

Memo

To: Docketing Division

From: Jill Henry, Rail Specialist, Rail Division

Cc: PUCO Legal Department

Date: 5/31/2019

Re: PUCO Case No. 19-423-RR-STP- In the Matter of a Request for Upgrades at Akron Barberton Cluster Railway Crossings in Medina County and Portage County, Ohio.

On November 14, 2018, Commission Staff (PUCO) and Akron Barberton Cluster Railway (AB) entered into a stipulation agreement whereby upgraded warning devices would be installed at the following AB crossings:

| <u>Grade Crossing #</u> | <u>Location</u> | <u>Nature of Upgrades</u> |
|--------------------------------|---------------------------------------------------|-------------------------------------------------------------------|
| 262-564G | Main Street, Kent, Portage County | Upgrade to cantilever lights and gates |
| 265-079J | Medina Line Road/CR 2 Barberton, Medina County | Upgrade to lights and gates |
| 265-076N | Main Street Wadsworth, Medina County | Upgrade lights and gates and move devices closer to tracks. |

On April 3, 2019, the Commission issued a Finding and Order approving the project, requiring plans and estimates, by July 3, 2019, and ordering project completion by April 3, 2020.

On May 28, 2019, AB filed with the Rail Division all plans and estimates for the projects.

The plans and estimates submitted by AB have been reviewed and authorization is recommended. (See attached documentation.)



Public Utilities Commission

Mike DeWine, Governor
Sam Randazzo, Chairman

Commissioners

M. Beth Trombold
Lawrence K. Friedeman
Dennis P. Deters
Daniel R. Conway

May 31, 2019

Mr. Andrew Shuster
Akron Barberton Cluster Railway
Signals & Communications Supervisor
43 Second Street NW
Barberton, Ohio 44203

Re: AB Grade Crossing Upgrades,
Main St, Kent DOT#262-564G
Medina Line Rd DOT#265-079J
Main St, Wadsworth DOT#265-076N

Mr. Shuster:

Akron Barberton Cluster Railway (AB) is now authorized to proceed with field construction for the above referenced projects. This authorization is contingent upon accepting the following:

- 1) AB will make any adjustments to the plans noted in the field reports dated May 31, 2019 (Attached).
- 2) AB will furnish e-mail, fax, or phone notification five (5) working days prior to the date work will start at the project site. Notification to be made to Jill Henry, PUCO, at E-MAIL jill.henry@puco.ohio.gov, or PHONE 614-466-0435.
- 3) AB will arrange for utilities to be relocated and/or dropped (as soon as possible) at the project sites through the applicable utility companies.
- 4) AB will arrange for utilities to be located at the project sites by the Ohio Utilities Protection Service (OUPS) prior to any construction activities at the sites. Utilities that are not participating members of the OUPS service must be contacted directly by AB.
- 5) AB's project foreman will notify the PUCO Railroad Inspector of any changes in the scope of work, cost overruns, material changes, etc. which are not included in the approved plans and estimates and secure approval of same before the work is performed.
- 6) AB will furnish three (3) copies of each partial bill to the PUCO.

- 7) AB will furnish the final-inclusive bill to PUCO stating that exact dates of starting and completing work, the initial and final dates of construction and location where the accounts may be audited.
- 8) AB will furnish as-built detailed circuit plans directly to the PUCO.
- 9) AB is to schedule and complete the subject projects by April 3, 2020. If any extraordinary circumstances unique to the projects occur, please notify the Commission's rail staff immediately.

Thank you for you cooperation in this matter.

Sincerely,



Jill Henry
Rail Specialist
PUCO Railroad Division

Enclosure

cc: File

**PUBLIC UTILITIES COMMISSION OF OHIO
TRANSPORTATION DEPARTMENT
RAIL DIVISION**

Date of Assignment: May 28, 2019

Subject: Plans and estimates review for active warning devices at Main Street, Kent (262-564G), Akron Barberton Cluster Railway, Portage County.

DOT #: 262-564G

FINDINGS

On May 28, 2019, the plans and estimates for the above mentioned crossing were received from Akron Barberton Cluster Railway (AB). They were reviewed by Jill Henry, PUCO Rail Specialist, and Shawn Zurfley, FRA/PUCO Field Investigator.

Main Street is a 4 lane urban roadway traveling east/west and intersecting a single track of AB traveling north/south. Existing warning devices include mast mounted lights and gates with short arm cantilevers, pedestrian gates, advanced warning signs, pavement markings and crossbucks.

SUMMARY AND CONCLUSIONS

We reviewed the plans and estimates for the crossing. The plans and estimates appear to be fundamentally correct. Construction authorization is granted for this project with the following conditions:

- 1) The bungalow being placed in the NE quadrant needs to be placed as far back as possible to try and meet the 25' Ohio Manual of Uniform Traffic Control Devices (OMUTCD) placement recommendation.

Jill Henry
PUCO Rail Specialist
Date: May 31, 2019

AKRON BARBERTON CLUSTER RAILWAY COMPANY

Andrew Shuster
Signal & Communication Supervisor

43 Second Street N.W.
Barberton, OH 44203

Tel. 330-813-6133

ashuster@abcrwy.com

Fax: 330-745-4519

5/21/19

Public Utilities Commission of Ohio
Jill Henry

Re: Estimate for Railroad Crossing Warning System at Main Street in Kent, Ohio,

Dear Jill Henry,

I am providing this estimate for the crossing package and installation at Main Street,

| | |
|----------------------------------------------------------------------|---------------|
| Material Package, & Installation | \$ 272,372.18 |
| Crosier Inc. | \$ 70,178.00 |
| Two Gate and cantilever Foundations (note 1) | \$ 7,746.00 |
| Electric Service (Included in Crosier Estimate) | \$ 0.00 |
| Wintrow Railroad Construction (Provide and Install Allegheny Joints) | \$ 30,750.00 |
| Estimated Total | \$ 381,046.18 |

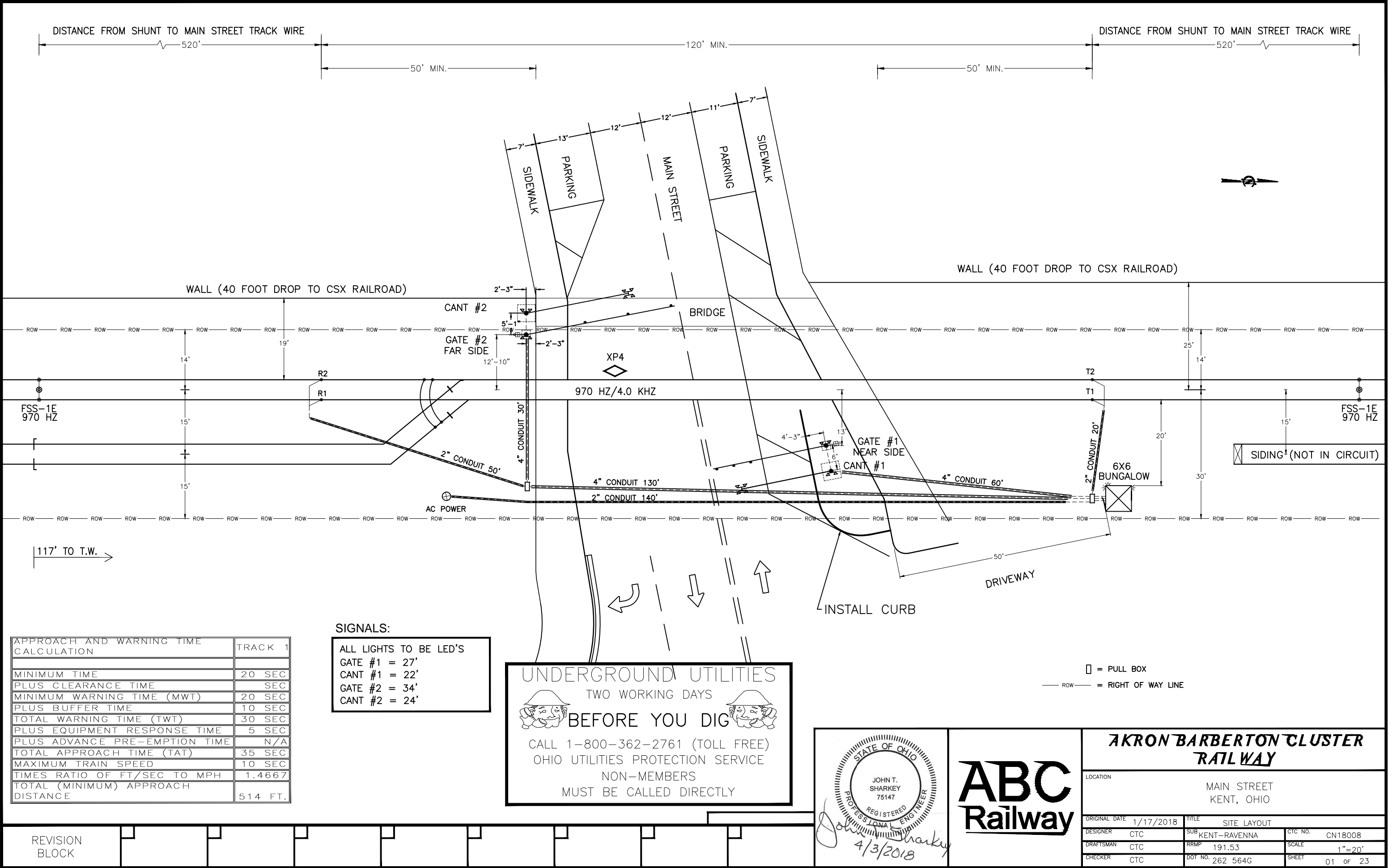
Please contact me if additional details are required.

Respectfully,

Andrew Shuster

Notes

- 1: Direct purchase from Fabricated Metals, 60' galvanized gate foundation, \$598 ea.
Purchased from Dixie Precast, Pour in place cantilever Foundation \$3275 ea.



| APPROACH AND WARNING TIME CALCULATION | TRACK 1 |
|---------------------------------------|---------|
| MINIMUM TIME | 20 SEC |
| PLUS CLEARANCE TIME | SEC |
| MINIMUM WARNING TIME (MWT) | 20 SEC |
| PLUS BUFFER TIME | 10 SEC |
| TOTAL WARNING TIME (TWT) | 30 SEC |
| PLUS EQUIPMENT RESPONSE TIME | 5 SEC |
| PLUS ADVANCE PRE-EMPTION TIME | N/A |
| TOTAL APPROACH TIME (TAT) | 35 SEC |
| MAXIMUM TRAIN SPEED | 10 SEC |
| TIMES RATIO OF FT/SEC TO MPH | 1.4667 |
| TOTAL (MINIMUM) APPROACH DISTANCE | 514 FT. |

SIGNALS:

ALL LIGHTS TO BE LED'S

GATE #1 = 27'

CANT #1 = 22'

GATE #2 = 34'

CANT #2 = 24'

UNDERGROUND UTILITIES

TWO WORKING DAYS

BEFORE YOU DIG

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

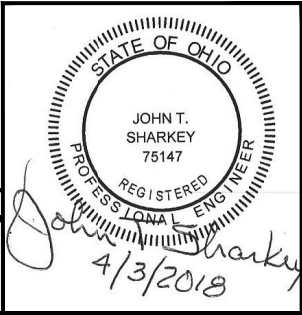
OHIO UTILITIES PROTECTION SERVICE

NON-MEMBERS

MUST BE CALLED DIRECTLY

□ = PULL BOX

— ROW — = RIGHT OF WAY LINE



ABC
Railway

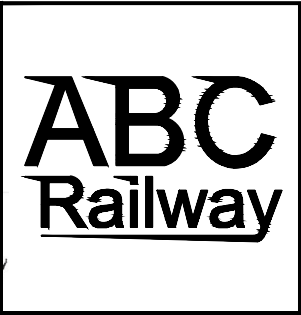
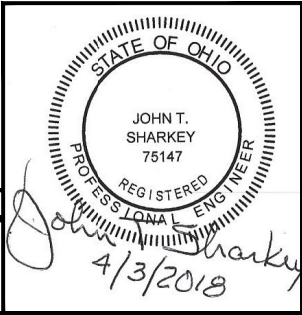
| AKRON BARBERTON CLUSTER RAILWAY | | | |
|---------------------------------|-----------|---------------------------|--------------|
| LOCATION | | MAIN STREET KENT, OHIO | |
| ORIGINAL DATE | 1/17/2018 | TITLE | SITE LAYOUT |
| DESIGNER | CTC | SUB | KENT-RAVENNA |
| DRAFTSMAN | CTC | RRMP | 191.53 |
| CHECKER | CTC | DOT NO. | 262 564G |
| | | CTC NO. | CN18008 |
| | | SCALE | 1"=20' |
| | | SHEET | 01 of 23 |

REVISION
BLOCK

CONSTRUCTION NOTES

- 1.) INSTALL NEW 6' X 6' BUNGALOW IN NORTHEAST QUADRANT.
- 2.) INSTALL (2) NEW FLASHING LIGHTS WITH GATES AND (2) CANT ASSEMBLIES.
- 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.

| | | | | | | | | | | |
|-------------------|--|--|--|--|--|--|--|--|--|--|
| REVISION BLOCK | | | | | | | | | | |
|-------------------|--|--|--|--|--|--|--|--|--|--|



| AKRON BARBERTON CLUSTER RAILWAY | | |
|---------------------------------------|-----------|-----------------------------|
| LOCATION MAIN STREET KENT, OHIO | | |
| ORIGINAL DATE | 1/17/2018 | TITLE CONSTRUCTION NOTES |
| DESIGNER | CTC | SUB KENT-RAVENNA |
| DRAFTSMAN | CTC | RRMP 191.53 |
| CHECKER | CTC | DOT NO. 262 564G |
| | | SCALE N.T.S. |
| | | SHEET 01A of 23 |



CROSSING SIGNAL ALIGNMENT

LEGEND

| | |
|-----|---------------------------------|
| (A) | CANT #2 FRONT MAST & ARM LIGHTS |
| (B) | GATE #1 BACK MAST LIGHTS |
| (C) | GATE #2 BACK MAST LIGHTS |
| (D) | CANT #1 FRONT MAST & ARM LIGHTS |
| (E) | CANT #2 BACK ARM LIGHTS |
| (F) | CANT #1 BACK ARM LIGHTS |

ALIGNMENT

FRONT LIGHTS ON CANTILEVER MAST & ARM
ADJUST LIGHT UNIT VERTICALLY TO ALIGN AXIS OF BEAM 5 FT. 6 IN. 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 ON GATES
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.

BACK LIGHTS ON CANTILEVER MAIN MAST
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.

BACK LIGHTS CANTILEVER ARM
ADJUST LIGHT UNIT HORIZONTALLY TO ALIGN AXIS OF BEAM TO A POINT 100 FT. IN APPROACH TO THE SIGNAL ON OPPOSITE SIDE OF TRACK AND IN CENTER OF APPROACH TRAVEL WAY.



ABC
Railway

**AKRON BARBERTON CLUSTER
RAILWAY**

| | | |
|---------------------------------------|------------------------------------|--------------------|
| LOCATION MAIN STREET KENT, OHIO | | |
| ORIGINAL DATE 1/17/2018 | TITLE CROSSING SIGNAL ALIGNMENT | |
| DESIGNER CTC | SUB KENT-RAVENNA | CTC NO. CN18008 |
| DRAFTSMAN CTC | RRMP 191.53 | SCALE N.T.S. |
| CHECKER CTC | DOT NO. 262 564G | SHEET 02 OF 23 |

REVISION
BLOCK

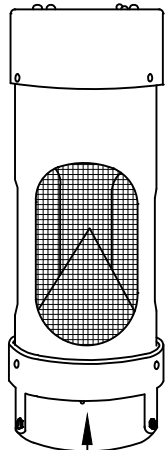
SITE LAYOUT NOTES

1.) CROSSING IS LOCATED:

LATITUDE
LONGITUDE

41.1537602
-81.3590482

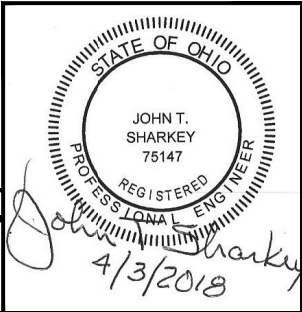
ELECTRONIC CROSSING BELL
GSI MODEL EB-3-360-5



THIS SIDE FACING
ROADWAY

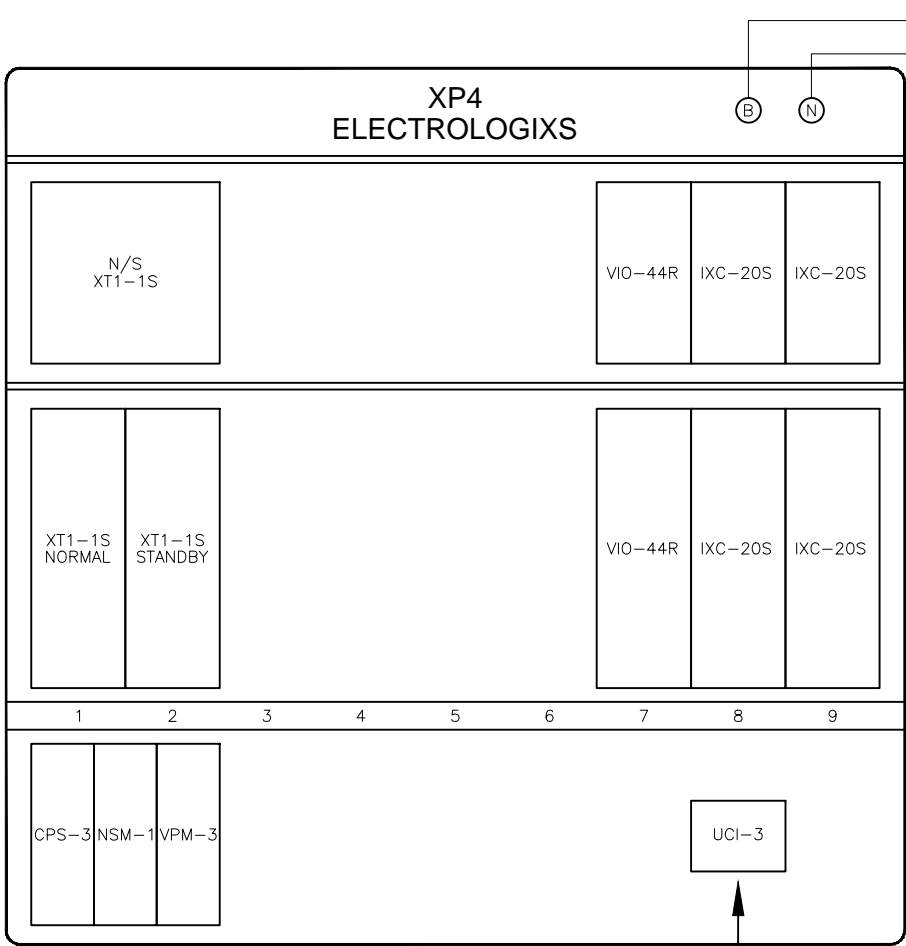
CHANGE FROM TYPICAL: N

REVISION
BLOCK

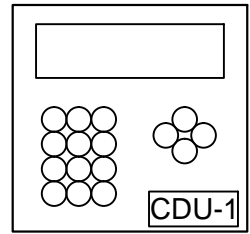


ABC
Railway

| AKRON BARBERTON CLUSTER RAILWAY | | |
|---------------------------------------|-----------|----------------------------|
| LOCATION MAIN STREET KENT, OHIO | | |
| ORIGINAL DATE | 1/17/2018 | TITLE SITE LAYOUT NOTES |
| DESIGNER | CTC | SUB KENT-RAVENNA |
| DRAFTSMAN | CTC | RRMP 191.53 |
| CHECKER | CTC | DOT NO. 262 564G |
| | | CTC NO. CN18008 |
| | | SCALE N.T.S. |
| | | SHEET 03 of 23 |



XP4 CHASSIS
PN: 300752-000

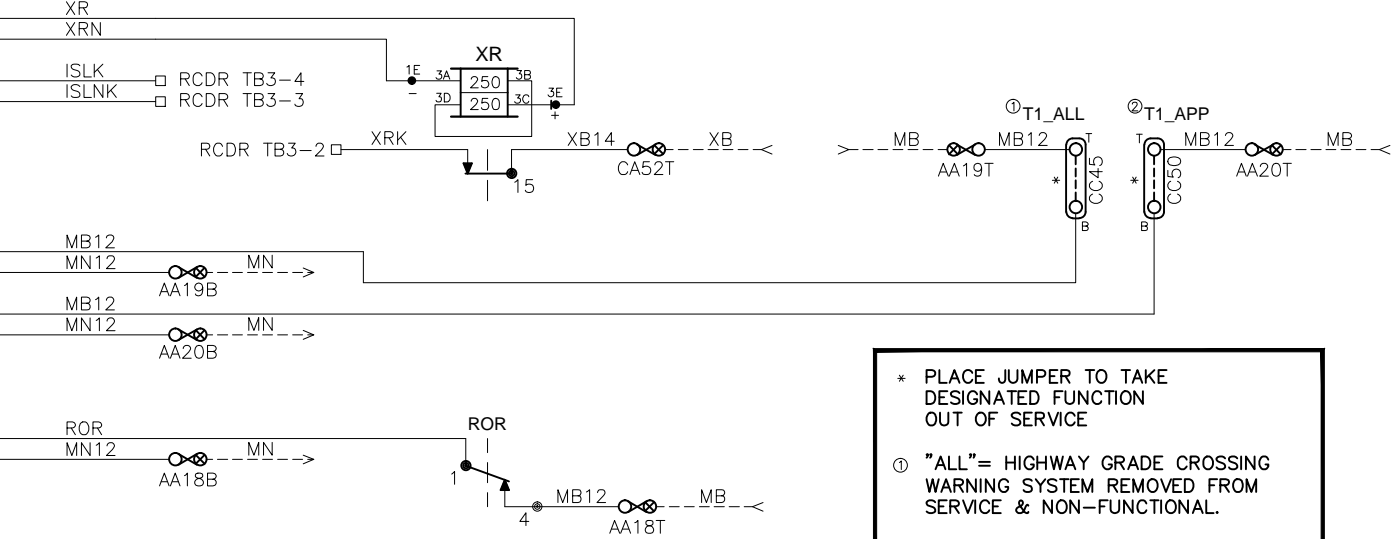
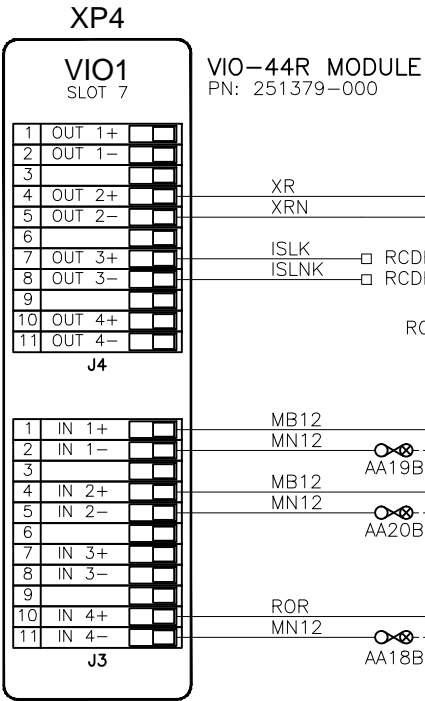


CDU-1
PN: 251124-000

CDU-1 IS MOUNTED
IN FRONT OF CPS-3, NSM-1
AND VPM-3 MODULES

CHASSIS ID
IS LOCATED
BEHIND UCI-3

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



* PLACE JUMPER TO TAKE
DESIGNATED FUNCTION
OUT OF SERVICE

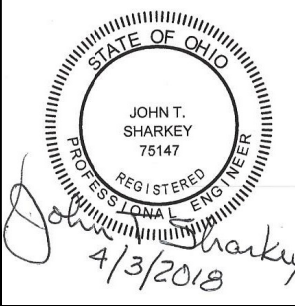
① "ALL" = HIGHWAY GRADE CROSSING
WARNING SYSTEM REMOVED FROM
SERVICE & NON-FUNCTIONAL.

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

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

REVISION
BLOCK

CHANGE FROM TYPICAL: N



ABC
Railway

| AKRON BARBERTON CLUSTER RAILWAY | | | |
|------------------------------------|-----------|---------------------------|------------------|
| LOCATION | | MAIN STREET KENT, OHIO | |
| ORIGINAL DATE | 1/17/2018 | TITLE | XP4/VIO CIRCUITS |
| DESIGNER | CTC | SUB | KENT-RAVENNA |
| DRAFTSMAN | CTC | RRMP | 191.53 |
| CHECKER | CTC | DOT NO. | 262 564G |
| | | CTC NO. | CN18008 |
| | | SCALE | N.T.S. |
| | | SHEET | 04 of 23 |

| | | | | | | | | | |
|--------------------|------|------------------|-----|-----|-----|------------------|-----|-----|-----|
| ADJUSTMENT NAME | | MDR1 | | | | MDR2 | | | |
| NAME | | HIGHWAY CROSSING | | | | HIGHWAY CROSSING | | | |
| WARNING TIME | | 30 SEC | | | | 25 SEC | | | |
| CW/MD | | MD | | | | CW | | | |
| AP TIME | | 00 SEC | | | | 00 SEC | | | |
| CWE-WT | | 00 SEC | | | | 00 SEC | | | |
| AUX RECOVERY DELAY | | 05 SEC | | | | 05 SEC | | | |
| | | TK1 | TK2 | TK3 | TK4 | TK1 | TK2 | TK3 | TK4 |
| TRACK ASSIGNED | | ASSIGN | | | | ASSIGN | | | |
| OFFSET DISTANCE | | 0 FT | | | | 0 FT | | | |
| MD RESTART | | * | | | | * | | | |
| SUDDEN SHUNT ZONE | | * | | | | * | | | |
| POSITIVE START | PSEN | DISABLE | | | | DISABLE | | | |
| | PSRX | NA | | | | NA | | | |
| | PST | NA | | | | NA | | | |
| POST JOINT DETECT | PJEN | DISABLE | | | | DISABLE | | | |
| | PJRX | NA | | | | NA | | | |
| | PJDT | NA | | | | NA | | | |

* PER RAILROAD REQUEST XP4 UNIT TO BE SET IN MOTION DETECTION *

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

⓪ = TAB INTACT
● = TAB PUNCHED OUT

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

| | | | | |
|-------------------|----------|-----|-----|-----|
| BASIC TRACK SETUP | | | | |
| | TK1 | TK2 | TK3 | TK4 |
| FREQUENCY | 970 HZ | | | |
| MASTER/SLAVE | MASTER | | | |
| RX ADJUST | 100 | | | |
| TCA | * | | | |
| DIRECTION MODE | BI | | | |
| LIA | * | | | |
| ADVANCED APR. CAL | INACTIVE | | | |
| NBS COMP RX | * | | | |
| TRK ISLAND ASSIGN | ISL1 | | | |
| APPROACH LENGTH | 520 FT | | | |
| AUTO RX | ENABLE | | | |

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

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

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

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

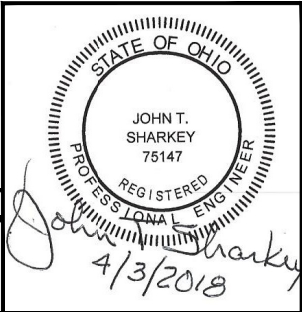
| APPROACH 1 (EAST) | | NO SHUNT | | 100% SHUNT | | 50% SHUNT | | LIA ADDED |
|----------------------|---------|----------|-------|------------|-------|-----------|----|-----------|
| | | RX | PHASE | RX | PHASE | | RX | PHASE |
| Track 1 | Normal | | | | | | | |
| | Standby | | | | | | | |
| Track 2 | Normal | | | | | | | |
| | Standby | | | | | | | |
| APPROACH 2 (WEST) | | | | | | | | |
| Track 1 | Normal | | | | | | | |
| | Standby | | | | | | | |
| Track 2 | Normal | | | | | | | |
| | Standby | | | | | | | |

INITIAL VALUES WHEN PLACED IN SERVICE

NOTES:
* = FIELD ADJUSTMENT
NA = NOT APPLICABLE

CHANGE FROM TYPICAL: Y

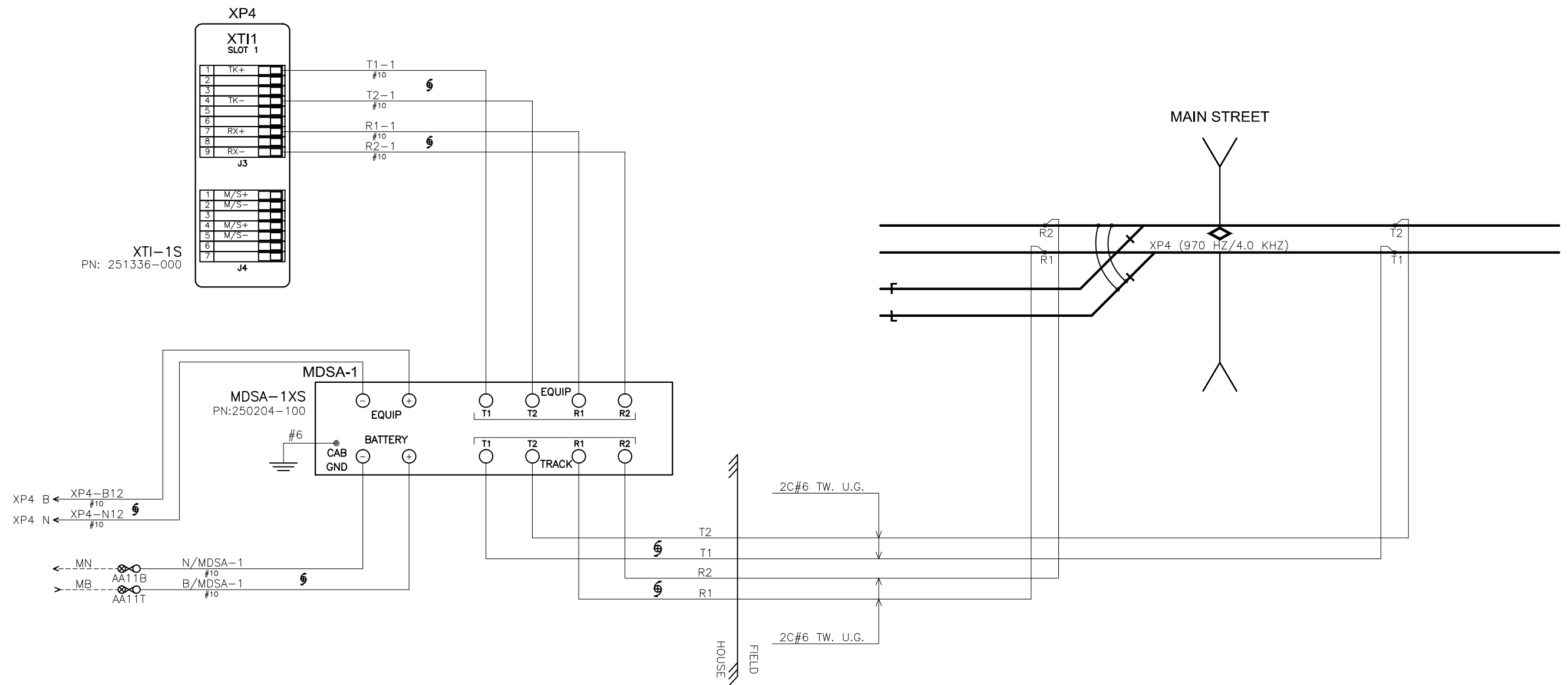
REVISION
BLOCK



ABC
Railway

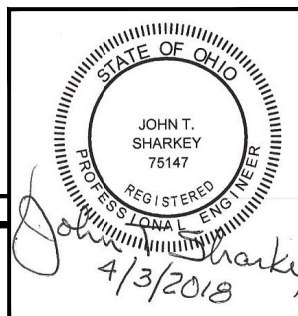
AKRON BARBERTON CLUSTER
RAILWAY

| | | | | | |
|---------------|-----------|---------|---------------------------|---------|----------|
| LOCATION | | | MAIN STREET KENT, OHIO | | |
| ORIGINAL DATE | 1/17/2018 | TITLE | XP4 SETUP SHEET | | |
| DESIGNER | CTC | SUB | KENT-RAVENNA | CTC NO. | CN18008 |
| DRAFTSMAN | CTC | RRMP | 191.53 | SCALE | N.T.S. |
| CHECKER | CTC | DOT NO. | 262 564G | SHEET | 05 of 23 |



REVISION
BLOCK

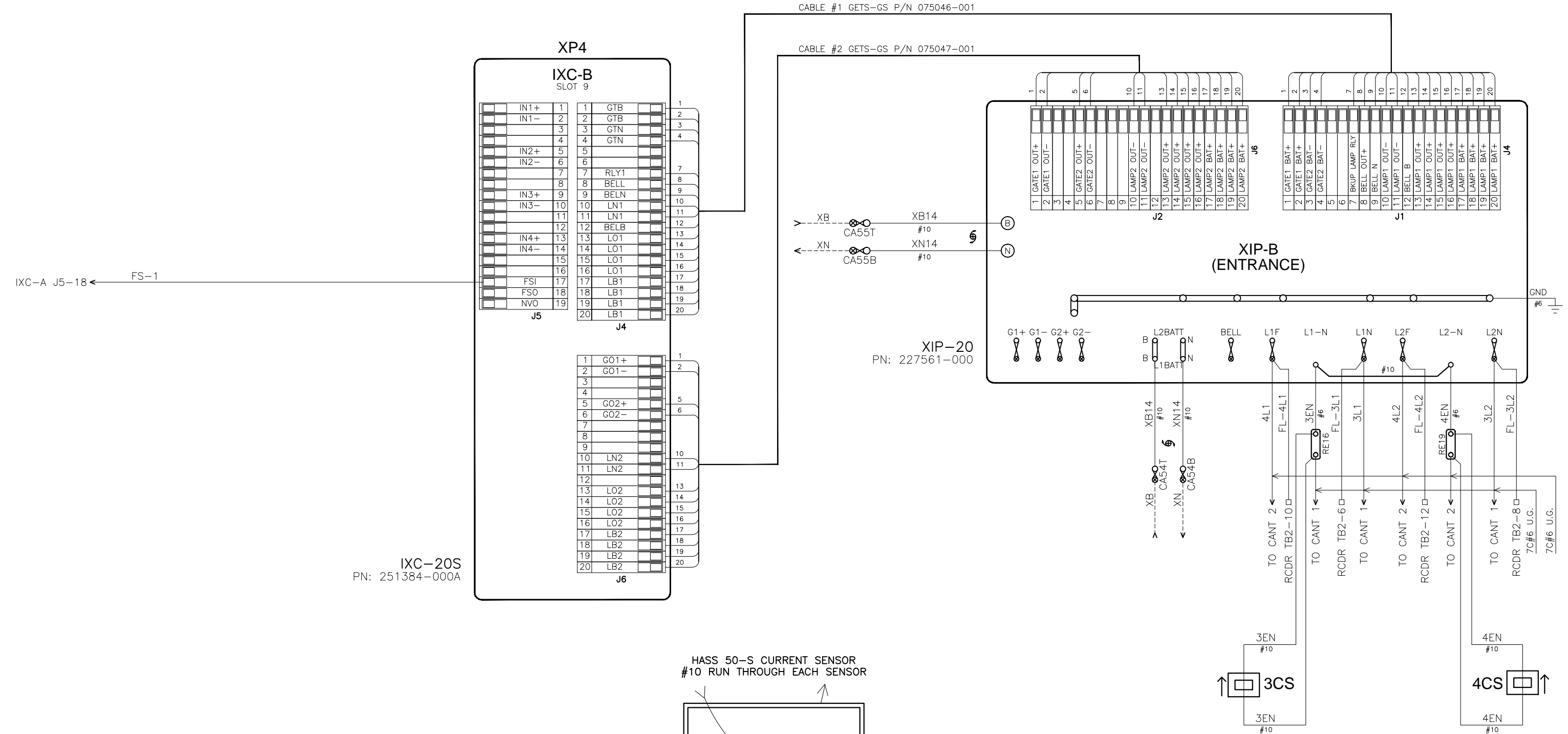
CHANGE FROM TYPICAL: Y



ABC
Railway

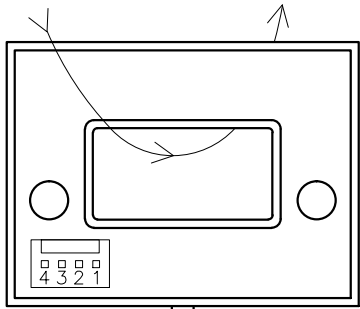
**AKRON BARBERTON CLUSTER
RAILWAY**

| | | |
|---------------------------------------|------------------------------------|--------------------|
| LOCATION MAIN STREET KENT, OHIO | | |
| ORIGINAL DATE 1/17/2018 | TITLE TRACK CONNECTION CIRCUITS | |
| DESIGNER CTC | SUB KENT-RAVENNA | CTC NO. CN18008 |
| DRAFTSMAN CTC | RRMP 191.53 | SCALE N.T.S. |
| CHECKER CTC | DOT NO. 262 564G | SHEET 06 of 23 |



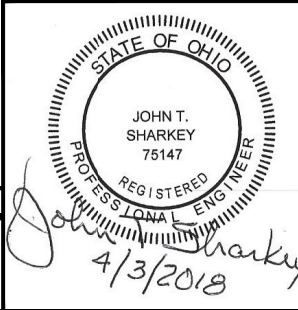
NOTES: ALL WIRING THIS SHEET #16 AWG
UNLESS NOTED OTHERWISE.

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



TO RCDR
TB5

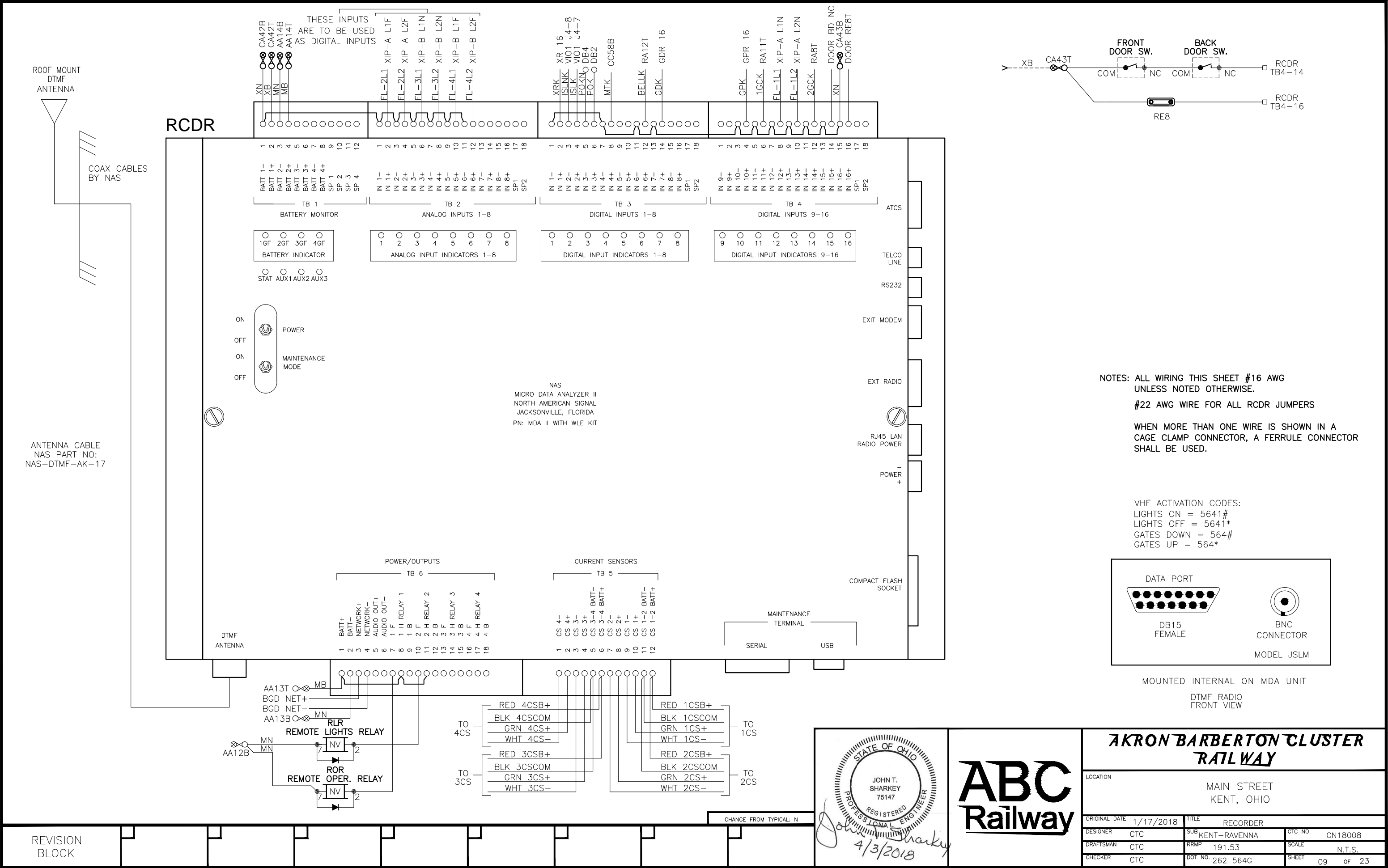
CHANGE FROM TYPICAL: N



ABC
Railway

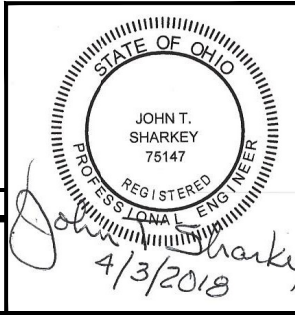
AKRON BARBERTON CLUSTER
RAILWAY

| | | |
|---------------------------------------|----------------------------------------|--------------------|
| LOCATION MAIN STREET KENT, OHIO | | |
| ORIGINAL DATE 1/17/2018 | TITLE ENTRANCE GATE CONTROL CIRCUIT | |
| DESIGNER CTC | SUB KENT-RAVENNA | CTC NO. CN18008 |
| DRAFTSMAN CTC | RRMP 191.53 | SCALE N.T.S. |
| CHECKER CTC | DOT NO. 262 564G | SHEET 08 of 23 |



REVISION
BLOCK

CHANGE FROM TYPICAL: N

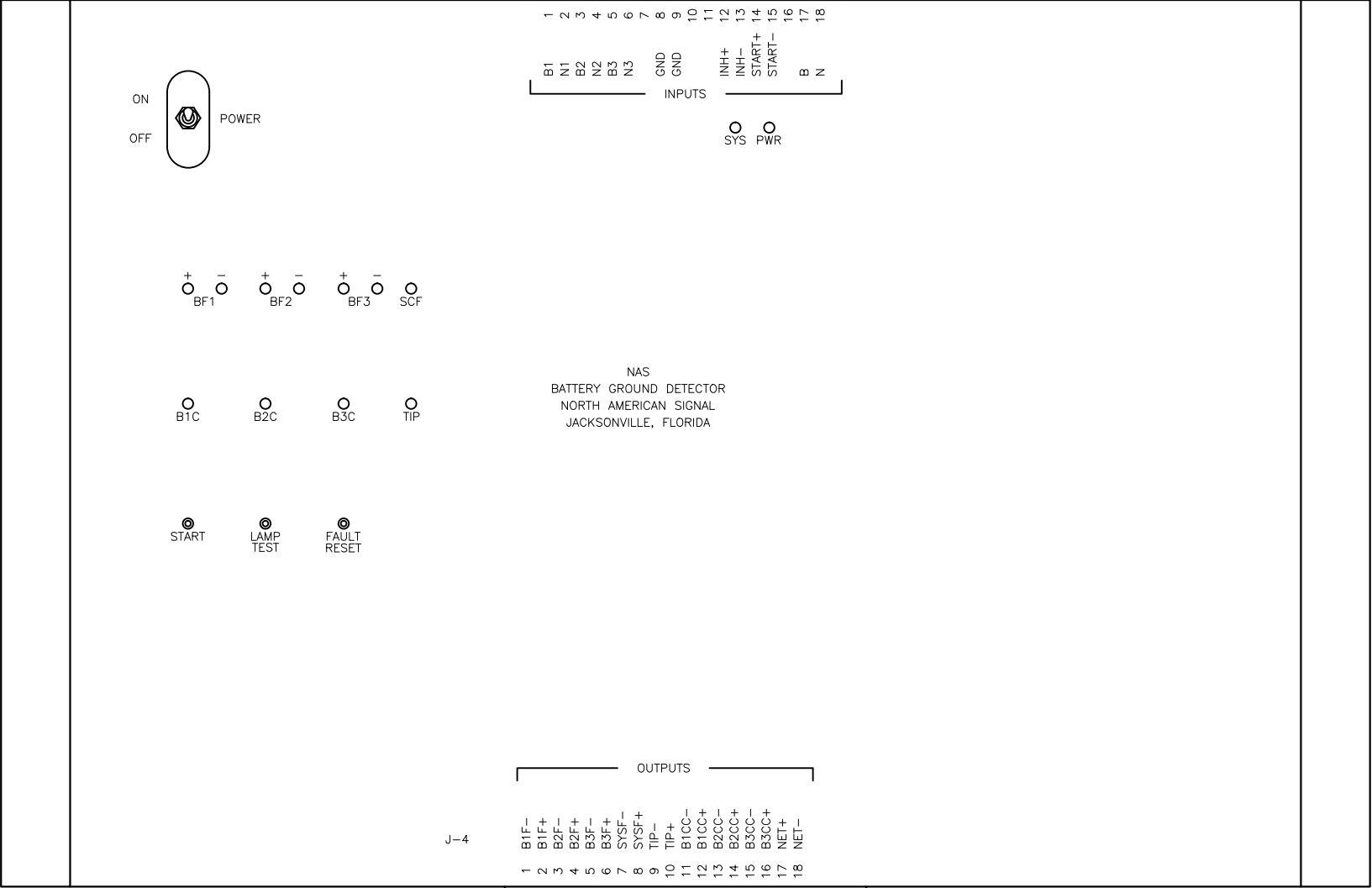


ABC
Railway

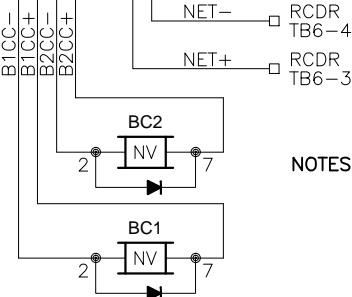
**AKRON BARBERTON CLUSTER
RAILWAY**

| | | |
|---------------------------------------|---------------------|--------------------|
| LOCATION MAIN STREET KENT, OHIO | | |
| ORIGINAL DATE 1/17/2018 | TITLE RECORDER | |
| DESIGNER CTC | SUB KENT-RAVENNA | CTC NO. CN18008 |
| DRAFTSMAN CTC | RRMP 191.53 | SCALE N.T.S. |
| CHECKER CTC | DOT NO. 262 564G | SHEET 09 of 23 |

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)

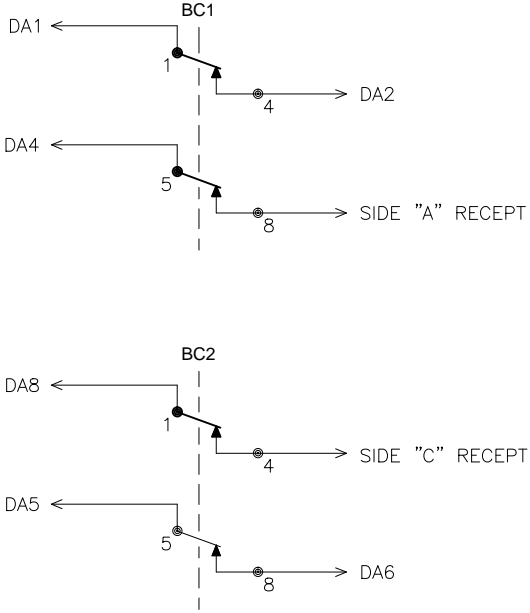
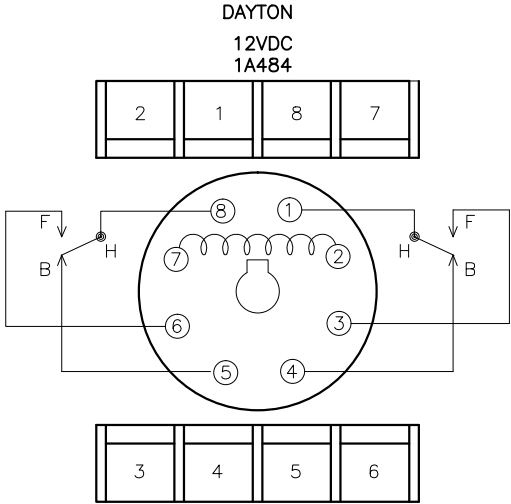
- SW1 = 1
- SW2 = 2
- SW3 = 4
- SW4 = 8
- SW5 = 16
- SW6 = 32
- SW7 = 64
- SW8 = 128

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

(12 HOURS)

SWITCH VALUES CLOSED
POSITION (BINARY)

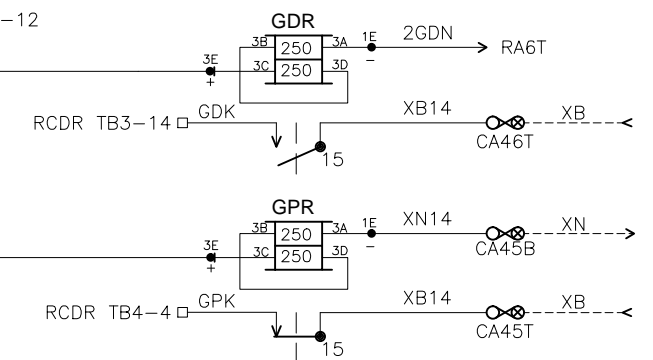
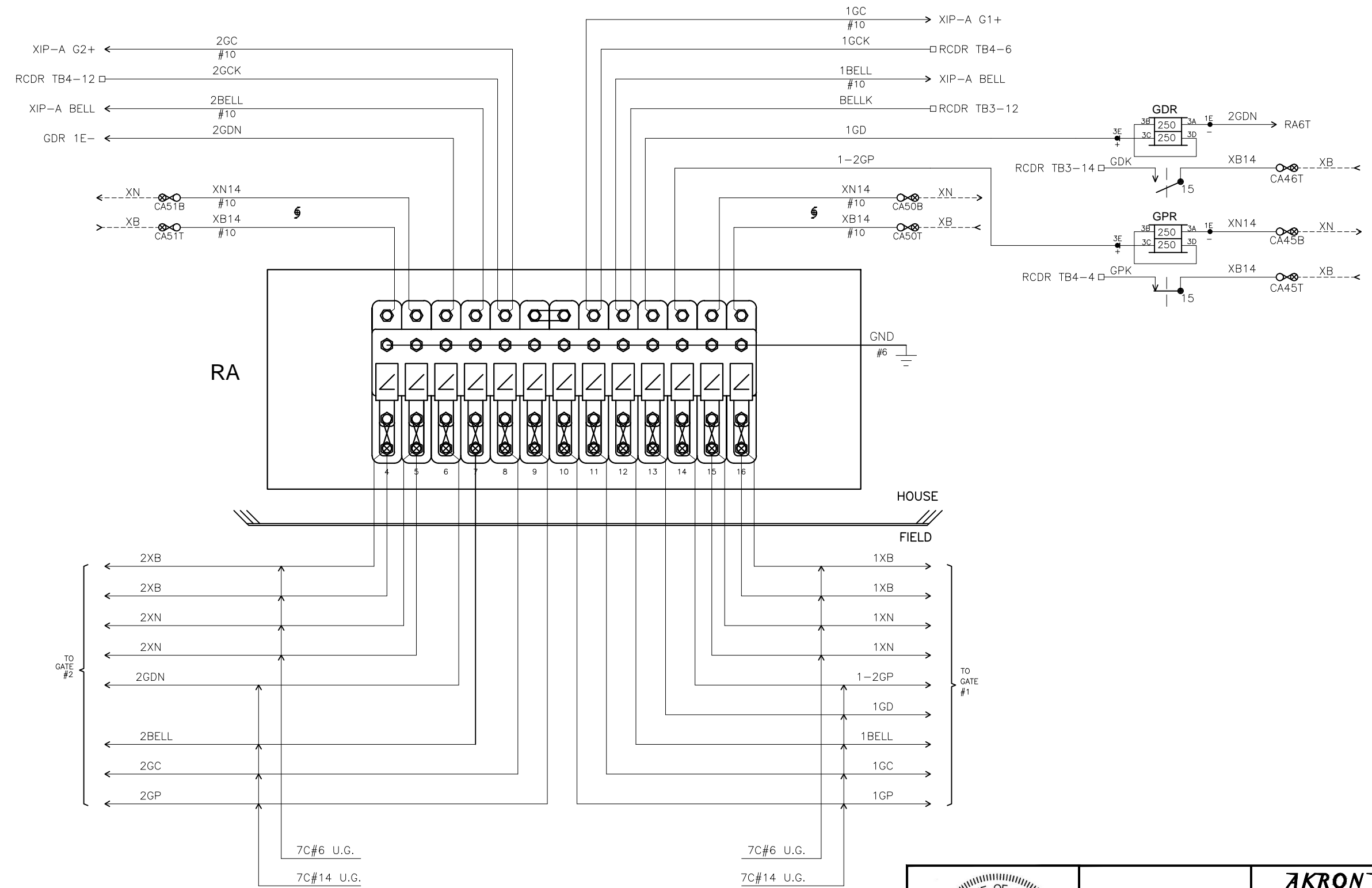
- SW1 = 1
- SW2 = 2
- SW3 = 4
- SW4 = 8
- SW5 = 16
- SW6 = 32
- SW7 = 64
- SW8 OPEN=HOUR CLOSED=DAYS



ABC
Railway

| AKRON BARBERTON CLUSTER RAILWAY | | | |
|------------------------------------|-----------|---------------------------|--------------|
| LOCATION | | MAIN STREET KENT, OHIO | |
| ORIGINAL DATE | 1/17/2018 | TITLE | BGD |
| DESIGNER | CTC | SUB | KENT-RAVENNA |
| DRAFTSMAN | CTC | RRMP | 191.53 |
| CHECKER | CTC | DOT NO. | 262 564G |
| SCALE | | N.T.S. | |
| SHEET | | 10 of 23 | |

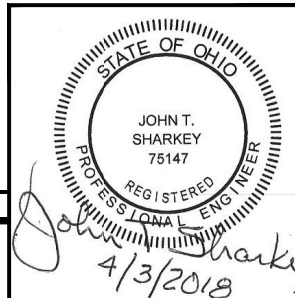
REVISION
BLOCK



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

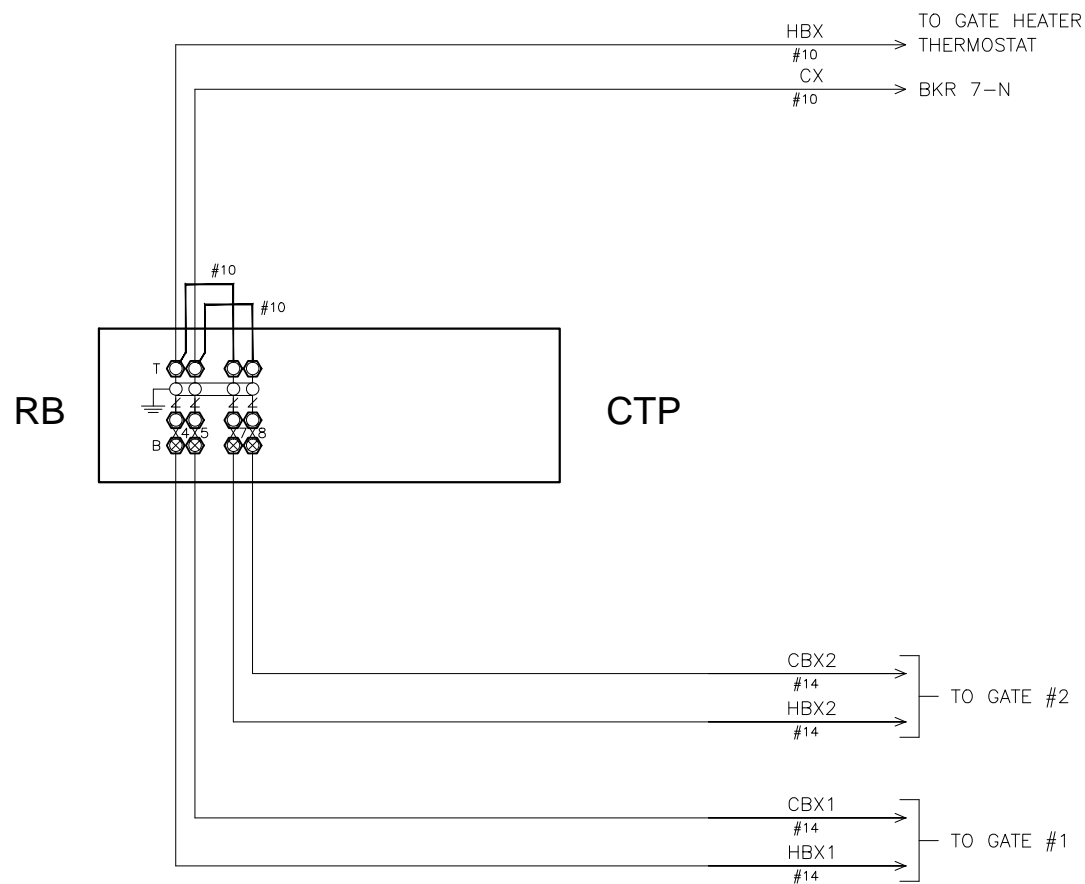
REVISION
BLOCK

CHANGE FROM TYPICAL: N



ABC
Railway

| AKRON BARBERTON CLUSTER RAILWAY | | |
|---------------------------------------|-------------------------|--------------------|
| LOCATION MAIN STREET KENT, OHIO | | |
| ORIGINAL DATE 1/17/2018 | TITLE ARRESTOR PANEL | |
| DESIGNER CTC | SUB KENT-RAVENNA | CTC NO. CN18008 |
| DRAFTSMAN CTC | RRMP 191.53 | SCALE N.T.S. |
| CHECKER CTC | DOT NO. 262 564G | SHEET 11 of 23 |

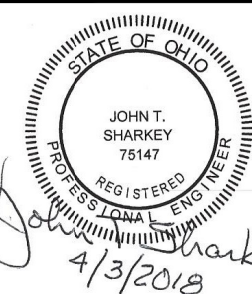


LEGEND:

⊗ = INSULATED NUT

REVISION
BLOCK

CHANGE FROM TYPICAL: N



ABC
Railway

**AKRON BARBERTON CLUSTER
RAILWAY**

| | | | |
|---------------|-----------|---------------------------|--------------|
| LOCATION | | MAIN STREET KENT, OHIO | |
| ORIGINAL DATE | 1/17/2018 | TITLE | CTP |
| DESIGNER | CTC | SUB | KENT-RAVENNA |
| DRAFTSMAN | CTC | RRMP | 191.53 |
| CHECKER | CTC | DOI NO. | 262 564G |
| | | SCALE | N.T.S. |
| | | SHEET | 12 of 23 |


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

LEGEND:

 = INSULATED NUT

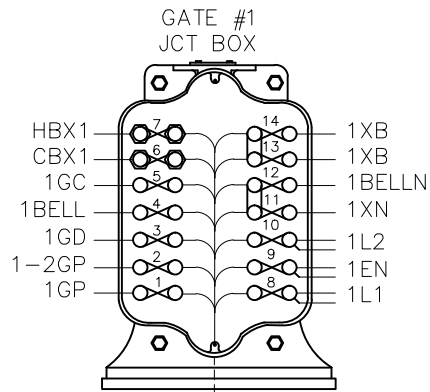
NOTES:

* BELL TO BE ELECTRONIC.

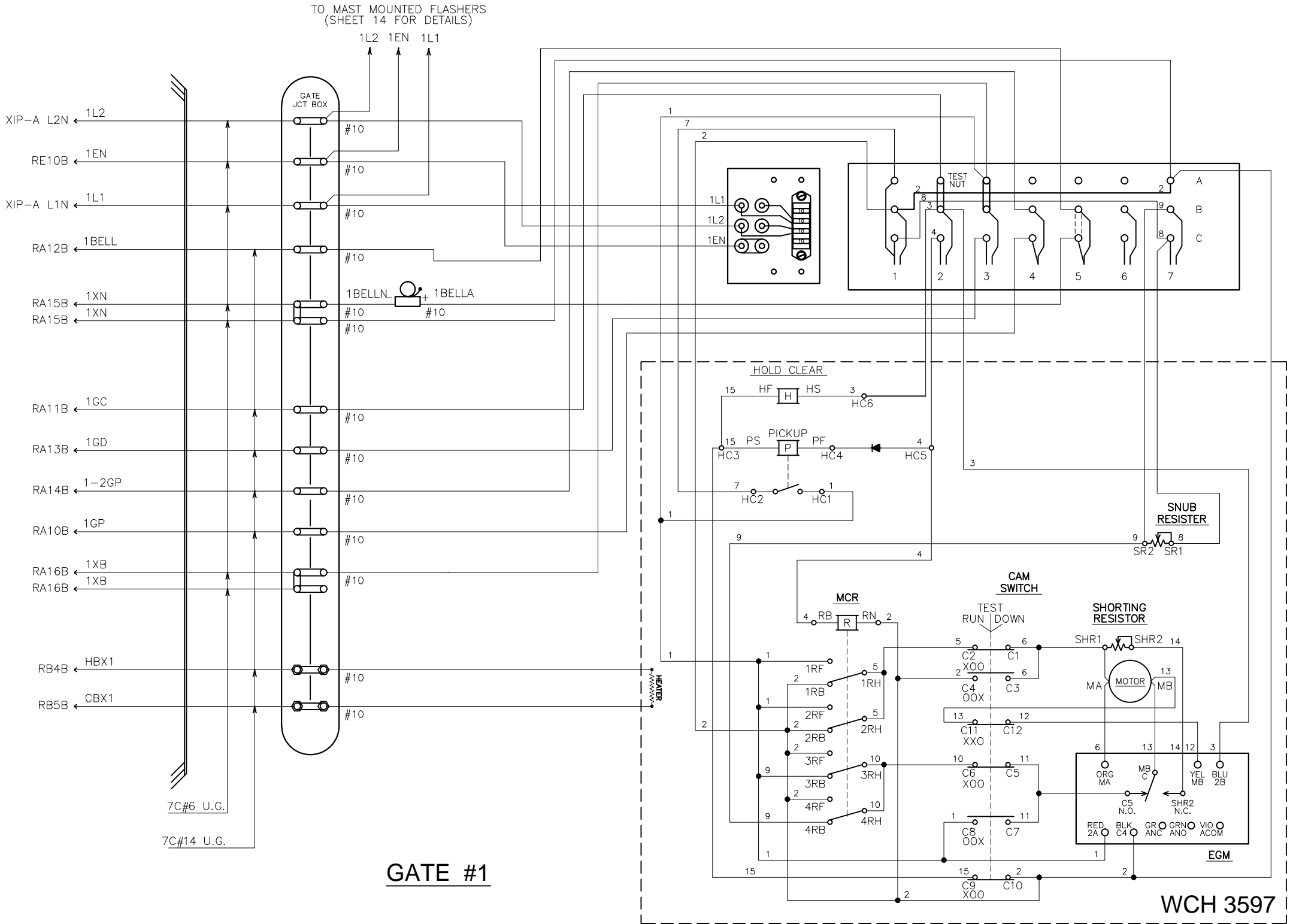
 = INTERNAL GATE WIRES THAT SHARE ELECTRICAL CONNECTIONS WITH OTHER WIRES THAT ARE ASSIGNED THE SAME NUMBER.

REFER TO SHEET 14 FOR GATE ARM LIGHT WIRING

ADD STRAP FROM:
3A TO 3B



-----> CABLES TO HOUSE

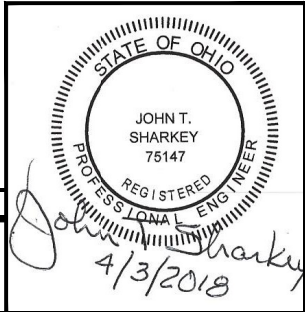


GATE #1

WCH 3597

REVISION
BLOCK

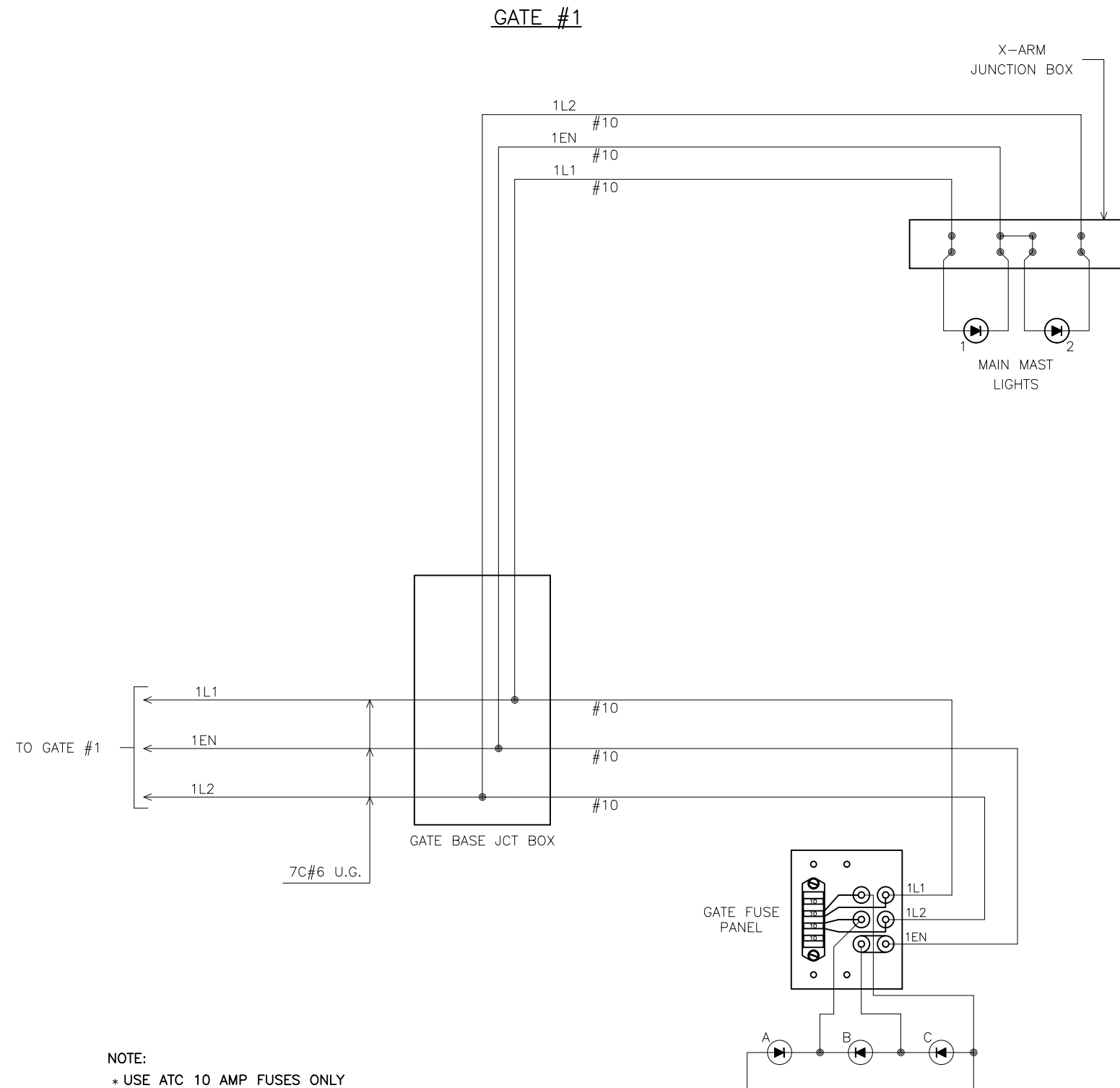
CHANGE FROM TYPICAL: N



ABC
Railway

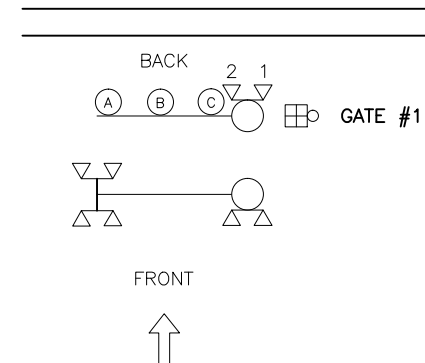
**AKRON BARBERTON CLUSTER
RAILWAY**

| | | |
|---------------------------------------|----------------------------------------|--------------------|
| LOCATION MAIN STREET KENT, OHIO | | |
| ORIGINAL DATE 1/17/2018 | TITLE GATE #1 MECHANISM (NEAR SIDE) | CTC NO. CN18008 |
| DESIGNER CTC | SUB KENT-RAVENNA | SCALE N.T.S. |
| DRAFTSMAN CTC | RRMP 191.53 | SHEET 13 of 23 |
| CHECKER CTC | DOT NO. 262 564G | |

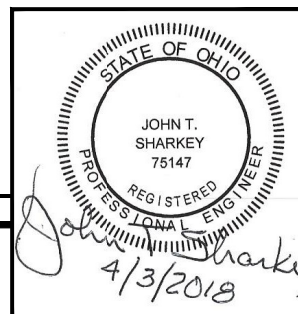


NOTE:
* USE ATC 10 AMP FUSES ONLY

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



CHANGE FROM TYPICAL: Y



ABC
Railway


**AKRON BARBERTON CLUSTER
RAILWAY**

| | | | |
|---------------|-----------|---------------------------|----------------------------|
| LOCATION | | MAIN STREET KENT, OHIO | |
| ORIGINAL DATE | 1/17/2018 | TITLE | GATE #1 LIGHTS (NEAR SIDE) |
| DESIGNER | CTC | SUB | KENT-RAVENNA |
| DRAFTSMAN | CTC | RRMP | 191.53 |
| CHECKER | CTC | DOT NO. | 262 564G |
| | | SCALE | N.T.S. |
| | | SHEET | 14 of 23 |

REVISION
BLOCK


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

LEGEND:

 = INSULATED NUT

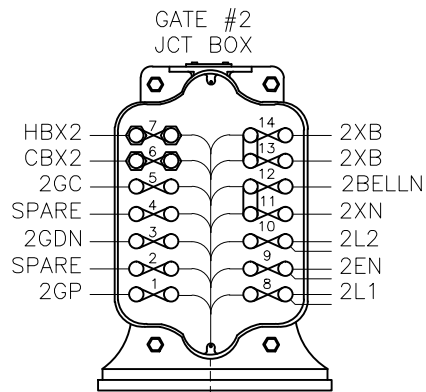
NOTES:

* BELL TO BE ELECTRONIC.

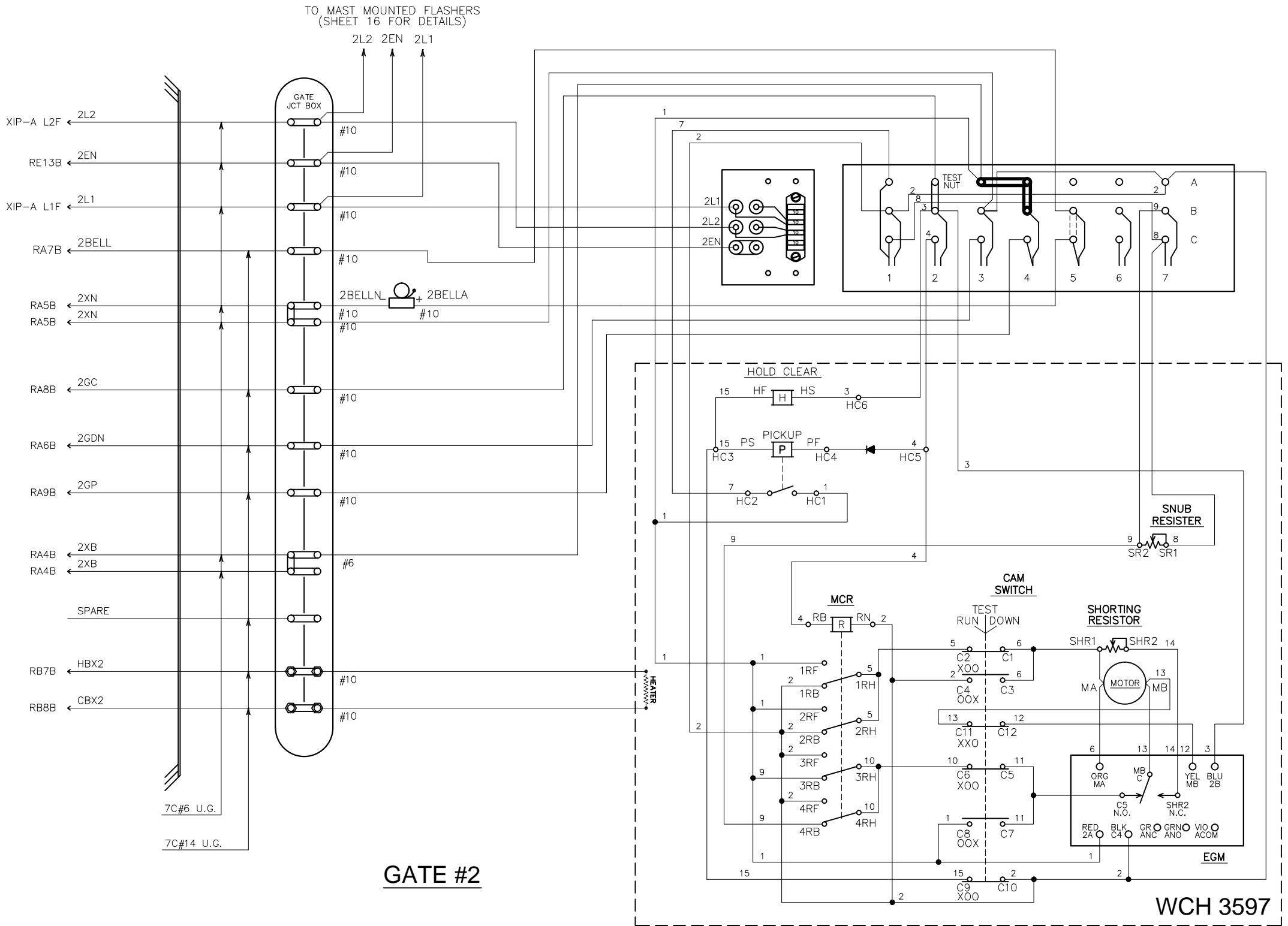
 = INTERNAL GATE WIRES THAT SHARE ELECTRICAL CONNECTIONS WITH OTHER WIRES THAT ARE ASSIGNED THE SAME NUMBER.

REFER TO SHEET 16 FOR GATE ARM LIGHT WIRING

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



-----> CABLES TO HOUSE



GATE #2



ABC
Railway

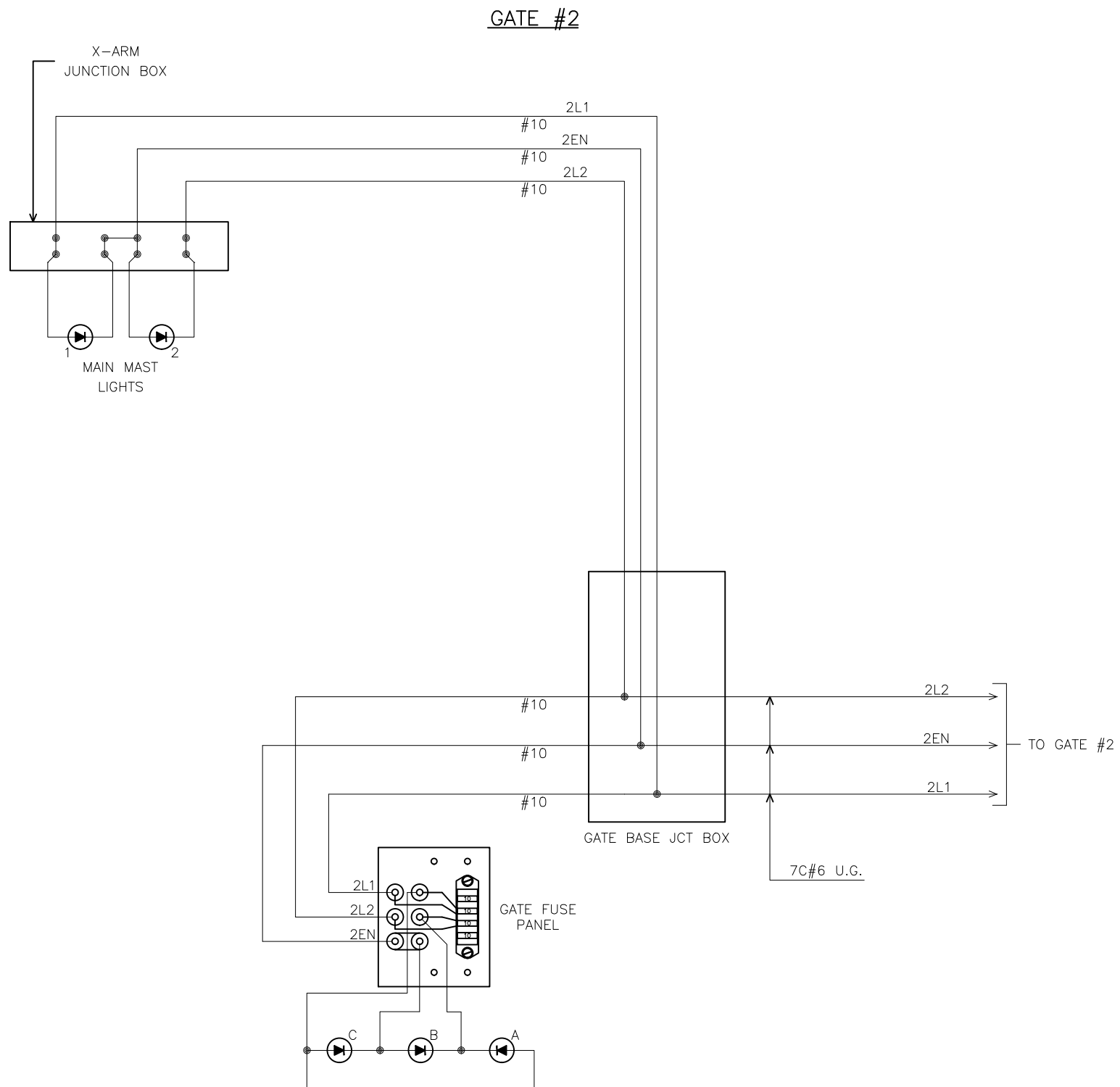
AKRON BARBERTON CLUSTER
RAILWAY

LOCATION: MAIN STREET
KENT, OHIO

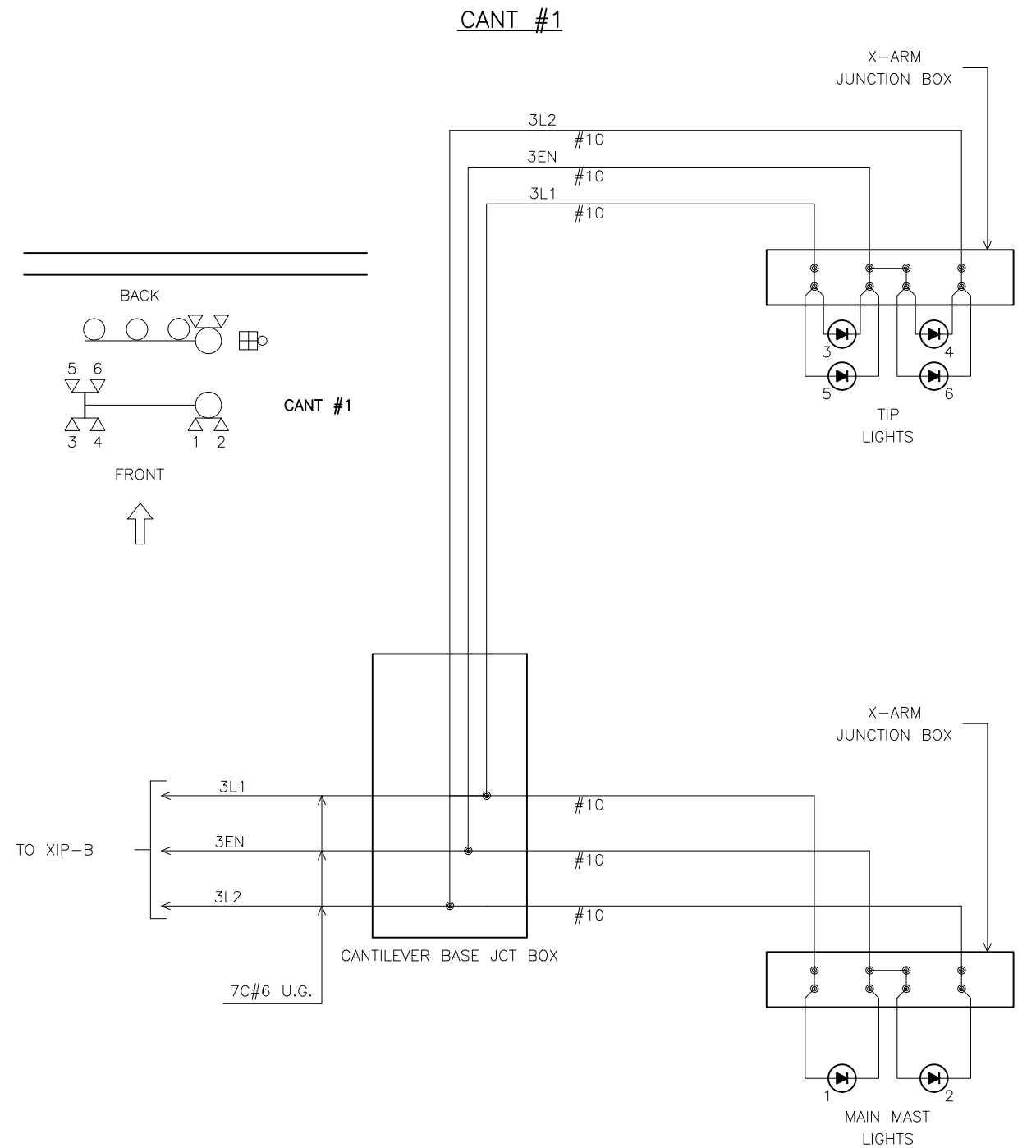
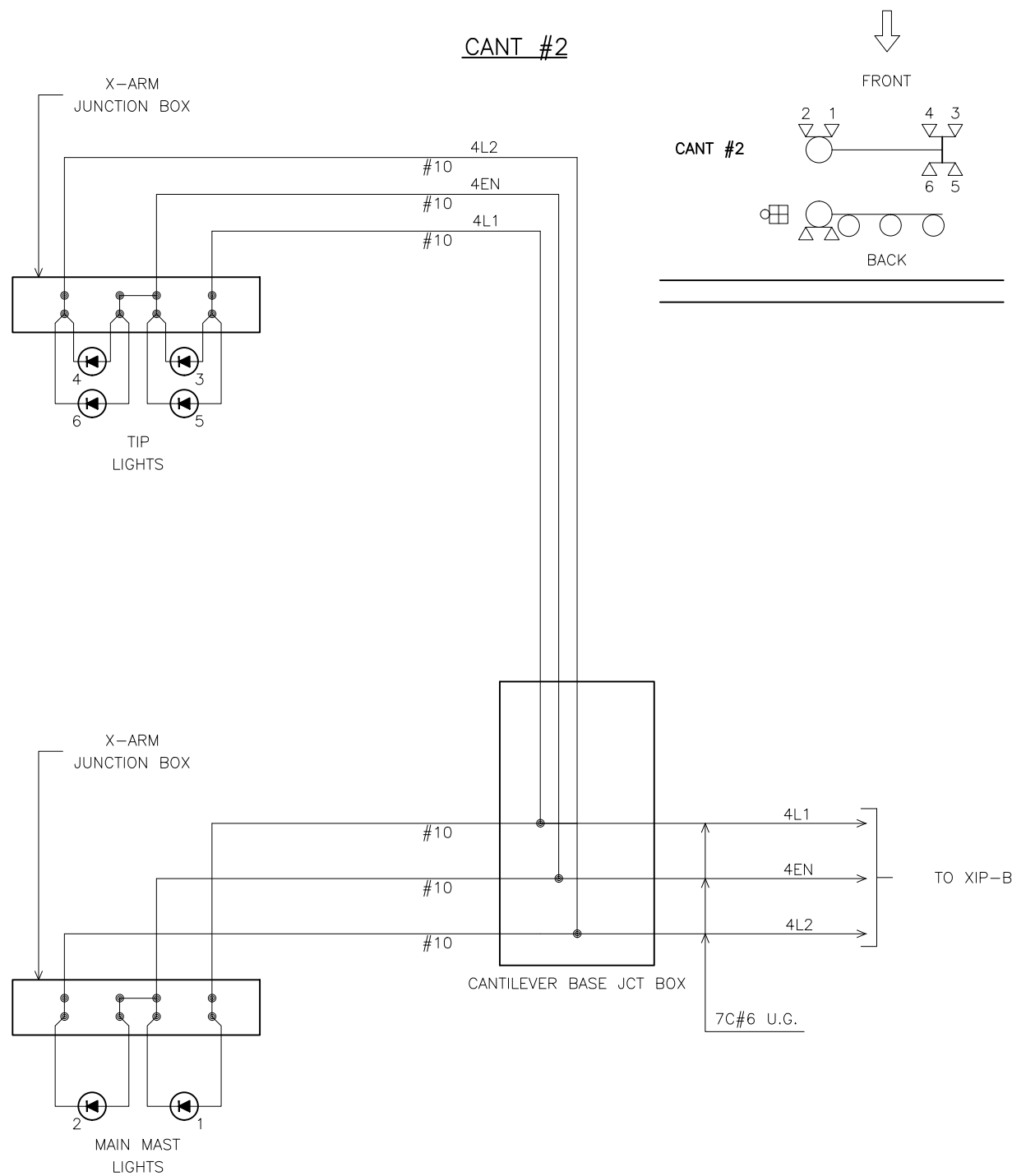
| | | | |
|---------------|-----------|---------|------------------------------|
| ORIGINAL DATE | 1/17/2018 | TITLE | GATE #2 MECHANISM (FAR SIDE) |
| DESIGNER | CTC | SUB | KENT-RAVENNA |
| DRAFTSMAN | CTC | RRMP | 191.53 |
| CHECKER | CTC | DOT NO. | 262 564G |
| | | SCALE | N.T.S. |
| | | SHEET | 15 of 23 |

REVISION
BLOCK

CHANGE FROM TYPICAL: Y



| | | | |
|---------------|-----------|---------------------------------|-----------------|
| LOCATION | | MAIN STREET KENT, OHIO | |
| ORIGINAL DATE | 1/17/2018 | TITLE GATE #2 LIGHTS (FAR SIDE) | |
| DESIGNER | CTC | SUB KENT-RAVENNA | CTC NO. CN18008 |
| DRAFTSMAN | CTC | RRMP 191.53 | SCALE N.T.S. |
| CHECKER | CTC | DOY NO. 262 564G | SHEET 16 OF 23 |

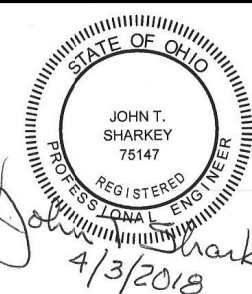


NOTE:
* USE ATC 10 AMP FUSES ONLY

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

REVISION
BLOCK

CHANGE FROM TYPICAL: Y

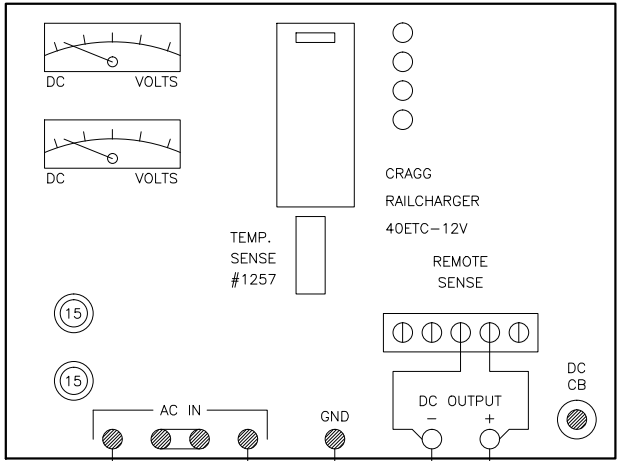


ABC
Railway

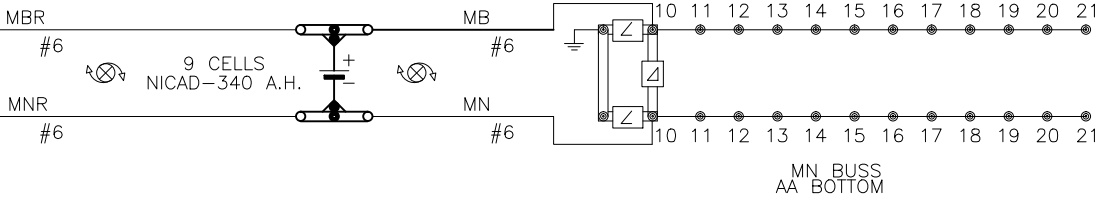
**AKRON BARBERTON CLUSTER
RAILWAY**

| | | |
|---------------------------------------|--------------------------------|--------------------|
| LOCATION MAIN STREET KENT, OHIO | | |
| ORIGINAL DATE 1/17/2018 | TITLE CANT'S #1 & #2 LIGHTS | |
| DESIGNER CTC | SUB KENT-RAVENNA | CTC NO. CN18008 |
| DRAFTSMAN CTC | RRMP 191.53 | SCALE N.T.S. |
| CHECKER CTC | DOT NO. 262 564G | SHEET 17 of 23 |

MB-CHARGER
(SIDE "A" WALL)



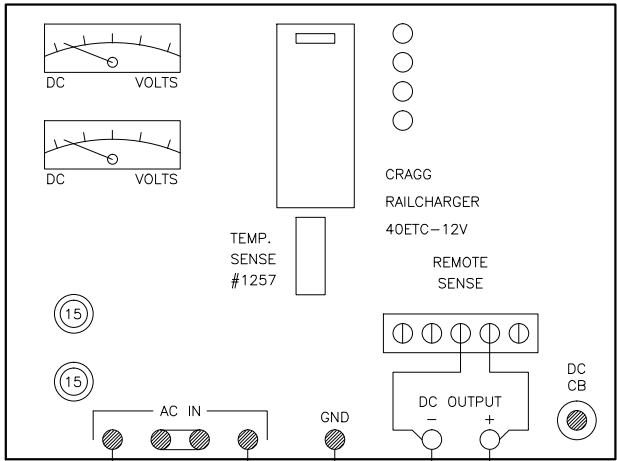
MB-BATTERY



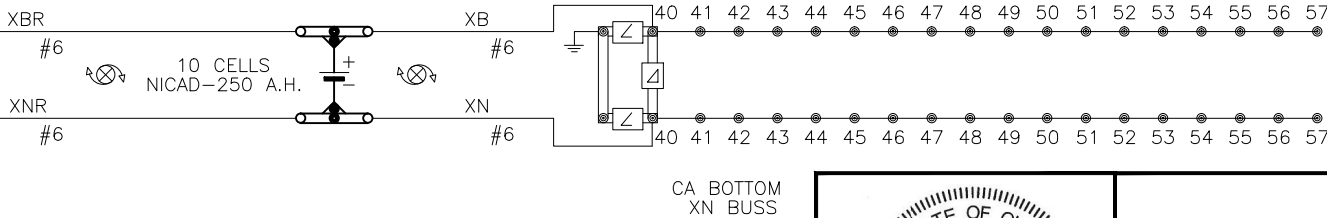
BATTERY BUSS DETAILS

| | | |
|------------|----|-------------|
| SPARE | 21 | SPARE |
| T1_APP 50T | 20 | VIO1 J3-5 |
| T1_ALL 45T | 19 | VIO1 J3-2 |
| ROR-4 | 18 | VIO1 J3-11 |
| PO DB1 | 17 | PO DB3 |
| BGD B1 | 16 | BGD N1 |
| SPARE | 15 | SPARE |
| 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- |

XB-CHARGER
(SIDE "C" WALL)



XB-BATTERY



BATTERY BUSS DETAILS

| | | |
|-------------|----|-------------|
| SPARE | 57 | SPARE |
| SPARE | 56 | SPARE |
| XIP-B B | 55 | XIP-B N |
| XIP-B L1B-B | 54 | XIP-B L1B-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 | SPARE |
| GPR 15 | 45 | GPR 1E |
| CC58T | 44 | IXC-A J5-14 |
| 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- |

NEMA PLUG
L6-15P

3C#14 ←

NEMA PLUG
L6-15P

3C#14 ←

REVISION
BLOCK

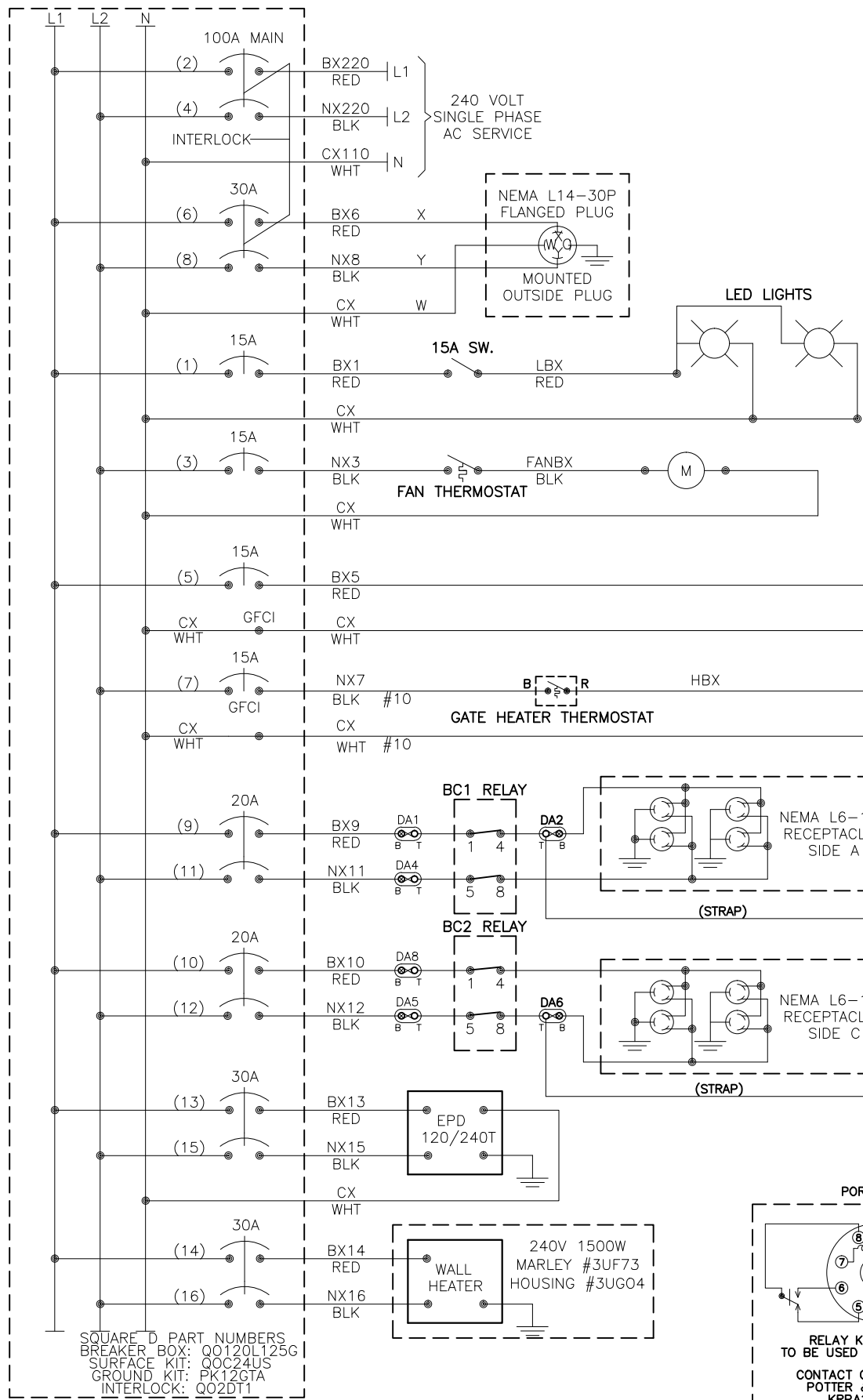
CHANGE FROM TYPICAL: Y



ABC
Railway

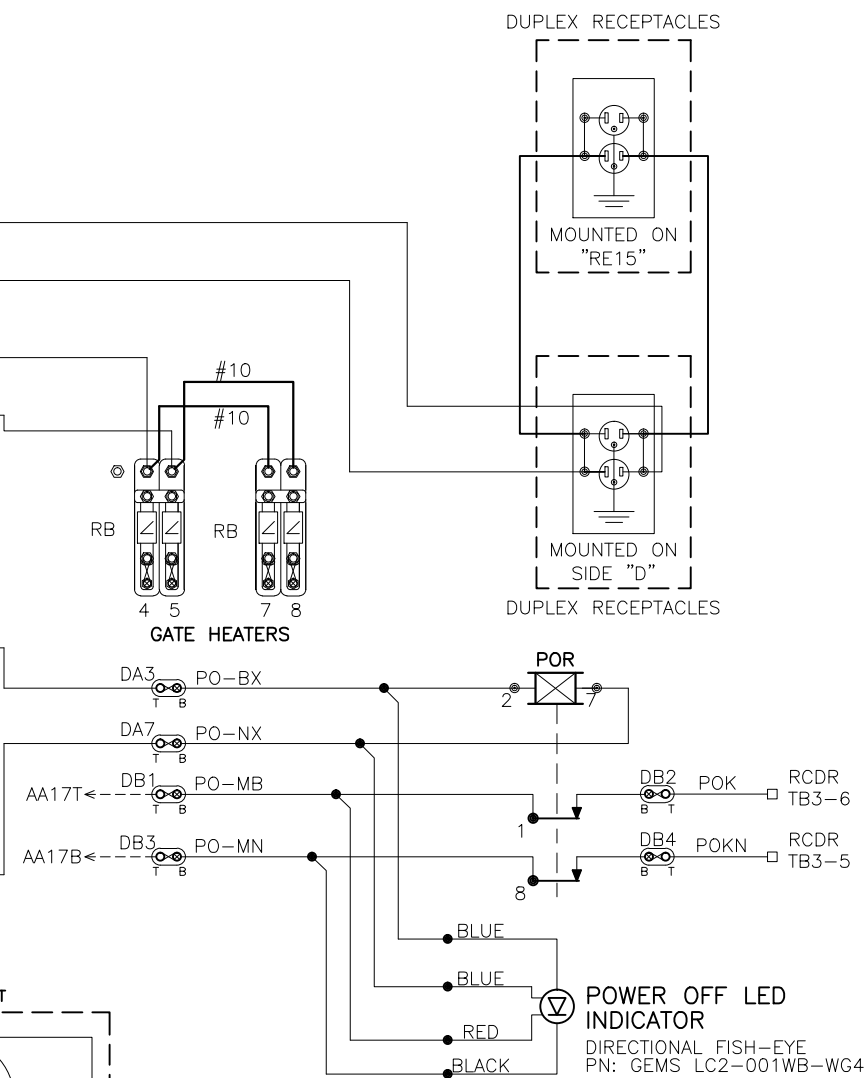
**AKRON BARBERTON CLUSTER
RAILWAY**

| | | |
|---------------------------------------|---------------------------|--------------------|
| LOCATION MAIN STREET KENT, OHIO | | |
| ORIGINAL DATE 1/17/2018 | TITLE BATTERY CHARGERS | |
| DESIGNER CTC | SUB KENT-RAVENNA | CTC NO. CN18008 |
| DRAFTSMAN CTC | RRMP 191.53 | SCALE N.T.S. |
| CHECKER CTC | DOT NO. 262 564G | SHEET 18 of 23 |

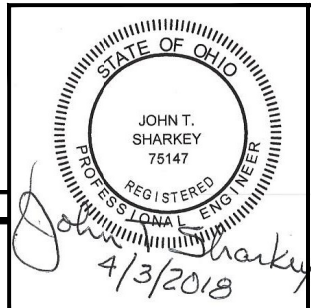
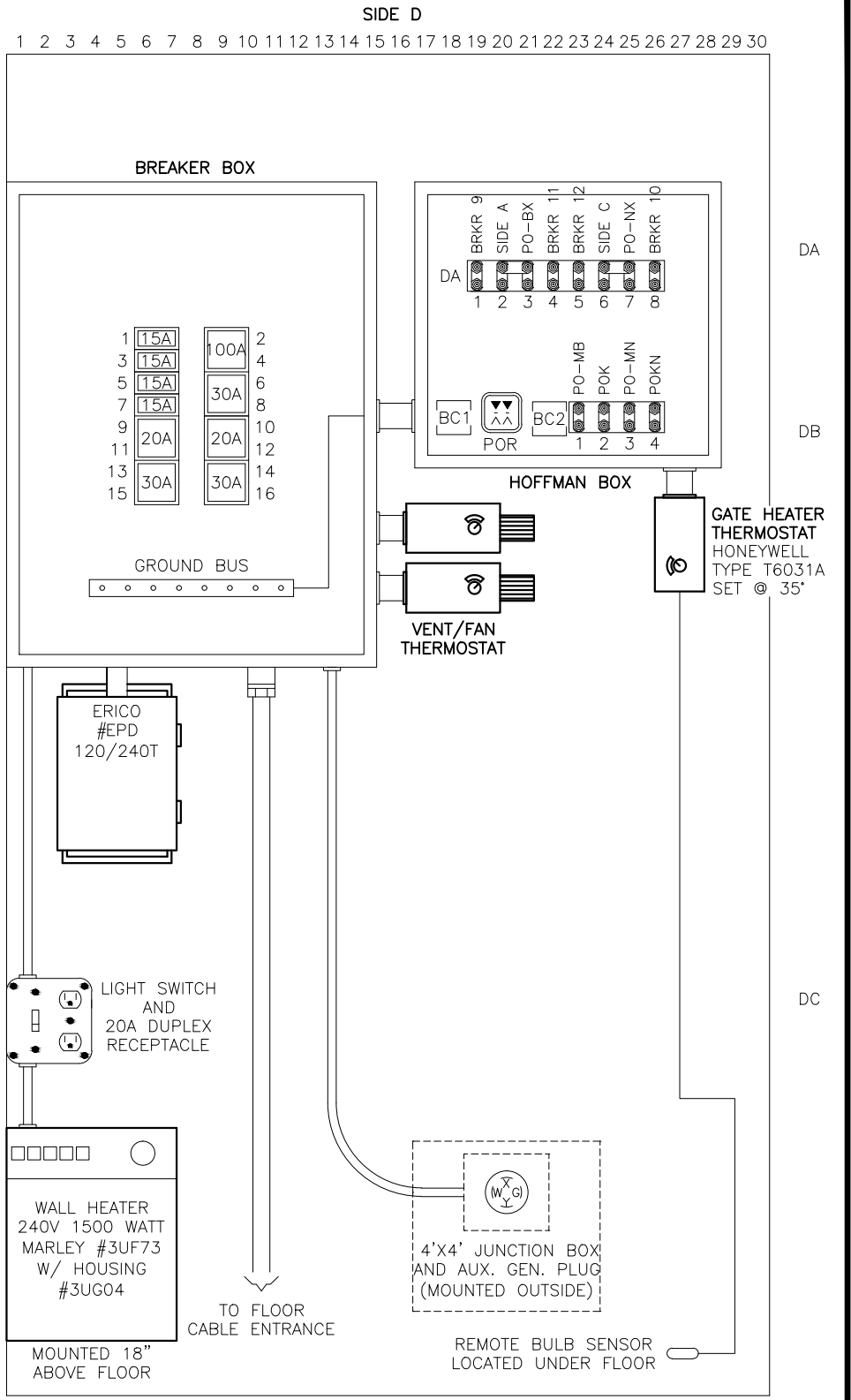
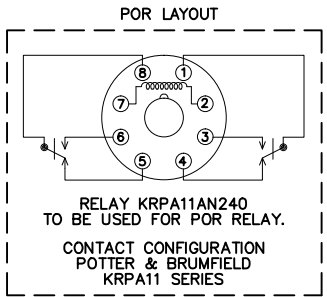


SQUARE D PART NUMBERS
BREAKER BOX: Q0120L125G
SURFACE KIT: Q0C24US
GROUND KIT: PK12GTA
INTERLOCK: Q02DT1

- 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



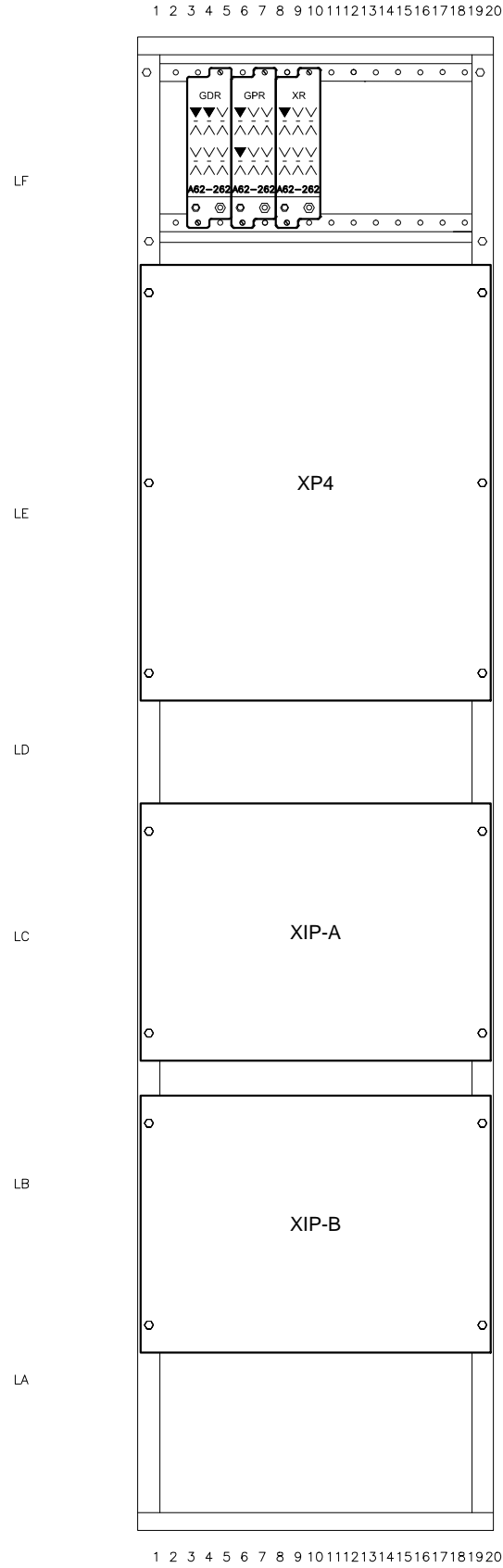
- NOTE:
- WHEN AC IS ON LED IS ON
 - WHEN AC IS OFF LED FLASHES UNTIL BATTERY IS DISCHARGED.
 - WHEN AC IS OFF AND BATTERY IS DISCHARGED LED IS OFF.



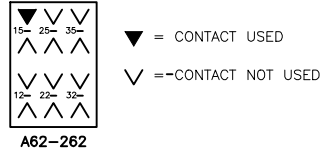
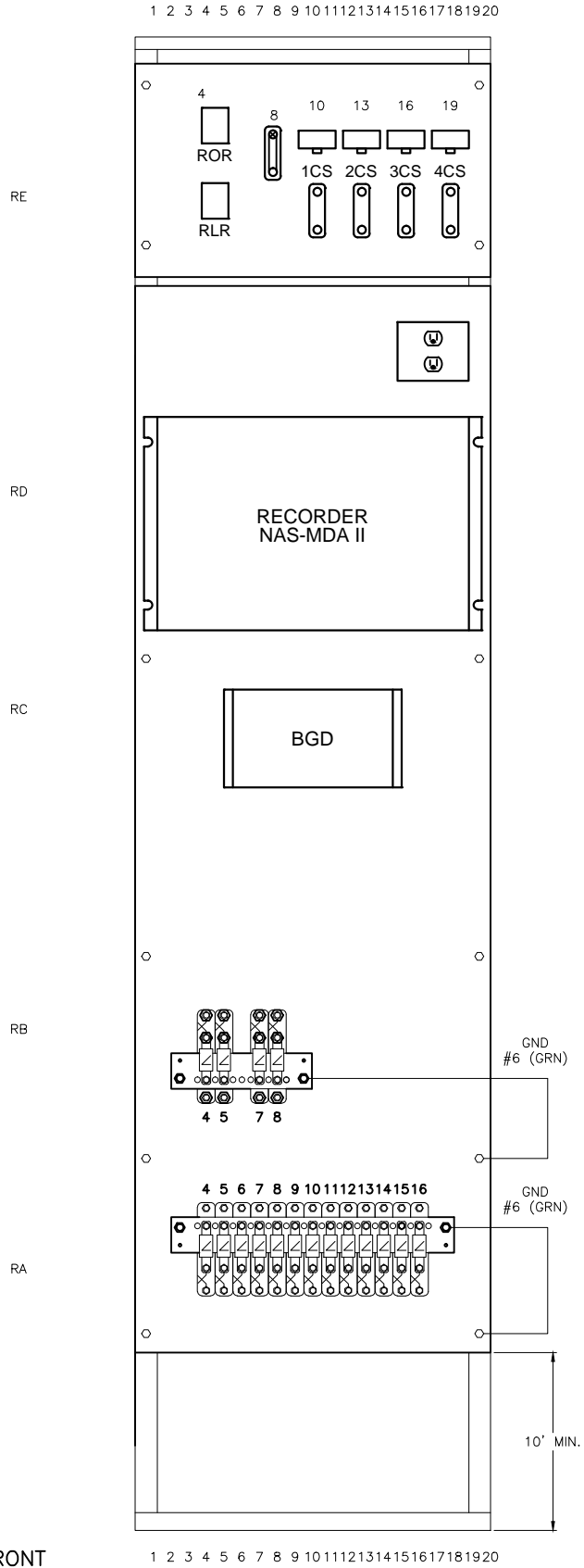
| AKRON BARBERTON CLUSTER RAILWAY | | | |
|---------------------------------|-----------|------------------------|-----------------------|
| LOCATION | | MAIN STREET KENT, OHIO | |
| ORIGINAL DATE | 1/17/2018 | TITLE | AC POWER DISTRIBUTION |
| DESIGNER | CTC | SUB | KENT-RAVENNA |
| DRAFTSMAN | CTC | RRMP | 191.53 |
| CHECKER | CTC | DOT NO. | 262 564G |
| | | SCALE | 1"=2' |
| | | SHEET | 19 of 23 |

REVISION BLOCK

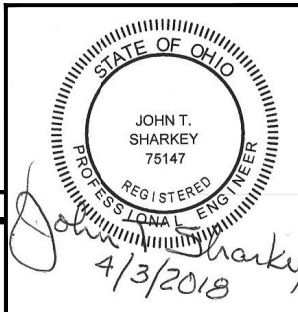
CHANGE FROM TYPICAL: N



SIDE 'B' FRONT



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



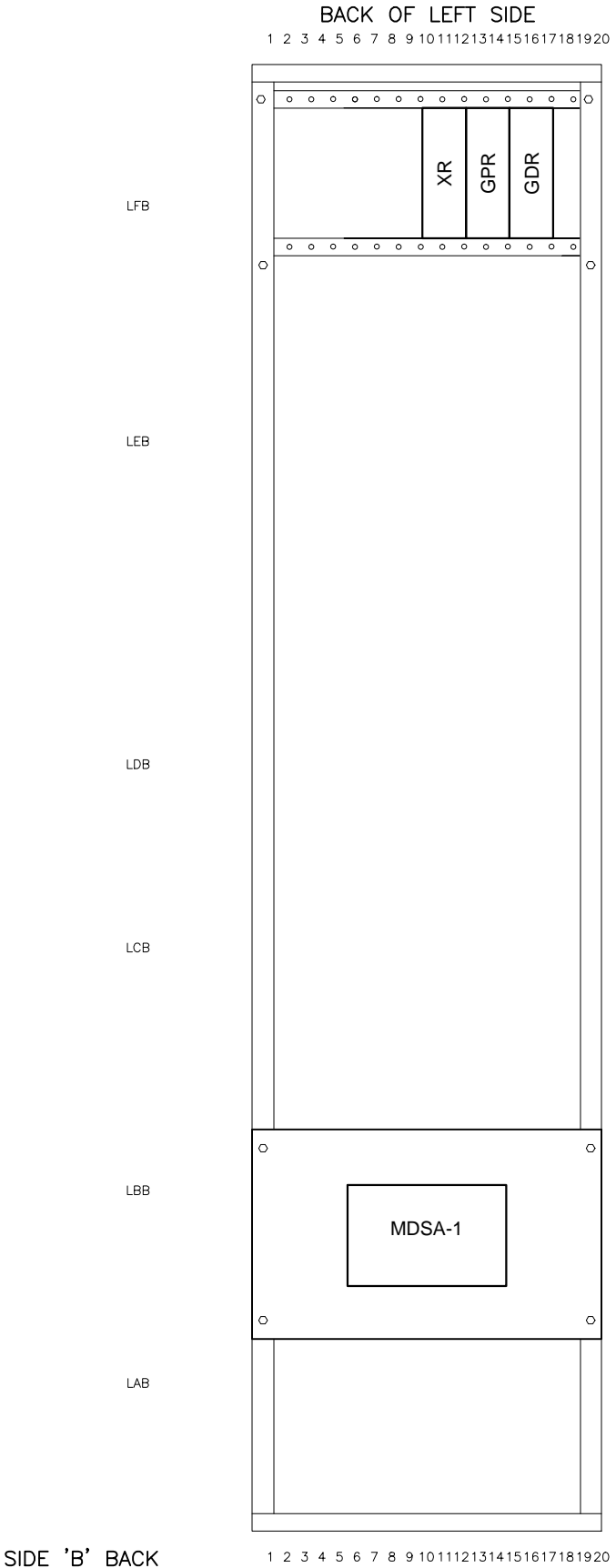
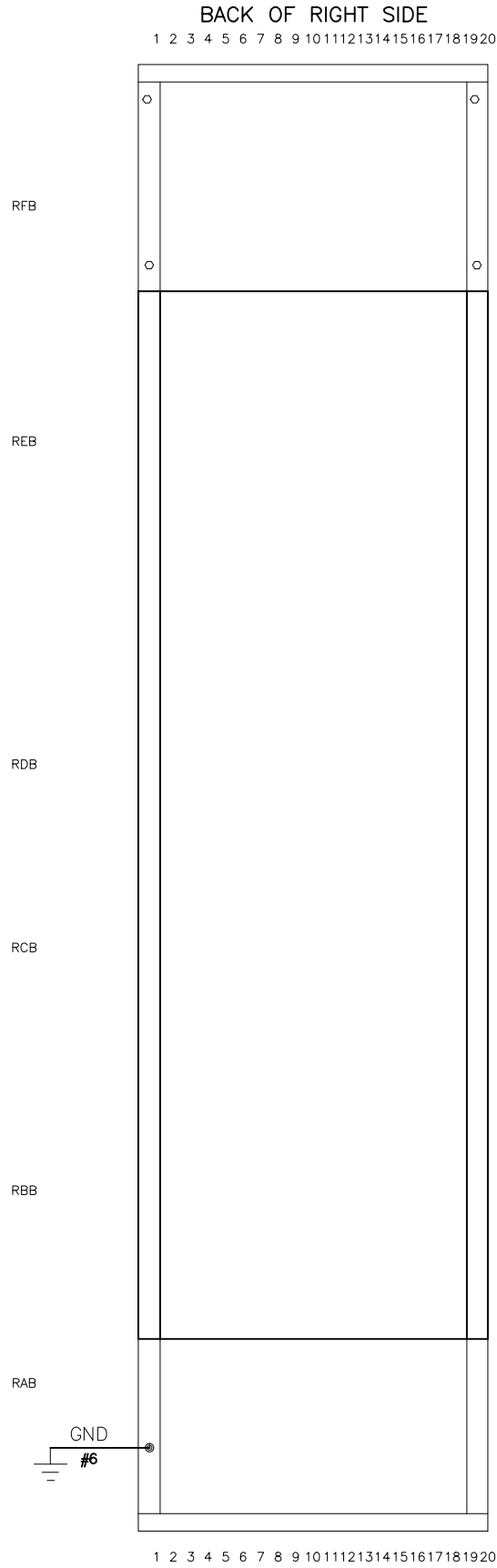
ABC
Railway

**AKRON BARBERTON CLUSTER
RAILWAY**

| | | |
|---------------------------------------|--------------------------|--------------------|
| LOCATION MAIN STREET KENT, OHIO | | |
| ORIGINAL DATE 1/17/2018 | TITLE RACK FRONT VIEW | |
| DESIGNER CTC | SUB KENT-RAVENNA | CTC NO. CN18008 |
| DRAFTSMAN CTC | RRMP 191.53 | SCALE 1"=2' |
| CHECKER CTC | DOT NO. 262 564G | SHEET 20 of 23 |

REVISION
BLOCK

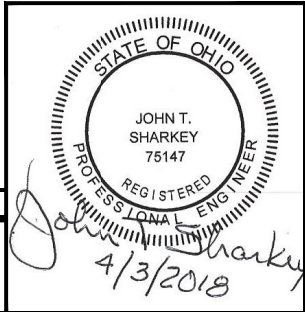
CHANGE FROM TYPICAL: Y



SIDE 'B' BACK

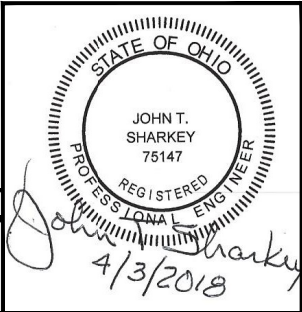
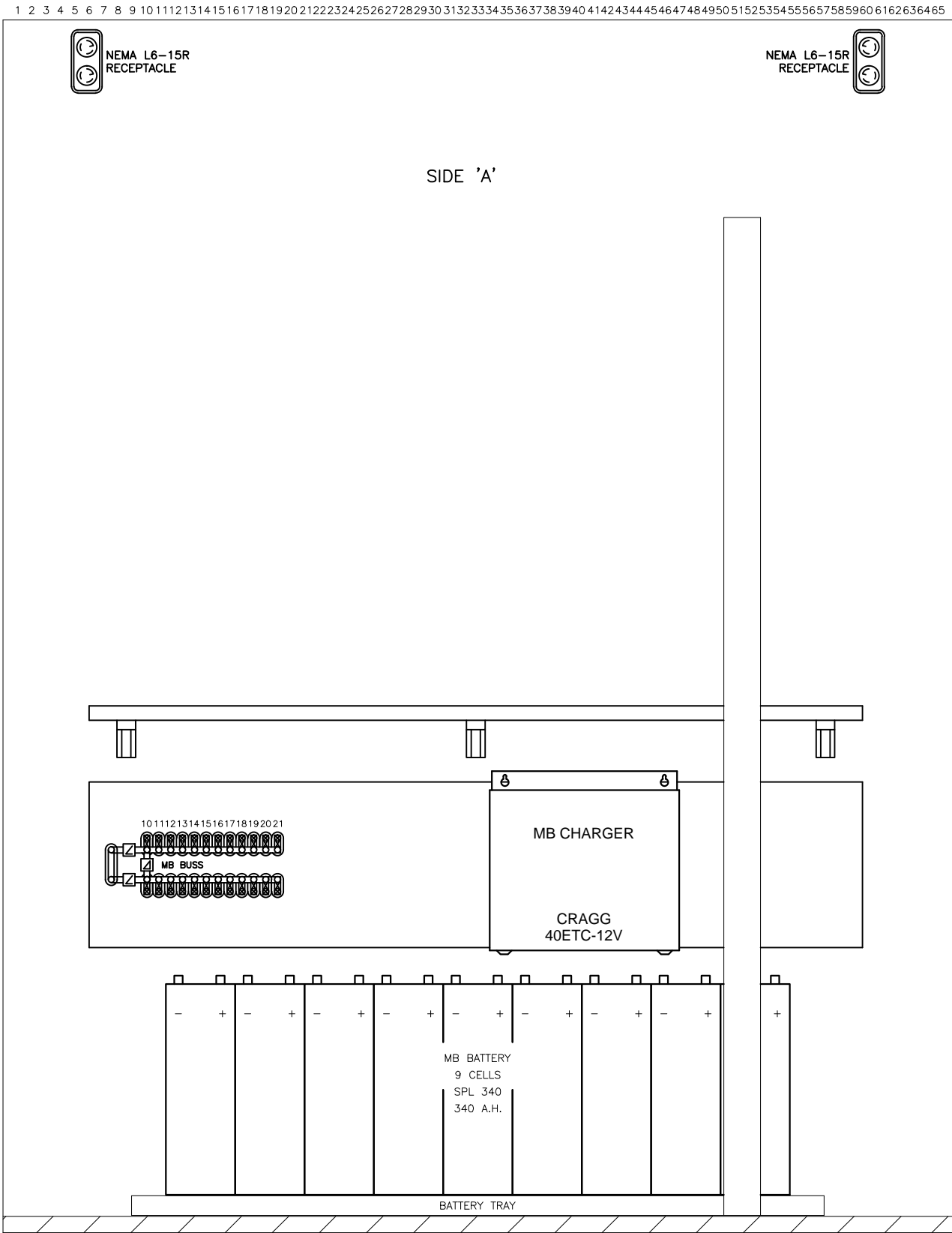
REVISION
BLOCK

CHANGE FROM TYPICAL: Y



ABC
Railway

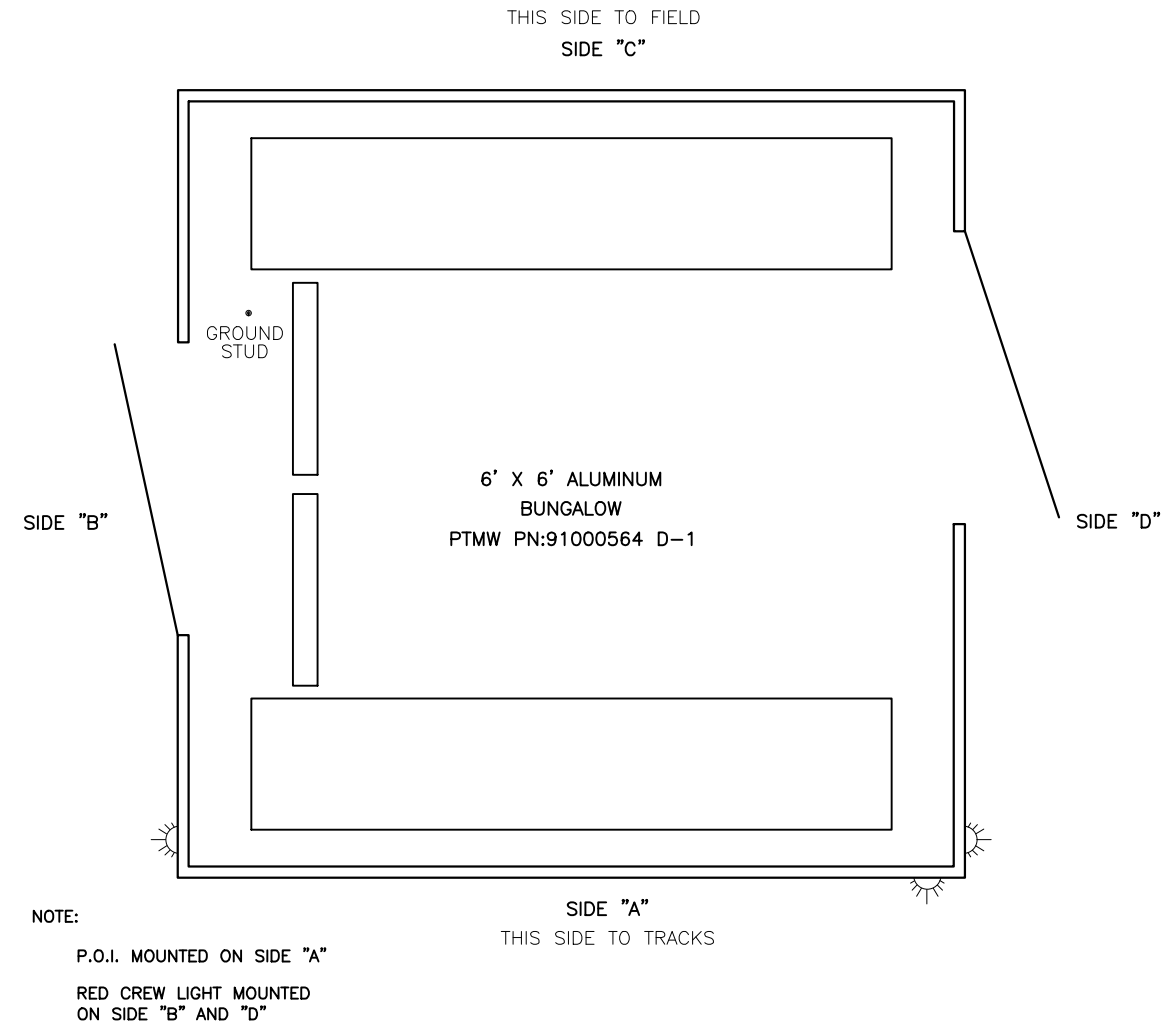
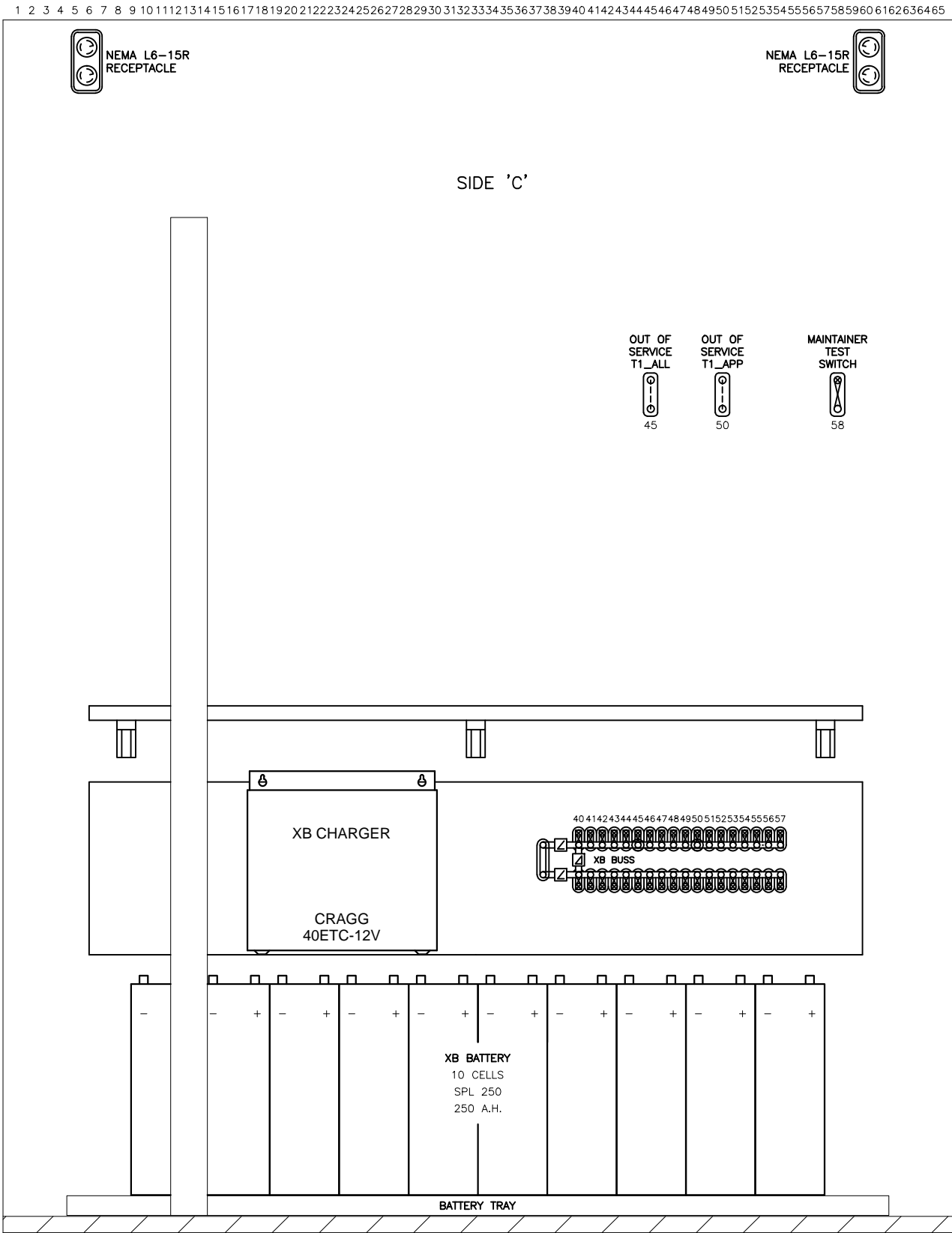
| AKRON BARBERTON CLUSTER RAILWAY | | |
|---------------------------------------|-------------------------|--------------------|
| LOCATION MAIN STREET KENT, OHIO | | |
| ORIGINAL DATE 1/17/2018 | TITLE RACK BACK VIEW | |
| DESIGNER CTC | SUB KENT-RAVENNA | CTC NO. CN18008 |
| DRAFTSMAN CTC | RRMP 191.53 | SCALE 1"=2' |
| CHECKER CTC | DOT NO. 262 564G | SHEET 21 of 23 |



ABC
Railway

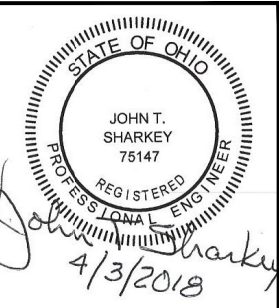
| AKRON BARBERTON CLUSTER RAILWAY | | | |
|------------------------------------|-----------|---------------------------|--------------|
| LOCATION | | MAIN STREET KENT, OHIO | |
| ORIGINAL DATE | 1/17/2018 | TITLE | SIDE "A" |
| DESIGNER | CTC | SUB | KENT-RAVENNA |
| DRAFTSMAN | CTC | RRMP | 191.53 |
| CHECKER | CTC | DOT NO. | 262 564G |
| | | SCALE | 1"=2' |
| | | SHEET | 22 of 23 |

REVISION
BLOCK



REVISION
BLOCK

CHANGE FROM TYPICAL: N



ABC
Railway

| AKRON BARBERTON CLUSTER RAILWAY | | | |
|---------------------------------|-----------|---------------------------|--------------|
| LOCATION | | MAIN STREET KENT, OHIO | |
| ORIGINAL DATE | 1/17/2018 | TITLE | SIDE "C" |
| DESIGNER | CTC | SUB | KENT-RAVENNA |
| DRAFTSMAN | CTC | RRMP | 191.53 |
| CHECKER | CTC | DOT NO. | 262 564G |
| | | SCALE | 1"=2' |
| | | SHEET | 23 of 23 |

Akron Barberton Cluster Railway
Kent, OH. MP 191.53 DOT# 262 564G
CTC Project Estimate

| ENGINEERING | | | | |
|----------------------------------------|------------|------------|-------------------|--------------------|
| <i>Description</i> | <i>Qty</i> | <i>UOM</i> | <i>Unit Price</i> | <i>Amount</i> |
| SIGNAL DESIGNER | 80 | HR | 32.69 | \$2,615.20 |
| SIGNAL CHECKER, LEVEL 1 | 20 | HR | 43.72 | \$874.40 |
| SIGNAL CHECKER, LEVEL 2/FIELD ENGINEER | 10 | HR | 35.00 | \$350.00 |
| SUBTOTAL | | | | \$3,839.60 |
| G&A BURDEN FOR LABOR (162%) | | | | \$6,220.15 |
| FIXED FEE (14%) | | | | \$1,408.37 |
| ENGINEERING TOTAL | | | | \$11,468.12 |

| PROJECT MANAGEMENT | | | | |
|----------------------------------------|------------|------------|-------------------|--------------------|
| <i>Description</i> | <i>Qty</i> | <i>UOM</i> | <i>Unit Price</i> | <i>Amount</i> |
| SENIOR SIGNAL ENGINEER | 16 | HR | \$100.00 | \$1,600.00 |
| PROJECT MANAGER | 40 | HR | \$39.66 | \$1,586.40 |
| CONSTRUCTION MANAGER | 160 | HR | \$39.66 | \$6,345.60 |
| ACCOUNTING, LEVEL1 | 16 | HR | \$39.81 | \$636.96 |
| ADMINISTRATIVE | 4 | HR | \$26.44 | \$105.76 |
| SUBTOTAL | | | | \$10,274.72 |
| G&A BURDEN FOR LABOR (162%) | | | | \$16,645.05 |
| FIXED FEE (14%) | | | | \$3,768.77 |
| PROJECT MANAGEMENT TOTAL | | | | \$30,688.53 |

| EAF LABOR | | | | |
|----------------------------------------|------------|------------|-------------------|-------------------|
| <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 | 24 | HR | \$20.19 | \$484.56 |
| LEAD WIREMAN | 40 | HR | \$19.25 | \$770.00 |
| WIREMAN | 24 | HR | \$15.00 | \$360.00 |
| TEST | 16 | HR | \$36.00 | \$576.00 |
| QC | 8 | HR | \$28.85 | \$230.80 |
| SUBTOTAL | | | | \$2,645.36 |
| G&A BURDEN FOR LABOR (162%) | | | | \$4,285.48 |
| FIXED FEE (14%) | | | | \$970.32 |
| EAF LABOR TOTAL | | | | \$7,901.16 |

| CONSTRUCTION LABOR | | | | |
|----------------------------------------|------------|------------|-------------------|--------------------|
| <i>Description</i> | <i>Qty</i> | <i>UOM</i> | <i>Unit Price</i> | <i>Amount</i> |
| SIGNAL FOREMAN | 160 | HR | \$29.04 | \$4,646.40 |
| SIGNALMAN | 160 | HR | \$23.40 | \$3,744.00 |
| SIGNAL HELPER | 320 | HR | \$19.00 | \$6,080.00 |
| SUBTOTAL | | | | \$14,470.40 |
| G&A BURDEN FOR LABOR (162%) | | | | \$23,442.05 |
| FIXED FEE (14%) | | | | \$5,307.74 |
| CONSTRUCTION LABOR TOTAL | | | | \$43,220.19 |

Akron Barberton Cluster Railway
Kent, OH. MP 191.53 DOT# 262 564G
CTC Project Estimate

| CONSTRUCTION LABOR EXPENSES | | | | |
|------------------------------------------|------------|------------|-------------------|--------------------|
| <i>Description</i> | <i>Qty</i> | <i>UOM</i> | <i>Unit Price</i> | <i>Amount</i> |
| EMPLOYEE MEALS (PER DIEM) | 64 | EA | \$30.00 | \$1,920.00 |
| EMPLOYEE LODGING | 64 | EA | \$70.00 | \$4,480.00 |
| MOBILIZATION | 3 | EA | \$1,500.00 | \$4,500.00 |
| SUBTOTAL | | | | \$10,900.00 |
| CONSTRUCTION LABOR EXPENSES TOTAL | | | | \$10,900.00 |

| CONSTRUCTION EQUIPMENT | | | | |
|--------------------------------------|------------|------------|-------------------|-------------------|
| <i>Description</i> | <i>Qty</i> | <i>UOM</i> | <i>Unit Price</i> | <i>Amount</i> |
| TRUCK, PU, 1 TON CREW CAB | 160 | HR | \$15.71 | \$2,513.60 |
| TRAILER, UTILITY (12,000lb SC410) | 160 | HR | \$7.55 | \$1,208.00 |
| RENTAL EQUIPMENT (FORKLIFT - 8K) | 2 | WK | \$1,400.00 | \$2,800.00 |
| RENTAL EQUIPMENT (BACKHOE W/18" BKT) | 2 | WK | \$1,200.00 | \$2,400.00 |
| EQUIPMENT DELIVERY/PICKUP | 4 | LS | \$195.00 | \$780.00 |
| SUBTOTAL | | | | \$9,701.60 |
| CONSTRUCTION EQUIPMENT TOTAL | | | | \$9,701.60 |

| MATERIAL | | | | |
|--------------------------------------|------------|------------|-------------------|---------------------|
| <i>Description</i> | <i>Qty</i> | <i>UOM</i> | <i>Unit Price</i> | <i>Amount</i> |
| HOUSE MATERIAL (SEE ATTACHED DETAIL) | 1 | LS | | \$59,076.74 |
| FIELD MATERIAL (SEE ATTACHED DETAIL) | 1 | LS | | \$83,150.84 |
| CONCRETE | 20 | YD | \$500.00 | \$10,000.00 |
| COVER ROCK (3/4" CRUSHED - WHITE) | 10 | TN | \$26.50 | \$265.00 |
| FREIGHT & CONTAINER PRICE | 1 | LS | \$6,000.00 | \$6,000.00 |
| SUBTOTAL | | | | \$158,492.58 |
| MATERIAL TOTAL | | | | \$158,492.58 |

| | |
|-------------------------------|---------------------|
| TOTAL PROJECT ESTIMATE | \$272,372.18 |
|-------------------------------|---------------------|

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 | 1 | EA | \$4.99 | \$4.99 |
| Actuator, Hermetic Door Switch, P/N 70168991, Allied Electric | 1 | EA | \$1.99 | \$1.99 |
| 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 arrester 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 |
| Current Sensor w/25ft. Cable, P/N CS100-CBL-25, NAS | 2 | EA | \$90.00 | \$180.00 |
| Relay, 500 Ohm, 6PT, Nuetral relay, plug-in, P/N A62-0262, Alstom | 3 | EA | \$1,256.80 | \$3,770.40 |
| Plugboard, Kit (1E/3E test posts) P/N 59686-019-02, Alstom | 3 | EA | \$125.00 | \$375.00 |
| 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 | 2 | EA | \$15.87 | \$31.74 |
| Socket, 8-pin KRPA style, P/N 70199343, Allied | 3 | EA | \$5.61 | \$16.83 |
| Spring, Hold down for KRPA style relay, P/N 70198576, Allied | 3 | EA | \$0.33 | \$0.99 |
| 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'x38", Holds (5) Batteries, P/N 027004-01, J&A | 4 | EA | \$51.00 | \$204.00 |
| 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 SJ00W-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 | 9 | EA | \$10.45 | \$94.05 |
| 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 | 17 | EA | \$21.15 | \$359.55 |
| RailSurge Plane Strip Busbar (36"), P/N B2700HC36, Erico | 1 | EA | \$36.90 | \$36.90 |
| Connector, Buss strap (1" - 36 holes), P/N 9A2216-36, L&W Industries | 2 | EA | \$17.89 | \$35.78 |
| 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 | 10 | EA | \$0.30 | \$3.00 |
| Arrestor, Air Gap, With Cover, P/N 4000-44585-001X, Siemens | 21 | EA | \$24.80 | \$520.80 |
| 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 | \$59,076.74 |
|--------------|--------------------|

| FIELD MATERIALS | | | | |
|--------------------------------------------------------------------------------|------|------|--------------|--------------------|
| DESCRIPTION | QTY | UOM | UNIT PRICE | TOTAL PRICE |
| Cable, 7/C#6, Armored, 206-11-6247, Okonite | 1000 | FT | \$8.11 | \$8,110.00 |
| Cable, 7C#14, Armored, 206-11-6887, Okonite | 500 | FT | \$2.99 | \$1,495.00 |
| Cable, 3C#6, Armored, #206-11-6243, Okonite | 250 | FT | \$6.00 | \$1,500.00 |
| Wire, Track, 2C/#6, Twist, Solid, 113-12-3933, Okonite | 300 | FT | \$1.86 | \$558.00 |
| 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 | 200 | EA | \$5.12 | \$1,024.00 |
| Connector, Track, Web of Rail, P/N SBTBBU4A, Erico | 200 | EA | \$4.63 | \$926.00 |
| Rail Welding Material F80, P/N SB25, Erico | 100 | EA | \$1.56 | \$156.00 |
| Wheel, grinding, P/N SB22122, Erico | 4 | EA | \$35.87 | \$143.48 |
| Wire, Bondstrand, 3/16" Black (500'), P/N SBSLINSUL, Erico | 0.5 | FT | \$595.00 | \$297.50 |
| 5/8" X 8' Copper Ground Rod P/N 615880, Erico | 8 | EA | \$9.50 | \$76.00 |
| 5/8" Ground Rod Weld, P/N SBNT1161G, Erico | 8 | EA | \$4.48 | \$35.84 |
| Wire, Ground, #6AWG, Bare Copper, Graybar | 100 | FT | \$0.34 | \$34.00 |
| FSS-1A, 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 |
| Cantilever, 22' Alum. walkout, w/pour in-place foundation, Progress Rail | 1 | EA | \$18,000.00 | \$18,000.00 |
| Cantilever, 24' Alum. walkout, w/pour in-place foundation, Progress Rail | 1 | EA | \$20,000.00 | \$20,000.00 |
| 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 | 2 | EA | \$3,762.00 | \$7,524.00 |
| Crossarm Assy, 5" Mtg., 1 Way BACK , P/N 975-0804-XA-12, WCH | 2 | EA | \$503.00 | \$1,006.00 |
| Lights, 12" LED, P/N 433121680XLTC-00, Arms | 16 | EA | \$74.00 | \$1,184.00 |
| Counterweight Package, P/N 070755-18X, Siemens | 2 | EA | \$3,261.00 | \$6,522.00 |
| Sign, Crossbuck, No brackets/hardware, P/N 070-0065, Rebel Railway | 4 | EA | \$84.00 | \$336.00 |
| 5" Sign Kit, Brackets/extensions/Ubolts/hardware, P/N 070-5008, Rebel Railway | 6 | EA | \$56.70 | \$340.20 |
| Wind Bracket, 36", Tusk style, P/N 2010-001-01, RDG | 2 | EA | \$136.00 | \$272.00 |
| 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 | 2 | EA | \$1,100.00 | \$2,200.00 |
| E-Z Gate 42'(Vertical stripe)LED gate w/lamp kit, P/N 9298-6154, Railway Equip | 2 | EA | \$649.00 | \$1,298.00 |
| Sleeve, 4' Aluminum, P/N 92958, Railway Equipment | 2 | EA | \$39.00 | \$78.00 |
| 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 | 1 | EA | \$2.93 | \$2.93 |
| Duct seal, 5lb, P/N 31-605, Graybar | 1 | EA | \$9.41 | \$9.41 |
| Lock, Barrel Style | 6 | EA | \$45.25 | \$271.50 |
| | | | Total | \$83,150.84 |

Wintrow Construction Corp.

673 Norton Ave. Barberton, Ohio 44203

Tele: (330) 753-2983

6/6/2018

ABC Railway

Various Locations

Insulated Joints Installation - Proposal

Attn: Andrew R. Shuster Phone: 330-813-6133 Email: ashuster@abcrwy.com

Wintrow Construction Corp. will provide all supervision, labor, equipment, and specified materials to complete the following described work:

Main St., Wadsworth, Ohio

1. Furnish and install 8-Insulated joints for crossing signal project
New Alleghany glue joints will be furnished-39' overall length
Insulated joints will be bolted in place
Location of joints to be marked by others

Total: **\$31,825**
Labor/Equip: \$12,931
Materials: \$18,894
Deduct: **(\$1,971)**

If new Alleghany joint made from relay rail is acceptable

Medina Line Rd., Norton, Ohio

1. Furnish and install 8-Insulated joints for crossing signal project
New Alleghany glue joints will be furnished-39' overall length
Insulated joints will be bolted in place
Location of joints to be marked by others

Total: **\$30,544**
Labor/Equip: \$11,650
Materials: \$18,894
Deduct: **(\$1,971)**

If new Alleghany joint made from relay rail is acceptable

Main St., Kent, Ohio

1. Furnish and install 1-Insulated joints in curve closure rail in turnout south of road
New Alleghany glue joint will be furnished-39' overall length
Insulated joint will be bolted in place
Location of joint to be marked by others

Total: **\$4,315**
Labor/Equip: **\$1,649**
Materials: **\$2,666**
Deduct: **(\$246)**

If new Alleghany joint made from relay rail is acceptable

Wintrow Construction Corp.

673 Norton Ave. Barberton, Ohio 44203

Tele: (330) 753-2983

6/6/2018

ABC Railway

Various Locations

Insulated Joints Installation - Proposal

Contingencies/Notes

Sales Taxes Not included in Quotation

No Warranty or Guarantees are apart of this proposal

Payment: Net 30 Days. Late payment charge of 1 1/2% (18% annum) will be charged on all past due balances.

We are not responsible for repair or relocation of Under Ground Utilities

Weather conditions prevail and may affect the construction schedule.

Track must be free of rail cars and rail traffic.

ONE Mobilization is included in the quotation.

All work is at straight time labor rates unless specified otherwise in the quotation

Work description and material specifications haven't as yet been approved by the railroad

Engineering, plans and layout survey by others.

Material Subject to Pryor Sale

Progress payments are to be paid by the 15th of the month.

No costs for possible flagman services is included

Costs include continuous work windows with no train delays

No destressing of rails is included-Rail temperature is assumed to be within rage when installation is scheduled

****No wiring or bonding is included in pricing****

From: [Andrew Shuster](#)
To: [Henry, Jill](#)
Subject: Fw: Main St. Kent, Ohio Estimate
Date: Wednesday, May 29, 2019 7:15:57 AM

Jill,
this is Croziers estimate for Main Street Kent

Andrew R. Shuster

Signals and Communications Supervisor
Akron Barberton Cluster Railway
43 Second Street NW, Barberton, Ohio 44203
330-813-6133 cell | ashuster@abcrwy.com email

From: Bob Crosier <trailnrnrbob@hotmail.com>
Sent: Monday, June 18, 2018 5:16 AM
To: Andrew Shuster
Subject: Main St. Kent, Ohio Estimate

The following estimate is for crossing pre-installation construction at Main Street Kent, Ohio
Portage Co DOT 262564G

Labor \$18 x 180 hr = 3240
Operator 25 x 180 hr = 4500
Project Man. 50 x 180 hr = 9000
Admin 30 x 3 hr = 90
sub total labor 16830.00
Labor total G&A x 1.6 = \$26928.00

Excavator E32 31.20 x 80 hr = 2496
Backhoe 580 42.33 x 20 hr = 846.6
Excavator E55 40.20 x 180 hr = 7236
Dump Truck 40 x 30 hr = 1200
Directional Drill 59.62 x 24 hr = 1430.88
Locator 8.75 x 10 hr = 87.50
Equip truck 21.35 x 180 hr = 3843
Digger Derrick 55.20 x 18 hr = 993.60
Tamper 4.25 x 20 hr = 85
Traffic cones .13 x 180 hr = 23.40
Traffic signs .23 x 180 hr = 41.40

Cut off saw 3.50 x 20 hr = 70
Hydra breaker 34.10 x 24 hr = 818.40
Hydra tamper 17.05 x 20 = 341
Equipment total = \$19512.78

185' - 5" pvc conduit @ 3.50 = 647.50
2 - 5" 90s @ 22 = 44
1 - 5" 45 @ 21
6 - 5" coup @ 5.15 = 30.90
240' - 4" pvc conduit @ 2.20 = 528
8 - 4" sweeps @ 25 = 200
6 - 4" 45s @ 11.50 = 69
20 - 4" coup @ 2.22 = 44.40
220' - 2" pvc conduit @ .94 = 206.80
4 - 2" 45s @ 2.10 = 8.40
3 - 2" sweeps @ 18.50 = 55.50
2 - ground rods @ 17.75 = 35.50
750' - pull rope @ .14 = 105
1 - 17x30x18 pull box @ 385
1 - 24x36x18 pull box @ 505
2 cans pvc cement @ 10 = 20
20' - 3" steel conduit @ 11.25 = 225
10 bags cement @ 4.50 = 45
60 tons limestone @ 25 = 1500
Material total \$4676.00

Total labor \$26928.00
Total equip \$19512.78
Total material \$4676.00
sub total \$51116.78
10% profit \$5111.68
Asphalt/concrete cutting \$500.00
Concrete contractor pour in place found. \$6000.00
Curbs and walks \$4000.00
Road opening permit \$450.00
Asphalt \$3000.00
Estimate total \$70178.46

Thank you,
Bob Crosier
Crosier Industrial Construction LLC

8938 Peck Rd

Ravenna, Ohio 44266

330 592 3082

**PUBLIC UTILITIES COMMISSION OF OHIO
TRANSPORTATION DEPARTMENT
RAIL DIVISION**

Date of Assignment: May 28, 2019

Subject: Plans and estimates review for active warning devices at Medina Line Road (265-079J), Akron Barberton Cluster Railway, Medina County.

DOT #: 265-079J

FINDINGS

On May 28, 2019, the plans and estimates for the above mentioned crossing were received from Akron Barberton Cluster Railway (AB). They were reviewed by Jill Henry, PUCO Rail Specialist, and Shawn Zurfley, FRA/PUCO Field Investigator.

Medina Line Road is a 2 lane rural roadway traveling north and south and intersecting a single track of AB traveling east/west. Existing warning devices include mast mounted lights and gates, advanced warning signs, pavement markings and crossbucks.

SUMMARY AND CONCLUSIONS

We reviewed the plans and estimates for the crossing. The plans and estimates appear to be fundamentally correct. Construction authorization is granted for this project.

Jill Henry
PUCO Rail Specialist
Date: May 31, 2019

AKRON BARBERTON CLUSTER RAILWAY COMPANY

Andrew Shuster
Signal & Communication Supervisor

43 Second Street N.W.
Barberton, OH 44203

Tel. 330-813-6133

ashuster@abcrwy.com

Fax: 330-745-4519

29 June 2018

Public Utilities Commission of Ohio
Jill Henry

Re: Estimate for Railroad Crossing Warning System at Medina Line Road in Norton, Ohio

Dear Jill Henry,

I am providing this estimate for the crossing package and installation at Medina Line Rd.,

| | |
|----------------------------------------------------------------------|---------------|
| CTC Managed Services, Material Package, & Installation | \$ 153,050.02 |
| Crosier Inc. | \$ 24,317.66 |
| Two Gate Foundations (note 1) | \$ 1,196.00 |
| Electric Service | \$ 3,500.00 |
| Wintrow Railroad Construction (Provide and Install Allegheny Joints) | \$ 30,544.00 |
| Estimated Total | \$ 212,607.68 |

Please contact me if additional details are required.

Respectfully,

Andrew Shuster

Notes

1: Direct purchase from Fabricated Metals, 60' galvanized gate foundation, \$598 ea.

CONSTRUCTION NOTES

- 1.) INSTALL NEW 6' X 6' BUNGALOW IN SOUTHWEST QUADRANT.
- 2.) INSTALL (2) NEW FLASHING LIGHTS WITH GATES.
- 3.) METER POLE LOCATION SHOWN ON THE PLAN IS SUBJECT TO CHANGE WITHIN RAILROAD RIGHT-OF-WAY IF UNDERGROUND OBSTRUCTIONS PREVENT THE INSTALLATION OF THE POLE IN THE LOCATION SHOWN.
- 4.) BUNGALOW LOCATION SHOWN ON THE PLAN IS SUBJECT TO CHANGE WITHIN RAILROAD RIGHT-OF-WAY IF UNDERGROUND OBSTRUCTIONS PREVENT THE INSTALLATION OF THE BUNGALOW IN THE LOCATION SHOWN.
- 5.) CREW LIGHT RED IN COLOR.
- 6.) POWER OFF LIGHT (SOLID AC) (FLASH DC)

[illegible]



CROSSING SIGNAL ALIGNMENT

LEGEND

| | |
|---|---------------------------|
| Ⓐ | GATE #1 FRONT MAST LIGHTS |
| Ⓑ | GATE #1 BACK MAST LIGHTS |
| Ⓒ | GATE #2 FRONT MAST LIGHTS |
| Ⓓ | GATE #2 BACK 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.



ABC
Railway

**AKRON BARBERTON CLUSTER
RAILWAY**

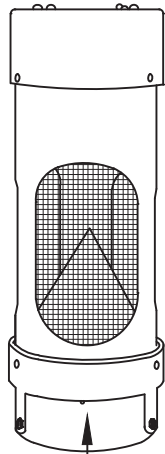
| | | | |
|---------------|-----------|-----------------------------------------|---------------------------|
| LOCATION | | MEDINA LINE ROAD (CR 2) NORTON, OHIO | |
| ORIGINAL DATE | 1/15/2018 | TITLE | CROSSING SIGNAL ALIGNMENT |
| DESIGNER | CTC | SUB | WADSWORTH-RITTMAN |
| DRAFTSMAN | CTC | RRMP | 24.06 |
| CHECKER | CTC | DOT NO. | 265 079J |
| | | CTC NO. | CN18007 |
| | | SCALE | N.T.S. |
| | | SHEET | 02 of 20 |

REVISION
BLOCK

SITE LAYOUT NOTES

1.) CROSSING IS LOCATED: LATITUDE 41.0152265
LONGITUDE -81.6879500

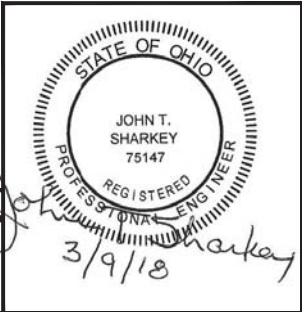
ELECTRONIC CROSSING BELL
GSI MODEL EB-3-360-5



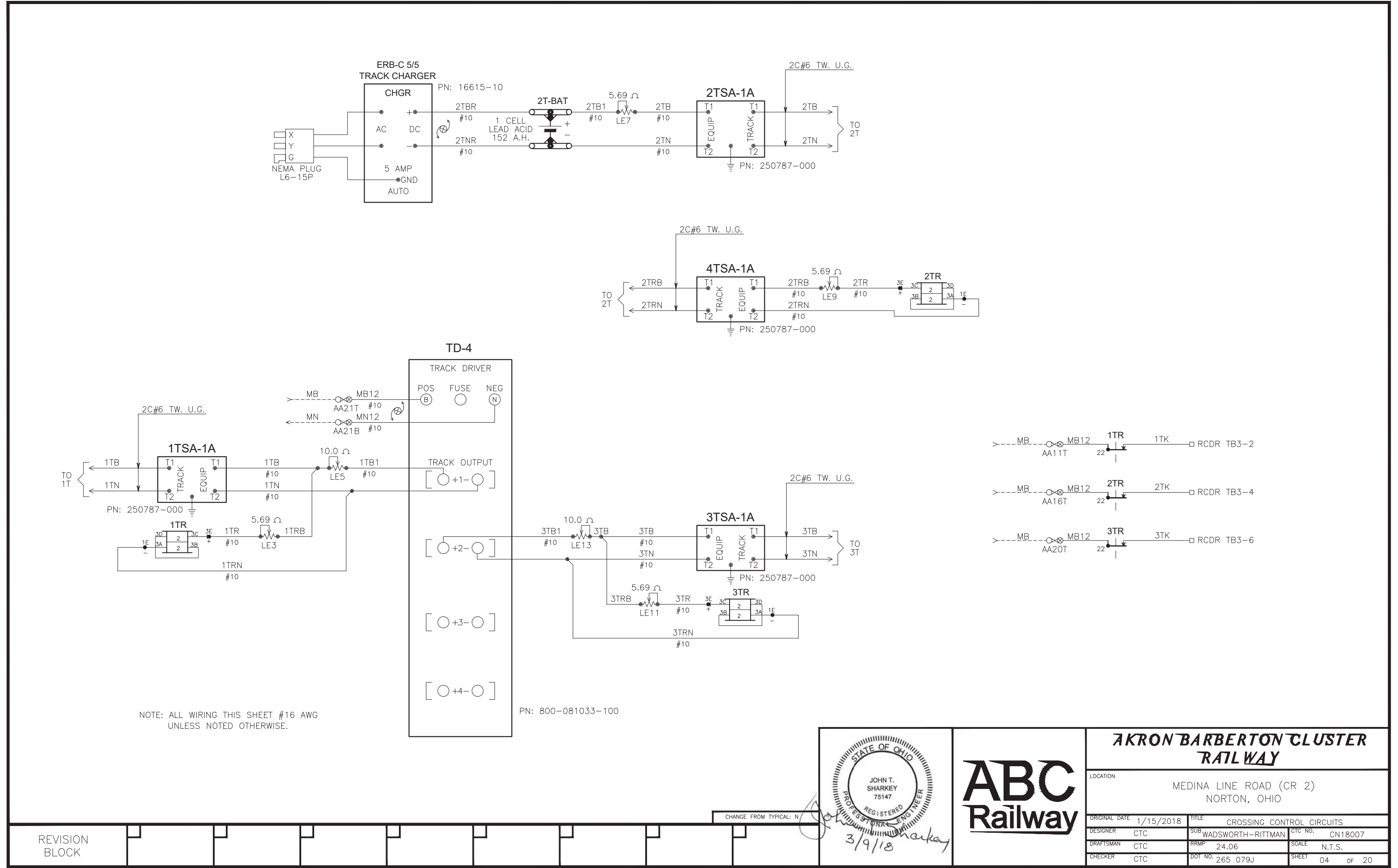
THIS SIDE FACING
ROADWAY

CHANGE FROM TYPICAL: N

REVISION
BLOCK

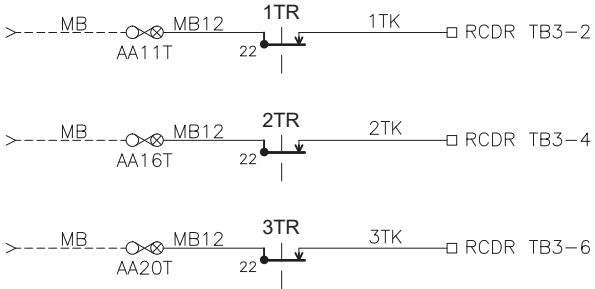


| AKRON BARBERTON CLUSTER RAILWAY | | | |
|------------------------------------|-----------|-----------------------------------------|-------------------|
| LOCATION | | MEDINA LINE ROAD (CR 2) NORTON, OHIO | |
| ORIGINAL DATE | 1/15/2018 | TITLE | SITE LAYOUT NOTES |
| DESIGNER | CTC | SUB | WADSWORTH-RITTMAN |
| DRAFTSMAN | CTC | RRMP | 24.06 |
| CHECKER | CTC | DOT NO. | 265 079J |
| | | CTC NO. | CN18007 |
| | | SCALE | N.T.S. |
| | | SHEET | 03 of 20 |



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

PN: 800-081033-100



STATE OF OHIO

JOHN T. SHARKEY

75147

REGISTERED PROFESSIONAL ENGINEER

3/9/18

ABC

Railway

AKRON BARBERTON CLUSTER

RAILWAY

LOCATION

MEDINA LINE ROAD (CR 2)

NORTON, OHIO

ORIGINAL DATE

1/15/2018

TITLE

CROSSING CONTROL CIRCUITS

DESIGNER

CTC

SUB

WADSWORTH-RITTMAN

CTC NO.

CN18007

DRAFTSMAN

CTC

RRMP

24.06

SCALE

N.T.S.

CHECKER

CTC

DOT NO.

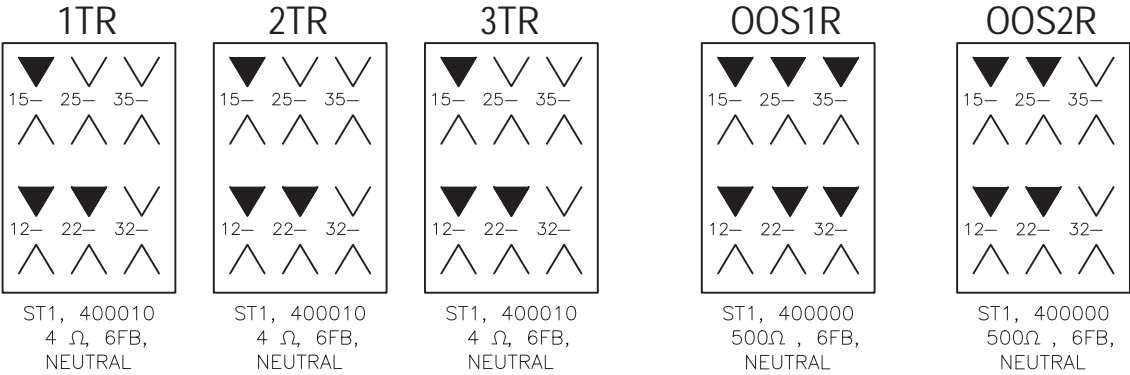
265 079J

SHEET

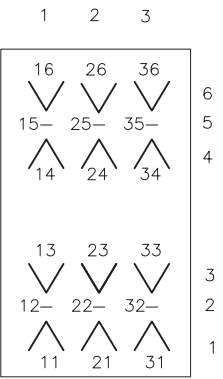
04 of 20

REVISION
BLOCK

ST RELAY LAYOUT



EXAMPLE



ST1, 400000
500Ω , 6FB,
NEUTRAL

∨ CONTACT, NOT USED
▼ CONTACT, USED

∨ FRONT
- HEEL
∧ BACK

- LEGEND:
- 1TR = TRACK RELAY (1T)
 - 2TR = TRACK RELAY (2T)
 - 3TR = TRACK RELAY (3T)
 - OOS1R = OUT OF SERVICE RELAY
 - OOS2R = OUT OF SERVICE RELAY

NOTES:
* = FIELD ADJUSTMENT
NA = NOT APPLICABLE

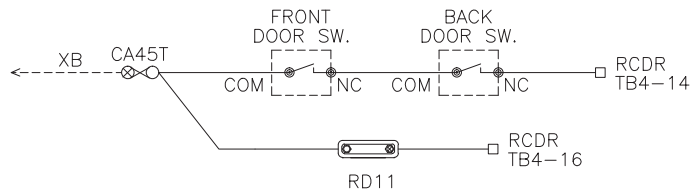
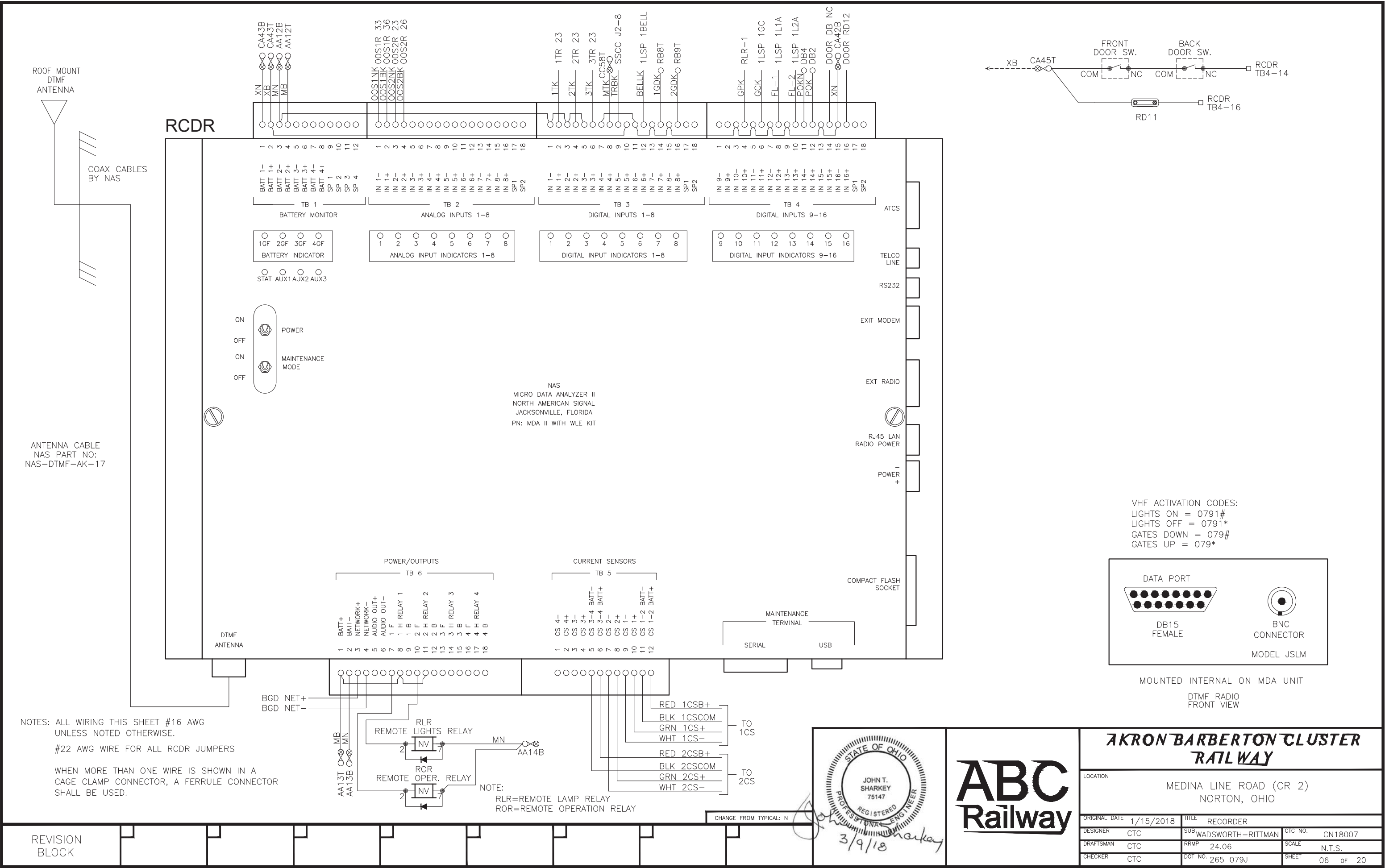
REVISION
BLOCK

CHANGE FROM TYPICAL: Y

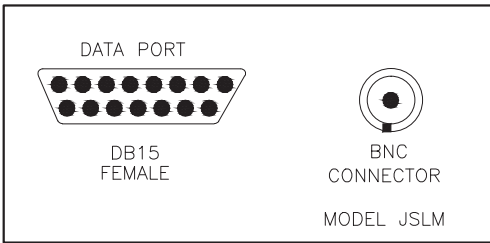
**AKRON BARBERTON CLUSTER
RAILWAY**

LOCATION
MEDINA LINE ROAD (CR 2)
NORTON, OHIO

| | | | |
|---------------|-----------|---------|-------------------|
| ORIGINAL DATE | 1/15/2018 | TITLE | RELAYS |
| DESIGNER | CTC | SUB | WADSWORTH-RITTMAN |
| DRAFTSMAN | CTC | RRMP | 24.06 |
| CHECKER | CTC | DOT NO. | 265 079J |
| | | CTC NO. | CN18007 |
| | | SCALE | N.T.S. |
| | | SHEET | 05 of 20 |

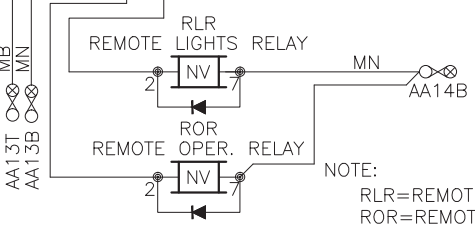


VHF ACTIVATION CODES:
LIGHTS ON = 0791#
LIGHTS OFF = 0791*
GATES DOWN = 079#
GATES UP = 079*



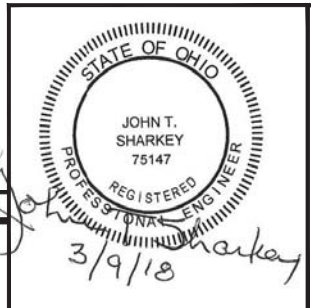
MOUNTED INTERNAL ON MDA UNIT
DTMF RADIO
FRONT VIEW

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.



NOTE:
RLR=REMOTE LAMP RELAY
ROR=REMOTE OPERATION RELAY

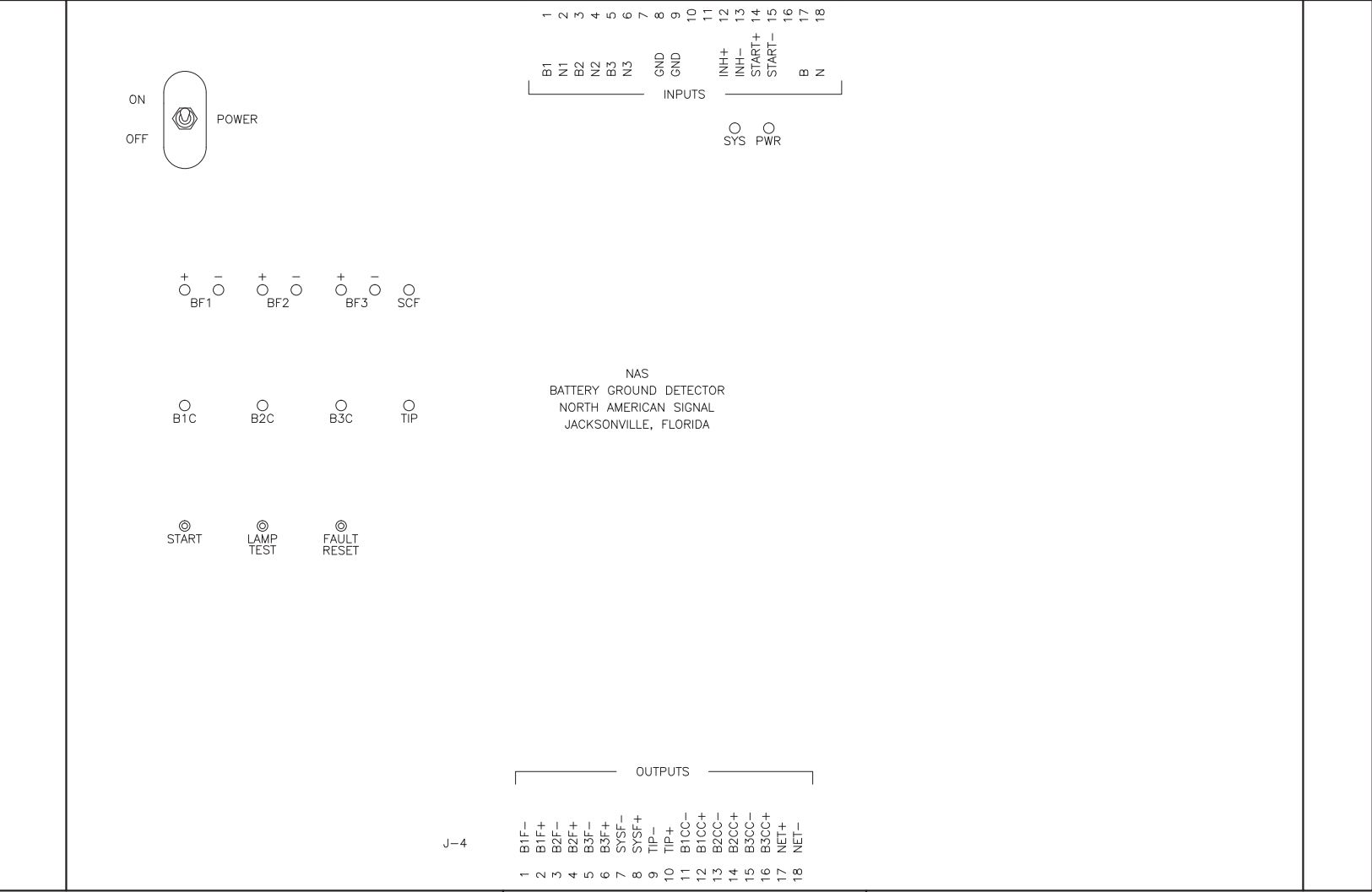
CHANGE FROM TYPICAL: N



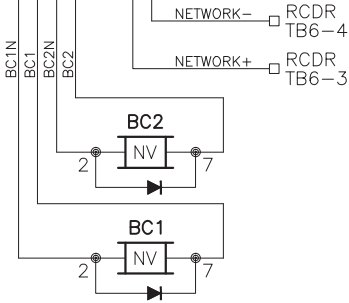
ABC
Railway

| AKRON BARBERTON CLUSTER RAILWAY | | | |
|---------------------------------|-----------|-----------------------------------------|-------------------|
| LOCATION | | MEDINA LINE ROAD (CR 2) NORTON, OHIO | |
| ORIGINAL DATE | 1/15/2018 | TITLE | RECORDER |
| DESIGNER | CTC | SUB | WADSWORTH-RITTMAN |
| DRAFTSMAN | CTC | RRMP | 24.06 |
| CHECKER | CTC | DOT NO. | 265 079J |
| SCALE | | CTC NO. | CN18007 |
| | | SCALE | N.T.S. |
| | | SHEET | 06 of 20 |

BGD



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



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

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

(2 MA)

SWITCH VALUES CLOSED
POSITION (BINARY)

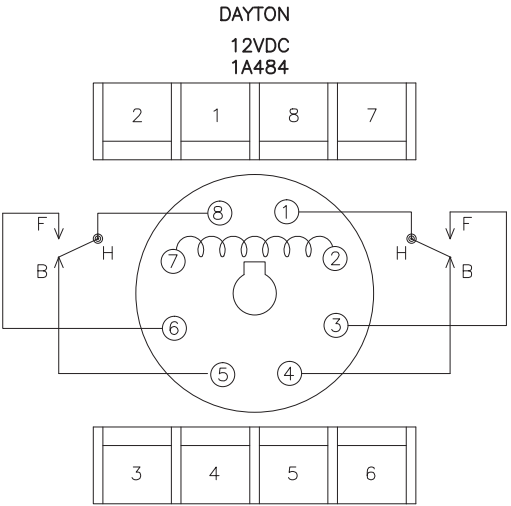
SW1 = 1
SW2 = 2
SW3 = 4
SW4 = 8
SW5 = 16
SW6 = 32
SW7 = 64
SW8 = 128

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

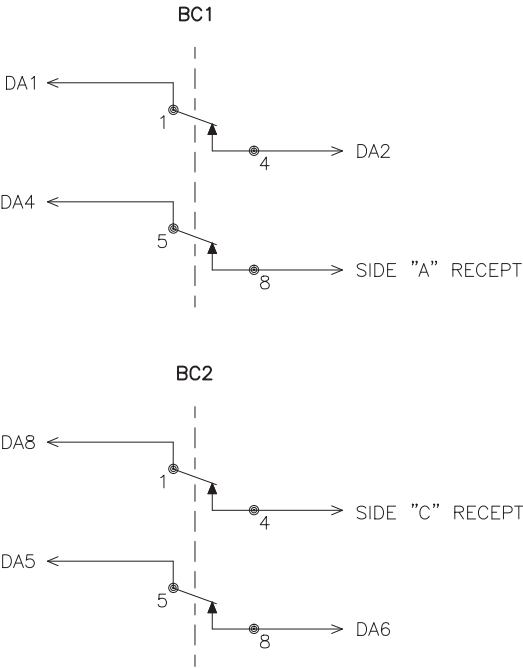
(12 HOURS)

SWITCH VALUES CLOSED
POSITION (BINARY)

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

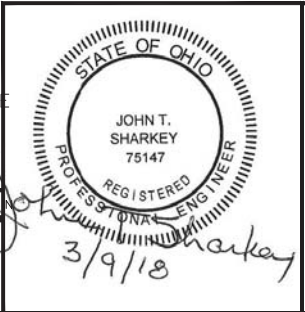


BC1, BC2, ROR, RLR



REVISION
BLOCK

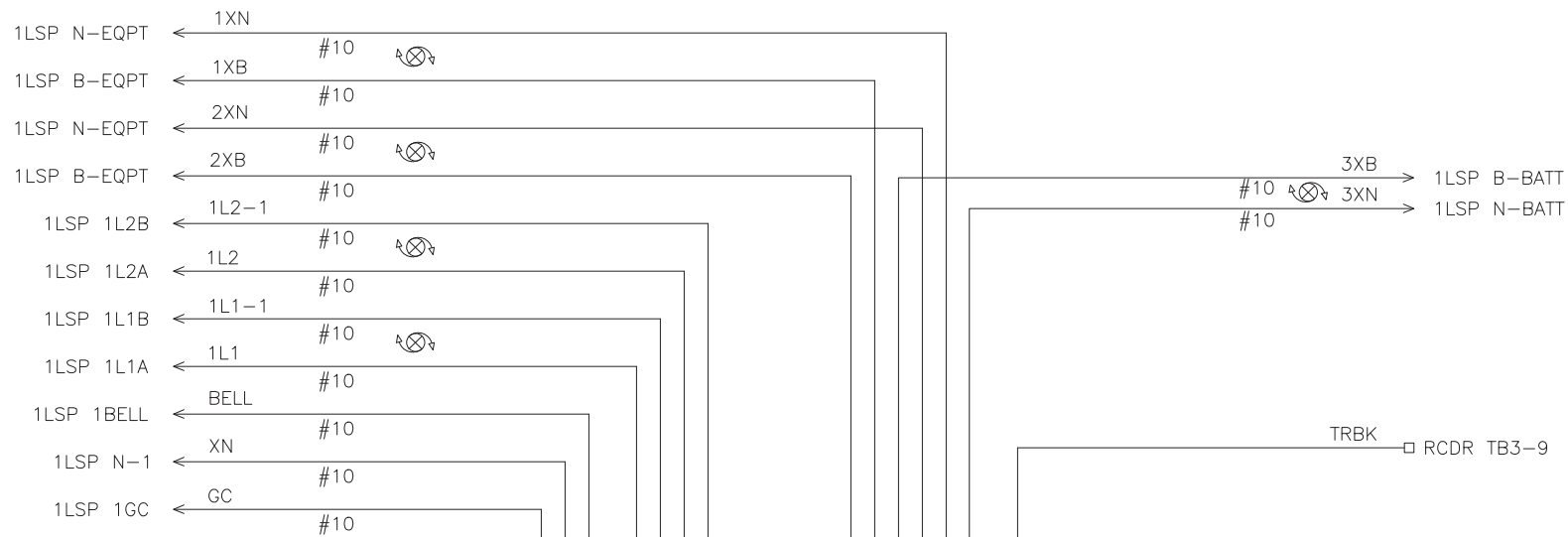
CHANGE FROM TYPICAL



ABC
Railway

AKRON BARBERTON CLUSTER
RAILWAY

| | | | |
|-----------------------------------------------------|-----------|---------|-------------------|
| LOCATION MEDINA LINE ROAD (CR 2) NORTON, OHIO | | | |
| ORIGINAL DATE | 1/15/2018 | TITLE | BGD |
| DESIGNER | CTC | SUB | WADSWORTH-RITTMAN |
| DRAFTSMAN | CTC | RRMP | 24.06 |
| CHECKER | CTC | DOT NO. | 265 079J |
| | | SCALE | N.T.S. |
| | | SHEET | 07 of 20 |



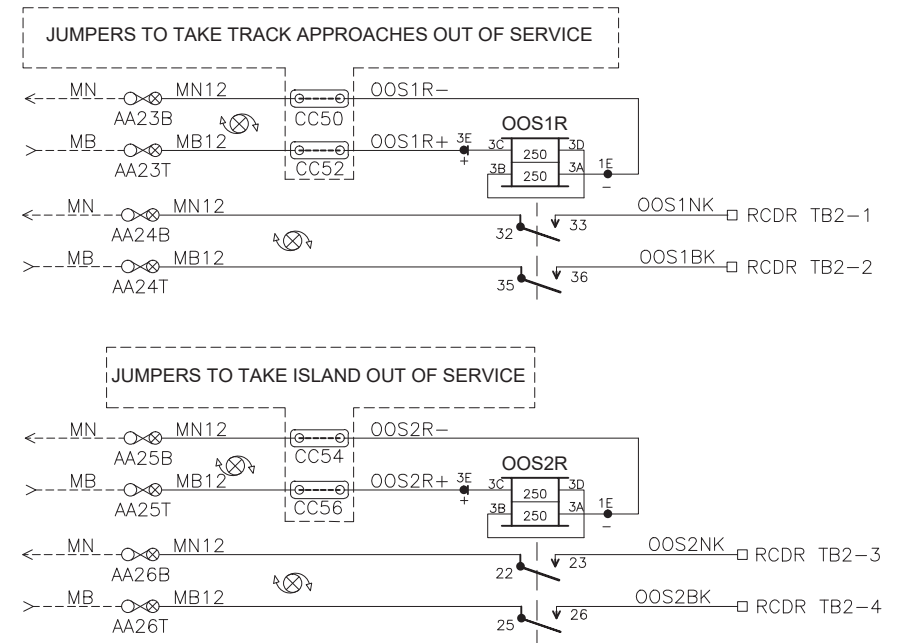
MCF=2TRKDSTK.MCF ID=320

| PROGRAM | |
|--------------------------|----------|
| FLASHER RATE: | 50 FPM |
| GATE DELAY 1 TIMER: | 4 SEC. |
| GATE DELAY 2 TIMER: | 4 SEC. |
| BELL-ON GATE RISING | ON |
| PRG 2GC/17 MODE | NORMAL |
| MIN ACTIVATION TIMER: | 0 SEC. |
| ENABLE INPUTS 4,5&6 | DISABLED |
| INPUT 7 | TEST |
| PRG TEST SWITCH | ACTIVATE |
| PRG STICK RELEASE | 15 MIN. |
| PRG ENABLED OUTPUTS: A&B | A |
| TIME | |
| DATE | |
| DAYLIGHT SAVINGS | DISABLED |
| PASSWORD | DISABLED |
| SET TO DEFAULT | N/A |

WARNING
DO NOT JUMPER
1GC- OR 2GC-
DIRECTLY TO N
ON CONNECTOR J2

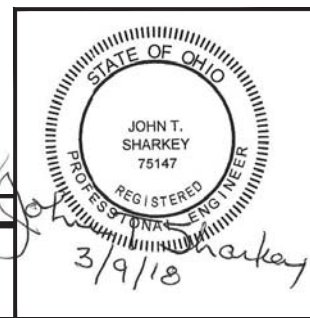
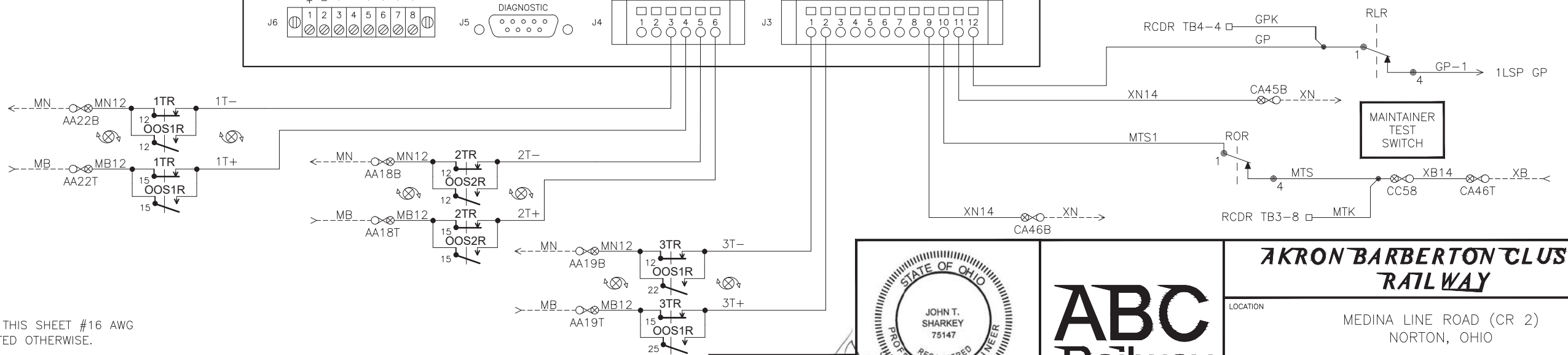
| CONFIGURE | |
|-----------------------------|--------------|
| INPUT 1 LOS | 8 |
| INPUT 2 LOS | 8 |
| INPUT 3 LOS | 8 |
| INPUT 4 LOS | 0 |
| INPUT 5 LOS | 0 |
| INPUT 6 LOS | 0 |
| INPUT 7 LOS | 0 |
| ATCS ADDRESS | 700000000000 |
| LOW BATTERY | DISABLED |
| AUX I/O | NV OUTPUT |
| DETECT LAMP NEUTRAL WIRE:NO | |

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



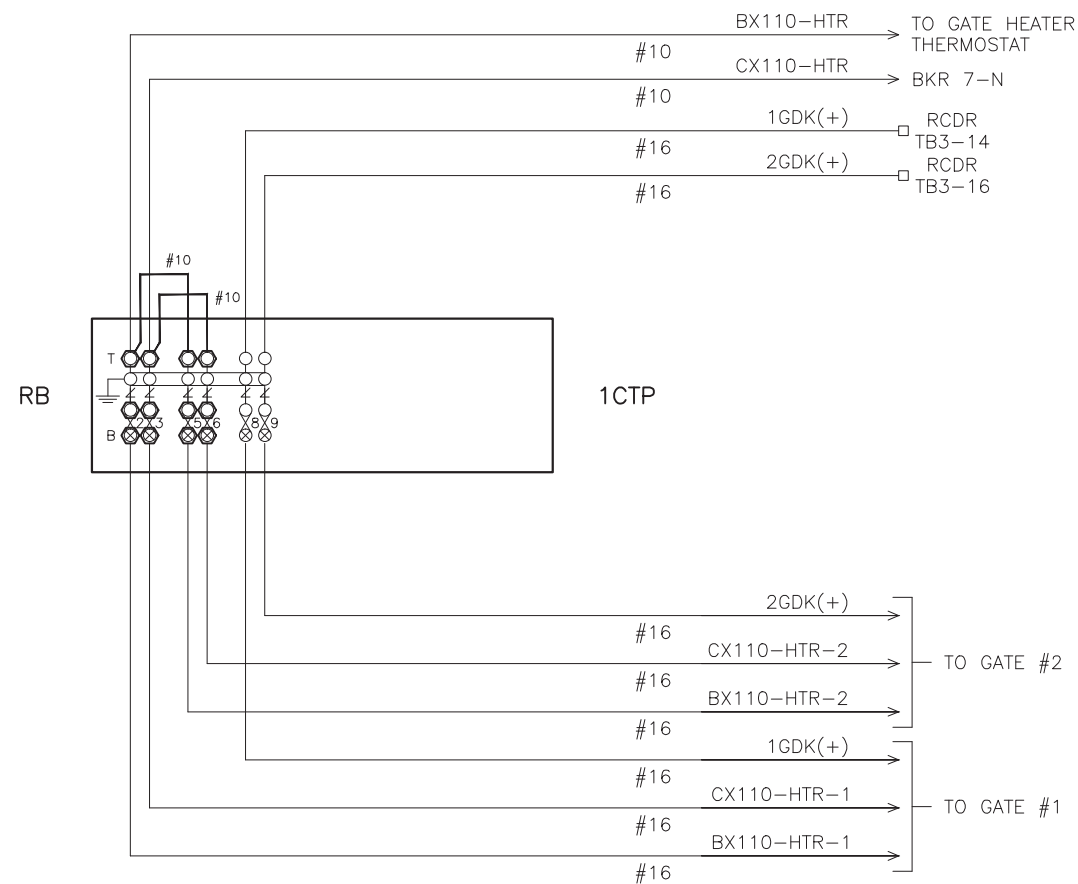
**INCORRECT POLARITY WILL RESULT IN SEVERE
DAMAGE TO THE CONTROLLER UNIT.**

WARNING
IF B OR N ARE FULLY OR PARTIALLY REMOVED,
SIGNALS AND/OR GATES MAY NOT OPERATE AS
INTENDED. TAKE ALTERNATE MEANS TO WARN
VEHICULAR TRAFFIC AND EMPLOYEES.



| AKRON BARBERTON CLUSTER RAILWAY | | | |
|-----------------------------------------------------|-----------|---------|-------------------|
| LOCATION MEDINA LINE ROAD (CR 2) NORTON, OHIO | | | |
| ORIGINAL DATE | 1/15/2018 | TITLE | SSSC PLUS |
| DESIGNER | CTC | SUB | WADSWORTH-RITTMAN |
| DRAFTSMAN | CTC | RRMP | 24.06 |
| CHECKER | CTC | DOT NO. | 265 079J |
| | | SCALE | N.T.S. |
| | | SHEET | 08 of 20 |

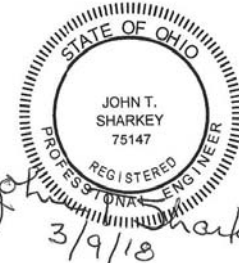
REVISION
BLOCK



LEGEND:
⊗ = INSULATED NUT

REVISION
BLOCK

CHANGE FROM TYPICAL: N



ABC
Railway

**AKRON BARBERTON CLUSTER
RAILWAY**

| | | | |
|---------------|-----------|-----------------------------------------|-------------------|
| LOCATION | | MEDINA LINE ROAD (CR 2) NORTON, OHIO | |
| ORIGINAL DATE | 1/15/2018 | TITLE | CTP |
| DESIGNER | CTC | SUB | WADSWORTH-RITTMAN |
| DRAFTSMAN | CTC | RRMP | 24.06 |
| CHECKER | CTC | DOT NO. | 265 079J |
| | | CTC NO. | CN18007 |
| | | SCALE | N.T.S. |
| | | SHEET | 10 of 20 |


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

LEGEND:

 = INSULATED NUT

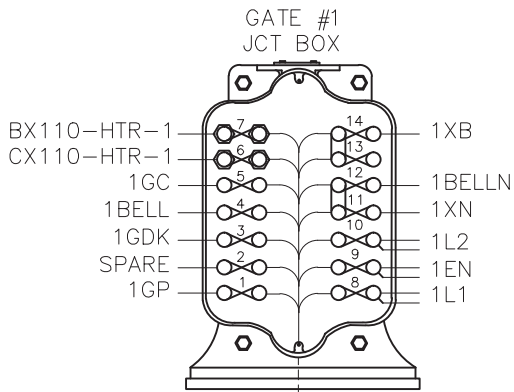
NOTES:

* BELL TO BE ELECTRONIC.

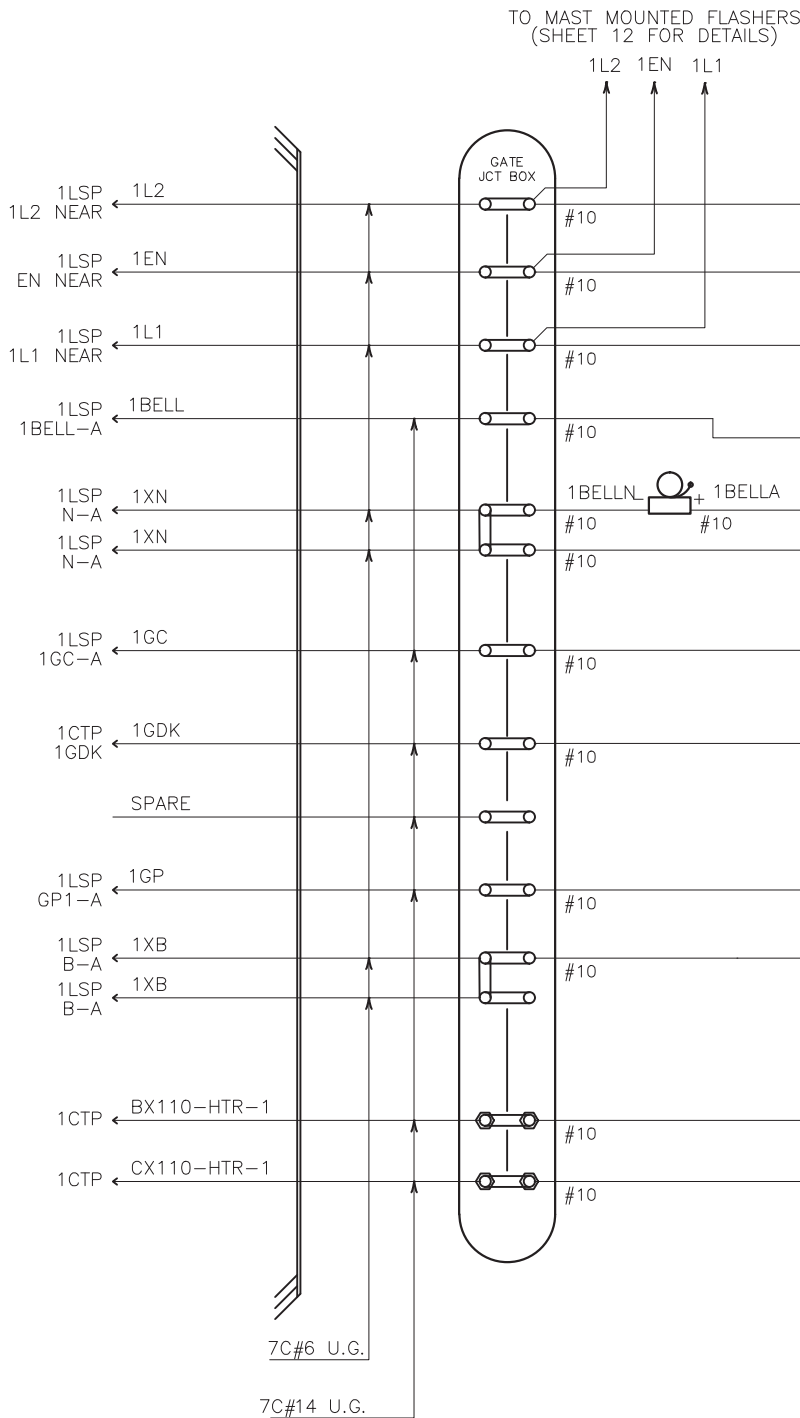
 = INTERNAL GATE WIRES THAT SHARE ELECTRICAL CONNECTIONS WITH OTHER WIRES THAT ARE ASSIGNED THE SAME NUMBER.

REFER TO SHEET 12 FOR GATE ARM LIGHT WIRING

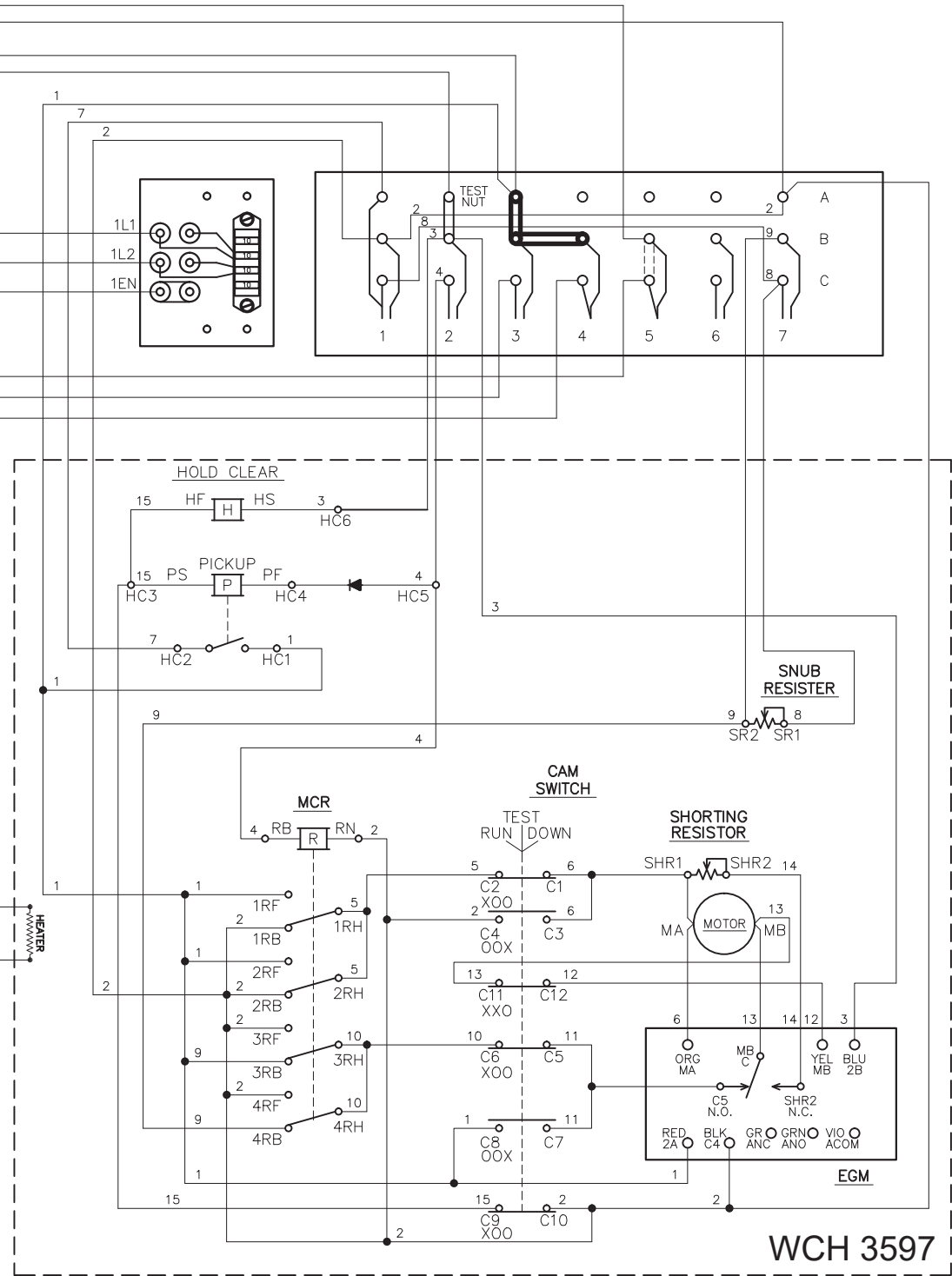
ADD STRAP FROM:
3A TO 3B AND 3B TO 4B



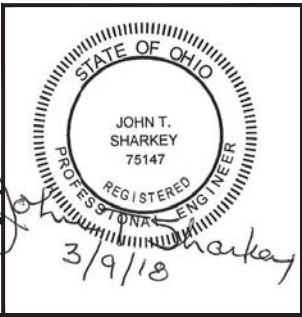
-----> CABLES TO HOUSE



GATE #1



WCH 3597



**ABC
Railway**

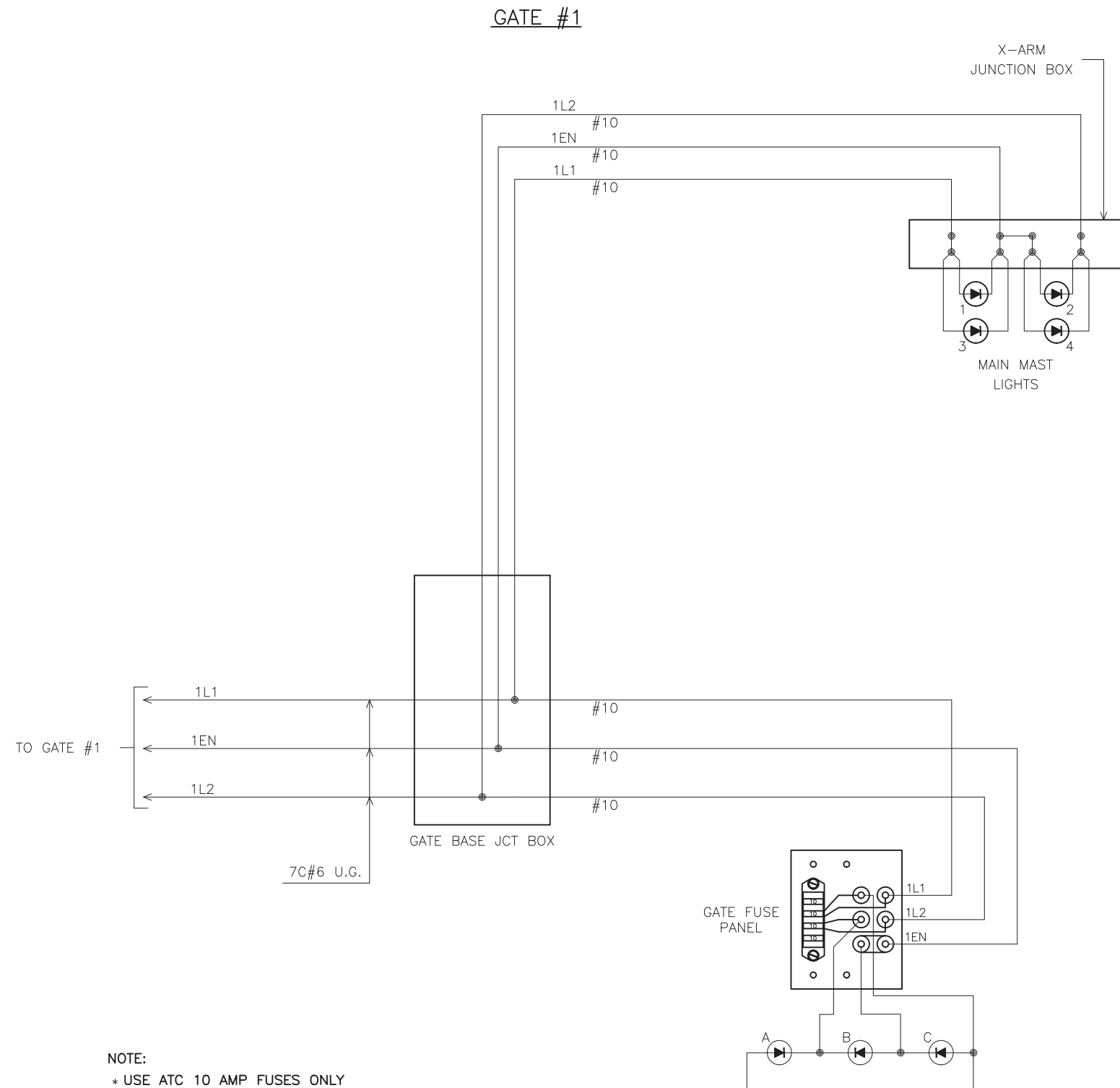
**AKRON BARBERTON CLUSTER
RAILWAY**

LOCATION
MEDINA LINE ROAD (CR 2)
NORTON, OHIO

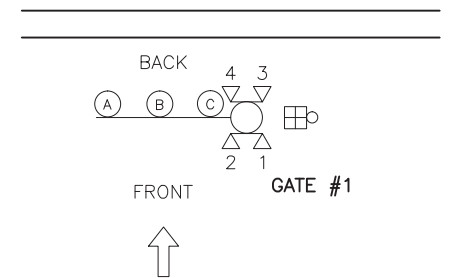
| | | | |
|---------------|-----------|---------|-------------------------------|
| ORIGINAL DATE | 1/15/2018 | TITLE | GATE #1 MECHANISM (NEAR SIDE) |
| DESIGNER | CTC | SUB | WADSWORTH-RITTMAN |
| DRAFTSMAN | CTC | RRMP | 24.06 |
| CHECKER | CTC | DOT NO. | 265 079J |
| | | SCALE | N.T.S. |
| | | SHEET | 11 of 20 |

REVISION
BLOCK

CHANGE FROM TYPICAL: N

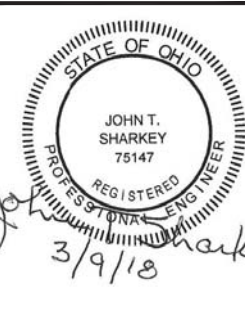


NOTE:
 * USE ATC 10 AMP FUSES ONLY
 (LED SYMBOL) IS LED SYMBOL ONLY. INSTALL ACCORDING TO MANUFACTURER'S INSTRUCTIONS.



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

CHANGE FROM TYPICAL: Y

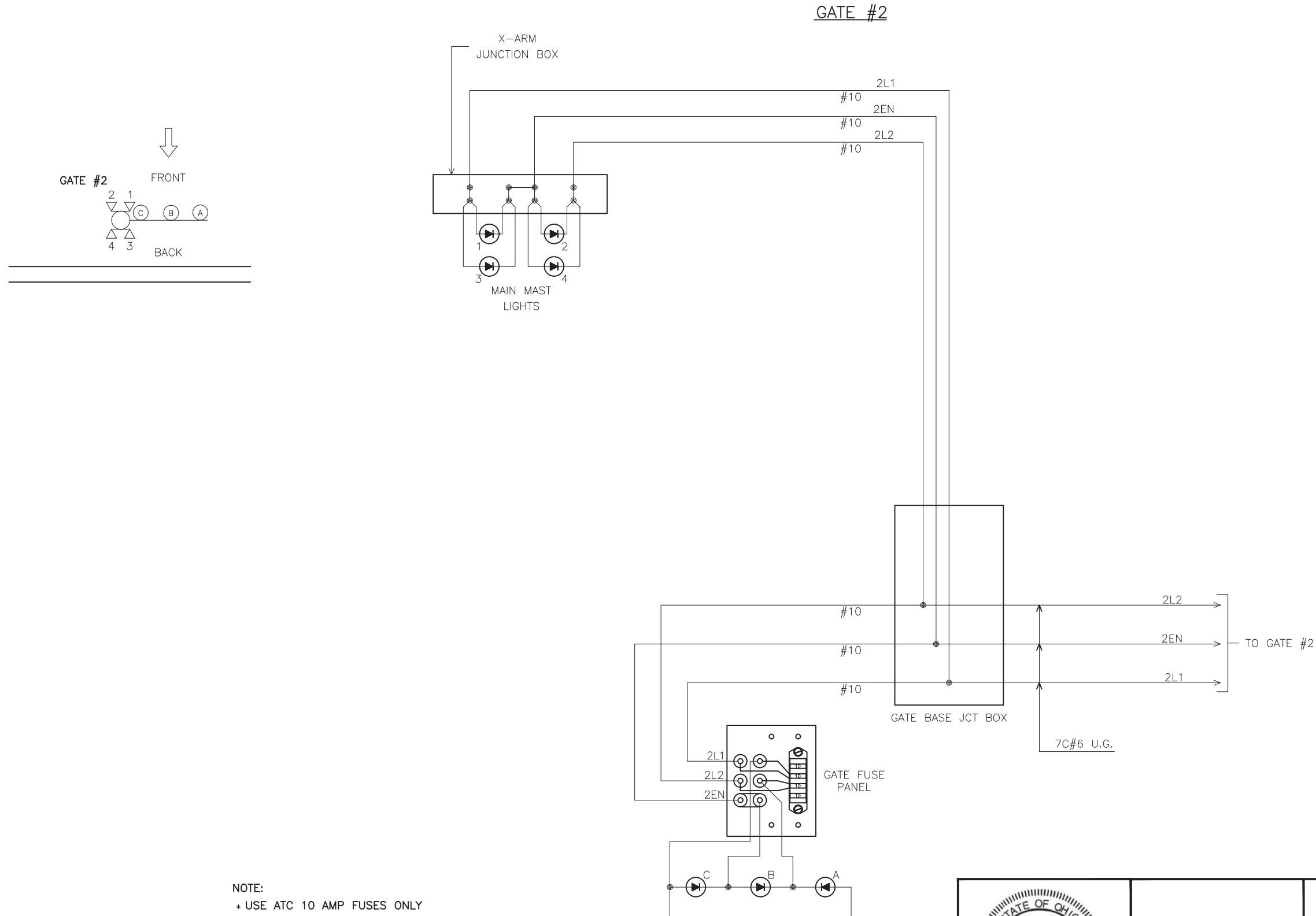


ABC
Railway

AKRON BARBERTON CLUSTER
RAILWAY

| | | |
|-----------------------------------------------------|-------------------------------------|--------------------|
| LOCATION MEDINA LINE ROAD (CR 2) NORTON, OHIO | | |
| ORIGINAL DATE 1/15/2018 | TITLE GATE #1 LIGHTS (NEAR SIDE) | |
| DESIGNER CTC | SUB WADSWORTH-RITTMAN | CTC NO. CN18007 |
| DRAFTSMAN CTC | RRMP 24.06 | SCALE N.T.S. |
| CHECKER CTC | DOT NO. 265 079J | SHEET 12 of 20 |

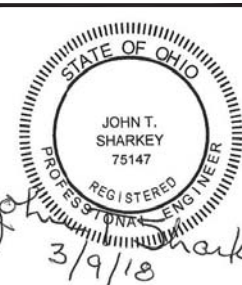
REVISION
BLOCK



NOTE:
* USE ATC 10 AMP FUSES ONLY

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

CHANGE FROM TYPICAL: Y

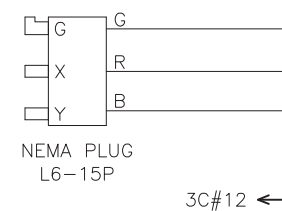
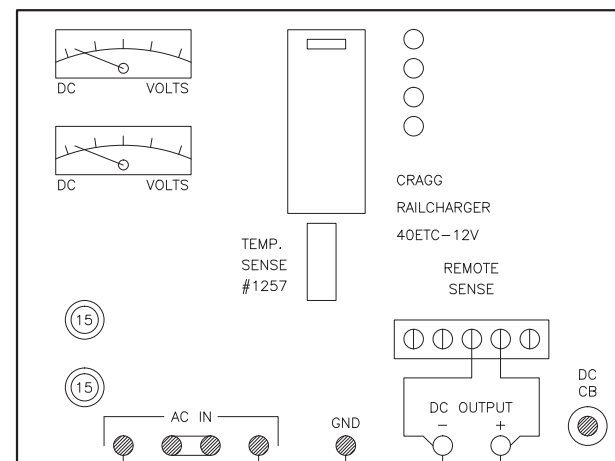
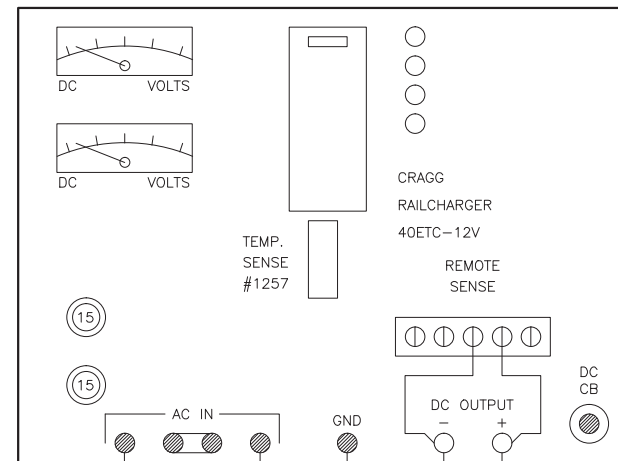


ABC
Railway

**AKRON BARBERTON CLUSTER
RAILWAY**

| | | |
|-----------------------------------------------------|------------------------------------|--------------------|
| LOCATION MEDINA LINE ROAD (CR 2) NORTON, OHIO | | |
| ORIGINAL DATE 1/15/2018 | TITLE GATE #2 LIGHTS (FAR SIDE) | CTC NO. CN18007 |
| DESIGNER CTC | SUB WADSWORTH-RITTMAN | SCALE N.T.S. |
| DRAFTSMAN CTC | RRMP 24.06 | SHEET 14 of 20 |
| CHECKER CTC | DOT NO. 265 079J | |

REVISION
BLOCK

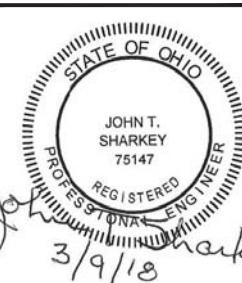


| | | |
|-------------|----|-------------|
| SPARE | 27 | SPARE |
| 00S2R-25 | 26 | 00S2R-22 |
| CC56 | 25 | CC54 |
| 00S1R-35 | 24 | 00S1R-32 |
| CC52 | 23 | CC50 |
| 1TR 15 | 22 | 1TR 12 |
| TD-4 B | 21 | TD-4 N |
| 3TR 22 | 20 | SPARE |
| 3TR 15 | 19 | 3TR 12 |
| 2TR 15 | 18 | 2TR 12 |
| PO DB1 | 17 | PO DB3 |
| 2TR 22 | 16 | SPARE |
| BGD INPUT 1 | 15 | BGD INPUT 2 |
| SPARE | 14 | RLR 7 |
| RCDR TB6-1 | 13 | RCDR TB6-2 |
| RCDR TB1-4 | 12 | RCDR TB1-3 |
| 1TR 22 | 11 | SPARE |
| MB BATT+ | 10 | MN BATT- |

| MB BUSS (TOP) | AA | MN BUSS (BOTTOM) |
|------------------|----|---------------------|
|------------------|----|---------------------|

| | | |
|-------------|----|-------------|
| Spare | 48 | Spare |
| Spare | 47 | Spare |
| CC58 | 46 | SSCC J3-9 |
| DOOR SWITCH | 45 | SSCC J3-11 |
| BGD INPUT 3 | 44 | BGD INPUT 4 |
| RCDR TB1-2 | 43 | RCDR TB1-1 |
| CC58T | 42 | RCDR TB4-15 |
| 1LSP B-BATT | 41 | 1LSP N-BATT |
| XB BATT+ | 40 | XN BATT- |

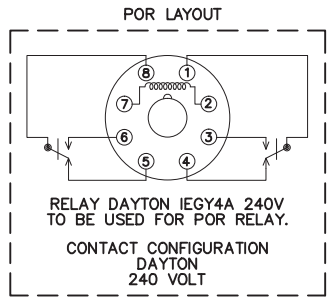
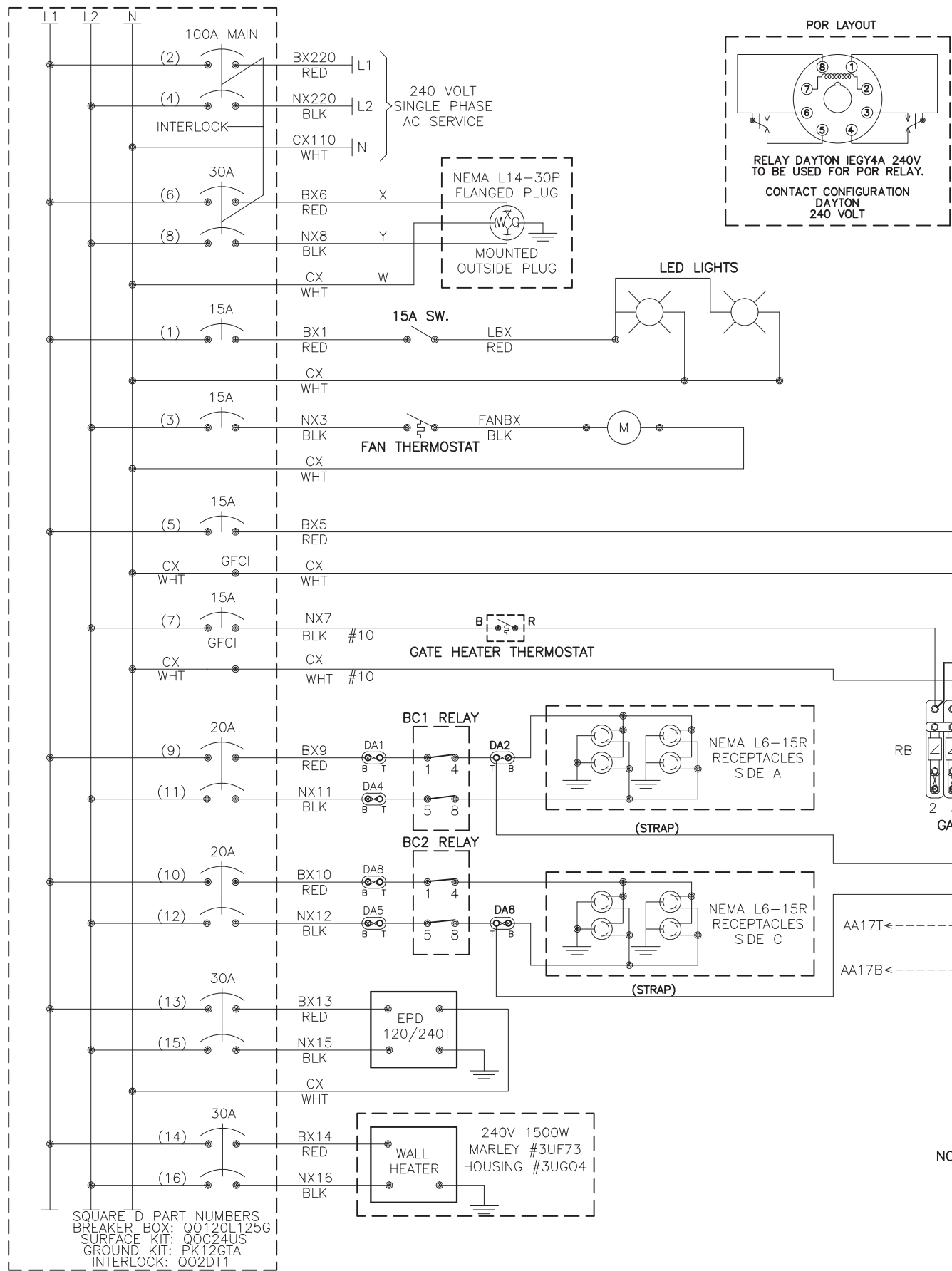
| XB BUSS (TOP) | CA | XN BUSS (BOTTOM) |
|------------------|----|---------------------|
|------------------|----|---------------------|

CHANGE FROM TYPICAL: Y

ABC Railway

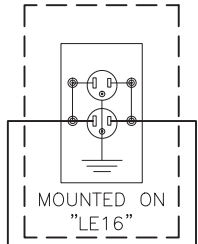
AKRON BARBERTON CLUSTER RAILWAY

| | | | |
|---------------|-----------|-----------------------------------------|-------------------|
| LOCATION | | MEDINA LINE ROAD (CR 2) NORTON, OHIO | |
| ORIGINAL DATE | 1/15/2018 | TITLE | BATTERY CHARGERS |
| DESIGNER | CTC | SUB | WADSWORTH-RITTMAN |
| DRAFTSMAN | CTC | RRMP | SCALE 1"=2' |
| CHECKER | CTC | DOT NO: | 265 079J |
| | | SHEET | 15 OF 20 |

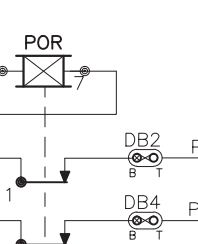


- NOTES:
- USE THE FOLLOWING COLOR CODE:
 GRN - GREEN - SAFETY EQUIPMENT GROUND
 WHT - WHITE - CX110 (NEUTRAL)
 BLK - BLACK - NX220 (L2)
 RED - RED - BX220 (L1)
 EXCEPTIONS TO THE ABOVE COLOR CODE ARE THE PRE-WIRED, SEALED ARRESTOR UNITS MOUNTED ON THE BREAKER BOX WHICH HAVE TWO BLACK AND ONE WHITE WIRE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

DUPLEX RECEPTACLES

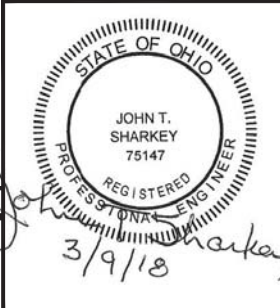


DUPLEX RECEPTACLES



NOTE:

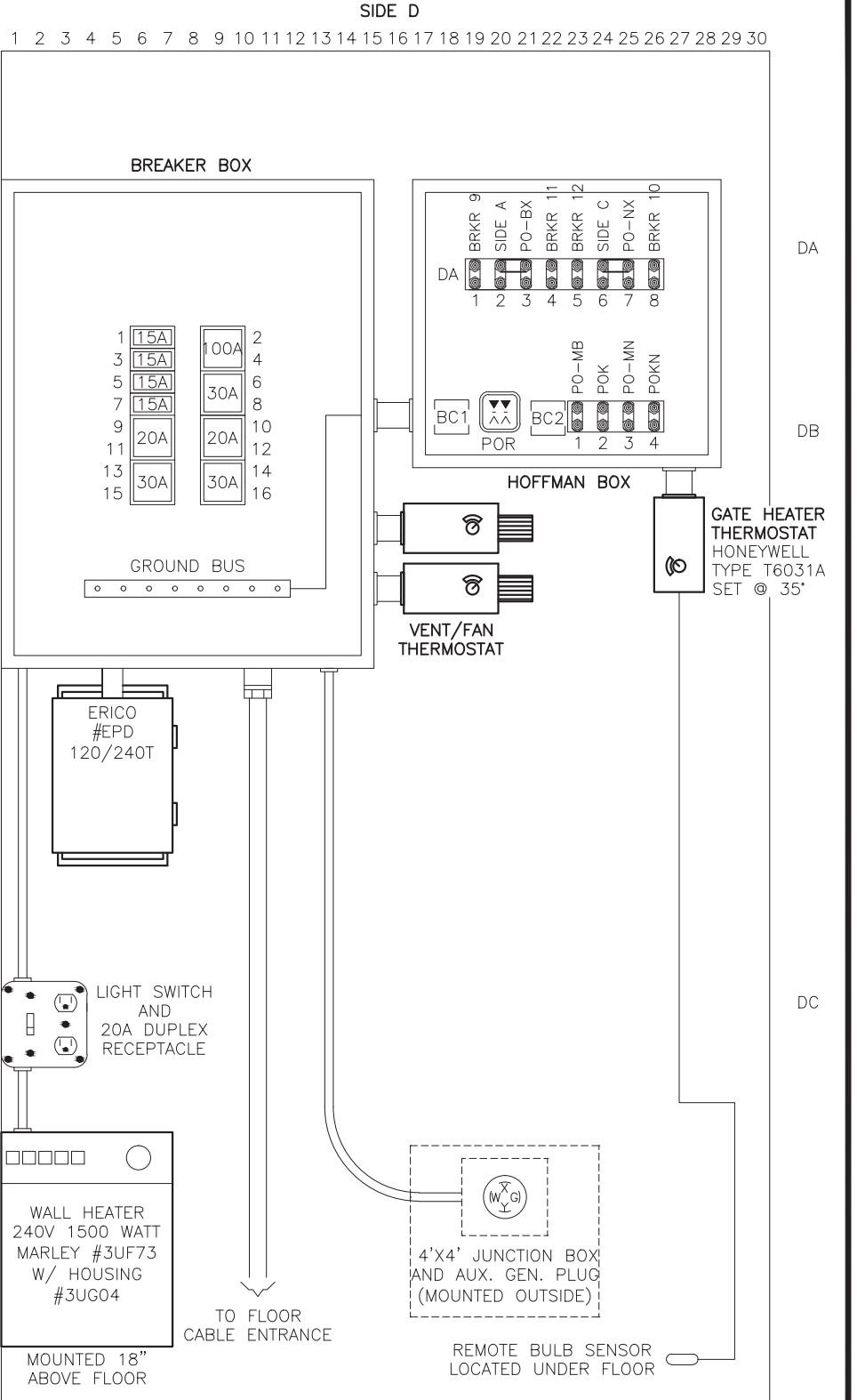
- WHEN AC IS ON LED IS ON
- WHEN AC IS OFF LED FLASHES UNTIL BATTERY IS DISCHARGED.
- WHEN AC IS OFF AND BATTERY IS DISCHARGED LED IS OFF.

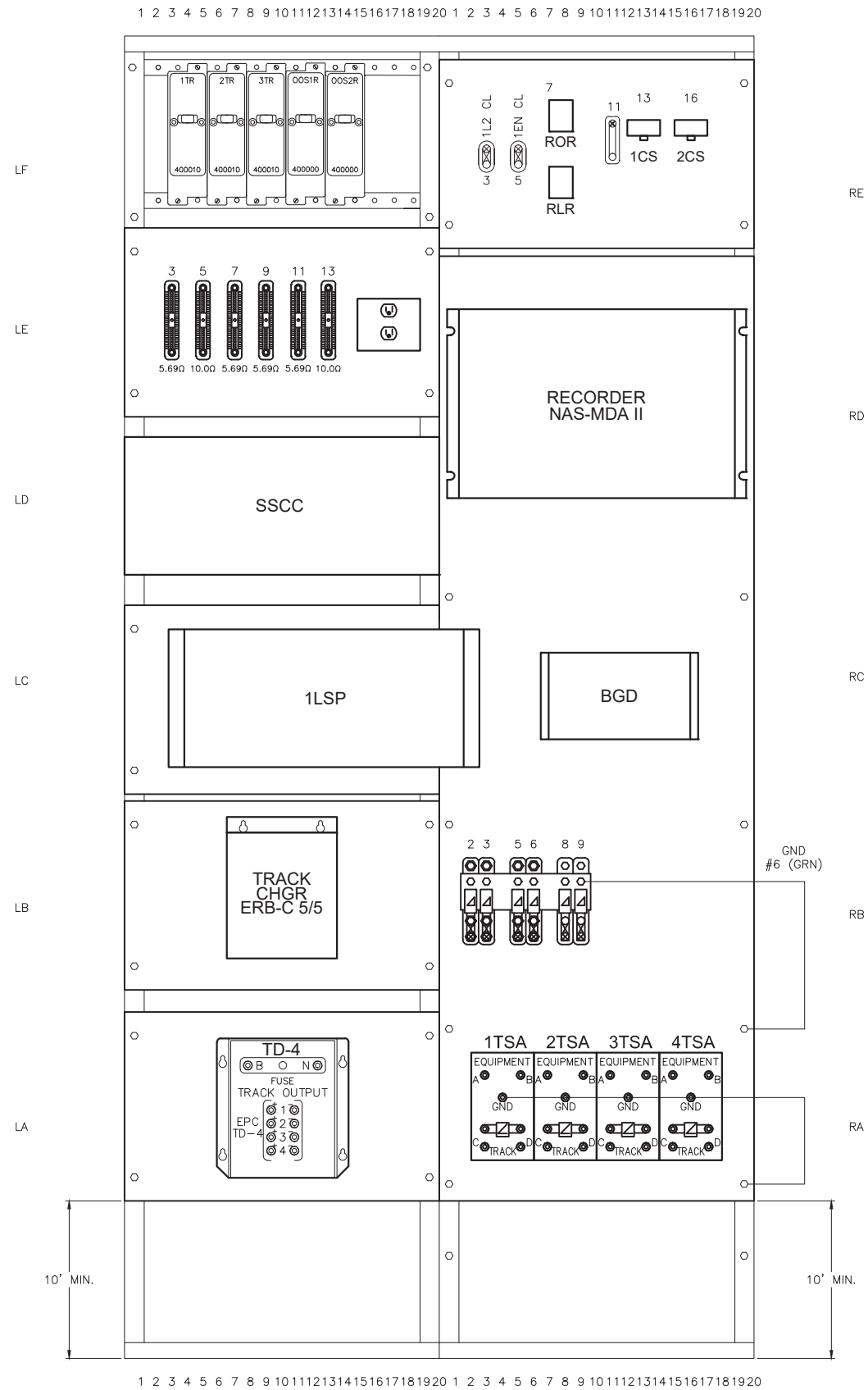


| AKRON BARBERTON CLUSTER RAILWAY | | | |
|-----------------------------------------------------|-----------|-----------------------------|-----------------|
| LOCATION MEDINA LINE ROAD (CR 2) NORTON, OHIO | | | |
| ORIGINAL DATE | 1/15/2018 | TITLE AC POWER DISTRIBUTION | |
| DESIGNER | CTC | SUB WADSWORTH-RITTMAN | CTC NO. CN18007 |
| DRAFTSMAN | CTC | RRMP 24.06 | SCALE 1"=2' |
| CHECKER | CTC | DOT NO. 265 079J | SHEET 16 OF 20 |

REVISION BLOCK

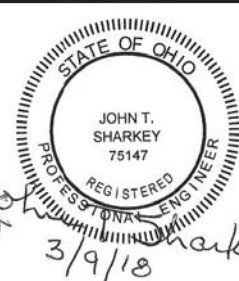
CHANGE FROM TYPICAL: N





REVISION
BLOCK

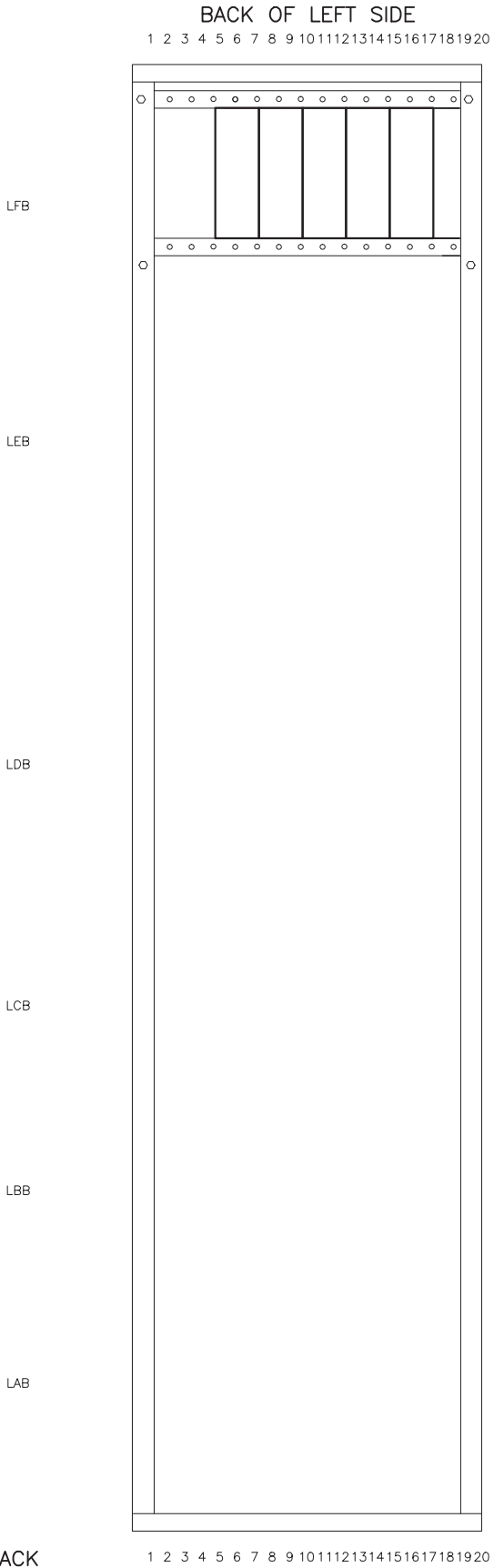
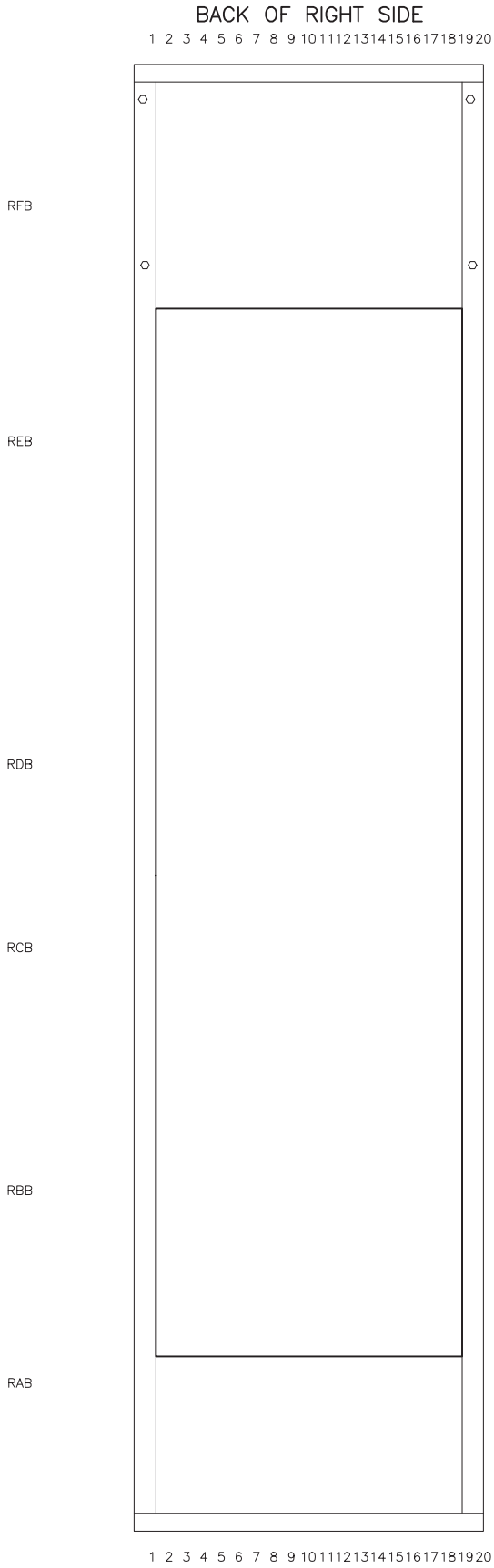
CHANGE FROM TYPICAL: Y



ABC
Railway

**AKRON BARBERTON CLUSTER
RAILWAY**

| | | | |
|---------------|-----------|-----------------------------------------|-------------------|
| LOCATION | | MEDINA LINE ROAD (CR 2) NORTON, OHIO | |
| ORIGINAL DATE | 1/15/2018 | TITLE | RACK FRONT VIEW |
| DESIGNER | CTC | SUB | WADSWORTH-RITTMAN |
| DRAFTSMAN | CTC | RRMP | 24.06 |
| CHECKER | CTC | DOT NO. | 265 079J |
| | | CTC NO. | CN18007 |
| | | SCALE | 1"=2' |
| | | SHEET | 17 of 20 |



SIDE 'B' BACK

CHANGE FROM TYPICAL: Y



ABC
Railway

**AKRON BARBERTON CLUSTER
RAILWAY**

LOCATION
MEDINA LINE ROAD (CR 2)
NORTON, OHIO

| | | | |
|---------------|-----------|---------|-------------------|
| ORIGINAL DATE | 1/15/2018 | TITLE | RACK BACK VIEW |
| DESIGNER | CTC | SUB | WADSWORTH-RIITMAN |
| DRAFTSMAN | CTC | RRMP | 24.06 |
| CHECKER | CTC | DOT NO. | 265 079J |
| | | SCALE | 1"=2' |
| | | SHEET | 18 OF 20 |

REVISION
BLOCK



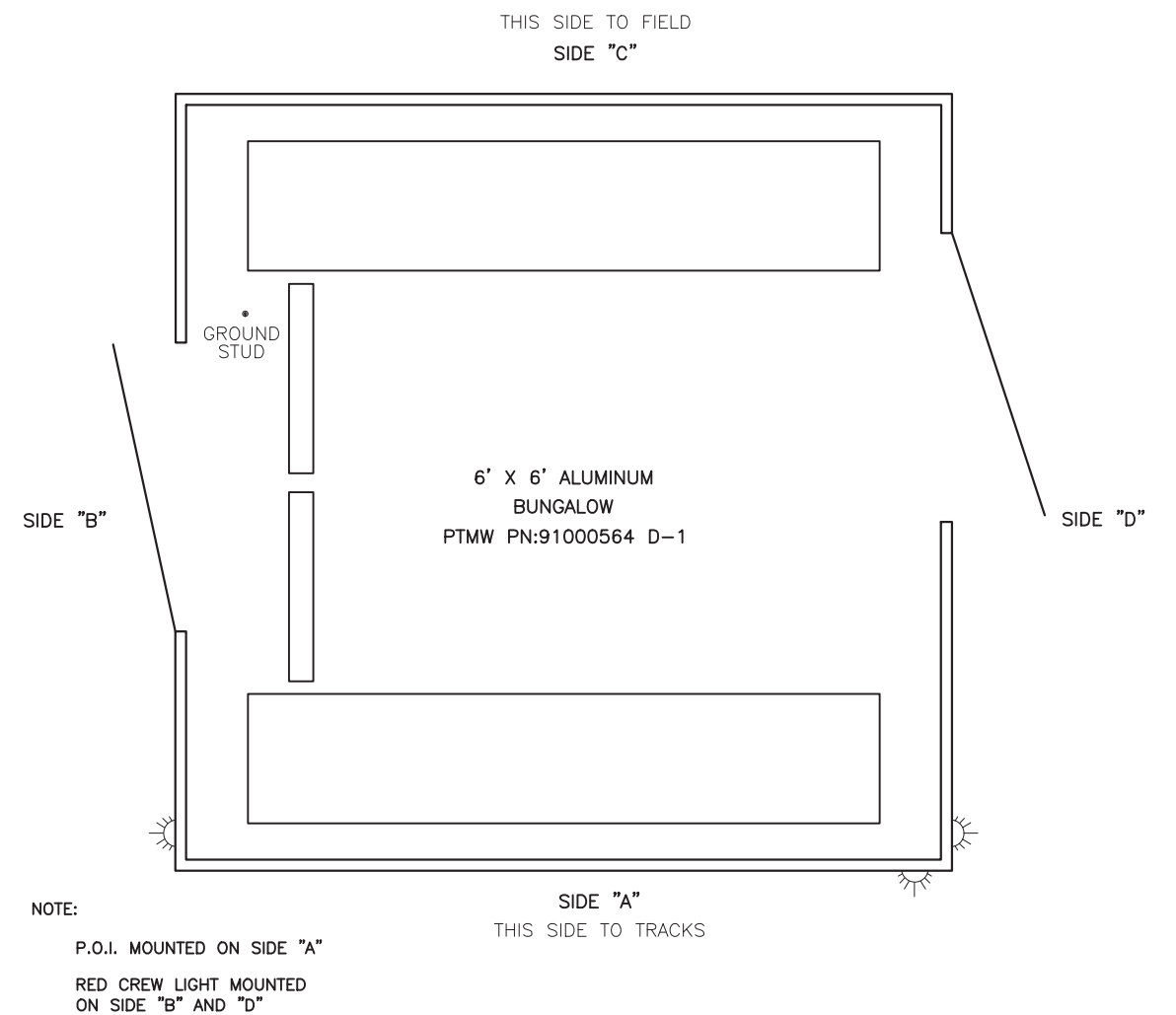
ABC Railway

**AKRON BARBERTON CLUSTER
RAILWAY**

| | |
|----------|-----------------------------------------|
| LOCATION | MEDINA LINE ROAD (CR 2) NORTON, OHIO |
|----------|-----------------------------------------|

| | | | |
|---------------|-----------|---------|-------------------|
| ORIGINAL DATE | 1/15/2018 | TITLE | SIDE "A" |
| DESIGNER | CTC | SUB | WADSWORTH-RITTMAN |
| DRAFTSMAN | CTC | RRMP | 24.06 |
| CHECKER | CTC | DOT NO. | 265 079J |
| | | CTC NO. | CN18007 |
| | | SCALE | 1"=2' |
| | | SHEET | 19 OF 20 |

REVISION
BLOCK



NOTE:

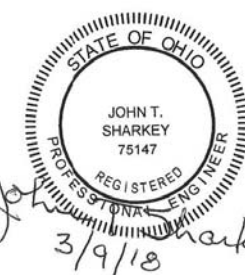
P.O.I. MOUNTED ON SIDE "A"

RED CREW LIGHT MOUNTED
ON SIDE "B" AND "D"

SIDE "A"
THIS SIDE TO TRACKS

REVISION
BLOCK

CHANGE FROM TYPICAL: N/A



ABC Railway

AKRON BARBERTON CLUSTER RAILWAY

| | | | |
|-----------------------------------------|-----------------------|----------------|----------|
| LOCATION | | | |
| MEDINA LINE ROAD (CR 2) NORTON, OHIO | | | |
| ORIGINAL DATE 1/15/2018 | | TITLE SIDE "C" | |
| DESIGNER CTC | SUB WADSWORTH-RITTMAN | CTC NO. | CN18007 |
| DRAFTSMAN CTC | RRMP 24.06 | SCALE | 1"=2' |
| CHECKER CTC | DOT NO. 265 079J | SHEET | 20 OF 20 |

Akron Barberton Cluster Railway
Norton, OH. - Medina Line Rd DOT # 265 079J
CTC Project Estimate

| ENGINEERING | | | | |
|----------------------------------------|------------|------------|-------------------|-------------------|
| <i>Description</i> | <i>Qty</i> | <i>UOM</i> | <i>Unit Price</i> | <i>Amount</i> |
| SIGNAL DESIGNER | 56 | HR | 33.65 | \$1,884.40 |
| SIGNAL CHECKER, LEVEL 1 | 16 | HR | 43.72 | \$699.52 |
| SIGNAL CHECKER, LEVEL 2/FIELD ENGINEER | 8 | HR | 52.88 | \$423.04 |
| SUBTOTAL | | | | \$3,006.96 |
| G&A BURDEN FOR LABOR (164%) | | | | \$4,931.41 |
| FIXED FEE (10%) | | | | \$793.84 |
| ENGINEERING TOTAL | | | | \$8,732.21 |

| PROJECT MANAGEMENT | | | | |
|----------------------------------------|------------|------------|-------------------|--------------------|
| <i>Description</i> | <i>Qty</i> | <i>UOM</i> | <i>Unit Price</i> | <i>Amount</i> |
| SENIOR SIGNAL ENGINEER (PE STAMP) | 8 | HR | \$100.00 | \$800.00 |
| PROJECT MANAGER | 40 | HR | \$36.06 | \$1,442.40 |
| CONSTRUCTION MANAGER | 40 | HR | \$39.61 | \$1,584.40 |
| ACCOUNTING, LEVEL1 | 8 | HR | \$40.86 | \$326.88 |
| ADMINISTRATIVE | 8 | HR | \$28.85 | \$230.80 |
| SUBTOTAL | | | | \$4,384.48 |
| G&A BURDEN FOR LABOR (164%) | | | | \$7,190.55 |
| FIXED FEE (10%) | | | | \$1,157.50 |
| PROJECT MANAGEMENT TOTAL | | | | \$12,732.53 |

| EAF LABOR | | | | |
|----------------------------------------|------------|------------|-------------------|-------------------|
| <i>Description</i> | <i>Qty</i> | <i>UOM</i> | <i>Unit Price</i> | <i>Amount</i> |
| EAF MANAGER | 16 | HR | \$28.85 | \$461.60 |
| EAF LEAD FORMAN | 32 | HR | \$20.19 | \$646.08 |
| LEAD WIREMAN | 56 | HR | \$19.25 | \$1,078.00 |
| TEST | 12 | HR | \$36.00 | \$432.00 |
| QC | 8 | HR | \$31.25 | \$250.00 |
| SUBTOTAL | | | | \$2,867.68 |
| G&A BURDEN FOR LABOR (164%) | | | | \$4,703.00 |
| FIXED FEE (10%) | | | | \$757.07 |
| EAF LABOR TOTAL | | | | \$8,327.74 |

| CONSTRUCTION LABOR | | | | |
|----------------------------------------|------------|------------|-------------------|--------------------|
| <i>Description</i> | <i>Qty</i> | <i>UOM</i> | <i>Unit Price</i> | <i>Amount</i> |
| SIGNAL FOREMAN | 80 | HR | \$31.25 | \$2,500.00 |
| SIGNALMAN | 80 | HR | \$28.50 | \$2,280.00 |
| SIGNAL HELPER | 160 | HR | \$21.00 | \$3,360.00 |
| SUBTOTAL | | | | \$8,140.00 |
| G&A BURDEN FOR LABOR (164%) | | | | \$13,349.60 |
| FIXED FEE (10%) | | | | \$2,148.96 |
| CONSTRUCTION LABOR TOTAL | | | | \$23,638.56 |

Akron Barberton Cluster Railway
Norton, OH. - Medina Line Rd DOT # 265 079J
CTC Project Estimate

| CONSTRUCTION LABOR EXPENSES | | | | |
|------------------------------------------|------------|------------|-------------------|-------------------|
| <i>Description</i> | <i>Qty</i> | <i>UOM</i> | <i>Unit Price</i> | <i>Amount</i> |
| EMPLOYEE MEALS (PER DIEM) | 32 | EA | \$35.00 | \$1,120.00 |
| EMPLOYEE LODGING | 32 | EA | \$75.00 | \$2,400.00 |
| MOBILIZATION | 1 | EA | \$1,500.00 | \$1,500.00 |
| CONSTRUCTION LABOR EXPENSES TOTAL | | | | \$5,020.00 |

| CONSTRUCTION EQUIPMENT | | | | |
|--------------------------------------|------------|------------|-------------------|-------------------|
| <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 | \$1,256.80 |
| TRAILER, UTILITY (12,000lb SC410) | 80 | HR | \$7.55 | \$604.00 |
| RENTAL EQUIPMENT (FORKLIFT - 8K) | 1 | WK | \$1,600.00 | \$1,600.00 |
| RENTAL EQUIPMENT (BACKHOE W/18" BKT) | 1 | WK | \$1,400.00 | \$1,400.00 |
| EQUIPMENT DELIVERY/PICKUP | 2 | LS | \$250.00 | \$500.00 |
| CONSTRUCTION EQUIPMENT TOTAL | | | | \$5,360.80 |

| MATERIAL | | | | |
|--------------------------------------|------------|------------|-------------------|--------------------|
| <i>Description</i> | <i>Qty</i> | <i>UOM</i> | <i>Unit Price</i> | <i>Amount</i> |
| HOUSE MATERIAL (SEE ATTACHED DETAIL) | 1 | LS | | \$43,109.83 |
| FIELD MATERIAL (SEE ATTACHED DETAIL) | 1 | LS | | \$35,911.09 |
| FILL DIRT | 15 | TN | \$25.89 | \$388.35 |
| COVER ROCK (3/4" CRUSHED - WHITE) | 20 | TN | \$26.50 | \$530.00 |
| FREIGHT & CONTAINER PRICE | 1 | LS | \$5,500.00 | \$5,500.00 |
| MATERIAL TOTAL | | | | \$85,439.27 |

| | |
|-------------------------------|---------------------|
| TOTAL PROJECT ESTIMATE | \$149,251.12 |
|-------------------------------|---------------------|

| HOUSE MATERIALS | | |
|-------------------------------------------------------------------------------------------|-----|-----|
| DESCRIPTION | QTY | UOM |
| Bungalow, Alum. 6 X6 w/Heater P/N 91000564 D-1, PTMW (WLE SPECS) | 1 | EA |
| Assembly Board, 20.31X12.00X0.75, w/Hardware, P/N R66000139PH, PTMW | 5 | EA |
| Indicator, Horizontal, 1 Eye, Red LED, P/N LC-1EY-HGS-R, Velcorp Gems | 2 | EA |
| Wrench, AAR terminal - 11", P/N 032619-9X, Siemens | 1 | EA |
| Sensor, Hermetic Door Switch, P/N 70168986, Allied Electric | 1 | EA |
| Actuator, Hermetic Door Switch, P/N 70168991, Allied Electric | 1 | EA |
| Decal, Danger 240V (5"X3.5"), P/N 3XDU5, Grainger | 1 | EA |
| Decal, MUTCD Emergency Notification, 30"X18", Eagle Traffic | 1 | EA |
| Wire, Case, #16AWG 1000' spool, Blue, P/N 152-11-3002, Okonite | 0.5 | EA |
| Wire, Case, #10AWG 1000' spool, Blue, P/N 152-11-3038, Okonite | 0.5 | EA |
| Wire, Case, #6AWG, Green, P/N N6GNM, Reynolds | 100 | FT |
| Wire, Case, #6AWG, Black, P/N N6BM, Reynolds | 100 | FT |
| Wire, Case, #6AWG, Red, P/N N6RD, Reynolds | 100 | FT |
| MDA-II With Current Sensors DTMF Radio and GFD - Complete, P/N NAS-WLE, NAS | 1 | EA |
| MDSA-1X Surge arrestor panel, P/N 250204-100, Alstom | 1 | EA |
| LSP, Lightning Surge Panel w/Arrestors, P/N 9000-91170-0001, Siemens | 1 | EA |
| Track Driver, TD-4 AC/DC, P/N 800-081033-100, GE | 1 | EA |
| Arrestor, Track Surge, P/N 250787-000, GE | 4 | EA |
| Controller, SSCC III Plus, 40 Amp, P/N 9000-91190-0101, Siemens | 1 | EA |
| Relay, 500 Ohm, 6PT, Nuetral relay, plug-in, P/N A62-0262, Alstom | 2 | EA |
| Relay, 4 Ohm, 6PT, Biased Nuetral, P/N A62-682, Alstom | 3 | EA |
| Plugboard, Kit (1E/3E test posts) P/N 59686-019-02, Alstom | 5 | EA |
| Wrench, 3E test tool, P/N P03-0320, Alstom | 1 | EA |
| Extractor Tool, Terminal clip, P/N 032619-25, Siemens | 1 | EA |
| Relay, 8-pin KRPA style, 10A/240VAC, P/N 70198711, Allied | 1 | EA |
| Relay, 8-pin KRPA style, 10A/12VDC, P/N 70199265, Allied | 4 | EA |
| Socket, 8-pin KRPA style, P/N 70199343, Allied | 5 | EA |
| Spring, Hold down for KRPA style relay, P/N 70198576, Allied | 5 | EA |
| Resistor, Adjustable, 5.69 Ohms, P/N 1110-7D, WCH | 4 | EA |
| Resistor, Adjustable, 11.21 Ohms, P/N 1110-10D, WCH | 2 | EA |
| Battery Charger, ETC-12V 40AMP, P/N 520740, Railway Equipment | 2 | EA |
| Track Charger, ERB-C 5/5, P/N 16615-10, NRS | 1 | EA |
| Battery, NiCad 340 A.H., P/N SPL-340, Saft | 9 | EA |
| Battery, NiCad 250 A.H., P/N SPL-250, Saft | 10 | EA |
| Battery, Absolyte GP, 152 A.H., P/N 1-50G07, Exide/GNB | 1 | EA |
| Terminal, Battery, 3-PT, P/N 225481-000, J&A Industries | 6 | EA |
| Battery Tray 12"x38", Holds 5 Batteries, P/N 027004-001, J&A | 4 | EA |
| Nema Plug, Locking, 15 Amp/240V, P/N L6-15P, Reynolds | 2 | EA |
| Power Indicator, 2 Eye/4 Wire, Wago connector, P/N LC2-001WB-WG4, Velcorp Gems | 1 | EA |
| SO Cord, 14 AWG/4 Conductor, P/N SJ00W-14-4-BLK-250R, Graybar | 100 | FT |
| Tie-wrap, 11 1/2", PKG 100, Black, P/N LTS11-0, Vantex | 1 | EA |
| Tie-wrap, mounting, PKG 100, P/N TYM, Vantex | 1 | EA |
| Loom, Spiral Wrap 100', Black, P/N SW38-0, Vantex | 1 | EA |
| Panduit, Wire Duct, 2"X3"X6' Gray, P/N G2X3LG6, Graybar | 3 | EA |
| Panduit, Cover, 6' Gray, P/N C2LG6, Graybar | 3 | EA |
| Terminal, 2X6 W/ Flat nut/washer, P/N 220-0101, Rebel | 10 | EA |
| Terminal, Block, 2 3/8" center - 2 post w/hardware, P/N 220-0301, Rebel | 8 | EA |
| Terminal, 4-post, Block Kit, w/ 14-24 AAR Hardware, P/N B2700A2C1WH, Erico | 6 | EA |
| RailSurge Plane Strip Busbar (36"), P/N B2700HC36, Erico | 1 | EA |
| Connector, 2 3/8", strap style, P/N 220-0507, Rebel | 5 | EA |
| Connector, 1", flat, strap style, P/N 220-0501, Rebel | 10 | EA |
| Arrestor, Air Gap, With Cover, P/N 4000-44585-001X, Siemens | 10 | EA |
| Equalizer, Air Gap, with Cover/Hardware, P/N 4000-44700-001X, Siemens | 2 | EA |
| Binding Nut, P/N 13073-000, Rebel | 200 | EA |
| Clamp Nut, P/N 13079-000, Rebel | 100 | EA |
| Insulated Nut, 1 3/16", P/N 023408-1X, Safetran | 20 | EA |
| Washer, P/N 013074-000, Rebel | 200 | EA |
| Gold Test Nut, P/N 13296-001, Rebel | 100 | EA |
| 1' Test Link, Flat, P/N 32257-002, Rebel | 100 | EA |
| Terminal Ring, HD, 1/4", insulated, #14 - #16 (yellow w/blk stripe), P/N NC-10HDB, Vantex | 100 | EA |
| Terminal, Ring, 1/4", insulated #14 - #16 (100 pk), P/N NB14, Vantex | 2 | EA |
| Terminal, Ring, 1/4" insulated, #10 - #12 (100 pk), P/N NC14, Vantex | 2 | EA |
| Terminal, Ring, 1/4" insulated, #6, Blue, P/N T6-14N, Vantex | 30 | EA |
| Terminal, Ring, 3/8" non-insulated, #6, Battery Lug, P/N T6-38, Vantex | 15 | EA |

| FIELD MATERIALS | | |
|-------------------------------------------------------------------------------|------------|------------|
| DESCRIPTION | QTY | UOM |
| Cable, 7/C#6, Armored, 206-11-6247, Okonite | 250 | FT |
| Cable, 7C#14, Armored, 206-11-6887, Okonite | 250 | FT |
| Cable, 3C#6, Armored, #206-11-6243, Okonite | 150 | FT |
| Wire, Track, 2C/#6, Twist, Solid, 113-12-3933, Okonite | 400 | FT |
| Tape, Marker - "Buried RR line"/"Buried electrical line" | 1 | ROLL |
| Bootleg Kit, Crossing complete, Wood, 1 Track, CTC Inc. | 2 | EA |
| Bond Wire, 7 1/2" XS Style, P/N SBS24883, Erico | 100 | EA |
| Connector, Track, Web of Rail, P/N SBTBBU4A, Erico | 100 | EA |
| Wheel, grinding, P/N SB22122, Erico | 4 | EA |
| Bondstrand, 3/16" Black, 500' Reel, P/N SBS8LINSUL, Erico | 0.5 | EA |
| 5/8" X 8' Copper Ground Rod P/N 615880, Erico | 6 | EA |
| 5/8" Ground Rod Weld, P/N SBNT1161G, Erico | 6 | EA |
| Wire, Ground, #6AWG, Bare Copper, Graybar | 60 | FT |
| Ring 10, Track Diode, P/N 800-004080-001, GE | 2 | EA |
| Mast, Gate, 18'X5" w/pigtail (single-sided Jct Box), P/N 715-324-2-GS, WCH | 2 | EA |
| Jct box, Gate, 5" single hole w/24 terminals, P/N 2149-A-139, WCH | 2 | EA |
| Pinnacle, 5", P/N 010-9034, Rebel | 1 | EA |
| Gate, Model 3597, P/N 3597-131-P-H-M1 (WLE Spec), WCH | 2 | EA |
| Resistor, Adjustable, 5 OHM, P/N 1110-7D, WCH | 4 | EA |
| Crossarm Assy, 5" Mtg., 2 Way, P/N 975-0804-5, WCH | 2 | EA |
| Lights, 12" LED, P/N 433121680XLTC-00, Arms | 8 | EA |
| Counterweight Package, P/N 070755-18X, Siemens | 2 | EA |
| Sign, Crossbuck, No brackets/hardware, P/N 070-0065, Rebel Railway | 2 | EA |
| 5" Sign Kit, Brackets/extensions/Ubolts/hardware, P/N 070-5008, Rebel Railway | 4 | EA |
| Wind Bracket, 36", Tusk style, P/N 2010-001-01, RDG | 2 | EA |
| Bell, Electronic, 5" Base, P/N EB-3-360-5, GSI | 1 | EA |
| Gate Keeper, 2-Way, w/Hardware & Buffer Spring, P/N SK-1000-2W, GSI | 2 | EA |
| E-Z Gate (Vertical stripe) LED gate w/lamp kit, P/N 9298-6154, Railway Equip | 2 | EA |
| Sleeve, 4' Aluminum, P/N 92958, Railway Equipment | 2 | EA |
| Wrench, Torque (KIT), P/N 2590-K-9, WCH | 1 | EA |
| Sign, Emergency, ENS, 15"X9" Blue, Eagle Traffic | 2 | EA |
| Field cable Tag Kit, P/N FLDTGKT, CTC Inc. | 1 | EA |
| Schedule 40 2" & 4" PVC Conduit Kit with Elbows | 1 | LOT |
| Duct seal, 1lb, P/N 31-601, Graybar | 1 | EA |
| Duct seal, 5lb, P/N 31-605, Graybar | 1 | EA |
| Lock, Barrel Style | 4 | EA |

Wintrow Construction Corp.

673 Norton Ave. Barberton, Ohio 44203

Tele: (330) 753-2983

6/6/2018

ABC Railway

Various Locations

Insulated Joints Installation - Proposal

Attn: Andrew R. Shuster Phone: 330-813-6133 Email: ashuster@abcrwy.com

Wintrow Construction Corp. will provide all supervision, labor, equipment, and specified materials to complete the following described work:

Main St., Wadsworth, Ohio

1. Furnish and install 8-Insulated joints for crossing signal project
New Alleghany glue joints will be furnished-39' overall length
Insulated joints will be bolted in place
Location of joints to be marked by others

| | |
|----------------|------------------|
| Total: | \$31,825 |
| Labor/Equip: | \$12,931 |
| Materials: | \$18,894 |
| Deduct: | (\$1,971) |

If new Alleghany joint made from relay rail is acceptable

Medina Line Rd., Norton, Ohio

1. Furnish and install 8-Insulated joints for crossing signal project
New Alleghany glue joints will be furnished-39' overall length
Insulated joints will be bolted in place
Location of joints to be marked by others

| | |
|----------------|------------------|
| Total: | \$30,544 |
| Labor/Equip: | \$11,650 |
| Materials: | \$18,894 |
| Deduct: | (\$1,971) |

If new Alleghany joint made from relay rail is acceptable

Main St., Kent, Ohio

1. Furnish and install 1-Insulated joints in curve closure rail in turnout south of road
New Alleghany glue joint will be furnished-39' overall length
Insulated joint will be bolted in place
Location of joint to be marked by others

| | |
|---------------------|----------------|
| Total: | \$4,315 |
| Labor/Equip: | \$1,649 |
| Materials: | \$2,666 |
| Deduct: | (\$246) |

If new Alleghany joint made from relay rail is acceptable

Wintrow Construction Corp.

673 Norton Ave. Barberton, Ohio 44203

Tele: (330) 753-2983

6/6/2018

ABC Railway

Various Locations

Insulated Joints Installation - Proposal

Contingencies/Notes

Sales Taxes Not included in Quotation

No Warranty or Guarantees are apart of this proposal

Payment: Net 30 Days. Late payment charge of 1 1/2% (18% annum) will be charged on all past due balances.

We are not responsible for repair or relocation of Under Ground Utilities

Weather conditions prevail and may affect the construction schedule.

Track must be free of rail cars and rail traffic.

ONE Mobilization is included in the quotation.

All work is at straight time labor rates unless specified otherwise in the quotation

Work description and material specifications haven't as yet been approved by the railroad

Engineering, plans and layout survey by others.

Material Subject to Pryor Sale

Progress payments are to be paid by the 15th of the month.

No costs for possible flagman services is included

Costs include continuous work windows with no train delays

No destressing of rails is included-Rail temperature is assumed to be within rage when installation is scheduled

****No wiring or bonding is included in pricing****

Crosier Industrial Construction Ltd

8938 Peck Rd
Ravenna, Ohio 44266
Ph (330) 592-3082
trailnrbob@hotmail.com

Crosier Industrial Construction, LLC
Project Cost Estimate
Project: Medina Line Road 265-079J

Date 13-Feb-18
Invoice Number TBD
Shuster/Shanklin - ABC

| LABOR | | Rate/Hr | Hours | sub-total | |
|-----------------------------------------|--|----------|------------|--------------|-------------|
| Equipment Operator (backhoe, excavator) | | \$25.00 | 80 | \$2,000.00 | |
| Laborer, skilled | | \$18.00 | 80 | \$ 1,440.00 | |
| Project Manager | | \$50.00 | 80 | \$ 4,000.00 | |
| Administrative | | \$30.00 | 2 | \$ 60.00 | |
| Sub-Total | | | | \$ 7,500.00 | |
| G&A Burden for Labor | | | | 4,500.00 | |
| Total Labor | | | | \$ 12,000.00 | |
| EQUIPMENT | | Quantity | rate/hr | Hours | Total |
| Excavator, Bobcat E32 (331) | | \$ 31.20 | | 20 | \$ 624.00 |
| E55 | | \$ 40.20 | | 60 | \$ 2,412.00 |
| Dump Truck | | \$ 40.00 | | 20 | \$ 800.00 |
| Directional Drill | | \$ 59.62 | | 12 | \$ 715.44 |
| Truck, equipment | | \$ 21.35 | | 80 | \$ 1,708.00 |
| HydroTamper | | \$ 17.05 | | 20 | \$ 341.00 |
| Traffic Cones | | \$ 0.13 | | 80 | \$ 10.40 |
| Traffic Signs | | \$ 0.23 | | 80 | \$ 18.40 |
| Tamper | | \$ 4.25 | | 6 | \$ 25.50 |
| Digger Derrick | | \$ 55.20 | | 4 | 220.80 |
| Total Equipment | | | | \$ 6,875.54 | |
| MATERIALS | | Quantity | Price/Each | Total | |
| 5" pvc conduit | | 120 | \$ 2.86 | \$ | 343.20 |
| 5" 90 degree | | 2 | \$ 20.10 | \$ | 40.20 |
| 5" coup | | 4 | \$ 4.98 | \$ | 19.92 |
| 4" pvc conduit | | 40 | \$ 2.18 | \$ | 87.20 |
| 4" sweeps | | 3 | \$ 23.50 | \$ | 70.50 |
| 4" 90 degree | | 1 | \$ 11.50 | \$ | 11.50 |
| 4" 45 degree | | 2 | \$ 11.50 | \$ | 23.00 |
| 4" coup | | 8 | \$ 2.10 | \$ | 16.80 |
| 3" pvc conduit | | 40 | \$ 1.72 | \$ | 68.80 |
| 3" sweeps | | 2 | \$ 21.10 | \$ | 42.20 |
| 3" coup | | 4 | \$ 1.45 | \$ | 5.80 |
| 2" pvc conduit | | 30 | \$ 0.94 | \$ | 28.20 |
| 2" sweeps | | 1 | \$ 17.95 | \$ | 17.95 |
| 2" 45 degree | | 2 | \$ 1.95 | \$ | 3.90 |
| Pull Rope | | 225 | \$ 0.13 | \$ | 29.25 |
| Ground rods | | 2 | \$ 17.25 | \$ | 34.50 |
| Cement | | 1 | \$ 8.50 | \$ | 8.50 |
| Pull Box | | 2 | \$ 315.00 | \$ | 630.00 |
| Gravel | | 70 | \$ 25.00 | \$ | 1,750.00 |
| Material Total | | | | \$ 3,231.42 | |
| Job Sub-Total | | | | \$ 22,106.96 | |
| Profit Addition | | | 10% | \$ 2,210.70 | |
| TOTAL PROJECT ESTIMATE | | | | \$ 24,317.66 | |

Day 1: Bore road and place 5" conduit

Day 2: Excavate and place near foundation. Excavate conduit to pull box location. Backfill and tamp. Set AC meter pole.

Day 3: Excavate and place far foundation. Excavate conduit to pull box location. Place far track wire conduit. Backfill/tamp.

Day 4: Excavate AC conduit and near track wire conduit. Backfill/tamp. Spread and tamp gravel.

Day 5: Place pull boxes, ground rods and pull rope. Spread/tamp gravel.

Day 6: Spread and tamp gravel. Finish grade.

Duties Performed throughout the project:

- * Coordinate delivery of fill material
- * Coordinate curb and sidewalk construction
- * Transport foundations, conduit, pull box to site
- * Remove spoils and debris
- * Supply and erect traffic control devices for work zone safety
- * Call Ohio Utility Protection Service as required by Ohio Law
- * Establish Railroad Roadway Worker Protection daily to comply with Federal Regulation

Terms for Invoices are Net 30 days. Thank you.

**PUBLIC UTILITIES COMMISSION OF OHIO
TRANSPORTATION DEPARTMENT
RAIL DIVISION**

Date of Assignment: May 28, 2019

Subject: Plans and estimates review for active warning devices at Main Street, Wadsworth (265-076N), Akron Barberton Cluster Railway, Medina County.

DOT #: 265-076N

FINDINGS

On May 28, 2019, the plans and estimates for the above mentioned crossing were received from Akron Barberton Cluster Railway (AB). They were reviewed by Jill Henry, PUCO Rail Specialist, and Shawn Zurfle, FRA/PUCO Field Investigator.

Main Street is a 2 lane urban roadway traveling north and south and intersecting a single track of AB traveling east/west. Existing warning devices include mast mounted lights and gates, advanced warning signs, pavement markings and crossbucks.

SUMMARY AND CONCLUSIONS

We reviewed the plans and estimates for the crossing. The plans and estimates appear to be fundamentally correct. Construction authorization is granted for this project with the following conditions:

- 1) The gate foundations need to be placed so that they are either behind or in front of the sidewalks on each side of the crossing.

Jill Henry
PUCO Rail Specialist
Date: May 31, 2019

AKRON BARBERTON CLUSTER RAILWAY COMPANY

Andrew Shuster
Signal & Communication Supervisor

43 Second Street N.W.
Barberton, OH 44203

Tel. 330-813-6133

ashuster@abcrwy.com

Fax: 330-745-4519

29 June 2018

Public Utilities Commission of Ohio
Jill Henry

Re: Estimate for Railroad Crossing Warning System at Main Street in Wadsworth Ohio,

Dear Jill Henry,

I am providing this estimate for the crossing package and installation at Main St.,

| | |
|----------------------------------------------------------------------|---------------|
| CTC Managed Services, Material Package, & Installation | \$ 153,050.02 |
| Crosier Inc. | \$ 34,933.51 |
| Two Gate Foundations (note 1) | \$ 1,196.00 |
| Electric Service | \$ 3,500.00 |
| Wintrow Railroad Construction (Provide and Install Allegheny Joints) | \$ 31,825.00 |
| Estimated Total | \$ 224,504.53 |

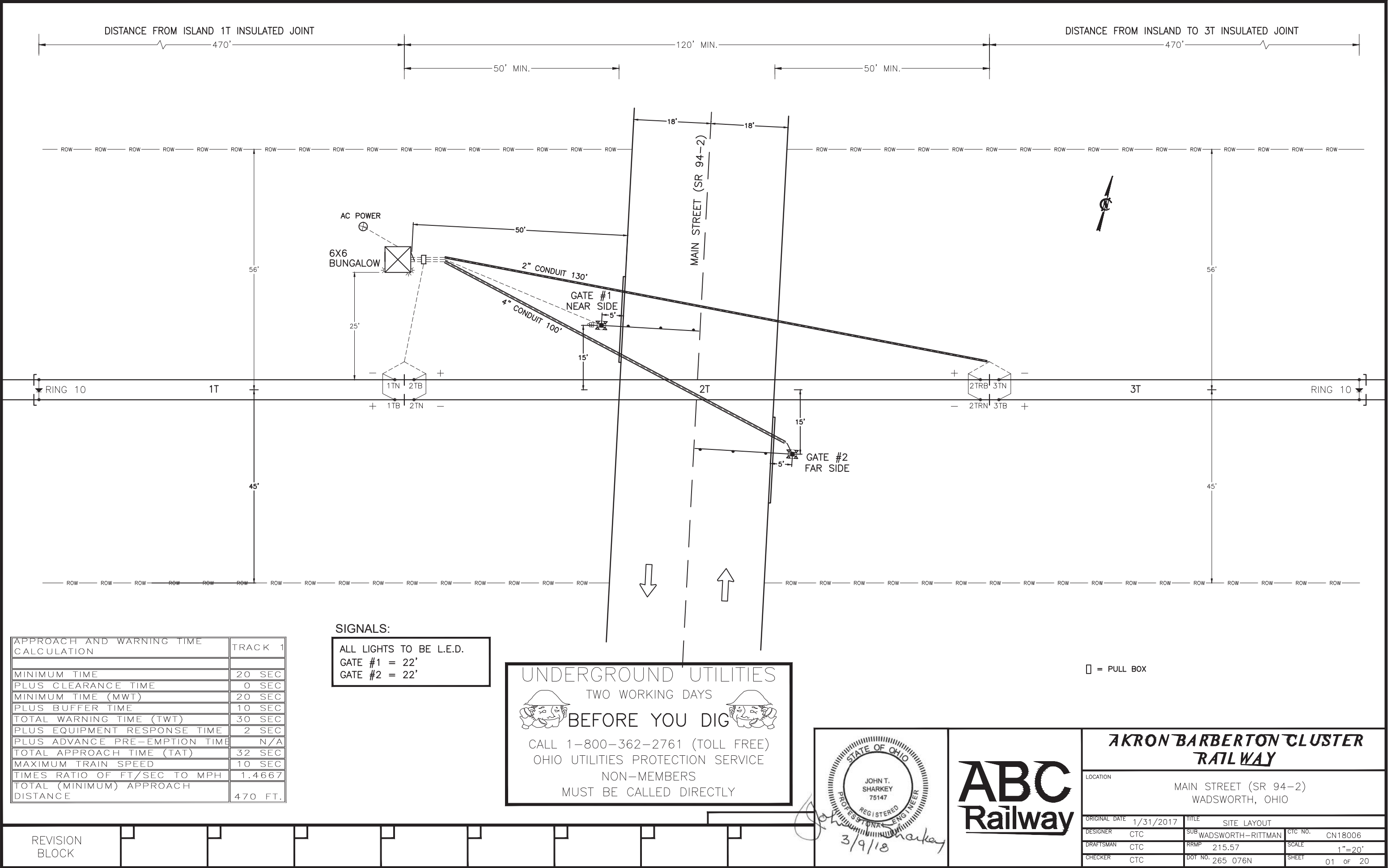
Please contact me if additional details are required.

Respectfully,

Andrew Shuster

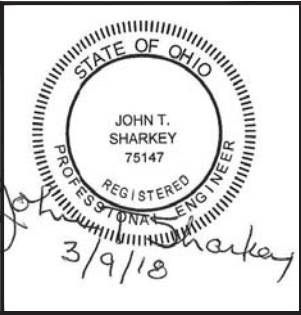

Notes

1: Direct purchase from Fabricated Metals, 60' galvanized gate foundation, \$598 ea.



CONSTRUCTION NOTES

- 1.) INSTALL NEW 6' X 6' BUNGALOW IN NORTHWEST QUADRANT.
- 2.) INSTALL (2) NEW FLASHING LIGHTS WITH GATES.
- 3.) METER POLE LOCATION SHOWN ON THE PLAN IS SUBJECT TO CHANGE WITHIN RAILROAD RIGHT-OF-WAY IF UNDERGROUND OBSTRUCTIONS PREVENT THE INSTALLATION OF THE POLE IN THE LOCATION SHOWN.
- 4.) BUNGALOW LOCATION SHOWN ON THE PLAN IS SUBJECT TO CHANGE WITHIN RAILROAD RIGHT-OF-WAY IF UNDERGROUND OBSTRUCTIONS PREVENT THE INSTALLATION OF THE BUNGALOW IN THE LOCATION SHOWN.
- 5.) CREW LIGHT RED IN COLOR.
- 6.) POWER OFF LIGHT (SOLID AC) (FLASH DC)
- 7.) CURB TO BE INSTALLED FOR GATE PLACEMENT.

| | | | | | | | | | | | | | | | |
|-------------------|---------------|-----|-----------|---------|-------|----------|--------------------|-------|---------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------------------------------|--|--|--|
| REVISION BLOCK | | | | | | | | | |  |  | AKRON BARBERTON CLUSTER RAILWAY | | | |
| | LOCATION | | | | | | | | | | | MAIN STREET (SR 94-2) WADSWORTH, OHIO | | | |
| | ORIGINAL DATE | | 1/31/2017 | | TITLE | | CONSTRUCTION NOTES | | | | | | | | |
| | DESIGNER | | CTC | | SUB | | WADSWORTH-RITTMAN | | CTC NO. | | CN18006 | | | | |
| | DRAFTSMAN | | CTC | | RRMP | | 215.57 | | SCALE | | N.T.S. | | | | |
| CHECKER | | CTC | | DOT NO. | | 265 076N | | SHEET | | 01A of 20 | | | | | |



CROSSING SIGNAL ALIGNMENT

LEGEND

| | |
|---|---------------------------|
| Ⓐ | GATE #1 FRONT MAST LIGHTS |
| Ⓑ | GATE #1 BACK MAST LIGHTS |
| Ⓒ | GATE #2 FRONT MAST LIGHTS |
| Ⓓ | GATE #2 BACK MAST LIGHTS |

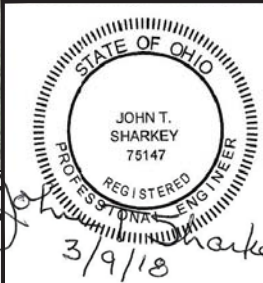
ALIGNMENT

FRONT LIGHTS
ADJUST LIGHT UNIT VERTICALLY TO ALIGN AXIS OF BEAM 5 FT. 6 IN. 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.



ABC
Railway

**AKRON BARBERTON CLUSTER
RAILWAY**

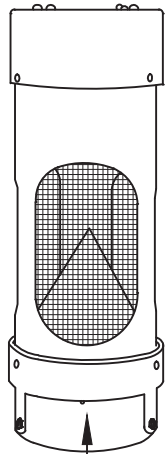
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|---------------|-----------|------------------------------------------|---------------------------|
| LOCATION | | MAIN STREET (SR 94-2) WADSWORTH, OHIO | |
| ORIGINAL DATE | 1/31/2017 | TITLE | CROSSING SIGNAL ALIGNMENT |
| DESIGNER | CTC | SUB | WADSWORTH-RITTMAN |
| DRAFTSMAN | CTC | RRMP | 215.57 |
| CHECKER | CTC | DOT NO. | 265 076N |
| | | SCALE | N.T.S. |
| | | SHEET | 02 of 20 |

REVISION
BLOCK

SITE LAYOUT NOTES

1.) CROSSING IS LOCATED: LATITUDE 41.0174198
LONGITUDE -81.7296900

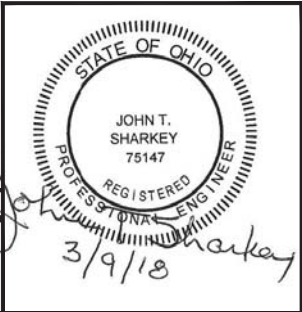
ELECTRONIC CROSSING BELL
GSI MODEL EB-3-360-5



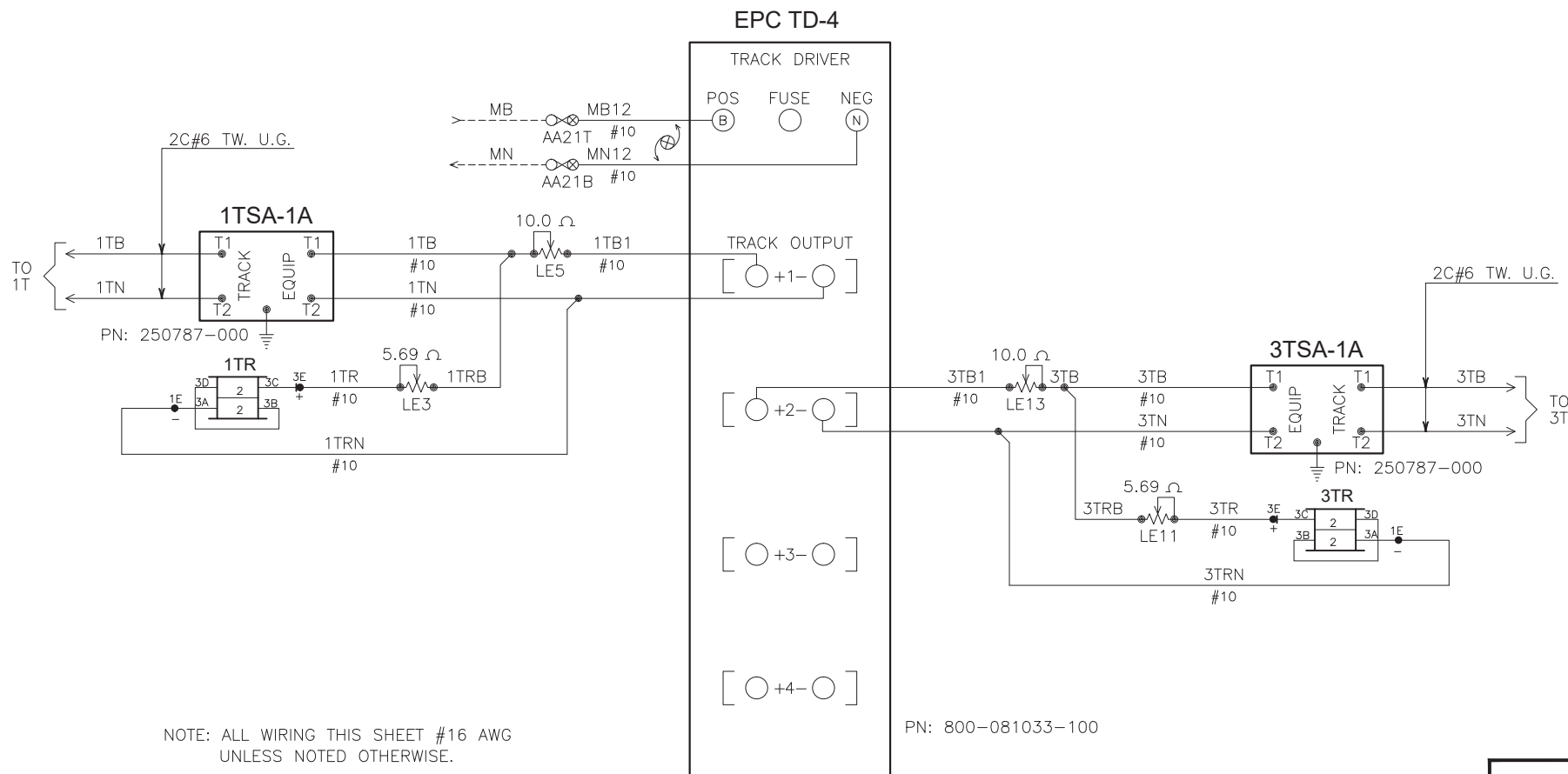
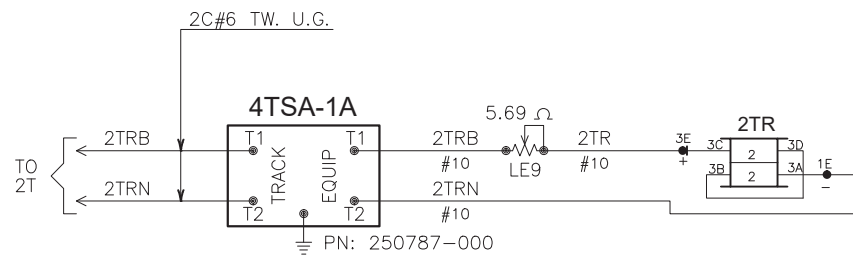
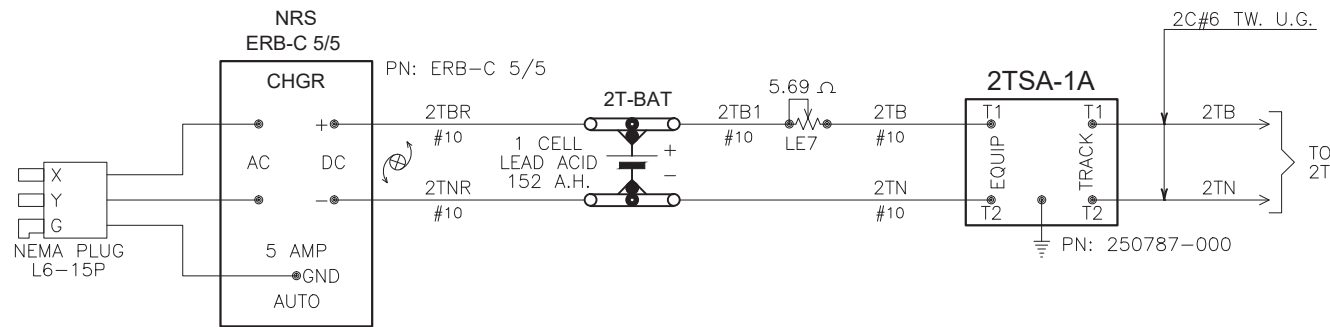
THIS SIDE FACING
ROADWAY

CHANGE FROM TYPICAL: N

REVISION
BLOCK

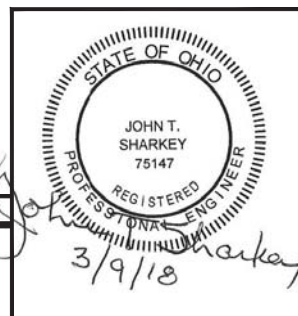
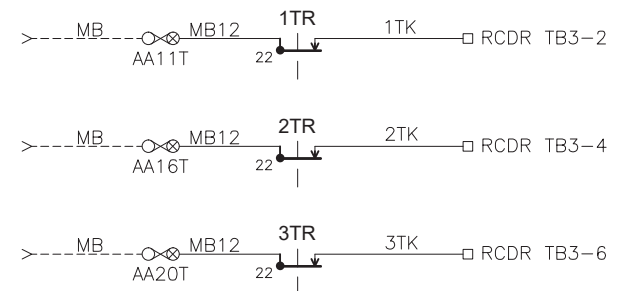


| AKRON BARBERTON CLUSTER RAILWAY | | | |
|------------------------------------|-----------|------------------------------------------|-------------------|
| LOCATION | | MAIN STREET (SR 94-2) WADSWORTH, OHIO | |
| ORIGINAL DATE | 1/31/2017 | TITLE | SITE LAYOUT NOTES |
| DESIGNER | CTC | SUB | WADSWORTH-RITTMAN |
| DRAFTSMAN | CTC | RRMP | 215.57 |
| CHECKER | CTC | DOT NO. | 265 076N |
| | | CTC NO. | CN18006 |
| | | SCALE | N.T.S. |
| | | SHEET | 03 of 20 |



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

PN: 800-081033-100



ABC
Railway

AKRON BARBERTON CLUSTER RAILWAY

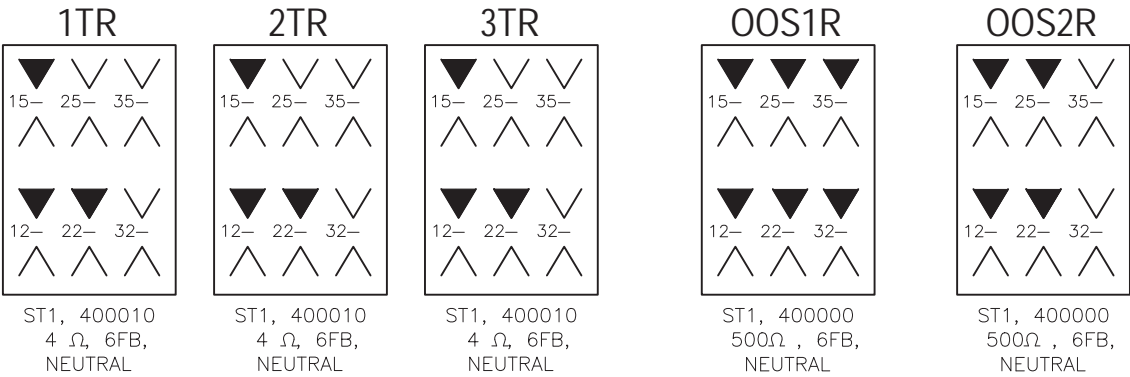
LOCATION
MAIN STREET (SR 94-2)
WADSWORTH, OHIO

| | | | |
|---------------|-----------|---------|---------------------------|
| ORIGINAL DATE | 1/31/2017 | TITLE | CROSSING CONTROL CIRCUITS |
| DESIGNER | CTC | SUB | WADSWORTH-RITTMAN |
| DRAFTSMAN | CTC | RRMP | 215.57 |
| CHECKER | CTC | DOT NO. | 265 076N |
| | | SCALE | N.T.S. |
| | | SHEET | 04 of 20 |

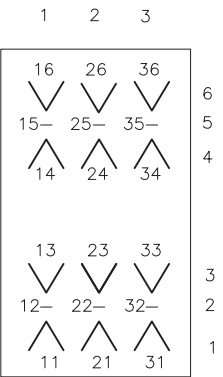
REVISION
BLOCK

CHANGE FROM TYPICAL: N

ST RELAY LAYOUT



EXAMPLE



ST1, 400000
500Ω , 6FB,
NEUTRAL

∨ CONTACT, NOT USED
▼ CONTACT, USED

∨ FRONT
- HEEL
∧ BACK

- LEGEND:
- 1TR = TRACK RELAY (1T)
 - 2TR = TRACK RELAY (2T)
 - 3TR = TRACK RELAY (3T)
 - OOS1R = OUT OF SERVICE RELAY
 - OOS2R = OUT OF SERVICE RELAY

NOTES:
* = FIELD ADJUSTMENT
NA = NOT APPLICABLE

REVISION
BLOCK

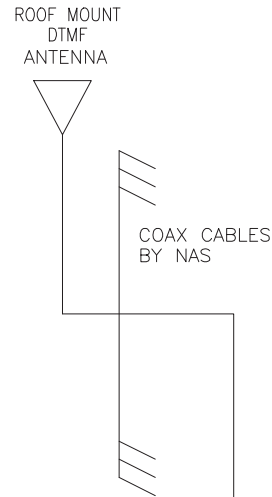
CHANGE FROM TYPICAL: Y

3/9/18

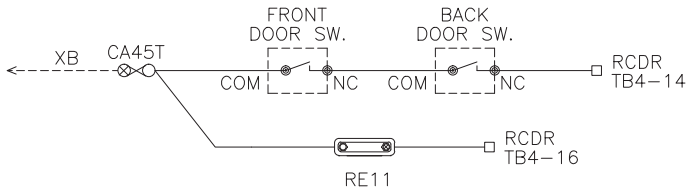
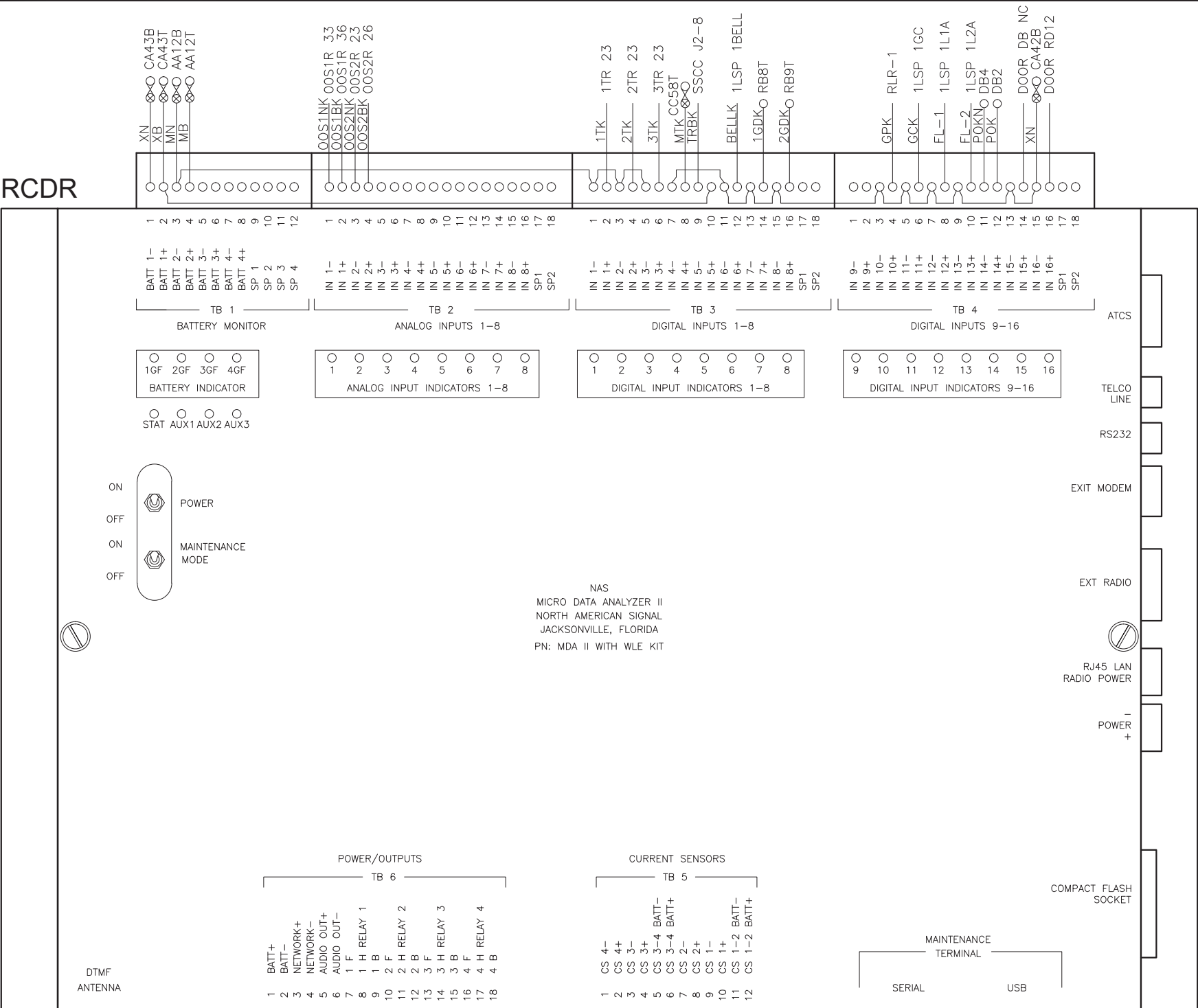
ABC
Railway

**AKRON BARBERTON CLUSTER
RAILWAY**

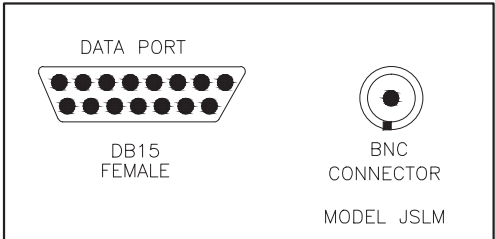
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| LOCATION MAIN STREET (SR 94-2) WADSWORTH, OHIO | | |
| ORIGINAL DATE 1/31/2017 | TITLE RELAYS | |
| DESIGNER CTC | SUB WADSWORTH-RITTMAN | CTC NO. CN18006 |
| DRAFTSMAN CTC | RRMP 215.57 | SCALE N.T.S. |
| CHECKER CTC | DOT NO. 265 076N | SHEET 05 of 20 |



ANTENNA CABLE
NAS PART NO:
NAS-DTMF-AK-17

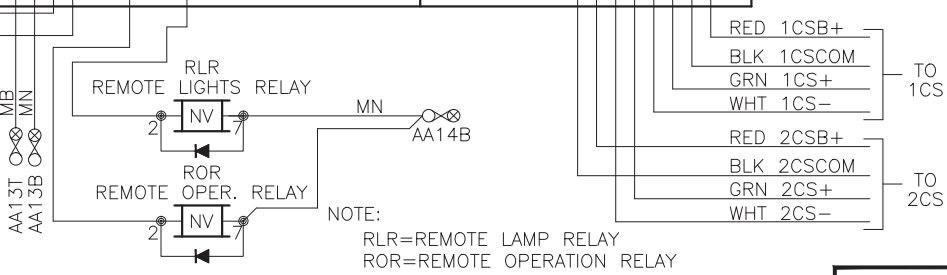


VHF ACTIVATION CODES:
LIGHTS ON = 0761#
LIGHTS OFF = 0761*
GATES DOWN = 076#
GATES UP = 076*

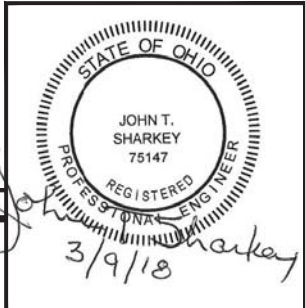


MOUNTED INTERNAL ON MDA UNIT
DTMF RADIO
FRONT VIEW

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



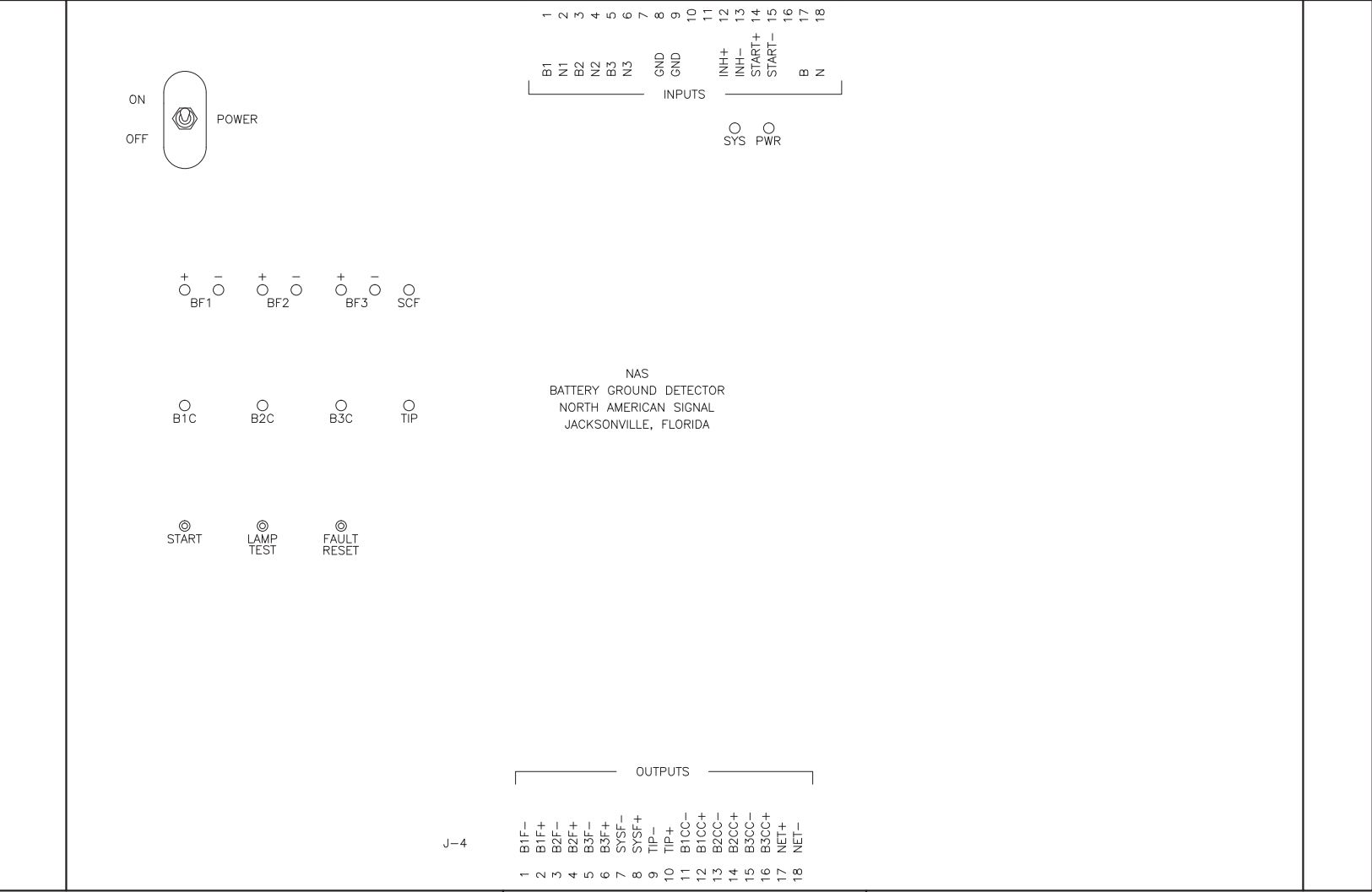
**ABC
Railway**

**AKRON BARBERTON CLUSTER
RAILWAY**

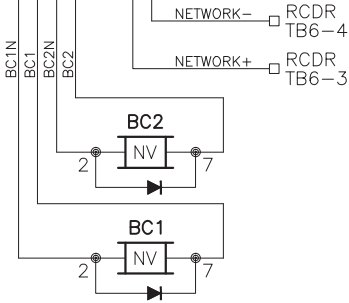
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|---------------|-----------|------------------------------------------|-------------------|
| LOCATION | | MAIN STREET (SR 94-2) WADSWORTH, OHIO | |
| ORIGINAL DATE | 1/31/2017 | TITLE | RECORDER |
| DESIGNER | CTC | SUB | WADSWORTH-RITTMAN |
| DRAFTSMAN | CTC | RRMP | 215.57 |
| CHECKER | CTC | DOT NO. | 265 076N |
| | | SCALE | N.T.S. |
| | | SHEET | 06 of 20 |

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.

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

(2 MA)

SWITCH VALUES CLOSED
POSITION (BINARY)

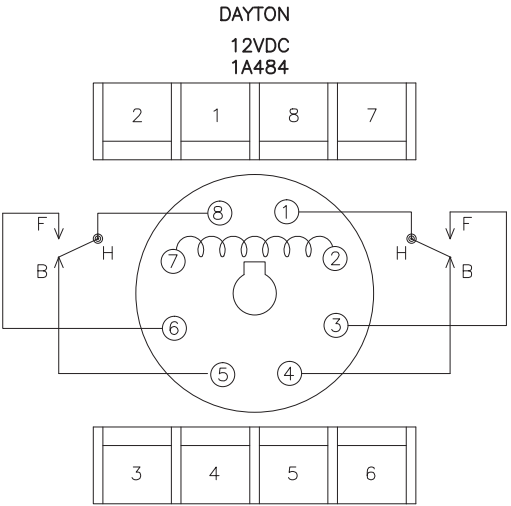
SW1 = 1
SW2 = 2
SW3 = 4
SW4 = 8
SW5 = 16
SW6 = 32
SW7 = 64
SW8 = 128

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

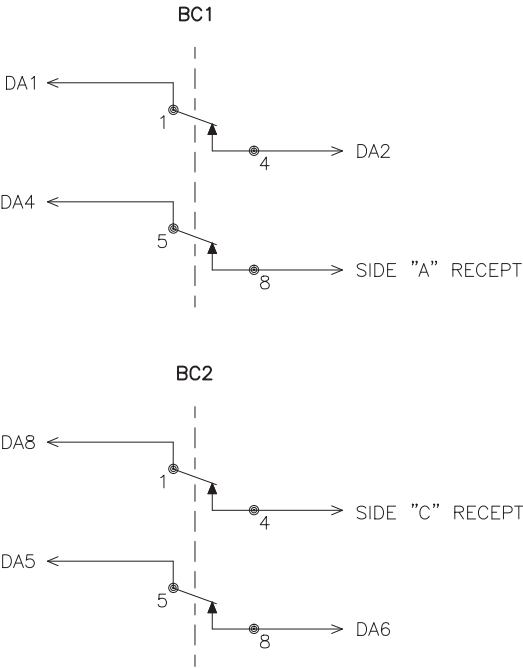
(12 HOURS)

SWITCH VALUES CLOSED
POSITION (BINARY)

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

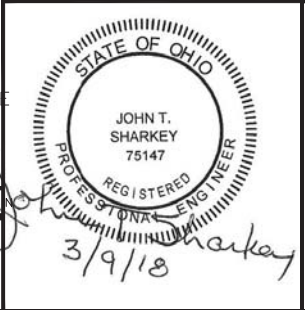


BC1, BC2, ROR, RLR



REVISION
BLOCK

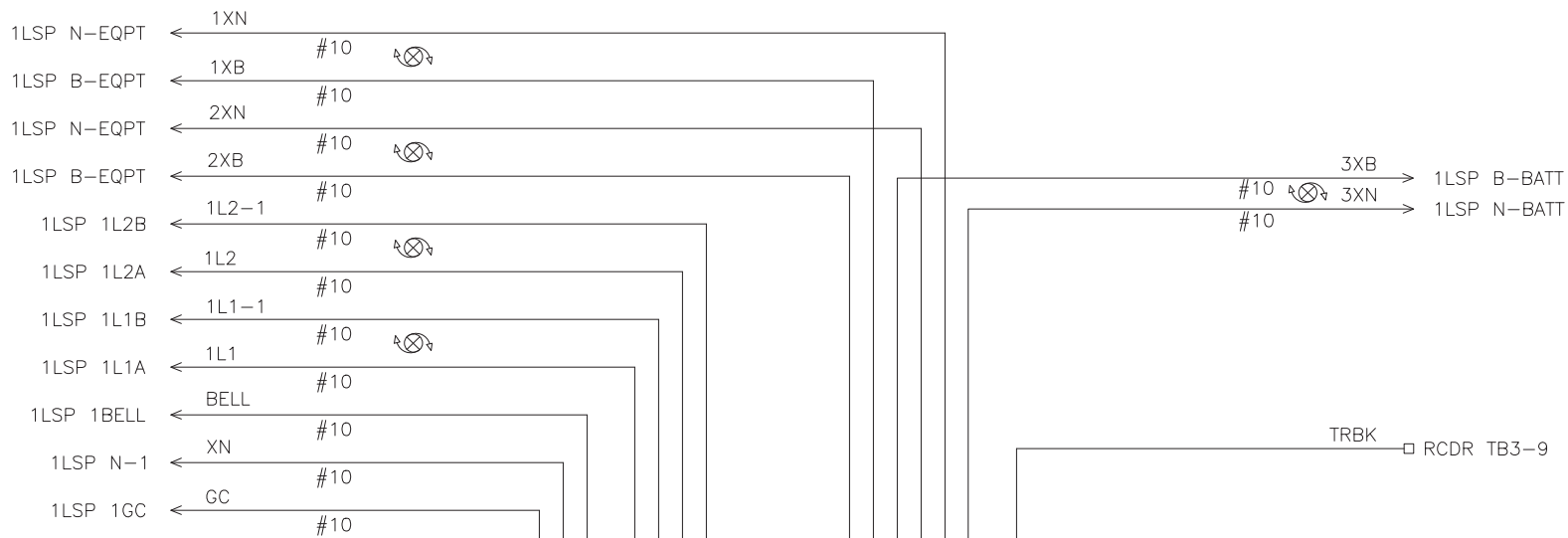
CHANGE FROM TYPICAL



ABC
Railway

**AKRON BARBERTON CLUSTER
RAILWAY**

| | | | |
|------------------------------------------------------|--------------------------|---------|----------|
| LOCATION MAIN STREET (SR 94-2) WADSWORTH, OHIO | | | |
| ORIGINAL DATE 1/31/2017 | TITLE BGD | | |
| DESIGNER CTC | SUB WADSWORTH-RITTMAN | CTC NO. | CN18006 |
| DRAFTSMAN CTC | RRMP 215.57 | SCALE | N.T.S. |
| CHECKER CTC | DOT NO. 265 076N | SHEET | 07 of 20 |

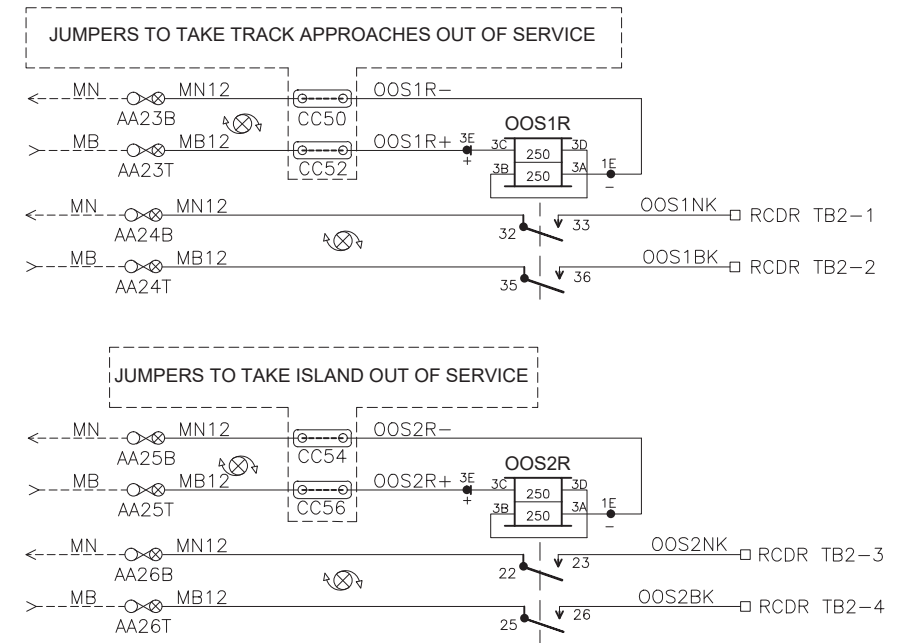
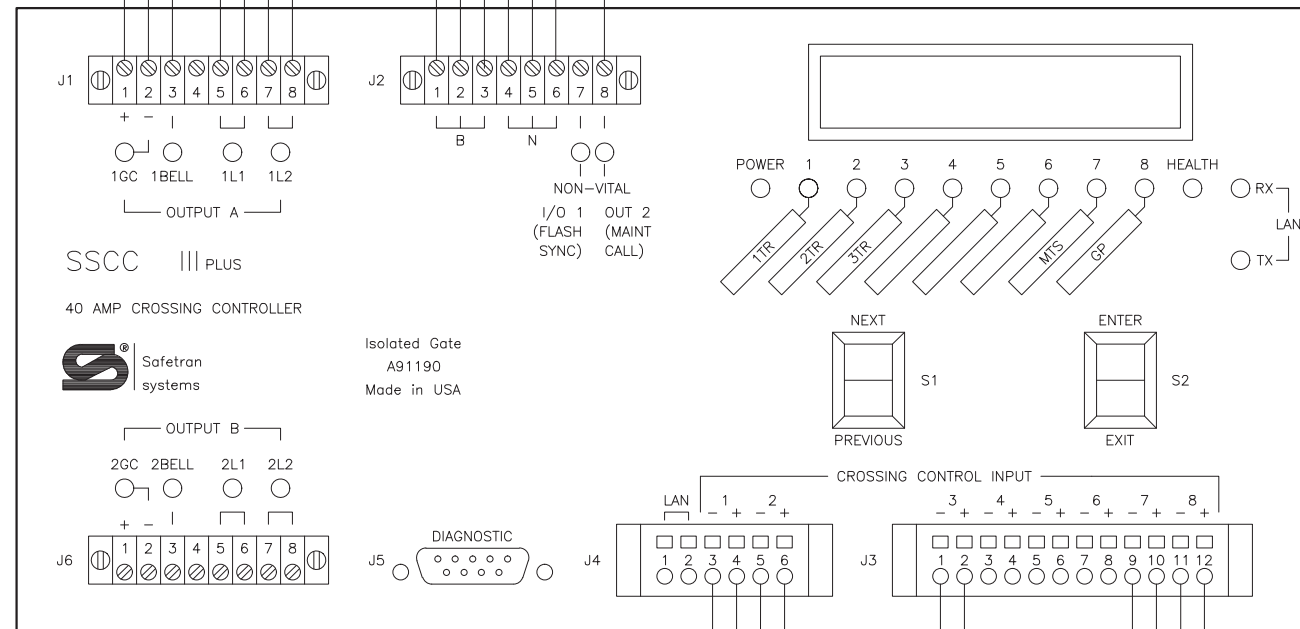


MCF=2TRKDSTK.MCF ID=320

| PROGRAM | |
|--------------------------|----------|
| FLASHER RATE: | 50 FPM |
| GATE DELAY 1 TIMER: | 4 SEC. |
| GATE DELAY 2 TIMER: | 4 SEC. |
| BELL-ON GATE RISING | ON |
| PRG 2GC/17 MODE | NORMAL |
| MIN ACTIVATION TIMER: | 0 SEC. |
| ENABLE INPUTS 4,5&6 | DISABLED |
| INPUT 7 | TEST |
| PRG TEST SWITCH | ACTIVATE |
| PRG STICK RELEASE | 15 MIN. |
| PRG ENABLED OUTPUTS: A&B | A |
| TIME | |
| DATE | |
| DAYLIGHT SAVINGS | DISABLED |
| PASSWORD | DISABLED |
| SET TO DEFAULT | N/A |

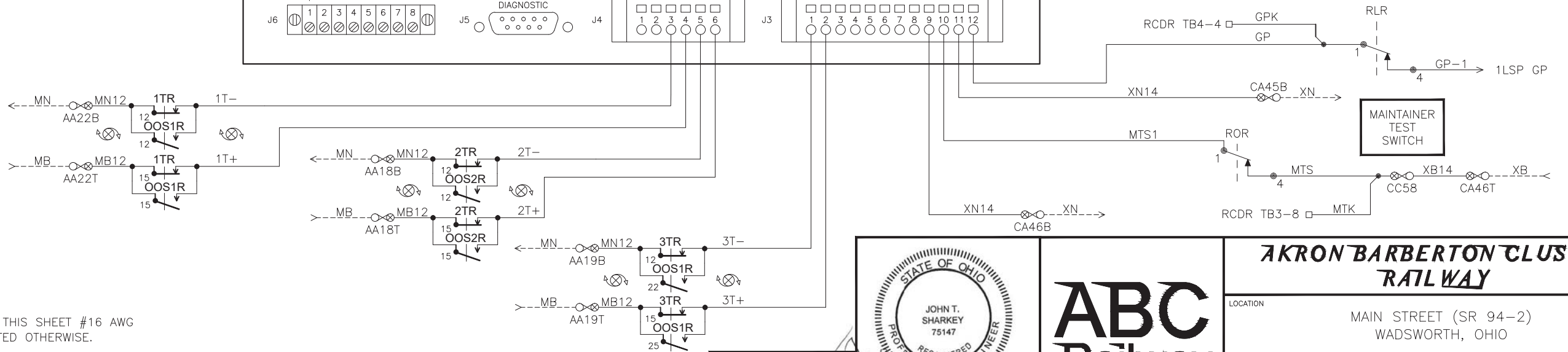
WARNING
DO NOT JUMPER
1GC- OR 2GC-
DIRECTLY TO N
ON CONNECTOR J2

| CONFIGURE | |
|-----------------------------|--------------|
| INPUT 1 LOS | 8 |
| INPUT 2 LOS | 8 |
| INPUT 3 LOS | 8 |
| INPUT 4 LOS | 0 |
| INPUT 5 LOS | 0 |
| INPUT 6 LOS | 0 |
| INPUT 7 LOS | 0 |
| ATCS ADDRESS | 700000000000 |
| LOW BATTERY | DISABLED |
| AUX I/O | NV OUTPUT |
| DETECT LAMP NEUTRAL WIRE:NO | |



INCORRECT POLARITY WILL RESULT IN SEVERE DAMAGE TO THE CONTROLLER UNIT.

WARNING
IF B OR N ARE FULLY OR PARTIALLY REMOVED, SIGNALS AND/OR GATES MAY NOT OPERATE AS INTENDED. TAKE ALTERNATE MEANS TO WARN VEHICULAR TRAFFIC AND EMPLOYEES.



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

REVISION
BLOCK

CHANGE FROM TYPICAL: N



ABC
Railway

**AKRON BARBERTON CLUSTER
RAILWAY**

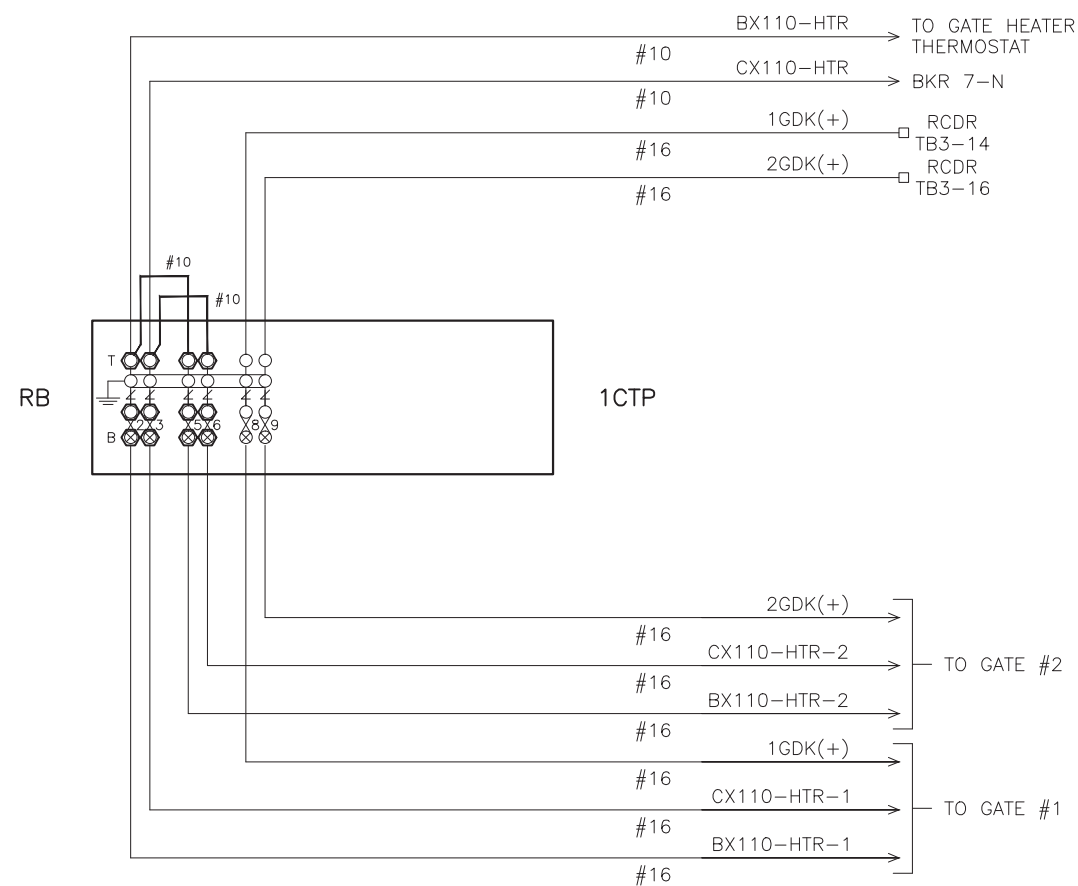
| | | | |
|---------------|-----------|------------------------------------------|-------------------|
| LOCATION | | MAIN STREET (SR 94-2) WADSWORTH, OHIO | |
| ORIGINAL DATE | 1/31/2017 | TITLE | SSSC PLUS |
| DESIGNER | CTC | SUB | WADSWORTH-RITTMAN |
| DRAFTSMAN | CTC | RRMP | 215.57 |
| CHECKER | CTC | DOT NO. | 265 076N |
| | | SCALE | N.T.S. |
| | | SHEET | 08 of 20 |



CHANGE FROM TYPICAL: N



| | | | | |
|---------------|-----------|---------|-------------------|-----------------|
| ORIGINAL DATE | 1/31/2017 | TITLE | | 1LSP |
| DESIGNER | CTC | SUB | WADSWORTH-RITTMAN | CTC NO. CN18006 |
| DRAFTER | CTC | RRMP | 215.57 | SCALE N.T.S. |
| CHECKER | CTC | DOT NO. | 265 076N | SHEET 09 OF 20 |

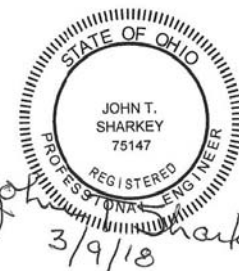


LEGEND:

⊗ = INSULATED NUT

REVISION
BLOCK

CHANGE FROM TYPICAL: N



ABC
Railway

**AKRON BARBERTON CLUSTER
RAILWAY**

| | | | |
|---------------|-----------|------------------------------------------|-------------------|
| LOCATION | | MAIN STREET (SR 94-2) WADSWORTH, OHIO | |
| ORIGINAL DATE | 1/31/2017 | TITLE | CTP |
| DESIGNER | CTC | SUB | WADSWORTH-RITTMAN |
| DRAFTSMAN | CTC | RRMP | 215.57 |
| CHECKER | CTC | DOT NO. | 265 076N |
| | | CTC NO. | CN18006 |
| | | SCALE | N.T.S. |
| | | SHEET | 10 of 20 |

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

LEGEND:

⊗ = INSULATED NUT

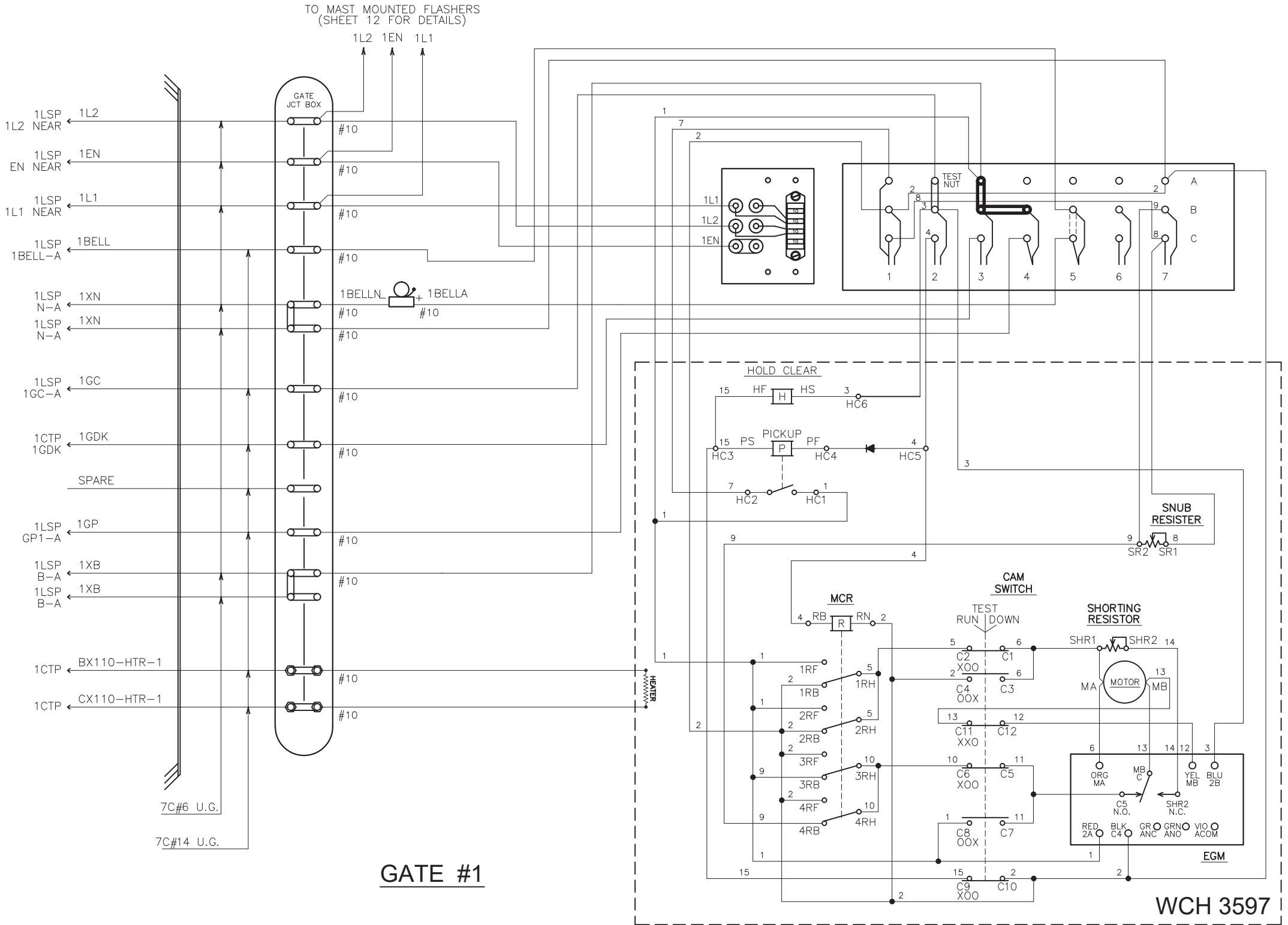
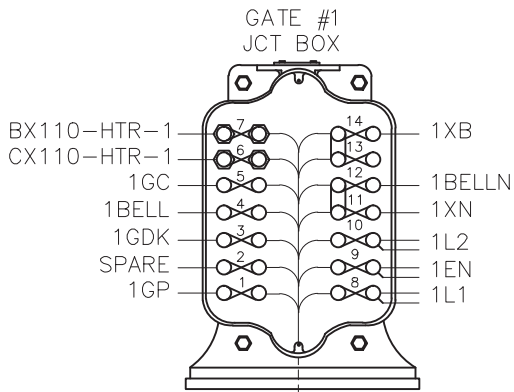
NOTES:

* BELL TO BE ELECTRONIC.

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

REFER TO SHEET 12 FOR GATE ARM LIGHT WIRING

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

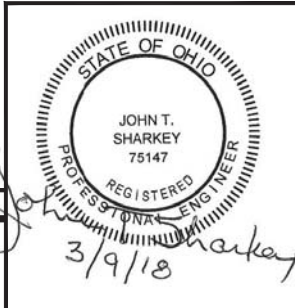


GATE #1

WCH 3597

REVISION
BLOCK

CHANGE FROM TYPICAL: N

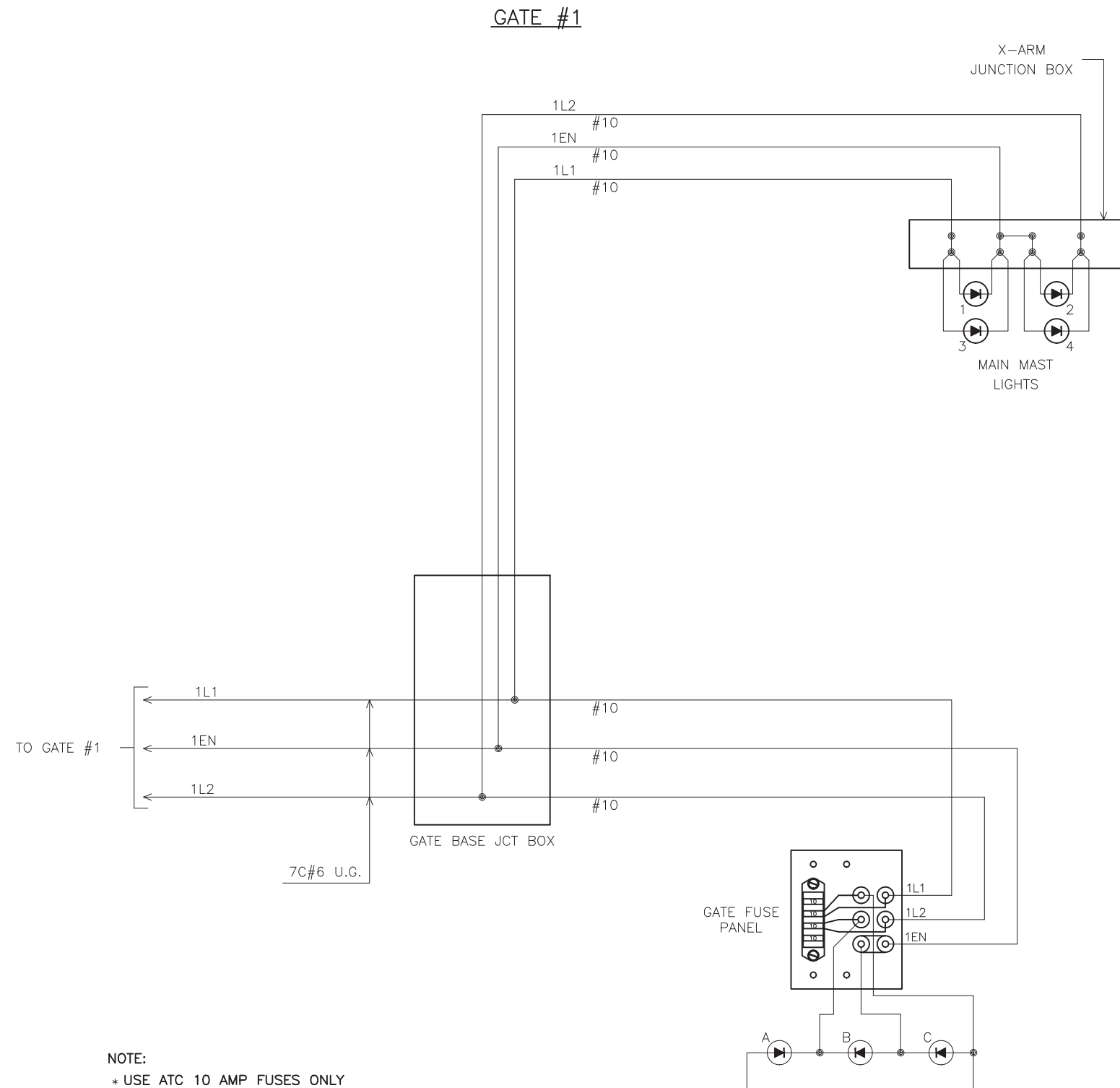


ABC
Railway

**AKRON BARBERTON CLUSTER
RAILWAY**

LOCATION
MAIN STREET (SR 94-2)
WADSWORTH, OHIO

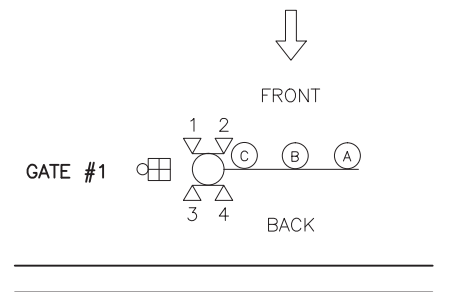
| | | | |
|---------------|-----------|---------|-------------------------------|
| ORIGINAL DATE | 1/31/2017 | TITLE | GATE #1 MECHANISM (NEAR SIDE) |
| DESIGNER | CTC | SUB | WADSWORTH-RITTMAN |
| DRAFTSMAN | CTC | RRMP | 215.57 |
| CHECKER | CTC | DOT NO. | 265 076N |
| | | SCALE | N.T.S. |
| | | SHEET | 11 of 20 |



NOTE:

* USE ATC 10 AMP FUSES ONLY

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



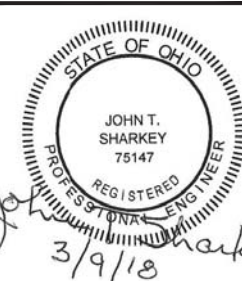
NOTE:

* USE ATC 10 AMP FUSES ONLY

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

REVISION
BLOCK

CHANGE FROM TYPICAL: Y



ABC
Railway

**AKRON BARBERTON CLUSTER
RAILWAY**

LOCATION MAIN STREET (SR 94-2)
WADSWORTH, OHIO

| | | | |
|---------------|-----------|---------|----------------------------|
| ORIGINAL DATE | 1/31/2017 | TITLE | GATE #1 LIGHTS (NEAR SIDE) |
| DESIGNER | CTC | SUB | WADSWORTH-RITTMAN |
| DRAFTSMAN | CTC | RRMP | 215.57 |
| CHECKER | CTC | DOT NO. | 265 076N |
| | | SCALE | N.T.S. |
| | | SHEET | 12 of 20 |

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

LEGEND:

⊗ = INSULATED NUT

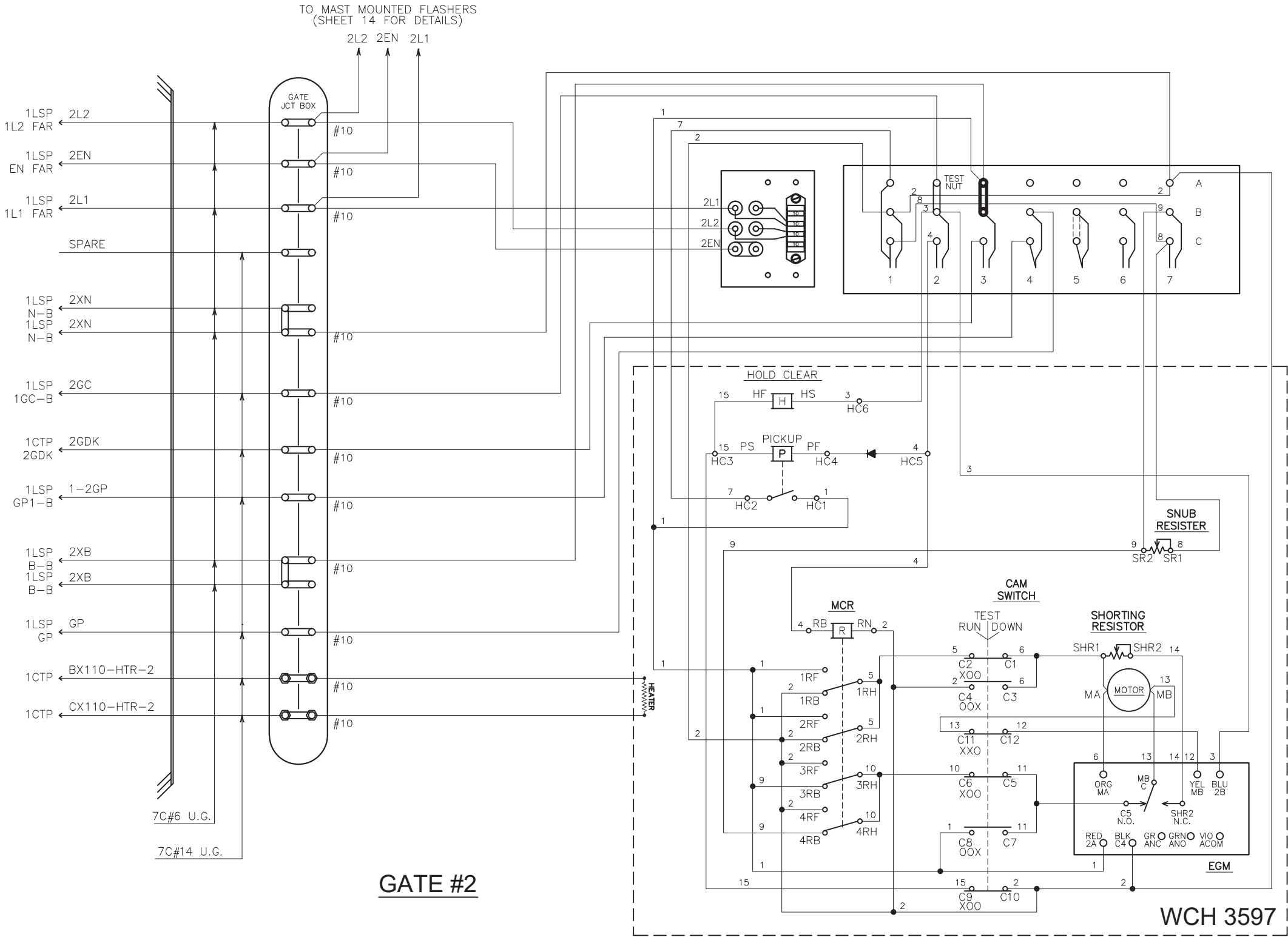
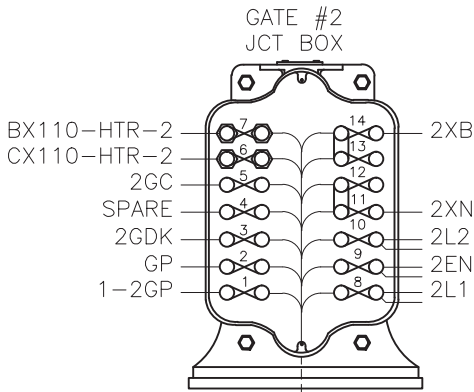
NOTES:

* BELL TO BE ELECTRONIC.

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

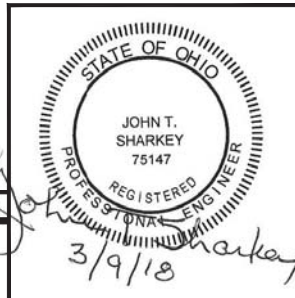
REFER TO SHEET 14 FOR GATE ARM LIGHT WIRING

ADD STRAP FROM:
3A TO 3B



REVISION
BLOCK

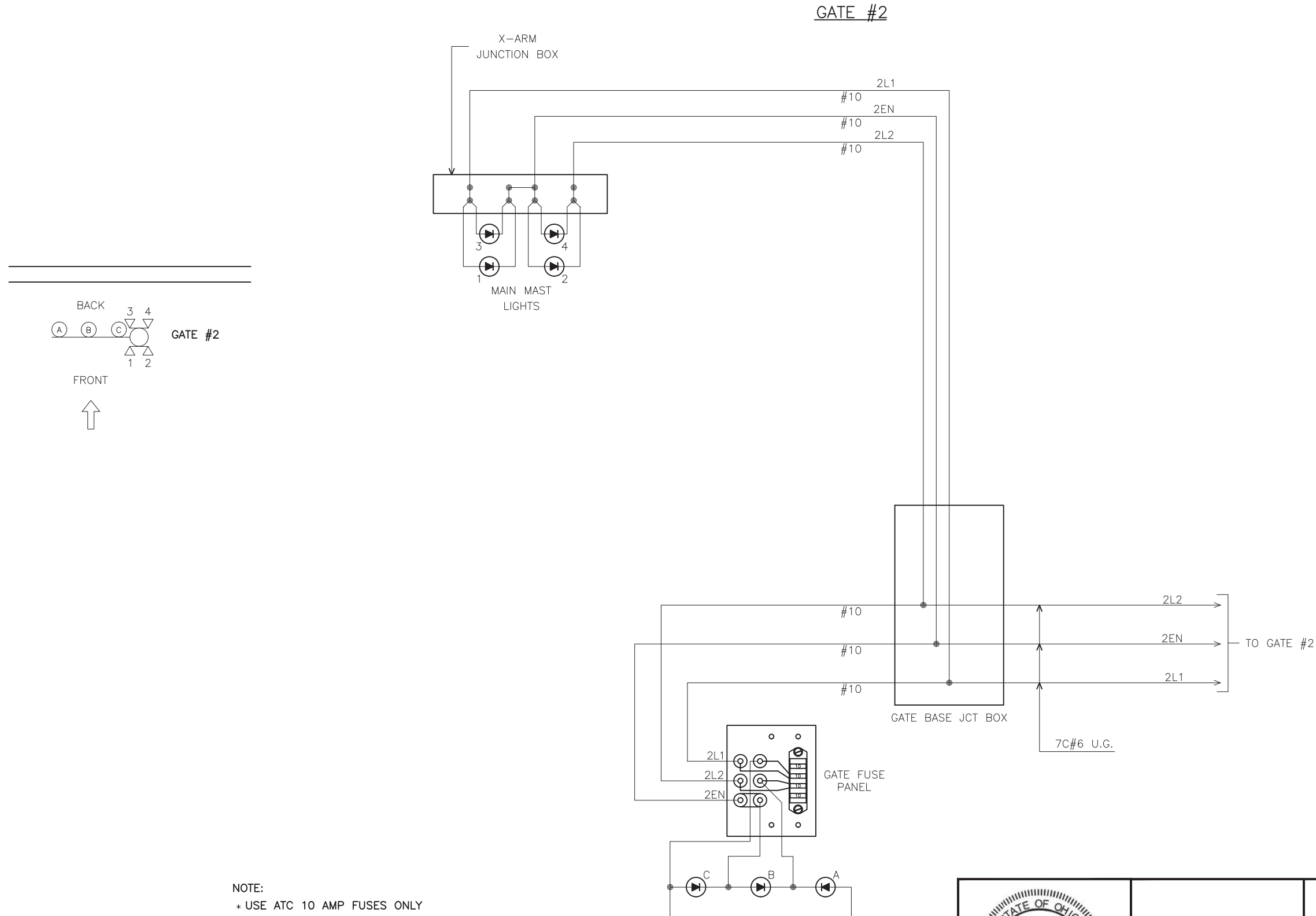
CHANGE FROM TYPICAL:



ABC
Railway

AKRON BARBERTON CLUSTER
RAILWAY

| | | |
|------------------------------------------------------|---------------------------------------|--------------------|
| LOCATION MAIN STREET (SR 94-2) WADSWORTH, OHIO | | |
| ORIGINAL DATE 1/31/2017 | TITLE GATE #2 MECHANISM (FAR SIDE) | CTC NO. CN18006 |
| DRAWN BY CTC | SUB WADSWORTH-RITTMAN | SCALE N.T.S. |
| CHECKER CTC | DOT NO. 265 076N | SHEET 13 of 20 |



NOTE:
* USE ATC 10 AMP FUSES ONLY

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

REVISION
BLOCK

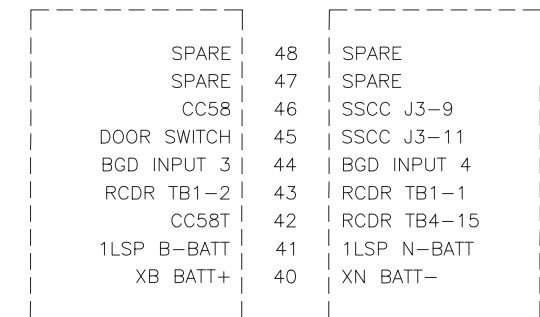
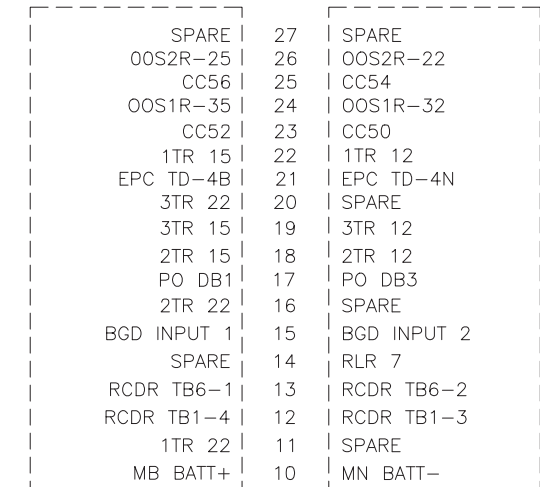
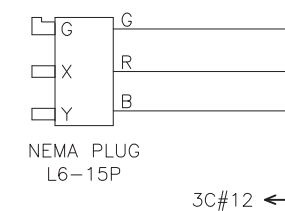
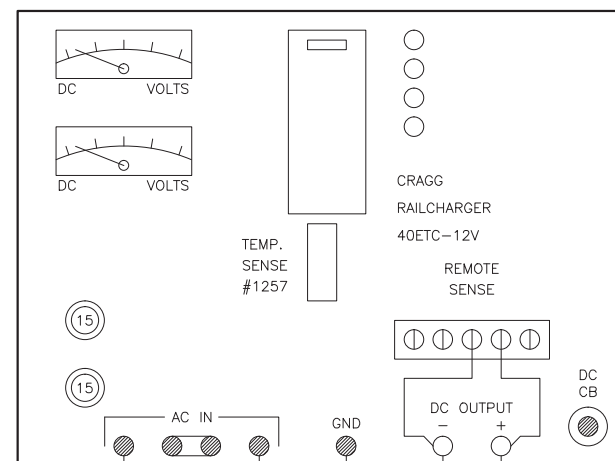
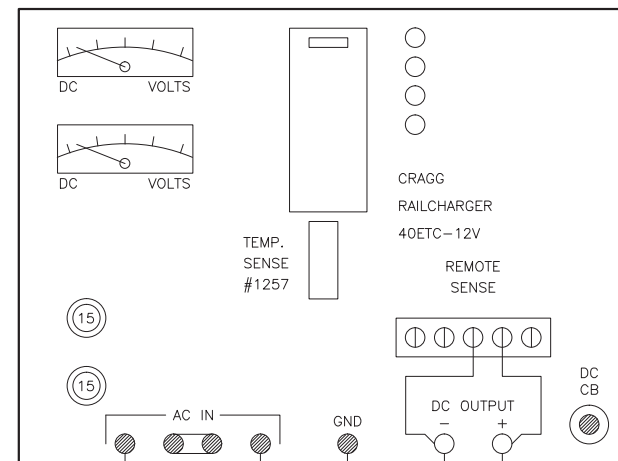
CHANGE FROM TYPICAL: Y



ABC
Railway

**AKRON BARBERTON CLUSTER
RAILWAY**

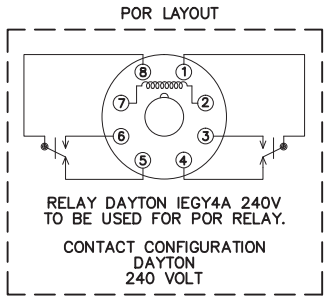
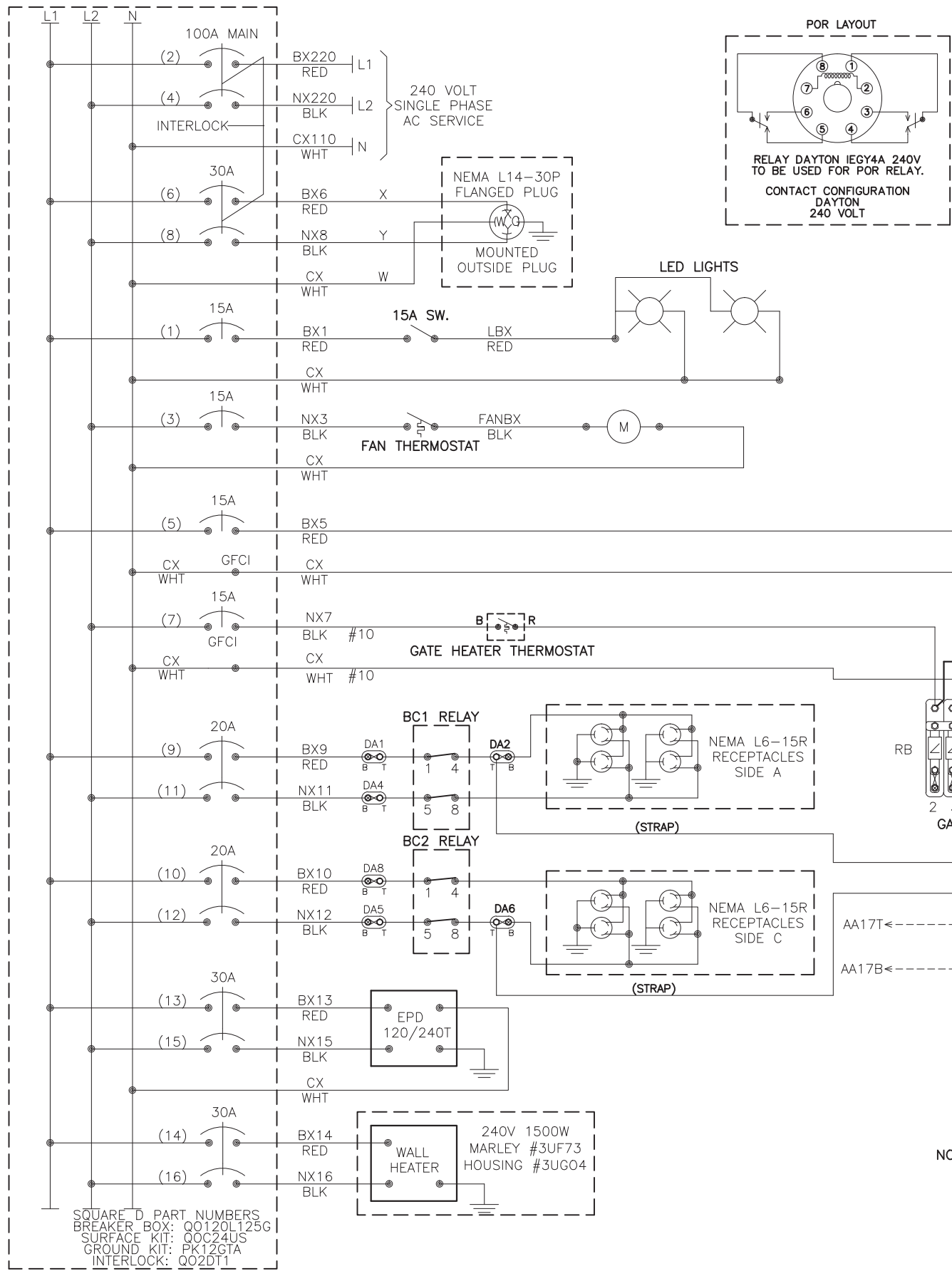
| | | | |
|---------------|-----------|------------------------------------------|---------------------------|
| LOCATION | | MAIN STREET (SR 94-2) WADSWORTH, OHIO | |
| ORIGINAL DATE | 1/31/2017 | TITLE | GATE #2 LIGHTS (FAR SIDE) |
| DESIGNER | CTC | SUB | WADSWORTH-RIITMAN |
| DRAFTSMAN | CTC | RRMP | 215.57 |
| CHECKER | CTC | DOT NO. | 265 076N |
| | | CTC NO. | CN18006 |
| | | SCALE | N.T.S. |
| | | SHEET | 14 of 20 |



| | | | |
|---------------|-----------|------------------------------------------|-------------------|
| LOCATION | | MAIN STREET (SR 94-2) WADSWORTH, OHIO | |
| ORIGINAL DATE | 1/31/2017 | TITLE | BATTERY CHARGERS |
| DESIGNER | CTC | SUB | WADSWORTH-RITTMAN |
| DRAFTSMAN | CTC | RRMP | 215.57 |
| CHECKER | CTC | DOT NO. | 265 076N |
| | | SCALE | 1"=2' |
| | | SHEET | 15 OF 20 |

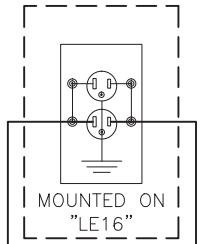
REVISION
BLOCK

CHANGE FROM TYPICAL: Y

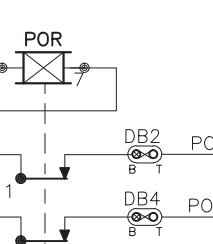


- NOTES:
- USE THE FOLLOWING COLOR CODE:
GRN - GREEN - SAFETY EQUIPMENT GROUND
WHT - WHITE - CX110 (NEUTRAL)
BLK - BLACK - NX220 (L2)
RED - RED - BX220 (L1)
EXCEPTIONS TO THE ABOVE COLOR CODE ARE THE PRE-WIRED, SEALED ARRESTOR UNITS MOUNTED ON THE BREAKER BOX WHICH HAVE TWO BLACK AND ONE WHITE WIRE EACH.
 - 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

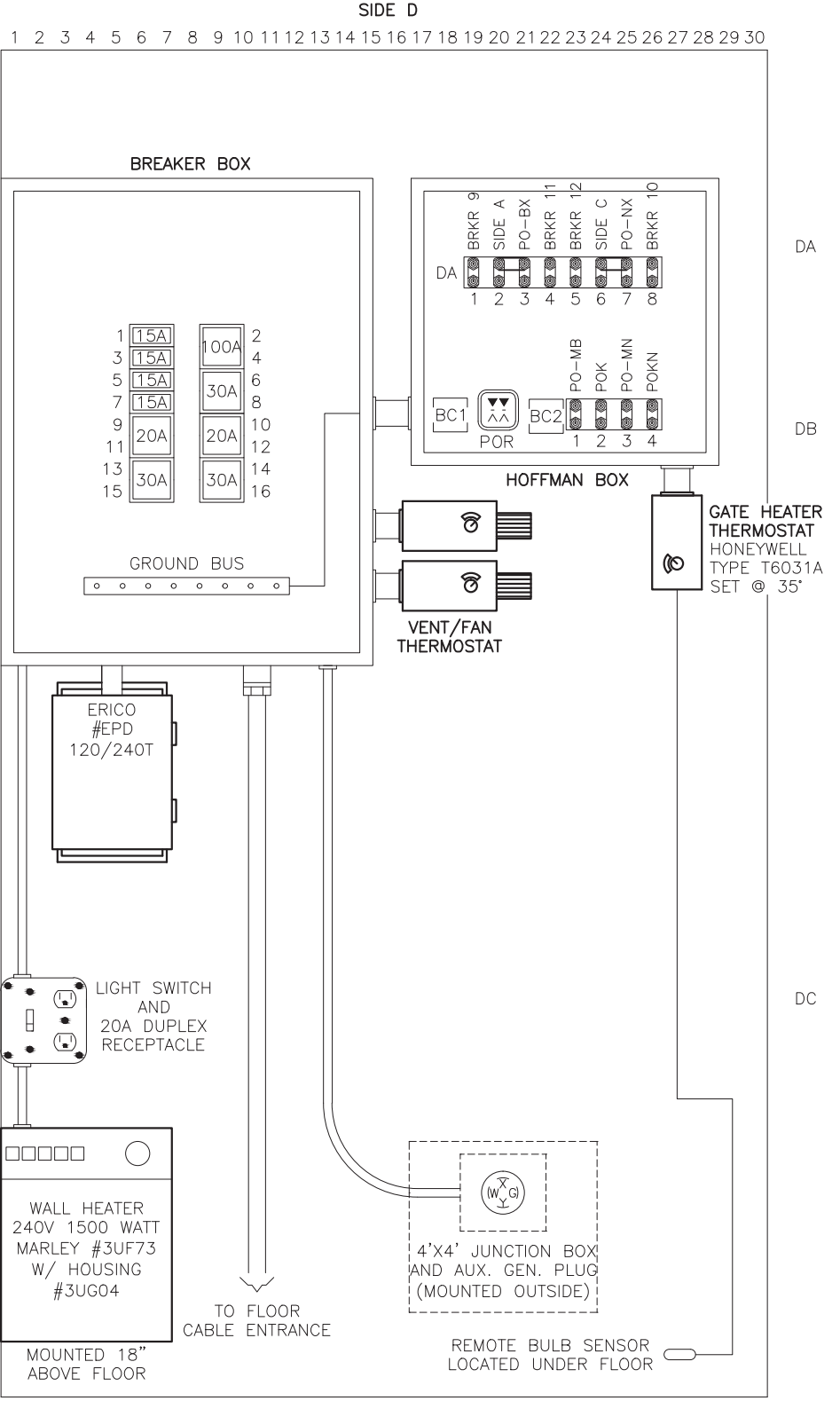
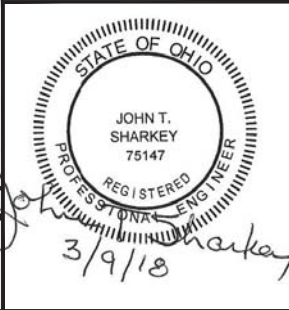
DUPLEX RECEPTACLES



DUPLEX RECEPTACLES

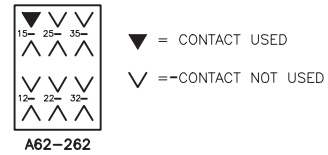
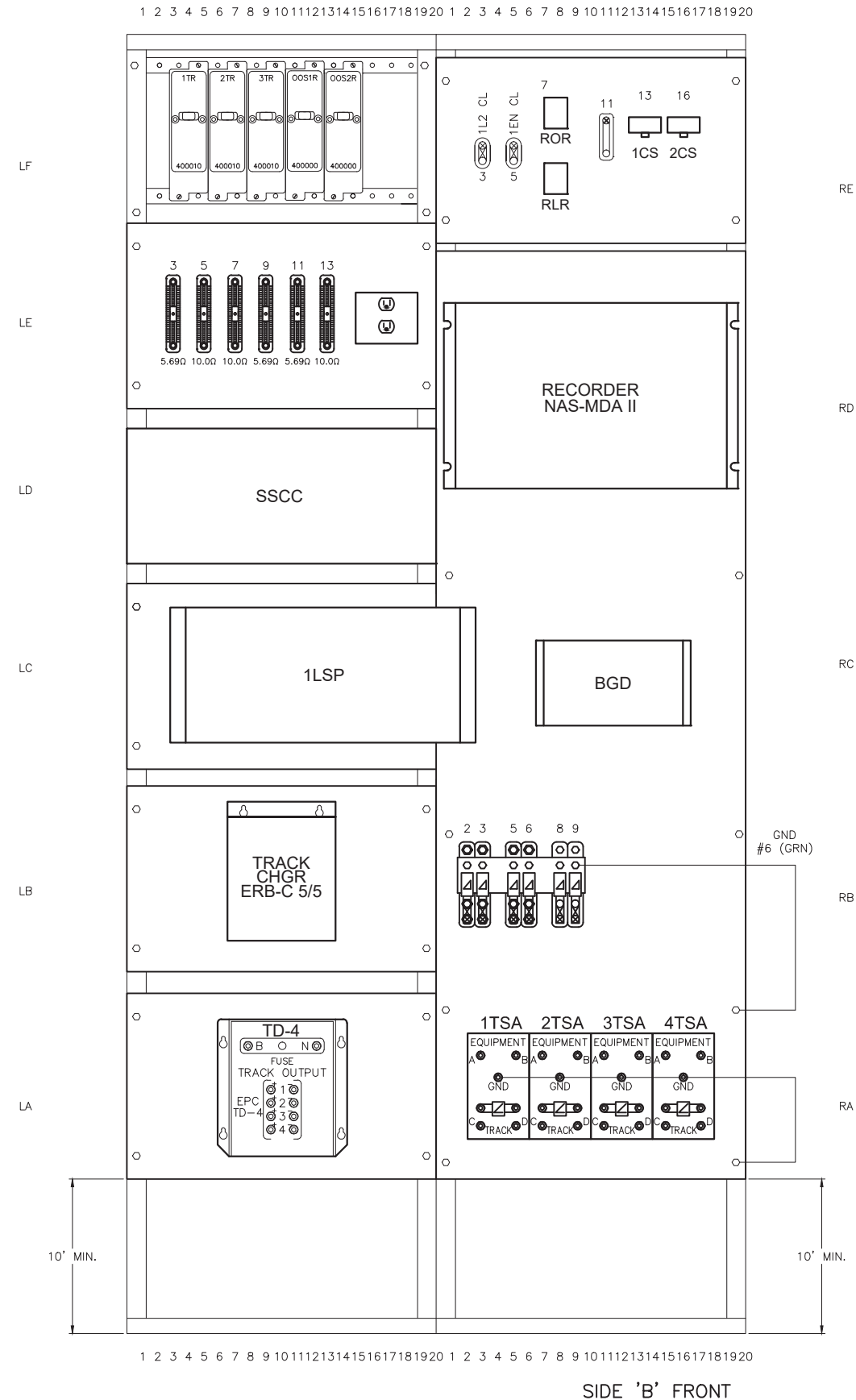


- NOTE:
- WHEN AC IS ON LED IS ON
 - WHEN AC IS OFF LED FLASHES UNTIL BATTERY IS DISCHARGED.
 - WHEN AC IS OFF AND BATTERY IS DISCHARGED LED IS OFF.



REVISION
BLOCK

| AKRON BARBERTON CLUSTER RAILWAY | | | |
|---------------------------------|-----------|------------------------------------------|-----------------------|
| LOCATION | | MAIN STREET (SR 94-2) WADSWORTH, OHIO | |
| ORIGINAL DATE | 1/31/2017 | TITLE | AC POWER DISTRIBUTION |
| DESIGNER | CTC | SUB | WADSWORTH-RITTMAN |
| DRAFTSMAN | CTC | RRMP | 215.57 |
| CHECKER | CTC | DOT NO. | 265 076N |
| | | SCALE | 1"=2' |
| | | SHEET | 16 of 20 |



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

SIDE 'B' FRONT

CHANGE FROM TYPICAL: Y

REVISION
BLOCK



ABC
Railway

**AKRON BARBERTON CLUSTER
RAILWAY**

| | | |
|------------------------------------------------------|--------------------------|--------------------|
| LOCATION MAIN STREET (SR 94-2) WADSWORTH, OHIO | | |
| ORIGINAL DATE 1/31/2017 | TITLE RACK FRONT VIEW | |
| DESIGNER CTC | SUB WADSWORTH-RITTMAN | CTC NO. CN18006 |
| DRAFTSMAN CTC | RRMP 215.57 | SCALE 1"=2' |
| CHECKER CTC | DOT NO. 265 076N | SHEET 17 of 20 |

BACK OF RIGHT SIDE

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

RFB

REB

RDB

RCB

RBB

RAB



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

BACK OF LEFT SIDE

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

LFB

LEB

LDB

LCB

LBB

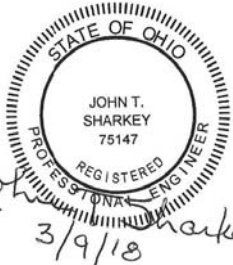
LAB

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

SIDE 'B' BACK

CHANGE FROM TYPICAL: Y

REVISION
BLOCK



ABC
Railway

AKRON BARBERTON CLUSTER
RAILWAY

| | | | |
|---------------|-----------|------------------------------------------|-------------------|
| LOCATION | | MAIN STREET (SR 94-2) WADSWORTH, OHIO | |
| ORIGINAL DATE | 1/31/2017 | TITLE | RACK BACK VIEW |
| DESIGNER | CTC | SUB | WADSWORTH-RITTMAN |
| DRAFTSMAN | CTC | RRMP | 215.57 |
| CHECKER | CTC | DOT NO. | 265 076N |
| | | CTC NO. | CN18006 |
| | | SCALE | 1"=2' |
| | | SHEET | 18 of 20 |

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



NEMA L6-15R
RECEPTACLE



NEMA L6-15R
RECEPTACLE

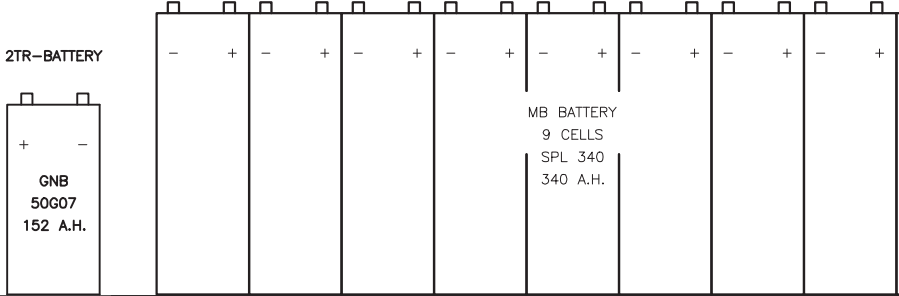
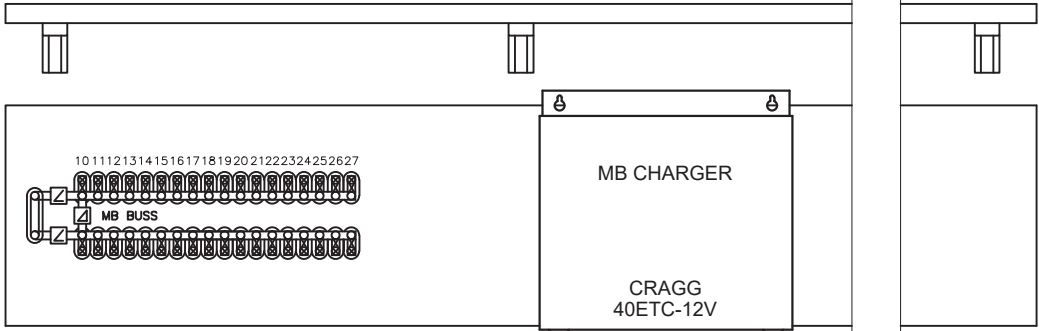
SIDE 'A'

AD

AC

AB

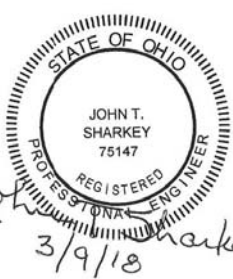
AA



BATTERY TRAY

CHANGE FROM TYPICAL: N

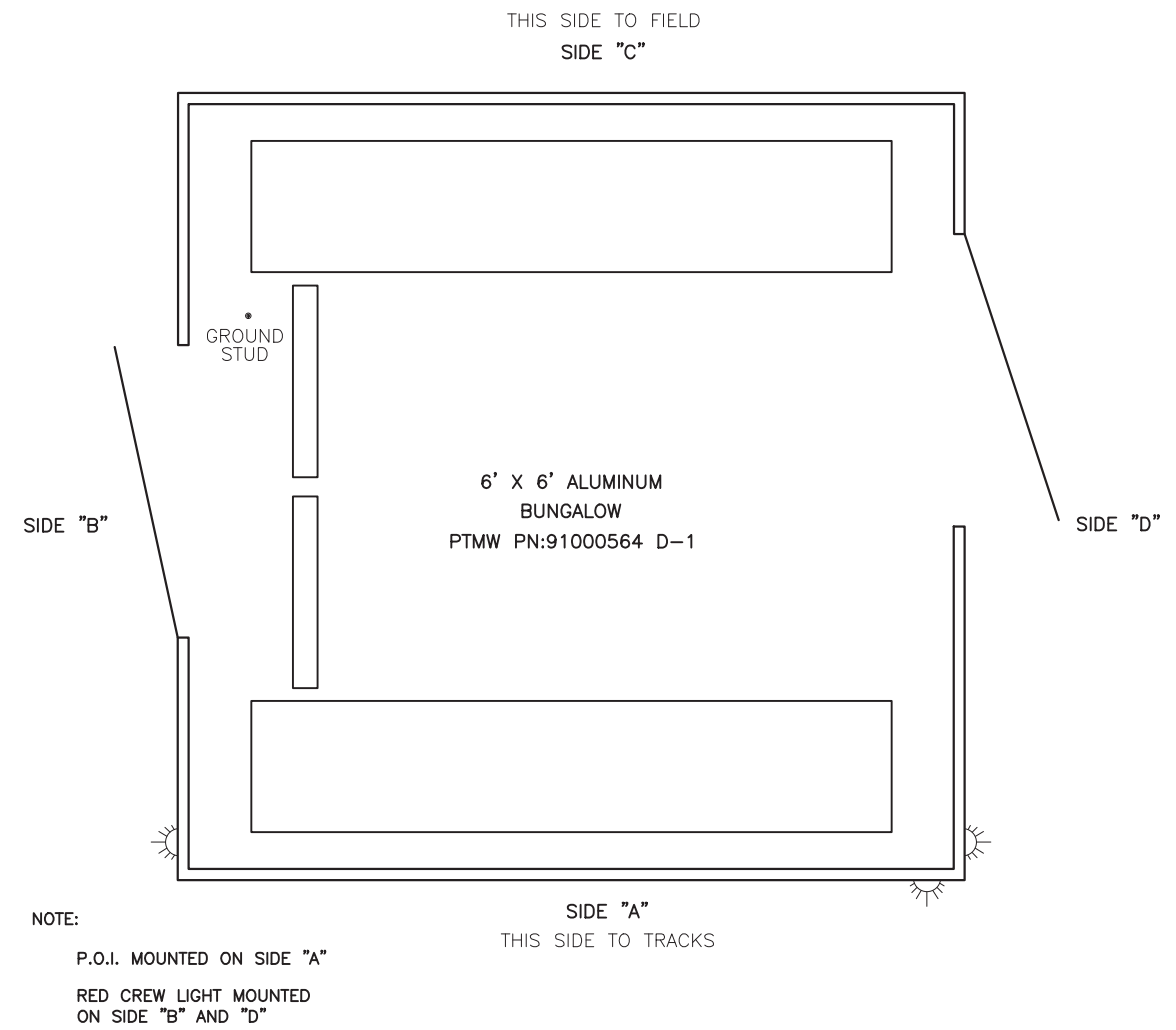
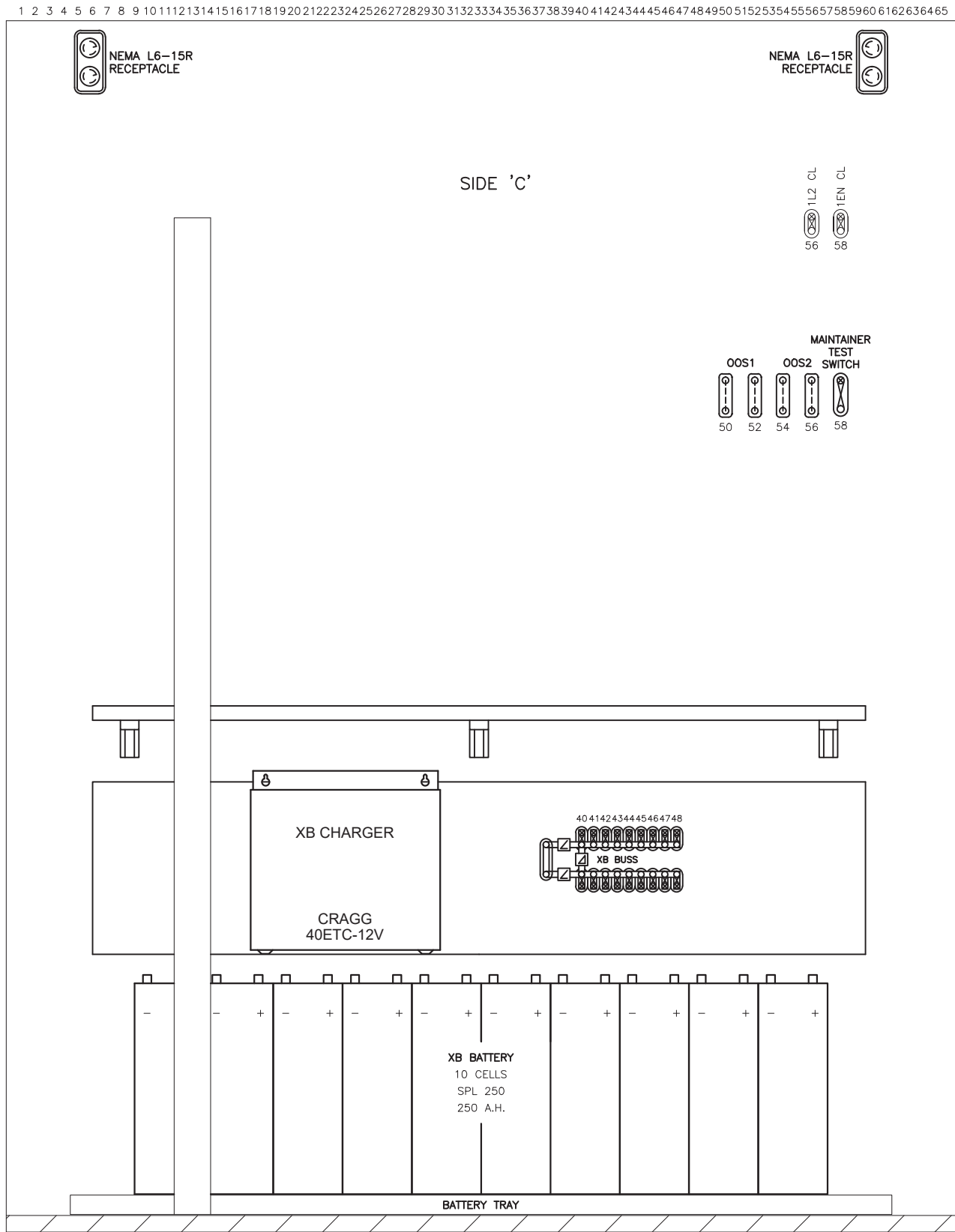
REVISION
BLOCK



ABC
Railway

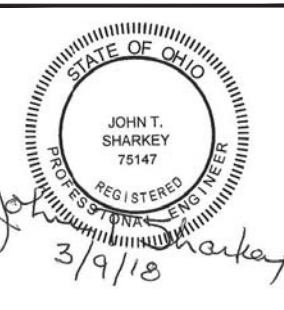
**AKRON BARBERTON CLUSTER
RAILWAY**

| | | | |
|---------------|-----------|------------------------------------------|-------------------|
| LOCATION | | MAIN STREET (SR 94-2) WADSWORTH, OHIO | |
| ORIGINAL DATE | 1/31/2017 | TITLE | SIDE "A" |
| DESIGNER | CTC | SUB | WADSWORTH-RITTMAN |
| DRAFTSMAN | CTC | RRMP | 215.57 |
| CHECKER | CTC | DOT NO. | 265 076N |
| | | CTC NO. | CN18006 |
| | | SCALE | 1"=2' |
| | | SHEET | 19 of 20 |



REVISION
BLOCK

CHANGE FROM TYPICAL: N



ABC
Railway

**AKRON BARBERTON CLUSTER
RAILWAY**

| | | | |
|------------------------------------------------------|-----------|---------|-------------------|
| LOCATION MAIN STREET (SR 94-2) WADSWORTH, OHIO | | | |
| ORIGINAL DATE | 1/31/2017 | TITLE | SIDE "C" |
| DESIGNER | CTC | SUB | WADSWORTH-RITTMAN |
| DRAFTSMAN | CTC | RRMP | 215.57 |
| CHECKER | CTC | DOT NO. | 265 076N |
| | | SCALE | 1"=2' |
| | | SHEET | 20 of 20 |

Akron Barberton Cluster Railway
Wadsworth, OH. - Main Street DOT # 365 076N
CTC Project Estimate

| ENGINEERING | | | | |
|----------------------------------------|------------|------------|-------------------|-------------------|
| <i>Description</i> | <i>Qty</i> | <i>UOM</i> | <i>Unit Price</i> | <i>Amount</i> |
| SR SIGNAL ENGINEER (PE STAMP) | 8 | HR | \$100.00 | \$800.00 |
| SIGNAL DESIGNER | 56 | HR | \$33.65 | \$1,884.40 |
| SIGNAL CHECKER, LEVEL 1 | 16 | HR | \$43.72 | \$699.52 |
| SIGNAL CHECKER, LEVEL 2/FIELD ENGINEER | 8 | HR | \$52.88 | \$423.04 |
| SUBTOTAL | | | | \$3,006.96 |
| G&A BURDEN FOR LABOR (164%) | | | | \$4,931.41 |
| FIXED FEE (10%) | | | | \$793.84 |
| ENGINEERING TOTAL | | | | \$8,732.21 |

| PROJECT MANAGEMENT | | | | |
|----------------------------------------|------------|------------|-------------------|--------------------|
| <i>Description</i> | <i>Qty</i> | <i>UOM</i> | <i>Unit Price</i> | <i>Amount</i> |
| PROJECT MANAGER | 40 | HR | \$36.06 | \$1,442.40 |
| CONSTRUCTION MANAGER | 40 | HR | \$39.61 | \$1,584.40 |
| ACCOUNTING | 8 | HR | \$40.86 | \$326.88 |
| ADMINISTRATIVE | 8 | HR | \$28.85 | \$230.80 |
| SUBTOTAL | | | | \$3,584.48 |
| G&A BURDEN FOR LABOR (164%) | | | | \$5,878.55 |
| FIXED FEE (10%) | | | | \$946.30 |
| PROJECT MANAGEMENT TOTAL | | | | \$10,409.33 |

| EAF LABOR | | | | |
|----------------------------------------|------------|------------|-------------------|-------------------|
| <i>Description</i> | <i>Qty</i> | <i>UOM</i> | <i>Unit Price</i> | <i>Amount</i> |
| EAF MANAGER | 16 | HR | \$28.85 | \$461.60 |
| EAF LEAD FORMAN | 32 | HR | \$20.19 | \$646.08 |
| LEAD WIREMAN | 56 | HR | \$19.25 | \$1,078.00 |
| TEST | 12 | HR | \$36.00 | \$432.00 |
| QC | 8 | HR | \$31.25 | \$250.00 |
| SUBTOTAL | | | | \$2,867.68 |
| G&A BURDEN FOR LABOR (164%) | | | | \$4,703.00 |
| FIXED FEE (10%) | | | | \$757.07 |
| EAF LABOR TOTAL | | | | \$8,327.74 |

| CONSTRUCTION LABOR | | | | |
|----------------------------------------|------------|------------|-------------------|--------------------|
| <i>Description</i> | <i>Qty</i> | <i>UOM</i> | <i>Unit Price</i> | <i>Amount</i> |
| SIGNAL FOREMAN | 80 | HR | \$31.25 | \$2,500.00 |
| SIGNALMAN | 80 | HR | \$28.50 | \$2,280.00 |
| SIGNAL HELPER | 160 | HR | \$21.00 | \$3,360.00 |
| SUBTOTAL | | | | \$8,140.00 |
| G&A BURDEN FOR LABOR (164%) | | | | \$13,349.60 |
| FIXED FEE (10%) | | | | \$2,148.96 |
| CONSTRUCTION LABOR TOTAL | | | | \$23,638.56 |

Akron Barberton Cluster Railway
Wadsworth, OH. - Main Street DOT # 365 076N
CTC Project Estimate

| TRAVEL EXPENSES | | | | |
|------------------------------------------|------------|------------|-------------------|-------------------|
| <i>Description</i> | <i>Qty</i> | <i>UOM</i> | <i>Unit Price</i> | <i>Amount</i> |
| EMPLOYEE MEALS (PER DIEM) | 32 | EA | \$35.00 | \$1,120.00 |
| EMPLOYEE LODGING | 32 | EA | \$75.00 | \$2,400.00 |
| MOBILIZATION | 1 | EA | \$1,500.00 | \$1,500.00 |
| CONSTRUCTION LABOR EXPENSES TOTAL | | | | \$5,020.00 |

| CONSTRUCTION EQUIPMENT | | | | |
|--------------------------------------|------------|------------|-------------------|-------------------|
| <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 | \$1,256.80 |
| TRAILER, UTILITY (12,000lb SC410) | 80 | HR | \$7.55 | \$604.00 |
| RENTAL EQUIPMENT (FORKLIFT - 8K) | 1 | WK | \$1,600.00 | \$1,600.00 |
| RENTAL EQUIPMENT (BACKHOE W/18" BKT) | 1 | WK | \$1,400.00 | \$1,400.00 |
| EQUIPMENT DELIVERY/PICKUP | 2 | LS | \$250.00 | \$500.00 |
| CONSTRUCTION EQUIPMENT TOTAL | | | | \$5,360.80 |

| MATERIAL | | | | |
|--------------------------------------|------------|------------|-------------------|--------------------|
| <i>Description</i> | <i>Qty</i> | <i>UOM</i> | <i>Unit Price</i> | <i>Amount</i> |
| HOUSE MATERIAL (SEE ATTACHED DETAIL) | 1 | LS | | \$42,981.83 |
| FIELD MATERIAL (SEE ATTACHED DETAIL) | 1 | LS | | \$35,855.87 |
| FILL DIRT | 15 | TN | \$25.89 | \$388.35 |
| COVER ROCK (3/4" CRUSHED - WHITE) | 25 | TN | \$26.50 | \$662.50 |
| FREIGHT & CONTAINER PRICE | 1 | LS | \$5,500.00 | \$5,500.00 |
| MATERIAL TOTAL | | | | \$85,388.55 |

| | |
|-------------------------------|---------------------|
| TOTAL PROJECT ESTIMATE | \$146,877.20 |
|-------------------------------|---------------------|

| HOUSE MATERIALS | | |
|-------------------------------------------------------------------------------------------|------------|------------|
| DESCRIPTION | QTY | UOM |
| Bungalow, Alum. 6 X6 w/Heater P/N 91000564 D-1, PTMW (WLE SPECS) | 1 | EA |
| Assembly Board, w/Hardware, P/N R66000139PH, PTMW | 5 | EA |
| Indicator, Horizontal, 1 Eye, Red LED, P/N LC-1EY-HGS-R, Velcorp Gems | 2 | EA |
| Wrench, AAR terminal - 11", P/N 032619-9X, Siemens | 2 | EA |
| Sensor, Hermetic Door Switch, P/N 70168986, Allied Electric | 2 | EA |
| Actuator, Hermetic Door Switch, P/N 70168991, Allied Electric | 1 | EA |
| Decal, Danger 240V (5"X3.5"), P/N 3XDU5, Grainger | 1 | EA |
| Decal, MUTCD Emergency Notification, 30"X18", Eagle Traffic | 1 | EA |
| Wire, Case, #16AWG 1000' spool, Blue, P/N 152-11-3002, Okonite | 0.5 | EA |
| Wire, Case, #10AWG 1000' spool, Blue, P/N 152-11-3038, Okonite | 0.5 | EA |
| Wire, Case, #6AWG, Green, P/N N6GNM, Reynolds | 100 | FT |
| Wire, Case, #6AWG, Black, P/N N6BM, Reynolds | 100 | FT |
| Wire, Case, #6AWG, Red, P/N N6RD, Reynolds | 100 | FT |
| MDA-II With Current Sensors DTMF Radio and GFD-Complete, P/N NAS-WLE, NAS | 1 | EA |
| MDSA-1X Surge arrestor panel, P/N 250204-100, Alstom | 1 | EA |
| LSP, w/Arrstors, P/N 9000-91170-0001, Siemens | 1 | EA |
| Track Driver, TD-4 AC/DC, P/N 800-081033-100, GE | 1 | EA |
| Arresor, Track Surge, P/N 250787-000, GE | 4 | EA |
| Controller, SSCC III Plus, 40 Amp, P/N 9000-91190-0101, Siemens | 1 | EA |
| Relay, 500 Ohm, 6PT, Nuetral relay, plug-in, P/N A62-0262, Alstom | 2 | EA |
| Relay, 4 Ohm, 6PT, Biased Nuetral, P/N A62-682, Alstom | 3 | EA |
| Plugboard, Kit (1E/3E test posts) P/N 59686-019-02, Alstom | 5 | EA |
| Wrench, 3E test tool, P/N P03-0320, Alstom | 1 | EA |
| Extractor Tool, Terminal clip, P/N 032619-25, Siemens | 1 | EA |
| Relay, 8-pin KRPA style, 10A/240VAC, P/N 70198711, Allied | 1 | EA |
| Relay, 8-pin KRPA style, 10A/12VDC, P/N 70199265, Allied | 4 | EA |
| Socket, 8-pin KRPA style, P/N 70199343, Allied | 5 | EA |
| Spring, Hold down for KRPA style relay, P/N 70198576, Allied | 5 | EA |
| Battery Charger, ETC-12V 40AMP, P/N 520740, Railway Equipment | 2 | EA |
| Track Charger, ERB-C 5/5, P/N 16615-10, NRS | 1 | EA |
| Battery, NiCad 340 A.H., P/N SPL-340, Saft | 9 | EA |
| Battery, NiCad 250 A.H., P/N SPL-250, Saft | 10 | EA |
| Battery, Absolyte GP, 152 A.H., P/N 1-50G07, Exide/GNB | 1 | EA |
| Terminal, Battery, 3-PT, P/N 225481-000, J&A Industries | 6 | EA |
| Battery Tray 12"x27", Holds (3) Batteries, P/N 027002-001, J&A | 4 | EA |
| Nema Plug, Locking, 15 Amp/240V, P/N L6-15P, Reynolds | 2 | EA |
| Power Indicator, 2 Eye/4 Wire, Wago connector, P/N LC2-001WB-WG4, Velcorp Gems | 1 | EA |
| SO Cord, 14 AWG/4 Conductor, P/N SJOOW-14-4-BLK-250R, Graybar | 100 | FT |
| Tie-wrap, 11 1/2", PKG 100, Black, P/N LTS11-0, Vantex | 1 | EA |
| Tie-wrap, mounting, PKG 100, P/N TYM, Vantex | 1 | EA |
| Loom, Spiral Wrap 100', Black, P/N SW38-0, Vantex | 1 | EA |
| Panduit, Wire Duct, 2"X3"X6' Gray, P/N G2X3LG6, Graybar | 3 | EA |
| Panduit, Cover, 6' Gray, P/N C2LG6, Graybar | 3 | EA |
| Terminal, 2X6 W/ Flat nut/washer, P/N 220-0101, Rebel | 10 | EA |
| Terminal, Block, 2 3/8" center - 2 post w/hardware, P/N 220-0301, Rebel | 8 | EA |
| Terminal, 4-post, Block Kit, w/ 14-24 AAR Hardware, P/N B2700A2C1WH, Erico | 6 | EA |
| RailSurge Plane Strip Busbar (36"), P/N B2700HC36, Erico | 1 | EA |
| Connector, Buss strap (1" - 36 holes), P/N 9A2216-36, L&W Industries | 5 | EA |
| Connector, 1", flat, strap style, P/N 220-0501, Rebel | 10 | EA |
| Arrestor, Air Gap, With Cover, P/N 4000-44585-001X, Siemens | 10 | EA |
| Equalizer, Air Gap, with Cover/Hardware, P/N 4000-44700-001X, Siemens | 2 | EA |
| Binding Nut, P/N 13073-000, Rebel | 200 | EA |
| Clamp Nut, P/N 13079-000, Rebel | 200 | EA |
| Insulated Nut, 1 3/16", P/N 023408-1X, Safetran | 28 | EA |
| Washer, P/N 013074-000, Rebel | 200 | EA |
| Gold Test Nut, P/N 13296-001, Rebel | 100 | EA |
| 1' Test Link, Flat, P/N 32257-002, Rebel | 100 | EA |
| Terminal Ring, HD, 1/4", insulated, #14 - #16 (yellow w/blk stripe), P/N NC-10HDB, Vantex | 100 | EA |
| Terminal, Ring, 1/4" non-insulated, #6, Battery Lug, P/N T6-14, Vantex | 15 | EA |

| FIELD MATERIALS | | |
|-------------------------------------------------------------------------------|------------|------------|
| DESCRIPTION | QTY | UOM |
| Cable, 7/C#6, Armored, 206-11-6247, Okonite | 250 | FT |
| Cable, 7C#14, Armored, 206-11-6887, Okonite | 250 | FT |
| Cable, 3C#6, Armored, #206-11-6243, Okonite | 150 | FT |
| Wire, Track, 2C/#6, Twist, Solid, 113-12-3933, Okonite | 400 | FT |
| Bootleg Kit, Crossing complete, Wood, 1 Track, CTC Inc. | 2 | EA |
| Bond Wire, 7 1/2" XS Style, P/N SBS24883, Erico | 100 | EA |
| Connector, Track, Web of Rail, P/N SBTBBU4A, Erico | 100 | EA |
| Wheel, grinding, P/N SB22122, Erico | 4 | EA |
| Bondstrand, 3/16" Black, 500' Spool, P/N SBS8LINSUL, Erico | 0.5 | EA |
| 5/8" X 8' Copper Ground Rod P/N 615880, Erico | 6 | EA |
| 5/8" Ground Rod Weld, P/N SBNT1161G, Erico | 6 | EA |
| Wire, Ground, #6AWG, Bare Copper, Graybar | 60 | FT |
| Ring 10, Track Diode, P/N 800-004080-001, GE | 1 | EA |
| Mast, Gate, 18'X5" w/pigtail (single-sided Jct Box), P/N 715-324-2-GS, WCH | 2 | EA |
| Jct box, Gate, 5" single hole w/24 terminals, P/N 2149-A-139, WCH | 2 | EA |
| Pinnacle, 5", P/N 010-9034, Rebel | 1 | EA |
| Gate, Model 3597, P/N 3597-131-P-H-M1 (WLE Spec), WCH | 2 | EA |
| Crossarm Assy, 5" Mtg., 2 Way, P/N 975-0804-5, WCH | 2 | EA |
| Lights, 12" LED, P/N 433121680XLTC-00, Arms | 8 | EA |
| Counterweight Package, P/N 070755-18X, Siemens | 2 | EA |
| Sign, Crossbuck, No brackets/hardware, P/N 070-0065, Rebel Railway | 2 | EA |
| 5" Sign Kit, Brackets/extensions/Ubolts/hardware, P/N 070-5008, Rebel Railway | 4 | EA |
| Wind Bracket, 36", Tusk style, P/N 2010-001-01, RDG | 2 | EA |
| Bell, Electronic, 5" Base, P/N EB-3-360-5, GSI | 2 | EA |
| Gate Keeper, 2-Way, w/Hardware & Buffer Spring, P/N SK-1000-2W, GSI | 2 | EA |
| E-Z Gate (Vertical stripe) LED gate w/lamp kit, P/N 9298-6154, Railway Equip | 2 | EA |
| Sleeve, 4' Aluminum, P/N 92958, Railway Equipment | 2 | EA |
| Wrench, Torque (KIT), P/N 2590-K-9, WCH | 1 | EA |
| Sign, Emergency, ENS, 15"X9" Blue, Eagle Traffic | 2 | EA |
| Field cable Tag Kit, P/N FLDTGKT, CTC Inc. | 1 | EA |
| Schedule 40 2" & 4" PVC Conduit Kit with Elbows | 1 | LOT |
| Duct seal, 5lb, P/N 31-605, Graybar | 3 | EA |
| Lock, Barrel Style | 4 | EA |

Wintrow Construction Corp.

673 Norton Ave. Barberton, Ohio 44203

Tele: (330) 753-2983

6/6/2018

ABC Railway

Various Locations

Insulated Joints Installation - Proposal

Attn: Andrew R. Shuster Phone: 330-813-6133 Email: ashuster@abcrwy.com

Wintrow Construction Corp. will provide all supervision, labor, equipment, and specified materials to complete the following described work:

Main St., Wadsworth, Ohio

1. Furnish and install 8-Insulated joints for crossing signal project
New Alleghany glue joints will be furnished-39' overall length
Insulated joints will be bolted in place
Location of joints to be marked by others

Total: **\$31,825**
Labor/Equip: \$12,931
Materials: \$18,894
Deduct: **(\$1,971)**

If new Alleghany joint made from relay rail is acceptable

Medina Line Rd., Norton, Ohio

1. Furnish and install 8-Insulated joints for crossing signal project
New Alleghany glue joints will be furnished-39' overall length
Insulated joints will be bolted in place
Location of joints to be marked by others

Total: **\$30,544**
Labor/Equip: \$11,650
Materials: \$18,894
Deduct: **(\$1,971)**

If new Alleghany joint made from relay rail is acceptable

Main St., Kent, Ohio

1. Furnish and install 1-Insulated joints in curve closure rail in turnout south of road
New Alleghany glue joint will be furnished-39' overall length
Insulated joint will be bolted in place
Location of joint to be marked by others

Total: **\$4,315**
Labor/Equip: **\$1,649**
Materials: **\$2,666**
Deduct: **(\$246)**

If new Alleghany joint made from relay rail is acceptable

Wintrow Construction Corp.

673 Norton Ave. Barberton, Ohio 44203

Tele: (330) 753-2983

6/6/2018

ABC Railway

Various Locations

Insulated Joints Installation - Proposal

Contingencies/Notes

Sales Taxes Not included in Quotation

No Warranty or Guarantees are apart of this proposal

Payment: Net 30 Days. Late payment charge of 1 1/2% (18% annum) will be charged on all past due balances.

We are not responsible for repair or relocation of Under Ground Utilities

Weather conditions prevail and may affect the construction schedule.

Track must be free of rail cars and rail traffic.

ONE Mobilization is included in the quotation.

All work is at straight time labor rates unless specified otherwise in the quotation

Work description and material specifications haven't as yet been approved by the railroad

Engineering, plans and layout survey by others.

Material Subject to Pryor Sale

Progress payments are to be paid by the 15th of the month.

No costs for possible flagman services is included

Costs include continuous work windows with no train delays

No destressing of rails is included-Rail temperature is assumed to be within rage when installation is scheduled

****No wiring or bonding is included in pricing****

Crosier Industrial Construction Ltd

8938 Peck Rd
Ravenna, Ohio 44266
Ph (330) 592-3082
trailnrbob@hotmail.com

Crosier Industrial Construction, LLC
Project Cost Estimate
Project: Main St. Wadsworth 265-076N

Date 13-Feb-18
Invoice Number TBD
Shuster/Shanklin - ABC

| LABOR | | Rate/Hr | Hours | sub-total | |
|-----------------------------------------|--|------------------------|------------|---------------------|---------------------|
| Equipment Operator (backhoe, excavator) | | \$25.00 | 96 | \$2,400.00 | |
| Laborer, skilled | | \$18.00 | 96 | \$ 1,728.00 | |
| Project Manager | | \$50.00 | 96 | \$ 4,800.00 | |
| Administrative | | \$30.00 | 2 | \$ 60.00 | |
| | | Sub-Total | | \$ 8,988.00 | |
| | | G&A Burden for Labor | | 5,392.80 | |
| | | Total Labor | | \$ 14,380.80 | |
| EQUIPMENT | | Quantity | rate/hr | Hours | Total |
| Excavator, Bobcat E32 (331) | | \$ 31.20 | | 12 | \$ 374.40 |
| E55 | | \$ 40.20 | | 80 | \$ 3,216.00 |
| Dump Truck | | \$ 40.00 | | 20 | \$ 800.00 |
| Directional Drill | | \$ 59.62 | | 12 | \$ 715.44 |
| Truck, equipment | | \$ 21.35 | | 96 | \$ 2,049.60 |
| HydroTamp | | \$ 17.05 | | 12 | \$ 204.60 |
| Traffic Cones | | \$ 0.13 | | 96 | \$ 12.48 |
| Traffic Signs | | \$ 0.23 | | 96 | \$ 22.08 |
| Tamper | | \$ 4.25 | | 6 | \$ 25.50 |
| Digger Derrick | | \$ 55.20 | | 4 | \$ 220.80 |
| | | Total Equipment | | | \$ 7,640.90 |
| MATERIALS | | Quantity | Price/Each | Total | |
| 5" pvc conduit | | 150 | \$ 2.86 | \$ | 429.00 |
| 5" 90 degree | | 3 | \$ 20.10 | \$ | 60.30 |
| 5" coup | | 6 | \$ 4.98 | \$ | 29.88 |
| 4" pvc conduit | | 50 | \$ 2.18 | \$ | 109.00 |
| 4" sweeps | | 3 | \$ 23.50 | \$ | 70.50 |
| 4" 90 degree | | 1 | \$ 11.50 | \$ | 11.50 |
| 4" 45 degree | | 2 | \$ 11.50 | \$ | 23.00 |
| 4" coup | | 12 | \$ 2.10 | \$ | 25.20 |
| 3" pvc conduit | | 45 | \$ 1.72 | \$ | 77.40 |
| 3" sweeps | | 2 | \$ 21.10 | \$ | 42.20 |
| 3" coup | | 4 | \$ 1.45 | \$ | 5.80 |
| 2" pvc conduit | | 50 | \$ 0.94 | \$ | 47.00 |
| 2" sweeps | | 1 | \$ 17.95 | \$ | 17.95 |
| 2" 45 degree | | 2 | \$ 1.95 | \$ | 3.90 |
| Pull Rope | | 325 | \$ 0.13 | \$ | 42.25 |
| Ground rods | | 2 | \$ 17.25 | \$ | 34.50 |
| Cement | | 1 | \$ 8.50 | \$ | 8.50 |
| Pull Box | | 2 | \$ 315.00 | \$ | 630.00 |
| Gravel | | 50 | \$ 25.00 | \$ | 1,250.00 |
| | | Material Total | | | \$ 2,917.88 |
| | | Job Sub-Total | | | \$ 24,939.55 |
| | | Profit Addition | 10% | | \$ 2,493.96 |
| | | Concrete curbs: | | | \$ 3,000.00 |
| | | Asphalt work: | | | \$ 4,500.00 |
| | | TOTAL PROJECT ESTIMATE | | | \$ 34,933.51 |

Day 1: Bore road and place 5" conduit

Day 2: Excavate and place near foundation and conduit to pull box location. Place AC pole and conduit. Backfill and tamp.

Day 3: Excavate and place far foundation and conduit to pull box. Excavate and place far track wire conduit. Install far pullbox.

Day 4: Excavate and pour curbs. Excavate and install bore conduit to bungalow pull box. Backfill/tamp.

Day 5: Backfill behind curbs. Install bungalow pull box. Install near track wire conduit. Backfill/tamp. Install pull rope.

Day 6: Spread and tamp gravel. Grade area to be paved. Install ground rods.

Day 7: Pave areas with asphalt.

Day 8: Spread gravel and tamp. Finish grade.

Duties Performed throughout the project:

- * Coordinate delivery of fill material
- * Coordinate curb and sidewalk construction
- * Transport foundations, conduit, pull box to site
- * Remove spoils and debris
- * Supply and erect traffic control devices for work zone safety
- * Call Ohio Utility Protection Service as required by Ohio Law
- * Establish Railroad Roadway Worker Protection daily to comply with Federal Regulation

Terms for Invoices are Net 30 days. Thank you.

This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

6/3/2019 11:28:44 AM

in

Case No(s). 19-0423-RR-STP

Summary: Memorandum In the Matter of a Request for Upgrades at Akron Barberton Cluster Railway Crossings in Medina County and Portage County, Ohio. electronically filed by Mrs. Jill A Henry on behalf of PUCO/Rail Division