Public Utilities Commission of Ohio

Memo

To: Docketing Division

From: Jill Henry, Rail Specialist, Rail Division

Cc: PUCO Legal Department

Date: 2/14/20

Re: PUCO Case No. 20-395-RR-FED- In the Matter of a Request for the Installation of Active Warning Devices at the Grand Trunk Western Railroad Crossing, New York Avenue, DOT#905-282V, in Lucas County, Ohio.

On July 8, 2019, the Ohio Rail Development Commission (ORDC) authorized funding for Grand Trunk Western Railroad (GTW) to install flashing lights and gates at New York Avenue, DOT#905-282V, in Lucas County, Ohio. The crossing was surveyed, on October 21, 2016, and found to warrant the upgrade. The electric utility provider for this crossing is First Energy-Toledo Edison.

The project will be paid for with federal funds and is actual cost. The plans and estimates in the amount of $286,179.00 have been approved. Construction may commence at once. **Staff requests a Finding & Order with completion of the project in nine months.** Staff requests that the following language be incorporated in the Finding & Order:

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

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

Please serve the following parties of record:

Grand Trunk Western Railroad
Thomas Brasseur
Canadian National
Manager of Public Works
24002 Vreeland road
Flat Rock, MI 48134

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

City of Toledo
Douglas Stephens
Administrator, Engineering Services
600 Jefferson Avenue, Suite 300
Toledo, OH 43604

First Energy- Toledo Edison

OHIO RAIL DEVELOPMENT COMMISSION
INTER-OFFICE COMMUNICATION

TO: **Randall Schumacher, Chief, Motor Carrier & Rail Enforcement, PUCO**

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

BY: **Don Damron, ORDC**

SUBJECT: **New York Ave, Lucas County,**
DOT# 905282V; PID# 104588

DATE: **January 7, 2020**

The Public Utilities Commission of Ohio (PUCO) established a diagnostic survey at the subject location on 10/21/2016. The Ohio Rail Development Commission (ORDC) attended the review. The Diagnostic Team recommended the improvement of warning devices to flashing lights and roadway gates. Copies of the diagnostic review form and the railroad site layout plan and project estimate are attached.

The preliminary engineering plans and cost estimates have already been provided by the railroad and ORDC accepts these as provided. Please issue a construction-only order for the project referenced above. ORDC recommends a nine (9) month construction timeline. This authorization is made with the stipulation and understanding that an approved estimate may contain entries for items or activities that may be cited and found to be ineligible for federal participation during the project audit.

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

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

Thank you for your assistance with these matters.

Attachment: Construction Authorization
Diagnostic Review Team Survey
Letter Agreement
Plan, Estimate & Material List
Authorization to Proceed with Engineering Plans and Estimates

Copy: Jill Henry, Rail Division Specialist, PUCO
ORDC Project Manager (file)

Ohio | Rail Development Commission

Mike DeWine, Governor
Jon Husted, Lt. Governor

Mark Policinski, Chair

January 7, 2020

Mr. Thomas Brasseur
Grand Truck Western Railroad
Manager of Public Works
24002 Vreeland Road
Flat Rock, MI 48134

RE: Construction Authorization for Grade Crossing Warning Device Improvement
New York Ave. in Toledo, Lucas County, Ohio
DOT# 905282V; Ohio PID# 104588

Dear Mr. Brasseur:

The preliminary engineering design dated 10-29-19 plan and cost estimate dated 9-26-2917, for the referenced project have been reviewed and are acceptable. **Please note that the GTWR must provide ORDC with a plan stamped by a professional engineer licensed in the State of Ohio prior to acceptance and close out of the project.** The Grand Truck Western Railroad may proceed with the construction of the proposed grade crossing warning system in accordance with the abbreviated plan.

The estimate of $286,179.00 is acceptable and reimbursement is limited to $286,179.00. This Construction 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. Additional costs must be approved in writing by the Ohio Rail Development Commission (ORDC) prior to being incurred. Emergency verbal authorizations by ORDC may be permitted and will be confirmed by ORDC in writing within ten (10) business days of the verbal approval.

This authorization is contingent upon the Grand Trunk and Western Railroad (GTWR) accepting the following instructions:

1. The GTWR's project foreman will furnish written notification five (5) working days prior to the date work will start at the project site to Don Damron, ORDC, email don.darmon@dot.ohio.gov, and to the Public Utilities Commission of Ohio at Jill.henry@puc.state.oh.us. The GTWR's project foreman will also notify the same of any stops and re-starts of the work activity and of the date work was completed for the project.

2. The GTWR 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 GTWR.

3. The GTWR's project foremen will notify Don Damron at 614-917-8466 (mobile) or don.damron@dot.ohio.gov (email) of any changes in the scope of work, cost overruns, material changes, etc. which are not included in the approved plan and estimate and secure approval of same before the work is performed.

4. Open cut of roadways is *not permitted* except in unusual circumstances and must be coordinated with the local highway authority and preapproved by ORDC.

5. GTWR will furnish two (2) copies of each partial bill to ORDC. Please find the enclosed ODOT Purchase Order to reference when billing.

6. GTWR will furnish two (2) copies of the final all-inclusive bill to ORDC stating the exact dates of starting and completing work, the initial and final dates of construction and location where the accounts may be audited.

7. This installation will include any ancillary work to make the warning devices function as designed and meet MUTCD.

Thank you for your assistance with these matters.

Sincerely,

Don Damron
Project Manager

C: Randall Schumacher, Chief, Motor Carrier & Rail Enforcement, PUCO
Jill Henry, Rail Division Specialist, PUCO
Heather Hamilton, ORDC
ORDC (file)

GRAND TRUNK WESTERN RAILROAD COMPANY

A WHOLLY OWNED SUBSIDIARY OF

CANADIAN NATIONAL RAILWAY COMPANY

HIGHWAY-RAIL GRADE CROSSING SIGNAL ESTIMATE

Roadway Name:	New York Ave	Date:	September 26, 2017
Location:	Toledo, OH		
Railroad Region:	Southern		
Railroad Subdivision:	Shore Line	Est:	17-905282V
Railroad Milepost:	000.28		
DOT Crossing No.:	905282V	Prepared By:	Kasey Klynstra/CJW

Description of Work: Install flashing-light mast-mounted gated signals with 12-inch LED lamp units, electronic bells, 1-way sidelights, and a bungalow with constant warning time circuitry

MATERIAL

MISCELLANEOUS MATERIAL

Item	Quantity	Units	Unit Cost	Cost
Backfill	50	TON	$ 85.00	$ 4,250.00
Signal Material	1	LOT	$ 1,000.00	$ 1,000.00
17kw Generator Assembly	1	EACH	$ 7,200.00	$ 7,200.00
Insulated Joint	6	EACH	$ 1,200.00	$ 7,200.00
SUBTOTAL MISCELLANEOUS MATERIAL				$ 19,650.00

CROSSING PACKAGE MATERIAL

Item	Quantity	Units	Unit Cost	Cost
Pre-wired Aluminum Bungalow, 6'x6'	1	EACH	$ 18,000.00	$ 18,000.00
GCP 4000 2 Track (redundant)	1	EACH	$ 23,510.00	$ 23,510.00
Multi-freq NBS, 340-970 Hz	2	EACH	$ 330.00	$ 660.00
Shunt/Coupler Enclosure	2	EACH	$ 550.00	$ 1,100.00
DC Shunt Enhancer Panel	1	EACH	$ 1,390.00	$ 1,390.00
DC converter, 2TC	1	EACH	$ 550.00	$ 550.00
Relay, ST, 2 Ω, 400012 w/Plugboard	1	EACH	$ 600.00	$ 600.00
Resistor (4 Ohm & 2.5 Ohm)	2	EACH	$ 45.00	$ 90.00
Swing Rack 2 Position	1	EACH	$ 120.00	$ 120.00
SEAR II, ILOD	2	EACH	$ 408.00	$ 816.00
Modem, Cellular	1	EACH	$ 3,375.00	$ 3,375.00
Wayside Access Gateway	1	EACH	$ 850.00	$ 850.00
SEAR II, Ground Fault Sensor	1	EACH	$ 420.00	$ 420.00
Convertor, 12VDC/12VDC	1	EACH	$ 1,431.00	$ 1,431.00
5 Way Antenna with 36” Pole Kit	1	EACH	$ 1,500.00	$ 1,500.00
Rectifier, NRS 20A	1	EACH	$ 380.00	$ 380.00
Rectifier, NRS 40A	1	EACH	$ 575.00	$ 575.00
Battery, Ni-Cad, SPL 250 AH	11	EACH	$ 200.00	$ 2,200.00
Battery, Ni-Cad, SPL 340 AH	9	EACH	$ 275.00	$ 2,475.00
LED Flasher & Gate Assembly, 2-Way	2	EACH	$ 8,900.00	$ 17,800.00
LED Flasher & Crossarm Assy, 1-Way	1	EACH	$ 985.00	$ 985.00
Foundation, S-2	2	EACH	$ 1,100.00	$ 2,200.00
Arm, E-Z Gate, 16-24'	2	EACH	$ 605.00	$ 1,210.00
Gatekeeper, SK-1000	2	EACH	$ 1,410.00	$ 2,820.00
Bell, Electronic	2	EACH	$ 385.00	$ 770.00
Sign, "Stop on Red Signal" w/Hardware	2	EACH	$ 160.00	$ 320.00
Wire, 2c/6, T10456	600	FEET	$ 1.63	$ 978.00
Cable,3c/6,T10458	100	FEET	$ 3.21	$ 321.00
Cable,7c/6,9c/14, T12481	400	FEET	$ 5.20	$ 2,080.00
SUBTOTAL CROSSING PACKAGE MATERIAL				$ 89,526.00
TOTAL MATERIAL				$ 109,176.00

LABOR

SIGNAL LABOR

Item	Gang Days	Cost/Day	Cost
6-man Gang	14	$ 2,500.00	$ 35,000.00
SUBTOTAL SIGNAL LABOR			$ 35,000.00

MISCELLANEOUS LABOR

Item	Quantity	Units	Unit Cost	Cost
Preliminary Engineering	1	L.S.	$ 2,500.00	$ 2,500.00
Construction Engineering	1	L.S.	$ 300.00	$ 300.00
Accounting	1	L.S.	$ 200.00	$ 200.00
SUBTOTAL MISCELLANEOUS LABOR				$ 3,000.00
TOTAL LABOR				$ 38,000.00

OTHER

Item	Quantity	Units	Unit Cost	Cost
Contractor/Rented Equipment	1	L.S.	$ 8,750.00	$ 8,750.00
Directional Boring (By Others)	125	FT	$ 41.00	$ 5,125.00
Power Service, AC	1	L.S.	$ 15,000.00	$ 15,000.00
Freight on Crossing Package	1	L.S.	$ 6,000.00	$ 6,000.00
Preliminary Engineering (Contracted)	1	L.S.	$ 2,750.00	$ 2,750.00
Construction Engineering (Contracted)	1	L.S.	$ 8,000.00	$ 8,000.00
Per Diem/Business Expense	1	L.S.	$ 21,000.00	$ 21,000.00
Sales Tax on Material	1	L.S.	$ 6,267.00	$ 6,267.00
TOTAL OTHER				$ 72,892.00
TOTAL DIRECT COSTS				$ 220,068.00

FHWA ADDITIVES

Material		$ 109,176.00	
Material Additive	5.00%		$ 5,459.00
Signal Labor		$ 35,000.00	
Signal Labor Additive	159.61%		$ 55,864.00
Engineering Labor		$ 2,800.00	
Engineering Labor Additive	159.61%		$ 4,469.00
Accounting Labor		$ 200.00	
Accounting Labor Additive	159.61%		$ 319.00
Other		$ 72,892.00	
		=========	=========
TOTAL DIRECT COSTS		$ 220,068.00	
TOTAL FHWA ADDITIVES			$ 66,111.00
			=========
GRAND TOTAL FHWA BASIS			$ 286,179.00

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N

CSX START
MANHATTAN BLVD

START
NEW YORK AVE
520'
30SEC @ 10MPH

START
NEW YORK AVE
520'
30SEC @ 10MPH

XP4
1T1
790HZ

1T2
790HZ

MANHATTAN BLVD (CSX)
DOT*867 101H

NEW YORK AVE
DOT*905 282V

MANHATTAN JCT.

4' X 6'
CSX
BUNG.

AC
SERVICE

3R

TO MILWAUKEE JCT.

MAIN — C3T — R — R — D3T — B — R — 03RT — B — 790HZ — B — XT — R — 790HZ — *XX — NS

CONT'D ON
SHO-000.60-T

6' X 6'
BUNG.
M.000.28

GEN

AC
SERVICE

81' ± | 50' ± | ℄ | 50' ± | 409' ± | 645' ± | 1227' ± | 520' ± | 62' ± | ℄ | 62' ± | 520' ± | 1296' ± | 714' ± | PS

M.000.59 — M.000.58 — M.000.57 — M.000.49 — M.000.39 — M.000.29 — M.000.28 — M.000.27 — M.000.17 — M.000.00

NOTES

1) ALL APPROACH DISTANCES MEASURED FROM TRACK LEADS

DENOTES MULTIFREQUENCY NARROW-BAND SHUNT *62775-3497

SMI 23 SEP 2019

TO BE CONFIRMED

CONFIRMED
DATE _____
BY _____
(PRINT NAME)

PROPOSED
DESIGN NO. 19-0155
RED-IN YELLOW-OUT

AS INSTALLED
DATE _____
BY _____
(PRINT NAME)

PROPOSED D	M	Y	REVISIONS	D	C	COMPLETED D	M	Y	C
			PLAN REDRAWN			21	07	17	JCM
23	09	19	M.000.28 CWT UPGRADE	NAD	MKN				

REGION SOUTHERN
SUB. SHORE LINE 304

SIGNALS AND COMMUNICATIONS
HOMEWOOD

DES.
CH.

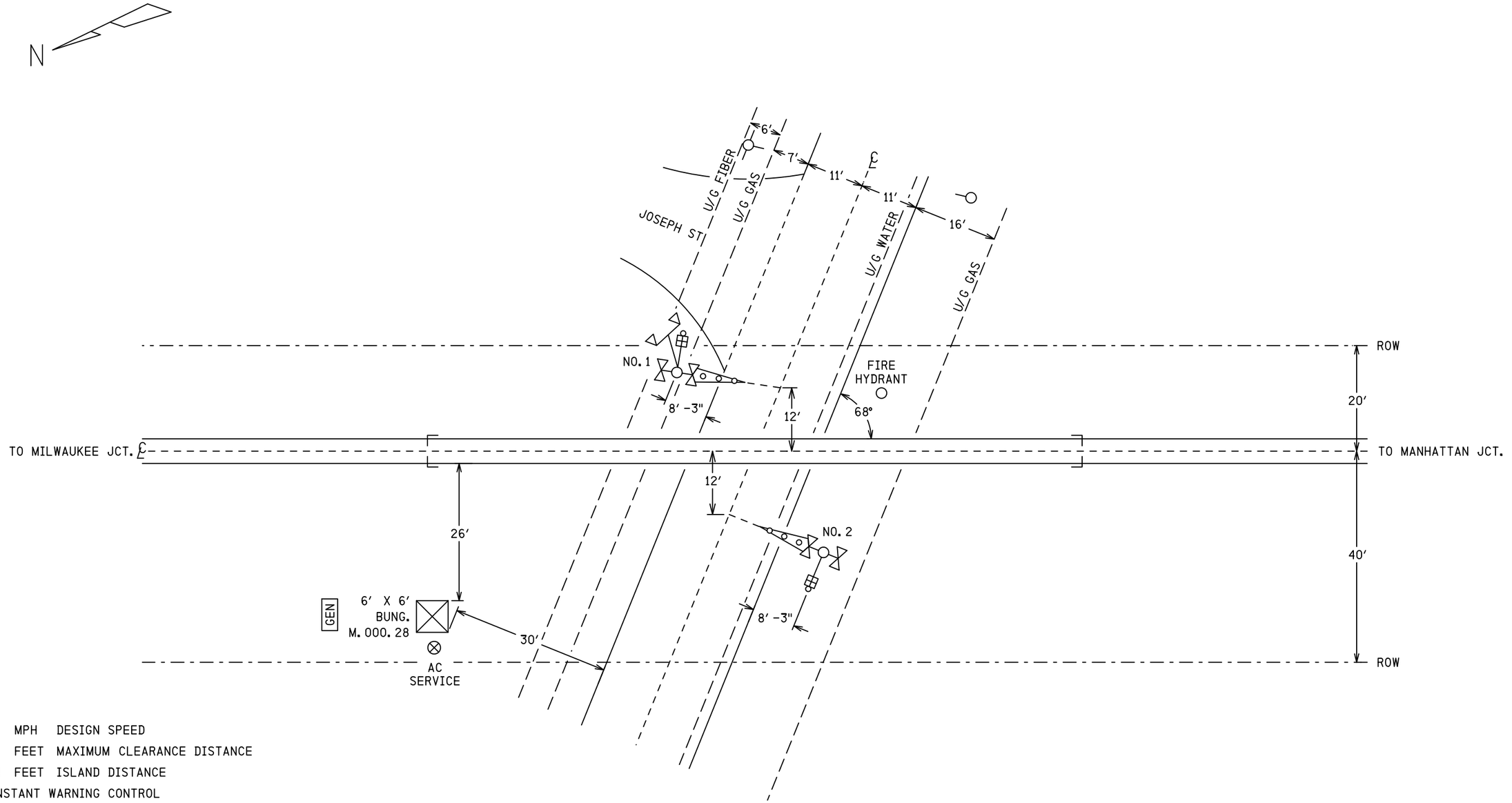
TRACK PLAN
M.000.00 TO M.000.59

SHO-000.00-T

SIEMENS MOBILITY INC

DES.: NAD	DATE: 23/09/19
CKD.: MKN	ISSUE DATE: N/A
DRN.: JCM	PLAN NO.: N/A
P TIME: 15:59	P DATE: 29-OCT-2019
JOB NO.: 300807736I	
EST. NO.: N/A	
SHEET N/A OF N/A	
CAD ID.: SHO-000.00-T	

SIEMENS MOBILITY INC
LOUISVILLE DIVISION, LOUISVILLE, KY



NOTES

1) 10 MPH DESIGN SPEED
2) 35 FEET MAXIMUM CLEARANCE DISTANCE
3) 124 FEET ISLAND DISTANCE
4) CONSTANT WARNING CONTROL
5) APPROACH CIRCUIT DISTANCE PROVIDES FOR:
   0 SEC CLEARANCE TIME
   0 SEC PREEMPTION TIME (0 SEC ADVANCE TIME)
   20 SEC MINIMUM WARNING TIME
   4 SEC GATE DESCENT DELAY
   10 SEC BUFFER TIME
   5 SEC EQUIPMENT REACTION TIME
6) 27 FEET NO. 1 GATE ARM LENGTH
   19 FEET NO. 2 GATE ARM LENGTH

SMI 23 SEP 2019

PROPOSED
DESIGN NO. 19-0155
RED-IN YELLOW-OUT

AS INSTALLED
DATE _____
BY _____
(PRINT NAME)

PROPOSED D	M	Y	REVISIONS	D	C	COMPLETED D	M	Y	C

REGION SOUTHERN
SUB. SHORE LINE 304

SIGNALS AND COMMUNICATIONS HOMEWOOD
DES. NAD
23 SEPTEMBER 2019
CH. MKN

SITUATION SKETCH
SCALE 1" = 20′
TOLEDO, OH

NEW YORK AVE

SHO-000. 28-0

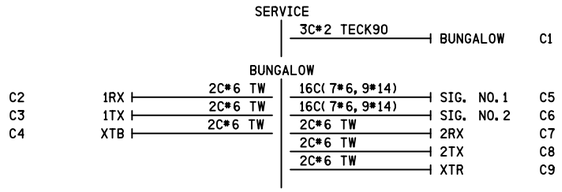
DOT# 905 282V

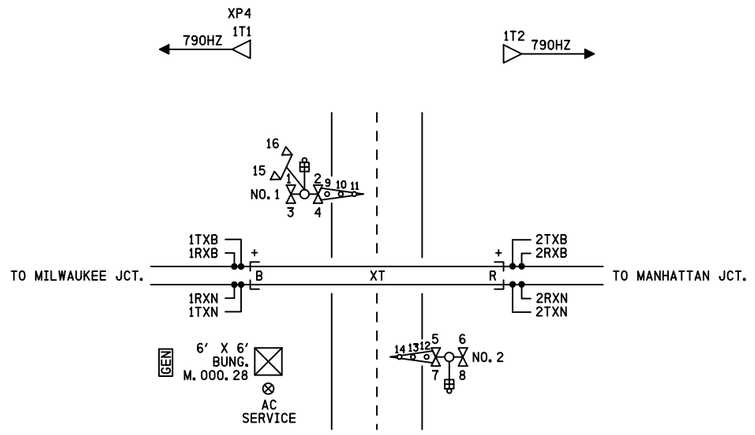
17

SIEMENS MOBILITY INC
LOUISVILLE DIVISION, LOUISVILLE, KY

FLASHING LIGHT UNITS ALIGNMENT TABLE						
PRIMARY FRONT LIGHTS FOR VEHICLES						
SIG #	LIGHT #	ROUNDEL		ROAD SPEED	DISTANCE (FT)	
		SIZE	TYPE	MPH	MINIMUM	ALIGNMENT
1	1, 2	12"	LED	25	215	
2	7, 8	12"	LED	25	215	
INTERMEDIATE FRONT LIGHTS FOR VEHICLES						
SIG #	LIGHT #	ROUNDEL		ROAD SPEED	DISTANCE (FT)	
		SIZE	TYPE	MPH	MINIMUM	ALIGNMENT
1	15, 16	12"	LED	N/A	N/A	
BACK LIGHTS FOR VEHICLES						
SIG #	LIGHT #	ROUNDEL		ROAD SPEED	DISTANCE (FT)	
		SIZE	TYPE	MPH	MINIMUM	ALIGNMENT
1	3, 4	12"	LED	N/A	N/A	50
2	5, 6	12"	LED	N/A	N/A	50

NOTE
FIELD IS TO PROVIDE THE ACTUAL ALIGNMENT DISTANCE AS DETERMINED BY SCP-706: ROAD CROSSING DEVICE LIGHT UNIT ALIGNMENT PROCEDURES





CONTENTS	SHEET NO.
SITUATION SKETCH	0
INDEX, CABLE & TRACK LAYOUT	01
TRACK, I/O, & GFD CIRCUITS	02
CROSSING CONTROLLER CIRCUITS	03
CROSSING MONITORING CIRCUITS	04
SIGNAL NO.1 CONTROL CIRCUITS	05
SIGNAL NO.2 CONTROL CIRCUITS	06
IXS XP4 CHASSIS CONFIGURATION & WIRING	07
IXS XP4 MODULE CONNECTOR USAGE	08
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CROSSING MONITORING CONFIGURATIONS	10
DC DISTRIBUTION	11
AC DISTRIBUTION	12
MAIN TERMINAL BOARD INSIDE DETAIL SIDE D	13
MAIN TERMINAL BOARD OUTSIDE DETAIL SIDE D	14
BUNGALOW LAYOUT TOP VIEW & SIDE A	15
BUNGALOW LAYOUT SIDES B, C, & D	16

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SIEMENS MOBILITY INC
DES.: NAD | DATE: 23/09/19 | JOB NO.: 3008077361
CKD.: MKN | ISSUE DATE: N/A | EST. NO.: XXXX
DRN.: NAD | PLAN NO.: N/A | SHEET 1 OF 16
P TIME: 15:59 | P DATE: 29-OCT-2019 | CAD ID.: SHO-000.28-01

SMI 23 SEP 2019

TO BE CONFIRMED

CONFIRMED
DATE _____
BY _____
(PRINT NAME)

PROPOSED
DESIGN NO. 19-0155
RED-IN YELLOW-OUT

AS INSTALLED
DATE _____
BY _____
(PRINT NAME)

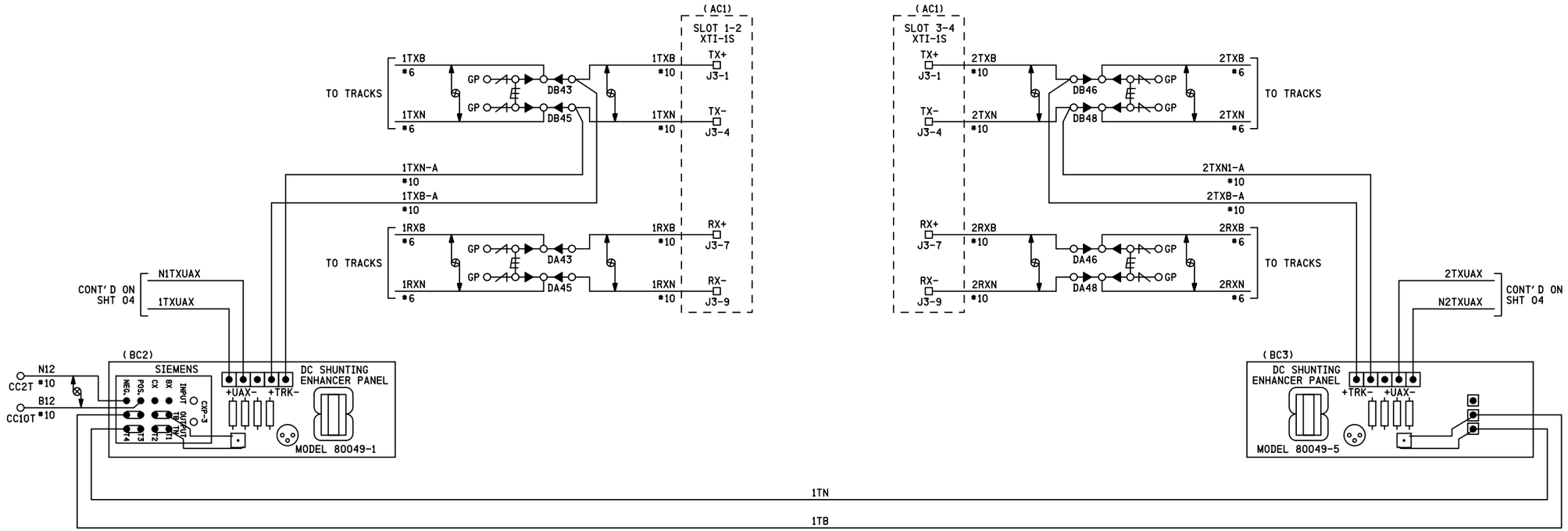
PROPOSED D	M	Y	REVISIONS	D	C	COMPLETED D	M	Y	C

REGION SOUTHERN
SUB. SHORE LINE 304

SIGNALS AND COMMUNICATIONS HOMEWOOD | DES. NAD
23 SEPTEMBER 2019 | CH. MKN

INDEX, CABLE & TRACK LAYOUT
TOLEDO, OH
NEW YORK AVE
SHO-000.28-01
DOT# 905 282V

SIEMENS MOBILITY INC
LOUISVILLE DIVISION, LOUISVILLE, KY



NOTES
1) ALL WIRING TO BE #16 AWG UNLESS OTHERWISE NOTED
2) TO TAKE MAIN TRACK (T1) OUT OF SERVICE, JUMPER AB1T TO AB1B
3) TO TAKE MAIN TRACK (T2) OUT OF SERVICE, JUMPER AB2T TO AB2B
4) OPEN TEST LINK TO TEST IXS GROUND
5) GP INDICATES GROUND PLANE

DENOTES TWISTED PAIR

" " DENOTES REFERENCE, NOT WIRE TAG

GP L C R DENOTES THRU TERMINAL

SMI 23 SEP 2019

PROPOSED
DESIGN NO. 19-0155
RED-IN YELLOW-OUT

AS INSTALLED
DATE _____
BY _____
(PRINT NAME)

REVISIONS	D	C	COMPLETED D	M	Y	C

REGION SOUTHERN
SUB. SHORE LINE 304

SIGNALS AND COMMUNICATIONS HOMEWOOD
DES. NAD
CH. MKN
23 SEPTEMBER 2019
TRACK, I/O, & GFD CIRCUITS
TOLEDO, OH
NEW YORK AVE
SHO-000.28-02
DOT#905 282V

SIEMENS MOBILITY INC
DES.: NAD
CKD.: MKN
DRN.: NAD
P TIME:15:59
DATE: 23/09/19
ISSUE DATE: N/A
PLAN NO.: N/A
P DATE: 29-OCT-2019
JOB NO.: 3008077361
EST. NO.: XXXX
SHEET 2 OF 16
CAD ID.: SHO-000.28-02

SIEMENS MOBILITY INC
LOUISVILLE DIVISION, LOUISVILLE, KY

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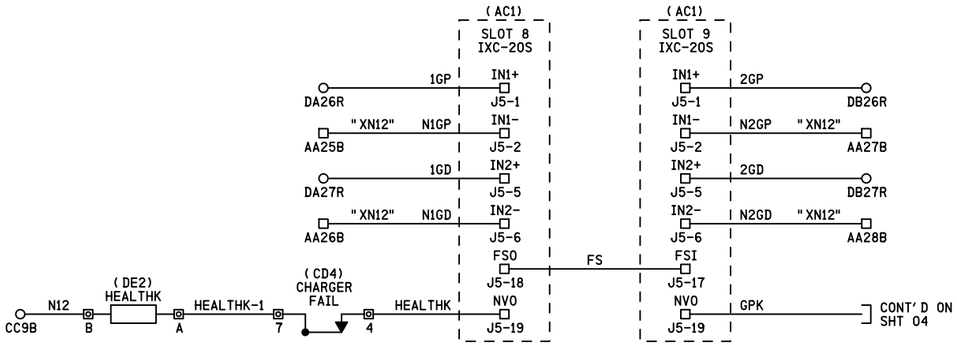
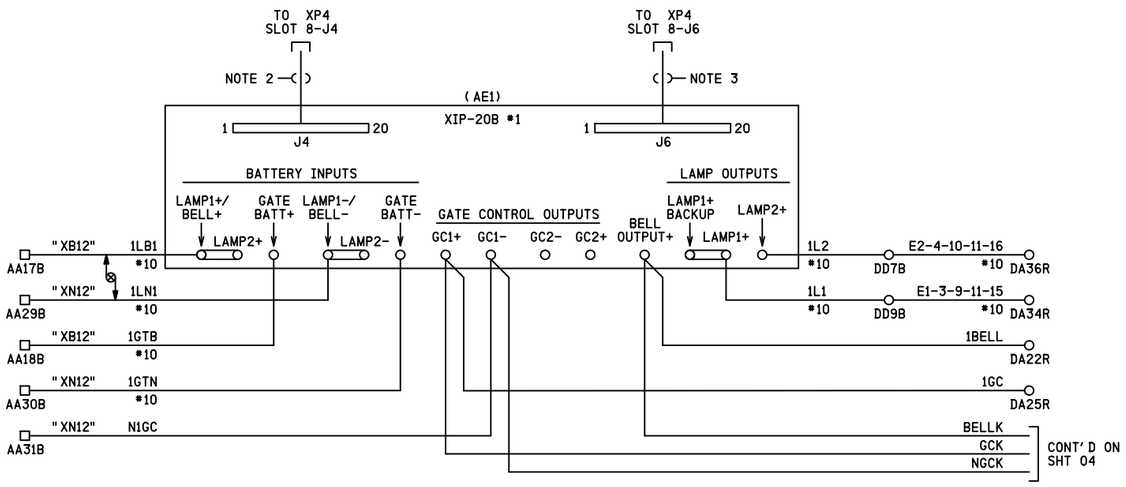
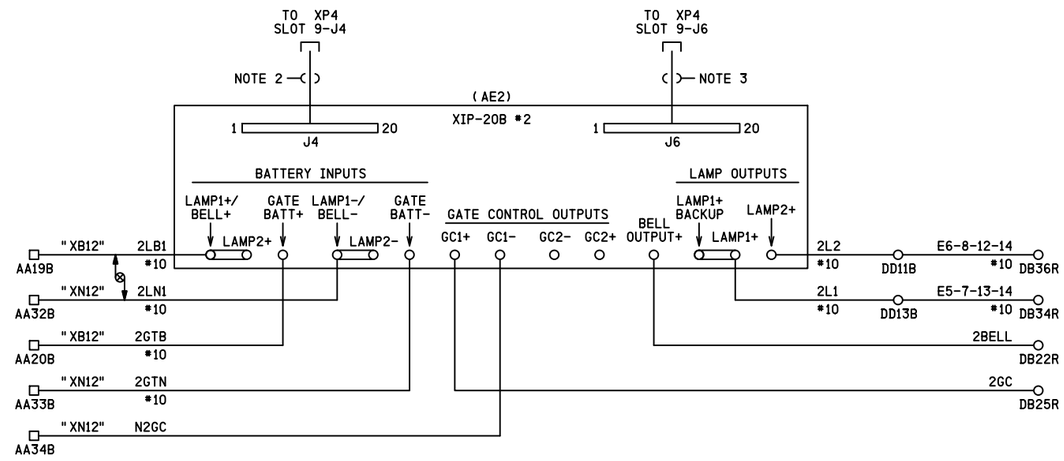






NOTES
1) ALL WIRING TO BE #16 AWG UNLESS OTHERWISE NOTED
2) 8' XIP TO IXC-20S CABLE, P/N: 075046-001
3) 8' XIP TO IXC-20S CABLE, P/N: 075047-001
" " DENOTES REFERENCE, NOT WIRE TAG
⊗ DENOTES TWISTED PAIR

XIP-20B CABLE DETAIL					
PIN	J4	J6	PIN	J4	J6
1	GATE B	GATE1 OUT+	11	LAMP1 N	LAMP2 N
2	GATE B	GATE1 OUT-	12	BELL B	N/A
3	GATE N	N/A	13	LAMP1 OUT+	LAMP2 OUT+
4	GATE N	N/A	14	LAMP1 OUT+	LAMP2 OUT+
5	N/A	GATE2 OUT+	15	LAMP1 OUT+	LAMP2 OUT+
6	N/A	GATE2 OUT-	16	LAMP1 OUT+	LAMP2 OUT+
7	RELAY COIL1	N/A	17	LAMP1 B	LAMP2 B
8	BELL OUT+	N/A	18	LAMP1 B	LAMP2 B
9	BELL N	N/A	19	LAMP1 B	LAMP2 B
10	LAMP1 N	LAMP2 N	20	LAMP1 B	LAMP2 B

SMI 23 SEP 2019

PROPOSED
DESIGN NO. 19-0155
RED-IN YELLOW-OUT

AS INSTALLED
DATE _____
BY _____
(PRINT NAME)

PROPOSED D	M	Y	REVISIONS	D	C	COMPLETED D	M	Y	C

REGION SOUTHERN
SUB. SHORE LINE 304

SIGNALS AND COMMUNICATIONS HOMEWOOD
23 SEPTEMBER 2019

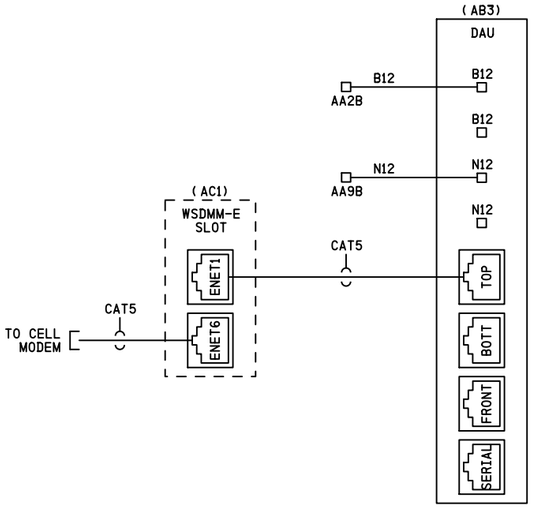
DES. NAD
CH. MKN

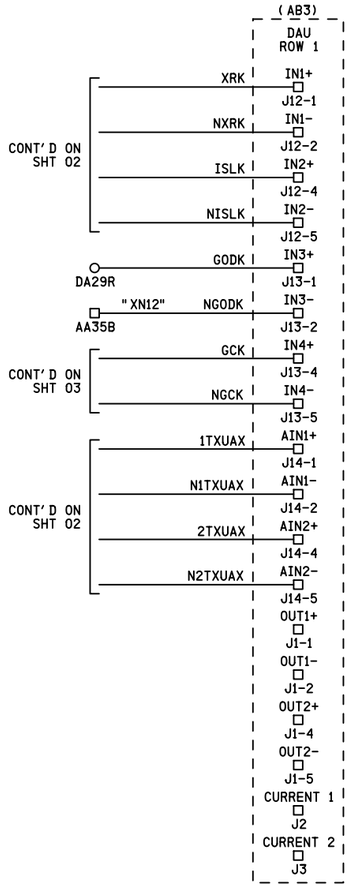
CROSSING CONTROLLER CIRCUITS
TOLEDO, OH
NEW YORK AVE
SHO-000.28-03
DOT#905 282V

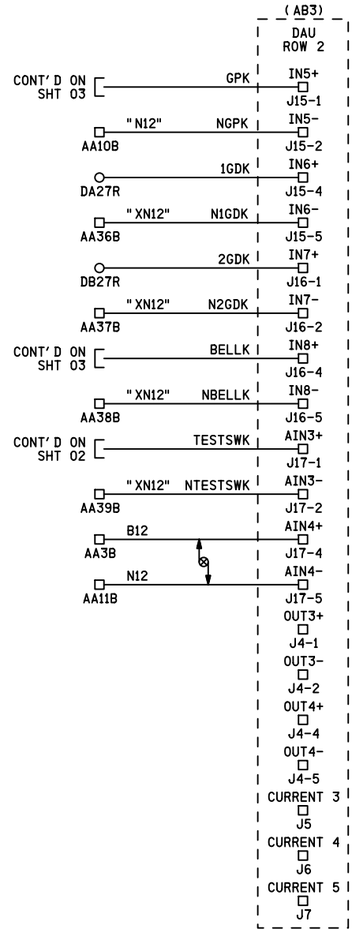
SIEMENS MOBILITY INC

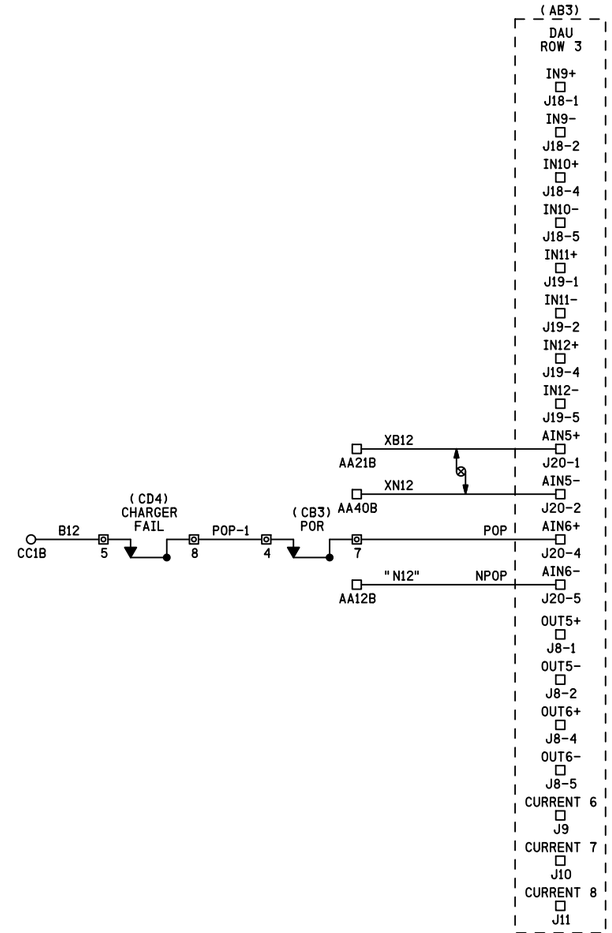
DES.: NAD	DATE: 23/09/19	JOB NO.: 300807736I		
CKD.: MKN	ISSUE DATE: N/A	EST. NO.: XXXX		
DRN.: NAD	PLAN NO.: N/A	SHEET 3 OF 16		
P TIME: 15:59	P DATE: 29-OCT-2019	CAD ID.: SHO-000.28-03		

SIEMENS MOBILITY INC
LOUISVILLE DIVISION, LOUISVILLE, KY









NOTES
1) ALL WIRING TO BE #16 AWG UNLESS OTHERWISE NOTED

DENOTES TWISTED PAIR

" " DENOTES REFERENCE, NOT WIRE TAG

SIEMENS MOBILITY INC	
DES.: NAD	DATE: 23/09/19
CKD.: MKN	ISSUE DATE: N/A
DRN.: NAD	PLAN NO.: N/A
P. TIME: 16:00	P. DATE: 29-OCT-2019
JOB NO.: 30080773 61	
EST. NO.: XXXX	
SHEET 4 OF 16	
CAD ID.: SHO-000.28-04	

SIEMENS MOBILITY INC
LOUISVILLE DIVISION, LOUISVILLE, KY

SMI 23 SEP 2019

PROPOSED
DESIGN NO. 19-0155
RED-IN YELLOW-OUT

AS INSTALLED
DATE _____
BY _____
(PRINT NAME)

	PROPOSED D	PROPOSED M	PROPOSED Y	REVISIONS	D	C	COMPLETED D	COMPLETED M	COMPLETED Y	C

REGION SOUTHERN
SUB. SHORE LINE 304

SIGNALS AND COMMUNICATIONS HOMEWOOD
23 SEPTEMBER 2019

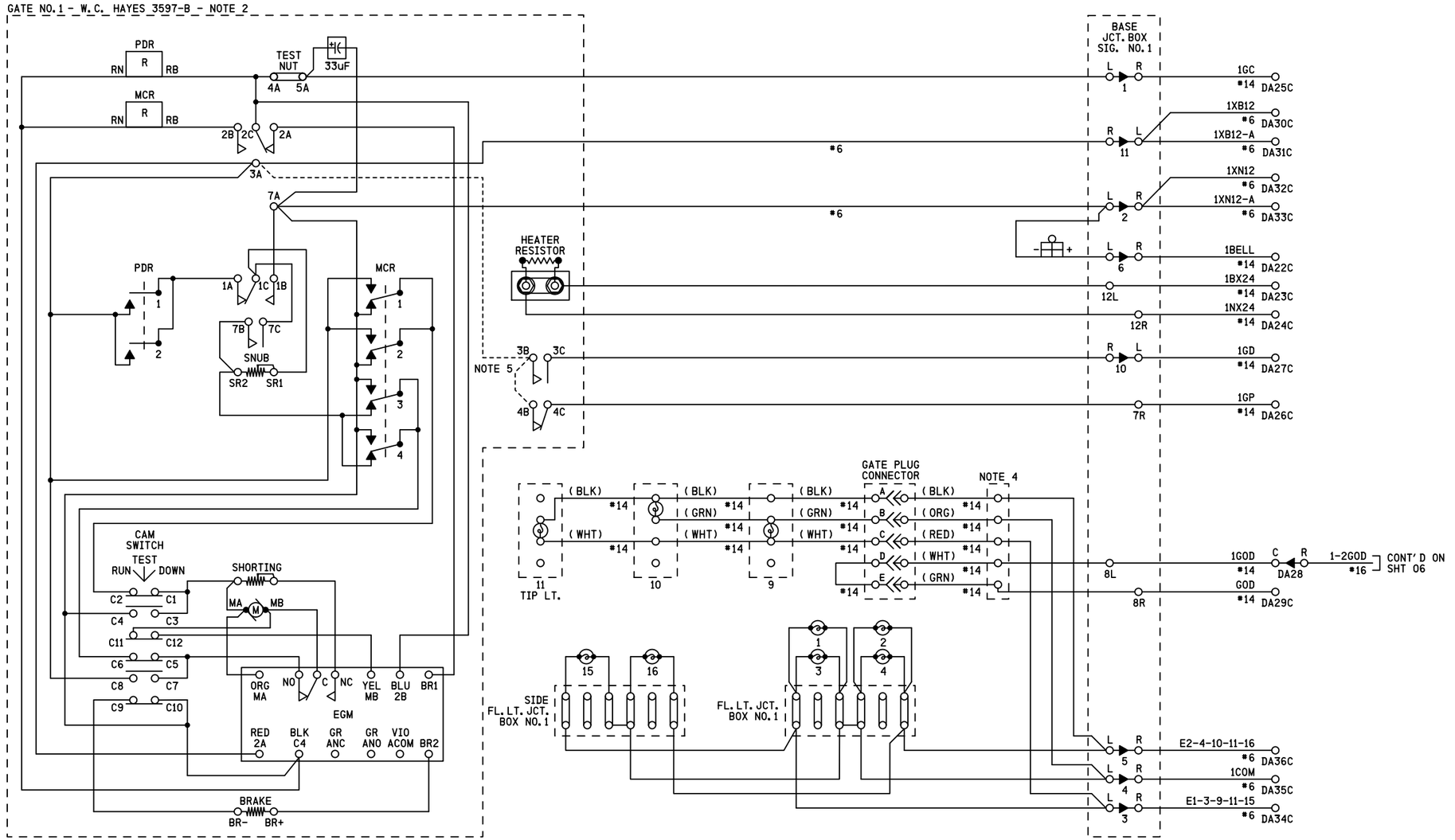
DES. NAD
CH. MKN

CROSSING MONITORING CIRCUITS

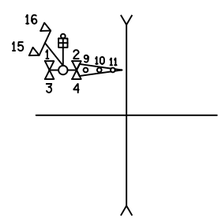
TOLEDO, OH
NEW YORK AVE

SHO-000.28-04

DOT#905 282V



3597-B CONTACT CONFIGURATION		
CONTACT	CLOSED AT	FUNCTION
1A	75° -90°	POWER DOWN
1B	0° -70°	SNUB DOWN
2B	0° -86°	POWER UP
2A	86° -90°	BRAKE ON
3	0° -10°	GATE DOWN
4	82° -90°	GATE CLEAR
5	10° -90°	BELL
6	SPARE	SPARE
7	0° -2°	SNUB



BASE JCT. SIG. NO.1 TERMINAL NUMBERING

L	R	L	R
1			7
2			8
3			9
4			10
5			11
6			12

NOTES
1) ALL WIRING TO BE *10 AWG UNLESS OTHERWISE NOTED
2) GATE DESCENT TIME (RELEASE FROM VERTICAL TO FULLY HORIZONTAL) TO BE WITHIN 11 SECONDS
3) ENSURE ALL TERMINALS HAVE TWO SHOULDER NUTS
4) TERMINALS LOCATED IN GATE MECHANISM
5) DASHED LINES REPRESENT STRAPS ADD STRAP BETWEEN TERMINALS 3A & 3B, 3B & 4B

SMI 23 SEP 2019

PROPOSED
DESIGN NO. 19-0155
RED-IN YELLOW-OUT

AS INSTALLED
DATE _____
BY _____
(PRINT NAME)

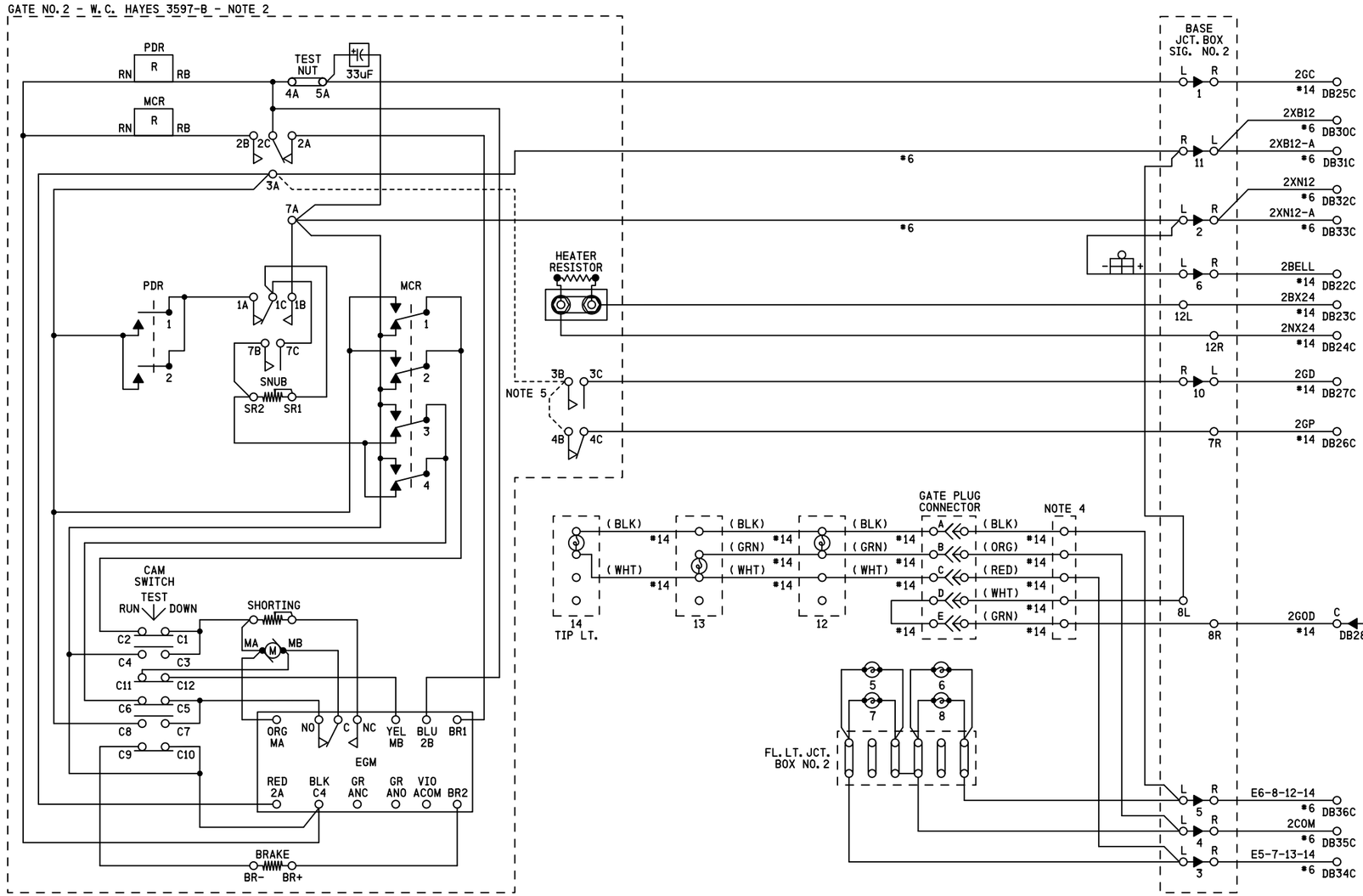
REVISIONS	D	C
PROPOSED D M Y		
COMPLETED D M Y		

REGION SOUTHERN
SUB. SHORE LINE 304
SIGNALS AND COMMUNICATIONS HOMEWOOD
23 SEPTEMBER 2019
DES. NAD
CH. MKN
SIGNAL NO.1 CONTROL CIRCUITS
TOLEDO, OH
NEW YORK AVE
SHO-000.28-05
DOT#905 282V

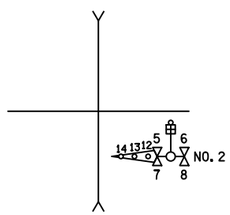
SIEMENS MOBILITY INC
DES.: NAD DATE: 23/09/19 JOB NO.: 300807736I
CKD.: MKN ISSUE DATE: N/A EST. NO.: XXXX
DRN.: NAD PLAN NO.: N/A SHEET 5 OF 16
P TIME: 16:00 P DATE: 29-OCT-2019 CAD ID.: SHO-000.28-05

SIEMENS MOBILITY INC
LOUISVILLE DIVISION, LOUISVILLE, KY

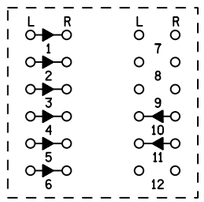
sho-000.28-05.dgn
29-OCT-2019 16:00



3597-B CONTACT CONFIGURATION		
CONTACT	CLOSED AT	FUNCTION
1A	75° -90°	POWER DOWN
1B	0° -70°	SNUB DOWN
2B	0° -86°	POWER UP
2A	86° -90°	BRAKE ON
3	0° -10°	GATE DOWN
4	82° -90°	GATE CLEAR
5	10° -90°	BELL
6	SPARE	SPARE
7	0° -2°	SNUB



BASE JCT. SIG. NO. 2 TERMINAL NUMBERING



NOTES
1) ALL WIRING TO BE #10 AWG UNLESS OTHERWISE NOTED
2) GATE DESCENT TIME (RELEASE FROM VERTICAL TO FULLY HORIZONTAL) TO BE WITHIN 11 SECONDS
3) ENSURE ALL TERMINALS HAVE TWO SHOULDER NUTS
4) TERMINALS LOCATED IN GATE MECHANISM
5) DASHED LINES REPRESENT STRAPS ADD STRAP BETWEEN TERMINALS 3A & 3B, 3B & 4B

SMI 23 SEP 2019

PROPOSED
DESIGN NO. 19-0155
RED-IN YELLOW-OUT

AS INSTALLED
DATE
BY
(PRINT NAME)

REVISIONS	PROPOSED D	PROPOSED M	PROPOSED Y	D	C	COMPLETED D	COMPLETED M	COMPLETED Y	C

REGION SOUTHERN
SUB. SHORE LINE 304
SIGNALS AND COMMUNICATIONS HOMEWOOD
DES. NAD
CH. MKN
23 SEPTEMBER 2019
SIGNAL NO. 2 CONTROL CIRCUITS
TOLEDO, OH
NEW YORK AVE
SHO-000.28-06
DOT#905 282V

SIEMENS MOBILITY INC
DES.: NAD
CKD.: MKN
DRN.: NAD
P TIME: 16:00
DATE: 23/09/19
ISSUE DATE: N/A
PLAN NO.: N/A
P DATE: 29-OCT-2019
JOB NO.: 300807736I
EST. NO.: XXXX
SHEET 6 OF 16
CAD ID.: SHO-000.28-06

SIEMENS MOBILITY INC
LOUISVILLE DIVISION, LOUISVILLE, KY

sho-000.28-06.dgn
29-OCT-2019 16:00

(AC1)

B12 *10 CC1B
N12 *10 CC9B
GND (GRN) *10 CF5T

SLOT 1	SLOT 2	SLOT 3	SLOT 4	SLOT 5	SLOT 6	SLOT 7	SLOT 8	SLOT 9
XTI-1S	XTI-1S	XTI-1S	XTI-1S	EMPTY	EMPTY	VIO-86S	IXC-20S	IXC-20S
ATC ENABLED	ATC ENABLED	ATC ENABLED	ATC ENABLED			VITAL IN 1	VITAL IN 1	VITAL IN 1
MASTER	MASTER	MASTER	MASTER			VITAL IN 2	VITAL IN 2	VITAL IN 2
SLAVE	SLAVE	SLAVE	SLAVE			VITAL IN 3	VITAL IN 3	VITAL IN 3
						VITAL IN 4	VITAL IN 4	VITAL IN 4
HIGH SIGNAL	HIGH SIGNAL	HIGH SIGNAL	HIGH SIGNAL			VITAL IN 5	LAMP BATT 1	LAMP BATT 1
LOW PHASE	LOW PHASE	LOW PHASE	LOW PHASE			VITAL IN 6	LAMP 1	LAMP 1
MOTION DETECT	MOTION DETECT	MOTION DETECT	MOTION DETECT			VITAL IN 7	LAMP BATT 2	LAMP BATT 2
						VITAL IN 8	LAMP 2	LAMP 2
ITC ENABLED	ITC ENABLED	ITC ENABLED	ITC ENABLED			BANK 1	GATE BATT	GATE BATT
						VITAL OUT 1		
ISLAND	ISLAND	ISLAND	ISLAND			VITAL OUT 2		
						VITAL OUT 3	GATE 1	GATE 1
						BANK 2	GATE 2	GATE 2
						VITAL OUT 4	BELL	BELL
						VITAL OUT 5	FLASH SYNC	FLASH SYNC
						VITAL OUT 6	NVOUT	NVOUT
						BANK 1 HEALTH		
						BANK 2 HEALTH		
HEALTH	HEALTH	HEALTH	HEALTH			HEALTH	HEALTH	HEALTH

CPS-3	BACK PLANE	NSM-1	VPM-3	GFD-1	SERIAL PORT 1	SERIAL PORT 2	SERIAL PORT 3	RMM-1
	CONTROL DISPLAY UNIT WILL MOUNT IN FRONT OF THE CPS-3, NSM-1, & VPM-3	HEALTH	CPU STATUS A B C PROG ENET1 ENET2 CDU USB	B1+ B1- B2+ B2- B3+ B3- 1 B2 2 B2 3 — 4 B3 5 B3 6 — 7 GND	EMPTY	EMPTY	EMPTY	WSDMM-E POWER SSD HEALTH STATUS OPTION 1 2 3 USB ENET1 ENET6 ENET2 ENET6 ENET2 ENET6

CHASSIS ID DIP PACK
UCI-3

ELECTROLOGIXS COMMUNICATION NOTES:

SERIAL PORT 1 (VPM-2+ & VPM-3)
- -GENISYS
- -SCS-128
- -LCP (MUST USE EXTERNAL CURRENT LOOP ADAPTER P/N 203051-000 FOR GENERIC/CUSTOM LCP UNITS OR CIO-2A TO SOFTWARE PANEL)
- -UCE

SERIAL PORT 2 & 3 (VPM-2+ & VPM-3)
- -ATCS (MUST USE CIO-MDA TO RADIO)
- -LCP (MUST USE EXTERNAL CURRENT LOOP ADAPTER P/N 203051-000 FOR GENERIC/CUSTOM LCP UNITS OR CIO-2A TO SOFTWARE PANEL)
- -HAWK
- -REMOTE (RP2000)

ETHERNET (IP-BASED PROTOCOLS VPM-3 ONLY)
GENISYS
REMOTE (RP2000)

NOTES
CDU-2 = CONTROL DISPLAY UNIT
CPS-3 = CENTRAL POWER SUPPLY
VPM-3 = VITAL PERIPHERAL MASTER MODULE
GFD-1 = GROUND FAULT DETECTOR MODULE
NSM-1 = NORMAL STANDBY MODULE
CIO-2A = COMMUNICATION INPUT/OUTPUT MODULE
CIO-1A = COMMUNICATION INPUT/OUTPUT MODULE
UCI-3 = CHASSIS INFORMATION MODULE
XTI-1S = CROSSING TRACK INTERFACE
IXC-20S = INTERGRATED CROSSING CONTROLLER
VIO-86S = VITAL 8 IN / 6 OUT
WSDMM-E = REMOTE MONITORING MODULE

SMI 23 SEP 2019

PROPOSED
DESIGN NO. 19-0155
RED-IN YELLOW-OUT

AS INSTALLED
DATE _____
BY _____
(PRINT NAME)

REVISIONS	PROPOSED D	PROPOSED M	PROPOSED Y	D	C	COMPLETED D	COMPLETED M	COMPLETED Y	C

REGION SOUTHERN
SUB. SHORE LINE 304

SIGNALS AND COMMUNICATIONS HOMEWOOD
23 SEPTEMBER 2019
DES. NAD
CH. MKN

IXS XP4 CHASSIS
CONFIGURATION & WIRING
TOLEDO, OH
NEW YORK AVE

SHO-000.28-07

DOT#905 282V

SIEMENS MOBILITY INC

DES.: NAD	DATE: 23/09/19	JOB NO.: 3008077361	
CKD.: MKN	ISSUE DATE: N/A	EST. NO.: XXXX	
DRN.: NAD	PLAN NO.: N/A	SHEET 7 OF 16	
P TIME: 16:00	P DATE: 29-OCT-2019	CAD ID.: SHO-000.28-07	

SIEMENS MOBILITY INC
LOUISVILLE DIVISION, LOUISVILLE, KY

sho-000,28-08.dgn
29-OCT-2019 16:00

XTI-1S NORMAL/STANDBY PERSONALITY MODULE (SLOT 1 & 2)

TX+	1TXB	1
TX-	1TXN	4
RX+	1RXB	7
RX-	1RXN	9

J3

M/S+		1
M/S-		2
M/S+		4
M/S-		5

J4

XTI-1S NORMAL/STANDBY PERSONALITY MODULE (SLOT 3 & 4)

TX+	2TXB	1
TX-	2TXN	4
RX+	2RXB	7
RX-	2RXN	9

J3

M/S+		1
M/S-		2
M/S+		4
M/S-		5

J4

EMPTY (SLOT 5)

EMPTY (SLOT 6)

VIO-86S PERSONALITY MODULE (SLOT 7)

IN 1+	TEST	1
IN 1-	NTEST	2
IN 2+	XT	5
IN 2-	NXT	6
IN 3+		9
IN 3-		10
IN 4+		13
IN 4-		14
IN 5+		17
IN 5-		18

J3

IN 6+		1
IN 6-		2
IN 7+	OOS2	5
IN 7-	NOOS2	6
IN 8+	OOS1	9
IN 8-	NOOS1	10
OUT 6+		17
OUT 6-		18

J4

OUT 1+	XRK	1
OUT 1-	NXRK	2
OUT 2+	ISLK	5
OUT 2-	NISLK	6
OUT 3+		9
OUT 3-		10
OUT 4+		13
OUT 4-		14
OUT 5+		17
OUT 5-		18

J5

IXC-20S PERSONALITY MODULE (SLOT 8)

GTB	"1GTB"	1
GTB	"1GTB"	2
GTN	"1GTN"	3
GTN	"1GTN"	4
RLY1	"RLY1"	7
BELL	"1BELL"	8
BELN	"1BELN"	9
LN1	"1LN1"	10
LN1	"1LN1"	11
BELB	"1BELB"	12
LO1	"1L1"	13
LO1	"1L1"	14
LO1	"1L1"	15
LO1	"1L1"	16
LB1	"1LB1"	17
LB1	"1LB1"	18
LB1	"1LB1"	19
LB1	"1LB1"	20

J4

IN1+	1GP	1
IN1-	N1GP	2
IN2+	1GD	5
IN2-	N1GD	6
IN3+		9
IN3-		10
IN4+		13
IN4-		14
FSI		17
FSO	FS	18
NVO	HEALTHK	19

J5

GO1+	"1GC"	1
GO1-	"N1GC"	2
GO2+	"1GCA"	5
GO2-	"N1GCA"	6
LN2	"1LN2"	10
LN2	"1LN2"	11
LO2	"1L2"	13
LO2	"1L2"	14
LO2	"1L2"	15
LO2	"1L2"	16
LB2	"1LB2"	17
LB2	"1LB2"	18
LB2	"1LB2"	19
LB2	"1LB2"	20

J6

IXC-20S PERSONALITY MODULE (SLOT 9)

GTB	"2GTB"	1
GTB	"2GTB"	2
GTN	"2GTN"	3
GTN	"2GTN"	4
RLY1	"RLY1"	7
BELL	"2BELL"	8
BELN	"2BELN"	9
LN1	"2LN1"	10
LN1	"2LN1"	11
BELB	"2BELB"	12
LO1	"2L1"	13
LO1	"2L1"	14
LO1	"2L1"	15
LO1	"2L1"	16
LB1	"2LB1"	17
LB1	"2LB1"	18
LB1	"2LB1"	19
LB1	"2LB1"	20

J4

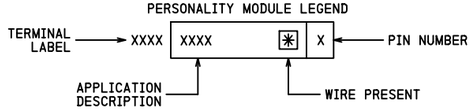
IN1+	2GP	1
IN1-	N2GP	2
IN2+	2GD	5
IN2-	N2GD	6
IN3+		9
IN3-		10
IN4+		13
IN4-		14
FSI	FS	17
FSO		18
NVO	GPK	19

J5

GO1+	"2GC"	1
GO1-	"N2GC"	2
GO2+	"2GCA"	5
GO2-	"N2GCA"	6
LN2	"2LN2"	10
LN2	"2LN2"	11
LO2	"2L2"	13
LO2	"2L2"	14
LO2	"2L2"	15
LO2	"2L2"	16
LB2	"2LB2"	17
LB2	"2LB2"	18
LB2	"2LB2"	19
LB2	"2LB2"	20

J6

PERSONALITY MODULE LEGEND



NOTES
" " DENOTES REFERENCE, NOT WIRE TAG

SIEMENS MOBILITY INC

DES.: NAD	DATE: 23/09/19
CKD.: MKN	ISSUE DATE: N/A
DRN.: NAD	PLAN NO.: N/A
P TIME: 16:00	P DATE: 29-OCT-2019
JOB NO.: 3008077361	
EST. NO.: XXXX	
SHEET 8 OF 16	
CAD ID.: SHO-000,28-08	

SMI 23 SEP 2019

PROPOSED
DESIGN NO. 19-0155
RED-IN YELLOW-OUT

AS INSTALLED
DATE _____
BY _____
(PRINT NAME)

PROPOSED D	M	Y	REVISIONS	D	C	COMPLETED D	M	Y	C

REGION SOUTHERN
SUB. SHORE LINE 304

SIGNALS AND COMMUNICATIONS HOMEWOOD
DES. NAD
23 SEPTEMBER 2019
CH. MKN

IXS XP4 MODULE CONNECTOR USAGE
TOLEDO, OH
NEW YORK AVE

SHO-000.28-08

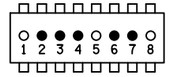
DOT#905 282V

SIEMENS MOBILITY INC
LOUISVILLE DIVISION, LOUISVILLE, KY

EXECUTIVE INFORMATION		
VPM-3	VERSION	CRC
VPM-A PROCESSOR	7.XX	XXXXXXXX
VPM-B PROCESSOR	7.XX	XXXXXXXX
VPM-C PROCESSOR	7.XX	XXXXXXXX

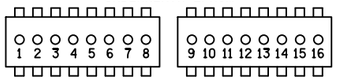
APPLICATION SOFTWARE INFORMATION	
SHO-000.28-XP4.MB1	CHECKSUM: XXXX / CRC: XXXX
REV.	A
SHO-000.28-XP4V.B1	CHECKSUM: XXXX / CRC: XXXX
SHO-000.28-XP4NV.B1	CHECKSUM: XXXX / CRC: XXXX
YEAR COMPILED	2019
MONTH COMPILED	XXXX
CHASSIS ID	137

CHASSIS ID DIP SHUNTS
LOCATED ON BACKPLANE
UNDERNEATH UCI-3 MODULE



● = TAB PUNCHED OUT (BROKEN)
○ = TAB INTACT (MADE)
LEAVE TAB INTACT TO OBTAIN ID NUMBER

APPLICATION ID DIP SHUNTS
LOCATED INSIDE UCI-3 MODULE
UNDERNEATH EPROM



● = TAB PUNCHED OUT (BROKEN)
○ = TAB INTACT (MADE)
LEAVE TAB INTACT TO OBTAIN ID NUMBER

VPM3 ETHERNET SETUP	
PORT 1 (TOP) IP ADDRESS	192.168.0.11
SUBNET MASK	255.255.255.0
PORT 2 (BOTTOM) IP ADDRESS	192.186.1.12
SUBNET MASK	255.255.255.0
DEFAULT GATEWAY	0.0.0.0

VITAL TIMER SETTINGS		
DESCRIPTION	TIMER	VALUE
MINIMUM WARNING TIME	MIN_ACT_T	20 SEC*

*-SET TO DEFAULT

BASIC APPROACH SETTINGS		
DESCRIPTION	TRACK 1	TRACK 2
FREQUENCY (HZ)	790	790
MASTER/SLAVE	MASTER	MASTER
TRANSMITTER CHECK (TCA)	✳	✳
DIRECTION MODE (UNI/BI)	UNI	UNI
LUMPED IMPEDANCE (LIA)	✳	✳
NBS COMP RX	✳	✳
TRACK ISLAND ASSIGN	TK1ISL	TK2ISL
APPROACH LENGTH (FT)	520	520
AUTO RX	✳	✳

ADVANCED APPROACH SETTINGS			
DESCRIPTION		TRACK 1	TRACK 2
MOTION DET	ENABLE	DISABLED	DISABLED
	TIME (SEC)	N/A	N/A
FALSE SHUNT	ENABLE	DISABLED	DISABLED
	RX	N/A	N/A
	TIME (SEC)	N/A	N/A
APPROACH RELEASE	ENABLE	DISABLED	DISABLED
	RX	N/A	N/A
	TIME (SEC)	N/A	N/A
LOSS OF SHUNT TIMER (SEC)		30	30
IJ-LOS TIMER (SEC)		5	5
APPROACH SETTING		NORMAL	NORMAL

APPROACH MAINTENANCE SETTINGS		
DESCRIPTION	TRACK 1	TRACK 2
ENABLE/ DISABLE	ENABLED	ENABLED
DISABLE TIMEOUT	N/A	N/A
BALLAST COMP	✳	✳
PHASE COMP	✳	✳

MDR CONFIGURATION SETTINGS			
DESCRIPTION		MDR1	MDR2
WARNING TIME (SEC)		30	30
CW/MD		CW	CW
ADV PREEMPT TIME (SEC)		N/A	N/A
CWE WARNING TIME (SEC)		80	80
AUX RECOVERY DELAY (SEC)		5	5

MDR TRACK PARAMETERS			
DESCRIPTION		TRACK 1	TRACK 2
TRACK ASSIGNED		ASSIGNED	ASSIGNED
OFFSET DISTANCE (FT)		0	0
MD RESTART RX		50	50
SUDDEN SHUNT ZONE RX		0	0
POSITIVE START	ENABLE	DISABLED	DISABLED
	RX	0	0
	TIME (SEC)	0	0
POST JOINT DETECTION	ENABLE	ENABLED	ENABLED
	RX	15	15
	TIME (SEC)	15	15
CLEAR JOINT LOS	MODE	STANDARD	STANDARD
	RX	15	15
	TIME (SEC)	30	30

ISLAND SETUP			
DESCRIPTION	TRACK 1	TRACK 2	XT
ENABLE/ DISABLE	DISABLE	DISABLE	N/A
EXTERNAL ISLAND INPUT	N/A	N/A	SLOT 7 IN2
FREQUENCY (KHZ)	N/A	N/A	N/A
LOSS OF SHUNT (SEC)	N/A	N/A	2
FAULT DELAY	N/A	N/A	N/A

IXC-20S SETTINGS		
DESCRIPTION	SLOT 8	SLOT 9
CROSSING FLASH RATE	55	55
LAMP REGULATION	OFF	OFF
LAMP 1 OUTPUT VOLTAGE	12.0	12.0
LAMP 2 OUTPUT VOLTAGE	12.0	12.0
GATE 1 DELAY	4	4
GATE 2 DELAY	N/A	N/A

GFD-1 SETTINGS			
DESCRIPTION	BATTERY 1	BATTERY 2	BATTERY 3
BATTERY NAME	B12	XB12	N/A
CALIBRATED VOLTAGE	✳	✳	N/A
FAULT THRESHOLD (KΩ)	10	10	N/A
GROUND FAULT TIME (SEC)	5	5	N/A
LOW BATT ALARM VOLTAGE	✳	✳	N/A
HIGH BATT ALARM VOLTAGE	✳	✳	N/A

NOTES
✳ DENOTES FIELD ADJUSTMENT REQUIRED

SMI 23 SEP 2019

CONFIRM ALL PROGRAM DETAILS
TO BE CONFIRMED
CONFIRMED
DATE _____
BY _____
(PRINT NAME)

PROPOSED
DESIGN NO. 19-0155
RED-IN YELLOW-OUT
AS INSTALLED
DATE _____
BY _____
(PRINT NAME)

REVISIONS	D	C	COMPLETED D	M	Y	C

REGION SOUTHERN
SUB. SHORE LINE 304
SIGNALS AND COMMUNICATIONS HOMEWOOD
DES. NAD
23 SEPTEMBER 2019
CH. MKN
IXS XP4
PROGRAM INFORMATION
TOLEDO, OH
NEW YORK AVE
SHO-000.28-09
DOT#905 282V

SIEMENS MOBILITY INC
DES.: NAD
CKD.: MKN
DRN.: NAD
P TIME: 16:00
DATE: 23/09/19
ISSUE DATE: N/A
PLAN NO.: N/A
P DATE: 29-OCT-2019
JOB NO.: 300807736
EST. NO.: XXXX
SHEET 9 OF 16
CAD ID.: SHO-000.28-09

SIEMENS MOBILITY INC
LOUISVILLE DIVISION, LOUISVILLE, KY

sho-000.28-10.dgn
29-OCT-2019 16:00

FURTHER CONFIGURATION DETAILS TBD

WSDMM CONFIGURATION	
IP ADDRESS	192.168.0.101
SUBNET MASK	255.255.255.0
DEFAULT GATEWAY	192.168.0.100
HOSTNAME	SHO-000.28-WSDMM
TIMEZONE	-5/NEW_YORK

DAU CONFIGURATION	
IP ADDRESS	192.168.0.205
SUBNET MASK	255.255.255.0
DEFAULT GATEWAY	192.168.0.100
HOSTNAME	SHO-000.28-DAU
TIMEZONE	-5/NEW_YORK

FIELD TO CONFIRM
ALL CONFIGURATION DETAILS

TO BE CONFIRMED

CONFIRMED
DATE _____
BY _____
(PRINT NAME)

SMI 23 SEP 2019

PROPOSED
DESIGN NO. 19-0155
RED-IN YELLOW-OUT

AS INSTALLED
DATE _____
BY _____
(PRINT NAME)

	PROPOSED D	M	Y	REVISIONS	D	C	COMPLETED D	M	Y	C

REGION SOUTHERN
SUB. SHORE LINE 304

SIGNALS AND COMMUNICATIONS HOMEWOOD | DES. NAD
23 SEPTEMBER 2019 | CH. MKN

CROSSING MONITORING CONFIGURATIONS
TOLEDO, OH
NEW YORK AVE

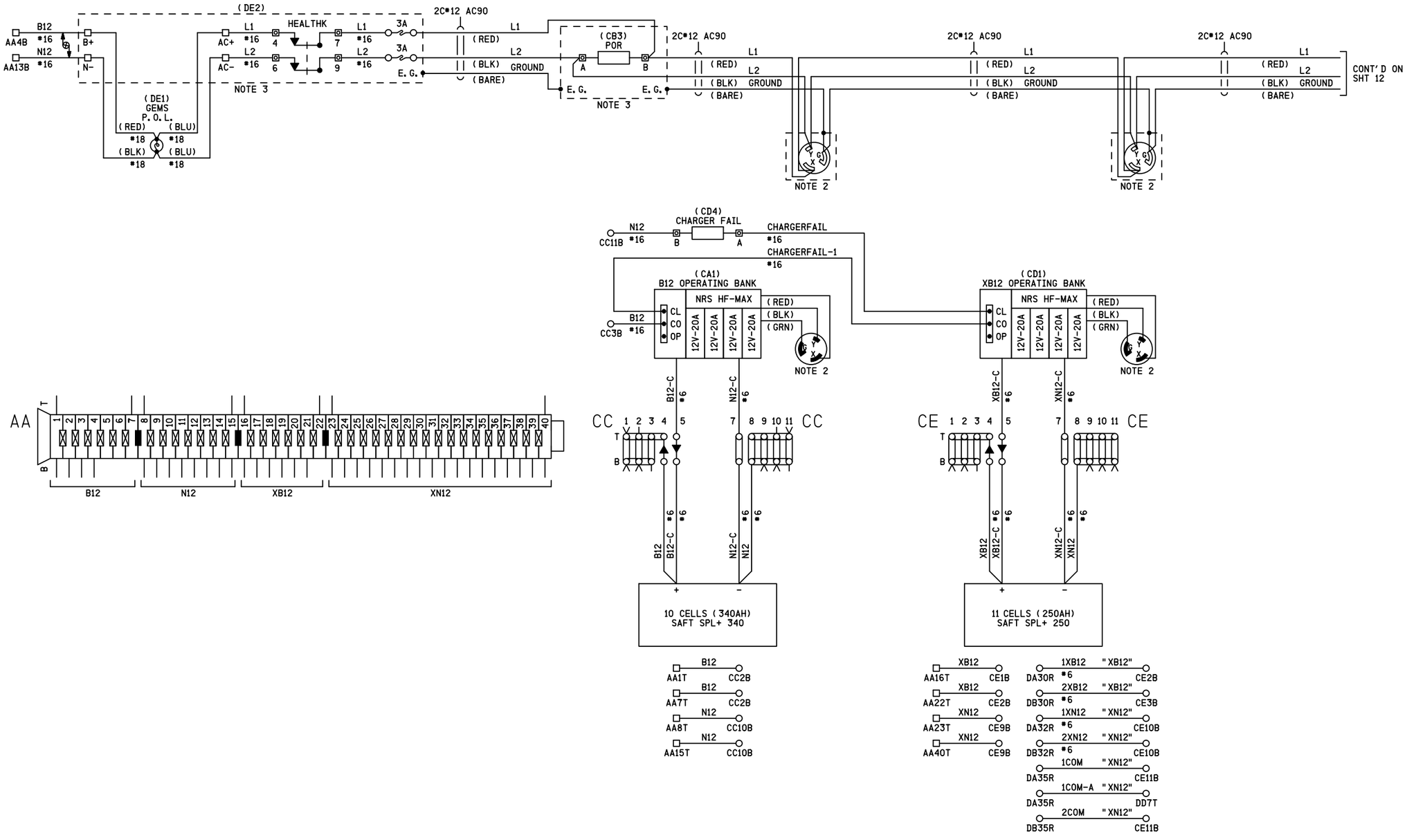
SHO-000.28-10

DOT# 905 282V

SIEMENS MOBILITY INC

DES.: NAD	DATE: 23/09/19
CKD.: MKN	ISSUE DATE: N/A
DRN.: NAD	PLAN NO.: N/A
P. TIME: 16:00	P. DATE: 29-OCT-2019
JOB NO.: 300807361	
EST. NO.: XXXX	
SHEET 10 OF 16	
CAD ID.: SHO-000.28-10	

SIEMENS MOBILITY INC
LOUISVILLE DIVISION, LOUISVILLE, KY



NOTES
1) ALL WIRING TO BE *10 AWG UNLESS OTHERWISE NOTED
2) REFER TO POWER STANDARD PS-902
3) REFER TO POWER STANDARD PS-907
" " DENOTES REFERENCE, NOT WIRE TAG
DENOTES TWISTED PAIR

1 WAGO TERMINAL 2 COND. 24-10AWG (WAGO 282-601)
DENOTES WAGO JUMPER CN* 02-45-872 (WAGO 282-402)
DENOTES WAGO SEPARATOR (WAGO 282-337)
DENOTES WAGO END PLATE CN* 02-45-870 (WAGO 282-317)
DENOTES WAGO END STOP CN* 02-46-646 (WAGO 249-117)

SMI 23 SEP 2019

PROPOSED
DESIGN NO. 19-0155
RED-IN YELLOW-OUT

AS INSTALLED
DATE
BY
(PRINT NAME)

REVISIONS	PROPOSED D	PROPOSED M	PROPOSED Y	D	C	COMPLETED D	COMPLETED M	COMPLETED Y	C

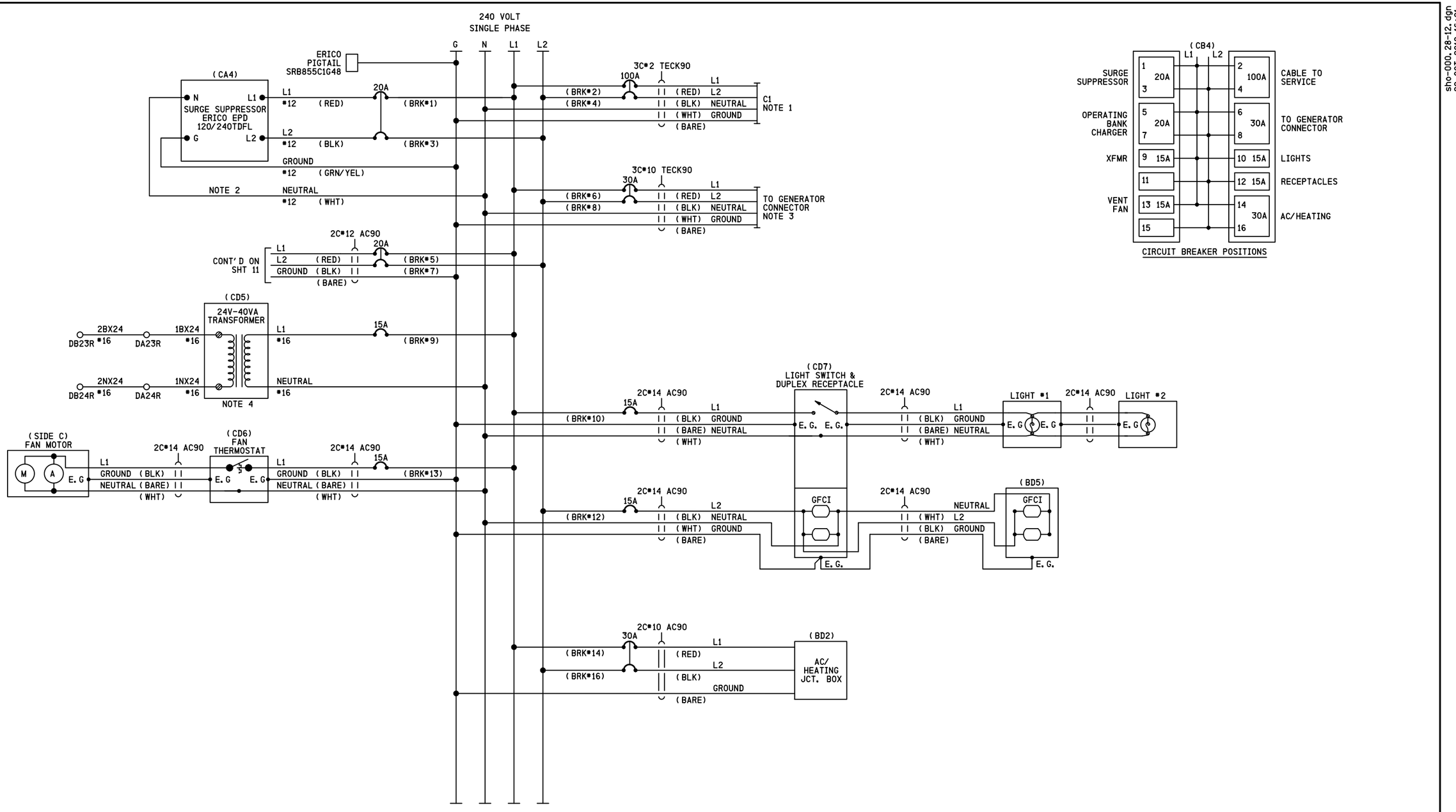
SIEMENS MOBILITY INC

DES.: NAD	DATE: 23/09/19	JOB NO.: 3008077361	
CKD.: MKN	ISSUE DATE: N/A	EST. NO.: XXXX	
DRN.: NAD	PLAN NO.: N/A	SHEET 11 OF 16	
P TIME: 16:00	P DATE: 29-OCT-2019	CAD ID.: SHO-000.28-11	

REGION SOUTHERN
SUB. SHORE LINE 304
SIGNALS AND COMMUNICATIONS HOMEWOOD
DES. NAD
CH. MKN
23 SEPTEMBER 2019
DC DISTRIBUTION
TOLEDO, OH
NEW YORK AVE
SHO-000.28-11
DOT#905 282V

SIEMENS MOBILITY INC
LOUISVILLE DIVISION, LOUISVILLE, KY

sho-000_28-11.dgn
29-OCT-2019 16:00



sho-000.28-12.dgn
29-OCT-2019 16:01

NOTES

1) CIRCUIT BREAKER NOT TO EXCEED 100 AMPERES
   RETAINING KIT PK2MB MUST BE USED WITH 100A BREAKER
   FEEDER CIRCUIT BREAKER AT STUB POLE SERVICE PANEL
   NOT TO EXCEED 100 AMPERES
   WHERE SEPARATE GROUND WIRE EXISTS BETWEEN THE SERVICE AND THE LOAD CENTER, REMOVE THE BRASS COLORED BONDING SCREW (REFER TO SCHEMATIC ON BOX COVER FOR EXACT LOCATION)
2) KEEP LEADS AS SHORT AS POSSIBLE
3) A TRANSFER SWITCH KIT MUST BE INSTALLED BETWEEN THE SERVICE DISCONNECT BREAKER AND THE GENERATOR HOOK UP MANUAL TRANSFER EQUIPMENT KIT PK4DTIM4LA
4) REFER TO PS-904

SMI 23 SEP 2019

PROPOSED
DESIGN NO. 19-0155
RED-IN YELLOW-OUT

AS INSTALLED
DATE _____
BY _____
(PRINT NAME)

REVISIONS	PROPOSED D	PROPOSED M	PROPOSED Y	D	C	COMPLETED D	COMPLETED M	COMPLETED Y	C

SIEMENS MOBILITY INC

DES. : NAD	DATE: 23/09/19
CKD. : MKN	ISSUE DATE: N/A
DRN. : NAD	PLAN NO. :N/A
P TIME:16:01	P DATE: 29-OCT-2019
JOB NO. : 3008077361	
EST. NO. :XXXX	
SHEET 12 OF 16	
CAD ID. : SHO-000.28-12	

REGION SOUTHERN
SUB. SHORE LINE 304

SIGNALS AND COMMUNICATIONS HOMEWOOD
23 SEPTEMBER 2019
DES. NAD
CH. MKN

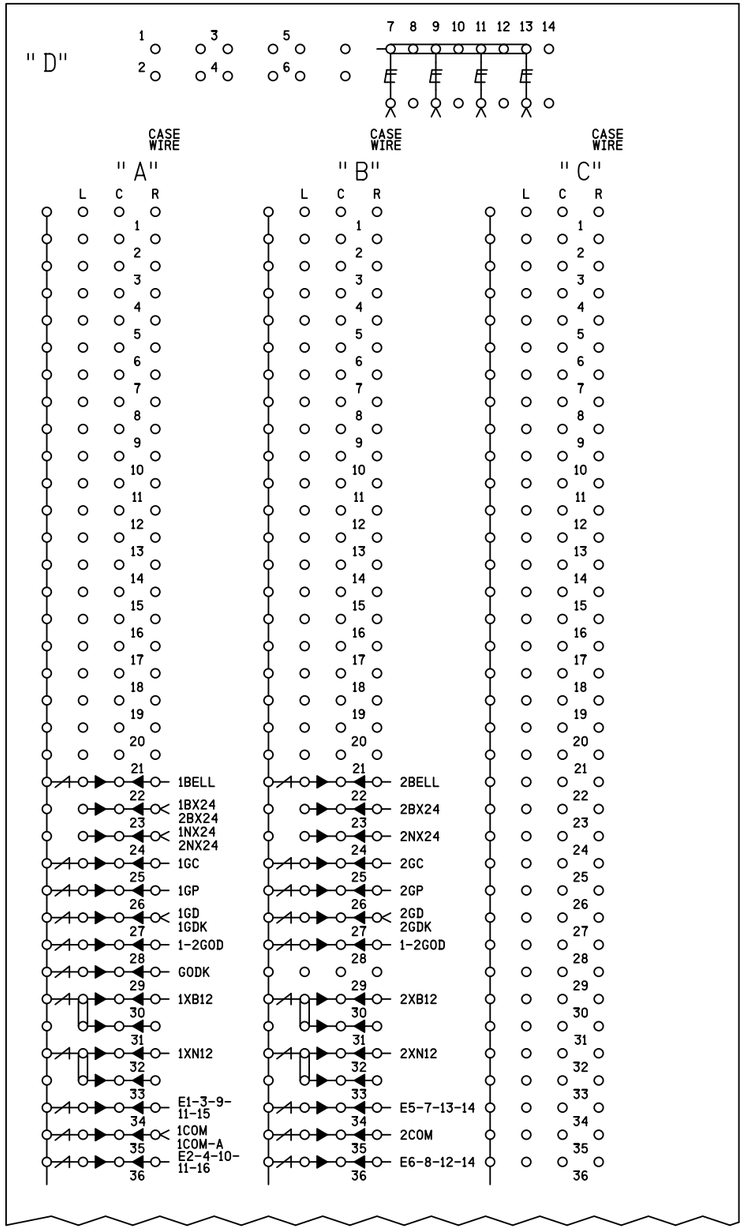
AC DISTRIBUTION

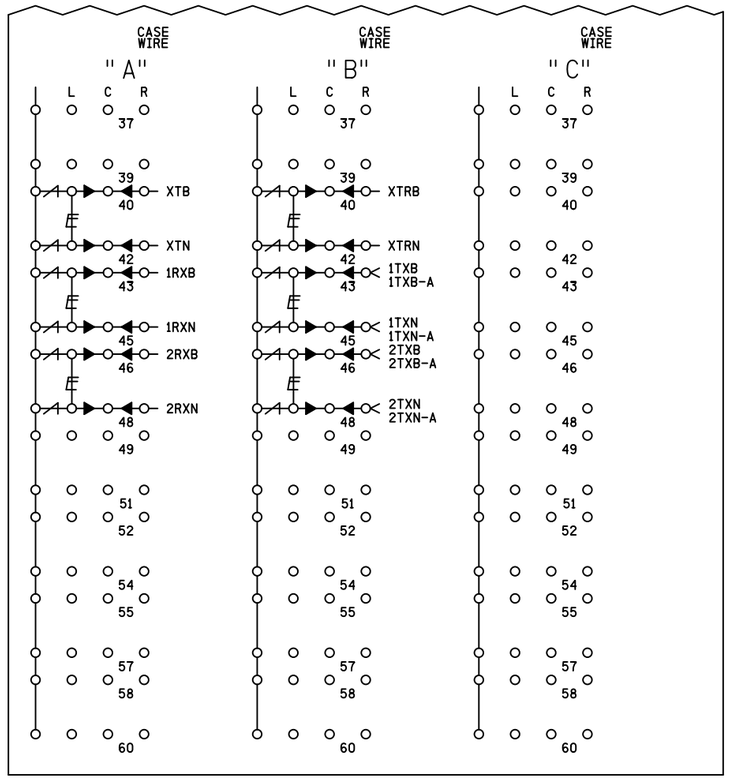
TOLEDO, OH
NEW YORK AVE

SHO-000.28-12

DOT#905 282V

SIEMENS MOBILITY INC
LOUISVILLE DIVISION, LOUISVILLE, KY





NOTES

E DENOTES HD EQUALIZER
REFER TO SCP 1101 FOR APPROVED TYPES

DENOTES ARRESTER
SEE SCP 1101 FOR APPROVED TYPES

DENOTES GROUND PLANE

DENOTES TEST LINK

SIEMENS MOBILITY INC			
DES.: NAD	DATE: 23/09/19	JOB NO.: 3008077361	
CKD.: MKN	ISSUE DATE: N/A	EST. NO.: XXXX	
DRN.: NAD	PLAN NO.: N/A	SHEET 13 OF 16	
P. TIME: 16:01	P. DATE: 29-OCT-2019	CAD ID.: SHO-000.28-13	

SIEMENS MOBILITY INC
LOUISVILLE DIVISION, LOUISVILLE, KY

SMI 23 SEP 2019

PROPOSED
DESIGN NO. 19-0155
RED-IN YELLOW-OUT

AS INSTALLED
DATE _____
BY _____
(PRINT NAME)

REVISIONS	D	C	COMPLETED D	COMPLETED M	COMPLETED Y	C

REGION SOUTHERN
SUB. SHORE LINE 304

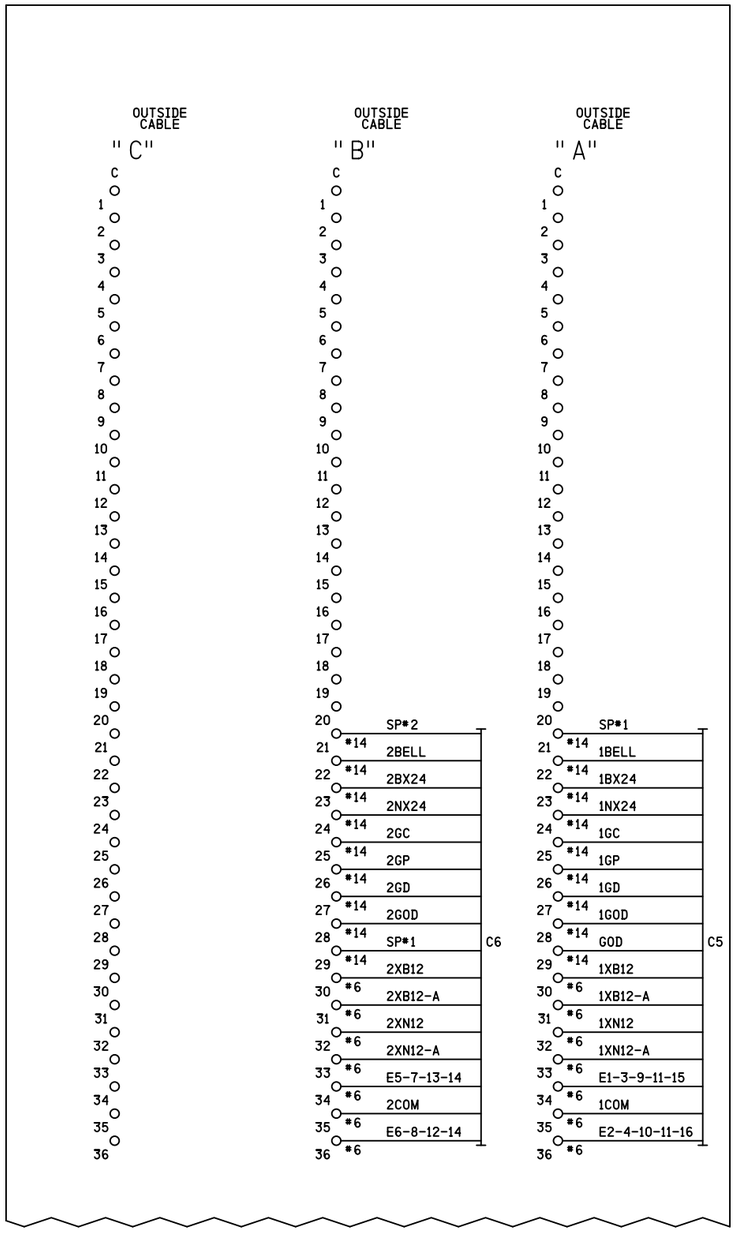
SIGNALS AND COMMUNICATIONS HOMEWOOD
23 SEPTEMBER 2019
DES. NAD
CH. MKN

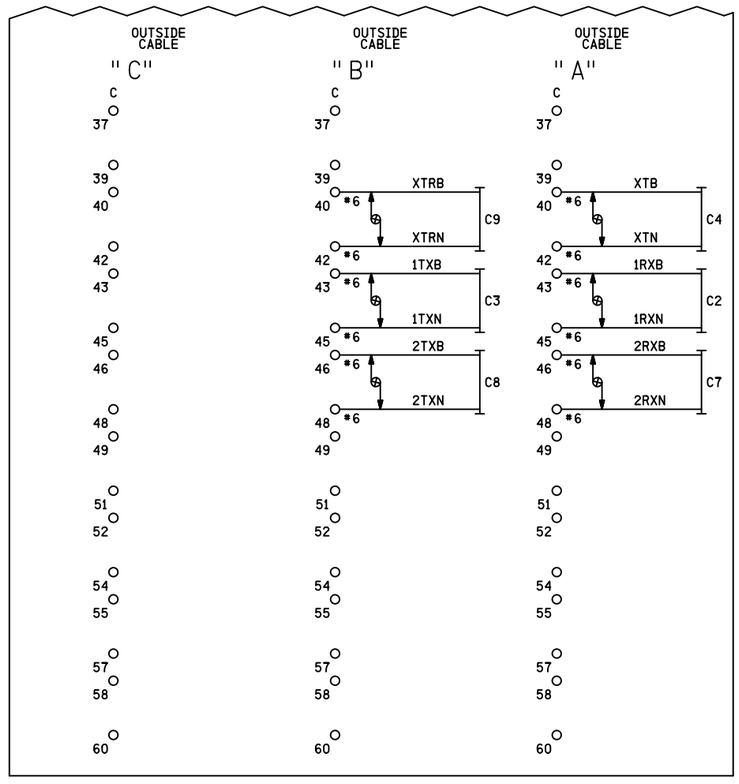
MAIN TERMINAL BOARD
INSIDE DETAIL SIDE D
TOLEDO, OH
NEW YORK AVE

SHO-000.28-13

DOT# 905 282V

sho-000.28-13.dgn
29-OCT-2019 16:01





NOTES

DENOTES TWISTED PAIR

SIEMENS MOBILITY INC

DES.: NAD	DATE: 23/09/19
CKD.: MKN	ISSUE DATE: N/A
DRN.: NAD	PLAN NO.: N/A
P. TIME: 16:01	P. DATE: 29-OCT-2019
JOB NO.: 30080777361	
EST. NO.: XXXX	
SHEET 14 OF 16	
CAD ID.: SHO-000.28-14	

SIEMENS MOBILITY INC
LOUISVILLE DIVISION, LOUISVILLE, KY

SMI 23 SEP 2019

PROPOSED
DESIGN NO. 19-0155
RED-IN YELLOW-OUT

AS INSTALLED
DATE _____
BY _____
(PRINT NAME)

PROPOSED D	M	Y	REVISIONS	D	C	COMPLETED D	M	Y	C

REGION SOUTHERN
SUB. SHORE LINE 304

SIGNALS AND COMMUNICATIONS HOMEWOOD
23 SEPTEMBER 2019

DES. NAD
CH. MKN

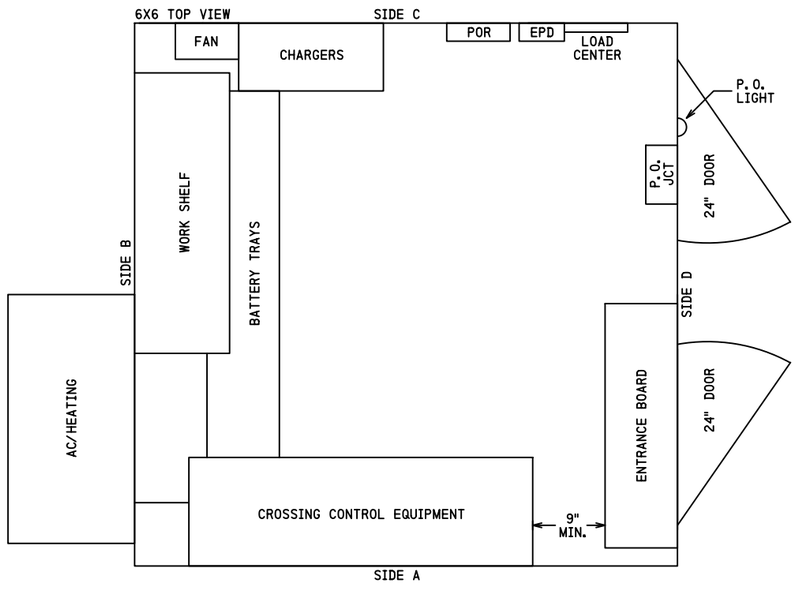
MAIN TERMINAL BOARD
OUTSIDE DETAIL SIDE D
TOLEDO, OH
NEW YORK AVE

SHO-000.28-14

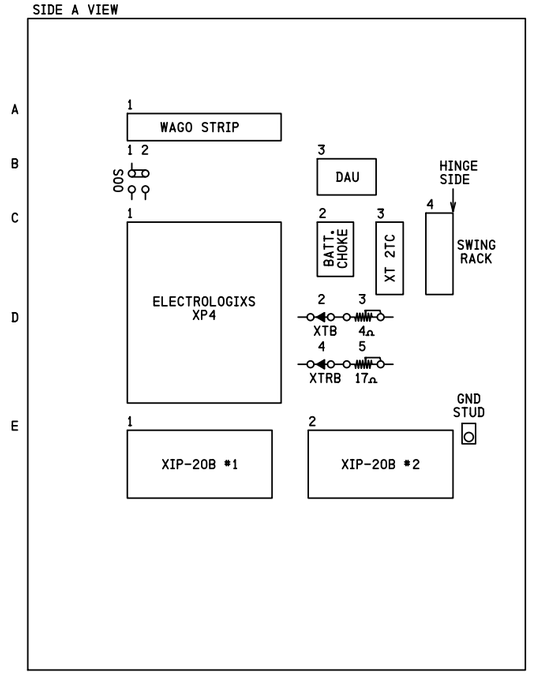
DOT#905 282V

sho-000.28-15.dgn
29-OCT-2019 16:01

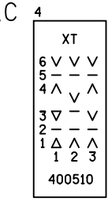
6X6 TOP VIEW



SIDE A VIEW



AC



SIEMENS MOBILITY INC			
DES.: NAD	DATE: 23/09/19	JOB NO.: 3008077361	
CKD.: MKN	ISSUE DATE: N/A	EST. NO.: XXXX	
DRN.: NAD	PLAN NO.: N/A	SHEET 15 OF 16	
P TIME: 16:01	P DATE: 29-OCT-2019	CAD ID.: SHO-000.28-15	

SMI 23 SEP 2019

PROPOSED
DESIGN NO. 19-0155
RED-IN YELLOW-OUT

AS INSTALLED
DATE _____
BY _____
(PRINT NAME)

REVISIONS	D	C	COMPLETED D	M	Y	C

REGION SOUTHERN
SUB. SHORE LINE 304

SIGNALS AND COMMUNICATIONS HOMEWOOD
23 SEPTEMBER 2019
DES. NAD
CH. MKN

BUNGALOW LAYOUT
TOP VIEW & SIDE A
TOLEDO, OH
NEW YORK AVE

SHO-000.28-15

DOT#905 282V

SIEMENS MOBILITY INC
LOUISVILLE DIVISION, LOUISVILLE, KY

sho-000.28-16.dgn
29-OCT-2019 16:01

CB 3

POR

6 5 4
9 8 7
3 2 1

P & B
KUP-14A15-240

CD 4

CHARGER FAIL

6 5 4
9 8 7
3 2 1

P & B
KUP-14D15-12

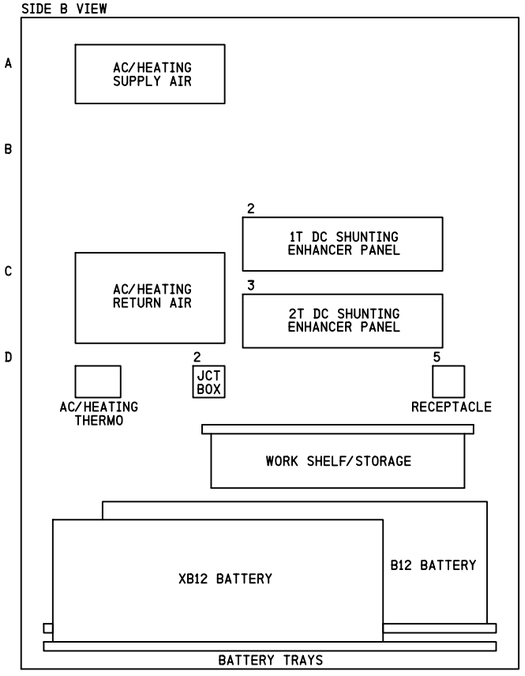
DE 2

HEALTHK

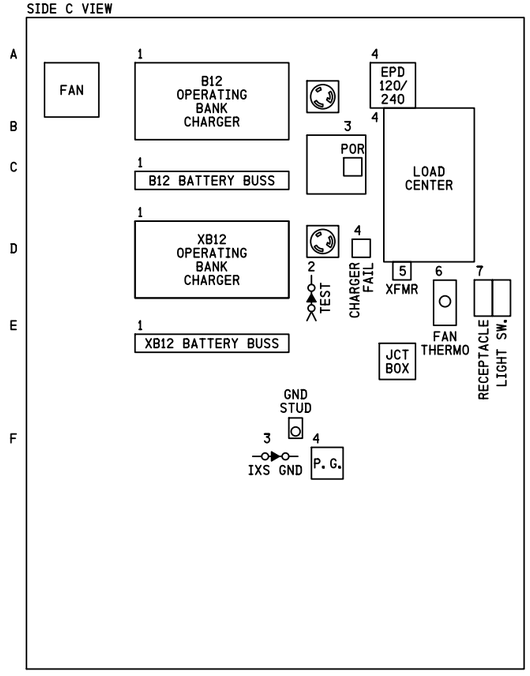
6 5 4
9 8 7
3 2 1

P & B
KUMP-14D18-12

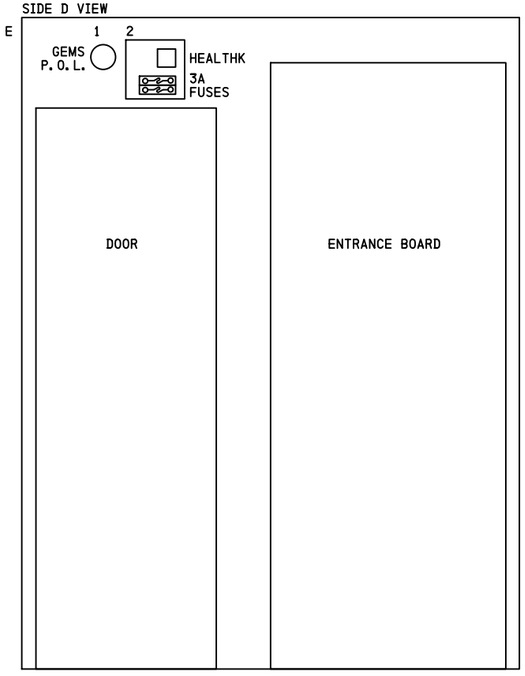
SIDE B VIEW



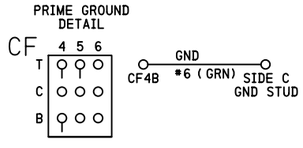
SIDE C VIEW



SIDE D VIEW



PRIME GROUND DETAIL



SMI 23 SEP 2019

PROPOSED
DESIGN NO. 19-0155
RED-IN YELLOW-OUT

AS INSTALLED
DATE _____
BY _____
(PRINT NAME)

	PROPOSED D	M	Y
REVISIONS			

	D	C	COMPLETED D	M	Y	C
REVISIONS						

REGION SOUTHERN
SUB. SHORE LINE 304

SIGNALS AND COMMUNICATIONS HOMEWOOD
DES. NAD
23 SEPTEMBER 2019
CH. MKN

BUNGALOW LAYOUT
SIDES B, C, & D
TOLEDO, OH
NEW YORK AVE

SHO-000.28-16

DOT#905 282V

17

SIEMENS MOBILITY INC

DES.: NAD	DATE: 23/09/19	JOB NO.: 3008077361	
CKD.: MKN	ISSUE DATE: N/A	EST. NO.: XXXX	
DRN.: NAD	PLAN NO.: N/A	SHEET 16 OF 16	
P TIME: 16:01	P DATE: 29-OCT-2019	CAD ID.: SHO-000.28-16	

SIEMENS MOBILITY INC
LOUISVILLE DIVISION, LOUISVILLE, KY

OHIO RAIL DEVELOPMENT COMMISSION

Mail Stop #3140, 1980 West Broad Street, Columbus OH 43223
John R. Kasich, Governor • James G. Bradley, Chairman

July 8, 2019

Mr. Tomas Brasseur
Grand Trunk Western Railroad
Manager of Public Works
24002 Vreeland Road
Flat Rock, MI 48134

RE: Grade Crossing Warning Device Upgrade Authorization to Proceed with Final Engineering Design
Lucas County, New York Ave.; DOT #905282V; Ohio PID# 104588; GTWR

Dear Mr. Brasseur:

A diagnostic review was held at the above grade crossing on 10/21/2016. The crossing was recommended for the installation of automatic flashing lights and gates. The Ohio Rail Development Commission has reviewed the GTWR submitted preliminary engineering design, site plans and cost estimates for the crossing improvement and ORDC has approved the preliminary plans for final design.

The GTWR is authorized to proceed with final engineering design, including circuitry plans, site plans and cost estimate updates for the referenced railroad crossing. This authorization is made with the stipulation and understanding that any field work needs prior approval before work begins, and that an approved estimate may contain entries for items or activities that may be cited and found to be ineligible for federal participation during the project audit.

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

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

The ORDC Project Manager for this project is Don Damron. If you have any questions, I can be reached at 614-466-2509 (office), or 614-917-8466 (cell), or don.damron@dot.state.oh.us.

Sincerely,

Donald J. Damron
Project Manager

Copy: Randall Schumacher, Chief, Rail Division, PUCO
Jill Henry, Rail Specialist, PUCO
ORDC (file)

Attachments: Diagnostic Review Team Survey dated 10/21/2016
ORDC Letter Agreement dated 6/26//2017
State of Ohio Purchase Order

Ohio | Public Utilities Commission
Asim Z. Haque, Chairman

June 26, 2017

Grand Trunk Western Railroad
Mr. Tomas Brasseur
Manager of Public Works
24002 Vreeland Road
Flat Rock, MI 48134

Re: 1) Lucas County, New York Avenue,
DOT#905-282V, hereinafter
referred to as the "Project"

Dear Mr. Brasseur:

The Public Utilities Commission of Ohio (PUCO) has identified and the Ohio Rail Development Commission (ORDC) surveyed, on October 21, 2016, the above mentioned grade crossing for warning device upgrades. The location has been approved for flashing lights and roadway gates.

The Project shall comply with Agreement No. 5927, dated May 24, 1989, entered into by the State of Ohio and Grand Trunk Western Railroad (hereinafter referred to as the "RAILROAD"). Furthermore, the RAILROAD shall comply with all applicable state and federal laws governing grade crossing safety programs.

Reimbursable costs will be limited by ORDC based upon approved estimates and bid tabulations, if applicable. These limits will be quantified by the ORDC in its construction authorization to the RAILROAD and may be amended by the ORDC based upon revised estimates and bid tabulations. Additional costs must be approved in writing by the ORDC prior to being incurred. Emergency verbal authorizations by ORDC may be permitted but must be confirmed in writing within ten (10) business days of the verbal approval.

The RAILROAD shall complete plans and estimates for the Project within ninety (90) days after the RAILROAD is notified of authorization to proceed unless otherwise agreed by ORDC/PUCO and the RAILROAD.

The RAILROAD shall not commence construction prior to PUCO's Order or ORDC's construction authorization. The RAILROAD shall provide written notification of the construction start date to PUCO and ORDC no later than five (5) business days prior to such date.

Please indicate your acceptance of the terms and conditions of this Letter of Agreement by signing and returning one (1) copy to Ms. Jill Henry, Rail Specialist, Rail Division, Public Utilities Commission of Ohio, 180 E. Broad Street, Columbus, Ohio 43215-3793.

Sincerely,

Milan Orbovich
Director of Transportation
Public Utilities Commission of Ohio

Date 6/26/17

Grand Trunk Western Railroad

By _____

Title _____

Date _____

Matthew Dietrich
Executive Director
Ohio Rail Development Commission

Date 7/27/17

Please indicate your acceptance of the terms and conditions of this Letter of Agreement by signing and returning one (1) copy to Ms. Jill Henry, Rail Specialist, Rail Division, Public Utilities Commission of Ohio, 180 E. Broad Street, Columbus, Ohio 43215-3793.

Sincerely,

Milan Orbovich
Director of Transportation
Public Utilities Commission of Ohio

Date 6/26/17

Grand Trunk Western Railroad

By _____

Title Regional Chief Engineer

Date February 27, 2018

Matthew Dietrich
Executive Director
Ohio Rail Development Commission

Date _____

OHIO RAIL DEVELOPMENT COMMISSION

Ohio Rail Development Commission
Mail Stop 3140, 1980 W. Broad Street,
Columbus, OH 43223

Diagnostic Review Team Survey

Reason for Survey: (e.g. formula, accident, constituent, etc.) Formula

Date: 10/21/2016

Location Data

Street or Road Name: New York Avenue

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

US DOT No.: 905282V

County: LUC

Township:

City: (In or Near) City of Toledo

Railroad Name: Grand Trunk Western RR

Railroad Division:

Branch/Line Name:

Nearest RR Timetable Station:

RR Milepost: .44

On-Site Review Team

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

1. Don Damron, ORDC 614 917-8466 don.damron@dot.ohio.gov
2. Nate Warner, CN Rail (Signals) 2487948460 Nate.warner@cn.ca
3. Nathan Niver, PUCO, (419) 340-1011 nathan.niver@puc.state.oh.us
4. Jim Grasiecki, CN/GTW, 2483130649
5. Jim.Grasiecki@cn.ca
6. Tim Grosjean City of Toledo 419 245-1344 tim.grosjean@toledo.oh.gov
7. Tim Lance City of Toledo 419-245-1337 Tim.lance@toledo.oh.gov
8.
9.

Existing Traffic Control Devices

Type of Warning Devices	Installed?	Quantity/Comments
Advance Warning Signs (condition?)	☑ Yes ☐ No	
'Stop' Signs	☐ Yes ☑ No	
'Stop Ahead' Signs	☐ Yes ☑ No	
Pavement Markings (condition?)	☑ Yes ☐ No	STOP BARS NEED REFRESHING
Crossbucks	☑ Yes ☐ No	WITH YIELDS
Number of Tracks Signs	☐ Yes ☑ No	ONE TRACK
Inventory Tags	☑ Yes ☐ No	
Interconnected Highway Traffic Signal	☐ Yes ☑ No	
Mast-Mounted Flashing Lights	☐ Yes ☑ No	
Cantilever Flashing Lights	☐ Yes ☑ No	Number: Length:
Side Lights	☐ Yes ☑ No	
Automatic Gates	☐ Yes ☑ No	Number: Length:
Bells	☐ Yes ☑ No	Number:
Sidewalk Gate Arms	☐ Yes ☑ No	
'No Turn' Signs	☐ Yes ☑ No	
Illumination	☑ Yes ☐ No	
Is crossing flagged by train crew?	☐ Yes ☑ No	TRAIN MAY STOP ON XING
Other	☐ Yes ☐ No	

Safety Data (Obtain crash reports, if possible, prior to review)

	Initial Information (from database)	Revised
Number & dates of crashes in previous 5 years	1 (3/5/16) & (1/20/03)	
Hazard Ranking	197 Date Run: 9/30/16	

Railroad Data

Railroad Characteristics	Initial Information (from database)	Revised
Total trains per day	2	UP TO 4 TRAINS / DAY
< 1 per day		
Day thru trains	1	
Night thru trains	1	
Daytime switching movements		
Nighttime switching movements		
Total number of tracks	1	
Number of main tracks	1	
Number of other tracks		
Maximum train speed	10	OK
Typical train speed	10	OK
Amtrak		

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

If multiple tracks, can two trains occupy crossing at the same time? ☐ Yes ☑ No

Can one train block the motorists' view of another train at crossing? ☐ Yes (Explain below) ☑ No

Can one or more tracks be eliminated through the crossing? ☐ Yes ☑ No

Are there other track(s) crossing this same roadway within 100 ft of this crossing? ☐ Yes ☑ No

If yes, Crossing DOT #(if different) _____

If yes, distance _____ (take measurement between track centerlines at closest point along roadway)

Roadway Data

Local Highway Authority: City of Toledo

Roadway Characteristics	Initial Information (from database)	Revised
Average daily traffic	2500 (2012)	NO UPDATE PROVIDED
Highway paved	X Yes ☐ No	☐ Yes ☐ No

Roadway Surface: ☑ Blacktop ☐ Gravel ☐ Concrete ☐ Other _____

Roadway width: 22 ft.

Number of highway lanes	2	
Urban or Rural	Rural	URBAN
Vehicle Speed: 25 MPH		35 MPH EAST BOUND
School Bus Operation: ☐ No ☑ Yes __ Amount		AT LEAST 4 / DAY
Hazardous Materials Trucks: ☐ No ☐ Yes ___ Amount		UNKNOWN

Shoulders: ☑ No ☐ Yes

Is the shoulder surfaced? ☑ No ☐ Yes

Is there existing guardrail along roadway in crossing vicinity? ☑ No ☐ Yes

Is stopping site distance adequate? (See Table 2) ☑ Yes ☐ No If no, deficient approach(es) _____

Quadrant NE Curb and Gutter:	Quadrant SW Curb and Gutter:
☐ Functional (Curb height = 4" or more)	☐ Functional (Curb height = 4" or more)
☐ Non-functional (Curb height = Less than 4")	☐ Non-functional (Curb height = Less than 4")
☑ None	☑ None

Pedestrians: ☐ No ☑ Yes

Is sidewalk present? ☑ No ☐ Yes

Is there a nearby intersection that could cause queuing over the crossing? ☑ No ☐ Yes

If yes,

Distance _____

Is this intersection signalized? ☑ No ☐ Yes

Are the signals currently interconnected with the existing crossing warning devices? ☑ No ☐ Yes

Is there a 'Do not Stop on Track' sign? ☑ No ☐ Yes

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

If yes,

Improvement type_____ Lead Agency _____ Timeline/completion -

_____

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

Explain reasons:

Type of Development

☐ Open Space	☐ Institutional	Location of nearby schools:
☑ Industrial	☐ Commercial	SCHOOLS ON EAST SIDE OF CROSSING
☑ Residential		

Utility Information

Is commercial power available? ☐ No ☑ Yes

Utility Provider (Company Name) TOLEDO EDISON Phone Number _____

Nearest Available Power Source AT - SITE

What other utilities are present? (add locations to sketch)
☑ Gas ☐ Cable ☑ Telephone ☑ Fiber Optic Cable
☐ Petroleum ☑ Water ☐ Sanitary Sewer
☐ Other _____

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

Comments:

MULTIPLE POTENTIAL CONFLICTS:
- UG FIBER - BOTH SIDES - PARALLEL TO ROADWAY
- UG GAS - NE QUAD - PARALLEL TO ROADWAY
- UG FIBER - " " " "

Potential Red Flags / Project Challenges

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

NA

Crossing Consolidation or Closure:

NA

Real Estate or ROW:

NA

Culverts / Drainage / Ballast Conditions:

NEW TIMBER SURFACE RECENTLY INSTALLED.

Roadway and/or Sidewalks:

ROADWAY ROW = 60'
RAILROAD ROW SHOULD BE ADEQUATE

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

BONDING RAIL JOINTS FOR APPROACHES NEEDED.

Environmental:

NA

Other:

Diagnostic Team Recommendations

	Quadrants Needed
☒ Install/upgrade active devices	
☐ Automatic Flashing Lights (AFLS)	
☐ AFLS /Cants	
☒ AFLS / Gates	
☐ AFLS / Gates / Cants	
☒ Bells / number	2 BELLS STANDARD ON GTW
☐ Upgrade circuitry / type	
☒ Sidelights	
☐ Guardrail Needed	
☐ Install/Replace curb	
☒ Bungalow placement & offset from rail & highway	NE QUAD
☐ Other (define)	

Comments:
CONSENSUS: UPGRADE TO LIGHTS & GATES

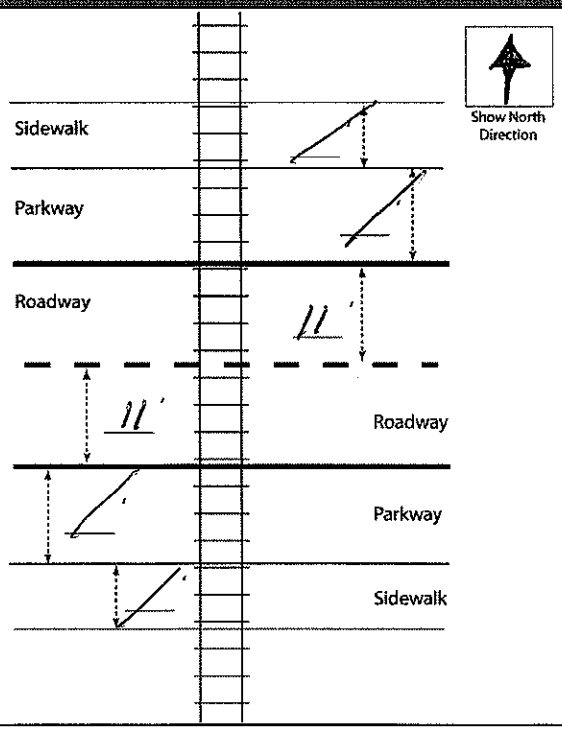
☐ Install/upgrade traffic signal preemption	
☐ No improvements needed	

☐ Other (define)

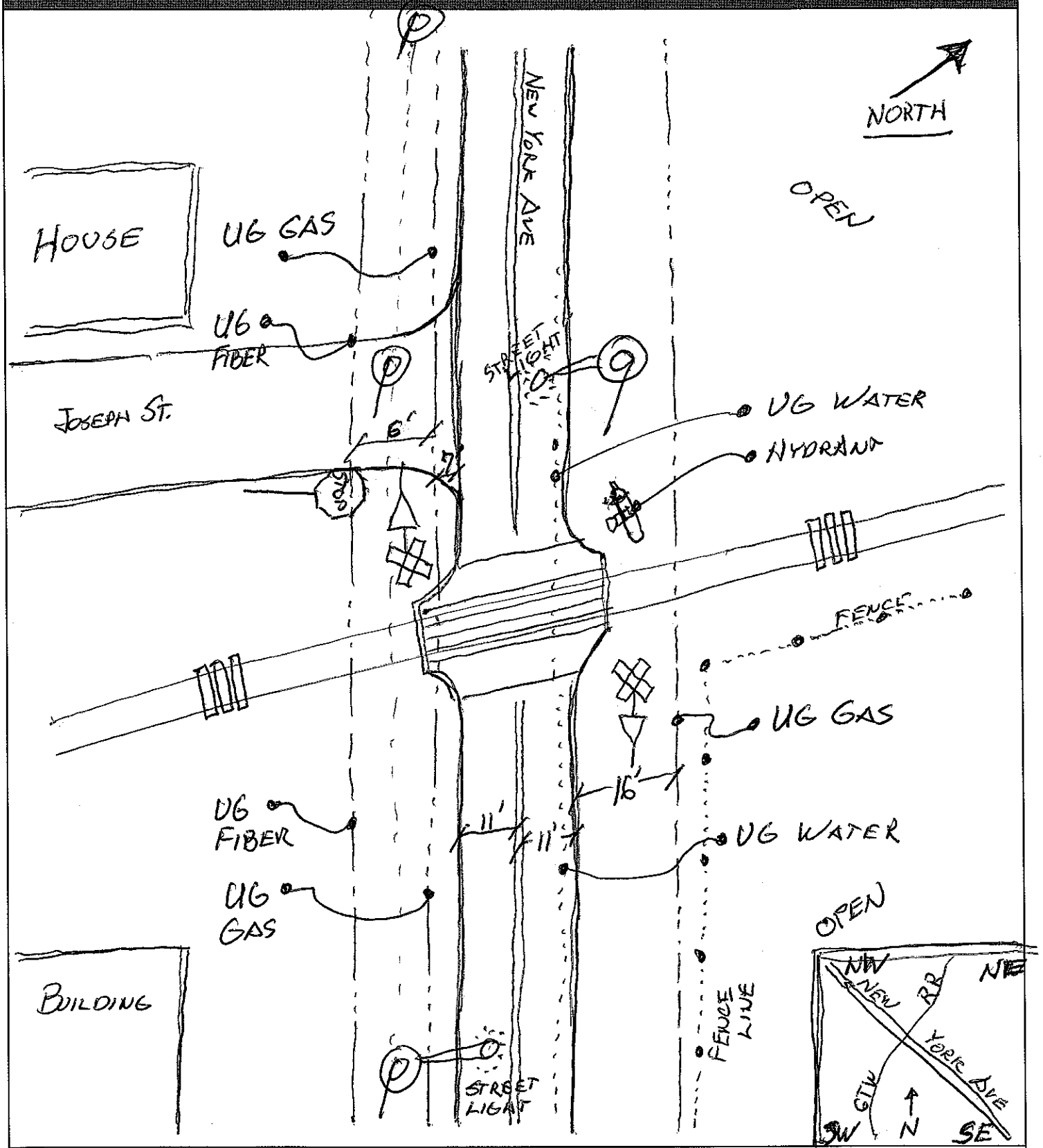
Acknowledgement of Recommendations (each entity represented at the diagnostic must have at least one signature acknowledgement):

TDG

Field Dimensions



Field Sketch



Crossing Angle ☐ 0-29° ☐ 30-59° ☒ 60-90° Measured in 5 Quadrant?

Sketch by: DTD

C.

TABLE I

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.

Summary: Application In the Matter of a Request for the Installation of Active Warning Devices at the Grand Trunk Western Railroad Crossing, New York Avenue, DOT#905-282V, in Lucas County, Ohio electronically filed by Mrs. Jill A Henry on behalf of PUCO/Rail Division