

ENERGY
SERVICES

101 California Street, Suite 1000, San Francisco, CA 94111-5894

415-397-5600

July 31, 1984
84056.013

Mr. J. B. George
Project Manager
Texas Utilities Generating Company
Highway FM 201
Glen Rose, Texas 76043

Subject: Pipe Support Review Questions
Comanche Peak Steam Electric Station
Independent Assessment Program - Phase 4
Job No. 84056

Dear Mr. George:

Attached please find a list of pipe support questions resulting from the Phase 4 analytical reviews and walkdowns. The remaining questions are scheduled for submittal to TUGCO on August 6, 1984.

If you have any questions or require clarification prior to responding to any of these questions don't hesitate to call.

Very truly yours,

N. H. Williams

N. H. Williams
Project Manager

Attachments

cc: Mr. G. Grace (w/attachment)
Mr. D. Wade (w/attachment)
Mr. S. Burwell (w/attachment)
Mr. S. Treby (w/attachment)
Mrs. J. Ellis (w/attachment)

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PDR ADOCK 05000445
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PIPE SUPPORT QUESTIONS

1. In reviewing ITT-Grinnell snubber rear-brackets (Figure 307N), Cygna has found that the dimensions used in the design calculation match those in the field, but not those from Revision 15 of the DRS. Is there an earlier or later revision from which these brackets were taken? If so, please provide the appropriate reference.

Examples: CC-1-028-004-A33K (6-1/2 x 9-3/4 vs. 4-1/2 x 6-3/4)
CC-1-028-022-S33K (6-1/2 x 9-3/4 vs. 4-1/2 x 6-3/4)
CC-1-019-011-A43K (4-7/8 x 3-1/2 vs. 2-7/8 x 2)
CC-X-080-001-001-A43K (4-7/8 x 3-1/2 vs. 2-7/8 x 2)

2. In examining Quality Control procedure QI-QAP-11.1-28, Cygna has noted that there is no written direction or set limits for the QC inspectors to accept or reject support material distortions. Please explain how TUGCO assures that material distortions, such as warped tube steel, are checked in the field and accounted for in the design calculations as necessary.
3. During the walkdown, Cygna noted a number of supports with incorrect tag numbers. It is Cygna's understanding that the BRHL drawings will not be part of the permanent plant records. Given these facts, how will TUGCO be able to match a support design calculation to a particular support in the field or perform modifications on the correct support, once operation has commenced?

Examples: CC-1-028-017-S33R marked as CC-1-087-002-S33R
CC-1-028-023-S33R marked as CC-2-008-714-S33R
CC-1-019-006-A43R marked as CC-1-028-003-S33R
CC-1-019-010-A43R marked as CC-1-051-010-A43K
CC-1-019-014-A43R marked as CC-1-051-014-A43K

4. In reviewing procedure QI-QAP-11.1-28, which is used by QC for inspections, Cygna has found two tolerances which do not seem reasonable for all possible applications:
 - a) Working Point Dimensions = ± 1 "
 - b) Location on Support Steel = ± 2 "

In case a) there is no limit set on the working point dimension. For example, in support CC-1-028-023-S33R, the U-bolts in Section A-A are actually 3" apart, not 4". Although this is within the ± 1 " tolerance, 5" would also be within the tolerance. A 5" dimension would increase plate stresses by 25%. As another example, in CC-1-028-001-A33R, the dimension in section C-C from the bracket centerline to the right edge should be 8-3/8" instead of 7-3/8", i.e., the baseplate is 14" wide. While the bolt hole is located in the proper position, this change in plate size could affect the prying action.

In case b) there is also no lower limit set. For example, in support CC-1-077-005-S33R, the top of the rear bracket does not extend 1/4" above the steel as specified, but is 15/16" below it. Again, it could have extended 2-1/4" above the steel and still be within the required tolerance. This would affect weld stresses.

What justification does TUGCO have that the above tolerances are acceptable for all dimension ranges?

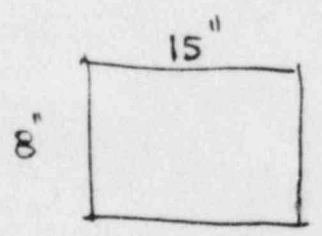
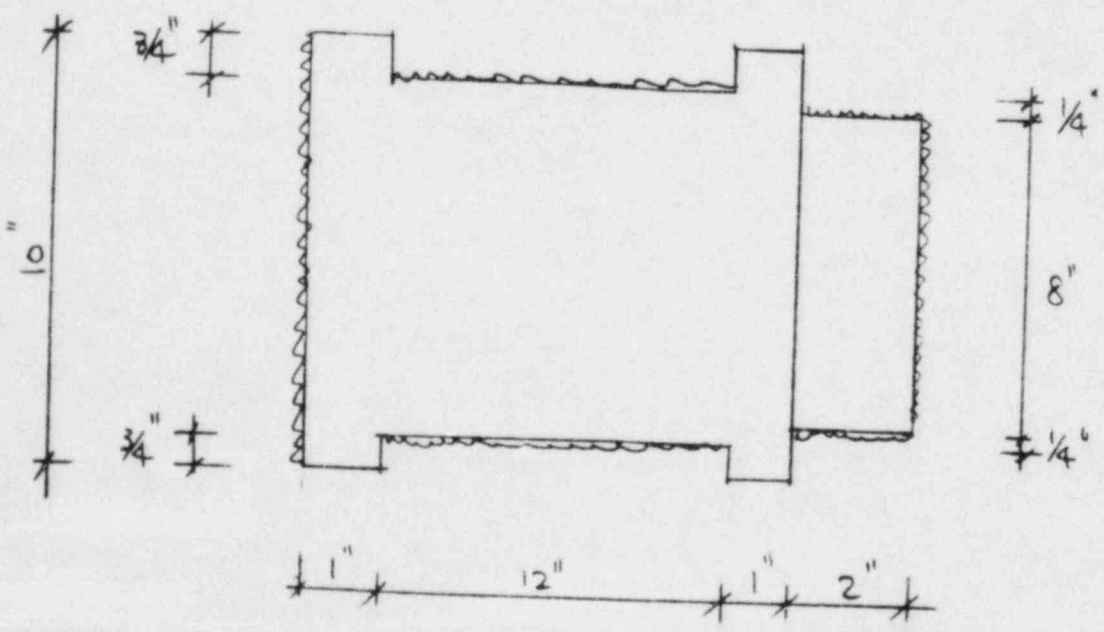
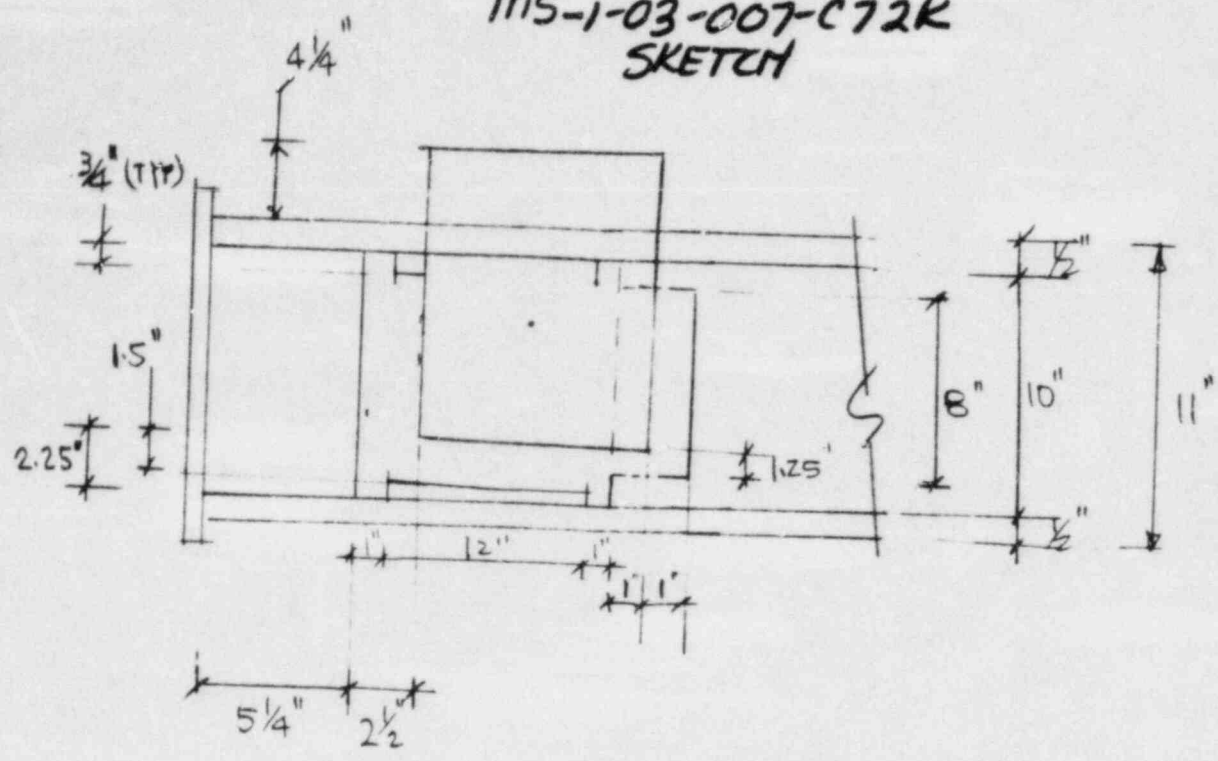
5. In examining support CC-1-031-009-S33R, Cygna noted that the edge of a baseplate from CC-1-028-038-S33R is welded to the embedment plate within 6" of the baseplate for this support. It is Cygna's understanding, based on discussions with Gibbs and Hill, that the embedment plate allowable loads in specification 2323-SS-30 are based on applied point loads spaced a minimum of 12" apart. Since there appears to be no direction given to QC for determining the acceptability of attachment spacing to embedded plates, please provide justification that the use of embedment plates at CPSES is in agreement with the assumptions used to derive allowable loads, i.e., no applied loads closer than 12" spacing.
6. In response to a Phase 3 question regarding load sharing on double struts or snubbers, TUGCO responded by referencing the Affidavit by Dr. Iotti and Mr. Finneran, "Regarding Consideration of Force Distribution in Axial Restraints." That study does not account for the initial fit-up effect. During the Phase 4 walkdowns, Cygna found two cases with double struts in which one strut was loose enough to move by hand (MS-1-002-002-S72R, CC-1-028-034-S33R). Please justify this phenomena in the context of the force distribution.
7. CC-1-028-024-S33R, drawing revision 11. In Section C-C, the lower rear bolt (just past the canted bolt) is located 2" from the tube steel centerline, rather than on the centerline as shown in the drawing. Since this is outside the $\pm 1/4$ " bolt hole tolerance specified in QI-QAP-11.1-28, please justify this omission from the inspection report records.
8. MS-1-002-004-S72R, drawing revision 2. The 1/2" minimum gap between the nut and item 31 shown on the drawing does not exist in the field. Please justify this discrepancy. Note: The inspection report for this support was not available at the time of Cygna's review.
9. MS-1-004-003-S72R, drawing revision 4. Looking toward the concrete wall, the left hand side double nuts are not snugged up against each other. This could allow the nuts to loosen due to inplant vibration and prevent the support from functioning. Please explain this omission from the inspection report.

10. MS-1-003-007-C72K, drawing revision 10. In the original review of support MS-1-003-007-C72K, Cygna did not find sufficient dimensioning in section J-J detail 46 to determine where the rear bracket was welded to item 35. During the Phase 4 walkdown, Cygna was able to measure the actual dimensions as shown on the attached sketch.

- a) Did the designers size item 35 without dimensions based on assumptions which were not stated?
- b) Given the as-built data, please provide calculations showing item 35 is adequate to transfer the load from the rear bracket to item 22.

W12 x 58.
 $t_f = 0.641" \approx 5/8"$

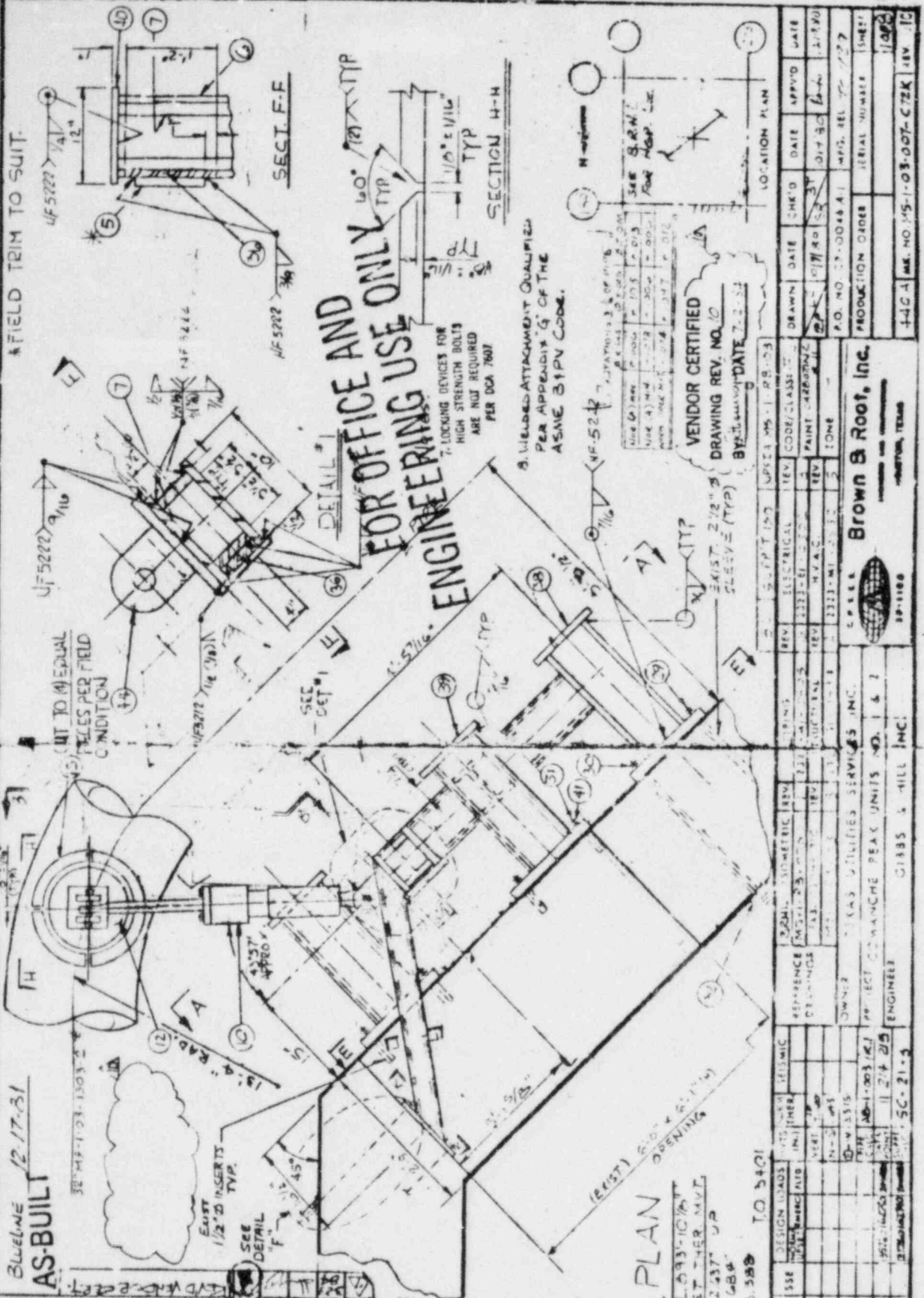
MS-1-03-007-C72K
SKETCH



assume weld shape

BLUELINE 12.17.81
AS-BUILT

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2		REV. VENDOR CERT.
3		REV. VENDOR CERT.
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30		REV. VENDOR CERT.



FOR OFFICE AND ENGINEERING USE ONLY

VENDOR CERTIFIED
DRAWING REV. NO. 10
BY: [Signature] DATE: 7.2.81

REV.	DATE	BY	REASON
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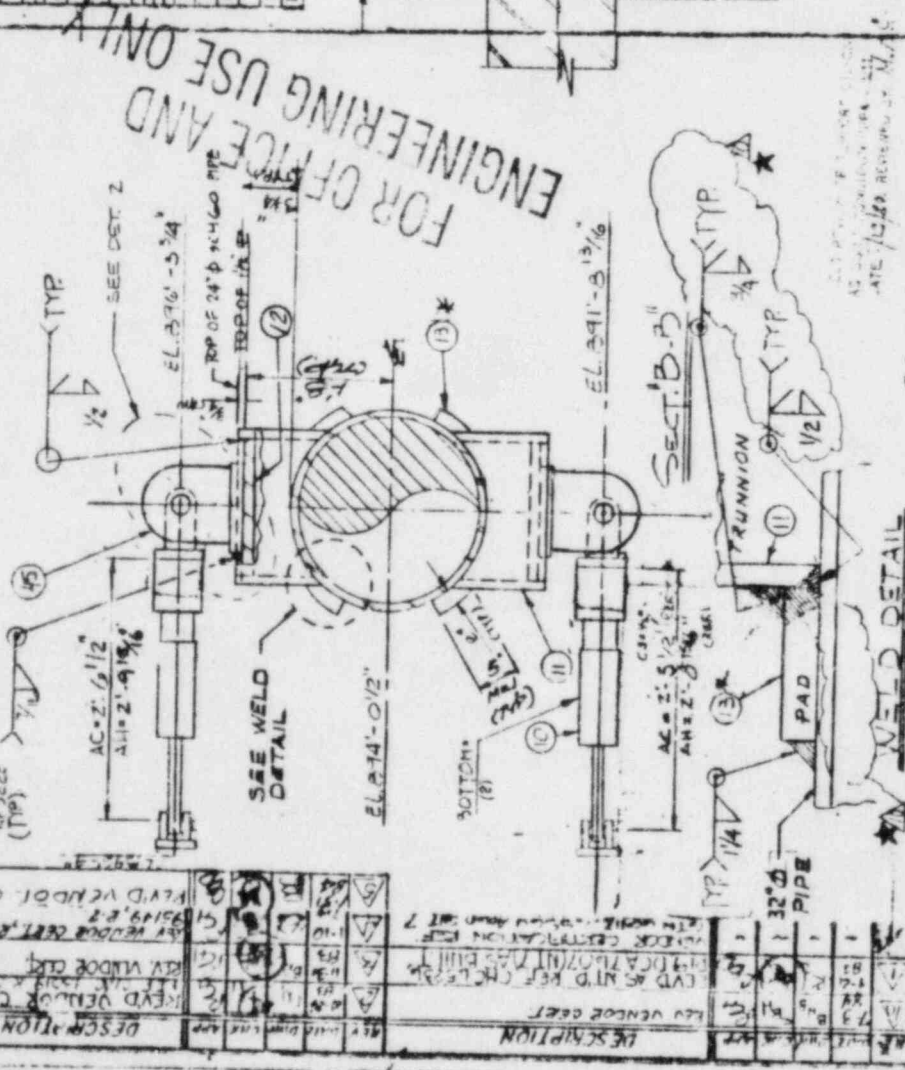
Brown & Root, Inc.
HOUSTON, TEXAS

OWNER: TEXAS UTILITIES SERVICES, INC.
PROJECT: COMANCHE PEAK UNITS NO. 1 & 2
ENGINEER: GIBBS & HILL, INC.

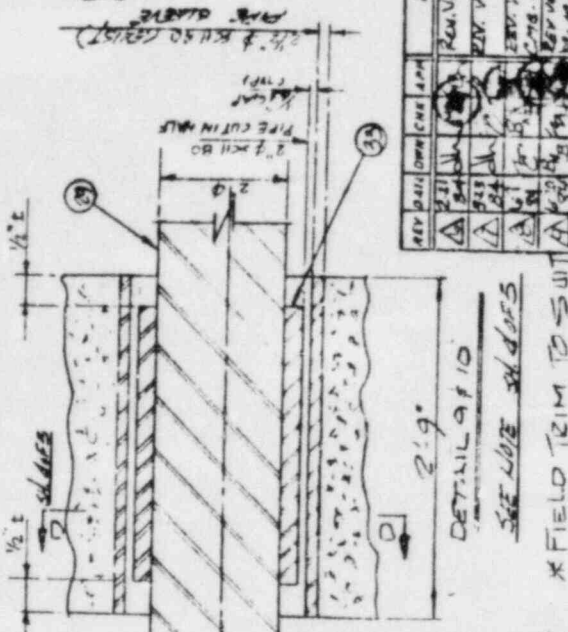
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BLUELINE 2-17-51
AS-BUILT
 15-3224 (11P)

NOTE: NO WASHERS ARE REQUIRED ON ITEMS 1-6



ITEM NO.	QTY	PART NO.	DESCRIPTION	ASME OR A.S.M.	REV.	QTY	AMOUNT
1	1	10364	PIPE	SA 106 GR B	1	1	1
2	1	10175	PLATE	SA 106 GR B	1	1	1
3	1	10364	PIPE	SA 106 GR B	1	1	1
4	1	10364	PIPE	SA 106 GR B	1	1	1
5	1	10364	PIPE	SA 106 GR B	1	1	1
6	1	10364	PIPE	SA 106 GR B	1	1	1
7	1	10364	PIPE	SA 106 GR B	1	1	1
8	1	10364	PIPE	SA 106 GR B	1	1	1
9	1	10364	PIPE	SA 106 GR B	1	1	1
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11	1	10364	PIPE	SA 106 GR B	1	1	1
12	1	10364	PIPE	SA 106 GR B	1	1	1
13	1	10364	PIPE	SA 106 GR B	1	1	1
14	1	10364	PIPE	SA 106 GR B	1	1	1



VENDOR CERTIFIED
 DRAWING REV. NO. 10
 BY DATE 7-2-54

CHANGE NOT MADE
 BY DATE

REV.	DATE	DESCRIPTION
1	7-2-54	REV. NEW WORK CERTIFICATION
2	7-2-54	REV. VENDOR CERTIFICATION
3	7-2-54	REV. VENDOR CERT. REF. AC
4	7-2-54	REV. VENDOR CERT. REF. AC

REV.	DATE	DESCRIPTION	CHK'D	DATE	APPROV.	DATE
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4	7-2-54	REV. VENDOR CERT. REF. AC				

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4	7-2-54	REV. VENDOR CERT. REF. AC				

Brown & Root, Inc.
 HOUSTON, TEXAS

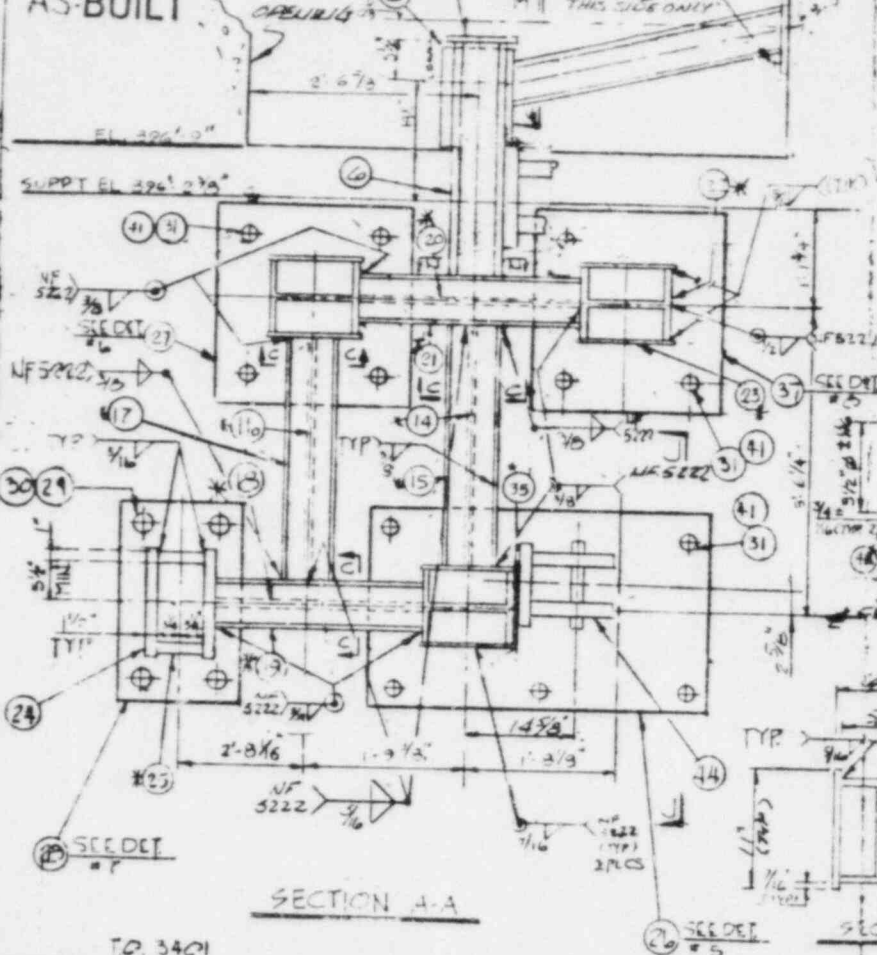
TEXAS UTILITIES SERVICES INC.
 PROJECT COMANCHE PEAK UNITS NO. 1 & 2
 ENGINEER

38-1188
 6135 & WILL INC.
 10044 10-17-78

BLUELINE: 12-17-81
AS-BUILT

USE ONLY ONE HEX
NUT & SUPPORT THROD
ON ROD
THIS SIDE ONLY

ITEM NO	NO REQ'D	PART NO	DESCRIPTION	WT.	ASME OR ASTM	PO NO	MIC.
1	2		2 1/2" x 11" CS PLATE	2-7/4"			
2	1	10364	2 1/2" x 22" STRUCT. SHAP	3-7/4"			
3	2		2 1/2" x 11" CS PLATE	2-7/4"			
4	1	10364	2 1/2" x 22" STRUCT. SHAP	3-7/4"			
5	2		2 1/2" x 11" CS PLATE	2-7/4"			
6	1		2 1/2" x 22" STRUCT. SHAP	3-7/4"			
7	2		2 1/2" x 11" CS PLATE	2-7/4"			
8	3	10330	2 1/2" x 50" STRUCT. SHAP	20-7/4"			
9	6		2 1/2" x 11" CS PLATE	20-7/4"			
10	2		2 1/2" x 11" CS PLATE	2-7/4"			
11	2		2 1/2" x 11" CS PLATE	2-7/4"			
12	1		2" CARBON STEEL PLATE (SEE DETAIL #3)				
13	1		2" CARBON STEEL PLATE (SEE DETAIL #3)				
14	1		2" CARBON STEEL PLATE (SEE DETAIL #2)				



FOR OFFICE AND
ENGINEERING USE ONLY

VENDOR CERTIFIED
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BY [Signature] DATE 7-2-84

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ISOMETRIC REV.	PIPING REV.	ELECTRICAL REV.	CODE/CLASS.	DRAWN	DATE	CHK'D	DATE	APP'VD	DATE
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OWNER	TEXAS UTILITIES SERVICES INC.			P.O. NO. UP-0048 A-1 MFG. REL. TC 1129					
PROJECT	COMANCHE PAK UNITS NO. 1 & 2			PRODUCTION ORDER SERIAL NUMBER SHEET					
ENGINEER	GIBBY & HILL INC.			3040					
Brown & Root, Inc.				HOUSTON, TEXAS					
28-1100				REV. 10					

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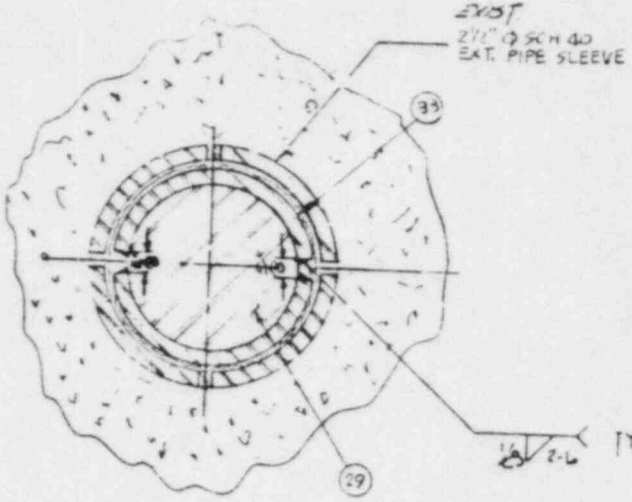
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 BY: DATE 7-2-84

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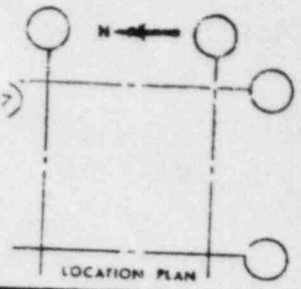
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20	1	12-17-81	REV'D VENDOR CERT. REF. MTC



SECTION D-D
FOR OFFICE AND ENGINEERING USE ONLY

ITEM NO	REQ'D	PART NO	DESCRIPTION	WT.	ASME OR ASTM	QTY	MIC.
27	4	DET-10	1/2" DIA 2" DIA BUSHING DET-10				
28	16	DET-2	HEA NUT		A 307		
29	14	DET-12	ROD		A 307		
30	4		4 1/2" DIA 3" WOOD SCREW		A 307		
31	4	10043	P 2" DIA SCH 30 PIPE		A 106 B		
32			(CUT IN HALF) (SEE DET-10)				
33	1		NAME IS NAME PLATE				
34	1		R 1/2" DIA 1/2" LG CS		A 307		
35	1		FILLER PLATE				
36	1		R 1/2" DIA 1/2" LG CS		A 307		
37	1		FILLER PLATE				
38	1		2" CARBONS STEEL PLATE (SEE DET-10)				
39	1		R 1/2" DIA 1/2" LG CS		A 307		
40	3		R 1/2" DIA 1/2" LG CS		A 307		
41	1		R 1/2" DIA 1/2" LG CS		A 307		
41	20	FHN 1/2"	HVT HEA NUTS		A 307		

- NOTES:- **INSTALLATION INSTRUCTION FOR DETAIL 29 & 33**
- CUT 2" DIA SCH 30 PIPE IN HALF LENGTHWISE.
 - POSITION ONE HALF OF PIPE ON BOLT AFTER FORMING IT TO A 2" DIA I.D., ASSURING A TIGHT FIT ALL AROUND.
 - WELD PIPE HALF TO BOLT.
 - REPEAT STEPS 2 THROUGH 3 USING OTHER HALF OF PIPE.
 - PLACE ALL ANCHOR BOLTS IN EXISTING SLEEVES.
 - MEASURE C-C SPACING OF BOLTS AND DRILL BASE RE TO FIT. C-C SPACING MAY VARY ON OPPOSITE SIDES OF WALL. FIELD TO VERIFY ALL DIMENSION BEFORE DRILLING THE BASE RE.



FIELD REVIEWED BY: MTC
 AS BUILT BY: MTC
 DATE: 7/2/84

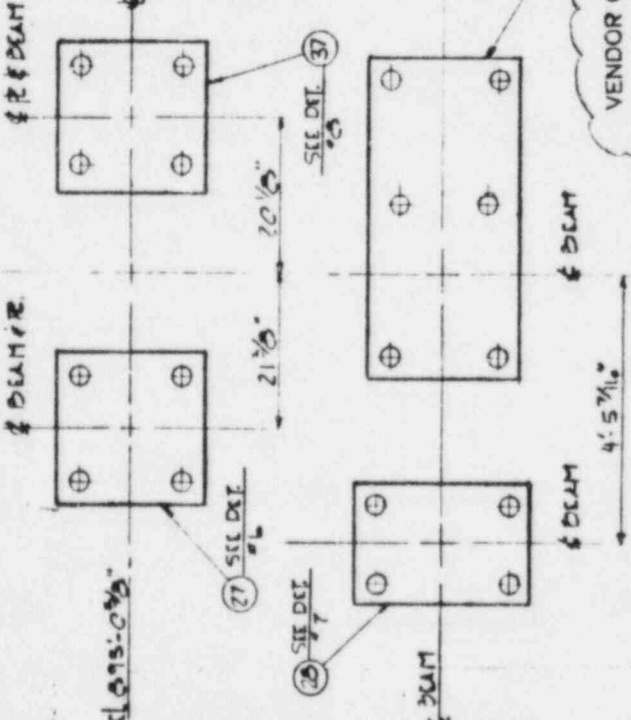
LOAD (LBS)	GRAV	THER	HYDRO	OSE	SSB	DESIGN LOADS	MVTS (IN.)	SEISMIC	OTHER	ISOMETRIC REV.	PIPING	REV.	ELECTRICAL	REV.	CODE/CLASS.	DRAWN	DATE	CHK'D	DATE	APP'VD	DATE	
UP						VERT.				2323-W		2323-W										
DN						N-S				2323-E		2323-E										
N						E-W				2323-S		2323-S										
E						OTHER				2323-M		2323-M										
S						OWNER																
W						PROJECT																
						ENGINEER																

Brown & Root, Inc.
 ENGINEERS AND CONTRACTORS
 HOUSTON, TEXAS

P.O. NO.	CP-0046	A 1	MFG. REL. TO	11/27
PRODUCTION ORDER	SERIAL NUMBER	SHEET		
446A	MR. NO. MS-1-03-007	C72K	REV 13	

BLUELINE: 12-17-81
AS-BUILT

FOR OFFICE AND
ENGINEERING USE ONLY



SECTION E-E

T.O. 3401

SECTION J-J

ITEM NO.	NO. REQ'D.	DESCRIPTION	WT.	ASME OR ASTM	MIC.
47	4	5/8" X 4" X 8' ROD		S436	
48	2	2 1/2" DIA 12' PIN		S436	
49	2	3/4" X 100' BEAR BRACKET (SEE DET. 1)		S436	
50	2	1/2" CS 2" X 2" TO BE MACHINED TO 7/16" THK		S436	
51	2	1/2" CS 2" X 4" X 12' SEE SEC. L-L		S436	
52	2	1/2" CS 2" X 4" X 12' SEE SEC. L-L		S436	
53	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
54	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
55	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
56	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
57	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
58	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
59	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
60	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
61	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
62	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
63	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
64	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
65	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
66	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
67	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
68	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
69	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
70	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
71	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
72	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
73	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
74	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
75	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
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77	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
78	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
79	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
80	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
81	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
82	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
83	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
84	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
85	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
86	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
87	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
88	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
89	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
90	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
91	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
92	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
93	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
94	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
95	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
96	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
97	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
98	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
99	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	
100	2	1/2" CS 2" X 4" X 12' SEE SEC. K-K		S436	

REV	DATE	BY	DESCRIPTION
1			REV'D VENDOR CERT.
2			REV'D VENDOR CERT.
3			REV'D VENDOR CERT.
4			REV'D VENDOR CERT.
5			REV'D VENDOR CERT.
6			REV'D VENDOR CERT.
7			REV'D VENDOR CERT.
8			REV'D VENDOR CERT.
9			REV'D VENDOR CERT.
10			REV'D VENDOR CERT.

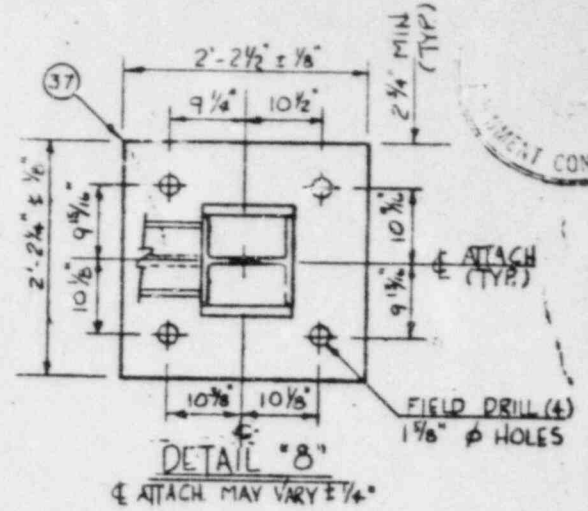
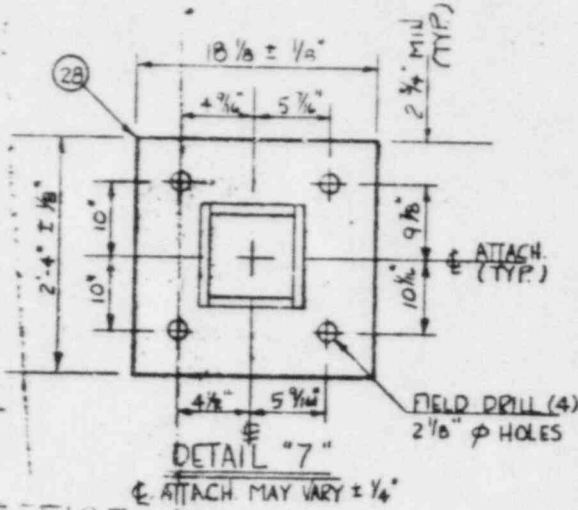
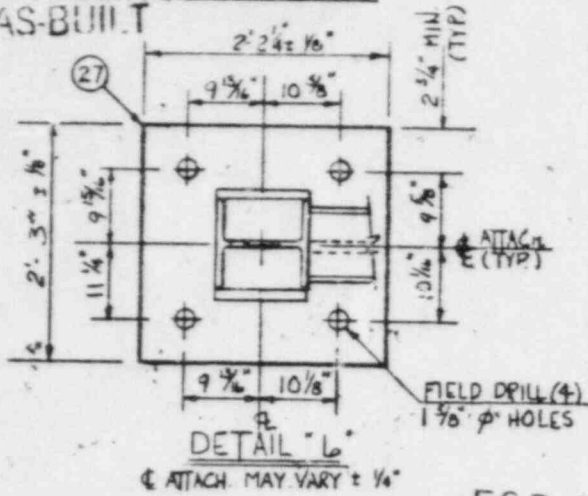
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2			REV'D VENDOR CERT.
3			REV'D VENDOR CERT.
4			REV'D VENDOR CERT.
5			REV'D VENDOR CERT.
6			REV'D VENDOR CERT.
7			REV'D VENDOR CERT.
8			REV'D VENDOR CERT.
9			REV'D VENDOR CERT.
10			REV'D VENDOR CERT.

ELECTRICAL REV 1333-E
 STRUCTURAL REV 1333-S
 ISOMETRIC REV 1333-M
 TONS
 P.O. NO. CP-0049A.1
 MFG. REV. 7C-1129
 PRODUCTION ORDER
 SERIAL NUMBER
 SHEET 6 of 8
 +4CA INC. NO. MS-1-23-002-77C REV. 0

Brown & Root, Inc.
 HOUSTON, TEXAS

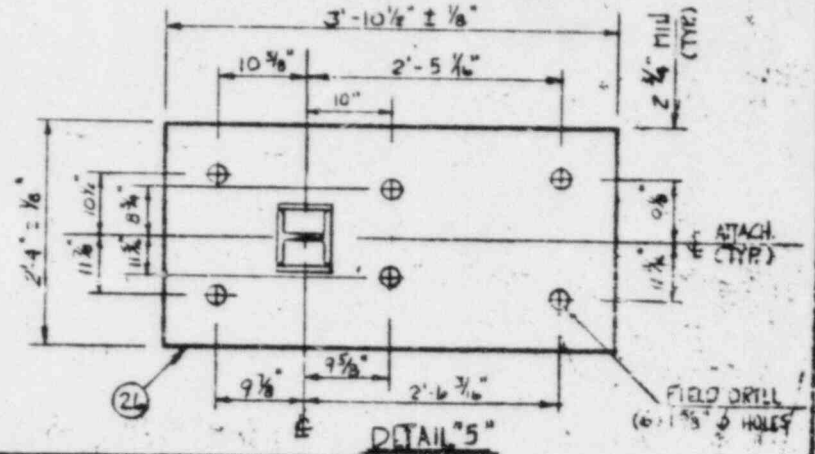
TEXAS UTILITIES SERVICES INC.
 PROJECT COMANCHE PEAK UNITS NO. 1 & 2
 ENGINEER GIBBS & HILL INC.
 SC-21-3

BLUELINE 12-17-81
AS-BUILT



FOR OFFICE AND
ENGINEERING USE ONLY.

VENDOR CERTIFIED
DRAWING REV. NO. 10
BY DATE 7-2-84



REV	DATE	BY	CHK	APP	DESCRIPTION	MTS	UNIT	SEISMIC	REFERENCE	SOMETRIC REV.	PIPING	REV.	ELECTRICAL	REV.	CODE/CLASS/III/2	DRAWN	DATE	CHK'D	DATE	APP'D	DATE	
1	12/17/81	...	...	...	REV. VENDOR CERT.				MS-1-RB-03	2333-M		2333-E			PAINT/CASCO-ZINC II							
2	REV. VENDOR CERT.				MS-1-RB-03	2333-S		2333-M			ZONE							
3	REV. VENDOR CERTIFICATION																	
4	REV. VENDOR CERT. REF. 3MC																	
5	REV. VENDOR CERT. REF. 3MC																	
6	REV. VENDOR CERT.																	
7	REV. VENDOR CERT.																	
8	REV. VENDOR CERT.																	
9	REV. VENDOR CERT.																	
10	REV. VENDOR CERT.																	

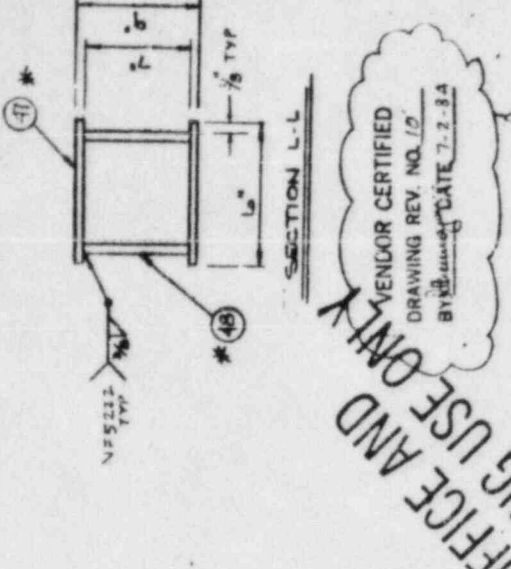
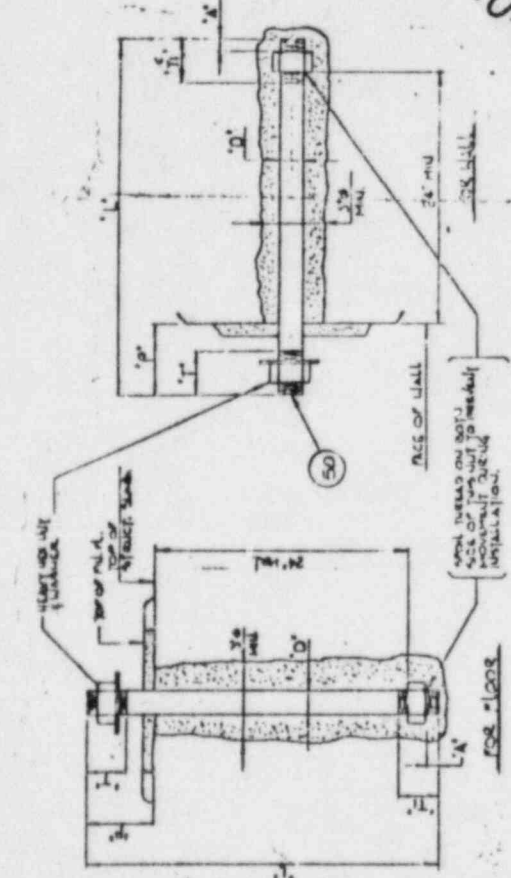
82	SUPP'T ISO	NPSI-MS-1-RB-03
PO. NO.	CP-3048 A-1	MFG. REL. TC-1124
PRODUCTION ORDER	440A	HE. NO. MS-1-003-009-C72X
SHEET	10	

Brown & Root, Inc.
HOUSTON, TEXAS

REV	DATE	BY	CHK	APP	DESCRIPTION
1	12/17/81	...	...	...	REV. VENDOR CERT.
2	REV. VENDOR CERT.
3	REV. VENDOR CERTIFICATION
4	REV. VENDOR CERT. REF. 3MC
5	REV. VENDOR CERT. REF. 3MC
6	REV. VENDOR CERT.
7	REV. VENDOR CERT.
8	REV. VENDOR CERT.
9	REV. VENDOR CERT.
10	REV. VENDOR CERT.

TA 3401

REV	DATE	DR	DESCRIPTION
11-30	11-30	RF	REV VENDOR CERT
1-10	1-10	RF	REV VENDOR CERT, REV 2ND
2-1	2-1	RF	REV VENDOR CERT
2-21	2-21	RF	REV VENDOR CERT
5-23	5-23	RF	REV VENDOR CERT
8-4	8-4	RF	REV VENDOR CERT
8-1	8-1	RF	REV VENDOR CERT
6-23	6-23	RF	REV VENDOR CERT
11-20	11-20	RF	REV VENDOR CERT

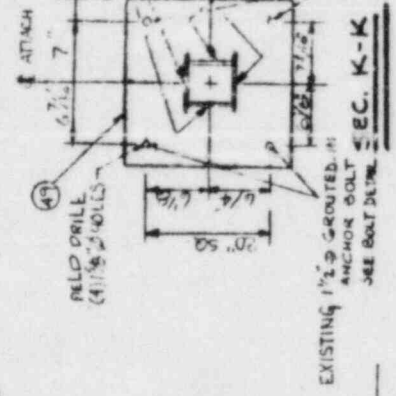
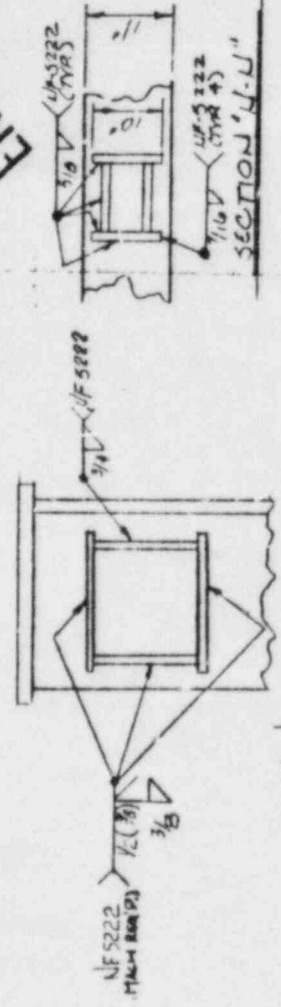


FOR OFFICE AND ENGINEERING USE ONLY
 VENDOR CERTIFIED
 DRAWING REV. NO. 10
 BY [Signature] DATE 7-2-84

REV	DATE	DR	DESCRIPTION
11-30	11-30	RF	REV VENDOR CERT
1-10	1-10	RF	REV VENDOR CERT, REV 2ND
2-1	2-1	RF	REV VENDOR CERT
2-21	2-21	RF	REV VENDOR CERT
5-23	5-23	RF	REV VENDOR CERT
8-4	8-4	RF	REV VENDOR CERT
8-1	8-1	RF	REV VENDOR CERT
6-23	6-23	RF	REV VENDOR CERT
11-20	11-20	RF	REV VENDOR CERT

BOIT DETAIL

REV	DATE	DR	DESCRIPTION
11-30	11-30	RF	REV VENDOR CERT
1-10	1-10	RF	REV VENDOR CERT, REV 2ND
2-1	2-1	RF	REV VENDOR CERT
2-21	2-21	RF	REV VENDOR CERT
5-23	5-23	RF	REV VENDOR CERT
8-4	8-4	RF	REV VENDOR CERT
8-1	8-1	RF	REV VENDOR CERT
6-23	6-23	RF	REV VENDOR CERT
11-20	11-20	RF	REV VENDOR CERT



SECTION M-M

SECTION M-M

REV DATE	DR	DESCRIPTION	REV	DATE	DR	DESCRIPTION
11-30	RF	REV VENDOR CERT	11-30	RF	REV VENDOR CERT	
1-10	RF	REV VENDOR CERT, REV 2ND	1-10	RF	REV VENDOR CERT, REV 2ND	
2-1	RF	REV VENDOR CERT	2-1	RF	REV VENDOR CERT	
2-21	RF	REV VENDOR CERT	2-21	RF	REV VENDOR CERT	
5-23	RF	REV VENDOR CERT	5-23	RF	REV VENDOR CERT	
8-4	RF	REV VENDOR CERT	8-4	RF	REV VENDOR CERT	
8-1	RF	REV VENDOR CERT	8-1	RF	REV VENDOR CERT	
6-23	RF	REV VENDOR CERT	6-23	RF	REV VENDOR CERT	
11-20	RF	REV VENDOR CERT	11-20	RF	REV VENDOR CERT	

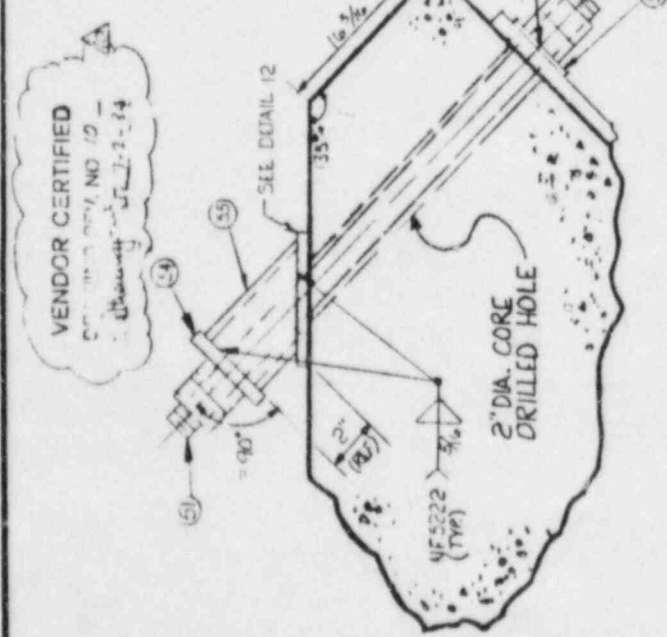
P.O. NO. CP-0048 A
 SERIAL NUMBER
 PRODUCTION ORDER
 DATE
 CHECKED
 DATE
 APP'D
 DATE



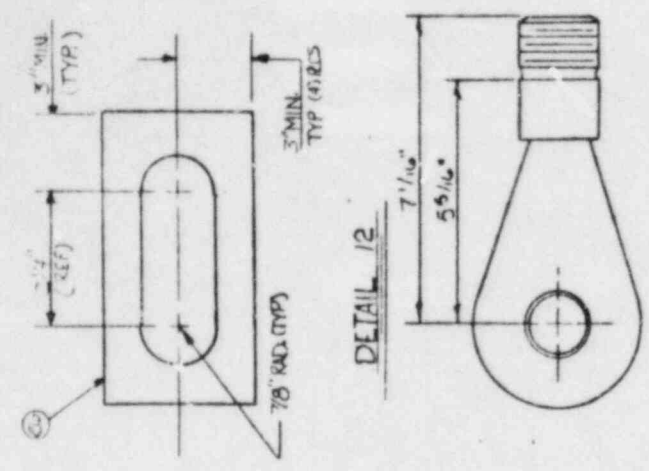
Brown & Root, Inc.
 HOUSTON, TEXAS

TEXAS UTILITIES SERVICES INC.
 PROJECT COMANCHE PEAK UNITS NO. 1 & 2
 ENGINEER
GIBBS & HILL INC.
 HOUSTON, TEXAS

REV	DATE	BY	CHK'D	DESCRIPTION
1	10/21/24	JL	JL	REV'D VENDOR CERT
2	10/21/24	JL	JL	REV'D VENDOR CERT
3	10/21/24	JL	JL	REV'D VENDOR CERT
4	10/21/24	JL	JL	REV'D VENDOR CERT
5	10/21/24	JL	JL	REV'D VENDOR CERT
6	10/21/24	JL	JL	REV'D VENDOR CERT
7	10/21/24	JL	JL	REV'D VENDOR CERT
8	10/21/24	JL	JL	REV'D VENDOR CERT
9	10/21/24	JL	JL	REV'D VENDOR CERT
10	10/21/24	JL	JL	REV'D VENDOR CERT



DETAIL F



FORWARD BRAT EYE DETAIL

FOR OFFICE AND
ENGINEERING USE ONLY

T.O. 3401

REV	DATE	BY	CHK'D	DESCRIPTION
1	10/21/24	JL	JL	REV'D VENDOR CERT
2	10/21/24	JL	JL	REV'D VENDOR CERT
3	10/21/24	JL	JL	REV'D VENDOR CERT
4	10/21/24	JL	JL	REV'D VENDOR CERT
5	10/21/24	JL	JL	REV'D VENDOR CERT
6	10/21/24	JL	JL	REV'D VENDOR CERT
7	10/21/24	JL	JL	REV'D VENDOR CERT
8	10/21/24	JL	JL	REV'D VENDOR CERT
9	10/21/24	JL	JL	REV'D VENDOR CERT
10	10/21/24	JL	JL	REV'D VENDOR CERT

REV	DATE	CHK'D	DATE	APPLY'D	DATE
1	10/21/24	JL			
2	10/21/24	JL			
3	10/21/24	JL			
4	10/21/24	JL			
5	10/21/24	JL			
6	10/21/24	JL			
7	10/21/24	JL			
8	10/21/24	JL			
9	10/21/24	JL			
10	10/21/24	JL			

REV	ELECTRICAL	REV	ISOMETRIC	REV	PIPING	REV	CORE/CLASS
3333-M	3333-E	3333-M	3333-E	3333-M	3333-E	3333-M	3333-E
3333-M	3333-E	3333-M	3333-E	3333-M	3333-E	3333-M	3333-E
3333-M	3333-E	3333-M	3333-E	3333-M	3333-E	3333-M	3333-E

OWNER	TEXAS UTILITIES SERVICES INC.
PROJECT	COMANCHE PEAK UNITS NO. 1 & 2
ENGINEER	GIBBS & HILL INC.

OWNER	Brown & Root, Inc.
PROJECT	COMANCHE PEAK UNITS NO. 1 & 2
ENGINEER	GIBBS & HILL INC.

P.O. NO.	CF-00188-A-1
PRODUCTION ORDER	
SERIAL NUMBER	
MFG. REL. TC	1124
ME. NO.	MS-1-03-007-C72K
REV.	