

Docket No. 50-255

MAY 18 1979

MEMORANDUM FOR: Darrell G. Eisenhut, Deputy Director, Division of Operating Reactors, NRR

THRU: Dennis L. Ziemann, Chief, Operating Reactors Branch #2, DOR

FROM: Richard D. Silver, Project Manager, Operating Reactors Branch #2, DOR

SUBJECT: PALISADES PIPE SUPPORT MODIFICATIONS

On April 10, 1979, Region III, I&E and Consumers Power Company (CPC) informed me of potential seismic design analysis problems involving pipe supports at the Palisades Plant. Following this notification, the NRC staff had a series of telephone conversations and meetings with the CPC staff and received documentation of our concerns and corrective actions to be taken by letters from CPC dated April 19, 1979, April 23, 1979, and May 16, 1979. See enclosed chronology. The seismic design analysis problems resulted from an error in an Energy Data Systems, Inc. (EDS) computer code which was used in the EDS analysis of certain piping systems at the Palisades Plant. The error involved the calculation of flexibility for elbows. Sixteen piping systems were affected of which six required modification to meet ANSI piping code B 31.1 (1973). On May 1, 1979, CPC issued a press release and informed us that the Palisades Plant, which had been shutdown for turbine related problems, would remain shutdown pending resolution of the potential seismic design problems. In a telephone call from Mr. C. Bilby, Vice President of CPC, to D. Eisenhut, CPC confirmed that the plant would remain shutdown until all modifications needed to make the piping systems conform to ANSI B 31.1 (1973) were completed. In addition, Mr. Bilby confirmed that CPC would make any additional modifications during the upcoming 1979 refueling outage needed to bring the systems in total conformance with the FSAR analysis criteria. These commitments were confirmed in a letter from CPC dated May 16, 1979.

The staff of the Engineering Branch, DOR, has reviewed the material provided by CPC and agrees that there is reasonable assurance that (1) the piping systems, as modified, conform to ANSI B 31.1 (1973) and (2) the piping systems, as modified, would not fail during the operating basis earthquake or safetshutdown earthquake described in the FSAR.

OFFICE					
DATE					

485 209

7907300565 XA

Darrell G. Eisenhut

- 2 -

It should be noted that by telegram dated May 1, 1979, copy enclosed, CPC confirmed that none of the methods specified in IE Bulletin 79-07 were used in computer codes for the seismic analysis of safety-related piping at Palisades.

Based on our review, we conclude that CPC has taken appropriate corrective action.

Original signed by
Darrell G. Eisenhut

Richard D. Silver, Project Manager
Operating Reactors Branch #2
Division of Operating Reactors

Enclosures:

- 1. Chronology of Events
- 2. Telegram dtd. 5/1/79

cc w/enclosures:

- V. Noonan
- J. Fair

DISTRIBUTION

- Docket
- ORB #2 Reading
- DLZiemann
- RDSilver
- HSmith

COPIES	DOR:ORB #2	DOR:EB	DOR:EB	DOR:ORB #2	DOR:V/DIP
SURNAME	RDSilver:ah	JFair	VNoonan	DLZiemann	DGE Eisenhut
DATE	5/18/79	5/18/79	5/18/79	5/18/79	5/18/79

CHRONOLOGY

PALISADES PIPE SUPPORT MODIFICATIONS

- 4/10/79 CPC informed Region III I&E and R. Silver of potential seismic design analysis problems.
- 4/11/79 Conference call among CPC representatives, EB staff and R. Silver.
- 4/19/79 Letter from CPC documenting the information provided to the NRC staff in the 4/11/79 conference call.
- 4/23/79 CPC issued an LER concerning the pipe supports.
- 4/27/79 Meeting between EDS and IE in Bethesda to discuss EDS calculational errors. (Summarized in memo from E. L. Jordan dated 5/9/79).
- 5/1/79 CPC informed us that Palisades would remain shutdown pending resolution of potential seismic design analysis problems.
- 5/7/79 Meeting with CPC to discuss seismic design analysis concerns and CPC plans for performing reanalyses and modifications.
- 5/11/79 Mr. Bilby, Vice President of CPC, informed D. Eisenhut that Palisades would remain shutdown until all modifications identified in the 4/19/79 letter and 5/7/79 meeting were completed.
- 5/14/79 &
5/15/79 IE Inspector, Isa Yin, performed inspections of modifications in progress.
- 5/16/79 As a result of a question raised by Mr. Yin, John Fair, EB, R. Silver, ORB #2, and Mr. Yin met with CE, and CPC representatives at Combustion Engineering in Windsor, Connecticut. Mr. Yin's questions were satisfactorily answered.
- 5/17/79 CPC transmitted a letter dated 5/16/79 confirming that all modifications identified in their 4/19/79 letter and 5/7/79 meeting would be completed by May 17, 1979, prior to startup. CPC also informed us that the modifications have been reviewed by their Plant Review Committee and Safety & Audit Review Board and determined not to involve an unreviewed safety question. CPC also determined that all piping systems meet at least the requirements of the 1975 ASME Piping Code B 31.1. The letter also committed to make any additional modifications necessary to conform the piping to all ASME stated criteria by the end of the month of May 1979.

NRC 9HDA

WI INFOMASTER 1-029179M121 05/01/79
TLX CPCC PARN JKN
9 JACKSON MI MAY 1
TWX 7102240415 NRC 9HDA
R J SILVER & H J WONG

US NRC

OPERATING REACTOR BRANCH #2
WASHINGTON, DC 20555

THIS CONFIRMS THE TELEPHONE CONVERSATION BETWEEN HOWARD J WONG
(NRC) AND CONSUMERS POWER CO ON 5-1-79 CONCERNING IE BULLETIN
79-07.

IN PARTICULAR, NONE OF THE METHODS SPECIFIED IN THE ABOVE BULLETIN
WERE EMPLOYED OR WERE USED IN THE COMPUTER CODES FOR THE SEISMIC
ANALYSIS OF SAFETY-RELATED PIPING AT OUR PALISADES OR BIG ROCK POINT
NUCLEAR PLANTS. A WRITTEN RESPONSE TO IE BULLETIN WILL BE SUB-
MITTED ON OR BEFORE 5-4-79.

G S CASHELL
CONSUMERS POWER CO
JACKSON MI

CC R B JENKINS & R B DE WITT

1419 EST

NRC 9HDA

485 212

POOR ORIGINAL

Exp No: 207 | Rev: 1 | Ref. Dwg. No: M-3A | Rev: 20 | ISO No: M-101-119 | Rev: 1 | Line No: EB-1-B | Hgr. Dwg: EB-1-H51 | Rev:

Installation per Detail Dwg. Yes No Type
 If no, As-Built Dwg. Complete Yes No Wall
 Evidence of Concrete Cracking or Failure Floor
 If yes, show on sketch Yes No Ceiling
 No. of Expansion Anchors: N/A | Pipe Elevation: 615 1/2"

N/A

Measured gap between concrete surface and back of support plate: N/A

Walkdown Inspector
 Signature: B. B. Pedersen Date: 12/2/79

Reviewer
 Signature: Jan Paula Date: 11/27/79

CONCRETE EXPANSION ANCHOR

Wedge	Bolt No. (Per Sketch)	J	Wj-it	Thread	Stud	Stud	Stud	Embed. Length	Applied Tor./Ten.	Cage/Wrench Ident. No.	No.	For Wj-it	Exposed Thread (in)	Nut Bot- toned	Anchor Reerited	Comments
		R	Wedge	Engag.	Dis.	Project.	Length				Thread	Trans.				
Shell	S	Shell	Thread	Engag.	Bolt Size	Length S to C	Bolt Length	Fibed. Length			No. Shell back of Plate					

N/A

UT Inspector Signature: _____ Date: _____

Testing Inspector Signature: _____ Date: _____

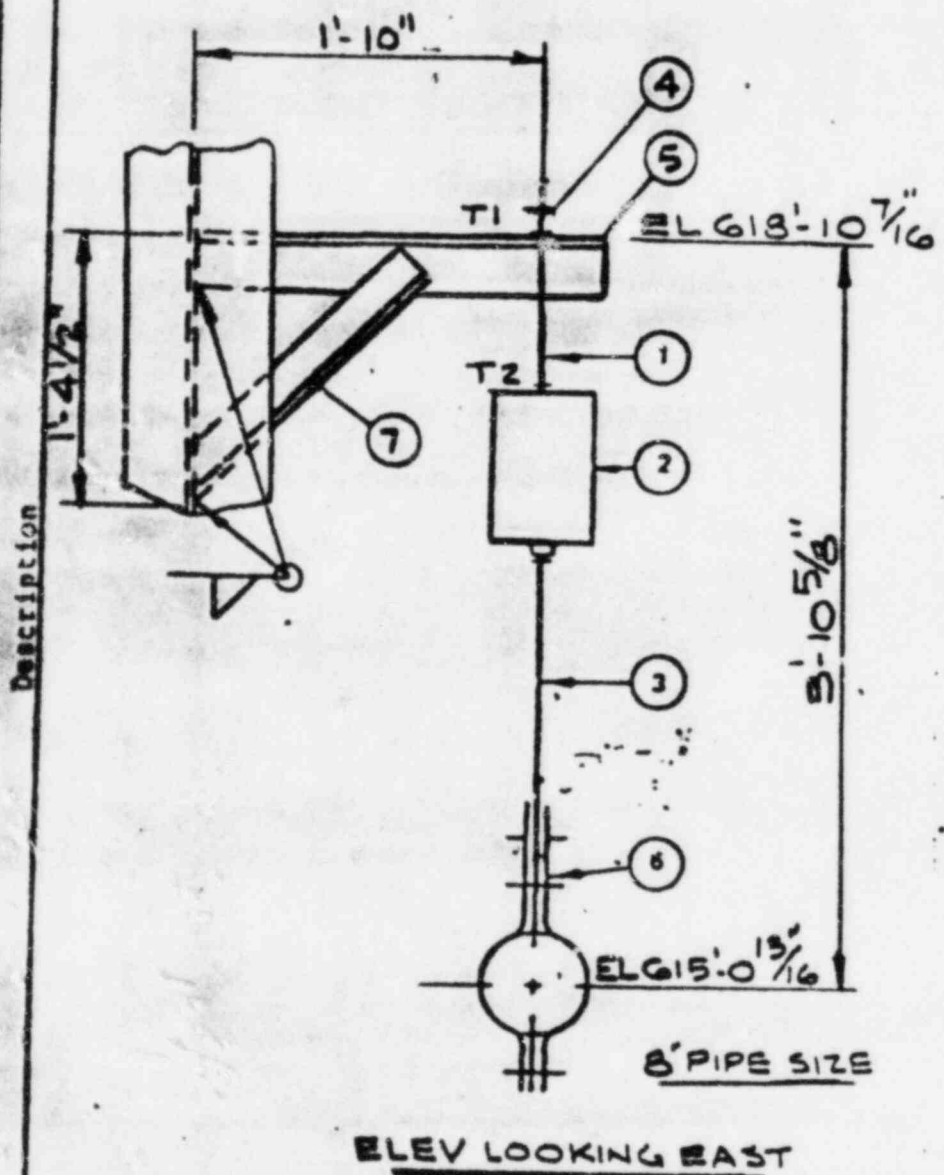
Discrepancies (Circle) Yes/No Reported to Client:

Discrepancies Resolved: Emerge: _____ Repair: _____

Engineering Evaluation: Acceptable Signature: _____

Unacceptable, Description Attached: _____

10	A	1	5/8" φ ROD x 1'-11 1/2" LG THO = 6
		2	VARIABLE SUPPORT HL 500', CL = 35'2" MVT = 3/16 ON LCA
6	Chkd	3	5/8" φ WELDED EYE ROD x 1'-0 1/4" LG THO = 6
		4	5/8" φ FULL NUT (4 REQ'D)
H P	Drawn	5	L 4" x 3" x 5/8" x 1'-11 1/2" LG
		6	3" PIPE SIZE THREE BOLT PIPE CLAMP
		7	L 3" x 3" x 3/8"



As Built

LOAD: 550*

M-101-119
Location

Date	BECHTEL ANN ARBOR, MICHIGAN	MAIN STEAM TO H.P. STOP VALVE System: (SECONDARY PORTION)
	PALISADES PROJECT JOB 12447	Plant Area/Room: AREA 3 / COMP ROOM INC
Rev.	CONSUMERS POWER COMPANY PALISADES	P&ID: MEXP-207
		Isometric: M-101-119
		Ref. Dwg: M-39 REV 20
		Support/Restraint No: EBL-451

Installation per Detail Dwg. Yes No X
 If no, As-Built Dwg. Complete Yes X No

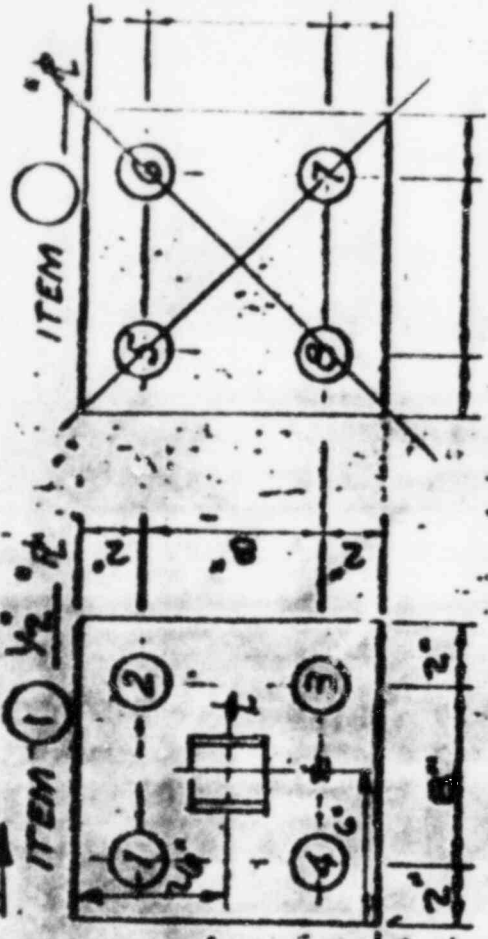
Evidence of Concrete Cracking or Failure
 If yes, show on sketch Yes No X

No. of Expansion Anchors: 4 | | Elev. Elevation: 45'-0" X

Measured gap between concrete surface and back of support plate: None

Walkdown Inspector: E.B. Robinson Date: 12/2/79
 Signature: E.B. Robinson

Reviewer: David Bach Date: 11/27/79
 Signature: David Bach



Wedge No. or Sketch	J K S	Mej-it Wedge	Thread Engag.	Stud Dia.	Stud Project.	Stud Length	Embed. Length	Applied Tor./Ten.	Case/Wrench	No. Pins/ Type Washer, OK	Per. Mej-it Exposed Thread (in) Bot-tomed	Nut	Anchor Repeated	Comments
1	R		FULL	5/8"	1 1/4"									
2	R		FULL	5/8"	1 1/4"									
3	R		FULL	5/8"	1 1/4"									
4	R		FULL	5/8"	1 1/4"									

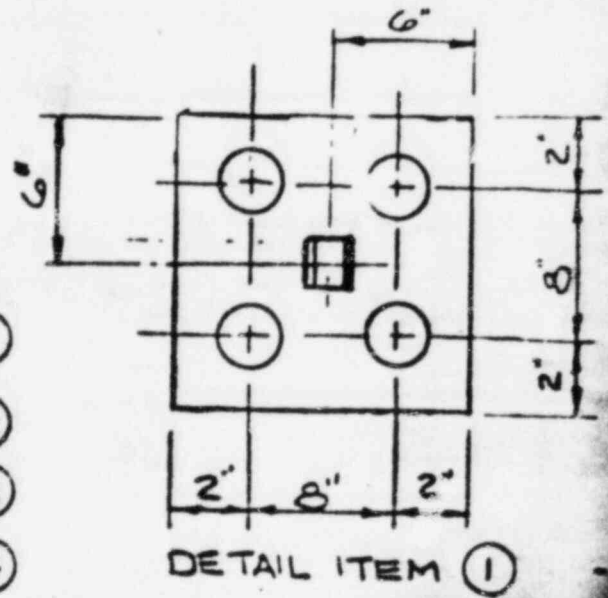
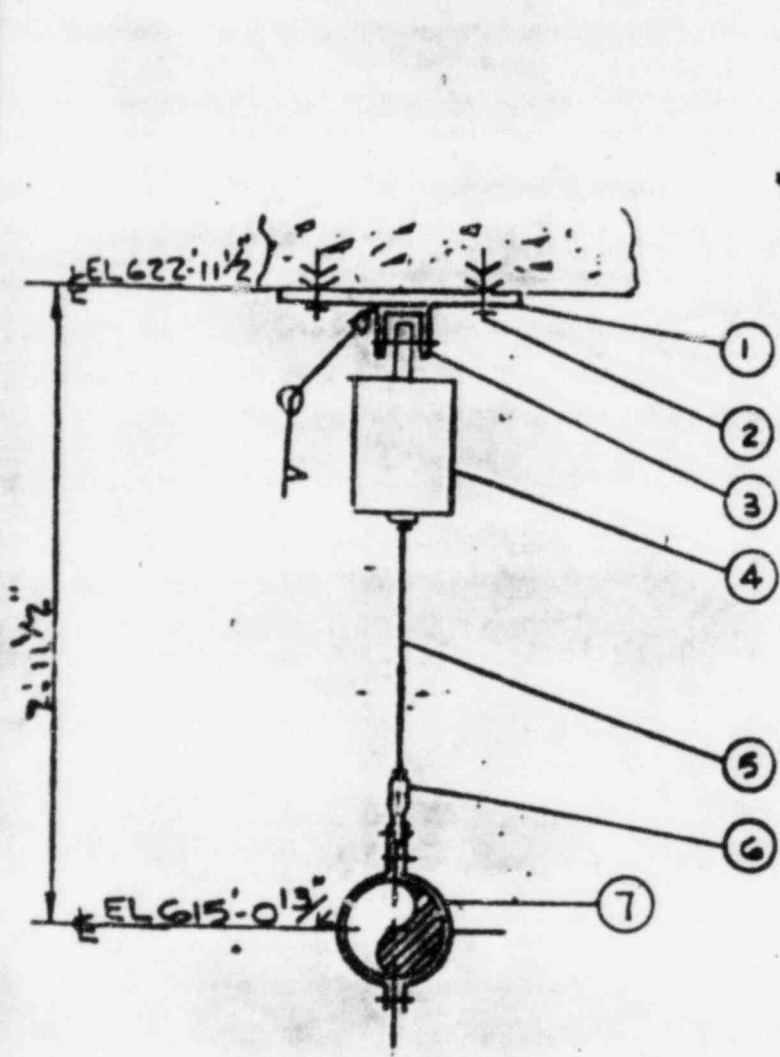
UT Inspector Signature: _____ Date: _____

Testing Inspector Signature: _____ Date: _____

Discrepancies (Circle) Yes/No Reported to Client:

Engineering Evaluation: Acceptable Signature: _____ Unacceptable, Description Attached: Repair

Item	Description
1	Ø 12" x 12" x 1/2"
2	1/2" Ø CONCRETE FASTENER
3	WELDED BEAM ATTACHMENT SIZE
4	GRINDEL FIG. 98 SIZE 12 VARIABLE SUPPORT TRD = 2 7/8" NOTED LOAD = 2225
5	1" Ø HANGER ROD 4'-8" LG.
6	SIZE B WELDED EYE NUT
7	8" PIPE SIZE 3-BOLT CLAMP



ELEVATION
LOOKING WEST

Date	BECHTEL ANN ARBOR, MICHIGAN	Location MAN STEAM TO HP STOP System: VALVE (SECONDARY PORTION)
	PALISADES PROJECT JOB 12447	Plant Area/Room: AREA 3 / COOLING
Rev.	CONSUMERS POWER COMPANY PALISADES	P&ID: MEXP-207
	COVERT, MICHIGAN	Isometric: M-101-119
		Ref. Dwg: M-59 REV 20
		Support/Restraint No: EBI-451.1

Stress Prob: 08341 System: H.P. STOP VALVE Sldg: AUXILIARY Area/Floor: AREA B / COMPONENT COOLING

ME No: 207 Rev: 1 Ref. Dwg. No: M39 Rev: 20 ISO No: M-101-119 Rev: 1 Line No: EB-1-B Hgr. Dwg: EB-1-551 Rev: 0/1

Installation per Detail Dwg. Yes No
 If no, As-Built Dwg. Complete Yes No
 Evidence of Concrete Cracking or Failure
 If yes, show on sketch Yes No

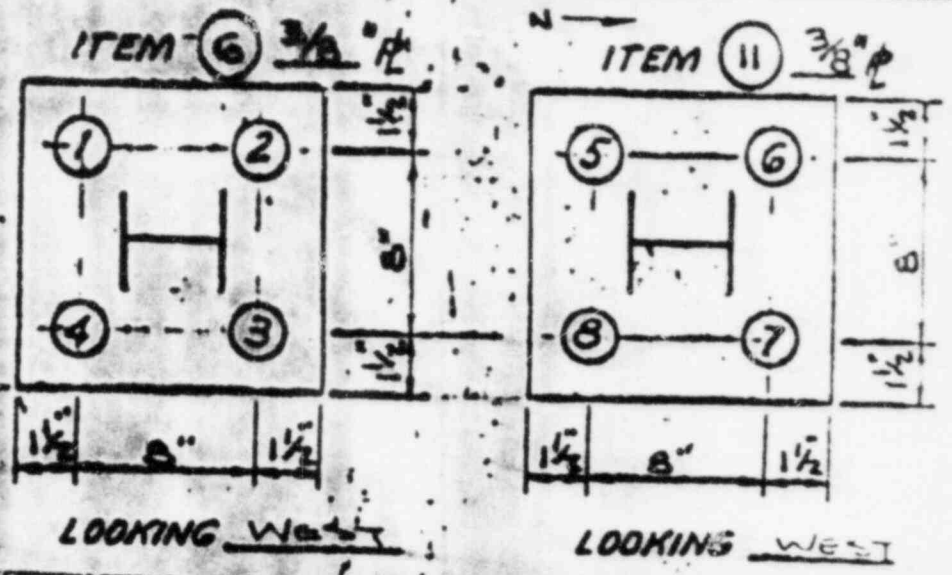
TYPE
 Wall
 Floor
 Ceiling

No. of Expansion Anchors: 8 Pipe Elevation: 6'5" - 7"

Measured gap between concrete surface and back of support plate: NONE

Walkdown Inspector Signature: B. B. Robinson Date: 12/2/79

Reviewer Signature: J. Paula Date: 11/27/79



CONCRETE EXPANSION ANCHOR

Wedge	Bolt No. (Per Sketch)	J E	Wedge	Thread Engag.	Stud Dia.	Stud Project.	Stud Length	Embed. Length	Applied Tor./Ten.	Case/Wrench Ident. No.	No. Pins/Trap Washer, OK	For Wedge-It Shell, No. Trns. Back of Plate	Exposed Thread (in)	Nut Bottomed	Anchor Reused	Comments
Shell		S	Shell	Thread Engag.	Bolt Size	Length S to C	Bolt Length	Embed. Length					Shell Moved or Rotated While Tor.	Test Method		
	1		R	1 1/4"	1/2"	N/A										
	2		R	1"	1/2"	N/A										
	3		R	1 1/8"	1/2"	N/A										
	4		R	1"	1/2"	N/A										
	5		R	7/8"	1/2"	N/A										
	6		R	7/8"	1/2"	N/A										
	7		R	7/8"	1/2"	N/A										
	8		R	1"	1/2"	N/A										

UT Inspector Signature: _____ Date: _____

Discrepancies (Circle) Yes/No Reported to Client

Engineering Evaluation: Acceptable Signature: _____

Testing Inspector Signature: _____ Date: _____

Discrepancies Resolved: Engr: _____ Repair

Date: _____ Unacceptable, Description Attached

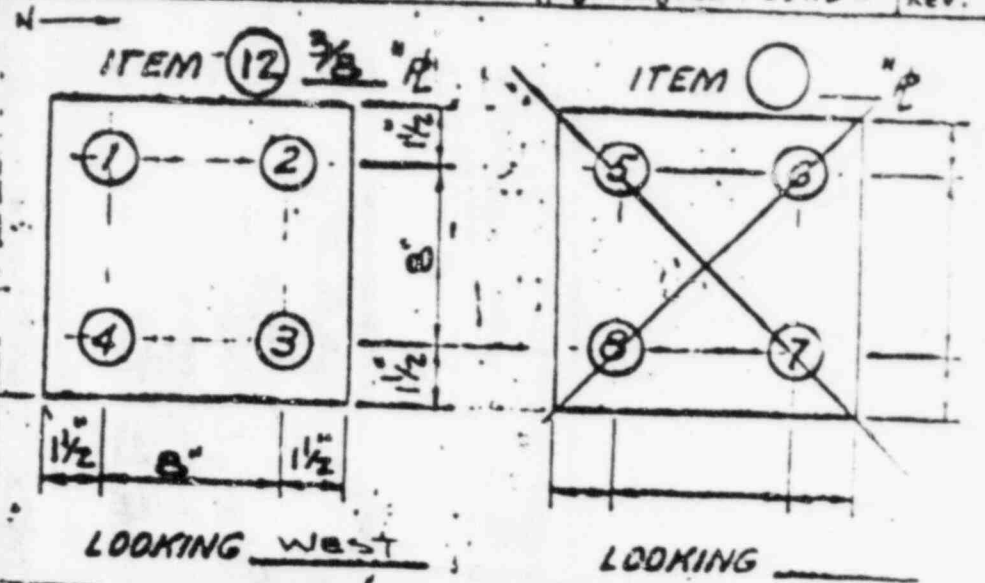
1287-033 1 1/1-5

Installation per Detail Dwg. Yes No
 If no, As-Built Dwg. Complete Yes No
 Evidence of Concrete Cracking or Failure
 If yes, show on sketch Yes No
 No. of Expansion Anchors: 4 G. Pipe Elevation: 615'-7"

Type
 Wall
 Floor
 Ceiling

Measured gap between concrete surface and back of support plate: NONE

Walkdown Inspector
 Signature: *B. B. Robinson* Date: 12/12/79
 Reviewer
 Signature: *Sam Basula* Date: 11/27/79

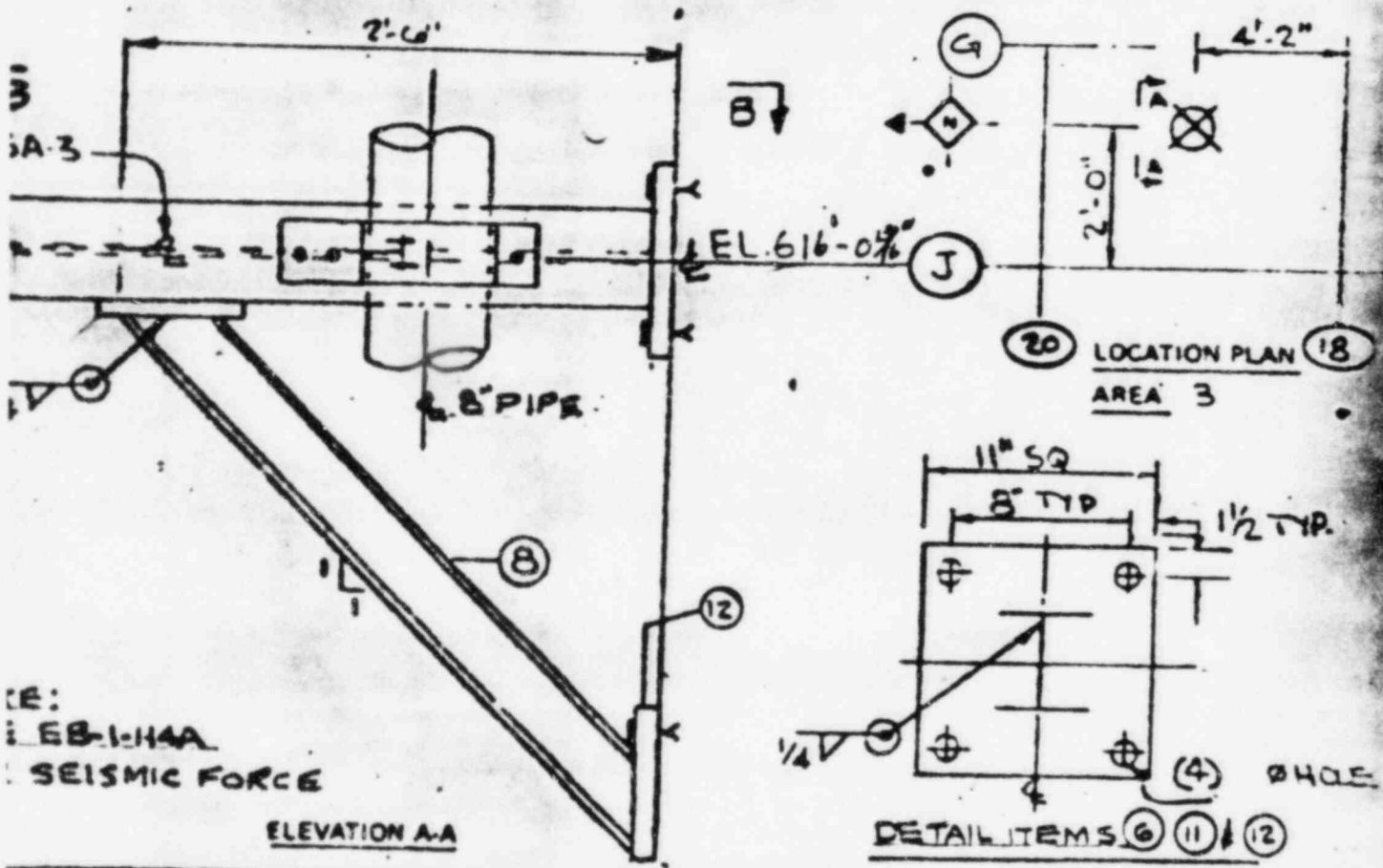


CONCRETE EXPANSION ANCHOR

Wedge	Bolt No. (Per Sketch)	J	Thread	Stud	Stud	Stud	Embed.	Applied Tor./Ten.	Cage/Wrench Ident. No.	No. Trns.	For Wej-it	Exposed	Nut	Comments
		R	Engag.	Di.	Project.	Length	Length				Pins/Washer, OK	Thread (in)	Bot-tomed	
Shell		S	Thread Engag.	Bolt Size	Length S to C	Bolt Length	Embed. Length				Shell Touching Back of Plate	Shell Moved or Rotated While Tor.	Test Method	Anchor Rejected
	1	R	1 1/4"	1/2"	N/A									
	2	R	1 1/8"	1/2"	N/A									
	3	R	1 3/8"	1/2"	N/A									
	4	R	1 1/4"	1/2"	N/A									

UT Inspector Signature: _____ Date: _____ Testing Inspector Signature: _____ Date: _____
 Discrepancies (Circle) Yes/No Reported to Client Discrepancies Resolved: _____
 Engineering Evaluation: Acceptable Signature: _____ Date: _____ Unacceptable, Description Attached

NO REQD	PART NO	DESCRIPTION
1	52EA3	8" 3-BOLT CLAMP G: 1/2 X 3 1/2", PROVIDE LOG. MNT. MOUNTED W/ TWO SPREADER LUGS (W/ 1/2" C.S.)
1	64127-3	PISTON ROD CONN. W/ 3: 11 1/8 LG.
1	251	HSSA-3, 6" STROKE, 1 1/2" BORE, THERMAL MNT. 4(-) COLD POSITION SETTING = 3 3/4" (MIDDLE) END ATTACHMENT EAL, FLUID GE. RADIATION OR EQUAL OVERALL STRUT LENGTH = 2'-9"
1		4 WF13 BEAM X 3'-8 1/2" LG.
1		4 WF13 BEAM X 4'-11 1/4" LG.
1		3/8 X 11" X 11" C.S. R.
1		3/8 X 5" X 7" C.S. R.
1		4 WF13 BEAM X 3'-6 7/8" LG.
12	512	1/2" Ø PHILLIPS SNAP-OFF CONC. FASTENERS
12		1/2" Ø X 1 1/4" LG. TAP BOLT
1		R 3/8 X 11 X 11"
1		R 3/8 X 11 X 11"
1		R 3/8 X 4 X 7"



RE:
 EB-1-44A
 SEISMIC FORCE
 ELEVATION A-A

SEE SH. 2 FOR REVISION DESCRIPTION
 ISSUED FOR CONSTRUCTION
 REVISIONS

BY: CHK
 DESIGNED BY: ELP
 SUPERVISED BY: G.A.P.P.P.
 PROJECT ENGR: ENGR

PALISADES PLANT
 CONSUMERS POWER COMPANY

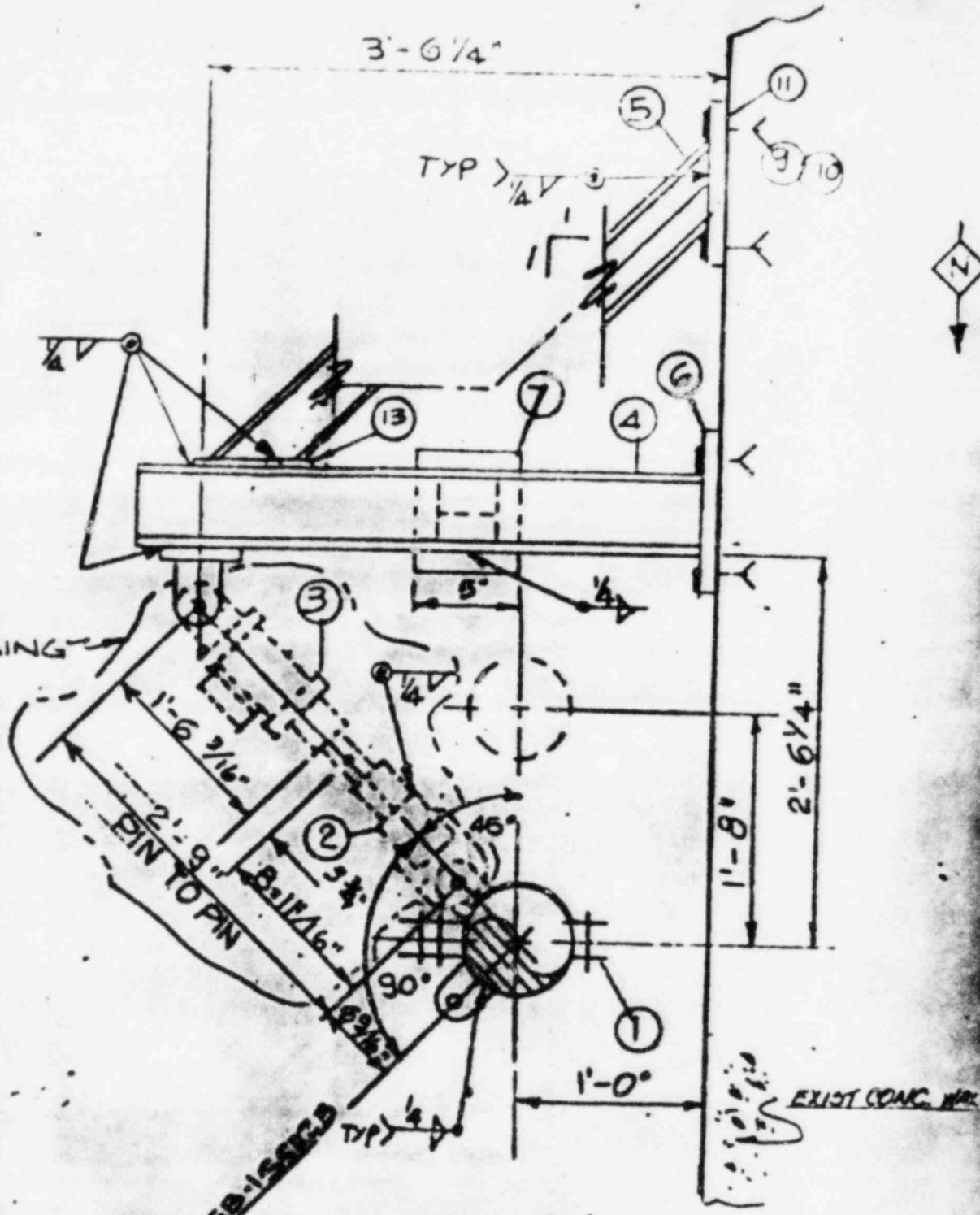


REF. D.W.G.S.
 150 M-121-119
 PIPE EB-1-8"
 STEEL C-107-12

AUXILIARY BLDG

JOB NO. 12447
 DRAWING NO. EB-1-5512B
 REV.

TRUT MISSING
2-11-79



PLAN B-B

4/74	ITEMS (5) & (3) MISSING & ADDED MITRE TO (5)	DW	4				
5/74	ISSUED FOR CONSTRUCTION	RB	ECP	ECP	DESIGN	PROJ	ENGR
6/74	REVISIONS	BY	CHK	DESIGN	SUPV	ENGR	ENGR

ALISAPES PLANT
BUMERS POWER COMPANY



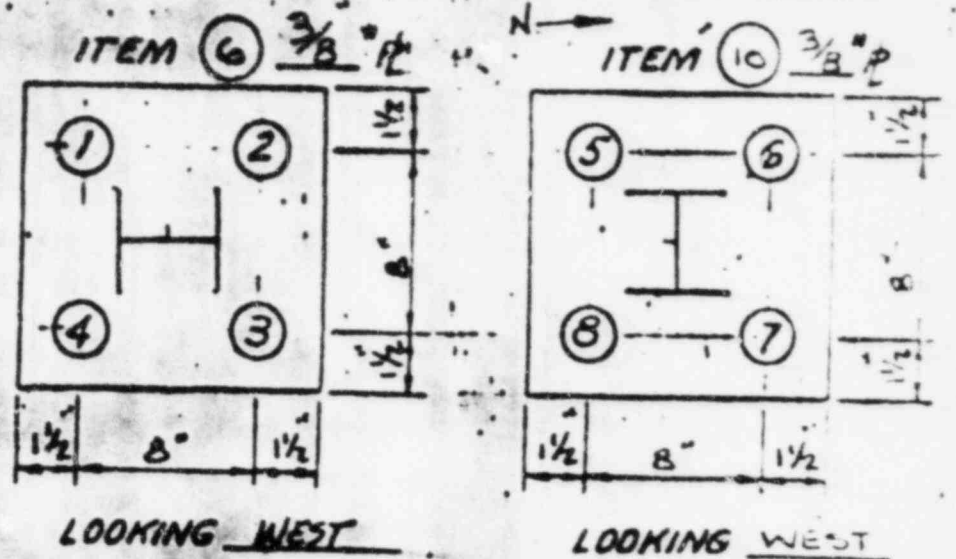
REF. DWGS.
150 M-101-119
PIPE EB-1-8"
STEEL C-107-12

AUXILIARY BLDG.
FAM TO PARTITIONING

JOB NO.	DRAWING NO.	RE
12447-	EB-1-5512B	

Address: 10000 3071 System: H.P. STOP VALVE Bldg/AUXILIARY Area/Room: AREA 3/COMPONENT COOLING
 MExp No: 207 Rev: 1 Ref. Dwg. No: M 89 Rev: 2 ISO No: M-101-119 Rev: 1 Line No: M-1-8 Hgr. Dwg: E-1-541, 2A Rev: 1

Installation per Detail Dwg. Yes No A
 If no, As-Built Dwg. Complete Yes No
 Evidence of Concrete Cracking or Failure
 If yes, show on sketch Yes No
 No. of Expansion Anchors: 8 Pipe Elevation: 6'5" - 7"
 Measured gap between concrete surface and back of support plate: NONE
 Walkdown Inspector Signature: B.B. Robinson Date: 12/2/79
 Reviewer Signature: Louis Paula Date: 11/27/79

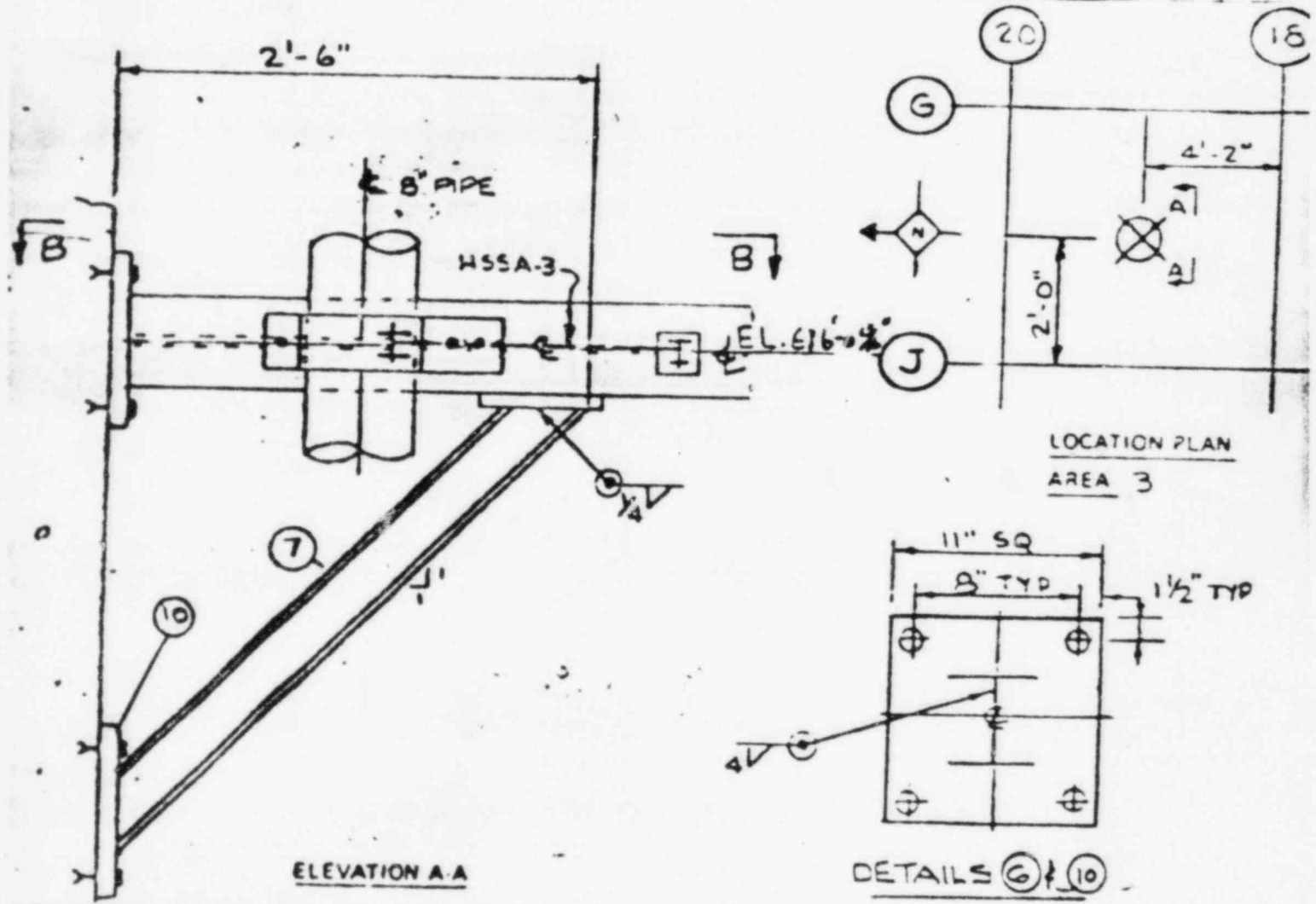


CONCRETE EXPANSION ANCHOR

Wedge	Bolt No. (Per Sketch)	J R	Wej-it Wedge	Thread Engag.	Stud Dia.	Stud Project.	Stud Length	Embed. Length	Applied Tor./Ten.	Cage/Wrench Ident. No.	No. Trns.	For Wej-it Pins/Washer, OK	Exposed Thread (in)	Nut Bottomed	Comments
Shell	S	Shell	Thread Engag.	Bolt Size	Length S to C	Bolt Length	Embed. Length				No. Trns.	Shell Touching Back of Plate	Shell Moved or Rotated While Tor.	Test Method	Anchor Rejected
	1	R		1/4"	1/2"	N/A									
	2	R		1/8"	1/2"	N/A									
	3	R		1 3/8"	1/2"	N/A									
	4	R		1/4"	1/2"	N/A									
	5	R		7/8"	1/2"	N/A									
	6	R		1/8"	1/2"	N/A									
	7	R		7/8"	1/2"	N/A									
	8	R		1"	1/2"	N/A									

UT Inspector Signature: _____ Date: _____
 Testing Inspector Signature: _____ Date: _____
 Discrepancies (Circle) Yes/No Reported to Client
 Engineering Evaluation: Acceptable Signature: _____
 Discrepancies Resolved: Engrs: _____ Repair: _____
 Date: _____ Unacceptable, Description: _____

ITEM NO.	NO. REQD.	PART NO.	SIZE	DESCRIPTION
1	1		8 X 5 X 1/8 C.S. PLATE	
2	1	512		PISTON ROD CONN. W/B = 1 1/2" LG
3	1	251		HSSA-3. 6" STROKE 1 1/2" BORE THERMAL (MVT = 160°) COLD POSITION SETTING 3 1/4" (MIDDLE) END ATTACHMENT END, FLUID G.E. PAINT FROM 13 EQUAL OVERALL STRUT LENGTH = 2'-9"
4	1		4 WF13, BEAM X 3'-8 1/2" LG	
5	1		4 WF13, BEAM Y	
6	1		3/8 X 11" X 11" C.S. PLATE	
7	1		4 WF13 BEAM X 3'-6 7/16" LG	
8	8	512		1/2" Ø PHILLIPS SNAP-OFF CONC. FAST.
9	8			1/2" Ø X 1 1/4" LG TAP BOLT
10	1		R 3/8" X 11" X 11"	



DATE	ADDED ITEM 10	BY	CHK	DESIGN	ENGR	PROJ	MAN
7/2/54	ISSUED FOR CONSTRUCTION	IM	ELP	ELP	ELP	ELP	ELP
	REVISIONS						

PALISADES PLANT
 CONSUMERS POWER COMPANY
 AUXILIARY BLDG.

ORPHEUS
 SAN FRANCISCO
 JOB NO.
 12447-

REF DWGS
 150 M-101-119
 PIPE EB-1-8
 STEEL C-107-12
 DRAWING NO.
 REV