



Ms Susan Kirkland

Ohio Rail Development Commission

1980 West Broad St

Columbus, Oh 43223

Mr Chris Layman

Ohio Central Rail System

47849 Papermill Rd

Coshocton, Oh 43812

Mr David Slatzer

ODOT District 5

9600 Jacksontown Rd

Jacksontown, Oh 43030

Mr Brian Morehead

Engineering Department

40 W Main St

Newark, Oh 43055

AEP Legal Department

1 Riverside Plaza

Columbus, Oh 43215

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

**TO:** George Martin, Planner, Railroad Division, PUCO

**FROM:** Susan Kirkland, Manager, Safety Section, ORDC

**BY:** Tod Darfus, Safety Section, ORDC

**SUBJECT:** Licking County, Columbus & Ohio River Railroad,  
Waterworks Road, AAR DOT# 152005D



**DATE:** June 14, 2010

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The Ohio Rail Development Commission (ORDC) established a diagnostic review on behalf of the City of Newark and the Ohio Department of Transportation District #5 at the subject location on November 22, 2008. The Public Utilities Commission of Ohio (PUCO) attended the review. A copy of the diagnostic review form is attached.

As a result of the diagnostic team findings, a warning device project will be progressed in conjunction with a City of Newark highway realignment project. The project will also involve traffic signals at Deo Drive and will require traffic signal preemption. The railroad warning device portion of the project will be funded with local funds flowing through the Ohio Department of Transportation, District #5 and the project will be administered by ORDC.

The improvements required for this crossing are flashing lights and roadway gates. The advanced preemption of traffic signals will proceed in accordance with the new preemption standard published in the current edition of the Traffic Engineering Manual (TEM). Timing requirements for the traffic signal preemption are attached. Please have copies of the timing requirements and the diagnostic review form added to the PUCO formal docket and distribute copies of the forms to the ~~JOER~~ with the PUCO Order.

*CHCR*

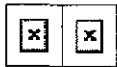
Because construction of the relocated crossing will take place this summer, we request PUCO issue a nine month Order for the project outlined above. The ORDC understands that the railroad has worked closely with ODOT, the City of Newark and Trucco Construction on the progression of the highway project. On April 2, 2010 a pre-construction meeting took place in which the C&ORR reported that as soon as markings are placed the railroad would begin to bury conduit and place foundations.

This construction authorization is made with the stipulation and understanding that any field work needs prior approval before the work begins. This authorization is made with the stipulation and understanding that an approved estimate may contain entries for items or activities that may be cited and found to be ineligible for federal participation during the project audit.

Thank you for your assistance with these matters.

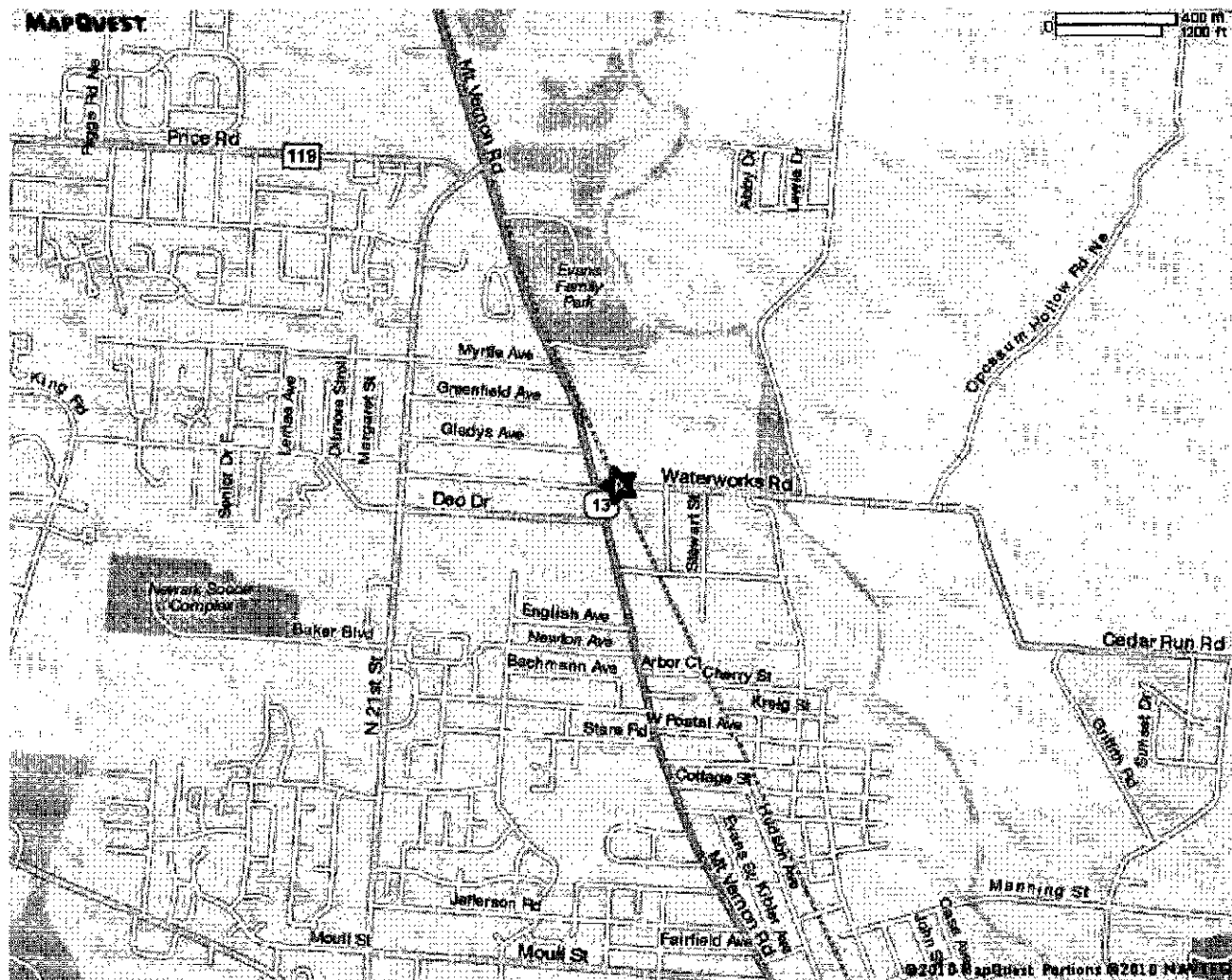
**Attachments (2): Diagnostic Review, Railroad Configuration and Timing Requirements.**

- c:     Numan Babieh, ODOT District 5
- Brian Bosch, ODOT District 5
- Dave Slatzer, ODOT District 5
- Dan Birrell, Ohio Central Railroad
- T. Darfus (file)

**MAPQUEST.**

Sorry! When printing directly from the browser your directions or map may not print correctly. For best results, try clicking the Printer-Friendly button.

★ Latitude: 40.0873576  
Longitude: -82.417615  
Newark, OH 43055



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## Diagnostic Review Team Survey

Date: 11-22-08

### Location Data

Street or Road Name:

Water Works

Route/Road Number

(i.e. Twp., Co., SR or US)

(include SLN if State or US route)

AAR-DOT No.:

152 005 D

County:

Licking

Township:

City:  
(In or Near)

Newark

Railroad

Name:

Ohio Central

Railroad

Division:

Branch/Line

Name:

Mt Vernon Sub

Nearest RR

Timetable Station:

RR Milepost:

### On-Site Review Team

(Include: Name - Organization - Phone Number)

- 1.
2. GEORGE MARTIN PUCO 614-752-9107 GEORGE.MARTIN@PUC.STATE.OH.US
3. GARY GREGORY C&E Eng 740 295 4120 GREGORY@GWRP.COM
4. Randy Combs ODOT 740-323-5188 Randy.Combs@dot.state.oh.us
5. BRYAN PARSELL DLZ 614.828.0040 BPARSELL@DLZ.COM
6. DAVE SLATZER ODOT 740-323-5117 dslatzer@dot.state.oh.us
7. Brian Monahan City of Newark 740-670-7725 bmonahan@newarkohio.net
8. JOHN B. CORNUS OHIO CENTRAL RR SYSTEM 740/622-8092 JCORNUS@GWRP.COM
9. DAN BIRNELL " " 295 4122 dbirnell " "

### Existing Traffic Control Devices

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

| Safety Data (Obtain crash reports, if possible, prior to review)   |  |  |
|--|--|--|
|  | Initial Information (from database)                      | Revised  |
| Number & dates of crashes in previous 5 years  | None   | None   |
| Hazard Ranking   | Date Run:  |  |
| Railroad Data  |  |  |
| Railroad Characteristics   | Initial Information (from database)                      | Revised  |
| Total trains per day   | 2  | 2  |
| < 1 per day  |  |  |
| Day thru trains  | 2  | 2  |
| Night thru trains  | 0  | 0  |
| Daytime switching movements  | 0  | 0  |
| Nighttime switching movements  | 0  | 0  |
| Total number of tracks   | 1  | 1  |
| Number of main tracks  | 1  | 1  |
| Number of other tracks   | 0  | 0  |
| Maximum train speed  |  |  |
| Typical train speed  |  |  |
| Amtrak   | No   | No   |
| If non-gated crossing, is clearing sight distance adequate in all quadrants? (See Table 1) <input type="checkbox"/> Yes <input type="checkbox"/> No                  |  |  |
| If multiple tracks, can two trains occupy crossing at the same time? <input type="checkbox"/> Yes <input type="checkbox"/> No  |  |  |
| Can one train block the motorists' view of another train at crossing? <input type="checkbox"/> Yes (Explain below) <input type="checkbox"/> No                       |  |  |
| Are there other track(s) crossing this same roadway within 100 ft of this crossing? <input type="checkbox"/> Yes <input type="checkbox"/> No                         |  |  |
| If yes, Crossing DOT # (if different) _____  |  |  |
| If yes, distance _____ (take measurement between track centerlines at closest point along roadway)   |  |  |
| Roadway Data   |  |  |
| Local Highway Authority: City of Newark  |  |  |
| Roadway Characteristics  | Initial Information (from database)                      | Revised  |
| Average daily traffic  |  |  |
| Highway paved  | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Roadway Surface: <input checked="" type="checkbox"/> Blacktop <input type="checkbox"/> Gravel <input type="checkbox"/> Concrete <input type="checkbox"/> Other _____ |  |  |
| Roadway width: 30 ft.  |  |  |
| Number of highway lanes  | 2  | 2  |
| Urban or Rural   | Urban  | Urban  |
| Vehicle Speed: 35 MPH  |  |  |
| School Bus Operation: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes _____ Amount   |  |  |
| Hazardous Materials Trucks: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes _____ Amount   |  |  |
| Shoulders: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes   |  |  |
| Is the shoulder surfaced? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes  |  |  |
| Is there existing guardrail along roadway in crossing vicinity? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes                                  |  |  |
| Is stopping site distance adequate? (See Table 2) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If no, deficient approach(es) _____            |  |  |

|   |   |
|---|---|
| Quadrant _____ Curb and Gutter:<br><input type="checkbox"/> Functional (Curb height = 4" or more)<br><input type="checkbox"/> Non-functional (Curb height = Less than 4")<br><input checked="" type="checkbox"/> None | Quadrant _____ Curb and Gutter:<br><input type="checkbox"/> Functional (Curb height = 4" or more)<br><input type="checkbox"/> Non-functional (Curb height = Less than 4")<br><input checked="" type="checkbox"/> None |
| Pedestrians: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes  |   |
| Is sidewalk present? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes  |   |
| Is there a nearby intersection that could cause queuing over the crossing? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes<br>If yes,<br>Distance _____   |   |
| Is this intersection signalized? <input type="checkbox"/> No <input type="checkbox"/> Yes   |   |
| Are the signals currently interconnected with the existing crossing warning devices? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes  |   |
| Is it the consensus of the Diagnostic Review Team that this is a potential closure project? <input type="checkbox"/> No <input type="checkbox"/> Yes<br>Explain reasons:  |   |

### Type of Development

|   |  |  |
|---|--|--|
| <input type="checkbox"/> Open Space<br><input type="checkbox"/> Industrial<br><input checked="" type="checkbox"/> Residential | <input type="checkbox"/> Institutional<br><input checked="" type="checkbox"/> Commercial | Location of nearby schools:<br><div style="font-size: 1.2em; margin-top: 10px;">1/2 mile</div> |
|---|--|--|

### Utility Information

|  |                    |
|--|--------------------|
| Is commercial power available? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes                               |                    |
| Utility Provider (Company Name) <u>AEP</u>   | Phone Number _____ |
| Nearest Available Power Source <u>10'</u>  |                    |
| What other utilities are present? _____  |                    |
| Is there potential utility conflict(s) <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown |                    |

### Diagnostic Team Recommendations

|  | Quadrants Needed  |
|--|---|
| <input checked="" type="checkbox"/> Install/upgrade active devices   |   |
| <input checked="" type="checkbox"/> Automatic Flashing Lights (AFLS) | This L&G will be interconnected to the traffic control device @ SR 13 and Deo drive |
| <input type="checkbox"/> AFLS / Cants                                |   |
| <input checked="" type="checkbox"/> AFLS / Gates                     |   |
| <input type="checkbox"/> AFLS / Gates / Cants                        |   |
| <input type="checkbox"/> Upgrade circuitry                           |   |
| <input type="checkbox"/> Sidelights                                  |   |
| <input type="checkbox"/> Guardrail Needed                            |   |
| <input type="checkbox"/> Install/Replace curb                        |   |
| <input type="checkbox"/> Other (define)                              |   |

|   |  |
|---|--|
| Comments: <u>This is a new realignment of Deo Drive &amp; St Rt 13</u><br><u>New lights and Gates plus surface will be installed @ location</u>                             |  |
| <input checked="" type="checkbox"/> Install/upgrade traffic signal preemption<br><input type="checkbox"/> No improvements needed<br><input type="checkbox"/> Other (define) |  |



# Field Dimensions

Sidewalk

Parkway

Roadway

Roadway

Parkway

Sidewalk

Show North  
Direction

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

Measurements by: \_\_\_\_\_

## Field Sketch

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

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

TABLE 1

## Clearing Sight Distances

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

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

## Notes:

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

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

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

Table 2

## Stopping Sight Distances

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

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

## Notes:

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

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

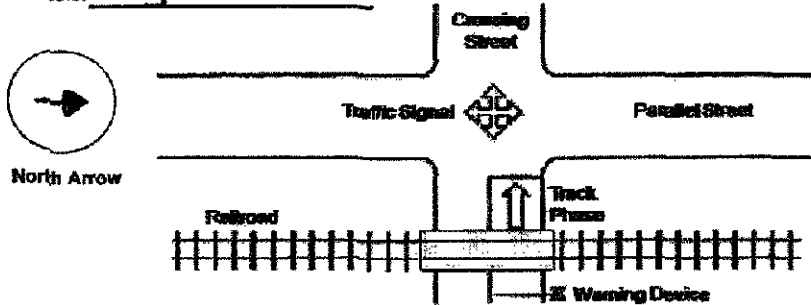
Stopping Sight Distance is to be measured on each roadway approach to crossing from stop bar.



**OHIO DEPARTMENT OF TRANSPORTATION  
GUIDE FOR DETERMINING TIME REQUIREMENTS FOR  
TRAFFIC SIGNAL PREEMPTION AT HIGHWAY-RAIL GRADE CROSSINGS**

City Newark  
County Licking  
District 5

Date April 28, 2010  
Completed by B. Bosch



Parallel Street Name  
SR 13

Crossing Street Name  
Waterworks Rd.

Railroad Genesee & Wyoming  
DOT No. 152 005 D

Railroad Contact Don Birrell  
Phone 740-295-4122

operated by:  
Columbus + Ohio  
River RR

Enter values in non-shaded boxes. Shaded boxes are calculated.

**SECTION 1: RIGHT-OF-WAY TRANSFER TIME CALCULATION**

**Preempt verification and response time**

- |  |    |          |  |
|--|----|----------|--|
| 1. Programmed preempt delay time (sec) .....                             | 1. | <u>-</u> | Remarks<br><br>Controller type: <u>Engle M42</u> |
| 2. Controller response time to preempt (sec) .....                       | 2. | <u>-</u> |  |
| 3. Preempt verification and response time (sec): add lines 1 and 2 ..... | 3. | <u>-</u> |  |

**Worst-case conflicting vehicle time**

- |   |    |              |                             |
|---|----|--------------|-----------------------------|
| 4. Worst-case conflicting vehicle phase number(s) .....                   | 4. | <u>2a, b</u> | Remarks<br><br><br><br><br> |
| 5. Minimum green time during right-of-way transfer (sec) .....            | 5. | <u>15</u>    |                             |
| 6. Other green time during right-of-way transfer (sec) .....              | 6. | <u>-</u>     |                             |
| 7. Yellow change time (sec) .....   | 7. | <u>3.5</u>   |                             |
| 8. Red clearance time (sec) .....   | 8. | <u>2</u>     |                             |
| 9. Worst-case conflicting vehicle time (sec): add lines 5 through 8 ..... | 9. | <u>20.5</u>  |                             |

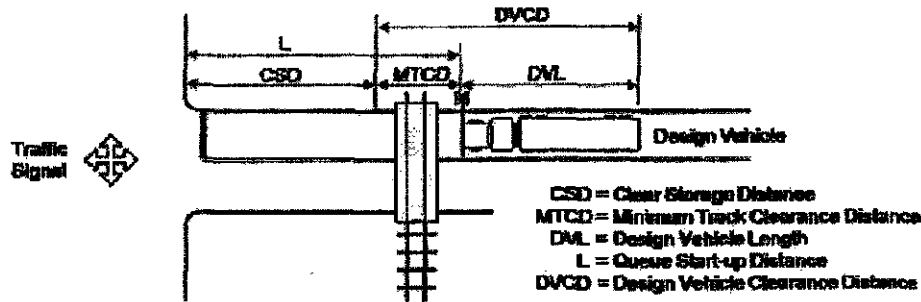
**Worst-case conflicting pedestrian time**

- |   |     |          |                                       |
|---|-----|----------|---------------------------------------|
| 10. Worst-case conflicting pedestrian phase number(s) .....                     | 10. | <u>-</u> | Remarks<br><br><u>No Peds</u><br><br> |
| 11. Minimum walk time during right-of-way transfer (sec) .....                  | 11. | <u>-</u> |                                       |
| 12. Pedestrian clearance time during right-of-way transfer (sec) .....          | 12. | <u>-</u> |                                       |
| 13. Vehicle yellow change time, if not included on line 12 (sec) .....          | 13. | <u>-</u> |                                       |
| 14. Vehicle red clearance time, if not included on line 12 (sec) .....          | 14. | <u>-</u> |                                       |
| 15. Worst-case conflicting pedestrian time (sec): add lines 11 through 14 ..... | 15. | <u>-</u> |                                       |

**Worst-case conflicting vehicle or pedestrian time**

- |   |     |             |
|---|-----|-------------|
| 16. Worst-case conflicting vehicle or pedestrian time(sec): maximum of lines 9 and 15 ..... | 16. | <u>20.5</u> |
| 17. Right-of-way transfer time (sec): add lines 3 and 16 .....                              | 17. | <u>20.5</u> |

## SECTION 2: QUEUE CLEARANCE TIME CALCULATION



|  |     |            |         |                                     |         |
|--|-----|------------|---------|-------------------------------------|---------|
| 18. Clear storage distance (CSD, feet) .....   | 18. | <u>270</u> | Remarks |                                     |         |
| 19. Minimum track clearance distance (MTCD, feet) .....                                      | 19. | <u>22</u>  |         |                                     |         |
| 20. Design vehicle length (DVL, feet) .....  | 20. | <u>65</u>  |         |                                     |         |
| 21. Average grade over crossing (%) .....  | 21. | <u>0.7</u> |         |                                     |         |
| 22. Queue start-up distance (L, feet): add lines 18 and 19 .....                             |     |            | 22.     | <u>292</u>                          | Remarks |
| 23. Time required for design vehicle to start moving (sec): calculated as $2 + (L/20)$ ..... |     |            | 23.     | <u>16.6</u>                         |         |
| 24. Design vehicle clearance distance (DVCD, feet): add lines 19 and 20 .....                |     |            | 24.     | <u>87</u>                           |         |
| 25. Time for design vehicle to accelerate through the DVCD (sec) .....                       |     |            | 25.     | <u>12.5</u> From Fig. 2 and Table 2 |         |
| 26. Queue clearance time (sec): add lines 23 and 25 .....                                    |     |            | 26.     | <u>29.1</u>                         |         |

## SECTION 3: MAXIMUM PREEMPTION TIME CALCULATION

|  |     |             |         |             |                  |
|--|-----|-------------|---------|-------------|------------------|
| 27. Right-of-way transfer time (sec): line 17 .....              | 27. | <u>20.5</u> | Remarks |             |                  |
| 28. Queue clearance time (sec): line 26 .....                    | 28. | <u>29.1</u> |         |             |                  |
| 29. Desired minimum separation time (ST, sec) .....              | 29. | <u>4</u>    |         |             |                  |
| 30. Maximum preemption time (sec): add lines 27 through 29 ..... |     |             | 30.     | <u>53.6</u> | Minimum of 4 sec |

## SECTION 4: SUFFICIENT WARNING TIME CHECK

|  |     |           |         |             |                       |
|--|-----|-----------|---------|-------------|-----------------------|
| 31. Required minimum time (MT, sec), per regulations .....   | 31. | <u>20</u> | Remarks |             |                       |
| 32. Wide crossing clearance time (CT, sec): verify w/ railroad .....   | 32. | -         |         |             |                       |
| 33. Additional CT (sec): from railroad or public agency .....  | 33. | -         |         |             |                       |
| 34. Minimum warning time provided by railroad (MWT, sec): add lines 31 thru 33 .....   |     |           | 34.     | <u>20</u>   | round up (MTCD-35)/10 |
| 35. Minimum amount of advance preemption time needed from railroad (sec): subtract line 34 from line 30, round up to nearest full second; enter zero (0) if less than zero ..... |     |           | 35.     | <u>33.6</u> |                       |

If the value on line 35 is greater than zero, this is the minimum advance preemption time that should be requested from the railroad. Alternatively, the maximum preemption time (line 30) may be decreased after performing an engineering study to investigate the possibility of reducing the values on lines 1, 5, 6, 7, 8, 11, 12, 13 and 14.

Remarks:

**SECTION 5: VEHICLE-GATE INTERACTION CHECK (OPTIONAL)**

36. Right-of-way transfer time (sec): line 17 ..... 36. 20.5
37. Time required for design vehicle to start moving (sec): line 23 ..... 37. 16.6
38. Time required for design vehicle to accelerate through DVL (on line 20, sec) ..... 38. 11.0 From Fig. 2 and Table 2
39. Time required for design vehicle to clear descending gate (sec): add lines 36 through 38 ..... 39. 48.1 Remarks
40. Duration of flashing lights before gate descent start (sec): get from railroad ..... 40. 5 3 to 5 sec. Remarks
41. Full gate descent time (sec): get from railroad ..... 41. 10 From Example
42. Distance from center of gate support to design vehicle (ft) ..... 42. 12 See Figure 4
43. Proportion of non-interaction gate descent time ..... 43. 0.42 From Figure 5
44. Non-interaction gate descent time (sec): multiply lines 41 and 43 ..... 44. 42
45. Time available for design vehicle to clear descending gate (sec): add lines 40 and 44 ..... 45. 9.2
46. Advance preemption time (APT) required to avoid design vehicle-gate interaction (sec):  
subtract line 45 from line 39, round up to nearest full second, enter zero (0) if less than zero ..... 46. 38.9

**SECTION 6: TRACK CLEARANCE GREEN TIME CALCULATION**

Preempt Trap Check (Use if gate-down circuit not present)

47. Advance preemption time (APT) to be provided (sec) ..... 47.            Enter APT from line 35 or line 46
48. Multiplier for maximum APT due to train deceleration ..... 48.            See Instructions for details.
49. Maximum APT (sec): multiply line 47 and 48 ..... 49.            Remarks
50. Time from start of flashing lights until gate is horizontal (sec) ..... 50.
51. Gates down after start of preemption (sec): add lines 49 and 50 ..... 51.
52. Preempt verification and response time (sec): line 3 ..... 52.            Remarks
53. Best-case conflicting vehicle or pedestrian time (sec): usually zero (0) ..... 53.
54. Minimum right-of-way transfer time (sec): add lines 52 and 53 ..... 54.
55. Minimum track clearance green time (sec): subtract line 54 from line 51 ..... 55.

**Clearing of Clear Storage Distance**

56. Time required for design vehicle to start moving (sec): line 23 ..... 56.
57. Design vehicle clearance distance (DVCD, feet): line 24 ..... 57.            Remarks
58. Portion of CSD to clear during track clearance green (feet) ..... 58.
59. Design vehicle relocation distance (DVRD, feet): add lines 57 and 58 ..... 59.
60. Time required for design vehicle to accelerate through DVRD (sec) ..... 60.            From Fig. 2 and Table 2
61. Time to clear portion of clear storage distance (sec): add lines 56 and 60 ..... 61.
62. Track clearance green interval (seconds): maximum of lines 26, 55, or 61, round up to full second ..... 62.



# Ohio Rail Development Commission

1980 West Broad Street • Columbus, Ohio 43223  
614-644-0306 (telephone) • 614-728-4520 (fax) [www.dot.state.oh.us/ohiorail](http://www.dot.state.oh.us/ohiorail)

June 14, 2010

Mr. Dan Birrell,  
Manager, Communications and Signals  
Columbus & Ohio River Rail Road  
47849 Papermill Road  
Coshocton, Ohio 43812

Re: Letter of Authorization  
Grade Crossing Warning Device Project Licking County:  
City of Newark, Waterworks Road  
DOT Numbers: 152005D  
PID # 82744

Dear Mr. Birrell:

The Columbus and Ohio River Rail Road's plan and estimate submitted by RSS dated August 27, 2009 for the referenced project has been reviewed and is acceptable. For future projects, please note that the Ohio Rail Development Commission must have plan and estimate packages submitted by the railroad, not a contractor for the railroad. We understand from the preconstruction meeting held on April 2, 2010 that the C&ORR has likely begun work on this warning device project. This letter constitutes formal authorization to proceed with the construction of the proposed grade crossing warning system including traffic signal preemption in accordance with the abbreviated plan and the provisions set forth in Warning Device Master Agreement No. 0009-A dated November 20, 1990 and the Ohio Department of Transportation Agreement No. 21782 dated September 5, 2008.

As the highway project and warning device project proceed, the C&ORR should coordinate all construction with ODOT District 5 and the City of Newark to insure that all work is completed concurrently. As you are aware from the April Preconstruction Meeting the expectation is to have this project completed yet this construction season.

This authorization is made with the stipulation and understanding that the approved estimate may contain entries for items or activities that may be cited and found to be ineligible for federal participation during the project audit.

This authorization is contingent upon C&ORR accepting the following instructions:

1. C&ORR will furnish FAX or written notification five (5) working days prior to the date work will start at the project site to me at the ORDC at 1980 West Broad Street, Columbus Ohio

Page 2

Mr. Dan Birrell, C&ORR

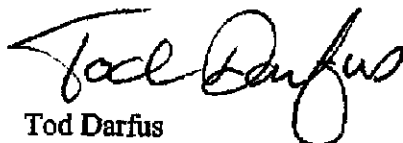
June 14, 2010

43223, telephone number (614)728-5426 , fax (614)728-7285, mobile (614) 374-9298 or e-mail, **Tod.Darfus@dot.state.oh.us**. C&ORR project foreman will notify the same of any stops and re-starts of the work activity and of the date work was completed for the project, this must occur for reimbursement.

2. C&ORR will arrange for utilities to be located at the project site by the Ohio Utilities Protection Service (OUPS) prior to any construction activities at the site. Utilities that are not participating members of the service must be contacted directly by C&ORR;
3. C&ORR project foremen will notify me of any changes in the scope of work, cost overruns, material changes, etc. which are not included in the approved plan and estimate and secure approval of same before the work is performed;
4. C&ORR will furnish two (2) copies of each partial bill to ORDC, each bill shall reference the project location and ODOT PID # 82744;
5. C&ORR will furnish two (2) copies of the final all - inclusive bill to ORDC Office stating the exact dates of starting and completing work, the initial and final dates of construction and location where the accounts may be audited; and
6. The advanced preemption of traffic signals will proceed in accordance with the new preemption standard published in the current edition of the Traffic Engineering Manual (TEM). A copy of the TEM is attached to this correspondence along with timing requirements for the traffic signal preemption.

Thank you for your assistance with these matters.

Respectfully,



Tod Darfus  
Grade Crossing Specialist

TD:td

Attachments (2): Railroad Configuration and Timing Requirements, ODOT TEM

c: Numan Babieh, Brian Bosch, and Dave Slatzer, ODOT District 5  
George Martin, PUCO  
T. Darfus (file)

9600 JACKSONTOWN RD  
JACKSONTOWN, OH  
43030

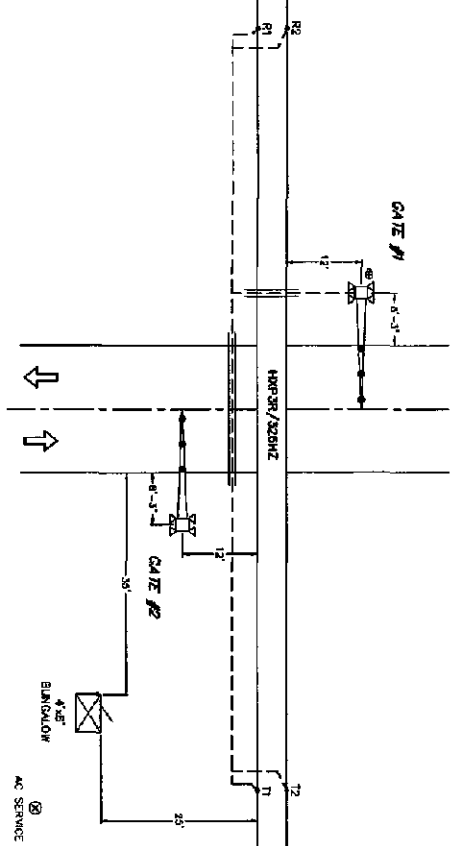






329KHZ  
DUAL-HOLE  
BAND-SHUNT


329KHZ  
DUAL-HOLE  
BAND-SHUNT



WATERWORKS RD.

| APPROACH AND WARNING TIME CALCULATION | TRACK 1 |
|---------------------------------------|---------|
| MINIMUM WARNING TIME                  | 20 SEC  |
| PLUS CLEARANCE TIME                   | 5 SEC   |
| PLUS BUFFER TIME                      | 5 SEC   |
| TOTAL WARNING TIME                    | 30 SEC  |
| TOTAL WARNING TIME                    | 30 SEC  |
| PLUS EQUIPMENT RESPONSE               | 5 SEC   |
| PLUS ADVANCE PREEMPT                  | N/A     |
| TOTAL APPROACH TIME                   | 35 SEC  |
| MINIMUM TRAIN SPEED                   | 10 MPH  |
| TIME RATION OF FT/SEC TO MPH          | 1.4667  |
| TOTAL APPROACH DISTANCE               | 513'    |

- LEGEND:
- - TEST TERMINAL
  - △ - EQUALIZER
  - ⌋ - ARRESTER TO GROUND
  - ⌋ - TWISTED WIRE
  - - RIGID CONDUIT
  - - UNDERGROUND CABLE



# OHIO CENTRAL RAILROAD

LOCATION

WATERWORKS RD.  
NEWARK, OHIO

DATE: 02/14/2003

TIME: 10:15

BY: CEN

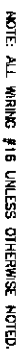
NO: 002.20

DATE: 02/14/2003

TIME: 10:15

BY: CEN

NO: 002.20



WATERWORKS RD.  
NEWARK, OHIO

| ORIGINAL DATE | FILE   | CROSSING CONTROL CIRCUITS |
|---------------|--------|---------------------------|
| 08/14/2009    | 249    | RES NO C-09-896           |
| RES           | C&N    |                           |
| 0093000       | 00230  | SOME N.T.S.               |
| RES           |        |                           |
| 0093000       | 002050 | SOME                      |
| RES           |        | 02 of 15                  |

\* - FIELD ADJUSTMENT TO BE MADE ACCORDING TO THE HXP-3 INSTRUCTION MANUAL.

### HXP-3R ADJUSTMENTS

| NO. | ADJUSTMENT NAME | TRACK 1 | TRACK 2 |
|-----|-----------------|---------|---------|
| 1   | APP. LENGTH     | 513'    |         |
| 2   | WARNING TIME    | 30 SEC  |         |
| 3   | LA              | "       |         |
| 4   | TC              | "       |         |
| 5   | MD RESTART      | 0       |         |

### OPTION ADJUSTMENTS

| NO. | ABBREVIATION | TRACK 1      | TRACK 2 |
|-----|--------------|--------------|---------|
| 1   | TX-RNA       |              |         |
| 2   | TX-RD        | UP           |         |
| 3   | CM-RND       | 326 HZ       |         |
| 4   | UM-RN        | C            |         |
| 5   | MES-C        | b (B)        |         |
| 6   | QWENT        | *            |         |
| 7   | LDS          | DL (60 SEC.) |         |
| 8   | U-LDS        | DL (16 SEC.) |         |
| 9   | BC           | DL (5 SEC.)  |         |
| 10  | P-COMP       | 141 *        |         |
| 11  | AX1          | *            |         |
| 12  | AX2          | N/A          |         |
| 13  | AX3          | N/A          |         |
| 17  | MDR-AX       | N/A          |         |
|     | OT-TX 1 OR 2 | 5m           |         |
|     | CJ-LDS       | DL (0)       |         |
|     | PJ-DET       | DL (0)       |         |
|     | PJ-RX        | DL (15)      |         |
| 16  | MD-TMR       | DL (10)      |         |
| 19  | MIN-WT       | DL (0)       |         |
| 20  | FS-DET       | 5m           |         |
|     | FS-RX        | DL (0)       |         |
|     | FS-TM        | DL (10)      |         |
| 21  | POS-SI       | 5m           |         |
|     | POS-RX       | DL (0)       |         |
|     | POS-TM       | DL (0)       |         |
| 22  | MR-TMR       | 5m           |         |
|     | AR-RX        | DL (0)       |         |
|     | AR-TM        | DL (10)      |         |
| 42  | ATO-RX       | UP           |         |
| 43  | PE-EMA       | UP           |         |

## AX ADJUSTMENTS

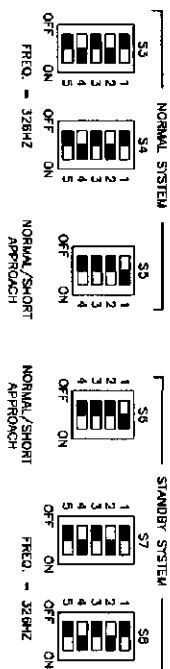
|                 | AK 1 | AK 2 | AK 3 |
|-----------------|------|------|------|
| 1. NOS          |      |      |      |
| 2. ABBREVIATION |      |      |      |
| 3. TK-JSN       |      |      |      |
| 4. OF-JK1       |      |      |      |
| 5. OF-JK2       |      |      |      |
| 6. WT           |      |      |      |
| 7. MD-FST       |      |      |      |
| 8. CW/MD        |      |      |      |
| 9. PLLOS        |      |      |      |
| 10. P4-DI1      |      |      |      |
| 11. P05-SI      |      |      |      |

### SWITCH INFORMATION

| SWITCH              | TRACK 1  | TRACK 2 |
|---------------------|----------|---------|
| MASTER/SLAVE        | MASTER   |         |
| RSI-FAULT JUMPER    | 0        |         |
| RSI-LOS JUMPER      | 1        |         |
| TLM W1 JUMPER       | PINS 1-2 |         |
| TLM W2 JUMPER       | PINS 1-2 |         |
| TLM W3 JUMPER       | PINS 2-3 |         |
| MINUTE TIMEOUT      | 5 MIN    |         |
| CM/MD               |          |         |
| STANDBY/AUTO/NORMAL | AUTO     |         |

NOTE: DL= DEFAULT LEVEL  
NA= NON APPLICABLE

NOTE: DL= DEFAULT LEVEL  
NA= NON APPLICABLE



## NOTES FOR S5 AND S6:

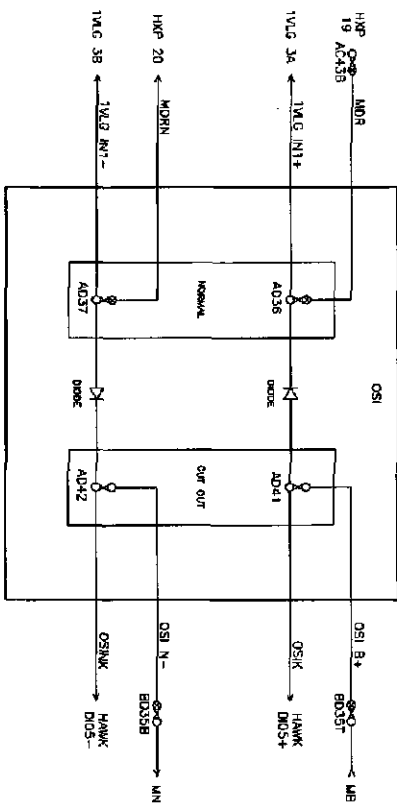
- 1) ACTUATOR 1 SELECTS NORMAL APPROACH WHEN SET TO ON POSITION
- 2) ACTUATORS 1 AND 2 IN OFF POSITION SELECTS SHORT APPROACH. ACTUATOR 1 IN OFF POSITION AND ACTUATOR 2 IN ON POSITION SELECTS VERY SHORT APPROACH.
- 3) ACTUATORS 3 AND 4 RESERVED FOR FUTURE USE.



WATERWORKS RD  
NEWARK, OHIO

# OHIO CENTRAL RAILROAD

|               |            |          |                         |
|---------------|------------|----------|-------------------------|
| ORIGINAL DATE | 06/14/2009 | TITLE    | HXP PROGRAM INFORMATION |
| DESIGNER      | RSS        | SUB      | C&N                     |
| DESIGNER      | RSS        | REVISION | 002.30                  |
| CHECKER       | RSS        | DWG NO.  | 502-0050                |
|               |            | SHEET    | 03 of 15                |



\*\*\*CAUTION\*\*\*  
USE OF THIS CUT OUT DEVICE WILL DEFEAT OPERATION  
OF THE WARNING SYSTEM. PRIOR TO USE, NOTIFY  
CONTROL OPERATOR/DISPATCHER PER 48 USC 234.105.

TO CUT OUT OPERATION OF WARNING SYSTEM, REMOVE GOLD NUTS FROM "NORMAL" POSITIONS AND INSTALL ON "CUT OUT" POSITIONS.



# OHIO CENTRAL RAILROAD

**LOCATION**

WATERWORKS RD.  
NEWARK, OHIO

|              |            |      |     |
|--------------|------------|------|-----|
| CHSMAIL DATE | 08/14/2009 | FILE | 051 |
|--------------|------------|------|-----|

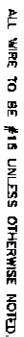
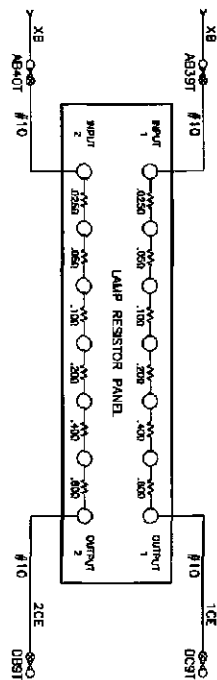
CSI

|        |        |        |
|--------|--------|--------|
| DESIGN | SUB    | CAN    |
| DESIGN | DESIGN | DESIGN |

002

**10/2/2015**

**NTS**

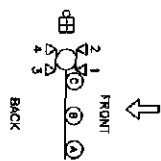
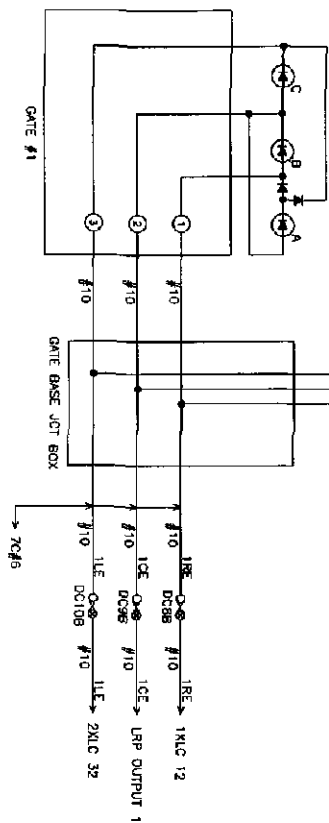
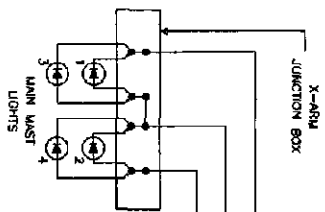


| ISSUE DATE | TITLE                        |
|------------|------------------------------|
| 08/14/2009 | LAMP RESISTOR PANEL - RELAYS |
| DESIGN     | DWG                          |
| DESIGN     | C&N                          |
| DESIGN     | 1888 RM.                     |
| DESIGN     | C-09-866                     |
| DESIGN     | 002.30                       |
| DESIGN     | W&S                          |
| DESIGN     | N.T.S.                       |
| DESIGN     | 001 RM.                      |
| DESIGN     | 502-0030                     |
| DESIGN     | 502-0030                     |
| DESIGN     | 05 of 15                     |



# OHIO CENTRAL RAILROAD

|                 |                                |              |      |      |
|-----------------|--------------------------------|--------------|------|------|
| LOCATION        | WATERWORKS RD.<br>NEWARK, OHIO |              |      |      |
| ORDER DATE      | DATE                           | ITEM         | QTY  | UNIT |
| 09/14/2028      |                                | HWK REC'D/DR |      |      |
| DESCRIPTION     | ITEM                           | QTY          | UNIT |      |
| RESS            | RESS                           | 002.30       |      |      |
| 007 MC 502.0050 | 007 MC 502.0050                | 06           | sq   | 15   |
| 007 MC 502.0050 | 007 MC 502.0050                | 06           | sq   | 15   |

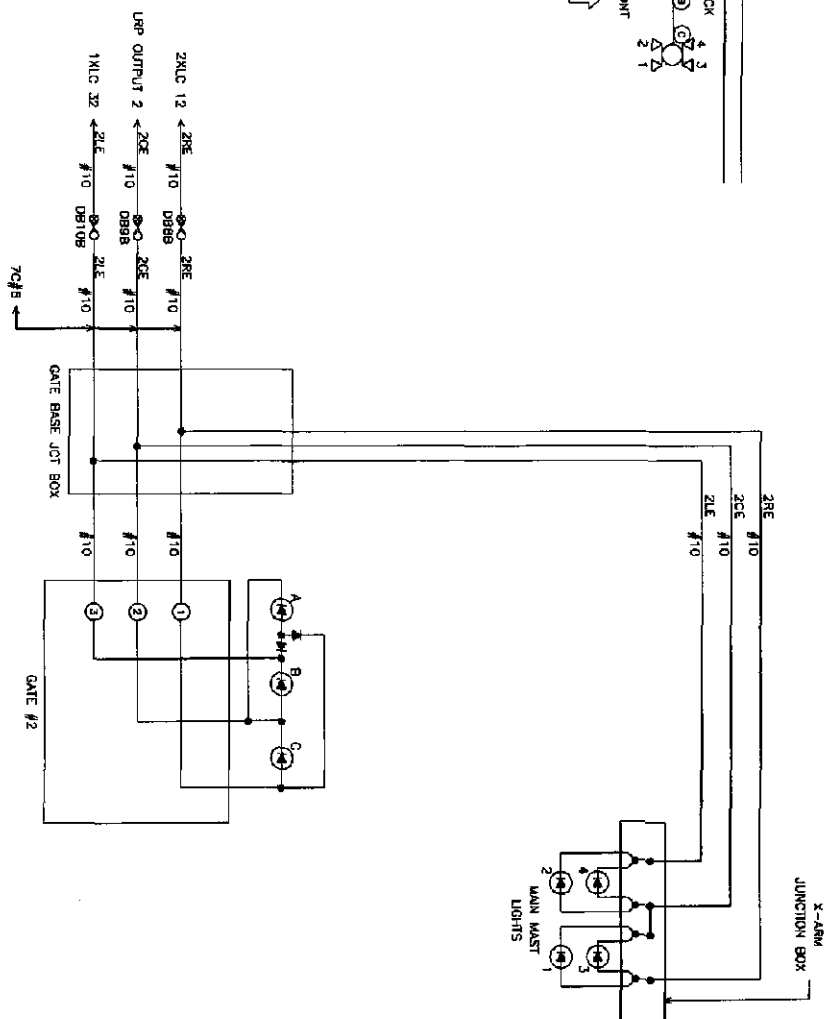
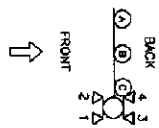


# OHIO CENTRAL RAILROAD



|          |                                |
|----------|--------------------------------|
| LOCATION | WATERWORKS RD.<br>NEWARK, OHIO |
| DATE     | 06/14/2003                     |
| TIME     | 10:15                          |
| BY       | WJC                            |
| FOR      | GATE #1 LIGHTS                 |
| REVISION | 002.20                         |
| DATE     | 07/01/03                       |
| BY       | WJC                            |
| FOR      | 07 of 15                       |

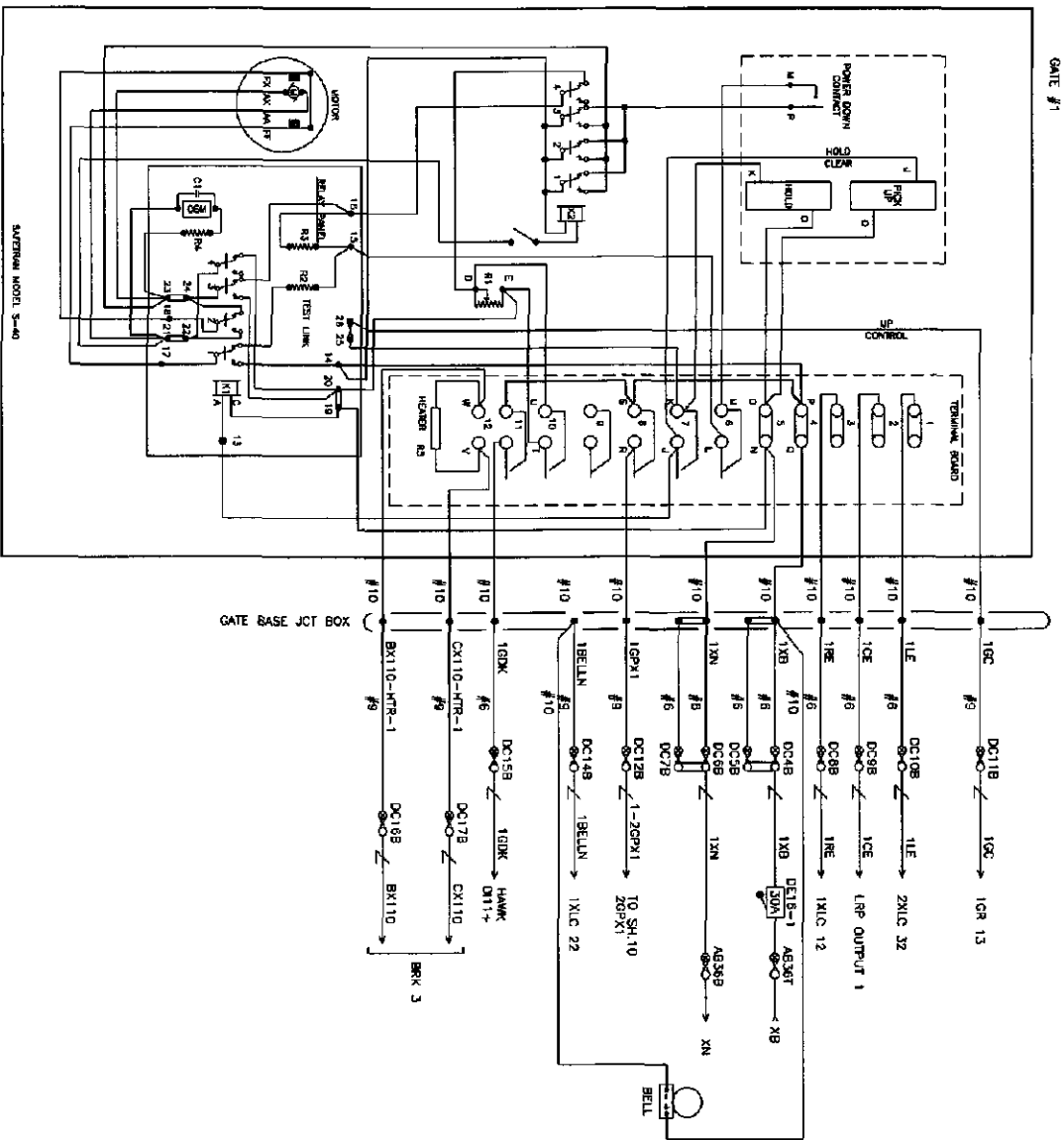


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# OHIO CENTRAL RAILROAD

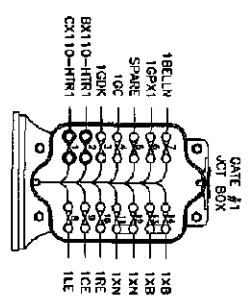
WATERWORKS RD.  
NEWARK, OHIO

| OSWALD, GOLF | DATE 1/14/2009 | TIME   | GATE #2  | LIGHTS   |
|--------------|----------------|--------|----------|----------|
| OSWALD       | RSS            | SUB    | C&N      | RSS NO   |
| OSWALD       | RSS            | RSS    | 002.30   | C-09-996 |
| OSWALD       | RSS            | DEF NO | 502.0050 | N.T.S.   |
| OSWALD       | RSS            |        |          | DEFAT    |
|              |                |        |          | OS OF 15 |



| CONTACT | CLOSED  | FUNCTION             |
|---------|---------|----------------------|
| 6       | 45°-90° | POWER DOWN           |
| 7       | 0°-88°  | POWER UP             |
| 8       | 83°-90° | FLASHING LIGHT       |
| 9       | 5°-90°  | BELL                 |
| 10      | 0°-5°   | HORIZONTAL SLUDB     |
| 11      | 0°-5°   | GATE DOWN INDICATION |

WITH GATE IN UP POSITION



OHIO CENTRAL

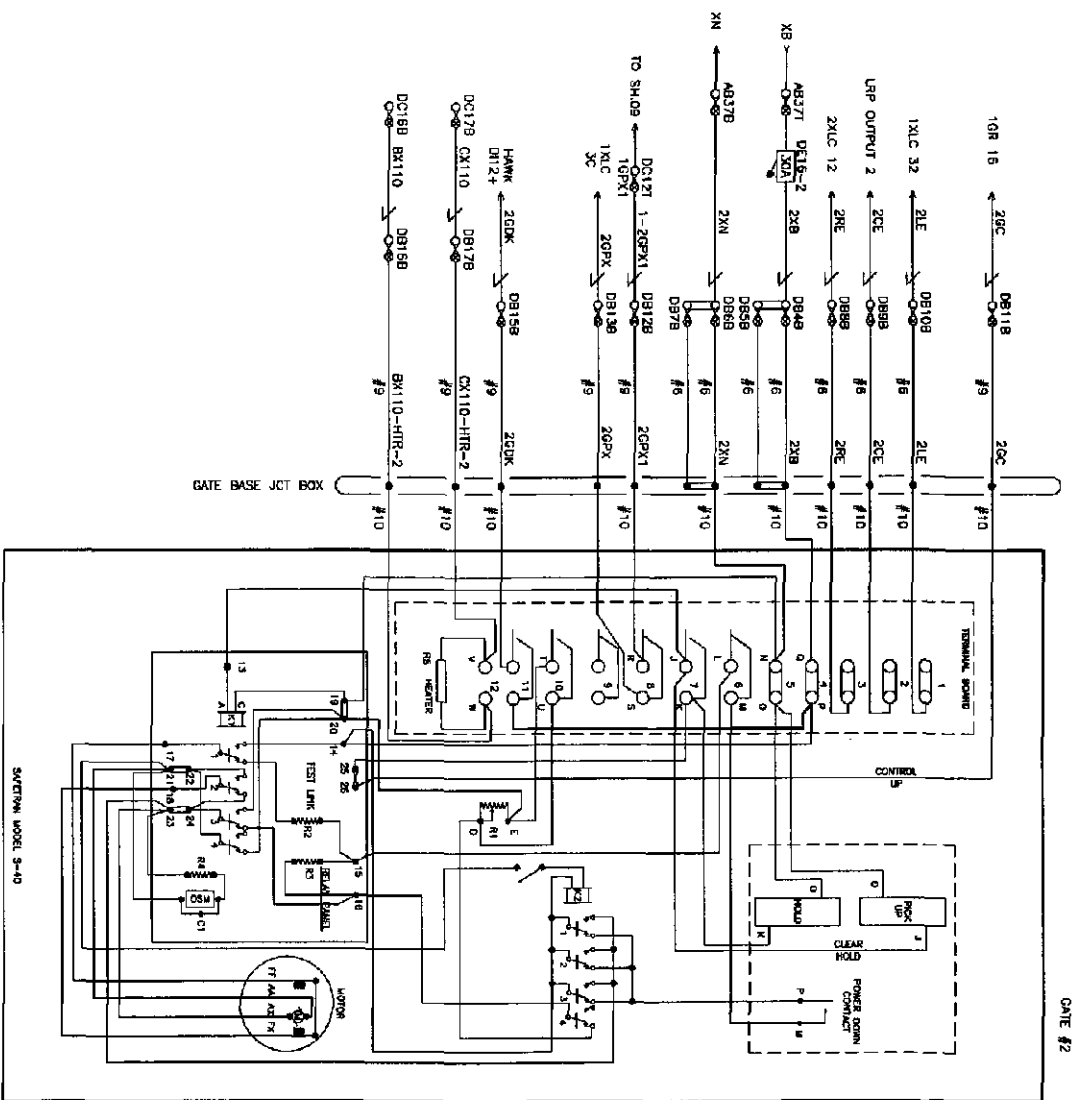
WATERWORKS RD.  
NEWARK, OHIO

DATE: 08/14/2005 TIME: 11:00 AM  
BY: J. M. HARRIS  
CHECKED: J. M. HARRIS  
DESIGNED: J. M. HARRIS  
DRAWN: J. M. HARRIS  
C-05-086  
N.I.S.  
09 OF 15

OHIO CENTRAL RAILROAD

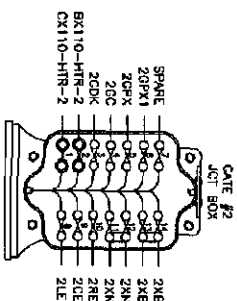
LOCATION: GATE #1 MECHANISM

PROJECT: 09 OF 15



| CONTACT | CLOSED | FUNCTION             |
|---------|--------|----------------------|
| 6       | 45-90° | POWER DOWN           |
| 7       | 0-85°  | POWER UP             |
| 8       | 85-90° | FLASHING LIGHT       |
| 9       | 5-90°  | BELL                 |
| 10      | 0-5°   | HORIZONTAL SNUB      |
| 11      | 0-5°   | GATE DOWN INDICATION |

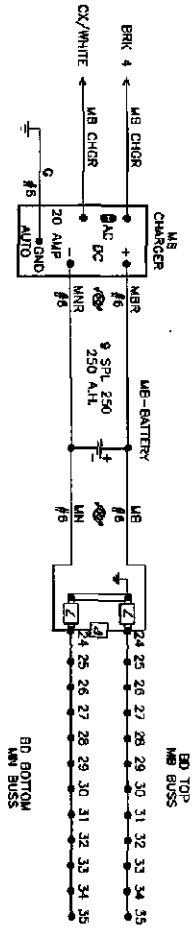
WITH GATE IN UP POSITION



**OHIO CENTRAL RAILROAD**

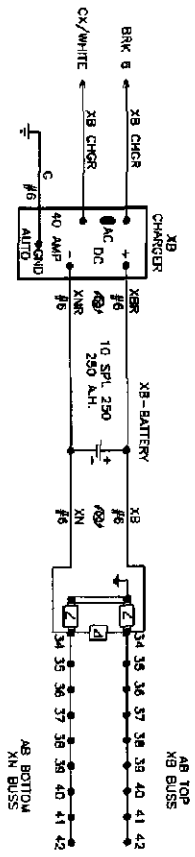
WATERWORKS RD.  
NEWARK, OHIO

|                      |                 |                 |                 |            |
|----------------------|-----------------|-----------------|-----------------|------------|
| ORDER NO. 08/14/2008 | DATE 08/14/2008 | UNIT 1          | DATE 08/14/2008 | REV. NO. 1 |
| DESIGNED BY RJS      | DATE 08/14/2008 | DESIGNED BY RJS | DATE 08/14/2008 | REV. NO. 1 |
| DRAWN BY RJS         | DATE 08/14/2008 | DRAWN BY RJS    | DATE 08/14/2008 | REV. NO. 1 |
| CHECKED BY RJS       | DATE 08/14/2008 | CHECKED BY RJS  | DATE 08/14/2008 | REV. NO. 1 |




BATTERY BUSS DETAILS

| MB BATTERY |            |
|------------|------------|
| 25         | WOSA-BATT- |
| 26         | 27C B10    |
| 27         | YLG 15     |
| 28         | YLG 26     |
| 29         | 2XLC 26    |
| 30         | SPARE      |
| 31         | SPARE      |
| 32         | CSM N12    |
| 33         | HAWK N12   |
| 34         | HAWK DCO1+ |
| 35         | OSI B+     |



BATTERY BUSS DETAILS

| XB BATTERY |            |
|------------|------------|
| 24         | 1XLC 24    |
| 25         | 2XLC 24    |
| 26         | YLG 15     |
| 27         | YLG 26     |
| 28         | 2XLC 26    |
| 29         | SPARE      |
| 30         | SPARE      |
| 31         | CSM N12    |
| 32         | HAWK N12   |
| 33         | HAWK DCO1+ |
| 34         | OSI B+     |



# OHIO CENTRAL RAILROAD

LOCATION

WATERWORKS RD.  
NEWARK, OHIO

DATE: 06/14/2006

BY: [Signature]

CHKD: [Signature]

REV: 002.20

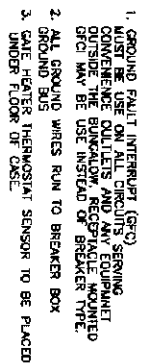
REV: 502.0050

PROJECT: BATTERY CHARGERS

REV: C-06-866

REV: N.T.S.

REV: 11 of 15



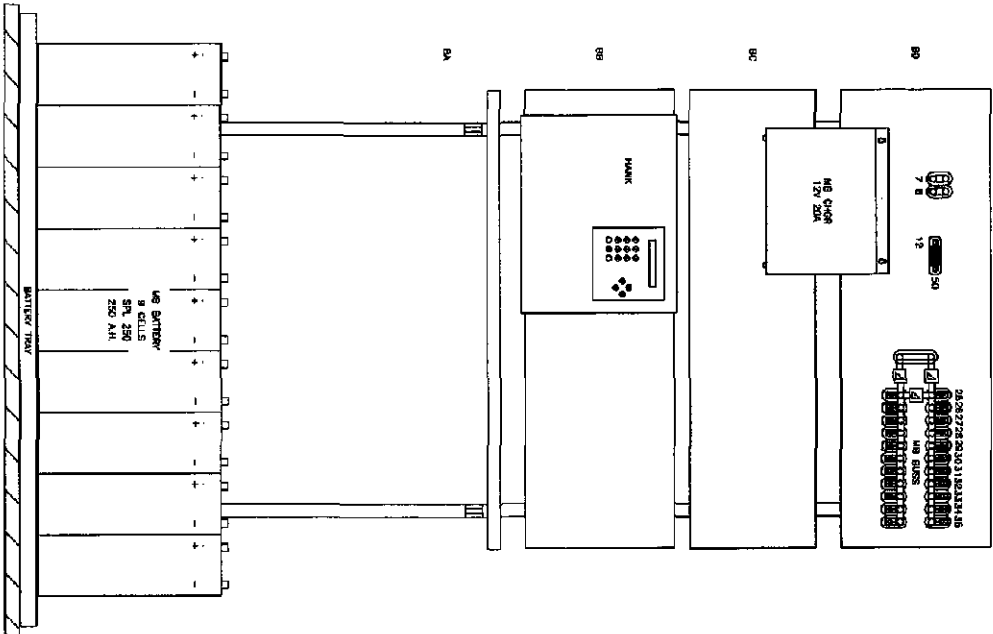
# OHIO CENTRAL RAILROAD


**WATERWORKS RD  
NEWARK, OHIO**

| ORIGINAL DATE | TIME     | AC POWER DISTRIBUTION |          |
|---------------|----------|-----------------------|----------|
| 06/14/2009    |          |                       |          |
| RESIDENT      | 500      | C&N                   | RES HL   |
| RES           |          |                       | C-09-B96 |
| DEPT HEAD     | 002.50   |                       |          |
| RES           |          |                       | 1"=3'    |
| DEPT NO.      | 502-0030 |                       |          |
| RES           |          |                       | 12 of 15 |

|                      |      |           |          |    |
|----------------------|------|-----------|----------|----|
| ORDER NO. 08/14/2008 |      | FILE      | SIDE     | 7" |
| DISCOUNT             | KS25 | RUB       | C&M      |    |
| DESCRIPTION          | KS25 | SHAPE     | 002.30   |    |
| DATE ORDER           | KS25 | DATE SHIP | 002.0030 |    |
|                      |      | REQ. NO.  | C-05-695 |    |
|                      |      | QTY       | 1 "x-2"  |    |
|                      |      | PRICE     | 13 @ 15  |    |

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






# OHIO CENTRAL RAILROAD

|               |            |                                |            |
|---------------|------------|--------------------------------|------------|
| LOCATION      |            | WATERWORKS RD.<br>NEWARK, OHIO |            |
| DESIGNED DATE | 03/14/2003 | TIME                           | 5:00 PM    |
| DESIGNED BY   | SSS        | DATE                           | 03/14/2003 |
| DESIGNED FOR  | SSS        | PROJECT NO.                    | 502.0050   |
| DESIGNED BY   | SSS        | PROJECT NO.                    | 502.0050   |
| DESIGNED FOR  | SSS        | PROJECT NO.                    | 502.0050   |

14 OF 15

[illegible]



# OHIO CENTRAL RAILROAD

LOCATION

WATERWORKS RD.  
NEWARK, OHIO

| DESCRIPTION | DATE       | UNIT | SIG.     | %  | RE. NO.  |
|-------------|------------|------|----------|----|----------|
| REPAIRS     | 04/14/2006 | RD   | CAN      | 1  | C-09-836 |
| REPAIRS     |            | RD   | CAN      | 1  | 1 = 2    |
| REPAIRS     |            | RD   | 002.30   |    |          |
| REPAIRS     |            | RD   | 502.0050 |    | 3007     |
| REPAIRS     |            |      |          | 15 | 15       |