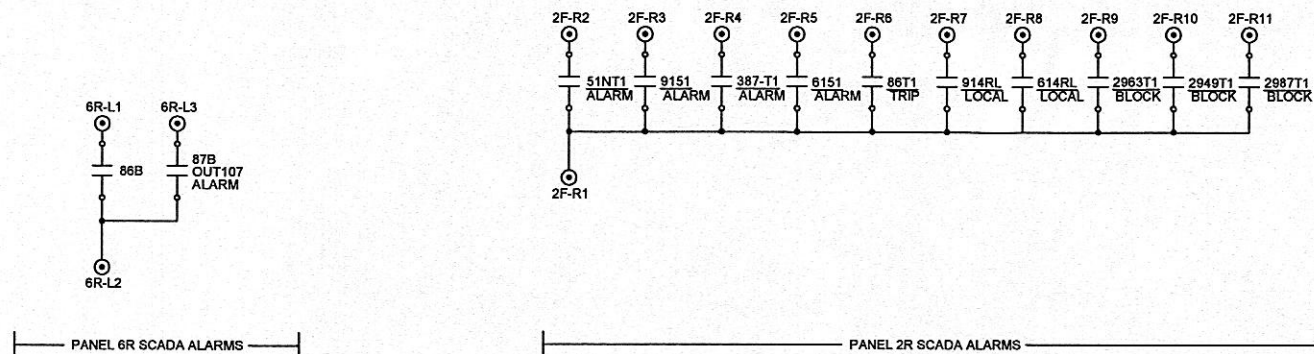


PLOT: 9/30/2010 WALESPA - SAVED: 9/18/2010 WALESPA- 14:10 - C:\01063007-70014-01317 HARRIMAN UB-PRIMARY\WORK PRODUCTS\CTCR\01317-05.DWG : MODEL

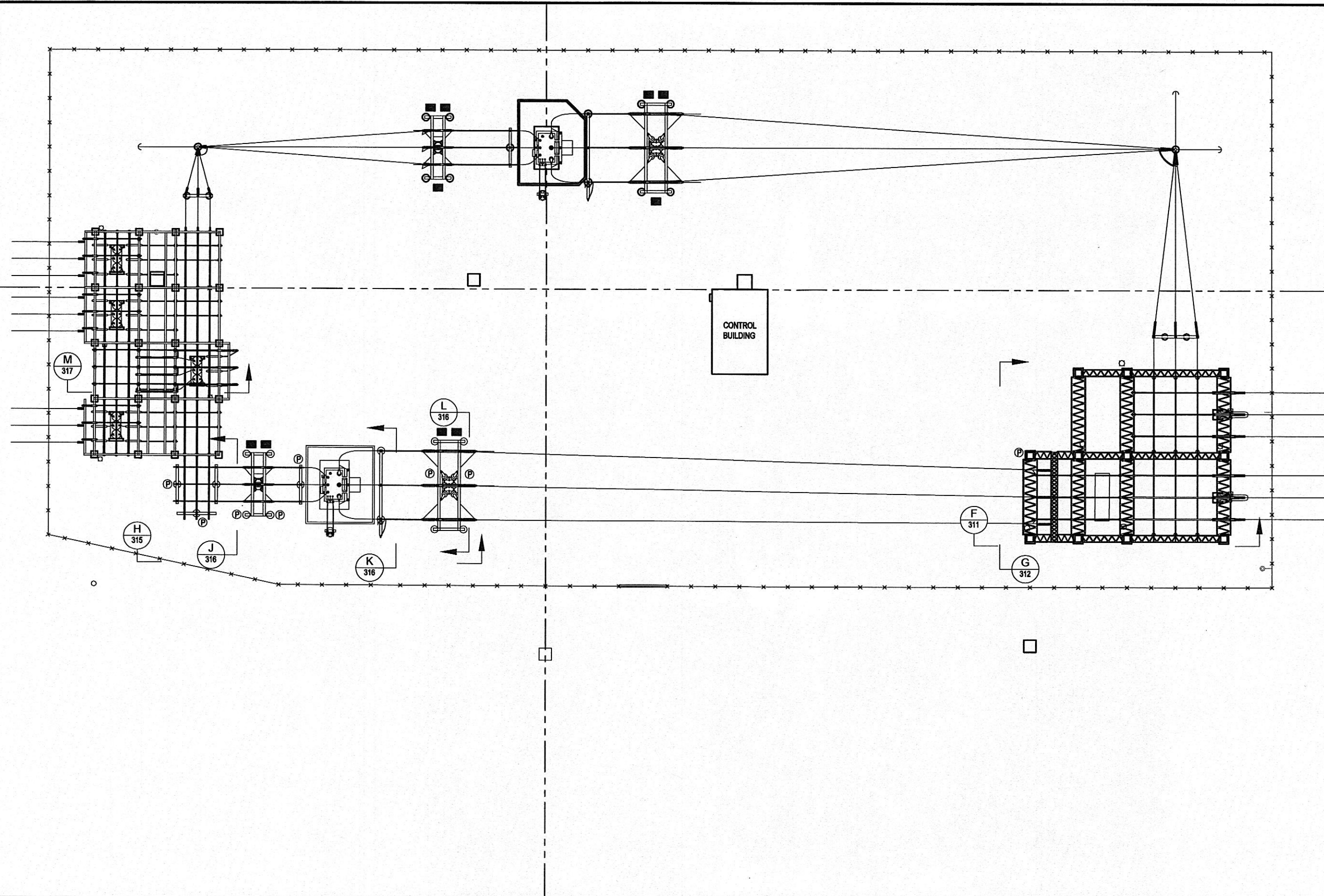
- LEGEND
- RELAY PANEL TERMINAL BLOCK
 - INTERCONNECTIONS BETWEEN RELAY PANELS AND FIELD EQUIPMENT
 - RELAY PANEL WIRING
 - FIELD DEVICE TERMINAL BLOCK



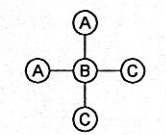
					DESIGNED	CONFORMED TO CONSTRUCTION RECORDS		 R.W. Beck 131 Saundersville Rd., Suite 300 Hendersonville, TN 37075 (615) 431-3200 An SAIC Company	HARRIMAN UTILITY BOARD HARRIMAN PRIMARY SUBSTATION SCADA ALARM CONNECTIONS	PROJECT NUMBER:
					RNJ					07-70014-01317-1000
					DRAWN					SHEET OF:
					RAW					1 1
1	09-15-10				CONFORMED TO CONSTRUCTION RECORDS.					DRAWING NUMBER:
0	11-09-09	KA	RNJ		ISSUED FOR CONSTRUCTION.					01317-105.1
REV	DATE	CHKD	APPD		REVISION DESCRIPTION					

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PLOT: 9/18/2010 WALESSA - SAVED: 9/18/2010 WALESSA- 13:15 - G:\01053007-7001-4-01317 HARRIMAN UB-PRIMARYWORK\PRODUCTS\CTCR01317-300.DWG : LAYOUT1



PHASING DIAGRAM

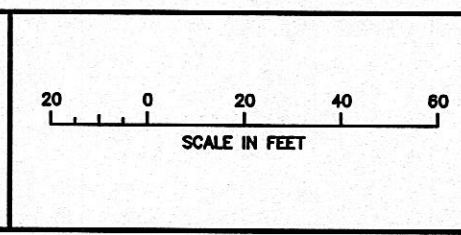


LEGEND
Ⓟ - PHASE MARKER SET

REV	DATE	CHKD	APPD	REVISION DESCRIPTION
2	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.
1	12-15-09	RNJ	KA	ISSUED FOR CONSTRUCTION.
0	10-02-09	RNJ	KA	ISSUED FOR BIDS.

DESIGNED
KA
DRAWN
RW

**CONFORMED TO
CONSTRUCTION
RECORDS**

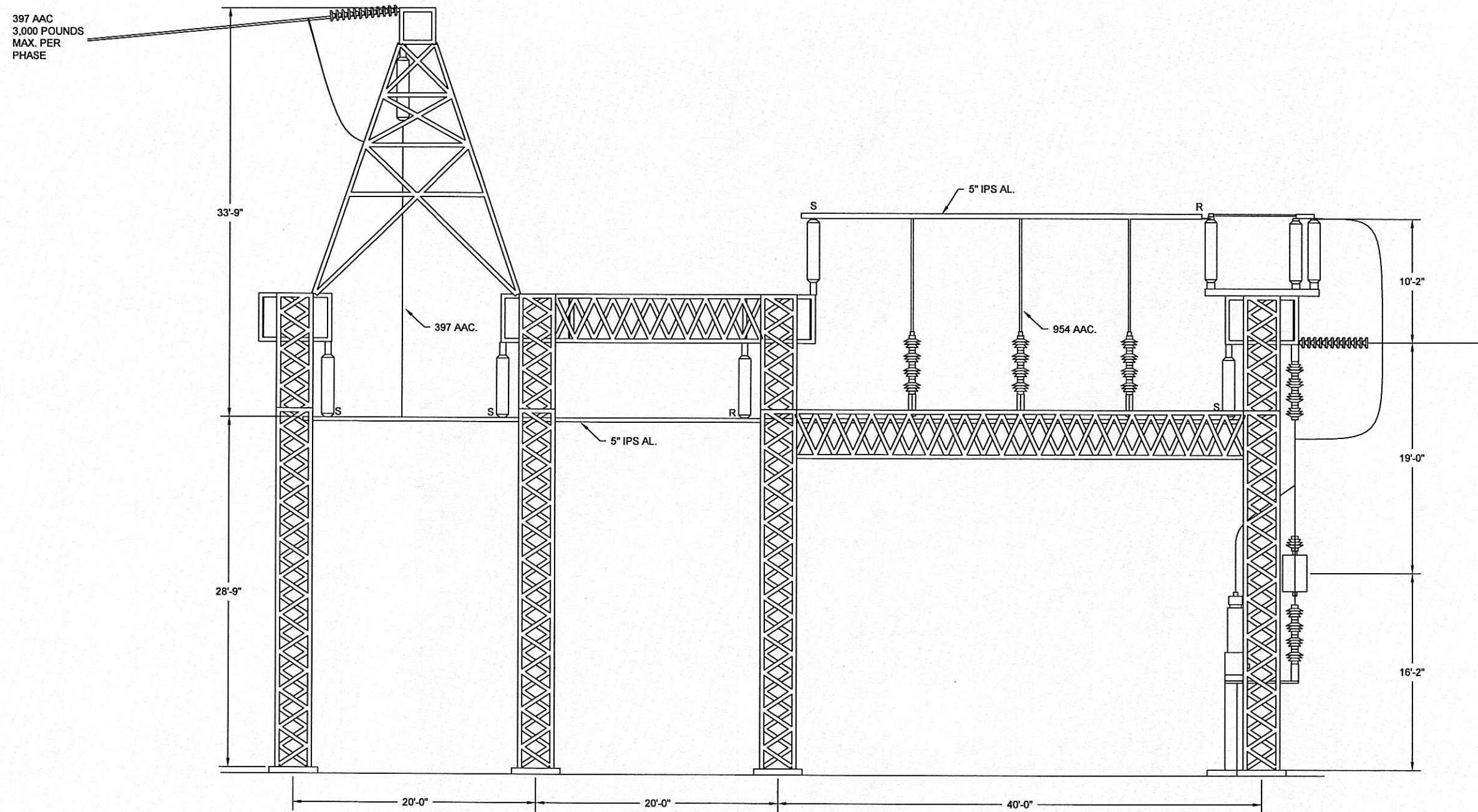


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Hendersonville, TN 37075
(615) 431-3200

HARRIMAN UTILITY BOARD
HARRIMAN PRIMARY SUBSTATION
ELECTRICAL EQUIPMENT PLAN

PROJECT NUMBER:
07-70014-01317-1000
SHEET OF:
1 1
DRAWING NUMBER:
01317-300.2

PLOT: 9/16/2010 WALESA - SAVED: 9/16/2010 WALESA - 13:16 - C:\01053007-701401317 HARRIMAN UB-PRIMARYWORK PRODUCTS\CTCR001317311.DWG : LAYOUT1
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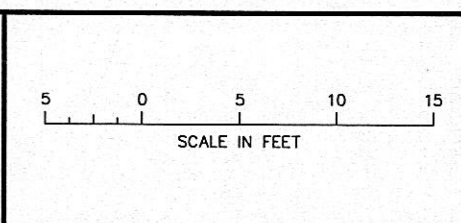


LEGEND
 S - SLIP BUS FITTING
 R - RIGID BUS FITTING

REV	DATE	CHK'D	APP'D	REVISION DESCRIPTION
2	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.
1	12-15-09	RNJ	KA	ISSUED FOR CONSTRUCTION.
0	10-02-09	RNJ	KA	ISSUED FOR BIDS.

DESIGNED	KA
DRAWN	RW

**CONFORMED TO
CONSTRUCTION
RECORDS**

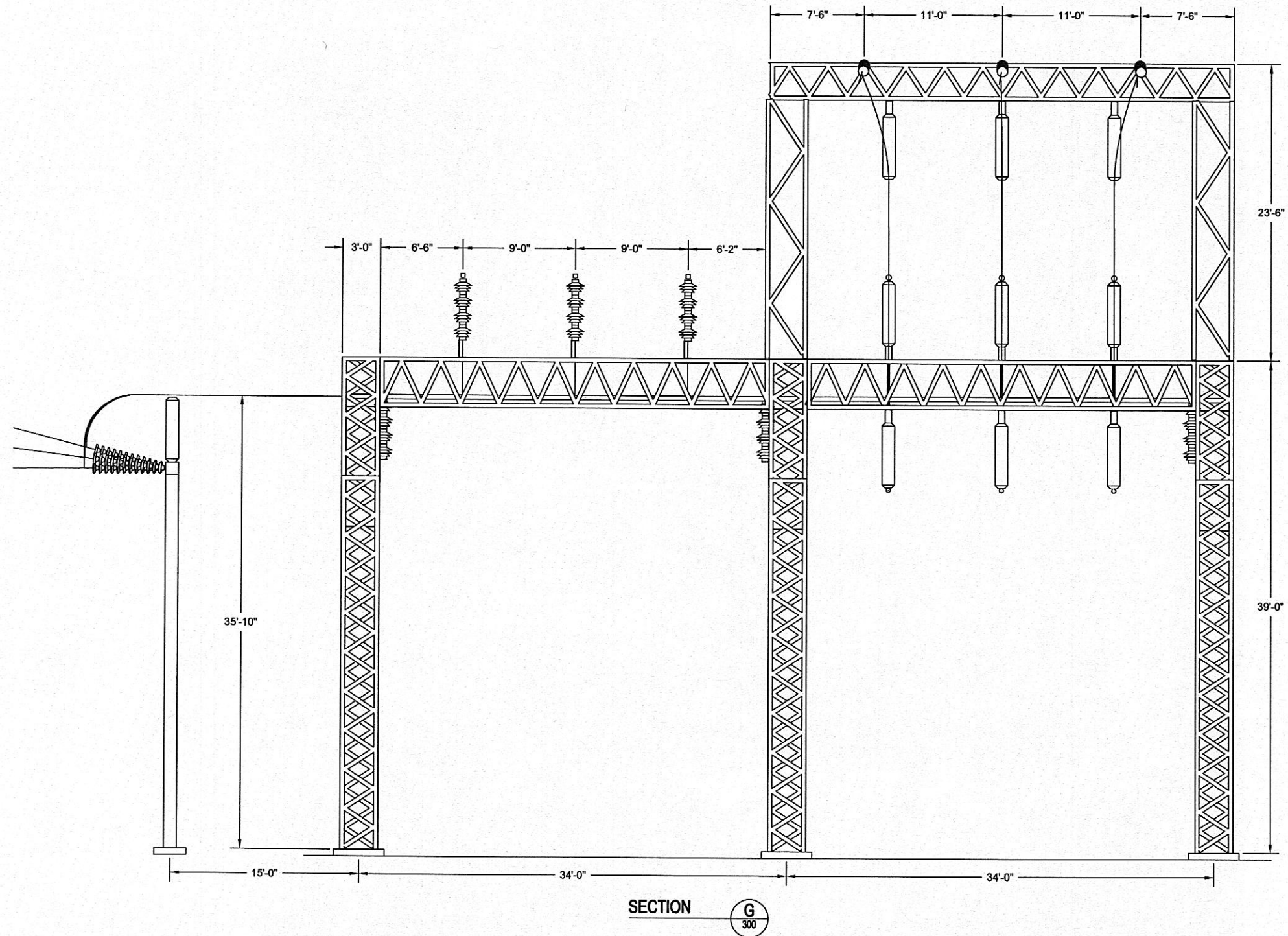


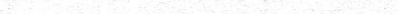


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HARRIMAN UTILITY BOARD
 HARRIMAN PRIMARY SUBSTATION
 161KV SWITCHGEAR
 SECTION VIEW F

PROJECT NUMBER:	07-70014-01317-1000
SHEET OF:	1 1
DRAWING NUMBER:	01317-311.2



					DESIGNED KA	CONFORMED TO CONSTRUCTION RECORDS	 5 0 5 10 15 SCALE IN FEET	 R.W. Beck 131 Saundersville Rd., Suite 300 Hendersonville, TN 37075 (615) 431-3200 An SAIC Company	HARRIMAN UTILITY BOARD HARRIMAN PRIMARY SUBSTATION ELECTRICAL EQUIPMENT SECTION VIEW G	PROJECT NUMBER: 07-70014-01317-1000
2	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.	DRAWN RW					SHEET OF: 1 1
1	12-15-09	RNJ	KA	ISSUED FOR CONSTRUCTION.						DRAWING NUMBER: 01317-312.2
0	10-02-09	RNJ	KA	ISSUED FOR BIDS.						
REV	DATE	CHKD	APPD	REVISION DESCRIPTION						

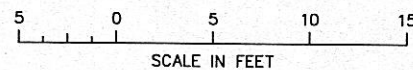
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H
300

LEGEND
S -SLIP BUS FITTING
R -RIGID BUS FITTING

3	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.
2	12-15-09	RNJ	KA	ISSUED FOR CONSTRUCTION.
1	10-09-09	RNJ	KA	ADDED BYPASS SWITCHES.
0	10-02-09	RNJ	KA	ISSUED FOR BIDS.
REV	DATE	CHKD	APPD	REVISION DESCRIPTION

**CONFORMED TO
CONSTRUCTION
RECORDS**

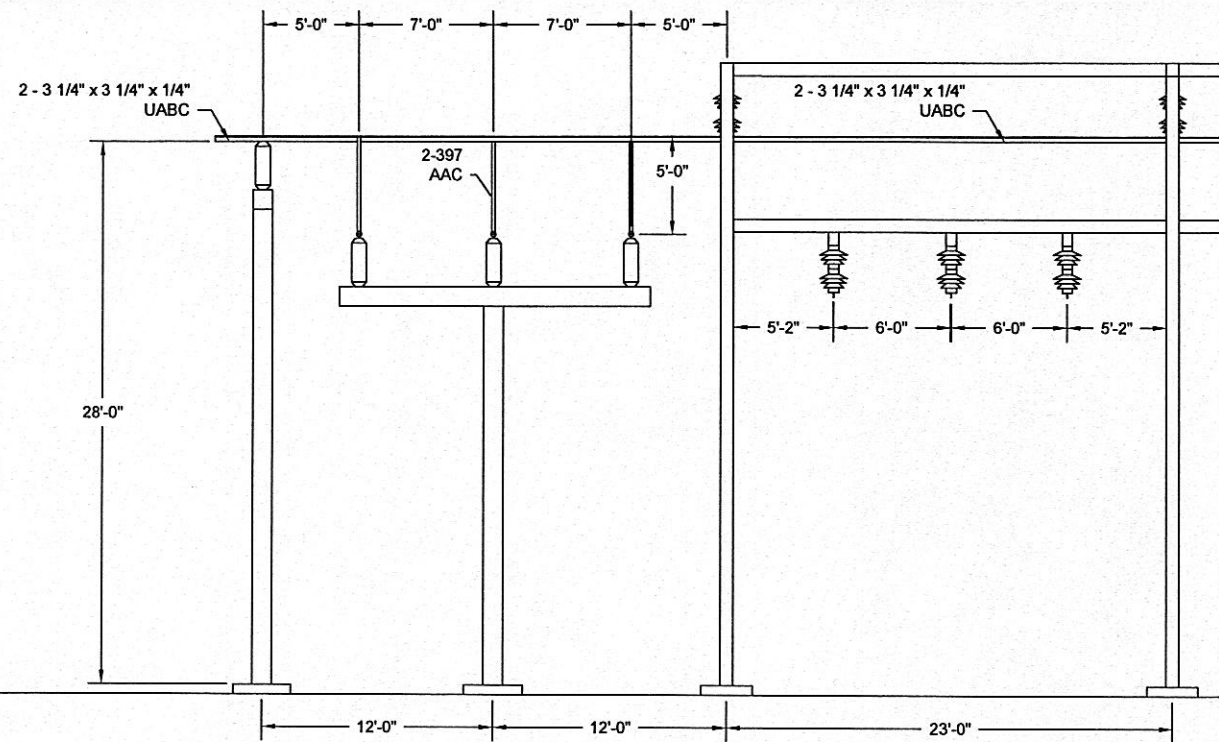


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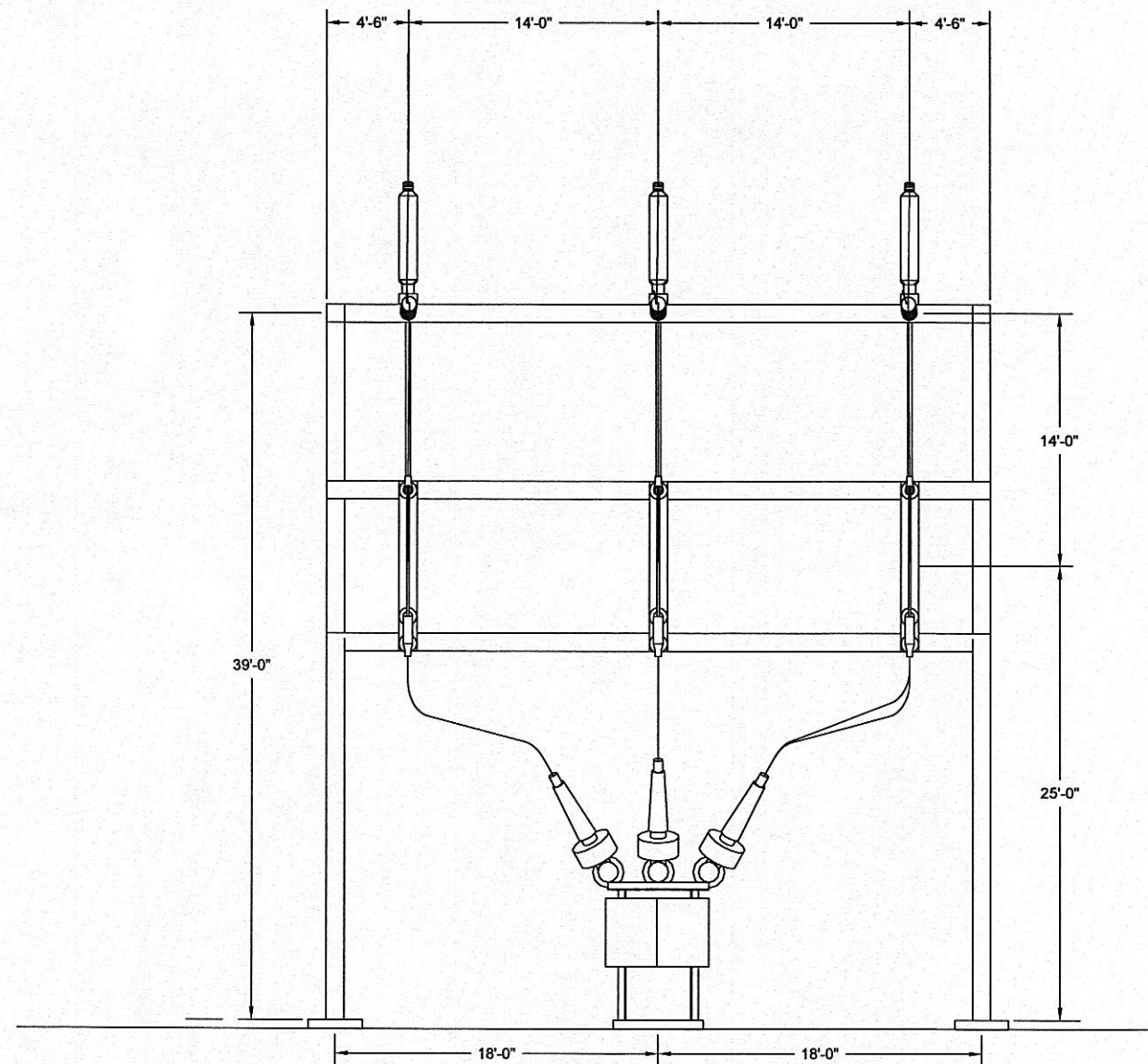
HARRIMAN UTILITY BOARD
HARRIMAN PRIMARY SUBSTATION
ELECTRICAL EQUIPMENT
SECTION VIEW H

01317-315.3

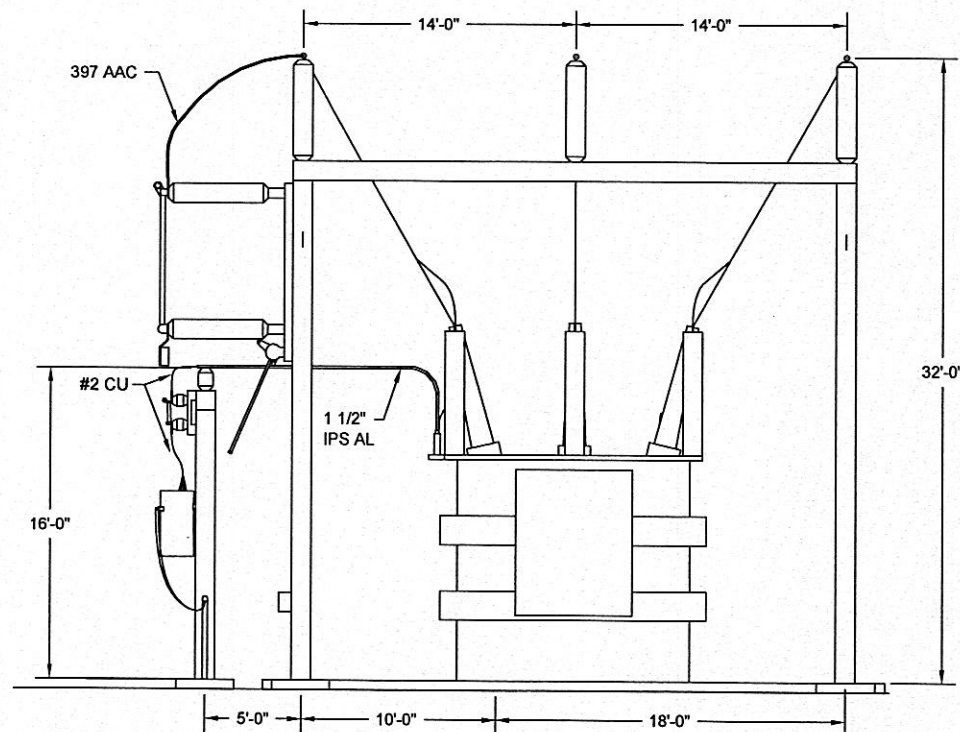
PLOT: 9/16/2010 WALESPA - 13:17 - G:\01053007-70014-01317 HARRIMAN UB-PRIMARYWORK PRODUCTS\CTCR01317-316.DWG - LAYOUT1



SECTION J
300



SECTION L
300

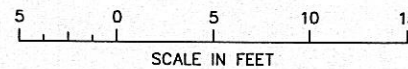


SECTION K
300

REV	DATE	CHKD	APPD	REVISION DESCRIPTION
3	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.
2	12-15-09	RNJ	KA	ISSUED FOR CONSTRUCTION.
1	10-09-09	RNJ	KA	ADDED BYPASS SWITCHES.
0	10-02-09	RNJ	KA	ISSUED FOR BIDS.

DESIGNED	KA
DRAWN	RW

**CONFORMED TO
CONSTRUCTION
RECORDS**



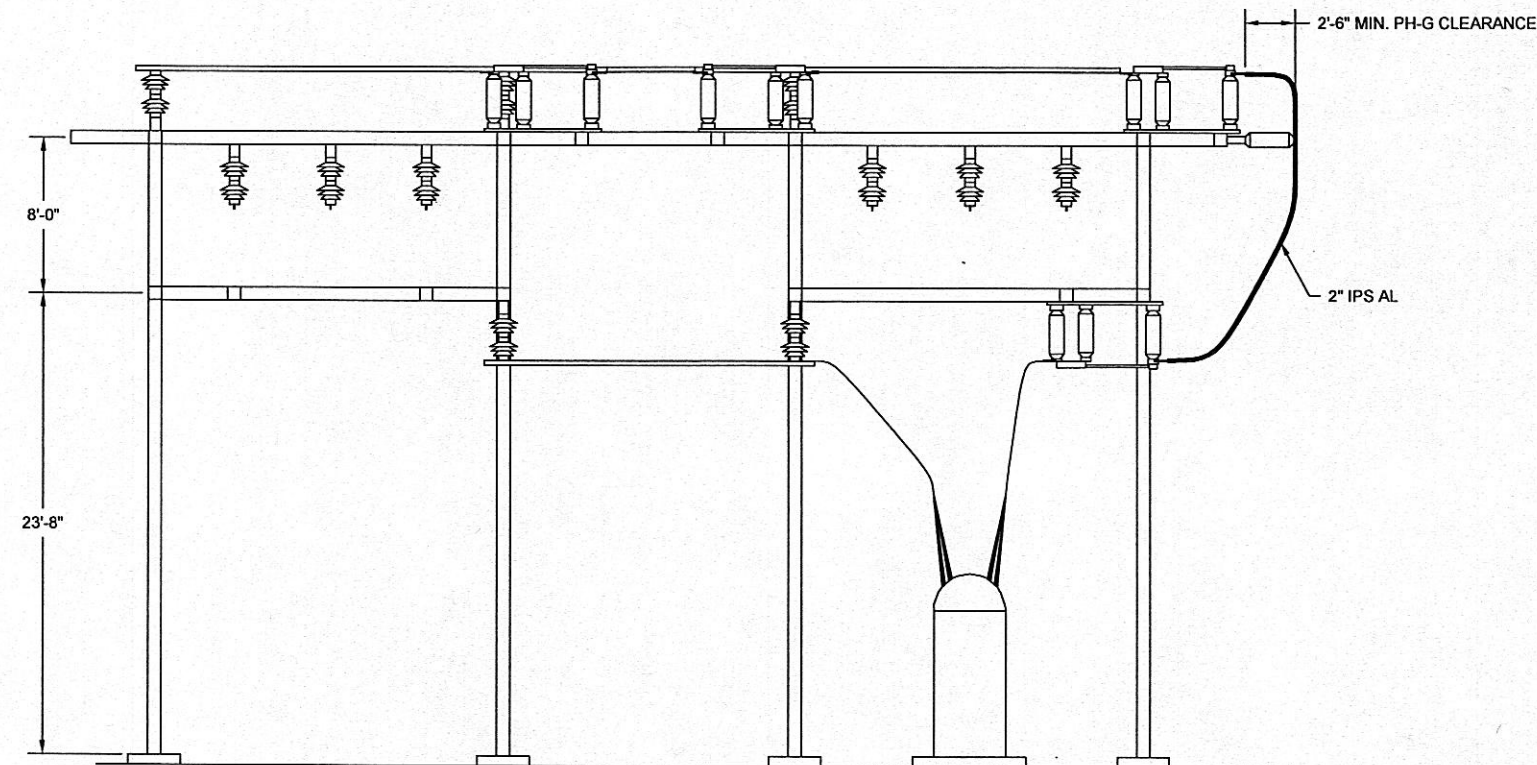
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An SAIC Company

HARRIMAN UTILITY BOARD
HARRIMAN PRIMARY SUBSTATION
ELECTRICAL EQUIPMENT
SECTION VIEWS J, K, & L

PROJECT NUMBER:	07-70014-01317-1000
SHEET OF:	1 1
DRAWING NUMBER:	01317-316.3

PLOT: 9/16/2010 WALESPA - SAVED: 9/16/2010 WALESPA - 13:17 - G:\01050007-70014-01317 HARRIMAN UB-PRIMARY\WORK PRODUCTS\CTCR01317-317.DWG - LAYOUT1

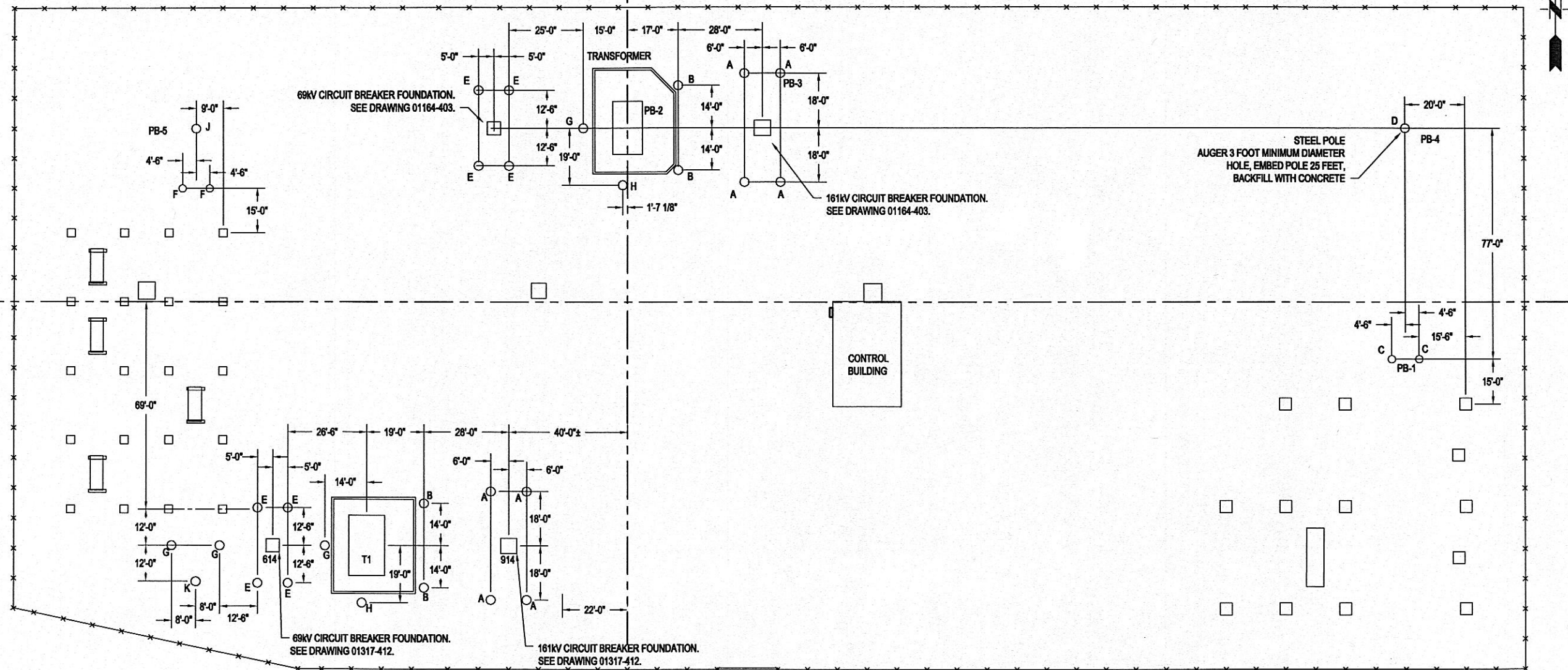


SECTION M
300

					DESIGNED KA	CONFORMED TO CONSTRUCTION RECORDS	50515 SCALE IN FEET	RW BECK An SAIC Company R.W. Beck 131 Saundersville Rd., Suite 300 Hendersonville, TN 37075 (615) 431-3200	HARRIMAN UTILITY BOARD HARRIMAN PRIMARY SUBSTATION ELECTRICAL EQUIPMENT SECTION VIEW M	PROJECT NUMBER: 07-70014-01317-1000
					DRAWN RW					SHEET OF: 1 1
										DRAWING NUMBER: 01317-317.2
2	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.						
1	12-15-09	RNJ	KA	ISSUED FOR CONSTRUCTION.						
0	10-02-09	RNJ	KA	ISSUED FOR BIDS.						
REV	DATE	CHK'D	APP'D	REVISION DESCRIPTION						

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PLOT: 9/18/2010 WALESRA - SAVED: 9/15/2010 WALESRA - 13:38 - G:\01053007-70014-01317 HARRIMAN UB-PRIMARY WORK PRODUCTS\01317-400.DWG - LAYOUT1



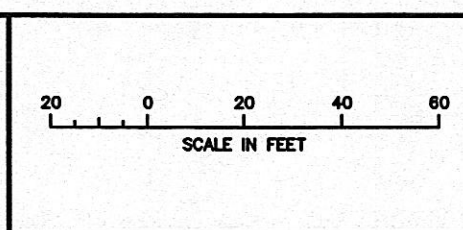
NOTES:

1. REFER TO DRAWING 01317-411 FOR TRANSFORMER 1 FOUNDATION DETAILS.
2. ALL TOP OF CONCRETE (TOC) ELEVATIONS ARE 101.0
3. DIMENSIONS ARE TO CENTER OF BASEPLATE.
4. ALL FOUNDATIONS NOTED FOR REMOVAL SHALL BE REMOVED TO A LEVEL AT LEAST ONE FOOT BELOW GRADE. RESTORE GRAVEL AREA AFTER REMOVAL. REFER TO DRAWING 01317-404 FOR MODIFICATIONS TO ADJACENT OIL CONTAINMENT PIPING.

REV	DATE	CHK'D	APP'D	REVISION DESCRIPTION
3	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.
2	12-15-09	MDB	KA	GENERAL REVISIONS. RE-ISSUED FOR CONSTRUCTION
1	11-05-09	MDB	KA	ISSUED FOR CONSTRUCTION
0	10-02-09	MDB	KA	ISSUED FOR BIDS.

DESIGNED
DRAWN

**CONFORMED TO
CONSTRUCTION
RECORDS**



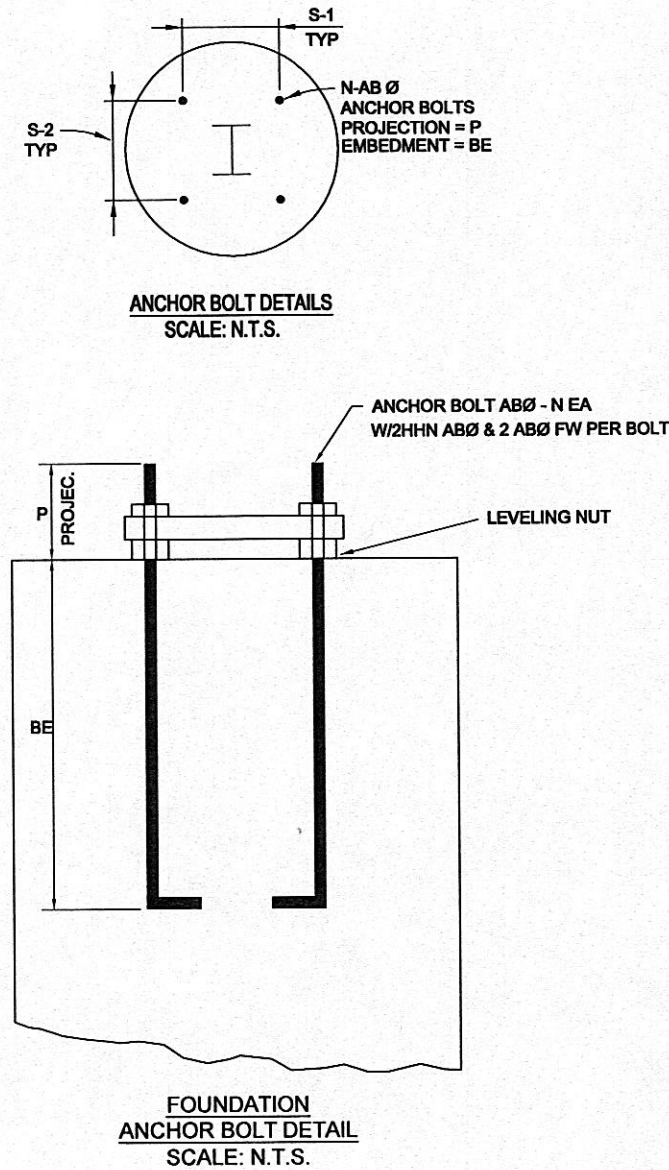
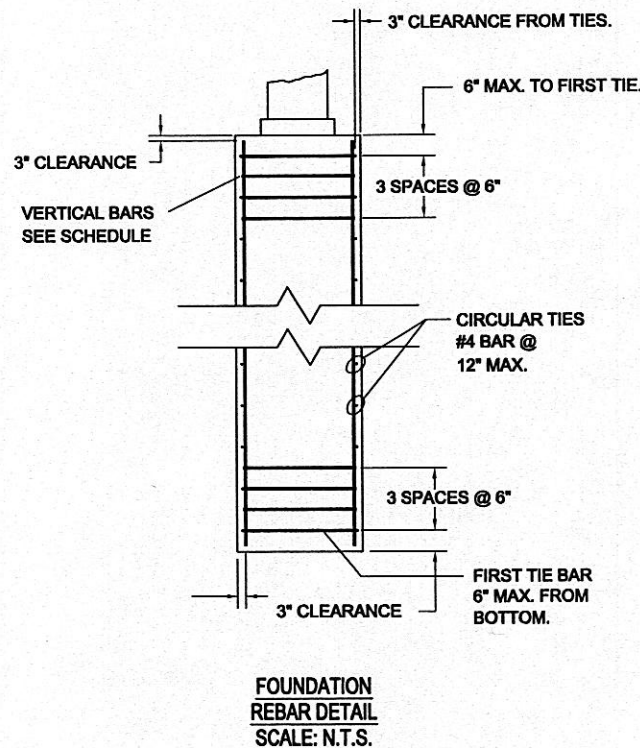
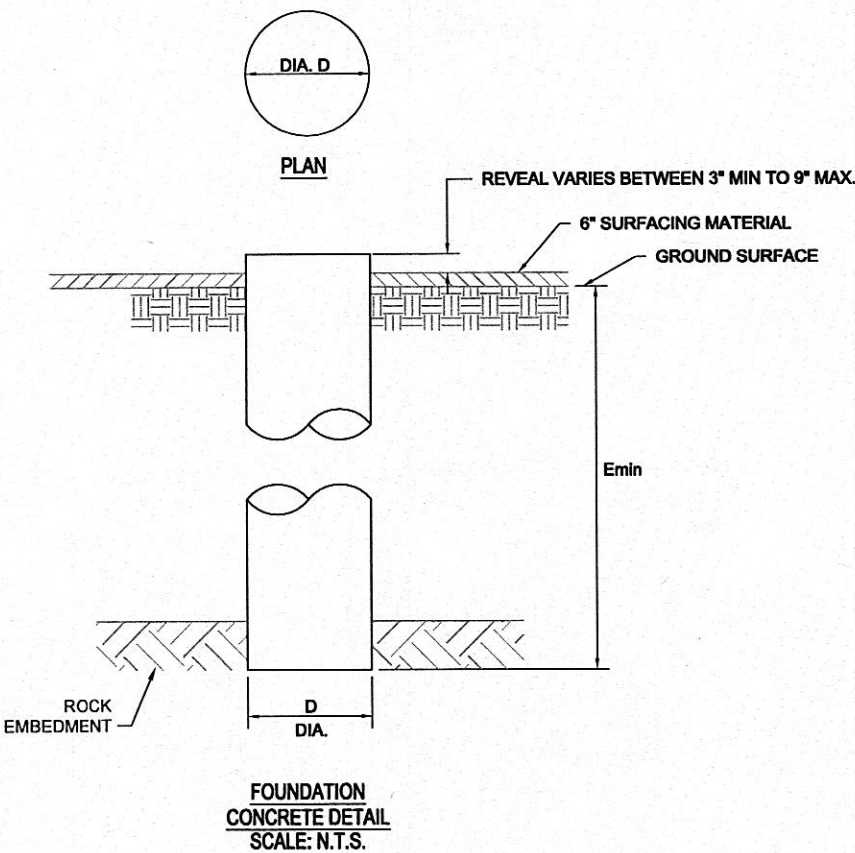
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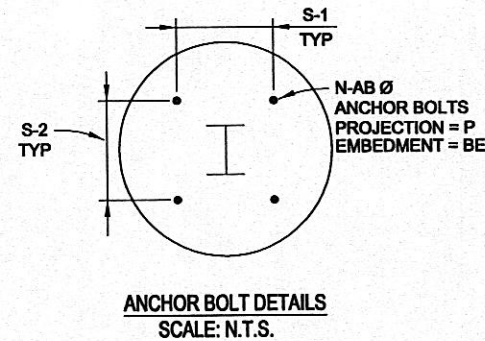
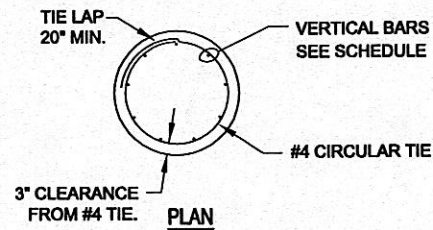
HARRIMAN UTILITY BOARD
HARRIMAN PRIMARY SUBSTATION
FOUNDATION PLAN

PROJECT NUMBER: 07-70014-01317-1000
SHEET OF:
DRAWING NUMBER: 01317-400.3

PLOT: 9/16/2010 WALESSA - SAVED: 9/15/2010 WALESSA - 1336 - G:\01053007-70014-01317 HARRIMAN UB-PRIMARY\WORK PRODUCTS\CTCR01317-401.DWG : MODEL



DRILLED PIER SCHEDULE											
FND TYPE	DIAMETER D (FT)	TOTAL EMBEDMENT Emin (FT)	VERTICAL BAR EVENLY SPACED		NUMBER OF AB N	ABØ (IN)	SPACING SIZE (IN)		AB PROJECTION P (IN)	AB EMBEDMENT BE (FT-IN)	ANCHOR BOLT PATTERN
			NUMBER	SIZE			S-1	S-2			
A	3.5	15.0	14	5	4	1.25	16	16	5.0	3-1	P-1
B	3.0	11.0	11	5	4	1.25	14	14	5.0	3-1	P-2
E	2.5	10.0	7	5	4	1.00	10	10	4.0	2-2	P-3
G	2.5	10.0	7	5	4	1.00	12	12	4.0	2-2	P-4
H	2.5	9.0	7	5	4	1.00	12	12	4.0	2-2	P-4
K	3.0	10.5	11	5	4	1.25	14	14	5.0	3-1	P-2



NOTES:

1. CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 3,500 PSI AT 28 DAYS PER ASTM C39.
2. REINFORCING SHALL BE DEFORMED NEW BILLET STEEL PER ASTM A615, GRADE 60.
3. CHAMFER ALL EXPOSED EDGES 1".
4. MAXIMUM SIZE OF AGGREGATE SHALL BE 2".
5. EXPOSED SURFACE OF CONCRETE TO BE SMOOTH FORM FINISH.
6. ALL REINFORCING BARS TO HAVE MINIMUM 3" CLEARANCE FROM EDGE OF CONCRETE.
7. NOT ALL REINFORCING BARS SHOWN FOR CLARITY.
8. THREADS OF ANCHOR BOLTS AND NUTS TO BE THOROUGHLY CLEANED OF CONCRETE AND PROTECTED AFTER PLACEMENT.
9. FOR FOUNDATION DESIGNATIONS REFER TO DRAWING 01317-400.
10. SUBSURFACE CONDITIONS MAY VARY FROM ENGINEER'S ASSUMPTIONS. IF ROCK OR SOF CONDITIONS ARE ENCOUNTERED CONTACT ENGINEER.
 - 10.1. IN CASE OF ROCK, CONTINUE TO MINIMUM EMBEDMENT DEPTH REGARDLESS OF ROCK DEPTH.
 - 10.2. IN CASE OF SOFT SOIL, INCREASE DEPTH TO STIFFER SOIL OR ROCK IS ENCOUNTERED.
11. FOR ANCHOR BOLT PLAN AND ANCHOR BOLT DETAILS, REFER TO DRAWINGS DG-2482-AP1 AND DG-2482-AP2 BY SUBSTATION ENTERPRISES, INC.
12. TOP OF CONCRETE (TOC) ELEVATION SHALL BE 101.0.

REV	DATE	CHK'D	APP'D	REVISION DESCRIPTION
2	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.
1	12-15-09	MDB	KA	ISSUED FOR CONSTRUCTION.
0	10-02-09	MDB	KA	ISSUED FOR BIDS.

DESIGNED
DRAWN

**CONFORMED TO
CONSTRUCTION
RECORDS**



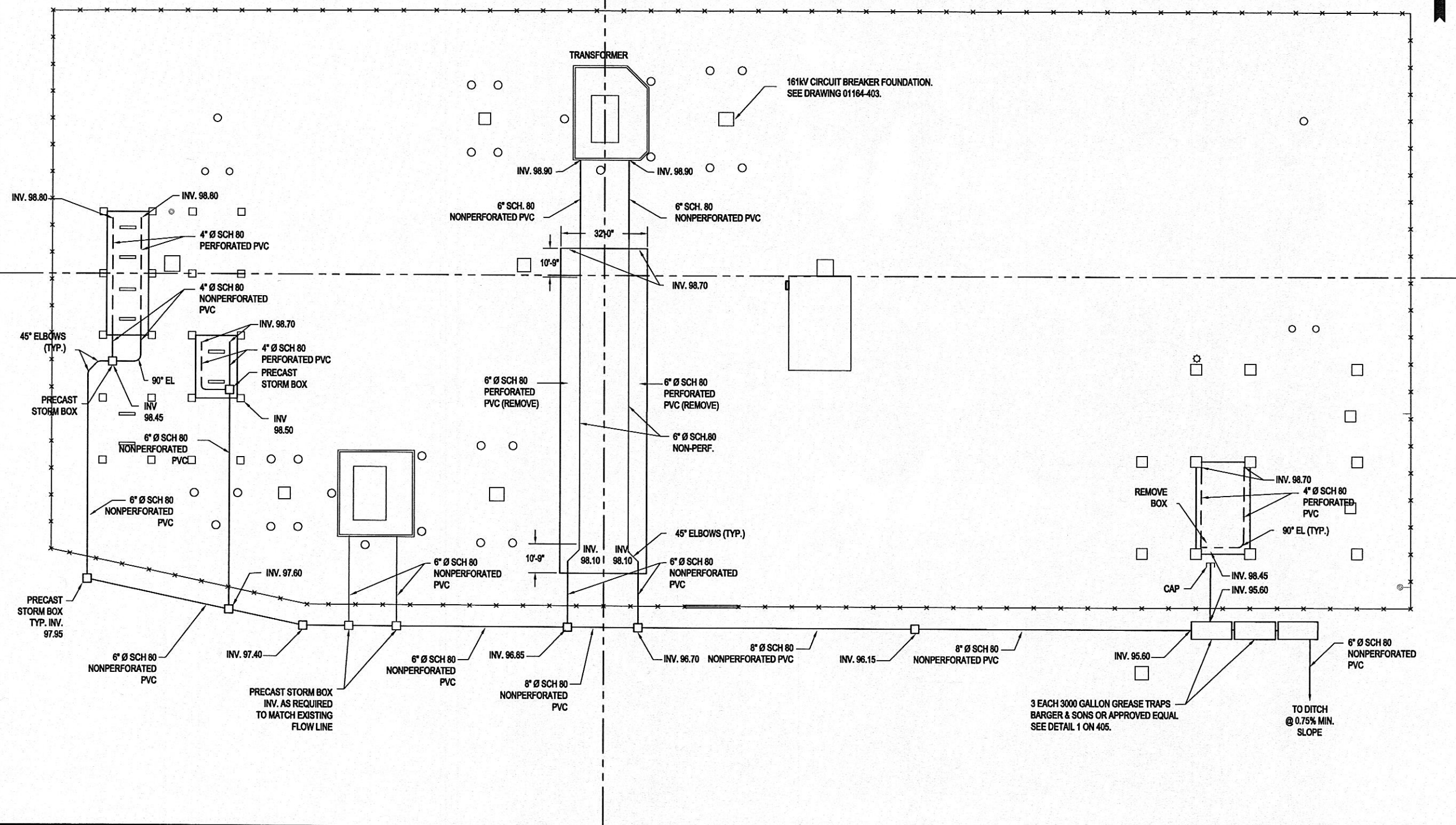
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HARRIMAN UTILITY BOARD
HARRIMAN PRIMARY SUBSTATION
DRILLED PIER
FOUNDATION DETAILS

PROJECT NUMBER:
07-70014-01317-1000
SHEET OF:
DRAWING NUMBER:
01317-401.2

NOTES:

1. MAINTAIN MINIMUM OF 0.5% SLOPE ON ALL PIPES.
2. REFER TO ABSORPTION AREA DETAILS ON SHEET 411 AND SPECIFICATION 02225.



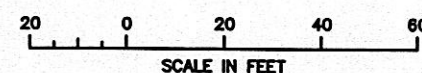
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REV	DATE	CHKD	APP'D	REVISION DESCRIPTION
2	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.
1	12-15-09	MDR	KA	ISSUED FOR CONSTRUCTION.
0	10-02-09	MDR	KA	ISSUED FOR BIDS.

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DESIGNED
DRAWN

**CONFORMED TO
CONSTRUCTION
RECORDS**



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An SAIC Company

HARRIMAN UTILITY BOARD
HARRIMAN PRIMARY SUBSTATION
OIL CONTAINMENT

PROJECT NUMBER:

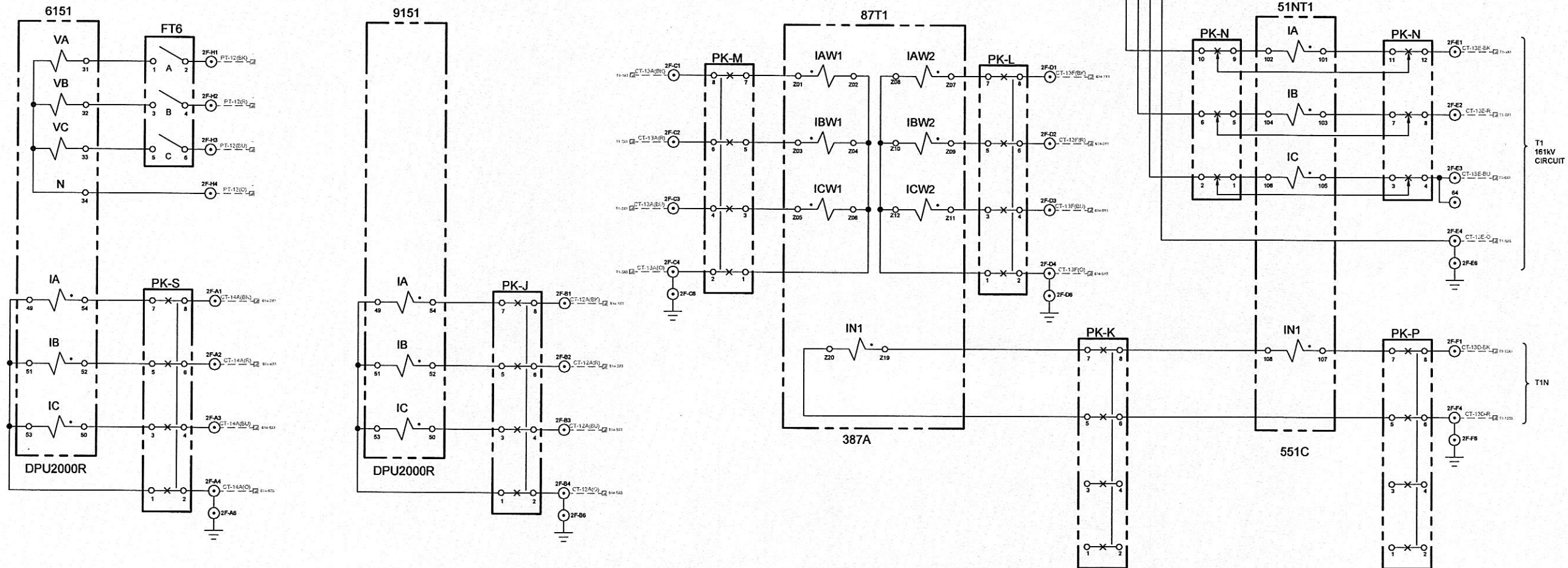
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SHEET OF:

DRAWING NUMBER:

01317-404.2

PLOT: 9/30/2010 WALESSA - SAVED: 9/30/2010 WALESSA - 09:56 - C:\V103007\70014-01317 HARRIMAN UB-PRIMARYWORK PRODUCTS\CTCR01317-101.DWG - MODEL



REV	DATE	CHKD	APPD	REVISION DESCRIPTION
4	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.
3	3-4-10	KA	RNJ	REVISED PK BLOCK DESIGNATIONS, REISSUED FOR CONSTRUCTION.
2	02-23-10	KA	RNJ	ADDED TVA CONNECTION.
1	2-22-10	KA	RNJ	REVISED FIELD TERMINATIONS
0	11-09-09	KA	RNJ	ISSUED FOR CONSTRUCTION.

DESIGNED	RNJ
DRAWN	RAW

**CONFORMED TO
CONSTRUCTION
RECORDS**

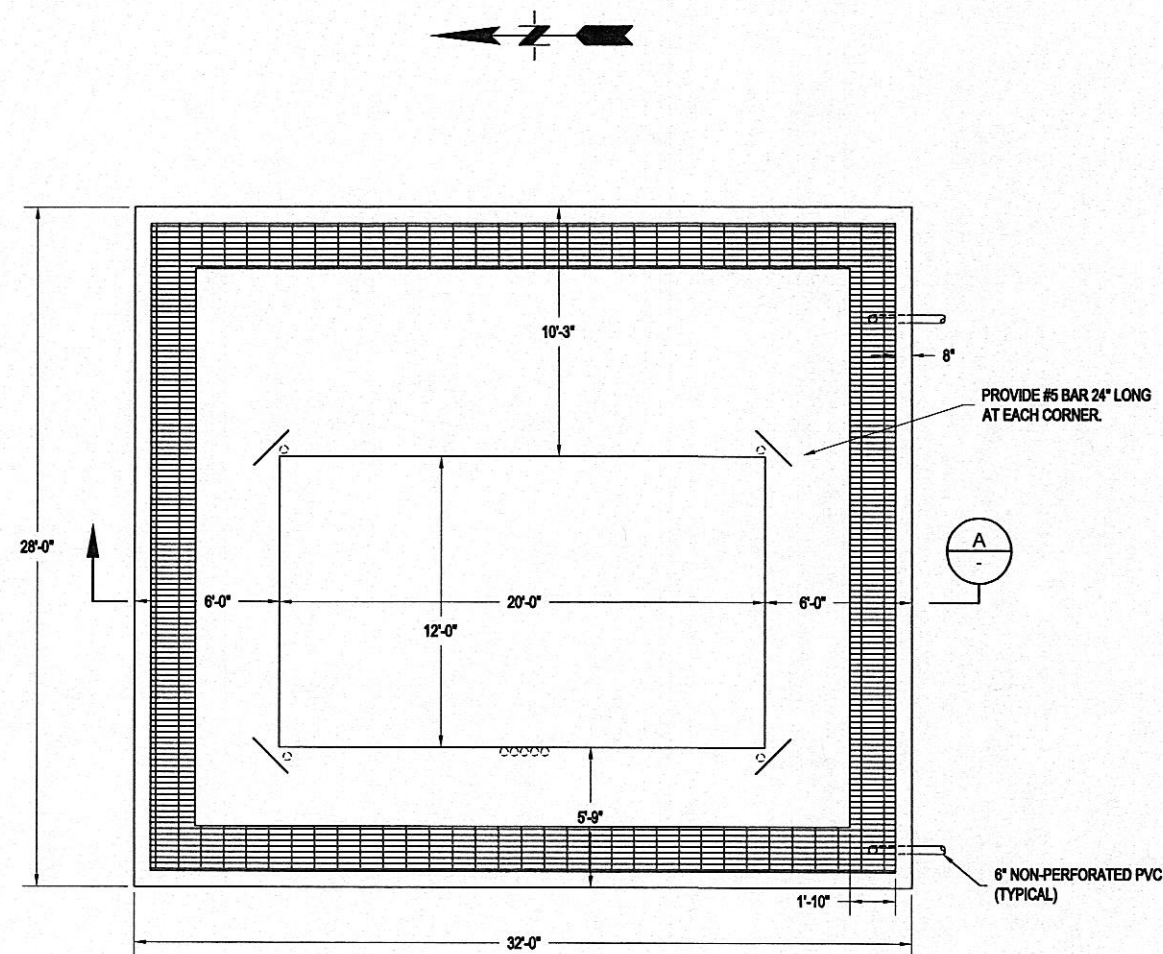


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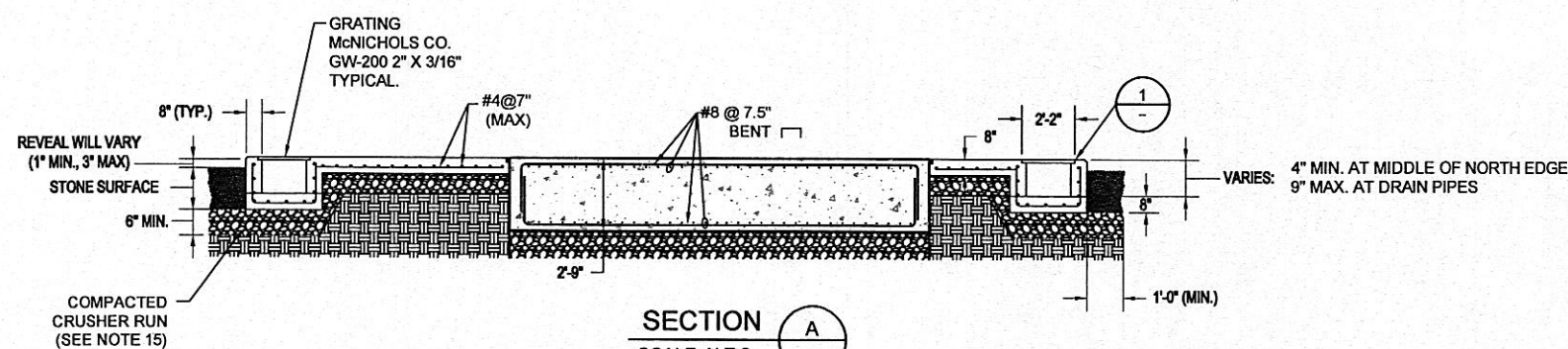
HARRIMAN UTILITY BOARD
HARRIMAN PRIMARY SUBSTATION
CURRENT ELEMENTARIES
BREAKERS 914 AND 614

PROJECT NUMBER:	07-70014-01317-1000
SHEET OF:	1 1
DRAWING NUMBER:	01317-101.4

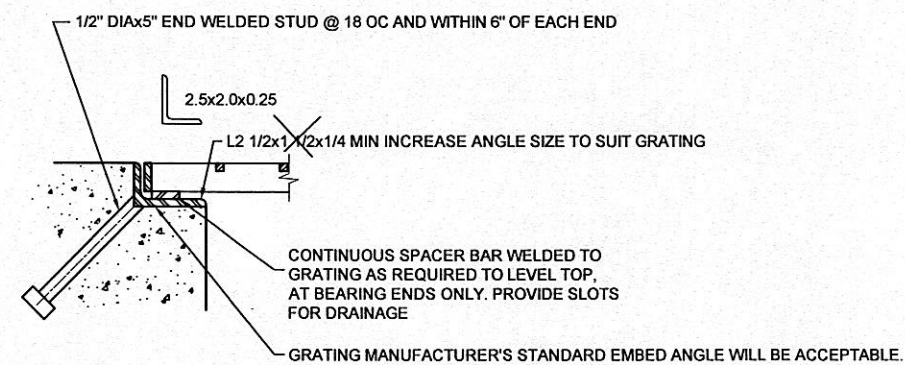
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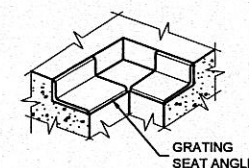
PLAN VIEW
SCALE: N.T.S.



SECTION A
SCALE: N.T.S.



REMOVABLE GRATING SUPPORT
SCALE: N.T.S.



GRATING SUPPORT CORNER
SCALE: N.T.S.

NOTES:

1. CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 3500 PSI AT 28 DAYS IN ACCORDANCE WITH ASTM C39. REINFORCING SHALL BE DEFORMED NEW BILLET STEEL IN ACCORDANCE WITH ASTM A615, GRADE 60.
2. CHAMFER ALL EXPOSED EDGES 1".
3. MAXIMUM SIZE OF AGGREGATE SHALL BE 1 1/2". EXPOSED SURFACE OF CONCRETE TO BE SMOOTH FORM FINISH.
4. BAR GRATING AND ALL EXPOSED STEEL TO BE GALVANIZED.
5. MISCELLANEOUS STEEL: ASTM A-36, HOT DIP GALVANIZED AFTER FABRICATION.
6. PROVIDE WATER STOPS WHERE SHOWN AND AT ALL VERTICAL CONSTRUCTION JOINTS IN THE OIL CATCHMENT TRENCH WALLS.
7. SLOPE TRENCH AT 0.5% MINIMUM TO OUTLETS.
8. SUBGRADE TO BE COMPACTED TO 98% MAX. DENSITY PER ASTM D1557.
9. NOT ALL REINFORCING BARS SHOWN FOR CLARITY.
10. TYPICAL 3" CLEAR SPACING FOR ALL REINFORCING BARS.
11. ALL CONDUIT TO BE PVC, SCHEDULE 80 BELOW GRADE.
12. GRATING IN AREA OVER DRAIN TO BE REMOVABLE SEPARATELY FROM OTHER GRATING SECTIONS, 120 LB MAXIMUM.
13. INSTALL EUCOLASTIC II (2 PART URETHANE SEALANT) MANUFACTURED BY EUCLID CHEMICAL COMPANY OR EQUIVALENT. INSTALL IN ACCORDANCE WITH MANUFACTURER'S SPECS.
14. INSTALL EPOXY BONDING AGENT AT ALL COLD JOINTS.
15. ENSURE PROPER COMPACTION OF SOIL AND GRAVEL UNDER ALL NEW INSTALLATIONS.

REV	DATE	CHKD	APPD	REVISION DESCRIPTION
2	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.
1	11-05-09	MD8	KA	ISSUED FOR CONSTRUCTION
0	10-02-09	MD8	KA	ISSUED FOR BIDS.

DESIGNED
DRAWN

CONFORMED TO
CONSTRUCTION
RECORDS

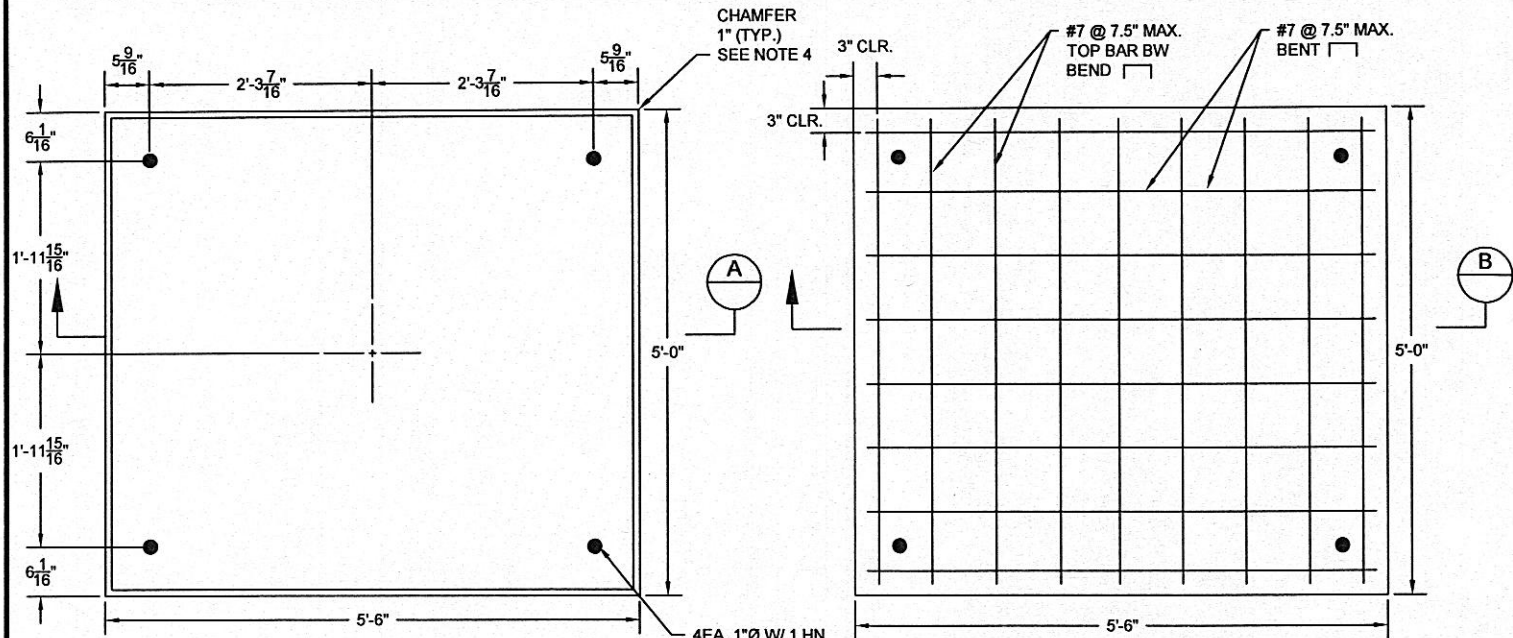


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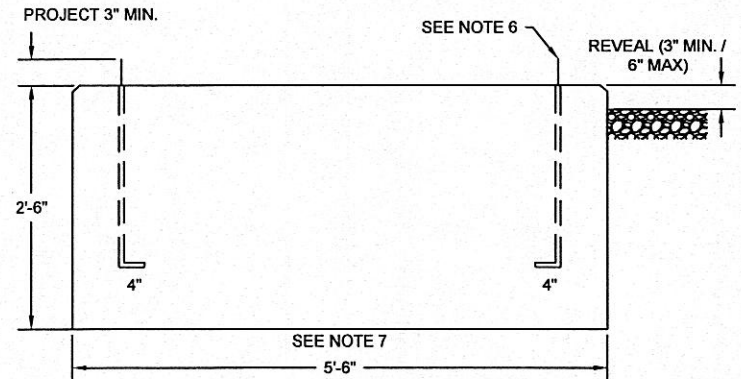
HARRIMAN UTILITY BOARD
HARRIMAN PRIMARY SUBSTATION
TRANSFORMER BANK 1
FOUNDATION AND OIL CONTAINMENT APRON

PROJECT NUMBER:
07-70014-01317-1000
SHEET OF:
DRAWING NUMBER:
01317-411.2

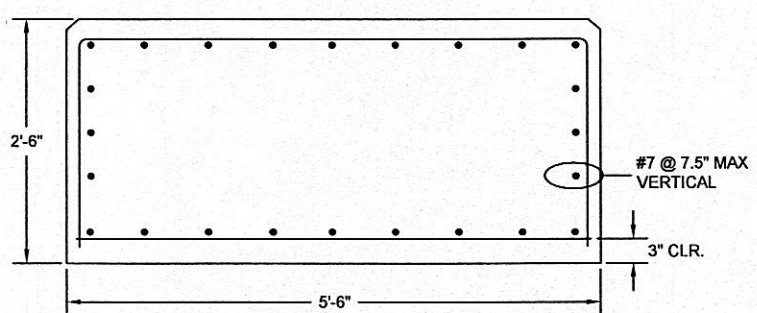


161kV BREAKER 914
PLAN VIEW
CONCRETE DETAILS

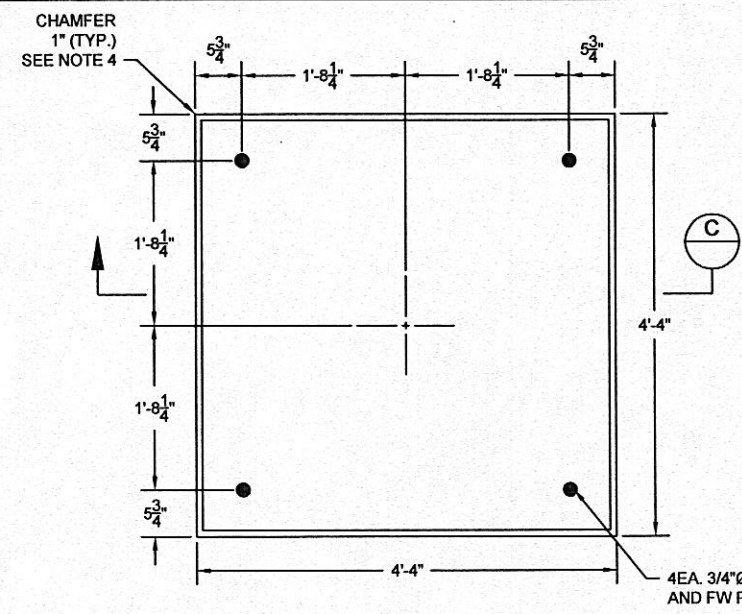
161kV BREAKER 914
PLAN VIEW
REINFORCING DETAILS



SECTION A

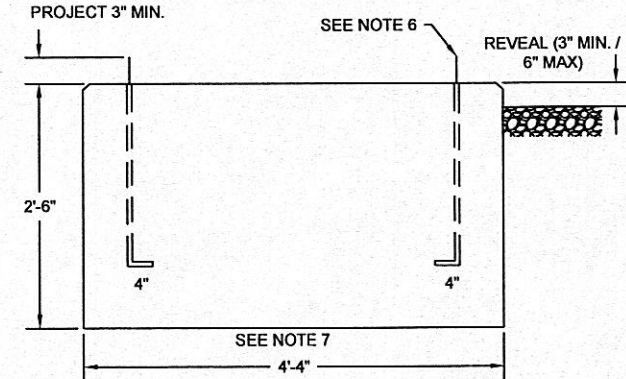


SECTION B

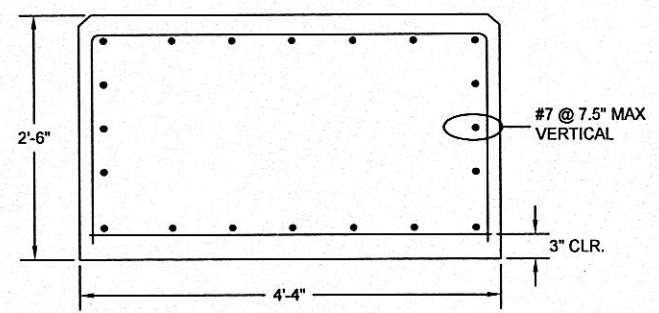


69kV BREAKER 614
PLAN VIEW
CONCRETE DETAILS

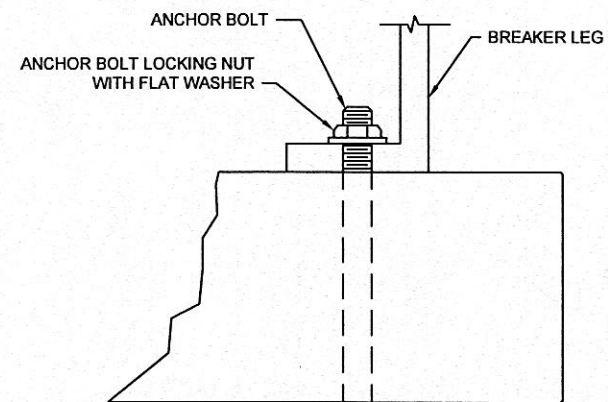
69kV BREAKER 614
PLAN VIEW
REINFORCING DETAILS



SECTION C



SECTION D



ANCHOR BOLT ASSEMBLY

- NOTES:**
1. CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 3,500 PSI AT 28 DAYS IN ACCORDANCE WITH ASTM C 39.
 2. REINFORCING SHALL BE DEFORMED NEW BILLET STEEL IN ACCORDANCE WITH ASTM A 615, GRADE 60.
 3. MAXIMUM SIZE OF AGGREGATE SHALL BE 2 INCHES.
 4. CHAMFER ALL EXPOSED EDGES 1".
 5. EXPOSED SURFACE OF CONCRETE SHALL BE SMOOTH FORM FINISH.
 6. THREADS OF ANCHOR BOLTS AND NUTS SHALL BE THOROUGHLY CLEANED OF CONCRETE AND PROTECTED AFTER PLACEMENT.
 7. SUBGRADE SHALL BE COMPACTED TO 95% MAXIMUM DENSITY, ASTM D698.
 8. FOUNDATION LOCATIONS INDICATED ON DRAWING 01317-400.
 9. TOP OF CONCRETE ELEVATIONS SHALL BE AS SHOWN ON SHEET 01317-400.

REV	DATE	CHKD	APPD	REVISION DESCRIPTION
2	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.
1	12-15-09	MDB	KA	LOCATED CENTERLINES, CONVERTED TO FRACTIONS, ISSUED FOR CONSTRUCTION.
0	10-02-09	MDB	KA	ISSUED FOR BIDS.

DESIGNED
DRAWN

**CONFORMED TO
CONSTRUCTION
RECORDS**



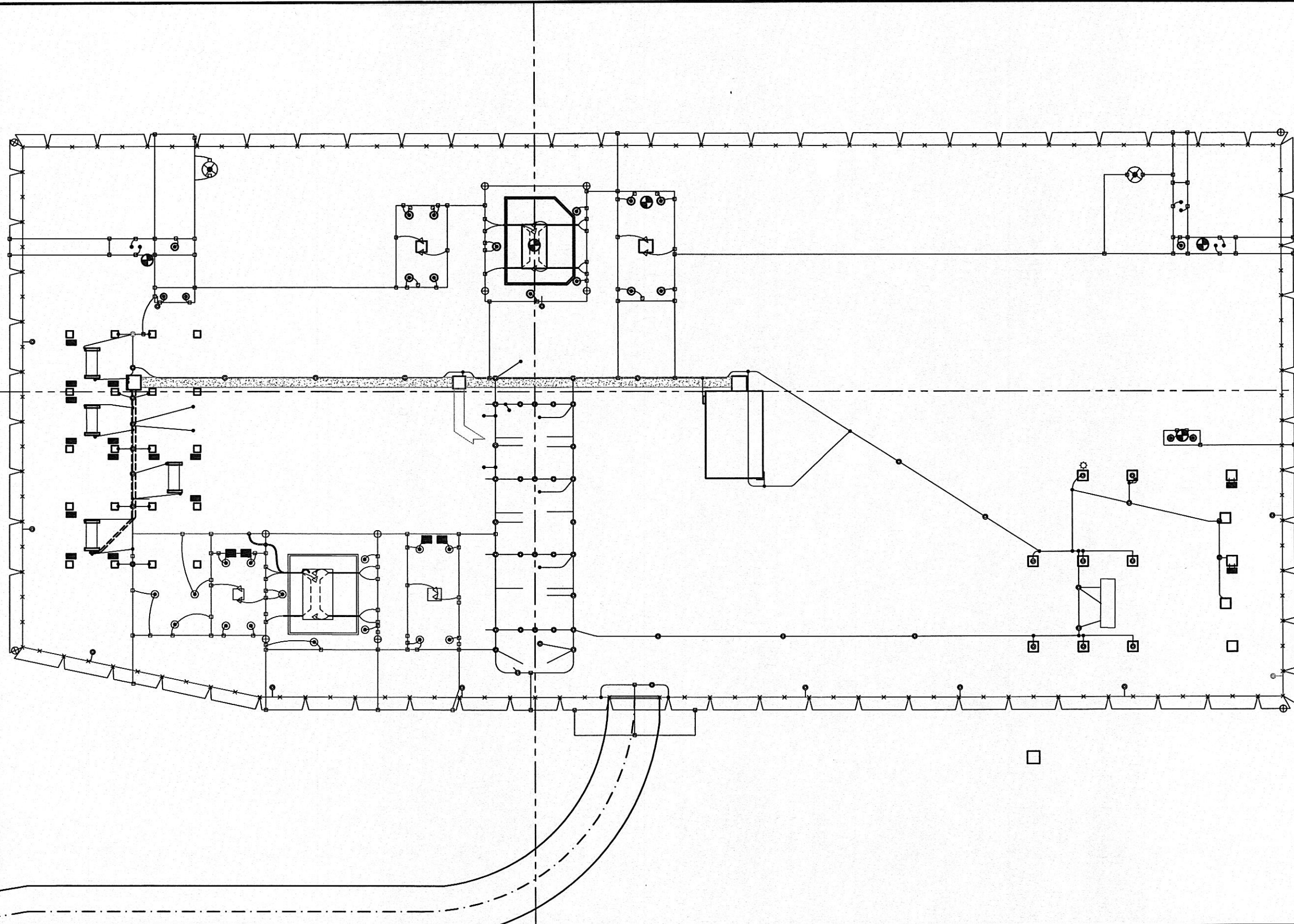
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(615) 431-3200

HARRIMAN UTILITY BOARD
HARRIMAN PRIMARY SUBSTATION
BREAKER 914 AND BREAKER 614
FOUNDATION DETAILS

PROJECT NUMBER:
07-70014-01317-1000
SHEET OF:
DRAWING NUMBER:
01317-412.2

PLOT: 9/15/2010 WALEBRA - SAVED: 9/15/2010 WALEBRA - 13.41 - G:\01053007-70014-01317 HARRIMAN UB-PRIMARYWORK PRODUCTS\CTCR01317-412.DWG - LAYOUT1
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PLOT: 9/16/2010 WALESSA - SAVED: 9/16/2010 WALESSA - 13:28 - G:\01033007-70014-01317 HARRIMAN UB-PRIMARYWORK PRODUCTS\CTCR01317-500.DWG : LAYOUT1



LEGEND

- GROUNDING CONDUCTOR
4/0 SOFT DRAWN STRANDED CU
18" MIN BURIAL DEPTH BELOW EARTH
24" MIN BURIAL DEPTH BELOW FINAL GRADE.
- GROUNDING CONDUCTOR
500 SOFT DRAWN STRANDED CU
- GROUND CONNECTION
EXOTHERMIC
500 MCM STR CU TO 4/0 STR CU
- GROUND CONNECTION
CADWELD
4/0 STR CU TO 4/0 STR CU
- GROUND CONNECTION
BURNDY TYPE YA-28
4/0 STR CU TO FLAT.
- GROUND CONNECTION
BURNDY TYPE YA-28-2
4/0 STR CU TO 2 HOLE PAD.
- GROUND ROD
10'-0" x 3/4" DIA.
WITH BURNDY
CONNECTION TO 4/0 STR CU.
- 4/0 STR CU TO GATE, CORNER
AND ALTERNATE LINE POSTS.
- SWITCH OPERATOR PLATFORM
- GROUNDING WELL

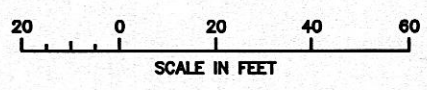
NOTES:

- LOOP 4/0 STR CU UP AND ACROSS TRANSFORMER FOR GROUNDING OF LIGHTNING ARRESTERS.
- SEE R. W. BECK DRAWING 01317-503 FOR GROUNDING DETAILS.

REV	DATE	CHK'D	APP'D	REVISION DESCRIPTION
2	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.
1	12-15-09	RJ	KA	ISSUED FOR CONSTRUCTION.
0	10-02-09	RJ	KA	ISSUED FOR BIDS.

DESIGNED
KA
DRAWN
RW

CONFORMED TO
CONSTRUCTION
RECORDS



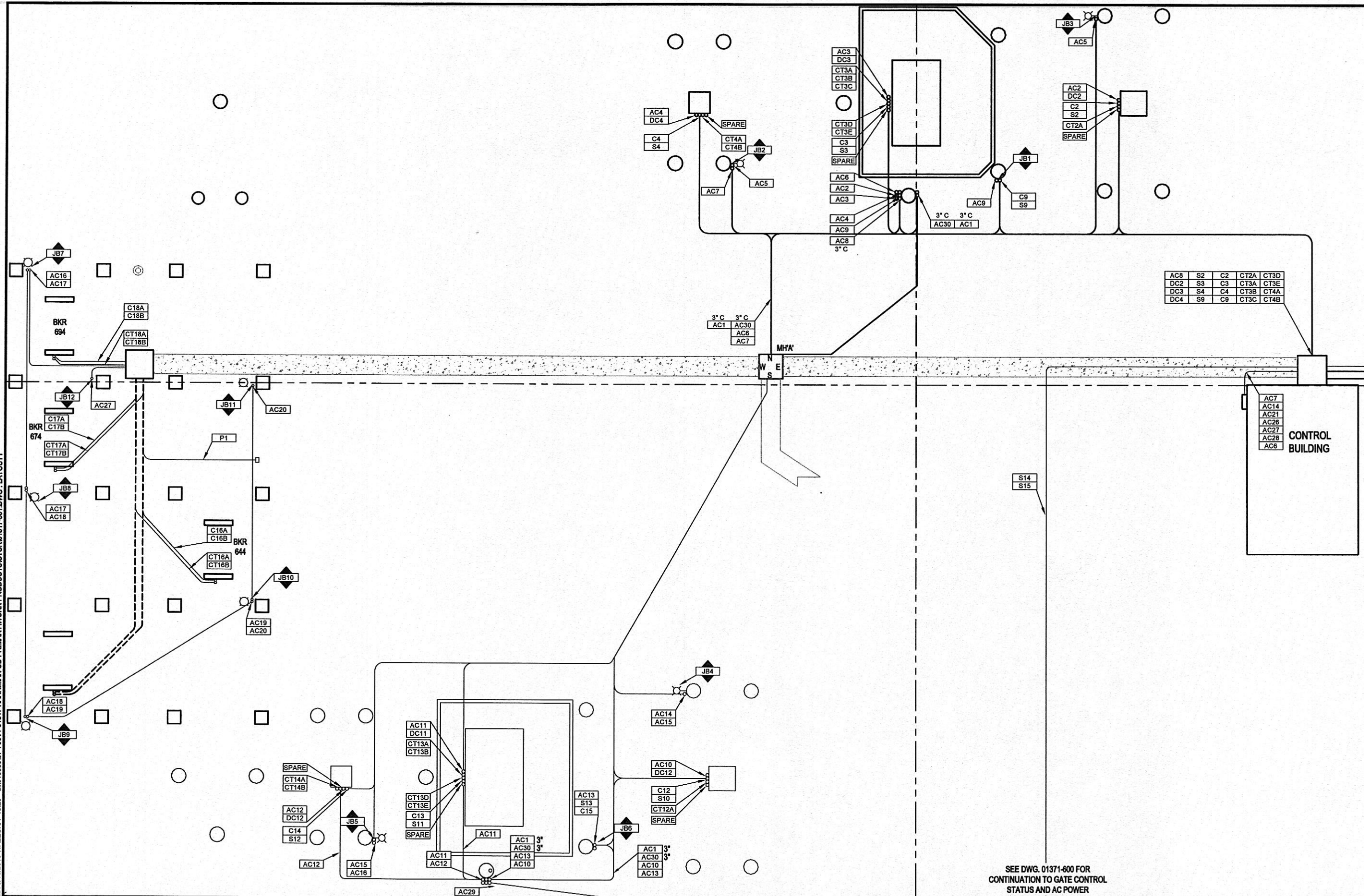
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HARRIMAN UTILITY BOARD
HARRIMAN PRIMARY SUBSTATION
GROUNDING PLAN

PROJECT NUMBER:
07-70014-01317-1000
SHEET OF:
1 1
DRAWING NUMBER:
01317-500.2

PLOT: 9/18/2010 WALESSA - SAVED: 9/18/2010 WALESSA - 13:29 - G:\01053007-70014-01317 HARRIMAN UB-PRIMARYWORK PRODUCTS\CTCR01317-501.DWG - LAYOUT1



NOTES:

1. BELOW GRADE CONDUIT TO BE SCHEDULE 40, ABOVE GRADE TO BE SCHEDULE 80, UNLESS NOTED OTHERWISE.
2. MINIMUM CONDUIT BURIAL DEPTH SHALL BE 24" BELOW FINAL GRADE UNLESS NOTED OTHERWISE.
3. SEE R.W. BECK DRAWING 01317-503 FOR CONDUIT DETAILS.
4. SEE R.W. BECK DRAWING 01317-504 FOR CIRCUIT LIST.
5. FIELD VERIFY ALL CONDUIT TERMINATION LOCATIONS.
6. CONTRACTOR TO CONNECT ALL JUNCTION BOXES WITH CABLE AND CONDUIT TO ALL OVERHEAD EQUIPMENT.
7. CONDUIT SHALL BE 2" UNLESS OTHERWISE NOTED.

LEGEND:

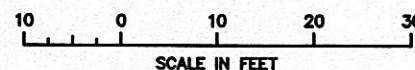
- JUNCTION BOX
- CONDUIT CIRCUIT
- SUBSTATION LUMINAIRE

SEE DWG. 01371-600 FOR
CONTINUATION TO GATE CONTROL
STATUS AND AC POWER

REV	DATE	CHK'D	APP'D	REVISION DESCRIPTION
3	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.
2	02-24-10	RJ	KA	CORRECTIONS TO AC CABLES.
1	12-15-09	RJ	KA	ISSUED FOR CONSTRUCTION.
0	10-02-09	RJ	KA	ISSUED FOR BIDS.

DESIGNED	KA
DRAWN	RW

**CONFORMED TO
CONSTRUCTION
RECORDS**



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HARRIMAN UTILITY BOARD
HARRIMAN PRIMARY SUBSTATION
LIGHTING AND CONDUIT PLAN

PROJECT NUMBER:

07-70014-01317-1000

SHEET OF:

1 1

DRAWING NUMBER:

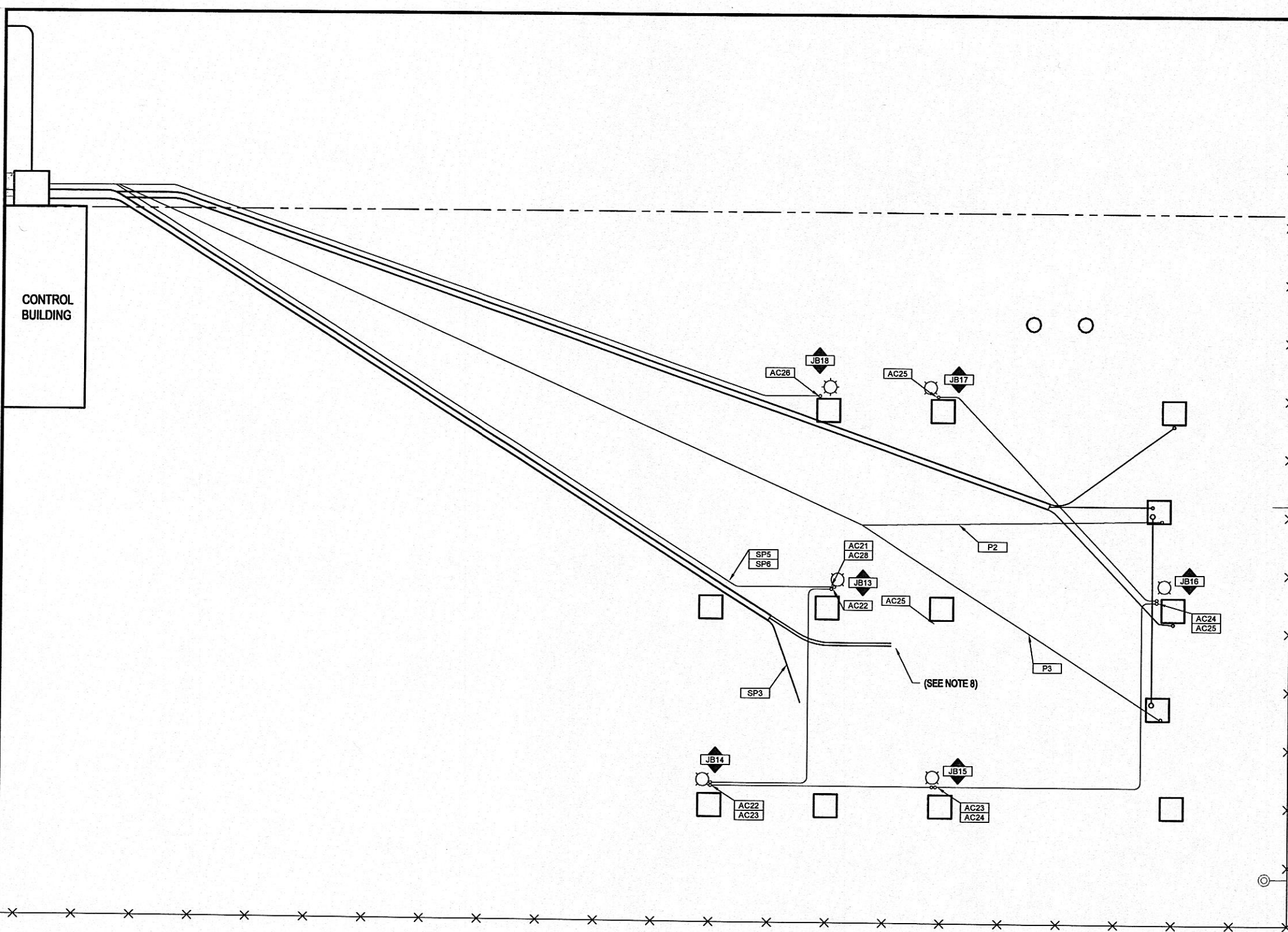
01317-501.3

NOTES:

- BELOW GRADE CONDUIT TO BE SCHEDULE 40, ABOVE GRADE TO BE SCHEDULE 80, UNLESS NOTED OTHERWISE.
- MINIMUM CONDUIT BURIAL DEPTH SHALL BE 24" BELOW FINAL GRADE UNLESS NOTED OTHERWISE.
- SEE R.W. BECK DRAWING 01164-504 FOR CONDUIT DETAILS.
- SEE R.W. BECK DRAWING 01164-505 FOR CIRCUIT LIST.
- FIELD VERIFY ALL CONDUIT TERMINATION LOCATIONS.
- CONTRACTOR TO CONNECT ALL JUNCTION BOXES WITH CABLE AND CONDUIT TO ALL OVERHEAD EQUIPMENT.
- CONDUIT SHALL BE 2" UNLESS OTHERWISE NOTED.
- INTERCEPT CONDUITS C1 AND R1, EXTEND TO COUPLING CAPACITORS AS SHOWN AND INSTALL NEW CABLES P2 AND P3.
- EXTEND 2-SPARE 2" CONDUITS (SP5 AND SP6) TO THIS LOCATION AND CAP ENDS.

LEGEND:

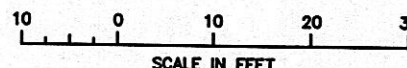
-  -JUNCTION BOX
-  -CONDUIT CIRCUIT
-  -SUBSTATION LUMINAIRE
-  -1000W LIGHT



REV	DATE	CHK'D	APP'D	REVISION DESCRIPTION
2	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.
1	12-15-09	RJ	KA	ISSUED FOR CONSTRUCTION.
0	10-02-09	RJ	KA	ISSUED FOR BIDS.

DESIGNED	KA
DRAWN	RW

**CONFORMED TO
CONSTRUCTION
RECORDS**



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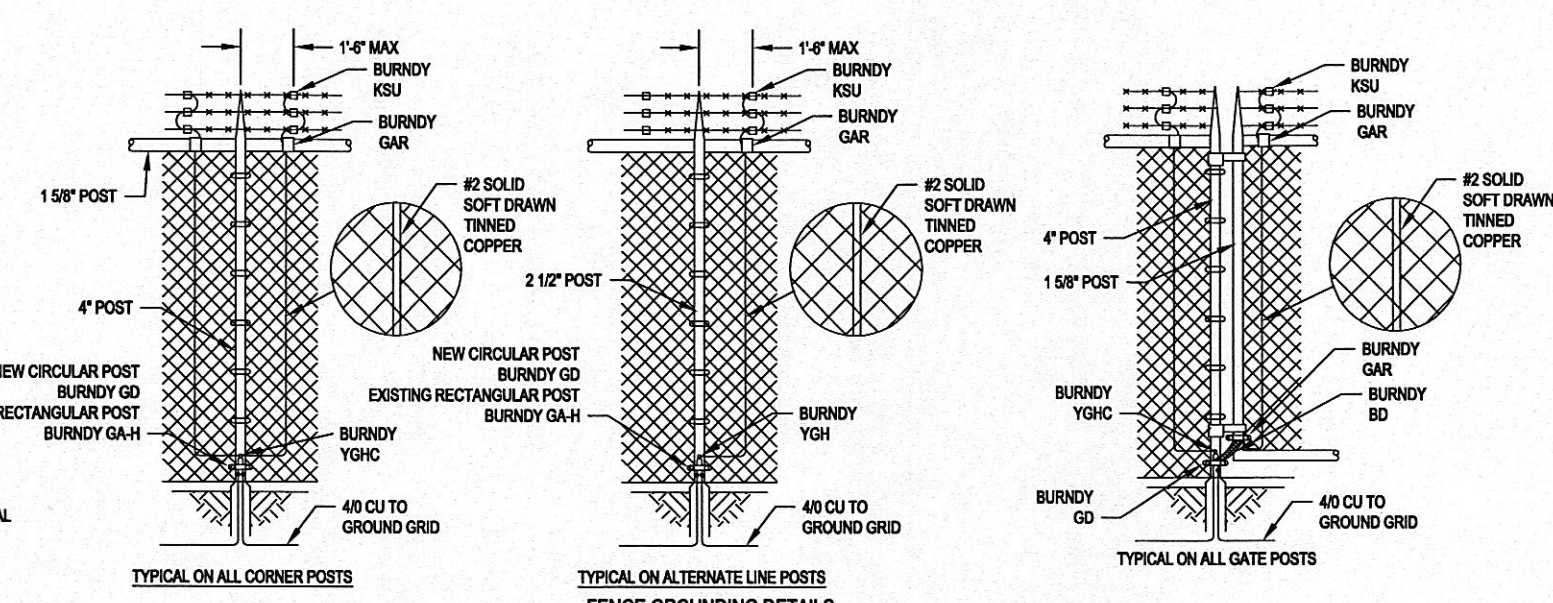
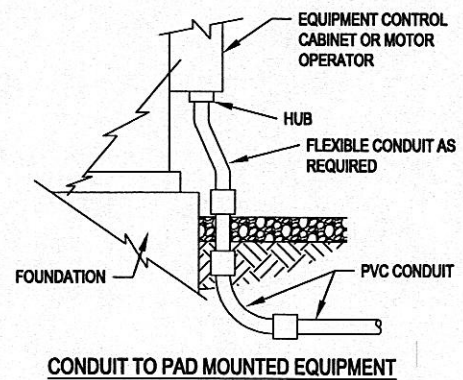
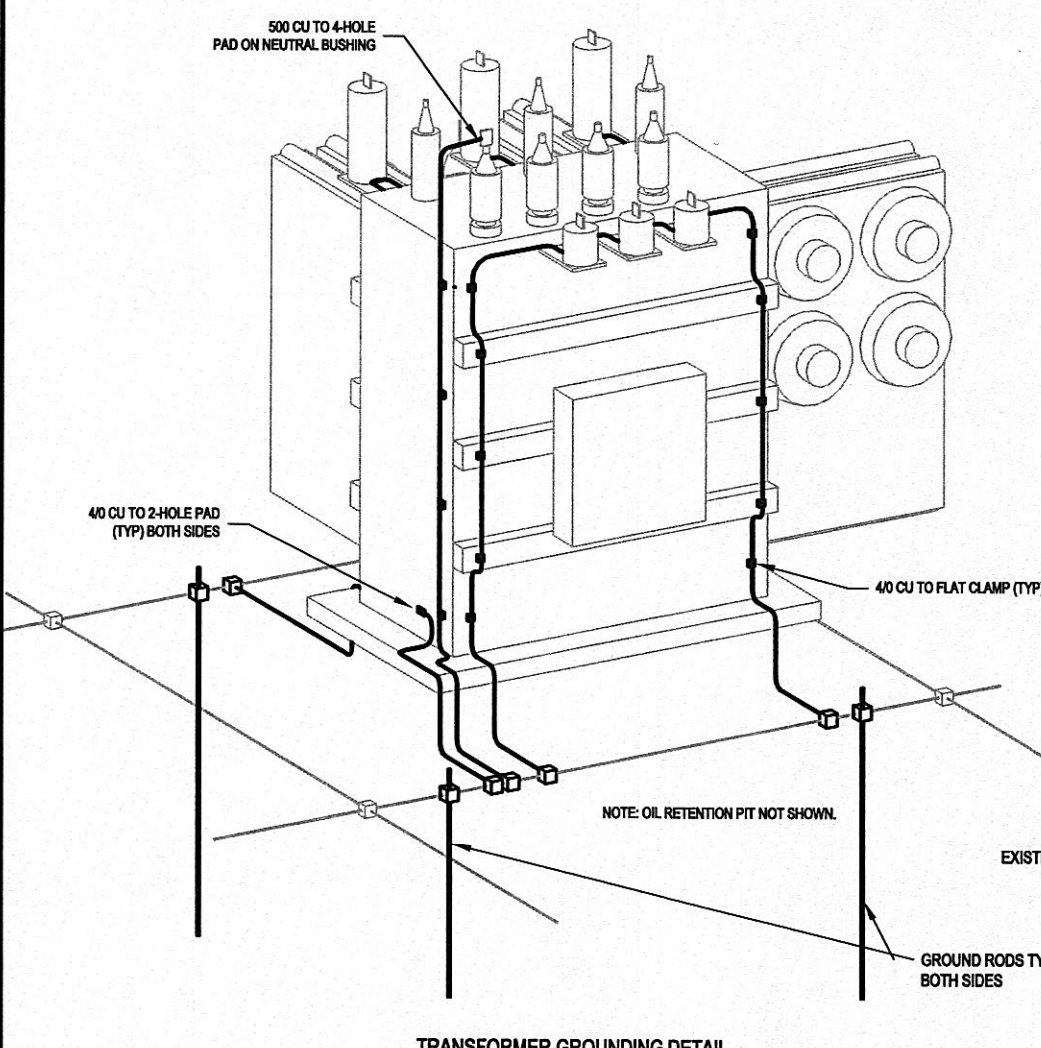
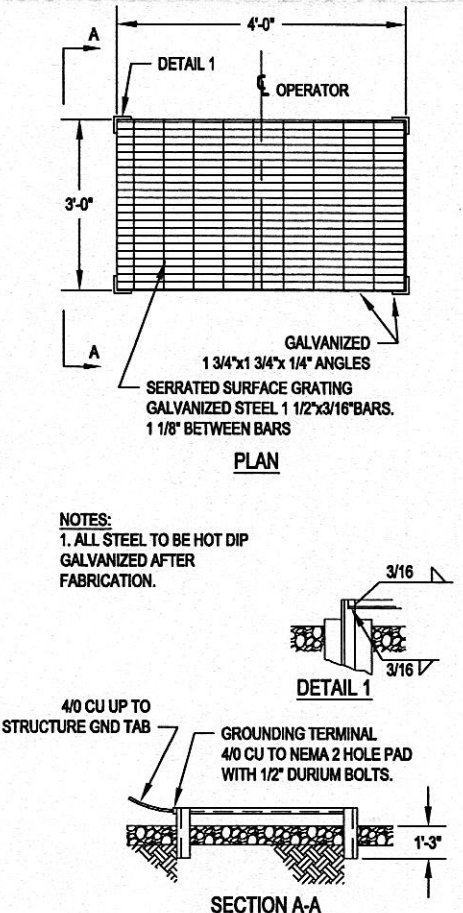
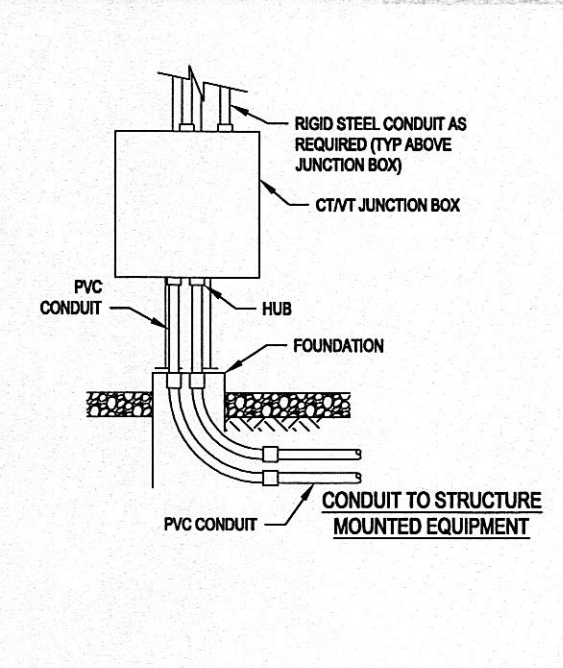
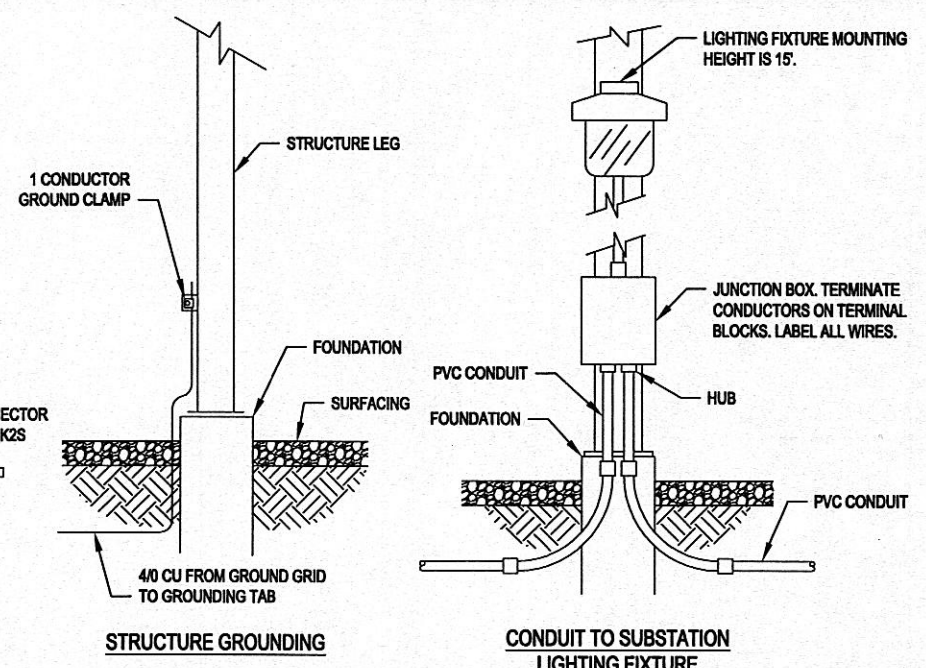
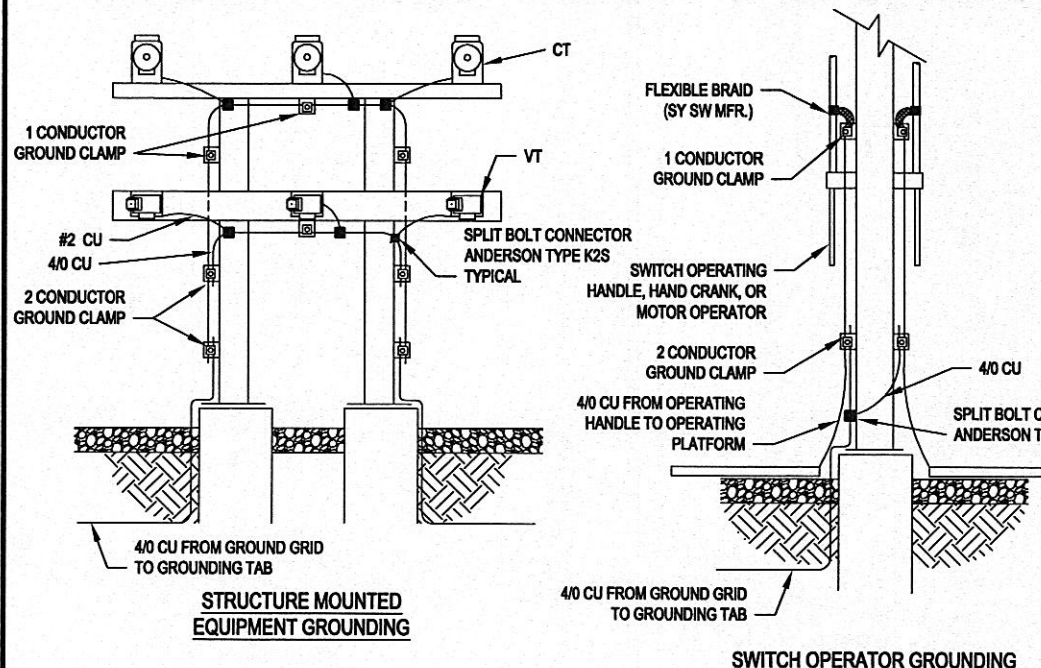
HARRIMAN UTILITY BOARD
HARRIMAN PRIMARY SUBSTATION
LIGHTING AND CONDUIT PLAN

PROJECT NUMBER:
07-70014-01317-1000
SHEET OF:
1 1
DRAWING NUMBER:
01317-502.2

PLOT: 9/16/2010 WALESPA - SAVED: 9/16/2010 WALESPA - 13:38 - G:\01053007-70014-01317 HARRIMAN UB-PRIMARY\WORK PRODUCTS\CTCR01317-502.DWG - LAYOUT1

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PLOT: 9/16/2010 WALESRA-1338 - G:\01053007-7001-4\01317 HARRIMAN UB-PRIMARYWORK PRODUCTS\CTCR001317-503.DWG : LAYOUT1



REV	DATE	CHKD	APPD	REVISION DESCRIPTION
2	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.
1	12-15-09	RJ	KA	ISSUED FOR CONSTRUCTION.
0	10-02-09	RJ	KA	ISSUED FOR BIDS.

DESIGNED	KA
DRAWN	RW

CONFORMED TO CONSTRUCTION RECORDS



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HARRIMAN UTILITY BOARD
HARRIMAN PRIMARY SUBSTATION
CONDUIT AND GROUNDING DETAILS

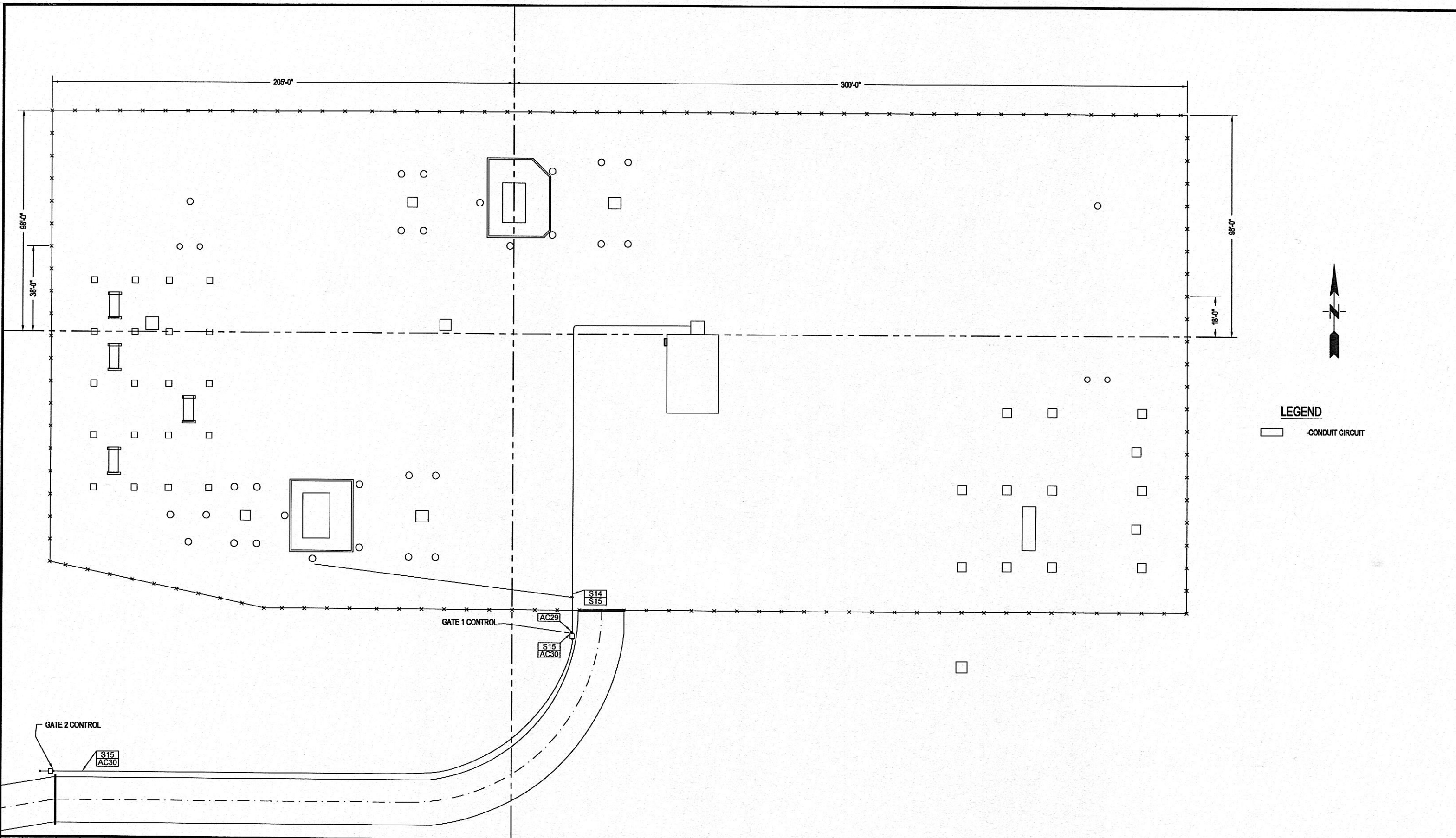
PROJECT NUMBER:	07-70014-01317-1000
SHEET OF:	1 1
DRAWING NUMBER:	01317-503.2

PLOT: 9/16/2010 WALESRA - SAVED: 9/16/2010 WALESRA- 13:39 - G:\01053\07-70014-01317 HARRIMAN UB-PRIMARY\WORK PRODUCTS\ICTCR\01317-504.DWG : MODEL

R.W. BECK
An SAIC Company

PROJECT NUMBER:	
07-70014-01317-1000	
SHEET	OF:
1	1
DRAWING NUMBER:	
01317-504.3	

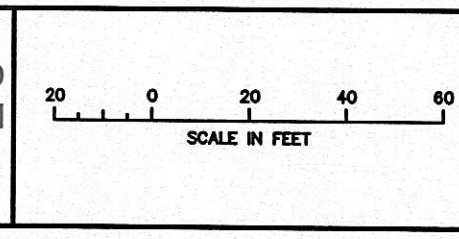
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REV	DATE	CHKD	APPD	REVISION DESCRIPTION
2	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.
1	12-15-09	RJ	KA	ISSUED FOR CONSTRUCTION.
0	10-02-09	RJ	KA	ISSUED FOR BIDS.

DESIGNED	KA
DRAWN	RW

**CONFORMED TO
CONSTRUCTION
RECORDS**

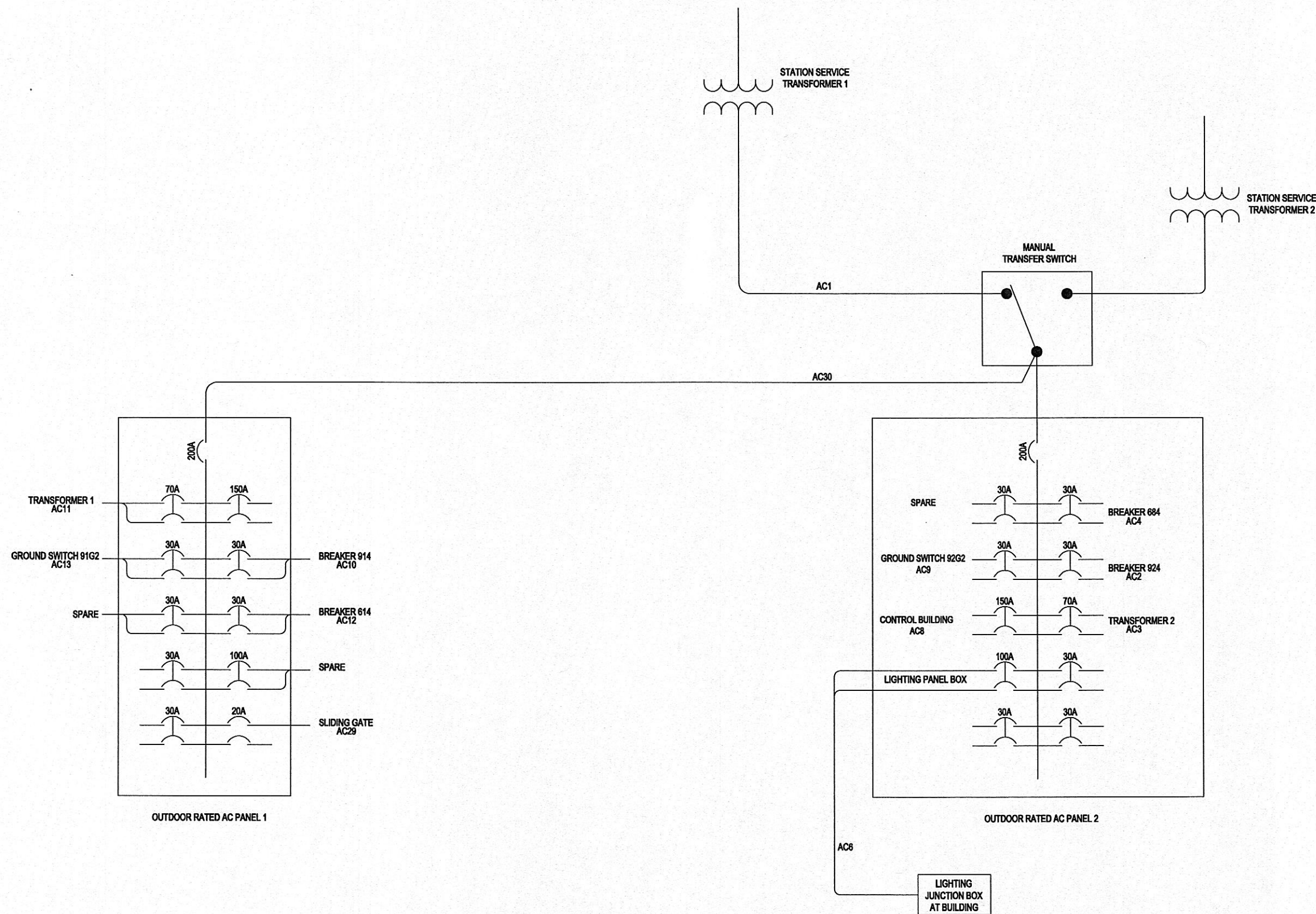


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HARRIMAN UTILITY BOARD
HARRIMAN PRIMARY SUBSTATION
YARD IMPROVEMENT PLAN

PROJECT NUMBER:	07-70014-01317-1000
SHEET OF:	1 1
DRAWING NUMBER:	01317-600.2



PLOT: 9/16/2010 WALESRA - SAVED: 9/16/2010 WALESRA - 13:46 - G:\01053007-70014-01317 HARRIMAN UB-PRIMARYWORK PRODUCTS\CTCR\01317-700.DWG - MODEL

REV	DATE	CHK'D	APP'D	REVISION DESCRIPTION
3	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.
2	02-24-10	RJ	KA	CHANGED TRANSFORMER 1 AC BREAKER TO 70A.
1	12-15-09	RJ	KA	ISSUED FOR CONSTRUCTION.
0	10-02-09	RJ	KA	ISSUED FOR BIDS.

DESIGNED	KA
DRAWN	RW

**CONFORMED TO
CONSTRUCTION
RECORDS**

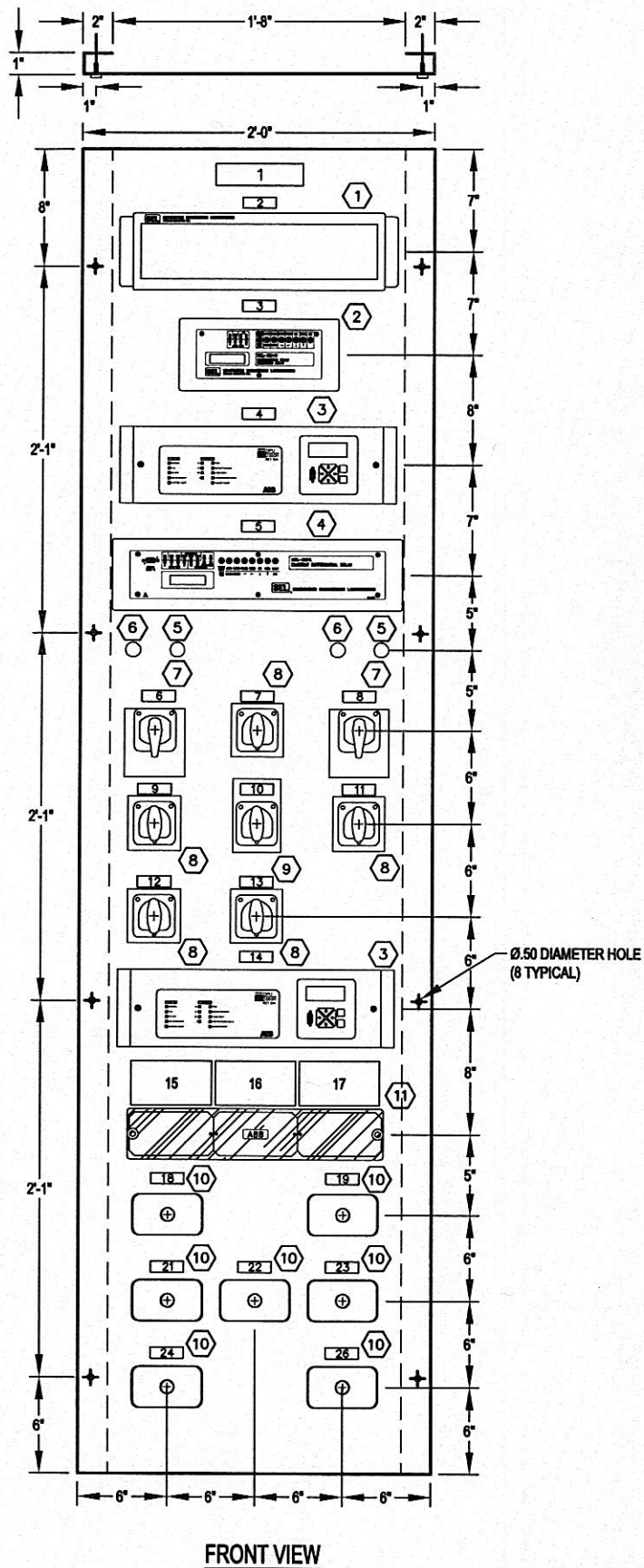


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HARRIMAN UTILITY BOARD
HARRIMAN PRIMARY SUBSTATION
STATION SERVICE AC
DISTRIBUTION MODIFICATIONS

PROJECT NUMBER:	07-70014-01317-1000
SHEET	OF:
1	1
DRAWING NUMBER:	01317-700.3

PLOT: 9/15/2010 WALESRA - SAVED: 9/15/2010 WALESRA - 13:46 - G:\01\053007-7001-4-01317 HARRIMAN UB-PRIMARYWORK PRODUCTS\CT001317-702.DWG - LAYOUT1



NAMEPLATE NO.	LINE 1	LINE 2	LINE 3
1	PANEL 2F		
2	95	TIME SOURCE	
3	51N-T1	TRANSFORMER 1	NEUTRAL OVERCURRENT
4	9151	BREAKER 914	161 KV OVERCURRENT
5	87T1	TRANSFORMER 1	DIFFERENTIAL RELAY
6	9101	BREAKER 914	CONTROL SWITCH
7	63SP-T1 TCO	SUDDEN PRESSURE	TRIP CUTOUT, T1
8	6101	BREAKER 614	CONTROL SWITCH
9	43S-914	BREAKER 914	SUPERVISORY CONTROL
10	86-T1	TRANSFORMER 1	LOCKOUT RELAY
11	43S-614	SUPERVISORY CUTOUT	BREAKER 614
12	49T-T1 TCO	WINDING TEMP.	TRIP CUTOUT, T1
13	87T1-TCO	DIFFERENTIAL	TRIP CUTOUT, T1
14	6151	BREAKER 614	OVERCURRENT
15	FT-4	SEE DWG 01317-704 FOR DETAILS	
16	FT-5	SEE DWG 01317-704 FOR DETAILS	
17	FT-6	SEE DWG 01317-704 FOR DETAILS	
18	PK-J	BREAKER 914	9151 CURRENTS
19	PK-K	TRANSFORMER 1	87T NEUTRAL CURRENT
20	(NOT USED)		
21	PK-L	TRANSFORMER 1	69 KV CURRENTS
22	PK-M	TRANSFORMER 1	161 KV CURRENTS
23	PK-N	TRANSFORMER 1	51T CURRENTS
24	PK-P	TRANSFORMER 1	51N CURRENT
25	(NOT USED)		
26	PK-S	BREAKER 614	6151 CURRENTS

REFER TO DWG 01317-705 FOR ITEMS MOUNTED ON BACK OF PANEL

REV	DATE	CHKD	APPD	REVISION DESCRIPTION
2	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.
1	11-09-09	KA	RNJ	ISSUED FOR CONSTRUCTION.
0	08-24-09	KA	RNJ	ISSUED FOR BIDS.

DESIGNED	RNJ
DRAWN	RNJ

**CONFORMED TO
CONSTRUCTION
RECORDS**



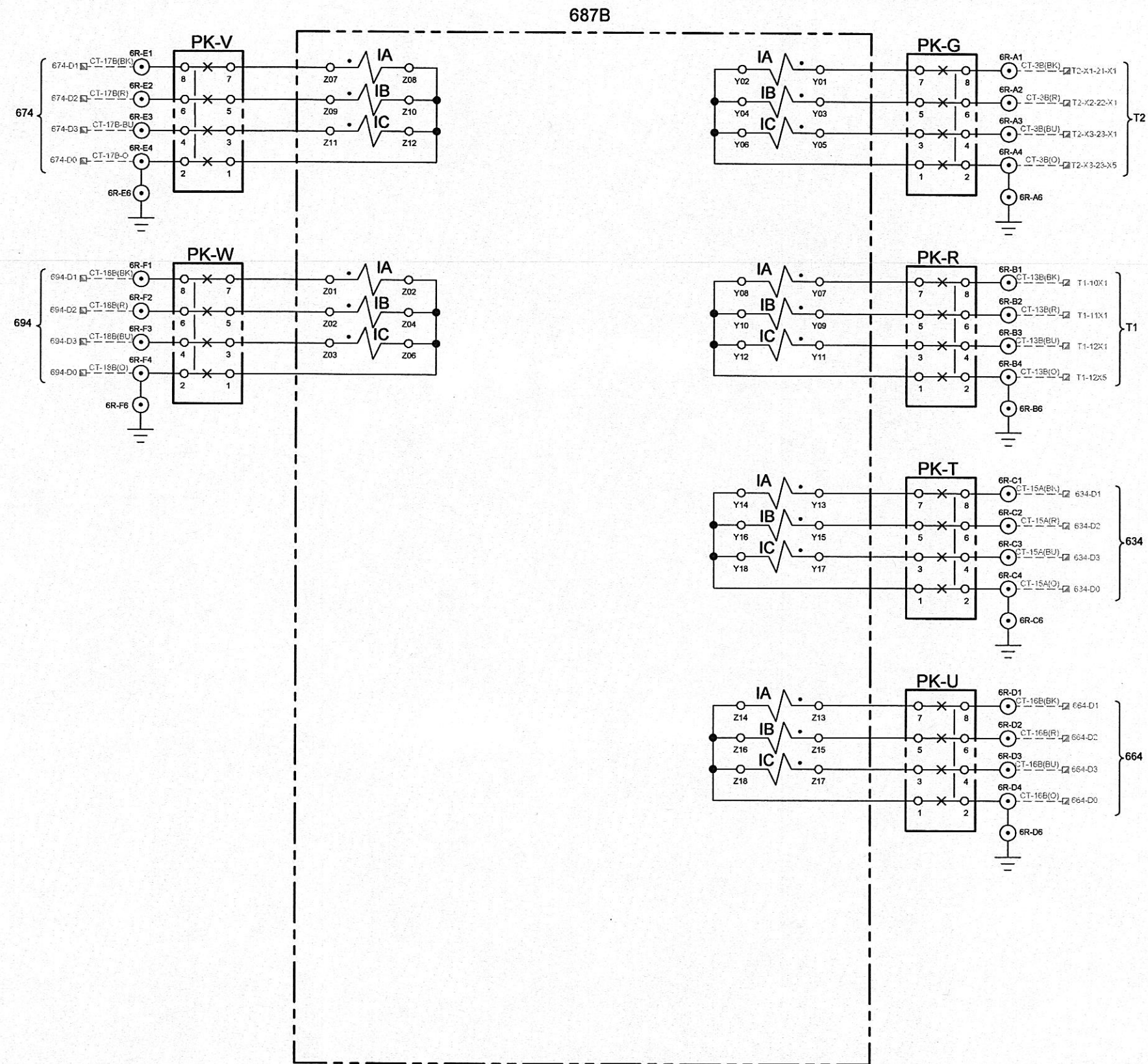
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HARRIMAN UTILITY BOARD
HARRIMAN PRIMARY SUBSTATION
REPLACEMENT PANEL 2F
FRONT VIEW

PROJECT NUMBER:	07-70014-01317-1000
SHEET OF:	1 1
DRAWING NUMBER:	01317-702.2

PLOT: 9/16/2010 WALESSA - SAVED: 9/15/2010 WALESSA - 13.34 - G:\01053007-70014-01317 HARRIMAN UB-PRIMARYWORK PRODUCTS\CTCR\01317-102.DWG - MODEL



- LEGEND
- RELAY PANEL TERMINAL BLOCK
 - INTERCONNECTIONS BETWEEN RELAY PANELS AND FIELD EQUIPMENT
 - RELAY PANEL WIRING
 - FIELD DEVICE TERMINAL BLOCK

REV	DATE	CHK'D	APP'D	REVISION DESCRIPTION
3	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.
2	3-4-10	KA	RNJ	REVISED TERMINAL CONNECTIONS Z13-18, REISSUED FOR CONSTRUCTION.
1	2-22-10	KA	RNJ	REVISED DEVICE TERMINATIONS
0	11-09-09	KA	RNJ	ISSUED FOR CONSTRUCTION.

DESIGNED	RNJ
DRAWN	RAW

CONFORMED TO
CONSTRUCTION
RECORDS

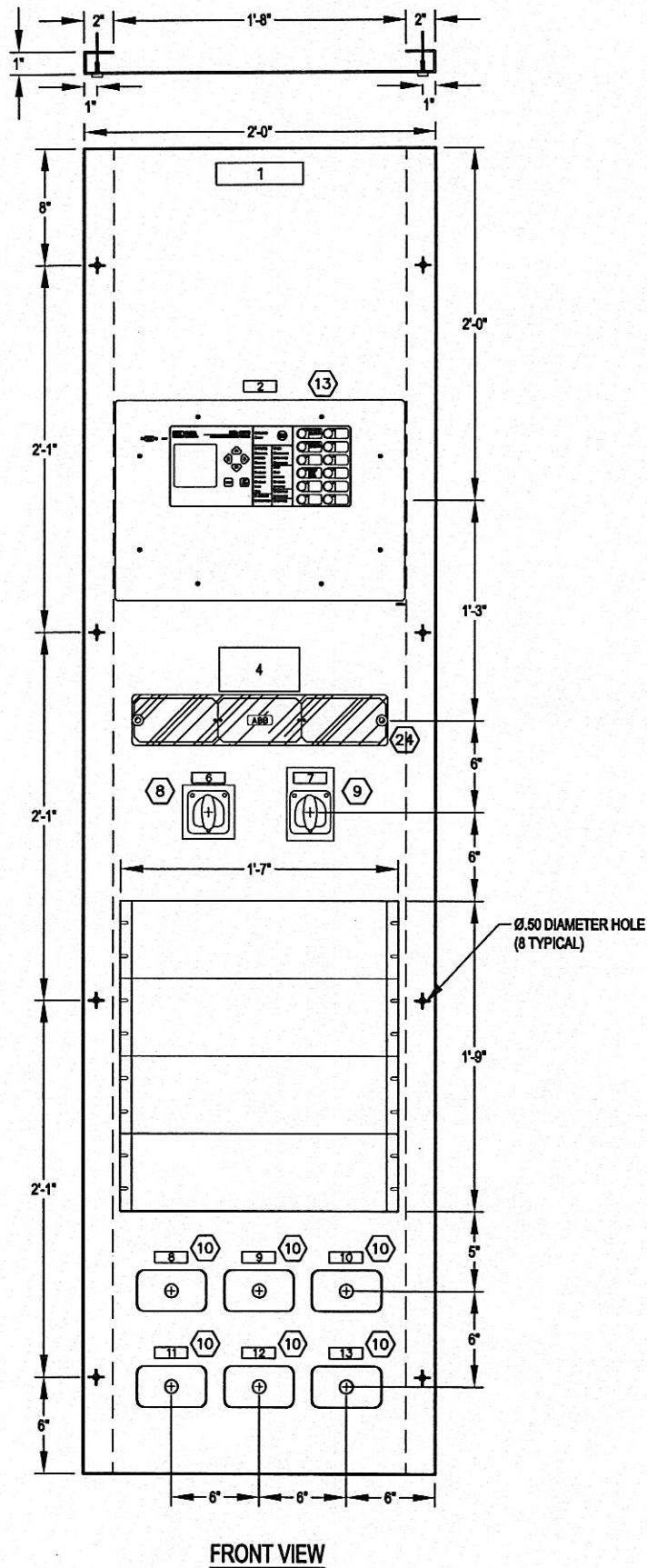


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HARRIMAN UTILITY BOARD
HARRIMAN PRIMARY SUBSTATION
CURRENT ELEMENTARIES
687 B

PROJECT NUMBER:	07-70014-01317-1000
SHEET OF:	1 1
DRAWING NUMBER:	01317-102.3

PLOT: 9/15/2010 WALESRA - SAVED: 9/15/2010 WALESRA - 13:48 - G:\01053007-70014-01317 HARRIMAN UB-PRIMARY\WORK PRODUCTS\CTCR01317-703.DWG - LAYOUT1



NAMEPLATE NO.	LINE 1	LINE 2	LINE 3
1	PANEL 6R		
2	687	69-KV BUS	DIFF. RELAY
3		(NOT USED)	
4	SEE SHEET E-102 FOR DETAILS		
5		(NOT USED)	
6	687B-TCO	69-KV BUS DIFF	TRIP CUTOFF
7	86B	69-KV BUS	LOCKOUT RELAY
8	PK-R	BANK 1	687B CURRENTS
9	PK-G	BANK 2	687B CURRENTS
10	PK-T	BKR 634	687B CURRENTS
11	PK-U	BKR 664	687B CURRENTS
12	PK-V	BKR 674	687B CURRENTS
13	PK-W	BKR 694	687B CURRENTS

REFER TO DWG 01317-705 FOR ITEMS MOUNTED ON BACK OF PANEL

NOTES:
1. PANEL MANUFACTURER TO DETERMINE STIFFENER LOCATIONS.
2. PANEL MANUFACTURER TO PROVIDE RACK UNIT WITH UNISTRUT AND REMOVABLE PLATES FOR FUTURE INSTALLATIONS.

REV	DATE	CHKD	APPD	REVISION DESCRIPTION
2	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.
1	11-09-09	KA	RNJ	ISSUED FOR CONSTRUCTION.
0	08-24-09	KA	RNJ	ISSUED FOR BIDS.

DESIGNED	RNJ
DRAWN	RNJ

CONFORMED TO CONSTRUCTION RECORDS



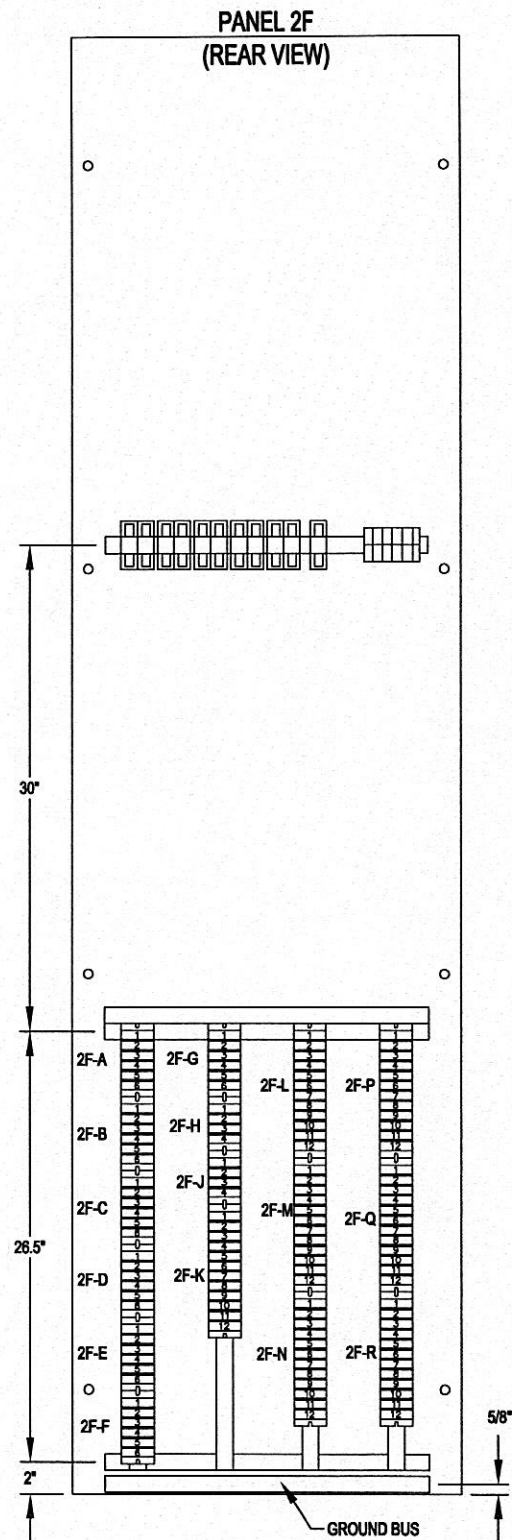
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(615) 431-3200

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HARRIMAN UTILITY BOARD
HARRIMAN PRIMARY SUBSTATION
REPLACEMENT PANEL 6R
FRONT VIEW

PROJECT NUMBER:	07-70014-01317-1000
SHEET OF:	1 1
DRAWING NUMBER:	01317-703. 2

PLOT: 9/16/2010 WALESA - SAVED: 9/16/2010 WALESA - 13.46 - G:\01053007-70014-01317 HARRIMAN UB-PRIMARYWORK PRODUCTS\CTCR\01317-704.DWG - LAYOUT1



FT-4 NAMEPLATE

A	87T1 DIFF. TRIP OUTPUT (+)
B	87T1 DIFF. TRIP OUTPUT (-)
C	87T1 GENERAL TRIP OUTPUT (+)
D	87T1 GENERAL TRIP OUTPUT (-)
E	49T1 INPUT (+)
F	49T1 INPUT (-)
G	63SP T1 INPUT (+)
H	63SP T1 INPUT (-)
I	51N51 TRIP OUTPUT (+)
J	51N51 TRIP OUTPUT (-)

FT-5 NAMEPLATE

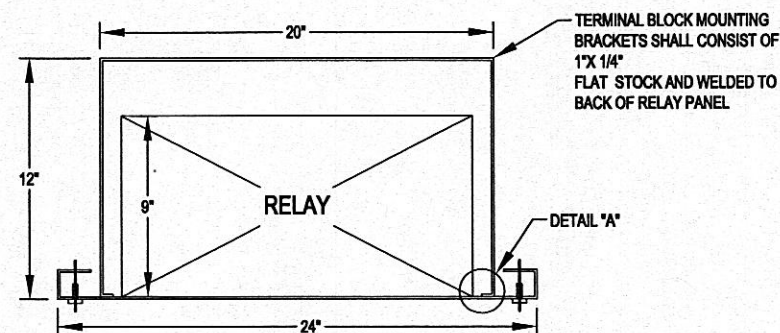
A	9151 TRIP OUTPUT (+)
B	9151 TRIP OUTPUT (-)
C	6151 TRIP OUTPUT (+)
D	6151 TRIP OUTPUT (-)
E	92G1 28GS (+)
F	238TR BREAKER 914
G	238TR BREAKER 614
H	
I	
J	

FT-6 NAMEPLATE

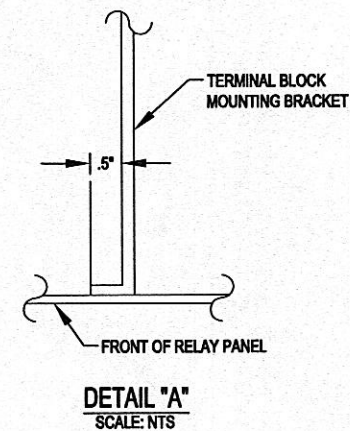
A	69 KV BUS VOLTS - A PH
B	69 KV BUS VOLTS - B PH
C	69 KV BUS VOLTS - C PH
D	
E	
F	
G	
H	
I	
J	

FT-7 NAMEPLATE

A	IN101
B	IN102
C	IN103
D	IN104
E	IN105
F	IN106
G	
H	
I	TRIP +
J	TRIP -



BOTTOM VIEW



NOTE:
REFER TO SPECIFICATIONS
FOR QUANTITIES AND TYPES
OF TERMINAL BLOCKS AND
FUSE BLOCKS.

REV	DATE	CHKD	APPD	REVISION DESCRIPTION
2	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.
1	11-09-09	KA	RNJ	ISSUED FOR CONSTRUCTION.
0	08-24-09	KA	RNJ	ISSUED FOR BIDS.

DESIGNED	RNJ
DRAWN	RNJ

**CONFORMED TO
CONSTRUCTION
RECORDS**

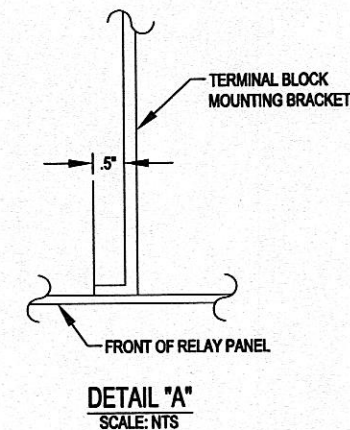
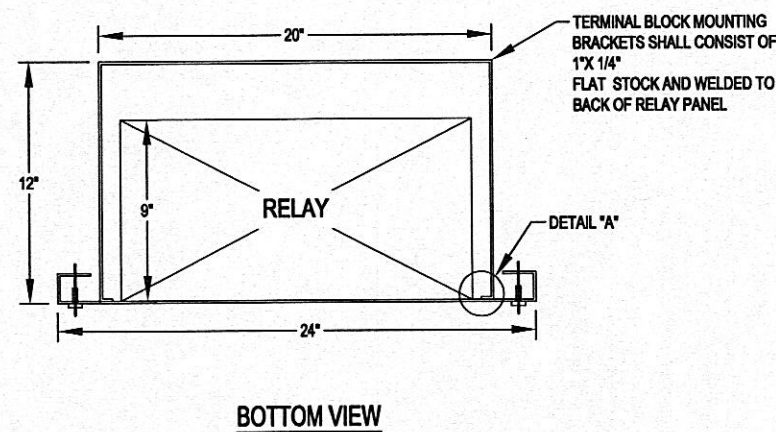
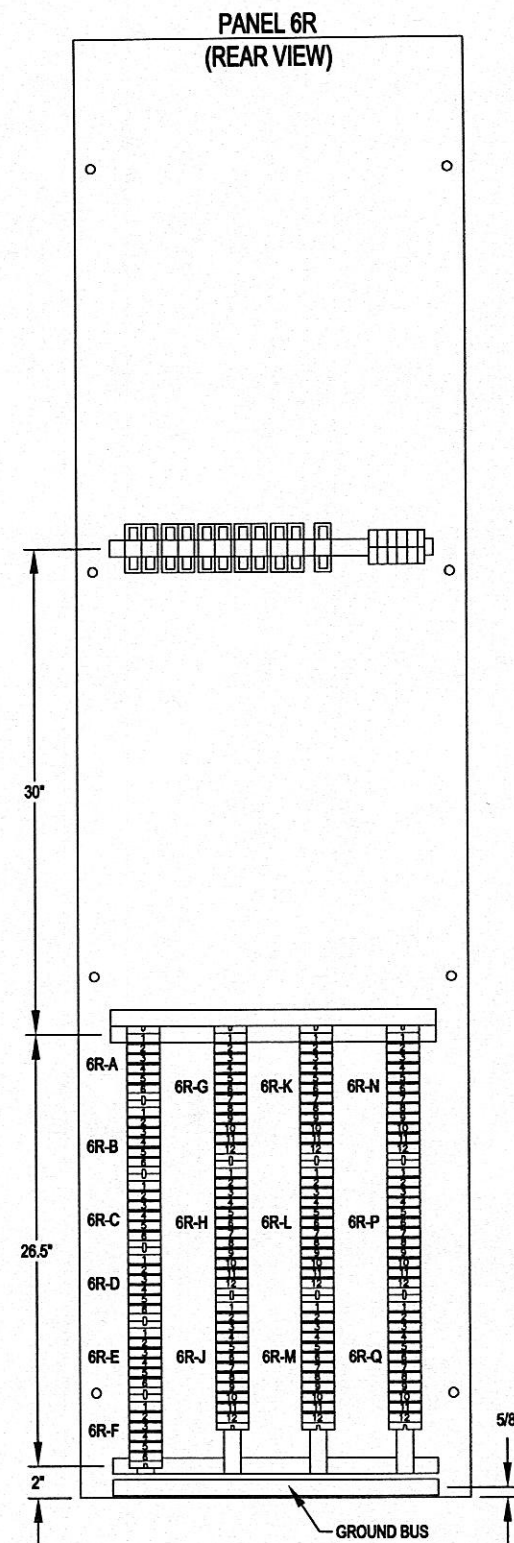


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Hendersonville, TN 37075
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HARRIMAN UTILITY BOARD
HARRIMAN PRIMARY SUBSTATION

PANEL 2F REAR VIEW
CONSTRUCTION DETAILS

PROJECT NUMBER:	07-70014-01317-1000
SHEET OF:	1 1
DRAWING NUMBER:	01317-704. 2



NOTE:
REFER TO SPECIFICATIONS
FOR QUANTITIES AND TYPES
OF TERMINAL BLOCKS AND
FUSE BLOCKS.

PLOT: 9/16/2010 WALESSA - SAVED: 9/15/2010 WALESSA - 13:46 - G:\01053007-70014-01317 HARRIMAN UB-PRIMARY\WORK PRODUCTS\CTCR001317-05.DWG : LAYOUT1

REV	DATE	CHKD	APPD	REVISION DESCRIPTION
2	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.
1	11-09-09	KA	RNJ	ISSUED FOR CONSTRUCTION.
0	08-24-09	KA	RNJ	ISSUED FOR BIDS.

DESIGNED RNJ
DRAWN RNJ

**CONFORMED TO
CONSTRUCTION
RECORDS**



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HARRIMAN UTILITY BOARD
HARRIMAN PRIMARY SUBSTATION
PANEL 6R REAR VIEW
CONSTRUCTION DETAILS

PROJECT NUMBER:
07-70014-01317-1000
SHEET OF:
1 1
DRAWING NUMBER:
01317-705.2

PLOT: 9/16/2010 WALESRA - SAVED: 9/15/2010 WALESRA- 13:46 - G:\01053007-70014-01317 HARRIMAN UB-PRIMARY\WORK PRODUCTS\CTCR001317-706.DWG : LAYOUT1

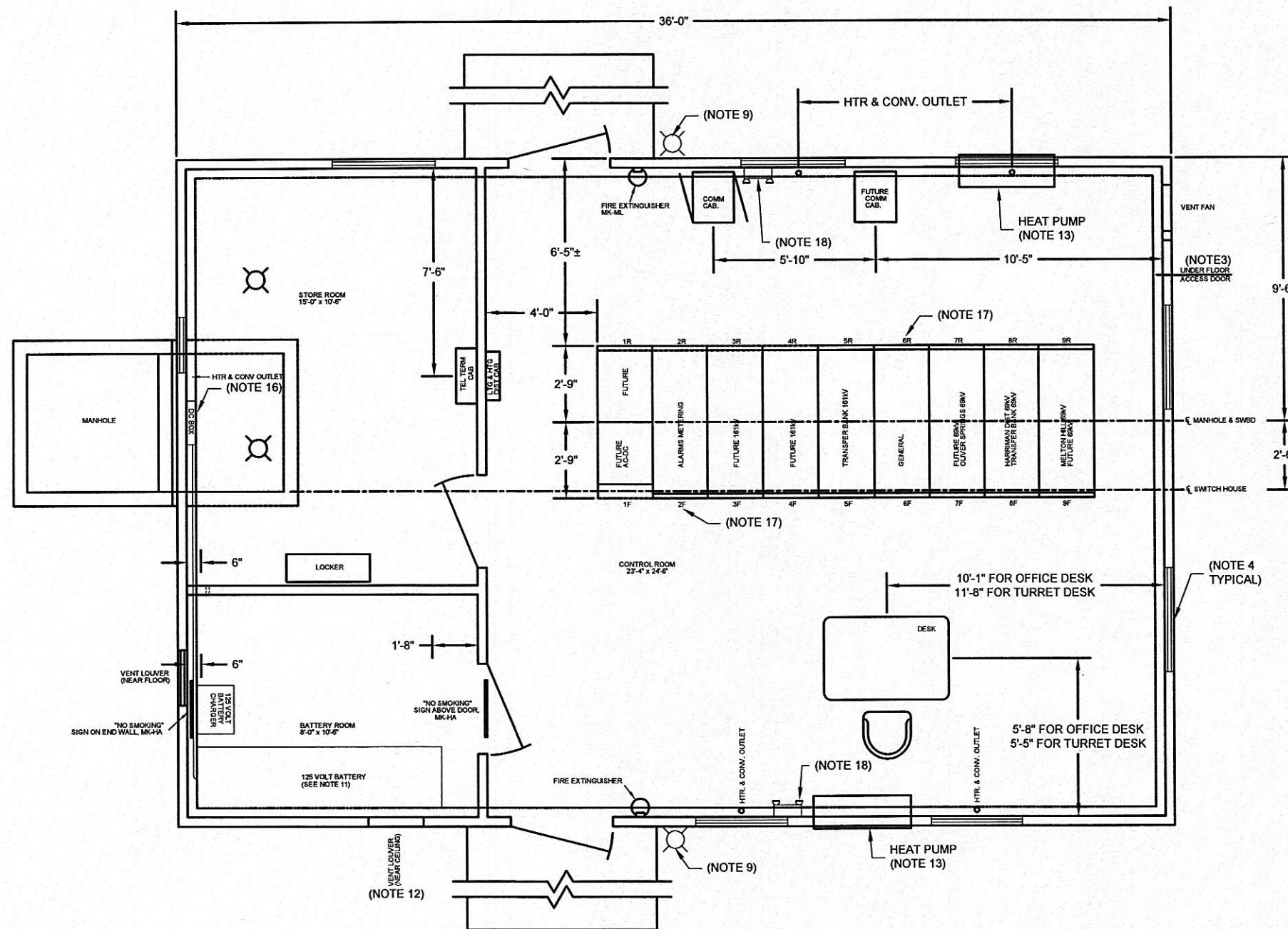
BOM#	Panel	Part#	Qty	Description	Mfg.
1	2F	24041441X	1	SATELLITE SYNCHRONIZED CLOCK, RACK MOUNT, 125 VDC POWER SUPPLY, WITH GPS BULET ANTENNA (235-0103) AND 75 FEET OF CABLE (C960-75)	SEL
2	2F	0551C0BX533X	1	OVERCURRENT RELAY, 125 VDC, 5 AMP, PANEL MOUNT, EIA-232 FRONT PORT AND REAR PORT	SEL
3	2F	587R0418-61111	2	TYPE DPU 2000R, THREE-PHASE MICROPROCESSOR BASED DISTRIBUTION PROTECTION UNIT	ABB
4	2F	0387A010HX3X341	1	THREE WINDING CURRENT DIFFERENTIAL RELAY, PANEL MOUNT, 125 VDC, 5 AMP	SEL
5	2F, 6R	116B6708G43R53C4	2	RED INDICATING LED, 125 VDC	GE
6	2F	116B6708G43G53C4	2	GREEN INDICATING LED, 125 VDC	GE
7	2F	8857DB	2	CONTROL SWITCH, ELECTRICALLY OPERATED, 125 VDC CONTROL, PISTOL GRIP HANDLE, ESCUTCHEON ENGRAVE "TRIP" ON 11 O'CLOCK POSITION AND "CLOSE" ON 1 O'CLOCK POSITION	ESW
8	2F	24205B	6	OVAL HANDLE, ESCUTCHEON ENGRAVE, "ON" ON 12 O'CLOCK POSITION, AND "OFF" ON 1 O'CLOCK POSITION	ESW
9	2F, 6R	7805D	2	LOCKOUT RELAY, OVAL HANDLE, 125 VDC, 5 DECK, TYPE D COIL	ESW
10	2F, 6R	6422120G1	13	4 POLE PK TEST BLOCK	GE
11	2F	FR2G001001001	1	FT-19R FLEXTTEST SWITCH ASSEMBLY, TWO RACK UNITS, GRAY, FULL LENGTH CLEAR COVER, CONSISTING OF THREE, R129A501G01 POTENTIAL TEST SWITCHES	ABB
12	2F	NTE5890	2	TRIPPING RECTIFIER	
13	6R	0487B065X2XEXXXC	1	BUS DIFFERENTIAL RELAY, 125-VDC, 5-A, PANEL MOUNT	SEL
15	**	915900043	1	GPS BULLET ANTENNA MOUNTING KIT	SEL
20	**	C256	2	RG-58 CABLE WITH BNC MALE CONNECTOR AND 9-PIN MALE "D" SUB CONNECTOR, 5 FEET	SEL
21	**	C962	2	RG-58 CABLE WITH BNC MALE CONNECTOR ON ONE END, TINNED WIRES ON OTHER, 10 FEET	SEL
	**	C953	1	RG-58 CABLE WITH BNC MALE CONNECTORS ON BOTH ENDS, 60 FEET	SEL
24	6R	FR3H000246000	1	FT-19R FLEXTTEST SWITCH ASSEMBLY, TWO RACK UNITS, GRAY, FULL LENGTH CLEAR COVER, CONSISTING OF TWO BLANK COVERS AND ONE, R1586C42G30 TEST SWITCH	ABB
26	**	SEL-C662	1	RELAY PROGRAMMING CABLE, USB PORT TO 9-PIN MALE CONNECTOR	SEL
27	2F*, 6R*	EB25B12	11	TERMINAL BLOCK, 12 POINT	GE
28	2F*, 6R*	EB25B04	4	TERMINAL BLOCK, 4 POINT	GE
29	2F*, 6R*	EB27B06S	13	TERMINAL BLOCK 6 POINT SHORTING TYPE	GE
30	2F*, 6R*		6	FUSE BLOCK, 2 POLE	
31	2F*		1	FUSE BLOCK, 1 POLE	

* INDICATES MOUNTING ON BACK OF PANEL
** INDICATES MATERIAL TO BE SHIPPED LOOSE

					DESIGNED RNJ	CONFORMED TO CONSTRUCTION RECORDS		 R.W. Beck, Inc. 131 Mir Parkway, Suite 300 Hendersonville, TN 37075 (615) 431-3200 An SAIC Company	HARRIMAN, TN UTILITY BOARD HARRIMAN PRIMARY SUBSTATION MODIFICATIONS RELAY PANEL BILL OF MATERIALS	PROJECT NUMBER: 07-70014-01317-1000
					DRAWN RNJ					SHEET OF: 1 1
2	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.						DRAWING NUMBER: 01317-706.2
1	11-09-09	KA	RNJ	ISSUED FOR CONSTRUCTION.						
0	08-24-09	KA	RNJ	ISSUED FOR BIDS.						
REV	DATE	CHK'D	APP'D	REVISION DESCRIPTION						

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PLOT: 9/16/2010 WALESA - 13:48 - G:\01053007-70014-01317 HARRIMAN UB-PRIMARYWORK PRODUCTS\CTOR\01317-710.DWG - LAYOUT1



NOTES:

1. THIS DRAWING DEVELOPED FROM TVA
DRAWING LC-46656, R-0.

COMPLETE THE FOLLOWING IMPROVEMENTS TO THE
CONTROL BUILDING.

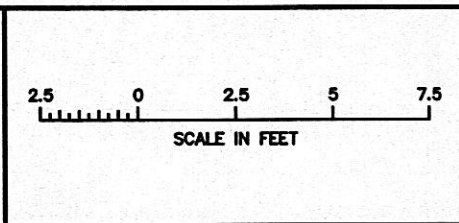
1. REMOVE AND REPLACE ROOF WITH EQUIVALENT
STRUCTURAL ROOFING.
2. REPLACE DOWNSPOUTS WITH NEW ALUMINUM 6"
DOWNSPOUTS.
3. INSTALL PERMANENT WOOD FRAME AND HINGED
DOOR TO CRAWL SPACE ACCESS DOORS.
4. REPLACE EIGHT EXISTING WINDOWS WITH DOUBLE
HUNG, TILT IN, TRIPLE PANE REPLACEMENT
WINDOWS.
5. CLEAN, PREP, PRIME, AND PAINT BUILDING EXTERIOR
INCLUDING STAIR HAND RAILS, DOWNSPOUTS,
GUTTERS, AND WALLS. COLOR TO BE SELECTED BY
HUB.
6. CLEAN, PREP, PRIME, AND PAINT COMPLETE BUILDING
CEILING WHITE.
7. CLEAN, PREP, PRIME, AND PAINT COMPLETE BUILDING
INTERIOR WALLS. COLOR TO BE SELECTED BY HUB.
8. REPLACE ALL FLUORESCENT AND INCANDESCENT
CEILING FIXTURES WITH NEW 4 LAMP, 40 WATT, T12
BALLAST, 120 VOLT, SURFACE MOUNT FIXTURES. 15
REQUIRED.
9. REPLACE EXTERIOR LIGHTS AT DOORS WITH 120
VOLTS, OUTDOOR WALL PACK FIXTURE WITH 70W HPS
BULB AND PHOTOCCELL.
10. INSTALL 6" OF BLOWN INSULATION IN THE ATTIC.
11. REPLACE EXISTING BATTERIES, RACK, AND CHARGER
WITH NEW EQUIPMENT AND WIRING. BATTERIES
SHALL BE COMPRISED OF FIAMM LEAD ACID TYPE, 60
CELL, TYPE SD-11. RACK SHALL BE SGL 3-27.
CHARGER SHALL BE C & D TYPE: ARE-M13025, 240
VOLTS, 25 AMP OUTPUT.
12. INSTALL BATTERY EXHAUST FAN. FAN SHALL BE 10",
115 VOLT, SHUTTER MOUNTED, DAYTON MODEL
1HLA1. INSTALL RAIN HOOD AND AN ADJUSTABLE
TIMER TO RUN 1-15 MINUTES PER HOUR.
13. INSTALL TWO THRU WALL HEAT PUMPS. HEAT PUMPS
SHALL BE GE ZONELINE AZ58H15DAC.
14. REPLACE CABLE ENTRY COVER PLATES BEHIND
PANELS AT FLOOR.
15. REMOVE INCANDESCENT FIXTURES ALONG RELAY
AISLE AND REPLACE WITH 2 LAMP, 40 WATT, T12
BALLAST, 120 VOLT FLUORESCENT FIXTURES, 4
REQUIRED.
16. REPLACE DC BOX WITH DC PANEL. PANEL SHALL BE
SQUARE D, I-LINE WITH 225 AMP MAIN BREAKER AND
BRANCH BREAKERS AS SHOWN ON DC PANEL
SCHEDULE. CORE DRILL CONCRETE FLOOR AND
INSTALL 3-4" CONDUITS FROM PANEL TO CABLE TRAY
BELOW FLOOR.
17. REMOVE PANELS 6R AND 2F. PANELS ARE ASBESTOS.
DISPOSE OF PANELS APPROPRIATELY. INSTALL
OWNER FURNISHED PANELS 6R AND 2F.
18. REPLACE EXISTING EMERGENCY LIGHT WITH NEW
120VAC LED EMERGENCY LIGHT. LIGHT SHALL BE
GILBERT LED GEMINI STAR (WWW.GILBERTINC.COM).
INSTALL POWER FOR LIGHT IN EMT CONDUIT.

REFERENCES:
BILL OF MATERIAL: BMC-46653
CONDUIT AND CABLE LIST CMC-46656
SW. HOUSE CONDUIT LC-46652
AND LIGHTING

REV	DATE	CHKD	APPD	REVISION DESCRIPTION
3	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.
2	12-15-09	RNJ	KA	ISSUED FOR CONSTRUCTION.
1	10-16-09	RNJ	KA	GENERAL REVISIONS: BATTERY SYSTEM, DC PANEL, EMERGENCY LIGHTS.
0	10-02-09	RNJ	KA	ISSUED FOR BIDS.

DESIGNED	KA
DRAWN	RW

**CONFORMED TO
CONSTRUCTION
RECORDS**

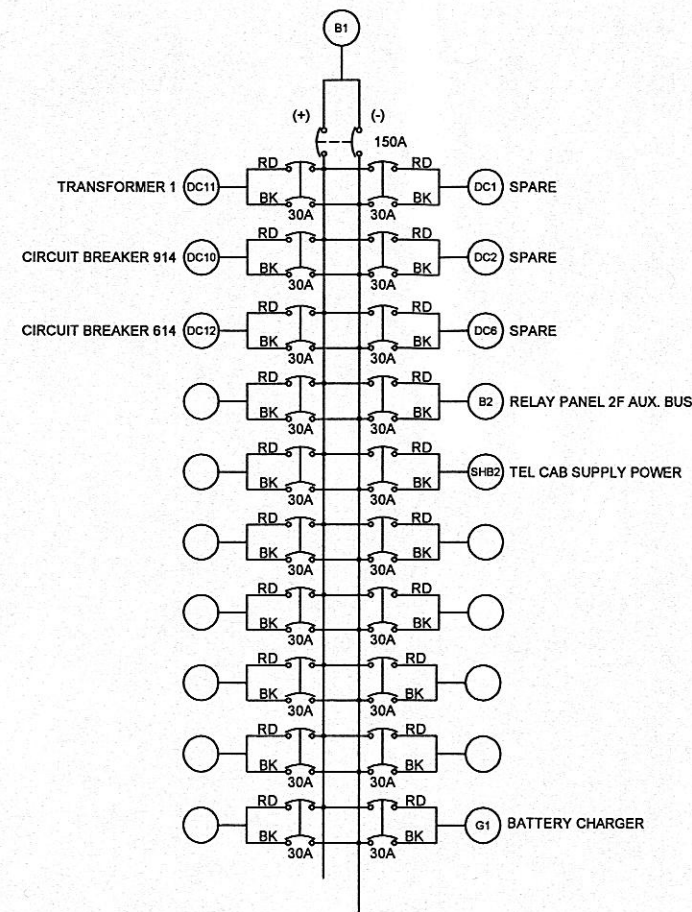


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HARRIMAN, TN UTILITY BOARD
HARRIMAN PRIMARY SUBSTATION MODIFICATIONS
CONTROL HOUSE FLOOR PLAN

PROJECT NUMBER:	07-70014-01317-1000
SHEET OF:	1 1
DRAWING NUMBER:	01317-710.3

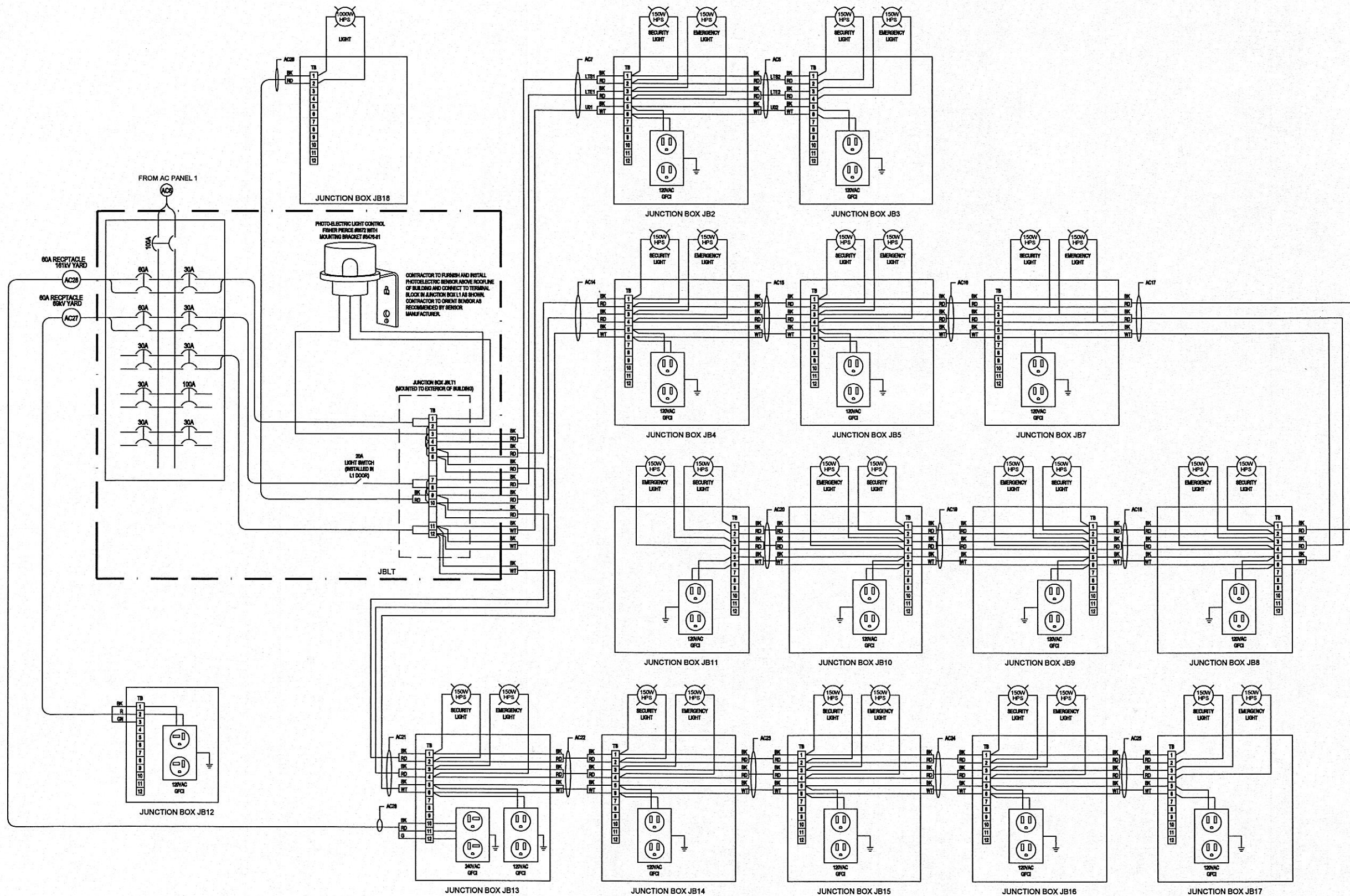
PLOT: 9/16/2010 WALESPA - SAVED: 9/16/2010 WALESPA - 13:50 - G:\01053007-7001-4-01317 HARRIMAN UB-PRIMARY\WORK PRODUCTS\CTCR01317-712.DWG : MODEL



D.C. DISTRIBUTION PANEL

					DESIGNED KA	CONFORMED TO CONSTRUCTION RECORDS	 R.W. Beck 131 Saundersville Rd., Suite 300 Hendersonville, TN 37075 (615) 431-3200 An SAIC Company	HARRIMAN UTILITY BOARD HARRIMAN PRIMARY SUBSTATION DC DISTRIBUTION PANEL	PROJECT NUMBER: 07-70014-01317-1000	
					DRAWN RW				SHEET OF: 1 1	
2	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.					DRAWING NUMBER: 01317-712.2	
1	12-15-09	RNJ	KA	ISSUED FOR CONSTRUCTION.						
0	10-02-09	RNJ	KA	ISSUED FOR BIDS.						
REV	DATE	CHKD	APPD	REVISION DESCRIPTION						

PLOT: 9/18/2010 WALESPA-1349- G:\01053007-70014-01317 HARRIMAN UB-PRIMARY WORK PRODUCTS\CTCR001317-711.DWG: LAYOUT1



REV	DATE	CHK'D	APP'D	REVISION DESCRIPTION
3	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.
2	02-24-10	RJ	KA	CORRECTED DESIGNATION FOR CABLE AC8.
1	12-15-09	RJ	KA	ISSUED FOR CONSTRUCTION.
0	10-02-09	RJ	KA	ISSUED FOR BIDS.

DESIGNED	KA
DRAWN	RW

CONFORMED TO
CONSTRUCTION
RECORDS



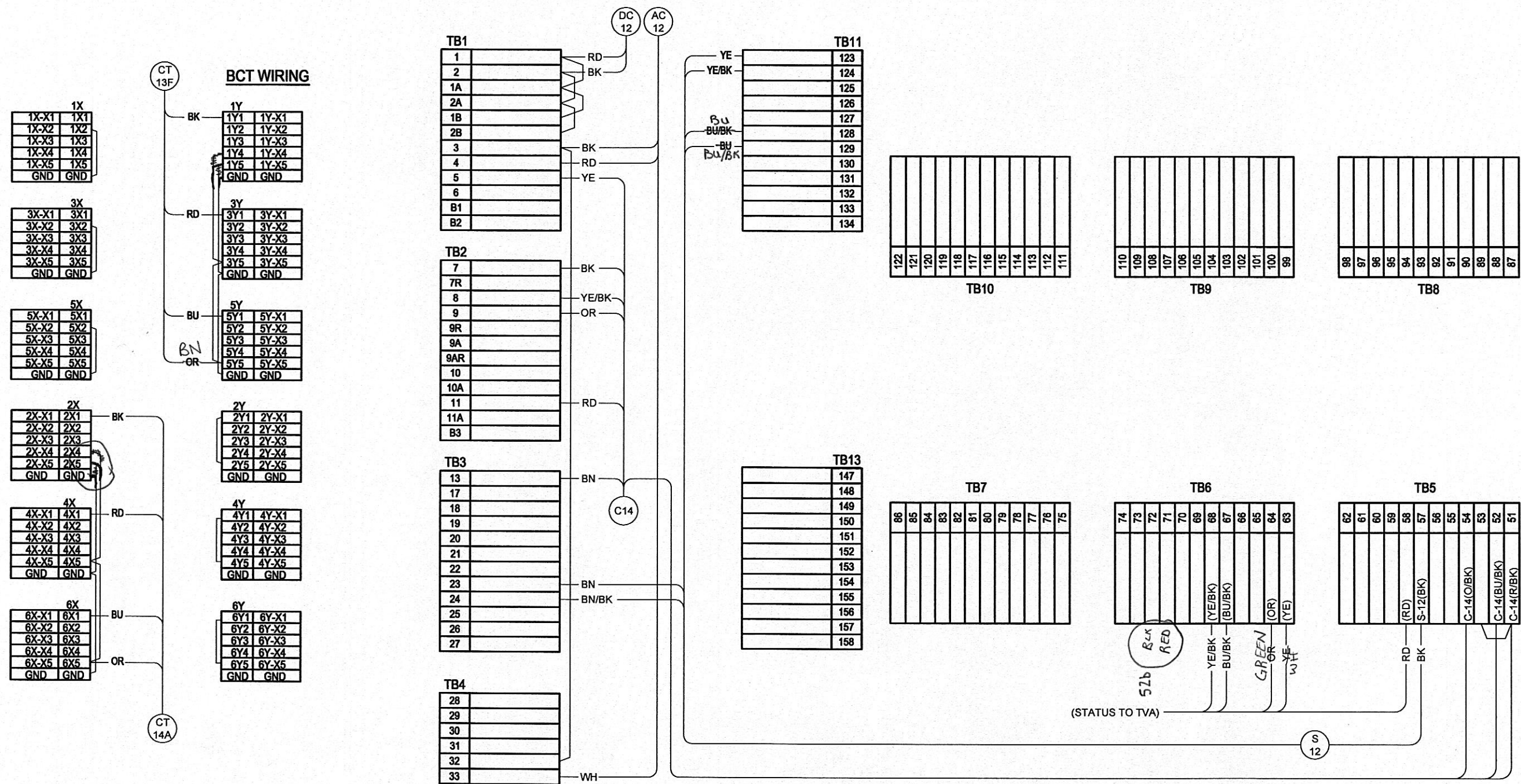
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An SAIC Company

HARRIMAN UTILITY BOARD
HARRIMAN PRIMARY SUBSTATION
YARD LIGHTING AND UTILITIES
SCHEMATIC

PROJECT NUMBER:	07-70014-01317-1000
SHEET OF:	1 1
DRAWING NUMBER:	01317-711.3

PLOT: 10/4/2010 WALESPA - SAVED: 10/4/2010 WALESPA-11:11 - G:\01053007-70014-01317 HARRIMAN UB-PRIMARYWORK PRODUCTS\CTCR01317-800.DWG - LAYOUT1



REV	DATE	CHK'D	APP'D	REVISION DESCRIPTION
3	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.
2	03-04-10			ADDED STATUS CIRCUIT. ISSUED FOR CONSTRUCTION.
1				
0				

DESIGNED	RNJ
DRAWN	RNJ

**CONFORMED TO
CONSTRUCTION
RECORDS**



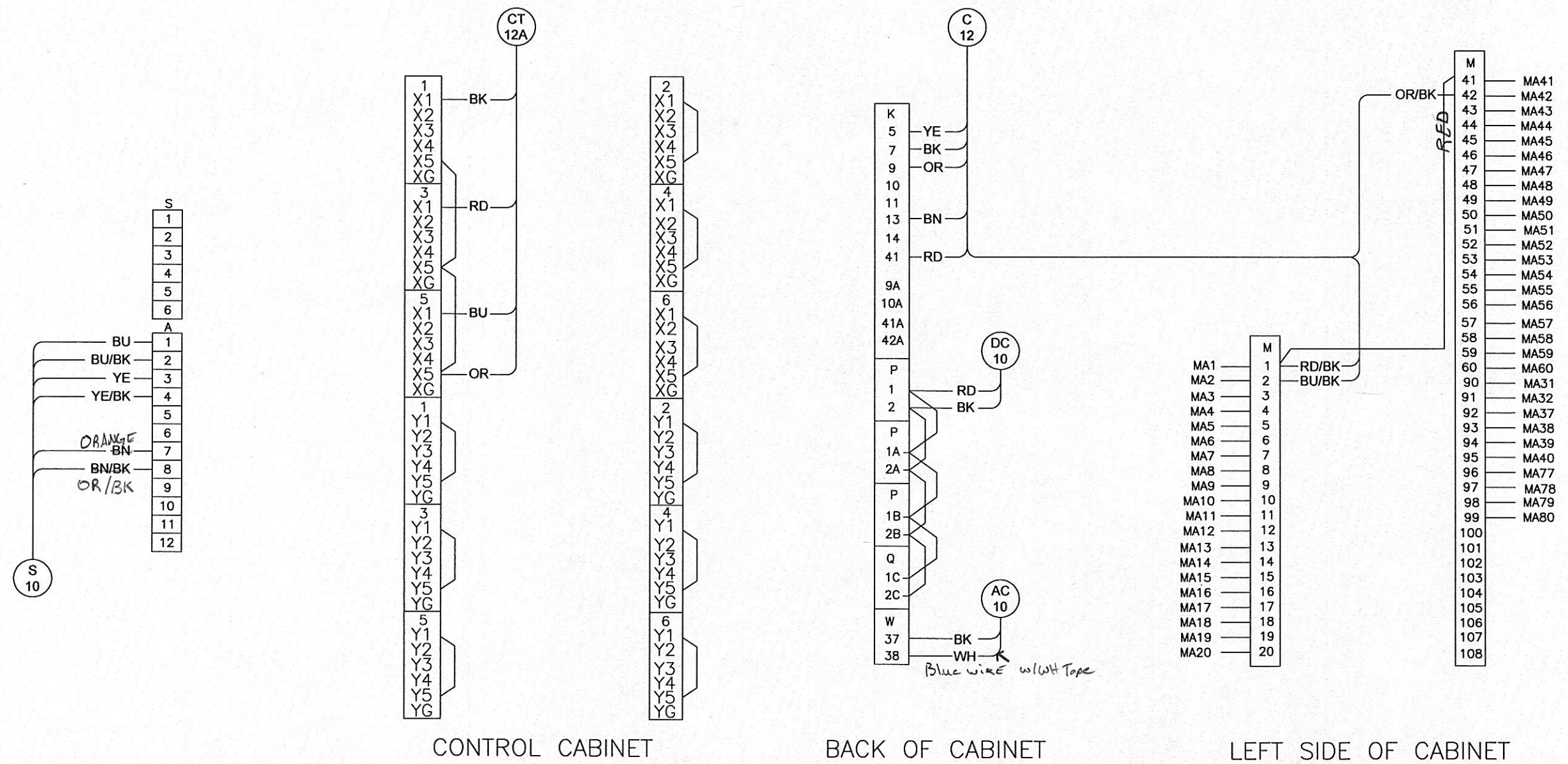
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HARRIMAN UTILITY BOARD
HARRIMAN PRIMARY SUBSTATION
BREAKER 614
CONNECTION DIAGRAM

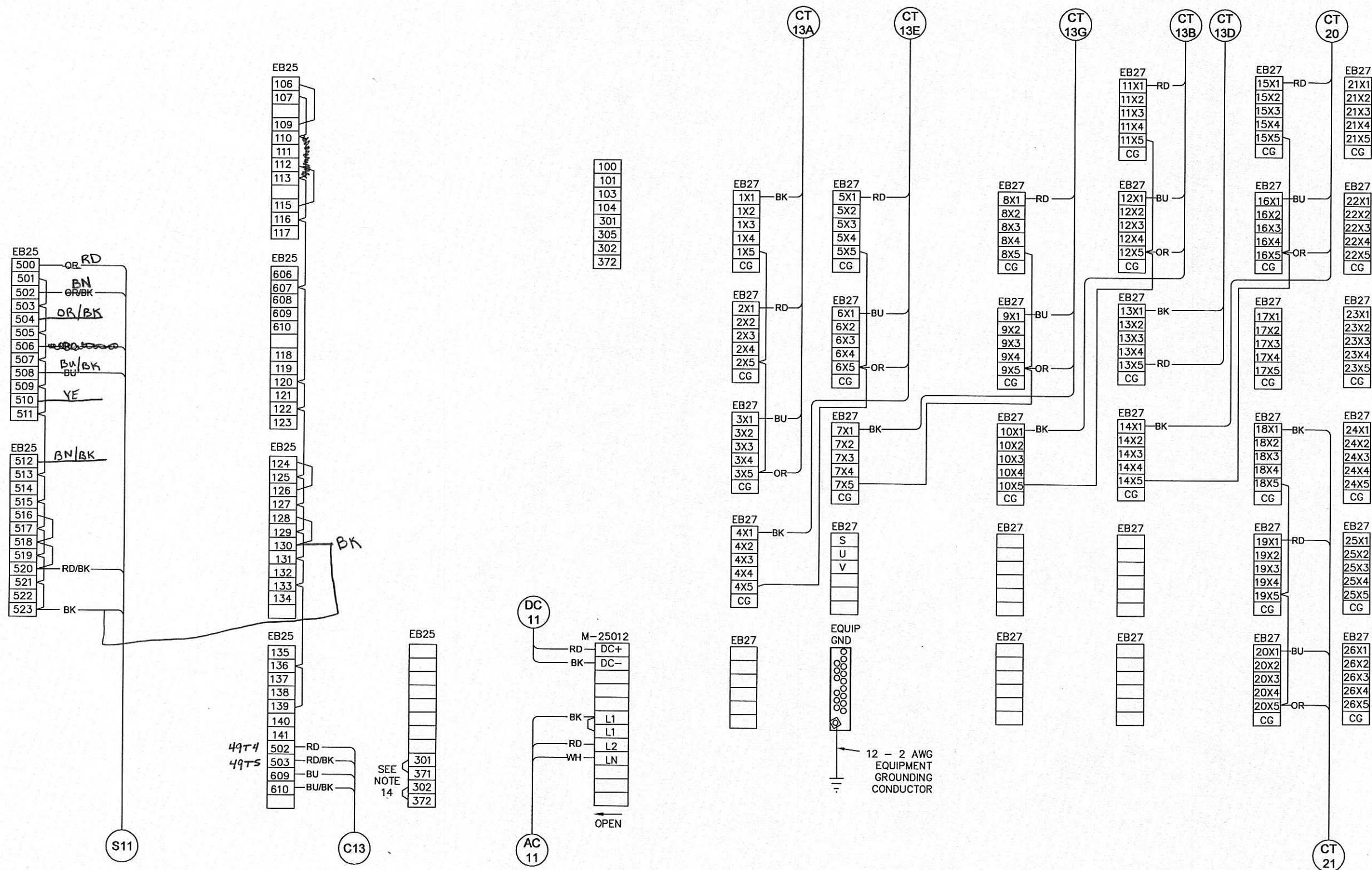
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07-70014-01317-1000
SHEET 1 OF 1
DRAWING NUMBER:
01317-800.3

PLOT: 9/30/2010 WALESSA - SAVED: 9/30/2010 WALESSA - 09:34 - G:\01053007-70014-01317 HARRIMAN UB-PRIMARY\WORK PRODUCTS\CTCR01317-801.DWG : LAYOUT1



					DESIGNED	CONFORMED TO CONSTRUCTION RECORDS	 R.W. Beck 131 Saundersville Rd., Suite 300 Hendersonville, TN 37075 (615) 431-3200 An SAIC Company	HARRIMAN UTILITY BOARD HARRIMAN PRIMARY SUBSTATION BREAKER 914 CONNECTION DIAGRAM	PROJECT NUMBER:
					RNJ				07-70014-01317-1000
3	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.	DRAWN				SHEET OF:
2	03-04-10			ADDED STATUS CIRCUIT. ISSUED FOR CONSTRUCTION.	RNJ				1 1
1									DRAWING NUMBER:
0									01317-801.3
REV	DATE	CHKD	APPD	REVISION DESCRIPTION					
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PLOT: 9302010 WALESPA - SAVED: 9302010 WALESPA - 14:47 - G:\01053007-70014-01317 HARRIMAN UB-PRIMARY\WORK PRODUCTS\CTCR001317-803.DWG : MODEL



REV	DATE	CHK'D	APP'D	REVISION DESCRIPTION
2	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.
1	03-04-10			ISSUED FOR CONSTRUCTION.
0				

DESIGNED	RW
DRAWN	RW

**CONFORMED TO
CONSTRUCTION
RECORDS**

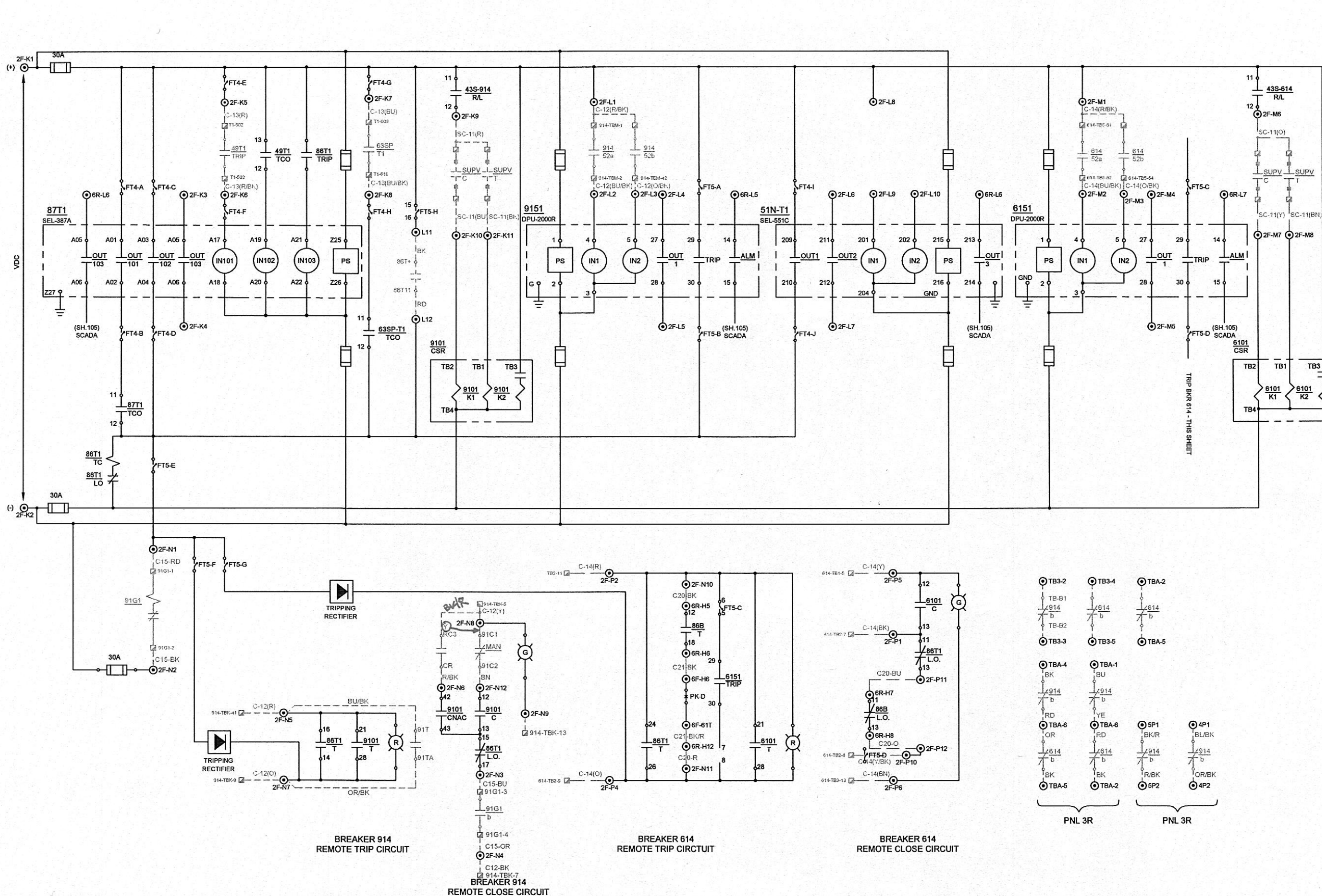


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HARRIMAN UTILITY BOARD
HARRIMAN PRIMARY SUBSTATION
TRANSFORMER 1
CONNECTION DIAGRAM

PROJECT NUMBER:	07-70014-01317-1000
SHEET OF:	1 1
DRAWING NUMBER:	01317-803.2

PLOT: 9302010 WALESBRA - 1434 - G:\01053007-70014-01317 HARRIMAN UB-PRIMARYWORK PRODUCTS\CTCR01317-103.DWG : MODEL



LEGEND

- RELAY PANEL TERMINAL BLOCK
- INTERCONNECTIONS BETWEEN RELAY PANELS AND FIELD EQUIPMENT
- RELAY PANEL WIRING
- FIELD DEVICE TERMINAL BLOCK

BREAKER 914
REMOTE TRIP CIRCUIT

BREAKER 614
REMOTE TRIP CIRCUIT

BREAKER 614
REMOTE CLOSE CIRCUIT

PNL 3R

PNL 3R

REV	DATE	CHKD	APPD	REVISION DESCRIPTION
2	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.
1	2-22-10	KA	RNJ	UPDATED TERMINATIONS
0	11-09-09	KA	RNJ	ISSUED FOR CONSTRUCTION.

DESIGNED	RNJ
DRAWN	RAW

CONFORMED TO
CONSTRUCTION
RECORDS

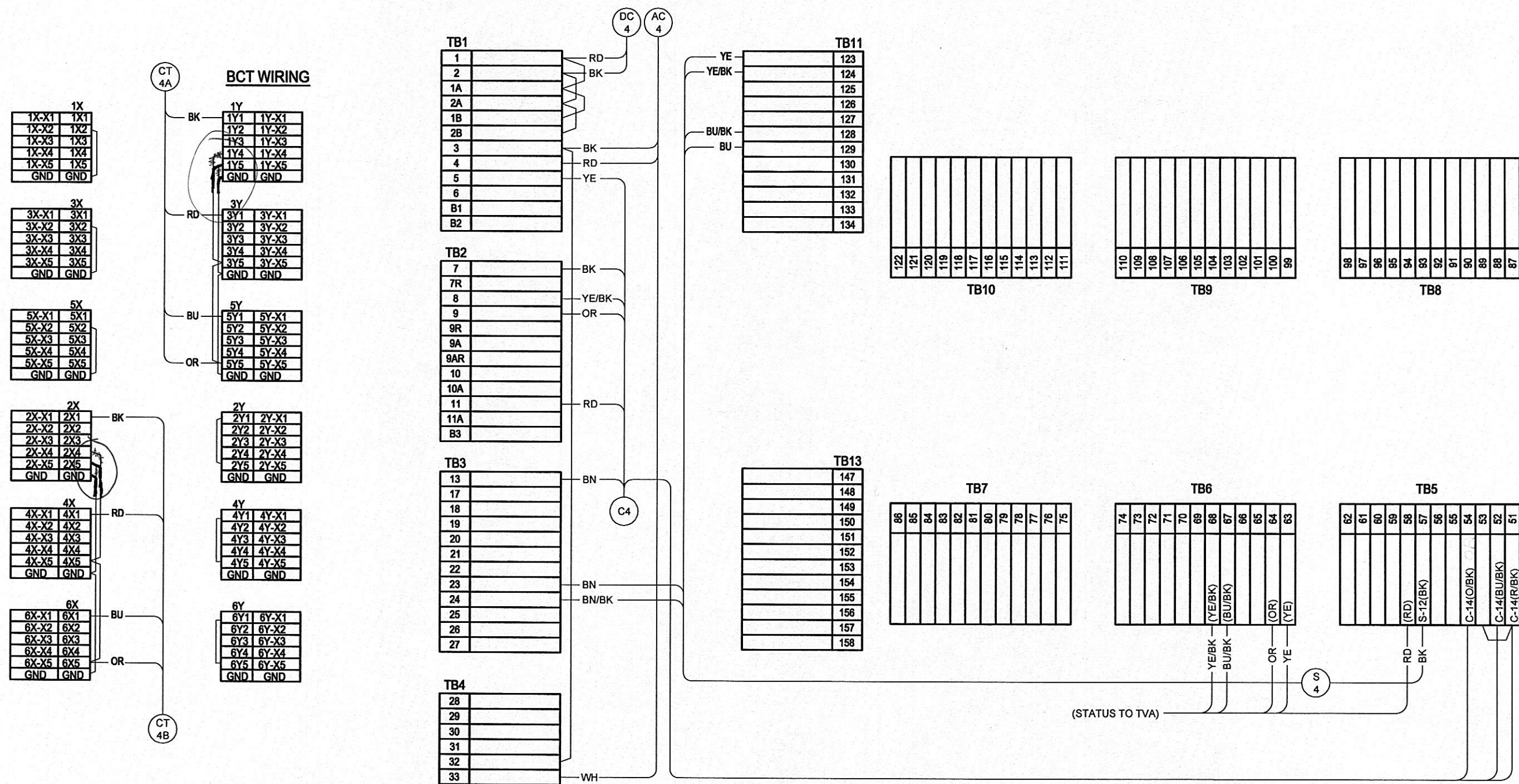


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HARRIMAN UTILITY BOARD
HARRIMAN PRIMARY SUBSTATION
BREAKER CONTROL SCHEME
BREAKERS 914 AND 614

PROJECT NUMBER:	07-70014-01317-1000
SHEET OF:	1 1
DRAWING NUMBER:	01317-103.2

PLOT: 9/20/2010 WALESSA - SAVED: 9/20/2010 WALESSA - 09:28 - C:\0103007-70014-01317 HARRIMAN UTILITY WORK PRODUCTS\CTCR01317-804.DWG - LAYOUT1



0	09-15-10				CONFORMED TO CONSTRUCTION RECORDS.
REV	DATE	CHKD	APPD		REVISION DESCRIPTION

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DESIGNED	RNJ
DRAWN	RNJ
CONFORMED TO CONSTRUCTION RECORDS	



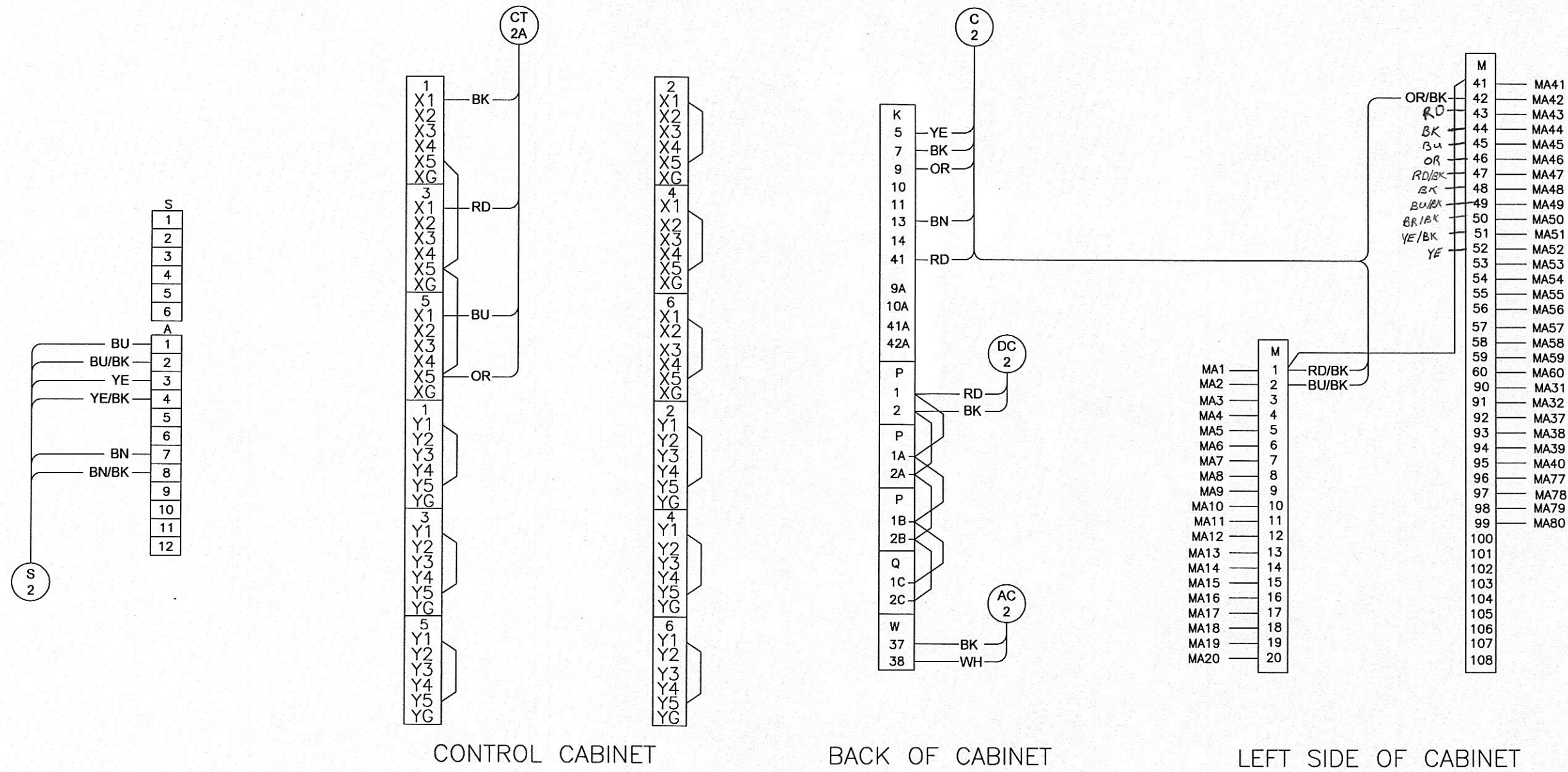
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HARRIMAN UTILITY BOARD
HARRIMAN PRIMARY SUBSTATION
BREAKER 684
CONNECTION DIAGRAM

PROJECT NUMBER:
07-70014-01317-1000
SHEET OF:
1 1
DRAWING NUMBER:
01317-804.0

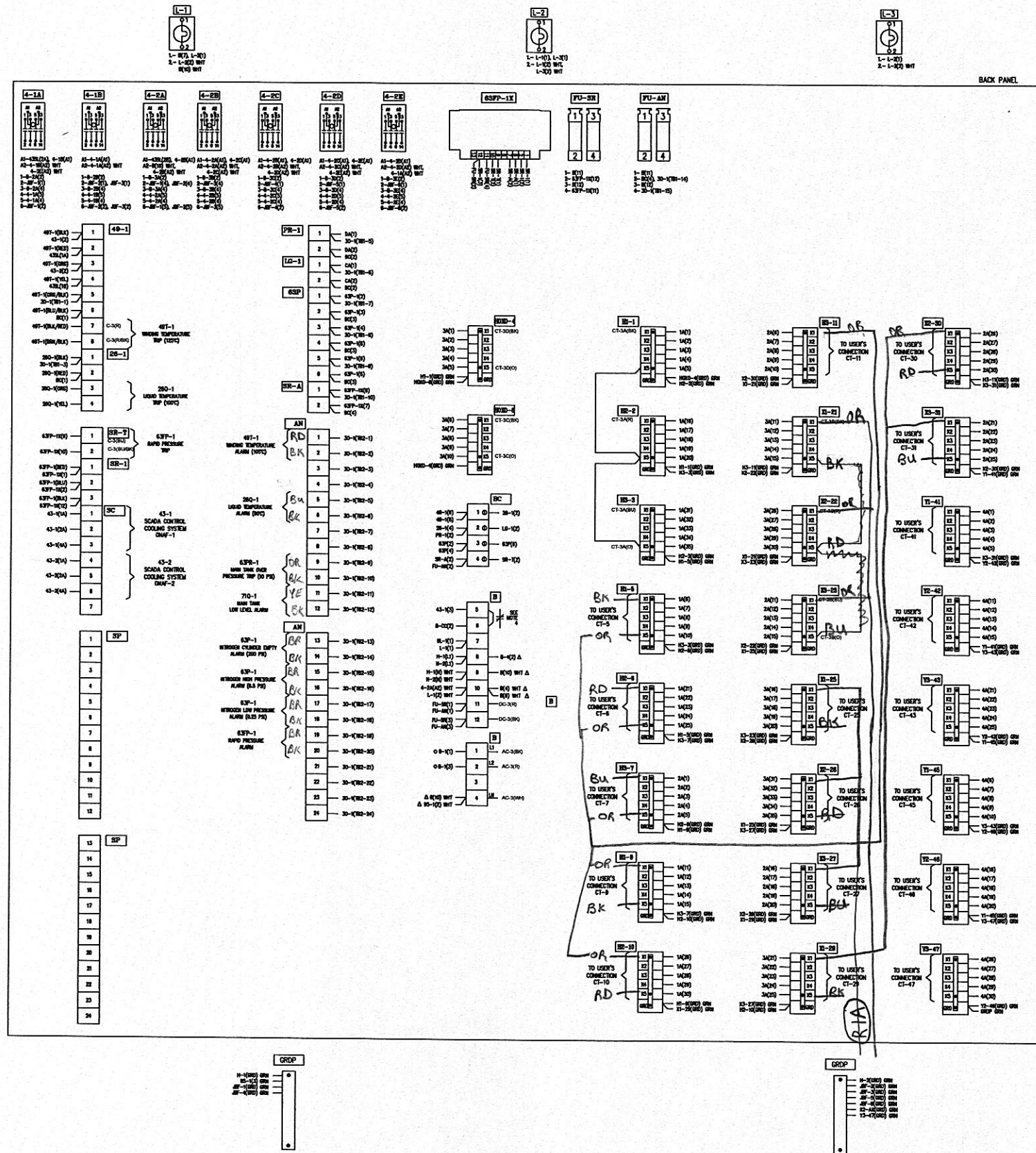
PLOT: 9/30/2010 WALESSA - SAVED: 9/30/2010 WALESSA - 09:35 - G:\01\5350\07-70014-01317 HARRIMAN UB-PRIMARYWORK PRODUCT\CTCR01317-805.DWG - LAYOUT1



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PROJECT NUMBER:	
07-70014-01317-1000	
SHEET	OF:
1	1
DRAWING NUMBER:	
01317-806.0	

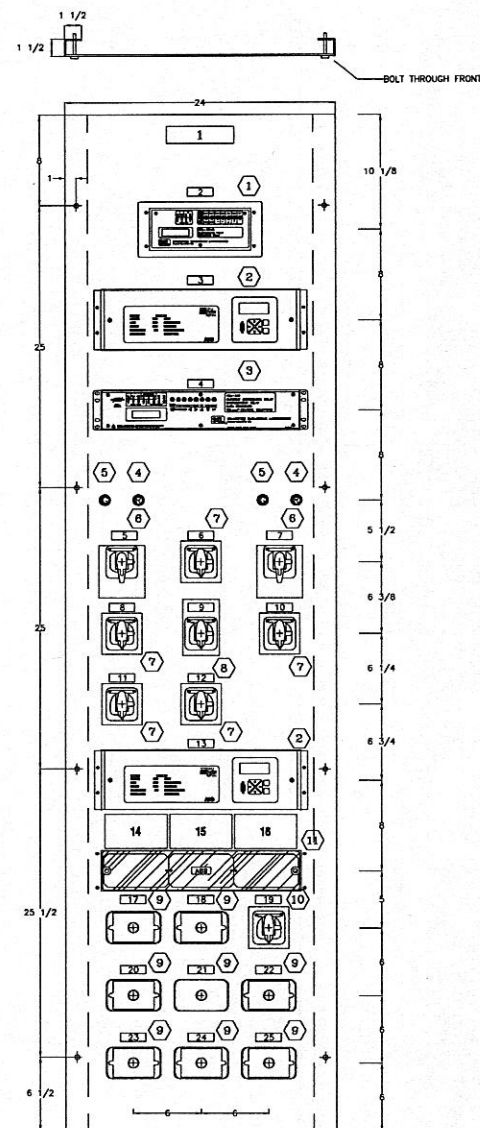


- NOTES:
- 1- CONDUCTOR TYPE MTH/NEW/ANAL, 105°C, 600 V, # 14 AWG FOR CONTROL & FANS. EXCEPT MARKED WITH:
 - WITH # 12 AWG
 - WITH # 10 AWG
 - WITH # 8 AWG
 - WITH # 6 AWG
 - WITH # 4 AWG
 - 2- TERMINAL BLOCKS ARE DESIGNED FOR 600 V, 30 A MAX. LUG SIZE # 18 AWG - 10 AWG. EXCEPT (MTH/ANAL) FOR 15 A MAX. LUG SIZE # 18 AWG - 7 AWG.
 - 3- CONDUCTOR TYPE MTH/NEW/ANAL, 105°C, 600 V, # 10 AWG FOR EXTERNAL CTS WIRING.
 - 4- REMOVABLE JUMPER FOR INSERTION OF REMOTE CONTACT BY OTHERS TO STOP ALL FORCED COOLING WHEN CONTACT IS OPEN.

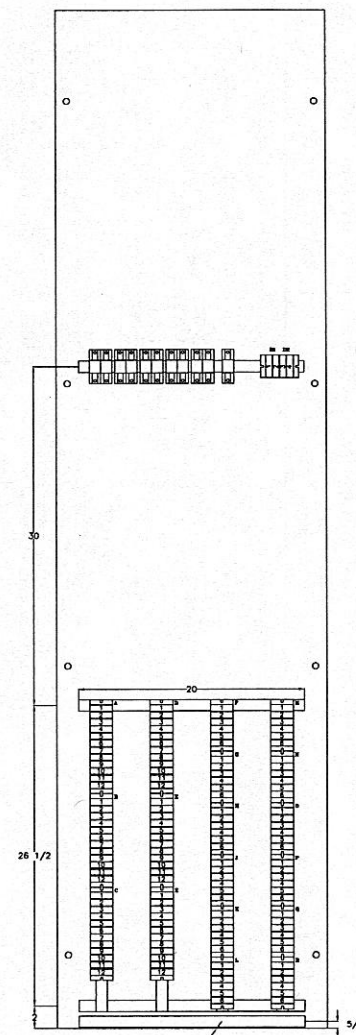


					DESIGNED	CONFORMED TO CONSTRUCTION RECORDS	 R.W. Beck 131 Saundersville Rd., Suite 300 Hendersonville, TN 37075 (615) 431-3200 An SAIC Company	HARRIMAN UTILITY BOARD HARRIMAN PRIMARY SUBSTATION TRANSFORMER 2 CONNECTION DIAGRAM	PROJECT NUMBER: 07-70014-01317-1000
					RNJ				SHEET OF: 1 1
					DRAWN				DRAWING NUMBER: 01317-807.0
					RW				
0	09-15-10				CONFORMED TO CONSTRUCTION RECORDS.				
REV	DATE	CHKD	APPD	REVISION DESCRIPTION					

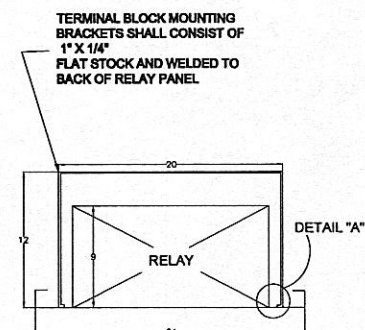
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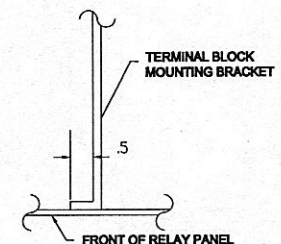
FRONT VIEW



REAR VIEW

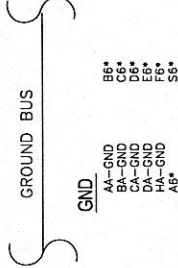
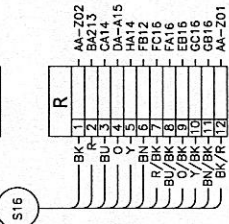
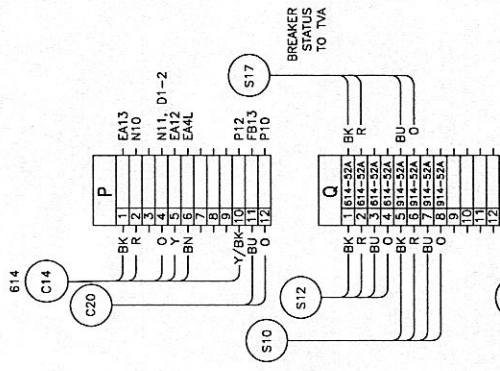
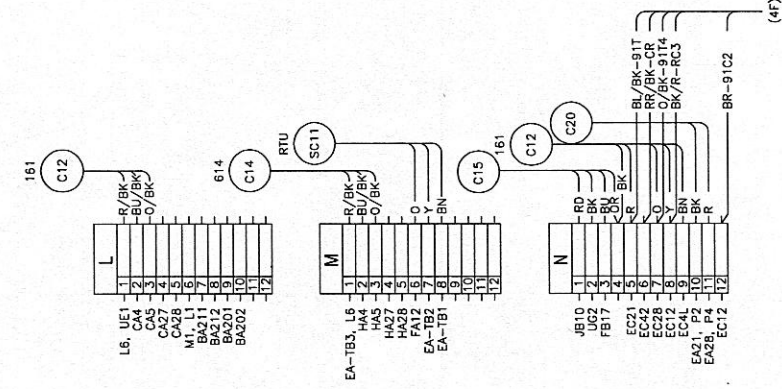
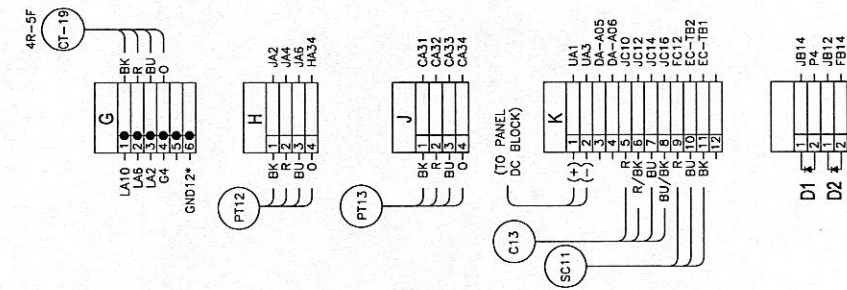
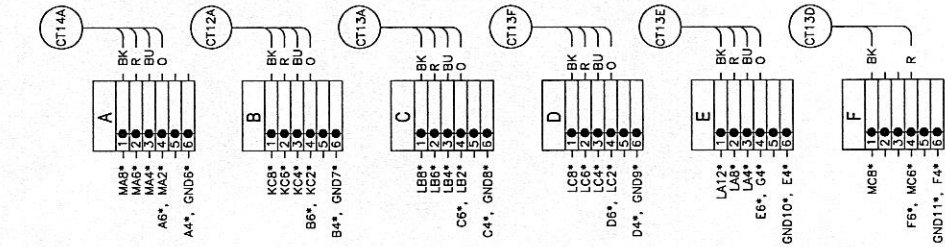
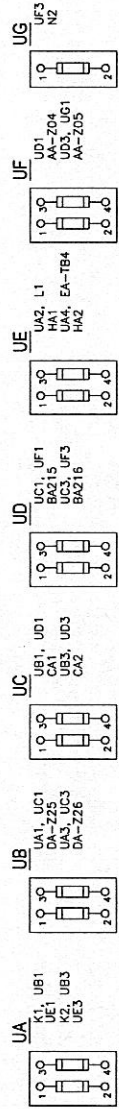


BOTTOM VIEW

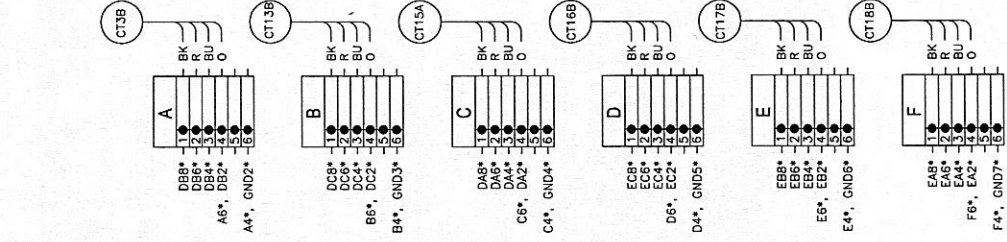
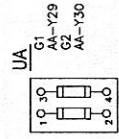


DETAIL "A"
SCALE, 1/2" = 1"

REV	DESCRIPTION	BY	APPR	DATE
	www.keystonemfg.com			
		DES MOINES, IOWA, USA		
SCALE: 1/8"=1	PROJ ENGR: EAP	CHK BY:	APPROVED	
DATE: 9/26/07	DRAWN BY: EAP			
REPLACEMENT PANEL 3F				
HARRIMAN PRIMARY SUBSTATION				
STRUCTURAL DRAWING				
HARRIMAN UTILITIES		DWG NO.		
HARRIMAN, TN		4249-SL1		
01164-P3		SHEET: 1 OF 1		



KEYSTONE ELECTRICAL MANUFACTURING CO. DES. NUMBER: 0914-0001		WIRING DIAGRAM HARRIMAN PRIMARY SUBSTATION MODIFICATIONS RELAY PANEL #2F		TESTING: WIRE TEST AND SIZES: #14 AWG SIS Ø : 16AWG FOR SHIELDED Ø : 12AWG FOR CURRENT		CONTINUITY & FUNCTION TESTS	
DWG NO. 4697-W1T	PROJ ENGR DGR	DEVELOPED BY ING	CHK BY TAL	APR BY DGR	4 CONFORMED TO CONSTRUCTION RECORDS (RW BECK)	WIRE MANAGEMENT:	
REV 2	DATE 10/20/09	DRWN BY TNG	PT TO PT BY TN	ISSUE DATE 12/18/09	3 ISSUED FOR CONSTRUCTION 03-04-10 (RWBECK)	WIRED BY: T20	FUNCTION TEST BY: 101
					2 AS BUILT	WIRE MARKERS: YES	CONTINUITY TEST BY: 120, 203
					1 REVISED PER RW BECK OF 12/15/09	WIRE COUNT: 125	INSPECTED BY: 16
					1 REV	LUSS: BUNDLY TYPE W/IN HOUSE BUNDLING	

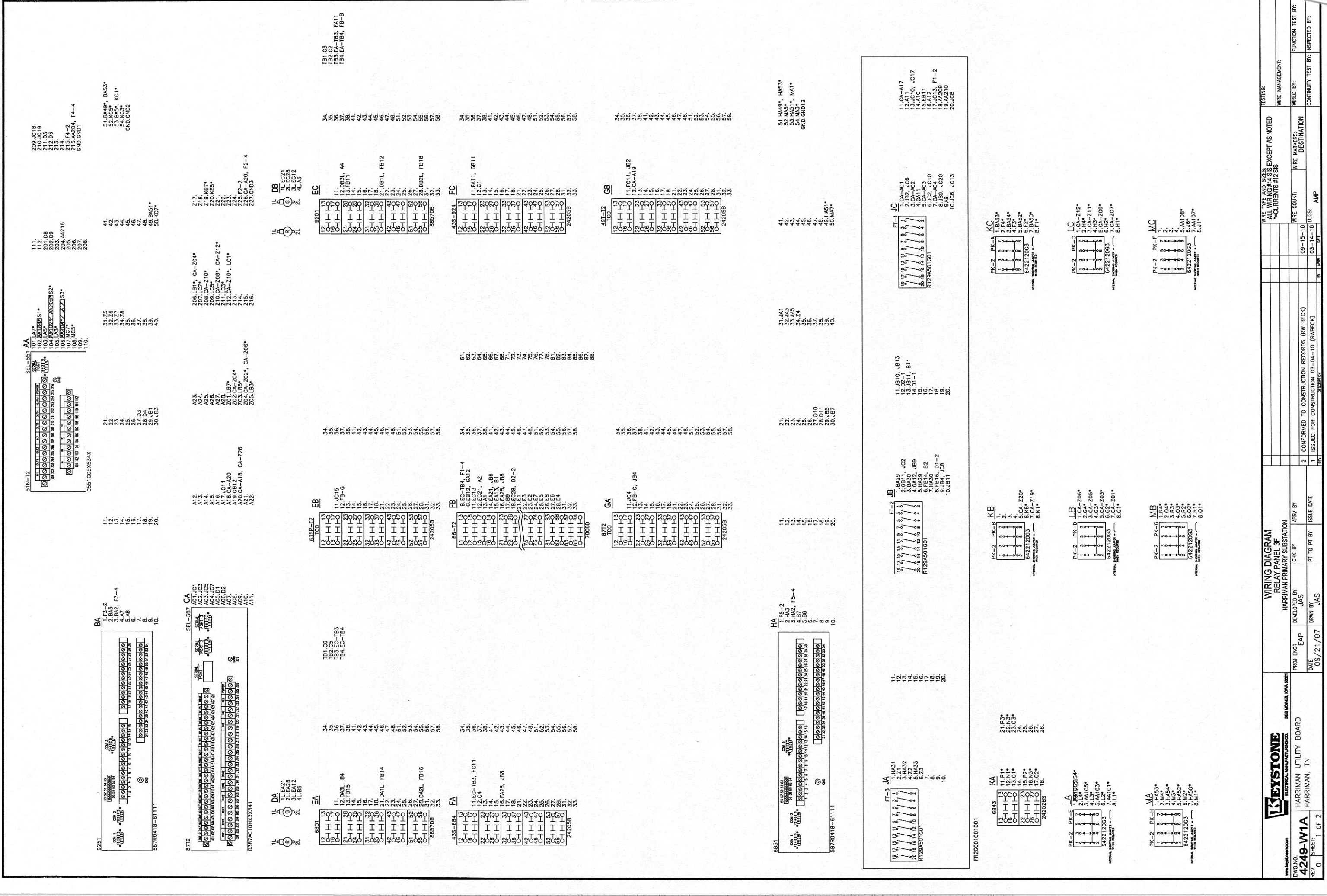


GROUND BUS

GND

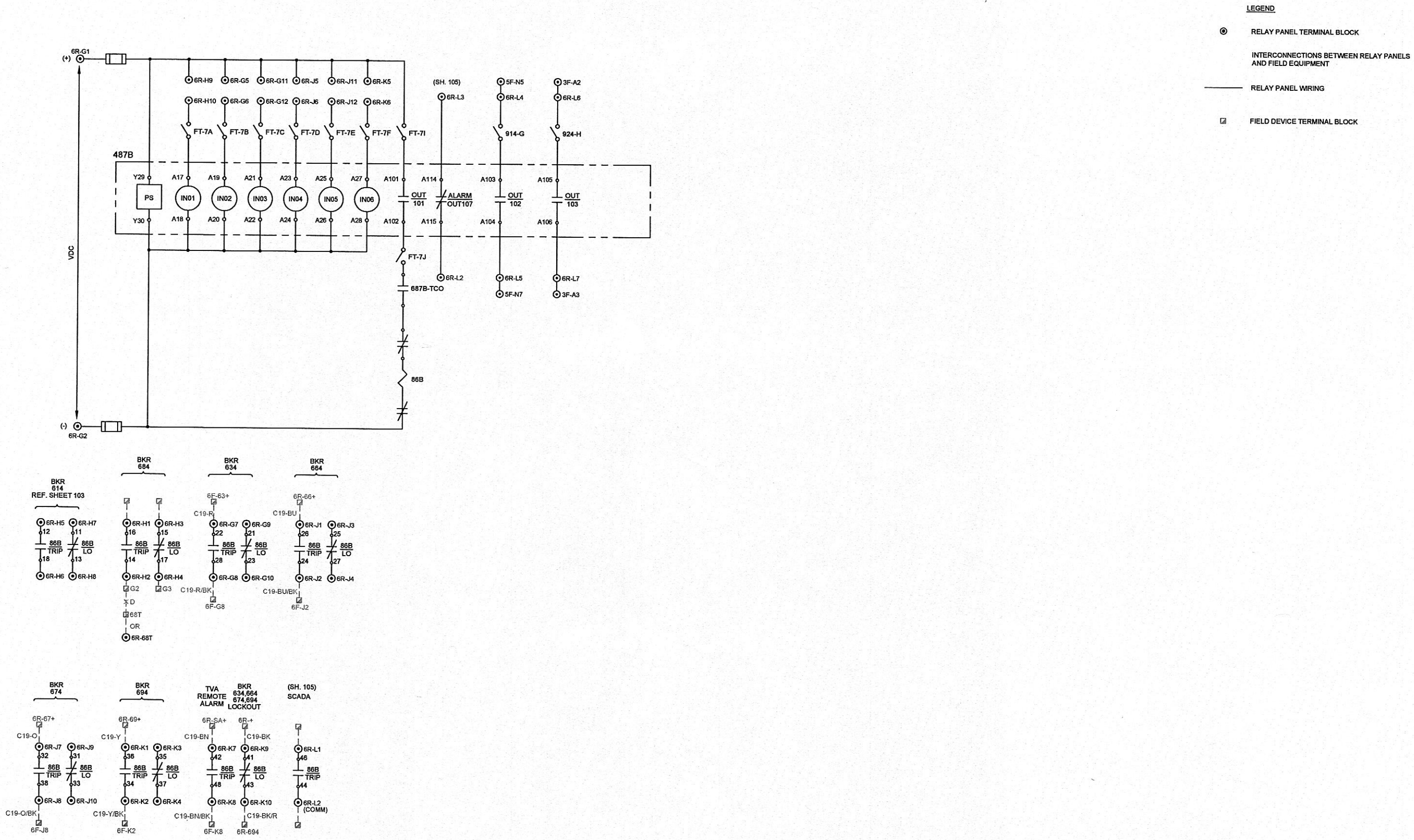
AA-GND
A5*
B5*
C8*
D8*
E8*
F5*

KEYSTONE ELECTRICAL MANUFACTURING CO. www.keystoneusa.com		HARRIMAN UTILITY BOARD HARRIMAN, TN		OSB LICENSE: 03WA 00021		WIRING DIAGRAM HARRIMAN PRIMARY SUBSTATION MODIFICATIONS RELAY PANEL #08										WIRE TYPE AND SIZES #14 AWG SIS Ø : 16AWG FOR SHIELDED * : 12AWG FOR CURRENT										TESTING: CONTINUITY & FUNCTION TESTS WIRE MANAGEMENT:																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
DWG NO. 4697-W2T	REV 1	SHEET: 1 of 1	PROJ ENGR DGR	DATE 10/20/09	DEVELOPED BY TNG	CHK BY TAL	AFRY BY DGR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121	1122	1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140	1141	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166	1167	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188	1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208	1209	1210	1211	1212	1213	1214	1215	1216	1217	1218	1219	1220	122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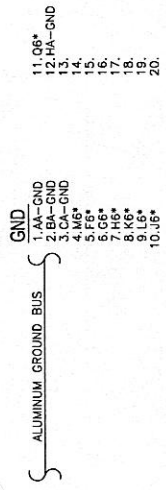
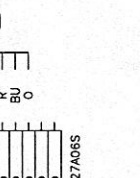
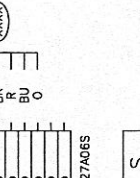
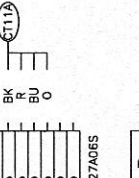
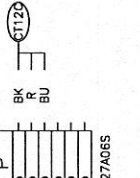
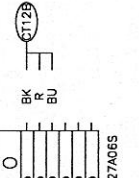
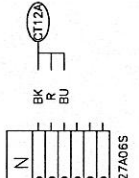
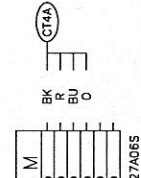
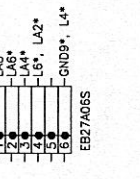
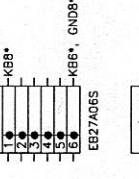
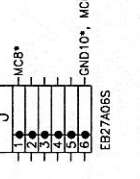
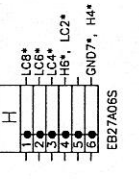
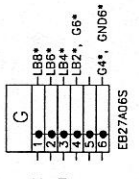
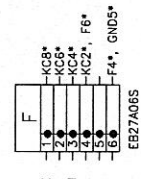
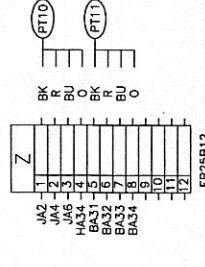
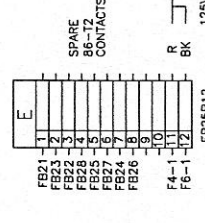
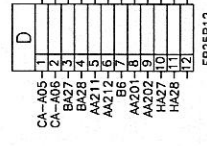
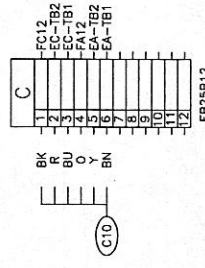
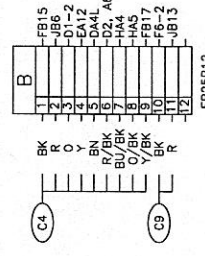
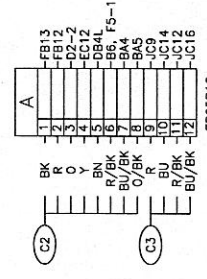
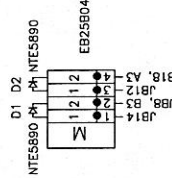
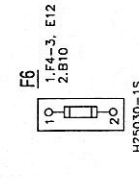
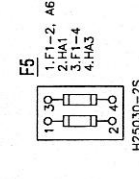
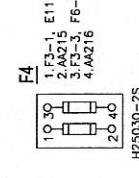
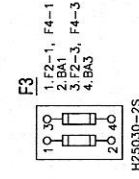
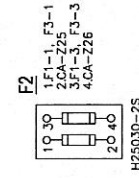
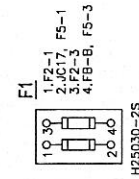
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DWG. NO. 4249-W1A	DES. NO. 4249-W1A	PROJ. ENGR. EAP	DEVELOPED BY JAS	WIRE TYPE AND SIZES: ALL WIRING #14 SIS EXCEPT AS NOTED *CURRENTS #12 SIS	WIRE MANAGEMENT:
REV 0	SHEET: 1 OF 2	DATE 03/21/07	DRWN BY JAS	WIRE COUNT: 09-15-10 LUGS: 03-14-10 LUGS: AMP	WIRE BY: CONTINUED TEST BY: INSPECTED BY:

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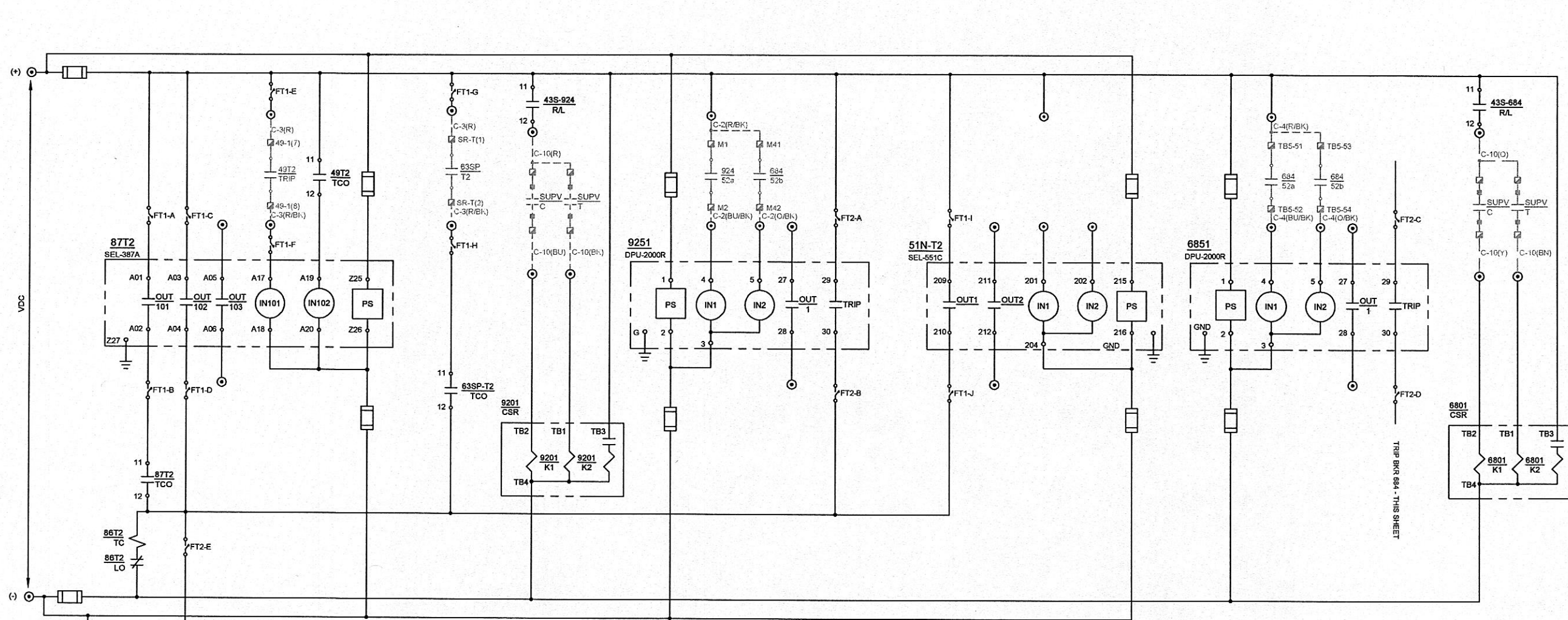
					DESIGNED RNJ	CONFORMED TO CONSTRUCTION RECORDS	 R.W. Beck 131 Saundersville Rd., Suite 300 Hendersonville, TN 37075 (615) 431-3200 An SAIC Company	HARRIMAN UTILITY BOARD HARRIMAN PRIMARY SUBSTATION BUS DIFFERENTIAL RELAY SCHEME	PROJECT NUMBER: 07-70014-01317-1000
					DRAWN RAW				SHEET OF: 1 1
									DRAWING NUMBER: 01317-104. 1
1	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.					
0	11-09-09	KA	RNJ	ISSUED FOR CONSTRUCTION.					
REV	DATE	CHKD	APPD	REVISION DESCRIPTION					

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KEYSTONE ELECTRICAL MANUFACTURING CO. HARRIMAN UTILITY BOARD HARRIMAN, TN		WIRING DIAGRAM RELAY PANEL 3F HARRIMAN PRIMARY SUBSTATION		DESIGNED BY: JAS CHECKED BY: JAS DATE: 09/21/07		APPROVED BY: JAS DATE: 09/21/07		TESTING: WIRE TYPE AND SIZES: ALL WIRING #14 SIS EXCEPT AS NOTED CURRENTS #12 SIS		WIRE MANAGEMENT: WIRE MARKERS: DESTINATION CONTINUITY TEST BY: INSPECTED BY:	
DWG NO. 4249-W1B	REV 0	PROJ ENGR EAP	DEVELOPED BY JAS	CHK BY JAS	PT TO PT BY TN	ISSUE DATE 09/21/07	DATE 09/21/07	WIRE COUNT: 09-15-10 03-04-10	WIRE COUNT: 09-15-10 03-04-10	WIRE COUNT: 09-15-10 03-04-10	WIRE COUNT: 09-15-10 03-04-10

walesra Oct 04, 2010 - 8:34am - G:\01053007-70014-01317 HARRIMAN UB-PRIMARY\Work Products\CTCR01164-101.dwg



LEGEND

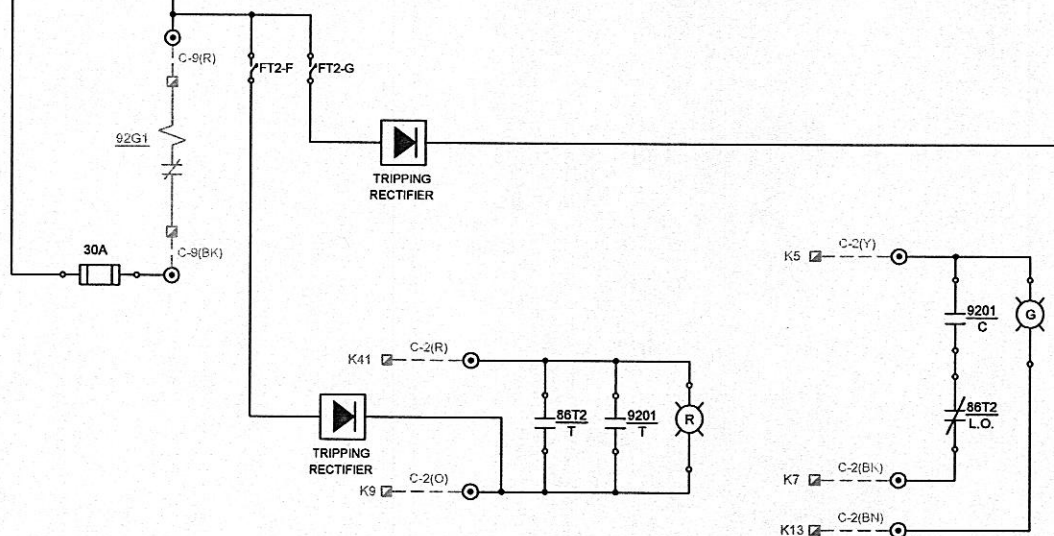
● RELAY PANEL TERMINAL BLOCK

— INTERCONNECTIONS BETWEEN RELAY PANELS AND FIELD EQUIPMENT

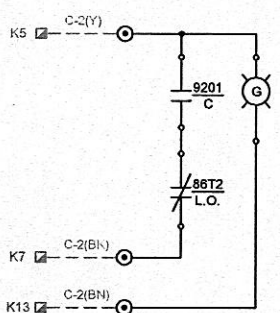
— RELAY PANEL WIRING

■ FIELD DEVICE TERMINAL BLOCK

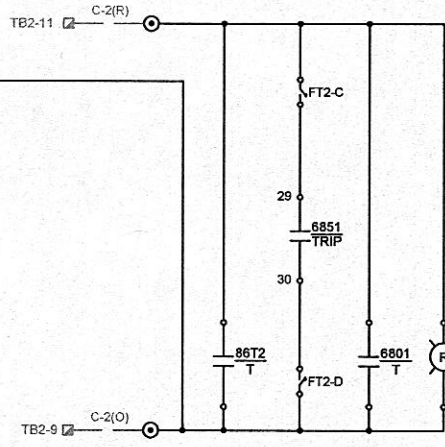
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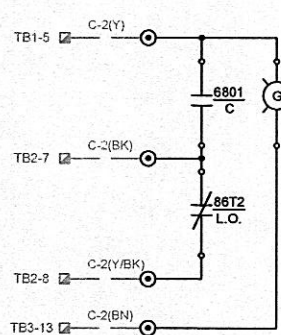
BREAKER 924
REMOTE TRIP CIRCUIT



BREAKER 924
REMOTE CLOSE CIRCUIT



BREAKER 684
REMOTE TRIP CIRCUIT



BREAKER 684
REMOTE CLOSE CIRCUIT

REV	DATE	CHKD	APPD	REVISION DESCRIPTION
2	09-15-10			CONFORMED TO CONSTRUCTION RECORDS FOR PHASE II.
1	8/30/2007			ISSUED FOR CONSTRUCTION

DESIGNED
DRAWN

**CONFORMED TO
CONSTRUCTION
RECORDS**



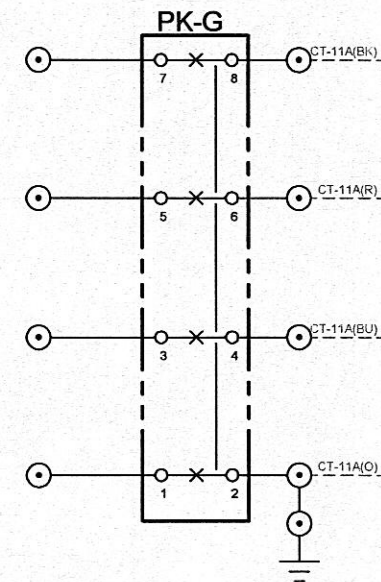
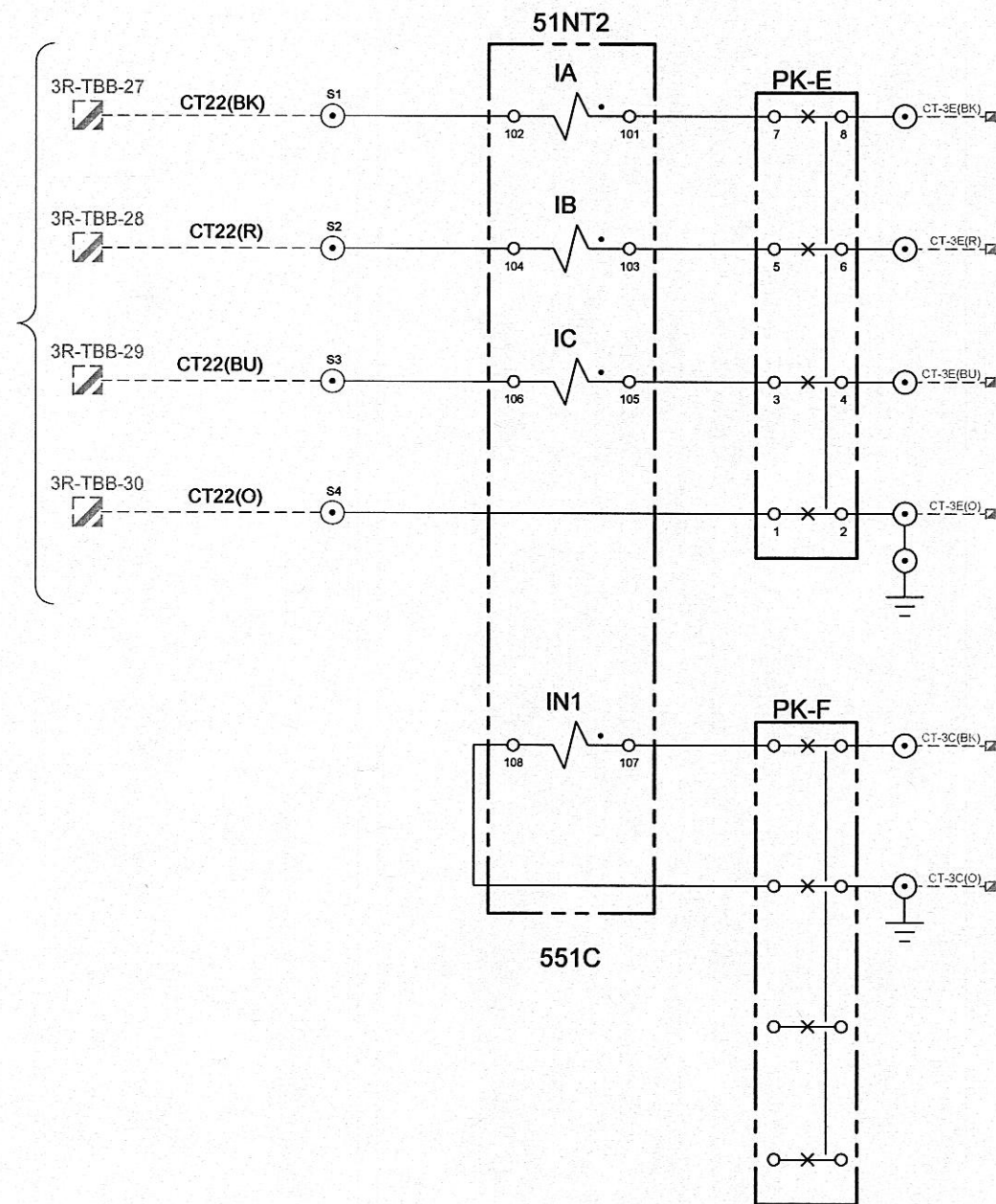
R.W. Beck, Inc.
400 Professional Park Dr.
Goodlettsville, TN 37072-2100
(615) 859-3900

HARRIMAN UTILITY BOARD
HARRIMAN PRIMARY SUBSTATION
BREAKER CONTROL SCHEME

PROJECT NUMBER: 07-70014-01164-1000
SHEET OF: 1 1
DRAWING NUMBER: 01164-101.2

walesra Oct 04, 2010 - 11:12am - G:\010530\07-70014-01317 HARRIMAN UB-PRIMARY\Work Products\CTCR01164-104.dwg

TO TVA



LEGEND

- RELAY PANEL TERMINAL BLOCK
- INTERCONNECTIONS BETWEEN RELAY PANELS AND FIELD EQUIPMENT
- RELAY PANEL WIRING
- FIELD DEVICE TERMINAL BLOCK

REV	DATE	CHKD	APPD	REVISION DESCRIPTION
2	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.
1	2/25/10			REVISED FOR PHASE II
0	8/30/2007			ISSUED FOR CONSTRUCTION

DESIGNED
DRAWN

CONFORMED TO
CONSTRUCTION
RECORDS

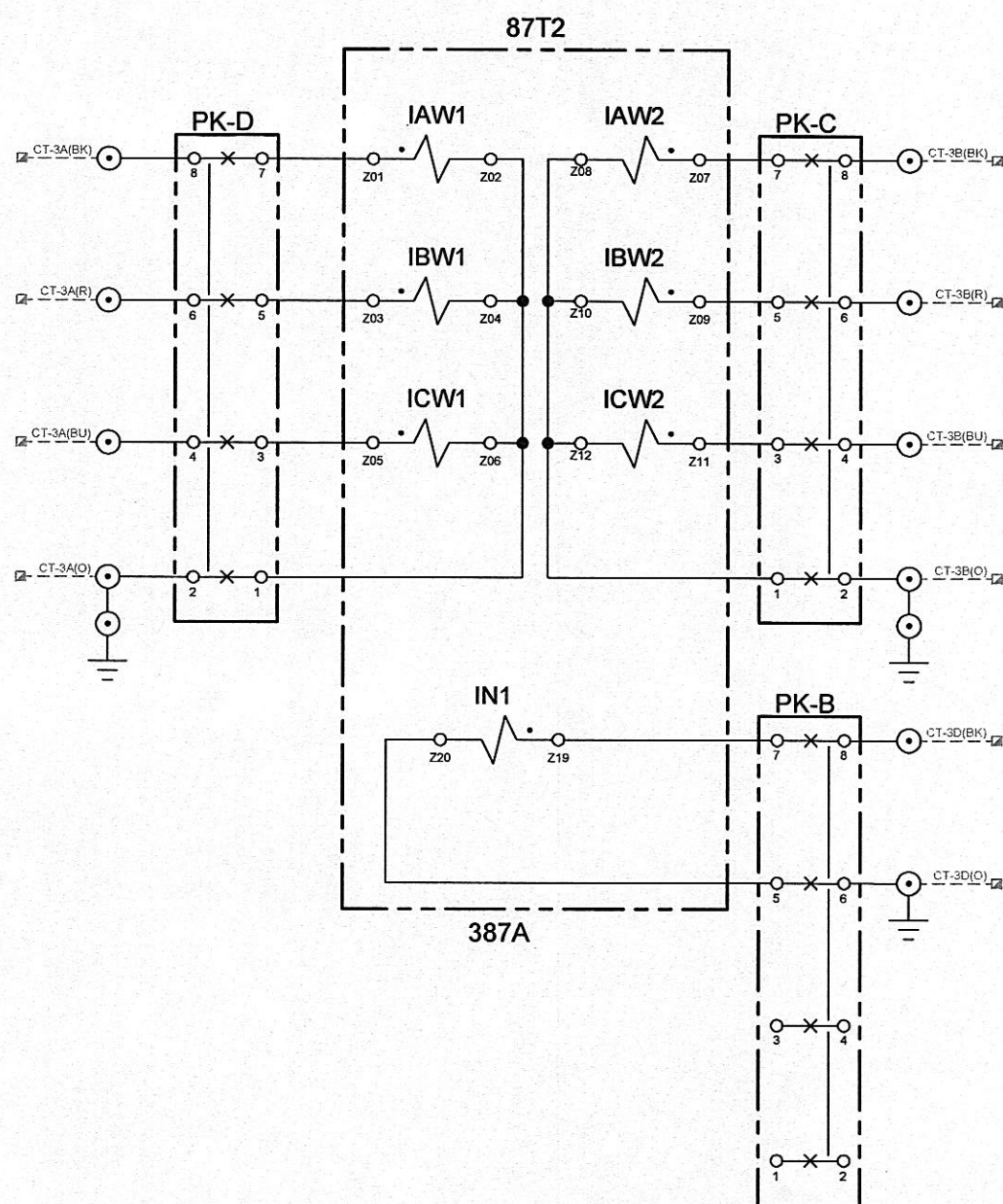
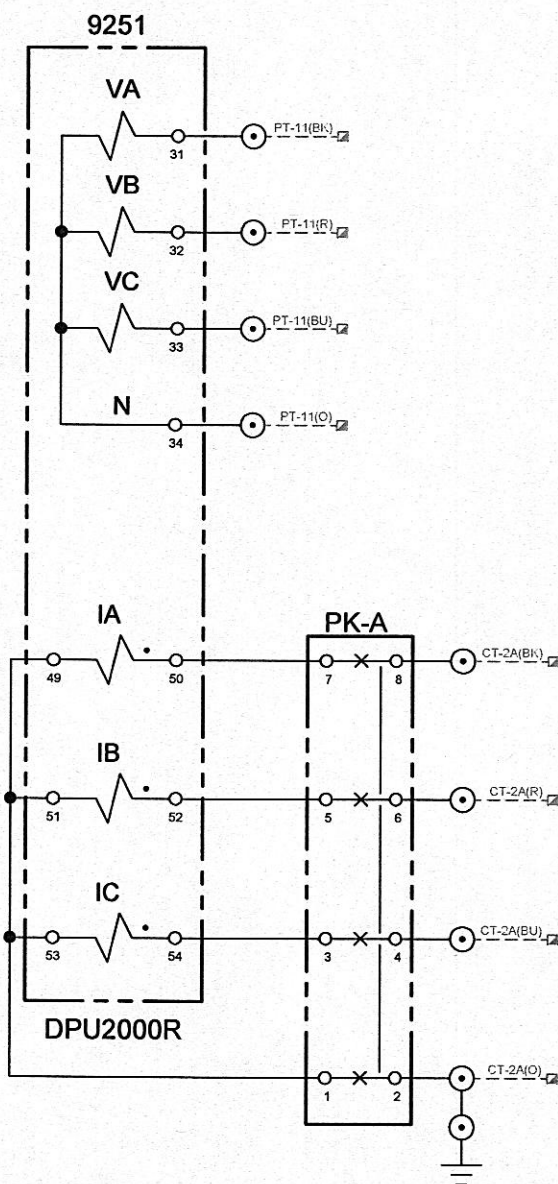
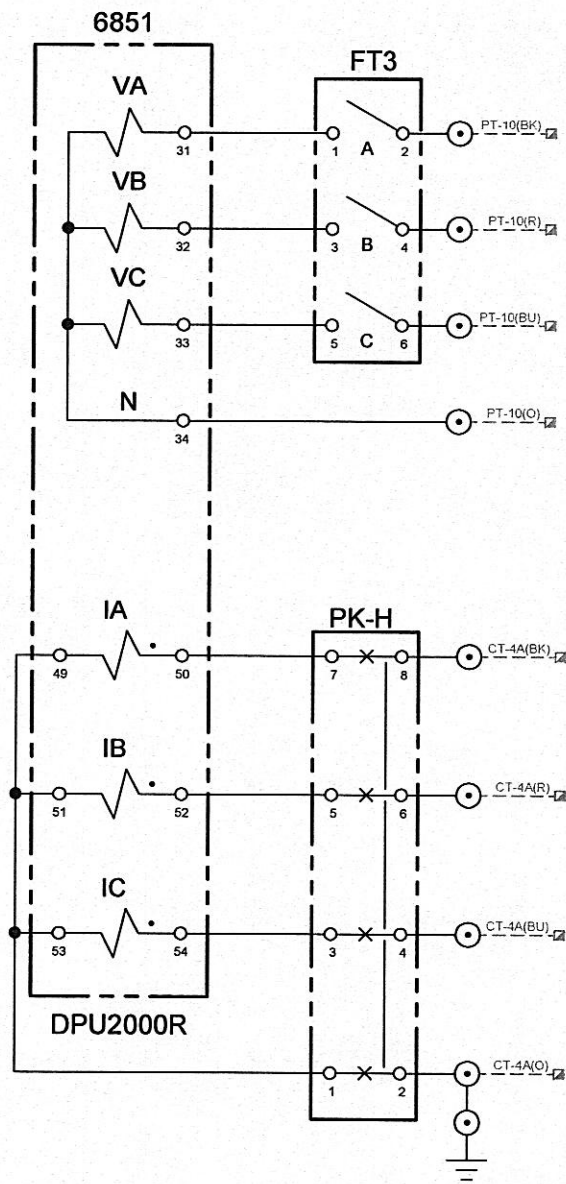


R.W. Beck, Inc.
400 Professional Park Dr.
Goodlettsville, TN 37072-2100
(615) 859-3900

HARRIMAN UTILITY BOARD
HARRIMAN PRIMARY SUBSTATION
CURRENT ELEMENTARIES

PROJECT NUMBER:	07-70014-01164-1000
SHEET OF:	2 2
DRAWING NUMBER:	01164-104.2

walesra Oct 04, 2010 - 11:12am - G:\010530\07-70014-01317 HARRIMAN UB-PRIMARY\Work Products\CTCR01164-103.dwg



- LEGEND
- RELAY PANEL TERMINAL BLOCK
 - INTERCONNECTIONS BETWEEN RELAY PANELS AND FIELD EQUIPMENT
 - RELAY PANEL WIRING
 - FIELD DEVICE TERMINAL BLOCK

REV	DATE	CHKD	APPD	REVISION DESCRIPTION
1	09-15-10			CONFORMED TO CONSTRUCTION RECORDS FOR PHASE II.
0	8/30/2007			ISSUED FOR CONSTRUCTION

DESIGNED
DRAWN

CONFORMED TO
CONSTRUCTION
RECORDS

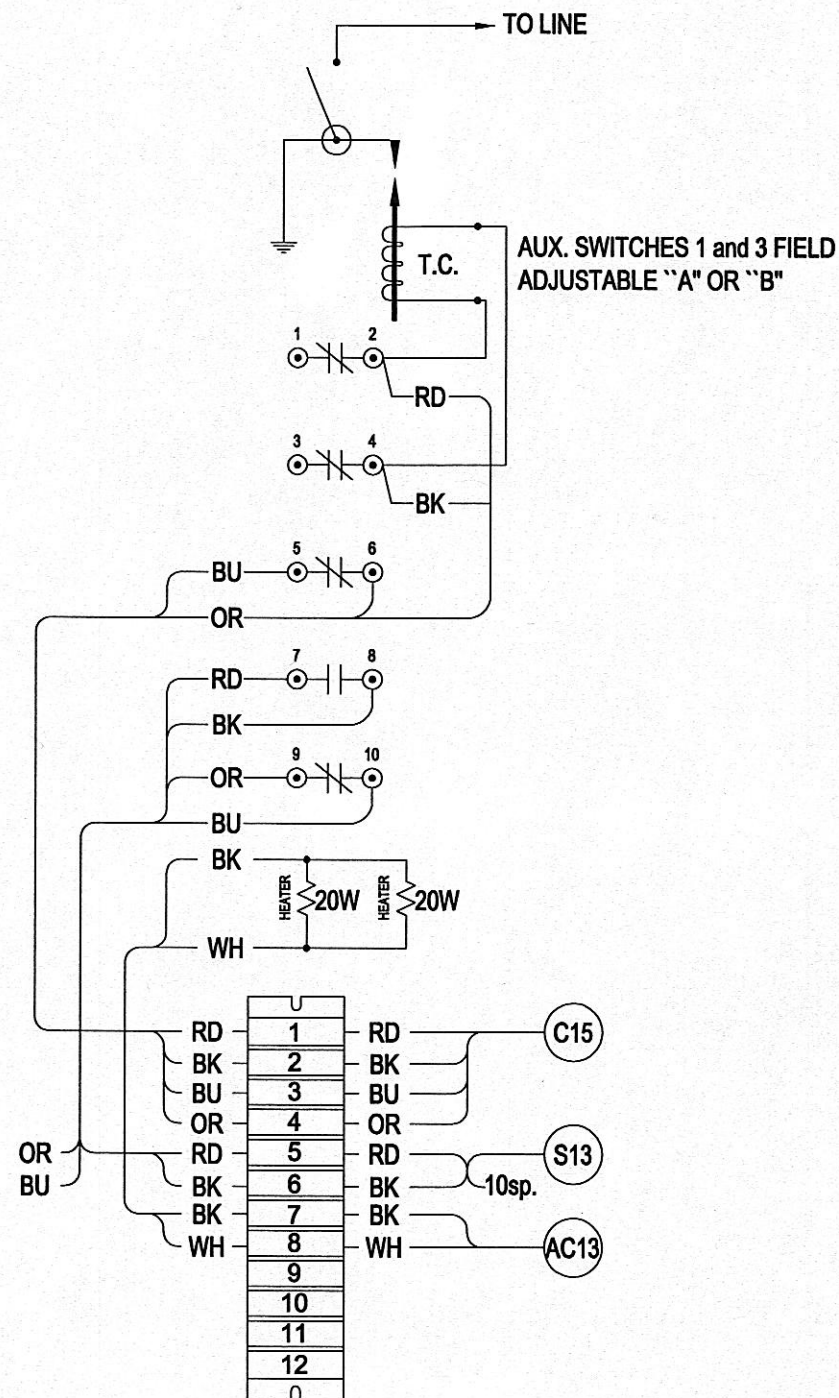


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HARRIMAN UTILITY BOARD
HARRIMAN PRIMARY SUBSTATION
CURRENT ELEMENTARIES

PROJECT NUMBER: 07-70014-01164-1000
SHEET OF: 1 2
DRAWING NUMBER: 01164-103.1

PLOT: 9/30/2010 WALESA - SAVED: 9/30/2010 WALESA - 09:53 - G:\01\0530\07-70014-01317 HARRIMAN UB-PRIMARY\WORK PRODUCTS\CTCR\01317-802.DWG - MODEL



REV	DATE	CHK'D	APP'D	REVISION DESCRIPTION
2	09-15-10			CONFORMED TO CONSTRUCTION RECORDS.
1	03-04-10			ISSUED FOR CONSTRUCTION.
0				

DESIGNED	RNJ
DRAWN	RW

**CONFORMED TO
CONSTRUCTION
RECORDS**



R.W. Beck
131 Saundersville Rd., Suite 300
Hendersonville, TN 37075
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HARRIMAN UTILITY BOARD
HARRIMAN PRIMARY SUBSTATION
GROUND SWITCH 91G1
CONNECTION DIAGRAM

PROJECT NUMBER:	07-70014-01317-1000
SHEET OF:	1 1
DRAWING NUMBER:	01317-802. 2