

# Memo

To: Docketing Division  
From: Jill Henry, Rail Specialist, Rail Division  
Cc: PUCO Legal Department  
Date: 3/8/17

Re: PUCO Case No. 17-688-RR-FED- In the Matter of a Request for the Installation of Active Warning Devices at the Norfolk Southern Railway Railroad Crossing, Billings Road/TR 38 DOT#481-649M, in Erie County, Ohio.

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On October 17, 2016, the Ohio Rail Development Commission (ORDC) authorized funding for Norfolk Southern Railway to install lights and gates at Billings Road/TR 38 (DOT#481-649M), in Erie County, Ohio. The crossing was surveyed on July 6, 2016 and was found to warrant the upgrade. The electric utility provider for this crossing is Ohio Edison-First Energy.

The project will be paid for with federal funds and is actual cost. The plans and estimates for the project in the amount of \$349,432.00 have been approved. Construction may commence at once. **Staff requests a Finding & Order with completion of the project in nine months.** Staff requests that the following language be incorporated in the Finding & Order:

**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.

**Please serve the following parties of record:**

Norfolk Southern Railway Company  
Stephen Klinger  
Public Projects Engineer  
1200 Peachtree Street NE  
Atlanta, GA 30309-3597

Norfolk Southern Railway Company  
Cayela Wimberly  
Director Grade Crossing Safety  
1200 Peachtree Street NE  
Atlanta, GA 30309-3597

Ohio Rail Development Commission  
Cathy Stout  
Safety Manager  
1980 West Broad Street  
Mail Stop #3140  
Columbus, Ohio 43223

Mr. Kerry Jett  
Fire Chief  
Groton Township, Erie County  
9414 Portland Road  
Castalia, OH 44824-9161

Ohio Edison-First Energy

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

**TO:** Randall Schumacher, Supervisor, Rail Division, PUCO

**FROM:** Cathy Stout, Manager, Safety Section, ORDC

**BY:** Eric Neff, Safety Manager, Safety Section, ORDC

**SUBJECT:** Erie County, TR 38 - Billings Road, DOT#481649M  
PID# 103873, NS Project 10.1252

**DATE:** February 13, 2017

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The Public Utilities Commission of Ohio (PUCO) established a diagnostic survey at the subject location on July 6, 2016. 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 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: Jill Henry, Rail Division Specialist, PUCO  
ORDC Project Manager (file)



# OHIO RAIL DEVELOPMENT COMMISSION

Mail Stop #3140, 1980 West Broad Street, Columbus OH 43223

John R. Kasich, Governor • Mark Policinski, ORDC Chairman

February 13, 2017

Mr. Stephen Klinger  
Norfolk Southern  
Public Projects Engineer  
1200 Peach Street NE, Box 123  
Atlanta, Ga. 30309

RE: Erie County, TR 38 - Billings Road, DOT#481649M  
PID# 103873, NS Project 10.1252

Dear Mr. Klinger:

The plan and estimate dated January 17, 2017, for the referenced project has been reviewed and is acceptable. The project is authorized for construction under the master agreement between Ohio Rail Development Commission, Public Utilities Commission of Ohio and Norfolk Southern (NS) executed on December 19, 2012. 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 **\$349,432.00**. Additional costs must be approved in writing by the Ohio Rail Development Commission (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's project foreman will furnish written notification five (5) working days prior to the date work will start at the project site to Eric Neff, ORDC, email: [eric.neff@dot.ohio.gov](mailto:eric.neff@dot.ohio.gov) and to Jill Henry the Public Utilities Commission of Ohio at email: [jill.henry@puco.ohio.gov](mailto:jill.henry@puco.ohio.gov). 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.
2. 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.
3. NS's project foremen will notify Eric Neff at 614-752-0399 (telephone) or [eric.neff@dot.ohio.gov](mailto:eric.neff@dot.ohio.gov) (email) 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.
4. Open cut of roadways is not permitted except in unusual circumstances and must be coordinated with the local highway authority and preapproved by ORDC.



[www.rail.ohio.gov](http://www.rail.ohio.gov)

phone: 614.644.0306

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5. NS will furnish two (2) copies of each partial bill to ORDC. Please find the enclosed ODOT Purchase Order 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.
7. This installation will include any ancillary work to make the warning devices function as designed and meet MUTCD.

Thank you for your assistance with these matters.

Sincerely,



Eric T. Neff  
Project Manager, Safety Programs

Attachments: Letter Agreement  
State of Ohio Purchase Order

C: Randall Schumacher, Rail Division Supervisor, PUCO (email)  
Jill Henry, Grade Crossing Planner, PUCO (email)  
Susan Arduini, ORDC (email)  
ORDC (file)



17-Jan-17

**Detailed Estimate for Grade Crossing Warning Devices**

City/State: BELLEVUE, OH  
MilePost: S-101.24  
State Proj. No.: PID 103873  
S&E Proj. No.: 10.1252  
Man Days: 198

Road: BILLINGS RD  
DOT/AAR: 481649M  
County: ERIE  
File Number:

<b>***Purchases - Others***</b>	
Meals and Lodging:	\$27,083.55
Rental of Equipment:	\$37,023.11
(2 Trucks, 1 Backhoe w/ Trailer and 1 Pipe-Pusher for 33 Days)	
Construction Supervision Vehicle:	\$5,663.29
Purchases - Other Total:	\$69,769.95
<b>***Material And Additives***</b>	
Material Cost:	\$106,016.00
Sales and Use Tax:	\$8,481.00
Material Handling Freight:	\$10,601.64
Material Total:	\$125,098.64
<b>***Labor And Additives***</b>	
Labor Cost:	\$63,756.00
(6 man crew at \$1,932.00 a day for: 33 days)	
Payroll Tax & Overheads:	\$54,358.37
Preliminary Engineering:	\$17,826.10
Construction Supervision:	\$18,623.13
Labor Total:	\$154,563.60
Project Cost:	\$349,432.19
Scrap / Salvage Credit:	\$0.00
<b>Project Total:</b>	<b>\$349,432.00</b>

Estimated on: 17-Jan-17

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:	BELLEVUE
Road:	BILLINGS RD
Mile Post:	S-101.24
Drawing Number:	SNCS10124
State ProjectNumber:	PID 103873
County:	ERIE
A A R Number:	481649M
Project Number:	10.1252
File Number:	
New File Number:	CX1112465
WBS:	F-03782
Store Number:	
Supervisor:	A.R. ETHERTON
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: BELLEVUE

OH

S&amp;E Proj. No.: 10.1252

AFE No.: F-03782

Drawing No.: SNCS10124

Store No.:

P.O.Number:

Date Required:

Date Shipped:

Vendor: Xorail

Qty.	Class-Item-CD	UI	Price per Item	Total Price	Item Description	Quantity Shipped	Quantity Date	Installed Date	Quantity Date	Returned (Credit)	Special Instructions
3	670-360693-4	EA	\$5.80	\$17.40	AAR/DOT 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						
4	670-119241-4	EA	\$25.01	\$100.04	ARRESTOR, LIGHTNING HEAVY DUTY CLEAR VIEW SAFETRAN 022585-1X						
20	105-002620-4	EA	\$302.42	\$6,048.40	BATTERY, NICAD 340AH, MODEL SPL340						
1	670-503047-4	EA	\$181.50	\$181.50	BELL, CROSSING ELECTRONIC GENERL SIGNAL, EB-3-360-5 CR 02-044350						
1	670-080490-4	EA	\$192.72	\$192.72	BOX, JUNCTION 8 TERMINALS, WITH PEDESTAL @093463-11 SAFETRAN 091313-229X						
2	670-980689-4	EA	\$75.48	\$150.96	BRACKET HIGH WIND, (RIGID 3), WIG- 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	\$94.05	\$94.05	CABLE, 10' GENERATOR HOOK UP, SERRMI P/N 40524, FEMALE CONNECTOR						
500	465-939422-4	LF	\$2.93	\$1,465.00	CABLE, UG 12 CONDUCTOR NO 14 AWG SOLID EACH CONDUCTOR WITH 5/64 IN INSULATION 10 MIL						
900	465-292862-4	LF	\$1.49	\$1,341.00	CABLE, UG 2-6 TWISTED, S-23 OKONITE 113-12-3933 SOLID TINNED CONDUCTOR						
500	465-292929-4	LF	\$4.13	\$2,065.00	CABLE, UG 5 COND. NO. 6 AWG SOLID COPPER CABLE TO MEET NS CORP. SPEC. FOR SIGNAL						
2000	465-292945-4	LF	\$1.59	\$3,180.00	CABLE, UG 5-14, S-54 OKONITE 206-14-6885						
350	465-791835-4	FT	\$3.55	\$1,242.50	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						
2	670-010671-4	EA	\$738.15	\$1,476.30	CHARGER, BATTERY CRAGG MODEL 40 DTC-12V, 40 AMP, P/N 520940						
120	165-544477-4	FT	\$3.22	\$386.40	CONDUIT, 4"x10' PVC, SCHEDULE 80 BELL CONNECTOR AT ONE END, 1/2 PT. GLUE IN KIT 670-123298-4						

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CAR NUMBER

SEAL NUMBER



Location: BELLEVUE

OH

S&amp;E Proj. No.: 10.1252

AFE No.: F-03782

Drawing No.: SNCS10124

Store No.:

P.O.Number:

Date Required:

Date Shipped:

Vendor: Xorail

Qty.	Class-Item-CD	UI	Price per Item	Total Price	Item Description	Quantity Shipped	Quantity Date Quan.	Quantity Installed Date Quan.	Quantity Returned (Credit)	Special Instructions
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	\$9.95	\$39.80	COVER, FOR 1 WAY FLASHING LIGHT ASSY. 18 OZ. BLACK VINYL COATED NYLON. ===== TO COVER 2 LAMPS=====					
1	670-986650-4	EA	\$370.21	\$370.21	DISPOSAL, CONSTRUCTION DEBRIS AND CLEANING XING EQUIPMENT CONTAINER					
1	670-007684-4	EA	\$813.63	\$813.63	DRIVER, TRACK, MODEL TD-4 ELECTRO PNEUMATIC CORP. FOUR OUTPUTS					
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					
2	670-011669-4	EA	\$359.64	\$719.28	FILTER, ELECTRO CODE 86HZ REJECTION PART# TF-86					
2	670-015231-4	EA	\$599.40	\$1,198.80	FOUNDATION, DIXIE,S-2 GATE 26"X26"X56" ASSEMBLED					
2	670-005377-4	EA	\$338.00	\$676.00	GATE ARM, ALUMINUM, 17-24 FT. ARM ASSEMBLY, INCLUDES GATE GUARD FOR GATE LIGHT CABLE. HIGH INTENSITY VERTICAL STRIPES.					
1	670-675667-4	EA	\$30,238.53	\$30,238.53	GCP4000 - 1 TRK (2TC) - REDUNDANT - 40/40 AMP WIRED RACK EQUIP. FOR 6X8 XING SHELTER, (INCL. 2 TRK CHASSIS A80465, 2 TRK MODS, A80418, 2-SSCC A80405, 2 CPU A80403, 1 SEAR A80410, 1 DISPLAY A80407, , 2-40 AMP CHARGERS) IPN: 003131-1X					
1	670-237009-4	EA	\$6,524.08	\$6,524.08	GCP4000 - 1 TRK (5TC) - NON-REDUNDANT (INCL. 5 TRK CHASSIS A80440, 1 TRK MOD, A80418, 0 SSCC, 1 CPU A80403, NO SEAR, 1 DISPLAY A80407)					

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Location: BELLEVUE

OH

S&amp;E Proj. No.: 10.1252

AFE No.: F-03782

Drawing No.: SNCS10124

Store No.:

P.O. Number:

Date Required:

Date Shipped:

Vendor: Xorail

Qty.	Class-Item-CD	UI	Price per Item	Total Price	Item Description	Quantity Shipped	Quantity Date	Quantity Installed Date	Quantity Returned (Credit)	Special Instructions
1	670-942036-4	EA	\$44.23	\$44.23	INDUCTOR, SIMULATED TRACK SAFETRAN 8V617-1600					
4	640-547363-4	EA	\$387.39	\$1,549.56	JOINT, INSL 130RE 6H 1 1/8IN BOLT POLY DRLD 6-7.5 1/4-7.6 IRJ 6259					
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	\$361.54	\$361.54	KIT, HARDWARE SUPPLIES REQUIRED XING PKGAGES. WEB CONNECTORS FOR SHUNT(8EA) TAPE, AMPS,P'GUM PAINT SLEEVES,TAGS,GLUE, 100 EA WHITE TAGS, )NE CAN BLUE MARKING PAINT ETC...					
2	670-092155-4	EA	\$160.00	\$320.00	LAMP ASSY, LED GATE ARM KIT (INCLUDES 3 LAMPS COMPLETE WITH CABLES AND MTG. HARDWARE) REC #: 9298-1120					
2	670-005058-4	EA	\$1,786.08	\$3,572.16	LAMP ASSY, LED, 5" MAST BACK TO BACK LIGHTS (IPN: 042003-L487XNS)					
4	670-440826-4	EA	\$2.22	\$8.88	LINK, SAFETRAN 024620-1X INSL TESTING COMP 1 IN CENTER SIGNAL CIRCUITS CR 02-286662					
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" STRAN P# 070519-11AX					
2	670-637778-4	EA	\$1,325.00	\$2,650.00	MAST, 5" ALUMINUM 13'10" WITH DOUBLE JCT. BOX BASE.					
2	670-875060-4	EA	\$2,596.32	\$5,192.64	MECHANISM, GATE MODEL S-60, WITH DEFROSTER, WITHOUT MINI TRACKSIDE SENSOR STRAN # 0740007-X002A3					
2	670-000001-4	EA	\$726.23	\$1,452.46	MISC. EXPENSE, MATERIAL/FILL					
4	670-000007-4	EA	\$307.02	\$1,228.08	MISC. EXPENSE, TRACK WORK (I.E. INS JTS, RODS, ETC.)					
1	000-000000-4	EA	\$5,000.00	\$5,000.00	MISC. EXPENSE, UNDERGROUND BORING					
4	670-001347-4	EA	\$59.67	\$238.68	PACKAGE, HARDWARE SIGN 5 IN. MOUNTING, SERRMI A1250-5, HARMON @200965-000, OR					
1	670-004475-4	EA	\$336.93	\$336.93	PACKAGE, KIT FOR ADDITIONAL TRACK CONNECTION CROSSING LOCATION, INCLUDES ALL EQUIPMENT, WIRING AND SHOP LABOR. (1 PER WIRE PAIR) IPN: 051000-NSX-0005					
1	255-646807-4	EA	\$32.59	\$32.59	PADLOCK, SAFETRAN PART NO. 030339-29X SCREW TYPE FOR CIR CONTROLLER AND BTY. BOX					

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Location: BELLEVUE

OH

S&amp;E Proj. No.: 10.1252

AFE No.: F-03782

Drawing No.: SNCS10124

Store No.:

P.O. Number:

Date Required:

Date Shipped:

Vendor: Xorail

Qty.	Class-Item-CD	UI	Price per Item	Total Price	Item Description	Quantity Shipped	Quantity Date	Quantity Installed Date	Quantity Returned (Credit)	Special Instructions
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					
3	670-259211-4	EA	\$47.25	\$141.75	PLUG BOARD KIT, TYPE B-1 & VOLTAGE TEST TERMINAL, SAFETRAN 420000-75X					
1	165-902002-4	EA	\$303.43	\$303.43	PROTECTOR, SURGE 120/240VAC, ERICO P/N EPD120/240TDFL					
1	670-602559-4	EA	\$132.09	\$132.09	RECTIFIER, ELECTRO-PNEUMATIC TRACK MODEL NO RING-10 TYPE C TRACK CIRCUIT					
6	465-002899-4	EA	\$40.24	\$241.44	REEL, CABLE DISPOSABLE FOR CROSSING SIGNAL PACKAGES					
3	670-456936-4	EA	\$145.69	\$437.07	RELAY RACK, SWING, FARADAY SHELTER FOR ONE RELAY, SSFETRAN P/N T15331					
2	670-707995-4	EA	\$510.12	\$1,020.24	RELAY, TYPE B1, NEV LINE, 900 OHMS, .008 AMPERES GRS A62-308 OR SAFETRAN @400003					
1	670-708282-4	EA	\$524.43	\$524.43	RELAY, TYPE B1, TRACK 4 OHM .85A GRS A62-276, STRAN 400011					
1	670-932235-4	EA	\$28.01	\$28.01	RESISTANCE UNIT, ADJUST SAFETRAN 029602-7X 2W 2.5 OHMS					
1	670-507443-4	EA	\$39.73	\$39.73	RESISTOR, ADJUSTABLE 029603-7X, 1.53 OHM - 16 OHM INVENYS					
4	435-805560-4	EA	\$2.78	\$11.12	SAND, 25LB BAG FOR CABLE ENTRANCE INTO THE SHELTER					
1	670-113448-4	EA	\$910.23	\$910.23	SEARIII, (VHFC W/ANTENNA) - VHF COMMUNICATOR, SAFETRAN P/N A80276, 1/PER CROSSING					
1	670-749325-4	EA	\$237.18	\$237.18	SHELF, FOLDING, FOR LAPTOP USE IN FARADAY 6X8 SHELTER, SAFETRAN 052852-128X					
1	670-755523-4	EA	\$9,325.16	\$9,325.16	SHELTER, 6'X8' ALUMN FARADAY W/1EA EQUIPMENT RACK, W/CABLE CHUTES BEHIND TERMINAL BOARD, W/GEN RECEPTICAL, BREAKER BOX GFI OUTLET FOR LAPTOP SHELF SAFETRAN 058400-68-85					
2	670-471572-4	EA	\$3.48	\$6.96	SHIELD, GROUND SERRMI P/N 61278 FOR GROUNDING A RH 4 POST					
2	670-472200-4	EA	\$3.48	\$6.96	SHIELD, GROUND SERRMI PART NO. 61278 FOR GROUNDING A LH 4 POST					
					TERMINAL BLOCK DIRECTLY TO FARADAY SHIELD					

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CAR NUMBER

SEAL NUMBER

Tuesday, January 17, 2017 9:56 AM

Location: BELLEVUE

OH

S&amp;E Proj. No.: 10.1252

AFE No.: F-03782

Drawing No.: SNCS10124

Store No.:

P.O. Number:

Date Required:

Date Shipped:

Vendor: Xorail

Qty.	Class-Item-CD	UI	Price per Item	Total Price	Item Description	Quantity Shipped	Quantity Date	Quantity Installed Date	Quantity Returned (Credit)	Special Instructions
4	670-586967-4	EA	\$14.33	\$57.31	SHUNT COVER W/LAG SCREWS, 19"X19", SERMM #40271, ORDER 1 PER SHUNT					
1	670-688850-4	EA	\$369.89	\$369.89	SHUNT, MULTI-FREQ. #62775-3497 SAFETRAN NARROW BAND					
2	670-645460-4	EA	\$575.56	\$1,151.12	SHUNT, MULTI-FREQ. #62775-8621 SAFETRAN NARROW BAND					
2	670-393331-4	EA	\$37.43	\$74.86	SIGN CROSSING MALFUNCTION ASSEMBLY FOR 4" AND 5" MAST, SAFETRAN #T17215					
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					
2	670-330382-4	RL	\$18.06	\$36.12	TAPE, THOR 3" DURATEC, ORANGE 1000' LENGTHS. "WARNING STOP DIGGING"					
10	670-478560-4	EA	\$20.56	\$205.60	TERMINAL BLOCK, ERICO 4 POST P/N B2700A2C1WH W/HARDWARE LESS LIGHTNING ARRESTOR					
4	670-007238-4	EA	\$117.04	\$468.16	UNIT, THE INSTALLATION AND WIRING OF A DEVICE WHICH REQUIRE A MINIMUM OF FOUR WIRE CONNECT-					
500	465-458198-4	FT	\$0.20	\$100.00	WIRE, NO.16, 1 CONDUCTOR, CASE, FLEXIBLE, 19 STRAND, 2/64 IN. INSULATION					
2	450-986008-4	EA	\$30.45	\$60.90	WRENCH, TEST POST TYPE B DWG 55393-3, GR.1					

Total Material: \$106,016.37

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Tuesday, January 17, 2017 9:56 AM

SH. NO.	CONTENTS
NX1	INDEX SHEET
1	LAYOUT
2	PROFILE
3	CABLE PLAN
4	LOAD CENTER
5	B12 & B16 CHARGERS & BATTERIES
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 & VHF HOOK-UPS
11	SEAR IIi PROGRAMMING SETUP
12	TD-4 & TRACK RELAY
13	SSCC#1 MODULE HOOK-UP
14	SSCC#2 MODULE HOOK-UP
15	SIGNAL "A" S60 GATE & FLASHER CIRCUITS
16	SIGNAL "B" S60 GATE & FLASHER CIRCUITS
17	BACKBOARD 1A & 1B
18	REAR BACKBOARD 1A & 1B
19	FARADAY SHIELD 1A & 1B
20	FARADAY SHIELD 1C
21	HOUSE SIDE C LAYOUT & RACK PLACEMENT
22	HOUSE SIDE A LAYOUT
23	HOUSE SIDE B LAYOUT & TOP VIEW

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

DESIGNED BY:	 <b>NORFOLK SOUTHERN</b>		
JLM   12-08-16	DRAWN BY:	OFFICE OF ASS'T. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.	M.P.: S-101.24
XRL   12-08-16	CHECKED BY:	BELLEVUE, OH FLGS AT BILLINGS RD	
PEH   12-19-16	IN SERVICE:	SANDUSKY DISTRICT	FILE No. R-
	- -	CADD or DWG. No. SNCS10124.NX1	SHEET No. 1 of 1

REVISION  
INITIALS

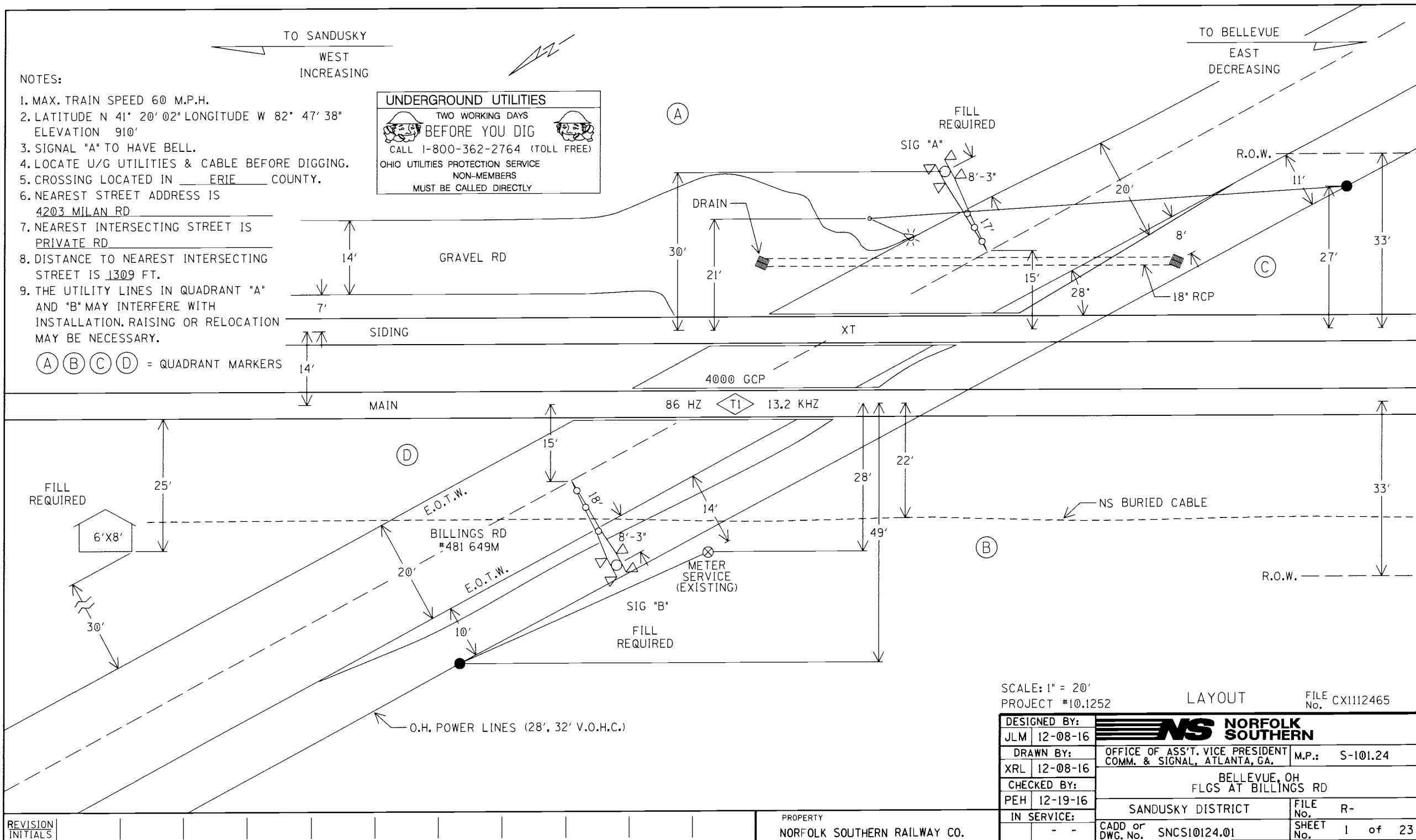
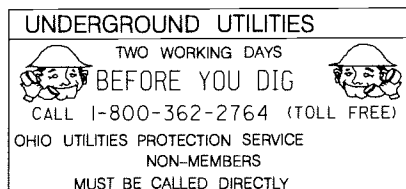
PROPERTY  
NORFOLK SOUTHERN RAILWAY CO.

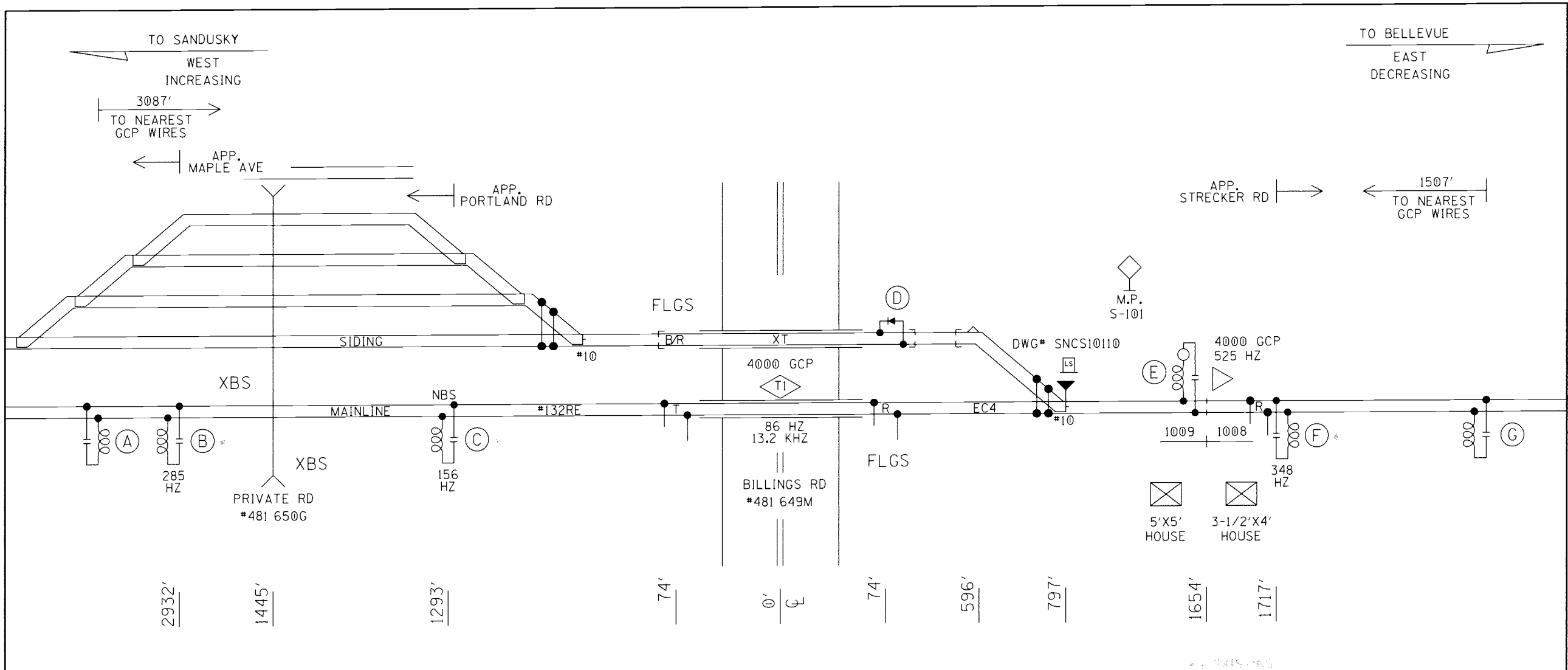
1. MAX. TRAIN SPEED 60 M.P.H.
2. LATITUDE N 41° 20' 02" LONGITUDE W 82° 47' 38"  
ELEVATION 910'
3. SIGNAL "A" TO HAVE BELL.
4. LOCATE U/G UTILITIES & CABLE BEFORE DIGGING.
5. CROSSING LOCATED IN ERIE COUNTY.
6. NEAREST STREET ADDRESS IS  
4203 MILAN RD \_\_\_\_\_

7. NEAREST INTERSECTING STREET IS  
PRIVATE RD
8. DISTANCE TO NEAREST INTERSECTING  
STREET IS 1309 FT.
9. THE UTILITY LINES IN QUADRANT "A"  
AND "B" MAY INTERFERE WITH  
INSTALLATION. RAISING OR RELOCATION  
MAY BE NECESSARY.

(A) (B) (C) (D) = QUADRANT MARKERS

TO SANDUSKY  
WEST  
INCREASING





(A) - MF-NBS 62775-8621 (86HZ)

(D) - DIODE

(G) - MF-NBS 62775-3497 (525HZ)

(B) - MF-NBS 62775-1543 (285HZ)

(E) - MF-NBS 62775-8621 (86HZ)  
W/INDUCTOR 8V617-1600


(C) - MF-NBS 62775-8621 (156HZ)

(F) - MF-NBS 62775-1543 (348HZ)

PROJECT #10.1252

PROFILE

FILE No. CX1112465

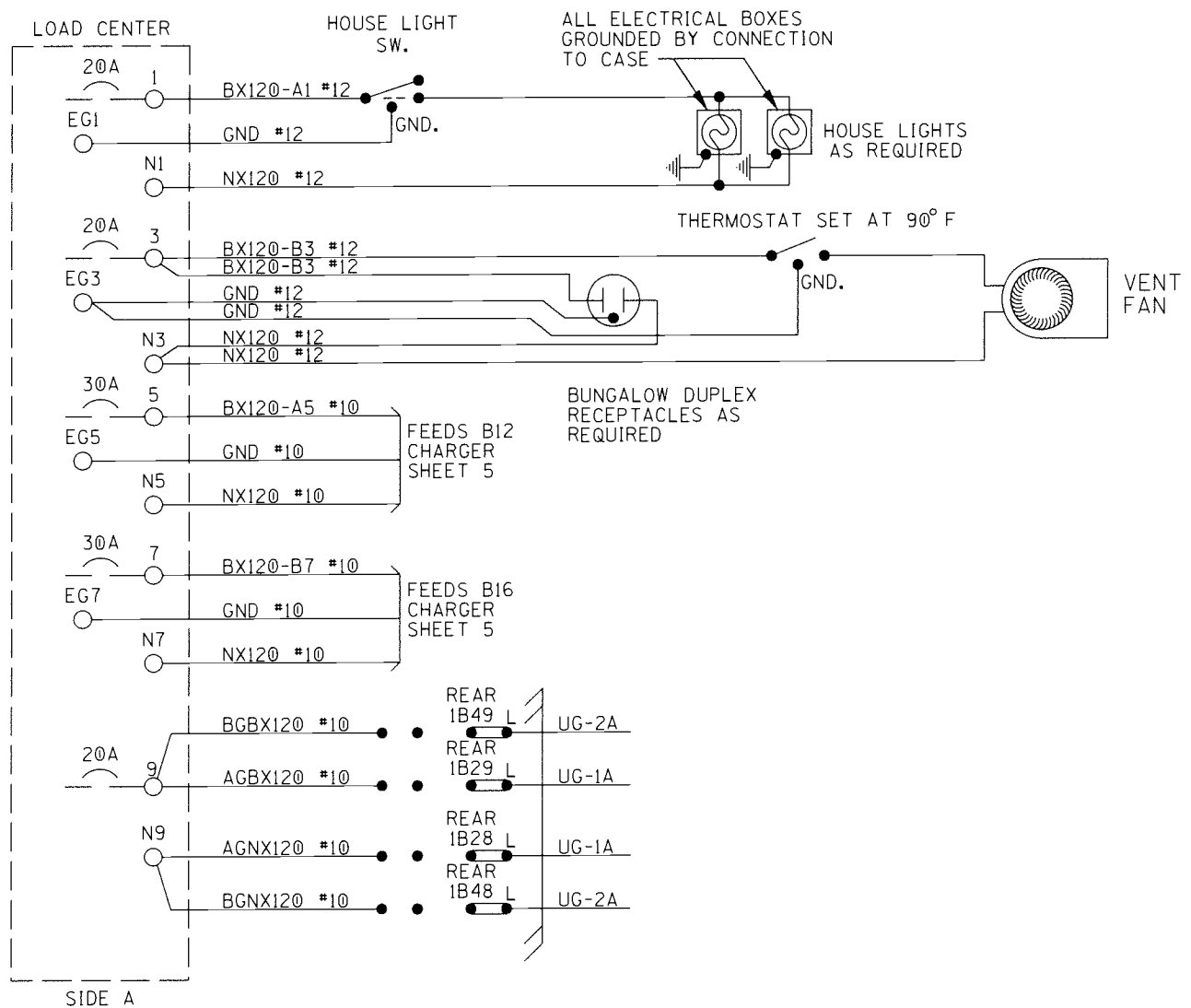
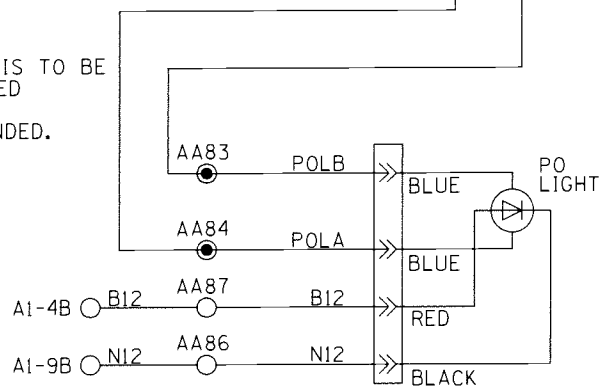
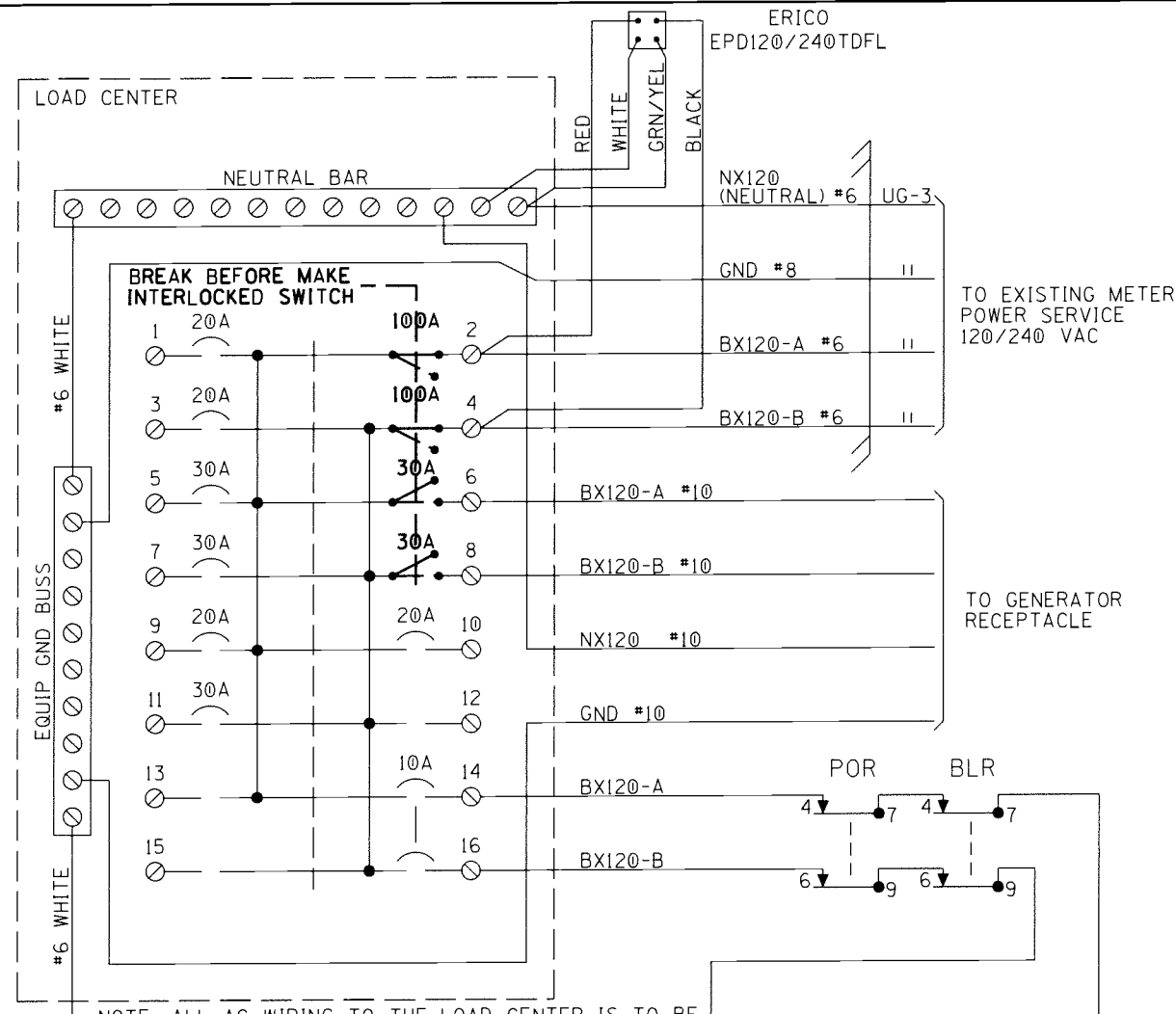
DESIGNED BY:	JLM 12-08-16	 <b>NORFOLK SOUTHERN</b>	
DRAWN BY:	XRL 12-08-16		
CHECKED BY:	PEH 12-19-16	OFFICE OF ASS'T. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.	
IN SERVICE:	- -	BELLEVUE, OH FLGS AT BILLINGS RD	
		SANDUSKY DISTRICT	FILE No. R-
		CADD or DWG. No. SNCS10124.02	SHEET No. 2 of 23

REVISION  
INITIALS

PROPERTY  
NORFOLK SOUTHERN RAILWAY CO.







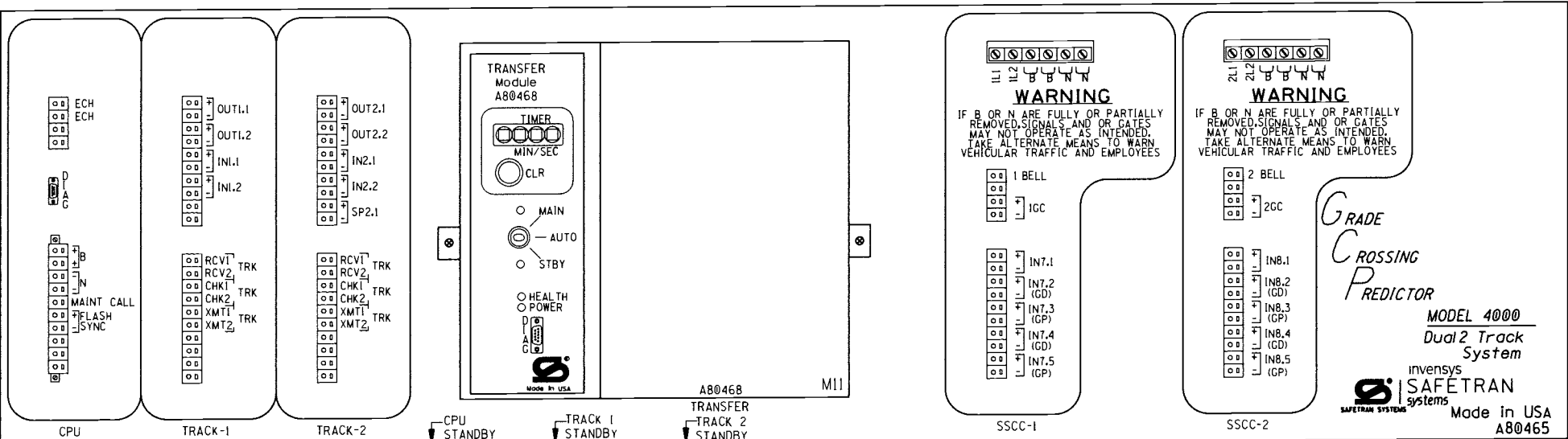
GENERATOR RECEPTACLE:  
MALE CONNECTOR - NEMA L1430-FI

LOAD CENTER

DESIGNED BY:	JLM 12-08-16	<b>NORFOLK SOUTHERN</b>	
DRAWN BY:	XRL 12-08-16		
CHECKED BY:	PEH 12-19-16	OFFICE OF ASS'T. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.	
IN SERVICE:	- -	BELLEVUE, OH FLGS AT BILLINGS RD	
PROPERTY		SANDUSKY DISTRICT	FILE No. R-
NORFOLK SOUTHERN RAILWAY CO.		CADD or DWG. No. SNCS10124.04	SHEET No. 4 of 23

REVISION  
INITIALS



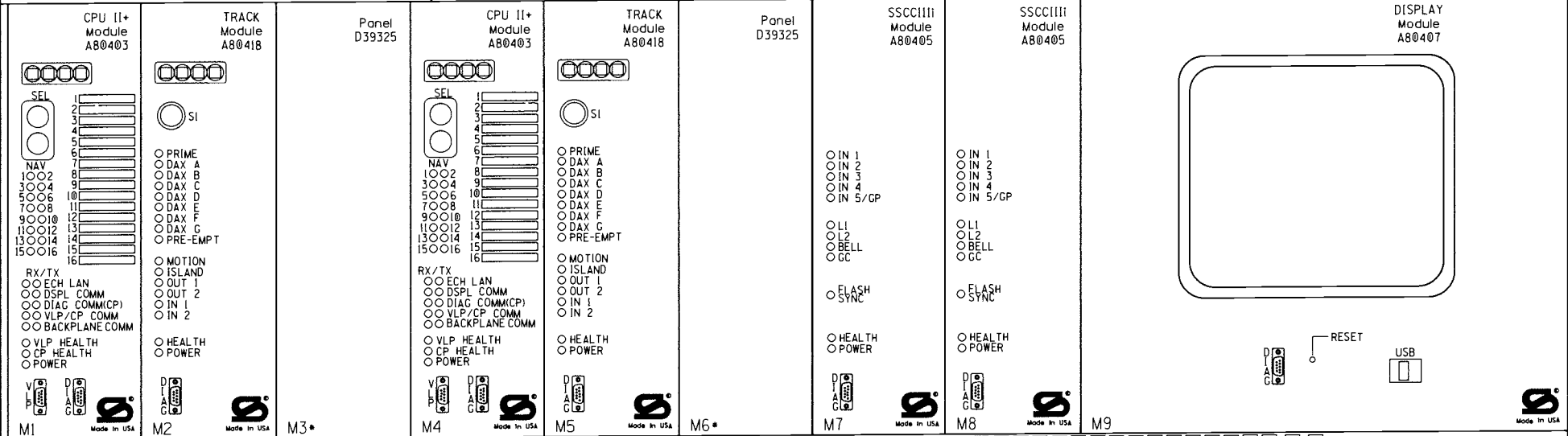


**WARNING**

REMOVAL OF THE SSCCIII MODULE  
WILL CAUSE THE GATE(S) TO  
DROP BUT THE LIGHTS WILL  
NOT ACTIVATE

**CAUTION**

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

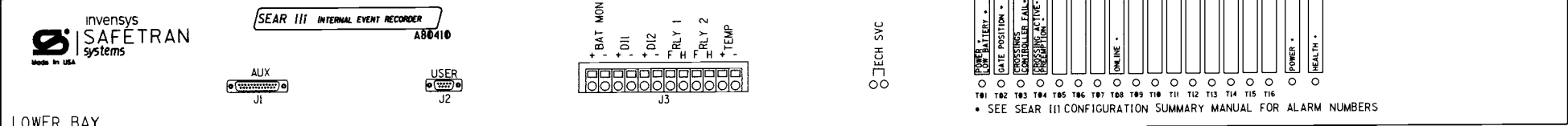


**ATTENTION!**

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 RIO IN  
TRACK 2 SLOTS (M3 AND M6)



4000 GCP 2-TK CHASSIS  
& MODULE LAYOUT

										DESIGNED BY:		 <b>NORFOLK SOUTHERN</b>			
										JLM 12-08-16					
										DRAWN BY:		OFFICE OF ASS'T. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.		M.P.: S-101.24	
										XRL 12-08-16					
										CHECKED BY:		BELLEVUE, OH FLGS AT BILLINGS RD			
PEH 12-19-16															
										IN SERVICE:		SANDUSKY DISTRICT		FILE No. R-	
										- -		CADD or DWG. No. SNCS10124.06		SHEET No. 6 of 23	
REVISION INITIALS										PROPERTY NORFOLK SOUTHERN RAILWAY CO.					

Program Report

Location and SIN

DOT Number: 481649M  
Milepost Number: S-101.24  
Site Name: BILLINGS RD

SIN: 755023603416

MCF and Template Selection

MCF Name: GCP-T6X-02-1.mcf  
MCF Revision: 021  
MCFCRC: 6076E435

Template = 1A:6 Trk BI

Check Numbers

Office Check No. (DT 4.6.0): 08973BDC  
Office Check Number: 08973BDC  
Config. Check Number: 558A7E72  
(Based on MCF Revision 021)

Program

BASIC: module configuration  
Track 1 Slot = Track  
Track 2/RIO 1 Slot = Not Used  
Track 3 Slot = Not Used  
Track 4 Slot = Not Used  
Track 5/RIO 2 Slot = Not Used  
Track 6/RIO 3 Slot = Not Used  
SSCC-1 Slot = SSCC3i  
SSCC-2 Slot = SSCC3i  
SEAR Used = Yes

BASIC: MS/GCP operation  
Track 1: MS/GCP Operation = Yes

BASIC: island operation  
Track 1: Island Used = Internal

BASIC: preemption  
Preempt Logic = No

BASIC: radio Dax links  
Radio DAX link A Used = No  
Radio DAX link B Used = No

BASIC: VitalComms links  
VitalComms link 1 Used = No  
VitalComms link 2 Used = No

PREDICTORS: track 1  
Track 1: Prime Used = Yes  
Track 1: Dax A Used = No  
Track 1: Dax B Used = No  
Track 1: Dax C Used = No  
Track 1: Dax D Used = No  
Track 1: Dax E Used = No  
Track 1: Dax F Used = No  
Track 1: Dax G Used = No

GCP: track 1  
Track 1: GCP Freq Category = Standard  
Track 1: GCP Frequency = 86 Hz  
Track 1: Approach Distance = 3087 ft  
Track 1: Uni/Bi/Sim-Bidirnl = Bidirnl  
Track 1: GCP Transmit Level = High  
Track 1: Island Connection = Isl1  
Track 1: Island Distance = 148 ft  
Track 1: Computed Distance = 9999 ft  
Track 1: Linearization Steps = 100

GCP: track 1 enhanced det  
Track 1: Inbound PS Sensitivity = Off  
Track 1: Speed Limiting Used = Yes  
Track 1: Outbound False Act Lvl = Normal  
Track 1: Outbound PS Timer = 20 sec  
Track 1: Trailing Switch Logic = On  
Track 1: Post Joint Detn Time = 15 sec  
Track 1: Adv Appr Predn = No  
Track 1: CancelPickup Delay = This Isl

GCP: track 1 prime  
Track 1: Prime Warning Time = 30 sec  
Track 1: Prime Offset Distance = 0 ft  
Track 1: Switch MS EZ Level = 10  
Track 1: Prime MS/GCP Mode = Pred  
Track 1: Prime Pickup Delay = 15 sec  
Track 1: Prime UAX = IP  
Track 1: Prime UAX Pickup = 5 sec

GCP: track 1 pos start  
Track 1: Positive Start = Off  
Track 1: Sudden Shnt Det Used = No  
Track 1: Low EZ Detection Used = No

GCP: track 1 MS Control  
Track 1: MS/GCP CtrlIP Used = No  
Track 1: MS Sensitivity Level = 0  
Track 1: Compensation Level = 1300  
Track 1: Warn Time-Ballast Comp = High  
Track 1: Low EX Adjustment = 39  
Track 1: Bidirnl Dax Passthru = No  
Track 1: False Act on Train Stop = No  
Track 1: EX Limiting Used = Yes  
Track 1: EZ Correction Used = Yes

ISLAND: track 1  
Track 1: IslFrequency = 13.2 kHz  
Track 1: Pickup Delay (2s +) = 0 sec  
Track 1: IslEnable IP Used = No

AND: track Anding  
AND 1 XR Used = Yes  
AND 2 Used = No  
AND 3 Used = No  
AND 4 Used = No  
AND 5 Used = No  
AND 6 Used = No  
AND 7 Used = No  
AND 8 Used = No

AND: AND 1 XR  
AND 1 XR Track 1 = Prime  
AND 1 Enable Used = Yes  
AND 1 Enable Pickup = 5 sec  
AND 1 Enable Drop = 0 sec  
AND 1 Wrap Used = No

ADVANCED: MS restart  
MS/GCP Restart Used = No

ADVANCED: out of service  
OOS Control = Display+OOS IPs  
OOS Timeout = Yes  
OOS Timeout = 1 hrs

ADVANCED: out of service 2  
T1 OOS Control = OOS Input 1

ADVANCED: track wrap circuits  
Wrap LOS Timer = 5 sec  
Track 1 Wrap Used = No

ADVANCED: trk 1 overrides  
Track 1: AllPredictors Override Used = No

ADVANCED: OR logic  
OR 1 Used = No  
OR 2 Used = No  
OR 3 Used = No  
OR 4 Used = No

ADVANCED: internalI/O 1  
Pass Thrus = No  
Int.1 Sets = Not Used  
Int.1 Set by = Not Used  
Int.2 Sets = Not Used  
Int.2 Set by = Not Used  
Int.3 Sets = Not Used  
Int.3 Set by = Not Used  
Int.4 Sets = Not Used  
Int.4 Set by = Not Used

ADVANCED: internalI/O 2  
Int.5 Sets = Not Used  
Int.5 Set by = Not Used  
Int.6 Sets = Not Used  
Int.6 Set by = Not Used  
Int.7 Sets = Not Used  
Int.7 Set by = Not Used  
Int.8 Sets = Not Used  
Int.8 Set by = Not Used

ADVANCED: internalI/O 3  
Int.9 Sets = Not Used  
Int.9 Set by = Not Used  
Int.10 Sets = Not Used  
Int.10 Set by = Not Used  
Int.11 Sets = Not Used  
Int.11 Set by = Not Used  
Int.12 Sets = Not Used  
Int.12 Set by = Not Used

ADVANCED: internalI/O 4  
Int.13 Sets = Not Used  
Int.13 Set by = Not Used  
Int.14 Sets = Not Used  
Int.14 Set by = Not Used  
Int.15 Sets = Not Used  
Int.15 Set by = Not Used  
Int.16 Sets = Not Used  
Int.16 Set by = Not Used

4000 GCP PROGRAMMING SETUP

REVISION INITIALS										PROPERTY NORFOLK SOUTHERN RAILWAY CO.		DESIGNED BY: JLM 12-08-16				 <b>NORFOLK SOUTHERN</b>			
												DRAWN BY: XRL 12-08-16		OFFICE OF ASS'T. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.				M.P.: S-101.24	
												CHECKED BY: PEH 12-19-16		BELLEVUE, OH FLGS AT BILLINGS RD					
												IN SERVICE: - -		SANDUSKY DISTRICT		FILE No. R-			
														CADD or DWG. No. SNCS10124.07		SHEET No. 7 of 23			

ADVANCED: site options  
Daylight Savings = On  
Units = Standard  
Maint CallRpt IP Used = No  
Emergency Activate IP = No  
EZ/EX Logging = Change  
EZ/EX Point Change = 3

SSCC  
Gates Used = Yes  
SSCCI+2 GPs Coupled = Yes  
Min Activation = 0 sec  
Rmt Activation Cancel= 2 min  
BellOn Gate Rising = No  
Mute BellOn Gate Down = No  
SSCCIV Controller Used = No

SSCC: 1  
SSCC-1 Activation = AND 1 XR  
SSCC-1 Gate Delay = 6 sec  
SSCC-1 Number of GPs = 1  
SSCC-1 Number of GDs = 2  
SSCC 1:Flash Rate = 40  
SSCC 1:Low Battery Detection = No  
SSCC 1:Flash Sync = master  
SSCC 1:Invert Gate Output = No  
SSCC 1:Lamp NeutralTest = Off  
Aux-1 Xng CtrlUsed = No

SSCC: 2  
SSCC-2 Activation = AND 1 XR  
SSCC-2 Gate Delay = 6 sec  
SSCC-2 Number of GPs = 0  
SSCC-2 Number of GDs = 0  
SSCC 2 :Flash Rate = 40  
SSCC 2 :Low Battery Detection = No  
SSCC 2 :Flash Sync = slave  
SSCC 2 :Invert Gate Output = No  
SSCC 2 :Lamp NeutralTest = Off  
Aux-2 Xng CtrlUsed = No

OUTPUT: assignment page 1  
OUT 1.1 = Not Used  
OUT 1.2 = Not Used

INPUT: assignment page 1  
IN 1.1 = T1 Prime UAX  
IN 1.2 = AND 1 XR Enable

IO: assignment SSCC  
OUT GC 1 = Gate Output 1  
OUT GC 2 = Gate Output 2  
IN 7.1 = Not Used  
IN 7.2 = GD 1.2  
IN 7.3 = AND 1 XR Enable  
IN 7.4 = GD 1.1

IN 7.5 = GP 1.1  
IN 8.1 = Out Of Service IP 1  
IN 8.2 = Not Used  
IN 8.3 = Not Used  
IN 8.4 = Not Used  
IN 8.5 = Not Used

SEAR  
SEAR Subnode = 3  
DI 1 = Not Used  
DI 2 = Not Used  
Rly 1 = General1  
Rly 2 = Not Used

SEAR: inputs  
SP 2.1 = POK 1  
SP 3.1 = Not Used  
SP 4.1 = Not Used  
SP 5.1 = Not Used  
SP 6.1 = Not Used

SEAR: slot 1-4 inputs  
IN 2.1 = Not Used  
IN 2.2 = Not Used  
IN 3.1 = Not Used  
IN 3.2 = Not Used  
IN 4.1 = Not Used  
IN 4.2 = Not Used

SEAR: inputs slot 5  
IN 5.1 = Not Used  
IN 5.2 = Not Used

SEAR: inputs slot 6  
IN 6.1 = Not Used  
IN 6.2 = Not Used

SEAR: slot 7-8 inputs  
IN 7.1 = Not Used  
IN 8.2 = Not Used  
IN 8.3 = Not Used  
IN 8.4 = Not Used  
IN 8.5 = Not Used

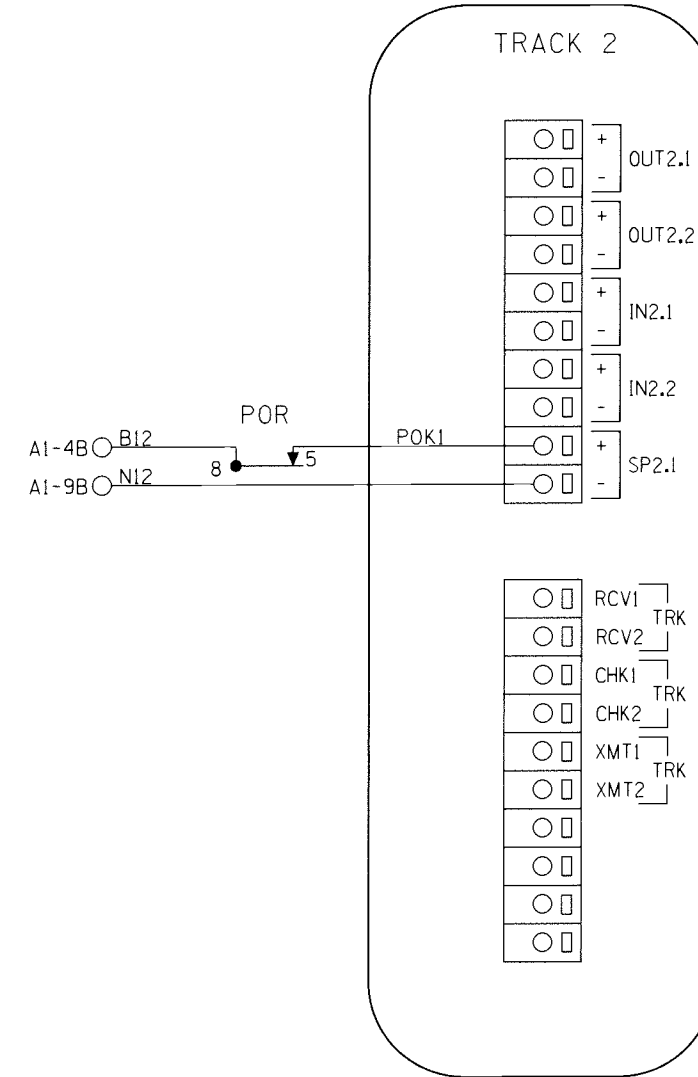
SITE: programming  
Radio Subnode = 1  
Field Password = Off  
Low Battery Enabled = Off

Configuration Package File  
-----  
Filename: sncls10124.pac

4000 GCP PROGRAMMING SETUP

DESIGNED BY:										 <b>NORFOLK SOUTHERN</b>			
										OFFICE OF ASS'T. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.			
DRAWN BY:										M.P.: S-101.24			
XRL 12-08-16										BELLEVUE, OH			
CHECKED BY:										FLGS AT BILLINGS RD			
PEH 12-19-16										SANDUSKY DISTRICT			
IN SERVICE:										FILE No. R-			
- -										CADD or DWG. No. SNCS10124.08			
SHEET 8 of 23													

REVISION										PROPERTY
INITIALS										NORFOLK SOUTHERN RAILWAY CO.

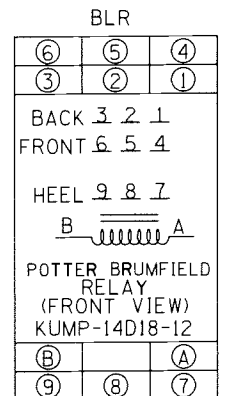
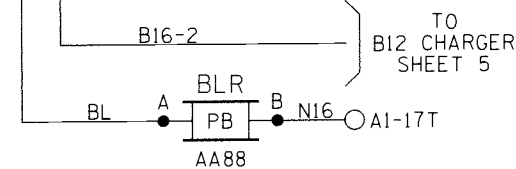
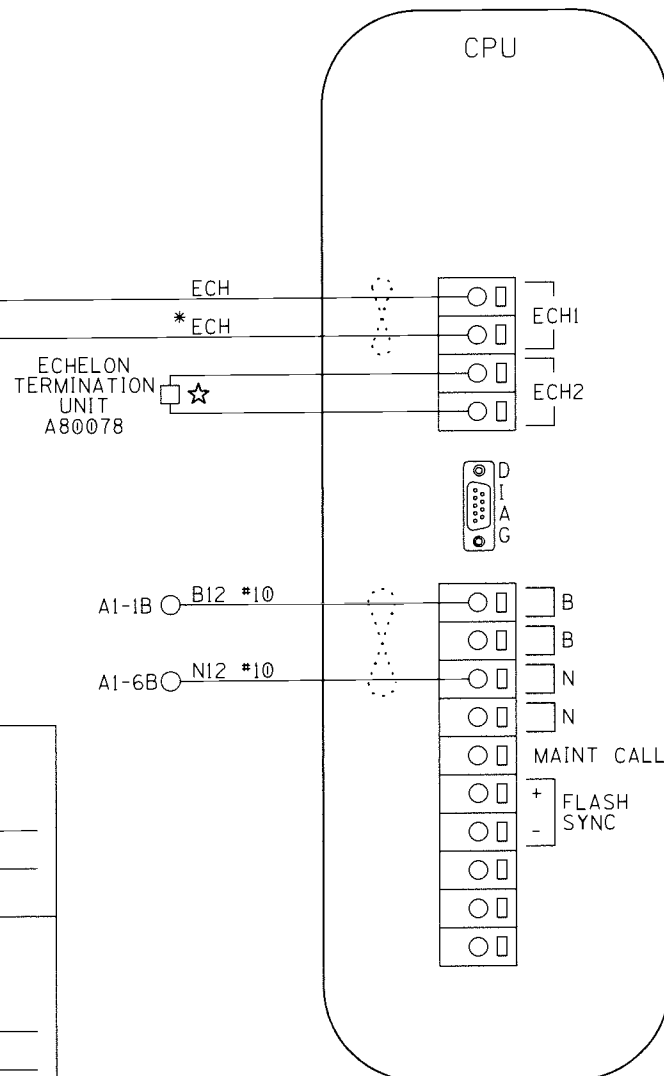
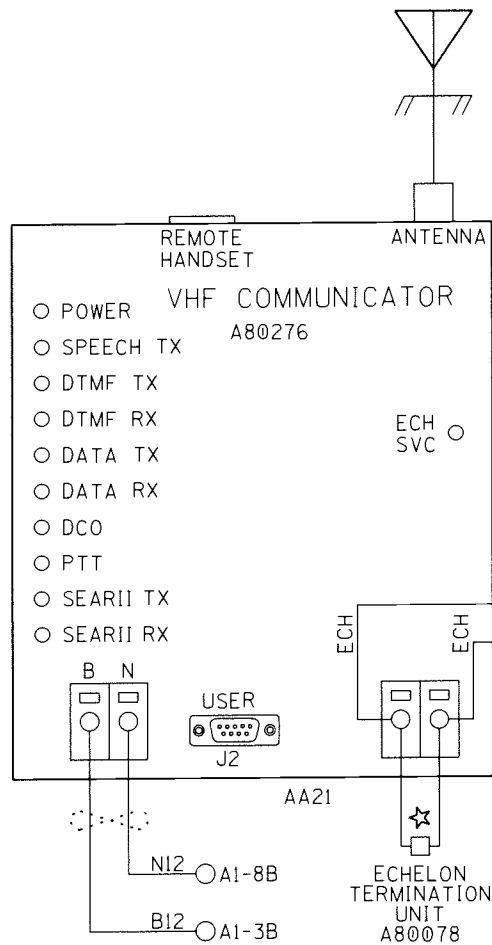
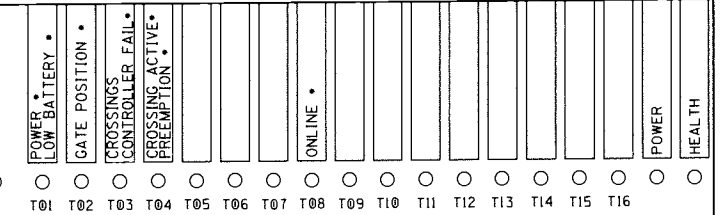
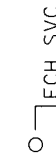
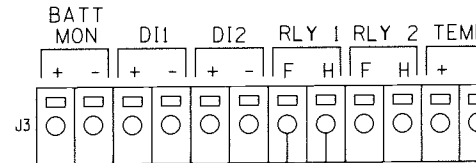


PROPERTY  
NORFOLK SOUTHERN RAILWAY CO.



## /SEAR Ili INTERNAL EVENT RECORDER

A80410



## GCP PROGRAMMING FOR VHF RADIO

REMOTE DTMF CROSSING ACTIVATION  
(ACTIVATES ENTIRE CROSSING)

TO ACTIVATE PRESS: 649\*

TO DE-ACTIVATE PRESS: 649\*

(ACTIVATION WILL TIME OUT AFTER 60 SEC.)

REMOTE DTMF LIGHTING ACTIVATION  
(ACTIVATES FLASHING LIGHTS ONLY)

TO ACTIVATE PRESS: 6491\*

TO DE-ACTIVATE PRESS: 649!\*

(ACTIVATION WILL TIME OUT AFTER 60 SEC.)

NOTES:


ALL WIRING TO BE #16AWG  
UNLESS NOTED OTHERWISE.

\* = ECHELON 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.

☆ = A80078 ECHELON TERMINATION  
UNIT TO TERMINATE ECHELON  
NETWORK.

$\mathcal{S} \approx \text{TWIST}$

## CPU MODULE, SEAR III &amp; VHF HOOK-UPS

DESIGNED BY:		 <b>NORFOLK SOUTHERN</b>	
JLM	12-08-16		
DRAWN BY:		OFFICE OF ASST. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.	M.P.: S-101.24
XRL	12-08-16	BELLEVUE, OH FLGS AT BILLINGS RD	
CHECKED BY:			
PEH	12-19-16	SANDUSKY DISTRICT	FILE No. R-
IN SERVICE:		CADD or DWG. No. SNCS10124.10	SHEET No. 10 of 23

SITE SET UP PROCEDURE	
FUNCTION	LED DISPLAY
DATE/TIME	
AUTOMATIC DST ADJUSTMENT	YES
TIME ZONE	EST
SITE NAME	BILLINGS RD
MILEPOST	S-101.24
DOT #	481649M
TESTER TYPE	CROSSING
DATE FORMAT	MM-DD-YYYY
TEMP FORMAT	FAHRENHEIT
INDICATE HOLD (SEC)	0
INDICATE REFRESH (SEC)	60
SITE ATCS	7.550.236.034.03.01
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 (ECHELON)
** RADIO ATCS ADDR	7.RRR.LLL.GGG.01.01
** PHONE #	(OFFICE NUMBER)
** INIT STRING	
** FIELD COMM DEVICE	NONE
*** USER PORT BAUD	57600
*** USER PORT DATA BITS	8
*** USER PORT PARITY	NONE
*** USER PORT STOP BITS	1
*** USER PORT FLOW CONTROL	NONE
*** AUX PORT BAUD	9600
*** AUX PORT DATA BITS	8
*** AUX PORT PARITY	NONE
*** AUX PORT STOP BITS	1
*** AUX PORT FLOW CONTROL	NONE

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
85% VOLTAGE RELAY OUT	YES
* GATES CONTROLLED BY FOREIGN RR	
BATTERY BANKS	2
BATTERY MON USED	NO
PREEMPTION	NO
INTERNAL CROSSING CONTROLLERS	2
EXTERNAL CROSSING CONTROLLERS	0
VHF COMMUNICATOR	YES
DTMF ACTIVATION	YES
**** ACTIVATION CODE	649
ACTIVATION TIMEOUT (SECONDS)	60
ILOD MODULES	0
***** ANY LED BULBS USED	NO
VHF VOICE CHANNEL	2
VHF DATA CHANNEL	2
USE CELL MODEM NON-CRITICAL FEATURE	NO

PROGRAM MENU QUESTIONS	PROGRAM
EDIT DIGITAL INPUTS	NO
EDIT BATTERIES	NO
EDIT RELAYS	NO
EDIT INDICATOR LEDS	NO
EDIT TEST LEDS	NO
EDIT ILOD SENSORS	NO
EDIT VHF SETTINGS	NO
GCP4K ATCS SUBNODE	16

NOTES:

- \* = DISPLAYED IF CROSSING CONFIGURATION IS SPLIT GATE.
- \*\* = 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.
- \*\*\*\*\* = IF ILOD MODULE >0.

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


PROPERTY  
NORFOLK SOUTHERN RAILWAY CO.

DESIGNED BY:  
JLM 12-08-16

DRAWN BY:  
XRL 12-08-16

CHECKED BY:  
PEH 12-19-16

IN SERVICE:  
- -

 **NORFOLK SOUTHERN**

OFFICE OF ASS'T. VICE PRESIDENT  
COMM. & SIGNAL, ATLANTA, GA. M.P.: S-101.24

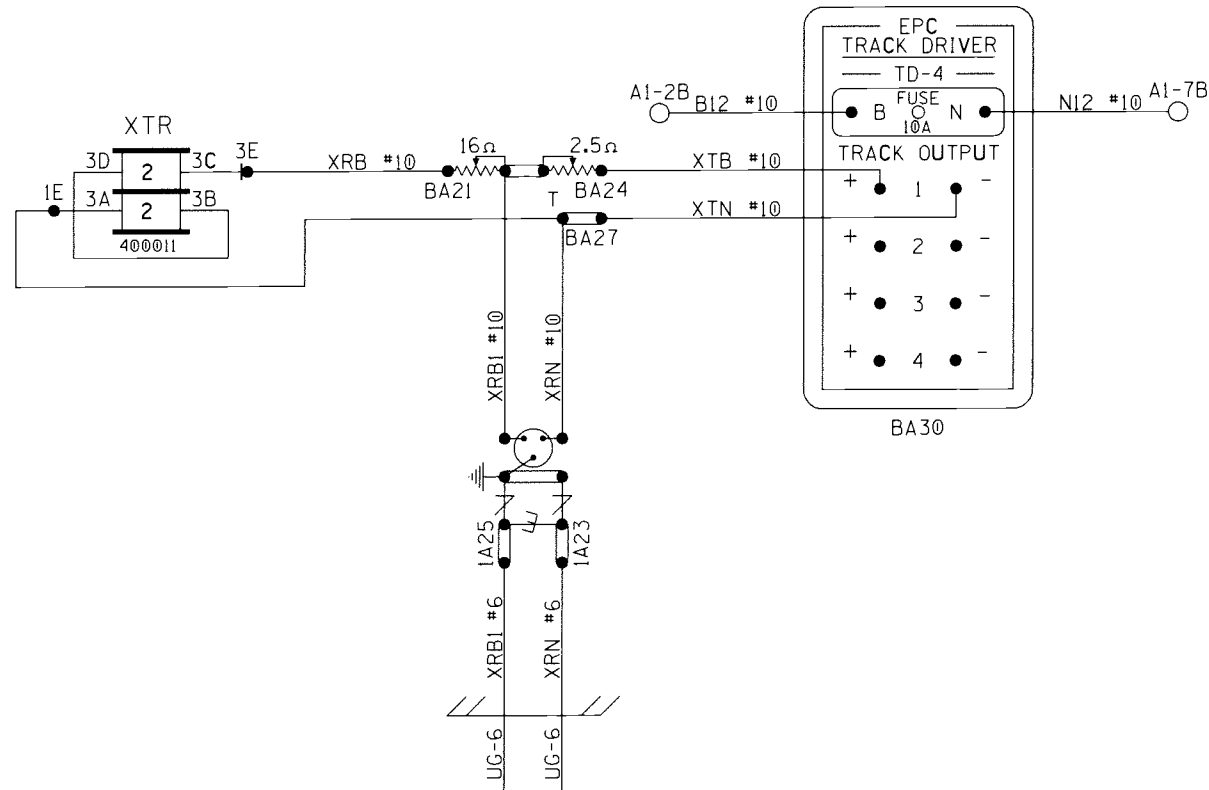
BELLEVUE, OH  
FLGS AT BILLINGS RD

SANDUSKY DISTRICT


FILE No. R-  
SHEET No. 11 of 23

CADD or DWG. No. SNCS10124.11





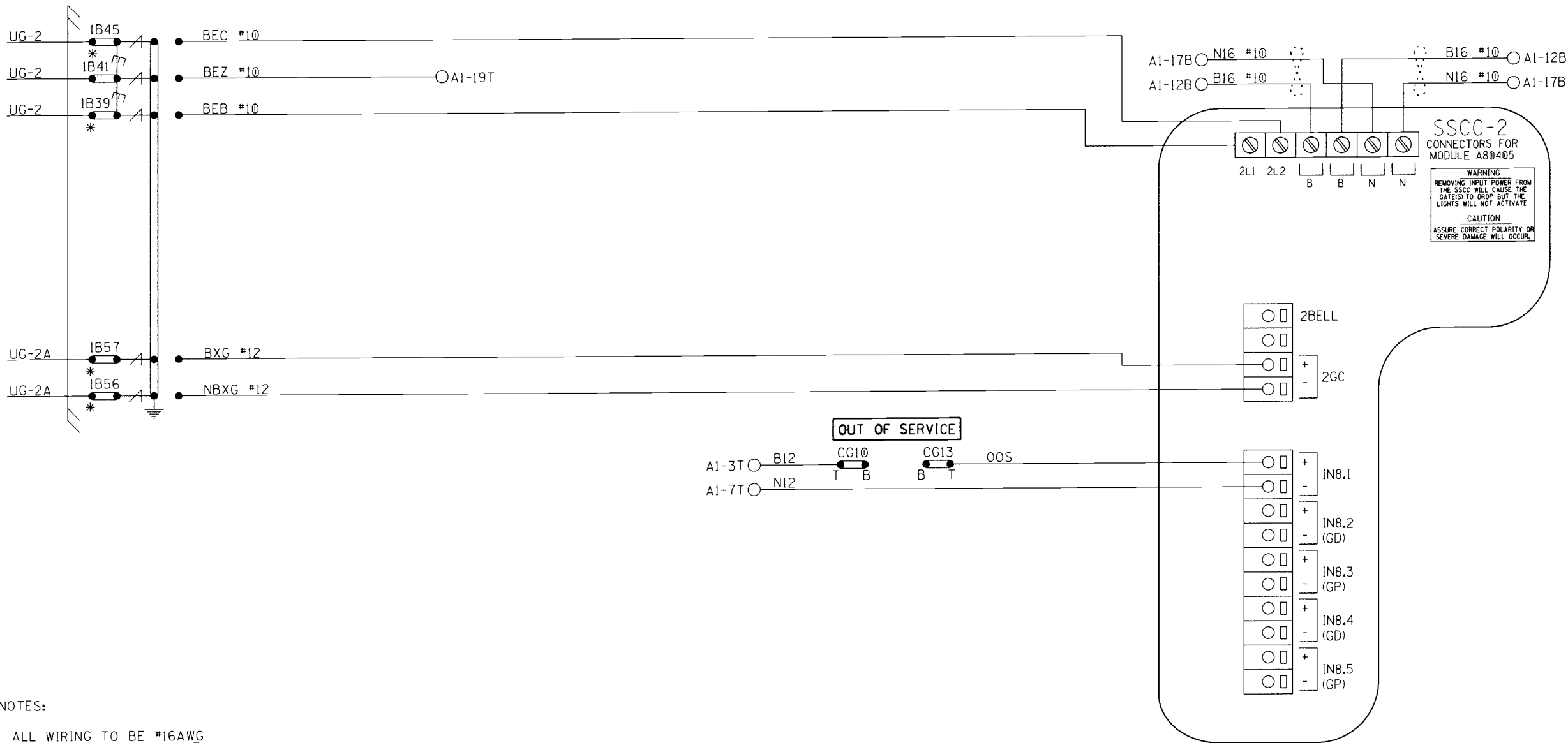
TD-4 & TRACK RELAY

DESIGNED BY:	JLM	12-08-16	 <b>NORFOLK SOUTHERN</b>	
DRAWN BY:	XRL	12-08-16		
CHECKED BY:	PEH	12-19-16	OFFICE OF ASS'T. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.	
IN SERVICE:	-	-	BELLEVUE, OH FLGS AT BILLINGS RD	
			SANDUSKY DISTRICT	FILE No. R-
			CADD or DWG. No. SNCS10124.12	SHEET No. 12 of 23

REVISION  
INITIALS

PROPERTY  
NORFOLK SOUTHERN RAILWAY CO.





NOTES:

ALL WIRING TO BE #16AWG  
UNLESS NOTED OTHERWISE.

\* = 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.

○ = TWIST

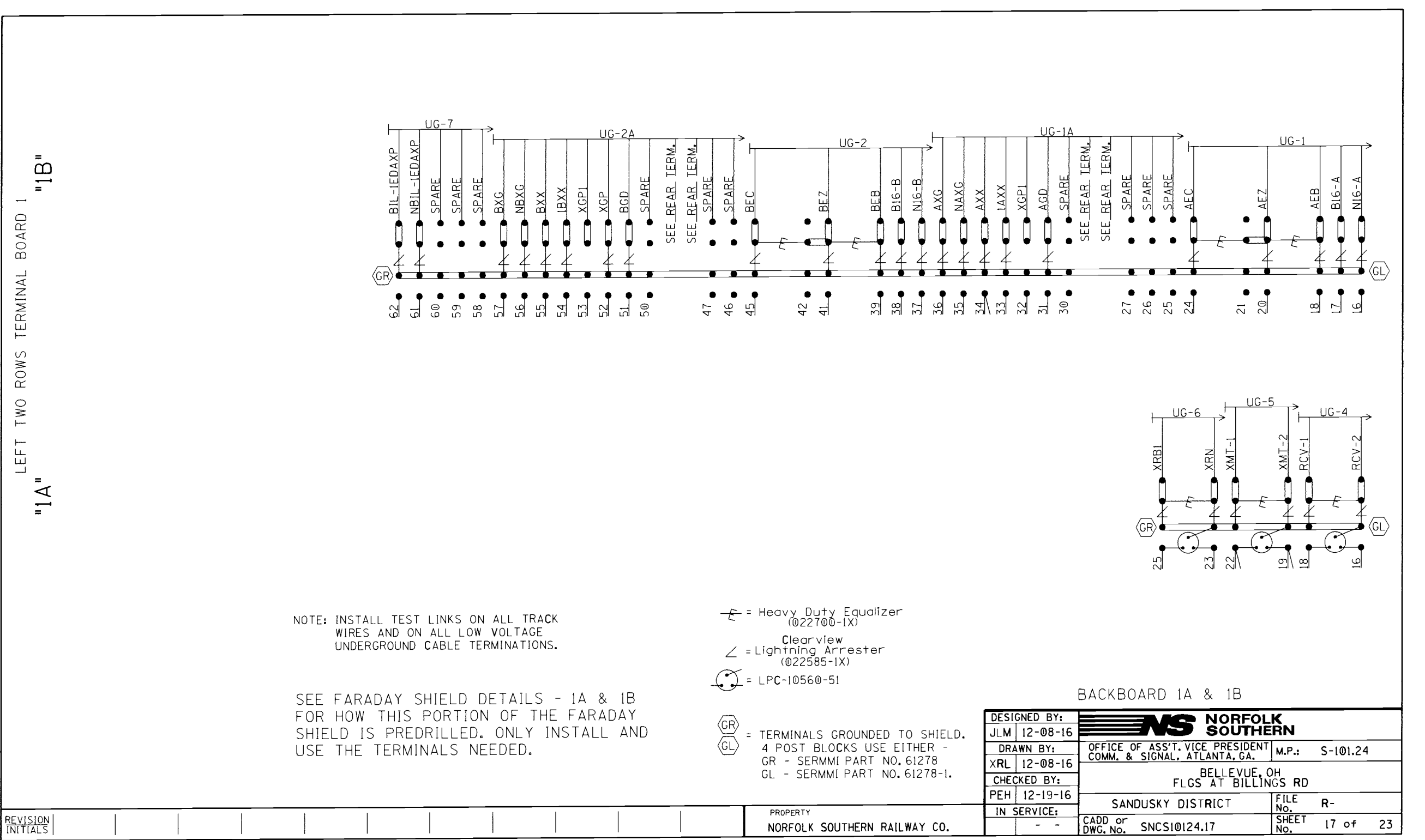
SSCC#2 MODULE HOOK-UP

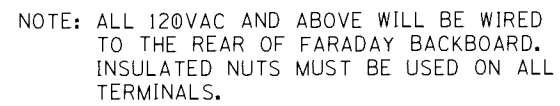
DESIGNED BY:	JLM 12-08-16	<b>NS NORFOLK SOUTHERN</b>	
DRAWN BY:	XRL 12-08-16	OFFICE OF ASS'T. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.	M.P.: S-101.24
CHECKED BY:	PEH 12-19-16	BELLEVUE, OH FLGS AT BILLINGS RD	
IN SERVICE:	- -	SANDUSKY DISTRICT	FILE No. R-
REVISION	INITIALS	CADD or DWG. No.	SHEET No. 14 of 23

PROPERTY  
NORFOLK SOUTHERN RAILWAY CO.

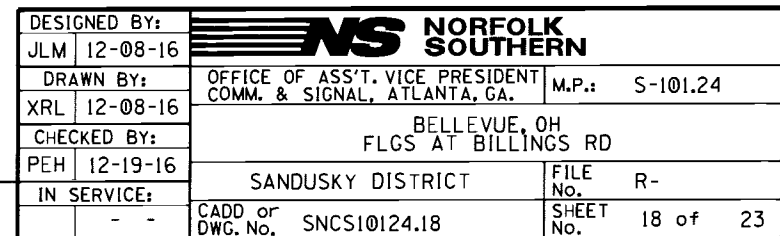






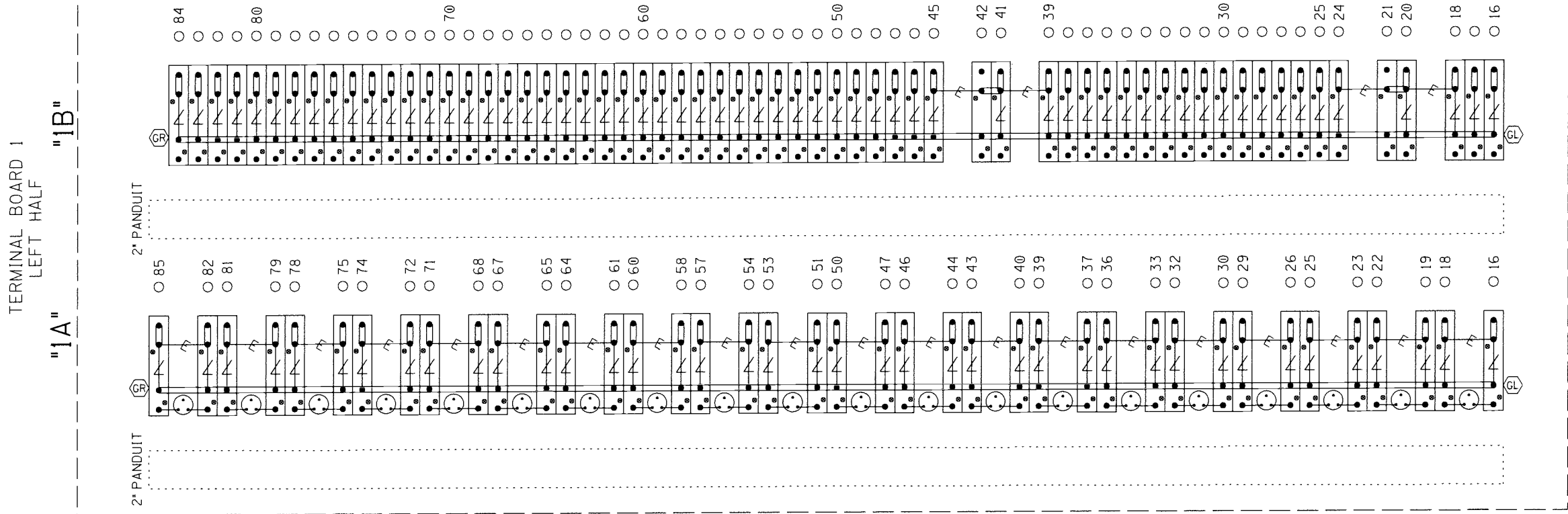
[illegible]

REAR BACKBOARD 1A &amp; 1B



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




⚡ = Heavy Duty Equalizer (022700-1X)

Clearview  
⚡ = Lightning Arrester (022585-1X)

⦿ = LPC-10560-51

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

FARADAY SHIELD 1A & 1B

DESIGNED BY:	JLM	12-08-16	 <b>NORFOLK SOUTHERN</b>	
DRAWN BY:	XRL	12-08-16		
CHECKED BY:	PEH	12-19-16	OFFICE OF ASS'T. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.	
IN SERVICE:	-	-	M.P.: S-101.24 BELLEVUE, OH FLGS AT BILLINGS RD	
			SANDUSKY DISTRICT	FILE No. R-
			CADD or DWG. No. SNCS10124.19	SHEET No. 19 of 23

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

REVISION  
INITIALS

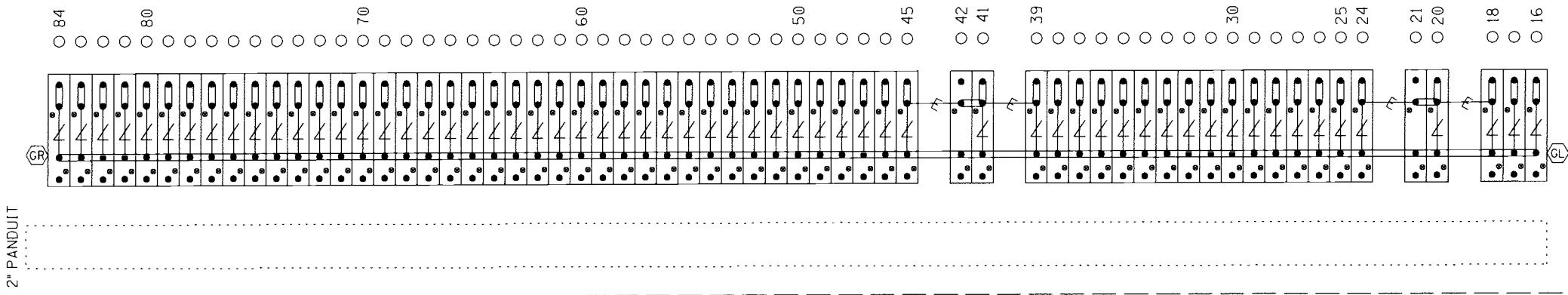
PROPERTY  
NORFOLK SOUTHERN RAILWAY CO.



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  
"1C"



E = Heavy Duty Equalizer  
(022700-1X)

Z = Clearview  
Lightning Arrester  
(022585-1X)

LPC = LPC-10560-51

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


FARADAY SHIELD 1C

= 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.

REVISION  
INITIALS

PROPERTY  
NORFOLK SOUTHERN RAILWAY CO.

DESIGNED BY:	JLM	12-08-16	 <b>NORFOLK SOUTHERN</b>	
DRAWN BY:	XRL	12-08-16		
CHECKED BY:	PEH	12-19-16	OFFICE OF ASS'T. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.	
IN SERVICE:	-	-	BELLEVUE, OH FLGS AT BILLINGS RD	
			SANDUSKY DISTRICT	FILE No. R-
			CADD or DWG. No. SNCS10124.20	SHEET No. 20 of 23

Technical drawing of a rack layout showing dimensions and component labels. The drawing is oriented vertically with dimensions on the left and right sides.

**Dimensions (Left Side):**

- 24 1/4"
- 2" PANDUIT
- CABLE TERMINATION PANEL 91042-19
- "A1"
- 2" PANDUIT


**Dimensions (Right Side):**

- 1 1/2"
- 2"
- 1"
- 4"
- 1"
- 2"
- 2"
- 22"
- 2"
- 2"
- 6"
- 15"
- 23 1/2"

**Component Labels:**

- XTR
- BIL-IEDAXPR
- 4000 GCP (REDUNDANT 2-TK CHASSIS) A80465
- "A2"
- 2" PANDUIT
- LAPTOP SHELF

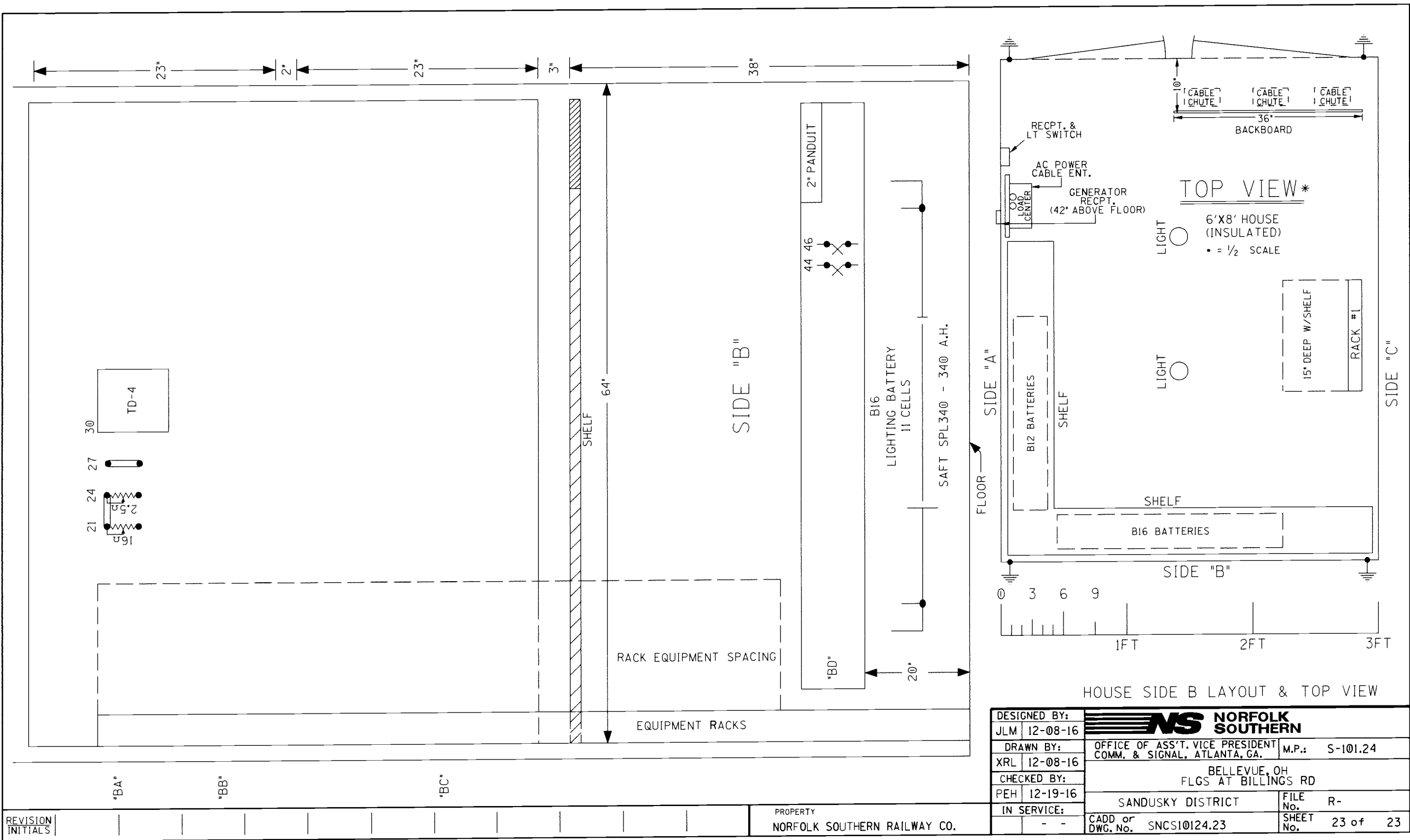


DESIGNED BY:			
JLM	12-08-16		
DRAWN BY:		OFFICE OF ASS'T. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.	M.P.: S-101.24
XRL	12-08-16	BELLEVUE, OH FLGS AT BILLINGS RD	
CHECKED BY:			
PEH	12-19-16	SANDUSKY DISTRICT	FILE No. R-
IN SERVICE:		CADD or DWG. No. SNCS10124.21	SHEET No. 21 of 23
	- -		

[illegible]

PROPERTY NORFOLK SOUTHERN RAILWAY CO.
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# OHIO RAIL DEVELOPMENT COMMISSION

Mail Stop #3140, 1980 West Broad Street, Columbus OH 43223

John R. Kasich, Governor • Mark Policinski, ORDC Chairman

October 17, 2016

Mr. Stephen Klinger  
Public Project Engineer  
1200 Peachtree Street, Box 123  
Atlanta, Ga. 30309

RE: Erie County, Billings Road  
DOT 481649M, PID 103873

Dear Mr. Klinger:

A diagnostic review was held at the above grade crossing on July 6, 2016. The crossing has been recommended for the installation of lights and gates.

NS is authorized to proceed with the site plans and cost estimates (PE) for this project. This authorization is made with the stipulation and understanding that any field work needs prior approval before 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.

The ORDC is not requesting that the PUCO issue an Order at this time. When the ORDC receives the PE it will be evaluated and a construction-only Order will be requested from PUCO. Please submit the PE to ORDC within 90 days of receipt of this letter.

The diagnostic review form is attached. Please note any recommendations (page 5), if any, made by the team with regard to requirements for this location. Any minor roadway work necessary for MUTCD compliance should be incorporated into the PE and such costs will flow through the railroad reimbursement process.

The Project Manager for this project is Joe Reinhardt. He can be reached at (614) 644.0291, or Joe.Reinhardt@dot.state.oh.us, if you have any questions.

Sincerely,

Joseph N. Reinhardt  
Project Manager

C: Jill Henry, PUCO, Grade Crossing Planner  
ORDC (file)





# OHIO RAIL DEVELOPMENT COMMISSION

Mail Stop #3140, 1980 West Broad Street, Columbus OH 43223

John R. Kasich, Governor • Mark Policinski, ORDC Chairman

September 6, 2016

Norfolk Southern Railway Company  
Mr. Stephen Klinger  
Administrator Highway Grade Crossing Improvements  
1200 Peachtree Street  
Atlanta, GA 30309-3597

Subject: Grade Crossing Warning Device Improvements  
Erie County, TR 38 - Billings Rd., DOT # 481649M, PID 103873

2016 OCT 13 AM 10:22

RECEIVED  
ORDC

Dear Mr. Klinger:

A diagnostic review was conducted at the subject grade crossing on 7/6/16. As a result of the review, the devices will be upgraded to automatic flashing lights and roadway gates.

This project shall be completed in compliance with Agreement No. 17450, dated December 19, 2012, entered into by the State of Ohio and Norfolk Southern Railway Company (NS) and incorporated as if fully rewritten herein. This construction shall also meet the general terms and conditions under the Moving Ahead for Progress in the 21<sup>st</sup> Century Act (MAP-21) and subsequent amendments and the State of Ohio's Federally Funded Warning Device Program.

Preliminary engineering (PE) and construction costs shall be borne one hundred percent (100%) by ORDC. Reimbursable costs will be limited by the ORDC based on approved estimates and bid tabulations, if applicable. These limits will be quantified by the ORDC in its construction authorization to NS and may be amended by the ORDC based on revised estimates and bid tabulations.

This Letter Agreement and the approved plans constitute the scope of the project. NS shall notify ORDC in writing of any changes in the scope of work which are not in the approved plans and estimates and secure approval in writing of same before the work is performed.

PE will not be commenced by NS prior to ORDC issuing a PE authorization. PE will be submitted by NS to ORDC within ninety (90) days or other time specified by ORDC in the PE authorization. Construction will not be commenced by NS prior to ORDC issuing a construction authorization. Construction will be completed by NS within nine (9) months or other time specified in the time specified by ORDC in the construction authorization.

Please indicate your acceptance of the terms and conditions of this Letter Agreement by signing and returning one (1) copy to me at the address listed above and retain a copy for your files. This Agreement may be executed in one or more counterparts, each of which shall be deemed to be a duplicate original, but all of which taken together shall be deemed to constitute a single Agreement.

Sincerely,

Matthew R. Dietrich  
Executive Director



[www.rail.ohio.gov](http://www.rail.ohio.gov)

phone: 614.644.0306

IMPROVING RAIL TODAY FOR TOMORROW'S ECONOMY

Norfolk Southern:

By: Gregory L. Comstock

Title: General Manager

Date: 9/23/2016

X:\tr agreements\ERI TR 38 Billings Rd 481649M PID 103873 NS



## Diagnostic Review Team Survey

**Reason for Survey:**

(e.g. formula, accident, constituent, etc.)

**Date:** 7/6/2016

### Location Data

Street or Road Name: Billings Road		US DOT No.: 481649M	
Route/Road Number (i.e. Twp., Co., SR or US) TR 38			
County: ERI	Township: Groton Twp.	City: (In or Near) Near Bellevue	
Railroad Name: Norfolk Southern	Railroad Division: Lake	Branch/Line Name: Sandusky	
Nearest RR Timetable Station: Bellevue		RR Milepost: 101.24	

### On-Site Review Team

(Include: Name – Organization – Phone Number – Email)

- GREG GRONBACH ORDC 614-395-1824 GREG.GRONBACH@DOT.OHIO.GOV
- Isabella Culliton ORDC 614-752-6910 Isabella.Culliton@dot.oh.gov
- GEORGE MATHIAS PULC 614-752-9107
- A.J. PRASE NS 440 429 1960 AARON.PRASE@NSCORP.COM
- Adam Etherton NS 812 677 8709 adam.etherton@nscorp.com
- 
- 
- 
- 

### Existing Traffic Control Devices

Type of Warning Devices	Installed?		Quantity/Comments
Advance Warning Signs (condition?)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	GOOD
'Stop' Signs	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
'Stop Ahead' Signs	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Pavement Markings (condition?)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	GOOD
Crossbucks	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Number of Tracks Signs	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Inventory Tags	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	POOR
Interconnected Highway Traffic Signal	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Mast-Mounted Flashing Lights	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Cantilever Flashing Lights	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Number: Length:
Side Lights	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Automatic Gates	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Number: Length:
Bells	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Number:
Sidewalk Gate Arms	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
'No Turn' Signs	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Illumination	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Is crossing flagged by train crew?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Other	<input type="checkbox"/> Yes	<input type="checkbox"/> 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	
Hazard Ranking	1506	Date Run: 6/9/2016

**Railroad Data**

Railroad Characteristics	Initial Information (from database)	Revised
Total trains per day	12	
< 1 per day		
Day thru trains	3	
Night thru trains	3	
Daytime switching movements	6	
Nighttime switching movements		
Total number of tracks	2	
Number of main tracks	1	
Number of other tracks	1 (siding)	
Maximum train speed	40' <del>50</del> 40	
Typical train speed	40	
Amtrak		

If non-gated crossing, is clearing sight distance adequate in all quadrants? (See Table I) ☒ Yes ☐ NoIf multiple tracks, can two trains occupy crossing at the same time? ☒ Yes ☐ NoCan one train block the motorists' view of another train at crossing? ☒ Yes (Explain below) ☐ NoCan one or more tracks be eliminated through the crossing? ☐ Yes ☒ NoSWITCHING WITHIN  
200' OF CROSSINGAre 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: Groton Township

Roadway Characteristics	Initial Information (from database)	Revised
Average daily traffic	174 (2010)	
Highway paved	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Roadway Surface: <input checked="" type="checkbox"/> Blacktop <input type="checkbox"/> Gravel <input type="checkbox"/> Concrete <input type="checkbox"/> Other _____		
Roadway width: 22 ft.		
Number of highway lanes	2	
Urban or Rural	Rural	
Vehicle Speed: 45 MPH		
School Bus Operation: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes <u>LDW</u> Amount		
Hazardous Materials Trucks: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes <u>.05</u> Amount		
Shoulders: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes		
Is the shoulder surfaced? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes		
Is there existing guardrail along roadway in crossing vicinity? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes		
Is stopping site distance adequate? (See Table 2) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If no, deficient approach(es) _____		

Quadrant _____ Curb and Gutter: <input type="checkbox"/> Functional (Curb height = 4" or more) <input type="checkbox"/> Non-functional (Curb height = Less than 4") <input type="checkbox"/> None	Quadrant _____ Curb and Gutter: <input type="checkbox"/> Functional (Curb height = 4" or more) <input type="checkbox"/> Non-functional (Curb height = Less than 4") <input type="checkbox"/> 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 there a 'Do not Stop on Track' sign? ☐ No ☐ Yes

Is a roadway improvement project (e.g. widening, turn lanes, nearby new or upgraded traffic signal, sidewalk) planned at or near this location in the foreseeable future? ☐ No ☐ Yes

If yes,  
Improvement type \_\_\_\_\_ Lead Agency \_\_\_\_\_ Timeline/completion - \_\_\_\_\_

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

Explain reasons:

### Type of Development

<input checked="" type="checkbox"/> Open Space <input checked="" type="checkbox"/> Industrial <input type="checkbox"/> Residential	<input type="checkbox"/> Institutional <input type="checkbox"/> Commercial	Location of nearby schools: ? -
--	---	---------------------------------------

### Utility Information

Is commercial power available? ☐ No ☒ Yes

Utility Provider (Company Name) OHIO EDISON Phone Number \_\_\_\_\_

Nearest Available Power Source POWER @ CROSSING

What other utilities are present? (add locations to sketch)

<input type="checkbox"/> Gas	<input type="checkbox"/> Cable	<input type="checkbox"/> Telephone	<input checked="" type="checkbox"/> Fiber Optic Cable
<input type="checkbox"/> Petroleum	<input type="checkbox"/> Water	<input type="checkbox"/> Sanitary Sewer	
<input type="checkbox"/> Other _____			

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

Comments: OVERHEAD POWER LINES ON NORTHSIDE OF CROSSING IN AREA WHERE GATE FOUNDATION TO BE PLACED.

## Potential Red Flags / Project Challenges

Traffic Signal Preemption (include traffic signal intersection name and LHA with jurisdiction over traffic signal, if known):

N/A

Crossing Consolidation or Closure:

NO

Real Estate or ROW:

NO

Culverts / Drainage / Ballast Conditions:

NO

Roadway and/or Sidewalks:

NO

Circuitry (e.g. reaches out to other crossings, specific needs, etc.):

NO

Environmental:

NO

Other:

APPEARS TO BE A LOT OF SWITCHING MOVES, DUE TO QUARRY TO THE EAST OF CROSSING. CONSTANT WARNING TIME SHOULD BE LOOKED AT.

## Diagnostic Team Recommendations

Quadrants Needed

- ☐ Install/upgrade active devices
- ☒ Automatic Flashing Lights (AFLS)
- ☐ AFLS / Cants
- ☐ AFLS / Gates
- ☐ AFLS / Gates / Cants
- ☐ Bells / number
- ☒ Upgrade circuitry / type
- ☐ Sidelights
- ☐ Guardrail Needed
- ☐ Install/Replace curb
- ☒ Bungalow placement & offset from rail & highway
- ☐ Other (define)

Comments:

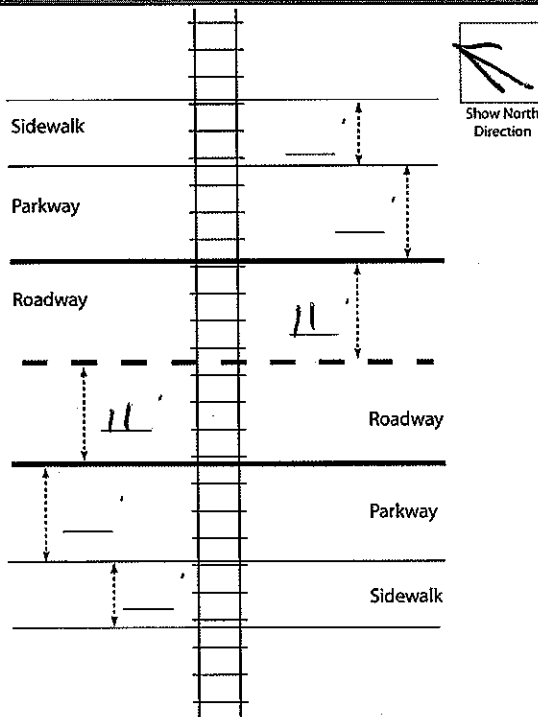
UPGRADE TO INCLUDE AUTOMATIC FLASHING LIGHTS  
+ GATES.

- ☐ 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):

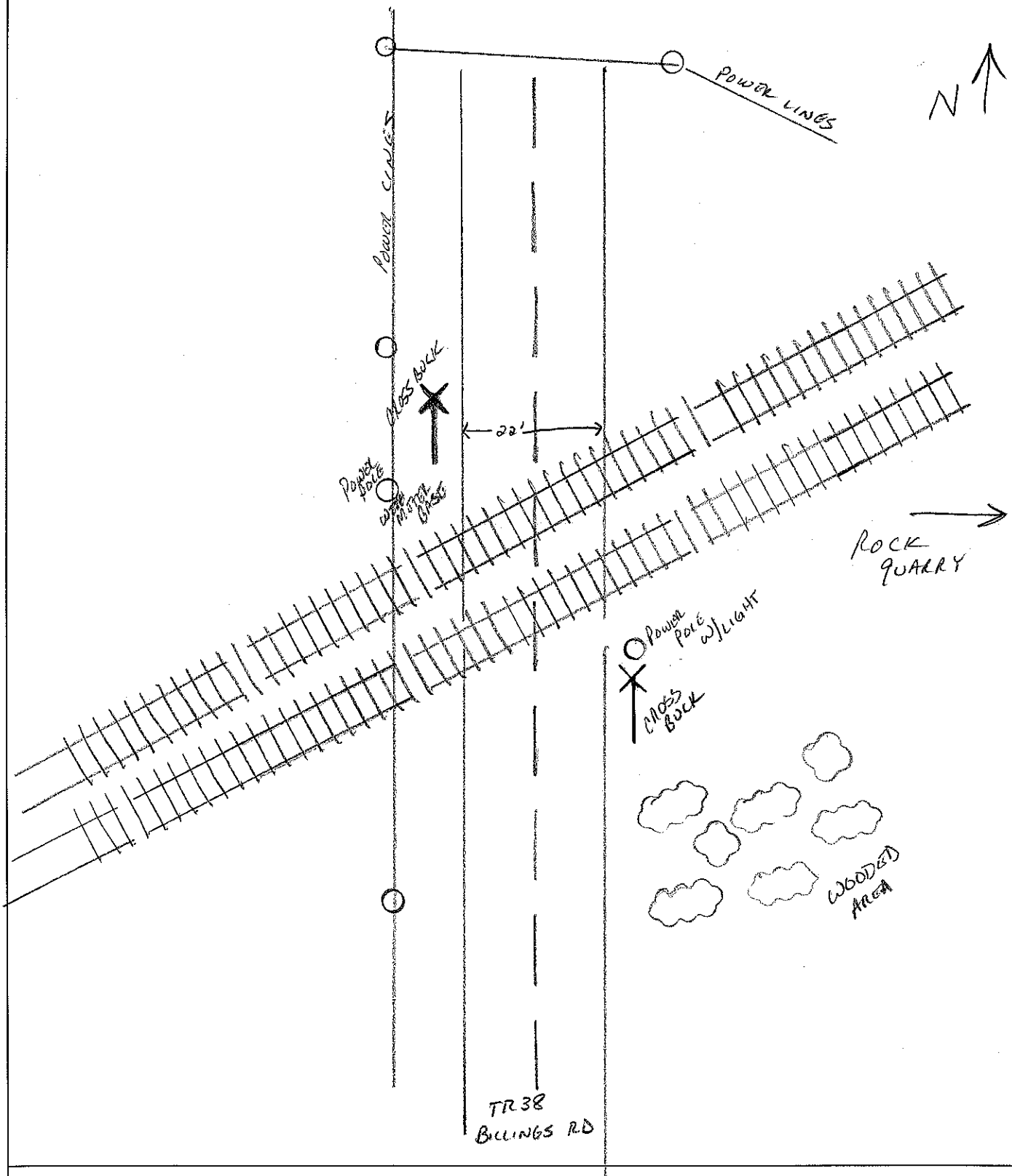
GWK Cam ALB  
VC

## Field Dimensions



a/p

# Field Sketch



Crossing Angle ☐ 0-29° ☒ 30-59° ☐ 60-90° Measured in \_\_\_\_\_ Quadrant?

Sketch by: GWB

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.

**This foregoing document was electronically filed with the Public Utilities**

**Commission of Ohio Docketing Information System on**

**3/8/2017 4:45:16 PM**

**in**

**Case No(s). 17-0688-RR-FED**

Summary: Memorandum In the Matter of a Request for the Installation of Active Warning Devices at the Norfolk Southern Railway Railroad Crossing, Billings Road/TR 38 DOT#481-649M, in Erie County, Ohio. electronically filed by Mrs. Jill A Henry on behalf of PUCO/Rail Division