CEQA Project Description

June 2020

Hunter Substation Replacement Project

Prepared For:

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1.0 Introduction

TRC has been commissioned to provide Owner Engineering services for the City of Riverside Public Utilities' (RPU) Hunter Substation Replacement Project (Proposed Project or Project). RPU is required to comply with CEQA as part of their responsibilities associated with discretionary project decisions. This CEQA Project Description (Project Description) describes the Project, including construction and operations phases, to provide a basis for CEQA analysis. This Project Description is based on current, preliminary project design information developed by the TRC Engineering Team and input from RPU. Due to the ongoing nature of Project design, the CEQA Project Description may evolve over time. This Project Description also includes a description of the Project's technical, operational, engineering, and construction features/details, focusing on project parameters needed for environmental impact assessment. The Project Description, once approved by RPU, will be used for the preparation of the CEQA document and technical studies.

1.1 Project Location

The existing 69/12/4 kilovolt (kV) Hunter Electrical Substation (existing Hunter Substation) is located at 1731 Marlborough Avenue, near the intersection of Marlborough Avenue and Chicago Avenue, south of Columbia Avenue in the City of Riverside, California (refer to Figure 1, Project Vicinity Map and Figure 2, Project Location Map). The Project includes the existing substation site (APN 210-060-049), as well as the adjacent parcel (APN 210-060-033), which is also owned by the City of Riverside. The existing substation and the new substation areas (collectively referred to as the "Project Site") comprise approximately 2.5-acres of land located within an urban area.

1.1.1 Existing Land Uses

The western parcel of the Project Site (APN 210-060-033) is currently undeveloped. The Project Site is bordered by Chicago Avenue to the east with a railroad yard railroad right-of-way beyond, a concrete storm water drainage channel to the west with a residential neighborhood beyond, and commercial/industrial building developments to the north and south.

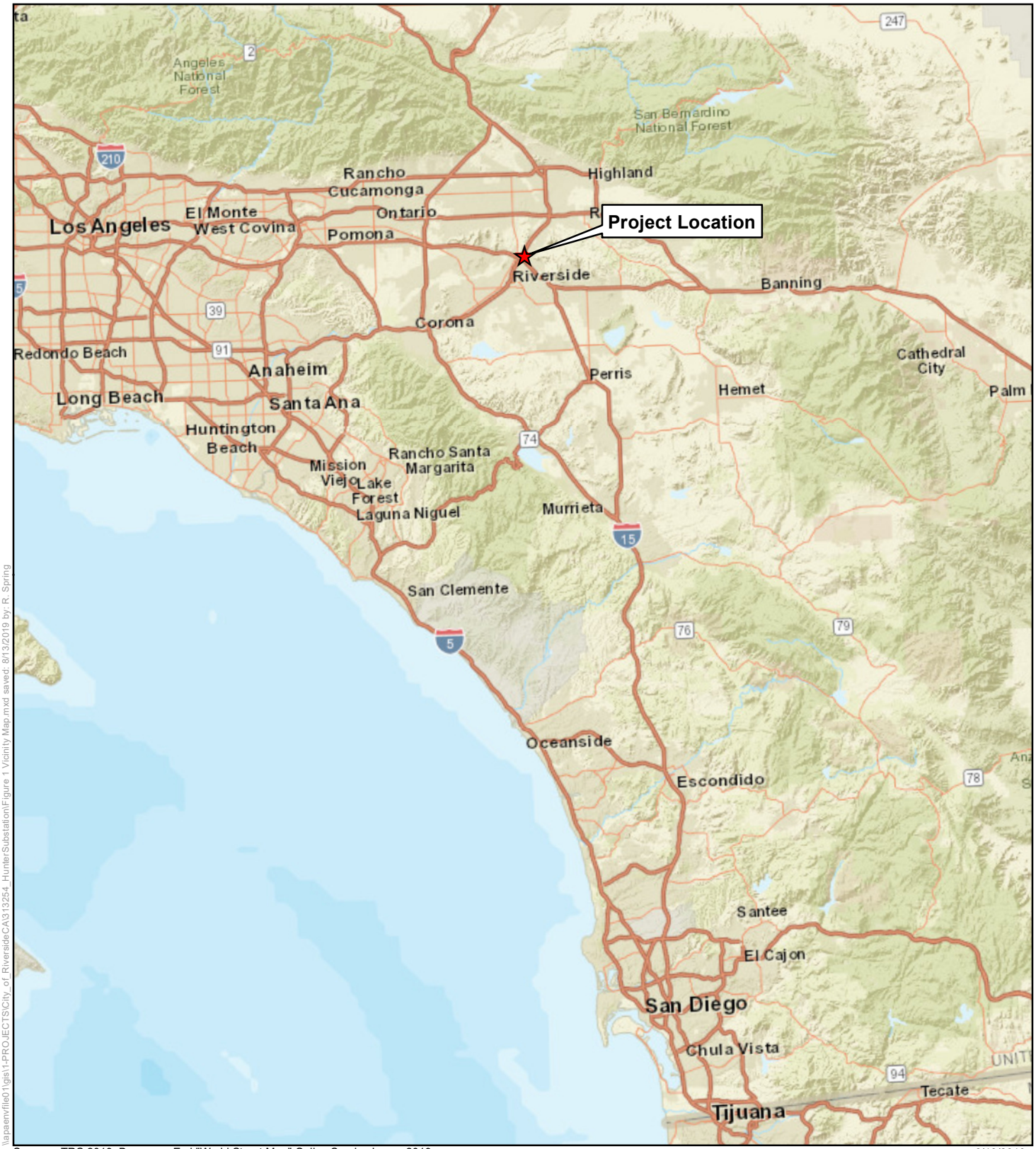
1.1.2 Project and Surrounding Zoning

Both parcels that consist the Project Site are zoned for Industrial (I), as are the adjacent parcels to the north, south, and east (across Chicago Avenue). The parcels to the west (across the water channel ROW), are zoned as Residential (R-1-7000).

1.2 Project Overview

The Proposed Project will replace the existing Hunter Substation with a new 69/12kV electrical substation (new or proposed Hunter Substation) to be located on an immediately adjacent vacant parcel (refer to Figure 3, Project Overview Map). Specifically, the Proposed Project will include the following main components:

1. Construction of a new 69/12kV Hunter Substation on previously disturbed land adjacent to and west of the existing Hunter substation;
2. Loop-in (i.e., connection to) four existing 69kV sub-transmission lines and 20 existing 12kV distribution lines to the new substation;
3. Decommissioning and removal of the existing substation; and
4. Construction and operation of a warehouse facility that will store equipment and materials used by RPU for operation and maintenance of the RPU electrical grid system.



Sources: TRC 2019, Basemap: Esri "World Street Map" Online Service Layer, 2019.

8/13/2019

★ Project Location

Hunter Substation Replacement Project

Vicinity Map

Figure 1

N

1:1,000,000
1 inch = 16 miles
(when printed 8.5x11)

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Miles

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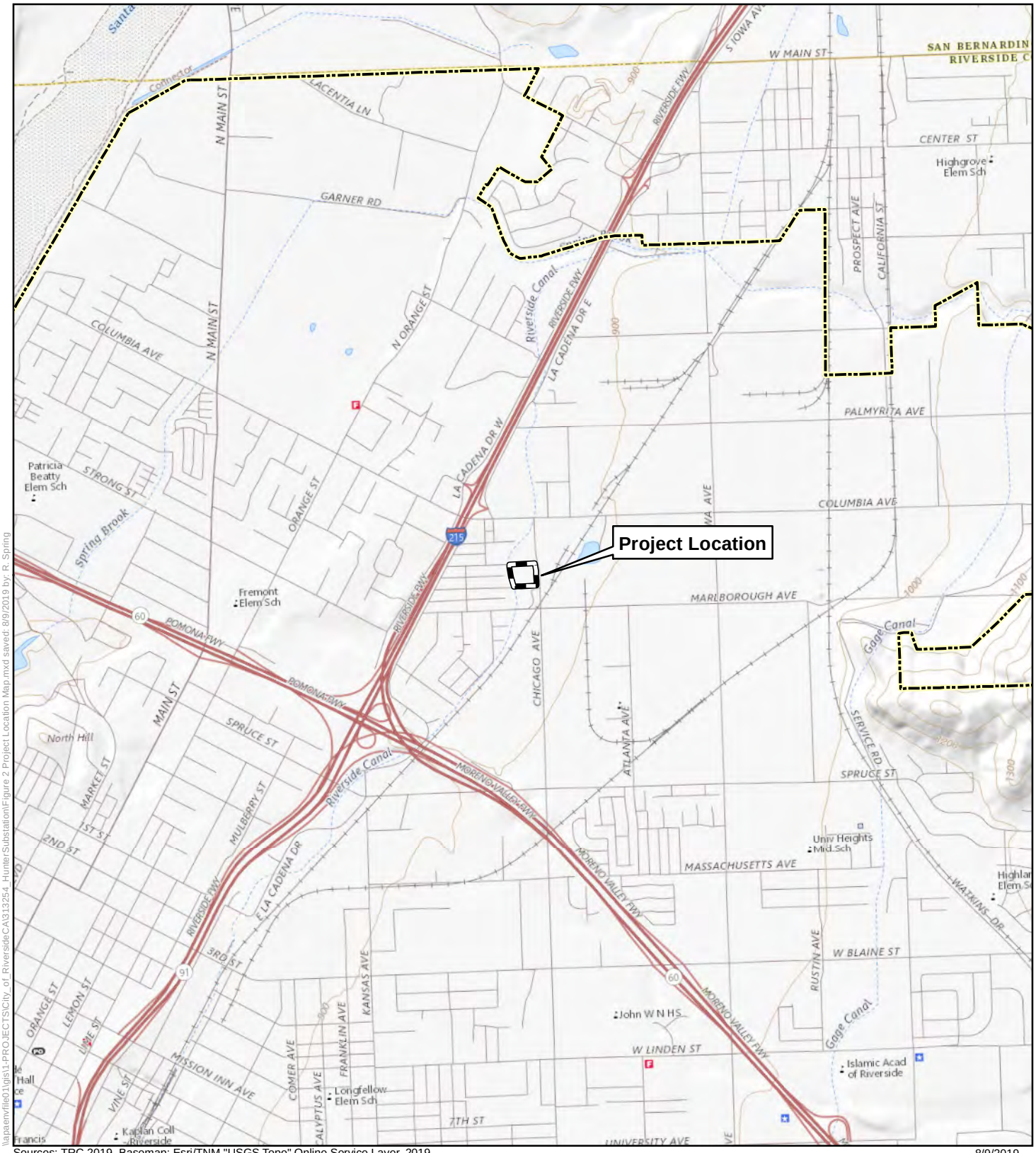
\\apanenvfile01\gis\1-PROJECTS\City_of_Riverside\CA\13254_HunterSubstation\Figure 1 Vicinity Map.mxd saved: 8/13/2019 by: R. Spring



\\apanemfile01\gis1\PROJECTS\City_of_Riverside\CA\13254_HunterSubstation\Figure 2 Project Location Map.mxd saved: 8/9/2019 by: R. Spring

Sources: TRC 2019, Basemap: Esri/TNM "USGS Topo" Online Service Layer, 2019.

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Project Location

City of Riverside Limits

Hunter Substation Replacement Project

Project Location Map

Figure 2

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1:24,000
1 inch = 2,000 feet
(when printed 8.5x11)

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\\apanmfile01\gis1-PROJECTS\City_of_RiversideCA\313254_HunterSubstation\Figure 3 Project Overview Map.mxd saved: 9/8/2019 by: R. Spring

Sources: TRC 2019; Parcel Boundaries Digital Map, 2019; Riverside Easement AGOL, 2019; Basemap: Esri/DigitalGlobe "World Imagery" Online Service Layer, 2018. 9/8/2019

- Overall Project Boundary
- Parcel Boundary
- Existing Hunter Substation Footprint
- Water Canal Easement

Hunter Substation Replacement Project
Project Overview Map
Figure 3

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1:1,200
1 inch = 100 feet
(when printed 8.5x11)

0 50 100 Feet

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1.3 Electrical Substations and Electric Grid Operations

Electrical substations are built and operated to convert electrical power (or electricity) from higher to lower voltages. Higher voltage electric power lines, typically referred to as *transmission or sub-transmission lines*[1], are used to transmit (or transport) electrical power over large distances, typically between where the power is created (i.e., power plant, photovoltaic solar array, wind turbine, etc.) and where it will be distributed for end use (i.e., cities or other developed areas where large groups of customers are located). Transmission lines are broadly defined as having voltage ratings above 100 kV and sub-transmission lines are defined as having voltage rating between 35 kV to 100 kV. Lower voltage electrical power lines, typically referred to as *distribution lines*, convey power from the electric substations to the individual customers (e.g., homes, businesses, etc.). Electric distribution lines are typically defined as having voltages below 35kV, but most distribution lines in California are operated in the immediate range of +/-12kV.

The existing Hunter Substation is a 69/12kV *distribution substation*[2] because it converts electricity from 69kV to 12kV. The Hunter Substation therefore intakes the higher voltage power from the greater RPU *Electric Grid*[3], and converts it to lower voltage for use by customers in the electric load area.

1.4 Project Purpose and Need

1.4.1 Overall Purpose and Need

The objective of the Proposed Project is to replace the aging existing Hunter Substation with a new substation to ensure reliability of service through the near term and extended future.

The current Hunter Substation was built in approximately 1960, and many of the existing substation components are near or past the end of their useful life. Replacing the entire substation with a complete new substation facility is a more efficient, cost effective, and viable long-term solution when compare to piecemeal replacement of parts and components. Additional detail is provided in the following subsections addressing the key aspects of the Project's purpose and need:

- Substation Load – the amount of electrical power that a substation must be able to supply
- Space and Outage Limitations – limits relating to usable space and backup electric load support
- Seismic Design Standards – Minimum design specifications that address seismic safety
- RPU Design Standards and Risk of Failure – Minimum specifications for RPU substations and risks due to aging and obsolete equipment and design

1.4.2 Substation Load

The Hunter Substation serves electricity to approximately 4,750 customers, and the electrical capacity of the substation is near the maximum design capacity. The 10-year load forecast in the Project service area is 20-25 megawatts (MW). The existing Hunter Substation does not have the electrical or physical capacity to serve this forecasted load. Also, the existing and projected Hunter

[1] *Transmission lines* are high voltage electric power lines that are utilized to transfer electricity large amounts of electricity over long distances.

[2] *Distribution substations* are defined as any substation that is connected to one or more distributions lines.

[3] The *Electric Grid*, or *Grid* for short, refers to the full system electrical transmission and distribution system, including generation, energy storage, energy transmission (i.e., transmission lines), and distribution (i.e., distribution lines).

substation load cannot be transferred to nearby stations due to the size of the load and the limited capacity of the nearby substations. Therefore, the Hunter Substation must be replaced and expanded to support the projected load growth.

1.4.3 Substation Seismic Design

A seismic study was conducted several years ago to evaluate the integrity of the Hunter Substation structures. The study recommendation was to replace a majority of the structures because they were found to be beyond rehabilitation in terms of achieving current seismic standards. Therefore, the Hunter Substation must be rebuilt to be compliant with current seismic design standards.

1.4.4 RPU Design Standards and Risk of Failure

Aging substation infrastructure pose risks to the reliability of the electrical system. RPU engineering determined that the substation deteriorated infrastructure could result in costly failures which will dramatically reduce the reliability of the RPU electric system and increase customer outages. Also, the substation bus configuration utilizes a segmented design that offers poor reliability and does not meet RPU's current design standard. Updating the substation is required to bring the substation to compliance with RPU design standards, improve system reliability, and mitigate risk of outage.

1.4.5 Space and System Outage Constraints

As explained above, the existing Hunter substation load (4,750 customers) cannot be transferred to nearby stations due to the size of the load and the limited capacity of the nearby substations. Therefore, the existing Hunter Substation cannot be demolished prior to building and energizing the new substation. However, the current Hunter Substation site has very limited space which is not sufficient to build a new substation while not reducing the capacity of the existing substation. The only viable solution is to build the new Hunter Substation on adjacent land and only demolishing the existing substation following energization of the new substation. The adjacent parcel to the west of the existing Hunter Substation site (APN 210-060-033) will be utilized to construction the new Hunter Substation, while allowing for the existing substation to operate un-restricted.

2.0 Project Description

This section provides a detailed description of the existing and proposed project components, including the design, ratings, location, and physical size (all as applicable for each project component).

2.1 Existing Hunter Substation and Electrical System

The existing Hunter Substation is a 69/12kV distribution, *air insulated substation*[4] (AIS) approximately one acre in size (fenced area). The existing Hunter Substation was construction in approximately 1960 and has been operated continuously since then by RPU. RPU has made upgrades and incrementally increased the capacity of the substation since its initial construction.

[4] Electric substations require an insulating substrate to insulate certain energized portions of the substation. The most common method is to use the existing atmosphere, or air, for this insulating substrate. Therefore, these substations are referred to as *air insulated substations*, or AIS.

The existing Hunter Substation includes the following key features and equipment:

- (4) Four 69kV Sub-transmission Lines
- (8) Eight 69kV Circuit Breakers
- (20) Twenty 12kV Distribution Lines
- (2) Two 69kV-4.36kV Power Transformers
- (4) Four 69kV-12kV Power Transformers
- (2) Two 4kV Switchgears
- (4) Four 12kV Switchgears
- (1) One 15kV, 2 Stages of 3000kV Capacitor Bank

Access to the existing Hunter Substation is from the east (access directly to Chicago Avenue) and from the north where a substation gate is located at the end of an approximately 150-foot paved driveway that leads from Chicago Avenue to the gate that served as the previous access to the eastern parcel (refer to Figure 4, Existing Site Layout Map).

2.2 Proposed New Hunter Substation

The proposed new Hunter 69/12kV distribution substation will be an AIS with four bays and a breaker-and-a-half configuration. The new Hunter Substation will be constructed on an undeveloped parcel immediately adjacent to the existing Hunter Substation. However, some features of the new substation may ultimately be located on the existing substation site. Key features of the proposed new Hunter Substation, including site layout and arrangement, key equipment specifications and ratings are discussed in the following sub-sections.

2.2.1 Site Layout

2.2.1.1 Overall Site Layout

The Proposed Project site consists of the existing approximately 1.12-acre Hunter Substation site and northern driveway (or eastern parcel) and the adjacent 1.38-acre vacant parcel (western parcel) where the majority of new Hunter Substation will be constructed. A minimum 10-foot concrete masonry (CMU) perimeter security wall will be constructed around the active substation portion of the overall Project Site (approximately 2.26 acres). If needed for substation security, and if consistent with substation design standards, RPU may increase the height of the perimeter security wall to as tall as 14 feet. As an additional security measure, RPU may install barb wire and/or razor wire on top of the CMU perimeter security wall. Figure 5, Proposed Site Layout Map, depicts the key substation site elements in relation to the current surroundings.

The preliminary General Arrangement drawing is provided in Appendix A and depicts the location and orientation of the major substation equipment.

\\apanemfile01\gis1\PROJECTS\City_of_RiversideCA\313254_HunterSubstation\Figure 4 Existing Site Layout Map.mxd saved: 9/8/2019 by: R. Spring

Sources: TRC 2019; Parcel Boundaries Digital Map, 2019; Riverside Easement AGOL, 2019; Basemap: Esri/DigitalGlobe "World Imagery" Online Service Layer, 2018. 9/8/2019

Overall Project Boundary
Existing Hunter Substation Footprint
Water Canal Easement
Parcel Boundary

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1:1,200
1 inch = 100 feet
(when printed 8.5x11)

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Hunter Substation Replacement Project
Existing Site Layout Map
Figure 4

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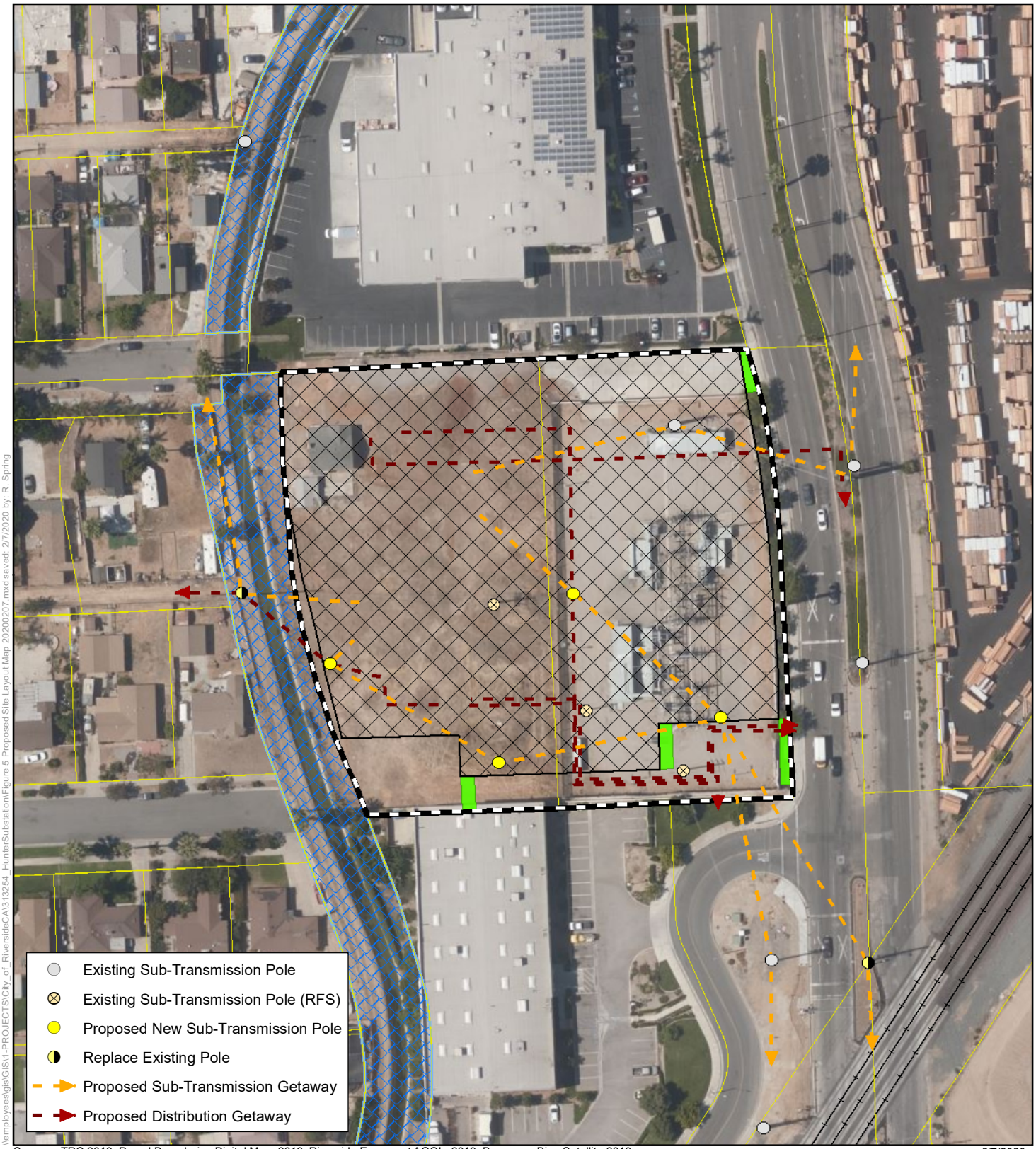

\\employees\gis\GIS1-PROJECTS\City_of_RiversideCA\313254_HunterSubstation\Figure 5 Proposed Site Layout Map 20200207.mxd saved: 2/7/2020 by: R. Spring

Sources: TRC 2019; Parcel Boundaries Digital Map, 2019; Riverside Easement AGOL, 2019; Basemap: Bing Satellite 2019.

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Overall Project Boundary
Proposed Hunter Substation Footprint
Water Canal Easement
Parcel Boundary

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1 inch = 100 feet
(when printed 8.5x11)

0 50 100 Feet

Hunter Substation Replacement Project
Proposed Site Layout Map
Figure 5

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2.2.1.2 Water Site

In addition to the new Hunter Substation facility, a small portion (approximately 4,000 square feet) of the western parcel will be dedicated for use by the RPU Water Division (Water Site). The dedicated Water Site will not be located within the walled substation facility (refer to Figure 5). The Water Site is not part of the Project and will be held for potential future development by the RPU Water Division.

2.2.1.3 Site Access

As shown on Figure 5, proposed access to the new Hunter Substation will be from two existing gates/driveways off Chicago Avenue to the east. The southern driveway will ultimately be extended west approximately 150 feet (through the existing the substation site) to connect to the western parcel where the new substation will be constructed. This southern driveway will lead directly to the Water Site, where a gated entrance into the substation will be installed, creating an access point into the substation from the south while maintain a separate gate and entrance to the Water Site.

The existing paved northern driveway currently stops at the border between the eastern and western parcels. This driveway previously provided access to the existing Hunter Substation (from the north) and to the eastern parcel from the west. The northern driveway will be extended into the western parcel, providing direct access to the new substation yard.

2.2.2 Substation Specifications and Equipment

The new Hunter Substation will have a breaker-and-a-half configuration with 4 bays, and will include the following major components:

- Connection to four existing 69kV sub-transmission lines;
- Connection to 20 distribution lines (four per switchgear);
- Four 69/12.47kV power transformers;
- Four distribution switchgears; and
- Four 15kV, 3-stages of 2000KVAR capacitor banks.

2.2.3 RPU Property and Rights-of-Way

The Proposed new Hunter Substation will be constructed adjacent to the existing substation site, on city-owned property. The Proposed Project will only affect the substation facility and the sub-transmission and distribution line *getaways*[5]. All the getaways will be located within existing City rights-of-way and easements, and no new land rights will be required.

[5] *Substation getaways* are defined as the segment of an electric power line (transmission, sub-transmission, or distribution) between the connection point with a substation and the first downstream power line support structure located outside of the substation boundary. The first downstream support structure is typically either an overhead support structure (such as wood poles and tubular steel poles), an overhead/underground transition structure (such as a cable riser pole), or an underground vault.

2.3 Proposed Substation Getaways

As outlined above, the proposed new Hunter Substation will be connected to four 69kV sub-transmission lines and 20 distribution lines. The proposed getaways will mirror the existing substation getaways, including re-use of overhead support structures, underground duct banks, and underground vaults where possible. The proposed sub-transmission and distribution getaways are further discussed below and are depicted on Figure 5, Proposed Site Layout Map.

2.3.1 Sub-transmission Line Getaways

As stated above, the new Hunter Substation will be connected to four existing 69kV sub-transmission lines. One of the sub-transmission lines will enter the substation from the west, one from directly east, and the remaining two from the southeast (refer to Figure 5). All four sub-transmission lines will connect to the new substation rack in an overhead position. To facilitate connection of the southern lines into the new substation rack, four new steel poles will be installed within the substation footprint (refer to Figure 5). In addition, two existing wood poles will be replaced with new steel poles (refer to Figure 5). A total of 3 existing wood poles will be removed from service (i.e., not directly replaced), all located within the substation site.

2.3.2 Distribution Line Getaways

As stated above, the new Hunter Substation will connect to 20 12kV distribution lines. All 20 distribution line getaways will be in an underground position, consistent with the current distribution getaways. All but two of the distribution line getaways will enter the new Substation yard from the east or southeast (refer to Figure 5). The remaining two will enter the substation from the west. The new getaways will be constructed by trenching and installation new *duct bank*[6] from the new substation yard until reaching connection points with the existing underground distribution line getaways. Existing distribution line vaults will be re-used for the new getaways.

2.4 Proposed RPU Storage Facility

Once the existing Hunter Substation is removed and the new substation is under operation, the remaining unused space on the eastern parcel will be redeveloped into a storage facility for RPU (refer to Appendix A). The new storage facility will include one new single-story storage structure (25 feet tall, 40 feet wide, and 80 feet long), with a mezzanine, parking, water and sewer connections, office space, and storage space. The storage structure will be made using metal and will primarily be used to store spare substation parts, materials, and equipment. The facility may also be used to store equipment related to capital improvement projects. The storage facility will serve only RPU and will be located within the substation CMU perimeter security wall.

2.5 Landscaping

2.5.1 Landscape Concept

The Landscape Concept for the Project incorporates a number of recommendations, including retention of existing, water efficient landscaping, and utilization of hardscaping options that will require no water. This landscape strategy will help minimize energy and water usage.

[6] *Duct banks* are a grouping, or bundle, of PVC (or other materials) conduits that are surrounded, or encased, in a projective casing. For underground electrical infrastructure, the casing is typically concrete. All underground electrical lines are currently installed within a duct bank system.

Specifically, the existing landscaping along Chicago Avenue will be retained in place, with the exception of eight large trees, which will be replaced. The large trees will be replaced with shorter species that do not interfere with the substation wall or substation security. Existing landscaping along the northern border of the Substation Site would also be retained. By retaining existing landscaping to the greatest extent possible, the site will retain existing visual character and water use will be minimized. Retention of existing landscaping would effectively reduce construction costs and impacts.

Along the northern and western walls, rock will be placed within the space between the perimeter wall and the property line (approximately 5 feet). In addition, synthetic ivy will be utilized along the western perimeter wall as screening for the residents located to the west of the canal.

2.5.2 Landscape Plan

Appendix B contains a Landscape Concept Plan for use in assessing the potential adverse effects of the Project under CEQA. While the Landscape Concept Plan is preliminary and will be revised during final engineering, the Concept Plan provides a vehicle for RPU and public review. The final Landscape and Irrigation Plans will be approved by RPU in consultation with the City of Riverside Public Works department.

3.0 Project Construction

This section includes an overview of the typical methods, equipment, and work force that would be used for construction of the Proposed Project. Construction of the Proposed Project will be conducted by a construction contractor under contract to RPU and is anticipated to take approximately 17 months total to complete. Construction is currently anticipated to begin in the summer of 2022 and be completed by fall of 2023. Unless otherwise noted, construction activities are anticipated to occur between the hours of 7am and 7pm, Monday through Friday, consistent with the City of Riverside Noise Ordinance. If construction is required on one of more Saturdays, construction activities will be limited to the hours between 8am and 5pm, also consistent with the Noise Ordinance.

3.1 Construction Phasing

Construction of the Proposed Project will occur in distinct phasing, in order to complete the Hunter Substation replacement without loss of electric service. Because the Hunter Substation is a distribution substation, it feeds thousands of end users. Therefore, the new Hunter Substation will be constructed adjacent to the existing substation, while the existing substation remains in service. The existing substation will not be de-energized until the new substation is ready to be energized. Table 1 below outlines the general construction phasing.

Table 1: Construction Phasing

Construction Phase [a]	Description	Approximate Duration
1	Mobilization	2 days
2	Material Delivery and Inventory	1 month [b]
3a	Grading and Site Preparation - Western Parcel	2 weeks
3b	Temporary relocation of Sub-transmission Line 3 and distribution Circuit 1222.	2 weeks
4a	Civil Survey and Marking	1 day
4b	Below-Grade Civil Construction for the new Hunter Substation (Western parcel)	2 months
4c	Electrical Below-Grade Construction for the new Hunter Substation (Western Parcel)	1 month
5	Underground Distribution Getaways.	2 months
6a	Above-grade (structural) construction for the new Hunter Substation. (western parcel)	2 months
6b	Above-grade (Electrical) construction for the new Hunter Substation (Western Parcel)	2 months
7	Sub-transmission getaways (overhead).	2 weeks
8	Substation testing, energization, and cutover	2 days
9	Demolition and Salvage of the old Hunter Substation (eastern parcel)	2 months
10	*Grading and site preparation (eastern parcel)*	*1 week*
11	*Below grade construction for the storage facility (eastern parcel)*	*2 months*
12	*Above grade construction for the storage facility (eastern parcel)*	*2 months*

Notes:
[a] While construction phases will occur generally in the order listed, some overlap may occur. The total duration of construction is anticipated to be approximately 17 months.
[b] Construction Phase 2 (material delivery and inventory) will occur simultaneously with phases 3a and 3b. 3a and 3b will occur in succession.
For the purposes of CEQA analysis, construction of the Storage Building was assumed to occur following completion of the new substation. However, this portion of construction may ultimately occur later in the future.

3.2 Substation Construction

Construction of the new Hunter Substation will have four major steps that occur in sequential order:

- Grading and site preparation,
- Below grade construction,
- Above grade construction, and
- Testing, energization, and cutover.

Each of these phases of substation construction are described below.

3.2.1 Mobilization and Set-up (Phase 1)

As the first step of construction, the contractor will mobilize initial crews to the project site, install SWPPP BMPs. The contractor will also locate, identify, and mark-out any existing utilities at the

Project Site. Mobilization and set-up will typically include a small work crew (2-5 workers) and use of standard work trucks, a forklift, a dozer, a compactor, and a water truck.

3.2.2 Material Delivery and Inventory (Phase 2)

Following mobilization and installation of BMPs, material and equipment delivery will begin. As materials and equipment are brought to the site, the construction contractor will carefully inventory all delivered items. While this phase of construction will have a duration of approximately one month, this will occur simultaneously with phases 3a and 3b. It is also important to note that not all project materials and equipment will be delivered at this time; some equipment (such as new transformers) will not be delivered to the site until they are ready to be installed. Construction offices (trailers) will also be delivered to Project Site. Material delivery and inventory will utilize a small work crew (2-5 workers) that will overlap with crews assigned to Phases 3a and 3b. Similarly, the construction equipment utilized will largely overlap with Phases 3a and 3b, with the addition of a forklift.

3.2.3 Grading and Site Preparation (Phases 3a and 3b)

3.2.3.1 Description of Activities

Grading and site development activities would include the following:

- Demolition and/or removal of the buildings, foundations, vegetation, and any other miscellaneous structures located on the western parcel,
- Grading of the new substation site (western parcel) (Phase 3a),
- Construct temporary relocation of sub-transmission Line 3 and distribution Circuit 1222 (Phase 3b),
- Demolition of the existing substation western wall,
- Extension of the northern driveway into the western parcel, and
- Construction of the new CMU substation security wall.

After clearing the western parcel of existing buildings and miscellaneous structures (fencing, concrete steps, remnant foundations, etc.), the existing sub-transmission Line 3 and distribution line Circuit 1222 will be temporarily relocated. This is required because the existing substation getaways for these two lines cross the middle of the western parcel site and grading activities cannot commence until the two lines are temporarily relocated. This relocation is temporary because both lines will ultimately be connected to the new Hunter Substation yard, which will be construction on the western parcel.

Following completion of the line relocations, grading will be performed per design plans to prepare the site for the construction of the relocated 69/12kV substation yard. This phase of the site development work will include grading (cut and fill). Total western parcel cut and fill from grading activities would be approximately 832 cubic yards (net import). To achieve uniform support, the underlying soils may be excavated below the ultimate pad grade, then backfilled and compacted per geotechnical recommendations. Excavation is anticipated to reach a depth of approximately 5 feet.

Following completion of grading activities, the new CMU security wall (which will encompass the

majority of both east and west parcels), and the northern and southern driveway expansions will be constructed. Construction of the new CMU security wall may overlap with underground construction at the western parcel.

3.2.3.2 Typical Construction Work Force

Typical construction work forces for grading and site preparation will be relatively small given the small size of the western parcel. The typical workforce will vary between 5 and 8 workers.

3.2.3.3 Typical Construction Equipment

Site preparation and grading activities will typically include the following construction equipment[7]:

- Dozer
- Grader
- Scraper
- Compactor
- Skip loader
- Backhoe
- Work trucks
- Haul/dump trucks
- Water trucks

In addition, the temporary relocation of sub-transmission Line 4 and distribution Circuit 1222 will require the following equipment:

- Bucket truck
- Drill rig
- Pull rig
- Forklift
- Wire truck
- Work trucks
- Truck-mounted crane

3.2.4 Civil (Below Grade) Construction (Phases 4a, 4b, and 4c)

3.2.4.1 Description of Activities

Prior to starting the civil work on the western parcel, the construction contractor will survey the newly graded parcel to establish a base line and survey grid (Phase 4a). This must be completed prior to commencement of civil construction to ensure project component locations.

[7] Not all equipment would necessarily be needed, and not all equipment would be used simultaneously.

Following completion of grading and site preparation activities on the western parcel, below grade work will commence. Below grade construction will include the following steps:

- Drilling and pouring piers, footings, foundations, and equipment and structure pads (Phase 4b). This includes drilling and installation of foundations for new sub-transmission poles.
- Installation of underground equipment, cable trench from the outdoor equipment to the control room, installation of the ground grid, and wiring (Phase 4c).

It is important to note that the underground distribution line getaways would occur at least partially concurrent with below grade substation construction.

3.2.4.2 Typical Construction Work Force

Typical construction work forces for below grade construction will be relatively small give the small size of the site. The typical workforce will vary between 3 and 12 workers, with an average of 7 workers on site during this phase.

3.2.4.3 Typical Construction Equipment

Below grade construction activities will typically include the following construction equipment:

- Excavator
- Backhoe
- Drill Rig
- Skip loader
- Forklift
- Cement truck
- Work trucks,
- Haul/dump trucks
- Water trucks

3.2.5 Above Grade Construction (Phase 6a and 6b)

3.2.5.1 Description of Activities

Following completion of the foundations and below ground substation facilities, the above-ground equipment will be installation (Phase 6a). Specifically, the above grade construction will include installation of the new 69/12kV transformers, switchgear, capacitor banks, other substation structures and equipment, and the new control house.

Following installation of the above-grade substation equipment, wiring of the new equipment is performed, including pulling and terming control cable, comm cable, and grounds (Phase 6b). The control/protection panels, equipment, and batteries will also be installed and wired in the control house as part of Phase 6b.

3.2.5.2 Typical Construction Work Force

Typical construction work forces for the above grade construction will be the largest workforce for the Proposed Project. The typical workforce can vary between 10 and 15 workers, with an average of 12 workers on site during this phase.

3.2.5.3 Typical Construction Equipment

Above grade construction activities will typically include the following construction equipment:

- Bucket truck or manlift
- Line truck
- Boom truck
- Large Crane
- Stringing rig
- Cable reel trailer
- Relay/ Telecommunication/ Wiring Van
- SF_6 gas cart (electric)
- Portable generator
- 100-hp Oil Processing Truck
- Work trucks
- Water trucks

3.2.6 Energization and Cutover (Phase 8)

3.2.6.1 Description of Activities

Following completion of the above ground substation facilities and equipment installation, relay testing, substation cutover, and energization occur. These are the final steps for construction of the new Hunter Substation. Prior to cutover and energization of the new substation, the contractor must obtain an outage of the affected lines. The outage is a temporary de-energization of each affected line so that the new substation can be connected to the Grid.

3.2.6.2 Typical Construction Work Force

Typical construction work forces for the final wiring, testing, and energization of the substation will be relatively small. The typical workforce can vary between 4 and 8 workers, with an average of 6 workers on site during this phase.

3.2.6.3 Typical Construction Equipment

Final substation wiring, testing, and energization activities will typically include the following construction equipment:

- Relay/ Telecommunication/ Wiring Van

- Wire truck
- Line truck
- Bucket truck
- Work trucks

3.3 Substation Getaways

3.3.1 Sub-transmission Line Getaways (Phase 7)

3.3.1.1 Description of Activities

The new Hunter Substation will connect to the same four 69kV sub-transmission lines that feed the existing Hunter Substation. As with the existing getaways, the new sub-transmission getaways will be in an overhead position. In order to connect sub-transmission Line 4 to the new substation rack, a new sub-transmission pole will need to be installed in the southwest corner of the substation site (refer to Figure 5). Existing wood sub-transmission structures will be replaced with new steel structures.

Otherwise, the new sub-transmission getaways will be installed from new and existing steel sub-transmission poles to the new substation rack (refer to Figure 5). New conductor will be strung from the existing poles and connected to the new substation rack. The specific order of connecting and energizing the sub-transmission lines will be based on final construction plans and coordination with RPU for system outages.

3.3.1.2 Typical Construction Work Force

Typical construction work forces for the sub-transmission line getaways will be relatively small. The typical workforce can vary between 4 and 6 workers, with an average of 5 workers on site during this phase.

3.3.1.3 Typical Construction Equipment

The sub-transmission line getaways will be constructed using the following construction equipment:

- Stringing rig
- Cable reel trailer
- Drill rig
- Truck-mounted crane
- Wire truck
- Line truck
- Haul/Dump trucks
- Bucket truck
- Work trucks

3.3.2 Distribution Line Getaways (Phase 5)

3.3.2.1 Description of Activities

The new hunter substation distribution line getaways will be in an underground position, similar to the existing getaways. The new getaways will be installed within a combination of new duct bank (in new trenches) and existing duct banks. New trenching and duct bank installation will occur mainly on the western parcel and will continue until intercepting the existing distribution line getaways at various location on the eastern parcel (refer to Figure 5).

3.3.2.2 Typical Construction Work Force

Typical construction work forces for the distribution line getaways will be larger than for the sub-transmission line getaways, because they will be installed in an underground position. The typical workforce can vary between 4 and 12 workers, with an average of 10 workers on site during this phase.

3.3.2.3 Typical Construction Equipment

The distribution line getaways will be constructed using the following construction equipment:

- Puller/ tensioner
- Cable reel trailer
- Backhoe
- Truck-mounted crane
- Concrete truck
- Haul/Dump trucks
- Water truck
- Work trucks

3.4 Demolition and Salvage of the Existing Substation (Phase 9)

3.4.1 Description of Activities

Following energization of the new Hunter Substation, the old substation will be dismantled and removed. First, the contractor will locate and isolate any existing utilities and grounds. All above grade equipment will then be removed and subsequently re-used at other RPU facilities, stored as back-up equipment, recycled, or as the last option disposed at a licensed facility. Paint and other building materials will be tested for regulated or hazardous materials such as asbestos and lead-based paint. Any such materials will be removed and disposed according to all applicable federal, state, and location regulations.

Following removal of all the aboveground equipment, the below ground facilities and foundations will be removed. Affected soils will be tested if signs of potential contamination are present (i.e., soil staining and/or odor). Again, any equipment or materials that can be salvaged for re-use or use as back-up will treated as such. Inert materials will be sent to a recycling facility, where

appropriate, or disposed at a licensed landfill facility. All hazardous or otherwise regulated wastes, such as used transformer oils and impacted soils, will be disposed of at an appropriately licensed facility according to applicable local, state, and federal law.

3.4.2 Typical Construction Work Force

Typical construction work forces for the demolition and equipment removal at the existing Hunter Substation will vary between 8 and 12 workers, with an average of 10 workers on site during this phase.

3.4.3 Typical Construction Equipment

The sub-transmission line getaways will be constructed using the following construction equipment:

- Jackhammer
- Flatbed truck
- Crane or truck-mounted crane
- Line trucks
- Bucket trucks/ Manlift
- Forklift
- Excavator
- Haul/dump trucks
- Water truck
- Work trucks

3.5 Landscaping

Following completion of the substation construction, landscaping will be installed pursuant to the final approved landscape plans (refer to the preliminary Landscape Concept Plan in Appendix B). The landscaped areas will be prepped, including installation of irrigation and minor civil construction. Plantings will be conducted by hand for the most part, with larger shrubs or trees being placed with the assistance of a bobcat or similar small construction equipment. Ground cover may also be installed, and could include crushed rock, mulch, and/or artificial turf. Landscaping will include a small crew of 2-5 workers and will utilize standard work trucks and a small excavator or backhoe, as needed. Landscaping will occur concurrent with other construction tasks, after the substation (CMU block) security wall is completed.

3.6 Storage Facility (Phases 10 – 12)

For the purposes of CEQA review, Phases 10 through 12 are assumed to occur immediately following Phases 1 through 9. However, the Storage Facility may be constructed in the future instead.

3.6.1 Site Preparation and Grading of the Eastern Parcel (Phase 10)

After removal of the old Hunter Substation buildings, structures, equipment, and foundations (see Phase 9 above), the eastern parcel site will be graded per design plans to prepare the site for the construction of the storage facility. This phase of the site development work will include grading to remove and export excess material from the site and import suitable material, as needed. Total cut and fill for the eastern parcel is estimated to be 320 cubic yards (net fill). To achieve uniform support, the underlying soils may be over excavated below ultimate pad grade, then backfilled and compacted per geotechnical recommendations. All grading will be conducted pursuant to the approved grading plans. Site preparation and grading of the eastern parcel will utilize similar equipment and work force as listed under Phase 3a (Hunter Substation Site Preparation and Grading).

3.6.2 Storage Facility Below Grade (Civil) Construction (Phase 11)

Following Site Development, the storage facility structure foundation and underground utility connections will be installed. Storage facility below grade construction will utilize similar equipment and work force as listed under Phase 4b (Hunter Substation Below-Grade Construction).

3.6.3 Storage Facility Above Grade Construction (Phase 12)

As the final step of storage facility construction, the storage facility structure will be installed on the foundation. Final cleanup and surface treatments will be conducted, and final construction demobilization will occur. Storage facility above grade construction and final demobilization will utilize similar equipment and work force as listed under Phases 6a (Hunter Substation Site Above Grade Construction) and Phase 1 (Mobilization and Set-up).

4.0 Project Operations and Maintenance

This section describes the activities relating to operation and maintenance of the Proposed Project facilities; including the new Hunter Substation and the new Storage Facility. In reference to the new Hunter Substation, this section also includes a comparison to existing substation operation and maintenance activities.

4.1 Substation Operations

The proposed new Hunter Substation will be an unmanned substation. In general, routine substation operations will be commensurate with current operation and maintenance of the existing Hunter Substation. However, because the proposed Hunter Substation will be constructed with new parts and equipment, it will require less maintenance and repair when compared to the existing, aging Hunter Substation. The Proposed Hunter Substation will require a single pickup truck visiting the site a few times a week for switching, as well as several larger substation construction and maintenance trucks visiting the substation several times a year for substation equipment maintenance. Substation maintenance activities typically include equipment testing, equipment monitoring and repair, and emergency and routine procedures for service continuity and preventive maintenance. In general, routine substation maintenance is expected to necessitate approximately six trips per year by a two- to four-person crew at the Hunter Substation site. Routine substation operations will require one or two workers in a light

utility truck to visit the substation on a weekly basis. Typically, a major maintenance inspection will take place annually, requiring approximately 10 personnel for approximately one week.

Routine maintenance for vegetation clearing/trimming would occur on an as-needed basis for purposes of safety, access, and aesthetics. Vegetation maintenance activities would typically involve the presence of one to two small maintenance vehicles and one or more employees to clear or trim vegetation to achieve the minimum working space around the substation facilities. It is not anticipated that additional full-time RPU staff would be required for operation or maintenance purposes at the Proposed new Hunter Substation.

4.2 Storage Facility Operations

The Hunter Substation Storage facility will be unmanned, with deliveries and pick-ups occurring monthly, on average. Operation of the storage facility will not require the addition of new or otherwise additional staff or workers.

Because the existing landscaping will be retained, water usage for landscaping is not anticipated to be required beyond what is currently required. The Project will use potable water provided by the RPU – Water Division using existing infrastructure. No new infrastructure or water source will be required.

5.0 Required Approvals

The City of Riverside the lead agency for the Proposed Project. In addition to the required approval from the RPU Board and the City Council, RPU will obtain approval for the Proposed Project from other Federal, State, and City departments, as required. Table 2, Anticipated Potential Permit, Approval, and Consultation Requirements identifies these other permits, approvals, and licenses that RPU anticipates being required for the Proposed Project.

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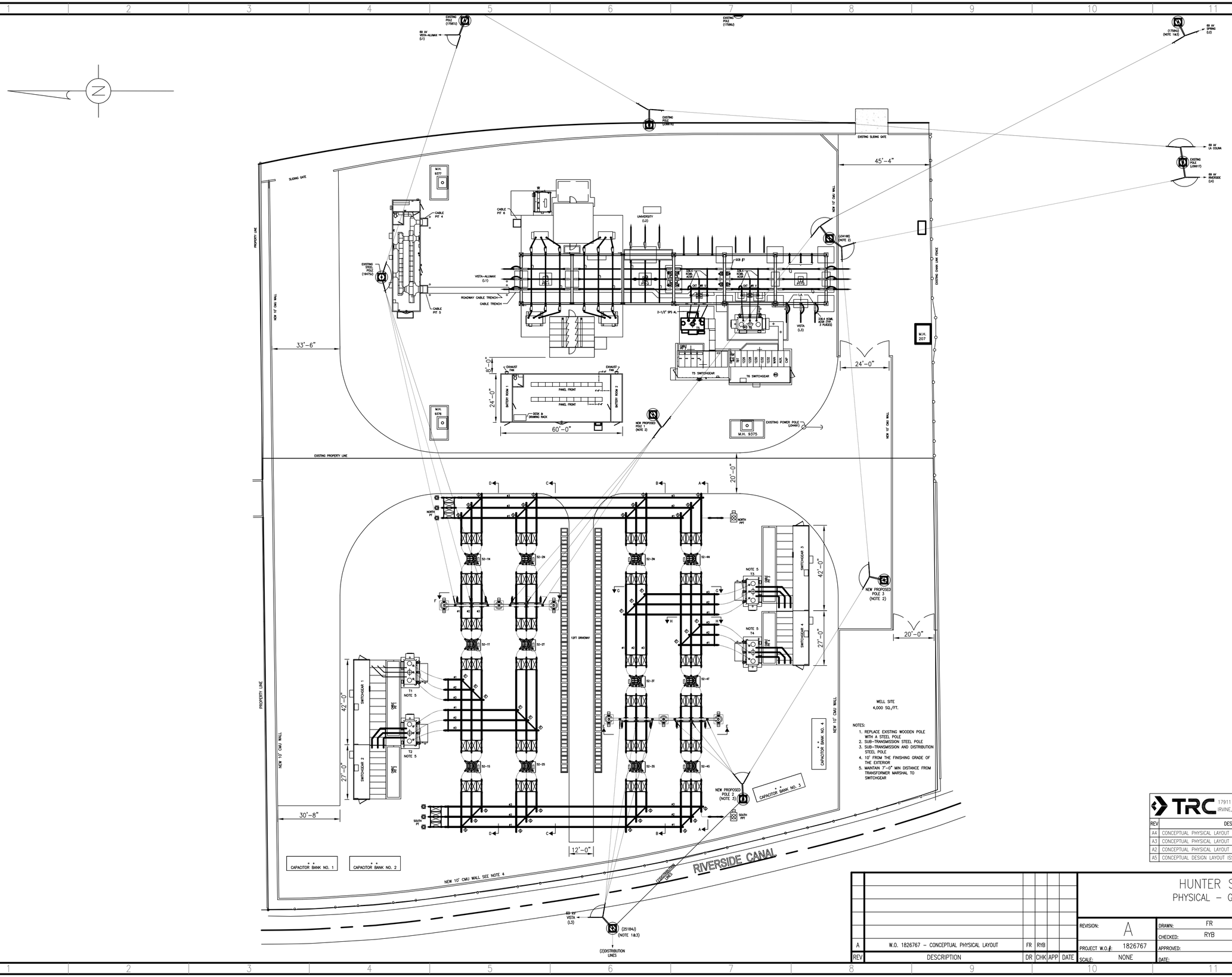
Table 2: Permits and Approvals

Permit/ Approval/ Consultation	Agency	Jurisdiction/ Purpose
Grading Permit	City of Riverside	Grading at the Hunter Substation site.
Wall Permit	City of Riverside	Installation of perimeter security walls.
Building Permit & Certificate of Occupancy	City of Riverside	Construction and operation of storage building.
Encroachment Permit and Traffic Control Plans	City of Riverside	Construction within, under, or over City roadways.
NPDES – General Construction Permit	State Water Resources Control Board (SWRCB)	Stormwater discharges associated with construction activities disturbing more than one acre of land.

APPENDIX A
Proposed Hunter Substation General Arrangement Drawing



NOTES:

1. REPLACE EXISTING WOODEN POLE WITH A STEEL POLE
2. SUB–TRANSMISSION STEEL POLE
3. SUB–TRANSMISSION AND DISTRIBUTION STEEL POLE
4. 10' FROM THE FINISHING GRADE OF THE EXTERIOR
5. MAINTAIN 7'–0" MIN DISTANCE FROM TRANSFORMER MARSHAL TO SWITCHGEAR

PRELIMINARY
DESIGN FOR CLIENT REVIEW
NOT FOR CONSTRUCTION

TRC 17911 VON KARMAN AVE., SUITE 400 IRVINE, CA 92614

PROJECT NO: 313254

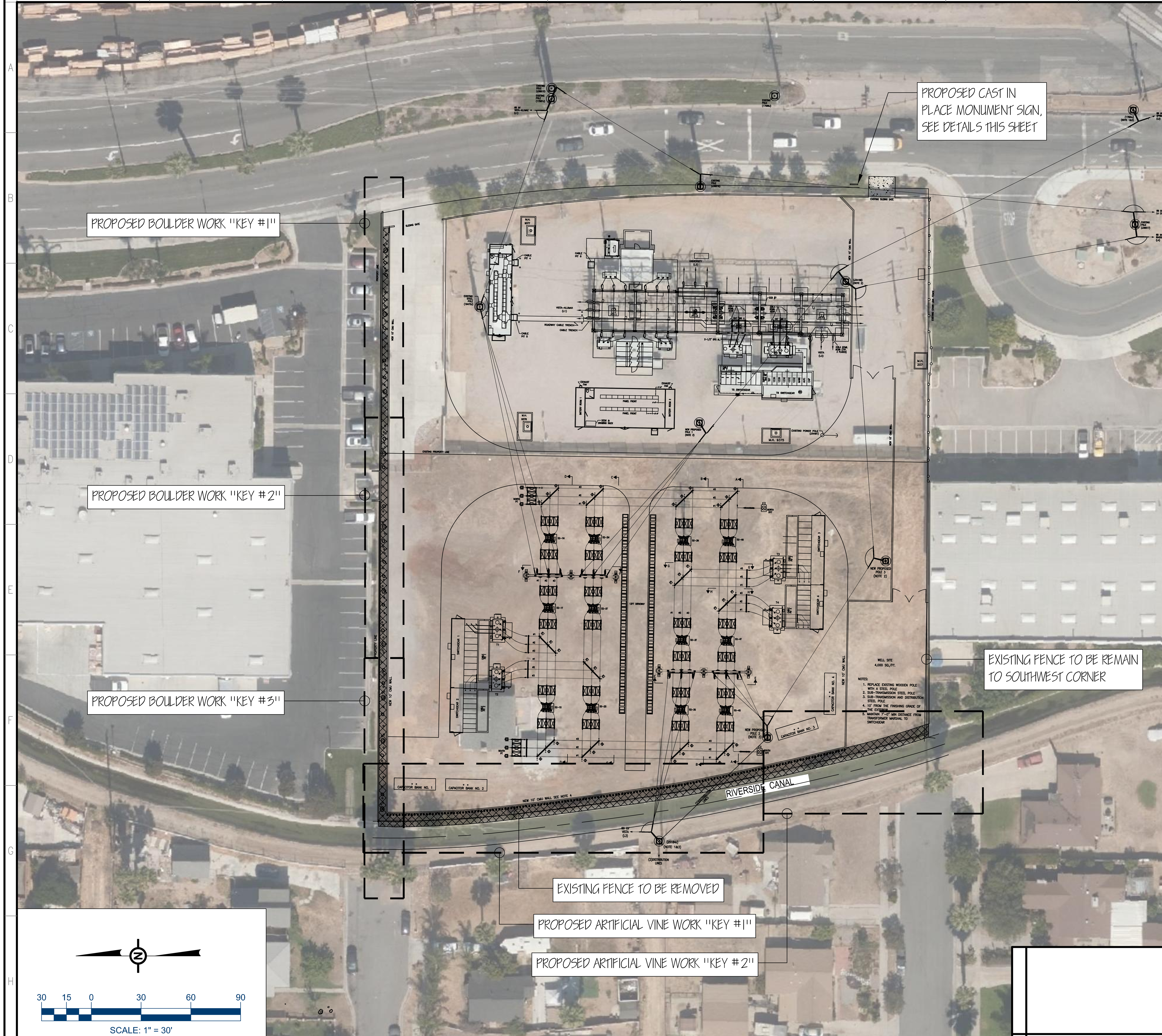
REV	DESCRIPTION	DATE	DES	CHK	APP
A4	CONCEPTUAL PHYSICAL LAYOUT 30% ISSUE FOR REVEIW	12/19	GAR	FR	
A3	CONCEPTUAL PHYSICAL LAYOUT ISSUE FOR REVEIW	11/11/19	FR	RYB	
A2	CONCEPTUAL PHYSICAL LAYOUT ISSUE FOR USE	9/13/19	FR	RYB	
A5	CONCEPTUAL DESIGN LAYOUT ISSUE FOR REVIEW	1/30	GAR	FLR	

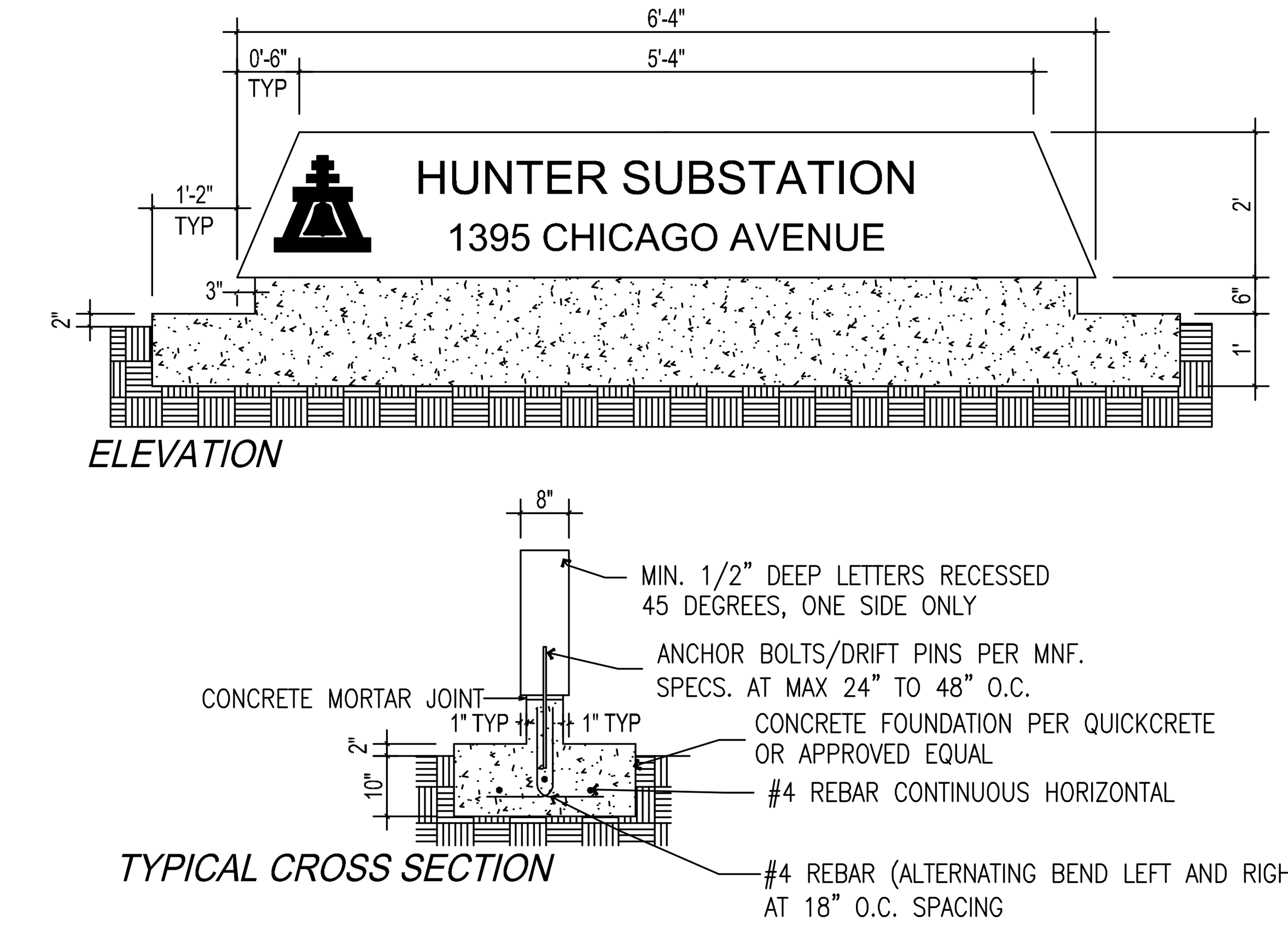
REV	DESCRIPTION	DR	CHK	APP	DATE
A	W.O. 1826767 – CONCEPTUAL PHYSICAL LAYOUT	FR	RYB		

HUNTER SUBSTATION
PHYSICAL – GENERAL LAYOUT

REVISION: A	DRAWN: FR	DRAWING NO. HUSOP1200–01	WATER | ENERGY | LIFE
PROJECT W.O.#: 1826767	CHECKED: RYB	SHEET: 1 OF 1	RIVERSIDE PUBLIC UTILITIES
SCALE: NONE	APPROVED:	W.O. NO.: 1826767	
	DATE:		

APPENDIX B
Preliminary Landscape Concept Diagram





CONTRACTOR SHALL PROVIDE SHOP DRAWING OF LETTER AND LOGO LAYOUT OF SIGN FOR CITY ENGINEER'S REVIEW AND APPROVAL.
SIGN SHALL BE COATED WITH THE "WORLD'S BEST GRAFFITI COATING" –NO. WB007 PER THE MANUFACTURERS RECOMMENDATIONS.
HTTP://WWW.GRAFFITIREMOVALINC.COM. OR CITY APPROVED EQUAL.

Monumental Sign
SCALE: NTS

PRELIMINARY
DESIGN FOR CLIENT REVIEW
NOT FOR CONSTRUCTION

TRC
17911 VON KARMAN AVE., SUITE 400
IRVINE, CA 92614
PROJECT NO: 313254

REV	DESCRIPTION	DATE	DES	CHK	APP
C	LANDSCAPE IFU	5/26/20	MJR	MJR	
B	LANDSCAPE EXHIBIT	3/13/20	MJR	MJR	
A	CONCEPTUAL DESIGN LAYOUT ISSUE FOR REVIEW	8/12/19	FR	RYB	

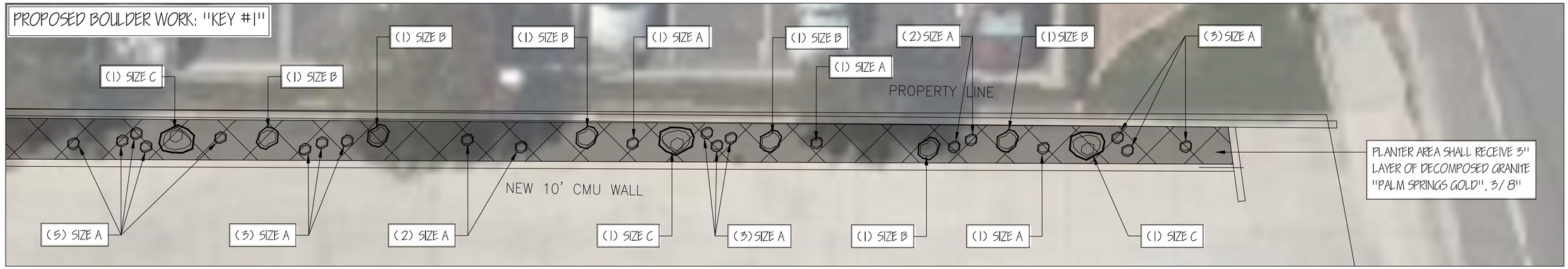
HUNTER SUBSTATION
LANDSCAPE EXHIBIT
LOCATION MAP AND KEY

REV	DESCRIPTION	DR	CHK	APP	DATE

REVISION: A	DRAWN: MJR	DRAWING NO. L-001	
	CHECKED: MJR		
PROJECT W.O.#: 1826767	APPROVED:	SHEET: 1 OF 3	
SCALE: AS NOTED	DATE: 05/26/20	W.O. NO.: 1826767	

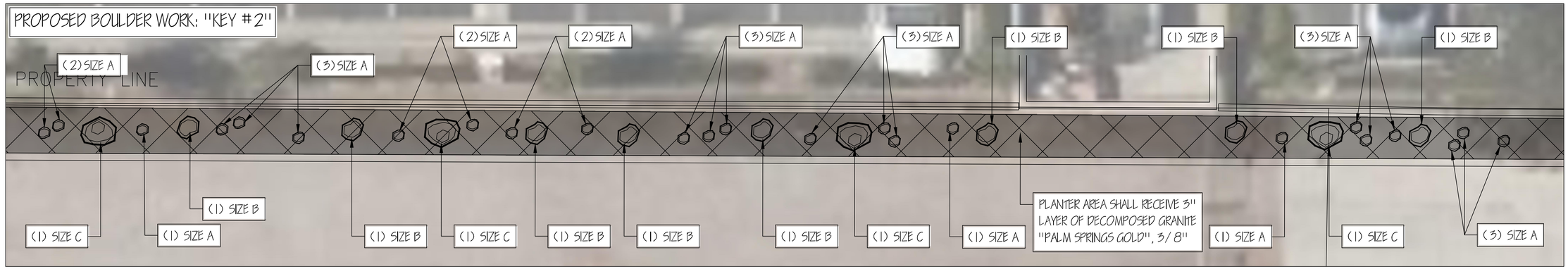
WATER | ENERGY | LIFE
CITY OF RIVERSIDE
PUBLIC UTILITIES

PROPOSED BOULDER WORK: "KEY #1"



MATCHLINE "KEY #2"

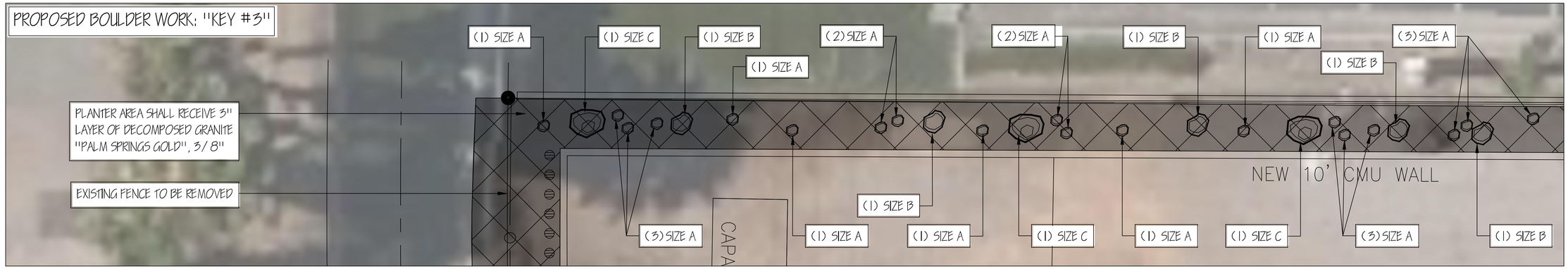
PROPOSED BOULDER WORK: "KEY #2"



MATCHLINE "KEY #3"

MATCHLINE "KEY #1"

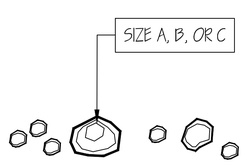
PROPOSED BOULDER WORK: "KEY #3"



MATCHLINE "KEY #2"

PLANTER BED AREAS: ALL AREAS TO RECEIVE 3" LAYER OF DECOMPOSED GRANITE "PALM SPRINGS GOLD", 3/8"
TOTAL AREA COVERAGE (NORTH PLANTING BED) = APPROXIMATELY 1,500 SQ. FT.

NOTE:
PROVIDE COMMERCIAL GRADE PERMEABLE-TYPE SPUNBONDED POLYESTER WEED FABRIC UNDER ALL GRAVEL BED AREAS TO ENSURE SEPARATION FROM SOIL.



LARGE BOULDERS: 18" - 36" DIAMETER
A = 18", B = 24"- 30", C = 36"
"PINE CREEK"

SIZE A = 64 BOULDERS TOTAL
SIZE B = 19 BOULDERS TOTAL
SIZE C = 10 BOULDERS TOTAL

NOTE: LOCATIONS ARE APPROXIMATE AND FIELD ADJUSTMENTS MAY BE NECESSARY

GRANITE AVAILABLE THROUGH:
SEPULVEDA BUILDING MATERIALS
1485 S. WATERMAN AVENUE
SAN BERNARDINO, CA 92408 (800) 394-4726

N

5 2.5 0 5 10 20

SCALE: 1" = 5'

PRELIMINARY
DESIGN FOR CLIENT REVIEW
NOT FOR CONSTRUCTION

TRC
17911 VON KARMAN AVE., SUITE 400
IRVINE, CA 92614

PROJECT NO: 313254

REV	DESCRIPTION	DATE	DES	CHK	APP
C	LANDSCAPE IFU	5/26/20	MJR	MJR	
B	LANDSCAPE EXHIBIT	3/13/20	MJR	MJR	
A	CONCEPTUAL DESIGN LAYOUT ISSUE FOR REVIEW	8/12/19	FR	RYB	

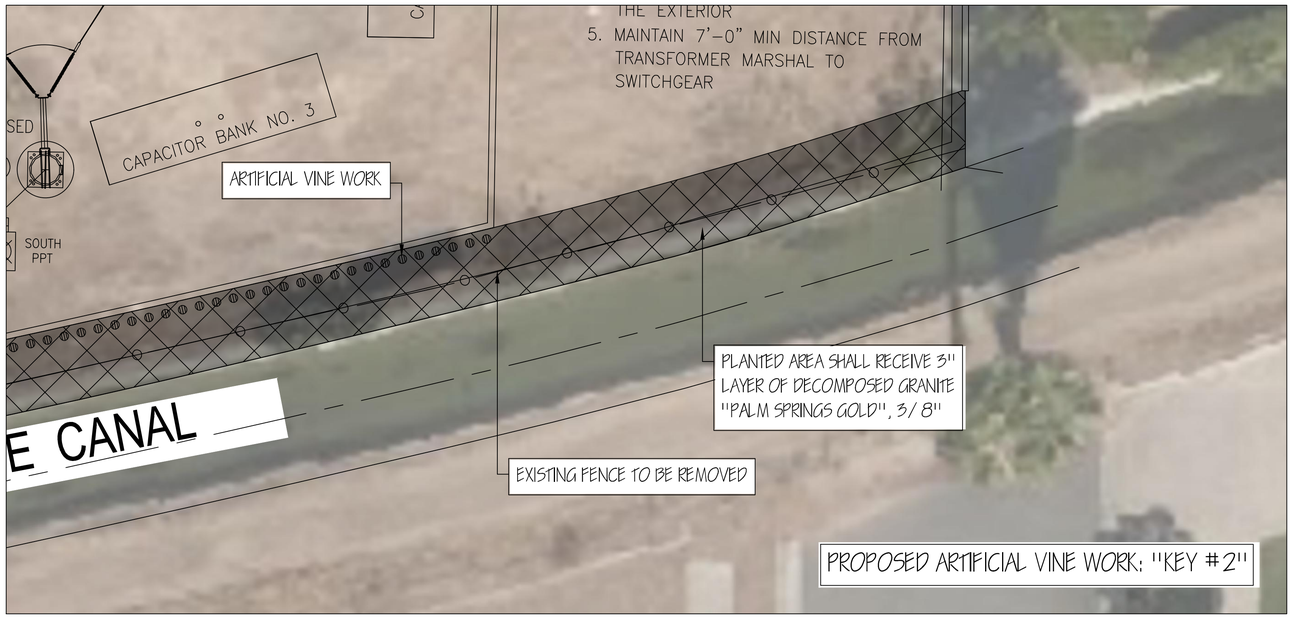
HUNTER SUBSTATION
LANDSCAPE EXHIBIT
PROPOSED BOULDER WORK AND LAYOUT PLAN

REV	DESCRIPTION	DR	CHK	APP	DATE

REVISION: A
PROJECT W.O.#: 1826767
SCALE: AS NOTED
DRAWN: MJR
CHECKED: MJR
APPROVED:
DATE: 05/26/20
DRAWING NO. L-002
SHEET: 2 OF 3
W.O. NO.: 1826767

WATER | ENERGY | LIFE
RIVERSIDE PUBLIC UTILITIES

MATCHLINE "KEY #2"



MATCHLINE "KEY #1"

PLANTER BED AREAS: ALL AREAS TO RECEIVE 3" LAYER OF DECOMPOSED GRANITE "PALM SPRINGS GOLD", 3/8"
TOTAL AREA COVERAGE (WEST PLANTING BED) = APPROXIMATELY 2,700 SQ. FT.

NOTE:
PROVIDE COMMERCIAL GRADE PERMEABLE-TYPE SPUNBONDED POLYESTER WEED FABRIC UNDER ALL GRAVEL BED AREAS TO ENSURE SEPARATION FROM SOIL.

GRANITE AVAILABLE THROUGH:
SEPULVEDA BUILDING MATERIALS
1485 S. WATERMAN AVENUE
SAN BERNARDINO, CA 92408 (800) 394-4726

ARTIFICIAL VINE TO BE INSTALLED BY IVY-IT.COM

ADDITIONAL NOTES:
ARTIFICIAL VINES SHALL BE FULL-COVERAGE ARTIFICIAL VINE PANELS. THE CONTRACTOR WILL BE RESPONSIBLE FOR PURCHASING ARTIFICIAL FROM IVY-IT COMPANY. THE CONTRACTOR WILL BE RESPONSIBLE FOR COORDINATING THE INSTALLATION, MAINTENANCE, AND WARRANTY OF THE ARTIFICIAL VINES WITH IVY-IT.COM. VINES SHALL BE FASTENED TO MASONRY WALL WITH WALL ANCHORS OR FASTENERS. PROVIDE SAMPLE OF VINE MATERIAL AND ANCHORS OR FASTENERS TO CITY ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.

FINAL HEIGHT OF WALL MAY VARY. CONTRACTOR SHALL FIELD VERIFY WALL HEIGHT PRIOR TO PROCURING AND INSTALLING ARTIFICIAL VINES.

8 4 0 8 16 24
SCALE: 1" = 8'

PRELIMINARY
DESIGN FOR CLIENT REVIEW
NOT FOR CONSTRUCTION

TRC
17911 VON KARMAN AVE., SUITE 400
IRVINE, CA 92614

PROJECT NO: 313254

REV	DESCRIPTION	DATE	DES	CHK	APP
C	LANDSCAPE IFU	5/26/20	MJR	MJR	
B	LANDSCAPE EXHIBIT	3/13/20	MJR	MJR	
A	CONCEPTUAL DESIGN LAYOUT ISSUE FOR REVIEW	8/12/19	FR	RYB	

HUNTER SUBSTATION
LANDSCAPE EXHIBIT
PROPOSED ARTIFICIAL VINE WORK AND LAYOUT PLAN

REV	DESCRIPTION	DR	CHK	APP	DATE

REVISION: A
PROJECT W.O.#: 1826767
SCALE: AS NOTED
DRAWN: MJR
CHECKED: MJR
APPROVED:
DATE: 05/26/20
DRAWING NO. L-003
SHEET: 3 OF 3
W.O. NO.: 1826767

WATER | ENERGY | LIFE
RIVERSIDE PUBLIC UTILITIES