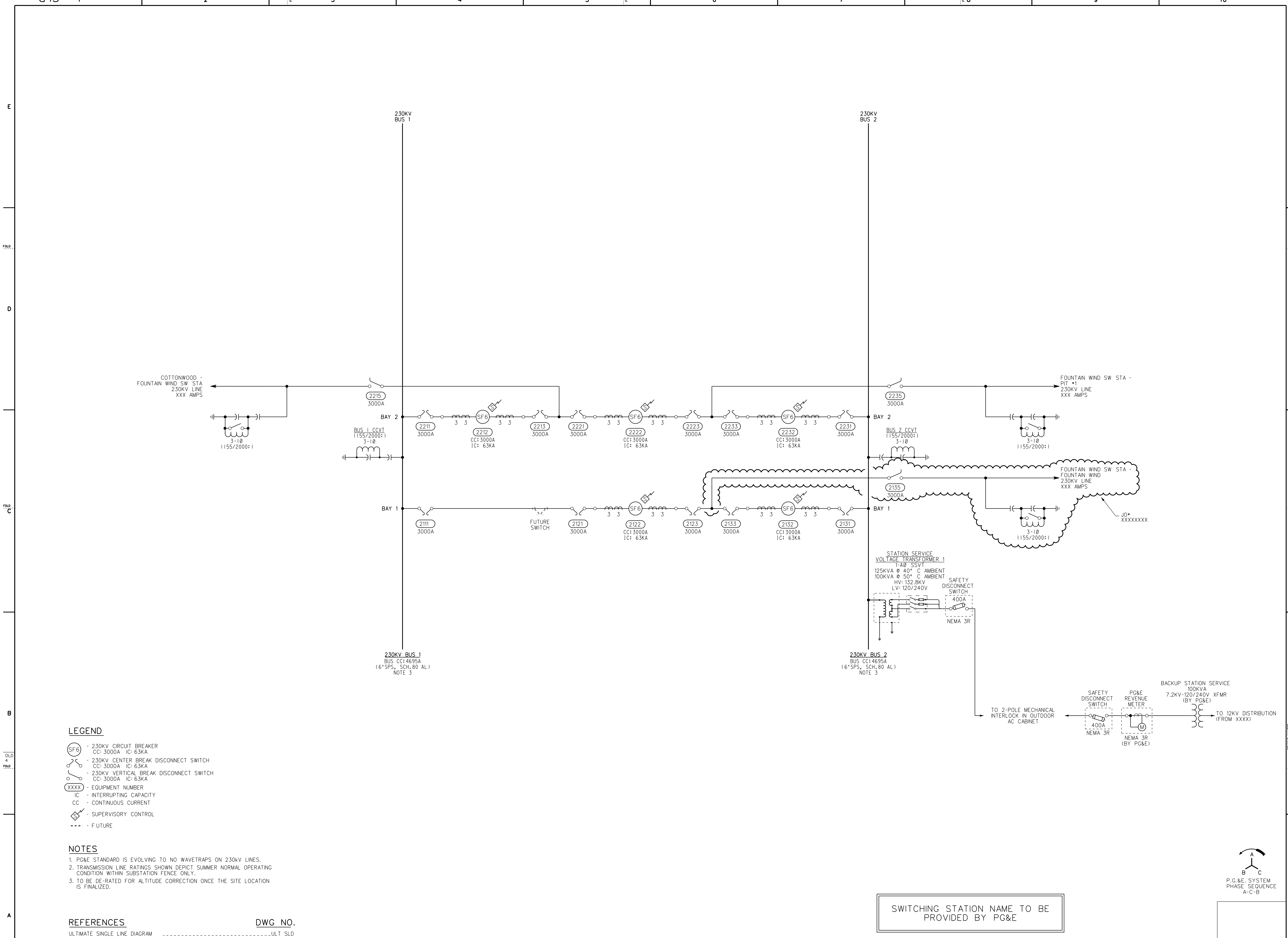


DOCKETED	
Docket Number:	23-OPT-01
Project Title:	Fountain Wind Project
TN #:	250503
Document Title:	TSD-03_fwp_Switching Station Design Details
Description:	N/A
Filer:	Caitlin Barns
Organization:	Stantec Consulting Services, Inc.
Submitter Role:	Applicant Consultant
Submission Date:	6/2/2023 3:02:23 PM
Docketed Date:	6/2/2023

LINE NAMES CHECKED BY CH DATE



LEGEND

- (SF6) - 230KV CIRCUIT BREAKER
CC: 3000A IC: 63KA
- (C) - 230KV CENTER BREAK DISCONNECT SWITCH
CC: 3000A IC: 63KA
- (V) - 230KV VERTICAL BREAK DISCONNECT SWITCH
CC: 3000A IC: 63KA
- (XXXX) - EQUIPMENT NUMBER
- IC - INTERRUPTING CAPACITY
- CC - CONTINUOUS CURRENT
- ◇ - SUPERVISORY CONTROL
- - FUTURE

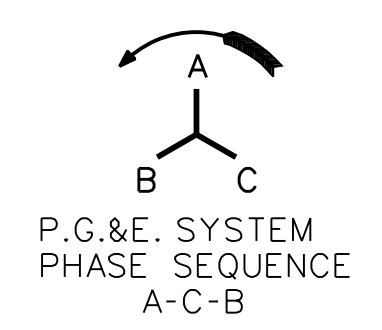
NOTES

1. PG&E STANDARD IS EVOLVING TO NO WAVETRAPS ON 230KV LINES.
2. TRANSMISSION LINE RATINGS SHOWN DEPICT SUMMER NORMAL OPERATING CONDITION WITHIN SUBSTATION FENCE ONLY.
3. TO BE DE-RATED FOR ALTITUDE CORRECTION ONCE THE SITE LOCATION IS FINALIZED.

REFERENCES

REFERENCES	DWG NO.
ULTIMATE SINGLE LINE DIAGRAM	ULT SLD
GENERAL ARRANGEMENT OUTDOORS	GAO
ULTIMATE GENERAL ARRANGEMENT OUTDOORS	ULT GAO
PROPERTY PLAN	PROP PLN

SWITCHING STATION NAME TO BE PROVIDED BY PG&E



CAD USER: JME DATE: 05-07-21
VECTOR: SLD.DWG
RASTER:

ELECTRIC TRANSMISSION ENGINEERING & CONSTRUCTION
FOR QUESTIONS ON REV. B OF THIS DWG
Call DASHIELL-RAJA at 713-578-6218
Call DASHIELL-RAJA KODURU at 713-578-6218

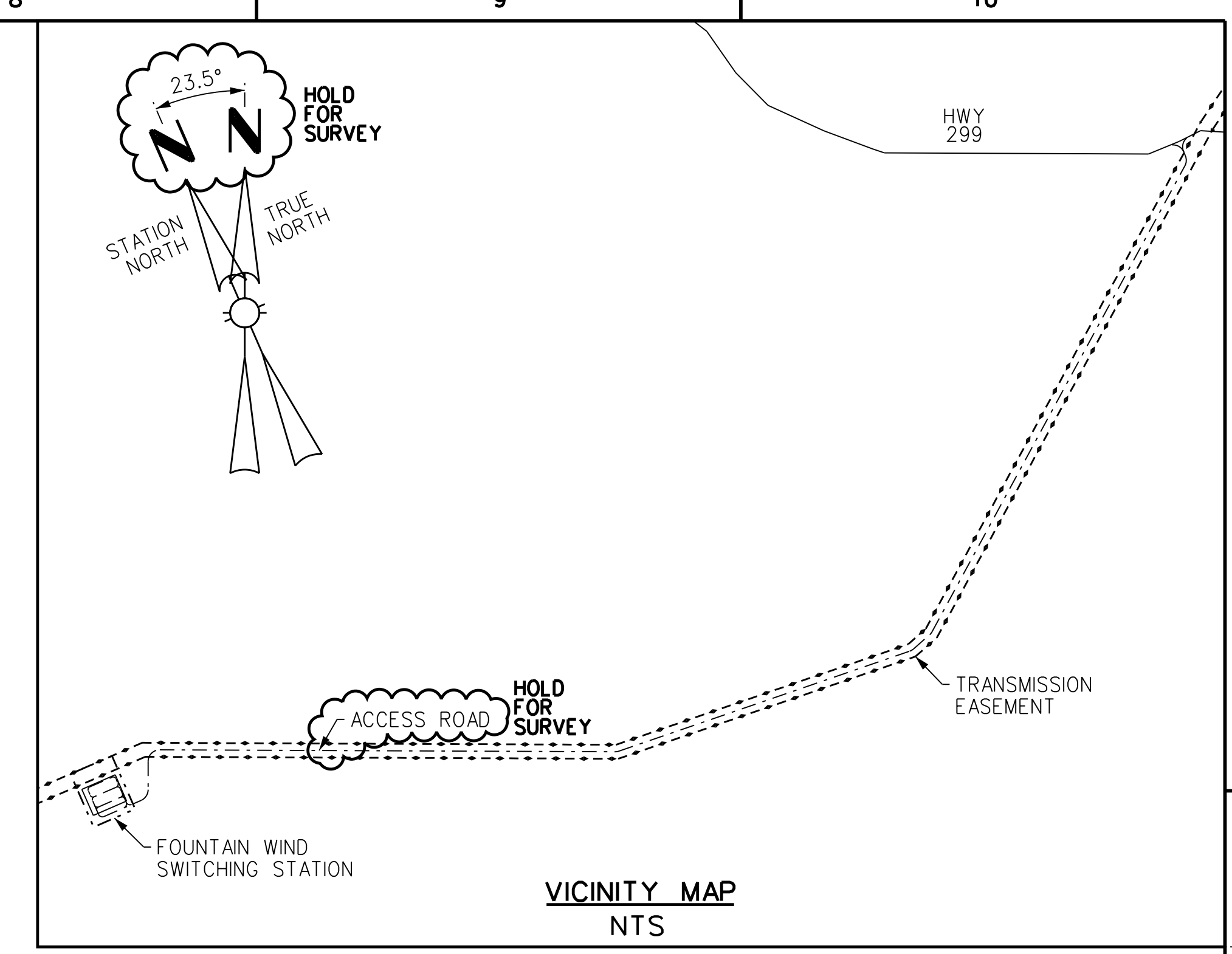
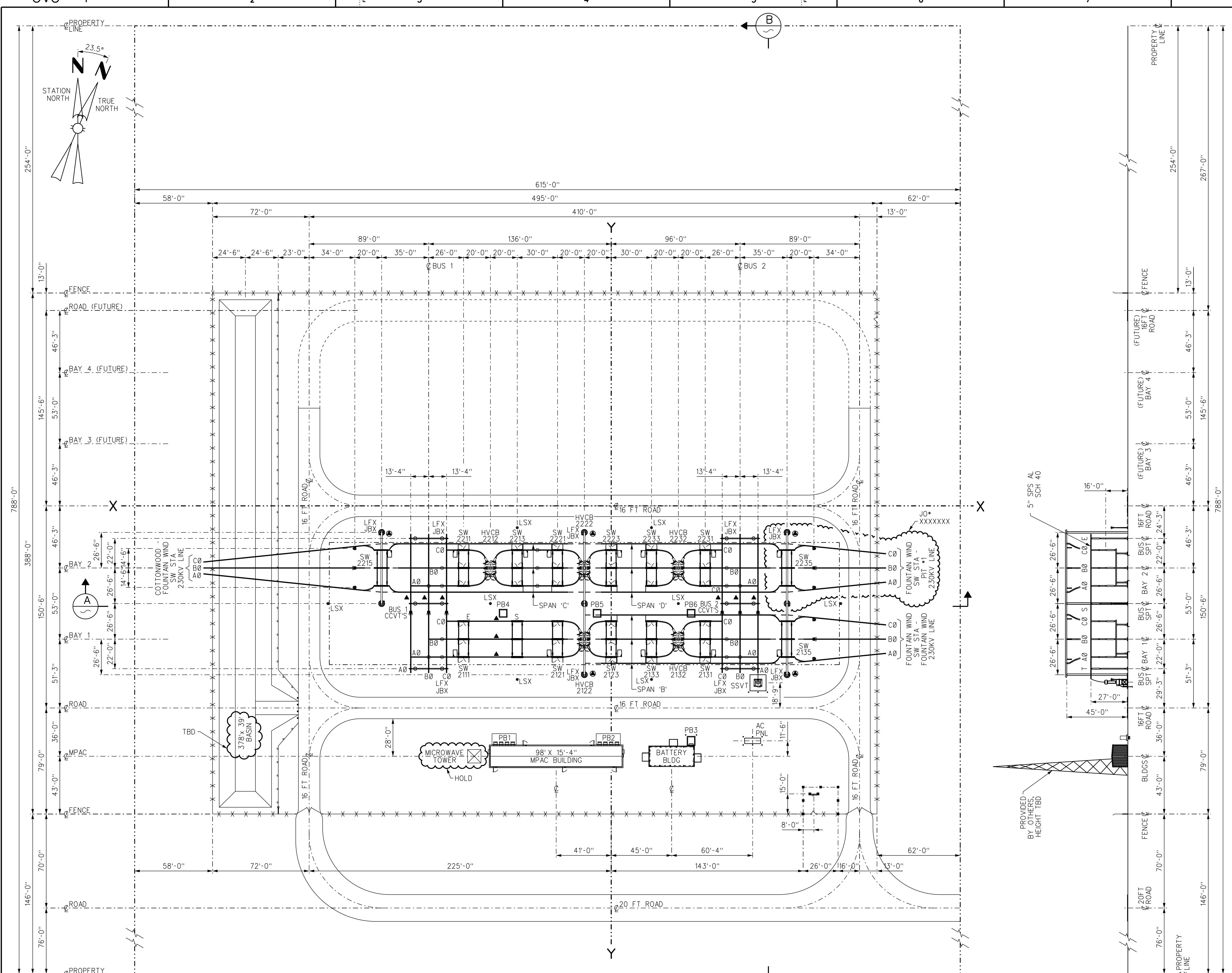
SUBSTATION & TRANSMISSION BUSINESS LINE		SWITCHING STATION FACILITY TYPE	ELECTRICAL DISCIPLINE	FOUNTAIN WIND SWITCHING STATION FACILITY NAME		ARRANGEMENT DRAWING TYPE	ACTIVE STATUS	PROJECT	SUBSTATION FACILITY COMPONENT		230KV UNIT
B	05/10/21	UPDATED PER IDP COMMENTS	JME	RKK					W.O.	REV. 1	
		RECEIVED ON 04/28/2021							DWN		
A	09/03/20	APPROVED FOR CONSTRUCTION	JME	RKK					CHKD		
		REFERENCE EDS 4042042 REV 4							SUPV R. KODURU		
									APVD		
									DATE 09/03/2020		



PACIFIC GAS AND ELECTRIC COMPANY
DEPARTMENT OF ENGINEERING
SAN FRANCISCO, CALIFORNIA

SCAN	IC
SLD	REV B

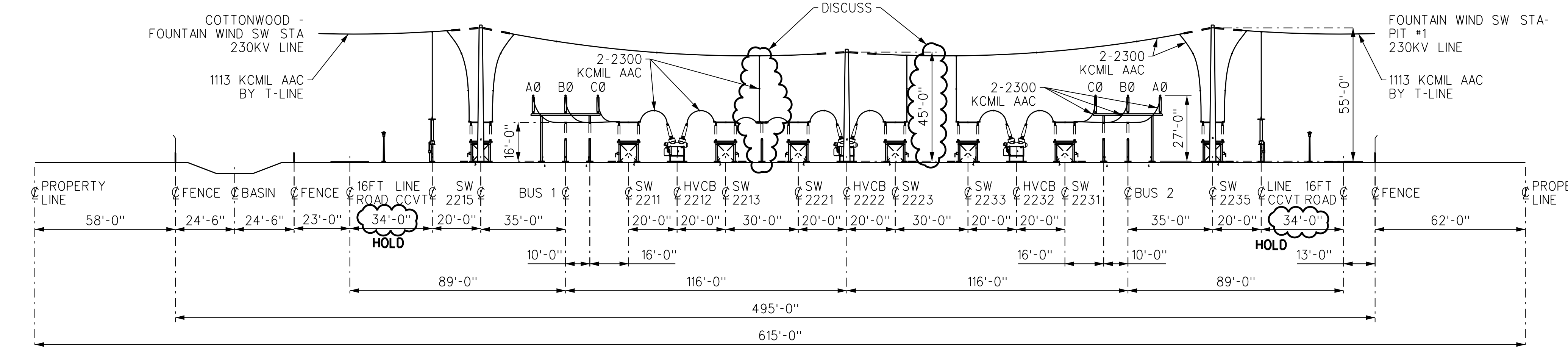
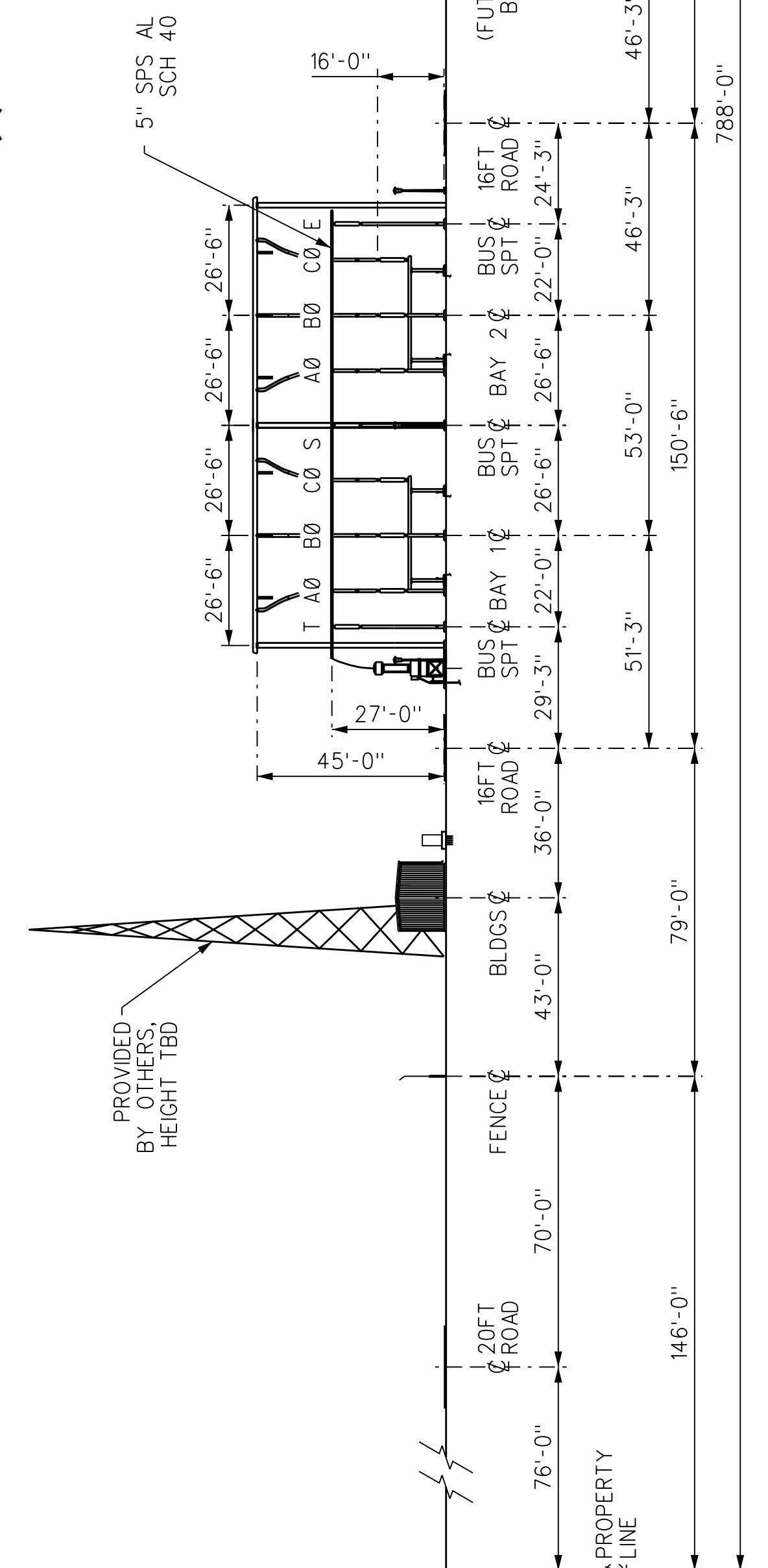
LINE NAMES CHECKED BY CH DATE



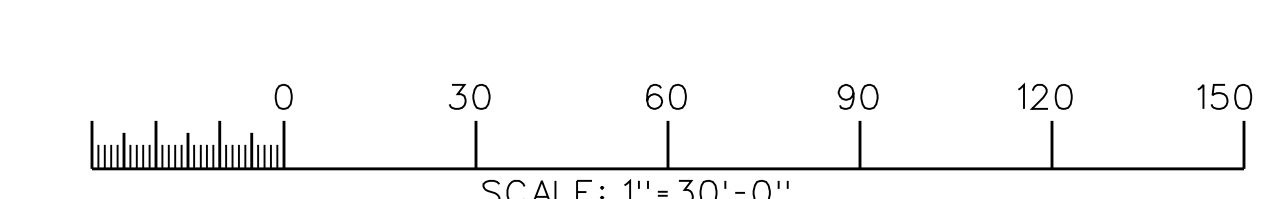
SPAN 'A'				SPAN 'B'				SPAN 'D'			
DEADEND-DEADEND		DEADEND-DEADEND		DEADEND-DEADEND		DEADEND-DEADEND		DEADEND-DEADEND		DEADEND-DEADEND	
2-2300 KCMIL AAC CONDUCTOR 151' SPAN		2-2300 KCMIL AAC CONDUCTOR 151' SPAN		2-2300 KCMIL AAC CONDUCTOR 151' SPAN		2-2300 KCMIL AAC CONDUCTOR 151' SPAN		2-2300 KCMIL AAC CONDUCTOR 151' SPAN		2-2300 KCMIL AAC CONDUCTOR 151' SPAN	
TEMP °F	TENSION LB	SAG FT - IN	TEMP °F	TENSION LB	SAG FT - IN	TEMP °F	TENSION LB	SAG FT - IN	TEMP °F	TENSION LB	SAG FT - IN
30	659	9-11	30	659	9-11	30	659	9-11	30	659	9-11
50	654	10-0	50	654	10-0	50	654	10-0	50	654	10-0
70	646	10-2	70	646	10-2	70	646	10-2	70	646	10-2
90	641	10-3	90	641	10-3	90	641	10-3	90	641	10-3
110	635	10-4	110	635	10-4	110	635	10-4	110	635	10-4

MAX. TENSION = 750# PER SUBCONDUCTOR @ 25° F, 8#WIND

ELEVATION B



ELEVATION A



- LEGEND**
- LS — LIGHT STAND
 - JB — JUNCTION BOX
 - LF — LIGHT FIXTURE
 - PB — PULL BOX
 - SW — SWITCH
 - HVCB — HIGH VOLTAGE CIRCUIT BREAKER
 - CCVT — COUPLING CAPACITOR VOLTAGE TRANSFORMER
 - E — EXPANSION BUS SUPPORT
 - T — TIGHT FIT BUS SUPPORT
 - S — SLIP FIT BUS SUPPORT
 - ▲ — INSERT 397.5 KCMIL ACSR CABLE INTO 4" SPS AL TUBING AND 795 KCMIL ACSR CABLE INTO 6" SPS AL TUBING WHERE THE UNSUPPORTED SPAN IS 20 FEET OR GREATER FOR WIND VIBRATION DAMPING. (EDS 052646)
 - — 120V-15A & 240V-20A SINGLE PHASE RECEPTACLES
 - — — — — NON-CONDUCTIVE FENCE
 - — — — — VINYL FENCE
 - — — — — SUBSTATION FENCE
 - — — — — BARRIER FENCE AND CHAIN
 - ● ● ● ● REMOVABLE BOLLARDS
 - — — — — PROPERTY LINE

ELECTRICAL CLEARANCES (ES 067908 REV 5)

PHASE TO PHASE (METAL TO METAL) ————— 7'-5"(MIN)

PHASE TO GROUND ————— 5'-11"(MIN)

VERTICAL CLEARANCE TO UNGUARDED LIVE PARTS (RECOMMENDED) ————— 15'-0"

SWITCHING STATION SHORT CIRCUIT INTERRUPTING RATING ————— 63KA

NOTES

- 1/4" WEEP HOLES ARE INCLUDED IN THE LOW POINT OF ALL TUBULAR BUS UNITS.
- BOND ALL SWITCH OPERATING PLATFORMS PER ES 067910.
- IN NO CASE SHALL THE ELECTRICAL CLEARANCES BETWEEN PHASE TO PHASE AND PHASE TO GROUND BE LESS THAN SHOWN IN TABLE 3 COLUMN 4 AND TABLE 1 COLUMN 5 ON EDS 067908 RESPECTIVELY.
- MAKE UP ALUMINUM-TO-ALUMINUM AND ALUMINUM-TO-COPPER CONNECTIONS PER ES 037788.

REFERENCES

SINGLE LINE DIAGRAM ————— SLD

ULTIMATE SINGLE LINE DIAGRAM ————— ULTSLD

ULTIMATE GENERAL ARRANGEMENT OUTDOORS ————— ULTGAO

PROPERTY PLAN ————— PROPPFN

SWITCHING STATION NAME TO BE PROVIDED BY PG&E

SUBSTATION & TRANSMISSION BUSINESS LINE		SWITCHING STATION FACILITY TYPE		ELECTRICAL DISCIPLINE		FOUNTAIN WIND SWITCHING STATION FACILITY NAME		ARRANGEMENT DRAWING TYPE		ACTIVE STATUS		PROJECT		SUBSTATION FACILITY COMPONENT		230KV UNIT	
REV	DATE	DESCRIPTION	JOB NO	CHKD	SUPV	APVD	REV	DATE	DESCRIPTION	JOB NO	CHKD	SUPV	APVD	DATE	W.O.	REV. 1	IC
B	05/14/21	UPDATED PER IDP COMMENTS								JME	RKK				DSG	J. EMERT	
-	-	RECEIVED ON 04/28/2021													DWN		
A	09/03/20	APPROVED FOR CONSTRUCTION								JME	RKK				CHW		
-	-	REFERENCE EDS 4042042 REV 4													SUPV	R. KODURU	

ELECTRIC TRANSMISSION ENGINEERING & CONSTRUCTION

FOR QUESTIONS ON REV. B OF THIS DWG

Call DASHIELL at xxx-xxx-xxxx

Call DASHIELL-RAJA KODURU at 713-578-6218

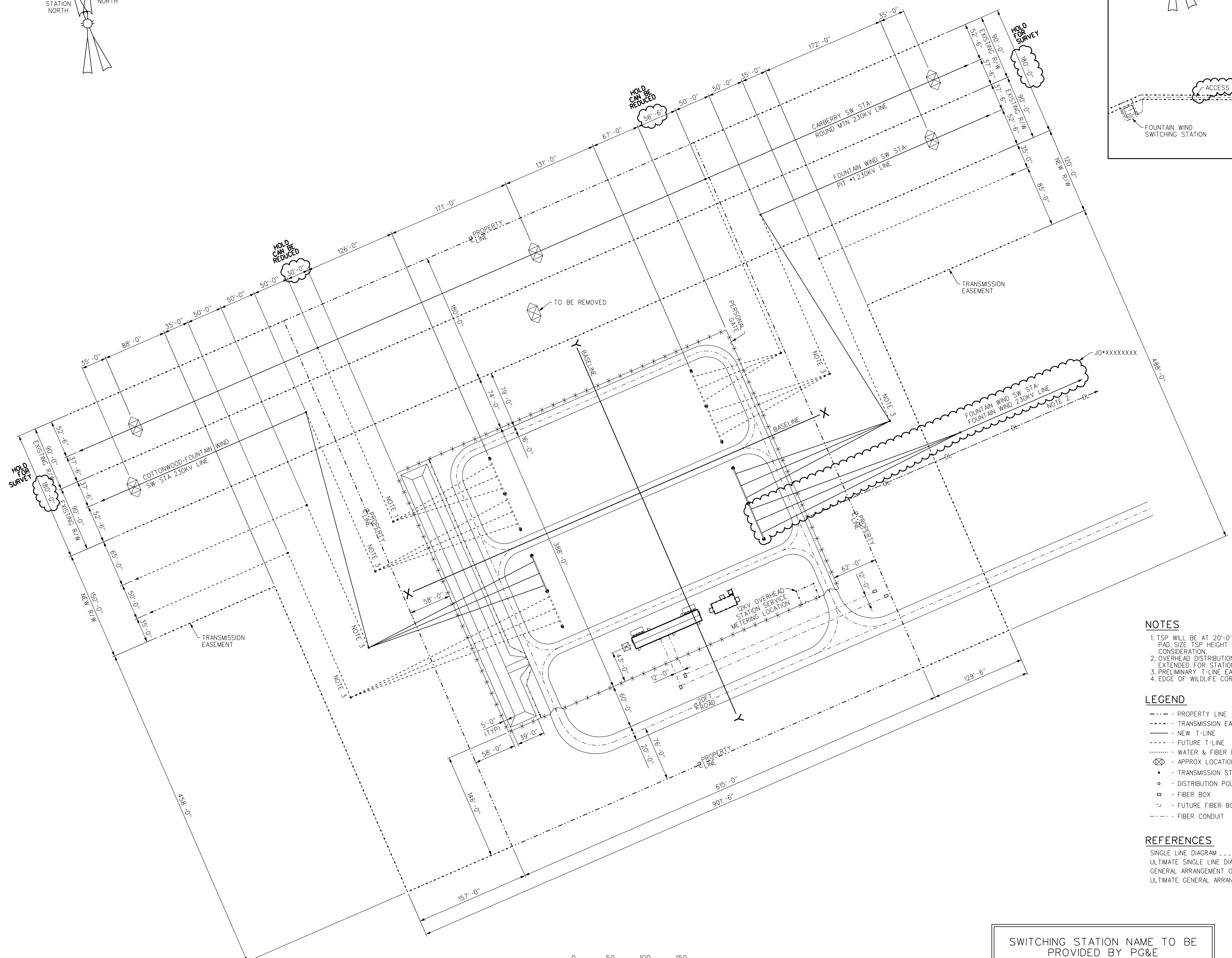
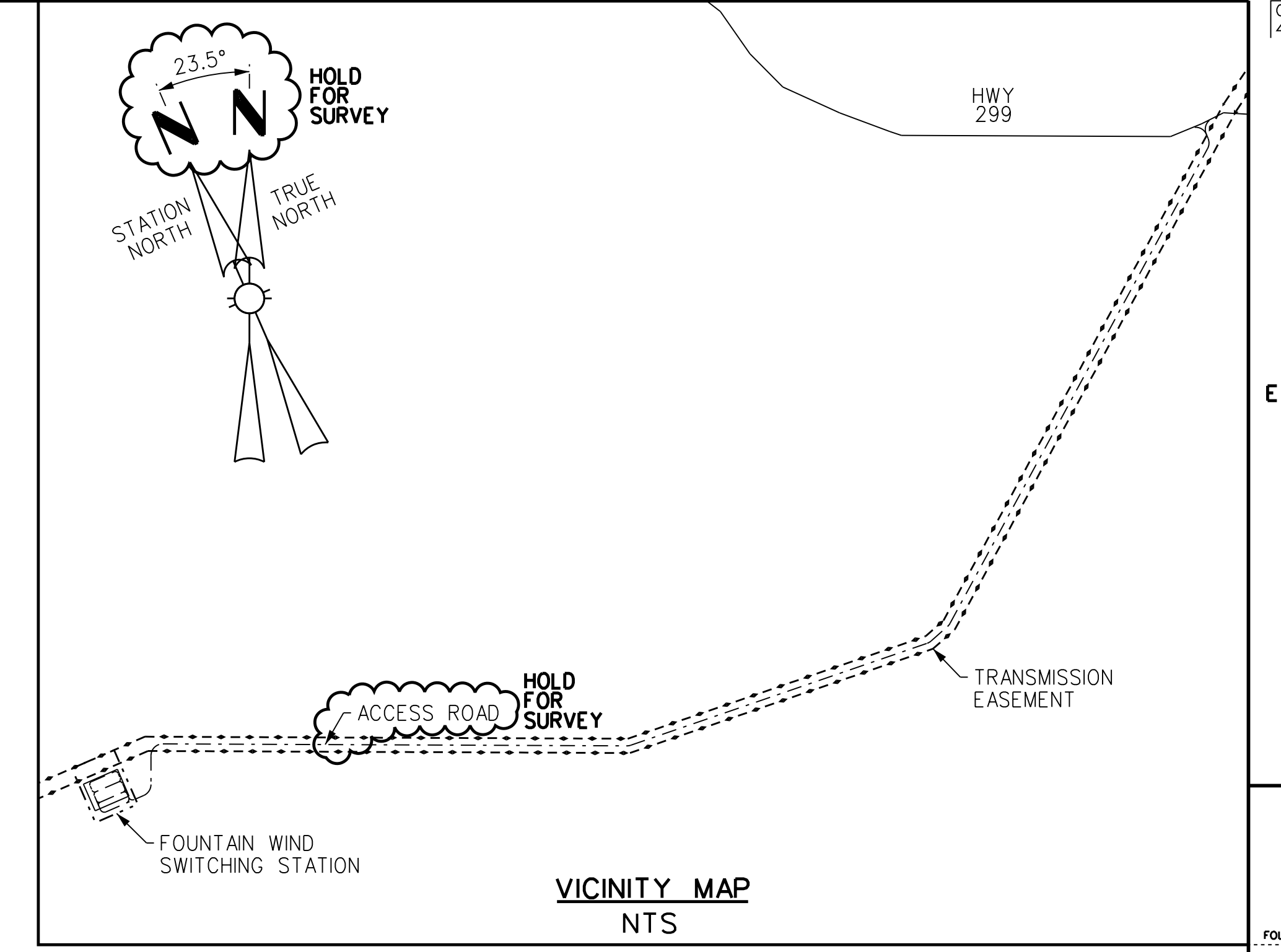
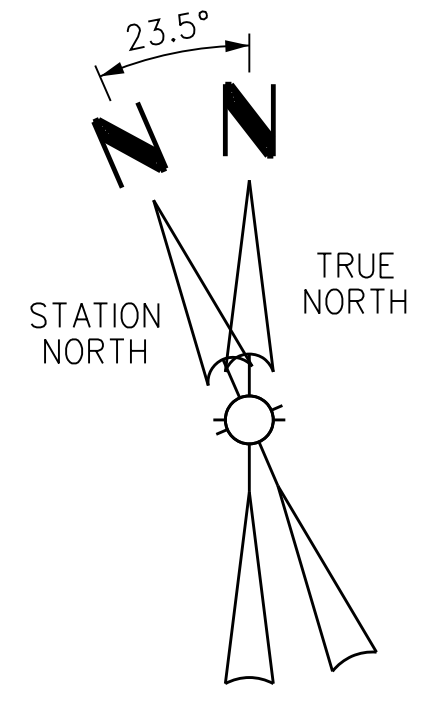
GENERAL ARRANGEMENT OUTDOORS
FOUNTAIN WIND SWITCHING STATION

DEPARTMENT OF ENGINEERING
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA



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GAO	REV

LINE NAMES CHECKED BY CH DATE



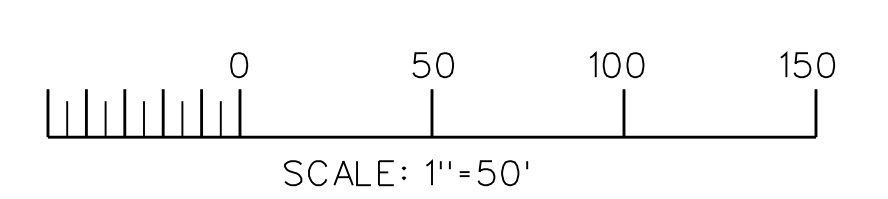
- NOTES**
- TSP WILL BE AT 20'-0" BELOW STATION PAD. SIZE TSP HEIGHT WITH THIS CONSIDERATION.
 - OVERHEAD DISTRIBUTION LINE TO BE EXTENDED FOR STATION SERVICE.
 - PRELIMINARY T-LINE EASEMENT SHOWN.
 - EDGE OF WILDLIFE CORRIDOR.

- LEGEND**
- PROPERTY LINE
 - - - TRANSMISSION EASEMENTS
 - NEW T-LINE
 - - - FUTURE T-LINE
 - WATER & FIBER EASEMENT
 - ⊗ APPROX LOCATION OF 230KV TOWERS
 - TRANSMISSION STEEL POLE
 - DISTRIBUTION POLE
 - FIBER BOX
 - ▭ FUTURE FIBER BOX
 - - - FIBER CONDUIT

REFERENCES

SINGLE LINE DIAGRAM	SLD
ULTIMATE SINGLE LINE DIAGRAM	ULTSLD
GENERAL ARRANGEMENT OUTDOORS	GAO
ULTIMATE GENERAL ARRANGEMENT OUTDOORS	ULTGAO

SWITCHING STATION NAME TO BE PROVIDED BY PG&E



SUBSTATION & TRANSMISSION BUSINESS LINE		SWITCHING STATION FACILITY TYPE	CIVIL DISCIPLINE	FOUNTAIN WIND SWITCHING STATION FACILITY NAME		ARRANGEMENT DRAWING TYPE	ACTIVE STATUS	PROJECT	SUBSTATION FACILITY COMPONENT		230KV UNIT		
ELECTRIC TRANSMISSION ENGINEERING & CONSTRUCTION													
FOR QUESTIONS ON REV. B OF THIS DWG													
Call DASHIELL at xxx-xxx-xxxx													
Call DASHIELL-RAJA KODURU at 713-578-6218													
REV	DATE	DESCRIPTION	JOB NO	CHKD	SUPV	APVD	REV	DATE	DESCRIPTION	JOB NO	CHKD	SUPV	APVD
B	05/14/21	UPDATED PER IDP COMMENTS					JME	RKK					
-	-	RECEIVED ON 04/28/2021											
A	09/03/20	APPROVED FOR CONSTRUCTION					JME	RKK					
-	-	REFERENCE EDS 4042042 REV 4											

DWG NO.

SINGLE LINE DIAGRAM SLD
 ULTIMATE SINGLE LINE DIAGRAM ULTSLD
 GENERAL ARRANGEMENT OUTDOORS GAO
 ULTIMATE GENERAL ARRANGEMENT OUTDOORS ULTGAO

PROPERTY PLAN
 FOUNTAIN WIND SWITCHING STATION
 DEPARTMENT OF ENGINEERING
 PACIFIC GAS AND ELECTRIC COMPANY
 SAN FRANCISCO, CALIFORNIA

SCAN	IC
BILL OF MATL	
DWG LIST	
SUPDS	
SUPSD BY	
SHEET NO	SHEETS
PROPLN	REV

CAD USER: ME DATE: 05-12-21
 VECTOR: PROPLN.DGN
 RASTER: