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Technician U Date Processed SEP 11 2009

**Detailed Estimate for Grade Crossing Warning Devices**

City/State: CLEVELAND, OH
MilePost: RD-112.98
State Proj. No.:
S&E Proj. No.: 10.1103
Man Days: 180

Road: MCCracken RO
DOT/AAR: 524232N
County: CUYAHOGA
AFE: F11113
File Number: 061-10.899

Purchases - Others	
Meals and Lodging:	\$24,192.00
Rental of Equipment:	\$42,840.00
(2 Trucks, 1 Backhoe w/ Trailer	
Construction Supervision Vehicle:	\$14,953.68
Purchases - Other Total:	\$81,985.68
Material And Additives	
Material Cost:	\$138,432.00
Sales and Use Tax:	\$0.00
Material Handling Freight:	\$6,921.62
Material Total:	\$145,353.62
Labor And Additives	
Labor Cost:	\$50,400.00
(4 man crew at \$1,120.00 a day for: 45 days)	
Payroll Tax & Overheads:	\$66,951.36
Preliminary Engineering:	\$25,000.00
Construction Supervision:	\$28,234.08
Labor Total:	\$170,585.44
Project Cost:	\$397,924.74
Scrap / Salvage Credit:	\$0.00
Project Total:	\$397,924.74

Estimated on: 02-Sep-09

Estimated by: ndr3j

Estimate valid for 1 year from date of estimate



Norfolk Southern Railway

Highway Crossing Signalization Program - Material List

Do not substitute items without permission from S & E Engineering

City:	CLEVELAND
Road:	MCCRACKEN ROAD
Mill Post:	RD-112.98
Drawing Number:	35121129
State Project Number:	
County:	CUYAHOGA
A A R Number:	524232N
Project Number:	10.1103
File Number:	061-10.899
New File Number:	CX0116825
A F E Number:	F11113
Store Number:	08388
Supervisor:	D.P. MCINTYRE
Tax Code:	3500
Vendor to supply the following copies after pricing: 1 Set - Material Management with original Invoice 2 Sets - with plans shipped in car with material 1 Set - S&E Gen. Supt. Construction w/copy of invoice	

Location: CLEVELAND
Store No.: 08388

OH S&E Proj. No.: 10.1103 AFE No.: F11113 Drawing No.: 35121129
P.O. Number: Date Required: Date Shipped: Vendor: Safetran Systems Corp.

Qty.	Class-Item-CD	UI	Price per Item	Total Price	Item Description	Quantity Shipped	Quantity Date	Quantity Installed Date	Quantity Returned Date	Special Instructions
3	670-360693-4	EA	\$5.50	\$16.50	AAR/DOT NUMBER PLATE/DECAL, ORDER 3 PER PROJECT. 60 DAY LEAD TIME. SUPPLIED BY STRAN.					
1	165-006605-4	EA	\$1,051.54	\$1,051.54	AC SERVICE, COMPLETE LESS METER BASE, ASSEMBLED ON 30' POLE					
23	670-119241-4	EA	\$33.59	\$772.57	ARRESTOR, LIGHTNING HEAVY DUTY CLEAR VIEW SAFETRAN 022585-1X					
13	105-871901-4	EA	\$170.17	\$2,212.21	BATTERY, GNB 265AH MODEL 50A11 SINGLE CELL 2.25 VOLTS					
2	670-980689-4	EA	\$76.10	\$152.20	BRACKET HIGH WIND, (RIGID 3), W/G-191036, WALRUS TUSK TYPE					
2	670-561375-4	EA	\$1,197.90	\$2,395.80	BRACKET, GATE SAVER, NEG385102GS, SPRING LOADED SWING AWAY ADAPTER FOR FIBERGLASS/ALUMINUM GATES, USE WITH GATE 38 AND LESS					
1	670-356949-4	EA	\$61.67	\$61.67	CABLE, 10' GENERATOR HOOK UP, SERRMI P/N 40524, FEMALE CONNECTOR					
700	465-939422-4	LF	\$2.28	\$3,876.00	CABLE, UG 12 CONDUCTOR NO 14 AWG SOLID EACH CONDUCTOR WITH 5/64 IN INSULATION 10 MIL					
100	465-292862-4	LF	\$0.98	\$1,078.00	CABLE, UG 2-6 TWISTED, S-23 OKONITE 113-12-3933 SOLID TINNED CONDUCTOR					
000	465-292929-4	LF	\$2.94	\$2,940.00	CABLE, UG 5 COND. NO. 6 AWG SOLID COPPER CABLE TO MEET NS CORP. SPEC. FOR SIGNAL					
000	465-292945-4	LF	\$1.22	\$1,220.00	CABLE, UG 5-14, S-54 OKONITE 206-14-6885					
300	465-791835-4	FT	\$2.63	\$789.00	CABLE, UG AC ENTRANCE 3C#6-7X OKONITE FMPF-L 094-078 TR W/G 1 X 8 7X W010 BRZ TAPE 600V PRODUCT CODE 206-11-6070					
1	670-563176-4	EA	\$2,364.32	\$2,364.32	CANTILEVER, W/T/F ARM 12' W/WALKWAY KIT SAFTTRAN #071294-12NS1					
1	670-007189-4	EA	\$157.53	\$157.53	CHOKE, BATTERY SAFETRAN NO. 62648					
40	165-544477-4	FT	\$3.41	\$477.40	CONDUIT, 4"x10" PVC, SCHEDULE 80 BELL CONNECTOR AT ONE END, 1/2 PT. GLUE IN KIT 670-123298-4					
4	670-090450-4	EA	\$86.46	\$345.84	CONNECTOR, WELDED FAR RAIL HARMON A1000-2W					
4	670-486646-4	EA	\$73.92	\$295.68	CONNECTOR, WELDED NEAR RAIL HARMON A1000-1W					

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CAR NUMBER

SEAL NUMBER

Location: CLEVELAND
Store No.: 08398

OH S&E Proj. No.: 10.1103 AFE No.: F11113 Drawing No.: 35121129
P.O. Number: Date Required: Date Shipped: Vendor: Safetran Systems Corp.

Qty.	Class-Item-CD	UI	Price per Item	Total Price	Item Description	Quantity Shipped	Quantity Date Quan.	Quantity Installed Date Quan.	Quantity Returned Date (Credit)	Special Instructions
1	670-005026-4	EA	\$510.40	\$510.40	CONVERTER/DRIVER, SINGLE UNIT DC EPC MODEL 2TC DC, 2 OUTPUTS FOR TRACK CIRCUITS UP TO 1000 FT.					
2	670-793404-4	EA	\$1,189.32	\$2,378.64	COUNTERWEIGHT PKAGE, 17-24 GATE STRAN S- MECH ONLY, STAINLESS, TO INCLUDE HUB, SUPPORT ARMS					
8	670-760012-4	EA	\$40.02	\$320.16	COVER, FOR 1 WAY FLASHING LIGHT ASSY. 18 OZ. BLACK VINYL COATED NYLON. ===TO COVER 2 LAMPS===					
1	670-986650-4	EA	\$348.44	\$348.44	DISPOSAL, CONSTRUCTION DEBRIS AND CLEANING X'ING EQUIPMENT CONTAINER					
6	670-228165-4	EA	\$12.69	\$76.14	EQUALIZER, SAFETRAN 022700-1X LESS BASE, MODERN NO. 700-1 SHUNT ARRESTER TRACK CIRCUITS CR 02-197960					
1	670-000004-4	EA	\$700.00	\$700.00	FCC LICENSE FOR MONITOR/RADIO					
6	670-000003-4	EA	\$255.85	\$1,535.10	FILL/STONE #57, QUANTITY IS BASED ON TRUCK LOAD PLUS DELIVERY COST					
1	670-744631-4	EA	\$3,134.67	\$3,134.67	FOUNDATION, CFLS FOR SAFETRAN MODEL "WTF" ARMS 12' TO 30' SINGLE MAST, DIXIE# S-10-3WS-C, 5'10" CR 02-205902					
3	670-015231-4	EA	\$577.50	\$1,732.50	FOUNDATION, DIXIE,S-2 GATE 26"X26"X56" ASSEMBLED					
2	670-257031-4	EA	\$339.19	\$678.38	GATE, ARM FIBERGLASS ALUMINUM 17-24 FT., INCLUDES GATE GUARD FOR GATE LIGHT CABLE, NEG P/N 8002-244NFS/CG					
1	670-973409-4	EA	\$36,649.65	\$36,649.65	GCP 4000 2 TRK. REDUNDANT, (2TRK CHASSIS), WIRED RACK FOR 6X6 FARADAY, 2 EA SSCIII, 1 EA 20 AMP & 1 EA 40 AMP CRAIG CHARGER, WITH SEAR III, 2 RELAY RACKS, SAFETRAN T18811					
1	670-718743-4	EA	\$45.52	\$45.52	INDUCTOR, SIMULATED TRACK SAFETRAN 8V617-1000					
1	670-001853-4	EA	\$44.23	\$44.23	INDUCTOR, SIMULATED TRACK SAFETRAN 8V617-2800					
1	670-477991-4	EA	\$317.90	\$317.90	KIT, GROUNDING ASSY FOR ALI/S INCLUDES 8 GRD RDS,200#4WIRE,12.4 WIRE ONE-SHOTS, ERICO SBR206					
2	670-123298-4	EA	\$287.93	\$575.86	KIT, HARDWARE SUPPLIES REQUIRED X'ING PACKAGES, WEB CONNECTORS FOR SHUNT(8EA) TAPE, AMPS,P/GUM PAINT,SLEEVES,TAGS,GLUE, 100 EA WHITE TAGS, JNE CAN BLUE MARKING PAINT ETC...					

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Location: CLEVELAND
Store No.: 08388

OH S&E Proj. No.: 10.1103 AFE No.: F11113 Drawing No.: 35121129
P.O. Number: Date Required: Date Shipped: Vendor: Safetran Systems Corp.

Qty.	Class-Item-CD	UI	Price per Item	Total Price	Item Description	Quantity Shipped	Quantity Date Quan.	Quantity Installed Date Quan.	Quantity Returned Date (Credit)	Special Instructions
1	670-816589-4	EA	\$665.61	\$665.61	LAMP ASSY, 5" MAST MTG, 1W IND, 20" BKGRD, (BACK) LTS, FLX-12W/BULB STRAN # 042003-001493					
2	670-764166-4	EA	\$1,224.75	\$2,449.50	LAMP ASSY, 5" MAST MTG, 2W IND, 20" BKGRD, FLX-12 W/BULB STRAN #042003-487XNS					
1	670-167654-4	EA	\$665.26	\$665.26	LAMP ASSY, FLX 12" LIGHT UNIT, USE WITH W & WT/F MAST, 1W (FRONT) INDICATION FOR WT/F CANTILEVER MAIN MAST, SAF-TRAN P/N 042003-489XNS					
6	165-643547-4	EA	\$5.69	\$34.14	LAMP, 18 WATT 10 VOLT S-11 SC BAY 18S11/1SC CLEAR RWY SIGNAL UJ71463 GE					
7	255-590880-4	EA	\$17.08	\$119.56	LOCK, AMERICAN LOCK MODEL H-10KA KEYED ALIKE TO PRIVATE KEYWAY D456 AND STAMPED "NS SIG"					
1	670-179911-4	EA	\$4,205.08	\$4,205.08	MAST, WT/F ARMS, 12 W/LADDER KIT FOR 12-20' WT/F ARMS, PN 071271-20NS					
2	670-850933-4	EA	\$3,540.11	\$7,080.22	MECHANISM, GATE MODEL S-60, WITH DEFROSTER AND MINI TRACKSIDE SENSOR STRAN # 0740007-X002B3					
5	670-000001-4	EA	\$726.23	\$3,631.15	MISC. MATERIAL/FILL					
1	000-000000-4	EA	\$5,000.00	\$5,000.00	MISC. UNDERGROUND BORING					
3	670-014233-4	EA	\$815.26	\$2,445.78	MODULE, DAX FOR 3000 GCP SAFETRAN #80016					
3	670-748403-4	EA	\$429.82	\$1,289.46	MODULE, INTERFACE ASSEMBLY FOR 3000GCP SAFETRAN# 80020					
3	670-014225-4	EA	\$1,513.75	\$4,541.25	MODULE, PROCESSOR FOR 3000 GCP SAFETRAN #80214					
3	670-014217-4	EA	\$1,174.57	\$3,523.71	MODULE, RELAY DRIVE FOR 3000 GCP SAFETRAN #80013					
6	670-014209-4	EA	\$1,658.98	\$9,953.88	MODULE, TRANSCEIVER FOR 3000 GCP SAFETRAN #80012					
1	670-317208-4	EA	\$394.73	\$394.73	MODULE, TRANSFER FOR 3000GCP SAFETRAN# 80028					
2	670-001355-4	EA	\$64.77	\$129.54	PACKAGE, HARDWARE SIGN 12 IN. (USE WITH WT/F MAST) MOUNTING, SERIMI A1250-8, HARMON @ 180004/0007,					

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Qty.	Class-Item-CD	UI	Price per Item	Total Price	Item Description	Quantity Shipped	Quantity Date Quon.	Quantity Installed Date Quon.	Quantity Returned (Credit)	Special Instructions
4	670-001347-4	EA	\$47.93	\$191.72	PACKAGE, HARDWARE SIGN 5 IN. MOUNTING, SERMMI A1250-5, HARMON @200965-000, OR					
1	255-646807-4	EA	\$17.09	\$17.09	PADLOCK, SAFETRAN PART NO. 030399-29X SCREW TYPE FOR CIR CONTROLLER AND BTY. BOX					
2	670-514605-4	EA	\$10.30	\$20.60	PINNACLE, W-C SECT 1-11, 4"X 5" REF K1 110-8 OR SAFETRAN NO. @035045-503X					
5	670-259211-4	EA	\$49.49	\$247.45	PLUG BOARD KIT, TYPE B-1 & VOLTAGE TEST TERMINAL, SAFETRAN 420000-75X					
2	165-103293-4	EA	\$75.41	\$150.82	PROTECTOR, LIGHTNING & SURGE LPC 10560-51, 3 ELECTRODE WITH SPADE TERMINAL					
1	165-902002-4	EA	\$308.00	\$308.00	PROTECTOR, SURGE 120/240VAC, ERICO P/N EPD120240TDFL					
6	465-002899-4	EA	\$36.06	\$216.36	REEL, CABLE DISPOSABLE FOR CROSSING SIGNAL PACKAGES					
5	670-742096-4	EA	\$43.30	\$216.50	RELAY INTERFACE PROBE, ULTRATECH PN 16031-00					
4	670-707945-4	EA	\$440.10	\$1,760.40	RELAY, 02-411583 PLUG IN TYPE, NEUTRAL, ORD. B-1 500 OHMS					
1	670-148385-4	EA	\$684.08	\$684.08	RELAY, B-1, 0.5 OHM SAFETRAN 400515-11X BIASED NEUTRAL HIGH RELEASE OR GRS A62-633					
6	670-790627-4	EA	\$24.87	\$149.22	RESISTOR ADJUSTABLE 0.63 OHM MINIMUM RESIST 0.068-OHM, ITEM 248 S-500 SAFETRAN P/N 029602-1X					
1	180-000029-4	EA	\$26.29	\$26.29	RESISTOR UNIT, 2W ADJUSTABLE SAFETRAN NO. 029602-8X FOR TRACK CIRCUITS CR 02-425807					
2	435-805560-4	EA	\$6.25	\$12.50	SAND, 25LB BAG FOR CABLE ENTRANCE INTO THE SHELTER					
1	670-027556-4	EA	\$2,659.94	\$2,659.94	SEARIII, ACCESSORY PACKAGE, W/2-ILOD, 1-E-BELL, 2-GTS, 1-GFT, 1-VHFC, WITHOUT MTSS/SEAR UNIT					
1	000-000068-4	EA	\$9,905.00	\$9,905.00	SHELTER BARE 6X8, ***NONSTANDARD** ALUMN, FARADAY, W/CABLE CHUTES BEHIND TERMINAL BOARD, W/GEN. CONN. W/ADJUSTABLE PIERS, SAFETRAN P/N 058400-68-8					
2	670-586967-4	EA	\$42.98	\$85.96	SHUNT COVER W/LAG SCREWS, 19"X19", SERMMI #40271, ORDER 1 PER SHUNT					
2	670-652773-4	EA	\$466.63	\$933.26	SHUNT, MULTI-FREQ. #62775-1543 SAFETRAN NARROW BAND					

APPROVED BY STATE _____ APPROVED BY RAILROAD _____ CAR NUMBER _____ SEAL NUMBER _____

Qty.	Class-Item-CD	UI	Price per Item	Total Price	Item Description	Quantity Shipped	Quantity Date	Quantity Date	Quantity Date	Quantity Returned (Credit)	Special Instructions
4	670-363348-4	EA	\$375.00	\$1,500.00	SHUNT, NARROW BAND - SAFETRAN 62770-211 (FOR CAB SIGNAL TERRITORY)						
1	670-397239-4	EA	\$40.23	\$40.23	SIGN CROSSING MALFUNCTION ASSEMBLY FOR 12" MAST, SAFETRAN #117216						
2	670-393331-4	EA	\$37.43	\$74.86	SIGN CROSSING MALFUNCTION ASSEMBLY FOR 4" AND 5" MAST, SAFETRAN #117215						
3	670-806648-4	EA	\$68.73	\$206.19	SIGN, X-BUCK, LESS HARDWARE, SAFETRAN 035200-X CR 02-490546						
3	670-353390-4	EA	\$38.50	\$115.50	SIGN, "2 TRACKS" LESS HARDWARE SAFETRAN 035207-2X						
2	670-330382-4	RL	\$15.68	\$31.36	TAPE, THOR 3" DURATEC, ORANGE 1000' LENGTHS. "WARNING STOP DIGGING"						
42	670-478660-4	EA	\$21.52	\$903.84	TERMINAL BLOCK, ERICO 4 POST P/N B2700A2C1WH W/HARDWARE LESS LIGHTNING ARRESTOR						
5	610-065626-4	EA	\$18.18	\$90.90	ULTRA-TECH 15206-01 CONNECTIVITY BLOCK FOR GRS B1 RELAY						
8	670-007238-4	EA	\$119.07	\$952.56	UNIT, THE INSTALLATION AND WIRING OF A DEVICE WHICH REQUIRE A MINIMUM OF FOUR WIRE CONNECT-						
60	165-298417-4	LF	\$3.40	\$204.00	Z-DNO-CONDUIT, STD RIGID STEEL ASA SPEC C 80.1 LATEST REV 1-1/4 IN 10 FT LENGTHS, ORDER IN LINIAR FEET BUT IN 10 FT LENGTHS ONLY.						

Total Material: \$138,432.33

APPROVED BY STATE
 APPROVED BY RAILROAD
 CAR NUMBER
 SEAL NUMBER

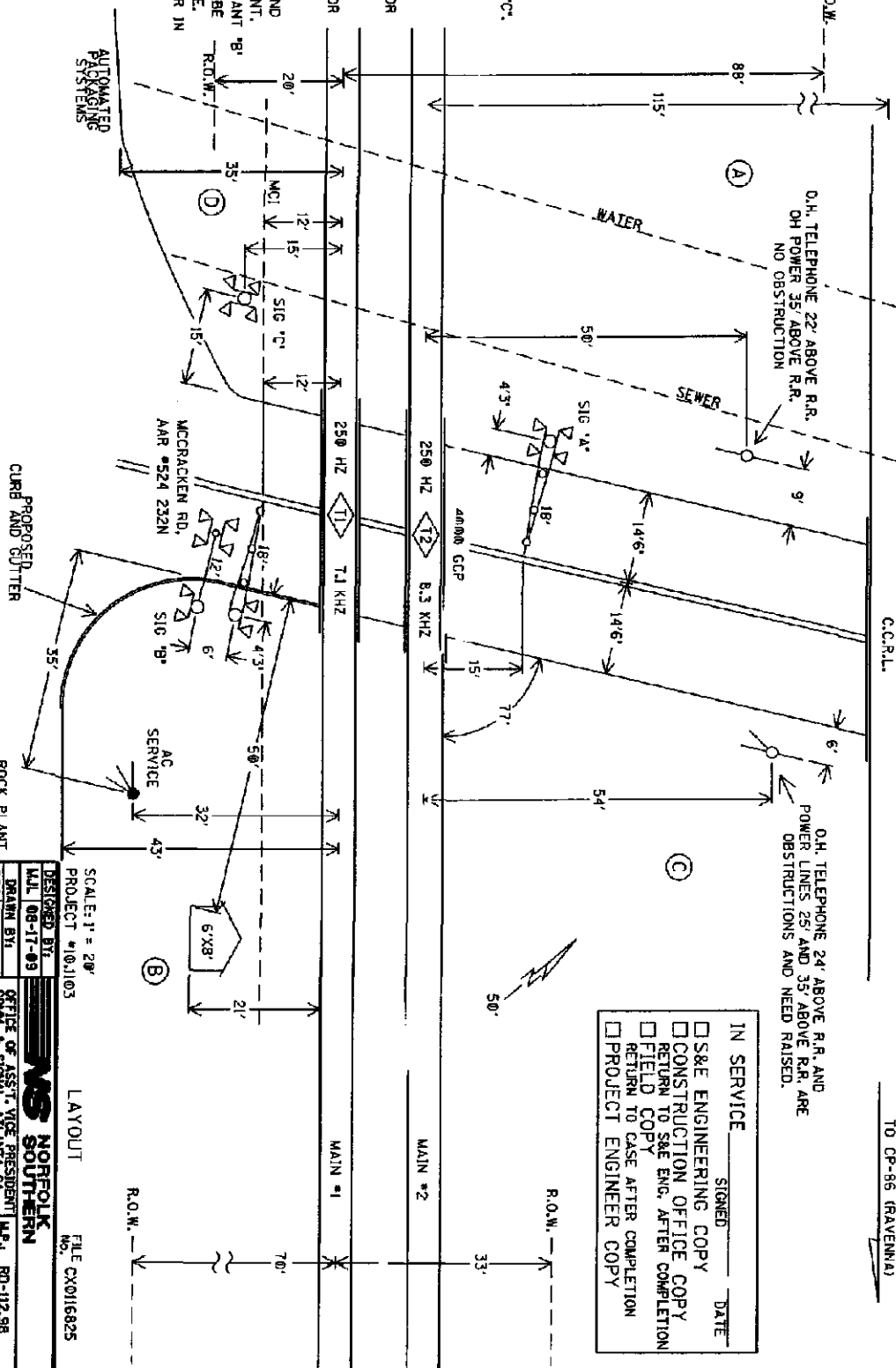
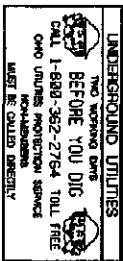
TO DRAINBRIDGE

C.C.R.L.

TO CP-86 (RAVENNA)

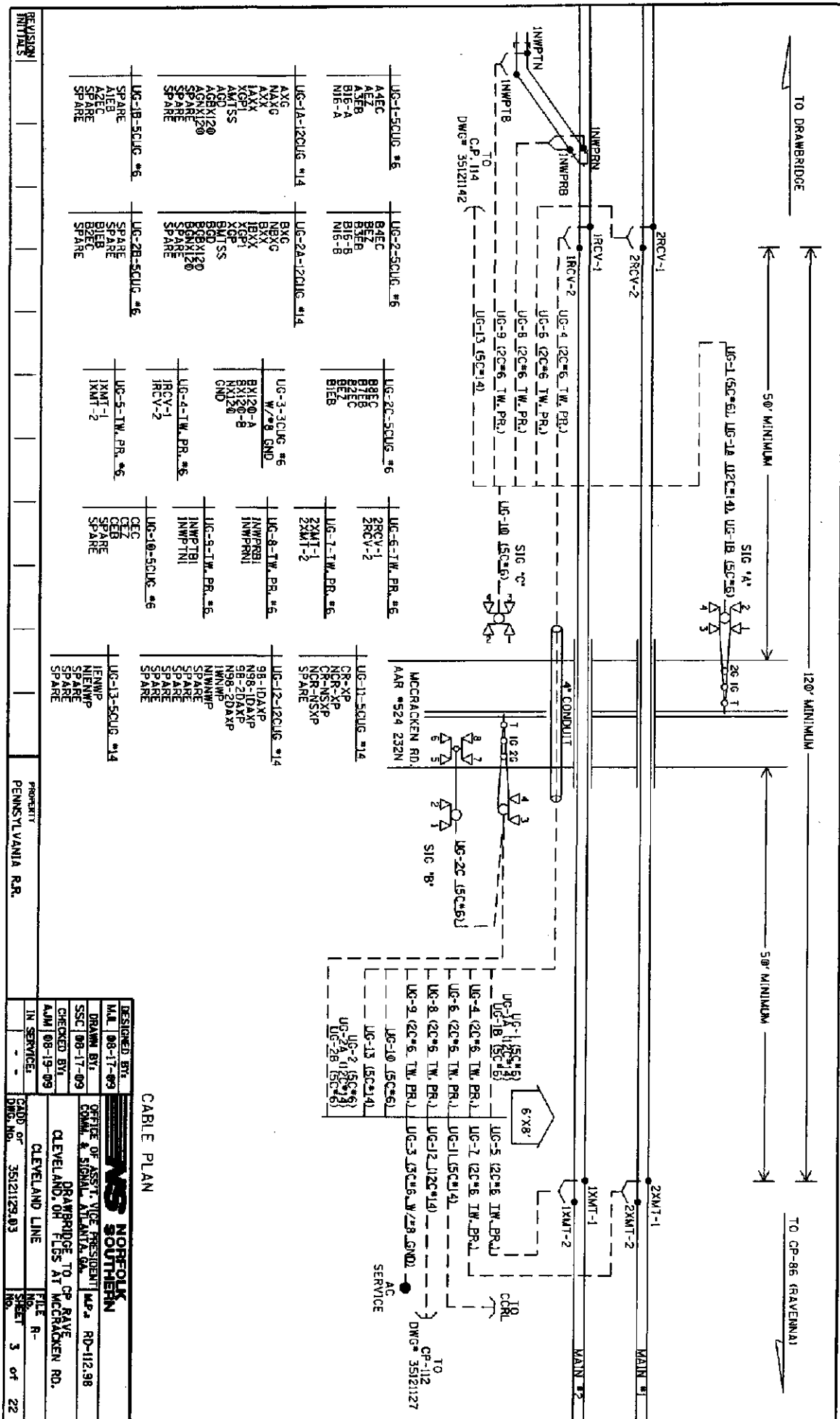
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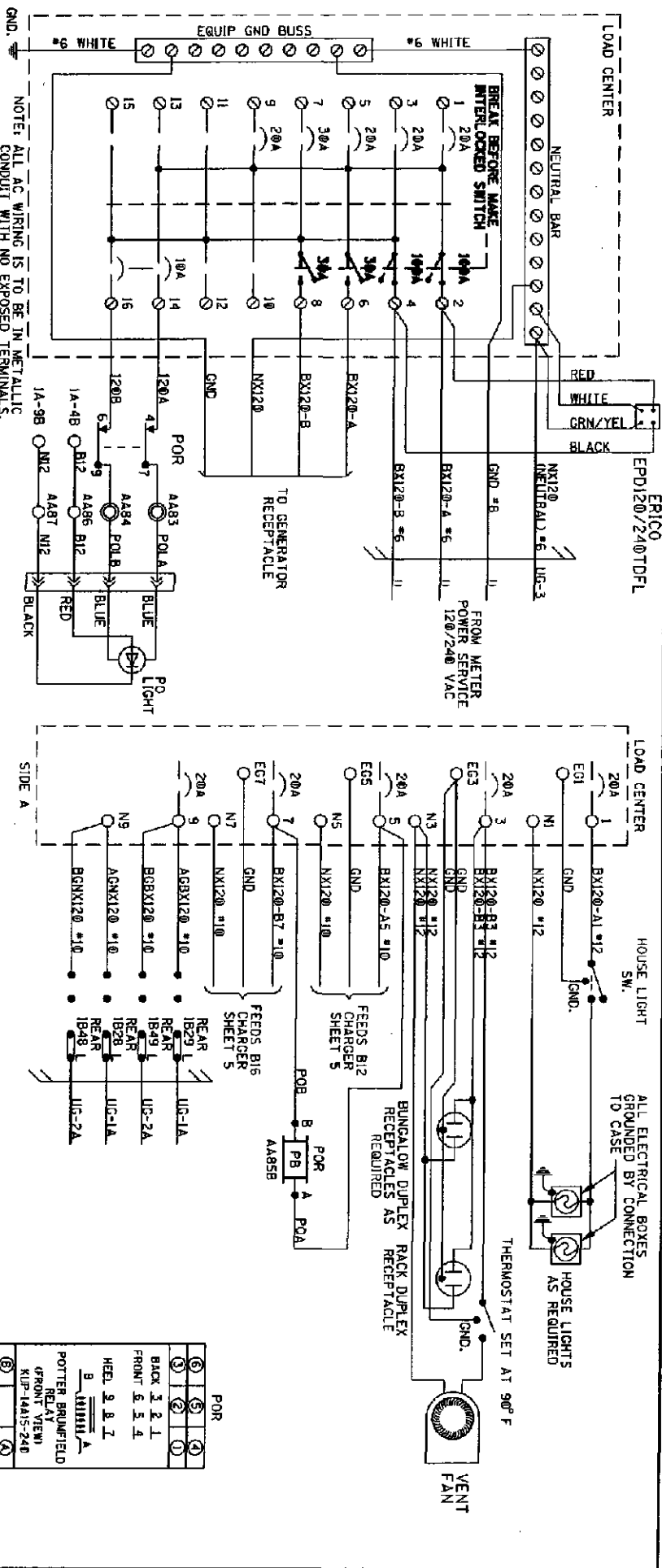
1. MAX. TRAIN SPEED 55 M.P.H.
2. LATITUDE N 41° 25' 25"
3. LONGITUDE W 81° 35' 05"
4. ELEVATION 840'
5. SIGNAL 'B' TO HAVE BELL BEFORE DIGGING.
6. LOCATE U/G UTILITIES & CABLE BEFORE DIGGING.
7. CROSSING LOCATED IN CUYAHOGA COUNTY.
8. NEAREST STREET ADDRESS IS 13555 MCCrackEN RD.
9. NEAREST INTERSECTING STREET IS BROADWAY AVE.
10. DISTANCE TO NEAREST INTERSECTING STREET IS 500 FT.
11. PLACE THE CONTAINER IN QUADRANT 'C'.
12. THE NEW 6'x8' SHELTER IS TO BE PLACED IN QUADRANT 'B' AND WILL REQUIRE APPROX 15 YARDS OF FILL FOR PROPER PLACEMENT.
13. THE SIGNAL IN QUADRANT 'A' WILL REQUIRE 10 CUBIC YARDS OF FILL FOR PROPER PLACEMENT.
14. THE SIGNAL IN QUADRANT 'B' WILL REQUIRE 10 CUBIC YARDS OF FILL FOR PROPER PLACEMENT.
15. THE SIGNAL IN QUADRANT 'C' WILL REQUIRE 10 CUBIC YARDS OF FILL FOR PROPER PLACEMENT.
16. THE SIGNAL IN QUADRANT 'D' WILL REQUIRE 20 CUBIC YARDS OF FILL AND 20' OF 12" CP FOR PROPER PLACEMENT.
17. THE OVERHEAD TELE LINES IN QUADRANT 'B' ARE AN OBSTRUCTION AND NEED TO BE RAISED FOR PROPER GATE CLEARANCE.
18. STATE TO INSTALL CURB AND GUTTER IN QUADRANT 'B'.



IN SERVICE	
SIGNED	DATE
☐ S&E ENGINEERING COPY ☐ CONSTRUCTION OFFICE COPY ☐ RETURN TO S&E ENG. AFTER COMPLETION ☐ FIELD COPY ☐ RETURN TO CASE AFTER COMPLETION ☐ PROJECT ENGINEER COPY	

REVISION INITIALS	PROPERTY PENNSYLVANIA R.R.	DESIGNED BY: M.L. 08-17-03	FILE NO. CX016825
(A) (B) (C) (D) = QUADRANT MARKERS		CHECKED BY: S.S.C. 08-17-03	
		IN SERVICE	
		DATE OF ASST. VICE PRESIDENT: 08-17-03	
		OFFICE OF S&E: 08-17-03	
		FILE NO. 3512123.01	
		FILE NO. 1 of 22	





NOTE: ALL AC WIRING IS TO BE IN METALLIC CONDUIT WITH NO EXPOSED TERMINALS. ALL AC 120V AND 240V EQUIPMENT IS TO BE PROPERLY GROUNDED.

SQUARE "D" PART NUMBERS:

- LOAD CENTER—Q016L25G
- 100A 2P CIR BKR—Q0210
- 20A 1P CIR BKR—Q0120
- 30A 1P CIR BKR—Q0130
- 30A 2P CIR BKR—Q0230
- 100A 2P CIR BKR—Q02100
- MECH INTERLOCK—PK40T1M4LA
- GENERATOR RECEPTACLE:
- MALE CONNECTOR—NEMA 1430-F1

⑥	⑤	④	③	②	①
⑧	⑦	⑥	⑤	④	③
⑨	⑧	⑦	⑥	⑤	④
⑩	⑨	⑧	⑦	⑥	⑤
⑪	⑩	⑨	⑧	⑦	⑥
⑫	⑪	⑩	⑨	⑧	⑦
⑬	⑫	⑪	⑩	⑨	⑧
⑭	⑬	⑫	⑪	⑩	⑨
⑮	⑭	⑬	⑫	⑪	⑩
⑯	⑮	⑭	⑬	⑫	⑪
⑰	⑰	⑰	⑰	⑰	⑰

LOAD CENTER WIRING

DESIGNED BY:	DATE:	PROJECT:
SSC 06-17-09	06-17-09	PENNSYLVANIA R.R.
CHECKED BY:	DATE:	PROPERTY:
ALM 06-19-09	06-19-09	PENNSYLVANIA R.R.
IN SERVICE:	DATE:	PROPERTY:

NOTED BY:

DATE:

SSC 06-17-09

CHECKED BY:

ALM 06-19-09

IN SERVICE:

OFFICE OF ASST. VICE PRESIDENT

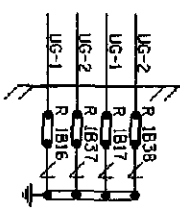
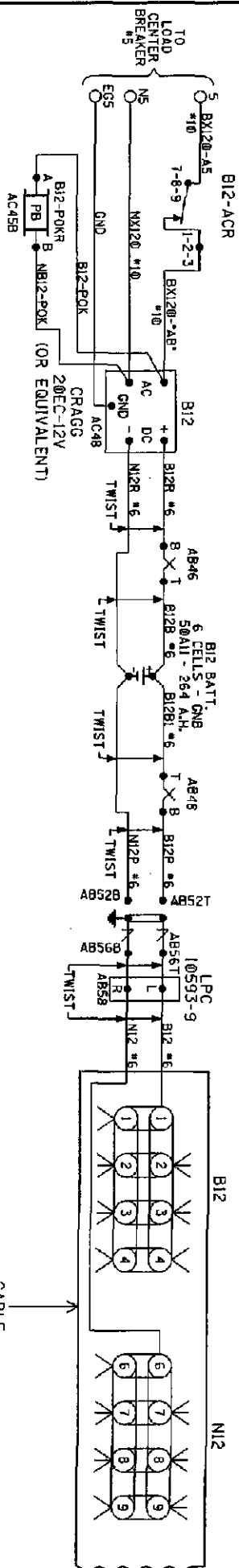
COMM. & SIGNALS, ATLANTA, GA.

BRIDGE TO CP RAVE

CLEVELAND, OH

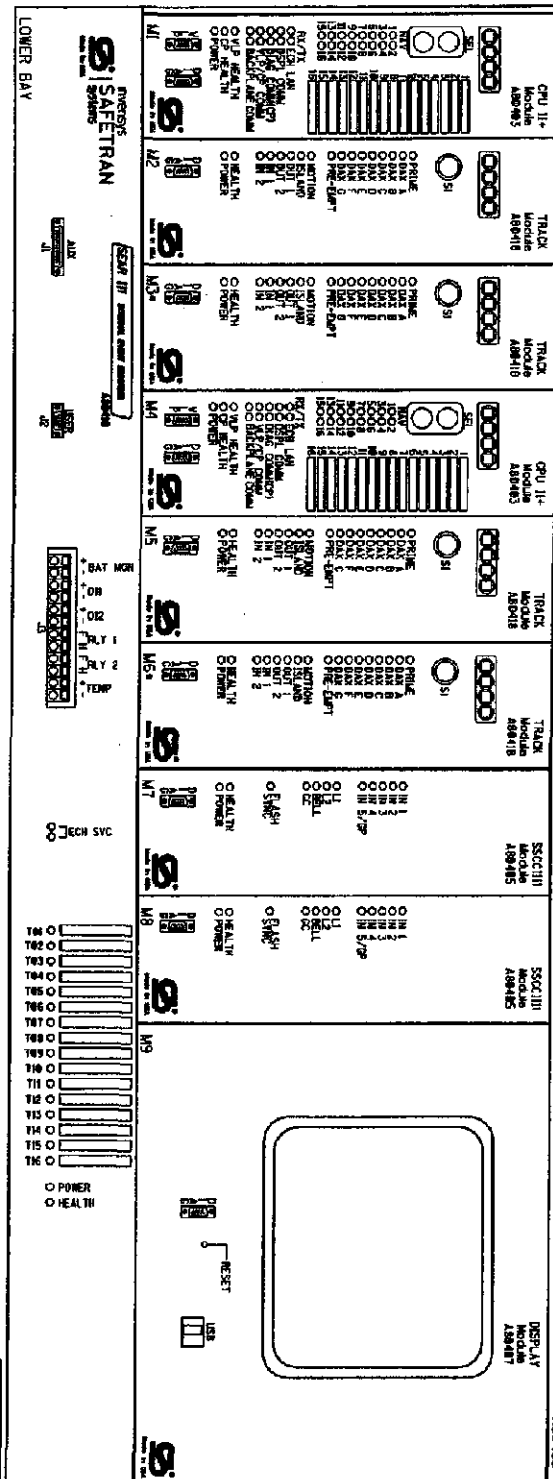
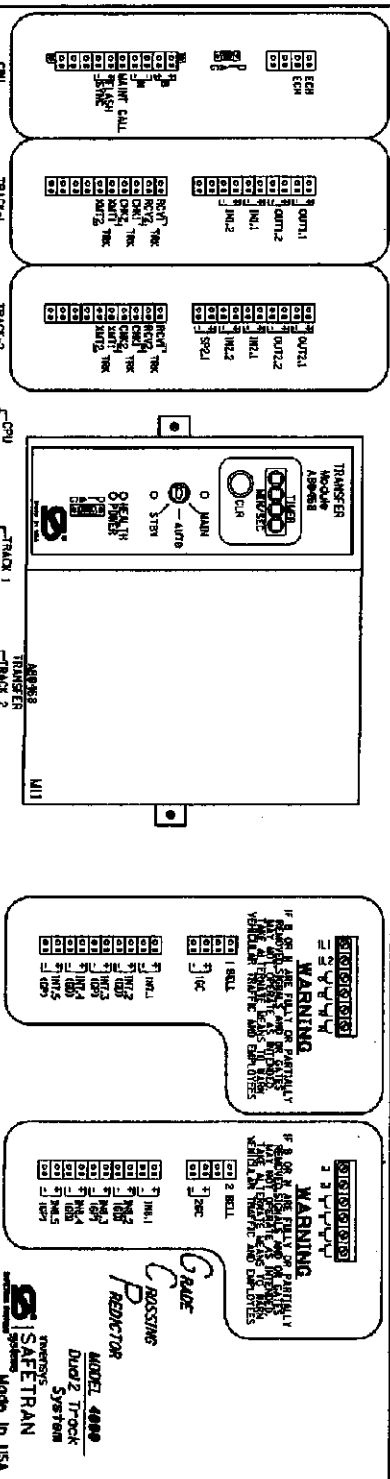
FILE NO. R-1

SHEET 4 OF 22



(5)	(5)	(5)	(5)	(5)	(5)
(3)	(2)	(2)	(1)		
BACK 3 2 1					
FRONT 5 5 4					
HEEL 9 8 1					
B <u>UUUU</u> A					
POTTER BRUMFIELD					
REAY					
(FRONT VIEW)					
KLMF-14018-12					
(5)	(5)	(5)	(5)	(5)	(5)
(3)	(2)	(2)	(1)		
BACK 3 2 1					
FRONT 5 5 4					
HEEL 9 8 1					
B <u>UUUU</u> A					
POTTER BRUMFIELD					
REAY					
(FRONT VIEW)					
KLMF-14018-12					
(5)	(5)	(5)	(5)	(5)	(5)
(3)	(2)	(2)	(1)		
BACK 3 2 1					
FRONT 5 5 4					
HEEL 9 8 1					
B <u>UUUU</u> A					
POTTER BRUMFIELD					
REAY					
(FRONT VIEW)					
KLMF-14018-12					
(5)	(5)	(5)	(5)	(5)	(5)
(3)	(2)	(2)	(1)		
BACK 3 2 1					
FRONT 5 5 4					
HEEL 9 8 1					
B <u>UUUU</u> A					
POTTER BRUMFIELD					
REAY					
(FRONT VIEW)					
KLMF-14018-12					

NOTE: ALL WIRING TO BE #16AWG UNLESS NOTED OTHERWISE



WARNING
REMOVAL OF THE SSCCUM MODULE WILL CAUSE THE GATES TO DROP BUT THE LIGHTS WILL NOT ACTIVATE

CAUTION
ASSURE CORRECT POLARITY OF THE SSCCUM MODULE OR SEVERE DAMAGE WILL OCCUR.

CAUTION
REMOVE OF THE SSCCUM MODULE WILL CAUSE THE GATES TO DROP BUT THE LIGHTS WILL NOT ACTIVATE

CAUTION
ASSURE CORRECT POLARITY OF THE SSCCUM MODULE OR SEVERE DAMAGE WILL OCCUR.

ATTENTION!
ENSURE THE DISPLAY MODULE HEATER IS DISABLED LEAVING THE DISPLAY HEATER ENABLED WILL REDUCE THE AMOUNT OF BATTERY STANDBY TIME IN THE EVENT OF AN AC POWER FAILURE.

HEATER FUNCTION IS JUMPER SELECTABLE ON THE DISPLAY MODULE BOARD. THREE OPTIONS ARE AVAILABLE:
NORMAL LCD HTR (DEFAULT)
HI CURRENT
NO JUMPER (HEATER DISABLED)

* MAIN AND STANDBY MAY USE RIO IN TRACK 2 SLOTS (M3 AND M6)

PANEL 1A2 4000 GCP REDUNDANT 2-TK CHASSIS AND MODULE LAYOUT

DESIGNED BY: MALL 08-17-09
DRAWN BY: SSC 08-17-09
CHECKED BY: AAM 08-19-09
IN SERVICE: -

OFFICE OF ASST. VICE PRESIDENT
COMM. & SIGNAL, ATLANTA, GA. W.P. RD-112.98
DRAWBRIDGE TO CP BAY
CLEVELAND, OH FLS AT WACKACKEN RD.
CLEVELAND LINE
FILE NO. R-
SHEET 5 OF 22

PROPERTY
PENNSYLVANIA R.R.

Minimum Program Steps Report

Location and SIN

DOT Number: 524232N
Milepost Number: RD-112.98
Site Name: MCCracken RD

SIN: 755019602816 *

* Parameter is part of office check number calculation.

MCF and Template Selection

MCF Name: GCP-T6X-02-1mct
MCF Revision: 021
MCF ORC: 6076E353

Template = 1a6 Trk Bl *

* Parameter is part of office check number calculation.

Minimum Program Steps

TEMPLATE: module configuration

Track 2/RIO 1 Slot = Track *

TEMPLATE: track 1-BL Island

Track 1: GCP Frequency = 250 Hz
Track 1: Approach Distance = 3558 ft
Track 1: Prime Warning Time = 39 sec
Track 1: Prime UAX = 1P
Track 1: GCP Transmitt Level = High
Track 1: IsIFrequency = 7.1 kHz

TEMPLATE: track 2-BL Island

Track 2: GCP Frequency = 250 Hz
Track 2: Approach Distance = 3558 ft
Track 2: Prime Warning Time = 39 sec
Track 2: Prime UAX = 1P
Track 2: GCP Transmitt Level = High
Track 2: IsIFrequency = 8.3 kHz

TEMPLATE: AND 1 XR

AND 1 Enable Used = Yes *

TEMPLATE: SSCC

SSCC 1: Lamp Neutral Test = On
SSCC 2: Lamp Neutral Test = On

TEMPLATE: OOS

OOS Control = Display+OOS 1Ps
TZ OOS Control = OOS Input 1 *

EMULATE: OP assignment 1

OUT 1:1 = AND 2 *

TEMPLATE: IP assignment 1
IN 1:1 = AND 1 XR Enable
IN 1:2 = T1 Prime UAX
IN 2:1 = T2 Prime UAX

TEMPLATE: IP assignment SSCC

IN 7:3 = T1 Prime UAX
IN 8:2 = OUT OF Service IP 1 *

GCP: track 1

Track 1: GCP Freq Category = Other *

Track 1: Approach Distance = 130 ft *

GCP: track 1 enhanced det

Track 1: Inbound PS Sensitivity = 0.7 *

GCP: track 2

Track 2: GCP Freq Category = Other *

Track 2: Island Distance = 130 ft *

GCP: track 2 enhanced det

Track 2: Inbound PS Sensitivity = 0.7 *

AND: track Anding

AND 2 Used = Yes *

AND: AND 2

AND 2 Track 1 = Prime *

AND 2 Track 2 = Prime *

ADVANCED: site options

Daylight Savings = On *

SSCC: 1

SSCC 1: Flash Rate = 40 *

SSCC: 2

SSCC 2: Activation = AND 2 *

SSCC 2: Gate Delay = 13 sec *

SSCC 2: Flash Rate = 40 *

SEAR

SEAR Subnode = 3 *

DJ = Ground Fault Test *

Ry 1 = AC Control *

Ry 2 = AC Control *

SEAR slot 7-8 inputs

IN 7:1 = TSS 1 *

IN 8:1 = TSS 2 *

IN 8:3 = POK 2 *

* Parameter is part of office check number calculation.

Check Numbers

Office Check No. IDT 46.011874E1A3
Office Check Number: 1874E1A3
Config. Check Number: 5A8259F5
(Based on MCF Revision 021)

Parameters not part of office check number calculation:

Track 1: GCP Frequency = 250 Hz
Track 1: Approach Distance = 3558 ft
Track 1: Prime Warning Time = 39 sec
Track 1: GCP Transmitt Level = High
Track 1: IsIFrequency = 7.1 kHz
Track 2: GCP Frequency = 250 Hz
Track 2: Approach Distance = 3558 ft
Track 2: Prime Warning Time = 39 sec
Track 2: GCP Transmitt Level = High
Track 2: IsIFrequency = 8.3 kHz
SSCC 1: Lamp Neutral Test = On

Comments

<none>

Configuration Package File

Filename: 35121129.ppc

4000 GCP PROGRAMMING SETUP

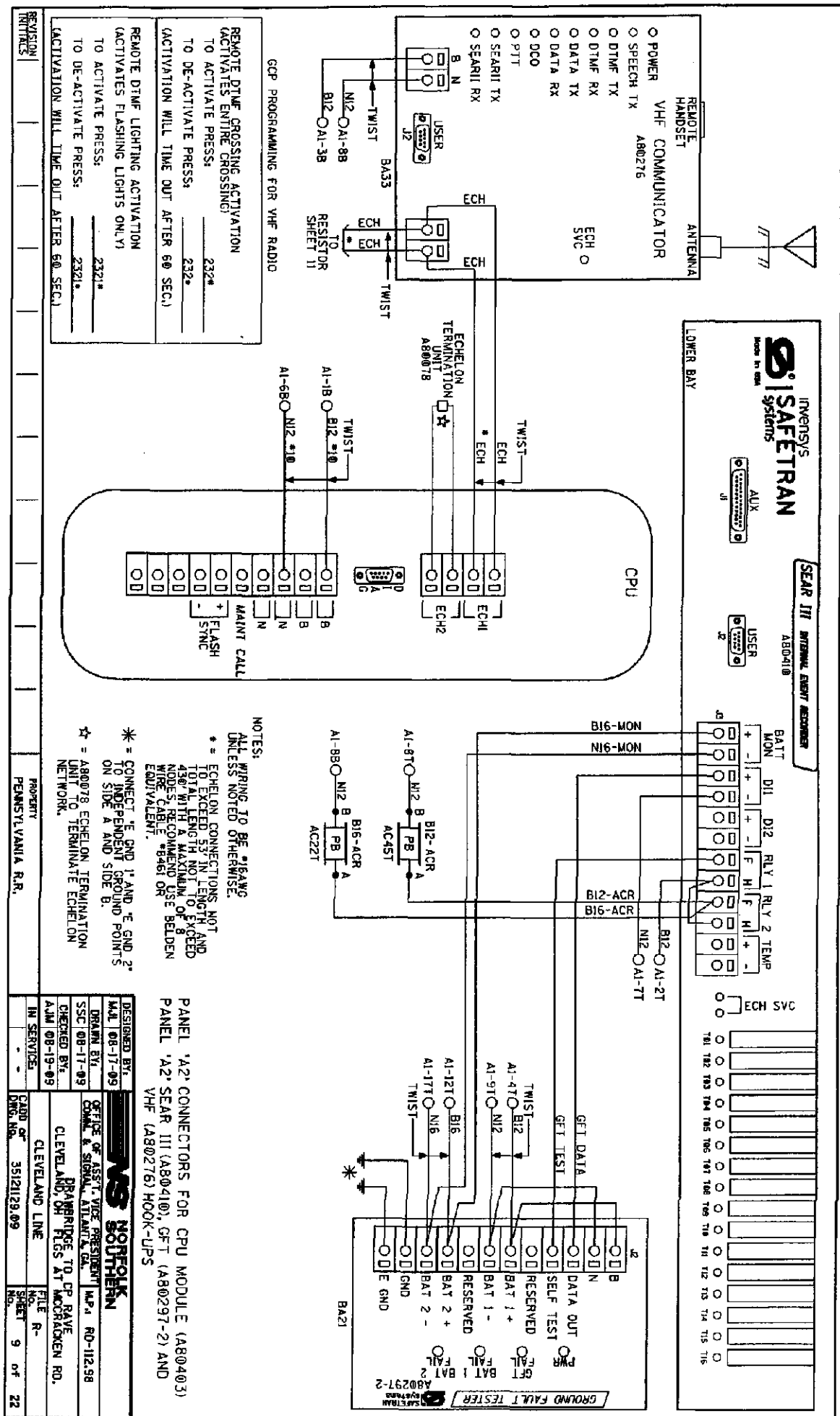
REVISION	INITIALS	PROPERTY	PENNSYLVANIA R.R.	DESIGNED BY	DATE	CHECKED BY	DATE	FILE NO.	SHEET	OF	22
				MALE 08-17-03		08-17-03		35121129.07	7	07	22

NORFOLK SOUTHERN

OFFICE OF ASSIST. VICE PRESIDENT, M.P. RD-112.98

CLEVELAND, OH FLGS AT MCCracken RD.

CLEVELAND LINE



TO CONFIGURE SEARCH PRESS SITE SETUP KEY.
USE ARROW KEYS TO MAKE SELECTION.
PRESS ENTER AFTER SELECTION HAS BEEN MADE.

SITE SET UP PROCEDURE	
FUNCTION	LED DISPLAY
DATE/TIME	
AUTOMATIC DST ADJUSTMENT	YES
TIME ZONE	EST
SITE NAME	MCCRACKEN RD.
MILEPOST	RD-112.98
DOT *	524232N
TESTER TYPE	CROSSING
DATE FORMAT	MM-DD-YYYY
TEMP FORMAT	FAHRENHEIT
INDICATE HOLD (SECI)	0
INDICATE REFRESH (SECI)	60
SITE ATCS	7.550.185.028.03.01
SITE TYPE	NO COMMUNICATION
OFFICE ATCS ADDRESS	2.550.000.0000
PRIMARY HOP ADDR	7.RRR.LLL.GGG.XX.XX
BACKUP HOP ADDR 1	7.RRR.LLL.GGG.XX.XX
BACKUP HOP ADDR 2	7.RRR.LLL.GGG.XX.XX
POLL ID	1
MODE	GEN/ATCS
WAMS XID	DISABLED
OFFICE COMM DEVICE	MM (ECHO)
RADIO ATCS ADDR	7.RRR.LLL.GGG.00.00
PHONE *	(OFFICE NUMBER)
INIT STRING	
FIELD COMM	NONE
USER PORT	BAUD 57600, N, 8, 1, NONE
AUX PORT	BAUD 9600, N, 8, 1, NONE

VERIFY NUMBER OF BULBS: SENSOR #1	
CURR 1 LAMP SET UP	7 BULBS
CURR 2 LAMP SET UP	7 BULBS
VERIFY NUMBER OF BULBS: SENSOR #2	
CURR 1 LAMP SET UP	5 BULBS
CURR 2 LAMP SET UP	5 BULBS

CONTROL SYSTEM CONFIGURATION MENU QUESTIONS

THE QUESTION	SELECT FROM MENU OPTION
RESET NAMES AND MODULES?	YES
RAILROAD NUMBER	550
CROSSING CONFIGURATION	NORMAL
AND 1 USED AS XR?	YES
AND 2 USED AS XR?	NO
AND 3 USED AS XR?	NO
AND 4 USED AS XR?	NO
AND 5 USED AS XR?	NO
AND 6 USED AS XR?	NO
AND 7 USED AS XR?	NO
AND 8 USED AS XR?	NO
XR CONTROLLED BY FOREIGN RR	YES
ENTRANCE GATES	2
GATES CONTROLLED BY FOREIGN RR	
GATE POSITION FAIL TIME (SECONDS)	20
BATTERY BANKS	2
BATTERY MON USED	YES
INTERNAL CROSSING CONTROLLERS	2
EXTERNAL CROSSING CONTROLLERS	0
VHF COMMUNICATOR	YES
DTMF ACTIVATION	YES
ACTIVATION CODE	232
ACTIVATION TIMEOUT (SECONDS)	60
110D MODULES	2
ANY LED BULBS USED	NO
AUTO INSPECTIONS	NO
BELL SENSORS	1
BELL SENSOR TSS1	NO
BELL SENSOR TSS2	YES
BELL SENSOR TSS3	NO
BELL SENSOR TSS4	NO
BELL SENSOR TSS5	NO
BELL SENSOR TSS6	NO
BELL SENSOR TSS7	NO
BELL SENSOR TSS8	NO

CONTROL SYSTEM CONFIGURATION MENU QUESTIONS (CONT.)

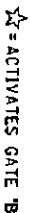
BELL ON	GATES LOWERING
GATE T1	YES
BATTERIES ON GATE T1	2
GATE TIP SENSORS	YES
RTU	NO
VHF VOICE CHANNEL	2
VHF DATA CHANNEL	2
USE CELL MODEM	
NON-CRITICAL FEATURE	NO
FULL APPROACH MOVES ALARM	ACTIVATE

PROGRAM MENU QUESTIONS	PROGRAM
EDIT DIGITAL INPUTS	NO
EDIT BATTERIES	NO
EDIT DELAYS	NO
EDIT INDICATOR LENS	NO
EDIT TEST LENS	NO
EDIT 110D SENSORS	NO
EDIT VHF SETTINGS	NO
EDIT ATCS SENSORS	NO

NOTES:
* = DISPLAYED IF CROSSING CONFIGURATION IS SPLIT GATE
** = OPTIONS IF BELL SENSOR = 0
THEN BELL FIELDS ARE NOT USED.
*** = IF SITE TYPE = NO COMMUNICATION,
THEN THESE OPTIONS ARE NOT
DISPLAYED
**** = THESE SETTINGS SHOULD BE LEFT
AT THE DEFAULT SETTING.
***** = USE LAST 3 NUMBERS FROM DOT NUMBER

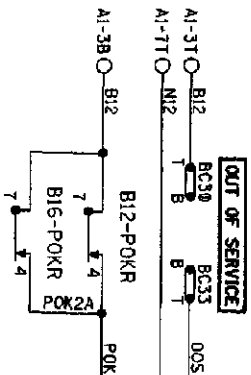
SEAR III PROGRAMMING SETUP

DESIGNED BY:	FILE R-
DRAWN BY:	FILE R-
CHECKED BY:	FILE R-
IN SERVICE:	FILE R-
DATE OF	FILE R-
DRS. NO.	FILE R-
35121129.10	FILE R-
10 of 22	FILE R-



ECHERON CONNECTIONS NOT TO EXCEED 53" IN LENGTH
 AND TOTAL LENGTH NOT TO EXCEED 430' WITH A MAXIMUM
 OF 8 NODES. RECOMMEND USE BELDEN WIRE CABLE #8661 OR EQUIVALENT.
 TEST LINKS MUST BE OPENED TEMPORARILY FOR NEW
 GOOD START OF NEW ORDER ALLOCATION. SSC MODULE
 AND CAN ONLY BE CLOSED IN SEQUENCE WITH WTE
 INSTRUCTIONS. SECTION 8.8 OF THE GCP 40000 REFERENCE MANUAL.

100



NOTES: ALL WIRING TO BE #16AWG
UNLESS NOTED OTHERWISE.

* = ECHOLON CONNECTIONS NOT TO EXCEED 53' IN LENGTH AND TOTAL LENGTH NOT TO EXCEED 430' WITH A MAXIMUM OF 8 NODES, RECOMMEND USE BELDEN WIRE CABLE #9461 OR EQUIVALENT.

*** = TEST JNKS MUST BE OPENED TEMPORARILY FOR NEW CORD START OF NEW OR REPLACEMENT SSCC MODULE AND CAN ONLY BE CLOSED IN SEQUENCE WITH AFR. INSTRUCTIONS, SECTION B.8 OF THE GCP 4000 REFERENCE MANUAL.

☆ = AB0078 ECHELON TERMINATION UNIT
TO TERMINATE ECHELON NETWORK.

3512129.12	DRABRIDGE "O" CP RAVE	RD-112.98
3512129.12	CLEVELAND AND FICS AT MCCHACKEN RD.	
3512129.12	CLEVELAND LINE	
3512129.12	FILE R-	
3512129.12	SHEET 12 of 22	
3512129.12	NO.	

13 of

1B



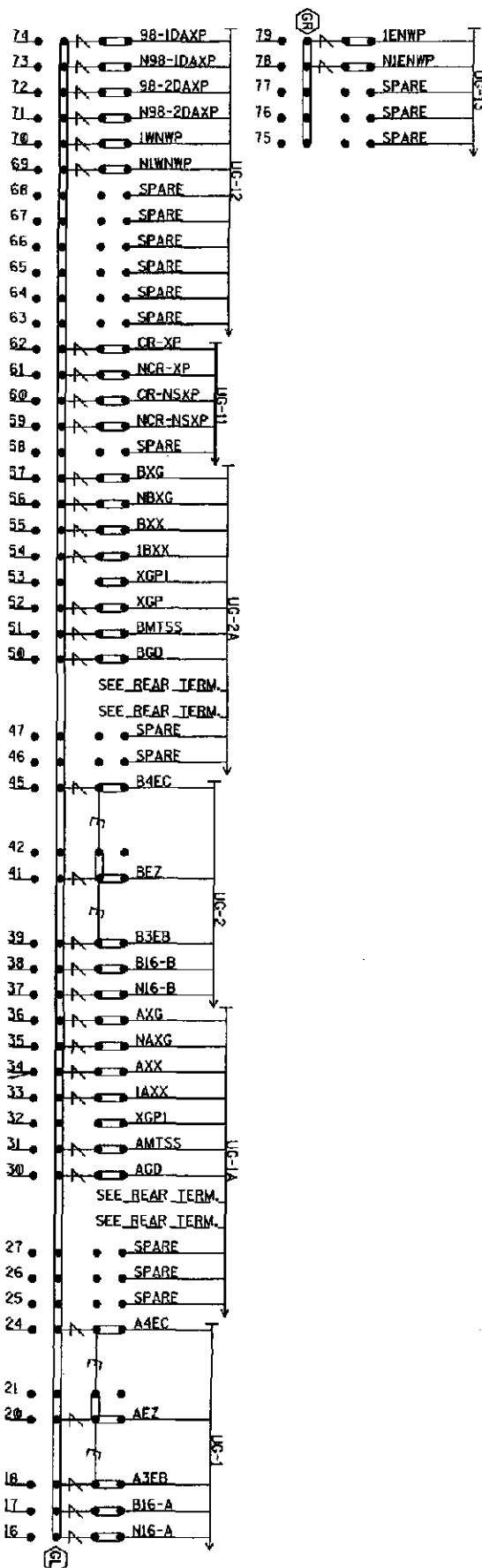
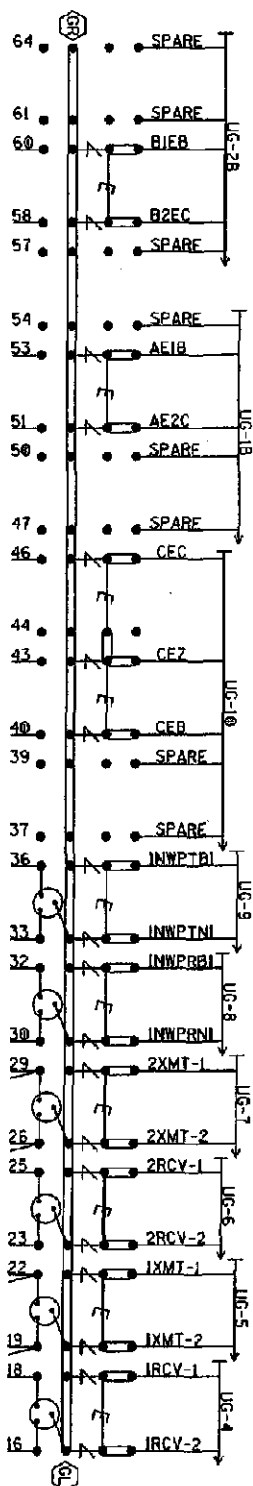
~~EC~~ = Heavy Duty Equalizer
(022700-1X)

✓ = Lightning Arrester
(M23595-1X)

Q = LPC-10560-51

SEE FARADAY SHIELD DETAILS - 1A & 1B FOR HOW THIS PORTION OF THE FARADAY SHIELD IS PREDRILLED. ONLY INSTALL AND USE THE TERMINALS NEEDED.

BACKBOARD DETAIL - 1A & 1B



DRAWN BY:		OFFICE OF ASST. VICE PRESIDENT	LPJ	RD-H2.98
DESIGNED BY:		CORR. & SIGNALS UNIT		
M.A.L.	08-17-09			
SSC	08-17-09	DEBARRED TO CP RAVE		
CHECKED BY:		CLEVELAND, ON PLS AT		
A.M.N.	08-18-09	CLEVELAND LINE		
IN SERVICE:				
-				
PLOD NO.				
DRG. NO.	3512H29.16			
SHEET	No.	FILE R-		
16	of	22		

"1A"

Figure 1 is a schematic diagram of the experimental setup. It shows a vertical line representing the ground plane. A horizontal line labeled 'UG-2A' is connected to the ground plane. Two horizontal lines, labeled 'RGX120', are connected to the 'UG-2A' line. Each 'RGX120' line has a small circle with a cross inside, representing a probe. To the right of each probe is a small circle with a dot inside, representing a probe. The distance between the two probes is labeled '49' and '4B'.

* = CLOSED DURING WINTER MONTHS

DESIGNED BY	NS NORFOLK SOUTHERN
MAL 08-17-09	

OFFICE OF ASST. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.	M.P.J. RD-112.98
--	------------------

CHECKED BY:	DRAWBRIDGE TO CP RAVE CLEVELAND, OH FLGS AT MCCracken RD.
-------------	--

IN SERVICE.	FILE NO.	R-
AUG 08-19-09	CLEVELAND LINE	

ADD OF Dwg. No.	35121129.17	SHEET NO.	17 of
IN SECTION	-		

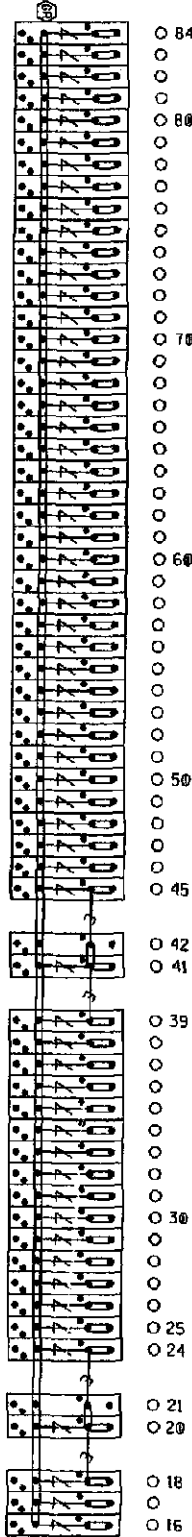
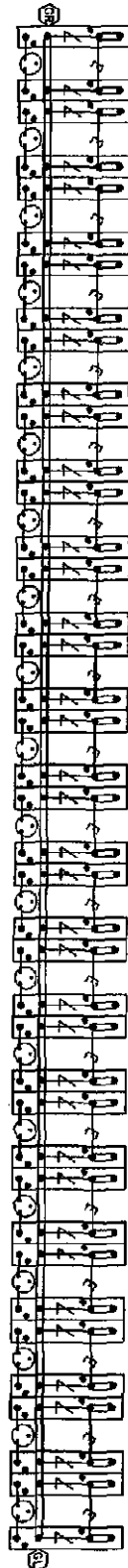
INITIALS _____ PENNSYLVANIA R.R.

TERMINAL BOARD 1 LEFT HALF

'1A' '1B'

2" PANDUIT

2" PANDUIT



AREA BELOW IS SCALED WITH ASS=75

NOTE: IF THE FARADAY SHIELD WOULD EVER NEED TO
BE DRILLED IN THE FIELD, PROPER PRECAUTIONS
MUST BE TAKEN TO INSURE METAL SHAVINGS
DO NOT GET INTO EXISTING TERMINALS/WIRES.

= INDICATES PLACEMENT
OF PANDUIT

THIS SHEET IS FOR REFERENCE ONLY,
TO REFLECT HOW THE FARADAY SHIELD
IS PREDRILLED, ONLY INSTALL AND USE
THE TERMINALS NEEDED.



= TERMINALS GROUNDED TO SHIELD.

4 POST BLOCKS USE EITHER -

CR - SERMI PART NO. 61278

CL - SERMI PART NO. 61278-1.



= LIGHT DUTY EQUALIZER
(022585-1X)

CL - SERMI PART NO. 61278-1.

= Heavy Duty Equalizer
(022700-1X)

CL - SERMI PART NO. 61278-1.

TERMINAL BOARD 1
LEFT TWO ROWS
FARADAY SHIELD DETAIL - 1A & 1B

NOIR-OLK
SOUTHERN

OFFICE OF ASST. VICE PRESIDENT
COMM. & SIGNAL, ATLANTA, GA.

DRYBRIDGE TO CP RAVE
CLEVELAND, OH. PLS RT. MCCORMACKEN RD.

CLEVELAND LINE

FILE R-

STATUS OF SHEET 18 of 22

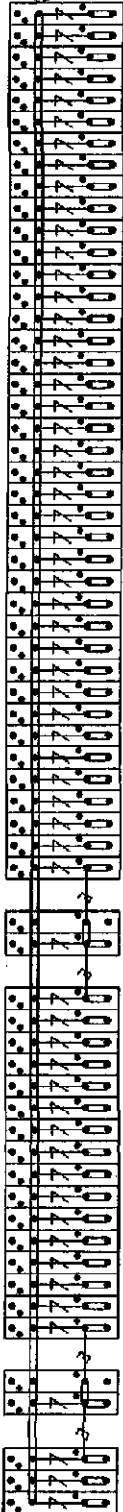
DATE NO. 3512129.18

PROPERTY
PENNSYLVANIA R.R.

REVISION
NOTES

"1C"

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☐ 18
☐ 16



NOTE: IF THE FARADAY SHIELD WOULD EVER NEED TO BE DRILLED IN THE FIELD, PROPER PRECAUTIONS MUST BE TAKEN TO INSURE METAL SHAVINGS DO NOT GET INTO EXISTING TERMINALS/WIRES.

THIS SHEET IS FOR REFERENCE ONLY, TO REFLECT HOW THE FARADAY SHIELD IS PREDRILLED. ONLY INSTALL AND USE THE TERMINALS NEEDED.

TERMINALS GROUNDED TO SHIELD.
4 POST BLOCKS USE EITHER -
GR - SERMMI PART NO. 61278
GL - SERMMI PART NO. 61278-1.

~~E~~ = Heavy Duty Equalizer
(022700-1X)
L = Lightning Arrestor
(022585-1X)
C = LPC-10560-51

TERMINAL BOARD 1
RIGHT ROW
FARADAY SHIELD DETAIL - 10C

[illegible]

