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01-AFC-24C

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RECD. APR 09 2010

**PETITION FOR CHANGE OF THE PROJECT DESCRIPTION IN THE FINAL
DECISION TO INSTALL AND OPERATE NEW WATER TREATMENT
STORAGE TANKS AND RELATED EQUIPMENT**

PALOMAR ENERGY CENTER

(O1-AFC-24C)

Submitted By:

SAN DIEGO GAS & ELECTRIC COMPANY

SAN DIEGO, CALIFORNIA

Submitted to:

CALIFORNIA ENERGY COMMISSION

APRIL, 2010

**PETITION FOR CHANGE OF THE PROJECT DESCRIPTION IN THE FINAL
DECISION TO INSTALL AND OPERATE NEW WATER TREATMENT STORAGE
TANKS AND RELATED EQUIPMENT**

PALOMAR ENERGY CENTER on, and

(O1-AFC-24C)

1.0 INTRODUCTION

San Diego Gas & Electric Company (SDG&E) is filing this petition for a proposed amendment of the project design as described in the Final Decision for the Palomar Energy Center (PEC), Docket 01-AFC-24 pursuant to 20 Cal. Code Regs. Section 1769(a)(1). San Diego Gas & Electric (SDG&E or "the applicant") is proposing to upgrade existing areas for chemical storage with the installation of three new water treatment bulk storage tanks and three associated pump skid assemblies. The tanks will hold sodium hypochlorite and sodium bromide. These materials have low acute toxicity and are already being used at the PEC. The goal of this project is to reduce the need for deliveries of water treatment chemicals and make the PEC a more reliable electricity generating facility (EGF). No increase in the usage rate of the materials is proposed.

2.0 DESCRIPTION OF PROPOSED MODIFICATION (Sec. 1769(a)(1)(A))

SDG&E intends to install three new water treatment storage tanks, upgrades to existing containments, three associated pump skid assemblies, two of which are new and one which will utilize an existing pump skid. Upgrades to electrical wiring, instrumentation and DCS control and indication wiring will also be completed. Detailed plans for the proposed changes are included in Attachment 1.

The Palomar Energy Center currently has the following cooling water biocide injection equipment:

1. At the cooling tower:

- a. 1,500 gallon sodium hypochlorite storage tank and pump skid system.
- b. 400 gallon sodium bromide and pump skid system.

2. At the raw water tank:

- a. 300 gallon sodium hypochlorite storage tank and pump skid system.
- b. 400 gallon sodium bromide storage tank and pump skid system.

These systems do not provide enough storage capacity and in some cases the pump capacities are not large enough. Ideally, the tanks would be topped off about once a month. The smaller tank system currently in place requires multiple deliveries per week. Replacing the current system with larger tanks will reduce deliveries and transfer of materials from delivery trucks into tanks at the plant. The following project is proposed:

1. At the cooling tower:

- a. Install a new 6,000 gallon sodium hypochlorite tank and pump skid system.
- b. Install a new 3,000 gallon sodium bromide tank and pump skid system.
- c. Install a new chemical injection piping and drive-over type duct between the chemical pump skids and the cooling tower basin. The length of this duct is approximately 50 feet. The new duct and piping will replace original under ground and above ground systems.

2. At the raw water tank:

- a. Install a new 4,800 gallon sodium hypochlorite tank. Use the existing pump skid system.
- b. Remove the existing sodium bromide tank and pump skid system as it is not necessary.

3.0 NECESSITY (Sec. 1769(a)(1)(B))

The current installed chemical storage systems do not provide enough storage capacity and in some cases the pump capacities were not originally designed large enough. In an ideal situation, deliveries would occur on an average once a month. Due to the current capacities of existing storage, deliveries occur several times per week. The delivery and handling of chemicals so frequently adds additional risk to the public in transportation on roadways, during unloading for employees and is more labor intensive.

4.0 TIMING (Sec. 1769(a)(1)(C) and (D))

SDG&E assumed ownership of the PEC about three years after issuance of the Final Decision and certification to Palomar Energy, LLC. After taking over operation of the plant on SDG&E continues to undertake a number of engineering and design reviews to improve plant operations, efficiency and reliability and thus better serve the needs of SDG&E ratepayers. SDG&E has also benefited from experience gained operating the plant since assuming ownership. This “fine tuning” could not have taken place during the licensing proceeding because SDG&E was not the applicant, the plant was not yet operating, and Palomar Energy, LLC brought its own objectives to the development of the project for the merchant market. The addition of the additional water treatment material storage tanks does not change or undermine the assumptions, rationale, findings, or other bases of the Final Decision. The change complies with all laws, ordinances, regulations and standards and does not have a significant environmental impact, as further described below.

5.0 ANALYSIS OF THE EFFECT OF THE MODIFICATIONS ON THE ENVIRONMENT (Sec. 1769(a)(1)(E))

The requested equipment change will have no significant effects on any of the technical areas analyzed in the August 2003 Final Commission Decision. Please see Table 1 below.

Table 1

Review of Effects of Installation and Operation of Chemical Storage Tanks

TECHNICAL AREA	SIGNIFICANT ENVIRONMENTAL IMPACT (Y/N)?		NOTES
AIR QUALITY		N	
CULTURAL RESOURCES		N	Area for construction is prior filled/constructed area
EFFICIENCY		N	No impact
GEOLOGICAL HAZARDS		N	No change
HAZARDOUS MATERIALS HANDLING		N	No new materials will be introduced. The new tank and pump system will reduce the need for weekly deliveries and reduce transportation and material unloading risks. Equipment will meet all applicable codes.
LAND USE		N	No change
NOISE		N	
PALEONTOLOGICAL RESOURCES		N	Area for construction is prior filled area

TECHNICAL AREA	SIGNIFICANT ENVIRONMENTAL IMPACT (Y/N)?		NOTES
BIOLOGICAL RESOURCES		N	Area previously disturbed.
PUBLIC HEALTH		N	New tank systems are replacing existing, will reduce number of deliveries and reduce risk of spills or emergencies by having fewer deliveries
RELIABILITY		N	The project improves plant reliability.
SOCIOECONOMICS		N	No change
SOILS		N	No change
TRAFFIC AND TRANSPORTATION		N	Construction traffic minimal
T-LINE SAFETY AND NUISANCE		N	No change
TRANSMISSION SYSTEM ENGINEERING		N	No change
VISUAL RESOURCES		N	Structures will meet painting and visual requirements of Final Decision. The tallest structure is 15 feet and will not add a significant new visual feature observable offsite.

TECHNICAL AREA	SIGNIFICANT ENVIRONMENTAL IMPACT (Y/N)?		NOTES
WASTE MANAGEMENT		N	No change
WATER RESOURCES		N	No additional water will be used;
WORKER SAFETY		N	Risk associated with material deliveries will be reduced.

6.0 COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS) (Sec. 1769(a)(1)(F))

The equipment change will not affect compliance with any other LORS requirement. Therefore, the proposed modification will not impact SDG&E’s ability to comply with the applicable LORS, as listed in Appendix A of the Commission Final Decision. See Table 1 above.

7.0 POTENTIAL EFFECTS ON PUBLIC AND NEARBY PROPERTY OWNERS (Sec. 1769(a)(1)(G and I))

The requested modification will not have significant adverse environmental impacts and will comply with all applicable LORS. Thus, the proposed equipment change is not anticipated to affect nearby property owners or parties in the application proceedings or the public.

8.0 LIST OF PROPERTY OWNERS (Sec. 1769(a)(1)(H))

A list of property owners 1,000 feet of the plant site has previously been provided to the Commission CPM.

9.0 SUMMARY OF REQUEST

As demonstrated above, the requested change to the PEC's Final Decision will not have an adverse effect on the public or the environment. The change will not affect compliance with applicable LORS. Accordingly, SDG&E requests that the Energy Commission Staff expedite review of this petition, and request Commission approval of the proposed modified conditions in accordance with Title 20 CCR Section 1769.

Respectfully Submitted,

Taylor O. Miller

Counsel to SDG&E


Dated: April 1, 2010

ATTACHMENT 1

PROJECT PLANS

(26 Pages)



A  Sempra Energy™ company

Lin Leonhardt
Compliance Administrator
2300 Harveson Place
Escondido, CA 92029
Tel: 760-432-2506
LLeonhardt@semprautilities.com

March 22, 2010

Mr. Dale Rundquist
Compliance Project Manager
California Energy Commission
1516 Ninth Street, MS-2000
Sacramento, CA 95814

Re: STRUCT-1: Upgrade to Biocide Storage Areas at the Palomar Energy Center
01-AFC-24 (C)

Dear Mr. Rundquist:

Pursuant to compliance requirements for condition STRUCT-1, please find attached final design prints and project description submittal information for approval to upgrade the existing biocide storage areas. The project is being managed by our Facilities Management Team and will be permitted through the City of Escondido. We would like to proceed as soon as practical with this project upon approval and completing the permit process.

These systems do not provide enough storage capacity and in some cases the pump capacities were not designed large enough. Ideally the tanks are topped off about once a month but due to the current storage capacity, we require multiple deliveries per week. Transferring product so frequently adds risk and is labor intensive therefore the systems need to be upgraded. The following table identifies the existing chemical volume proposed changes.

Cooling Tower Storage Area

Chemical Name	Current volume	New volume	Method of Storage
Sodium Hypochlorite	1500 gallon	6,000 gallon	Tank
Sodium Bromide	400 gallon	3,000 gallon	Tank

Raw Water Tank Storage Area

Chemical Name	Current Volume	New Volume	Method of Storage
Sodium Hypochlorite	None-add	4,800 gallon	Tank
Sodium Bromide	400 gallon	Remove	Tank

The upgrades are in previously disturbed portions of the plant footprint chemical storage/unloading areas and make maximum use of existing visual screening afforded by site topography, existing landscape, approved color schemes and permanent lighting. In addition, these upgrades will reduce the number of deliveries on public streets and reduce risk while unloading and handling with fewer deliveries.

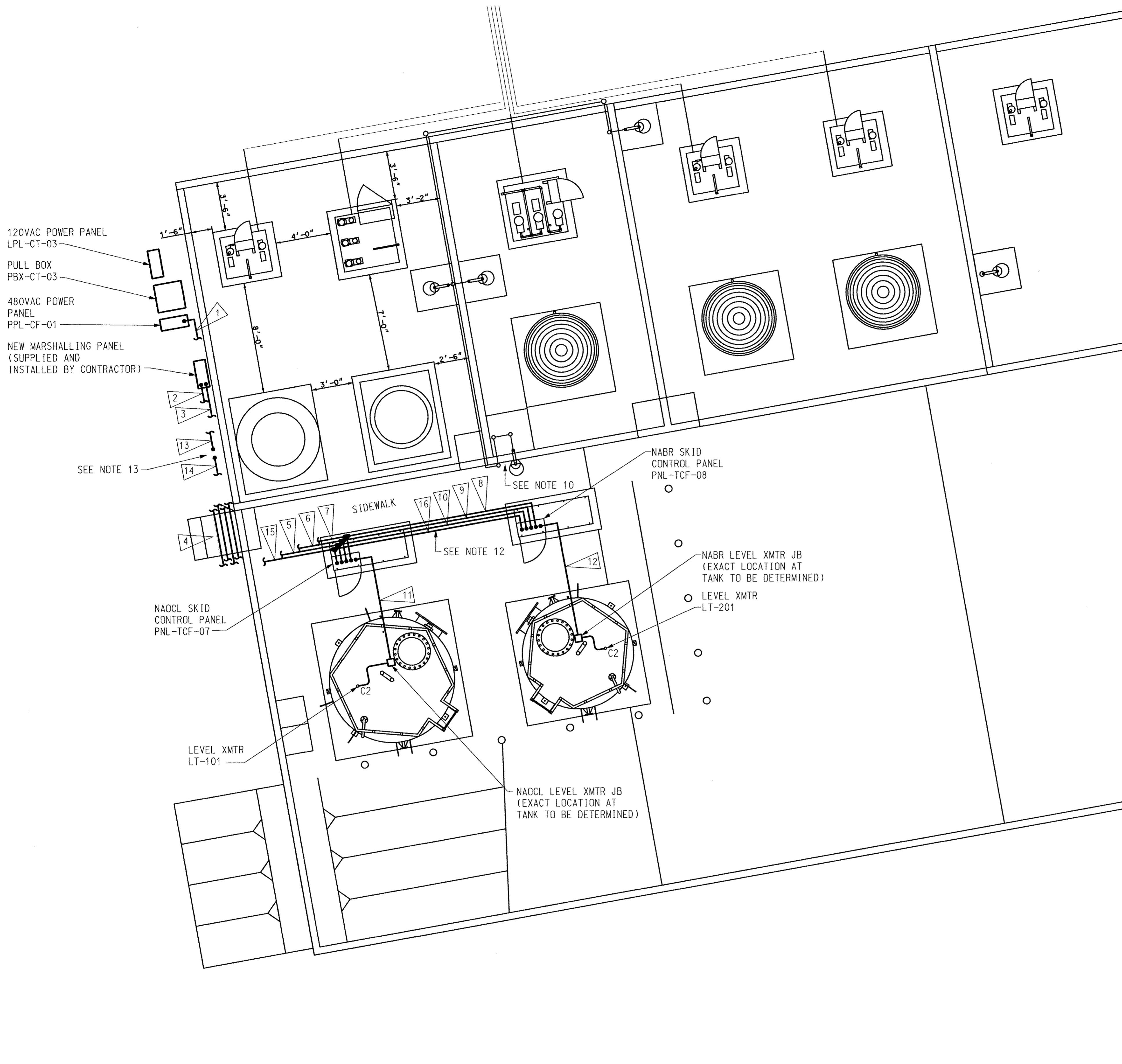
If you have any questions on the attached subject matter, please feel free to contact me at (760) 432-2506; email LLeonhardt@semprautilities.com .

Sincerely yours,

A handwritten signature in cursive script, appearing to read "L. Leonhardt".

Lin Leonhardt

Cc Fred Waller
File# 3.1.2.3.2.2



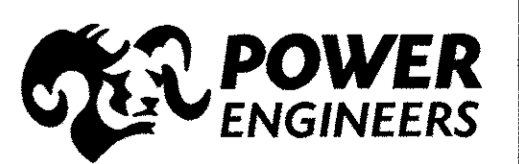
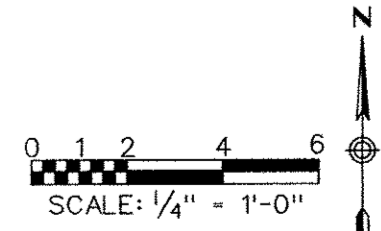
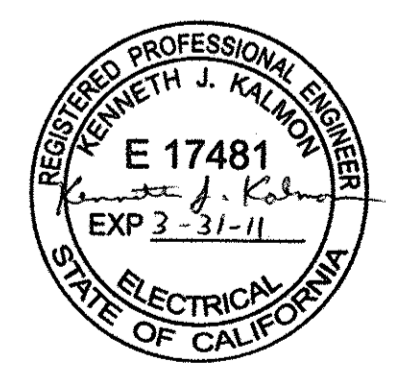
GENERAL NOTES

1. THE CONTRACTOR IS TO FIELD ROUTE ALL CONDUIT. THE CONTRACTOR IS TO COORDINATE WITH SDG&E FOR INTENDED CONDUIT ROUTING PATHS PRIOR TO INSTALLATION.
2. CONDUIT IS TO BE RIGID ALUMINUM CONDUIT, EXCEPT AS NOTED.
3. LIQUID-TIGHT FLEXIBLE METAL CONDUIT IS TO MAKE THE FINAL CONDUIT CONNECTION TO LEVEL TRANSMITTERS. CONDUIT ON TANKS IS TO BE FIELD ROUTED USING EXISTING FRP PIPE SUPPORTS.
4. FITTINGS, SUPPORTS, HANGERS, AND FASTENERS ARE TO BE RATED FOR OUTDOOR INSTALLATIONS. FITTINGS ARE TO BE THREADED AND RAIN-TIGHT. MEYERS HUBS ARE TO CONNECT CONDUIT TO BOXES AND CABINETS. WHEN CONDUIT ENTERS BOXES OR CABINETS, IT IS TO ENTER ON THE SIDES OR BOTTOM OF THE ENCLOSURE.
5. 9 CONDUCTOR #14AWG CABLE IS TO BE 600V, TYPE TC, COPPER STRANDED CONDUCTORS, XLP INSULATION, CSPE JACKET, TABLE E-2 COLOR CODE, ANIXTER 2RH-1409, OR EQUAL.
6. 4 CONDUCTOR #12AWG CABLE IS TO BE 600V, TYPE TC, COPPER STRANDED CONDUCTORS, XLP INSULATION, CSPE JACKET, TABLE E-2 COLOR CODE, ANIXTER 2RH-1204, OR EQUAL.
7. 1 PAIR #16AWG SHIELDED CABLE IS TO BE 600V, TYPE TC, COPPER STRANDED CONDUCTORS, XLP INSULATION, CSPE JACKET, BLACK/WHITE TWISTED PAIRS, ALUMINUM TAPE SHIELD, COPPER DRAIN WIRE, ANIXTER 2RH-1601POS, OR EQUAL.
8. CABLE ROUTING INTENT IS SHOWN ON THIS DRAWING. THE CONTRACTOR MAY USE ALTERNATE ROUTING THAT COMBINES CABLES OF LIKE TYPE (POWER WITH POWER, CONTROL WITH CONTROL, SIGNAL WITH SIGNAL) IF IT RESULTS IN MORE EFFICIENT CONDUIT ROUTING. CONDUIT SIZING IS TO MEET CALIFORNIA ELECTRICAL CODE REQUIREMENTS.
9. PVC CONDUIT SLEEVES ARE TO BE ROUTED THROUGH POURED CONCRETE STAIRS. THE ELECTRICAL CONTRACTOR IS TO COORDINATE CONDUIT INSTALLATION WITH CIVIL/STRUCTURAL CONTRACTOR PRIOR TO CONCRETE POUR.
10. RECEPTACLE AND ASSOCIATED CONDUIT IN THIS AREA IS TO BE REMOVED THEN RE-INSTALLED BY THE ELECTRICAL CONTRACTOR TO FACILITATE INSTALLATION OF THE CONCRETE STAIRS. THE ELECTRICAL CONTRACTOR IS TO COORDINATE REMOVAL/INSTALLATION WITH THE CIVIL/STRUCTURAL CONTRACTOR PRIOR TO CONCRETE POUR.
11. UNLESS OTHERWISE NOTED, THE CONTRACTOR IS TO SUPPLY ALL WIRE, CONDUIT, FITTINGS AND ELECTRICAL EQUIPMENT NEEDED TO MAKE THIS ELECTRICAL INSTALLATION.
12. CONDUIT ALONG SIDEWALK IS TO BE ROUTED A MINIMUM OF 7 FEET ABOVE GROUND ELEVATION TO KEEP ACCESS TO SKID AREA CLEAR.
13. TO MINIMIZE GROUND CONDUCTOR EXPOSURE TO PHYSICAL DAMAGE PVC CONDUIT IS TO EXTEND BELOW GRADED AT THE SURFACE ENTRY POINT THEN TRANSITION TO RIGID ALUMINUM CONDUIT ABOVE GRADE.

KEYED NOTES

- 1 ONE 1 1/2" CONDUIT FOR 480VAC POWER TO NABR AND NAOCL SKID PANELS PNL-TCF-08 & PNL-TCF-07. CONTAINS TWO 4/C #12AWG CABLES.
- 2 ONE 2" CONDUIT. CONTAINS FOUR 9/C #14AWG CABLES.
- 3 ONE 1 1/2" CONDUIT. CONTAINS SIX 1PR #16AWG SHIELDED CABLES.
- 4 TWO 2" PVC CONDUITS AND TWO 1 1/2" PVC CONDUITS THROUGH POURED CONCRETE STAIRS.
- 5 ONE 2" CONDUIT. CONTAINS FOUR 9/C #14AWG CABLES.
- 6 ONE 1 1/2" CONDUIT. CONTAINS SIX 1PR #16AWG SHIELDED CABLES.
- 7 ONE 1 1/2" CONDUIT CONTAINING POWER CABLES FROM PPL-CF-01. CONTAINS TWO 4/C #12AWG CABLES.
- 8 ONE 1 1/2" CONDUIT CONTAINING POWER CABLE FROM PPL-CF-01. CONTAINS ONE 4/C #12AWG CABLE.
- 9 ONE 1 1/2" CONDUIT. CONTAINS THREE 1PR 4/C #16AWG SHIELDED CABLE.
- 10 ONE 1 1/2" CONDUIT. CONTAINS TWO 9/C #14AWG CABLES.
- 11 ONE 3/4" CONDUIT TO NAOCL LEVEL TRANSMITTER JUNCTION BOX. CONTAINS ONE 1PR #16AWG SHIELDED CABLE.
- 12 ONE 3/4" CONDUIT TO NABR LEVEL TRANSMITTER JUNCTION BOX. CONTAINS ONE 1PR #16AWG SHIELDED CABLE.
- 13 ONE 1" CONDUIT. CONTAINS ONE #4/0 AWG GROUND CONDUCTOR.
- 14 ONE 2" CONDUIT. CONTAINS TWO #4/0 AWG GROUND CONDUCTORS.
- 15 ONE 2" CONDUIT. CONTAINS TWO #4/0 AWG GROUND CONDUCTORS.
- 16 ONE 1" CONDUIT. CONTAINS ONE #4/0 AWG GROUND CONDUCTOR.

POWER PLAN
SCALE 1/4" = 1'-0"



REVISIONS

NO.	WORK DONE	DATE	BY:	APP'D:	NO.	WORK DONE	DATE	BY:	APP'D:	NO.	WORK DONE	DATE	BY:	APP'D:	NO.	WORK DONE	DATE	BY:	APP'D:	NO.	

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PALOMAR ENERGY CENTER

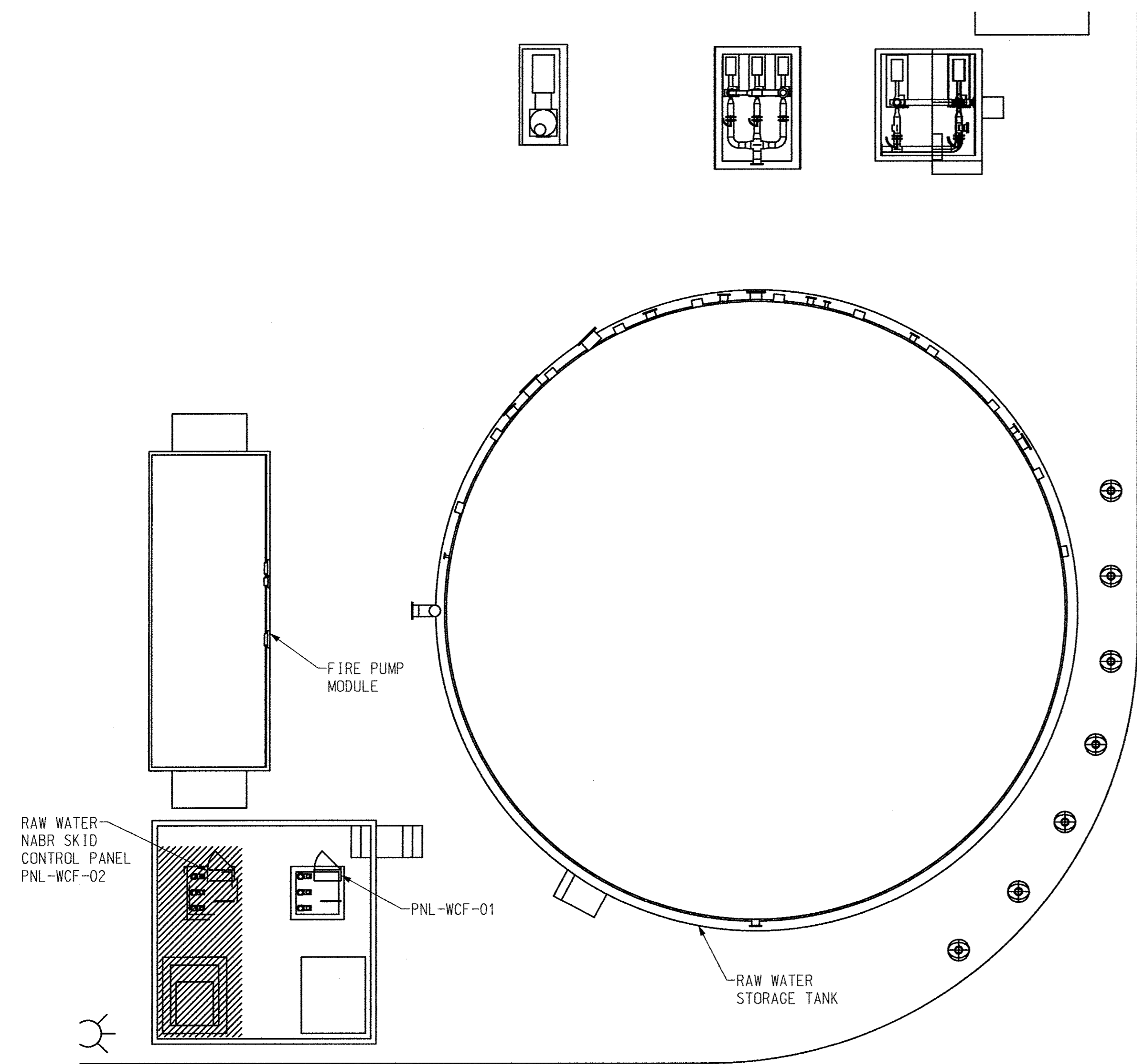
COOLING WATER BIOCIDES
POWER PLAN

DRAWN BY: CMC	DATE: 05/12/09	SCALE: 1/4" = 1'-0"	W.O.:	REV. 0
CHECKED BY: ELB	DATE: 11/16/09			
APPROVED BY: KJK	DATE: 11/16/09			
CAD NO.: 116522	PLOT SCALE:			

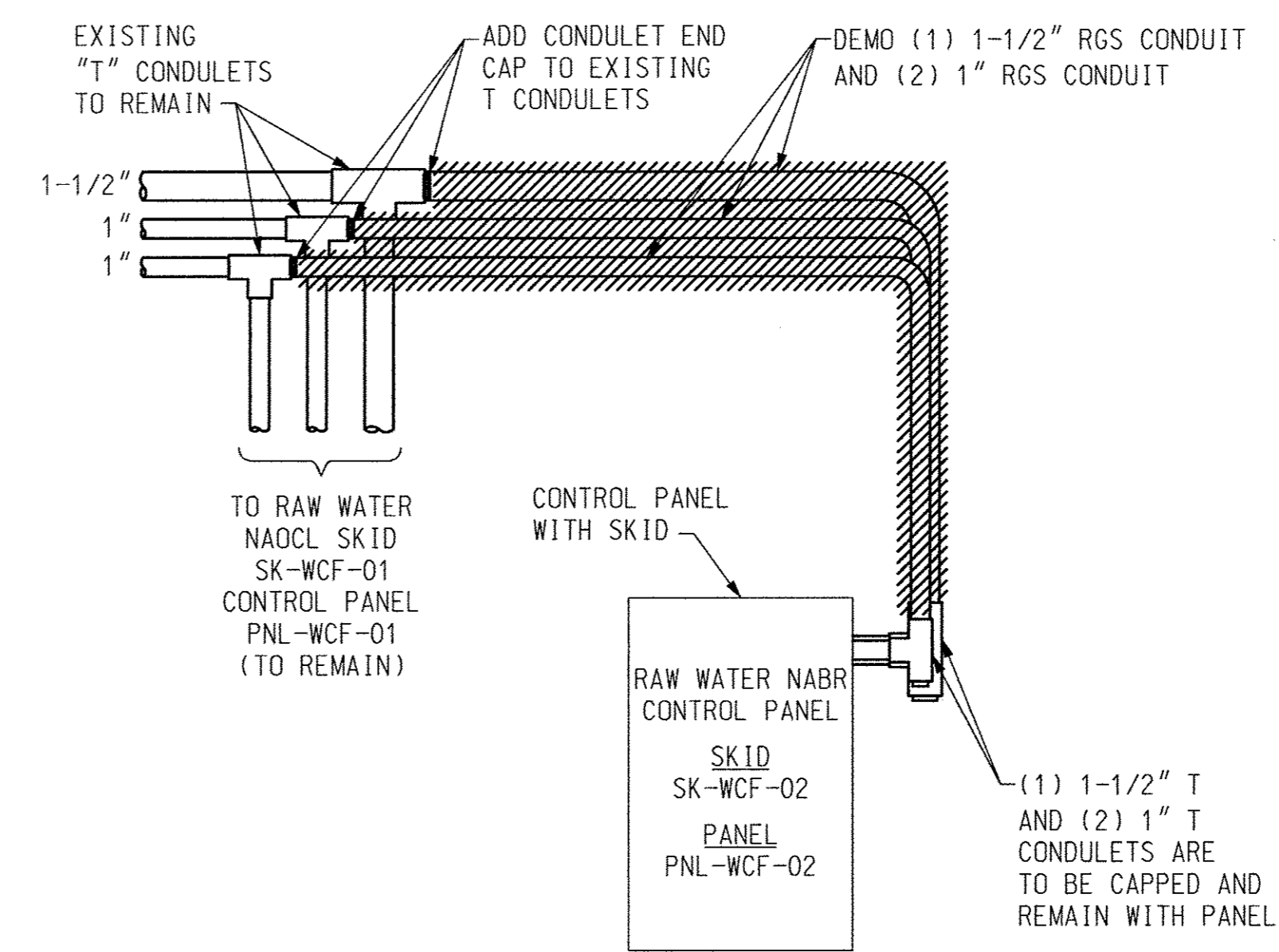
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GENERAL NOTES

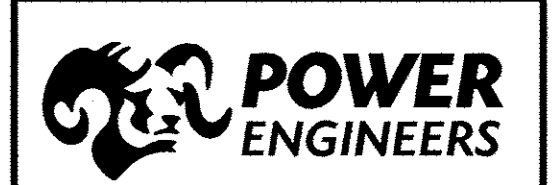
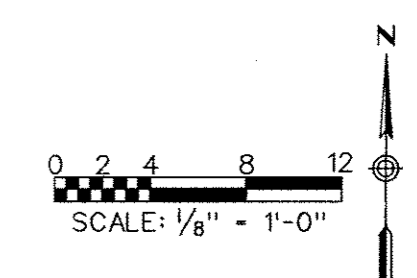
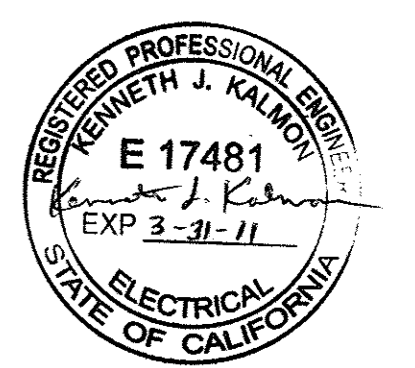
1. CONTRACTOR IS TO HAVE THE RAW WATER NABR SKID LOCKED OUT AND TAGGED ACCORDING TO PLANT PROCEDURES. CONTRACTOR IS TO DETERMINE THE 480VAC POWER SOURCE AND DISCONNECT THE SKID'S SUPPLY CONDUCTORS AT THE POWER PANEL. CONTRACTOR IS TO SPARE OUT THE RAW WATER NABR SKID POWER SOURCE CONDUCTORS ACCORDING TO PLANT PROCEDURES AND COIL INSIDE THE POWER PANEL.
2. CONTRACTOR IS TO VERIFY PLANT PERSONNEL HAVE DISCONNECTED AND SPARED OUT CONDUCTORS FOR THE RAW WATER NABR SKID AT THE DCS PRIOR TO STARTING WORK.
3. CONTRACTOR IS TO DISCONNECT POWER SUPPLY AND CONTROL CONDUCTORS AT THE RAW WATER NABR SKID CONTROL PANEL AND PULL CONDUCTORS BACK TO THE NEAREST PULL BOX. CONTRACTOR IS TO SPARE OUT THE RAW WATER NABR SKID CONDUCTORS ACCORDING TO PLANT PROCEDURES AND COIL AT THE PULL BOX. NOTE THAT ANALOG CABLEING DISCONNECTED AT PNL-WCF-02 MAY NEED TO BE USED AT PNL-WCF-01 FOR A NEW LEVEL TRANSMITTER CIRCUIT SHOULD NO SUITABLE EXISTING SPARE CABLE BE PRESENT AT PNL-WCF-01.



RAW WATER NABR SKID CONTROL PANEL LOCATION
SCALE 1/8" = 1'-0"



RAW WATER NABR SKID ELECTRICAL DEMOLITION
NOT TO SCALE



REVISIONS

NO.	WORK DONE	DATE	BY:	APP'D:	NO.	WORK DONE	DATE	BY:	APP'D:	NO.	WORK DONE	DATE	BY:	APP'D:	NO.	WORK DONE	DATE	BY:	APP'D:	NO.	
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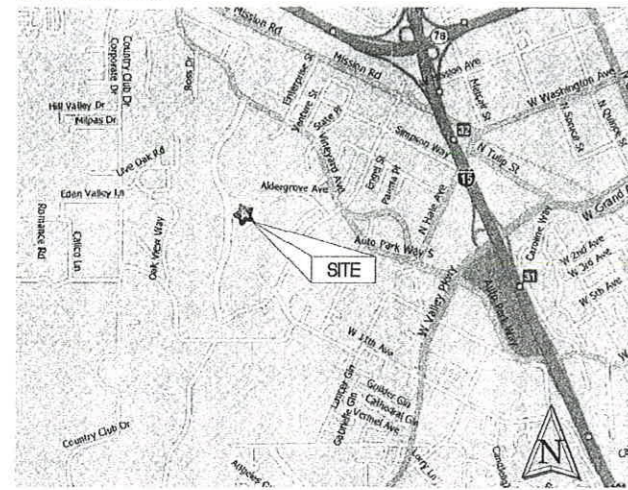
SAN DIEGO GAS & ELECTRIC COMPANY
PALOMAR ENERGY CENTER

COOLING WATER BIOCID
ELECTRICAL DEMOLITION

DRAWN BY: CMC	DATE: 05/06/09	SCALE: AS NOTED	W. D.	REV. 0
CHECKED BY: ELB	DATE: 11/16/09			
APPROVED BY: KJK	DATE: 11/16/09			
CAD NO.: 116522	PLOT SCALE:			

ED7-1

VICINITY MAP:



VICINITY MAP
NTS

SITE CONTACT:
PETER SMITHSON
2300 HARVESON PLACE
ESCONDIDO, CA 92029

ENGINEER CONTACT:
BEN GUTH
POWER ENGINEERS
2041 S. COBALT POINT WAY
MERIDIAN, ID 83642
208-288-6372

ASSESSOR'S PARCEL NUMBER:
232-591-01-00

SDG&E PALOMAR ENERGY CENTER

2300 Harveson Place Escondido, CA 92029

COOLING WATER BIOCIDES TREATMENT PROJECT

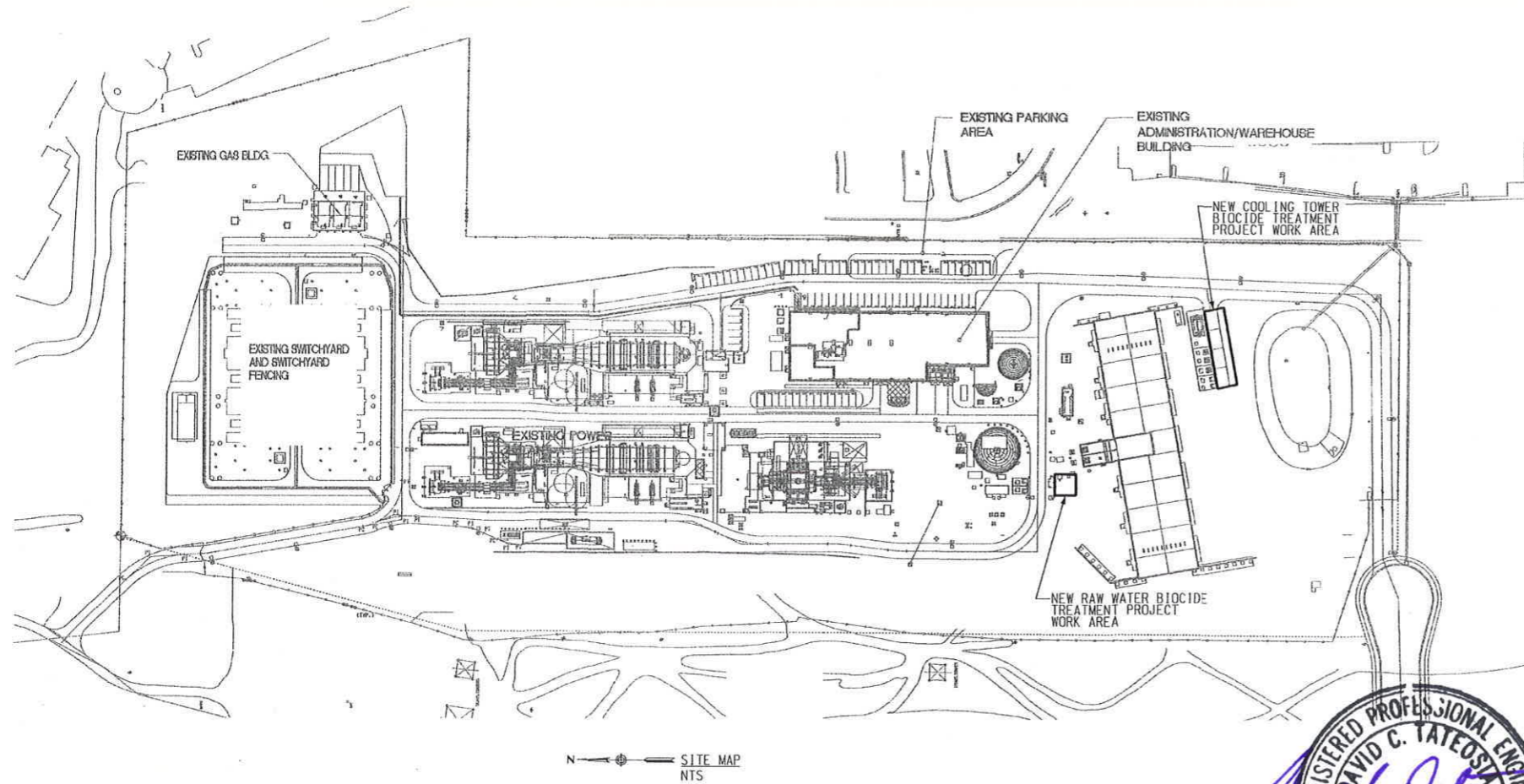
DRAWING INDEX

MECHANICAL :	REVISION:	DESCRIPTION:
M0-0	1	COVER SHEET
2004-005-PS-262	6	PIPING & INSTRUMENTATION DIAGRAM, CW-CIRCULATING WATER
2004-005-PS-263	8	PIPING & INSTRUMENTATION DIAGRAM, CW-CIRCULATING WATER
M1-0	1	RAW WATER GENERAL ARRANGEMENT
M1-1	1	RAW WATER DEMOLITION PLAN
M1-2	0	COOLING TOWER DEMOLITION PLAN
M2-0	1	COOLING TOWER CHEMICAL TREATMENT GENERAL ARRANGEMENT
M2-1	1	RAW WATER PLAN
M2-2	1	COOLING TOWER PLAN - EAST

STRUCTURAL :	REVISION:	DESCRIPTION:
S0-1	0	GENERAL STRUCTURAL NOTES
S0-2	0	STRUCTURAL STEEL NOTES
S1-1	1	CONTAINMENT PLAN
S1-2	1	COOLING WATER FOUNDATION PLAN
S1-3	1	RAW WATER FOUNDATION PLAN
S1-4	0	COOLING WATER PIPE SUPPORT PLAN
S2-1	1	FOUNDATION SECTIONS AND DETAILS
S2-2	0	FOUNDATION SECTIONS AND DETAILS
S2-3	1	STEEL DETAILS

ELECTRICAL :	REVISION:	DESCRIPTION:
E3-1	0	PANEL SCHEDULES DRAWING
E5-1	0	GROUND PLAN DRAWING
E7-1	0	POWER PLAN DRAWING
I15-1	0	MARSHALLING CABINET INTERCONNECT DIAGRAM
ED7-1	0	ELECTRICAL DEMOLITION RAW WATER CHEMICAL FEED SKID PLAN
100539 Sh.1	4	RAW WATER CHEMICAL FEED SKIDS WIRING DIAGRAM (REVISED HAND MARK-UP OF PDF FILE)

VENDOR SHEETS:	REVISION:	DESCRIPTION:
FIBER-TECH SDGE-09148	B	SDG&E TANK TK-TCF-01
FIBER-TECH SDGE-09148	B	SDG&E TANK TK-TCF-02
FIBER-TECH SDGE-09148	B	SDG&E TANK TK-RWF-01
FIBER-TECH SDGE-09148	A	FRP LADDER/RAILING
FIBER-TECH SDGE-09148	A	TYPICAL SIGHT GLASS
KOFLO DATA SHEET	NONE	CLEAR PVC STATIC MIXERS SERIES 328
KOFLO KD-1027	5/22/08	TYPICAL FLANGED SCHEDULE 80 PVC MIXER
ST-001	NONE	TANK FOUNDATION AND ANCHOR BOLT DESIGN
ST-002	NONE	CONDUIT/PIPE SUPPORT
DESIGN CONTROLS 2777-01	3	COOLING TOWER SODIUM BROMIDE FEED SKID SK-TCF-08 P&ID
DESIGN CONTROLS 2777-02	3	COOLING TOWER SODIUM BROMIDE FEED SKID SK-TCF-08 LAYOUT
DESIGN CONTROLS 2777-02A	3	COOLING TOWER SODIUM BROMIDE FEED SKID SK-TCF-08 LAYOUT
DESIGN CONTROLS 2777-03	3	COOLING TOWER SODIUM BROMIDE FEED SYSTEM VFD ENCLOSURE LAYOUT
DESIGN CONTROLS 2777-04	3	COOLING TOWER SODIUM BROMIDE FEED SYSTEM VFD ENCLOSURE WIRING DIAGRAM
DESIGN CONTROLS 2777-04A	2	COOLING TOWER SODIUM BROMIDE FEED SYSTEM VFD ENCLOSURE WIRING DIAGRAM
DESIGN CONTROLS 2777-FAB-01	1	NAME PLATES
DESIGN CONTROLS 2778-01	3	COOLING TOWER SODIUM HYPOCHLORITE FEED SKID SK-TCF-07 P&ID
DESIGN CONTROLS 2778-02	3	COOLING TOWER SODIUM HYPOCHLORITE FEED SKID LAYOUT
DESIGN CONTROLS 2778-02A	3	COOLING TOWER SODIUM HYPOCHLORITE FEED SKID LAYOUT
DESIGN CONTROLS 2778-03	3	COOLING TOWER SODIUM HYPOCHLORITE FEED SYSTEM VFD ENCLOSURE LAYOUT
DESIGN CONTROLS 2778-04	3	COOLING TOWER SODIUM HYPOCHLORITE FEED SYSTEM VFD ENCLOSURE WIRING DIAGRAM
DESIGN CONTROLS 2778-04A	2	COOLING TOWER SODIUM HYPOCHLORITE FEED SYSTEM VFD ENCLOSURE WIRING DIAGRAM
DESIGN CONTROLS 2778-FAB-01	0	NAME PLATES
DESIGN CONTROLS OA-PID	4	COOLING TOWER SODIUM HYPOCHLORITE & SODIUM BROMIDE FEED SKIDS P&ID



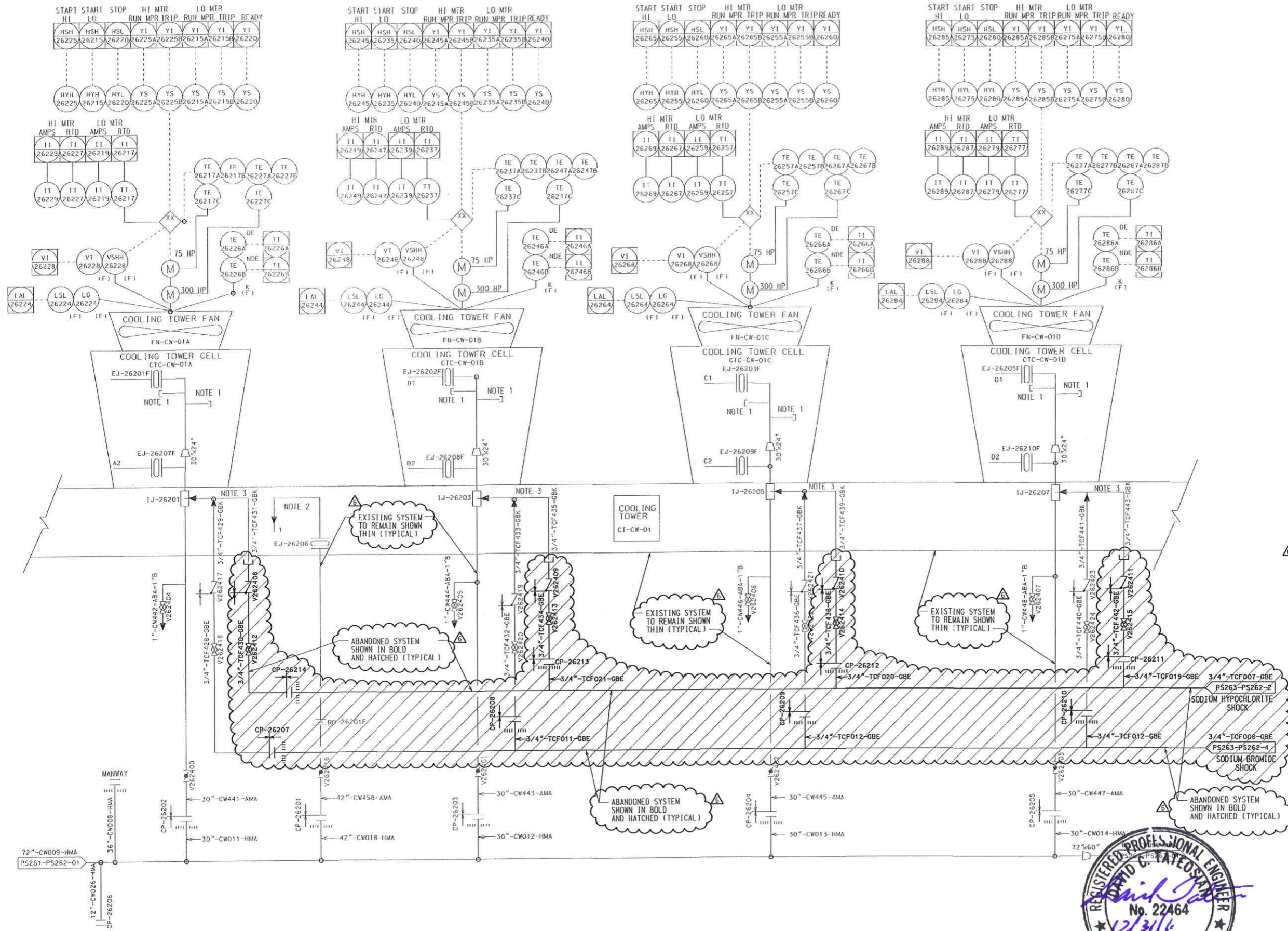
SITE MAP
NTS



REVISIONS												SAN DIEGO GAS & ELECTRIC COMPANY PALOMAR ENERGY CENTER			
NO.	WORK DONE	DATE	BY:	APP'D:	NO.	WORK DONE	DATE	BY:	APP'D:	NO.	WORK DONE	DATE	BY:	APP'D:	
1	UPDATED DRAWING LIST	03/08/10	JA	JK											
0	ISSUED FOR BID	11/20/09	JA	JK											

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CHECKED BY: JK	DATE: 11/20/09			
APPROVED BY: JK	DATE: 11/20/09			
CAD NO: 116522	PLAT SCALE: B : 1			

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- NOTES:
1. FLOW MEASUREMENT CONNECTIONS (2" NPT) LOCATED IN SAME PLANE, 90 DEGREES APART. LOCATE IN RISER BETWEEN VALVE AND ELBOW 2/3 FROM VALVE AND 1/3 FROM ELBOW.
 2. RESTRICTION ORIFICE FOR BYPASS OPERATION PROVIDED BY CT IEM.
 3. MINIMUM OF 6 FEET OF PIPING REQUIRED BETWEEN CHEMICAL MIXING POINT AND INJECTION POINT. CHECK VALVES TO BE LOCATED AS CLOSE TO MIXING POINT AS POSSIBLE. PIPE ROUTING TO BE VERTICAL UP TO INJECTION POINT TO ENSURE PIPE REMAINS FULL OF CHEMICALS.

REV	DESCRIPTION	DWN	CHK	APP	DATE
6	ABANDON TCF-007,008	JA	JK	TC	03-08-10
5	ISSUE FOR RFD (NEW EXISTING SYSTEM)	JA	JK	TC	01-20-09
4	RECONFORMED TO CONSTRUCTION RECORDS.	KGA	AJG	SJL	05-19-06
3	CONFORMED TO CONSTRUCTION RECORDS.	KGA	AJG	SJL	04-27-06
2	ADDED UNDERGROUND LINES TCF007, 008, 011, 012, 013, 015, 020, 021, TCF428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, NOTE 3.	SRH	AJG	SJL	03-30-05
1	ISSUED FOR CONSTRUCTION - ABOVE GROUND; REVISED LINE # CW026.	CMD	AJG	SJL	08-25-04
0	ISSUED FOR CONSTRUCTION - UNDERGROUND ONLY	ANR	AJG	ADS	04-08-04

POWER ENGINEERS THIS DRAWING IS REVISED BY POWER ENGINEERS. POWER ENGINEERS HAS NOT VERIFIED ANY INFORMATION ON THIS DRAWING OTHER THAN THE INFORMATION WHICH IS INDICATED INSIDE A REVISION CLOUD.

SEMPRA ENERGY RESOURCES
PALOMAR ENERGY, LLC

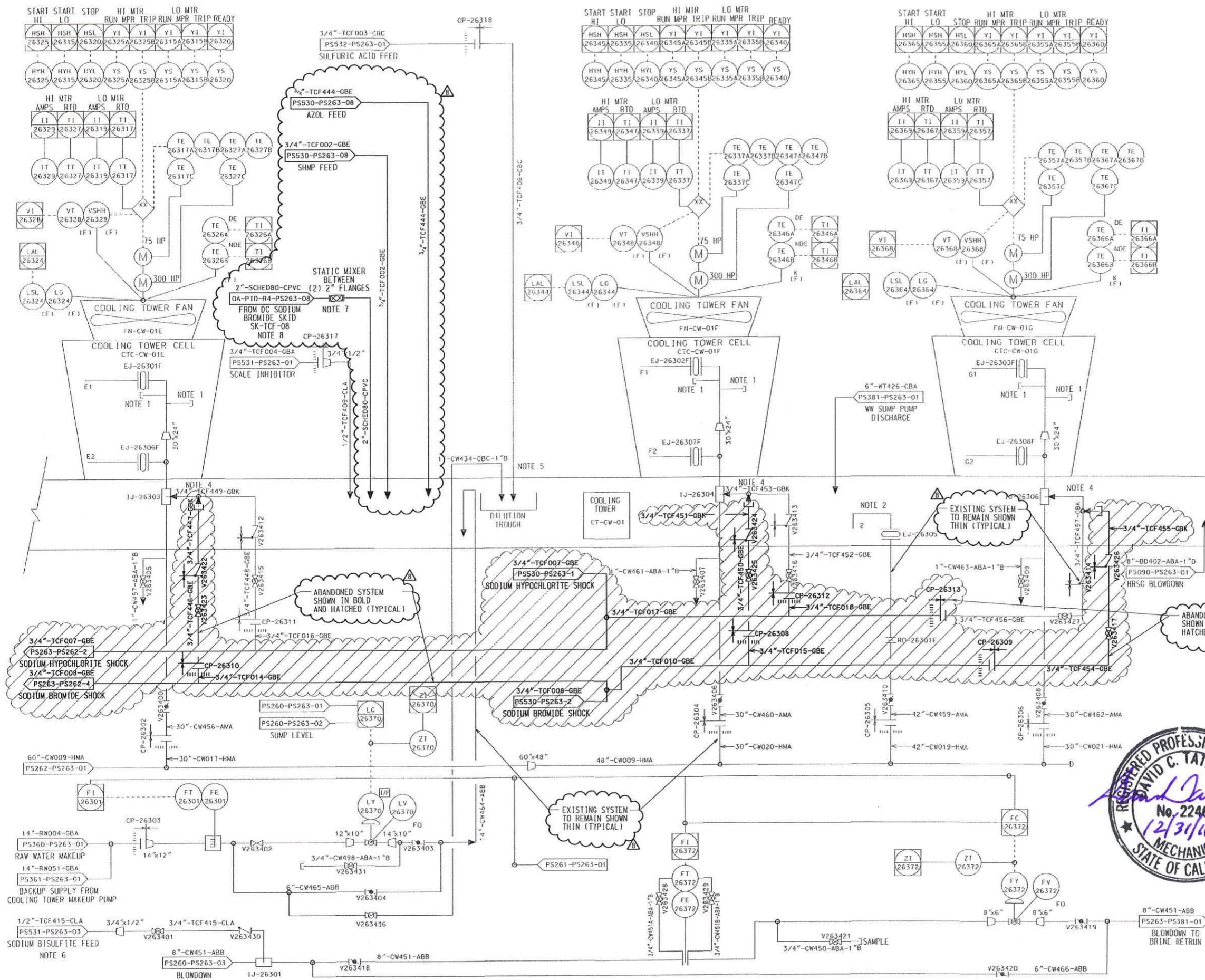
PALOMAR ENERGY PROJECT
ESCONDIDO, CALIFORNIA

Bibb and associates
8455 Lenexa Drive
Lenexa, Kansas 66214

PIPING AND INSTRUMENTATION DIAGRAM
CW - CIRCULATING WATER

DESIGNED	DATE	DRAWING NUMBER
by REZ	01-27-04	2004-005-PS-262
DRAWN ANR	01-27-04	
CHECKED AJG	04-08-04	
APPROVED ADS	04-08-04	





- NOTES:
1. FLOW MEASUREMENT CONNECTIONS (1/2" NPT) LOCATED IN SAME PLANE, 90 DEGREES APART. LOCATE IN RISER BETWEEN VALVE AND ELBOW 2/3 FROM VALVE AND 1/3 FROM ELBOW.
 2. RESTRICTION ORIFICE FOR BYPASS OPERATION PROVIDED BY CT OEM.
 3. SODIUM HYPOCHLORITE AND SODIUM BROMIDE FEED DIFFUSER LOCATED BELOW THE WATER LINE. SEE BIBB SHOP DWG 430A-GA-004-01. DIFFUSER SHALL BE LOCATED BETWEEN TOWER CELLS E AND F. APPROXIMATELY SIX FEET FROM ACID TROUGH.
 4. MINIMUM OF 6 FEET OF PIPING REQUIRED BETWEEN CHEMICAL MIXING POINT AND INJECTION POINT. CHECK VALVES TO BE LOCATED AS CLOSE TO MIXING POINT AS POSSIBLE. PIPE ROUTING TO BE VERTICAL UP TO INJECTION POINT TO ENSURE PIPE REMAINS FULL OF CHEMICALS.
 5. SLOPE LINE FROM HIGH POINT TO DILUTION TROUGH. SEE BIBB SHOP DWG 430A-GA-006-01 FOR TROUGH DETAILS. TROUGH SHALL BE LOCATED BETWEEN TOWER CELLS E AND F.
 6. SODIUM BISULFITE TUBING SHALL BE YELLOW JACKET (TYPE C1) PRE-INSULATED TUBING BUNDLE. SEE BIBB DRAWING 2004-005-1D-101 FOR ADDITIONAL INFORMATION.
 7. CONTRACTOR TO PROVIDE AND INSTALL 2", 6 ELEMENT KOFLO IN LINE MIXER AT THIS LOCATION. BOLT TO SKID DISCHARGE FLANGE ON SK-TCF-08.
 8. REFER TO 2009 DESIGN CONTROLS VENDOR DRAWING FOR SKID P&ID '0A-PID-R4'.

REV	DESCRIPTION	DWN	CHK	APP	DATE
8	ABANDON TCF-007,008/ ADDED NaOCl/NaBr AND REPLACED NaOCl/NaBr TOTES WITH SOME AND AZOL	JA	JK	TG	03-01-10
7	ISSUE FOR BID (NEW EXISTING SYSTEM)	JA	JK	TG	11-20-09
6	RECONFORMED TO CONSTRUCTION RECORDS.	KGA	AJG	SJL	05-15-06
5	CONFORMED TO CONSTRUCTION RECORDS.	KGA	AJG	SJL	04-21-06
4	ADDED LINE WT426; REVISED NOTES 3 AND 5.	SRH	AJG	SJL	07-22-05
3	ADDED NOTE 6; REMOVED INSULATION ON LINE TCF415.	SRH	AJG	SJL	07-15-05
2	ADDED LINES TCF001, 002, 003, 004, 005, 007, 008, 010, 014, 015, 016, 017, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, CW458, NOTES 4 & 5, & A REDUCER ON LINE TCF415.	SRH	AJG	SJL	03-30-05
1	ISSUED FOR CONSTRUCTION - ABOVE GROUND ADDED LINE # CW027; REMOVED LINE # CW026.	CMD	AJG	SJL	08-25-04
0	ISSUED FOR CONSTRUCTION - UNDERGROUND ONLY	AMR	AJG	ADS	04-05-04



POWER ENGINEERS THIS DRAWING IS REVISION BY POWER ENGINEERS. POWER ENGINEERS HAS NOT VERIFIED ANY INFORMATION ON THIS DRAWING OTHER THAN THE INFORMATION WHICH IS INDICATED INSIDE A REVISION CLOUD.

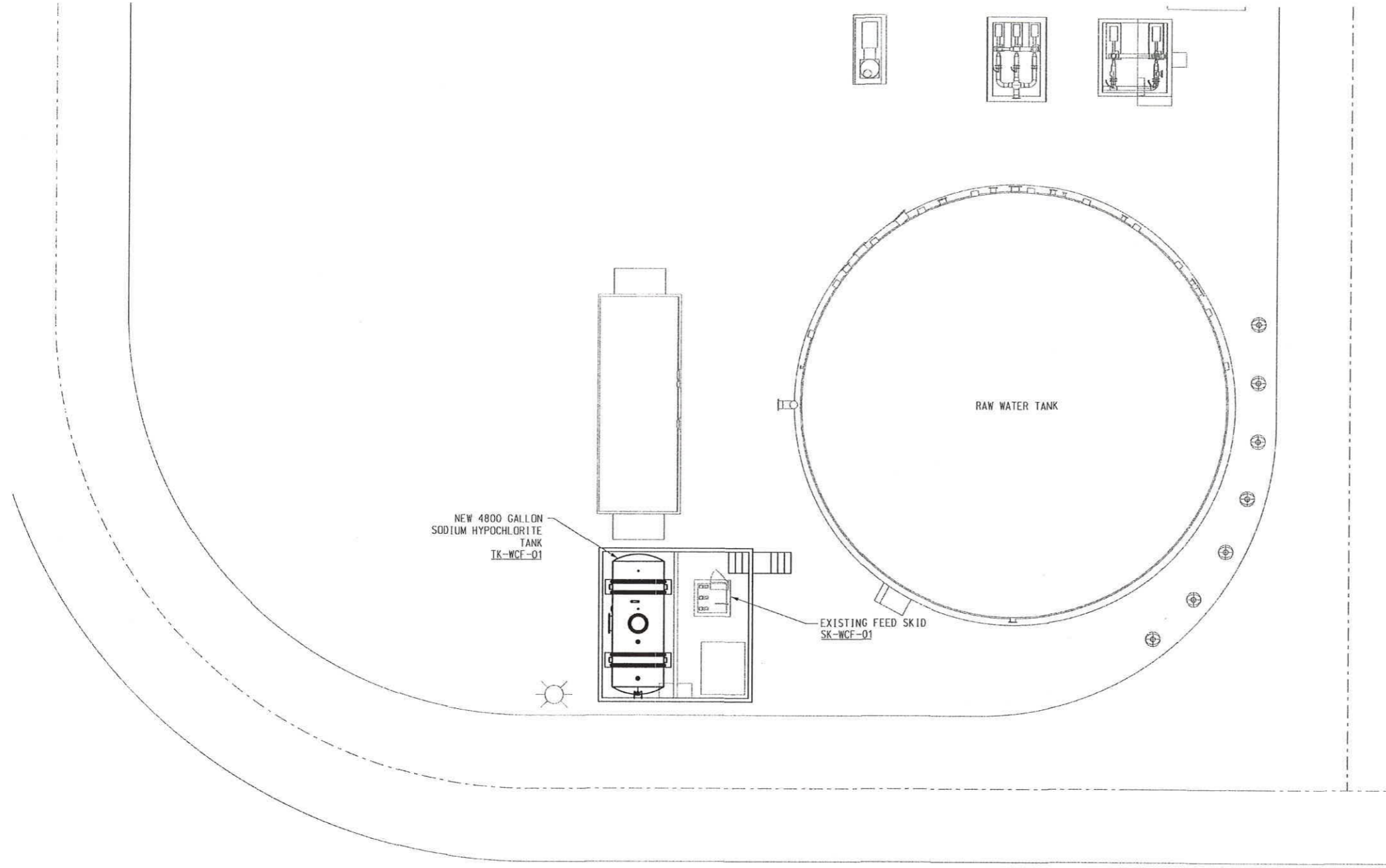
SEMPRA ENERGY RESOURCES
PALOMAR ENERGY, LLC

PALOMAR ENERGY PROJECT
ESCONDIDO, CALIFORNIA

Bibb and associates
8455 Lenora Drive
Lenexa, Kansas 66214

PIPING AND INSTRUMENTATION DIAGRAM
CW - CIRCULATING WATER

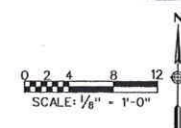
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DRAWN	ANR	01-28-04	2004-005-PS-263
CHECKED	AJG	04-08-04	
APPROVED	ADS	04-08-04	



GENERAL NOTES

1. CONTRACTOR SHALL COORDINATE ALL PIPING WORK WITH STRUCTURAL, ELECTRICAL, AND EXISTING SITE WORK.
2. PIPE ROUTING IS APPROXIMATE AND DIAGRAMMATIC. WHERE ALTERNATE ROUTING, OFFSETS, AND TRANSITIONS ARE REQUIRED FOR COORDINATION OF ALL WORK, CONTRACTOR SHALL MAKE APPROPRIATE CHANGES WITHOUT ADDITIONAL COSTS.
3. ALL WORK TO BE DONE IN COMPLIANCE WITH LATEST ADOPTED MECHANICAL AND PLUMBING CODES.
4. KEEP ALL PIPE ROUTING ALONG CONTAINMENT WALLS AS TIGHT AS POSSIBLE TO WALL. COORDINATE PIPING LOCATIONS WITH EXISTING CONDITIONS.
5. CONTRACTOR TO VERIFY ALL SKID AND TANK CONNECTIONS.
6. CONTRACTOR TO LABEL ALL HOSE BIB CONNECTIONS, SKIDS, AND TANKS WITH APPROPRIATE TAGS AND TAG NUMBERS.
7. CONTRACTOR TO TAG ALL NEW ABOVE GROUND PIPING WITH WEATHER PROOF LABELS AT APPROXIMATELY EVERY 20'-0" ON LONG RUNS AND A MINIMUM OF ONE LABEL ON SHORT RUNS.
8. CONTRACTOR TO PROVIDE NEW INTERCONNECTING PIPING BETWEEN NEW TANK AND EXISTING SKID. MATCH MATERIALS OF CONSTRUCTION WITH EXISTING AND REUSE ALL VALVES, STRAINERS AND INSTRUMENTATION.
9. TANK SIGNAGE PROVIDED AND INSTALLED BY CONTRACTOR.
10. CONTRACTOR TO INSTALL TANK TK-WCF-01.

RAW WATER GENERAL ARRANGEMENT
SCALE: 1/8" = 1'-0"



REVISIONS

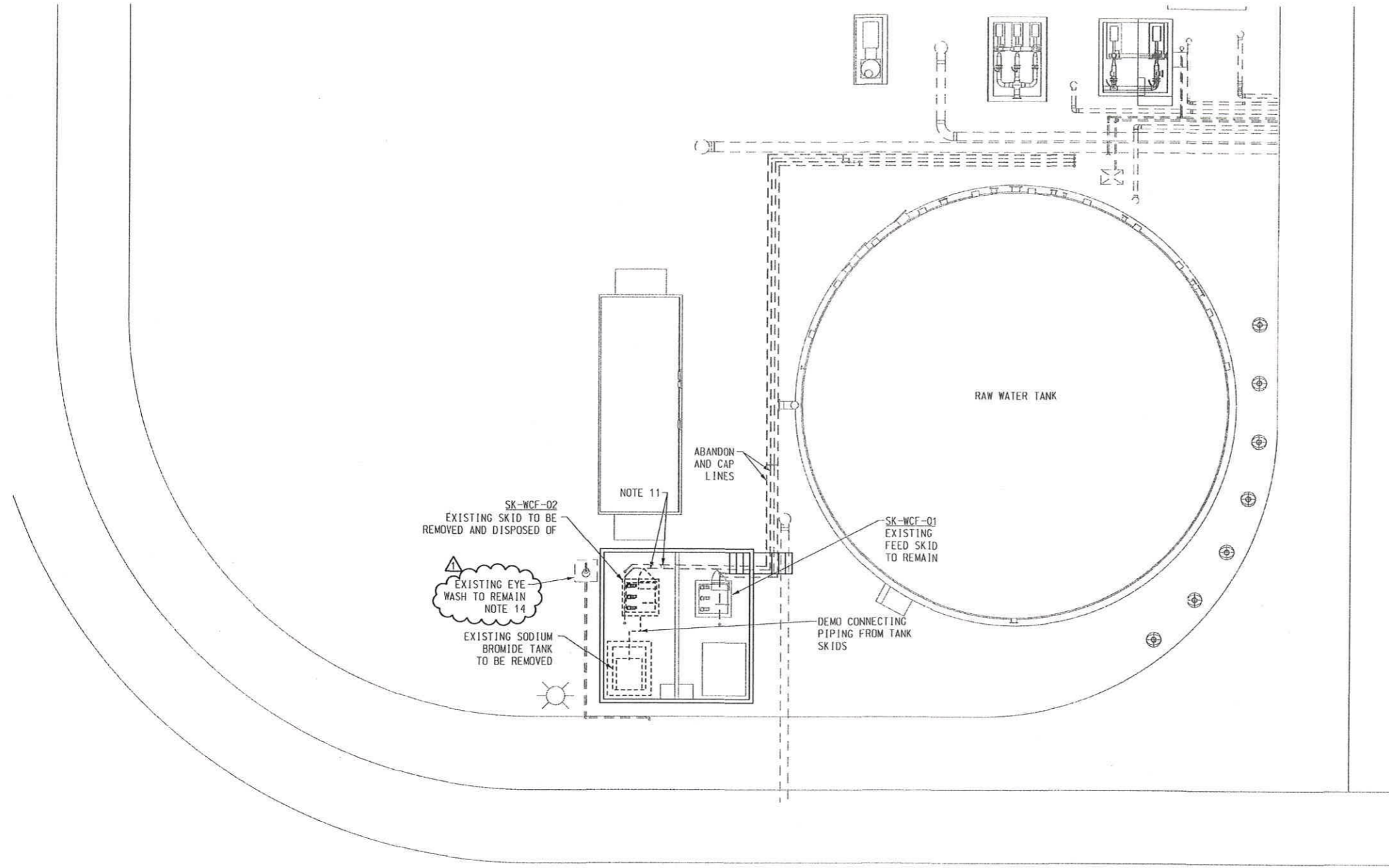
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1	REVISED NOTE 9	03/09/10	JA	JK											
0	ISSUED FOR BID	11/20/09	JA	JK											

SAN DIEGO GAS & ELECTRIC COMPANY
PALOMAR ENERGY CENTER

COOLING WATER BIOCIDES
RAW WATER GENERAL ARRANGEMENT

DRAWN BY: JA DATE: 02/11/09 SCALE: 1/8" = 1'-0" W.D. REV: 1
 CHECKED BY: JK DATE: 02/11/09
 APPROVED BY: JK DATE: 02/11/09
 CAD NO: 116522 PLOT SCALE: 8 : 1

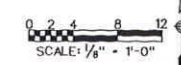
M1-0



GENERAL NOTES

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9. TANK SIGNAGE PROVIDED AND INSTALLED BY CONTRACTOR.
10. COORDINATE EQUIPMENT REMOVAL AND DISPOSAL WITH OWNER.
11. COORDINATE WITH STRUCTURAL CONTRACTOR ON DEMO OF CONCRETE PAD AND CAPPING OF ABANDONED LINES ASSOCIATED WITH SKID SK-WCF-02.
12. REMOVE ALL ABOVE GROUND PIPING ASSOCIATED WITH SKID SK-WCF-02.
13. CONTRACTOR TO COORDINATE ALL CONSTRUCTION ACTIVITIES WITH OWNER TO DETERMINE ANY PLANT DOWNTIME THAT MAY BE REQUIRED.
14. MECHANICAL CONTRACTOR TO COORDINATE WITH ELECTRICAL CONTRACTOR FOR ALL CONDUIT AND WIRE RE-ROUTING FOR EYE WASH STATION ALARM POINTS BEFORE DEMOLITION BEGINS.

RAW WATER DEMOLITION PLAN
SCALE 1/8" = 1'-0"



REVISIONS

NO.	WORK DONE	DATE	BY:	APP'D:	NO.	WORK DONE	DATE	BY:	APP'D:	NO.	WORK DONE	DATE	BY:	APP'D:	NO.
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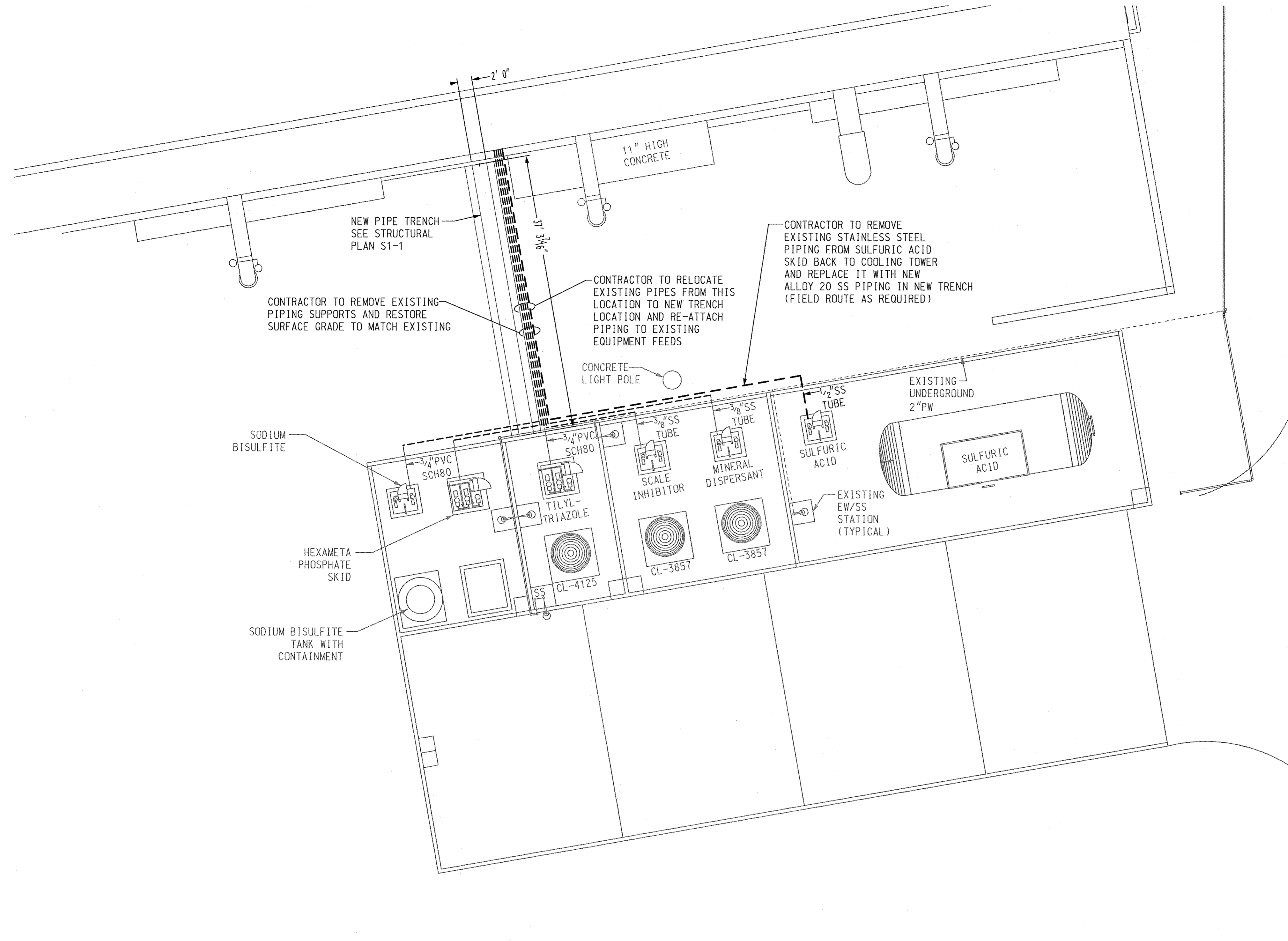
SAN DIEGO GAS & ELECTRIC COMPANY
PALOMAR ENERGY CENTER

COOLING WATER BIOCIDES
RAW WATER DEMOLITION PLAN

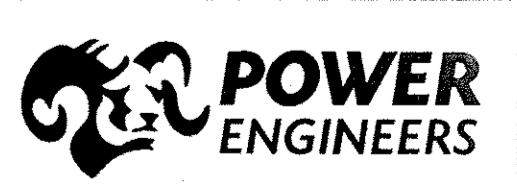
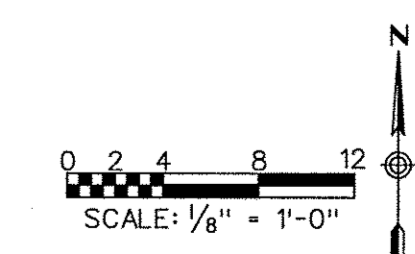
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CHECKED BY: JK	DATE: 11/20/09			
APPROVED BY: JK	DATE: 11/20/09			
CAD NO.: 116522	PLOT SCALE: 8 : 1			

GENERAL NOTES

1. CONTRACTOR SHALL COORDINATE ALL PIPING WORK WITH STRUCTURAL, ELECTRICAL, AND EXISTING SITE WORK.
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6. COORDINATE EQUIPMENT REMOVAL AND DISPOSAL WITH OWNER.
7. CONTRACTOR TO COORDINATE ALL CONSTRUCTION ACTIVITIES WITH OWNER TO DETERMINE ANY PLANT DOWNTIME THAT MAY BE REQUIRED.



COOLING TOWER DEMOLITION PLAN
SCALE 1/8" = 1'-0"



REVISIONS

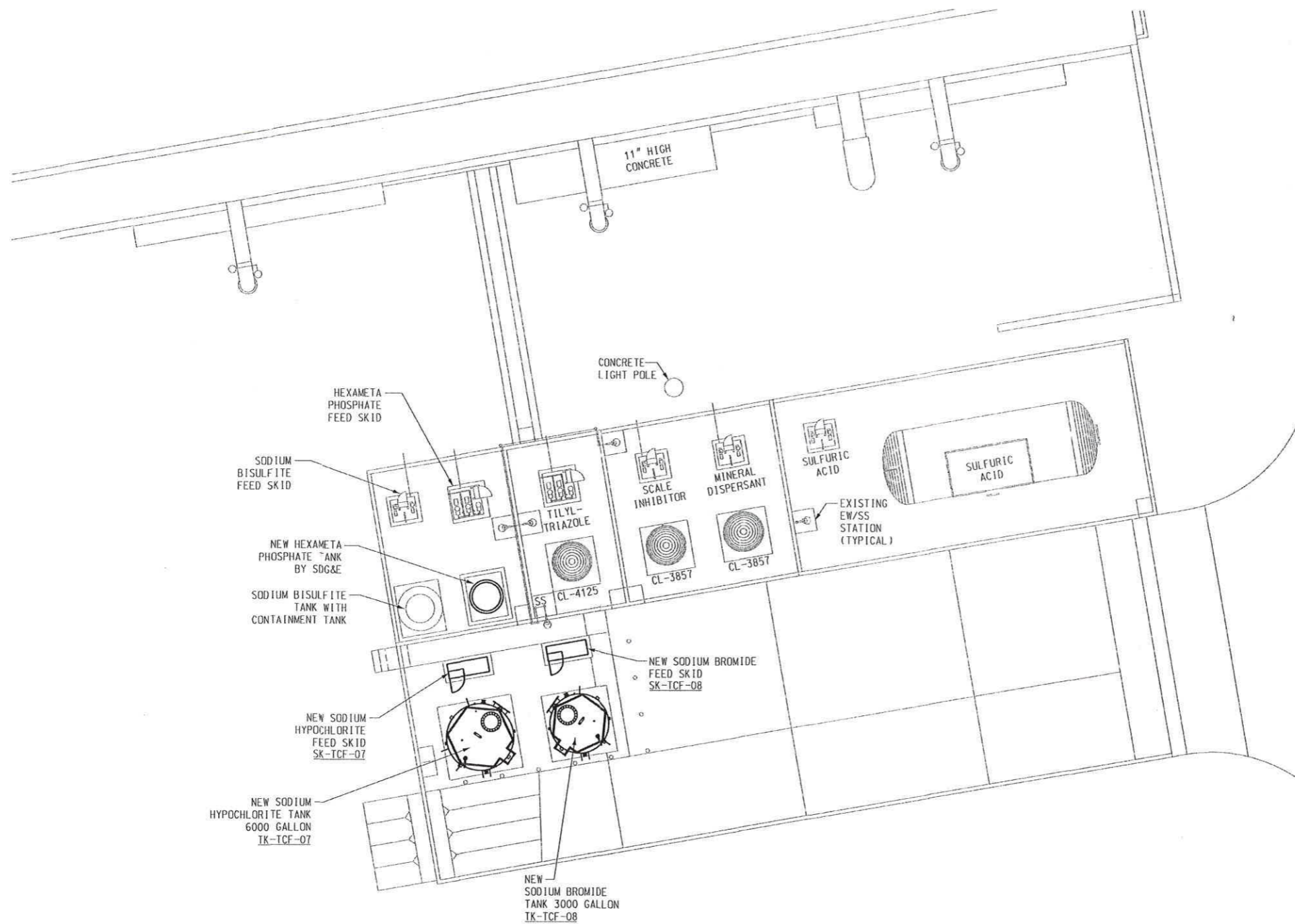
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0	ISSUED FOR BID	11/20/09	JA	JK																	

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PALOMAR ENERGY CENTER

COOLING WATER BIOCIDES
COOLING TOWER DEMOLITION PLAN

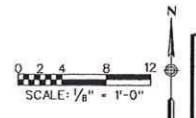
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M1-2



- GENERAL NOTES**
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 6. CONTRACTOR TO LABEL ALL HOSE BIB CONNECTIONS, SKIDS, AND TANKS WITH APPROPRIATE TAGS AND TAG NUMBERS.
 7. CONTRACTOR TO TAG ALL NEW ABOVE GROUND PIPING WITH WEATHER PROOF LABELS AT APPROXIMATELY EVERY 20'-0" ON LONG RUNS AND A MINIMUM OF ONE LABEL ON SHORT RUNS.
 8. CONTRACTOR TO INSTALL TANKS, TK-TCF-07 AND TK-TCF-08 AND CHEMICAL FEED SKIDS, SK-TCF-07 AND SK-TCF-08
 9. TANK SIGNAGE PROVIDED AND INSTALLED BY CONTRACTOR.
 10. CONTRACTOR TO COORDINATE ALL CONSTRUCTION ACTIVITIES WITH OWNER TO DETERMINE ANY PLANT DOWNTIME THAT MAY BE REQUIRED.

COOLING TOWER CHEMICAL TREATMENT GENERAL ARRANGEMENT
 SCALE 1/8" = 1'-0"



REVISIONS

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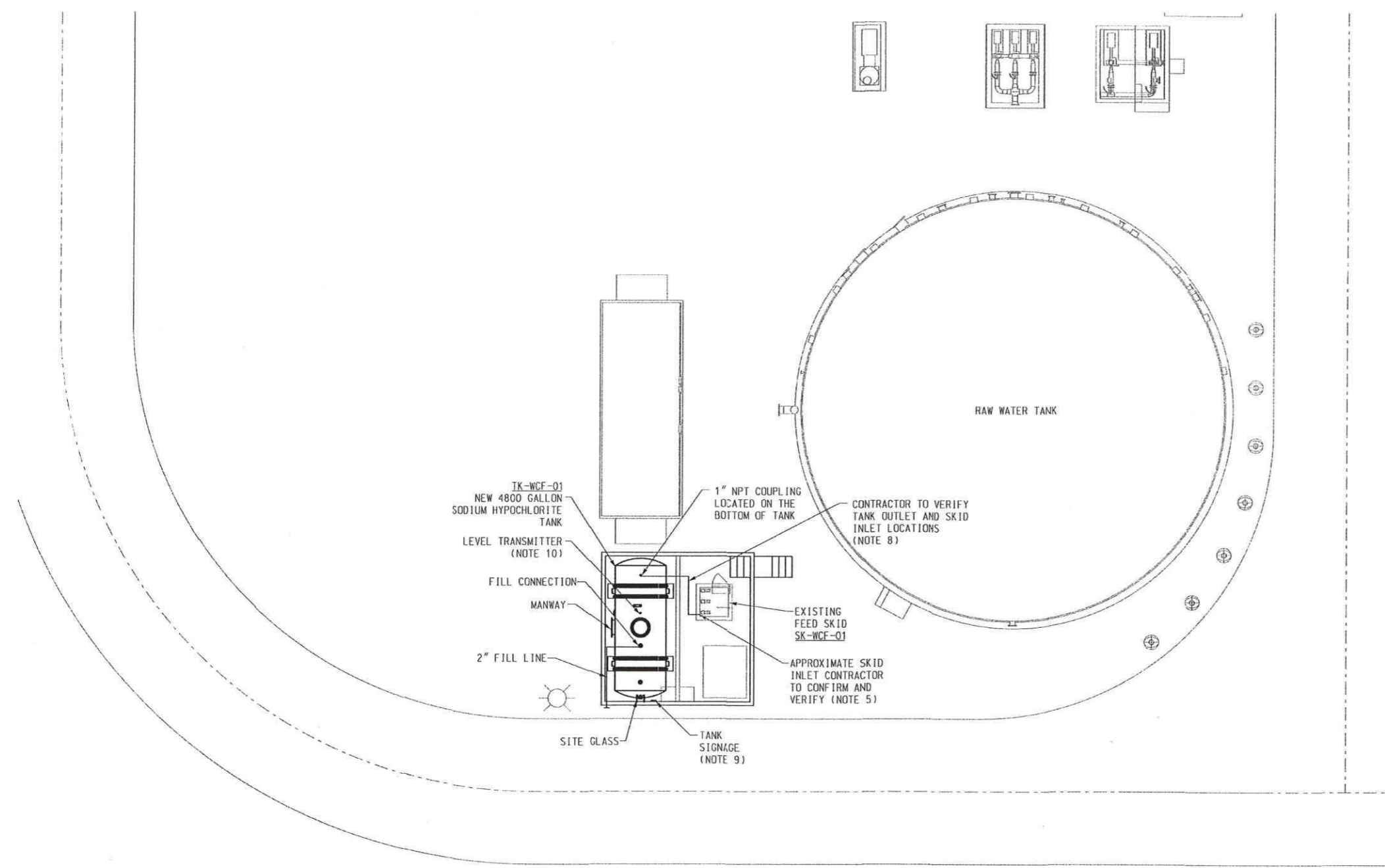
SAN DIEGO GAS & ELECTRIC COMPANY
 PALOMAR ENERGY CENTER
 COOLING WATER BIOCIDES
 COOLING TOWER CHEMICAL TREATMENT GENERAL ARRANGEMENT

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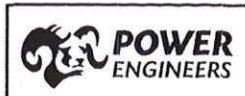
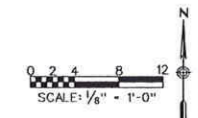
M2-0

GENERAL NOTES

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8. CONTRACTOR TO PROVIDE NEW INTERCONNECTING PIPING BETWEEN NEW TANK AND EXISTING SKID. MATCH MATERIALS OF CONSTRUCTION WITH EXISTING AND REUSE ALL VALVES, STRAINERS AND INSTRUMENTATION.
9. TANK SIGNAGE PROVIDED AND INSTALLED BY CONTRACTOR.
10. CONTRACTOR TO INSTALL OWNER PROVIDED ULTRASONIC LEVEL TRANSMITTER ON TANK, TK-WCF-01.
11. CONTRACTOR TO COORDINATE ALL CONSTRUCTION ACTIVITIES WITH OWNER TO DETERMINE ANY PLANT DOWNTIME THAT MAY BE REQUIRED.
12. MECHANICAL CONTRACTOR TO COORDINATE WITH ELECTRICAL CONTRACTOR THAT ALL CONDUIT AND WIRE ROUTING IS COMPLETE BEFORE INSTALLATION OF ANY EQUIPMENT.



RAW WATER PLAN
SCALE 1/8" = 1'-0"



REVISIONS

NO.	WORK DONE	DATE	BY:	APP'D:	NO.	WORK DONE	DATE	BY:	APP'D:	NO.	WORK DONE	DATE	BY:	APP'D:	NO.	WORK DONE	DATE	BY:	APP'D:	NO.	
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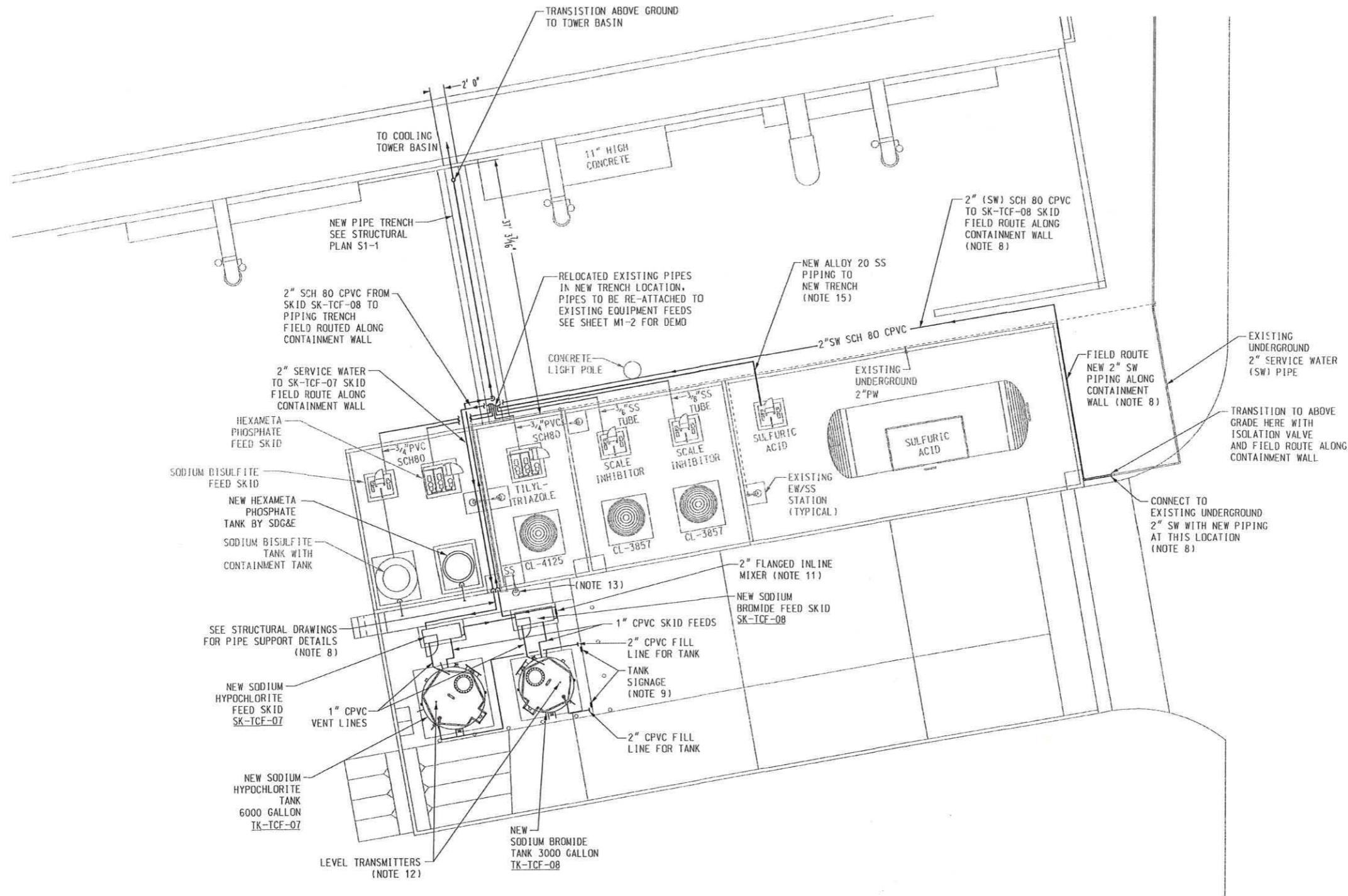
SAN DIEGO GAS & ELECTRIC COMPANY
PALOMAR ENERGY CENTER

COOLING WATER BIOCIDES
RAW WATER PLAN

DRAWN BY: JA DATE: 11/20/09 SCALE: 1/8" = 1'-0" W.O. REV: 1
 CHECKED BY: JK DATE: 11/20/09
 APPROVED BY: JK DATE: 11/20/09

CAD NO: 116522 PLOT SCALE: 8 : 1

M2-1



GENERAL NOTES

1. CONTRACTOR SHALL COORDINATE ALL PIPING WORK WITH STRUCTURAL, ELECTRICAL, AND EXISTING SITE WORK.
2. PIPE ROUTING IS APPROXIMATE AND DIAGRAMMATIC. WHERE ALTERNATE ROUTING, OFFSETS, AND TRANSITIONS ARE REQUIRED FOR COORDINATION OF ALL WORK, CONTRACTOR SHALL MAKE APPROPRIATE CHANGES WITHOUT ADDITIONAL COSTS.
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6. CONTRACTOR TO LABEL ALL HOSE BIB CONNECTIONS, SKIDS, AND TANKS WITH APPROPRIATE TAGS AND TAG NUMBERS.
7. CONTRACTOR TO TAG ALL NEW ABOVE GROUND PIPING WITH WEATHER PROOF LABELS AT APPROXIMATELY EVERY 20'-0" ON LONG RUNS AND A MINIMUM OF ONE LABEL ON SHORT RUNS.
8. NEW SERVICE WATER (SW) LINE TO BE 2" SCH 80 CPVC. FIELD ROUTE AND SUPPORT ALONG CONTAINMENT WALL AND PER STRUCTURAL PIPE SUPPORT DETAILS AT SKIDS SK-TCF-07 AND SK-TCF-08. LABEL TO MATCH EXISTING PIPING FOR SERVICE REQUIREMENTS.
9. TANK SIGNAGE PROVIDED AND INSTALLED BY CONTRACTOR.
10. ALL TANK PIPING TO BE FIELD ROUTED AND SUPPORTED FROM FRP SUPPORTS WHERE PROVIDED ON TANKS.
11. CONTRACTOR TO PROVIDE AND INSTALL 2", 6 ELEMENT KOFLO INLINE MIXER (PART # 2-80C-4-6-9) AT THIS LOCATION.
12. CONTRACTOR TO INSTALL OWNER PROVIDED ULTRASONIC LEVEL TRANSMITTER ON TANKS, TK-TCF-07 AND TK-TCF-08.
13. CONTRACTOR TO MAKE NECESSARY PIPING ADJUSTMENTS TO THE FEED PIPING TO THE SAFETY SHOWER TO ACCOMMODATE THE INCREASED CONTAINMENT WALL HEIGHT.
14. CONTRACTOR TO COORDINATE ALL CONSTRUCTION ACTIVITIES WITH OWNER TO DETERMINE ANY PLANT DOWNTIME THAT MAY BE REQUIRED.
15. CONTRACTOR TO PROVIDE AND INSTALL NEW ALLOY 20 SS PIPING TO FULLY REPLACE EXISTING SS PIPING. PIPE TERMINATIONS ON ALLOY 20 SS PIPE TO MATCH EXISTING SS PIPING. NEW ALLOY 20 SS PIPING TO BE ROUTED THROUGH NEW TRENCH WITH OTHER RE-ROUTED PIPES.

COOLING TOWER PLAN- EAST
SCALE 1/8" = 1'-0"



REVISIONS

NO.	WORK DONE	DATE	BY:	APP'D:	NO.	WORK DONE	DATE	BY:	APP'D:	NO.	WORK DONE	DATE	BY:	APP'D:	NO.	WORK DONE	DATE	BY:	APP'D:	NO.	
1	REMOVED NAOCL/NABR FEEDS DIRECT TO COOLING TOWER CELLS	03/08/10	JA	JK																	
0	ISSUED FOR BID	11/20/09	JA	JK																	

SAN DIEGO GAS & ELECTRIC COMPANY
PALOMAR ENERGY CENTER

COOLING WATER BIOCIDES
COOLING TOWER PLAN-EAST

DRAWN BY: JA	DATE: 11/20/09	SCALE: 1/8" = 1'-0"	NO.	REV: 1
CHECKED BY: JK	DATE: 11/20/09			
APPROVED BY: JK	DATE: 11/20/09			
CAD NO: 116522	PLOT SCALE: 8 : 1			

M2-2

GENERAL STRUCTURAL NOTES

GENERAL

- CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS WITH CONTRACT DRAWINGS AND WITH THE PHYSICAL CONDITIONS AT THE SITE, AND SHALL REPORT ALL DISCREPANCIES TO THE ENGINEER FOR RESOLUTION. THE CONTRACTOR SHALL NOT CONTINUE ANY WORK RELATING TO SUCH DISCREPANCIES WITHOUT APPROVAL FROM THE ENGINEER.
- CONTRACTOR SHALL MAKE EVERY REASONABLE EFFORT TO LOCATE ALL EXISTING UNDERGROUND UTILITIES AND EXERCISE CARE TO PROTECT THEM FROM DAMAGE DURING EXCAVATION AND CONSTRUCTION.

SPECIFICATIONS

- WHERE REFERENCE IS MADE TO ASTM, AISC, ACI OR OTHER STANDARDS AND SPECIFICATIONS, THE LATEST REVISION OR ADOPTION IS INTENDED UNLESS SPECIFICALLY DESIGNATED OTHERWISE.

DESIGN LOADS

- DESIGN CODES:
CALIFORNIA BUILDING CODE, 2007 EDITION
ASCE 7-05
ACI 318-05
- OCCUPANCY CATEGORY: I
- LIVE LOAD:
100 PSF (1,000# CONCENTRATED) STAIRS
75 PSF (1,000# CONCENTRATED) OTHERWISE
- ROOF LIVE LOAD: $L_r = 20$ PSF
- GROUND SNOW LOAD: $P_g = 0$ PSF
- WIND LOAD:
BASIC WIND SPEED: $V = 85$ MPH
IMPORTANCE FACTOR: $I_w = 1.00$
EXPOSURE: C
TOPOGRAPHIC FACTOR: $K_{zt} = 1.0$
- SEISMIC LOAD:
IMPORTANCE FACTOR: $I_E = 1.00$
MAPPED ACCELERATION: $S_s = 1.06g$, $S_1 = 0.40g$
SITE CLASS = C
DESIGN ACCELERATION: $S_{DS} = 0.71g$, $S_{D1} = 0.37g$
SEISMIC DESIGN CATEGORY: D
ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE

CONSTRUCTION LOADS

- STRUCTURES HAVE BEEN DESIGNED FOR OPERATIONAL LOADS ON THE COMPLETED STRUCTURE. DURING CONSTRUCTION, CONTRACTOR SHALL PROTECT STRUCTURE BY BRACING AND BALANCING WHEREVER EXCESSIVE CONSTRUCTION LOADS MAY OCCUR.
- ERECTOR SHALL PROVIDE ALL TEMPORARY SHORING AND BRACING NEEDED FOR STABILITY UNTIL STRUCTURE IS COMPLETE.

SOILS

- GEOTECHNICAL REPORT: BIBB AND ASSOCIATES, DATED 05/03/2009 (PROJECT # 1-332)
- SHALLOW FOUNDATION DESIGN:

ALLOWABLE BEARING PRESSURE: 4000 PSF (STATIC), 5300 PSF (WIND OR SEISMIC)
ALLOWABLE PASSIVE PRESSURE: 400 PCF
COEFFICIENT OF FRICTION: 0.35
REDUCE ALLOWABLE PASSIVE OR FRICTION RESISTANCE BY 50 % IF USED SIMULTANEOUSLY.
- GROUND WATER WAS NOT ENCOUNTERED DURING THE BORINGS.
- NO EXCAVATION SHALL BE MADE BELOW ANY FOOTING CLOSER THAN A SLOPE OF TWO HORIZONTAL TO ONE VERTICAL TO THE BOTTOM OF SAME.

SPECIFICATIONS

- DESIGN, MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE FOLLOWING CODES AND STANDARDS CONTAINED THEREIN, UNLESS OTHERWISE NOTED ON THE DRAWINGS.

ACI 301	SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS
ACI 318	BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE



GENERAL CONCRETE NOTES

CONCRETE MIX

- THE CONCRETE SUPPLIER SHALL PROVIDE A MIX DESIGN SUBMITTAL TO THE OWNER AND THE STRUCTURAL ENGINEER FOR REVIEW. THE MIX DESIGN SUBMITTAL SHALL INCLUDE, BUT IS NOT LIMITED TO, THE SOURCE AND TYPE OF CEMENTITIOUS MATERIALS, THE SOURCES, TYPES, AND INDIVIDUAL GRADINGS FOR EACH AGGREGATE, THE VENDOR AND TYPE OF ALL ADMIXTURES PROPOSED FOR USE, THE SOURCE OF MIXING WATER, EVIDENCE OF SOLUBLE CHLORIDE-ION CONTENT FOR EACH INGREDIENT OR FOR THE HARDENED CONCRETE, THE QUANTITY OF CEMENTITIOUS MATERIAL BY MASS, THE SLUMP, UNIT WEIGHT, AND AIR CONTENT OF FRESHLY MIXED CONCRETE, AND ANY COMPRESSIVE STRENGTH DATA, IF AVAILABLE.
 - CONCRETE SHALL HAVE A 4,000 PSI COMPRESSIVE STRENGTH (UNLESS NOTED OTHERWISE) AT 28 DAYS. MATERIALS FOR CONCRETE AND PROPORTIONING SHALL CONFORM TO CHAPTER 4 OF ACI 301. PORTLAND CEMENT SHALL BE ASTM C150, TYPE I AS APPROPRIATE.
 - THE MAXIMUM SIZE OF COARSE AGGREGATE SHALL BE 1". REFERENCE ASTM C33 FOR GRADATION. PROPORTIONS OF AGGREGATE TO CEMENT FOR ANY CONCRETE MIX SHALL BE SUCH AS TO PRODUCE A MIXTURE WHICH, CONSISTENT WITH THE METHOD OF PLACING, WILL WORK READILY INTO CORNERS AND ANGLES OF THE FORMS AND AROUND REINFORCEMENT WITHOUT PERMITTING THE MATERIALS TO SEGREGATE OR EXCESS WATER TO COLLECT ON THE SURFACE.
 - MAXIMUM WATER/CEMENT RATIOS FOR CONCRETE SHALL BE 0.45 WHEN STRENGTH DATA FROM FIELD EXPERIENCE OR TRIAL MIXTURES ARE NOT AVAILABLE.
 - CONCRETE SLUMP SHALL BE MEASURED AT THE POINT OF FINAL PLACEMENT AND SHALL BE AS FOLLOWS:
- | | | |
|--|----------|----------|
| CONCRETE MEMBER | MAXIMUM* | MINIMUM |
| REINFORCED FOOTINGS, PAVEMENTS, AND SLABS ON GRADE | 3" SLUMP | 1" SLUMP |
| PIERS, GRADE BEAMS, AND REINFORCED WALLS | 4" SLUMP | 2" SLUMP |
- * SLUMP MAY BE INCREASED TO A MAXIMUM OF 7" WHEN CHEMICAL ADMIXTURES ARE USED, PROVIDED THAT THE ADMIXTURE-TREATED CONCRETE HAS THE SAME OR LOWER WATER-CEMENTITIOUS MATERIAL RATIO AND DOES NOT EXHIBIT SEGREGATION POTENTIAL OR EXCESSIVE BLEEDING.

REINFORCEMENT

- PRIOR TO FABRICATION OF REINFORCING STEEL, SHOP DRAWINGS SHALL BE SUPPLIED TO THE ENGINEER FOR REVIEW.
 - REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM A615 GRADE 60, UNLESS OTHERWISE NOTED. REINFORCING STEEL SHALL NOT BE WELDED UNLESS SHOWN OTHERWISE ON THE DRAWINGS.
 - FIELD BENDING OF REINFORCING STEEL SHALL NOT BE DONE WITHOUT AUTHORIZATION OF THE STRUCTURAL ENGINEER.
 - ALL REINFORCEMENT SHALL BE BENT COLD, UNLESS OTHERWISE PERMITTED BY THE BUILDING OFFICIAL. REINFORCEMENT PARTIALLY EMBEDDED IN CONCRETE SHALL NOT BE FIELD BENT, UNLESS PERMITTED BY THE BUILDING OFFICIAL PER ACI 318, SECTION 7.3.
 - REINFORCING STEEL SHALL NOT BE BENT OR DISPLACED FOR THE CONVENIENCE OF OTHER TRADES UNLESS APPROVED BY THE STRUCTURAL ENGINEER.
 - PROVIDE A MINIMUM CONCRETE COVER FOR REINFORCING AS FOLLOWS:
- | | |
|--|-----------|
| CONDITION | MIN COVER |
| CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH | 3" |
| CONCRETE EXPOSED TO EARTH OR WEATHER, #6 AND LARGER | 2" |
| CONCRETE EXPOSED TO EARTH OR WEATHER, #5 & SMALLER | 1 1/2" |
- THE PROPER TYPE AND QUANTITIES OF ACCESSORIES SHALL BE FURNISHED TO HOLD THE REINFORCING STEEL IN PLACE WHILE THE CONCRETE IS BEING PLACED. REINFORCEMENT SHALL BE TIED OFF AT A MINIMUM OF 50% OF THE INTERSECTIONS.
 - LAP SPLICES OF REINFORCING SHALL BE PER ACI 318 SECTION 12.15, CLASS B, UNLESS NOTED OTHERWISE. IN LIEU OF A MORE DETAILED ANALYSIS, THE FOLLOWING LAP SPLICE LENGTHS MAY BE USED:

REINFORCING SIZE	CRITICAL SPACING(b)	MIN LAP LENGTH TOP(o)	OTHER
#3	1 1/8"	16"	16"
#4	2 1/2"	20"	16"
#5	3 1/8"	25"	19"
#6	3 3/4"	29"	23"
#7	4 3/8"	43"	33"
#8	5"	49"	37"

NOTES:

- TOP REINFORCING LAP LENGTHS SHALL BE USED FOR HORIZONTAL REINFORCING WHERE MORE THAN 12" OF FRESH CONCRETE IS CAST BELOW THE SPLICE.
 - WHERE CENTER-TO-CENTER SPACING OF REINFORCING IS LESS THAN CRITICAL SPACING PROVIDED IN THE TABLE, THE TABULATED MINIMUM LAP LENGTHS MUST BE MULTIPLIED BY A FACTOR OF (S CRITICAL/S ACTUAL).
- PROVIDE CORNER BARS FOR ALL HORIZONTAL REINFORCING STEEL AT ALL CORNERS AND INTERSECTIONS. CORNER BARS SHALL BE THE SAME DIAMETER AND SPACING AS HORIZONTAL REINFORCING AND SHALL LAP HORIZONTAL REINFORCING PER NOTE 8 (2'-0" X 2'-0" MINIMUM).
 - FIELD WELDING OF REINFORCING STEEL SHALL NOT BE DONE WITHOUT AUTHORIZATION OF THE STRUCTURAL ENGINEER. IF WELDING OF REINFORCING STEEL IS AUTHORIZED, REINFORCING STEEL SHALL CONFORM TO ASTM A706 GRADE 60.

GENERAL CONCRETE NOTES (CONTINUED)

ANCHOR BOLTS

- ALL ANCHOR BOLTS SHALL BE SUPPLIED AND INSTALLED BY THE CONCRETE CONTRACTOR, UNLESS OTHERWISE SPECIFIED.
- ALL ANCHOR RODS SHALL BE ASTM F1554, GRADE 36, UNLESS OTHERWISE NOTED. ANCHOR RODS SHALL BE GALVANIZED PER THE HOT-DIPPED PROCESS PER ASTM A153 CLASS C.
- NUTS SHALL BE ASTM A563 GRADE A HEX, UNLESS OTHERWISE NOTED. NUTS SHALL BE GALVANIZED PER THE HOT-DIPPED PROCESS PER ASTM A153 CLASS C.
- STANDARD SIZE WASHERS SHALL BE PER ASTM F436, TYPE 1 ZINC COATED, UNLESS OTHERWISE NOTED.
- OVERSIZED PLATE WASHERS SHALL BE ASTM A36, UNLESS OTHERWISE NOTED. PLATE WASHERS SHALL BE GALVANIZED BY THE HOT DIPPED PROCESS PER ASTM A153 CLASS C.
- ALL ANCHOR RODS SHALL BE SET WITH TEMPLATES.

ACCESSORIES

- ADHESIVE AND EXPANSION ANCHORS SHALL BE PROVIDED AND INSTALLED BY THE STEEL CONTRACTOR.
- HEADED CONCRETE ANCHORS SHALL BE NELSON HEADED ANCHORS WITH FLUXED ENDS OR APPROVED EQUAL. STUDS SHALL BE AUTOMATICALLY END-WELDED WITH THE MANUFACTURER'S STANDARD EQUIPMENT IN ACCORDANCE WITH THEIR RECOMMENDATIONS.

FORMWORK

- FORMWORK SHALL BE IN ACCORDANCE WITH ACI 301 AND ACI 347.
- WHERE WOOD FORMS ARE USED, THEY SHALL BE PLY FORM OR GRADED EXTERIOR TYPE PLYWOOD, GRADE B-B OR BETTER.

CONSTRUCTION

- CONSTRUCTION TOLERANCES SHALL BE IN ACCORDANCE WITH ACI 117. ANCHOR BOLT PLACEMENT TOLERANCES SHALL BE IN ACCORDANCE WITH AISC CODE OF STANDARD PRACTICE, SECTION 7.5. FLOOR FLATNESS SHALL BE $F_f = \pm 20$ AND $F_t = \pm 15$ PER ASTM E1155 OR 3/16" TOLERANCE BY 10 FOOT STRAIGHT EDGE METHOD, UNLESS OTHERWISE NOTED.
- REINFORCING STEEL SHALL BE TIED AND SUPPORTED FIRMLY TO PREVENT DISPLACEMENT DURING THE PLACEMENT OF CONCRETE.
- CONCRETE FORMS SHALL BE STRONG, STABLE, AND TIGHT TO SUPPORT WET CONCRETE LOADS.
- REFER TO ELECTRICAL & VENDOR DRAWINGS FOR EMBEDDED ITEMS NOT SHOWN ON STRUCTURAL DRAWINGS.
- ALL CONCRETE PLACED IN COLD WEATHER SHALL CONFORM TO REQUIREMENTS OF ACI 306R. COLD WEATHER CONDITIONS EXIST IF FOR 3 CONSECUTIVE DAYS THE AVERAGE DAILY TEMPERATURE IS LESS THAN 40 DEG F, AND THE AIR TEMPERATURE IS NOT GREATER THAN 50 DEG F FOR MORE THAN 12 HOURS.
- ALL CONCRETE PLACED IN HOT WEATHER SHALL CONFORM TO REQUIREMENTS OF ACI 305R. HOT WEATHER CONDITIONS EXIST FOR HIGH AMBIENT OR CONCRETE TEMPERATURES, HIGH WIND SPEED, HIGH SOLAR RADIATION, OR LOW HUMIDITY.
- PLACING OF CONCRETE SHALL BE IN ACCORDANCE WITH ACI 301, ACI 304, AND PER THE GEOTECHNICAL RECOMMENDATIONS. ARRANGE EQUIPMENT SUCH THAT THE CONCRETE HAS AN UNRESTRICTED VERTICAL DROP TO THE POINT OF PLACEMENT OR INTO THE CONTAINER RECEIVING IT. THE STREAM OF CONCRETE SHALL NOT BE SEPARATED BY FALLING FREELY OVER RODS, SPACERS, REINFORCEMENT, OR OTHER EMBEDDED MATERIALS. CONCRETE SHALL BE DEPOSITED AT OR NEAR ITS FINAL POSITION.
- PUMPING OR PNEUMATIC CONVEYING EQUIPMENT SHALL BE OF SUITABLE KIND WITH ADEQUATE PUMPING CAPACITY. PNEUMATIC PLACEMENT SHALL BE CONTROLLED SO THAT SEGREGATION IS NOT APPARENT IN THE DISCHARGED CONCRETE. THE LOSS OF SLUMP IN PUMPING OR PNEUMATIC CONVEYING EQUIPMENT SHALL NOT EXCEED 2". CONCRETE SHALL NOT BE CONVEYED THROUGH PIPE MADE OF ALUMINUM OR ALUMINUM ALLOY. SLUMP SPECIFIED IN CONCRETE NOTE 5 SHALL BE AT CONVEYING DISCHARGE.
- CONCRETE SHALL BE CONSOLIDATED BY INTERNAL VIBRATION. WORKERS SHALL BE EXPERIENCED OR SHALL BE TRAINED IN USE OF THE VIBRATORS. USE INTERNAL VIBRATORS OF THE LARGEST SIZE AND POWER THAT CAN PROPERLY BE USED IN THE WORK. THOROUGHLY WORK CONCRETE AROUND REINFORCEMENT AND EMBEDDED ITEMS AND INTO CORNERS OF FORMS, ELIMINATING AIR AND STONE POCKETS THAT MAY CAUSE HONEYCOMBING, PITTING, OR PLANES OF WEAKNESS. VIBRATORS SHALL NOT BE USED TO MOVE CONCRETE LATERALLY WITHIN THE FORMS.
- ALL EXPOSED EDGES OF CONCRETE, INCLUDING INTERIOR FOUNDATION WALLS AND EQUIPMENT FOUNDATIONS, SHALL HAVE A 3/4" CHAMFER AT 45°.
- EXPOSED CONCRETE SURFACES AND SURFACES WHERE FORMS ARE REMOVED PRIOR TO 7 DAYS AFTER CASTING SHALL BE CURED BY ONE OF THE FOLLOWING METHODS:
 - WATER SATURATED BURLAP. BURLAP SHALL MEET THE REQUIREMENTS OF AASHTO M182-91, AND SHALL BE FREE OF HARMFUL SUBSTANCES, INCLUDING SUGAR OR FERTILIZERS. BURLAP SHOULD BE THOROUGHLY RINSED IN WATER BEFORE PLACING IT ON THE CONCRETE. UNIFORMLY DISTRIBUTE BURLAP ACROSS THE CONCRETE SURFACE AFTER FINAL FINISHING AND AS SOON AS THE BURLAP CAN BE APPLIED WITHOUT DAMAGE TO THE SURFACE, AND COMPLETELY SATURATE THE BURLAP WITH WATER. WATER SHALL BE POTABLE OR SHALL MEET THE REQUIREMENTS OF ASTM C94, AND SHALL BE FREE OF MATERIALS THAT HAVE THE POTENTIAL TO STAIN CONCRETE. THE TEMPERATURE OF THE CURING WATER SHALL NOT BE LOWER THAN 20 DEG F COOLER THAN THE SURFACE TEMPERATURE OF THE CONCRETE AT THE TIME OF APPLICATION. CONCRETE SURFACES SHALL BE KEPT CONTINUOUSLY WET AND SHALL NOT BE ALLOWED TO DRY FOR A MINIMUM OF 7 DAYS.
 - LIQUID MEMBRANE-FORMING COMPOUND. COMPOUNDS SHALL MEET THE REQUIREMENTS OF ASTM C309. APPLY MEMBRANE-FORMING COMPOUND TO CONCRETE SURFACES IMMEDIATELY AFTER FINAL FINISHING AND AS SOON AS THE FREE WATER HAS DISAPPEARED, NO WATER SHEEN IS VISIBLE, AND BLEEDING HAS ESSENTIALLY CEASED. APPLY COMPOUNDS UNIFORMLY AND AT THE RATE RECOMMENDED BY THE MANUFACTURER.



REVISIONS

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SAN DIEGO GAS & ELECTRIC COMPANY
PALOMAR ENERGY CENTER

COOLING WATER BIOCIDES
GENERAL STRUCTURAL NOTES

DRAWN BY: DP	DATE: 05/08/09	SCALE: NTS	NO.	REV. 0
CHECKED BY: DS	DATE: 05/11/09			
APPROVED BY: MJH	DATE: 05/11/09			
CAD NO.: 116522	PLOT SCALE: 1 : 1			

GENERAL STEEL NOTES

SPECIFICATIONS

- DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH THE "STEEL CONSTRUCTION MANUAL", 13TH EDITION, BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION, UNLESS OTHERWISE NOTED ON THE DRAWINGS.
- STEEL MATERIALS SHALL MEET THE REQUIREMENTS OF THE FOLLOWING SPECIFICATIONS, UNLESS OTHERWISE NOTED:

STRUCTURAL SHAPE W SHAPES PLATES, ANGLES, CHANNELS & MISC PIPE HOLLOW STRUCTURAL SECTIONS (RECT) HIGH STRENGTH BOLTS STAINLESS STEEL STAINLESS ELECTRODES	MATERIAL GRADE ASTM A992, Fy=50 KSI ASTM A36 ASTM A53, TYPE E OR S, GRADE B ASTM A500, GRADE B, Fy=46 KSI ASTM A325N, TYPE 1 GALVANIZED 316L (ASTM A276) MIN Fy=25 KSI E316L
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- TWO COPIES OF CERTIFIED MILL TEST REPORTS ON ALL ASTM MATERIALS USED IN THIS WORK SHALL BE FURNISHED TO THE ENGINEER.

CONNECTIONS

- ALL SHOP CONNECTIONS SHALL BE WELDED OR MADE WITH HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED.
- ALL HIGH STRENGTH BOLTED CONNECTIONS ARE CLASSIFIED AS SNUG TIGHTENED (ST), AS DEFINED BY THE AISC "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS", AND REQUIRE INSPECTION AS OUTLINED BY SECTION 9 OF THAT SPECIFICATION. THE SNUG TIGHT CONDITION IS THE TIGHTNESS ATTAINED WITH A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF AN IRONWORKER USING AN ORDINARY SPUD WRENCH TO BRING ALL THE PLIES INTO FIRM CONTACT.
- GUSSET PLATES SHALL BE $\frac{3}{8}$ " MINIMUM THICKNESS UNLESS OTHERWISE SPECIFIED.
- BOLTS FOR MISCELLANEOUS STEEL CONNECTIONS (PURLINS, GIRTS AND PLATFORMS) SHALL BE $\frac{3}{4}$ " DIAMETER CONFORMING TO ASTM A325N.
- ASTM A307 BOLTS (MB) SHALL NOT BE USED UNLESS OTHERWISE NOTED ON DESIGN DRAWINGS.
- THE MINIMUM CONNECTION FOR BRACING SHALL BE (2) $\frac{3}{4}$ " DIAMETER HIGH STRENGTH BOLTS UNLESS OTHERWISE SHOWN ON DRAWING.
- ALL BOLT HOLES SHALL BE NORMAL SIZE PER AISC UNLESS OTHERWISE NOTED.
- FIELD BURNING OF BOLT HOLES IS NOT PERMITTED WITHOUT APPROVAL FROM THE ENGINEER OF RECORD. SURFACES OF ALL FIELD BURNED BOLT HOLES SHALL BE GROUND SMOOTH.

ANCHOR BOLTS

- CAST-IN-PLACE ANCHORS SHALL BE SUPPLIED BY THE CONCRETE CONTRACTOR.
- EXPANSION ANCHORS USED FOR ANCHORAGE OF EQUIPMENT SHALL BE PROVIDED AND INSTALLED BY EQUIPMENT CONTRACTOR. EXPANSION ANCHORS SHALL BE "HILTI KWIK BOLT TZ (KB-TZ SS304)" OR APPROVED ALTERNATE. ANCHORS, NUTS, AND WASHERS SHALL BE STAINLESS STEEL TYPE 304.
- ADHESIVE ANCHORS SHALL BE PROVIDED AND INSTALLED BY THE STEEL CONTRACTOR. ADHESIVE ANCHORS SHALL BE "HILTI HIT RE500 SD ADHESIVE ANCHOR SYSTEMS" OR APPROVED ALTERNATE. ANCHORS SHALL BE HILTI "HAS-E" THREADED RODS CONFORMING TO ISO 898-1 CLASS 5.8, OR SHALL BE MADE FROM ALL-THREADED RODS CONFORMING TO ASTM A572 GRADE 60, UNLESS OTHERWISE NOTED. ANCHORS, NUTS, AND WASHERS SHALL BE GALVANIZED.
- ANCHOR BOLT HOLES SHALL BE DRILLED WITH TOOLS THAT CANNOT CUT REBAR.

CONSTRUCTION

- DAMAGED GALVANIZED SURFACES AND FIELD WELDED SURFACES SHALL BE TOUCHED-UP AND REPAIRED PER ASTM A780. ERECTOR SHALL SUBMIT A REPAIR PROCEDURE FOR APPROVAL BY THE OWNER AND THE STRUCTURAL ENGINEER PRIOR TO MAKING ANY REPAIRS.

GENERAL STEEL NOTES (CONTINUED)

GROUTING

- STEEL ERECTOR SHALL BE RESPONSIBLE FOR GROUTING UNDER ALL COLUMN BASE PLATES.
- UNLESS OTHERWISE NOTED, BASE PLATES SHALL BE SHIMMED WITH STEEL SHIMS OR WEDGES BEFORE GROUTING. BACKOFF LEVELING NUTS PRIOR TO GROUTING.
- GROUT SHALL BE A NONSHRINK, NONCORROSIVE, NONSTAINING, NATURAL AGGREGATE (NONMETALLIC) GROUT AND SHALL BE A PREMIXED, PACKAGED TYPE, INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S DIRECTIONS. GROUT SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI AT 7 DAYS.

SHOP DRAWINGS

- SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW BEFORE STARTING FABRICATION.

WELDING

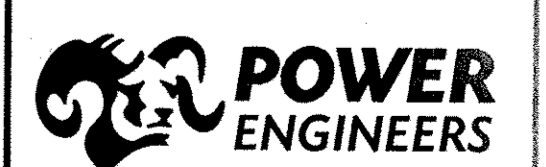
- ALL WELDING SHALL CONFORM TO THE REQUIREMENT OF AWS D1.1 STRUCTURAL WELDING CODE.
- WELDER CERTIFICATION PROCEDURES SHALL BE AS FOLLOWS:
 - ALL WELDERS SHALL BE CURRENTLY CERTIFIED AND REGISTERED BY THE LOCAL BUILDING OFFICIALS AND/OR THE AMERICAN WELDING SOCIETY AND, IF REQUIRED, ALL WELDERS SHALL HAVE THEIR CERTIFICATION AVAILABLE TO THE ENGINEER.
 - A COPY OF CERTIFIED WELDING PROCEDURES NOT PREQUALIFIED BY AWS, SHALL BE SUBMITTED FOR INFORMATION.
- ALL WELD FILLER METAL SHALL BE AWS E7018 WITH A MINIMUM CHARPY V-NOTCH (CVN) TOUGHNESS OF 20 FT-LB AT 0 DEG F, AS DETERMINED BY THE APPROPRIATE AWS AS CLASSIFICATION TEST METHOD OR MANUFACTURER CERTIFICATION, UNLESS OTHERWISE NOTED.
- ALL BUTT WELDS SHALL BE COMPLETE PENETRATION WELDS UNLESS OTHERWISE NOTED.
- ALL GROOVE WELDS SHALL BE COMPLETE PENETRATION WELD, UNLESS NOTED OTHERWISE
- WELDING PROCEDURE AND SEQUENCES SHALL BE PLANNED TO MINIMIZE WELD SHRINKAGE THAT COULD RESULT IN LAMELLAR TEARING.
- FIELD WELDING WILL BE ALLOWED ONLY WHERE SHOWN ON THE DRAWINGS.
- EXISTING AND NEW STEEL SURFACES TO BE WELDED SHALL BE CLEANED OF PAINT, GREASE, SCALE OR OTHER FOREIGN MATERIAL.
- ALL FIELD WELDS SHALL BE WIRE BRUSHED AND CLEANED, THEN TOUCHED UP PER CONSTRUCTION NOTE 2.
- WELDING TO EXISTING BEAM OR COLUMN FLANGES IS NOT PERMITTED EXCEPT AS INDICATED ON THE DRAWINGS.

REVISIONS

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11/20/09

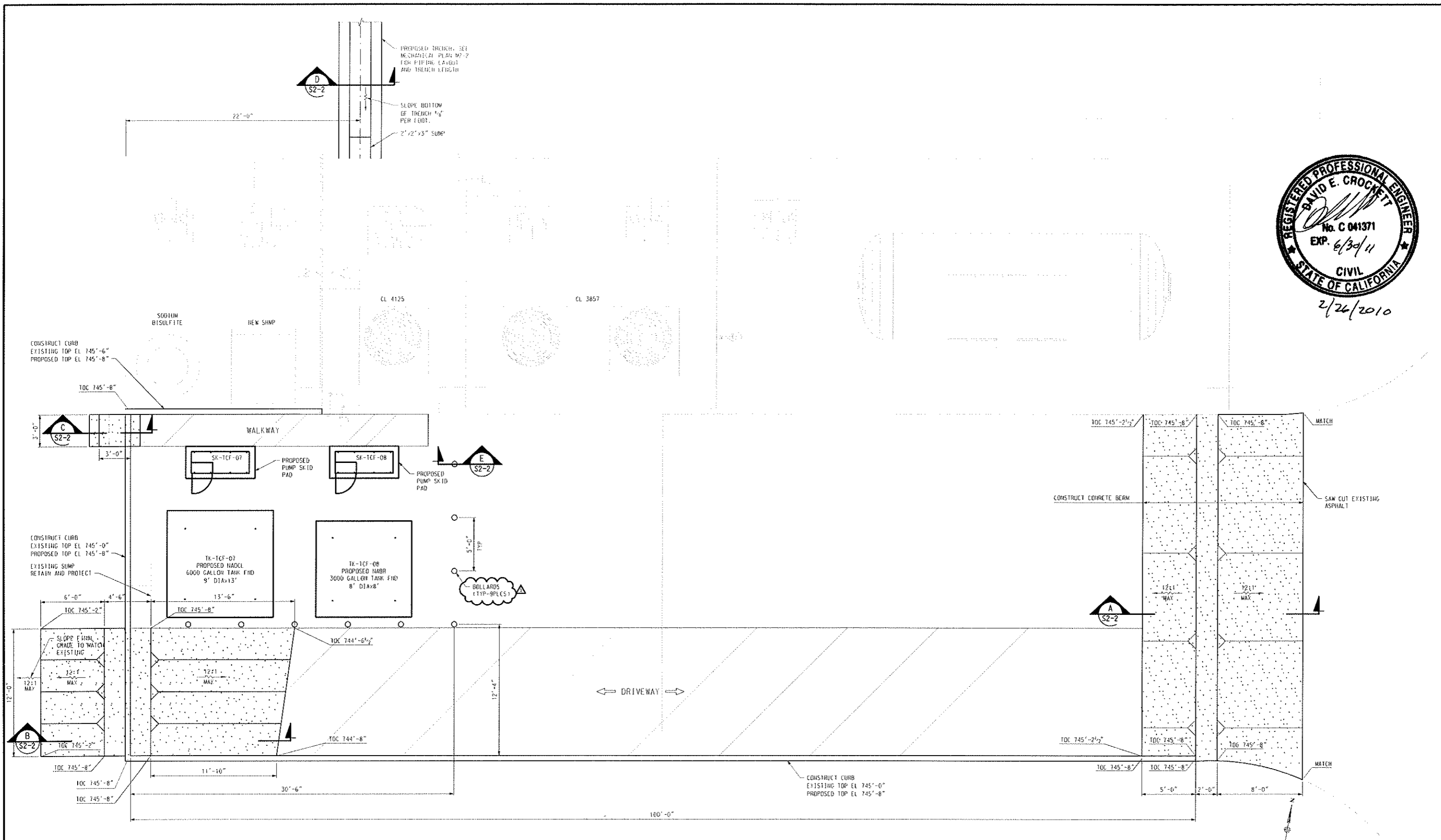
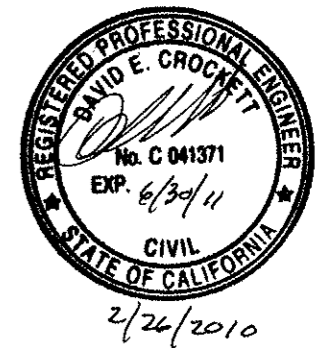


SAN DIEGO GAS & ELECTRIC COMPANY
PALOMAR ENERGY CENTER

COOLING WATER BIOCIDES
GENERAL STRUCTURAL NOTES

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APPROVED BY: MJH	DATE: 05/11/09			
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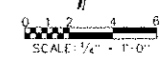
S0-2



CONTAINMENT PLAN

ABBREVIATIONS

- EL ELEVATION
- TOC TOP OF CONCRETE



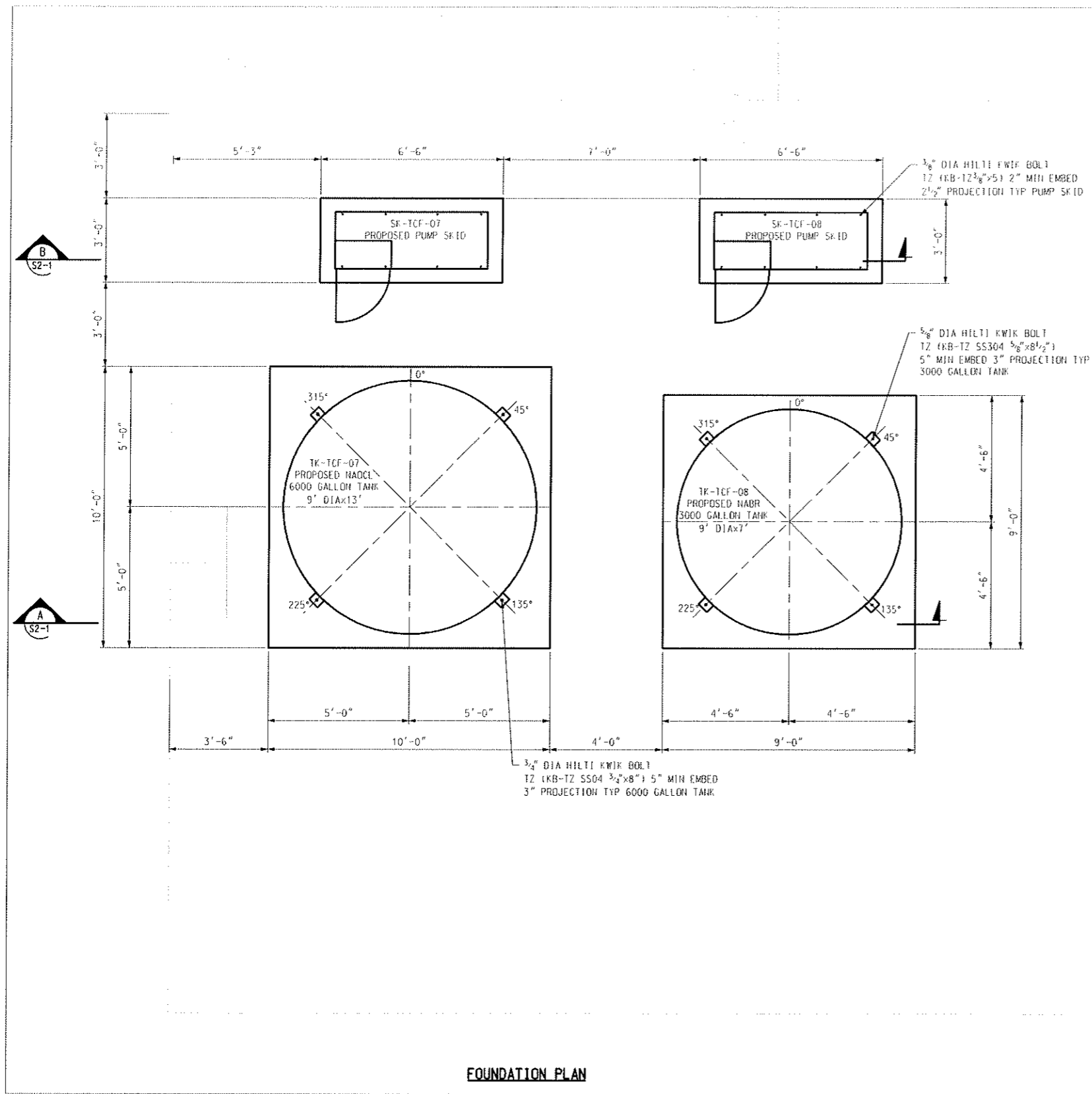
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SAN DIEGO GAS & ELECTRIC COMPANY
PALOMAR ENERGY CENTER

COOLING WATER BIOCIDES
CONTAINMENT PLAN

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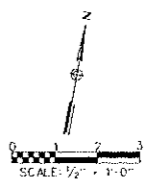


NOTES

1. CONTRACTOR SHALL VERIFY ALL ANCHOR LOCATIONS PRIOR TO ANCHOR BOLT INSTALLATION.
2. CONTRACTOR SHALL USE PLATE WASHERS ON ANCHOR LUGS THAT EXCEED ANCHOR BOLT DIAMETER GREATER THAN 1/8" DIAMETER.
3. REFER TO TANK VENDOR DRAWING VENDOR DRAWING EDGE_09148 AND PUMP SKID LAYOUT VENDOR DRAWING 2777-02A
4. CONTRACTOR SHALL INSTALL ANCHOR BOLTS AND GROUT PER VENDOR DRAWINGS.
5. CONTRACTOR SHALL ROUGHEN CONCRETE TO AN AMPLITUDE OF +/- 1/8" AND APPLY CONCRETE BONDING AGENT. BONDING AGENT SHALL BE Sika ARMETEC 110 EPOXEM OR ENGINEER APPROVED EQUAL.
6. REFER TO DRAWING S1-1 FOR PROPOSED SITE LOCATION OF EQUIPMENT SHOWN.



2/26/2010



REVISIONS

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SAN DIEGO GAS & ELECTRIC COMPANY
PALOMAR ENERGY CENTER

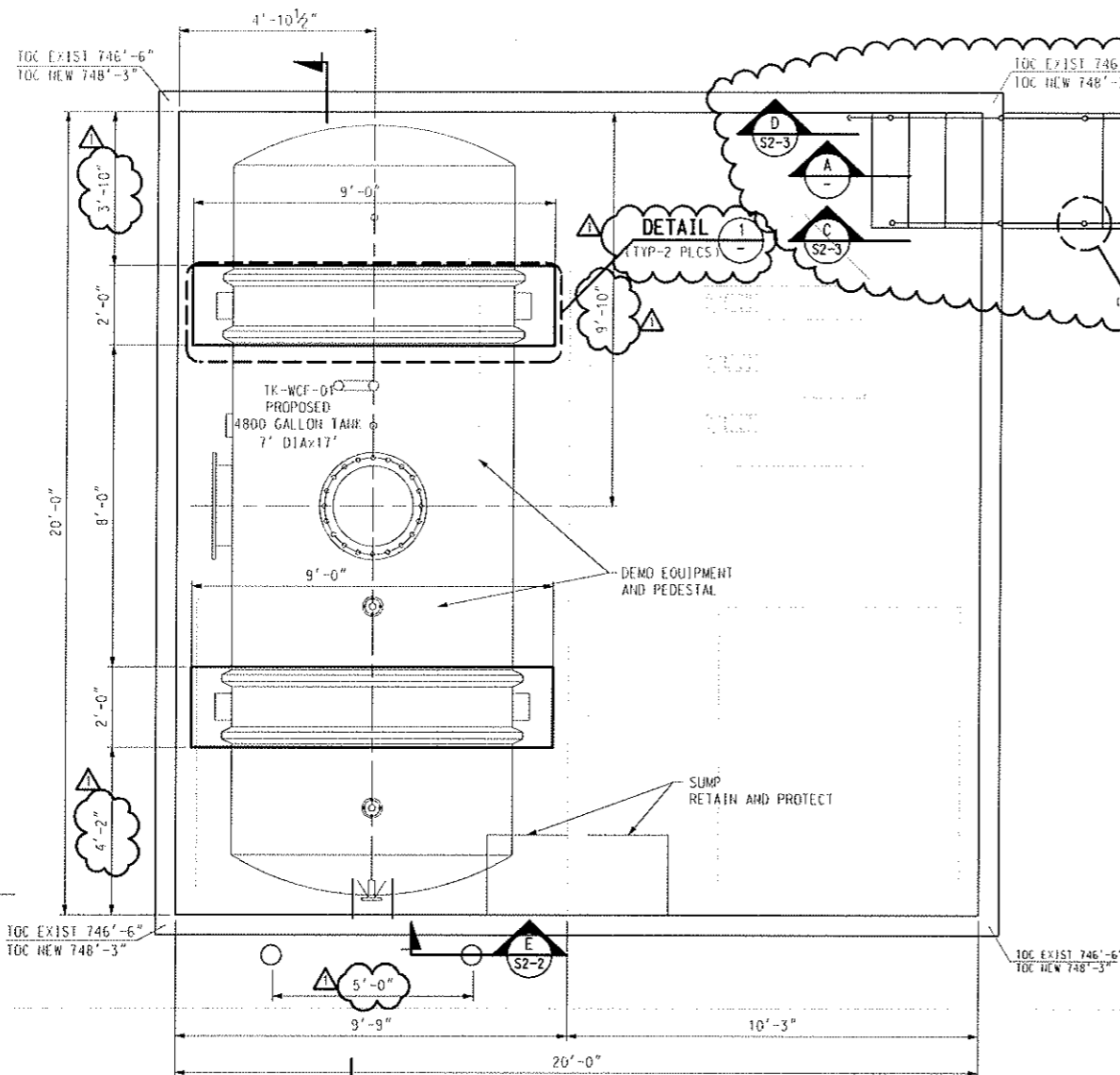
COOLING WATER BIOCIDES
COOLING WATER FOUNDATION PLAN

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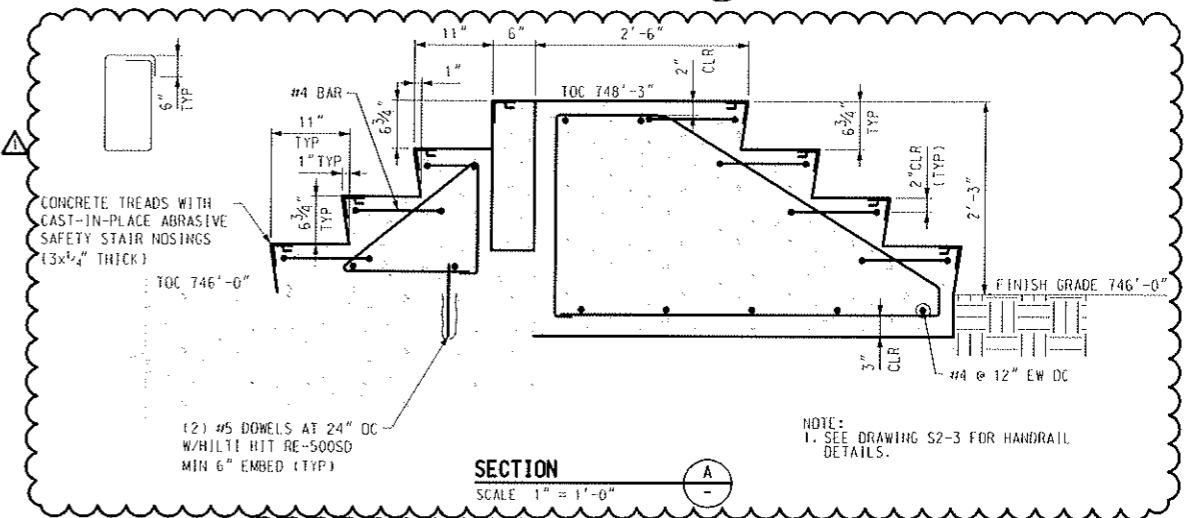
S1-2

NOTES

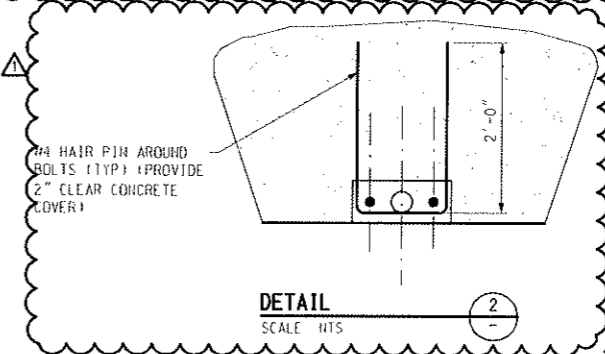
1. CONTRACTOR SHALL VERIFY ALL ANCHOR LOCATIONS PRIOR TO ANCHOR BOLT INSTALLATION.
2. CONTRACTOR SHALL USE PLATE WASHERS ON ANCHOR LUGS THAT EXCEED ANCHOR BOLT DIAMETER GREATER THAN 1/2" DIAMETER.
3. REFER TO TANK VENDER DRAWING VENDER DRAWING SDGE 09148 AND PUMP SET LAYOUT VENDER DRAWING 2777-02A
4. CONTRACTOR SHALL INSTALL ANCHOR BOLTS AND GROUT PER VENDER DRAWINGS.
5. CONTRACTOR SHALL ROUGHEN CONCRETE TO AN AMPLITUDE OF 1/4" AND APPLY CONCRETE BONDING AGENT. BONDING AGENT SHALL BE SIKER ARMIPEC 110 EPOCEM OR ENGINEER APPROVED EQUAL.
6. REFER TO DRAWING M1-0 FOR PROPOSED SITE LOCATION OF THIS WORK.



FOUNDATION PLAN



SECTION

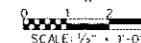


DETAIL



2/26/2010

ABBREVIATIONS
 EL ELEVATION
 TOC TOP OF CONCRETE



REVISIONS

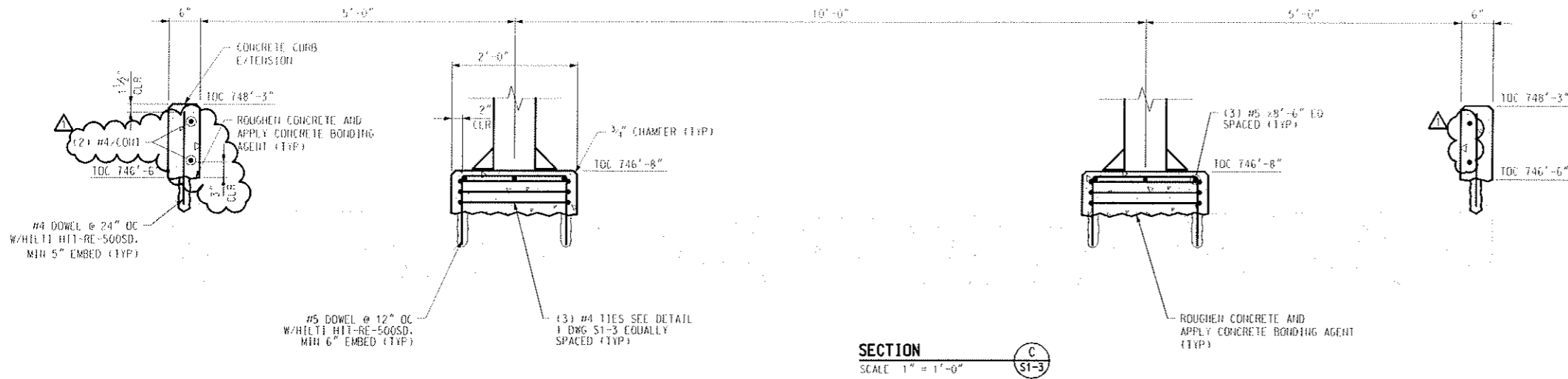
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 PALOMAR ENERGY CENTER

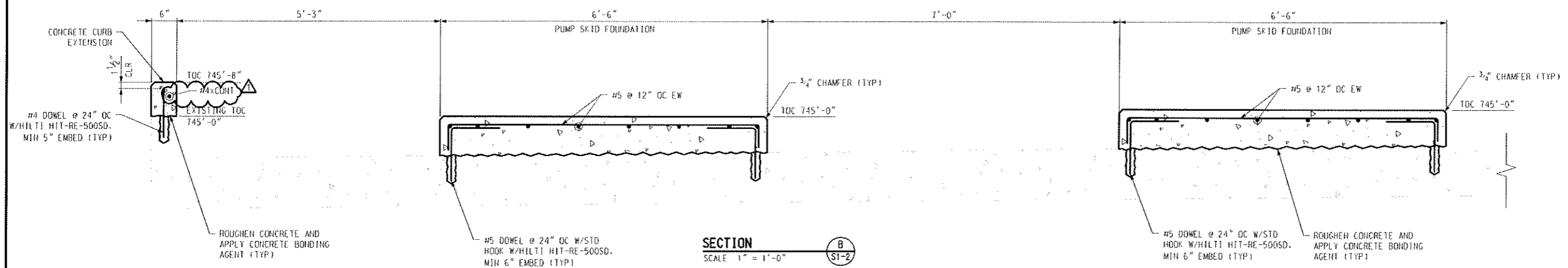
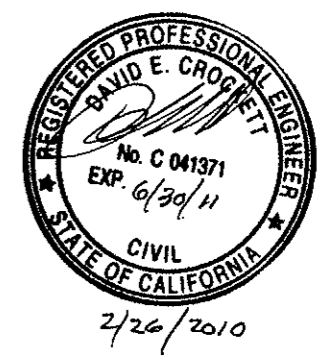
COOLING WATER BIOCTIDE
 RAW WATER FOUNDATION PLAN

DRAWN BY: DP	DATE: 05/14/09	SCALE: 1/2" = 1'-0"	NO.	REV. 1
CHECKED BY: DS	DATE: 05/15/09			
APPROVED BY: MJH	DATE: 05/15/09			
CAD NO: 116522	PLOT SCALE: 2 : 1			

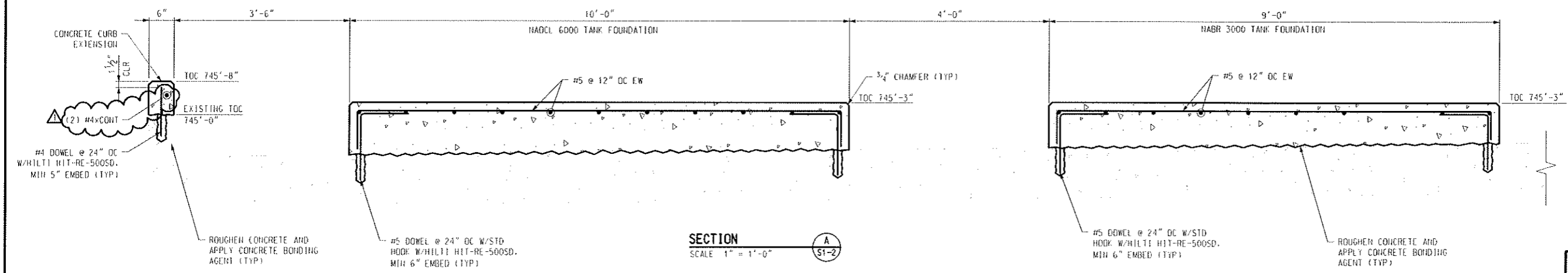
S1-3



SECTION C
SCALE 1" = 1'-0"



SECTION B
SCALE 1" = 1'-0"



SECTION A
SCALE 1" = 1'-0"



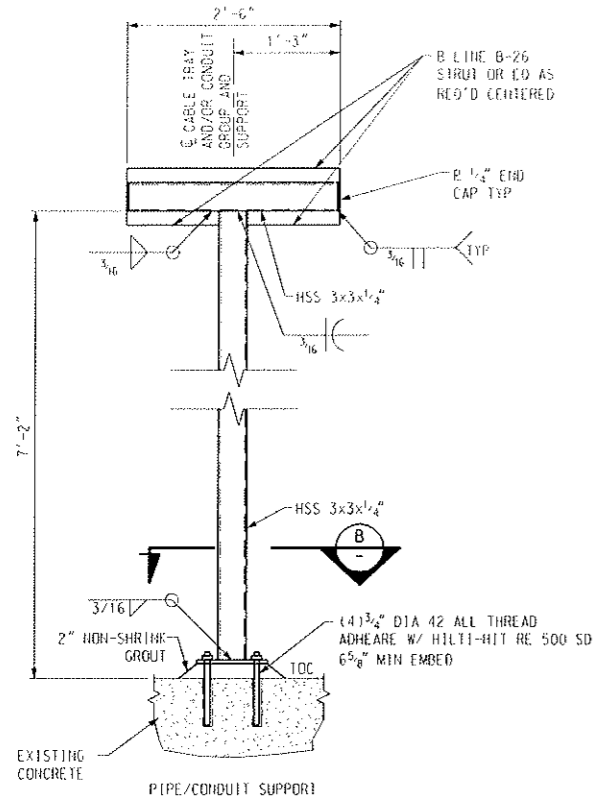
REVISIONS

NO.	WORK DONE	DATE	BY	APP'D.	NO.	NO.	WORK DONE	DATE	BY	APP'D.	NO.	NO.	WORK DONE	DATE	BY	APP'D.	NO.
1	ADDED HORIZONTAL BAR	02/24/10	SJR	MJH													
2	ISSUED FOR BID	11/20/09	SJR	MJH													

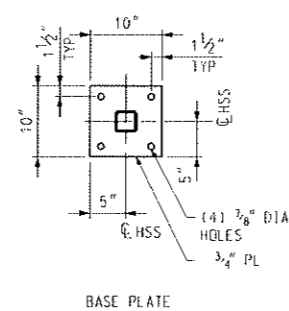
SAN DIEGO GAS & ELECTRIC COMPANY
PALOMAR ENERGY CENTER
COOLING WATER BIOCIDES
FOUNDATION SECTION AND DETAILS

DRAWN BY: [] DATE: 06/13/09 SCALE: 1"=1'-0" NO. REV. 1
 CHECKED BY: DS DATE: 05/14/09
 APPROVED BY: WJR DATE: 05/13/09
 CAD NO: 116522 PLOT SCALE: 1:1

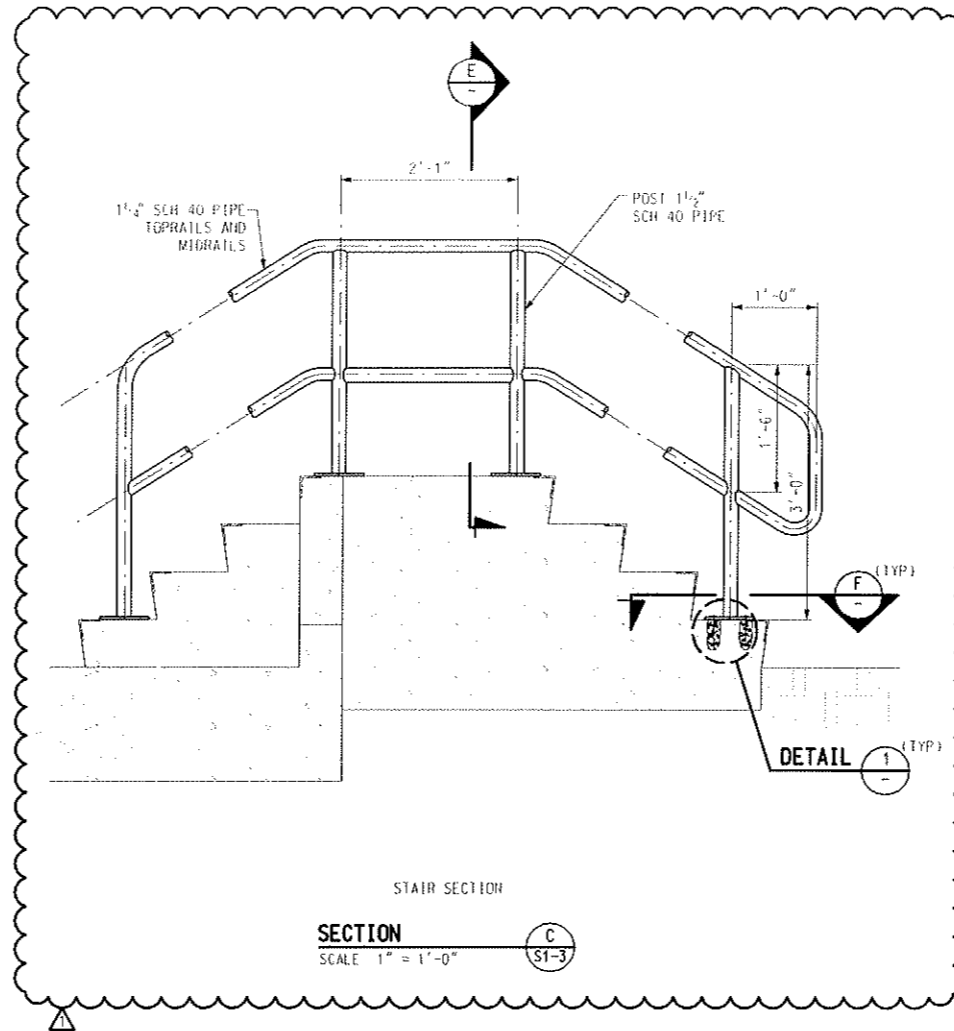
S2-1



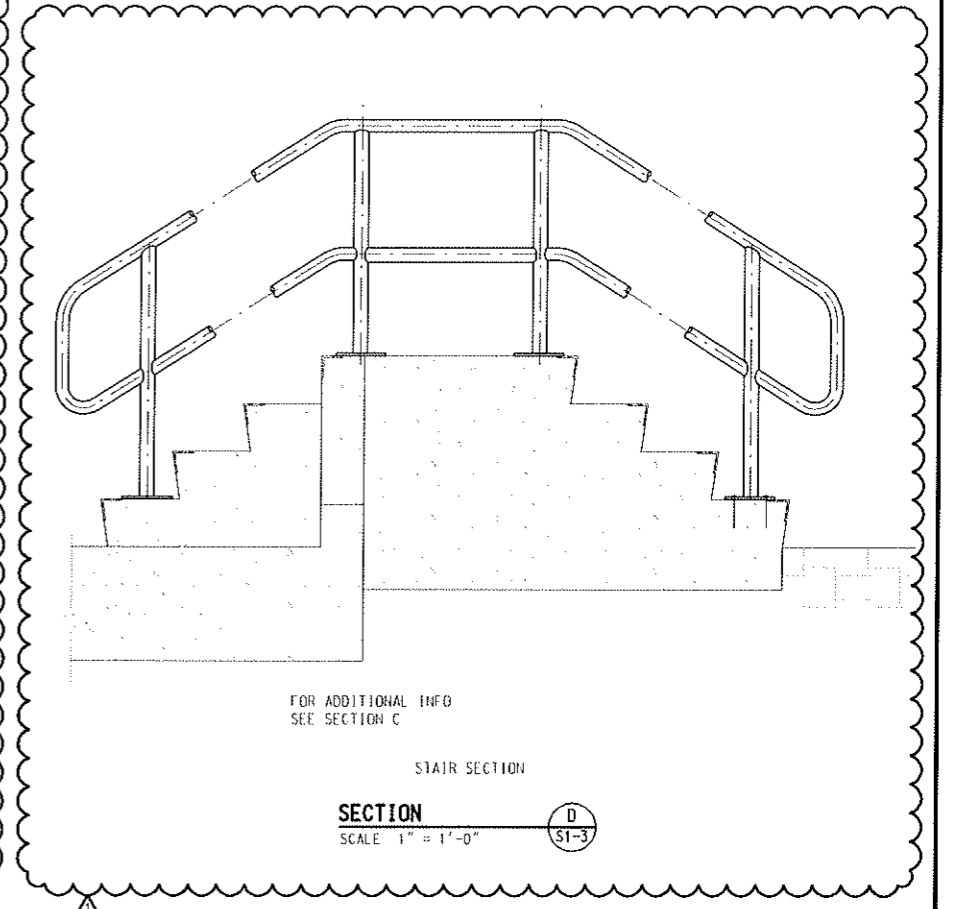
SECTION A
SCALE 1" = 1'-0"
S1-4



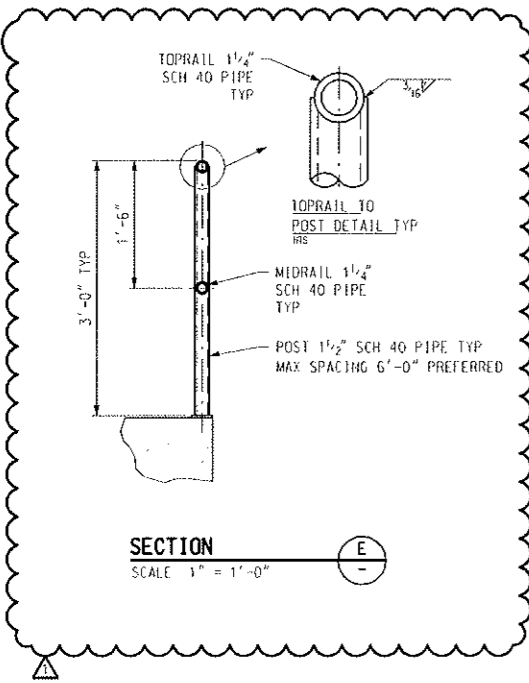
SECTION B
SCALE 1" = 1'-0"
-



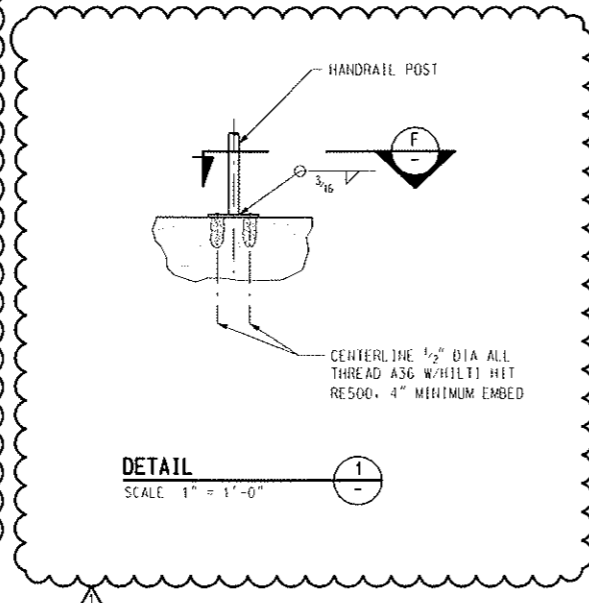
SECTION C
SCALE 1" = 1'-0"
S1-3



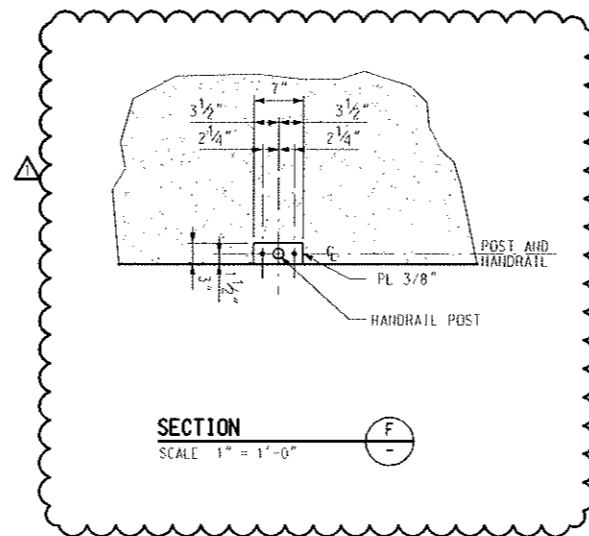
SECTION D
SCALE 1" = 1'-0"
S1-3



SECTION E
SCALE 1" = 1'-0"
-



DETAIL I
SCALE 1" = 1'-0"
-



SECTION F
SCALE 1" = 1'-0"
-



2/26/2010



REVISIONS

NO.	WORK DONE	DATE	BY	APP'D.	NO.	WORK DONE	DATE	BY	APP'D.	NO.	WORK DONE	DATE	BY	APP'D.	NO.	WORK DONE	DATE	BY	APP'D.	NO.	
1	ADDED HANDRAILS	07/24/10	SJK	MJM																	
2	ISSUED FOR BID	11/22/09	SJK	MJM																	

SAN DIEGO GAS & ELECTRIC COMPANY
PALOMAR ENERGY CENTER
COOLING WATER BLOCIDE
STEEL SECTION

DRAWN BY: SJK	DATE: 11/22/09	SCALE: AS SHOWN	NO.:	REV: 1
CHECKED BY: DJ	DATE:			
APPROVED BY: MJM	DATE:			
CAD NO: 116572	PLT SCALE: 1" = 1'			

S2-3

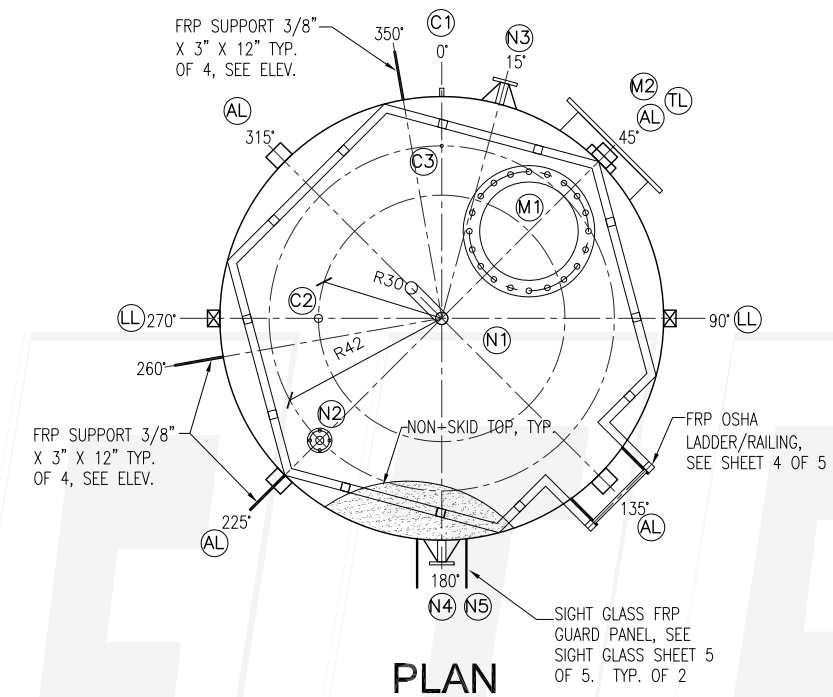
A

B

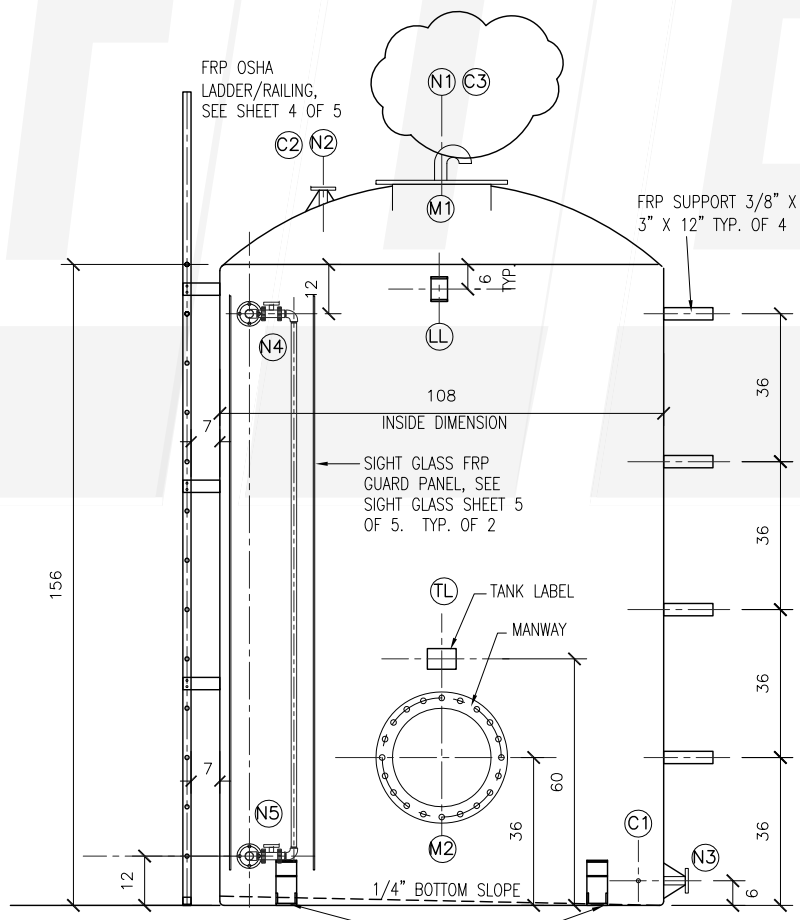
C

D

E



PLAN



ELEVATION

INSTALLATION CONTRACTOR MUST APPLY 1/2" NON-SHRINK GROUT BENEATH EACH ANCHOR LUG AND HAND TIGHTEN A NUT (NO WRENCH) ON ANCHOR BOLT BEFORE GROUT SETS. AFTER GROUTS SETS COMPLETELY, TIGHTEN ANOTHER NUT ON TOP OF THE FIRST WITHOUT TIGHTENING THE FIRST NUT.



TOLL FREE 1-888-NEED-FRP

SERIAL #: SDGE_09148 TK-TCF-01

SERVICE: SODIUM HYPOCHLORITE

SPECIFIC GRAVITY: 1.1

DESIGN TEMP: AMBIENT

DESIGN PRESSURE: ATMOSPHERIC

**RESIN: HETRON FR992 (CORROSION BARRIER)
HETRON FR992 SB (STRUCTURE)**

TANK CAPACITY: 6,000 GAL (NOMINAL)

DIMENSIONS: 9'-0"Ø X 13'-0" TALL

EMPTY WEIGHT: 2,500 LBS.

BUILT: NOVEMBER 2009

TANK LABEL

- NOTES**
- BOLT HOLES TO STRADDLE MAJOR CENTERLINES UNLESS OTHERWISE SPECIFIED.
 - NOZZLES AND COUPLINGS PROTRUDE 2" WITHIN INSIDE WALL. PROJECTION PER NOZZLE SCHEDULE.
 - ALL FLANGED NOZZLE'S 4"Ø AND BELOW ARE BE REINFORCED W/ (4) 1/4" THICK PLATE GUSSETS.
 - 316 S.S. MANWAY FASTENERS & 1/8" VITON GASKETS BY FTE.
 - SEE PLAN VIEW FOR TRUE ORIENTATION.

CUSTOMER DRAWING APPROVAL

APPROVED APPROVED AS NOTED

AUTHORIZED SIGNATURE

DATE

THE SIGNATORY HEREBY VERIFIES THIS DRAWING TO BE CORRECT AND AUTHORIZES FIBER-TECH ENGINEERING TO PROCEED WITH MANUFACTURING. THE SIGNATORY ASSUMES RESPONSIBILITY FOR SUBSEQUENT CHANGE REQUESTS, IF ANY, TO THE PRODUCT REPRESENTED ON THIS DRAWING AFTER THE COMMENCEMENT OF MANUFACTURING AND RECOGNIZES THAT SAID CHANGES MAY RESULT IN ADDITIONAL CHARGES.

PARTS LIST - NOZZLE SCHEDULE						
ITEM NO.	SIZE	MATERIAL	DESCRIPTION	PROJ	PSI RATING	QTY REQ
N1	3"	FRP	GOOSENECK VENT W/ SSTL SCREEN	6"	50	1
N2	2"	FRP	FF FLANGE - FILL	6"	50	1
N3	2"	FRP	FF FLANGE - DRAIN W/ FF CPVC VALVE, VITON GASKET, 316SS N/B	6"	150	1
N4	2"	FRP	FF FLANGE - SIGHT GLASS - SEE SHEET 5 OF 5	4"	50	1
N5	2"	FRP	FF FLANGE - SIGHT GLASS - SEE SHEET 5 OF 5	4"	50	1
M1	24"	FRP	FF FLANGE - TOP MANWAY	6"	--	1
M2	24"	FRP	FF FLANGE - SIDE MANWAY	6"	--	1
C1	1"	FRP	NPT COUPLING - PUMP SUCTION	2"	150	1
C2	2"	FRP	NPT COUPLING - LEVEL TRANSMITTER	2"	150	1
C3	1"	FRP	NPT COUPLING - DRAW DOWN VENT	2"	150	1
TL	--	SSTL	TANK LABEL	2"	--	1
AL	--	SSTL	ANCHOR LUG - 316 SSTL. TYP II (SEE STRUCTURAL CALC'S)	--	--	4
LL	--	SSTL	LIFTING LUG - 316 SSTL. (SEE STRUCTURAL CALC'S)	--	--	2

DESIGN

SERVICE: SODIUM HYPOCHLORITE TANK/COOLING WATER

FABRICATION STANDARDS: CONTACT MOLDED PER ASTM D-4097
FILAMENT WOUND PER ASTM D 3299

FABRICATION METHOD: CONTACT MOLDED CORROSION BARRIER
FILAMENT WOUND STRUCTURE

DESIGN PRESSURE: ATMOSPHERIC

SEISMIC ZONE: S_s = 1.06 S₁ = 0.40

DESIGN TEMPERATURE: 100° F

DESIGN WIND LOAD: 90 MPH

MATERIAL OF CONST. CORROSION BARRIER: HETRON FR992
STRUCTURE: HETRON FR992 SB

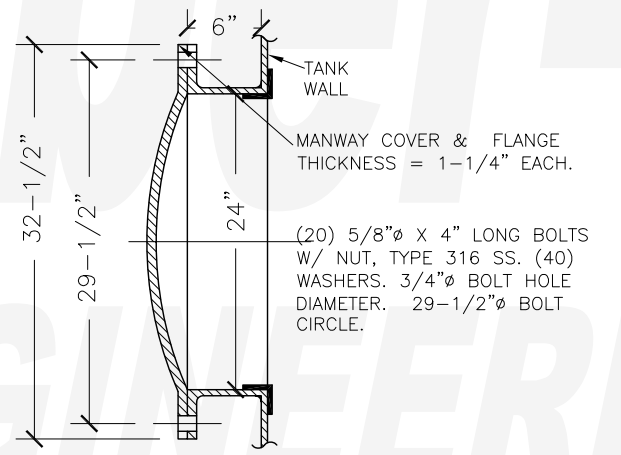
CURE SYSTEM: CORROSION BARRIER- BPO/DMA W/ (2) C-VEIL,
(4) ECR, 200 MILS, POST CURE

STRUCTURE- MEKFP

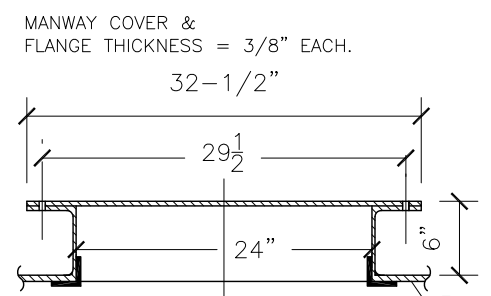
LOCATION: OUTDOOR

COLOR: WHITE GEL COAT W/UV INHIBITOR

EST'D. EMPTY WEIGHT: 2,500 LB



SIDE MANWAY



TOP MANWAY

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
0	ORIGINAL DRAWING	10/06/09	TM
A	PER CLIENT COMMENTS / NEW LOCATION FOR LIFTING LUG	10/23/09	TM
B	PER CLIENT COMMENTS	10/27/09	TM

THIS DOCUMENT CONTAINS INFORMATION PROPRIETARY TO FIBER-TECH ENGINEERING AND SHALL NOT BE REPRODUCED WITHOUT WRITTEN PERMISSION.

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FTE Fiber-Tech ENGINEERING, INC. 611 Rock Springs Road Escondido, CA 92025 (760) 735-6277

SDG&E TANK #TK-TCF-01
SODIUM HYPOCHLORITE TANK/COOLING WATER
PALOMAR ENERGY CENTER
ESCONDIDO, CA

APPROVALS	DATE
DRAWN FT	9/21/09
CHECKED TM	--

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:

FRACTIONS	DECIMALS	ANGLES
1/8	.XX ±.25	± 1'
	.XXX ±.13	

SIZE X DRAWING NUMBER SDGE_09148 REV. B

DO NOT SCALE DRAWING SCALE: XXX FILE NAME: SDGE_09148 SHEET: 1 OF 5



TOLL FREE 1-888-NEED-FRP

SERIAL #: SDGE_09148 TK-TCF-02

SERVICE: SODIUM BROMIDE

SPECIFIC GRAVITY: 1.3

DESIGN TEMP: AMBIENT

DESIGN PRESSURE: ATMOSPHERIC

RESIN: HETRON FR992 (CORROSION BARRIER)
HETRON FR992 SB (STRUCTURE)

TANK CAPACITY: 3,000 GAL (NOMINAL)

TANK DIMENSIONS: 8'-0"Ø X 8'-0" TALL

EMPTY WEIGHT: 1,200 LBS.

BUILT: NOVEMBER 2009

TANK LABEL

NOTES

1. BOLT HOLES TO STRADDLE MAJOR CENTERLINES UNLESS OTHERWISE SPECIFIED.
2. NOZZLES AND COUPLINGS PROTRUDE 2" WITHIN INSIDE WALL. PROJECTION PER NOZZLE SCHEDULE.
3. ALL FLANGED NOZZLE'S 4"Ø AND BELOW ARE BE REINFORCED W/ (4) 1/4" THICK PLATE GUSSETS.
4. 316 S.S. MANWAY FASTENERS & 1/8" EPDM GASKETS BY FTE.
5. SEE PLAN VIEW FOR TRUE ORIENTATION.

CUSTOMER DRAWING APPROVAL

APPROVED APPROVED AS NOTED

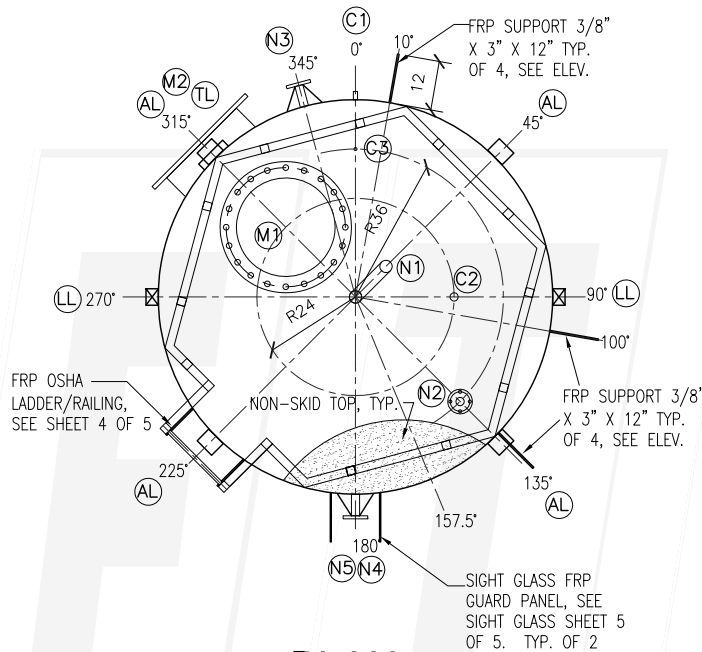
AUTHORIZED SIGNATURE

DATE

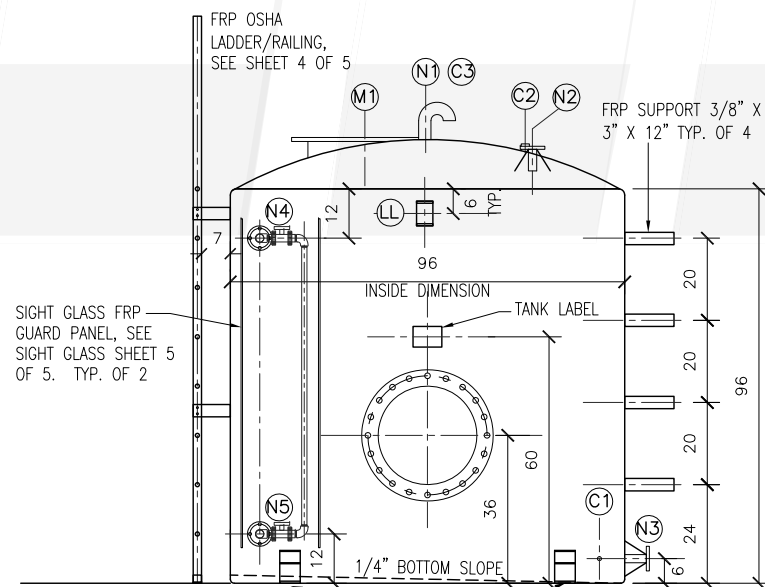
THE SIGNATORY HEREBY VERIFIES THIS DRAWING TO BE CORRECT AND AUTHORIZES FIBER-TECH ENGINEERING TO PROCEED WITH MANUFACTURING. THE SIGNATORY ASSUMES RESPONSIBILITY FOR SUBSEQUENT CHANGE REQUESTS, IF ANY, TO THE PRODUCT REPRESENTED ON THIS DRAWING AFTER THE COMMENCEMENT OF MANUFACTURING AND RECOGNIZES THAT SAID CHANGES MAY RESULT IN ADDITIONAL CHARGES.

PARTS LIST - NOZZLE SCHEDULE

ITEM NO.	SIZE	MATERIAL	DESCRIPTION	PROJ	PSI RATING	QTY REQ
(N1)	3"	FRP	GOOSENECK VENT W/ SSTL SCREEN	6"	50	1
(N2)	2"	FRP	FF FLANGE - FILL	6"	50	1
(N3)	2"	FRP	FF FLANGE - DRAIN W/ FF CPVC VALVE, EPDM GASKET, 316SS N/B	6"	150	1
(N4)	2"	FRP	FF FLANGE - SIGHT GLASS - SEE SHEET 5 OF 5	4"	50	1
(N5)	2"	FRP	FF FLANGE - SIGHT GLASS - SEE SHEET 5 OF 5	4"	50	1
(M1)	24"	FRP	FF FLANGE - TOP MANWAY	6"	---	1
(M2)	24"	FRP	FF FLANGE - SIDE MANWAY	6"	---	1
(C1)	1"	FRP	NPT COUPLING - PUMP SUCTION	2"	150	1
(C2)	2"	FRP	NPT COUPLING - LEVEL TRANSMITTER	2"	150	1
(C3)	1"	FRP	NPT COUPLING - DRAW DOWN VENT	2"	150	1
(--)	--	--	--	--	--	--
(TL)	--	SSTL	TANK LABEL	2"	---	1
(AL)	--	SSTL	ANCHOR LUG - 316 SSTL. TYP I (SEE STRUCTURAL CALC'S)	---	---	4
(LL)	--	SSTL	LIFTING LUG - 316 SSTL. (SEE STRUCTURAL CALC'S)	---	---	2



PLAN

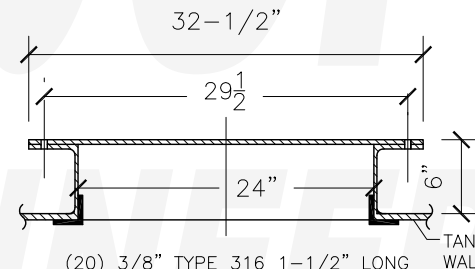


ELEVATION

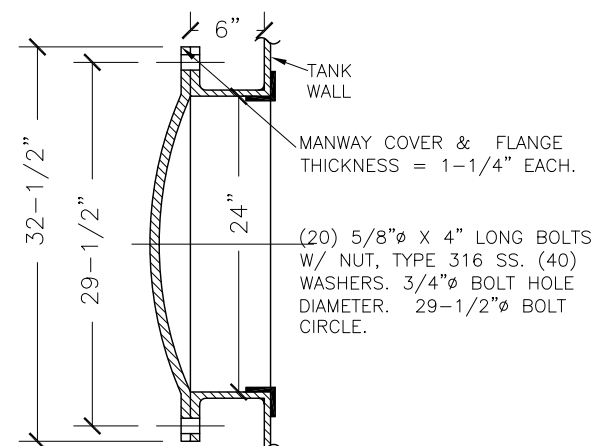
SEE PLAN VIEW FOR TRUE ORIENTATION

INSTALLATION CONTRACTOR MUST APPLY 1/2" NON-SHRINK GROUT BENEATH EACH ANCHOR LUG AND HAND TIGHTEN A NUT (NO WRENCH) ON ANCHOR BOLT BEFORE GROUT SETS. AFTER GROUTS SETS COMPLETELY, TIGHTEN ANOTHER NUT ON TOP OF THE FIRST WITHOUT TIGHTENING THE FIRST NUT.

MANWAY COVER & FLANGE THICKNESS = 3/8" EACH.



TOP MANWAY



SIDE MANWAY

DESIGN

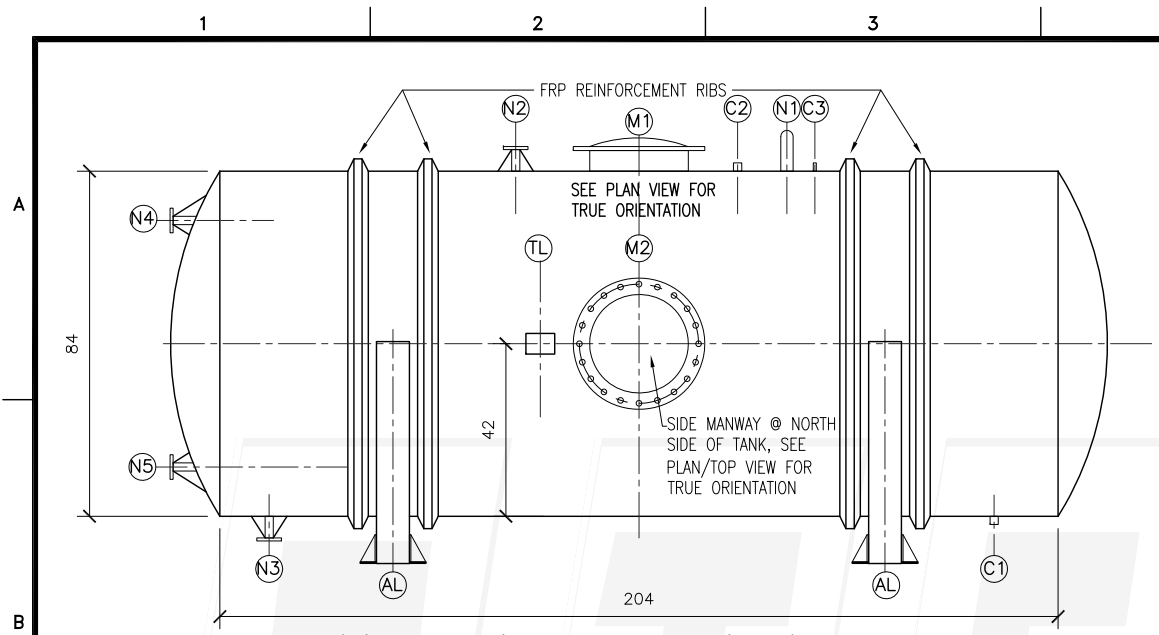
SERVICE: SODIUM BROMIDE TANK/COOLING WATER
 FABRICATION STANDARDS: CONTACT MOLDED PER ASTM D-4097 FILAMENT WOUND PER ASTM D 3299
 FABRICATION METHOD: CONTACT MOLDED CORROSION BARRIER FILAMENT WOUND STRUCTURE
 DESIGN PRESSURE: ATMOSPHERIC
 SEISMIC ZONE: S_s :=1.06 S₁ :=0.40
 DESIGN TEMPERATURE: 100° F
 DESIGN WIND LOAD: 90 MPH
 MATERIAL OF CONST. CORROSION BARRIER: HETRON FR992 STRUCTURE: HETRON FR992 SB
 CURE SYSTEM: CORROSION BARRIER- C VEIL 100 MILS (C,M,M) STRUCTURE- MEKP
 LOCATION: OUTDOOR
 COLOR: WHITE GEL COAT W/UV INHIBITOR
 EST'D. EMPTY WEIGHT: 1,200 LB

REVISIONS

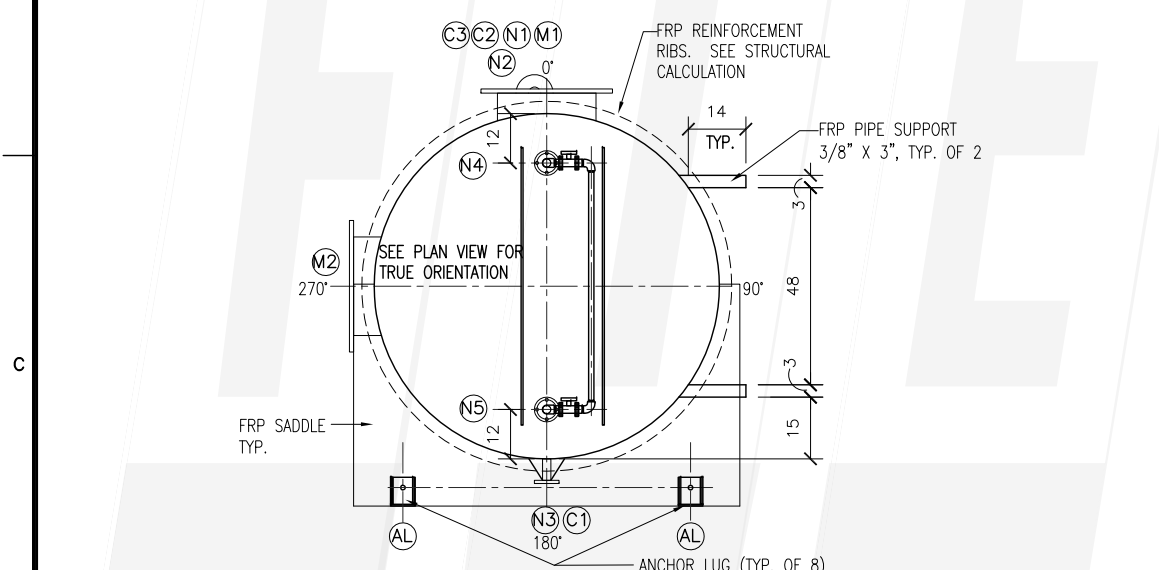
REV.	DESCRIPTION	DATE	APPROVED
0	ORIGINAL DRAWING	10/06/09	TM
A	PER CLIENT COMMENTS / NEW LOCATION FOR LIFTING LUG	10/23/09	TM
B	PER CLIENT COMMENTS	10/27/09	TM

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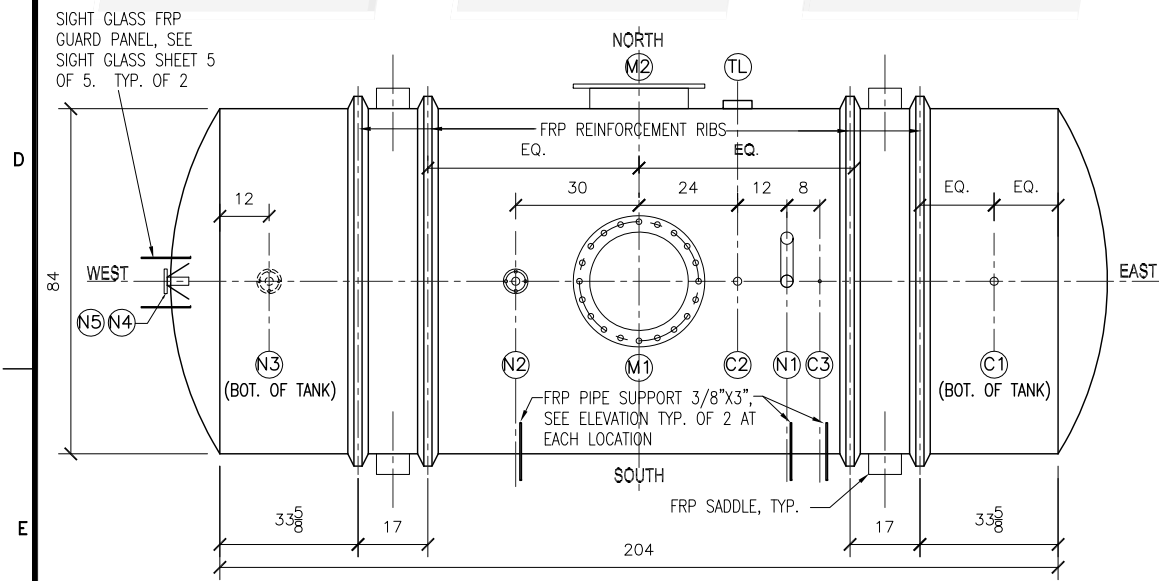
(FTE) FIBER-TECH ENGINEERING, INC. ALL RIGHTS RESERVED APPROVALS: FT DATE: 9/21/09 DRAWN: FT DATE: 9/21/09 CHECKED: TM DATE: -- UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES 1/8 .XX ±.25 ± 1' ±.003 ±.13 ± 1'		611 Rock Springs Road Escondido, CA 92025 (760) 735-6277 FTE Fiber-Tech ENGINEERING, INC. SDG&E TANK #TK-TCF-02 SODIUM BROMIDE / COOLING WATER PALOMAR ENERGY CENTER ESCONDIDO, CA SIZE: X DRAWING NUMBER: SDGE_09148 REV. B	
DO NOT SCALE DRAWING		SCALE: xxx	FILE NAME: SDGE_09148 SHEET: 2 OF 5



SOUTH / NORTH ELEVATION (SIM.)



WEST / EAST ELEVATION (SIM.)



PLAN "TOP VIEW"

FTE Fiber-Tech
ENGINEERING, INC.

TOLL FREE 1-888-NEED-FRP

SERIAL #: SDGE_09148 TK-RWF-01

SERVICE: SODIUM HYPOCHLORITE

SPECIFIC GRAVITY: 1.1

DESIGN TEMP: 30° TO 110° F

DESIGN PRESSURE: ATMOSPHERIC

RESIN: HETRON FR992 (CORROSION BARRIER)
HETRON FR992 SB (STRUCTURE)

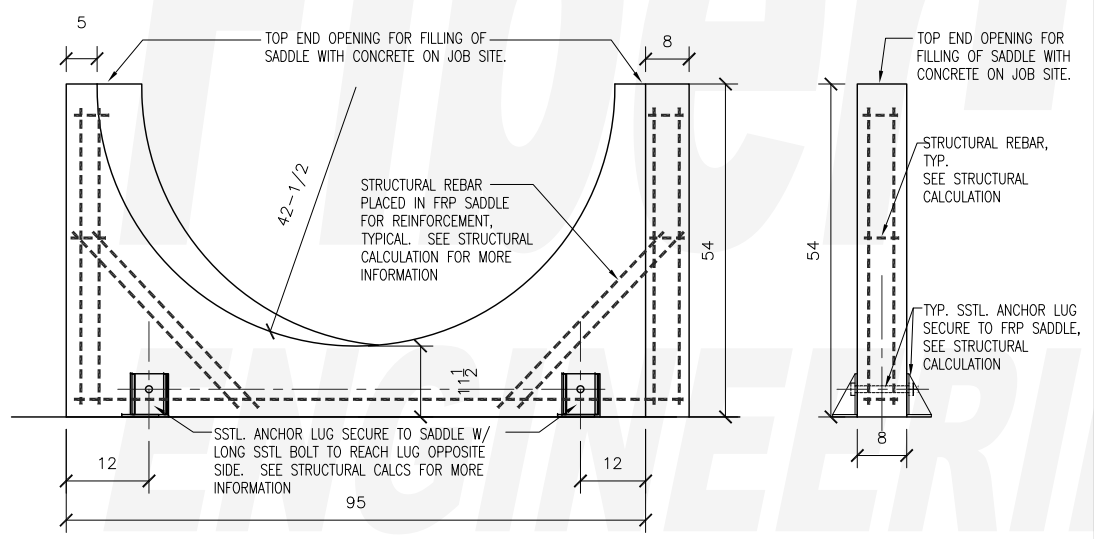
TANK CAPACITY: 4,800 GAL (NOMINAL)

TANK DIMENSIONS: 7'-0"Ø X 17'-0"LONG

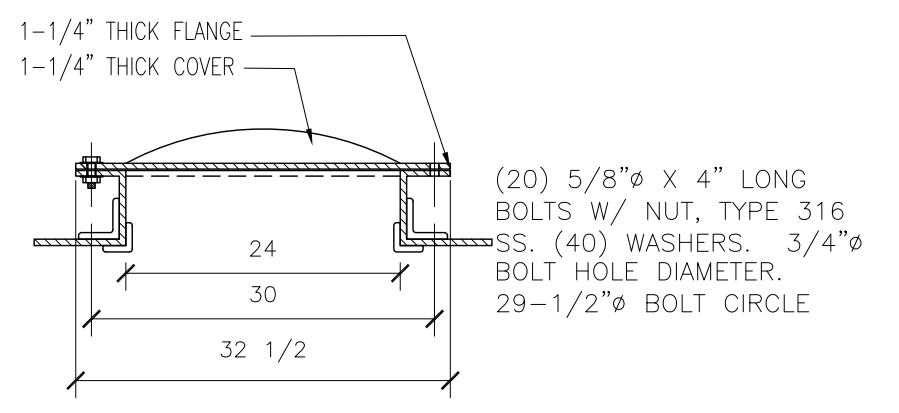
EMPTY WEIGHT: 2,300 LBS.

BUILT: NOVEMBER 2009

TANK LABEL



ELEVATION/SECTION - TYP. FRP SADDLE



TOP / SIDE MANWAY (SIM.)

- NOTES**
1. BOLT HOLES TO STRADDLE MAJOR CENTERLINES UNLESS OTHERWISE SPECIFIED.
 2. NOZZLES AND COUPLINGS PROTRUDE 2" WITHIN INSIDE WALL. PROJECTION PER NOZZLE SCHEDULE.
 3. ALL FLANGED NOZZLE'S 4"Ø AND BELOW ARE BE REINFORCED W/ (4) 1/4" THICK PLATE GUSSETS.
 4. 316 S.S. MANWAY FASTENERS & 1/8" VITON GASKETS BY FTE.
 5. SEE PLAN VIEW FOR TRUE ORIENTATION.

CUSTOMER DRAWING APPROVAL

APPROVED APPROVED AS NOTED

AUTHORIZED SIGNATURE

DATE

THE SIGNATORY HEREBY VERIFIES THIS DRAWING TO BE CORRECT AND AUTHORIZES FIBER-TECH ENGINEERING TO PROCEED WITH MANUFACTURING. THE SIGNATORY ASSUMES RESPONSIBILITY FOR SUBSEQUENT CHANGE REQUESTS, IF ANY, TO THE PRODUCT REPRESENTED ON THIS DRAWING AFTER THE COMMENCEMENT OF MANUFACTURING AND RECOGNIZES THAT SAID CHANGES MAY RESULT IN ADDITIONAL CHARGES.

PARTS LIST - NOZZLE SCHEDULE						
ITEM NO.	SIZE	MATERIAL	DESCRIPTION	PROJ	PSI RATING	QTY REQ
(N1)	3"	FRP	GOOSENECK VENT W/ SSTL SCREEN	6"	50	1
(N2)	2"	FRP	FF FLANGE - FILL	6"	50	1
(N3)	2"	FRP	FF FLANGE - DRAIN W/ FF CPVC VALVE, VITON GASKET, 316SS N/B	6"	150	1
(N4)	2"	FRP	FF FLANGE - SIGHT GLASS - SEE SHEET 5 OF 5	6"	50	1
(N5)	2"	FRP	FF FLANGE - SIGHT GLASS - SEE SHEET 5 OF 5	6"	50	1
(M1)	24"	FRP	FF FLANGE - TOP MANWAY	6"	--	1
(M2)	24"	FRP	FF FLANGE - SIDE MANWAY	6"	--	1
(C1)	1"	FRP	NPT COUPLING - PUMP SUCTION	2"	150	1
(C2)	2"	FRP	NPT COUPLING - LEVEL TRANSMITTER	2"	150	1
(C3)	1"	FRP	NPT COUPLING - DRAW DOWN VENT	2"	150	1
(TL)	--	SSTL	TANK LABEL	2"	--	1
(AL)	--	SSTL	ANCHOR LUG - 316 SSTL. (SEE STRUCTURAL CALC'S)	--	--	8

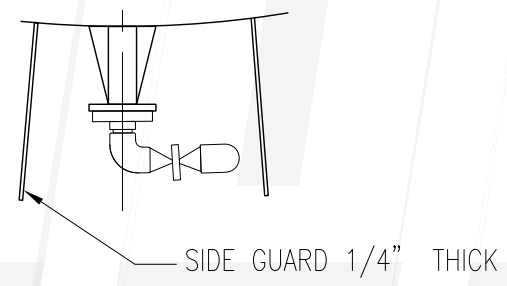
DESIGN

SERVICE:	SODIUM HYPOCHLORITE / RAW WATER
FABRICATION STANDARDS:	CONTACT MOLDED PER ASTM D-4097 FILAMENT WOUND PER ASTM D 3299
FABRICATION METHOD:	CONTACT MOLDED CORROSION BARRIER FILAMENT WOUND STRUCTURE
DESIGN PRESSURE:	ATMOSPHERIC
SEISMIC ZONE:	S _s :=1.06 S ₁ :=0.40
DESIGN TEMPERATURE:	30°-100°F
DESIGN WIND LOAD:	90 MPH
MATERIAL OF CONST.:	CORROSION BARRIER: HETRON FR992 STRUCTURE: HETRON FR992 SB
CURE SYSTEM:	CORROSION BARRIER- BPO/DMA W/ (2) C-VEIL, (4) ECR, 200 MILS, POST CURE
LOCATION:	OUTDOOR
COLOR:	WHITE GEL COAT W/UV INHIBITOR
EST'D. EMPTY WEIGHT:	2,300 LB

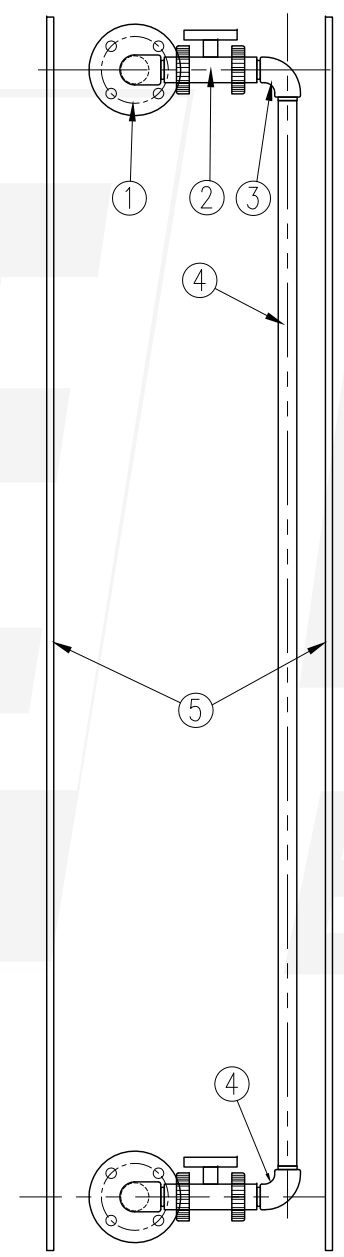
REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
0	ORIGINAL DRAWING	10/06/09	TM
A	PER CLIENT COMMENTS / OMIT LIFTING LUG	10/23/09	TM
B	PER CLIENT COMMENTS	10/27/09	TM

THIS DOCUMENT CONTAINS INFORMATION PROPRIETARY TO FIBER-TECH ENGINEERING AND SHALL NOT BE REPRODUCED WITHOUT WRITTEN PERMISSION.

FIBER-TECH ENGINEERING ALL RIGHTS RESERVED	FTE Fiber-Tech ENGINEERING, INC. 611 Rock Springs Road Escondido, CA 92025 (760) 735-6277
APPROVALS DATE	SDG&E TANK #TK-RWF-01 SODIUM HYPOCHLORITE / RAW WATER PALOMAR ENERGY CENTER ESCONDIDO, CA
DRAWN FT 9/21/09	DRAWING NUMBER REV.
CHECKED TM --	X SDGE_09148 B
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:	DO NOT SCALE DRAWING SCALE: xxx FILE NAME: SDGE_09148 SHEET: 3 OF 5
FRACTIONS DECIMALS ANGLES	
1/8 .XX ±.25 ± 1°	
.XXX ±.13	



PLAN



SIGHT GLASS - TYPICAL ELEVATION

NOTE:
DIRECTION OF UNION BALL VALVE
CAN BE EITHER LEFT OR RIGHT DEPENDS
ON NOZZLE LOCATIONS

PARTS LIST - TYPICAL SIGHT GLASS				
ITEM NO.	SIZE	DESCRIPTION	MATERIAL	QTY REQ
①	2"	FLANGE SCH. 80 W/ 1/8" VITON GASKET, 316SS TL BOLTS, AND NUTS	PVC	2
②	2"	TRUE UNION BALL VALVE SCH. 80	CPVC	2
③	--	90° ELBOW SCH. 80	PVC	2
④	2"	1" CLEAR PIPE SCHED. 40 - LENGTH AS REQUIRED	PVC	1
⑤	5"	SIDE GUARD 1/4" THICK (WIDTH AND HEIGHT AS REQUIRED)	FRP	2
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CUSTOMER DRAWING APPROVAL

APPROVED APPROVED AS NOTED

AUTHORIZED SIGNATURE

DATE

THE SIGNATORY HEREBY VERIFIES THIS DRAWING TO BE CORRECT AND AUTHORIZES FIBER-TECH ENGINEERING TO PROCEED WITH MANUFACTURING. THE SIGNATORY ASSUMES RESPONSIBILITY FOR SUBSEQUENT CHANGE REQUESTS, IF ANY, TO THE PRODUCT REPRESENTED ON THIS DRAWING AFTER THE COMMENCEMENT OF MANUFACTURING AND RECOGNIZES THAT SAID CHANGES MAY RESULT IN ADDITIONAL CHARGES.

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
0	ORIGINAL DRAWING	10/06/09	TM
A	PER CLIENT COMMENTS	10/23/09	TM

THIS DOCUMENT CONTAINS INFORMATION PROPRIETARY TO FIBER-TECH ENGINEERING AND SHALL NOT BE REPRODUCED WITHOUT WRITTEN PERMISSION.

<small>© FIBER-TECH ENGINEERING ALL RIGHTS RESERVED</small>	FTE Fiber-Tech ENGINEERING, INC	<small>611 Rock Springs Road Escondido, CA 92025 (760) 735-6277</small>									
<table border="1"> <tr> <th>APPROVALS</th> <th>DATE</th> </tr> <tr> <td>DRAWN FT</td> <td>9/21/09</td> </tr> <tr> <td>CHECKED TM</td> <td>--</td> </tr> </table>	APPROVALS	DATE	DRAWN FT	9/21/09	CHECKED TM	--	TYPICAL SIGHT GLASS PALOMAR ENERGY CENTER ESCONDIDO, CA				
APPROVALS	DATE										
DRAWN FT	9/21/09										
CHECKED TM	--										
<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:</small> <table border="0"> <tr> <td>FRACTIONS</td> <td>DECIMALS</td> <td>ANGLES</td> </tr> <tr> <td>$\pm \frac{1}{8}$</td> <td>.XX $\pm .25$</td> <td>$\pm 1'$</td> </tr> <tr> <td></td> <td>.XXX $\pm .13$</td> <td></td> </tr> </table>	FRACTIONS	DECIMALS	ANGLES	$\pm \frac{1}{8}$.XX $\pm .25$	$\pm 1'$.XXX $\pm .13$		SIZE X DRAWING NUMBER SDGE_09148 REV. A	
FRACTIONS	DECIMALS	ANGLES									
$\pm \frac{1}{8}$.XX $\pm .25$	$\pm 1'$									
	.XXX $\pm .13$										

DO NOT SCALE DRAWING SCALE: XXX FILE NAME: SDGE_09148 SHEET: 5 OF 5