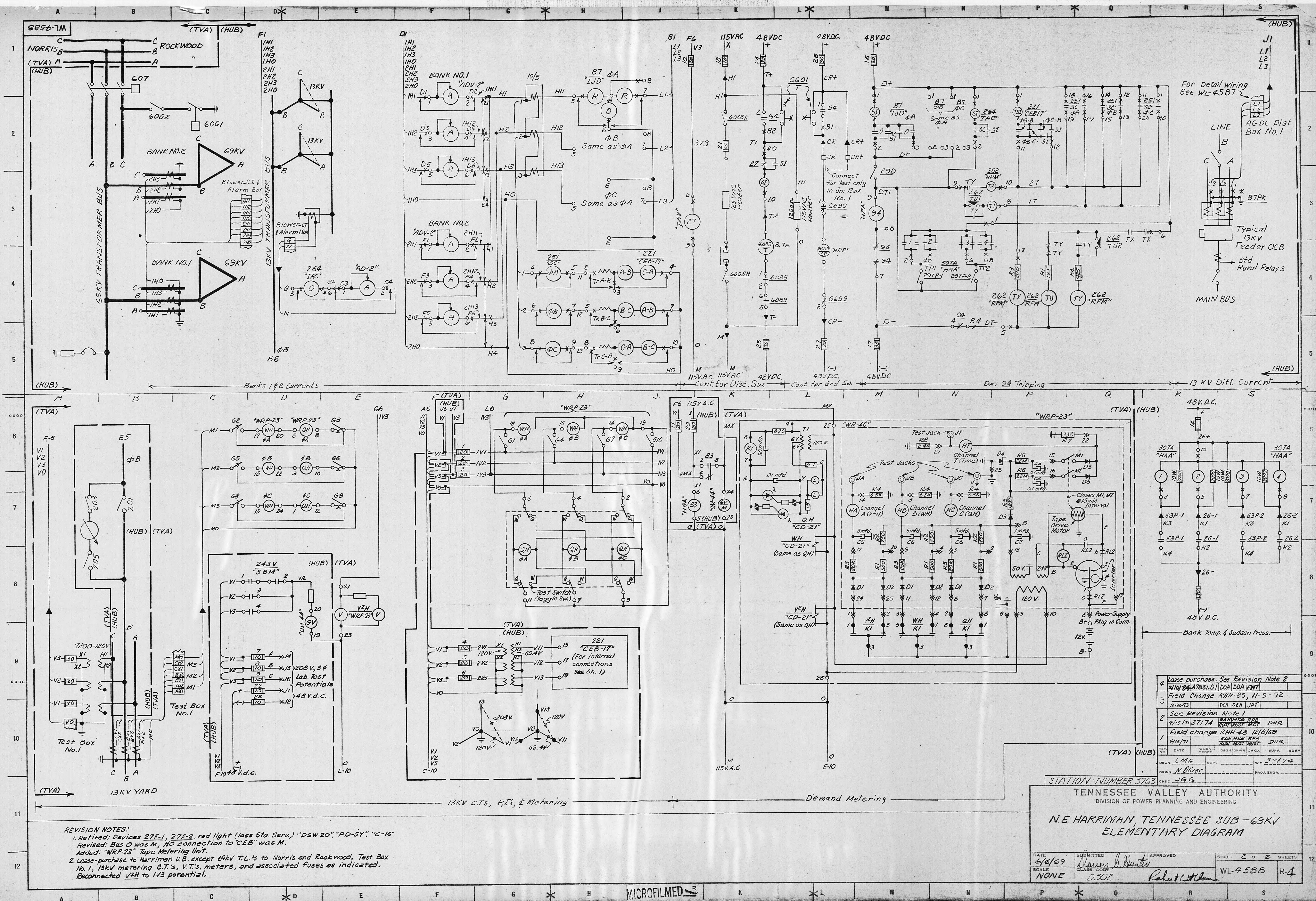




Added Lease Note							
REV. NO.	DATE	WORK ORDER	DSGN	DRWN	CHKD	SUPV	APPV
	8/19/83			RFM		MBB	
DSGN	RC		SUPV	HJF		W.O.	37174
DRWN	RC					PROJ. ENGR.	W.B.M.
CHKD	HJF						

N.E. HARRIMAN SUBSTATION-69 KV
ARRANGEMENT OF
OVERHEAD GROUND WIRE

DATE 8-7-69	SUBMITTED 8-7-69 R. P. Crumley	APPROVED J. J. Reenan	SHEET 1 OF 1	SHEET
SCALE 1"=20'	CLASS CODE 111 1342		LC-43535	R.

2896797

195'-0" to Property Corner

LIST OF FOUNDATIONS

MARK	QUANTITY	DESCRIPTION	DWG. NO.	FILE NO.	FOUND. DWG. NO.	ELEV.	CONCRETE	STEEL
AA	2	69 kv. Bus & Switch Struct.	LC-23257	HC-204675	843.5	0.97	1.94	
AB	4	69 kv. Bus & Switch Struct.	LC-23257	HC-204675	843.5	0.97	3.88	
AC	1	69 kv. Tap Structure	LC-41305	Grillage				
AD	4	13 kv. L.V. Bus Support Tower	LC-38700	SC-38701	843.7	1.10	4.40	
AE	1	69 kv. Transformer Bus Tower	LC-41056	MC-41204	843.6	2.51	2.51	
AF	2	69-13 kv. 3 Phase Transformer	YA-1775	HC-449344	843.5	3.10	6.20	
AG	2	15 kv. Type D Regulator Extension	LC-22617	SC-3709	843.7	0.41	0.82	
AH	1	13.8 kv. 3 Phase Voltage Regulator	YA-1930	HC-384633	843.4	3.10	3.10	
AJ	10	15 kv. Type B & D Bus & Sw. Struct.	LC-28012	MC-19168	843.7	1.85	18.50	
AK	3	14.4 kv. Oil Circuit Breaker	YA-1803	SC-40368	843.6	0.69	2.07	
AL	1	Outdoor Meter Cabinet, Type A	LC-33843	SC-23266	843.6	0.32	0.32	
AM	1	Outdoor Battery Box	MC-585, Fig. 3	SC-603	843.6	0.15	0.15	
AN								
AO	2	65' Overhead Groundwire Tower	LC-4956	MC-6165	See Plan	16.5	33.0	
AP	1	55' Overhead Groundwire Tower	LC-48704	MC-48705	842.9	18.4	18.4	

* Top of Concrete

Location of
Tap Structure
not to scale

BASE LINE "B"

REFERENCES:

General Arrangement Plan (Initial) LC-47897
 Grading Plan LC-49591
 Fence Plan HC-49683
 Yard Improvement Plan LC-49684

T.B.M. - R.R. spike in pole #2, located 14' West of S.W. Corner of
 substation site. Elevation 854.42 MSL datum.

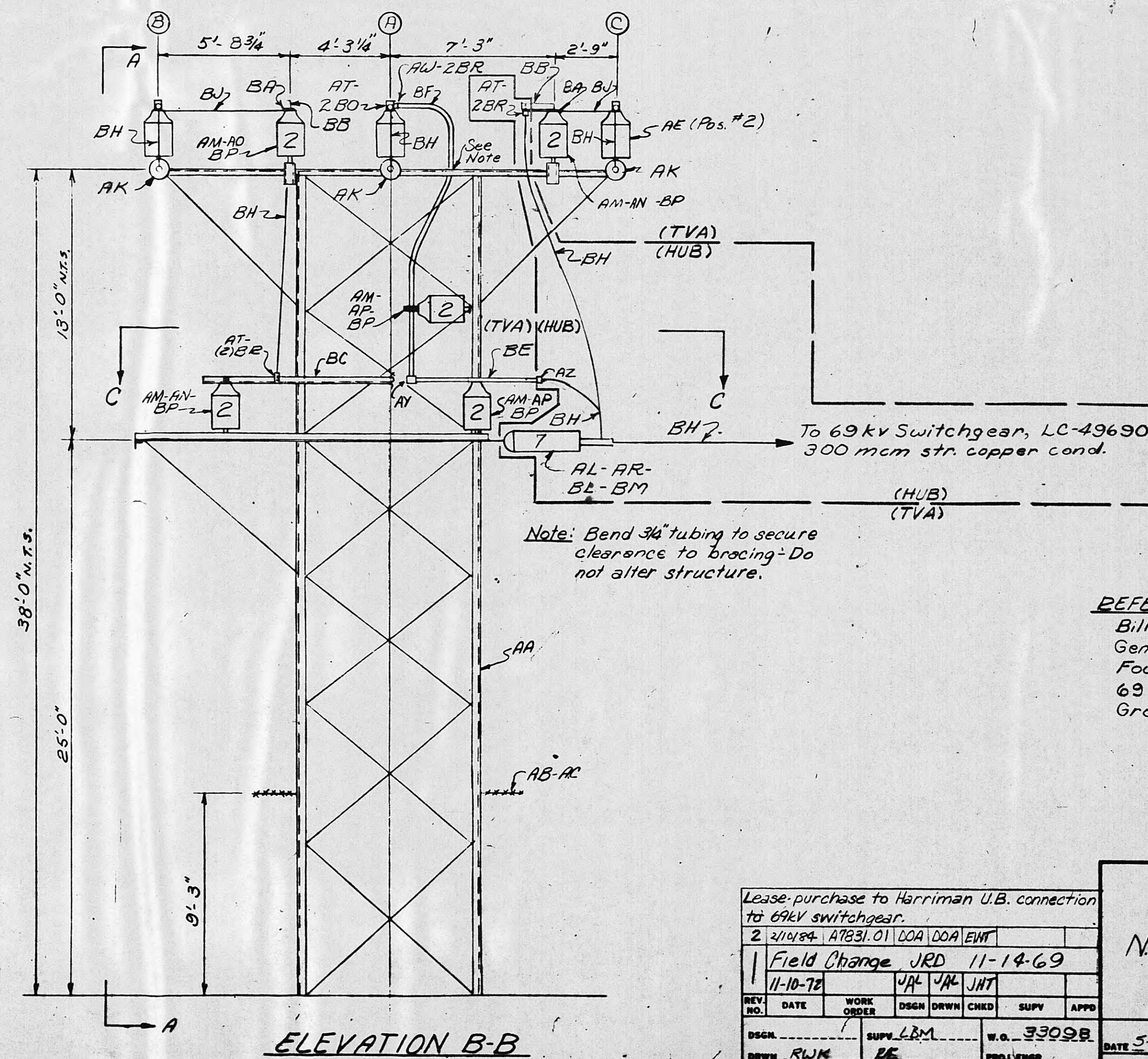
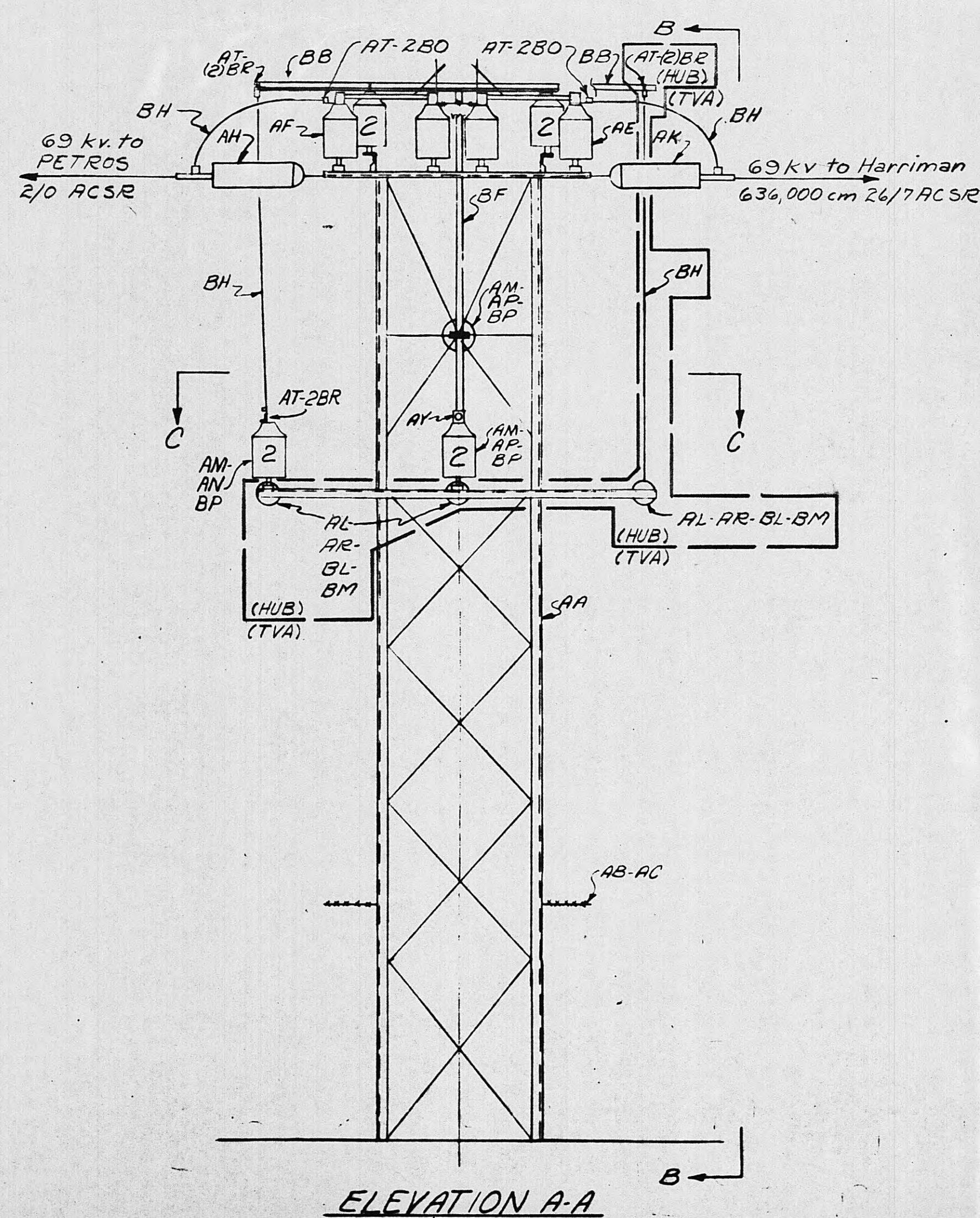
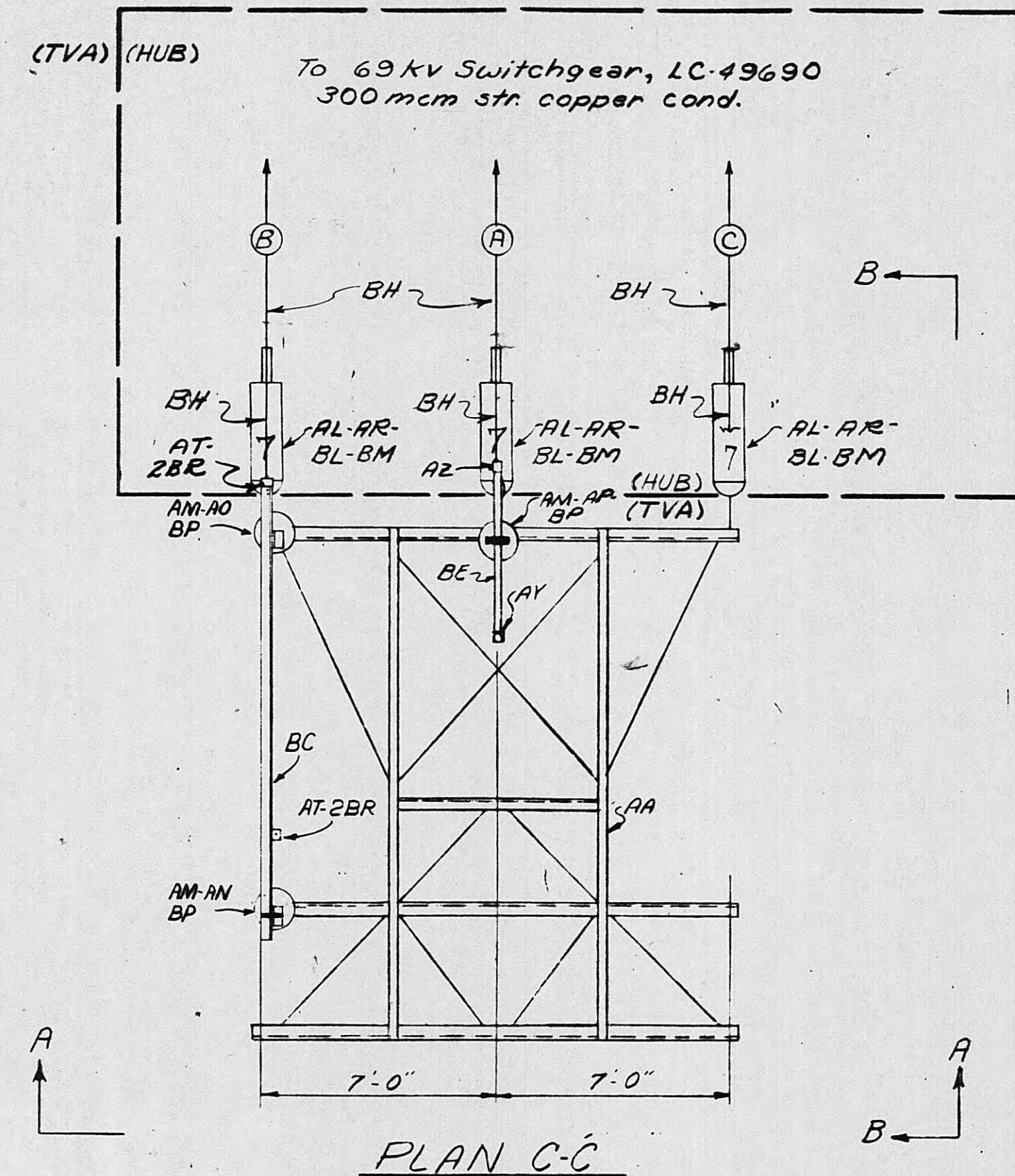
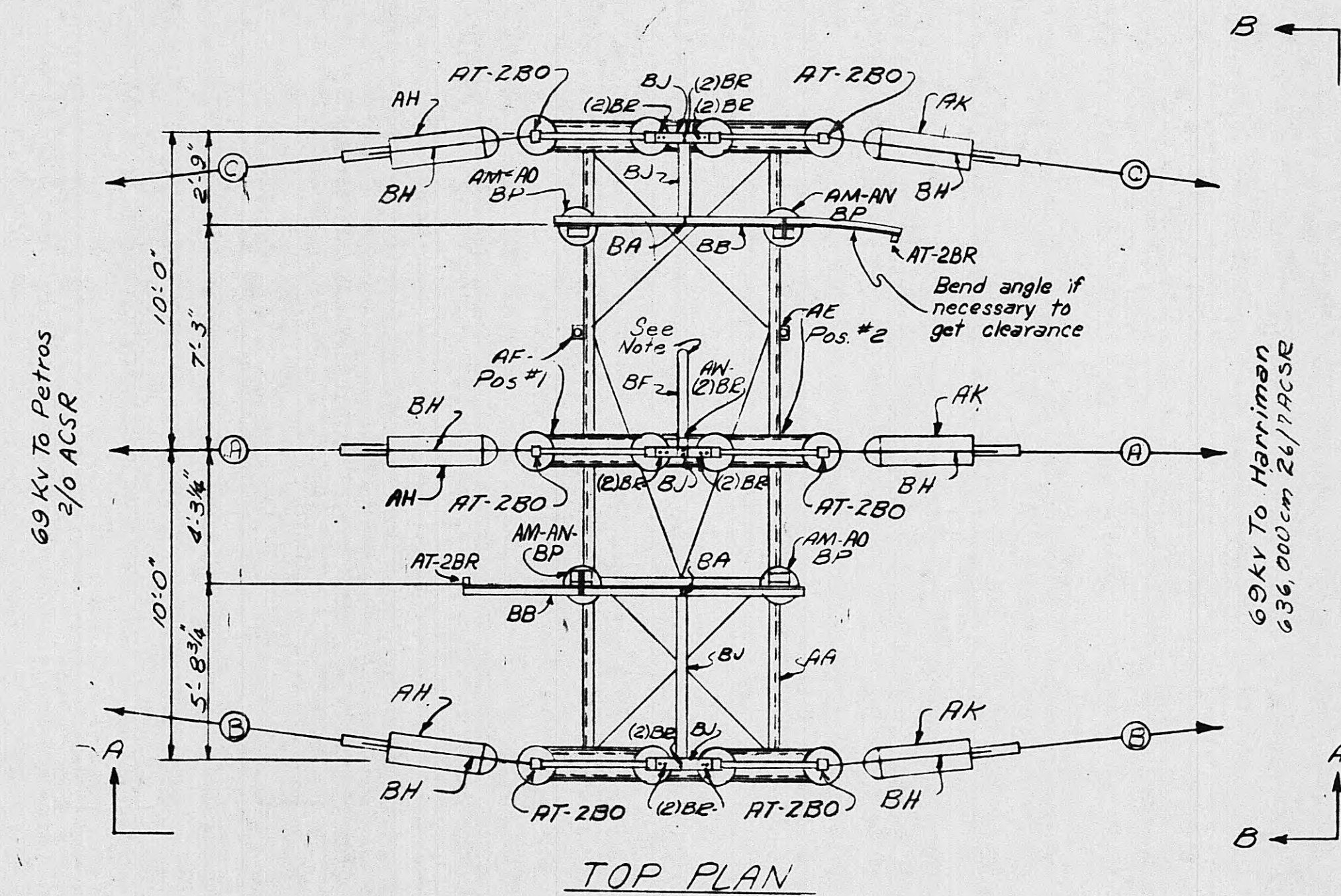
TENNESSEE VALLEY AUTHORITY
 DIVISION OF POWER PLANNING AND ENGINEERING

N.E. HARRIMAN, TENN. SUBSTATION-69KV.
 FOUNDATION PLAN

1	Lease purchase to Harriman U.B. except MK. AC.								
REV. NO.	DATE	WORK ORDER	DESIGN	DRWN.	CHKD.	SUPV.	APPR.		
1	2/10/84	A7831.01	DOA	DOA	ENT				
DESIGN	DATE	SUPV.	W.O. NO.	DATE	SUBMITTED	APPROVED	SHEET	OF	SHEETS
DRWN. R.W.K.	5-27-69	FE	37174	5-27-69	Final	Robert W. Smith	1	1	1
CHKD. MMR					CLASS. CODE	A305			
					SCALE	1"=10'-0"			

LC49682 R-1

MICROFILMED



- REFERENCES:
- Bill of Material - BMC-49687
 - General Arrangement Plan (Initial) - LC-47897
 - Foundation Plan - LC-49682
 - 69 kV Switchgear - LC-49690
 - Grounding Plan - LC-49982

Lease purchase to Harriman U.B. connection to 69kV switchgear.					
2 2/10/54 ATB31.01 DCA DCA EWT					
Field Change JRD 11-14-69					
REV.	DATE	WORK ORDER	DSGN	DRWN	CHGD
1	11-10-78		JPL	JPL	JHT
DSGN.		SUPV.	LM	W.O.	3309B
DRWN.	BWM	EC		PROJ. ENGR.	
CHGD.	MMR				

TENNESSEE VALLEY AUTHORITY DIVISION OF POWER PLANNING AND ENGINEERING			
NE. HARRIMAN, TENN. SUBSTATION-69 KV. 69 KV. TAP STRUCTURE PLAN AND SECTIONS			
DATE	5-16-69	SUBMITTED	APPROVED
SCALE	1"=1'-0"	AS566	LC49686-2

To Harriman Utility Board
556.5 Mcm 26/7 Str ACSR

To Harriman Utility Board
556.5 Mcm 26/7 Str ACSR

To Harriman Utility Board
556.5 Mcm 26/7 Str ACSR



NOTES:

1. Drill ends of Main & Transfer buses for future extension per MC-36996, Sh-3E 4.
2. All bolted aluminum connections to be made per SC-37447.

From 69-13 Kv Power Transf. Bank
4"x4" Integral Web Channel
See LC-49688

REFERENCES:

Bill of Material — BMC-49693
General Arrangement Plan (Initial) — LC-47897
Foundation Plan — LC-49682
Yard Improvement Plan — LC-49684
69-13 Kv Power Transf. Bank — LC-49688

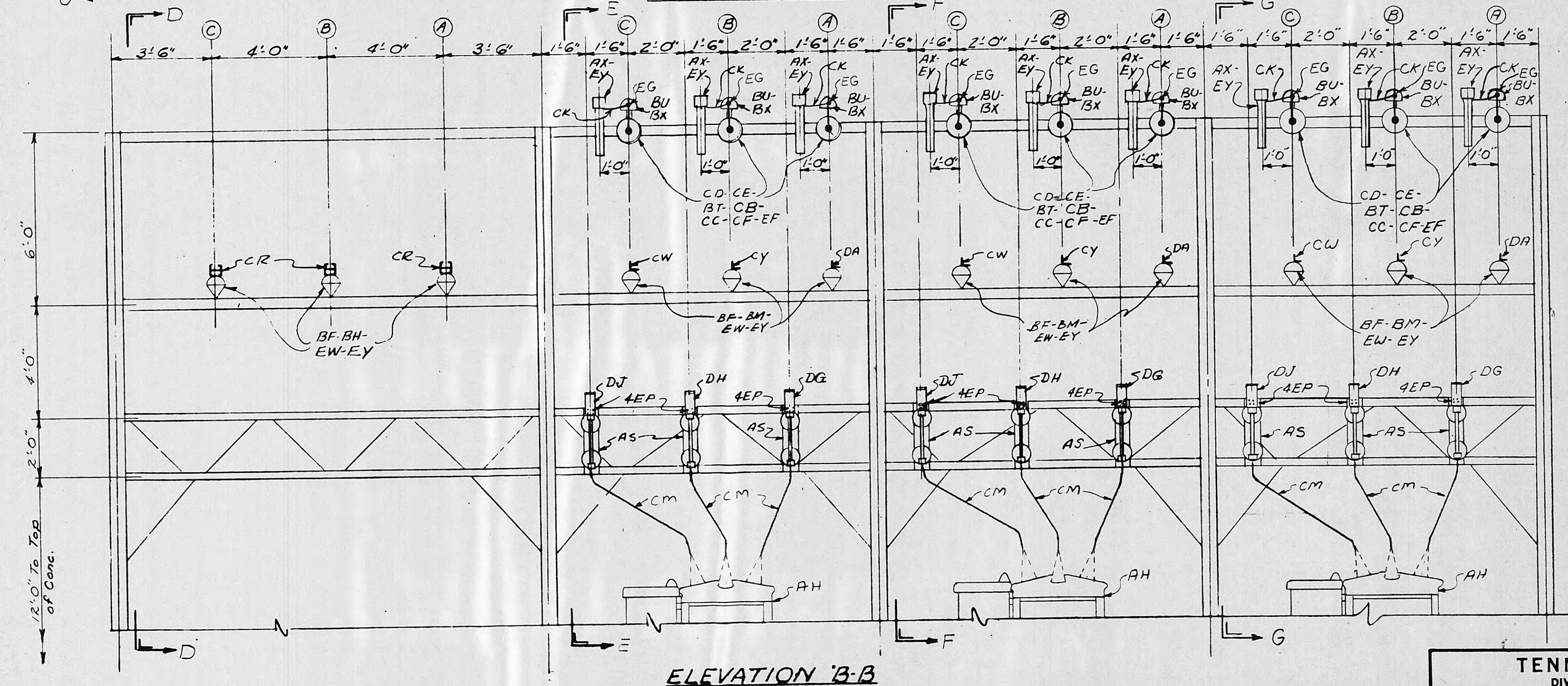
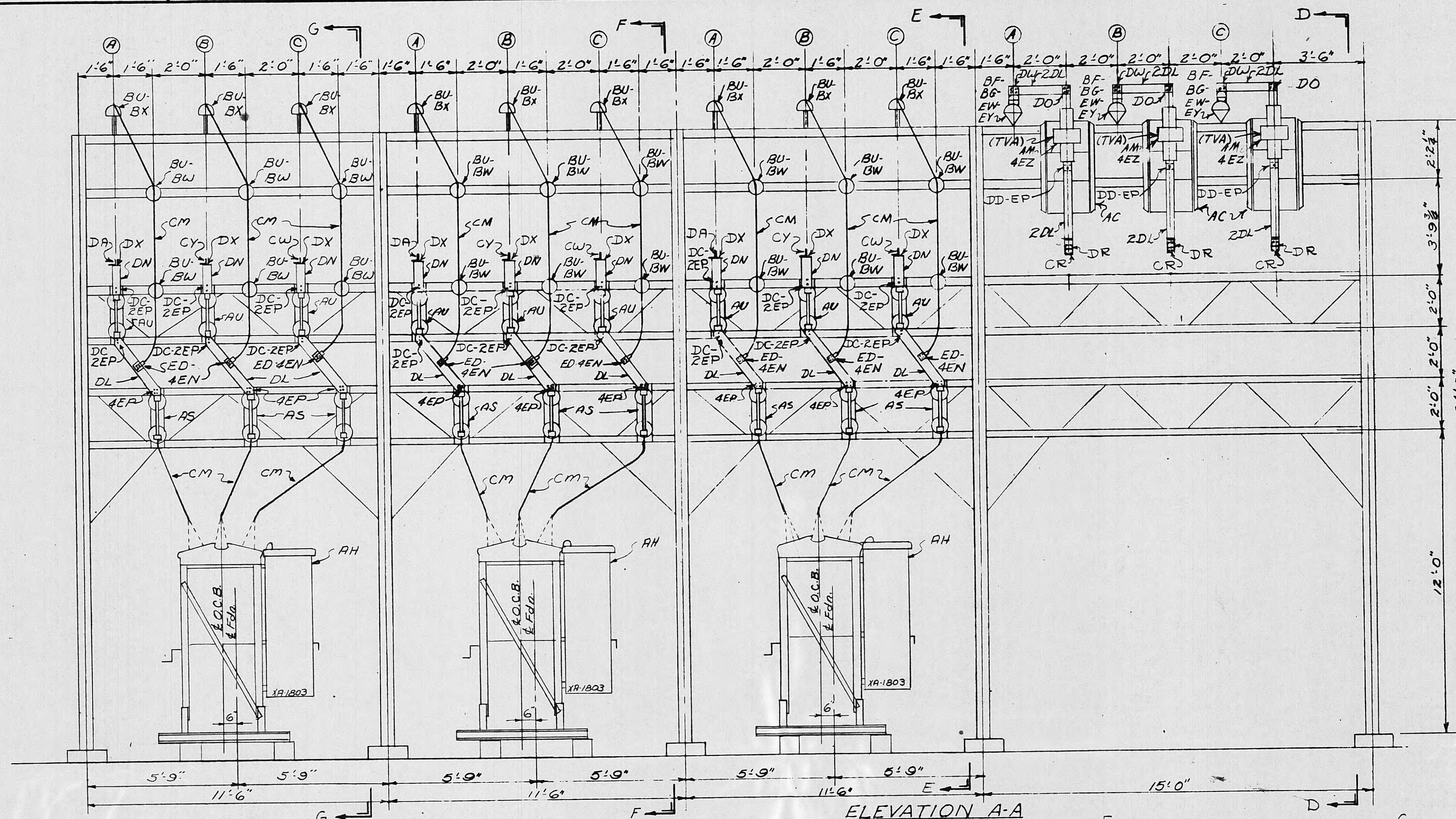
Lease-purchase to Harriman U.B. except 13KV metering C.T.'s and V.T.'s					
2 2/10/84A7831.01 DOA DOA ENT					
Field Change JRD 11-13-69					
11-10-72 JAL/JHT					
REV	DATE	WORK ORDER	DSGN. DRWN. CHD.	SUPV.	APPD.
DSGN.	DATE	SUPV.	DSGN.	DRWN.	CHD.
DRWN.	DATE	SUPV.	DSGN.	DRWN.	CHD.
CHD.	DATE	SUPV.	DSGN.	DRWN.	CHD.

TENNESSEE VALLEY AUTHORITY
DIVISION OF POWER PLANNING AND ENGINEERING

N.E. HARRIMAN, TENN. SUBSTATION-69KV
13 KV SWITCHGEAR - TYPE 'B' & 'D'

PLAN & SECTIONS

DATE 5-26-69
SCALE 3'-1"=1'-0"
SHEET 1 OF 3 SHEETS
LC-49692 R-2

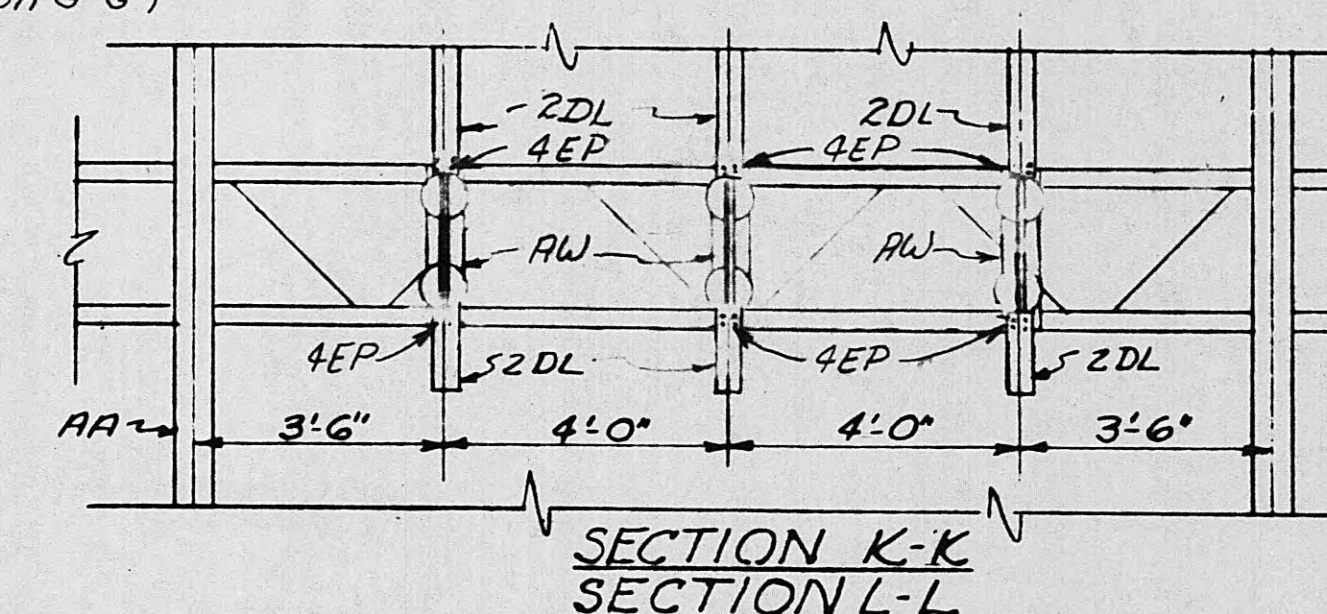
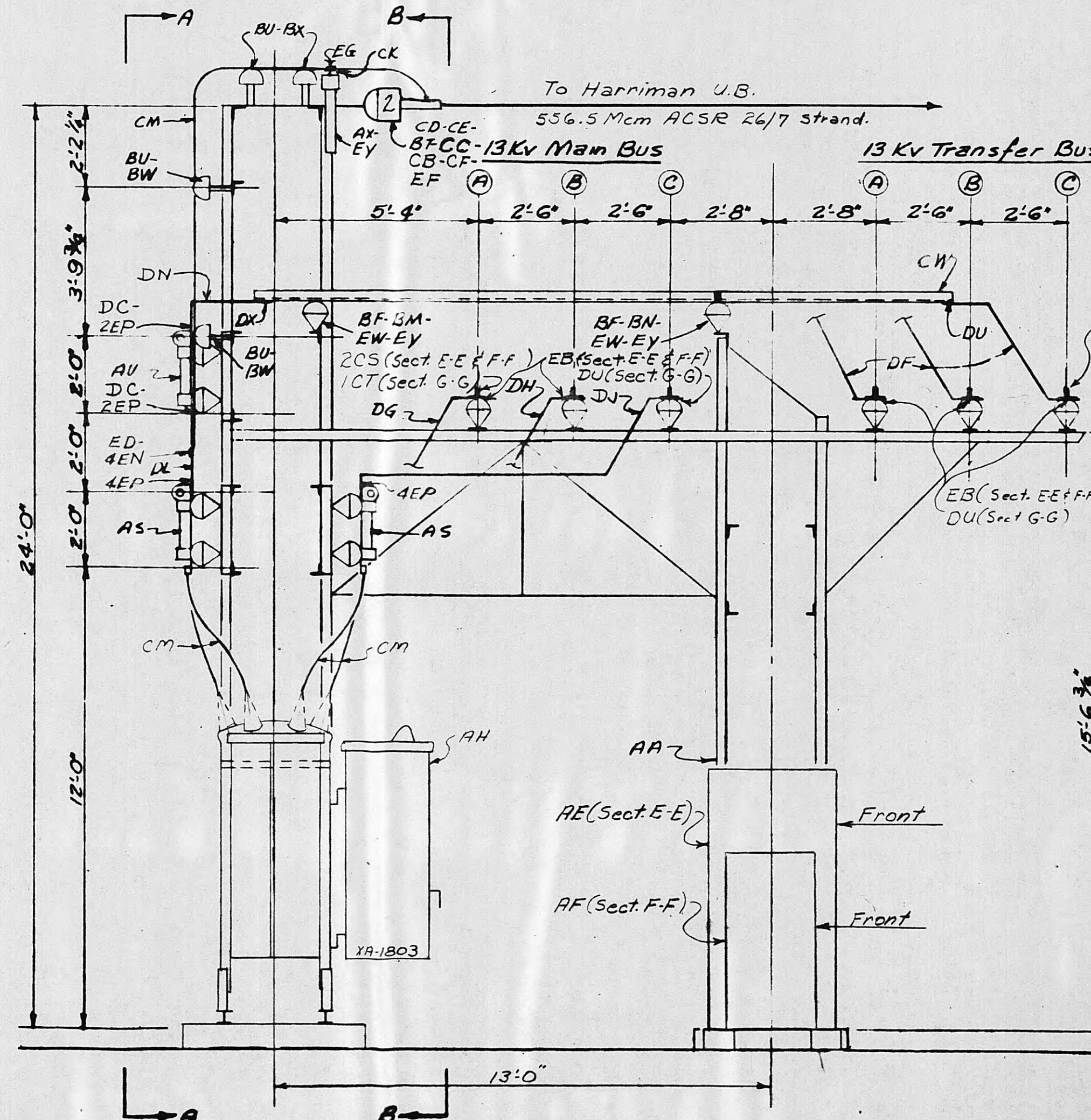
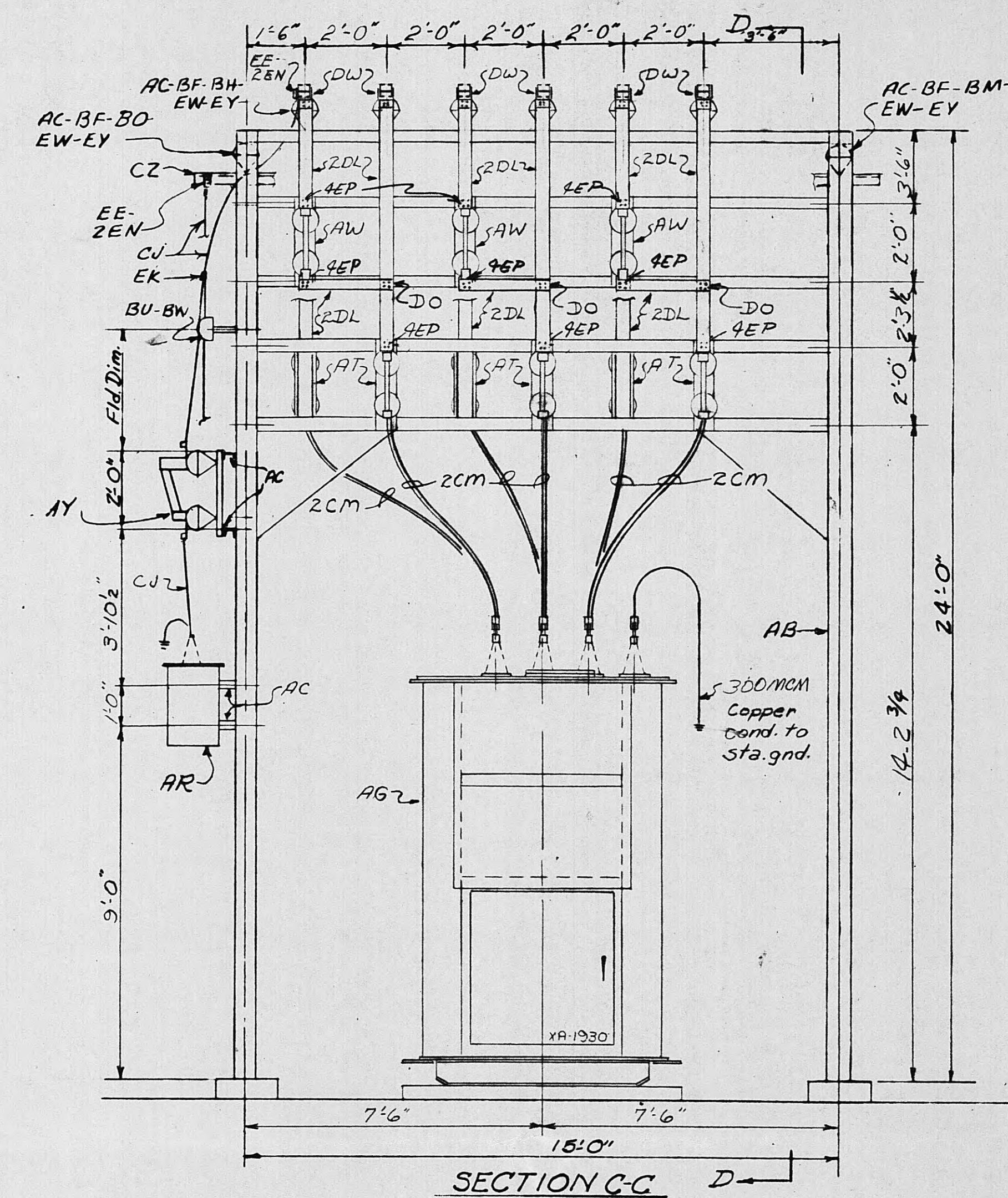
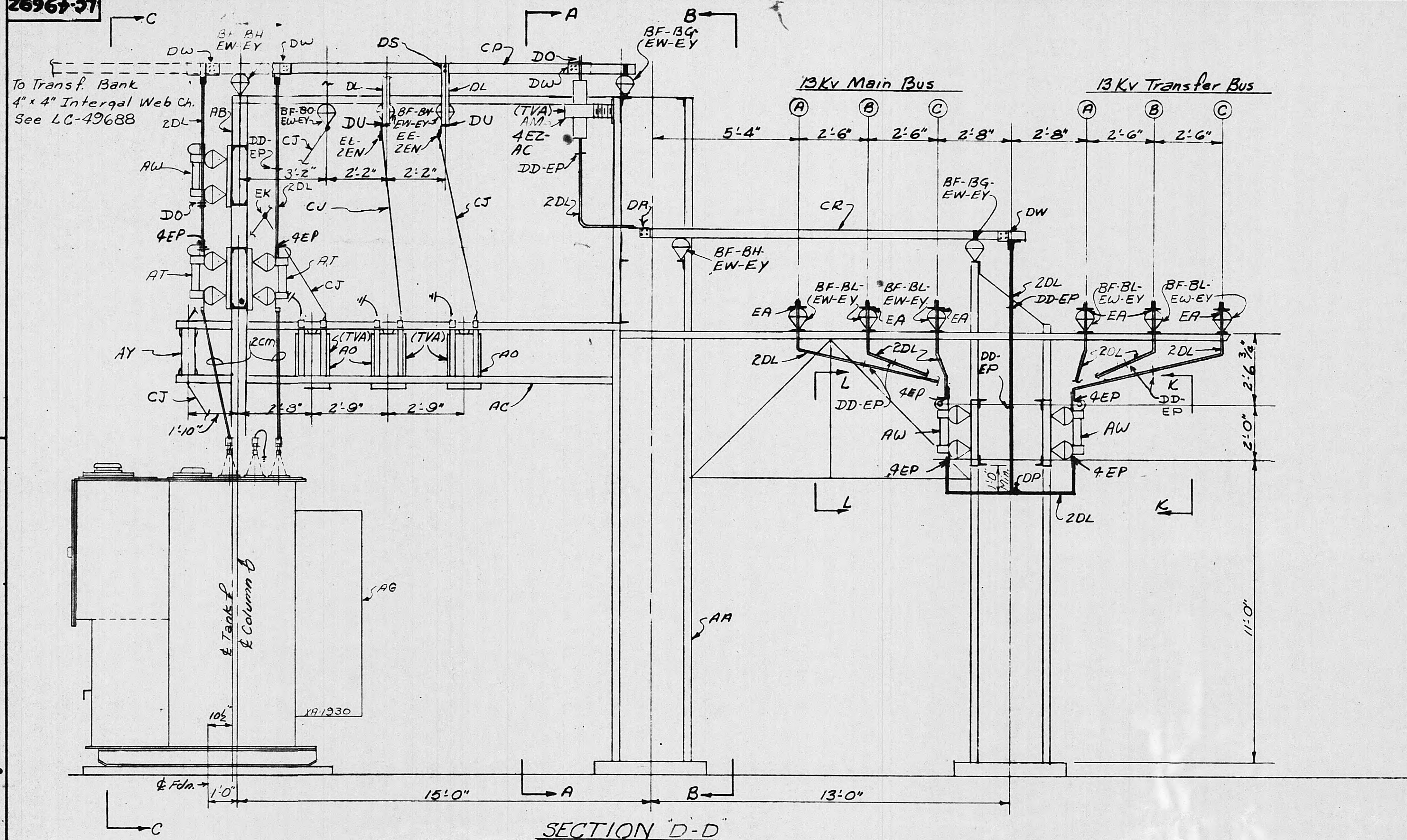


REFERENCES:
Bill of Material-----BMC--49693

Lease-Purchase. See Revision Note 2, Sh. 1.			
2 2/10/74 17831.D1 DOA DOA			
Field Change JRD 11-13-69			
REV	NO.	DATE	BY
1	1	11-10-72	JRD
2	2	11-13-69	JRD
3	3	11-13-69	JRD
4	4	11-13-69	JRD
5	5	11-13-69	JRD
6	6	11-13-69	JRD
7	7	11-13-69	JRD
8	8	11-13-69	JRD
9	9	11-13-69	JRD
10	10	11-13-69	JRD

TENNESSEE VALLEY AUTHORITY DIVISION OF POWER PLANNING AND ENGINEERING	
N.E. HARRIMAN, TENN., SUBSTATION-69KV 13KV SWITCHGEAR TYPE 'B&D'	
PLAN & SECTIONS	
DATE: 5-24-69	APPROVED: [Signature]
SCALE: 3/4"=1'-0"	CLASS CODE: 4052U
SHEET 2 OF 3	SHEETS

26967-37



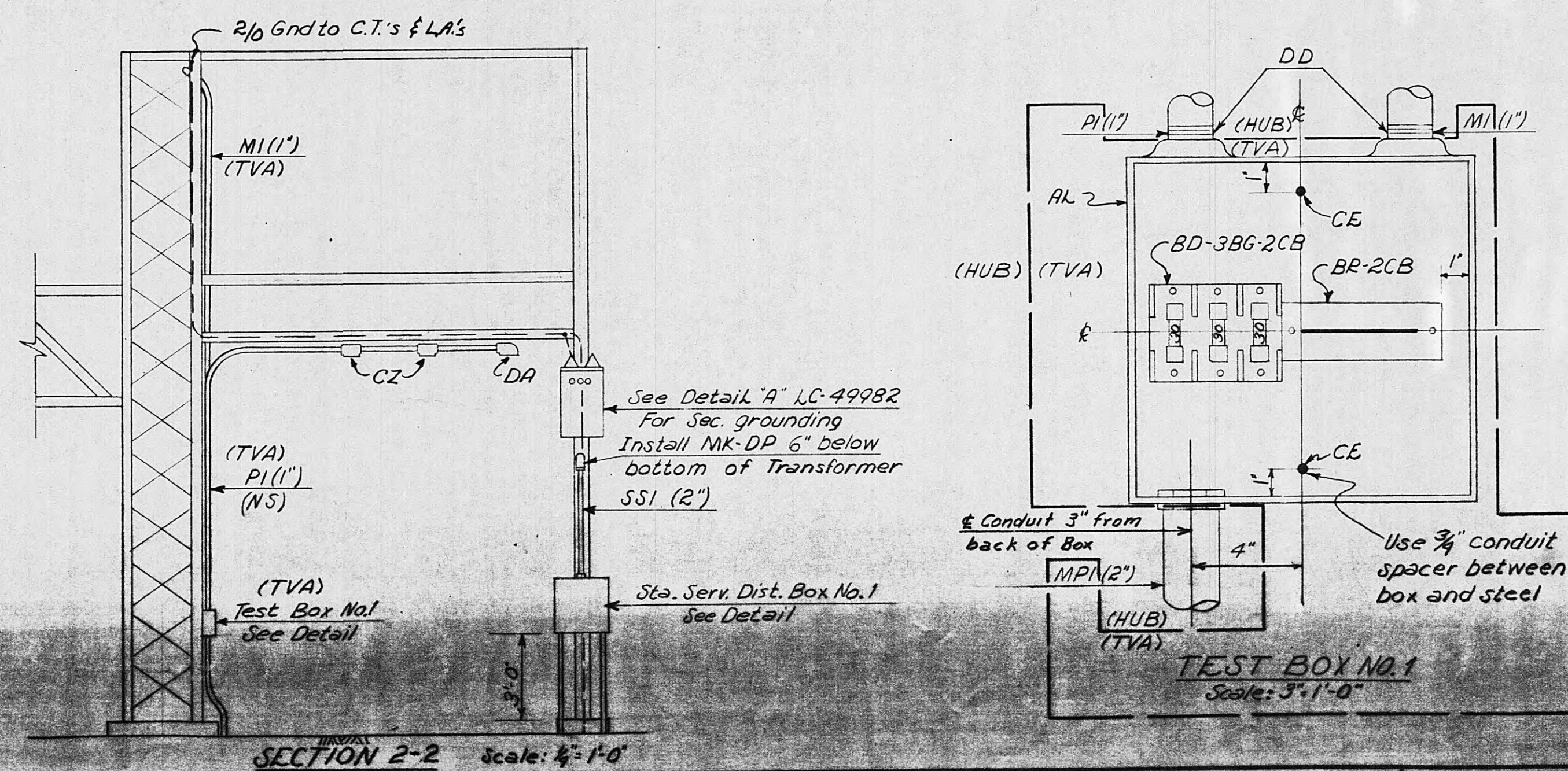
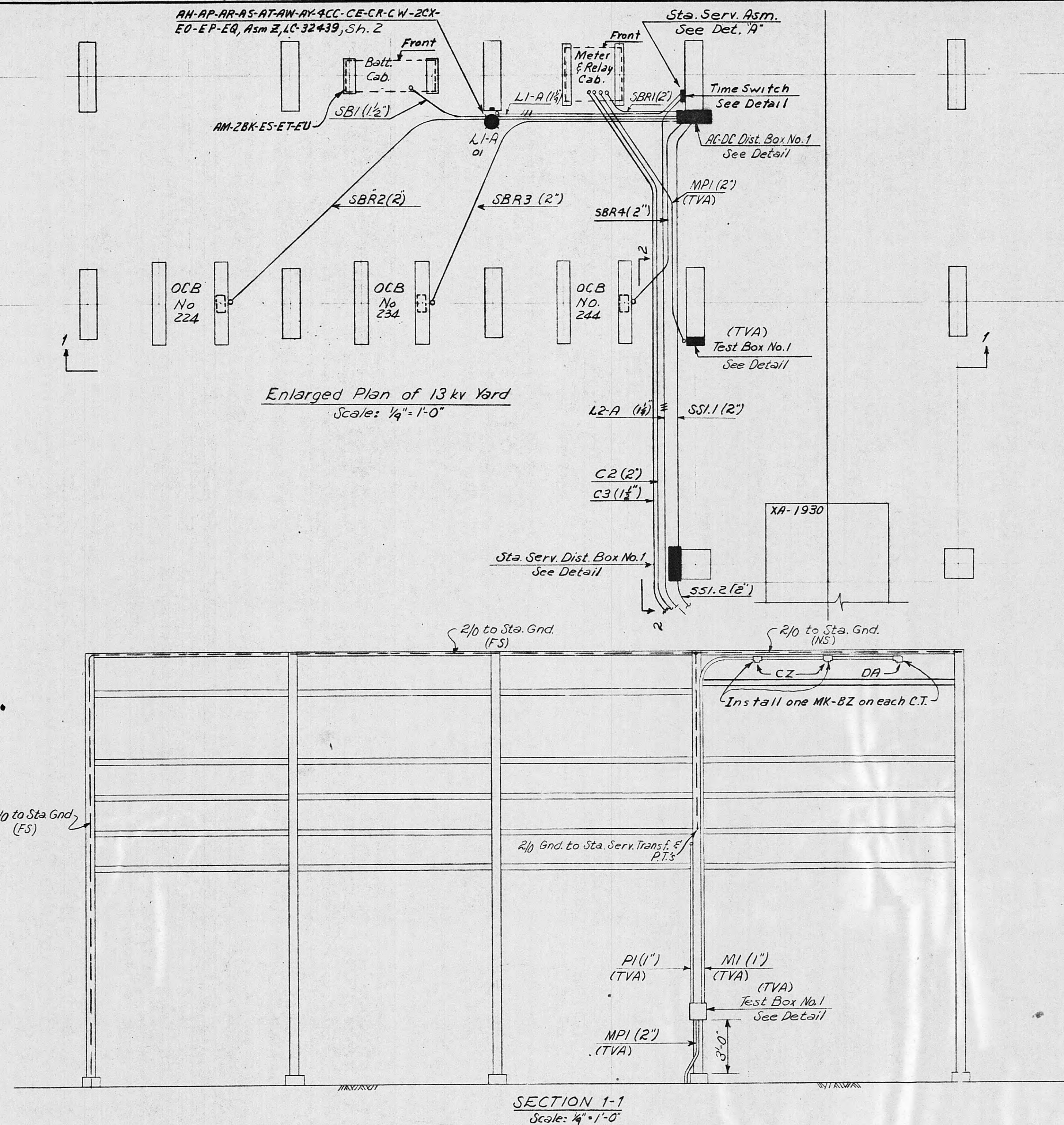
REFERENCE:
Bill of Material - BMC-49693

License purchase. See Revision Note 2, Sh. 1. 2/11/69 17831.01 DDA/DOA/ENT									
Field Change JRD 11-13-69									
REV	NO.	DATE	WORK	CHG	BY	CHKD	SUPV.	APPR.	
1	1	11-10-78	WAL	WAL	WAL	WAL	WAL	WAL	
2	2	11-10-78	WAL	WAL	WAL	WAL	WAL	WAL	
DESIGN: R.W.K.					SCALE: 3/8" = 1'-0"				
CHKD: MMR					CLASS: C				
TENNESSEE VALLEY AUTHORITY DIVISION OF POWER PLANNING AND ENGINEERING									
N.E. HARRIMAN, TENN., SUBSTATION-69KV. 13KV SWITCHGEAR-TYPE 'B' & 'D'									
PLAN & SECTIONS									
DATE: 5-26-69					APPROVED: [Signature]				
SHEET 3 OF 3					LC 49692-R-2				

MICROFILMED

62666-37

AM-AP-AR-AS-AT-AW-AY-4CC-CE-CA-CW-2CX-
EO-EP-EQ, Asm 2, LC-32439, Sh. 2



REFERENCES:
Bill of Material _____ BMC-49980
Conduit and Cable List _____ CMC-49981

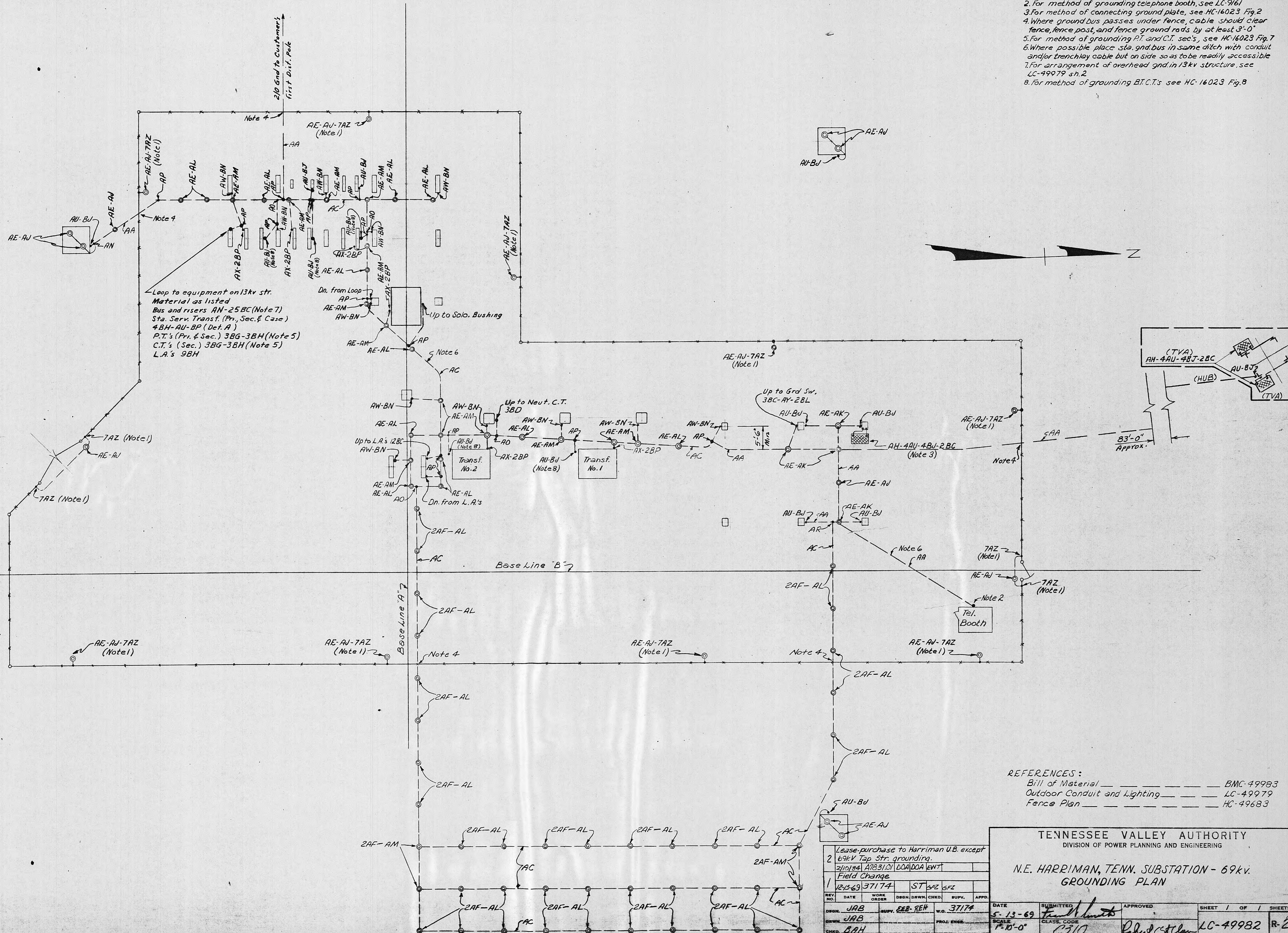
Lease-Purchase; Sheets No. 1 and 3 given to Harriman U.B.

TENNESSEE VALLEY AUTHORITY
DIVISION OF POWER PLANNING AND ENGINEERING

N.E. HARRIMAN, TENN. SUBSTATION - 69 KV.
OUTDOOR CONDUIT AND LIGHTING
PLAN AND DETAILS

Lease-purchase to Harriman U.B. except 2 Test Box No. 1 and cables MI, PI, MPI.						
REV.	DATE	WORK ORDER	DESIGN	DRWN	CHCK	SUPV.
1	12-15-69	37174	ST	5FZ	6FZ	
2	12-15-69	37174	ST	5FZ	6FZ	
3	12-15-69	37174	ST	5FZ	6FZ	
4	12-15-69	37174	ST	5FZ	6FZ	
5	12-15-69	37174	ST	5FZ	6FZ	
6	12-15-69	37174	ST	5FZ	6FZ	
7	12-15-69	37174	ST	5FZ	6FZ	
8	12-15-69	37174	ST	5FZ	6FZ	
9	12-15-69	37174	ST	5FZ	6FZ	
10	12-15-69	37174	ST	5FZ	6FZ	
11	12-15-69	37174	ST	5FZ	6FZ	
12	12-15-69	37174	ST	5FZ	6FZ	
13	12-15-69	37174	ST	5FZ	6FZ	
14	12-15-69	37174	ST	5FZ	6FZ	
15	12-15-69	37174	ST	5FZ	6FZ	
16	12-15-69	37174	ST	5FZ	6FZ	
17	12-15-69	37174	ST	5FZ	6FZ	
18	12-15-69	37174	ST	5FZ	6FZ	
19	12-15-69	37174	ST	5FZ	6FZ	
20	12-15-69	37174	ST	5FZ	6FZ	

DATE	5-13-69	SUBMITTED	APPROVED	SHEET 2 OF 3	SHEETS
SCALE	Shown	CLASS CODE	LC-49979	R-2	



REFERENCES:

Bill of Material	_____	BMC-49983
Outdoor Conduit and Lighting	_____	LC-49979
Fence Plan	_____	HC-49683

TENNESSEE VALLEY AUTHORITY
 DIVISION OF POWER PLANNING AND ENGINEERING
 E. HARRIMAN, TENN. SUBSTATION - 69kv
 GROUNDING PLAN

2	Lease-purchase to Harriman U.B. except			
	69kV Tap Str. Grounding.			
	2/10/84, A/B3/101, DDA/DDA/ENT			
1	Field Change			
	12-15-69 37174 ST 5FZ 5FZ			

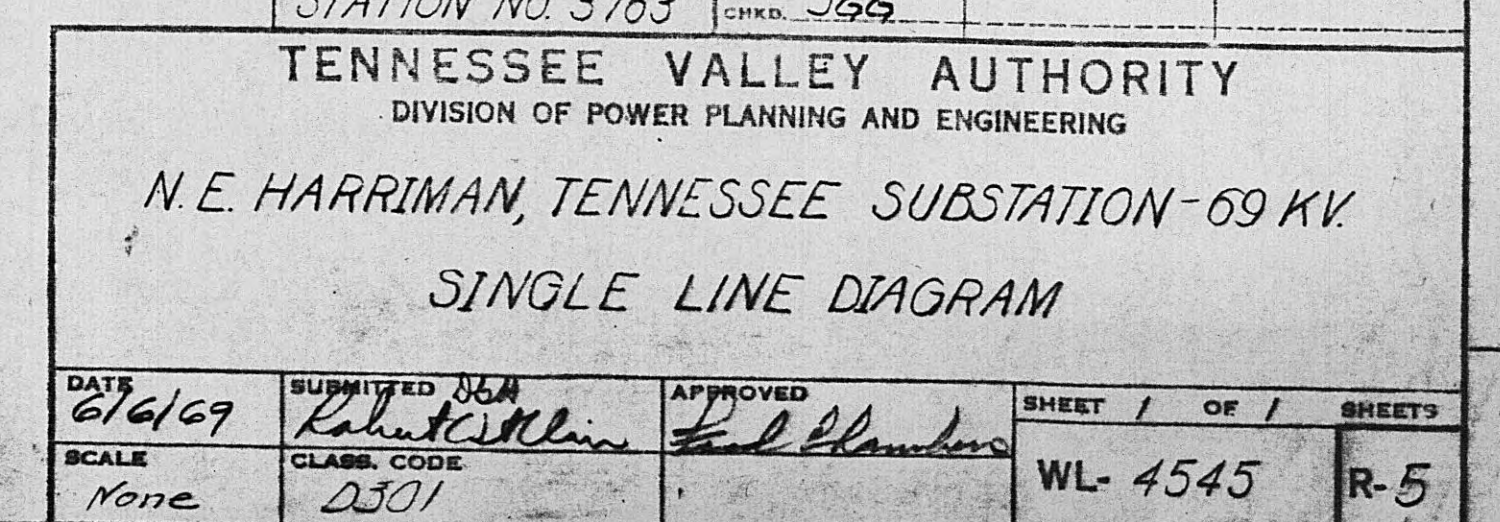
DIVISION OF POWER PLANNING AND ENGINEERING

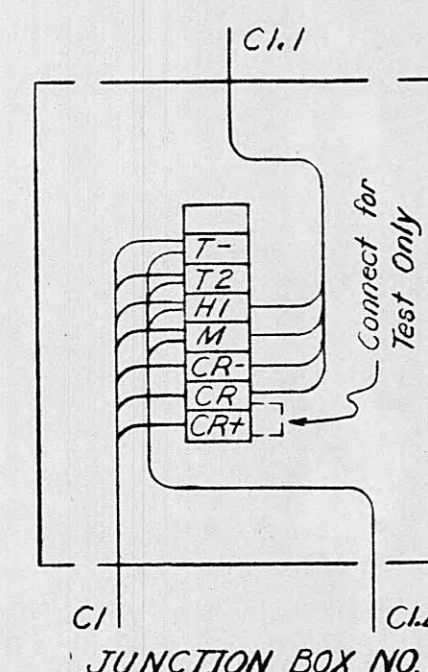
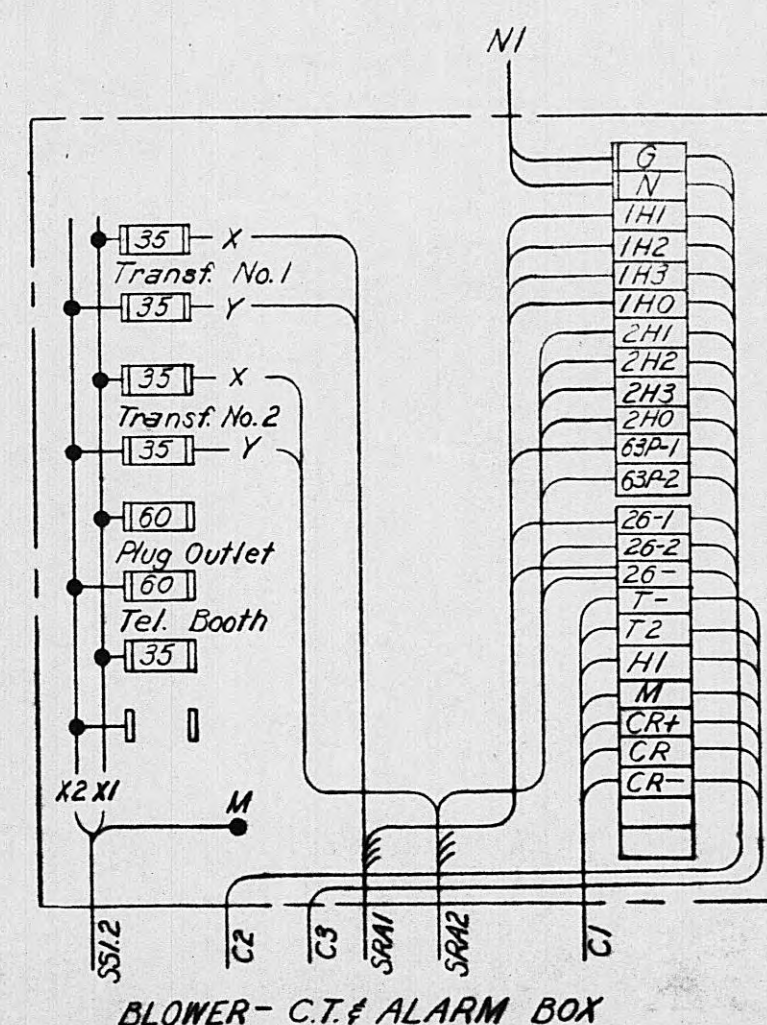
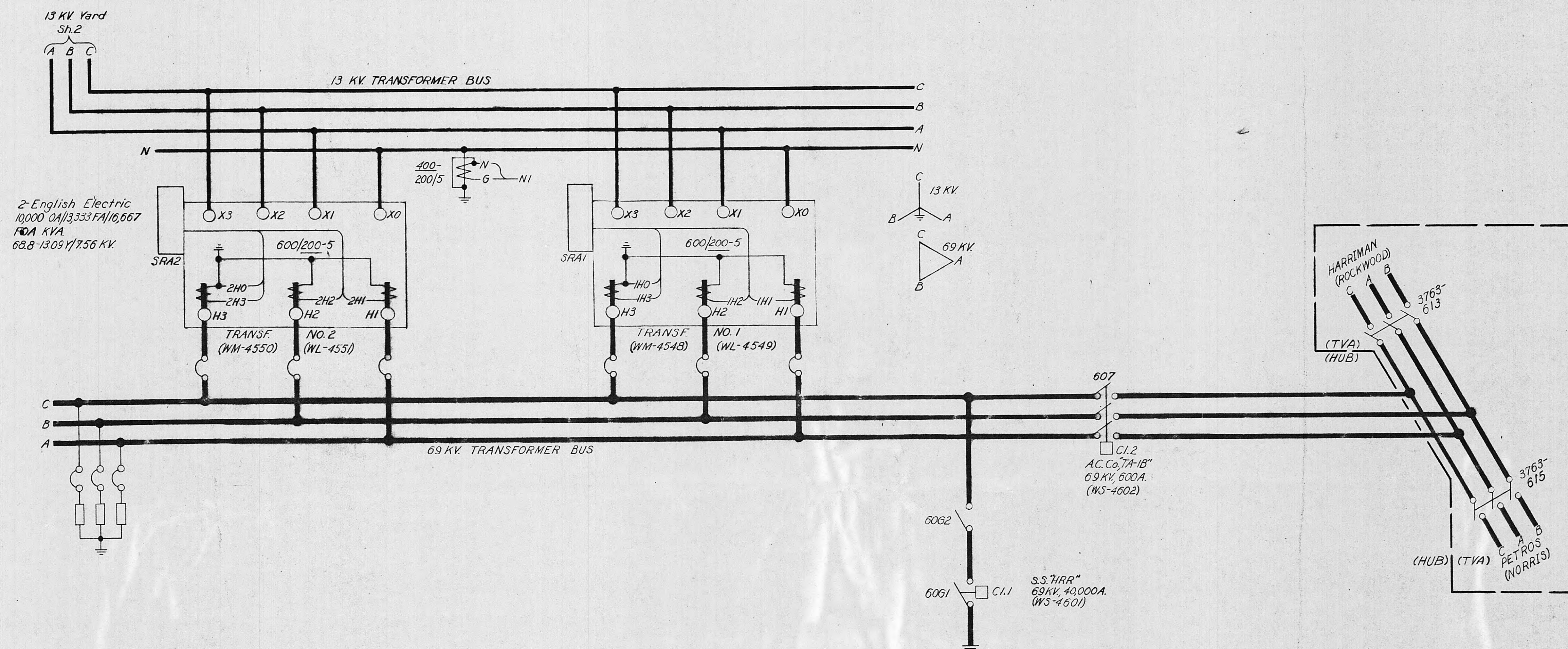
N.E. HARRIMAN, TENN. SUBSTATION - 69kV.
GROUNDING PLAN

REV. NO.	DATE	WORK ORDER	DSGN.	DRWN.	CHKD.	SUPV.	APPR.
----------	------	------------	-------	-------	-------	-------	-------

DSGN.	JAB	SUPV.	EEB-REN4	W.O.	37174		
DRWN.	JAB			PROJ. ENGR.			
CHKD.	BAH						

DATE	5-13-69	SUBMITTED	<i>Frank L. Smith</i>	APPROVED		SHEET	1	OF	1	SHEET
SCALE	1"=10'-0"	CLASS. CODE	C310	<i>Ph. J. Smith</i>		LC-49982				R-2

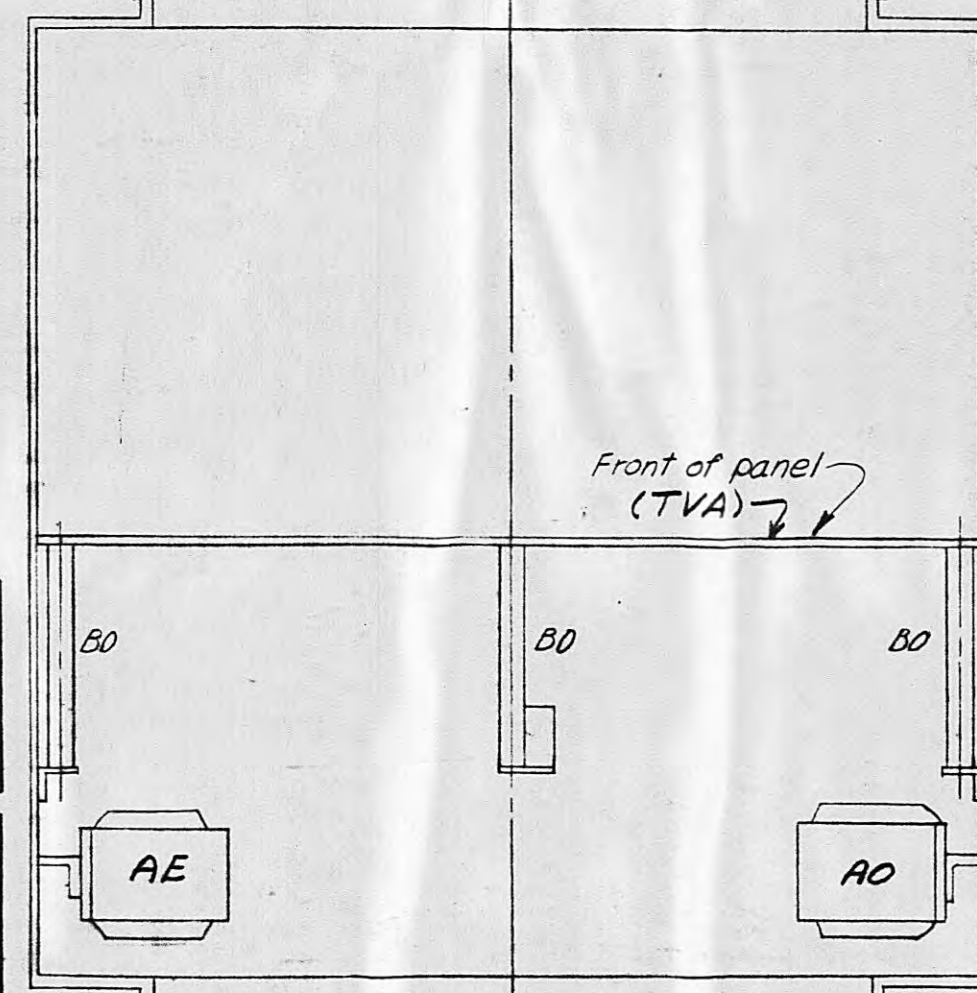




REVISION NOTES:
1. Lease-purchase to Harriman U.B. except
69KV T.L.'s to Harriman and to Rockwood.

REFERENCES:
Single Line Diagram WL-4545
Elementary Diagram WL-4588
Conduit Plan & Details LC-49979
Conduit & Cable List CMC-49981

Tennessee Valley Authority DIVISION OF POWER PLANNING AND ENGINEERING N.E. HARRIMAN, TENN. SUBSTATION - 69KV THREE LINE DIAGRAM 69 KV YARD & TRANSFORMER BANK									
Station No. 3763									
Lease-purchase to Harriman U.B. except 69KV T.L.'s to Harriman & to Petros. 2/10/69 A7831.011 DOA DOA EWT									
Field Change RHH-43 12/3/69									
Corrected tapstr switch numbers 8/11/69 37174 DNR DNR									
REV	NO.	DATE	WORK ORDER	DESIGN	DRWN	CHKD	SUPV	APPD	
DESIGN	LMO						W.D. 37174		
DRWN	MFA						PROJ. ENGR.		
CHKD	J94								
DATE		6/6/69		SUBMITTED BY		APPROVED		SHEET 1 OF 2 SHEETS	
SCALE		None		CLASS CODE		2703		WL-4587 R3	



REFERENCES:		4		Lease Purchase. See Revision. Note 2		00	
Single Line Diagram		WL-4545		2/10/84-ATB31.0100A100A EMT			
Three Line Diagram		WL-4587		3		Field Change RHH-85, 11-9-72	
Elementary Diagram		WL-4588		10-30-73		DCH DCH JHT	
Parts to Relocate Panel		SC-34034		2		See Revision Note #1	
Conduit Plant Details		LC-49979		4		4/15/71 3/71/74	
Conduit/Cable List		CMC-49981		1		Field Change. RHH-48 12/3/69	
				4/15/71		DNR	
				REV. NO.		DATE	
				WORK ORDER		ISSN	
				DRAWN		CHKD	
				BY		SUBM	
				DSGN.		L.M.G.	
				SUPV.		W.D.	
				DRWN.		Oliver	
				CHKD.		J.G.G.	
						PROJ. ENGR.	

TENNESSEE VALLEY AUTHORITY
 DIVISION OF POWER PLANNING AND ENGINEERING
 N.E. HARRIMAN, TENN. SUBSTATION-69KV
 RELAY & METER CABINET
 PANEL WIRING, F.V., R.V. & B/M

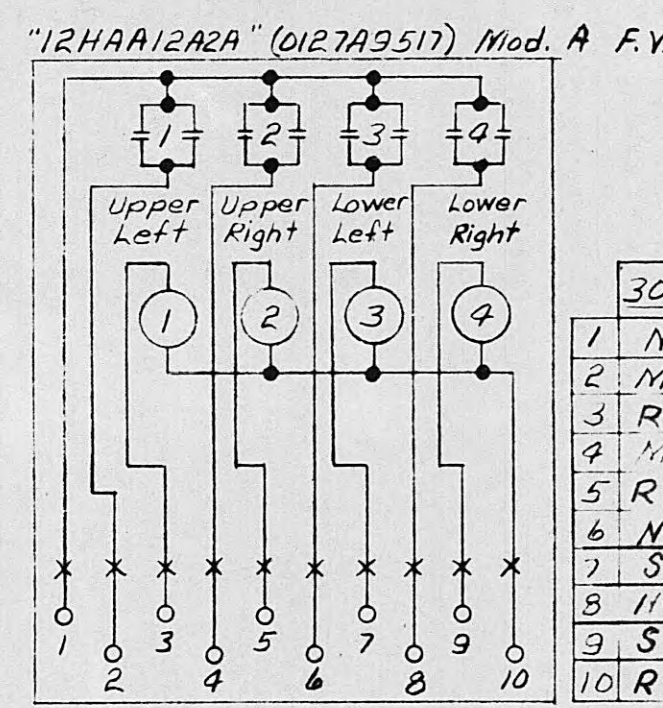
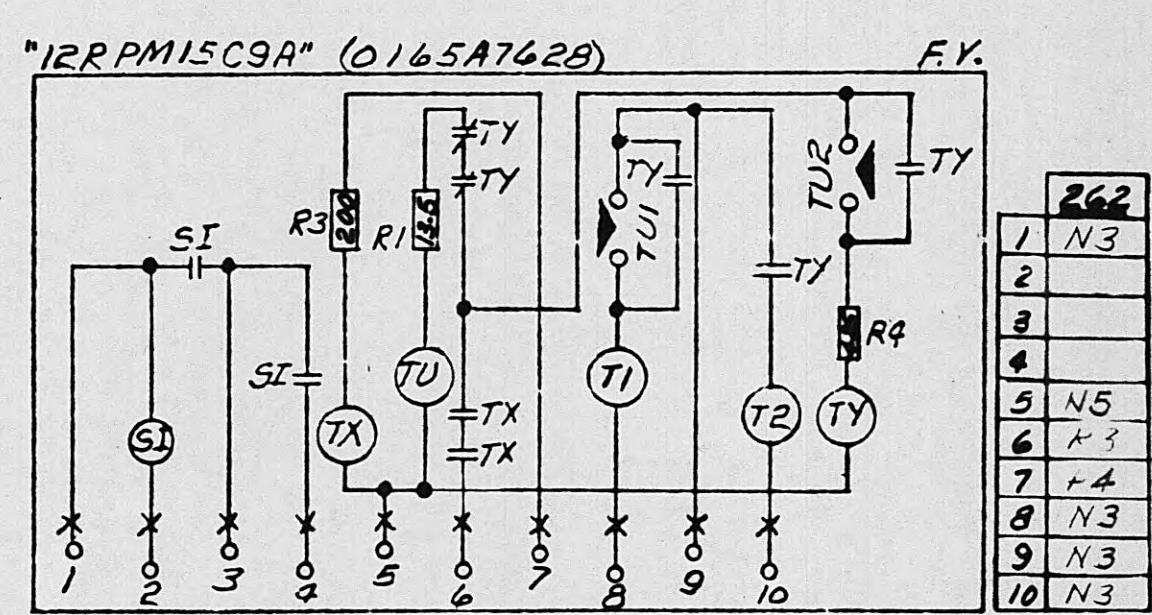
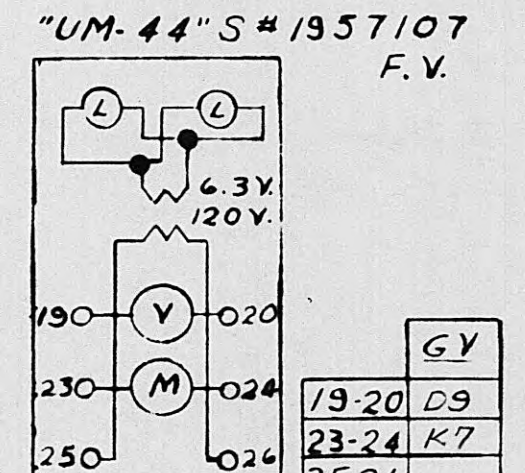
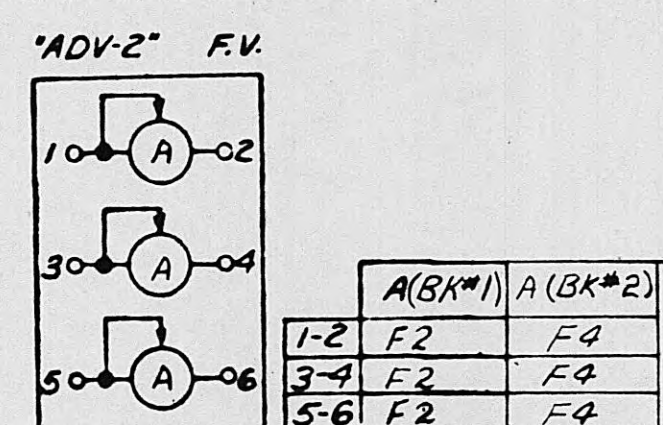
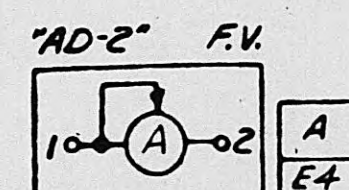
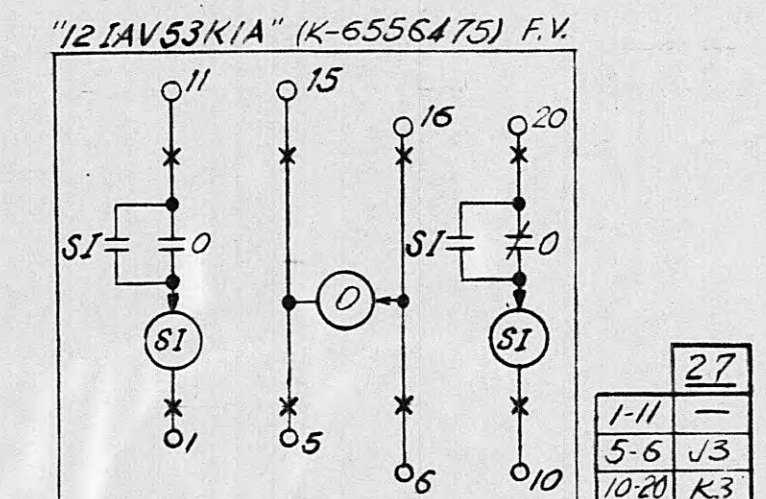
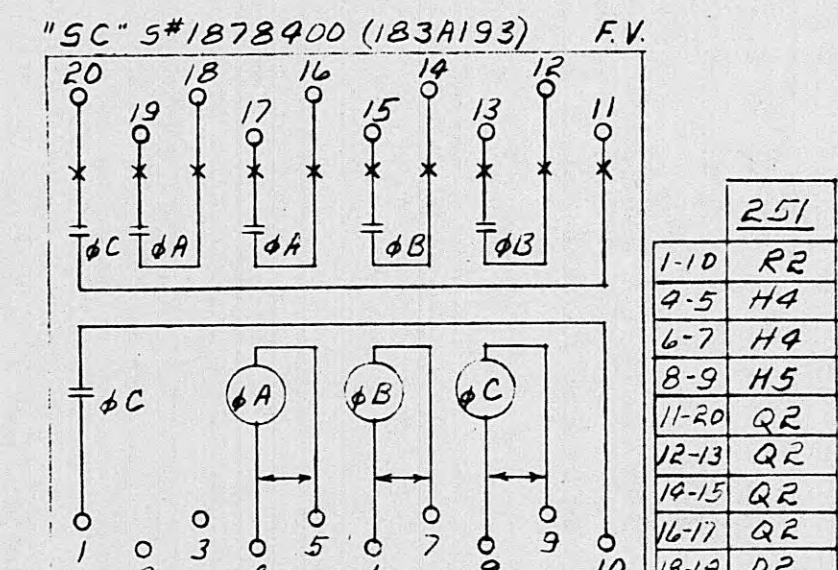
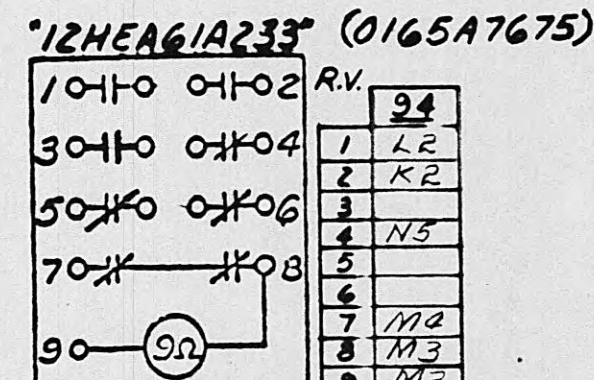
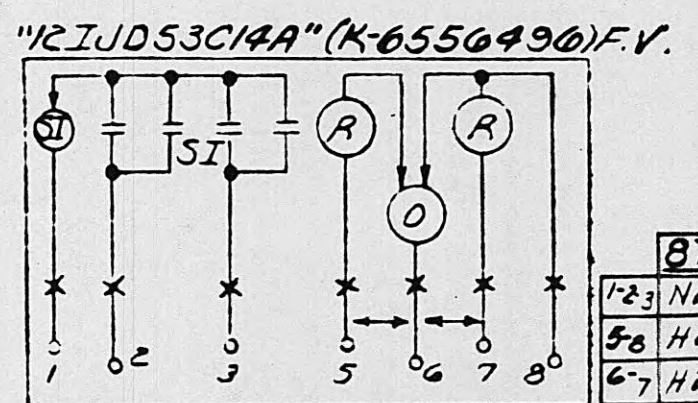
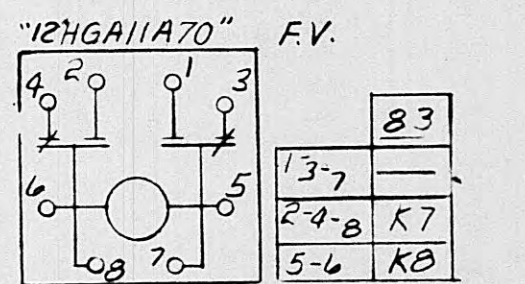
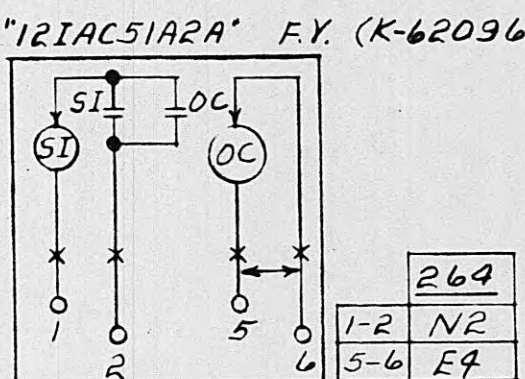
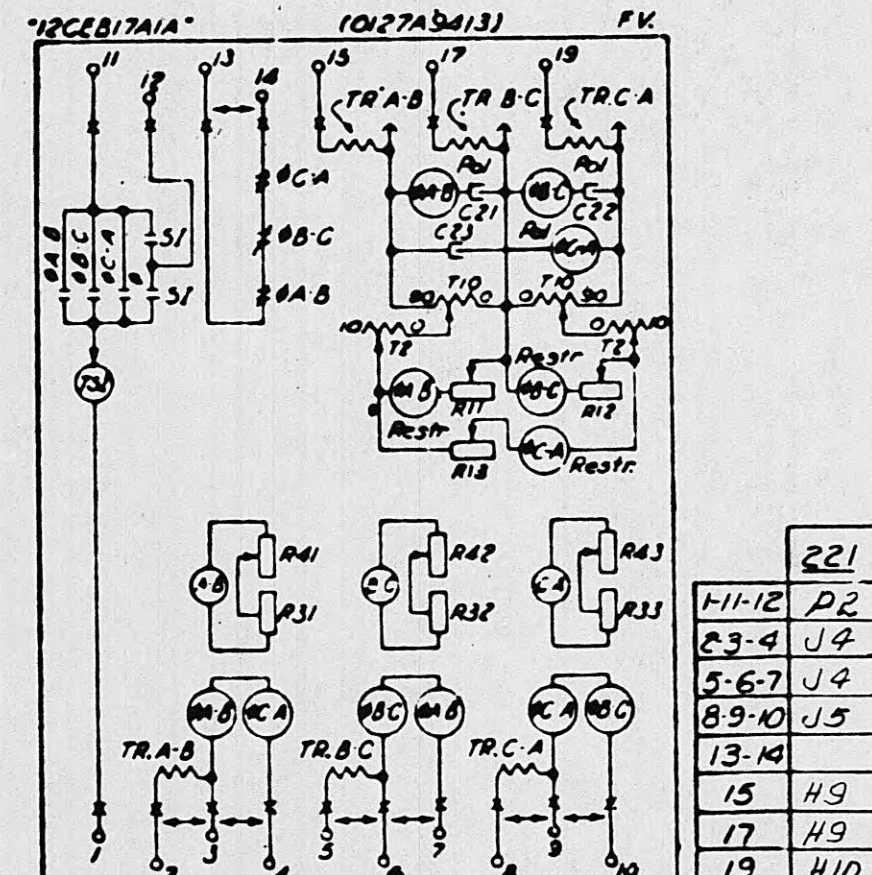
885-1M

"SB M10A6622"

CONTACTS	POSITIONS	R.V.
HANDLE END	3 2 1 OFF	243V
0-10 0-10	1 X	D8
	2 X	D8
	3 X	D8
	4 X	D8

"16SB1BB218"

CONTACTS	POSITIONS	R.V.
HANDLE END	NORMAL TRIP	6601
0-10 0-10	1 X	L-2
	2 X	K3
	3 X	
	4 X	



DEVICE SERIES
Device series for equipment general to station

Device	Type	Function
1-99	CEB17	Distance relay
200	IAY	A.C. undervoltage relay
307A	HAA	Target tripping & alarm relay
243V	SB/M	Voltmeter transfer switch
251	SC	Overcurrent relay
262	RPM	Timing relay
264	IAC	Overcurrent ground relay
83	HGA	Graphic voltmeter chart drive transfer relay
87	IJD	Bank differential relay
94	HEA	Aux. tripping relay
6601	SB1	Control switch for grounding switch

One element thermal demand ammeter
Three element thermal demand
Graphic voltmeter
Tape Metering Unit.

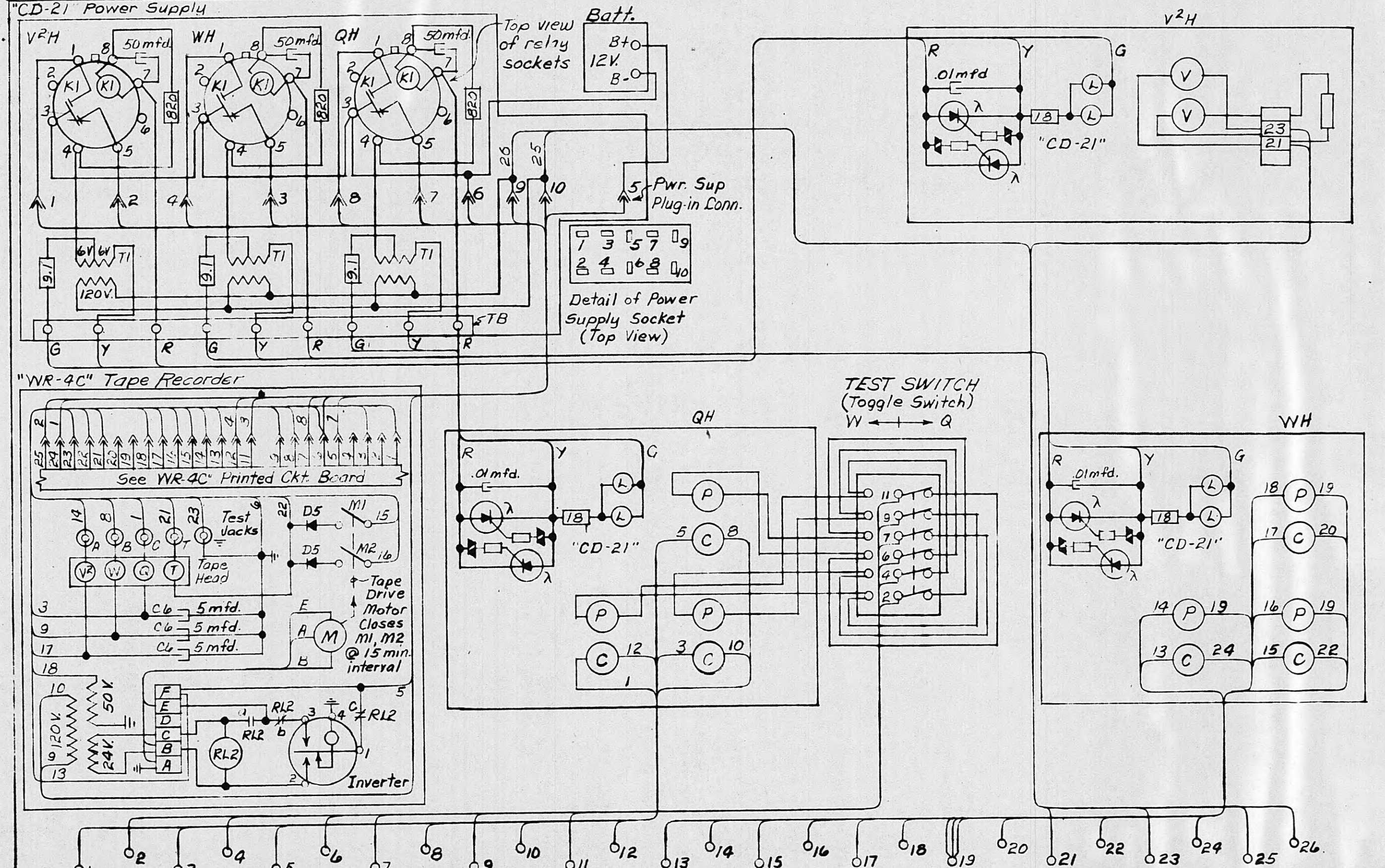
BANK
Hot spot temperature contacts

SWITCH 607
Air-break switch
Trip coil

GROUNDING SWITCH 6061
Grounding switch
Close release coil

REVISION NOTES:
1. Retired: "DSW-20", "PD-5Y", "C-16"
Revised: Index No's as required.
Added: "WRP-23" Tape Metering Unit.

"WRP-23" Tape Metering Unit (TVA)

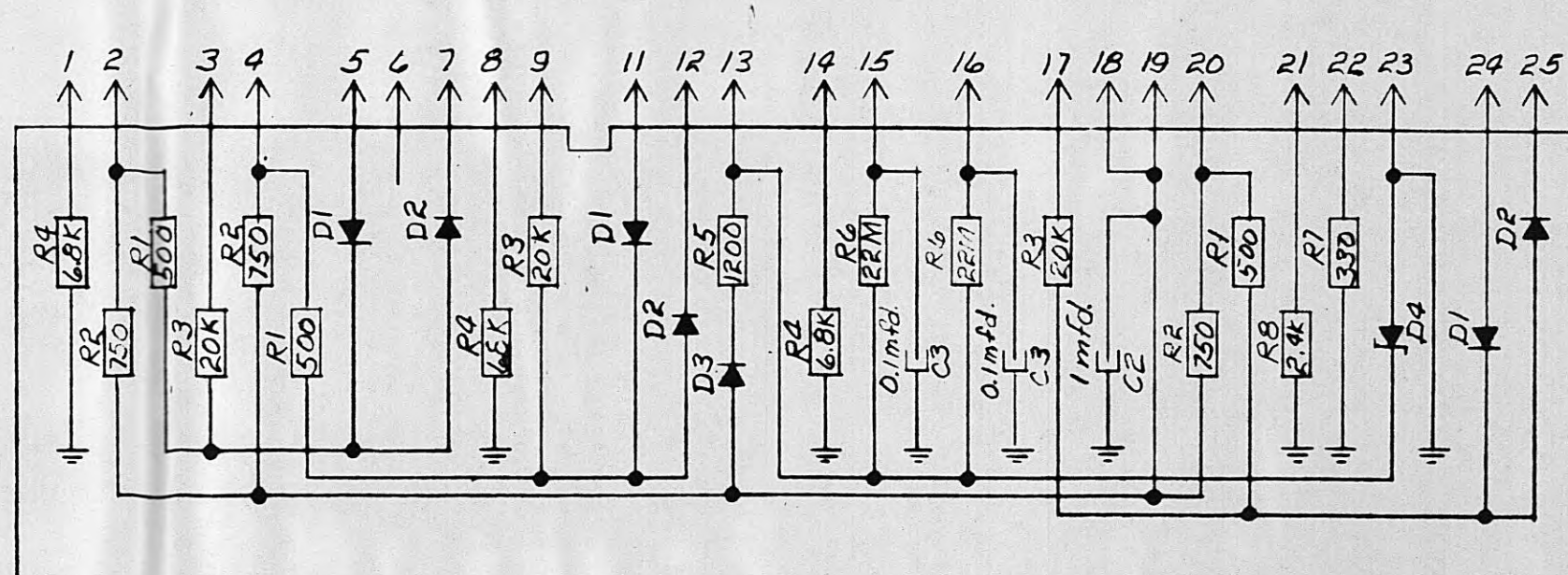


(TVA)

V2H	WH	QH
1-12	D7	
2	H7	
3-10	D7	
4	D7	
5-8	D6	
6	G7	
7	H8	
8	H8	
9	H8	
11	G8	
13-24	D7	
14-16	H6	
15-22	D7	
17-20	D6	
21-23	E8	
25-26	L6	

REFERENCES:
Single Line Diag.
Three Line Diag.
13KV Meter & Relay Cab.

WL-4545
WL-4587
WL-4679



"WRP-4C" Printed Circuit Board (Components not physically located)

All Internals are indexed to
Sh. 2 of this drawing

STATION NO. 3763

TENNESSEE VALLEY AUTHORITY
DIVISION OF POWER PLANNING AND ENGINEERING

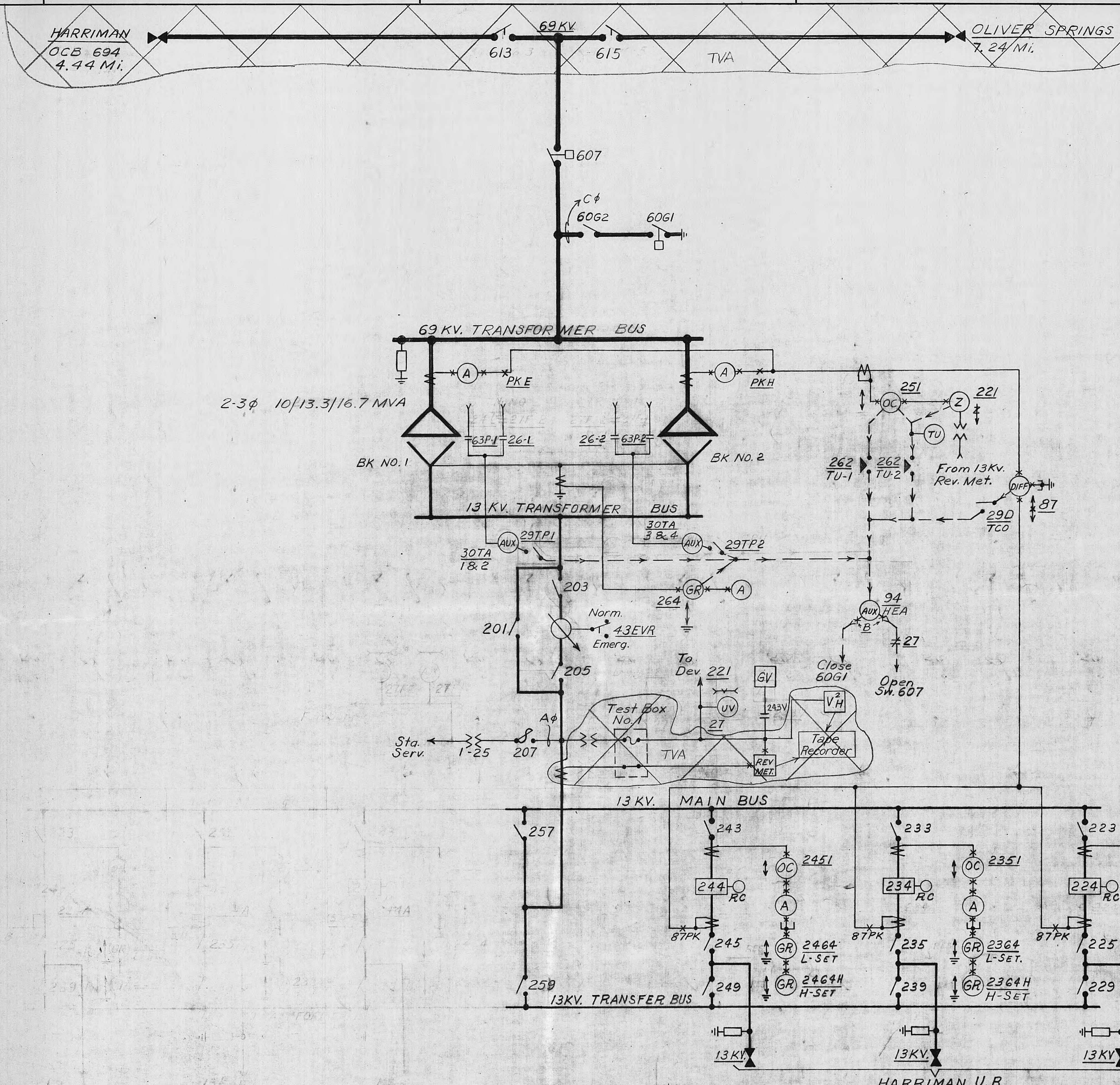
N. E. HARRIMAN, TENN., SUBSTATION - 69 KV.
ELEMENTARY DIAGRAM
INTERNAL CONNECTIONS

DATE	SUBMITTED	APPROVED	SHEET	OF	SHEETS
6/5/69	Dewey G. Hunter	Robert C. St. Clair	1	2	

CLASS. CODE: 2302

SCALE: None

WL-4588 R-4



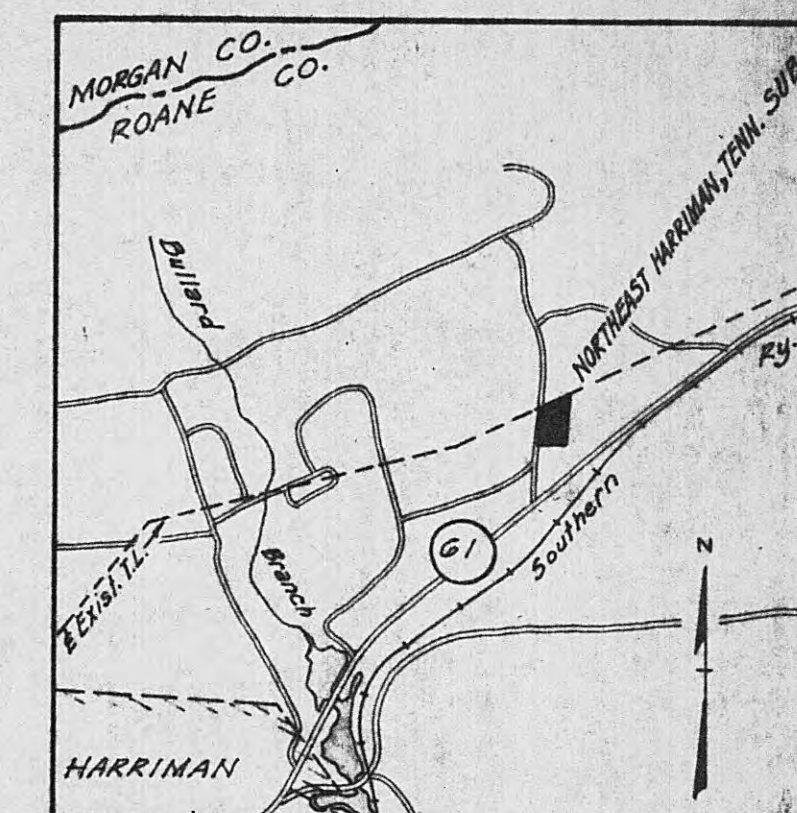
Lease-Purchase					
3	5-21-84	VSB	VSB	W.C. Lucas	David M. Bailey
REV	DATE	DESIGN	DRAWN	APPROVED	SUPERVISOR

TENNESSEE VALLEY AUTHORITY DIVISION OF POWER SYSTEM OPERATIONS			
N. E. HARRIMAN			
DATE 7-1-69	SUBMITTED 7-1-69	APPROVED 7-1-69	SHEET 1 OF 1 SHEETS
DRWN. AAD	W.O. INT. 37174	LOC. 0301	PSO 3763 R-3
CHKD. J.J.M.	W.O. CURR.	843139-355741	

2085-M7

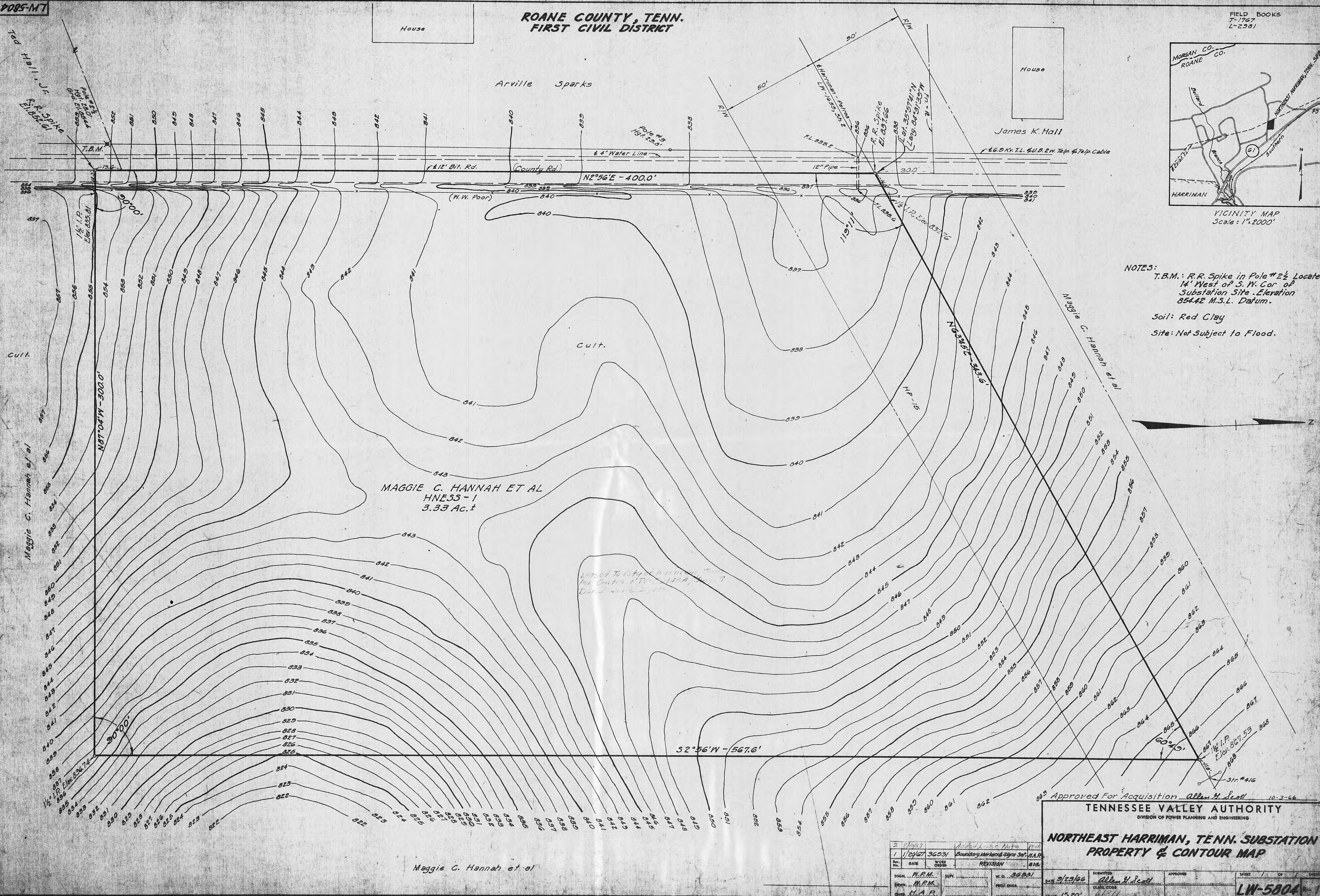
ROANE COUNTY, TENN.
FIRST CIVIL DISTRICT

FIELD BOOKS
T-1767
L-2281



VICINITY MAP
Scale: 1"=2000'

NOTES:
T.B.M.: R.R. Spike in Pole #2 1/2 Located
14' West of S.W. Cor. of
Substation Site. Elevation
854.42 M.S.L. Datum.
Soil: Red Clay
Site: Not Subject to Flood.



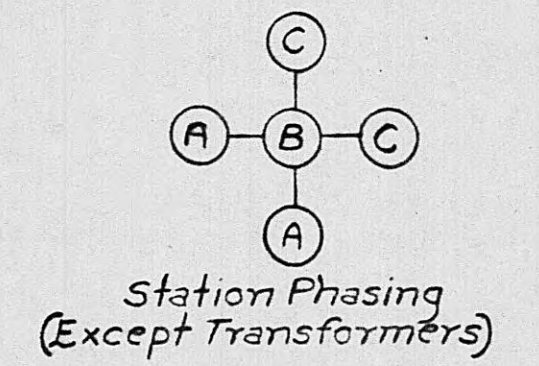
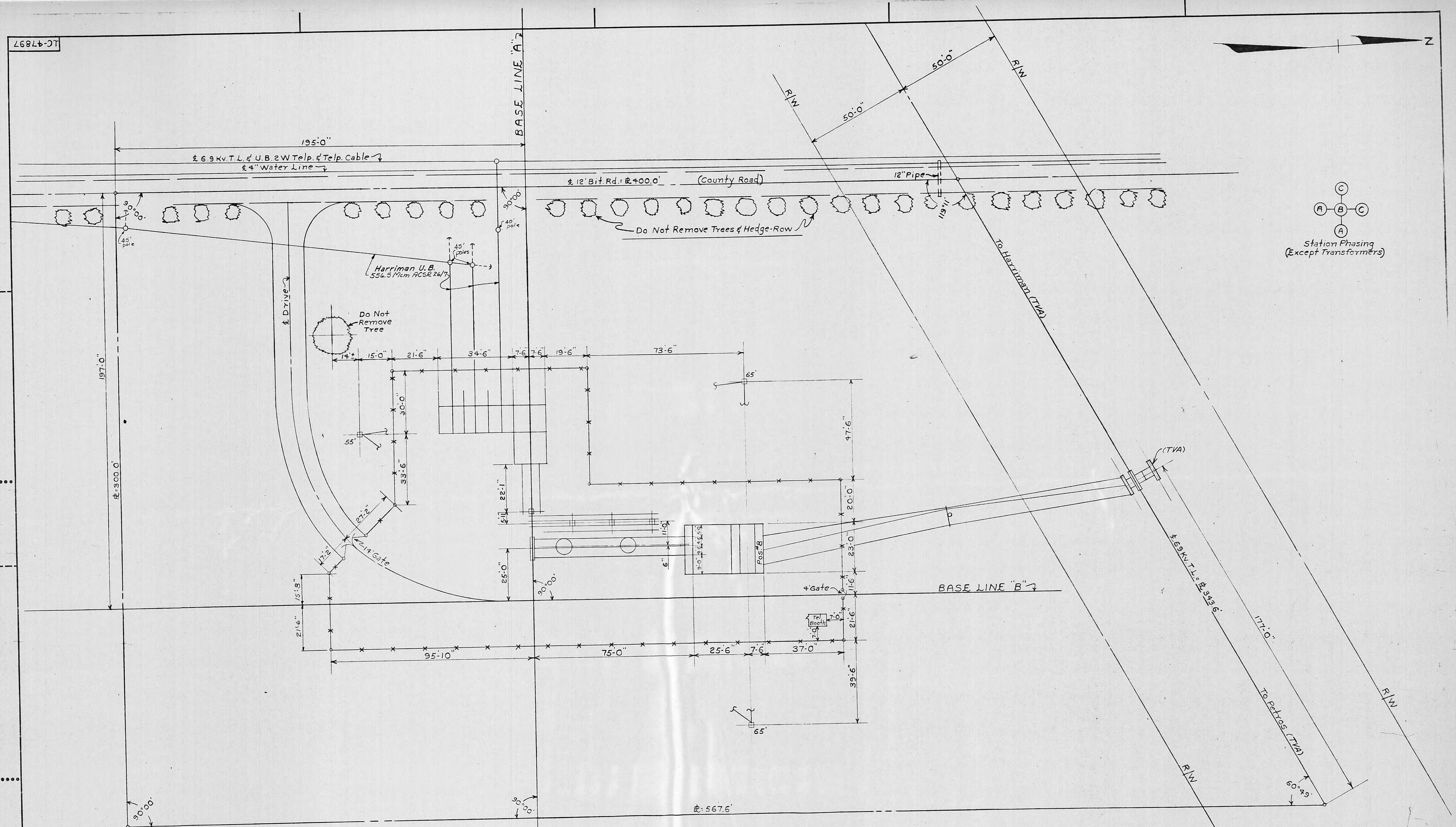
Approved For Acquisition *Allen H. Scott* 10-3-66

TENNESSEE VALLEY AUTHORITY
DIVISION OF POWER PLANNING AND ENGINEERING

NORTHEAST HARRIMAN, TENN. SUBSTATION
PROPERTY & CONTOUR MAP

REV.	DATE	DESCRIPTION	BY	CHKD.
1	1/24/67	36031 Boundary Markers & Signs Set	H.A.P.	
2	3/23/66	36031		
3	3/23/66	36031		
4	3/23/66	36031		
5	3/23/66	36031		
6	3/23/66	36031		
7	3/23/66	36031		
8	3/23/66	36031		
9	3/23/66	36031		
10	3/23/66	36031		

LW-5804-1

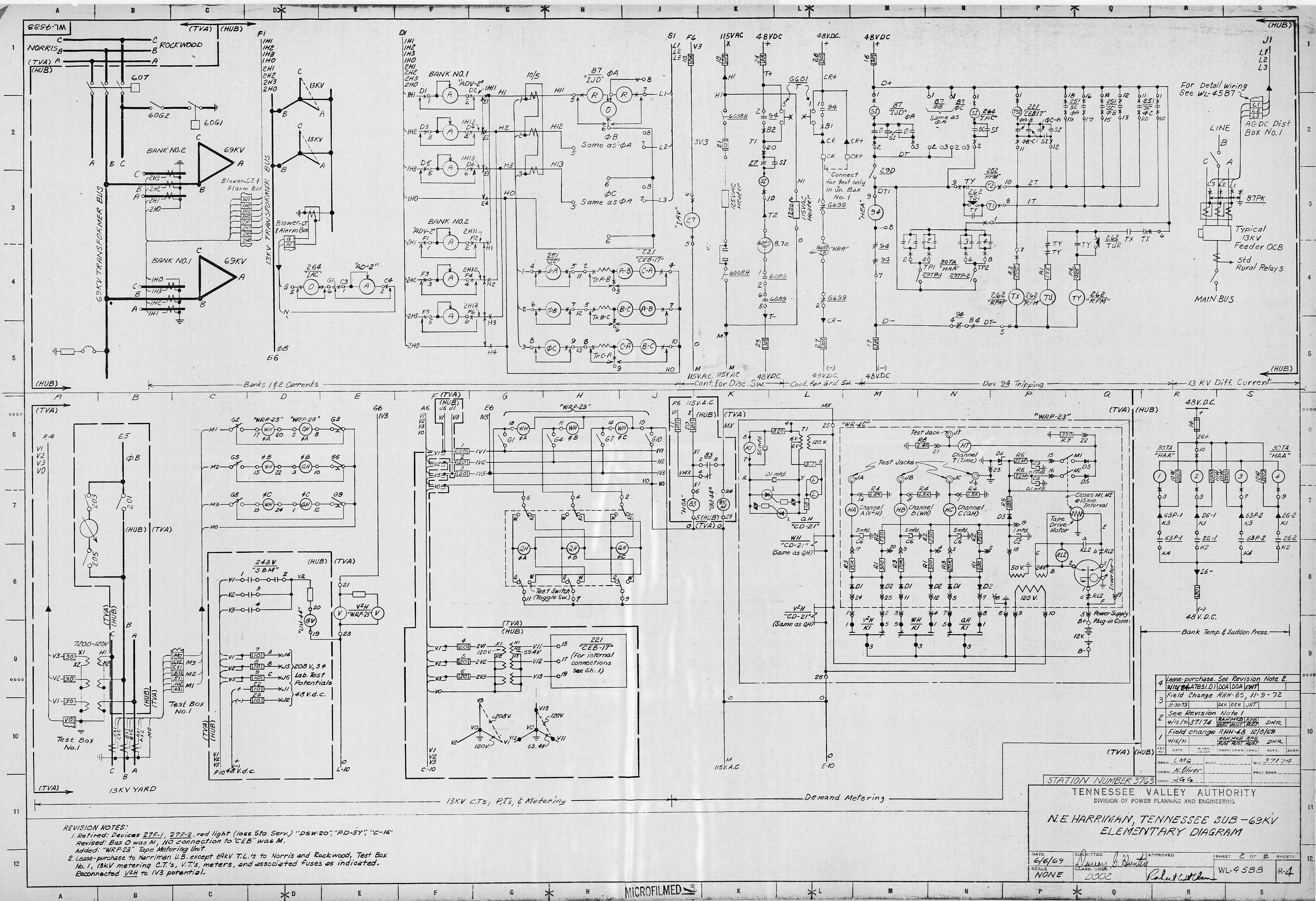


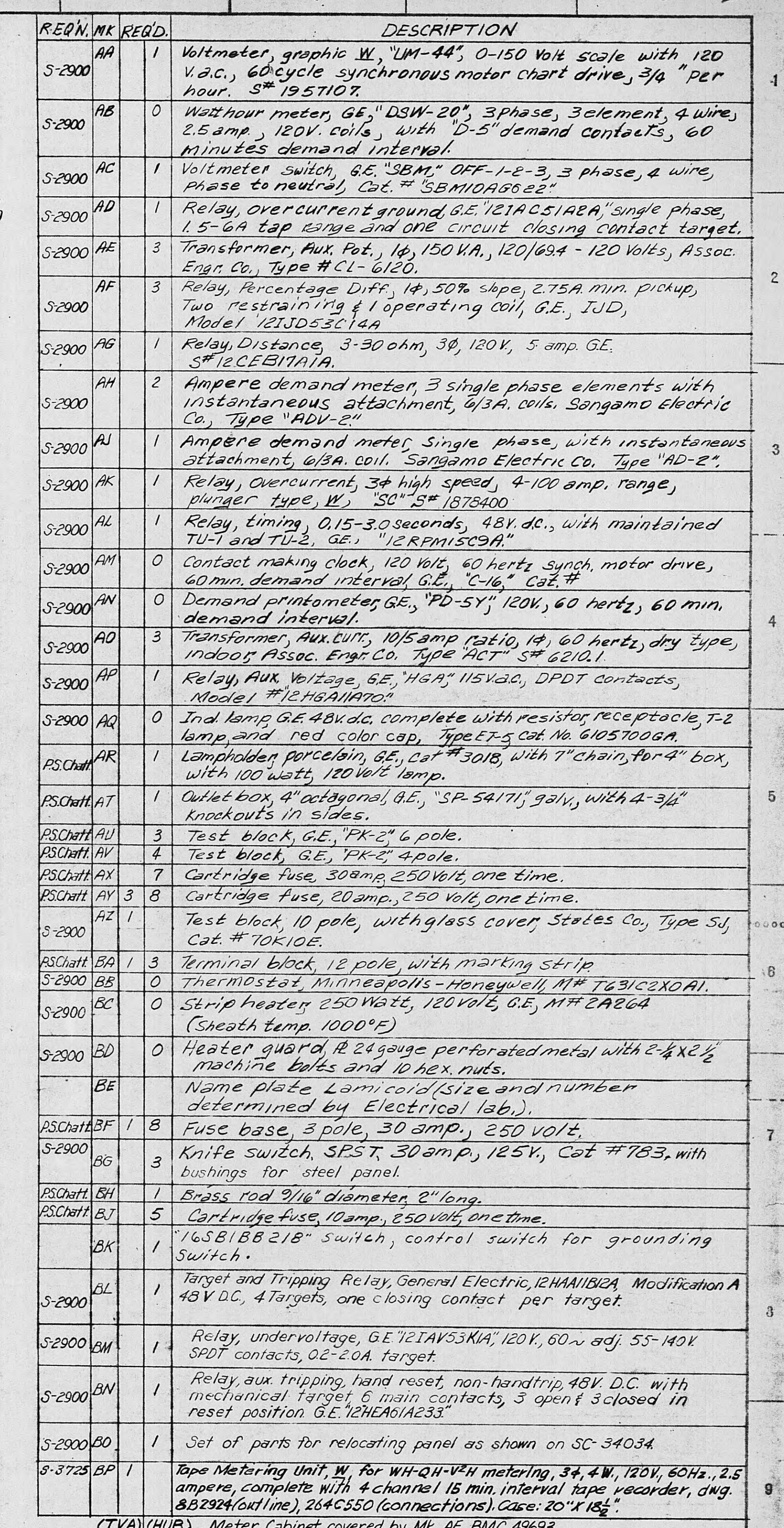
REFERENCES:
 Property And Contour Map _____ LW-5804
 General Arrangement Plan (Ultimate) _____ LC-47896

Lease-purchase to Harriman U.B. except 69KV T.L.'s to Harriman & to Petros and 69KV tap str.					
3 2/10/84 17831.01 00A 00A ENT					
Added feeder conductor size.					
2	5-26-69	37174	RWK/MMR/LDM	RE	
Moved Station 30'-0" East					
1	10-17-68	37174	T.P. JRS	RE	
REV. NO.	DATE	WORK ORDER	DESN. DRWN. CHKD.	SUPV.	APPD.
DESN.	J.T.P.	RE	W.O. 37174		
DRWN.	J.T.P.		PROJ. ENGR.		
CHKD.	JRS				

TENNESSEE VALLEY AUTHORITY
 DIVISION OF POWER PLANNING AND ENGINEERING
 N.E. HARRIMAN, TENN. SUBSTATION-69KV
 GENERAL ARRANGEMENT PLAN
 INITIAL

DATE	8-16-68	SUBMITTED	8/20/68	APPROVED	8/20/68	SHEET 1 OF 1 SHEETS
SCALE	1"=20'-0"	CLASS. CODE	A301	INITIAL	LC-47897	R-3





REFERENCES:

Single Line Diagram MW-4545

Three Line Diagram MW-4587

Elementary Diagram MW-4588

Parts to Relocate Panel SC-34034

Conduit Plant Details LC-49979

Conduit Cable List CMC-49981

4 Lease Purchase See Revision Note 2
2/10/84 ATB31.01 00A100A EWT

3 Field Change RHH-85, 1/-9-72
10-30-73 DCH DEH JHT

2 See Revision Note #1
4/15/74 37174 RAY MKS TBB DNR
RUST RUST RUST

1 Field Change: RHH-48 12/8/69
4/15/74 RAY MKS TBB DNR
RUST RUST RUST

REV. NO. DATE WORK ORDER DESGN. DRAWN CHKD. SUPV. HUSN

DESGN. LMG SUPV. W.D. 37174

DRAWN. Oliver PROJ. ENGR.

CMKC JGG

TENNESSEE VALLEY AUTHORITY DIVISION OF POWER PLANNING AND ENGINEERING				
N. E. HARRIMAN, TENN., SUBSTATION-69KV RELAY & METER CABINET PANEL WIRING, F.V., R.V. & B/M				
DATE 6/6/69	SUBMITTED <i>Henry B. Hunter</i>	APPROVED	SHEET / OF / SHEET	
SCALE AS SHOWN	CLASS. CODE 00070	<i>Robert W. Hagan</i>	WL- 4679	R-4