

FILE



Norfolk Southern Corporation
Communications and Signal Department
1200 Peachtree Street, N.E., Box 123
Atlanta, Georgia 30309

B. L. Sykes
Chief Engineer
C&S Engineering
404/529-2105

January 3, 2007
0061-10.0800

30
RECEIVED-DOCKETING DIV
2007 JAN -5 PM 1:12
PUCO

Ms. Bonnie J. Johrendt
Grade Crossing Planner
Public Utilities Commission of Ohio
180 East Broad St., 14th Floor
Columbus, OH, 43215-3793

RE: In the Matter of the Implementation of the 2006 Federal Crossing Protection Program, Case No.
06-1152-RR-FED

Dear Ms. Johrendt:

Per PUCO order dated October 4, 2006, regarding the above case for the installation of automatic grade crossing warning devices at Holland—Sylvania Road in Toledo, Lucas County, Ohio, DOT: 509 457F, Milepost CD-295.85.

Installation of this project shall be completed within the time period as specified in the state's order. Although we cannot give you an exact date of installation at this time we can provide our average installation time, which is 9.1 months after authorization from the state. Since this project is authorized, we will order material and schedule for installation once we have received approvals from ODOT's district office. Attached for your reference is a copy of the Arema Manual, dedicated to bi-directional center turn lanes.

As shown on our signal plans (see note 9), roadway work will be necessary for proper placement of our signal equipment. This work needs to be completed by the appropriate governmental entity prior to the arrival of our installation construction forces. If the State will have personnel or equipment within 25 feet of our tracks while performing their work, please contact Jim R. Stump at 313-323-5100.

An extra copy of this letter is included with the enclosures. Please date stamp this extra copy and forward to Mr. R. S. Noe, Assistant General Attorney, Norfolk Southern Corporation Three Commercial Place, Norfolk, Virginia, 23510.

Upon receipt of this revised material, please initial, date and confirm via fax to 404-527-2901.

Sincerely,

B L Sykes
B. L. Sykes

Enclosure(s)

BLS/rhr/cp/rjs

Cc: Mr. R. S. Noe, NS Corporation, Norfolk, VA
Ms. Susan Kirkland, ORDC (w/plans, estimate and material list)
Docketing Division (w/plans, estimate and material list) ✓
Ms. P. A. Gray, NS Corporation, Roanoke, VA (w/estimate)

This is to certify that the images appearing are an accurate and complete reproduction of a case file document delivered in the regular course of business
1207
Date Processed
Technician

**Recommended Configuration Plan for Highway-Rail Grade Crossing Warning
Devices With or Without Gates, One or More Tracks With Two Quadrant Gates or
Four Quadrant Gates at a Crossing With a Center Turn Lane**
Revised 2004 (6 Pages)

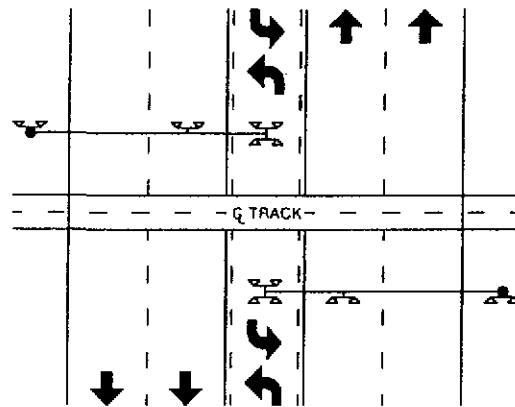


Figure 3137-1: Center Turn Lane and Cantilevered Flashing Light Warning Device
See Notes on Page 6.

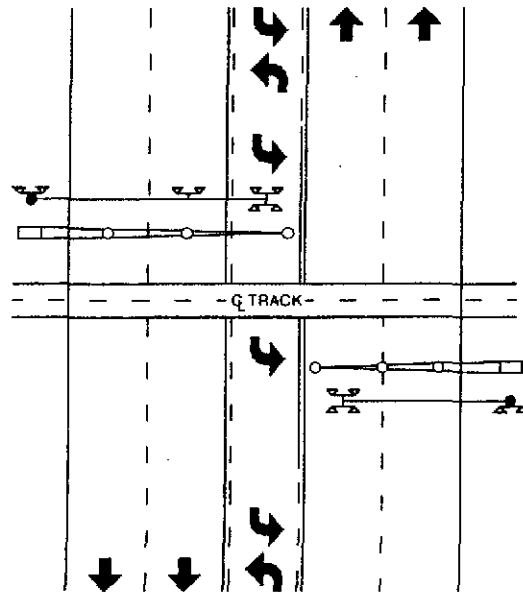


Figure 3137-2: Dedicated Single Direction Turn Lane and Cantilevered Flashing Light Warning Devices with Gates
See Notes on Page 6.

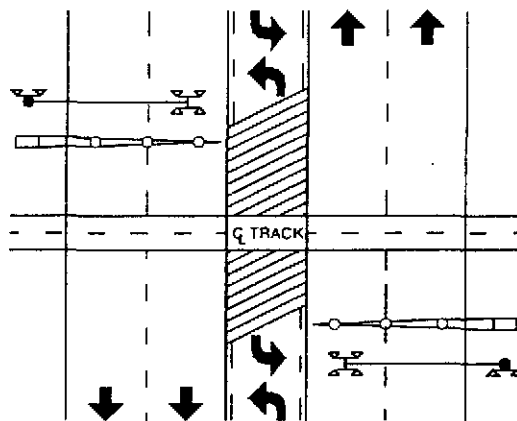


Figure 3137-3: Striped Center Turn Lane and Cantilevered Flashing Light Warning Devices with Gates
See Notes on Page 6.

Notes:

1. See Manual Part 3.1.36 for additional information.
2. Gates cannot effectively be installed at crossings with a bi-directional center turn lane as shown in Figure 3137-1. If gates are recommended, the traffic control pattern should be changed as shown in Figure 3137-2, Figure 3137-3 or Figure 3137-4. Using the means described to divert traffic into through lanes over the crossing area.
3. Maximum gate arm length is 38 feet.



02-Jan-07

Detailed Estimate for Grade Crossing Warning Devices

City/State: TOLEDO, OH
MilePost: CD-295.85
State Proj. No.:
S&E Proj. No.: 10.0014
Man Days: 168

Road: HOLLAND-SYLVANIA RD.
DOT/AAR: 509457F
County: LUCAS
AFE: F10025
File Number: 061-10.0800

Purchases - Others	
Meals and Lodging:	\$15,807.05
Rental of Equipment:	\$34,557.60
(2 Trucks, 1 Backhoe w/ Trailer and 1 Pipe-Pusher for 42 Days)	
Construction Supervision Vehicle:	\$2,764.61
Purchases - Other Total:	\$53,129.26
Material And Additives	
Material Cost:	\$147,490.00
Sales and Use Tax:	\$0.00
Material Handling Freight:	\$7,374.52
Material Total:	\$154,864.52
Labor And Additives	
Labor Cost:	\$40,656.00
(4 man crew at \$968.00 a day for: 42 days)	
Payroll Tax & Overheads:	\$40,107.14
Preliminary Engineering:	\$16,556.89
Construction Supervision:	\$11,477.19
Labor Total:	\$108,797.22
Project Cost:	\$316,791.00
Scrap / Salvage Credit:	\$0.00
Project Total:	\$316,791.00

Estimated on: 02-Jan-07

Estimated by: ndr3j

Estimate valid for 1 year from date of estimate



Norfolk Southern Railway

Highway Crossing Signalization Program - Material List

Do not substitute items without permission from S & E Engineering

City:	TOLEDO
Road:	HOLLAND-SYLVANIA RD.
Mile Post:	CD-295.85
Drawing Number:	36002958
State Project Number:	
County:	LUCAS
A A R Number:	509457F
Project Number:	10.0014
File Number:	061-10.0800
A F E Number:	F10025
Store Number:	07858
Supervisor:	L.J. PAWLOWSKI
Tax Code:	3500
Vendor to supply the following copies after pricing:	
1 Set - Material Management with original Invoice	
2 Sets - with plans shipped in car with material	
1 Set - S&E Gen. Supt. Construction w/copy of invoice	

Location: TOLEDO OH S&E Proj. No.: 10.0014 AFE No.: F10025 Drawing No.: 36002958
Store No.: 07858 P.O. Number: Date Required: Date Shipped: Vendor: Interall Engineering, INC

Qty.	Class-Item-CD	UI	Price per Item	Total Price	Item Description	Quantity Shipped	Quantity Date Quan.	Quantity Installed Date Quan.	Quantity Returned Date (Credit)	Special Instructions
3	670-360693-4	EA	\$5.04	\$15.12	AAR/DOT NUMBER PLATE/DECAL, ORDER 3 PER PROJECT. 60 DAY LEAD TIME. SUPPLIED BY STRAN.					
2	165-006505-4	EA	\$1,051.54	\$2,103.08	AC SERVICE, COMPLETE LESS METER BASE, ASSEMBLED ON 30' POLE					
24	670-119241-4	EA	\$32.80	\$787.20	ARRESTOR, LIGHTNING HEAVY DUTY CLEAR VIEW SAFETRAN 022585-1X					
19	105-871901-4	EA	\$161.57	\$3,069.83	BATTERY, GNB 265AH MODEL 50A11 SINGLE CELL 2.25 VOLTS					
2	670-980689-4	EA	\$71.71	\$143.42	BRACKET HIGH WIND, (RIGID 3), WIG- 191036, WALRUS TUSK TYPE					
2	670-561375-4	EA	\$1,197.90	\$2,395.80	BRACKET, GATE SAVER, NEG385102GS, SPRING LOADED SWING AWAY ADAPTER FOR FIBERGLASS/ALUMINUM GATES, USE WITH GATE 28' AND LESS					
2	670-356949-4	EA	\$97.00	\$194.00	CABLE, 10' GENERATOR HOOK UP, SERMM P/N 40524, FEMALE CONNECTOR					
7000	465-292862-4	LF	\$1.04	\$7,280.00	CABLE, U-2-6 TWISTED, S-23 OKONITE 113-12-3933 SOLID TINNED CONDUCTOR					
4000	465-292945-4	LF	\$1.35	\$5,400.00	CABLE, U-5-14, S-54 OKONITE 206-14-6885					
400	465-292929-4	LF	\$3.05	\$1,220.00	CABLE, U.G. 5 COND. NO. 6 AWG SOLID COPPER CABLE TO MEET NS CORP. SPEC. FOR SIGNAL					
400	465-939422-4	LF	\$2.55	\$1,020.00	CABLE, UG 12 CONDUCTOR NO 14 AWG SOLID EACH CONDUCTOR WITH 5/64 IN INSULATION 10 MIL					
600	465-791835-4	FT	\$2.22	\$1,332.00	CABLE UG AC ENTRANCE 3C#6-7X OKONITE FMPF-L 094-078 TR W/G 1 X 8 7X W010 BRZ TAPE 600V PRODUCT CODE 206-11-6070					
2	670-128745-4	EA	\$180.02	\$360.04	CHOKER, BATTERY SAFETRAN NO 8A065A FOR GRADE CROSSING PREDICTOR					
160	165-544477-4	FT	\$2.55	\$408.00	CONDUIT, 4"x10' PVC, SCHEDULE 80 BELL CONNECTOR AT ONE END, 1/2 PT. GLUE IN KIT 670-123298-4					
16	670-090450-4	EA	\$50.38	\$806.08	CONNECTOR, WELDED FAR RAIL HARMON A1000-2W					
16	670-486646-4	EA	\$41.62	\$665.92	CONNECTOR, WELDED NEAR RAIL HARMON A1000-1W					
2	670-793404-4	EA	\$838.37	\$1,676.74	COUNTERWEIGHT PKAGE, 17-24 GATE STRAN S- MECH ONLY, STAINLESS, TO INCLUDE HUB, SUPPORT ARMS					

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CAR NUMBER

SEAL NUMBER

Location: TOLEDO OH S&E Proj. No.: 10.0014 AFE No.: F10025 Drawing No.: 36002958
 Store No.: 07858 P.O. Number: Date Required: Date Shipped: Vendor: Intervall Engineering, INC

Qty.	Class-Item-CD	UI	Price per Item	Total Price	Item Description	Quantity Shipped	Quantity Date	Quantity Installed Date	Quantity Returned Date	Quantity (Credit)	Special Instructions
4	670-760012-4	EA	\$40.02	\$160.08	COVER, FOR 1 WAY FLASHING LIGHT ASSY. 18 OZ. BLACK VINYL COATED NYLON. === TO COVER 2 LAMPS===						
1	670-986650-4	EA	\$375.69	\$375.69	DISPOSAL, CONSTRUCTION DEBRIS AND CLEANING X'ING EQUIPMENT CONTAINER						
8	670-228165-4	EA	\$10.73	\$85.84	EQUALIZER, SAFETRAN 022700-1X LESS BASE, MODERN NO. 700-1 SHUNT ARRESTER TRACK CIRCUITS CR 02-197950						
1	670-000004-4	EA	\$700.00	\$700.00	FCC LICENSE FOR MONITOR/RADIO						
8	670-000003-4	EA	\$255.85	\$2,046.80	FILL/STONE #57, QUANTITY IS BASED ON TRUCK LOAD PLUS DELIVERY COST						
2	670-015231-4	EA	\$423.50	\$847.00	FOUNDATION, DIXIE, S-2 GATE 5'6" ASSEMBLED						
2	670-257031-4	EA	\$297.88	\$595.76	GATE, ARM FIBERGLASS-ALUMINUM 17-24 FT., INCLUDES GATE GUARD FOR GATE LIGHT CABLE, NEG P/N 8002-244NFS/CG						
2	670-930665-4	EA	\$43.57	\$87.14	INDUCTOR, SIMULATED TRACK SAFETRAN 8V617-1400						
2	670-477991-4	EA	\$317.90	\$635.80	KIT, GROUNDING ASSY FOR AL I/S INCLUDES 8 GRD RDS, 200 #4 WIRE, 12 4 WIRE ONE-SHOTS, ERICO SBK206						
3	670-123298-4	EA	\$256.93	\$770.79	KIT, HARDWARE SUPPLIES REQUIRED X'ING PACKAGES. WEB CONNECTORS FOR SHUNT(8EA) TAPE, AMPS, P/GUM PAINT, SLEEVES, TAGS, GLUE, 100 EA WHITE TAGS, JNE CAN BLUE MARKING PAINT ETC...						
4	670-835845-4	EA	\$14.51	\$58.04	KIT, SPLICING SCOTCHAST #72-N1 FOR SPLICING 1C #9, 2C #6 UG OR AERIAL						
4	670-835853-4	EA	\$32.93	\$131.72	KIT, SPLICING SCOTCHAST #72-N2 FOR SPLICING 2C #9, 2C #14, 7C #14 UG OR AERIAL						
2	670-764166-4	EA	\$907.65	\$1,815.30	LAMP ASSY, 5" MAST MTG. 2W IND. 20" BKGRD. FLX-12 W/BULB STRAN #042003-487XNS						
6	165-643547-4	EA	\$4.30	\$25.80	LAMP, 18 WATT 10 VOLT S-11 SC BAY 18S11/1/SC CLEAR RWW SIGNAL UJ-71463 GE						
24	670-440826-4	EA	\$1.01	\$24.24	LINK, SAFETRAN 024620-1X INSL TESTING COMP 1 IN CENTER SIGNAL CIRCUITS CR 02-286662						
6	255-590860-4	EA	\$16.12	\$96.72	LOCK, AMERICAN LOCK MODEL H-10KA KEYED ALIKE TO PRIVATE KEYWAY D456 AND STAMPED "NS SIG"						

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CAR NUMBER

SEAL NUMBER

Location: TOLEDO CH S&E Proj. No.: 10.0014 AFE No.: F10025 Drawing No.: 36002958
 Store No.: 07858 P.O. Number: Date Required: Date Shipped: Vendor: InterRail Engineering, INC

Qty.	Class-Item-CD	UI	Price per Item	Total Price	Item Description	Quantity Shipped	Quantity Date	Quantity Installed Date	Quantity Returned (Credit)	Special Instructions
2	670-637778-4	EA	\$1,031.41	\$2,062.82	MAST, 5" ALUMINUM 13'10" WITH DOUBLE JCT. BOX BASE. STRAN P# 070519-11AX.					
2	670-850933-4	EA	\$3,352.65	\$6,705.30	MECHANISM, GATE MODEL S-60, WITH DEFROSTER AND MINI TRACKSIDE SENSOR STRAN # 0740007-X002B3					
2	000-000000-4	EA	\$5,000.00	\$10,000.00	MIS. UNDERGROUND BORING					
5	670-000001-4	EA	\$316.23	\$1,581.15	MISC. MATERIAL					
4	670-001347-4	EA	\$63.27	\$253.08	PACKAGE, HARDWARE SIGN 5 IN. MOUNTING, SERAMI A1250-5, HARMON @200965-000, OR					
2	255-646807-4	EA	\$10.38	\$20.76	PADLOCK, SAFETRAN PART NO. 030399-29X SCREW TYPE FOR CIR CONTROLLER AND BTY. BOX					
1	670-514605-4	EA	\$8.45	\$8.45	PINNACLE, W-C SECT 1-11, 4" & 5" REF K1 110-8 OR SAFETRAN NO. @035045-503X					
4	670-555609-4	EA	\$45.12	\$180.48	PLUGBOARD, TYPE B-1 GRS A62-506 OR HARMON @7062-506 OR					
1	670-973480-4	EA	\$7,665.27	\$7,665.27	PREDICTOR, DUAL FREQ. 3000 2 TRACK, SAFETRAN #80200-102-0 NO ISLAND, W/PROCESSOR 80214					
8	165-103293-4	EA	\$62.43	\$499.44	PROTECTOR, LIGHTNING & SURGE LPC 10560-51, 3 ELECTRODE WITH SPADE TERMINAL					
2	165-902002-4	EA	\$308.00	\$616.00	PROTECTOR, SURGE 120/240VAC, ERICO P/N EPD120/240TDFL					
18	465-002899-4	EA	\$22.06	\$397.08	REEL, CABLE DISPOSABLE FOR CROSSING SIGNAL PACKAGES					
2	670-742096-4	EA	\$41.80	\$83.60	RELAY INTERFACE PROBE, ULTRATECH PN 16031-00					
4	670-707995-4	EA	\$313.67	\$1,254.68	RELAY, TYPE B1, NEW LINE, 900 OHMS, .008 AMPERES GRS A62-308 OR SAFETRAN @400003					
4	435-805560-4	EA	\$6.25	\$25.00	SAND, 25LB BAG FOR CABLE ENTRANCE INTO THE SHELTER					
1	670-816502-4	EA	\$4,903.75	\$4,903.75	SEARII AUTOMATED INSPECTOR SYSTEM KIT, w/ 1-ILOD, 1-EBELL, 2-GTS, WITHOUT MTSS, 1-GFT, 1-VHFC, 2-RECORDER INTERFACE MODULE, 1-ECHOLON CONNECTOR					
2	670-281280-4	EA	\$7,006.00	\$14,012.00	SHELTER BARE 6X6, ALUMN, FARADAY, W/CABLE CHUTES BEHIND TERMINAL BOARD, W/GEN. CONN. W/ADJUSTABLE PIERS, SAFETRAN P/N 058400-66-78A					

APPROVED BY STATE APPROVED BY RAILROAD CAR NUMBER SEAL NUMBER

Location: TOLEDO
Store No.: 07658

OH S&E Proj. No.: 10.0014 AFE No.: F10025 Drawing No.: 36002958
P.O. Number: Date Required: Date Shipped:

Vendor: InterRail Engineering, INC

Qty.	Class-Item-CD	UI	Price per item	Total Price	Item Description	Quantity Shipped	Quantity Date Quen.	Quantity Installed Date Quen.	Quantity Returned (Credit)	Special Instructions
8	670-586967-4	EA	\$37.68	\$301.44	SHUNT COVER W/LAG SCREWS, 19"X19", SERRIM #40271, ORDER 1 PER SHUNT					
4	670-688850-4	EA	\$370.27	\$1,481.08	SHUNT, MULTI-FREQ. #62775-3497 SAFETRAN NARROW BAND					
4	670-645460-4	EA	\$596.03	\$2,384.12	SHUNT, MULTI-FREQ. #62775-8621 SAFETRAN NARROW BAND					
2	670-393331-4	EA	\$37.43	\$74.86	SIGN CROSSING MALFUNCTION ASSEMBLY FOR 4" AND 5" MAST, SAFETRAN #T17215					
2	670-806648-4	EA	\$56.42	\$112.84	SIGN, X-BUCK, LESS HARDWARE, SAFETRAN 035200-X CR 02-490546					
2	670-353390-4	EA	\$43.04	\$86.08	SIGN, "2 TRACKS" LESS HARDWARE SAFETRAN 035207-2X					
4	670-330382-4	RL	\$15.68	\$62.72	TAPE, THOR 3" DURATEC, ORANGE 1000 LENGTHS, "WARNING STOP DIGGING"					
24	670-478560-4	EA	\$19.47	\$467.28	TERMINAL BLOCK, ERICO 4 POST P/N B2700A2C1WH W/HARDWARE LESS LIGHTNING ARRESTOR					
4	610-065626-4	EA	\$17.55	\$70.20	ULTRA-TECH 15206-01 CONNECTIVITY BLOCK FOR GRS B1 RELAY					
10	670-007238-4	EA	\$129.46	\$1,294.60	UNIT, THE INSTALLATION AND WIRING OF A DEVICE WHICH REQUIRE A MINIMUM OF FOUR WIRE CONNECT.					
200	465-999111-4	LF	\$0.29	\$58.00	WIRE, NO.10, 1 CONDUCTOR, CASE, FLEXIBLE 37 STRAND, 3/64 IN. INSULATION-ORDER EXT.AMT. NEEDED CR 02-620502					
100	465-999161-4	LF	\$0.18	\$18.00	WIRE, NO.16, 1 CONDUCTOR, CASE, FLEXIBLE, 19 STRAND, 2/64 IN. INSULATION CR 02-620254					
1	670-110527-4	EA	\$22,018.66	\$22,018.66	WIRED RACK UNI-DIRECTIONAL DOUBLE TRK, 6X6 FARADAY, COMPLETE/GCP3000, 2 CRAGG CHARGER, 2 RELAY RACK, SAFETRAN P/N T15409, USE WITH I/S 670-786834-4 OR P/N 058400-66-78A, 670-281280-4					
1	670-262739-4	EA	\$31,408.11	\$31,408.11	WIRED RACK, 6X6 FARADAY, 20AMP DOUBLE TRK SSCCIIIA, GCP3000D2, 2 CRAGG CHARGER, 2 RELAY RACKS, SAFETRAN P/N 20A 2TRK, USE WITH I/S 670-281280-4 W/CABLE CHUTES BEHIND THE FARADAY SHIELD					

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CAR NUMBER

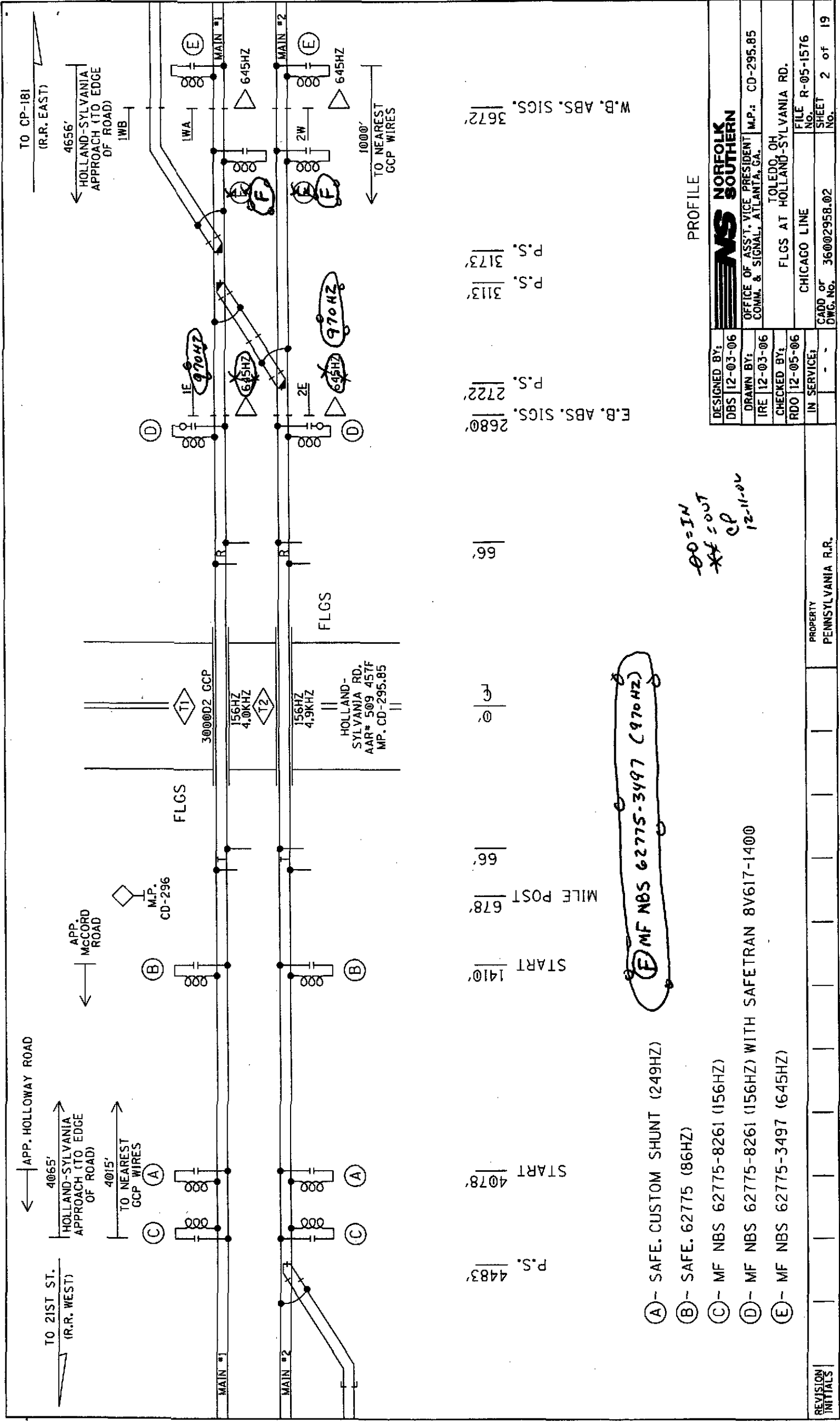
SEAL NUMBER

Location: TOLEDO OH S&E Proj. No.: 10.0014 AFE No.: F10025 Drawing No.: 36002958
 Store No.: 07858 P.O. Number: Date Required: Date Shipped: Vendor: Interroll Engineering, INC

Qty.	Class-Item-CD	UI	Price per Item	Total Price	Item Description	Quantity Shipped	Quantity Date	Quantity Installed Date	Quantity Returned (Credit)	Special Instructions
2	450-986008-4	EA	\$24.84	\$49.68	WRENCH, TEST POST TYPE B DWG 56393-3, GR.1					

Total Material: \$147,490.48

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P.S. 4483'

START 4078'

START 1410'

678' MILE POST

66'

66'

66'

F.B. ABS. SIGS. 2680'
P.S. 2722'

P.S. 3113'
P.S. 3173'

W.B. ABS. SIGS. 3672'

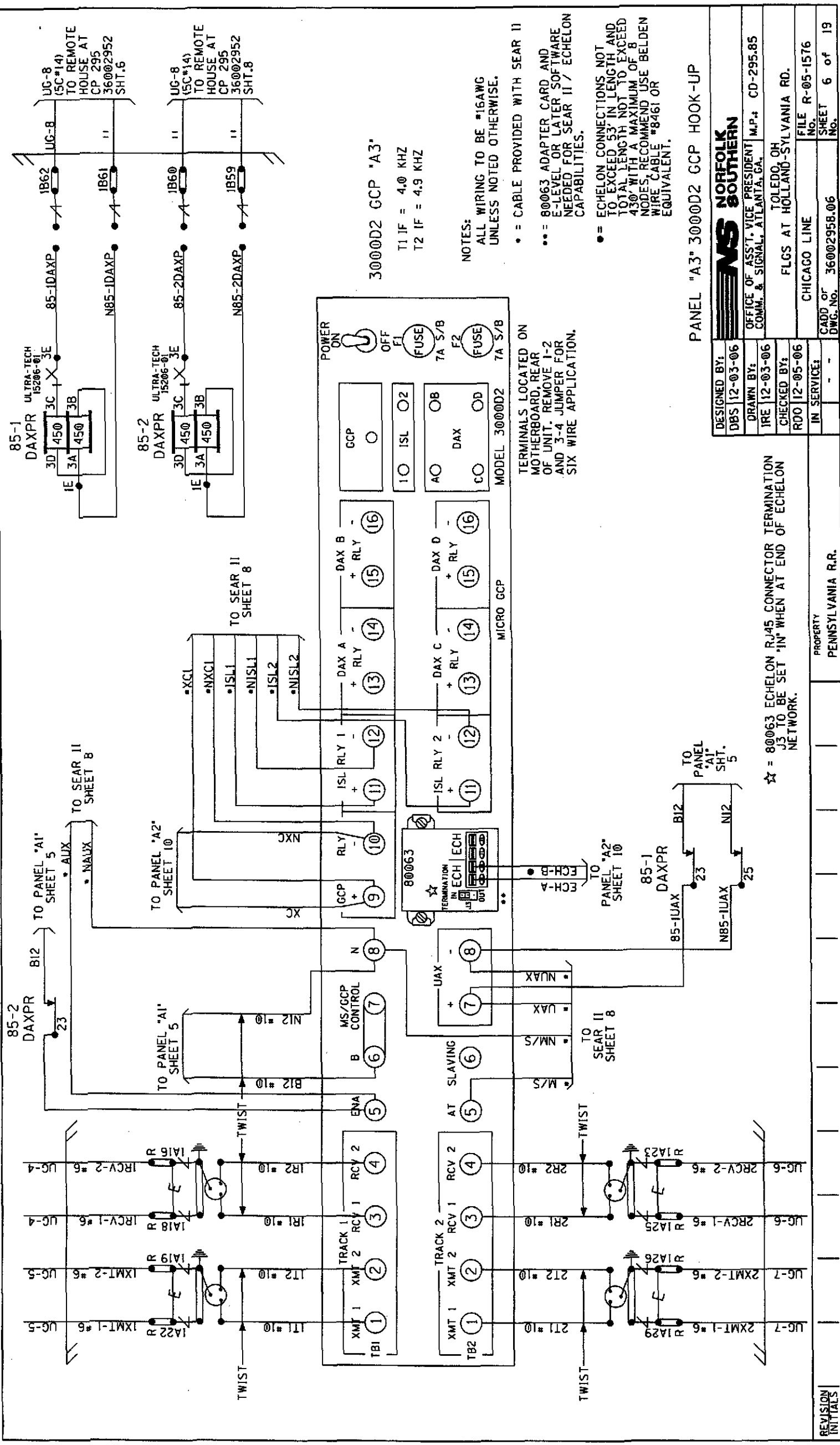
- ① - SAFE. CUSTOM SHUNT (249HZ)
- ② - SAFE. 62775 (86HZ)
- ③ - MF NBS 62775-8261 (156HZ)
- ④ - MF NBS 62775-8261 (156HZ) WITH SAFETRAN 8V617-1400
- ⑤ - MF NBS 62775-3497 (645HZ)

MF NBS 62775-3497 (970HZ)

00-IN
X-OUT
CP
12-11-00

PROFILE

DESIGNED BY:	DBS 12-03-06	NORFOLK SOUTHERN
DRAWN BY:	IRE 12-03-06	
CHECKED BY:	RDO 12-05-06	
IN SERVICE:	- - -	
CADD or DWG. No.	36002958.02	
FILE NO.	FILE R-05-1576	CHICAGO LINE
SHEET No.	2 of 19	
OFFICE OF ASS'T. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.		M.P.: CD-295.85
TOLEDO, OH		
FLGS AT HOLLAND-SYLVANIA RD.		



3000D2 GCP "A3"

T1 IF = 4.0 KHZ
T2 IF = 4.9 KHZ

- NOTES:
- ALL WIRING TO BE *16AWG UNLESS NOTED OTHERWISE.
 - * = CABLE PROVIDED WITH SEAR II
 - ** = 80063 ADAPTER CARD AND E-LEVEL OR LATER SOFTWARE NEEDED FOR SEAR II / ECHELON CAPABILITIES.
 - = ECHELON CONNECTIONS NOT TO EXCEED 53' IN LENGTH AND TOTAL LENGTH NOT TO EXCEED 430' WITH A MAXIMUM OF 8 NODES. RECOMMEND USE BELDEN WIRE CABLE *8461 OR EQUIVALENT.

PANEL "A3" 3000D2 GCP HOOK-UP

DESIGNED BY:	DBS 12-03-06
DRAWN BY:	IRE 12-03-06
CHECKED BY:	RDO 12-05-06
IN SERVICE:	-
NORFOLK SOUTHERN	
OFFICE OF ASS'T. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.	
M.P.# CD-295.85	
TOLEDO, OH	
FLGS AT HOLLAND-SYLVANIA RD.	
CHICAGO LINE	
FILE R-05-1576	
CADD OF	36002958.06
DWG. No.	
SHEET	6 of 19

REVISION	INITIALS	PROPERTY	PENNSYLVANIA R.R.
☆ = 80063 ECHELON RJ45 CONNECTOR TERMINATION J3 TO BE SET "IN" WHEN AT END OF ECHELON NETWORK.			

EXPANDED PROGRAMMING

T1: SWITCH TO MS (ENTER EZ VALUE)	10 %	(1)
T2: SWITCH TO MS (ENTER EZ VALUE)	10 %	(1)
T1: TRANSFER DELAY MS TO GCP (0 = OFF)	0 Sec	(2)
T2: TRANSFER DELAY MS TO GCP (0 = OFF)	0 Sec	(2)
T1: TRANSFER MS TO GCP PRIME (ON/OFF)	---	(2)
T2: TRANSFER MS TO GCP PRIME (ON/OFF)	---	(2)
T1: TRANSFER MS TO GCP DAX A (ON/OFF)	---	(2)
T2: TRANSFER MS TO GCP DAX A (ON/OFF)	---	(2)
T1: TRANSFER MS TO GCP DAX B (ON/OFF)	---	(2)
T2: TRANSFER MS TO GCP DAX B (ON/OFF)	---	(2)
T1: TRANSFER MS TO GCP DAX C (ON/OFF)	---	(2)
T2: TRANSFER MS TO GCP DAX C (ON/OFF)	---	(2)
T1: TRANSFER MS TO GCP DAX D (ON/OFF)	---	(2)
T2: TRANSFER MS TO GCP DAX D (ON/OFF)	---	(2)
T1: PRIME PREDICTION OFFSET (0 = OFF)	0 Ft	(3)
T2: PRIME PREDICTION OFFSET (0 = OFF)	0 Ft	(3)
PICKUP DELAY PRIME	15 Sec	(3)
PICKUP DELAY DAX A	-- Sec	(3)
PICKUP DELAY DAX B	-- Sec	(3)
PICKUP DELAY DAX C	-- Sec	(3)
PICKUP DELAY DAX D	-- Sec	(3)
T1: ENHANCED DETECTION (ON/OFF)	OFF	(4)
T2: ENHANCED DETECTION (ON/OFF)	OFF	(4)
BACK-TO-BACK T1 AND T2 (NO/YES)	---	(5)
T1: STATION STOP TIMER	10 Sec	(5)
T2: STATION STOP TIMER	10 Sec	(5)
T1: NUMBER OF TRACK WIRES (4/6)	4	(5)
T2: NUMBER OF TRACK WIRES (4/6)	4	(5)
T1: LOW EX ADJUSTMENT	0	(5)
T2: LOW EX ADJUSTMENT	0	(5)
T1: LOW EZ DETECTION	OFF	(5)
T2: LOW EZ DETECTION	OFF	(5)
T1: LOW EZ DETECTION TIMER (ON/OFF)	10 Min	(5)
T2: LOW EZ DETECTION TIMER (ON/OFF)	10 Min	(5)
T1: POSITIVE START (EZ LEVEL) (0 = OFF)	0	(5)
T2: POSITIVE START (EZ LEVEL) (0 = OFF)	0	(5)
T1: POSITIVE START TIMEOUT (0 = NONE)	-- Min	(5)
T2: POSITIVE START TIMEOUT (0 = NONE)	-- Min	(5)
SET AT OPERATION (NORMAL/DIAGNOSTIC)	NORMAL	(5)
DIAGNOSTIC MESSAGES (ON/OFF)	ON	(5)
DAX MESSAGES (ON/OFF)	ON	(5)
ADVANCE PREEMPT TIMER (0 = OFF)	0	(5)
T1: MOTION SENSING LEVEL (0 = NORMAL)	0 %	(5)
T2: MOTION SENSING LEVEL (0 = NORMAL)	0 %	(5)

3000D2 PROGRAMMING CHART (LEVEL: J)	
NUMBER OF TRACK TRANSCIEVERS	2
T1: FREQUENCY	156Hz
T2: FREQUENCY	156Hz
T1: UNIDIRECTIONAL/BIDIRECTIONAL	BI
T2: UNIDIRECTIONAL/BIDIRECTIONAL	BI
T1: XMIT LEVEL (MAX/MED)	MED
T2: XMIT LEVEL (MAX/MED)	MED
T1: PREDICTOR/MOTION SENSOR	PRED
T2: PREDICTOR/MOTION SENSOR	PRED
T1: WARNING TIME	30 Sec
T2: WARNING TIME	30 Sec
T1: APPROACH DISTANCE	4015 Ft
T2: APPROACH DISTANCE	4015 Ft
UAX1 PICKUP DELAY (UAX) (0 = OFF)	15 Sec
ENA/UAX2 DELAY (0 = ENA)	15 Sec
T1: ISLAND DISTANCE	132 Ft
T2: ISLAND DISTANCE	132 Ft
NUMBER OF DAX'S	0 EQ
DAX A TRACK ASSIGNMENT (T1/T2)	---
DAX A DISTANCE (0 = PREEMPT)	Ft
DAX A WARNING TIME	Sec
DAX B TRACK ASSIGNMENT (T1/T2)	---
DAX B DISTANCE (0 = PREEMPT)	Ft
DAX B WARNING TIME	Sec
DAX C TRACK ASSIGNMENT (T1/T2)	---
DAX C DISTANCE (0 = PREEMPT)	Ft
DAX C WARNING TIME	Sec
DAX D TRACK ASSIGNMENT (T1/T2)	---
DAX D DISTANCE (0 = PREEMPT)	Ft
DAX D WARNING TIME	Sec
SLAVING (MASTER/SLAVE)	MASTER
PASSWORD ENABLED	NO
RECORDER INSTALLED	NO

3000D2 PROGRAMMING NOTES:

- 1) AVAILABLE WHEN 'TRANSFER DELAY MS TO GCP' AND 'PRIME PREDICTION OFFSET' IS ON
- 2) AVAILABLE WHEN 'TRANSFER DELAY MS TO GCP' AND DAX DISTANCE IS GREATER THAN ZERO
- 3) AVAILABLE WHEN 'ENHANCED DETECTION' IS ON
- 4) AVAILABLE WHEN 'LOW EZ DETECTION' IS ON
- 5) AVAILABLE WHEN 'POSITIVE START' IS ON

* = 1ST SLOT AT LEFT END OF BAY

MODEL 3000D2 GCP MODULE ASSEMBLIES																					
UPPER BAY											LOWER BAY										
MODULES POSITION	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21
MODULE NUMBERS	80211-(f1) 4.0 ISL	80211-(f2) 4.9 ISL	80012 T/R 1	80012 T/R 2	80013 RLY DRV	80214 PROCS	80255 REC-INTF	80016 (1) DAX	80016 (2) DAX	80020 + 80017	80211-(f1) 4.0 ISL	80211-(f2) 4.9 ISL	80012 T/R 1	80012 T/R 2	80013 RLY DRV	80214 PROCS	80255 REC-INTF	80016 (1) DAX	80016 (2) DAX	80020 + 80017	80028 XFRTMR
	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
MODULES USED																					

NOTES:

- 1 - SEE IP1 INSTRUCTION AND INSTALLATION MANUAL FOR 80211 ISLAND CALIBRATION PROCEDURE.
 - 2 - TOGGLE SWITCH ON MOTHER BOARD:
UP = DUAL FREQ.
DOWN = SINGLE FREQ.
- ** = 80214 & 80255 (WITH JUMPER) CARDS AND E-LEVEL OR LATER SOFTWARE NEEDED FOR SEAR II / ECHELON CAPABILITIES.

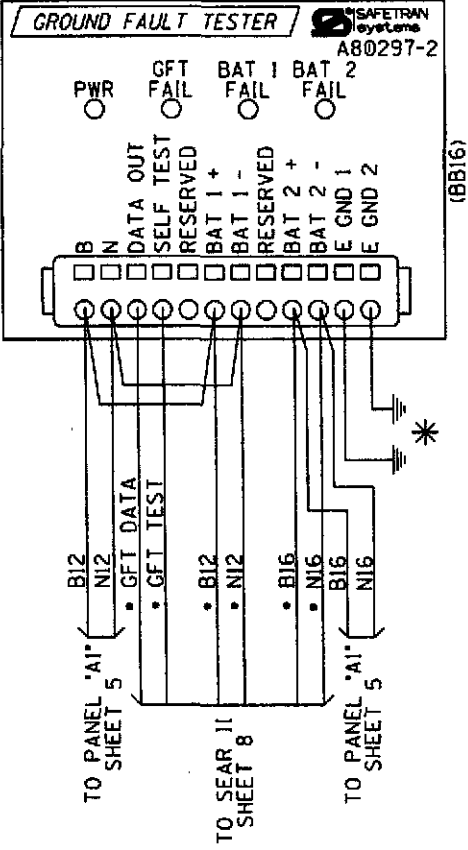
PANEL "A3" 3000D2 GCP SET-UP

DESIGNED BY:	DBS 12-03-06		OFFICE OF ASS'T. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.	M.P.: CD-295.85
DRAWN BY:	IRE 12-03-06		FILED AT	TOLEDO, OH
CHECKED BY:	RDO 12-05-06		FLCS AT	HOLLAND-SYLVANIA RD.
IN SERVICE:	- - -		CHICAGO LINE	FILE R-05-1576
PROPERTY	PENNSYLVANIA R.R.	CADD or DWG. No.	36002958.07	SHEET 7 of 19

SITE SET UP PROCEDURE	
FUNCTION	LED DISPLAY
DATE	- -
TIME	:
DAYLIGHT SAVINGS TIME	YES
TIME ZONE	CST
SITE NAME	HOLLAND-SYLVANIA RD.
DOT NUMBER	509 457F
MILEPOST	CD-295.85
TESTER TYPE	CROSSING
DATE FORMAT	MM-DD-YYYY
TEMP FORMAT	FAHRENHEIT
SITE TYPE	NO COMMUNICATION
SITE ATCS	7.RRR.LLL.GCG.03.01
OFFICE ATCS ADDRESS	2.000.00.0000
POLL ID	1
OFFICE F8/F9	YES
OFFICE COMM DEVICE	SPREAD SPECTRUM RADIO
DIAL MODEM PORT	AUX/COMM
PHONE NUMBER	(OFFICE NUMBER)
INIT STRING	(LEAVE BLANK)
BACKUP SITE ADDRESS 1	
BACKUP SITE ADDRESS 2	
FIELD COMM	
USER PORT	BAUD 57600, N, 8, 1, NONE
AUX PORT	BAUD 9600, N, 8, 1, NONE
COMM PORT	BAUD 9600, N, 8, 1, NONE

VERIFY NUMBER OF BULBS	
CURR 1: LAMP SET UP	8 BULBS
CURR 2: LAMP SET UP	8 BULBS

CONTROL SYSTEM CONFIGURATION MENU QUESTIONS		
THE QUESTION	SELECT FROM MENU OPTION	
RESET NAMES AND MODULES?	YES	
NUMBER OF TRACKS?	2	
NUMBER OF XR INPUTS?	1	
CONSTANT WARNING DEVICE	GCP	
CROSSING CONTROLLER?	SSCC III (A, PLUS)	
MAIN / STANDBY	YES	
AUXILIARY TRACKS?	YES	
AUX TRACK	SET TO AUX	
GATES?	2	
EXIT GATES?	0	
UAX?	DROPS MD/GCP	
BATTERY BANKS?	2	
PREEMPTION?	NO	
ILOD MODULES?	1	
LAMP TYPE?	NORMAL	
AUTO INSPECTIONS?	YES	
BELL SENSOR?	** 1	
BELL SENSOR INPUT 7	** YES	
BELL SENSOR INPUT 8	** NO	
BELL SENSOR INPUT 9	** NO	
BELL SENSOR INPUT 10	** NO	
BELL ON?	GATES LOWERING	
GATE TIP SENSORS?	YES	
GROUND FAULT DETECTORS?	YES	
CHANNEL 1	151.475 MHZ	
CHANNEL 2	NONE	
FULL APPROACH MOVE ALARMS	ACTIVATE	
SSCC ATCS ADDRESS	7.RRR.LLL.GCG.07.01	

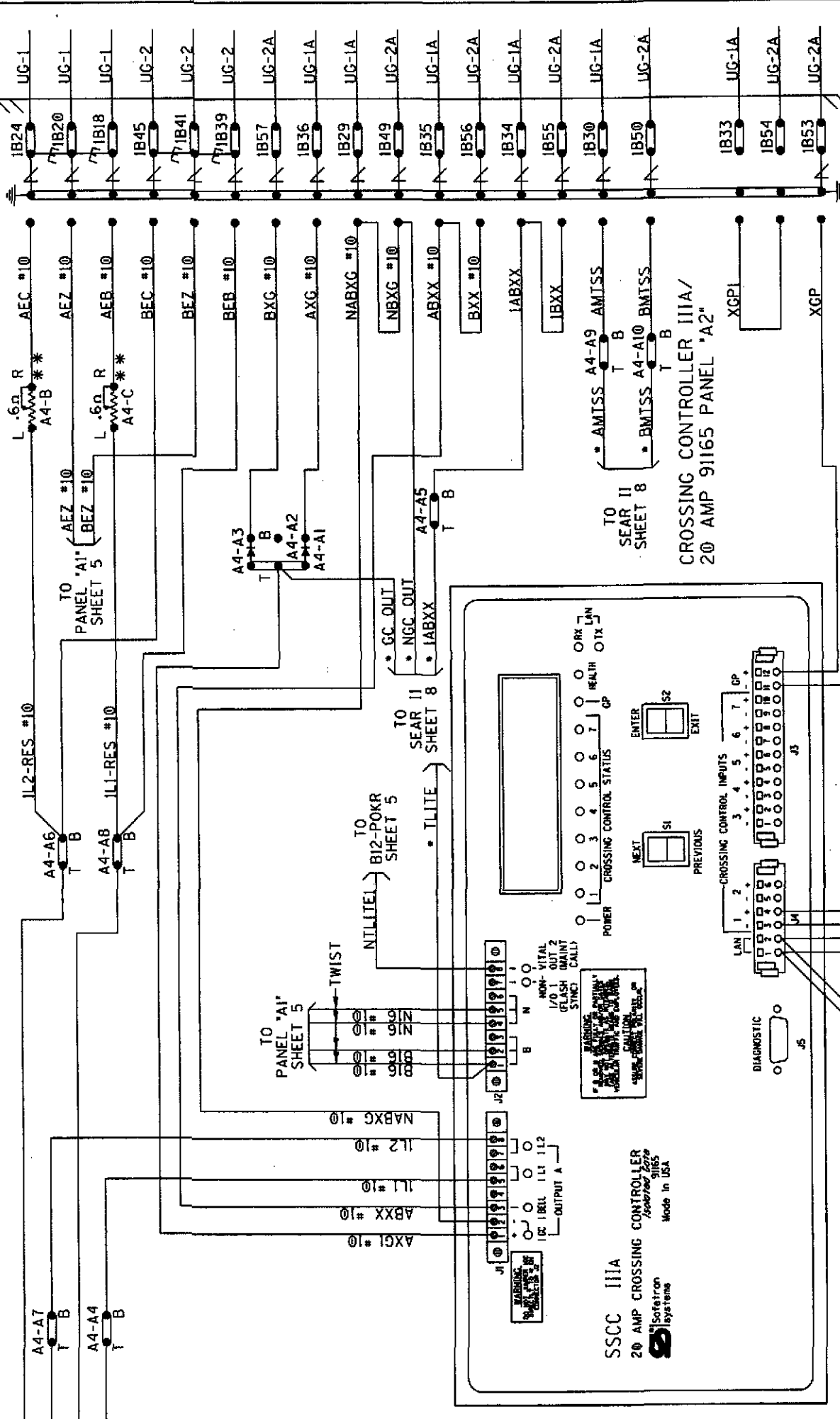
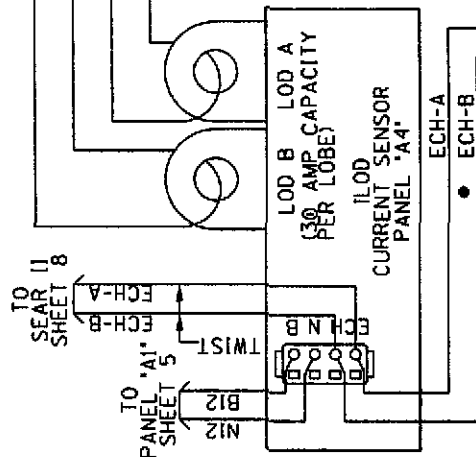


VERIFY THE BATTERY SUPPLY VOLTAGES	
B12 BATTERY VOLTAGE AT INPUT DC1	VOLT 1: .
B16 BATTERY VOLTAGE AT INPUT DC2	VOLT 2: .

- NOTES:
- ALL WIRING TO BE #16AWG UNLESS NOTED OTHERWISE
 - * = CABLE PROVIDED WITH SEAR II
 - ** = OPTIONS: IF BELL SENSOR = 0, THEN BELL FIELDS ARE NOT USED.
 - *** = IF SITE TYPE = NO COMMUNICATION, THEN THESE OPTIONS ARE NOT DISPLAYED
 - **** = THESE SETTINGS SHOULD BE LEFT AT THE DEFAULT SETTING.
 - * = CONNECT 'E GND 1' AND 'E GND 2' TO INDEPENDENT GROUND POINTS ON SIDE A AND SIDE B.

SEAR II SET UP CHART
& GROUND FAULT TESTER

DESIGNED BY:	DBS 12-03-06	NORFOLK SOUTHERN OFFICE OF ASS'T. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA. M.P.: CD-295.85 TOLEDO, OH FLGS AT HOLLAND-SYLVANIA RD. CHICAGO LINE FILE NO. R-05-1576
DRAWN BY:	IRE 12-03-06	
CHECKED BY:	RDO 12-05-06	
IN SERVICE:	-	
CADD or DWG. No.	FEDFLGS2.09	CHICAGO LINE
REVISION INITIALS		FILE NO. R-05-1576
		SHEET 9 of 19



PROGRAM	
FLASHER RATE	40
1 GC DELAY	4 SEC.
BELL-ON GATE RISING OFF	
MIN ACTIVATION TIME	0 SEC.
ENABLE INPUTS	1 THRU 1
TIME	
DATE	
DAYLIGHT SAVINGS	ON
PASSWORD	DISABLED
SET TO DEFAULT	SKIP

SETUP LAMP VOLTAGE	
SETUP OUTPUT IL1 XX.X VOLTS	
SETUP OUTPUT IL2 XX.X VOLTS	

CONFIGURE	
1:	0 SEC.
2:	0 SEC.
3:	0 SEC.
4:	0 SEC.
5:	0 SEC.
6:	0 SEC.
7:	0 SEC.
ATCS ADDRESS	TRRRLGG07
LOW BATTERY	DISABLED
AUX I/O	NV OUTPUT

TEST CONFIGURE	
LAMP TEST CANCEL TIMER	5 MIN.
LAMP TEST DELAY TIMER	30 SEC.
LAMP TEST ON TIMER	15 SEC.

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

- * = CABLE PROVIDED WITH SEAR II
- * = DIODE SAFETRAN PN 8A299
- * = RESISTORS TO BE INSTALLED TO LAMPS WITH SHORTEST CABLE RUN

- * = ECHELON CONNECTIONS NOT TO EXCEED 53' IN LENGTH AND TOTAL LENGTH NOT TO EXCEED 430' WITH A MAXIMUM OF 8 NODES. RECOMMEND USE BELDEN WIRE CABLE #8461 OR EQUIVALENT.

NORFOLK SOUTHERN

DESIGNED BY: DBS 12-03-06
DRAWN BY: IRE 12-03-06
CHECKED BY: RDO 12-05-06
IN SERVICE: - - -

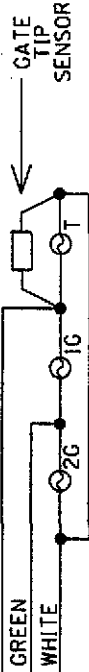
OFFICE OF ASST. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.
M.P.: CD-295.85

TOLEDO, OH
FLGS AT HOLLAND-SYLVANIA RD.

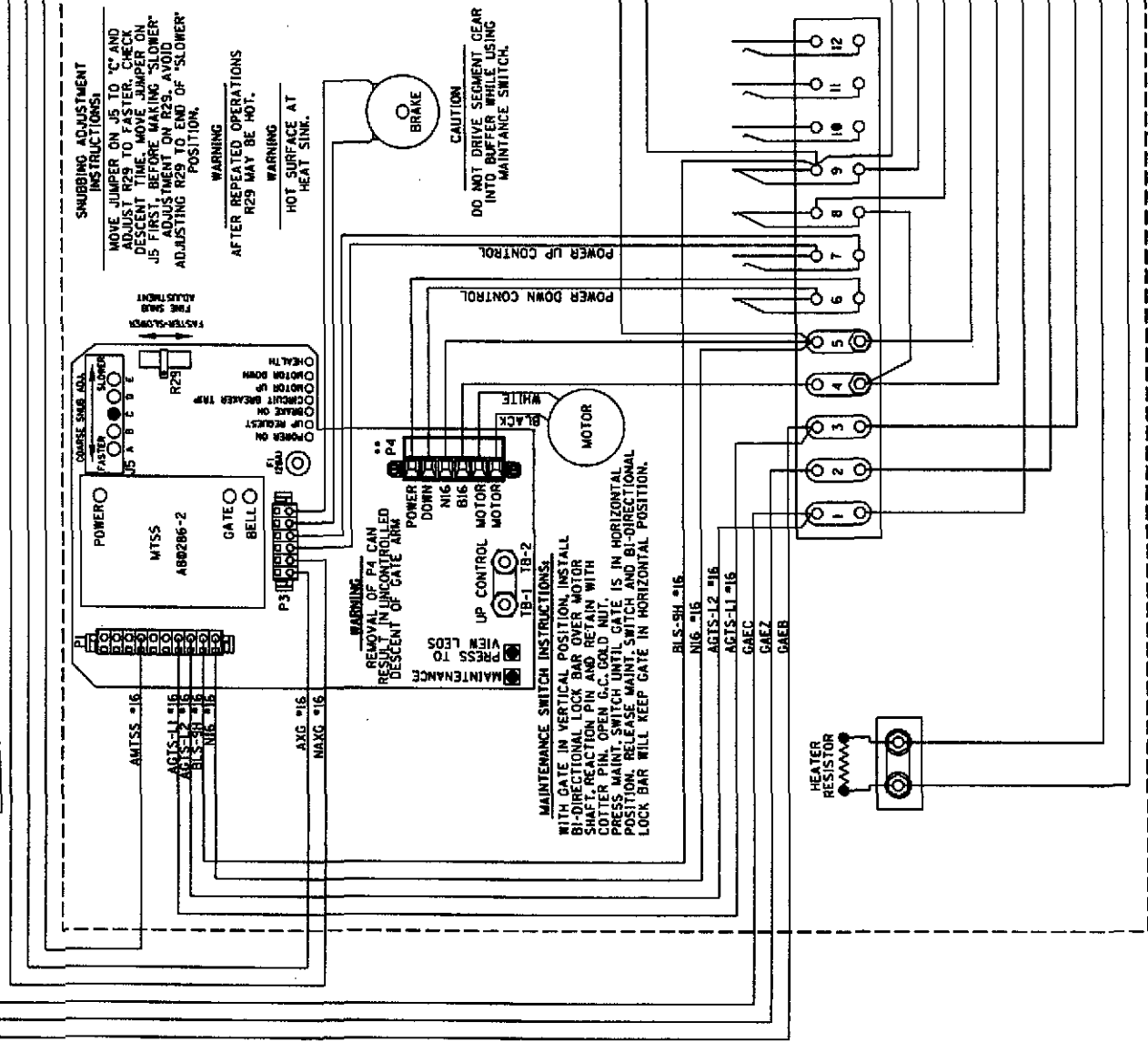
CHICAGO LINE
FILE R-05-1576

CADD or DWG. No. 36002958.10
SHEET 10 of 19

'A' GATE ARM LIGHTS



'A' GATE MECHANISM



SAFETRAN MODEL 'S60' GATE

CONTACT SPACE	CONTACT CLOSED AT	FUNCTION OF CONTACT
6	70° - 90°	POWER DOWN CONTROL
7	0° - 89°	POWER UP CONTROL
8	83° - 90°	FLASHING LGT. CONTROL
9	5° - 90°	BELL CONTROL
10		SPARE
11		SPARE
12		SPARE

'A' FLASHER AND GATE LIGHTS WITH GATE TIP SENSOR & MODEL 'S60' GATE MECHANISM WITH MINI TRACKSIDE SENSOR

NORFOLK SOUTHERN

DESIGNED BY: DBS 12-03-06

DRAWN BY: IRE 12-03-06

CHECKED BY: RDO 12-05-06

IN SERVICE: - -

CADD OF DWG. No. 36002958.11

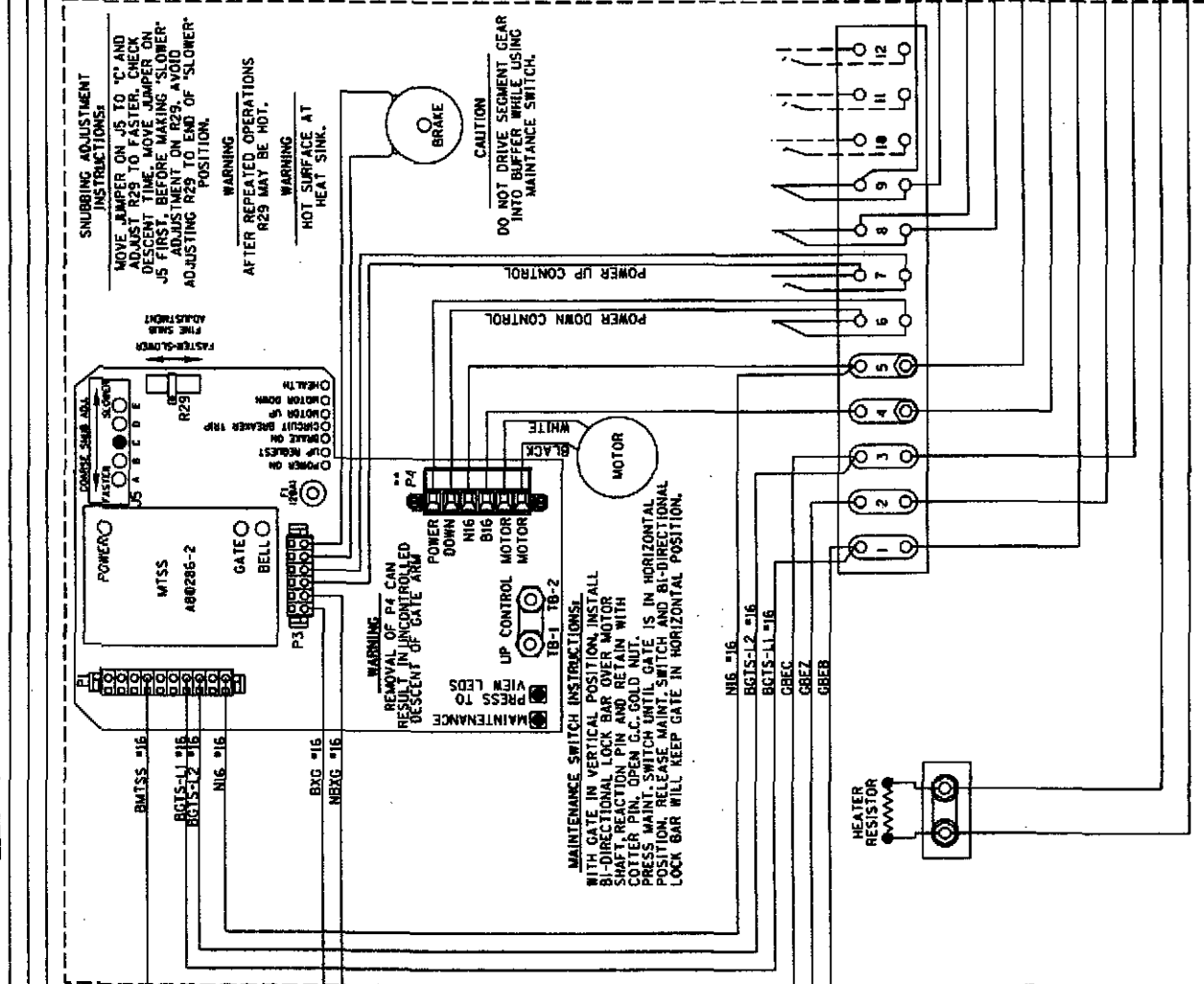
PROPERTY PENNSYLVANIA R.R.

REVISION INITIALS

FILE R-05-1576

SHEET 11 of 19

SAFETRAN MODEL "S60" GATE



"B" FLASHING LIGHTS

4 2 1 3

BEZ *10

B1-3EB *10

B2-4EC *10

NBXG *16

BXC *16

BMTSS *16

IBXX *16

BXX *10

XGP1 *16

XCP *16

NI6-B *10

B16-B *10

GBEB *10

GBEZ *10

GBEC *10

BCBX120 *10

BGNX120 *10

UG-2A

NBXG *14

BXC *14

BMTSS *14

IBXX *14

BXX *14

XGP1 *14

XCP *14

NI6-B *6

B16-B *6

BEB *6

BEZ *6

BEC *6

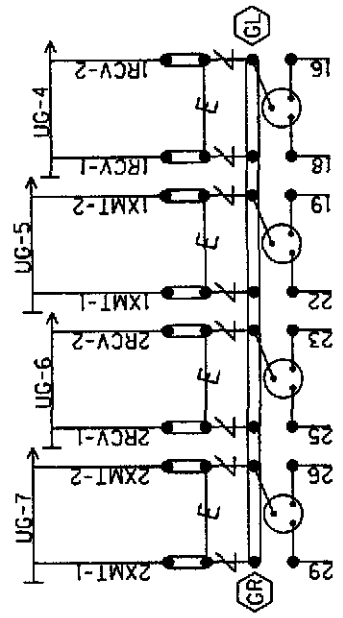
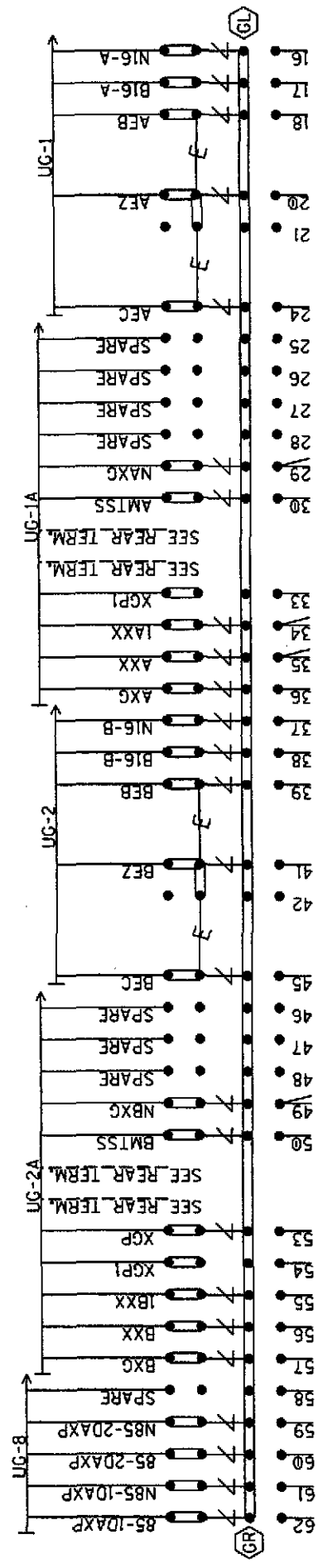
BCBX120 *14

BGNX120 *14

GATE, "B" JUNCTION BOX BASE

**"B" FLASHER AND GATE LIGHTS WITH
GATE TIP SENSOR & MODEL "S60"
GATE MECHANISM WITH MINI
TRACKSIDE SENSOR**

[illegible]



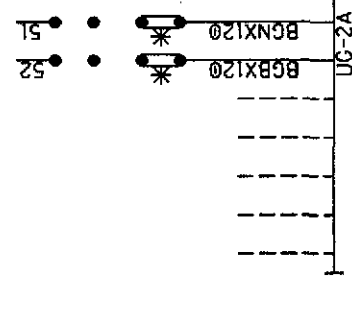
⎓ = Heavy Duty Equalizer
(022700-1X)
Clearview
/ = Lightning Arrester
(022585-1X)
⊗ = LPC-10560-51

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

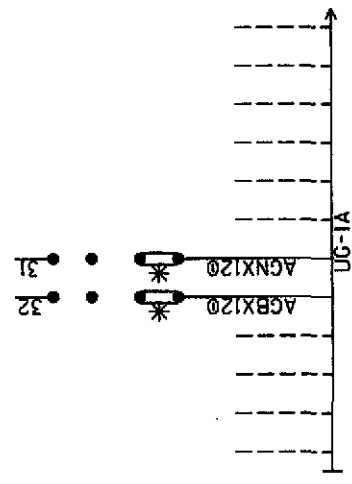
SEE FARADAY SHIELD DETAILS - 1A & 1B
FOR HOW THIS PORTION OF THE FARADAY
SHIELD IS PREDRILLED. ONLY INSTALL AND
USE THE TERMINALS NEEDED.

BACKBOARD DETAIL - 1A & 1B

DESIGNED BY:	DBS 12-03-06	 NORFOLK SOUTHERN	TOLEDO, OH FLGS AT HOLLAND-SYLVANIA RD.	FILE NO. R-05-1576	SHEET 13 of 19
DRAWN BY:	IRE 12-03-06				
CHECKED BY:	RDO 12-05-06				
IN SERVICE:	- -				
OFFICE OF ASS'T. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.		M.P.: CD-295.85		CADD or DWG. No. 36002958.13	
CHICAGO LINE		CHICAGO LINE			
PENNSYLVANIA R.R.		PENNSYLVANIA R.R.			



(SEE PREVIOUS SHEET FOR OTHER WIRES IN CABLE)



(SEE PREVIOUS SHEET FOR OTHER WIRES IN CABLE)

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

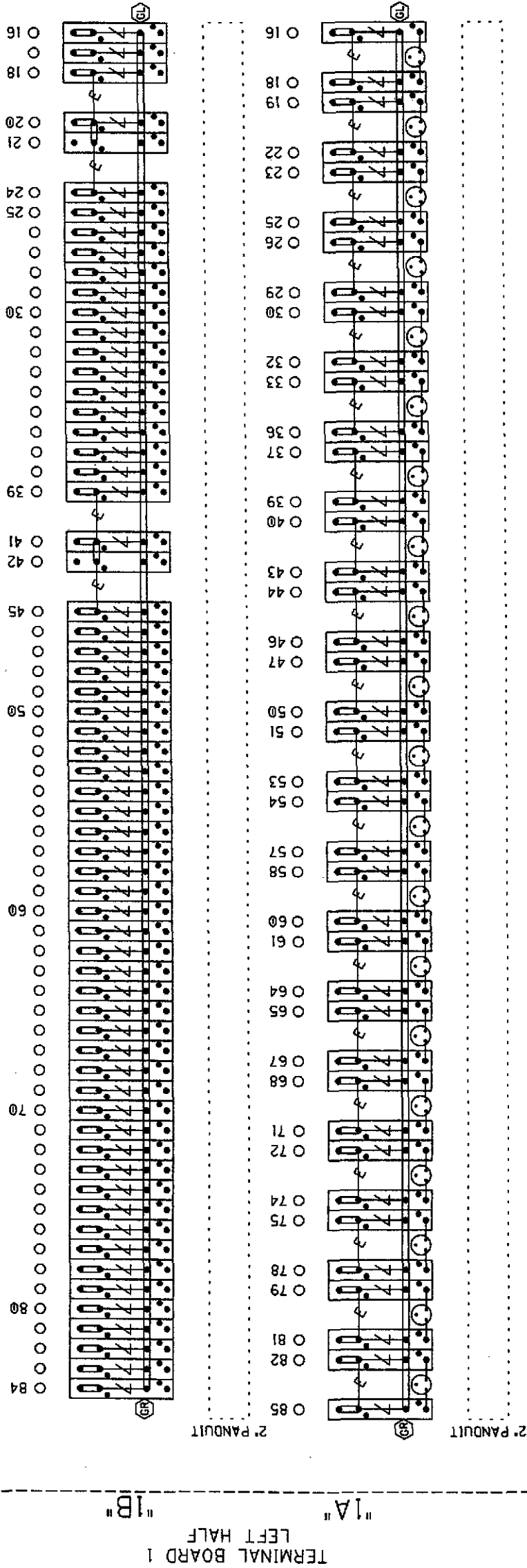
* = CLOSED DURING WINTER MONTHS

REAR OF FARADAY BACKBOARD
REAR BACKBOARD DETAIL - 1A & 1B

DESIGNED BY: DBS 12-03-06			FILE NO.
DRAWN BY: IRE 12-03-06	OFFICE OF ASST. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.		M.P.: CD-295.85
CHECKED BY: RDO 12-05-06	FLGS AT HOLLAND-SYLVANIA RD.		FILE NO. R-05-1576
IN SERVICE: - - -	CHICAGO LINE		SHEET 14 of 19
REVISION INITIALS	PROPERTY PENNSYLVANIA R.R.		CADD OF DWG. NO. 36002958.14

NOTE: IF THE FARADAY SHIELD WOULD EVER NEED TO BE DRILLED IN THE FIELD, PROPER PRECAUTIONS MUST BE TAKEN TO INSURE METAL SHAVINGS DO NOT GET INTO EXISTING TERMINALS/WIRES.

AREA BELOW IS SCALED WITH AS-75



TERMINAL BOARD 1
LEFT TWO ROWS
FARADAY SHIELD DETAIL - 1A & 1B

DESIGNED BY:	DBS 12-03-06	NORFOLK SOUTHERN OFFICE OF ASST. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA. M.P.: CD-295.85
DRAWN BY:	IRE 12-03-06	
CHECKED BY:	RDO 12-05-06	
IN SERVICE:	- -	
FILE NO. R-05-1576		CHICAGO LINE
CADD OF DWG. NO. 36002958.15		TOLEDO, OH FLGS AT HOLLAND-SYLVANIA RD.
REVISION/INITIALS	SHEET 15 of 19	

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

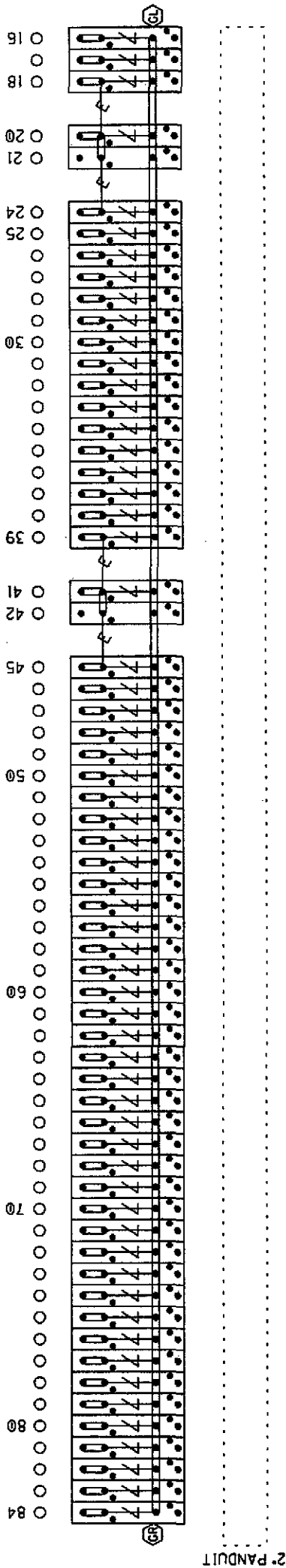
GR = TERMINALS GROUNDED TO SHIELD, 4 POST BLOCKS USE EITHER - GR - SERMMI PART NO. 61278 GL - SERMMI PART NO. 61278-1.

PROPERTY
PENNSYLVANIA R.R.

NOTE: IF THE FARADAY SHIELD WOULD EVER NEED TO BE DRILLED IN THE FIELD, PROPER PRECAUTIONS MUST BE TAKEN TO INSURE METAL SHAVINGS DO NOT GET INTO EXISTING TERMINALS/WIRES.

AREA BELOW IS SCALED WITH AS=75

TERMINAL BOARD 1
RIGHT HALF



⎓ = Heavy Duty Equalizer
(022700-IX)

⌋ = Lightning Arrestor
Clearview
(022585-IX)

⊗ = LPC-10560-51

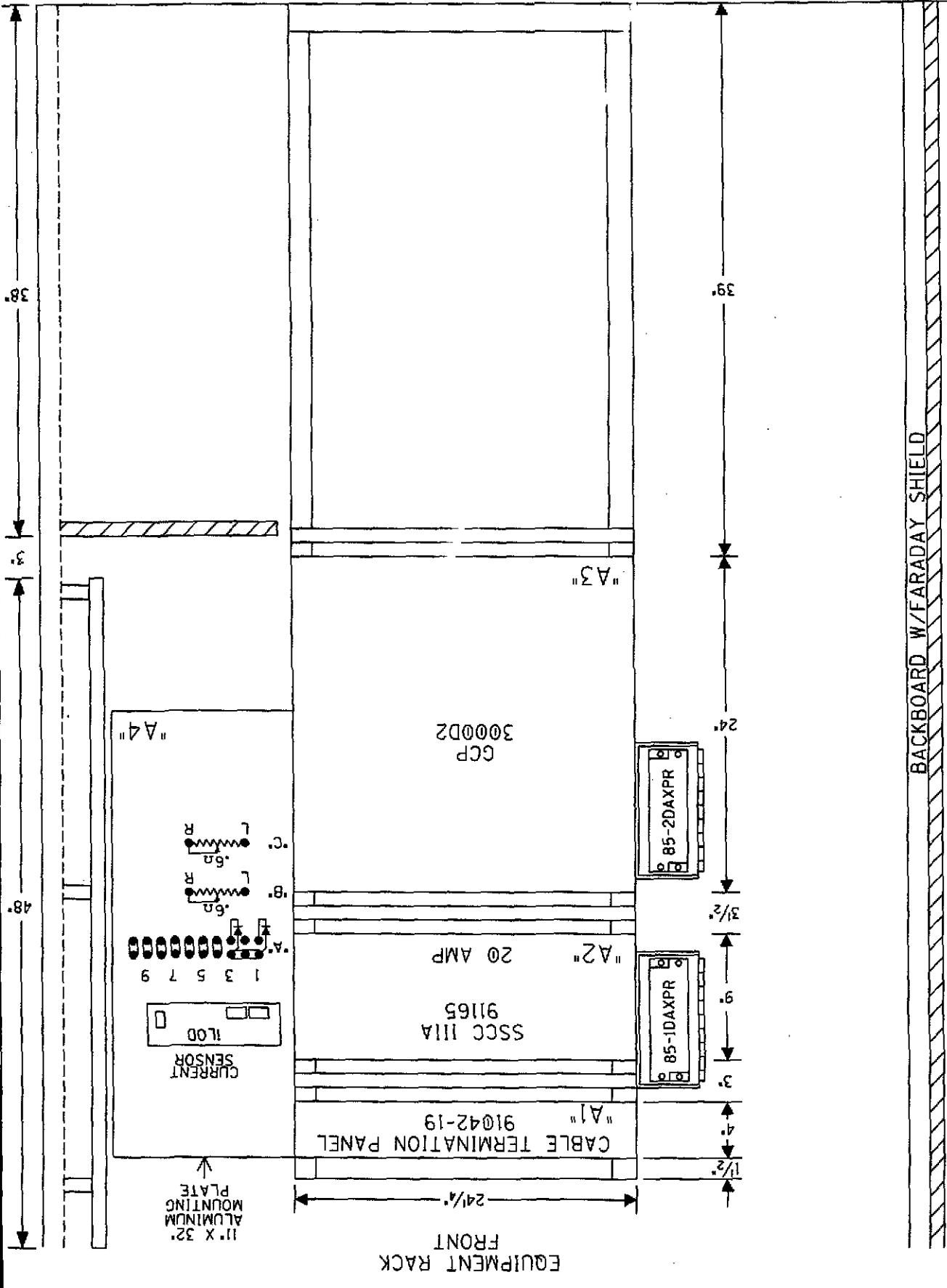
THIS SHEET IS FOR REFERENCE ONLY,
TO REFLECT HOW THE FARADAY SHIELD
IS PREDRILLED. ONLY INSTALL AND USE
THE TERMINALS NEEDED.

⊠ = INDICATES PLACEMENT
OF PANDUIT

TERMINAL BOARD 1
RIGHT ROW
FARADAY SHIELD DETAIL - 1C

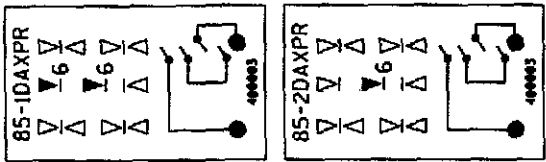
DESIGNED BY:	DBS 12-03-06	NORFOLK SOUTHERN
DRAWN BY:	IRE 12-03-06	OFFICE OF ASS'T. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.
CHECKED BY:	RDO 12-05-06	FLCS AT HOLLAND-SYLVANIA RD. TOLEDO, OH
IN SERVICE:	-	CHICAGO LINE FILE R-05-1576
NO.	36002958.16	SHEET 16 of 19

PROPERTY
PENNSYLVANIA R.R.



EQUIPMENT RACK FRONT

SIDE "C"



SAFETRAN, ALSTOM(GRS) RELAY
CROSS REFERENCE LIST
SAFETRAN ALSTOM(GRS)
400003 - A62-308

SAFETRAN, ALSTOM(GRS) RELAY
CROSS REFERENCE LIST
SAFETRAN ALSTOM(GRS)
400003 - A62-308

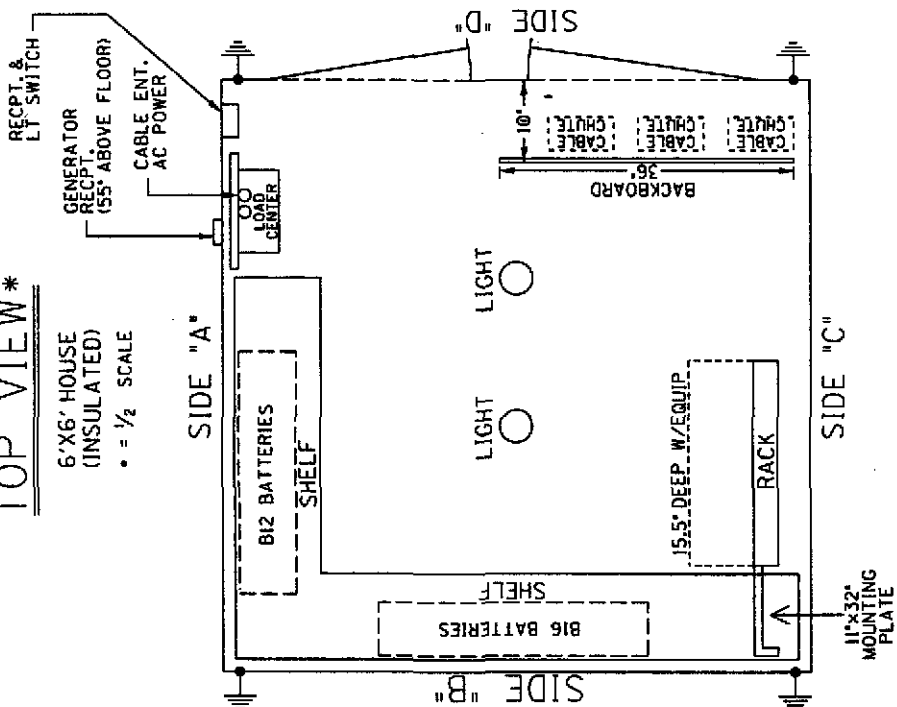
RACK PLACEMENT
6' X 6' HOUSE - SIDE "C"

DESIGNED BY:	DBS 12-03-06	NORFOLK SOUTHERN
DRAWN BY:	OFFICE OF ASST. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.	
IRE 12-03-06	M.P.: CD-295.85	
CHECKED BY:	TOLEDO, OH	
RDO 12-05-06	FLGS AT HOLLAND-SYLVANIA RD.	FILE R-05-1576
IN SERVICE:	CHICAGO LINE	SHEET 17 of 19
	CADD No. 36002958.17	No.

PROPERTY
PENNSYLVANIA R.R.

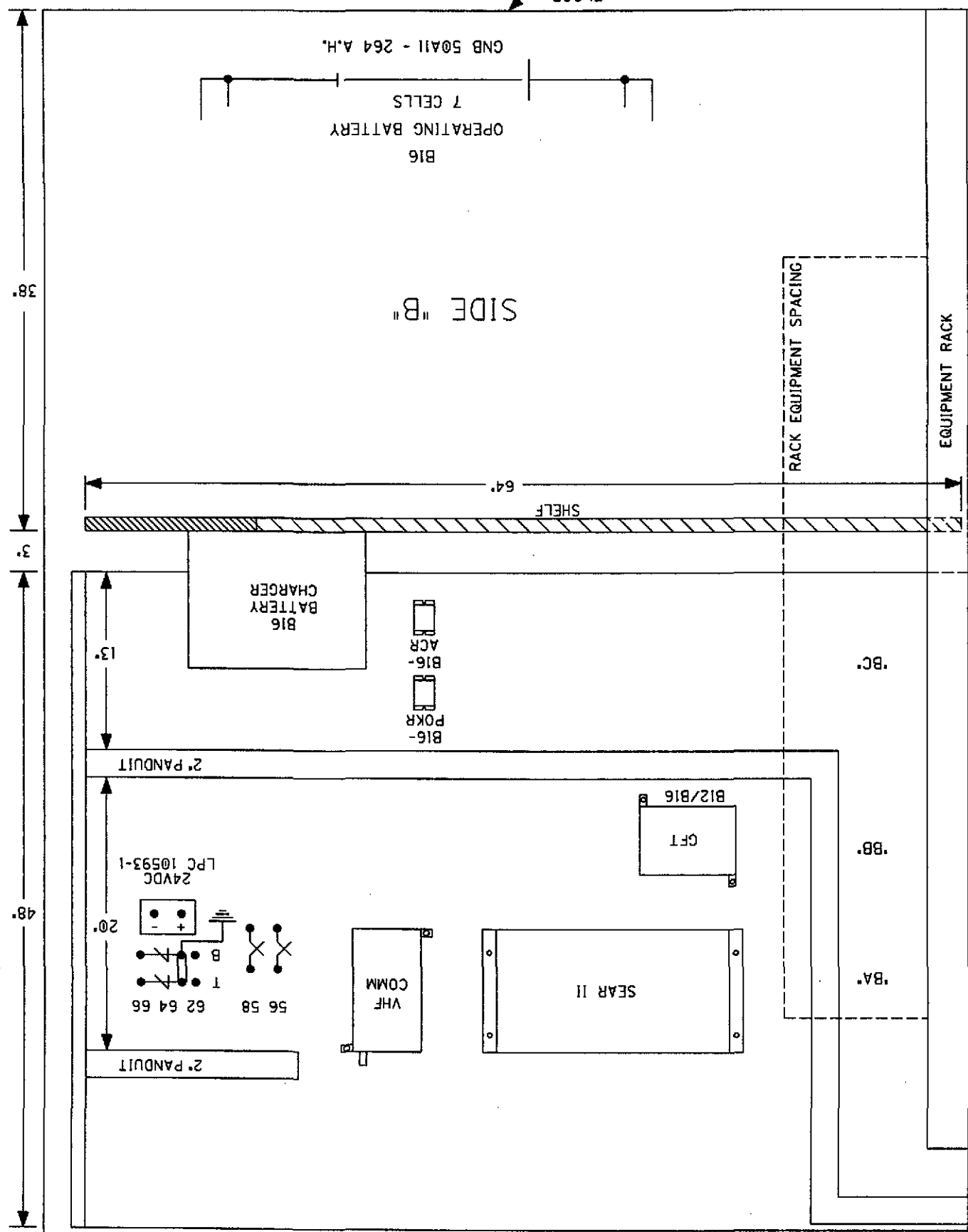
TOP VIEW *

6'X6' HOUSE
(INSULATED)
• = 1/2" SCALE



6' X 6' HOUSE (SIDE 'B' & TOP VIEW)

DESIGNED BY:	DBS 12-03-06	NORFOLK SOUTHERN
DRAWN BY:	IRE 12-03-06	OFFICE OF ASS'T. VICE PRESIDENT COMM. & SIGNAL, ATLANTA, GA.
CHECKED BY:	RDO 12-05-06	TOLEDO, OH
IN SERVICE:	- -	FLCS AT HOLLAND-PENNSYLVANIA RD.
		CHICAGO LINE
		FILE No. R-05-1576
		CADD or DWG. No. 36002958.19
		SHEET 19 of 19



PROPERTY
PENNSYLVANIA R.R.

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