

# Memo

To: Docketing Division  
From: Jill Henry, Rail Specialist, Rail Division  
Cc: PUCO Legal Department  
Date: 2/6/2019

Re: PUCO Case No. 19-365-RR-FED- In the Matter of a Request for Upgrades to the Active Warning Devices at the Norfolk Southern Railway Crossing, Grace Street DOT#524-340K, in Cuyahoga County, Ohio.

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On December 11, 2017, the Ohio Rail Development Commission (ORDC) authorized funding for Norfolk Southern Railway (NS), Wheeling & Lake Erie Railway (WE) and Cleveland Commercial Railroad (CCRL) to install upgrades at Grace Street DOT#524-340K, in Cuyahoga County, Ohio. This crossing has three main tracks. NS maintains two tracks at the crossing. WE operates and maintains the third track and CCRL operates on the third track. The existing warning devices are interconnected and NS, WE, and CCRL will need to coordinate on this project. The crossing was surveyed, on May 9, 2017, and found to warrant the upgrades. The electric utility provider for this crossing is Cleveland Electric Illuminating-First Energy Corp.

NS will install LED lights, a new crossing controller and add curbing to existing devices. WE will install a new crossing surface and new warning devices. The project will be paid for with federal funds and is actual cost. The plans and estimates in the amount of \$150,582.00 for NS and \$373,124.98 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  
Kurt Young  
Public Projects Engineer  
1200 Peachtree Street NE  
Box 123  
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

Wheeling & Lake Erie Railway Company  
Tim Andrews  
Signals & Communications Supervisor  
100 E. First Street  
Brewster, Ohio 44613

Cleveland Commercial Railroad  
Mike Kole  
President  
7634 Bond Street  
Glenwillow, OH 44139

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

City of Bedford  
Clint Bellar  
Service Director  
120 Solon Road  
Bedford, OH 44146

Cleveland Electric Illuminating-First  
Energy Corp.

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

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

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

**BY:** James Tucker, Project Manager, ORDC

**SUBJECT:** Cuyahoga County, West Grace Street,  
Norfolk Southern / Wheeling & Lake Erie  
DOT#524 340K, PID#106422

**DATE:** December 13, 2018

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The Ohio Rail Development Commission (ORDC) established a diagnostic survey at the subject location on May 9, 2017. The Diagnostic Team recommended that the Wheeling & Lake Erie crossing receive upgrades to the flashing lights, roadway gate and circuitry along with a new surface. An amendment to the Diagnostic recommended that the Norfolk Southern crossing receive L.E.D and circuitry upgrades. Copies of the diagnostic review form and the plan and estimates are attached for each railroad.

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 nine months. This construction 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.

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

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

Thank you for your assistance with these matters.

Attachment: Diagnostic Review  
Plan & Estimate

c: Jill Henry, PUCO  
Heather Hamilton, ORDC  
ORDC Project Manager (file)



# OHIO RAIL DEVELOPMENT COMMISSION

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

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

December 13, 2018

Mr. Kurt Young  
Public Projects Engineer  
1200 Peach Street NE, Box 123  
Atlanta, Ga. 30309

RE: Cuyahoga County, West Grace Street, DOT #524340K  
PID#106422, NS Project 10.1101

Dear Mr. Young:

The plan dated July 15, 2018 and estimate dated August 9, 2018, for the referenced project has been reviewed and is acceptable. NS may proceed with the construction of the proposed L.E.D. and circuitry upgrades 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 \$150,582.00. 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.ohio.gov](mailto:jill.henry@puco.ohio.gov) NS's project foreman will also notify the same of any stops and re-starts of the work activity and of the date work was completed for the project.
2. NS will arrange for utilities to be located at the project site by the Ohio Utilities Protection Service (OUPS) prior to any construction activities at the site. Utilities that are not participating members of the service must be contacted directly by NS.
3. NS's project foremen will notify 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

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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,



James Tucker  
Project Manager

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



09-Aug-18

**Detailed Estimate for Grade Crossing Warning Devices**

City/State: BEDFORD, OH  
MilePost: RD-109.88  
State Proj. No.: PID 106422  
S&E Proj. No.: 10.1101  
Man Days: 48

Road: W. GRACE  
DOT/AAR: 524340K  
County: CUYAHOGA  
File Number: 061-10.897

| ***Purchases - Others***   |              |
|--|--------------|
| Meals and Lodging:   | \$6,565.71   |
| Rental of Equipment:   | \$8,975.30   |
| (2 Trucks, 1 Backhoe w/ Trailer<br>and 1 Pipe-Pusher for 8 Days) |              |
| Construction Supervision Vehicle:                                | \$1,372.92   |
| Purchases - Other Total:   | \$16,913.93  |
| ***Material And Additives***                                     |              |
| Material Cost:   | \$76,962.00  |
| Sales and Use Tax:   | \$6,157.00   |
| Material Handling Freight:                                       | \$7,696.22   |
| Material Total:  | \$90,815.22  |
| ***Labor And Additives***  |              |
| Labor Cost:  | \$15,456.00  |
| (6 man crew at \$1,932.00 a day for: 8 days)                     |              |
| Payroll Tax & Overheads:   | \$13,177.79  |
| Preliminary Engineering:   | \$9,703.91   |
| Construction Supervision:  | \$4,514.70   |
| Labor Total:   | \$42,852.40  |
| Project Cost:  | \$150,581.55 |
| Scrap / Salvage Credit:  | \$0.00       |
| Project Total:   | \$150,582.00 |

Estimated on: 09-Aug-18

Estimated by: q2suj

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



## Norfolk Southern Railway



### Highway Crossing Signalization Program - Material List

Do not substitute items without permission from S & E Engineering

|  |            |
|--|------------|
| City:  | BEDFORD    |
| Road:  | W. GRACE   |
| Mile Post:   | RD-109.88  |
| Drawing Number:  | 35121099   |
| State ProjectNumber:   | PID 106422 |
| County:  | CUYAHOGA   |
| A A R Number:  | 524340K    |
| Project Number:  | 10.1101    |
| File Number:   | 061-10.897 |
| New File Number:   | CX0116828  |
| WBS:   | F-05013    |
| Store Number:  | S805       |
| Supervisor:  | A.J. PEASE |
| Tax Code:  | 3500       |
| Vendor to supply the following copies after pricing:<br><br>1 Set - Material Management with original Invoice<br>2 Sets - with plans shipped in car with material<br>1 Set - S&E Gen. Supt. Construction w/copy of invoice |            |

Location: BEDFORD

OH

S&amp;E Proj. No.: 10.1101

AFE No.: F-05013

Drawing No.: 35121099

Store No.: S805

P.O.Number:

Date Required:

Date Shipped:

Vendor: Railroad Signal Design

| Qty. | Class-Item-CD | UI | Price<br>per Item | Total Price | Item Description  | Quantity<br>Shipped | Quantity Installed |  |  | Quantity<br>Returned<br>(Credit) | Special<br>Instructions |
|------|---------------|----|-------------------|-------------|---|---------------------|--------------------|--|--|----------------------------------|-------------------------|
| 750  | 465-954727-4  | LF | \$1.83            | \$1,372.50  | CABLE, UG 7 CONDUCTOR NO 14 AWG SOLID EACH<br>CONDUCTOR WITH 5/64 IN INSULATION 10 MIL FLAT   |                     |                    |  |  |                                  |                         |
| 1    | 000-000001-4  | EA | \$20,000.00       | \$20,000.00 | CURBING/SIDEWALK WORK, INSTALL/REPLACE  |                     |                    |  |  |                                  |                         |
| 1    | 670-986650-4  | EA | \$370.21          | \$370.21    | DISPOSAL, CONSTRUCTION DEBRIS AND CLEANING X'ING<br>EQUIPMENT CONTAINER   |                     |                    |  |  |                                  |                         |
| 1    | 670-000004-4  | EA | \$700.00          | \$700.00    | FCC LICENSE FOR MONITOR/RADIO   |                     |                    |  |  |                                  |                         |
| 1    | 670-005377-4  | EA | \$338.00          | \$338.00    | GATE ARM, ALUMINUM, 17-24 FT, ARM ASSEMBLY, INCLUDES<br>GATE GUARD FOR GATE LIGHT CABLE. HIGH INTENSITY<br>VERTICAL STRIPES.  |                     |                    |  |  |                                  |                         |
| 2    | 670-245212-4  | EA | \$10,865.86       | \$21,731.72 | GCP4000 - 2 TRK (5TC) - NON-REDUNDANT (INCL. 5 TRK<br>CHASSIS A80440, 2 TRK MODS. A80418, 0 SSCC, 1 CPU A80403,<br>NO SEAR, 1 DISPLAY A80407)   |                     |                    |  |  |                                  |                         |
| 1    | 670-562486-4  | EA | \$2,868.68        | \$2,868.68  | GCP4000 - CHASSIS - 2 TRK REDUNDANT CHASSIS ONLY - NO<br>CARDS - IPN: A80465  |                     |                    |  |  |                                  |                         |
| 2    | 670-394191-4  | EA | \$2,203.50        | \$4,407.00  | GCP4000 - MODULE - CPU2+ MODULE - IPN: A80403   |                     |                    |  |  |                                  |                         |
| 1    | 670-505810-4  | EA | \$1,385.24        | \$1,385.24  | GCP4000 - MODULE - DISPLAY MOD. FOR 2, 5 & 6 TRK CHASSIS<br>- IPN: A80407   |                     |                    |  |  |                                  |                         |
| 4    | 670-396564-4  | EA | \$3,430.68        | \$13,722.72 | GCP4000 - MODULE - TRACK MODULE - IPN: A80418   |                     |                    |  |  |                                  |                         |
| 1    | 670-526349-4  | EA | \$1,205.09        | \$1,205.09  | GCP4000 - MODULE - TRANSFER MOD. FOR 2 TRK CHASSIS -<br>IPN: A80468   |                     |                    |  |  |                                  |                         |
| 2    | 670-016300-4  | EA | \$88.55           | \$177.10    | INDUCTOR, SIMULATED TRACK HARMON 227032-006 (1750')   |                     |                    |  |  |                                  |                         |
| 1    | 670-123298-4  | EA | \$344.59          | \$344.59    | KIT, HARDWARE SUPPLIES REQUIRED X'ING P'CKAGES. WEB<br>CONNECTORS FOR SHUNT(8EA) TAPE, AMPS,P'GUM<br>PAINT,SLEEVES,TAGS,GLUE, 100 EA WHITE TAGS, )NE CAN<br>BLUE MARKING PAINT ETC... |                     |                    |  |  |                                  |                         |
| 1    | 670-092155-4  | EA | \$160.00          | \$160.00    | LAMP ASSY, LED GATE ARM KIT (INCLUDES 3 LAMPS<br>COMPLETE WITH CABLES AND MTG. HARDWARE) REC #: 9298-<br>1120   |                     |                    |  |  |                                  |                         |
| 8    | 670-005514-4  | EA | \$166.50          | \$1,332.00  | LAMP ASSY, LED INSERT, 12" GE LED LAMP ASSEMBLY FOR<br>INCANDESCENT CHANGEOUT   |                     |                    |  |  |                                  |                         |
| 1    | 670-113448-4  | EA | \$910.23          | \$910.23    | SEARIII, ( VHFC w/ANTENNA ) - VHF COMMUNICATOR,<br>SAFETRAN P/N A80276, 1/ PER CROSSING   |                     |                    |  |  |                                  |                         |

APPROVED BY STATE

APPROVED BY RAILROAD

CAR NUMBER

SEAL NUMBER



Location: BEDFORD

OH

S&amp;E Proj. No.: 10.1101

AFE No.: F-05013

Drawing No.: 35121099

Store No.: S805

P.O.Number:

Date Required:

Date Shipped:

Vendor: Railroad Signal Design

| Qty. | Class-Item-CD | UI | Price<br>per Item | Total Price | Item Description  | Quantity<br>Shipped | Quantity Installed |               |               | Quantity<br>Returned<br>(Credit) | Special<br>Instructions |
|------|---------------|----|-------------------|-------------|---|---------------------|--------------------|---------------|---------------|----------------------------------|-------------------------|
|      |               |    |                   |             |   |                     | Date<br>Quan.      | Date<br>Quan. | Date<br>Quan. |                                  |                         |
| 8    | 670-586967-4  | EA | \$42.98           | \$343.84    | SHUNT COVER W/LAG SCREWS, 19"X19", SERRMI #40271,<br>ORDER 1 PER SHUNT                |                     |                    |               |               |                                  |                         |
| 4    | 670-016312-4  | EA | \$697.62          | \$2,790.48  | SHUNT, MULTI-FREQ. #250849-004 FSS-1E ALSTOM NARROW<br>BAND (211, 285, 348, 430, 525) |                     |                    |               |               |                                  |                         |
| 4    | 670-016315-4  | EA | \$700.70          | \$2,802.80  | SHUNT, MULTI-FREQ. #250849-005 FSS-1F ALSTOM NARROW<br>BAND (430, 525, 645, 790, 970) |                     |                    |               |               |                                  |                         |

Total Material: \$76,962.20

APPROVED BY STATE

APPROVED BY RAILROAD

CAR NUMBER

SEAL NUMBER

| REV | DATE     | CKD BY |
|-----|----------|--------|
| 1   | 11/22/96 | HE1    |
|     |          |        |
|     |          |        |
|     |          |        |
|     |          |        |
|     |          |        |
|     |          |        |

NOTES

- = FOR MATERIAL REFERENCE SEE PLAN S-1002
- ⊗

 = DENOTES TWISTED PAIR
- GROUND IN ACCORDANCE WITH CS-9001-A

DESIGN: 07-15-18  
PROJECT: 10.1101  
FILE: CX0116828  
INSTALL 4000 GCP AT GRACE ST.  
DESIGN BY RSD/JAR RED-IN YELLOW-OUT

INDEX

| SH. NO. | CONTENTS   | REVISION NO. |   |   |   |   |   |   |
|---------|--|--------------|---|---|---|---|---|---|
|         |  | 1            | 2 | 3 | 4 | 5 | 6 | 7 |
| 1       | TITLE, NOTES, INDEX AND REVISIONS                      | ✓            | ✓ | ✓ |   |   |   |   |
| 2       | LOCATION PLAN  | ✓            |   | ✓ |   |   |   |   |
| 3       | POWER DISTRIBUTION                                     | ✓            |   | ✓ |   |   |   |   |
| 4       | 4000 GCP 2-TK CHASSIS & MODULE LAYOUT                  | ✓            | ✓ | ✓ |   |   |   |   |
| 5       | 4000 GCP PROGRAMMING                                   | ✓            |   | ✓ |   |   |   |   |
| 6       | 4000 CONNECTORS FOR TRACK MODULES & CPU MODULE         | ✓            |   | ✓ |   |   |   |   |
| 7       | GATE CONTROL, LIGHTING CIRCUITS AND CABLE TERMINATIONS | ✓            |   | ✓ |   |   |   |   |
| 8       | MODEL S40 GATE MECHANISM                               | ✓            |   | ✓ |   |   |   |   |
| 9       | FRONT AND RIGHT WALL LAYOUT                            | ✓            |   | ✓ |   |   |   |   |
| 10      | RELAY FUNCTIONS  | ✓            |   | ✓ |   |   |   |   |
| 11      | TERMINAL BOARD ARRANGEMENT                             |              |   | ✓ |   |   |   |   |
| 12      | HOUSE LAYOUT   |              |   | ✓ |   |   |   |   |
| 13      | OUT OF SERVICE (OOS) INSTRUCTIONS                      |              |   | ✓ |   |   |   |   |

3000D2 SAFETRAK GRADE CROSSING PREDICTOR CIRCUITS

REVISIONS

|  |          |     |     |
|--|----------|-----|-----|
| 1  | 12-31-99 |     |     |
| NEW PLAN DRAWN ACCOUNT CAB<br>SIGNAL ADDED.                                      |          |     |     |
| FILE NO: R-0921<br>WO/AFE NO: 99-8091<br>IN SERVICE: 09-17-01<br>PER: J.J. BENTZ |          |     |     |
|  |          | SWS | SWS |
| 2  | 09-22-00 |     |     |
| PLAN REVISED ACCOUNT OF<br>INSTALLATION OF C.P. MAPLE.                           |          |     |     |
| FILE NO: R-1065<br>WO/AFE NO: 99-8091<br>IN SERVICE: 09-17-01<br>PER: J.J. BENTZ |          |     |     |
|  |          | SWS | SWS |
| 3  | 07-15-18 | TAH | JAR |
| PLAN REVISED ACCOUNT OF<br>INSTALLATION OF 4000 GCP AND<br>LED UPGRADE.          |          |     |     |
| PROJECT NO: 10.1101<br>IN SERVICE:<br>PER:                                       |          |     |     |
|  |          |     |     |

AAR/DOT\*524340K



DEARBORN DIVISION

CLEVELAND LINE

BEDFORD, OHIO

GRACE STREET

TITLE, NOTES, INDEX AND REVISIONS

PROPERTY PENNSYLVANIA R.R.

APPROVED: 

PE CAD

CHIEF ENGINEER - C&S

ISSUE DATE: DECEMBER 31, 1999

3512-1099

SWS

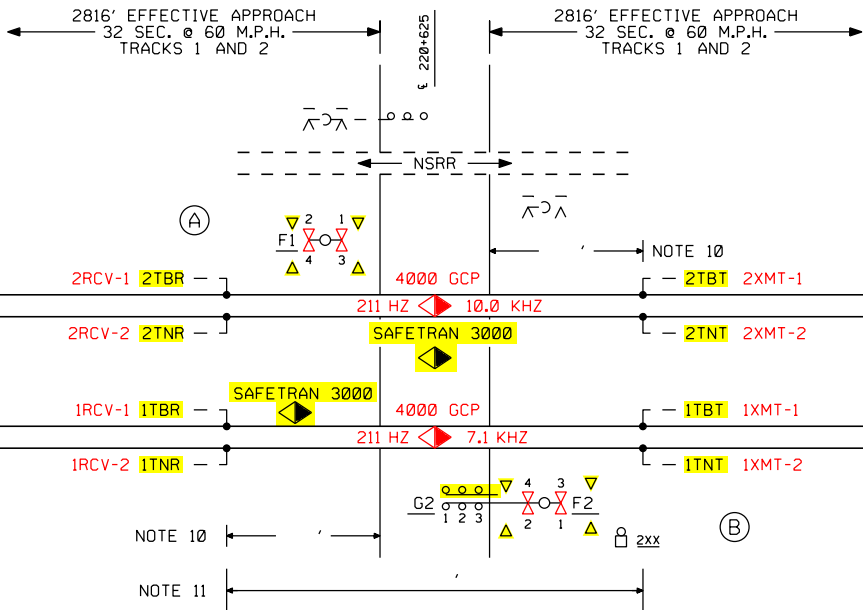
SWS

SWS

REV. 3

07-15-18

SHEET 1 OF 10 13



- NOTES:
1. MAX. TRAIN SPEED 55 M.P.H.
  2. LATITUDE N 41° 23' 41" LONGITUDE W 81° 32' 30"  
ELEVATION 958'
  3. SIGNAL "B" TO HAVE BELL.
  4. LOCATE U/G UTILITIES & CABLE BEFORE DIGGING.
  5. CROSSING LOCATED IN CUYAHOGA COUNTY.
  6. NEAREST STREET ADDRESS IS  
54 W. GRACE STREET 87' (SOUTH)
  7. NEAREST INTERSECTING STREET IS  
EDGEWOOD AVENUE (SOUTH)
  8. DISTANCE TO NEAREST INTERSECTING  
STREET IS 120 FT.
  9. UTILITIES IN THE AREA - CONTACT:  
POWER-OHIO EDISON (888) 544-4877  
FIBER-CENTURYLINK (877) 837-5738  
NS FIBER-T-CUBED  
FIBER-LEVEL 3 COMM. (877)-253-8353  
PHONE-AT&T (888) 757-6500  
WATER/SEWER-CITY OF BEDFORD (440) 735-6525
  10. 25' MINIMUM
  11. 120' MINIMUM
  12. EACH PAIR OF TRACK WIRES (TRANSMIT AND RECEIVE) SHOULD BE  
TWISTED AT LEAST TWO TURNS PER FOOT. THE TRANSMITTER PAIR  
SHOULD BE SEPARATED TO THE MAXIMUM EXTENT POSSIBLE FROM  
THE GCP RECEIVER PAIR BELOW GROUND AND IN INSTRUMENT HOUSING.  
TRANSMITTER WIRES MUST BE RUN TO THE NEAR SIDE OR BUNGALOW  
SIDE OF THE CROSSING.
  13. FIELD FORCES TO REPLACE EXISTING 211HZ SHUNTS LOCATED 3127'  
EAST OF CROSSING WITH NEW MF-NBS FSS-1E 250849-004 (211HZ)  
(SEE PLAN 3512-1094)
  14. FIELD FORCES TO REPLACE EXISTING 211HZ SHUNTS LOCATED 1667'  
WEST OF CROSSING WITH NEW MF-NBS FSS-1E 250849-004 (211HZ)  
W/227032-006 FSS 1750' D.L. - (SEE PLAN 3512-1102)
  15. FIELD FORCES TO REPLACE EXISTING 790HZ SHUNTS LOCATED 2724'  
(M/L #2) AND 2728' (M/L #1) WEST OF CROSSING WITH NEW  
MF-NBS FSS-1F 250849-005 (790HZ) - (SEE PLAN 3512-1103)
  16. FIELD FORCES TO REPLACE EXISTING 525HZ SHUNTS LOCATED 3734'  
WEST OF CROSSING WITH NEW MF-NBS FSS-1F 250849-005 (525HZ)  
(SEE PLAN 3512-1103)
  17. FIELD FORCES TO RENEW 7C\*14 RAILROAD INTERCONNECT CABLE.
  18. CITY FORCES TO INSTALL CURBING IN QUADRANT "A" TO MEET MUTCD CLEARANCE REQUIREMENTS.
  19. CITY FORCES TO REDEFINE CURBING IN QUADRANT "B" TO MEET MUTCD CLEARANCE REQUIREMENTS.

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

#### 4X6 HOUSE CABLES

- 4 (2 COND. #6), TWISTED U.G. CABLES TO TRACKS
- 1 (17 COND. 2\*6,8\*9,7\*14), U.G. CABLES TO GATE/FLASHER
- 3 (4 COND. #9), U.G. CABLE TO FLASHERS
- 1 (12 COND. #14), U.G. CABLE EAST
- 1 (19 COND. #14), U.G. CABLE WEST
- 1 (3 COND. #10), U.G. CABLE TO METER
- 1 (7 COND. #14), U.G. CABLE TO NSRR CASE
- 1 (7 COND. #14), U.G. CABLE TO NSRR CASE

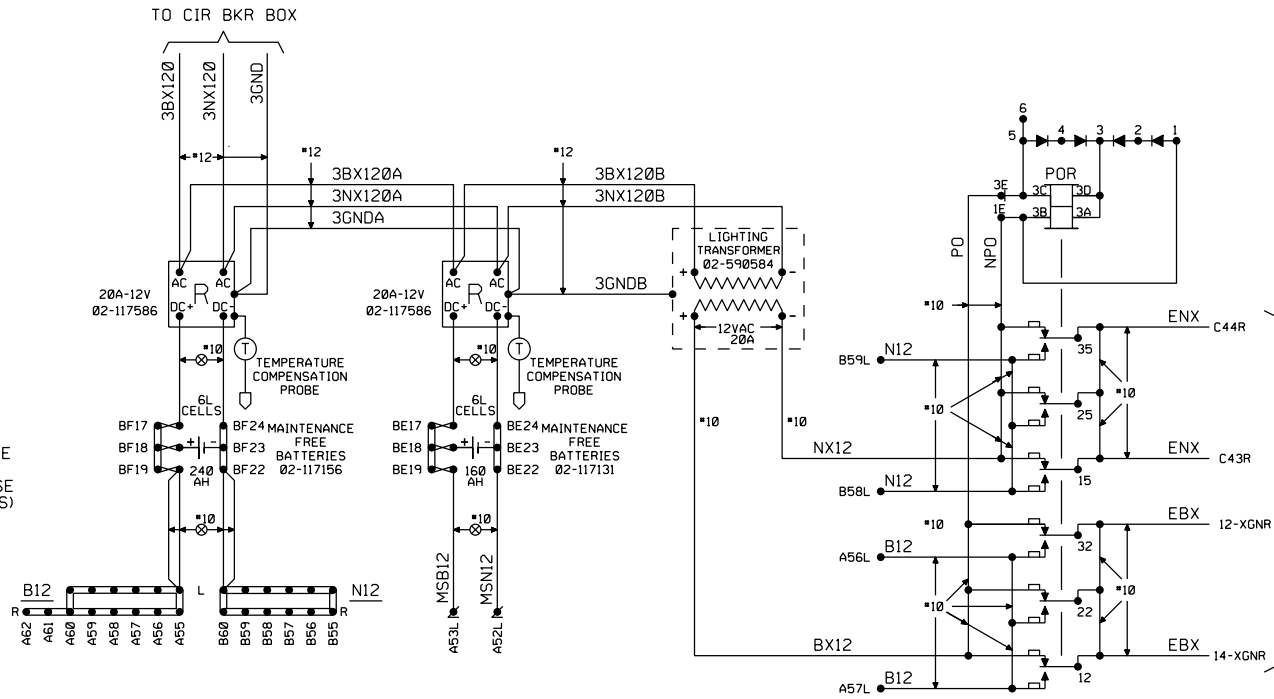
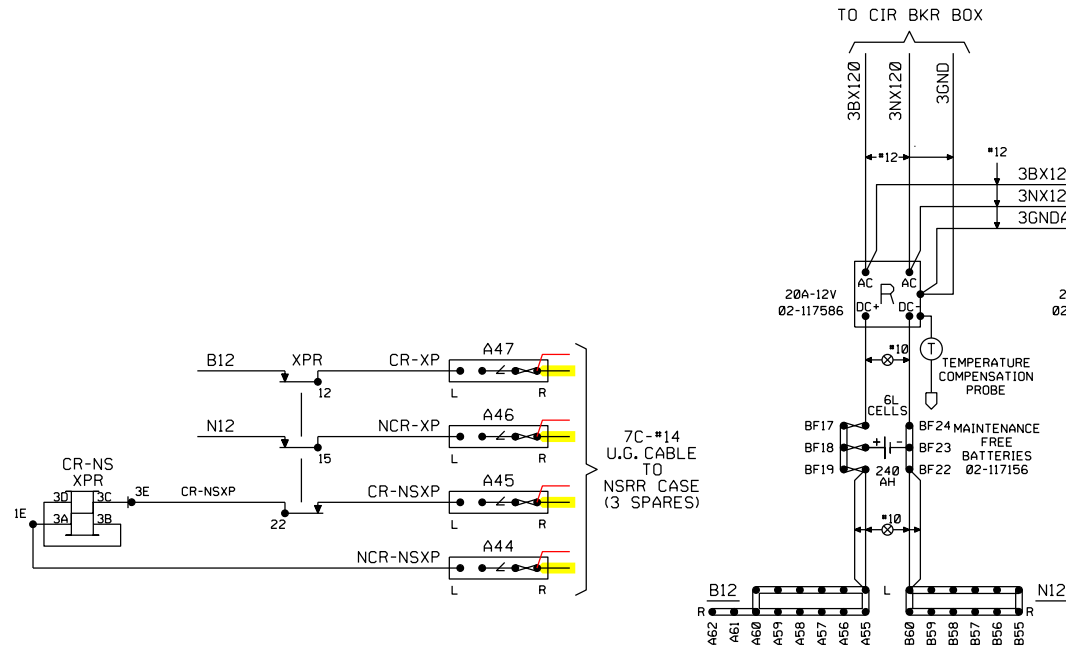
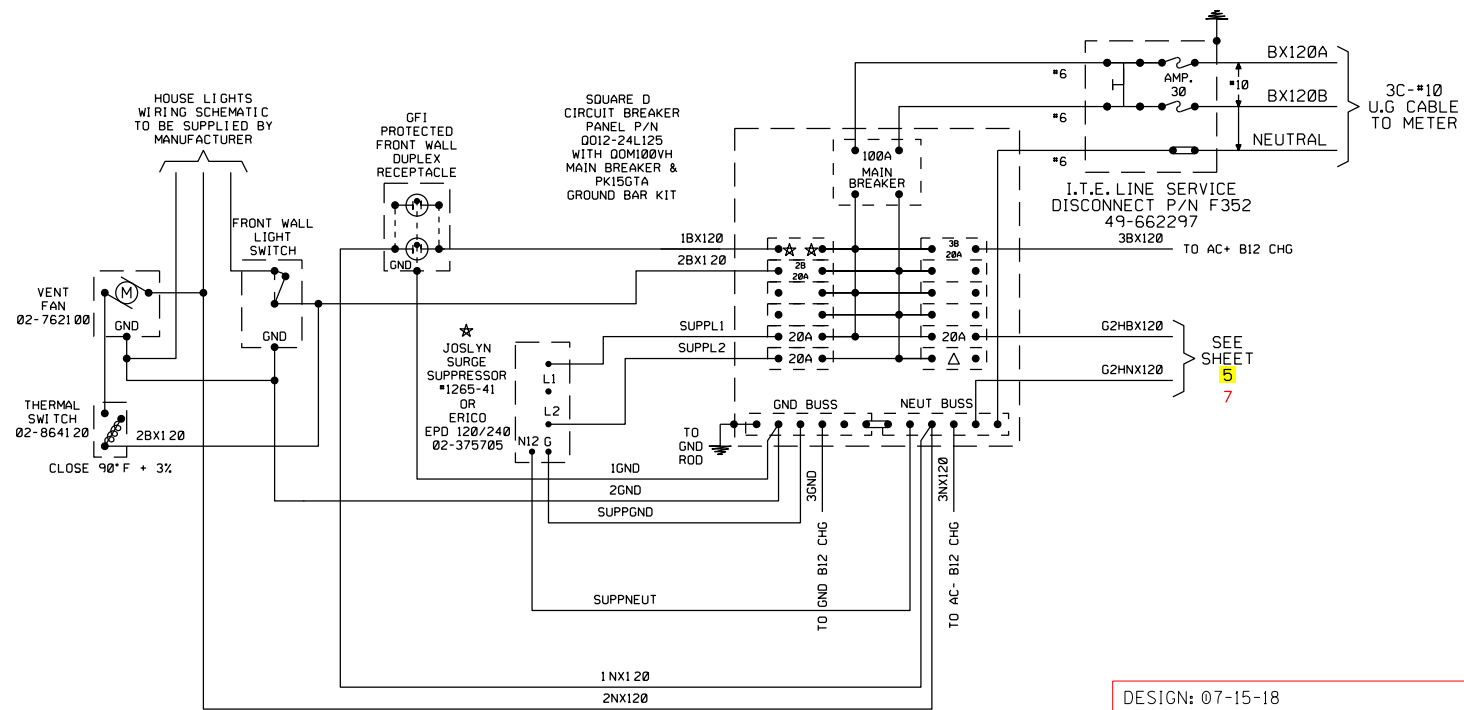
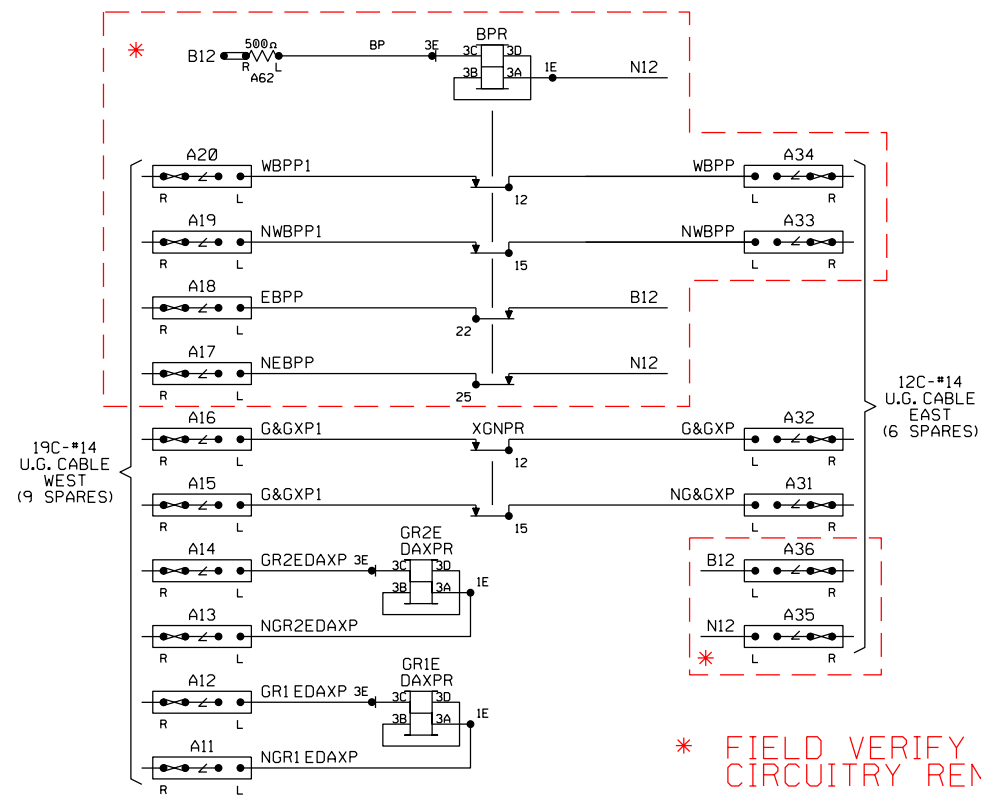
DESIGN: 07-15-18  
PROJECT: 10.1101  
FILE: CX0116828  
INSTALL 4000 GCP AT GRACE ST.  
DESIGN BY RSD/JAR RED-IN YELLOW-OUT



GRACE STREET BEDFORD, OHIO

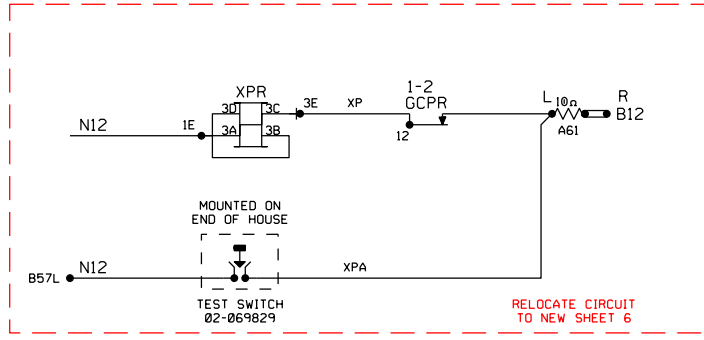
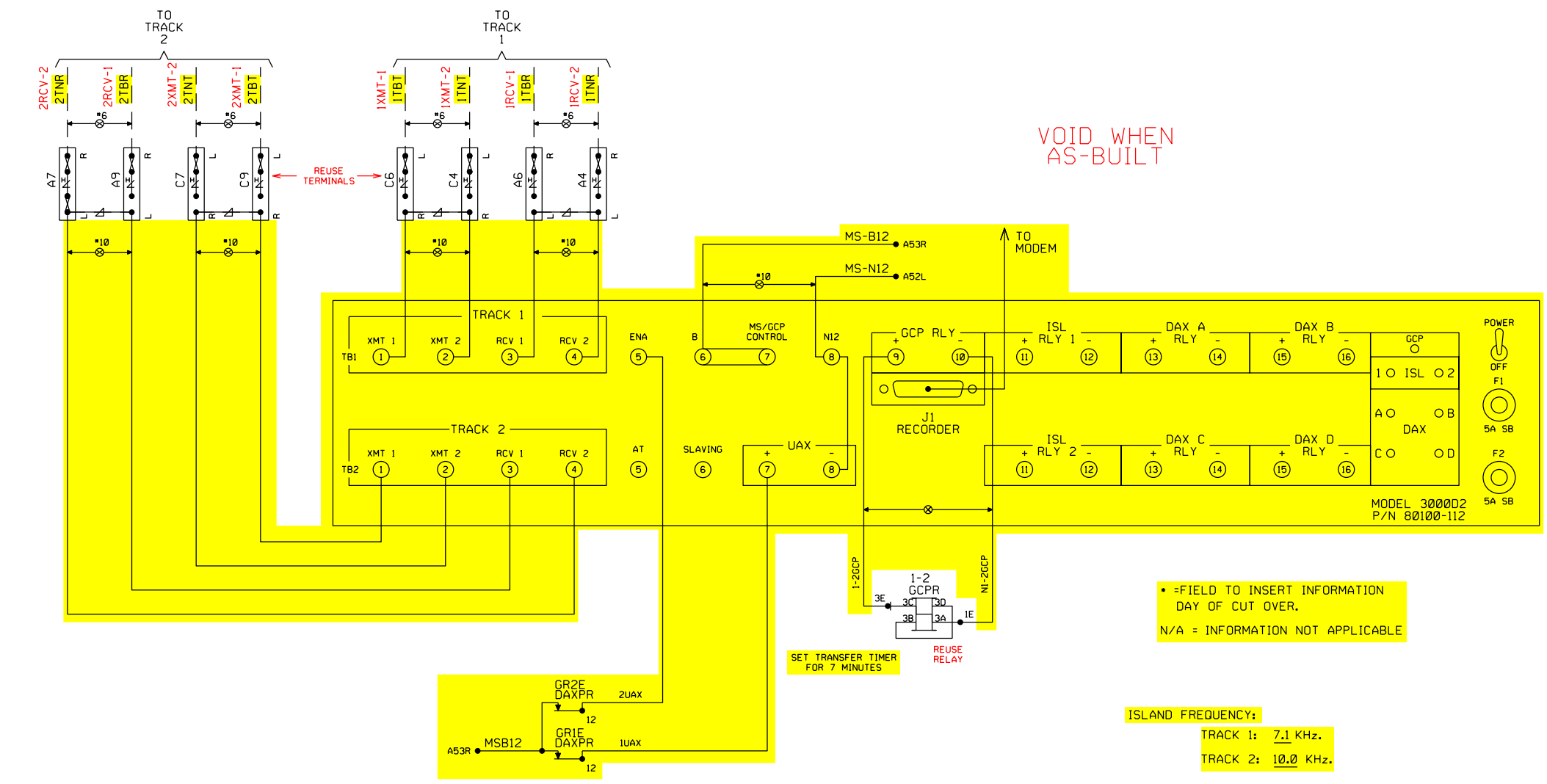
HIGHWAY CROSSING  
LOCATION PLAN

|                               |          |         |           |
|-------------------------------|----------|---------|-----------|
| ISSUE DATE: DECEMBER 31, 1999 |          |         | 3512-1099 |
| REV. 3                        | 07-15-18 | SHEET 2 |           |





|                           |        |          |           |
|---------------------------|--------|----------|-----------|
| ISSUE DATE: JULY 15, 2018 |        |          | 3512-1099 |
| SWS                       | REV. 3 | 07-15-18 | SHEET 4   |
| SWS                       |        |          |           |
| SWS                       |        |          |           |



DESIGN: 07-15-18  
PROJECT: 10.1101  
FILE: CX0116828  
INSTALL 4000 GCP AT GRACE ST.  
DESIGN BY RSD/JAR **RED-IN** **YELLOW-OUT**

• =FIELD TO INSERT INFORMATION  
DAY OF CUT OVER.  
N/A = INFORMATION NOT APPLICABLE

ISLAND FREQUENCY:  
TRACK 1: 7.1 KHz.  
TRACK 2: 10.0 KHz.

THIS UNIT TO BE EQUIPPED  
WITH 'F' LEVEL SOFTWARE  
ON PROCESSOR MODULE  
(80014) AND DATA  
RECORDER MODULE (80015)

| SYSTEM PROGRAMMING PARAMETERS |                  |
|-------------------------------|------------------|
| PROMPT                        | RESPONSE         |
| NUMBER OF TRACKS              | 2 TRACK          |
| FREQUENCY (MS/GCP)            | 211 Hz           |
| UNI/BIDIRECTIONAL             | T1 BIDIRECTIONAL |
| UNI/BIDIRECTIONAL             | T2 BIDIRECTIONAL |
| XMIT LEVEL                    | T1 MAX           |
| XMIT LEVEL                    | T2 MAX           |
| PREDICTOR/MOTION SENSOR       | T1 PREDICTOR     |
| PREDICTOR/MOTION SENSOR       | T2 PREDICTOR     |
| WARNING TIME SELECTED         | T1 35 SEC.       |
| WARNING TIME SELECTED         | T2 35 SEC.       |
| APPROACH DIST. SELECTED       | T1 3109 FT.      |
| APPROACH DIST. SELECTED       | T2 3109 FT.      |
| APPROACH DIST. COMPUTED       | T1 3109 FT.      |
| APPROACH DIST. COMPUTED       | T2 3109 FT.      |
| UAX PICKUP DELAY(0=OFF)       | 25-SEC.          |
| ENA/UAX2 PICKUP DELAY(0=ENA)  | 25-SEC.          |
| NUMBER OF DAX'S               | 0                |
| ISLAND DISTANCE               | T1 146 FT.       |
| ISLAND DISTANCE               | T2 146 FT.       |
| DAX A TRACK ASSIGNMENT        | N/A              |
| DAX A DISTANCE (0=PREEMPT)    | N/A FT.          |
| DAX A WARNING TIME            | N/A SEC.         |
| DAX B TRACK ASSIGNMENT        | N/A              |
| DAX B DISTANCE (0=PREEMPT)    | N/A FT.          |
| DAX B WARNING TIME            | N/A SEC.         |
| DAX C TRACK ASSIGNMENT        | N/A              |
| DAX C DISTANCE (0=PREEMPT)    | N/A FT.          |
| DAX C WARNING TIME            | N/A SEC.         |
| DAX D TRACK ASSIGNMENT        | N/A              |
| DAX D DISTANCE (0=PREEMPT)    | N/A FT.          |
| DAX D WARNING TIME            | N/A SEC.         |
| SLAVING MASTER/SLAVE          | MASTER           |
| PASSWORD ENABLED              | DISABLED         |
| RECORDER INSTALLED            | INSTALLED        |
| RS-232-C BAUD RATE            |                  |
| RS-232-C DATA BITS            |                  |
| RS-232-C STOP BITS            |                  |
| RS-232-C PARITY               |                  |
| DATE(E.G., MON 16 NOV 1987)   | •                |
| TIME(E.G., 11:25:43 AM)       | •                |
| DAYLIGHT SAVINGS              | ON/OFF           |
| EXPANDED PROGRAMMING HISTORY  |                  |
| SWITCH TO MS                  | T1 0-EZ          |
| SWITCH TO MS                  | T2 0-EZ          |
| TRANSFER DELAY MS TO GCP      | T1 0-SEC.        |
| TRANSFER DELAY MS TO GCP      | T2 0-SEC.        |
| PRIME PREDICTION OFFSET       | T1 0-FT.         |
| PRIME PREDICTION OFFSET       | T2 0-FT.         |
| PICKUP DELAY PRIME            | 15-SEC.          |
| PICKUP DELAY DAX A            | 15-SEC.          |
| PICKUP DELAY DAX B            | 15-SEC.          |
| PICKUP DELAY DAX C            | 15-SEC.          |
| PICKUP DELAY DAX D            | 15-SEC.          |
| COMPENSATION VALUE            | T1 SET BY SYSTEM |
| COMPENSATION VALUE            | T2 SET BY SYSTEM |
| NUMBER OF TRACK WIRES         | T1 4 WIRES       |
| NUMBER OF TRACK WIRES         | T2 4 WIRES       |

GRACE STREET

BEDFORD, OHIO

HIGHWAY CROSSING  
DUAL BIDIRECTIONAL GCP  
MODEL 3000D2 02-806766

|                               |           |
|-------------------------------|-----------|
| ISSUE DATE: DECEMBER 31, 1999 | 3512-1099 |
| REV. 3                        | 07-15-18  |
| SHEET 4                       | A         |

Program Report

Location and SIN

DOT Number: 524340K  
Milepost Number: RD-109.88  
Site Name: GRACE ST  
SIN: 755024017716

MCF and Template Selection

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

Template = 1A:6 Trk B1

Check Numbers

Office Check No. (DT 4.6.0): 7ABEE7E0  
Office Check Number: 7ABEE7E0  
Config. Check Number: 7E6B893B  
(Based on MCF Revision 021)

Program

BASIC: module configuration  
Track 1 Slot = Track  
Track 2/RIO 1 Slot = Track  
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 = Not Used  
SSCC-2 Slot = Not Used  
SEAR Used = No

BASIC: MS/GCP operation  
Track 1: MS/GCP Operation = Yes  
Track 2 : MS/GCP Operation = Yes

BASIC: island operation  
Track 1: Island Used = Internal  
Track 2 : 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: Vital Comms links  
Vital Comms link 1 Used = No  
Vital Comms 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

PREDICTORS: track 2  
Track 2 : Prime Used = Yes  
Track 2 : Dax A Used = No  
Track 2 : Dax B Used = No  
Track 2 : Dax C Used = No  
Track 2 : Dax D Used = No  
Track 2 : Dax E Used = No  
Track 2 : Dax F Used = No  
Track 2 : Dax G Used = No

GCP: track 1  
Track 1: GCP Freq Category = Standard  
Track 1: GCP Frequency = 211 Hz  
Track 1: Approach Distance = 3040 ft  
Track 1: Uni/B1/Sim-Bidirnl = Bidirnl  
Track 1: GCP Transmit Level = High  
Track 1: Island Connection = Isl 1  
Track 1: Island Distance = 189 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: Cancel Pickup Delay = This Isl

GCP: track 1 prime  
Track 1: Prime Warning Time = 32 sec  
Track 1: Prime Offset Distance = 0 ft  
Track 1: Switch MS EZ Level = 10  
Track 1: Prime MS/GCP Mode = Pred  
Track 1: Prime Pickup Delay = 15 sec  
Track 1: Prime UAX = IP  
Track 1: Prime UAX Pickup = 5 sec

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

GCP: track 1 MS Control  
Track 1: MS/GCP Ctrl IP 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: Bidirn Dax Passthru = No  
Track 1: False Act on Train Stop = No  
Track 1: EX Limiting Used = Yes  
Track 1: EZ Correction Used = Yes

GCP: track 2  
Track 2 : GCP Freq Category = Standard  
Track 2 : GCP Frequency = 211 Hz  
Track 2 : Approach Distance = 3040 ft  
Track 2 : Uni/B1/Sim-Bidirnl = Bidirnl  
Track 2 : GCP Transmit Level = High  
Track 2 : Island Connection = Isl 2  
Track 2 : Island Distance = 189 ft  
Track 2 : Computed Distance = 9999 ft  
Track 2 : Linearization Steps = 100

GCP: track 2 enhanced det  
Track 2 : Inbound PS Sensitivity = Off  
Track 2 : Speed Limiting Used = Yes  
Track 2 : Outbound False Act Lvl = Normal  
Track 2 : Outbound PS Timer = 20 sec  
Track 2 : Trailing Switch Logic = On  
Track 2 : Post Joint Detn Time = 15 sec  
Track 2 : Adv Appr Predn = No  
Track 2 : Cancel Pickup Delay = This Isl

GCP: track 2 prime  
Track 2 : Prime Warning Time = 32 sec  
Track 2 : Prime Offset Distance = 0 ft  
Track 2 : Switch MS EZ Level = 10  
Track 2 : Prime MS/GCP Mode = Pred  
Track 2 : Prime Pickup Delay = 15 sec  
Track 2 : Prime UAX = IP  
Track 2 : Prime UAX Pickup = 5 sec

GCP: track 2 pos start  
Track 2 : Positive Start = Off  
Track 2 : Sudden Shnt Det Used = No  
Track 2 : Low EZ Detection Used = No

GCP: track 2 MS Control  
Track 2 : MS/GCP Ctrl IP Used = No  
Track 2 : MS Sensitivity Level = 0  
Track 2 : Compensation Level = 1300  
Track 2 : Warn Time-Ballast Comp = High  
Track 2 : Low EX Adjustment = 39  
Track 2 : Bidirn Dax Passthru = No  
Track 2 : False Act on Train Stop = No  
Track 2 : EX Limiting Used = Yes  
Track 2 : EZ Correction Used = Yes

ISLAND: track 1  
Track 1: Isl Frequency = 7.1 kHz  
Track 1: Pickup Delay (2s +) = 0 sec  
Track 1: Isl Enable IP Used = No

ISLAND: track 2  
Track 2 : Isl Frequency = 10.0 kHz  
Track 2 : Pickup Delay (2s +) = 0 sec  
Track 2 : Isl Enable IP Used = No

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

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

ADVANCED: MS restart  
MS/GCP Restart Used = No

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

ADVANCED: out of service 2  
T1 OOS Control = OOS Input 1  
T2 OOS Control = OOS Input 1

ADVANCED: track wrap circuits  
Wrap LOS Timer = 5 sec  
Track 1 Wrap Used = No  
Track 2 Wrap Used = No

ADVANCED: trk 1 overrides  
Track 1: All Predictors Override Used = No

ADVANCED: trk 2 overrides  
Track 2 : All Predictors Override Used = No

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

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

ADVANCED: internal I/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: internal I/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

ALL NEW

ADVANCED: internal I/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 Call Rpt IP Used = No  
Emergency Activate IP = No  
EZ/EX Logging = Change  
EZ/EX Point Change = 3

OUTPUT: assignment page 1  
OUT 1.1 = AND 1 XR  
OUT 1.2 = Not Used  
OUT 2.1 = Not Used  
OUT 2.2 = Not Used

INPUT: assignment page 1  
IN 1.1 = T1 Prime UAX  
IN 1.2 = AND 1 XR Enable  
IN 2.1 = T2 Prime UAX  
IN 2.2 = Out Of Service IP 1

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

Configuration Package File  
Filename: 35121099.pac



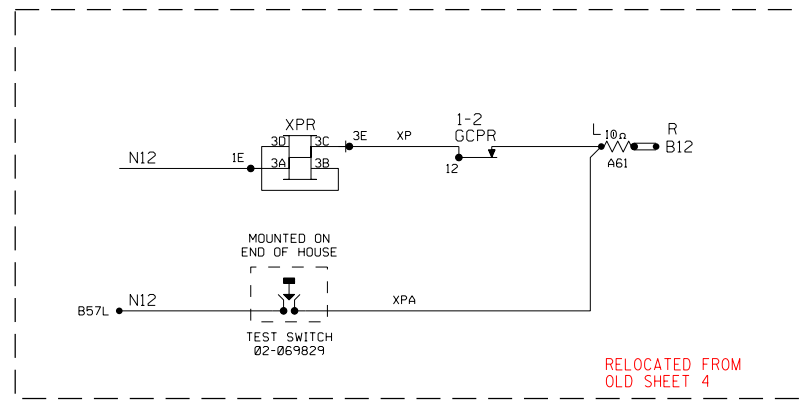
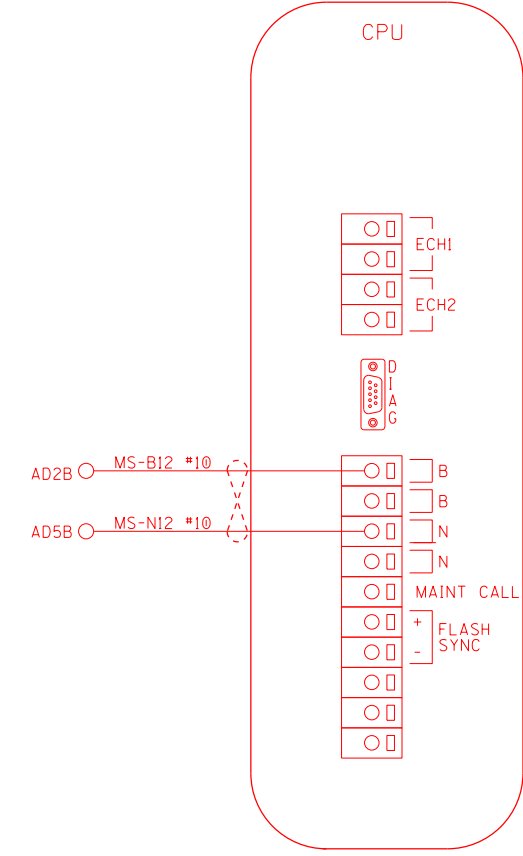
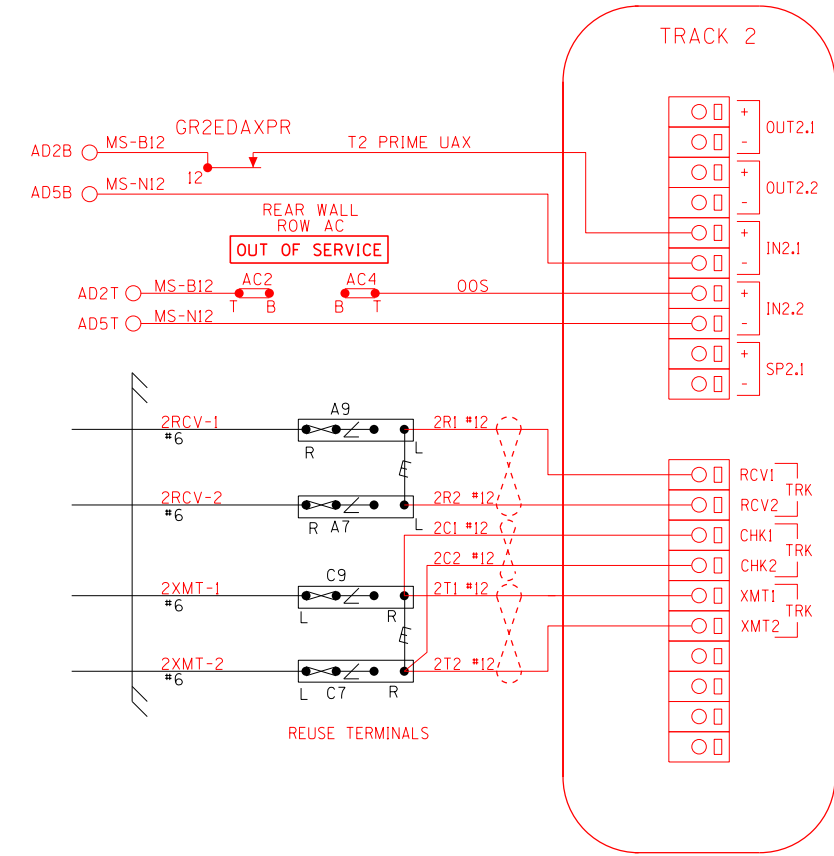
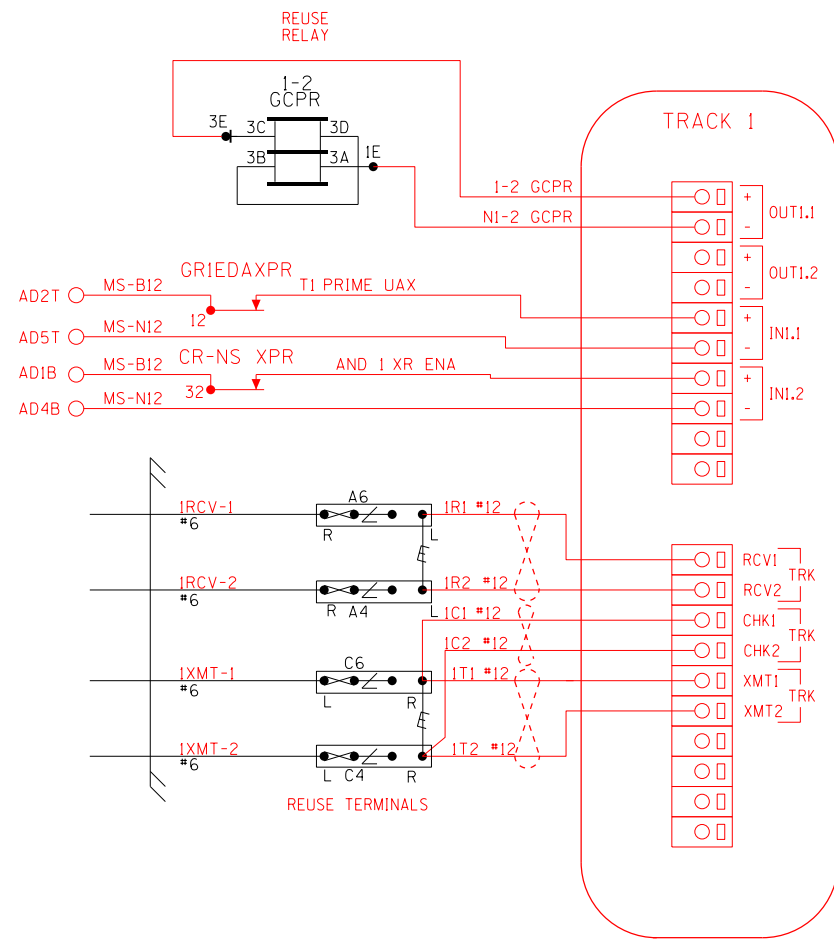
GRACE STREET

BEDFORD, OHIO

HIGHWAY CROSSING  
4000 GCP PROGRAMMING


DESIGN: 07-15-18  
PROJECT: 10.1101  
FILE: CX0116828  
INSTALL 4000 GCP AT GRACE ST.  
DESIGN BY RSD/JAR RED-IN YELLOW-OUT

|                           |          |           |  |
|---------------------------|----------|-----------|--|
| ISSUE DATE: JULY 15, 2018 |          | 3512-1099 |  |
| REV. 3                    | 07-15-18 | SHEET 5   |  |



DESIGN: 07-15-18  
PROJECT: 10.1101  
FILE: CX0116828  
INSTALL 4000 GCP AT GRACE ST.  
DESIGN BY RSD/JAR RED-IN YELLOW-OUT

NOTES:  
ALL WIRING TO BE #16AWG  
UNLESS NOTED OTHERWISE.  
( ) = TWIST

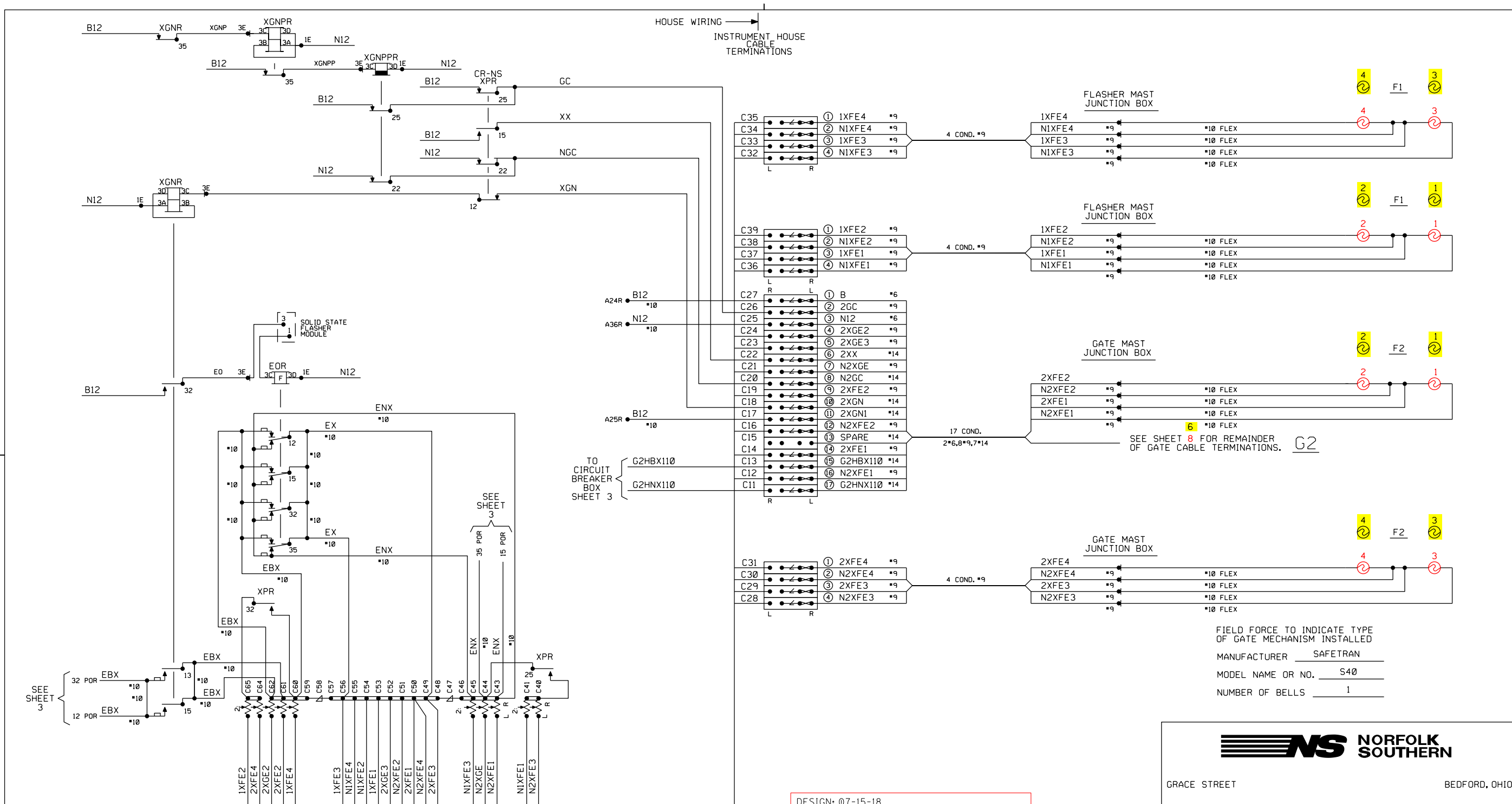
**NORFOLK SOUTHERN**

GRACE STREETBEDFORD, OHIO

HIGHWAY CROSSING  
4000 GCP CONNECTORS FOR TRACK MODULES & CPU MODULE

|                           |          |           |
|---------------------------|----------|-----------|
| ISSUE DATE: JULY 15, 2018 |          | 3512-1099 |
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FIELD FORCE TO INDICATE TYPE  
OF GATE MECHANISM INSTALLED

MANUFACTURER SAFETRAN

MODEL NAME OR NO. S40

NUMBER OF BELLS 1

DESIGN: 07-15-18  
PROJECT: 10.1101  
FILE: CX0116828  
INSTALL 4000 GCP AT GRACE ST.  
DESIGN BY RSD/JAR RED-IN YELLOW-OUT

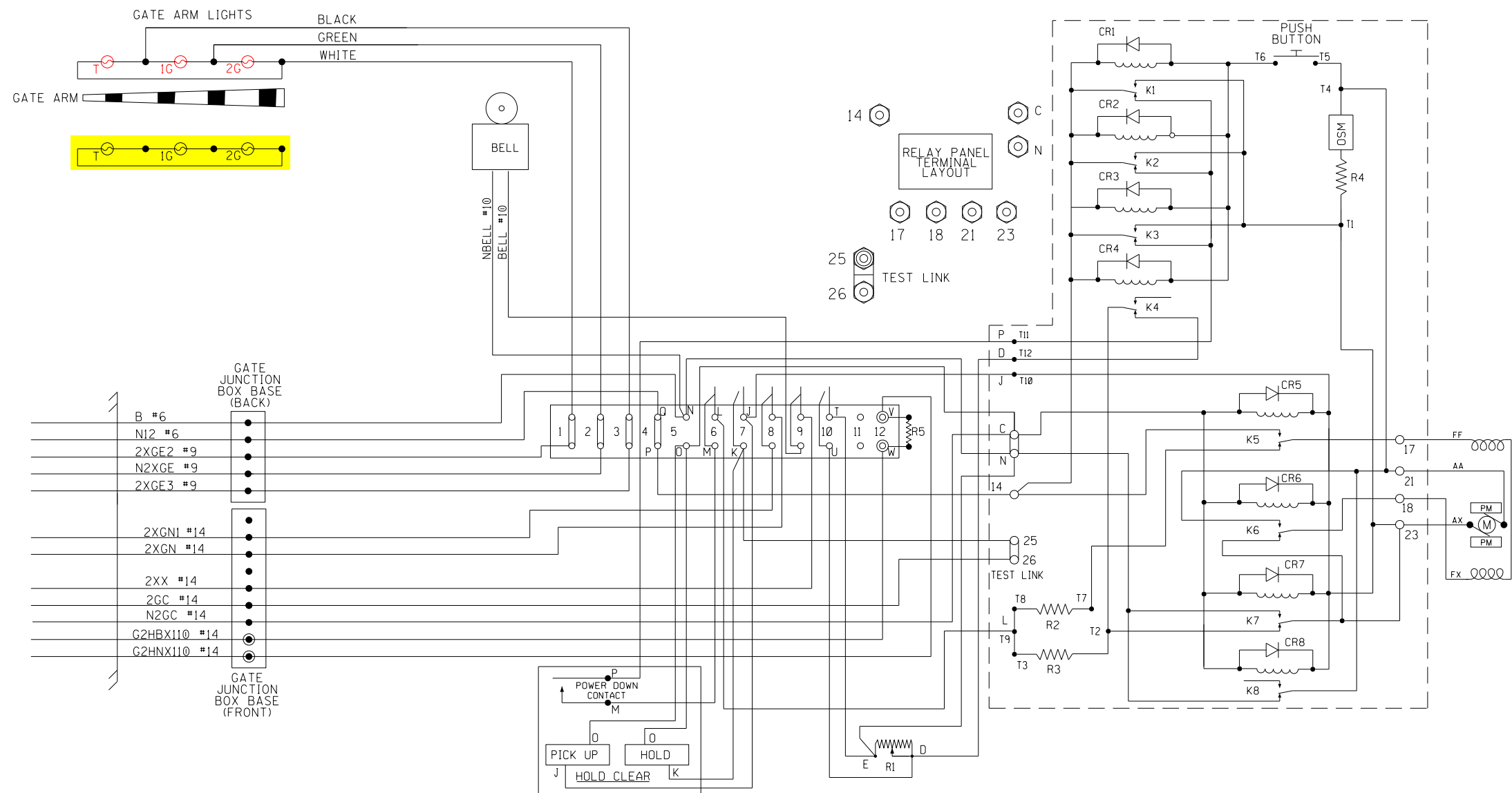


GRACE STREET

BEDFORD, OHIO

HIGHWAY CROSSING  
GATE CONTROL, LIGHTING CIRCUITS  
AND CABLE TERMINATIONS

|                               |                    |
|-------------------------------|--------------------|
| ISSUE DATE: DECEMBER 31, 1999 | 3512-1099          |
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DESIGN: 07-15-18  
PROJECT: 10.1101  
FILE: CX0116828  
INSTALL 4000 GCP AT GRACE ST.  
DESIGN BY RSD/JAR **RED-IN** **YELLOW-OUT**


FIELD VERIFY  
S40 GATE MECH.  
AND GATE WIRING

| REV | DATE     | CKD BY |
|-----|----------|--------|
| 1   | 11/22/96 | HE1    |
|     |          |        |
|     |          |        |
|     |          |        |
|     |          |        |
|     |          |        |
|     |          |        |

| CONTACT SPACE | CONTACT CLOSED AT | FUNCTION OF CONTACT   |
|---------------|-------------------|-----------------------|
| (6) L-M       | 45°-90°           | POWER DOWN CONTROL    |
| (7) J-K       | 0°-89°            | POWER UP CONTROL      |
| (8)           | 83°-90°           | FLASHING LGT. CONTROL |
| (9)           | 5°-90°            | BELL CONTROL          |
| (10) T-U      | 0°-5°             | HORIZONTAL SNUB       |
| (11)          | 0°-5°             | GATE DOWN INDICATION  |

R1 - DOWN SNUB RESISTOR, ADJ.  
R2 - POWER DOWN RATE RESISTOR  
R3 - POWER DOWN LIMIT RESISTOR

R4 - OSM SNUB RESISTOR  
R5 - DEFROSTER  
K1-8 - GATE & MAINT. RELAYS  
OSM - OVERSPEED MODULE

**NORFOLK SOUTHERN**

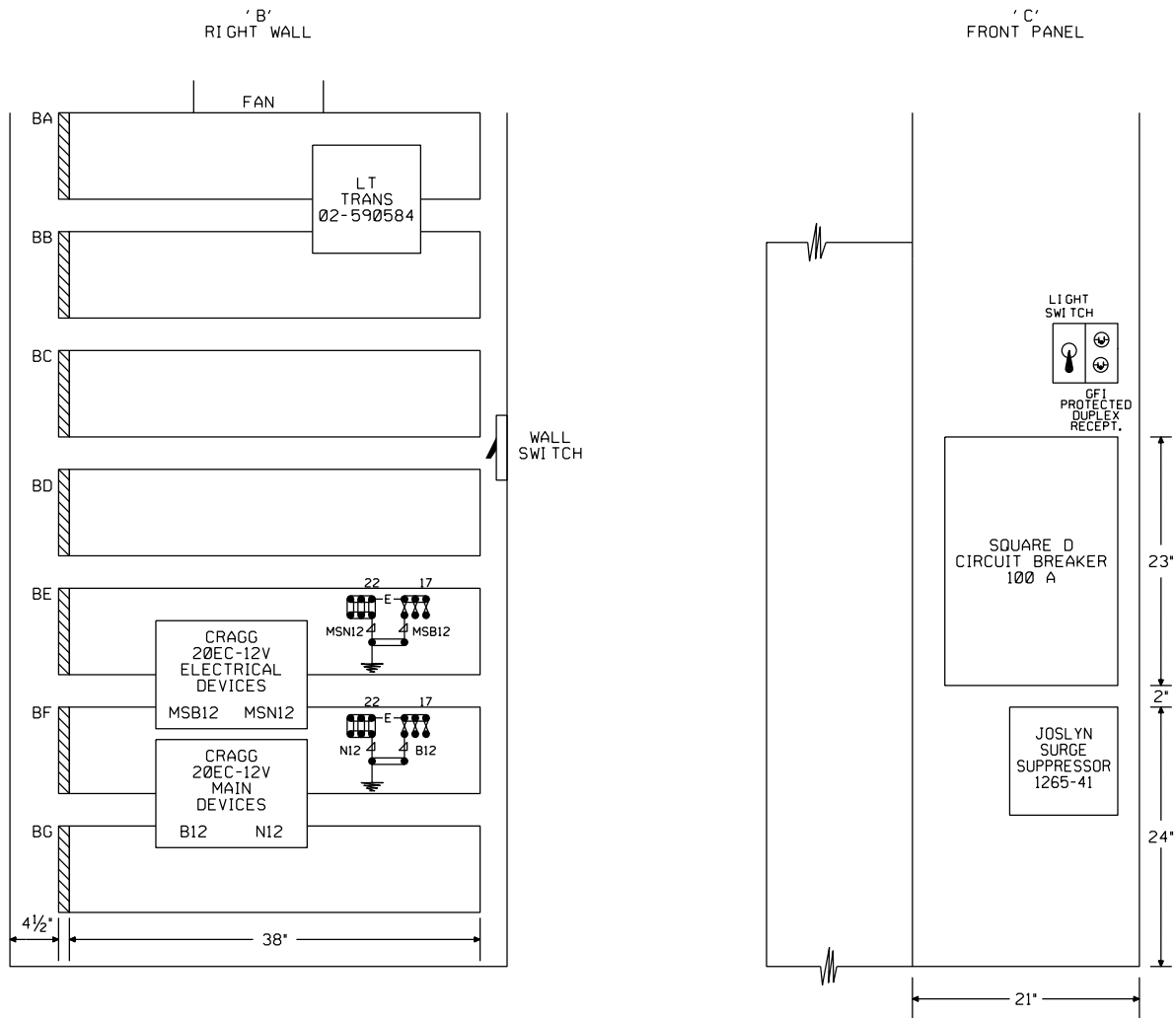
GRACE STREETBEDFORD, OHIO

HIGHWAY CROSSING  
MODEL "S40" GATE MECHANISM

|                               |          |                  |
|-------------------------------|----------|------------------|
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| REV. 3                        | 07-15-18 | SHEET <b>6</b> 8 |

| REV | DATE     | CKD BY |
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| 1   | 11/22/96 | HEI    |
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DESIGN: 07-15-18  
 PROJECT: 10.1101  
 FILE: CX0116828  
 INSTALL 4000 GCP AT GRACE ST.  
 DESIGN BY RSD/JAR RED-IN YELLOW-OUT

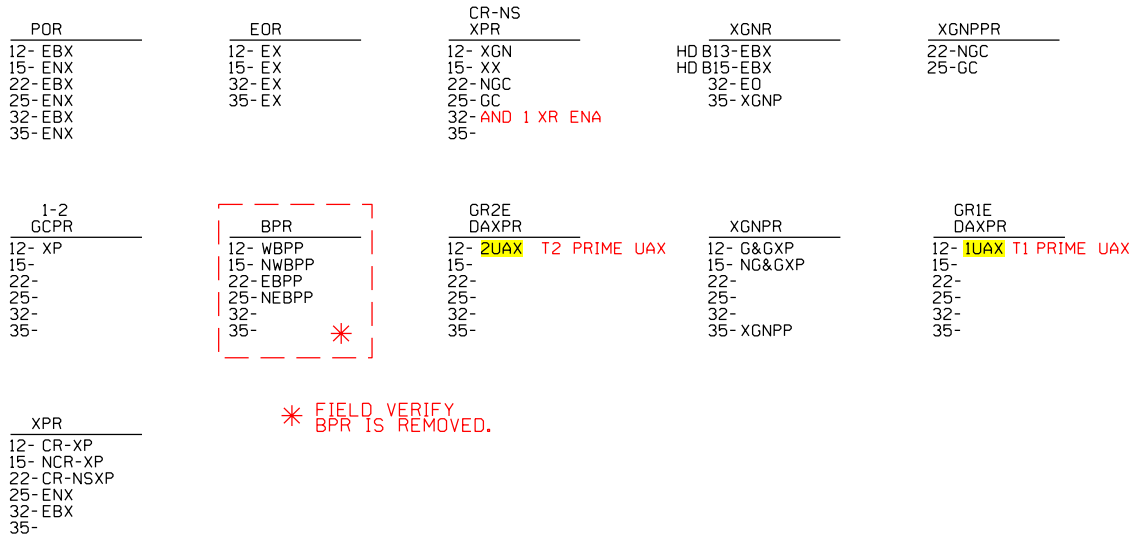


GRACE STREET
 BEDFORD, OHIO

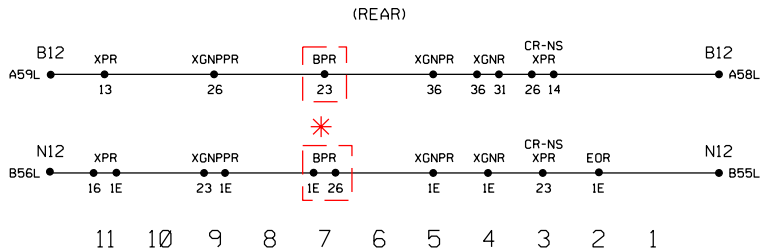
HIGHWAY CROSSING  
 FRONT AND RIGHT WALL LAYOUT

|                               |           |
|-------------------------------|-----------|
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RELAY FUNCTIONS



RELAY ENERGY LOOPS



RELAYS

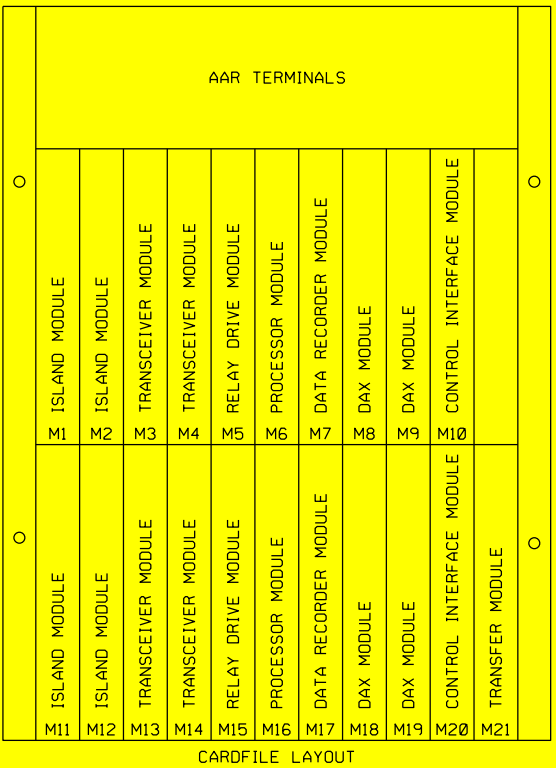
A62-407 = 02-411542 B1-PT, 6FB-HD, 100-/100:  
A62-195 = 02-411526 B1, FLASHER 4FB-HD  
A62-205 = 02-411682 B1, 2FB, 2B-HD, 210:  
A62-353 = 02-411609 B1SR (3 SEC.), 2FB, 460:  
A62-262 = 02-395406 B1N, 6FB, 500:

DESIGN: 07-15-18  
PROJECT: 10.1101  
FILE: CX0116828  
INSTALL 4000 GCP AT GRACE ST.  
DESIGN BY RSD/JAR RED-IN YELLOW-OUT

REQUIRED MODULES

| PART NUMBER AND MODULE NAME                                       | UPPER BAY | LOWER BAY |
|---|-----------|-----------|
| 80011-F (HZ) ISLAND MODULE  | M1-M2     | M11-M12   |
| 80012 TRANSCEIVER MODULE  | M3-M4     | M13-M14   |
| 80013 RELAY DRIVE MODULE  | M5        | M15       |
| 80014 PROCESSOR MODULE  | M6        | M16       |
| 80015 DATA RECORDER MODULE  | M7        | M17       |
| 80016-1,-2 DAX MODULE   | NONE      | NONE      |
| 80020 CONTROL MODULE INCLUDES<br>80017 KEYBOARD DISPLAY INTERFACE | M10       | M20       |
| 80028 TRANSFER MODULE   |           | M21       |

AAR TERMINALS



GRACE STREET BEDFORD, OHIO

HIGHWAY CROSSING  
RELAY FUNCTIONS

|                               |                     |
|-------------------------------|---------------------|
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**NORFOLK  
SOUTHERN**

BEDFORD, OHIO

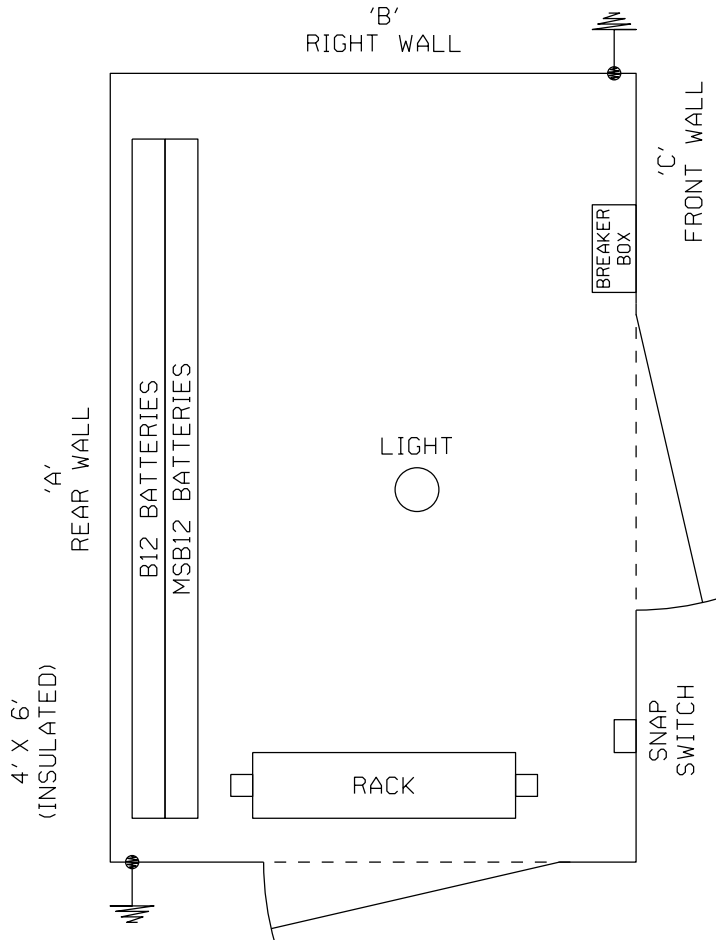
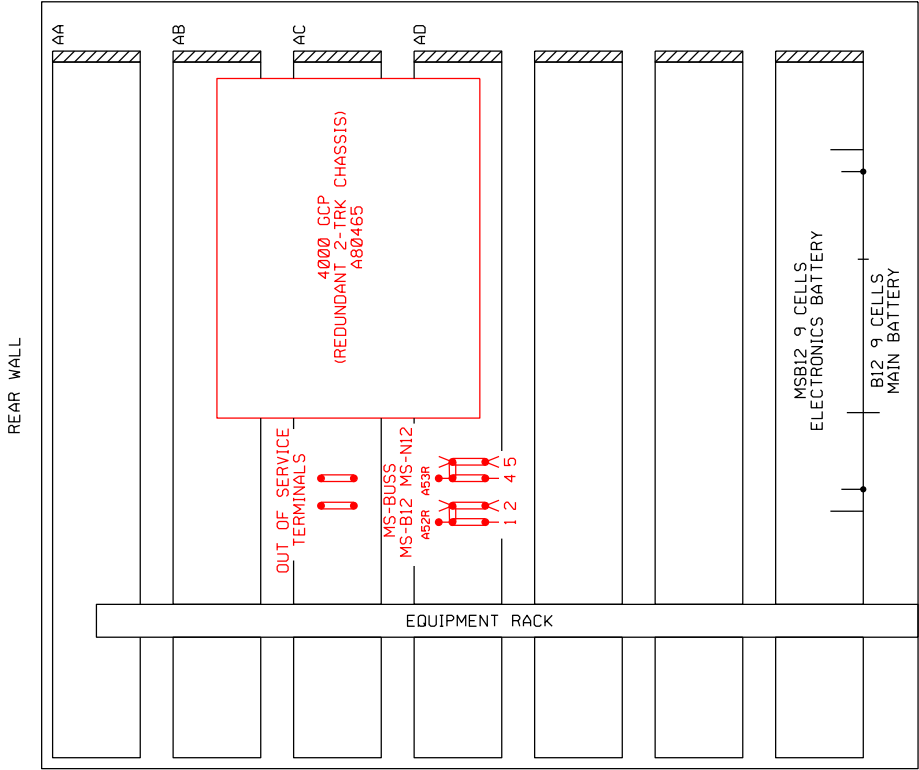
3512-1099

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| SWS | REV. | 3 | 07-15-18 | SHEET | 9 | 11 |
|-----|------|---|----------|-------|---|----|


| REV | DATE     | CKD BY |
|-----|----------|--------|
| 1   | 11/22/96 | HE1    |
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|     |          |        |
|     |          |        |

DESIGN: 07-15-18  
PROJECT: 10.1101  
FILE: CX0116828  
INSTALL 4000 GCP AT GRACE ST.  
DESIGN BY RSD/JAR RED-IN YELLOW-OUT

SAFETRAIN  
GRADE CROSSING PREDICTOR  
MODEL 300002  
02-806766  
ISLAND FREQ. TRK 1 7.1 KHz  
ISLAND FREQ. TRK 2 10.0 KHz



(4) ADJUSTABLE PIERS - 3" O.D. X 48" LONG  
WITH 12" X 12" PLATE ON BOTTOM, SLEEVE  
3.5" X 6" ABOVE FLOOR, SHELF DRILLED WITH  
4" HOLE TO PERMIT SHIPPING.



GRACE STREET

BEDFORD, OHIO

HIGHWAY CROSSING  
HOUSE LAYOUT

|                               |          |             |
|-------------------------------|----------|-------------|
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TAKING TRACK(S) OUT OF SERVICE (OOS):

SP-1001 MUST BE COMPLIED WITH

THE OUT OF SERVICE MENU IS ACCESSED ON THE DISPLAY BY TOUCHING THE DESIRED TRACK IN THE TRACK STATUS WINDOW ON THE DISPLAY. SELECT OUT OF SERVICE FROM THE DROP DOWN MENU.

PLACE A JUMPER ACROSS THE OOS TERMINALS SHOWN IN THE PLANS.

SP-1001 MUST BE COMPLIED WITH

SELECT "TAKE GCP OUT OF SERVICE."

ONCE THE GCP APPROACH IS TAKEN OUT OF SERVICE, IF AN ISLAND EXISTS, THE OPTION TO "TAKE ISL OUT OF SERVICE" IS PRESENTED. IF THE ISLAND IS LEFT IN SERVICE, THE CROSSING WILL ACTIVATE IF THE ISLAND IS OCCUPIED.

IF DESIRED, SELECT "TAKE ISL OUT OF SERVICE."

THE TRACK IS NOW OUT OF SERVICE. WHEN THE OUT OF SERVICE SCREEN IS CLOSED, THE DISPLAY RETURNS TO THE TRACK STATUS SCREEN. NOTE THAT THE OUT OF SERVICE TRACK IS ALTERNATELY FLASHING DARK GRAY AND LIGHT BLUE.

REPEAT FOR ADDITIONAL TRACKS IF NEEDED.

PUTTING TRACK(S) BACK IN SERVICE:

SP-1001 MUST BE COMPLIED WITH

REMOVE THE JUMPER ACROSS THE OOS TERMINALS SHOWN IN THE PLANS.

SP-1001 MUST BE COMPLIED WITH

ALL NEW

| REV | DATE     | CKD BY |
|-----|----------|--------|
| 1   | 11/22/96 | HEI    |
|     |          |        |
|     |          |        |
|     |          |        |
|     |          |        |
|     |          |        |
|     |          |        |

DESIGN: 07-15-18  
PROJECT: 10.1101  
FILE: CX0116828  
INSTALL 4000 GCP AT GRACE ST.  
DESIGN BY RSD/JAR RED-IN YELLOW-OUT



GRACE STREETBEDFORD, OHIO

HIGHWAY CROSSING  
OUT OF SERVICE (OOS) INSTRUCTIONS

|                               |          |           |  |
|-------------------------------|----------|-----------|--|
| ISSUE DATE: DECEMBER 31, 1999 |          | 3512-1099 |  |
| REV. 3                        | 07-15-18 | SHEET 13  |  |



# OHIO RAIL DEVELOPMENT COMMISSION

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

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

December 13, 2018

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

RE: Cuyahoga County, West Grace Street.  
DOT#524340K, PID# 106422

Dear Mr. Andrews:

The plan stamped July 2, 2018 and estimate dated December 5, 2018, for the referenced project has been reviewed and is acceptable. Wheeling & Lake Erie (WLE) may proceed with the construction of the proposed grade crossing warning system upgrade and surface reconstruction 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 \$373,124.98. 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 WLE accepting the following instructions:

1. WLE'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.ohio.gov](mailto:jill.henry@puco.ohio.gov). WLE'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. WLE 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 WLE.
3. WLE'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. WLE 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

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6. WLE 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 blue 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  
Heather Hamilton, ORDC  
ORDC (file)

# 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

December 5, 2018

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

Re: Re: Estimate for Railroad Crossing Warning System at West Grace Street DOT 524-340K

Dear Mr. Tucker,

I am providing this revised estimate for the crossing package and installation at West Grace Street. Award of the material package is the result of a competitive bid; copies of the submitted quotes were forwarded to your office. Installation will be performed under our continuing construction agreement with CTC LLC. The crossing surface will be installed by ACME Construction. Please let me know if you have any questions.

|   |              |
|---|--------------|
| Engineering Services, CTC (breakout attached) | \$201,268.04 |
| Fill Materials, transport, hauling            | \$5,500.00   |
| Preliminary Installation Services, Crosier    | \$31,233.22  |
| Electric Service, Emery                       | \$3,950.00   |
| Electric Utility fees                         | \$2,000.00   |
| Crossing Surface Rehab – (ACME)               | \$127,995.72 |
| Galvanized signal foundations                 | \$1,178.00   |
| TOTAL:  | \$373,124.98 |

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**  
**Bedford, OH. - West Grace Street DOT # 524 340K**  
**CTC Project Estimate**

| <b>ENGINEERING</b>                     |            |            |                   |                    |
|--|------------|------------|-------------------|--------------------|
| <i>Description</i>                     | <i>Qty</i> | <i>UOM</i> | <i>Unit Price</i> | <i>Amount</i>      |
| SR SIGNAL ENGINEER (PE STAMP)          | 10         | HR         | \$100.00          | \$1,000.00         |
| SIGNAL DESIGNER                        | 80         | HR         | 33.65             | \$2,692.00         |
| SIGNAL CHECKER, LEVEL 1                | 20         | HR         | 52.88             | \$1,057.60         |
| SIGNAL CHECKER, LEVEL 2/FIELD ENGINEER | 8          | HR         | 43.00             | \$344.00           |
| SR SIGNAL ENGINEER                     | 2          | HR         | 75.48             | \$150.96           |
| <b>SUBTOTAL</b>                        |            |            |                   | <b>\$5,244.56</b>  |
| <b>G&amp;A BURDEN FOR LABOR (162%)</b> |            |            |                   | <b>\$8,496.19</b>  |
| <b>FIXED FEE (14%)</b>                 |            |            |                   | <b>\$1,923.70</b>  |
| <b>ENGINEERING TOTAL</b>               |            |            |                   | <b>\$15,664.45</b> |

| <b>PROJECT MANAGEMENT</b>              |            |            |                   |                   |
|--|------------|------------|-------------------|-------------------|
| <i>Description</i>                     | <i>Qty</i> | <i>UOM</i> | <i>Unit Price</i> | <i>Amount</i>     |
| SR PROJECT MANAGER                     | 2          | HR         | \$87.41           | \$174.82          |
| PROJECT MANAGER                        | 8          | HR         | \$33.65           | \$269.20          |
| ACCOUNTING, LEVEL1                     | 16         | HR         | \$24.23           | \$387.68          |
| ADMINISTRATIVE                         | 8          | HR         | \$24.04           | \$192.32          |
| <b>SUBTOTAL</b>                        |            |            |                   | <b>\$1,024.02</b> |
| <b>G&amp;A BURDEN FOR LABOR (162%)</b> |            |            |                   | <b>\$1,658.91</b> |
| <b>FIXED FEE (14%)</b>                 |            |            |                   | <b>\$375.61</b>   |
| <b>PROJECT MANAGEMENT TOTAL</b>        |            |            |                   | <b>\$3,058.54</b> |

| <b>EAF LABOR</b>                       |            |            |                   |                   |
|--|------------|------------|-------------------|-------------------|
| <i>Description</i>                     | <i>Qty</i> | <i>UOM</i> | <i>Unit Price</i> | <i>Amount</i>     |
| EAF MANAGER                            | 8          | HR         | \$28.00           | \$224.00          |
| EAF LEAD FORMAN                        | 16         | HR         | \$20.19           | \$323.04          |
| LEAD WIREMAN                           | 40         | HR         | \$19.25           | \$770.00          |
| WIREMAN                                | 24         | HR         | \$15.00           | \$360.00          |
| TEST                                   | 8          | HR         | \$75.48           | \$603.84          |
| QC                                     | 8          | HR         | \$28.85           | \$230.80          |
| <b>SUBTOTAL</b>                        |            |            |                   | <b>\$2,511.68</b> |
| <b>G&amp;A BURDEN FOR LABOR (162%)</b> |            |            |                   | <b>\$4,068.92</b> |
| <b>FIXED FEE (14%)</b>                 |            |            |                   | <b>\$921.28</b>   |
| <b>EAF LABOR TOTAL</b>                 |            |            |                   | <b>\$7,501.89</b> |

| <b>CONSTRUCTION LABOR</b>              |            |            |                   |                    |
|--|------------|------------|-------------------|--------------------|
| <i>Description</i>                     | <i>Qty</i> | <i>UOM</i> | <i>Unit Price</i> | <i>Amount</i>      |
| CONSTRUCTION MANAGER                   | 20         | HR         | \$43.27           | \$865.40           |
| SIGNAL FOREMAN                         | 80         | HR         | \$29.04           | \$2,323.20         |
| SIGNALMAN                              | 80         | HR         | \$26.00           | \$2,080.00         |
| SIGNAL HELPER                          | 160        | HR         | \$20.00           | \$3,200.00         |
| <b>SUBTOTAL</b>                        |            |            |                   | <b>\$8,468.60</b>  |
| <b>G&amp;A BURDEN FOR LABOR (162%)</b> |            |            |                   | <b>\$13,719.13</b> |
| <b>FIXED FEE (14%)</b>                 |            |            |                   | <b>\$3,106.28</b>  |
| <b>CONSTRUCTION LABOR TOTAL</b>        |            |            |                   | <b>\$25,294.01</b> |

**Wheeling & Lake Erie Railway**  
**Bedford, OH. - West Grace Street DOT # 524 340K**  
**CTC Project Estimate**

| <b>TRAVEL 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           | <b>\$960.00</b>   |
| EMPLOYEE LODGING                         | 32         | EA         | \$70.00           | <b>\$2,240.00</b> |
| MOBILIZATION                             | 2          | EA         | \$1,500.00        | <b>\$3,000.00</b> |
| <b>SUBTOTAL</b>                          |            |            |                   | <b>\$6,200.00</b> |
| <b>CONSTRUCTION LABOR EXPENSES TOTAL</b> |            |            |                   | <b>\$6,200.00</b> |

| <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 (12,000lb 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 W/18" BKT) | 1          | WK         | \$1,200.00        | <b>\$1,200.00</b> |
| EQUIPMENT DELIVERY/PICKUP            | 2          | LS         | \$250.00          | <b>\$500.00</b>   |
| <b>SUBTOTAL</b>                      |            |            |                   | <b>\$4,960.80</b> |
| <b>CONSTRUCTION EQUIPMENT TOTAL</b>  |            |            |                   | <b>\$4,960.80</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>\$60,845.17</b>  |
| FIELD MATERIAL (SEE ATTACHED DETAIL) | 1          | LS         |                   | <b>\$30,278.79</b>  |
| FILL DIRT                            | 15         | TN         | \$25.89           | <b>\$388.35</b>     |
| COVER ROCK (3/4" CRUSHED - WHITE)    | 20         | TN         | \$26.50           | <b>\$530.00</b>     |
| FREIGHT & CONTAINER PRICE            | 1          | LS         | \$10,000.00       | <b>\$10,000.00</b>  |
| <b>SUBTOTAL</b>                      |            |            |                   | <b>\$102,042.31</b> |
| <b>MATERIAL TOTAL</b>                |            |            |                   | <b>\$102,042.31</b> |

|                               |                     |
|-------------------------------|---------------------|
| <b>TOTAL PROJECT ESTIMATE</b> | <b>\$164,722.01</b> |
|-------------------------------|---------------------|

## HOUSE MATERIALS

| DESCRIPTION   | QTY | UOM | UNIT PRICE  | TOTAL PRICE |
|---|-----|-----|-------------|-------------|
| Bungalow, Alum. 6 X6 w/Heater P/N 91000564 D-1, PTMW (WLE SPECS)                          | 1   | EA  | \$9,477.00  | \$9,477.00  |
| Wrench, AAR terminal - 11", P/N 032619-9X, Siemens  | 1   | EA  | \$43.63     | \$43.63     |
| Sensor, Hermetic Door Switch, P/N 70168986, Allied Electric                               | 2   | EA  | \$4.99      | \$9.98      |
| Actuator, Hermetic Door Switch, P/N 70168991, Allied Electric                             | 2   | EA  | \$1.99      | \$3.98      |
| Decal, Danger 240V (5"X3.5"), P/N 3XDU5, Grainger   | 1   | EA  | \$2.94      | \$2.94      |
| Decal, MUTCD Emergency Notification, 30"X18", Eagle Traffic                               | 1   | EA  | \$68.00     | \$68.00     |
| Wire, Case, #16AWG 1000' spool, Blue, P/N 152-11-3002, Okonite                            | 0.5 | EA  | \$198.00    | \$99.00     |
| Wire, Case, #10AWG 1000' spool, Blue, P/N 152-11-3038, Okonite                            | 0.5 | EA  | \$407.00    | \$203.50    |
| Wire, Case, #6AWG, Green, P/N N6GNM, Reynolds   | 100 | FT  | \$0.35      | \$35.00     |
| Wire, Case, #6AWG, Black, P/N N6BM, Reynolds  | 100 | FT  | \$0.35      | \$35.00     |
| Wire, Case, #6AWG, 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 16-220000433, GE   ** (Populated as shown on Plans)**                     | 1   | EA  | \$27,450.00 | \$27,450.00 |
| XIP-20 w/Lamp Resistor, P/N 227561-000, Alstom  | 2   | EA  | \$602.00    | \$1,204.00  |
| Cable, XIP 8 ft (cable #1) (need 1 for XP4 Assy) P/N 075046-001, Alstom                   | 2   | EA  | \$104.00    | \$208.00    |
| Cable, XIP 8 ft (cable #2) (need 1 for XP4 Assy) P/N 075047-001, Alstom                   | 2   | EA  | \$104.00    | \$208.00    |
| Relay, 500 Ohm, 6PT, Nuetral relay, plug-in, P/N A62-0262, Alstom                         | 4   | EA  | \$1,256.80  | \$5,027.20  |
| Plugboard, Kit (1E/3E test posts) P/N 59686-019-02, Alstom                                | 4   | EA  | \$125.00    | \$500.00    |
| 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/240VAC, P/N 70198711, Allied                                 | 1   | EA  | \$18.62     | \$18.62     |
| Relay, 8-pin KRPA style, 10A/12VDC, P/N 70199265, Allied                                  | 4   | EA  | \$15.87     | \$63.48     |
| 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, ETC-12V 40AMP, P/N 520740, Railway Equipment                             | 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     |
| Battery Tray 12"x27", 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                                    | 1   | EA  | \$20.21     | \$20.21     |
| Tie-wrap, mounting, PKG 100, P/N TYM, Vantex  | 1   | EA  | \$27.44     | \$27.44     |
| Loom, Spiral Wrap 100', Black, 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, 2X6 W/ Flat nut/washer, P/N 220-0101, Rebel                                     | 12  | EA  | \$10.45     | \$125.40    |
| Terminal, Block, 2 3/8" center - 2 post w/hardware, P/N 220-0301, Rebel                   | 8   | EA  | \$3.95      | \$31.60     |
| Terminal, 4-post, Block Kit, w/ 14-24 AAR Hardware, P/N B2700A2C1WH, Erico                | 25  | EA  | \$21.15     | \$528.75    |
| RailSurge Plane Strip Busbar (36"), P/N B2700HC36, Erico                                  | 3   | EA  | \$36.90     | \$110.70    |
| Connector, Buss strap (1" - 36 holes), P/N 9A2216-36, L&W Industries                      | 4   | EA  | \$17.89     | \$71.56     |
| 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                                     | 75  | EA  | \$0.30      | \$22.50     |
| Arrestor, Air Gap, With Cover, P/N 4000-44585-001X, Siemens                               | 29  | EA  | \$24.80     | \$719.20    |
| Equalizer, Air Gap, with Cover/Hardware, P/N 4000-44700-001X, Siemens                     | 2   | EA  | \$23.36     | \$46.72     |
| 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   | 25  | EA  | \$4.00      | \$100.00    |
| 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, Rebel  | 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     |

**TOTAL           \$60,845.17**

| FIELD MATERIALS   |     |      |             |             |
|---|-----|------|-------------|-------------|
| DESCRIPTION   | QTY | UOM  | UNIT PRICE  | TOTAL PRICE |
| Cable, 7/C#6, Armored, 206-11-6247, Okonite                                   | 500 | FT   | \$8.11      | \$4,055.00  |
| Cable, 7C#14, Armored, 206-11-6887, Okonite                                   | 300 | FT   | \$2.99      | \$897.00    |
| Cable, 3C#6, Armored, #206-11-6243, Okonite                                   | 300 | FT   | \$6.00      | \$1,800.00  |
| Wire, Track, 2C/#6, Twist, Solid, 113-12-3933, Okonite                        | 400 | FT   | \$1.86      | \$744.00    |
| Tape, Marker - "Buried RR line"/"Buried electrical line"                      | 2   | ROLL | \$15.99     | \$31.98     |
| Bootleg Kit, Crossing complete, Wood, 1 Track, CTC Inc.                       | 2   | EA   | \$500.00    | \$1,000.00  |
| 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                                    | 200 | EA   | \$1.56      | \$312.00    |
| Wheel, grinding, P/N SB22122, Erico   | 3   | EA   | \$35.87     | \$107.61    |
| 5/8" X 8' Copper Ground Rod P/N 615880, Erico                                 | 6   | EA   | \$9.50      | \$57.00     |
| 5/8" Ground Rod Weld, P/N SBNT1161G, Erico                                    | 6   | EA   | \$4.48      | \$26.88     |
| Wire, Ground, #6AWG, Bare Copper, Graybar                                     | 75  | FT   | \$0.34      | \$25.50     |
| 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    | 2   | EA   | \$578.00    | \$1,156.00  |
| Jct box, Gate, 5" single hole w/24 terminals, P/N 2149-A-139, WCH             | 2   | EA   | \$462.00    | \$924.00    |
| Gate, Model 3597, P/N 3597-131-P-H-M1 (WLE Spec), WCH                         | 1   | EA   | \$3,762.00  | \$3,762.00  |
| Resistor, Adjustable, 5 OHM, P/N 1110-7D, WCH                                 | 2   | EA   | \$24.50     | \$49.00     |
| Crossarm Assy, 5" Mtg., 2 Way, P/N 975-0804-5, WCH                            | 2   | EA   | \$697.00    | \$1,394.00  |
| Lights, 12" LED, P/N 433121680XLTC-00, Arms                                   | 8   | EA   | \$74.00     | \$592.00    |
| Counterweight Package, P/N 070755-18X, Siemens                                | 1   | EA   | \$3,261.00  | \$3,261.00  |
| Sign, Crossbuck, No brackets/hardware, P/N 070-0065, Rebel Railway            | 2   | EA   | \$84.00     | \$168.00    |
| 5" Sign Kit, Brackets/extensions/Ubolts/hardware, P/N 070-5008, Rebel Railway | 4   | EA   | \$56.70     | \$226.80    |
| 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                                | 2   | EA   | \$165.00    | \$330.00    |
| 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 (Vertical stripe) LED gate w/lamp kit, P/N 9298-6154, Railway Equip  | 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    |
| Sign, Emergency, ENS, 15"X9" Blue, Eagle Traffic                              | 2   | EA   | \$38.00     | \$76.00     |
| Field cable Tag Kit, P/N FLDTGKT, CTC Inc.                                    | 1   | EA   | \$1,100.00  | \$1,100.00  |
| Schedule 40 2" & 4" PVC Conduit Kit with Elbows                               | 1   | LOT  | \$2,500.00  | \$2,500.00  |
| Duct seal, 1lb, P/N 31-601, Graybar   | 2   | EA   | \$2.93      | \$5.86      |
| Duct seal, 5lb, P/N 31-605, Graybar   | 1   | EA   | \$9.41      | \$9.41      |
| Lock, Barrel Style  | 3   | EA   | \$45.25     | \$135.75    |
| Total   |     |      | \$30,278.79 |             |







## CONSTRUCTION NOTES

WHEN THE TRACK OCCUPIED IS WLE TRACK:

-FLASH THE FRONT LIGHTS AND THE GATE LIGHTS ON NSG AND GATE 1.  
FLASH THE BACK LIGHTS ON NSF AND FLS #1. BELL(S) BEGIN TO RING.

—AFTER THE GATE DELAY TIME, NSG AND GATE #1 SHOULD START TO DESCEND.

-AFTER THE ADJACENT TRACK CLEARANCE TIME HAS EXPIRED, FLASH THE FRONT LIGHTS ON FLS #1. FLASH THE BACK LIGHTS ON GATE #1.

-IF A TRAIN APPROACHES ON NS TRACK (WITH WLE TRACK STILL OCCUPIED) FLASH THE FRONT LIGHTS ON NSF.

-FLASH THE BACK LIGHTS ON NSG.

WHEN THE TRACK OCCUPIED IS NS TRACK:

-FLASH THE FRONT LIGHTS AND THE GATE LIGHTS ON NSG AND GATE 1.  
FLASH THE BACK LIGHTS ON NSF AND FLS #1. BELL(S) BEGIN TO RING.

—AFTER THE GATE DELAY TIME, NSG AND GATE #1 SHOULD START TO DESCEND.

–AFTER THE ADJACENT TRACK CLEARANCE TIME HAS EXPIRED, FLASH THE FRONT LIGHTS ON NSF. FLASH THE BACK LIGHTS ON NSG.

-IF A TRAIN APPROACHES ON WLE TRACK (WITH NS TRACK STILL OCCUPIED) FLASH THE FRONT LIGHTS AND THE GATE LIGHTS ON FLS #1.

—FLASH THE BACK LIGHTS ON GATE #1.

- 1.) INSTALL NEW 6' X 6' BUNGALOW IN SOUTHWEST QUADRANT.
- 2.) INSTALL (2) NEW FLASHING LIGHTS WITH GATES AND MAST FLASHER ASSEMBLY.
- 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.) CURBS TO BE INSTALLED BY CROSIER.
- 6.) CROSSING SURFACE WILL ALSO BE REHABBED WITH THIS PROJECT.

[illegible]





CROSSING SIGNAL ALIGNMENT

LEGEND

|   |                              |
|---|------------------------------|
| Ⓐ | FLASHER #1 FRONT MAST LIGHTS |
| Ⓑ | GATE #1 BACK MAST LIGHTS     |
| Ⓒ | FLASHER #1 BACK MAST LIGHTS  |
| Ⓓ | GATE #1 FRONT MAST LIGHTS    |

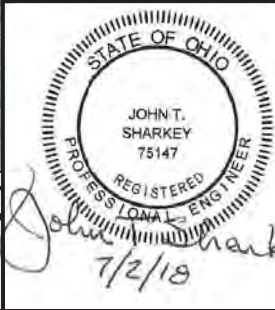
ALIGNMENT

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.



**Wheeling & Lake Erie  
Railway**

|               |            |                                    |                           |
|---------------|------------|------------------------------------|---------------------------|
| LOCATION      |            | WEST GRACE STREET<br>BEDFORD, OHIO |                           |
| ORIGINAL DATE | 02/08/2018 | TITLE                              | CROSSING SIGNAL ALIGNMENT |
| DESIGNER      | CTC        | SUB                                | CLEVELAND                 |
| DRAFTSMAN     | CTC        | RRMP                               | 109.88                    |
| CHECKER       | CTC        | DOT NO.                            | 524 340K                  |
|               |            | CTC NO.                            | CN18042                   |
|               |            | SCALE                              | N.T.S.                    |
|               |            | SHEET                              | 02 of 21                  |

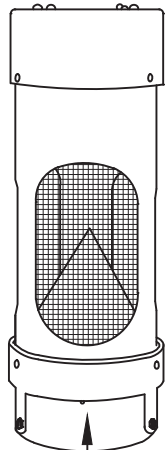
REVISION  
BLOCK



SITE LAYOUT NOTES

1.) CROSSING IS LOCATED: LATITUDE 41.3948995  
LONGITUDE -81.5417792

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



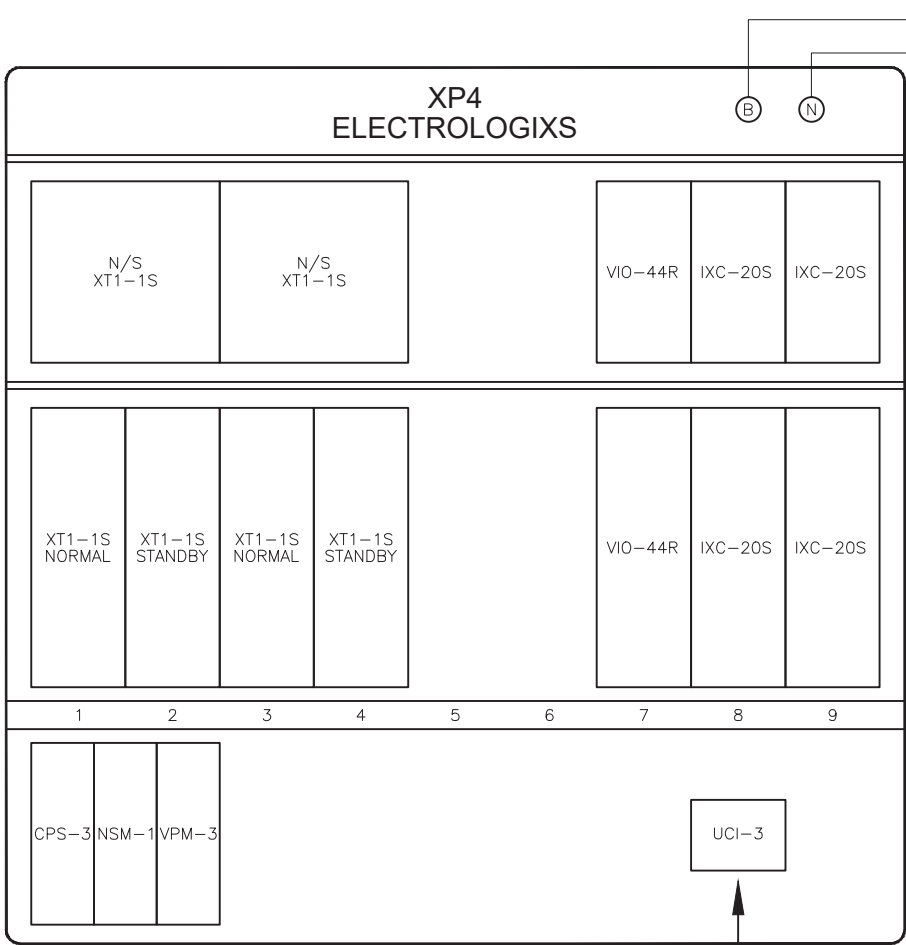
THIS SIDE FACING  
ROADWAY

CHANGE FROM TYPICAL: N

REVISION  
BLOCK

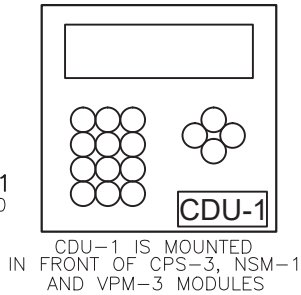


| Wheeling & Lake Erie<br>Railway                |                            |                    |
|--|----------------------------|--------------------|
| LOCATION<br>WEST GRACE STREET<br>BEDFORD, OHIO |                            |                    |
| ORIGINAL DATE<br>02/08/2018                    | TITLE<br>SITE LAYOUT NOTES |                    |
| DESIGNER<br>CTC                                | SUB<br>CLEVELAND           | CTC NO.<br>CN18042 |
| DRAFTSMAN<br>CTC                               | RRMP<br>109.88             | SCALE<br>N.T.S.    |
| CHECKER<br>CTC                                 | DOT NO.<br>524 340K        | SHEET<br>03 OF 21  |



XP4 CHASSIS  
PN: 300752-000

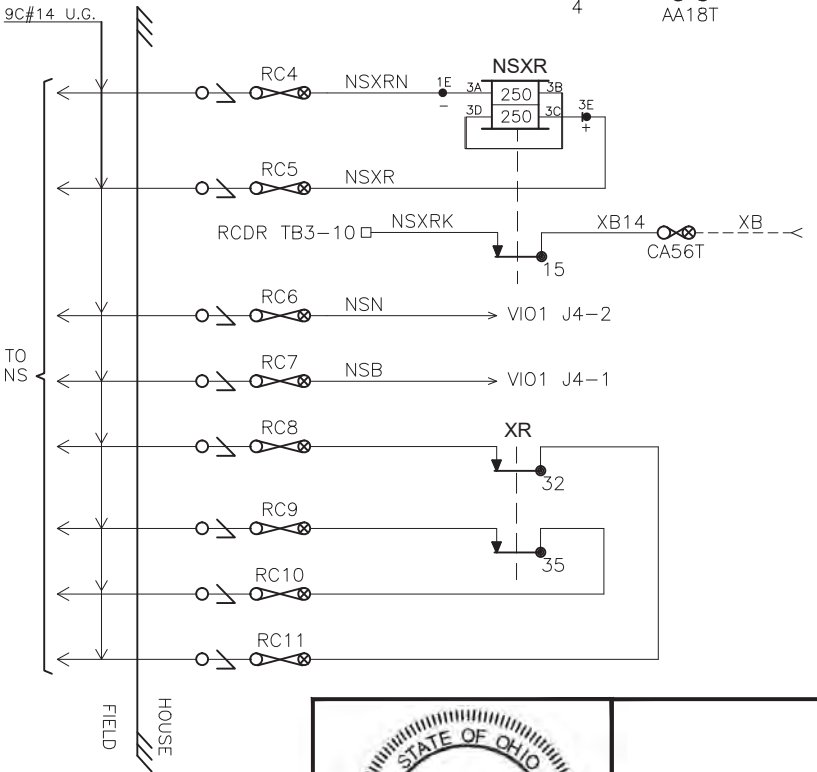
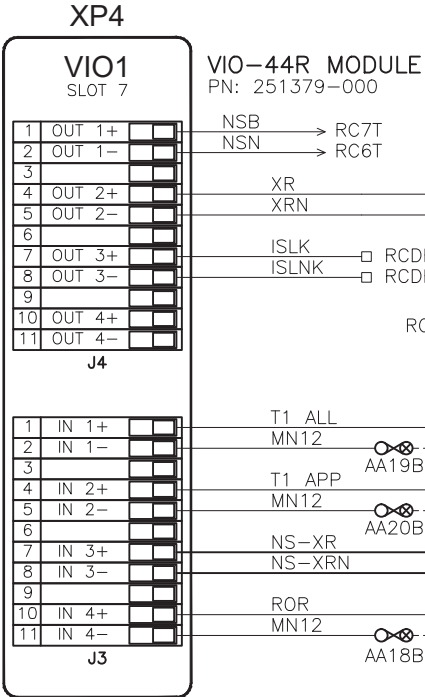
CDU-1  
PN: 251124-000



CHASSIS ID  
IS LOCATED  
BEHIND UCI-3

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

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



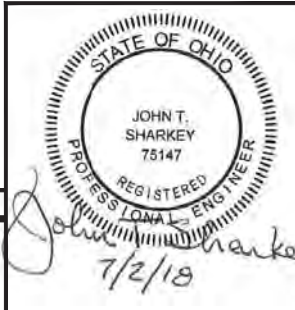
\* PLACE JUMPER TO TAKE  
DESIGNATED FUNCTION  
OUT OF SERVICE

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.

REVISION  
BLOCK

CHANGE FROM TYPICAL: N



W&LE

Wheeling & Lake Erie  
Railway

LOCATION  
WEST GRACE STREET  
BEDFORD, OHIO

|               |            |         |                  |
|---------------|------------|---------|------------------|
| ORIGINAL DATE | 02/08/2018 | TITLE   | XP4/VIO CIRCUITS |
| DESIGNER      | CTC        | SUB     | CLEVELAND        |
| DRAFTSMAN     | CTC        | RRMP    | 109.88           |
| CHECKER       | CTC        | DOT NO. | 524 340K         |
|               |            | SCALE   | N.T.S.           |
|               |            | SHEET   | 04 of 21         |

|                    |      |                  |         |     |     |                  |     |     |     |
|--------------------|------|------------------|---------|-----|-----|------------------|-----|-----|-----|
| ADJUSTMENT NAME    |      | MDR1             |         |     |     | MDR2             |     |     |     |
| NAME               |      | HIGHWAY CROSSING |         |     |     | HIGHWAY CROSSING |     |     |     |
| WARNING TIME       |      | 43 SEC           |         |     |     | 25 SEC           |     |     |     |
| 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  |     |     | ASSIGN           |     |     |     |
| OFFSET DISTANCE    |      | 0 FT             | 0 FT    |     |     | 0 FT             |     |     |     |
| MD RESTART         |      | *                | *       |     |     | *                |     |     |     |
| SUDDEN SHUNT ZONE  |      | *                | *       |     |     | *                |     |     |     |
| POSITIVE START     | PSEN | DISABLE          | DISABLE |     |     | DISABLE          |     |     |     |
|                    | PSRX | NA               | NA      |     |     | NA               |     |     |     |
|                    | PST  | NA               | NA      |     |     | NA               |     |     |     |
| POST JOINT DETECT  | PJEN | DISABLE          | DISABLE |     |     | DISABLE          |     |     |     |
|                    | PJRX | NA               | NA      |     |     | NA               |     |     |     |
|                    | PJDT | NA               | NA      |     |     | NA               |     |     |     |

| APPLICATION SOFTWARE INFORMATION |  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |
|----------------------------------|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|--|--|--|--|--|
| NAME                             | *  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |
| REV.                             | 1  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |
| CHECKSUM                         |  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |
| CRC                              |  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |
| CHASSIS ID                       |  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |
|                                  |  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |
| LOCATED<br>BEHIND<br>UCI-3       | CHASSIS ID   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |
|                                  | <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr><tr><td>⬤</td><td>⬤</td><td>⬤</td><td>⬤</td><td>⬤</td><td>⬤</td><td>⬤</td><td>⬤</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | ⬤ | ⬤ | ⬤ | ⬤ | ⬤ | ⬤ | ⬤ | ⬤ |  |  |  |  |  |  |  |
| 1                                | 2  | 3 | 4 | 5 | 6 | 7 | 8 |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |
| ⬤                                | ⬤  | ⬤ | ⬤ | ⬤ | ⬤ | ⬤ | ⬤ |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |
|                                  |  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |

ⓘ = TAB INTACT  
● = TAB PUNCHED OUT

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

|                   |          |          |     |     |
|-------------------|----------|----------|-----|-----|
| BASIC TRACK SETUP |          |          |     |     |
|                   | TK1      | TK2      | TK3 | TK4 |
| FREQUENCY         | 630 HZ   | 753 HZ   |     |     |
| MASTER/SLAVE      | MASTER   | MASTER   |     |     |
| RX ADJUST         | 100      | 100      |     |     |
| TCA               | *        | *        |     |     |
| DIRECTION MODE    | UNI      | UNI      |     |     |
| LIA               | *        | *        |     |     |
| ADVANCED APR. CAL | INACTIVE | INACTIVE |     |     |
| NBS COMP RX       | *        | *        |     |     |
| TRK ISLAND ASSIGN | ISL1     | ISL1     |     |     |
| APPROACH LENGTH   | 705 FT   | 705 FT   |     |     |
| AUTO RX           | ENABLE   | ENABLE   |     |     |

|                    |        |       |       |       |
|--------------------|--------|-------|-------|-------|
| IXC-A 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         | * 10.0 |       |       |       |
| GATE 1 DELAY       | 3 SEC  |       |       |       |
| GATE 2 DELAY       | 3 SEC  |       |       |       |

|                    |        |       |       |       |
|--------------------|--------|-------|-------|-------|
| IXC-B 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         | * 10.0 |       |       |       |
| GATE 1 DELAY       | 3 SEC  |       |       |       |
| GATE 2 DELAY       | 3 SEC  |       |       |       |

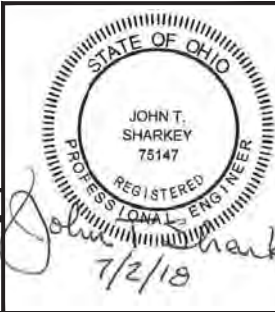
|                      |        |         |         |     |
|----------------------|--------|---------|---------|-----|
| ADVANCED TRACK SETUP |        |         |         |     |
|                      | TK1    | TK2     | TK3     | TK4 |
| MOTION DET TIMER     | MDEN   | DISABLE | DISABLE |     |
|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

| APPROACH 1<br>(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<br>(WEST) |         |          |       |            |       |           |    |       |           |
| Track 1              | Normal  |          |       |            |       |           |    |       |           |
|                      | Standby |          |       |            |       |           |    |       |           |
| Track 2              | Normal  |          |       |            |       |           |    |       |           |
|                      | Standby |          |       |            |       |           |    |       |           |

INITIAL VALUES WHEN PLACED IN SERVICE

NOTES:  
\* = FIELD ADJUSTMENT  
NA = NOT APPLICABLE

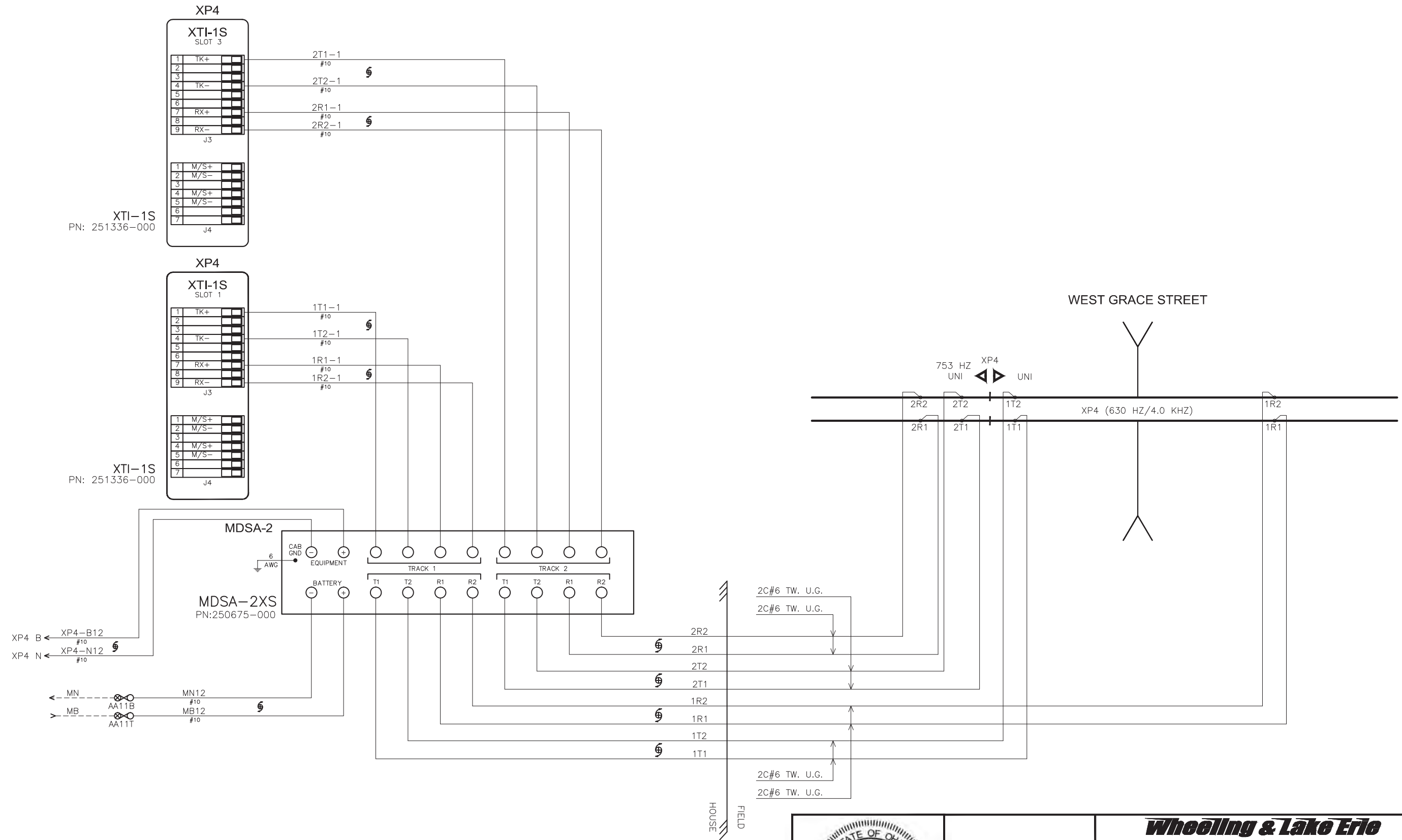
CHANGE FROM TYPICAL: Y



W&LE

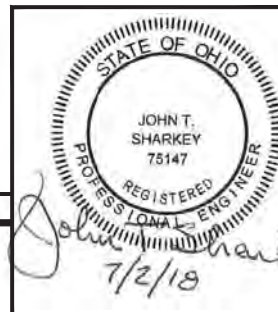
Wheeling & Lake Erie  
Railway

|               |            |         |                                    |         |          |
|---------------|------------|---------|------------------------------------|---------|----------|
| LOCATION      |            |         | WEST GRACE STREET<br>BEDFORD, OHIO |         |          |
| ORIGINAL DATE | 02/08/2018 | TITLE   | XP4 SETUP SHEET                    |         |          |
| DESIGNER      | CTC        | SUB     | CLEVELAND                          | CTC No. | CN18042  |
| DRAFTSMAN     | CTC        | RRMP    | 109.88                             | SCALE   | N.T.S.   |
| CHECKER       | CTC        | DOT NO. | 524 340K                           | SHEET   | 05 of 21 |



REVISION  
BLOCK

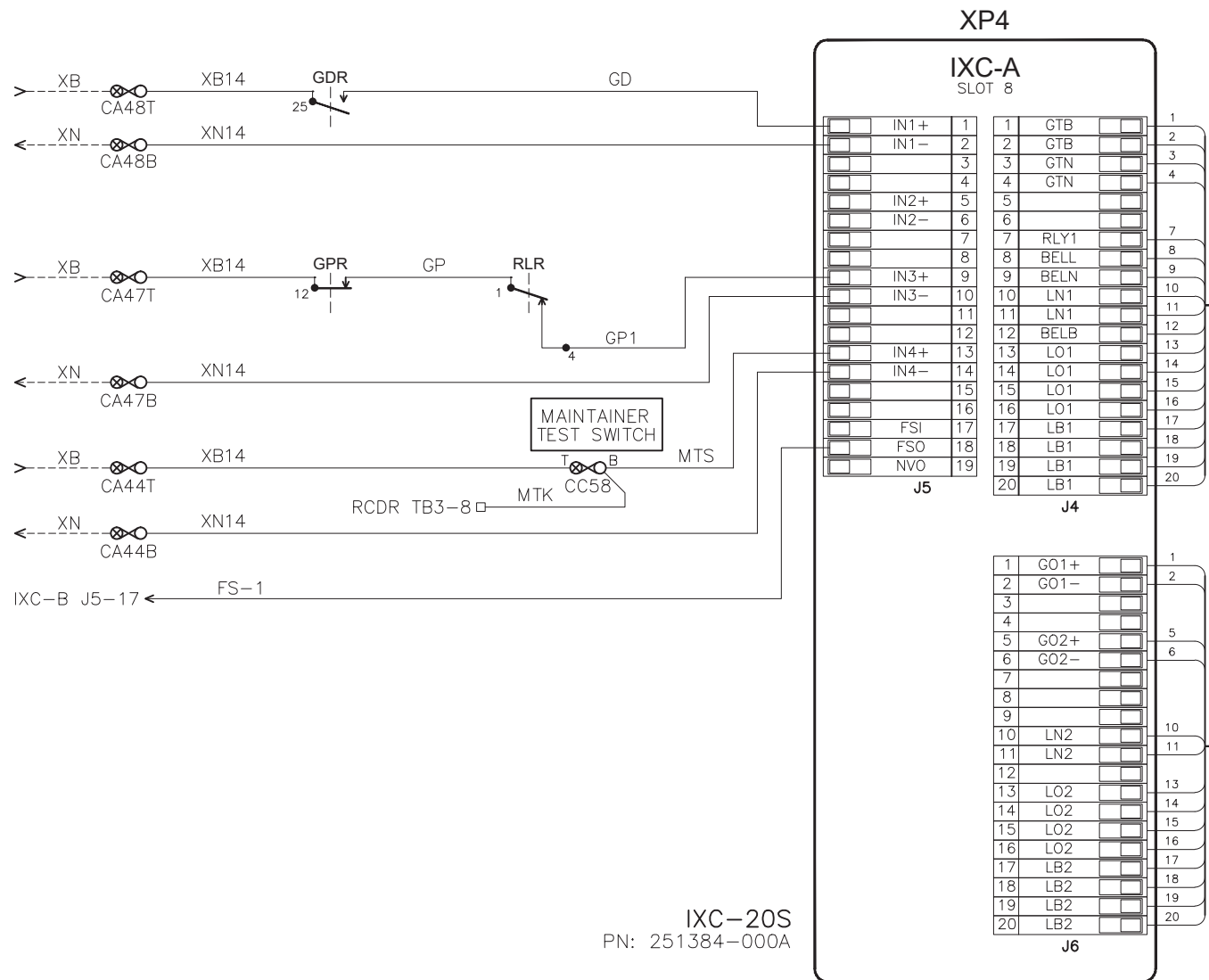
CHANGE FROM TYPICAL: Y



**W&LE**

**Wheeling & Lake Erie  
Railway**

|               |            |         |                                    |         |          |
|---------------|------------|---------|------------------------------------|---------|----------|
| LOCATION      |            |         | WEST GRACE STREET<br>BEDFORD, OHIO |         |          |
| ORIGINAL DATE | 02/08/2018 | TITLE   | TRACK CONNECTION CIRCUITS          |         |          |
| DESIGNER      | CTC        | SUB     | CLEVELAND                          | CTC NO. | CN18042  |
| DRAFTSMAN     | CTC        | RRMP    | 109.88                             | SCALE   | N.T.S.   |
| CHECKER       | CTC        | DOT NO. | 524 340K                           | SHEET   | 06 OF 21 |



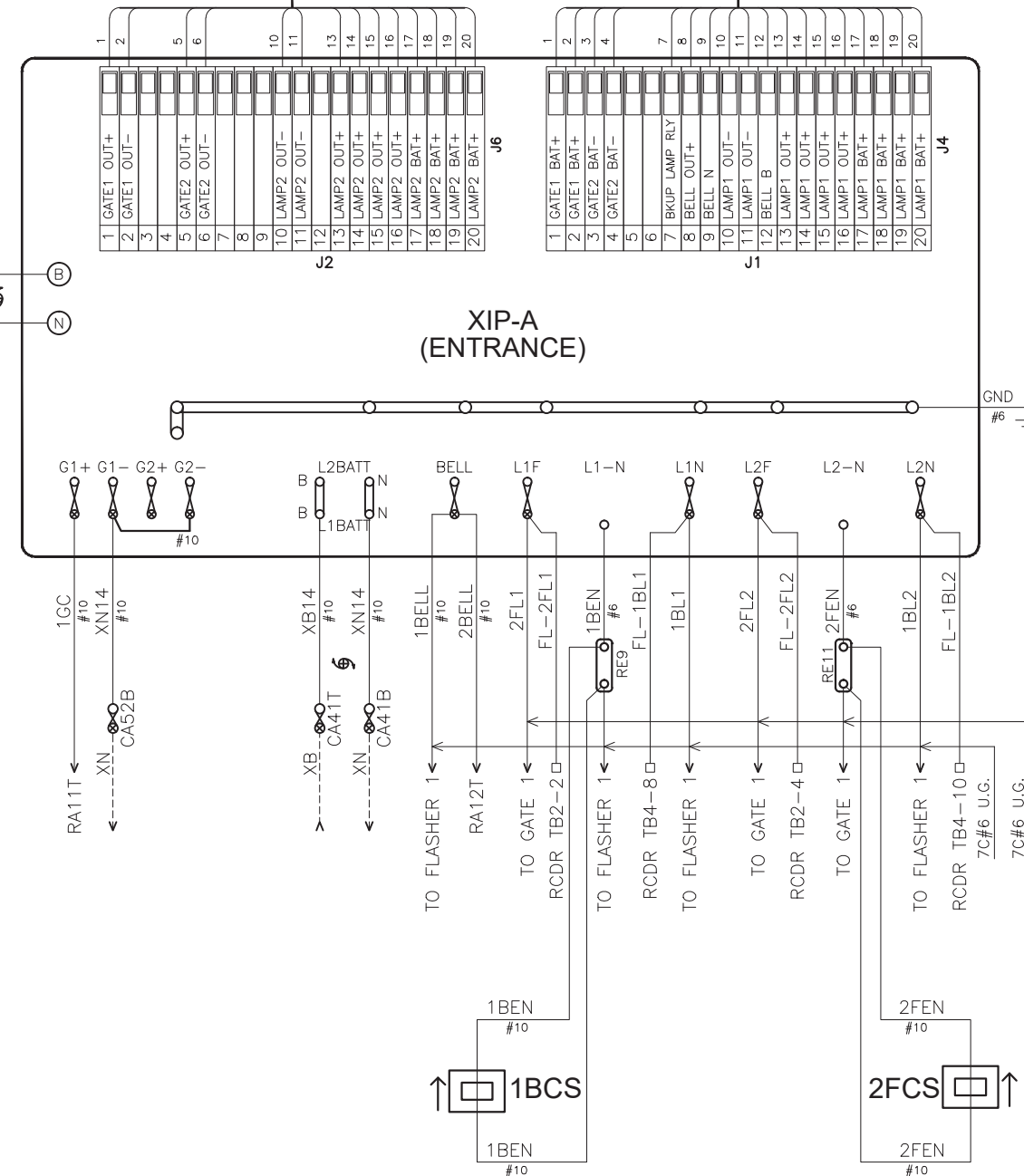
IXC-20S  
PN: 251384-000A

CABLE #1 GETS-GS P/N 075046-001

CABLE #2 GETS-GS P/N 075047-001

XB14  
CA49T  
XB14  
CA49B  
XB14  
CA49T  
XB14  
CA49B

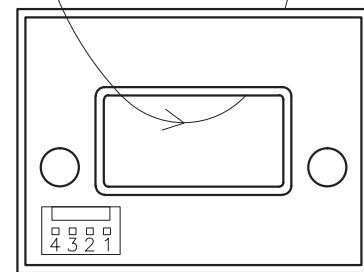
XIP-20  
PN: 227561-000



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

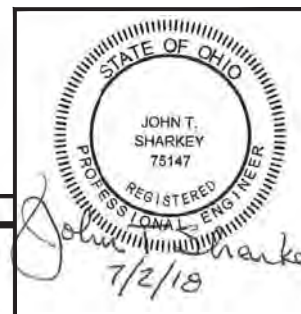
NOTES: ALL WIRING THIS SHEET #16 AWG  
UNLESS NOTED OTHERWISE.

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



TO RCDR  
TB5

CHANGE FROM TYPICAL: N

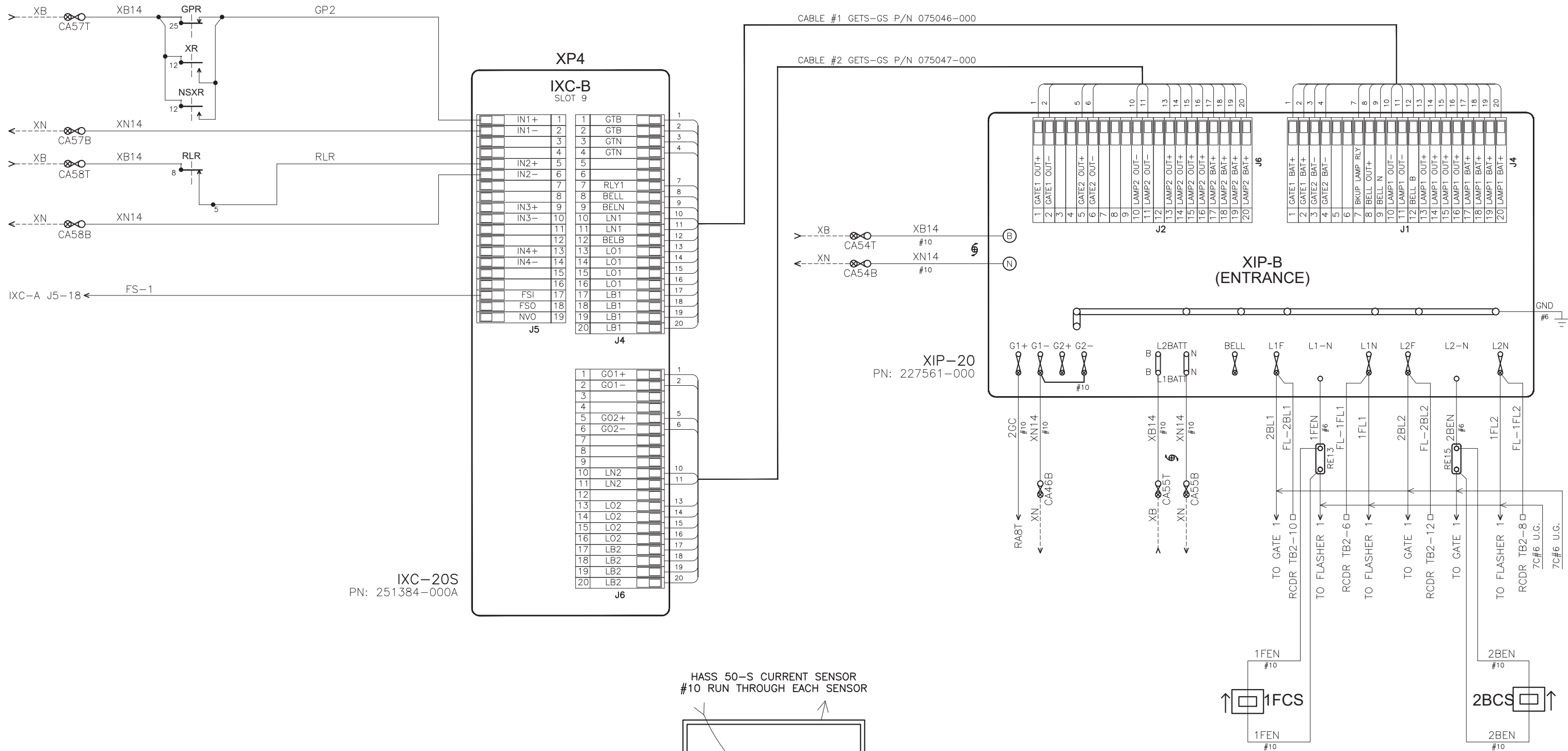


**W&LE**

**Wheeling & Lake Erie  
Railway**

|               |            |                                    |                               |
|---------------|------------|------------------------------------|-------------------------------|
| LOCATION      |            | WEST GRACE STREET<br>BEDFORD, OHIO |                               |
| ORIGINAL DATE | 02/08/2018 | TITLE                              | ENTRANCE GATE CONTROL CIRCUIT |
| DESIGNER      | CTC        | SUB                                | CLEVELAND                     |
| DRAFTSMAN     | CTC        | RRMP                               | 109.88                        |
| CHECKER       | CTC        | DOT NO.                            | 524 340K                      |
|               |            | SCALE                              | N.T.S.                        |
|               |            | SHEET                              | 07 of 21                      |

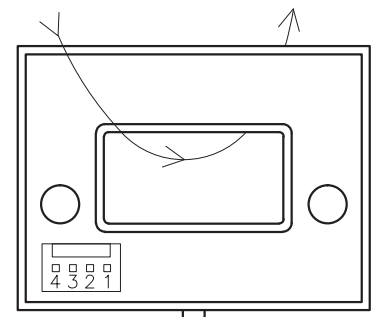
REVISION  
BLOCK



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

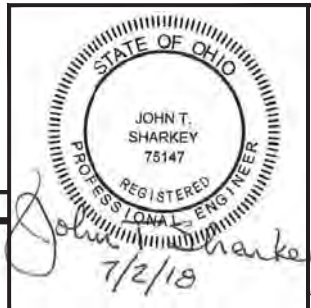
HASS 50-S CURRENT SENSOR  
#10 RUN THROUGH EACH SENSOR

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



TO RCDR  
TB5

CHANGE FROM TYPICAL: N



**W&LE**

**Wheeling & Lake Erie  
Railway**

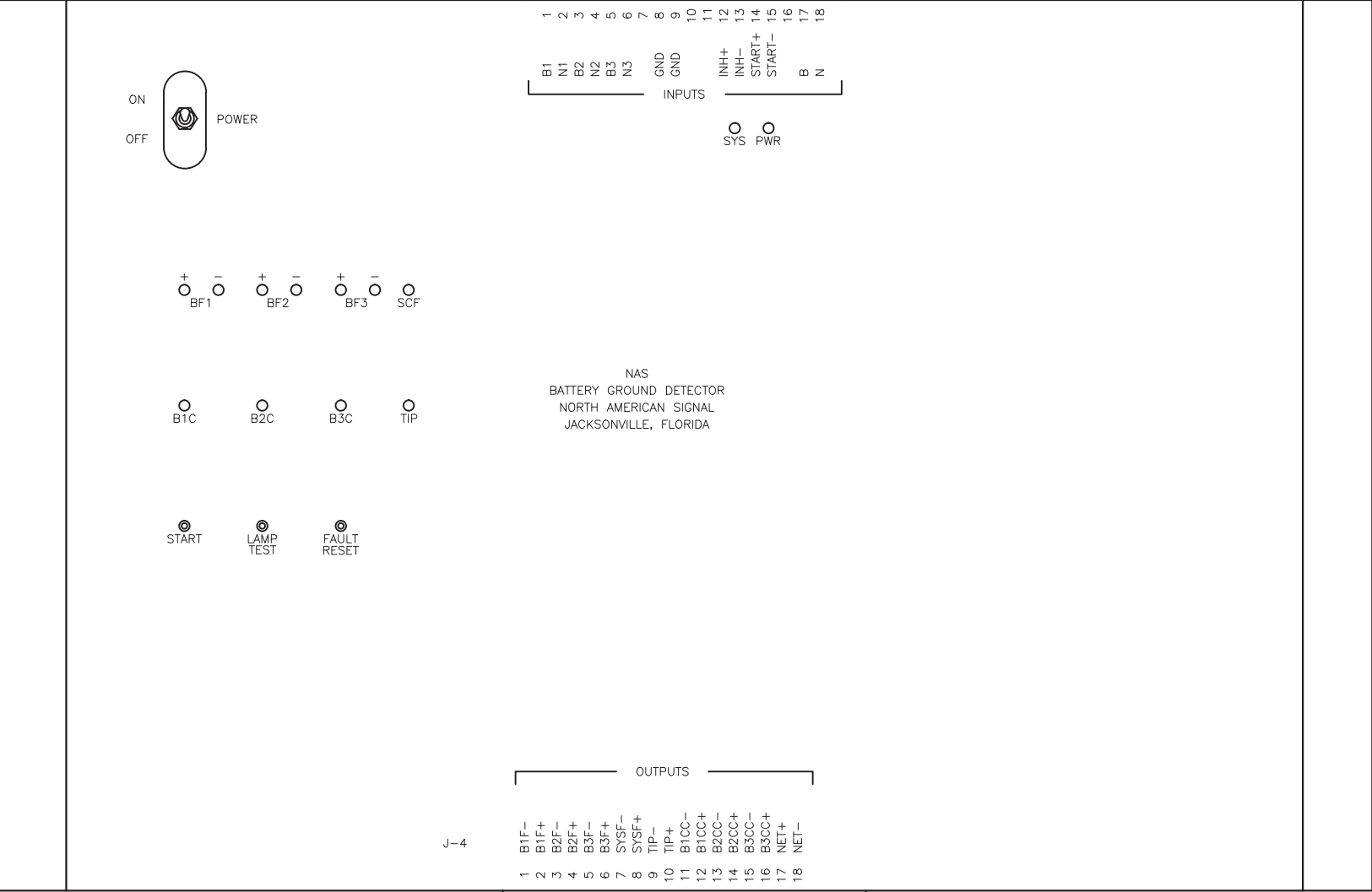
|               |            |         |                                    |         |          |
|---------------|------------|---------|------------------------------------|---------|----------|
| LOCATION      |            |         | WEST GRACE STREET<br>BEDFORD, OHIO |         |          |
| ORIGINAL DATE | 02/08/2018 | TITLE   | ENTRANCE GATE CONTROL CIRCUIT      |         |          |
| DESIGNER      | CTC        | SUB     | CLEVELAND                          | CTC NO. | CN18042  |
| DRAFTSMAN     | CTC        | RRMP    | 109.88                             | SCALE   | N.T.S.   |
| CHECKER       | CTC        | DOT NO. | 524 340K                           | SHEET   | 08 OF 21 |

REVISION  
BLOCK





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.

CHANGE FROM TYPICAL: N

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

(2 MA)

SWITCH VALUES CLOSED  
POSITION (BINARY)

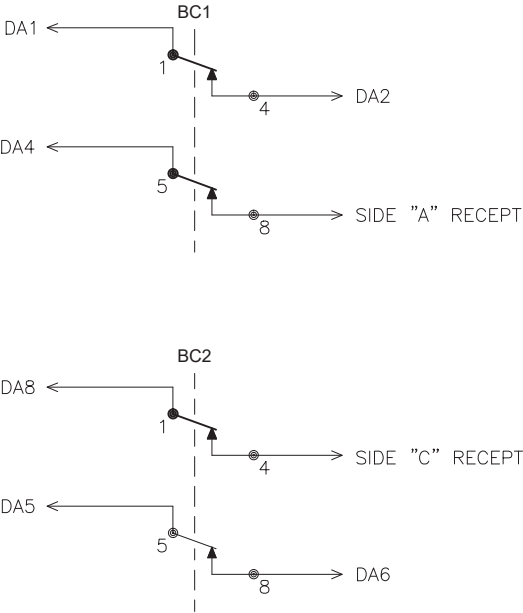
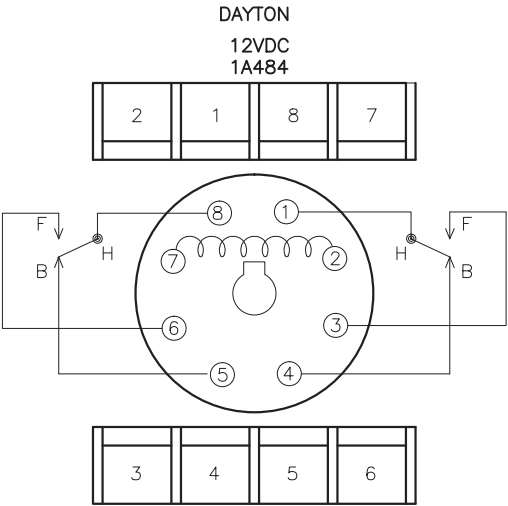
SW1 = 1  
SW2 = 2  
SW3 = 4  
SW4 = 8  
SW5 = 16  
SW6 = 32  
SW7 = 64  
SW8 = 128

| 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



REVISION  
BLOCK



**W&LE**

**Wheeling & Lake Erie  
Railway**

| LOCATION                           |            |         |           |
|------------------------------------|------------|---------|-----------|
| WEST GRACE STREET<br>BEDFORD, OHIO |            |         |           |
| ORIGINAL DATE                      | 02/08/2018 | TITLE   | BGD       |
| DESIGNER                           | CTC        | SUB     | CLEVELAND |
| DRAFTSMAN                          | CTC        | RRMP    | 109.88    |
| CHECKER                            | CTC        | DOT NO. | 524 340K  |
|                                    |            | SCALE   | N.T.S.    |
|                                    |            | SHEET   | 10 of 21  |

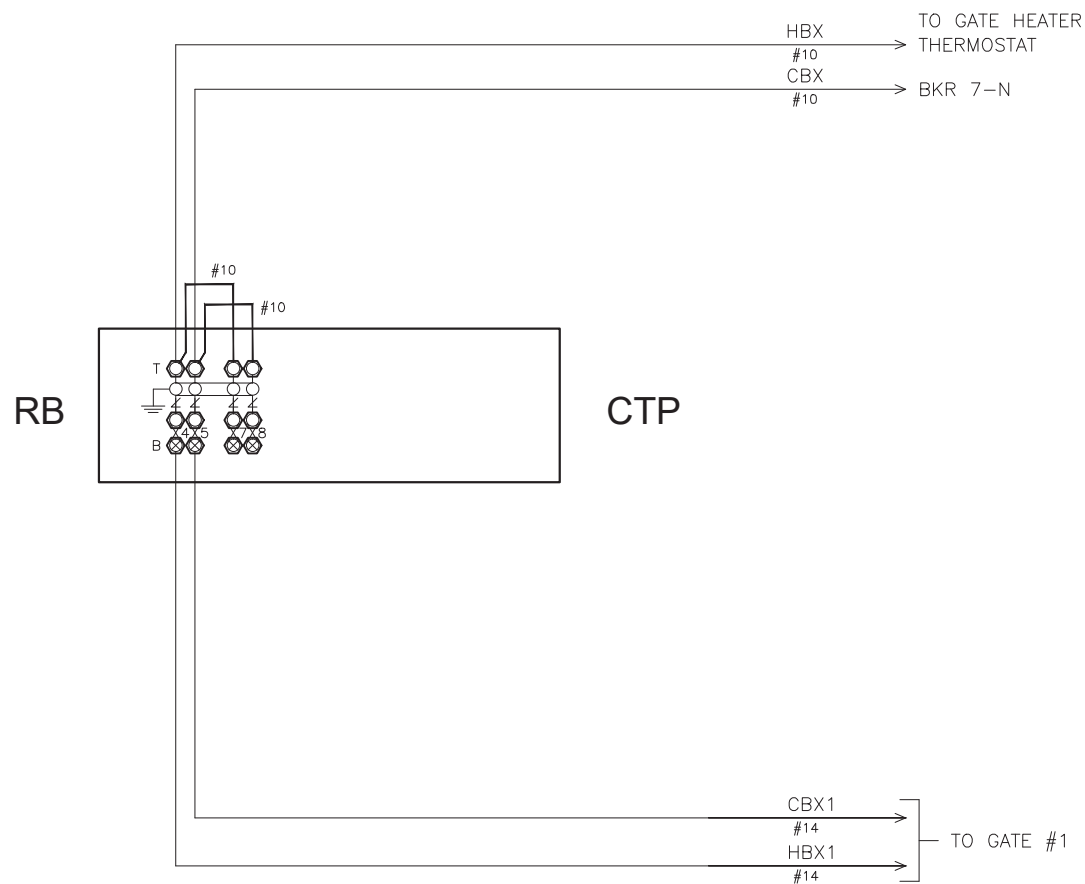


CHANGE FROM TYPICAL: N



|          |                                    |
|----------|------------------------------------|
| LOCATION | WEST GRACE STREET<br>BEDFORD, OHIO |
|----------|------------------------------------|

|               |            |         |           |                |          |
|---------------|------------|---------|-----------|----------------|----------|
| ORIGINAL DATE | 02/08/2018 | TITLE   |           | ARRESTOR PANEL |          |
| DESIGNER      | CTC        | SUB     | CLEVELAND | CTC NO.        | CN18042  |
| DRAFTSMAN     | CTC        | RRMP    | 109.88    | SCALE          | N.T.S.   |
| CHECKER       | CTC        | DOT NO. | 524 340K  | SHEET          | 11 OF 21 |

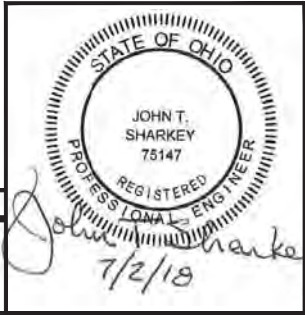


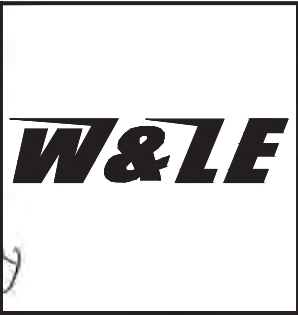
LEGEND:

 = INSULATED NUT

|                   |  |  |  |  |  |  |  |  |  |  |
|-------------------|--|--|--|--|--|--|--|--|--|--|
| REVISION<br>BLOCK |  |  |  |  |  |  |  |  |  |  |
|                   |  |  |  |  |  |  |  |  |  |  |

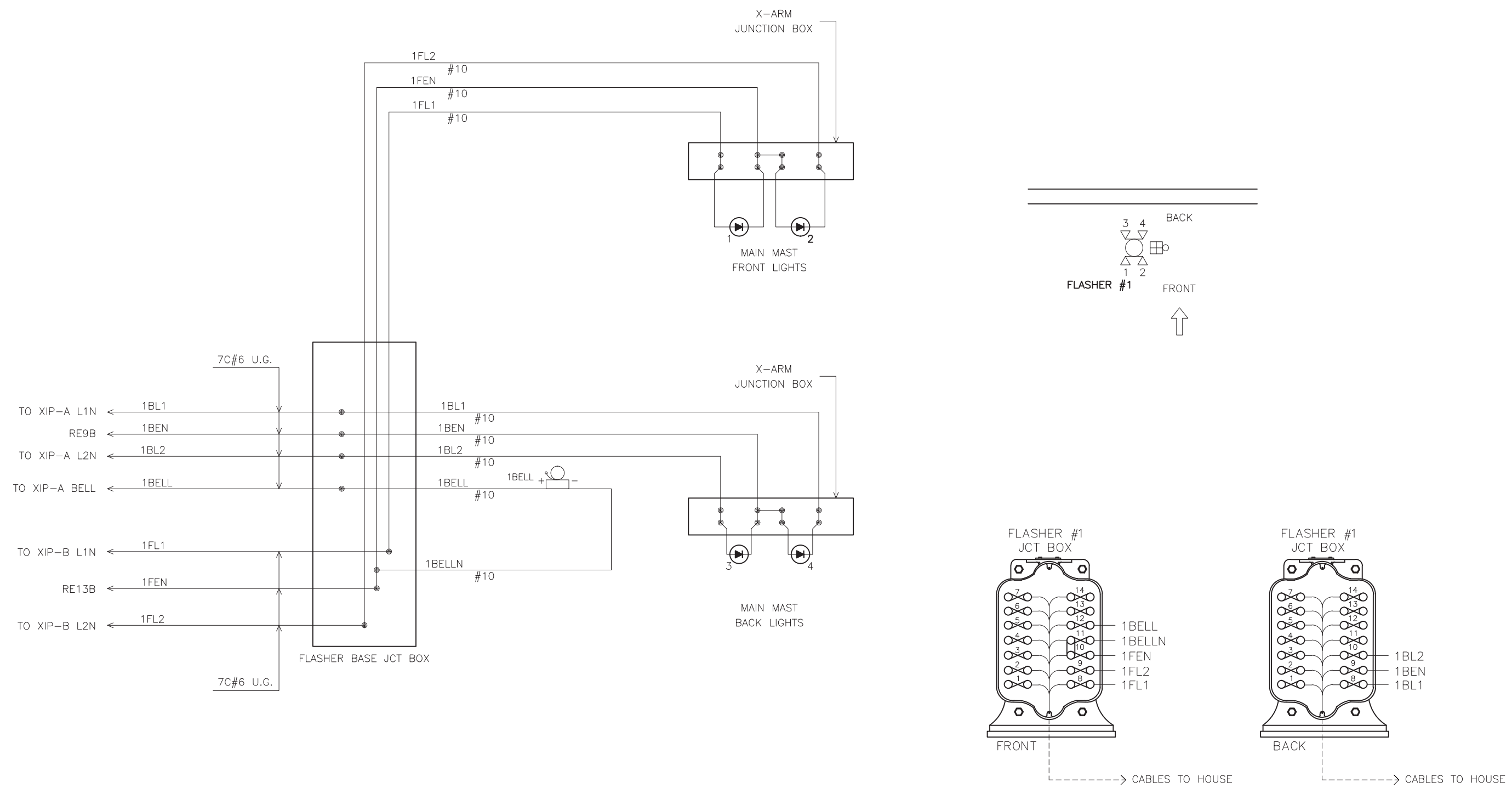
CHANGE FROM TYPICAL: N





| Wheeling & Lake Erie<br>Railway |            |                                    |           |
|---------------------------------|------------|------------------------------------|-----------|
| LOCATION                        |            | WEST GRACE STREET<br>BEDFORD, OHIO |           |
| ORIGINAL DATE                   | 02/08/2018 | TITLE                              | CTP       |
| DESIGNER                        | CTC        | SUB                                | CLEVELAND |
| DRAFTSMAN                       | CTC        | RRMP                               | 109.88    |
| CHECKER                         | CTC        | DOT NO.                            | 524 340K  |
|                                 |            | CTC NO.                            | CN18042   |
|                                 |            | SCALE                              | N.T.S.    |
|                                 |            | SHEET                              | 12 of 21  |

FLASHER #1



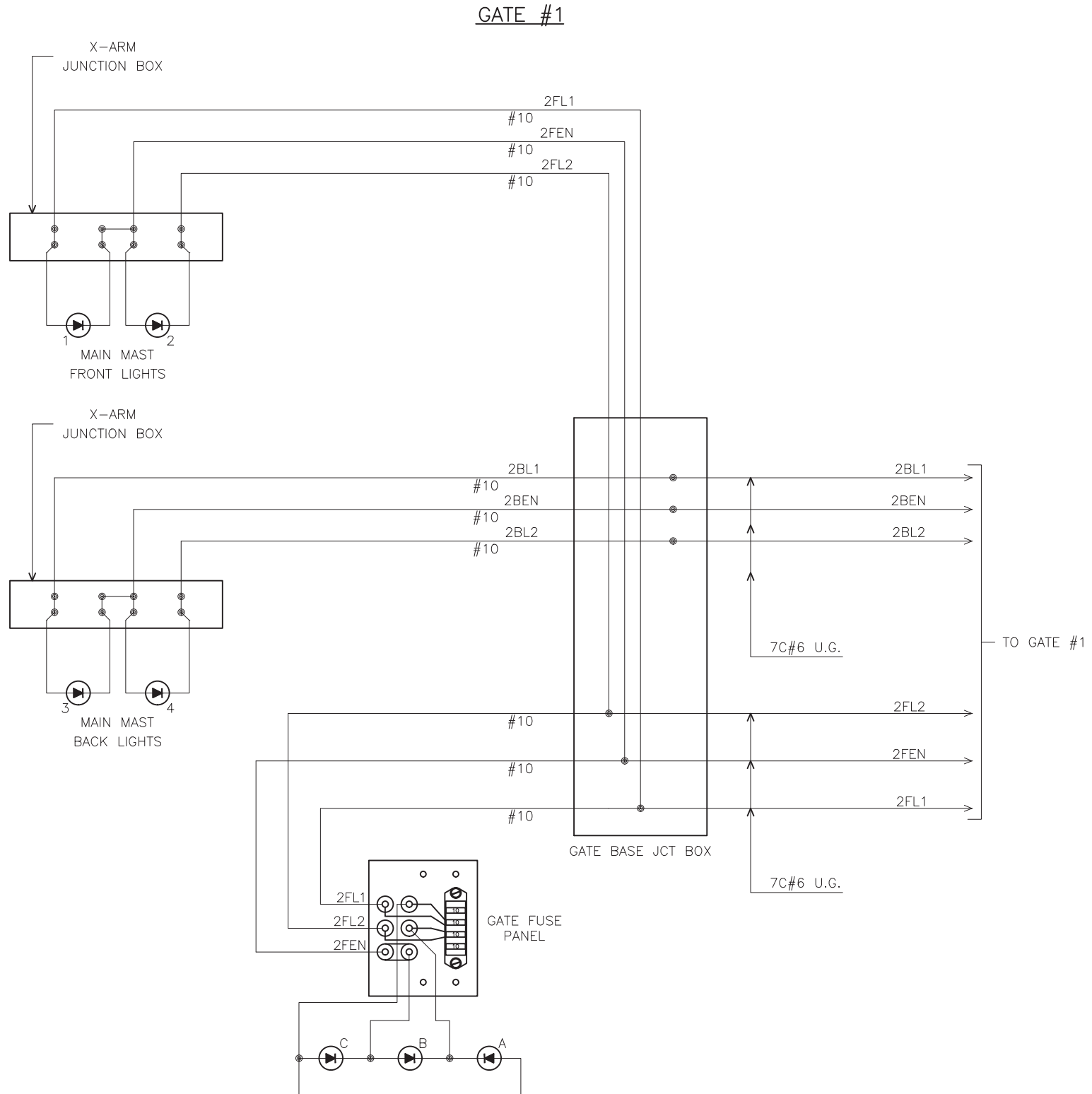
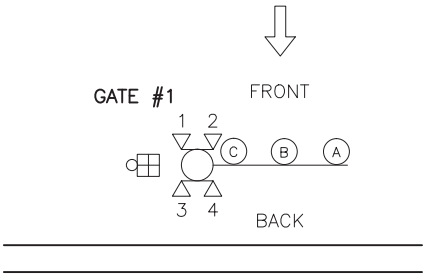
NOTE:  
\* USE ATC 10 AMP FUSES ONLY  
◀ IS LED SYMBOL ONLY. INSTALL ACCORDING TO MANUFACTURER'S INSTRUCTIONS.

CHANGE FROM TYPICAL: Y

|  |  |                    |          |
|--|--|--------------------|----------|
| <b>Wheeling &amp; Lake Erie Railway</b>        |  |                    |          |
| LOCATION<br>WEST GRACE STREET<br>BEDFORD, OHIO |  |                    |          |
| ORIGINAL DATE<br>02/08/2018                    | TITLE<br>FLASHER #1 LIGHTS (NEAR SIDE) |                    |          |
| DRAWN BY<br>CTC                                | SUB<br>CLEVELAND                       | CTC NO.<br>CN18042 |          |
| CHECKED BY<br>CTC                              | RRMP<br>109.88                         | SCALE<br>N.T.S.    |          |
| CHECKER<br>CTC                                 | DOT NO.<br>524 340K                    | SHEET<br>13        | OF<br>21 |

REVISION  
BLOCK



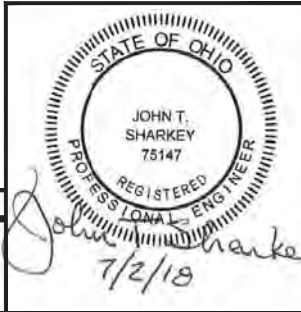


NOTE:  
\* USE ATC 10 AMP FUSES ONLY

IS LED SYMBOL ONLY. INSTALL ACCORDING TO MANUFACTURER'S INSTRUCTIONS.

REVISION  
BLOCK

CHANGE FROM TYPICAL: Y



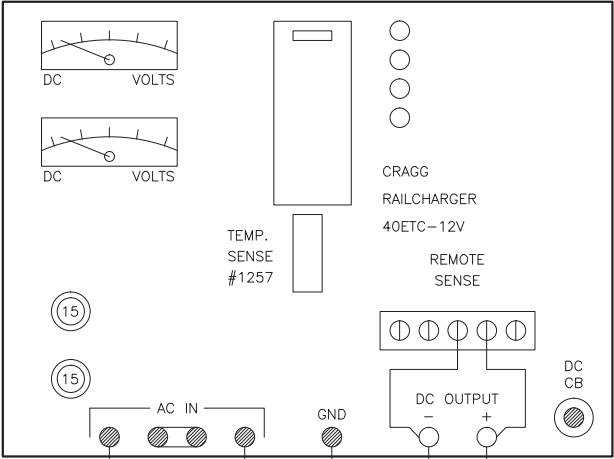
**W&LE**

**Wheeling & Lake Erie  
Railway**

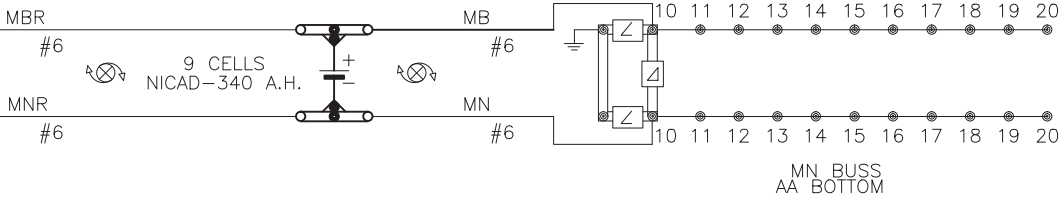
|               |            |         |                                    |         |          |
|---------------|------------|---------|------------------------------------|---------|----------|
| LOCATION      |            |         | WEST GRACE STREET<br>BEDFORD, OHIO |         |          |
| ORIGINAL DATE | 02/08/2018 | TITLE   | GATE #1 LIGHTS (FAR SIDE)          |         |          |
| DESIGNER      | CTC        | SUB     | CLEVELAND                          | CTC NO. | CN18042  |
| DRAFTSMAN     | CTC        | RRMP    | 109.88                             | SCALE   | N.T.S.   |
| CHECKER       | CTC        | DOT NO. | 524 340K                           | SHEET   | 15 of 21 |



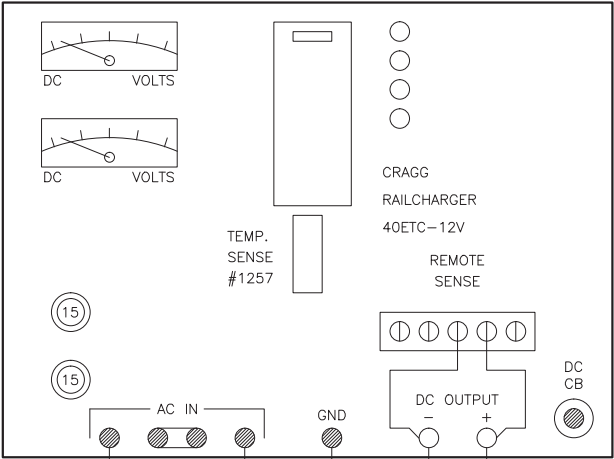
MB-CHARGER  
(SIDE "A" WALL)



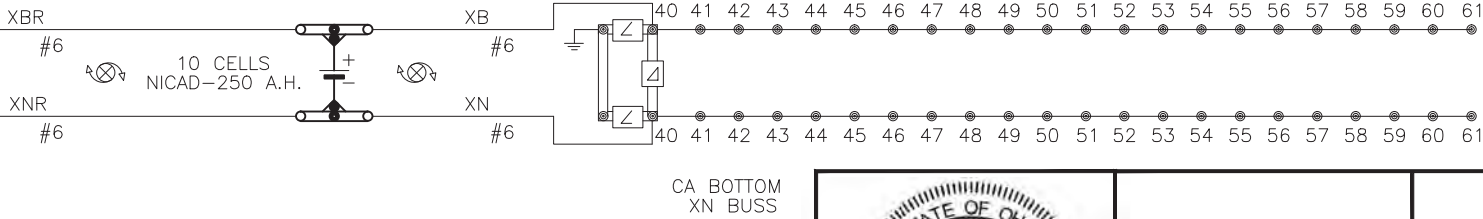
MB-BATTERY



XB-CHARGER  
(SIDE "C" WALL)



XB-BATTERY

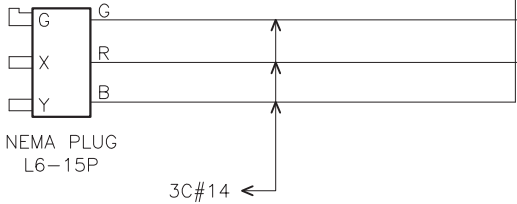
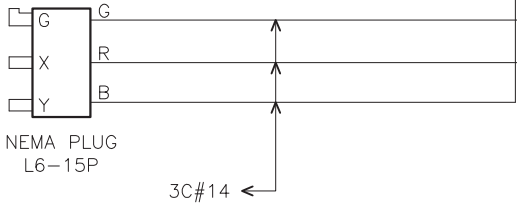


BATTERY BUSS DETAILS

|            |    |             |
|------------|----|-------------|
| CC50T      | 20 | VIO1 J3-5   |
| CC45T      | 19 | VIO1 J3-2   |
| ROR-4      | 18 | VIO1 J3-11  |
| PO DB1T    | 17 | PO DB3T     |
| BGD B1     | 16 | BGD N1      |
| NSXR 32    | 15 | NSXR 35     |
| RCDR TB1-4 | 14 | RCDR TB1-3  |
| RCDR TB6-1 | 13 | RCDR TB6-2  |
| SPARE      | 12 | RLR-7/ROR 7 |
| MDSA-1 B+  | 11 | MDSA-1 B-   |
| MB BATT+   | 10 | MN BATT-    |

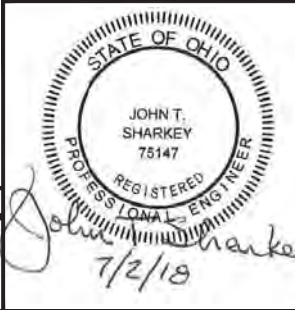
BATTERY BUSS DETAILS

|             |    |             |
|-------------|----|-------------|
| SPARE       | 61 | SPARE       |
| SPARE       | 60 | SPARE       |
| SPARE       | 59 | SPARE       |
| RLR 8       | 58 | IXC-B J5-6  |
| GPR 25      | 57 | IXC-B J5-2  |
| NSXR 15     | 56 | SPARE       |
| XIP-B L1B-B | 55 | XIP-B L1B-N |
| XIP-B B     | 54 | XIP-B N     |
| BGD B2      | 53 | BGD N2      |
| XR 15       | 52 | XIP-A G1-   |
| RA4T        | 51 | RA5T        |
| RA16T       | 50 | RA15T       |
| XIP-A B     | 49 | XIP-A N     |
| GDR 25      | 48 | IXC-A J5-2  |
| GPR 12      | 47 | IXC-A J5-10 |
| GDR 15      | 46 | XIP-B G1-   |
| GPR 15      | 45 | GPR 1E      |
| CC58T       | 44 | IXC-A J5-14 |
| RE7B/FD COM | 43 | RCDR TB4-15 |
| RCDR TB1-2  | 42 | RCDR TB1-1  |
| XIP-A L1B-B | 41 | XIP-A L1B-N |
| XB BATT+    | 40 | XN BATT-    |



REVISION  
BLOCK

CHANGE FROM TYPICAL: Y

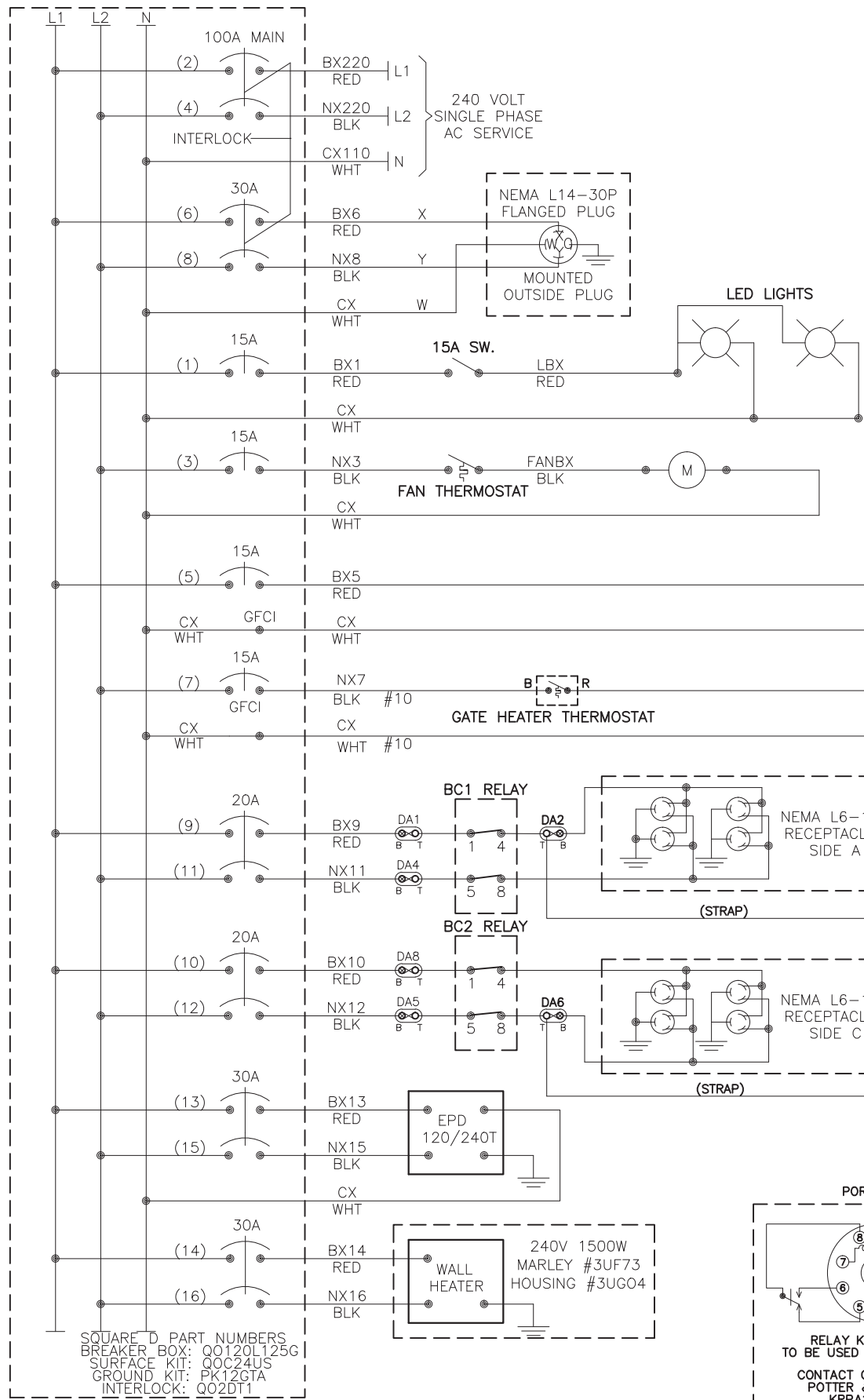


**W&LE**

**Wheeling & Lake Erie  
Railway**

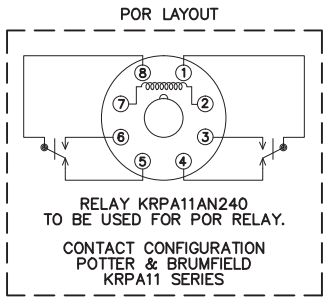
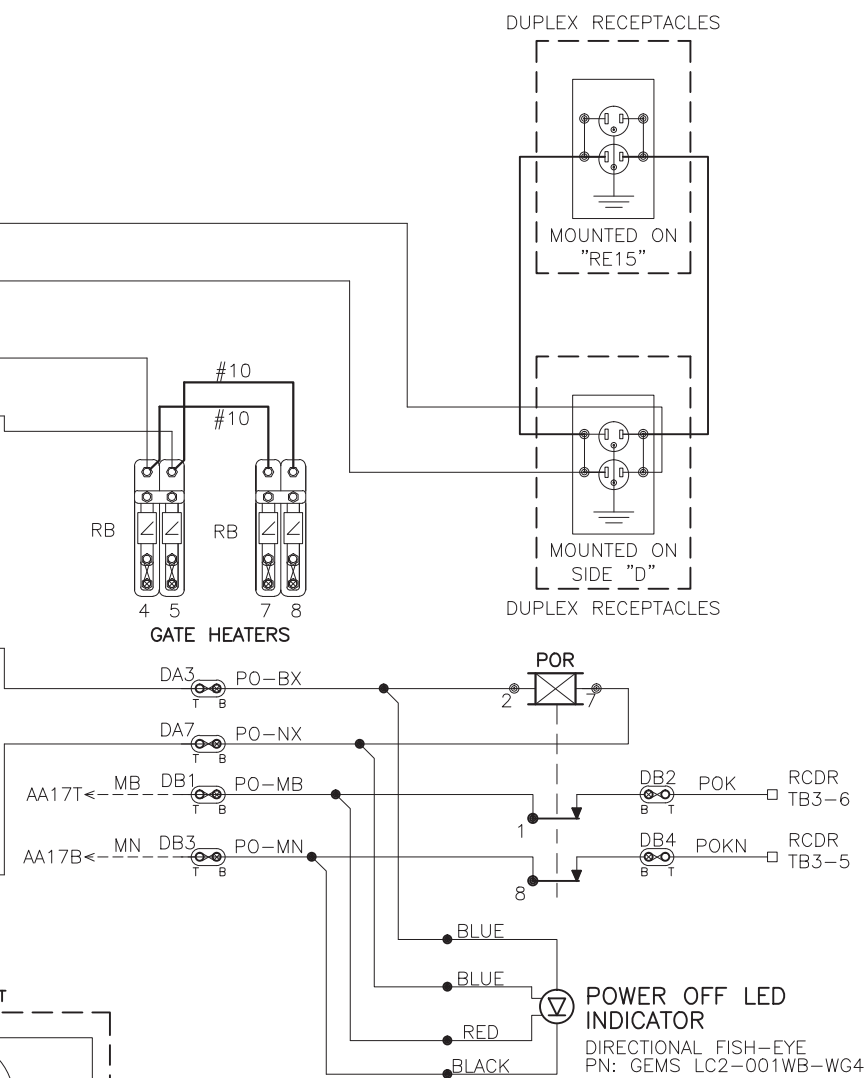
|  |            |         |                 |
|--|------------|---------|-----------------|
| LOCATION<br>WEST GRACE STREET<br>BEDFORD, OHIO |            |         |                 |
| ORIGINAL DATE                                  | 02/08/2018 | TITLE   | BATTERY CHARGER |
| DESIGNER                                       | CTC        | SUB     | CLEVELAND       |
| DRAFTSMAN                                      | CTC        | RRMP    | 109.88          |
| CHECKER  | CTC        | DOT NO. | 524 340K        |
|  |            | SCALE   | 1"=2'           |
|  |            | SHEET   | 16 OF 21        |



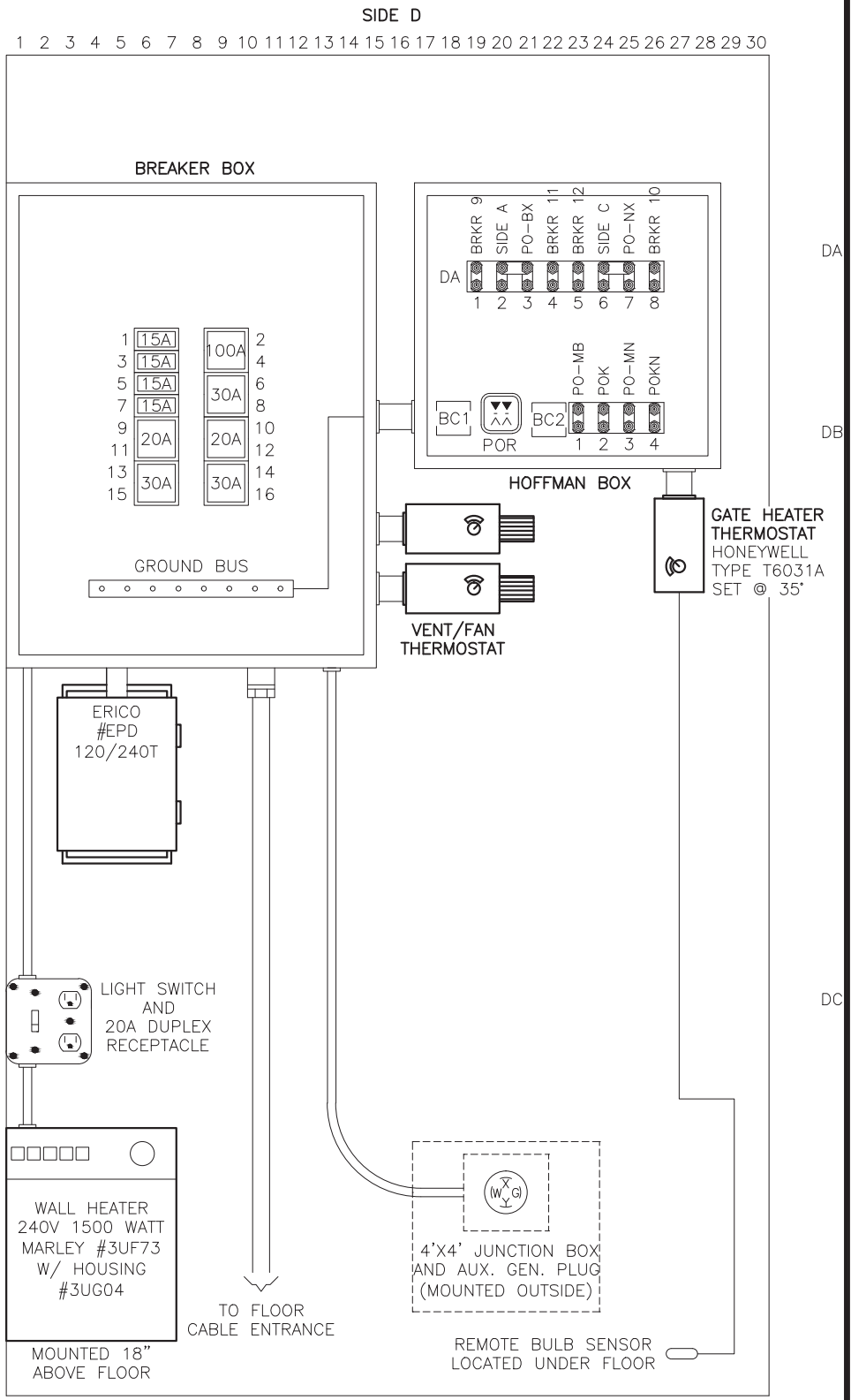


SQUARE D PART NUMBERS  
BREAKER BOX: Q0120L125G  
SURFACE KIT: Q0C24US  
GROUND KIT: PK12GTA  
INTERLOCK: Q02DT1

- 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

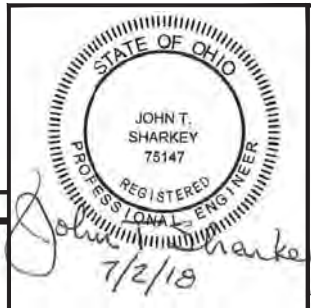


- NOTE:
- WHEN AC IS ON LED IS ON
  - WHEN AC IS OFF LED FLASHES UNTIL BATTERY IS DISCHARGED.
  - WHEN AC IS OFF AND BATTERY IS DISCHARGED LED IS OFF.

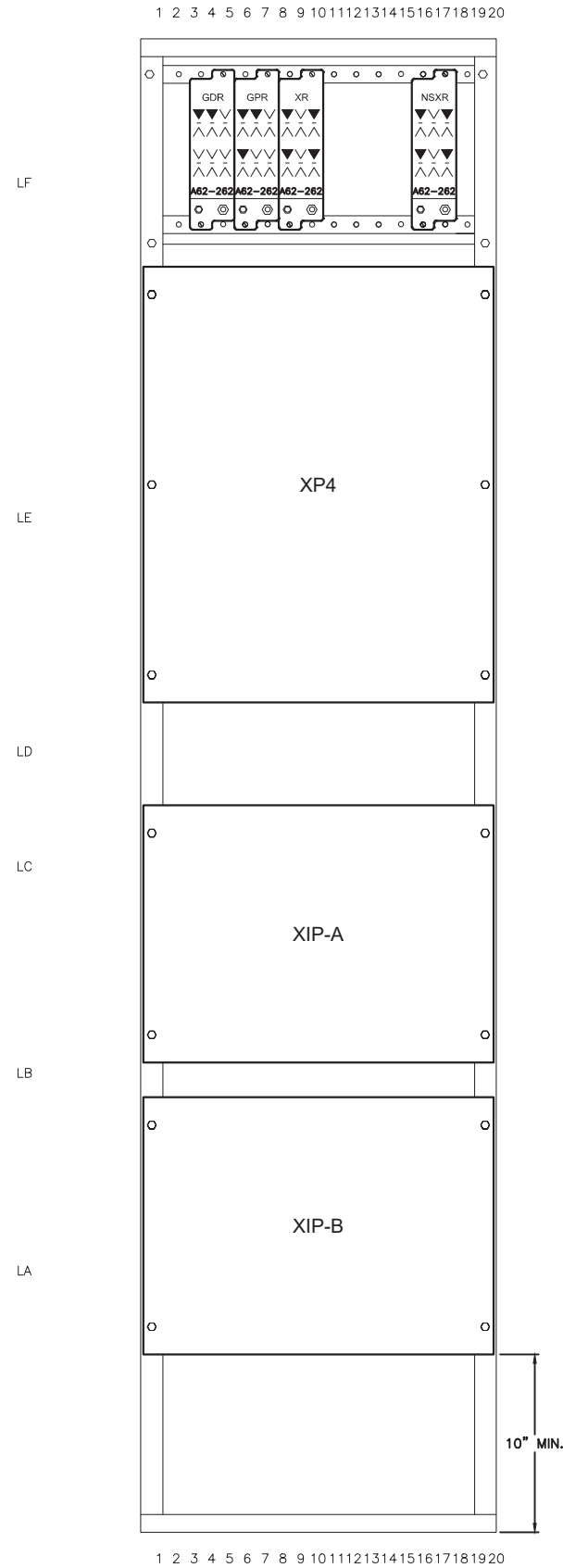


REVISION  
BLOCK

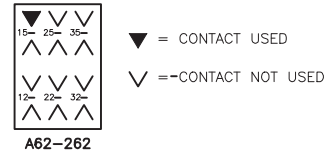
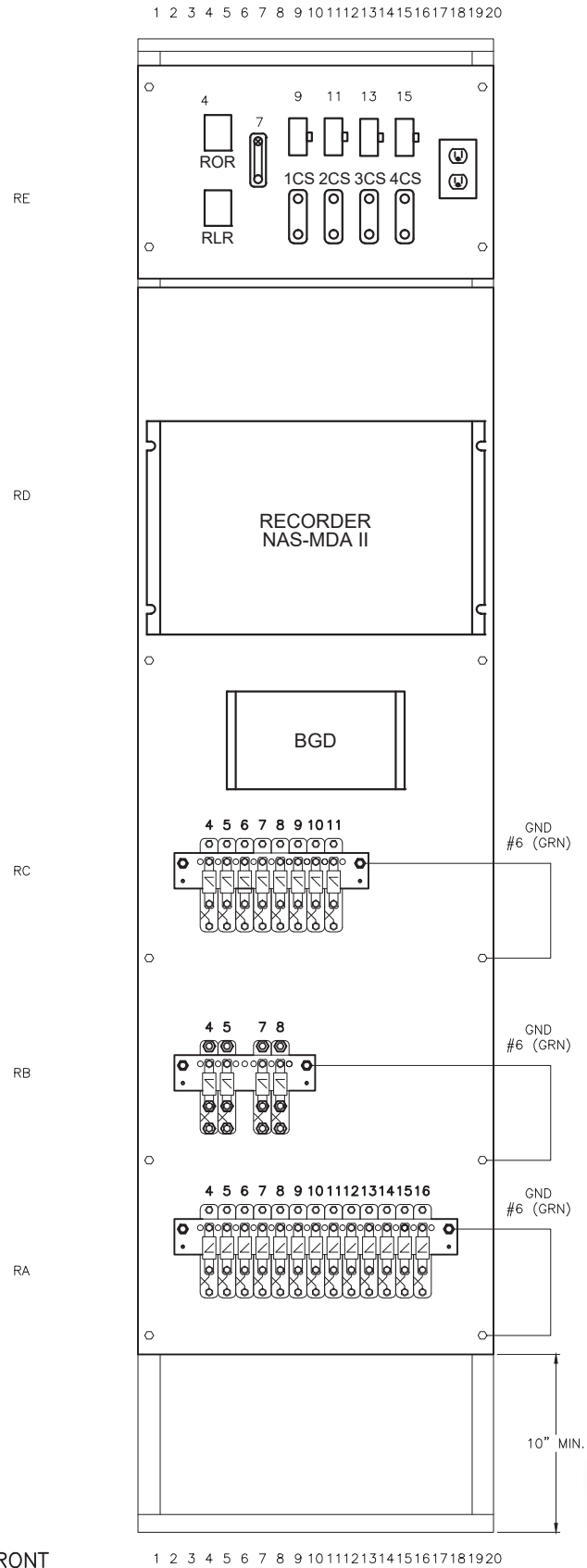
CHANGE FROM TYPICAL: N



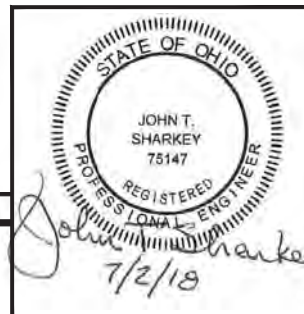
| Wheeling & Lake Erie<br>Railway |            |                                    |                       |
|---------------------------------|------------|------------------------------------|-----------------------|
| LOCATION                        |            | WEST GRACE STREET<br>BEDFORD, OHIO |                       |
| ORIGINAL DATE                   | 02/08/2018 | TITLE                              | AC POWER DISTRIBUTION |
| DESIGNER                        | CTC        | SUB                                | CLEVELAND             |
| DRAFTSMAN                       | CTC        | RRMP                               | 109.88                |
| CHECKER                         | CTC        | DOT NO.                            | 524 340K              |
|                                 |            | CTC NO.                            | CN18042               |
|                                 |            | SCALE                              | 1"=2'                 |
|                                 |            | SHEET                              | 17 OF 21              |



SIDE 'B' FRONT



| RELAY CROSS REFERENCE |          |
|-----------------------|----------|
| GRS                   | SAFETRAN |
| A62-262               | 400000   |

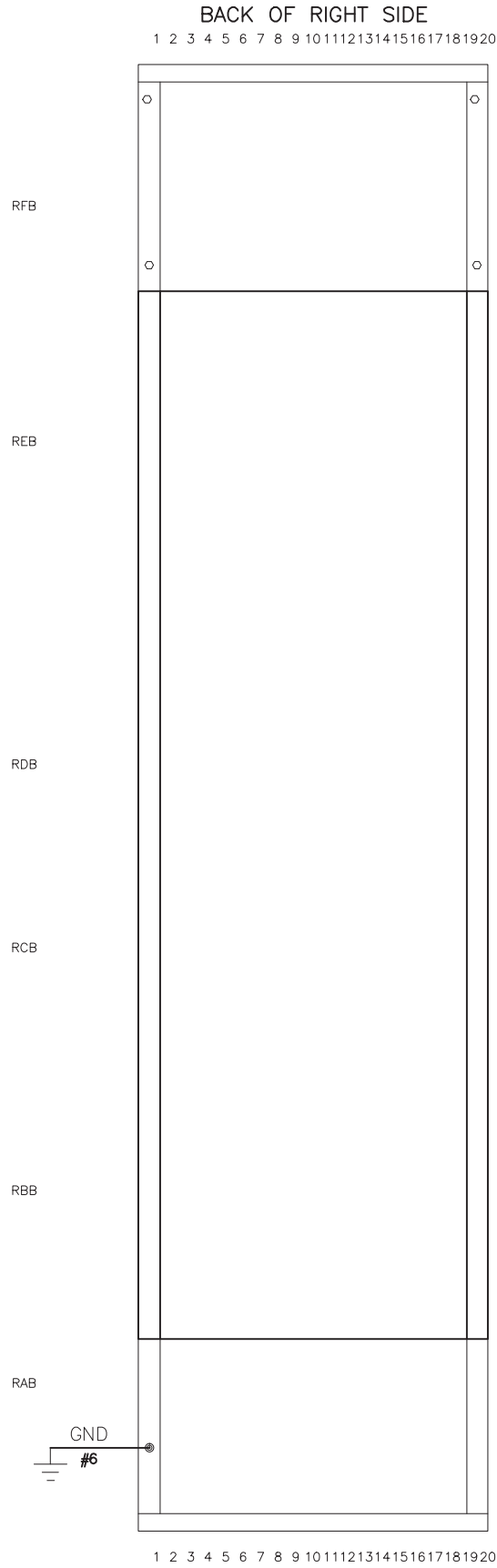


**Wheeling & Lake Erie  
Railway**

|               |            |         |                                    |         |          |
|---------------|------------|---------|------------------------------------|---------|----------|
| LOCATION      |            |         | WEST GRACE STREET<br>BEDFORD, OHIO |         |          |
| ORIGINAL DATE | 02/08/2018 | TITLE   | RACK FRONT VIEW                    |         |          |
| DESIGNER      | CTC        | SUB     | CLEVELAND                          | CTC NO. | CN18042  |
| DRAFTSMAN     | CTC        | RRMP    | 109.88                             | SCALE   | 1"=2'    |
| CHECKER       | CTC        | DOT NO. | 524 340K                           | SHEET   | 18 OF 21 |

REVISION  
BLOCK

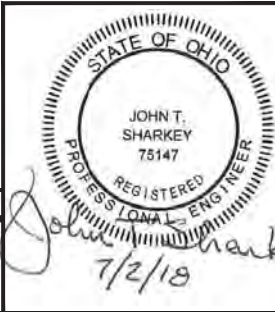
CHANGE FROM TYPICAL: Y



SIDE 'B' BACK

REVISION  
BLOCK

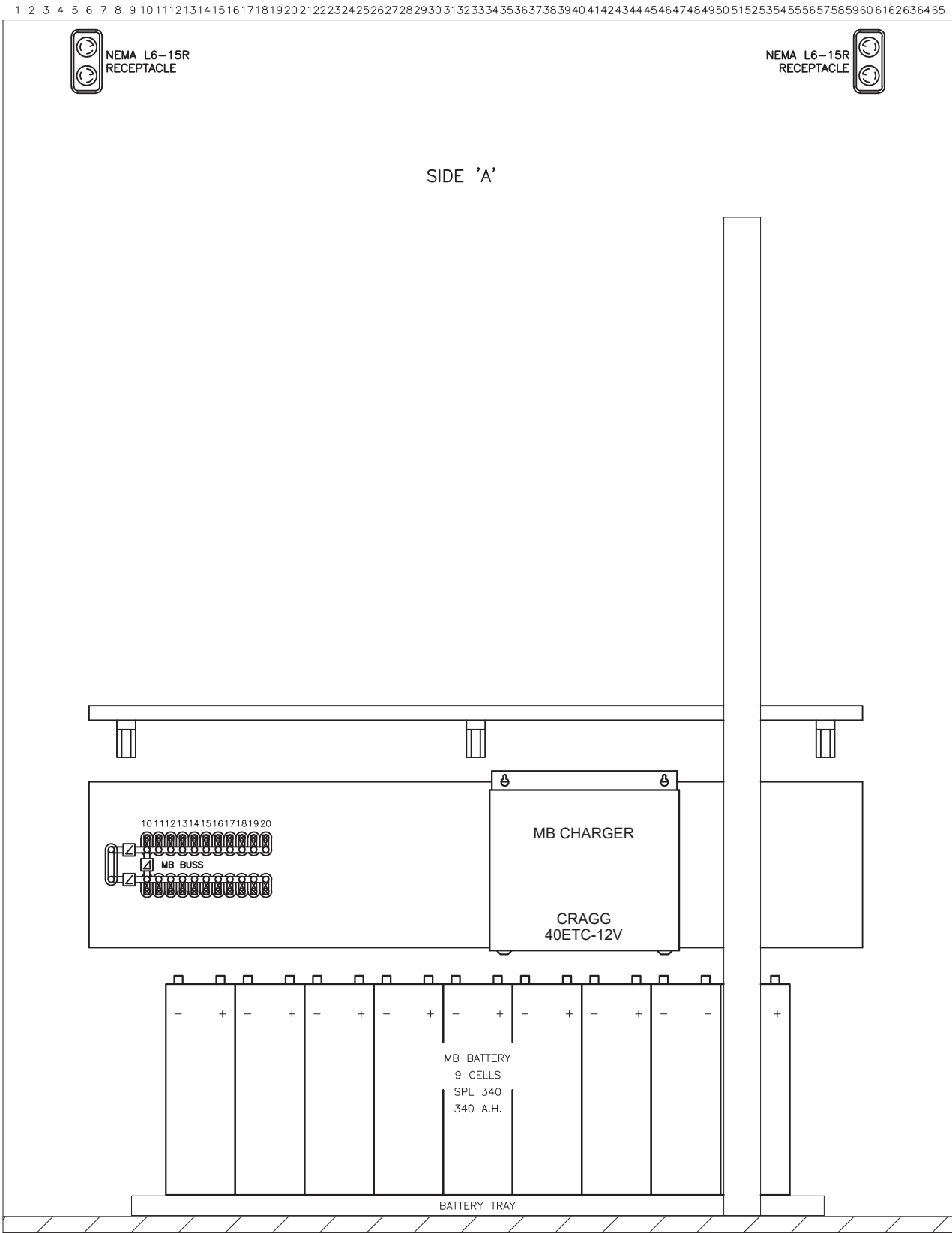
CHANGE FROM TYPICAL: Y



**W&LE**

**Wheeling & Lake Erie  
Railway**

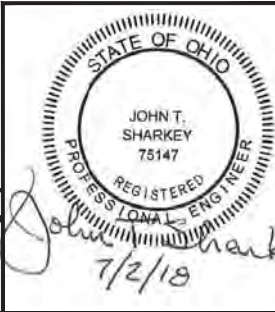
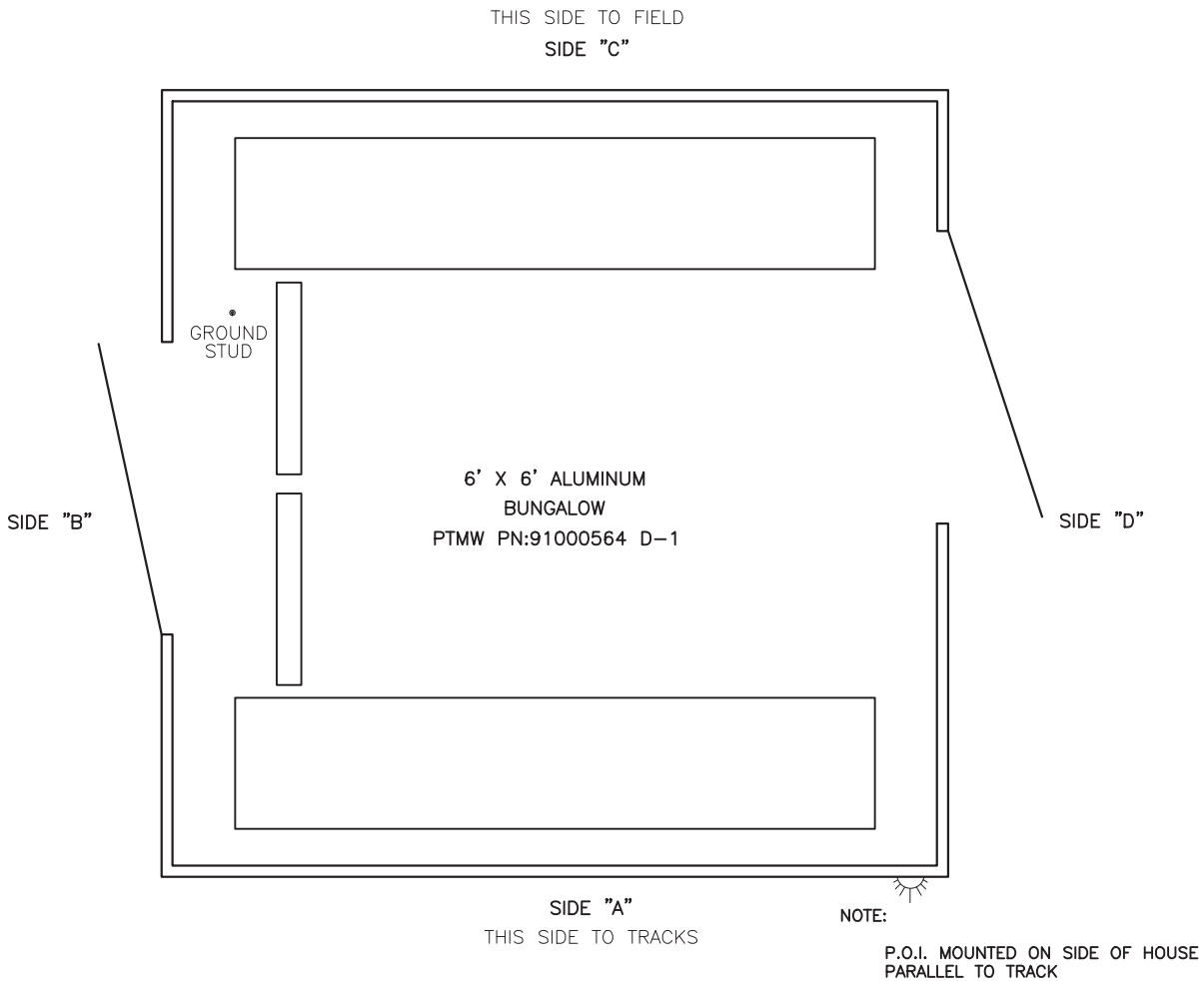
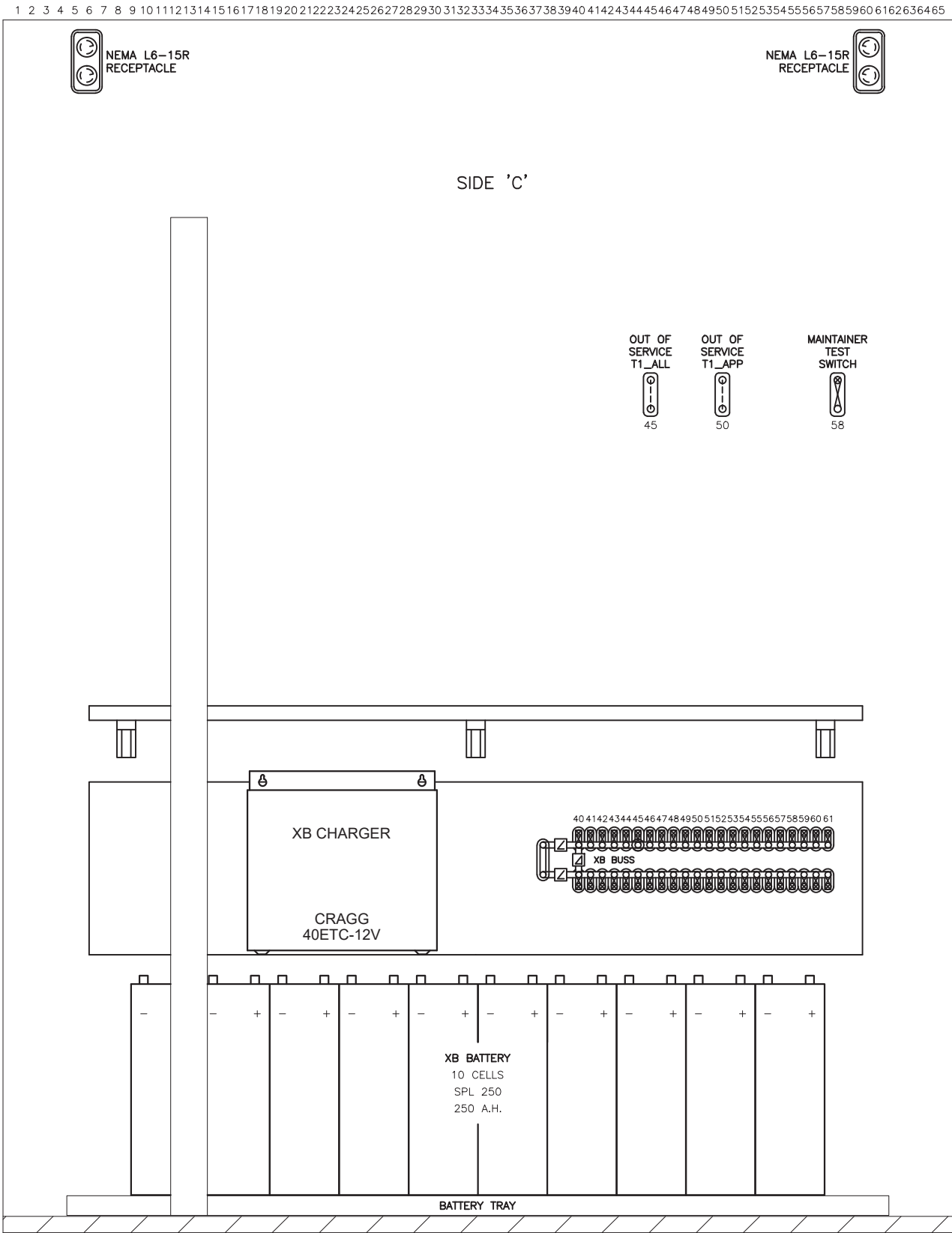
|               |            |         |                                    |         |          |
|---------------|------------|---------|------------------------------------|---------|----------|
| LOCATION      |            |         | WEST GRACE STREET<br>BEDFORD, OHIO |         |          |
| ORIGINAL DATE | 02/08/2018 | TITLE   | RACK BACK VIEW                     |         |          |
| DESIGNER      | CTC        | SUB     | CLEVELAND                          | CTC NO. | CN18042  |
| DRAFTSMAN     | CTC        | RRMP    | 109.88                             | SCALE   | 1"=2'    |
| CHECKER       | CTC        | DOT NO. | 524 340K                           | SHEET   | 19 OF 21 |



**Wheeling & Lake Erie  
Railway**

|               |            |                                    |           |
|---------------|------------|------------------------------------|-----------|
| LOCATION      |            | WEST GRACE STREET<br>BEDFORD, OHIO |           |
| ORIGINAL DATE | 02/08/2018 | TITLE                              | SIDE "A"  |
| DESIGNER      | CTC        | SUB                                | CLEVELAND |
| DRAFTSMAN     | CTC        | RRMP                               | 109.88    |
| CHECKER       | CTC        | DOT NO.                            | 524 340K  |
|               |            | CTC NO.                            | CN18042   |
|               |            | SCALE                              | 1"=2'     |
|               |            | SHEET                              | 20 of 21  |

REVISION  
BLOCK



**W&LE**

**Wheeling & Lake Erie  
Railway**

|               |            |                                    |           |
|---------------|------------|------------------------------------|-----------|
| LOCATION      |            | WEST GRACE STREET<br>BEDFORD, OHIO |           |
| ORIGINAL DATE | 02/08/2018 | TITLE                              | SIDE "C"  |
| DESIGNER      | CTC        | SUB                                | CLEVELAND |
| DRAFTSMAN     | CTC        | RRMP                               | 109.88    |
| CHECKER       | CTC        | DOT NO.                            | 524 340K  |
|               |            | SCALE                              | 1"=2'     |
|               |            | SHEET                              | 21 OF 21  |
|               |            | CTC NO.                            | CN18042   |

REVISION  
BLOCK

CHANGE FROM TYPICAL: N



# OHIO RAIL DEVELOPMENT COMMISSION

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

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

December 11, 2017

Michael J. Kole  
President  
Cleveland Commercial Railroad Company, L.L.C. (CCRL)  
29930 Pettibone Road  
Glenwillow, OH 44139

Stephen Klinger  
Norfolk Southern Railway (NS)  
Administrator Highway Grade Crossing Improvements  
1200 Peachtree Street  
Atlanta, GA 30309-3597

Tim Andrews  
Wheeling & Lake Erie (WE)  
100 east First Street  
Brewster, OH 44613

RE: Grade Crossing Warning Device Improvements  
Cuyahoga County, West Grace Street, DOT#524340K, PID#106422

Dear Messrs. Kole, Klinger and Andrews:

A diagnostic review was held at the above grade crossing on May 9, 2017. The crossing has been recommended for warning device upgrades and surface reconstruction.

Wheeling & Lake Erie Railroad (WE) is authorized to proceed with the site plans and cost estimates or bid package for the upgrade to CCRL warning devices and surface reconstruction. WE shall be responsible for the improvements to the WE/CCRL warning devices.

Norfolk Southern (NS) is authorized to proceed with the site plans and cost estimates for the LED, Curbing and 4000 unit upgrade to the NS warning devices. NS Shall be responsible for the improvements to the NS warning devices.

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. Please note that the railroad must provide ORDC with a plan stamped by a professional engineer licensed in the State of Ohio prior to acceptance and close out of the project.



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

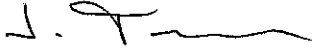
phone: 614.644.0306

IMPROVING RAIL TODAY FOR TOMORROW'S ECONOMY

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  
Jill Henry, Rail Division Specialist, PUCO  
Susan Arduini, ORDC  
ORDC (file)

Attachment: 1 (diagnostic review form)





# OHIO RAIL DEVELOPMENT COMMISSION

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

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

November 6, 2017

Michael J. Kole  
President  
Cleveland Commercial Railroad Company, L.L.C.  
29930 Pettibone Road  
Glenwillow, OH 44139

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

Mr. Tim Andrews  
Wheeling and Lake Erie Railway (WE)  
100 East First Street  
Brewster, Ohio 44613

Subject: Grade Crossing Warning Device Improvements  
Cuyahoga County, W. Grace Street, DOT # 524340K, PID 106422

Dear Messrs. Kole, Klinger and Andrews:

A diagnostic review was conducted at the subject grade crossing on 5/9/2017. As a result of the review, there will be a warning device upgrade and surface reconstruction.

Wheeling & Lake Erie Railroad (WE) shall be responsible for the improvements to the WE/ Cleveland Commercial Railroad Company, L.L.C. (CCRL) warning device/s which shall be completed in compliance with Agreement No. 0001-A, dated September 17, 1990, entered into by the State of Ohio and WE and incorporated as if fully rewritten herein.

WE shall be responsible for the surface reconstruction of the surface at the WE/CCRL track which shall be completed in compliance with master Reconstruction Agreement number 6781, dated February 10, 1992, between the State of Ohio and WE except as defined by the terms of this letter agreement.

Norfolk Southern Railway Company (NS) shall be responsible for the improvements to the NS warning device/s which shall be completed in compliance with Agreement No. 17450, dated December 19, 2012, entered into by the State of Ohio and NS and incorporated as if fully rewritten herein.

Construction of all parts of the project shall also meet the general terms and conditions under the Fixing America's Surface Transportation Act and subsequent amendments and the State of Ohio's Federally Funded Warning Device Program.

WE, CCRL and NS shall cooperate as necessary for the proper coordination of the warning devices.

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



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

phone: 614.644.0306

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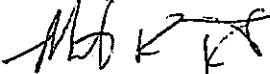
November 6, 2017  
Page 2

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

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

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

Sincerely,



Matthew R. Dietrich  
Executive Director

Cleveland Commercial Railroad Company, L.L.C.:

By: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Wheeling & Lake Erie Railroad:

By: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Norfolk Southern:

By: Gregory P. Gustafson

Title: General Manager

Date: 11/20/17

CUY W. Grace St 524340K NS WE CCRL PID 106422

November 6, 2017

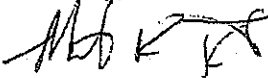
Page 2

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Sincerely,



Matthew R. Dietrich  
Executive Director

Cleveland Commercial Railroad Company, L.L.C.:

By: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Wheeling & Lake Erie Railroad:

By: T. A.

Title: S+C Supervisor

Date: 11-6-17

Norfolk Southern:

By: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

CUY W. Grace St 524340K NS WE CCRL PID 106422

November 6, 2017

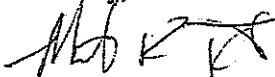
Page 2

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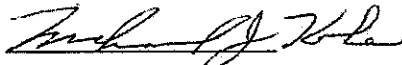
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Sincerely,



Matthew R. Dietrich  
Executive Director

Cleveland Commercial Railroad Company, L.L.C.:

By: 

Title: PRESIDENT

Date: 11-6-17

Wheeling & Lake Erie Railroad:

By: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Norfolk Southern:

By: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

CUY W. Grace St 524340K NS WE CCRL PID 106422



## Diagnostic Review Team Survey

## Reason for Survey:

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

Constituent - Railroad

Date: 5/9/2017

## Location Data

Street or Road Name:

W. Grace Street

Route/Road Number  
(i.e. Twp., Co., SR or US)

US DOT No.:

524340K

County:

CUY

Township:

City:

(In or Near)

City of Bedford

Railroad  
Name:

Norfolk Southern/WLE/CCRL

Railroad  
Division:

Dearborn

Branch/Line  
Name:

Cleveland Line

Nearest RR

Timetable Station:

Bedford

RR Milepost:

109.88

## On-Site Review Team

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

1. JAMES TUCKER ORDC 614-398-6897 James.tucker@dot.ohio.gov
2. Tim Andrews WLE 330-417-5541 tandrews@wle.rwy.com
3. MIKE KOLE CCR 440-227-3780 THEKOLE@AMERITECH.NET
4. SHAWN LURKY 614-466-1150 PULCO
5. JOE Ciani (216) 518-5544 City of Bedford, Engineer
6. A.J. PEASE 440-429-1960 Norfolk Southern
7. SHAWN FRANKS 440-735-6582 City of Bedford
8. CHRIST BELLAR 440-735-6581 CITY OF BEDFORD
9. \_\_\_\_\_

## Existing Traffic Control Devices

| Type of Warning Devices               | Installed?                              |  | Quantity/Comments |         |
|---------------------------------------|---|--|-------------------|---------|
| Advance Warning Signs (condition?)    | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No |                   |         |
| 'Stop' Signs                          | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No |                   |         |
| 'Stop Ahead' Signs                    | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No |                   |         |
| Pavement Markings (condition?)        | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            |                   |         |
| Crossbucks                            | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            |                   |         |
| Number of Tracks Signs                | <input type="checkbox"/> Yes            | <input checked="" 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 type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No |                   |         |
| Automatic Gates                       | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            | Number: 1         | Length: |
| Bells                                 | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            | Number: 1         |         |
| 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 checked="" type="checkbox"/> Yes | <input 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  | 2 (11/15/15) & (2/23/12)  |  |
| Hazard Ranking   | 252 Date Run: 4/24/2017   |  |
| Railroad Data  |   |  |
| Railroad Characteristics   | Initial Information (from database)                                 | Revised  |
| Total trains per day   | 1   | 2  |
| < 1 per day  |   |  |
| Day thru trains  | 1   | 2  |
| Night thru trains  | 0   |  |
| Daytime switching movements  | 0   |  |
| Nighttime switching movements  | 0   |  |
| Total number of tracks   | 3   |  |
| Number of main tracks  | 3   |  |
| Number of other tracks   | 0   |  |
| Maximum train speed  | 60 NS   | 10 CCRL  |
| Typical train speed  | 60 NS   | 10 CCRL  |
| Amtrak   |   |  |
| If non-gated crossing, is clearing sight distance adequate in all quadrants? (See Table I) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No       |   |  |
| If multiple tracks, can two trains occupy crossing at the same time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No NS main                     |   |  |
| Can one train block the motorists' view of another train at crossing? <input checked="" type="checkbox"/> Yes (Explain below) <input type="checkbox"/> No NS main    |   |  |
| Can one or more tracks be eliminated through the crossing? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                                       |   |  |
| Are there other track(s) crossing this same roadway within 100 ft of this crossing? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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:   |   | City of Bedford  |
| Roadway Characteristics  | Initial Information (from database)                                 | Revised  |
| Average daily traffic  | 7664 (2006)   | 7360 4-25-17   |
| Highway paved  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Roadway Surface: <input checked="" type="checkbox"/> Blacktop <input type="checkbox"/> Gravel <input type="checkbox"/> Concrete <input type="checkbox"/> Other _____ |   |  |
| Roadway width: 37 ft.  |   |  |
| Number of highway lanes  | 2   |  |
| Urban or Rural   | Urban   |  |
| Vehicle Speed: 35 MPH  |   |  |
| School Bus Operation: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes 62 Amount  |   |  |
| Hazardous Materials Trucks: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes 04% Amount   |   |  |
| Shoulders: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes   |   |  |
| Is the shoulder surfaced? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes  |   |  |
| Is there existing guardrail along roadway in crossing vicinity? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes                                  |   |  |
| Is stopping site distance adequate? (See Table 2) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If no, deficient approach(es) _____            |   |  |

|  |   |
|--|---|
| Quadrant <u>NE</u> Curb and Gutter:<br><input checked="" type="checkbox"/> Functional (Curb height = 4" or more)<br><input type="checkbox"/> Non-functional (Curb height = Less than 4")<br><input type="checkbox"/> None  | Quadrant <u>SW</u> Curb and Gutter:<br><input type="checkbox"/> Functional (Curb height = 4" or more)<br><input type="checkbox"/> Non-functional (Curb height = Less than 4")<br><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 checked="" type="checkbox"/> No <input type="checkbox"/> Yes<br>If yes,<br>Distance _____<br>Is this intersection signalized? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes<br>Are the signals currently interconnected with the existing crossing warning devices? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes<br>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<br>If yes,<br>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<br>Explain reasons: _____  |   |
| <b>Type of Development</b>   |   |
| <input type="checkbox"/> Open Space <input type="checkbox"/> Institutional<br><input type="checkbox"/> Industrial <input checked="" type="checkbox"/> Commercial<br><input checked="" type="checkbox"/> Residential  | Location of nearby schools:<br><u>1/2 mile west</u>   |
| <b>Utility Information</b>   |   |
| Is commercial power available? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes<br>Utility Provider (Company Name) <u>Illuminating Company</u> Phone Number _____<br>Nearest Available Power Source <u>@ crossing</u>   |   |
| What other utilities are present? (add locations to sketch)<br><div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="checkbox"/> Gas      <input type="checkbox"/> Cable<br/> <input type="checkbox"/> Petroleum    <input checked="" type="checkbox"/> Water<br/> <input type="checkbox"/> Other _____         </div> <div> <input checked="" type="checkbox"/> Telephone    <input type="checkbox"/> Fiber Optic Cable<br/> <input checked="" type="checkbox"/> Sanitary Sewer         </div> </div>                    |   |
| Is(are) there potential utility conflict(s) <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Unknown<br>Comments: _____  |   |

## Potential Red Flags / Project Challenges

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

N/A

Crossing Consolidation or Closure:

N/A

Real Estate or ROW:

N/A

Culverts / Drainage / Ballast Conditions:

N/A

Roadway and/or Sidewalks:

N/A

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

Interconnected w/ NS.

Environmental:

N/A

Other:



# Field Sketch

X = AFLS

X — AFLS Gates

⊙ = power pole

□ = Bungalow

Parking lot

Gravel

128'

Gravel

\* NOT TO SCALE

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

Sketch by: AT




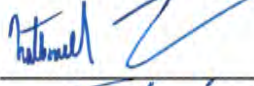
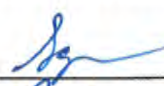

## Diagnostic Team Recommendations

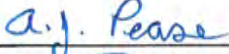

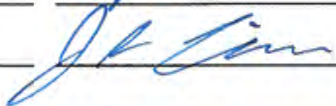
|  | Quadrants Needed                        |
|--|---|
| <input checked="" type="checkbox"/> Install/upgrade active devices       | Upgrade to CCRL Track ONLY              |
| <input checked="" type="checkbox"/> Automatic Flashing Lights (AFLS)     | SW Quad                                 |
| <input type="checkbox"/> AFLS / Cants                                    |   |
| <input checked="" type="checkbox"/> AFLS / Gates                         | NE Quad                                 |
| <input type="checkbox"/> AFLS / Gates / Cants                            |   |
| <input checked="" type="checkbox"/> Bells / number                       | 2                                       |
| <input checked="" type="checkbox"/> Upgrade circuitry / type             | upgrade to XP-4. w/ Standard Trackwire. |
| <input type="checkbox"/> Sidelights                                      |   |
| <input type="checkbox"/> Guardrail Needed                                |   |
| <input checked="" type="checkbox"/> Install/Replace curb                 | SW Quad                                 |
| <input type="checkbox"/> Bungalow placement & offset from rail & highway | USE SAME LOCATION                       |
| <input type="checkbox"/> Other (define)                                  |   |

Comments: Need to work with NS due to the interconnect.

- ☐ Install/upgrade traffic signal preemption
- ☐ No improvements needed
- ☒ Other (define) Replace Timber crossing with new Timber crossing.

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

## Field Dimensions

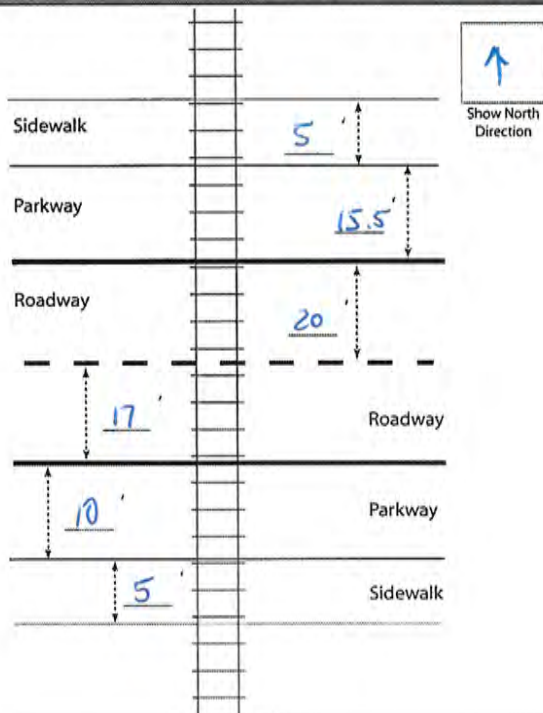


TABLE 1

## 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.

## Stout, Catherine

---

**From:** Henry, Jill  
**Sent:** Thursday, July 06, 2017 9:24 AM  
**To:** Stout, Catherine; Tim Andrews; cbellar@bedfordoh.gov; Mike Kole; Zurfley, Shawn; AJ Pease (aaron.pease@nscorp.com)  
**Cc:** Klinger, Stephen J.; Tucker, Jim  
**Subject:** RE: DIAGNOSTIC REVIEW - CUY W. Grace Street DOT# 524340K NS/WLE/CCRL

Cathy,

Shawn is out this week, but the PUCO concurs with the amendment to the diagnostic recommendation.

Jill Henry  
Public Utilities Commission of Ohio  
Transportation/Rail Division  
Rail Specialist  
614-466-0435  
[PUCO.ohio.gov](http://PUCO.ohio.gov)



This message and any response to it may constitute a public record and thus may be publicly available to anyone who requests it.

---

**From:** Stout, Catherine  
**Sent:** Monday, July 03, 2017 11:32 AM  
**To:** Tim Andrews <tandrews@wlerwy.com>; cbellar@bedfordoh.gov; Mike Kole <thepilot@ameritech.net>; Zurfley, Shawn <shawn.zurfley@puco.ohio.gov>; AJ Pease (aaron.pease@nscorp.com) <aaron.pease@nscorp.com>  
**Cc:** Klinger, Stephen J. <Stephen.Klinger@nscorp.com>; Henry, Jill <jill.henry@puco.ohio.gov>; Tucker, Jim <James.Tucker@dot.ohio.gov>  
**Subject:** DIAGNOSTIC REVIEW - CUY W. Grace Street DOT# 524340K NS/WLE/CCRL

Everyone,

An amendment to the diagnostic review recommendations has been suggested and input is needed from the diagnostic review team with respect to the proposed amendment.

The diagnostic review team on 5/9/2017 recommended upgrading the warning devices and replacing the surface at the WLE/CCRL track and adding curb on the SW quadrant. See attached diagnostic review form.

Conversations between some of the parties following the diagnostic review suggested an LED upgrade for the devices on the NS track and an upgrade to a 4000 unit. Measurements taken at the crossing indicate that curb will be required to make the devices compliant with the Manual of Uniform Traffic Control Devices.

Please respond and indicate whether you concur with amending the diagnostic team recommendation to include upgrading the warning devices on the NS track and installation of curbs.

Thank you,

Cathy Stout  
Manager, Safety Programs, ORDC  
MS 3140, 1980 W. Broad Street  
Columbus, OH 43223  
614-644-0313

## Stout, Catherine

---

**From:** Pease, Aaron J. <Aaron.Pease@nscorp.com>  
**Sent:** Thursday, July 06, 2017 7:53 AM  
**To:** Stout, Catherine; Tim Andrews; cbellar@bedfordoh.gov; Mike Kole; Zurfley, Shawn  
**Cc:** Klinger, Stephen J.; Henry, Jill; Tucker, Jim  
**Subject:** RE: DIAGNOSTIC REVIEW - CUY W. Grace Street DOT# 524340K NS/WLE/CCRL

I am in agreeance with this proposed plan.

A.J. Pease  
Dearborn Division  
Assistant Division Manager  
Communications and Signals  
Cell 1-440-429-1960



---

**From:** Catherine.Stout@dot.ohio.gov [mailto:Catherine.Stout@dot.ohio.gov]  
**Sent:** Monday, July 03, 2017 11:32 AM  
**To:** Tim Andrews; cbellar@bedfordoh.gov; Mike Kole; shawn.zurfley@puco.ohio.gov; Pease, Aaron J.  
**Cc:** Klinger, Stephen J.; jill.henry@puco.ohio.gov; James.Tucker@dot.ohio.gov  
**Subject:** [EXTERNAL] DIAGNOSTIC REVIEW - CUY W. Grace Street DOT# 524340K NS/WLE/CCRL

Everyone,

An amendment to the diagnostic review recommendations has been suggested and input is needed from the diagnostic review team with respect to the proposed amendment.

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Please respond and indicate whether you concur with amending the diagnostic team recommendation to include upgrading the warning devices on the NS track and installation of curbs.

Thank you,

Cathy Stout  
Manager, Safety Programs, ORDC  
MS 3140, 1980 W. Broad Street  
Columbus, OH 43223  
614-644-0313

## Stout, Catherine

---

**From:** Mike Kole <thepilot@ameritech.net>  
**Sent:** Wednesday, July 05, 2017 2:06 PM  
**To:** Stout, Catherine; Tim Andrews; cbellar@bedfordoh.gov; Zurfley, Shawn; aaron.pease@nscorp.com  
**Cc:** Klinger, Stephen J.; Henry, Jill; Tucker, Jim; Mazo Nate  
**Subject:** Re: DIAGNOSTIC REVIEW - CUY W. Grace Street DOT# 524340K NS/WLE/CCRL

Hi Cathy,  
I have been on vacation hence the delay in responding. But now that I am back, I do agree with the recommendation.  
Mike Kole

**From:** [Catherine.Stout@dot.ohio.gov](mailto:Catherine.Stout@dot.ohio.gov)  
**Sent:** Monday, July 03, 2017 11:32 AM  
**To:** [Tim Andrews](#) ; [cbellar@bedfordoh.gov](mailto:cbellar@bedfordoh.gov) ; [Mike Kole](#) ; [shawn.zurfley@puco.ohio.gov](mailto:shawn.zurfley@puco.ohio.gov) ; <mailto:aaron.pease@nscorp.com>  
**Cc:** [Klinger, Stephen J.](#) ; [jill.henry@puco.ohio.gov](mailto:jill.henry@puco.ohio.gov) ; [James.Tucker@dot.ohio.gov](mailto:James.Tucker@dot.ohio.gov)  
**Subject:** DIAGNOSTIC REVIEW - CUY W. Grace Street DOT# 524340K NS/WLE/CCRL

Everyone,

An amendment to the diagnostic review recommendations has been suggested and input is needed from the diagnostic review team with respect to the proposed amendment.

The diagnostic review team on 5/9/2017 recommended upgrading the warning devices and replacing the surface at the WLE/CCRL track and adding curb on the SW quadrant. See attached diagnostic review form.

Conversations between some of the parties following the diagnostic review suggested an LED upgrade for the devices on the NS track and an upgrade to a 4000 unit. Measurements taken at the crossing indicate that curb will be required to make the devices compliant with the Manual of Uniform Traffic Control Devices.

Please respond and indicate whether you concur with amending the diagnostic team recommendation to include upgrading the warning devices on the NS track and installation of curbs.

Thank you,

Cathy Stout  
Manager, Safety Programs, ORDC  
MS 3140, 1980 W. Broad Street  
Columbus, OH 43223  
614-644-0313

## Stout, Catherine

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**From:** Tim Andrews <tandrews@wlerwy.com>  
**Sent:** Wednesday, July 05, 2017 2:55 PM  
**To:** Stout, Catherine; cbellar@bedfordoh.gov; Mike Kole; Zurfley, Shawn; AJ Pease (aaron.pease@nscorp.com)  
**Cc:** Klinger, Stephen J.; Henry, Jill; Tucker, Jim  
**Subject:** RE: DIAGNOSTIC REVIEW - CUY W. Grace Street DOT# 524340K NS/WLE/CCRL

I am okay with the changes involving the NS.

Thanks,

Tim Andrews  
Wheeling & Lake Erie Railway  
S&C Supervisor  
330-767-7255  
tandrews@wlerwy.com

---

**From:** Catherine.Stout@dot.ohio.gov [mailto:Catherine.Stout@dot.ohio.gov]  
**Sent:** Monday, July 03, 2017 11:32 AM  
**To:** Tim Andrews <tandrews@wlerwy.com>; cbellar@bedfordoh.gov; Mike Kole <thepilot@ameritech.net>; shawn.zurfley@puco.ohio.gov; AJ Pease (aaron.pease@nscorp.com) <aaron.pease@nscorp.com>  
**Cc:** Klinger, Stephen J. <Stephen.Klinger@nscorp.com>; jill.henry@puco.ohio.gov; James.Tucker@dot.ohio.gov  
**Subject:** DIAGNOSTIC REVIEW - CUY W. Grace Street DOT# 524340K NS/WLE/CCRL

Everyone,

An amendment to the diagnostic review recommendations has been suggested and input is needed from the diagnostic review team with respect to the proposed amendment.

The diagnostic review team on 5/9/2017 recommended upgrading the warning devices and replacing the surface at the WLE/CCRL track and adding curb on the SW quadrant. See attached diagnostic review form.

Conversations between some of the parties following the diagnostic review suggested an LED upgrade for the devices on the NS track and an upgrade to a 4000 unit. Measurements taken at the crossing indicate that curb will be required to make the devices compliant with the Manual of Uniform Traffic Control Devices.

Please respond and indicate whether you concur with amending the diagnostic team recommendation to include upgrading the warning devices on the NS track and installation of curbs.

Thank you,

Cathy Stout  
Manager, Safety Programs, ORDC  
MS 3140, 1980 W. Broad Street  
Columbus, OH 43223  
614-644-0313



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

**Commission of Ohio Docketing Information System on**

**2/6/2019 2:35:25 PM**

**in**

**Case No(s). 19-0365-RR-FED**

Summary: Application In the Matter of a Request for Upgrades to the Active Warning Devices at the Norfolk Southern Railway Crossing, Grace Street DOT#524-340K, in Cuyahoga County, Ohio. electronically filed by Mrs. Jill A Henry on behalf of PUCO/Rail Division