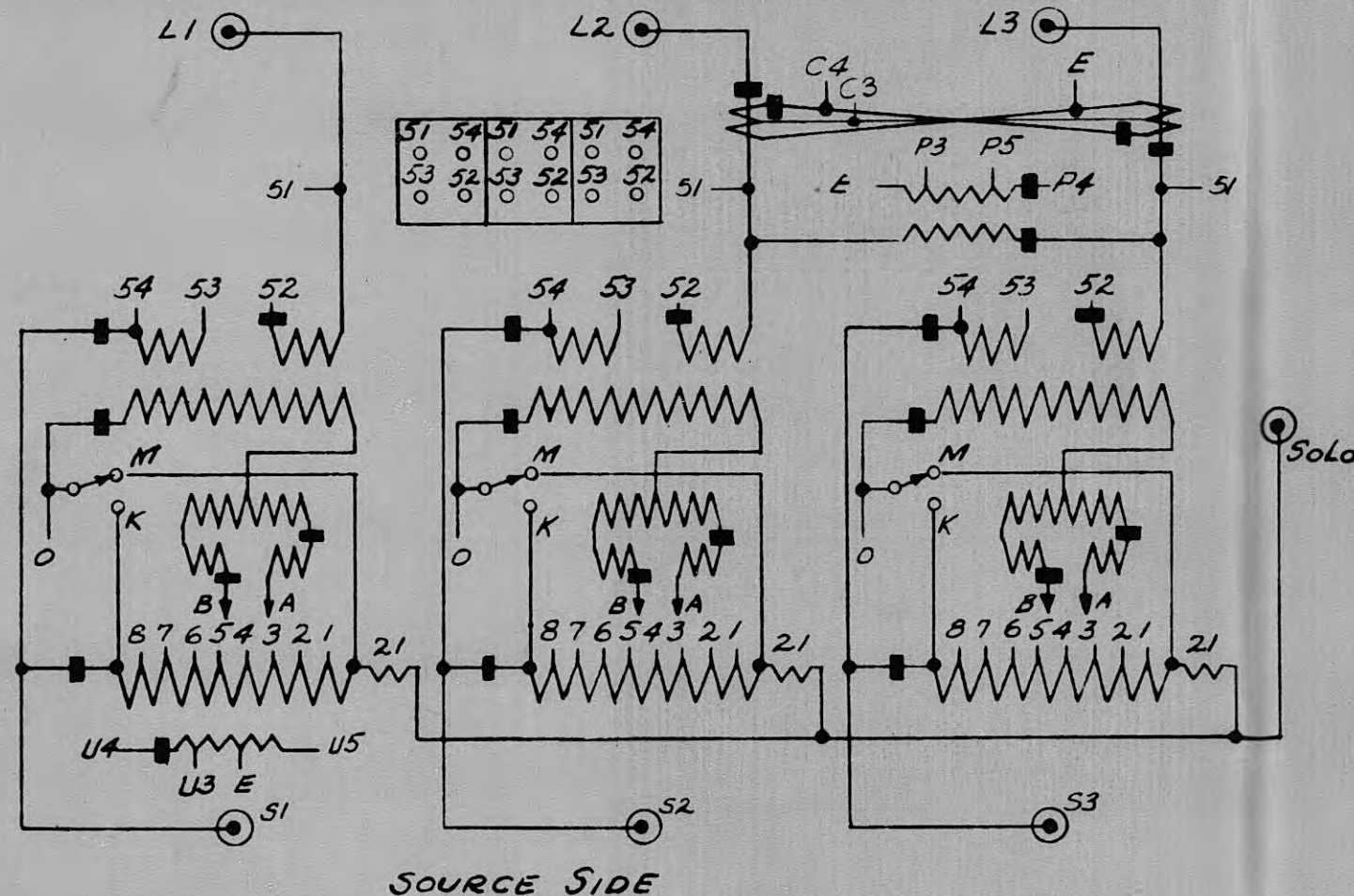


2722-WM

LOAD SIDE



ALLIS-CHALMERS VOLTAGE REGULATOR  
SERIAL NO. 5-2134-31405-2 CLASS OA/(FA FUT) TYPE "AFR" 60 CYCLES  
RATING VOLTS: 138.00 ± 10/5% IN 32 STEPS 3 PHASE 55°C RISE  
RATING KVA: 1500 OA/(2000 FA FUT)  
BIL: 95 kV. TVA REQ. NO. 65 P2-13827  
MFR'S. ORDER NO. 5-2134-31405-2

| TEST DATA AT 75°C      |       |       |        |       |       |       |                      |        |                 |                                                   |      |
|------------------------|-------|-------|--------|-------|-------|-------|----------------------|--------|-----------------|---------------------------------------------------|------|
| LOSSES IN WATTS        |       |       |        |       |       |       | PERCENT              |        | EXC. CURR. AMPS |                                                   |      |
| POS. NO.               | CORE  |       | COPPER |       | TOTAL |       | IMPEDANCE            |        | 100% V          | 110% V                                            |      |
|                        | SER.  | PAR.  | SER.   | PAR.  | SER.  | PAR.  | SER.                 | PAR.   | SER.            | PAR.                                              | SER. |
| 16L                    | 10190 | 10190 | 18030  | 16310 | 28220 | 26500 | 0.50                 | 0.25   | —               | 495                                               | —    |
| 0                      | 5600  | 5600  | 11360  | 11880 | 16960 | 17480 | 0.18                 | 0.23   | —               | —                                                 | —    |
| 16R                    | 10190 | 10190 | 17530  | 16160 | 27720 | 26350 | 0.41                 | 0.20   | —               | 495                                               | —    |
| WINDING                |       |       |        |       |       |       | RES. IN OHMS AT 75°C |        |                 |                                                   |      |
|                        |       |       |        |       |       |       | Ø1                   | Ø2     | Ø3              | TEMP. RISE AT POS. 16R, OA, PARALLEL CONN. C RISE |      |
| Exc. S. Solo 16R Conn. |       |       |        |       |       |       | 0.2532               | 0.2537 | 0.2531          | TOP OIL                                           |      |
| Exc. S. Solo N. Conn.  |       |       |        |       |       |       | 0.2973               | 0.2976 | 0.2960          | Ser. (S-L)                                        |      |
| Exc. M-8 Ser. Conn.    |       |       |        |       |       |       | 0.0873               | 0.0873 | 0.0867          | Ser. (O-T)                                        |      |
| Ser. AB-O Ser. Conn.   |       |       |        |       |       |       | 0.0520               | 0.0527 | 0.0529          | Exc. M-Solo                                       |      |
| Ser. S-L Par. Conn.    |       |       |        |       |       |       | 0.0011               | 0.0011 | 0.0011          | Exc. (S-8)                                        |      |
| Ser. S-L Ser. Conn.    |       |       |        |       |       |       | 0.0039               | 0.0039 | 0.0039          | Ex. (M-8)                                         |      |

| VOLTS |  | AUX. VOLTS  |           |              | CONNECTS *         | % REG. | CT AMP |      | CONNECTS *        |
|-------|--|-------------|-----------|--------------|--------------------|--------|--------|------|-------------------|
| LINE  |  | CONTROL E-P | MOTOR E-U | FANS U50-U51 |                    |        | PRIM.  | SEC. |                   |
| 13800 |  | 115         | 120       | 240          | P2 to P3, U2 to U3 | ± 10   | 900    | 5    | 52-53             |
| 13200 |  | 110         | 115       | 230          | P2 to P3, U2 to U3 |        |        |      | C2 to C3          |
| 12470 |  | 120         | 122       | 230          | P2 to P5, U2 to U4 | ± 5    | 1800   | 5    | 51-53             |
| 12000 |  | 120         | 117       | 225          | P2 to P4, U2 to U4 |        |        |      | 52-54<br>C2 to C4 |

# REFERENCES:

Control Diag. WL-2725  
Mfr's. Dwg. XA-155  
Mfr's. N.P. Dwg. 21-111-005-001

| VOLTAGE TABLE |         |                |                   |      |                   |          |         |                |                   |      |                   |
|---------------|---------|----------------|-------------------|------|-------------------|----------|---------|----------------|-------------------|------|-------------------|
| % RAISE       |         | RAISE POS. NO. | DIAL SW. CONNECTS |      | REVERS. SWITCH ON | % LOWER  |         | LOWER POS. NO. | DIAL SW. CONNECTS |      | REVERS. SWITCH ON |
| 10% REG.      | 5% REG. |                | A TO              | B TO |                   | 10% REG. | 5% REG. |                | A TO              | B TO |                   |
| 10            | 5       | 16             | 8                 | 8    | M                 | N        | N       | N              | N                 | N    | K                 |
| 9 3/8         | 4 7/8   | 15             | 7                 | 8    |                   | 5 7/8    | 5 1/8   | 1              | 8                 | 0    |                   |
| 8 3/4         | 4 3/8   | 14             | 7                 | 7    |                   | 1 1/4    | 5/8     | 2              | 8                 | 8    |                   |
| 8 1/4         | 4 1/8   | 13             | 6                 | 7    |                   | 1 1/8    | 13/16   | 3              | 7                 | 8    |                   |
| 7 1/2         | 3 3/4   | 12             | 6                 | 6    |                   | 2 1/2    | 1 1/4   | 4              | 7                 | 7    |                   |
| 6 7/8         | 3 7/16  | 11             | 5                 | 6    |                   | 3 1/8    | 1 1/16  | 5              | 6                 | 7    |                   |
| 6 1/4         | 3 1/8   | 10             | 5                 | 5    |                   | 3 3/4    | 1 1/8   | 6              | 6                 | 6    |                   |
| 5 3/8         | 2 13/16 | 9              | 4                 | 5    |                   | 4 3/8    | 2 3/16  | 7              | 5                 | 6    |                   |
| 5             | 2 1/2   | 8              | 4                 | 4    |                   | 5        | 2 1/2   | 8              | 5                 | 5    |                   |
| 4 3/8         | 2 3/16  | 7              | 3                 | 4    |                   | 5 3/8    | 2 5/16  | 9              | 4                 | 5    |                   |
| 3 3/4         | 1 7/8   | 6              | 3                 | 3    |                   | 6 1/4    | 3 1/8   | 10             | 4                 | 4    |                   |
| 3 1/8         | 1 9/16  | 5              | 2                 | 3    |                   | 6 7/8    | 3 1/16  | 11             | 3                 | 4    |                   |
| 2 1/2         | 1 1/4   | 4              | 2                 | 2    |                   | 7 1/2    | 3 3/4   | 12             | 3                 | 3    |                   |
| 1 7/8         | 15/16   | 3              | 1                 | 2    |                   | 8 3/4    | 4 1/16  | 13             | 2                 | 8    |                   |
| 1 1/4         | 5/8     | 2              | 1                 | 1    |                   | 8 3/4    | 4 3/8   | 14             | 2                 | 2    |                   |
| 5/8           | 5/16    | 1              | 0                 | 1    |                   | 9 3/8    | 4 1/8   | 15             | 1                 | 2    |                   |
| N             | N       | N              | N                 | N    | *                 | 10       | 5       | 16             | 1                 | 1    |                   |

Neutral Solo should be grounded if system neutral is grounded, ungrounded if system is ungrounded.

\* Do not by-pass unless on position "N" and control switch on panel is "OFF"

# APPROXIMATE WEIGHTS

Core and Coils 15,500 lbs.  
Tank and fittings 6,800 lbs.  
Oil (1387 Gals.) 10,400 lbs.  
Total 32,700 lbs.

Floor space 6' x 9' - 10"  
Untanking Height 17' - 0"

|                         |         |      |      |      |              |      |
|-------------------------|---------|------|------|------|--------------|------|
| Relocated to Loc. No. 2 |         |      |      |      |              |      |
| REV. NO.                | DATE    | DEGN | DRWN | CHKD | SUPV.        | SUBN |
| 1                       | 9/11/71 | DST  | DST  | LMS  | DNR          |      |
| DEGN                    | G.L.R.  |      |      |      | SUPV. J.F.H. |      |
| DRWN                    | D.R.C.  |      |      |      | W.O. 36788   |      |
| CHKD                    | J.F.H.  |      |      |      | PROJ. ENGR.  |      |

| 3                                              | 4                            |
|------------------------------------------------|------------------------------|
| 1                                              | W. Dyersburg, Tenn. - 69 KV. |
| 2                                              | Harriman, Tenn. - 69 KV.     |
| LOCATION                                       |                              |
| TENNESSEE VALLEY AUTHORITY                     |                              |
| DIVISION OF POWER ENGINEERING AND CONSTRUCTION |                              |
| VOLTAGE REGULATOR NAMEPLATE DIAGRAM            |                              |
| A.C. "AFR" 1500KVA 3 PHASE                     |                              |
| 13800 VOLTS 625/1256 AMPS.                     |                              |
| DATE                                           | 9-9-66                       |
| SUBMITTED                                      | Franklin                     |
| APPROVED                                       |                              |
| SCALE                                          | None                         |
|                                                | E074A                        |
| SHEET 1 OF 1 SHEETS                            |                              |
| WM-2724                                        |                              |

MICROFILMED

R-1



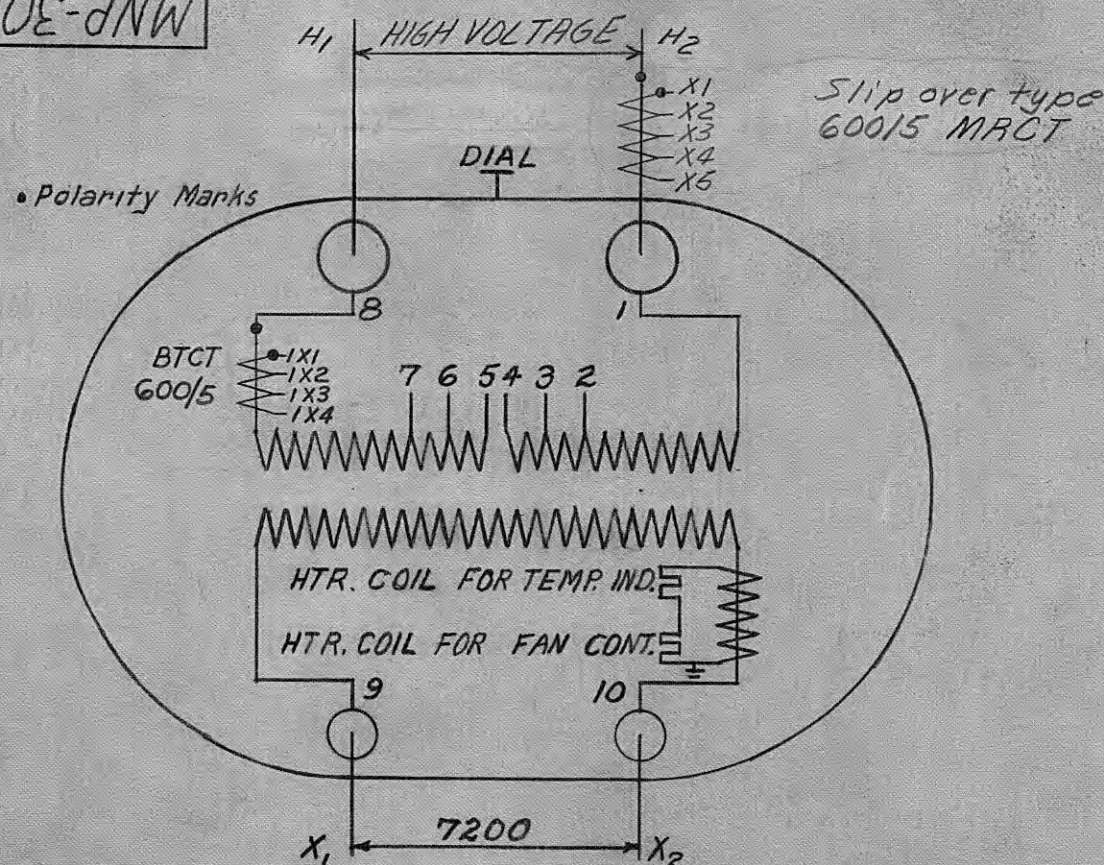








400E-JNW



**MOLONEY TRANSFORMER**  
 SER. NOS.: 897563, 4, 5, 6 TYPE CR SINGLE PHASE 60 CYCLE  
 RATINGS: 66000 - 7200/12470V VOLTS SUBTRACTIVE POLARITY  
 6667 KVA CONTINUOUS SELF-COOLED  
 8333 KVA CONTINUOUS FORCED AIR COOLED (TWO FANS OPER.)  
 11111 KVA CONTINUOUS FORCED AIR COOLED (ALL FANS OPER.)  
 TEMPERATURE RISE: 55°C CONTINUOUS 65°C HOT SPOT  
 MFRS. F.O.: 50-63582  
 T.V.A. REQ. NO.: 615085  
 T.V.A. P.O. NO.: C-50-16035

| TEST DATA @ 75°C                                                  |        |                 |           |          |           |          |        |              |                |        |             |        |        |
|-------------------------------------------------------------------|--------|-----------------|-----------|----------|-----------|----------|--------|--------------|----------------|--------|-------------|--------|--------|
| K.V.                                                              | K.V.A. | LOSSES IN WATTS |           |          | LOSS DATA |          |        | % REGULATION |                |        | % EXC. CUR. |        |        |
|                                                                   |        | CORE            | COPPER    | TOTAL    | % Z       | % X      | % R    | 1.0 PF       | 0.9 PF         | 0.8 PF | 90% V       | 100% V | 110% V |
| 66/7.2                                                            | 6667   | 12615           | 26550     | 39165    | 7.34      | 7.33     | 3.98   | 6.77         | 3.81           | 4.87   | .611        | .981   | 1.83   |
| 66/7.2                                                            | 11111  | —               | —         | —        | 12.25     | 12.24    | 6.65   | 14.15        | 6.58           | 8.24   | —           | —      | —      |
| D.C. RESISTANCE % EFFICIENCY @ 100% P.F. TEMPERATURE TEST DATA °C |        |                 |           |          |           |          |        |              |                |        |             |        |        |
| WINDING                                                           | OHMS   | K.V.            | FULL LOAD | 3/4 LOAD | 1/2 LOAD  | 1/4 LOAD | K.V.A. | K.V.         | RISE BY RESIS. |        | OIL RISE    |        | TEMP.  |
| H.V.                                                              | 1.194  | 66/7.2          | 99.41     | 99.45    | 99.42     | 99.15    |        |              | H.V.           | L.V.   | BY THER.    | AMB.   | ROOM   |
| L.V.                                                              | .0114  |                 |           |          |           |          | 6667   | 59.4         | 39.5           | 39.0   | 34.0        | 27.2   | 24.0   |
|                                                                   |        |                 |           |          |           |          | 8333   | 7.2          | 39.2           | 36.2   | 30.2        | 26.0   | 26.0   |
|                                                                   |        |                 |           |          |           |          | 11111  |              | 45.2           | 42.2   | 29.7        | 28.3   | 23.5   |

\*Calculated by T.V.A.

| VOLTAGE SETTING |    |      | HIGH VOLTAGE CONNECTIONS |                  |                   |           |          |
|-----------------|----|------|--------------------------|------------------|-------------------|-----------|----------|
|                 |    |      | LINES ON 1 & 8           |                  |                   |           |          |
| NO.             | BY | DATE | VOLTS                    | AMP. AT 6667 KVA | AMP. AT 11111 KVA | DIAL POS. | CONNECTS |
| A               |    |      | 66000                    | 101.0            | 168.5             | I         | 4 to 5   |
| B               |    |      | 64350                    | 103.6            | 173.0             | II        | 3 to 5   |
| C               |    |      | 62700                    | 106.2            | 177.0             | III       | 3 to 6   |
| D               |    |      | 61050                    | 109.0            | 181.5             | IV        | 2 to 6   |
| E               |    |      | 59400                    | 112.2            | 187.0             | V         | 2 to 7   |
|                 |    |      | 7200                     | 926              | 1544              |           |          |

**APPROXIMATE WEIGHTS**  
 Untanking 28150 lbs.  
 Tank and Fittings 17500 lbs.  
 Oil (2000 Gals.) 15000 lbs.  
 Total 60650 lbs.

Floor Space 9'-7 3/8" x 12'-10"  
 Untanking Height 26'-0"

**REFERENCES:**  
 Mfrs. Dwgs. X-5102  
 Mfrs. N.P. Diag. 45970  
 Trans. Acces. Diag. HC-27997

W.O. 45117

|                                                                                                                                                                                                                                                          |                        |                       |                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-----------------------|---------------------|
| LOCATION 5                                                                                                                                                                                                                                               | 6                      | 7                     | 8                   |
| LOCATION 1                                                                                                                                                                                                                                               | HARRIMAN, TENN.        | 2                     | 3                   |
| <p align="center"><b>TENNESSEE VALLEY AUTHORITY</b><br/>         POWER ENGINEERING AND CONSTRUCTION DEPARTMENT<br/> <b>TRANSFORMER NAMEPLATE DIAGRAM</b><br/>         MOLONEY 6667SC/8333FA/11111FA KVA 1φ "CR"<br/>         66000-7200/12470V VOLTS</p> |                        |                       |                     |
| SCALE:                                                                                                                                                                                                                                                   | SUBMITTED              | APPROVED              | DATE 2-4-52         |
| DRAWN: RLV                                                                                                                                                                                                                                               | TRACED: M.C. Charles   | CHECKED: R.E. Hayford | SHEET 1 OF 1 SHEETS |
| ISSUE                                                                                                                                                                                                                                                    | REVISION               | DATE                  | SIG.                |
| 1                                                                                                                                                                                                                                                        | Added MRCT on H2531-66 | DWA                   |                     |
| MNP-3004                                                                                                                                                                                                                                                 |                        |                       |                     |

MICROFILMED 1

E353M

R-1



| PREPARED: AMR<br>CHECKED: PPP<br>CORRECT:<br>APPROVED: |      | BILL OF MATERIAL FOR:<br>Grounding |       | TENNESSEE VALLEY AUTHORITY<br>DIVISION OF POWER ENGINEERING AND CONSTRUCTION<br><b>BILL OF MATERIAL</b><br>HARRIMAN, TENN.<br>SUBSTATION - 69 kV |                     | APPLIES TO DRAWINGS NO. LC-15068<br>INITIAL W.O. - |           | BMC - 15069<br>SHEET 1 OF 2<br>DATE: 7/27/43                          |            |
|--------------------------------------------------------|------|------------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------------------------------------------------|-----------|-----------------------------------------------------------------------|------------|
| REQUISITION                                            | M.K. | REQUIRED                           |       | DESCRIPTION                                                                                                                                      | CATALOG OR DWG. NO. | REMARKS                                            | REVISIONS |                                                                       |            |
|                                                        |      | THIS REV                           | TOTAL |                                                                                                                                                  |                     |                                                    | NO.       | DATE AND CHANGES                                                      | SIG.       |
| Stock                                                  | AA   | +15                                | 975   | Ft., 2/0 stranded bare copper cable                                                                                                              |                     |                                                    | 11.       | 7/28/71 W.O. 35644                                                    | CDB        |
|                                                        | AB   |                                    |       |                                                                                                                                                  |                     |                                                    |           | Retyped<br>AA was 940, AK was 8,<br>AL was 19, AP was 49,<br>AV was 8 |            |
|                                                        | AC   |                                    | 8     | Connector, ground, clamp type, for connecting two 2/0 stranded copper cables to a flat surface                                                   | Burndy GC-2626      |                                                    |           |                                                                       |            |
|                                                        | AD   | +2                                 | 6     | Connector, tee, clamp type, for connecting a 4/0 stranded copper cable run and compression type for a 2/0 stranded copper cable tap              | Burndy NYT-2826     |                                                    | 12.       | 11-6-74 Fld. Chg. Completion of W.O. 35982                            | RJS<br>JHT |
|                                                        | AE   |                                    | 4     | Grounded platform plate                                                                                                                          | SC-3956             |                                                    |           |                                                                       |            |
|                                                        | AF   | +2                                 | 30    | Terminal, compression type, for connecting a 2/0 stranded copper cable to a flat surface                                                         | Burndy YA-26        |                                                    |           |                                                                       |            |
|                                                        | AG   |                                    | 1     | Cap screw, 3/8" x 1/2", hex head, Everdur, with nut                                                                                              |                     |                                                    |           |                                                                       |            |
|                                                        | AJ   |                                    | 4     | Terminal, clamp type, for connecting a 2/0 stranded copper cable to a flat surface, tongue not drilled                                           | Burndy NA-26-2      |                                                    |           |                                                                       |            |
| Stock                                                  | AK   | 2                                  | 10    | Cap screw, Everdur, 1/2" - 13 x 1" long, with lockwasher                                                                                         |                     |                                                    |           |                                                                       |            |
| Stock                                                  | AL   | 1                                  | 20    | Connector, tee, compression type, for connecting a 2/0 stranded copper cable, run and tap                                                        | Burndy YYT-2626     |                                                    |           |                                                                       |            |
|                                                        | AM   |                                    | 18    | Ft., 250 kcmil bare stranded copper cable                                                                                                        |                     |                                                    |           |                                                                       |            |
|                                                        | AN   |                                    | 1     | Connector, tee, clamp type, for connecting a 4/0 stranded copper cable run and a 250 kcmil stranded copper cable tap                             | Burndy NT-2829      |                                                    |           |                                                                       |            |
|                                                        | AO   | +2                                 | 30    | Bolt, Everdur, 3/8" x 1 1/2", hex nut and lockwasher                                                                                             |                     |                                                    |           |                                                                       |            |
| Stock                                                  | AP   | 10                                 | 59    | Split bolt connector, for No. 6 solid copper wire                                                                                                | Burndy KS-17        |                                                    |           |                                                                       |            |
|                                                        | AQ   |                                    | 3     | Mechanical attachment for holding a 250 kcmil strd. copper cable to a flat surface                                                               | Burndy GBM-29       |                                                    |           |                                                                       |            |
|                                                        | AR   |                                    | 24    | Mechanical attachment for holding a 2/0 stranded copper cable to a flat surface                                                                  | Burndy GBM-26       |                                                    |           |                                                                       |            |
|                                                        | AS   |                                    | 25    | Ground rod, 5/8" x 8'-0" long                                                                                                                    | Copperweld          |                                                    |           |                                                                       |            |
|                                                        | AT   |                                    | 5     | Connector, clamp type, for connecting one 2/0 stranded copper cable to a 5/8" rod                                                                | Burndy GAR-6426     |                                                    |           |                                                                       |            |
|                                                        | AU   |                                    | 13    | Connector, clamp type, for connecting two 2/0 stranded copper cables to a 5/8" rod                                                               | Burndy GP-6426      |                                                    |           |                                                                       |            |
| Stock                                                  | AV   | 3                                  | 11    | Split bolt connector, for 2/0 stranded copper cable run and No. 6- No. 2 copper wire tap                                                         | Burndy KSU-26       |                                                    |           |                                                                       |            |