

4. Project Description

San Diego Gas & Electric Company (SDG&E) proposes to construct the Ocean Ranch Substation Project (Proposed Project) in Oceanside, San Diego County, California. The Proposed Project would consist of the following: a new 69/12 kilovolt (kV) low-profile electric substation located on a 9.66-acre site on Avenida del Oro north of Avenida de la Plata; approximately 1,500 feet of underground power line duct bank to loop an existing 69 kV circuit into the new substation; four new 12 kV distribution circuits that would intercept four existing circuits in the vicinity; and a telecommunication system that would include a 40-foot monopole and microwave antenna.

4.1 Project Title

San Diego Gas & Electric Ocean Ranch Substation Project

4.2 Lead Agency Name and Address

California Public Utilities Commission
Energy Division
505 Van Ness Avenue
San Francisco, California 94102

4.3 Lead Agency Contact Person and Phone Number

Ms. Andie Biggs, Project Manager
(415) 703-3305

4.4 Project Location

The proposed Ocean Ranch Substation would be situated in the City of Oceanside, in northern San Diego County. The proposed site is approximately 4 miles south of Marine Corps Base Camp Pendleton and 6 miles east of the Pacific Ocean. The site is within the Pacific Coast Business Park, which is part of the Rancho del Oro Specific Plan area. The substation would be located entirely on land owned by SDG&E. Portions of the project's transmission and distribution lines would be installed in nearby streets as well as within the substation property. The 69 kV transmission power line that would loop into the substation would be located underground within existing SDG&E rights-of-way (ROWs) and franchise position in City of Oceanside public streets. The 12 kV distribution lines exiting the substation also would be underground. Figure 4-1 depicts the location of the Proposed Project within the North San Diego County area and Figure 4-2 illustrates the proposed substation site with project components and potential construction yard sites in the region. (Note: All figures referenced in the text are located at the end of this section.)

4.5 Project Sponsor's Name and Address

San Diego Gas & Electric Company
8830 Century Park Court, CP32A
San Diego, CA 92123

4.6 General Plan Designation

The City of Oceanside General Plan designation for the proposed substation property is Industrial. The property is within the approved Rancho del Oro Master Plan Area.

4.7 Zoning

The property is zoned IL (Limited Industrial) and PD-1 (under the Rancho Del Oro Master Plan).

4.8 Surrounding Land Uses and Setting

The 9.66-acre substation property consists of two parcels: Assessor Parcel Number (APN) 161-512-26 is 5.60 acres and APN 161-512-27 is 4.06 acres. The two triangular parcels together form the larger triangle-shaped substation site. Both parcels are flat, previously filled land. The land consists of disturbed soils with non-native vegetation. A row of young trees marks the boundary between the two parcels. The easternmost of the two parcels is somewhat higher in elevation than the western parcel. The parcels are approximately 364 feet and 375 feet above mean sea level (MSL), respectively. Following site grading and preparation, the final finished pad elevation would range from 370 feet above MSL at the southwest corner to 375 feet above MSL at the northeast side.

The proposed substation site is within the 120-acre Pacific Coast Business Park, which supports commercial, office, and light industrial uses. The business park currently is a mix of recently built structures as well as vacant, graded building lots.

The property around the Project site is largely developed. To the west, the substation site abuts Avenida del Oro. A U.S. Post Office facility and a vacant lot are located across this street from the substation site, and a large Federal Express handling facility surrounded by extensive paved car and truck parking is located north of the Postal facility, near the northwest corner of the substation site. Along the north side of the site are two developed commercial properties, each with a 2-story building and off-street parking. These adjacent properties and the substation site are accessed by Rocky Point Drive, which terminates in a cul-de-sac at the north side of the substation site. TL 693 is an existing 69 kV line between San Luis Rey Substation and Melrose Substation that separates these adjacent properties from the substation project; this line bypasses the substation and would not be affected by the project. To the southeast, the substation site abuts the rear of five developed commercial properties that separate the substation site from Avenida de la Plata. These properties along Avenida de la Plata are developed with 1- and 2-story structures, off-street parking, and landscape vegetation.

The topographic relationship of the project site to its surroundings varies. Overall, the two parcels comprising the substation site have an elevation similar to the adjoining developed properties to the north on Rocky Point Drive. The site is approximately 20 feet higher than Avenida del Oro at the north end of the parcel and approximately 10 feet higher than the street at its south end. This edge of the site is separated from the street and adjacent sidewalk by a vegetated slope. To the southeast, the northern end of the substation site is slightly lower than the northern most properties facing Avenida de la Plata, but slightly higher than the properties at the southern end of the site.

The nearest residential properties are in subdivisions located approximately 0.3 miles east and 0.5 miles north of the site at their nearest points. Three schools are within 1 mile of the site: Ivey Ranch Elementary School on Mesa Drive 0.6 miles to the northwest; Empresa Elementary School on Avenida Empresa 0.85 miles to the northeast; and Coastal Academy charter school on Calle Platino near Avenida

del Oro 0.22 miles to the south. Le Petite Academy, providing day care and after school programs, is approximately 0.25 miles northeast of the site on Avenida del la Plata.

Primary access to the substation site would be from the cul-de-sac on Rocky Point Drive, where two gated access points would be established. Secondary access would be provided from another gated entry point on Avenida del Oro near its intersection with Avenida de la Plata. SDG&E is requesting permission from the City of Oceanside to establish this secondary access driveway, which would be limited to SDG&E personnel.

4.9 Project Overview

SDG&E proposes to construct a new substation, with associated electrical tie lines, distribution lines, and telecommunications, as shown in Figure 4-2. The proposed substation site is owned by SDG&E and the transmission line looping into the substation would be located within existing SDG&E rights-of-way (ROWs) and franchise position within the City of Oceanside public streets. The Proposed Project would include the following primary components:

- **Ocean Ranch Distribution Substation.** A new 69/12 kilovolt (kV) low-profile substation in the City of Oceanside. The substation would be named Ocean Ranch, and would have an initial capacity of 60 megavolt ampere (MVA) rating and an ultimate capacity of 120 MVA.
- **Power Line TL 6966 Loop-In.** An existing transmission line (TL 6966) provides an underground 69 kV circuit that extends between San Luis Rey Substation (to the west) and Melrose Substation (to the east). This existing underground line would be intercepted at the intersection of Avenida de la Plata and Avenida del Oro and extended to the proposed Ocean Ranch Substation in a new underground power line duct bank with a total length of approximately 1,500 feet. This would reconfigure the existing TL 6966 tie line into two lines, one line into the substation and one out of the substation. These lines would be designated TL6966 (San Luis Rey to Ocean Ranch) and TL 6979 (Ocean Ranch to Melrose). Figure 4-3 and Figure 4-4 are schematic drawings illustrating the existing and ultimate configuration of substations and power lines in the area, with the difference being the looping in of TL 6966 to the proposed new substation.
- **12 kV Distribution System.** Four new distribution circuits would exit the new substation and intercept four existing 12 kV circuits in the vicinity. Service to these existing 12 kV circuits would be switched to the new Ocean Ranch Substation. Approximately 4,650 feet of new 12 kV distribution line would be constructed to connect to the existing circuits. The Proposed Project also includes construction of five new manholes and one new handhole to access the new underground 12 kV distribution lines.
- **Telecommunication Systems:** A 40-foot monopole would be installed in the southwest corner of the proposed Ocean Ranch Substation property as part of a microwave radio communication system. A 3-foot-diameter antenna would be mounted on the monopole and pointed west to provide a communication link to the San Luis Rey Substation. AT&T services would enter the property from the street. A conduit duct would be installed from the substation control shelter to the property line to intercept the AT&T duct structure. Two pad-mounted pedestals, approximately 3 feet high, would be installed to enclose the communications equipment at or near the property line.

The proposed Ocean Ranch Substation would initially be constructed at a rated capacity of 60 MVA, but designed to expand to an ultimate capacity of 120 MVA. The planned initial substation load and anticipated load growth rate within the current 10-year distribution system planning horizon do not require the installation of the ultimate 120 MVA substation capacity at this time.

4.9.1 Project Objectives

SDG&E has identified four project objectives:

- Objective 1: Meet the area’s existing and forecasted electric load growth.
- Objective 2: Maintain substation and circuit reliability with additional tie line and transformer capacity.
- Objective 3: Reduce area substation loading to optimum operating conditions.
- Objective 4: Locate the Proposed Project’s facilities within SDG&E fee-owned property, franchise, or existing easements.

4.9.2 Purpose and Need

Within the general vicinity of the Proposed Project are three existing substations (Morro Hill, San Luis Rey, and Melrose) that feed the majority of northern San Diego County’s electricity demand.

SDG&E’s stated project purpose for the Proposed Project is to construct a new substation to (1) provide additional capacity to serve the existing load and the forecasted customer-driven load growth in the area; and (2) prevent potential long outages or disruption of service to SDG&E customers in the Ocean-side area. The Proposed Project is needed to meet existing and forecast demand, enhance reliability, and reallocate some 12 kV service from existing substations to a new substation.

San Luis Rey Substation is a 230/69/12 kV substation located on the northwest corner of the El Camino Real and Mesa Drive intersection in Oceanside, approximately 2.3 miles west of the Proposed Project site. The substation currently has four 69/12 kV, 30 MVA distribution transformers installed and feeds the following 15 individual 12 kV distribution circuits: C190, C191, C192, C194, C198, C199, C213, C497, C498, C900, C901, C902, C903, C904, and C905. The substation is built out to its ultimate configuration with no room for expansion.

Melrose Substation is a 69/12 kV substation located on the northeast corner of the Olive Avenue and Melrose Drive intersection in Vista, approximately 2.3 miles east of the Proposed Project site. The substation currently has four 69/12 kV, 30 MVA distribution transformers installed and feeds 12 separate 12 kV distribution circuits: C205, C206, C207, C208, C209, C504, C505, C506, C507, C508, C509, and C821. The substation is built out to its ultimate configuration with no room for expansion.

Morro Hill Substation is a 69/12 kV substation located on the west side of Vandegrift Boulevard, just north of College Boulevard in Oceanside, approximately 2.8 miles north of the Proposed Project site. The substation currently has one 69/12 kV, 12.5 MVA distribution transformer installed and feeds the following 12 kV distribution circuits: C486 and C487. The substation is built out to its ultimate configuration. Due to its proximity to the Marine Corps Base Camp Pendleton to the north and west, and to the San Luis Rey River south and east, the locational constraints of Morro Hill Substation prohibit the routing of circuits north and west of the substation. As such, this substation is a land-locked radial-fed temporary substation with a one-transformer bank (12.5 MVA capacity). Although this SDG&E-owned substation property would have room for potential expansion by moving the existing fence line to install more transformers, its location inhibits the construction of more distribution circuits out of the substation and south across the San Luis Rey riverbed to the identified load center. Due to this limiting factor, Morro Hill would not be able to meet SDG&E’s needs or serve the electric distribution load growth that would be served by the Proposed Project.

Existing transmission line (TL) 6966 is a 69 kV power line that would be looped into the new substation from its underground position at the intersection of Avenida de la Plata and Avenida del Oro. The existing line originates at San Luis Rey Substation and terminates at Melrose Substation. From San Luis Rey Substation, TL 6966 is an overhead double-circuit line that shares common overhead pole structures with TL 693. The lines run overhead in an easterly direction to where TL 6966 transitions from overhead to underground on a cable pole located along Avenida de la Plata west of Avenida del Oro. At a second cable pole, TL 693 turns north on overhead structures, bypassing the Ocean Ranch Substation site and eventually reaching Melrose Substation. TL 6966 continues underground east along Avenida de la Plata for approximately 0.3 miles to Avenida del Oro, where it turns south on Avenida del Oro and continues underground to Melrose Substation. The intersection of Avenida del La Plata and Avenida del Oro, where TL 6966 turns south, is approximately 270 feet from the proposed substation site's southern corner.

4.10 Project Components

Each of the Proposed Project components are discussed below.

4.10.1 Ocean Ranch Distribution Substation

The proposed Ocean Ranch Substation facility is planned to occupy the entire site (9.66 acres). The proposed substation would be a low profile design facility. Electrical equipment, a control shelter, and paved and rock-covered surfaces would be enclosed by an approximately 10-foot-tall "La Paz" or similar sandstone colored masonry perimeter wall set back from Avenida del Oro. Gates in the substation wall would have vinyl slats similar in color to the masonry wall. Driveways, stormwater management basins, a telecommunications pole and antenna, and landscaping would be located outside of the substation wall, but within the substation property. A preliminary conceptual site plan for the substation property is provided in Appendix C.

The steel structures within the substation would be comprised of galvanized steel, while the transformers, breakers, switchgear, and capacitors would be painted American National Standards Institute (ANSI) 70 Grey. The control shelter within the substation would be constructed from "La Paz" or similar sandstone color masonry blocks as the wall and would include a welded metal roof.

The initial configuration of the substation is proposed to have a capacity of 60 MVA and include the following equipment:

- Two 69 kV low profile underground power line terminations
- Two 69 kV low profile main bus sections
- Twelve 69 kV low profile disconnect switches
- Five 69 kV circuit breakers
- Two low profile 69/12 kV, 30 MVA transformer banks
- Two quarter sections of 12 kV metal clad switchgear
- Two 12 kV, 4-step, 7,200 kilovolt-ampere reactive (kVAR) capacitor banks
- One 20-foot-wide by 40-foot-long by 11-foot-tall masonry block control shelter to enclose all protection relays, controls, supervisory control and data acquisition (SCADA), and telecommunication equipment
- Two points of entry via two 30-foot-wide slide gates (main entry) from Rocky Point Drive and one 20-foot-wide slide gate (secondary access) from Avenida del Oro.

At its ultimate configuration, anticipated to be required beyond the current 10-year demand forecast, the substation is planned to be a 120 MVA, 69/12 kV low profile distribution substation. The ultimate configuration is proposed to include the following components, some of which are in the initial configuration as well:

- Four 69 kV low profile underground power line terminations
- Two 69 kV low profile main bus sections
- Fourteen 69 kV low profile disconnect switches
- Nine 69 kV circuit breakers
- Four low profile 69/12 kV, 30 MVA transformer banks
- Four quarter sections of 12 kV metal clad switchgear
- Four 12 kV, 4-step, 7,200 kVAR capacitor banks
- Two 12 kV, 4-step, 7,200 kVAR reactor banks
- One 20-foot-wide by 40-foot-long by 11-foot-tall masonry block control shelter to enclose all protection relays, controls, SCADA, and telecommunication equipment
- Two points of entry via two 30-foot-wide slide gates (main entry) and one 20-foot-wide slide gate (secondary access).

Under both the initial and ultimate configurations, each low profile transformer would contain approximately 10,400 gallons of oil (the exact amount varies by manufacturer). The proposed substation would be designed and constructed with a containment system to prevent any accidental oil leaks from leaving the substation. The global oil containment system would be designed to contain 110 percent of the oil capacity of the installed equipment containing the largest amount of oil. The containment system would be installed inside the substation.

Substation lighting would be provided by a mixture of high-pressure sodium, metal halide, and LED lights that would be installed to adhere to the following SDG&E standards:

- Provide enough light for a safe entry into and exit from the substation
- Allow for safe driving around busses/racks, corners, and roadways
- Allow for a preliminary visual inspection of the substation.

One free-standing entry light would be installed on a 7-foot high light pole at the gate in the northwest portion of the substation near Rocky Point Drive. With the exception of the gate entry light, which would remain on at night for safety, substation lighting would be on only when required for nighttime work or in an emergency. These lights would be installed at the other gates, on each side of the control shelter, and a on the interior side of the substation walls. All on-site lighting would be oriented downward to minimize glare on surrounding properties.

As described previously, an approximately 10-foot-tall masonry wall would enclose the substation. The wall would be set back from the site boundaries, except for along the rear of existing commercial properties on the southeast side of the site, where the wall would be near the property line. Exterior to the substation wall, areas not otherwise required for access driveways, a communications pole, and storm-water management facilities, would be landscaped. The landscaping would be similar in character to the existing streetscape and landscaped areas in the business park, and would include trees and shrubs. Three gates would be installed within the perimeter wall to provide primary and secondary access to the

substation. The gates would be constructed from chain-link material and would include vinyl slats similar in color to the wall. Barbed wire would be installed horizontally along the interior of the wall and gates so as not to be visible from the exterior of the substation. The primary access to the substation would be from Rocky Point Drive via the existing cul-de-sac. The secondary access to the substation would be from Avenida del Oro on the southwest side of the substation property. See Figures 4-2 and 4.3. Appropriate signage would be posted on the substation wall and gates, in accordance with federal, state, and local safety regulations.

The approximately 20-foot-wide access road within the proposed substation would be asphalt-paved. The road would connect the primary and secondary access to the control shelter, which would be located in the center of the substation. This interior road would be approximately 940 feet long, occupying approximately 0.4 acres and circling various installed equipment within the interior perimeter wall.

The proposed Ocean Ranch Substation layout, planned access routes, driveways, and interior access road are illustrated in Figure 4-2 and in Appendix C. Details on the initial configuration of the proposed Ocean Ranch Substation are shown on Figure 4-5, with the ultimate configuration shown on Figure 4-6. The substation will be a low-profile design, as illustrated in Figure 4-7. The substation's electrical equipment would be housed within a walled area. However, for illustration purposes one view in Figure 4-7 shows how the substation would appear viewed from the west without the wall in place. The other view illustrates the substation as viewed from Rocky Point Drive with the wall in place and the upper part of the equipment visible beyond.

Site development includes:

- Site improvements for the 69/12 kV substation pad and future use area directly adjacent to the substation within the perimeter wall;
- Minimal retaining walls as needed;
- Replacement of the existing temporary desilting basins with permanent construction of two flow-through planter basins exterior to the substation wall;
- Storm drain system and connection to proposed flow-through planter basins;
- Approximately 1,200 linear feet of masonry block screening wall; and
- 18,800 square feet of access roads and/or driveways.

4.10.2 Power Line TL 6966 Loop-In

In order to connect in to the proposed Ocean Ranch Substation, the underground segment of existing power line TL 6966 would be intercepted at the intersection of Avenida del Oro and Avenida de la Plata and extended underground in a northerly direction along Avenida del Oro and into the proposed substation site. The new underground power line would be approximately 1,500 feet long, of which approximately 1,000 feet would be within the public road ROW. The remainder would be within SDG&E ROW or franchise position. The proposed underground segment would establish two circuits into the Ocean Ranch Substation. The underground 69 kV power line connecting the proposed Ocean Ranch Substation and San Luis Rey Substation would continue to be identified as TL 6966. Two vaults, one per underground power line, would be installed within the proposed substation property (Figure 4-2). An offset vault design configuration (one circuit per vault) would be implemented to maintain reliability and for maintenance. The underground 69 kV power line between the proposed Ocean Ranch Substation and Melrose Substation would be relabeled as TL 6979.

The two final loop-in transmission line re-configurations would be as follows:

- Re-configured TL 6966 – San Luis Rey Substation to Ocean Ranch Substation rather than Melrose Substation (overhead and underground).
- Re-configured TL 6979 – Melrose Substation to Ocean Ranch Substation rather than to San Luis Rey Substation (underground)

Open trench construction would be used to install the new loop-in underground between the Avenida del Oro/Avenida de la Plata intersection and the Ocean Ranch Substation. During construction, the trench for the loop-in line would be 3 feet wide, and the construction corridor would be approximately 20 to 30 feet wide. This is expected to require the temporary closure of one to two traffic lanes; entire road closures are not anticipated. Figure 4-8 illustrates a typical 69 kV underground vault and Figure 4-9 a typical 69 kV underground duct bank.

A minor segment of existing underground 69 kV power line would be abandoned at the intersection of Avenida del Oro and Avenida de la Plata to accommodate the new interception points for the proposed underground transmission lines. TL 694, a 69 kV line between Morro Hill and Melrose Substations, shares the existing duct bank with existing TL 6966; it would not be affected.

One pulling site would be required to pull underground cable. The pulling site would be approximately 50 feet long by 30 feet wide and would be on the substation site. No additional grading is anticipated at the pulling site.

4.10.3 12 kV Distribution System

The Proposed Project would include installing approximately 4,650 feet of new underground duct banks to facilitate transferring four existing 12 kV distribution circuits from existing substations to the proposed Ocean Ranch Substation. Each underground duct bank would be comprised of four 8-5-inch diameter polyvinyl chloride (PVC) conduits encased in concrete, as shown in Figure 4-10. The conduit duct packages for the 12 kV circuits and telecommunications would be arranged in two columns of four conduits each, spaced vertically and horizontally from the conduit centerline by 7.5 inches.

The proposed underground segment of the 12 kV distribution line would require installation of five new manholes and one new handhole. Two new manholes would be located within the proposed Ocean Ranch Substation site, two would be located within franchise positions along Avenida del Oro adjacent to the substation site, and one would be just south of the intersection of Avenida del Oro and Windansea Streets, north of the substation site. One new handhole would be located at the southern end of the proposed substation site. The exact locations will be determined during final engineering design.

The horizontal separation between adjacent duct packages would be 5 feet from centerline to centerline and the duct package would have an average depth of approximately 5 feet. The conduit duct packages for the 12 kV lines would continue and intercept existing conduit in Avenida del Oro. All distribution circuits would be installed underground outside of the proposed Ocean Ranch Substation within franchise position. Figure 4-11 illustrates a typical 12 kV underground manhole.

The new 12 kV distribution line going north on Avenida del Oro would intercept existing handholes at Windansea Street. Four 12 kV underground distribution circuits would be constructed. All four underground distribution circuits would be routed to five proposed manholes and one handhole, extending along Avenida del Oro tying into the existing underground system serving the area.

A portion of existing 12 kV circuits would be offloaded to the proposed new circuits from the Ocean Ranch Substation. The offloaded circuits would comprise existing line C509 from Melrose and existing lines C903, C904, and C905 from San Luis Rey. Four initial duct packages would be installed: two would head south and two would go directly west onto Avenida del Oro. Table 4-1 summarizes the relocated 12 kV circuits and Table 4-2 identifies the 12 kV distribution system structures proposed as part of the substation project.

- The first 12 kV circuit from Ocean Ranch Substation, C1801, would be routed from the northern manhole on Avenida del Oro south to a new pad-mounted switch located on Avenida del Oro. C1801 would ultimately connect to existing C509.
- The second circuit, C1802, would be routed from the northern manhole on Avenida del Oro north to a new pad-mounted switch where it would ultimately connect to existing C903.
- The third circuit, C1803, also would be routed from the northern manhole on Avenida del Oro north to a new padmount switch and would ultimately connect to existing C904.
- The fourth circuit, C1804, also would be routed from the northern manhole on Avenida del Oro north to a new padmount switch located on Old Grove Road north of Windansea Street and would ultimately connect to existing C905.

The Proposed Project would provide additional circuits to facilitate load transfers and distribute circuit load. The electric distribution circuits exiting the substation would be installed in public ROW or within the franchise position of City of Oceanside public streets. The proposed 12 kV system would be designed to accommodate a 120 MVA substation. The configuration of the proposed four circuits would cut over to existing circuits originating from the proposed Ocean Ranch Substation and have the following equipment installed:

- 7,000 feet of trench conduit 8-5 (improved street) including manholes.
- 2,000 feet of cable and connections no. 1000 kcmil copper (CU) 3 ph 15 kV.
- 3,500 feet of cable and connections no. 1000 kcmil aluminum (AL) 3 ph 15 kV.
- Four switch tray 4-way with SCADA padmount.
- Four capacitor pad-mount SCADA 1,200 kVAR.

Table 4-1. Distribution Relocation Summary

Existing Distribution Circuit Number	Approximate Interception Point	Proposed Distribution Circuit Number
C509	800 feet	C1801
C903	800 feet	C1802
C904	1,400 feet	C1803
C905	2,500 feet	C1804

Source: SDG&E 2015.

Notes: Table contents based on preliminary engineering and subject to change.

Table 4-2. Distribution System Structures

Structure Type	Amount Installed
12 kV underground distribution circuits	4
Underground duct banks	4,650 feet
Manholes	5
Handholes	1

Source: SDG&E 2015.

Notes: Table contents based on preliminary engineering.

4.10.4 Telecommunication Systems

The telecommunication services that would be installed would facilitate remote monitoring, control, and operation of substation equipment and provide telecommunication protection relaying, telemetry, telephone, modem, access control, and video monitoring. In order to connect the proposed Ocean Ranch Substation to these substation systems, fiber optic cable, microwave radio, and AT&T services would be installed.

The fiber optic cable would be installed within the underground duct structures connecting the proposed Ocean Ranch Substation and the existing San Luis Rey Substation. A 40-foot monopole would be installed in the southwest corner of the proposed Ocean Ranch Substation site for the microwave radio communication system. A 3-foot-diameter antenna would be mounted on the monopole and pointed west to provide a communications link to the San Luis Rey Substation. A conduit duct would be installed on site between the monopole and the substation control building. A typical drawing of a typical telecommunication monopole is provided in Figure 4-12.

AT&T services would enter the site from a public street near the substation site. A conduit duct would be installed from the substation to the property line to intercept the AT&T duct. Two pad-mounted pedestals, approximately 3 feet high, would be installed to enclose the communications equipment, which would be located at or near the property line. Figure 4-13 illustrates the typical underground duct package used by SDG&E.

4.11 Project Construction

This section describes typical construction methods for substations and underground facilities. Staging and work areas also would be required for construction of new facilities, removal existing facilities, and storage and staging of construction equipment and materials.

4.11.1 Work Areas

In addition to space at the substation site, temporary workspace would be required for each Proposed Project component in order to facilitate construction. These anticipated workspace requirements include staging yards, storage yards, access roads, pull sites, and underground work areas, as described in detail in the following sections and summarized in Table 4-3. Temporary work areas would all be accessed by construction equipment using existing access roads. All work areas would be restored as near to preconstruction conditions as possible following the completion of construction.

Table 4-3. Summary of Temporary Work Areas

Work Area Type	Estimated Number	Estimated Total Area (acres)
Staging Yards	4 areas	17.50
Underground Construction (69 kV loop-in)	1,500 feet (length)	1.10
Underground Construction (12 kV distribution line)	4,650 feet (length)	3.20
Total		21.80

Source: SDG&E 2015.

Staging Yards

In addition to the substation site, SDG&E has identified potential staging yards for the Proposed Project. These include existing, previously used staging yards as well as large undeveloped areas near the Proposed Project that have been previously disturbed and/or graded. While SDG&E has identified potential construction staging yards, there is no guarantee that all the identified staging yards would be available when the Proposed Project is set to begin construction because the Proposed Project is in an area with

several vacant lots that are currently available for development. If the identified staging yards are not available at the time of construction, several alternate locations within the general vicinity are potentially available. These sites possess similar characteristics (graded, disturbed habitat, industrial land uses), that would satisfy project needs. Prior to use, SDG&E would be required to ensure that these alternative parcels would be reviewed for environmental sensitivity such as sensitive species or habitats to ensure that their use would not result in any significant environmental impacts.

Four staging yards have been identified, in addition to the substation property. They are shown in Figure 4-2. These would accommodate the majority of construction equipment, vehicles, personnel, and material staging, as discussed below. Combined, these temporary staging areas cover approximately 17.5 acres:

- The Corporate Center staging yard is approximately 11.5 acres of disturbed habitat located on the north side of Ocean Ranch Boulevard, south of Mesa Drive/Pacifica Way.
- The USPS staging yard is approximately 5 acres of undeveloped land, located just south of the U.S. Postal Service building on Avenida del Oro, to the west of Ocean Ranch Substation site. This area is comprised of non-native grassland and disturbed non-native grassland.
- The San Luis Rey staging yard is approximately 0.5 acres of paved, fenced area with an existing access road located next to the existing San Luis Rey Substation.
- The Melrose staging yard is approximately 0.5 acres of paved, fenced area with an existing access road located next to the existing Melrose Substation and is approximately 3 miles from the proposed Ocean Ranch Substation.

In addition to the substation property, staging yards may be used for refueling vehicles and construction equipment by a mobile fueling truck. In addition, other activities performed at the staging areas may include assembly of project components, open storage of material and equipment, construction trailers, portable restrooms, parking, and lighting and may include generator use for temporary power supply. Construction workers typically would meet at the staging yard each morning and park their vehicles at the yard. In-ground fencing would be installed at the staging yards where it is not already installed. Gravel, class II base, or other best management practices (BMPs) may be used to line the ground at staging yards to avoid creation of unsafe mud conditions and sediment transport off-site.

Existing SDG&E Material Storage Yards

Materials would be initially delivered to existing SDG&E facilities, from where they would be transported to the Proposed Project site or a staging area. No improvements would occur at these existing SDG&E facilities as a result of the Proposed Project. The existing material storage yards that would be used include:

- Kearny Construction and Operation Center, located on approximately 18.6 acres in San Diego County. It is between Interstate 15 and State Route 163, on Clairemont Mesa Boulevard (Figure 4-14). It is accessed from Overland Avenue, and is approximately 28 miles from the proposed Ocean Ranch Substation.
- North Coast Construction and Operations Center is approximately 15.2 acres, located in Carlsbad, near the intersection of Carlsbad Boulevard and Cannon Road. (Figure 4-15). It is approximately 6 miles from the proposed Ocean Ranch Substation.

- Northeast Construction and Operations Center is approximately 25.1 acres, located in Escondido, north of Auto Park Way and south of West Mission Road (Figure 4-16). It is located approximately 12 miles from the proposed Ocean Ranch Substation.

These existing SDG&E facilities are paved and fenced land, with security. Upon the completion of final engineering, additional existing SDG&E facilities may be identified for use.

Access Roads

Construction would take place primarily within the existing SDG&E fee-owned property, franchise, or existing easements. Most work areas are accessible by vehicle in paved/developed areas or other existing disturbed areas. Vehicles would remain within existing access roads, previously disturbed areas, and designated temporary work areas, where feasible.

The temporary impact areas may vary because the positioning of construction vehicles, equipment, and materials cannot be fully anticipated prior to construction, as locations are dependent upon the contractor safely performing the work.

Pulling sites

Pulling sites are temporary construction areas used for pulling underground cable. The underground cable installation process would require a pull site located beside the proposed and existing underground vaults. This pull site would be approximately 50 feet long by 30 feet wide and would be located within the underground trench/vault work areas within the substation property. A typical drawing of the proposed underground construction activities in roadways has been included as Figure 4-17.

69 kV and 12 kV Underground Line Work Areas

Installation of new duct banks and vaults would require temporary workspace within Avenida del Oro and Avenida de la Plata. The underground trench work area would be approximately 20 to 30 feet wide and would be generally centered on the power line alignments. The underground trench work area would be adjusted to comply with traffic control permits to maintain traffic flow through construction areas as necessary.

All trenching and vault work areas would be located within City of Oceanside streets and SDG&E fee-owned property, franchise positions, or existing easements. These work areas would also support all cable installation activities, as well as the associated construction equipment to perform the work. A total of approximately 4,650 linear feet of workspace would be required for the proposed 12 kV underground distribution lines, which requires approximately 3.2 acres of temporary use (assuming a work area width of 30 feet for installation of a duct bank). A total of approximately 1,500 linear feet of work space (or approximately 1.10 acres, assuming a work area width of 30 feet for duct banks, 30 feet wide by 30 feet long for vault installation, and 30 feet wide by 50 feet long for the pulling site) would be required to install the proposed 69 kV underground power line loop-in. Site preparation in an underground trench work area and vault installation work areas would include marking out the proposed trench alignment and offsets to define the work area, as well as setting up traffic controls prior to construction.

4.11.2 Construction Methods

Construction of Ocean Ranch Substation

Site Development

Because the proposed substation site currently is disturbed land, minimal vegetation clearing would be required for construction. Site development activities would commence with clearing and grading of the site based on the recommendations of the geotechnical investigation, which would determine the appropriate onsite pad elevation and foundation support in order to maintain adequate site drainage. Approximately 18,100 cubic yards would be excavated during site grading, of which 8,000 cubic yards would be used as fill/embankment within the site and 10,100 cubic yards would be exported from the site. Onsite material would be reused to the extent possible, as recommended by a Geotechnical Engineer.

Approximately 16,600 cubic yards of select fill would be imported to help achieve the site design elevation. For construction of the flow-through planters, approximately 2,200 cubic yards of bioretention soil mix and 1,500 cubic yards of gravel would be imported and placed. Site grading would be accomplished primarily with bulldozers and backhoes, which would condition, cut and fill, and blend the native soil and imported material to the desired pad elevations.

Next, it is expected that approximately 7,200 cubic yards of Class II aggregate base and 1,200 cubic yards of asphalt would also be installed at the proposed Ocean Ranch Substation. The substation pad would be surfaced primarily with Class II aggregate base, and primary access roads would be paved with asphalt. Construction of the boundary walls would begin once grading is complete.

Construction of the proposed Ocean Ranch Substation would require importing approximately 28,700 cubic yards of material (select fill, bioretention soil mix, gravel, aggregate, and asphalt) and exporting 10,100 cubic yards of excavated material. Haul trucks would operate periodically, as needed, during the grading phase of construction. In general, an average of approximately 20 truck trips per day for an estimated 6 months would be required to complete the proposed substation grading and boundary wall installation. In addition, approximately 5 additional trips per day are anticipated for the delivery of materials and equipment for the duration of construction, based on current design criteria.

Primary access to the substation site during construction would be by way of Rocky Point Drive with secondary access from Avenida del Oro.

Below-Grade Construction

Following site development, below-grade work would begin, which would include the construction of structure and equipment foundations, underground ducts, and the ground grid, and erection of the control shelter. Concrete trucks, backhoes, loaders, ditch-witches, and skid steer loaders would be used for the below-grade work.

Above-Grade Construction

Once the grading activities, below-grade construction, and erection of the wall and control structure are complete, major equipment and structures would be installed and anchored to their respective foundations. The following steps would be taken to install the above-grade equipment:

- The 69 kV low profile bus section steel would be erected.
- The 69 kV circuit breakers would be installed on their foundations.

- Relay panels, controls, and station lighting and power would be installed in the control structure.
- The ground grid, control, communication, and power ducts would be installed and wiring of the equipment controls and protection devices would follow.
- The 69/12 kV transformers would be installed on their foundations, assembled, and filled with oil.
- The 12 kV switchgear and capacitors would be installed on their foundations.

Power line loop-in and distribution circuits would be completed and connected inside the substation following final installation of the substation structures and equipment. Communication equipment would be connected inside the control shelter. Testing would be performed on all equipment after the equipment is installed and wired, and before placing it in service. Equipment would be placed in service once the circuits and power line are ready to be energized and are tested outside the substation.

Portable cranes and heavy hauling trucks would be employed to bring in the 69/12 kV transformers. Substation crews, assist vehicles, forklifts, man lifts, and boom trucks would be used to construct the substation. Oil-processing equipment and vacuum pumps would be used to fill transformers with oil. Pick-up trucks and vans would be used during the wiring and control testing of the substation equipment. Line trucks, assist vehicles, and cable dolly trailers would be used for construction of the power line and distribution circuits.

A temporary tap to an existing distribution line may be installed to provide electrical service to the substation work area during construction. This temporary tap may be used to power construction trailers, lighting, or small hand-held machinery or tools until the substation is energized.

Installation of Underground 12 kV Distribution Line and 69 kV Loop-In

Trenching

Coordination with the City would occur to secure encroachment permits for trenching in the City's ROW, as required. It is anticipated that between one and two lanes of Avenida del Oro and Avenida de la Plata would be closed occasionally during trenching activities. During the closures, traffic controls would be implemented as required by the encroachment permit(s).

Trenching operations would be staged in intervals as allowed by any permit requirements. The spoils generated by excavation activities would be transported to an SDG&E-approved disposal site. At any one time, open trenches would not exceed that required to facilitate installation of the duct bank. Steel plating would be placed over the trenches to maintain vehicular and pedestrian traffic across areas that are not under active construction.

The duct bank would be installed using open-cut trenching techniques. The typical trench dimensions for installation of each duct bank would be 3 to 6 feet deep and 2 to 7 feet wide, depending on the duct bank configuration. Depths may vary depending on soil stability and the presence of existing substructures. The trench would be widened and shored where necessary to meet California Occupational Safety and Health Administration (Cal/OSHA) requirements. If trench water is encountered, trenches would be dewatered using a portable pump, and the water would be disposed of in accordance with acquired permits.

Throughout trench excavation and installation of the duct bank and vaults in roadways, removed asphalt and concrete would be transported to an approved off-site facility. Excavated soils not suspected to be impacted by contamination would be reused to the extent feasible or disposed of at an appropriate facility. Should soil that is stained, odorous, or otherwise suspect be encountered during trenching activ-

ities, SDG&E would sample in place, test, profile, and transport this material to an appropriately permitted disposal facility in accordance with applicable federal, state and local laws and regulations.

The number of truck trips to transport excavated materials to storage yards and/or disposal facilities would vary based on the rate of the trenching, the area excavated to install the vaults, and the proximity of the storage yards/disposal facilities to the ROW. For purposes of this Proposed Project, approximately 5 to 10 truck trips per day would be required during trenching activities at one site. Jackhammers may be used to break up sections of concrete that saw-cutting and pavement-breaking machines cannot reach. Other miscellaneous equipment may include a concrete saw, backhoe, excavator, roller compactor, water trucks, various paving equipment, and standard 1-ton pick-up trucks.

As described previously, traffic controls would be implemented to direct local traffic safely around work areas. SDG&E would coordinate provisions for emergency vehicle and local access with the City of Oceanside as necessary.

Duct Bank Installation

Duct banks are comprised of a number of separate conduits. Duct banks are used to consolidate cabling and secure circuit conduits below ground. As the trenches for the underground duct banks are completed, SDG&E would install empty conduits separated by spacers and then pour concrete around the conduits to form the duct banks. The duct banks would typically consist of 8-inch-diameter conduits (which would house the electrical cables that would be pulled into the conduits), and 2-inch-diameter conduits for the telecommunications cable that would be used for system protection and communication. See Figure 4-9 and Figure 4-10 for illustrations of typical 69 kV and 12 kV duct banks.

Once the conduits are installed and encased, a fluidized thermal backfill would be used to fill most of the remainder of the trench. Finally, an aggregate road base or backfill of slurry concrete with an asphalt concrete cap would be installed to restore the road in compliance with local requirements. As the completed trench sections are being restored, additional trench would be opened farther down the street. This process would continue until the distribution circuits are completed. Each duct bank would have a minimum of 36 inches of cover. Larger trenches would be excavated where vaults are installed, as described in the subsection that follows.

Where a distribution duct bank would cross other substructures that operate at normal soil temperature (e.g., gas lines, telephone lines, water mains, storm drains, and sewer lines), a minimal radial clearance of 12 inches would be required. In instances where a duct bank would be installed parallel to other substructures, a minimum radial clearance of 24 inches would be required. Ideal clearances of 2 to 5 feet are preferred. Where duct banks cross or run parallel to substructures that operate at temperatures significantly exceeding normal soil temperature (e.g., other underground power line circuits, primary distribution cables, steam lines, and heated oil lines), additional radial clearance may be required. All work would be in conformance with SDG&E's current construction and operating practices.

Manhole Installation

Manholes would be constructed to provide access to the circuit for operations, maintenance, and repair activities. SDG&E would excavate and install preformed concrete manholes during trenching for duct banks for the underground power line. The manholes would be used to pull cable through the conduits and splice the cables together during installation. During operation, the manholes would provide access to the underground cables for maintenance, inspections, and repairs.

Manholes would be constructed of prefabricated steel-reinforced concrete and designed to withstand the maximum credible earthquake in the area and heavy truck traffic loading. Installation would occur over a 1-week period beginning with excavation and shoring of the manhole pit followed by delivery and installation of the manhole, filling and compacting the backfill, and repaving the excavated area where necessary.

Vault Installation

SDG&E would excavate and install preformed concrete splice vaults during trenching for the duct banks inside the substation property. The proposed trench alignment and vault locations are shown on Figure 4-2. The installation of each vault would require an excavation measuring approximately 11 feet by 7.5 feet by 29 feet. Initially, the vaults would be used to pull cable through the conduits and splice the cables together during construction. During operation, the vaults would provide access to the underground cables for maintenance, inspections, and repairs.

Vaults would be constructed of prefabricated, steel-reinforced concrete and designed to withstand the maximum credible earthquake in the area and traffic loading. The installation process for each vault would occur over a 1-week period, beginning with excavation and shoring of the vault pit, followed by delivery and installation of the vault, filling and compacting the backfill, and repaving the excavated area where necessary.

Cable Pulling, Splicing, and Termination

After installation of the conduit, SDG&E would install the cables in the duct banks. Each cable segment would be pulled into the duct bank, spliced at each of the vaults along the route, and terminated at the proposed Ocean Ranch Substation. To pull the cable through the ducts, a cable reel would be placed at one end of the section and a pulling rig would be placed at the other end. A larger rope would then be pulled into the duct using a pull line and would be attached to the cable-pulling eyes to pull the cable into the duct. A lubricant would be applied to the cable as it enters the duct to decrease friction during pulling.

Splicing typically takes 12 to 16 hours to complete. The cables would rise out of the ground and terminate within the substation.

Dewatering

No dewatering is anticipated during construction of the underground 69 kV loop-in or the distribution circuits; however, SDG&E would acquire coverage under the General Permit for Stormwater Discharges Associated with Construction Activity (Construction General Permit) from the State Water Resources Control Board (SWRCB) and prepare a Stormwater Pollution Prevention Plan (SWPPP) prior to construction. The SWPPP would address any potential discharges in the event that dewatering is required. The SWPPP would detail project information, dewatering procedures, stormwater runoff prevention control procedures, monitoring and reporting procedures, and BMPs. Bentonite or similar stabilizing materials may be used to support foundation installation when water is present within the excavation.

Should dewatering be necessary, the following dewatering procedures would be implemented during construction:

- A submersible pump would be installed.
- Groundwater would be pumped to a desiltation tank (e.g., Baker tank). Baffles would be installed in the tank to increase sedimentation.

- Water quality testing of encountered groundwater would be performed to ensure compliance with the RWQCB National Pollutant Discharge Elimination System requirements. If water quality levels do not meet permit requirements, additional Baker tanks, or treatment, or filtering may be required.
- Treated water would be reused in compliance with permit requirements or disposed of at an approved SDG&E disposal site.

Rock-Splitting and Blasting

The substation site is on fill and the off-site trenching would be in existing previously disturbed ROW. Therefore, it is anticipated that blasting would not be required to complete construction of the Proposed Project. However, if significant or dense rock is encountered, blasting could be required. In most instances, if rock is encountered during excavation, a hydraulic rock drilling and splitting procedure (rock-splitting) may potentially be used to minimize trenching or drilling time, depending on site-specific conditions. The procedure involves drilling a hole in the rock and inserting a nonblasting cartridge of propellant. The cartridge is mechanically initiated by an impact generation device. This hydro-fracturing effect causes controlled tensile crack propagation in the rock and does not result in flyrock, noxious fumes, or ground vibrations.

In the event that rock blasting is used during construction where solid rock is present and where the hydraulic rock drilling and splitting procedure would be ineffective, the following procedure would be used to minimize both drilling time and noise impacts. The procedure involves drilling approximately 3-inch-diameter blast holes to the full depth of the shaft and inserting explosives. Blasting caps are connected, and a nonelectric detonator is employed. Flyrock protection is installed prior to blasting, and seismographs are placed to measure and record peak particle velocity and air blast levels at various distances from the blast site. Dust control would include a combination of steel plate covering, geotextile fabric with chain-link fence covering, and wetting the blasting surface. If blasting is used with the Proposed Project, the blasting contractor would be required to obtain a blasting permit and explosive permit per applicable local regulations.

Site Cleanup

Following the completion of construction, SDG&E would restore all areas that are temporarily disturbed by Proposed Project activities (including pulling sites and staging areas) to near preconstruction conditions. Restoration would include grading and restoring sites to original contours and reseeding, as appropriate. Where land is rented from private land owners (such as staging yards), post-construction restoration may be completed in consultation with the landowner. All post-construction restoration would be in compliance with the Project's SWPPP, which would be prepared pursuant to applicable stormwater regulations. In addition, all construction materials and debris would be removed from the Proposed Project area and recycled or properly disposed of off-site. SDG&E would conduct a final survey to ensure that cleanup activities are successfully completed as required.

All areas that are temporarily disturbed by the underground power line loop-in installation activities would be restored as near to preconstruction conditions as possible, following completion of construction. Restoration would involve the removal of all construction debris for recycling or disposal off-site and repaving, as appropriate. SDG&E would complete the following as part of the final construction activities:

- Restore all removed curbs, gutters, and sidewalks.
- Repave all removed or damaged paved surfaces.

- Restore landscaping or vegetation as necessary.
- Replace any damaged or removed fencing.
- Remove all construction materials from the construction site.

Outage Coordination

SDG&E would coordinate line outages in order to maintain system reliability and construction personnel safety. Based upon preliminary engineering, SDG&E anticipates only minor interruptions of service to customers during construction tie-ins.

4.11.3 Construction Equipment and Personnel

Construction equipment would include bulldozers, excavators, loaders, graders, and trucks for excavating, compacting, and hauling. All exported soil and new fill would be transported using street-legal dump/loader trucks. Concrete trucks, backhoes, ditch-witches, and skid steers would be used for the foundation and below-grade work. Portable cranes and heavy hauling trucks would be employed to deliver the 69/12 kV transformers. Substation crews, assist vehicles, forklifts, man lifts, and boom trucks would be used to construct the substation. Underground line trucks, assist vehicles, and cable dolly trailers would be used for construction of the 69 kV loop-in and distribution circuits. Pick-up trucks and vans would be required during the wiring and control testing of the substation equipment. Table 4-4, lists standard construction equipment that could be used, including the phase of the project, duration, type of equipment, quantities, and hours per day.

SDG&E primarily would use its own workforce for construction, but would supplement the workforce from an approved contractors' pool of qualified workers, as needed. It is anticipated that a peak of up to 40 workers would be employed during the site development phase of the Proposed Project. Approximately 33 workers would be required for the grading and site preparation. An average of approximately 12 workers are expected to be needed during the foundation and below-grade work. Construction of the substation is expected to require an average of 24 workers. Installation of the power line loop-in would require between 14 to 20 workers. Final testing and checkout would require 9 electricians and/or engineers. Crews are anticipated to work Monday through Saturday from 7:00 a.m. to 5:00 p.m.

Table 4-4. Standard Construction Equipment and Usage

Project Phase	Phase Duration	Vehicle/Equipment Type	Quantity Required	Hours Per Day Operating at Site
Temporary Staging Yard – Site Preparation	1 Week	Dump Truck	3	6
		Rubber Tired Loader	1	6
		Backhoe	1	6
Proposed 69/12 kV Substation – Site Development and Mass Grading ¹	3 Months	D5K Dozer	1	6
		D8T Dozer	1	6
		140H Blade	1	6
		966 H Loader	1	6
		834 Rubber Tired Dozer	1	6
		Dump Truck (12 CY)	25	7
		Asphalt Truck	8	1
		Maintenance Truck	1	1

Table 4-4. Standard Construction Equipment and Usage

Project Phase	Phase Duration	Vehicle/Equipment Type	Quantity Required	Hours Per Day Operating at Site
		657E Scraper or 637E Scraper	1	7
		289C Track Skid Steer	1	4
		Excavator	1	6
		430E Rubber Tire Backhoe	1	6
		Ride On Roller Compactor	1	7
		Ditch-witch	1	6
		John Deer 210E Skip Loader	1	3
		2,000 Gallon Water Truck (2)	1	7
Proposed 69/12 kV Substation – Site Development and Finish Grading ¹	2 Months	D5K Dozer	1	6
		D8T Dozer	1	6
		140H Blade	1	6
		966 H Loader	1	6
		834 Rubber Tired Dozer	1	6
		Maintenance Truck	1	1
		657E Scraper (2) or 637E Scraper (2)	1	7
		289C Track Skid Steer	1	6
		430E Rubber Tire Backhoe	1	6
		Ride On Roller Compactor	1	7
		John Deer 210E Skip Loader	1	4
		2,000 Gallon Water Truck (2)	1	4
Proposed 69/12 kV Substation – Retaining/Boundary Wall Construction	2 Months	Skytrack Forklift	1	2
		Bobcat Skid Steer Loader	1	6
		Excavator	1	9
		Water Truck	1	9
		Car/Pick-up Truck	5	1
		Maintenance Truck	1	3
		Delivery Truck	3	1
		Walk-behind Compactor	3	8
		Motor Grader	1	8
		Compactor	2	8
		Front-end loader (IT28)	3	8
		Skip Loader	1	7
		Rubber Tire Backhoe	1	7

Table 4-4. Standard Construction Equipment and Usage

Project Phase	Phase Duration	Vehicle/Equipment Type	Quantity Required	Hours Per Day Operating at Site
Proposed 69/12 kV Substation – Driveways/Sidewalks (AC Paving)	2 Months	AC Paver	1	6
		Bobcat Skid Steer	1	5
		Skip Loader	1	5
		Steel Drum Roller	2	6
		Backhoe	1	6
		Loader	2	6
		Dump Truck (20 CY)	2	3
Proposed 69/12 kV Substation – Below-Grade Construction	6 Months	Bobcat Skid Steer Loader	1	4
		Water Truck	1	3
		Concrete Truck	15	0.5
		Ditch-witch	1	6
		938H Loader	1	6
		Rubber Tire Backhoe	1	7
		305 Mini Excavator	1	7
Proposed 69/12 kV Substation – Equipment Installation	6 Months	Boom Trucks	2	6
		Manlift	1	6
		Bucket Truck	4	5
		Oil Rig (Trailer with Generator)	1	24
		Cable Dolly (Trailer)	1	No Engine
		Pulling Rig (Trailer)	2	No Engine
		Water Truck	1	2
69 kV Underground Power Line – Duct Bank Construction, Vault and Cable Installation	3 Months	Backhoe	1	7
		Flatbed Truck	1	1
		Dump Truck	2	3
		Water Truck	1	1
		Air Compressor	1	7
		Pulling Rig	1	1
		Air Truck	1	0.2
		Boom Truck	1	0.2
		Bucket Truck	1	0.2
12 kV Distribution – Trenching and Conductor Installation	3 Months	Line Truck	1	0.1
		Puller	1	2
		Reel Trailer	1	1
		Splice Truck	1	1
		Pick-up Truck	1	1
		Water Truck	1	2

Table 4-4. Standard Construction Equipment and Usage

Project Phase	Phase Duration	Vehicle/Equipment Type	Quantity Required	Hours Per Day Operating at Site
		Pulling Rig	1	0.3
		Forklift	1	0.2
		Wire Truck	1	0.2
		Boom Truck	1	0.2
		Concrete Saw	1	0.5
		Pick-up Truck, 1-2 Man	3	1
		Pick-up Truck, Crew Cab	4	1
		Flatbed Truck	4	1
		Crane	1	0.5
		Bobcat Skid Steer Loader	1	6
		Backhoe	2	7
		Trackhoe	1	1
		Dump Haul Truck	5	6
		Pick-up with Saw Cutter Trailer	1	0.1
		Concrete Truck	9	0.7
		Asphalt Dump Truck	2	0.2
		Asphalt Paver	1	0.5
		Steel Drum Roller	1	0.1
		Dump Trucks with Compressor and Emulsion Sprayer	1	0.2
Telecommunication System Extension – Duct Bank Construction, Vault and Cable Installation	1 Month	Backhoe or Rockwheel	1	7
		Dump Trucks (20 CY)	2	0.2
		Skid Steer Loader	1	7
		Concrete Truck	4	0.7
Energization – Testing and Commissioning	1 Month	Relay Telecommunication Vans	3	3
Temporary Staging Yard – Clean-Up	1 Week	Dump Truck	1	2
		Flatbed Truck	1	2
		Backhoe	1	7

1 - Mass grade and finish grade involve the same type, quantity, and hours of operation for a majority of the off-road equipment. The same equipment used for mass grade will also be used for finish grade.

Proposed Construction Schedule

SDG&E estimates that construction of the Proposed Project would take approximately 20 months to complete, depending upon unforeseen or unpredictable factors such as weather and required transmission outages. Proposed construction is scheduled to occur on or about October 1, 2017, and run through June 2019. The proposed construction schedule, outlined by component, is summarized in Table 4-5. The dates shown are based on permitting estimates and approvals, and are subject to change.

Transformer oil filling is a continuous activity once started and may require round the clock work (3 to 5 days per transformer).

Table 4-5. Proposed Construction Schedule

Proposed Project Component	Activity	Approximate Duration	Anticipated Start Date
Temporary Staging Yard	Site Preparation	1 week	October 2017
	Clean-up	1 week	June 2019
Proposed 69/12 kV Substation	Site Development and Grading	5 months	October 2017
	Retaining/Boundary Wall Construction	2 months	January 2018
	Driveways/Sidewalks (AC Paving)	2 months	March 2019
	Below-Grade Construction	6 months	March 2018
	Substation Equipment Installation	6 months	September 2018
69 kV Underground Power Line	Duct Bank Construction, Vault and Cable Installation	3 months	January 2019
12 kV Distribution	Trenching and Conductor Installation	3 months	February 2019
Telecommunication System Extension	Duct Bank Construction, Vault and Cable Installation	1 month	February 2019
Energization	Testing and Commissioning	1 month	May 2019
	Energization	1 month	June 2019

4.11.4 Cut and Fill

It is anticipated that construction of the Proposed Project would result in up to approximately 69,860 cubic yards of cut and fill (See Table 4-6).

Final civil engineering for the Proposed Project has yet to be completed, therefore final cut and fill may differ from the estimates provided. Actual cut and fill grading amounts may vary depending upon actual field conditions and final detailed engineering. Soil may be reused onsite within SDG&E fee-owned property, franchise or existing easements. Excess soil from excavation may also be transported to a local recycling or appropriately permitted waste disposal facility if the soil is not reused onsite or otherwise recycled. Excess soil would be reused onsite where possible and transported offsite only as the final option.

Table 4-6. Proposed Project Cut-And-Fill Requirements Summary (cubic yards)

Project Component	Cut	Fill	Net Import/Export
Temporary Staging Yards Site Preparation and Cleanup ¹	1,965	1,965	1,965/1,965
Ocean Ranch Substation	18,100	36,700	28,700/10,100
Underground power line (69 kV) trench and duct bank installation	1,995	1,995	1,995/1,995
Underground distribution (12 kV) line trench and duct bank installation	3,650	3,650	3,650/3,650

Source: SDG&E 2015.

Table contents based on preliminary engineering.

1 - 30 percent of 17.5 acres of temporary staging yards will have 3 inches of rock temporarily installed (for a total of 5 acres). Cut for this purpose refers to rock clean-up and fill refers to rock installation

4.11.5 Permanent Land/Right-of-Way Requirements

The Proposed Project will be within existing utility corridors, franchise areas, and SDG&E fee-owned property that currently feature permanent access roads and will include permanent pads and roads within the substation site. Operation and maintenance of the Proposed Project would use these existing and planned work areas and roads. It is anticipated that no additional ROW is required for this project.

4.12 Operation and Maintenance

4.12.1 Substation Operation and Maintenance

Implementation of the Proposed Project would not significantly increase the intensity, frequency, or duration of SDG&E's overall operation and maintenance activities. These would be substantially similar to existing operation and maintenance activities at other substations. Typical activities involve both routine inspections and preventive maintenance to ensure service reliability, as well as emergency work to maintain or restore service continuity. General Order 165 requires that transmission and power lines be inspected at least every three years for corrosion, equipment misalignment, loose fittings, and other common mechanical problems.

SDG&E conducts power and transmission line operation and maintenance activities that typically include security and other inspections, ROW and access repairs, herbicide application, emergency and non-emergency repairs and replacements, and tree trimming.

Ocean Ranch Substation would be unmanned except for periodic routine maintenance activities to ensure reliable operation of all equipment within the facility. The substation would be monitored and controlled remotely by SDG&E's Control Center.

Ongoing maintenance would involve testing, monitoring, and repairing equipment, as well as emergency and routine procedures. All access gates to the proposed substation would be locked to prevent entry of unauthorized individuals. In addition, signage would be posted on the substation's exterior and at the entryways to restrict entry of those who are not qualified SDG&E personnel.

Routine operations would require one or two workers in a light utility truck to visit the substation on a daily or weekly basis. Routine maintenance is expected to require approximately six trips to the substation per year by a two- to four-person crew. It is anticipated that one annual major maintenance inspection would occur, requiring an estimated 10 SDG&E personnel to be present at the substation. It is anticipated that this inspection would take approximately one week to complete. Nighttime maintenance activities are not expected to occur more than once a year.

Landscape maintenance would occur on an as-needed basis for purposes of enhancing the streetscape along the perimeter of the substation and for safety and/or access. Such activities would generally require the presence of one or two maintenance vehicles and one or more employees to clear and/or trim vegetation to ensure that an adequate working space is maintained around the substation.

4.12.2 Power Line Maintenance

SDG&E maintains a clear working space area around certain facilities pursuant to requirements found within General Order 95 and Public Resources Code (PRC) section 4292. SDG&E keeps these areas clear of shrubs and other obstructions for fire prevention.

The new 69 kV loop-in would be inspected consistent with SDG&E's existing underground inspection and maintenance program. The line would be accessed from the two new vaults during the annual underground transmission inspection program. Where needed, to access the vaults safely, inspection typically requires traffic control. However, the new 69 kV vaults are within the proposed substation. The inspection crew would open the vault covers and perform a visual survey from above (entry into vault with energized cables is not permitted), and use infrared, partial discharge monitoring, or other diagnostic instrumentation that may be available. The total time to inspect each vault is expected to be less than 1 day under normal operating conditions. The inspection of the underground power line would be the same for all existing underground inspections currently completed by SDG&E within the City of Ocean-side and throughout SDG&E's service territory.

4.12.3 Standard Operating Procedures

The Proposed Project includes design features and ordinary construction and operating procedures that avoid and minimize environmental impacts. The standard operating procedures incorporated into the Proposed Project include measures that are routinely implemented by SDG&E. SDG&E would implement these operating procedures as appropriate during construction, operation, and maintenance to avoid and minimize potential environmental impacts.

Design features and construction and operating procedures incorporated into all phases of the Proposed Project are described below.

- **Blasting.** In the event that rock blasting is used during construction, a noise and vibration calculation would be prepared and submitted to SDG&E for review before blasting at each site. The construction contractor would ensure compliance with all relevant local, state, and federal regulations relating to blasting activities, as well as SDG&E's blasting guidelines.
- **Carpooling.** SDG&E would encourage construction workers to carpool to the greatest extent possible.
- **Communication with Adjacent Property Owners (Parking).** SDG&E would communicate with adjacent land owners for use of areas where off-street parking may be temporarily lost due to construction activities.
- **Conceptual Landscape Plan.** The conceptual landscape plan for the proposed Ocean Ranch Substation would be implemented as part of the Proposed Project following construction of the substation. (The Conceptual Site Plan provided as Appendix C shows landscaping). The landscaping plan, planting scheme, lighting guidelines, and sign regulations, include street trees and shrubs along Rocky Point Drive and Avenida del Oro and landscape plants that are low-water use, regionally appropriate, and visually compatible with the surrounding area and that do not conflict with the Pacific Coast Business Park Industrial Master Development Plan.

Implementation of the landscape plan would ensure that the project perimeter wall, street-front areas, and slopes are visually similar to the existing business park surrounding the project, and would provide partial screening of the perimeter wall.

The plan incorporates low-water-use, mostly native plants that are visually similar to existing plants on neighboring properties. The landscaping includes strawberry tree (*Arbutus unedo*) at the entrance to the site from Rocky Point Drive, and on the top of the slope along Avenida del Oro. The landscape plan leaves in place the existing street trees and slope planting along the west side of the parcel facing Avenida del Oro, and adds more shrubs and trees to the slope as well. The Proposed Project's landscape elements would comply with existing streetscape guidelines and visually blend with existing neighboring landscapes. Low-water-use, mostly native plants are proposed throughout the landscape

areas of the site, including trees and shrubs that are visually similar to existing plants on neighboring lots, such as Australian willow (*Geijera parviflora*) and holly leaf cherry (*Prunus ilicifolia*). These trees would provide a visual connection to the surrounding streetscapes, and would provide some screening of the Proposed Project's perimeter wall. Medium-sized shrubs and low-growing shrubs and ground covers are proposed as well. The site includes two retention basins located on the property but outside the substation wall, which would be planted with locally appropriate grasses and rushes.

- **Construction Noise.** For the few locations where the Proposed Project may exceed the noise ordinances, SDG&E would meet and confer with the City of Oceanside to discuss temporarily deviating from the requirements of the Municipal Code.
- **Construction Practices.** During clearing, grading, earth moving, or excavation operations, SDG&E would follow applicable regulations and control excessive fugitive dust emissions by regular watering or other dust preventive measures, which may include the following procedures:
 - Spray unpaved construction areas with water, approved dust-control agents, or soil stabilizers to reduce particulates; sufficiently water material excavated or graded.
 - Sweep, vacuum, and/or remove dirt or debris spilled onto or tracked onto paved surfaces to reduce resuspension of particulate matter caused by vehicle movement.
 - Haul trucks moving soil to or from the site would either be covered or maintain 2 feet minimum freeboard.
 - Onsite stockpiles would be covered, watered, or bermed if left inactive for more than 24 hours.
 - Tracking-control measures, in accordance with SDG&E Water Quality Construction BMP Manual, Measure 1-07 (Tracking Controls), would be implemented. (At page 25 of Appendix H provided in SDG&E's PEA the Manual is included here as Appendix D.)
 - Implementation of measures during construction to control fugitive dust and reduce exhaust emissions to meet SDAPCD Rule 55 requirements.
 - Prevent visible dust from the project from emanating beyond the property line, to the maximum extent feasible.
 - To the extent feasible, unnecessary construction vehicle idling time would be minimized. The ability to limit construction vehicle idling time is dependent upon the sequence of construction activities and when and where vehicles are needed or staged. Certain vehicles, such as large diesel powered vehicles, have extended warm-up times following start-up that limit their availability for use following startup. Where such diesel-powered vehicles are required for repetitive construction tasks, these vehicles may require more idling time. If a vehicle is not required for use immediately or continuously for construction activities, its engine would be shut off. Construction foremen would include briefings to crews on vehicle use as part of preconstruction tailboard or training. Those briefings would include discussion of a "common sense" approach to vehicle use.
- **Coordination with City.** SDG&E is coordinating with the City regarding the establishment of access rights on Avenida del Oro for a secondary private driveway at the proposed Ocean Ranch Substation site.
- **Coordination with Emergency Service Providers.** SDG&E will coordinate with the affected emergency service providers in the event that lane closures occur.
- **Cultural Resources.** SDG&E will follow applicable federal, state, and local laws to protect and avoid cultural resources, including the Archaeological Resources Protection Act of 1979, as amended; the National Historic Preservation Act of 1966, as amended (NHPA); California Penal Code section 622½,

PRC sections 5097.1 through 5097.6, PRC section 5097.98, and CEQA. An independent expert conducted preconstruction surveys, prepared an inventory of cultural resources within the Proposed Project's Area of Potential Effect, and provided recommendations for avoidance and minimization of cultural resources. Known cultural resources would be spanned or otherwise avoided through Project design and through routing during construction activities to the extent feasible.

- **Encroachment Permits.** SDG&E would obtain the required encroachment permits from the City of Oceanside for crossings at city streets and would ensure that proper safety measures are in place while construction work is occurring in or near public roadways. These safety measures include flagging, proper signage, and orange cones to alert the public to construction activities near the roadway.
- **Generators.** Generator use would be limited to less than 50 horsepower (HP) at all staging yards, if required. Any generators used at the staging yards would be located away from noise-sensitive areas, and positioned on the property to ensure compliance with local noise ordinances.
- **Geotechnical Report.** A geotechnical study has been conducted for the Proposed Project under direction of a California-licensed Geotechnical Engineer or Certified Engineering Geologist, and recommendations identified in the geotechnical report would be carried out. (See Appendix E: Geotechnical Siting Study.)
- **Hazardous Materials.** SDG&E would address potential impacts relating to the handling and use of hazardous materials through compliance with applicable state and federal regulations, including but not limited to the following:
 - Federal OSHA regulations for worker safety in hazardous material remediation and hazardous waste operations (29 CFR Section 1910.120)
 - Federal OSHA regulations hazard communication for workers (29 CFR Section 1910.1200)
 - Federal OSHA regulations for toxic air contaminants for workers (29 CFR Section 1910.1000)
 - California OSHA (CalOSHA) regulations for worker safety in hazardous material remediation and hazardous waste operations (8 California Code of Regulations [CCR] 5192)
 - CalOSHA regulations for hazard communication for workers (8 CCR 5194)
 - Department of Toxic Substances Control (DTSC) regulations implementing Resource Conservation and Recovery Act of 1976 (RCRA) and the California Hazardous Waste Control Law (HWCL) (22 CCR Division 4.5).
- **Hazardous Materials and Waste Management Plan.** SDG&E would prepare a project-specific Hazardous Materials and Waste Management Plan (HMWMP) for the construction phase of the Proposed Project to ensure compliance with all applicable federal, state, and local regulations. The HMWMP would reduce or avoid the use of potentially hazardous materials for the purposes of worker safety, protection from groundwater contamination, and proper disposal of hazardous materials. The plan would include the following information related to hazardous materials and waste, as applicable:
 - A list of the hazardous materials that would be present on site during construction, including information regarding their storage, use, and transportation.
 - Procedures for the identification of and avoidance of contaminated materials.
 - Any secondary containment and countermeasures that would be required for onsite hazardous materials, as well as the required responses for different quantities of potential spills.

- A list of spill response materials and the locations of such materials at the Proposed Project site during construction.
 - A list of the adequate safety and fire suppression devices for construction activities involving toxic, flammable, or exposure materials.
 - A description of the waste-specific management and disposal procedures that would be conducted for any hazardous materials that would be used or are discovered during construction of the Proposed Project.
 - A description of the waste minimization procedures to be implemented during construction of the Proposed Project.
- **Landowner Notification.** Landowners of parcels within 300 feet of Proposed Project would receive notification of the start of construction at least one week prior to the start of construction activities within that area.
 - **Mufflers.** Functioning mufflers would be maintained on all equipment.
 - **Natural Community Conservation Plan (NCCP) Operation Protocols.** Based on the design of the Proposed Project, no mitigation is required, but SDG&E would implement the following construction and operation protocols (See Initial Study Section 5.4 Biological Resources for additional information):
 - Section 7.1.1 General Behavior for All Field Personnel
 - Section 7.1.2 Training
 - Section 7.1.4 Maintenance, Repair, and Construction of Facilities
 - Section 7.1.5 Maintenance of Access Roads
 - Section 7.1.8 Survey Work
 - Section 7.1.9 Emergency Repairs
 - **New Chain-Link Fence.** Any fencing installed as part of the Proposed Project would be a dull, non-reflective finish to reduce potential glare.
 - **Overall Grading and Drainage Design.** The overall grading design would include replacement of the existing temporary desilting basins with permanent construction of two flow-through planter basins to provide management of smaller, more frequent storm events, treatment of stormwater runoff, and peak flow attenuation from larger, less frequent events (such as the 100-year storm).
 - **Perimeter Wall.** The perimeter wall would be designed to blend with the neighboring buildings and provide continuity with the existing landscape, and would not conflict with standard design criteria and requirements for electrical substations or the Pacific Coast Business Park Industrial Master Development Plan.
 - **Project Fire Prevention Plan.** SDG&E Electric Standard Practice 113.1 would serve as the Project Fire Prevention Plan. This standard identifies risk-related activities as well as measures (including tools and procedures) to address said risks. This standard addresses all work activities which have the potential to start a wildland fire and sets forth equipment and practices relevant to fire prevention. (See Appendix F: O&M Wildland Fire Prevention Plan)
 - **Restoring Appearance of Temporarily Disturbed Areas.** When Proposed Project construction has been completed, all temporarily disturbed terrain would be restored as near to preconstruction conditions as possible. Revegetation would be used, where appropriate (revegetation in certain areas is not possible due to vegetation management requirements related to fire safety) to reestablish a natural

appearing landscape and reduce potential visual contrast between disturbed areas and the surrounding landscape.

- **Safety and Worker Environmental Awareness Program.** SDG&E would prepare a project-specific environmental and safety awareness program for project personnel. Training would include the following topics, as applicable:

- General safety procedures
- General environmental procedures
- Fire safety
- Biological resources
- Cultural resources
- Paleontological resources
- Hazardous materials protocols and BMPs
- SWPPP

- **SDG&E Water Quality Construction BMP Manual.** SDG&E's Water Quality Construction BMP Manual would be used during construction (by way of preparation and implementation of the SWPPP), operation, and maintenance of the Proposed Project to ensure compliance with all relevant SDG&E and government-mandated regulatory water quality standards. This manual organizes and presents SDG&E's standard water quality protection procedures for various specific actions that routinely occur as part of SDG&E's ongoing construction, operations, and maintenance activities. The primary focus of most BMPs is the reduction and/or elimination of potential water quality impacts during construction of linear and substation projects, such as the Proposed Project. The BMPs described within the BMP Manual were derived from several sources including State of California guidelines as well as the Caltrans Water Quality BMPs.

- **SF6 mitigation strategies.** SDG&E would implement its existing SF6 mitigation strategies during the operation and maintenance of SF6-containing equipment installed as part of the Proposed Project. These strategies include:

- Continue CARB's Mandatory Reporting Regulation for GHG emissions.
- Implement SDG&E's SF6 leak detection and repair program. This program includes monthly visual inspections of each GIS, which includes checking pressure levels within the breaker and recording these readings in SDG&E's Substation Management System. During the installation or major overhaul of any GIS, the unit is tested over a 24-hour period to ensure no leaks are present. Minor overhauls of each GIS are conducted every 36 to 40 months to check overall equipment health. This process includes checking gas pressure, moisture ingress, and SF6 decomposition. If the GIS fails any of these checks, the unit is checked for leaks and repaired. In addition, all GISs are equipped with a gas monitoring device and alarm that automatically alert SDG&E's Grid Operations Center. If gas pressure approaches minimum operating levels, an alarm is immediately reported to SDG&E's Substation Construction and Maintenance Department. The GIS is usually inspected for leaks within 24 hours of such an alarm. SDG&E's leak detection practice includes the following three methodologies:
 - Spraying a leak-detection agent onto common leak points — including O-rings, gaskets, and fittings;
 - Using a field-monitoring device (sniffer) to detect the presence of SF₆ gas; and
 - Using a laser-detection camera to detect the presence of SF₆ gas when the above two methods are unsuccessful in finding a leak.
- Implement a SF6 recycling program.

- Train employees on the safety and proper handling of SF6.
- **Soil Disturbance.** Ground and soil disturbance would be minimized through the use of existing access routes, to the extent feasible.
- **Soil Stabilization.** Once temporary surface disturbances are complete, areas that would not be subject to additional disturbance would be stabilized to control soil erosion. Disturbed areas would be stabilized per the project SWPPP.
- **Spill Prevention, Control, and Countermeasure (SPCC) Plan.** If required, an SPCC Plan would be prepared in accordance with CFR 40, Part 112 before petroleum products in threshold quantities would be stored on-site. Elements of an SPCC Plan include, but are not limited to, the following:
 - Facility diagram and description;
 - Oil discharge predictions;
 - Appropriate secondary containment or diversionary structures;
 - Facility drainage;
 - Personnel training and oil discharge prevention briefings; and
 - Recordkeeping and five-year plan review.
- **Standard Traffic Control Procedures.** SDG&E would implement traffic control plans to address potential disruption of traffic circulation during construction activities and address any safety issues. These traffic control plans would be prepared prior to construction by the project engineer or contractor and subject to approval by the appropriate jurisdictional agencies.
- **Temporary Lighting.** Temporary lighting at staging and storage areas would be directed on site and away from any sensitive receptors.
- **Visual Screening of Staging Yards.** Where staging yards are visible to the public, opaque mesh or slats (or equivalent material) would be installed along the fence that would soften the view of the staging yard from public vantage points such as roads, residences, and public vantage points.
- **Water Sources.**
 - To the extent that recycled water is used, the Proposed Project would adhere to use restrictions and water quality monitoring and reporting regulations associated with use of tertiary-treated recycled water for construction uses (e.g., dust control, soil compaction, and concrete mixing) permitted under the SWRCB General Order or the San Diego RWQCB Waiver 2 and consistent with the state’s anti-degradation policy.
 - Potable water to support project construction and operations activities would be sourced from the City of Oceanside. Project construction water use calculations are the basis for obtaining a would-serve letter from the City of Oceanside. To the extent feasible and if available, tertiary-treated recycled water would be used for allowed construction practices (e.g., dust control, soil compaction, cement mixing). The San Luis Rey Wastewater Treatment Plant (WWTP), which is located approximately one mile west of the project, is being upgraded to double its current daily volume of recycled water. The associated El Corazon commercial recycled water fill station near the NE corner of Oceanside Boulevard and El Camino Real has been permitted and is operational. To the extent that tertiary-treated recycled water is available at this fill station it would be used for approved uses.
 - The Proposed Project would adhere to the City of Oceanside Emergency Drought Response Ordinance.

4.13 Other Permits and Approvals

The CPUC is the lead agency for CEQA review of this project. In accordance with CPUC General Order No. 131-D SDG&E prepared and submitted a Proponent’s Environmental Assessment (PEA) as part of its application for a Permit to Construct (PTC).

The CPUC has exclusive authority to approve or deny SDG&E’s application; however, various permits from other agencies may also need to be obtained by SDG&E for the Proposed Project. If the CPUC issues a PTC, it would provide overall project approval and certify compliance of the project with CEQA. In addition to the PTC, Table 4-7 summarizes the permits from federal, State, and local agencies that may be needed for the project.

Table 4-7. Anticipated Permit, Approval, and Consultation Requirements

Permit Type/Name	Issuing Agency	Jurisdiction/Purpose
Federal Agencies		
Not Applicable		
State Agencies		
Permit to Construct	CPUC	Overall Project approval and CEQA review.
National Pollutant Discharge Elimination System–Construction Stormwater Permit	California SWRCB	Stormwater discharges associated with construction activities disturbing more than one acre of land.
Consultation	CDFW	Consultation on burrowing owls and/or western yellow bats if these species are identified within the Proposed Project area.
Local Agencies		
Approval of Remandment of Access Application	City of Oceanside	Accommodate secondary driveway at substation site along Avenida Del Oro.
Encroachment Permit	City of Oceanside	For crossings at city streets and trenching in the City’s ROW.
Grading Permit	City of Oceanside	Site grading.
Explosive Permit	City of Oceanside	Secure approval for rock blasting through Fire Department review.
Recycled Water General Order	SWRCB	Used to discharge tertiary-treated recycled water to land for approved construction activities.

4.14 Applicant Proposed Measures

During the design, construction, and operation of the Proposed Project, SDG&E proposes to implement certain measures, in a manner consistent with applicable rules and regulations, to avoid or minimize potential environmental impacts. These would be in addition to the procedures included as part of the overall project description, including the Standard Operating Procedures listed as part of the project description.

The Applicant Proposed Measures (APMs) listed in Table 4-8 are considered part of the Proposed Project and are considered in the evaluation of environmental impacts in Section 5, Environmental Analysis and Mitigation. SDG&E would be responsible for overseeing the assembly of construction and environmental teams that would implement the Proposed Project APMs. CPUC approval would be based upon SDG&E

adhering to the Proposed Project as described in this document, including this project description, the APMs, and any adopted mitigation measures identified by this Initial Study.

Table 4-8 details SDG&E’s APMs by environmental topic. For many environmental topics, SDG&E did not identify any APMs. In some cases, mitigation measures presented in Section 5 either expand upon or add detail to the APMs presented in Table 4-8 if necessary, to ensure that potential impacts would be reduced to less than significant levels.

Table 4-8. Applicant Proposed Measures by Resource Area

Resource Area	Relevant Applicant Proposed Measures
Biological Resources	<p>APM BIO-1: General Biological Resources</p> <ul style="list-style-type: none"> ▪ The Proposed Project work areas shall be limited to the sites specified in the project description. Access to the project site shall utilize existing access roads, where possible. Parking, driving, and storing of vehicles will be limited to previously disturbed, compacted, and developed areas, where possible. ▪ A contractor education program will be conducted by a qualified biologist. It will be conducted during all project phases and cover: (1) the potential presence of listed species and their habitats; (2) the requirements and boundaries of the project (e.g., areas delineated on maps and by flags or fencing); (3) the importance of complying with avoidance and minimization measures; (4) environmentally responsible construction practices; (5) identification of sensitive resource areas in the field; and (6) problem reporting and resolution methods. ▪ A qualified biologist will be assigned to the Proposed Project. The designated biologist will have the authority to halt construction in that segment of the Proposed Project to prevent impact to any listed species. ▪ Heavy equipment, construction, equipment maintenance, and staging activities will occur in designated areas and be restricted to existing roads and disturbed areas to the maximum extent practicable. ▪ Where possible, laydown, stockpiling, parking, driving, and storing of vehicles and equipment will be limited to previously disturbed/compacted and developed areas within and immediately adjacent to existing roads. <p>APM BIO-2: Vegetation and Special-status Plant Species</p> <ul style="list-style-type: none"> ▪ Disturbance to adjacent native vegetation will be avoided to the greatest extent. <p>APM BIO-3: Migratory Birds</p> <ul style="list-style-type: none"> ▪ Pre-construction nest surveys will be conducted by a qualified biologist if construction or demolition activities on the project site occurs between January 1 and August 31 (nesting season). Surveys shall cover all potential nesting habitat within the PSA and be repeated on a weekly basis throughout the nesting season. If SDG&E determines that any staging yards included in the proposed project, is not needed, then those staging yards will be exempt from nest surveys ▪ If an active nest is found within the Proposed Project at any time, work will stop immediately in the immediate area of the nest and redirected away from the nest location. A no disturbance buffer zone will be established around each nest. The size of the buffer zone for non-special-status species will be determined by a qualified biologist. Any activities that might, in the opinion of the biological monitor, disturb nesting activities, will be prohibited in the buffer zone. If an active nest of a special-status species is identified, SDG&E shall consult with the USFWS and CDFW to determine the size of the buffer zone (except for burrowing owls, which will be determined in accordance with APM BIO-4). Nest locations will be mapped using GPS technology. ▪ The biological monitor will monitor all active nests and buffers at least once per week, to determine whether birds are being disturbed. If signs of disturbance or distress are observed, the biological monitor shall immediately implement adaptive measures to reduce disturbance. These measures could include, but are not limited to, increasing buffer size, halting disruptive construction activities in the vicinity of the nest until fledging is confirmed, or placement of visual screens or sound dampening structures between the nest and construction activity. ▪ The qualified biologist or biological monitor will monitor the nest until he or she determines that nestlings have fledged and dispersed or the nest is no longer active. The results of nest surveys and nest monitoring shall be included in biological monitoring reports, described in Mitigation Measure B-1 (Biological Monitoring and Reporting).

Table 4-8. Applicant Proposed Measures by Resource Area

Resource Area	Relevant Applicant Proposed Measures
Biological Resources (cont.)	<p>APM BIO-4: Special-status Wildlife Species.</p> <ul style="list-style-type: none"> ▪ Protocol-level surveys for the burrowing owl shall occur prior to the commencement of construction. The survey shall be conducted by a qualified biologist in accordance with the Staff Report on Burrowing Owl Mitigation. The surveys shall commence at least 30 days and not less than 14 days prior to construction. The survey results shall be provided to SDG&E within 14 days following completion of surveys. ▪ If burrowing owls are detected within the Project Study Area, measures consistent with the methodology as established in the Staff Report on Burrowing Owl Mitigation and in concurrence with the local CDFW office will be implemented. This includes, but is not limited to the use of buffers around burrows, inspection of equipment, monitoring, and the potential for development of a Burrowing Owl Exclusion Plan approved by the local CDFW office. ▪ Prior to the commencement of the construction phase, a qualified biologist shall conduct a preconstruction survey/sweep of Melrose Staging Yard to determine the presence of the western yellow bat. If the western yellow bat is not found during the initial preconstruction survey/sweep, the staging yard will be resurveyed weekly while the yard is in use for the project. Surveys will be conducted year-round. If roosts are found during the survey sweeps, a no disturbance buffer zone will be established of 165 feet from any active roost and 300 feet from any active maternity roost. The qualified biologist shall consult with CDFW to determine the appropriate buffer limits to adequately protect the species and the buffer sizes listed above may be reduced with concurrence from CDFW. The buffers will remain in place until the staging yard is no longer used for this project or until the bat(s) have left the roost and a buffer is no longer necessary.
Cultural/ Paleontological Resources	<p>APM CUL-1: Paleontological Resource Monitoring Program.</p> <ul style="list-style-type: none"> ▪ A paleontological resource monitoring program will be implemented during construction. The program will include construction monitoring, fossil salvage, laboratory preparation of salvaged specimens, curation of prepared specimens, and storage of curated specimens. A qualified paleontologist will be onsite to monitor all ground disturbing activities (e.g., grading and excavation) within native sediments, until the monitor determines monitoring activities are not necessary. The monitor will inspect all fresh cut slopes and trenches, spoils piles, and graded pad surfaces for unearthened fossil remains. If any paleontological find is identified during monitoring, then the monitor will communicate with the general environmental monitor and the construction manager. Salvage may include techniques such as “pluck-and-run,” hand quarrying, and bulk matrix sampling and screen-washing. The monitor will also collect stratigraphic data to define the nature of fossiliferous sedimentary rock units within the Proposed Project area, their geographic distributions, and their lithologic characteristics. Paleontological monitoring would not be required in locations where artificial imported fill materials occur for the full depth of the proposed ground disturbance.

4.15 Electric and Magnetic Fields Summary

Recognizing that there is a great deal of public interest and concern regarding potential health effects from exposure to electric and magnetic fields (EMF) from power lines, this Initial Study provides information regarding EMF associated with electric utility facilities and the potential effects of the proposed project related to public health and safety. Potential health effects from exposure to **electric fields** from power lines (produced by the existence of an electric charge, such as an electron, ion, or proton, in the volume of space or medium that surrounds it) are typically not of concern since electric fields are effectively shielded by materials such as trees, walls, etc., therefore, the majority of the following information related to EMF focuses primarily on exposure to **magnetic fields** (invisible fields created by moving charges) from power lines. However, this Initial Study does not consider magnetic fields in the context of CEQA and determination of environmental impact. This is because (a) there is no agreement among scientists that EMF does create a potential health risk, and therefore, (b) there are no defined or adopted CEQA standards for defining health risk from EMF. As a result, EMF information is presented for the benefit of the public and decisionmakers.

After several decades of study regarding potential public health risks from exposure to power line EMF, research results remains inconclusive. Several national and international panels have conducted reviews of data from multiple studies and state that there is not sufficient evidence to conclude that EMF causes cancer. The International Agency for Research on Cancer (IARC), an agency of the World Health Organization (WHO), and the California Department of Health Services (DHS) both classified EMF as a *possible* carcinogen (WHO, 2001; DHS, 2002).

In addition, the 2007 WHO [Environmental Health Criteria (EHC) 238] report concluded that:

- Evidence for a link between Extremely Low Frequency (50–60 Hz) magnetic fields and health risks is based on epidemiological studies demonstrating a consistent pattern of increased risk for childhood leukemia. However, “...virtually all of the laboratory evidence and the mechanistic evidence fail to support a relationship between low-level ELF magnetic fields and changes in biological function or disease status....the evidence is not strong enough to be considered causal but sufficiently strong to remain a concern.”
- “For other diseases, there is inadequate or no evidence of health effects at low exposure levels.”

Currently, there are no applicable regulations related to EMF levels from power lines or substations. However, following a decision from 1993 (D.93-11-013) that was reaffirmed on January 27, 2006 (D.06-01-042), the CPUC requires utilities to incorporate “low-cost” or “no-cost” measures to mitigate EMF from new or upgraded electrical utility facilities up to approximately 4 percent of total project cost. To comply, SDG&E developed certain measures to reduce magnetic field levels in the vicinity of the proposed substation and subtransmission lines. SDG&E filed its Magnetic Field Management Plan for the Proposed Ocean Ranch Substation Project as Appendix F of its Application for a Permit to Construct (A.16-07-016; filed July 27, 2016).

4.16 Alternatives

Pursuant to CEQA, the purpose of an alternatives analysis is to identify options that would feasibly attain the project’s objectives while reducing identified significant environmental impacts that would result from the proposed project being implemented. Alternatives analysis is not required in a Mitigated Negative Declaration because the Initial Study concludes that with incorporation of mitigation measures there would be no significant adverse impacts resulting from the proposed project.

However, CPUC’s GO 131-D requires that an application for a PTC include the “reasons for adoption of the power line route or substation location selected, including comparison with alternative routes or locations, including the advantages and disadvantages of each” (GO 131-D, section IX.B.1.c.). A summary of the alternatives considered in SDG&E’s PEA is provided below.

During the development of the Proposed Project, a No Project Alternative, six alternative locations for a new substation site, and three power line alternatives to serve the new substation were considered for further analysis. The Proposed Project was ultimately selected because it best meets all of the Proposed Project objectives.

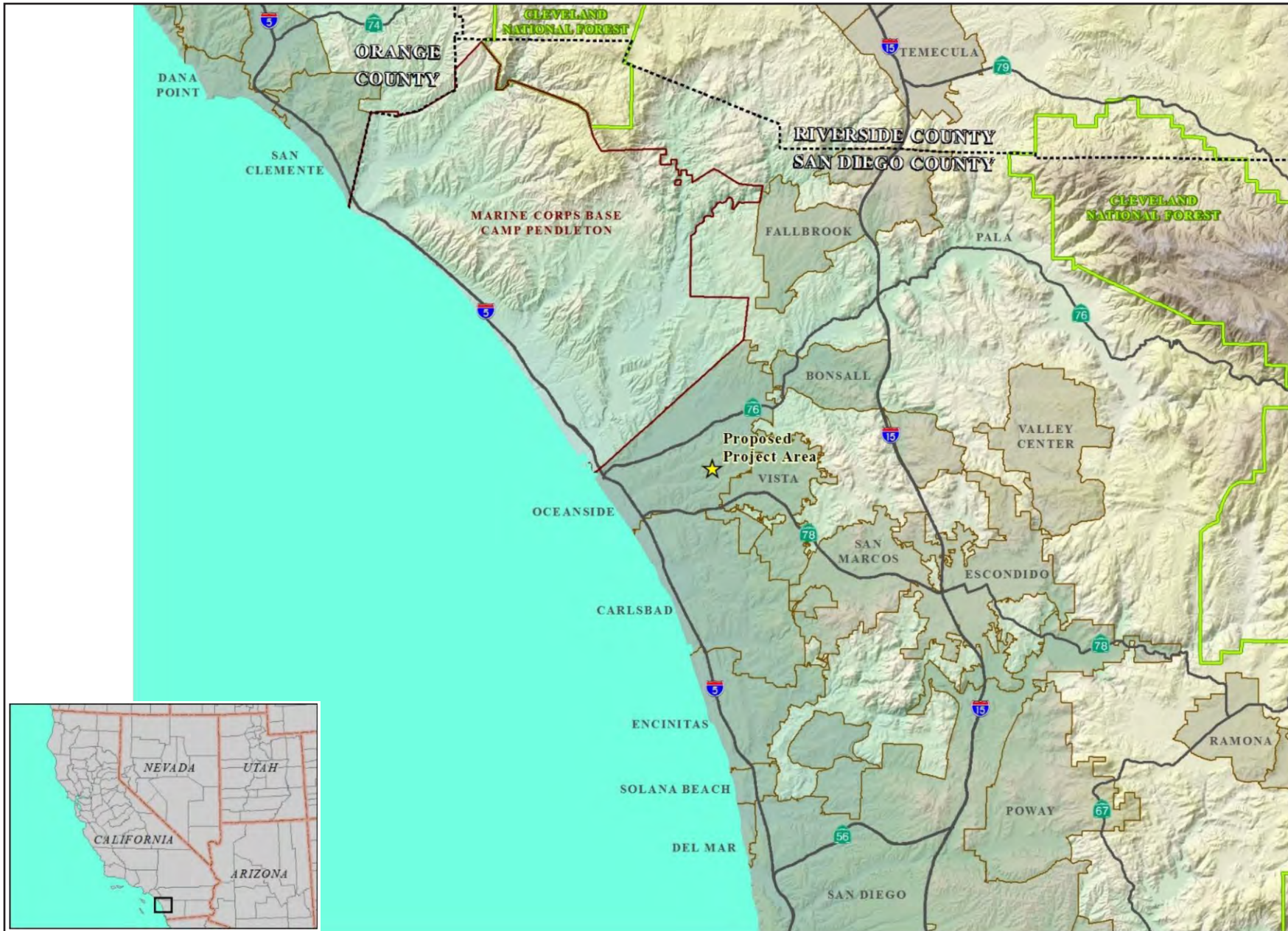
Under the No Project Alternative, the proposed Ocean Ranch Substation would not be constructed. However, by 2018, San Luis Rey Substation and Melrose Substation are projected to be at 92 percent and 94 percent load, respectively. San Luis Rey Substation is projected to be experiencing transformer bank and circuit (line) overloads, and Melrose Substation will be experiencing a transformer bank overload. When the design rating for a transformer is exceeded, the equipment may be damaged; when the design rating for a circuit is exceeded, the conductor (line) may be damaged and the circuit may trip

and go offline. Both substations already are built out to ultimate four-transformer bank (120 MVA) capacity. Morro Hill Substation is projected to be at 96 percent of load by 2018, and is constrained by its proximity to Marine Corps Base Camp Pendleton and the San Luis Rey River. The No Project Alternative would not meet 3 of the 4 Proposed Project objectives; namely: it would not meet existing or forecasted load growth; would not maintain substation and circuit reliability; and would not reduce area substation loading to optimum operating conditions.

For substation site alternatives to the Ocean Ranch site, SDG&E considered 22 locations over several years and identified 6 for further analysis. These 6 alternative sites were rejected because of land use compatibility issues, size constraints, previously recorded archaeological sites, non-availability of parcels due to development/purchase by other parties, unwilling sellers, and/or need for business relocation.

Three power line configuration alternatives were selected for evaluation:

- Option A was to loop in the existing TL 6966 between San Luis Rey and Melrose Substations into Ocean Ranch Substation. (This was the preferred alternative.)
- Option B included the Option A loop in of TL 6966 as well as reconductoring 2.5 miles of lines TL 6966 and TL 693 from San Luis Rey Substation to Ocean Ranch Substation to serve the ultimate design of the Ocean Ranch Substation. The California Independent System Operator (CAISO) did not support this alternative because its 2015-2016 Transmission Planning Report did not find a need for the second transmission line into the new substation at this time.
- Option C included bundling of TL 6966 and TL 693 between San Luis Rey and Ocean Ranch Substations, and construction of 3 miles of new overhead/underground powerline between the substations. This would serve the ultimate design of Ocean Ranch Substation, but this option was not considered further for the same reasons Option B was no considered further.



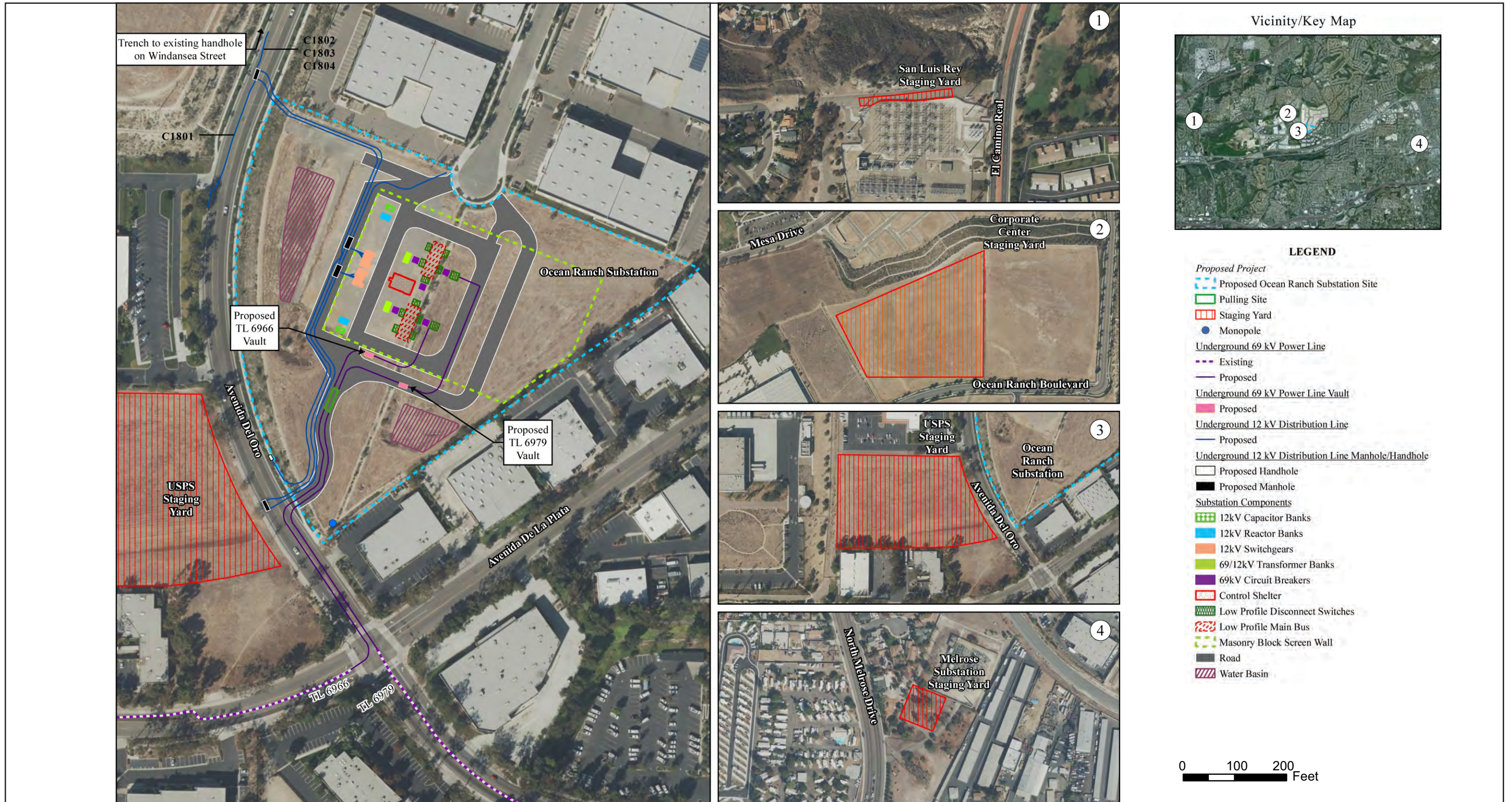
Source: SDG&E, 2016a.



- LEGEND**
- ★ Proposed Project Area
 - Marine Corps Base Camp Pendleton Boundary
 - City Limits
 - Cleveland National Forest Boundary
 - County Boundary
 - Interstates and State Routes

Figure 4-1
Project Regional Location

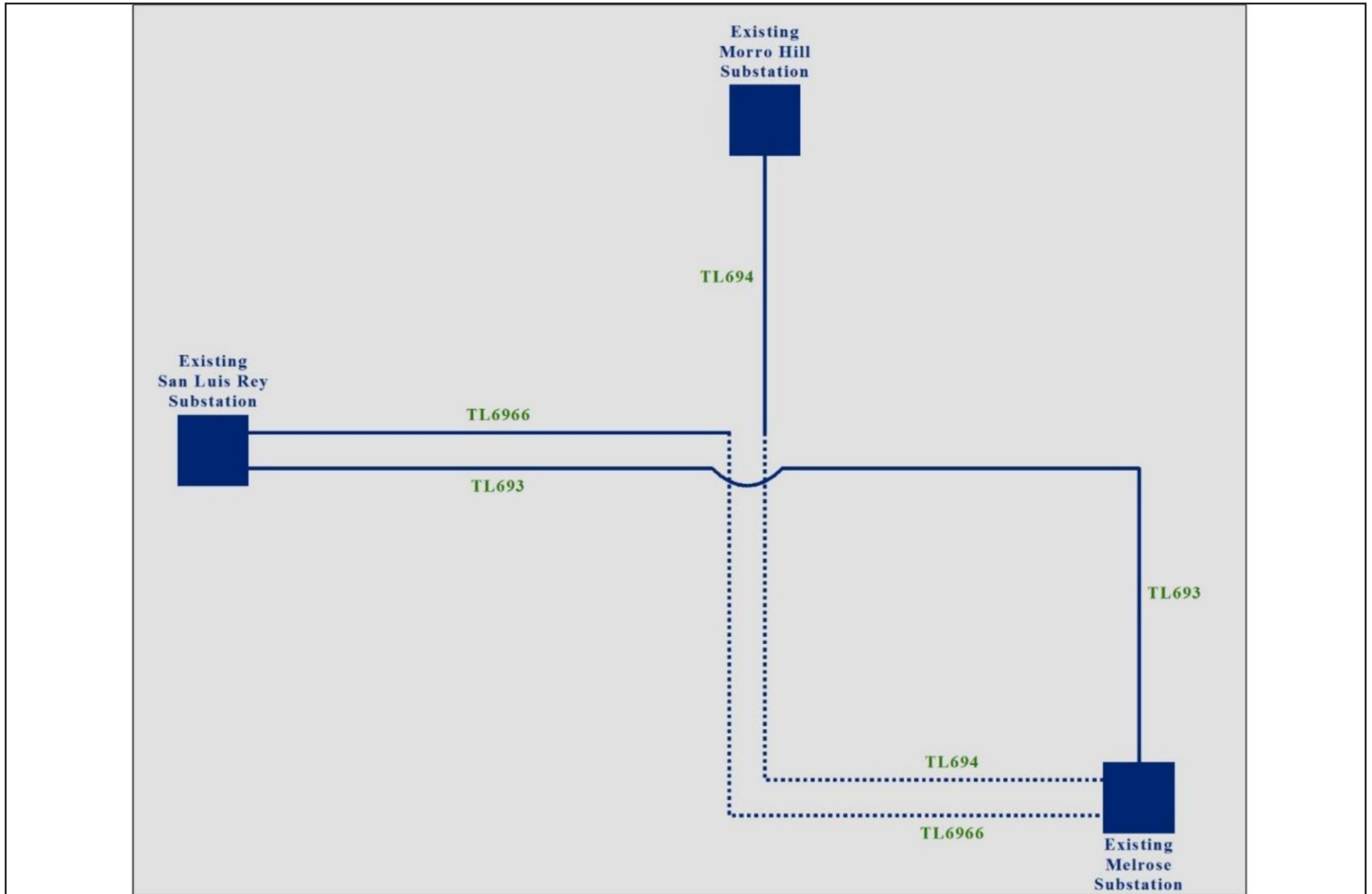
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Source: SDG&E, 2016b.

Figure 4-2
Project Site Location and Staging Yards

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Source: SDG&E, 2016a.

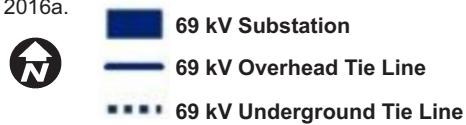
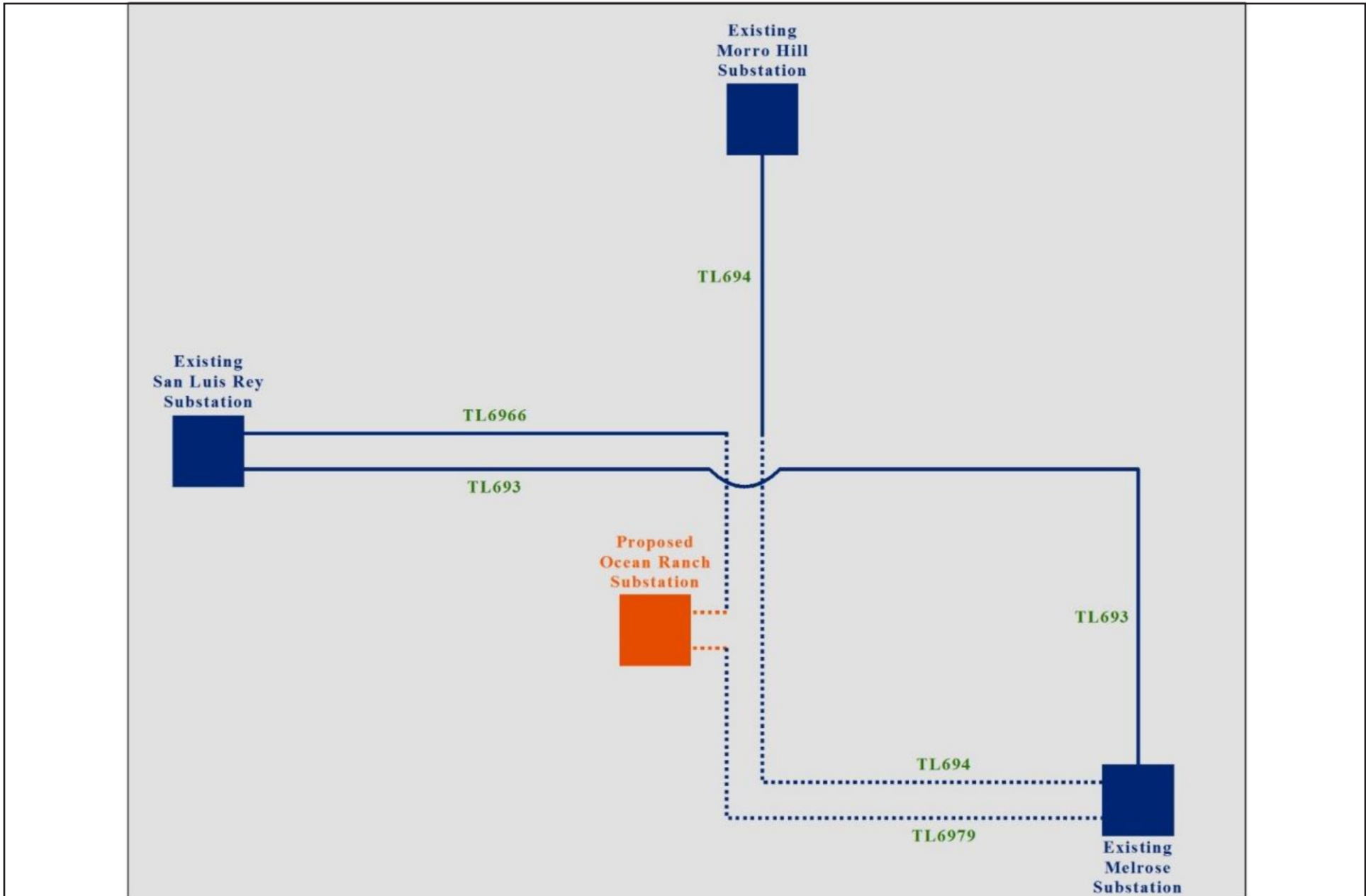


Figure 4-3

Existing Configuration of Substations

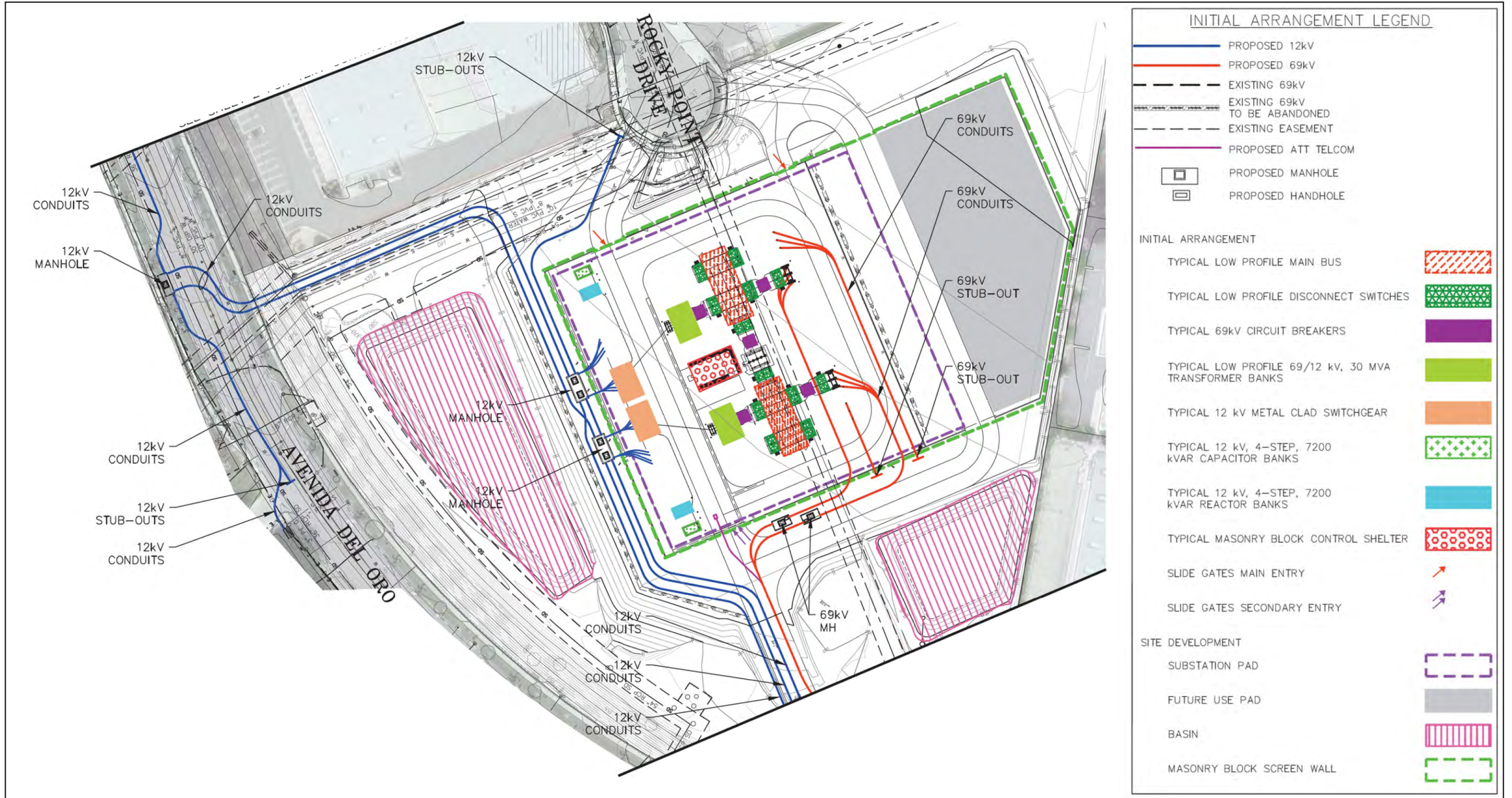


Source: SDG&E, 2016a.



Figure 4-4

Ultimate Configuration of Substations



Source: SDG&E, 2016b.

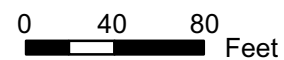
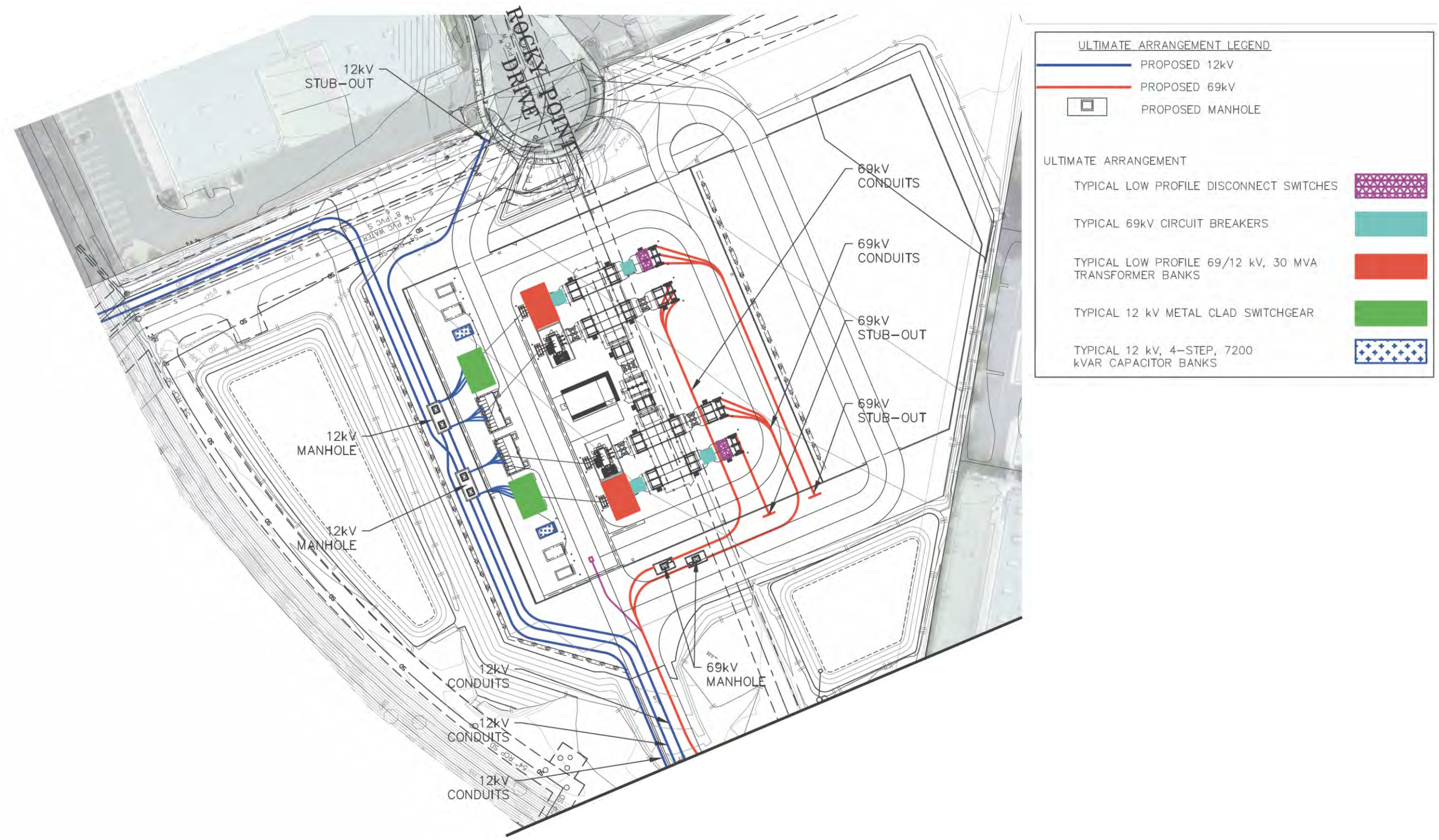


Figure 4-5

Initial Layout of Ocean Ranch Substation



Source: SDG&E, 2016b.

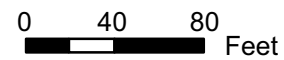
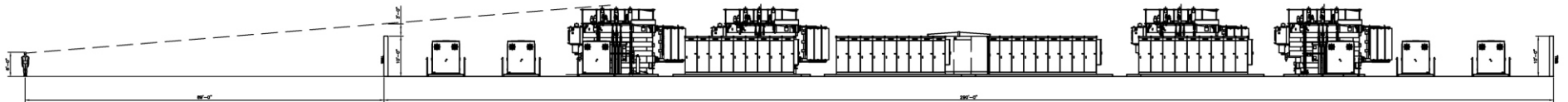


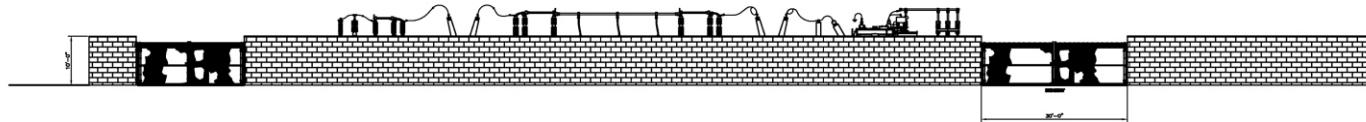
Figure 4-6

Ultimate Layout of Ocean Ranch Substation

View Looking East (without wall built)

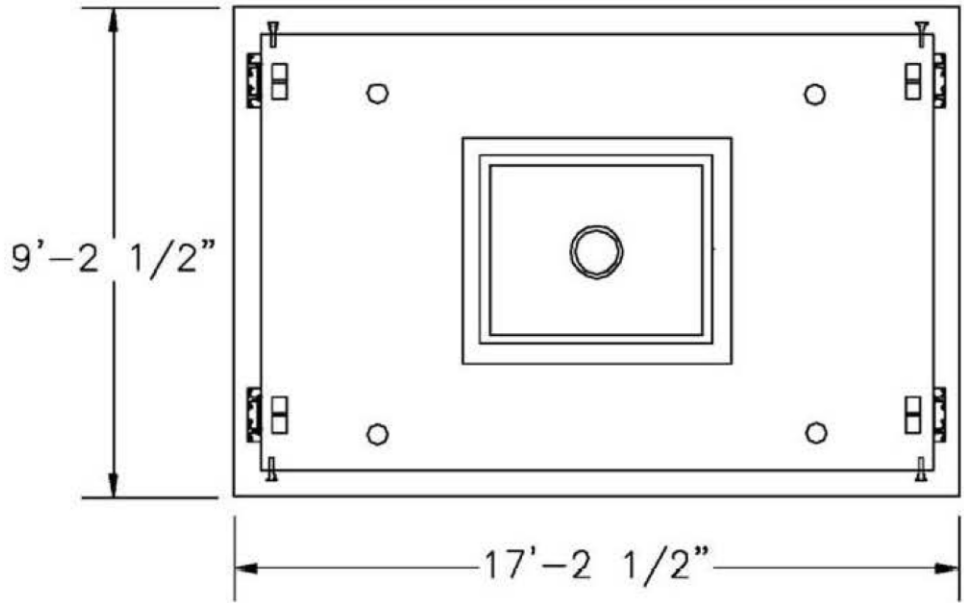


View Looking South from Rocky Point Drive (with wall built)

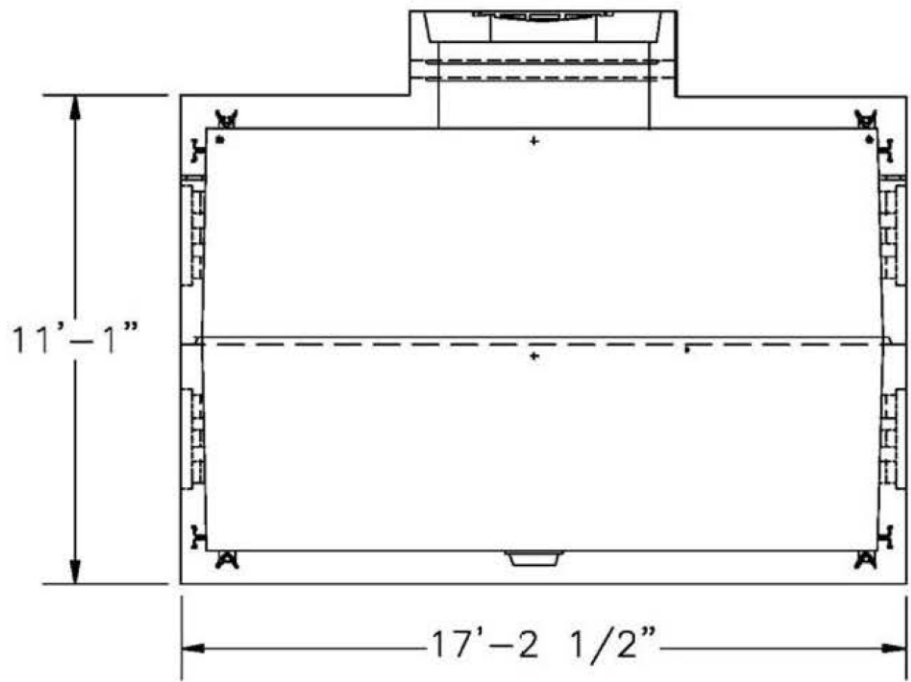


Source: SDG&E, 2016b.

Figure 4-7
Low-Profile Substation



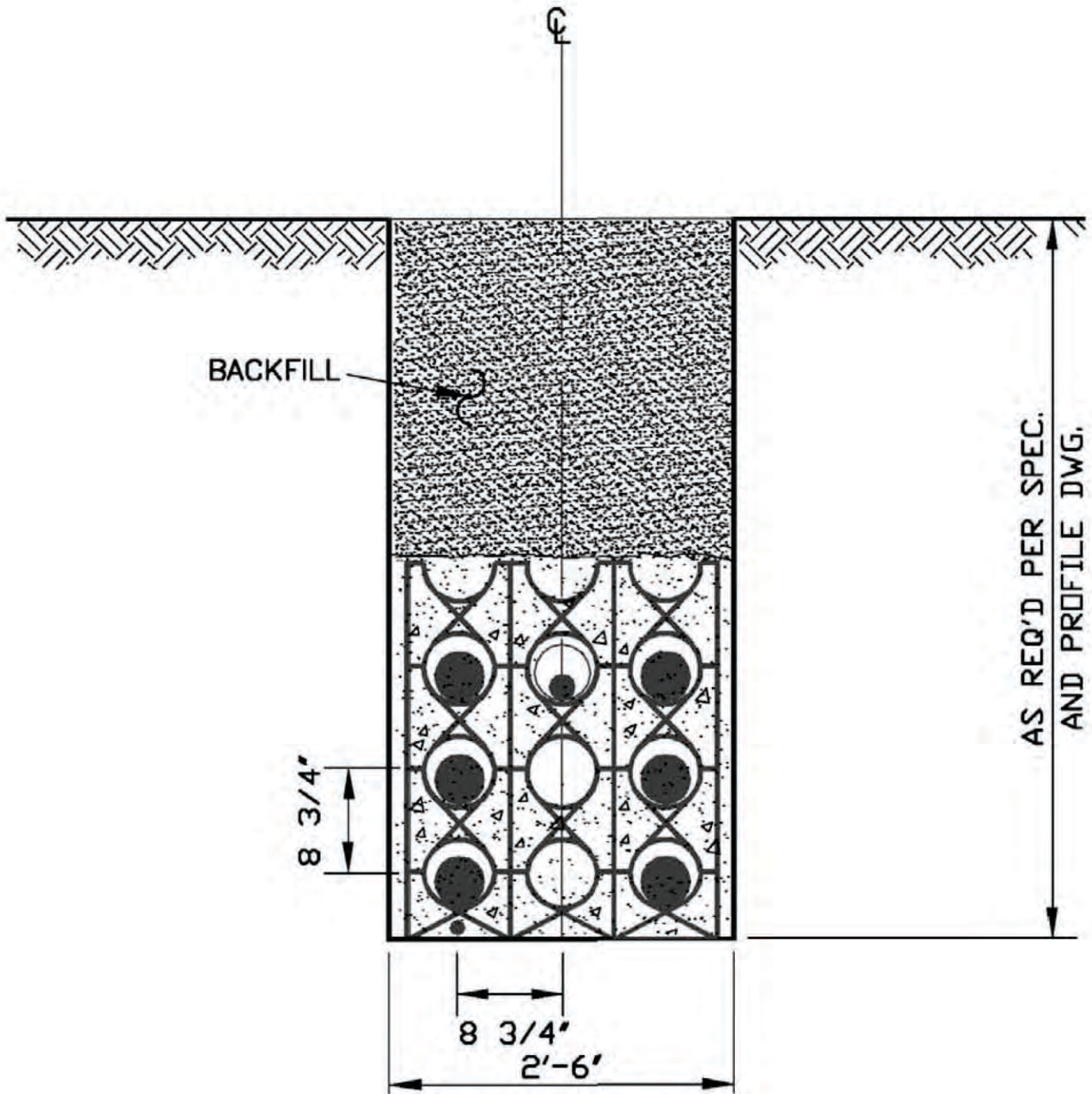
PLAN



ELEVATION

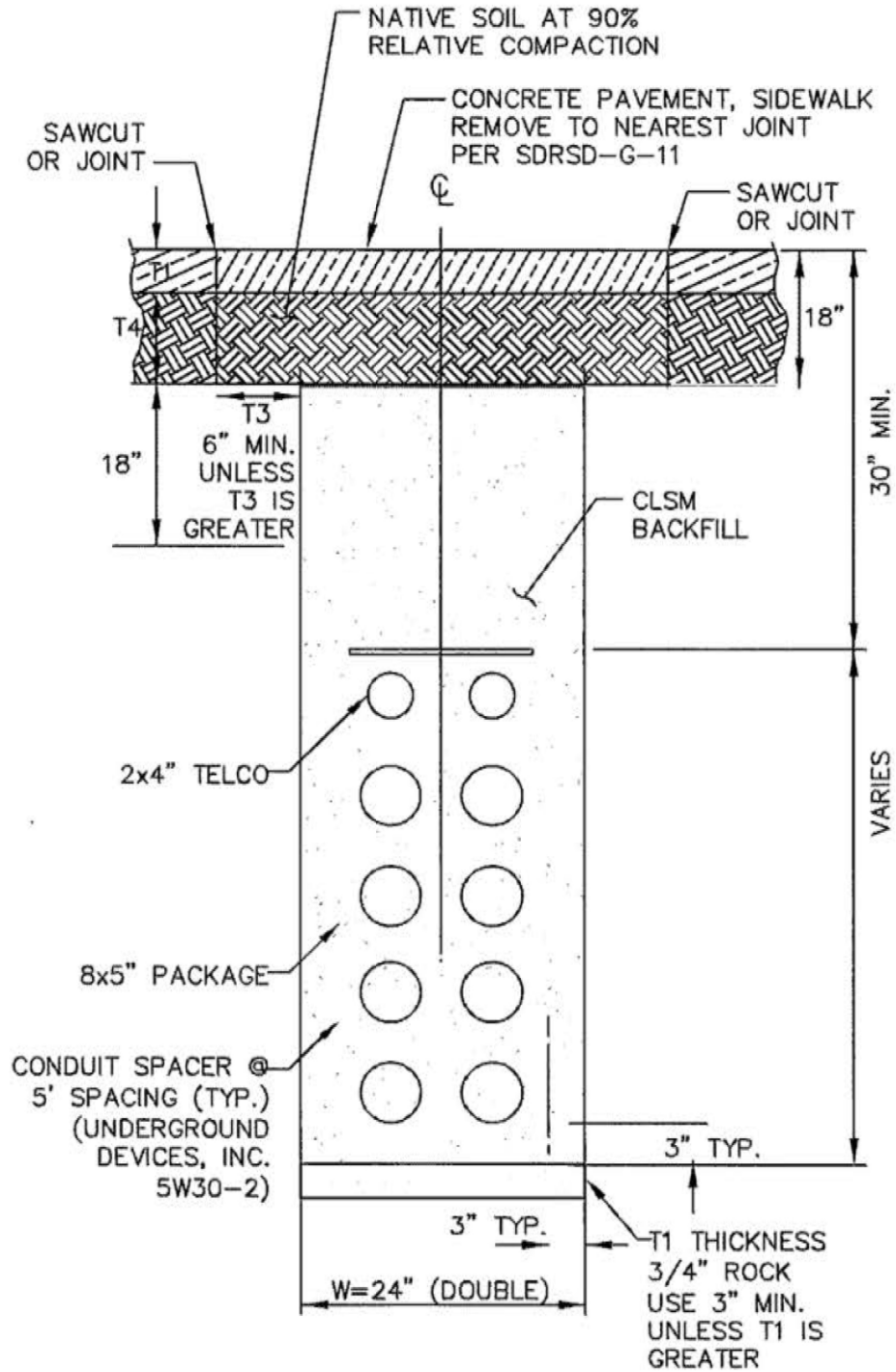
Source: SDG&E, 2016a.

Figure 4-8
Typical 69 kV Underground Vault



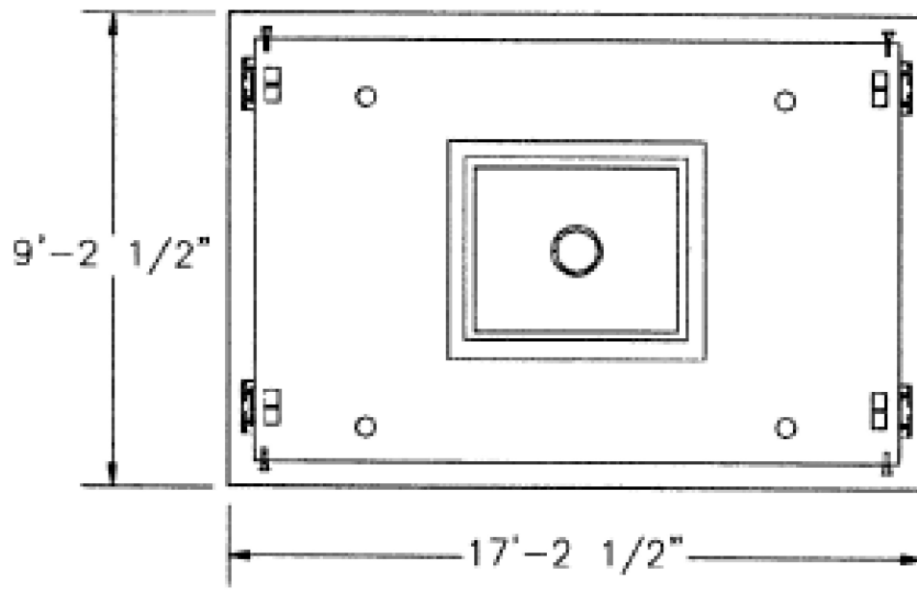
Source: SDG&E, 2016a.

Figure 4-9
Typical 69 kV Underground Duct Bank

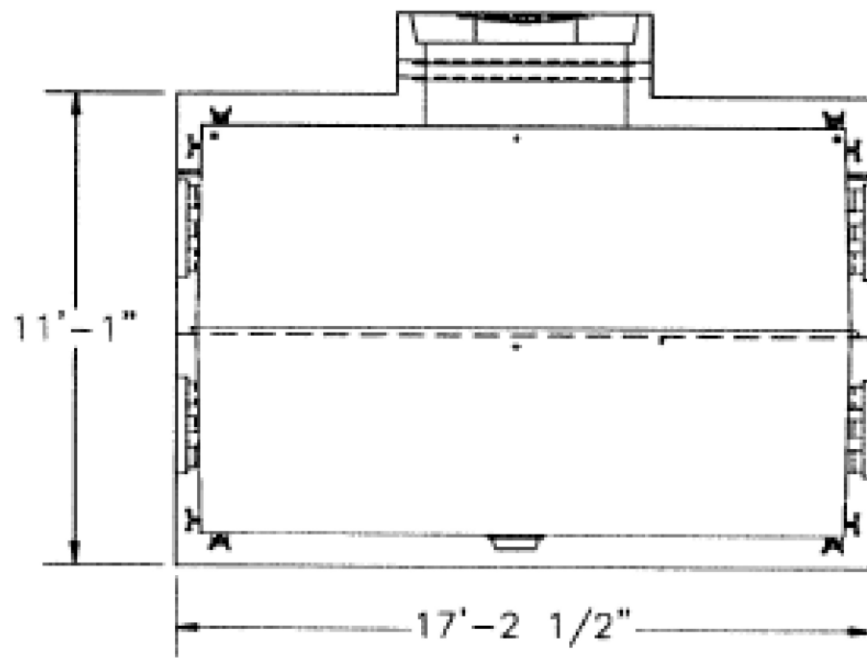


DETAIL 0

ASPHALT THICKNESS ENCOUNTERED IN THE POTHOLING VARIED BETWEEN x & x" THICK, UNDERLYING CONCRETE FOUND APPROXIMATELY x & x" THICK.



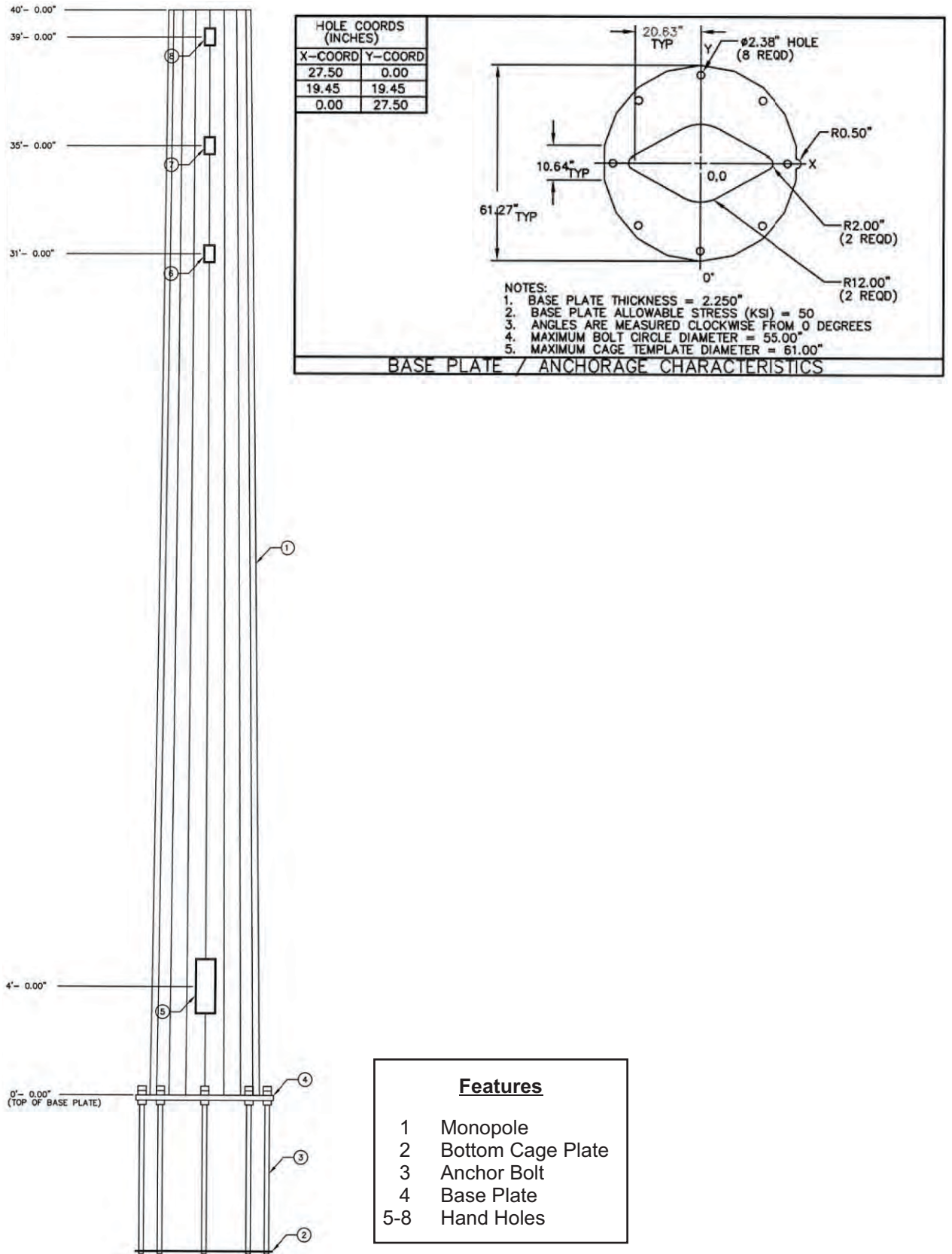
PLAN



ELEVATION

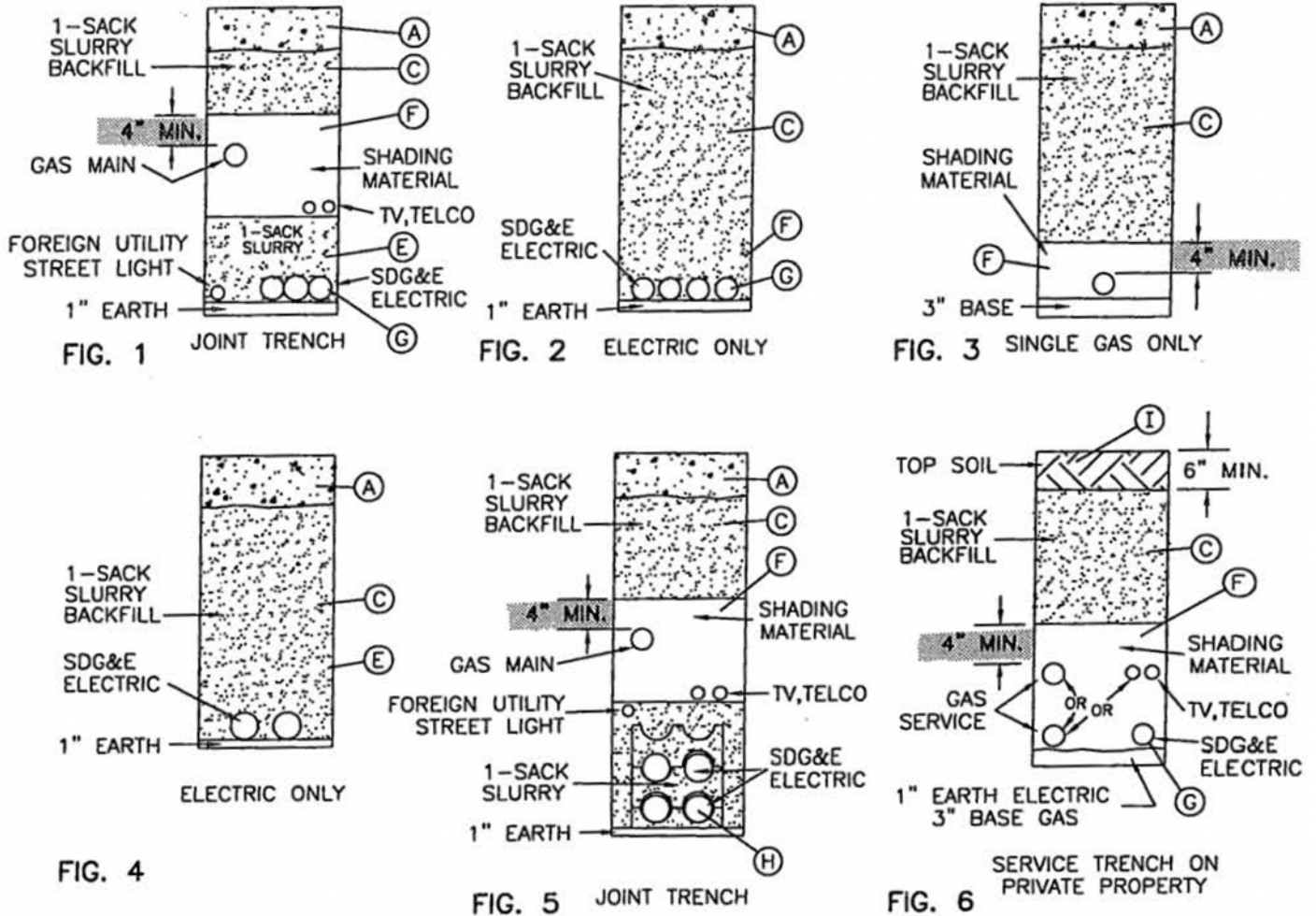
Source: SDG&E, 2016a.

Figure 4-11
Typical 12 kV Underground Manhole



Source: SDG&E, 2016b.

Figure 4-12
Typical Telecommunication Monopole



INSTALLATION:

- (A) ALL TRENCH RESURFACING SHALL BE DONE ACCORDING TO GOVERNMENTAL AGENCIES REQUIREMENTS.
 - B. SHADING MATERIAL SHALL MEET GAS STANDARD 7405 OR UNDERGROUND 3370/3371 SPECIFICATIONS AND MUST BE APPROVED BY AN SDG&E AUTHORIZED INSPECTOR.
 - (C) BACKFILL MATERIAL SHALL MEET THE GOVERNMENTAL (PERMITTING) AGENCIES REQUIREMENTS AND SDG&E STANDARDS. THE SAND USED FOR THE ONE SACK SLURRY OR TWO SACK, IF REQUIRED BY GOVERNMENTAL AGENCIES, MUST MEET THE CONCRETE SAND SPECIFICATION LISTED IN THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (GREEN BOOK) AND CONTAIN NO GRAVEL. SLURRY MUST BE FIRM BEFORE A PAVEMENT CONCRETE CAP IS INSTALLED. SLURRY IS TYPICALLY USED FOR BACKFILLING AROUND SUBSTRUCTURES, UNDER EQUIPMENT PADS, FOR TRENCHES IN EXISTING PAVED AREAS, AND UNDER CONCRETE OR PAVED DRIVEWAYS.
- IT MAY NOT BE APPROPRIATE TO USE ONE SACK SLURRY UNDER THE THE FOLLOWING CIRCUMSTANCES:
- GOVERNMENTAL AGENCIES DO NOT ALLOW ONE SACK OR MAY REQUIRE TWO SACK SLURRY BACKFILL.
 - INACCESSABILITY OF CONCRETE TRUCKS DELIVERING SLURRY.
 - WHEN SLURRY IS NOT COST EFFECTIVE.
 - NEW RESIDENTIAL SUBDIVISIONS, SINGLE FAMILY RESIDENCE SERVICE TRENCH
 - SHALLOW WELD HOLES, POT HOLES, ETC.



Source: SDG&E, 2016a.

Legend

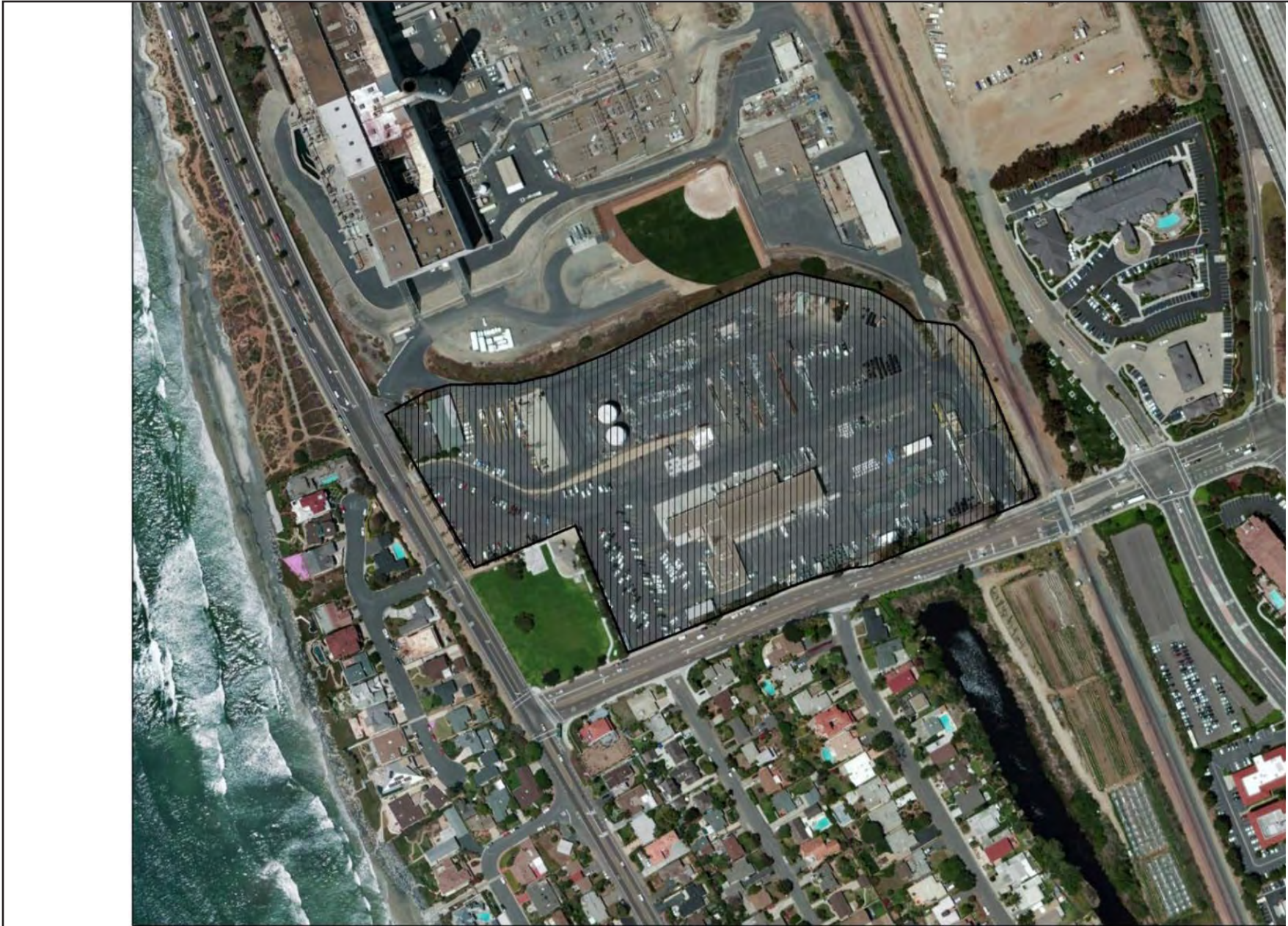
0 125 250 500
Feet

Existing Material Storage Yard

 Kearny

Figure 4-14

Kearny Construction and Operations Center



Source: SDG&E, 2016a.

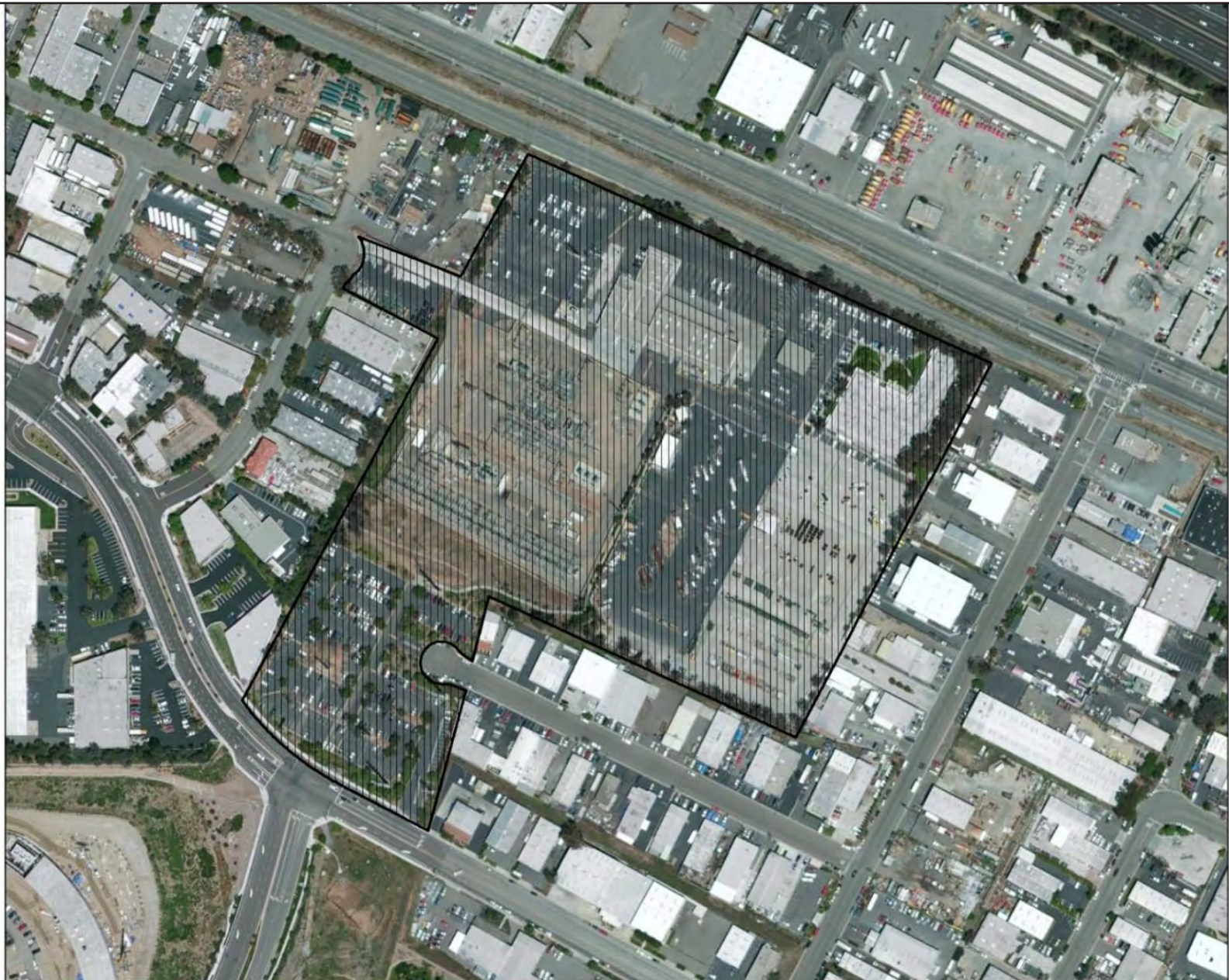
0 125 250 500
Feet

Legend

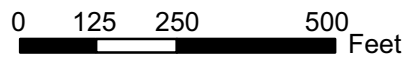
-  Existing Material Storage Yard
-  North Coast

Figure 4-15

North Coast Construction and Operations Center



Source: SDG&E, 2016a.



Legend



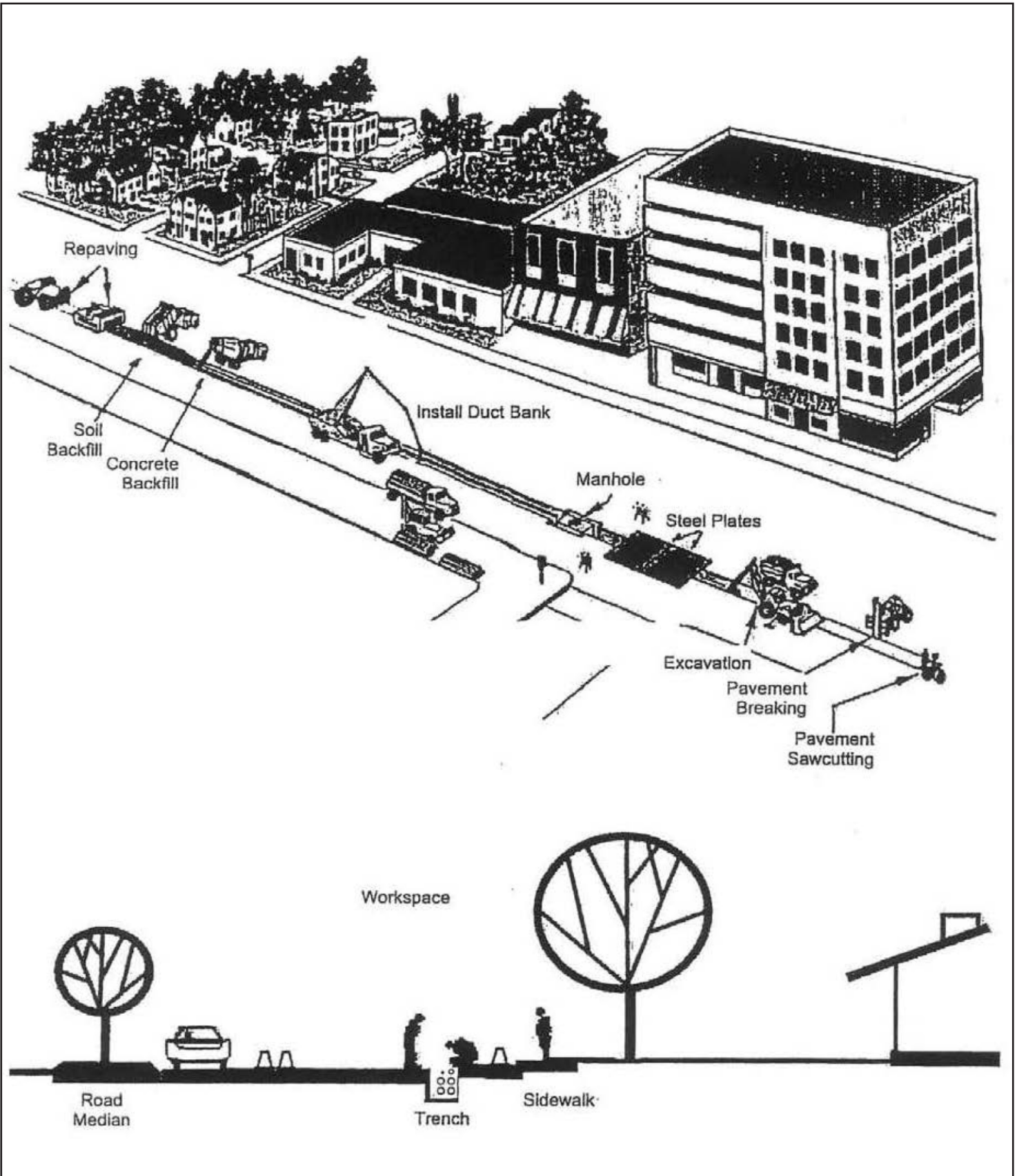
-  Existing Material Storage Yard
-  Northeast

Figure 4-16

Northeast Construction and Operations Center



Source: SDG&E, 2016a.

Figure 4-17
Typical Underground Construction
Process within Roadways