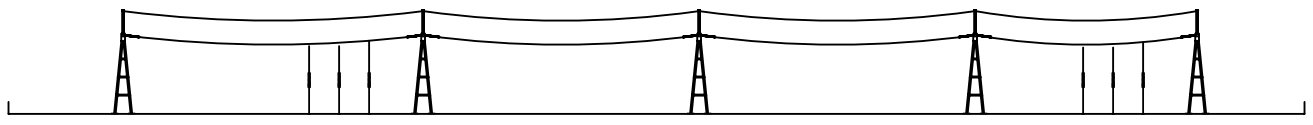

ELEVATION B
LOOKING WEST

NOT TO SCALE

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Figure 3-6: ECO Substation Profile Drawing

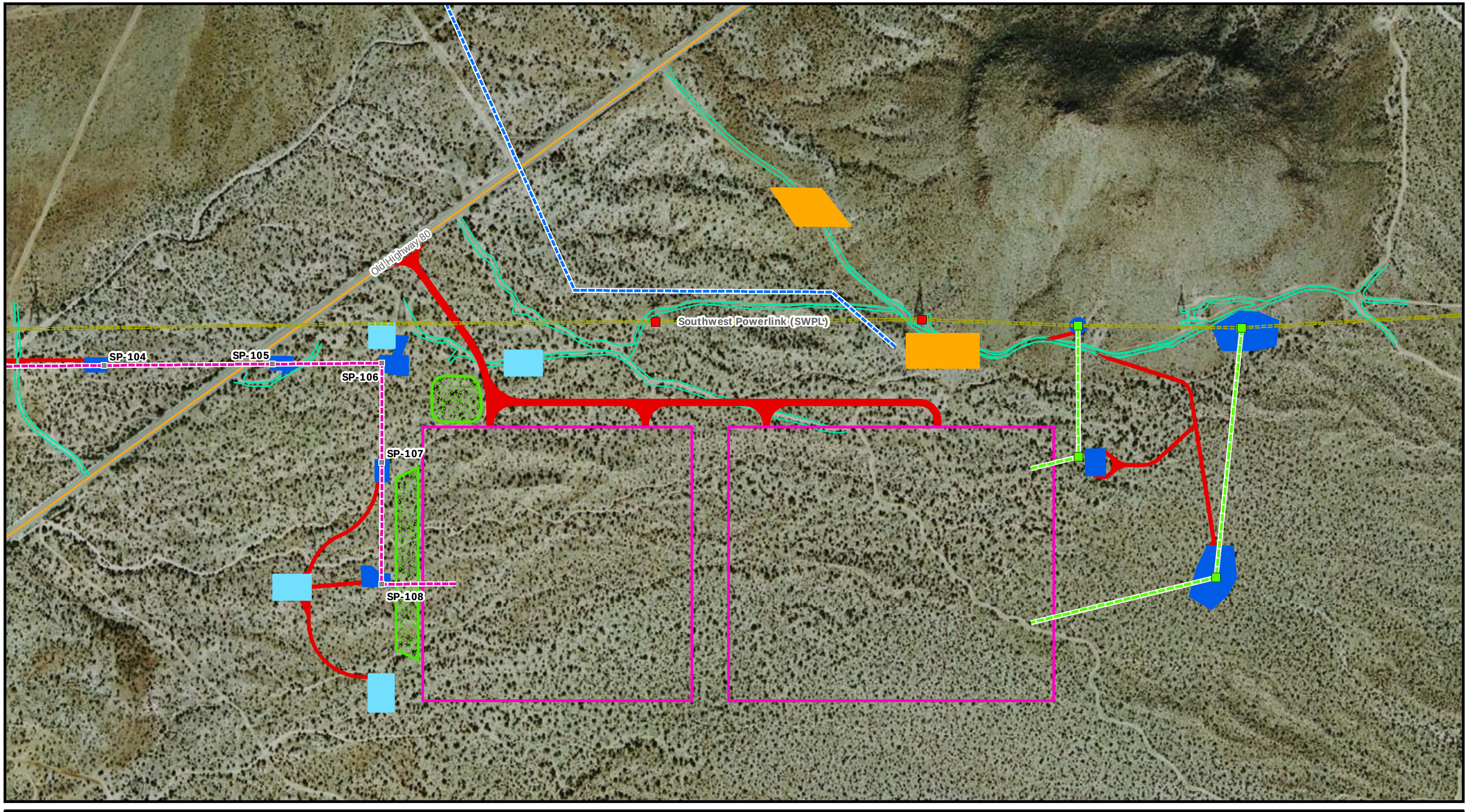

Figure 3-7: ECO Substation and SWPL Loop-In Vicinity Map

East County Substation Project

- Proposed SWPL Loop-In
- Proposed 138 kV Line
- Proposed 12 kV Temporary Distribution Tap
- Existing Transmission Line
- Proposed 138 kV Tower
- Proposed ECO Substation
- Retention Pond
- Existing SWPL Structure
- Proposed SWPL Loop-In Structure
- Exisiting Access Road
- New Access Road
- Pull Site
- Temporary Work Area
- Staging Yard
- Major Road
- Interstate
- Highway
- Railroad

Note: The Proposed Project facilities and work areas depicted are based on preliminary engineering data and are subject to change or refinement.

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- Nine 138 kV bays in a double-bus/double-breaker configuration
- Four 500/230 kV, 1,100 megavolt ampere (MVA) transformer banks with two single-phase operational spares
- Three 230/138 kV, 224 MVA transformer banks
- One or more 500 kV series capacitors
- Two 230 kV, 63 MVAR shunt capacitors
- Four 12 kV, 180 MVAR shunt reactor banks
- One 230 kV static VAR compensator

The maximum amount of oil required for the transformers at the ECO Substation will be approximately 569,800 gallons.

The tallest structures in the substation will be the 500 kV line and transformer dead-end structures and the new communication tower. The maximum height for the 500 kV structures and communication tower will be approximately 135 feet.

Substation lighting will be provided by approximately fifty 300-watt tungsten-quartz lamps placed near major electrical equipment. The yard lights will normally be turned off and will only be used during nighttime for security and safety reasons. Approximately ten 100-watt yellow floodlights will be mounted near the substation gates and building entrances to allow for nighttime emergency repair and routine maintenance access. The lights will be oriented downward to minimize glare onto surrounding property and habitat.

To offset the auxiliary power use at the ECO Substation, SDG&E is currently evaluating the installation of solar panels on the two control structures and storage structure. The installation of these solar panels would generate approximately 111,000 kilowatt (kW) hours of electricity annually. Since they have not yet been fully evaluated or designed, impacts associated with their installation have not been evaluated throughout the resource sections (Chapter 4) of this Proponent's Environmental Assessment.

A 10-foot-tall chain-link fence topped with barbed wire will enclose the entire substation, which includes the 500 kV yard and 230/138 kV yard. All entrance gates will be locked and monitored remotely to limit access to only qualified personnel. Warning signs, in English and Spanish, will be posted on the substation fence in accordance with federal, state, and local safety regulations. A substation ground grid will also be installed in accordance with applicable safety guidelines.

An approximately 2,900-foot-long asphalt paved access road will be constructed from Old U.S. Highway 80 to the ECO Substation. The access road will extend southeast off of Old U.S. Highway 80 before turning east and running along the north side of the pads. Four asphalt-paved driveways, approximately 100 feet in length, will be constructed off of the access road into the four-gated entrances of the substation. The access road will be approximately 30 feet wide; requiring approximately 2.2 acres of land. A detailed construction drawing depicting the substation layout and access roads is included as Figure 3–5: ECO Substation Layout. In addition, 20-foot-wide asphalt-paved interior access roads will be constructed within the substation to access the equipment.

Substation communication will be facilitated via a microwave and T1 system that will include the construction of a new communication tower at the ECO Substation. A 135-foot-tall microwave tower with a six-foot-diameter microwave antenna, associated ground systems, control structure, and cable bridge from the communication tower to the control structure will be installed within the ECO Substation fence. The microwave dish will be attached to the tower approximately 50 feet off the ground. A typical drawing of a communication tower is provided in Figure 3–8: Communication Tower Typical Drawing.

3.5.1 SWPL Loop-In

The existing 500 kV transmission line will be looped in and out of the 500 kV bus within the ECO Substation in conjunction with the substation construction. This installation will require the removal of one existing 125-foot-tall tower and the installation of four new steel towers east of the ECO Substation fence. Depending on the final design, the anticipated maximum height of these structures will be approximately 125 feet. The approximate locations of these structures are shown in Figure 3–7: ECO Substation and SWPL Loop-In Vicinity Map. A typical drawing of the lattice structures to be installed has been included as Figure 3–9: SWPL Loop-In Structure Typical Drawing.

A bundled 2,156 kcmil[3] aluminum-clad steel reinforced (ACSR)/Alumoweld (ACSR/AW) conductor will be installed on the SWPL loop-in with horizontal configuration (one phase on each side of the structures and one phase in the middle of the structures). The distance from the ground to the lowest conductor will be at least 35 feet. The approximate distance between phases will be 35 feet horizontally. The span lengths between the transmission structures will be approximately 1,200 feet.

3.5.2 138 kV Transmission Line

SDG&E is proposing to construct a new 138 kV transmission line from the ECO Substation to the rebuilt Boulevard Substation. The structure configuration for the transmission line will be designed as a twin circuit (two conductors per phase).

The new transmission line will be approximately 13.3 miles long and will include approximately 98 steel transmission poles, as shown in Figure 3–1: Project Location Map. In addition, nine wooden distribution poles will be installed to replace the existing distribution Circuit 445 poles; this distribution line will be collocated on the new 138 kV transmission line structures near the intersection of Jewel Valley Road and Tule Jim Lane in Boulevard. Some service lines may need to be extended to the relocated distribution line.

The final approximately 440 feet of the 138 kV transmission line will be installed underground in a concrete duct bank, terminating at the rebuilt Boulevard Substation. The duct bank will measure approximately 38 inches wide, 36 inches tall, and will contain nine six-inch-diameter conduits. One steel cable riser pole, which will be approximately 140 feet tall, will be installed at the end of the overhead segment to connect the overhead conductors to the underground substation getaways.

[3] kcmil (1,000 cmils) is a quantity of measure for the size of a conductor; kcmil wire size is the equivalent cross-sectional area in thousands of circular mils. A circular mil (cmil) is the area of a circle with a 0.001-inch-diameter.

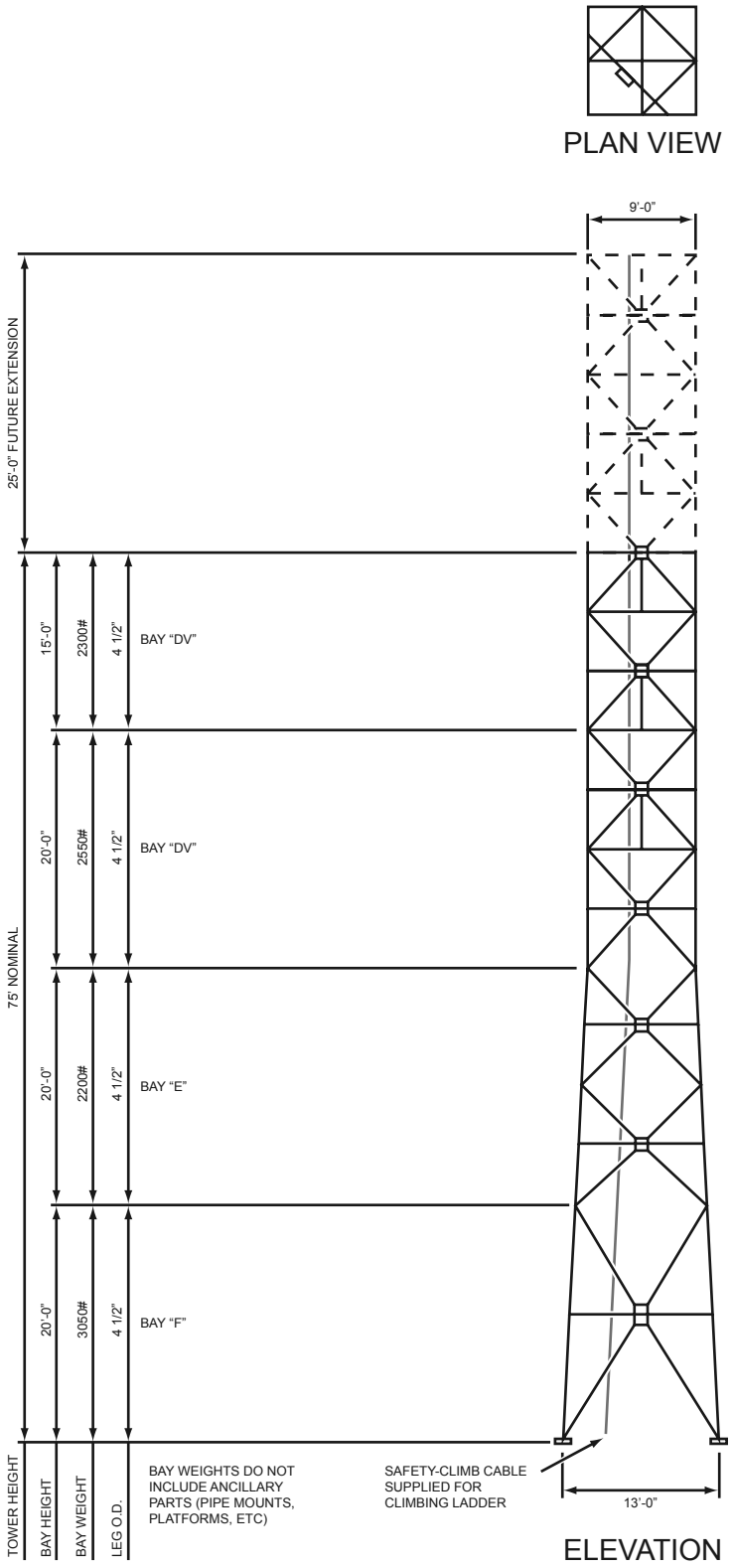

Figure 3-8: Communication Tower Typical Drawing

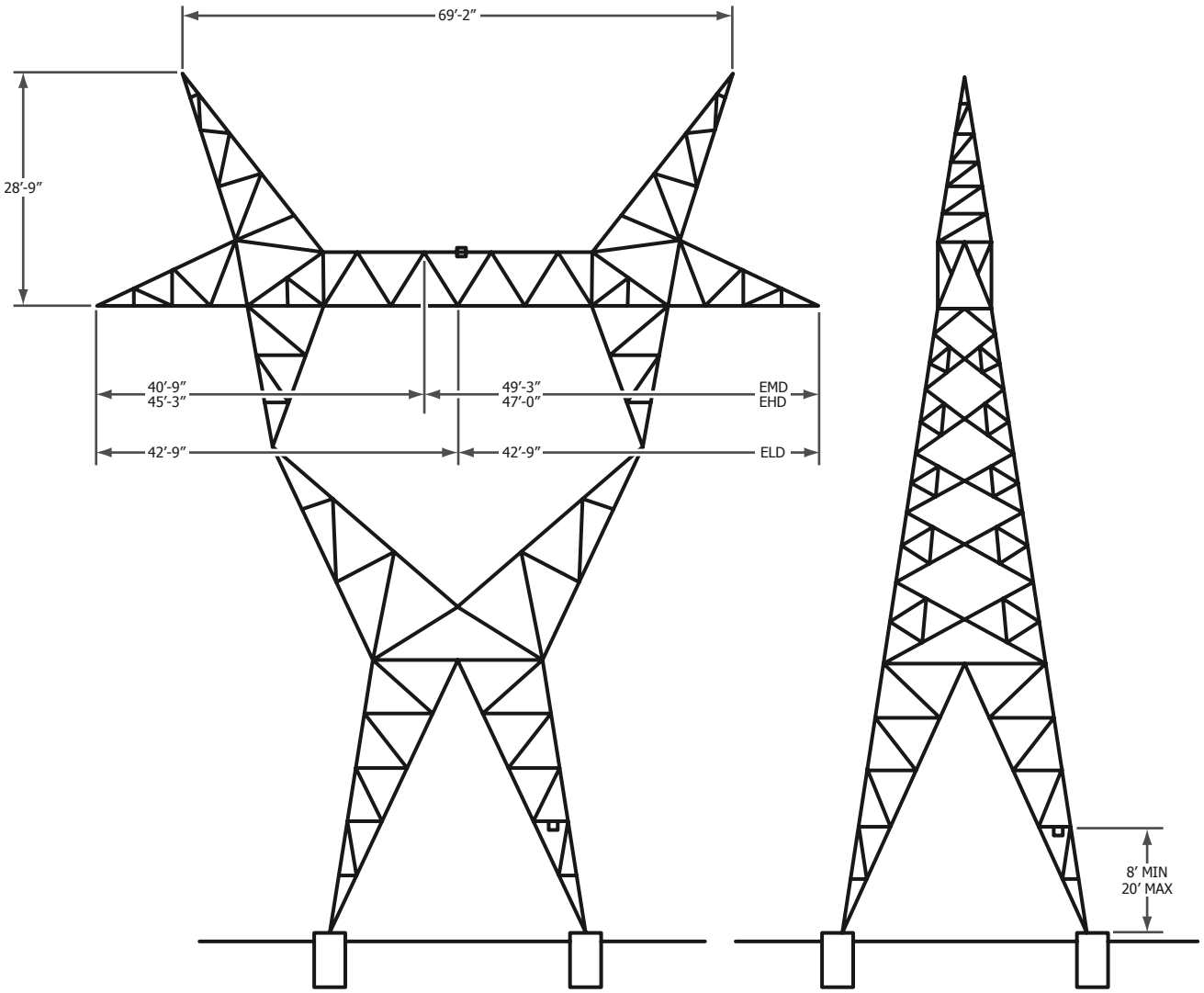

Figure 3-9: SWPL Loop-In Structure Typical Drawing

Access roads will be constructed to most steel pole locations to facilitate installation and to allow for inspection and maintenance. All access roads to be built will be spur roads off of existing dirt roads. The spur roads will vary in length from 20 feet to 250 feet and will be approximately 15 feet wide. A total of approximately 2.6 miles of spur roads will be constructed, requiring approximately 5.3 acres of land.

A more detailed route map showing the overhead, underground, and collocation segments, as well as the access roads, the 12 pull sites, and the three fly yards is provided in Attachment 3-A: 138 kV Transmission Line Route Map.

Drawings of a typical steel pole, typical angle structure,[4] typical steel pole with distribution underbuild, typical steel cable riser pole, and typical wooden distribution pole are provided in Figure 3–10: 138 kV Steel Pole Typical Drawing, Figure 3–11: 138 kV Angle Structure Typical Drawing, Figure 3–12: 138 kV Steel Pole With Distribution Under-Build Typical Drawing, Figure 3–13: Steel Cable Riser Pole Typical Drawing, and Figure 3–14: Wooden Distribution Pole Typical Drawing. The tallest 138 kV structure, which will be the riser pole, will stand approximately 140 feet above the ground surface. A drawing of a typical underground concrete duct bank is provided in Figure 3–15: Underground 138 kV Duct Bank Typical Drawing.

All of the 138 kV steel poles will have six cross arms and an extended pole top to accommodate a fiber optic ground wire attachment for lightning protection and critical communication. A 900 kcmil aluminum steel supported/Alumoweld conductor will be installed on each arm of the 138 kV line. The majority of the structures will be tangent structures with an I-string configuration. The distance from the ground to the lowest conductor will be at least 30 feet. The approximate distance between the conductors will be 18 feet horizontally and 12 feet vertically. The span lengths between poles will vary with terrain, but will generally be between 400 and 800 feet. The proposed conductor for use within the underground concrete duct bank between the cable riser pole and the rebuilt Boulevard Substation is 2,500 kcmil copper cross-linked polyethalene cable. The underground concrete duct bank will also accommodate the fiber optic ground wire attachment.

The components used to construct the 138 kV line will all have non-reflective surfaces. The insulators will be constructed of a gray polymer, the conductors will be made from alumunimum-wrapped steel, and the transmission poles and hardware will be galvanized steel. SDG&E will consider the use of weathering steel for the transmission poles.

3.5.3 Boulevard Substation Rebuild

SDG&E recently acquired one 8.5-acre parcel attached to the eastern property line of the existing substation, on which the Boulevard Substation will be rebuilt to operate at 138/69/12 kV. One residential home and eight associated structures located on this parcel will be demolished prior to constructing the substation. A new, 25-foot-wide, asphalt-paved access road, approximately 190 feet in length, will be constructed off of Old Highway 80 to the rebuilt substation site. Secondary access into the substation will be provided by a paved spur road off the main access road, approximately 210 feet in length. The rebuilt substation will include 138 kV, 69 kV, and

[4] An angle structure is designed to take the additional lateral loading caused by a change in the centerline direction.

12 kV facilities to accommodate the proposed transmission and gen-tie interconnections and provide 12 kV service to the surrounding area.

Currently, the fenced area of the existing Boulevard Substation is approximately 70 feet by 100 feet and encloses one 69 kV line, one 7.5-MVA transformer, and two 12 kV circuits. A drawing of the existing Boulevard Substation is shown in Figure 3–16: Existing Boulevard Substation Layout and Profile Drawing. The existing Boulevard Substation will be removed from service and demolished once the new substation is energized. The Boulevard Substation will be rebuilt directly east of the existing substation, as shown in Figure 3–17: Boulevard Substation Temporary and Permanent Impact Areas. The fenced area of the new substation will be approximately two acres (277 feet by 319 feet), allowing for the installation of new 138 kV, 69 kV, and 12 kV facilities to accommodate connection of the new 138 kV transmission line, as well as the potential for up to four generation tie-lines (gen-ties). In order to connect the existing TL 6931, 69 kV transmission line to the rebuilt Boulevard Substation, two new direct embedded steel poles, approximately 85 feet tall, will be installed southwest of the rebuilt Boulevard Substation.

The electrical facilities will include 138 kV, 69 kV and 12 kV air-insulated buses, transformers, circuit breakers, disconnect switches, communication equipment and protective relays. More specifically, the initial arrangement of the substation will consist of:

- One 138 kV low-profile radial bus with three line positions, two transformer positions, one bus-tie position and one future capacitor position
- One 138 kV tie-line to the ECO Substation
- Two ISO proposed 138 kV generator ties
- One 138/69 kV transformer
- One 138/12 kV transformer
- Two bays of 69 kV standard-profile switch racks with four line positions and one transformer position
- One 69 kV tie-line to the SDG&E Crestwood Substation
- One quarter section 12 kV switchgear
- One 12 kV capacitor
- One control shelter

The substation ultimate configuration will include:

- Two sections of 138 kV low-profile radial buses with six line positions, three transformer positions, one capacitor position, and a bus-tie
- One 138/69 kV transformer
- Two 138/12 kV transformers
- Two bays of 69 kV standard-profile switch racks with four line positions and one transformer position
- Two quarter section 12 kV switchgears
- Four 12 kV capacitors
- One control shelter

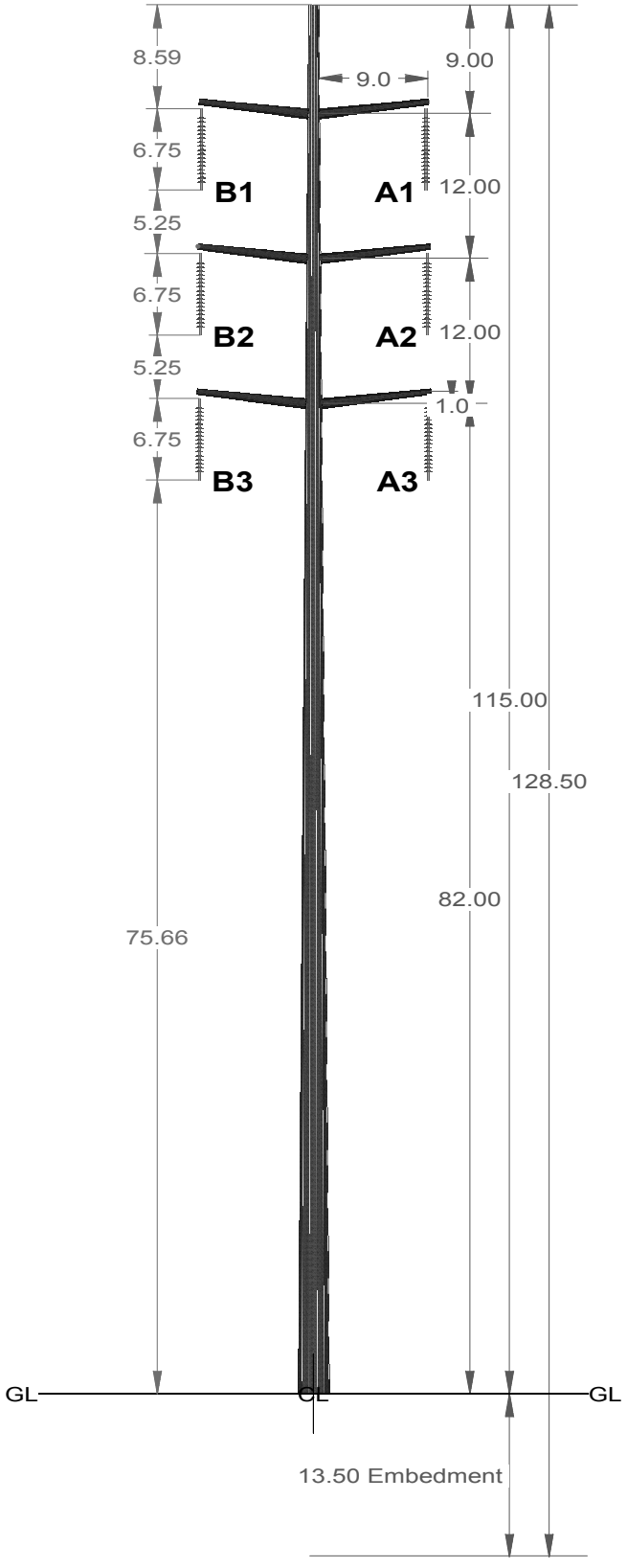

Figure 3-10: 138 kV Steel Pole Typical Drawing

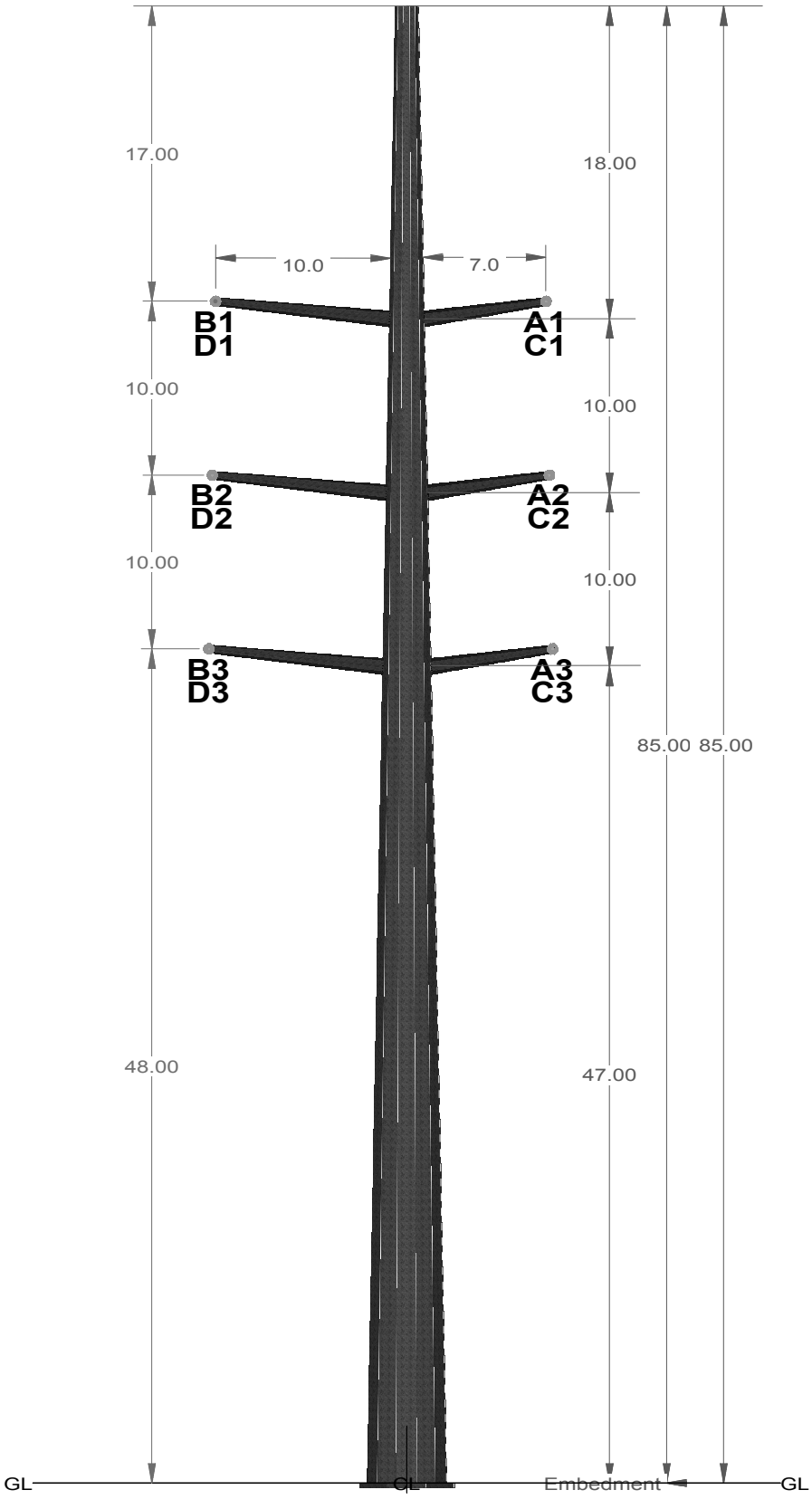

Figure 3-11: 138 kV Angle Structure Typical Drawing

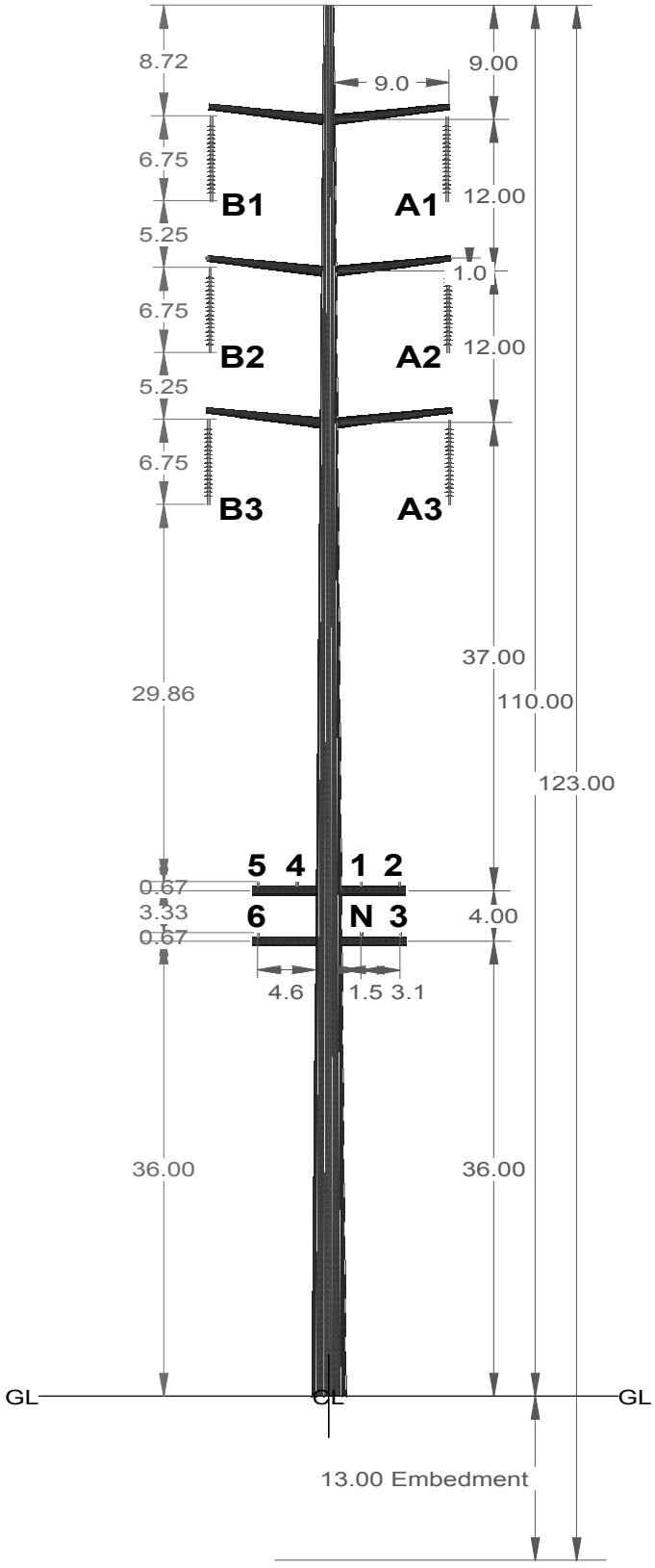

Figure 3-12: 138 kV Steel Structure with Distribution Underbuild Typical Drawing

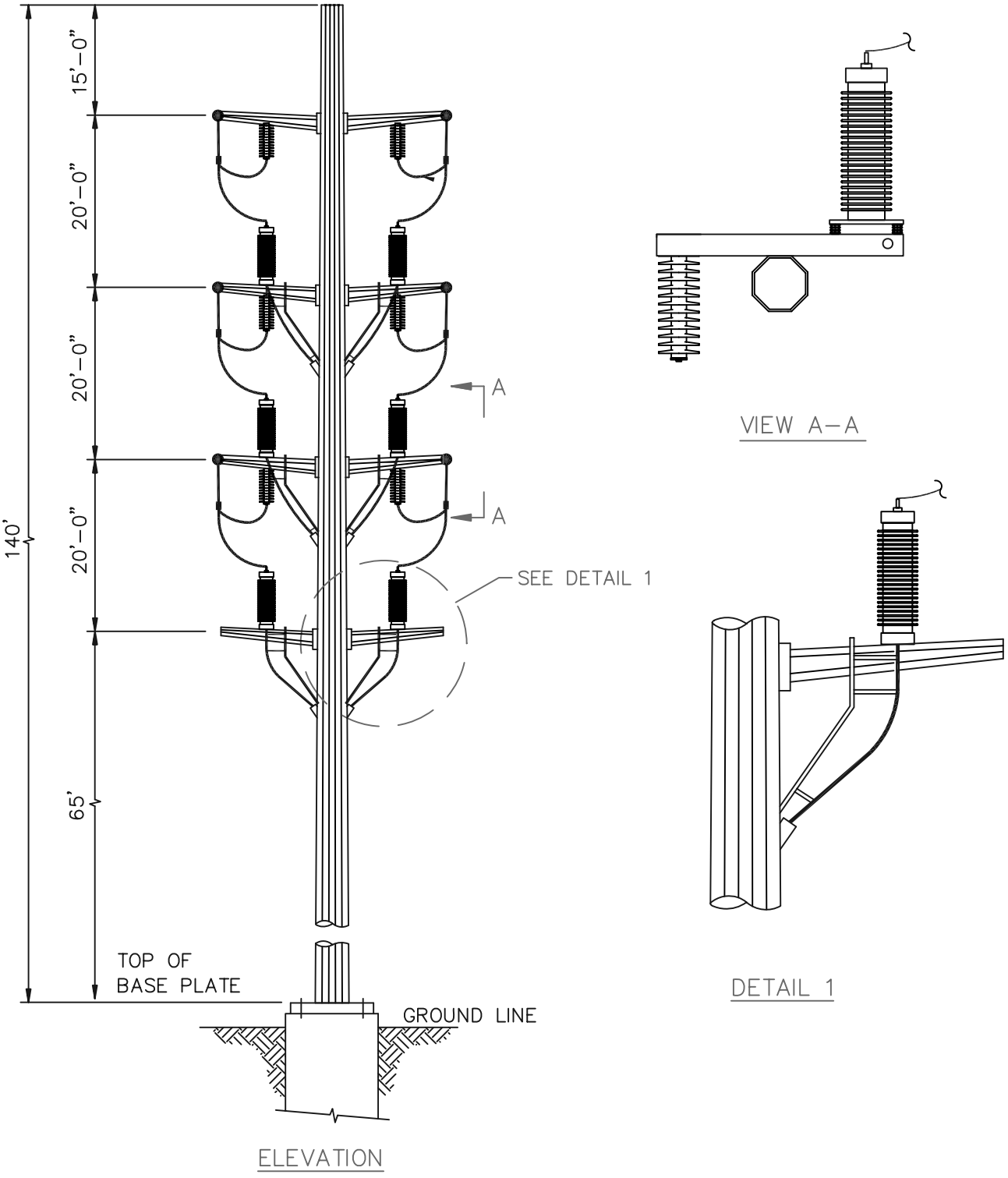

Figure 3-13: Steel Cable Riser Pole Typical Drawing

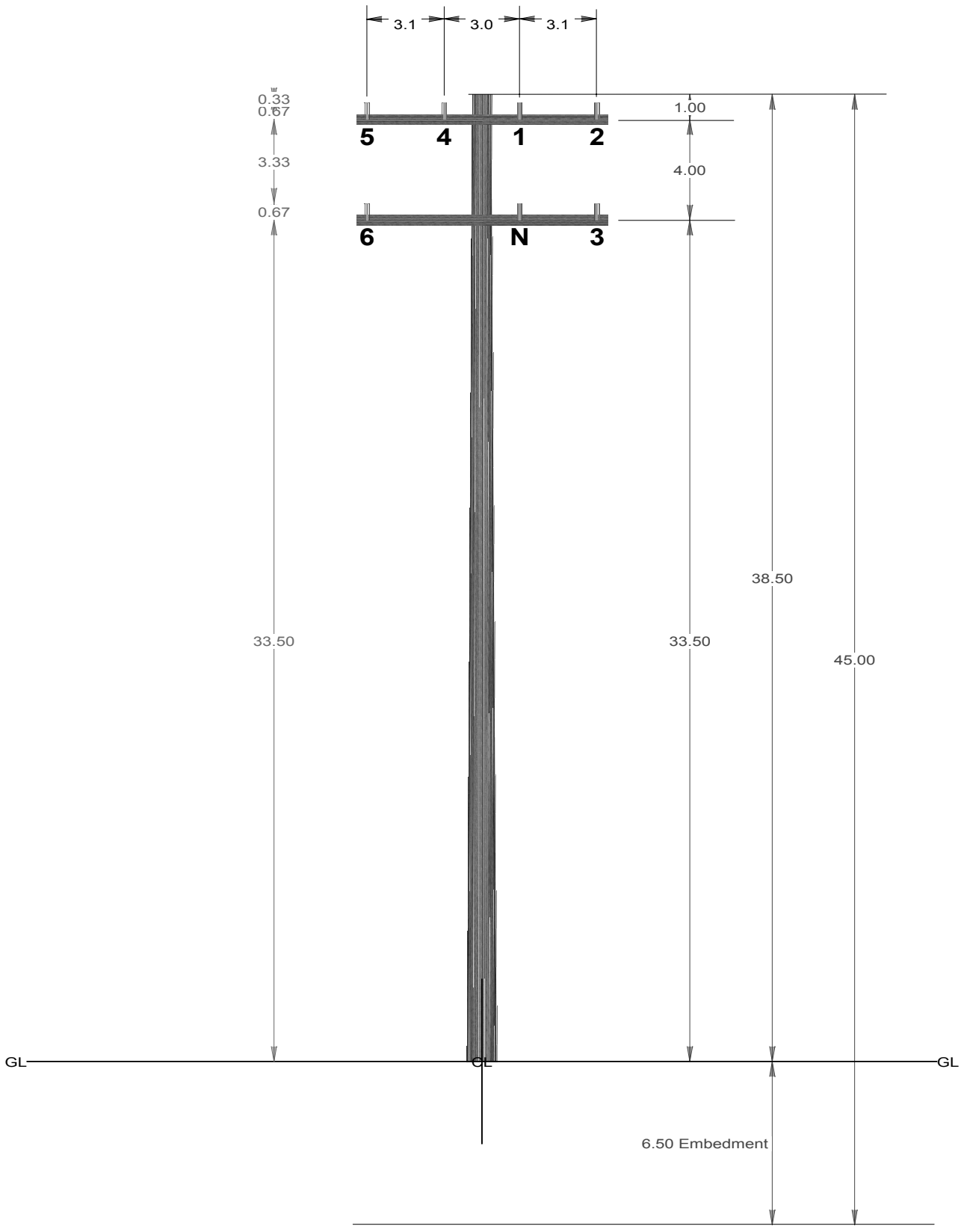

Figure 3-14: Typical Wooden Distribution Pole

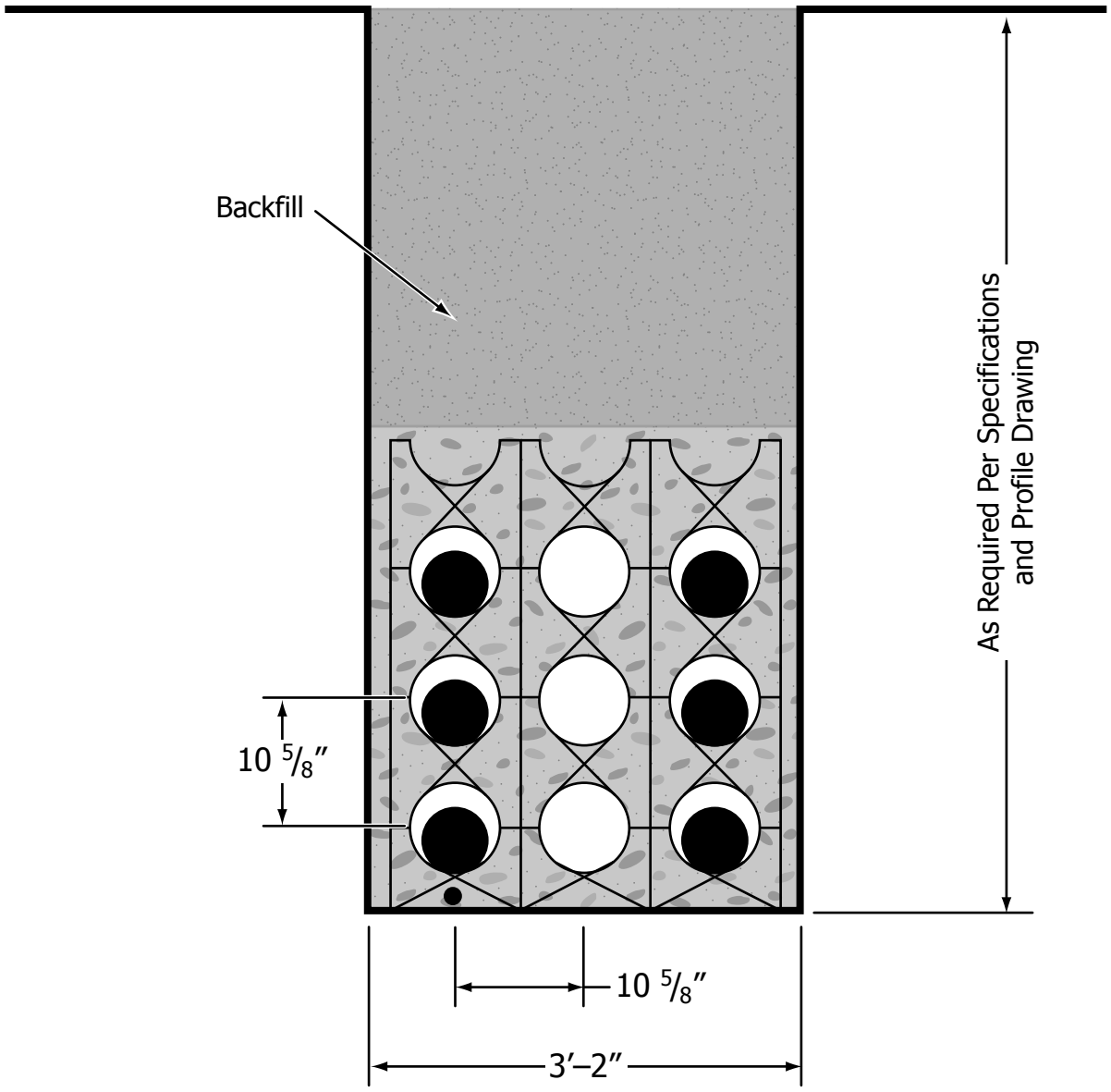

Figure 3-15: Underground 138 kV Duct Bank
Typical Drawing

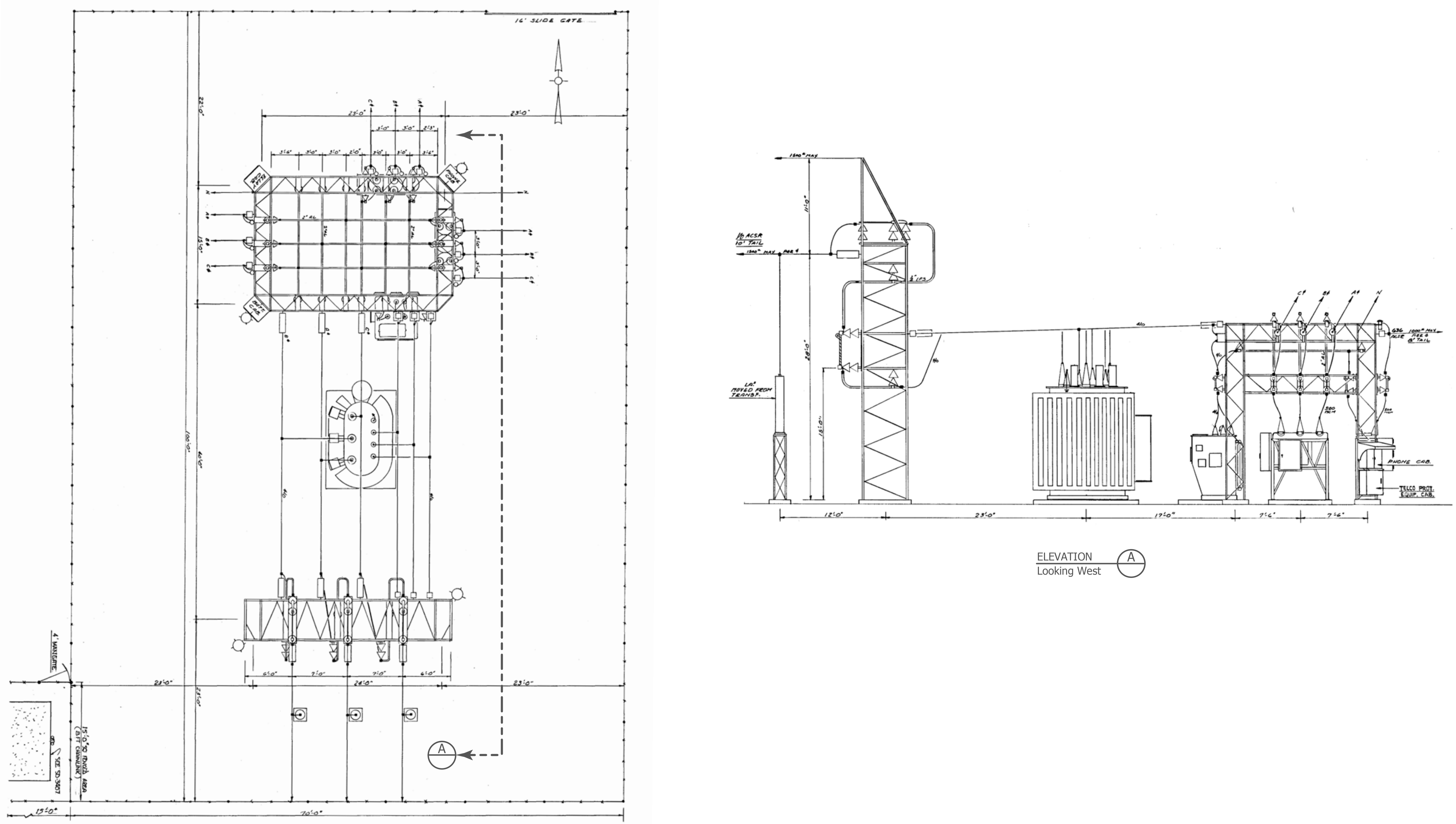

Figure 3-16: Existing Boulevard Substation Layout and Profile Drawing

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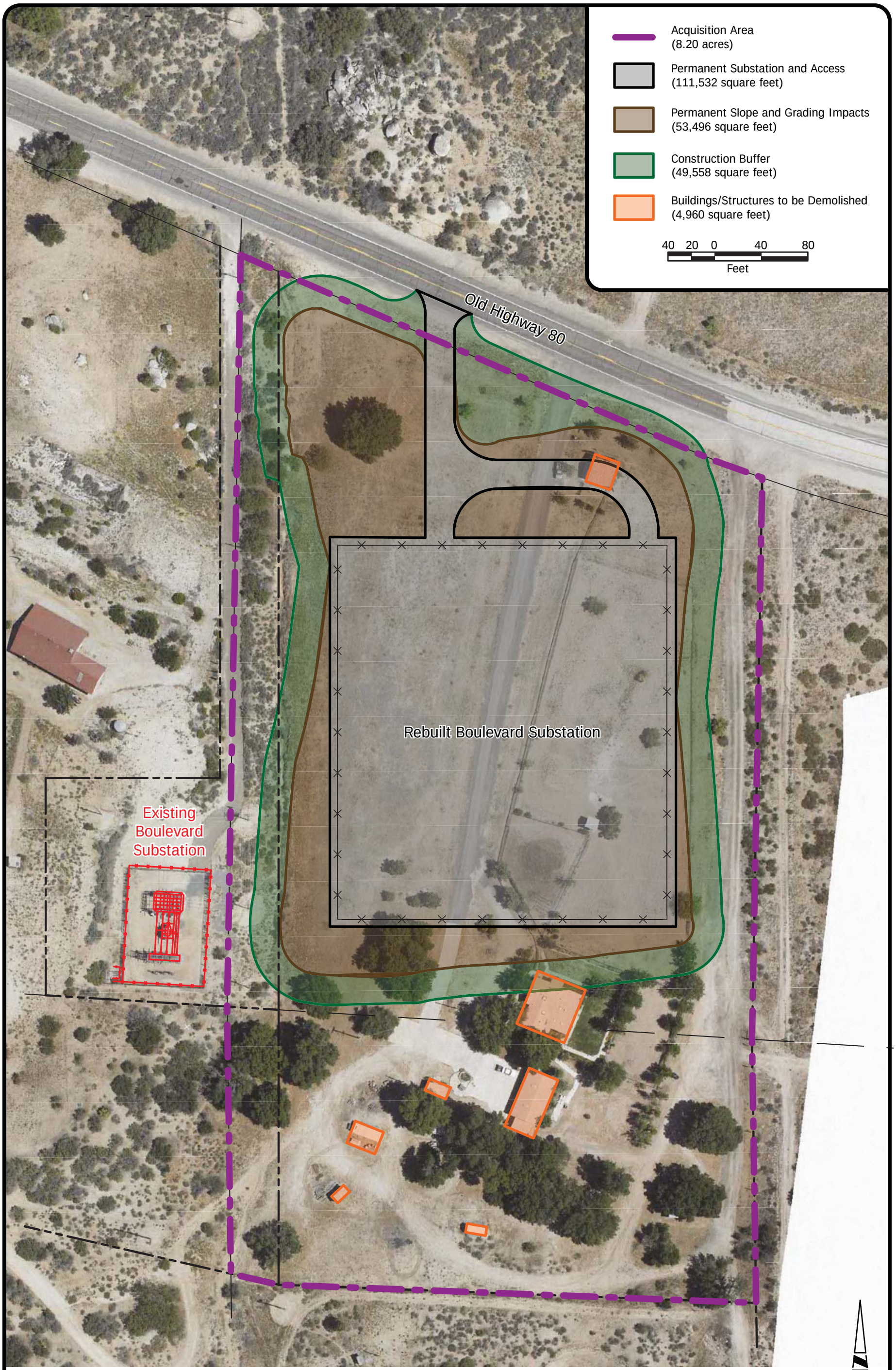


Note: Future transmission easements for lines coming in/out of the substation are not show, since the route for future lines is unknown at this time.

Figure 3-17: Boulevard Substation Temporary and Permanent Impact Areas

The rebuilt Boulevard Substation layout and section views are provided in Figure 3–18: Boulevard Substation Rebuild Layout and Figure 3–19: Boulevard Substation Rebuild Profile Drawing, respectively.

Prior to demolition of the existing substation, the soil, conduit, equipment, and steel structures will be tested for environmental hazards, such as oil, lead based paint, and asbestos. All hazardous materials will be abated prior to or as part of the demolition process. Demolition will include disconnecting and removing all of the equipment including the transformer, breakers, regulators, disconnect switches, fuses, the station light and power transformer, control cabinets, and the DC cabinet. In addition, all of the structural steel that includes the 69 kV and 12 kV switch racks, equipment support structures, and the fence and gates will be removed and recycled. Once all aboveground structures have been removed, all below-grade facilities, including the foundation pads, piers, and direct-buried control cable, will be demolished and removed. The oil-containing equipment, such as the transformers, 12 kV breakers and 12 kV regulators, will be drained and processed in accordance with SDG&E standard procedures. During demolition of the substation, all substation equipment to be dismantled will be tested per federal, state, and local standards to determine appropriate recycle, reuse, or disposal alternatives. If contaminated soil is encountered, it will be remediated, after which, the pad will be graded to match the existing surrounding topography.

3.5.4 White Star Communication Facility Rebuild

SDG&E owns and operates a communications facility at White Star in an easement that is adjacent to an existing communication facility owned by San Diego County. At this site, SDG&E will replace two wooden poles with one 75-foot-tall steel tubular pole. The new equipment to be installed will include a six-foot-diameter microwave antenna, waveguide, and grounding attached to the steel pole. The microwave dish will be attached to the tower approximately 50 feet from the ground. In addition, voice radio antennas may be attached to the tower to support electrical crews' fieldwork and operation safety. SDG&E will remove an existing equipment control shelter and install a small, pre-fabricated control building, 12 feet by 16 feet in size, adjacent to the new steel pole, which will house the microwave radio system and other telecommunication equipment. SDG&E will also be required to install a 48-VDC DC battery, including a rectifier, and one backup generator. The new facility will be approximately 30 feet by 30 feet and enclosed within a six-foot-high chain-link fence.

The locations of the existing communication facilities are shown in Figure 3–1: Project Location Map. A typical drawing of the new monopole to be installed at the White Star Communication Facility rebuild site has been included as Figure 3–20: Communication Monopole Typical Drawing. A site drawing showing the existing and new facilities is included as Figure 3–21: White Star Communication Facility Site Plan.

3.6 PERMANENT LAND/RIGHT-OF-WAY REQUIREMENTS

The following discussion describes the land and ROW requirements for each Proposed Project component. These requirements are also summarized in Table 3-1: New Permanent Land Requirements.

Table 3-1: New Permanent Land Requirements

Project Component		Approximate Dimensions	Area (acres)
ECO Substation	500 kV Yard	1,290 feet by 1,080 feet	87.5
	230/138 kV Yard	1,060 feet by 1,080 feet	
	Buffer	20-foot around fencing	
	Cut and Fill Slopes	25 acres	
SWPL Loop-In ROW		2,285 feet by 200 feet	10.5
138 kV Transmission Line ROW		13.3 miles by 100 feet	161.2
Boulevard Substation Rebuild	138/69/12 kV Yard (fenced)	277 feet by 319 feet	3.2
	Buffer	10-foot around fencing	
	Cut and Fill Slopes	1.2 acre	
White Star Communication Facility Rebuild		30 feet by 30 feet	0[5]

Note: Permanent access road information has been included in Table 3-2: Project Access Roads

3.6.0 ECO Substation

SDG&E will acquire approximately 404 acres of land through the purchase of all or portions of six privately owned parcels which are approximately 320 acres, 75 acres, 41 acres, 37 acres, 15 acres, and 10 acres in size, from three ownerships, for construction and operation of the ECO Substation. The approximately 94 acres that remain within these parcels retain development potential, value for their owners, public access rights, and are not physically constrained, and as a result will not be acquired. SDG&E will obtain the entirety of the 320-acre parcel, despite the fact that only a portion of it is required for access to the ECO Substation. The eastern half of this parcel consists mostly of steeply sloped terrain that is not conducive to additional development, and does not possess the necessary access to public rights-of-way. The communication tower at ECO Substation will be constructed within the substation fence line and will not require additional land.

3.6.0 SWPL Loop-In

Looping of the SWPL into the ECO Substation will require approximately seven acres of land, approximately 200 feet wide and 2,285 feet long, for placement of four transmission structures and the associated permanent ROW. The new ROW lies within the property that will be acquired for the ECO Substation.

3.6.1 138 kV Transmission Line

The new 138 kV transmission line will require a 100-foot-wide permanent ROW and 50-foot by 50-foot temporary workspace at each pole location. The new 100-foot-wide ROW will be located adjacent to and south of the existing SWPL ROW from approximately Milepost (MP) 0 to MP 6. Near MP 6, the transmission line crosses under the SWPL and then runs parallel to the SWPL along the north side. Therefore, the new ROW for the 138 kV transmission line will be

[5] The White Star Communication Facility Rebuild will be constructed within an existing SDG&E easement.

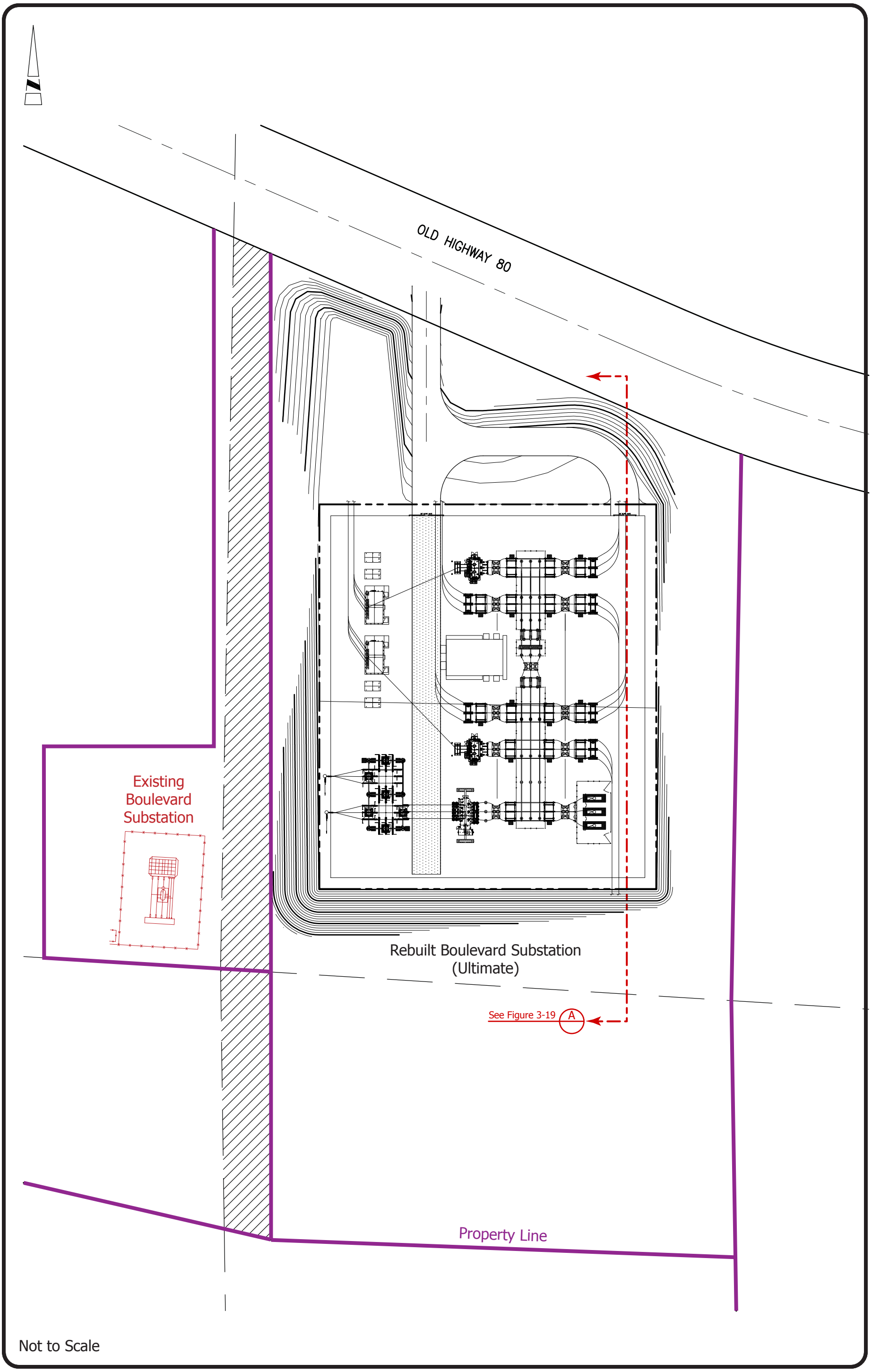
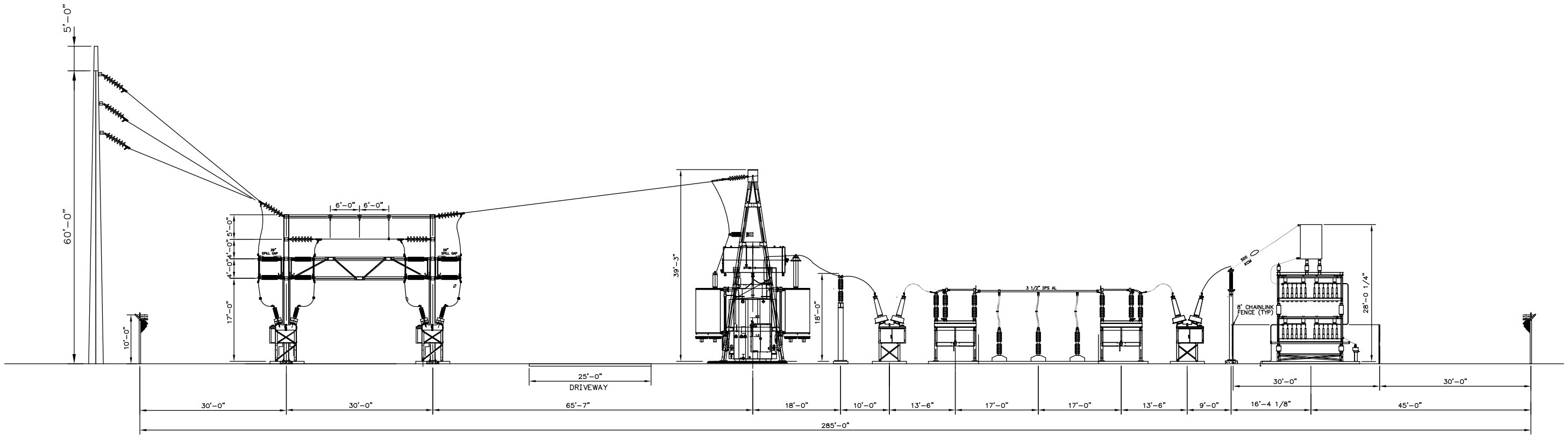


Figure 3-18: Boulevard Substation Rebuild Layout



ELEVATION A
Looking West

Figure 3-19: Boulevard Substation Rebuild Profile Drawing

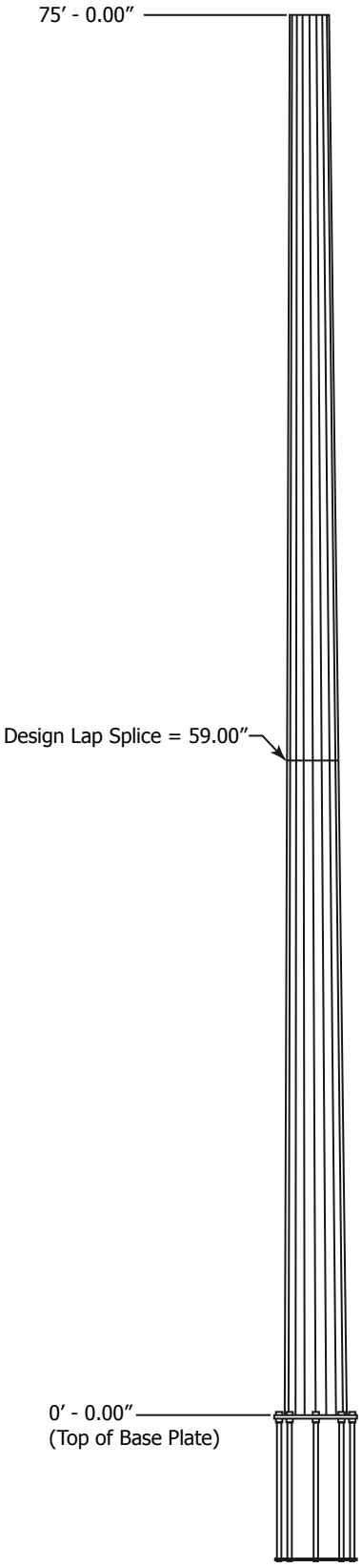


Figure 3-20: Communication Monopole Typical Drawing

adjacent to and north of the existing SWPL ROW from approximately MP 6 to MP 9.2. From MP 9.2 to the Boulevard Substation, a new 100-foot-wide ROW centered on the new 138 kV transmission line will also be required. A typical drawing of the new 138 kV transmission line ROW and the existing SWPL ROW is provided in Figure 3–22: Proposed and Existing Transmission Line ROWs Typical Drawing.

3.6.0 Boulevard Substation Rebuild

SDG&E recently acquired the approximately 8.5-acre parcel immediately east of the existing Boulevard Substation in order to rebuild the substation. One residential home, one barn, one garage, and five other smaller structures will be demolished and removed in order to facilitate the substation rebuild.

3.6.1 White Star Communication Facility Rebuild

The communication tower at White Star and equipment shelter replacement structure will be constructed within an existing SDG&E easement adjacent to the San Diego County-owned communication facility.

3.7 CONSTRUCTION

This section describes the required access, anticipated temporary workspace requirements, and methods that will be employed to construct the facilities of the Proposed Project.

3.7.0 Access

ECO Substation

Approximately 2,900 linear feet of new access road from Old U.S. Highway 80 to the ECO Substation will be built in order to allow safe access to the substation and facilitate the delivery of equipment. Four asphalt-paved driveways, approximately 100 feet in length, will be constructed off of the access road into the four gated entrances of the substation. The new access roads will be approximately 30 feet wide, requiring approximately 2.2 acres of land. A list of these access roads is provided in Table 3-2: Project Access Roads. These roads are also shown in Figure 3–5: ECO Substation Layout.

SWPL Loop-In

Existing dirt roads and the SWPL ROW will be utilized for the installation of the SWPL loop-in structures, removal of an existing SWPL tower, and stringing of conductor. New permanent access roads running along the eastern side of the ECO Substation from the SWPL ROW will be required for the removal of one tower and the installation and maintenance of four structures. These roads will be approximately 20 feet wide and total 1,700 feet long.

138 kV Transmission Line

Existing dirt and paved roads will be utilized to the maximum extent possible during the construction of the new 138 kV transmission line. Approximately 2.6 miles of new spur roads, requiring approximately 5.3 acres, will be constructed in order to access the pole locations, pull sites, staging areas, and landing zones.

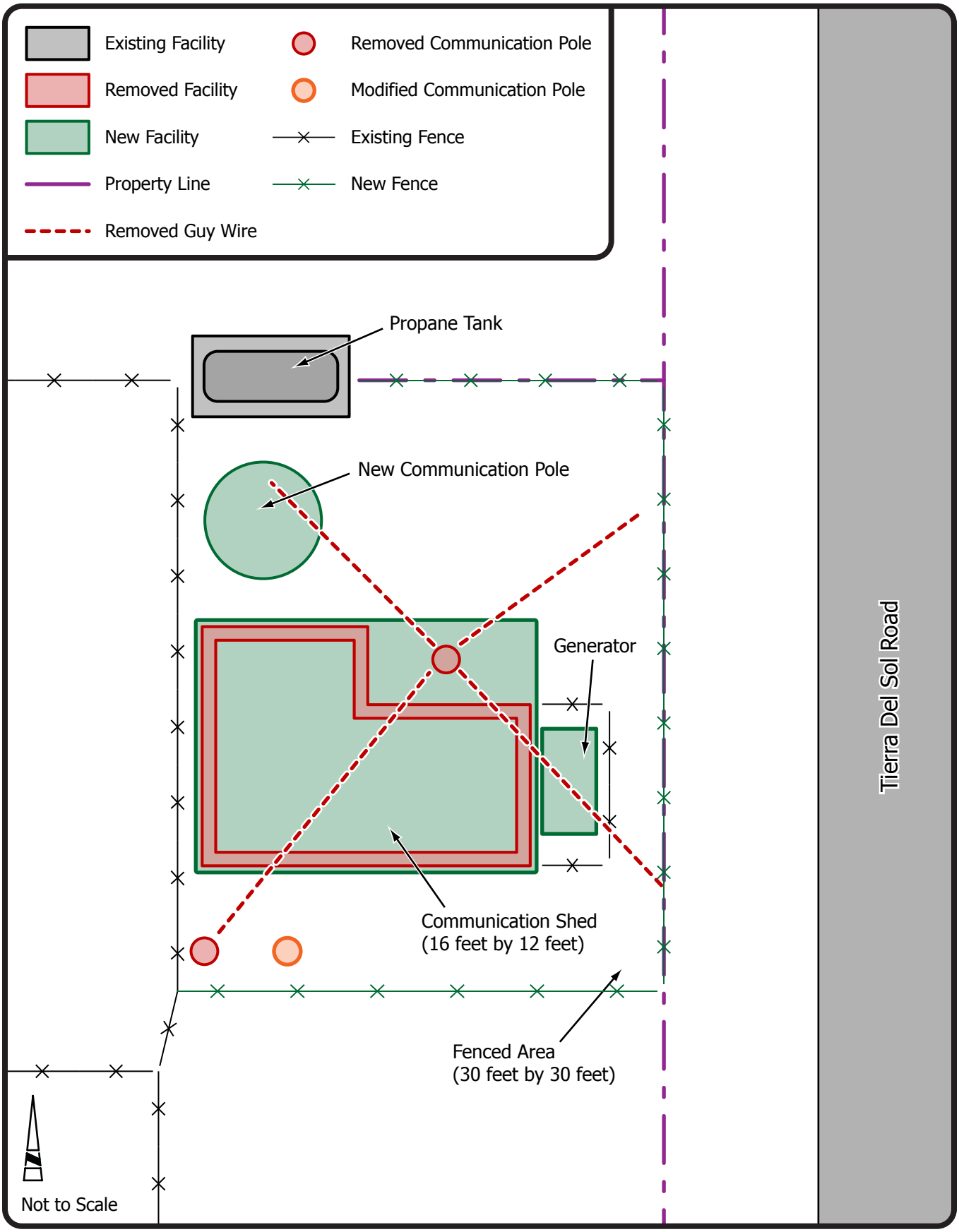


Figure 3-21: White Star Communication Facility Site Plan

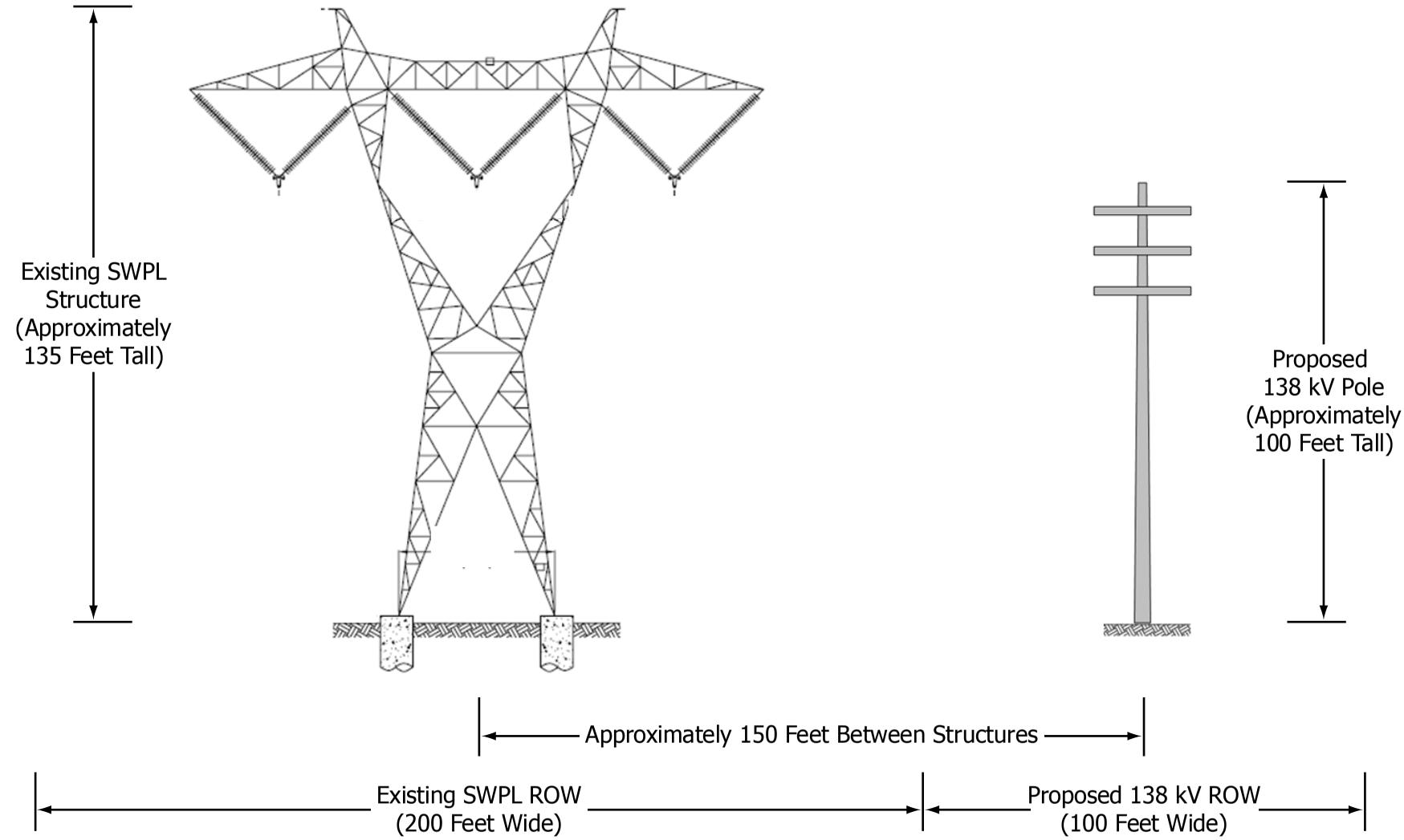


Figure 3-22: Proposed and Existing Transmission Line ROWs Typical Drawing

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Table 3-2: Project Access Roads

Project Component	Type of Road	Description	Total Acreage
ECO Substation	New Paved	Approximately 2,900 linear feet of new, paved roads will be constructed to access the ECO Substation. Four asphalt-paved driveways, approximately 100 feet in length, will be constructed off of the access road into the four gated entrances of the substation.	2.2
SWPL Loop-In Structures	Existing Dirt	Existing SWPL access road (approximately 20 feet wide and 1,000 feet long)	0.46
	New Dirt	New permanent dirt access roads (approximately 20 feet wide and totaling 1,700 feet long) will be constructed from the SWPL ROW to the new SWPL loop-in structures	0.79
138 kV Transmission Line Poles	Existing Dirt	Existing SWPL access road (approximately 20 feet wide and 9 miles long), Tule Jim Lane (approximately 15 feet wide and two miles long), and unnamed, private access roads (approximately 15 feet wide and 2.5 miles long)	22.25
	New Dirt	New spur roads to pole locations will be constructed (approximately 15 feet wide and 2.6 miles long)	5.25
Boulevard Substation Rebuild	New Paved	Approximately 400 linear feet of new, 25-foot-wide paved road from Old Highway 80 will be constructed to access the rebuilt Boulevard Substation	0.2
White Star Communication Facility Rebuild	New Dirt	Approximately 35 linear feet of new, 20-foot-wide dirt road from Terra Del Sol Road to the communication facility will be constructed	0.01

Boulevard Substation Rebuild

A new, asphalt-paved access road from Old U.S. Highway 80 to the rebuilt Boulevard Substation, approximately 400 feet in length and 25 feet wide, will be constructed.

White Star Communication Facility Rebuild

One new dirt access road, approximately 35 feet long and 20 feet wide, will be constructed from Terra Del Sol Road to the communication control structure.

3.7.1 Workspace

Temporary workspace will be required for each Proposed Project component in order to facilitate construction. These anticipated workspace requirements are described in detail in the following paragraphs, and are summarized in Table 3-3: Temporary Workspace Requirements.

Staging Areas

The Boulevard and ECO Substation sites will be utilized for staging the substation materials and construction equipment. The primary staging area for the Proposed Project will be located within the permanent footprint of the ECO Substation. Construction of the ECO Substation will temporarily require approximately 63 acres, of which 58 acres will contain the permanent, fenced footprint of the substation. An additional 25 acres will be cleared of vegetation and graded for permanent cut and fill slopes. Equipment, materials, temporary office trailers, and vehicle parking will be accommodated at this location for the duration of substation construction. Two additional staging areas at the ECO Substation, located approximately 800 feet and 250 feet north of the 500 kV yard, respectively, will be used for staging of material and temporary offices. All staging yards will be enclosed and secured with chain-link fencing. Both of the approximately one-acre areas are depicted in Figure 3–7: ECO Substation and SWPL Loop-In Vicinity Map.

A temporary tap to an existing distribution line will be installed to provide electrical service to the ECO Substation staging area(s) during construction. An existing, single-phase distribution circuit runs parallel to SWPL approximately 2,000 feet north of the proposed ECO Substation site. Approximately eight temporary wooden poles will be installed in order to tap this existing distribution circuit. This temporary tap will be used to power the construction trailer, construction lighting, temporary security system, and small hand tools, until the transformer is installed. For the first two months of construction at the ECO Substation, up to two propane generators will be utilized to provide power until the temporary tap is installed. Each 50-kW generator may be operated up to 24 hours a day, six days a week.

The staging area for the Boulevard Substation rebuild will lie within the disturbed 8.5-acre parcel on which the substation will be rebuilt. This area will require minor clearing and grading, as described in Section 3.7.2 Methods. An existing staging area, located adjacent to the SWPL, that measures approximately 170 feet by 100 feet, will also be used during construction of the 138 kV transmission line.

Table 3-3: Temporary Workspace Requirements

Project Component	Workspace Description	Number	Required Improvements	Approximate Dimensions (feet)	Total Acreage
ECO Substation	Temporary Distribution Line ROW	Not Applicable (NA)	Clearing, Excavation, and Grading	2,000 by 12	0.55
	Staging Area	2	Clearing and Fencing	250 by 175	2.0
SWPL Loop-In	Structure Work Areas	2	Clearing, Grading, and Excavation	250 by 130[6]	1.51
		2		70 by 70[6]	0.23
	Pull Sites	NA[7]	Clearing	NA	NA
138 kV Transmission Line	Staging Area	1	None	170 by 100	0.40
	Steel Pole Work Areas	98	Clearing, Grading, and Excavation	70 by 70	11.0
	Wood Distribution Pole Work Areas	9	Clearing	30 by 30	0.2
	Pull Sites	12	Clearing	100 by 150	4.1
	Clearance Structures	10	Clearing and Excavation	30 by 30	0.2
	Underground Duct Bank	Not Applicable	Clearing, Grading, and Excavation	450 by 50	0.5
	Fly Yards	3	Clearing and Excavation for Temporary Fencing	500 by 500	17.2

[6] The temporary work areas at the SWPL loop-in structures vary in shape; therefore, these dimensions are rough approximations of their size.
[7] The structure work areas used to install the SWPL loop-in structures will also be used for pulling and tensioning activities.

Work Areas

In addition to the staging areas discussed in the previous section, work areas will be required at each new structure location and at intervals along the new transmission lines to pull and tension conductor. These areas are described in more detail in the section that follows.

SWPL Loop-In

Structures

In order to accommodate construction equipment and activities during construction of the SWPL loop-in, additional temporary construction areas will be cleared and graded at each tower location. Four temporary work areas, approximately 75 feet by 35 feet in size, will be cleared around each structure location to accommodate its installation. This area will provide a safe working space for placing equipment, vehicles, and materials. Approximately 5,000 square feet of temporary disturbance due to driving and placement of vehicles and equipment and general construction activities will be required to facilitate each structure installation. At sites where solid rock is encountered, additional equipment will be required to remove rock from the excavation area. This may include rock-hauling and/or blasting equipment.

Pull Sites

Four pull sites, two located within the ECO Substation footprint and two located within the SWPL loop-in temporary work areas, will be required to accommodate installation of the SWPL loop-in. These pull sites are depicted in Figure 3–7: ECO Substation and SWPL Loop-In Vicinity Map. In general, the pull sites located within the ECO Substation footprint will be approximately 100 feet by 150 feet. The SWPL loop-in structure temporary work areas will also be utilized for pulling activities and will be approximately 250 feet by 130 feet, resulting in a total temporary disturbance of approximately 1.51 acres. These pull sites will be spaced approximately 1,200 feet apart. Because these pull sites will also be used for the assembly and erection of the SWPL loop-in structures, grading of the pull sites is expected.

138 kV Transmission Line

Structures

In order to accommodate construction equipment and activities during construction of the new 138 kV transmission line, additional temporary construction areas will be cleared and graded at each pole location. Each of the approximately 98 steel poles will require up to 4,900 square feet (70 feet by 70 feet) of cleared workspace for a safe working environment. Furthermore, an additional area for staging and operation of vehicles and equipment may be required around the cleared workspace. This additional area, inclusive of the cleared workspace, will be approximately 0.3 acre (115 feet by 115 feet). Each of the approximately 10 wood distribution poles will require up to 900 square feet (30 feet by 30 feet) of cleared workspace. At sites where solid rock is encountered, additional equipment will be required to remove rock from the excavation area. This may include rock-hauling and/or blasting equipment.

Pull Sites

Approximately 12 pull sites, not including the two pull sites within the Boulevard Substation, two pull sites within the ECO Substation, and four pull sites along existing roads, will be

required for the installation of the new 138 kV conductor. These pull sites are depicted in Attachment 3-A: 138 kV Transmission Line Route Map. In general, the pull sites will be approximately 100 feet by 150 feet, resulting in a total temporary disturbance of approximately 0.34 acre per site. Pull sites will be located at angle structures, within the disturbed area required to build the Boulevard Substation, and near the ECO Substation. Grading of the pull sites is not expected to be necessary.

Fly Yards

A total of three fly yards will be utilized for helicopter take-offs and landings, refueling areas, pole storage and assembly, and general helicopter construction. The helicopter will also utilize existing access roads and staging areas for landings. No additional landing zones will be required. In general, the fly yards will be approximately 500 feet by 500 feet, resulting in a total temporary disturbance of approximately 5.74 acres per yard. Grading of the fly yards is not expected to be necessary; however, mowing and clearing of vegetation to ground level will be required. Material storage areas within the fly yard will be fenced. The Jacumba Airport will be utilized as a fly yard and will not require any clearing. The Jacumba Airport is located approximately three miles west of the ECO Substation site and just east of the unincorporated community of Jacumba. In addition, the ECO Substation site will be utilized as a fly yard once the site is graded and fenced.

3.7.2 Methods

Construction methods are described in this section for each Proposed Project component. No dewatering is anticipated during construction of the Proposed Project. Refer to Section 4.6 Hazards and Hazardous Materials for information regarding handling and disposal of contaminated materials.

ECO Substation

Clearing and Grading

Construction of the ECO Substation will require the permanent removal of approximately 88 acres of mixed desert scrub and juniper woodland. Mowers, excavators, front-end loaders, and D-9 bulldozers will be utilized to clear the substation site. No trees will be removed; however, several mature juniper bushes and other desert scrub species will be cleared. More detailed information regarding the vegetation and habitat communities to be impacted by clearing is provided in Section 4.4 Biological Resources.

One of the first steps will be to construct the access road to the site. The access road's finished grade will include Class II base material with paved asphalt driveways to accommodate the high-usage facilities. SDG&E will construct approximately 2,900 feet of new access road and 400 feet of driveways through desert scrub vegetation. Several small off-road vehicle trails are located within the Proposed Project area; these will be utilized as starting points for new, improved access roads whenever feasible. Figure 3–5: ECO Substation Layout depicts all existing and new access roads.

Once access has been established, the major site grading will ensue. The grading will be based on a grading plan that emphasizes balanced cut and fill to the extent possible. Approximately

1.1 million cubic yards (CY) of cut and fill will be required to develop the pads and access roads. Depending on the characteristics of the site soil, import Class II base may be required to provide a 4- to 12-inch surface cap for the substation yards. On-site material will be reused to the extent possible. Site grading will be accomplished with bulldozers and scrapers, which will cut and fill native soil to the desired pad elevations.

Construction of the ECO Substation could potentially require approximately 140,000 CY or an estimated total of 10,000 haul truckloads of imported fill to develop the proposed substation site. All fill will be hauled from the Imperial Valley. The haul trucks will run periodically and as needed to facilitate the grading phase of construction. Some days will have more truck trips than others but, in general, no more than 60 truck trips per day for an estimated eight months will be required to complete the proposed substation grading. In addition, approximately 200 additional trips are anticipated for delivery of materials and equipment for the duration of the construction.

Approximately 30 million gallons of water will be required on site during Proposed Project construction and will be obtained by one or a combination of the following; purchasing and transporting water from local water districts, drilling wells in the vicinity of the ECO Substation, or purchasing and transporting water from the City of El Centro.

If drilling is a viable option, a local well drilling contractor will be utilized to perform the drilling operation and the drill hole will be logged per San Diego County requirements. When an appropriate aquifer is reached, water quality tests and pump tests for quantity will be conducted. If the aquifer can supply an adequate amount of clean water, a submersible pump will be placed down the drill hole and the discharge will be connected to a water system to transport the water to the ECO Substation site.

If enough water cannot be located on site or purchased from nearby sources, water will be imported from the City of El Centro, located approximately 40 miles east of the Proposed Project. A maximum of 30 truck trips per day, delivering approximately 300,000 gallons of water, will be used to supply water to the Proposed Project. Therefore, a total of approximately 3,000 trips will be required over five months in order to supply the required 30 million gallons of water.

A drainage plan will be developed and implemented to minimize surface water and erosion impacts. Above-grade concrete drainage swales, underground drains, and concrete catch basins may be utilized to capture and direct stormwater flow across the site to one of two retention basins to meet San Diego County stormwater quality requirements. Swales will be approximately 12 inches deep and will generally collect stormwater along the tops and toes of slopes, as well as required benches in the slopes. Other swales may be located in the drive lanes within the substation directing flow to the perimeters of the pad and swales draining into the retention basins. Below-grade drain pipes of adequate size for the flows anticipated will be placed under access roads, where needed, to direct the flow to the retention basins or off the site.

The approximately 25 acres of permanent cut and fill slopes for the ECO Substation yards and the approximately two acres of permanent cut and fill for the access roads will be stabilized during construction with Best Management Practices (BMPs) that are outlined in the Proposed Project Stormwater Pollution Prevention Plan (SWPPP). Once construction has been completed,

landscaping will be installed as outlined in the Proposed Project plans. The SWPPP BMPs will remain in place and be maintained until the landscaping has been established.

Foundation Construction

Following site preparation, construction of the substation equipment foundations (consisting of drilled pier, mat, and pad type foundations) and the grounding grid will commence. Foundation construction will commence with excavation activities that will be accomplished primarily by backhoes and drill rigs. Forms, reinforcing steel, and concrete will then be installed, as appropriate, to build the foundations.

SDG&E will notify the Underground Service Alert a minimum of 48 hours in advance of excavating or conducting other ground-disturbing activities in order to identify buried utilities. SDG&E will also conduct exploratory excavations (potholing) to verify the locations of existing facilities in the field.

Aboveground Equipment Installation

Once the foundation work has been finished, placement of major equipment on their respective foundations or structures, inclusive of anchoring in their final position and wiring of the equipment controls and protection devices, will be completed. This work will be accomplished by delivering equipment to the site on flatbed trucks and lifting it into place using cranes.

The SWPL 500 kV loop-in will be brought in and out of the ECO Substation and connected to buses via circuit breakers. For other connections from renewable energy sources and the Boulevard Substation, the conductors will connect to the buses via a disconnect switch and circuit breakers.

Cleanup and Post-Construction Restoration

All areas that are temporarily disturbed by the ECO Substation construction activities will be restored to preconstruction conditions, to the extent practicable, following the completion of construction. Restoration is detailed in SDG&E's Landscape Plan and Figure 4.1–3: East County Substation Landscape Concept Plan, and will involve removal of all construction debris for recycling or disposal off site, grading areas to original contours, and reseeding.

SWPL Loop-In

Clearing and Grading

Construction of the SWPL loop-in structures will require that approximately 1.74 acres of mixed desert scrub and juniper woodland be cleared in order to install the structures and conductor and to allow for tie-in to the existing 500 kV line. Mowers and D-9 bulldozers may be used to clear areas for structure installation and at pull and tension sites. More detailed information regarding the vegetation and habitat communities to be impacted by clearing is provided in Section 4.4 Biological Resources.

A dirt access road to the SWPL loop-in structure locations will be constructed from the existing unpaved access road within the existing SWPL ROW. The new access road will run south from the SWPL ROW for approximately 1,700 feet and be completely within the new ROW for the

SWPL loop-in. The access road will be approximately 20 feet wide and will require approximately 0.79 acre of land.

Foundations

Structure foundations will typically be drilled concrete piers. The foundation process will begin with the boring of four holes for each structure. The holes will be bored using truck-mounted excavators with various diameter augers to match the diameter and depth requirements of the foundations. Where solid rock is encountered, additional equipment for rock removal will be required. This may include rock hauling equipment, blasting equipment, or the use of a rock anchoring or mini-pile system. A rock anchoring or mini-pile system will be used where access to the site is very difficult or where adjacent structures may be damaged from blasting or rock excavation activities.

Each foundation hole will be approximately three to five feet in diameter and 10 to 15 feet deep, excavating approximately 29 CY of soil, depending on conditions. Following excavation of the foundation holes, reinforcing steel will be installed and concrete will be poured. Structures will require approximately 27 CY of concrete delivered to each structure location. Concrete will be delivered directly to the structure locations in concrete trucks with a capacity of up to 10 CY. In cases where access is limited, concrete may be pumped from several hundred feet away from the structure location. Once completed, each foundation will extend approximately two feet above ground.

SDG&E will notify the Underground Service Alert a minimum of 48 hours in advance of excavating or conducting other ground-disturbing activities in order to identify buried utilities. SDG&E will also conduct exploratory excavations (potholing) to verify the locations of existing facilities in the field.

Structure Assembly and Erection

Structure segments will be assembled at each site. Steel members for each structure will be delivered to each location by flatbed truck. The structure segments will be bolted together and assembled on the ground. Assembly will be facilitated with the use of a small truck-mounted crane. Following assembly, the structure segments will be lifted onto the foundation and bolted together by use of a larger crane or helicopter. Helicopter models typically used during structure assembly include a Sikorsky S-64 Skycrane/Aircrane or a Sikorsky S-58T.

Conductor Installation

Conductor installation procedures will be similar for the SWPL loop-in and the 138 kV transmission line. SDG&E will coordinate with the CAISO to obtain all the necessary line clearances prior to beginning conductor installation. This will ensure that the SWPL can be taken out of service and that power can be redistributed to service centers and customers. Conductor stringing operations will be facilitated with the installation of sheaves or “rollers” on the structure cross arms during structure installation, using a helicopter such as a Bell Long Ranger, Bell Jet Ranger, MD 500, or Bell UH-1 Huey, or aerial manlifts (bucket-trucks). The sheaves will allow the conductor to be pulled through each structure until the entire line is ready to be pulled up to the final tension position. Following installation of the sheaves, a sock line (a

small cable used to pull the conductor) rope will be pulled onto the sheaves using a helicopter that will travel along the ROW from structure to structure. Once the rope is in place, it will be attached to a steel cable and pulled back through the sheaves. The conductor will then be attached to the cable and pulled back through the sheaves using conventional tractor-trailer pulling equipment located at pull and tension sites.

After the conductor is pulled into place, the sags between the structures will be adjusted to a pre-calculated level. The line will be installed with a minimum ground clearance of 35 feet. The conductor will then be clipped into the end of each insulator, the sheaves will be removed, and vibration dampers and other accessories will be installed. A typical drawing of conductor installation procedure is provided in Figure 3–23: Aboveground Conductor Installation Procedure Typical Drawing.

Helicopter activities will be staged out of the Jacumba Airport when possible, and staging areas and access roads along the existing ROW will be utilized as landing zones. The helicopter landing areas will be located away from residences and other land uses (generally at least one mile from sensitive noise receptors).

Cleanup and Post-Construction Restoration

Approximately six 75-foot by 35-foot working zones around all structures will be kept clear of shrubs and other obstructions, for inspection and maintenance purposes. All other areas that are temporarily disturbed around each structure and areas used for conductor pulling and tensioning, staging, and structure installation will be restored to preconstruction conditions, to the extent practicable, following the completion of the SWPL loop-in. Restoration will include grading to original contours and reseeding.

138 kV Transmission Line

Access Road Construction

The first step in constructing the overhead line will be to install new, unpaved access roads to the new structure sites. Equipment typically utilized in the construction of access roads is listed in Table 3-4: Access Road Construction Equipment. These roads will be graded level and generally 15 feet wide for straight sections and up to 20 feet wide at curves to safely allow construction equipment and vehicles to access each site. Typically, each access road will first be cleared of vegetation by a bulldozer. A motorgrader will then be used to grade and level the road in accordance with the engineered specifications. The road will then be compacted by a roller compactor to a predetermined level. All access road construction will follow the specifications outlined in SDG&E Design and Procedure Manual for Transmission Line Access Roads.

Clearing and Grading

Once access to each site has been established, the work area at each structure location will be cleared of vegetation. No trees will be removed; however, some mature juniper bushes and other desert scrub and red shank/chamise chaparral species will be cleared. In addition, several oak trees located in the vicinity of the Boulevard Substation will require trimming. More detailed information regarding the vegetation and habitat communities to be impacted by clearing is provided in Section 4.4 Biological Resources.

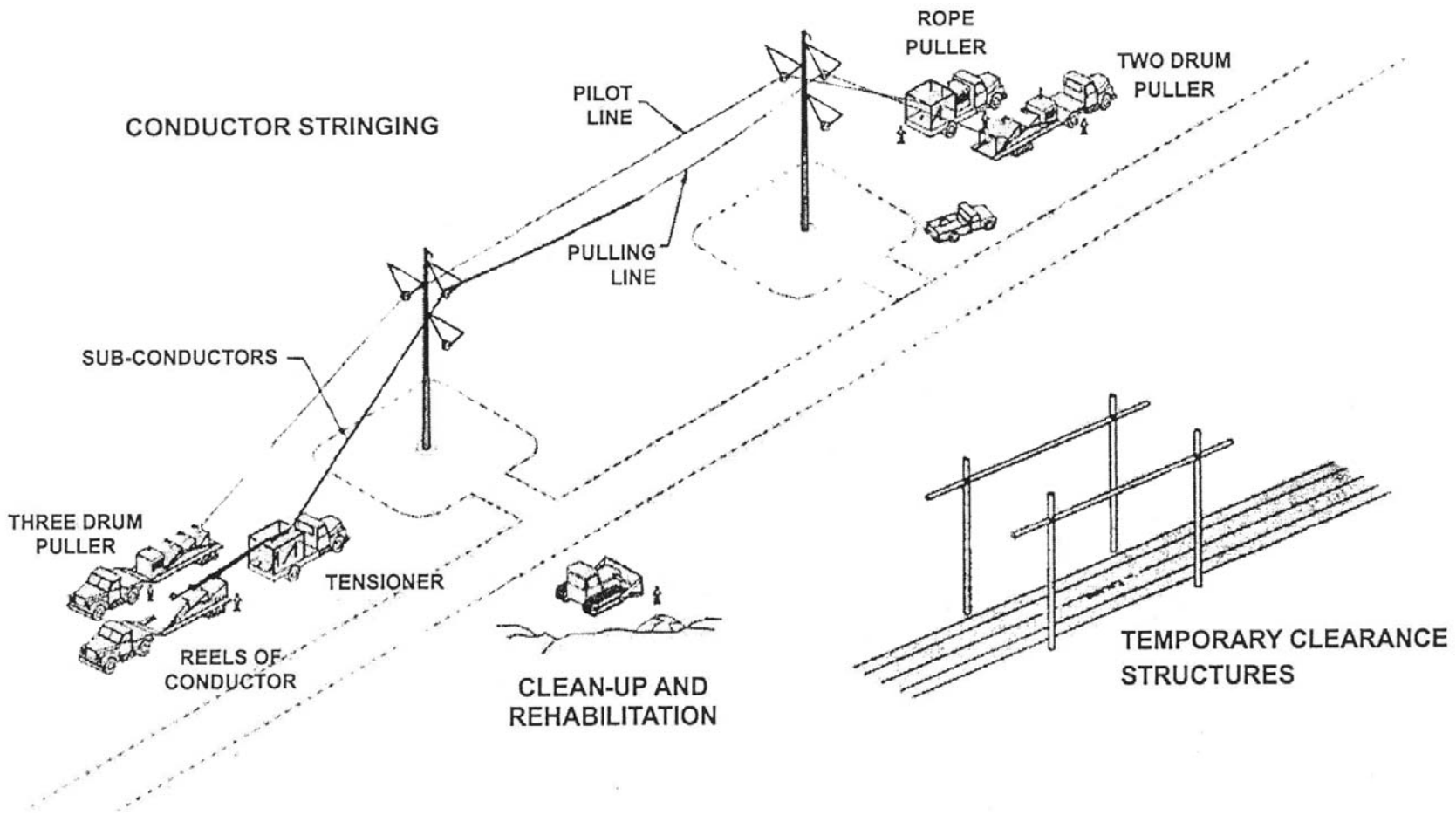

Figure 3-23: Aboveground Conductor Installation Procedure Drawing

Table 3-4: Access Road Construction Equipment

Equipment Type	Activity	Approximate Number
Skid Steer Loader	Clearing	3
Bulldozer	Clearing and Grading	3
Dump Truck	Transport Soil/Fill On and Off Site	5
Excavator	Removal of Soil and Brush	3
Front-end Loader	Transportation of Soil and Fill	2
Grader	Grade and Level	2
Hand Operator Compactor	Soil Compaction	2
Roller Compactor	Soil Compaction	2
Water Truck	Soil Compaction and Dust Control	2

Pole Installation

Installation of direct-bury steel poles will begin with the excavation of holes approximately six feet in diameter and approximately 13 to 20 feet deep, depending on the type and height of the pole. Holes will be drilled using a truck-mounted auger or similar equipment, and will excavate approximately nine CY of soil. New poles will then be delivered to the site and placed with a crane or helicopter. The annular space between poles and holes will then be backfilled with concrete. Any remaining excavated material will be placed around the holes or spread onto access roads and adjacent areas.

Dead-end poles, a type of angle structure, will be on drilled pier foundations. Installation will begin with the excavation of holes approximately seven to eight feet in diameter by approximately 20 to 30 feet deep (approximately 54 CY of soil), depending on the type and height of the pole. Holes will be drilled using a truck-mounted auger or similar equipment. Reinforcing steel cages and anchor bolt cages will be set in the open hole, and approximately 50 CY of concrete will be poured to a level approximately two feet above grade. Any remaining excavated material will be placed around the holes or spread onto access roads and adjacent areas.

SDG&E will notify the Underground Service Alert a minimum of 48 hours in advance of excavating or conducting other ground-disturbing activities in order to identify buried utilities. SDG&E will also conduct exploratory excavations (potholing) to verify the locations of existing facilities in the field.

Conductor Installation

Prior to stringing the new overhead 138 kV line, temporary clearance structures typically consisting of vertical wood poles with cross arms will be installed at road crossings and crossings of energized electric and communication lines, preventing the conductors from sagging onto roadways or other lines during the conductor installation. In some cases, bucket trucks may also be used for clearance structures. As an alternative to using temporary clearance structures,

SDG&E may use flaggers to temporarily halt traffic for brief periods of time while the overhead conductor is installed at road crossings.

Conductor and fiber optic ground wire stringing will begin with the installation of insulators and stringing sheaves during the pole installation. Sheaves are rollers that are temporarily attached to the lower end of the insulators to allow the conductor to be pulled along the line. A rope will then be pulled onto the rollers from structure to structure using a helicopter traveling along the ROW. Once the rope is in place, it will be attached to a steel cable and pulled back through the sheaves. The conductor will then be attached and pulled back through the sheaves and into place using conventional tractor-trailer pulling equipment located at pull and tension sites along the line. The pulling through each structure will be done under a controlled tension to keep it elevated and away from obstacles, thereby minimizing third-party damage to the line and protecting the public.

In some cases, sleeves or splices may be installed on the transmission line. This might occur when the conductor is slightly damaged during stringing operations or if the conductor is not long enough and needs to be joined to another segment. If the conductor is damaged, a repair sleeve will be wrapped around the outside of the conductor and pressed into place in order to protect the conductor. Full tension splices, or compression splices, are utilized when the conductor is damaged too severely for a repair sleeve, when the conductor is not long enough to span between dead-end structures, or if stringing locations are spread too far apart. During full-tension splices, the two ends of the conductor are connected with the use of heavy-duty vices or alternatively, a small engineered implosive charge is wrapped around a specially designed metallic sleeve creating a controlled implosive compression connecting the two conductors.

The designated pulling and tensioning sites, as described earlier in Section 3.7.1 Workspace, will be required in order to tension the conductor to a pre-calculated level. The sites will be needed to load the tractors and trailers with reels of conductors, and the trucks with tensioning equipment. Attachment 3-A: 138 kV Transmission Line Route Map details the locations of all pull and tension sites.

Each pull and tension site will require clearing an area of approximately 0.34 acre. Depending on topography, some incidental grading may be required at pulling and tensioning sites to create level pads for equipment.

After the conductor has been pulled into place, the sag between the structures will be adjusted to a pre-calculated level. The line will be installed with a minimum ground clearance of 30 feet. The conductor will then be attached to the end of each insulator, the sheaves will be removed, and the vibration dampers and other accessories will be installed.

Underground Duct Package and Cable Installation

The proposed 138 kV transmission line will leave the Boulevard Substation via an underground duct package and intercept the overhead lines via a steel cable riser pole (SP-1). The underground transmission facilities will be installed in a duct bank comprised of nine six-inch-diameter polyvinylchloride (PVC) conduits encased in concrete. A typical drawing of the proposed duct bank has been included as Figure 3–15: Underground 138 kV Duct Bank Typical

Drawing. An underground concrete splice vault measuring approximately 24 feet long, 12 feet wide, and 10 feet deep may be installed in line with the duct bank. If installed, this vault will be used to provide a means for inspecting the integrity of the underground cable system during operations of the line.

Prior to trenching, SDG&E will notify other utility companies (via Underground Service Alert) to locate and mark existing underground utilities along the proposed underground alignment. Exploratory excavations (potholing) will also be conducted to verify the locations of existing facilities in the field if necessary. The trench will be excavated using a backhoe. The depth of the trench will be determined by localized topography and potential conflicts, but is expected to be approximately 2.5 feet wide and six feet deep. Once installed, the depth from grade to the top of the concrete duct package will be approximately 2.5 feet and the depth from grade to the top of the conduit in the duct package will be approximately three feet. The trench alignment will proceed to the riser pole that provides the necessary structure to mechanically terminate the overhead conductors and support the underground cable terminators required for the underground cable.

The approximately 440-foot-long trench will result in the excavation of approximately 310 CY. After installation of the concrete duct bank, approximately 155 CY of this material will be used to backfill the trench. No engineered backfill is anticipated to be required. The remainder of the excavated material will be spread across the ROW or access roads, incorporated into the substation grading or berms, or disposed of at an appropriate facility. Encountering contaminated soils is not anticipated based on the results of the Phase I Environmental Site Assessment, which is discussed further in Section 4.7 Hazards and Hazardous Materials.

After trenching activities for the underground 138 kV duct bank have been completed, the PVC cable conduits will be installed (separated by spacers) and concrete will be poured around the conduits to form the duct banks. Upon completion of the installation of the duct bank, the cables will be installed in the duct banks. Each cable segment will be pulled into the duct bank and terminated at the riser pole where the line converts to an overhead configuration. To pull the cable through the ducts, a cable reel is placed at one end of the section and a pulling rig is placed at the other end. A larger rope is pulled into the duct using a fish line and is then attached to the cable puller which pulls the cable through the duct. A lubricant will be applied to the cable as it enters the duct to decrease friction during pulling. A typical drawing of the underground pulling process has been included as Figure 3–24: Underground Conductor Installation Procedure Typical Drawing. The work area adjacent to SP-1 and the Boulevard Substation pad will be utilized to pull in the underground cable.

After the conductor has been installed, the ground surface will be restored to near preconstruction conditions, and vegetation will be replanted as appropriate.

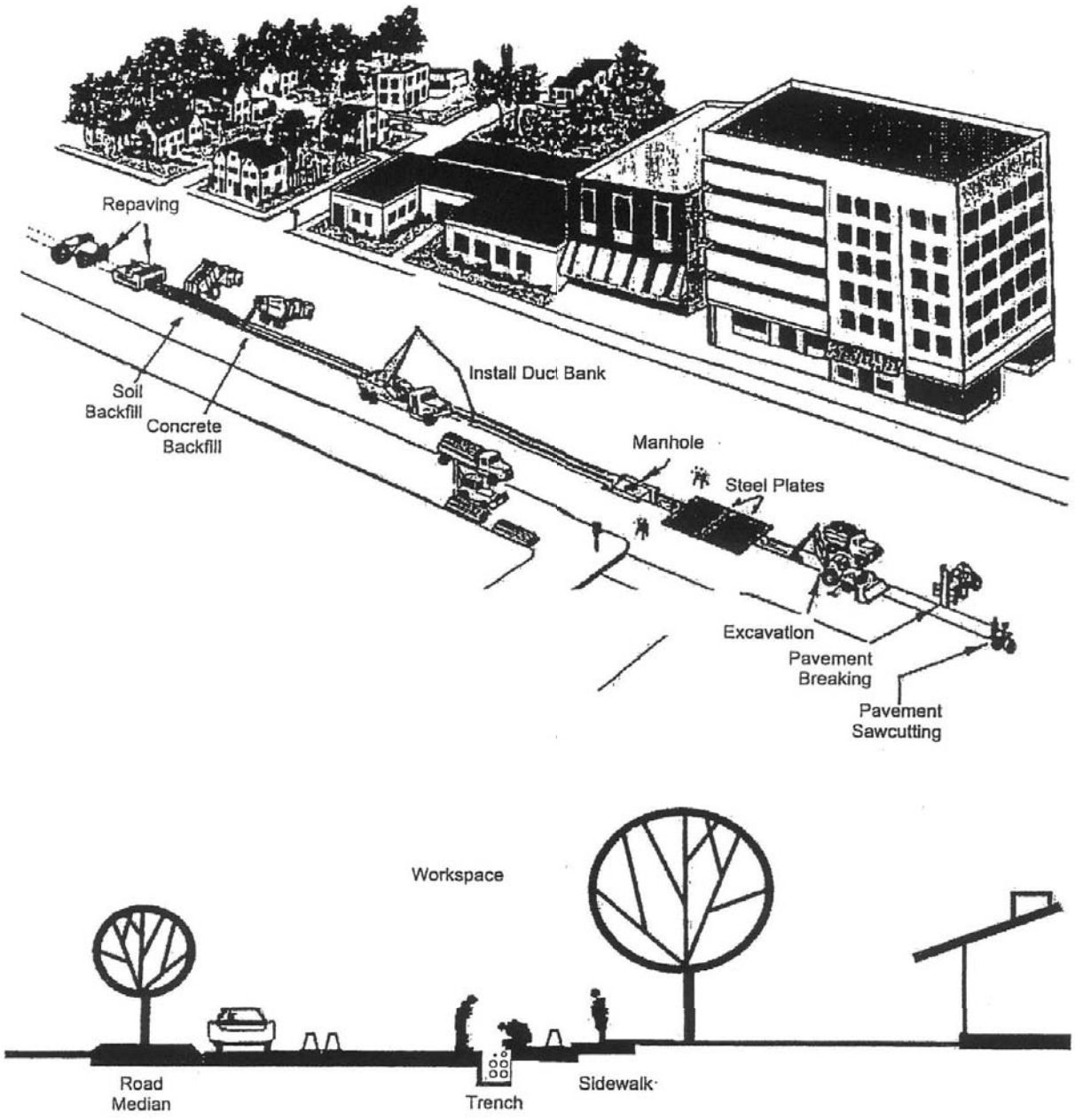

Figure 3-24: Underground Conductor Installation Procedure Typical Drawing

Distribution Line Relocation

The existing 445 distribution circuit will be removed from its existing location and collocated with the 138 kV transmission line facilities. This will involve the removal of the existing wood distribution poles, placement of some of the existing distribution circuit equipment on the newly installed wood distribution poles, and replacement of the existing distribution conductor (#6 bare strand, copper, #2 ACSR, and #2 Alumoweld-aluminum conductor) with 636 kcmil ACSR/AW conductor. The old conductor will be wound onto wooden spools, placed on flatbed trucks, and recycled or disposed of at an authorized facility. Pole installation work will be accomplished with the same equipment as previously described for installation of the poles. The holes from which the old wooden distribution poles are removed will be backfilled with native material from the excavations for the new 138 kV transmission steel poles. These areas will then be allowed to revegetate naturally. The old wooden distribution poles will be removed from the site by a crane and flatbed trucks and then recycled or disposed of at an authorized facility. The 445 distribution circuit will then be pulled into place in a similar manner as was previously described under Conductor Installation. The location of the collocated 445 circuit is depicted in Attachment 3-A: 138 kV Transmission Line Route Map.

Cleanup and Post-Construction Restoration

All areas that are temporarily disturbed around each structure, as well as areas used for conductor pulling and tensioning, and staging, will be restored to preconstruction conditions, to the extent practicable, following the installation of the line. This will include removal of all construction materials and debris, returning areas to their original contours, and reseeding.

Boulevard Substation Rebuild

Demolition of the existing structures located on the 8.5-acre parcel will be accomplished primarily with a bulldozer and excavator. During the demolition of these structures, all materials will be tested per federal, state, and local standards to determine appropriate recycle, reuse, or disposal alternatives. Once the structures are removed, the existing concrete foundations will be jack-hammered to below grade, and all associated debris will be removed. The holes will then be backfilled and the soil recontoured.

Approximately three mature coast live oak trees may require removal and one additional oak tree may require trimming in order to rebuild the Boulevard Substation to maintain the required clearance under California Public Utilities Commission (CPUC) General Order 95. The trees will be removed with earth-moving equipment, such as bulldozers and excavators. Tree trimming activities will be conducted with hand tools, such as chainsaws. No other native plant species will be removed. Access, pad construction, and equipment installation will be accomplished in a similar manner to the procedures previously described for the ECO Substation, though on a much smaller scale. Once site development activities, below grade construction, and above grade construction have been completed, all temporarily disturbed areas will be recontoured and reseeded, as appropriate. The grading will be based on a grading plan that emphasizes limited visual and biological impact. Depending on the characteristics of the site soil, up to 4,000 CY of Class II base may be imported and up to 24,000 CY of material may be removed from the site; however, as much export material as possible will be used on site to recontour grades and provide visual buffers. Some days will have more truck trips than others

but, in general, no more than 30 truck trips per day for an estimated three months will be required to complete the substation rebuild. In addition, an average of six truck trips per day are expected for delivery of materials and equipment for the duration of construction.

In addition, the existing TL 6931 69 kV transmission line will be rerouted into the rebuilt Boulevard Substation. This will require the installation of two direct embedded steel poles, approximately 85 feet in height, and associated guying. These poles will be located west of the substation rebuild site.

White Star Communication Facility Rebuild

No trees or native vegetation will be removed during the installation of the communication monopole and associated facilities.

Placement of the monopole at the White Star Communication Facility will begin by excavating a hole for the new foundation. SDG&E will notify the Underground Service Alert a minimum of 48 hours in advance of excavating or conducting other ground-disturbing activities in order to identify buried utilities. SDG&E will also conduct exploratory excavations (potholing) to verify the locations of existing facilities in the field. Rebar and concrete installation will then follow to complete the new foundation. Once the new foundation is installed, the new communication pole will be erected and connected to the foundation using a large crane. After the new pole is in place, it will be connected to the associated communication infrastructure.

Work at the White Star Communication Facility will also include the removal of two existing wooden poles, as well as shortening one. These poles will be removed by crane or manlifts and hauled away by truck for reuse elsewhere, recycling, or disposal. The holes will then be backfilled with soil or materials similar to the surrounding area. An existing shelter will also be dismantled and replaced with a new prefabricated structure that is 12 feet by 16 feet in dimension.

3.7.3 Equipment

Equipment used to construct new access and spur roads is summarized in Table 3-4: Access Road Construction Equipment. The equipment that will be used to construct each Proposed Project component, along with its approximate duration of use, is provided in Attachment 3-B: Typical Construction Equipment by Activity. In addition to this equipment, pick-up trucks and worker vehicles are expected to travel daily to and from each Proposed Project component work site. Maintenance and delivery trucks will likely travel to and from the staging areas once or twice a week, or up to four times a week during peak activities. If water production from on-site wells is not sufficient for construction, approximately 20 water trucks, each completing two trips to the ECO Substation per day, may be required to deliver water to the Proposed Project site for dust control, compaction, and fire protection.

3.7.4 Schedule

Construction of the entire Proposed Project is anticipated to take approximately two years from initial site development through energization. Table 3-5: Proposed Construction Schedule summarizes the length of time anticipated to construct each major component of the substation.

Table 3-5: Proposed Construction Schedule

Project Component	Activity	Approximate Number of Months	Anticipated Start Date
ECO Substation	Site Development	8	June 2010
	Below Grade Construction	8	November 2010
	Above Grade Construction	8	February 2011
	Communication Equipment Installation	1	February 2011
	Testing and Commissioning	2	March 2012
	Energization	0.5	May 2012
SWPL Loop-In	Access Roads	0.5	June 2011
	Install Foundations	1	April 2012
	Tower Installation and Conductor Stringing	0.5	May 2012
138 kV Transmission Line	Access Roads	3	February 2011
	Pole Foundation Installation	4	March 2011
	Pole Installation	3	June 2011
	Conductor Stringing and Sagging	3	October 2011
Boulevard Substation Rebuild	Site Development	4	February 2011
	Below Grade Construction	3	June 2011
	Above Grade Construction	3	September 2011
	Testing and Commissioning	2	January 2012
	Energization	0.5	April 2012
	Existing Substation Demolition	2	May 2012
White Star Communication Facility Rebuild	Site Development and Foundations Installation	2	June 2010
	Tower and Building Installation	2	August 2010

Construction activities will generally be limited to no more than 12 hours per 24-hour period, six days per week, as needed. On occasion, construction activities may be required at night or on weekends to minimize impacts to schedules and to facilitate cutover[8] work, and as required by other property owners or agencies, such as the CAISO, which may require outages of certain portions of the electric system. If construction occurs outside of the hours allowed by San Diego County, SDG&E will follow its established protocols and will provide advance notice by mail to all property owners within 300 feet of planned construction activities. The announcement will state the construction start date, anticipated completion date, and hours of construction.

ECO Substation

SDG&E anticipates that construction of the ECO Substation will take approximately two years from site development beginning in approximately June 2010 to energization in approximately May 2012. SDG&E anticipates that construction of the communication equipment will require approximately one month to complete.

SWPL Loop-In

SDG&E anticipates that the construction of the SWPL loop-in will take approximately two months, including site preparation, structure installation, and conductor stringing. Access road work will be done after grading is complete for the ECO Substation. Foundation work for the towers is scheduled to begin several months prior to the substation energization, and take approximately one month to complete. The tower installation and conductor stringing will require approximately two weeks. The actual timing of the loop-in construction will depend on the energization of the ECO Substation and the ability to take the SWPL out of service.

138 kV Transmission Line

SDG&E anticipates that the construction of the 138 kV transmission line will require approximately one year to complete. Construction of access roads is scheduled to begin once the applicable permits are approved, and take approximately three months to complete. Foundation work for the poles is scheduled to begin one month after access road work begins, and take approximately four months to complete. Once completed, the pole installation and conductor stringing will be completed in approximately three months each.

Boulevard Substation Rebuild

SDG&E anticipates that rebuilding the Boulevard Substation will take approximately one year. Demolition of the existing substation will begin once the rebuilt substation is energized and will require approximately two months to complete.

White Star Communication Facility Rebuild

SDG&E anticipates that construction of the communication equipment will require approximately four months to complete. Foundation work for the communication pole will require approximately two months to complete and erection of the pole will require approximately two months. Placement of the pre-fabricated control building at the White Star

[8] Cutover is a term that means to move service from one circuit to another.

Communication Facility will occur simultaneously with the foundation work and pole construction.

3.7.5 Personnel

Personnel anticipated to be on site for each Proposed Project component during peak construction conditions are shown in Table 3-6: Peak Construction Personnel. Each component of the Proposed Project will go out to bid separately; however, construction will be timed for common in-service completion. The access roads and 500 kV yard grading will begin first, and the 230/138 kV yard grading will follow shortly thereafter. The grading of the substation pads and foundation/underground will overlap. As the grading contractor completes the rough grading, the foundation underground work will begin with both components under construction simultaneously.

3.8 OPERATION AND MAINTENANCE

This section describes the operation and maintenance activities that will be conducted once the Proposed Project has been constructed and is in service. No new full-time staff will be required for operation and/or maintenance of the Proposed Project. A discussion of electric and magnetic fields that may be associated with the Proposed Project is provided in Attachment 3-C: Electric and Magnetic Fields. A Detailed Magnetic Field Management Plan for the Proposed Project is provided in Attachment 3-D: Detailed Magnetic Field Management Plan.

3.8.0 ECO Substation

The proposed ECO Substation will be unmanned during operation. Substation monitoring and control functions will be performed remotely from SDG&E's central operations facilities. Unauthorized entry into all substations is prevented with the provision of fencing and locked gates. Warning signs will be posted, and entry to the new substation will be restricted to SDG&E authorized personnel. Accordingly, no new personnel will be required for operation and maintenance of the ECO Substation.

Routine operation will require a single pickup truck visiting the substation several times a week for switching, as well as several larger construction and maintenance trucks visiting the substation several times a year for equipment maintenance. Maintenance activities will include equipment testing, equipment monitoring and repair, and emergency and routine procedures for service continuity and preventive maintenance. Routine maintenance is expected to require approximately six trips per year by a two- to four-person crew. Typically, a major maintenance inspection will take place annually, requiring approximately 20 personnel for approximately one week.

Safety lighting at the substation will be provided inside the substation fence for the purpose of emergency repair work. Because night activities are not expected to occur more than once per year, the safety lighting inside the substation fence will normally be turned off. Ten 100-watt yellow outdoor floodlights, mounted near the entry gate to safely illuminate the substation entry gate, will be left on during nighttime hours. The light will be directed downward to minimize glare into surrounding properties and habitat.

Table 3-6: Peak Construction Personnel

Project Component	Position	Number
ECO Substation	Superintendent	1
	Foremen	3
	Grade Checkers	4
	Operators	25
	Inspectors	2
	Construction Manager	1
SWPL Loop-In	Foremen	15
	Linemen	15
138 kV Transmission Line	Operators	8
	Foremen	15
	Linemen	15
Boulevard Substation Rebuild	Superintendent	1
	Foreman	1
	Grade Checker	1
	Operators	5
	Inspector	1
White Star Communication Facility	Operators	4

Routine maintenance for vegetation clearing will occur on an as-needed basis for the purposes of safety and access. These activities will typically involve the presence of one or two maintenance vehicles and one or more employees to clear or trim vegetation in order to achieve the minimum necessary working space around the substation facilities.

3.8.1 SWPL Loop-In

Operations and maintenance activities for the SWPL loop-in will include routine inspection, maintenance, and repair activities that are already being conducted for the SWPL transmission line. These activities include both routine preventive maintenance and emergency procedures to maintain system integrity. Some of the inspection work may include the use of helicopters for aerial patrol of the facilities, as well as ground patrol. At a minimum, routine land or aerial inspections will take place on an annual basis. These inspections will check for corrosion, equipment misalignment, loose fittings, and other common mechanical problems.

SDG&E will maintain a working space of a minimum of 150 feet in diameter around all transmission structures, which will be clear of shrubs and other obstructions for inspection and maintenance purposes. In addition, vegetation that has a mature height of 15 feet or taller will not be allowed to grow within 10 horizontal feet of any conductor within the ROW, for safety and reliability reasons.

3.8.2 138 kV Transmission Line

The 138 kV transmission line will be regularly inspected, maintained, and repaired following completion of Proposed Project construction. Operations and maintenance activities will involve both routine preventive maintenance and emergency procedures to maintain service continuity. Aerial and ground inspections of Proposed Project facilities will be performed. Aboveground components will be inspected annually, at a minimum, for corrosion, equipment misalignment, loose fittings, and other common mechanical problems. The underground portion of the transmission line will be inspected annually from inside the concrete splice vaults

Similar to the SWPL loop-in, a working space of a minimum of 150 feet in diameter around all steel transmission structures will be maintained for the 138 kV transmission line. These areas will be kept clear of shrubs and other obstructions for inspection and maintenance purposes. In addition, vegetation that has a mature height of 15 feet or taller will not be allowed to grow within 10 horizontal feet of any conductor within the ROW for safety and reliability reasons.

The following discussion provides an overview of the types of broad activities that will occur after the installation of the 138 kV transmission line. Unless otherwise noted, all vehicles will have rubber tires.

ROW Repair

ROW repair methods include grading previously built (road re-establishment) and existing maintenance access roads and spot-repair of erosion sites subject to scouring. ROW repairs are performed as necessary, usually following seasonal rains, and may require the use of a four-wheel-drive pickup truck, a motor grader, a backhoe, and/or a cat-loader. The cat-loader has steel tracks while the remaining equipment has rubber tires.

Pole or Structure Brushing

Certain poles or structures require the removal of vegetation to increase aerial patrol effectiveness or to reduce fire danger. Vegetation is removed using mechanical equipment consisting of chain saws, weed trimmers, rakes, shovels, and brush hooks. Three-man crews typically conduct this work. Normally, a 150-foot-diameter area is cleared around the pole base. The total area needed to complete this task is approximately 100 feet by 100 feet; it takes approximately two hours to complete. Poles are typically inspected on an annual basis to determine if brushing is required.

Application of Herbicides

Application of herbicides sometimes follows the mechanical clearing of vegetation to prevent vegetation from reoccurring. SDG&E normally utilizes one or more of 16 herbicides. These herbicides are identified in a U.S. Fish and Wildlife Service (USFWS) letter to SDG&E, along with their recommendations, which is included in Attachment 3-E: Approved Herbicides and Application Procedures. This activity generally requires one person in a pick-up truck and takes only minutes to spray around the base of the pole within a radius of approximately 10 feet. The employee will either walk from the nearest access road to apply the herbicide or drive a pick-up truck directly to each pole location as access permits.

Equipment Repair and Replacement

Poles or structures may support a variety of equipment such as conductors, insulators, switches, transformers, lightning arrest devices, line junctions, and other electrical equipment. This type of equipment may need to be added, repaired, or replaced in order to maintain uniform, adequate, safe, and reliable service. An existing transmission structure may be removed and replaced with a larger/stronger structure at the same location or a nearby location, due to damage or changes in conductor size. Equipment repair or replacement generally requires a crew to gain access to the location of the equipment to be repaired or replaced. This is normally a four-man crew with two to three trucks, a boom or line truck, an aerial lift truck, and an assist truck. If no vehicle access exists, the crew and material have to be flown in by helicopter.

Insulator Washing

In some areas prone to atmospheric moisture, condensation combined with dust on porcelain insulators can create an electrical discharge. This discharge, known as “arcing,” may cause outages. The outages caused by this condition can be prevented by washing the insulators routinely. The process of washing insulators involves driving a water truck to within six feet of the facility. A high-pressure hose is used to spray water at the insulators. A two-man crew driving a washer truck will be required for this operation. The space needed at each location is the size of the truck—approximately 30 by 40 feet. Typically, 0.5 hour is required for set up and washing of each insulator pole set. Washing consists of spraying the insulators with deionized water. Insulators are typically inspected on an annual basis to determine if washing is required. Insular washing will only be conducted on the SWPL loop-in structures and not on the new 138 kV transmission line. The 138 kV transmission line will utilize polymer insulators that do not require washing. Insulator washing may also occur at each of the substations depending on the type of insulators used and the level of contamination.

Tree Trimming

Tree trimming plays a critical role in maintaining reliable electrical power. Tree limb contact with electrical lines may cause power outages. Regular inspection, regardless of habitat type, is necessary to maintain proper line clearances. Tree trimming activities are conducted with a two-man crew, a one-man aerial lift truck, and a chipper trailer. In most cases, the crew has vehicle access. If vehicle access is not available, the crew walks to the location to conduct the trimming. Although the time required to complete tree trimming varies by the location, most tree trimming activity can be completed in one day. Trees where electric facilities exist are inspected annually in SDG&E's service area.

Use of Helicopters

Helicopters are used in the visual inspection of overhead facilities. Each electric transmission line is inspected several times a year via helicopter. Helicopters may be used to deliver equipment, position poles and structures, string lines, and position aerial markers, as required by Federal Aviation Administration (FAA) regulations. SDG&E's Transmission and Distribution Departments use helicopters for patrolling transmission and distribution lines during trouble jobs (outages/service curtailments) in areas that have no vehicle access or rough terrain. For patrolling during such jobs, the helicopter either picks up the patrolman at the district yard or in the field. If the pick up occurs in the field, the helicopter needs a pad or flat field to land. For new construction or maintenance, the helicopter needs a flat staging area for fueling and picking up material, equipment, and personnel. The area required for small helicopter staging is generally 100 feet by 100 feet. The size of the crew needed varies from four to ten crewmembers, two helicopter staff, and a water truck driver to apply water for dust control at the staging area. Most helicopter operations take only one day.

3.8.3 Boulevard Substation

The rebuilding of the Boulevard Substation will have a minor effect on the operations and maintenance practices currently employed at the site. The rebuilt Boulevard Substation will operate unmanned, monitored, and controlled by a remote control center. Unauthorized entry into the substation is prevented with the provision of fencing and locked gates. Maintenance activities, including equipment testing, equipment monitoring and repair, emergency and routine procedures for service continuity, and preventive maintenance, will continue with the same crew sizes and visit frequency. The maintenance crews will be on site for a slightly longer duration due to the increase in station equipment.

3.8.4 White Star Communication Facility

SDG&E personnel will conduct an annual inspection of the communication structures for corrosion, proper grounding, and tilt. In addition, crews will periodically paint and conduct routine building maintenance on the associated control structures.

3.9 ANTICIPATED PERMITS AND APPROVALS

The CPUC is the lead state agency for the Proposed Project under the California Environmental Quality Act (CEQA) because a Permit to Construct (PTC) is required in accordance with the CPUC's General Order No. 131-D Section III.B (GO 131-D), which contains the permitting

requirements for the construction of transmission and power line facilities. The BLM is the lead federal agency for the Proposed Project under the NEPA because the Proposed Project will require a ROW Grant from the BLM in accordance with the Federal Land Policy and Management Act of 1976. The BLM will also conduct Section 7 consultation with the USFWS concerning potential impacts to the federally listed Quino checkerspot butterfly (QCB) and Section 106 consultation under the National Historic Preservation Act of 1966 for the protection of historic properties that are included in the National Register of Historic Places or that meet the criteria for the National Register. In addition to the PTC and ROW Grant, SDG&E will obtain all relevant permits for the Proposed Project from federal, state, and local agencies. Table 3-7: Anticipated Permits and Approvals lists the potential permits and approvals that may be required for Proposed Project construction.

3.10 APPLICANT-PROPOSED MEASURES

As part of the Proposed Project, SDG&E plans to incorporate the applicant-proposed measures (APMs) included in Table 3-8: Applicant-Proposed Measures into the Proposed Project design to avoid or minimize potential impacts to sensitive resources. SDG&E will conduct the design, construction, operation, and maintenance of the Proposed Project in accordance with the APMs. All Proposed Project-related activities are subject to the APMs ultimately authorized by the CPUC. The various resource chapters detail how and when the APMs will be applied to avoid or minimize impacts to the less-than-significant level.

Portions of the Proposed Project are considered to be linear electric infrastructure projects that will traverse multiple jurisdictional boundaries, natural resource features, and habitat types. Until final design, and in some cases until installation, utility projects remain more flexible in the definition of their ultimate configuration and placement than most non-linear, non-utility projects. The Proposed Project may encounter unique topographical and natural features along the ROW, as well as challenges associated with engineering and existing and proposed land uses. The APMs take into consideration the potential for the Proposed Project to encounter such features and enhance SDG&E's ability to modify the final design during the installation phase to maximize overall project feasibility, while avoiding or minimizing impacts to sensitive environmental resources.

SDG&E established its Natural Community Conservation Plan (NCCP) in 1995, when it entered into an agreement with the USFWS and the California Department of Fish and Game (CDFG). The NCCP prescribes as "protocols" various protection, mitigation, and conservation measures that SDG&E must implement when utilizing the NCCP. The NCCP identifies 61 protocols that SDG&E routinely implements with every project to avoid and/or minimize impacts to sensitive areas. Many of these protocols were used in the development of the Proposed Project APMs and will be implemented to avoid and/or minimize potential impacts to biological resources.

Table 3-7: Anticipated Permits and Approvals

Agency	Permit/Consultation/Approval	Jurisdiction/Purpose
Federal Agencies		
BLM	ROW Grant	ROW for electric transmission facilities on BLM-managed land
	NEPA Compliance	Issuance of a federal permit
U.S. Army Corps of Engineers (USACE)	Clean Water Act Section 404 Nationwide or Individual Permit	Fill of waters of the U.S.
USFWS	Endangered Species Act Section 7 Consultation	Activities that may affect federally listed species or its habitat (QCB)
Advisory Council on Historic Preservation	National Historic Preservation Act Section 106 Review	Activities on federal land that may affect cultural or historic resources
FAA	Permission to Fly Helicopters	Activities that may affect air traffic
State Agencies		
CPUC	PTC	Construction of a new substation and a transmission line under 200 kV
	CEQA Compliance	Issuance of a discretionary permit by a state agency
California State Water Resources Control Board	National Pollutant Discharge Elimination System– Construction Stormwater Permit	Stormwater discharges associated with construction activities disturbing more than 1 acre of land
California Department of Fish and Game (CDFG)	Fish and Game Code Section 1600 Streambed Alteration Agreement	Activities that will disturb the bed or bank of a jurisdictional waterbody
Regional Water Quality Control Board (RWQCB)	Clean Water Act Section 401 Water Quality Certification	Activities authorized by federal agencies that may affect state water quality
State Historic Preservation Officer (SHPO)	SHPO Consultation	Activities that may affect cultural or historic resources
California Department of Transportation	Encroachment Permit	Construction of facilities within, under, or over state highway ROW
Local Agencies		
San Diego County	Encroachment Permit	Construction of facilities within, under, or over county road ROWs

The APMs are designed to take advantage of Proposed Project design flexibility, by avoiding or minimizing environmental impacts to the extent feasible. As defined in the CEQA, feasible means "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors," while attaining the Proposed Project's basic objectives, purpose, and need.[9]

3.11 IMPLEMENTATION OF APPLICANT-PROPOSED MEASURES

Prior to the start of construction, SDG&E will assemble the construction and environmental teams responsible for implementing and overseeing the APMs listed in Table 3-8: Applicant-Proposed Measures. Contractors and subcontractors working on the Proposed Project will be contractually bound to the requirements and stipulations of the APMs to ensure that the measures are implemented as proposed. SDG&E has developed an environmental compliance management program in order to track, document, and enforce the implementation of APMs throughout each phase of the project. Key components of the program are described in the following sections.

3.11.0 Environmental Compliance Management

SDG&E's environmental compliance team will include an environmental project manager, resource specialists, and environmental monitors to inspect, document, and report on compliance with APMs, as well as all local, state, and federal regulations. SDG&E will assign specialists in water quality, hazardous materials, and natural resources to ensure proper implementation of the APMs and evaluate their effectiveness during construction. On-site monitors will be familiar with the requirements and intent of each APM and will verify implementation in the field on a daily basis. The status and effectiveness of the APMs will be discussed during regularly scheduled construction meetings.

3.11.1 Environmental Training

Implementation of APM-BIO-08, APM-CUL-01, and APM-HAZ-01, will occur as part of a project-specific environmental training program developed by SDG&E. The program will include a multi-level approach that is commensurate to each worker's role on the project. Supervisors, including construction foreman, will participate in an in-depth training session to review the requirements of each APM, permit condition, and/or mitigation plan. Crews and other staff will also receive training and review of project requirements. All project personnel working on the ROW will attend SDG&E's training program prior to starting work.

3.11.2 Monitoring and Inspection

Environmental monitors and contract administrators will be on-site during all phases of construction to verify that APMs and other project specifications are adhered to. Issues or concerns related to implementation of the APMs will be addressed in the field and/or communicated to the environmental project manager for corrective action. The environmental monitors and contract administrators will have stop work authority if construction activities threaten a sensitive resource or seriously deviate from project requirements.

[9] Public Resources Code, Section 21061.1 and California Code of Regulations Title 14, Section 15126.6

3.11.3 Reporting and Documentation

Implementation of the APMs will be tracked and documented on a daily basis by SDG&E's environmental monitors. The monitors will use field notes and digital photographs to document and communicate the status of APMs.

Table 3-8: Applicant-Proposed Measures

APM Number	Description	Standard SDG&E Protocol	Project-Specific	Project Component				
				ECO Substation	SWPL Loop-In	Boulevard Substation Rebuild	138 kV Transmission Line	White Star Communication Facility Rebuild
Aesthetics								
APM-AES-01	In order to reduce potential visual contrast and integrate the ECO Substation's appearance with the desert landscape setting, when Project construction has been completed, all disturbed terrain at the ECO Substation site will be restored through recontouring and revegetation in accordance with the Landscaping Plan included as Figure 4.1–3: East County Substation Landscape Concept Plan.		X	X				
APM-AES-02	When Project construction has been completed, all disturbed terrain at the Boulevard Substation site will be restored through recontouring, revegetation, and landscaping in accordance with the Landscaping Plan included as Figure 4.1–4: Boulevard Substaion Landscape Concept Plan. In order to provide screening and thus reduce potential Project visibility, the Landscape Plan includes larger shrubs and trees that will partially screen views of the substation from Old Highway 80 and from adjacent residential properties.		X			X		
APM-AES-03	In order to reduce the Project's potential visibility from Old Highway 80, the underground portion of the new 138 kV transmission line will be extended an additional distance of approximately 600 feet to the south and the steel cable riser pole will be relocated to replace structure SP-2.		X				X	
APM-AES-04	Construction activities will be kept as clean and inconspicuous as possible. Where practical, construction storage and staging will be screened with opaque fencing from close-range residential views.	X		X	X	X	X	X
Air Quality								
APM-AIR-01	Rock aprons or rattle plates will be installed, as needed, at the intersection of dirt access roads and paved public roadways to clean the tires of equipment prior to leaving the site.	X		X	X	X	X	X
APM-AIR-02	All active construction areas, unpaved access roads, parking areas, and staging areas will be watered or stabilized with non-toxic soil stabilizers as needed to control fugitive dust.	X		X	X	X	X	X
APM-AIR-03	All public streets will be swept or cleaned with mechanical sweepers if visible soil material is carried onto them by construction activities or vehicles.	X		X	X	X	X	X
APM-AIR-04	Exposed stockpiles (e. g., dirt, sand, etc.) will be covered and/or watered or stabilized with non-toxic soil binders as needed to control emissions.	X		X	X	X	X	X
APM-AIR-05	Trucks transporting bulk materials will be completely covered unless two feet of freeboard space from the top of the container is maintained with no spillage and loss of material. In addition, the cargo compartment of all haul trucks will be cleaned and/or washed at the delivery site after removal of the bulk material.	X		X	X	X	X	X
APM-AIR-06	Movement of bulk material handling or transfer will be stabilized prior to handling or at a point of transfer with application of sufficient water, chemical stabilizers, or by sheltering or enclosing the operation and transfer line.	X		X	X	X	X	X
APM-AIR-07	Traffic speeds on unpaved roads and the ROW will be limited to 15 miles per hour (mph).		X	X	X	X	X	X

APM Number	Description	Standard SDG&E Protocol	Project-Specific	Project Component				
				ECO Substation	SWPL Loop-In	Boulevard Substation Rebuild	138 kV Transmission Line	White Star Communication Facility Rebuild
APM-AIR-08	SDG&E will limit actively graded areas to a cumulative total of 12.8 acres per day. The total area of disturbance can exceed this acreage so long as the actively graded portion is below this threshold.		X	X				
APM-AIR-09	Vehicle idling time will be limited to a maximum of five minutes for vehicles and construction equipment, except where idling is required for the equipment to perform its task.	X		X	X	X	X	X
APM-AIR-10	Road graders used during site development activities at the ECO Substation will be equipped with a California Air Resources Board-verified Level 2 diesel emission control strategy or a comparable diesel-control technology that will reduce inhalable particulate matter (PM_{10}) emissions by 50 percent or more.		X	X				
APM-AIR-11	If suitable park-and-ride facilities are available in the Project vicinity, construction workers will be encouraged to carpool to the job site to the extent feasible. The ability to develop an effective carpool program for the Project would depend upon the proximity of carpool facilities to the job site, the geographical commute departure points of construction workers, and the extent to which carpooling would not adversely affect worker show-up time and the Project's construction schedule.	X		X	X	X	X	X
APM-AIR-12	Routine inspections and preventative maintenance will be performed on all sulfur hexafluoride (SF_6) equipment according to the manufacturer's recommendations. SF_6 density will be monitored at all equipment and any changes exceeding the manufacturer's recommendations will be reported immediately to SDG&E. These activities will be tracked in SDG&E's substation maintenance software and reported to the California Climate Action Registry and the Assembly Bill 32 mandatory reporting regulation in compliance with the Environmental Protection Agency's mass-balance equation reporting and tracking method. Substation crews will be trained on these tracking procedures and the significance of SF_6 as a greenhouse gas.	X		X		X		
APM-AIR-13	During final design, SDG&E will consider the feasibility of using rooftop photovoltaic panels on the control shelters to help support operating load at the ECO Substation. SDG&E will also investigate utilizing solar tubes for lighting in the control shelters. SDG&E's Project team will work closely with SDG&E's Sustainable Communities team to implement green building practices at the ECO Substation.		X	X				
Biological Resources								
APM-BIO-01	Littering will not be allowed. Food-related garbage and trash will be removed from the Project area daily.	X		X	X	X	X	X
APM-BIO-02	Smoking will only be allowed in cleared areas or in enclosed vehicles to reduce the potential for wildfires.	X		X	X	X	X	X
APM-BIO-03	All earth-moving equipment will be confirmed to be clean and free of mud and vegetative material before first arriving at the construction site. If the equipment leaves the Project site, it must be confirmed to be clean and free of mud and vegetative material prior to re-entering the site.		X	X	X	X	X	X
APM-BIO-04	Firearms will be prohibited in all Project areas.	X		X	X	X	X	X

APM Number	Description	Standard SDG&E Protocol	Project-Specific	Project Component				
				ECO Substation	SWPL Loop-In	Boulevard Substation Rebuild	138 kV Transmission Line	White Star Communication Facility Rebuild
APM-BIO-05	Project personnel will not be allowed to bring pets to any Project area to minimize harassment or killing of wildlife and to prevent the introduction of destructive animal diseases to native wildlife populations.	X		X	X	X	X	X
APM-BIO-06	No harm, harassment, or collection of plant and wildlife species will be allowed. Feeding of wildlife will be prohibited.	X		X	X	X	X	X
APM-BIO-07	A biological monitor will be present during all ground-disturbing and vegetation removal activities. Immediately prior to initial ground-disturbing activities and/or vegetation removal, the biological monitor will survey the site to ensure that no sensitive species will be impacted.		X	X	X	X	X	X
APM-BIO-08	Prior to construction, all SDG&E, contractor, and subcontractor Project personnel will receive training regarding the appropriate work practices necessary to effectively implement the APMs and to comply with the applicable environmental laws and regulations, including appropriate wildlife avoidance; impact minimization procedures; the importance of these resources, and the purpose and necessity of protecting them; and methods for protecting sensitive ecological resources. The training will include BMPs to reduce the potential for erosion and sedimentation during construction of the Project.	X		X	X	X	X	X
APM-BIO-09	Survey personnel will keep survey vehicles on existing roads. During Project surveying activities, brush clearing for footpaths, line-of-sight cutting, and land surveying panel point placement in sensitive habitat will require prior approval from the Project biological monitor. Hiking off roads or paths for survey data collection will be allowed year-round as long as all of the other applicable APMs are met.	X		X	X		X	
APM-BIO-10	Except when not feasible due to physical or safety constraints, all Project vehicle movement will be restricted to existing access roads and access roads constructed as a part of the Project and determined and marked by SDG&E in advance of construction. Approval from a biological monitor will be obtained prior to any travel off of existing access roads.	X		X	X	X	X	X
APM-BIO-11	To the extent feasible, access roads will be built at right angles to streambeds and washes. Where it is not feasible for access roads to cross at right angles, SDG&E will limit roads constructed parallel to streambeds or washes to a maximum length of 500 feet at any one transmission line crossing location. Such parallel roads will be constructed in a manner that minimizes potential adverse impacts on waters of the U.S. or state-only waters. All access roads constructed parallel to or across these features will be approved by a biological monitor in advance.	X		X	X		X	
APM-BIO-12	Prior to construction of the 138 kV transmission line, surveys for sensitive plant species known to occur or with a moderate to high potential to occur within the Project area, as described in Chapter 4.4 Biological Resources, will be conducted for work areas and access roads during the appropriate phenological period. A report will be prepared that reflects the finding of these surveys and any associated impacts that would result from construction of the transmission line. This report will be submitted to the CPUC prior to the start of construction.		X				X	

APM Number	Description	Standard SDG&E Protocol	Project-Specific	Project Component				
				ECO Substation	SWPL Loop-In	Boulevard Substation Rebuild	138 kV Transmission Line	White Star Communication Facility Rebuild
APM-BIO-13	Prior to the start of construction, the boundaries of plant populations designated as sensitive by the USFWS or CDFG, and other resources designated sensitive by SDG&E and the resource agencies, will be delineated with clearly visible flagging or fencing. The flagging and/or fencing will be maintained in place for the duration of construction. Flagged and fenced areas will be avoided to the extent practicable during construction activities in that area.	X					X	
APM-BIO-14	If impacts to sensitive plant species are unavoidable, SDG&E will work with the appropriate jurisdictional agency (when practicable) to salvage the plant individuals utilizing methods, including removal and stockpiling for replanting on site, removal and transplanting out of surface disturbance area, or removal and salvage by an appropriate resource specialist.	X					X	
APM-BIO-15	SDG&E will conduct protocol-level surveys for QCB (*Euphydryas editha quino*) prior to construction. Once the surveys have been completed, a 45-day report will be submitted to the USFWS and CPUC.	X		X	X		X	
APM-BIO-16	SDG&E will work with Project engineers to relocate, if feasible, proposed SP 75 to avoid dense populations of any primary host plant of the QCB.		X				X	
APM-BIO-17	SDG&E will compensate for permanent impacts to suitable QCB critical habitat at a ratio of one to one or as agreed to in consultation with the USFWS.	X					X	
APM-BIO-18	SDG&E will compensate for permanent impacts to sensitive species habitat at a ratio of one to one or as agreed to in consultation with the USFWS and CDFG.	X		X	X		X	
APM-BIO-19	All steep-walled trenches or excavations used during construction will be inspected twice daily (early morning and evening) to protect against wildlife entrapment. Open construction holes will be covered overnight. Covers will be secured in place nightly, prior to workers leaving the site, and will be strong enough to prevent livestock or wildlife from falling into the hole. Holes and/or trenches will be inspected prior to filling to ensure the absence of mammals and reptiles. Excavations will be sloped on one end to provide an escape route for small mammals and reptiles. If wildlife is located in the trench or excavation and cannot escape unimpeded, the biological monitor will be called immediately to remove them. The biological monitor will make the required contacts with USFWS and CDFG resource personnel and obtain verbal approval prior to removing any entrapped protected wildlife species. If the biological monitor is not qualified to remove the entrapped wildlife, a recognized wildlife rescue agency (such as Project Wildlife) will be employed to remove the wildlife and transport them safely to other suitable habitats.	X		X	X	X	X	X
APM-BIO-20	Permanent retention basins will be constructed with escape ramps along two sides of the pond to allow entrapped wildlife to escape. The slope of the ramps will not exceed a two to one ratio and will be constructed of non-slippery material, or as specified by the biological monitor.		X	X				

APM Number	Description	Standard SDG&E Protocol	Project-Specific	Project Component				
				ECO Substation	SWPL Loop-In	Boulevard Substation Rebuild	138 kV Transmission Line	White Star Communication Facility Rebuild
APM-BIO-21	If feasible, SDG&E will avoid construction during the nesting or breeding season. When it is not feasible to avoid construction during the nesting or breeding season, SDG&E will perform a site survey in the area where the work is to occur. This survey will be performed to determine the presence or absence of nesting birds or other species in the work area. If an active nest is identified, a biological monitor will monitor the nest and determine a suitable construction buffer to ensure that the birds are not disturbed. If the birds are federal or state-listed species, SDG&E will consult with the USFWS and CDFG as necessary to determine the construction buffer. Monitoring of the nest will continue until the birds have fledged.		X	X	X	X	X	X
APM-BIO-22	Prior to construction, SDG&E will remove all existing raptor nests from existing structures that will be affected by Project construction. Removal of nests will occur outside of the raptor breeding season (January to July). If it is necessary to remove an existing raptor nest during the breeding season, a qualified biologist will survey the nest prior to removal to determine if it is active. If the nest is inactive, it will be dismantled and removed from the site promptly under the supervision of a biological monitor. If the nest is determined to be active, it will not be removed and the biological monitor will monitor the nest to ensure nesting activities and/or breeding activities are not disrupted. If the biological monitor determines that Project activities are disturbing or disrupting nesting activities, the monitor will make recommendations to reduce the noise and/or disturbance in the vicinity of the nest.		X	X	X		X	
APM-BIO-23	Construction night lighting in sensitive habitats will be minimized to the extent feasible. Exterior lighting within the Project area and adjacent to undisturbed habitat will be the lowest illumination allowed for human safety, selectively placed, shielded, and directed away from preserved habitat to the maximum extent practicable.		X	X	X	X	X	X
APM-BIO-24	Nighttime vehicle traffic volume associated with Project activities will be kept to a minimum and speeds will be limited to 10 miles per hour to prevent mortality of nocturnal wildlife species.		X	X	X	X	X	X
APM-BIO-25	Structures will be constructed to conform to the Avian Power Line Interaction Committee's *Suggested Practices for Avian Protection on Power Lines* to help minimize impacts to raptors.	X			X		X	
APM-BIO-26	At the completion of the Project, all construction materials will be removed from the site.	X		X	X	X	X	X
APM-BIO-27	All new access roads constructed as part of the Project that are not required as permanent access for future Project operation and maintenance will either be restored or permanently closed. Where required, roads will be permanently closed using the most effective feasible and least environmentally-damaging methods appropriate to that area (e.g., stockpiling and replacing topsoil or replacing rock), with the concurrence of the underlying landowner and the governmental agency having jurisdiction.	X		X	X		X	
APM-BIO-28	Topsoil located in areas to be restored will be conserved during excavation and reused as cover on disturbed areas to facilitate regrowth of vegetation. Topsoil located in developed or disturbed areas is excluded from this APM.	X		X	X	X	X	X
APM- BIO-29	Wherever possible, vegetation will be left in place to avoid excessive root damage and to allow for resprouting.	X		X	X	X	X	

APM Number	Description	Standard SDG&E Protocol	Project-Specific	Project Component				
				ECO Substation	SWPL Loop-In	Boulevard Substation Rebuild	138 kV Transmission Line	White Star Communication Facility Rebuild
APM-BIO-30	Temporarily disturbed areas will be reseeded with an appropriate seed mix that does not contain invasive, non-native plant species in accordance with landowner approval.	X		X	X	X	X	
Cultural Resources								
APM-CUL-01	Prior to construction, all SDG&E, contractor, and subcontractor Project personnel will receive training regarding the appropriate work practices necessary to effectively implement the APMs and to comply with the applicable environmental laws and regulations, including the potential for exposing subsurface cultural resources and paleontological resources and to recognize possible buried resources. This training will include presentation of the procedures to be followed upon discovery or suspected discovery of archaeological materials, including Native American remains, and their treatment, as well as of paleontological resources.	X		X	X	X	X	X
APM-CUL-02	At least 120 days prior to construction, a cultural/historical resource consultant will be retained by SDG&E to complete an analysis and assessment of the potential to disturb resources that were identified during the initial studies from major ground-disturbing activities. The analysis and assessment will be prepared to meet the requirements of the CEQA and NEPA. Project component sites that require testing for significance determination will be treated on a case-by-case basis using all applicable criteria.	X		X		X	X	
APM-CUL-03	A qualified archaeologist will attend preconstruction meetings, as needed, to make comments and/or suggestions concerning the monitoring program and to discuss excavation plans with the excavation contractor. The requirements for archaeological monitoring will be noted on the construction plans. The archaeologist's duties will include monitoring, evaluation, analysis of collected materials, and preparation of a monitoring results report conforming to agency guidelines for the Determination of the Significance of Archaeological Sites.	X		X		X	X	
APM-CUL-04	Known cultural resources that can be avoided will be demarcated as Environmentally Sensitive Areas. Construction crews will be instructed to avoid disturbance of these areas.	X		X		X	X	
APM-CUL-05	In the event that cultural resources are discovered, the archaeologist will have the authority to divert or temporarily halt ground disturbance to allow evaluation of potentially significant cultural resources. The archaeologist will contact SDG&E's Cultural Resource Specialist and Environmental Project Manager at the time of discovery. The archaeologist, in consultation with SDG&E's Cultural Resource Specialist will determine the significance of the discovered resources. SDG&E's Cultural Resource Specialist and Environmental Project Manager must concur with the evaluation procedures to be performed before construction activities are allowed to resume. For significant cultural resources, a Research Design and Data Recovery Program will be prepared and carried out to mitigate impacts.	X		X	X	X	X	X
APM-CUL-06	All collected cultural remains will be cleaned, cataloged, and permanently curated with an appropriate institution. All artifacts will be analyzed to identify function and chronology as they relate to the history of the area. Faunal material will be identified as to species.	X		X	X	X	X	X

APM Number	Description	Standard SDG&E Protocol	Project-Specific	Project Component				
				ECO Substation	SWPL Loop-In	Boulevard Substation Rebuild	138 kV Transmission Line	White Star Communication Facility Rebuild
APM-CUL-07	A monitoring results report (with appropriate graphics), which describes the results, analyses, and conclusions of the monitoring program, will be prepared and submitted to SDG&E's Cultural Resource Specialist and Environmental Project Manager following termination of the program. Any noteworthy cultural sites or features encountered will be recorded with the South Coastal Information Center at San Diego State University and with the San Diego Museum of Man.		X	X	X	X	X	X
APM-CUL-08	Prior to construction, a paleontological resource consultant will be retained by SDG&E to complete an analysis and assessment of the potential to disturb resources from major ground-disturbing activities, such as facility pad grading, trenching, or new access road grading.	X		X	X	X	X	X
APM-CUL-09	A qualified paleontologist will attend preconstruction meetings, as needed, to consult with the excavation contractor concerning excavation schedules, paleontological field techniques, and safety issues. A qualified paleontologist is defined as an individual with a Master of Science or Doctor of Philosophy in paleontology or geology who is experienced with paleontological procedures and techniques, who is knowledgeable in the geology and paleontology of Southern California, and who has worked as a paleontological mitigation project supervisor in the region for at least one year. The requirements for paleontological monitoring will be noted on the construction plans.	X		X	X	X	X	X
APM-CUL-10	A paleontological monitor will work under the direction of the qualified Project paleontologist and will be on site to observe excavation operations that involve the original cutting of previously undisturbed deposits with high paleontological resource sensitivity (i. e., Table Mountain Formation). A paleontological monitor is defined as an individual who has experience in the collection and salvage of fossil materials. Because the Miocene-age Table Mountain Formation is locally covered by Pleistocene-age Older alluvium and fanglomerate deposits of unknown thickness, careful monitoring of excavations of the younger deposits will be necessary to ensure that overall monitoring of the Table Mountain Formation is as complete as possible. However, if site-specific geotechnical studies are sufficient to distinguish the geologic contact between the Pleistocene and Miocene sedimentary rock units, this information can be used to more clearly define those portions of the excavations solely sited in the Table Mountain Formation. If this level of detail is achieved prior to excavating activities, a paleontological monitor will need to be on site only on a part-time basis to observe excavation operations that involve the original cutting of previously undisturbed deposits of moderate paleontological resource sensitivity (i. e., older alluvium and fanglomerates deposits).		X	X	X	X	X	X

APM Number	Description	Standard SDG&E Protocol	Project-Specific	Project Component				
				ECO Substation	SWPL Loop-In	Boulevard Substation Rebuild	138 kV Transmission Line	White Star Communication Facility Rebuild
APM-CUL-11	In the event that fossils are encountered, the Project paleontologist will have the authority to divert or temporarily halt construction activities in the area of discovery to allow recovery of fossil remains in a timely fashion. The paleontologist will contact SDG&E's Cultural Resource Specialist and Environmental Project Manager at the time of discovery. The paleontologist, in consultation with SDG&E's Cultural Resource Specialist will determine the significance of the discovered resources. SDG&E's Cultural Resource Specialist and Environmental Project Manager must concur with the evaluation procedures to be performed before construction activities are allowed to resume. Because of the potential for recovery of small fossil remains, it may be necessary to set up a screen-washing operation on site. When fossils are discovered, the paleontologist (or paleontological monitor) will recover them along with pertinent stratigraphic data. In most cases, this fossil salvage can be completed in a short period of time. Because of the potential for recovery of small fossil remains, such as isolated mammal teeth, recovery of bulk-sedimentary-matrix samples for off-site wet screening from specific strata may be necessary, as determined in the field. Fossil remains collected during monitoring and salvage will be cleaned, repaired, sorted, cataloged, and deposited in a scientific institution with permanent paleontological collections.	X		X	X	X	X	X
Geology, Soils, and Mineral Resources								
APM-GEO-01	SDG&E will consider the recommendations and findings of final Geotechnical Reports prepared by URS and the contractor's Geotechnical Engineer in the final design of all Project components to ensure that the potential for expansive soils and differential settling is compensated for in the final design and construction techniques. In addition, SDG&E will comply with all applicable codes and seismic standards. The final design will be reviewed and approved by a Professional Engineer registered in the State of California prior to construction.		X	X	X	X	X	X
Hazards and Hazardous Materials								
APM-HAZ-01	Prior to construction, all SDG&E, contractor, and subcontractor Project personnel will receive training regarding the appropriate work practices necessary to effectively implement the APMs to comply with the applicable environmental laws and regulations associated with hazardous materials.	X		X	X	X	X	X
APM-HAZ-02	A Phase II ESA will be conducted on the existing Boulevard Substation parcel after the equipment has been removed to determine if there is any surface or subsurface contamination. If required by the Phase II investigation, remediation will occur in accordance with all applicable federal, state, and local regulations.		X			X		
APM-HAZ-03	During the Boulevard Substation dismantling process, the existing equipment to be dismantled will be tested in accordance with federal, state, and local standards to determine appropriate recycle, reuse, or disposal alternatives.		X			X		

APM Number	Description	Standard SDG&E Protocol	Project-Specific	Project Component				
				ECO Substation	SWPL Loop-In	Boulevard Substation Rebuild	138 kV Transmission Line	White Star Communication Facility Rebuild
APM-HAZ-04	Soil testing for lead contamination will be conducted for all excavation sites within 500 feet of the informal shooting ranges. In addition, an Unanticipated Soil/Lead Contamination Handling Plan will be prepared to address the procedures to follow in the event that lead contamination is discovered during testing or excavation activities. This plan will contain provisions for a worker lead awareness program, as well as guidelines for the identification, removal, transport, and disposal of lead-impacted materials. This plan will also emphasize that all activities within, or in close proximity to, contaminated areas will follow applicable environmental and hazardous waste laws and regulations.		X	X				
APM-HAZ-05	SDG&E will develop a Construction Fire Prevention Plan for the Project and monitor construction activities to ensure its implementation and effectiveness. At a minimum, the Construction Fire Prevention Plan will include the following: – a description of the procedures that will be implemented to minimize the potential to start a fire (including vegetation clearing, parking requirements, etc.), – the requirements of Title 14 of the California Code of Regulations, Article 8 #918 "Fire Protection," – relevant components of the SDG&E Wildland Fire Prevention and Fire Safety Electric Standard Practice (2009) included in Attachment 4.7 B: SDG&E Wildland Fire Prevention and Fire Safety Electric Standard Practice, – the fire-fighting equipment (including shovels, axes, and fire extinguishers) that must be maintained on site and in vehicles for the duration of construction, – the appropriate timing and use of fire-protective mats or shields during grinding and welding operations, – emergency response and reporting procedures, and – relevant emergency contact information. SDG&E will provide a draft copy of the Construction Fire Prevention Plan to the California Public Utilities Commission (CPUC), CAL FIRE, the Bureau of Land Management, County of San Diego, and local community fire departments at least 90 days before the start of any construction activities. Agency comments on the Construction Fire Prevention Plan will be provided by SDG&E to all other reviewing parties and SDG&E will resolve each comment in consultation with CAL FIRE. The final Construction Fire Prevention Plan will be approved by CAL FIRE at least 30 days prior to the initiation of construction activities. SDG&E will fully implement the Construction Fire Prevention Plan during all construction activities.		X	X	X	X	X	X
APM-HAZ-06	SDG&E will implement the Wildland Fire Prevention and Fire Safety Electric Standard Practice (2009) included as Attachment 4.7–B: SDG&E Wildland Fire Prevention and Fire Safety Electric Standard Practice (2009) during all construction, operation, and maintenance work associated with the Project.	X		X	X	X	X	X

APM Number	Description	Standard SDG&E Protocol	Project-Specific	Project Component				
				ECO Substation	SWPL Loop-In	Boulevard Substation Rebuild	138 kV Transmission Line	White Star Communication Facility Rebuild
Hydrology and Water Quality								
APM-HYD-01	SDG&E will compensate for permanent impacts to any waters of the U.S. and state-only waters at a minimum ratio of one to one or as required by the USACE, CDFG, and RWQCB through their respective permitting processes.		X	X				
APM-HYD-02	If groundwater wells at ECO Substation are drilled within 0.5 mile of any local wells used for residential water supply, the water level in existing wells will be monitored and frequent communications will occur with the owner during construction to ensure that water availability is not adversely affected.		X	X				
Noise								
APM-NOI-01	Construction activities will occur during the times established by the local ordinances (generally between 7 a.m. and 7 p.m. Monday through Saturday), with the exception of certain activities where nighttime and weekend construction activities are necessary, including, but not limited to, delivery of substation transformers, filling of substation transformers, system transfers, pouring of foundations, and pulling of the conductor, which require continuous operation or must be conducted during off-peak hours per agency requirements. For any work that cannot occur during those timeframes, SDG&E will limit construction activities so that noise will not exceed an hourly average of 45 dB when measured at the border of the nearest parcel with an inhabited residence. If activities cannot be limited to meet this noise threshold, SDG&E will communicate the exception to San Diego County in advance of conducting the work that will exceed the threshold.	X		X	X	X	X	X
APM-NOI-02	SDG&E will provide notice of the construction plans to all property owners within 300 feet of the Project by mail at least one week prior to the start of construction activities. The announcement will state the construction start date, anticipated completion date, and hours of operation, and well as provide a telephone contact number for receiving questions or complaints during construction		X	X	X	X	X	X
APM-NOI-03	Helicopter operation will be prohibited during construction of the 138 kV transmission line in the immediate vicinity of pole SP-52, located at approximate MP 7.3, and between pole SP-26, located at approximate MP 10.5, and the Rebuilt Boulevard Substation. If helicopter use cannot be avoided in these locations, SDG&E will temporarily relocate the impacted residents, on an as-needed basis, for the duration of the helicopter use that would impact them.		X				X	