

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

September 2, 1980

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
Attention: Mr. B. Joe Youngblood, Chief
Licensing Branch No. 3
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Serial No. 743
NO/RMB/jmj
Docket No. 50-339
License No. NPF-7

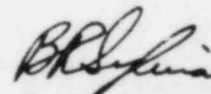
Dear Mr. Denton:

MULTIPLE STRUCTURE ARS CONCERN
NORTH ANNA UNIT NO. 2

As per your verbal request, enclosed are the detailed support drawings for the pipe supports installed on the North Anna Unit No. 2 Low Head Safety Injection Pump discharge piping shown on 12050-MSK-104B-5. These drawings are provided for your information and use in performing an independent verification of the pipe stress analysis performed by Stone and Webster Engineering Corporation.

If you have any questions or require any additional information, please contact us.

Very truly yours,



B. R. Sylvia
Manager - Nuclear
Operations and Maintenance

Enclosure

cc: Mr. Robert A. Clark
Operating Reactors Branch No. 3
Division of Licensing
Washington, D. C. 20555

Mr. James P. O'Reilly, Director
Office of Inspection and Enforcement
Region II
Atlanta, Georgia 30303

THIS DOCUMENT CONTAINS
POOR QUALITY PAGES

8009080394

P

VEPCO N.A.
J.O. NO. 12050
MINERAL, VA

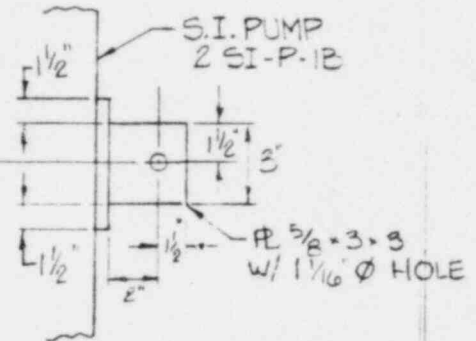
M. ERIC
8-3-78

NOTE:

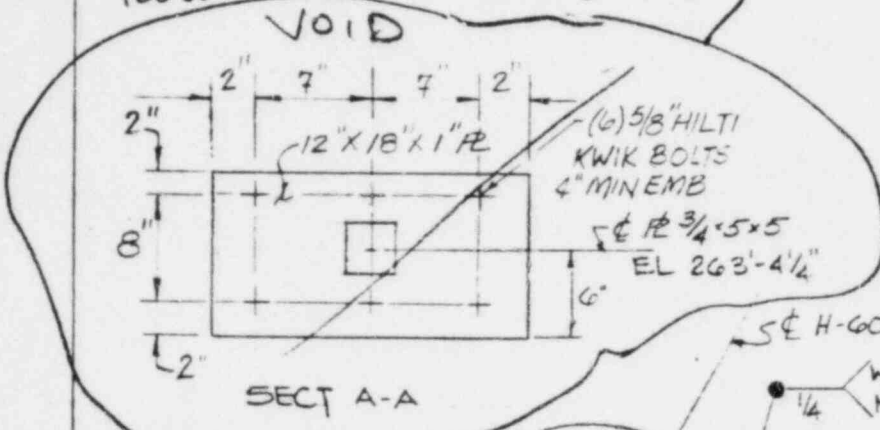
1. WORK THIS SKETCH W/
ZFSK-2430A

SEE SKETCH
12050-CBD-354A PAGE 6 OF 6

EL 263'-4"



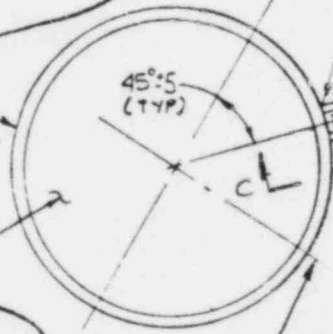
SECT C-C



SECT A-A

PUMP CLAMP
(ZFSK-2430A)

S.I. PUMP



PLAN

SE H-603A

WID
NSCFS

$\frac{1}{4}$

$\frac{1}{16}$ (TYP)

SEE
DET. 'X'

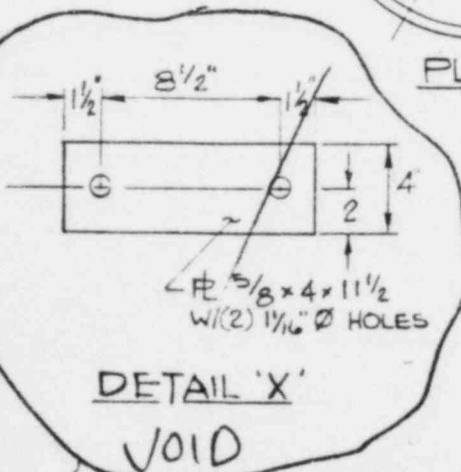
1" ϕ A-325 BOLT
& H.H. W/ L.W.

2" THD, 2" UNTHD
(TYP)

SE H-603B

1" GROUT PER
E&DCR-21479-1

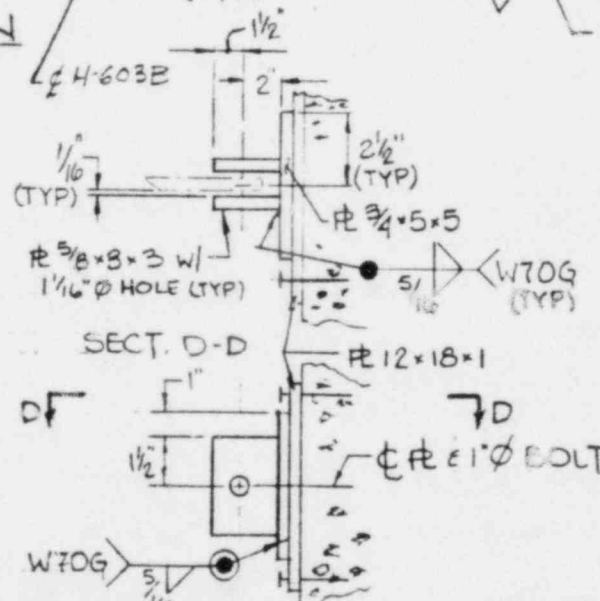
CONTAINMENT
WALL



DETAIL 'X'

VOID

SEE SKETCH - CBD-354A
page 6 of 6



SECT. D-D

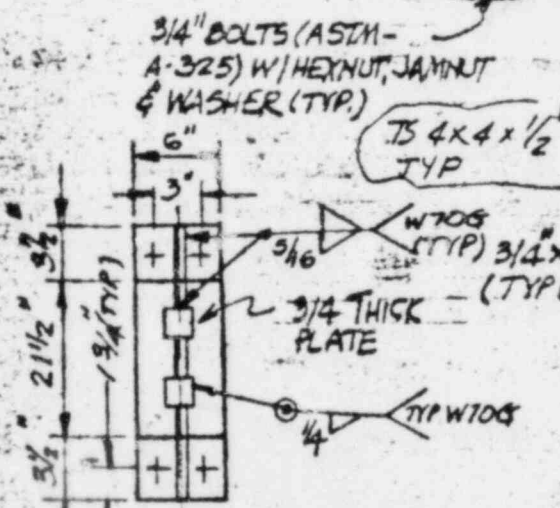
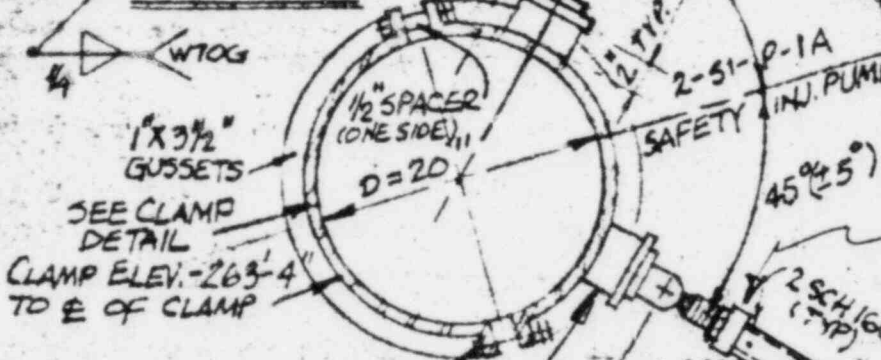
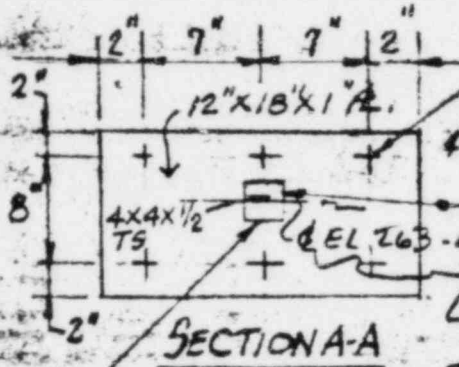
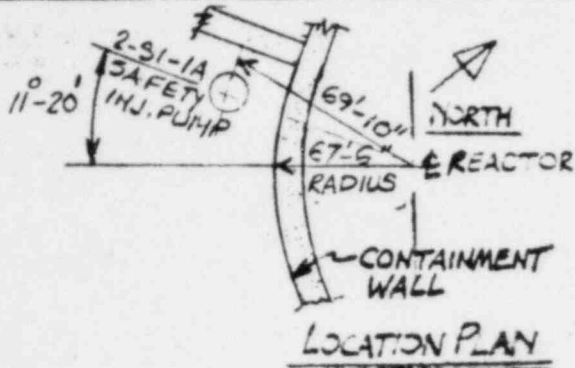
SECT. B-B

SH 2 of 2

POWER INDUSTRY GROUP		TITLE	SCALE: NONE
CHECKED	<i>Chenette</i>	REACTOR CONTAINMENT	DATE: 8-3-78
CORRECT	<i>W. L. K. S.</i>	SAFETY INJECTION PUMP-2-SI-P-1B	SKETCH NUMBER 12050
APPROVED	<i>W. L. K. S.</i>	H-603C	ZFSK-2430B-7
REVISIONS	(2)	(3)	(4)
	(5)		

VEPCO-NORTH ANNA
12050
DRN. BY: WM. BROWN
REF. DWGS - FP-4A
E & DCR PS-599-2

CALCULATION No.
11715-NM(B)-354-CBD
(ENG. NBCH.)



- NOTES:
1. ALL WELDS MUST BE W-200 UNLESS OTHERWISE NOTED.
 2. WORK THIS SKETCH WITH ZFSK-2429B

POWER INDUSTRY GROUP		TITLE	SCALE: NO SCALE
CHECKED	<i>[Signature]</i>	REACTOR CONTAINMENT	DATE: 12-15-77
CORRECT	<i>[Signature]</i>	SAFETY INJECTION PUMP-2-SI-P-1A	SKETCH NUMBER: 12050
APPROVED	<i>[Signature]</i>	H-602A & H-602B	ZFSK-2429A-2
REVISIONS	②	③	④

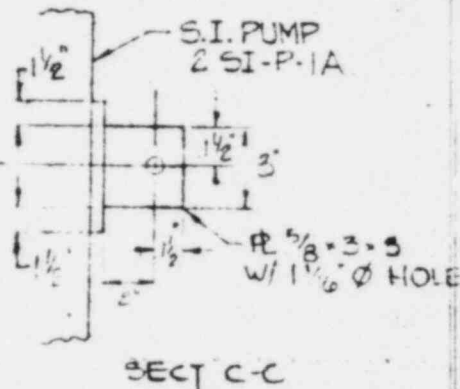
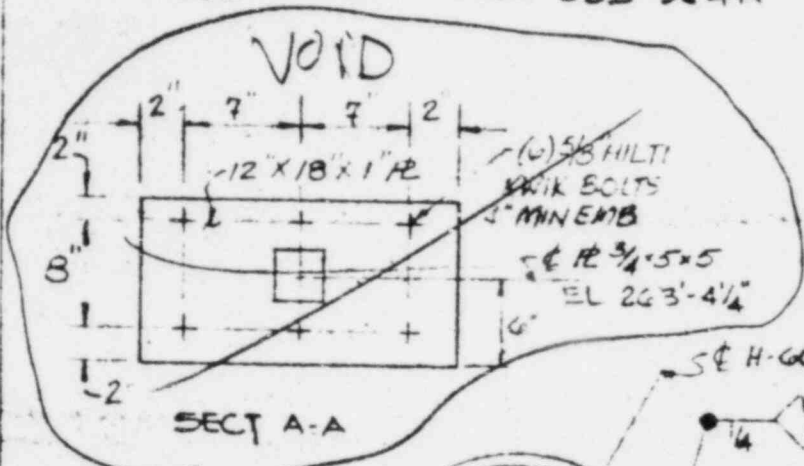
VERCO, N.A.
J.O. NO. 12050
MINERAL, VA.

M. ERNO
8-3-78

NOTE:

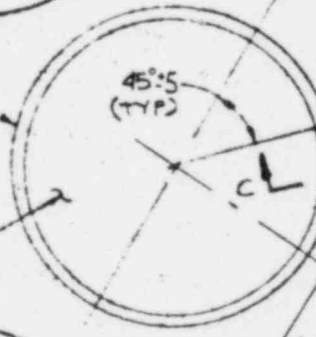
1. WORK THIS SKETCH W/
ZFSK-2429A

SEE SKETCH 12050-CBD-354A



PUMP CLAMP (ZFSK-2429A)

S.I. PUMP

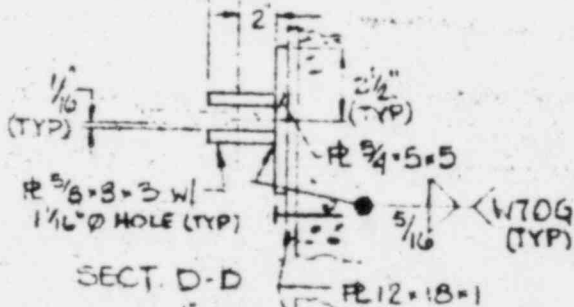
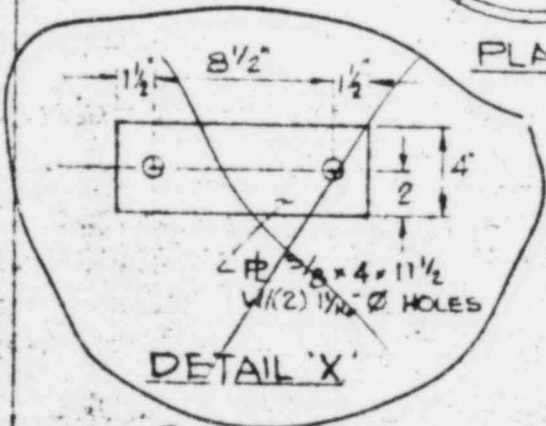


SE H-602A
WID NSCS

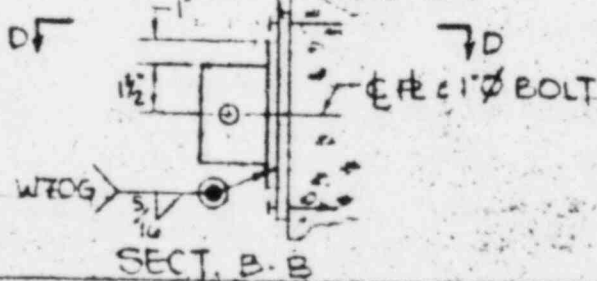
1/16" (TYP)
BL
SEE DET 'X'
1" Ø A-325 BOLT C.H.W. W/ L.W. 2" THD, 2" UNTHD (TYP)
SE H-602B

1" GROUT PER EDCR-21479-1

CONTAINMENT WALL



SECT. D-D

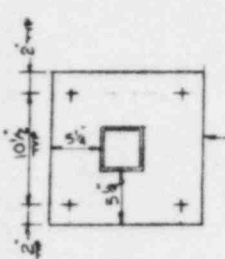
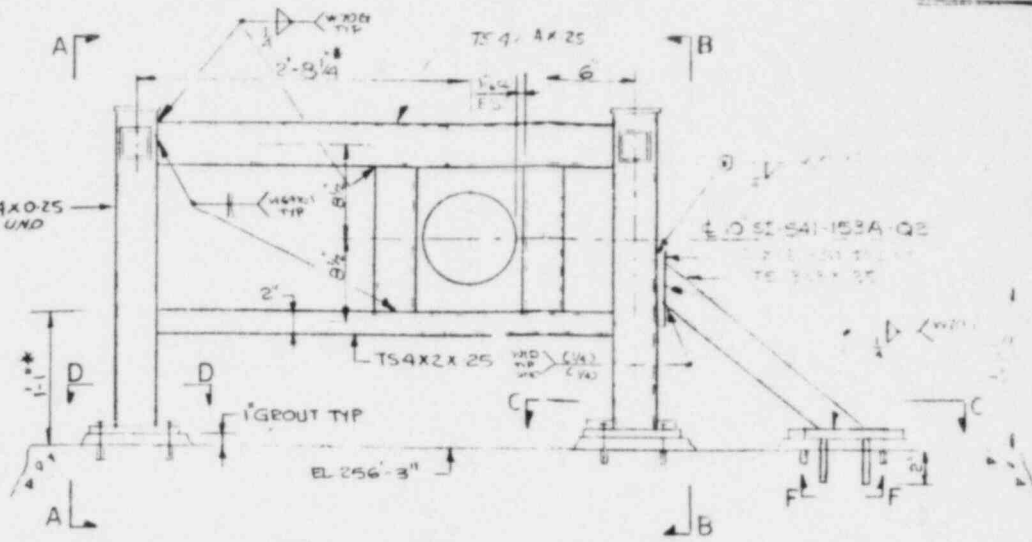
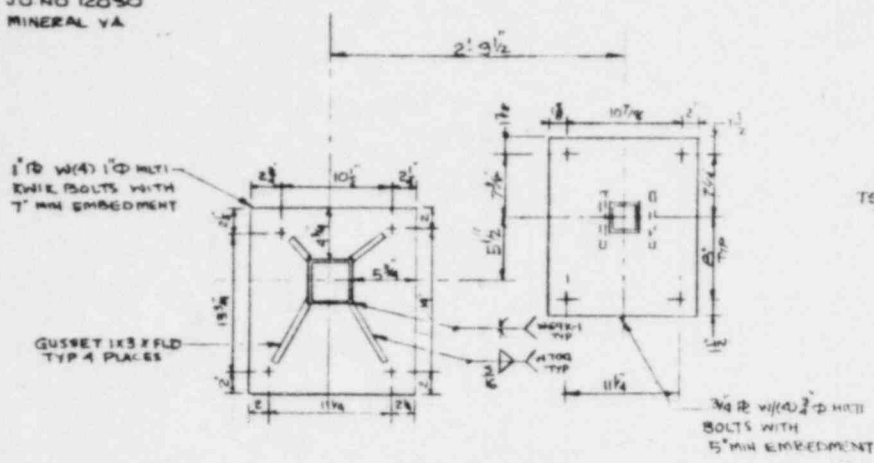


VOID
SEE SKETCH
12050-CBD-354A
(PAGE 6026)

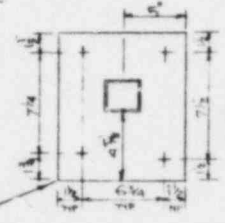
POWER INDUSTRY GROUP	TITLE	SCALE: NONE
CHECKED <i>[Signature]</i>	REACTOR CONTAINMENT	DATE: 8-3-78
CORRECT <i>[Signature]</i>	SAFETY INJECTION PUMP-2-SI-P-1A	SKETCH NUMBER 12050
APPROVED <i>[Signature]</i>	H-602C	ZFSK-2429B
REVISIONS		
②	③	④
		⑤

VEPCO HANNA
JO NO 12050
MINERAL VA

DILIP FATEL

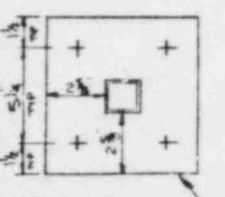


SECTION C-C



SECTION E-E
(FOR SECT B-B ONLY)

SECTION D-D



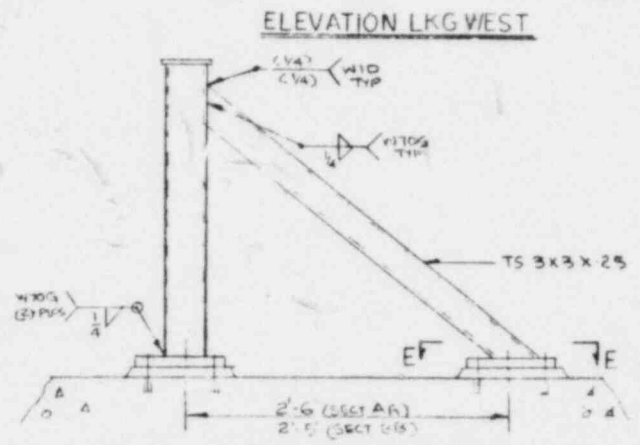
SECTION E-E
(FOR SECT A-A ONLY)

1/2" RE W/4 #2 MULTI KWIK BOLTS W/ 4" MIN EMBEDMENT

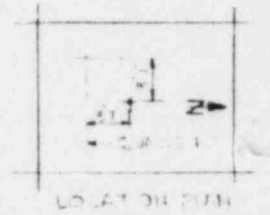
2 3/4" X 3 X 6 TYP

SECTION F-F

1/2" RE W/4 #2 MULTI KWIK BOLTS WITH 4" MIN EMBEDMENT



SECTION A-A (AS SHOWN)
SECTION B-B (OPP. HAND)



LOCATION PLAN

LOADS
F_x = 171
F_y = 97

REF:
MSK-104B 3 FCS
PR-4B-10
FC-19A
COMP 2 5/4 1/4 C
CALC Z-236B 2

THIS SKETCH IS REDRAWN

- NOTES:
- 1) # DENOTES NON-CRITICAL DIM
 - 2) BASE PDS REVIEWED PER EPCOR P22J
 - 3) FIELD TO CHIP CONCRETE TO ALLOW INSTALLATION OF SHEAR LUG DO NOT CUT RE BAR

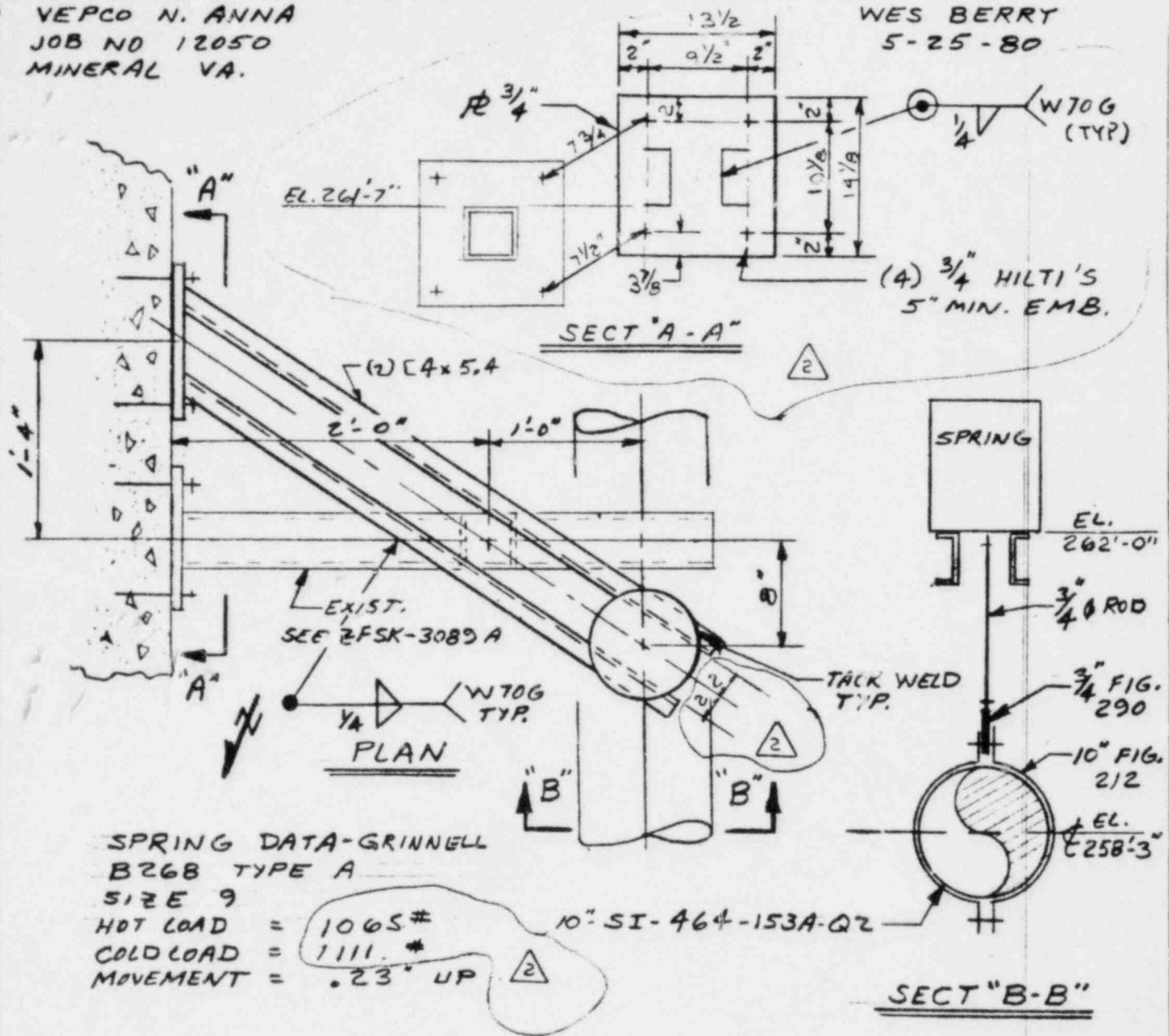
POWER INDUSTRY GROUP	
CHECKED	<input checked="" type="checkbox"/>
CORRECT	<input checked="" type="checkbox"/>
APPROVED	<input checked="" type="checkbox"/>
REVISIONS	② MTH 11 5 78 ③ ④ ⑤

H-618 - LAT RESTRAINT
10' - 51 - 541 - 153A - Q2
SAFEGUARDS AREA CAT I

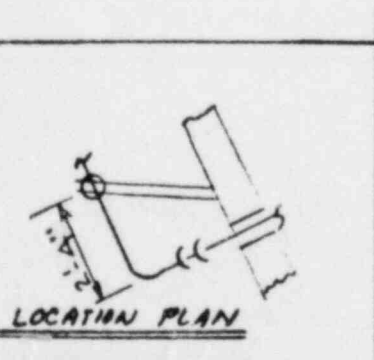
SCALE
DATE 23 NOV 1978
SKETCH NUMBER
12050 ZFSK 30501

VEPCO N. ANNA
JOB NO 12050
MINERAL VA.

WES BERRY
5-25-80



SPRING DATA-GRINNELL
B268 TYPE A
SIZE 9
HOT LOAD = 1065#
COLD LOAD = 1111#
MOVEMENT = .23" UP



VALVE PIT
N
E&D CR. PS-5321C

REF:
12050-FP-4B
-FC-19
-MSK-104B-5
CALC Z-307-4
ZFSK-3089A-3
COMP NO Z1068-Z
CAT I

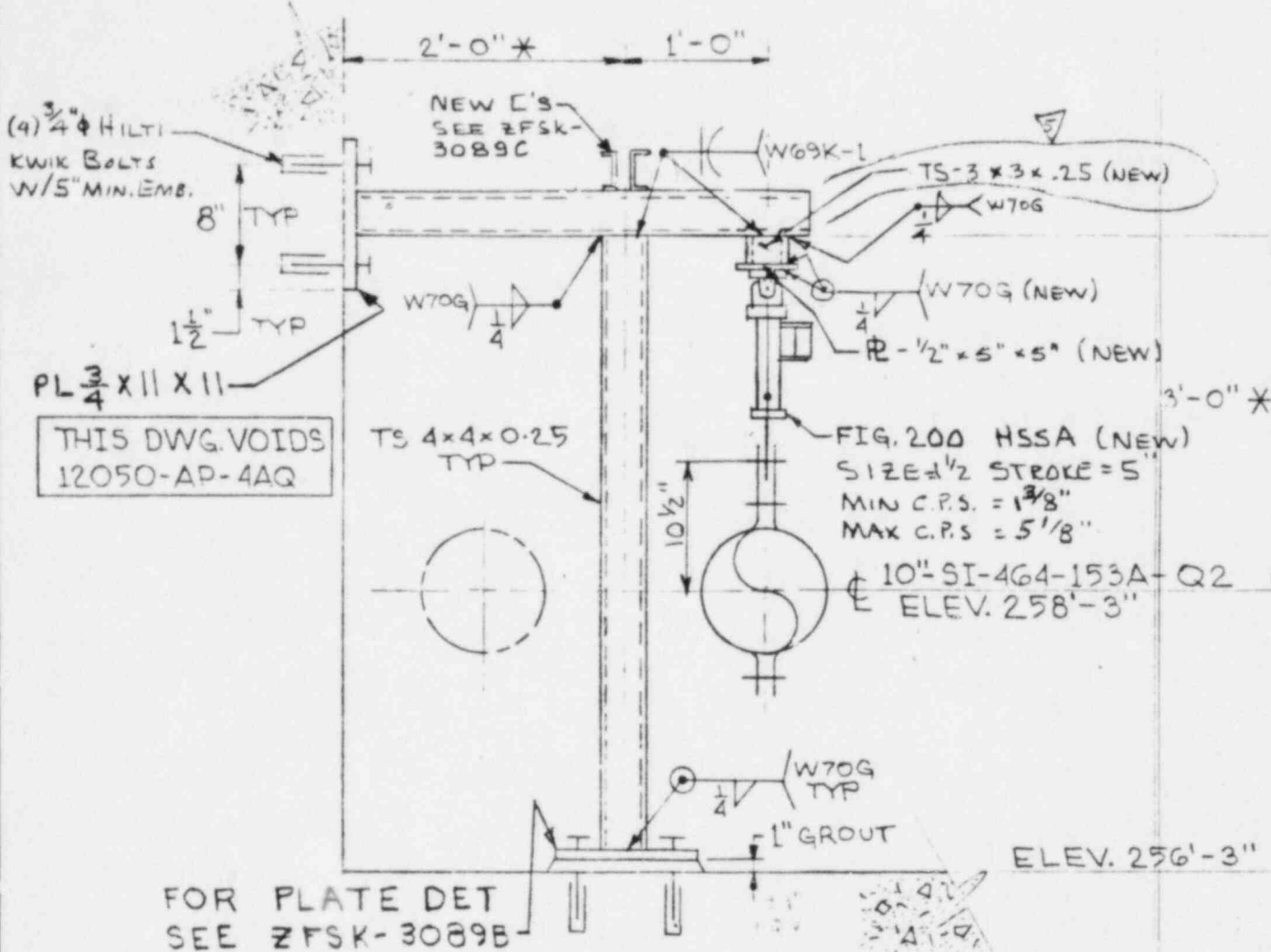
REVIEWED DATE 5-25-80

POWER INDUSTRY GROUP		TITLE	SCALE: NONE
CHECKED	P.V. Davis 5/26/80	2. SI - SH-28	DATE: 5-26-80
CORRECT	40 and/or 5-26-80	10" - SI - 464 - 153A - QZ	SKETCH NUMBER 12050
APPROVED	W.B. Berry 5/28/80	SAFEGUARDS AREA	
REVISIONS	(2) VAS 6/6/80 W.B. Berry	(3)	ZFSK-3089C-2
		(4)	
		(5)	

W.B. Berry 6/5/80

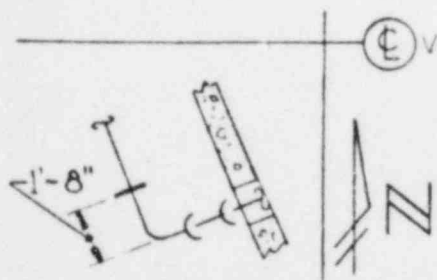
VEPCO-NAPS
MINERAL, VA.
J.O. No. 12050

KRYNOCK
11-20-78



THIS DWG. VOIDS
12050-AP-4AQ

ELEV. LKG. SOUTH-EAST



LOCATION PLAN

LOAD:
F_y = +273#

*NON-CRITICAL DIM. (COMP Z-1068-2)

REF.
12050-FP-4B
-FC-19 PT.162
-MSK-104B-5
E&DCR P-2436-2
CALC. Z-307-4
E&DCR P-5099D
PS-5321C, D-2
(COMP Z-1068-2)

REVIEWED
DATE 5-26-80

POWER INDUSTRY GROUP		TITLE		SCALE: NONE	
CHECKED	CCN 11-22-78	2-SI-HSS-802A		DATE: 11-20-78	
CORRECT	PA? SKA 12/27	10"-SI-464-153A-Q2		SKETCH NUMBER 12050	
APPROVED	PAK 11/27/78	AREA 2 CAT. I		ZFSK-3089A-5	
REVISIONS	② WJS 4-30-78	③ PVD 5/16/80	④ PVD 6/9/80	⑤ RC 6/27/80	

VEPCO N. ANNA
MINERAL VA
JOB NO 12050

MIKE JACKIMOWICZ
11-30-78

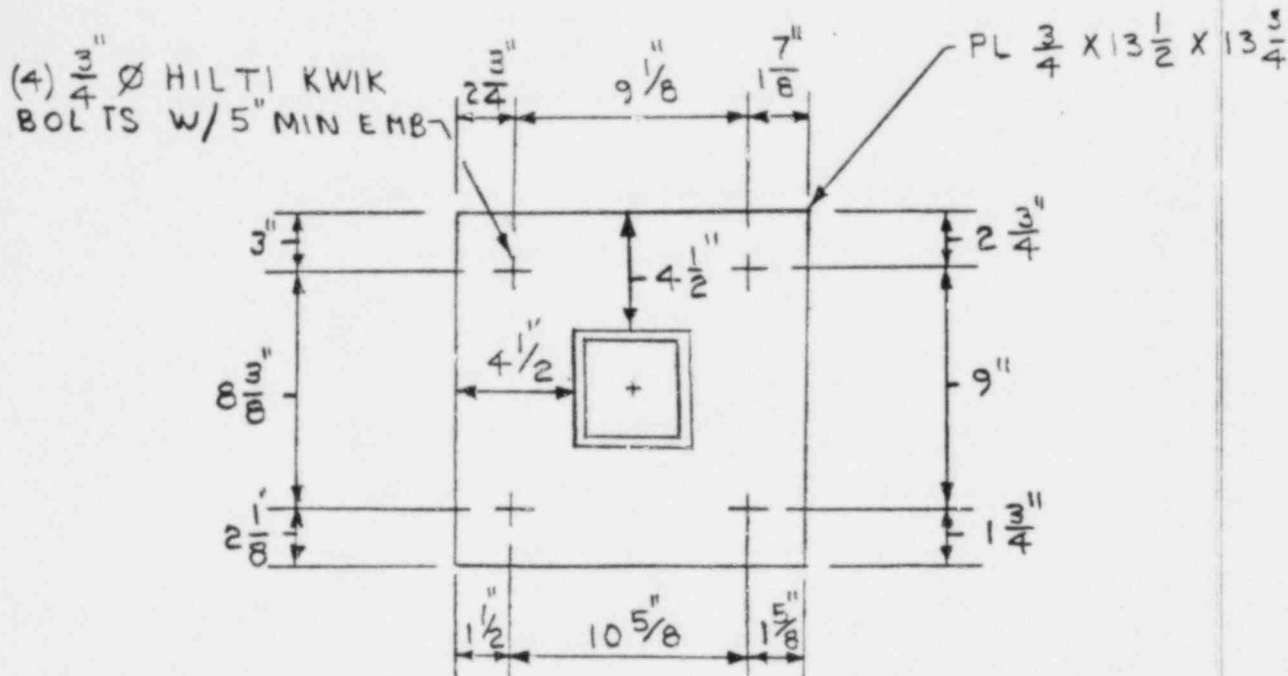


PLATE DETAIL AN

NOTE:
1.) WORK THIS SKETCH WITH ZFSK-3089A

E & DCR PS-532/C

INDEPENDENTLY REVIEWED
BY E.P. Conner DATE 5-29-80

POWER INDUSTRY GROUP		TITLE			SCALE: NONE	
CHECKED D. Lopez 11/20/78		BASE PLATE			DATE: 11-30-78	
CORRECT [Signature]		2 - SI - HSS-802A			SKETCH NUMBER	
APPROVED [Signature]		10" SI-464-153A-Q2			ZFSK-3089B-3	
REVISIONS	② P.V.D. 5/26/80	③ P.V.D. 6/9/80	④	⑤		

2 B. Lee / RA 5-28-80 (12) 5/9/80

VEPCO - N. ANNA
JOB NO. 12050
MINERAL, VA.

4 - 13/16" ϕ HOLES

RUNE BAKKE

H-803: GR. FIG. 200, OPTION 3
CYL. 1 1/2", 5" STROKE
CPC: MAX = 5/8", MIN = 1/4"

DET. 1

E_{ax} = ± 768 ±

1/4" CAP FL.
(TACK WELD)

TS 4x4x0.75

H-803

TS 4x4x0.75
(TYP.)

NEW FL.
SEE SECT. E.

1" GROUT

EXIST:

B - 3/4" ϕ HILTI BOLTS
5" MIN. EMB.

ELEV. LOOKING NORTH

R. 1/2 x 9 x 9
4 - 13/16" ϕ HOLES
FOR 3/4" ϕ BOLTS.
(SEE DET. 1)

SECTION A-A

NOTE:

FOR ADD'L DET'S, LOCATION PLAN
& REF DWG'S, SEE ZFSK-785B.

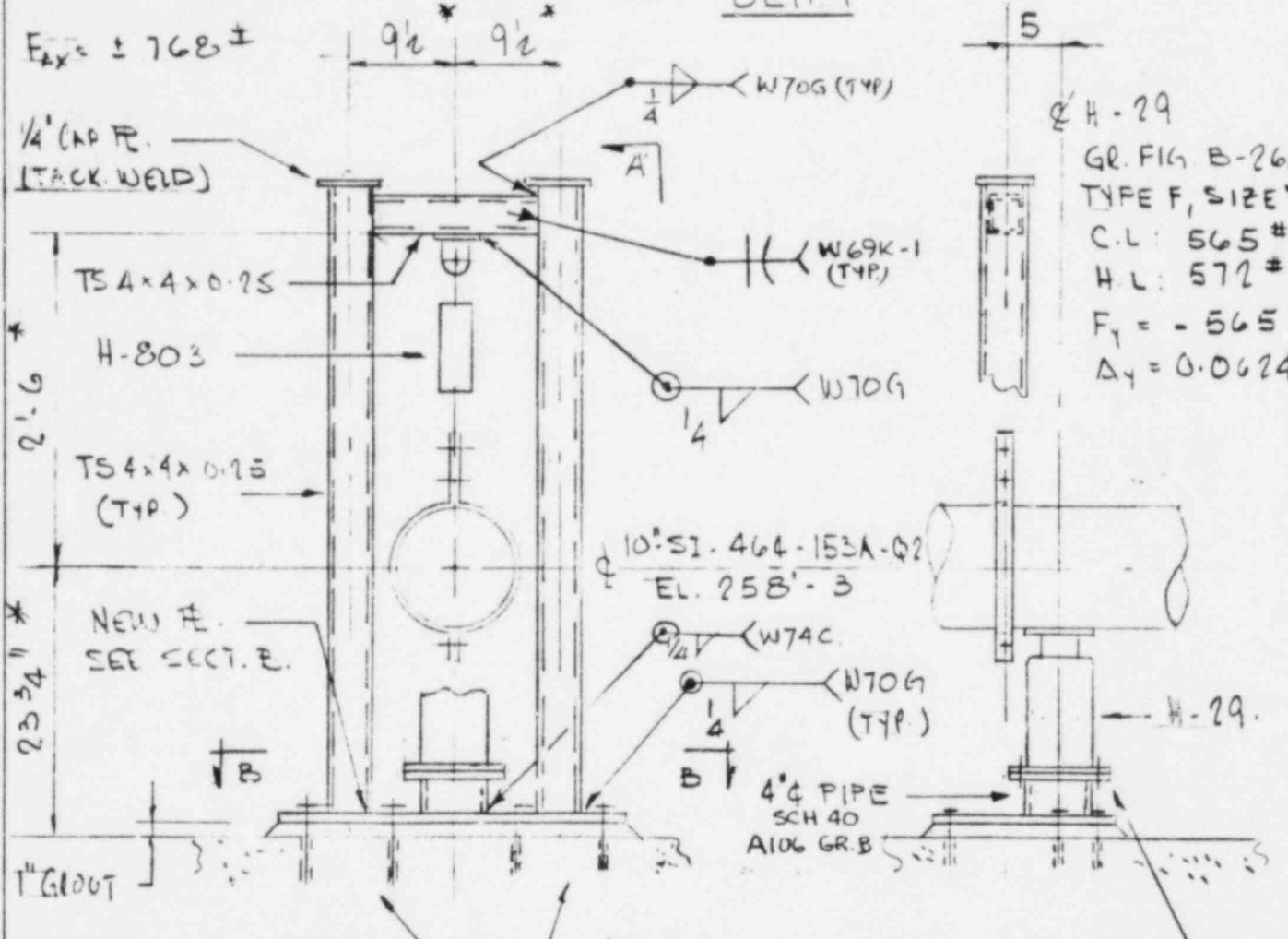
REDRAWN REV. 5

SHT. 1 OF 2

POWER INDUSTRY GROUP	
CHECKED	
CORRECT	
APPROVED	
REVISIONS	⑤ ⑥

TITLE	VERT. SNUBBER & SPRING
	H-803 * H-29
	10" SI-464-153A-Q2
	SAFEGUARD AREA
	⑦
	⑧

SCALE:	NONE
DATE:	5-25-80
SKETCH NUMBER	12050
	ZFSK-785A-5



Ø H-803

5

Ø H-29

GR. FIG. B-268
TYPE F, SIZE # 7
C.L.: 565 #
H.L.: 572 #
F₁ = - 565
Δ₁ = 0.0624"

10" SI-464-153A-Q2
EL. 258'-3"

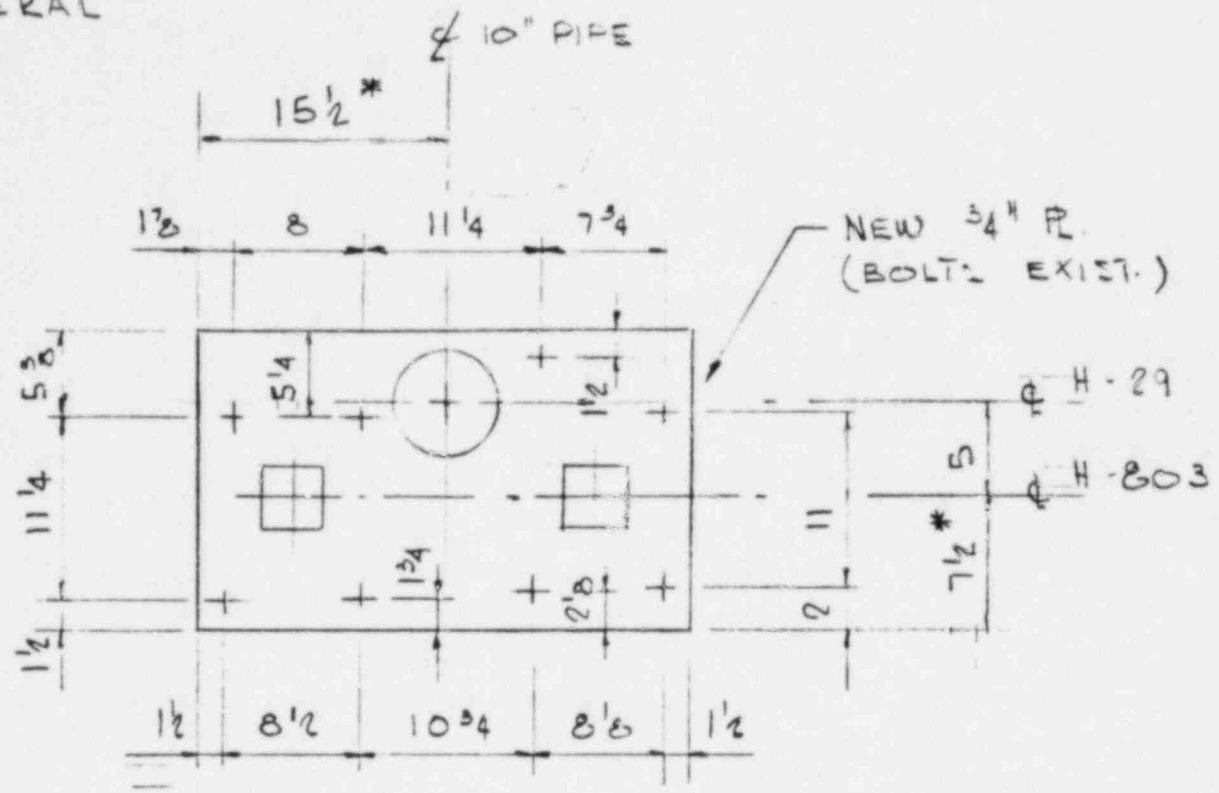
4" ϕ PIPE
SCH 40
A106 GR. B

REVISED DATE 5-29-80

CHANGING

VEPCO N. ANNA
 JOB NO 12050
 MINERAL

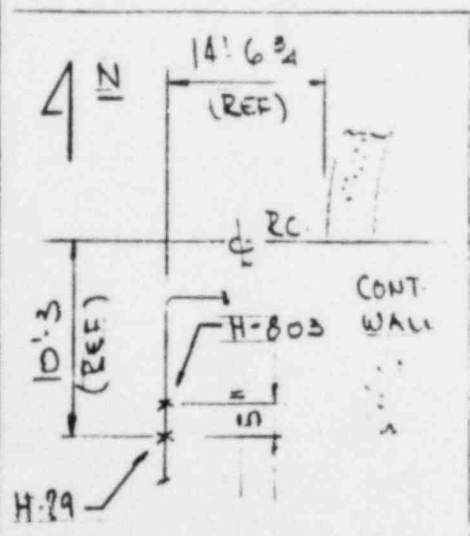
R. BAKKE



SECTION B-B.

REDRAWN FOR REV. 3

*NOW CRIT. DIMENSION



LOCATION PLAN

NOTES:-

1. FIELD TO REMOVE EXIST. STRUCT., BASE PL. & GUSSETS FOR H-29. EXIST. BOLTS TO REMAIN. INSTALL NEW PLATE & STRUCT AS SHOWN.
2. WORK WITH ZFSK-785A-5
3. BASE PL. REVIEWED PER E+DCR P-1922 G.
4. APPLY "MOLYKOTE 505" TO LOAD FLANGE OF SPRING.

REF. DWG'S.

- MEK-104B-5 (PT. # 260)
- FP-4B
- CALC. # Z-2679-3
- COMP. # Z-696
- E+DCR: P.1346 B
- PS-5099E

REVIEWED
 DATE 5-29-80

SHT. 2 OF 2

POWER INDUSTRY GROUP		TITLE VERT. SNUBBER & SPRING			SCALE: NONE
CHECKED		H-803 & H-29			DATE: 5-25-80
CORRECT		10"-SI-464-153A-Q2			SKETCH NUMBER 12050
APPROVED		SAFEGUARD AREA			
REVISIONS	②	③	④	⑤	ZFSK-785B-3

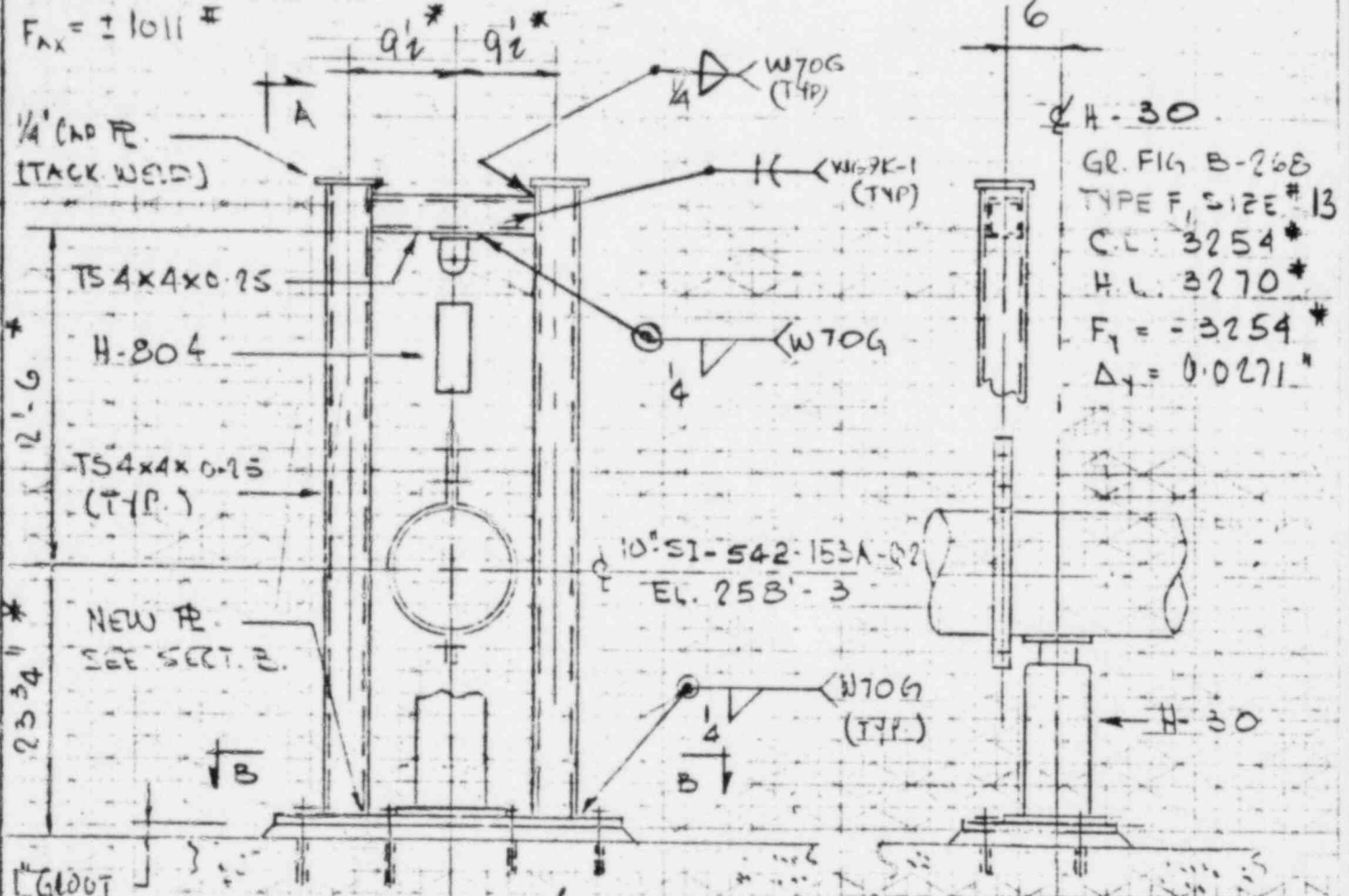
③ B. Bakke 5-15-80
 ④ J. P. 5-24-80
 ⑤ G. Bank/NPL 5-20-80
 SK: 205.

VEPCO - N. ANNA
JOB NO. 12050
MINERAL, VA.

RUNE BAKKE

H-804: GR. FIG. 200, OPTION 3
CYL. 1 1/2", 5" STROKE
CPS: MAX = 58, MIN = 1 1/4"

F_{AX} = ± 1011 #



GR. FIG. B-268
TYPE F, SIZE # 13
CL. 3254 #
H.L. 3270 #
F₁ = -3254 #
Δ₁ = 0.0271 #

NOTE: FOR H-30 USE SPRING FROM H-600 (ZFSK-2394A-3)

SECTION A-A

ELEV. LOOKING NORTH

EXIST.
8 - 3/4" φ HILTI BOLTS
5" MIN. EMB.

NOTE:
FOR ADD'L DET'S, LOCATION PLAN & REF DWG'S SEE ZFSK-669B-4

REDRAWN FOR REV. 6

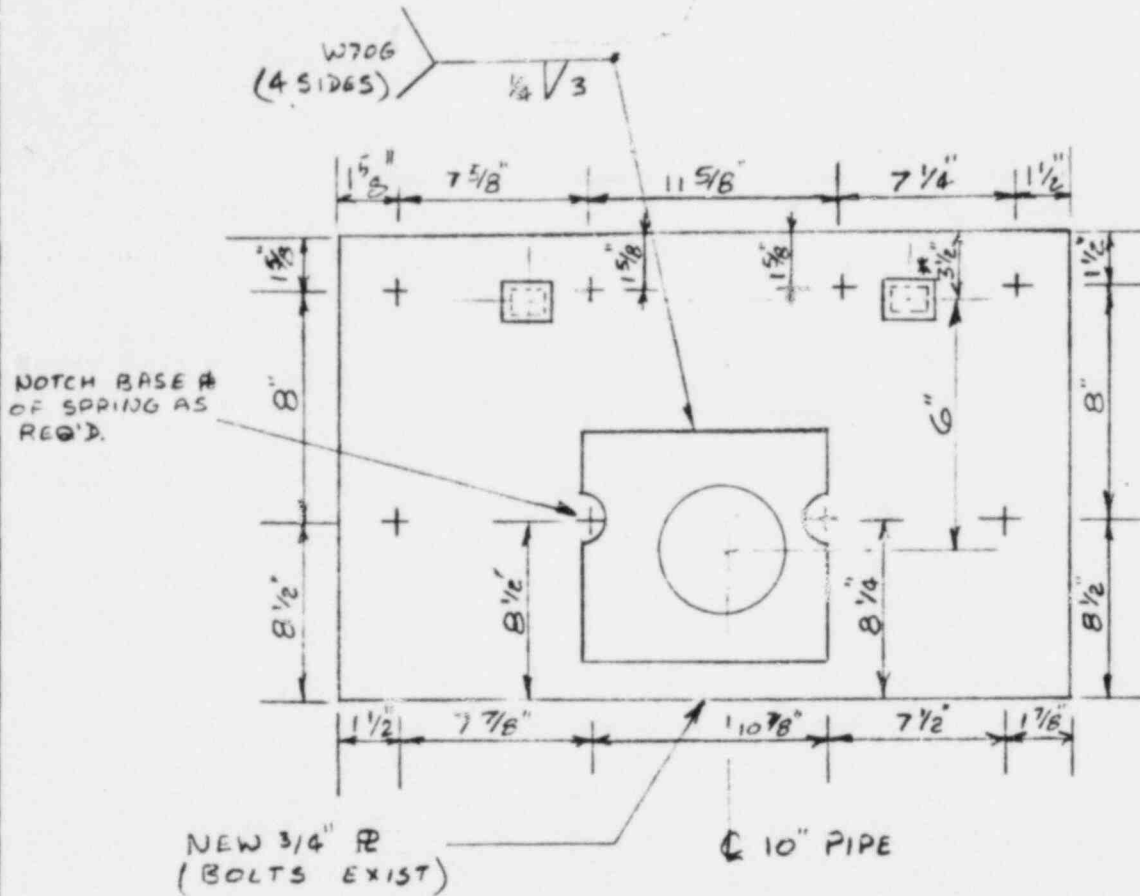
SHT. 1 OF 2

POWER INDUSTRY GROUP	TITLE	VERT. NUMBER & SPRING	SCALE: NONE
CHECKED	H-804 & H-30	10" SI-542-153A-Q2	DATE: 5-25-80
CORRECT	SAFEGUARD AREA		SKETCH NUMBER 12050
APPROVED			ZFSK-669A-6
REVISIONS	(6) 5-25-80 (7) 5-26-80 (8) 5-28-80 (9)		

REVISIONS
 5-25-80
 5-26-80
 5-28-80

VEPCO NORTH ANNA
MINERAL VA
J.O. NO. 12050

J. PATEL

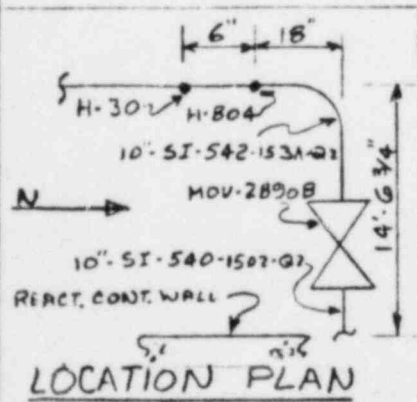


SECTION B-B

NOTE:

1. FIELD TO REMOVE EXIST STRUCT, BASE R, BOLTS TO REMAIN INSTALL NEW R & STRUCT. AS SHOWN.
2. WORK WITH ZFSK-669A-6
3. BASE R REVIEWED PER E&DCR P-1922G.
4. APPLY 'MOLYKOTE 605' TO LOAD FLANGE OF SPRING.

REF. DWGS.
FP-4B
CALC # Z-368-6
COMP # Z-339
E&DCR-P-1346B
P-5099E
MSK-104B-5 PT#256



* NON CRIT. DIM.

RE-DRAWN FOR REV 4

SH. 2 of 2

POWER INDUSTRY GROUP		TITLE	VERTICAL SNUBBER & SPRING	SCALE:	NONE
CHECKED			H-804 & H-30	DATE:	5-26-80
CORRECT			10" SI-542-153A-Q2		
APPROVED			SAFE GUARD AREA	SKETCH NUMBER	12050
REVISIONS	②	③	④		ZFSK-669B-4

REVIEWED

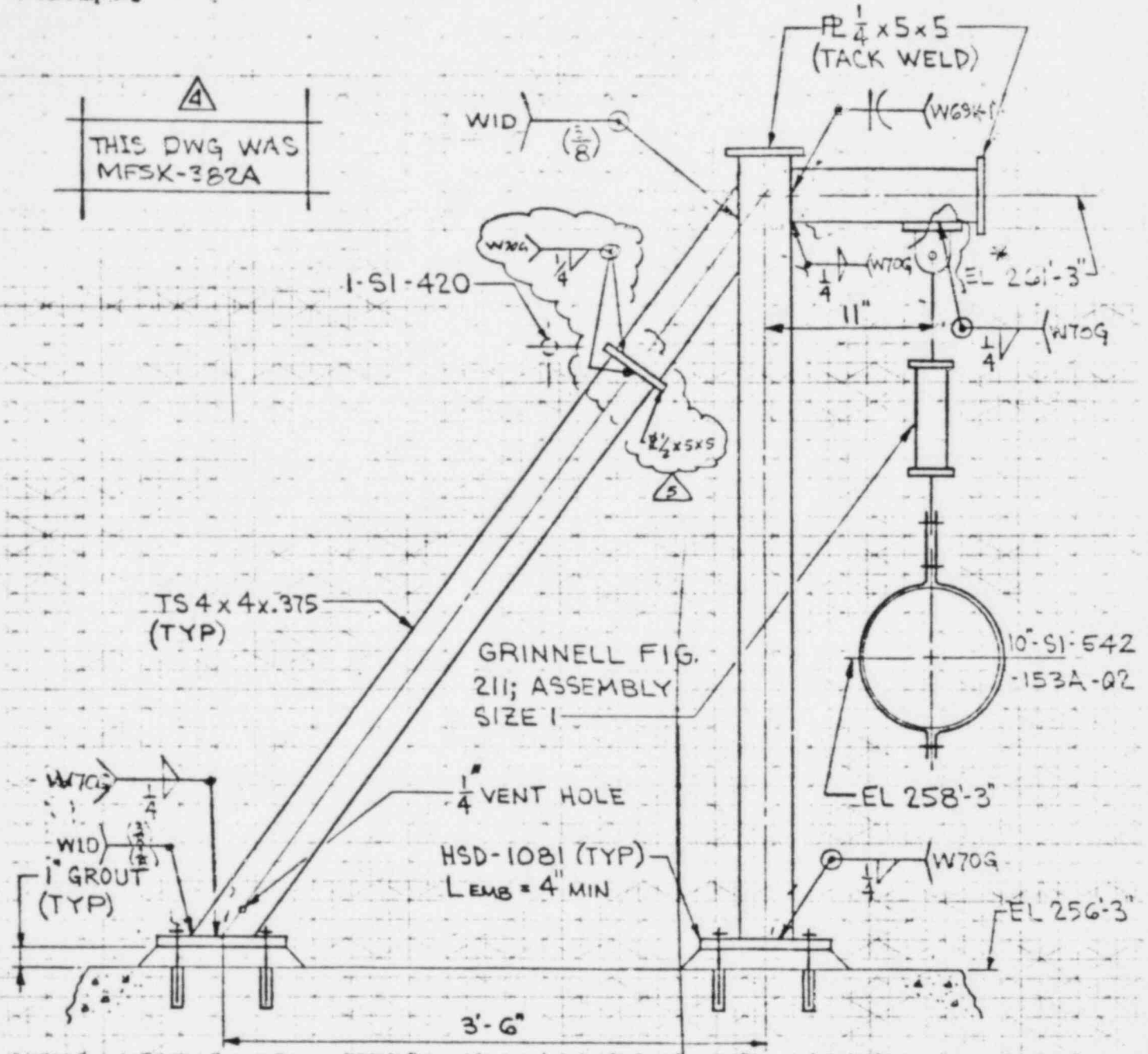
DATE 5-26-80

J. Patel 5/16/80
1/2
2/2
5-28-80

VEPCO NORTH ANNA
J.O. NO. 12050
MINERAL, VA.

J CURRERI

THIS DWG WAS
MFSK-382A



ELEV. LKG. EAST.

LOAD:
FY = +491#
FY = -3173#

REF DWG:
FP-4B-7
AP-4AT
FC-10A-5
CALC 221-72
E.DCK 300-1-2
MSK 10-1-3
Pt. 109

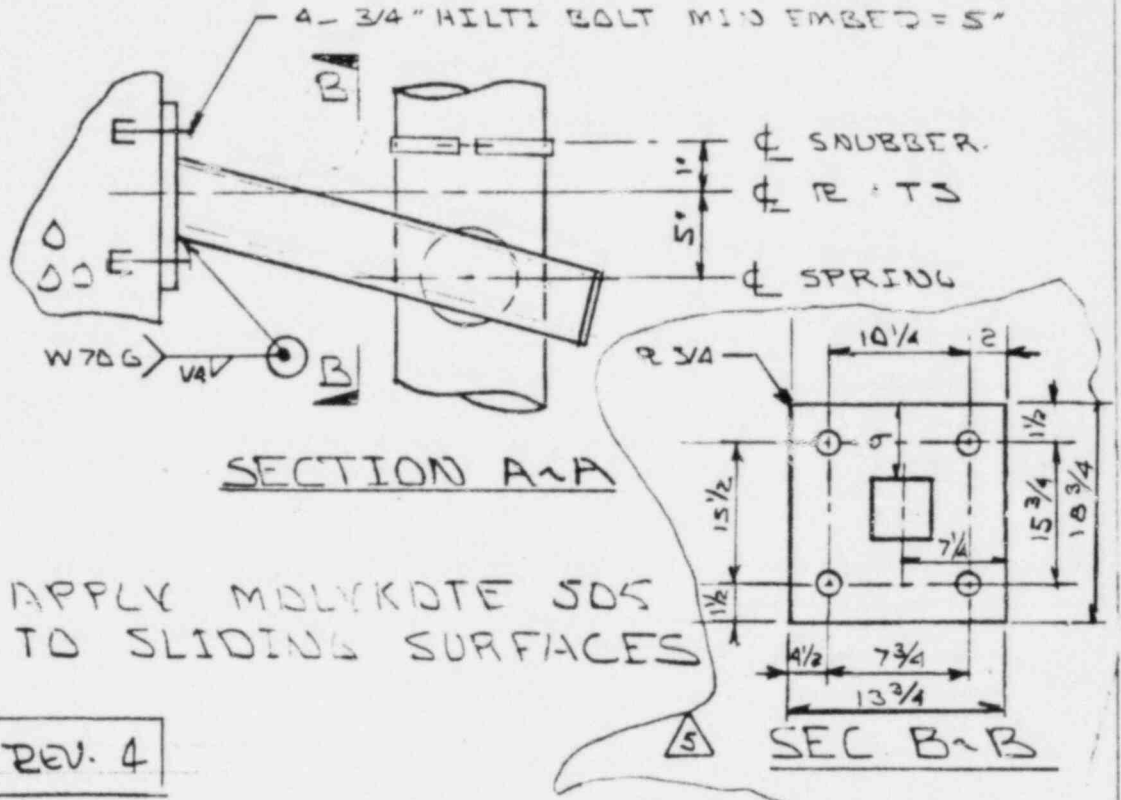
* NON CRITICAL
DIMENSION

NOTE: ALL WELDS TO BE W70G
UNLESS OTHERWISE NOTED.

POWER INDUSTRY GROUP	TITLE	REDESIGN OF 2-SI-R-31	SCALE: NONE
CHECKED		10"-SI-542-153A-Q2	DATE: 10-5-76
CORRECT		MAIN STEAM VALVE HOUSE BLDG	SKETCH NUMBER 12050
APPROVED			EFSK-3824-5
REVISIONS	②	5/20/77	③ 5/20/77 ④ 5/20/77 ⑤ 5/20/77

VEPCO - N. ANNA
MINERAL, VA.
JOB NO. 12050

V.A. SCAVINO

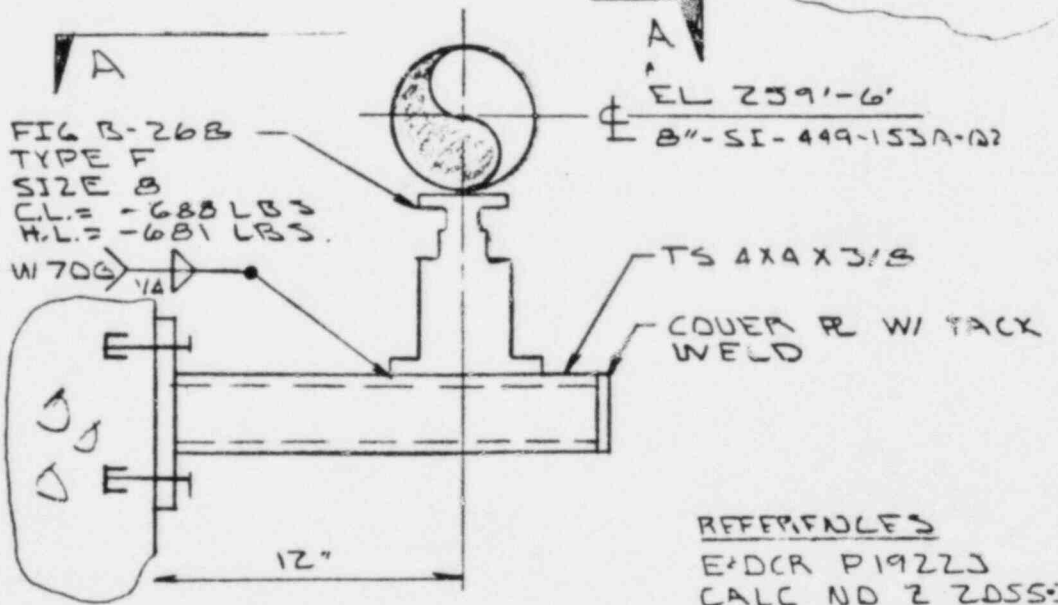


NOTE: APPLY MOLYKOTE JOS
TO SLIDING SURFACES

REDRAWN FOR REV. 4

LOADS :-
F_y = - 681 #
Δy = 0.0446"

FIG B-26B
TYPE F
SIZE B
C.L. = - 688 LBS
H.L. = - 681 LBS
W70G 1/4



ELEV LKG NORTH

REFERENCES
E & DCR P19223
CALC NO 2 2055-3
MSK-104B-5 PT.266
12050-FC-191
12050-TP-4B

E & DCR P-1346C & PS-5099E
PS-5321C

NOTE: FOR LOCATION PLAN
SEE ZFSK 3175A 2-SI-R-800

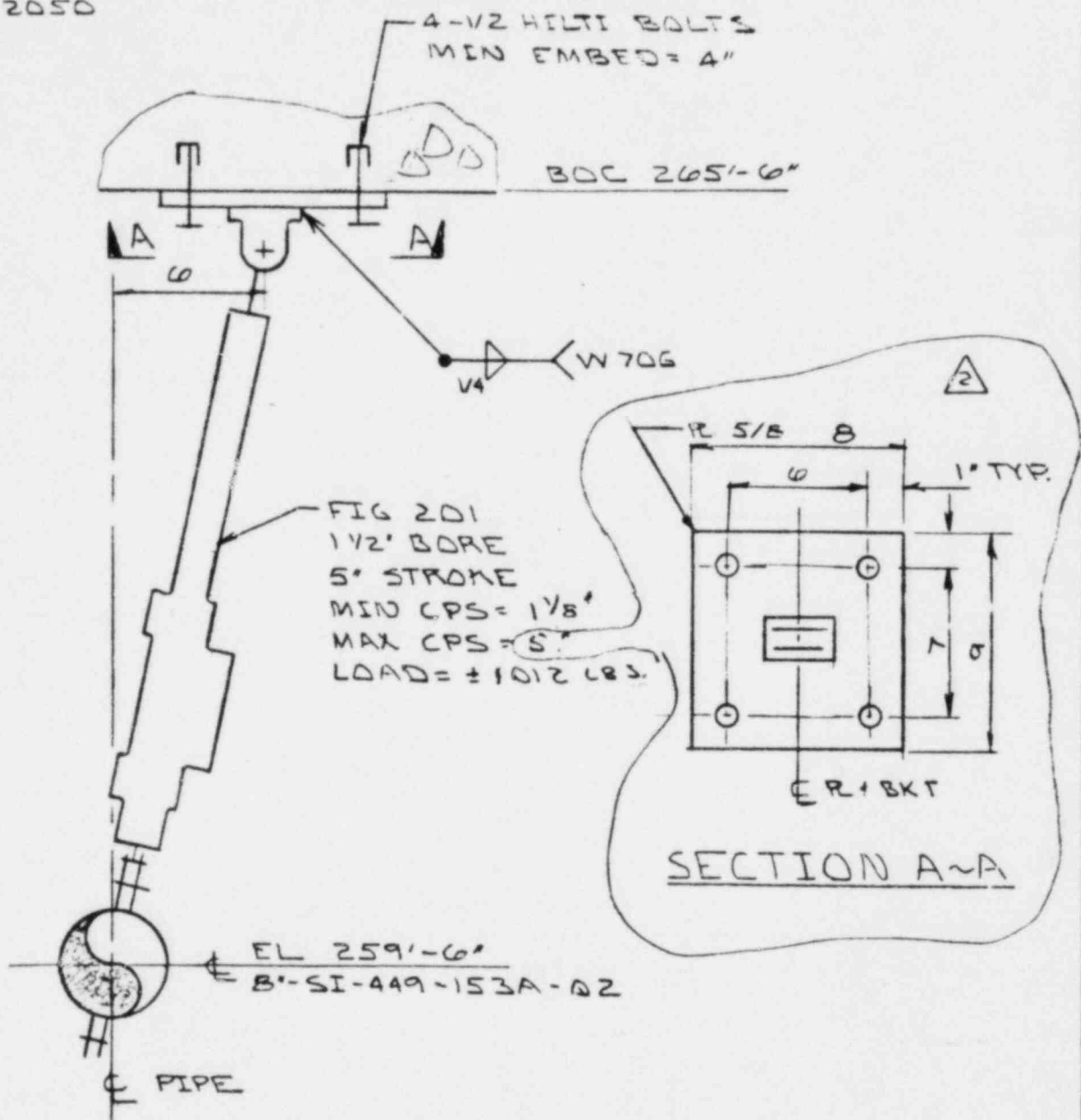
POWER INDUSTRY GROUP	TITLE 8"-SI-449-153A-D2		SCALE: N.T.S
CHECKED	SPRING HANGER PT 266		DATE: 25 MAY 80
CORRECT	SUPPORT 2-SI-SH-32		SKETCH NUMBER 12050 ZFSK 251A-5
APPROVED	SAFEGUARD UNIT 2		
REVISIONS	②	③	④ 3 PAGES 5/16/80 VAS 5-20-80 9-24-80 5-10-80 SUB-215 5-10-80

PROPERTY
REVISED

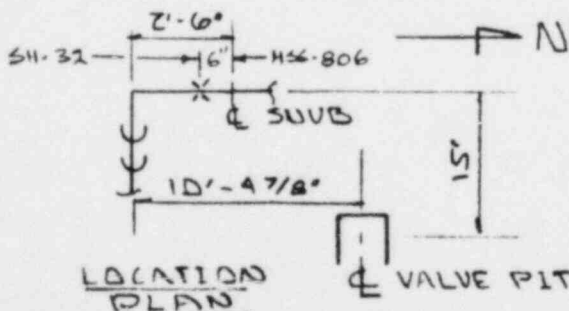
12/28/80 5-29-80

VEPCO - N. ANNA
MINERAL, VA.
JOB NO. 12050

U. A. SCAVINO



ELEVATION LKG NORTH



- REFERENCES
 E&DCR 1922 J
 CALC NO 2 2055-3
 MSK-10AB-5 PT. 266
 12050-FC-19A
 12050-FP-0B

E80CR⁴ PS-5321C

LEGENDARILY
REVIEWED

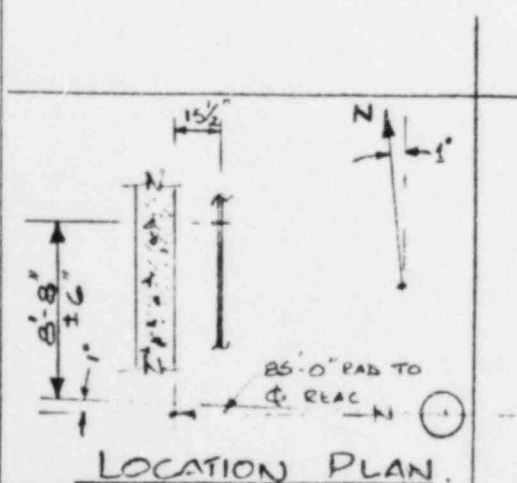
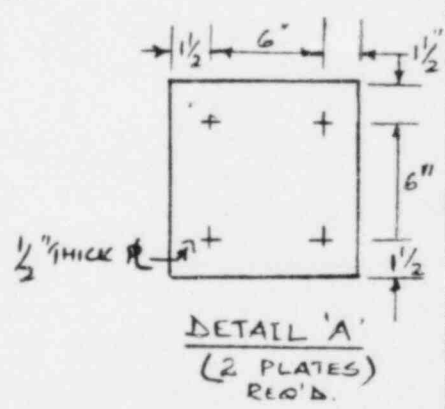
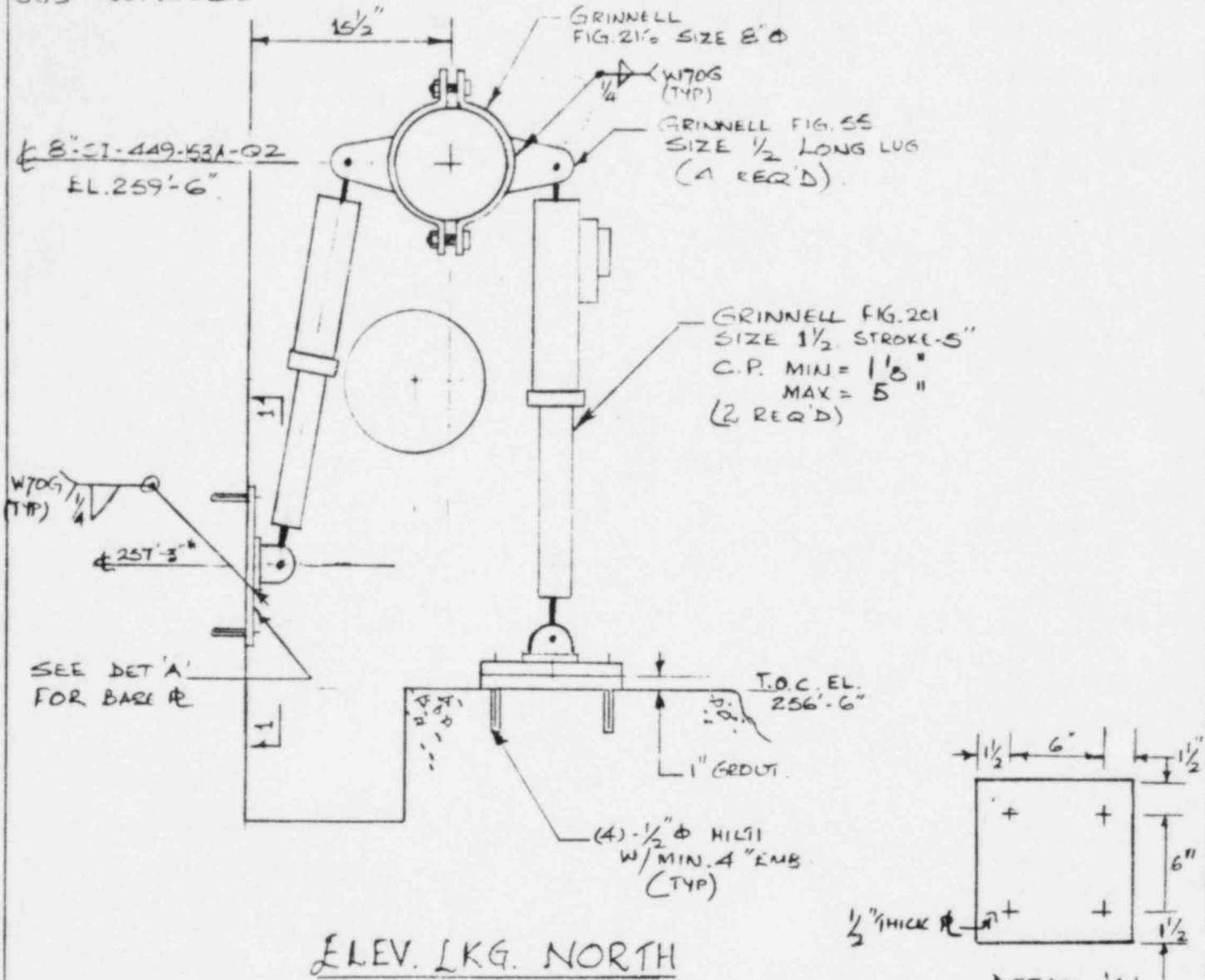
BY *U.A. Scavino* DATE 5-29-80

POWER INDUSTRY GROUP		TITLE	8"-SI-449-153A-02		SCALE: N.T.S.
CHECKED	<i>S. Pad. 5/16/80</i>	VERT. SNUBBER	PT 266		DATE: 25 MAY 80
CORRECT	<i>P. Banks 5/24/80</i>	SUPPORT	2-SI-HSS-806		SKETCH NUMBER 12050 ZFSK 3175A.2
APPROVED	<i>U.A. Scavino 5/28/80</i>	SAFEGUARD	UNIT 2		
REVISIONS	② <i>V.A.S. 5/29/80</i>		③	④	⑤

U.A. Scavino 5/29/80

VERCO, NORTH ANNA
MINERAL, VA.
JOB NO. 12050

RAMESH PATEL



LOAD: Fy = ±406#

REF:
12050-FP-4B
MSK-104B-5 (PT. 27A)
CAL. NO.
Z-1007-4

INDEPENDENTLY REVIEWED

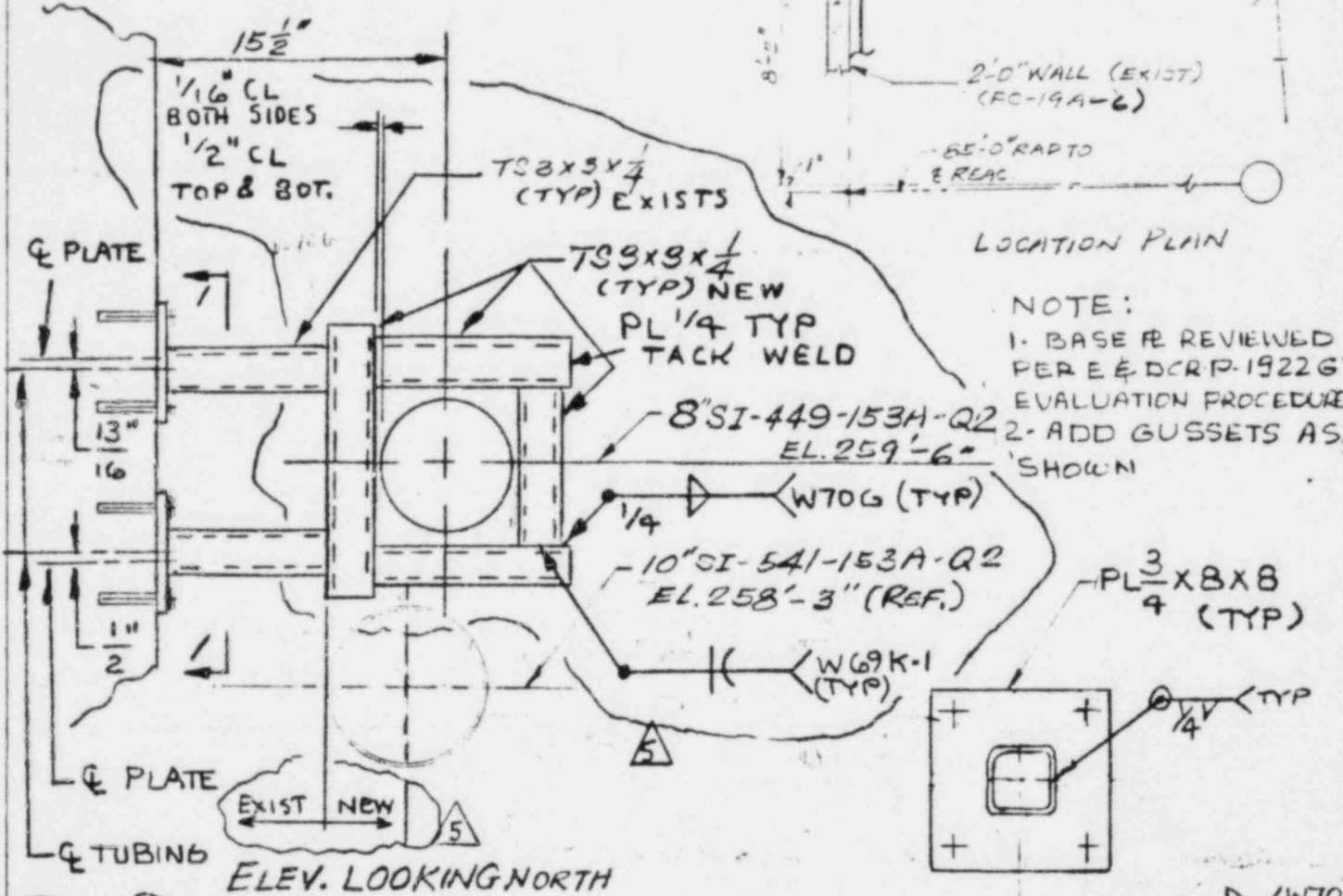
BY R.P. Grinnell DATE 5-26-80

POWER INDUSTRY GROUP		TITLE	VERTICAL SNUBBER			SCALE: NONE
CHECKED	W Bentley 5-26-80	SI-HSS-807A&B ON				DATE: 5-26-80
CORRECT	Randy 5-28-80	8"-SI-449-153A-Q2				SKETCH NUMBER 12050
APPROVED	RS 5/28/80	SAFEGUARDS AREA				
REVISIONS	(2)	(3)	(4)	(5)	ZFSK-3174A	

VEPCO NORTH ANNA
I.O. NO. 12050
MINERAL, VA

GEO. KWONG
4-27-77

DESIGN LOADS:
 $F_x = \pm 2731$
 $F_z = \pm 94$



REF. DWGS.

- 12050-MSK-104B-5 PT. 274
- E & DCR PS-5099E
- 12050-FP-4B (G-2)
- FC-19A
- E & DCR #31464-2
- CALC. Z-1007-4
- N&D 1874-53

ADD GUSSET #
3/4" X 3" X LENGTH BY FIELD
(8) - 3/4" HILTI
W/ 3/16" MIN.
EMB. LG

THIS WAS FORMERLY
MFSK-1355A

NOTE: ALL WELDS TO BE W-200A
UNLESS OTHERWISE NOTED.

COMP # Z-294

THIS DESIGN VOIDS
AP-4AV-1

CAT. I

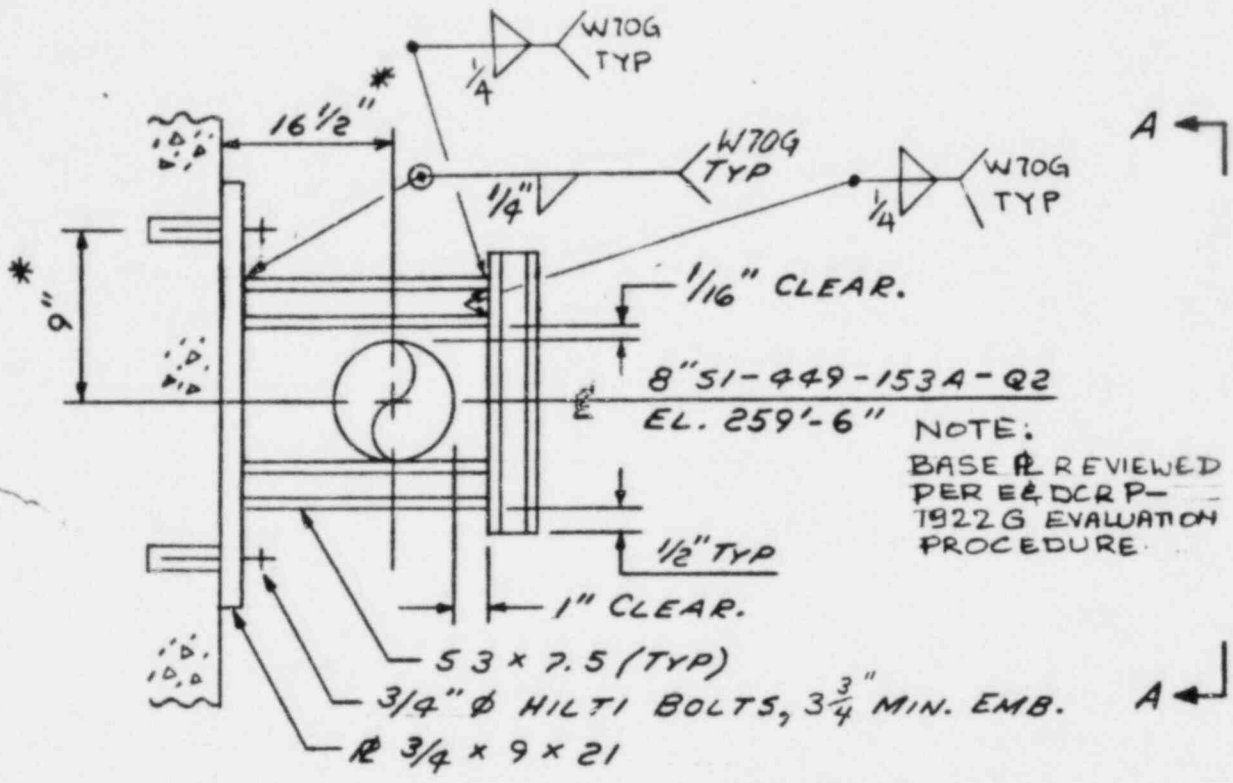
REVIEWED DATE 5-29-80

POWER INDUSTRY GROUP		TITLE	2-SI-R-33	LATERAL CONSTRAINT	SCALE: 1/2" = 1'-0"
CHECKED	4-28-77		LINE 8"SI-449-153A-Q2		DATE: APRIL 27, 1977
CORRECT			SAFE GUARD BLDG.		SKETCH NUMBER 12050
APPROVED					ZFSK-1355A-5
REVISIONS	② K.R. Walker/BJ 1-26-78	③ M.R.P. 5/17/80	④	⑤	

Handwritten notes and signatures at the bottom of the page, including dates like 1-26-78, 5/17/80, and 5-26-80.

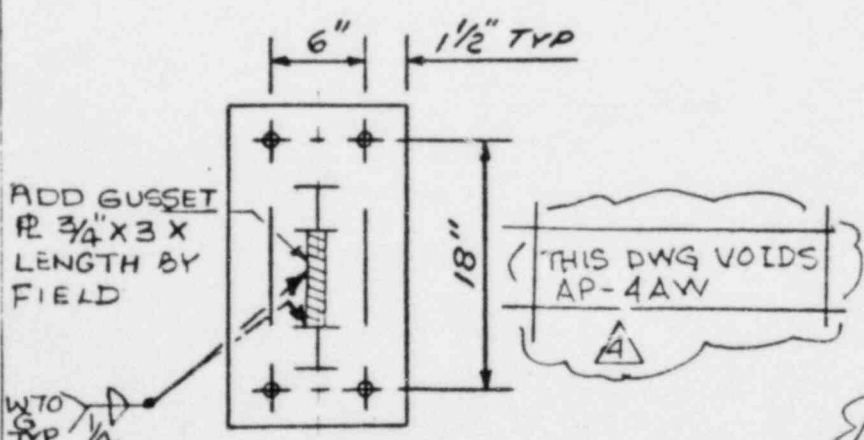
VEPCO - NORTH ANNA
 MINERAL, VIRGINIA
 J.O. 12050

D. HOSTETTLER
 3-12-77



NOTE:
 BASE R REVIEWED
 PER E&DCR P-
 1922 G EVALUATION
 PROCEDURE.

ELEVATION LOOKING NORTH



NOTE:
 FOR LOCATION SEE 12050-
 FP-4B.
 ALL WELDS W-200A.
 * = NON CRITICAL DIM.
 LOADS = $F_x = 274 \# \text{ fric.}$
 $F_y = -1094 \#$
 $F_z = 274 \text{ fric. } \Delta$

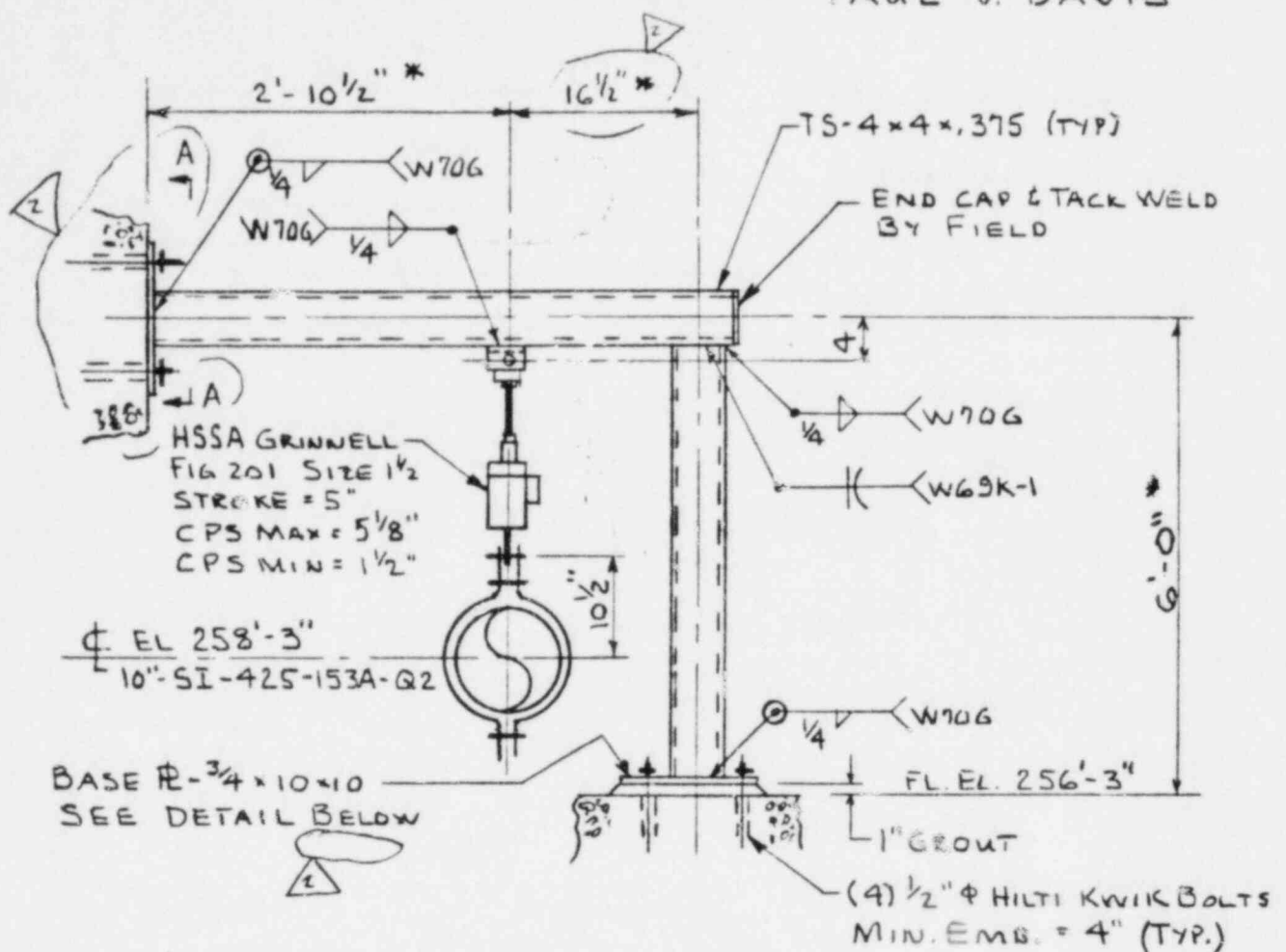
REF DWG'S:
 12050-FP-4B-9
 MSK-104B-3
 CALC NO. 566-3
 E&DCR-31362-2
 COMP # Z 300

SECTION AA

THIS WAS MFSK-967A

POWER INDUSTRY GROUP	TITLE	SCALE: NONE
CHECKED	REDESIGN OF VERTICAL	DATE: 3-12-77
CORRECT	RESTRAINT H-39,	SKETCH NUMBER 12050
APPROVED	SAFEGUARDS AREA FP-4	ZFSK-967A-A
REVISIONS	① K.R. Vollenweider 1-26-78 ② J. Curran 5-10-78 ③ ④ ⑤	

PAUL V. DAVIS



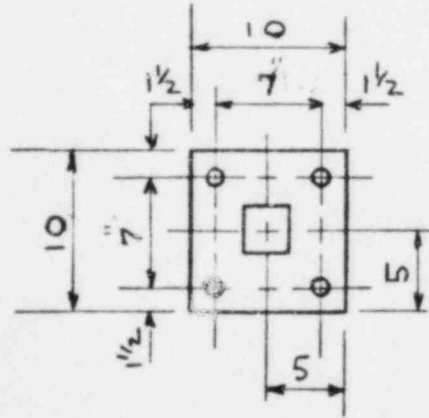
ELEV. LOOKING SOUTH-WEST

LOAD: $F_y = \pm 250 \text{ LB}$

REFERENCES:

- CALC NO Z-3011-3
- COMP NO Z-1075
- E&DCK-P-2436, PS-531C-PS-5115B
- FP-4B

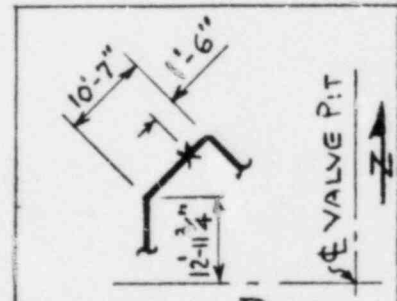
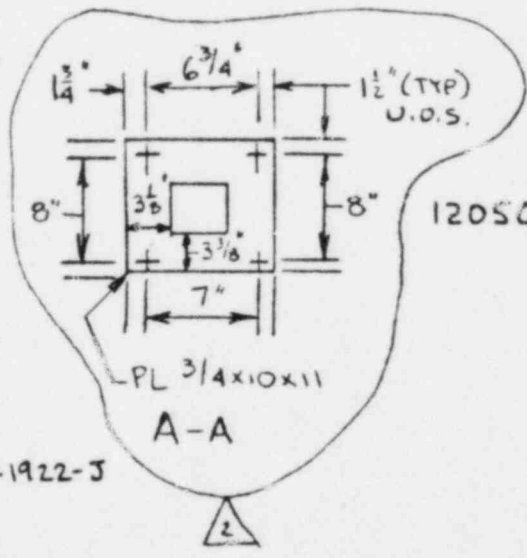
12050-MSK-109-B-5 PT. B1



BASE PL DETAIL

NOTE:

- 1) * NON CRITICAL DIM.
- 2) BASE PL PER E&DCK-P-1922-J



LOCATION PLAN

POWER INDUSTRY GROUP	TITLE	S NUMBER (VERTICAL)	SCALE: NONE
CHECKED		H-800	DATE: 5/25/80
CORRECT		ON 10" SI-425-153A-Q2	SKETCH NUMBER 12050
APPROVED		AREA 2 CAT 1	ZPSK-3169A-2
REVISIONS	② R. CORUM 6/20/80 VAS	③	④
			⑤

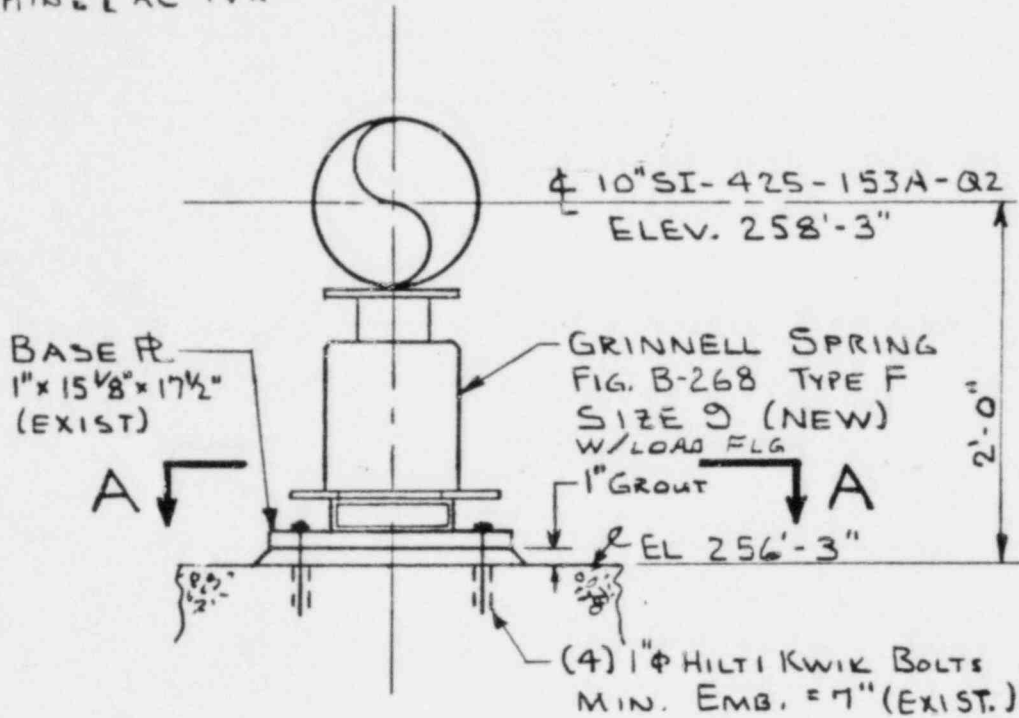
INDEPENDENTLY REVIEWED

DATE 5-25-80

6/10/80

VEPCO U. ANNA
 JOB 17050
 MINERAL, VA.

PAUL V. DAVIS

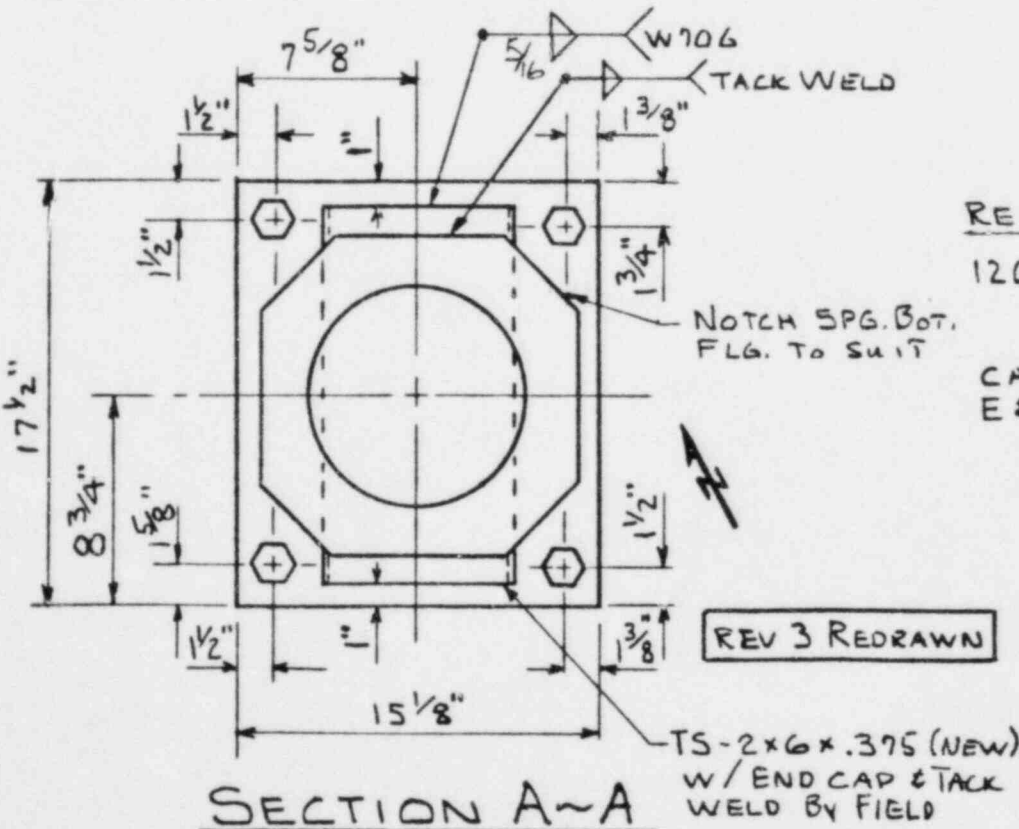


NOTE:-
 APPLY "HOLYKOTE"
 505" TO LOAD
 FLANGE.

ELEV. LOOKING NORTH-EAST

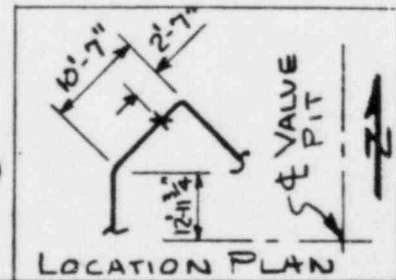
LOAD:

$F_y = -90,4 \text{ HOT}$
 -1060 COLD
 $MVT = +0.3286 \text{ ''}$



REFERENCES:

- 12050-FP-4B PT.
- MSK-104B-5 81
- FC-19
- CALC. NO Z-3011-3
- E & DCR-P-2436
- PS-5115B



SECTION A-A

REV 3 REDRAWN

TS-2x6x.375 (NEW)
 W/ END CAP & TACK
 WELD BY FIELD

POWER INDUSTRY GROUP	TITLE	SPRING HANGER		
CHECKED		2-SI-SH-35		
CORRECT		10"SI-425-153A-Q2		
APPROVED		AREA 2 CAT. 1		
REVISIONS	②	③	④	⑤

SCALE: NONE
 DATE: 5/23/80
 SKETCH NUMBER 12050
 ZFSK-3071A-3

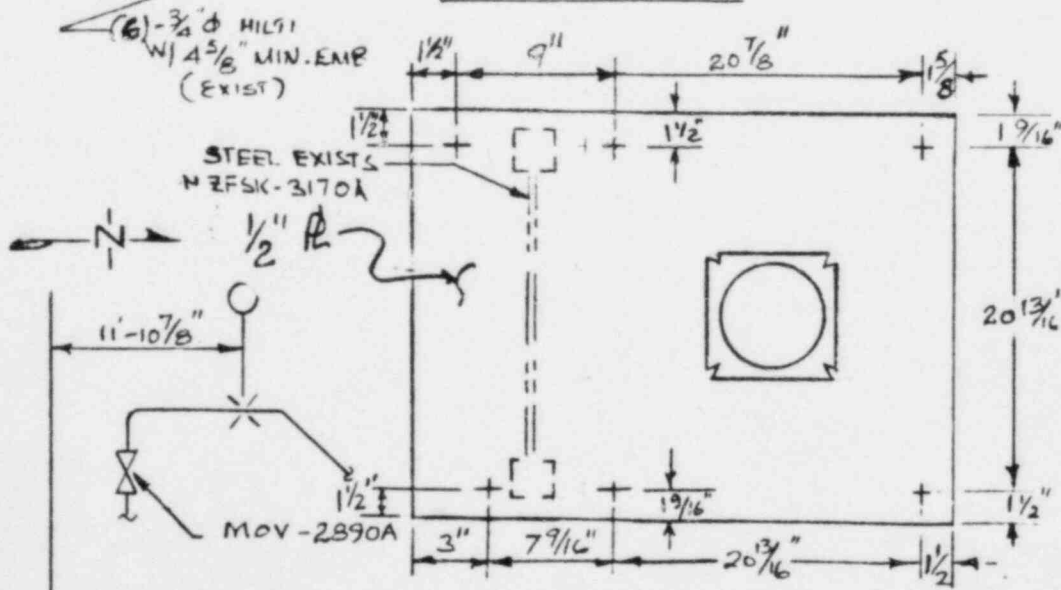
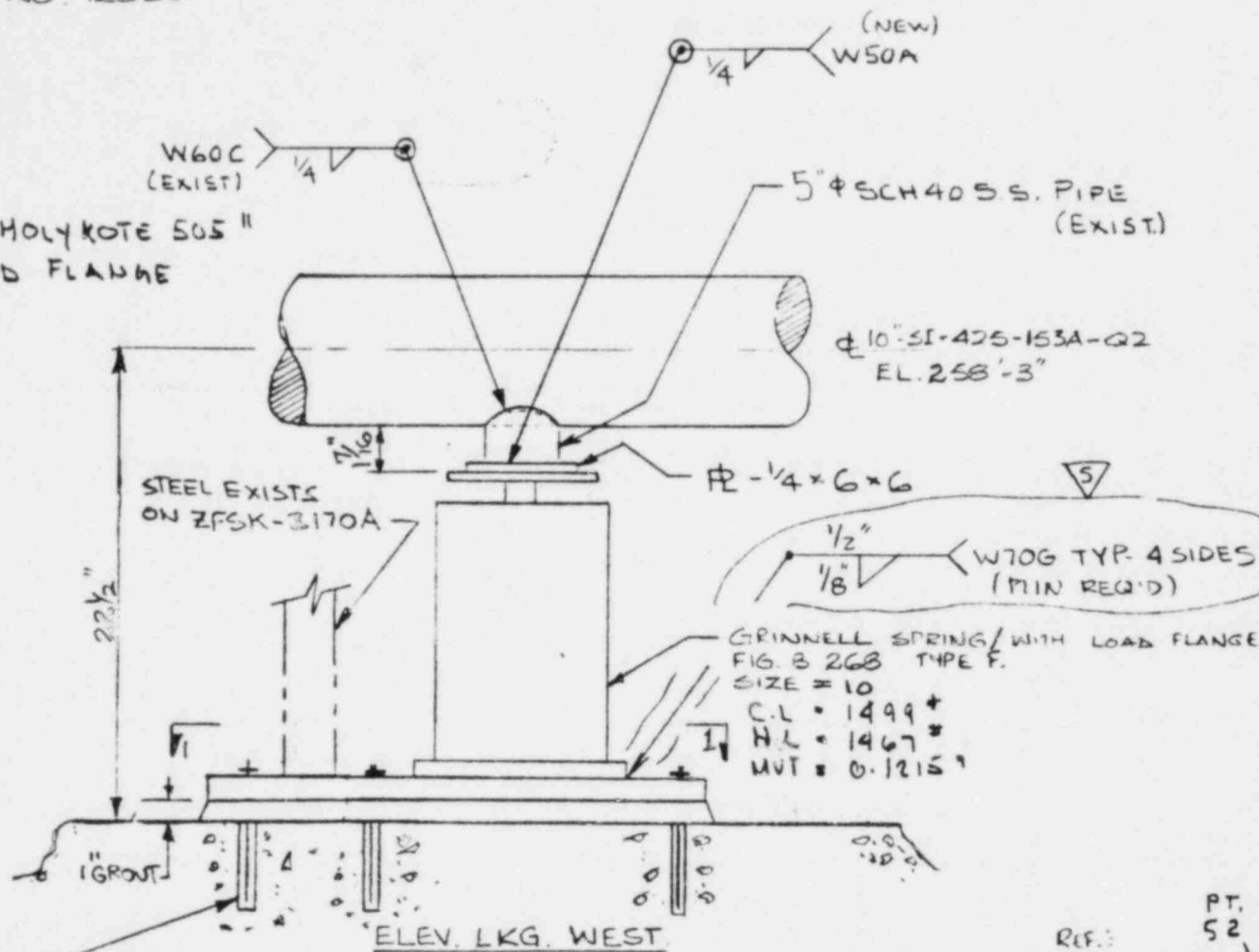
REVISED
 DATE 5-29-80

4 Bands REC 5-22-80
 C.R.

VEPCO, NORTH ANNA
MINERAL, VA.
JOB No. 12050

RAMESH PATEL

NOTE:
APPLY "HOLY KOTE 505"
TO LOAD FLANGE



PT. 52
 REF.: 12050-FP-4B.
 FC-19
 MSK-1048-5
 N.E.D. 1874-56
 E&DCR-P-2436-2
 -5099E46
 CALC # Z-1217-4
 COMP # 10-C
 E & DC R
 PS-5321 C, D

LOAD
 $F_y = -1467\#$
 $\Delta y = 0.1215"$

NOTE:
 BASE ϕ REVIEWED
 PER E & DC R - P1922 J

VALVE PIT. LOCATION PLAN.

SECT. I-I

REV. 3 REDRAWN

POWER INDUSTRY GROUP	
CHECKED	<input checked="" type="checkbox"/>
CORRECT	<input checked="" type="checkbox"/>
APPROVED	<input checked="" type="checkbox"/>
REVISIONS	② <input checked="" type="checkbox"/>

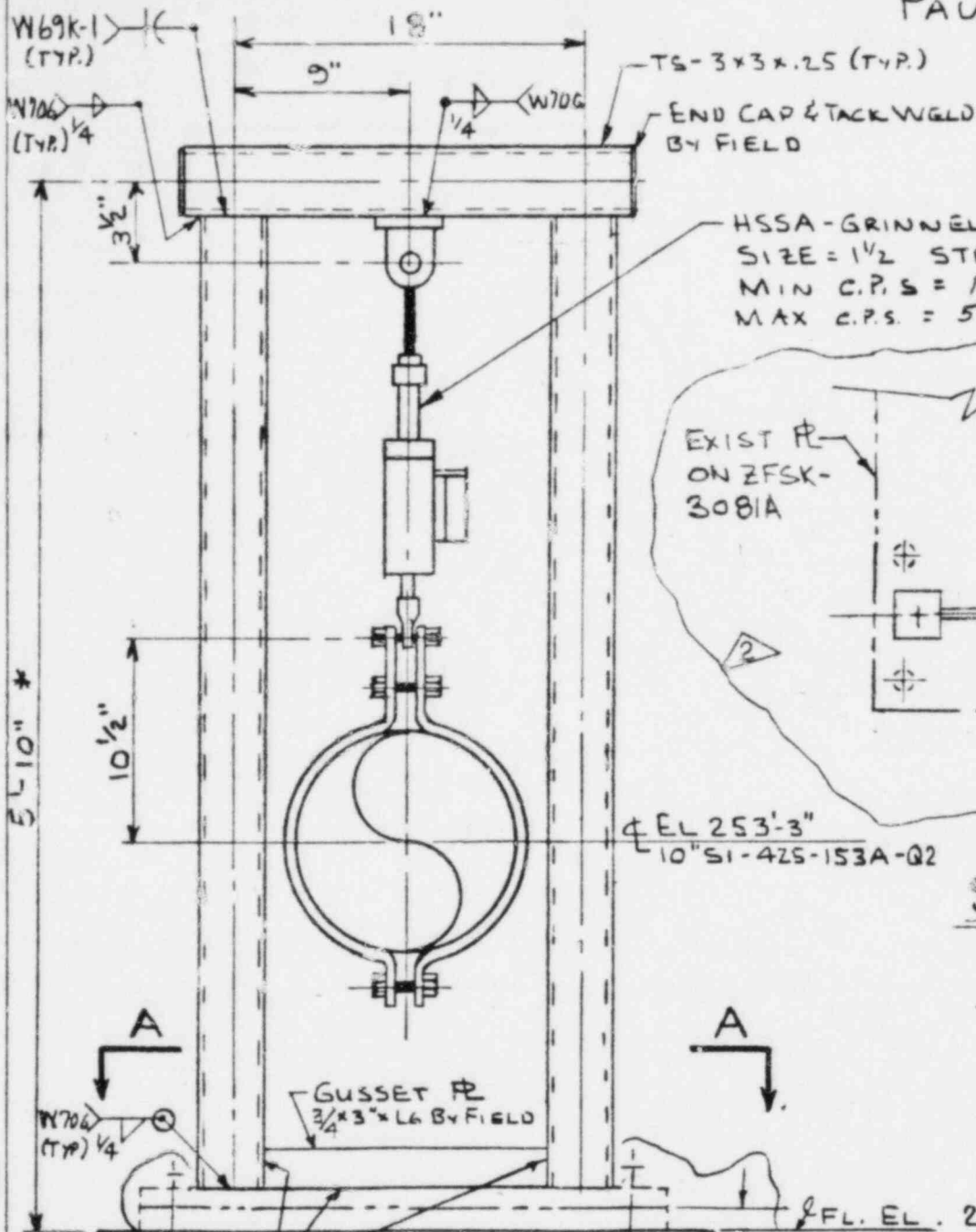
TITLE	HGR. SI-SH-36 ON 10" SI-425-153A-Q2 SAFE GUARD AREA:
REVISIONS	③ P.V.D. 5/26/80 W. Bentley ④ J. Patel 6-6-80 W. Bentley ⑤ W. Bentley 6-10-80 W. Bentley ⑥ W. Bentley 6-10-80 W. Bentley

SCALE:	NONE.
DATE:	5/25/80
SKETCH NUMBER	12050
	ZFSK-3081A-5

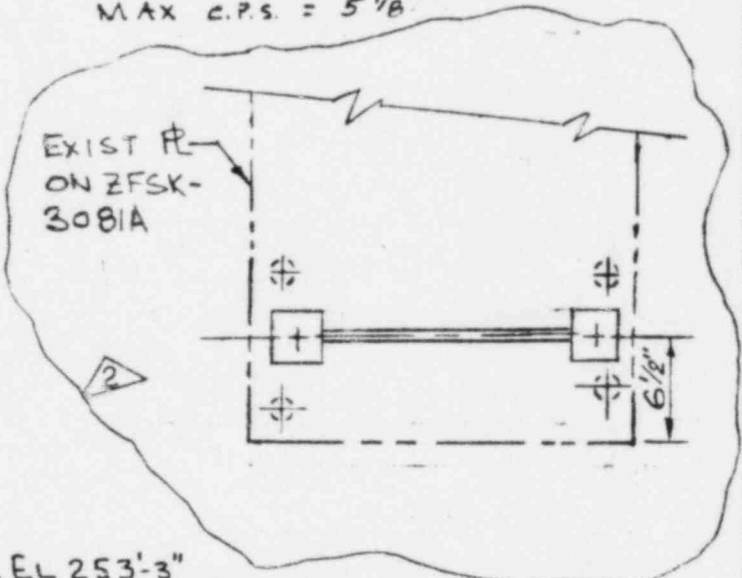
REVIEWED

DATE 5-29-80

PAUL V. DAVIS



HSSA-GRINNELL FIG. 201
 SIZE = 1 1/2 STROKE = 5"
 MIN C.P.S. = 1 1/4"
 MAX C.P.S. = 5 1/8"



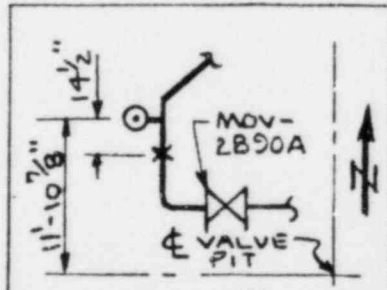
SECTION A-A

LOAD: Fv = ± 441 Lb

NOTES:
 1) * NON CRITICAL DIAM.
 EL. LKG. NORTH

REFERENCES:

- CALC NO 2-1217-4
- COMP NO 2-1076
- FP-4B
- MSK-104B-5PT.52
- E80CR-P2436
- 5099 EGG
- N 10-1874-56



LOCATION PLAN

E 80CR PS-5321C

POWER INDUSTRY GROUP	TITLE	SNUBBER (VERTICAL)		
CHECKED		H-808		
CORRECT		10" SI-425-153A-Q2		
APPROVED		AREA 2 CAT 1		
REVISIONS	②	③	④	⑤

SCALE: NONE
 DATE: 5/25/80

SKETCH NUMBER 12050
 ZFSK-3170A-2

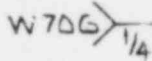
EXPLICITLY REVIEWED

DATE 5-25-80

25/4/80
 W. Webster

VEPCO - N. ANNA
MINERAL, VA
303 ND 1205D

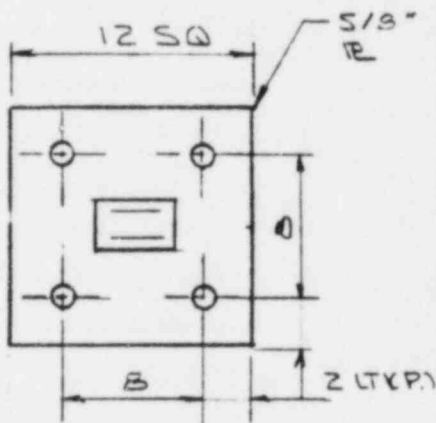
V.A. SCAVIND



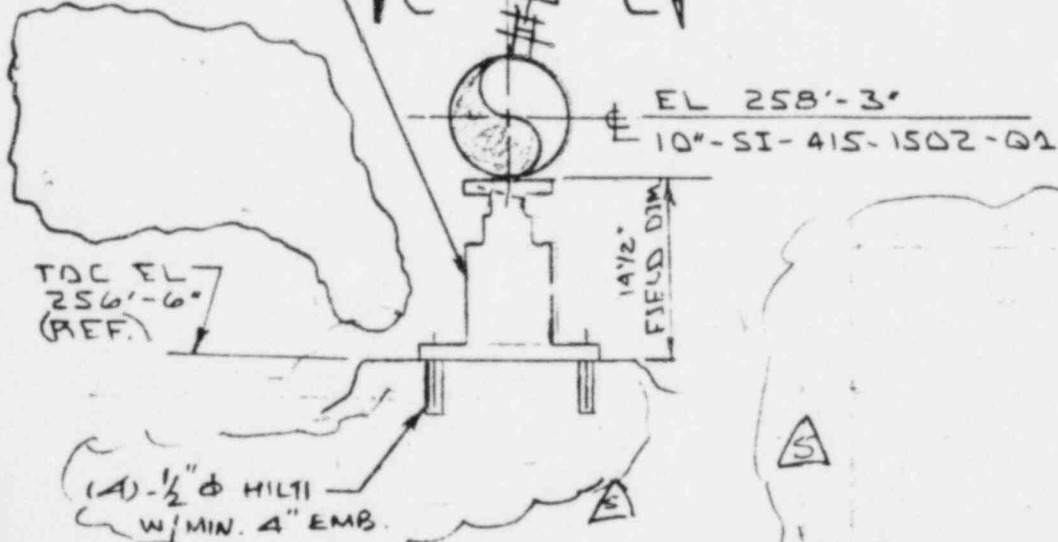
NOTE: APPLY
MOLYKOTE 505
TO ALL SLIDING
SURFACES.

FIG. B-268
TYPE F
SIZE 14
C.L. = 3949"
H.L. = 3886"
AY = 0.0784"

FIG 201
1 1/2" BORE
5" STROKE
FY = 51280
MIN CPS = 1 1/8"
MAX CPS = 5/8"



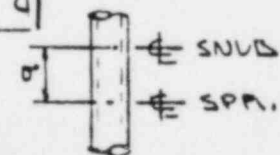
SECTION B-B



ELEV. LKG WEST

Redrawn FOR REV. 4

REF. DWGS
12050-FP-4B
E 80CR PS-5099 31339
FIDCR 1022 J, P. 2436
CALC NO. 2478-4
MSK-104B-5 PT. 191
12050-FC-19A



SECTION C-C

E 80CR PS-5321C

POWER INDUSTRY GROUP		TITLE	10" - SI - 415 - 1502 - Q1	SCALE: N.T.S.
CHECKED	/	SPRING HANGER H-37		DATE: 23 MAY 81
CORRECT	/	VERT SNUBSER H-801		SKETCH NUMBER 12050
APPROVED	/	PT NO 191		2FSK 823A-5
REVISIONS	(2)	SAFE GUARD UNIT 2		

5-26-80 / 5-28-80
S. P. / JAS
6/9/80
205 / 205
6/9/80

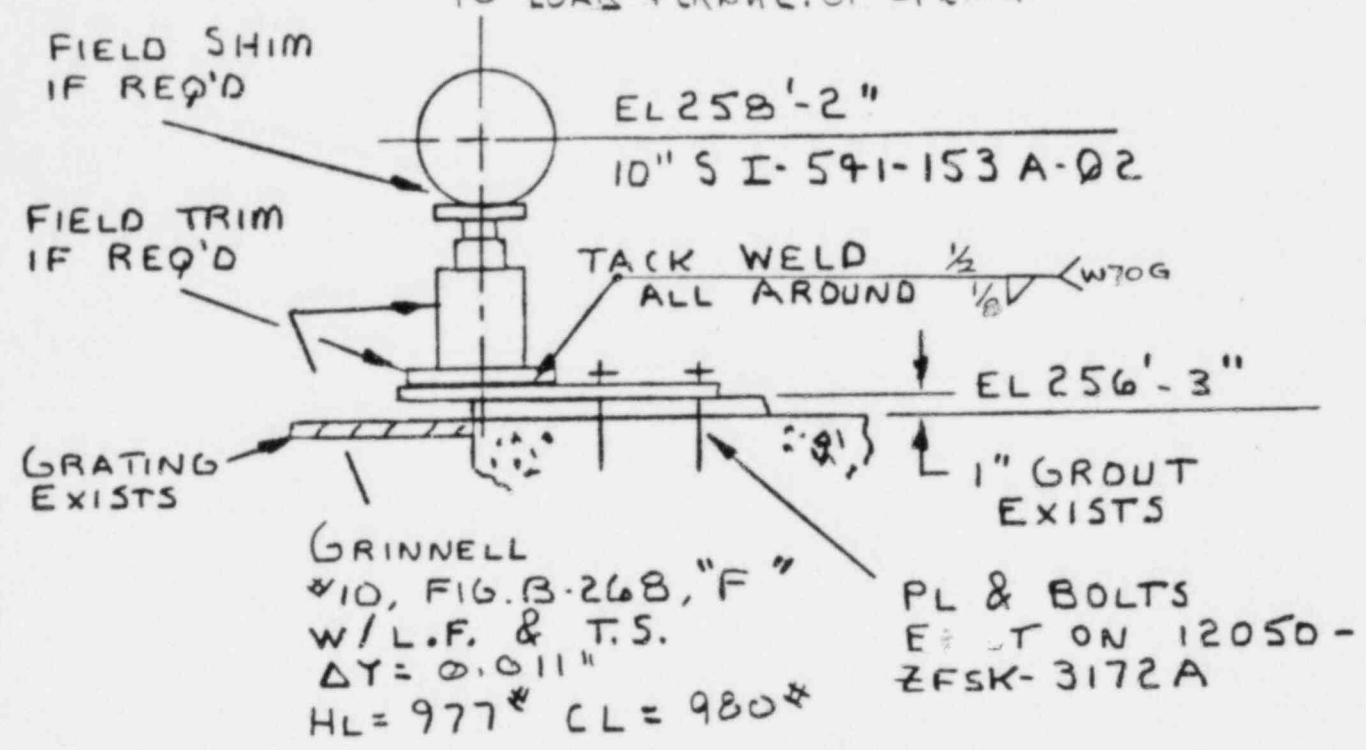
REVIEWED

DATE 5-29-80

VEPCO / NAPS
J.O. NO. 12050
MINERAL, VA.

W. BENTLEY
5-26-80

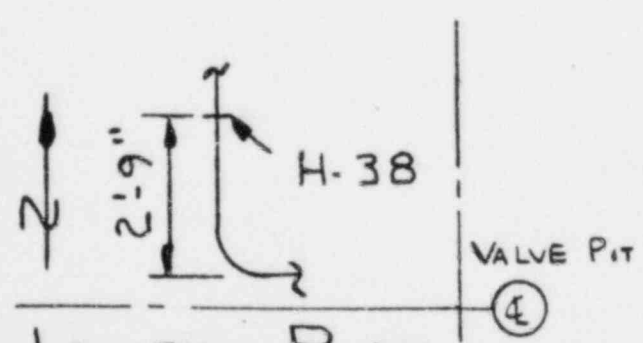
NOTE: -
APPLY "MOLYKOTE 505"
TO LOAD FLANGE OF SPRING.



ELEV. VIEW LOOKING NORTH

REF. DWGS.

- 12050-FP-4B
- MSK-104 B-5 PT. 40
- N&D #2035
- CALC #Z-1161-3
- E8DCR #PS-5099F



LOCATION PLAN

REV. 4 REDRAWN

THIS SKETCH VOIDS GRIN.
SK. NO. 12050-AP-4BA &
12050-ZFSK-1593A-3

CAT. I

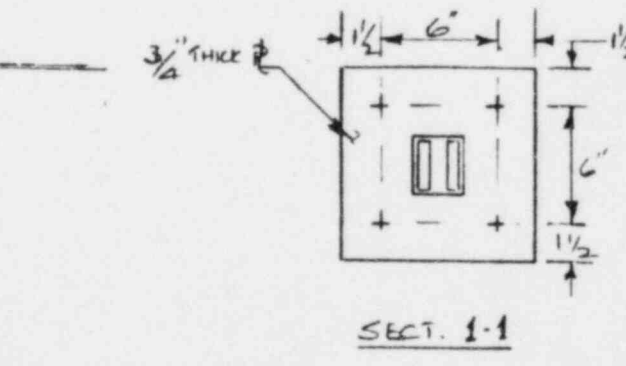
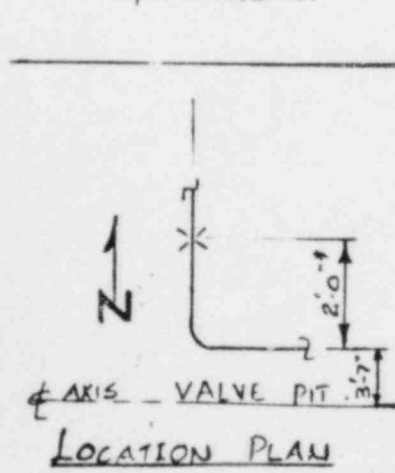
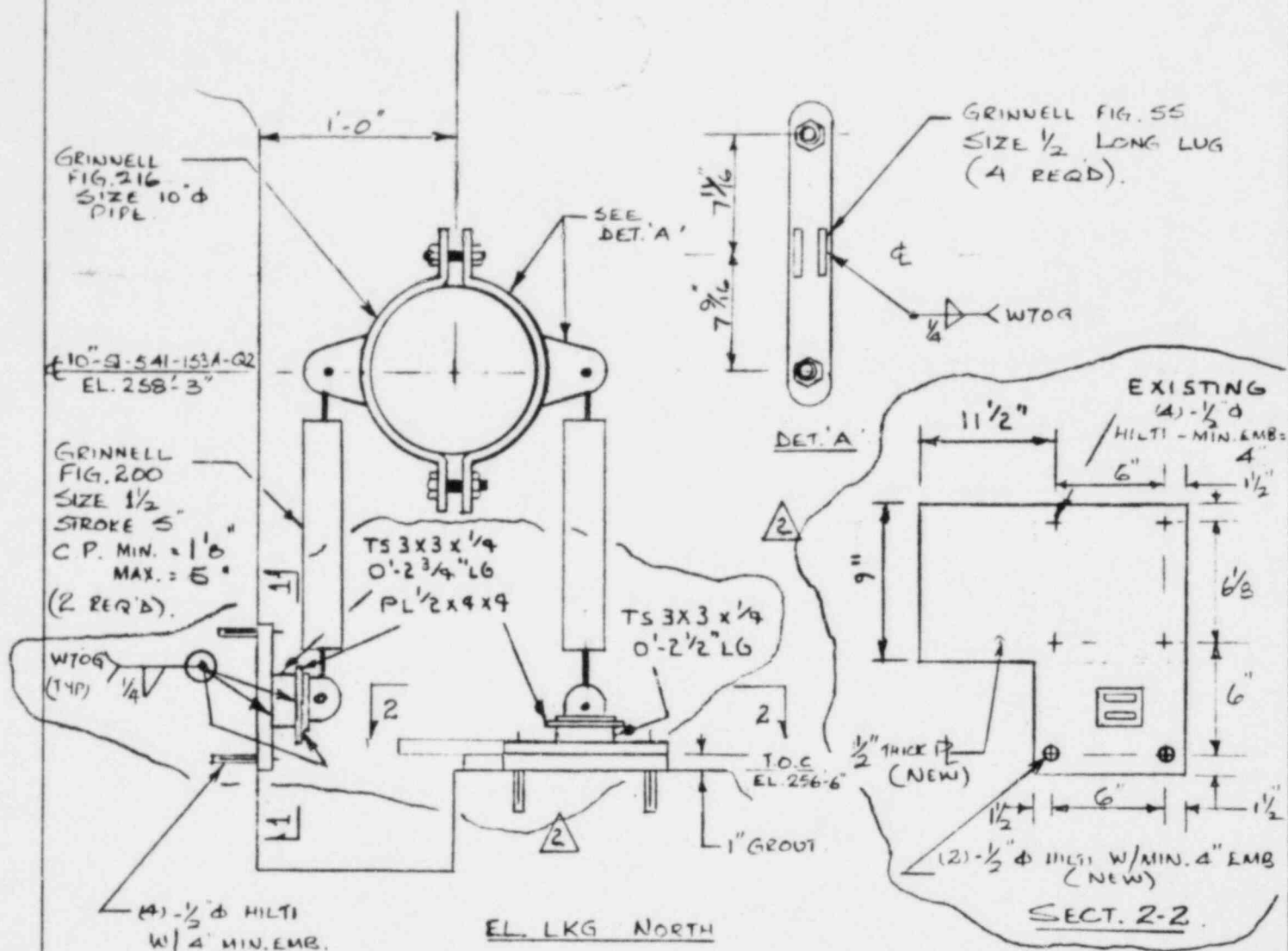
POWER INDUSTRY GROUP	TITLE	SCALE: NONE
CHECKED	SPRING HGR. H-38 10" SI-541-153A-02 SAFEGUARDS AREA	DATE: 5-26-80
CORRECT		SKETCH NUMBER 12050
APPROVED		ZFSK-1593A-4
REVISIONS		② _____ ③ _____ ④ P.V. DAVIS 5/24/80 ⑤ _____

REVIEWED
DATE 5-29-80

SKETCHED BY ZFS

VEPCO, NORTH ANNA
MINERAL, VA
JOB No. 12050.

RAMESH PATEL



LOAD: $F_y = \pm 1017^{\#}$

REF.
12050-FP-4B.
NED - 2035.
CAL. No. -
Z-1161-3
MSX-1048-5 (P. 40)

E&DCR^Y PS-5321C-2

* NON-CRITICAL DIMENSIONS.

REVIEWED
DATE 5-29-80

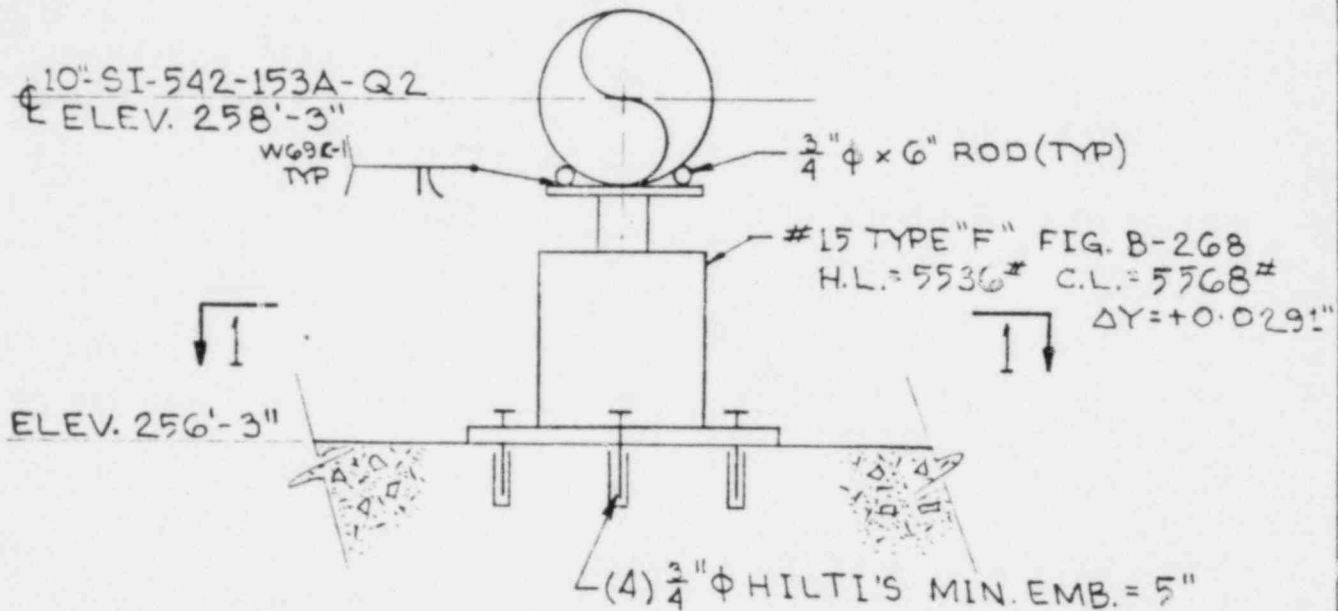
POWER INDUSTRY GROUP		TITLE	VERTICAL SNUBBER	SCALE:	NONE
CHECKED	W Bentley 5-26-80	SI-HSS-809 A E B. ON.		DATE:	5-26-80.
CORRECT	St. Galt	10" SI-541-153A-Q2		SKETCH NUMBER	12050
APPROVED	5/29/80	SAFE GUARDS AREA.		ZFSK - 3172A-2	
REVISIONS	② W Bentley 6-2-80	③	④	⑤	

4-2-80/RC 64-FU 5/29/80

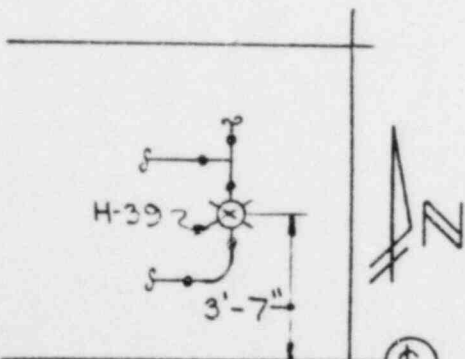
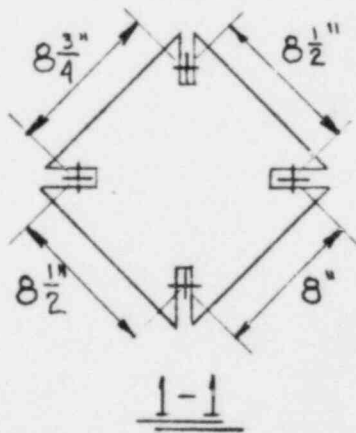
VEPCO-NAPS
MINERAL, VA.
J.O.No.12050

KRYNOCK
11-8-78

THIS SK. VOIDS
12050-AP-4BC



ELEV. LKG. WEST



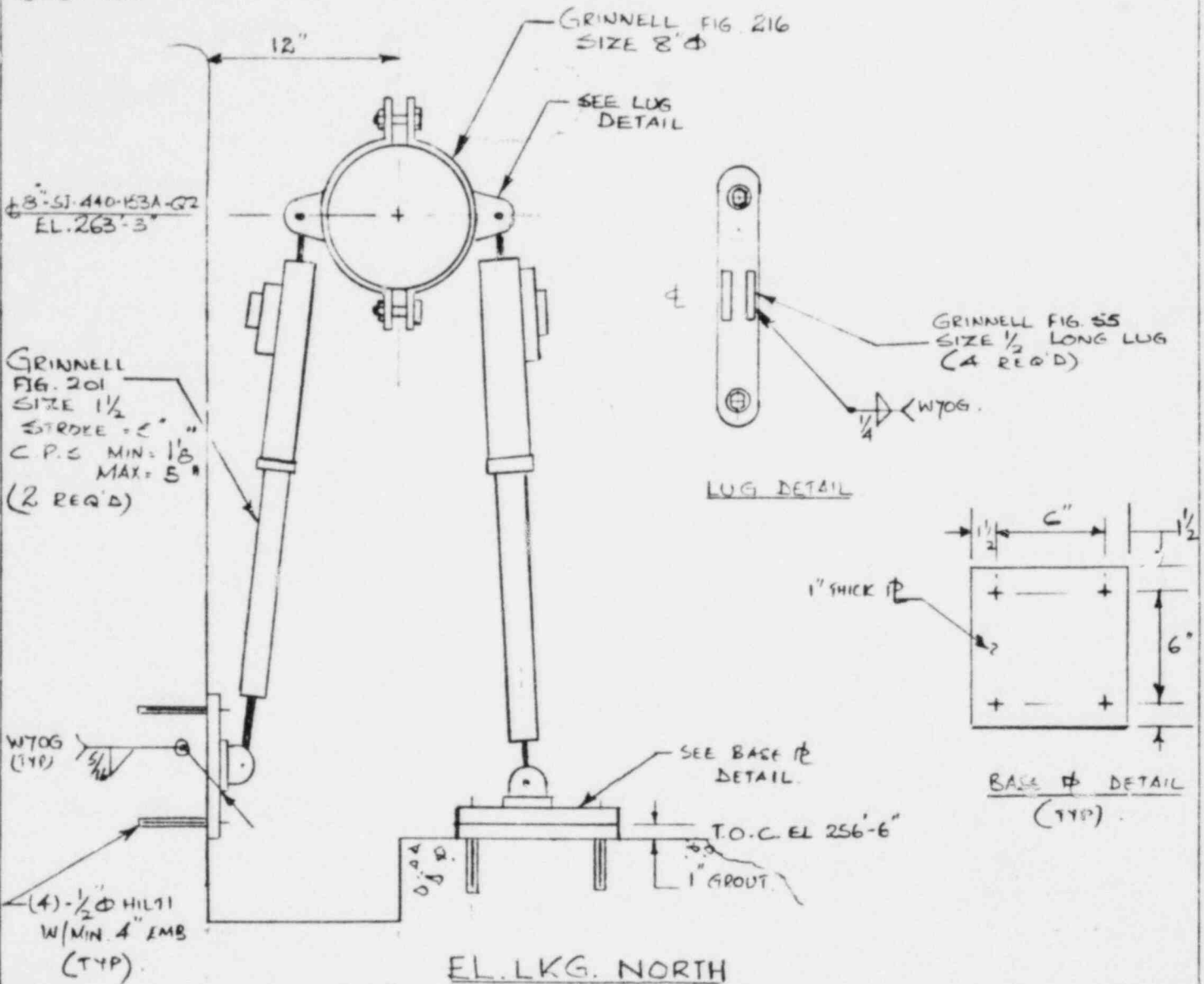
LOCATION PLAN (E) VALVE PIT

REF.
12050-FP-4B-10
-FC-19
-MSK-104B-3
E&DCR-P-2436-2
CALC. Z-3042
E&DCR-PS-5099A-2

POWER INDUSTRY GROUP	TITLE	SCALE: NONE
CHECKED <i>J. Pulling 11-15-78</i>	AS BUILT 2-SI-SH-39	DATE: 11-8-78
CORRECT <i>RAO GED 1/13/79</i>	10-SI-542-153A-Q2	SKETCH NUMBER 12050
APPROVED <i>SAW 1/17/78 PAB 11/8/78</i>	AREA 2 CAT. I	ZFSK-3083A
REVISIONS	(2) (3) (4) (5)	

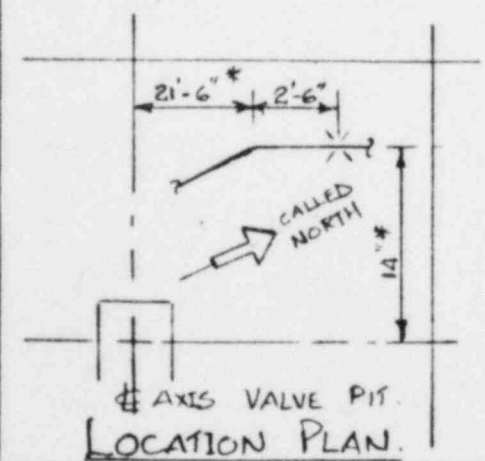
VEPCO, NORTH ANNA
MINERAL, VA
JOB NO 12050.

RAMESH PATEL



EL. LKG. NORTH

LOAD: $F_y = \pm 233^*$

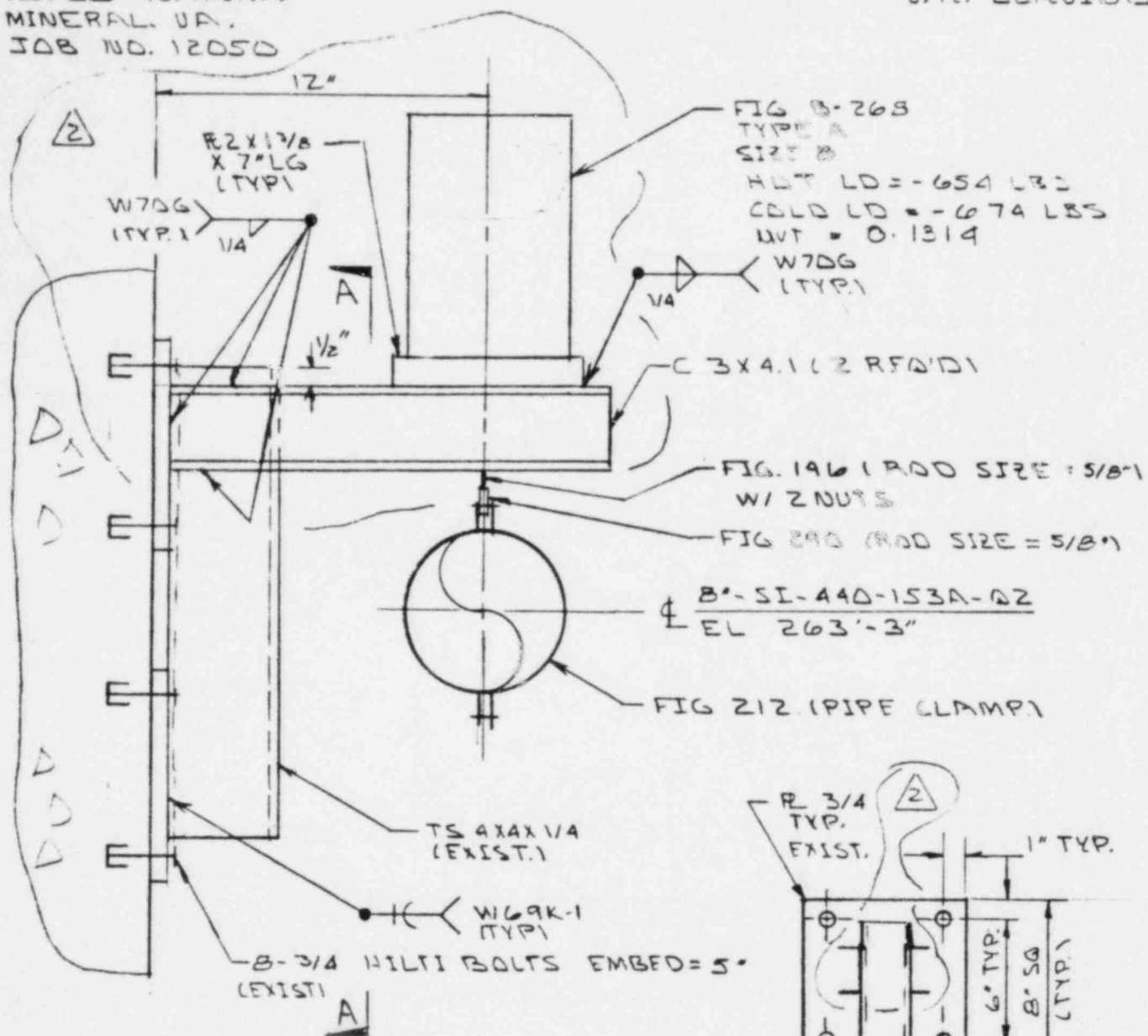


REF.
12050-FP-4B
MSK-104B-5 (PT 220)
CAL. NO.
Z-1988-3

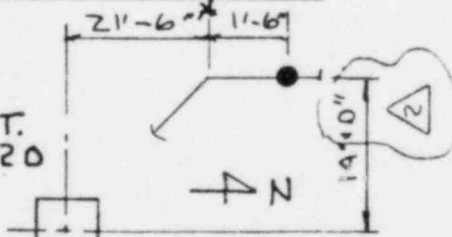
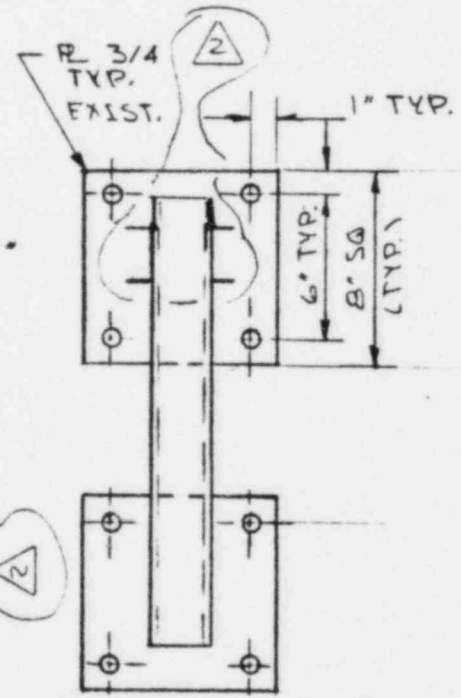
REVIEWED DATE 5-27-90

POWER INDUSTRY GROUP	TITLE	VERTICAL SNUBBER.	SCALE: NONE.
CHECKED	SI-HSS-810 A & B. ON.	DATE: 5-26-80.	SKETCH NUMBER 12050
CORRECT	8"-SI-440-153A-Q2		
APPROVED	SAFEGUARDS AREA. UNIT 2		ZFSK-3173 A
REVISIONS	(2)	(3)	(4)
			(5)

VEPCO - N. ANNA
MINERAL, VA.
JOB NO. 12050



ELEVATION LKG NORTH



- REFERENCES
 12050-MSK-104B-5
 CALC 2-1988-3
 12050-FC-19A
 12050-FP-4B
 E8DCR* PS-5099E
 PS-5321C, 31405 & A

REDRAWN FOR REV. 4

POWER INDUSTRY GROUP	TITLE	SCALE: N.T.S
CHECKED	B"-SI-440-153A-02	DATE: 26 MAY 80
CORRECT	SPRING HANGER PT NO. 220	
APPROVED	SUPPORT NO. 2-SI-SH-41	
REVISIONS	SAFEGUARD UNIT 2	SKETCH NUMBER 12050
②	③	ZFSK 2482 A-8

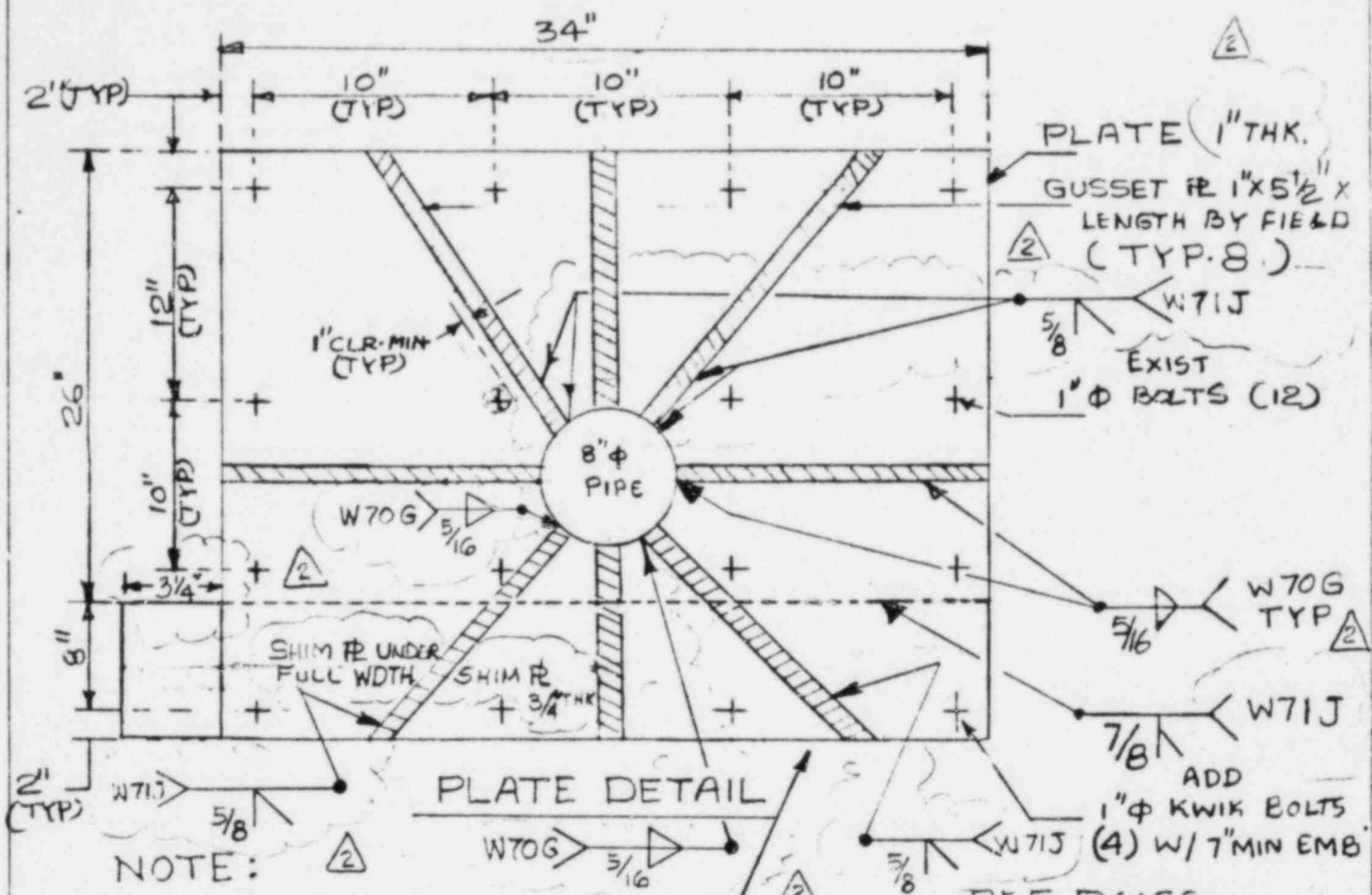
INDEPENDENTLY REVIEWED

DATE 5-29-80

④ J. P. 5-26-80
 VAS 5-26-80
 W. Bentley
 4/26/80
 SWS
 5/18/80

VEPCO, N-ANNA
JO. NO. 12050
MINERAL, VA.

K.R. VALLURIPALLI
1-6-78



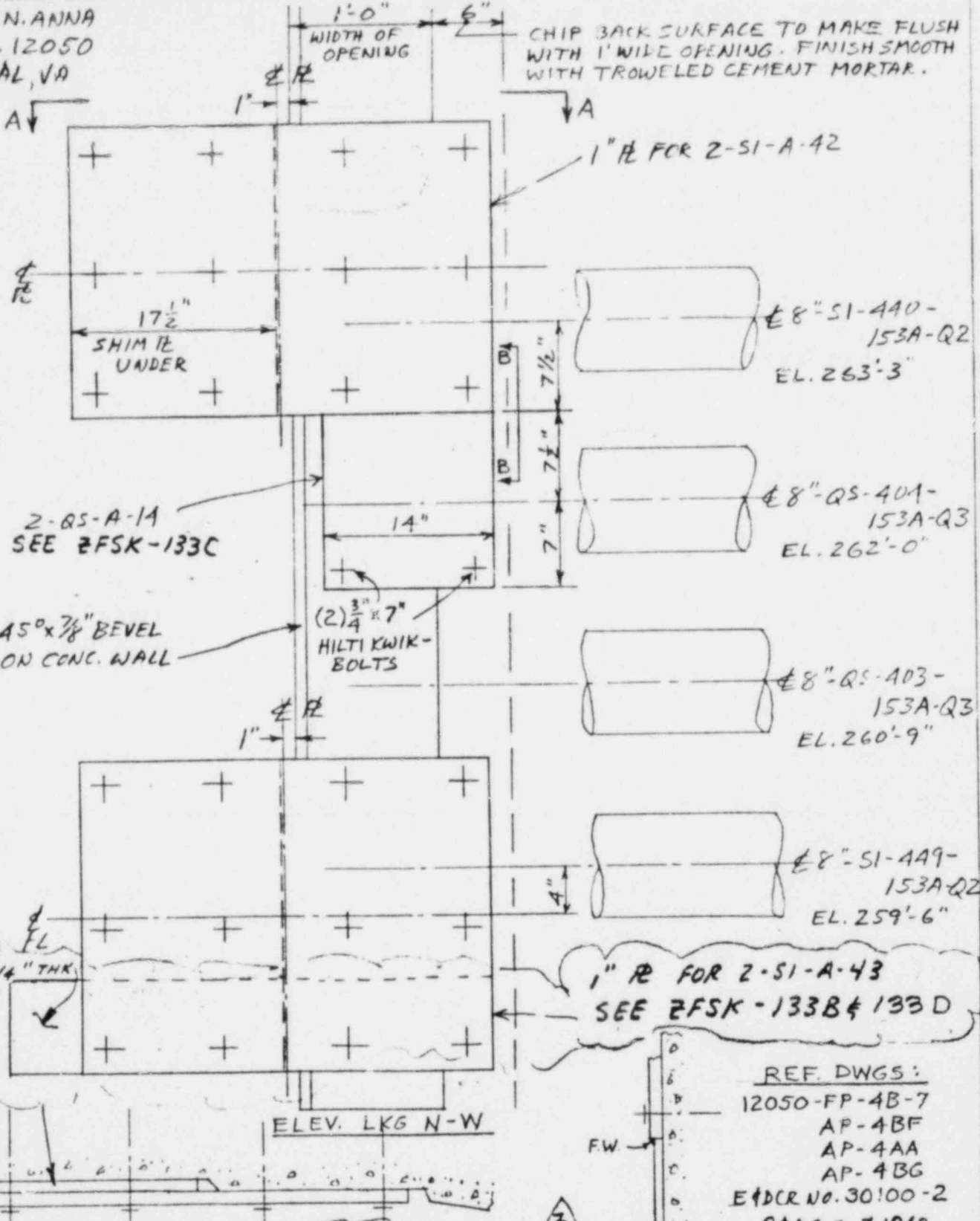
- NOTE:
1. BASE PLATE REVIEWED PER E&DCR P-1922 G EVALUATION PROCEDURE.
 2. ADD WING PLATE 1X10X 37 1/4 W/ 4 1" ϕ KWIK BOLTS WITH 7" EMBD *
 3. REMOVE EXISTING GUSSETS AND ADD NEW GUSSETS (8) AS SHOWN
 4. NOTCH GUSSETS TO CLEAR WELDS.
 5. WORK THIS DWG. ALONG WITH ZFSK-133A-2 & 133D

REF. DWGS.
12050-FP-4B
GR. DWG. 12050-AP-4BG
CALC. NO: Z 1962
N&D # 1874-4B

* SEE ZFSK-133D FOR WING $\#$ DETAIL

POWER INDUSTRY GROUP		TITLE	BASE PLATE DETAIL	SCALE:	NONE
CHECKED	S. Gantkew 1/13/78	FOR HGR #	2-SI-A-43 ON 8" SI-	DATE:	1-6-78
CORRECT	SK Batel	#	44-9-153A-Q-3	SKETCH NUMBER 12050	
APPROVED	RBS/29/78	SAFE GUARDS #	2	ZFSK-133B-2	
REVISIONS	②	20ctive 2/2/78	③	④	⑤

VEPCO N. ANNA
J.O. NO. 12050
MINERAL, VA



CHIP BACK SURFACE TO MAKE FLUSH WITH 1' WIDE OPENING. FINISH SMOOTH WITH TROWELED CEMENT MORTAR.

2-QS-A-14
SEE ZFSK-133C

45° x 3/8" BEVEL
ON CONC. WALL

(2) 3/4" x 7"
HILTI KWIK-
BOLTS

1" R FOR 2-SI-A-43
SEE ZFSK-133B & 133D

- REF. DWGS:
- 12050-FP-4B-7
 - AP-4BF
 - AP-4AA
 - AP-4BG
- ESDCR NO. 30100-2
CALC # Z1962
Z2011

1x12 HILTI KWIK-BOLTS
AT SHIMMED HOLES. SECT. A-A

NOTE:
THIS WAS FORMERLY
MFSK-133A
FOR OTHER NOTES SEE ZFSK 133B, C & D

J. R. BRETT

POWER INDUSTRY GROUP	TITLE	BASE PLATE LOCATIONS FOR
CHECKED	<i>[Signature]</i>	2-SI-A-42
CORRECT	<i>[Signature]</i>	2-QS-A-14
APPROVED	<i>[Signature]</i>	2-SI-A-43
REVISIONS	② K.R. Y... ③ George Love ④ ⑤	

SCALE: 1" = 1'-0"
DATE: 7-1-76
SKETCH NUMBER 12050
ZFSK-133A-3

VEPCO, N. ANNA
 JO. NO. 12050
 MINERAL, VA.

K.R. VALLURIPALLI,
 1-14-78

WORK THIS DWG. ALONG
 W/ ZFSK-133A-2

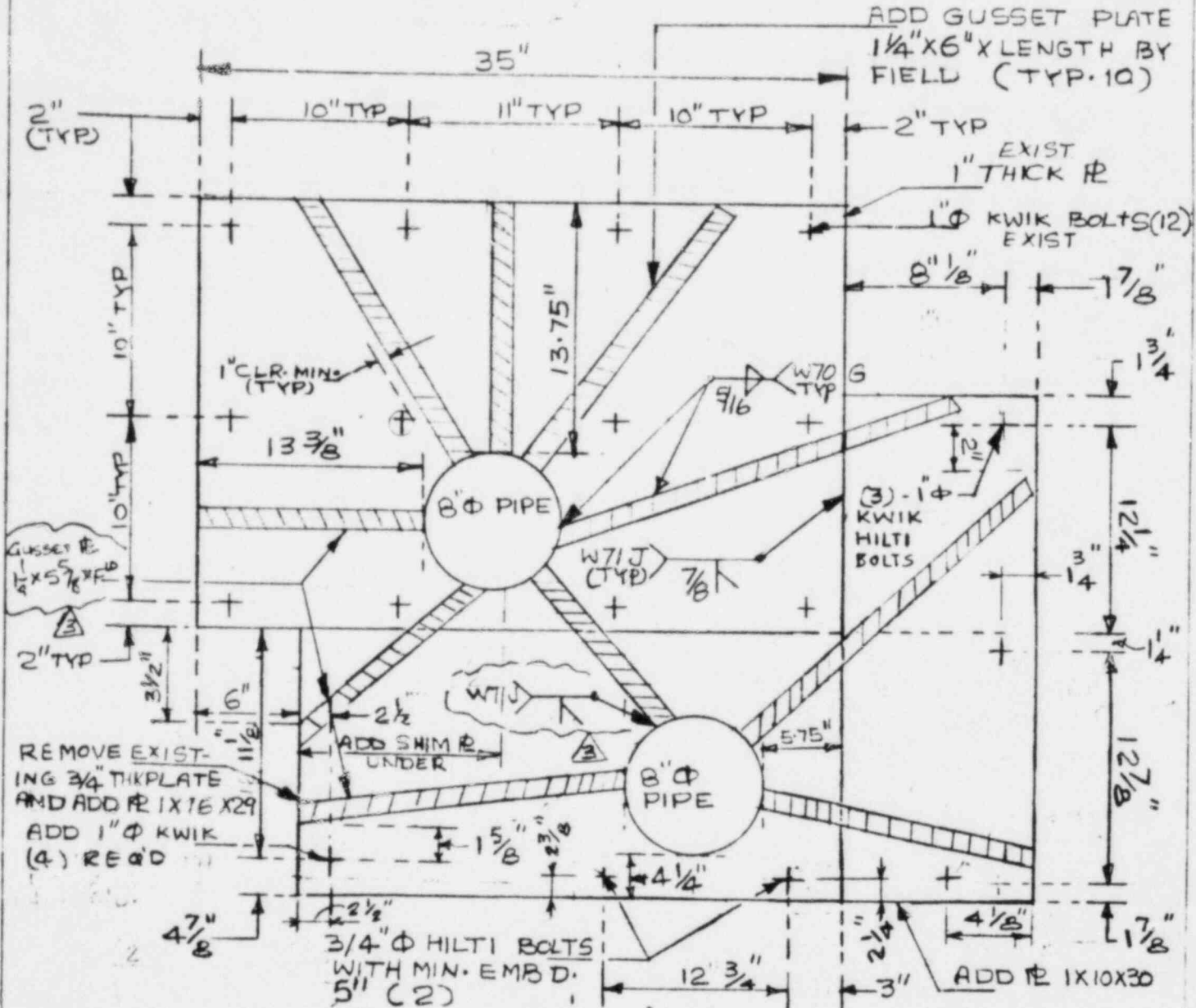


PLATE DETAIL

NOTE:

1. BASE PLATE REVIEWED PER E&DCR P-1922G EVALUATION PROCEDURE
2. ADD WING PLATES 1 X 16 X 29 AND 1 X 10 X 30, W/(4) - 1" Ø HILTI'S (MIN 5 1/4" EMB'D)
3. REMOVE EXISTING GUSSETS AND ADD NEW GUSSETS AS SHOWN. REMOVE EXISTING 3/4" THICK PLATE.
4. NOTCH GUSSETS TO CLEAR WELDS.

REF. DWGS.

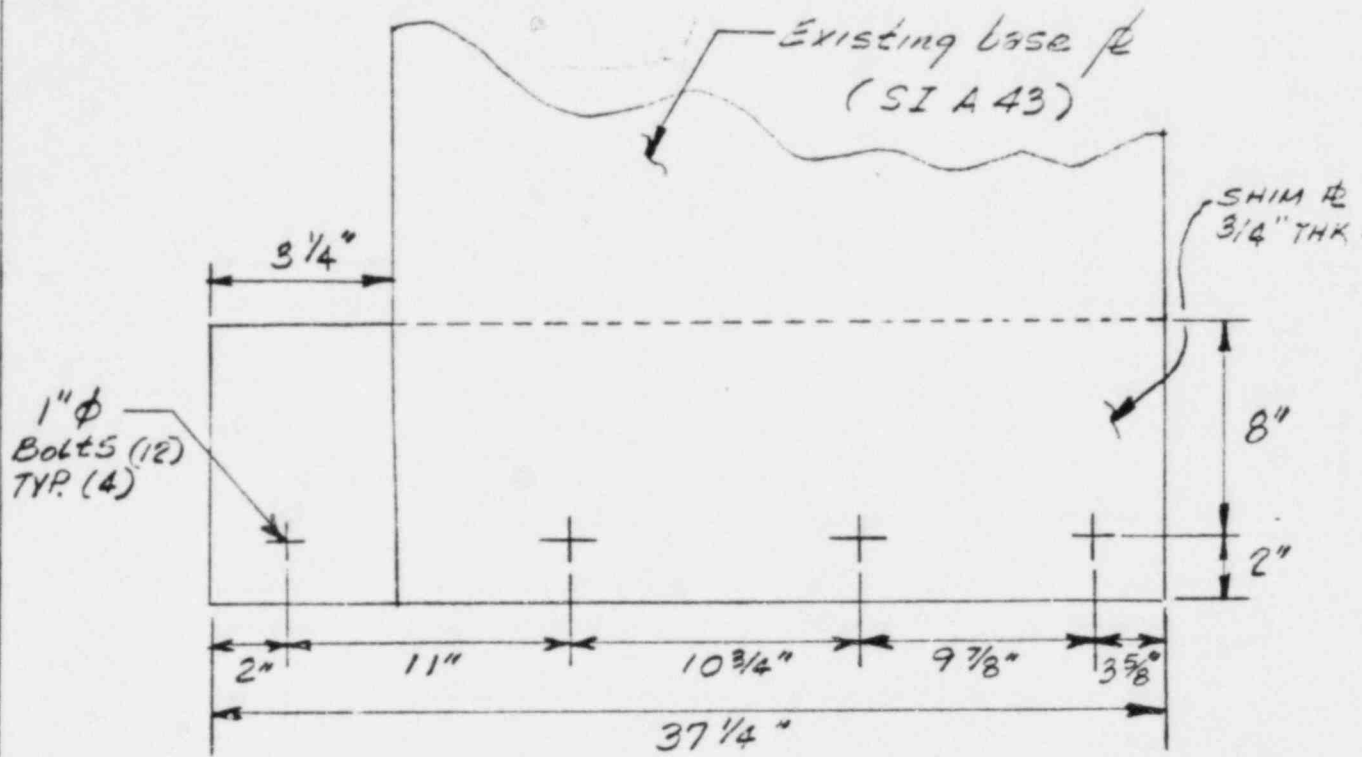
- 12050-FP-4B
- GR. DWG: AP-4BF &
- AR 4 AA
- CALC. NO: Z-2011
- N&D NO: 1874-51
- & 2275-5
- E&DCR-30100
- MSK-104B-2, F3-3

POWER INDUSTRY GROUP	TITLE BASE PLATE DETAIL			SCALE: NONE
CHECKED	FOR HGR# 2SI-A-42 ON 8"SI-440-153A-Q2 AND HGR# 2QS-A-14 ON 8"QS-404-153A-Q3.			DATE: 1-14-78
CORRECT	SAFE GUARDS # 2			SKETCH NUMBER 12050
APPROVED				ZFSK-133C-3
REVISIONS	② R. KHARVA	③ D. Patel 9/18	④	⑤

R. Khurva
 1/17/78

VEPCO - North Anna
 Jo. No. 12050
 Mineral, Va.

GEORGE LOVE
 3-14-78



Notes

- (1) Base plate reviewed per E&DCR P-1922 G.
- (2) SEE ZFSK 133 B FOR Existing Plate detail. (SI-A-43)

REFERENCE DWGS.

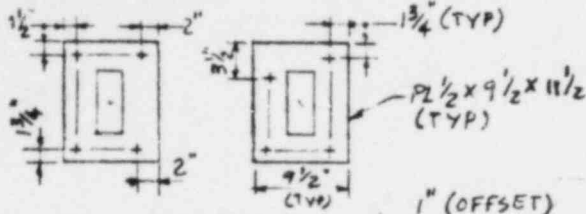
- 12050-FP-4B-7
- E&DCR 30100-2
- AP-4BF
- AP-4AA
- GR DWG. A P-4BG
- N&D # 1874-48

WORK THIS DWG. WITH ZFSK 133 A & 133 B

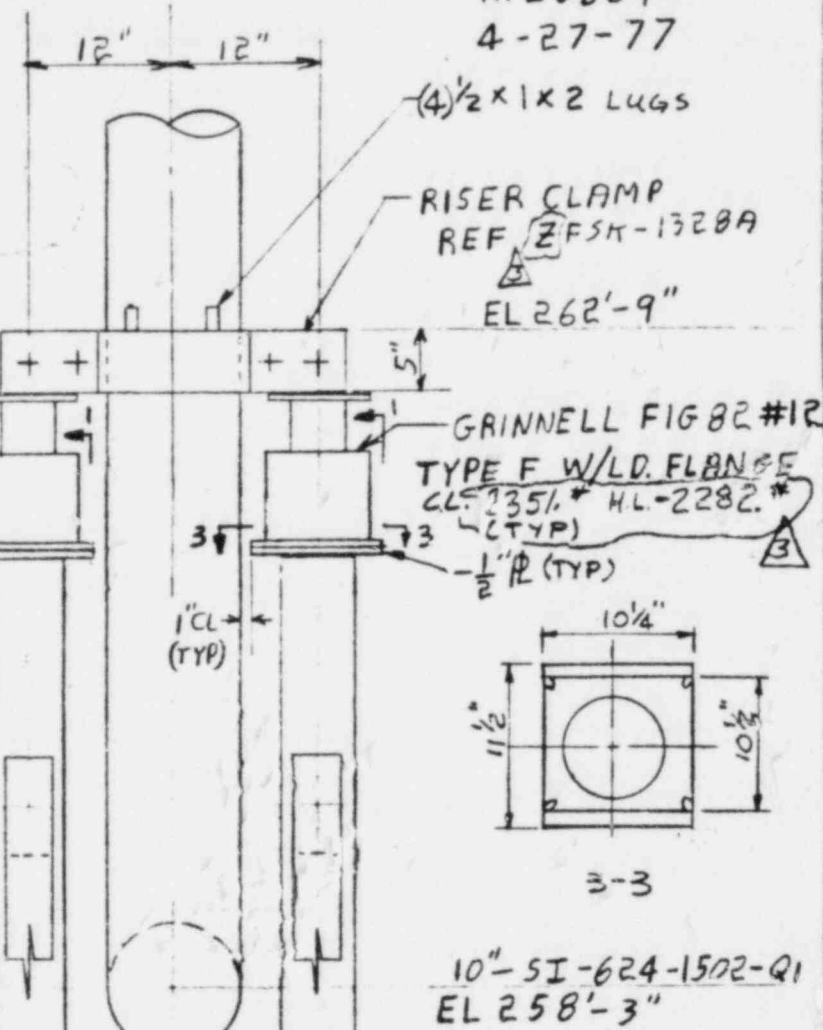
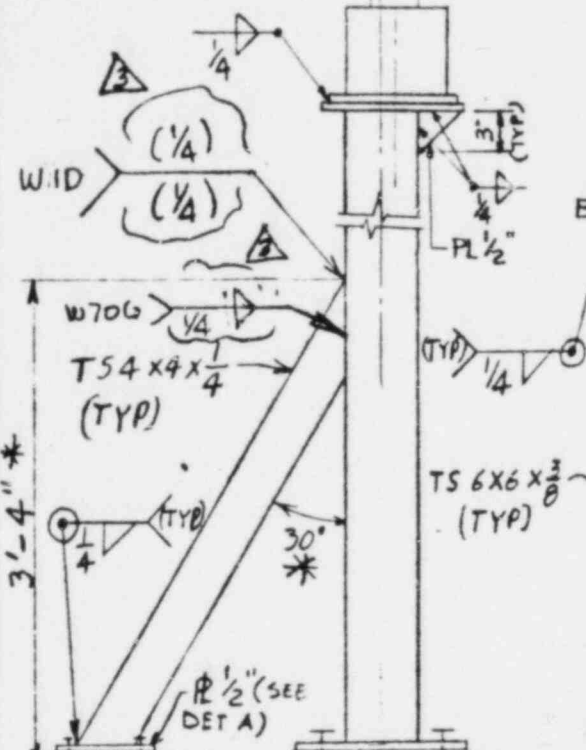
POWER INDUSTRY GROUP	TITLE BASE PLATE DETAIL	SCALE: NONE
CHECKED <i>J.P. 8-18-78</i>	FOR HGR # 2 - SI-A 43 ON	DATE: 8-14-78
CORRECT <i>[Signature]</i>	8" SI-449-153A-Q-3	SKETCH NUMBER 12050
APPROVED <i>[Signature]</i>	SAFE GUARDS # 2	
REVISIONS	②	ZFSK-133D

VEPCO NORTH ANNE
J.O. NO. 12050
MINERAL VA.

R. LUDDY
4-27-77



DET A

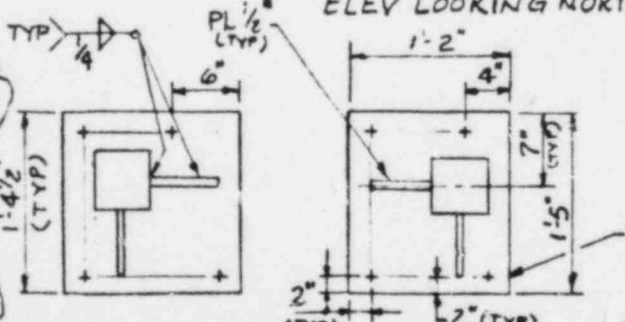


GRINNELL FIG 82 #12
TYPE F W/LD. FLANGE
CL. 7351, HL-2282
(TYP)

10" SI-624-1502-Q1
EL 258'-3"

LOADING
 $F_y = -4527\#$

MOVEMENTS
 $\Delta X = 0.2676$
 $\Delta Y = 0.1546$
 $\Delta Z = 0.0407$



ELEV LOOKING NORTH

* NON CRITICAL DIMENSION

REF DWG.
12050-FP-48-8
E+DCR P-1346 J
ZFSK-1328A
CALC-997
MSK-104B-3
E+DCR-P-2436 & PS-5099

ALL WELDS TO BE W200A UNLESS NOTED

2-2 comp # 2-924

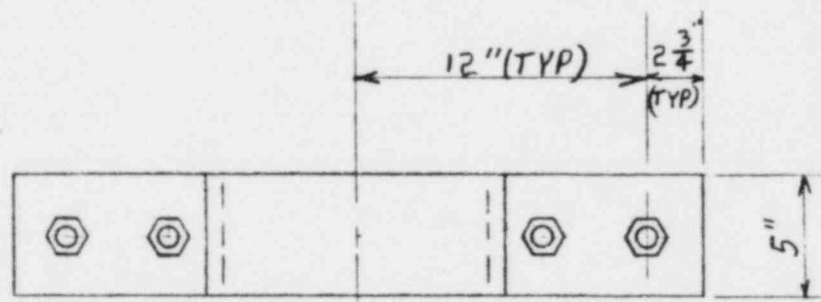
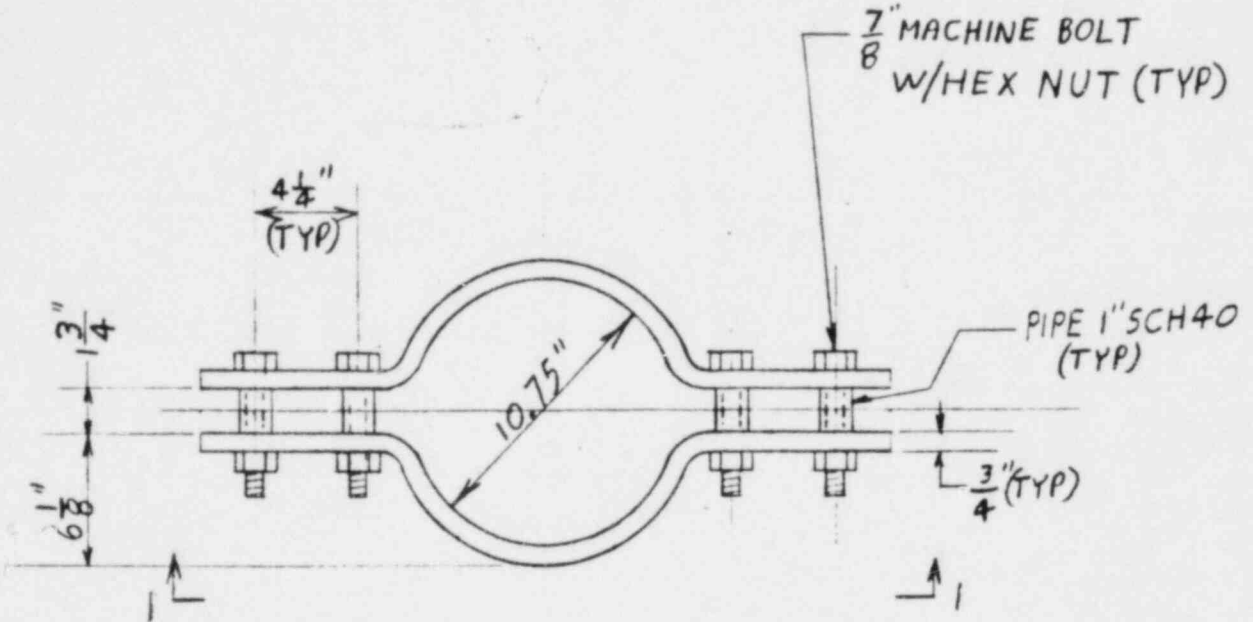
POWER INDUSTRY GROUP TITLE **SPRING HANGER**

CHECKED *DT* 4/3/77
CORRECT *DT* 4/27/77
APPROVED *DT* 4/27/77
REVISIONS ② *D. Tapp* 5/2/77 ③ *R* 10-11-78 ④ ⑤

SCALE: $\frac{3}{4}'' = 1'-0''$
DATE: 4-27-77
SKETCH NUMBER 12050
ZFSK-1327A-3

VEPCU NORTH ANNA
J.O. NO. 12050
MINERAL VA.

R. LUDDY
4-27-77



1-1

REF DWG:
 ZFSK-1327A
 E+DCR P-1346J
 GRINNELL HS-40
 CALC-997
 MSK-104B-3
 E&DCR-P-2436 & PS-5099

POWER INDUSTRY GROUP	
CHECKED	D. [Signature] 4/27/77
CORRECT	[Signature] 4/29/77
APPROVED	[Signature] 4/27/77
REVISIONS	② R. 10/11/78 ③ ④ ⑤

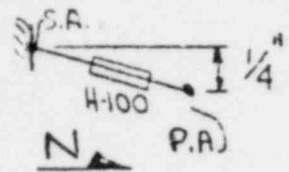
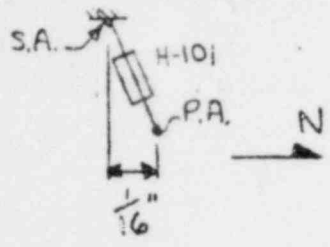
TITLE RISER CLAMP FOR
SI-SH-59

SCALE: 1 1/2" = 1'-0"
DATE: APR 27, 1977

SKETCH NUMBER
ZFSK-1328A-2

4/27/77 [Signature] [Signature]

PLAN VIEW OFFSETS

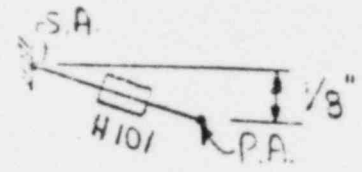


VERCO N. ANNA
J.O. NO. 12050
MINERAL, VA.

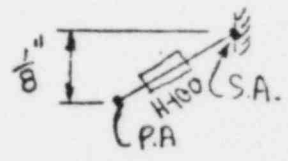
THIS DESIGN VOIDS
12050-AP-4CK

NOTE: BASE PLATES
REVIEWED PER
E&DCR P-1922G

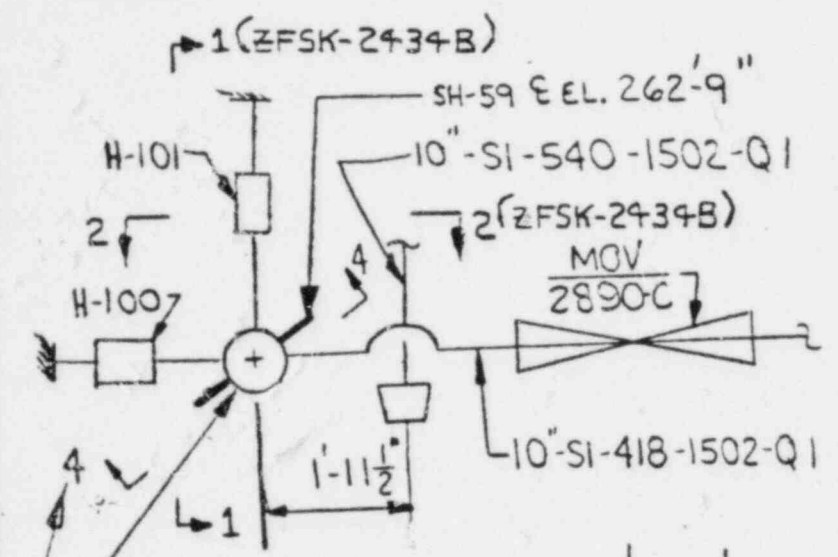
W. BENTLEY 12-16-77
ELEV. VIEW OFF SETS



ELEV. LOOKING
NORTH



ELEV. LOOKING
EAST

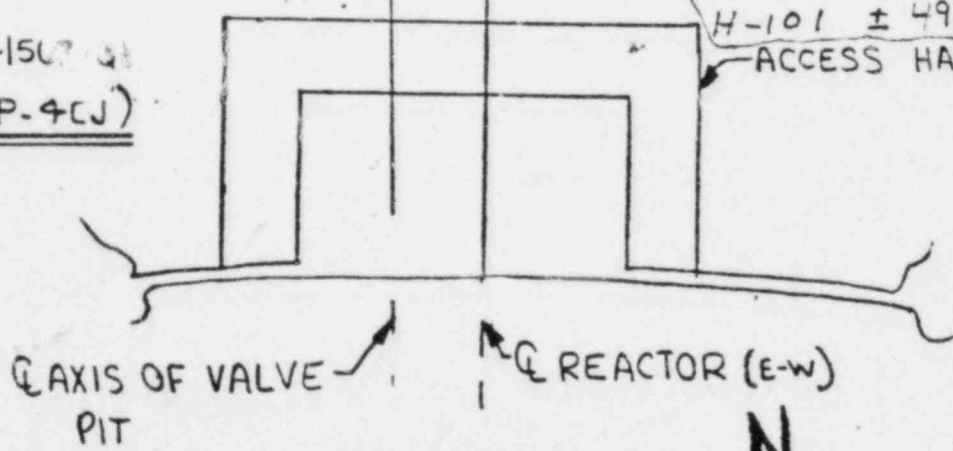


REF. DWG
12050-FP-4B
FC-19A
AP-4CJ
E&DCR P-1346B & M
CALC Z-1775
Z-2755 & 2756

MSK-104B-3
E&DCR-P-2436 & PS-5099

Design Loads
H-100 ± 4822 AXIAL
H-101 ± 4974 AXIAL.

ACCESS HATCH



LOCATION
PLAN EL. 256'-6"

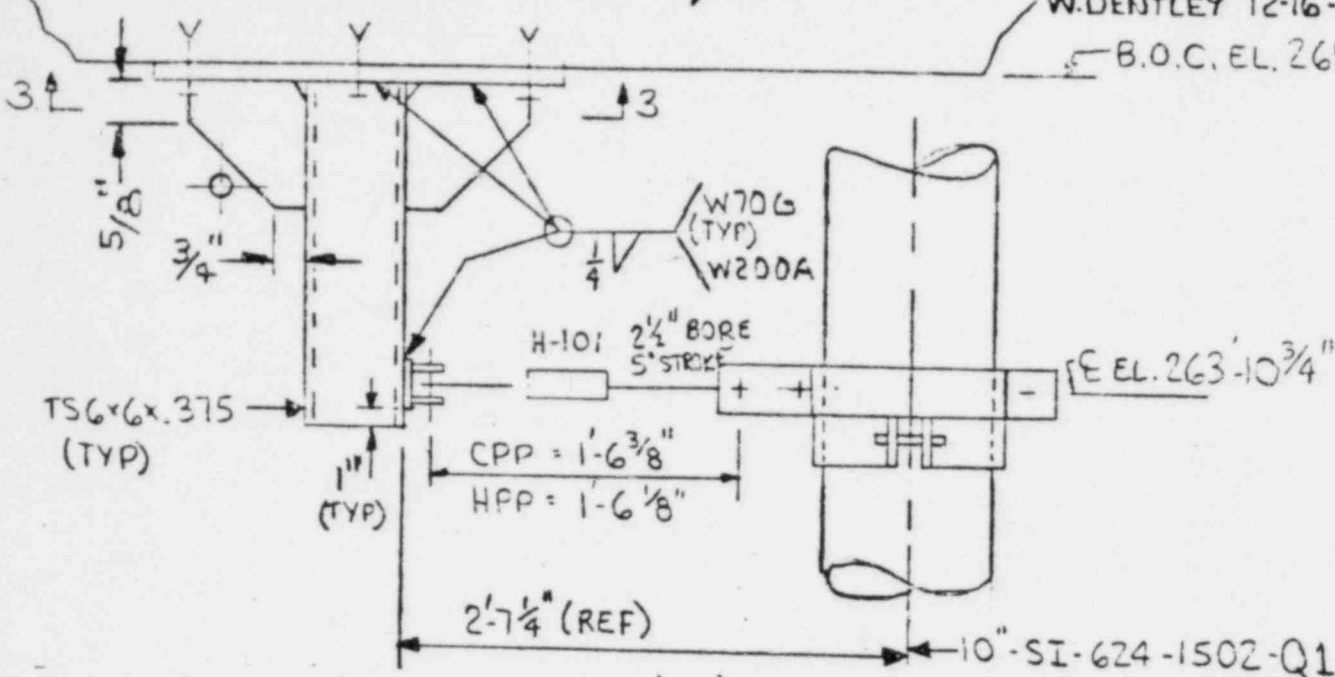
CAT. I

POWER INDUSTRY GROUP		TITLE			SCALE: NONE	
CHECKED	H BENN 12-28-77	SUPPRESSORS H-100 & 101 10" SI-624-1502-Q1 SAFEGUARD			DATE: 12-16-77	
CORRECT	St. Baker				SKETCH NUMBER 12050 ZFSK-2434A-2	
APPROVED	R. B. [Signature]					
REVISIONS	(2) R. 10/11/78	(3)	(4)	(5)		

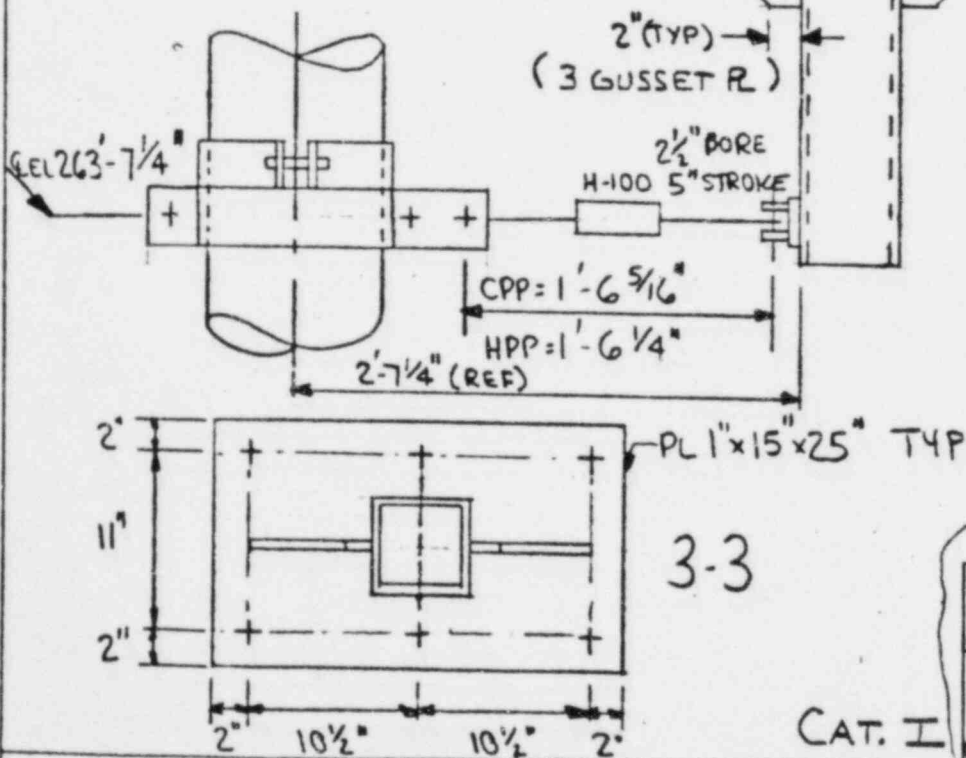
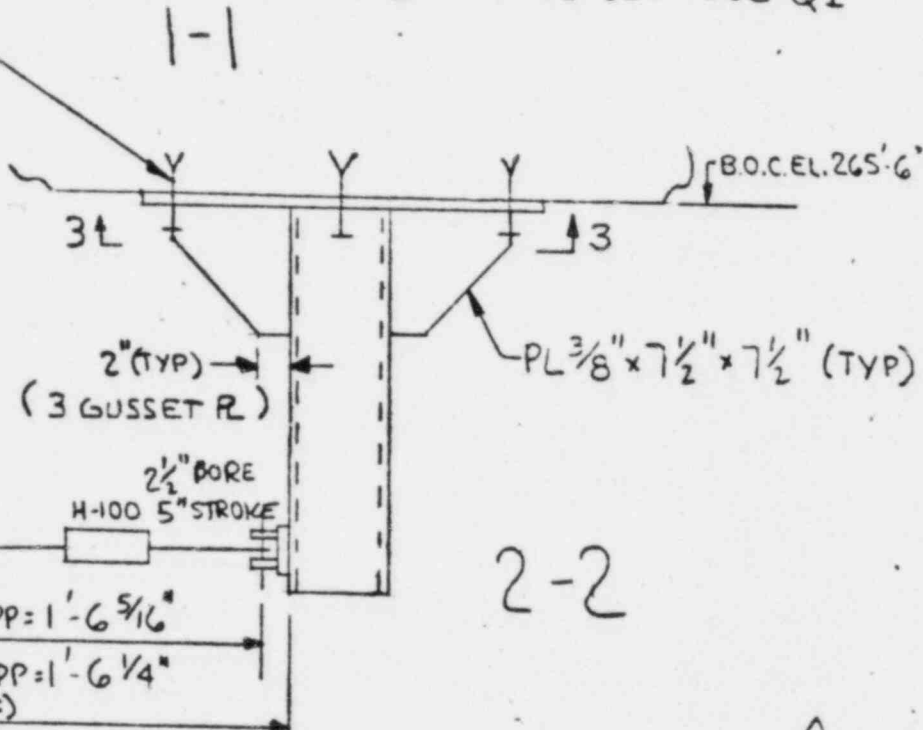
YEPKO N. ANNA JOND 12050 MINERAL, VA.

W. BENTLEY 12-16-77

B.O.C. EL. 265'-6"



(6) 1" HILTI BOL-
@ 7" MIN EMB
(TYP)



MOVEMENTS:

	ΔX	ΔY	ΔZ
H-100 (PT. 909)	-0.273	+0.166	+0.035
H-101 (PT. 910)	-0.274	+0.169	+0.034

POWER INDUSTRY GROUP	
CHECKED	H. BENTLEY 12-16-77
CORRECT	(S) SKEDATEL
APPROVED	(S) 12/16/77
REVISIONS	(2) P. 10/178 (3) (4) (5)

TITLE
SUPPRESSORS H-100 & 101
10" SI-624-1502-Q1
SAFEGUARD

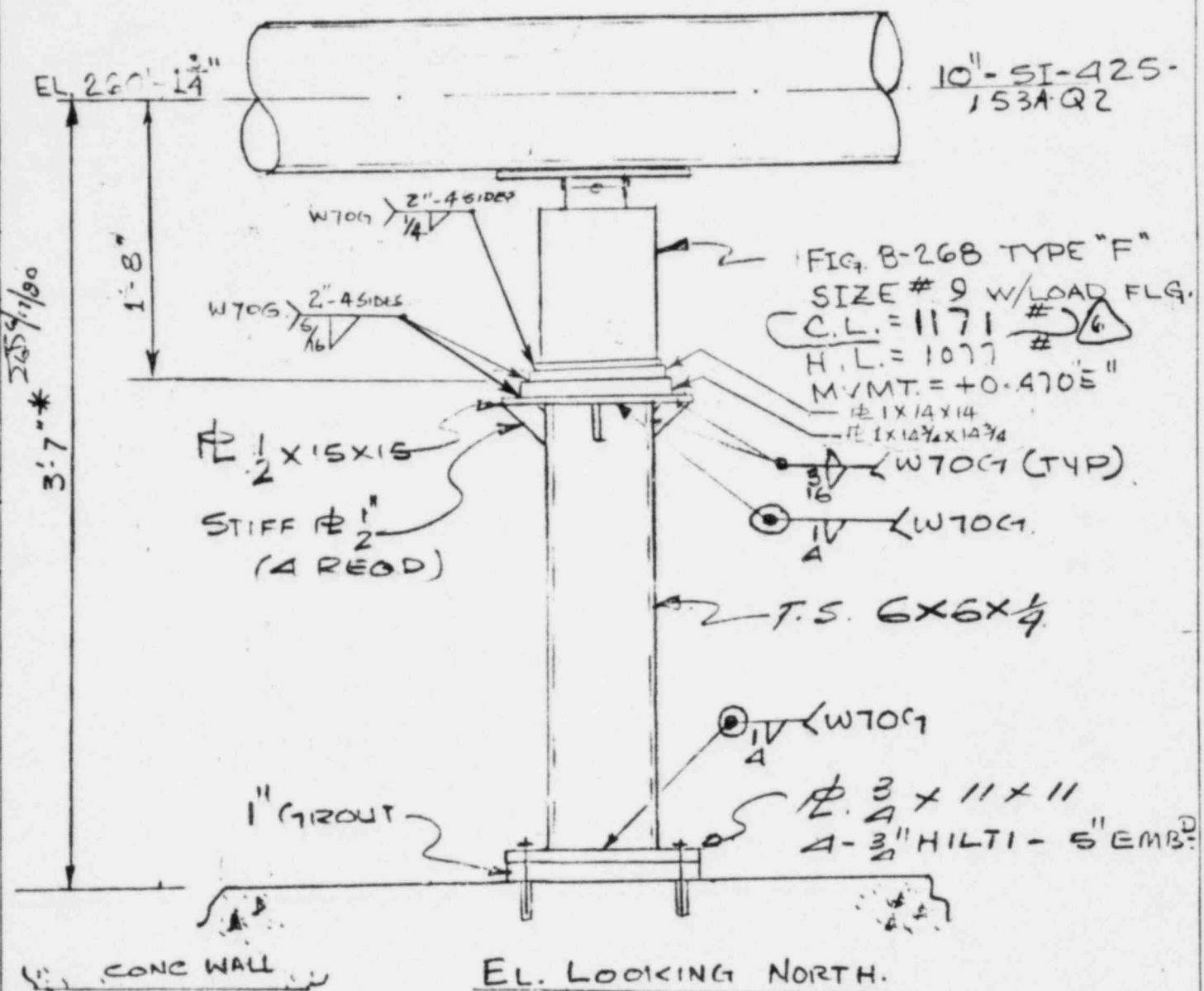
SCALE: NONE
DATE: 12-16-77

SKETCH NUMBER 12050
ZFSK-2434B-2

VERCO N.A.P.S.
JOB NO 12050

K.D. DATEL
11-28-77

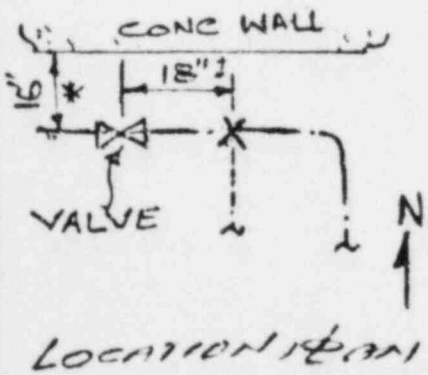
NOTE:-
APPLY "MOLYKOTE 502"
TO LOAD FLANGE OF SPRING.



7
6
W. Bentley SLS
6-17-80
11-28-77
2054/1/80

REVIEWED
BY R.P. G... DATE 5-29-80

EL. LOOKING NORTH.
(H-600)



REF. DWGS.
12050-FP-4B
-MSK-104B-5
-FC-19 PT. 69
E&DCR P-2436-2
CALC Z-3046-2
E&DCR-PS-5099 B-2
PS-5321 C&D

POWER INDUSTRY GROUP		TITLE			SCALE: HONC	
CHECKED	D. T... 11/28/77	H-600 SPRING			DATE: 11-28-77	
CORRECT	K. D. DATEL 11/28/77	FOR - 10"-SI-425-153A-Q2			SKETCH NUMBER 12050	
APPROVED	K. D. DATEL 11/29/77	SAFE GUARDS SP-1A			ZFSK-2394A-6	
REVISIONS	② D.T. 12/19/77	③ K. D. DATEL 11-12-78	④ RUP 5/23/80	⑤ RUP 6/16/80	6/9/80	

JEPCO N.A. 125

JOB NO 12050

MINERAL, VA.

NOTE:
APPLY MOLYKOTE 505"
TO LOAD FLANGE.

K.D. MITTEL
11-28-77

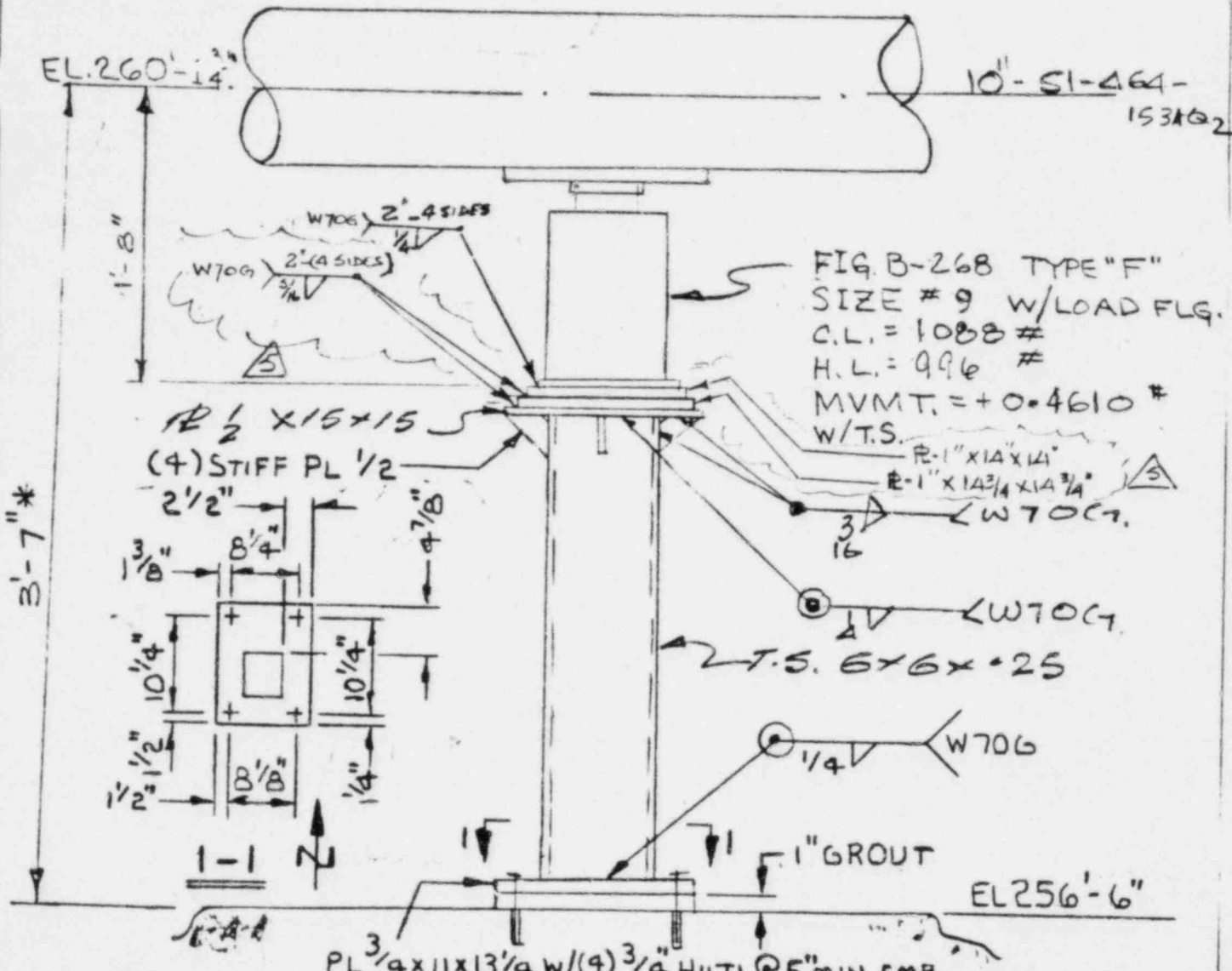
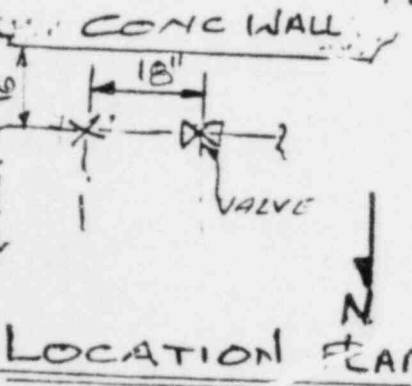
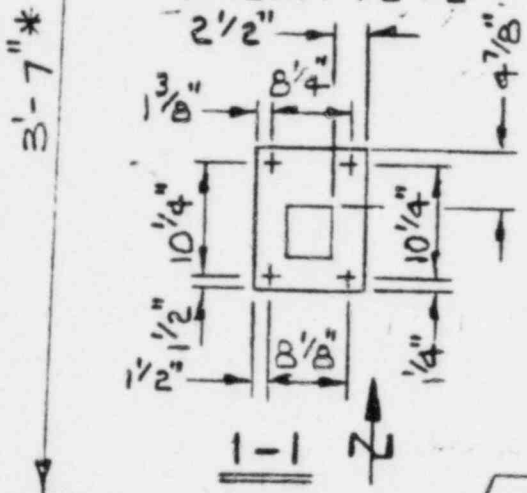


FIG. B-268 TYPE "F"
 SIZE # 9 W/LOAD FLG.
 C.L. = 1088 #
 H.L. = 996 #
 MVMT. = +0.4610 #
 W/T.S.



EL. LOOKING SOUTH
 (H-601)

REF DWGS
 12050-FP-4B
 MSK-1048-S PT.138
 FC-19 SERIES
 CALC. NO. Z-3046-2
 E&DCR# PS-569B-2
 P-2436-2
 PS-5099B & D
 CAT. I PS-5321C

* NON CRITICAL
 DIMENSIONS

POWER INDUSTRY GROUP	TITLE	SCALE
CHECKED	SPRING HANGER	NONE
CORRECT	FOR - 10" - 51 - 464 - 153A Q2	DATE: 11-28-77
APPROVED	(H-601)	SKETCH NUMBER 12050
REVISIONS	SAFE GUARD AREA, SP. 1B	ZFSK-2398A-5

REVIEWED
 DATE 5-25-80