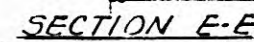
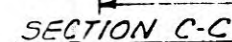
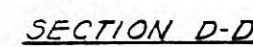


From 161Kv. Switchgear
One 500Mcm Strd. Cu.
Conductor per Phase
See LG-46520



TENNESSEE VALLEY AUTHORITY
DIVISION OF POWER ENGINEERING AND CONSTRUCTION
HARRIMAN, TENN. SUBSTATION-161KV.
161-69-13 KV. POWER TRANSFORMER BANK
PLAN AND SECTIONS

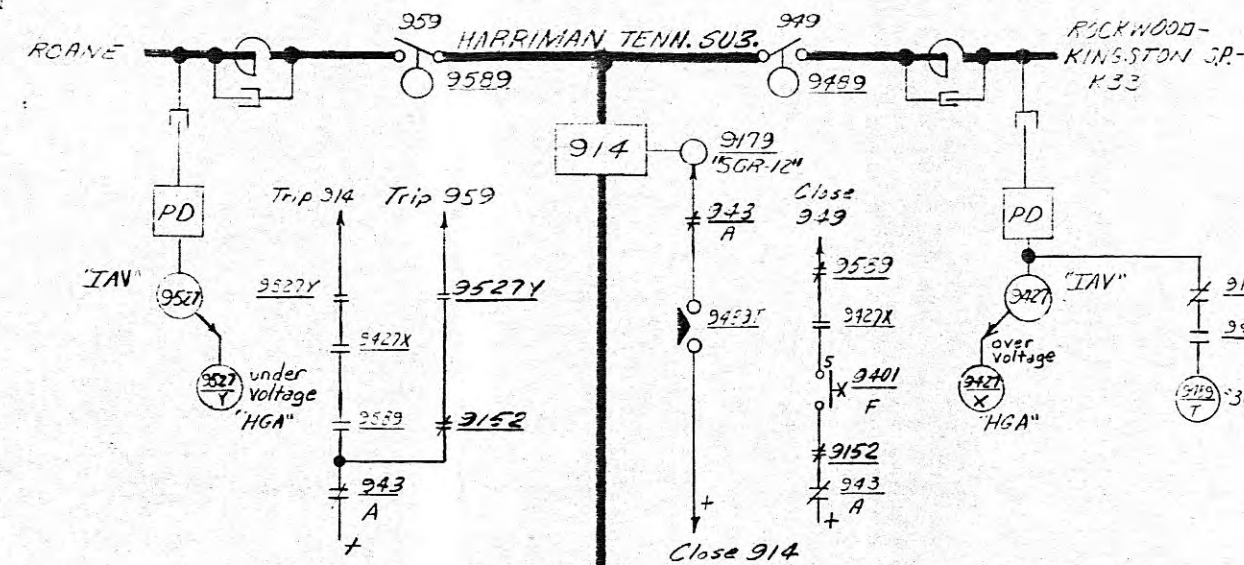
DATE 7-9-66	SUBMITTED <i>Robert C. Allen</i>	APPROVED <i>J. H. [unclear]</i>	SHEET 3 of 4 SHEETS
SCALE 3/8" = 1"	A550B		LC-46518

R-O

MICROFILMED Q

REV. NO.	DATE	WORK ORDER	DSGN	DRWN	CHKD	SUPV.	SUBV.		
			DSGN	SUPV. <i>26</i>		W.O. <i>36861</i>			
			DRWN <i>ENT</i>			PROJ. ENGR. <i>JCB</i>			
			CHKD <i>ADD</i>						

04079985

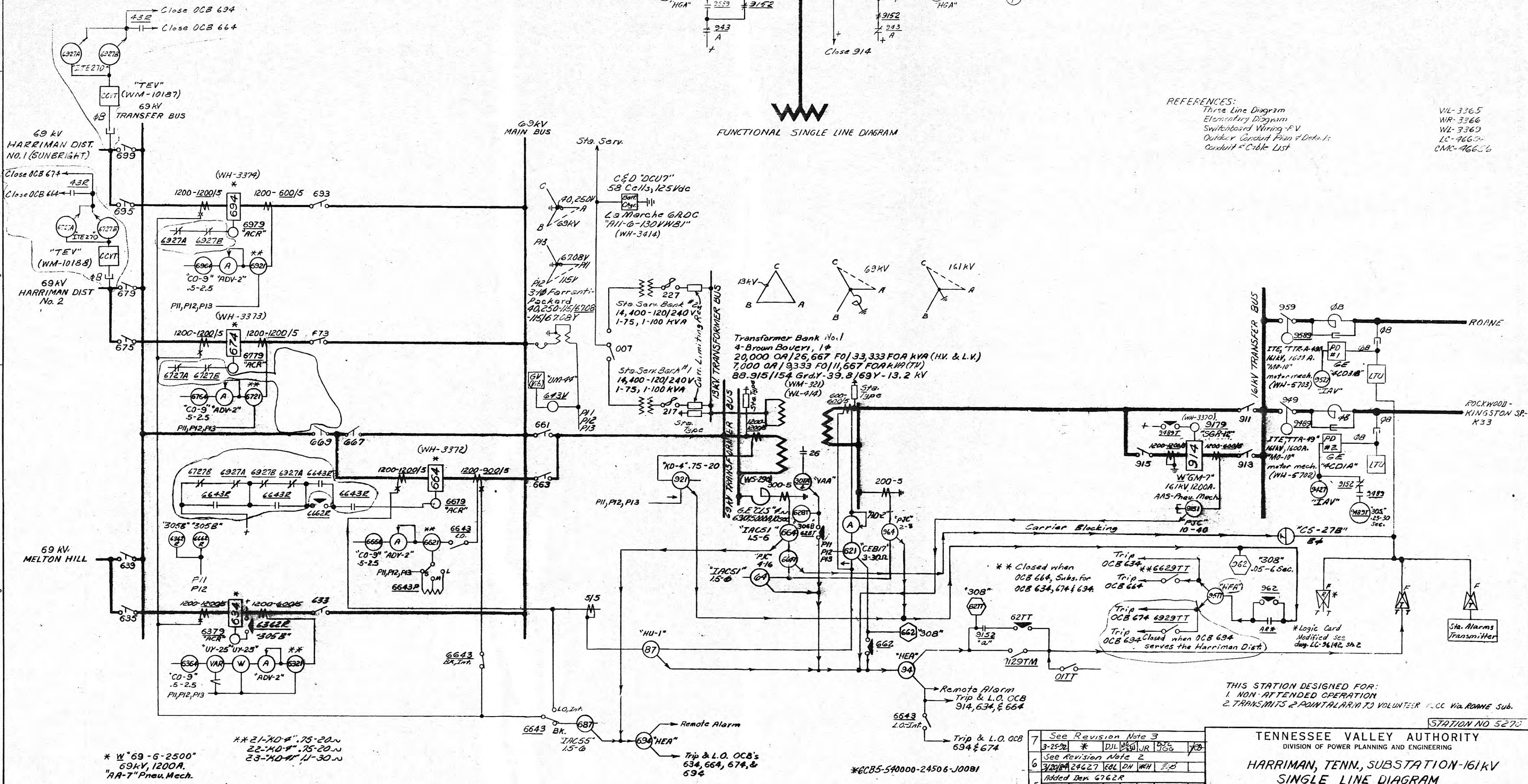


FUNCTIONAL SINGLE LINE DIAGRAM

- REVISION NOTES:**
- Retired device 987N; 15/5 aux. CTs; coupling cap. in 8p of Kingston line; line trap in 8p of trans. bank. Added MOD switches 949 & 953; coupling capacitor, line trap & potential device in 8p of REC-L33 & Kingston S.P. 161 kV lines; devices 942T, 952T, 664T, 9179; "CS-278" carrier transmitter and functional single line diagram.
 - Roane 161 kV line was (REC)K33 South 161 kV line "E". Rockwood-Kingston S.P.-K33 161 kV line was Kingston S.P. 161 kV line "E". Two point alarm was transmitted to Kingston S.P. Retired 916TY & 952TX. added 962, 964, 949T & 951T. Modified transfer trip receiver.
 - Device 951T "HFA" was "HGA". Retired "308E". Added CCVTs, "ITE270" to Harriman Dist. No. 1 & No. 2 Lines; 27A & 27B contacts to OCBs 664, 674 & 694 reclosing circuit; trip circuits for OCBs 674 & 694 by device 951T.

- REFERENCES:**
- Three Line Diagram
 - Elementary Diagram
 - Switchboard Wiring - F.V.
 - Outdoor Conduit Plan & Details
 - Conduit - Cable List

WL-3365
WR-3366
WL-3367
LC-4665-4
CNC-4665-6



THIS STATION DESIGNED FOR:
1. NON-ATTENDED OPERATION
2. TRANSMITS 2-POINT ALARM TO VOLUNTEER MCC Via ROANE Sub.

STATION NO 5270

TENNESSEE VALLEY AUTHORITY
DIVISION OF POWER PLANNING AND ENGINEERING
HARRIMAN, TENN., SUBSTATION-161KV
SINGLE LINE DIAGRAM

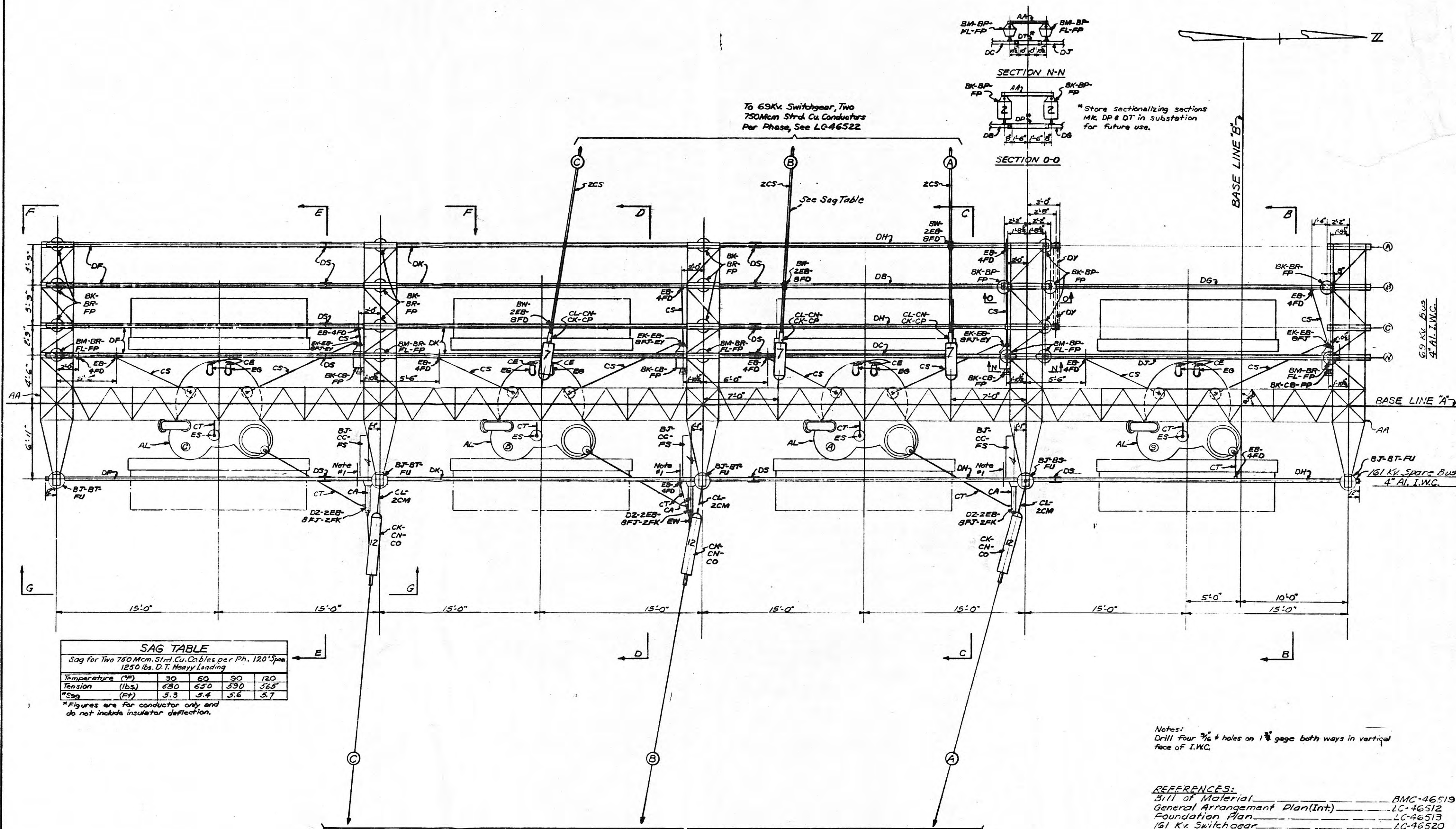
7	See Revision Note 3
3-25-52	* DJL WJR JR 5/26
6	See Revision Note 2
3/20/54	24427 EOL DN WJR JR
5	Added Den 6762R
5-6-82	25713 JPB JPB WJM JPD
REV	DATE
DESIGN	DATE
DRAWN	DATE
CHECK	DATE

DATE	8/15/66
CLASS CODE	201
SCALE	NONE
SHEET	1 OF 1
WL-3364	R-7

PHOTOGRAPHED
IN CHATTANOOGA

24X

81597-77



SAG TABLE
Sag for Two 750 Mcm. Strd. Cu. Cables per Ph. 120° Span
1250 lbs. D.T. Heavy Loading

Temperature (°F)	30	60	90	120
Tension (lbs)	680	650	590	565
*Sag (ft)	5.3	5.4	5.6	5.7

*Figures are for conductor only and do not include insulator deflection.

From 161 Kv. Switchgear
One 500 Mcm Strd. Cu.
Conductor Per Phase
See LC-46520

TOP PLAN

Notes:
Drill four 3/8" holes on 1" gage both ways in vertical face of I.W.C.

REFERENCES:
Bill of Material _____ BMC-46519
General Arrangement Plan(Int) _____ LC-46512
Foundation Plan _____ LC-46513
161 Kv. Switchgear _____ LC-46520
69 Kv. Switchgear _____ LC-46522

TENNESSEE VALLEY AUTHORITY
DIVISION OF POWER ENGINEERING AND CONSTRUCTION
HARRIMAN, TENN. SUBSTATION-161KV
161-69-13 KV POWER TRANSFORMER BANK
PLAN AND SECTIONS

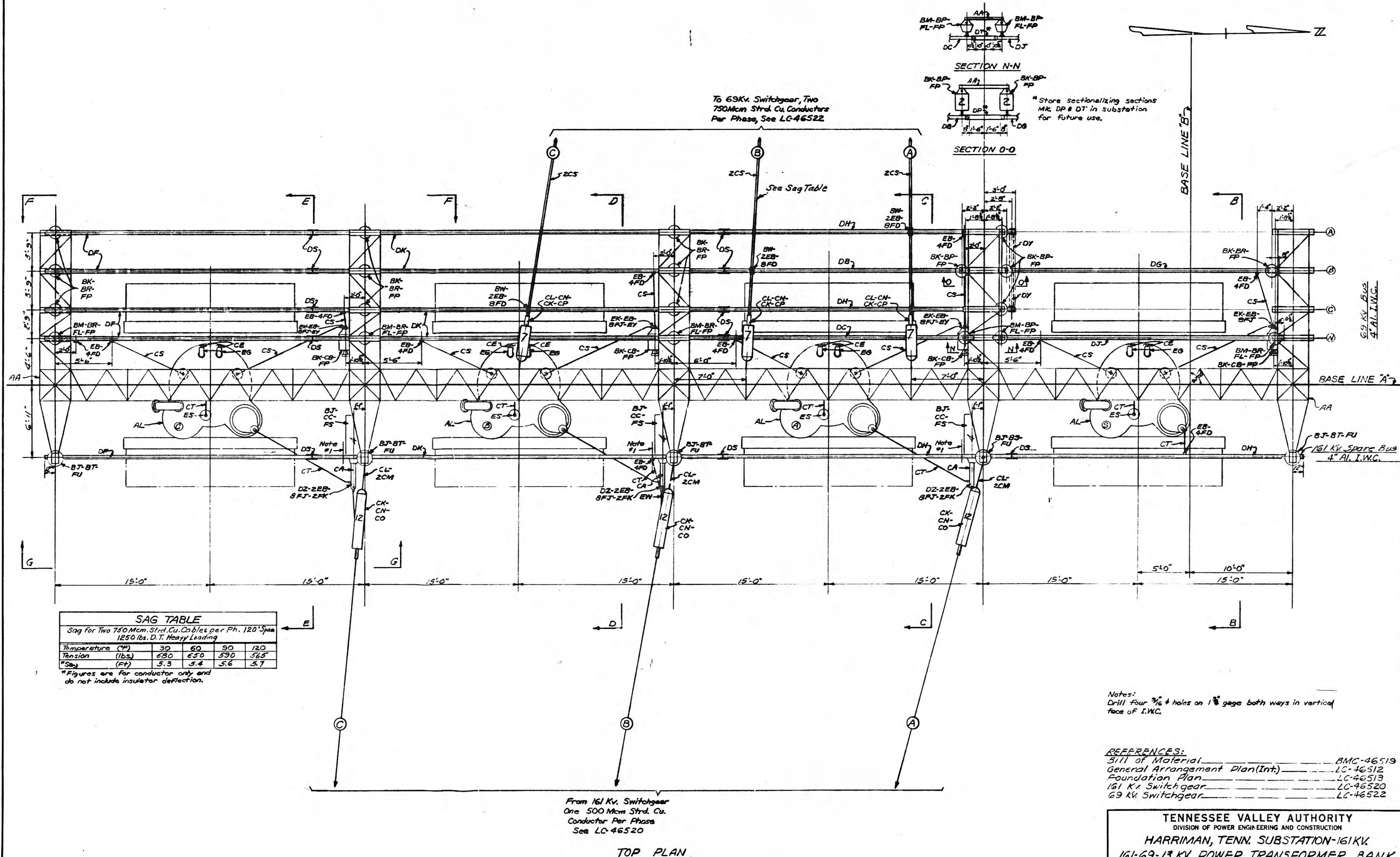
DATE 7-13-66	SUBMITTED	APPROVED	SHEET 1 OF 4 SHEETS
SCALE 1/4"=1'-0"	AS508		LC-46518

R-0

REV	DATE	WORK	ORDER	DESIGN	DRWN	CHKD	SUPV.	SUBM
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MICROFILMED 2

LC-46518



SAG TABLE
Sag for Two 750 Mcm. Strd. Cu. Cables per Ph. 120' Span
1250 lbs. D.T. Heavy Loading

Temperature (°F)	30	60	90	120
Tension (lbs)	680	650	620	585
"Ca" (ft)	5.3	5.4	5.6	5.7

*Figures are for conductor only and
do not include insulator deflection.

Notes:
Drill four 3/16" holes on 1" gage both ways in vertical
face of I.M.C.

REFERENCES:
Bill of Material _____ BMC-46519
General Arrangement Plan(Int.) _____ LC-46512
Foundation Plan _____ LC-46513
161 Kv. Switchgear _____ LC-46520
69 Kv. Switchgear _____ LC-46522

TENNESSEE VALLEY AUTHORITY
DIVISION OF POWER ENGINEERING AND CONSTRUCTION
HARRIMAN, TENN. SUBSTATION-161KV
161-69-13 KV POWER TRANSFORMER BANK
PLAN AND SECTIONS

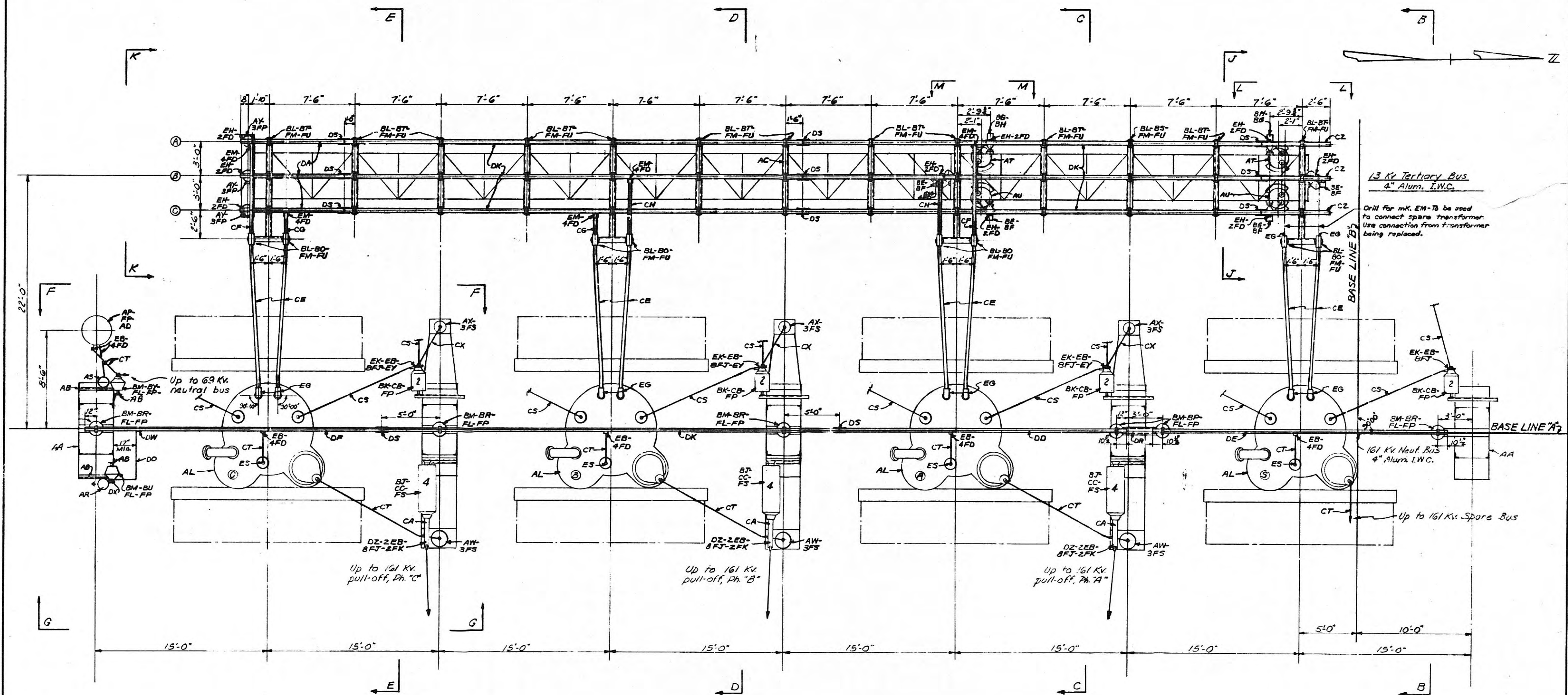
DATE 7-13-66	SUBMITTED <i>Robert Little</i>	APPROVED <i>John A. ...</i>	SHEET 1 OF 4 SHEETS
SCALE 1/4"=1'-0"	AS508		LC-46518

REV.	DATE	WORK	BY	CHKD	SUPV.	SUBV.
1		DESIGN	W.D. 36891			
2		CONSTRUCTION	PROJ. ENGR. 10			

MICROFILMED 2

R-0

81594-37



LOWER PLAN A-A

REFERENCES:
Bill of Material _____ BMC-465.9

REV	DATE	BY	CHKD	APPD	SUPP.	SUBM.
1	7-10-66	W.D. 36861				
2		W.D. 36861				
3		W.D. 36861				
4		W.D. 36861				
5		W.D. 36861				
6		W.D. 36861				
7		W.D. 36861				
8		W.D. 36861				
9		W.D. 36861				
10		W.D. 36861				

TENNESSEE VALLEY AUTHORITY DIVISION OF POWER ENGINEERING AND CONSTRUCTION			
HARRIMAN, TENN. SUBSTATION-161KV.			
161-63-13 KV. POWER TRANSFORMER BANK			
PLAN AND SECTIONS			
DATE 7-10-66	SUBMITTED	APPROVED	SHEET 2 OF 4 SHEETS
SCALE 1/8"=1'-0"	ASSOB		LC-46518
			R-0

MICROFILMED 2

101079984

REFERENCES:
Bill of Material _____ BMC-465.9

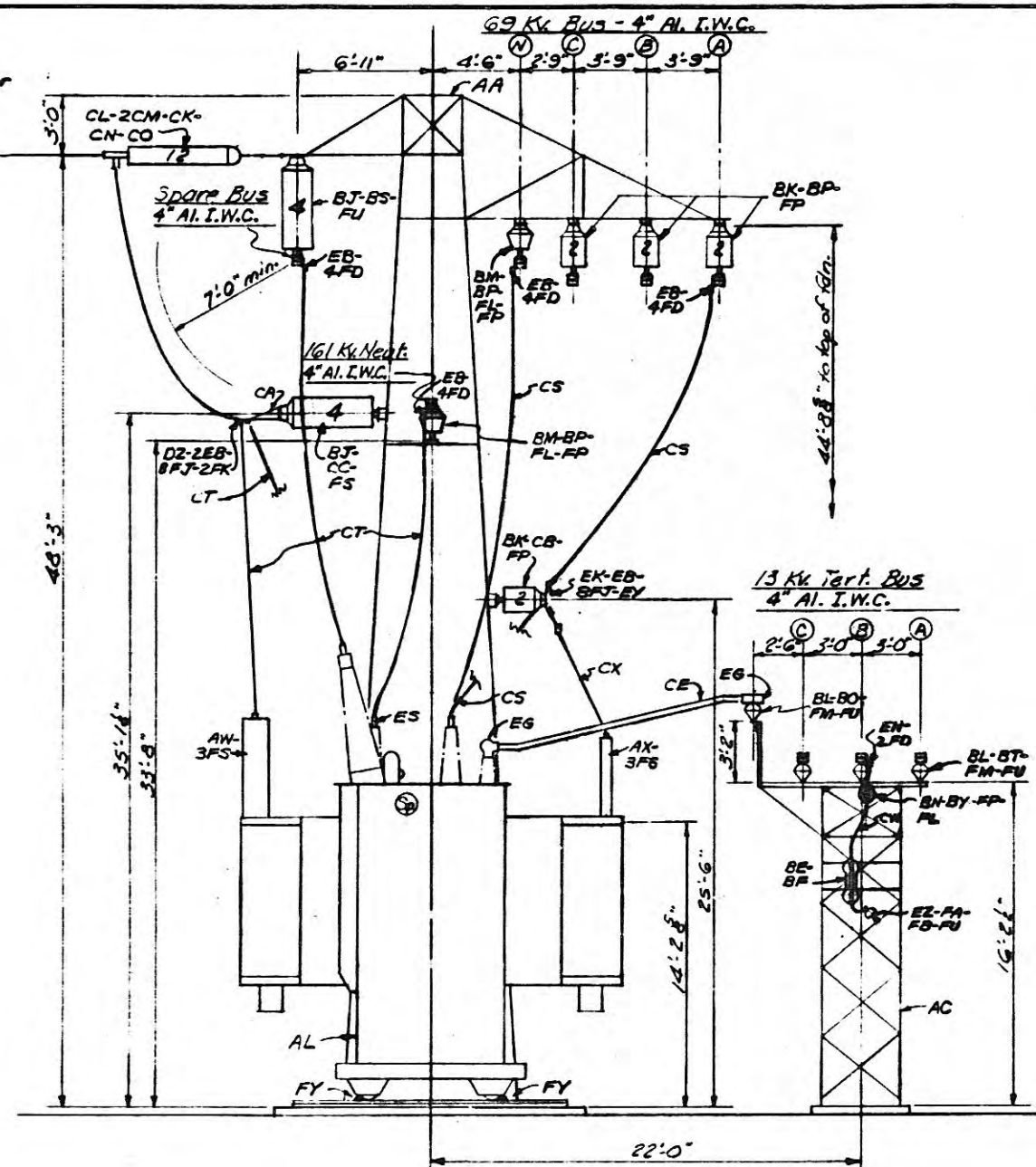
DATE 7-12-66	SUBMITTED <i>Robert L. La</i>	APPROVED <i>Summer</i>	SHEET 2 OF 4 SHEETS
SCALE 1/4" = 1'-0"	ASSOB		LC-46518

R-0

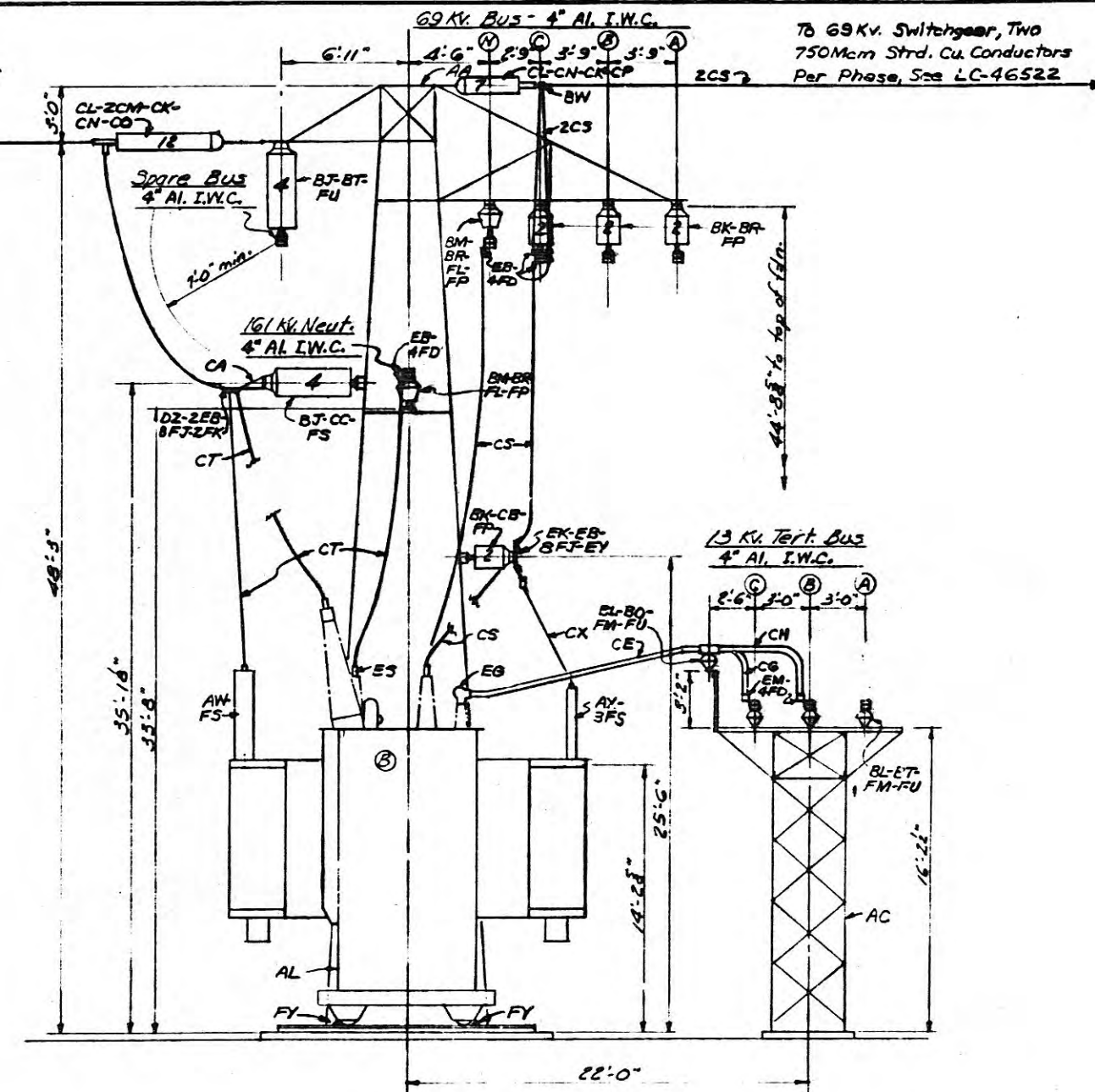
MICROFILMED Q

81594-JT

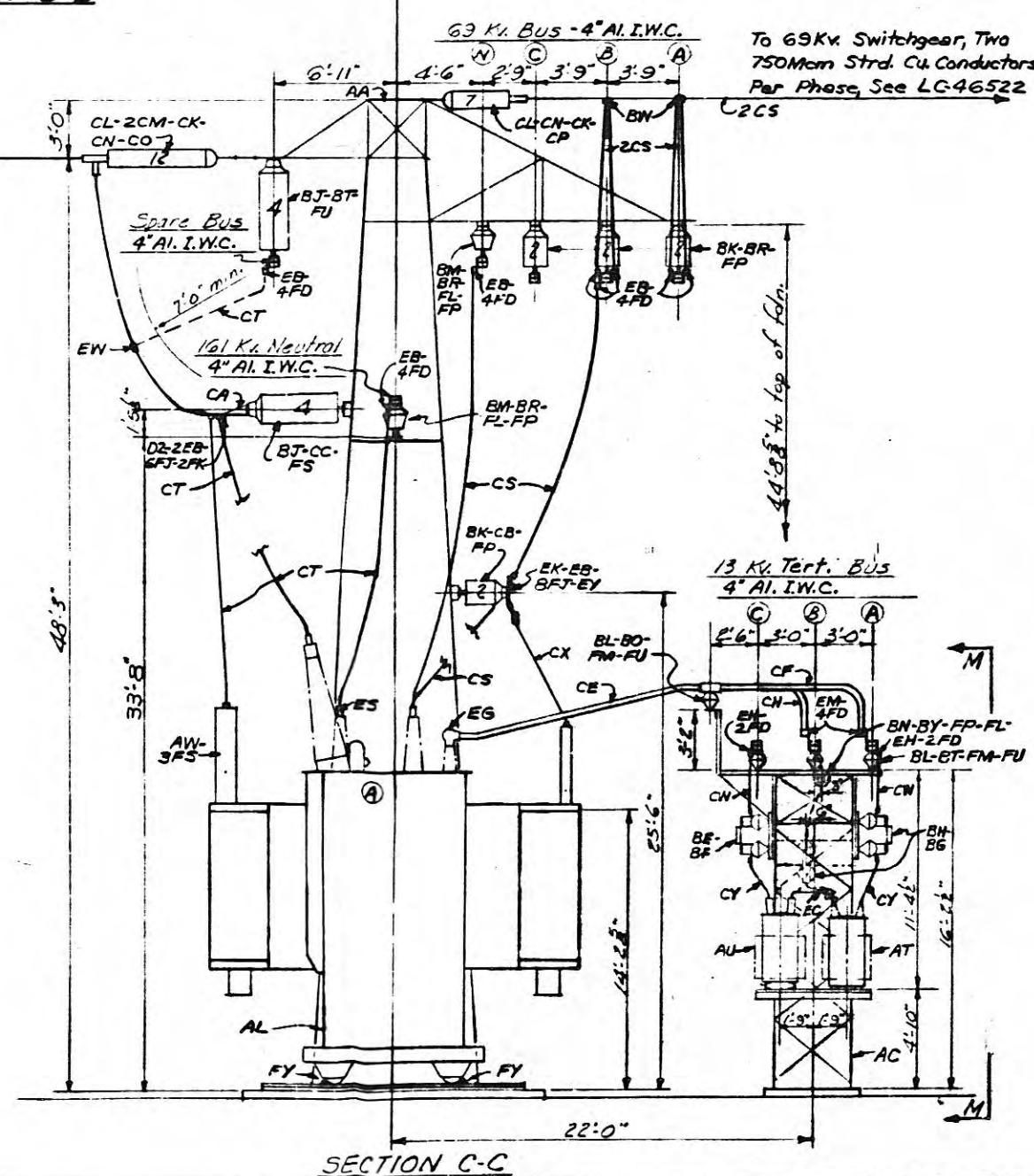
From 161Kv. Switchgear
One 500Mcm Strd. Cu.
Conductor per Phase
See LC-46520



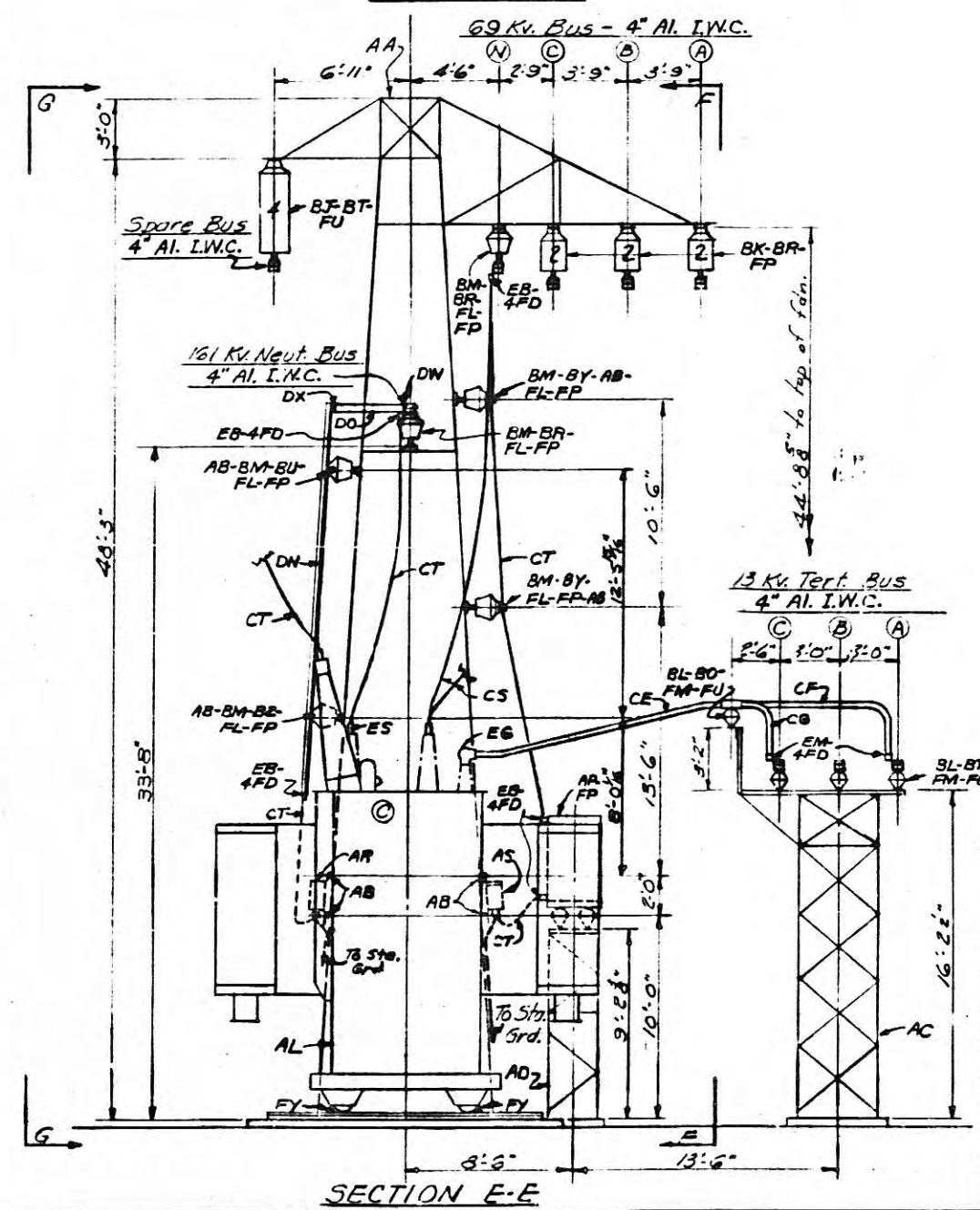
From 161Kv Switchgear
One 500Mcm Strd. Cu.
Conductor per Phase
See LC-46520



From 161Kv. Switchgear
One 500Mcm Strd. Cu.
Conductor per Phase
See LC-46520



To 69Kv. Switchgear, Two
750Mcm Strd. Cu. Conductors
Per Phase, See LC-46522



REFERENCE:
Bill of Material _____ BMC-46519

TENNESSEE VALLEY AUTHORITY
DIVISION OF POWER ENGINEERING AND CONSTRUCTION
HARRIMAN, TENN. SUBSTATION-161KV
161-69-13 KV. POWER TRANSFORMER BANK
PLAN AND SECTIONS

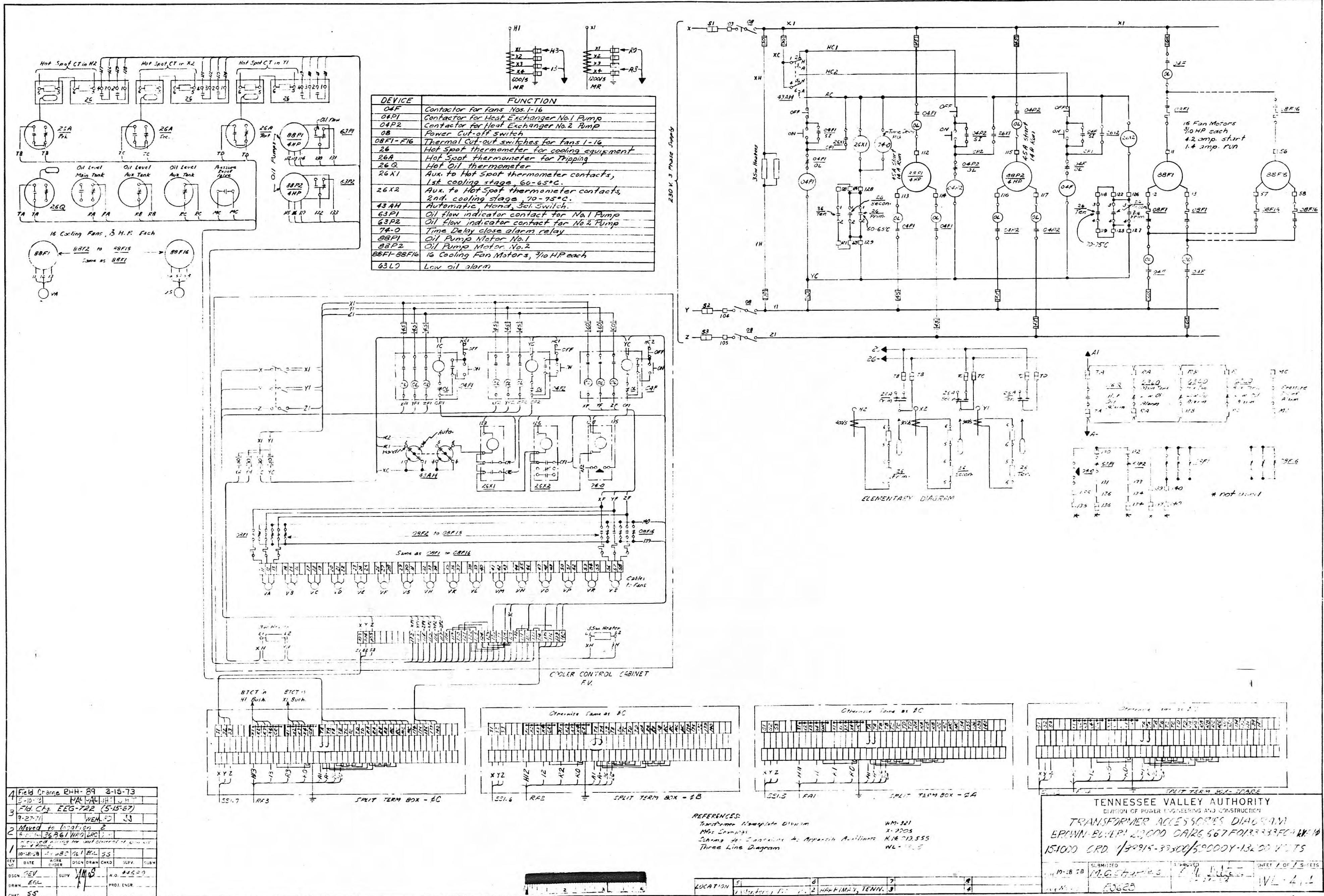
DATE 7-13-66
SCALE 3/8"=1'-0"
APPROVED
AS50B
SHEET 3 OF 4 SHEETS
LC-46518

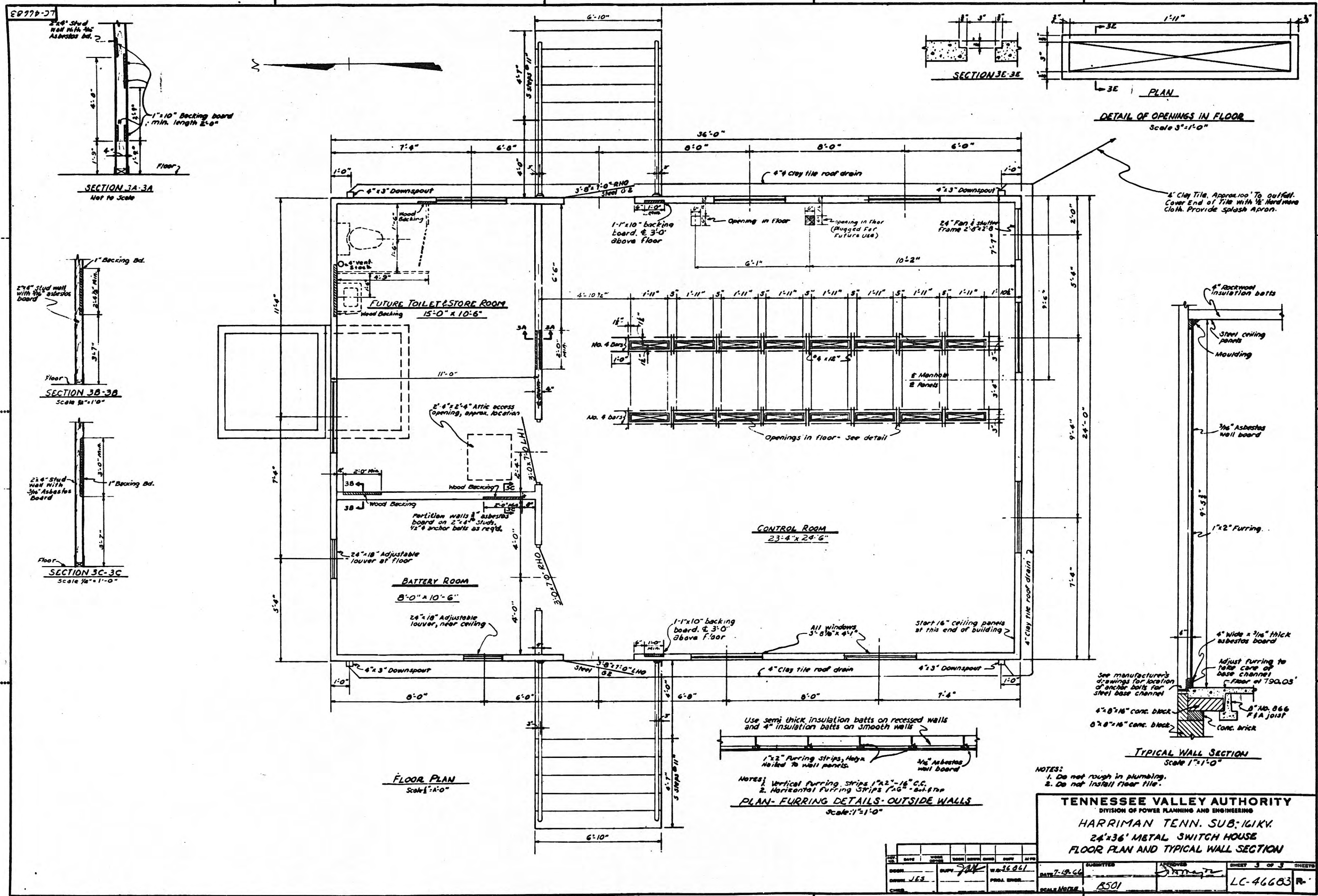
REV	NO	DATE	WORK ORDER	DESIGN	DRAWN	CHECKED	SUPV.	SUBV.
1								
2								
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MICROFILMED Q

R-0

1072985





MICROFILMED

45994-27

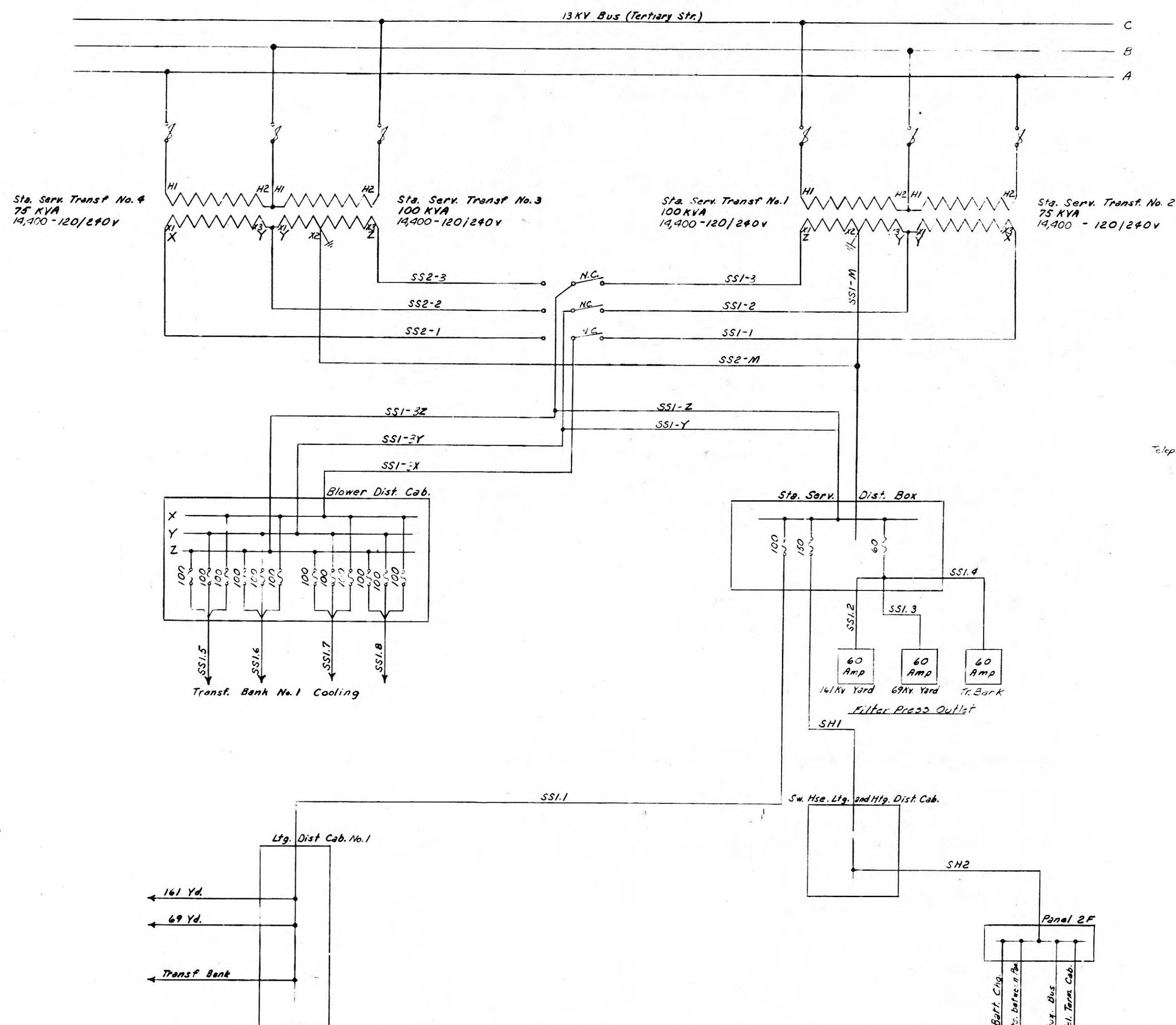
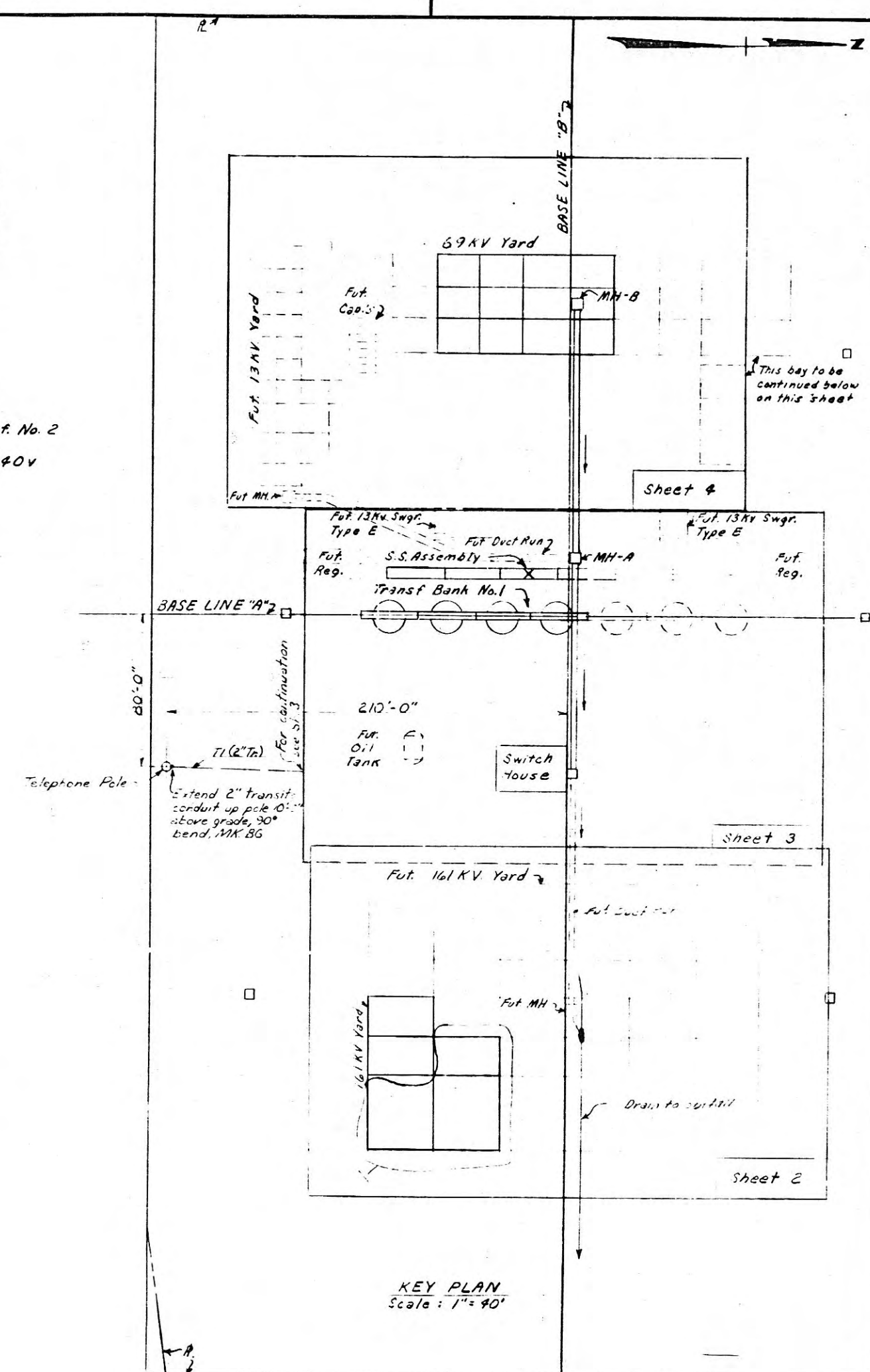


DIAGRAM - STATION SERVICE TRANSF SECONDARY
N.T.S.



- REFERENCES:
- Bill of Material - BMC-46655
 - Conduit and Cable List - CMC-46656
 - Foundation Plan - LC-46657
 - Switch House Conduit & Ltg. - LC-46658
 - Grounding Plan - LC-46659
 - Lighting Details - LC-46660

TENNESSEE VALLEY AUTHORITY
DIVISION OF POWER PLANNING AND ENGINEERING
HARRIMAN, TENNESSEE SUBSTATION-161KV
OUTDOOR CONDUIT AND LIGHTING
PLAN AND DETAILS

REV.	DATE	WORK ORDER	DESIGN	DRAWN	CHECKED	SUPPLY	APPROVED
1	5/23/66	35687	JAB	WAP	CEB-REN		
DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE
DESIGN	DESIGN	DESIGN	DESIGN	DESIGN	DESIGN	DESIGN	DESIGN
DRAWN	DRAWN	DRAWN	DRAWN	DRAWN	DRAWN	DRAWN	DRAWN
CHECKED	CHECKED	CHECKED	CHECKED	CHECKED	CHECKED	CHECKED	CHECKED

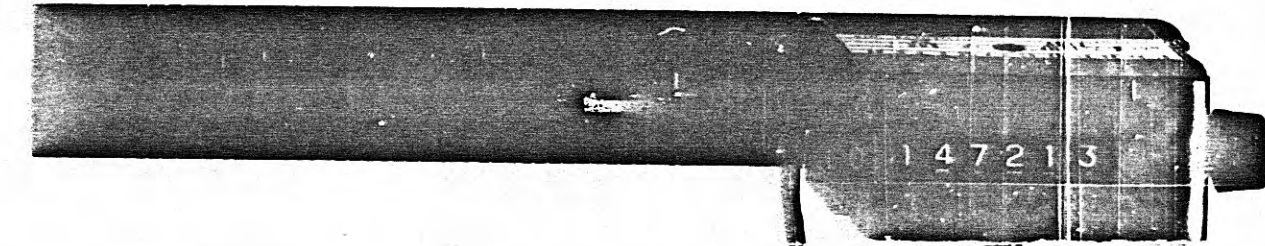
Revised Key Plan

DATE 8-1-66

SCALE: As Shown

CLASS CODE CS01

LC-46654 R-1



45990-07

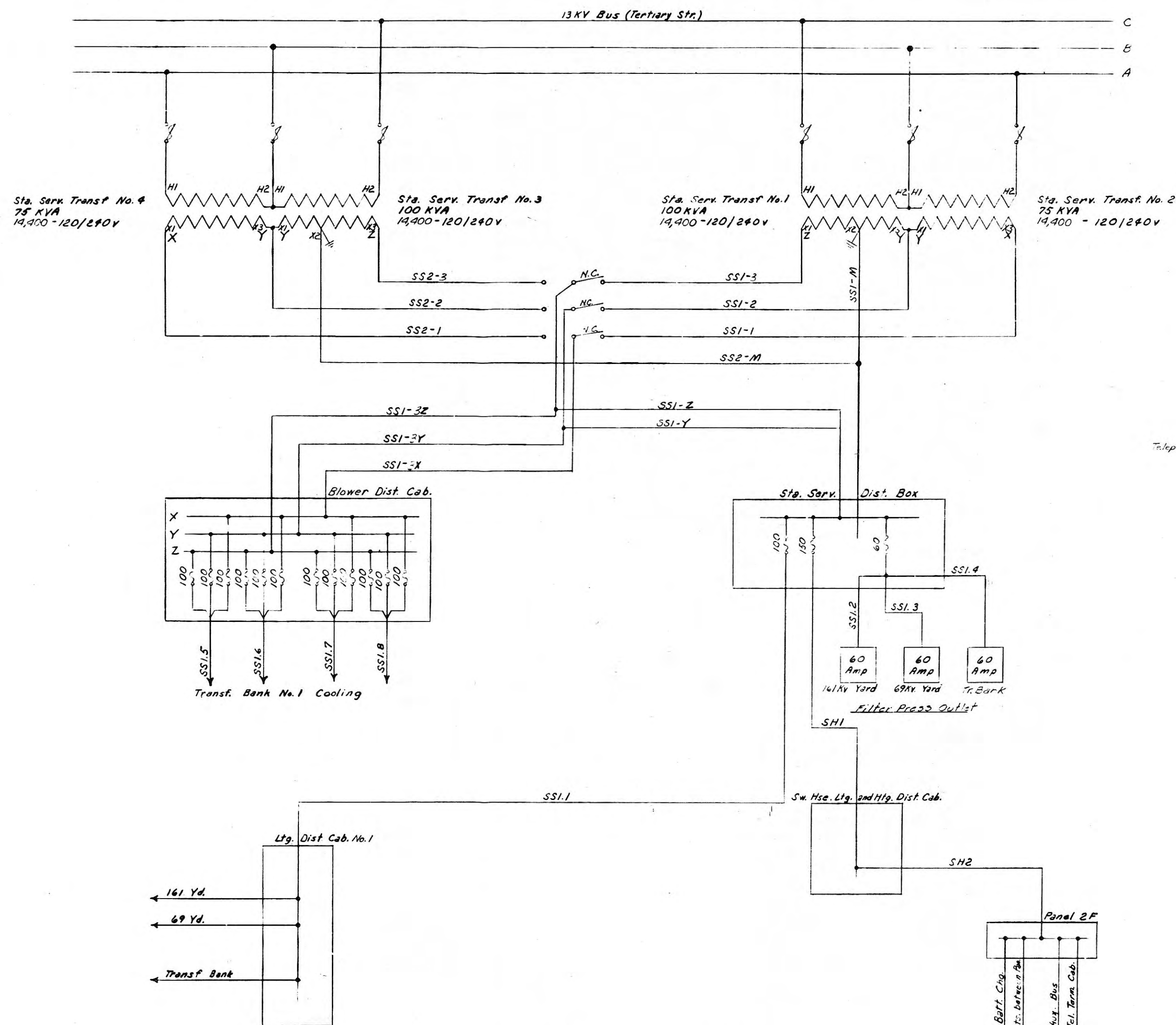
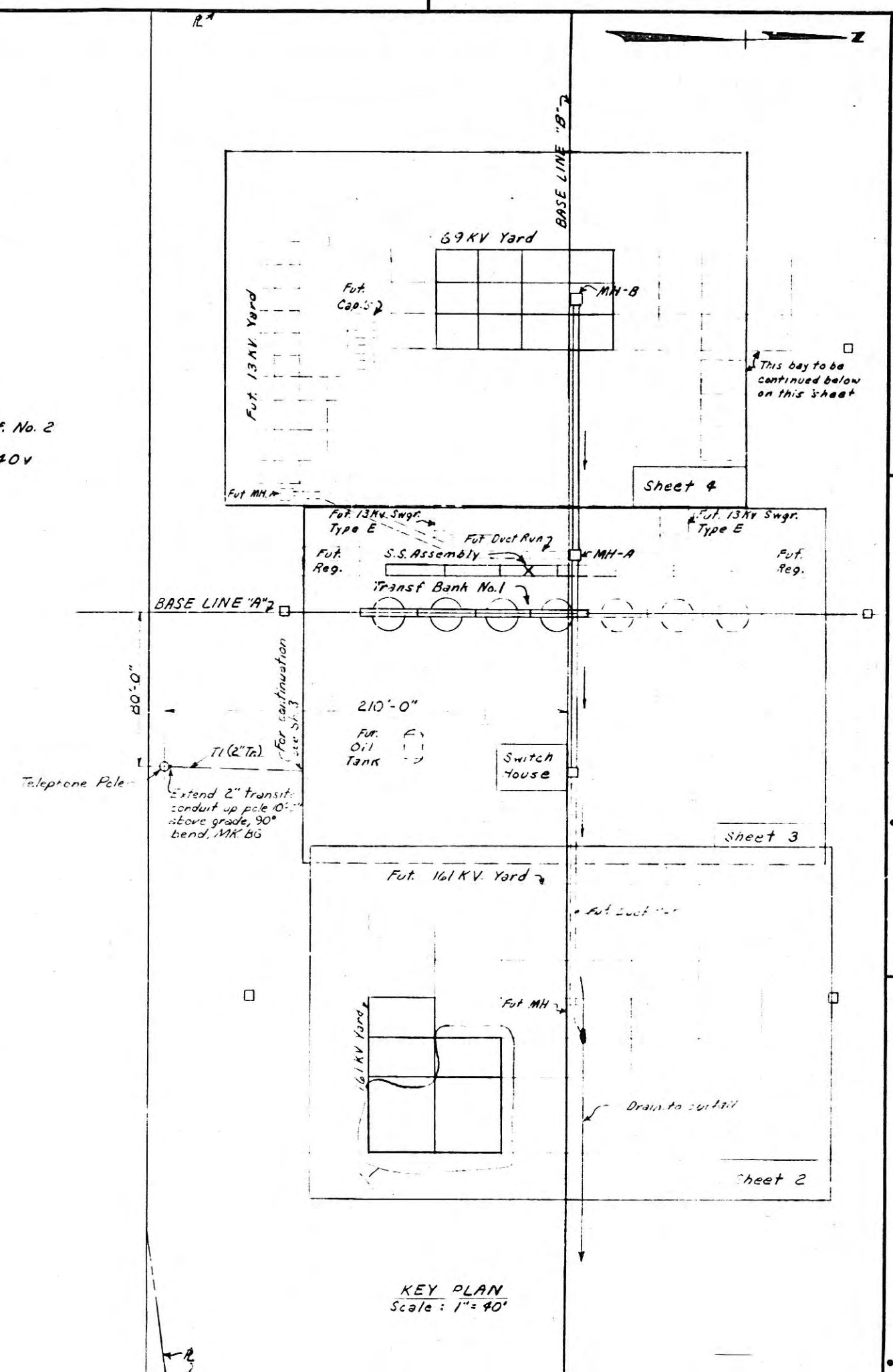


DIAGRAM - STATION SERVICE TRANSF SECONDARY
N.T.S.



REFERENCES:

Bill of Material	BM2-46655
Conduit and Cable List	CMC-46656
Foundation Plan	LC-46657
Switch House Conduit & Ltg.	LC-46658
Grounding Plan	LC-46659
Lighting Details	LC-32439, A, I

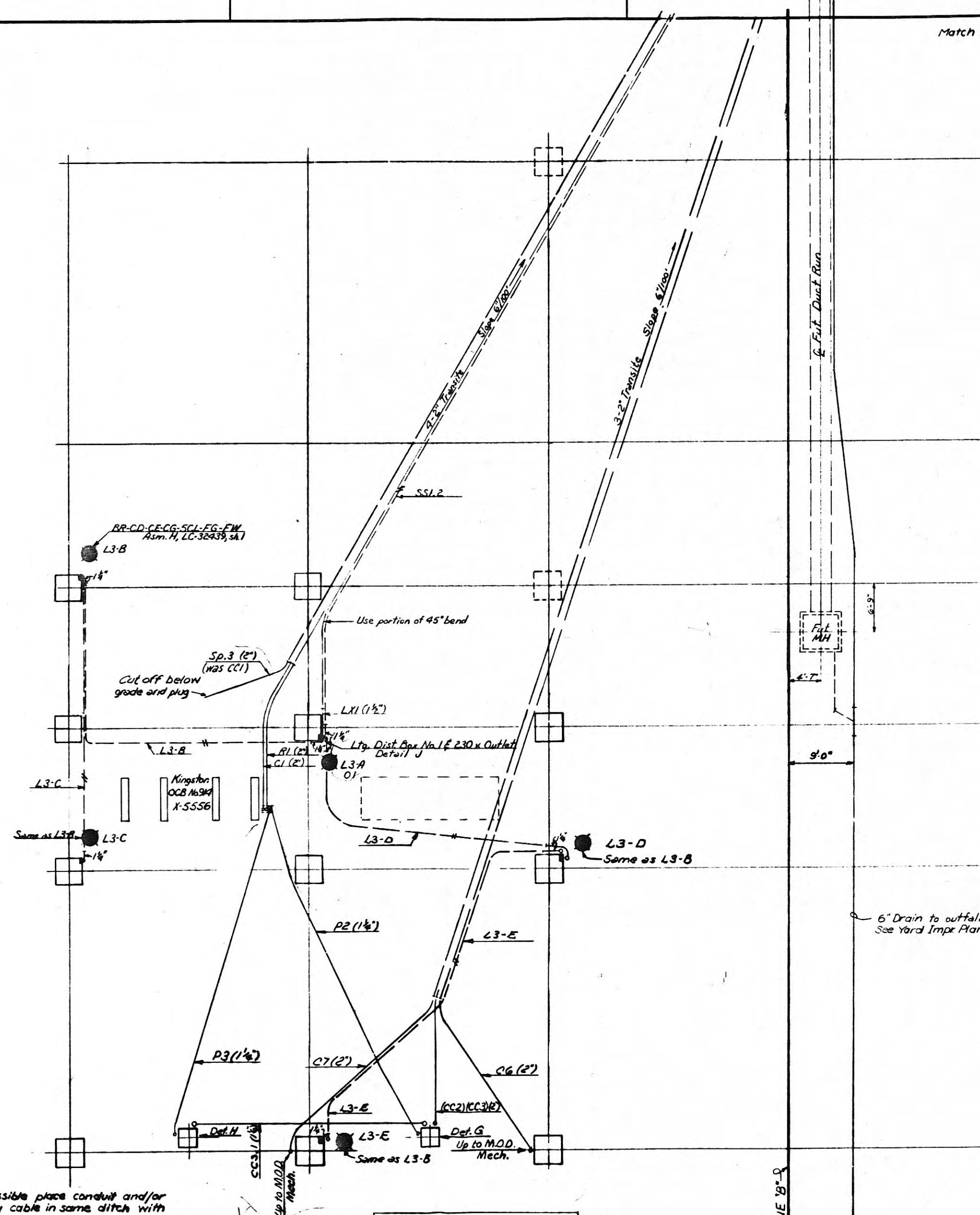
TENNESSEE VALLEY AUTHORITY
DIVISION OF POWER PLANNING AND ENGINEERING
HARRIMAN, TENNESSEE SUBSTATION-161KV
OUTDOOR CONDUIT AND LIGHTING
PLAN AND DETAILS

REV.	DATE	BY	CHKD.	APPD.	REMARKS
1	2/1/66	J.P.M.	J.A.B.	J.P.M.	Revised Key Plan
2	2/1/66	J.P.M.	J.A.B.	J.P.M.	Revised Key Plan

DATE	BY	CHKD.	APPD.	REMARKS
2-1-66	J.P.M.	J.A.B.	J.P.M.	Revised Key Plan
2-1-66	J.P.M.	J.A.B.	J.P.M.	Revised Key Plan

147213

Match Line for Sheet 3-



Note 2
1. where possible place conduit and/or trenchlay cable in same ditch with gnd. bus.

LEGEND

———— Steel Conduit
- - - - Trenchlay Cable
- - - - Transite Conduit
———— Symmetric Light

REFERENCES ~ _____

Bill of Material _____	BMC-46655
Conduit and Cable List _____	CMC-46656
Foundation Plan _____	LC-46513
Switch House Conduit & Ltg _____	LC-46652
Grounding Plan _____	LC-46658
Lighting Details _____	LC-32439.sh1

TENNESSEE VALLEY AUTHORITY

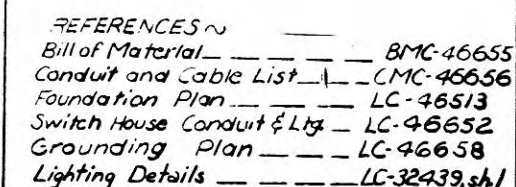
HARRIMAN, TENNESSEE SUBSTATION-161KV
OUTDOOR CONDUIT AND LIGHTING
PLAN AND DETAILS

Removed: CC1, CC1.1; Added P3, P2, C7
C6, CC3.1, CC2, CC3, L3-D, L3-E

1	5/20/77	35687	JAB	JAB	WLP	EEB-REM		
Rep. No.	DATE	WORE CASE#	DSGN	DRWN	CHBS	SUFF	APP	
DSGN			SUFF	EEB		W. O.	36861	
DRWN	JDE, WER					PROJ. ENGR.		
CHBS	EEB							

DATE 8-1-66	INSTRUMENT <i>State Plane</i>	ASSIGNOR <i>D. May</i>	SHEET 2 OF 9	SHEETS
SCALE $\frac{1}{2} = 1.0"$	CLASS CODE <i>C501</i>		LC-46654	R-1

Match Line for Sheet 3-



Notes
1. Where possible place conduit and/or trenchlay cable in same ditch with and bus.

LEGEND

- _____ Steel Conduit
_____ Trenchlay Cable
_____ Transite Conduit
_____ Symmetric Light

TENNESSEE VALLEY AUTHORITY

HARRIMAN, TENNESSEE SUBSTATION-161KV
OUTDOOR CONDUIT AND LIGHTING
PLAN AND DETAILS

Removed: CC1, CC1.1; Added P3, P2, C7,
C6, CC3.1, CC2, CC3, L3-D, L3-E
1/28/71 35687 JAB JAB MDP EEB-REM

Rev.	DATE	WORK ORDER	DISM	DRWN	CHGD	SUFF	A
DISM			SUFF	EEB		35686/	
DRWN	JDE, WER					PROJ. ENGR.	
CHGD	EEB						

DATE 8-1-66	Signature <i>E. H. [illegible]</i>	APPROVER <i>S. [illegible]</i>	SHEET 2 OF 9	W-1
CLASS CODE	<i>C501</i>		LC-46654	R-