

# Memo

To: Docketing Division  
From: Jill Henry, Rail Specialist, Rail Division  
Cc: PUCO Legal Department  
Date: 7/20/18

Re: PUCO Case No. 18-1135-RR-FED- In the Matter of a Request for the Installation of Active Warning Devices at the Norfolk Southern Railway & Wheeling & Lake Erie Railway Crossings, on Public Road DOT#503-246N & DOT#473-002U in Jefferson County, Ohio.

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On July 25, 2016, the Ohio Rail Development Commission (ORDC) authorized funding for Norfolk Southern Railway (NS) & Wheeling & Lake Erie Railway (WE) to install active warning devices at Public Road, DOT#503-246N & DOT#473-002U, in Jefferson County, Ohio. The crossings were surveyed on April 19, 2016 and found to warrant the upgrades. The electric utility provider for the crossings is American Electric Power- AEP.

The project will be paid for with federal funds and are actual cost. The plans and estimates for the project in the amount of \$275,439 for NS and \$221,222.17 for WE 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

Eastman & Smith LTD.  
Casey Talbott  
Attorney for Norfolk Southern  
One SeaGate 24<sup>th</sup> Floor  
P.O. Box 10032  
Toledo, OH 43699-0032

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

Wheeling & Lake Erie Railway Company  
Tim Andrews  
Signal & Communication Supervisor  
100 E. First Street  
Brewster, OH 44613

Village of Yorkville  
Blair Closser  
Mayor  
139 Market Street  
Yorkville, OH 43971

American Electric Power- AEP

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

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

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

**BY:** James Tucker, Project Manager, ORDC J.T.

**SUBJECT:** Jefferson County, CR2/Public Rd. DOT #473002U  
Wheeling & Lake Erie (WE), PID 103324

Jefferson County, CR2/Public Rd. DOT #503246N  
Norfolk Southern (NS), PID 103324

**DATE:** May 22, 2018

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The Public Utilities Commission of Ohio (PUCO) established a diagnostic survey at the subject location on May 19, 2016. The Ohio Rail Development Commission (ORDC) attended the review. The Diagnostic Team recommended the improvement of warning devices for both the WE and NS to new flashing lights and roadway gates with circuitry upgrades to include 19 seconds of APT for future use. Copies of the diagnostic review form and the plan and estimates 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 for twelve months. 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



# OHIO RAIL DEVELOPMENT COMMISSION

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

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

May 22, 2018

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

RE: Jefferson County, CR2/Public Rd, DOT #503246N  
PID#103324, NS Project 10.2204

Dear Mr. Klinger:

The plan and estimate dated March 28, 2018, for the referenced project has been reviewed and is acceptable. NS may proceed with the construction of the proposed light and gate with circuitry upgrades to include 19 seconds of APT (future use) 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 from ORDC is limited to \$275,439.00. 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 James Tucker, ORDC, email [james.tucker@dot.ohio.gov](mailto:james.tucker@dot.ohio.gov) and to the Public Utilities Commission of Ohio at [jill.henry@puco.oh.gov](mailto:jill.henry@puco.oh.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 James Tucker at 614-398-6897 (telephone) or [james.tucker@dot.ohio.gov](mailto:james.tucker@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.
5. NS will furnish two (2) copies of each partial bill to ORDC. Please find the enclosed ODOT Purchase Order to reference when billing.



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

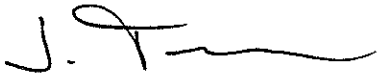
phone: 614.644.0306

IMPROVING RAIL TODAY FOR TOMORROW'S ECONOMY

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,

A handwritten signature in black ink, appearing to read 'J. Tucker', with a long horizontal flourish extending to the right.

James Tucker  
Project Manager

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





# OHIO RAIL DEVELOPMENT COMMISSION

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

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

May 22, 2018

Mr. Tim Andrews  
Wheeling & Lake Erie Railway  
100 East First Street  
Brewster, Ohio 44613

RE: Jefferson County, CR 2/Public Rd. Wheeling & Lake Erie (WE)  
DOT 473002U, PID# 103324

Dear Mr. Andrews:

The plan dated September 7, 2017 and estimate dated February 21, 2018, for the referenced project has been reviewed and is acceptable. WE may proceed with the construction of the proposed light and gate with circuitry upgrades to include 19 seconds of APT (future use) 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 \$221,222.17. 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 WE accepting the following instructions:

1. WE's project foreman will furnish written notification five (5) working days prior to the date work will start at the project site to James Tucker, ORDC, email [James.tucker@dot.ohio.gov](mailto:James.tucker@dot.ohio.gov) and to the Public Utilities Commission of Ohio at [Jill.henry@puco.oh.gov](mailto:Jill.henry@puco.oh.gov) WE'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. WE 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 WE.
3. WE's project foremen will notify James Tucker at [James.tucker@dot.ohio.gov](mailto:James.tucker@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.
5. WE will furnish two (2) copies of each partial bill to ORDC. Please find the enclosed ODOT Purchase Order to reference when billing.



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

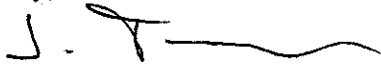
phone: 614.644.0306

IMPROVING RAIL TODAY FOR TOMORROW'S ECONOMY

6. WE 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,

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James Tucker  
Project Manager

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

**Detailed Estimate for Grade Crossing Warning Devices**

City/State: YORKVILLE, OH

Road: PUBLIC RD.

MilePost: RO-33.09

DOT/AAR: 503246N

State Proj. No.:

County: JEFFERSON

S&amp;E Proj. No.: 10.2204-2

File Number:

Man Days: 156

<b>***Purchases - Others***</b>		
Meals and Lodging:	\$21,338.55	
Rental of Equipment:	\$29,169.72	
(2 Trucks, 1 Backhoe w/ Trailer and 1 Pipe-Pusher for 26 Days)		
Construction Supervision Vehicle:	\$4,461.99	
Purchases - Other Total:		\$54,970.26
<b>***Material And Additives***</b>		
Material Cost:	\$83,628.00	
Sales and Use Tax:	\$6,690.00	
Material Handling Freight:	\$8,362.80	
Material Total:		\$98,680.80
<b>***Labor And Additives***</b>		
Labor Cost:	\$50,232.00	
(6 man crew at \$1,932.00 a day for: 26 days)		
Payroll Tax & Overheads:	\$42,827.80	
Preliminary Engineering:	\$14,055.30	
Construction Supervision:	\$14,672.77	
Labor Total:		\$121,787.87
	Project Cost:	\$275,438.93
	Scrap / Salvage Credit:	\$0.00
	<b>Project Total:</b>	<b>\$275,439.00</b>

Estimated on: 28-Mar-18

Estimated by: ndney

**Estimate valid for 1 year from date of estimate**





Highway Crossing Signalization Program - Material List

Do not substitute items without permission from S & E Engineering

City:	YORKVILLE
Road:	PUBLIC RD.
Mile Post:	RO-33.09
Drawing Number:	22310331
State ProjectNumber:	
County:	JEFFERSON
A A R Number:	503246N
Project Number:	10.2204-2
File Number:	
New File Number:	CX1112077
WBS:	F-03568
Store Number:	
Supervisor:	W.D. MCCAULEY
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	

Qty.	Class-Item-CD	UI	Price per Item	Total Price	Item Description	Quantity Shipped	Quantity Installed			Quantity Returned (Credit)	Special Instructions
3	670-360693-4	EA	\$5.55	\$16.65	AAR/DOT NUMBER PLATE/DECAL, ORDER 3 PER PROJECT. 60 DAY LEAD TIME. SUPPLIED BY S'TRAN.		Date Quan.	Date Quan.	Date Quan.		
1	165-006505-4	EA	\$1,075.23	\$1,075.23	AC SERVICE, COMPLETE LESS METER BASE, ASSEMBLED ON 30' POLE						
20	105-002620-4	EA	\$248.79	\$4,975.80	BATTERY, NICAD 340AH, MODEL SPL340						
1	670-503047-4	EA	\$183.15	\$183.15	BELL, CROSSING ELECTRONIC GENERL SIGNAL, EB-3-360-5 CR 02-044350						
2	670-980689-4	EA	\$75.48	\$150.96	BRACKET HIGH WIND, (RIGID 3'), WIG- 191036, WALRUS TUSK TYPE						
2	670-561375-4	EA	\$1,208.79	\$2,417.58	BRACKET, GATE SAVER, NEG385102GS, SPRING LOADED SWING AWAY ADAPTER FOR FIBERGLASS/ALUMINUM GATES, USE WITH GATE 38' AND LESS						
1	670-356949-4	EA	\$90.00	\$90.00	CABLE, 10' GENERATOR HOOK UP, SERRMI P/N 40524. FEMALE CONNECTOR						
500	465-939422-4	LF	\$2.92	\$1,460.00	CABLE, UG 12 CONDUCTOR NO 14 AWG SOLID EACH CONDUCTOR WITH 5/64 IN INSULATION 10 MIL						
350	465-292862-4	LF	\$1.49	\$521.50	CABLE, UG 2-6 TWISTED, S-23 OKONITE 113-12-3933 SOLID TINNED CONDUCTOR						
500	465-292929-4	LF	\$4.12	\$2,060.00	CABLE, UG 5 COND. NO. 6 AWG SOLID COPPER CABLE TO MEET NS CORP. SPEC. FOR SIGNAL						
350	465-791835-4	FT	\$3.54	\$1,239.00	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						
2	670-010671-4	EA	\$738.15	\$1,476.30	CHARGER, BATTERY CRAGG MODEL 40 DTC-12V, 40 AMP, P/N 520940						
2	670-664917-4	EA	\$90.11	\$180.22	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						
2	670-632520-4	EA	\$79.69	\$159.38	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						

APPROVED BY STATE	APPROVED BY RAILROAD	CAR NUMBER	SEAL NUMBER
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Qty.	Class-Item-CD	UI	Price per Item	Total Price	Item Description	Quantity Shipped	Quantity Date	Installed Date	Date	Quantity Returned (Credit)	Special Instructions
2	670-794453-4	EA	\$1,253.03	\$2,506.06	COUNTERWEIGHT PKAGE, 25-31'GATE S'TAN S- MECH ONLY, STAINLESS TO INCLUDE HUB, SUPPORT ARMS						
2	670-760012-4	EA	\$9.95	\$19.90	COVER, FOR 1 WAY FLASHING LIGHT ASSY. 18 OZ. BLACK VINYL COATED NYLON. ====TO COVER 2 LAMPS=====						
1	670-986650-4	EA	\$354.27	\$354.27	DISPOSAL, CONSTRUCTION DEBRIS AND CLEANING X'ING EQUIPMENT CONTAINER						
1	670-000004-4	EA	\$700.00	\$700.00	FCC LICENSE FOR MONITOR/RADIO						
12	670-000003-4	EA	\$255.85	\$3,070.20	FILL/STONE #57, QUANITY IS BASED ON TRUCK LOAD PLUS DELIVERY COST						
1	670-015231-4	EA	\$599.40	\$599.40	FOUNDATION, DIXIE,S-2 GATE 2'6"X2'6"X5'6" ASSEMBLED						
1	670-005378-4	EA	\$387.95	\$387.95	GATE ARM, ALUMINUM, 25-31 FT, ARM ASSEMBLY, INCLUDES GATE GUARD FOR GATE LIGHT CABLE. HIGH INTENSITY VERTICAL STRIPES.						
1	670-675667-4	EA	\$31,602.51	\$31,602.51	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	670-477991-4	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	\$345.97	\$345.97	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, )NE CAN BLUE MARKING PAINT ETC...						
1	670-092155-4	EA	\$160.00	\$160.00	LAMP ASSY, LED GATE ARM KIT (INCLUDES 3 LAMPS COMPLETE WITH CABLES AND MTG. HARDWARE) REC #: 9298-1120						
1	670-005058-4	EA	\$1,786.08	\$1,786.08	LAMP ASSY, LED, 5" MAST BACK TO BACK LIGHTS (IPN: 042003-L487XNS)						
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"						
1	670-637778-4	EA	\$1,384.63	\$1,384.63	MAST, 5" ALUMINUM 13'10" WITH DOUBLE JCT. BOX BASE. S'TRAN P# 070519-11AX.						
1	670-521147-4	EA	\$3,458.00	\$3,458.00	MECHANISM, GATE MODEL S-40, WITH CONTACT HEATER, COMPLETE W/RELAY S'TRAN # 074000-W00090						

APPROVED BY STATE	APPROVED BY RAILROAD	CAR NUMBER	SEAL NUMBER
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Qty.	Class-Item-CD	UI	Price per Item	Total Price	Item Description	Quantity Shipped	Quantity Installed			Quantity Returned (Credit)	Special Instructions
							Date Quan.	Date Quan.	Date Quan.		
1	000-000000-4	EA	\$5,000.00	\$5,000.00	MISC. EXPENSE, UNDERGROUND BORING						
2	670-001347-4	EA	\$57.10	\$114.20	PACKAGE, HARDWARE SIGN 5 IN. MOUNTING, SERRMI A1250-5, HARMON @200965-000, OR						
1	255-646807-4	EA	\$32.59	\$32.59	PADLOCK, SAFETRAN PART NO. 030399-29X SCREW TYPE FOR CIR CONTROLLER AND BTY. BOX						
5	670-259211-4	EA	\$47.25	\$236.25	PLUG BOARD KIT, TYPE B-1 & VOLTAGE TEST TERMINAL, SAFETRAN 420000-75X						
1	165-902002-4	EA	\$297.48	\$297.48	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						
1	670-024861-4	EA	\$424.00	\$424.00	RELAY RACK, SWING, FARADAY SHELTER FOR EIGHT B1 RELAYS, SAFETRAN P/N 057883-1X						
5	670-707995-4	EA	\$510.12	\$2,550.60	RELAY, TYPE B1, NEV LINE, 900 OHMS,.008 AMPERES GRS A62-308 OR SAFETRAN @400003						
2	435-805560-4	EA	\$2.78	\$5.56	SAND, 25LB BAG FOR CABLE ENTRANCE INTO THE SHELTER						
1	670-113448-4	EA	\$910.23	\$910.23	SEARII, ( VHFC w/ANTENNA ) - VHF COMMUNICATOR, SAFETRAN P/N A80276, 1/ PER CROSSING						
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' 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	670-586967-4	EA	\$44.91	\$89.82	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						
1	670-554843-4	EA	\$77.05	\$77.05	SIGN, 2 TRACK SIGN, HIGH INTENSITY, SAFETRAN #035207-2HX						
1	670-016346-4	EA	\$143.38	\$143.38	SIGN, X-BUCK, HI-INTENSIVE REFLECTIVE FRT. & BACK FOR ALL STATES, SAFETRAN# 035200-91X						
1	670-393331-4	EA	\$37.43	\$37.43	SIGN, CROSSING ENS MALFUNCTION ASSEMBLY FOR 4" AND 5" MAST, SAFETRAN #T17215						

APPROVED BY STATE	APPROVED BY RAILROAD	CAR NUMBER	SEAL NUMBER
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Qty.	Class-Item-CD	UI	Price per Item	Total Price	Item Description	Quantity Shipped	Quantity Installed			Quantity Returned (Credit)	Special Instructions
1	670-330382-4	RL	\$18.06	\$18.06	TAPE, THOR 3" DURATEC, ORANGE 1000' LENGTHS. "WARNING STOP DIGGING"		Date Quan.	Date Quan.	Date Quan.		
5	670-007238-4	EA	\$118.65	\$593.25	UNIT, THE INSTALLATION AND WIRING OF A DEVICE WHICH REQUIRE A MINIMUM OF FOUR WIRE CONNECT-						
1	450-986008-4	EA	\$30.45	\$30.45	WRENCH, TEST POST TYPE B DWG 55393-3, GR.1						
120	165-544477-4	FT	\$3.22	\$386.40	Z-DNO-CONDUIT, 4"x10' PVC, SCHEDULE 80 BELL CONNECTOR AT ONE END, 1/2 PT. GLUE IN KIT 670-123298-4						

Total Material: \$83,628.00

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	RR INTERCONNECT CIRCUITS
11	CPU MODULE, SEAR IIi & VHF HOOK-UPS
12	SEAR IIi PROGRAMMING SETUP
13	SSCC#1 MODULE HOOK-UP
14	SIGNAL "A" S40 GATE & FLASHER CIRCUITS
15	BACKBOARD 1A & 1B
16	REAR BACKBOARD 1A & 1B
17	FARADAY SHIELD 1A & 1B
18	FARADAY SHIELD 1C
19	HOUSE SIDE C LAYOUT & RACK PLACEMENT
20	HOUSE SIDE A LAYOUT
21	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

REVISION

INITIALS

PROPERTY

PENNSYLVANIA R.R.

SCALE: 1" = 20'

PROJECT #10.2204

INDEX SHEET


FILE NO. CX1112077

DESIGNED BY:  
WJK 01-20-18

DRAWN BY:  
XRL 01-20-18

CHECKED BY:  
PEH 02-01-18

IN SERVICE:  
- -

 **NORFOLK SOUTHERN**

OFFICE OF ASS'T. VICE PRESIDENT  
COMM. & SIGNAL, ATLANTA, GA.

YORKVILLE, OH  
FLGS AT PUBLIC RD.

RIVER LINE

CADD or  
DWG. No. 22310331.NX1

M.P.: RO-33.09

FILE No. R-

SHEET No. 1 of 1

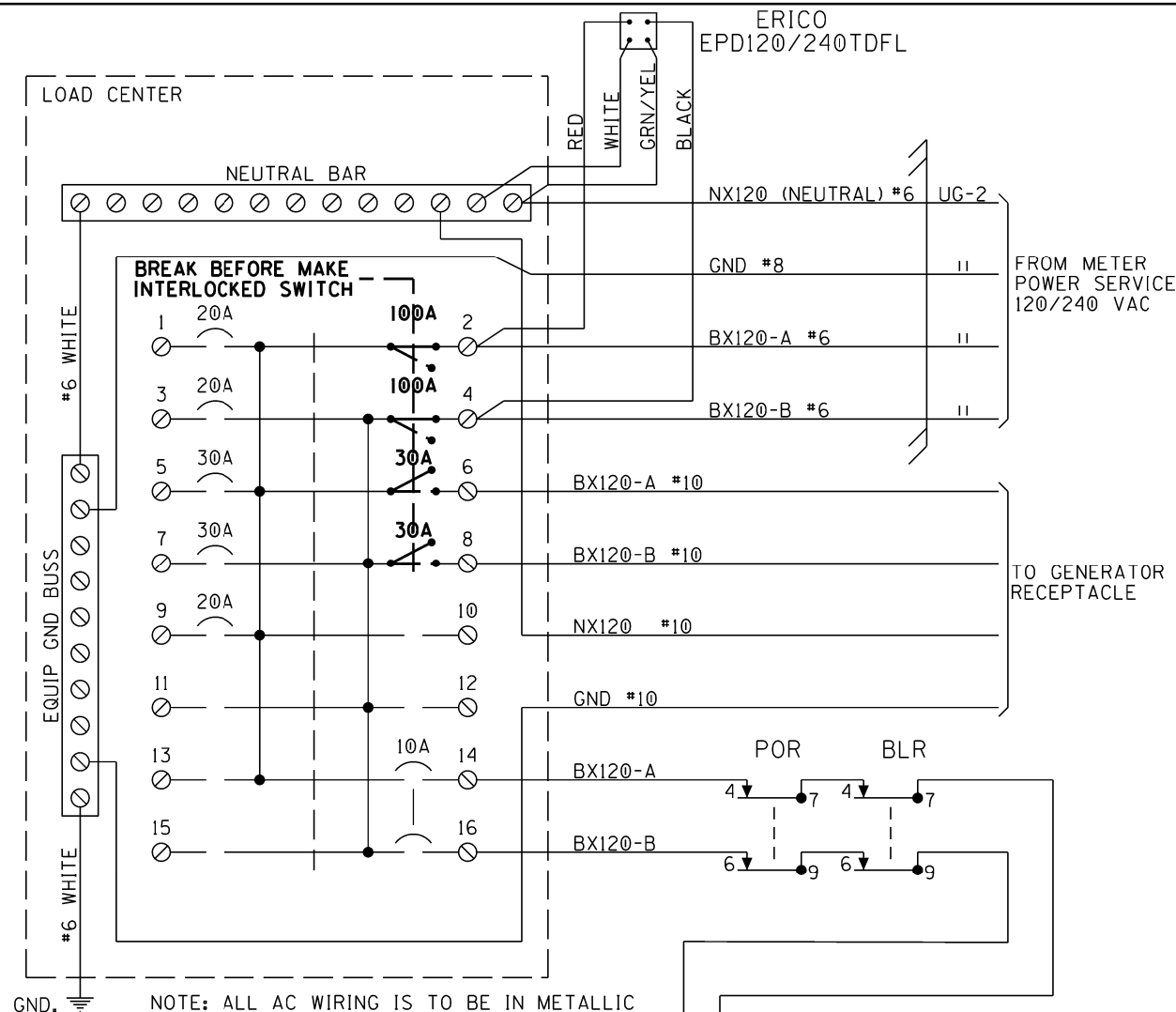








ERICO  
EPD120/240TDFL



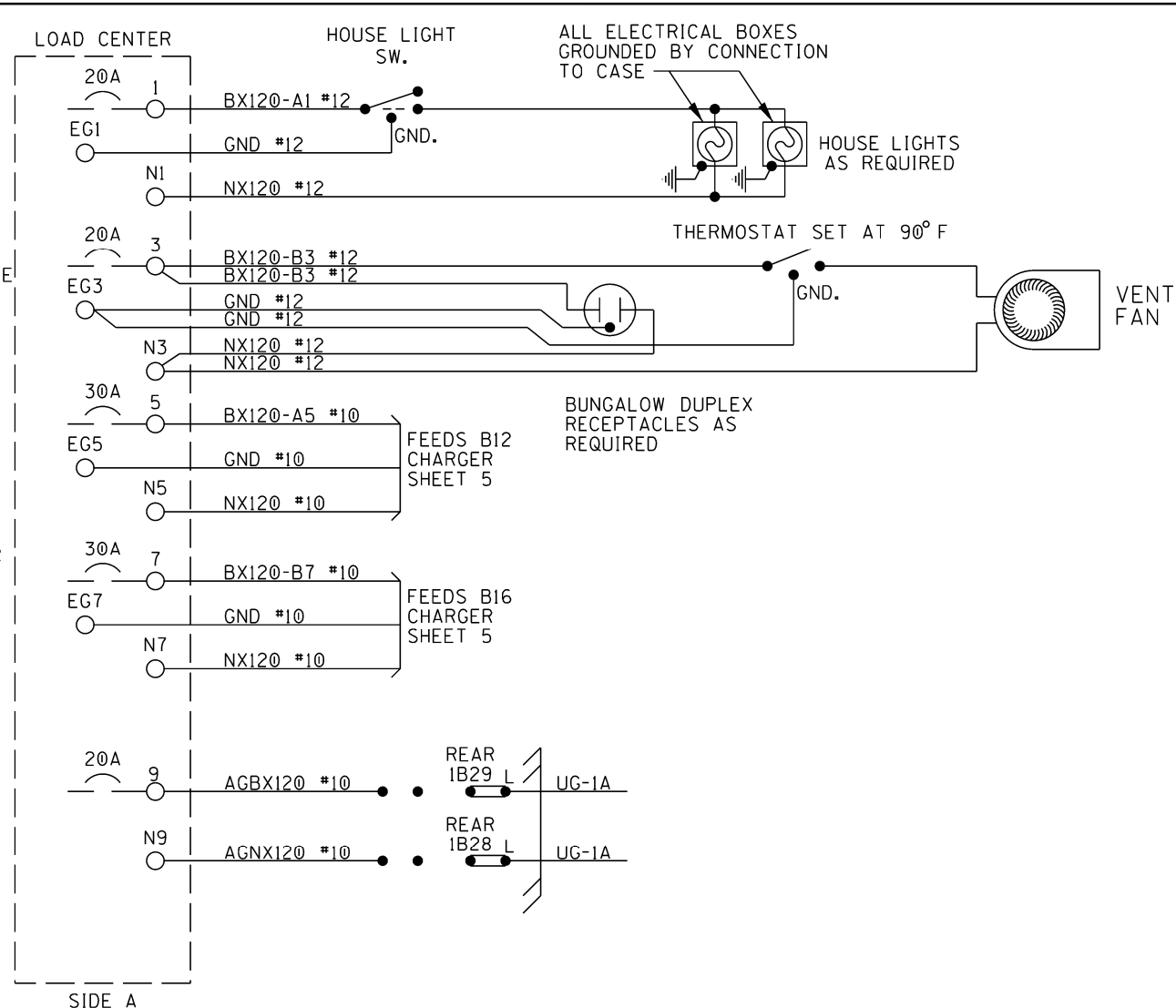
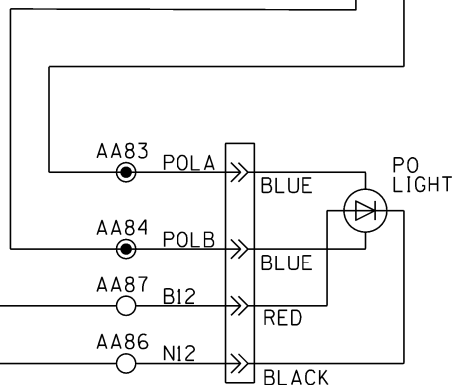
NOTE: ALL AC WIRING IS TO BE IN METALLIC CONDUIT WITH NO EXPOSED TERMINALS. ALL AC 120V AND 240V EQUIPMENT IS TO BE PROPERLY GROUNDING.

SQUARE "D" PART NUMBERS:

LOAD CENTER — Q0116L125G  
10A 1P CIR BKR — Q0110  
10A 2P CIR BKR — Q0210  
20A 1P CIR BKR — Q0120  
30A 1P CIR BKR — Q0130  
30A 2P CIR BKR — Q0230  
60A 2P CIR BKR — Q0260  
100A 2P CIR BKR — Q02100  
MECH INTERLOCK — PK4DTIM4LA

A1-4B B12

A1-9B N12



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

GENERATOR RECEPTACLE:  
MALE CONNECTOR - NEMA L1430-F1

LOAD CENTER

DESIGNED BY:	WJK 01-20-18		
DRAWN BY:	XRL 01-20-18	OFFICE OF ASS'T. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.	M.P.: RO-33.09
CHECKED BY:	PEH 02-01-18	YORKVILLE, OH FLGS AT PUBLIC RD.	
IN SERVICE:	- -	RIVER LINE	FILE R-
		CADD or DWG. No. 22310331.04	SHEET 4 of 21

REVISION  
INITIALS

PROPERTY  
PENNSYLVANIA R.R.

PROPERTY  
PENNSYLVANIA R.R.





Program Report  
-----

Location and SIN  
-----  
DOT Number: 503246N  
Milepost Number: R0-33.09  
Site Name: PUBLIC RD

SIN: 755048207216

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): 2F01AD29  
Office Check Number: 2F01AD29  
Config. Check Number: 69FD0032  
(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 = SSCC31  
SSCC-2 Slot = Not Used  
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 = 525 Hz  
Track 1: Approach Distance = 1286 ft  
Track 1: Uni/Bi/Sim-Bidirnl = Bidirnl  
Track 1: GCP Transmit Level = Medium  
Track 1: Island Connection = Isl1  
Track 1: Island Distance = 160 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 = Not Used

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 = Yes  
AND 3 Used = Yes  
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 = 1 sec  
AND 1 Enable Drop = 0 sec  
AND 1 Wrap Used = No

AND: AND 2  
AND 2 Track 1 = Prime  
AND 2 Enable Used = Yes  
AND 2 Enable Pickup = 5 sec  
AND 2 Enable Drop = 0 sec  
AND 2 Wrap Used = No

AND: AND 3  
AND 3 Track 1 = IslOnly  
AND 3 Enable Used = No  
AND 3 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 = AND 1 XR Enable  
Int.1 Set by = AND 2  
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

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

4000 GCP PROGRAMMING SETUP

DESIGNED BY:			
WJK   01-20-18			
DRAWN BY:	OFFICE OF ASS'T. VICE PRESIDENT	M.P.: R0-33.09	
XRL   01-20-18	COMM. & SIGNAL, ATLANTA, GA.		
CHECKED BY:	YORKVILLE, OH		
PEH   02-01-18	FLGS AT PUBLIC RD.		
IN SERVICE:	RIVER LINE	FILE R-	
- -	CADD or DWG. No. 22310331.07	SHEET 7 of 21	

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

```

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

```

```
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 = 1
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 Neutral Test = Off
Aux-1 Xng CtrlUsed = No
```

```

SEAR: slot 7-8 inputs
IN 7.2 = Not Used
IN 8.1 = 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 = 0ff
Low Battery Enabled = 0ff
```

```

OUTPUT: assignment page 1
OUT 1.1 = AND 2
OUT 1.2 = AND 3

```

Configuration Package File  
-----  
Filename: 22310331.pac

INPUT: assignment page 1  
IN 1.1 = AND 1 XR Enable  
IN 1.2 = Not Used

```

I0: assignment SSCC
OUT GC 1 = Gate Output 1
IN 7.1 = Out Of Service IP 1
IN 7.2 = Not Used
IN 7.3 = AND 2 Enable
IN 7.4 = GD 1.1
IN 7.5 = GP 1.1

```

```

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

```

SEAR: inputs


SP 2.1	=	Not	Used
SP 3.1	=	Not	Used
SP 4.1	=	Not	Used
SP 5.1	=	Not	Used
SP 6.1	=	Not	Used

```

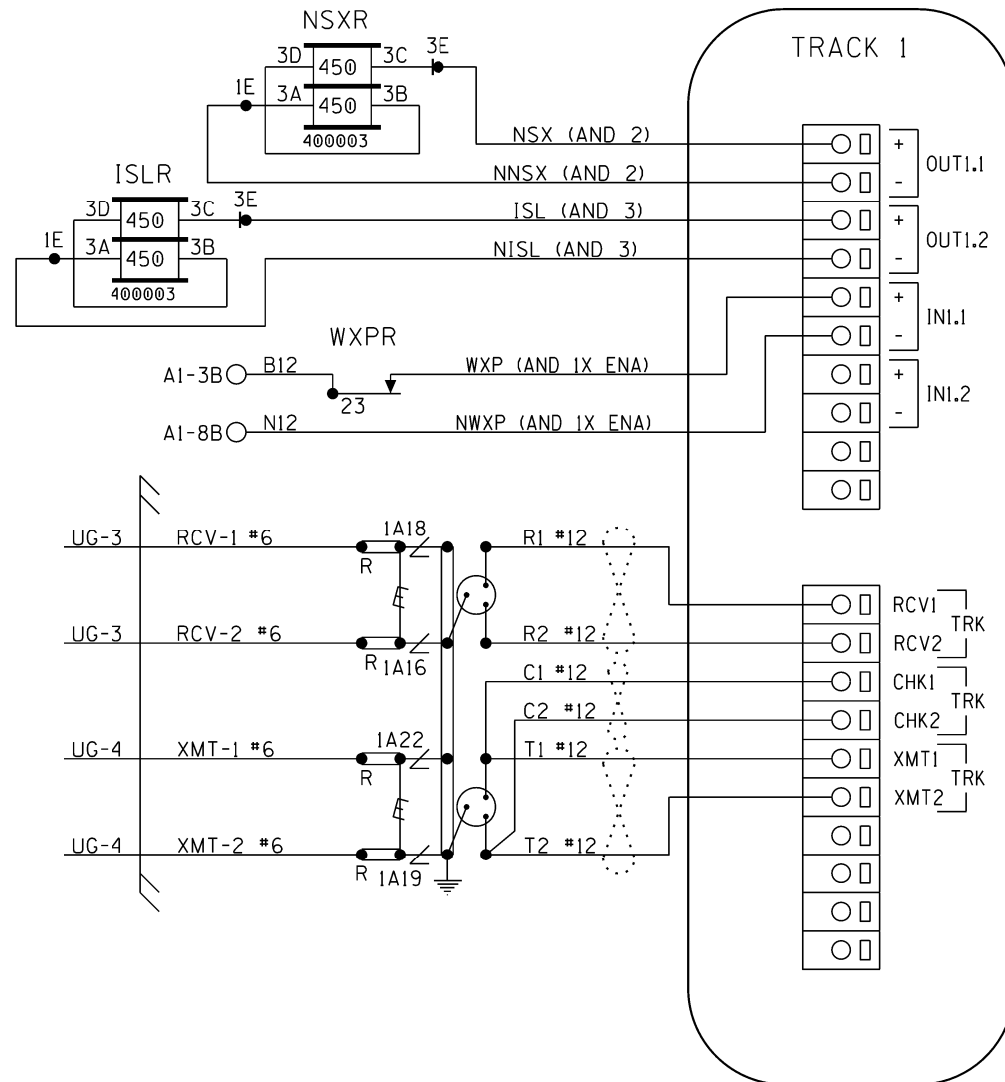
SEAR: slot 1-4 inputs
IN 1.2 = Not Used
IN 2.1 = Not Used
IN 2.2 = Not Used
IN 3.1 = Not Used
IN 3.2 = Not Used
IN 4.1 = Not Used
IN 4.2 = Not Used

```

4000 GCP PROGRAMMING SETUP

DESIGNED BY:		 <b>NORFOLK SOUTHERN</b>	
WJK	01-20-18		
DRAWN BY:		OFFICE OF ASST. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.	M.P.: RO-33.09
XRL	01-20-18	YORKVILLE, OH FLGS AT PUBLIC RD.	
CHECKED BY:			
PEH	02-01-18		
IN SERVICE:		RIVER LINE	FILE No. R-
	- -	CADD or DWG. No. 22310331.08	SHEET 8 of 21


[illegible]



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

⊗ = TWIST


# CONNECTORS FOR TRACK MODULES

DESIGNED BY:			
WJK 01-20-18			
DRAWN BY:	OFFICE OF ASS'T. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.		M.P.: RO-33.09
XRL 01-20-18	YORKVILLE, OH FLGS AT PUBLIC RD.		
CHECKED BY:			
PEH 02-01-18			
IN SERVICE:	RIVER LINE		FILE R-
- -	CADD or DWG. No.	22310331.09	SHEET 9 of 21

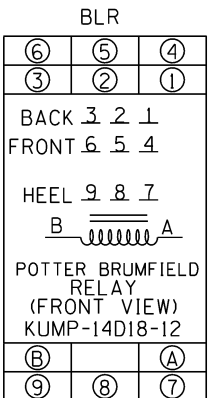
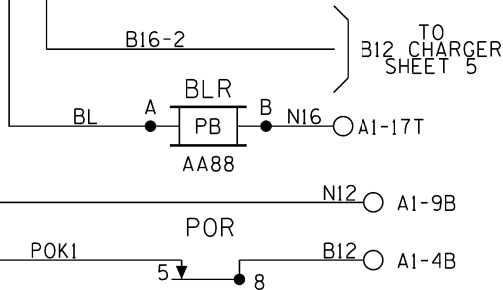
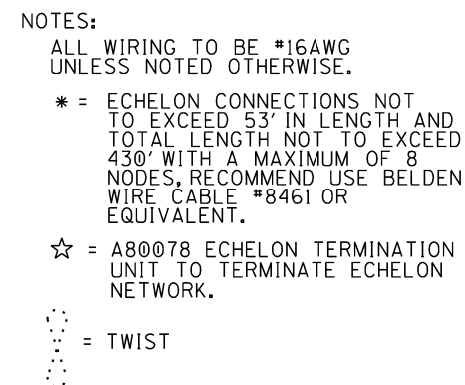
REVISION  
INITIALS

PROPERTY  
PENNSYLVANIA R.R.




DESIGNED BY:		 <b>NORFOLK SOUTHERN</b>	
WJK	01-20-18		
DRAWN BY:		OFFICE OF ASS'T. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.	M.P.: RO-33.09
XRL	01-20-18	YORKVILLE, OH FLGS AT PUBLIC RD.	
CHECKED BY:			
PEH	02-01-18		
IN SERVICE:		RIVER LINE	FILE No. R-
	- -	CADD or DWG. No. 22310331.10	SHEET No. 10 of 21

[illegible]



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

DESIGNED BY:		 <b>NORFOLK SOUTHERN</b>	
WJK	01-20-18		
DRAWN BY:		OFFICE OF ASST. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.	M.P.: RO-33.09
XRL	01-20-18	YORKVILLE, OH FLGS AT PUBLIC RD.	
CHECKED BY:			
PEH	02-01-18		
IN SERVICE:		RIVER LINE	FILE NO. R-
	- -	CADD No. 22310331.11	SHEET 11 of 21

[illegible]

SITE SET UP PROCEDURE	
FUNCTION	LED DISPLAY
DATE/TIME	
AUTOMATIC DST ADJUSTMENT	YES
TIME ZONE	EST
SITE NAME	PUBLIC RD.
MILEPOST	R0-33.09
DOT #	503246N
TESTER TYPE	CROSSING
DATE FORMAT	MM-DD-YYYY
TEMP FORMAT	FAHRENHEIT
INDICATE HOLD (SEC)	0
INDICATE REFRESH (SEC)	60
SITE ATCS	7.550.482.072.03.01
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	1
85% VOLTAGE RELAY OUT	YES
* GATES CONTROLLED BY FOREIGN RR	YES
BATTERY BANKS	2
BATTERY MON USED	NO
PREEMPTION	NO
INTERNAL CROSSING CONTROLLERS	1
EXTERNAL CROSSING CONTROLLERS	0
VHF COMMUNICATOR	YES
DTMF ACTIVATION	YES
**** ACTIVATION CODE	246
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  
PENNSYLVANIA R.R.

DESIGNED BY:  
WJK 01-20-18

DRAWN BY:  
XRL 01-20-18

CHECKED BY:  
PEH 02-01-18

IN SERVICE:  
- -

**NORFOLK SOUTHERN**

OFFICE OF ASS'T. VICE PRESIDENT  
COMM. & SIGNAL, ATLANTA, GA. M.P.: R0-33.09

YORKVILLE, OH  
FLGS AT PUBLIC RD.

RIVER LINE

CADD or DWG. No. 22310331.12

FILE No. R-

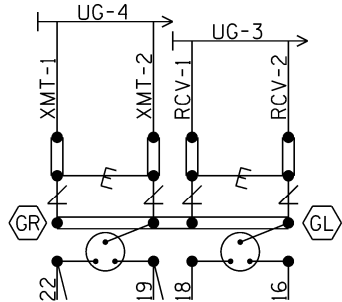
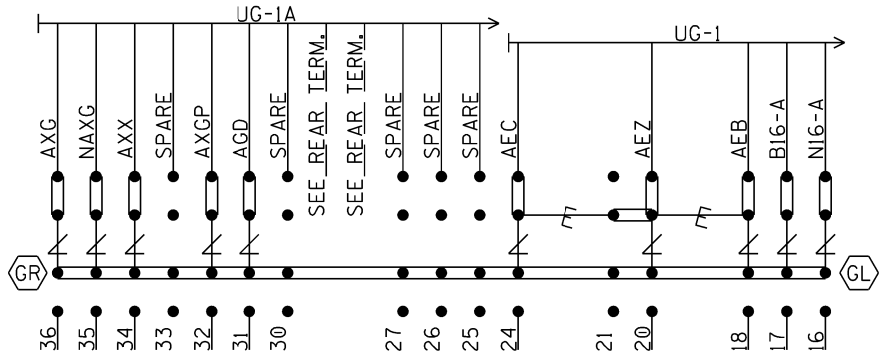
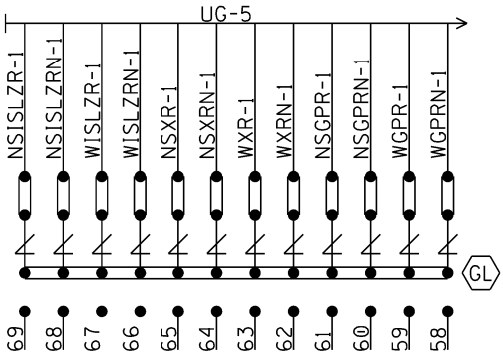
SHEET No. 12 of 21







LEFT TWO ROWS TERMINAL BOARD 1






NOTE: INSTALL TEST LINKS ON ALL TRACK WIRES AND ON ALL LOW VOLTAGE UNDERGROUND CABLE TERMINATIONS.

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


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

Clearview  
 ∠ = Lightning Arrester  
 (022585-1X)

 = LPC-10560-51

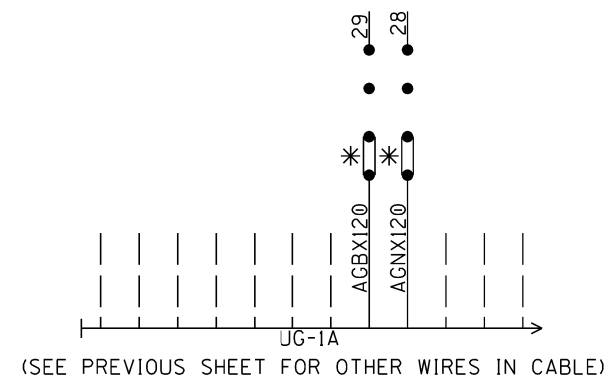


 = TERMINALS GROUNDED TO SHIELD.  
 4 POST BLOCKS USE EITHER -  
 GR - SERMMI PART NO. 61278  
 GL - SERMMI PART NO. 61278-1.

## BACKBOARD 1A & 1B

DESIGNED BY:		 <b>NORFOLK SOUTHERN</b>	
WJK	01-20-18		
DRAWN BY:		OFFICE OF ASS'T. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.	M.P.: RO-33.09
XRL	01-20-18	YORKVILLE, OH FLGS AT PUBLIC RD.	
CHECKED BY:			
PEH	02-01-18		
IN SERVICE:		RIVER LINE	FILE No. R-
	- -	CADD or DWG. No. 22310331.15	SHEET 15 of 21

[illegible]

REAR VIEW OF LEFT TWO ROWS TERMINAL BOARD 1  
"1B"  
"1A"




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

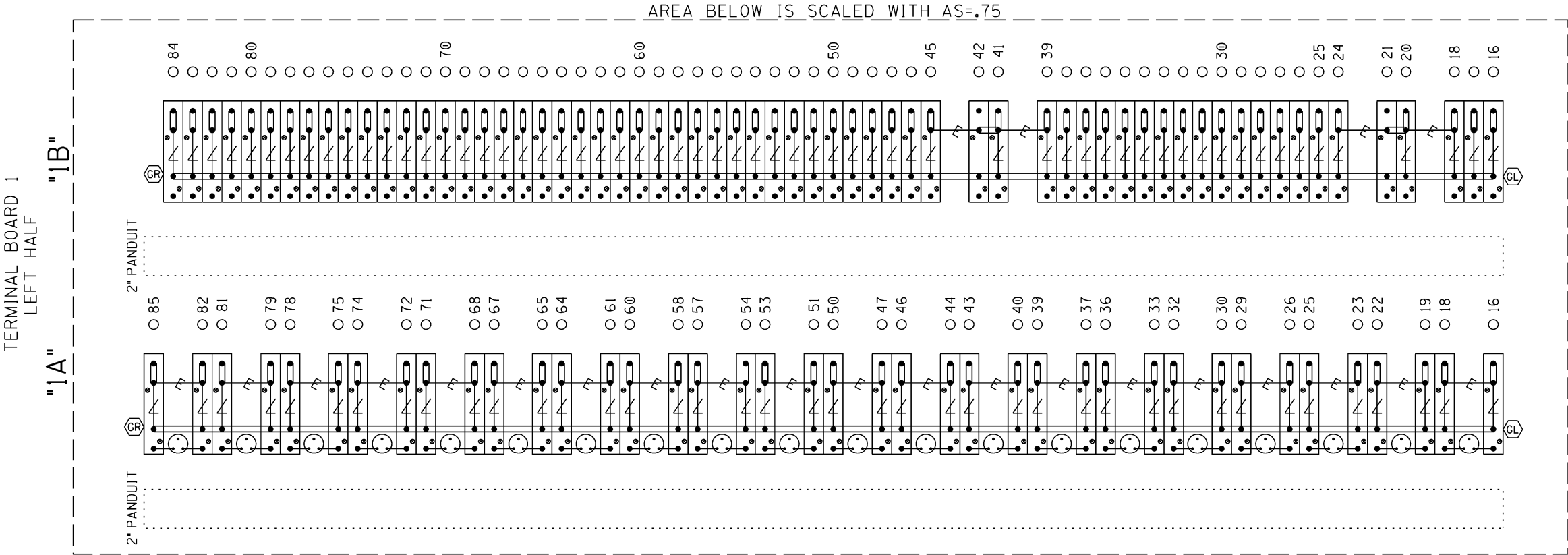
\* = CLOSED DURING WINTER MONTHS

REAR BACKBOARD 1A &amp; 1B

[illegible]

DESIGNED BY:		 <b>NORFOLK SOUTHERN</b>	
WJK	01-20-18		
DRAWN BY:		OFFICE OF ASST. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.	M.P.: RO-33.09
XRL	01-20-18	YORKVILLE, OH FLGS AT PUBLIC RD.	
CHECKED BY:			
PEH	02-01-18		
IN SERVICE:		RIVER LINE	FILE No. R-
	- -	CADD or DWG. No. 22310331.16	SHEET 16 of 21

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.



⚡ = Heavy Duty Equalizer  
(022700-1X)

Clearview  
⚡ = Lightning Arrester  
(022585-1X)

⦿ = 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 1A & 1B

⋮  
= 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.

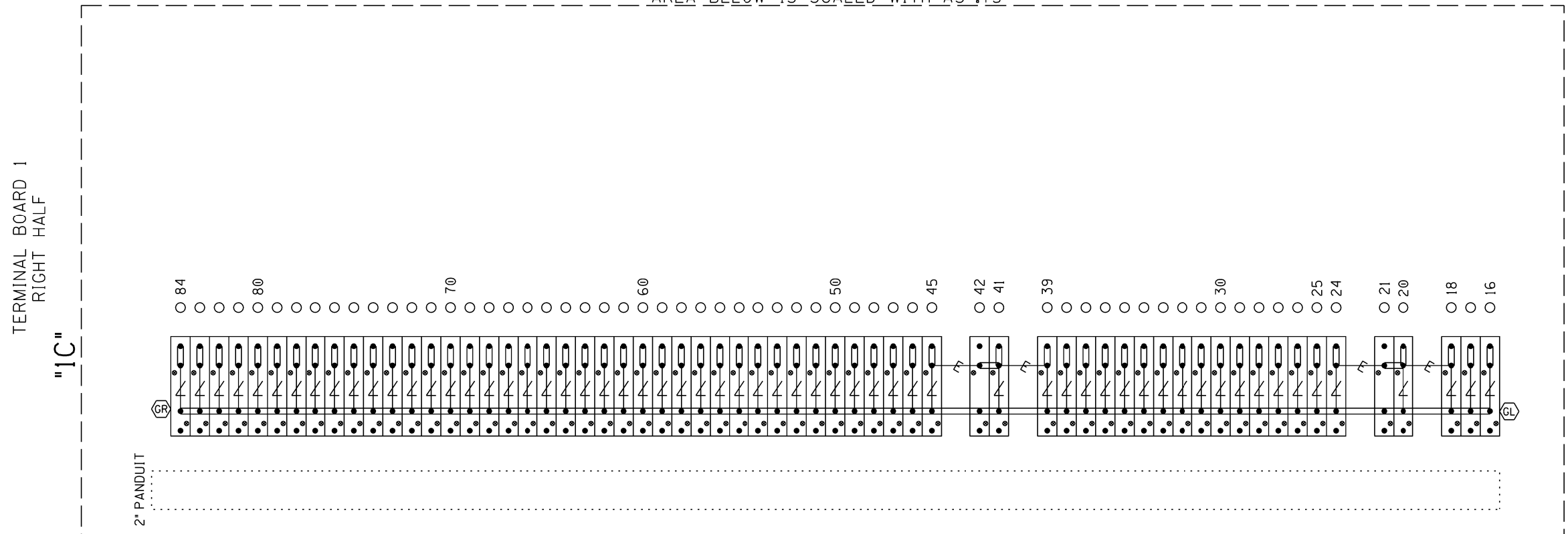
REVISION  
INITIALS

PROPERTY  
PENNSYLVANIA R.R.

DESIGNED BY:	WJK	01-20-18	 <b>NORFOLK SOUTHERN</b>	
DRAWN BY:	XRL	01-20-18		
CHECKED BY:	PEH	02-01-18	OFFICE OF ASS'T. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.	
IN SERVICE:	-	-	YORKVILLE, OH FLGS AT PUBLIC RD.	
			RIVER LINE	FILE R-
			CADD or DWG. No. 22310331.17	SHEET 17 of 21


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  
(022700-1X)

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 1C

DESIGNED BY:		 <b>NORFOLK SOUTHERN</b>	
WJK	01-20-18		
DRAWN BY:		OFFICE OF ASS'T. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.	M.P.: RO-33.09
XRL	01-20-18	YORKVILLE, OH FLGS AT PUBLIC RD.	
CHECKED BY:			
PEH	02-01-18		
IN SERVICE:		RIVER LINE	FILE NO. R-
	- -	CADD or DWG. No. 22310331.18	SHEET 18 of 21

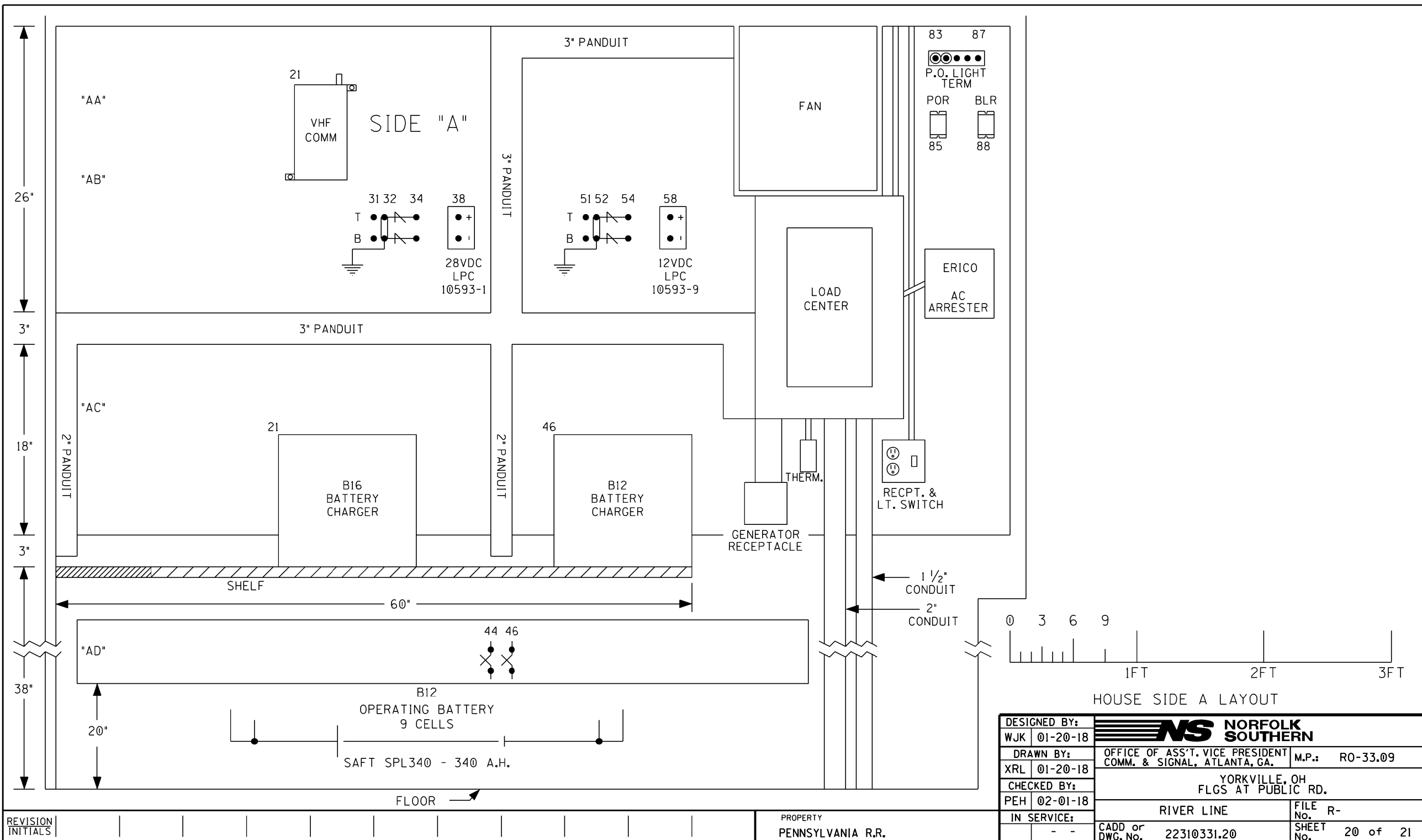
THIS SHEET IS FOR REFERENCE ONLY,  
TO REFLECT HOW THE FARADAY SHIELD  
IS PREDRILLED. ONLY INSTALL AND USE  
THE TERMINALS NEEDED.

= INDICATES PLACEMENT  
OF PANDUIT

[illegible]









# WHEELING & LAKE ERIE RAILWAY COMPANY

Tim Andrews  
Signal & Communication Supervisor  
Tel. 330-767-7255

tandrews@wlerwy.com

100 East First Street  
Brewster, OH 44613  
Fax: 330-767-3213

February 21, 2018

Ohio Rail Development Commission  
Mr. Jim Tucker  
1980 West Broad Street, Room 2B  
Columbus, OH 43223

Re: Estimate for Railroad Crossing Warning System at Public Rd. DOT 473 002U

Dear Mr. Tucker,

I am providing this estimate for the crossing package and installation at Public Rd. Award of the material package will be the result of a competitive bid; copies of the submitted quotes will be forwarded to your office when they are completed. Installation will be performed under our continuing construction agreement with CTC LLC.

Engineering Services, CTC (breakout attached)	\$181,947.64
Fill Materials, transport, hauling	\$5,500.00
Preliminary Installation Services, Crosier	\$21,735.53
Electric Service, Emery	\$3,950.00
Electric Utility fees	\$2,000.00
WLE Direct Signal & MOW Labor	\$5,500.00
Galvanized signal foundations	\$589.00
TOTAL:	\$221,222.17

Please contact me if additional details are required.

Respectfully,



Tim Andrews

Notes: Direct purchase from Fabricated Metals, 60' galvanized gate foundation, \$589.00 ea.

**Wheeling & Lake Erie Railway Co.**  
**Yorkville, Ohio - Public Rd. DOT# 473 002U**  
**Project Estimate - CN16161**

<b>ENGINEERING</b>					
<i>Description</i>	<i>Qty</i>	<i>UOM</i>	<i>Unit Price</i>		<i>Amount</i>
SIGNAL DESIGNER	85	HR	32.69		\$2,778.65
SIGNAL CHECKER, LEVEL 1	10	HR	39.66		\$396.60
SIGNAL CHECKER, LEVEL 2/FIELD ENGINEER	5	HR	36.66		\$183.30
<b>SUBTOTAL</b>					\$3,358.55
<b>G&amp;A BURDEN FOR LABOR</b>					\$6,146.15
<b>FIXED FEE</b>					\$950.47
<b>ENGINEERING TOTAL</b>					\$10,455.17

<b>PROJECT MANAGEMENT</b>					
<i>Description</i>	<i>Qty</i>	<i>UOM</i>	<i>Unit Price</i>		<i>Amount</i>
SENIOR SIGNAL ENGINEER	25	HR	\$75.48		\$1,887.00
PROJECT MANAGER	30	HR	\$39.66		\$1,189.80
CONSTRUCTION MANAGER	40	HR	\$39.66		\$1,586.40
ACCOUNTING, LEVEL1	16	HR	\$39.81		\$636.96
ADMINISTRATIVE	6	HR	\$25.48		\$152.88
<b>SUBTOTAL</b>					\$5,453.04
<b>G&amp;A BURDEN FOR LABOR</b>					\$8,833.92
<b>FIXED FEE</b>					\$1,428.70
<b>PROJECT MANAGEMENT TOTAL</b>					\$15,715.66

<b>CONSTRUCTION LABOR</b>					
<i>Description</i>	<i>Qty</i>	<i>UOM</i>	<i>Unit Price</i>		<i>Amount</i>
SIGNAL FOREMAN	80	HR	\$29.04		\$2,323.20
SIGNALMAN	80	HR	\$23.40		\$1,872.00
SIGNAL HELPER	160	HR	\$19.00		\$3,040.00
<b>SUBTOTAL</b>					\$7,235.20
<b>G&amp;A BURDEN FOR LABOR</b>					\$11,721.02
<b>FIXED FEE</b>					\$1,895.62
<b>CONSTRUCTION LABOR TOTAL</b>					\$20,851.85

<b>CONSTRUCTION LABOR EXPENSES</b>					
<i>Description</i>	<i>Qty</i>	<i>UOM</i>	<i>Unit Price</i>		<i>Amount</i>
EMPLOYEE MEALS (PER DIEM)	32	EA	\$30.00		\$960.00
EMPLOYEE TRAVEL	32	EA	\$60.00		\$1,920.00
EMPLOYEE LODGING	32	EA	\$70.00		\$2,240.00
MOBILIZATION	2	EA	\$1,000.00		\$2,000.00
<b>SUBTOTAL</b>		EA			
<b>CONSTRUCTION LABOR EXPENSES TOTAL</b>					\$7,120.00

**Wheeling & Lake Erie Railway Co.**  
**Yorkville, Ohio - Public Rd. DOT# 473 002U**  
**Project Estimate - CN16161**

<b>CONSTRUCTION EQUIPMENT</b>					
<i>Description</i>	<i>Qty</i>	<i>UOM</i>	<i>Unit Price</i>		<i>Amount</i>
TRUCK, PU, 1 TON CREW CAB	80	HR	\$15.71		<b>\$1,256.80</b>
TRAILER, UTILITY, 4 TIRE, 12,000lbs SC410	80	HR	\$7.55		<b>\$604.00</b>
RENTAL EQUIPMENT (FORKLIFT -8K)	1	WK	\$1,400.00		<b>\$1,400.00</b>
RENTAL EQUIPMENT (BACKHOE)	1	WK	\$1,200.00		<b>\$1,200.00</b>
EQUIPMENT DELIVERY/PICKUP	4	LS	\$150.00		<b>\$600.00</b>
<b><i>SUBTOTAL</i></b>					<b>\$5,060.80</b>
<b><i>CONSTRUCTION EQUIPMENT TOTAL</i></b>					<b>\$5,060.80</b>

<b>MATERIAL</b>					
<i>Description</i>	<i>Qty</i>	<i>UOM</i>	<i>Unit Price</i>		<i>Amount</i>
HOUSE MATERIAL (SEE ATTACHED DETAIL)	1	LS			<b>\$66,779.11</b>
FIELD MATERIAL (SEE ATTACHED DETAIL)	1	LS			<b>\$25,268.72</b>
HOUSE AND SIGNAL WIRING	1	LS	\$8,000.00		<b>\$8,000.00</b>
FILL DIRT (ROAD BASE W/ 3/4" ROCK)		TN	\$28.99		<b>\$0.00</b>
CONCRETE		YD	\$500.00		<b>\$0.00</b>
COVER ROCK		TN	\$26.50		<b>\$0.00</b>
BORING 4"		FT	\$35.00		<b>\$0.00</b>
ELECTRICAL PERMITS		EA	\$3,500.00		<b>\$0.00</b>
METER POLE ASSY AND INSTALLATION		EA	\$2,500.00		<b>\$0.00</b>
FREIGHT & CONTAINER PRICE	1	LS	\$6,000.00		<b>\$6,000.00</b>
<b><i>SUBTOTAL</i></b>					<b>\$106,047.83</b>
<b><i>MATERIAL TOTAL</i></b>					<b>\$106,047.83</b>

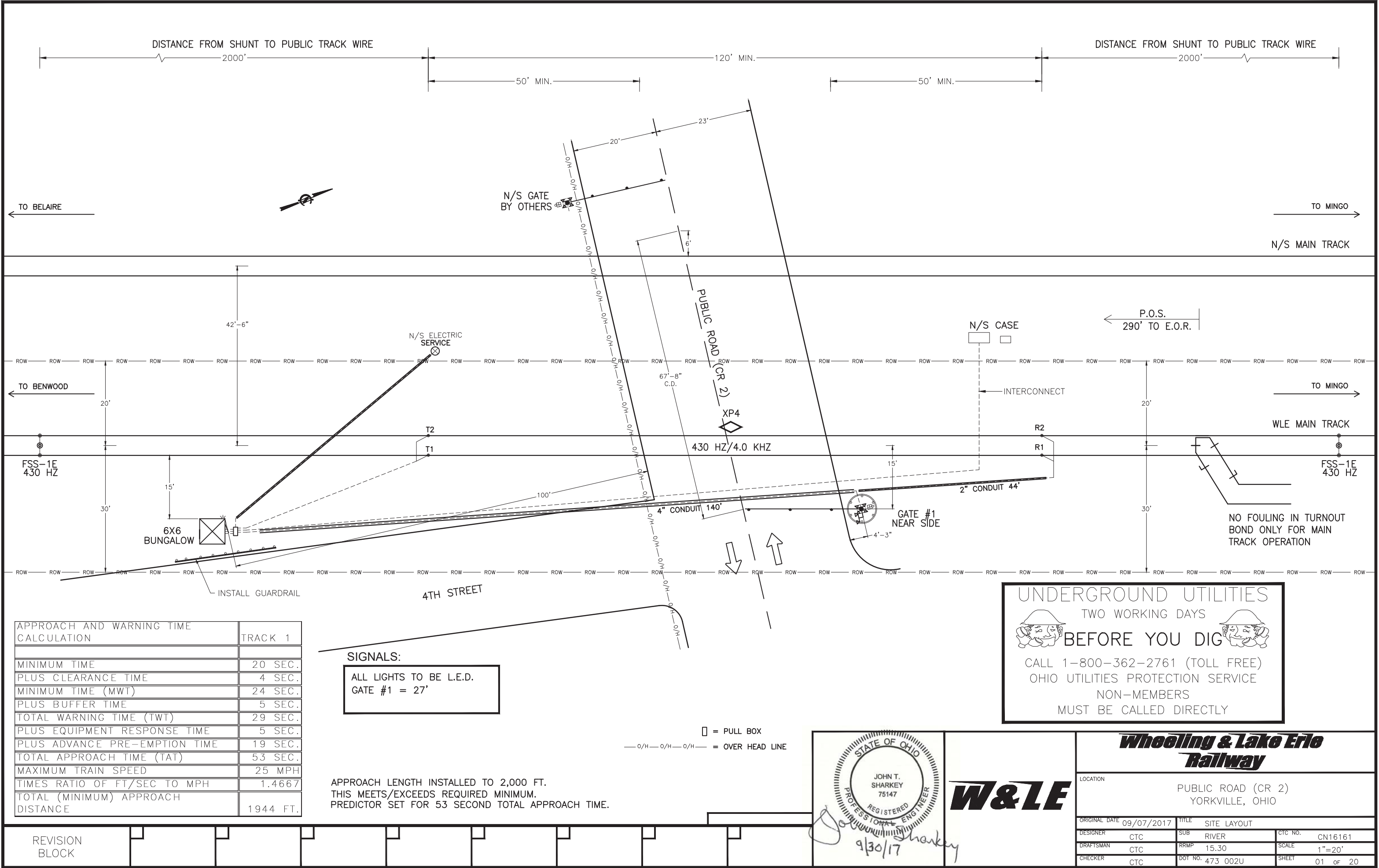
<b><i>TOTAL PROJECT ESTIMATE</i></b>	<b><i>\$165,251.30</i></b>
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HOUSE MATERIALS				
Description	QTY	UOM	Unit Price	Total Price
Bungalow, Alum. 6 X6 w/Heater P/N 91000564 D-1, PTMW	1	EA	\$9,388.00	\$9,388.00
Wrench, AAR terminal - 11", P/N 032619-9X, Siemens	1	EA	\$43.63	\$43.63
Label, Brady, Thermal, 2"x0.645" (1000), P/N PS3752WT2, Reynolds	250	EA	\$0.82	\$205.00
Sensor, Hermetic Door Switch, P/N 70168986, Allied Electric	1	EA	\$4.99	\$4.99
Actuator, Hermetic Door Switch, P/N 70168991, Allied Electronics	1	EA	\$1.99	\$1.99
Sign, Emergency Notification, 30"X30", P/N MUTCD 30x30, Eagle Traffic	1	EA	\$112.00	\$112.00
Sign, Emergency Notification, 15"X9" Blue w/Brackets, P/N MUTCD 15x9, Eagle Traffic	2	EA	\$38.00	\$76.00
Wire, Case, #16AWG Blue Okonite, P/N 012092-002, GETS	1000	EA	\$0.33	\$330.00
Wire, Case, #10AWG, Blue Okonite, P/N 152-11-3038, GETS	1000	EA	\$0.53	\$530.00
Wire, Case, #6AWG THHN, Green, P/N N6GNM, Reynolds	100	FT	\$0.35	\$35.00
Wire, Case, #6AWG THHN, Black, P/N N6BM, Reynolds	100	FT	\$0.35	\$35.00
Wire, Case, #6AWG THHN, Red, P/N N6RD, Reynolds	100	FT	\$0.35	\$35.00
MDA-II With Current Sensors DTMF Radio and GFD - Complete, P/N NAS-WLE, NAS	1	EA	\$6,431.00	\$6,431.00
MDSA-1X Surge arrestor panel, P/N 250204-100, Alstom	1	EA	\$474.00	\$474.00
XP4 Chassis P/N 300752-000, GE **(Populated as shown on Plans)**	1	EA	\$27,450.00	\$27,450.00
Cable, XIP 8 ft (cable #1) (need 1 for XP4 Assy) P/N 075046-001, Alstom	1	EA	\$104.00	\$104.00
Cable, XIP 8 ft (cable #2) (need 1 for XP4 Assy) P/N 075047-001, Alstom	1	EA	\$104.00	\$104.00
XIP-20 w/ Lamp Resistor (1 per IXC-20S) (need 1 for XP4 Assy) P/N 227561-000, Alstom	1	EA	\$602.00	\$602.00
Module, 44R, Input/Output, P/N 227538-000, Alstom	1	EA	\$2,313.00	\$2,313.00
Module, 44R, Personality, P/N 251379-000, Alstom	1	EA	\$549.00	\$549.00
Relay, 500 Ohm, 6PT, Nuetral relay, plug-in, P/N A62-0262, Alstom	9	EA	\$821.60	\$7,394.40
Plugboard, Kit (1E/3E test posts) P/N 59686-019-02, Alstom	9	EA	\$125.00	\$1,125.00
Wrench, 3E test tool, P/N P03-0320, Alstom	1	EA	\$51.10	\$51.10
Extractor Tool, Terminal clip, P/N 032619-25, Siemens	1	EA	\$1.18	\$1.18
Relay, 8-pin KRPA style, 10A/12V, P/N 70198611, Allied	4	EA	\$18.62	\$74.48
Relay, 8-pin KRPA style, 10A/240V, P/N 70198711, Allied	1	EA	\$20.12	\$20.12
Socket, 8-pin KRPA style, P/N 70199343, Allied	5	EA	\$5.61	\$28.05
Spring, Hold down for KRPA style relay, P/N 70198576, Allied	5	EA	\$0.33	\$1.65
Battery Charger, 40 ETC-12V, RECO 12/40	2	EA	\$590.00	\$1,180.00
Battery, NiCad 340 A.H., P/N SPL-340, Saft	9	EA	\$310.50	\$2,794.50
Battery, NiCad 250 A.H., P/N SPL-250, Saft	10	EA	\$225.00	\$2,250.00
Terminal, Battery, 3-PT, P/N 225481-000, J&A Industries	4	EA	\$24.25	\$97.00
Transformer, Chassis Mt, Gate Heater, 115-230V, P/N 038601-T11619, Siemens	1	EA	\$125.00	\$125.00
Battery Tray 12"x27", Holds (3) Batteries, P/N 027002-001, J&A	4	EA	\$48.00	\$192.00
Nema Plug, Locking, 15 Amp/240V, P/N L6-15P, Reynolds	2	EA	\$14.50	\$29.00
Power Indicator, 2 Eye/4 Wire, Wago connector, P/N LC2-001WB-WG4, Velcorp Gems	1	EA	\$139.56	\$139.56
SO Cord, 14 AWG/4 Conductor, P/N SJOOW-14-4-BLK-250R, Graybar	100	FT	\$0.73	\$73.00
Tie-wrap, 11 1/2", PKG 100, Black, P/N LTS11-0, Vantex	3	EA	\$20.21	\$60.63
Tie-wrap, mounting, PKG 100, P/N TYM, Vantex	1	EA	\$27.44	\$27.44
Loom, Spiral Wrap, Black 100', P/N SW38-0, Vantex	1	EA	\$48.54	\$48.54
Panduit, Wire Duct, 2"X3"X6' Gray, P/N G2X3LG6, Graybar	3	EA	\$4.61	\$13.83
Panduit, Cover, 6' Gray, P/N C2LG6, Graybar	3	EA	\$1.16	\$3.48
Terminal, Single Row, 12 x 1 w/hardware, P/N 220-0202, Rebel Rail	1000	FT	\$0.27	\$270.00
Terminal, 4-post, Block Kit, w/ 14-24 AAR Hardware, P/N B2700A2C1WH, Erico	1500	FT	\$0.53	\$795.00
Connector, 2 3/8", strap style, P/N 220-0507, Rebel	10	EA	\$0.70	\$7.00
Connector, 1", flat, strap style, P/N 220-0501, Rebel	100	EA	\$0.30	\$30.00
Arrestor, Air Gap, With Cover, P/N 4000-44585-001X, Siemens	10	EA	\$43.48	\$434.83
Equalizer, Air Gap, with Cover/Hardware, P/N 4000-44700-001X, Siemens	5	EA	\$19.77	\$98.84
Binding Nut, P/N 13073-000, Rebel	200	EA	\$0.18	\$36.00
Clamp Nut, P/N 13079-000, Rebel	100	EA	\$0.14	\$14.00
Insulated Nut, 1 3/16", P/N 023408-1X, Safetran	14	EA	\$4.00	\$56.00
Washer, P/N 013074-000, Rebel	200	EA	\$0.07	\$14.00
Gold Test Nut, P/N 13296-001, Rebel	100	EA	\$0.55	\$55.00
1' Test Link, Flat, P/N 32257-002	100	EA	\$1.75	\$175.00
Terminal Ring, HD, 1/4", insulated, #14 - #16 (yellow w/blk stripe), P/N NC-10HDB, Vantex	100	EA	\$0.83	\$83.00
Terminal, Ring, 1/4", insulated #14 - #16 (100 pk), P/N NB14, Vantex	2	EA	\$29.87	\$59.74
Terminal, Ring, 1/4" insulated, #10 - #12 (100 pk), P/N NC14, Vantex	2	EA	\$31.24	\$62.48
Terminal, Ring, 1/4" insulated, #6, Blue, P/N T6-14N, Vantex	30	EA	\$0.67	\$20.10
Terminal, Ring, 3/8" non-insulated, #6, Battery Lug, P/N T6-38, Vantex	15	EA	\$0.97	\$14.55

FIELD MATERIALS				
Description	QTY	UOM	Unit Price	Total Price
Cable, 7/C#6, Armored, 206-11-6247, Okonite	200	FT	\$8.11	\$1,622.00
Cable, 7C#14, Armored, 206-11-6887, Okonite	200	FT	\$2.99	\$598.00
Cable, 12/C#14, Armored, 206-11-6892, Okonite	200	FT	\$4.86	\$972.00
Cable, 3C#6, Armored, 206-11-6243, Okonite	150	FT	\$6.00	\$900.00
Wire, Track, 2C/#6, Twist, Solid, 113-12-3933, Okonite	325	FT	\$1.86	\$604.50
Tape, Marker - "Buried RR line"/"Buried electrical line"	1	ROLL	\$15.99	\$15.99
Bootleg Kit, Crossing complete, Wood, 1 Track, CTC Inc.	2	EA	\$500.00	\$1,000.00
Bondstrand, 3/16", Black, 500', P/N SBS8LINSUL, Erico	500	EA	\$1.22	\$610.00
Sleeve, 3/16" - #6 solid, P/N A2363J, Erico	100	EA	\$1.29	\$129.00
Sleeve, 3/16" - 3/16", P/N A2367J, Erico	100	EA	\$1.29	\$129.00
Clip, Retainer - Spring Steel, P/N A248B, Erico	50	EA	\$3.22	\$161.00
Staple, Copper, 1 1/2" x 5/16" x 0.144,	50	EA	\$0.38	\$19.00
Electrical tape, Super 88, Black, 3M	2	EA	\$5.00	\$10.00
Splicing tape, rubber, 3/4"X30', P/N 130C, 3M	1	EA	\$39.41	\$39.41
Bond Wire, 7 1/2" XS Style, P/N SBS24883, Erico	100	EA	\$5.12	\$512.00
Connector, Track, Web of Rail, P/N SBTBBU4A, Erico	100	EA	\$4.63	\$463.00
Rail Welding Material F80, P/N SB25, Erico	100	EA	\$1.56	\$156.00
Wheel, grinding, P/N SB22122, Erico	4	EA	\$35.87	\$143.48
5/8" X 8' Copper Ground Rod P/N 615880, Erico	5	EA	\$9.50	\$47.50
5/8" Ground Rod Weld, P/N SBNT1161G, Erico	5	EA	\$7.48	\$37.40
Wire, Ground, #6AWG, Bare Copper, Graybar	100	FT	\$0.34	\$34.00
FSS-IA, Tunable NBS, P/N 250850-000, GE	2	EA	\$847.00	\$1,694.00
Shunt Enclosure, Orange, P/N 500-400-100-09-Orange, G&B	2	EA	\$374.00	\$748.00
Mast, Gate, 18'X5" w/pigtail (single-sided Jct Box), P/N 715-324-2-GS, WCH	1	EA	\$578.00	\$578.00
Jct box, Gate, 5" single hole w/24 terminals, P/N 2149-A-139, WCH	1	EA	\$492.00	\$492.00
Gate, Model 3597, P/N 3597-131-R-H-M1 (6 contacts / 115v defroster), WCH	1	EA	\$3,762.00	\$3,762.00
Resistor, Adjustable, 5 OHM, P/N 1110-7D, WCH	1	EA	\$24.50	\$24.50
Crossarm Assy, 5" Mtg., 2 Way, P/N 975-0804-5, WCH	1	EA	\$697.00	\$697.00
Crossarm Assy, 4" Mtg., 1 Way, Flasher, P/N 975-0912-4, WCH	1	EA	\$393.00	\$393.00
Supporting Bracket & Dowel Mast Assy, 4" Pinnacle/5" Meeting, P/N 3565-267-42-5, WCH	1	EA	\$385.00	\$385.00
Lights, 12" LED, P/N FLX 4000, Safetran	6	EA	\$247.76	\$1,486.56
Counterweight Package, 24', P/N 070755-238G, Safetran	1	EA	\$1,356.00	\$1,356.00
Sign, Crossbuck, No brackets/hardware, P/N 070-0065, Rebel Railway	1	EA	\$84.00	\$84.00
5" Sign Kit, Brackets/extensions/Ubolts/hardware, P/N 070-5008, Rebel Railway	2	EA	\$56.70	\$113.40
Wind Bracket, 36", Tusk style, P/N 2010-001-01, RDG	1	EA	\$136.00	\$136.00
Bell, Electronic, 5" Base, P/N EB-3-360-5, GSI	1	EA	\$165.00	\$165.00
Gate Keeper, 2-Way, w/Hardware & Buffer Spring, P/N SK-1000-2W, GSI	1	EA	\$1,100.00	\$1,100.00
E-Z Gate 21'-42' (Vertical) A/F + LED gate lamp kit, P/N 9298-6154, Railway Equipment	1	EA	\$649.00	\$649.00
Sleeve, 4' Aluminum, P/N 92958, Railway Equipment	1	EA	\$39.00	\$39.00
Wrench, Torque (KIT), P/N 2590-K-9, WCH	1	EA	\$191.00	\$191.00
Field cable Tag Kit, P/N FLDTGKT, CTC Inc.	1	EA	\$171.00	\$171.00
Emergency Notification Signs, MUTCD, 15" x 9" with 5" mast mounts	1	EA	\$146.32	\$146.32
Schedule 40 2" & 4" PVC Conduit Kit with Elbows	1	LOT	\$1,500.00	\$1,500.00
Pull Box, Polymer concrete (30X48X36)w/cover, P/N PHA304836H, Reynolds	1	EA	\$1,100.00	\$1,100.00
Duct seal, 1lb, P/N 31-601, Graybar	1	EA	\$9.41	\$9.41
Duct seal, 5lb, P/N 31-605, Graybar	1	EA	\$45.25	\$45.25
			<b>TOTAL</b>	<b>\$25,268.72</b>







APPROACH AND WARNING TIME CALCULATION	TRACK 1
MINIMUM TIME	20 SEC.
PLUS CLEARANCE TIME	4 SEC.
MINIMUM TIME (MWT)	24 SEC.
PLUS BUFFER TIME	5 SEC.
TOTAL WARNING TIME (TWT)	29 SEC.
PLUS EQUIPMENT RESPONSE TIME	5 SEC.
PLUS ADVANCE PRE-EMPTION TIME	19 SEC.
TOTAL APPROACH TIME (TAT)	53 SEC.
MAXIMUM TRAIN SPEED	25 MPH
TIMES RATIO OF FT/SEC TO MPH	1.4667
TOTAL (MINIMUM) APPROACH DISTANCE	1944 FT.

SIGNALS:  
ALL LIGHTS TO BE L.E.D.  
GATE #1 = 27'

APPROACH LENGTH INSTALLED TO 2,000 FT.  
THIS MEETS/EXCEEDS REQUIRED MINIMUM.  
PREDICTOR SET FOR 53 SECOND TOTAL APPROACH TIME.

□ = PULL BOX  
— O/H — O/H — O/H — = OVER HEAD LINE

UNDERGROUND UTILITIES

TWO WORKING DAYS

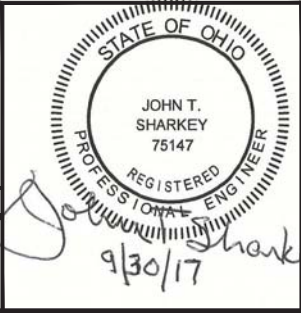
BEFORE YOU DIG

CALL 1-800-362-2761 (TOLL FREE)

OHIO UTILITIES PROTECTION SERVICE

NON-MEMBERS

MUST BE CALLED DIRECTLY




W&LE

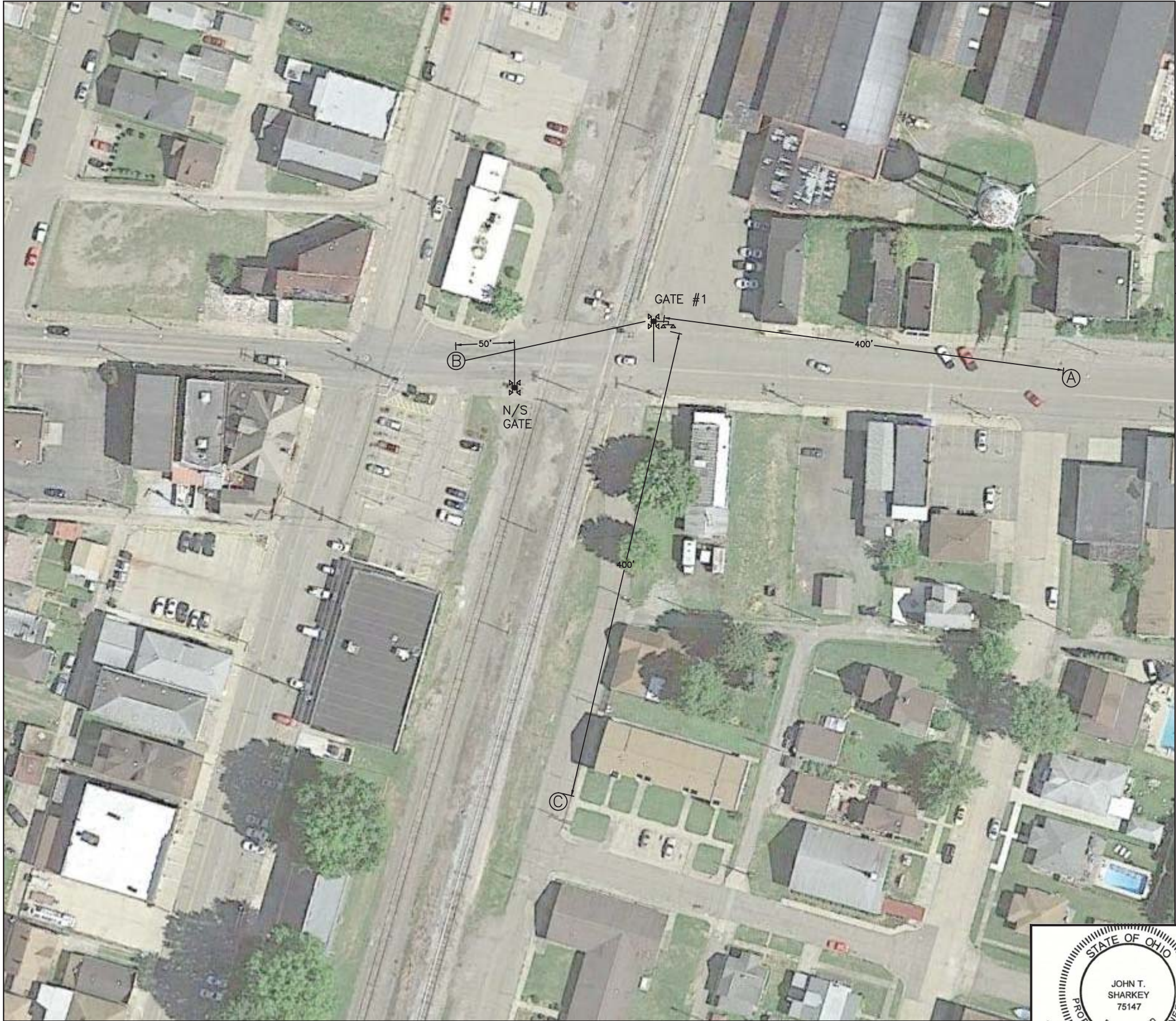
Wheeling & Lake Erie Railway			
LOCATION		PUBLIC ROAD (CR 2) YORKVILLE, OHIO	
ORIGINAL DATE	09/07/2017	TITLE	SITE LAYOUT
DESIGNER	CTC	SUB	RIVER
DRAFTSMAN	CTC	RRMP	15.30
CHECKER	CTC	DOT NO.	473 002U
		SCALE	1"=20'
		SHEET	01 OF 20
		CTC NO.	CN16161

## CONSTRUCTION NOTES

- 1.) INSTALL NEW 6' X 6' BUNGALOW IN SOUTHWEST QUADRANT.
- 2.) INSTALL (1) NEW FLASHING LIGHTS WITH GATES.
- 3.) METER POLE LOCATION SHOWN ON THE PLAN IS SUBJECT TO CHANGE WITHIN RAILROAD RIGHT-OF-WAY IF UNDERGROUND OBSTRUCTIONS PREVENT THE INSTALLATION OF THE POLE IN THE LOCATION SHOWN.
- 4.) BUNGALOW LOCATION SHOWN ON THE PLAN IS SUBJECT TO CHANGE WITHIN RAILROAD RIGHT-OF-WAY IF UNDERGROUND OBSTRUCTIONS PREVENT THE INSTALLATION OF THE BUNGALOW IN THE LOCATION SHOWN.
- 5.) COORDINATE WITH NORFOLK SOUTHERN TO TERMINATE AND TEST RAILROAD INTERCONNECT CABLE AND CIRCUITRY.

<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p><i>John T. Sharkey</i> 9/30/17</p> </div> <div style="font-size: 2em; font-weight: bold; text-align: center;">W&amp;LE</div> </div>										<h2 style="margin: 0;">Whoollong &amp; Lake Erie Railway</h2>									
										<p>LOCATION PUBLIC ROAD (CR 2) YORKVILLE, OHIO</p>									
REVISION BLOCK		ORIGINAL DATE 09/07/2017		TITLE CONSTRUCTION NOTES															
		DESIGNER CTC		SUB RIVER		CTC NO. CN16161													
		DRAFTSMAN CTC		RRMP 15.30		SCALE N.T.S.													
		CHECKER CTC		DOT NO. 473 002U		SHEET 01A OF 20													





CROSSING SIGNAL ALIGNMENT

LEGEND

Ⓐ	GATE #1 FRONT MAST LIGHTS
Ⓑ	GATE #1 BACK MAST LIGHTS
Ⓒ	GATE #1 AUX. MAST SIDE LIGHTS

ALIGNMENT

FRONT LIGHTS  
ADJUST LIGHT UNIT VERTICALLY TO ALIGN AXIS OF BEAM 5FT. 6IN. ABOVE PAVEMENT AT SELECTED ALIGNMENT DISTANCE. BOTH LAMPS SHOULD BE ALIGNED TO SAME POINT.

ADJUST LIGHT UNIT HORIZONTALLY TO ALIGN AXIS OF BEAM TO CENTER OF APPROACH LANE IN APPROACH TO SIGNAL AT SELECTED ALIGNMENT DISTANCE, MAINTAINING VERTICAL ALIGNMENT. BOTH LAMPS SHOULD BE ALIGNED TO SAME POINT.

BACK LIGHTS  
ADJUST LIGHT UNIT VERTICALLY TO ALIGN AXIS OF BEAM 5 FT. 6 IN. ABOVE PAVEMENT AT A POINT 50 FT. IN APPROACH TO THE SIGNAL ON OPPOSITE SIDE OF TRACK.

ADJUST LIGHT UNIT HORIZONTALLY TO ALIGN AXIS OF BEAM TO A POINT 50 FT. IN APPROACH TO THE SIGNAL ON OPPOSITE SIDE OF TRACK AND IN CENTER OF APPROACH TRAVEL WAY.



**W&LE**

**Wheeling & Lake Erie  
Railway**

LOCATION PUBLIC ROAD (CR 2) YORKVILLE, OHIO			
ORIGINAL DATE	09/07/2017	TITLE	CROSSING SIGNAL ALIGNMENT
DESIGNER	CTC	SUB	RIVER
DRAFTSMAN	CTC	RRMP	15.30
CHECKER	CTC	DOT NO.	473 002U
		SCALE	N.T.S.
		SHEET	02 OF 20

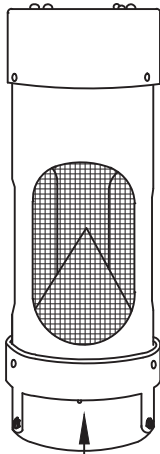
REVISION  
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SITE LAYOUT NOTES

1.) CROSSING IS LOCATED:   LATITUDE       40.159290  
  LONGITUDE     -80.705656

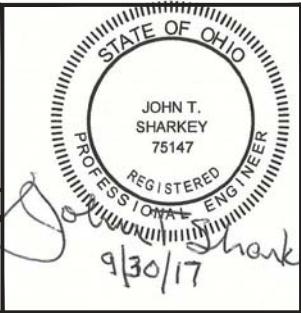
ELECTRONIC CROSSING BELL  
GSI MODEL EB-3-360-5



THIS SIDE FACING  
ROADWAY

CHANGE FROM TYPICAL: N

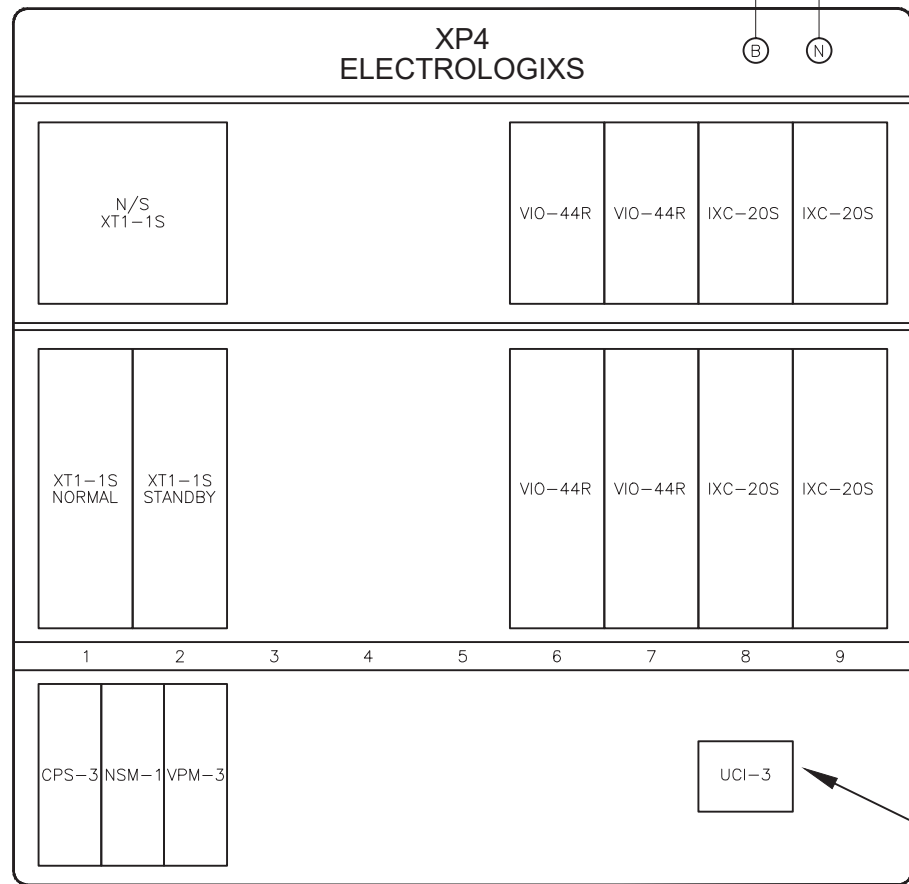
REVISION  
BLOCK



**W&LE**

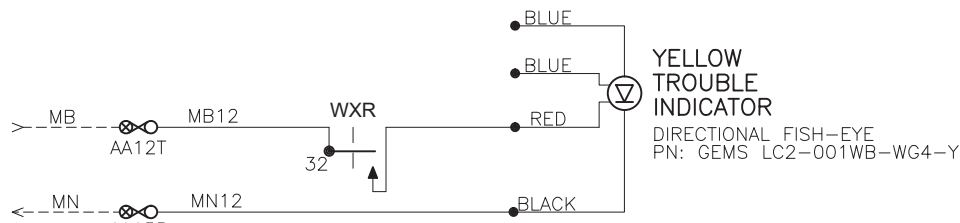
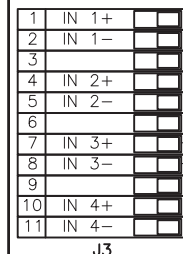
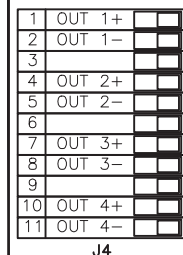
Wheeling & Lake Erie Railway			
LOCATION		PUBLIC ROAD (CR 2) YORKVILLE, OHIO	
ORIGINAL DATE	09/07/2017	TITLE	SITE LAYOUT NOTES
DESIGNER	CTC	SUB	RIVER
DRAFTSMAN	CTC	RRMP	15.30
CHECKER	CTC	DOT NO.	473 002U
		SCALE	N.T.S.
		SHEET	03 OF 20

XP4 CHASSIS  
PN: 300752-000



XP4-B12 → MDSA-1 EQ+  
XP4-N12 → MDSA-1 EQ-  
#10

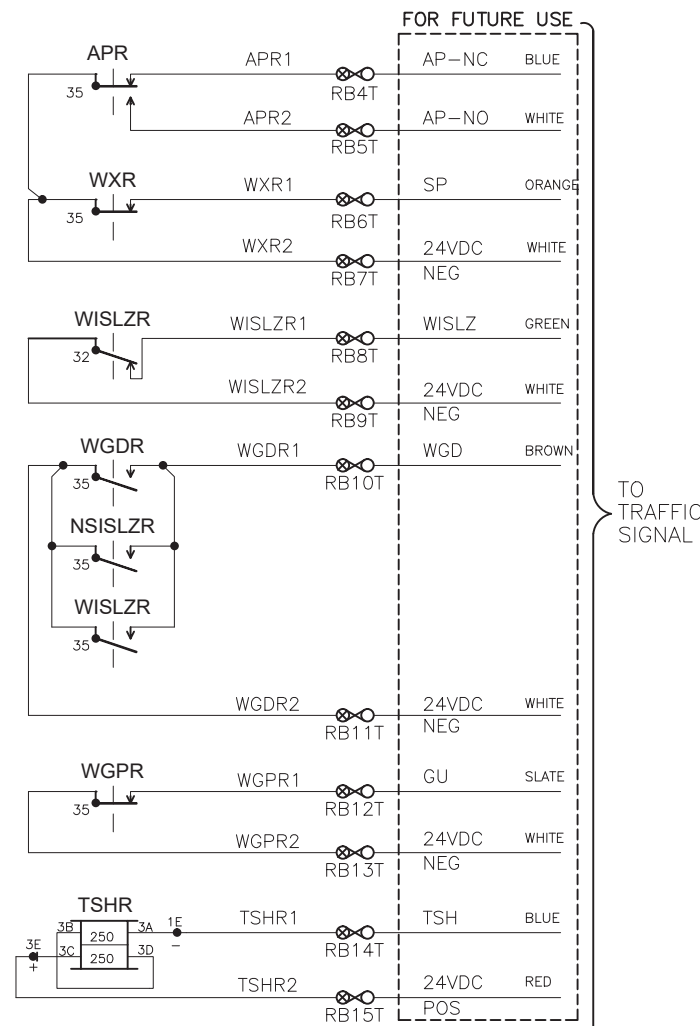
XP4  
VIO2  
SLOT 6  
VIO-44R MODULE  
PN: 251379-000



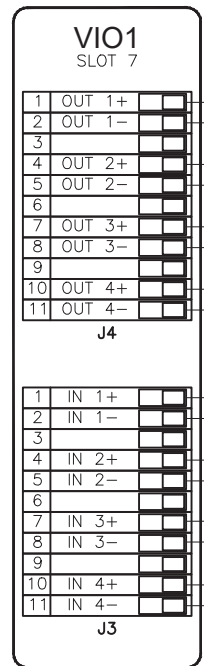
NOTE:  
-WHEN CROSSING IS IN TROUBLE  
L.E.D. FLASHES UNTIL BATTERY  
IS DISCHARGED.

WARNING!  
HIGHWAY-RAIL GRADE CROSSING  
WARNING SYSTEM AND HIGHWAY  
TRAFFIC SIGNALS ARE  
INTERCONNECTED.

BEFORE MODIFICATION IS MADE TO ANY OPERATION  
WHICH CONNECTS TO OR CONTROLS THE TIMING OF AN  
ACTIVE RAILROAD WARNING SYSTEM AND/OR TIMING  
AND PHASING OF A TRAFFIC SIGNAL THE APPROPRIATE  
PARTY(IES) SHALL BE NOTIFIED AND, IF NECESSARY, A  
JOINT INSPECTION CONDUCTED.



XP4



WISLZR  
WISLZR1  
WISLZR2

WXR  
WXR1  
WXR2

WISLZK  
WISLZK1  
WISLZK2

APR  
APR1  
APR2

NSXR-3  
NSXR1-3  
NSXR2-3

ROR  
ROR1  
ROR2

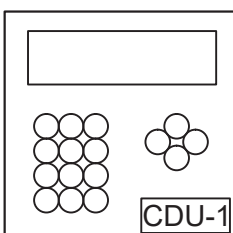
MB12  
MN12

AA19B  
AA20B

AA18B

AA18T

CDU-1  
PN: 251124-000



① T1\_ALL  
② T1\_APP

AA19T  
AA20T

CC45  
CC50

MB12  
MN12

AA21T  
AA21B

NSXR  
NSXR1  
NSXR2

MB12  
MN12

AA21T  
AA21B

ROR  
ROR1  
ROR2

MB12  
MN12

AA21T  
AA21B

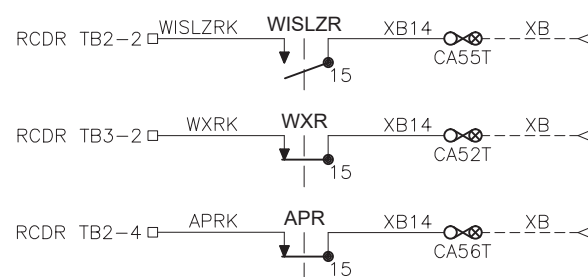
AA18T

\* PLACE JUMPER TO TAKE  
DESIGNATED FUNCTION  
OUT OF SERVICE

① "ALL" = HIGHWAY GRADE CROSSING  
WARNING SYSTEM REMOVED FROM  
SERVICE & NON-FUNCTIONAL.

② "APP" = ISLAND FUNCTION ONLY.  
HIGHWAY GRADE CROSSING WARNING  
SYSTEM APPROACHES REMOVED FROM  
SERVICE & NON-FUNCTIONAL.

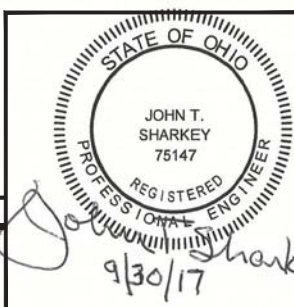
\*\*WARNING- NOTIFY N/S PERSONNEL WHEN  
TAKING CROSSING OUT OF SERVICE\*\*



NOTE: ALL WIRING THIS SHEET #16 AWG  
UNLESS NOTED OTHERWISE.

REVISION  
BLOCK

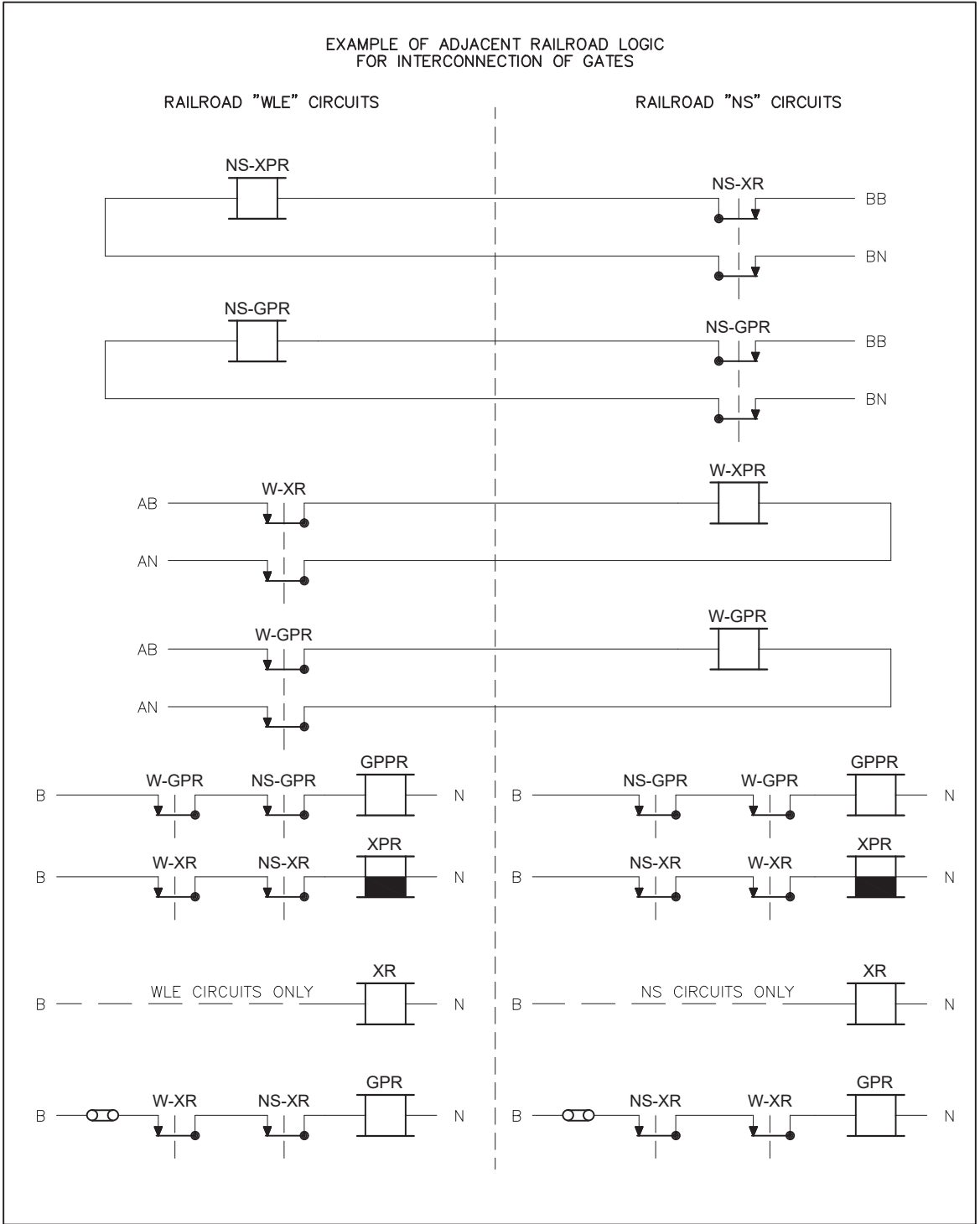
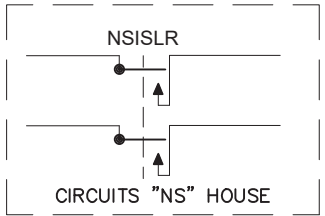
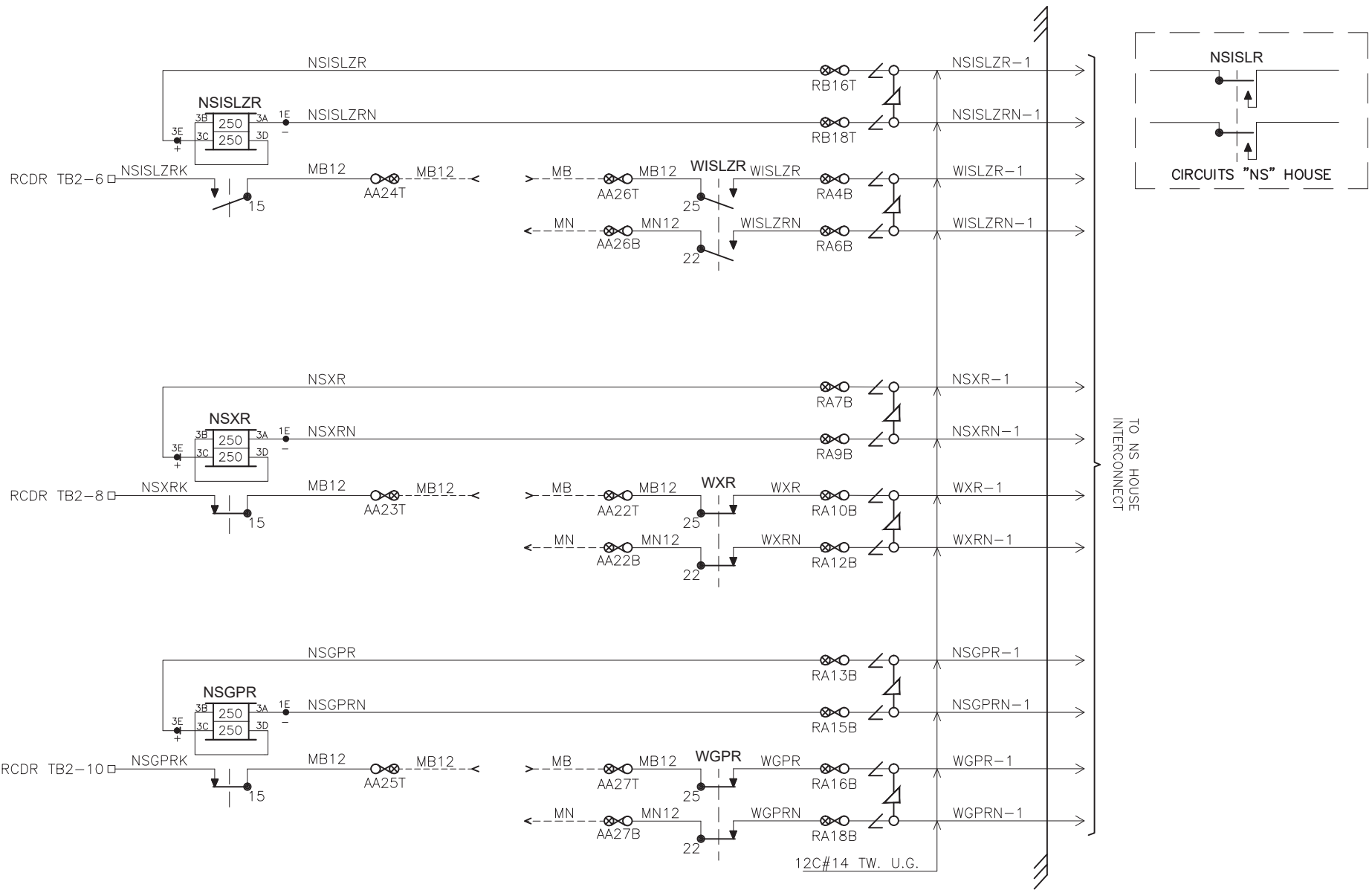
CHANGE FROM TYPICAL: Y



W&LE

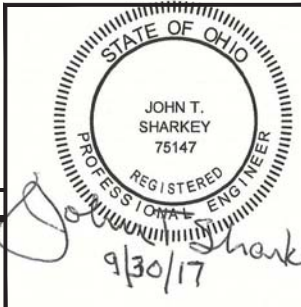
Wheeling & Lake Erie  
Railway

LOCATION		PUBLIC ROAD (CR 2) YORKVILLE, OHIO	
ORIGINAL DATE	09/07/2017	TITLE	XP4 CIRCUITS, TRAFFIC SIG. INTERCONNECT
DESIGNER	CTC	SUB	RIVER
DRAFTSMAN	CTC	RRMP	15.30
CHECKER	CTC	DOT NO.	473 002U
		SCALE	N.T.S.
		SHEET	04 OF 20



NOTE: ALL WIRING THIS SHEET #16 AWG  
UNLESS NOTED OTHERWISE.

CHANGE FROM TYPICAL: Y



**W&LE**

**Wheeling & Lake Erie  
Railway**

LOCATION		PUBLIC ROAD (CR 2) YORKVILLE, OHIO	
ORIGINAL DATE	09/07/2017	TITLE	X-ING CONTROL CIRCUITS, ADJ. RR INTERCON
DESIGNER	CTC	SUB	RIVER
DRAFTSMAN	CTC	RRMP	15.30
CHECKER	CTC	DOT NO.	473 002U
		SCALE	N.T.S.
		SHEET	05 OF 20

REVISION  
BLOCK

ADJUSTMENT NAME		MDR1				APT			
NAME		HIGHWAY CROSSING				HIGHWAY CROSSING			
WARNING TIME		29 SEC				48			
CW/MD		CW				CW			
AP TIME		00 SEC				00 SEC			
CWE-WT		00 SEC				00 SEC			
AUX RECOVERY DELAY		05 SEC				05 SEC			
		TK1	TK2	TK3	TK4	TK1	TK2	TK3	TK4
TRACK ASSIGNED		ASSIGN				ASSIGN			
OFFSET DISTANCE		0 FT				0 FT			
MD RESTART		*				*			
SUDDEN SHUNT ZONE		*				*			
POSITIVE START	PSEN	DISABLE				DISABLE			
	PSRX	NA				NA			
	PST	NA				NA			
POST JOINT DETECT	PJEN	DISABLE				DISABLE			
	PJRX	NA				NA			
	PJDT	NA				NA			

BASIC TRACK SETUP					
	TK1	TK2	TK3	TK4	
FREQUENCY	430 HZ				
MASTER/SLAVE	MASTER				
RX ADJUST	100				
TCA	*				
DIRECTION MODE	BI				
LIA	*				
ADVANCED APR. CAL	INACTIVE				
NBS COMP RX	*				
TRK ISLAND ASSIGN	ISL1				
APPROACH LENGTH	2000 FT				
AUTO RX	ENABLE				

ADVANCED TRACK SETUP					
		TK1	TK2	TK3	TK4
MOTION DET TIMER	MDEN	DISABLE			
	MDTT	10 MIN			
	FSEN	DISABLE			
FALSE SHUNT	FSRX	NA			
	FST	NA			
	AREN	DISABLE			
APPROACH RELEASE	ARRX	NA			
	ART	NA			
LOS TIME		16 SEC			
IJ-LOS TIME		5 SEC			
NRML_SHHTR_VRSHT		NRML *			

ISLAND SETUP				
	TK1	TK2	TK3	TK4
ENABLE/DISABLE	ENABLE			
FREQUENCY	4.0 KHZ			
LOSS OF SHUNT	4 SEC			
FAULT DELAY	1			

IXC SETUP				
CROSSING TEST MODE	OFF			
FLASH RATE	55FPM			
	IXC-1	IXC-2	IXC-3	IXC-4
VOLTAGE REGULATION	ON			
L1 VOLTAGE	* 10.0			
L2 VOLTAGE	NA			
GATE 1 DELAY	3 SEC			
GATE 2 DELAY	NA			

SHUNT RECORDS									
APPROACH 1 (EAST)		NO SHUNT		100% SHUNT		50% SHUNT			LIA ADDED
		RX	PHASE	RX	PHASE		RX	PHASE	± 1 to ±9
Track 1	Normal								
	Standby								
Track 2	Normal								
	Standby								
APPROACH 2 (WEST)									
Track 1	Normal								
	Standby								
Track 2	Normal								
	Standby								

INITIAL VALUES WHEN PLACED IN SERVICE

APPLICATION SOFTWARE INFORMATION	
NAME	*
REV.	1
CHECKSUM	
CRC	
CHASSIS ID	
LOCATED BEHIND UCI-3	CHASSIS ID
	1 2 3 4 5 6 7 8 ⓪ ⓪ ⓪ ⓪ ⓪ ⓪ ⓪ ⓪ □ □ □ □ □ □ □ □

- ⓪ = TAB INTACT  
● = TAB PUNCHED OUT

EXECUTIVE INFORMATION		
VPM-3	VERSION	PART NUMBER
CROSSING SOFTWARE	*	083024-716

NOTES:  
\* = FIELD ADJUSTMENT  
NA = NOT APPLICABLE

REVISION  
BLOCK

CHANGE FROM TYPICAL: Y

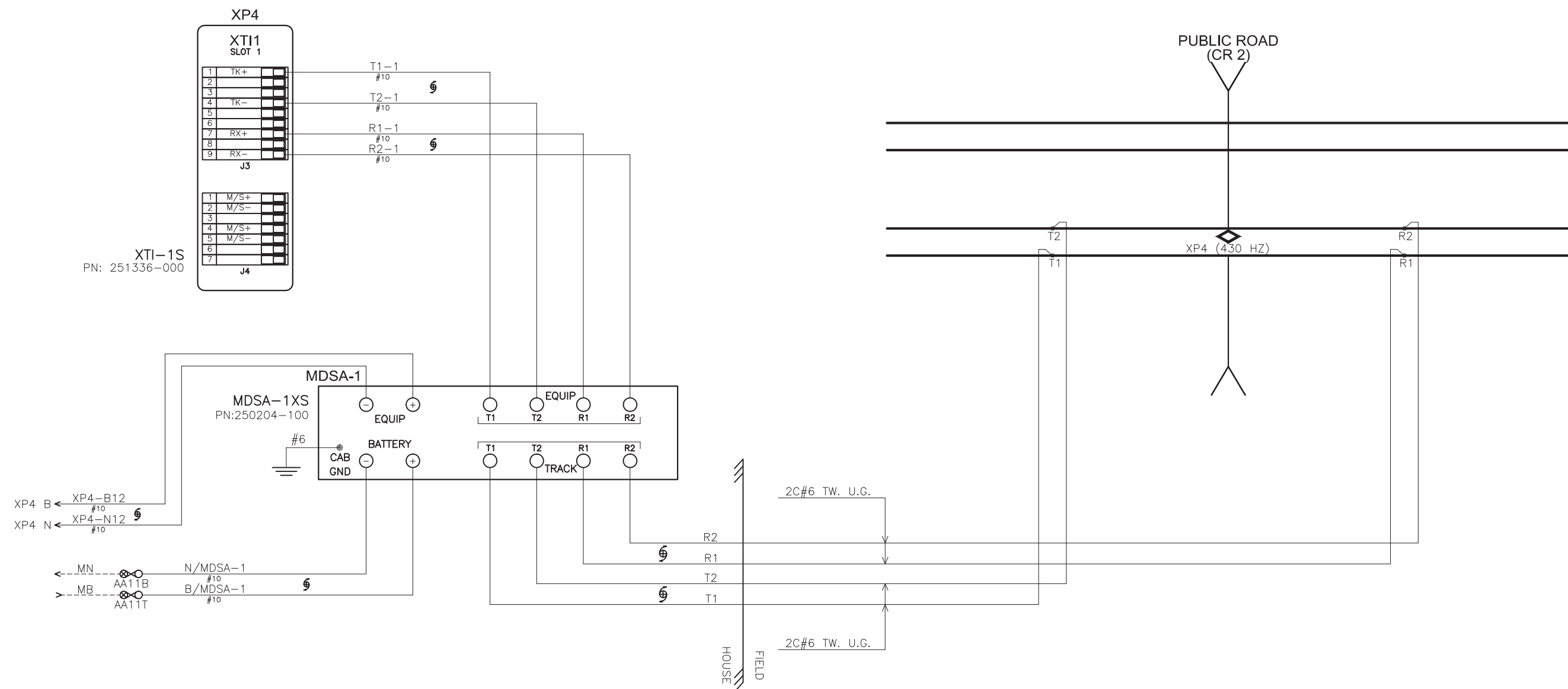


**W&LE**

**Wheeling & Lake Erie  
Railway**

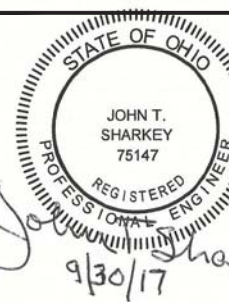
LOCATION PUBLIC ROAD (CR 2) YORKVILLE, OHIO			
ORIGINAL DATE	09/07/2017	TITLE	XP4 SETUP SHEET
DESIGNER	CTC	SUB	RIVER
DRAFTSMAN	CTC	RRMP	15.30
CHECKER	CTC	DOT NO.	473 002U
		CTC NO.	CN16161
		SCALE	N.T.S.
		SHEET	06 OF 20





REVISION  
BLOCK

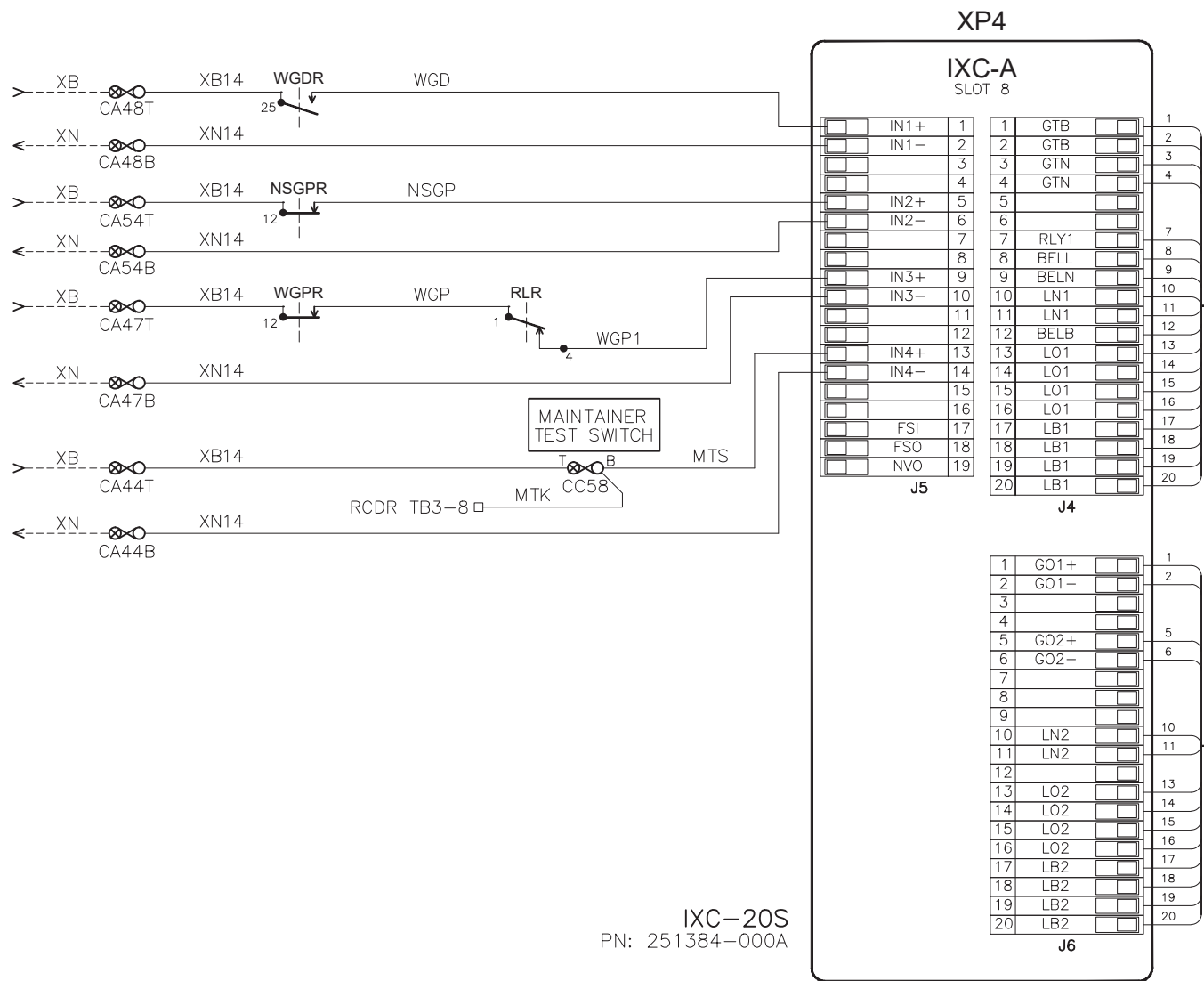
CHANGE FROM TYPICAL: Y



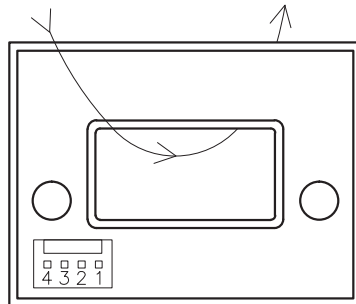
**W&LE**

**Wheeling & Lake Erie  
Railway**

LOCATION		PUBLIC ROAD (CR 2) YORKVILLE, OHIO	
ORIGINAL DATE	09/07/2017	TITLE	TRACK CONNECTION CIRCUITS
DESIGNER	CTC	SUB	RIVER
DRAFTSMAN	CTC	RRMP	15.30
CHECKER	CTC	DOT NO.	473 002U
		SCALE	N.T.S.
		SHEET	07 OF 20



HASS 50-S CURRENT SENSOR  
#10 RUN THROUGH EACH SENSOR



TO RCDR  
TB5

CHANGE FROM TYPICAL: Y

CABLE #1 GETS-GS P/N 075046-000

CABLE #2 GETS-GS P/N 075047-000

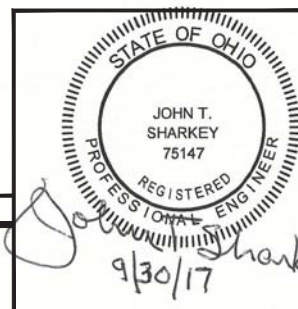
XIP-20  
PN: 227561-000

XIP-A  
(ENTRANCE)

CURRENT SENSORS MOUNTED ON FRONT OF RACK  
NOTE: ARROW INDICATES DIRECTION OF CURRENT FLOW

NOTES: ALL WIRING THIS SHEET #16 AWG  
UNLESS NOTED OTHERWISE.

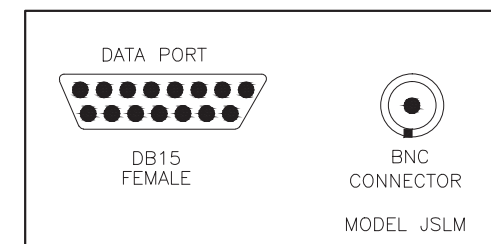
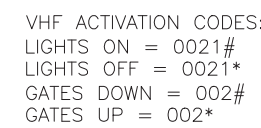
REVISION  
BLOCK



**W&LE**

**Wheeling & Lake Erie  
Railway**

LOCATION PUBLIC ROAD (CR 2) YORKVILLE, OHIO			
ORIGINAL DATE	09/07/2017	TITLE	ENTRANCE GATE CONTROL CIRCUIT
DESIGNER	CTC	SUB	RIVER
DRAFTSMAN	CTC	RRMP	15.30
CHECKER	CTC	DOT NO.	473 002U
		SCALE	N.T.S.
		SHEET	08 OF 20



MOUNTED INTERNAL ON MDA UNIT

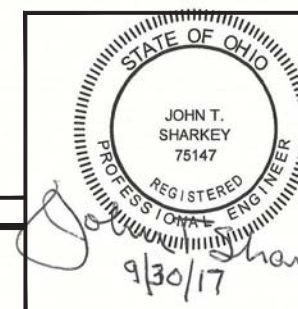
DTMF RADIO  
FRONT VIEW

## ***Wheeling & Lake Erie Railway***

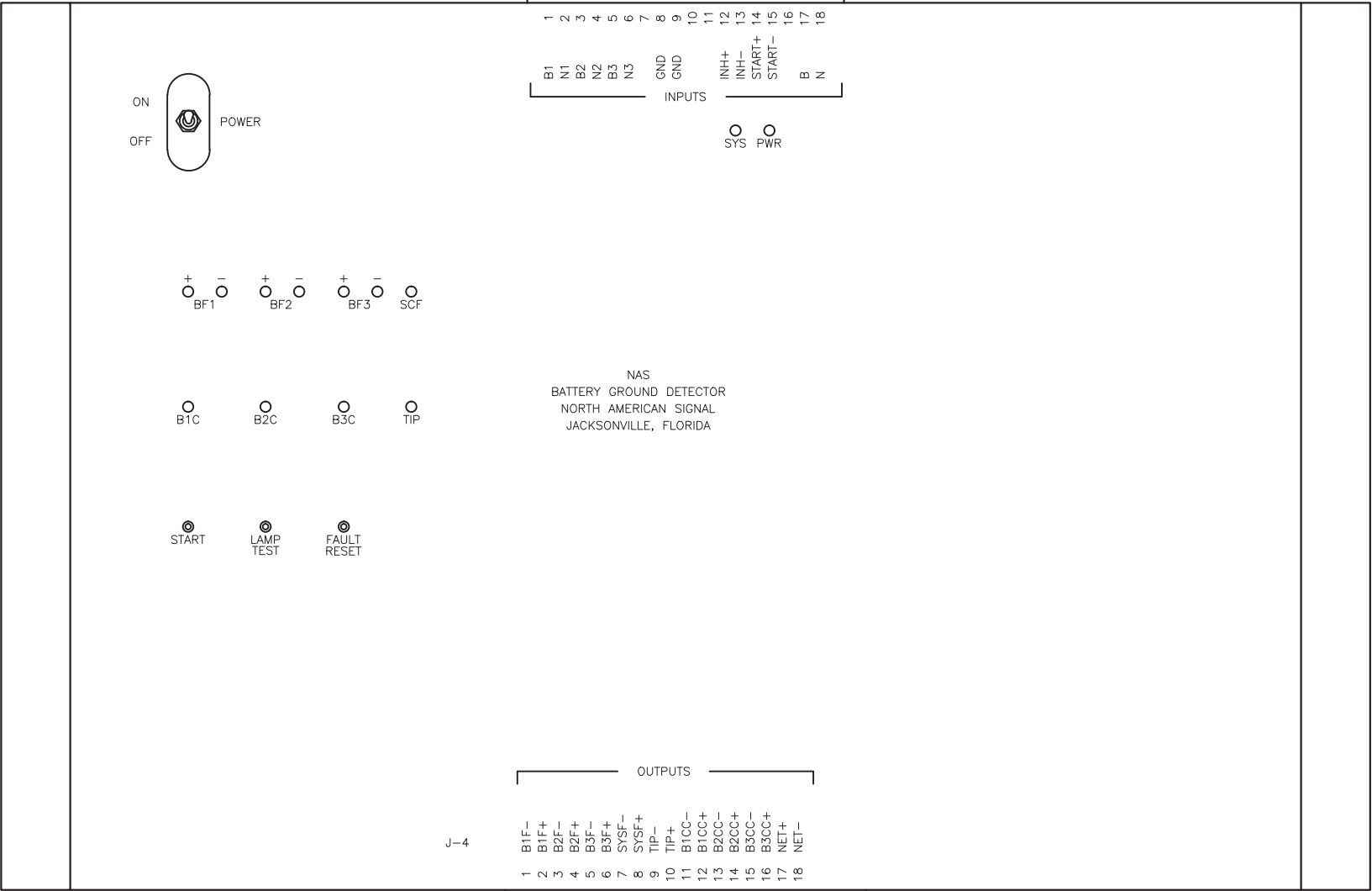
LOCATION		PUBLIC ROAD (CR 2) YORKVILLE, OHIO	
ORIGINAL DATE	09/07/2017	TITLE	RECORDER
DESIGNER	CTC	SUB	RIVER
DRAFTSMAN	CTC	RRMP	15.30
CHECKER	CTC	DOT NO.	473 002U
		CTC NO.	CN16161
		SCALE	N.T.S.
		SHEET	09 OF 20

REVISION  
BLOCK

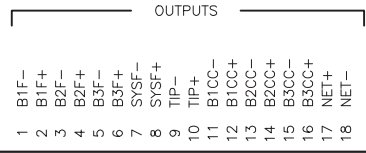
CHANGE FROM TYPICAL: Y

**W&L**

BGD



NAS CONTROLLER SOFTWARE CONFIGURATION MANAGEMENT TABLE			
APPLICATION	FILE NAME	DATE	DESCRIPTION
GFD EXEC	XXX	XX/XX/XXXX	GFD MODULE EXECUTIVE



NOTES: ALL WIRING THIS SHEET #16 AWG  
UNLESS NOTED OTHERWISE.  
#22 AWG WIRE FOR ALL RCDR JUMPERS  
WHEN MORE THAN ONE WIRE IS SHOWN IN A  
CAGE CLAMP CONNECTOR, A FERRULE CONNECTOR  
SHALL BE USED.

SW1 CURRENT 1/10 MA								
POSITION	1	2	3	4	5	6	7	8
CLOSED								
OPEN								

(2 MA)

SWITCH VALUES CLOSED  
POSITION (BINARY)

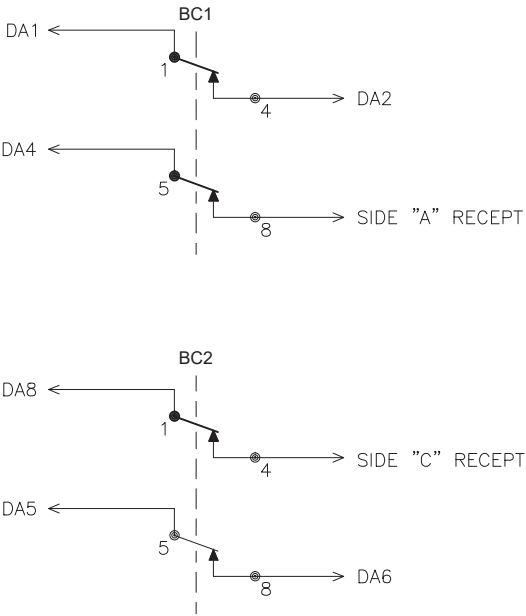
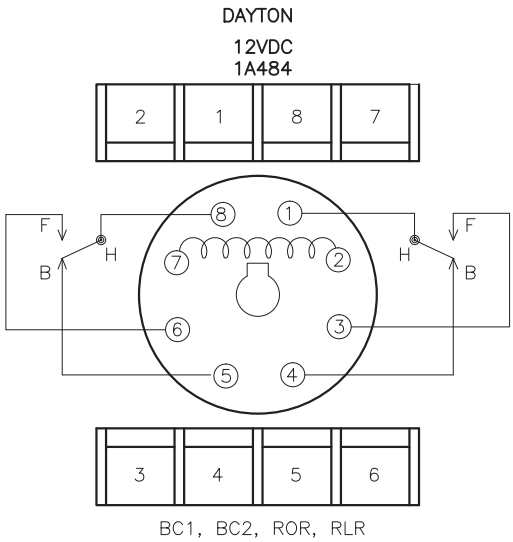
SW1 = 1  
SW2 = 2  
SW3 = 4  
SW4 = 8  
SW5 = 16  
SW6 = 32  
SW7 = 64  
SW8 = 128

SW1 CURRENT 1/10 MA								
POSITION	1	2	3	4	5	6	7	8
CLOSED								
OPEN								

(12 HOURS)

SWITCH VALUES CLOSED  
POSITION (BINARY)

SW1 = 1  
SW2 = 2  
SW3 = 4  
SW4 = 8  
SW5 = 16  
SW6 = 32  
SW7 = 64  
SW8 OPEN=HOUR CLOSED=DAYS



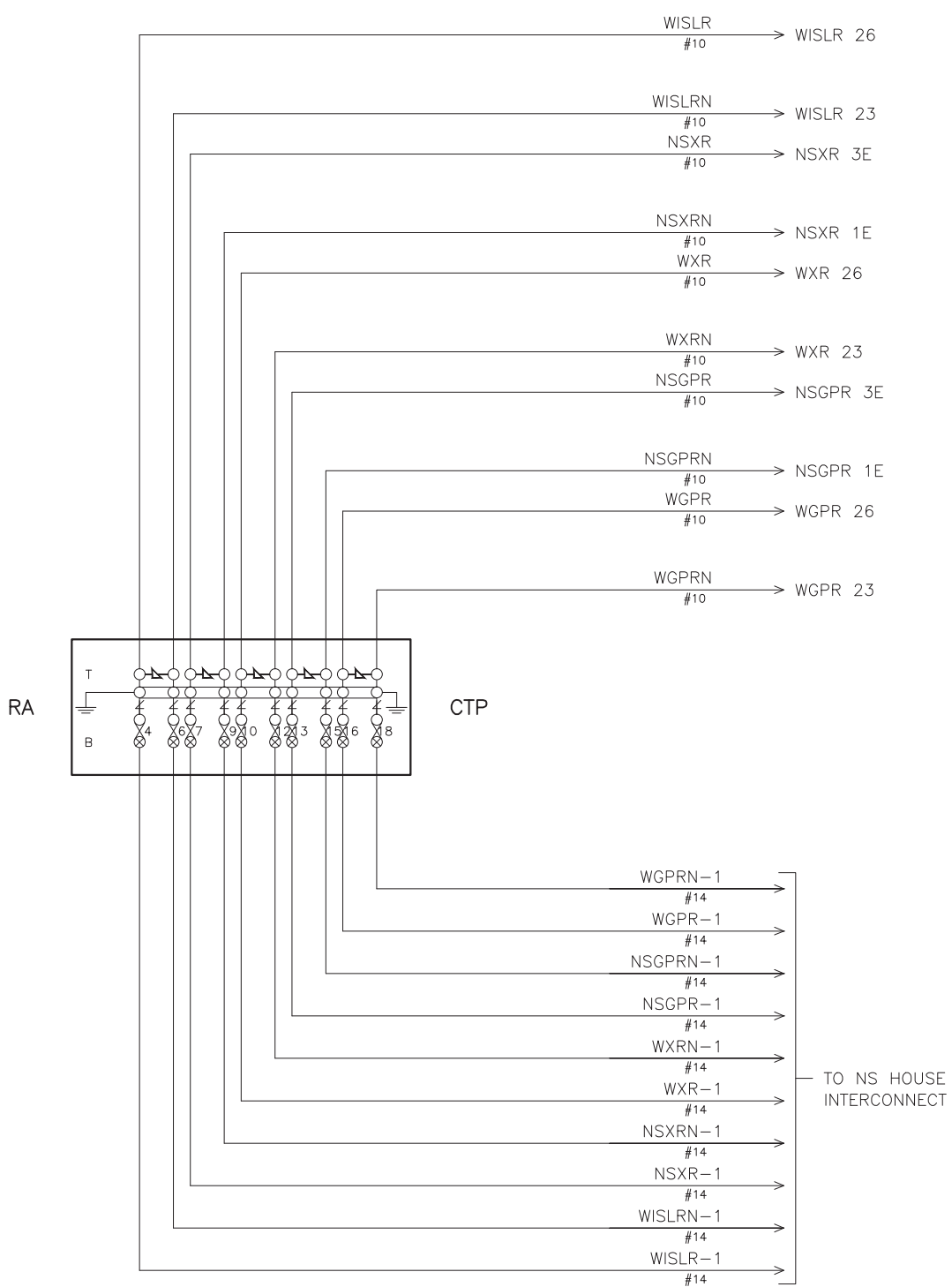
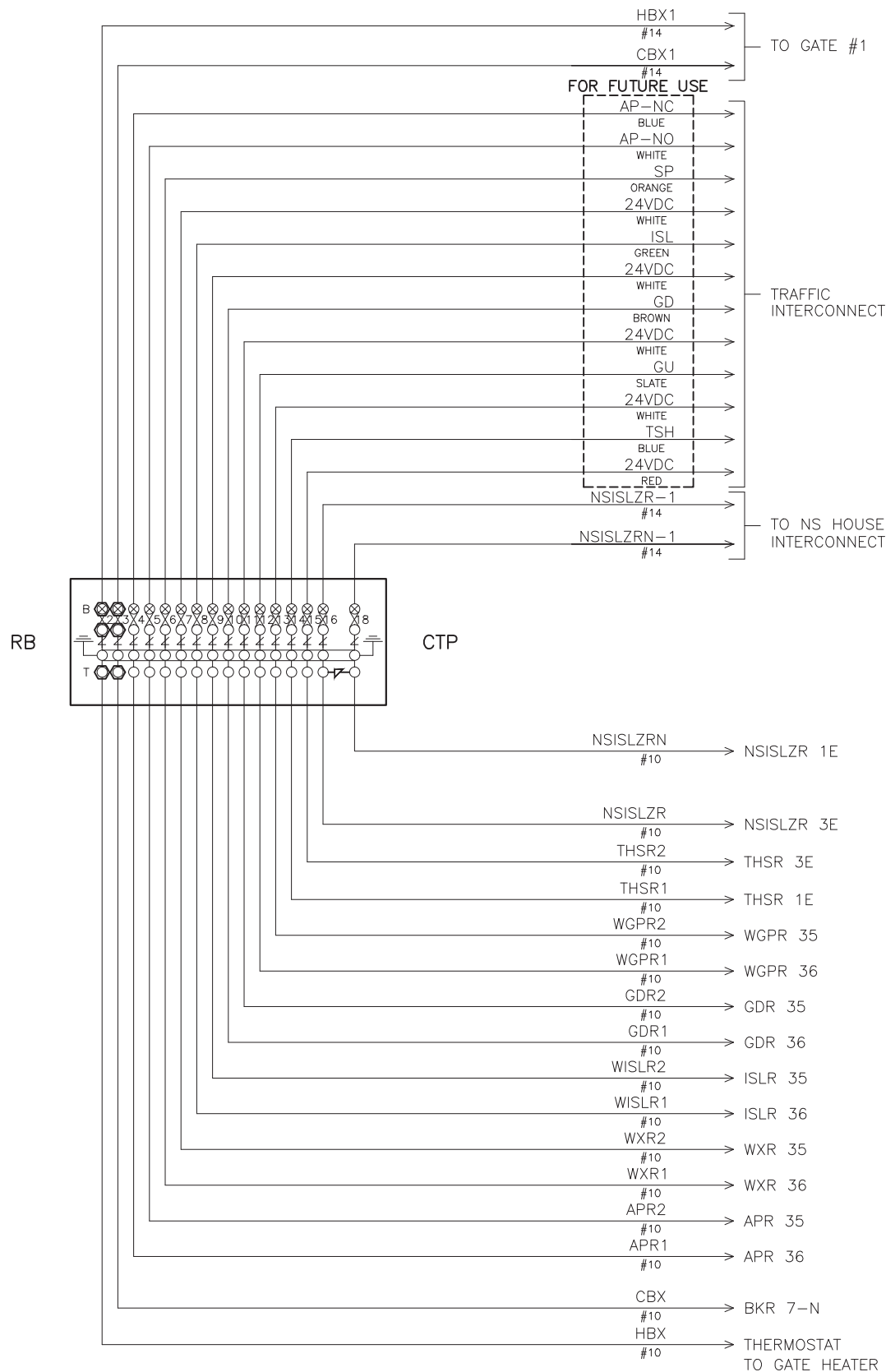
**W&LE**

Wheeling & Lake Erie Railway			
LOCATION		PUBLIC ROAD (CR 2) YORKVILLE, OHIO	
ORIGINAL DATE	09/07/2017	TITLE	BGD
DESIGNER	CTC	SUB	RIVER
DRAFTSMAN	CTC	RRMP	15.30
CHECKER	CTC	DOT NO.	473 002U
		SCALE	N.T.S.
		SHEET	10 of 20

REVISION  
BLOCK

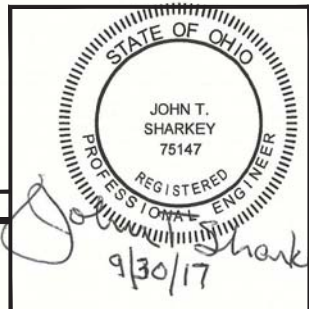
CHANGE FROM TYPICAL: Y





LEGEND:  
⊗ = INSULATED NUT

CHANGE FROM TYPICAL: Y



**W&LE**

**Wheeling & Lake Erie  
Railway**

LOCATION PUBLIC ROAD (CR 2) YORKVILLE, OHIO			
ORIGINAL DATE	09/07/2017	TITLE	CTP
DESIGNER	CTC	SUB	RIVER
DRAFTSMAN	CTC	RRMP	15.30
CHECKER	CTC	DOT NO.	473 002U
		SCALE	N.T.S.
		SHEET	12 OF 20

REVISION  
BLOCK


CONTACT	CLOSED	FUNCTION	TENSION
1B	75-90 DEG.	POWER DOWN	18-28 OZ.
1F	0-70 DEG.	SNUB DOWN	18-28 OZ.
2	0-86 DEG.	POWER UP	18-28 OZ.
3	0-10 DEG.	GATE DOWN	16-24 OZ.
4	82-90 DEG.	GATE CLEAR	16-24 OZ.
5	10-90 DEG.	BELL	16-24 OZ.
6	SPARE	SPARE	16-24 OZ.
7	0-2 DEG.	SNUB	16-24 OZ.

LEGEND:

 = INSULATED NUT

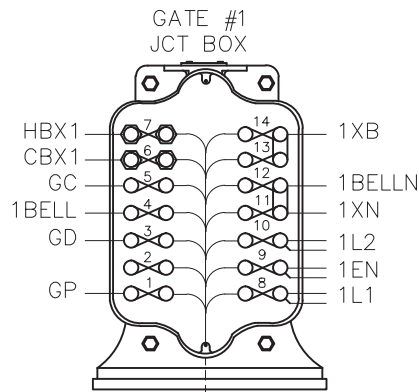
NOTES:

\* BELL TO BE ELECTRONIC.

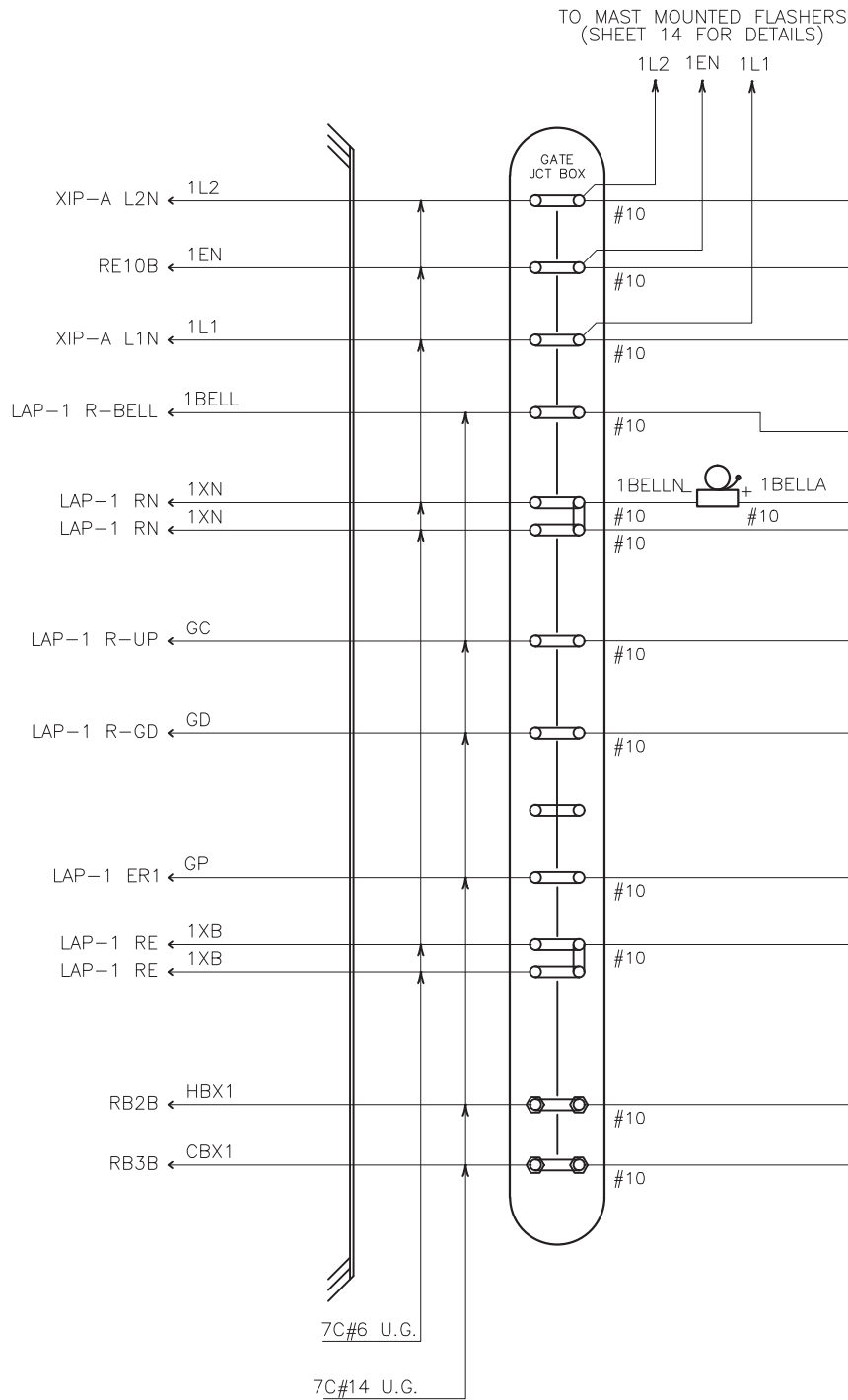
 = INTERNAL GATE WIRES THAT SHARE ELECTRICAL CONNECTIONS WITH OTHER WIRES THAT ARE ASSIGNED THE SAME NUMBER.

REFER TO SHEET 14 FOR GATE ARM LIGHT WIRING

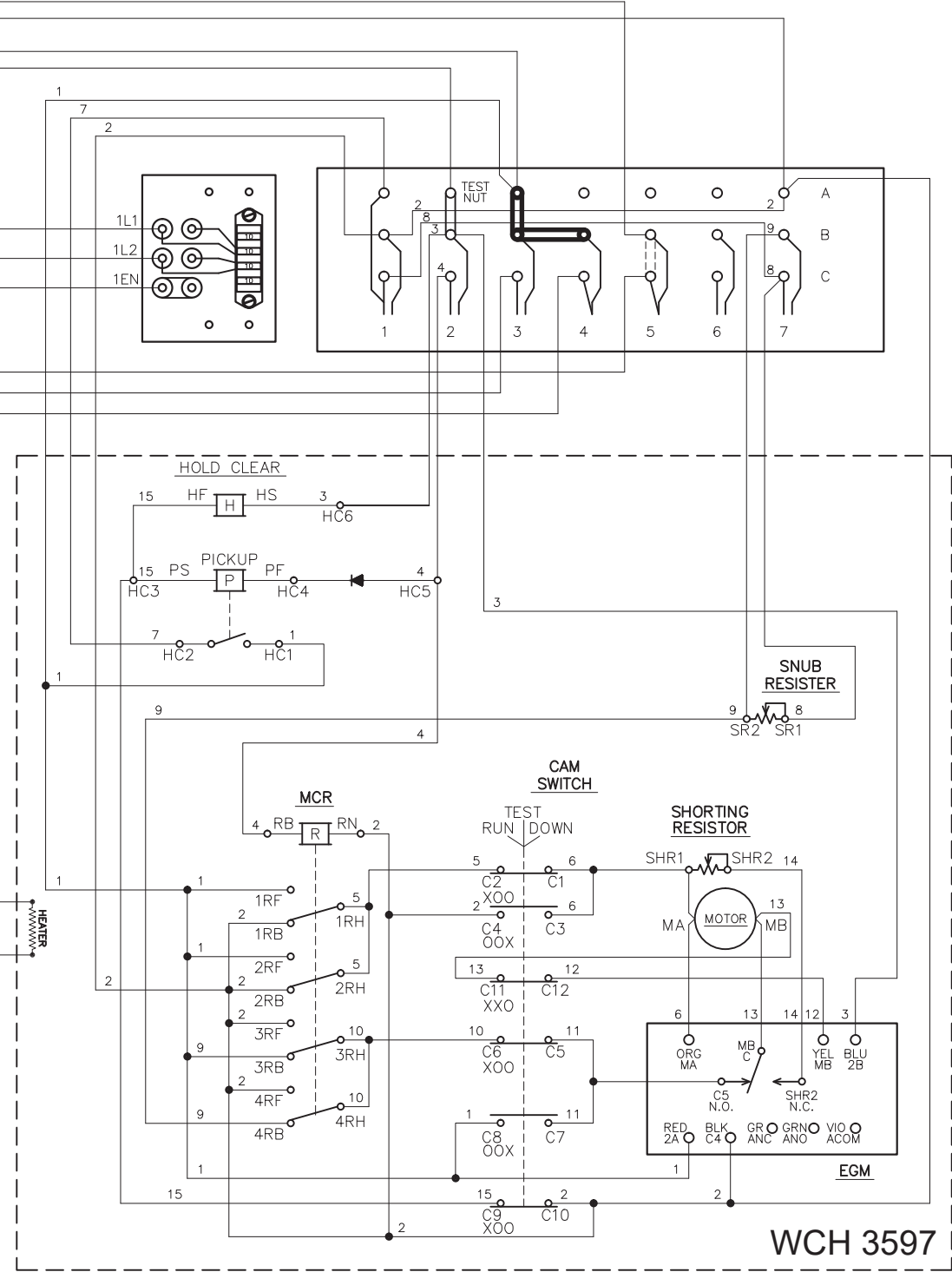
ADD STRAP FROM:  
3A TO 3B, 3B TO 4B



→ CABLES TO HOUSE

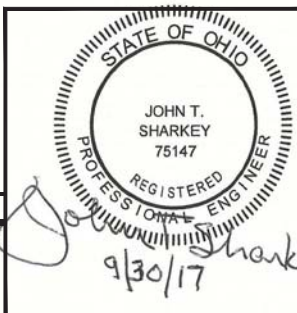


GATE #1



REVISION  
BLOCK

CHANGE FROM TYPICAL: N



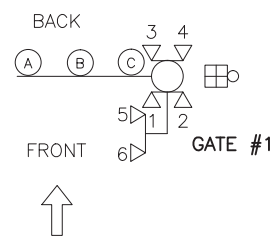
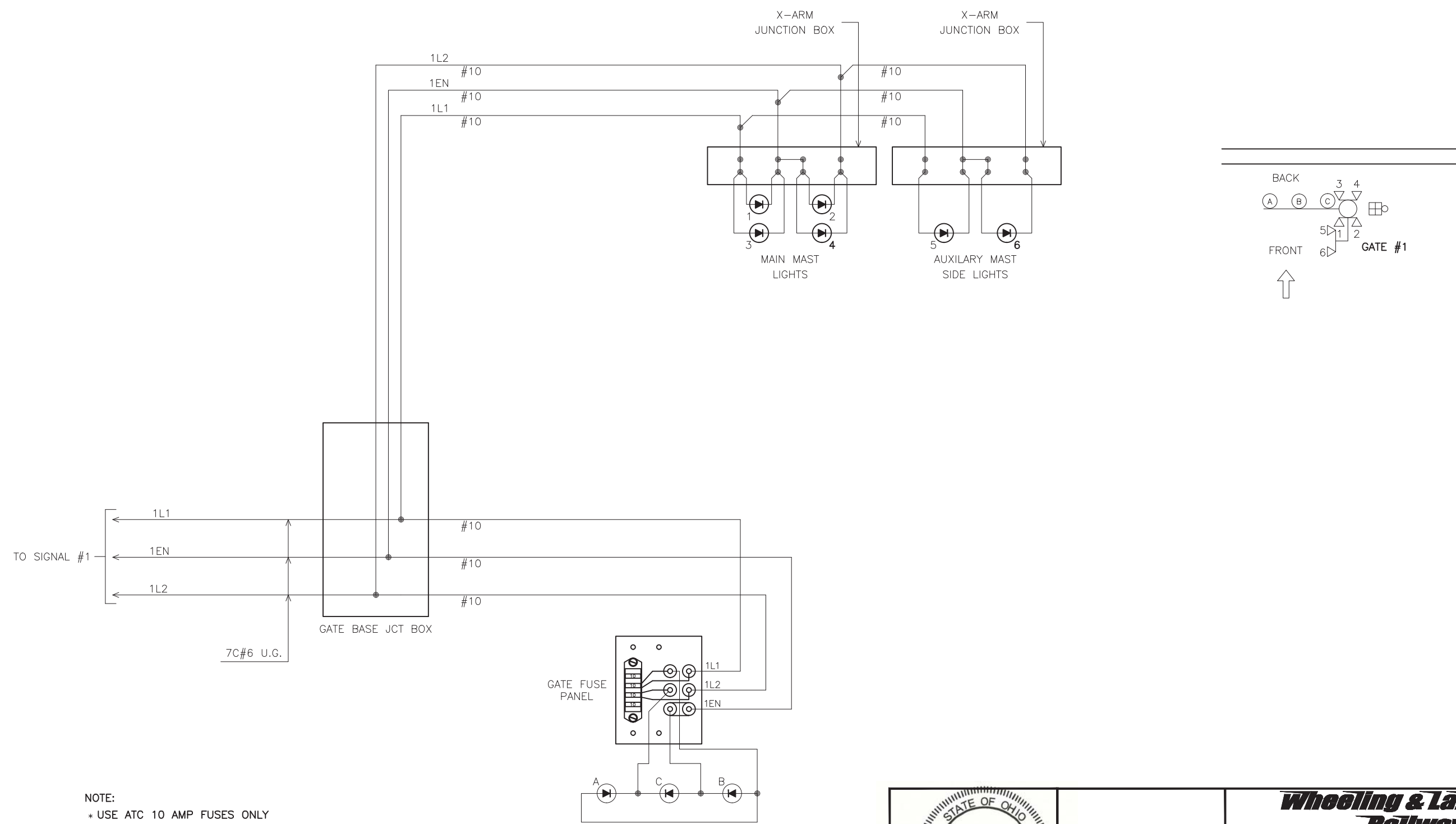
**W&LE**

**Wheeling & Lake Erie  
Railway**

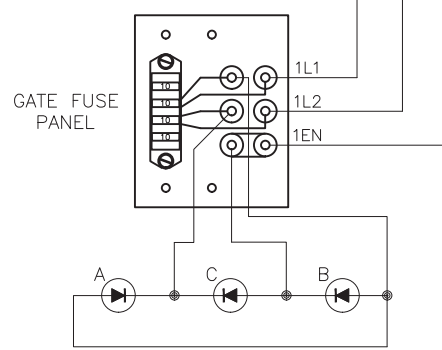
LOCATION		PUBLIC ROAD (CR 2) YORKVILLE, OHIO	
ORIGINAL DATE	09/07/2017	TITLE	GATE #1 MECHANISM (NEAR SIDE)
DESIGNER	CTC	SUB	RIVER
DRAFTSMAN	CTC	RRMP	15.30
CHECKER	CTC	DOT NO.	473 002U
		SCALE	N.T.S.
		SHEET	13 OF 20



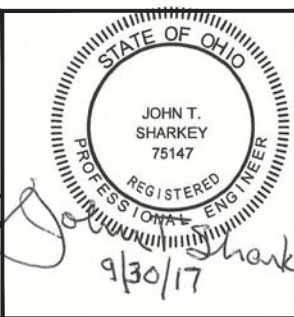
GATE #1



NOTE:  
\* USE ATC 10 AMP FUSES ONLY  
 IS LED SYMBOL ONLY. INSTALL ACCORDING TO MANUFACTURER'S INSTRUCTIONS.



CHANGE FROM TYPICAL: Y

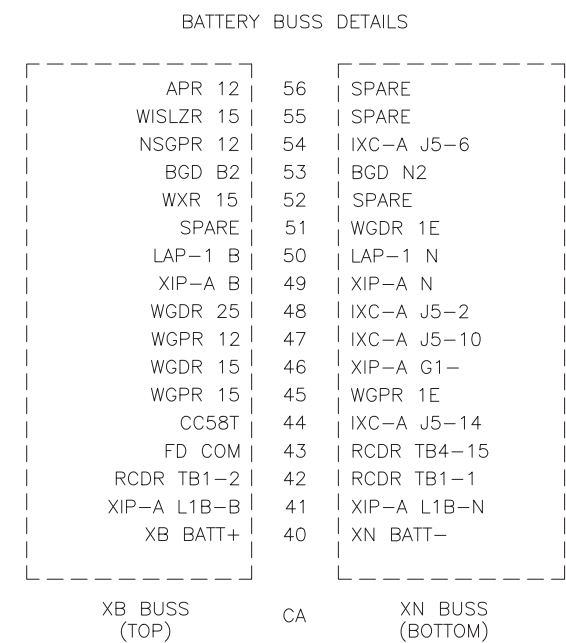
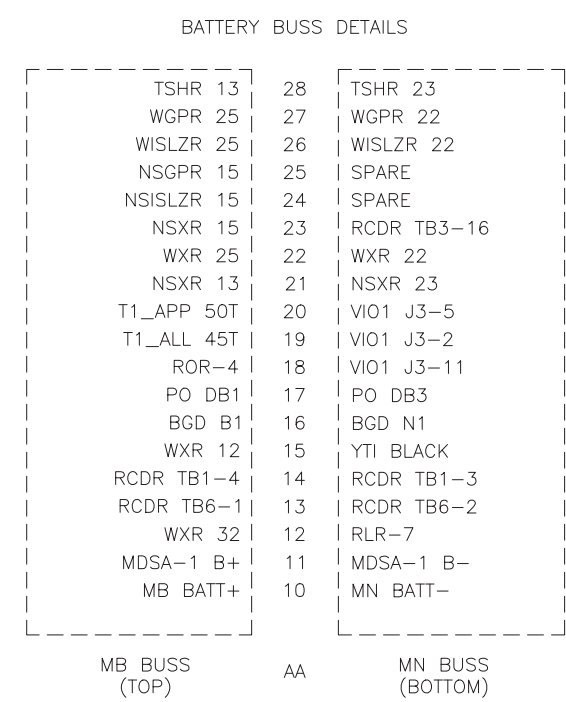


**Wheeling & Lake Erie**  
**Railway**

LOCATION		PUBLIC ROAD (CR 2) YORKVILLE, OHIO	
ORIGINAL DATE	09/07/2017	TITLE	GATE #1 LIGHTS (NEAR SIDE)
DESIGNER	CTC	SUB	RIVER
DRAFTSMAN	CTC	RRMP	15.30
CHECKER	CTC	DOT NO.	473 002U
		SCALE	N.T.S.
		SHEET	14 OF 20

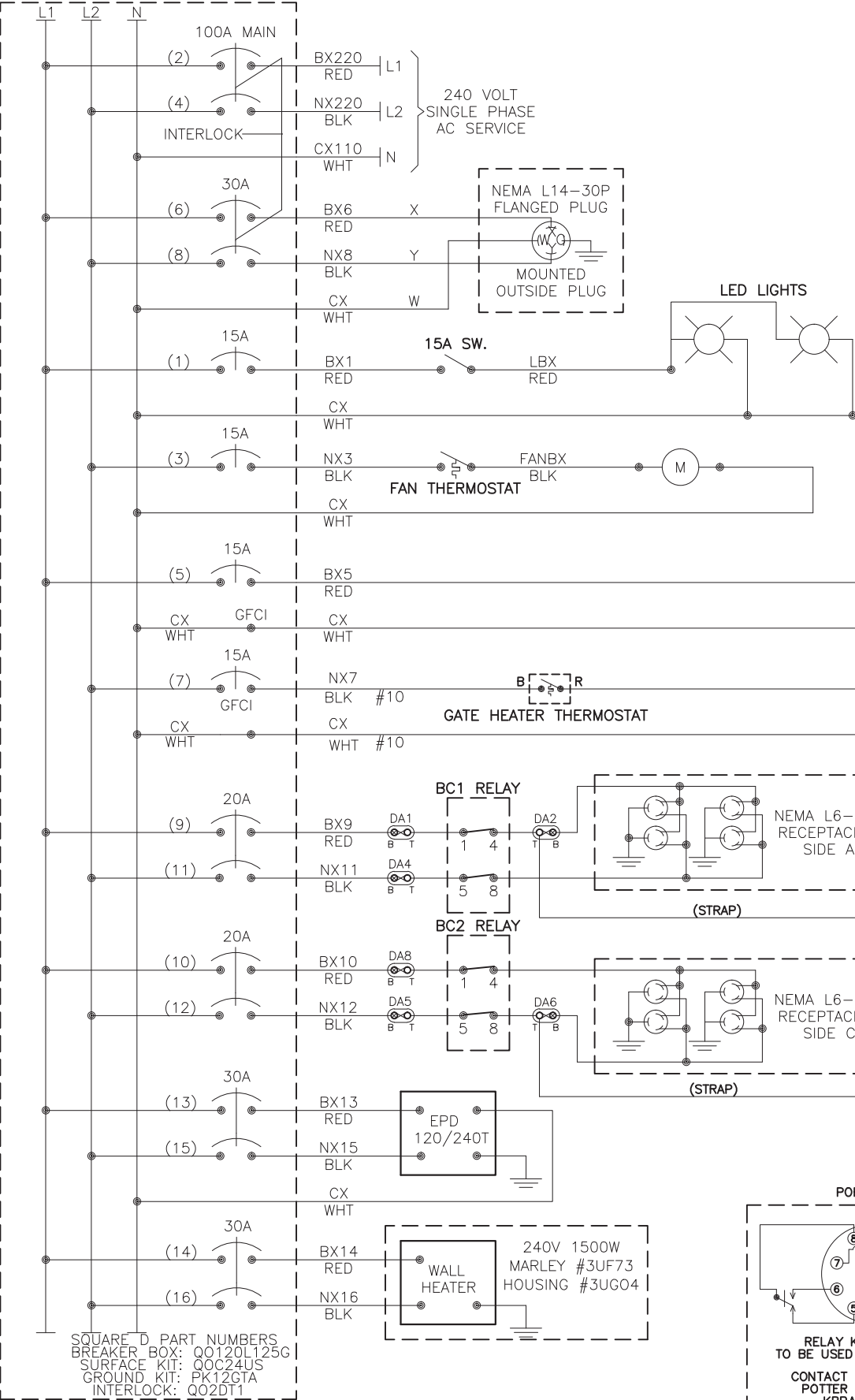
REVISION  
BLOCK



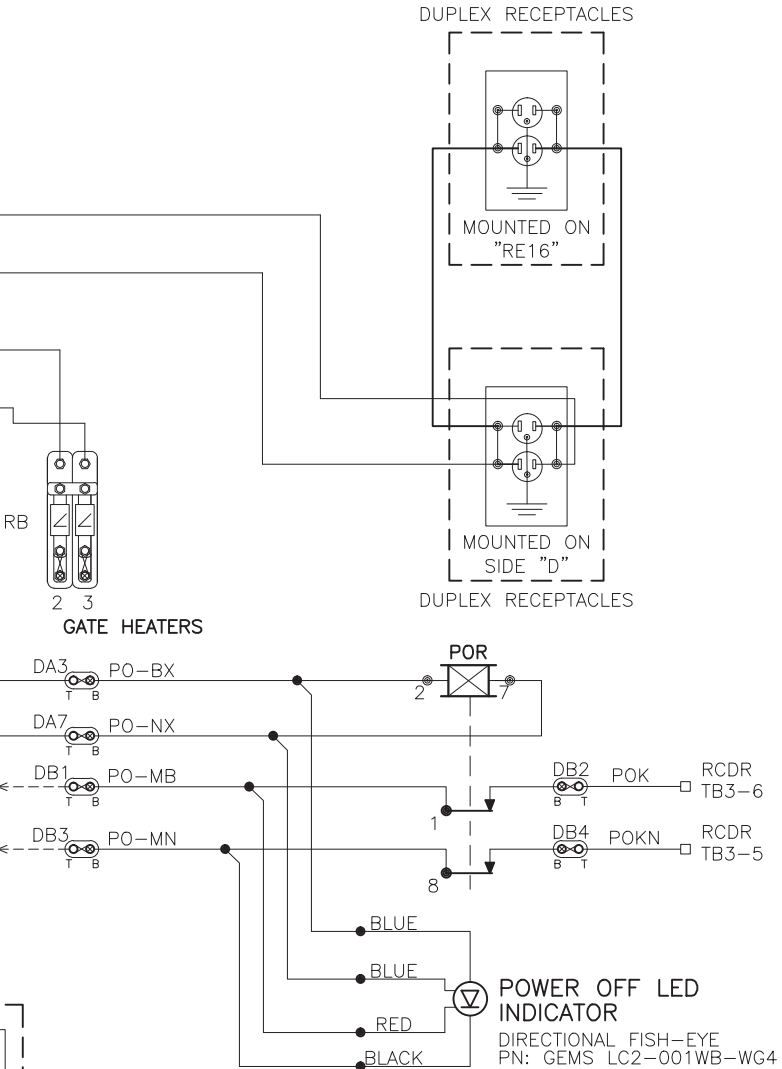


**W&LE**

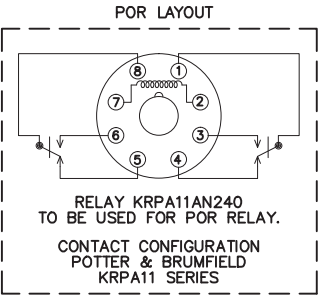
LOCATION			
PUBLIC ROAD (CR 2) YORKVILLE, OHIO			
ORIGINAL DATE	09/07/2017	TITLE	BATTERY CHARGER
DESIGNER	CTC	SUB	RIVER
DRAFTSMAN	CTC	RRMP	15.30
CHECKER	CTC	DOT NO.	473 00211
		CTC NO.	CN16161
		SCALE	1"=2'
		SHEET	15 OF 20



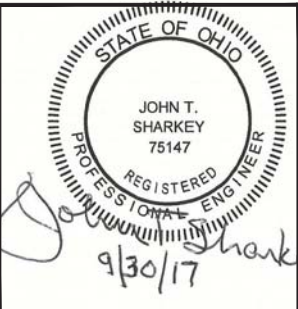
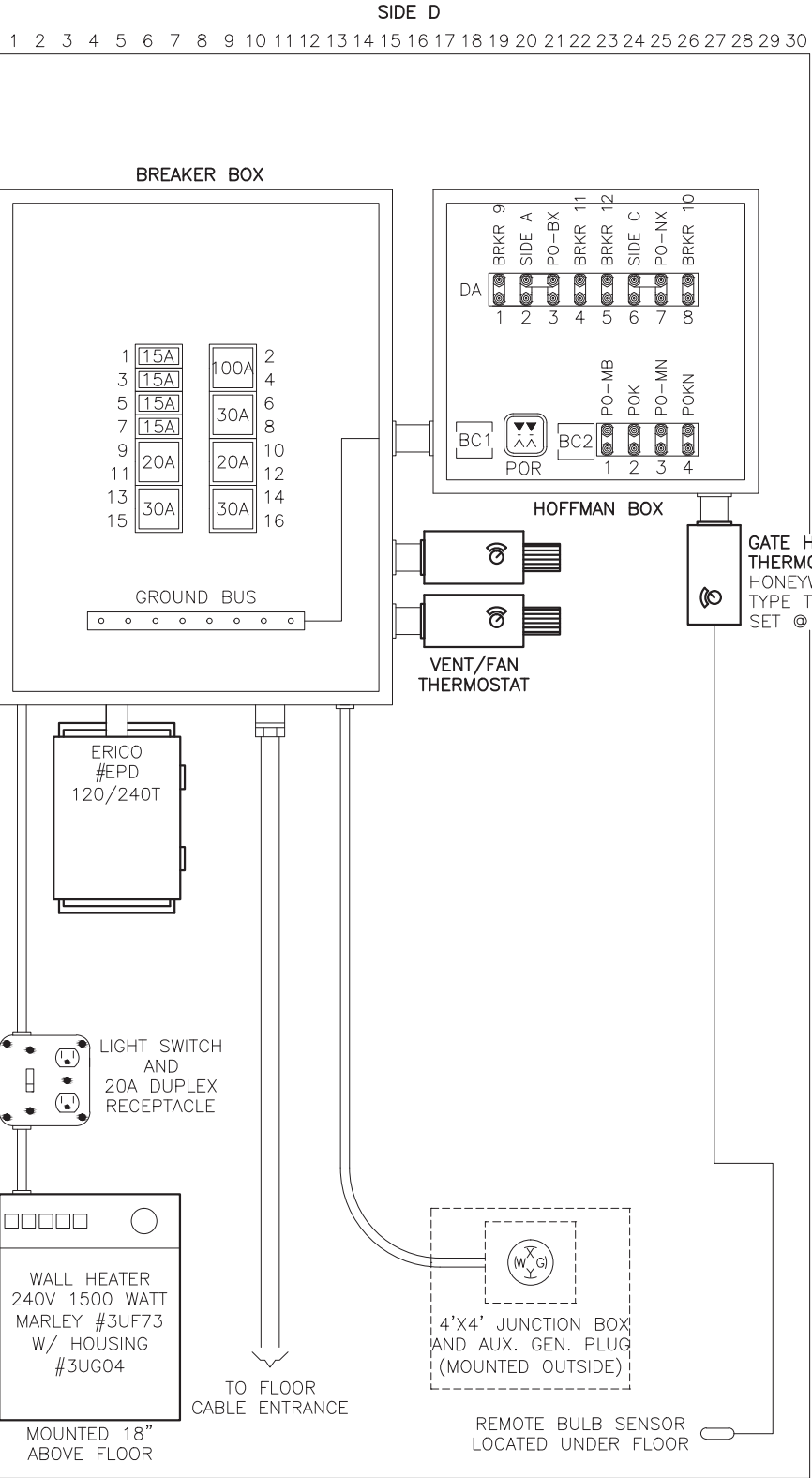
- NOTES:
- USE THE FOLLOWING COLOR CODE:  
GRN - GREEN - SAFETY EQUIPMENT GROUND  
WHT - WHITE - CX110 (NEUTRAL)  
BLK - BLACK - NX220 (L2)  
RED - RED - BX220 (L1)  
EXCEPTIONS TO THE ABOVE COLOR CODE ARE THE PRE-WIRED, SEALED ARRESTOR UNITS MOUNTED ON THE BREAKER BOX WHICH HAVE TWO BLACK AND ONE WHITE WIRE EACH.
  - MINIMUM WIRE SIZE:  
10 AMP - NO.14 AWG THHN OR THWN SOLID  
20 AMP - NO.12 AWG THHN OR THWN SOLID  
30 AMP - NO.10 AWG THHN OR THWN SOLID
  - GROUND FAULT INTERRUPT (GFCI) MUST BE USE ON ALL CIRCUITS SERVING CONVENIENCE OUTLETS AND ANY EQUIPMENT OUTSIDE THE BUNGALOW. RECEPTACLE MOUNTED GFCI MAY BE USE INSTEAD OF BREAKER TYPE.
  - ALL GROUND WIRES RUN TO BREAKER BOX GROUND BUS



- NOTE:
- WHEN AC IS ON LED IS ON
  - WHEN AC IS OFF LED FLASHES UNTIL BATTERY IS DISCHARGED.
  - WHEN AC IS OFF AND BATTERY IS DISCHARGED LED IS OFF.



SQUARE D PART NUMBERS  
BREAKER BOX: Q0120L125G  
SURFACE KIT: Q0C24US  
GROUND KIT: PK12GT  
INTERLOCK: Q02DT1

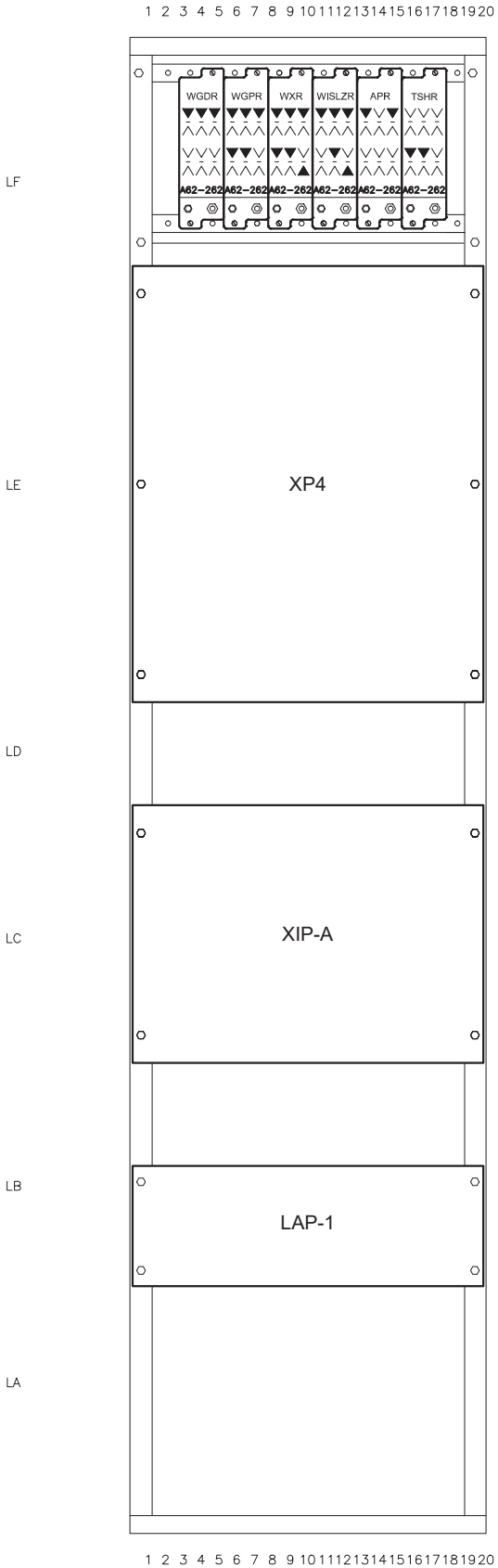


**W&LE**

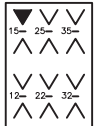
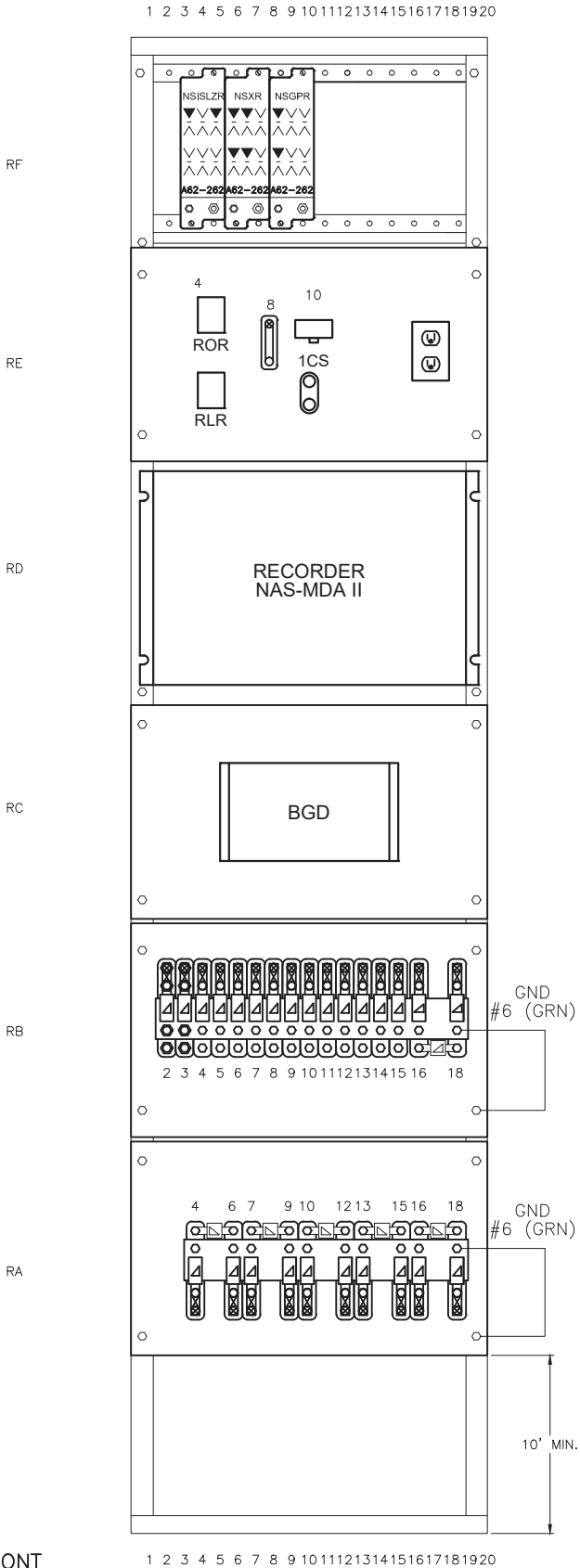
**Wheeling & Lake Erie  
Railway**

LOCATION		PUBLIC ROAD (CR 2) YORKVILLE, OHIO	
ORIGINAL DATE	09/07/2017	TITLE	AC POWER DISTRIBUTION
DESIGNER	CTC	SUB	RIVER
DRAFTSMAN	CTC	RRMP	15.30
CHECKER	CTC	DOT NO.	473 002U
		SCALE	1"=2'
		SHEET	16 OF 20

REVISION  
BLOCK



SIDE 'B' FRONT

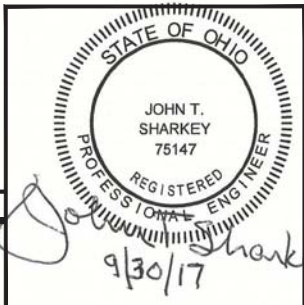


▼ = CONTACT USED  
∨ ==CONTACT NOT USED

RELAY CROSS REFERENCE	
GRS	SAFETRAN
A62-262	400000

REVISION  
BLOCK

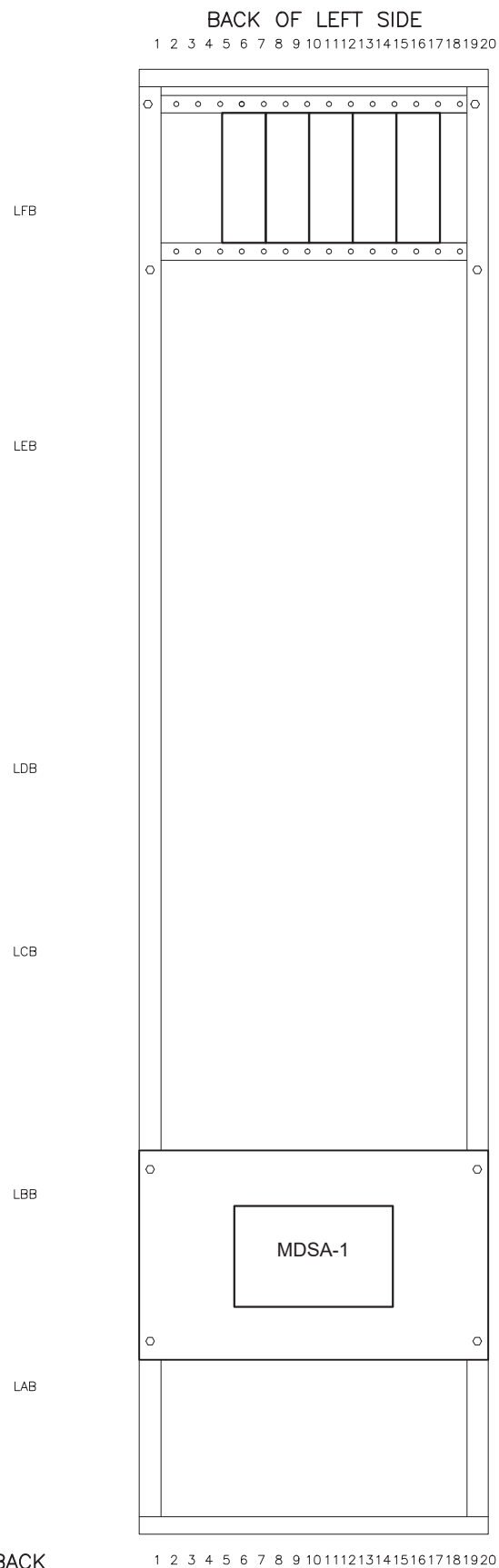
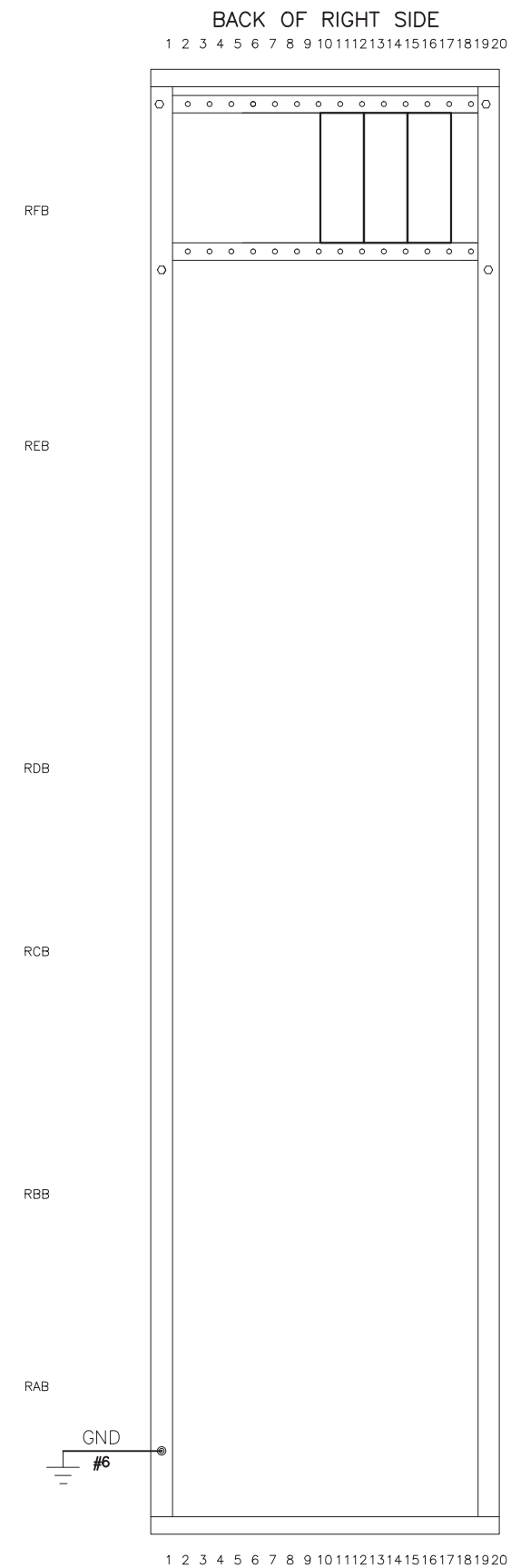
CHANGE FROM TYPICAL: Y



**W&LE**

**Wheeling & Lake Erie  
Railway**

LOCATION		PUBLIC ROAD (CR 2) YORKVILLE, OHIO	
ORIGINAL DATE	09/07/2017	TITLE	RACK FRONT VIEW
DESIGNER	CTC	SUB	RIVER
DRAFTSMAN	CTC	RRMP	15.30
CHECKER	CTC	DOT NO.	473 002U
		SCALE	1"=2'
		SHEET	17 OF 20



SIDE 'B' BACK

CHANGE FROM TYPICAL: Y



**W&LE**

**Wheeling & Lake Erie  
Railway**

LOCATION		PUBLIC ROAD (CR 2) YORKVILLE, OHIO	
ORIGINAL DATE	09/07/2017	TITLE	RACK BACK VIEW
DESIGNER	CTC	SUB	RIVER
DRAFTSMAN	CTC	RRMP	15.30
CHECKER	CTC	DOT NO.	473 002U
		SCALE	1"=2'
		SHEET	18 OF 20
		CTC NO.	CN16161

REVISION  
BLOCK

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65



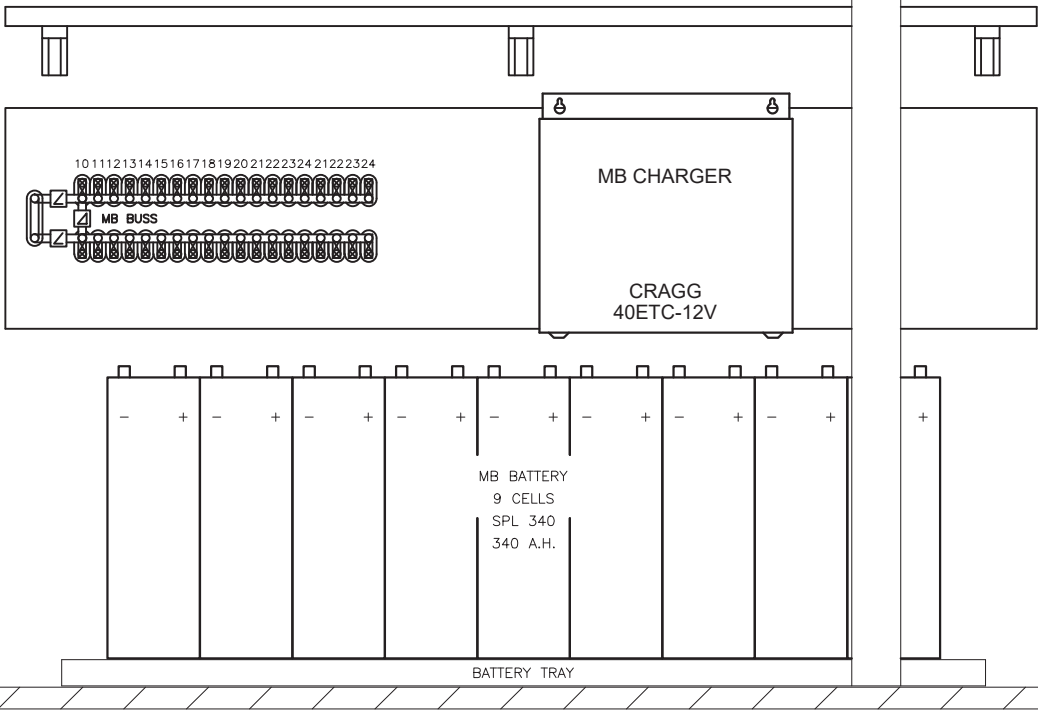
SIDE 'A'

AD

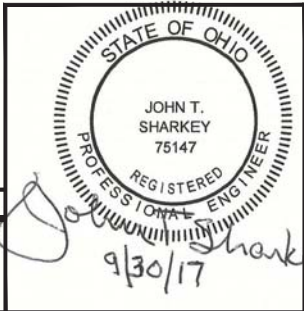
AC

AB

AA



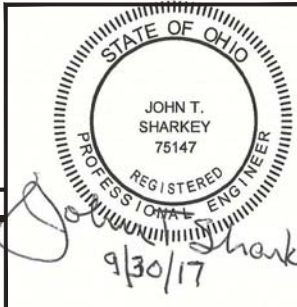
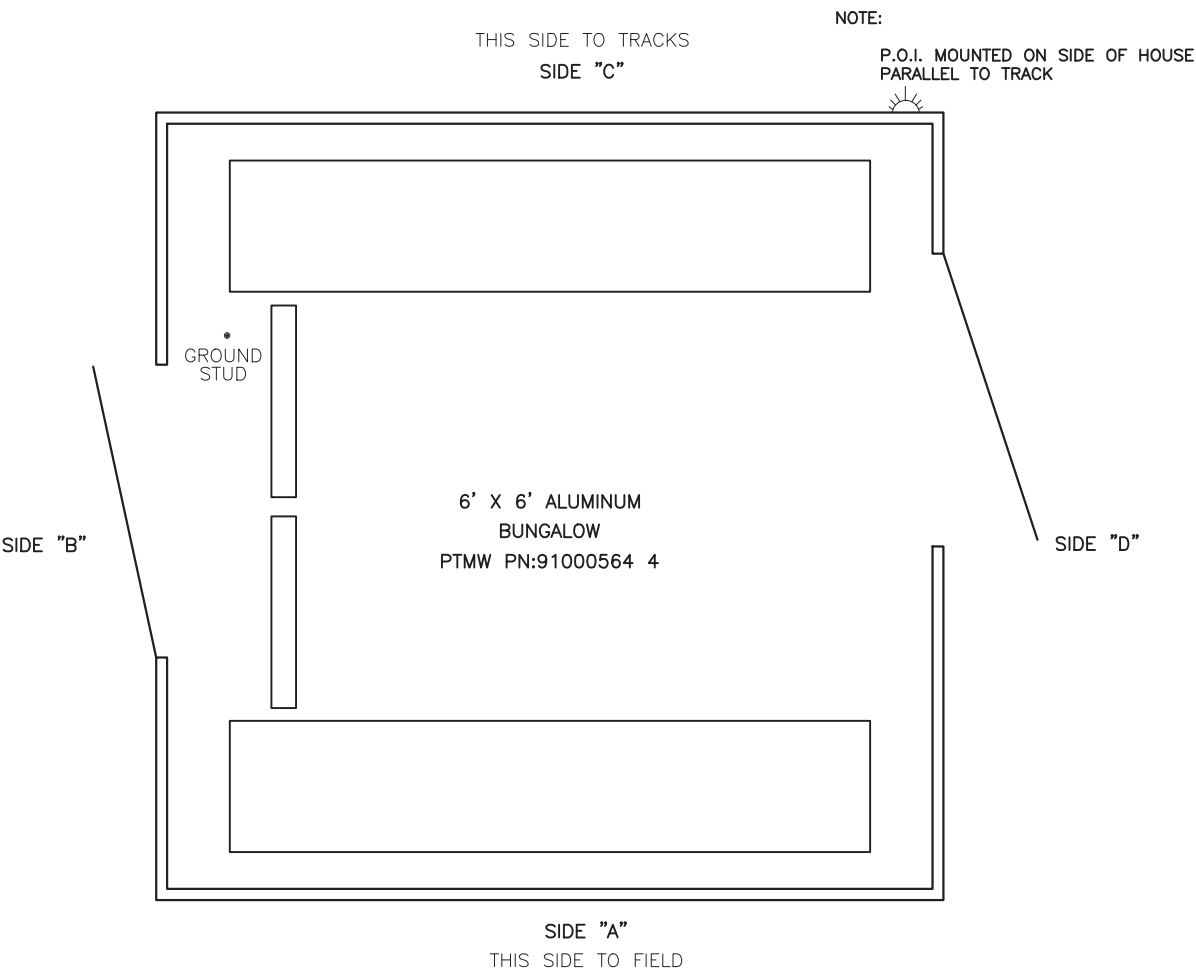
CHANGE FROM TYPICAL: N



**Wheeling & Lake Erie  
Railway**

LOCATION		PUBLIC ROAD (CR 2) YORKVILLE, OHIO	
ORIGINAL DATE	09/07/2017	TITLE	SIDE "A"
DESIGNER	CTC	SUB	RIVER
DRAFTSMAN	CTC	RRMP	15.30
CHECKER	CTC	DOT NO.	473 002U
		SCALE	1"=2'
		SHEET	19 OF 20
		CTC NO.	CN16161

REVISION  
BLOCK

**W&LE**

<h1 style="text-align: center; margin: 0;"> <i><b>Whoelling &amp; Lake Erie Railway</b></i> </h1>			
LOCATION <div style="text-align: center; padding: 10px;">                     PUBLIC ROAD (CR 2)                      YORKVILLE, OHIO                 </div>			
ORIGINAL DATE	09/07/2017	TITLE	
		SIDE "C"	
DESIGNER	CTC	SUB	RIVER
		CTC NO.	CN16161
DRAFTSMAN	CTC	RRMP	15.30
		SCALE	1"=2'
CHECKER	CTC	DOT NO.	473 002U
		SHEET	20 of 20

REVISION BLOCK								
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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

July 25, 2016

Mr. Tim Andrews  
Wheeling & Lake Erie  
100 East First St.  
Brewster Oh, 44613

473002 J

RE: Jefferson County, CR 2/Public Rd, DOT# ~~502-246N~~ BID# 103324

Dear Mr. Andrews:

A diagnostic review was held at the above grade crossing on April 19 2016. The crossing has been recommended for the installation of lights and gates.

Wheeling & Lake Erie (WE) is authorized to proceed with the site plans and cost estimates (PE) or bid package 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 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 James Tucker. James can be reached at (614) 398-6897, or [james.tucker@dot.ohio.gov](mailto:james.tucker@dot.ohio.gov), if you have any questions.

Sincerely,

Project Manager

C: Randall Schumacher, Supervisor, Rail Division, PUCO  
George Martin, Grade Crossing Planner, PUCO  
Susan Arduini, ORDC  
ORDC (file)

Attachment: 1 (diagnostic review form)



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

phone: 614.644.0306

IMPROVING RAIL TODAY FOR TOMORROW'S ECONOMY



# OHIO RAIL DEVELOPMENT COMMISSION

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

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

July 25, 2016

Mr. Stephen J. Klinger  
Norfolk Southern  
Administrator Grade Crossing Program  
1200 Peachtree Street NE, Box 123  
Atlanta, Ga. 30324

RE: County Rd 2/Public Rd. DOT# 503-246N, Jefferson County  
PID# 103324

Dear Mr. Klinger:

A diagnostic review was held at the above grade crossing on April 19, 2016. The crossing has been recommended for the installation of lights and gates.

Norfolk Southern (NS) is authorized to proceed with the site plans and cost estimates (PE) or bid package 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 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 James Tucker. James can be reached at (614) 398-6897, or [james.tucker@dot.ohio.gov](mailto:james.tucker@dot.ohio.gov), if you have any questions.

Sincerely,

Project Manager

C: Randall Schumacher, Supervisor, Rail Division, PUCO  
George Martin, Grade Crossing Planner, PUCO  
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ORDC (file)

Attachment: 1 (diagnostic review form)



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

phone: 614.644.0306

IMPROVING RAIL TODAY FOR TOMORROW'S ECONOMY





## Diagnostic Review Team Survey

**Reason for Survey:**

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

PUCO Formula Spring Pick

**Date:** 4/19/2016

### Location Data

Street or Road Name: Public Road			
Route/Road Number (i.e. Twp., Co., SR or US) CR 2		US DOT No.: 503246N	
County: JEF	Township:	City: (In or Near) Village of Yorkville	
Railroad Name: Norfolk Southern	Railroad Division: Pittsburgh	Branch/Line Name: River I.T.	
Nearest RR Timetable Station: Yorkville		RR Milepost: 33.09	

### On-Site Review Team

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

1. James Tucker ORDC 614-398-6897 James.Tucker@dot.ohio.gov
2. GEORGE MARTIN PUCO 614-752-9107 GEORGE.MARTIN@PUC.STATE.OH.US
3. Tim Andrews WLE 330-417-5541 TANDREWS@WLER.WY.COM
4. Karen Varga Yorkville Council Pres. 940-859-237 mother & two e comcast.net
5. Ron Emerson " " member 27408992943 LEXUS FABLE 44@comcast.net
6. John Morelli Chief Yorkville PD 740-859-2947 YorkvillePolice@hotmail.com
7. DAVE MCINTYRE AGS NS RR 330-221-6811 DAVID.MCINTYRE@NSCORP.COM
8. Justin Donley NS Maintainer 740-491-0176 justin.donley@ns.com
9. Wayne D McAdley 330-204-9041 Wayne.McAdley@NScorp.com

### Existing Traffic Control Devices

Type of Warning Devices	Installed?		Quantity/Comments
Advance Warning Signs (condition?)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	gave LHA P.U.C.O. Paper
'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 type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
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	
Interconnected Highway Traffic Signal	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Mast-Mounted Flashing Lights	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Cantilever Flashing Lights	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Number: Length:
Side Lights	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	1 Fourth St. WILE MAST
Automatic Gates	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Number: Length:
Bells	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Number: 2
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 (7/16/97)	
Hazard Ranking	1428 Date Run: 3/30/2016	3/06/3 6/2/10

**Railroad Data**

Railroad Characteristics	Initial Information (from database)	Revised
Total trains per day	7	① 7 th week
< 1 per day		Times vary per R.R.
Day thru trains	1	
Night thru trains	3	
Daytime switching movements	2	
Nighttime switching movements		
Total number of tracks	2	
Number of main tracks	2	
Number of other tracks	1	0
Maximum train speed	25	
Typical train speed	25	
Amtrak		

If non-gated crossing, is clearing sight distance adequate in all quadrants? (See Table 1) ☒ Yes ☐ No

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

Can one or more tracks be eliminated through the crossing? ☐ Yes ☒ 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 Yorkville

Roadway Characteristics	Initial Information (from database)	Revised
Average daily traffic	2994 (2011)	Possible Increase
Highway paved	X 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: _____ ft. 43'		
Number of highway lanes	2	
Urban or Rural	Rural	
Vehicle Speed: _____ MPH	25	
School Bus Operation: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes _____ Amount 12 total		
Hazardous Materials Trucks: <input type="checkbox"/> No X Yes .07 Amount		
Shoulders: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes		
Is the shoulder surfaced? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes		
Is there existing guardrail along roadway in crossing vicinity? <input type="checkbox"/> No <input checked="" 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 checked="" 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 checked="" type="checkbox"/> None
Pedestrians: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	
Is sidewalk present? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	
Is there a nearby intersection that could cause queuing over the crossing? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes If yes, Distance <u>118'</u> Is this intersection signalized? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes Are the signals currently interconnected with the existing crossing warning devices? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes Is there a 'Do not Stop on Track' sign? <input checked="" type="checkbox"/> No <input type="checkbox"/> 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? <input checked="" type="checkbox"/> No <input type="checkbox"/> 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? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes Explain reasons: _____	
<b>Type of Development</b>	
<input type="checkbox"/> Open Space <input type="checkbox"/> Industrial <input checked="" type="checkbox"/> Residential	<input type="checkbox"/> Institutional <input checked="" type="checkbox"/> Commercial Location of nearby schools: <u>1 mile North Tiltonsville</u>
<b>Utility Information</b>	
Is commercial power available? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes Utility Provider (Company Name) <u>AEP</u> Phone Number _____ Nearest Available Power Source _____	
What other utilities are present? (add locations to sketch) <input checked="" 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) <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Unknown	
Comments: _____	

## Potential Red Flags / Project Challenges

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

LHA STATES That Traffic does NOT queue over the Tracks

Crossing Consolidation or Closure:

N/A

Real Estate or ROW:

Limited R.O.W. for placement of Bungalow

Culverts / Drainage / Ballast Conditions:

N/A

Roadway and/or Sidewalks:

SW Quad Sidewalk might be impacted

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

w/LE and N.S. Share crossing

Environmental:

N/A

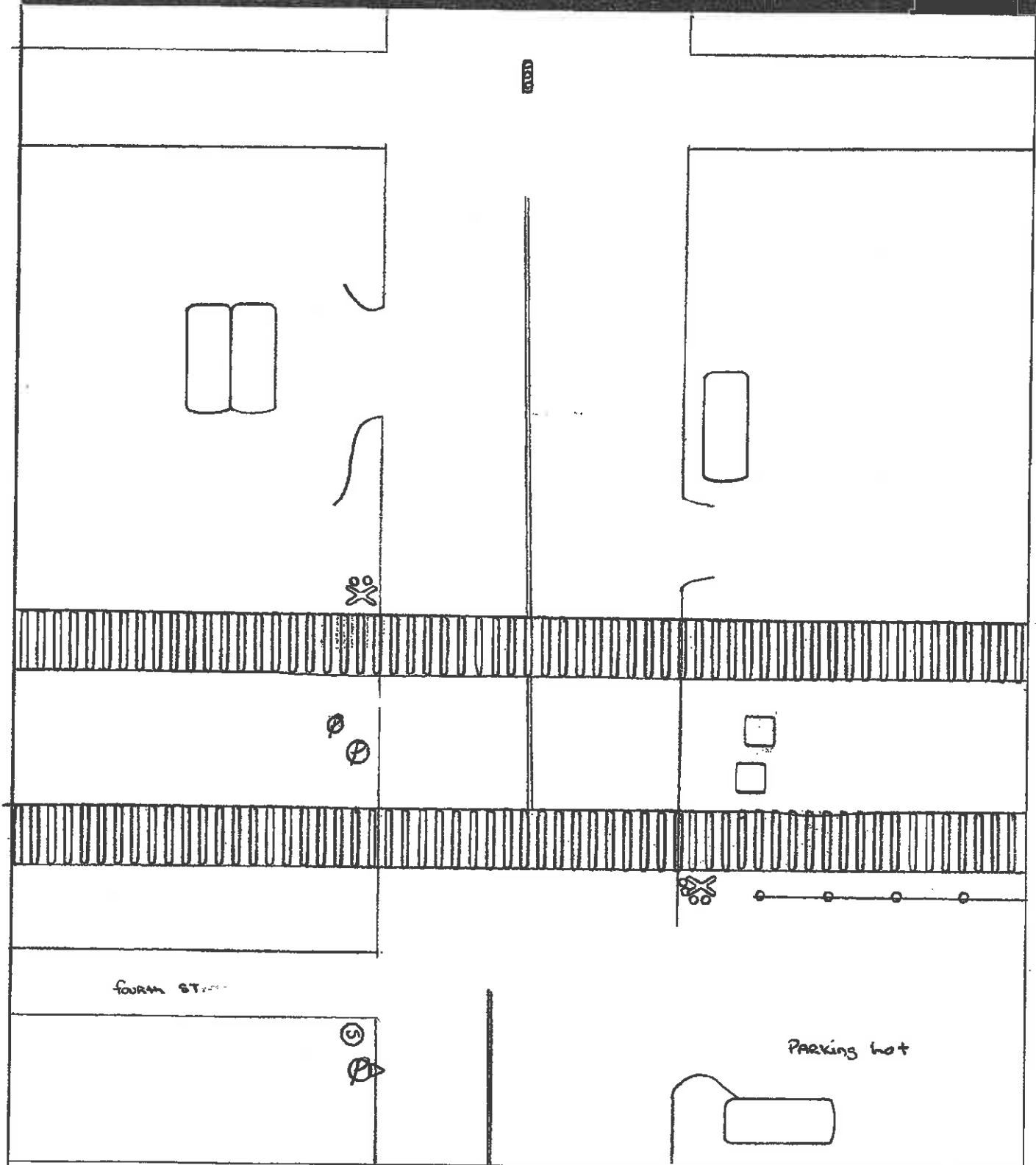
Other:

Power lines will need to be raised in S.W. Quad.

Ref. Public Rd

# 503246N

Field Sketch



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

Sketch by: \_\_\_\_\_

## Diagnostic Team Recommendations

	Quadrants Needed
<input checked="" type="checkbox"/> Install/upgrade active devices	
<input type="checkbox"/> Automatic Flashing Lights (AFLS)	
<input type="checkbox"/> AFLS / Cants	
<input checked="" type="checkbox"/> AFLS / Gates	(SW/NS) + NE for wheeling
<input type="checkbox"/> AFLS / Gates / Cants	
<input checked="" type="checkbox"/> Bells / number	2
<input checked="" type="checkbox"/> Upgrade circuitry / type	
<input checked="" type="checkbox"/> Sidellights	1 for fourth + 1 for alley
<input checked="" type="checkbox"/> Guardrail Needed	NE Quad wheeling
<input checked="" type="checkbox"/> Install/Replace curb	(Curb SW Quad NS) (Curb NE wheeling)
<input type="checkbox"/> Bungalow placement & offset from rail & highway	
<input type="checkbox"/> Other (define)	


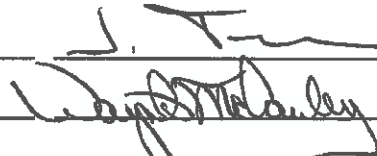


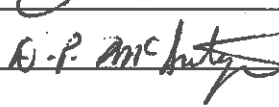


Comments: MS 4000 OR MS 2000 for NS circuitry  
XP 4 for wheeling.

☐ Install/upgrade traffic signal preemption

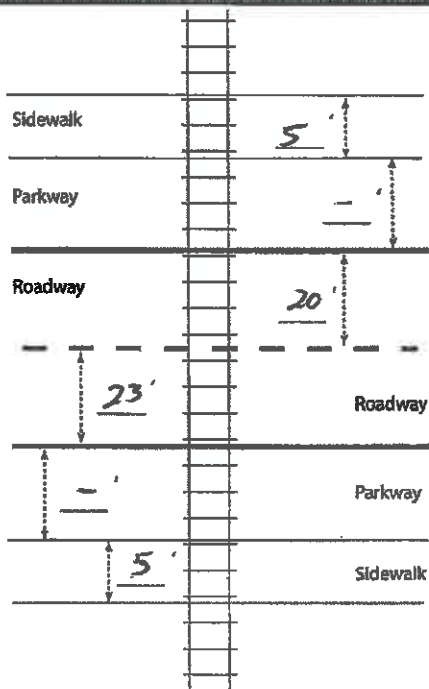
☐ No improvements needed

☐ Other (define)

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

## Field Dimensions



\* limited R.O.W. for Bungalow placement. The current Bungalow is set between the NS and WLE Lines.

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**

**7/20/2018 1:02:05 PM**

**in**

**Case No(s). 18-1135-RR-FED**

Summary: Application In the Matter of a Request for the Installation of Active Warning Devices at the Norfolk Southern Railway & Wheeling & Lake Erie Railway Crossings, on Public Road DOT#503-246N & DOT#473-002U in Jefferson County, Ohio. electronically filed by Mrs. Jill A Henry on behalf of PUCO/Rail Division