

NC

46

**Public Utilities
Commission of Ohio**

FILE

12-1584-RR-FED

Memo

RECEIVED-DOCKETING DIV
2012 MAY 17 PM 12:41
PUCO

To: Docketing Division
From: George Martin, Grade Crossing Planner, Rail Division
Re: In the matter of the authorization of Norfolk Southern Railway to install an active grade crossing warning device in Butler County
Date: May 15, 2012

The Ohio Rail Development Commission (ORDC) has authorized funding for Norfolk Southern Railway (NS) to install new mast mounted flashing lights, roadway gates and new circuitry at Yankee Rd/Todhunter Rd/CR 133, near Monroe, Butler County, DOT# 524685F. This crossing was surveyed on October 5, 2011, and is part of the upgrade to the NS CJ Line.

The project will be paid for with federal funds, and is actual cost. As the plans and estimates have already been submitted and approved, staff requests an Entry with completion of the project in nine months. Construction may commence at once. Staff requests that the following language be incorporated in the Entry:

It is expected that all work necessary for FHWA acceptance of the warning devices will be completed by the in-service due date and that the railroad will be responsible for this work. This work includes, but is not limited to:

Any ancillary work to make the warning devices function as designed and visible to the roadway user, and

MUTCD compliance, including minor roadway work if necessary.

A suggested case coding and heading would be:

PUCO Case No. 12-1584 -RR-FED In the matter of the authorization of Norfolk Southern Railway to install an active grade crossing warning device in Butler County

C: Legal Department

Please serve the following parties of record

This is to certify that the images appearing are an accurate and complete reproduction of a case file document delivered in the regular course of business.
Technician Date Processed 5/17/12

Ms Susan Kirkland
Ohio Rail Development Commission
1980 West Broad St, 2nd Floor
Columbus, Oh 43223

Ms Cayela Wimberly
Norfolk Southern Railway
1200 Peachtree St, Box 123
Atlanta, Ga 30309

Mr Jordan Parks
Department of Public Works
PO Box 330
Monroe, Oh 45050-0330

Duke Energy

George Martin - PUCO

**OHIO RAIL DEVELOPMENT COMMISSION
INTER-OFFICE COMMUNICATION**

TO: Leah Thomas-Dalton, Rail Division Chief, PUCO

FROM: Susan Kirkland, Manager, Safety Section, ORDC

BY: Tim Perkins, Grade Crossing Specialist

Tim Perkins

SUBJECT: Grade Crossing Warning Project, City of Monroe, Butler County, C.R. 133,
Todhunter Road, DOT No. 524 685 F, PID No. 92470, Mile Post: CJ-232.7

DATE: May 14, 2012

ORDC ESTABLISHED

The ~~Public Utilities Commission~~ of Ohio (PUCO) established a diagnostic survey at the subject location on October 5, 2011. The Ohio Rail Development Commission (ORDC) attended the review. The Diagnostic Team recommended the improvement of warning devices to flashing lights and roadway gates. Copies of the diagnostic review form and the plan and estimate are attached.

PE has already been provided by the railroad. ORDC approves the site plans and estimates as provided. Please issue a construction-only order for the project outlined above. This construction authorization is made with the stipulation and understanding that any field work needs prior approval before the work begins. This authorization is made with the stipulation and understanding that an approved estimate may contain entries for items or activities that may be cited and found to be ineligible for federal participation during the project audit.

It is expected that all work necessary for FHWA acceptance of the warning devices will be completed by the in-service due date and that the railroad will be responsible for this work. This work includes, but is not limited to:

- any ancillary work to make warning devices function as designed and visible to the roadway user, and
- MUTCD compliance – including minor roadway work if necessary.

Thank you for your assistance with these matters.

Attachment: Diagnostic Review
Plan & Estimate

c: George Martin, PUCO ✓
ORDC Project Manager (file)



Diagnostic Review Team Survey

Date: 10-5-11

Location Data

Street or Road Name: Yankee Rd. / Toddhunter Rd		
Route/Road Number (i.e. Twp., Co., SR or US)	CR133	AAR-DOT No.: 524685F
County: Butler	Township:	City: (In or Near) Monroe
Railroad Name: Norfolk Southern (NS)	Railroad Division: Dearborn Lake	Branch/Line Name: Cincinnati LI
Nearest RR Timetable Station: Monroe	RR Milepost: 232.7	

On-Site Review Team

(Include: Name - Organization - Phone Number)

1. Todd Darfus ORDC 614-374-9298
2. GEORGE MARTIN PUCO 614-752-9107
3. Derrick Prater NS 364-712-0220
4. Jordan Parker Monroe 513-823-1274
5. PUBLIC WORKS PO 330
6. 45850-0330
- 7.
- 8.
- 9.

Existing Traffic Control Devices

Type of Warning Devices	Installed?		Quantity/Comments
Advance Warning Signs	☒ Yes	☐ No	2
'Stop' Signs	☐ Yes	☒ No	
'Stop Ahead' Signs	☐ Yes	☒ No	
Pavement Markings	☒ Yes	☐ No	2
Crossbucks	☒ Yes	☐ No	2
Number of Tracks Signs	☒ Yes	☐ No	2
Inventory Tags	☒ Yes	☐ No	2
Interconnected Highway Traffic Signal	☐ Yes	☒ No	
Mast-Mounted Flashing Lights	☒ Yes	☐ No	2
Cantilever Flashing Lights	☐ Yes	☒ No	Number: Length:
Side Lights	☐ Yes	☒ No	
Automatic Gates	☒ Yes	☐ No	Number: 2 Length: 16'
Bells	☒ Yes	☐ No	1
Sidewalk Gate Arms	☐ Yes	☒ No	
'No Turn' Signs	☐ Yes	☒ No	
Illumination	☐ Yes	☒ No	
Is crossing flagged by train crew?	☐ Yes	☒ No	
Other	☐ Yes	☒ No	

Safety Data (Obtain crash reports, if possible, prior to review)

	Initial Information (from database)	Revised
Number & dates of crashes in previous 5 years	0	0
Hazard Ranking	873	Date Run: 8/19/2011

Railroad Data

Railroad Characteristics	Initial Information (from database)	Revised
Total trains per day	22	18
< 1 per day		
Day thru trains	10	9
Night thru trains	10	9
Daytime switching movements	2	0
Nighttime switching movements	0	0
Total number of tracks	2	2
Number of main tracks	2	2
Number of other tracks	0	0
Maximum train speed	50	50
Typical train speed		
Amtrak		No

If non-gated crossing, is clearing sight distance adequate in all quadrants? (See Table I) ☐ Yes ☐ No NA

If multiple tracks, can two trains occupy crossing at the same time? ☒ Yes ☐ No

Can one train block the motorists' view of another train at crossing? ☒ Yes (Explain below) ☐ No

Are there other track(s) crossing this same roadway within 100 ft of this crossing? ☐ Yes ☒ No

If yes, Crossing DOT #(if different) _____

If yes, distance _____ (take measurement between track centerlines at closest point along roadway)

Roadway Data

Local Highway Authority: Village of Monroe	
Roadway Characteristics	Initial Information (from database)
Average daily traffic	6567
Highway paved	☒ Yes ☐ No
Roadway Surface: ☒ Blacktop ☐ Gravel ☐ Concrete ☐ Other _____	☒ Yes ☐ No
Roadway width: <u>25</u> ft.	
Number of highway lanes	2
Urban or Rural	Rural
Vehicle Speed: <u>45</u> MPH	
School Bus Operation: ☐ No ☒ Yes <u>4</u> Amount	
Hazardous Materials Trucks: ☐ No ☒ Yes <u>3</u> Amount	
Shoulders: ☐ No ☒ Yes	
Is the shoulder surfaced? ☒ No ☐ Yes	
Is there existing guardrail along roadway in crossing vicinity? ☒ No ☐ Yes	
Is stopping site distance adequate? (See Table 2) ☒ Yes ☐ No If no, deficient approach(es) _____	
Quadrant <u>SW</u> Curb and Gutter: ☐ Functional (Curb height = 4" or more) ☐ Non-functional (Curb height = Less than 4") ☒ None	Quadrant <u>NE</u> Curb and Gutter: ☐ Functional (Curb height = 4" or more) ☐ Non-functional (Curb height = Less than 4") ☒ None

Pedestrians: ☒ No ☐ Yes

Is sidewalk present? ☒ No ☐ Yes

Is there a nearby intersection that could cause queuing over the crossing? ☒ No ☐ Yes

If yes,
Distance _____

Is this intersection signalized? ☐ No ☐ Yes

Are the signals currently interconnected with the existing crossing warning devices? ☐ No ☐ Yes

Is it the consensus of the Diagnostic Review Team that this is a potential closure project: ☒ No ☐ Yes

Explain reasons:

Type of Development

- ☐ Open Space ☐ Institutional
- ☐ Industrial ☐ Commercial
- ☒ Residential

Location of nearby schools:

1 mile Monroe High

Utility Information

Is commercial power available? ☐ No ☒ Yes

Utility Provider (Company Name) DUKE

Phone Number _____

Nearest Available Power Source @ Crossing

* SE Quad has overhead

What other utilities are present? MCI Sprint AH

issues

Is there potential utility conflict(s) ☐ Yes ☐ No ☒ Unknown

Diagnostic Team Recommendations

	Quadrants Needed
☒ Install/upgrade active devices	
☒ Automatic Flashing Lights (AFLS)	
☐ AFLS / Cants	
☒ AFLS / Gates	
☐ AFLS / Gates / Cants	
☒ Upgrade circuitry	
☐ Sidelights	
☐ Guardrail Needed	
☐ Install/Replace curb	
☐ Other (define)	

Comments:

* Overhead issue SE Quad

☐ Install/upgrade traffic signal preemption

☐ No improvements needed

☐ Other (define)

Acknowledgement of Recommendations (each entity represented at the diagnostic must have at least one signature acknowledgement):

[Signatures]

Field Dimensions

The diagram shows a cross-section of a street with a central vertical line and a ladder-like scale. The sections are labeled on the left and right sides:

- Sidewalk** (top section)
- Parkway** (middle section)
- Roadway** (bottom section)

On the right side, there is a box labeled "Show North Direction". Dashed arrows indicate measurement points for each section.

Crossing Angle ☐ 0-29° ☐ 30-59° ☐ 60-90° Measured in _____ Quadrant?

Measurements by: _____

Field Sketch

Crossing Angle ☐ 0-29° ☐ 30-59° ☐ 60-90° Measured in _____ Quadrant?

Sketch by: _____

TABLE 1

Clearing Sight Distances

Maximum Authorized Train Speed	Distance (dT) Along Railroad from Crossing (ft)
1 - 10	240
15	360
20	480
25	600
30	720
35	840
40	960
45	1080
50	1200
55	1320
60	1440
65	1560
70	1680
75	1800
80	1920
85	2040
90	2160

Source: R-H Grade Crossing Handbook Table 36 (pp. 132-133)

Notes:

All calculated distances are rounded up to the next higher 5-foot increment.

Distances indicated are for 65-ft double bottom semi-tractor trailers and level single track 90 degree crossings; and may need to be adjusted for multiple tracks, skewed crossings or approaches on grades.

Clearing Sight Distance is to be measured in each vehicle travel direction at non-gated crossings as viewed from a point 25 feet from centerline of nearest track in the center of whichever travel lane is nearest the direction along track being measured.

Table 2

Stopping Sight Distances

Highway Vehicle Speed	Distance (dH) Along Roadway from Crossing (ft)
0	n/a
5	50
10	70
15	105
20	135
25	180
30	225
35	280
40	340
45	410
50	490
55	570
60	660
65	760
70	865

Source: R-H Grade Crossing Handbook Table 36 (pp. 132-133)

Notes:

All calculated distances are rounded up to the next higher 5-foot increment.

Distances indicated are for 65-ft double bottom semi-tractor trailers on dry level pavements.

Stopping Sight Distance is to be measured on each roadway approach to crossing from stop bar.

George Martin PUCO



OHIO RAIL DEVELOPMENT COMMISSION

1980 WEST BROAD STREET • COLUMBUS, OH 43223

JOHN R. KASICH, GOVERNOR • JAMES G. BRADLEY, ORDC CHAIRMAN

May 14, 2012

Cayela J. Wimberly
Administrator, Highway Grade Crossings
Norfolk Southern Corporation
1200 Peachtree Street, N.E., Box 123
Atlanta, Georgia 30309

RE: City of Monroe, Butler County, C.R. 133, Todhunter Road, DOT No. 524 685 F,
PID No. 92470, Mile Post: CJ-232.7

Dear Ms. Wimberly:

The Norfolk Southern (NS) plan and estimate dated April 15, 2012, in the amount of \$204,317.00 for the referenced project has been reviewed and is acceptable. NS may proceed with the construction of the proposed grade crossing warning system in accordance with the abbreviated plan. This authorization is made with the stipulation and understanding that the approved estimate may contain entries for items or activities that may be cited and found to be ineligible for federal participation during the project audit. Reimbursement of eligible actual cost is limited to \$153,237.75. Additional costs must be approved in writing by the ORDC prior to being incurred. Emergency verbal authorizations by ORDC may be permitted and will be confirmed by ORDC in writing within ten (10) business days of the verbal approval.

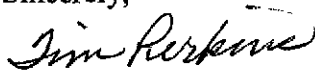
This authorization is contingent upon NS accepting the following instructions:

1. NS will furnish prior written notification of their scheduled date to start construction to George Martin, PUCO, Railroad Division.
2. NS's project foreman will furnish FAX or written notification five (5) working days prior to the date work will start at the project site to Tim Perkins, Ohio Rail Development Commission (ORDC), 1980 West Broad Street, Columbus, Ohio 43223, email Tim.Perkins@dot.state.oh.us or FAX (614) 728-4520, (telephone number 614-644-0284), and to the Public Utilities Commission of Ohio at 180 East Broad Street, Columbus, Ohio 43215, email George.martin@puc.state.oh.us, (telephone number 614-752-9107). NS's project foreman will also notify the same of any stops and re-starts of the work activity and of the date work was completed for the project.
3. NS will arrange for utilities to be located at the project site by the Ohio Utilities Protection Service (OUPS) prior to any construction activities at the site. Utilities that are not participating members of the service must be contacted directly by NS.

4. NS's project foremen will notify Tim Perkins of any changes in the scope of work, cost overruns, material changes, etc. which are not included in the approved plan and estimate and secure approval of same before the work is performed.
5. NS will furnish two (2) copies of each partial bill to ORDC. Please find the enclosed Encumbrance Estimate to reference when billing.
6. NS will furnish two (2) copies of the final all-inclusive bill to ORDC stating the exact dates of starting and completing work, the initial and final dates of construction and location where the accounts may be audited.

Thank you for your assistance with these matters.

Sincerely,



Tim Perkins
Project Manager

C: Leah Thomas-Dalton, Rail Division Chief, PUCO
George Martin, PUCO, Grade Crossing Planner ✓
ORDC (file)



15-Apr-12

Sent
to
T.Z.
4/10/12
SA

Detailed Estimate for Grade Crossing Warning Devices

City/State: MONROE, OH
MilePost: CJ-232.7
State Proj. No.:
S&E Proj. No.: 10.1348
Man Days: 100

Road: TODHUNTER RD (CR 133)
DOT/AAR: 524685F
County: BUTLER
File Number:

Purchases - Others	
Meals and Lodging:	\$13,440.00
Rental of Equipment:	\$14,000.00
(2 Trucks, 1 Backhoe w/ Trailer and 1 Pipe-Pusher for 25 Days)	
Construction Supervision Vehicle:	\$2,501.74
Purchases - Other Total:	\$29,941.74
Material And Additives	
Material Cost:	\$86,829.00
Sales and Use Tax:	\$0.00
Material Handling Freight:	\$4,341.44
Material Total:	\$91,170.44
Labor And Additives	
Labor Cost:	\$28,000.00
(4 man crew at \$1,120.00 a day for: 25 days)	
Payroll Tax & Overheads:	\$37,195.20
Preliminary Engineering:	\$10,104.94
Construction Supervision:	\$7,904.40
Labor Total:	\$83,204.54
Project Cost:	\$204,316.72
Scrap / Salvage Credit:	\$0.00
Project Total:	\$204,317.00

Estimated on: 15-Apr-12

Estimated by: BF2CC

F40C
4.17.12

Estimate valid for 1 year from date of estimate

As noted signal "A" will require overhead utility relocation or the gate will need to be cammed out like existing.



Norfolk Southern Railway
Highway Crossing Signalization Program - Material List

Do not substitute items without permission from S & E Engineering

City:	MONROE
Road:	TODHUNTER RD (CR 133)
Mile Post:	CJ-232.7
Drawing Number:	82112327
State Project Number:	
County:	BUTLER
A A R Number:	524685F
Project Number:	10.1348
File Number:	
New File Number:	CX0128701
A F E Number:	F-33477
Store Number:	
Supervisor:	D.R. DRAKE
Tax Code:	
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: MONROE		OH	S&E Proj. No.: 10.1348		AFE No.: F-33477		Drawing No.: 82112327		Vendor: Interrail Engineering, INC	
Store No.:		P.O.Number:			Date Required:		Date Shipped:			
Qty.	Class-Item-CD	UI	Price per Item	Total Price	Item Description	Quantity Shipped	Quantity Installed Date Quan.	Quantity Returned (Credit)	Special Instructions	
3	670-360693-4	EA	\$5.55	\$16.65	AARDOT NUMBER PLATE/DECAL, ORDER 3 PER PROJECT. 60 DAY LEAD TIME. SUPPLIED BY STRAN.					
1	165-006505-4	EA	\$1,075.23	\$1,075.23	AC SERVICE, COMPLETE LESS METER BASE, ASSEMBLED ON 30' POLE					
13	105-288384-4	EA	\$277.10	\$3,602.30	BATTERY GNB 368AH MODEL 50G15 SINGLE CELL 2.25 VOLTS, FOR USE WITH CROSSINGS DESIGNED AFTER 09/09					
2	670-980689-4	EA	\$75.48	\$150.96	BRACKET HIGH WIND, (RIGID 3'), W/G- 191036, WALRUS TUSK TYPE					
1	670-356949-4	EA	\$90.00	\$90.00	CABLE, 10' GENERATOR HOOK UP, SERRMI PIN 40524, FEMALE CONNECTOR					
350	465-939422-4	LF	\$3.11	\$1,088.50	CABLE, UG 12 CONDUCTOR NO 14 AWG SOLID EACH CONDUCTOR WITH 5/64" IN INSULATION 10 MIL					
500	465-292862-4	LF	\$1.49	\$745.00	CABLE, UG 2-6 TWISTED, S-23 OKONITE 113-12-3933 SOLID TINNED CONDUCTOR					
350	465-292929-4	LF	\$4.55	\$1,592.50	CABLE, UG 5 COND. NO. 6 AWG SOLID COPPER CABLE TO MEET NS CORP. SPEC. FOR SIGNAL					
350	465-791835-4	FT	\$3.84	\$1,344.00	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					
80	165-544477-4	FT	\$2.61	\$208.80	CONDUIT, 4"x10' PVC, SCHEDULE 80 BELL CONNECTOR AT ONE END, 1/2 PT. GLUE IN KIT 670-123298-4					
4	670-664917-4	EA	\$87.64	\$350.56	CONNECTOR KIT, WELDED FAR RAIL, CONSISTING OF RUBBER HOSE PROPERLY DRILLED, BONDSTRAND, 1 SPLICING SLEEVE, 1 REDUCING SLEEVE, 3 CLAMPS, 1 TRACK CLIP, 1 WEB WELDED TRACK CONNECTOR, 1 WELD METAL, SAFETRAN 111359-2X					
4	670-632520-4	EA	\$77.63	\$310.52	CONNECTOR KIT, WELDED NEAR RAIL, CONSISTING OF RUBBER HOSE PROPERLY DRILLED, BONDSTRAND, SPLICING SLEEVE, 1 REDUCING SLEEVE, 5 CLAMPS, 1 TRACK CLIP, 1 WEB WELDED TRACK CONNECTOR, 1 WELD METAL, SAFETRAN 111359-1X					
2	670-793404-4	EA	\$1,159.00	\$2,318.00	COUNTERWEIGHT PKAGE, 17-24' GATE STRAN S- MECH ONLY, STAINLESS, TO INCLUDE HUB, SUPPORT ARMS					
4	670-760012-4	EA	\$44.32	\$177.28	COVER, FOR 1-WAY FLASHING LIGHT ASSY. 18 OZ. BLACK VINYL COATED NYLON. ===TO COVER 2 LAMPS===					
APPROVED BY STATE		APPROVED BY RAILROAD			CAR NUMBER		SEAL NUMBER			

Location: MONROE				OH	S&E Proj. No.: 10.1348	A/E No.: F-33477	Drawing No.: 82112327		Vendor: Interrail Engineering, INC		
Store No.:				P.O. Number:		Date Required:		Date Shipped:			
Qty.	Class-Item-CD	UI	Price per Item	Total Price	Item Description	Quantity Shipped	Quantity Installed Date Quan.	Quantity Returned (Credit)	Special Instructions		
1	670-986650-4	EA	\$352.82	\$352.82	DISPOSAL, CONSTRUCTION DEBRIS AND CLEANING X'ING EQUIPMENT CONTAINER						
1	670-000004-4	EA	\$700.00	\$700.00	FCC LICENSE FOR MONITOR/RADIO						
2	670-000003-4	EA	\$255.85	\$511.70	FILL/STONE #57, QUANTITY IS BASED ON TRUCK LOAD PLUS DELIVERY COST						
2	670-015231-4	EA	\$599.40	\$1,198.80	FOUNDATION, DIXIE, S-2 GATE 2'6"X2'6"X5'6" ASSEMBLED						
2	670-257031-4	EA	\$422.36	\$844.72	GATE ARM, FIBERGLASS-ALUMINUM, 17-24 FT, INCLUDES GATE GUARD FOR GATE LIGHT CABLE, HIGH INTENSITY VERTICAL STRIPES, NEG P/N 8003-244NFS/CG, SSC T18115						
1	670-696894-4	EA	\$34,574.48	\$34,574.48	GCP4000 - 2 TRK (2TC) - REDUNDANT - 40/40 AMP WIRED RACK EQUIP. FOR 6X8 X'ING SHELTER, (INCL. 2 TRK CHASSIS A80465, 4 TRK MODS: A80418, 2-SSCC A80405, 2 CPU A80403, 1 SEAR A80410, 1 DISPLAY A80407, 2-40 AMP CHARGERS) IPN: 003131-4X						
1	670-477991-4	EA	\$410.00	\$410.00	KIT, GROUNDING ASSY FOR AL I/S INCLUDES 8 GRD RDS, 200#4WIRE, 12 4 WIRE ONE-SHOTS, ERICO SBK206						
1	670-123298-4	EA	\$344.59	\$344.59	KIT, HARDWARE SUPPLIES REQUIRED X'ING P'CKAGES, WEB CONNECTORS FOR SHUNT(8EA) TAPE, AMPS, P'GUM, PAINT, SLEEVES, TAGS, GLUE, 100 EA WHITE TAGS, JNE CAN BLUE MARKING PAINT ETC...						
2	670-764166-4	EA	\$1,240.19	\$2,480.38	LAMP ASSY, 5" MAST MTG. 2W IND. 20" BKGRD, FLX-12 W/BULB STRAN #042003-487XNS						
6	165-643547-4	EA	\$5.92	\$35.52	LAMP, 18 WATT 10 VOLT S-11 SC BAY 18S11/1/SC CLEAR RWY SIGNAL UJ-71463 GE						
4	255-590880-4	EA	\$17.52	\$70.08	LOCK, AMERICAN LOCK MODEL H-10KA KEYED ALIKE TO PRIVATE KEYWAY D456 AND STAMPED "NS SIG"						
2	670-637778-4	EA	\$1,317.65	\$2,635.30	MAST, 5" ALUMINUM 13'10" WITH DOUBLE JCT. BOX BASE. STRAN P# 070519-11AX.						
2	670-850933-4	EA	\$3,925.01	\$7,850.02	MECHANISM, GATE MODEL S-60, WITH DEFROSTER AND MINI TRACKSIDE SENSOR STRAN # 0740007-X002B3						
3	670-000001-4	EA	\$726.23	\$2,178.69	MISC. EXPENSE, MATERIAL/FILL						
1	000-000000-4	EA	\$5,000.00	\$5,000.00	MISC. EXPENSE, UNDERGROUND BORING						
4	670-001347-4	EA	\$57.10	\$228.40	PACKAGE, HARDWARE SIGN 5 IN. MOUNTING, SERRMI A1250-5, HARMON @200965-000, OR						

APPROVED BY STATE	APPROVED BY RAILROAD	CAR NUMBER	SEAL NUMBER
-------------------	----------------------	------------	-------------

Location: MONROE										OH	S&E Proj. No.: 10.1348	AFE No.: F-33477	Drawing No.: 82112327	Vendor: Interrail Engineering, INC			
Store No.:										P.O.Number:		Date Required:		Date Shipped:			
Qty.	Class-Item-CD	UI	Price per Item	Total Price	Item Description	Quantity Shipped	Quantity Installed Date Quan.	Quantity Returned (Credit)	Special Instructions								
1	255-646807-4	EA	\$31.19	\$31.19	PADLOCK, SAFETRAN PART NO. 030399-29X SCREW TYPE FOR CIR CONTROLLER AND BTY. BOX												
1	670-514605-4	EA	\$11.11	\$11.11	PINNACLE, W-C SECT 1-11, 4" & 5" REF K1 110-8 OR SAFETRAN NO. @035045-503X												
1	165-902002-4	EA	\$303.27	\$303.27	PROTECTOR, SURGE 120/240VAC, ERICO P/N EPD120/240TDFL												
4	465-002899-4	EA	\$40.24	\$160.96	REEL, CABLE DISPOSABLE FOR CROSSING SIGNAL PACKAGES												
2	435-805560-4	EA	\$2.78	\$5.56	SAND, 25LB BAG FOR CABLE ENTRANCE INTO THE SHELTER												
1	670-027556-4	EA	\$2,629.77	\$2,629.77	SEARIII, ACCESSORY PACKAGE, W/2-ILOD, 1-E-BELL, 2-GTS, 1-GFT, 1-VHFC, WITHOUT MTSS/SEAR UNIT												
1	670-749325-4	EA	\$226.97	\$226.97	SHELF, FOLDING, FOR LAPTOP USE IN FARADAY 6X8 SHELTER, SAFETRAN 052852-128X												
1	670-755523-4	EA	\$9,333.50	\$9,333.50	SHELTER, 6'X8' ALUMIN FARADAY W/CABLE CHUTES BEHIND TERMINAL BOARD, W/1EA EQUIPMENT RACK, W/GEN RECEPTICAL, BREAKER BOX GFI OUTLET FOR LAPTOP SHELF SAFETRAN 058400-68-85												
2	670-586967-4	EA	\$42.98	\$85.96	SHUNT COVER W/LAG SCREWS, 19"X19", SERRMI #40271, ORDER 1 PER SHUNT												
2	670-792699-4	EA	\$49.50	\$99.00	SHUNT, HARDWIRE SERRMI A1000-5												
2	670-652773-4	EA	\$460.98	\$921.96	SHUNT, MULTI-FREQ. #62775-1543 SAFETRAN NARROW BAND												
2	670-393331-4	EA	\$37.43	\$74.86	SIGN CROSSING MALFUNCTION ASSEMBLY FOR 4" AND 5" MAST, SAFETRAN #T17216												
2	670-554843-4	EA	\$77.05	\$154.10	SIGN, 2 TRACK SIGN, HIGH INTENSITY, SAFETRAN #035207-2HX												
2	670-016346-4	EA	\$143.38	\$286.76	SIGN, X-BUCK, HI-INTENSIVE REFLECTIVE FRT. & BACK FOR ALL STATES, SAFETRAN# 035200-91X												
1	670-330382-4	RL	\$18.06	\$18.06	TAPE, THOR 3" DURATEC, ORANGE 1000' LENGTHS. "WARNING STOP DIGGING"												

Total Material: \$86,828.83

APPROVED BY STATE	APPROVED BY RAILROAD	CAR NUMBER	SEAL NUMBER
-------------------	----------------------	------------	-------------

SH. NO.	CONTENTS
NXI	INDEX SHEET
1	LAYOUT
2	PROFILE
3	CABLE PLAN
4	LOAD CENTER
5	RECTIFIER & BATTERY
6	4000 GCP 2-TK CHASSIS & MODULE LAYOUT
7	4000 GCP PROGRAMMING SETUP
8	4000 GCP PROGRAMMING SETUP
9	CONNECTORS FOR TRACK MODULES
10	CPU MODULE, SEAR III, GFT & VHF HOOK-UPS
11	SEAR III PROGRAMMING SETUP
12	SSCC#1 MODULE, ILOD#1 HOOK-UP
13	SSCC#2 MODULE, ILOD#2 HOOK-UP
14	FLASHER AND GATE LIGHTS - A
15	FLASHER AND GATE LIGHTS - B
16	BACKBOARD 1A & 1B
17	REAR BACKBOARD 1A & 1B
18	FARADAY SHIELD 1A & 1B
19	FARADAY SHIELD 1C
20	HOUSE SIDE C LAYOUT
21	HOUSE SIDE A LAYOUT
22	HOUSE SIDE B & TOP VIEW LAYOUT

IN SERVICE _____ SIGNED _____ DATE _____

☐ S&E ENGINEERING COPY

☐ CONSTRUCTION OFFICE COPY

☐ RETURN TO S&E ENG. AFTER COMPLETION

☐ FIELD COPY

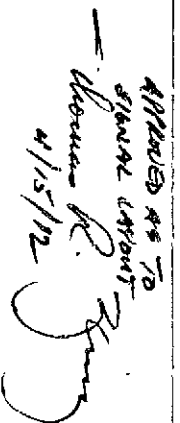
☐ RETURN TO CASE AFTER COMPLETION

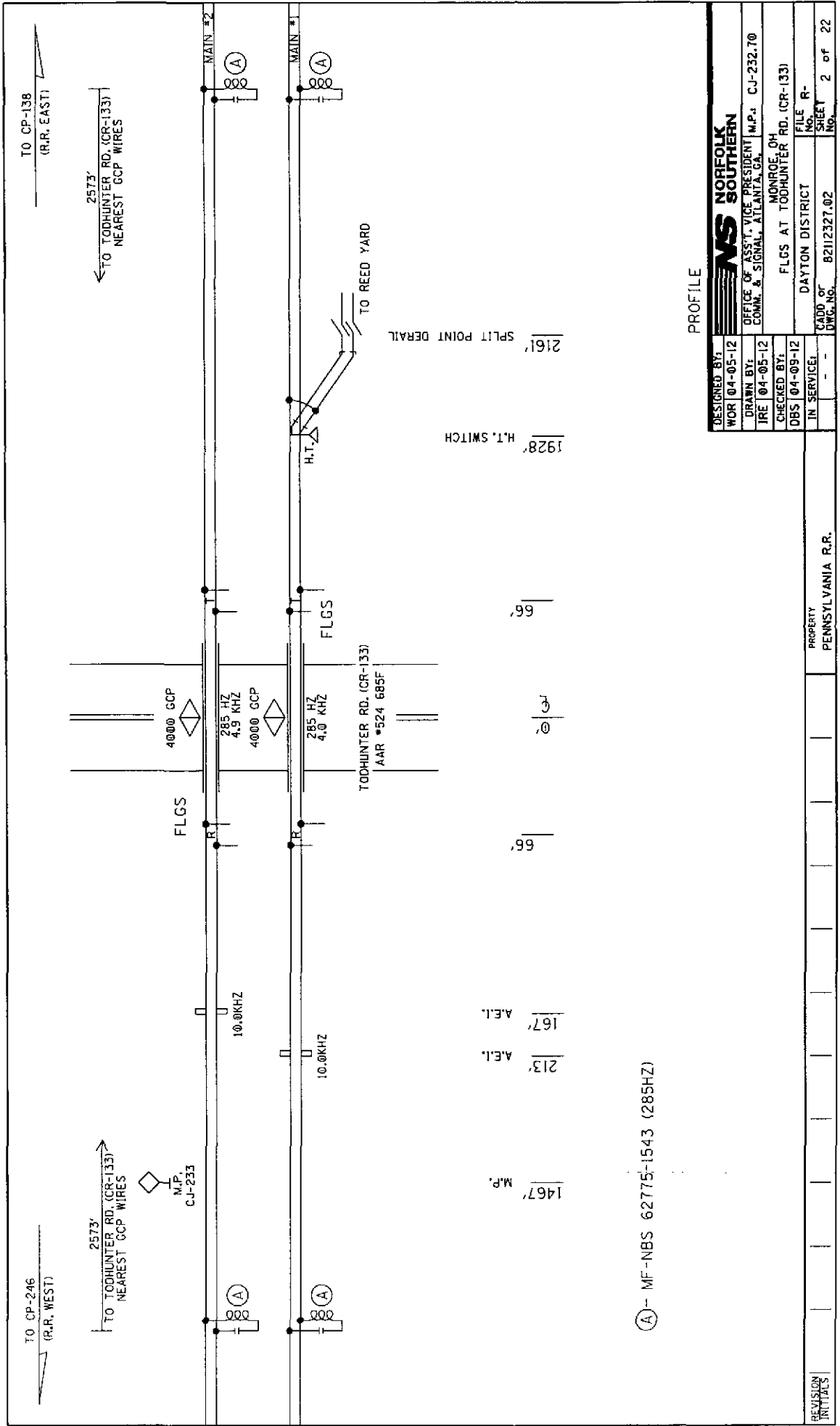
☐ PROJECT ENGINEER COPY

INDEX SHEET 1

DESIGNED BY:	WCR 04-05-12	 NORFOLK SOUTHERN OFFICE OF ASST. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA. M.P.# CJ-232.70	
DRAWN BY:	IRE 04-05-12		
CHECKED BY:	DBS 04-09-12		
IN SERVICE:	- -		
FILE NO.	DAYTON DISTRICT	FILE NO.	82112327.NXI
SHEET NO.	1	SHEET NO.	1 of 1

PROPERTY
PENNSYLVANIA R.R.

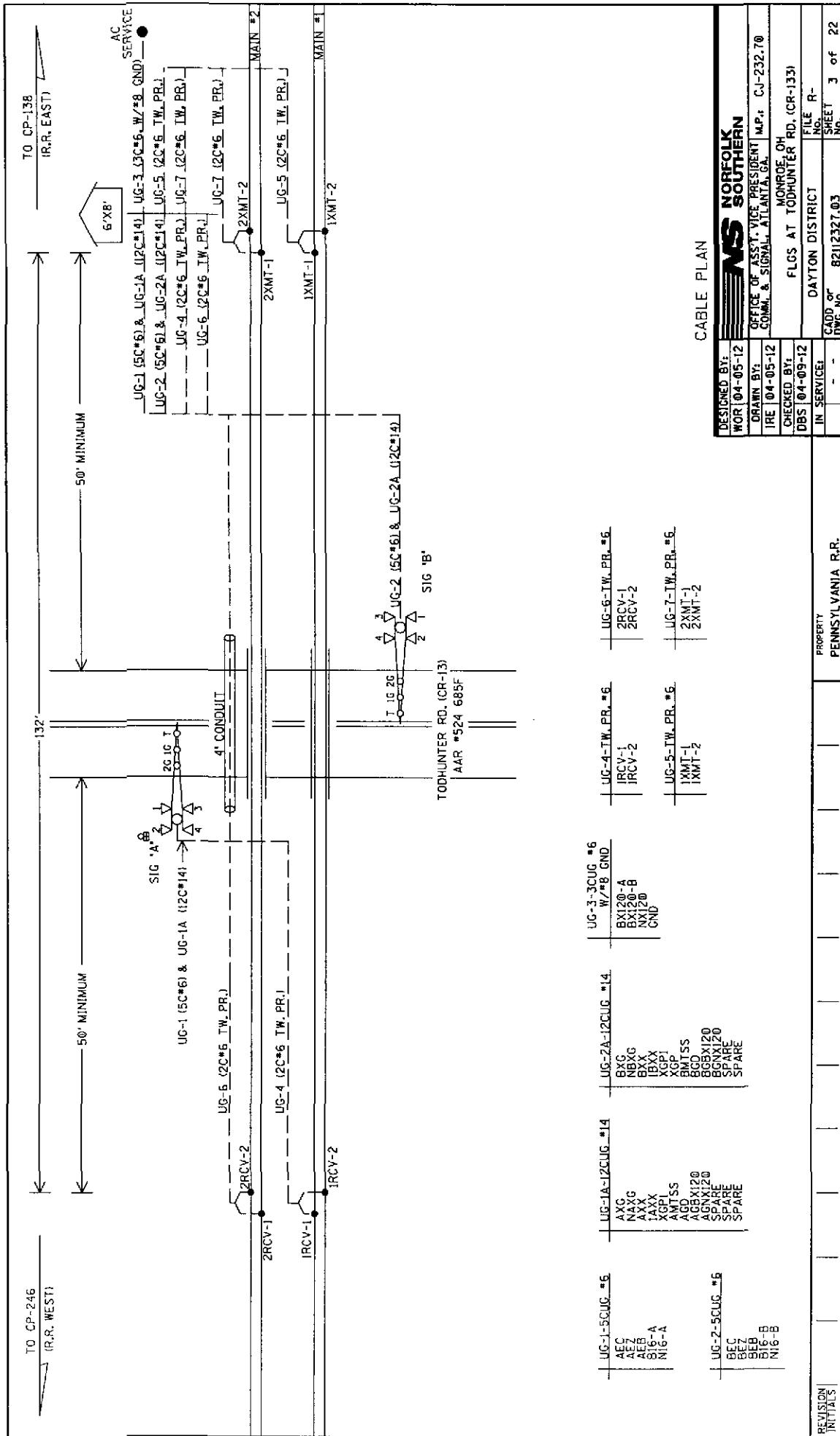


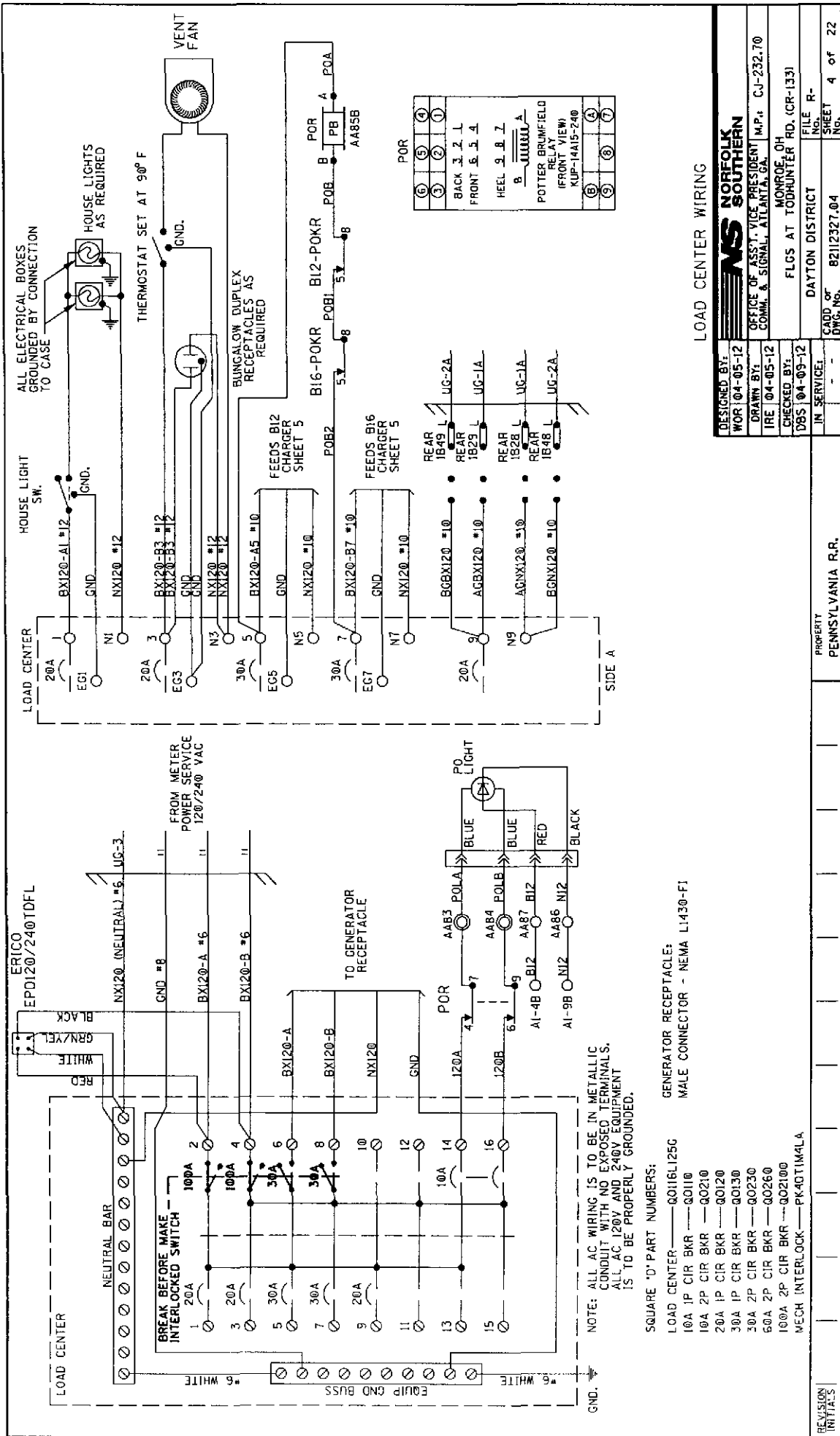


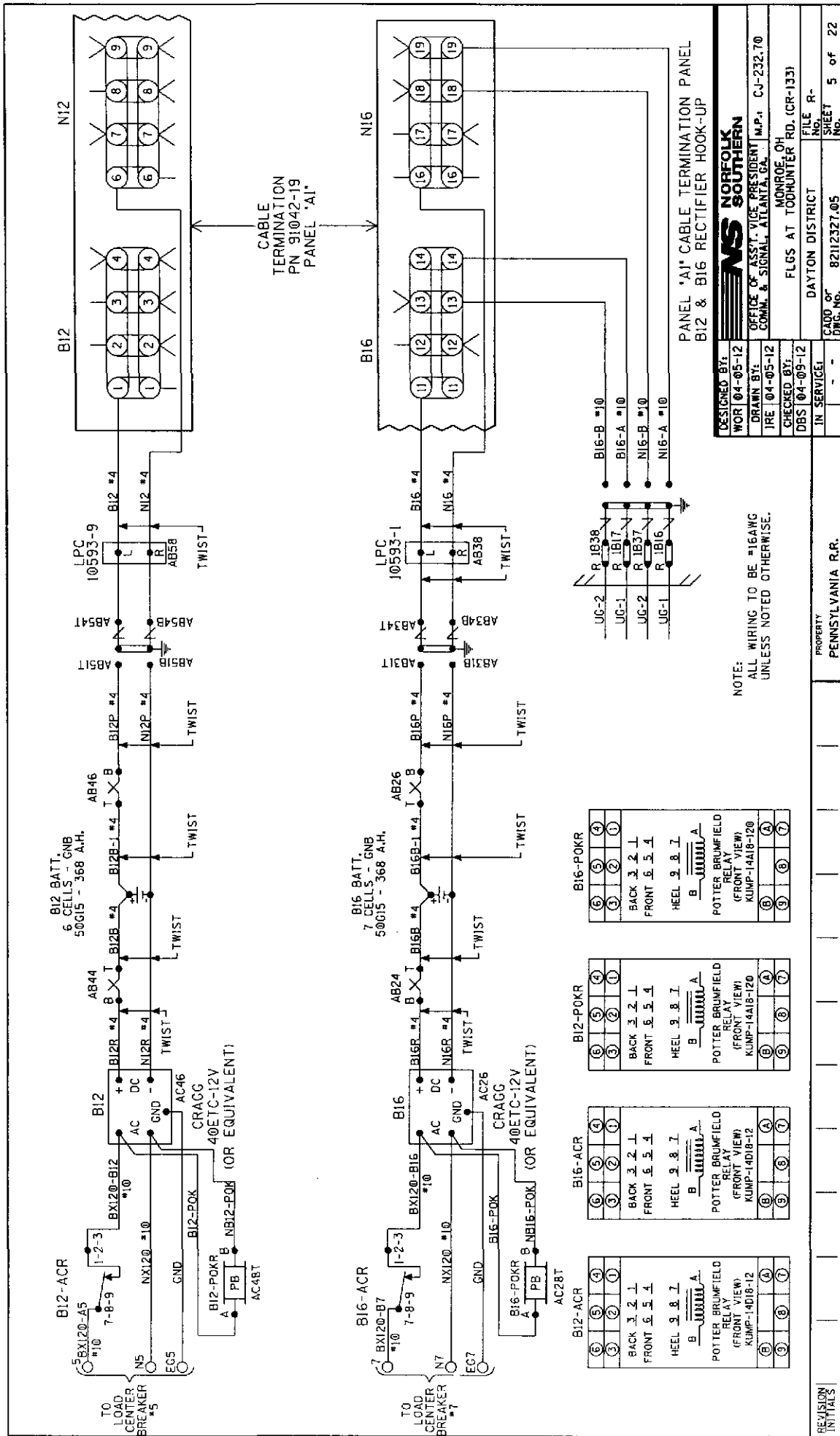
Ⓐ -- MF-NBS 62775-1543 (285HZ)

PROFILE

DESIGNED BY: WOR 04-05-12		NORFOLK SOUTHERN	
DRAWN BY: JRE 04-05-12		OFFICE OF ASST. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.	
CHECKED BY: DBS 04-09-12		M.P. CJ-232.70	
IN SERVICE: --		MONROE, OH	
		FLGS AT TODHUNTER RD. (CR-133)	
		DAYTON DISTRICT	
		FILE R-	
		CADD or DWG. No. 82112327.02	
		SHEET No. 2 of 22	
REVISION		PROPERTY	
ENTRIES		PENNSYLVANIA R.R.	







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

DESIGNED BY:	WOR 04-05-12
DRAWN BY:	IRE 04-05-12
CHECKED BY:	DBS 04-09-12
IN SERVICE:	-
FILE NO.	DAYTON DISTRICT
SHEET NO.	82112327.05
5 of 22	

NORFOLK SOUTHERN
OFFICE OF ASST. VICE PRESIDENT
COMM. & SIGNAL, ATLANTA, GA.
M.P.: C-J-232.70
MONROE, OH
FLGS AT TOOHUNTER RD. (CR-1331)

B12-ACR	B12-PKR	B16-ACR	B16-PKR
BACK 3 2 1	BACK 3 2 1	BACK 3 2 1	BACK 3 2 1
FRONT 5 3 4	FRONT 5 3 4	FRONT 5 3 4	FRONT 5 3 4
HEEL 3 8 1	HEEL 3 8 1	HEEL 3 8 1	HEEL 3 8 1
POTTER BRUMFIELD	POTTER BRUMFIELD	POTTER BRUMFIELD	POTTER BRUMFIELD
(FRONT VIEW)	(FRONT VIEW)	(FRONT VIEW)	(FRONT VIEW)
KUMP-14018-12	KUMP-14018-12	KUMP-14018-12	KUMP-14018-12
6 5 4 3 2 1	6 5 4 3 2 1	6 5 4 3 2 1	6 5 4 3 2 1

PROPERTY
PENNSYLVANIA R.R.

REVISION
INITIALS

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

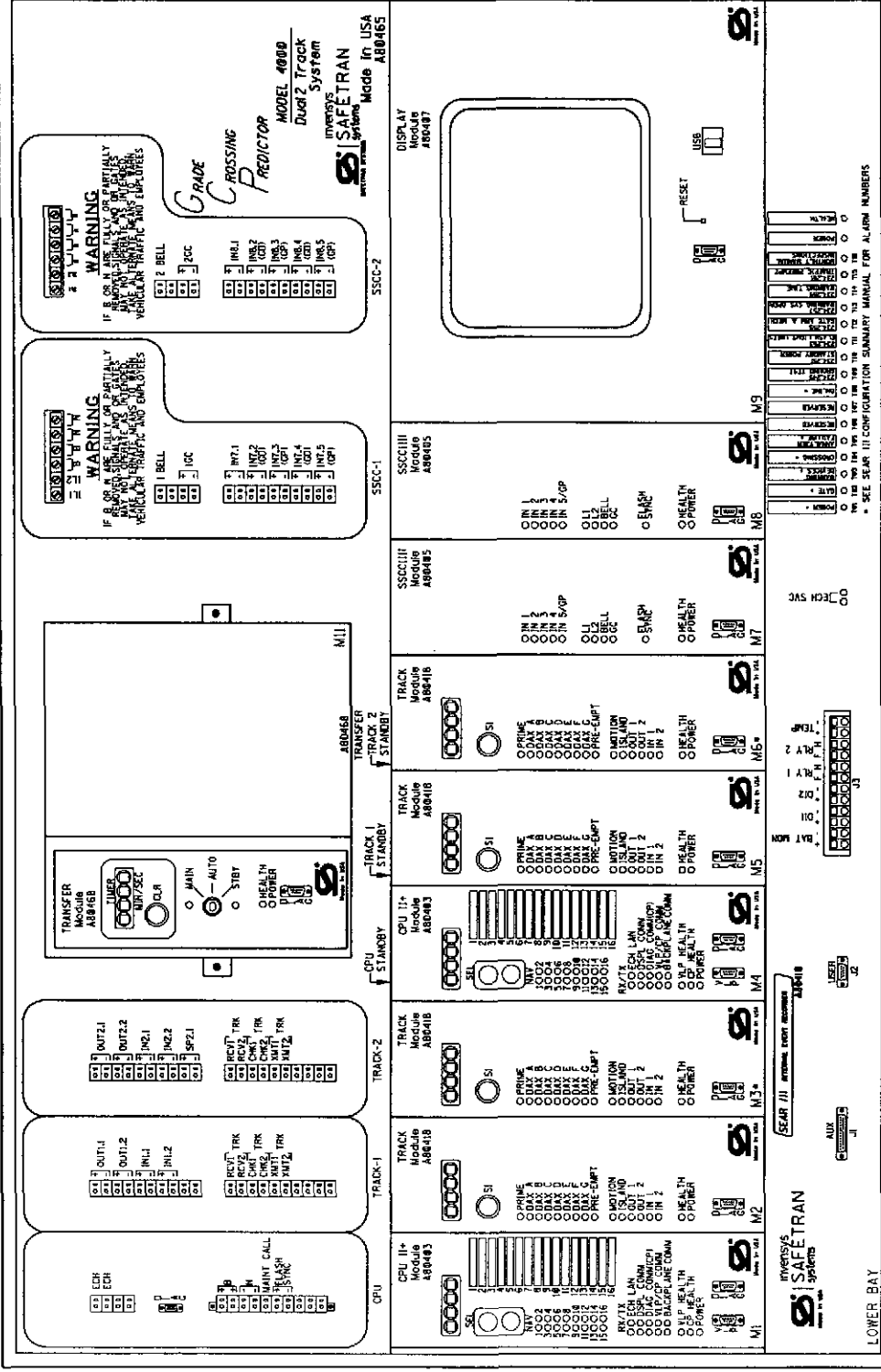
CAUTION
ASSURE CORRECT POLARITY
OF THE SSCCIII MODULE OR
SEVERE DAMAGE WILL OCCUR.

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 R10 IN
TRACK 2 SLOTS (M3 AND M6)

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



DESIGNED BY: WOR 04-05-12	
DRAWN BY: IRE 04-05-12	
CHECKED BY: DBS 04-09-12	
IN SERVICE: -	
PROPERTY: PENNSYLVANIA R.R.	
REVISION INITIALS	
FILE NO. 6 of 22	
SHEET NO. 6 of 22	
DAYTON DISTRICT	
FLGS AT TOOHUNTER RD. (CR-1331)	
MONROE, OH	
OFFICE OF ASST. VICE PRESIDENT	
COMM. & SIGNAL, ATLANTA, GA.	
M.P.: CJ-232.70	
NORFOLK SOUTHERN	

Program Report

Location and SIN

DOT Number: 524685F 232.70

Site Name: TOTHUNTER RD (CR-133)

SIN: 755022406816

MCF and Template Selection

MCF Name: GCP-T6X-02-1.mcf

MCF Revis: 001 021

MCF CRC: 6016E435

Template = 1A6 Trk 81

Check Numbers

Office Check No. 01 460 418C004E

Confid. Check Number: 23270235

(Based on MCF Revision 021)

Program

BASIC: module configuration

Track 1: 1A6 Trk 81

Track 2: 1A6 Trk 81

Track 3: 1A6 Trk 81

Track 4: 1A6 Trk 81

Track 5: 1A6 Trk 81

Track 6: 1A6 Trk 81

Track 7: 1A6 Trk 81

Track 8: 1A6 Trk 81

Track 9: 1A6 Trk 81

Track 10: 1A6 Trk 81

Track 11: 1A6 Trk 81

Track 12: 1A6 Trk 81

Track 13: 1A6 Trk 81

Track 14: 1A6 Trk 81

Track 15: 1A6 Trk 81

Track 16: 1A6 Trk 81

Track 17: 1A6 Trk 81

Track 18: 1A6 Trk 81

Track 19: 1A6 Trk 81

Track 20: 1A6 Trk 81

Track 21: 1A6 Trk 81

Track 22: 1A6 Trk 81

Track 23: 1A6 Trk 81

Track 24: 1A6 Trk 81

Track 25: 1A6 Trk 81

Track 26: 1A6 Trk 81

Track 27: 1A6 Trk 81

Track 28: 1A6 Trk 81

Track 29: 1A6 Trk 81

Track 30: 1A6 Trk 81

Track 31: 1A6 Trk 81

Track 32: 1A6 Trk 81

Track 33: 1A6 Trk 81

Track 34: 1A6 Trk 81

Track 35: 1A6 Trk 81

Track 36: 1A6 Trk 81

Track 37: 1A6 Trk 81

Track 38: 1A6 Trk 81

Track 39: 1A6 Trk 81

Track 40: 1A6 Trk 81

Track 41: 1A6 Trk 81

Track 42: 1A6 Trk 81

Track 43: 1A6 Trk 81

Track 44: 1A6 Trk 81

GCP: track 1: 1A6 Trk 81

Track 2: 1A6 Trk 81

Track 3: 1A6 Trk 81

Track 4: 1A6 Trk 81

Track 5: 1A6 Trk 81

Track 6: 1A6 Trk 81

Track 7: 1A6 Trk 81

Track 8: 1A6 Trk 81

Track 9: 1A6 Trk 81

Track 10: 1A6 Trk 81

Track 11: 1A6 Trk 81

Track 12: 1A6 Trk 81

Track 13: 1A6 Trk 81

Track 14: 1A6 Trk 81

Track 15: 1A6 Trk 81

Track 16: 1A6 Trk 81

Track 17: 1A6 Trk 81

Track 18: 1A6 Trk 81

Track 19: 1A6 Trk 81

Track 20: 1A6 Trk 81

Track 21: 1A6 Trk 81

Track 22: 1A6 Trk 81

Track 23: 1A6 Trk 81

Track 24: 1A6 Trk 81

Track 25: 1A6 Trk 81

Track 26: 1A6 Trk 81

Track 27: 1A6 Trk 81

Track 28: 1A6 Trk 81

Track 29: 1A6 Trk 81

Track 30: 1A6 Trk 81

Track 31: 1A6 Trk 81

Track 32: 1A6 Trk 81

Track 33: 1A6 Trk 81

Track 34: 1A6 Trk 81

Track 35: 1A6 Trk 81

Track 36: 1A6 Trk 81

Track 37: 1A6 Trk 81

Track 38: 1A6 Trk 81

Track 39: 1A6 Trk 81

Track 40: 1A6 Trk 81

Track 41: 1A6 Trk 81

Track 42: 1A6 Trk 81

Track 43: 1A6 Trk 81

Track 44: 1A6 Trk 81

Track 45: 1A6 Trk 81

Track 46: 1A6 Trk 81

Track 47: 1A6 Trk 81

Track 48: 1A6 Trk 81

Track 49: 1A6 Trk 81

Track 50: 1A6 Trk 81

Track 51: 1A6 Trk 81

Track 52: 1A6 Trk 81

Track 53: 1A6 Trk 81

Track 54: 1A6 Trk 81

Track 55: 1A6 Trk 81

Track 56: 1A6 Trk 81

Track 57: 1A6 Trk 81

Track 58: 1A6 Trk 81

Track 59: 1A6 Trk 81

Track 60: 1A6 Trk 81

Track 61: 1A6 Trk 81

Track 62: 1A6 Trk 81

GCP: track 2: pos start

Track 3: 1A6 Trk 81

Track 4: 1A6 Trk 81

Track 5: 1A6 Trk 81

Track 6: 1A6 Trk 81

Track 7: 1A6 Trk 81

Track 8: 1A6 Trk 81

Track 9: 1A6 Trk 81

Track 10: 1A6 Trk 81

Track 11: 1A6 Trk 81

Track 12: 1A6 Trk 81

Track 13: 1A6 Trk 81

Track 14: 1A6 Trk 81

Track 15: 1A6 Trk 81

Track 16: 1A6 Trk 81

Track 17: 1A6 Trk 81

Track 18: 1A6 Trk 81

Track 19: 1A6 Trk 81

Track 20: 1A6 Trk 81

Track 21: 1A6 Trk 81

Track 22: 1A6 Trk 81

Track 23: 1A6 Trk 81

Track 24: 1A6 Trk 81

Track 25: 1A6 Trk 81

Track 26: 1A6 Trk 81

Track 27: 1A6 Trk 81

Track 28: 1A6 Trk 81

Track 29: 1A6 Trk 81

Track 30: 1A6 Trk 81

Track 31: 1A6 Trk 81

Track 32: 1A6 Trk 81

Track 33: 1A6 Trk 81

Track 34: 1A6 Trk 81

Track 35: 1A6 Trk 81

Track 36: 1A6 Trk 81

Track 37: 1A6 Trk 81

Track 38: 1A6 Trk 81

Track 39: 1A6 Trk 81

Track 40: 1A6 Trk 81

Track 41: 1A6 Trk 81

Track 42: 1A6 Trk 81

Track 43: 1A6 Trk 81

Track 44: 1A6 Trk 81

Track 45: 1A6 Trk 81

Track 46: 1A6 Trk 81

Track 47: 1A6 Trk 81

Track 48: 1A6 Trk 81

Track 49: 1A6 Trk 81

Track 50: 1A6 Trk 81

Track 51: 1A6 Trk 81

Track 52: 1A6 Trk 81

Track 53: 1A6 Trk 81

Track 54: 1A6 Trk 81

Track 55: 1A6 Trk 81

Track 56: 1A6 Trk 81

Track 57: 1A6 Trk 81

Track 58: 1A6 Trk 81

Track 59: 1A6 Trk 81

Track 60: 1A6 Trk 81

Track 61: 1A6 Trk 81

Track 62: 1A6 Trk 81

ADVANCED: Internal I/O 1

Track 2: 1A6 Trk 81

Track 3: 1A6 Trk 81

Track 4: 1A6 Trk 81

Track 5: 1A6 Trk 81

Track 6: 1A6 Trk 81

Track 7: 1A6 Trk 81

Track 8: 1A6 Trk 81

Track 9: 1A6 Trk 81

Track 10: 1A6 Trk 81

Track 11: 1A6 Trk 81

Track 12: 1A6 Trk 81

Track 13: 1A6 Trk 81

Track 14: 1A6 Trk 81

Track 15: 1A6 Trk 81

Track 16: 1A6 Trk 81

Track 17: 1A6 Trk 81

Track 18: 1A6 Trk 81

Track 19: 1A6 Trk 81

Track 20: 1A6 Trk 81

Track 21: 1A6 Trk 81

Track 22: 1A6 Trk 81

Track 23: 1A6 Trk 81

Track 24: 1A6 Trk 81

Track 25: 1A6 Trk 81

Track 26: 1A6 Trk 81

Track 27: 1A6 Trk 81

Track 28: 1A6 Trk 81

Track 29: 1A6 Trk 81

Track 30: 1A6 Trk 81

Track 31: 1A6 Trk 81

Track 32: 1A6 Trk 81

Track 33: 1A6 Trk 81

Track 34: 1A6 Trk 81

Track 35: 1A6 Trk 81

Track 36: 1A6 Trk 81

Track 37: 1A6 Trk 81

Track 38: 1A6 Trk 81

Track 39: 1A6 Trk 81

Track 40: 1A6 Trk 81

Track 41: 1A6 Trk 81

Track 42: 1A6 Trk 81

Track 43: 1A6 Trk 81

Track 44: 1A6 Trk 81

Track 45: 1A6 Trk 81

Track 46: 1A6 Trk 81

Track 47: 1A6 Trk 81

Track 48: 1A6 Trk 81

Track 49: 1A6 Trk 81

Track 50: 1A6 Trk 81

Track 51: 1A6 Trk 81

Track 52: 1A6 Trk 81

Track 53: 1A6 Trk 81

Track 54: 1A6 Trk 81

Track 55: 1A6 Trk 81

Track 56: 1A6 Trk 81

Track 57: 1A6 Trk 81

Track 58: 1A6 Trk 81

Track 59: 1A6 Trk 81

Track 60: 1A6 Trk 81

Track 61: 1A6 Trk 81

Track 62: 1A6 Trk 8

```

SSCC: 2 Used = Yes
SSCC: 2 GPS Coupled = Yes
SSCC: 2 Activation Cancel = 2 min
SSCC: 2 Activation Cancel = 2 min
SSCC: 2 Gate Down = No
SSCC: 2 Gate Down = No
SSCC: 2 Controller Used = No

SSCC: 1 Activation = AND 1 XR
SSCC: 1 Gate Delay = 4 sec
SSCC: 1 Number of GPS = 2
SSCC: 1 Flash Rate = 40
SSCC: 1 Flash Rate = 40
SSCC: 1 Flash Sync = 0
SSCC: 1 Invert Gate Output = No
SSCC: 1 Lamp Neutral Test = 0n
AUX-1 Xing Ctrl Used = No

SSCC: 2 Activation = AND 1 XR
SSCC: 2 Gate Delay = 4 sec
SSCC: 2 Number of GPS = 0
SSCC: 2 Flash Rate = 40
SSCC: 2 Flash Rate = 40
SSCC: 2 Flash Sync = 0
SSCC: 2 Invert Gate Output = No
SSCC: 2 Lamp Neutral Test = 0n
AUX-2 Xing Ctrl Used = No

OUTPUT: assignment page 1
OUT 1: 1 = Not Used
OUT 1: 2 = Not Used
OUT 2: 1 = Not Used
OUT 2: 2 = Not Used

INPUT: assignment page 1
IN 1: 1 = Not Used
IN 1: 2 = Not Used
IN 2: 1 = Not Used
IN 2: 2 = Not Used

IO: assignment SSCC
OUT 1: 1 = Gate Output 1
OUT 1: 2 = Gate Output 2
OUT 2: 1 = Gate Output 1
OUT 2: 2 = Gate Output 2
OUT 3: 1 = AND 1 XR Enable
OUT 3: 2 = AND 1 XR Enable
OUT 4: 1 = Service IP 1
OUT 4: 2 = Service IP 1
OUT 5: 1 = Not Used
OUT 5: 2 = Not Used
OUT 6: 1 = Not Used
OUT 6: 2 = Not Used
OUT 7: 1 = Not Used
OUT 7: 2 = Not Used
OUT 8: 1 = Not Used
OUT 8: 2 = Not Used

```

```

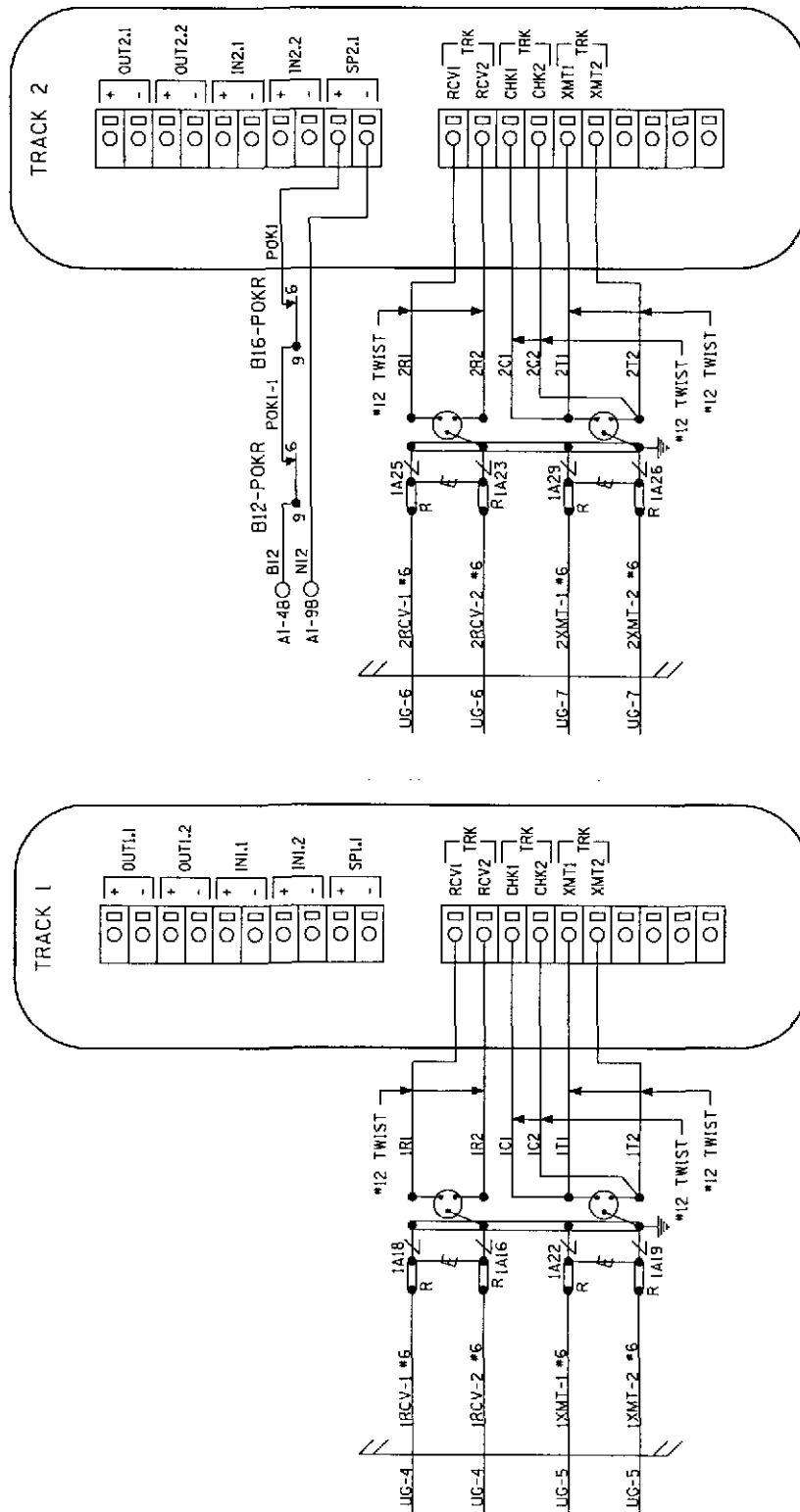
SEAR Subnode = 3
SEAR: 1 = Not Used
SEAR: 2 = Not Used
SEAR: 3 = Ground Fault Test
SEAR: 4 = AC Control
SEAR: 5 = Inputs
SEAR: 6 = Inputs
SEAR: 7 = Inputs
SEAR: 8 = Inputs
SEAR: 9 = Inputs
SEAR: 10 = Inputs
SEAR: 11 = Inputs
SEAR: 12 = Inputs
SEAR: 13 = Inputs
SEAR: 14 = Inputs
SEAR: 15 = Inputs
SEAR: 16 = Inputs
SEAR: 17 = Inputs
SEAR: 18 = Inputs
SEAR: 19 = Inputs
SEAR: 20 = Inputs
SEAR: 21 = Inputs
SEAR: 22 = Inputs
SEAR: 23 = Inputs
SEAR: 24 = Inputs
SEAR: 25 = Inputs
SEAR: 26 = Inputs
SEAR: 27 = Inputs
SEAR: 28 = Inputs
SEAR: 29 = Inputs
SEAR: 30 = Inputs
SEAR: 31 = Inputs
SEAR: 32 = Inputs
SEAR: 33 = Inputs
SEAR: 34 = Inputs
SEAR: 35 = Inputs
SEAR: 36 = Inputs
SEAR: 37 = Inputs
SEAR: 38 = Inputs
SEAR: 39 = Inputs
SEAR: 40 = Inputs
SEAR: 41 = Inputs
SEAR: 42 = Inputs
SEAR: 43 = Inputs
SEAR: 44 = Inputs
SEAR: 45 = Inputs
SEAR: 46 = Inputs
SEAR: 47 = Inputs
SEAR: 48 = Inputs
SEAR: 49 = Inputs
SEAR: 50 = Inputs
SEAR: 51 = Inputs
SEAR: 52 = Inputs
SEAR: 53 = Inputs
SEAR: 54 = Inputs
SEAR: 55 = Inputs
SEAR: 56 = Inputs
SEAR: 57 = Inputs
SEAR: 58 = Inputs
SEAR: 59 = Inputs
SEAR: 60 = Inputs
SEAR: 61 = Inputs
SEAR: 62 = Inputs
SEAR: 63 = Inputs
SEAR: 64 = Inputs
SEAR: 65 = Inputs
SEAR: 66 = Inputs
SEAR: 67 = Inputs
SEAR: 68 = Inputs
SEAR: 69 = Inputs
SEAR: 70 = Inputs
SEAR: 71 = Inputs
SEAR: 72 = Inputs
SEAR: 73 = Inputs
SEAR: 74 = Inputs
SEAR: 75 = Inputs
SEAR: 76 = Inputs
SEAR: 77 = Inputs
SEAR: 78 = Inputs
SEAR: 79 = Inputs
SEAR: 80 = Inputs
SEAR: 81 = Inputs
SEAR: 82 = Inputs
SEAR: 83 = Inputs
SEAR: 84 = Inputs
SEAR: 85 = Inputs
SEAR: 86 = Inputs
SEAR: 87 = Inputs
SEAR: 88 = Inputs
SEAR: 89 = Inputs
SEAR: 90 = Inputs
SEAR: 91 = Inputs
SEAR: 92 = Inputs
SEAR: 93 = Inputs
SEAR: 94 = Inputs
SEAR: 95 = Inputs
SEAR: 96 = Inputs
SEAR: 97 = Inputs
SEAR: 98 = Inputs
SEAR: 99 = Inputs
SEAR: 100 = Inputs

```

4000 GCP PROGRAMMING SETUP

DESIGNED BY:	WOR 04-05-12	NS NORFOLK SOUTHERN
DRAWN BY:	IRE 04-05-12	OFFICE OF ASST. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.
CHECKED BY:	DBS 04-09-12	FLGS AT TDDHUNTER RD. (CR-133)
IN SERVICE:	DAYTON DISTRICT	FILE R- No.
	CADD or DWG No.	8212327.08
		SHEET 8 of 22

PROPERTY
PENNSYLVANIA R.R.



PANEL *A2* CONNECTORS FOR MODULES (A80418)

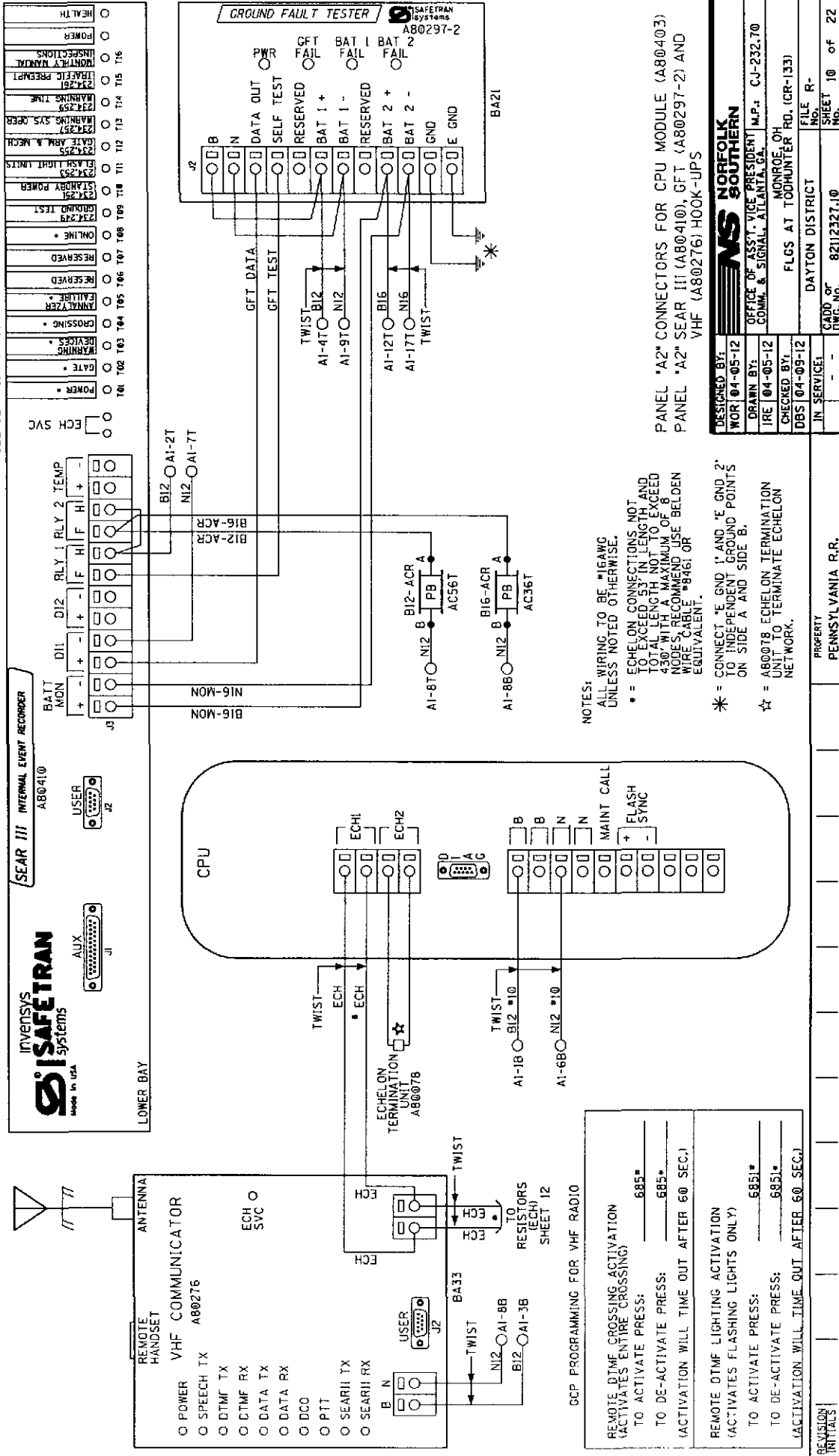
DESIGNED BY:	WOR 04-05-12	NORFOLK SOUTHERN
DRAWN BY:	IRE 04-05-12	OFFICE OF ASST. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.
CHECKED BY:	DBS 04-09-12	MONROE, OH
IN SERVICE:	-	FLGS AT TODHUNTER RD. (DR-133)
FILE NO.	DAYTON DISTRICT	8212327.09
SHEET No.	9	of 22

NOTE:
ALL WIRING TO BE *16AWG
UNLESS NOTED OTHERWISE.

PROPERTY
PENNSYLVANIA R.R.

REVISION
INITIALS

LOWER BAY



GCP PROGRAMMING FOR VHF RADIO

REMOTE DTMF CROSSING ACTIVATION
ACTIVATES ENTIRE CROSSING

TO ACTIVATE PRESS:

TO DE-ACTIVATE PRESS.

ACTIVATION WILL TIME OUT AFTER 60 SEC.)

REMOTE OTMF LIGHTING ACTIVATION
ACTIVATES FLASHING LIGHTS ONLY

TO ACTIVATE BORE.

TO ACQUAIRE PRESS:
TO DE LOYALTY PRESS:

10 DE-ACTIVATE PRESS: _____ 6821 •

ACTIVATION WILL TIME OUT AFTER 60 SEC 1

REVISION
INITIALS

PROPERTY

PENNsylvania R.R.

Q. 28. **100**

WORK 04-05-12

DRAWN BY:

IRE 04-05-12

CHECKED BY:	
-------------	--

DBS	04-09-12
-----	----------

IN SERVICE:

1

100

1

TO CONFIGURE SEARCH PRESS SITE SETUP KEY.
APPROPRIATE 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	TODHUNTER RD. (CR-133)
MILEPOST	CJ-232.70
DOT #	524 685F
TESTER TYPE	CROSSING
DATE FORMAT	MM-DD-YYYY
TEMP FORMAT	FAHRENHEIT
INDICATE HOLD (SEC)	0
INDICATE REFRESH (SEC)	60
SITE ATCS	7.550.234.068.001
SITE TYPE	NO COMMUNICATION
OFFICE ATCS ADDRESS	2.550.00.0000
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	MCM (EHELON)
RADIO ATCS ADDR	7.RRR.LLL.GGG.001.001
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	4 BULBS
CURR 2: LAMP SET UP	4 BULBS
VERIFY NUMBER OF BULBS: SENSOR #2	
CURR 1: LAMP SET UP	4 BULBS
CURR 2: LAMP SET UP	4 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		
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	685	
ACTIVATION TIMEOUT (SECONDS)	60	
IL00 MODULES	2	
ANY LED BULBS USED	NO	
AUTO INSPECTIONS	NO	
BELL SENSORS	1	
BELL SENSOR TSS1	YES	
BELL SENSOR TSS2	NO	
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	
GFT'S	YES	
BATTERIES ON GFTI	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 RELAYS	NO
EDIT INDICATOR LEDS	NO
EDIT TEST LEDS	NO
EDIT IL00 SENSORS	NO
EDIT VHF SETTINGS	NO
GP4K ATCS SUBNOOE	16

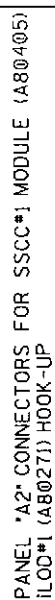
NOTES:

- * = 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

PEAR III PROGRAMMING SETUP

DESIGNED BY:	WOR 04-05-12	
DRAWN BY:	OFFICE OF ASST. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.	
IRE 04-05-12	MP-1 CJ-232.70	
CHECKED BY:	MONROE, OH	
DBS 04-09-12	FLGS AT TODHUNTER RD. (CR-133)	
IN SERVICE:	DAYTON DISTRICT	FILE R-
	CADD OR DWG. NO. 82112327-11	SHEET 11 of 22

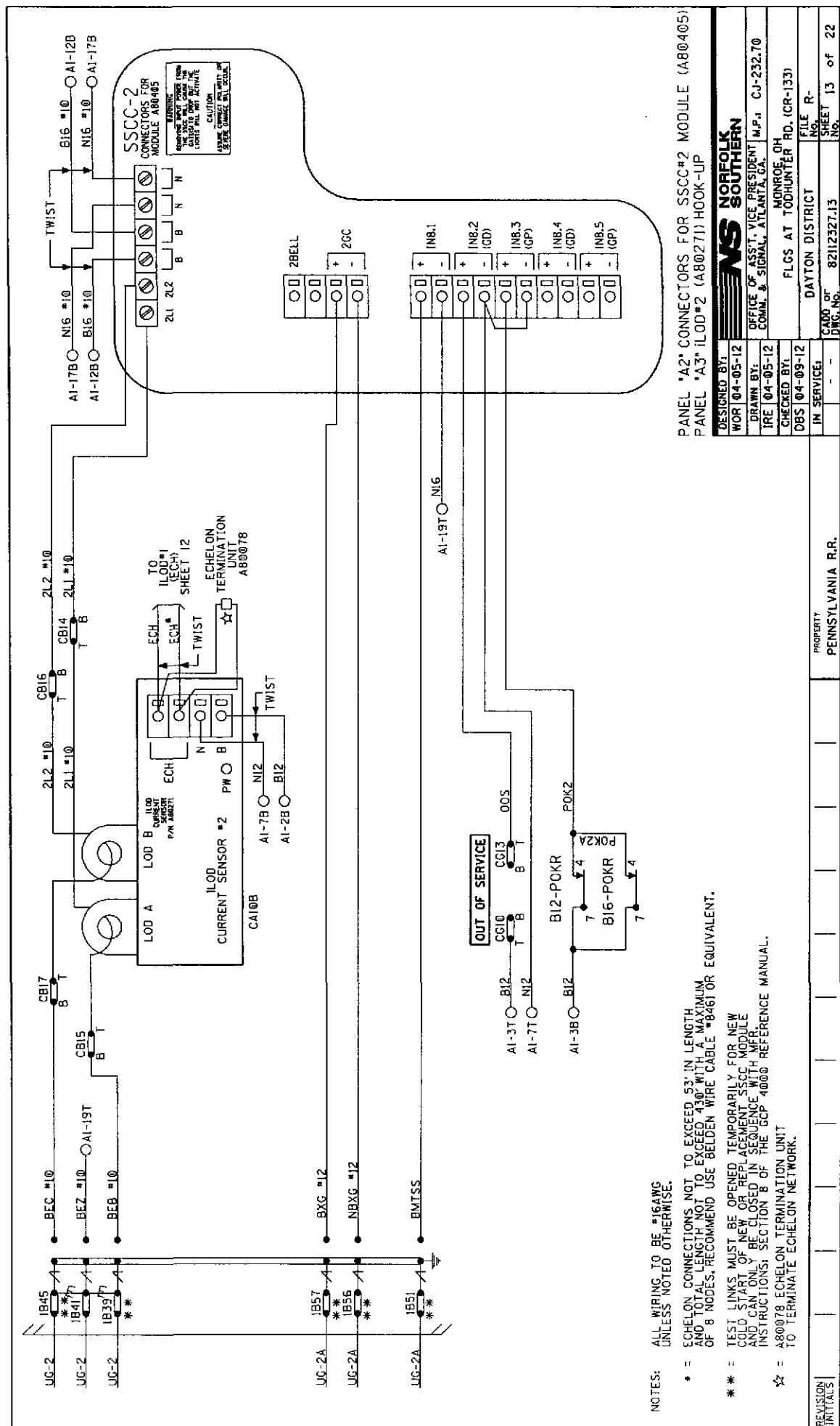
PROPERTY
PENNSYLVANIA R.R.



- * = ECHOLON CONNECTIONS NOT TO EXCEED 53' IN LENGTH AND NOT TO EXCEED 10 TO 15 DBM IN LOSS. THE MAXIMUM LOSS OF A SIGNAL FROM A CABLE WITH A MAXIMUM OF 8 NODES, RECOMMENDED USE BELDEN WIRE CABLE #8461 OR EQUIVALENT.
- * = TEST LINKS MUST BE OPENED TEMPORARILY FOR NEW COLD START OF NEW OR REPLACEMENT SSCC MODULE AND CAN ONLY BE CLOSED IN SEQUENCE WITH MFR. INSTRUCTIONS: SECTION 8 OF THE GCP 40000 REFERENCE MANUAL.
- * =

DESIGNED BY:	MS NORFOLK SOUTHERN		
WOR 04-05-12	OFFICE OF ASST. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.		
DRAWN BY:	M.P.A. CJ-232.70		
IRE 04-05-12	FLGS AT TOOHUNTER RD. (CR-133)		
CHECKED BY:	DAYTON DISTRICT		
DBS 04-09-12	FILE R-		
IN SERVICE:	FILE NO.	NO. OF SHEET	FILE NO.
-	8212327-12	12	04 22

[illegible]



DESIGNED BY: WOR 04-05-12
 DRAWN BY: TIRE 04-05-12
 CHECKED BY: DBS 04-09-12
 IN SERVICE: - - -
 PROPERTY: PENNSYLVANIA R.R.
 FILE NO. 82112327.13
 SHEET 13 of 22

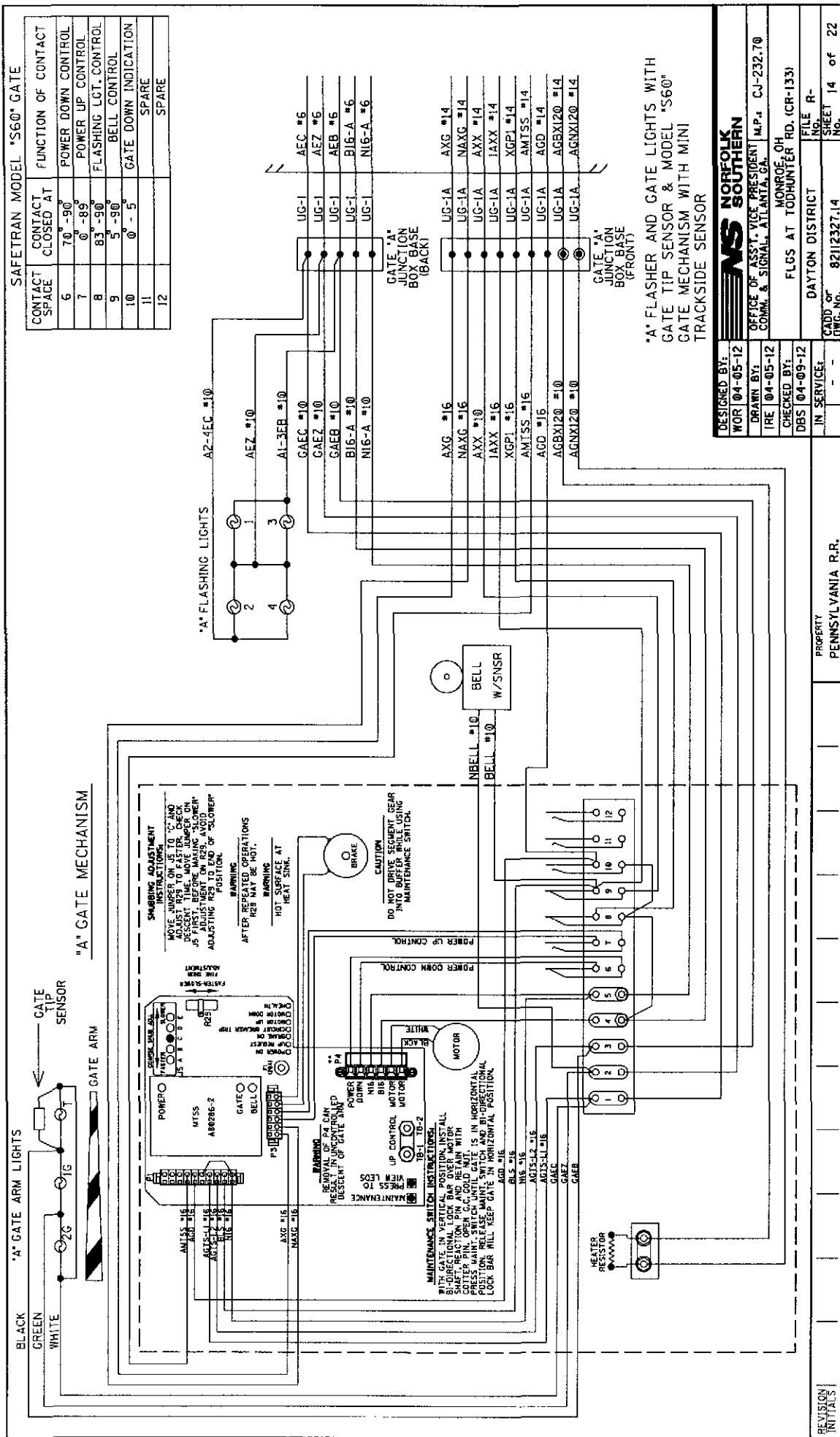
PANEL 'A2' CONNECTORS FOR SSCC#2 MODULE (A80405)
 PANEL 'A3' ILOD#2 (A80271) HOOK-UP
 NORFOLK SOUTHERN
 OFFICE OF ASST. VICE PRESIDENT M.P. CJ-232.70
 COMM. & SIGNAL, ATLANTA, GA.
 MONROE, OH
 FLGS AT TOOHUNTER RD. (CR-133)
 DAYTON DISTRICT
 CADW OF 82112327.13

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 #8461 OR EQUIVALENT.

** = TEST LINKS MUST BE OPENED TEMPORARILY FOR NEW COLD START OF NEW OR REPLACEMENT SSCC MODULE AND CAN ONLY BE CLOSED IN SEQUENCE WITH MFR. INSTRUCTIONS; SECTION 8 OF THE GCP 4000 REFERENCE MANUAL.

☆ = A80078 ECHOLON TERMINATION UNIT TO TERMINATE ECHOLON NETWORK.



☐ = Heavy Duty Equalizer (022700-1X)
 ☐ = Clearview
 ☐ = Lightning Arrestor (022585-1X)
 ☐ = PC-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.

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

BACKBOARD DETAIL - 1A & 1B

DESIGNED BY:	WOR 04-05-12	 = TERMINALS GROUNDED TO SHIELD, 4 POST BLOCKS USE EITHER - GR - SERMMI PART NO. 61278 CL - SERMMI PART NO. 61278-1.
DRAWN BY:	OFFICE OF ASST. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA. MJP-A CJ-232.70	
IRE 04-05-12		
CHECKED BY:	MONROE, OH	
DBS 04-09-12	FLOS AT TODHUNTER RD. (CR-133)	
IN SERVICE:	DAYTON DISTRICT	FILE R-
PROPERTY	82112327.16	NO. 16
PENNSYLVANIA R.R.		SHEET 16 of 22

REAR VIEW OF LEFT TWO ROWS TERMINAL BOARD 1

"1A"

"1B"

48

49

*

*

BGNX120

BGBX120

UG-2A

(SEE PREVIOUS SHEET FOR OTHER WIRES IN CABLE)

28

29

*

*

AGBX120

AGNX120

UG-1A

(SEE PREVIOUS SHEET FOR OTHER WIRES IN CABLE)

NOTE: ALL 120VAC AND ABOVE WILL BE WIRED
TO THE REAR OF FARADAY BACKBOARD.
INSULATED NUTS MUST BE USED ON ALL
TERMINALS.

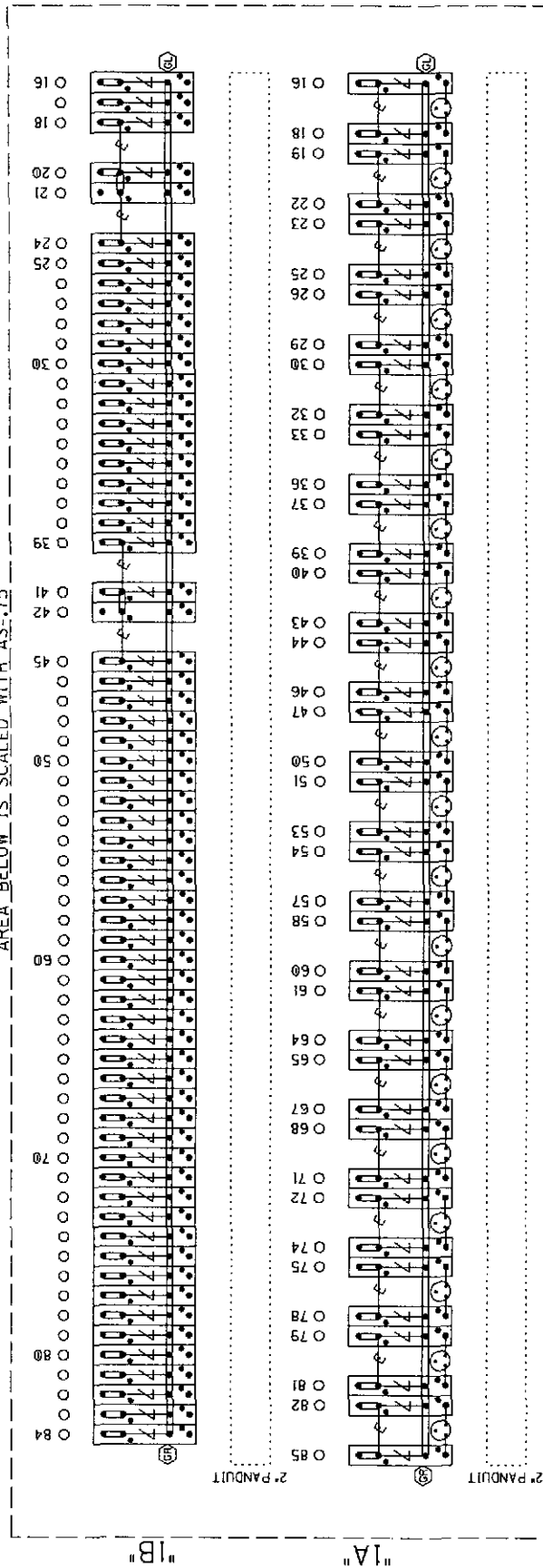
* = CLOSED DURING WINTER MONTHS

REAR OF FARADAY BACKBOARD
REAR BACKBOARD DETAIL - 1A & 1B

DESIGNED BY:	WOR 04-05-12	 NORFOLK SOUTHERN	FILE NO.	DAYTON DISTRICT	FILE R-
DRAWN BY:	IRE 04-05-12		OFFICE OF ASST. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.	M.P.#	CJ-232.70
CHECKED BY:	DBS 04-09-12		MONROE, OH	FLGS AT TODD HUNTER RD. (CR-133)	
IN SERVICE:	-				
REVISION INITIALS					
PROPERTY	PENNSYLVANIA R.R.				
CADD OF	DWG. No.	8212327.17	SHEET	17	of 22

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.

AREA BELOW IS SCALED WITH AS-75



-E- = Heavy Duty Equalizer
(022700-IX)
Clear View
Z = Lightning Arrestor
(022585-IX)
GL = LPC-10560-51

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

= INDICATES PLACEMENT OF PANDUIT

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

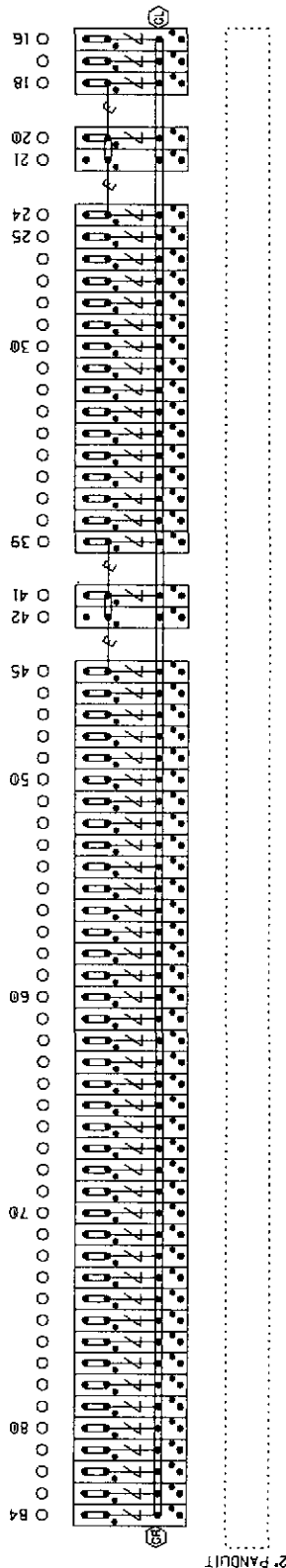
DESIGNED BY:	WOR 04-05-12	NORFOLK SOUTHERN OFFICE OF LOSS PREVENTION COMM & SIGNAL, ATLANTA, GA MONROE, OH FLGS AT TOWNHUNTER RD. (CR-133) DAYTON DISTRICT CADD OF DWG. No. 8212327.18	FILE No.	8212327.18
DRAWN BY:	IRE 04-05-12		SHEET	18 of 22
CHECKED BY:	DBS 04-09-12			
IN SERVICE:				

PROPERTY
PENNSYLVANIA R.R.

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.

AREA BELOW IS SCALED WITH AS=75

TERMINAL BOARD 1
RIGHT HALF



-E = Heavy Duty Equalizer
(022700-IX)

Clearview
Z = Lightning Arrester
(022585-IX)

GL = LPC-10560-51

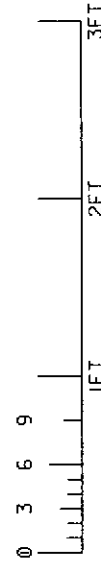
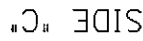
THIS SHEET IS FOR REFERENCE ONLY.
TO REFLECT HOW THE FARADAY SHIELD
IS PREDRILLED, ONLY INSTALL AND USE
THE TERMINALS NEEDED.

= INDICATES PLACEMENT
OF PANDUIT

TERMINAL BOARD 1
RIGHT ROW
FARADAY SHIELD DETAIL - 1C

DESIGNED BY:	WOR 04-05-12	NORFOLK SOUTHERN
DRAWN BY:	IRE 04-05-12	
CHECKED BY:	DBS 04-09-12	
OFFICE OF ASST. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.		FILE NO. 8212327.19
FLGS AT TODD HUNTER RD. (CR-133)		SHEET 19 of 22
DAYTON DISTRICT		
CADD or DWG. No.		

PROPERTY
PENNSYLVANIA R.R.



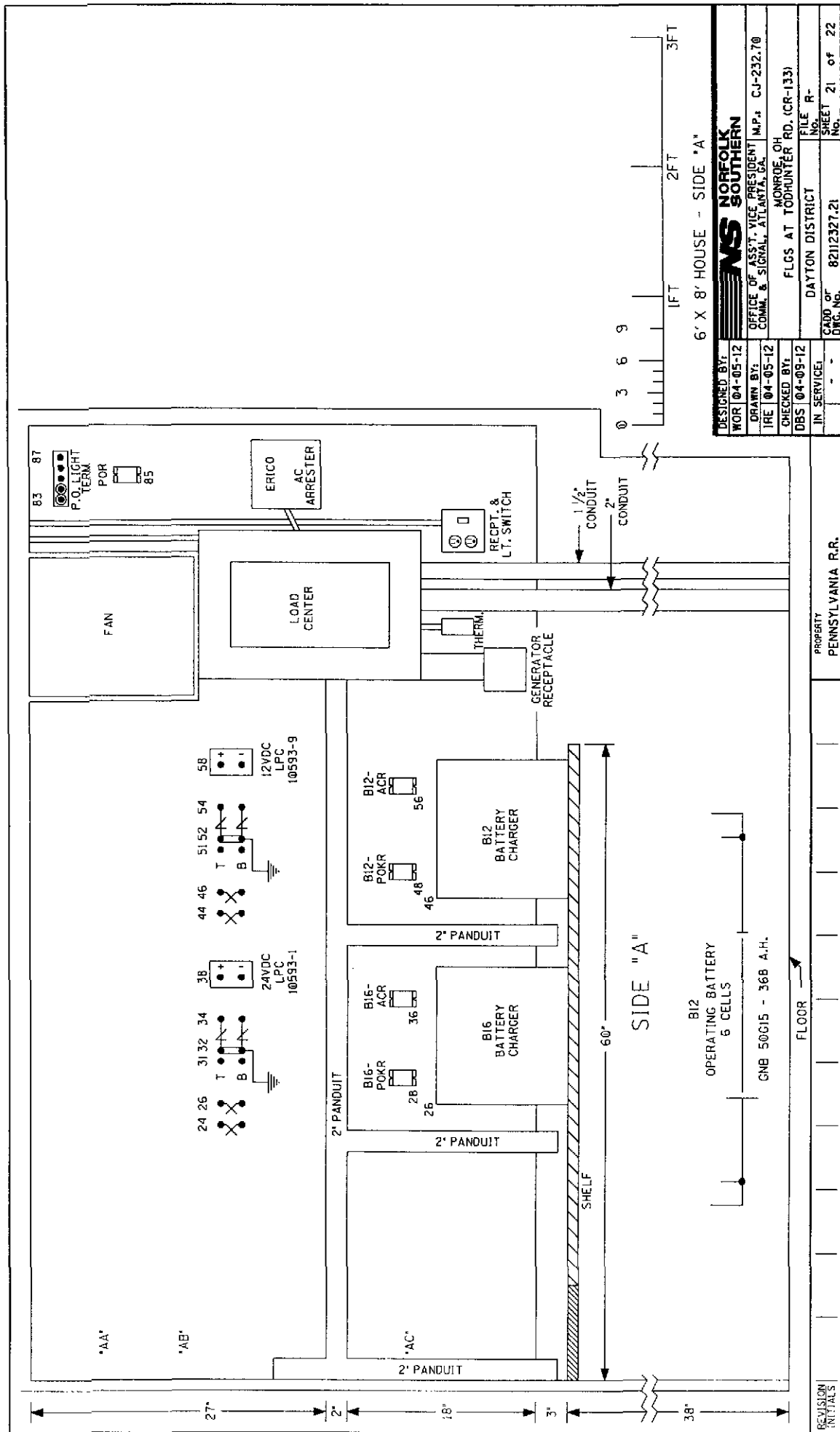
RACK PLACEMENT
6' X 8' HOUSE - SIDE "C"



DESIGNED BY:	NS NORFOLK SOUTHERN		
WORK 04-05-12	OFFICE OF ASST. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.		
DRAWN BY:	MONROE, JH		
IRE 04-05-12	FLGS AT TOLUHER RD. (CR-133)		
CHECKED BY:	DAYTON DISTRICT		
DGS 04-09-12	FILE	R-	
IN SERVICE:		CADD OF	SHEET
-	-	DWG. NO.	20 of 22
-	-	DATE	8/21/23

PROPERTY
PENNSYLVANIA R.R.

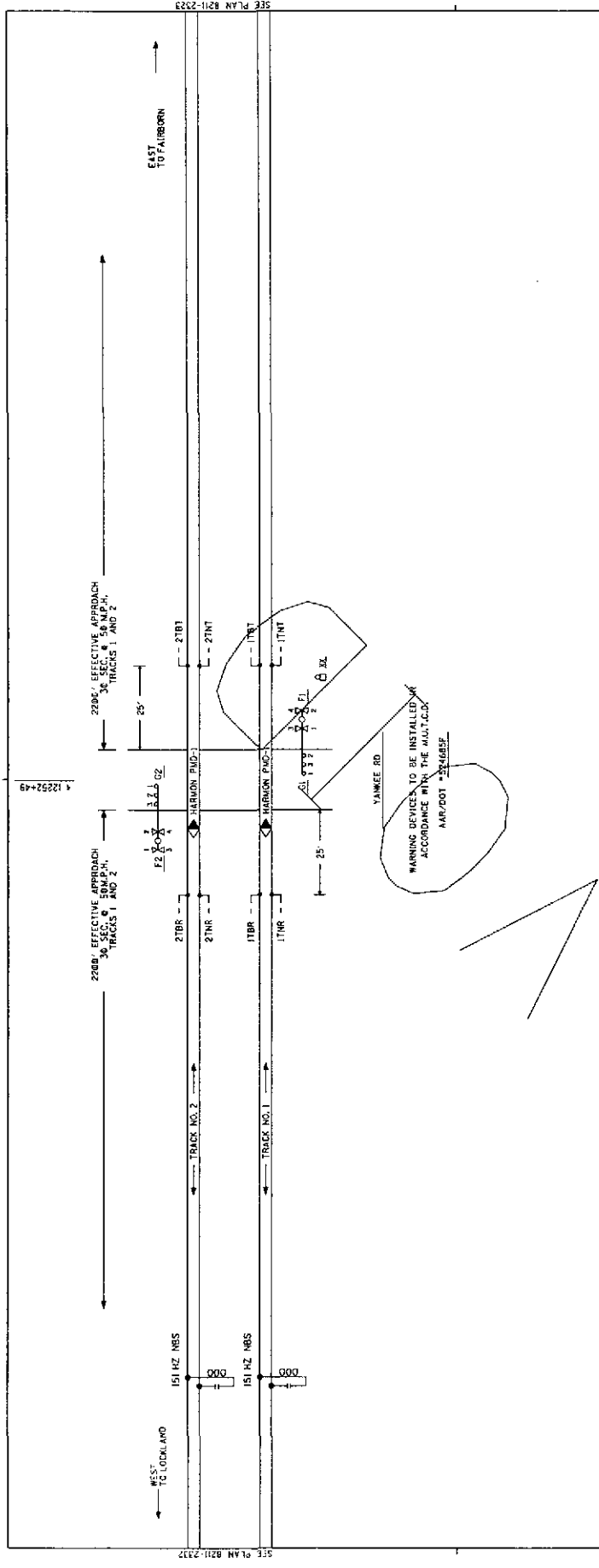
REVISION
INITIALS



DESIGNED BY:	WOR 04-05-12	NS NORFOLK SOUTHERN
DRAWN BY:	IRE 04-05-12	OFFICE OF ASST. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA
CHECKED BY:	DBS 04-09-12	MONROE, OH
IN SERVICE:	-	FLOS AT TODHUNTER RD. (CR-133)
FILE NO.	DAYTON DISTRICT	FILE R-
CAPO OF D.W.C. No.	8212327-21	SHEET 21 of 22

PROPERTY
PENNSYLVANIA R.R.

REVISION
INITIALS



THIS LOCATION VOID
ON PROJECT COMPLETION

YANKEE RD		NORDE, OH	
HIGHWAY CROSSING LOCATION PLAN			
ISSUE DATE: SEPTEMBER 22, 1986	8211-2327		
REV. 2	88-16-86	SHEET 2	

REV	DATE	BY
1	2-18-86	GRN
2	5-12-86	GRN



TRACK 2
PMD SWITCHES
POWER M/S REP

TRACK 3
PMD SWITCHES
POWER M/S XRD

SAWKEE RD
MONROE, OH

HIGHWAY CROSSING
HARMON PMD-1 CIRCUITS

MONADE, DM

ISSUE DATE: SEPTEMBER 22, 1986	8211-2327
--------------------------------	-----------

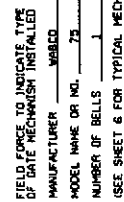
REV. 1	9-22-86	SHEET 4
--------	---------	---------

1102.101 HXPMDC.DGN

© 2001, Alan Weinstein. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or by any information storage or retrieval system, without prior written permission from the author.

REV	DATE	CRD BY
1	2-18-86	GMW
2	5-12-86	GMW

CMS CAD



THIS LOCATION VOID
ON PROJECT COMPLETION

YANKEE BO
MONDE. OH

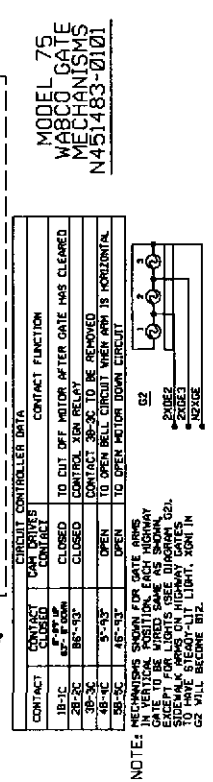
HIGHWAY CROSSING GATE CONTROLLING CIRCUITS AND CABLE TERMINATIONS

ISSUE DATE: SEPTEMBER 22, 1986	8211-2327
--------------------------------	-----------

(1992) 167 J HXPMDC.OCN

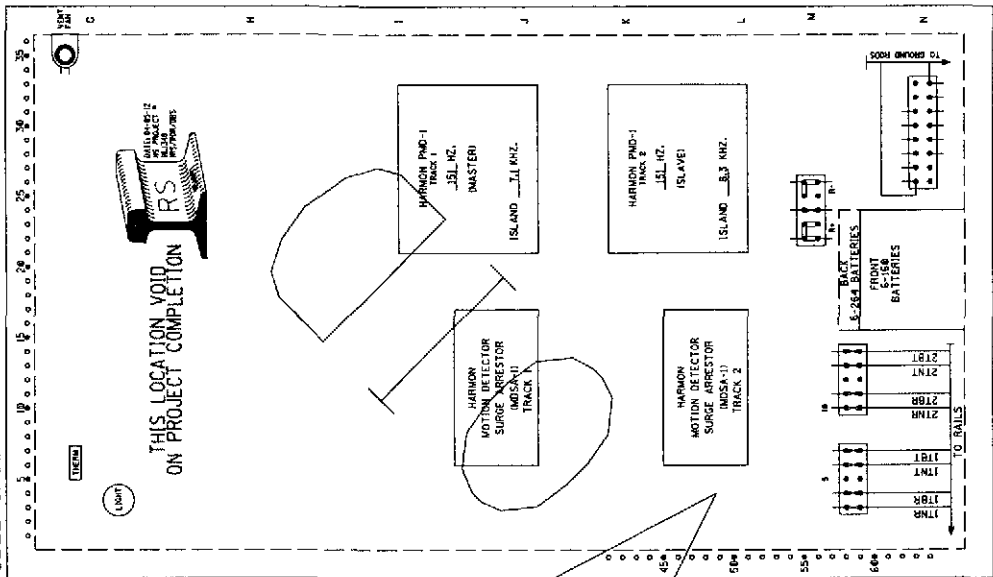
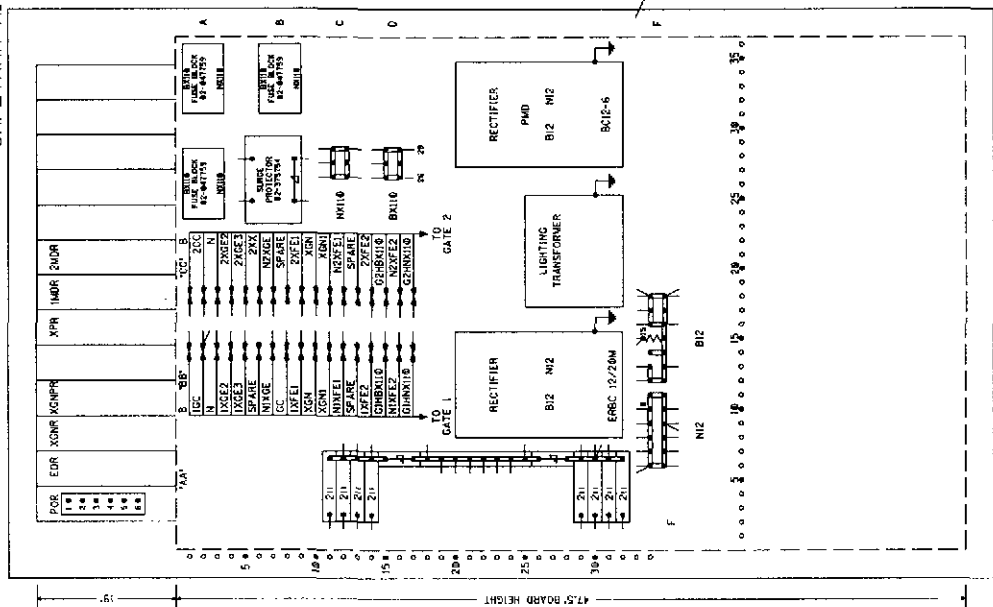
CAD CAD

REV	DATE	CHKD BY
1	2-18-86	GHW
2	5-12-86	GHW

[illegible]

REV	DATE	CHKD BY
1	2-18-86	GMW
2	5-12-86	GMW

SAFETRAN HIGH DOUBLE CASE



THIS LOCATION VOID
ON PROJECT COMPLETION

HARMON PND-1
TRACK 1
35L HZ.
(MASTER)
ISLAND 11 KHZ.

HARMON PWD-1
TRACK 2
151 HZ.
(SLAVE)
ISLAND 5.3 KHZ.

HARMON
MOTION DETECTOR
SURGE ARRESTOR
(MDSA-1)
TRACK 1

HARMON
MOTION DETECTOR
SURGE ARRESTOR
(MDSA-1)
TRACK 2

21N12 1812

BACK 5-264 BATTERIES

FRONT 6-150 BATTERIES

[illegible]

[illegible]

02-050073 - RESISTOR	02-923457 - 3 POST PORCELAIN BASE	02-150409 - BUSS LINK
02-050074 - RESISTOR	02-954753 - TERMINAL BLOCK FOR EQUALIZER	02-286668 - TEST LINK ASSEMBLY
02-023588 - RESISTOR		02-825242 - ARRESTOR
02-923711 - RESISTOR		02-925243 - ARRESTOR
		02-931945 - EQUALIZER
02-923457 - 3 POST PORCELAIN BASE	02-946751 - TERMINAL STRIP	
02-954753 - TERMINAL BLOCK FOR EQUALIZER		
02-150409 - BUSS LINK		
02-286668 - TEST LINK ASSEMBLY		
02-825242 - ARRESTOR		
02-925243 - ARRESTOR		
02-931945 - EQUALIZER		

NOTES:

211 AQL

02-923457 - 3 POST PORCELAIN BASE

02-954753 - TERMINAL BLOCK FOR EQUALIZER

02-150409 - BUSS LINK

02-286668 - TEST LINK ASSEMBLY

02-825242 - ARRESTOR

02-925243 - ARRESTOR

02-931945 - EQUALIZER

02-923457 - 3 POST PORCELAIN BASE

02-954753 - TERMINAL BLOCK FOR EQUALIZER

02-150409 - BUSS LINK

02-286668 - TEST LINK ASSEMBLY

02-825242 - ARRESTOR

02-925243 - ARRESTOR

02-931945 - EQUALIZER

GROUND CONNECTION TO BE IN ACCORDANCE WITH STANDARD P

YANKEE RD
MID-WAY CROSSING
HIGH DOUBLE CASE DETAIL
(FRONT)

ISSUE DATE: SEPTEMBER 22, 1965	REV. 2	65-10-106	SHEET 7
--------------------------------	--------	-----------	---------

DS41

[illegible]