DOCKETED

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October 31, 2014

VIA E-FILING

Carlsbad Energy Center Project (07-AFC-06C)
Karen Douglas, Commissioner and Presiding Member
Andrew McAllister, Commissioner and Associate Member
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512

Re: Carlsbad Energy Center Project Petition to Amend (07-AFC-06C)
Responses to Data Request Set 3 (Nos. 67–84)

Dear Committee Members:

California Energy Commission staff ("**Staff**") filed Data Request Set 3 (Nos. 67–85) (TN 203149) (the "**Data Requests**") on October 2, 2014, regarding Carlsbad Energy Center LLC's ("**Project Owner**") Petition to Remove Obsolete Facilities to Support Construction ("**PTR**") of the Carlsbad Energy Center Project (07-AFC-06C) ("**CECP**"), and Petition to Amend ("**PTA**") the CECP. Project Owner hereby submits responses to Data Requests (Nos. 67-84).

Please contact me if you have questions.

Locke Lord LLP

By: _____
John A. McKinsey
Attorneys for Carlsbad Energy Center LLC

JAM:dh

Carlsbad Energy Center Petition to Amend

(07-AFC-06C)

Data Response Set 3

(Response to Data Requests 67 to 84)

Submitted to

California Energy Commission

Prepared by

Carlsbad Energy Center LLC

With Assistance from

CH2MHILL®

6 Hutton Centre Drive Suite 700
Santa Ana, CA 92707

October 31, 2014

Contents

Tables

Figures (Figures are provided at the end of their respective sections)

Introduction

Attached are Carlsbad Energy Center LLC (Applicant) responses to the California Energy Commission (CEC) Data Request, Set 3 (numbers 67 through 84) regarding the Carlsbad Energy Center Project (CECP) (07-AFC-06C) Petition to Amend (PTA).

The responses are grouped by individual discipline or topic area. Within each discipline area, the responses are presented in the same order as the CEC presented them and are keyed to the Data Request numbers.

New or revised graphics or tables are numbered in reference to the Data Request number. For example, the first table used in response to Data Request 1 would be numbered Table DR1-1. The first figure used in response to Data Request 1 would be Figure DR1-1, and so on. Figures or tables from the CECP PTA that have been revised have "R1" following the original number, indicating revision 1.

Additional tables, figures, or documents submitted in response to a data request (for example, supporting data, stand-alone documents such as plans, folding graphics, etc.) are found at the end of each discipline-specific section and are not sequentially page-numbered consistently with the remainder of the document, though they may have their own internal page numbering system.

Noise (67–72)

BACKGROUND: ENCINA POWER STATION DEMOLITION IMPACTS

The May 2, 2014 Petition to Amend (PTA) (TN: 202287) requests that demolition and removal of the Encina Power Station (EPS) be included as part of the amended Carlsbad Energy Center Project (amended CECP). Section 5.7.4 of the PTA states that demolishing and removing the EPS would utilize similar construction equipment and consist of activities similar to the demolition and removal activities approved for the licensed CECP, thus no additional demolition noise impact estimates were provided. However, as indicated in Data Responses, Set 1, no. 3 (TN: 202938), demolition of the 400-foot-tall exhaust stack would utilize equipment and demolition methods beyond what was previously analyzed and approved. It is unclear what the noise impacts from these activities (at 400 feet above ground and at ground level) would be at nearby sensitive receptors. In addition, these activities would occur closer to sensitive receptors than previously analyzed.

Data Responses, Set 1, no. 3, explains that the current plan for the demolition of the EPS exhaust stack would be the use of mechanical dismemberment. Specifically, an engineered mast-climbing platform system would be installed on the exterior of the stack. Demolition work would begin starting at the top of the stack and move downwards using work crews or robotic units equipped with hammers, crushers, or shears. As the crews break apart the stack, the material would be pushed inside the stack where it is funneled to the base. The platform would be lowered as necessary to remove each section until the remaining stack height is approximately 80 feet. At this point, the mast climbing platform system would be removed and the remaining portion of the stack would be demolished using high-reach excavators (equipped with cracker/shear attachments).

Section 5.7.2 of the PTA explains that the closest residential area to the licensed CECP is located north of the Agua Hedionda Lagoon, approximately 1,750 feet from the facility site. However, demolition of the EPS would occur approximately 400 feet from the nearest residential receptor (400 feet from the southwest corner of the power plant building and 800 feet from the 400-foot-tall stack). This receptor is identified as receptor M4 in Figure 5.7-3 of the original Application for Certification (AFC) for the CECP (07-AFC-06). Staff needs to analyze the noise impacts from use of hammers, crushers, or shears for mechanical dismemberment at 400 feet above ground, and the noise and vibration impacts from material falling from 400 feet to inside the base of the stack, in addition to any other concurrent demolition activities associated with other onsite features of the EPS facility, including the power plant building that houses Units 1-5, associated boilers, turbine lube systems, air emissions control devices, fans, condensers, decommissioned fuel oil lines, sumps and ancillary structures including a 17-megawatt gas turbine unit, multiple transformers, above-ground ammonia storage tanks and other buildings as described in Data Responses, Set 1, no. 1, and Data Responses, Set 2A, no. 64.

DATA REQUEST

67. Please provide the noise impacts at M4 from the use of hammers, crushers, or shears for mechanical dismemberment, combined with the noise impacts from material falling from 400 feet to the inside base of the stack, in addition to any other concurrent demolition activities and equipment use as part of removal of the EPS.

Response:

The sound levels from hammers, crushers or shears are expected to be similar in level to the construction equipment discussed in the AFC. One of the more recent and complete compilations of construction equipment noise is the Roadway Construction Noise Model (RCNM) prepared by the Federal Highway Administration (FHWA). The RCNM User's Guide (FHWA, 2006) is one of the most comprehensive

construction noise databases ever developed in the U.S, and is applicable for equipment used for demolition as well

Equipment noise levels from Table 1 in the RCNM User's Guide are shown in Table DR67-1. All listed noise levels are maximum A-weighted sound pressure levels at a reference distance of 50 feet. The acoustical usage factor is the fraction of time that the equipment generates noise at the maximum level. The model takes into account the reduction of noise with distance due to geometric divergence. Geometric divergence is the primary mechanism of noise reduction close to a noise source. At farther distances, additional attenuation (for example, ground effects and atmospheric attenuation) can be significant. This excess attenuation is not accounted for in the model. Therefore, the model output should be considered conservatively high for distant receivers. Review of the Table DR67-1 construction equipment noise levels indicates that the loudest equipment generally emits noise in the range of 80 to 90 dBA at 50 feet. This is similar in level to what is presented in the AFC.

TABLE DR67-1
Construction Equipment Noise Levels from the Roadway Construction Noise Model User's Guide

Equipment Description	Acoustical Usage Factor (%)	Specified Lmax @ 50 ft (dBA)	Actual Measured Lmax @ 50 ft (dBA)	No. of Actual Data Samples (Count)
All Other Equipment > 5 HP	50	85	- N/A -	0
Auger Drill Rig	20	85	84	36
Backhoe	40	80	78	372
Bar Bender	20	80	- N/A -	0
Blasting	- N/A -	94	- N/A -	0
Boring Jack Power Unit	50	80	83	1
Chain Saw	20	85	84	46
Clam Shovel (dropping)	20	93	87	4
Compactor (ground)	20	80	83	57
Compressor (air)	40	80	78	18
Concrete Batch Plant	15	83	- N/A -	0
Concrete Mixer Truck	40	85	79	40
Concrete Pump Truck	20	82	81	30
Concrete Saw	20	90	90	55
Crane	16	85	81	405
Dozer	40	85	82	55
Drill Rig Truck	20	84	79	22
Drum Mixer	50	80	80	1
Dump Truck	40	84	76	31
Excavator	40	85	81	170
Flat Bed Truck	40	84	74	4
Front End Loader	40	80	79	96
Generator	50	82	81	19
Generator (<25KVA, VMS signs)	50	70	73	74
Gradall	40	85	83	70
Grader	40	85	- N/A -	0
Grapple (on backhoe)	40	85	87	1

TABLE DR67-1
Construction Equipment Noise Levels from the Roadway Construction Noise Model User's Guide

Equipment Description	Acoustical Usage Factor (%)	Specified Lmax @ 50 ft (dBA)	Actual Measured Lmax @ 50 ft (dBA)	No. of Actual Data Samples (Count)
Horizontal Boring Hydraulic Jack	25	80	82	6
Hydra Break Ram	10	90	- N/A -	0
Impact Pile Driver	20	95	101	11
Jackhammer	20	85	89	133
Man Lift	20	85	75	23
Mounted Impact Hammer (hoe ram)	20	90	90	212
Pavement Scarafier	20	85	90	2
Paver	50	85	77	9
Pickup Truck	40	55	75	1
Pneumatic Tools	50	85	85	90
Pumps	50	77	81	17
Refrigerator Unit	100	82	73	3
Rivet Buster/chipping gun	20	85	79	19
Rock Drill	20	85	81	3
Roller	20	85	80	16
Sand Blasting (Single Nozzle)	20	85	96	9
Scraper	40	85	84	12
Shears (on backhoe)	40	85	96	5
Slurry Plant	100	78	78	1
Slurry Trenching Machine	50	82	80	75
Soil Mix Drill Rig	50	80	- N/A -	0
Tractor	40	84	- N/A -	0
Vacuum Excavator (Vac-truck)	40	85	85	149
Vacuum Street Sweeper	10	80	82	19
Ventilation Fan	100	85	79	13
Vibrating Hopper	50	85	87	1
Vibratory Concrete Mixer	20	80	80	1
Vibratory Pile Driver	20	95	101	44
Warning Horn	5	85	83	12
Welder/Torch	40	73	74	5

N/A = not applicable

Source*:* FHWA. 2006. Roadway Construction Noise Model User's Guide. Final Report, January 2006, FHWA-HEP-05-054, DOT-VNTSC-FHWA-05-01.

It is anticipated that the noise from the dismantling/demolition debris falling within the stack will be primarily contained within the walls of the stack. Noise that emanates from the top of the stack will be attenuated by distance from the ground to the stack opening and it is anticipated that it will direct most of the sound upwards.

DATA REQUEST

68. Please provide the noise impacts at M4 from the use of high-reach excavators (equipped with cracker/shear attachments) at ground level combined with the noise impacts from any other concurrent demolition activities and equipment use as part of removal of the EPS. Response:

Response:

Review of the Table DR67-1 construction equipment noise levels indicates the loudest equipment generally emits noise in the range of 80 to 90 dBA at 50 feet. This is similar in level to what is presented in the AFC. Table DR68-1 presents the estimated sound level at 400 and 800 feet from construction/demolition equipment in the range of 80 to 90 dBA at 50 feet without the additional reductions afforded by consideration of the acoustical usage factor.

TABLE DR68-1
Estimated Equipment Sound Levels at 400 and 800 feet

	Distance		
	50 ft.	**400 ft.**	**800 ft.**
Sound Pressure Level	80	62	56
	90	72	66

DATA REQUEST

69. Please provide the vibration impacts at M4 from the use of hammers, crushers, or shears for mechanical dismemberment at 400 feet above ground and material falling from 400 feet to inside the base of the stack, in addition to the vibration impacts from any other concurrent demolition activities and equipment use as part of removal of the EPS.

Response:

The equipment used to facilitate mechanical dismemberment will be operating at elevation and is not expected to result in ground-borne vibration at M4. The potential level of vibration from material falling inside the stack will depend on the height of the drop and the size/weight of the material. It is expected that contractor will ensure Federal Transit Administration (FTA) threshold for architectural damage for conventional sensitive structures will not be exceeded (100 VdB, which correlates to a peak particle velocity of about 0.2 in/sec).

DATA REQUEST

70. Please provide a description of the assumptions used and the approaches taken in preparing responses to the above Data Requests, nos. 67 through 69.

Response:

Any assumptions are stated in the referenced Data Request.

DATA REQUEST

71. Please describe how sound impacts may be influenced as a result of a noise source being located 400 feet above sensitive receptors.

Response:

Sound from elevated sources is subject to less ground attenuation. However, most construction noise estimates do not take ground attenuation into account. Elevated sources are subject to the same geometric spreading (6 dB reduction per doubling of distance once in the far field) as ground-level sources. Barrier effects can be diminished if the line of sight between the source and receiver is not blocked.

DATA REQUEST

72. If any potentially significant impacts are identified as a part of the responses to Data Requests, nos. 67 through 69, please describe mitigation measures that could be implemented to reduce those impacts (e.g., installing sound reduction blankets on the mast-climbing platform system, sound walls at the base of the stack, and/or vibration dampers).

Response:

Consistent with the existing COC Noise-2, the project will take feasible measures to reduce project-related noise. The Applicant and its contractors anticipate working with the Compliance Project Manager to develop reasonable and feasible measures to reduce the level of noise associated with demolition and construction activities. In addition to complying with the existing Conditions of Certification (COC) Noise-1 and Noise-2, which establish a complaint resolution process and notification procedures, precise noise mitigation measures will be developed by the construction contractor. Factors to be consider include any additional wind loading and other safety considerations. Blasting mats or similar structures may be suitable to reduce the impact of falling debris inside the stack.

Transmission System Engineering (73–76)

BACKGROUND: TRANSMISSION FACILITY PROJECT WORKFORCE

The PTA schedule identifies the start of construction for the amended CECP in October, 2015; commercial operation of the amended CECP in November, 2017; start of EPS demolition in November, 2018 (following commercial operation of the amended CECP); and, completion of EPS demolition in November, 2020 (PTA, pgs. 1-5 & 1-6). This schedule reflects a one-year "EPS decommissioning" period between November, 2017 and November, 2018 as a period requiring no needed workforce (PTA, Tables 2.1-4 & 2.22).

DATA REQUEST

73. During the one-year EPS decommissioning period (between the start of commercial operation of the amended CECP, and the start of demolition of EPS), what activities, if any, would occur? If there are activities occurring during this one-year period (such as the movement of equipment and material, or demolition preparation), would any workforce beyond the existing EPS operations workforce be needed? If so, please provide a schedule showing the workforce by labor craft by month and state what work they will be doing.

Response:

The following decommissioning activities would occur between the start of commercial operation of the amended CECP and the start of demolition of EPS:

- De-energize unnecessary electrical equipment. Some electrical supplies may remain in service in support of demolition activities.
- Purge industrial gases from equipment (e.g., natural gas, hydrogen)
- Remove industrial chemicals from the site, including aqueous ammonia, and mercury if present
- Remove oil from all pumps, motors, pipes, oil reservoirs, transformers, and other equipment
- Electrically isolate decommissioned equipment
- Physically isolate decommissioned equipment by disconnecting from piping systems or other means
- Operate and maintain vital equipment as required for environmental permit compliance (e.g., storm drainage system)
- Verify that all facilities are left in a safe and secure condition

These activities will generally be performed by the EPS operations workforce. In the last 3 to 6 months of the decommissioning period, it may be necessary to utilize outside contractors intermittently to supplement EPS staff in performing the activities listed above. Up to six contractors (up to four electricians, one boilermaker or pipefitter, and one machinist) would be anticipated.

In limited cases, EPS may deploy working equipment or parts to outside entities for use as emergency replacements or spare parts.

BACKGROUND: GENERATOR TIE LINES PHYSICAL LAYOUT PLAN

The submitted gen tie line routes descriptions and diagrams in the Data Responses, Set 1 are incomplete (the scale of the drawings do not appear to be correct) as shown in Figures DR23-1 & DR23-2. While staff appreciates the information provided, we nonetheless require more detailed and accurate information for the certification process.

DATA REQUEST

74. Please provide a discussion, and revise and resubmit the physical layout of Figures DR 22-2, DR 23-1 and DR23-2 with corrected scale of the drawings that reflects the following requested information:

    a. For the proposed 230 kV and 138 kV gen tie lines along the 125-foot-wide right-of way (ROW) route, provide locations of the overhead poles, span lengths, the type of each pole including their height above ground level and underground cable termination poles. Also provide the total length of each 230 kV and 138 kV overhead gen tie line.

    b. Please provide the distance(s) between the newly proposed overhead gen tie lines along the eastern edge of the amended CECP (two most northerly 230kV poles, plus the new in-between 230kV pole separating the two following their movement from the top of the bowl, approximately ten feet west to the eastern edge of the lower perimeter road, which is approximately 25-ft below grade. Please provide the approximate distance of the three gen tie lines from the expected western right-of-way (ROW) boundary of the Caltrans North Coast Interstate-5 HOV/Management Lane Project (I-5 Widening Project). Please revise existing Figure DR 23-1 to illustrate the above.

    c. Provide the distance(s) of the overhead 138/230kV Line Cross-section Double Circuit pole Configuration gen tie lines along the southern boundary fence line of the proposed CECP, beginning at the furthest eastern point (near generation units 10 & 11), and ending at the termination point where the 138kV and 230kV lines separate.

    d. Provide the distance(s) of the 230 kV underground gen tie line (from the point where the line is first placed underground, near the NE corner of the existing SDG&E 138 kV switchyard, to the point where it emerges in the expanded SDG&E 230 kV switchyard.

    e. Please provide detailed 3-phase diagram(s) (plan and side view) showing positions of the two H-pole take-off structures (refine Figure DR 22-2) for the gen unit outlet lines in each amended CECP switchyard, the transitions between gen outlet lines and gen tie line(s) in the line dead end pole.

    f. Please include the position and relative height and size of the GE LMS 100 simple-cycle generation units based on specific size parameters listed in PTA Table 5.1E-1 (Equipment Structure Dimensions), in relation to Figure DR 22-2 (as was discussed during the September 24, 2015 public workshop in Carlsbad).

Response:

In response to Data Request 74a-d, Figures DR23-1 and DR23-2 have been revised and are resubmitted with additional information request depicted. In addition, the following information is supplied:

74a. The estimated total length of the 3-phase 230kV overhead conductor is 2,790 ft. The estimated total length of the 3-phase 138kV overhead conductor is 1,665 ft.

74d. The estimated length of the 3-phase 230kV underground cable between N/E corner of 138KV switchyard and prior to emerging within the SDGE switchyard is 576 ft.

74e. Figure DR22-2 has been revised to show a 3 dimension view starting from the generator enclosure to the transmission line pole.

74f. Figure DR74-1 depicts the positioning of the GE LMS100 unit to the transmission line pole for a pair of units.

Additionally, the site plan (PTA Figure 2.0-1), plot plan (PTA Figure 2.1-1), and transmission line routing (PTA Figure 3.1-1) are revised and included in this data set.

Changes to Drawings

- Location change of two northern poles now re-located in to the lower berm area

- An addition pole has been added to the northern section of the transmission line and located within the berm
- Elimination of the OWS (Ocean Water System)
- The area previously allocated to OWS, repurposed for additional water treatment.

The scale on these drawings has been vetted against known sizes of equipment onsite. Figure DR74-2 has been added to show the CECP overlay on the existing features of the site .

BACKGROUND: TRANSMISSION POLE INFORMATION & RAILWAY CROSSING

PTA Section 3.3.1 "Electrical Clearances" on page 3-5 indicates that the final design of the Amended CECP will comply with California Public Utilities Commission (CPUC) General Order (GO) 95, as well as CPUC decision 93-11-013. However, the submitted 138/230kV Line Cross-section Double Circuit pole Configuration design diagrams are incomplete without graphic representation of ground wire and any necessary communication cable positions and placement on the poles. (Data Response to TSE Data Request Set 1).

DATA REQUEST

75 Resubmit Steel pole Figures 24.1, 24.2 and 24.3 showing the specific locations of the ground wire (size: ½ inch EHS steel), and any required communication cable/wire, include their respective clearances from the ground level.

Response:

Figures DR24-1, DR24-2, and DR24-3 have been revised to depict OPGW (Optical Ground Wire) on the pole structures.

DATA REQUEST

76. For the overhead gen tie lines crossing over the North Coast Transit District Rail Corridor (NCTD) double tracks, please submit overhead line diagrams (plan and side views) showing clearance of the lowest conductor of the line in feet above the railway tracks, as well as positions of the poles (including type of poles) on both sides of the NCTD railway tracks.

Response:

Figure DR76-1 demonstrates the crossing over the NCTD railway tracks.

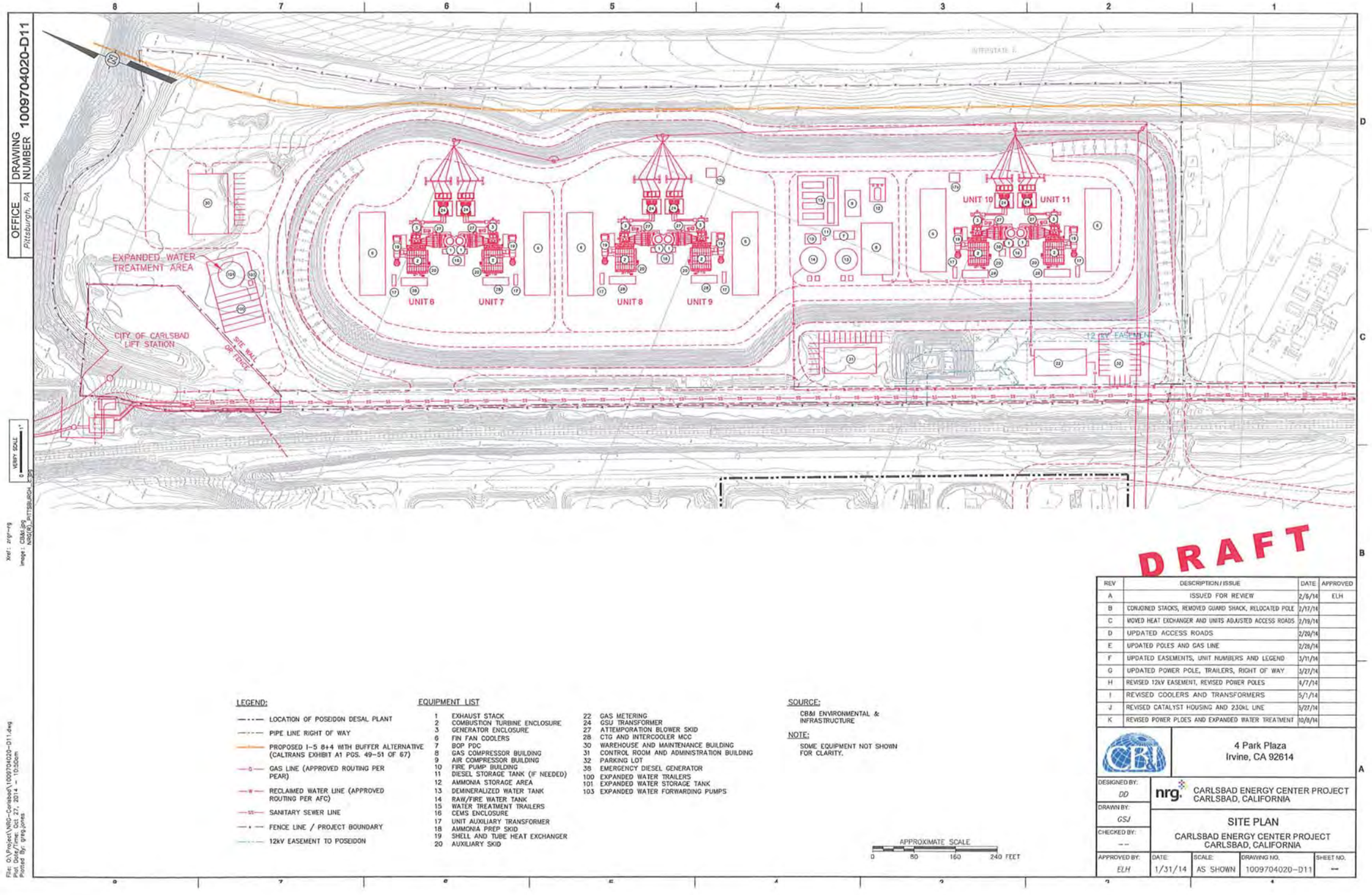


FIGURE 2.0-1R1
Site Plan
Carlsbad Energy Center Project
Carlsbad, California (07-AFC-06C)
Petition to Amend

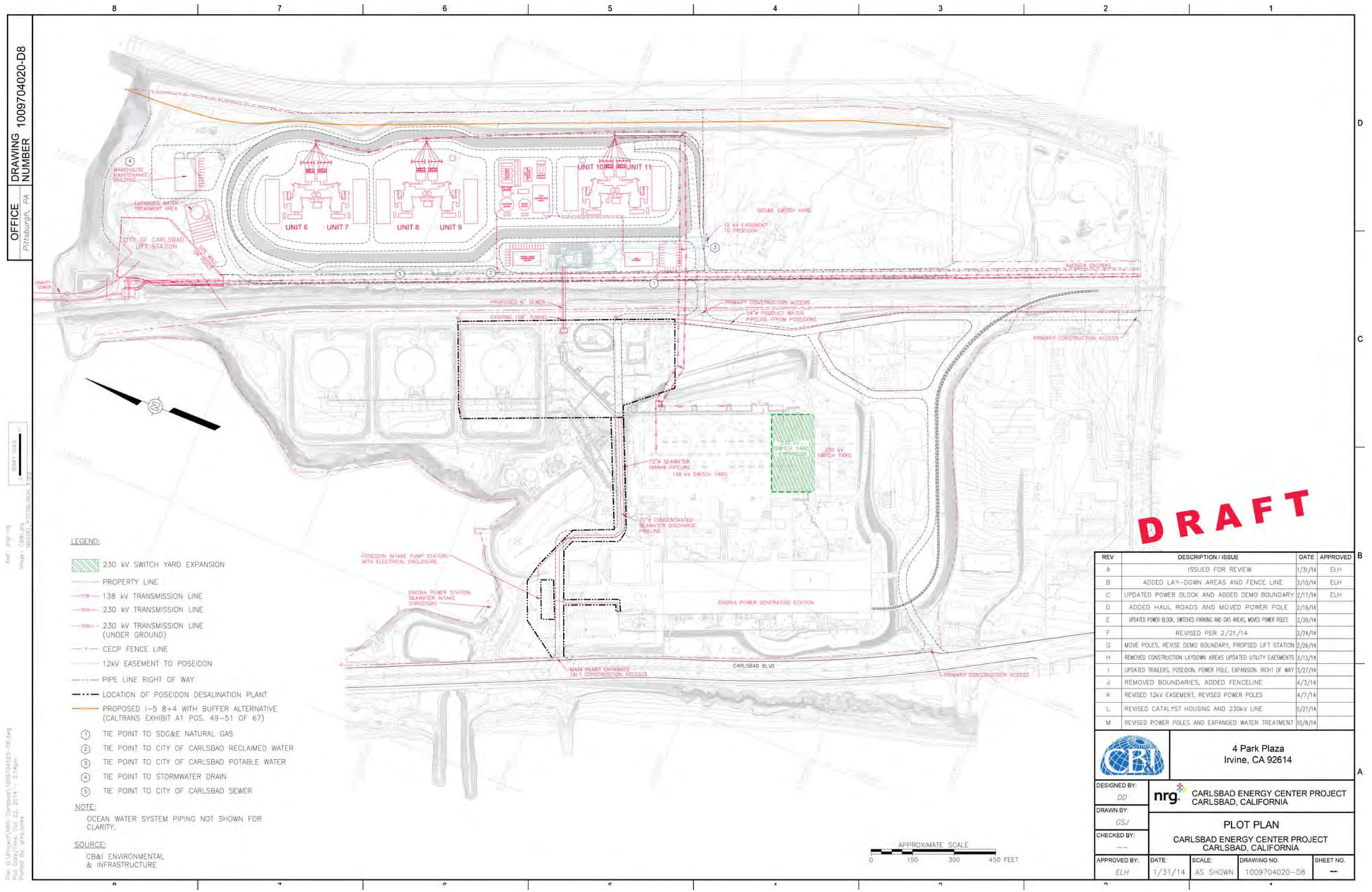


FIGURE 2.1-1R1
Plot Plan
Carlsbad Energy Center Project
Carlsbad, California (07-AFC-06C)
Petition to Amend

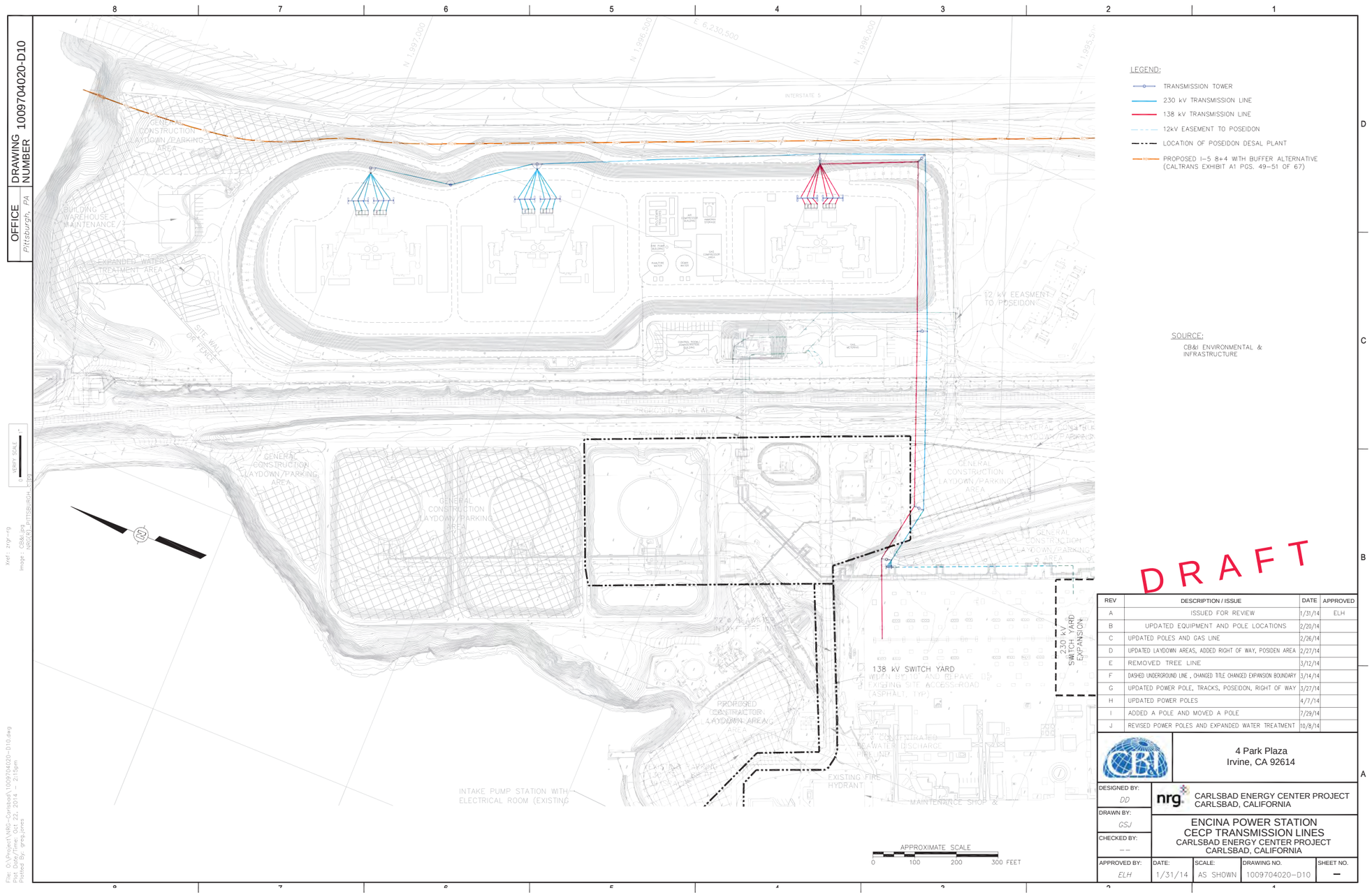
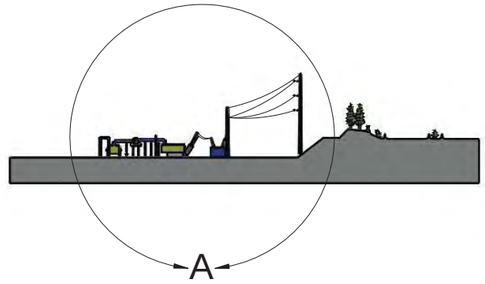
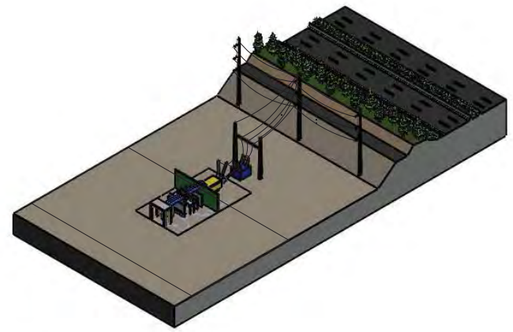


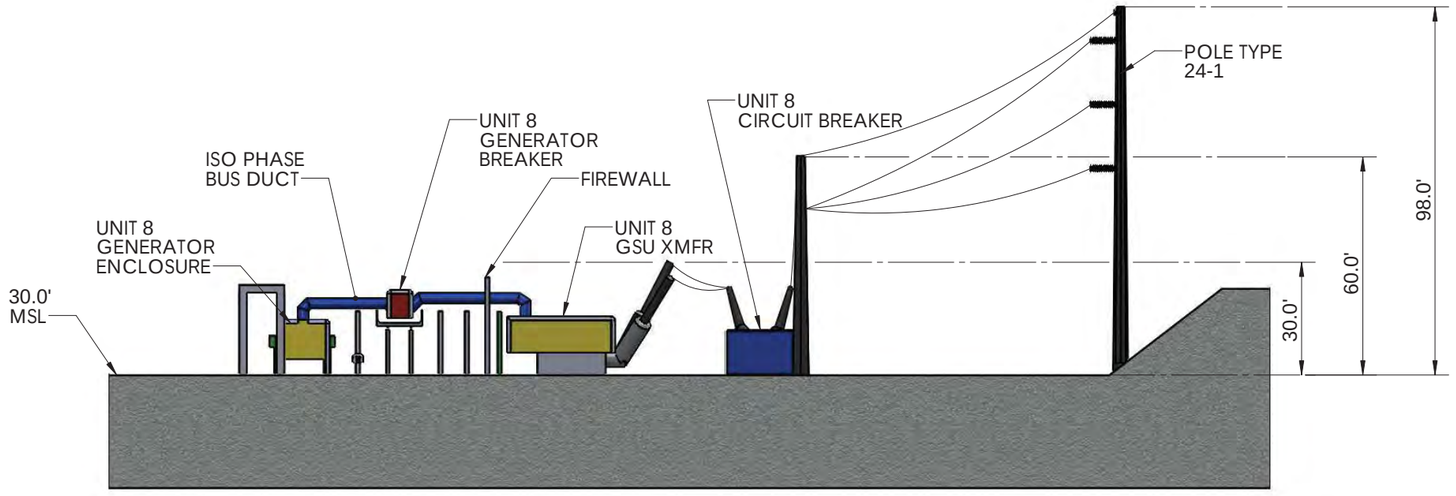
FIGURE 3.1-1R1
Transmission Line Routing
Carlsbad Energy Center Project
Carlsbad, California (07-AFC-06C)
Petition to Amend

PLANT VIEW
UNIT 8
LOOKING NORTH
SCALE: 1:1536



ISOMETRIC VIEW
UNIT 8
LOOKING NORTH-EAST
SCALE: 1:1536





DETAIL A
SCALE 1 : 350

		UNLESS OTHERWISE SPECIFIED:
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±
		INTERPRET GEOMETRIC TOLERANCING PER:
		MATERIAL
NEXT ASSY	USED ON	FINISH
APPLICATION		DO NOT SCALE DRAWING

	NAME	DATE
DRAWN	E.JONES	
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		

COMMENTS:

TITLE: **CEC DATA REQUEST 3 NO. 74e UNIT 8 GENERATOR TO TIE LINE CONNECTION CROSS SECTION**

SIZE	DWG. NO.	REV
B	22-2	A

SCALE: AS NOTED | WEIGHT: | SHEET 1 OF 1

FIGURE DR22-2R1
Takeoff Structure
Carlsbad Energy Center Project
Carlsbad, California (07-AFC-06C)
Petition to Amend

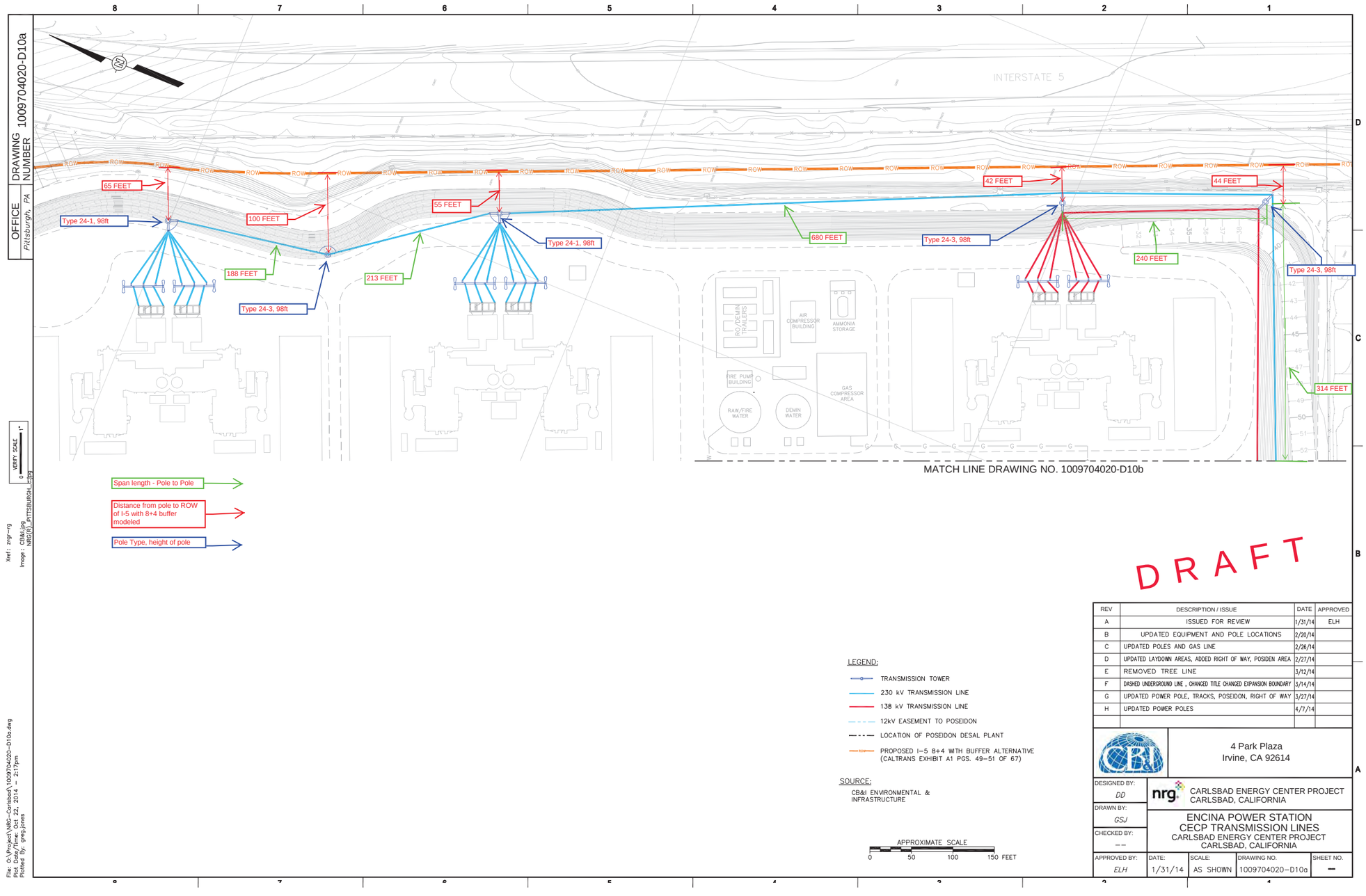
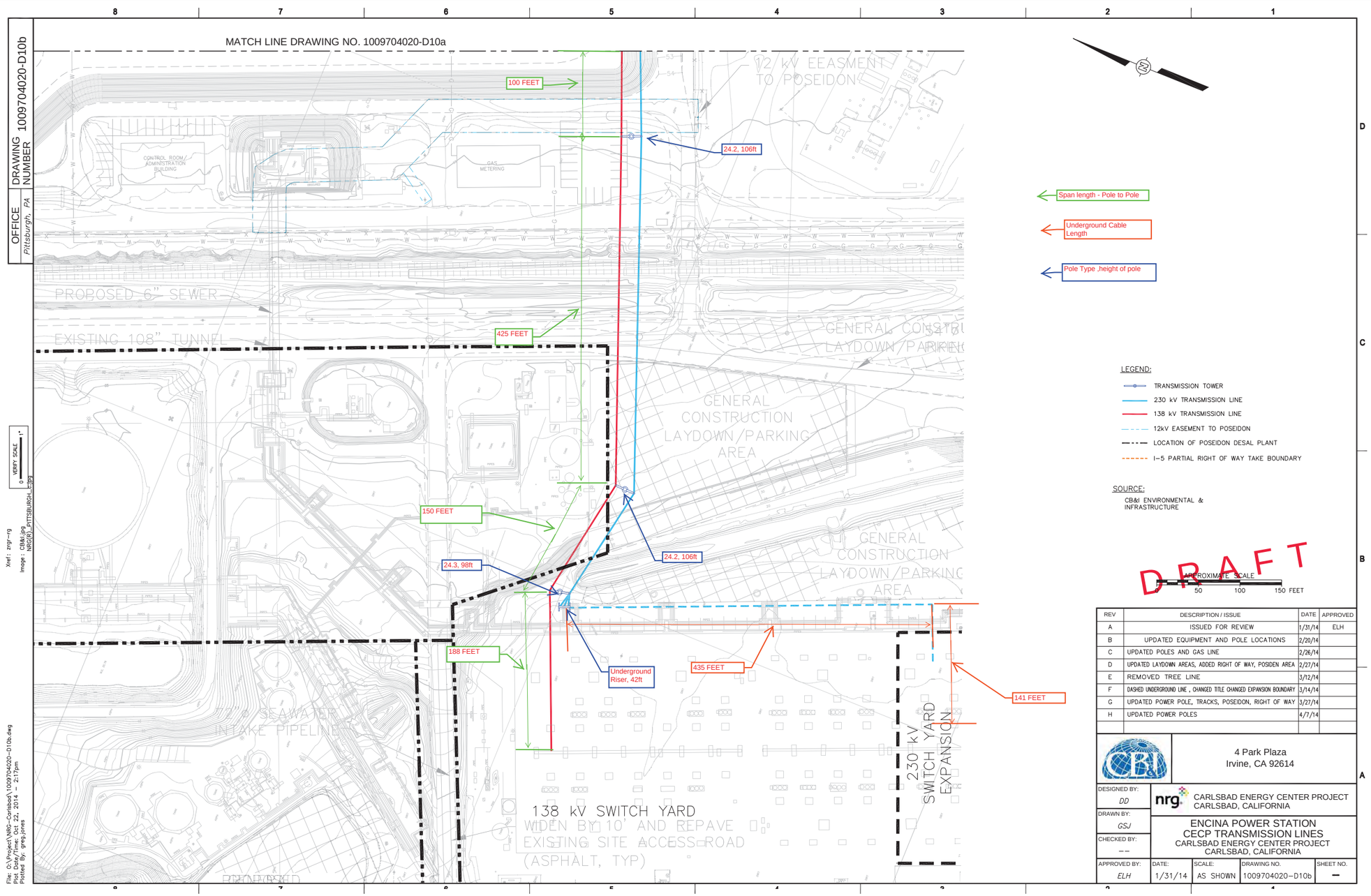


FIGURE DR23-1R1
Transmission Lines
Carlsbad Energy Center Project
Carlsbad, California (07-AFC-06C)
Petition to Amend

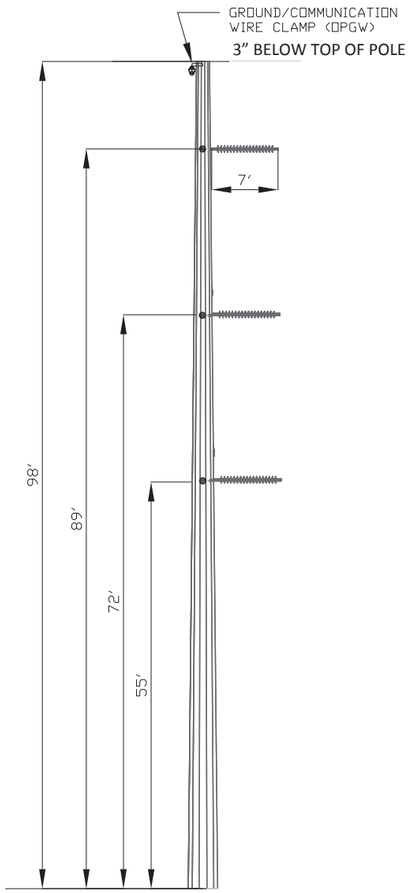


REV	DESCRIPTION / ISSUE	DATE	APPROVED
A	ISSUED FOR REVIEW	1/31/14	ELH
B	UPDATED EQUIPMENT AND POLE LOCATIONS	2/20/14	
C	UPDATED POLES AND GAS LINE	2/26/14	
D	UPDATED LAYDOWN AREAS, ADDED RIGHT OF WAY, POSIDEN AREA	2/27/14	
E	REMOVED TREE LINE	3/12/14	
F	DASHED UNDERGROUND LINE , CHANGED TITLE CHANGED EXPANSION BOUNDARY	3/14/14	
G	UPDATED POWER POLE, TRACKS, POSEIDON, RIGHT OF WAY	3/27/14	
H	UPDATED POWER POLES	4/7/14	

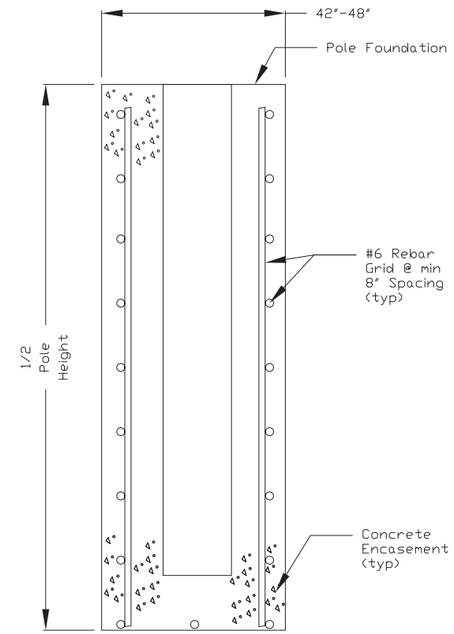
4 Park Plaza
Irvine, CA 92614

DESIGNED BY: DD	CARLSBAD ENERGY CENTER PROJECT CARLSBAD, CALIFORNIA		
DRAWN BY: GSJ	ENCINA POWER STATION CECP TRANSMISSION LINES CARLSBAD ENERGY CENTER PROJECT CARLSBAD, CALIFORNIA		
CHECKED BY: --			
APPROVED BY: ELH	DATE: 1/31/14	SCALE: AS SHOWN	DRAWING NO. 1009704020-D10b
			SHEET NO. -

FIGURE DR23-2R1
Transmission Lines
Carlsbad Energy Center Project
Carlsbad, California (07-AFC-06C)
Petition to Amend



230kV Line Pole Cross-section
Deadend Steel Pole



Typical Caisson Concrete Embedment
Cross- Section
N.T.S.

NOTE:

EQUIPMENT CONFIGURATION & RATINGS ARE PRELIMINARY.

SOURCE: CBI ENVIRONMENTAL AND INFRASTRUCTURE, INC.

REV	DESCRIPTION / ISSUE	DATE	APPROVED
A	ORIGINAL ISSUE	07/12/2007	n/a
B	ADDED LOCATION OF GND WIRE	10/15/2014	DRD

NRG Energy, Inc

CHICAGO BRIDGE AND IRON INC.

DESIGNED BY: DOP	CARLSBAD ENERGY CENTER PROJECT CARLSBAD, CA
DRAWN BY: DOP	ENCINA POWER STATION FIGURE TSE1c-2 CECDR 24-1 T-LINE POLE CROSS SECTIONS
CHECKED BY: --	

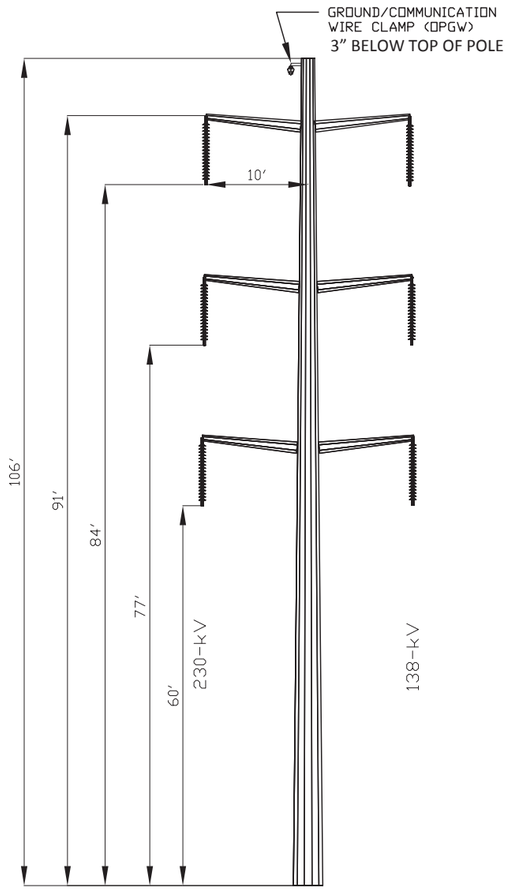
APPROVED BY:	DATE:	SCALE:	DRAWING NO.	REV. NO.
--	07/12/07	NTS	FIGURE TSE1c-2	B

OFFICE Centennial, CO | DRAWING NUMBER FIGURE TSE1c-2 CECDR 24-1 | B

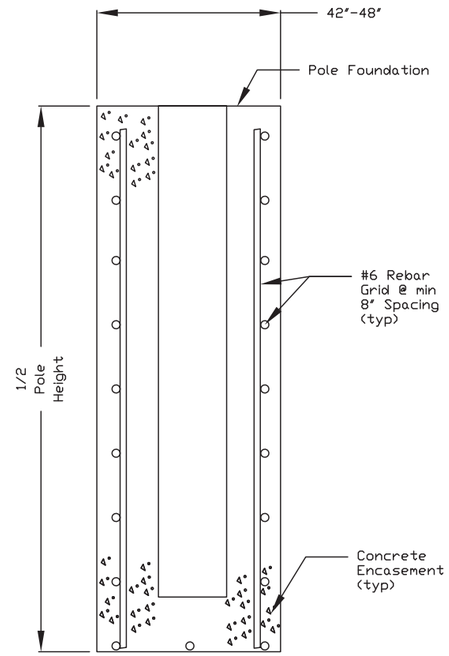
FIGURE DR24-1R1
Transmission Line Pole Cross Section
Deadend Steel Pole
Carlsbad Energy Center Project
Carlsbad, California (07-AFC-06C)

CH2MHILL

OFFICE: Centennial, CO | DRAWING NUMBER: FIGURE TSE1c-4 CEC DR 24-2 | B



138 & 230kV Line Pole Cross-section
Double Circuit Configuration - Steel Pole



Typical Caisson Concrete Embedment
Cross- Section
N.T.S.

NOTE:

EQUIPMENT CONFIGURATION & RATINGS ARE PRELIMINARY.

SOURCE: CBI ENVIRONMENTAL AND INFRASTRUCTURE, INC.

REV	DESCRIPTION / ISSUE	DATE	APPROVED
A	ORIGINAL ISSUE	07/12/2007	n/a
B	ADDED LOCATION OF GND WIRE	10/15/2014	DRD

NRG Energy, Inc | CHICAGO BRIDGE AND IRON INC.

DESIGNED BY: DOP	CARLSBAD ENERGY CENTER PROJECT CARLSBAD, CA			
DRAWN BY: DOP	ENCINA POWER STATION FIGURE TSE1c-4 CEC DR 24-2 T-LINE POLE CROSS SECTION			
CHECKED BY: --				
APPROVED BY: --	DATE: 07/12/07	SCALE: NTS	DRAWING NO. FIGURE TSE1c-4	REV. NO. B

FIGURE DR24-2R1
Transmission Line Pole Cross Section
Double-circuit Configuration Steel Pole
Carlsbad Energy Center Project
Carlsbad, California (07-AFC-06C)

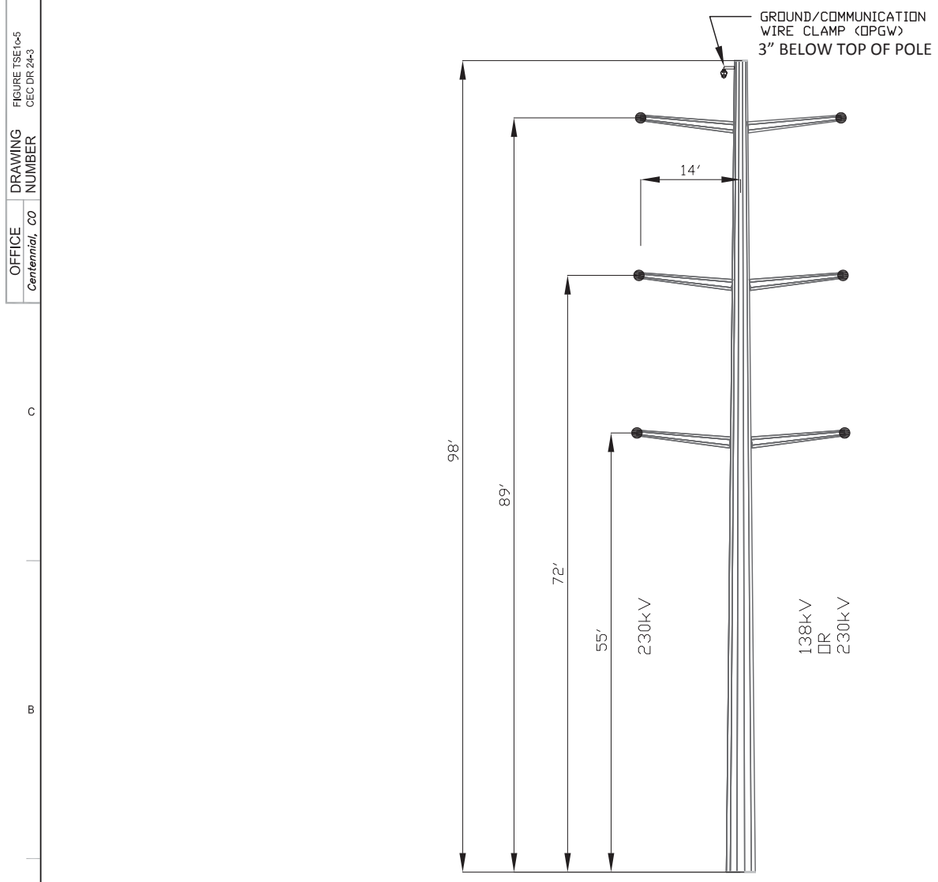
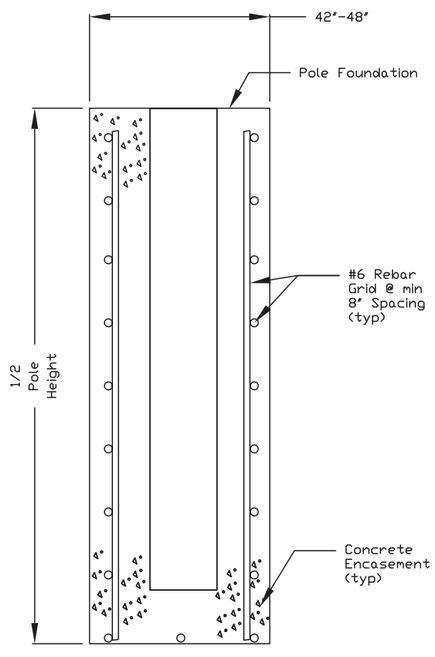


FIGURE TSE1c-5
138 & 230kV Line Pole Cross-section
Double Circuit Deadend Configuration
Line Divergence Point



Typical Caisson Concrete Embedment
Cross- Section
N.T.S.

NOTE:

EQUIPMENT CONFIGURATION & RATINGS ARE PRELIMINARY.

SOURCE: CBI ENVIRONMENTAL AND INFRASTRUCTURE, INC.

REV	DESCRIPTION / ISSUE	DATE	APPROVED
A	ORIGINAL ISSUE	07/12 2007	n/a
B	ADDED LOCATION OF GND WIRE	10/15 2014	DRD

NRG Energy, Inc — CHICAGO BRIDGE AND IRON INC.

DESIGNED BY: DOP	CARLSBAD ENERGY CENTER PROJECT CARLSBAD, CA
DRAWN BY: DOP	ENCINA POWER STATION FIGURE TSE1c-5 CEC DR 24-3 T-LINE POLE CROSS SECTION
CHECKED BY: --	

APPROVED BY:	DATE:	SCALE:	DRAWING NO.	REV. NO.
--	07/12/07	NTS	FIGURE TSE1c-5	B

OFFICE: Centennial, CO — DRAWING NUMBER: FIGURE TSE1c-5 CEC DR 24-3 — B

FIGURE DR24-3R1
Transmission Line Pole Cross Section
Double-circuit Deadend Configuration
Carlsbad Energy Center Project
Carlsbad, California (07-AFC-06C)

FIGURE DR74-1
Position of GE LMS100 Unit to Transmission Line Pole
Carlsbad Energy Center Project
Carlsbad, California (07-AFC-06C)
Petition to Amend

OFFICE Pittsburgh, PA

DRAWING NUMBER 1009704020-D8

230 kV SWITCH YARD EXPANSION
PROPERTY LINE
138 kV TRANSMISSION LINE
230 kV TRANSMISSION LINE
230 kV TRANSMISSION LINE (UNDER GROUND)
CECP FENCE LINE
12kV EASEMENT TO POSEIDON
PIPE LINE RIGHT OF WAY
LOCATION OF POSEIDON DESALINATION PLANT
PROPOSED I-5 8+4 WITH BUFFER ALTERNATIVE (CALTRANS EXHIBIT A1 PGS. 49-51 OF 67)

1. TIE POINT TO SDG&E NATURAL GAS
2. TIE POINT TO CITY OF CARLSBAD RECLAIMED WATER
3. TIE POINT TO CITY OF CARLSBAD POTABLE WATER
4. TIE POINT TO STORMWATER DRAIN
5. TIE POINT TO CITY OF CARLSBAD SEWER

NOTE:
OCEAN WATER SYSTEM PIPING NOT SHOWN FOR CLARITY.

SOURCE:
CB&I ENVIRONMENTAL & INFRASTRUCTURE

APPROXIMATE SCALE
0 150 300 450 FEET

DRAFT

REV	DESCRIPTION / ISSUE	DATE	APPROVED
A	ISSUED FOR REVIEW	1/31/14	ELH
B	ADDED LAY-DOWN AREAS AND FENCE LINE	2/10/14	ELH
C	UPDATED POWER BLOCK AND ADDED DEMO BOUNDARY	2/17/14	ELH
D	ADDED HAUL ROADS AND MOVED POWER POLE	2/19/14	
E	UPDATED POWER BLOCK, SWITCHED PARKING AND GAS AREAS, MOVED POWER POLES	2/20/14	
F	REVISED PER 2/21/14	2/24/14	
G	MOVE POLES, REVISE DEMO BOUNDARY, PROPSED LIFT STATION	2/26/14	
H	REMOVED CONSTRUCTION LAYDOWN AREAS UPDATED UTILITY EASEMENTS	3/13/14	
I	UPDATED TRAILERS, POSEIDON, POWER POLE, EXPANSION, RIGHT OF WAY	3/27/14	
J	REMOVED BOUNDARIES, ADDED FENCELINE	4/3/14	
K	REVISED 12kV EASEMENT, REVISED POWER POLES	4/7/14	
L	REVISED CATALYST HOUSING AND 230kV LINE	5/27/14	
M	REVISED POWER POLES AND EXPANDED WATER TREATMENT	10/8/14	

CB&I
4 Park Plaza
Irvine, CA 92614

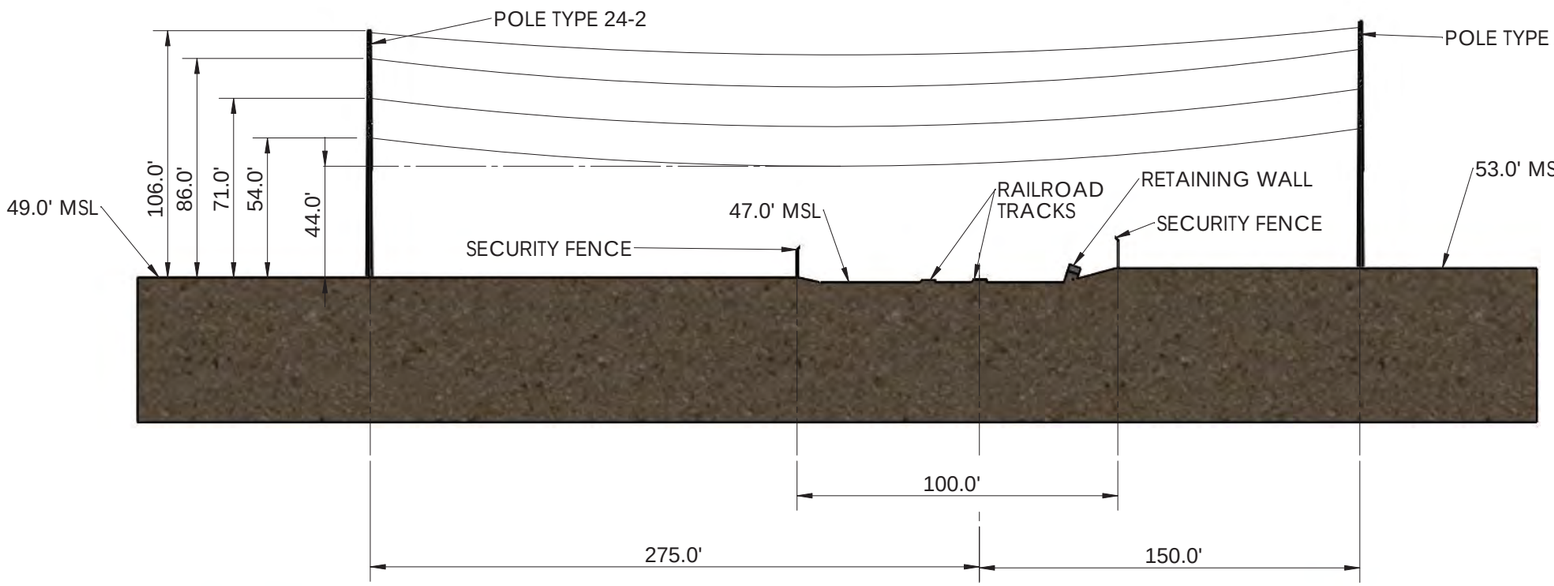
DESIGNED BY: DD
DRAWN BY: GSJ
CHECKED BY: ---

nrg. CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CALIFORNIA

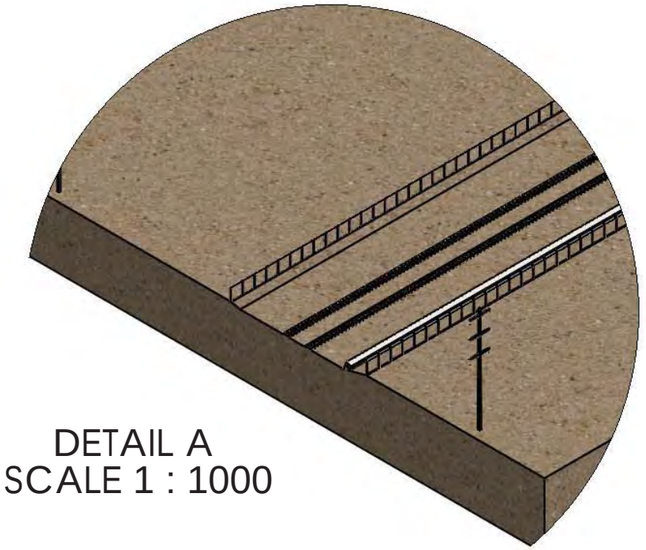
CEC DATA REQUEST 3 NO. 77C
CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CALIFORNIA

APPROVED BY:	DATE:	SCALE:	DRAWING NO.	SHEET NO.
ELH	1/31/14	AS SHOWN	photo1009704020-D8	--

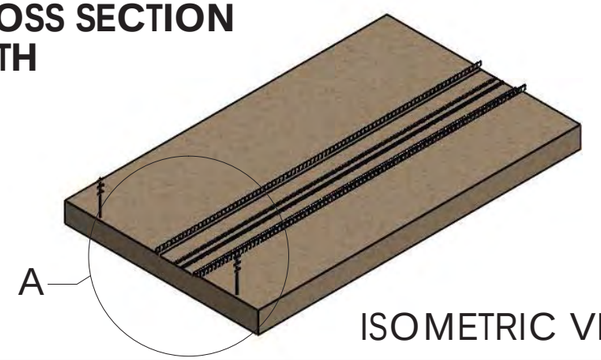
FIGURE DR74-2
CECP Overlay on Existing Site Features
Carlsbad Energy Center Project
Carlsbad, California (07-AFC-06C)
Petition to Amend



NCTD RAIL CORRIDOR CROSS SECTION LOOKING NORTH



DETAIL A
SCALE 1 : 1000



ISOMETRIC VIEW

		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±	DRAWN		
			CHECKED		
			ENG APPR.		
			MFG APPR.		
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.		
		MATERIAL	COMMENTS:		
NEXT ASSY	USED ON	FINISH			
APPLICATION		DO NOT SCALE DRAWING			

PROPRIETARY AND CONFIDENTIAL

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TITLE:
CEC DATA REQUEST 3 NO. 76

SIZE	DWG. NO.	REV
B		

SCALE: 1:3072 | WEIGHT: | SHEET 1 OF 1

Item is Unsolvable
Item Conflicts

FIGURE DR76-1a
NCTD Rail Corridor Cross Section
Carlsbad Energy Center Project
Carlsbad, California (07-AFC-06C)
Petition to Amend

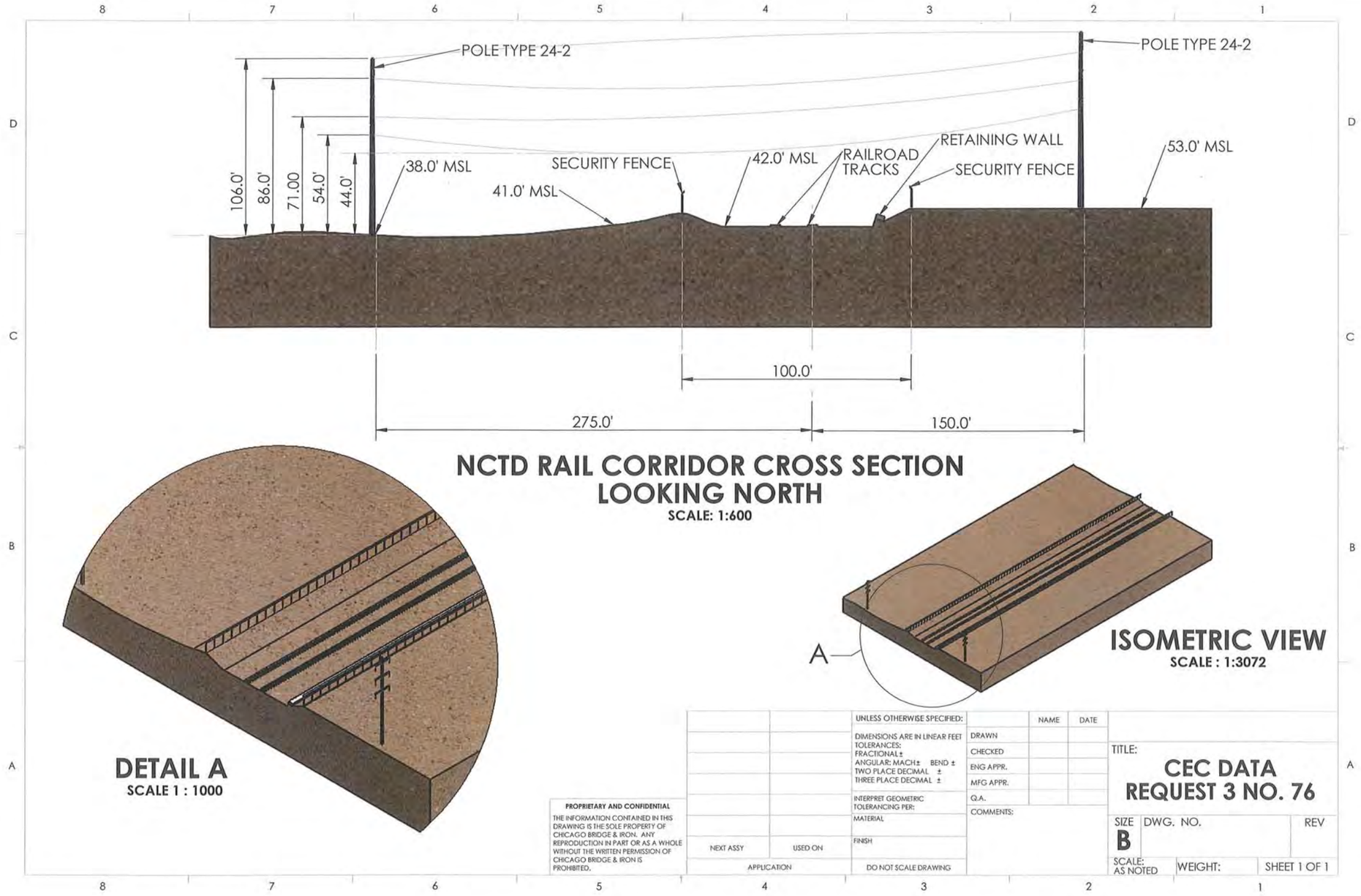

FIGURE DR76-1b
NCTD Rail Corridor Cross Section
Carlsbad Energy Center Project
Carlsbad, California (07-AFC-06C)
Petition to Amend

Visual Resources (77–84)

BACKGROUND: OVERLAY OF CECP SITE PLAN ON I-5 WIDENING PREFERRED ALTERNATIVE

Because the precise layout of the Caltrans North Coast Interstate 5 HOV/Management Lane Project (I-5 Widening Project) was not known with certainty at the time of preparation and publication of the Carlsbad Energy Center Project (CECP) Final Staff Assessment (FSA) in November, 2009, or the licensed CECP Final Decision on May 31, 2012, the physical details and specifics of Condition of Certification **VIS-5**[1] were not fully prescribed. However at this time, because the I-5 Widening Project has been approved, and the preferred alignment alternative (8+4 with Barrier) has been released, specific widening information is now available. Accordingly, staff requires accurate information on the relationship between the final I-5 widening alignment and the proposed amended CECP layout, in order to confirm the adequacy of visual mitigation measures embodied in **VIS-5** in terms of the "buffer zone" and its capacity to fulfill both visual and power plant perimeter safety goals described in **HAZ-8.**

DATA REQUEST

77. In order to better understand the extent of the impacts of the I-5 Widening Project Locally Preferred Alternative (LPA) on which impacts and mitigation measures for the amended CECP can be determined as appropriate, please provide the following Computer Aided Design (CAD) and image overlays:

    a. An accurately scaled and registered overlay of the Computer Aided Design (CAD) layout of the amended CECP site plan (PTA Figure 2.1-1) over the relevant portions of CAD layouts for the Caltrans I-5 Widening LPA (8+4 w/ Barrier Alternative).

    b. Please provide the above overlays in two forms: as CAD files (in AutoCAD file format) with separate layers for existing conditions with topography, proposed layouts, proposed grading; and as mapping in image file form.

    c. Please also provide both overlays (CAD and image) on rectified aerial photography for greater ease of public interpretation.

Response:

Project Owner objects to this data request as stated in the Objection Letter because it seeks information that is not necessary to reach a decision on the PTA.

BACKGROUND: ARCHITECTURAL AND GRADE ELEVATIONS

The project description in the PTA (Section 2, and elsewhere in the document) lacks sufficient physical description and dimension information related to the major physical features to be modified for the proposed project, including the combustion turbines and other features listed in PTA Table 5.1E-1 (Equipment Structure Dimensions), in order for staff to fully understand their visual effects.

Please provide accurately-scaled architectural cross-section and elevations of all amended CECP generation units (Units 6-11), and related major physical electrical-generation equipment and components (turbines, exhaust stacks, etc.). Please include heights above grade called out for major components, such as tops of exhaust stacks for the GE LMS 100 generation units, and associated 138kV and 230kV transmission poles and infrastructure, etc. In addition, please provide the actual proposed grade elevations for both the existing lower and upper berm (perimeter / access) roads, and adjacent portions of the proposed I-5 western right-of-way boundary under the Locally Preferred Alternative.

[1] Cumulative Impact Buffer Zone, Coordination with Caltrans, and Mitigation Plan

BACKGROUND: CROSS-SECTIONS SHOWING RELATIONSHIP BETWEEN PROJECT SITE AND I-5

The cross-sectional relationships of the amended CECP eastern boundary with that of the proposed western right-of-way boundary of the widened I-5 under the LPA are critical to understanding the long-term visual effects of the amended CECP, and to the design of a specific Cumulative Impact Mitigation Plan for implementation of Condition of Certification **VIS-5** in a timely and efficient manner to achieve effective mitigation of all potential cumulative visual impacts. Staff requires a better understanding of these physical relationships, and of the design intent for implementation of **VIS-5**.

DATA REQUEST

78. Please provide schematic cross-sections showing the relationship of the existing I-5 and amended CECP features such as landscaped berm, access roads, and storage tanks.

Response:

Project Owner objects to this data request as stated in the Objection Letter because it seeks information that is not necessary to reach a decision on the PTA.

DATA REQUEST

79. Please provide schematic cross-sections showing the relationship of the proposed I-5 Widening Project (LPA), with the proposed grading and project features of the amended CECP, including proposed concept(s) for implementation of **VIS-5**. Features depicted in the cross-sections should include the new proposed amended CECP fence line, proposed new Caltrans right-of-way (after I-5 Widening Project); all six GE LMS 100 generation units; proposed 230 and 138 kV transmission poles and gen-tie lines; and, the landscaped buffer as called for in **VIS-5**. In the schematic cross-sections, please provide dimensions such as width, grade elevation and height of the landscaped buffer, access roads, generation units, etc. in order to sufficiently convey the layout concepts and design intent, particularly as they relate to implementation of visual screening as called for **in VIS-5**. Cross-sections should, at a minimum, illustrate conditions at amended CECP Units 6/7 and 8/9, with their associated re-configured 230 kV gen-tie line transmission poles.

Response:

Project Owner objects to this data request as stated in the Objection Letter because it seeks information that is not necessary to reach a decision on the PTA.

DATA REQUEST

80. Please provide a scaled plan view conveying design intent for implementation of **VIS-5**.

Response:

Project Owner objects to this data request as stated in the Objection Letter because it seeks information that is not necessary to reach a decision on the PTA.

BACKGROUND: UPDATED ARBORIST'S ASSESSMENT AND LANDSCAPE PLAN

At the time of preparation of the CECP Final Staff Assessment, an arborist's assessment of existing trees on the Encina Power Station (EPS) and future CECP site was prepared, with recommendations for tree replacement and enhancement. Since that time, substantial changes in the tree canopy have occurred along the western and northern edges of the EPS, including loss of trees due to death and disease, and construction and preparation activities related to the Carlsbad Seawater Desalination Project and the Agua Hedionda Lift Station and Sewer Line project. Observation of the site's existing tree and vegetation screening conditions clearly indicate the need for a reassessment of the site's current condition, and for

replacement and enhancement of tree and shrub plantings simply to maintain existing visual screening of the power plant in the near and medium term (prior to future planned I-5 widening activities).

DATA REQUEST

81. Please prepare an updated arborist's assessment including inventory and recommendations for maintaining the existing level of visual screening on the western and northern boarders of the EPS where the amended CECP would be constructed.

Response:

Project Owner objects to this data request as stated in the Objection Letter because it seeks information that is not necessary to reach a decision on the PTA.

DATA REQUEST

82. Please prepare an updated conceptual landscape plan reflecting the recommendations of the arborist assessment for maintaining and enhancing visual screening at the amended CECP location in the near and medium term.

Response:

Project Owner objects to this data request as stated in the Objection Letter because it seeks information that is not necessary to reach a decision on the PTA.

BACKGROUND: SIMULATION OF CUMULATIVE CONDITION

In the licensed CECP proceedings and Final Commission Decision, a key visual concern was the potential for significant cumulative visual impacts occurring between the CECP eastern border and the western border of the I-5 Widening Project. At the time of those prior proceedings, the final configuration of the I-5 Widening Project was not known. However, since that time, the I-5 LPA has been determined. Because this impact was considered potentially significant without adequate mitigation as described in Condition of Certification VIS-5; because the I-5 expansion information is now available; and, because the amended CECP modifications include placement of new features along the eastern edge of the proposed project (specifically 230/138 kV transmission poles), it is now possible to predict and depict the anticipated cumulative amended CECP / expanded I-5 condition in visual simulations. Such simulations would provide a basis for analyzing the cumulative visual impact of the amended CECP.

DATA REQUEST

83. Please prepare simulations of the anticipated cumulative condition of the amended CECP following I-5 widening, as seen from KOP 2 (Pannonia) and KOP 4 (Hoover Street).

Response:

Project Owner objects to this data request as stated in the Objection Letter because it seeks information that is not necessary to reach a decision on the PTA.

DATA REQUEST

84. Please provide conceptual plans and cross-sections of the amended CECP at its most easterly boundary, in relation to both the existing and expanded I-5 right-of-ways, in order to indicate the assumptions underlying the simulations.

Response:

Project Owner objects to this data request as stated in the Objection Letter because it seeks information that is not necessary to reach a decision on the PTA.