WASHINGTON
UTC
UTILITIES AND TRANSPORTATION COMMISSION

TR-081325-P

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

Petitioner, City of Richland vs. Respondent, Tri-City and Olympia Railroad Company	)	DOCKET NO. TR- PETITION TO MODIFY HIGHWAY-RAIL GRADE CROSSING ACTIVE WARNING DEVICES USDOT CROSSING # 922-975L UTC CROSSING #

The Petitioner asks the Washington Utilities and Transportation Commission to approve modification of highway-rail grade crossing warning signals.

2008 JUL 17 PM 4:45

Section 1 – Petitioner's Information

Petitioner	City of Richland
Street Address	505 Swift Boulevard
City, State and Zip Code	Richland, WA 99352
Mailing Address, if different than the street address	P.O. Box 190, MS #26
Contact Person Name	Pete Rogalsky
Contact Phone Number and E-mail Address	509-942-7500, progalsky@ci.richland.wa.us

Section 2 – Respondent's Information

Respondent Tri-City and Olympia Railroad Company

Street Address 2579 Stevens Drive

City, State and Zip Code Richland, WA 99352

Mailing Address, if different than the street address P.O. Box 1700

Contact Person Name David L. Samples

Contact Phone Number and E-mail Address 509-371-8313, dlsamples@tcry.com

Section 3 – Crossing Location

1. Existing highway/roadway Battelle Boulevard

2. Existing railroad Tri-City and Olympia Railroad Company

3. USDOT Crossing No. 922-975L UTC Crossing No.

4. Located in the S.E. 1/4 of the S.E. 1/4 of Sec. 15 , Twp. 10 N. , Range 28 E. W.M.

5. GPS location, if known

6. Railroad mile post (nearest tenth) 36.3

7. City Richland, WA County Benton

Section 4 – Current Highway Traffic Information

1. Name of highway Battelle Boulevard

2. Road authority City of Richland

3. Average annual daily traffic (AADT) 976

4. Number of lanes 2

5. Roadway speed 35

6. Is the crossing part of an established truck route? Yes _____ No X

7. If so, trucks are what percent of total daily traffic? _____

8. Is the crossing part of an established school bus route? Yes _____ No X

9. If so, how many school buses travel over the crossing each day? _____

10. Describe any changes to the information in 1 through 7, above, expected within ten years:

Section 5 – Current Crossing Information

1. Railroad company _____

2. Type of railroad at crossing □ Common Carrier □ Logging X Industrial

□ Passenger □ Excursion

3. Type of tracks at crossing □ Main Line X Siding or Spur

4. Number of tracks at crossing 1

5. Average daily train traffic, freight <1

Authorized freight train speed 40 Operated freight train speed 25

6. Average daily train traffic, passenger 0

Authorized passenger train speed _____ Operated passenger train speed _____

7. Describe any changes to the information in 1 through 4, above, expected within ten years:

_____

_____

_____

8. What is the available sight distance from the stop bar (or 25 feet from the tracks if no stop bar) on both approaches to the crossing?

> 250 feet (Min. stopping sight distance for 35 mph design speed, AASHTO Geometric Design of Highways and Streets)

9. If the sight distance is less than 400 feet, describe the structures, roadway or track curvature, visual obstacles or other characteristics that limit sight distance.

_____

_____

Section 5 – Current Warning Devices

1. Provide a complete description of the warning devices currently located at the crossing, including signs, gates, lights, train detection circuitry and any other warning devices.

A Safe train crossing was installed in 2005 including; signs, gates, lights and train detection circuitry (see attached plans).

Section 6 – Description of Proposed Changes

1. Describe in detail the proposed changes to the crossing. Include the funding source for the proposed installation, if applicable.

The original crossing was designed with a 40 foot gate arm that has been damaged on several occasions due to high winds. This project will install a second gate in the median with a 24 foot gate and retrofitting the existing gate assembly with a 24 foot gate.

Section 7 – Illustration of Proposed Warning Devices

Attach a detailed diagram, drawing, map or other illustration showing the proposed warning devices.

Section 8 – Waiver of Hearing by Respondent

Waiver of Hearing

The undersigned represents the Respondent in the petition to modify highway-rail grade crossing warning signals at the following crossing.

USDOT Crossing No. 922-975L UTC Crossing No. _____

We have investigated the conditions at the crossing. We are satisfied the conditions are the same as described by the Petitioner in this docket. We agree the warning signals should be installed and consent to a decision by the commission without a hearing.

Dated at KENNEWICK, Washington, on the 14TH day of JULY, 2008.

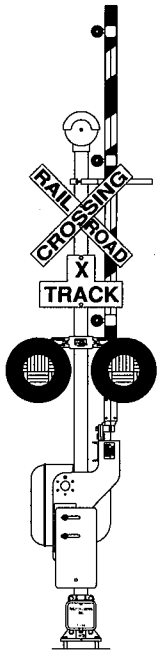
DAVID L. SAMPLES
Printed name of Respondent

Signature of Respondent's Representative

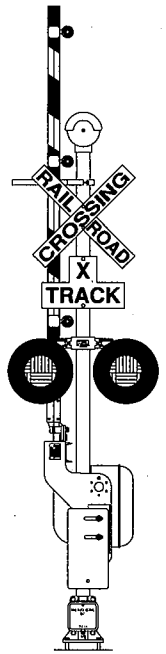
DIRECTOR, GOVERNMENTAL AFFAIRS
Title

509-727-8851 / DLSAMPLES@TCRY.COM
Phone number and e-mail address

TRI-CITY & OLYMPIA RAILROAD COMPANY
10 NORTH WASHINGTON STREET
KENNEWICK, WA 99336
Mailing address



TRI-CITIES & OLYMPIA RAILROAD
BATTELLE BLVD, DOT # 922 975L
RICHLAND, WASHINGTON



M.P. 36.3
PRELIMINARY DRAWINGS

THE OPERATION OF THE CIRCUITS AND EQUIPMENT REPRESENTED CANNOT BE FINALLY CHECKED UNTIL CONNECTED TO FORM A COMPLETE SYSTEM OR PORTION OF SUCH A SYSTEM. SUCH A SYSTEM OR PORTION OF SUCH A SYSTEM MUST UNDERGO A COMPLETE CIRCUIT CONTACT SELECTION (BREAKDOWN) AND SERVICE (OPERATION) TEST PRIOR TO BEING PLACED INTO REGULAR SERVICE.

SHT#	SHEET DESCRIPTION	SHT#	SHEET DESCRIPTION
1	COVER SHEET	9	SEAR II EVENT RECORDER
2	CROSSING LAYOUT	10	RTU CIRCUIT
3	CABLE LAYOUT	11	POWER DISTRIBUTION
4	TYPICAL SIGNAL DETAIL	12	HOUSE LAYOUT
5	GCP 3000 CIRCUIT	13	HOUSE LAYOUT DETAILS
6	SSCC IIIA CIRCUIT	14	TYPICAL TRACK CONNECTION
7	SIGNAL GATE "L" CIRCUIT	15	GCP3000 HISTORY CARD
8	SIGNAL GATE "R" CIRCUIT		

SHT#	SHEET DESCRIPTION	SHT#	SHEET DESCRIPTION	SHT#	SHEET DESCRIPTION
1	COVER SHEET	9	#2 SSCC IIIA CIRCUIT	17	GCP3000 HISTORY CARD
2	CROSSING LAYOUT	10	SIGNAL GATE "M" CIRCUIT		
3	CABLE LAYOUT	11	SEAR II EVENT RECORDER		
4	TYPICAL SIGNAL DETAIL	12	RTU CIRCUIT		
5	GCP 3000 CIRCUIT	13	POWER DISTRIBUTION		
6	#1 SSCC IIIA CIRCUIT	14	HOUSE LAYOUT		
7	SIGNAL GATE "L" CIRCUIT	15	HOUSE LAYOUT DETAILS		
8	SIGNAL GATE "R" CIRCUIT	16	TYPICAL TRACK CONNECTION		

RED = IN YELLOW = OUT

NO.	REVISION	BY	DATE	APPD
1	ADD MEDIAN GATE "M"	TCS	4/1/08	ACE

RAILROAD SIGNAL INTERNATIONAL
PHONE: (800) 543-2842 FAX:(918) 234-1529
TULSA, OKLAHOMA
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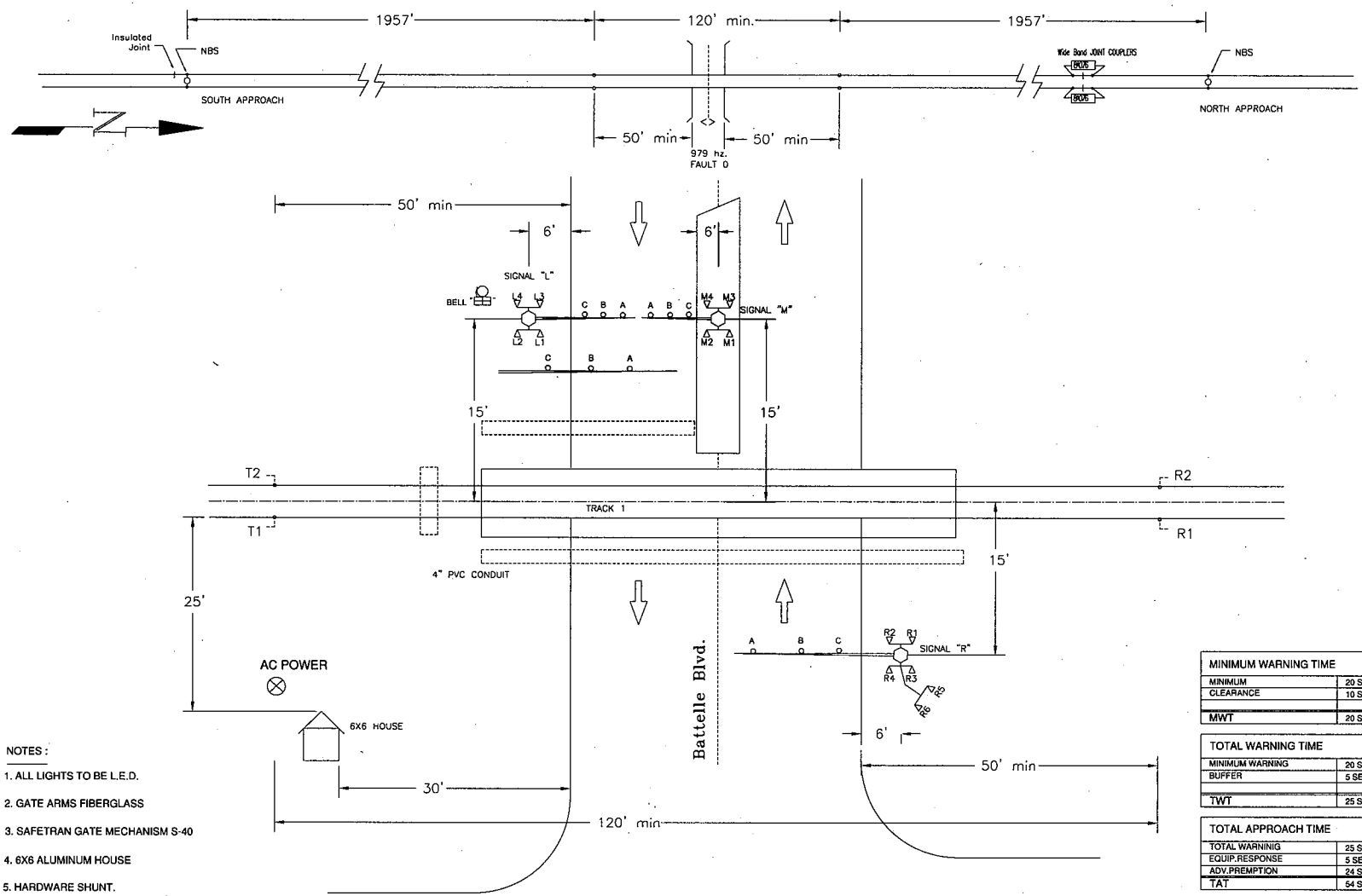
TRI-CITIES & OLYMPIA RAILROAD

DOT NUMBER	BATTELLE BLVD.		RICHLAND, WA
922975L	COVER SHEET		
PROJECT NO. 23-05-RICH	HIGHWAY RAILROAD GRADE CROSSING WARNING SYSTEM		

PROJECT APPROVED BY	PROJECT ENGINEER	DRAWN BY & DATE:	SHEET	DWG NO.	REV.
E. Burns	M.Costro	A.R. 05/26/2005	01 OF 17	23-05-s01	1

01 OF 15

Battelle Blvd.-s01



NOTES :

1. ALL LIGHTS TO BE L.E.D.
2. GATE ARMS FIBERGLASS
3. SAFETRAN GATE MECHANISM S-40
4. 6X6 ALUMINUM HOUSE
5. HARDWARE SHUNT.
6. CONTROLLER SAFETRAN GCP3000
7. TRAIN SPEED 25 MPH

MINIMUM WARNING TIME	
MINIMUM	20 SEC
CLEARANCE	10 SEC
MWT	20 SEC

TOTAL WARNING TIME	
MINIMUM WARNING	20 SEC
BUFFER	5 SEC
TWT	25 SEC

TOTAL APPROACH TIME	
TOTAL WARNINIG	25 SEC
EQUIP.RESPONSE	5 SEC
ADV.PREMPTION	24 SEC
TAT	54 SEC

RED = IN YELLOW = OUT

NO.	REVISION	BY	DATE	APPD
1	ADD MEDIAN GATE "M"	TCS	4/1/08	ACE

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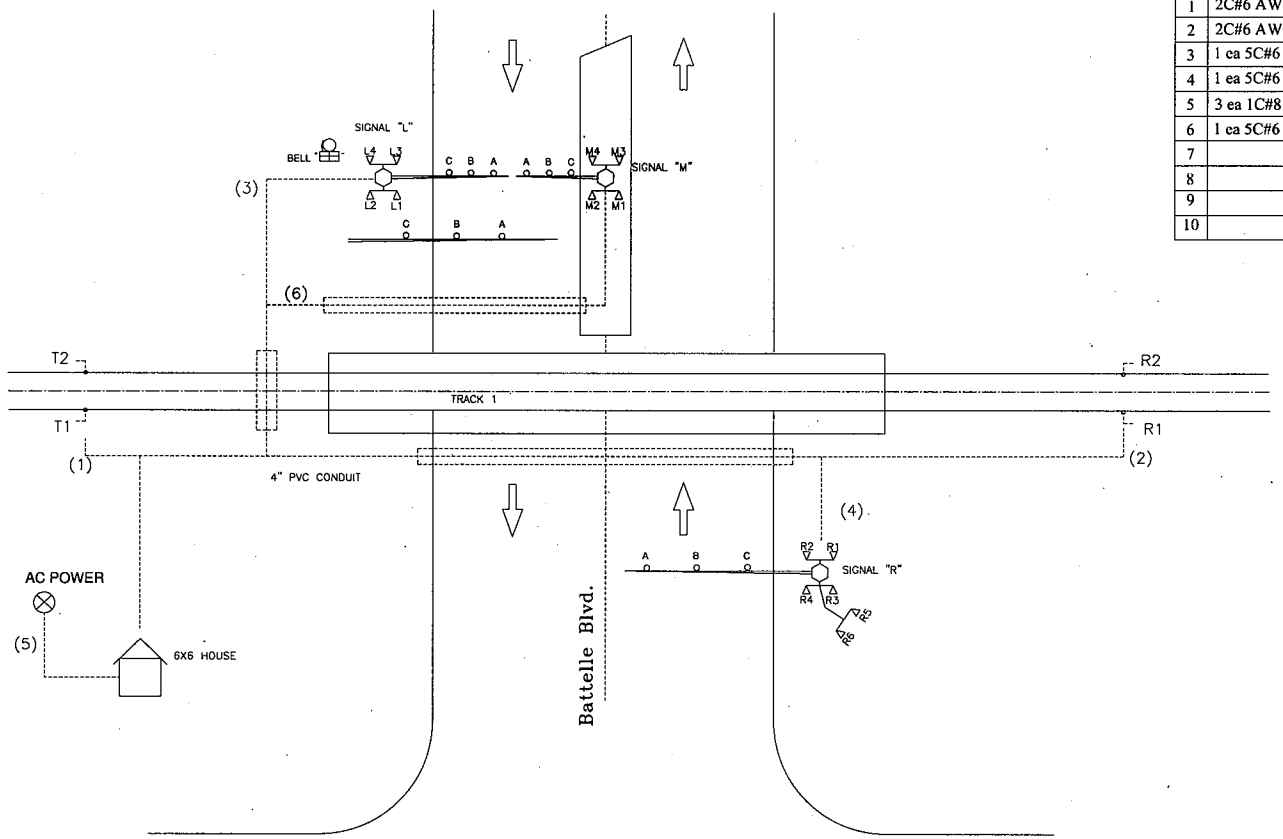
TRI-CITIES & OLYMPIA RAILROAD

DOT NUMBER	BATTELLE BLVD.		RICHLAND, WA
922975L	CROSSING LAYOUT		
PROJECT No. 23-05-RCH	HIGHWAY RAILROAD GRADE CROSSING WARNING SYSTEM		
PROJECT APPROVED BY: E. Burns	PROJECT ENGINEER: M.C.	DRAWN BY & DATE: A.R. 05/26/2005	SHEET: 02 OF 17 (02 OF 15)
DWG NO.: 23-05-s02	REV.: 1		

Battelle Blvd.-s02

UG	CABLES DESCRIPTION
1	2C#6 AWG TWISTED PAIR
2	2C#6 AWG TWISTED PAIR
3	1 ea 5C#6 AWG & 1 ea 7C#9 AWG
4	1 ea 5C#6 AWG & 1 ea 7C#9 AWG
5	3 ea 1C#8 AWG 600 Volt Rated
6	1 ea 5C#6 AWG & 1 ea 7C#9 AWG
7	
8	
9	
10	



RED = IN YELLOW = OUT

NO.	REVISION	BY	DATE	APPD
1	ADD MEDIAN GATE "M"	TCS	4/1/08	ACE

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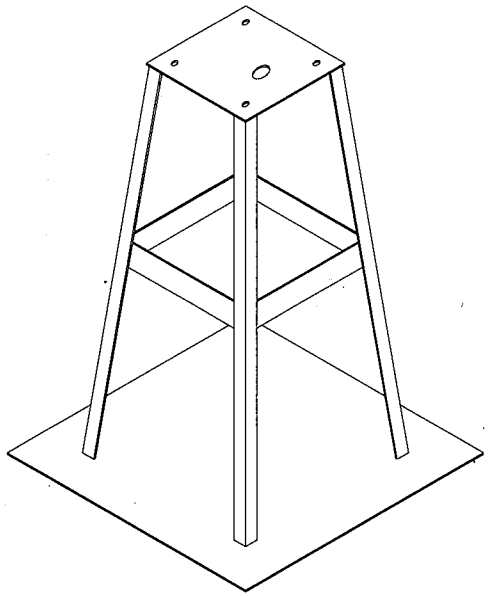
TRI-CITIES & OLYMPIA RAILROAD

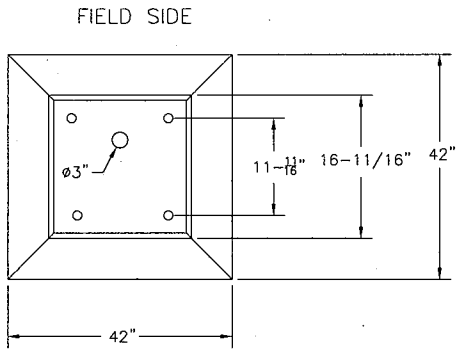
DOT NUMBER	BATTELLE BLVD.		RICHLAND, WA
922975L	CABLE LAYOUT		
PROJECT NO. 23-05-RICH	HIGHWAY RAILROAD GRADE CROSSING WARNING SYSTEM		
PROJECT APPROVED BY: E. Burns	PROJECT ENGINEER: M.C.	DRAWN BY & DATE: A.R. 05/26/2005	SHEET 03 OF 17 / DWG NO. 23-05-s03 / REV. 1

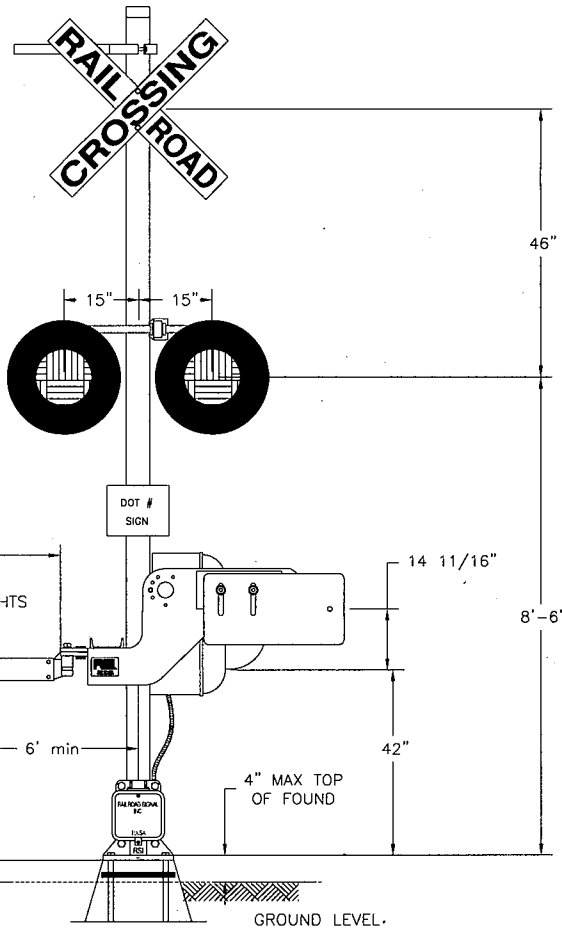
03 OF 15

Battelle Blvd.-s03



TYPICAL GALV, STEEL FOUNDATION





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NO.	REVISION	BY	DATE	APPD
1	ADD MEDIAN GATE "M"	TCS	4/1/08	ACE

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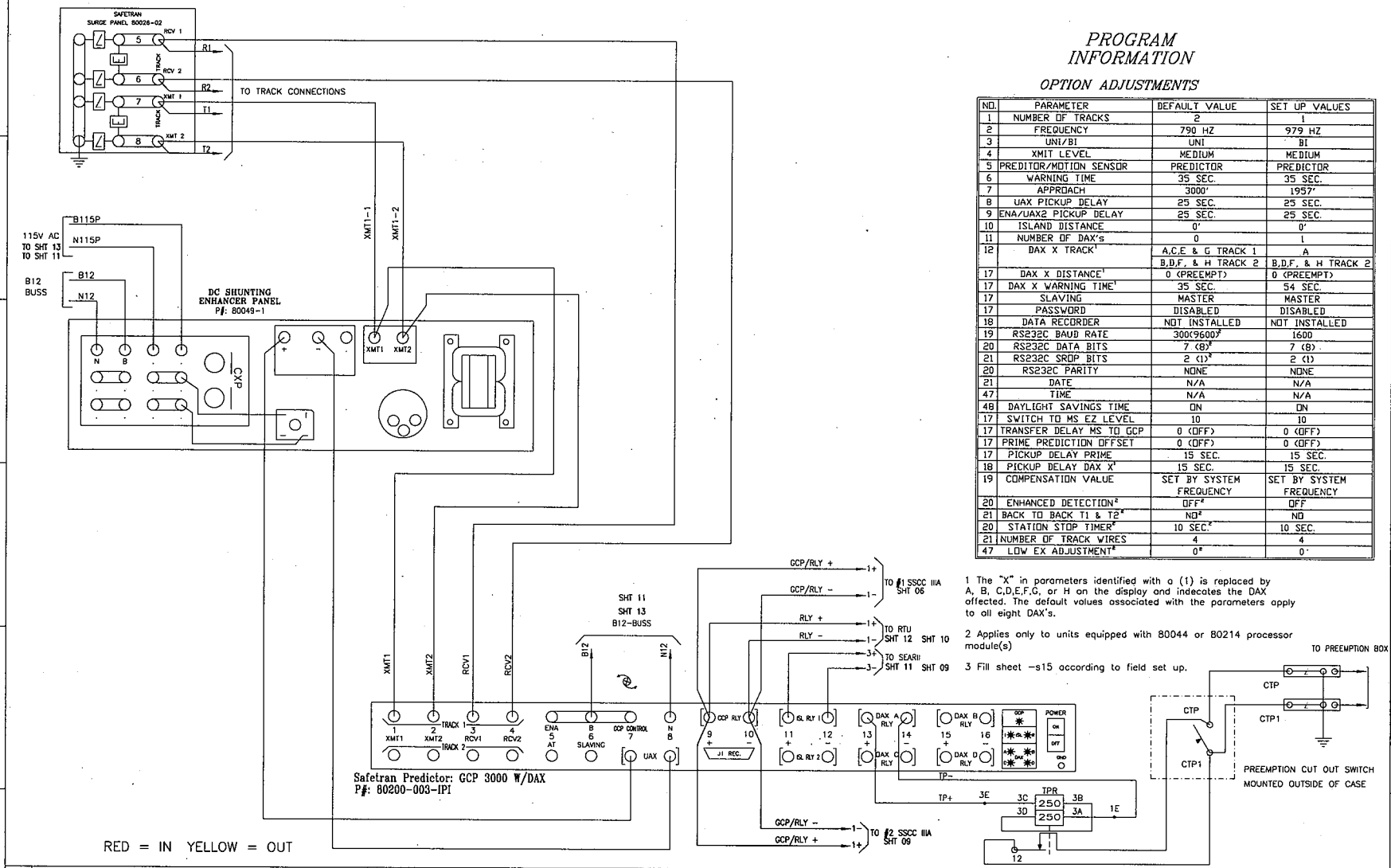
TRI-CITIES & OLYMPIA RAILROAD

DOT NUMBER 922975L	BATTELLE BLVD.					RICHLAND, WA
PROJECT NO. 23-05-RICH	TYPICAL SIGNAL DETAIL HIGHWAY RAILROAD GRADE CROSSING WARNING SYSTEM					
PROJECT APPROVED BY E. Burns	PROJECT ENGINEER M.Castro	DRAWN BY & DATE: A.R. 05/26/2005	SHEET 04 OF 17	DWG NO. 23-05-s04		REV. 1

04 OF 15

Battelle Blvd - s04



PROGRAM INFORMATION

OPTION ADJUSTMENTS

NO.	PARAMETER	DEFAULT VALUE	SET UP VALUES
1	NUMBER OF TRACKS	2	1
2	FREQUENCY	790 HZ	979 HZ
3	UNI/BI	UNI	BI
4	XMIT LEVEL	MEDIUM	MEDIUM
5	PREDITOR/MOTION SENSOR	PREDICTOR	PREDICTOR
6	WARNING TIME	35 SEC.	35 SEC.
7	APPROACH	3000'	1957'
8	UAX PICKUP DELAY	25 SEC.	25 SEC.
9	ENA/UAX2 PICKUP DELAY	25 SEC.	25 SEC.
10	ISLAND DISTANCE	0'	0'
11	NUMBER OF DAX's	0	1
12	DAX X TRACK[1]	A,C,E & G TRACK 1	A
		B,D,F, & H TRACK 2	B,D,F, & H TRACK 2
17	DAX X DISTANCE[1]	0 (PREEMPT)	0 (PREEMPT)
17	DAX X WARNING TIME[1]	35 SEC.	54 SEC.
17	SLAVING	MASTER	MASTER
17	PASSWORD	DISABLED	DISABLED
18	DATA RECORDER	NOT INSTALLED	NOT INSTALLED
19	RS232C BAUD RATE	300(9600)[2]	1600
20	RS232C DATA BITS	7 (8)[2]	7 (8)
21	RS232C SRDP BITS	2 (1)[2]	2 (1)
20	RS232C PARITY	NONE	NONE
21	DATE	N/A	N/A
47	TIME	N/A	N/A
48	DAYLIGHT SAVINGS TIME	ON	ON
17	SWITCH TO MS EZ LEVEL	10	10
17	TRANSFER DELAY MS TO GCP	0 (OFF)	0 (OFF)
17	PRIME PREDICTION OFFSET	0 (OFF)	0 (OFF)
17	PICKUP DELAY PRIME	15 SEC.	15 SEC.
18	PICKUP DELAY DAX X'	15 SEC.	15 SEC.
19	COMPENSATION VALUE	SET BY SYSTEM FREQUENCY	SET BY SYSTEM FREQUENCY
20	ENHANCED DETECTION[2]	OFF[2]	OFF
21	BACK TO BACK T1 & T2[2]	NO[2]	NO
20	STATION STOP TIMER[2]	10 SEC.[2]	10 SEC.
21	NUMBER OF TRACK WIRES	4	4
47	LOW EX ADJUSTMENT[2]	0[2]	0

1 The "X" in parameters identified with a (1) is replaced by A, B, C,D,E,F,G, or H on the display and indecates the DAX affected. The default values associated with the parameters apply to all eight DAX's.

2 Applies only to units equipped with 80044 or 80214 processor module(s)

3 Fill sheet -s15 according to field set up.

NO.	REVISION	BY	DATE	APPD
1	ADD MEDIAN GATE "M"	TCS	4/1/08	ACE

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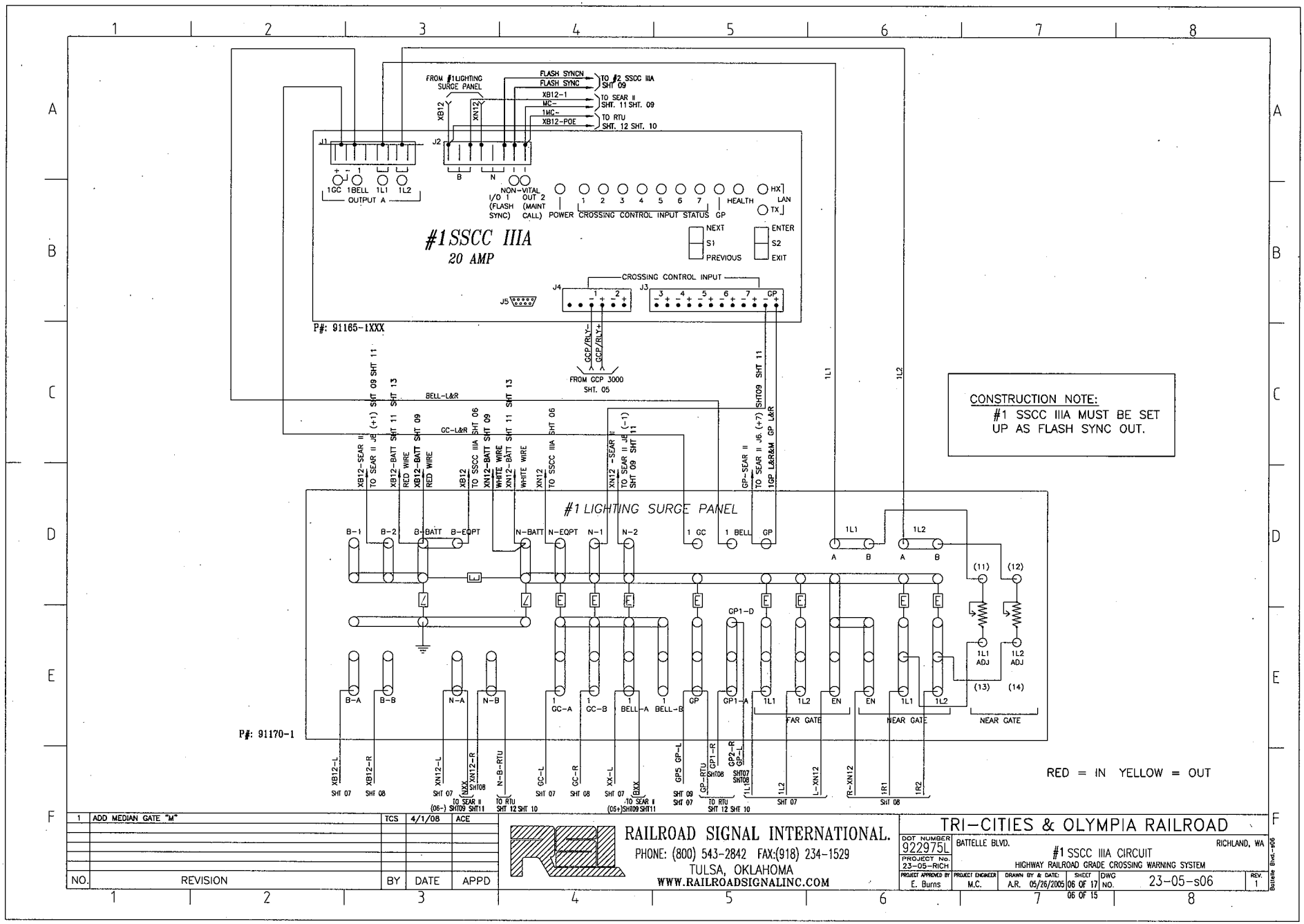
TRI-CITIES & OLYMPIA RAILROAD

DOT NUMBER 922975L
PROJECT NO. 23-05-RICH
BATTELLE BLVD. RICHLAND, WA
GCP3000 - CIRCUIT
HIGHWAY RAILROAD GRADE CROSSING WARNING SYSTEM

PROJECT APPROVED BY	PROJECT ENGINEER	DRAWN BY & DATE:	SHEET	DWG NO.	REV.
E. Burns	M.C.	A.R. 05/26/2005	05 OF 17	23-05-s05	.1

05 OF 15

Battelle Blvd.-s05



NO.	REVISION	BY	DATE	APPD
1	ADD MEDIAN GATE "M"	TCS	4/1/08	ACE

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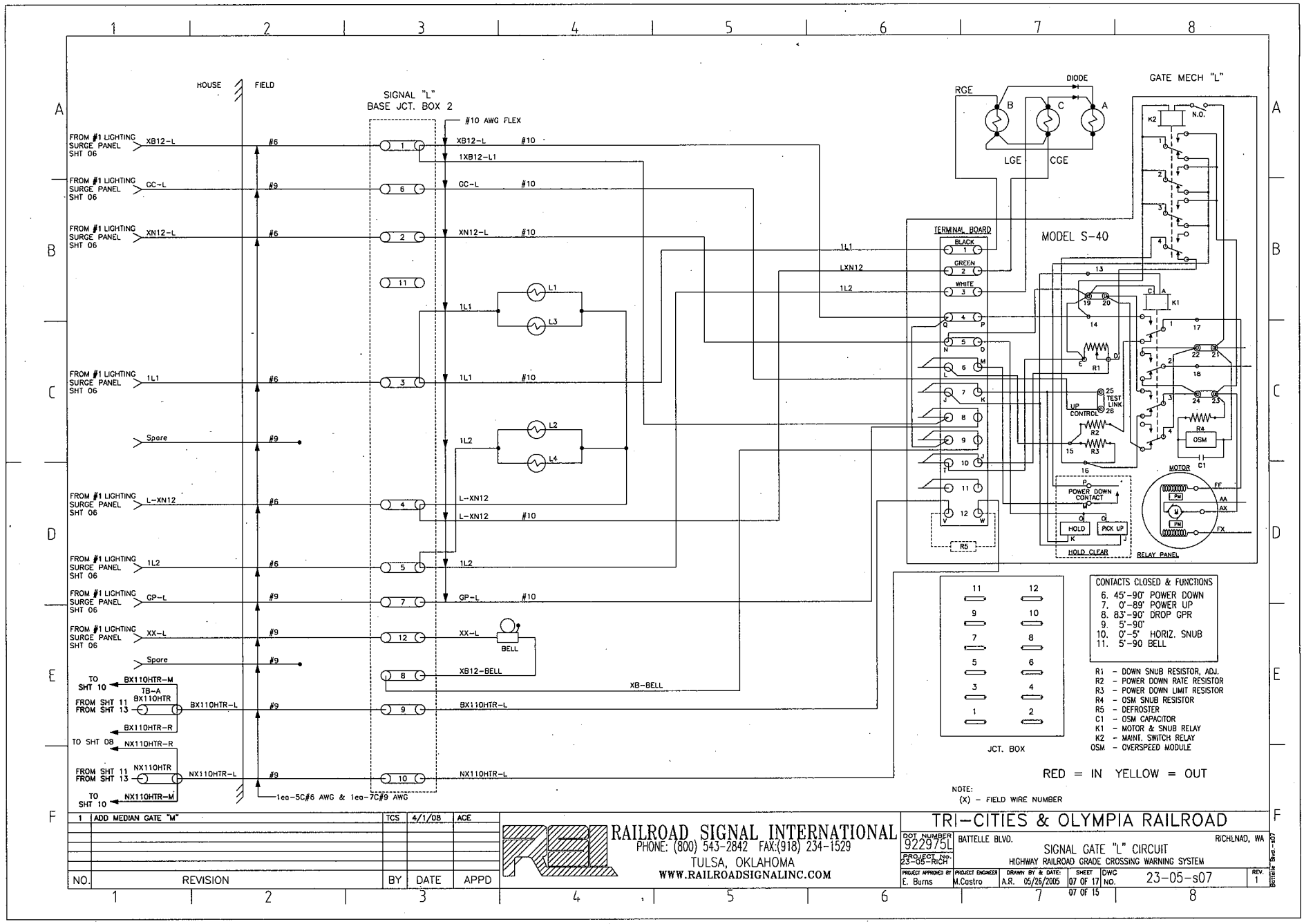
TRI-CITIES & OLYMPIA RAILROAD

DOT NUMBER 922975L	BATTELLE BLVD.				RICHLAND, WA
PROJECT No. 23-05-RICH	#1 SSCC IIIA CIRCUIT HIGHWAY RAILROAD GRADE CROSSING WARNING SYSTEM				
PROJECT APPROVED BY: E. Burns	PROJECT ENGINEER: M.C.	DRAWN BY & DATE: A.R. 05/26/2005	SHEET 06 OF 17	DWG NO. 23-05-s06	REV. 1

06 OF 15

Battelle Blvd.-s06



NO.	REVISION	BY	DATE	APPD
1	ADD MEDIAN GATE "M"	TCS	4/1/08	ACE

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TRI-CITIES & OLYMPIA RAILROAD

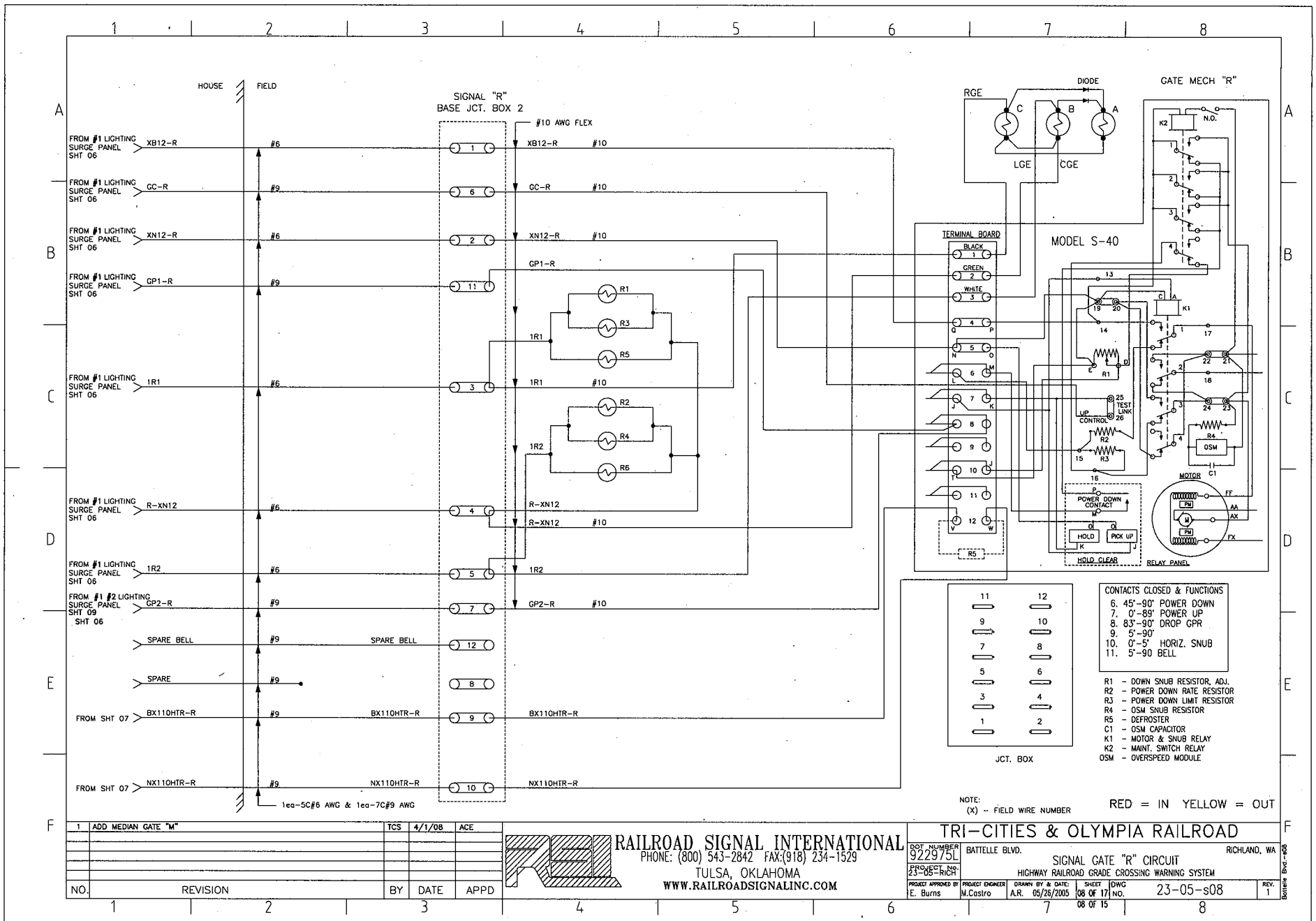
DOT NUMBER 922975L
PROJECT NO. 23-05-RICH
BATTELLE BLVD. RICHLNAD, WA

SIGNAL GATE "L" CIRCUIT
HIGHWAY RAILROAD GRADE CROSSING WARNING SYSTEM

PROJECT APPROVED BY	PROJECT ENGINEER	DRAWN BY & DATE:	SHEET	DWG NO.	REV.
E. Burns	M.Castro	A.R. 05/26/2005	07 OF 17	23-05-s07	1

07 OF 15

Battelle Blvd - s07



NO.	REVISION	BY	DATE	APPD
1	ADD MEDIAN GATE "M"	TCS	4/1/08	ACE

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TRI-CITIES & OLYMPIA RAILROAD

DOT NUMBER 922975L | BATTELLE BLVD. | RICHLAND, WA

PROJECT NO. 23-05-RICH

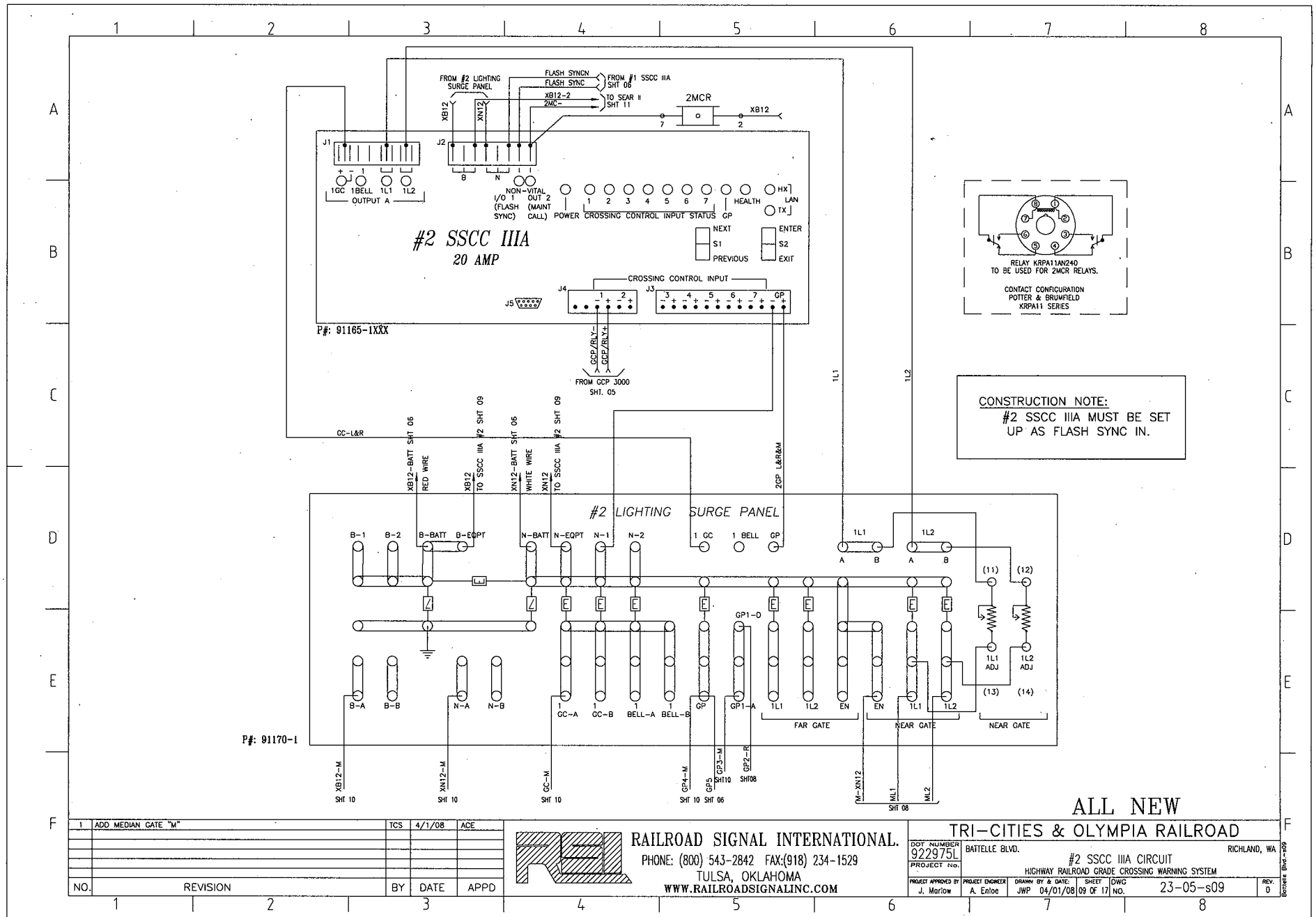
SIGNAL GATE "R" CIRCUIT

HIGHWAY RAILROAD GRADE CROSSING WARNING SYSTEM

PROJECT APPROVED BY	PROJECT ENGINEER	DRAWN BY & DATE:	SHEET	DWG NO.	REV.
E. Burns	M.Castro	A.R. 05/26/2005	08 OF 17	23-05-s08	1

08 OF 15

Battelle Blvd.-s08



ALL NEW

NO.	REVISION	BY	DATE	APPD
1	ADD MEDIAN GATE "M"	TCS	4/1/08	ACE

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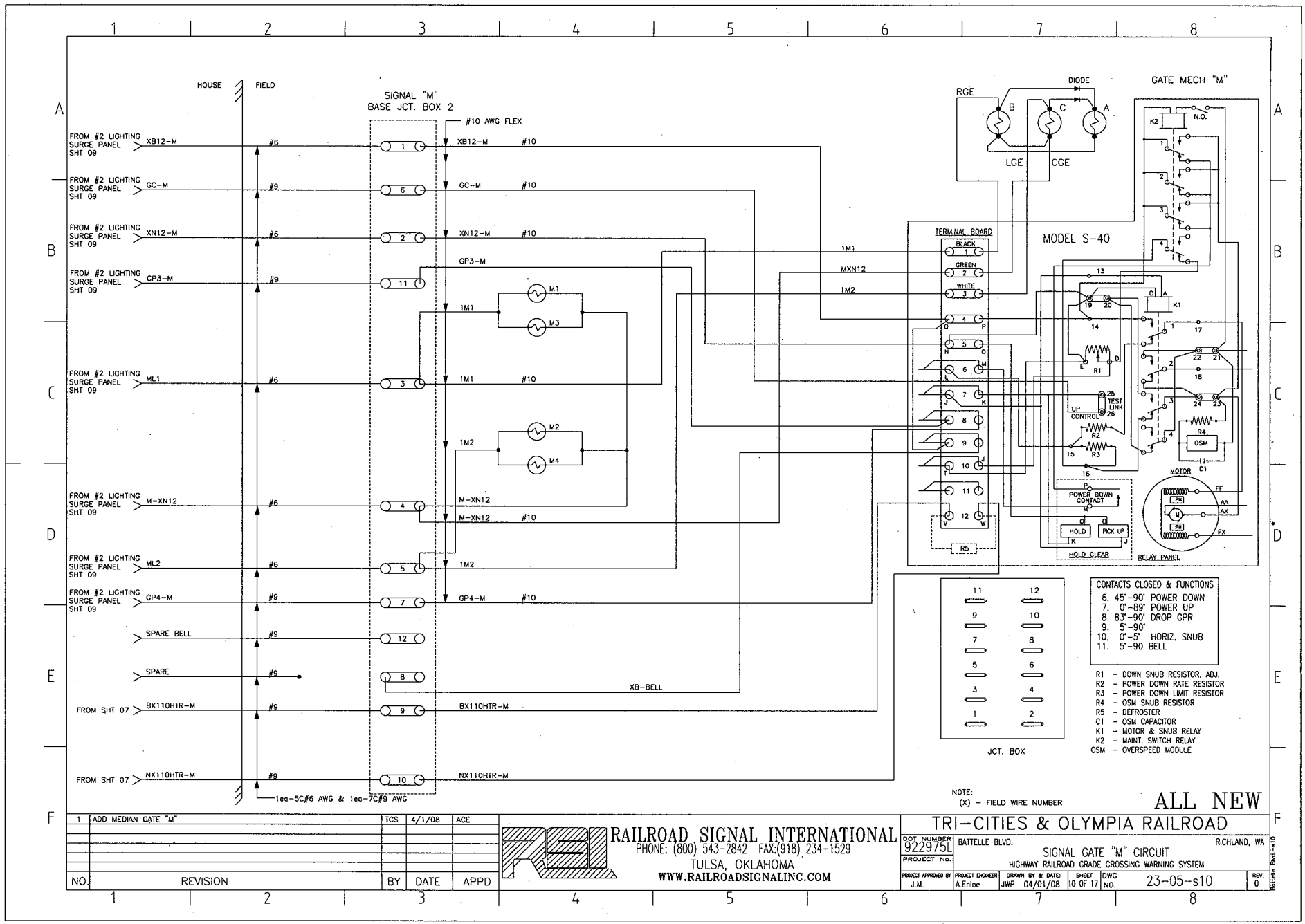
TRI-CITIES & OLYMPIA RAILROAD

DOT NUMBER / PROJECT No.						
922975L	BATTELLE BLVD.	#2 SSCC IIIA CIRCUIT				RICHLAND, WA
		HIGHWAY RAILROAD GRADE CROSSING WARNING SYSTEM				
PROJECT APPROVED BY	PROJECT ENGINEER	DRAWN BY & DATE:	SHEET	DWG NO.		REV.
J. Marlow	A. Enloe	JWP 04/01/08	09 OF 17	23-05-s09		0

Battelle Blvd.-s09



NO.	REVISION	BY	DATE	APPD
1	ADD MEDIAN GATE "M"	TCS	4/1/08	ACE

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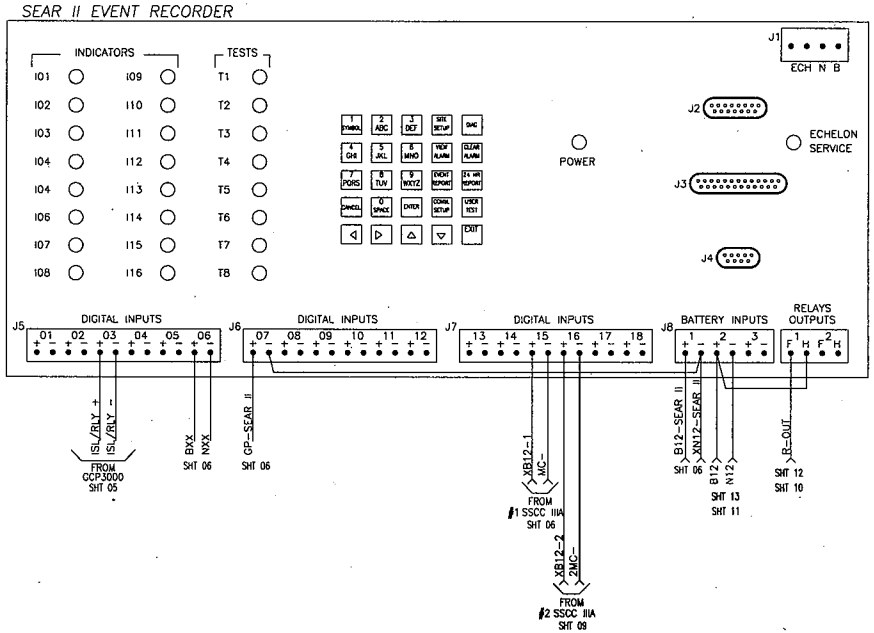
TRI-CITIES & OLYMPIA RAILROAD

DOT NUMBER 922975L	BATTELLE BLVD.				RICHLAND, WA
PROJECT No.	SIGNAL GATE "M" CIRCUIT HIGHWAY RAILROAD GRADE CROSSING WARNING SYSTEM				
PROJECT APPROVED BY J.M.	PROJECT ENGINEER A.Enloe	DRAWN BY & DATE: JWP 04/01/08	SHEET 10 OF 17	DWG NO. 23-05-s10	REV. 0

Battelle Blvd.-s10

SEAR II EVENT RECORDER



P#: 80273-001

RED = IN YELLOW = OUT

NO.	REVISION	BY	DATE	APPD
1	ADD MEDIAN GATE "M"	TCS	4/1/08	ACE

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TRI-CITIES & OLYMPIA RAILROAD

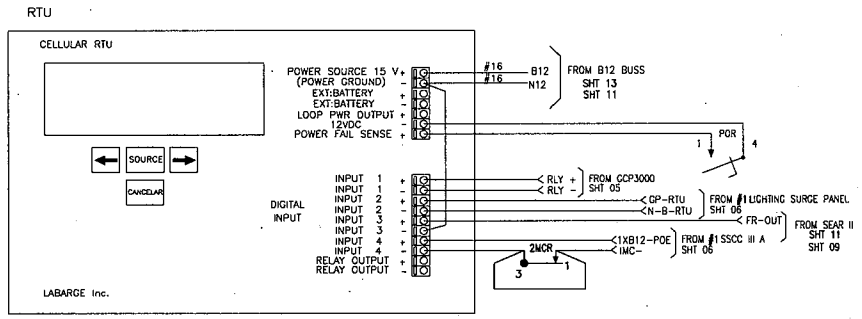
DOT NUMBER 922975L | BATTELLE BLVD. | RICHLAND, WA

PROJECT NO. 23-05-RICH

SEAR II EVENT RECORDER
HIGHWAY RAILROAD GRADE CROSSING WARNING SYSTEM

PROJECT APPROVED BY	PROJECT ENGINEER	DRAWN BY & DATE:	SHEET	DWG NO.	REV.
E. Burns	M.Castro	A.R. 05/26/2005	11 OF 17 (09 OF 15)	23-05-s11 09	1

Battelle Blvd.-s11



NOTE:
ALL WIRES IN RTU BE #16AWG UNLESS SHOWN OTHERWISE

RED = IN YELLOW = OUT

NO.	REVISION	BY	DATE	APPD
1	ADD MEDIAN GATE "M"	TCS	4/1/08	ACE

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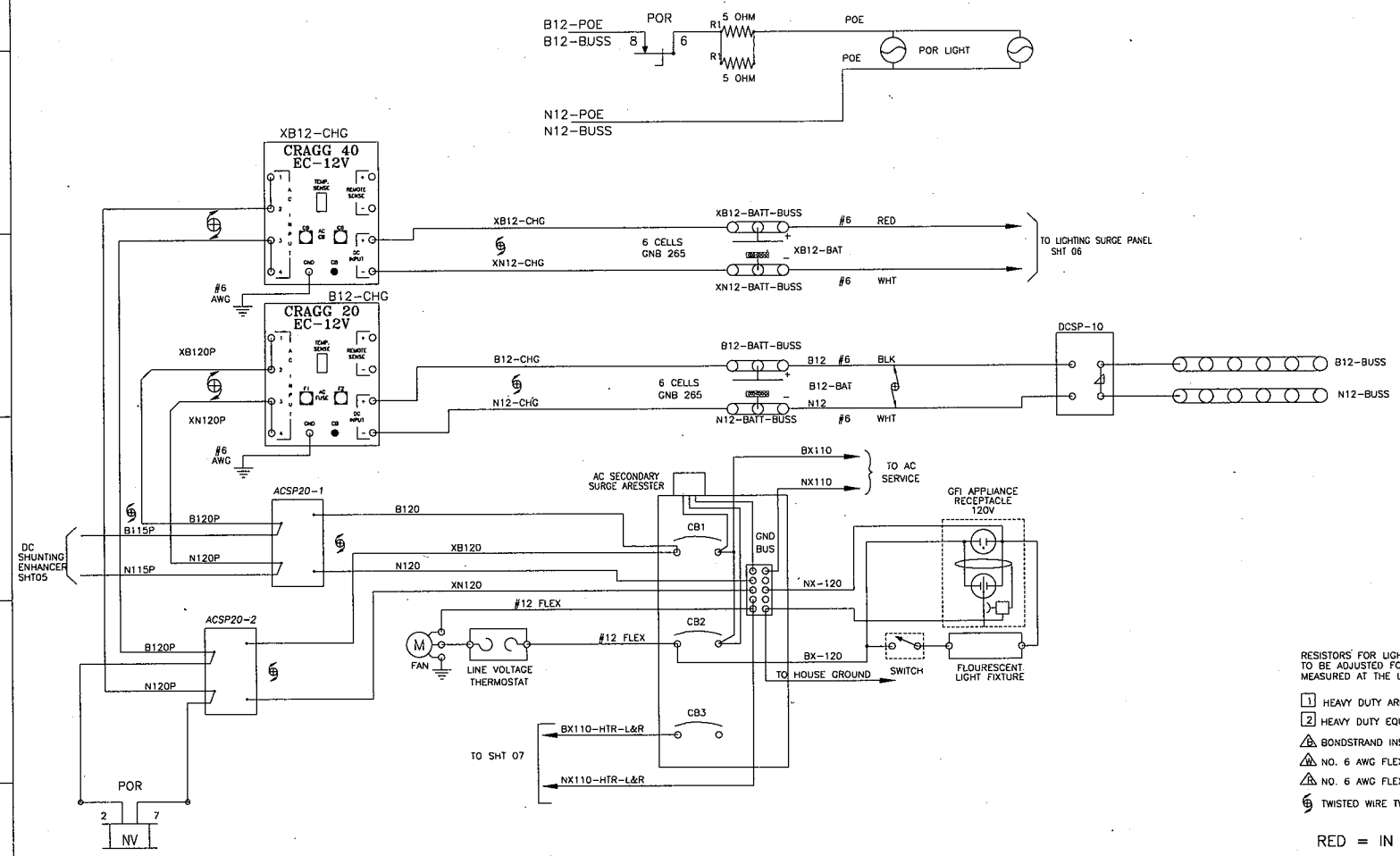
TRI-CITIES & OLYMPIA RAILROAD

DOT NUMBER 922975L	BATTELLE BLVD.					RICHLAND, WA
PROJECT No. 23-05-RICH	RTU CIRCUIT HIGHWAY RAILROAD GRADE CROSSING WARNING SYSTEM					
PROJECT APPROVED BY E. Burns	PROJECT ENGINEER M.Castro	DRAWN BY & DATE: A.R. 05/26/2005	SHEET 12 OF 17 10 OF 15	DWG NO. 23-05-s12 10	REV. 1	

Bolante Blvd.-s12



NO.	REVISION	BY	DATE	APPD
1	ADD MEDIAN GATE "M"	TCS	4/1/08	ACE

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TRI-CITIES & OLYMPIA RAILROAD

DOT NUMBER 922975L | BATTELLE BLVD. | RICHLAND, WA

PROJECT NO. 23-05-RICH

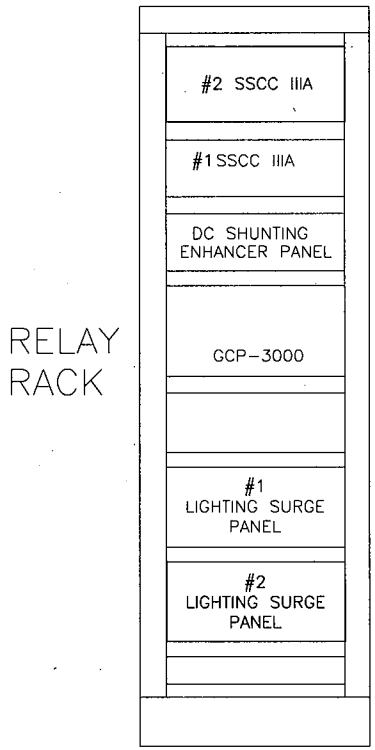
POWER DISTRIBUTION

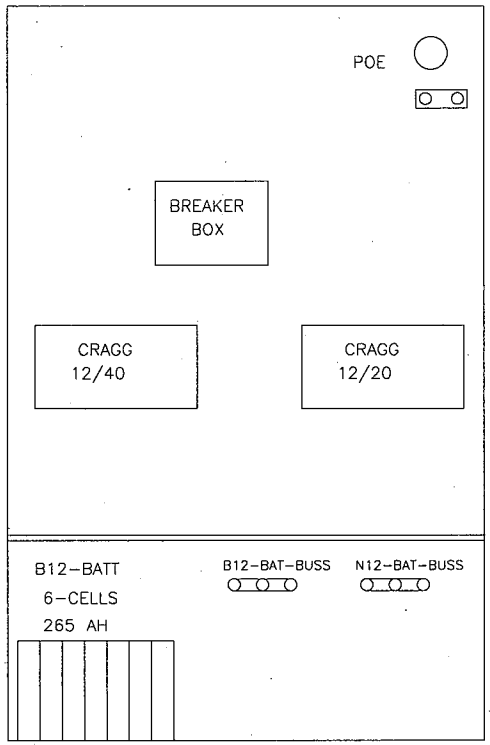
HIGHWAY RAILROAD GRADE CROSSING WARNING SYSTEM

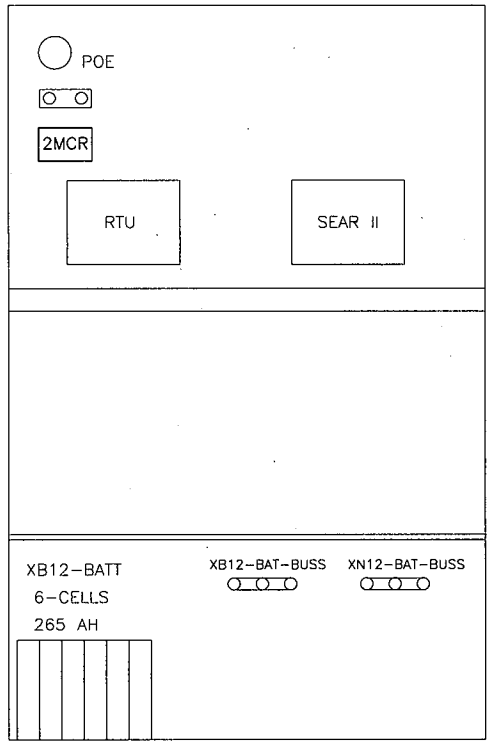
PROJECT APPROVED BY	PROJECT ENGINEER	DRAWN BY & DATE:	SHEET	DWG NO.	REV.
E. Burns	M.Castro	A.R. 05/26/2005	13 OF 17	23-05-s13 11	1

11 OF 15

Battelle Blvd-s13







HOUSE LAYOUT

RED = IN YELLOW = OUT

NO.	REVISION	BY	DATE	APPD
1	ADD MEDIAN GATE "M"	TCS	4/1/08	ACE

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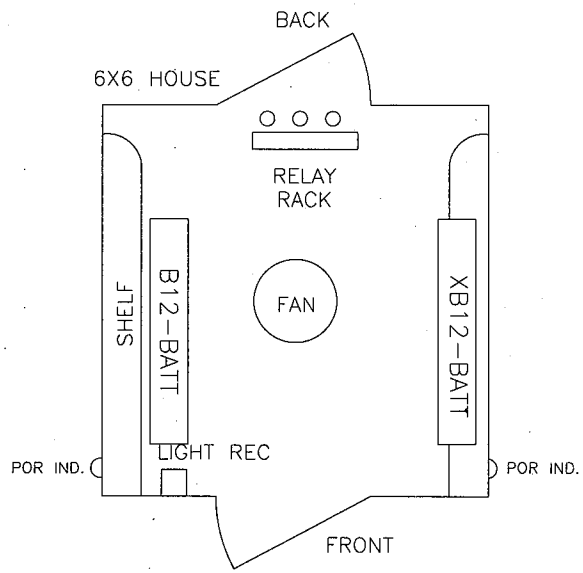
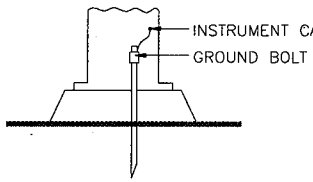
TRI-CITIES & OLYMPIA RAILROAD

DOT NUMBER	BATTELLE BLVD.			RICHLAND, WA
922975L	HOUSE LAYOUT			
PROJECT No. 23-05-RICH	HIGHWAY RAILROAD GRADE CROSSING WARNING SYSTEM			
PROJECT APPROVED BY: E. Burns	PROJECT ENGINEER: M.C.	DRAWN BY & DATE: A.R. 05/26/2005	SHEET: 14 OF 17	DWG NO.: 23-05-s14 12

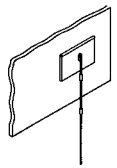
REV. 1

Battelle Blvd.-s14

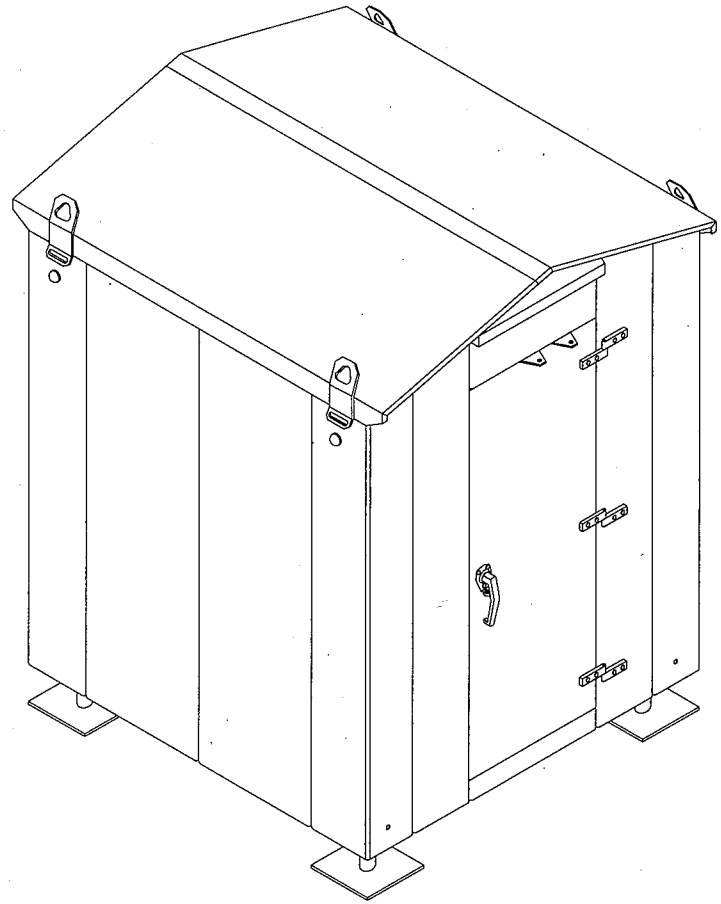




TYPICAL GROUND LAYOUT AT CASE



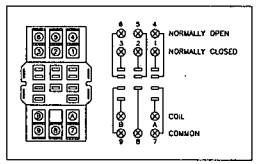
TYPICAL GROUND CONNECTION ON FLAT SURFACE



ISOMETRIC VIEW

6'x6" ALUMINUM CASE

POR NON-VITAL RELAY



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NO.	REVISION	BY	DATE	APPD
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TRI-CITIES & OLYMPIA RAILROAD

DOT NUMBER 922975L | BATTELLE BLVD. | RICHLAND, WA

PROJECT NO. 23-05-RICH

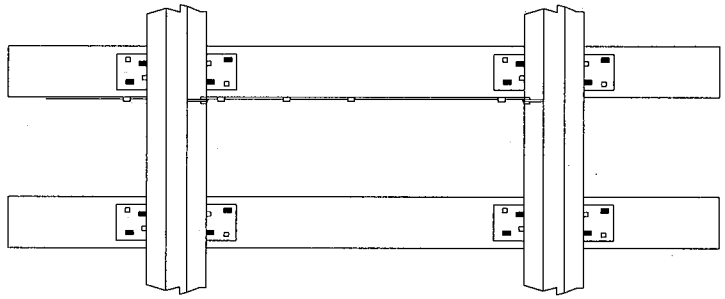
HOUSE LAYOUT DETAILS
HIGHWAY RAILROAD GRADE CROSSING WARNING SYSTEM

PROJECT APPROVED BY	PROJECT ENGINEER	DRAWN BY & DATE:	SHEET	DWG NO.	REV.
E. Burns	M.Costro	A.R. 05/26/2005	15 OF 17 (13 OF 15)	23-05-s15 13	1

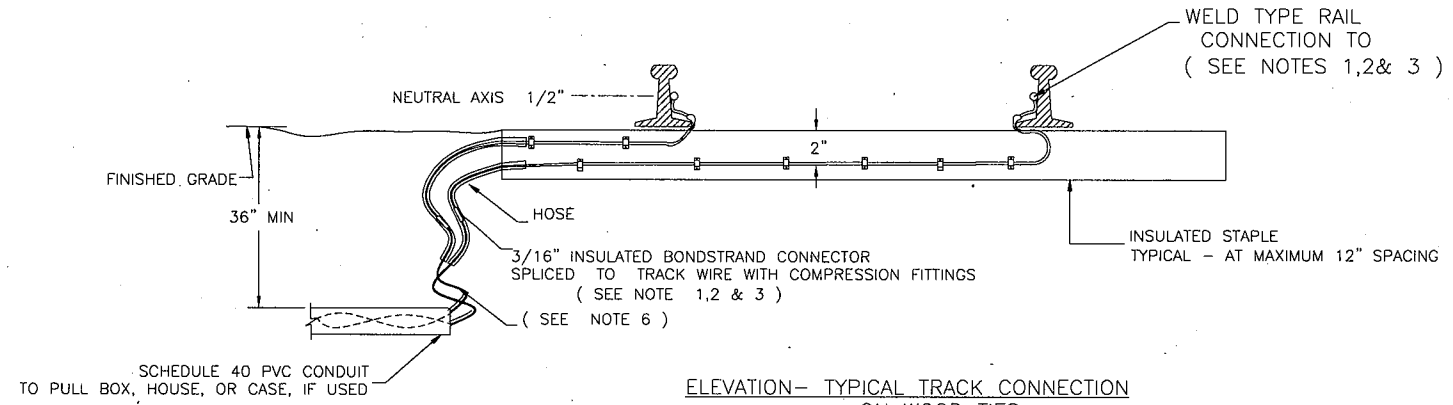
Battelle Blvd--s15

NOTES:

1.- TRACK CIRCUIT RAIL CONNECTION BE MADE USING 3/16" INSULATED BONDSTRAND. BONDSTRAND SHALL BE WELDED TO WEB OF RAIL USING CADWELD BONDING MATERIAL AS MANUFACTURED BY ERICO RAIL PRODUCTS. RAIL SHALL BE GROUND CLEAN PRIOR TO APPLICATION OF BOND. NO-OXIDE GREASE SHALL BE APPLIED TO CONNECTION IMMEDIATELY AFTER INSTALLATION OF BOND IN ACCORDANCE WITH MANUFACTURE DIRECTIONS.
2.- RAIL CONNECTION NEAREST TO INSULATED JOINT SHALL BE PLACED NO MORE THAN 3" FROM END OF JOINT BAR.
3.- SPLICE 3/16" INSULATED BOOTLEG TO TRACK WIRE USING COMPRESSION CONNECTOR. SPLICE BONDSTRAND TO NO. 6 AWG SOLID TRACK WIRE USING COMPRESSION FITTING. SEAL COMPRESSION FITTING WITH LENGTH OF HEAT SHRINK TUBING. COAT COMPRESSION FITTING AND BARE WIRE ENDS WITH A NO-OXIDE GREASE BEFORE APPLYING HEAT SHRINK. HEAT SHRINK SHOULD EXTEND A MINIMUM OF 1" ONTO WIRE INSULATION. WIRE INSULATION NOT TO BE STRIPPED BACK UNTIL JUST PRIOR TO MAKING SPLICE CONNECTION.
4.- FASTEN TRACK WIRE TO BASE OF RAIL WITH HAMMER-ON TYPE CABLE RETAINER CLIPS SIMILAR TO ERICO PART NO. SBA251 FOR PARALLEL CONNECTIONS AND SBA248A FOR PERPENDICULAR CONNECTIONS. MINIMUM OF ONE CABLE CLIP TO BE USED FOR EACH RAIL CONNECTION. WHERE RAIL CONNECTING MORE THAN 24" FROM CONDUIT STUB-UP, ADDITIONAL CABLE CLIPS TO BE USED WITH SPACING OF NO MORE THAN 18" APART.
5.- TRACK WIRES AND JUMPER WIRES SHALL BE SECURED TO THE SIDE OF CONCRETE TIES USING SERIES SBA257A STAINLESS STEEL SNAP-ON TYPE CONCRETE TIE CLIPS AS MANUFACTURED BY ERICO RAIL PRODUCTS. MINIMUM OF THREE TIE CLIPS TO BE USED PER TIE. FOR WOOD TIES, INSULATED STAPLES SHALL BE USED.
6.- COIL 3" OF SLACK TRACK WIRE BELOW NEAR TRACK CONNECTION A MINIMUM OF 24" BELOW BASE OF RAIL.
7.- SEAL CONDUIT AFTER TRACK CABLE HAS BEEN INSTALLED



PLAN – TYPICAL TRACK CONNECTION
ON WOOD TIES



ELEVATION– TYPICAL TRACK CONNECTION
ON WOOD TIES

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TRI-CITIES & OLYMPIA RAILROAD

DOT NUMBER 922975L
PROJECT NO. 23-05-RICH
BATTELLE BLVD. RICHLAND, WA
TYPICAL TRACK CONNECTION
HIGHWAY RAILROAD GRADE CROSSING WARNING SYSTEM

PROJECT APPROVED BY	PROJECT ENGINEER	DRAWN BY & DATE:	SHEET	DWG NO.	REV.
E. Burns	M.Costro	A.R. 05/26/2005	16 OF 17	23-05-s16 14	1

14 OF 15

Battelle Blvd.-s16

3000 GCP APPLICATION HISTORY CARD

EQUIPMENT: 3000☐ 3000D2☐ 3000D2L☐ 3000ND☐ 3000ND2☐ UNIT/SERIAL no:_____ CROSSING no:_____

CROSSING NAME:_____ CITY:_____ STATE:_____

DATE INSTALLED: _____ WEATHER CONDITIONS: _____

ISLAND FREQUENCY:T1:_____ khz T2:_____ khz

PROGRAMMING HISTORY

	INITIAL PROGRAMMED VALUE DATE:	PROGRAM CHANGE DATE:	PROGRAM CHANGE DATE:
☐ press PROGRAM key			
NUMBER OF TRACKS (no. of transceiver modules 1 or 2)	1☐ 2☐	1☐ 2☐	1☐ 2☐
FREQUENCY (MS/GCP)	_____Hz.	_____Hz.	_____Hz.
UNIDIRECTIONAL/BIDIRECTIONAL _____ T1:	UNI☐ BI☐	UNI☐ BI☐	UNI☐ BI☐
T2:	UNI☐ BI☐	UNI☐ BI☐	UNI☐ BI☐
XMIT LEVEL _____ T1:	MAX☐ MED☐	MAX☐ MED☐	MAX☐ MED☐
T2:	MAX☐ MED☐	MAX☐ MED☐	MAX☐ MED☐
PREDICTOR/MOTION SENSOR T1:	PRED☐ MS☐	PRED☐ MS☐	PRED☐ MS☐
T2:	PRED☐ MS☐	PRED☐ MS☐	PRED☐ MS☐
WARNING TIME SELECTED _____ T1:	_____sec.	_____sec.	_____sec.
T2:	_____sec.	_____sec.	_____sec.
APPROACH DISTANCE SELECTED T1:	_____ft.	_____ft.	_____ft.
T2:	_____ft.	_____ft.	_____ft.
APPROACH DISTANCE COMPUTED T1:	_____ft.	_____ft.	_____ft.
T2:	_____ft.	_____ft.	_____ft.
(not applicable in "D")			
UAX PICKUP DELAY (UAX) (0=OFF)	_____sec.	_____sec.	_____sec.
ENX/UAX2 DELAY (0=ENA) _____	_____sec.	_____sec.	_____sec.
ISLAND DISTANCE (between transmit & receive track wire connections) _____ T1:	_____ft.	_____ft.	_____ft.
T2:	_____ft.	_____ft.	_____ft.
NUMBER OF DAXS _____	0☐ 1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐ 8☐	0☐ 1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐ 8☐	0☐ 1☐ 2☐ 3☐ 4☐ 5☐ 6☐ 7☐ 8☐
DAX A TRACK ASSIGNMENT _____	T1☐ T2☐	T1☐ T2☐	T1☐ T2☐
DAX A DISTANCE (0=PREEMPT) _____	0 ft.	_____ft.	_____ft.
DAX A WARNING TIME _____	0 sec.	_____sec.	_____sec.
DAX B TRACK ASSIGNMENT _____	T1☐ T2☐	T1☐ T2☐	T1☐ T2☐
DAX B DISTANCE (0=PREEMPT) _____	NA. ft.	_____ft.	_____ft.
DAX B WARNING TIME _____	NA. sec.	_____sec.	_____sec.
DAX C TRACK ASSIGNMENT _____	T1☐ T2☐	T1☐ T2☐	T1☐ T2☐
DAX C DISTANCE (0=PREEMPT) _____	NA. ft.	_____ft.	_____ft.
DAX C WARNING TIME _____	NA. sec.	_____sec.	_____sec.
DAX D TRACK ASSIGNMENT _____	T1☐ T2☐	T1☐ T2☐	T1☐ T2☐
DAX D DISTANCE (0=PREEMPT) _____	NA. ft.	_____ft.	_____ft.
DAX D WARNING TIME _____	NA. sec.	_____sec.	_____sec.

PROGRAM HISTORY (continued)

	INITIAL PROGRAMMED VALUE DATE:	PROGRAM CHANGE DATE:	PROGRAM CHANGE DATE:
SLAVING MASTER/SLAVE	MASTER☐ SLAVE☐	MASTER☐ SLAVE☐	MASTER☐ SLAVE☐
PASSWORD ENABLED	DISABLED☐	DISABLED☐	DISABLED☐
	ENABLED☐	ENABLED☐	ENABLED☐
RECORDER INSTALLED	INSTALLED☐	INSTALLED☐	INSTALLED☐
	NOT INSTALLED☐		
RS-232-C BAUD RATE	_____bps	_____bps	_____bps
RS-232-C DATA BITS	7☐ 8☐	7☐ 8☐	7☐ 8☐
RS-232-C STOP BITS	1☐ 2☐	1☐ 2☐	1☐ 2☐
RS-232-C PARITY	NONE☐ MARK☐	NONE☐ MARK☐	NONE☐ MARK☐
	ODD☐ SPACE☐	ODD☐ SPACE☐	ODD☐ SPACE☐
	EVEN☐	EVEN☐	EVEN☐
DATE	_____	_____	_____
TIME	_____	_____	_____
DAYLIGHT SAVINGS	ON☐ OFF☐	ON☐ OFF☐	ON☐ OFF☐

EXPANDED PROGRAM HISTORY (function mode, optional)

	INITIAL PROGRAMMED VALUE DATE: 10-16-03	PROGRAM CHANGE DATE:	PROGRAM CHANGE DATE:
☐ press FUNCTION key			
SWITCH TO MS (enter EZ value) T1:	98 EZ	_____EZ	_____EZ
T2:	_____EZ	_____EZ	_____EZ
TRANSFER DELAY MS TO GCP (0=OFF) T1:	_____sec.	_____sec.	_____sec.
T2:	_____sec.	_____sec.	_____sec.
PRIME PREDICTION OFFSET (0=OFF) T1:	_____ft.	_____ft.	_____ft.
T2:	_____ft.	_____ft.	_____ft.
PICKUP DELAY PRIME	_____sec.	_____sec.	_____sec.
PICKUP DELAY DAX A	_____sec.	_____sec.	_____sec.
PICKUP DELAY DAX B	_____sec.	_____sec.	_____sec.
PICKUP DELAY DAX C	_____sec.	_____sec.	_____sec.
PICKUP DELAY DAX D	_____sec.	_____sec.	_____sec.
COMPENSATION VALUE _____ T1:	?		
T2:	0		
# ENHANCED DETECTION (ED) T1:	ON☐ OFF☐	ON☐ OFF☐	ON☐ OFF☐
T2:	ON☐ OFF☐	ON☐ OFF☐	ON☐ OFF☐
# BACK TO BACK T1 AND T2 (when ED is ON)	NO☐ YES☐	NO☐ YES☐	NO☐ YES☐
# STATION STOP TIMER T1:	_____sec.	_____sec.	_____sec.
(when ED is ON) T2:	_____sec.	_____sec.	_____sec.
NUMBER OF TRACK WIRES T1:	4☐ 6☐	4☐ 6☐	4☐ 6☐
T2:	4☐ 6☐	4☐ 6☐	4☐ 6☐
# STATION STOP TIMER T1:	_____	_____	_____
T2:	_____	_____	_____

CALIBRATION HISTORY

CALIBRATION HISTORY			CALIBRATION HISTORY: EZ/EX VALUES (TRACK UNOCCUPIED) EZ	EX	HISTORY: HARDWIRE SHUNT AT TERMINATION. SHUNT EZ VALUE	EZ-2 VALUE	HARDWIRE SHUNT AT 50 PERCENT POINT OF TRACK: NO LINEARIZATION EZ VALUE	LINEARIZATION COMP. STEP ±	EZ
WEST	TRACK 1		?	?	?	?			
WEST	TRACK 1								
EAST	TRACK 2								
EAST	TRACK 2								

RED = IN YELLOW = OUT

NO.	REVISION	BY	DATE	APPD
1	ADD MEDIAN GATE "M"	TCS	4/1/08	ACE

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TRI-CITIES & OLYMPIA RAILROAD

BATTELLE BLVD. RICHLAND, WA

GCP3000 APPLICATION HISTORY CARD
HIGHWAY RAILROAD GRADE CROSSING WARNING SYSTEM

DOT NUMBER	PROJECT No.	PROJECT APPROVED BY	PROJECT ENGINEER	DRAWN BY & DATE:	SHEET	DWG NO.	REV.
922975L	23-05-RICH	E. Burns	M.C.	A.R. 05/26/2005	17 OF 17	23-05-s17 15	1

15 OF 15

Battelle Blvd.-s17

SECTION 13200

GRADE CROSSING GATE SYSTEM CONSTRUCTION

PART 1 – GENERAL

1.1. SUMMARY

1.1.1. The work of this section shall consist of the procurement and installation of the additional median entrance gate at Battelle Boulevard, Richland, WA. The Work includes, but is not limited to: procure all material, assemble and install gate control equipment, new crossing gate, lights, underground conduit and wire, aligning signal lights, and replacement of existing gate arm on opposite side of road.

1.1.2. It shall be the Contractor's responsibility to follow the design as provided by the City of Richland, WA, provide and install all materials and equipment, including final inspection and placement of the gate in service. All CAD revisions of circuit plans shall be the responsibility of the City of Richland, WA.

1.2. REFERENCES

1.2.1. AMERICAN RAILWAY ENGINEERING AND MAINTENANCE OF WAY ASSOCIATION (AREMA)

1.2.1.1.1. Manual for Railway Engineering (AREMA Manual)

1.2.1.1.2. Portfolio of Trackwork Plans (AREMA Portfolio)

1.2.2. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

1.2.3. AMERICAN ASSOCIATION OF RAILROADS (AAR)

1.2.4. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

1.2.4.1.1. National Electrical Code

1.2.5. FEDERAL HIGHWAY ADMINISTRATION

1.2.5.1.1. Manual on Uniform Traffic Control Devices

1.2.6. FEDERAL RAILWAY ADMINISTRATION (FRA)

1.2.6.1.1. Rules and Regulations Governing Railroad Signal and Train Control Systems

1.2.6.1.2. Track Safety Standards

1.2.7. WASHINGTON STATE DEPARTMENT OF TRANSPORTATION (WSDOT)

1.2.7.1.1. Washington State Utilities and Transportation Commission – Washington Administrative Code

1.2.7.1.2. Standard Specifications

1.2.8. RELATED WORK

None

1.3. SUBMITTALS

1.3.1. None

2. PART 2 – PRODUCTS

2.1. GENERAL

2.1.1. All material shall be new and shall be guaranteed against defects in material and workmanship, damage caused by normal wear and tear excluded, for a period of one (1) year from date of final acceptance.

2.2. SIGNAL MATERIAL

The Contractor shall install the following materials:

2.2.1. Conduit – Contractor shall install 4-in steel rigid conduit, elbows, sleeves, and threaded couplers for cabling under roadways and track.

2.2.2. Cable – Contractor shall install Okonite 5C#6 (Part No. 206-11-6245), 7C#9 (Part No. 206-11-6927) or approved equal solid coated copper cable which meets AAR insulation requirements for underground wire.

2.2.3. Mast Wire – Mast wire to gate mounted flashers and cantilever mounted flashers to be 5C#10 stranded type TC, Okonite PN 202-10-3505, DWG DL 05

2.2.4. Case wire - Case wire to be Okonite nylon braid case wire, except #6 AWG wire for battery circuits.

2.2.5. Battery circuit wire - Battery circuit wires to be 6 AWG copper stranded. Red w/nylon jacket for positive battery, black w/nylon jacket for negative battery and green w/nylon jacket for ground.

2.2.6. Eyelets – Contractor shall supply ¼-in ring eyelets for #6, #9, #10 and #16 wire.

2.2.7. Signal Gates – Gates to be Safetran Model S-40 and shall consist of:

2.2.7.1. Gate mechanism (or approved equal), with mounting hardware, counter weights, and gate arm supports.

2.2.7.2. Aluminum mast of approximately 16-ft high x 5-in diameter with aluminum split base junction box assembly.

2.2.7.3. 12" FLX-2000 (or approved equal) 2-way flashing light assembly with L.E.D. Lights, and aluminum hoods and backgrounds.

2.2.7.4. Electronic bell – none required.

2.2.7.5. High wind support bracket shall be manufactured to industry standards.

2.2.7.6. The cross bucks sign shall be constructed of aluminum with high intensity reflective sheeting and mounted with 9" standoff brackets.

2.2.7.7. A lock shall be provided for the gate mechanism that conforms with the Tri Cities and Olympia Railroad types of lock and key.

2.2.8. Gate arms - Gate arms shall be EZ-Gate (or approved equal) with High Wind Profile extendable roadway arm with lens encapsulated high intensity red and white sheeting and 4-ft sleeve. Gate arms to be equipped with LED gate lights. Gate shall be attached to gate mechanism with conversion bracket with National Electric Gate Co, fabricated adapter. (or approved equal) (Part No. 385102-175-2SL).

2.2.9. Gate foundation to be concrete.

2.2.10. Sealing Compound – Contractor shall provide sealing grout and/or duct seal. Foam Sealant is not to be used.

2.3. SIGNAL HOUSE

2.3.1. Wire ties are to be kept to a minimum. Internal wiring shall run in plastic wireways or wireways integral to the house, such as, upper raceways for overhead wires.

2.3.2. All wiring and electronic components shall be labeled with printed tags to conform with 49 CFR 234.

2.3.3. Details for house and component layout are to conform to signal plans. Erico 4-post terminals with test links shall be used on all gate and light circuits leaving the bungalow.

2.3.4. Instrument house wire shall conform to section 2.2: Signal Material.

2.3.5. All wires shall be terminated using molded terminal blocks per AAR Signal Manual Part 14.1.5.

2.3.6. All stranded wiring connections are to be made with AMP insulated compression eyelets. The attached terminal shall have no bare wire showing, nor shall the insulation on the terminal be cracked or broken. The terminal shall be tightly attached to the wire so that it can not be pulled off without damaging the terminal.

2.3.7. Each end of a wiring circuit is to be identified by a sleeve tag on the wire bearing the name of the circuit and the location it is connecting to.

2.4. POWER SERVICE

Not Applicable

PART 3 - EXECUTION

3.1. GENERAL

3.1.1. Signal construction shall conform to the requirements of the American Association of Railroads, except as modified herein.

3.1.2. The Contractor shall give the Engineer a minimum of ten (10) working days notice prior to the date work is to begin. The Contractor shall, in the interim before work is begun, meet at the site with the Engineer or his representative. Authorized representative(s) shall resolve all questions with regard to the layout of equipment to be installed and installation procedures.

3.1.3. The Contractor shall be responsible for correcting any defects or malfunctions in the highway crossing protection installation, resulting from poor or faulty installation, workmanship or deviation from specified standards for a period of one (1) year from the date of final acceptance.

3.1.4. The Contractor shall be responsible for any loss or damage to equipment of material prior to date of acceptance.

3.2. LOCATION OF INSTRUMENT HOUSE

3.2.1. Not Applicable

3.3. LOCATION OF SIGNALS

3.3.1. Centerline of gate foundations shall be located no closer than 12' from the centerline of track, and preferably 15' from the centerline of track. The gate should be located so as to align with the gate on the opposite side of the street. Gate arm counterweights shall extend no closer than 10' from centerline of track. Centerline of gate foundations shall be located no closer than 5'-3" from inside edge of curb on gate arm side and no closer than 4'-3" from inside edge of curb on back side of gate.

3.4. ENGINEERING

3.4.1. The engineering documents shall be provided by the City of Richland, WA. The Contractor shall mark any changes to the plans so as-installed corrections can be made. These marked plans shall be delivered to the Engineer within 10 days of the final installation.

3.5. SEQUENCE OF WORK

3.5.1. The Contractor shall coordinate all Work with the road authority, the Railroad, affected utility companies and any other Contractors working in or adjacent to the Project area.

3.5.2. The Contractor is not obligated to perform work in any particular sequence, but should be prepared to explain reasons for work sequencing in any given portion of the Contract.

3.6. EXISTING FACILITIES

3.6.1. The Contractor shall conduct signal construction operations to avoid damage to existing ditches, drainage structures, fences, utilities, buildings and other structures (except where designated for removal in the Contract Drawings). All damage to existing facilities shall be repaired by the Contractor at the Contractor's expense.

3.6.2. All utilities are to be located and avoided. If necessary, a hole shall be bored down through the roadway to identify the exact location of any possible conflict.

3.7. QUALITY CONTROL AND TESTING

3.7.1. The Contractor shall make and record such tests as may be necessary to demonstrate to the satisfaction of the Engineer or authorized representative that the apparatus, as installed, is in accordance with requirements of these specifications. All tests shall satisfy the requirements of 49 CFR 234 and the component manufacturer.

3.7.2. If, in order to complete the requirements of this contract, it is necessary to effect changes to another signal location, the Contractor shall be responsible to ensure proper operation of that location, including testing and observing train movements.

3.7.3. Grounds – Each circuit shall be kept free of any ground or combination of grounds which shall permit a flow of current equal to or in excess of 75 percent of the release value of any relay or other electromagnetic device in the circuit, except circuits which include any track relay.

3.7.4. Protection of insulated wire – Insulated wire shall be protected from mechanical injury. The insulation shall not be punctured for test purposes. Splices in underground wire shall have insulation resistance at least equal to the wire spliced.

3.7.5. Tagging of wires – Each wire shall be tagged or otherwise so marked that in can be identified at each terminal. Tags and other marks of identification shall be made

of insulating material and so arranged that tags and wires do not interfere with moving parts of apparatus.

3.7.6. Insulation resistance tests – Insulation resistance of wires and cables, except wires connected directly to track rails, shall be tested when wires, cables and insulation are dry. Insulation resistance tests shall be made between all conductors and ground, and between conductors in each multiple conductor cable, and between conductors in trunking, when wires or cables are installed. Insulation resistance of wire or cable must be higher than 10 Megohm.

3.7.7. Gate arms are to be counterbalanced to conform to manufacturer's specifications.

3.7.8. Mast and lane lights shall be aligned to conform to AREMA crossing signal alignment instructions part 3.3.5.

3.7.9. Crossing electronics shall be calibrated to manufacturer's specifications in accordance with circuit plan parameters.

3.8. PROCEDURES

3.8.1. Size and number of conductors to be determined from circuit plans.

3.8.2. Cable for gate motors shall be #6 up to 120' cable length and 2 #6 up to 240' cable length.

3.8.3. Cable for other circuits for gate mechanisms and bell shall be minimum #14 AWG.

3.8.4. All cut ends of conduit shall be reamed and filed to prevent damage to insulation.

3.8.5. The length of the cable runs shall provide for ten extra feet at the control house. The conductors shall be taped together as they leave the conduit and be placed in a neat and orderly manner up the wall and suspend from the ceiling, back down and put through the appropriate hole in the backboard.

3.8.6. All stranded conductors to be connected in the signal house using insulated ¼-in ring eyelets, crimped with an appropriate tool.

3.8.7. All wire terminal posts to be double nutted with washers under and over eyelets.

3.8.8. All openings around pipe, conductors and cable wells are to be sealed with concrete grout.

3.8.9. All conductors entering the house to be labeled with permanently typed vinyl tags. Labels to conform to circuit plans.

3.8.10. Foundation bolts shall include leveling nuts and conduit shall connect to junction box on signal mast.

3.8.11. Gate mechanism and hardware shall be installed in such a manner that when completed, the gate can be twisted 90 degrees without disconnecting the flex conduit from the base.

3.8.12. All exterior steel hardware and components shall be painted with oil base aluminum color paint applied by brush where needed.

3.8.13. Conduit shall be buried 18 inches or more below and at least 30 inches below the top of ties, under the track.

3.9. ROADWAY CONSTRUCTION

3.9.1. The responsibility of repairs to the roadway surface as a result of the new construction must be assumed by the Contractor and warranted for a period of 1 year.

3.10. TOOLS

The following tools, or approved equals, are required to be used while performing the work of this Section. Approved equals may be substituted with the prior approval of the Engineer.

3.10.1. Crimping tool adequate to crimp insulated eyelets on #6 and smaller wire, such as HiLine Part No. RC6220.

3.10.2. Crimping tool adequate to crimp "J groove" sleeves and non-insulated eyelets on #6 wire, such as a Nicopress 31-DJ crimping tool.

3.10.3. Crimping tool adequate to crimp insulated, non-insulated and flag terminals on #18 to #10 wire.

3.10.4. Wire labeling machine (see Item 3.7.5 under TESTING).

3.10.5. Megohmmeter insulation tested (see Item 3.7.6 under TESTING).

3.11. MATERIAL TO BE LEFT IN THE SIGNAL HOUSE

3.11.1. Safetran No Oxide Grease, Part No. 32-401X.

3.11.2. Safetran Low Temperature Gear Grease, Part No. 32-403X.

4. PART 4 - MEASUREMENT AND PAYMENT

4.1. MEASUREMENT

There will be no measurement of crossing gate system installation. The supply and installation of crossing gate system components as required to construct the crossing gate system in accordance with the plans shown in the Contract Drawings shall be considered a single lump sum unit.

4.2. PAYMENT

4.2.1. The contract price for these items shall be payment in full for furnishing all labor, materials, tools, equipment and incidentals, and doing all work necessary to complete the work specified.

4.2.2. Payment for the proper installation of grade crossing gate systems shall be made at the lump sum price for the various items stated on the bid form as follows:

Item No.	Pay Item	Unit
13200-1	Provide and Install Complete Grade Crossing Gate System at Battelle Boulevard, Richland, WA	LS

END OF SECTION