CHAPTER 2.0
PROPOSED ACTION AND ALTERNATIVES

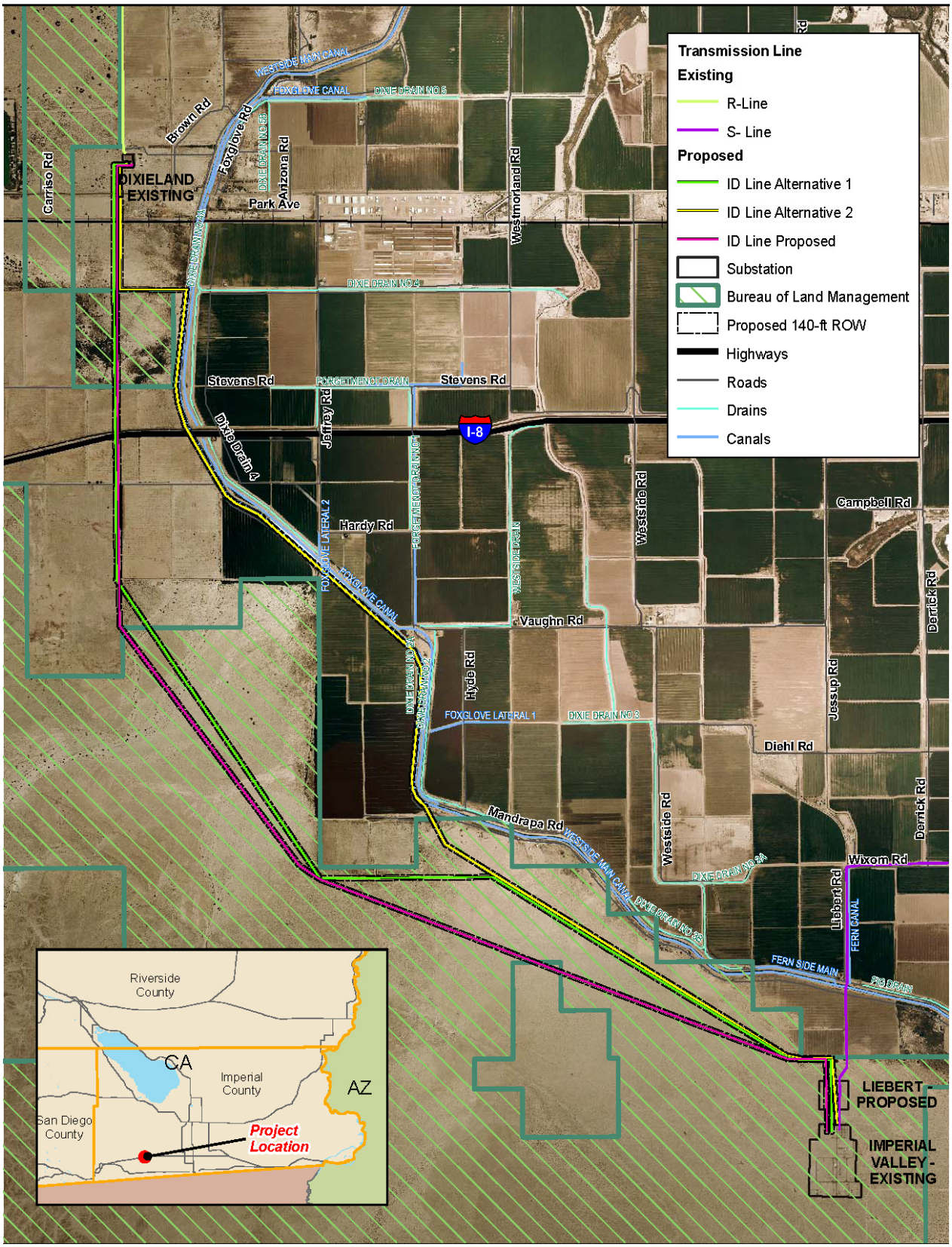
The ID Line project would be implemented to improve interconnection of the electrical transmission system in the Imperial Valley by constructing a 230-kV transmission line between the IV and Dixieland substations. In addition to the transmission lines, a new Liebert Substation would be constructed along the transmission line route just north of the IV Substation, and the Dixieland Substation would be expanded. Three transmission line routes are under consideration by IID and BLM.

The project is described below in detail. The first section describes the components that are common to each of the action alternatives being considered. The following sections describe the routing alternatives that are under consideration. Lastly, the No Action Alternative is described. Figure 2.1-1 shows the project area and proposed transmission line components.

2.1 PROJECT COMPONENTS COMMON TO EACH ACTION ALTERNATIVE

Substation Improvements

Substation improvements would be constructed at two locations in the project vicinity. The new Liebert Substation would be constructed on BLM land approximately 400 feet north of the existing IV Substation (Figure 2.1-2). The Liebert Substation would measure approximately 800 by 800 feet, covering approximately 14.69 acres, which includes a portion of the permanent maintenance road and poles that would be implemented prior to the Liebert Substation. Because the maintenance road would be installed first, the Liebert substation would be developed in a location that includes a portion of the maintenance road, which would already have been impacted. While the Liebert Substation footprint is approximately 14.69 acres, the resulting impact acreage of the Liebert Substation would be approximately 14.38 acres because of the maintenance road that would be installed prior to the substation. The approximately 14.38-acre impact area shown in Table 2.6-1 above for the Liebert Substation reflects the area the substation would permanently impact, plus the maintenance road it would cover and the poles it would replace. The Reduced Liebert Substation Alternative provides for a reduced and relocated Liebert Substation, which would provide the same function as described above but would be smaller and moved a few hundred feet north of the location described above and shown on Figure 2.1-2. There is also the No Liebert Substation Alternative, should this latter phase of the proposed project not be implemented or necessary.



Source: Imperial Irrigation District 2009; Imperial County 2009; ESRI 2009

4,000 2,000 0 4,000 Feet

Scale: 1 = 48,000; 1 inch = 4,000 feet

Figure 2.1-1

Project Overview

ID 230-kV Transmission Line and Substation Expansion—Imperial Valley to Dixieland Substations MND/EA

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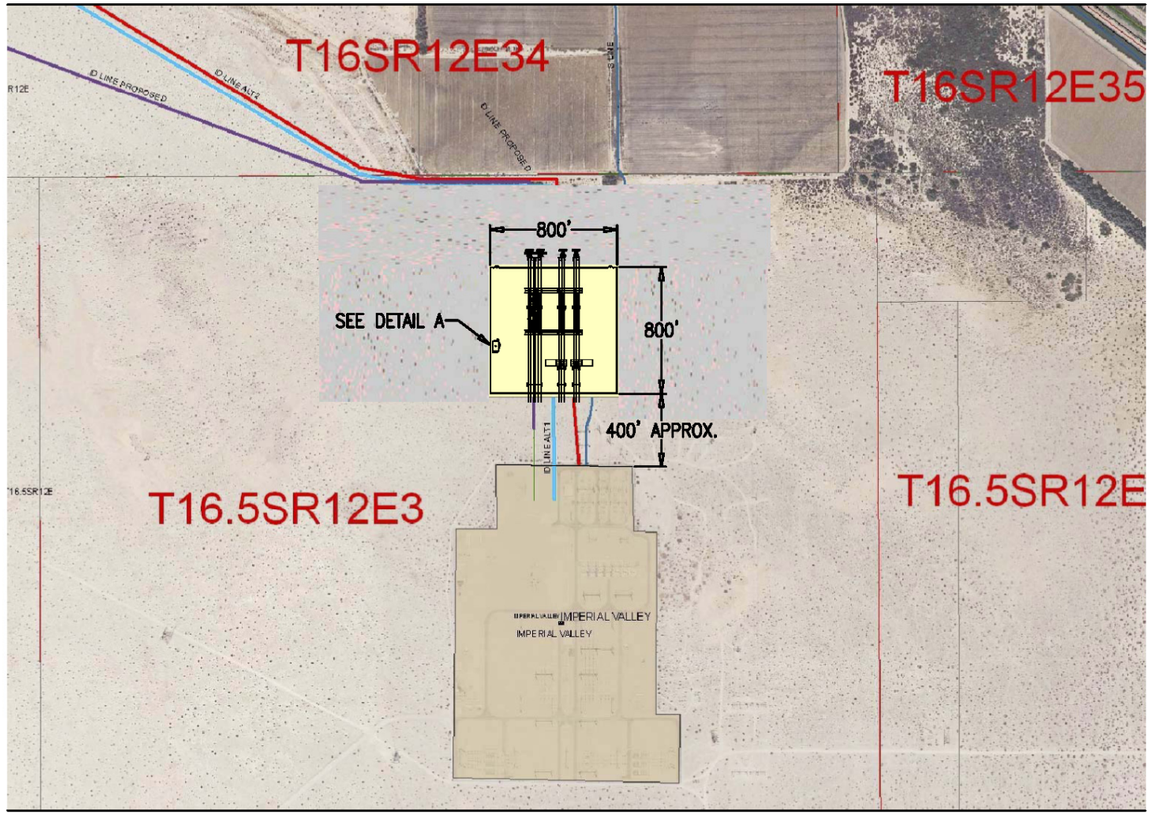
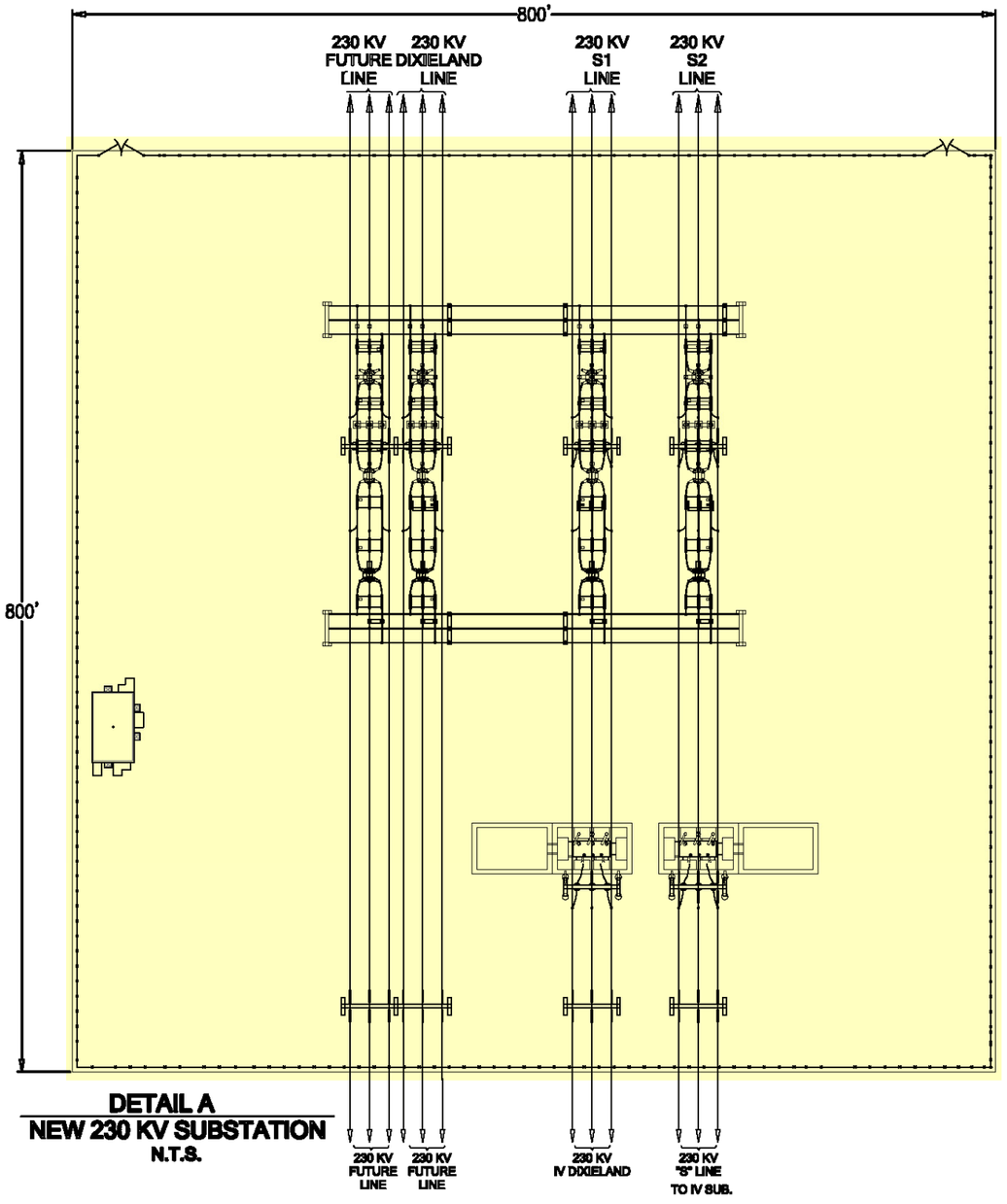


GENERAL PLOT PLAN
N.T.S.



DETAIL A
NEW 230 KV SUBSTATION
N.T.S.

Source: IID Energy/Imperial Irrigation District 2008

Figure 2.1-2
Proposed Liebert Substation

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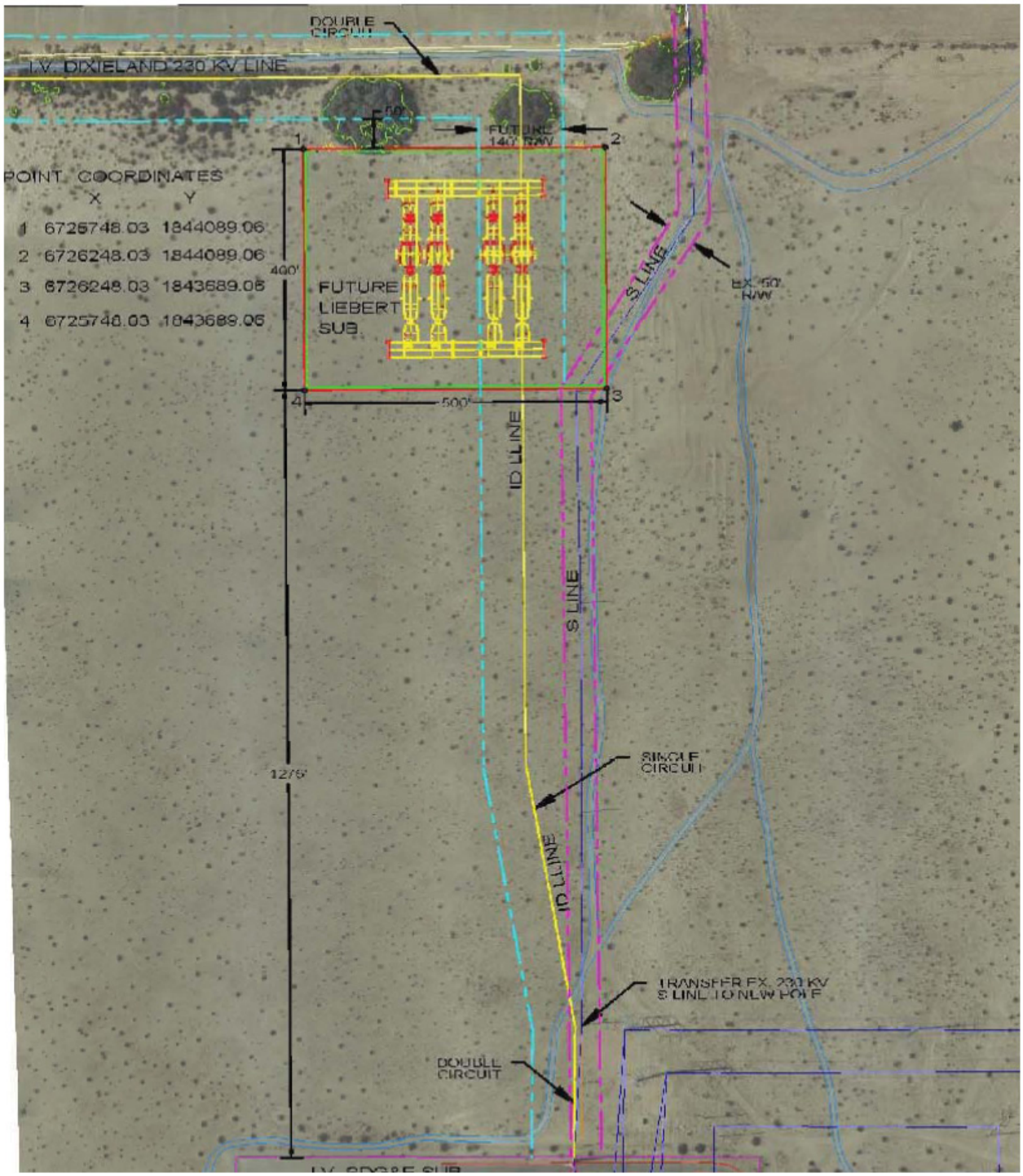

No Scale

Figure 2.1-2a
Reduced Liebert Substation Alternative

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At the northern terminus of the project, IID would expand the existing Dixieland Substation to accommodate the new transmission line connection (Figure 2.1-3). The existing substation would be expanded by 180 feet to the east, adding approximately 1.2 acres to the total substation footprint. The expansion of the Dixieland Substation would occur on existing disturbed land that would be either private property with an IID easement or IID property.

Transmission Line Structures and Right-of-Way

The ID Line will require construction of new single-pole steel transmission structures (Figure 2.1-4).

The transmission line would extend over a distance of approximately 7.38 miles and would be supported by approximately 53 pole structures (Figure 2.1-5). The pole structures would have an average height of 120 feet above ground. The poles will be designed to support a double circuit, 230-kV, two conductor per phase, two three-phase electrical circuits, one optical ground wire, and one 3/8-inch static or overhead ground wire. To avoid sensitive resources, the distance between poles was increased up to 1,500 feet in certain locations. To achieve these increased distances, poles up to 150 feet tall would be used. The pole structures would range in diameter from 6 to 10 feet. The 53 proposed poles would occupy approximately 0.12 acre in total (0.002 acre per pole). The diameter of the poles would be the same under any alternative. The distance between pole structures for Route Alternative 1 would be approximately 800 to 900 feet. For Route Alternative 2, the distance between pole structures would generally be 650 feet because of the narrower ROW available along the canal edge. The necessary new ROW width for the transmission line is 140 feet.

Construction Sequence

Construction of the transmission line would follow a sequence of operations which includes ROW acquisition, access road identification, site clearing, construction staging, foundation installation, assembly and erection of structures, clearing areas, grounding installation (including ground rods and tying grounding between poles), and cleanup and site reclamation. Various phases of construction may occur at the same time at different locations throughout the construction process. This would require several construction crews operating simultaneously in different locations.

Access

The construction, operation, and maintenance of the proposed transmission line would require that heavy vehicles access structure sites along the ROW. A new proposed 16-foot-wide maintenance road would extend along the transmission line route inside the new 140-foot ROW (Figure 2.1-5). The 16-foot-wide maintenance road would disturb approximately 14.33 acres.

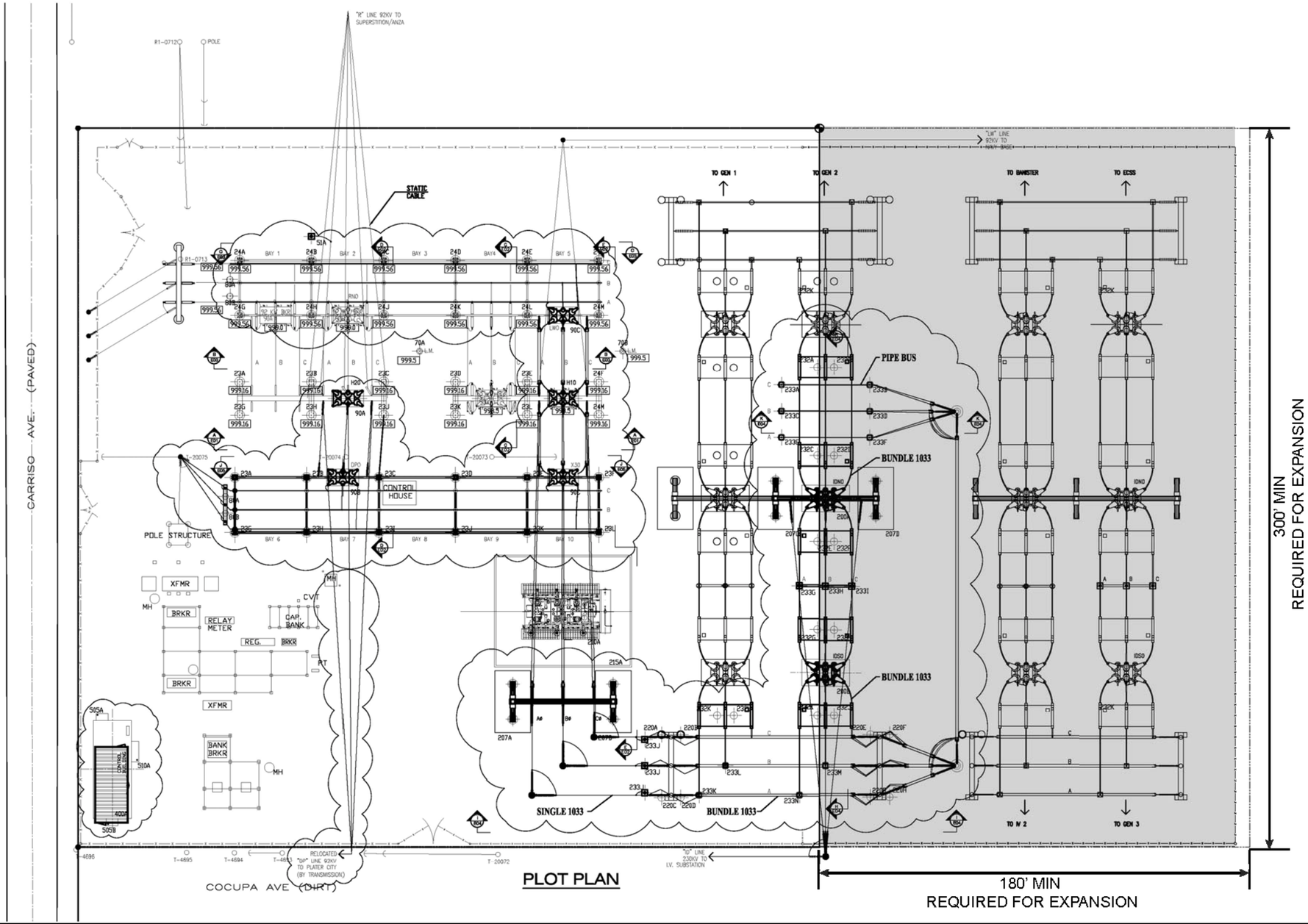
Construction Work Areas

Staging areas will be sited inside the ROW. Material will be transported to the proper station for construction, assembly, and erection. Figure 2.1-6 depicts the construction work area that would be required for each pole type. Each pole would be constructed within the 140-foot proposed ROW. Work areas would be necessary to ensure that the poles could be laid on the ground prior to installation and that the necessary equipment can maneuver to lift and install the poles. These areas would be approximately 140 by 200 feet around each proposed pole location (Figure 2.1-6), with a minimum of 16 feet required on all sides of the pole. The total temporary disturbance area needed for 53 poles would be approximately 33.47 acres, as shown in Table 2.1-1.

Foundation Installation

Installation of foundations (drilled shafts, drilled piers, and/or caissons) would require appropriate drilling equipment. Trucks with augers, cranes, bucket trucks, material trucks, and ready mix trucks are typical equipment that would be used for construction of foundations. Foundations will be excavated with a 2.5- to 3-foot auger. Various types of foundations would be used, depending on structure type and soil conditions.

Foundations for monopoles that include tangent and light angle components for conductors will range in diameter from 6 to 10 feet. Excavation depths will vary from 15 to 30 feet for tangent and light angle structures. For these types of structures, which are both monopole structures, a drill shaft foundation would most likely be used. Construction of foundations consists of the following:



PLOT PLAN

Source: IID Energy/Imperial Irrigation District 2010

Not to Scale

Figure 2.1-3
Proposed Dixieland Substation Expansion

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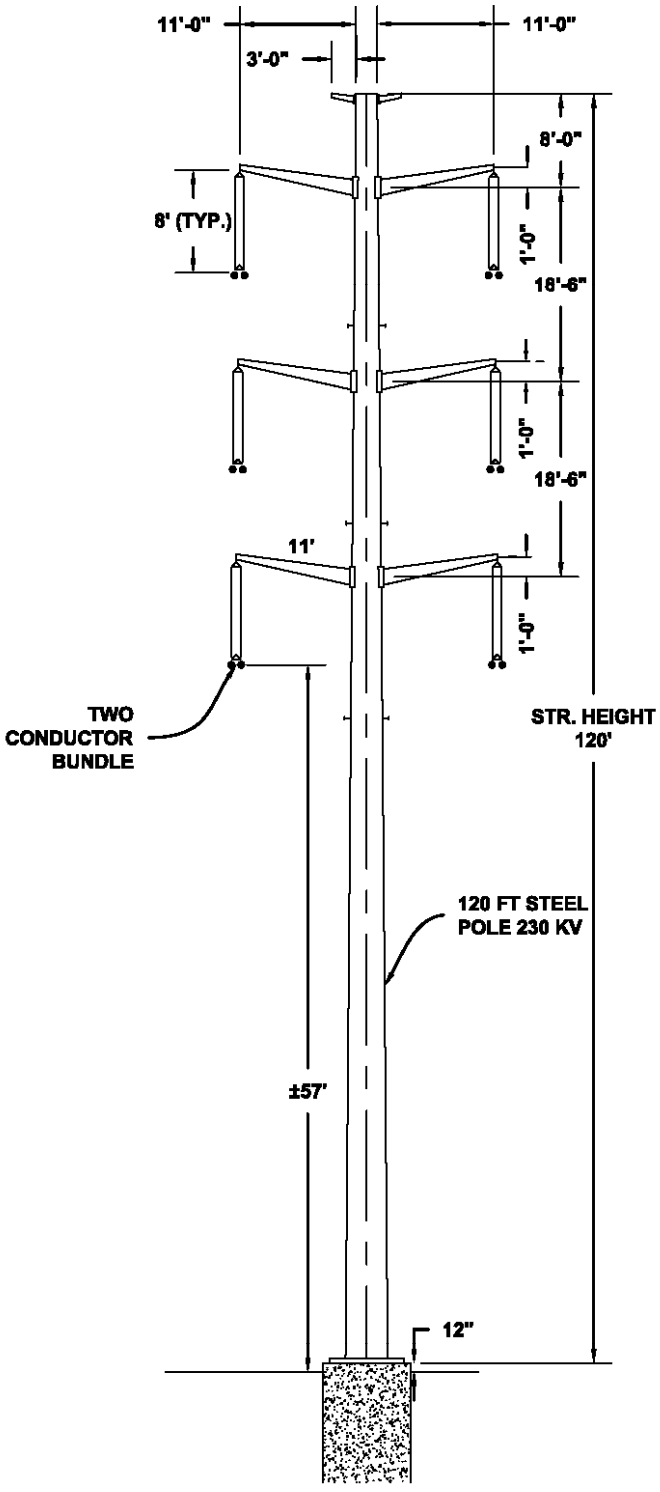

Figure 2.1-4
230-kV Steel Monopole

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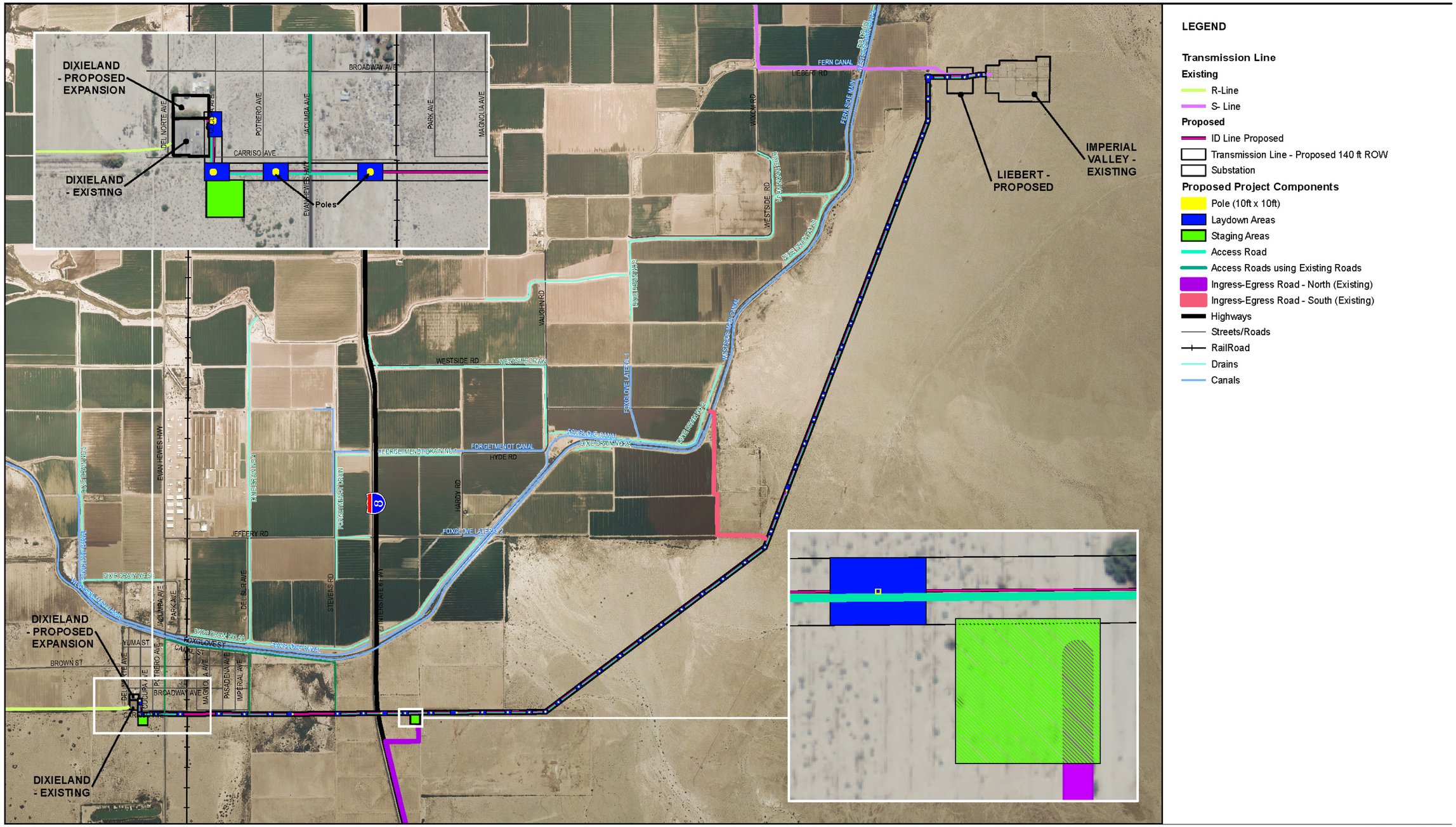

Source: Imperial Irrigation District 2010; NAIP 2006; FMMP 2006

3,000 1,500 0 3,000 Feet

Scale: 1 = 36,000; 1 inch = 3,000 feet

Figure 2.1-5

Proposed Project Components

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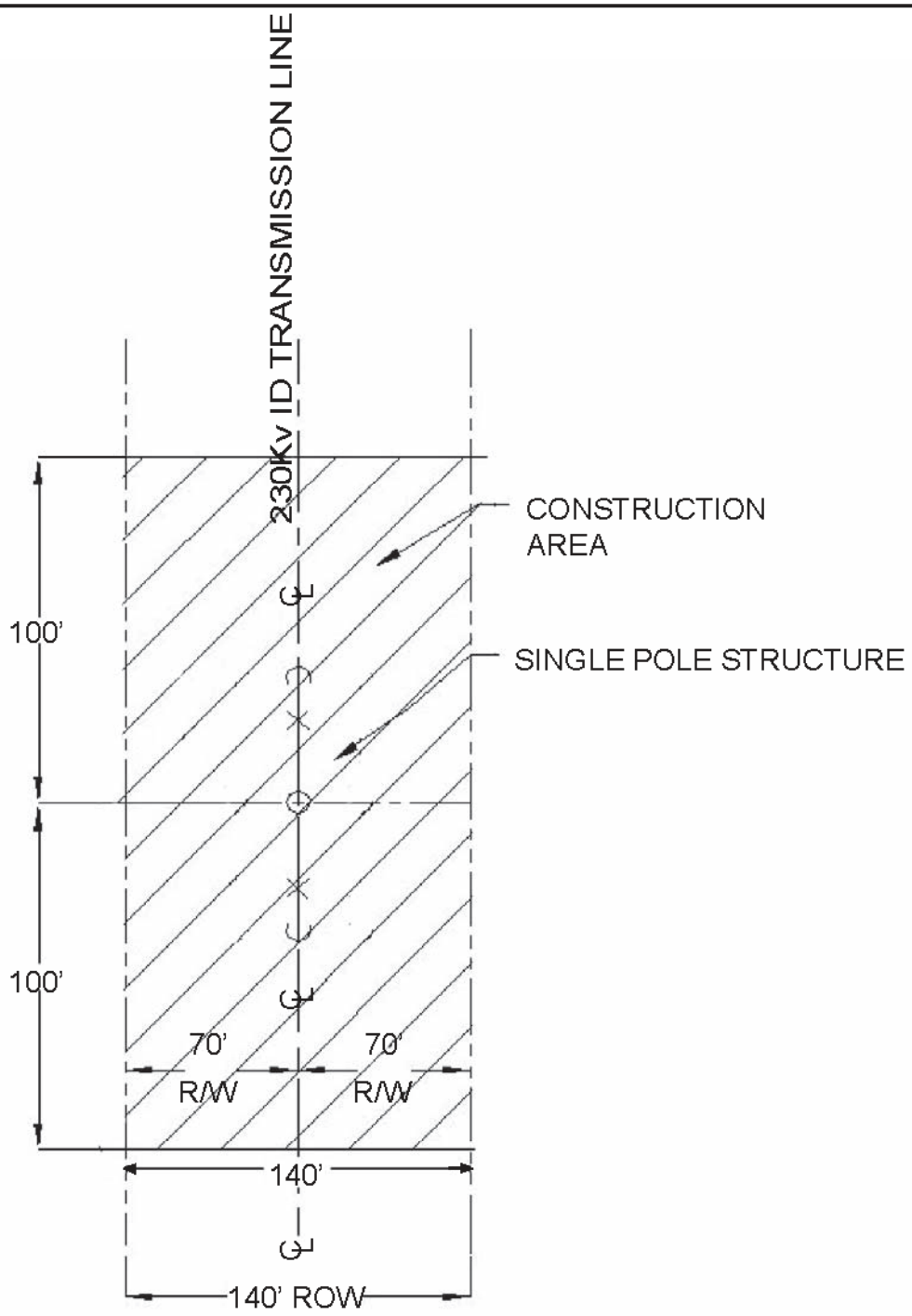

Figure 2.1-6
Construction Work Area for Single-Pole Structures

Table 2.1-1
Summary of Project Components and Land Ownership

Project Component	Land Ownership	Approximate Length & Width	Approximate Acreage
Permanent			
Poles	IID/Private Land (18 poles)	10-foot-diameter each	0.04
	BLM (35 poles)	10-foot-diameter each	0.08
Maintenance Road	IID/Private Land	16-foot-wide	4.17
	BLM	16-foot-wide	10.16
Dixieland Substation Expansion	IID/Private Land	180 feet x 300 feet	1.2
	BLM	NA	0
Proposed Liebert Substation	IID/Private Land	NA	0
	BLM	800 feet x 800 feet	14.38
Total Permanent	**IID/Private Land**		**5.41**
	BLM Land		**24.62**
	Combined		**30.03**
Temporary			
Laydown Areas	IID/Private Land	140 feet x 200 feet	9.64
	BLM	140 feet x 200 feet	19.72
Staging Areas	IID/Private Land	300 feet x 300 feet	4.11
	BLM	NA	0
Total Temporary	**IID/Private Land**		**13.75**
	BLM		**19.72**
	Combined		**33.47**
Overall Totals			
	IID / Private Land		**19.16**
	BLM		**44.34**
	Combined		**63.50**

- Excavating the foundation
- Placing the steel caisson to prevent collapsing
- Installing the anchor bolt cage
- Filling the foundation with concrete, encasing the anchor bolt cage

Conductor Installation and Grounding

After the structures are erected, new insulators and hardware would be installed to each structure. The structures would be rigged with insulator strings to install conductor wires, optical ground wire (OPGW), and static wire in position.

Installation of all required structure grounding would be completed promptly following structure erection.

Operational Characteristics

The nominal voltage for the transmission line would be a 230-kV alternating current. There may be minor variations of up to 5 percent above the nominal level depending on load flow. Since the 1980s, the public has raised questions about possible health effects from electric magnetic fields (EMF) from transmission lines, producing worldwide research efforts to determine health effects from exposure to EMF. Research shows contradictory conclusions. There is no agreement among scientists about whether exposure to EMF creates any potential health risks. Consequently, there is no national EMF exposure standard nor are there CEQA or NEPA standards for defining EMF health risks.

In response to possible public concern, the project was designed to reduce the magnetic fields the public is exposed to. Magnetic fields can be reduced either by cancellation or by increasing distance from the source. Cancellation can be accomplished by arranging phase wires from different circuits near each other. The interference, or cancellation, of the fields from each wire is enhanced by placing them closer together. The distance between the source of the EMF and the public can be increased by increasing the width of the ROW.

The project design uses both of these methods to decrease public exposure to EMF. The average project ROW width is 140 feet, and the distance between transmission poles allows the conductors to be placed vertically and closer together to reduce the magnetic field.

Maintenance

Maintenance of the transmission line would be the responsibility of IID and would be performed in accordance with existing IID procedures, including the Transmission Maintenance and Inspection Plan (IID 2010). Access for maintenance would be accomplished using the proposed 16-foot-wide maintenance road, as shown in Figure 2.1-5.

Construction Schedule

The tentative construction schedule would occur over an 8-month period.

Personnel

All personnel, before entering the work site, will be required to complete a worker environmental education program (WEEP). The WEEP training will include the potential biological and cultural impacts from the construction activities and methods required to avoid or minimize impacts to these resources.

A designated biologist and archaeologist will be appointed to provide and track WEEP training, provide monitoring of construction activities and any post-construction activities that could affect resources, supervise the monitors, and ensure compliance with required mitigation measures.

Post-Construction Activities

Upon completion of the project, areas disturbed (with the exception of the 16-foot-wide maintenance road and pole footprints within the ROW) by project construction would be restored to as natural condition as possible to allow for passive regeneration of flora. No spur roads are proposed. All disturbed soil surfaces would be contoured and raked to match the surrounding terrain. Any rocks that would be removed would be scattered over the disturbed area.

2.2 PREFERRED ALIGNMENT (PROPOSED ACTION)

The transmission line within this route would exit the IV Substation on the north side and run in a north direction for about 0.5 mile through the proposed Liebert Substation (Figure 2.1-1). The line would then make a 90 degree westward turn and run for approximately 0.25 mile before turning in a west-northwest direction. The line would stay on this northwest alignment for approximately 2.5 miles before turning again in a north-northwest direction and running for approximately 1.5 miles before turning north. The line will run north for approximately 2 miles, crossing I-8 and State Highway 80 before terminating at the Dixieland Substation (Figure 2.1-3). Approximately 53 poles would be installed to achieve the Preferred Alignment. Proposed pole locations and maintenance road alignment for the Preferred Alignment are shown in Figure 2.1-5. The maintenance road has been designed to avoid identified resources. As shown on figure 2.1-5, in two areas north of I-8 the road would be terminated, to avoid resources, and existing private agricultural roads would be used during construction and maintenance.

2.3 ROUTE ALTERNATIVE 1

The transmission line initially follows the same route from the IV Substation as the Preferred Alignment, exiting the IV Substation on the north side and running north for about 0.5 mile through the proposed Liebert Substation (Figure 2.1-1). The line would then make a 90 degree westward turn and run for approximately 0.25 mile before turning in a northwest direction. The alignment continues for approximately 1.8 miles before turning west and continuing in that direction for 0.9 mile. At this point, the alignment turns to the north-northwest, continuing for about 1.9 miles before matching the Preferred Alignment and continuing northward to the Dixieland Substation (Figure 2.1-1). Precise pole locations have not been determined for this alternative. However, the entire transmission line corridor has been analyzed for effects to each resource. The distance between poles would be similar to the distance in the Preferred Alignment, and the number of poles would be approximately the same (53), as shown in Table 2.8-1.

2.4 ROUTE ALTERNATIVE 2

The transmission line initially follows the same route from the IV Substation as the Preferred Alignment, exiting the IV Substation on the north side and running north for about 0.5 mile through the proposed Liebert Substation (Figure 2.1-1). The line would then make a 90 degree westward turn and run for approximately 0.25 mile before turning in a northwest direction. The alignment continues for approximately 2.1 miles in a northwesterly direction, and then turns north-northwest and continues for approximately 0.2 mile until the alignment is adjacent to the west side of the Foxglove Canal. The alignment follows the western edge of the canal northward until it reaches a point about 0.7 mile north of I-8. At this point the alignment runs west for about 0.3 mile until it again matches the Preferred Alignment and Route Alternative 1 (Figure 2.1-1).

Because the available ROW width is narrower along the canal, this alternative would require single-pole structures that must be constructed with shorter spans (650 feet) between pole structures. Precise pole locations have not been determined for this alternative. Based on the average spacing of the poles, approximately 59 poles would be needed to implement this alternative, as shown in Table 2.8-1.

2.5 REDUCED LIEBERT SUBSTATION ALTERNATIVE

Under this alternative, the proposed Liebert Substation would be reduced in size to 400 feet by 500 feet, and the transmission line route and Dixieland Substation would remain the same as

described under the preferred alignment. The Reduced Liebert Substation Alternative would involve re-positioning the smaller substation north of the preferred location, immediately south of the point at which the transmission line makes a right-angled turn from a north/south orientation to an east/west orientation, as shown in Figure 2.1-2a. This alternative would reduce the area of disturbance within the FTHL MA by 9.79 acres, to 4.59 acres of disturbance associated with the Liebert Substation. This alternative would also more easily accommodate the multitude of transmission lines and ROWs under consideration that could enter the Imperial Valley Substation from the north.

2.6 NO LIEBERT SUBSTATION ALTERNATIVE

Under this alternative, the proposed Liebert Substation would be eliminated, and the transmission line route and Dixieland Substation would remain the same as described under the preferred alignment. This alternative would remove the 14.38 acres of disturbance within the FTHL MA associated with the Liebert Substation.

2.7 NO ACTION ALTERNATIVE

The No Action Alternative must be evaluated in this MND/EA as required under NEPA. This alternative represents the environmental baseline for this project. Under the No Action Alternative, the Proposed Action would not be implemented and a new transmission line, a new substation, and substation improvements would not be constructed. Improvements to reliability of the transmission system would not be achieved without an additional line that provides redundancy. None of the potential environmental impacts resulting from implementation would occur.

2.8 COMPARISON OF ALTERNATIVES

Table 2.8-1 provides a summary comparison of the project features associated with each of the alternative alignments. The total temporary disturbance includes the staging and laydown areas. The total permanent disturbance includes the 16-foot-wide maintenance road, the Liebert Substation footprint, the Dixieland Substation Expansion footprint, and the pole footprints.

Table 2.8-1
Comparison of Features for Each Alternative

Features	Preferred Alignment	Route Alternative 1	Route Alternative 2	Reduced Liebert Alternative	No Liebert Alternative	No Action Alternative
Total ROW Length (miles)	7.38	7.41	7.18	7.38	7.38	0
Total Area within ROW (acres)	125.28	124.84	121.6	125.28	125.28	0
ROW Area Outside BLM Land (acres)	37.06	34.24	72.85	37.06	37.06	0
ROW Area within BLM Land (acres)	88.22	90.6	48.75	88.22	88.22	0
ROW Area within the MA (acres)	82.22	82.57	47.41	82.22	82.22	0
Number of Structures (estimated)	53	53	59	53	53	0
Structure Spacing (feet)	800 to 1,500	800 to 900	650	800 to 1,500	800 to 1,500	0
Estimated Permanent Impact Footprint						
Total Pole Footprints (acres)	0.12	0.11	0.12	0.12	0.12	0
Liebert Substation Footprint (acres)	14.38	14.4	14.4	4.59	0	0
16-foot-wide Maintenance Road (acres) on IID/Private Land	4.17	3.88	1.98	4.17	4.17	0
16-foot-wide Maintenance Road (acres) on BLM Land	10.16	10.36	5.5	10.16	10.16	0
Dixieland Substation Expansion Footprint (acres)	1.2	1.2	1.2	1.2	1.2	0
Estimated Temporary Impact Footprint						
Temporary Laydown Areas (acres) on BLM Land	19.72	19.6	10.95	19.72	19.72	0
Temporary Laydown Areas (acres) on IID/Private Land	9.64	7.97	18.74	9.64	9.64	0
Staging Area on BLM Land	0	0	0	0	0	0
Staging Area on IID/Private Land	4.11	4.11	4.11	4.11	4.11	0
Total Estimated Permanent Disturbance Area (acres)	30.03	29.95	23.2	19.32	15.65	0
Amount on BLM Land	24.62	24.83	19.94	13.91	10.24	0
Total Estimated Temporary Disturbance Area (acres)	33.47	31.68	33.8	33.47	33.47	0
Amount on BLM Land	19.72	19.6	10.95	19.72	19.72	0

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