



AUSTRALIAN RAIL TRACK CORPORATION LTD

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Discipline

Engineering Standard – NSW

Category

Signalling

Title

Signalling Circuit Design Standards

Reference Number

SDS 25 – (RIC Standard: SC 00 14 00 00 SP)

Document Control

Status	Date	Prepared	Reviewed	Endorsed	Approved
Issue 1 Revision 2	Mar 05	Standards and Systems	Standards Engineer	GM Infrastructure Strategy & Performance	Safety Committee
		Refer to Reference Number	H Olsen	M Owens	Refer to minutes of meeting 12/08/04

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Control sheet

Manual title: Signalling Circuit Design Standards
Manual No.: SDS 25

1. Amendment instructions

Each time this manual is reissued, it will receive a new version number. Version numbers are full numbers (e.g. 1.0, 2.0 etc).

Pages in this manual may be amended and reissued individually. Amendment(s) to pages will increase the manual version number by 0.1 (e.g. 1.1 to 1.2).

The control sheets will be reissued with each amendment(s). Before you throw the old control sheets away, check the version number to ensure that you have not missed out on any amendments. If you have, contact the Supplier.

When you receive a new page, insert it into your appropriate manual and destroy the superseded page identified in the new Amendment table.

If you have any suggestions for amendments, additions or improvements to the contents of this manual, please complete and forward to the authorising position, a photocopy of the attached Copyholder's comments sheet.

2. Amendment table

The amendment table allows you to check whether your publication is up to date, by checking the date in the table against the date on the pages of the corresponding page.

Document History

Primary Source – RIC Standard SC 00 14 00 00 SP Version 2.3

List of Amendments –

ISSUE	DATE	CLAUSE	DESCRIPTION
1.1	01/09/2004		▪ Reformatting to ARTC Standard
1.2	14/03/2005	Disclaimer	▪ Minor editorial change ▪ Footer reformatted

The following pages are to be removed from the folder and destroyed and replaced with the pages issued herewith:

CSTD0000

CSTDIND

	Index Sheet
A02	Alteration to 7.87VCSR circuit
A03	Modification to LPM details
A11	Modification to lower Red aspect light circuit
A12 Part 1 to 2	Modification to turnout repeater concept
A13 Part 1 to 2	Modification to turnout repeater concept
A50	Alteration to surge protection arrestor details
A51	Alteration to surge protection arrestor details
A52 Part 1 to 2	Alteration to LED signals
A53	Alteration to surge protection arrestor details & 120 supply
A55 Part 1 to 4	Alteration to Wiring (various versions) Alteration to surge protection arrestor type Alteration to surge protection arrestor details Alteration to earthing
A57	Alteration to Amplifier D1-D2 connections
A58	Alteration to Matching Transformer R to V connection
Q01	Alteration to Matching Transformer R to V connection
T20	Alteration to Receiver connections C- and C+
T31	Alteration to relay type
T32	Added POJR circuit
T37	Alteration to notes
U03	Alteration to notes
U05	Amendment to NGPR circuit
U07	Alteration to cable termination
V01	Correction to circuit controller R-NI and N-RI
V02	Alteration to surge protection arrestor details
W51	Alteration to operation
W59	Page Number Changed
W85	Page Number Changed
X03 Part 1 to 2	Separate fuse to reset alarm circuit
X04 Part 1 to 2	Alteration to surge protection type
X13	Added resistor to VIO
X14	Added Test switch monitoring
X17	Correction to wiring
X26	Alteration to power down circuit
X41	Added monitoring circuits
X39 Part 1 to 2	
X53 Part 1 to 3	

The following pages issued herewith are to be added to the folder :

A15	Signal Light Operating - Preliminary Medium
A17 Part 1 to 3	Intermediate Train Stops Approaching Catchpoint
A59 Part 1 to 2	SSI Signal Operating - Flashing Lower Yellow
A61 Part 1 to 3	Staff Instruments
A62 Part 1 to 2	Staff Instruments
A63 Part 1 to 3	Staff Instruments
A64 Part 1 to 3	Staff Instruments
A65 Part 1 to 2	Staff Instruments
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E02	Signal Operating - Lamp Driver Module - 3
E03	Coded Track CCTS: Locations 3, 10
E04	Microlok Inputs - 3 Loc
E05	Location 3 & 10 Push Button Relays
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E11 Part 1 to 2	Power Supply
E12	Communications Ports
E13	Cardfile Layout - 3 Location
E14	Microlok Dip Switch Layout
E15	Non Vital Inputs
E16	Track Insulation
E17	Dual (Hot Standby) Microlok Configuration
E18	Microlok II Data & Statements
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E20	Microlok II Data & Statements
N56	Entrance Exit Route Set Without A Ring Circuit
Q02	Miscellaneous - monitoring applications
R03	Dupline Input Assignment - Track Layout
R04	Dupline Fieldbus Transmit. (10.9 & 10.9C Locations)
R05	Channel Generator & Private Line Modem 13.7B Loc.
R06	Dupline Fieldbus Transmitters (13.4 Location)
R07	Dupline Fieldbus Transmitters (17.0 Location)
R08	Dupline Fieldbus Installation (Schematic Diagram)
R09	Dupline Fieldbus Channel Allocations
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T42	Tiffenbach Axle Counter
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U12	Electronic Signalling Equipment Power Arrangements
W97	EP Points Detection For Microlok
X54	Private Crossing Protection
X55 Part 1 to 2	Private Crossing Protection
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X57	Level Crossing Surge Protection
X58	Level Crossing Power Down Mechanism
X59	Level Crossing Power Down Mechanism

List of Effective Pages

Publication No.: **SC 001400 SP** Version: **2.3**

Date: **01 September 2001**

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CSTD0000		COVER PAGE	01-09-01	VERSION 2.3
CSTDIND X	12	INDEX SHEET	01-09-01	AMENDED
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A02	05	AUTOMATIC SIGNALLING (METROPOLITAN)	01-09-01	AMENDED
A03	04	AUTOMATIC SIGNALLING (METROPOLITAN)	01-09-01	AMENDED
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A50	04	OUTER METROPOLITAN WITH TRAINSTOPS	01-09-01	AMENDED
A51	04	SSI SIGNAL OPERATING-6 LIGHT SIGNAL WITH TRAIN STOP	01-09-01	AMENDED
A52 Part 1	02	SSI SIGNAL OPERATING - SHUNT SIGNAL WITH RI	01-09-01	AMENDED
A52 Part 2	02	SSI SIGNAL OPERATING - SHUNT SIGNAL WITH RI	01-09-01	AMENDED
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W86 Part 1	01	EP(S) MACHINES SSI CONTROLLED	30-12-99	
W86 Part 2	01	EP(S) MACHINES SSI CONTROLLED	30-12-99	
W87 Part 1	01	EP(S) MACHINES SSI CONTROLLED	30-12-99	
W87 Part 2	01	EP(S) MACHINES SSI CONTROLLED	30-12-99	
W88	01	EP(S) MACHINES SSI CONTROLLED	30-12-99	
W90	02	WBS 84M POINTS- DOUBLE RIGHT HAND SSI CONTROLLED	30-12-99	
W91	03	WBS 84M POINTS - DOUBLE RIGHT HAND SSI CONTROLLED	01-06-99	
W92	03	WBS 84M POINTS - DOUBLE LEFT HAND SSI CONTROLLED	01-06-99	
W93	03	WBS 84M POINTS- DOUBLE RIGHT HAND SSI CONTROLLED	30-12-99	
W94	01	WBS TD84M POINTS- DOUBLE RIGHT HAND SSI CONTROLLED	01-05-96	
W95 Part 1	01	EP CLAW LOCK SINGLE LEFT HAND - NKR/RKR	01-12-98	
W95 Part 2	01	EP CLAW LOCK SINGLE RIGHT HAND - NKR/RKR	01-12-98	
W96 Part 1	01	EP CLAW LOCK DOUBLE LEFT HAND	01-12-98	
W96 Part 2	01	EP CLAW LOCK DOUBLE RIGHT HAND	01-12-98	
W97	01	EP POINTS DETECTION FOR MICROLOK	01-09-01	NEW

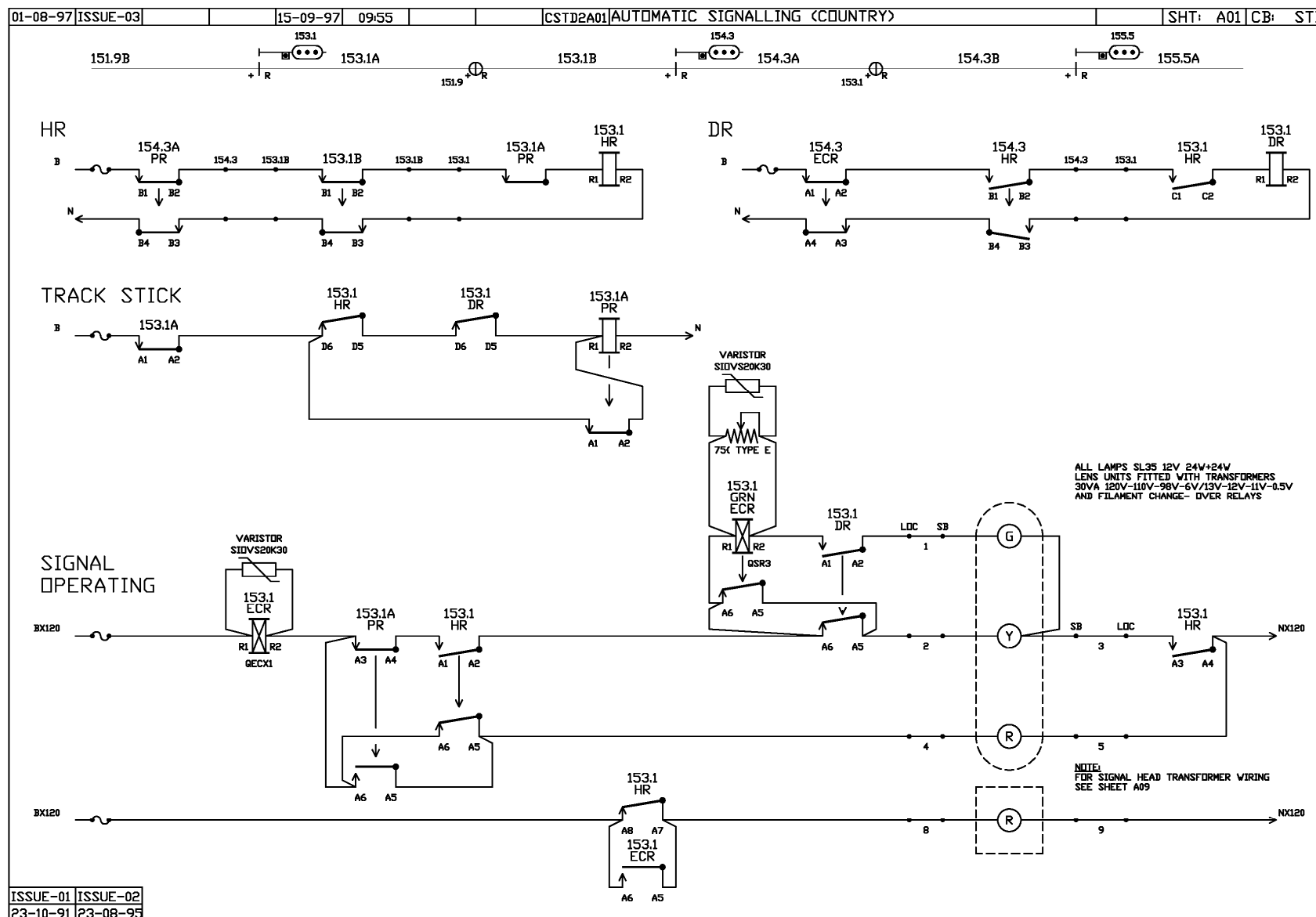
Page	Issue No	Circuit Description	Date	Comment
X01	01	LEVEL CROSSING - SINGLE LINE AUTOMATIC (ETS)	23-10-91	
X02	03	LEVEL CROSSING - SINGLE LINE AUTOMATIC	18-03-94	
X03 Part 1	04	LEVEL CROSSING - SINGLE LINE AUTOMATIC (OTS)	01-09-01	AMENDED
X03 Part 2	04	LEVEL CROSSING - SINGLE LINE AUTOMATIC (OTS)	01-09-01	AMENDED
X04 Part 1	06	LEVEL CROSSING - SINGLE LINE AUTOMATIC (OTS)	01-09-01	AMENDED
X04 Part 2	06	LEVEL CROSSING - SINGLE LINE AUTOMATIC (OTS)	01-09-01	AMENDED
X05	02	LEVEL CROSSING - DOUBLE LINE AUTOMATIC	21-06-94	
X06	02	LEVEL CROSSING - DOUBLE LINE AUTOMATIC	18-03-94	
X07	03	LEVEL CROSSING - DOUBLE LINE AUTOMATIC	30-12-00	
X08	02	LEVEL CROSSING - DOUBLE LINE AUTOMATIC	18-03-94	
X09	02	LEVEL CROSSING WITH CONTROLLED SIGNALS	21-06-94	
X10	02	SIGNAL CONTROLS OVER LEVEL CROSSING	16-06-94	
X11	01	LEVEL CROSSING - HARMON MECHANISM C1A	23-10-91	
X12	01	LEVEL CROSSING - HARMON MECHANISM C1B	23-10-91	
X13	03	LEVEL CROSSING BATTERY CHARGER STORE 74-ABW 1990	01-09-01	AMENDED
X14	06	LXMON CIRCUIT CONNECTIONS	01-09-01	AMENDED
X15	04	LXMON CIRCUIT CONNECTIONS	01-08-97	
X16	02	LXMON - SINGLE LINE AUTOMATIC (ETS)	21-06-94	
X17	05	LXMON - SINGLE LINE AUTOMATIC	01-09-01	AMENDED
X18	02	LXMON - SINGLE LINE AUTOMATIC (OTS)	16-06-94	
X19	02	LXMON - DOUBLE LINE AUTOMATIC	18-03-94	
X20	02	LXMON - DOUBLE LINE AUTOMATIC	30-12-99	
X21	06	LXMON - DOUBLE LINE AUTOMATIC	30-12-99	
X22	02	LXMON - DOUBLE LINE AUTOMATIC	01-08-97	
X23	02	LXMON - WITH CONTROLLED SIGNALS	18-03-94	
X24	02	LXMON - AC SUPPLY ALARMS	18-03-94	
X25	03	LXMON CONNECTION TO BATTERY CHARGER AND TESTER	18-03-93	
X26	04	LXMON - LOW BATTERY ALARM CONNECTION	01-09-01	AMENDED
X27	01	PEDESTRIAN CROSSING ON DOUBLE LINE	26-10-92	
X28	02	PEDESTRIAN CROSSING ON DOUBLE LINE	30-12-99	
X29	01	PEDESTRIAN CROSSING ON DOUBLE LINE	26-10-92	
X30	01	PEDESTRIAN CROSSING ON DOUBLE LINE	26-10-92	
X31	02	PEDESTRIAN CROSSING ON DOUBLE LINE	01-06-98	
X32	03	PEDESTRIAN CROSSING ON DOUBLE LINE	01-06-98	
X33	01	PEDESTRIAN CROSSING ON DOUBLE LINE	26-10-92	
X34	02	PEDESTRIAN CROSSING ON DOUBLE LINE	23-11-93	
X35	03	WESTINGHOUSE EB 12V BOOM MECHANISIM "POWER DOWN" TYPE BOOM	01-08-97	
X36	02	WESTINGHOUSE EB 12V "POWER DOWN" TYPE BOOMS ONLY	18-03-94	
X37	02	WESTINGHOUSE EB 12V MECHANISIM "POWER DOWN" TYPE BOOMS ONLY	18-03-94	
X38	01	L-XING - WITH AUXILIARY SET OF FLASHING LIGHTS	18-03-94	
X39 Part 1	03	WESTERN CULLEN GATE MECHANISM MODEL 3593B	01-09-01	AMENDED

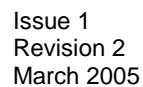
Page	Issue No	Circuit Description	Date	Comment
X39 Part 2	03	WESTERN CULLEN GATE MECHANISM MODEL 3590B	01-09-01	AMENDED
X40	01	WESTERN CULLEN GATE MECHANISM MODEL 3593B	21-06-94	
X41	04	GATE CONTROL CIRCUIT WITH QTD4 RELAYS	01-09-01	AMENDED
X42	02	SINGLE LINE WITH GATE PROTECTION	30-12-99	
X43	01	SINGLE LINE WITH GATE PROTECTION	23-08-95	
X44	02	SINGLE LINE WITH GATE PROTECTION	30-12-99	
X45	01	SINGLE LINE WITH GATE PROTECTION	23-08-95	
X47 Part 1	03	LEVEL CROSSING-DOUBLE LINE AUTOMATIC-WBS FLASHER	30-12-99	
X47 Part 2	03	LEVEL CROSSING-DOUBLE LINE AUTOMATIC-WBS FLASHER	30-12-99	
X48 Part 1	02	LEVEL CROSSING- SINGLE LINE AUTOMATIC-WBS FLASHER	01-08-97	
X48 Part 2	02	LEVEL CROSSING- SINGLE LINE AUTOMATIC-WBS FLASHER	01-08-97	
X49 Part 1	03	LEVEL CROSSING MONITOR WITH WBS SAFE FLASH UNIT	30-12-99	
X49 Part 2	03	LEVEL CROSSING MONITOR WITH WBS SAFE FLASH UNIT	30-12-99	
X50 Part 1	02	LEVEL CROSSING MONITOR WITH WBS SAFE FLASH UNIT	01-08-97	
X50 Part 2	02	LEVEL CROSSING MONITOR WITH WBS SAFE FLASH UNIT	01-08-97	
X51	02	LXMON CIRCUIT CONNECTIONS (WBS FLASHER)	01-12-98	
X52	01	LXMON CIRCUIT CONNECTIONS (WBS FLASHER)	01-05-96	
X53 Part 1	02	PEDESTRIAN GATE - THE MET STYLE M2	01-09-01	AMENDED
X53 Part 2	02	PEDESTRIAN GATE - THE MET STYLE M2 WITH MONITOR	01-09-01	AMENDED
X53 Part 3	02	PEDESTRIAN GATE - THE MET STYLE M2 WITH XNR/XRR	01-09-01	AMENDED
X54	01	PRIVATE CROSSING PROTECTION	01-09-01	NEW
X55 Part 1	01	PRIVATE LEVEL CROSSING	01-09-01	NEW
X55 Part 2	01	PRIVATE LEVEL CROSSING	01-09-01	NEW
X56	01	SAFETRAK GSP 3000	01-09-01	NEW
X57	01	LEVEL CROSSING SURGE PROTECTION	01-09-01	NEW
X58	01	LEVEL CROSSING POWER DOWN MECHANISM	01-09-01	NEW
X59	01	LEVEL CROSSING POWER DOWN MECHANISM	01-09-01	NEW
Y01	02	FILAMENT & LAMP FAILURE ALARMS	01-08-97	
Y02	02	WARNINGS & ALARMS	23-08-95	
Y03	01	EARTH LEAKAGE DETECTORS	24-02-92	
Z01	01	CIRCUIT NOMENCLATURE	23-10-91	
Z02	01	CIRCUIT NOMENCLATURE	23-10-91	
Z03	01	CIRCUIT NOMENCLATURE	23-10-91	

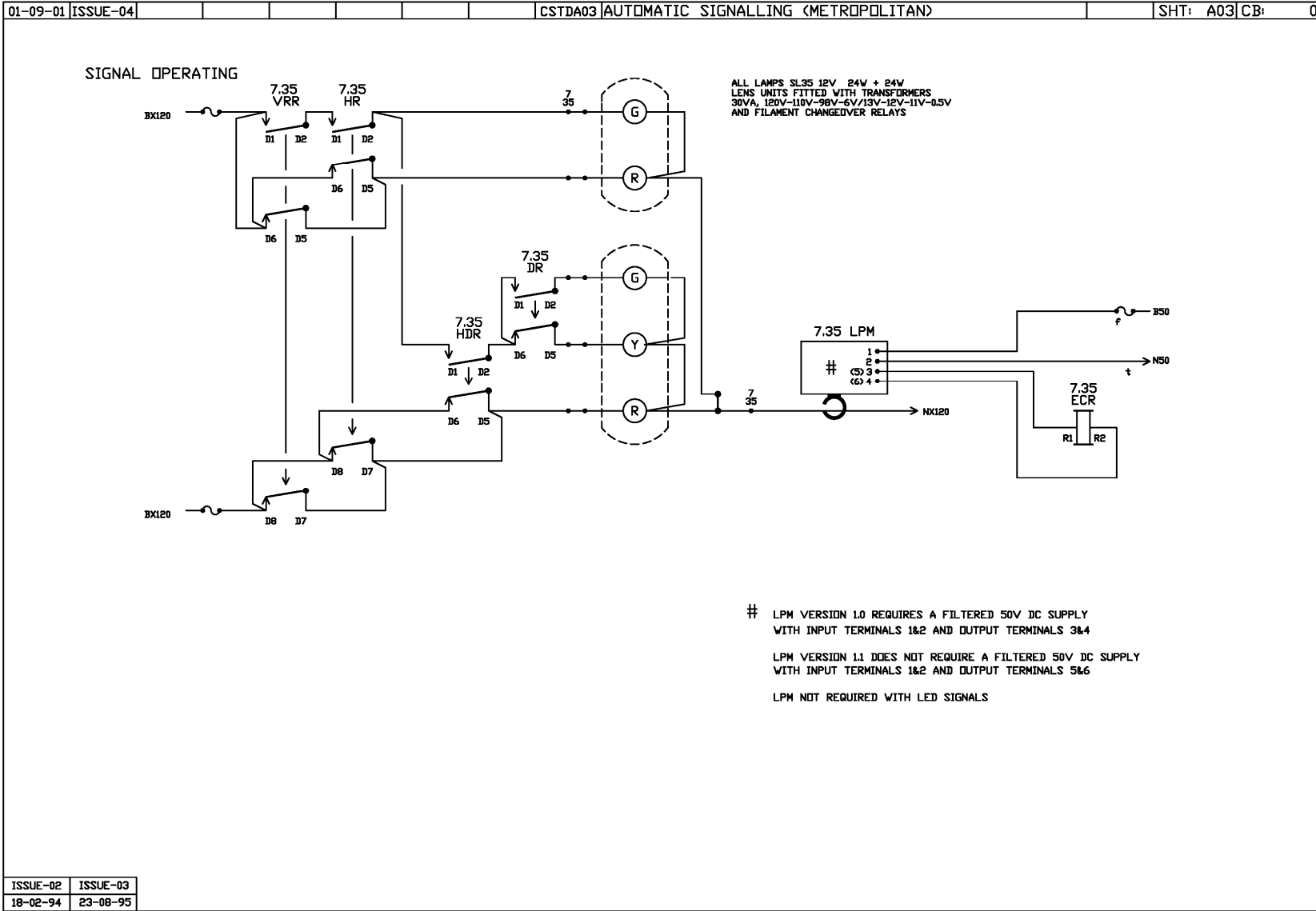
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RAIL INFRASTRUCTURE CORPORATION		CIRCUIT BOOK No. 0							
<h1>SIGNALLING CIRCUIT DESIGN STANDARDS</h1>									
BOOK 1 OF 1 VERSION: 2.3									
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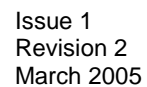
01-09-01 ISSUE 12								CSTDINDEX SHEET		SHT: INDX CB: ST			
CIRCUIT DESCRIPTION								SHEET		CIRCUIT DESCRIPTION		SHEET	
AUTOMATIC SIGNALLING COUNTRY _____ METROPOLITAN _____ CITY _____ CONDITIONAL CLEARING _____ PULSATING YELLOW (COUNTRY) _____ PULSATING BAND OF LIGHTS _____ SIGNAL HEAD TRANSFORMER WIRING _____ SHUNT SIGNAL OPERATING _____ SIGNAL OPERATING - SIX LIGHT SIGNAL _____ TURNOUT REPEATER SIGNAL _____ OUTER METROPOLITAN WITH TRAINSTOP _____ INTERMEDIATE TRAIN STOPS APPROACHING CATCHPOINT _____ SSI SIGNAL OPERATING _____ TRAIN ORDER LOOPS _____ STAFF INSTRUMENT _____ BI-DIRECTIONAL SIGNALLING _____ C.T.C. _____ TYPICAL ARRANGEMENT OF SIGNAL PHONES _____ MICROLOK APPLICATIONS _____ AUTOMATIC CROSSING LOOPS _____ AUTOMATIC CROSSING LOOPS _____ ELECTRO-MECHANICAL _____ NX ROUTE SET _____ DOUBLE LEVER STICK _____ EMERGENCY SHUNT FACILITY _____ NX ROUTE SET (DIAGRAM) _____ D.C.S. ROUTE SET _____ MISCELLANEOUS-WIRING OF LOCATION EARTHING _____ MISCELLANEOUS - MONITORING APPLICATIONS _____ REMOTE CONTROL (T.D.M.) _____ DUPLINE _____ TRACK CIRCUITS JOINTLESS CSEE UM71 _____ ML TI21 _____ WB&S FS2500 _____ JEUMONT SCHNEIDER _____ HARMON TD4 - TRACK CIRCUIT _____ WESTRAK - TRACK CIRCUIT _____ SOLAR POWERED TRACK CIRCUIT _____ TRACK CIRCUIT WB&S FS2600 _____ TRACK CIRCUIT TR17 TRACK FEED _____ TIFFENBACH AXLE COUNTER _____ POWER SUPPLIES _____ TRAIN STOP SUPPRESSION _____ JA or JAH TRAINSTOP WITH GOLD FLASHED CONTACTS _____ DETECTION CIRCUIT _____								A01 A02--A03 A04--A05 A06 A07 A08 A09 A10 A11 A12--A13 A14 A17 A50--A58 A60 A61--A65 B01--B03 C01--C06 D01 E01--E20 L01--L06 L01--L06 M01--M03 N01--N16 N17 N18 N51--N56 P01--P03 Q01 Q02 R01--R02 R03--R11 T01--T04 T10--T11 T20 T30--T36 T37 T38 T39 T40 T41 T42 U01--U13 V01 V02		POINT CONTROL & DETECTION _____ POINT CLAMP LOCK _____ WESTINGHOUSE M3A MK11 _____ WESTINGHOUSE 84M _____ GEC HW 4400 _____ D.C. MACHINES _____ GEC LZW _____ POINTS NIPPON _____ SSI POINTS DETECTION, MOTOR DRIVE - GEC _____ SSI POINTS CONTROL _____ SSI POINTS DETECTION, MOTOR DRIVE - WBS _____ EP MACHINES _____ WESTINGHOUSE 84M SSI _____ EP CLAW LOCKS _____ EP POINTS OPERATION WITH MICROLOK _____ LEVEL CROSSINGS SINGLE LINE AUTOMATIC _____ DOUBLE LINE AUTOMATIC _____ PROTECTED BY CONTROLLED SIGNAL _____ HARMON MECHANISM _____ BATTERY CHARGER _____ LEVEL CROSSING MONITOR CIRCUITS _____ PEDESTRIAN CROSSING _____ WESTINGHOUSE EB12V POWER DOWN MECHANISM _____ EXTRA SET OF FLASHING LIGHTS _____ WESTERN CULLEN GATE MECHANISMS _____ GATE CONTROL WITH QTD4 RELAYS _____ SINGLE LINE WITH GATE PROTECTION _____ SPARE _____ WBS FLASHER DOUBLE LINE AUTOMATIC _____ WBS FLASHER SINGLE LINE AUTOMATIC _____ WBS FLASHER WITH LEVEL CROSSING MONITOR _____ PEDESTRIAN GATE STYLE M2 _____ PRIVATE LEVEL CROSSING _____ SAFTRAN GSP 3000 _____ LEVEL CROSSING SURGE PROTECTION _____ LEVEL CROSSING POWER DOWN MECHANISM _____ ALARMS & INDICATIONS _____ NOMENCLATURE _____		W01 W02--W06 W10--W16 W17--W19 W20--W24 W25--W26 W27--W31 W50--W53 W55--W59 W70 W71--W74 W75--W87 W90--W94 W95--W96 W97 X01--X04 X05--X08 X09--X10 X11--X12 X13 X14--X26 X27--X34 X35--X37 X38 X39--X40 X41--X42 X43--X45 X46 X47 X48 X49--X52 X53 X54--X55 X56 X57 X57--X59 Y01--Y03 Z01--Z03	

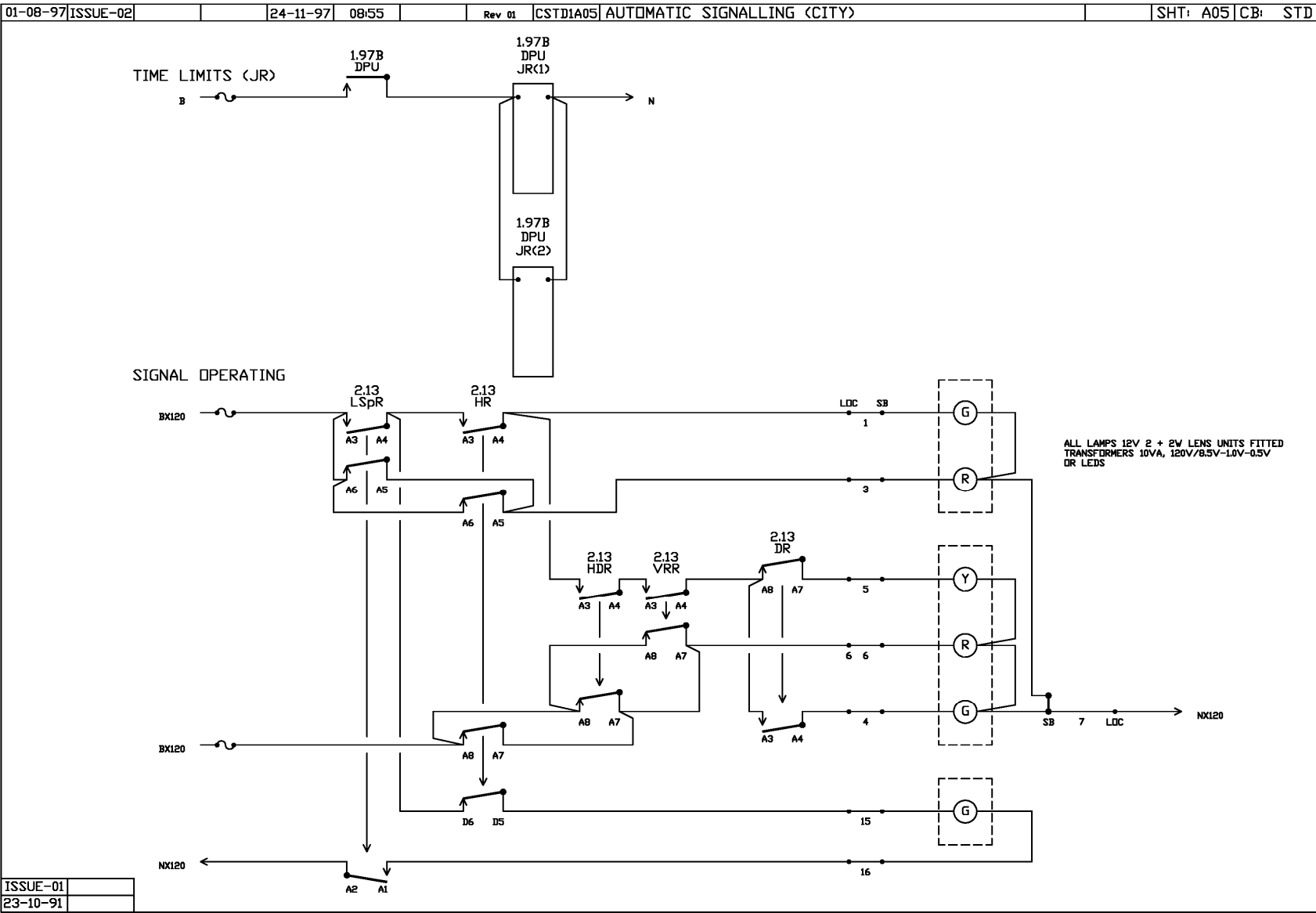
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23-10-91	18-3-93	14-04-93	23-11-93	21-06-94	23-08-95	01-05-96	01-08-97	01-08-97	01-12-98	30-12-99



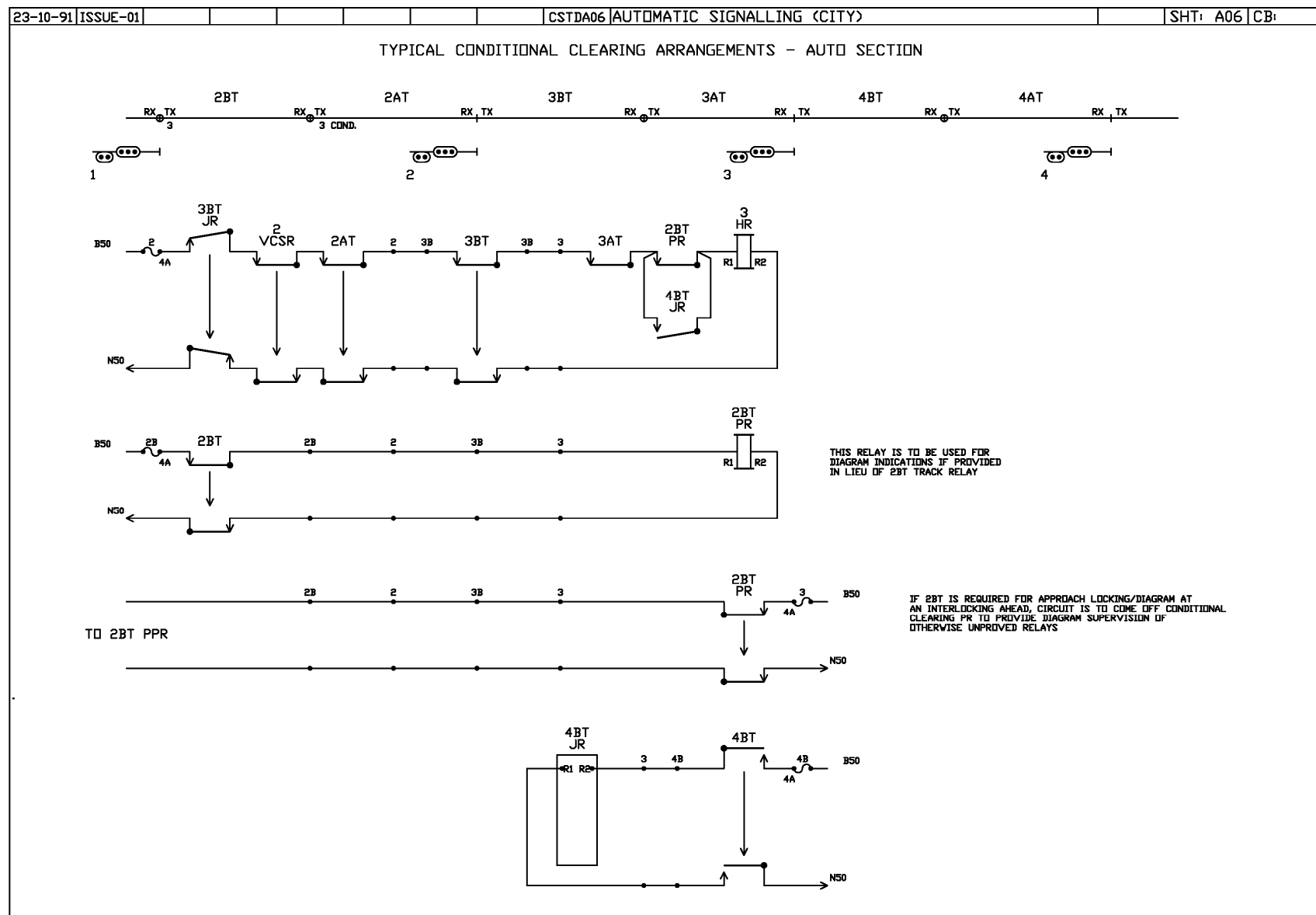


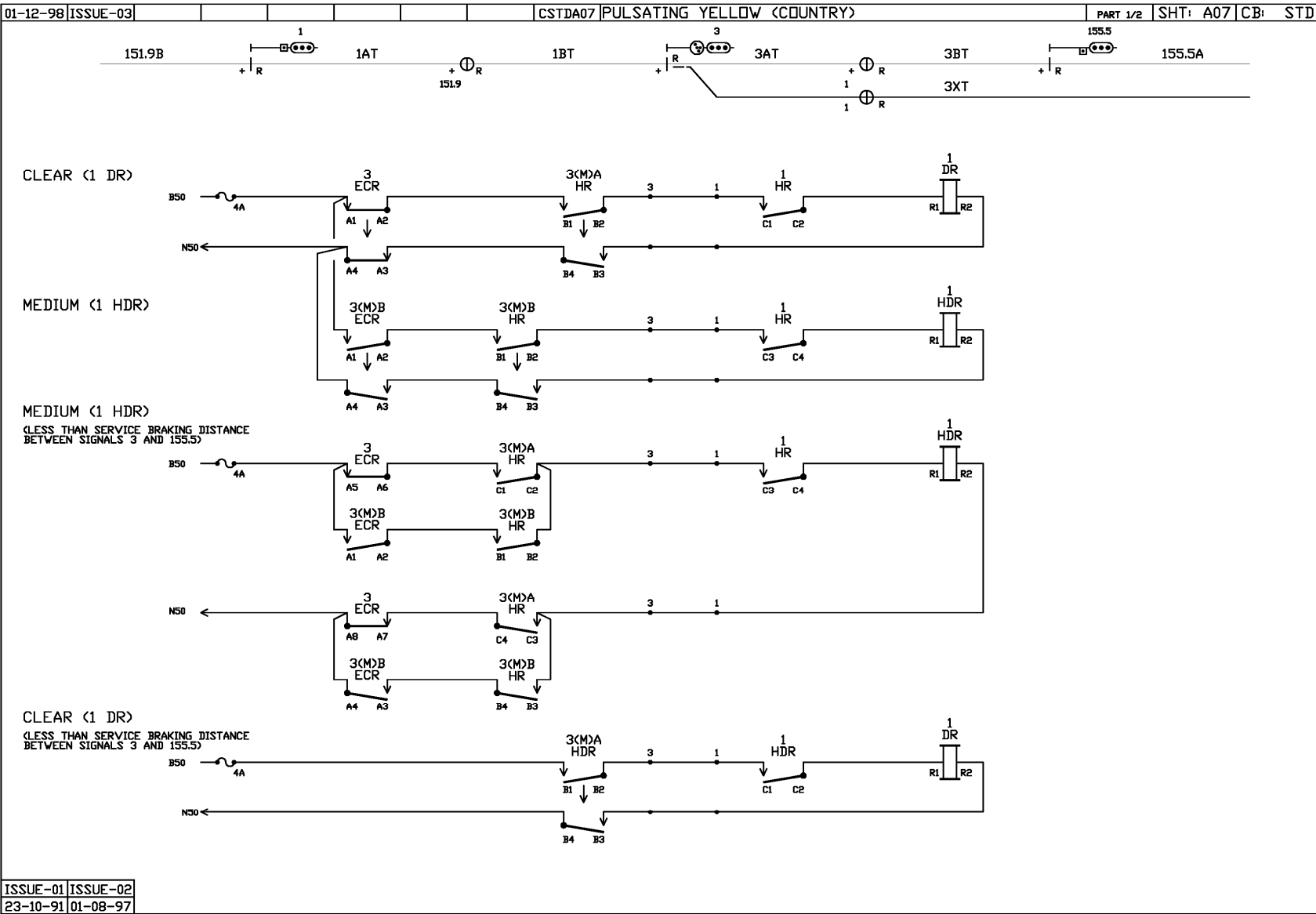


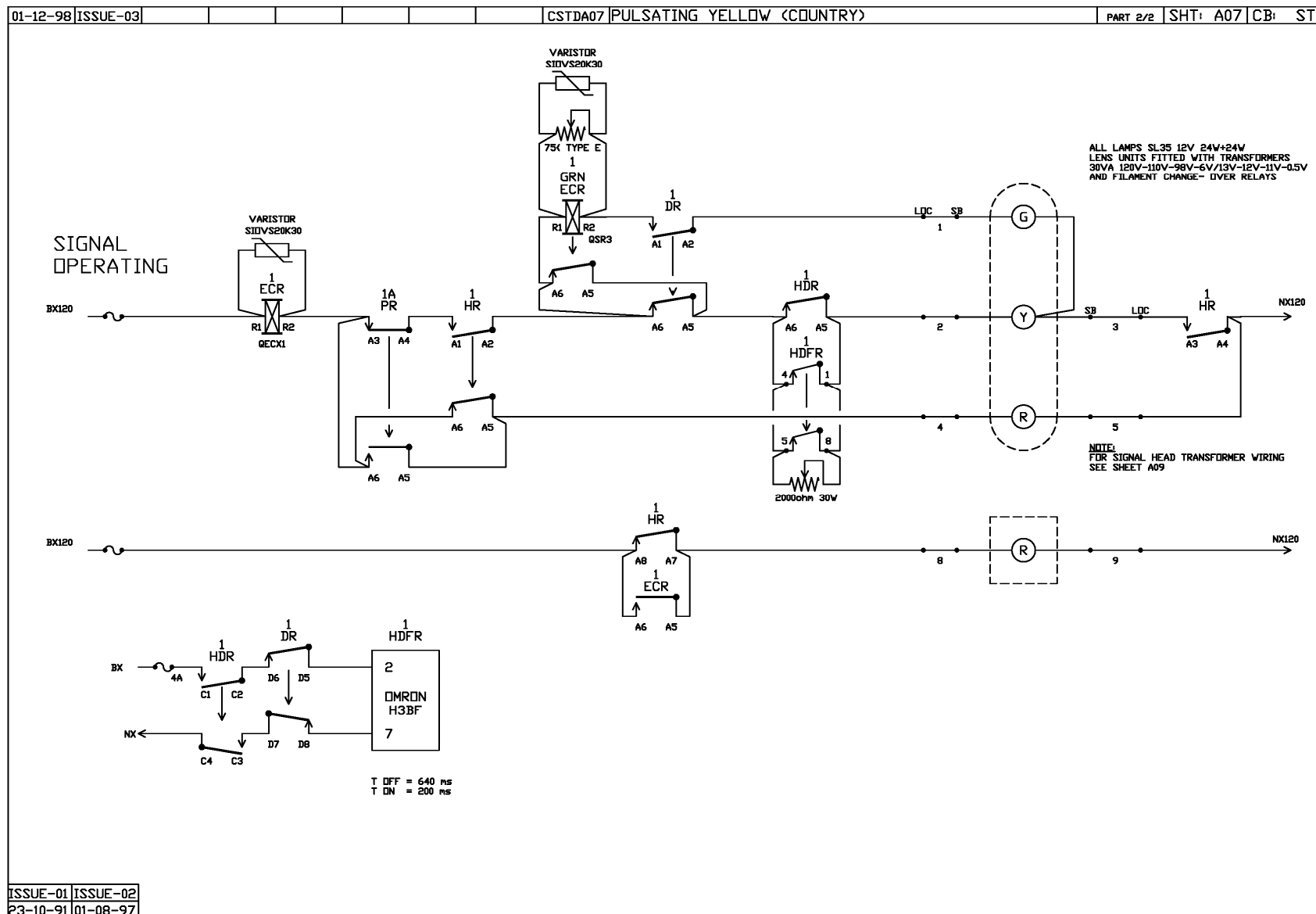


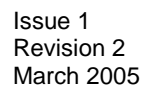


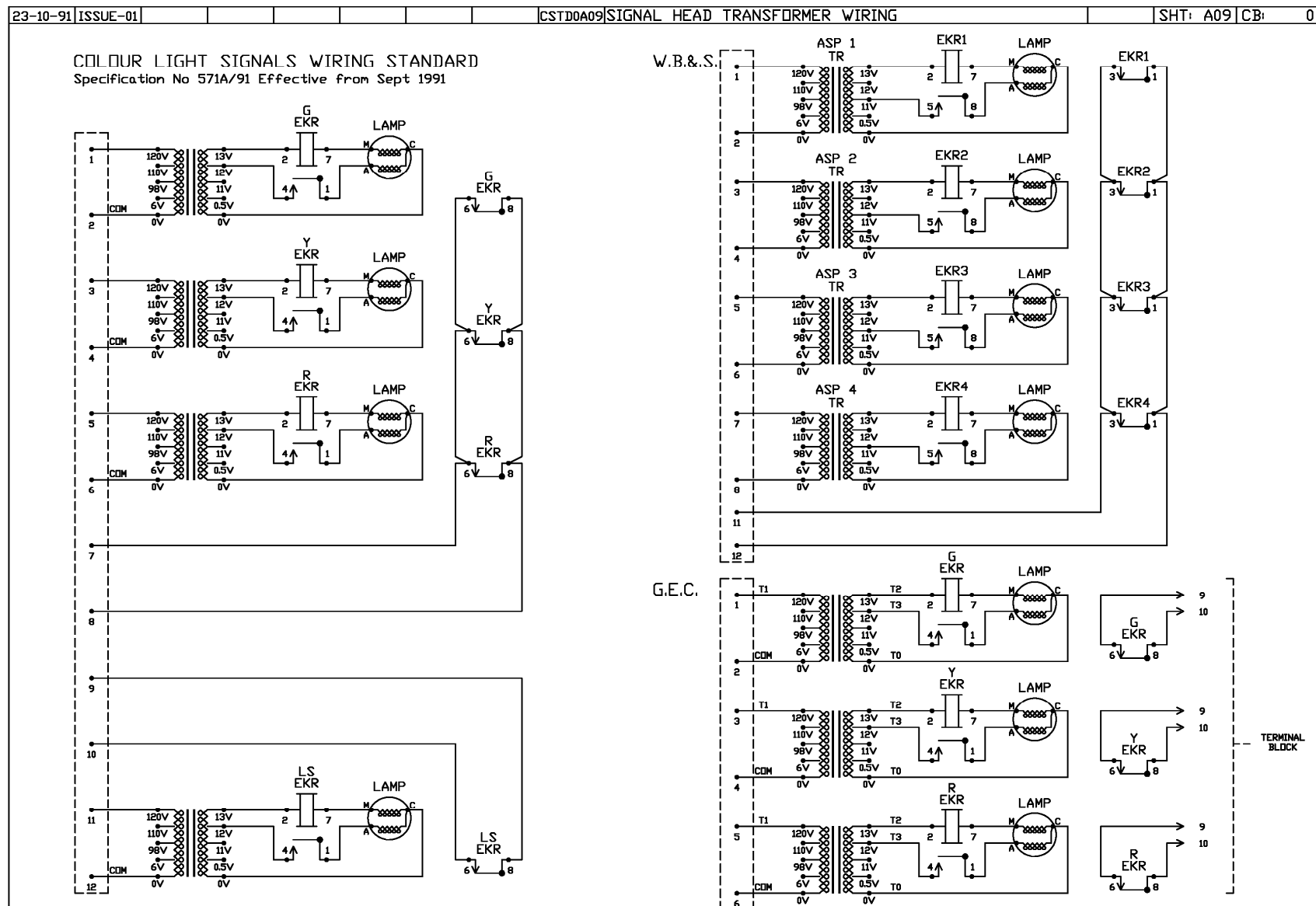
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23-10-91	

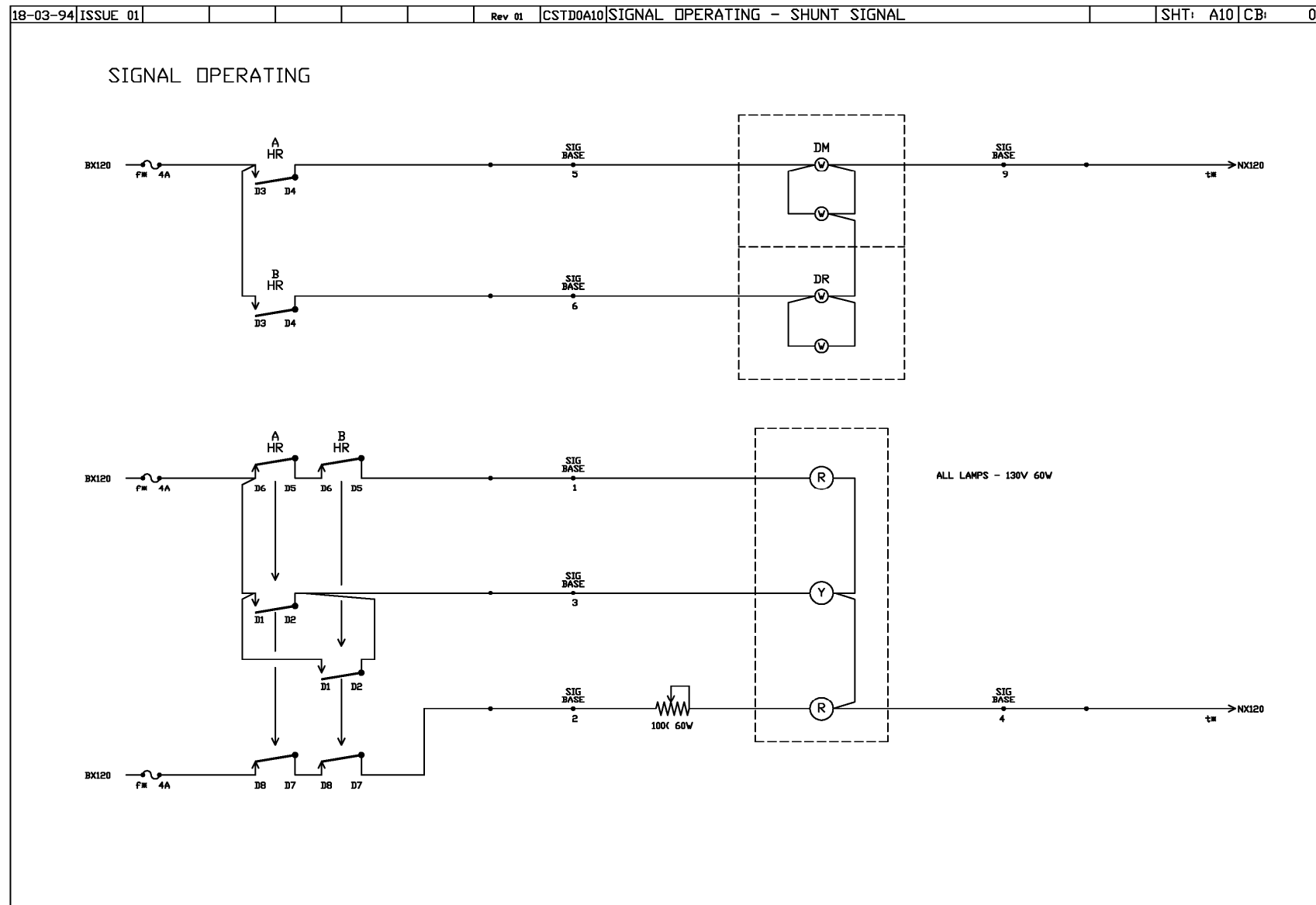


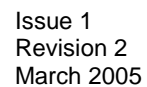


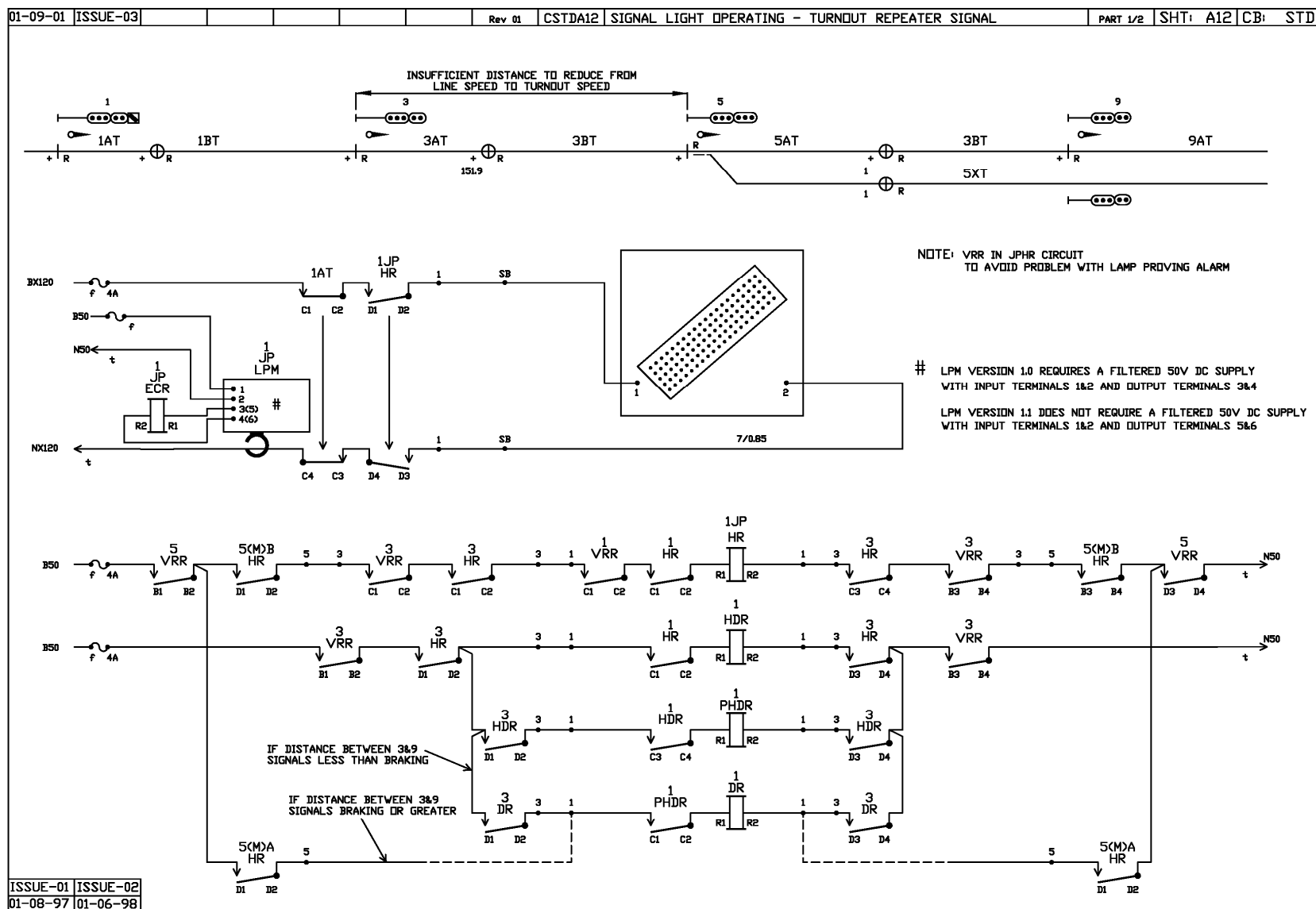


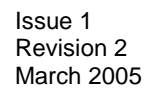


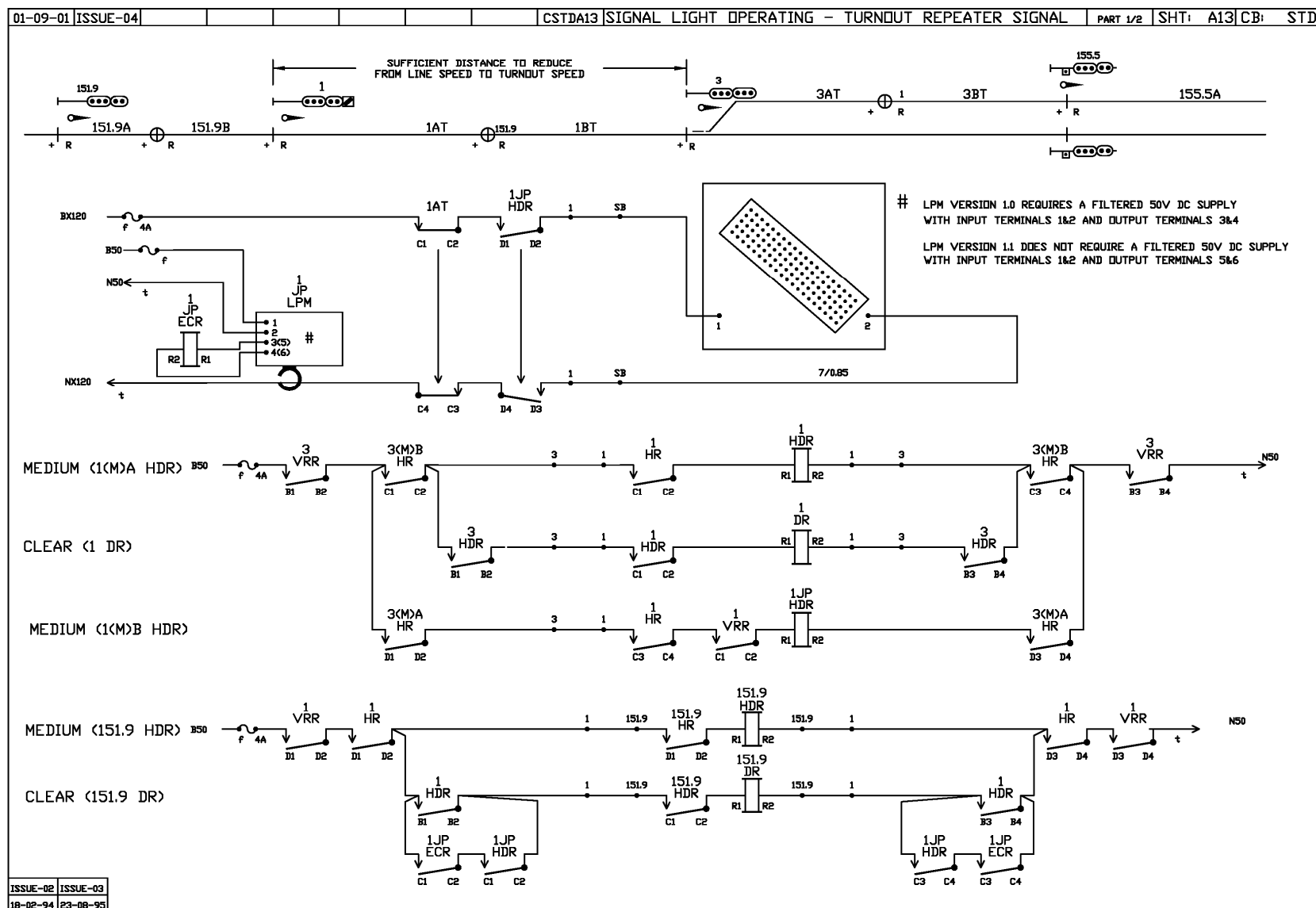


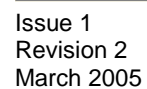


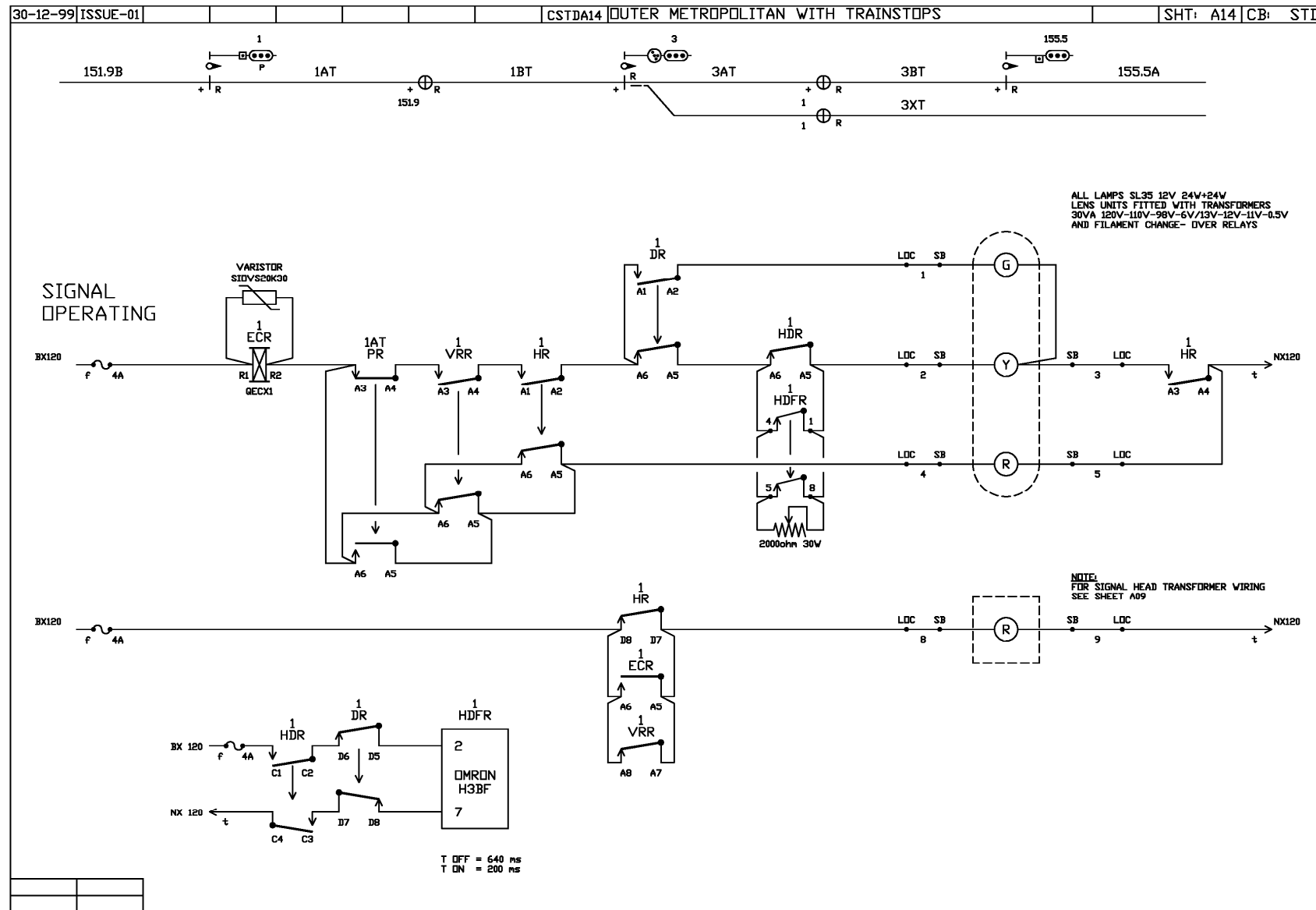


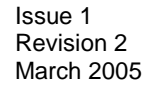


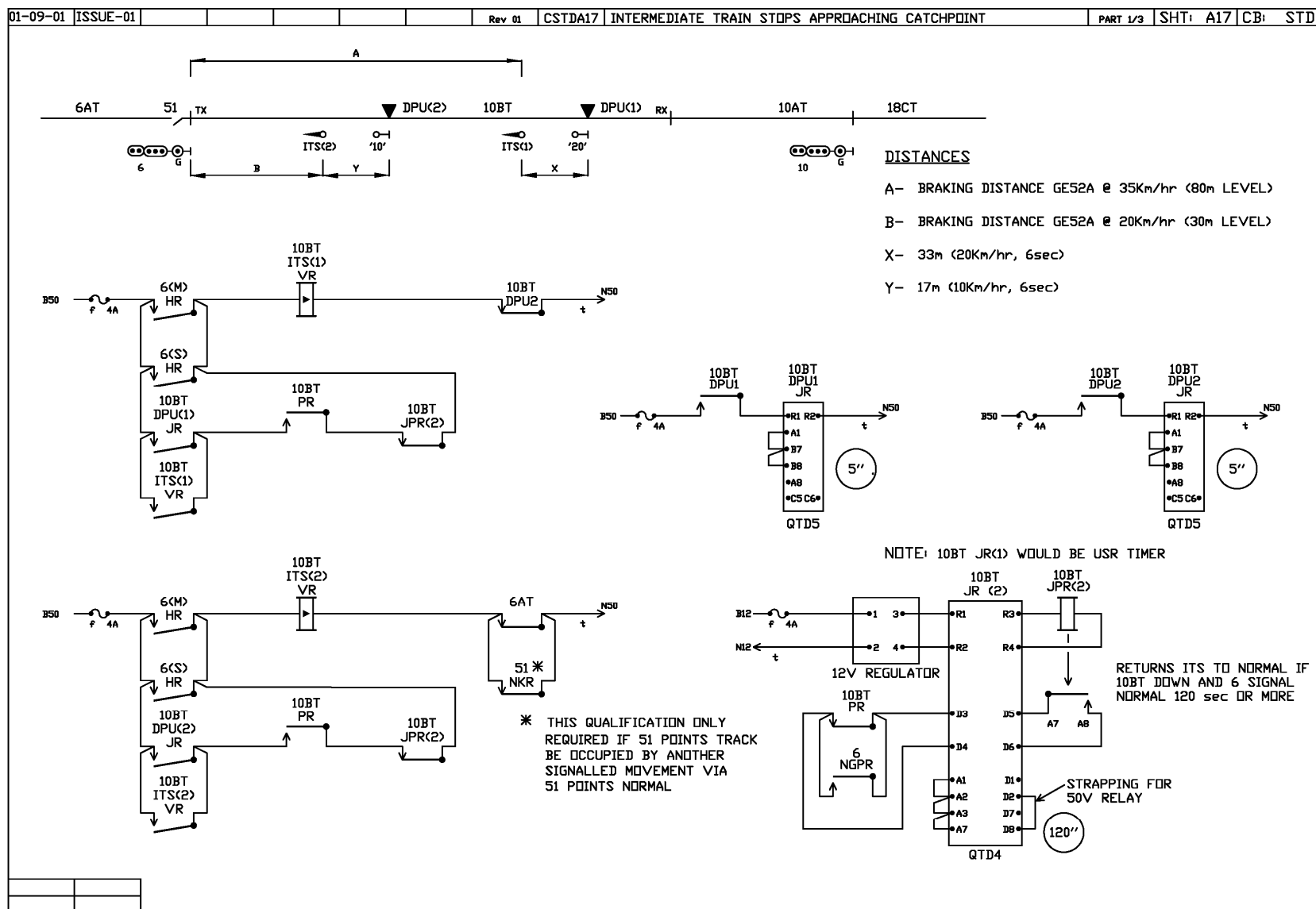


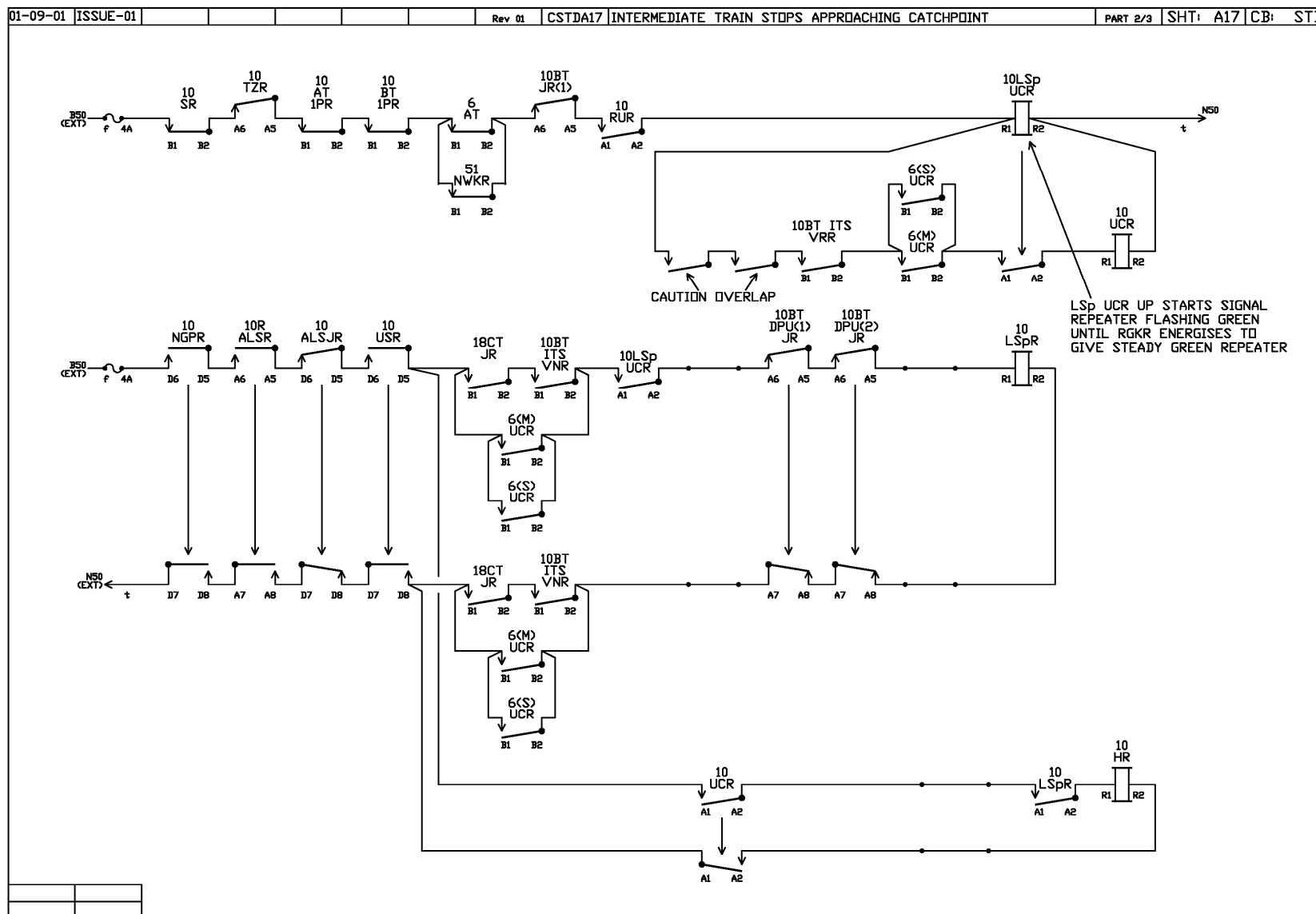


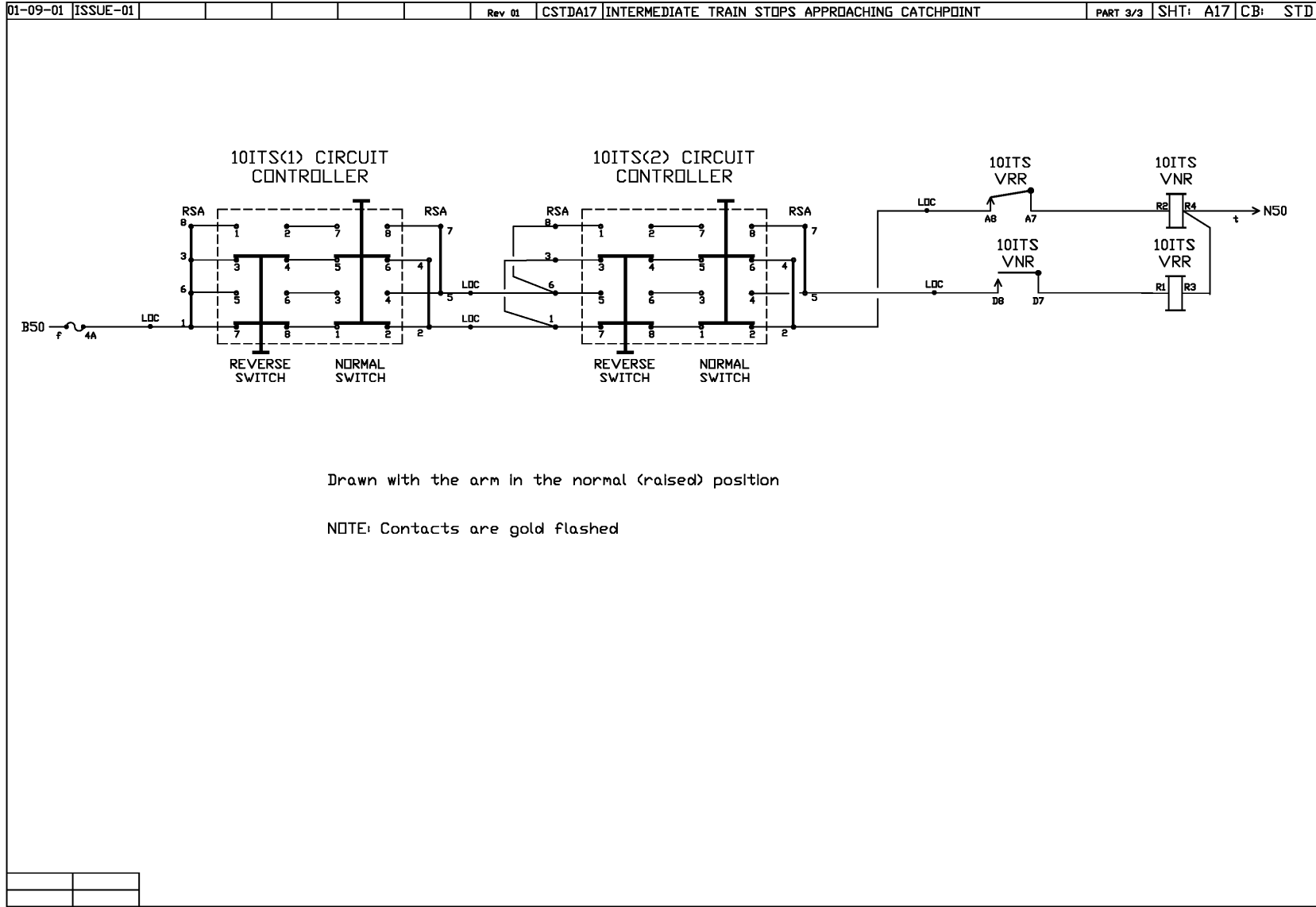


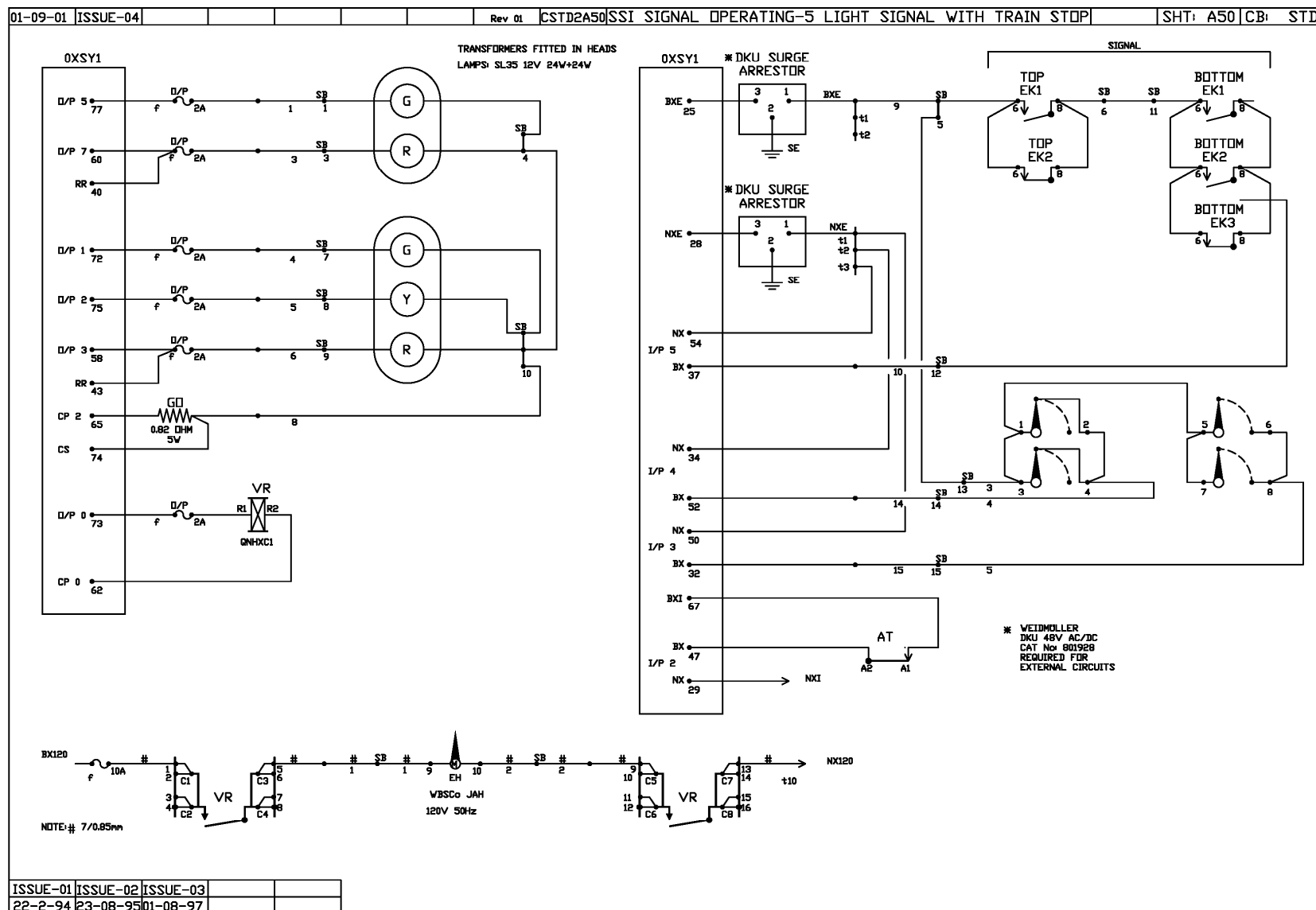


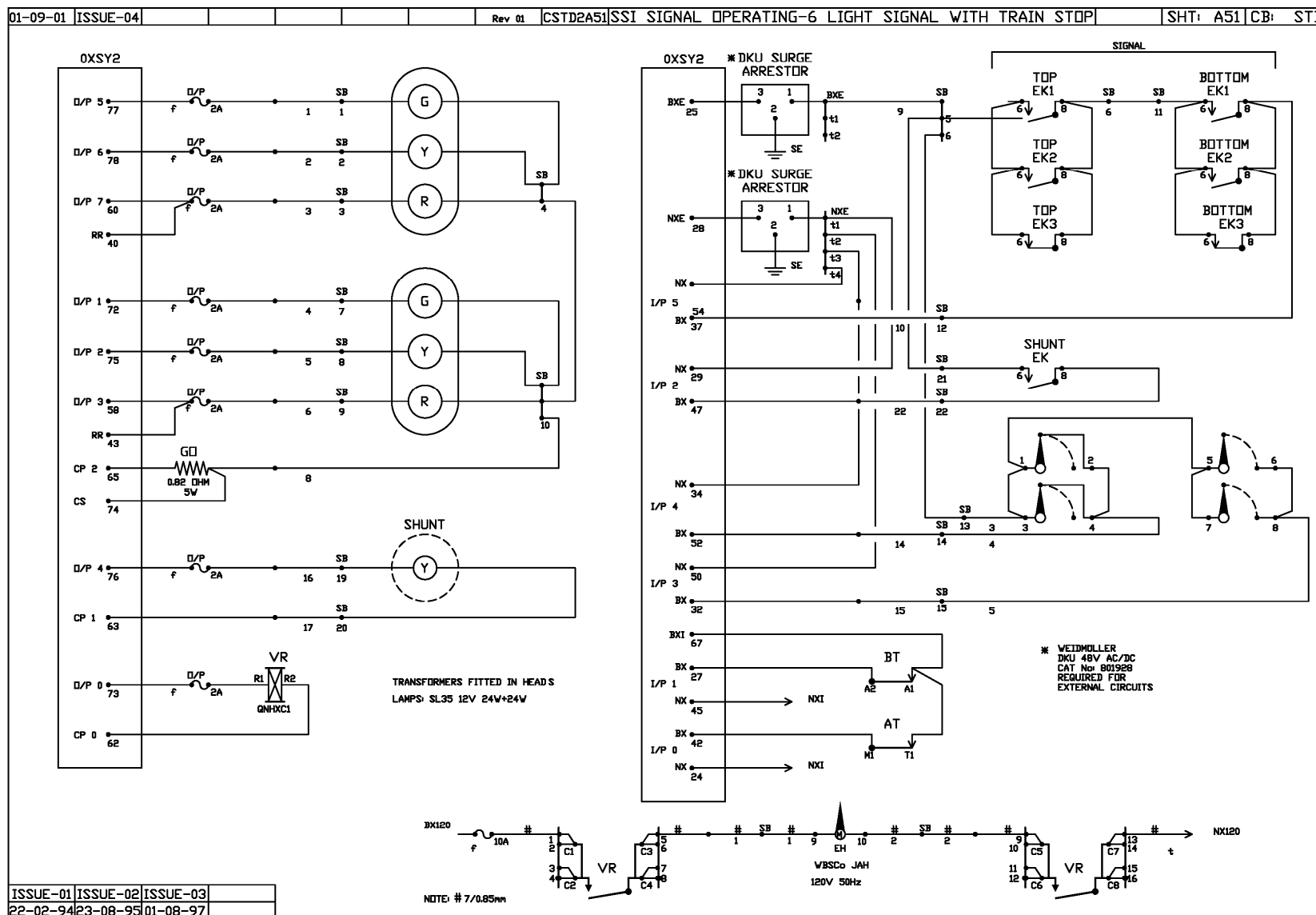


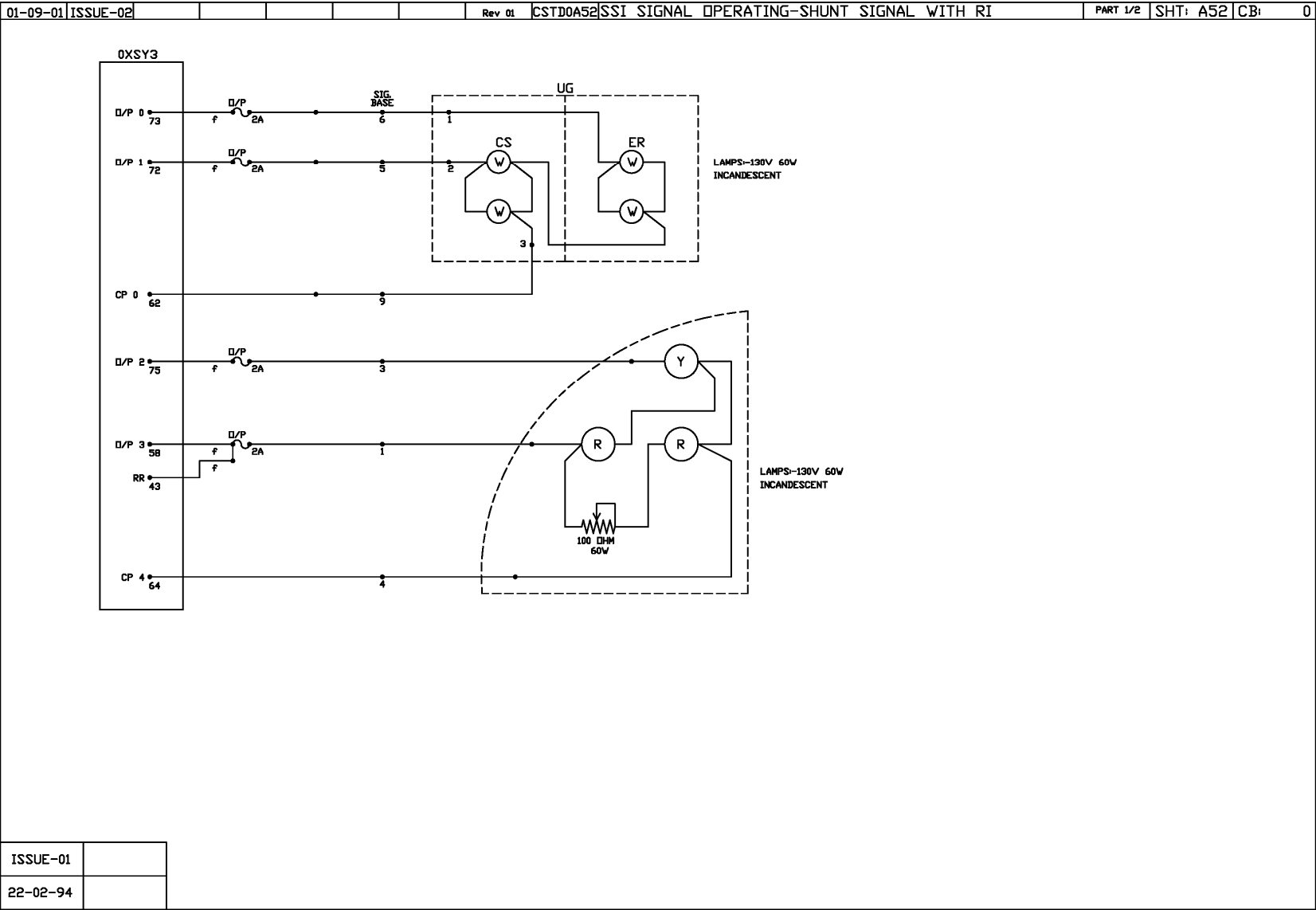


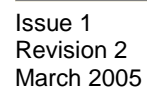


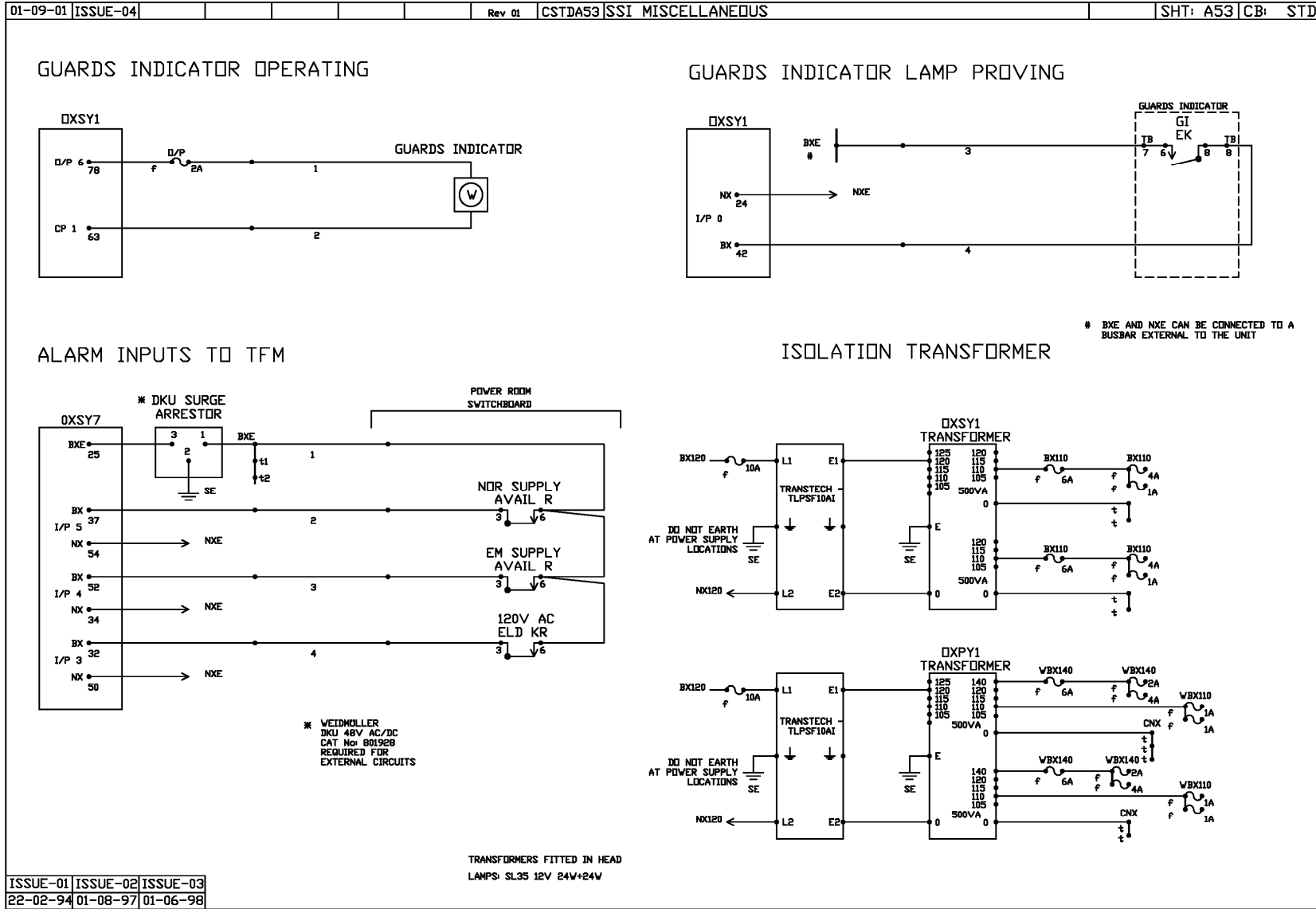


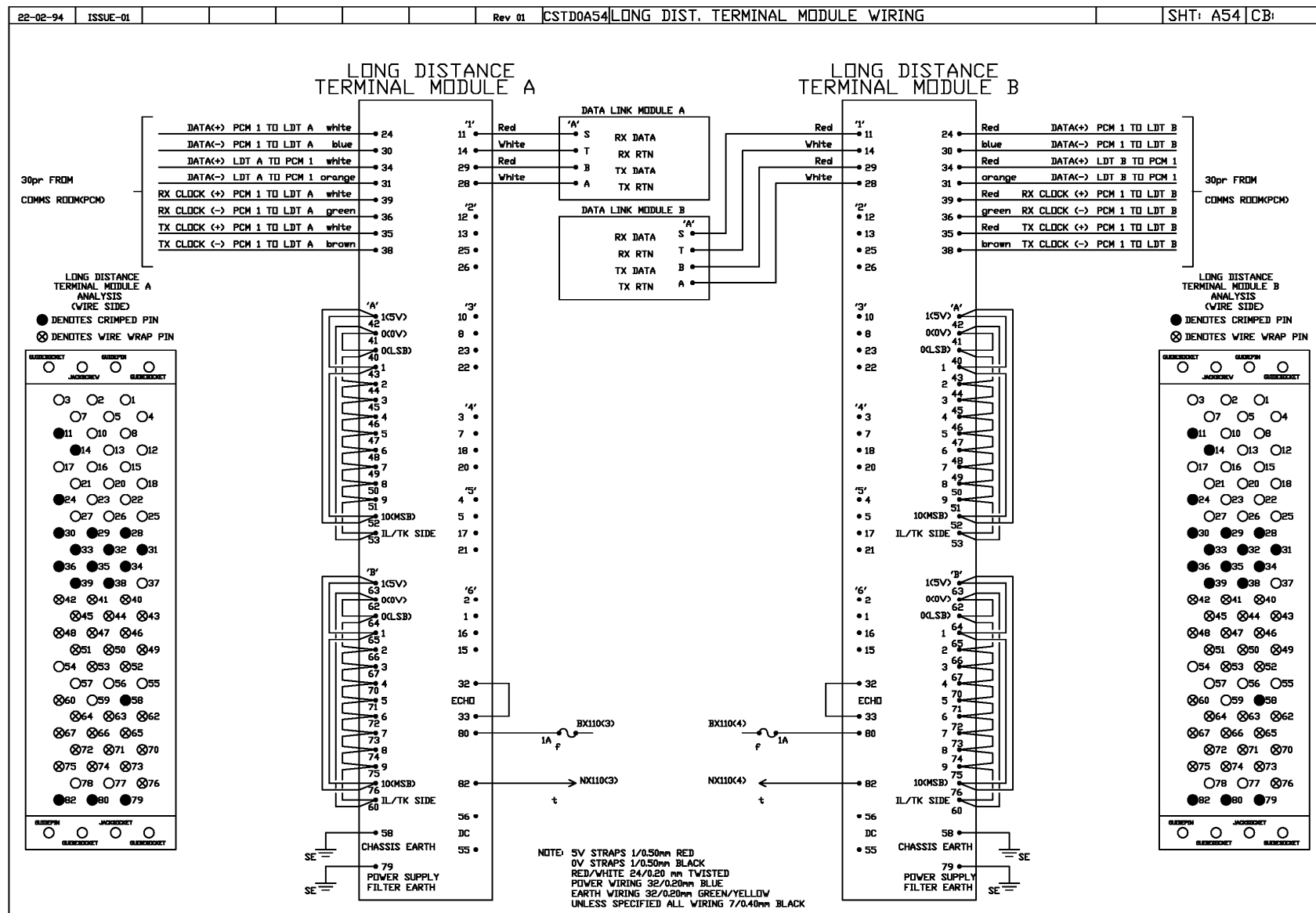


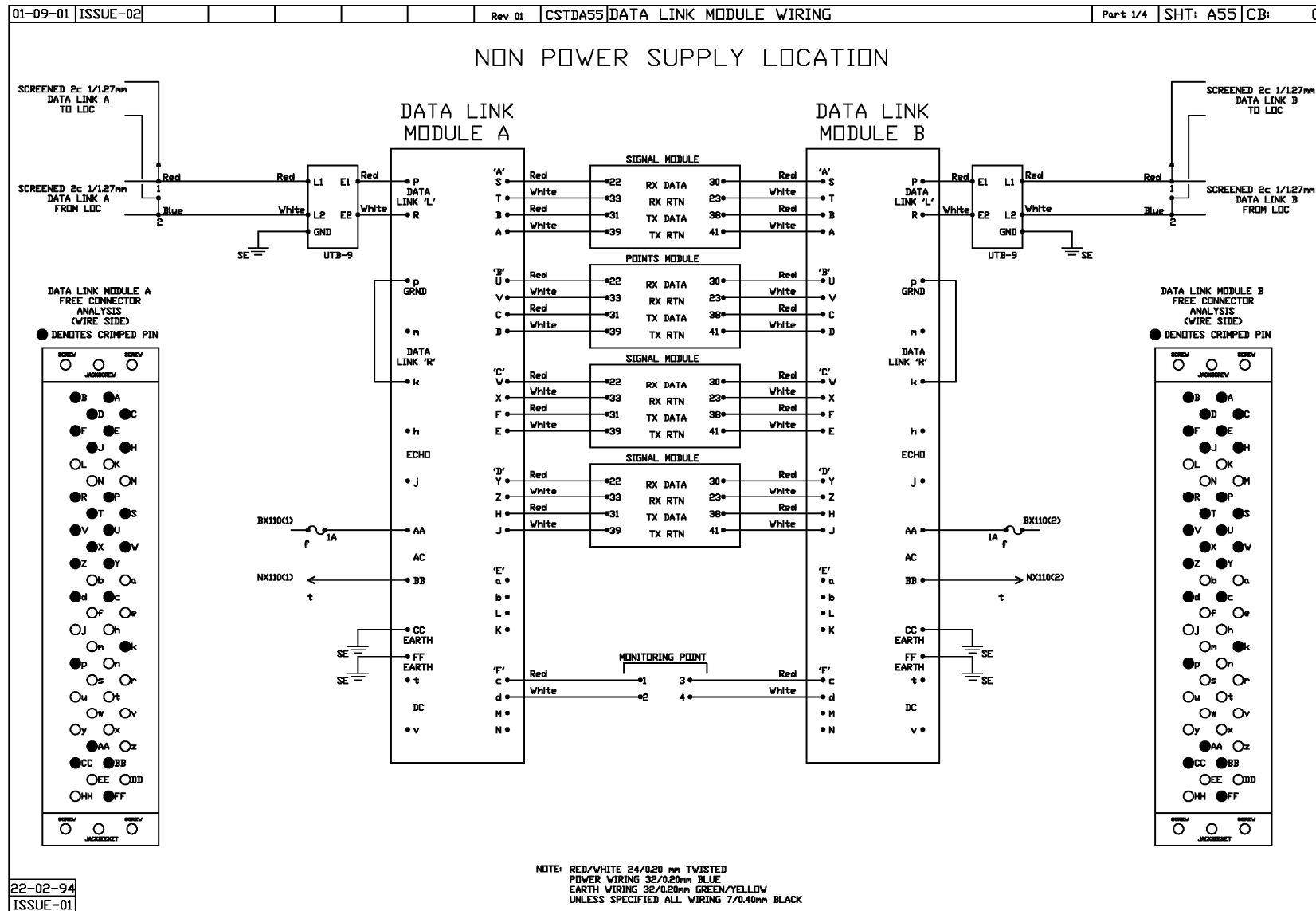


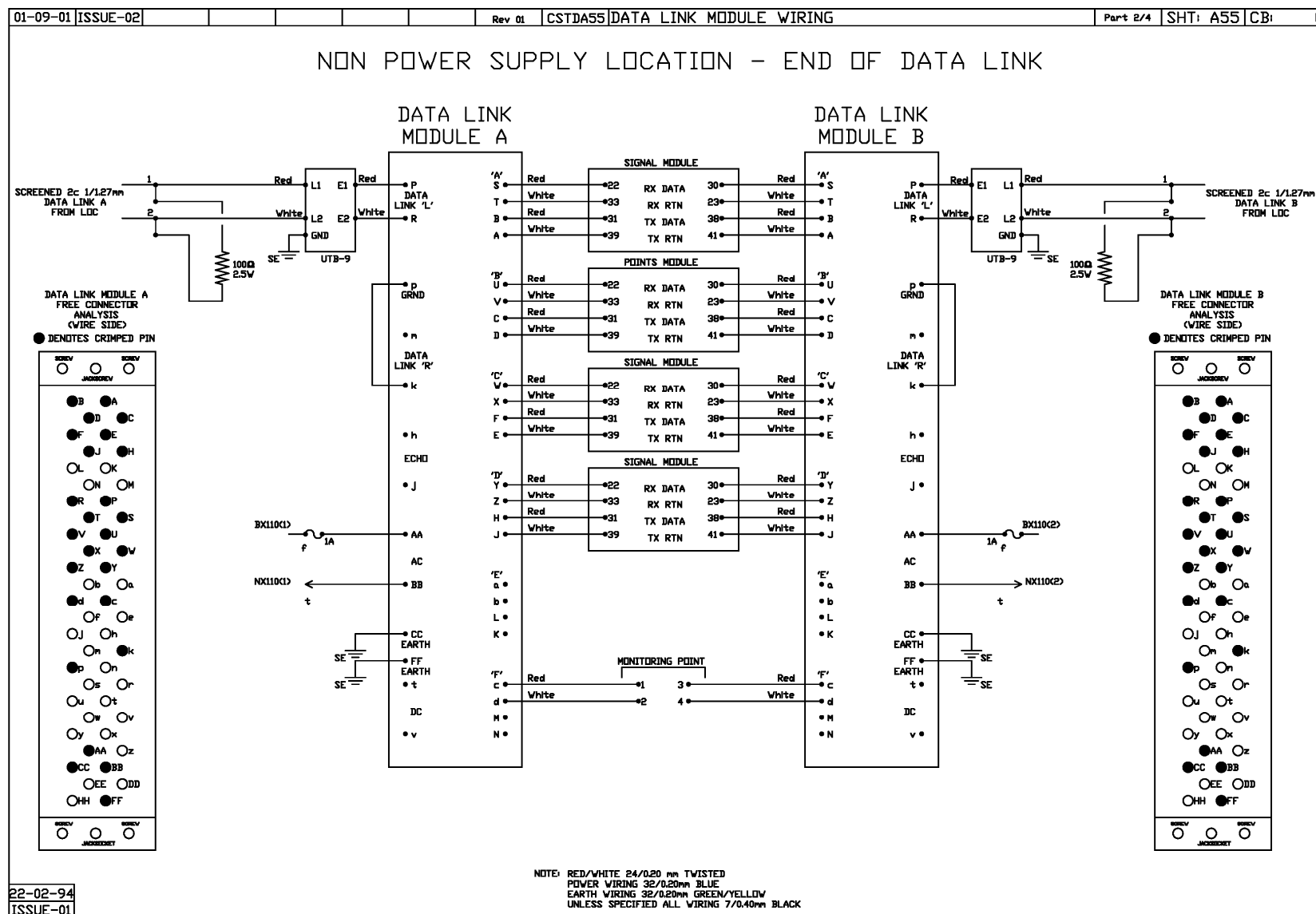


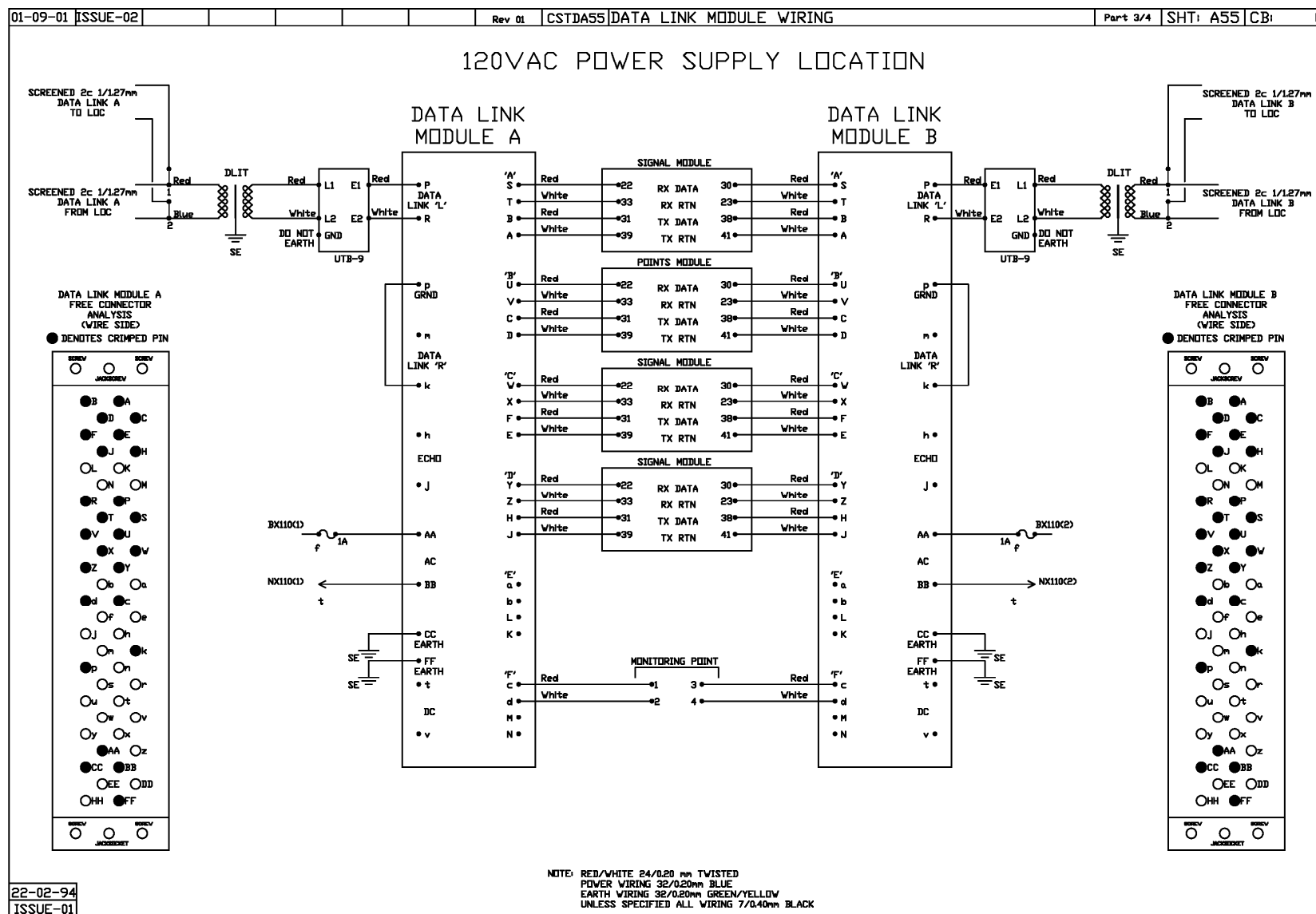


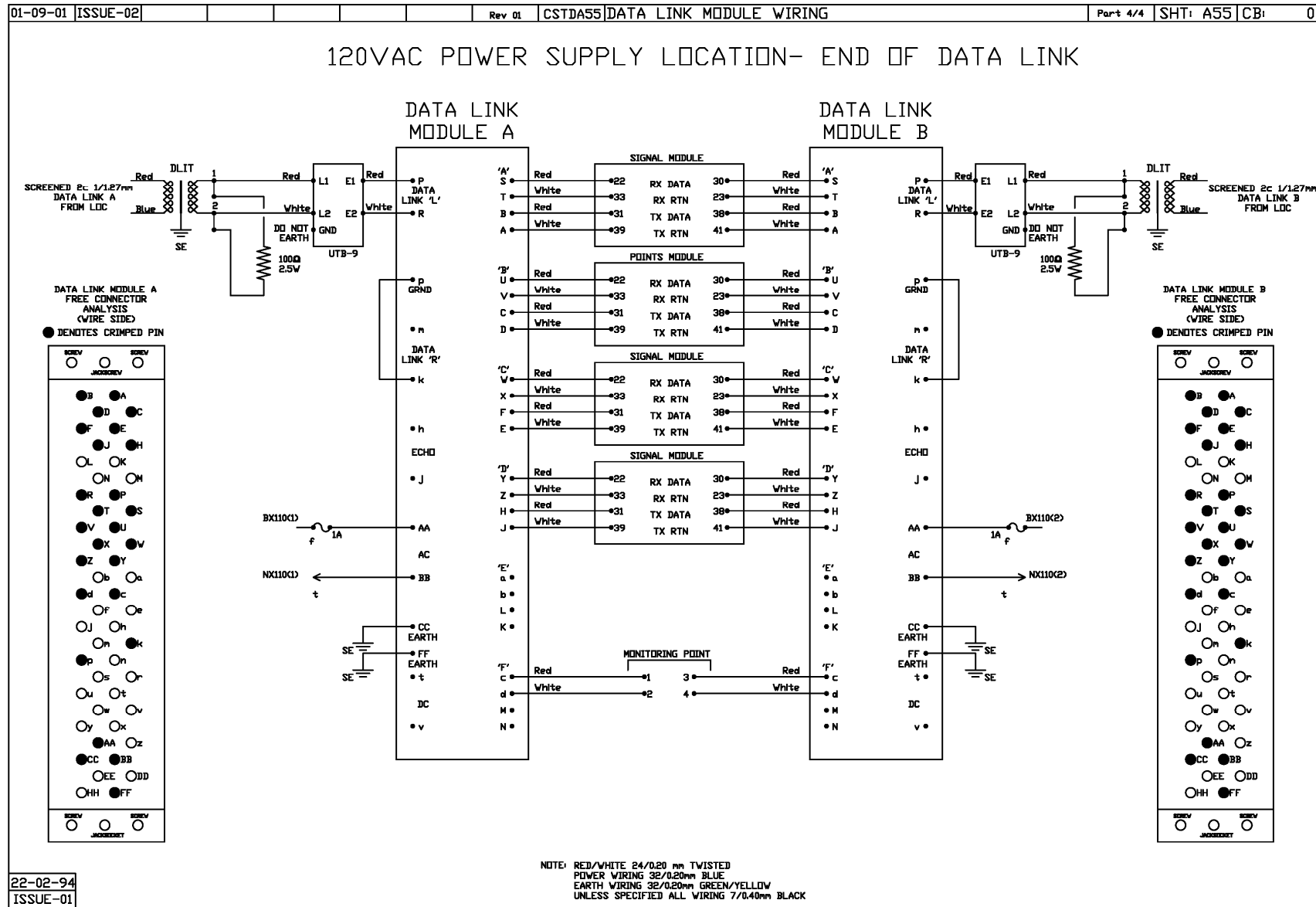


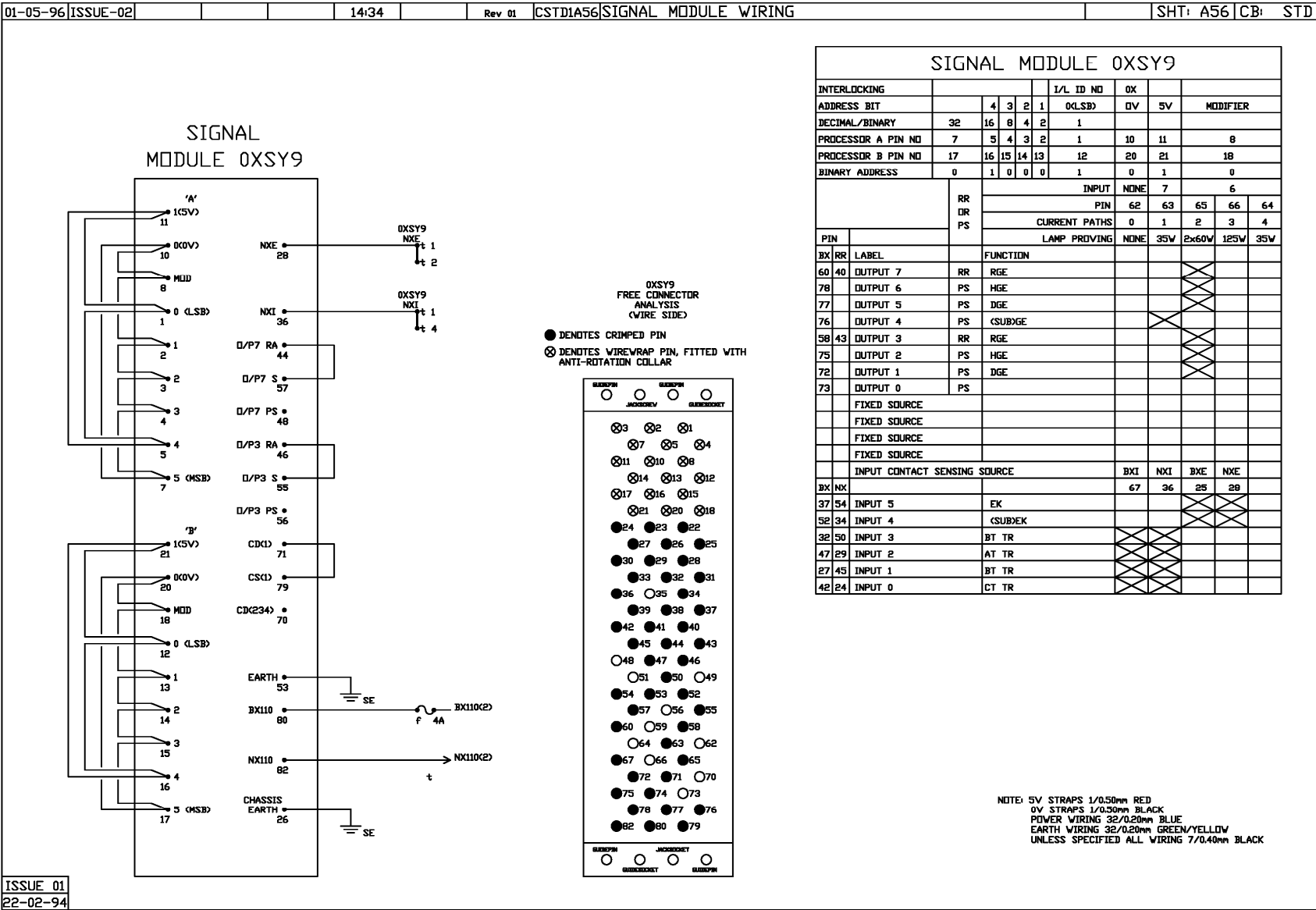


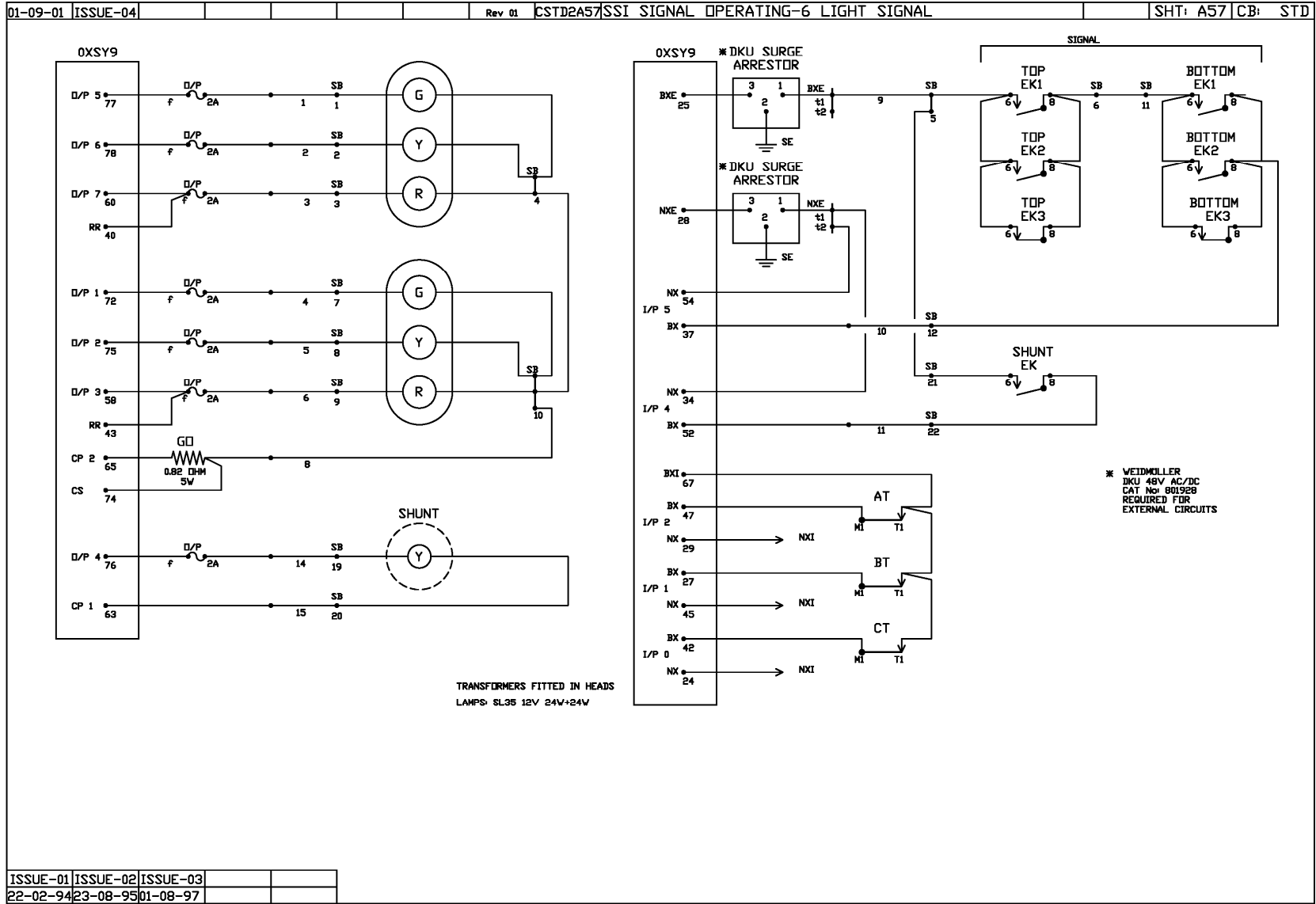


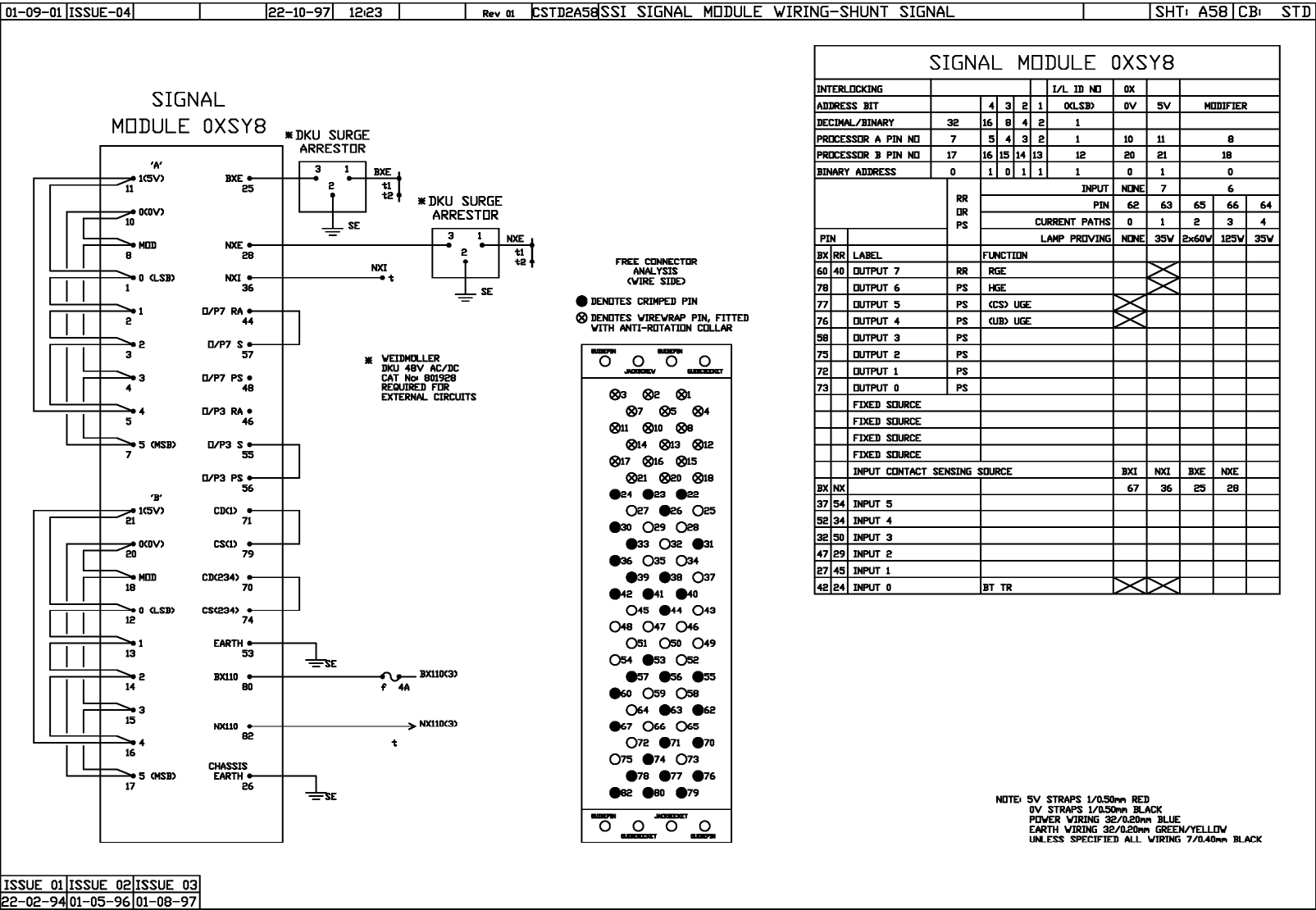


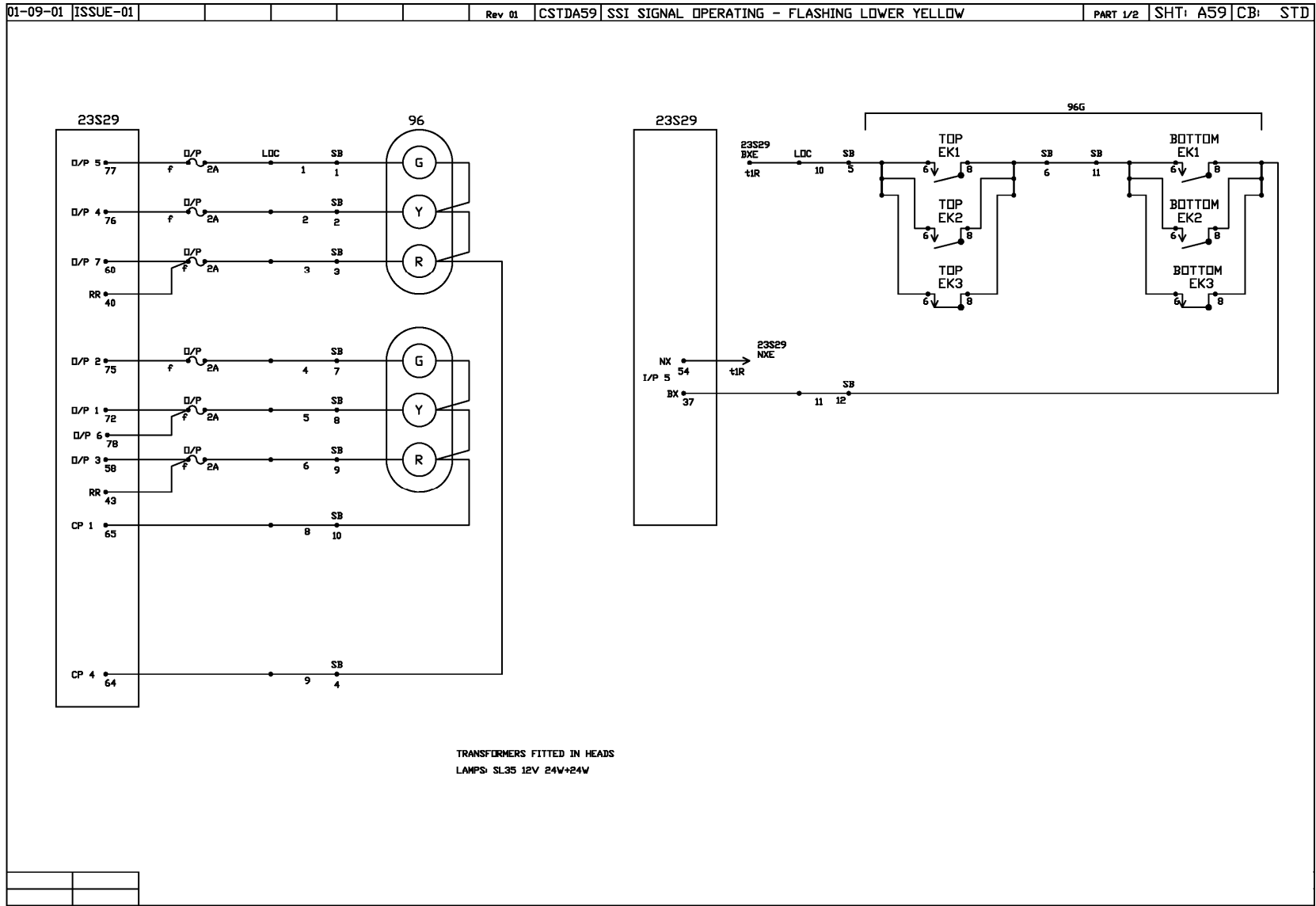


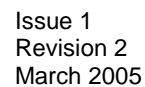


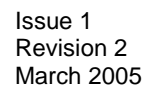


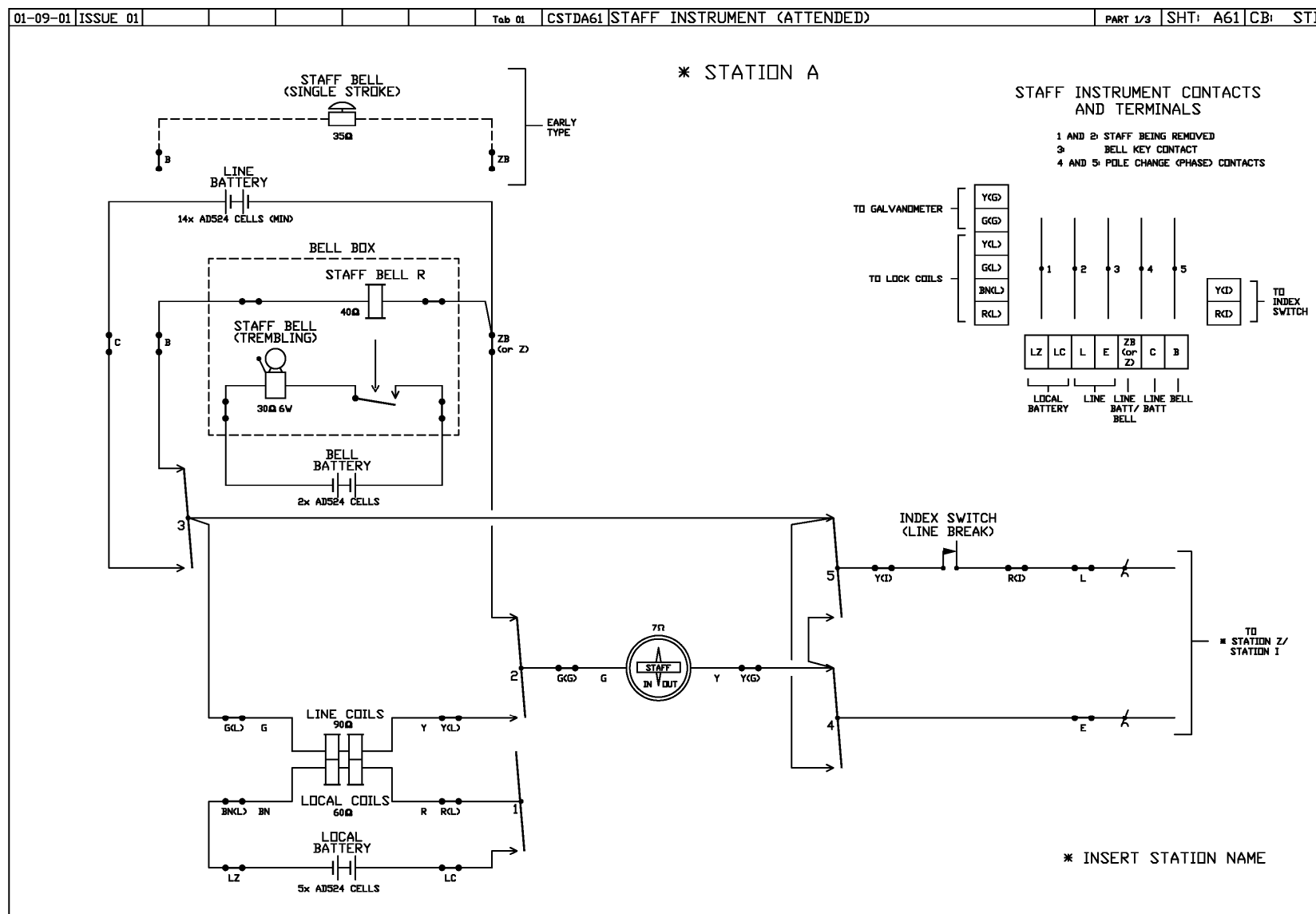


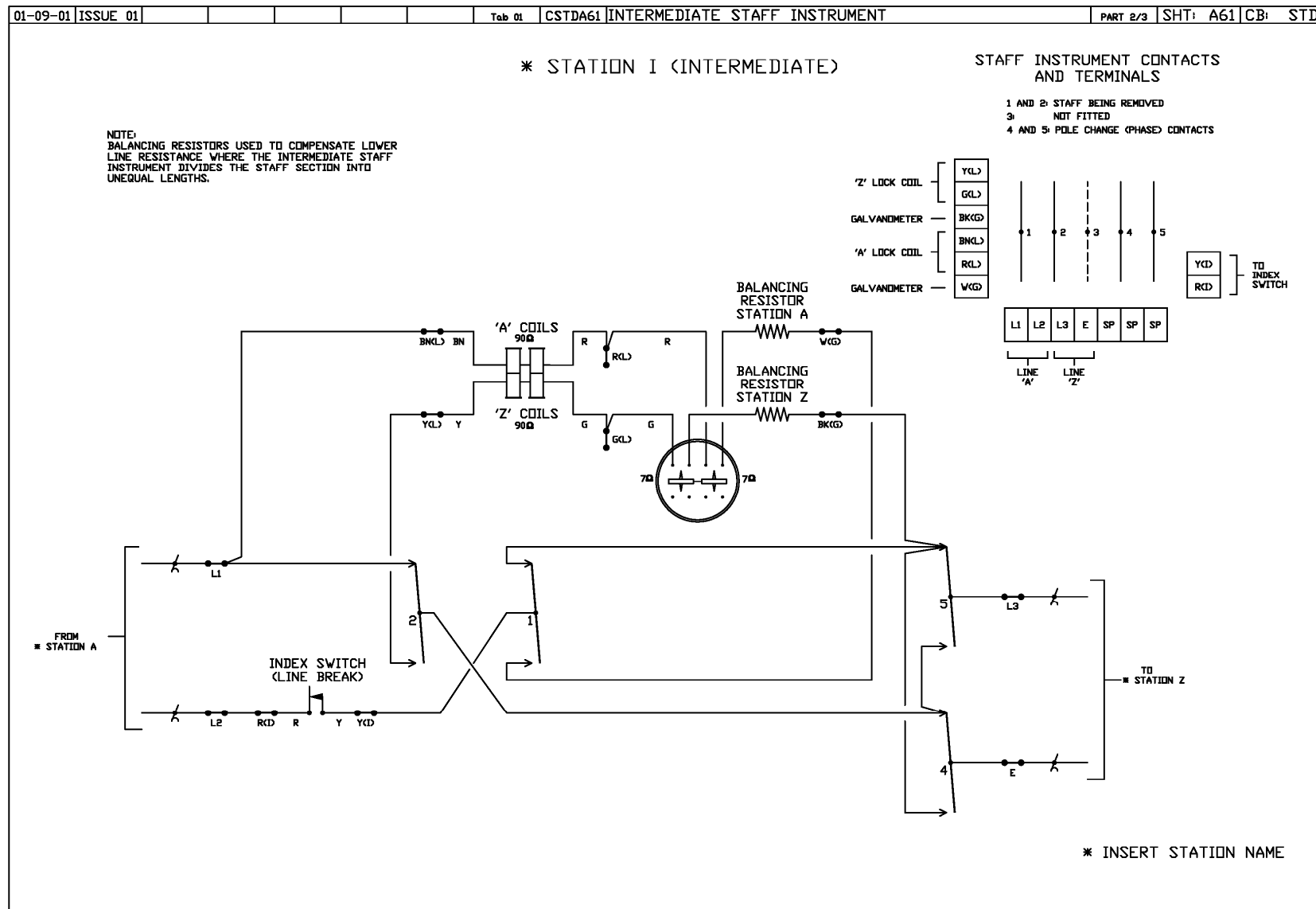


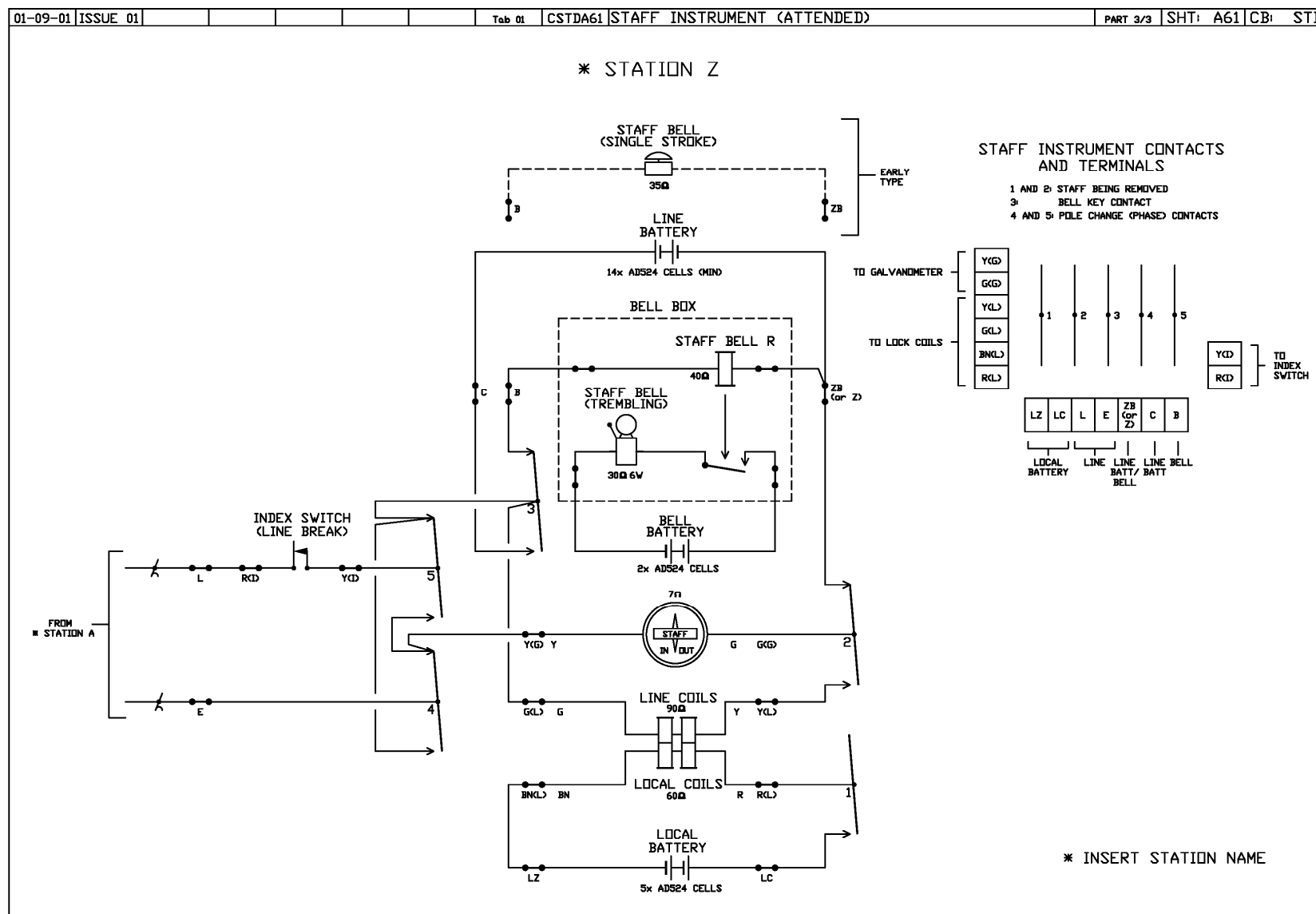


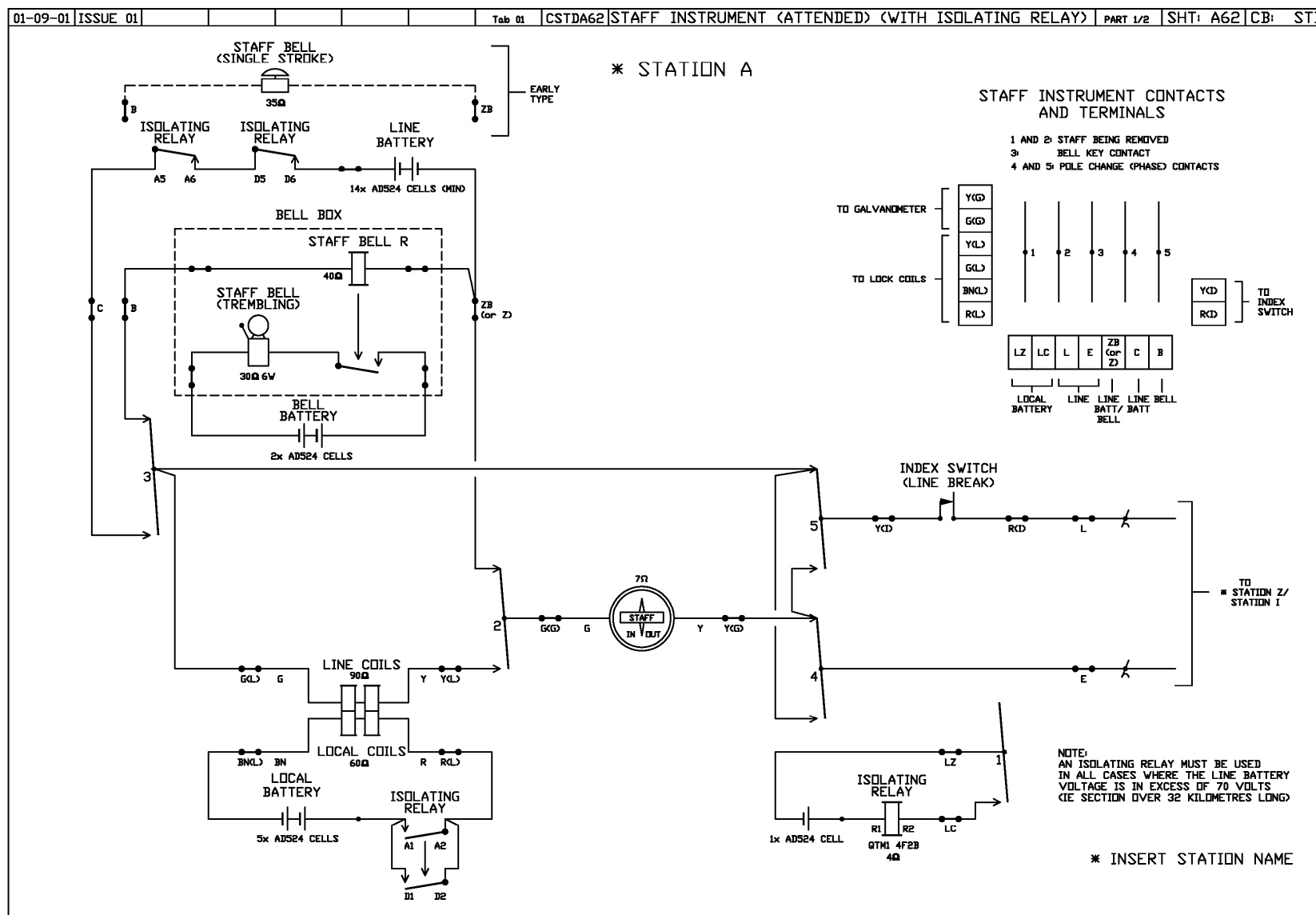


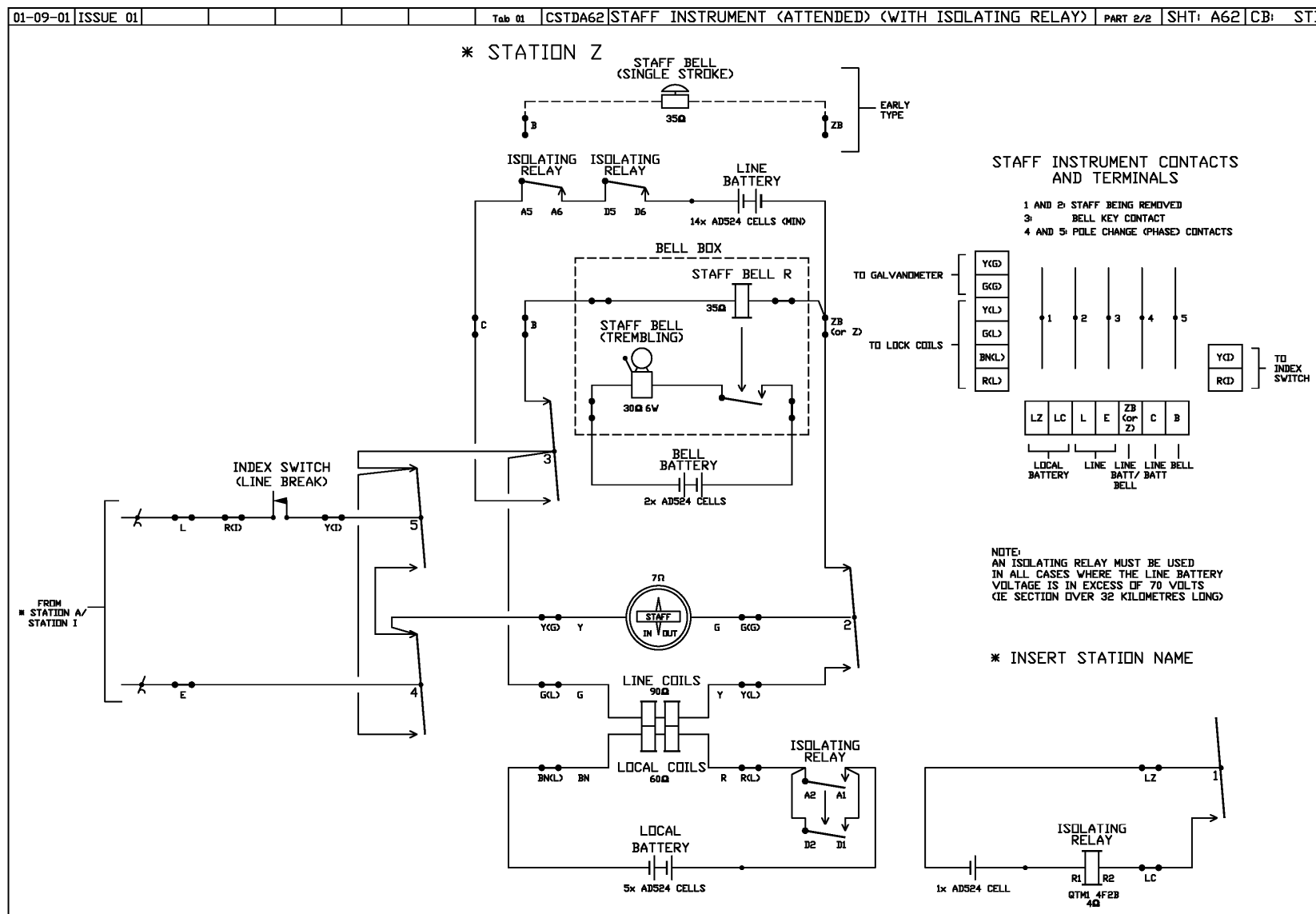


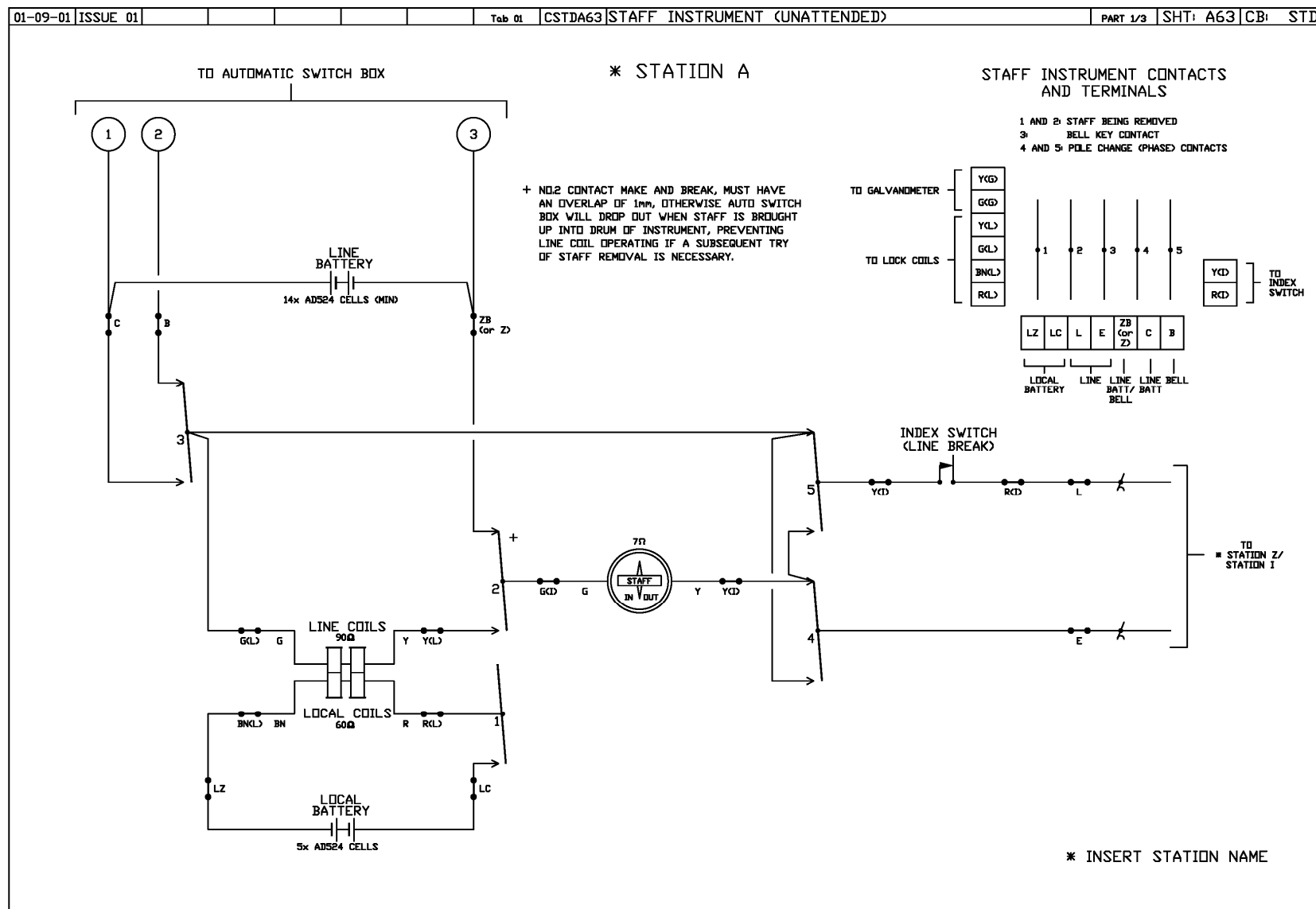


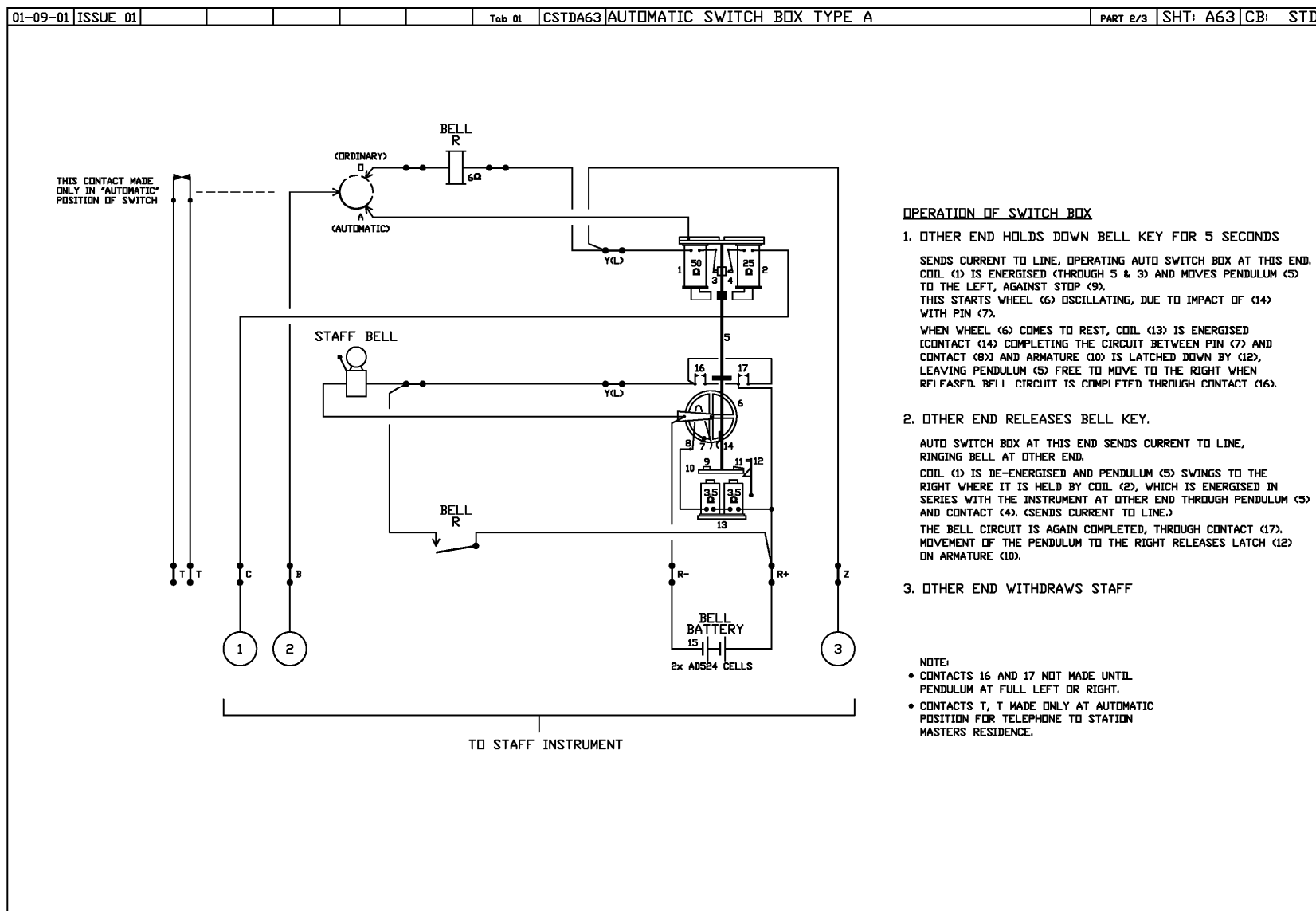


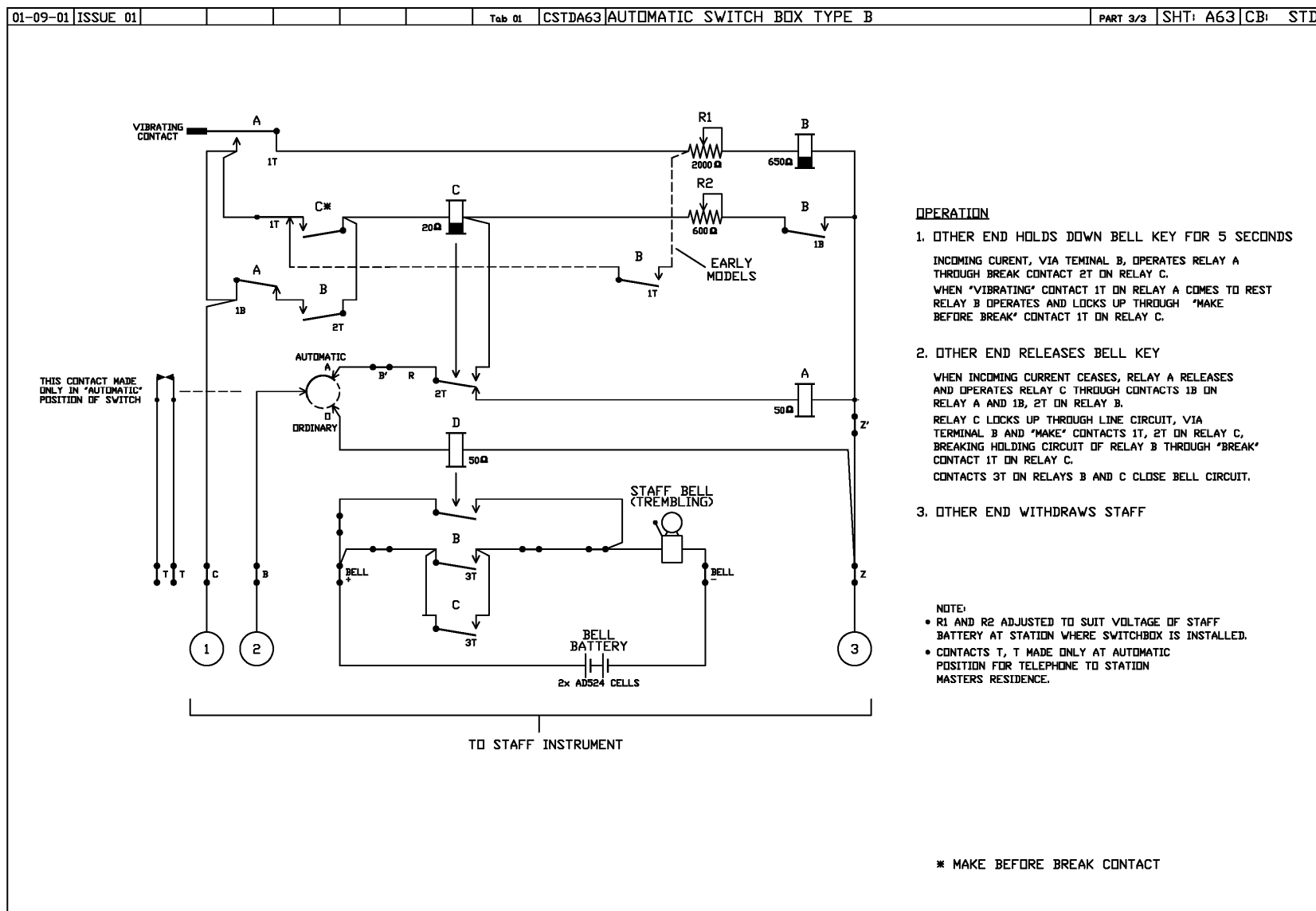


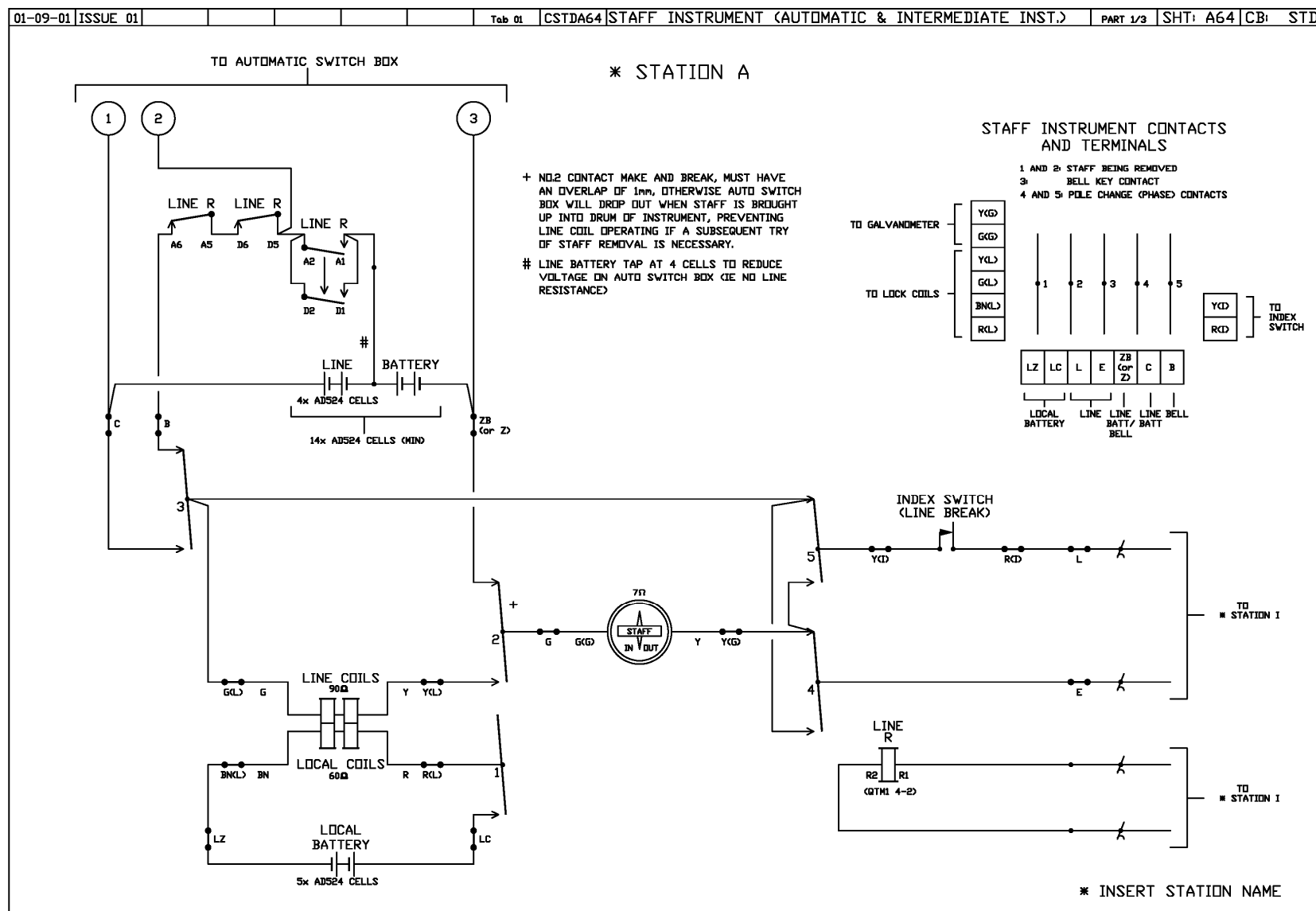


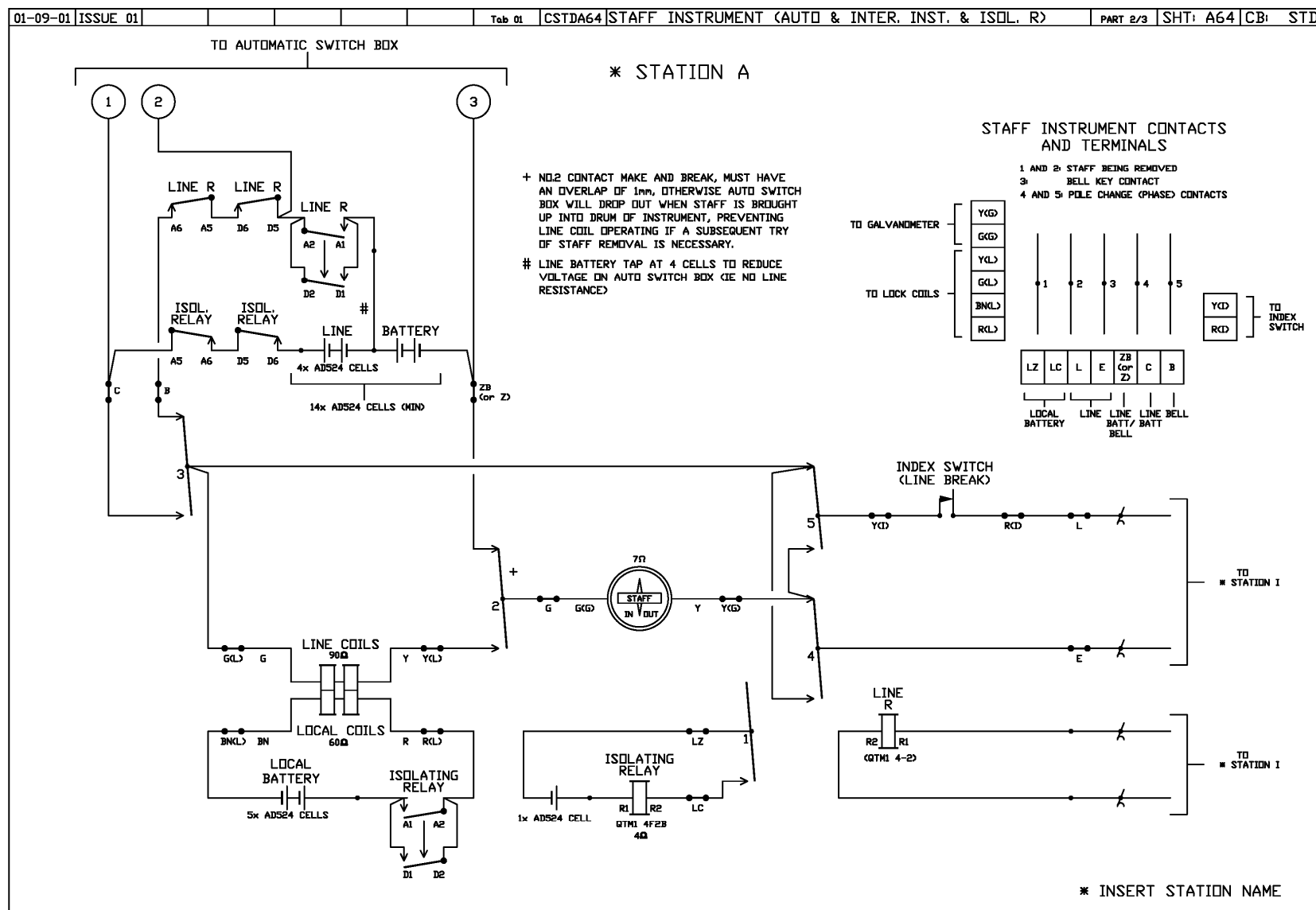


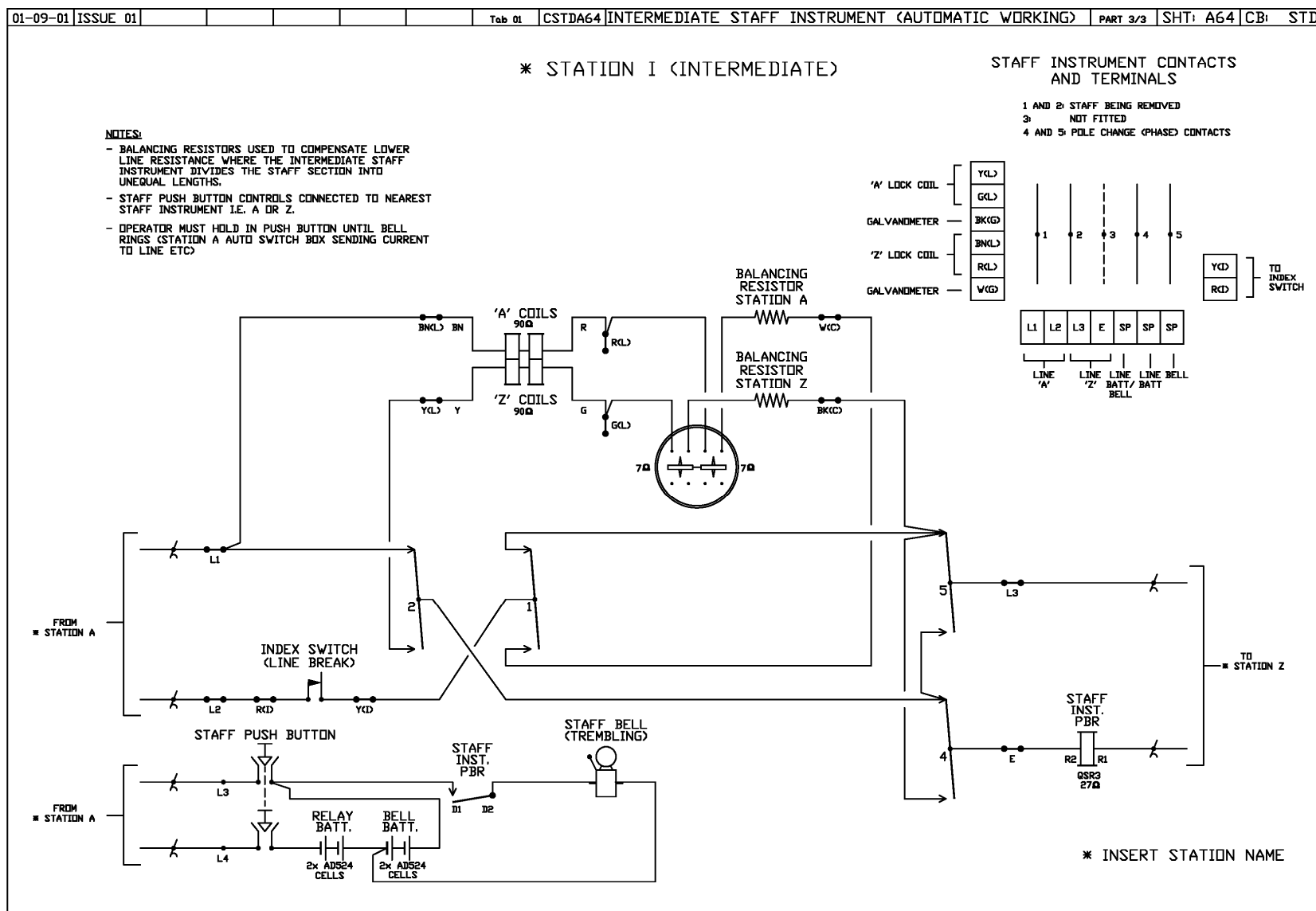


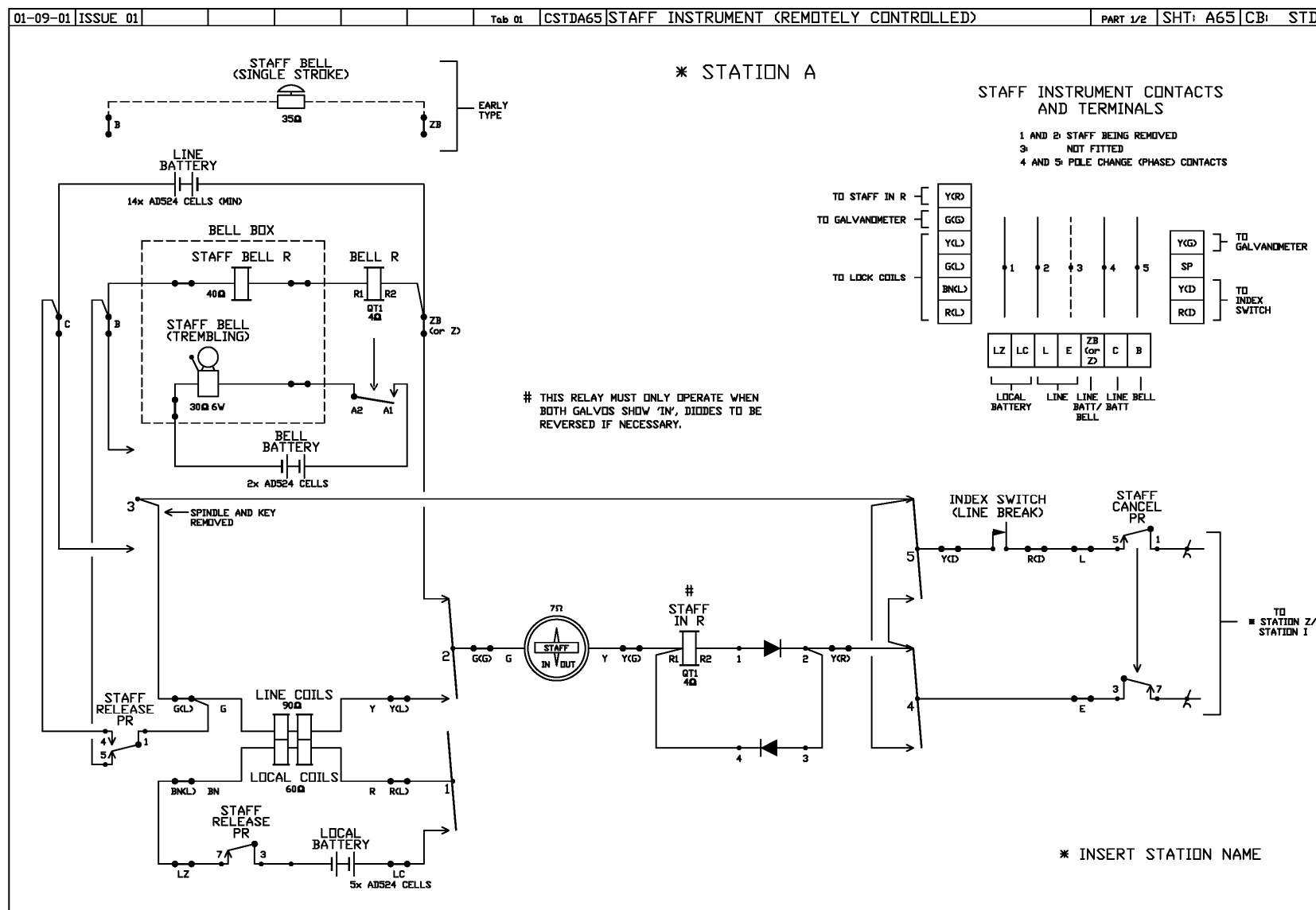




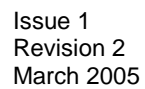


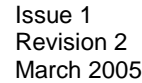


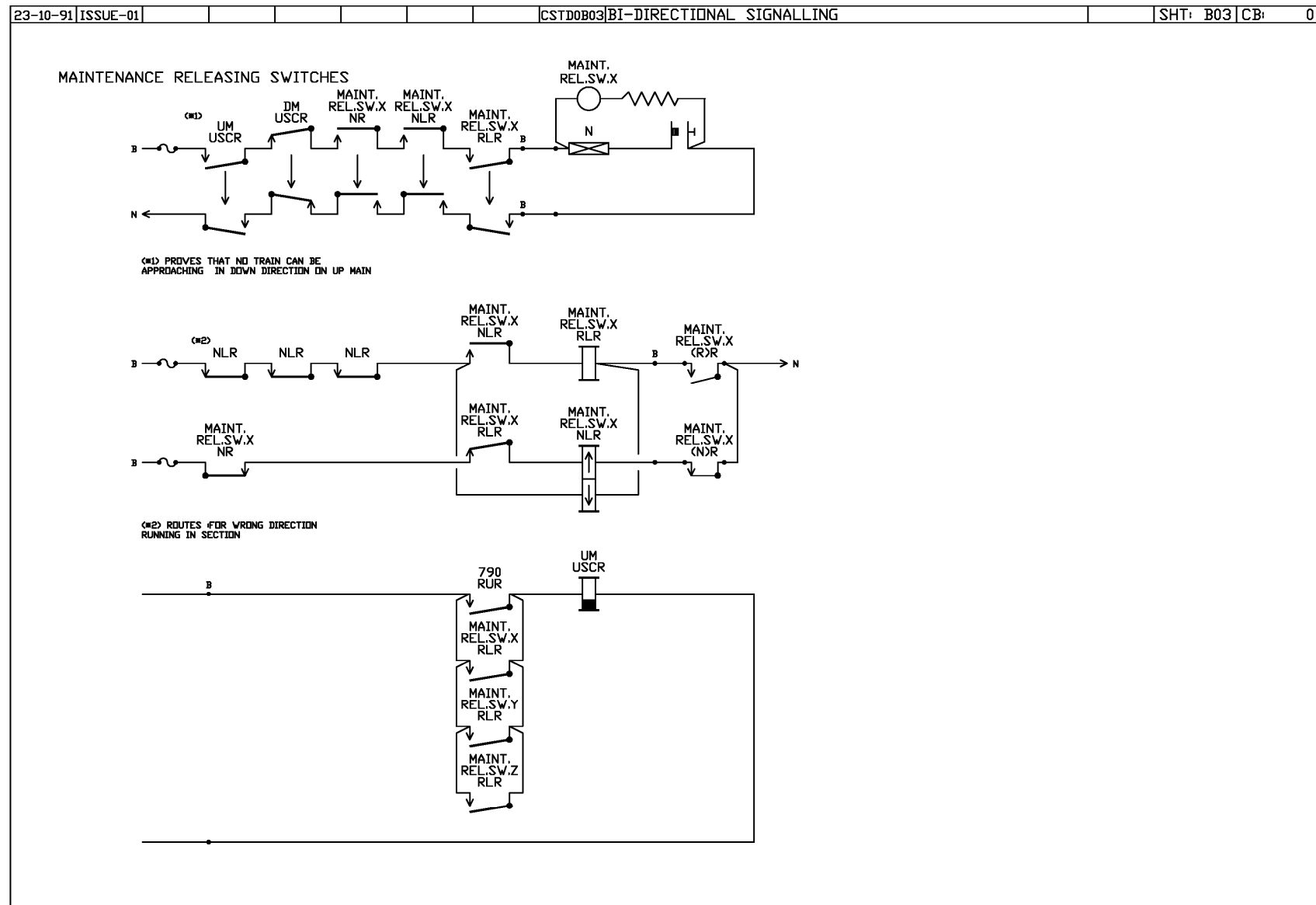


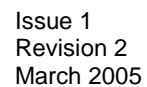


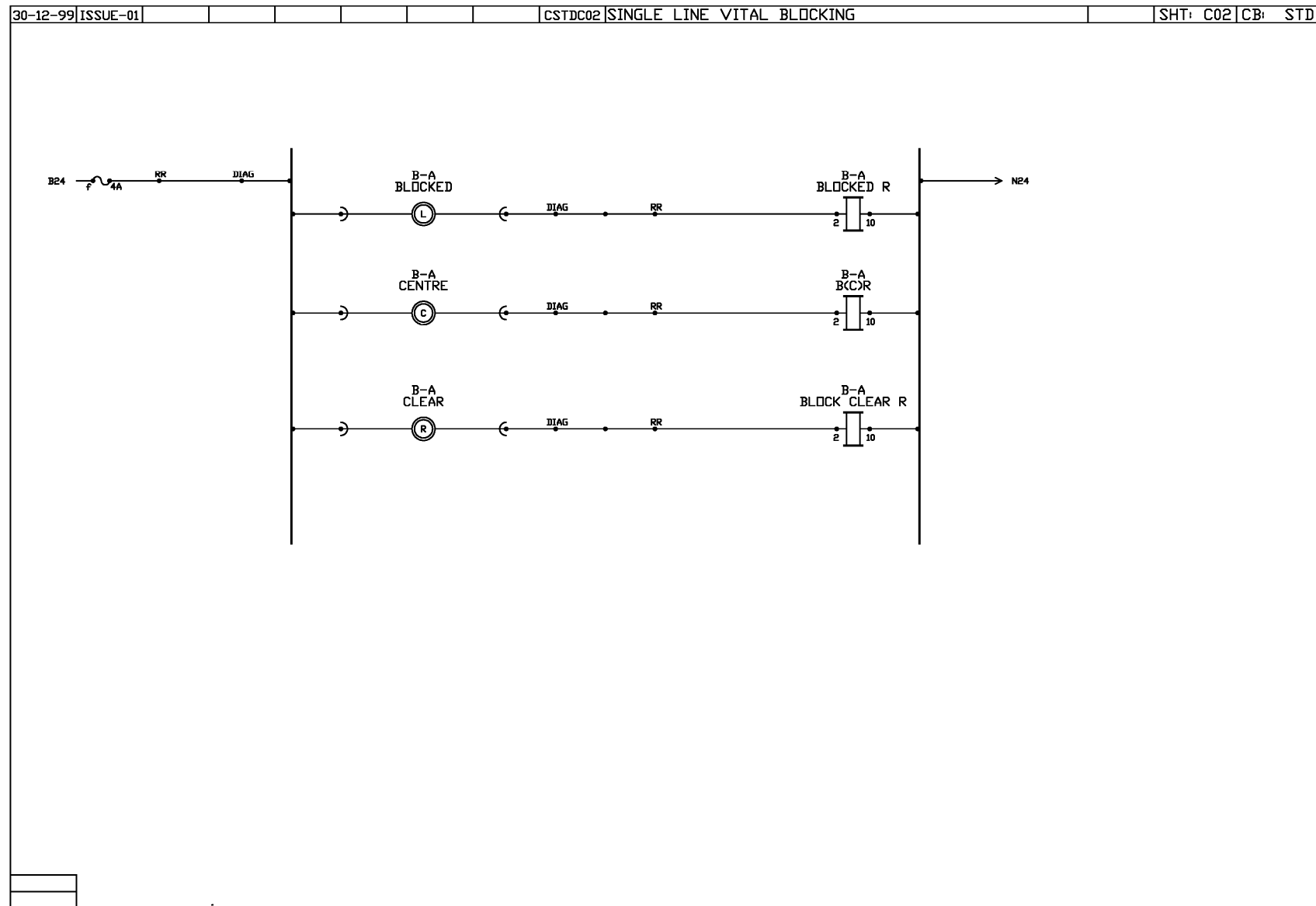




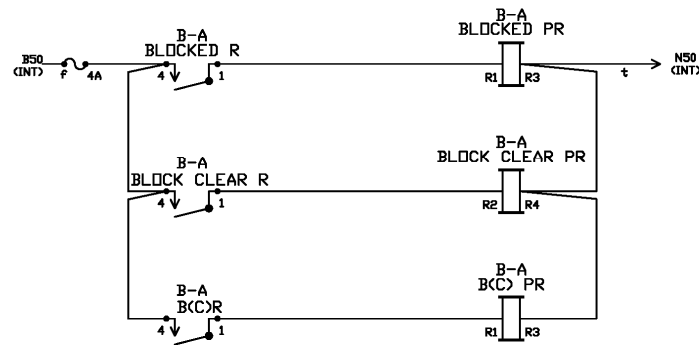




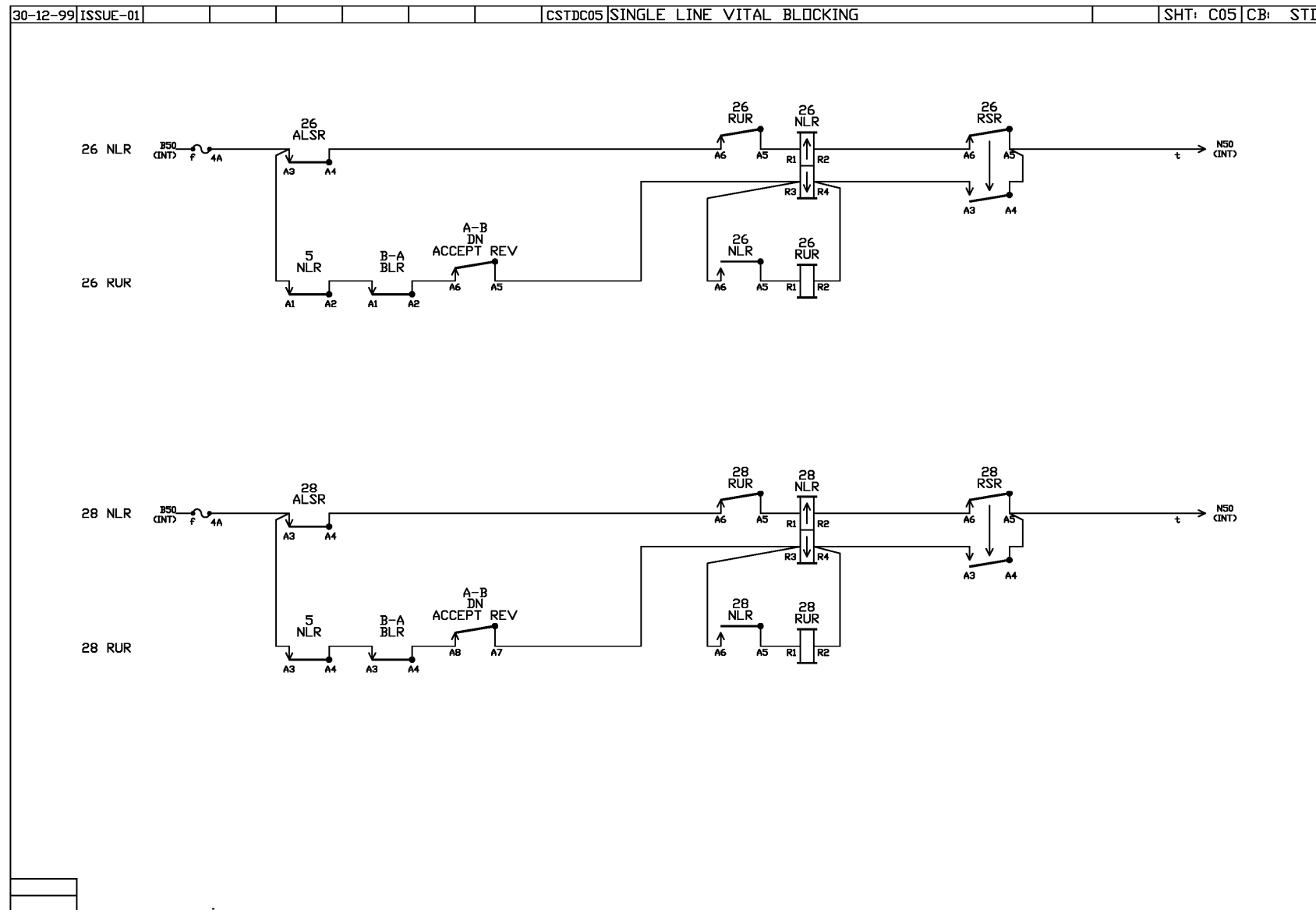


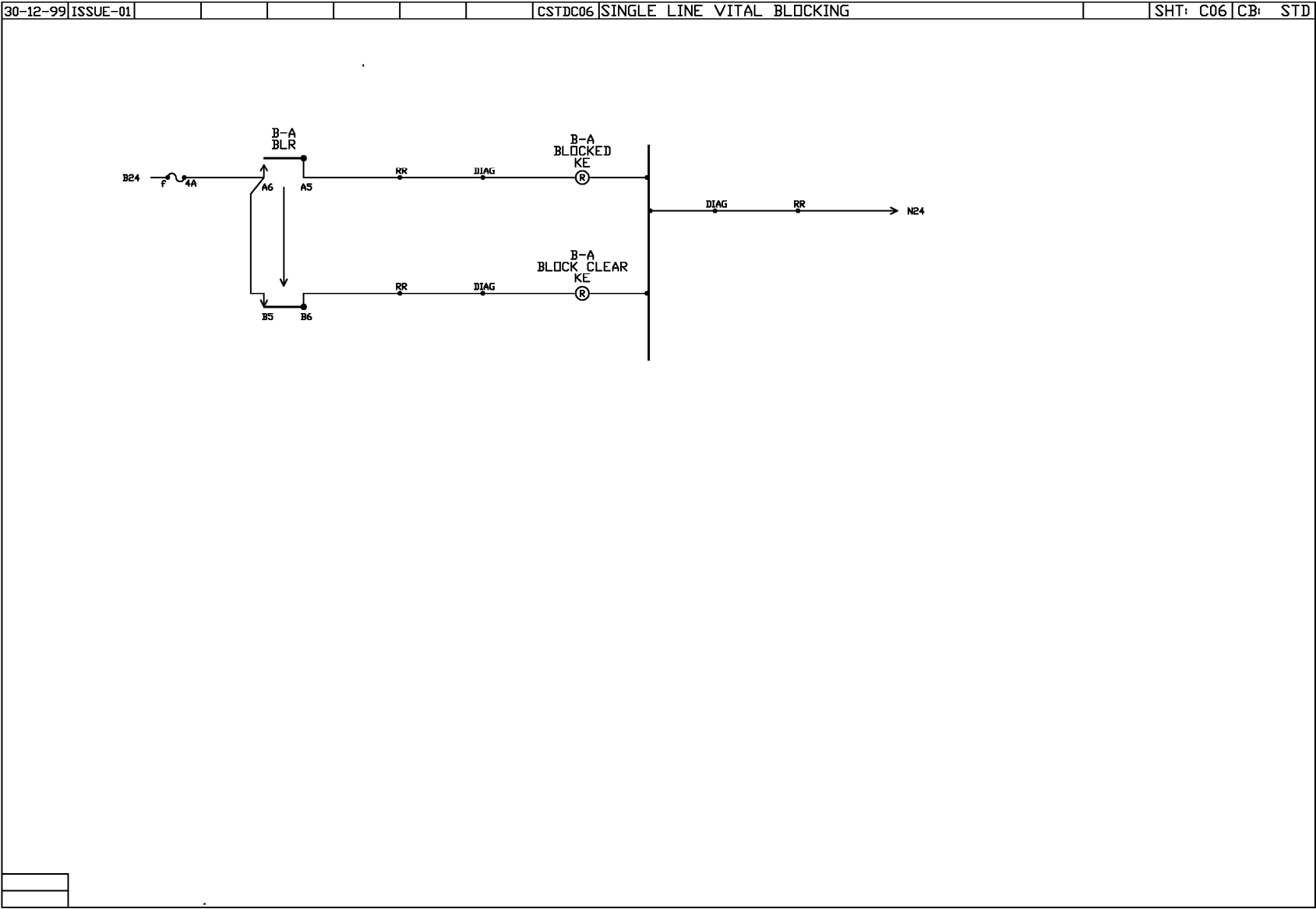


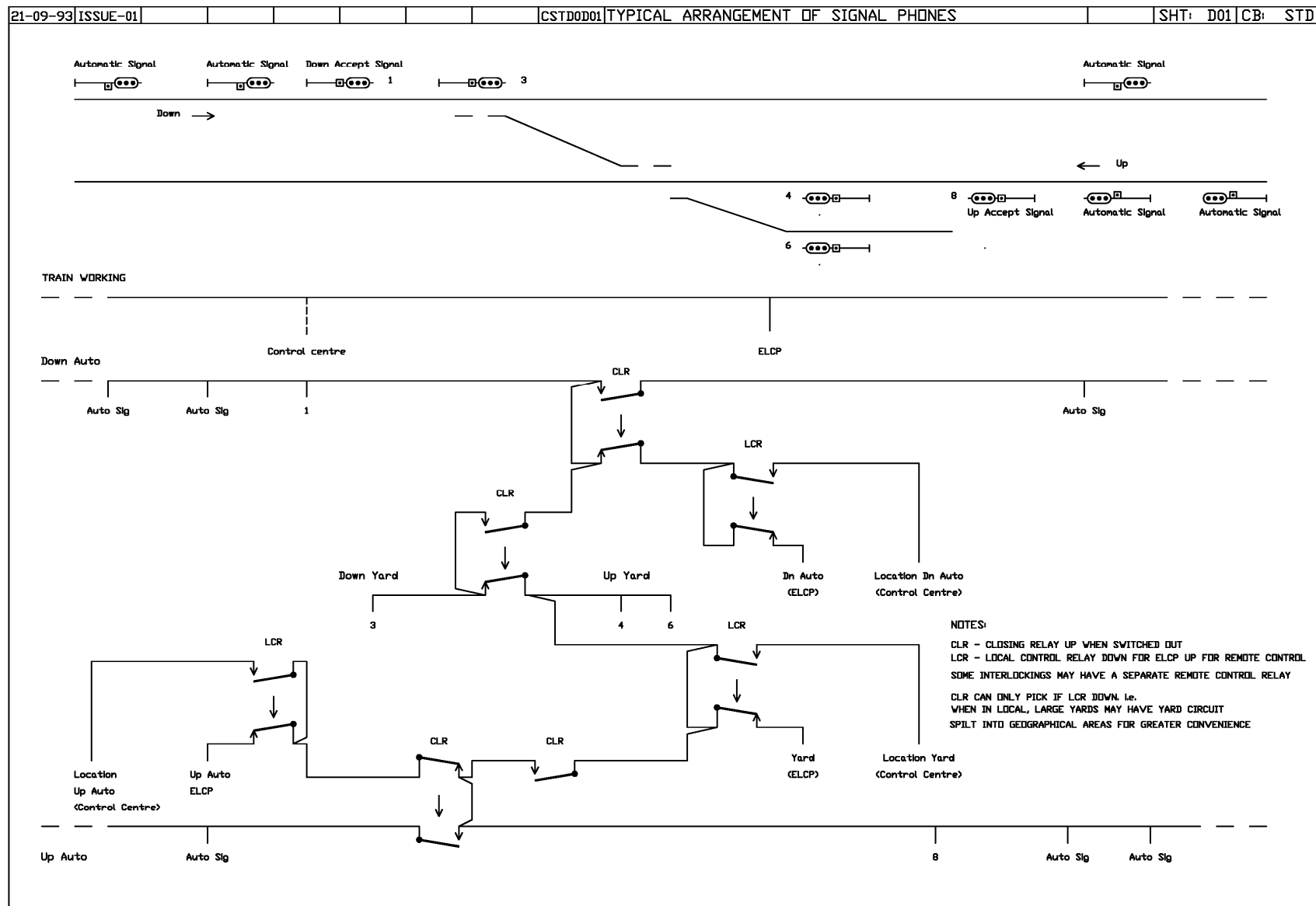
30-12-99	ISSUE-01						CSTD03	SINGLE LINE VITAL BLOCKING		SHT: C03	CB: STD
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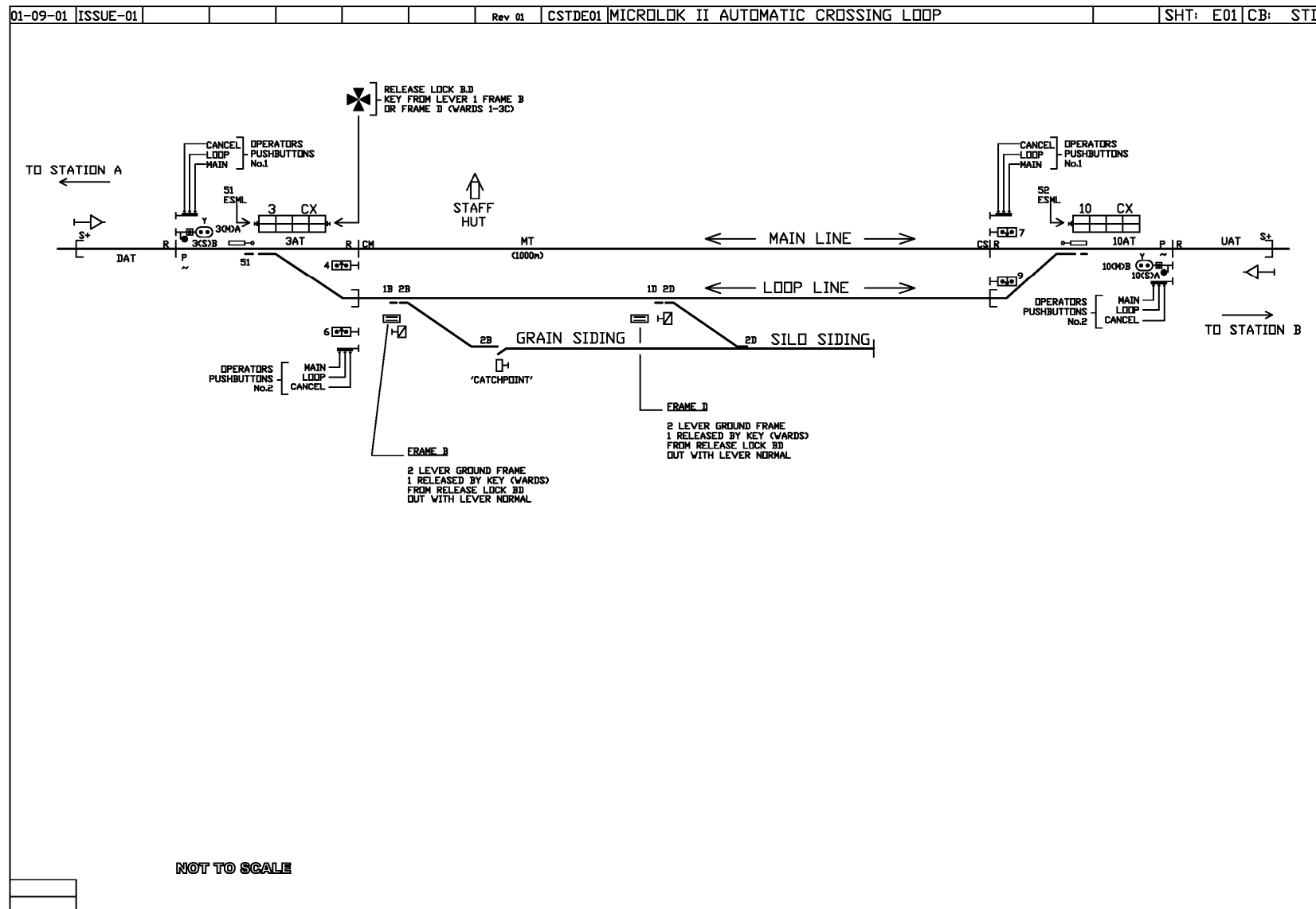


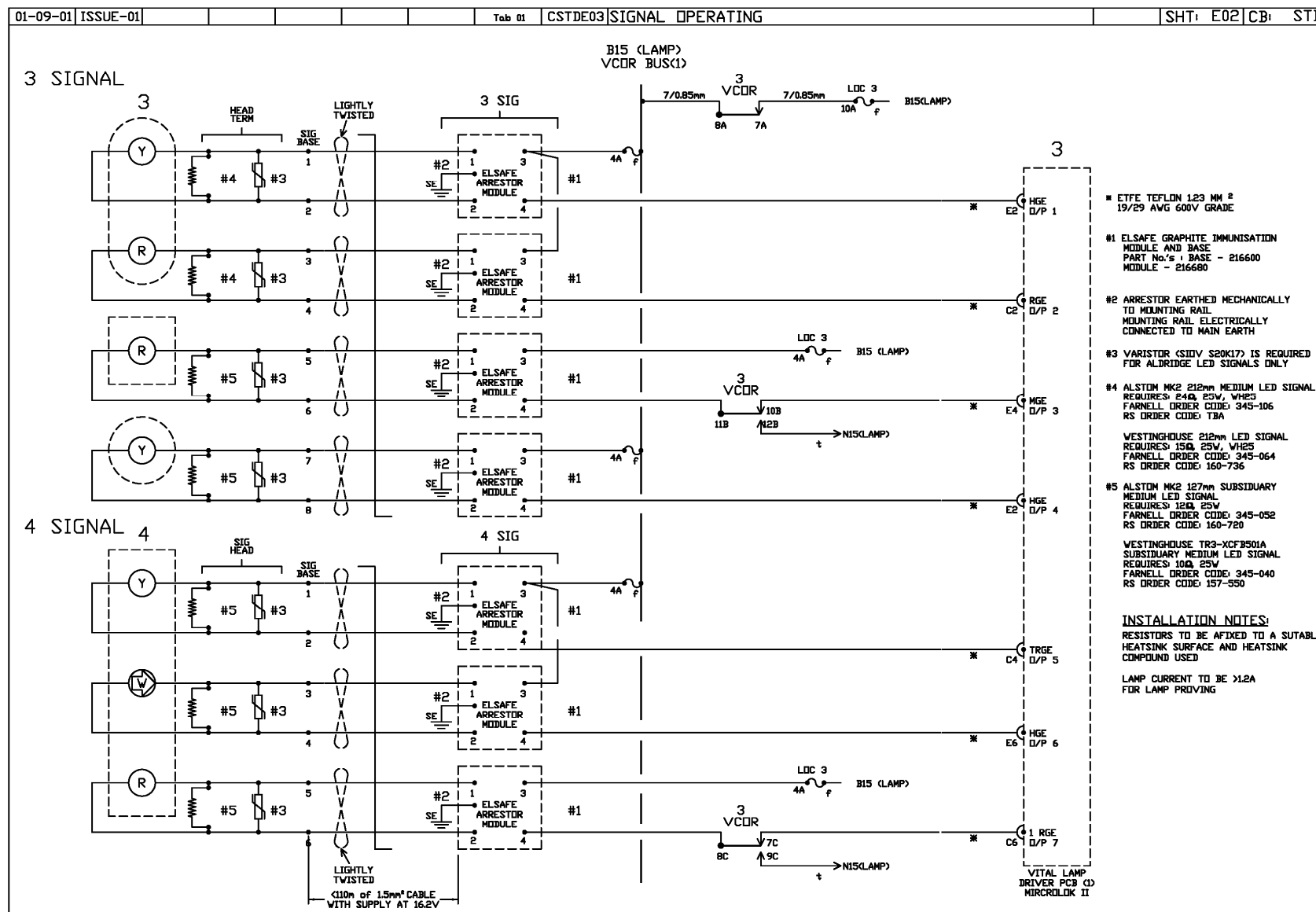


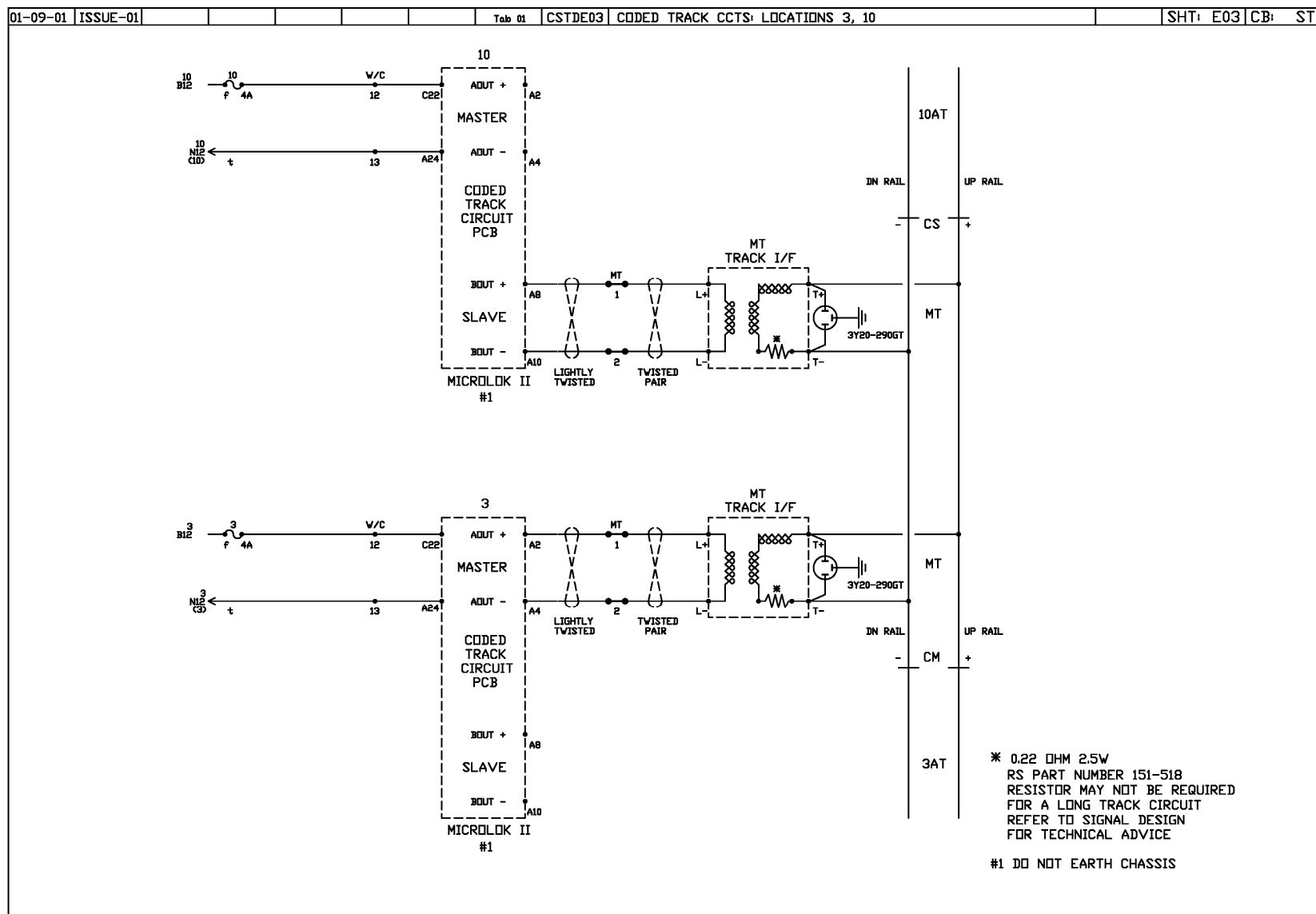


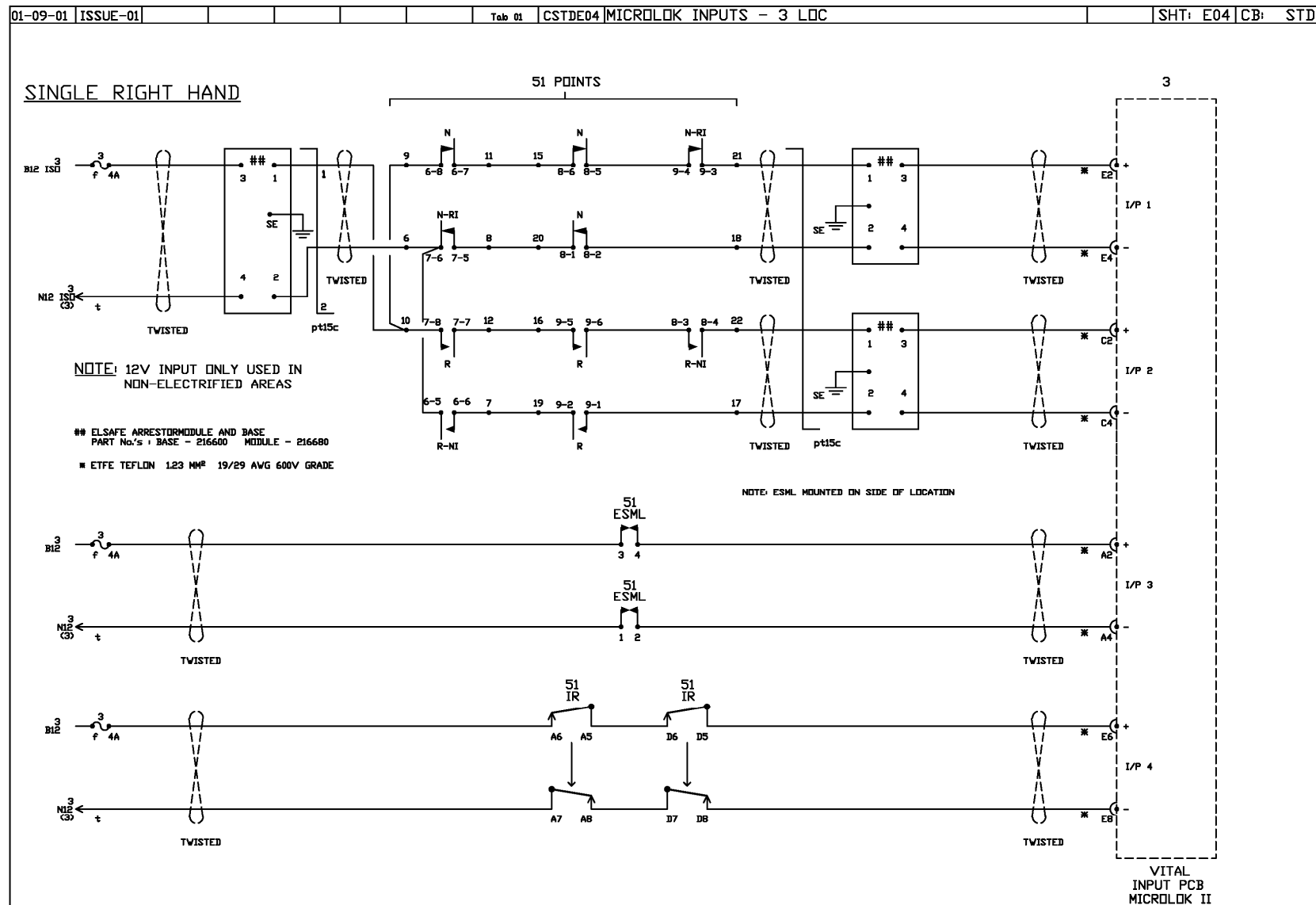


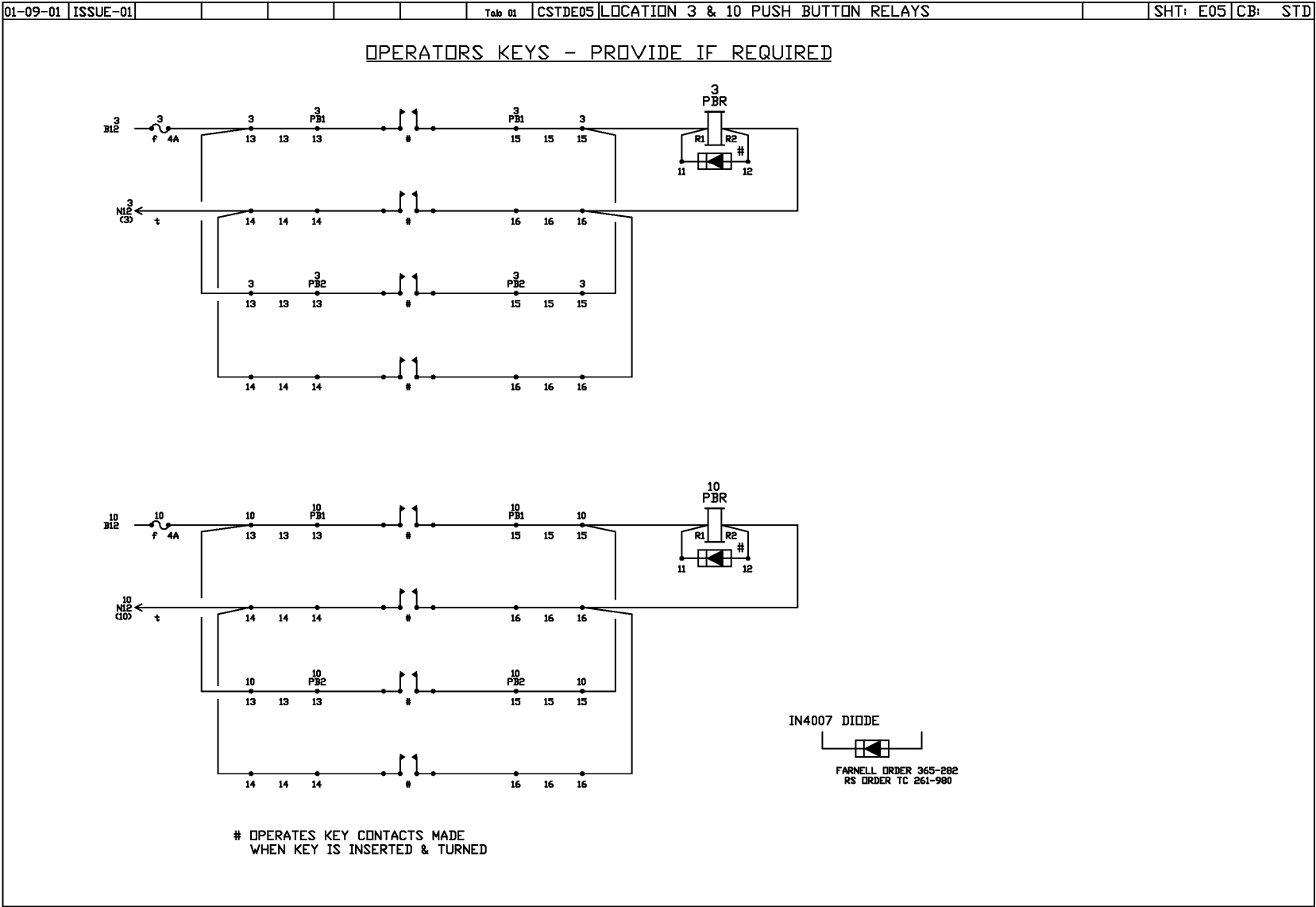


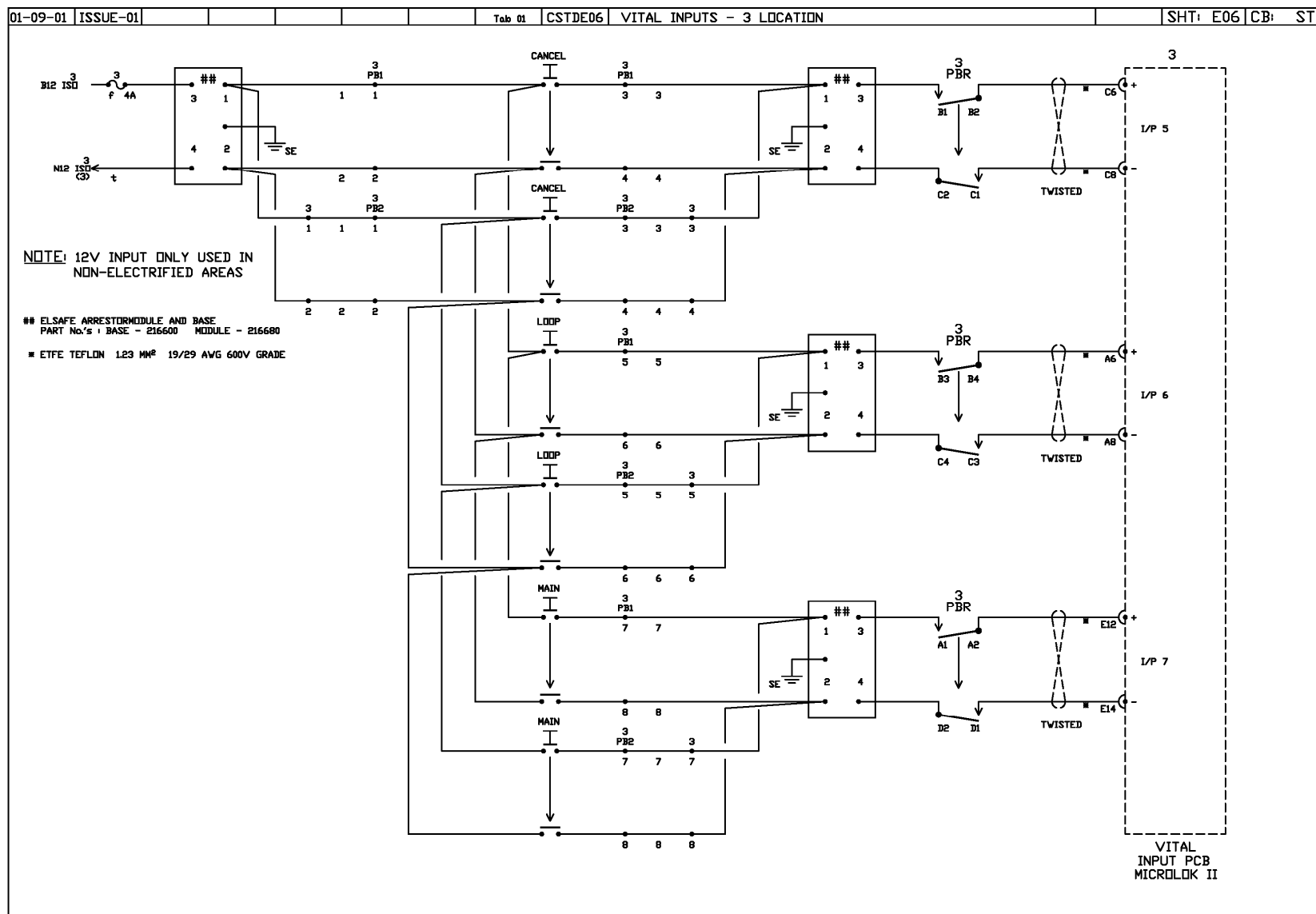


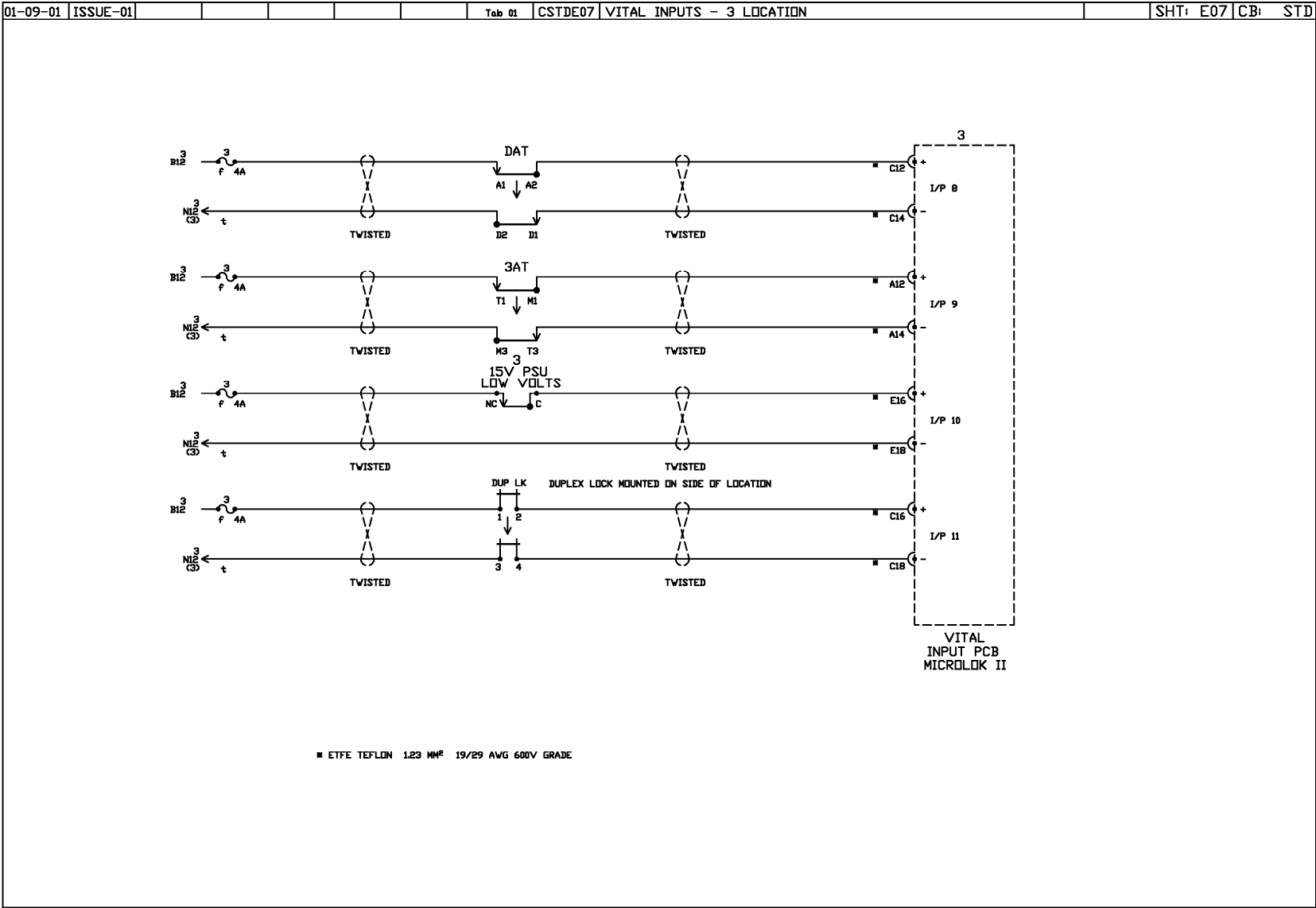


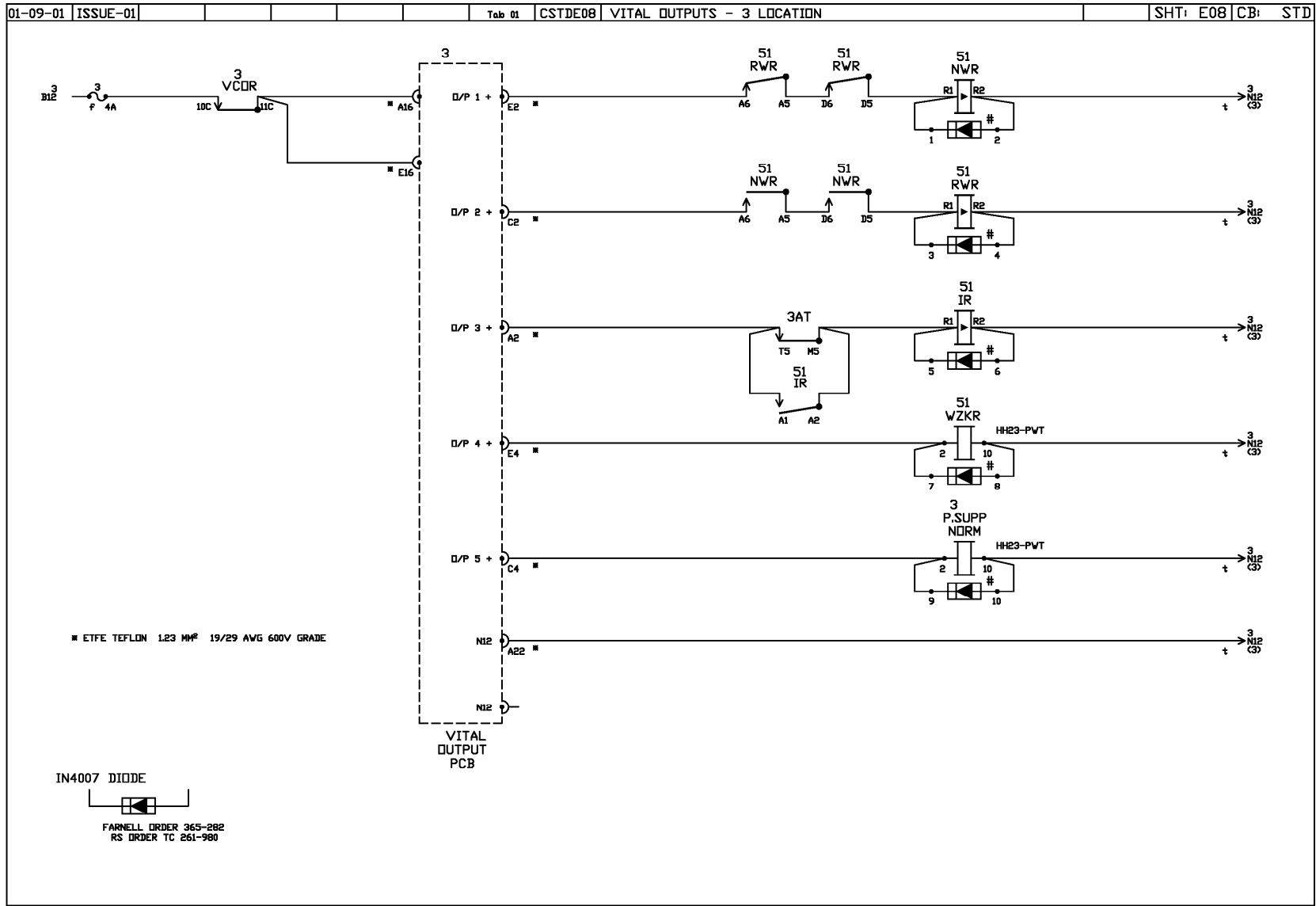


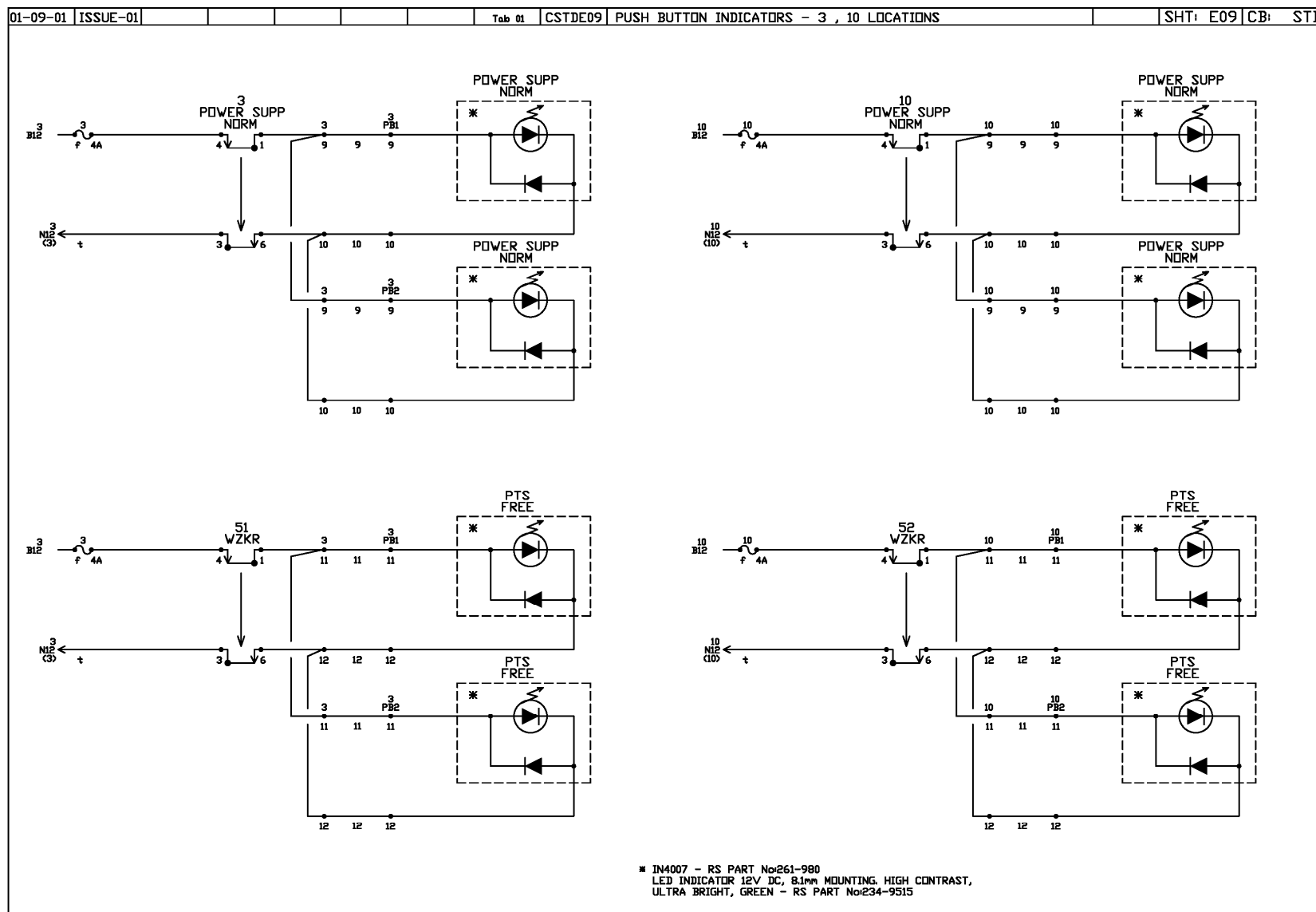


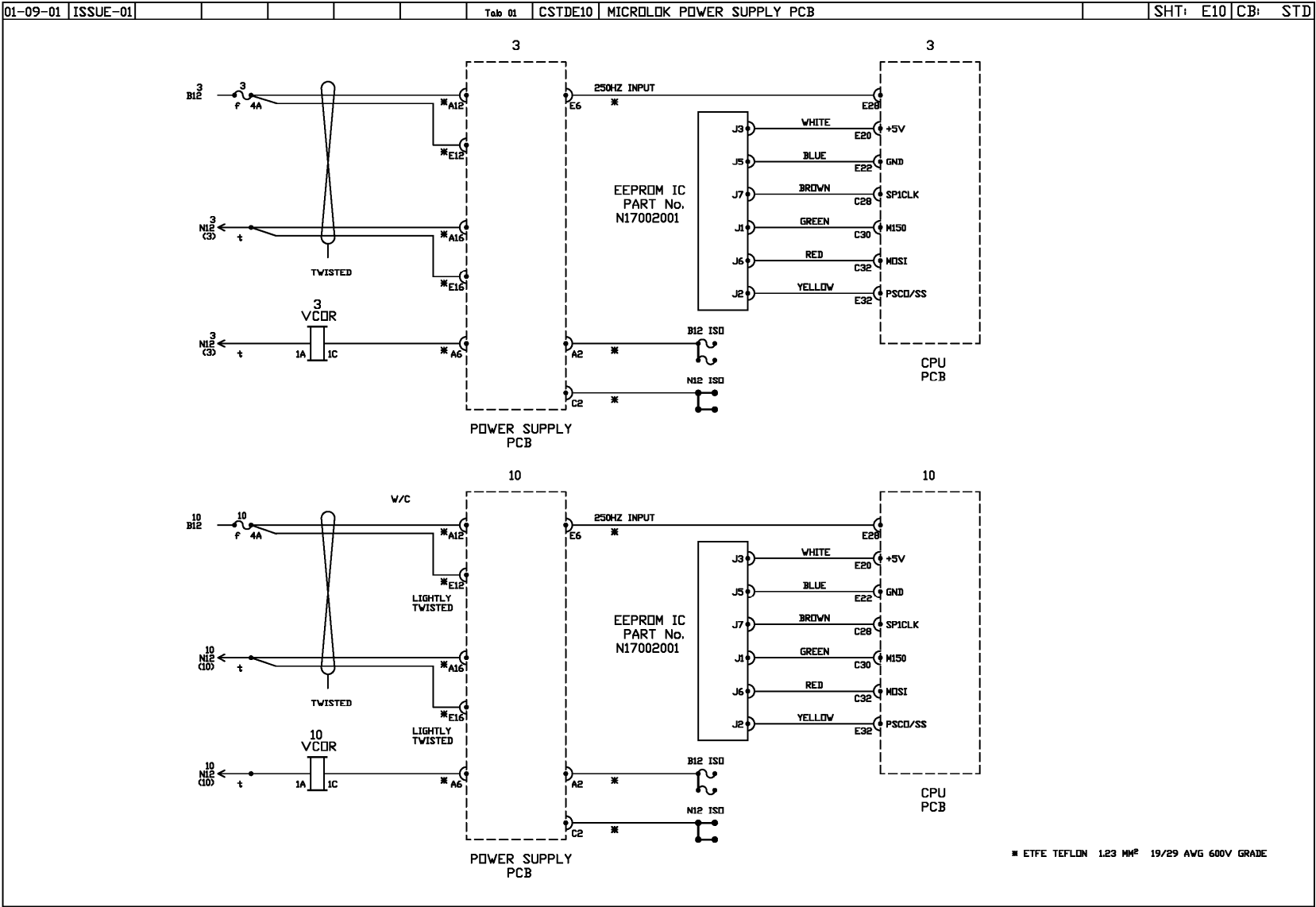


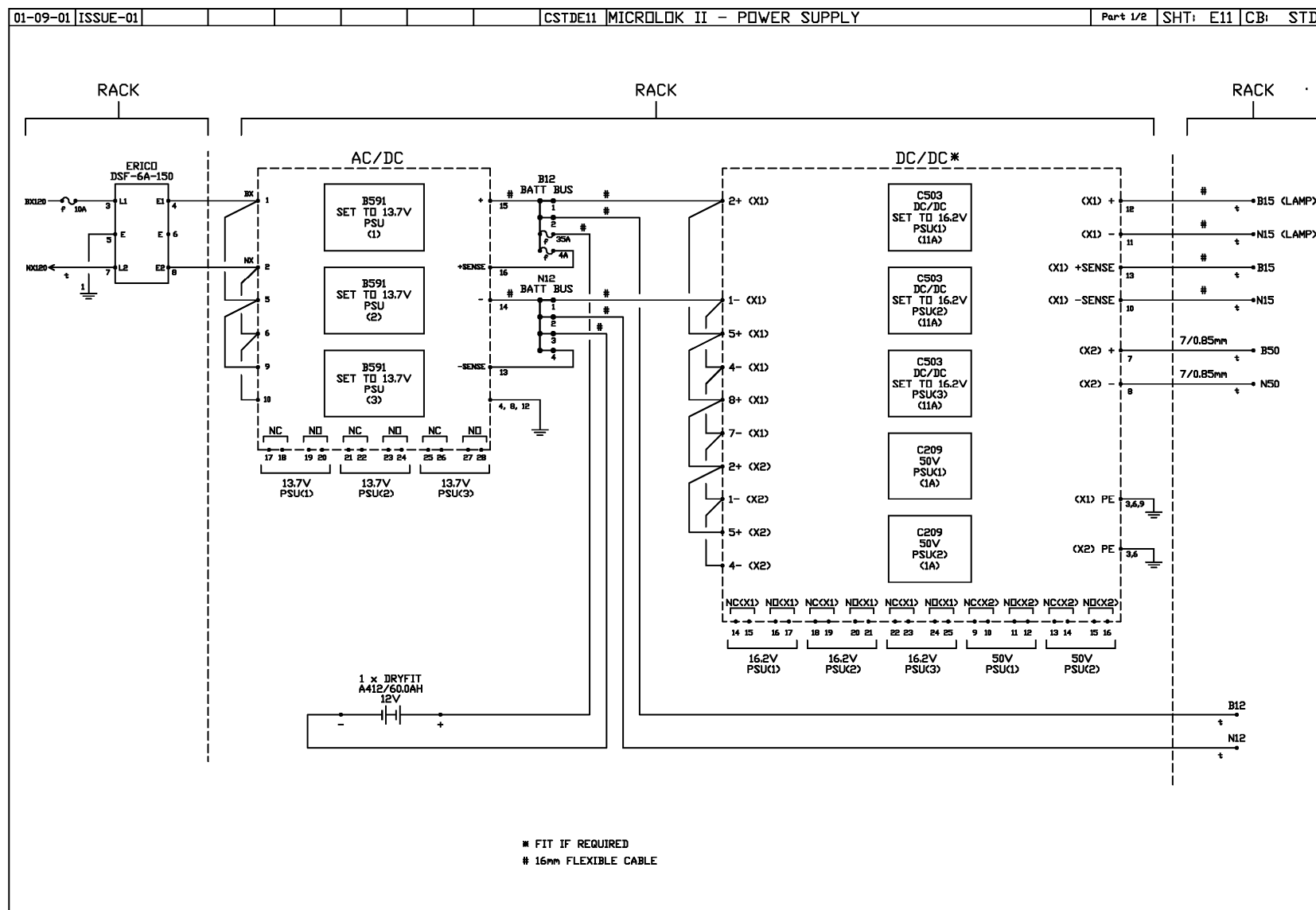


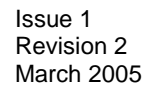


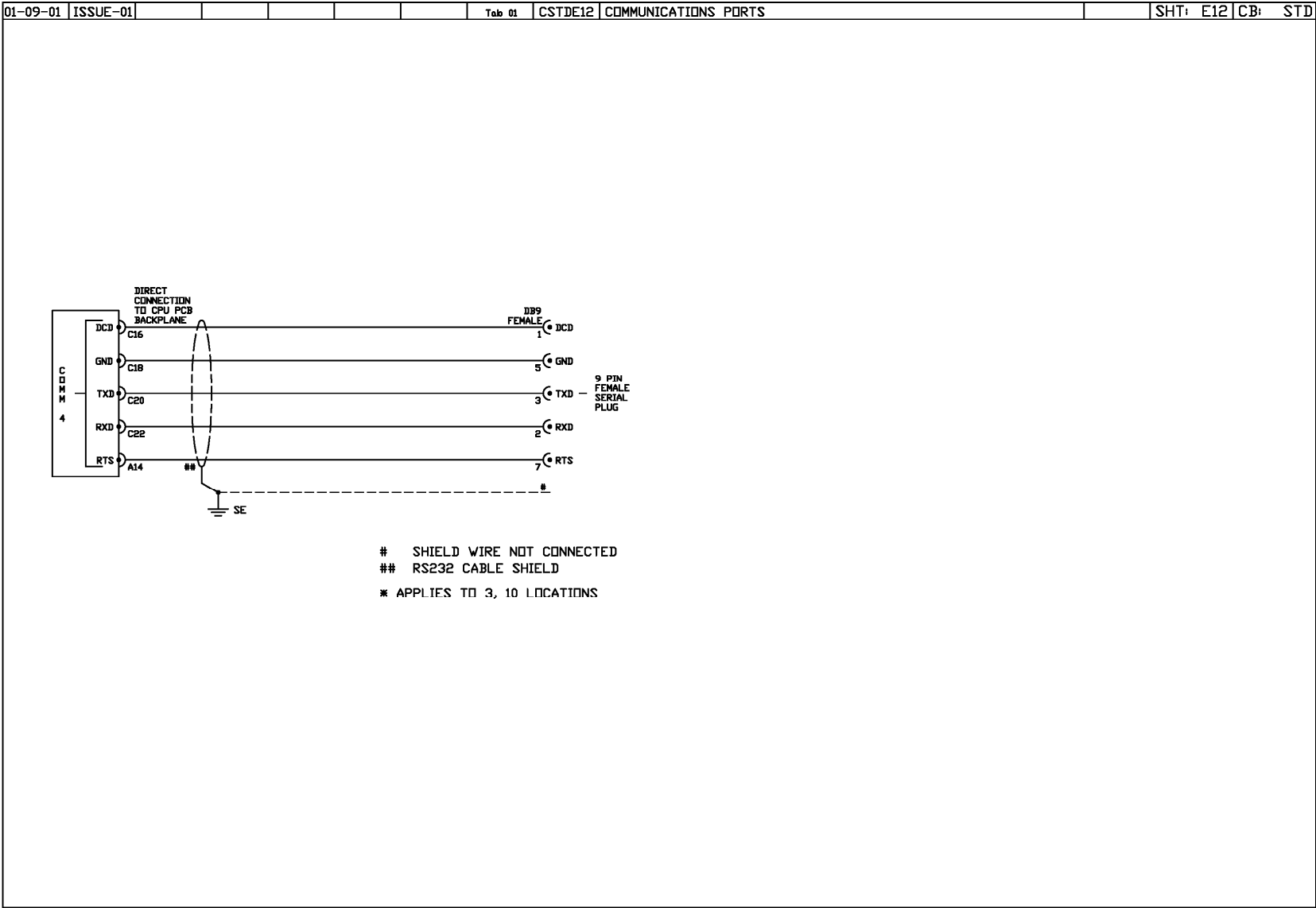


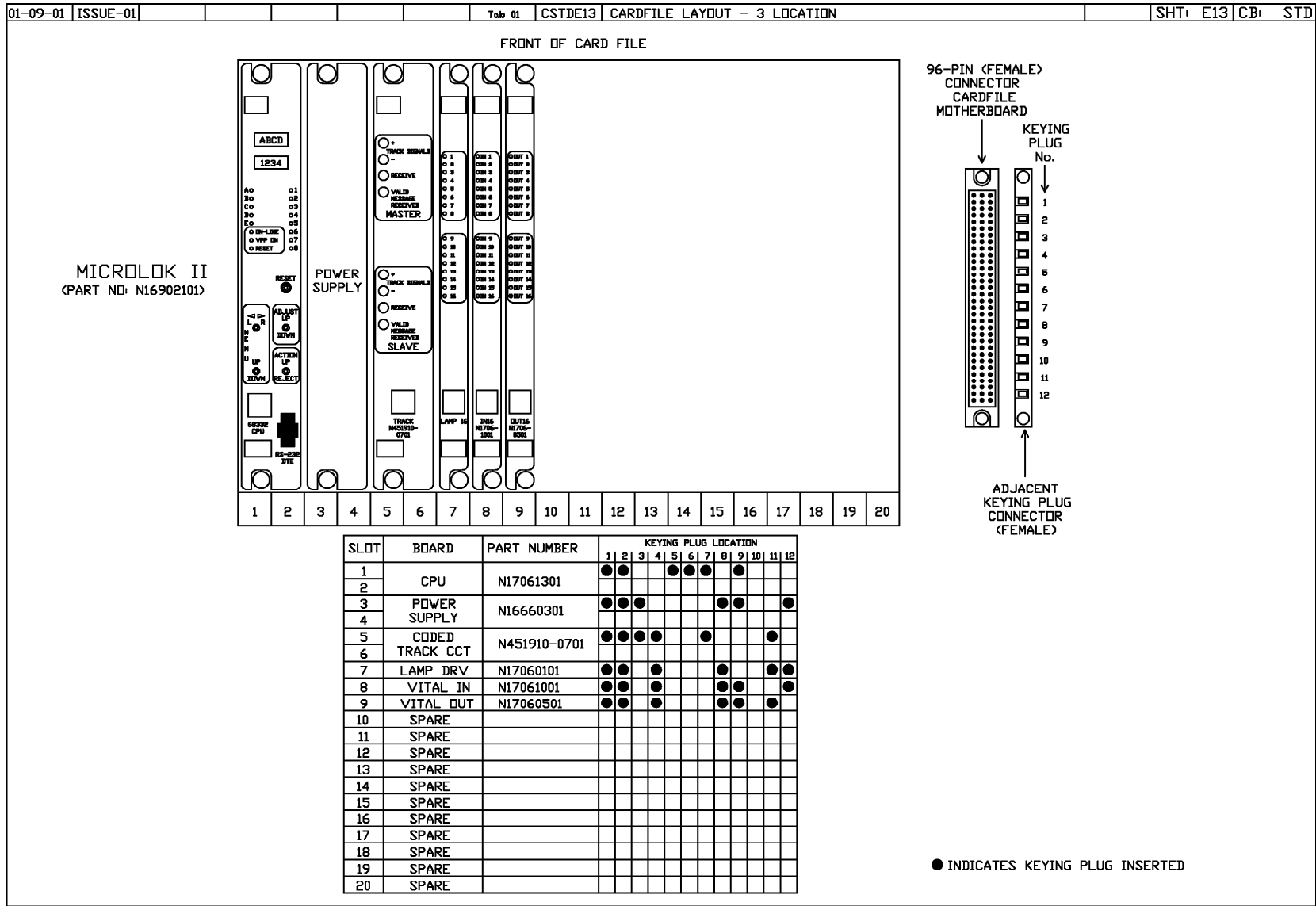


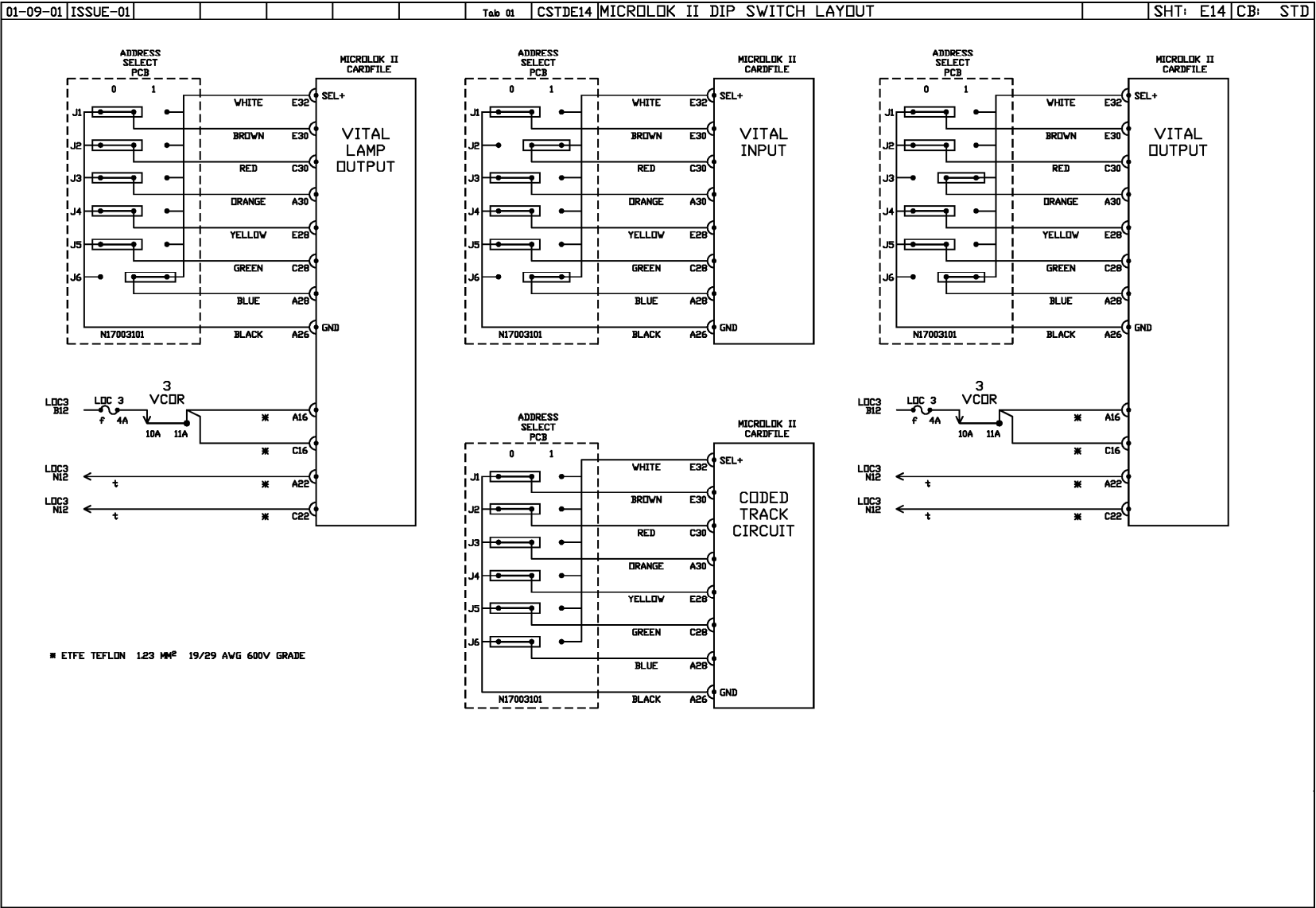


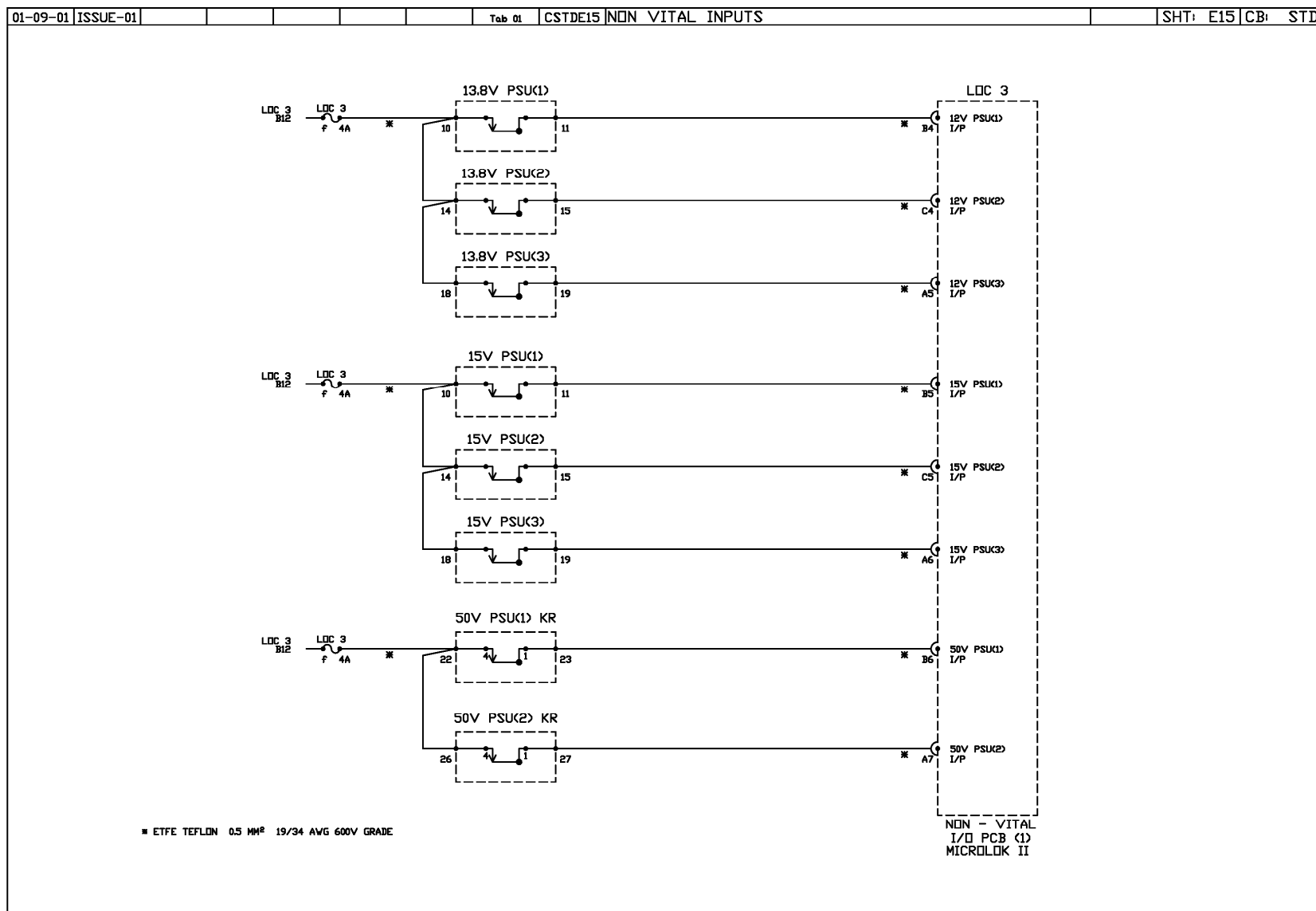


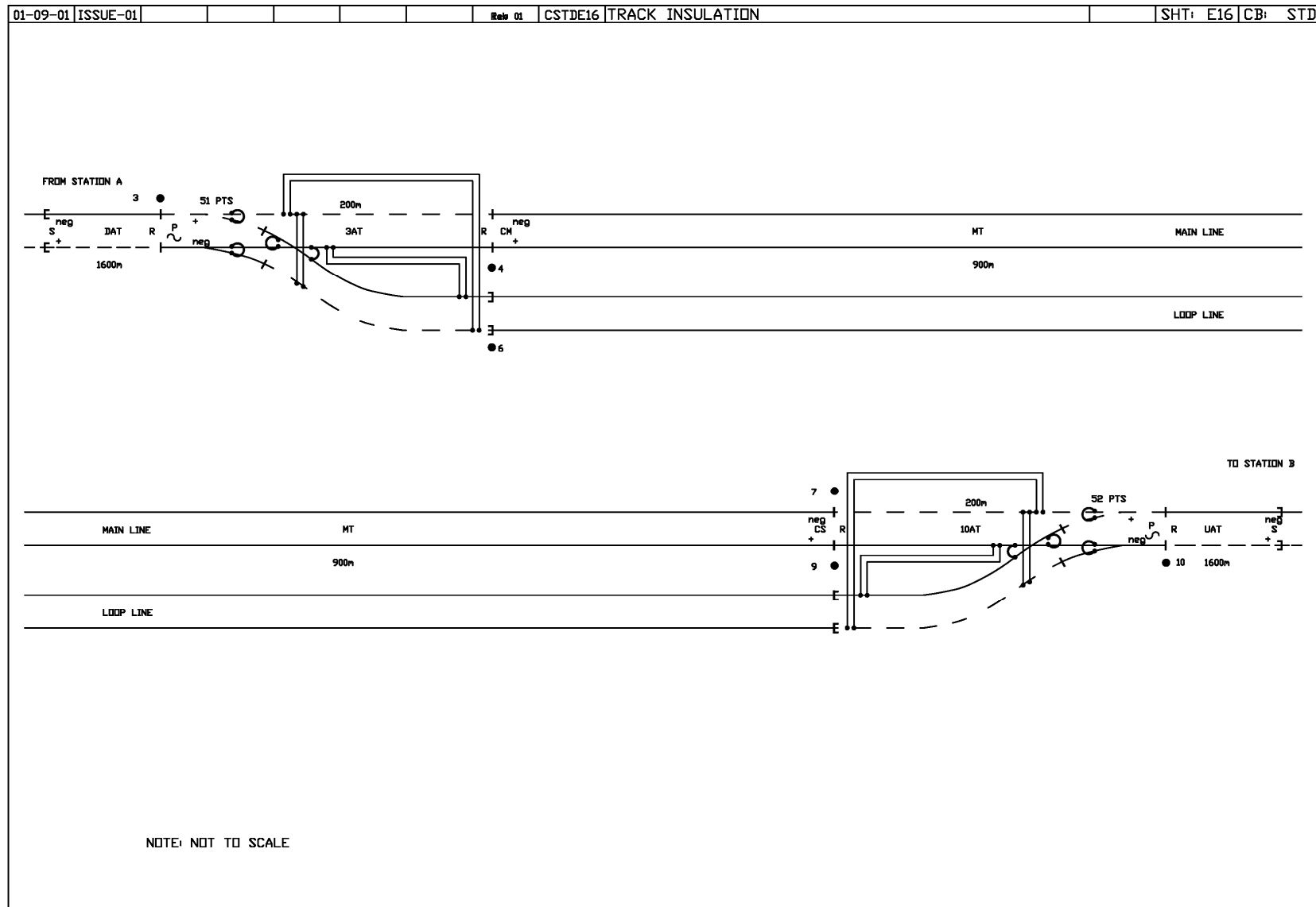


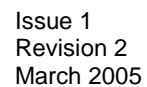








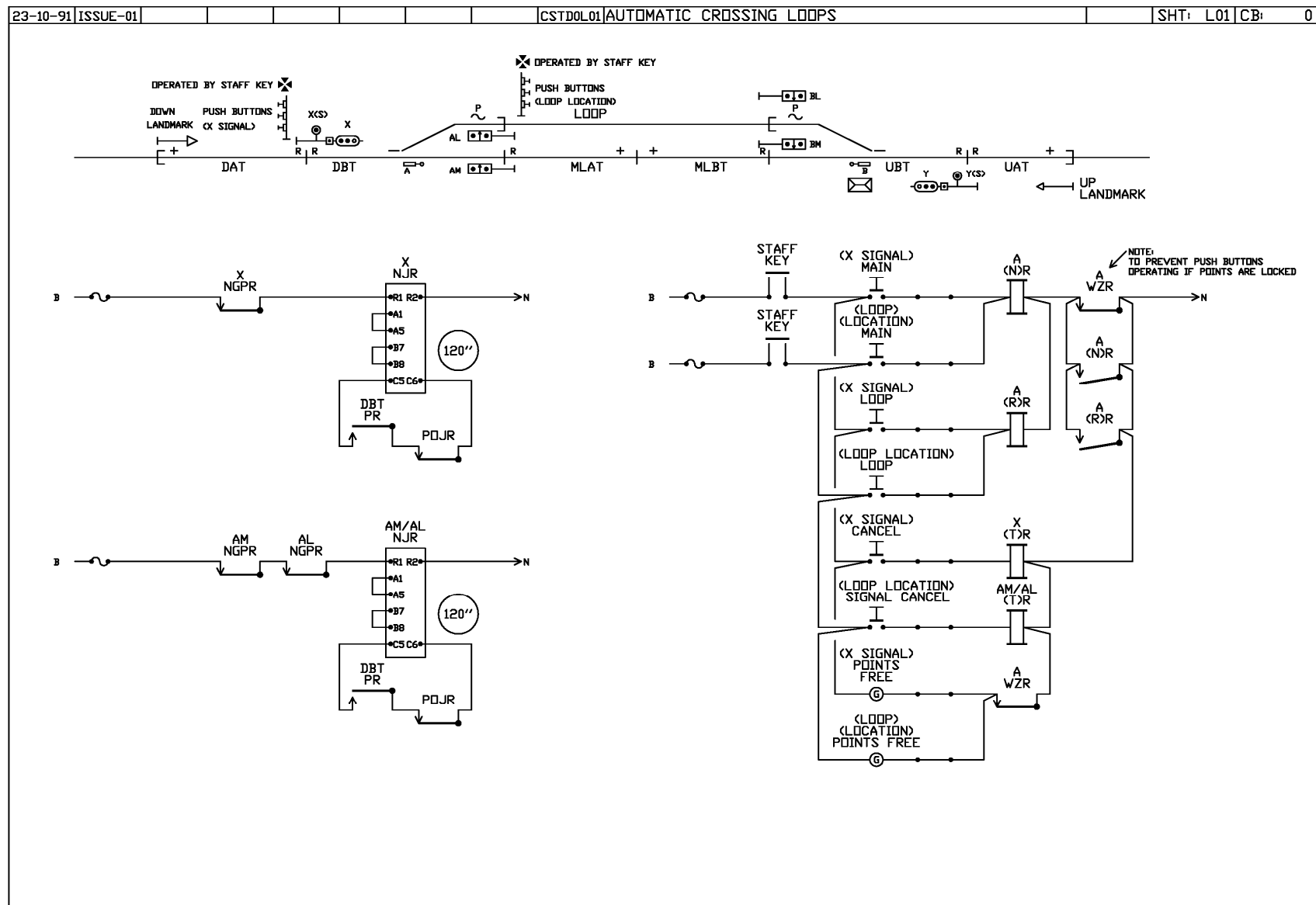




01-09-01	ISSUE-01					Rev 01	CSTD E18	MICROLOCK II DATA & STATEMENTS		SHT: E18	CB: STD
<pre> /* GENERIC MICROLOCK II PROGRAM ***** WARNING This is a vital interlocking program Changing of any statements can compromise the safe performance of this program ***** MICROLOCK II PROGRAM 3; INTERFACE //VITAL HARDWIRED I/O LOCAL BOARD: OUT_SLOT5 FIXED ENABLE: 1 TYPE: TRX.TRACK TRACKA: TRACK NAME: MT OUTPUT: MT.DOUT, MT.EOUT, MT.FOUT, MT.GOUT; INPUT: MT.DIN, MT.EIN, MT.FIN, MT.GIN; ADJUSTABLE LENGTH: 1; ADJUSTABLE ENABLE: 1; TRACKB: SPARE //----- BOARD: OUT_SLOT7 FIXED ENABLE: 1 TYPE: LAMP16 FIXED 16 WATT MODE 1 OUTPUT: 3HGE, 3RGE, 3MGE, 3SHGE, 4TRGE, 4HGE, 4BRGE, 6TRGE, 6HGE, 6RGE, SPARE, SPARE, SPARE, SPARE, SPARE, SPARE; LAMP.OUT: 3HGE LO, 3RGE LO, 3MGE LO, 3SHGE LO, 4TRGE LO, 4HGE LO, 4BRGE LO, 6TRGE LO, 6HGE LO, SPARE, SPARE, SPARE, SPARE, SPARE, SPARE, SPARE; //----- BOARD: IN_SLOT8 FIXED ENABLE: 1 TYPE: IN16 INPUT: 51NKR, 51RKR, 51ESMLR, 51IKR, 3.4.6TR, 3LOOP, 3MAIN, DAT, 3AT, 3PR, DUPLK, SPARE, SPARE, SPARE, SPARE, SPARE; //----- BOARD: OUT_SLOT9 FIXED ENABLE: 1 TYPE: OUT16 OUTPUT: 51NWR, 51RWR, 51IR, 51WJEP, 3PSNORMR, SPARE, SPARE, SPARE, SPARE, SPARE, SPARE, SPARE; //----- </pre>											
<pre> COMM // NON VITAL MAINTENANCE COMMUNICATIONS LINK LINK: ADJUSTABLE ENABLE: COMM1 PROTOCOL: GENISYS.SLAVE FIXED PORT: 4; ADJUSTABLE BAUD: 9600; FIXED STOPBITS: 1; FIXED PARITY: NONE; ADJUSTABLE KEY.ON.DELAY: 12; ADJUSTABLE KEY.OFF.DELAY: 12; ADJUSTABLE STALE.DATA.TIMEOUT: 5;SEC; ADJUSTABLE CARRIER.MODE: KEYED; ADJUSTABLE POINT.POINT: 1; ADJUSTABLE CRC.SIZE: 16; ADDRESS: 10 ADJUSTABLE ENABLE: 1 NV.INPUT://SERIAL INPUT BITS FROM MAINTAINERS CITECT INTERFACE 3LOOP_MTC, 3MAIN_MTC, 3.4.6T_MTC, SPARE, //BYTE 0 SPARE, SPARE, SPARE, SPARE, NV.OUTPUT://SERIAL OUTPUT BITS TO MAINTAINERS CITECT INTERFACE SPARE, SPARE, SPARE, SPARE, //BYTE 0 SPARE, SPARE, SPARE, SPARE, 3HGEK, 3RGEK, 3MGEK, 3SHGEK, //BYTE 1 4TRGEK, 4HGEK, 4BRGEK, SPARE, 6TRGEK, 6HGEK, 6BRGEK, SPARE, //BYTE 2 3HGE_LOK, 3RGE_LOK, 3MGE_LOK, 3SHGE_LOK, 4TRGE_LOK, 4HGE_LOK, 4BRGE_LOK, SPARE, //BYTE 3 6TRGE_LOK, 6HGE_LOK, 6BRGE_LOK, SPARE, MTPK, 3.4.6TK, DATK, 10ATPPK, //BYTE 4 3.4.6TK, 3LOOPK, 3MAINK, DUPLK, 51NKRK, 51RKRK, 51ESMLK, 51IKRK, //BYTE 5 51NWRK, 51RWRK, 51IK, 51WK, 3PSNORMK, SPARE, UATPPPK, SPARE, //BYTE 6 MTJK, UATPPPK, SPARE, SPARE, DOUTK, EOUTK, FOUTK, GOUTK, //BYTE 7 DINK, EINK, FINK, GINK, OUT_SLOT5.MT.TDOUTK, OUT_SLOT5.MT.TDINK, SPARE, //BYTE 8 3ALSK, 4ALSK, 6ALSK, SPARE, //INTERNAL VARIABLE FUNCTIONS FOR CONTROL OF 3, 4 AND 6 SIGNALS BOOLEAN BITS 3ATPR, DATPR, 10ATPR, UATPPPR, MTPR, MTJR, 3MAHR, 3SBHR, 4HR, 6HR, 3MAUCR, 3SBCR, 4UCR, 6UCR, 3ALSR, 4ALSR, 6ALSR, 3ALSJR, 4ALSJR, 6ALSJR, 3.4.6KR, 10TUMDKR, 3NGFR, 4NGFR, 6NGFR, 3MASR, 3SB.6SR, DDSR, DDSRINT, 3CCR, 10ALS.52NWK, 51NR, 51RR, 51NLR, 51RLR, 51NPR, 51RPR, 51WLESR, 51WCJR, 51WNJR, 51WNSR, 51WTJR, 51NWK, 51RWR, 51WJR, 51NWCJR, KILL, POJR; </pre>											

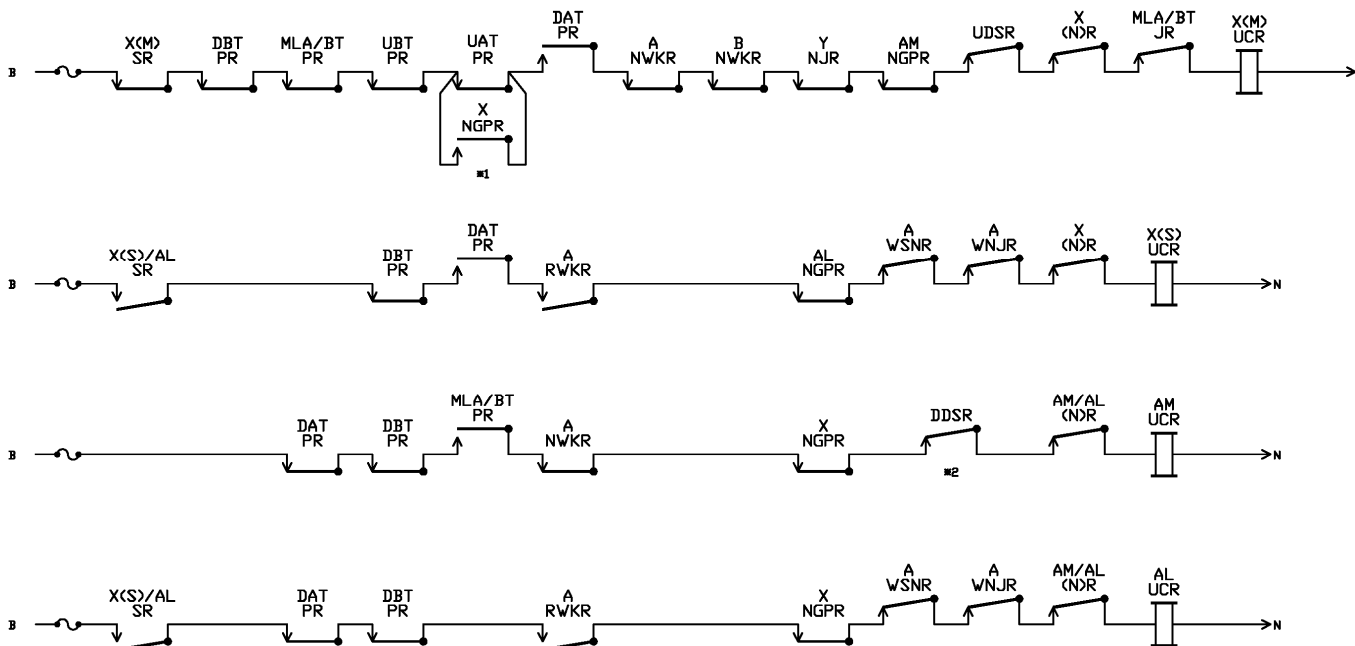
01-09-01	ISSUE-01					Rev 01	CSTDE19 MICROLOCK II DATA & STATEMENTS		SHT: E19	CB: STD
<pre> // MISCELLANEOUS SIGNAL, TRACK AND POINT TIMERS TIMER BITS FIXED 3ATPR: SET-20:SEC CLEAR=0:SEC; DATPR: SET-3:SEC CLEAR=0:SEC; MTPR: SET-3:SEC CLEAR=0:SEC; MTJR: SET-300:SEC CLEAR=0:SEC; 3MAHR: SET-15:SEC CLEAR=0:SEC; 3SBHR: SET-15:SEC CLEAR=0:SEC; 3ALSJR: SET-120:SEC CLEAR=0:SEC; 4ALSJR: SET-120:SEC CLEAR=0:SEC; 6ALSJR: SET-120:SEC CLEAR=0:SEC; 3ECR: SET-0:SEC CLEAR=500:MSEC; 51NPR: SET-0:SEC CLEAR=1:SEC; 51RPR: SET-0:SEC CLEAR=1:SEC; 51WJR: SET-7:SEC CLEAR=0:SEC; 51WCEJR: SET-15:SEC CLEAR=0:SEC; 51NWCEJR: SET-30:SEC CLEAR=0:SEC; 51WNJR: SET-10:SEC CLEAR=0:SEC; DDSR: SET-0:SEC CLEAR=1:SEC; DDSRINT: SET-0:SEC CLEAR=1:SEC; POJR: SET-30:SEC CLEAR=0:SEC; 10ATPPR: SET-0:SEC CLEAR=1:SEC; ADJUSTABLE 51WTJR: SET-10:SEC CLEAR=0:SEC; LOG BITS LOCAL_IO, COMM_IO, APPLICATION_VARS; CONSTANTS BOOLEAN FALSE = 0; TRUE = 1; CONFIGURATION SYSTEM ADJUSTABLE DEBUG PORT ADDRESS: 4; ADJUSTABLE DEBUG PORT BAUDRATE: 9600; ADJUSTABLE LOGIC TIMEOUT: 2:SEC; ADJUSTABLE DELAY_RESET: 100:MSEC; USER NUMERIC CARDFILE NUMBER: "Set Cardfile Number"; VERSION NUMBER: "Set Version Number"; LOGIC BEGIN //PROGRAM VERIFICATION LOGIC ASSIGN KILLZ TO KILL; //CONDITIONAL POWER SUPPLY LOGIC ASSIGN TRUE TO CPS.ENABLE; //TRACK REPEATERS ASSIGN OUT_SLOT5.MT.NORMAL TO MTJR; ASSIGN 3AT TO 3ATPR; ASSIGN DAT TO DATPR; //TRACK TIMERS ASSIGN ~MTJR TO MTJR; //DOWN DIRECTION STICES ASSIGN ~51NPR * 51NWKR * (~MTJR * (~3ATPR * 10ATPPR + DDSR) + ~10ATPPR * DDSR) TO DDSR; ASSIGN (~MTJR * (~3ATPR * 10ATPPR + DDSRINT) + ~10ATPPR * DDSRINT) TO DDSRINT; </pre>										
<pre> //NORMAL RELAY ASSIGN ~51NPR * ~51RPR * 3ATPR * ~51WNJR * (3.4.6TR + (3.4.6T_MTC * COMM1.10.STATUS) + 3.4.6NR) TO 3.4.6NR; //SIGNAL NORMAL RELAY ASSIGN ~3MAUCR * ~3SBUCR * ~3MAHR * ~3SBHR TO 3NGPR; ASSIGN ~4UCR * ~4HR TO 4NGPR; ASSIGN ~6UCR * ~6HR TO 6NGPR; //APPROACH LOCK STICK RELAY ASSIGN 3NGPR * (~3ATPR * POJR + 3ALSJR + 3ALSJR) TO 3ALSJR; ASSIGN 4NGPR * (~3ATPR * POJR + 4ALSJR + 4ALSJR) TO 4ALSJR; ASSIGN 6NGPR * (~3ATPR * POJR + 6ALSJR + 6ALSJR) TO 6ALSJR; //STICK RELAY ASSIGN 3ATPR * (DATPR + 51NPR + 3MASR) TO 3MASR; ASSIGN 3ATPR * (51RPR + 3SB.6SR) TO 3SB.6SR; //STICK TIMER RELAY ASSIGN 3NGPR TO 3ALSJR; ASSIGN 4NGPR TO 4ALSJR; ASSIGN 6NGPR TO 6ALSJR; //ROUTE CHECK RELAYS ASSIGN ~10TUMDNR * 3MASR * 3ATPR * MTPR * 10ATPPR * (UATPPR + 3MAHR) * ~DATPR * 10ALS.52NWKR * 51NWKR * ~4HR * ~3.4.6NR * DUPLK TO 3MAUCR; ASSIGN ~10TUMDNR * 3SB.6SR * 3ATPR * ~DATPR * (10ALS.52NWKR + MTJR * ~DDSRINT) * 51RWKR * ~6HR * ~3.4.6NR * ~51WNSR * DUPLK TO 3SBUCR; ASSIGN DATPR * 3ATPR * ~MTPR * 51NWKR * ~3MAHR * ~DDSR * ~3.4.6NR * DUPLK TO 4UCR; ASSIGN 3SB.6SR * DATPR * 3ATPR * 51RWKR * ~3SBHR * ~3.4.6NR * ~51WNSR TO 6UCR; //SIGNAL OPERATING ASSIGN ~51WJR * 3MAUCR TO 3MAHR; ASSIGN ~51WJR * 3SBUCR TO 3SBHR; ASSIGN ~51WJR * 4UCR TO 4HR; ASSIGN ~51WJR * 6UCR TO 6HR; //POINTS ASSIGN 3MAIN + (3MAIN_MTC * COMM1.10.STATUS) TO 51NR; ASSIGN 3LOOP + (3LOOP_MTC * COMM1.10.STATUS) TO 51RR; ASSIGN 51WLESR * ~51RR * (51NR + 51NWCEJR) * (51WJR + 51NLR + 51NPR) TO 51NPR; ASSIGN 51WLESR * 51RR * ~51NR * (51WJR + 51RLR + 51RPR) TO 51RPR; ASSIGN 51NLR + 51RLR + 51WLESR TO 51WLESR; ASSIGN ~51WLESR * 51WJR TO 51NWCEJR; ASSIGN 51WLESR * ~51NPR * ~51RPR * ~51NLR * ~51RLR TO 51WCEJR; ASSIGN 51WLESR * ~51RR * ~51NLR * (~3ATPR + 51WNSR + 3.4.6TR + (3.4.6T_MTC * COMM1.10.STATUS)) TO 51WNSR; ASSIGN (((51NPR + 51WNJR) * 51WJR) + 51NLR) * ~51RLR * (~51RPR + (~51WJR * 51NLR)) + ((~51WLESR + 51WCEJR) * 51NR * ~51RR * ~51RLR * ~51NLR) TO 51NLR; </pre>										

01-09-01	ISSUE-01				Rev 01	CSTD20	MICROLOCK II DATA & STATEMENTS		SHT: E20	CB: STD
ASSIGN	51NLR					TO 51NWR;	//NON VITAL INDICATION LOGIC - TO MAINTAINERS CITECT INTERFACE			
ASSIGN	((51RPR * 51WJER) + 51RLR) * ~51NLR * (~51NPR * ~51WNJR + (~51WJER * 51RLR)) + (~51WLESR + 51WCEJR) * 51RKR * ~51NKR * ~51NLR * ~51RLR					TO 51RLR;	NV.ASSIGN 3HGE	TO 3HGEK;		
ASSIGN	51RLR					TO 51RNR;	NV.ASSIGN 3RGE	TO 3RGEK;		
ASSIGN	3ALS * 4ALS * 6ALS * 3ATPR * (((~10TUMDNR * 10ALS.52NWK * MTFR * 10ATPPR) + DDSR + MTJR) * 51NLR * ~51RPR) + (51RLR * ~51NPR) + ~51WLESR					TO 51WJER;	NV.ASSIGN 3SHGE	TO 3SHGEK;		
ASSIGN	3ALS * 6ALS * 3ATPR * 51WNSR					TO 51WNJR;	NV.ASSIGN 4TRGE	TO 4TRGEK;		
ASSIGN	((3ATPR * 3ALS) + (~51IKR * 51IR)) * 51ESMLR * ((51NLR * ~51NKR) + (51RLR * ~51RKR)) * ~51WTJR					TO 51IR;	NV.ASSIGN 4BRGE	TO 4BRGEK;		
ASSIGN	51ESMLR * ((51NLR * ~51NKR) + (51RLR * ~51RKR))					TO 51WTJR;	NV.ASSIGN 6TRGE	TO 6TRGEK;		
ASSIGN	51ESMLR * 51IKR * 51NLR * 51NKR * ~51RKR * ~51RPR					TO 51NKR;	NV.ASSIGN 6HGE	TO 6HGEK;		
ASSIGN	51ESMLR * 51IKR * 51RLR * 51RKR * ~51NKR * ~51NPR					TO 51NKR;	NV.ASSIGN 6BRGE	TO 6BRGEK;		
ASSIGN	51WJER					TO 51WJER;	NV.ASSIGN 3RGE LO	TO 3RGE LOK;		
//TRACK CODES							NV.ASSIGN 3RGE LO	TO 3RGE LOK;		
ASSIGN	3ALS * 51NWK * 3ATPR * DATPR * DUPLK					TO MT.DOUT;	NV.ASSIGN 3RGE LO	TO 3RGE LOK;		
ASSIGN	3ALS * 51NWK * 3ATPR * ~DATPR * DUPLK					TO MT.EOUT;	NV.ASSIGN 4TRGE LO	TO 4TRGE LOK;		
ASSIGN	3ALS * 51NWK * ~3ATPR * DATPR * DUPLK					TO MT.FOUT;	NV.ASSIGN 4BRGE LO	TO 4BRGE LOK;		
ASSIGN	3ALS * 51NWK * ~3ATPR * ~DATPR * DUPLK					TO MT.GOUT;	NV.ASSIGN 6TRGE LO	TO 6TRGE LOK;		
ASSIGN	MT.DIN + MT.EIN + MT.FIN + MT.GIN					TO 10ALS.52NWK;	NV.ASSIGN 6BRGE LO	TO 6BRGE LOK;		
ASSIGN	MT.DIN + MT.EIN					TO 10ATPPR;	NV.ASSIGN MTFR	TO MTFR;		
ASSIGN	MT.DIN + MT.FIN					TO UATPPR;	NV.ASSIGN MTJR	TO MTJR;		
ASSIGN	OUT_SLOT5.MT.TDIN					TO 10TUMDNR;	NV.ASSIGN DAT	TO DATK;		
//TUMBLE DOWN TRACK CODE							NV.ASSIGN 3AT	TO 3ATK;		
ASSIGN	~3ALS + ~51NWK + ~DUPLK					TO OUT_SLOT5.MT.TDOUT;	NV.ASSIGN 10ATPPR	TO 10ATPPK;		
//SIGNAL OPERATING LOGIC - 3							NV.ASSIGN UATPPR	TO UATPPPK;		
ASSIGN	3MAHR * ~3HGE_LO					TO 3HGE;	NV.ASSIGN 3.4.6TR + 3.4.6T MTCE	TO 3.4.6TR;		
ASSIGN	(~3MAHR + (3MAHR * 3HGE_LO)) * ~3RGE_LO					TO 3RGE;	NV.ASSIGN 3LOCP + 3LOCP MTCE	TO 3LOCP;		
ASSIGN	3SHR * ~3SHGE_LO					TO 3SHGE;	NV.ASSIGN 3MAIN + 3MAIN MTCE	TO 3MAIN;		
ASSIGN	~3MAHR + ~3ECR					TO 3MGE;	NV.ASSIGN DUPLK	TO DUPLK;		
ASSIGN	4HR * ~4HGE_LO					TO 4HGE;	NV.ASSIGN 51NKR	TO 51NKRK;		
ASSIGN	(~4HR + (4HR * 4HGE_LO)) * ~4TRGE_LO					TO 4TRGE;	NV.ASSIGN 51RKR	TO 51RKRK;		
ASSIGN	(~4HR + (4HR * 4HGE_LO)) * ~4BRGE_LO					TO 4BRGE;	NV.ASSIGN 51ESMLR	TO 51ESMLK;		
ASSIGN	6HR * ~6HGE_LO					TO 6HGE;	NV.ASSIGN 51IKR	TO 51IKRK;		
ASSIGN	(~6HR + (6HR * 6HGE_LO)) * ~6TRGE_LO					TO 6TRGE;	NV.ASSIGN 51NWR	TO 51NWRK;		
ASSIGN	(~6HR + (6HR * 4HGE_LO)) * ~6BRGE_LO					TO 6BRGE;	NV.ASSIGN 51RKR	TO 51RKRK;		
//SIGNAL LAMP LOGIC - 3							NV.ASSIGN 51IR	TO 51IK;		
ASSIGN	(~3MAHR * ~3RGE_LO) + (3MAHR * ~3HGE_LO)					TO 3ECR;	NV.ASSIGN 51WJER	TO 51WEK;		
//POWER SUPPLY							NV.ASSIGN 3PSNORMR	TO 3PSNORMK;		
ASSIGN	POJR					TO 3PSNORMR;	NV.ASSIGN MT.DOUT	TO DOUTK;		
ASSIGN	3PSR					TO POJR;	NV.ASSIGN MT.EOUT	TO EOUTK;		
							NV.ASSIGN MT.FOUT	TO FOUTK;		
							NV.ASSIGN MT.GOUT	TO GOUTK;		
							NV.ASSIGN MT.DIN	TO DINK;		
							NV.ASSIGN MT.EIN	TO EINK;		
							NV.ASSIGN MT.FIN	TO FINK;		
							NV.ASSIGN MT.GIN	TO GINK;		
							NV.ASSIGN OUT_SLOT5.MT.TDOUT	TO OUT_SLOT5.MT.TDOUTK;		
							NV.ASSIGN OUT_SLOT5.MT.TDIN	TO OUT_SLOT5.MT.TDINK;		
							NV.ASSIGN 3ALS	TO 3ALK;		
							NV.ASSIGN 4ALS	TO 4ALK;		
							NV.ASSIGN 6ALS	TO 6ALK;		
							//MISCELLANEOUS INDICATIONS ON CPU BOARD			
							NV.ASSIGN COMM1.10.STATUS	TO LED.1;		
							NV.ASSIGN DUPLK	TO LED.2;		
							NV.ASSIGN 51ESMLK	TO LED.3;		
							NV.ASSIGN 3PSNORMK	TO LED.4;		
							END LOGIC			
							NUMERIC BEGIN			
							//PROGRAM VERIFICATION LOGIC			
							BLOCK 1 TRIGGERS ON CPS.ENABLE AND STALE AFTER 0:SEC;			
							ASSIGN (CARDFILE_NUMBER < 10) OR (VERSION_NUMBER < 5)	TO KILL;		
							END BLOCK			
							END NUMERIC			
							END PROGRAM			



23-10-91 ISSUE-01 CST00L02 AUTOMATIC CROSSING LOOPS SHT: L02 CB: 0

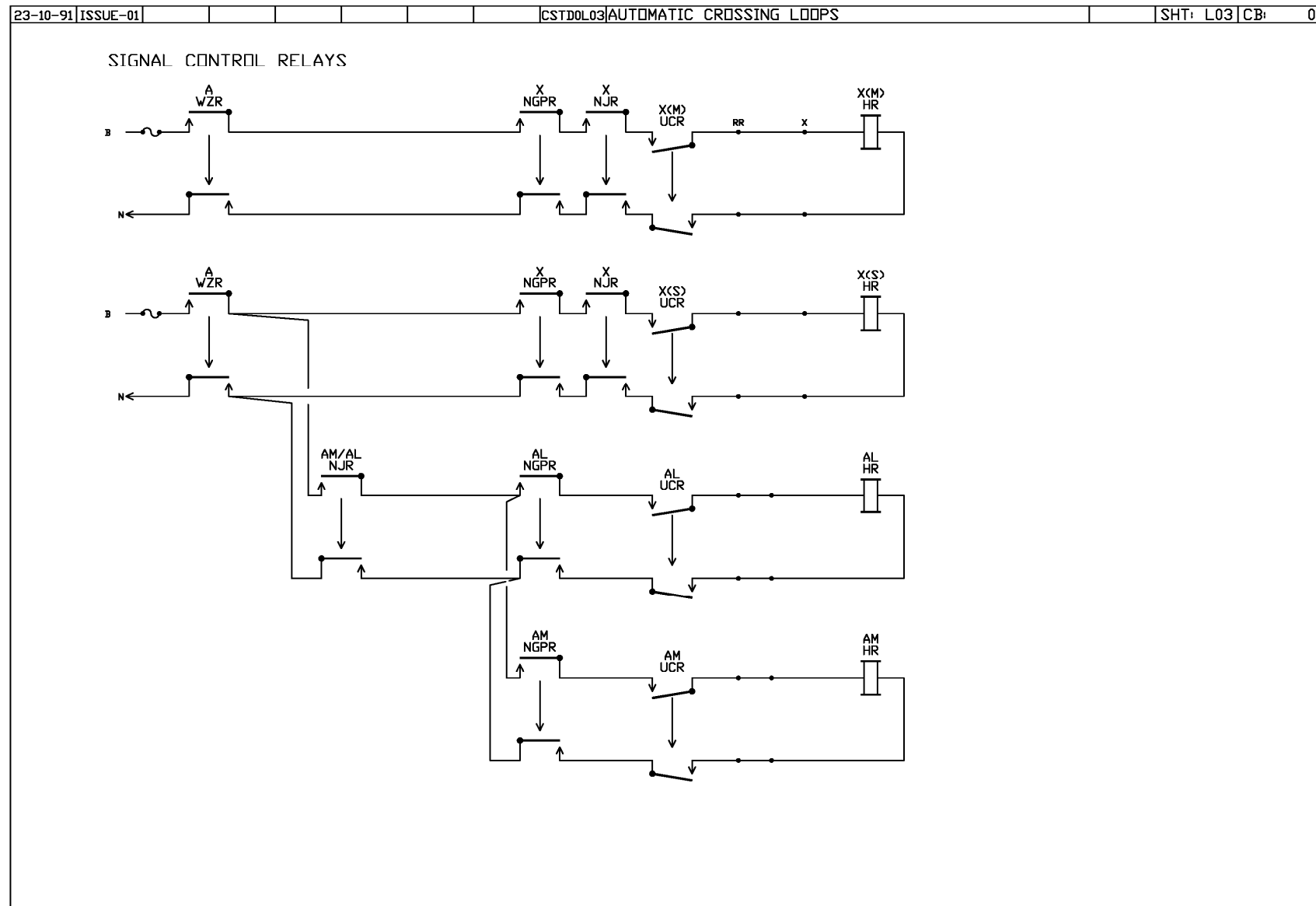
ROUTE CONTROL RELAYS

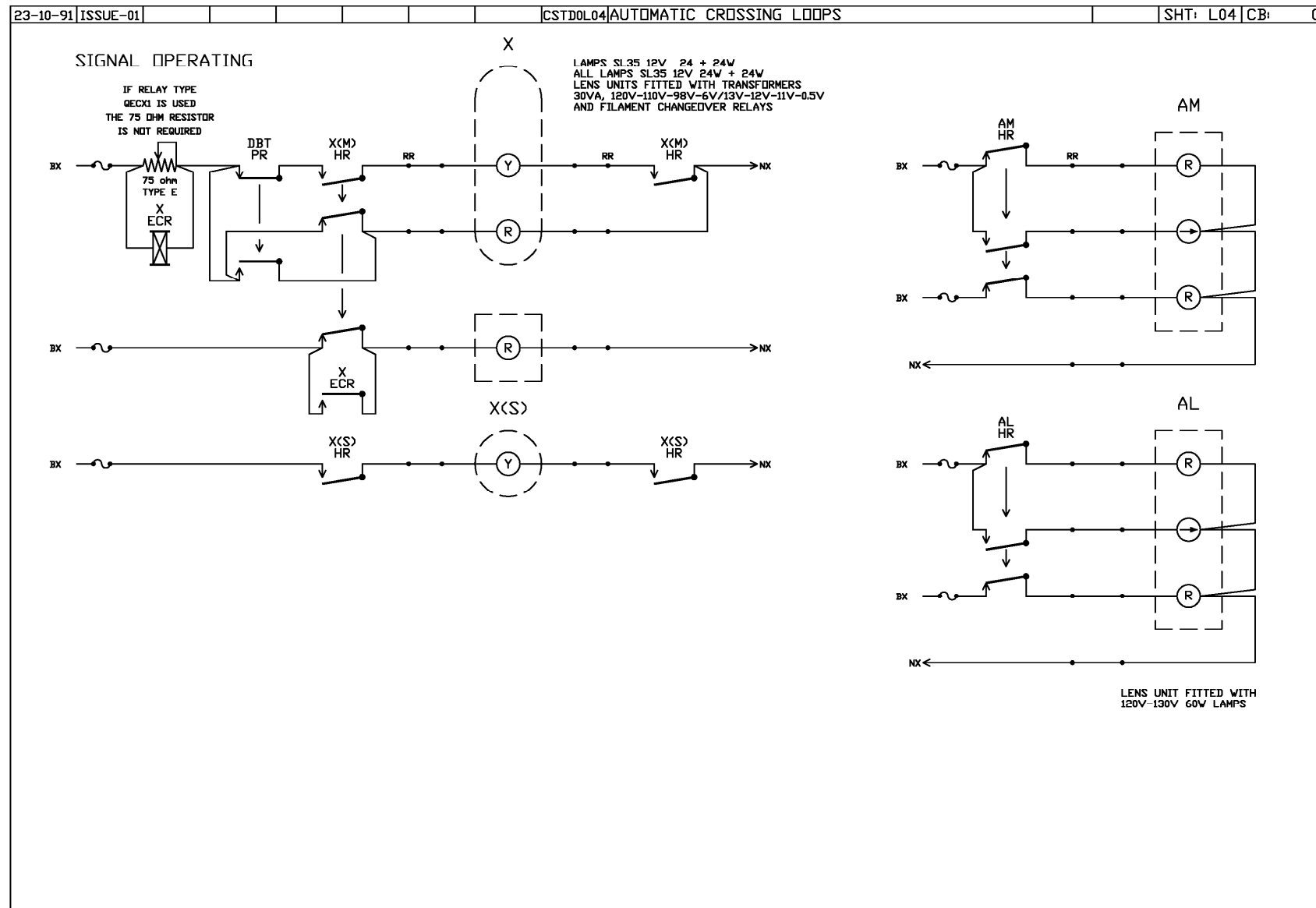


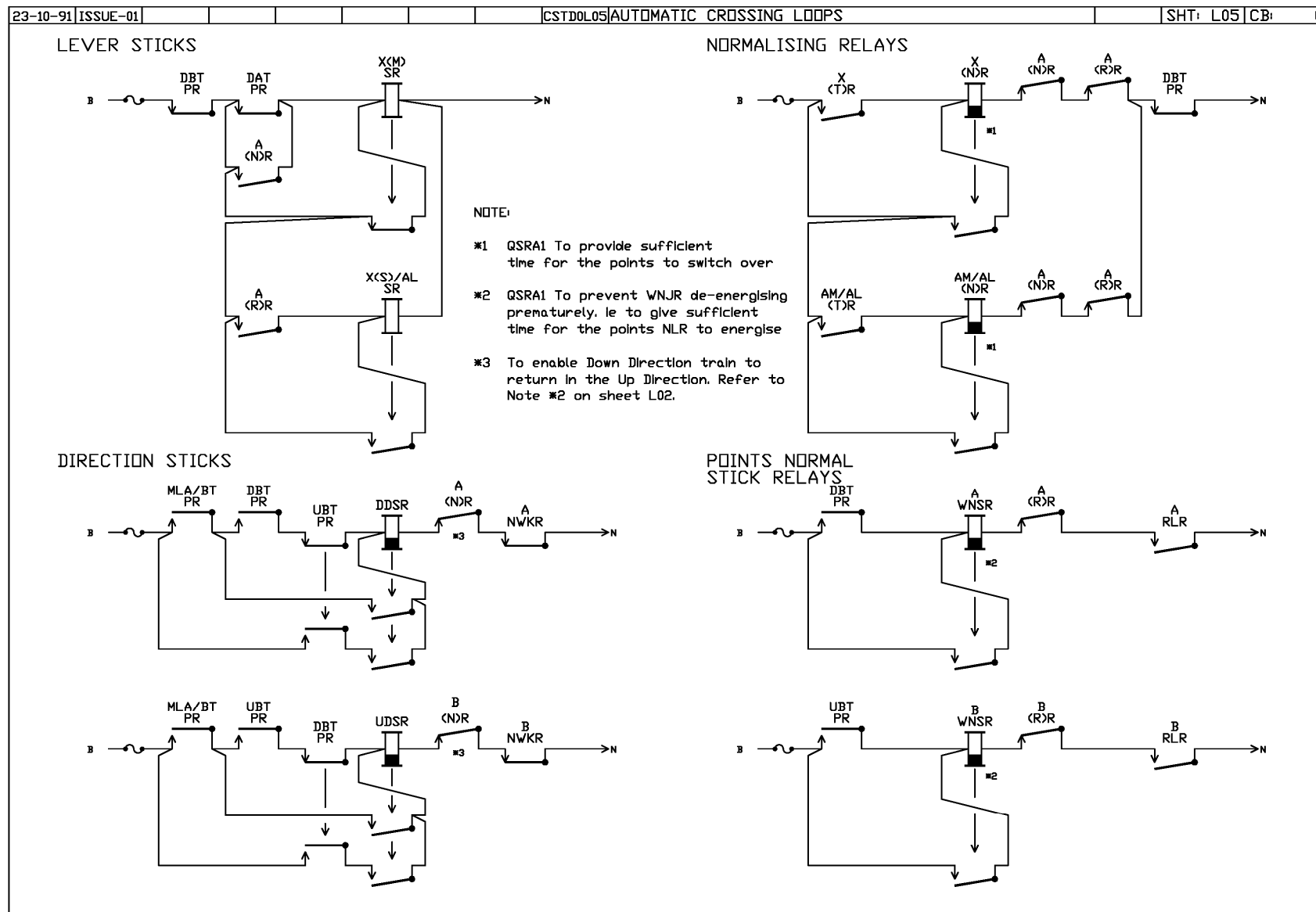
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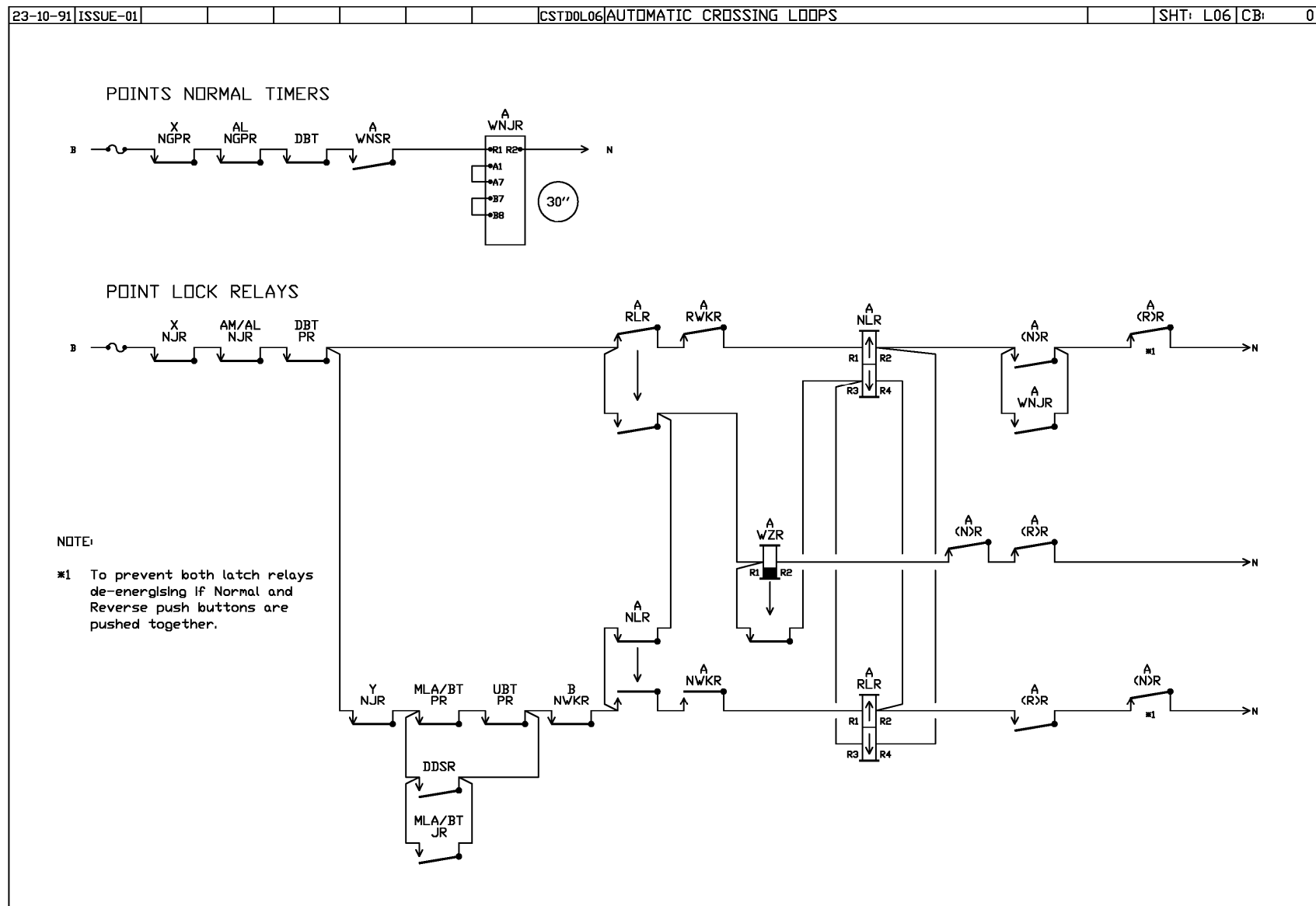
#1 THIS CIRCUITRY PREVENTS, X SIGNAL CLEARING FOR THE SECOND TRAIN, BEFORE CLEARING THE SIGNAL FOR THE FIRST TRAIN IF THE FIRST TRAIN CANCELS THE MAIN ROUTE Y, IN ORDER TO GET INTO THE LOOP.

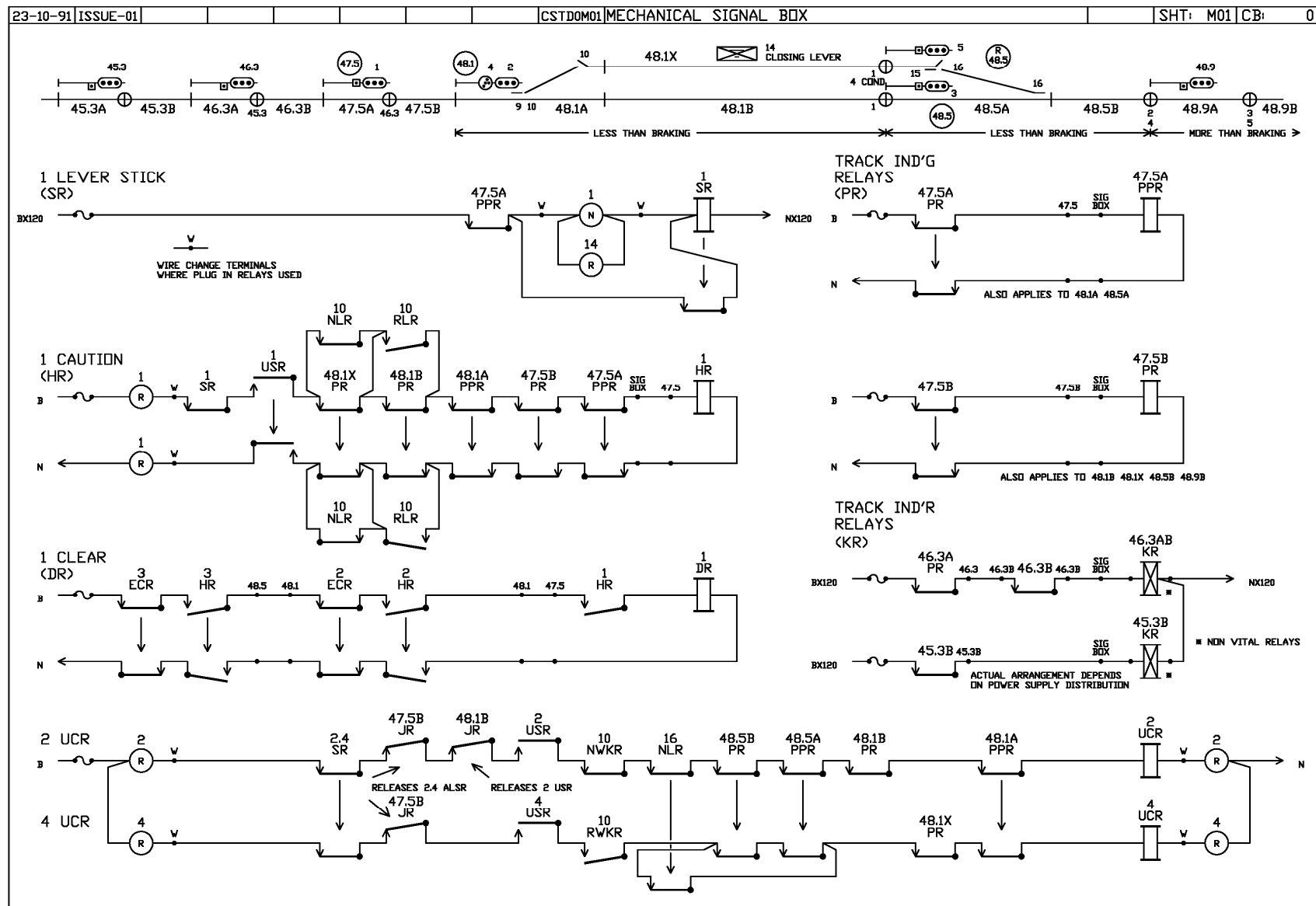
#2 TO PREVENT POINT INDICATOR IN THE UP DIRECTION CLEARING WHEN TRAIN IS TRAVELLING IN THE DOWN DIRECTION. REFER TO NOTE #3 ON SHEET L05.

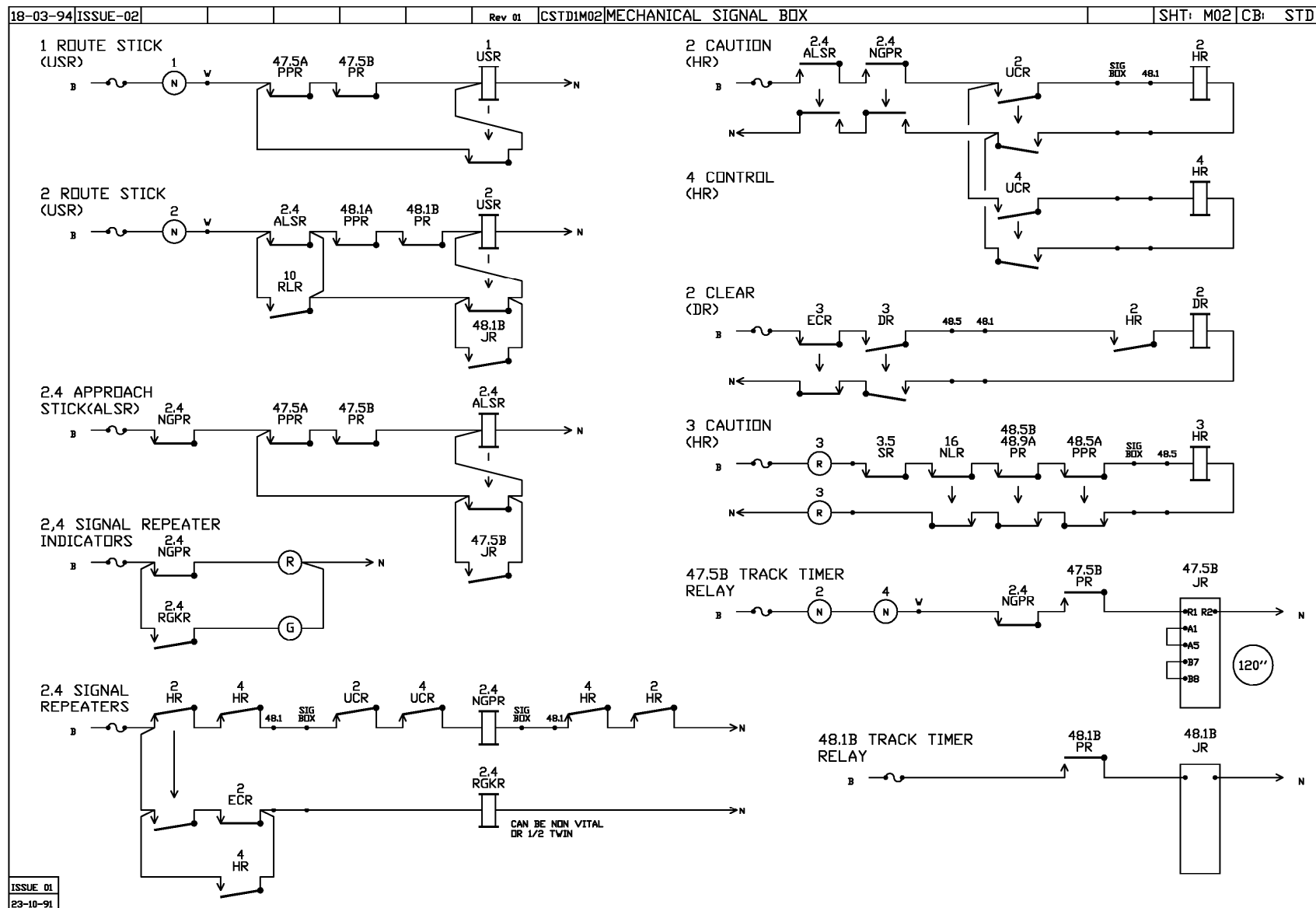


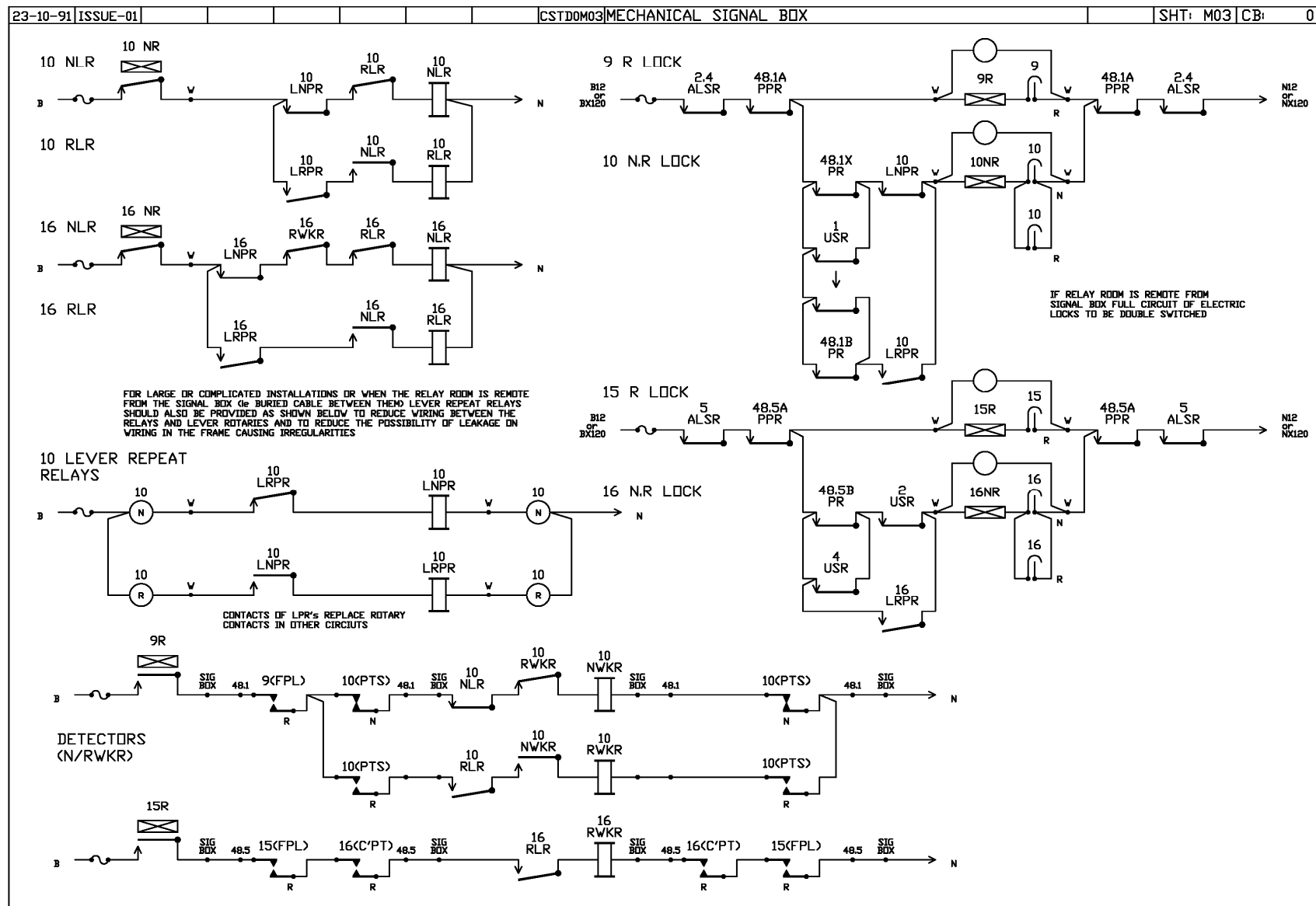


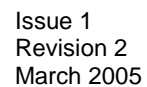


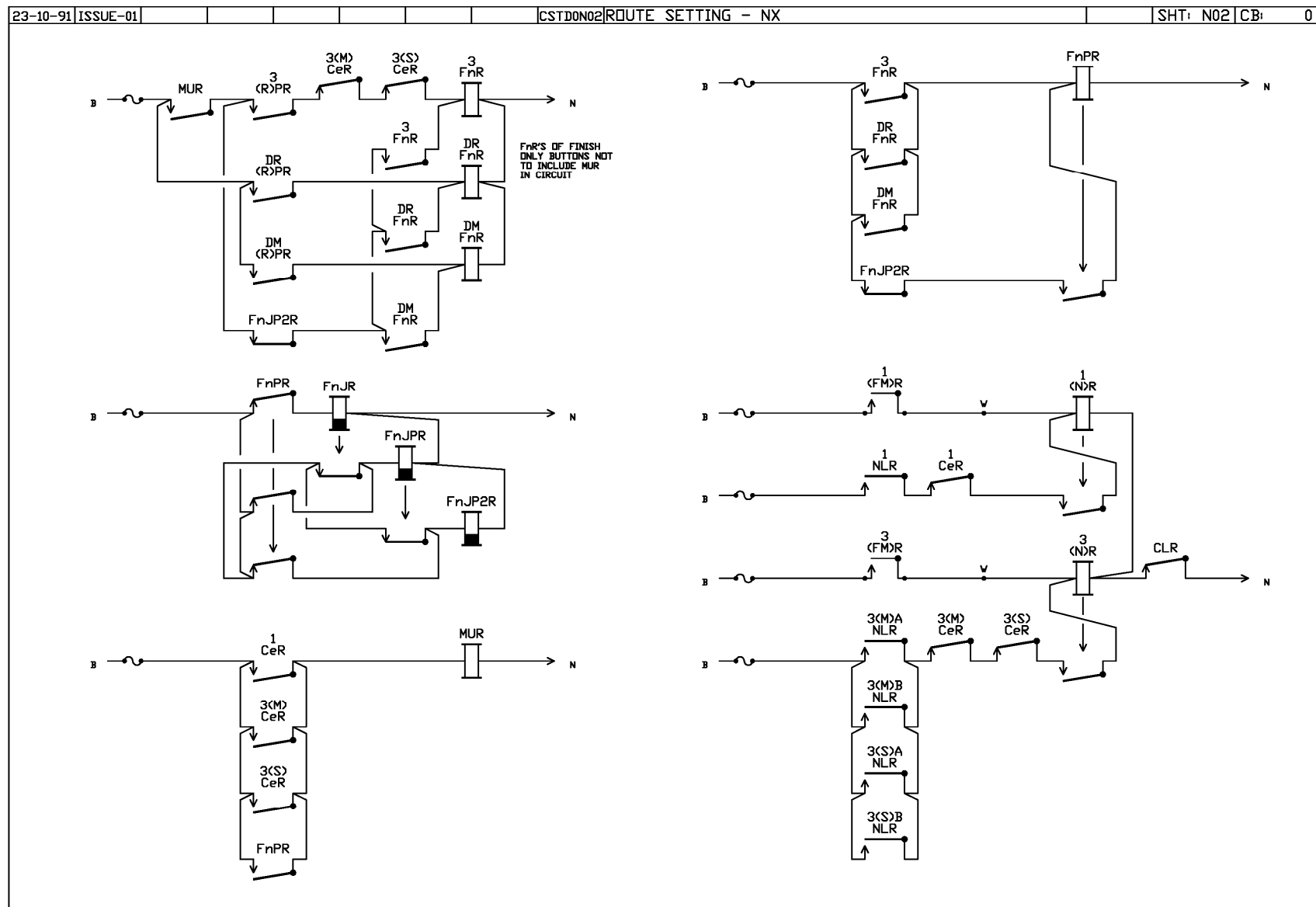


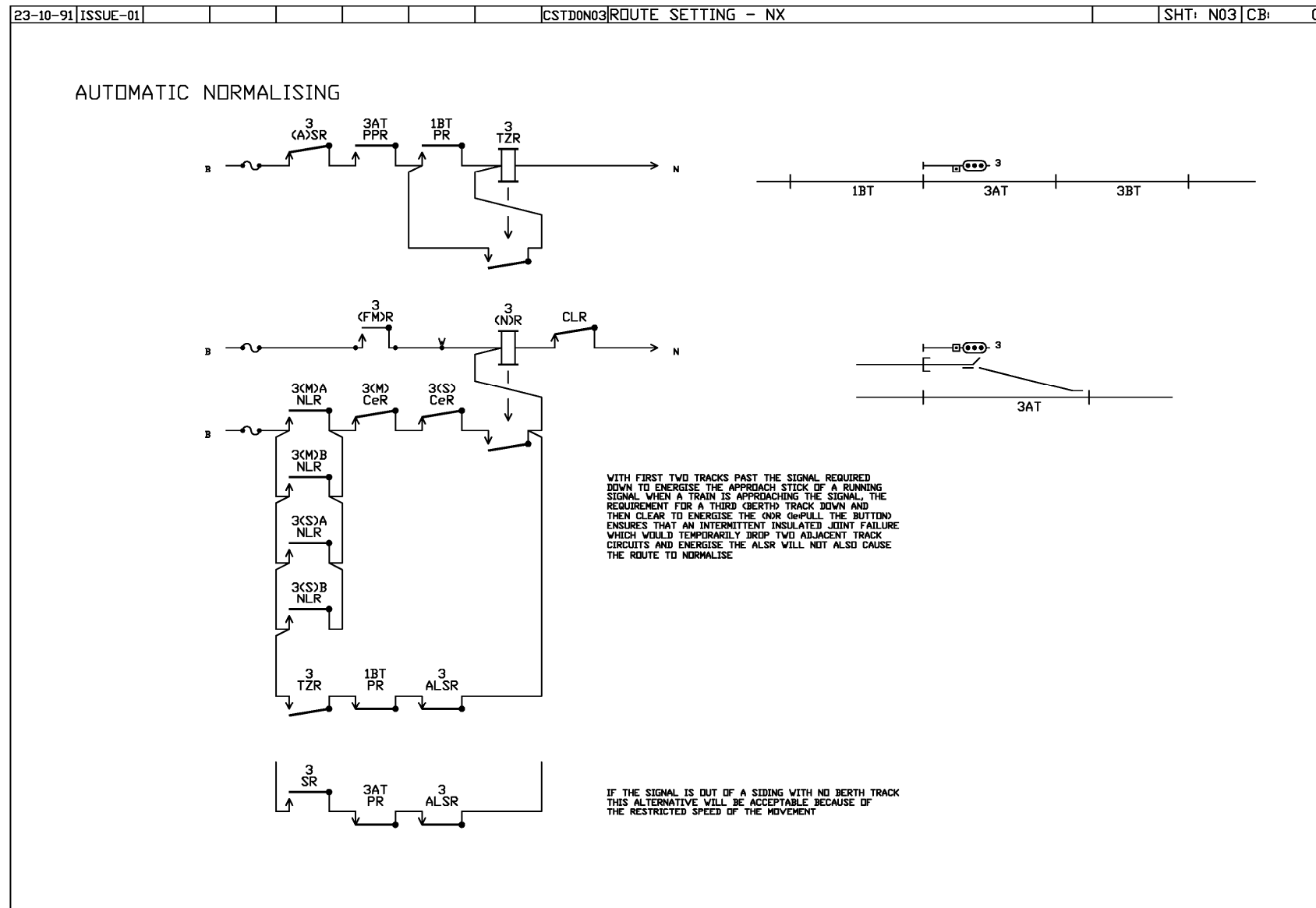


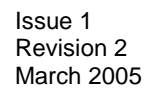


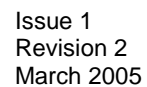


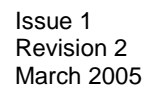


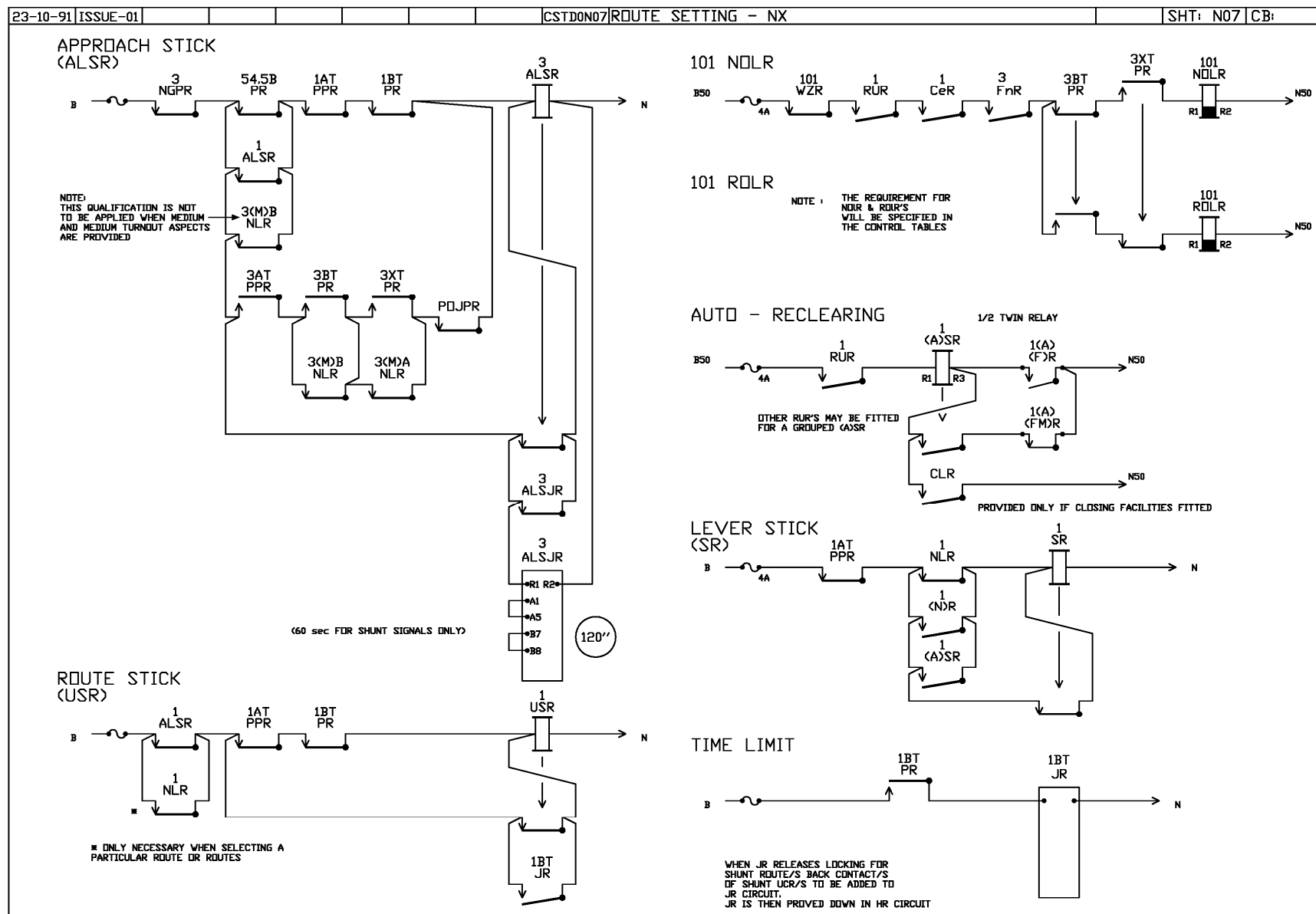


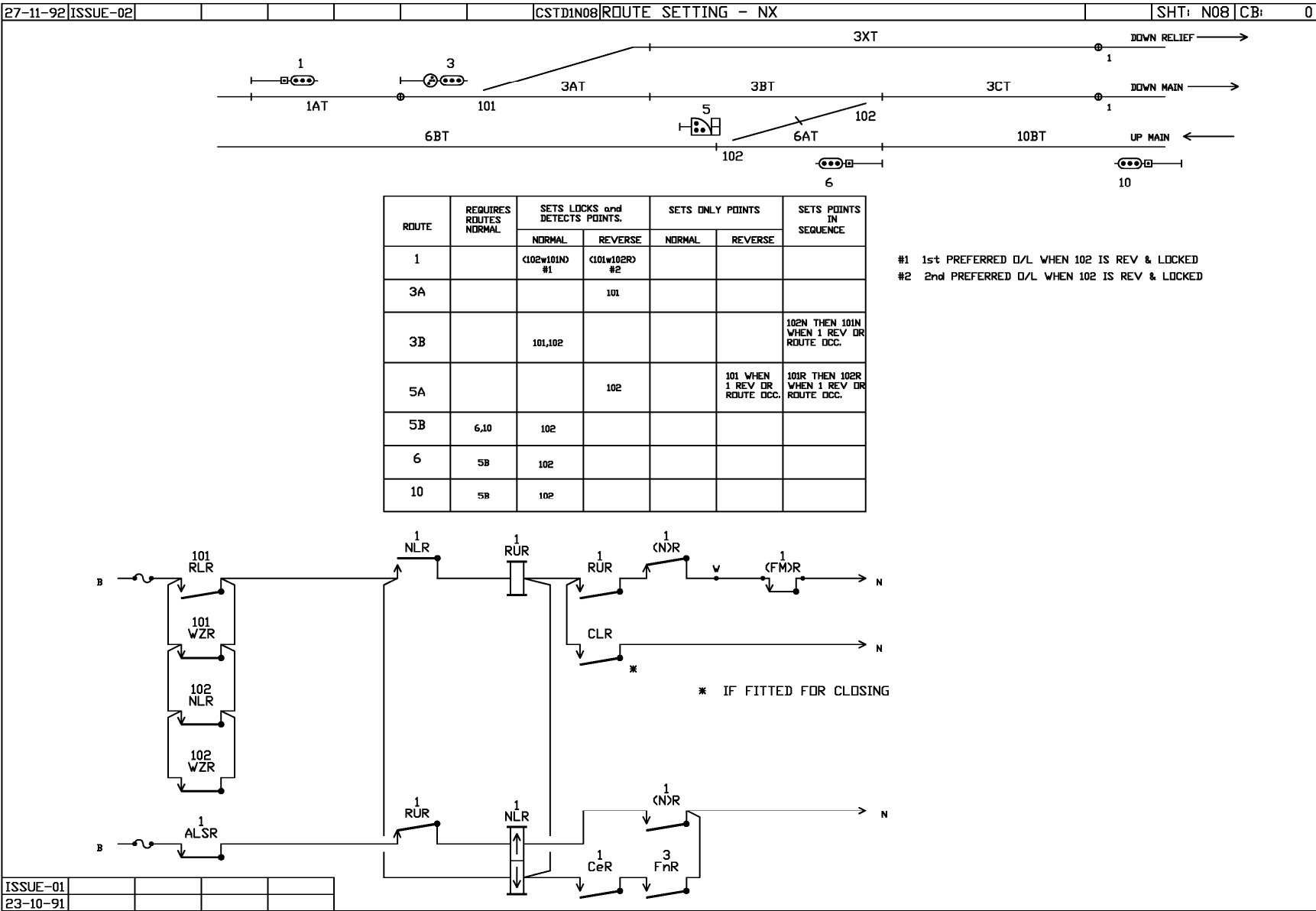


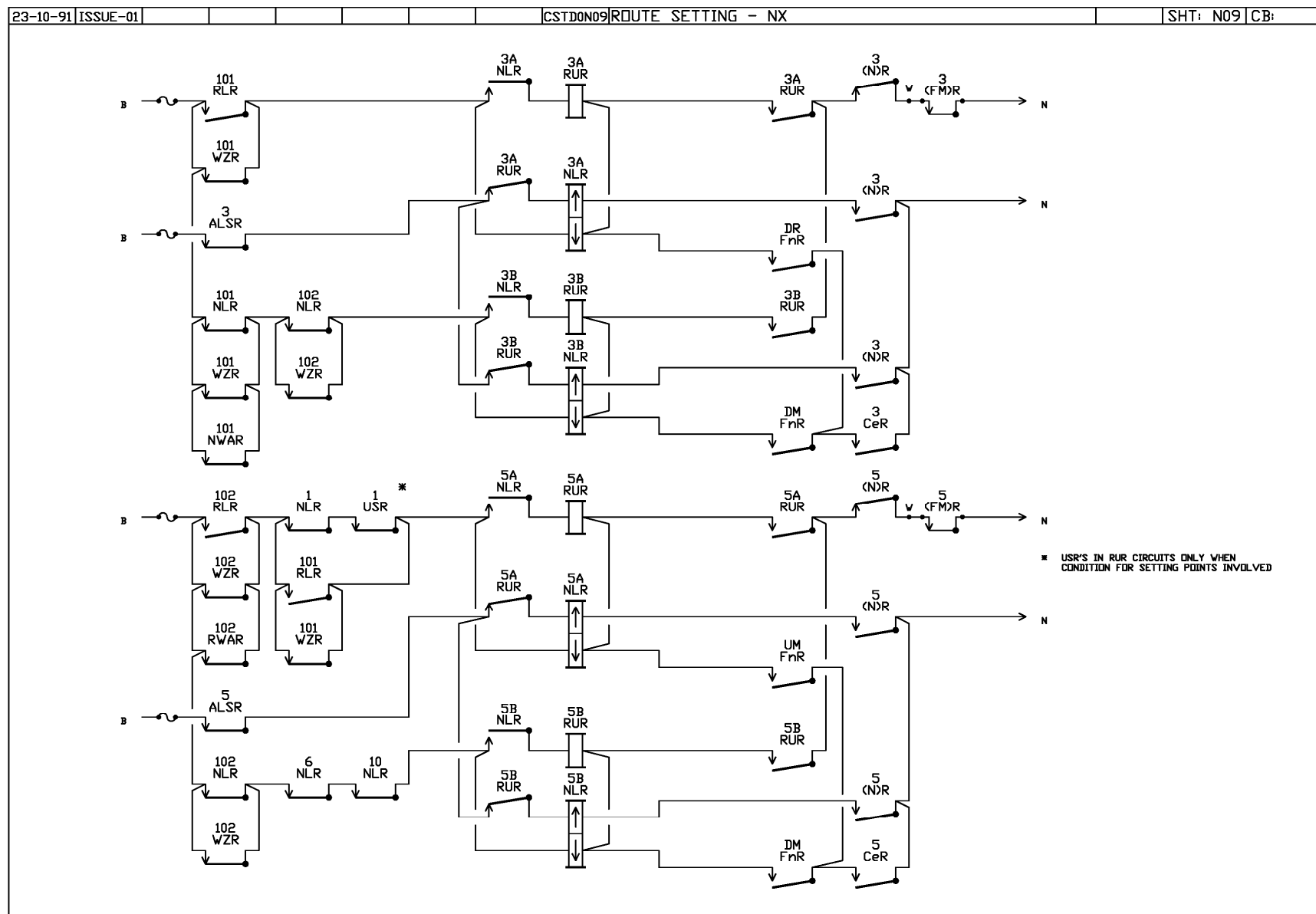


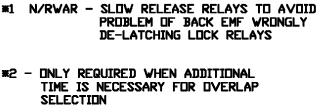


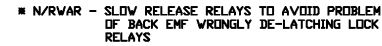


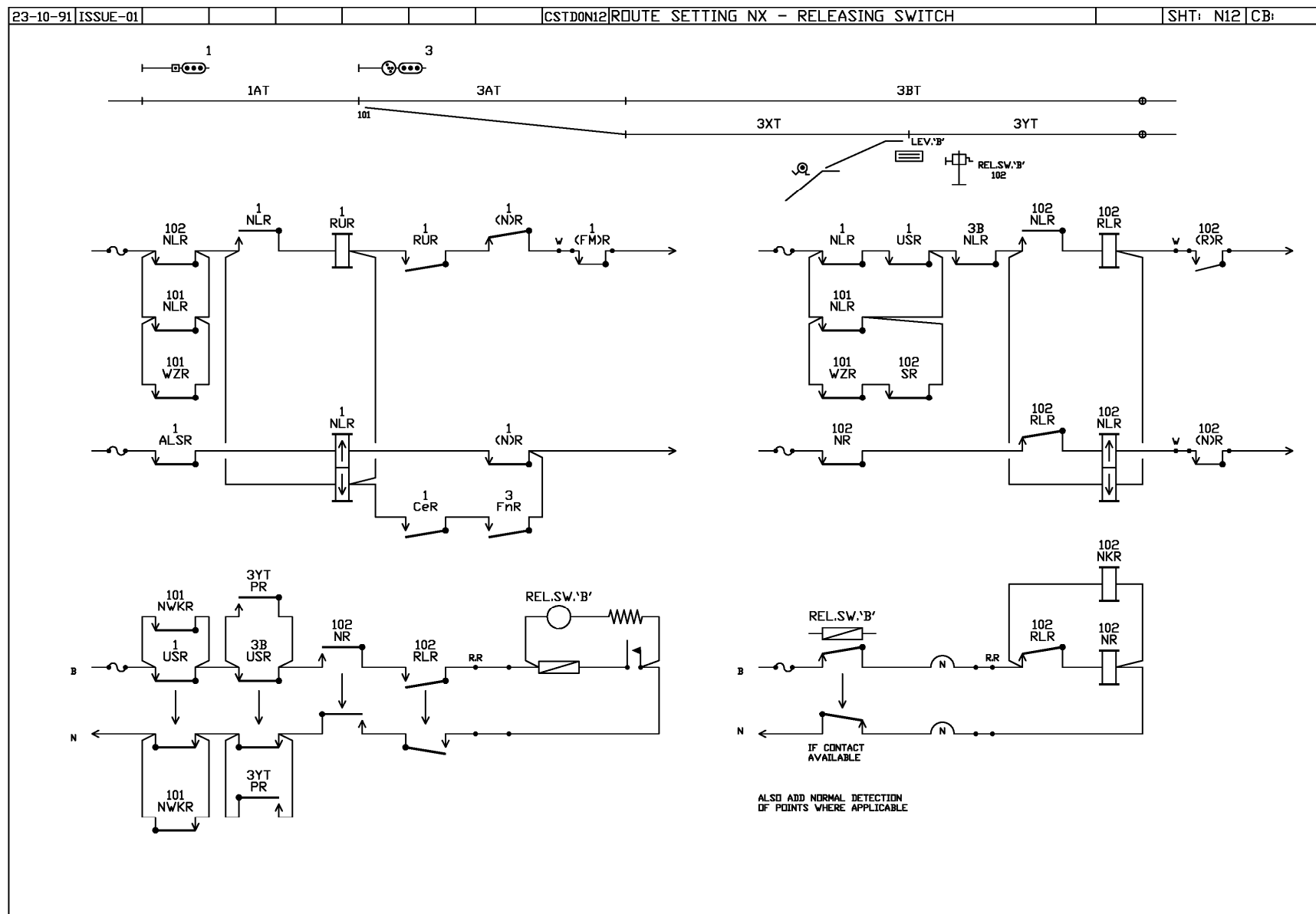


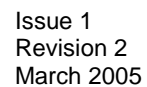


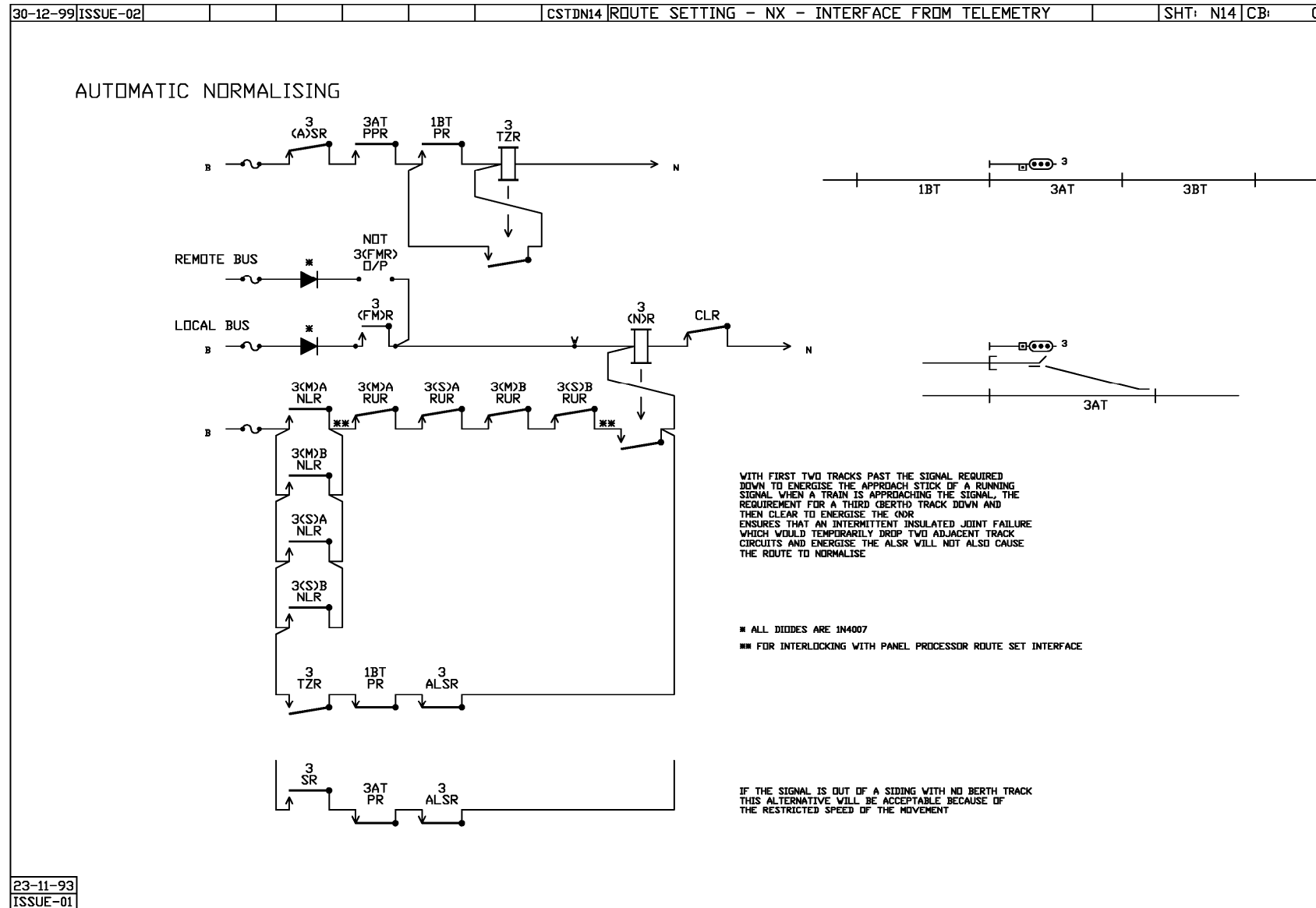




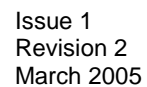


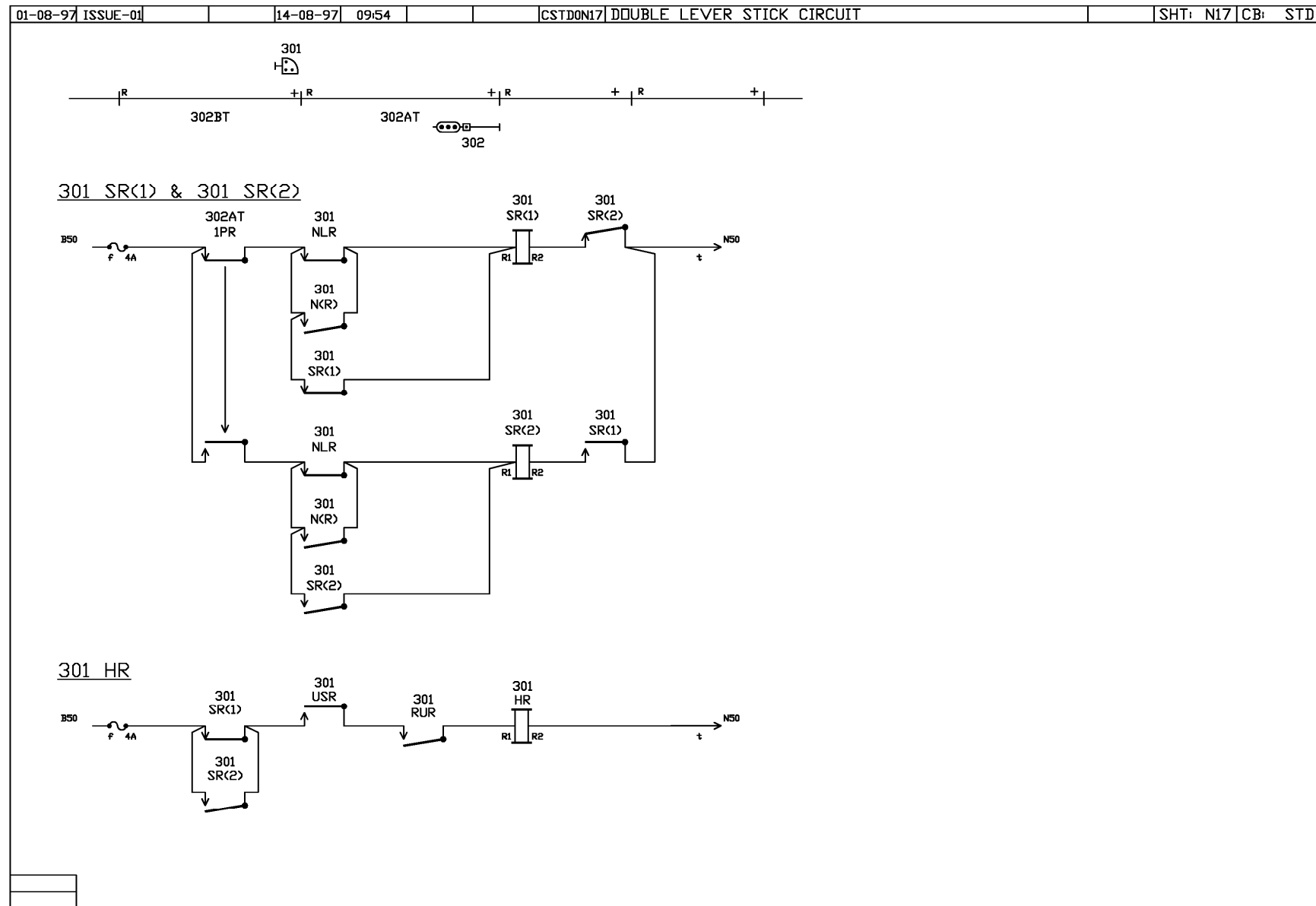


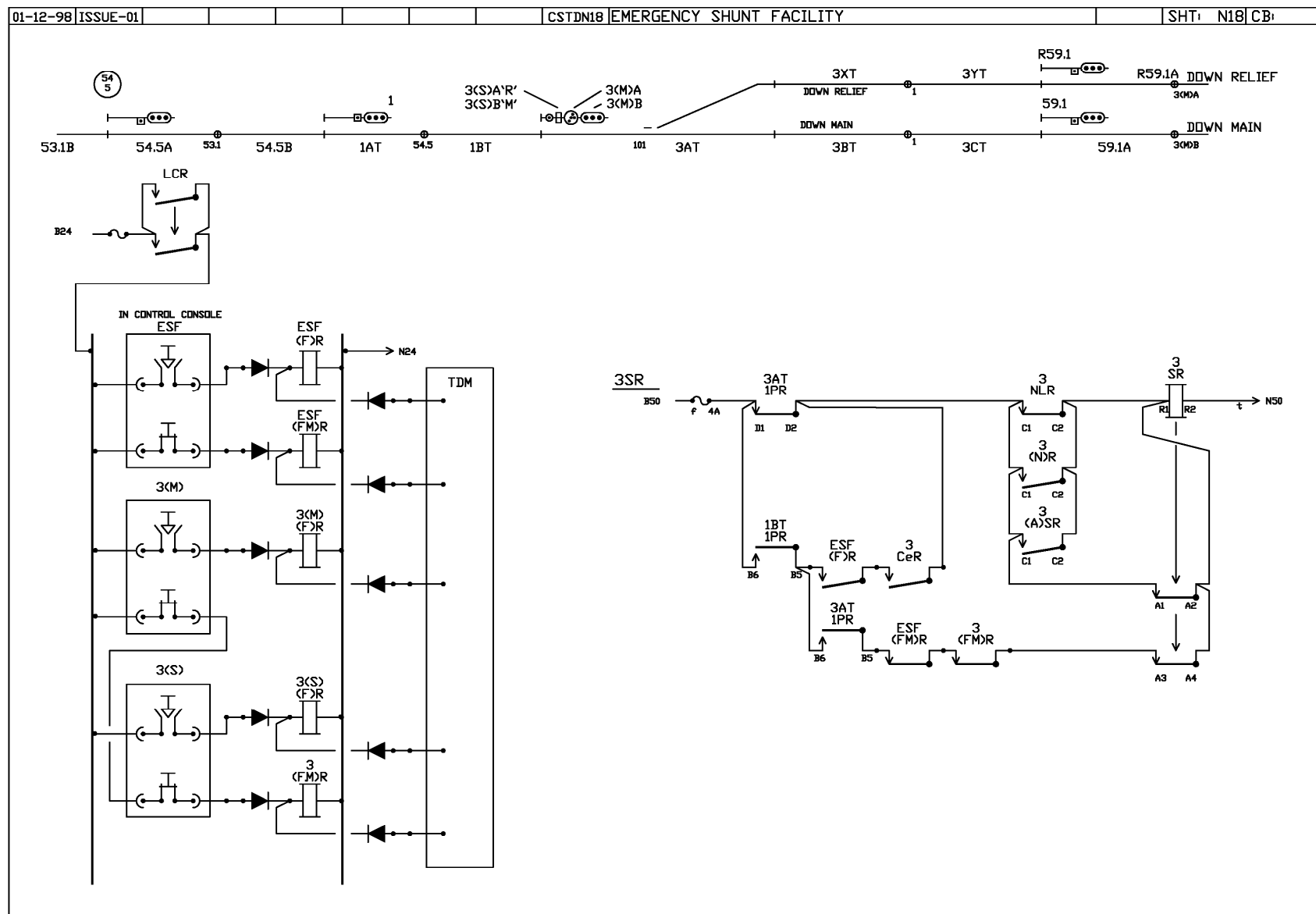


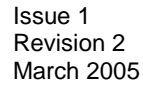


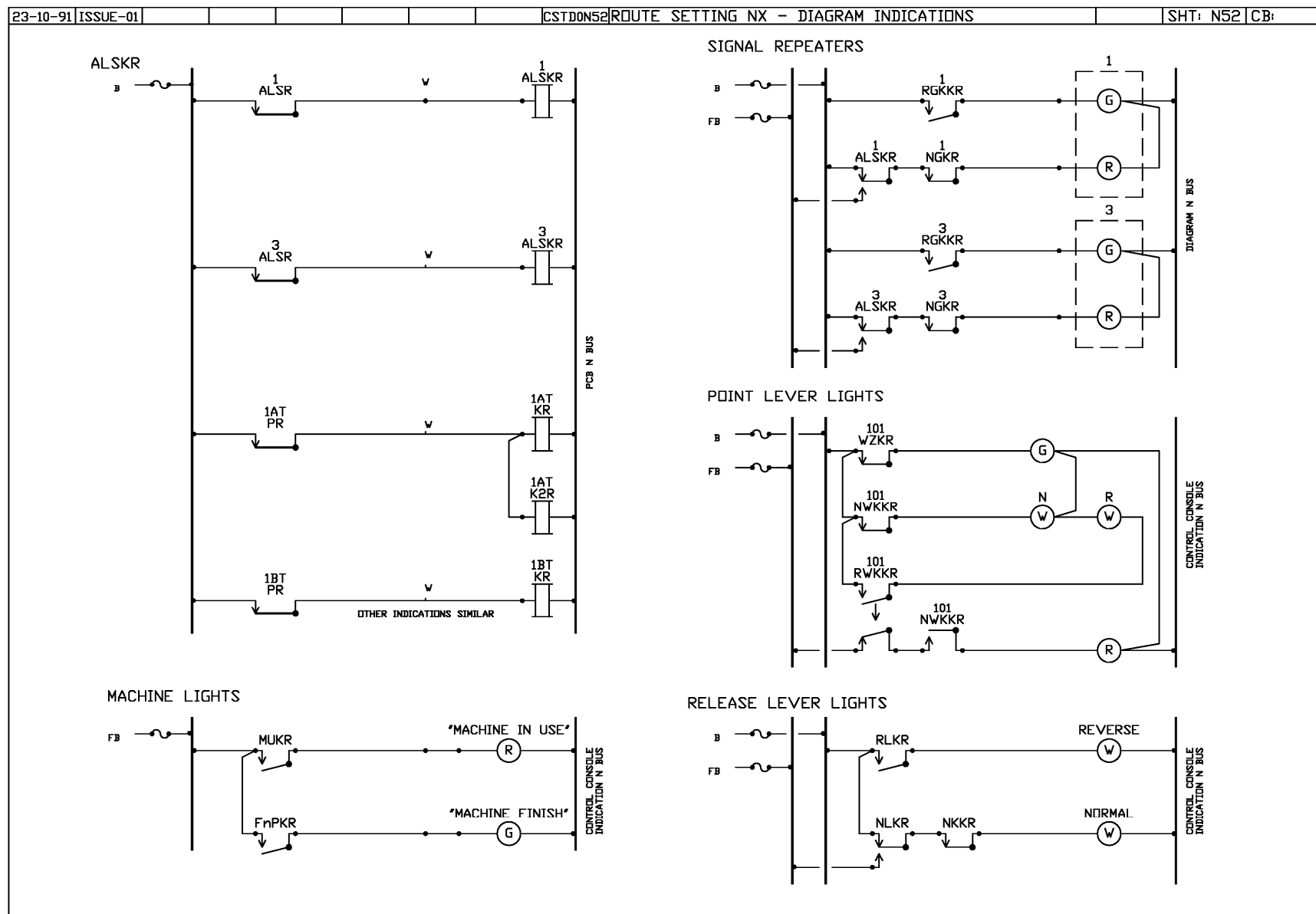


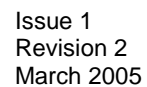


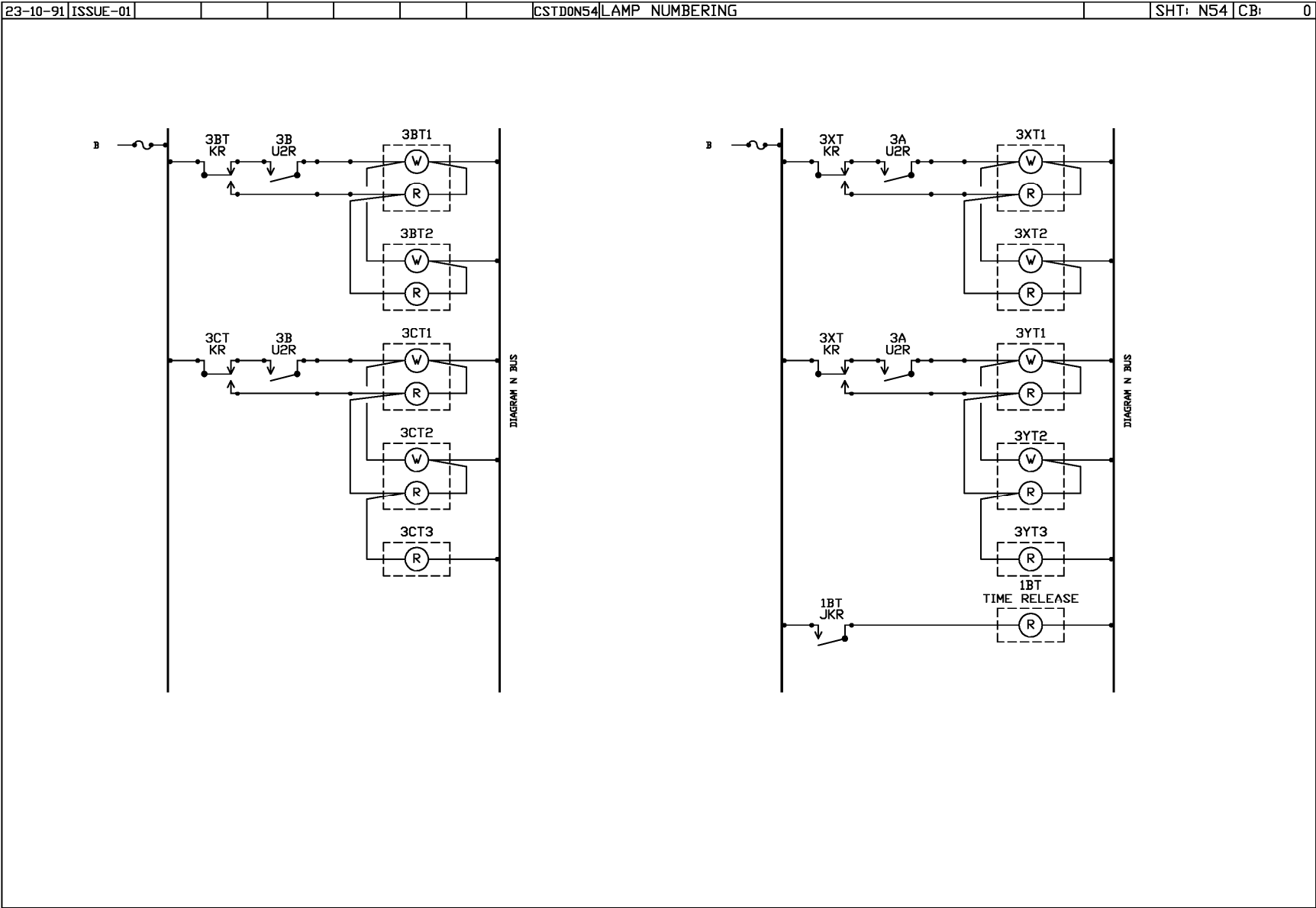


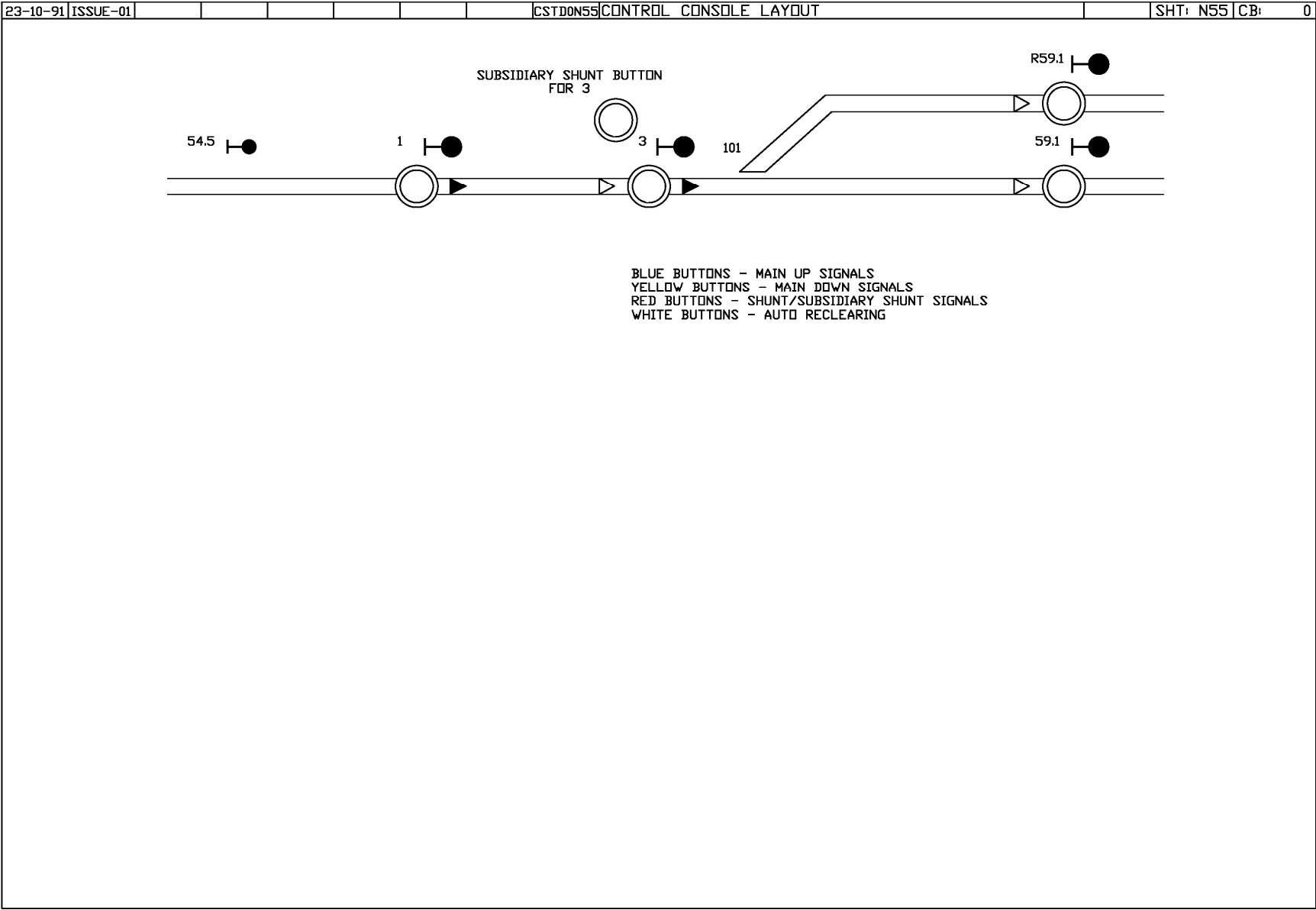


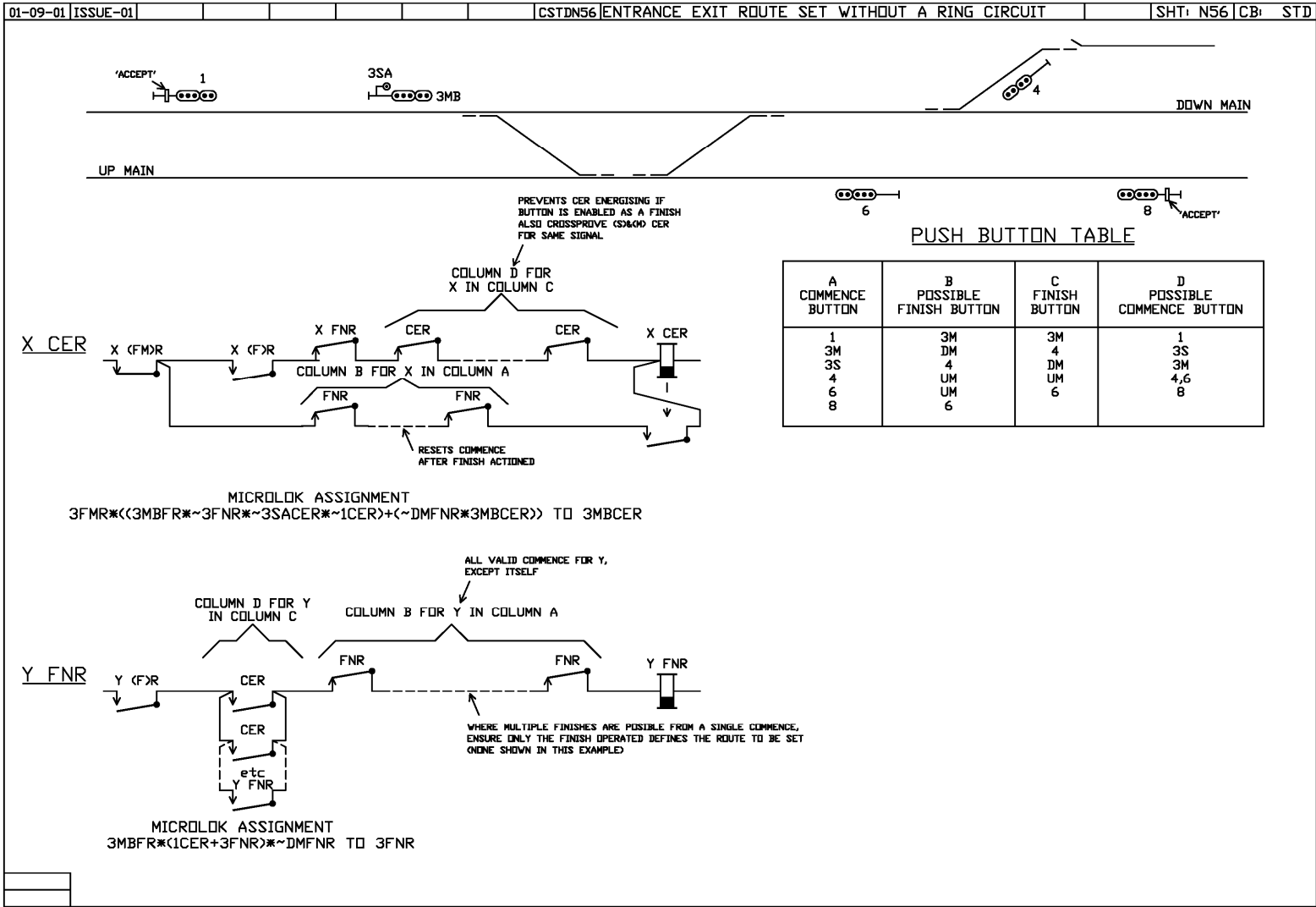


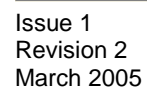


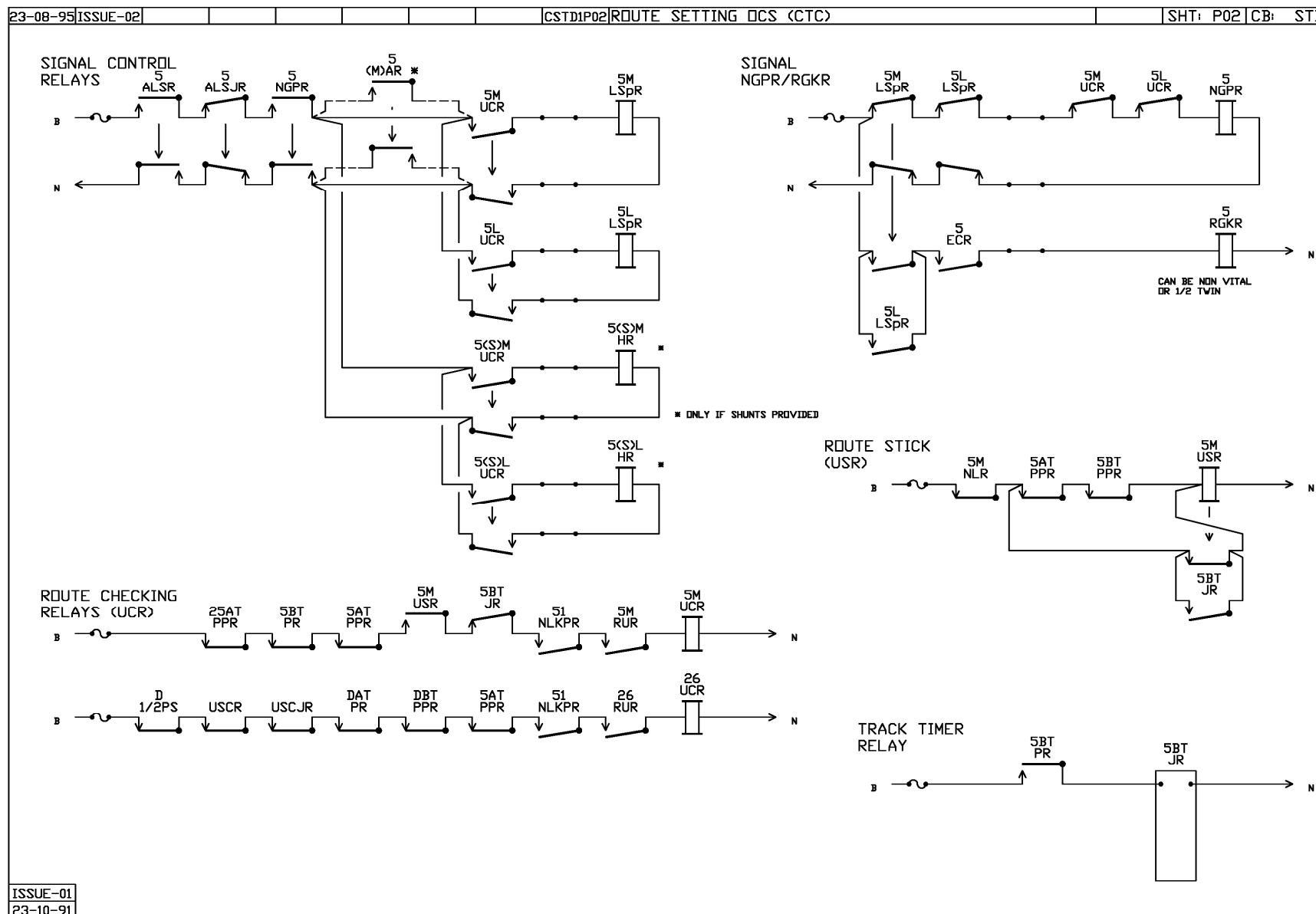


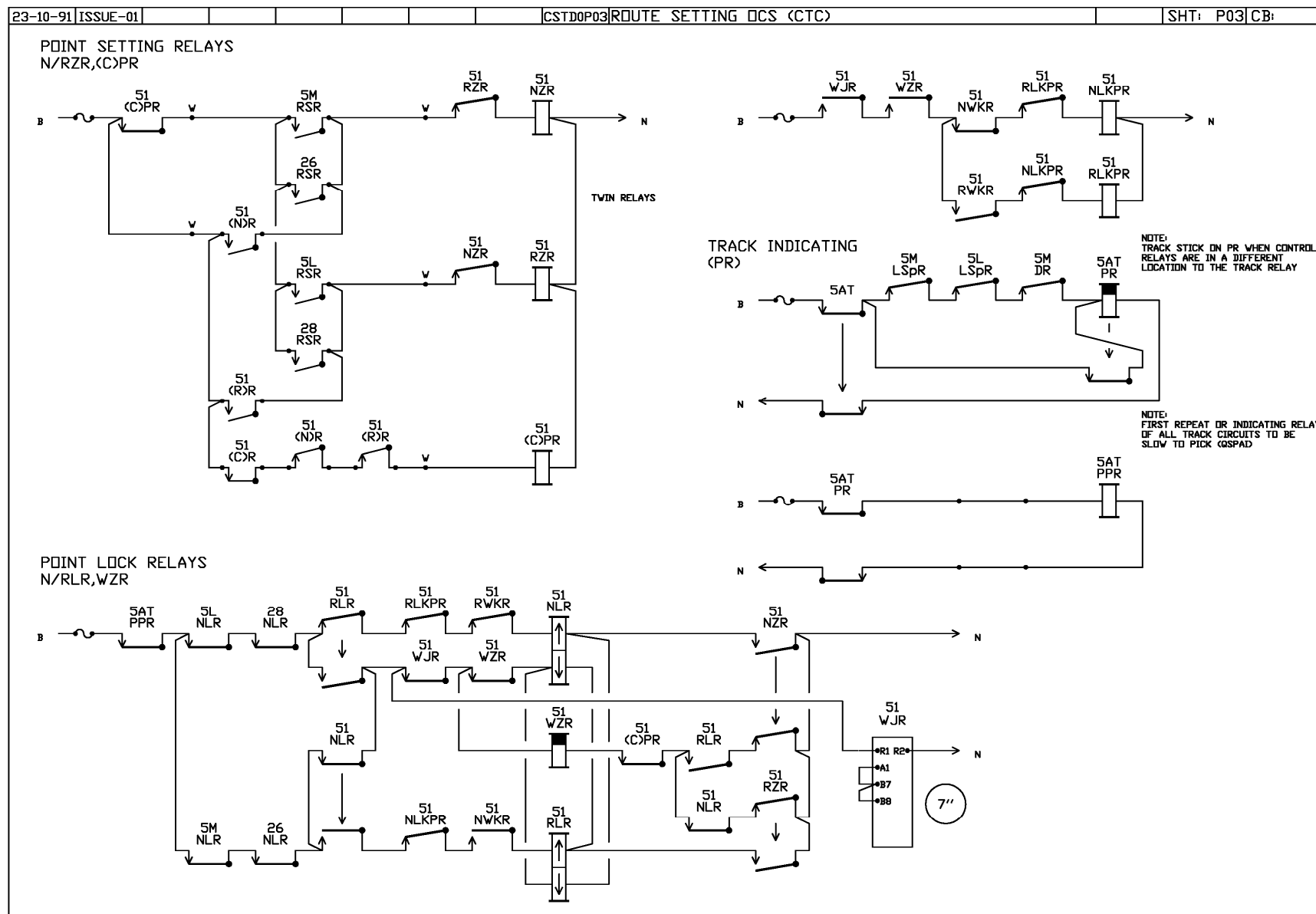


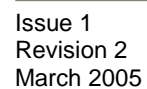


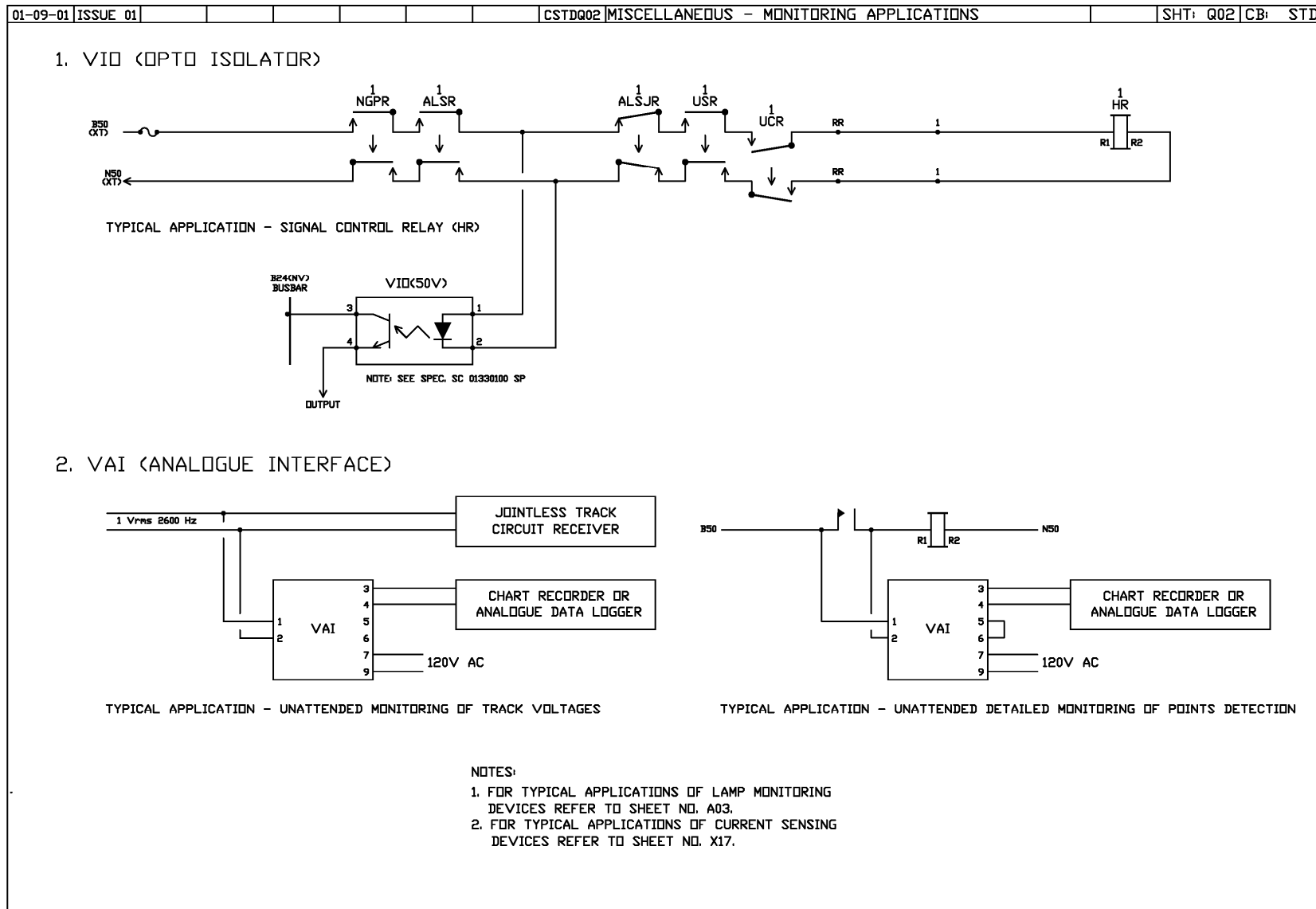


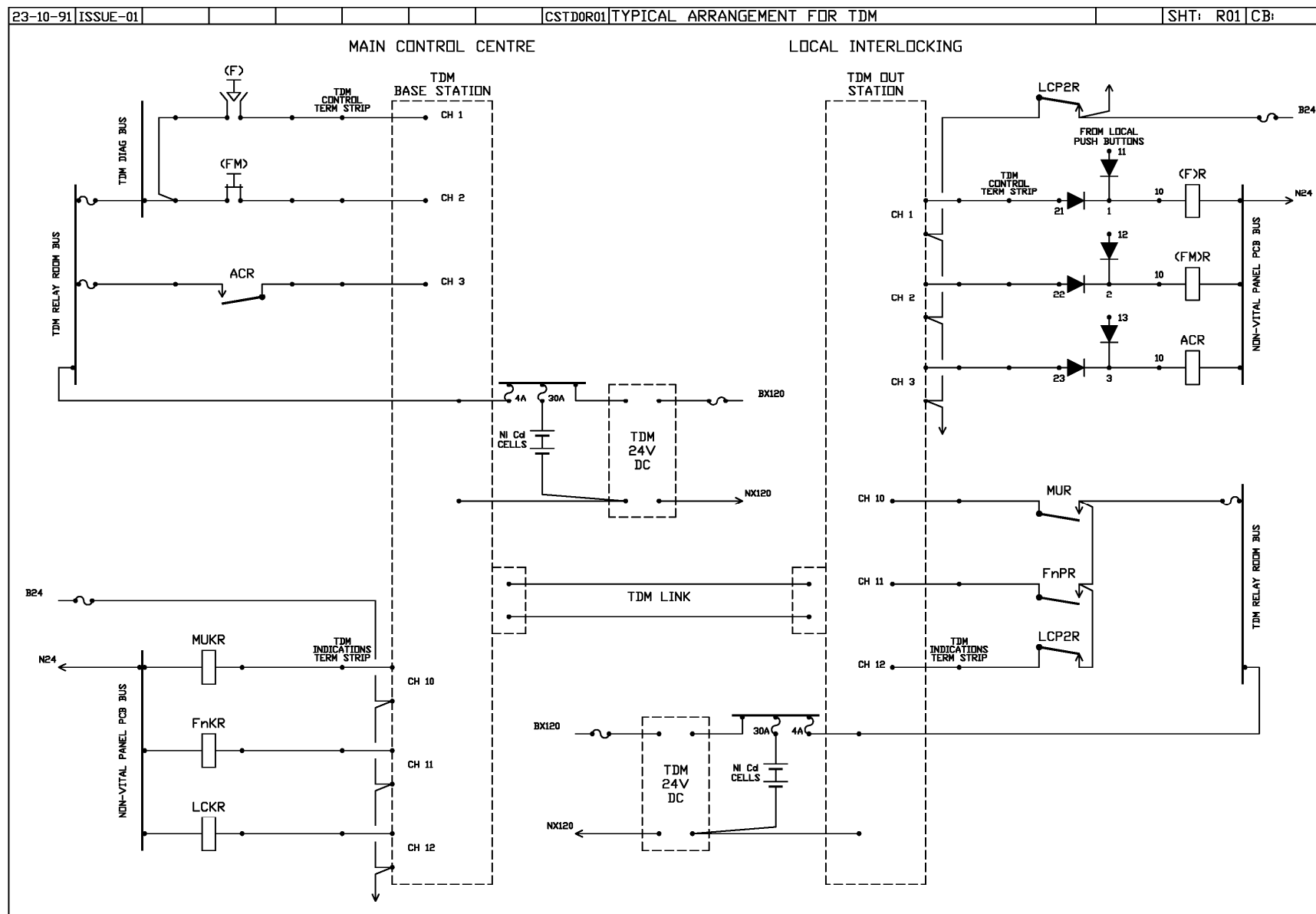


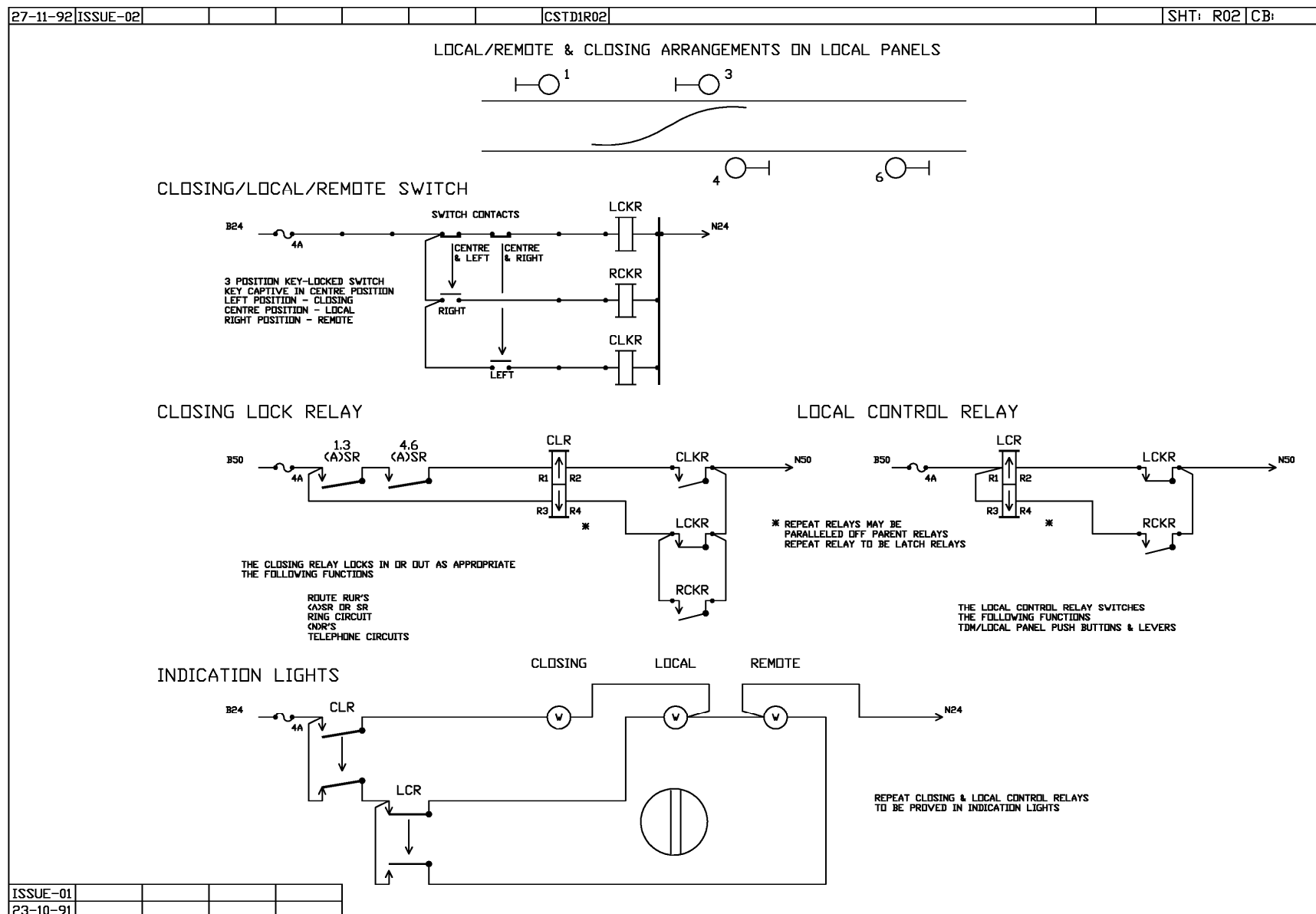


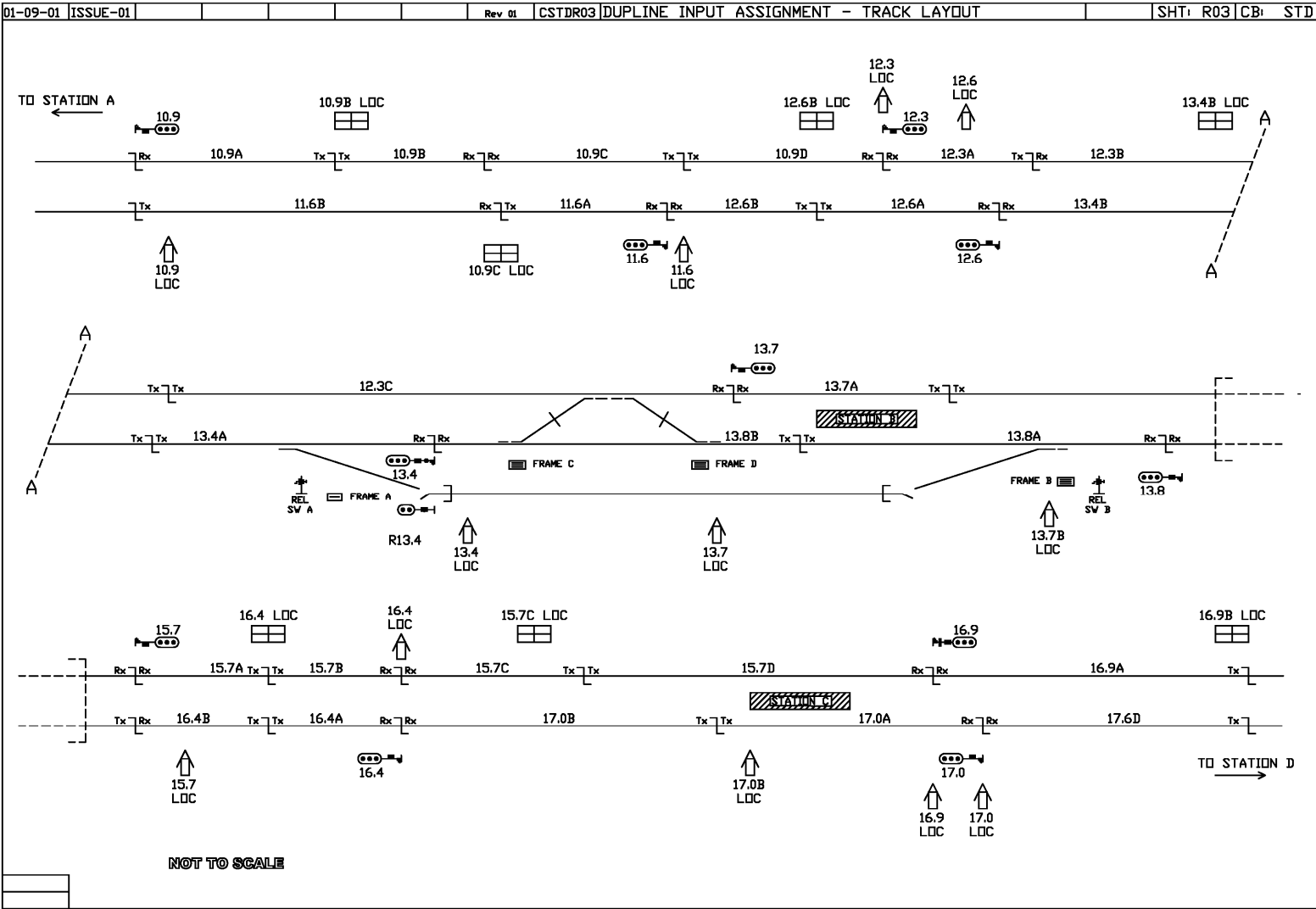


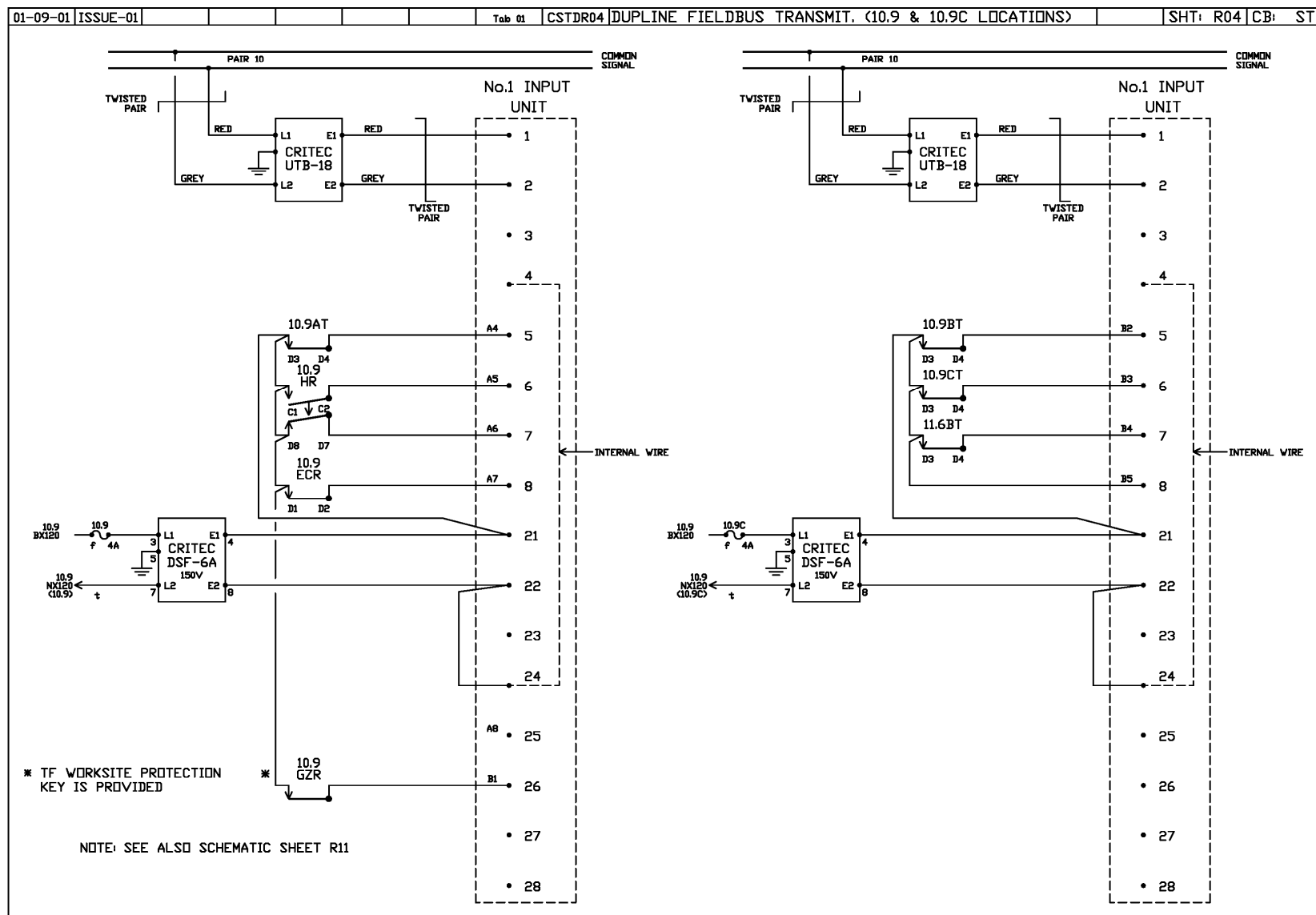


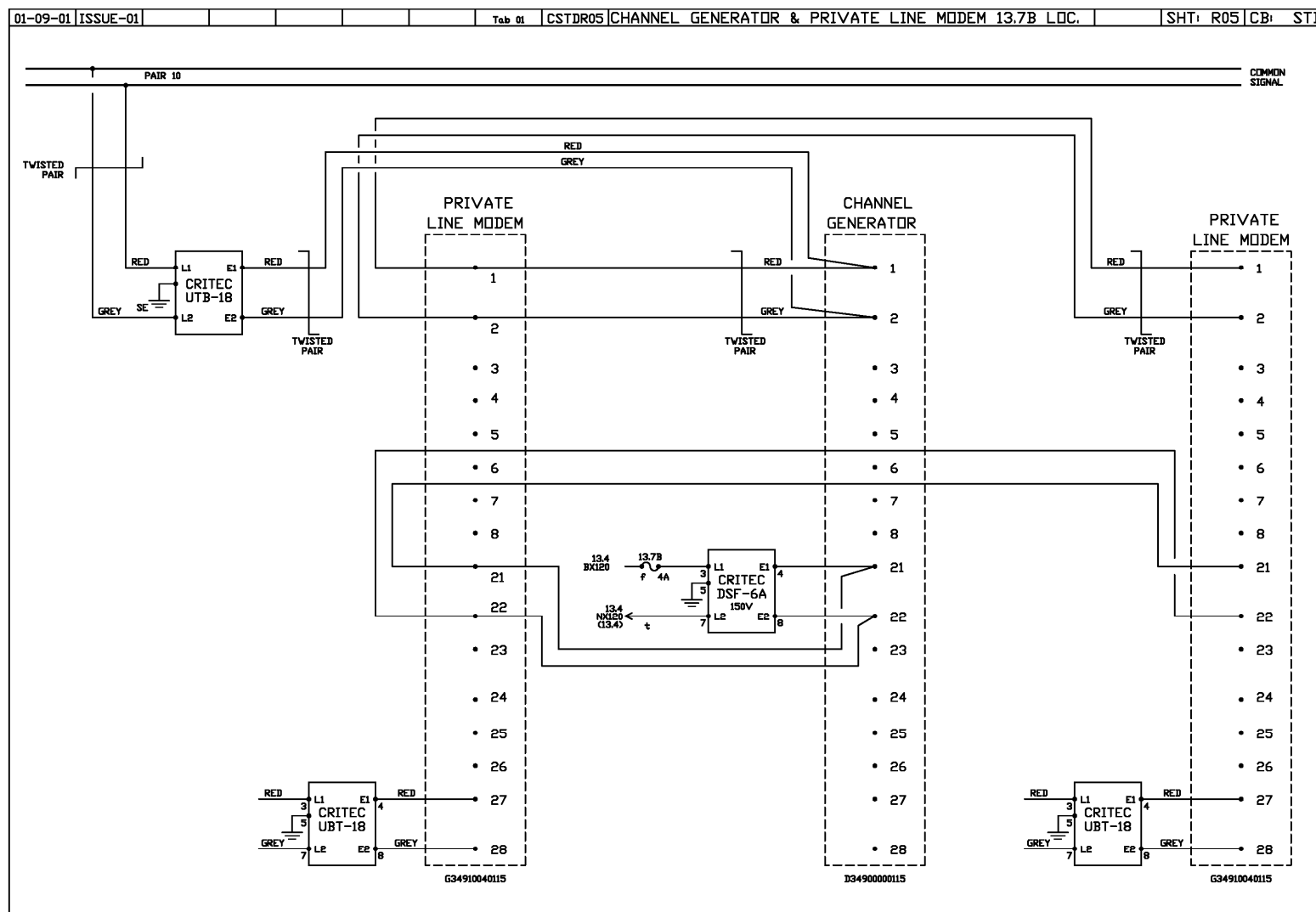


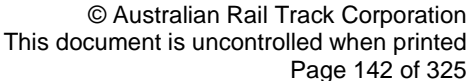


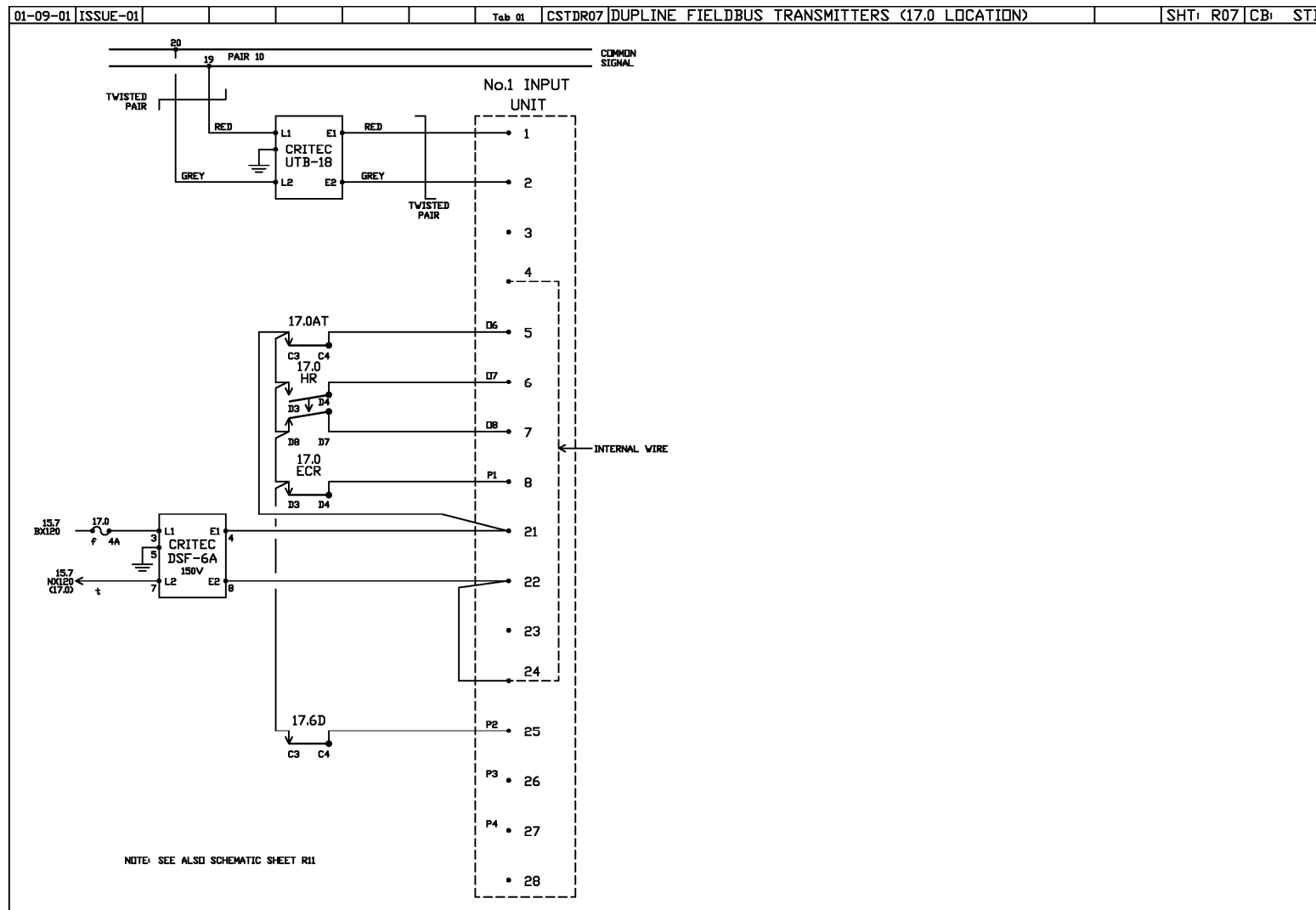


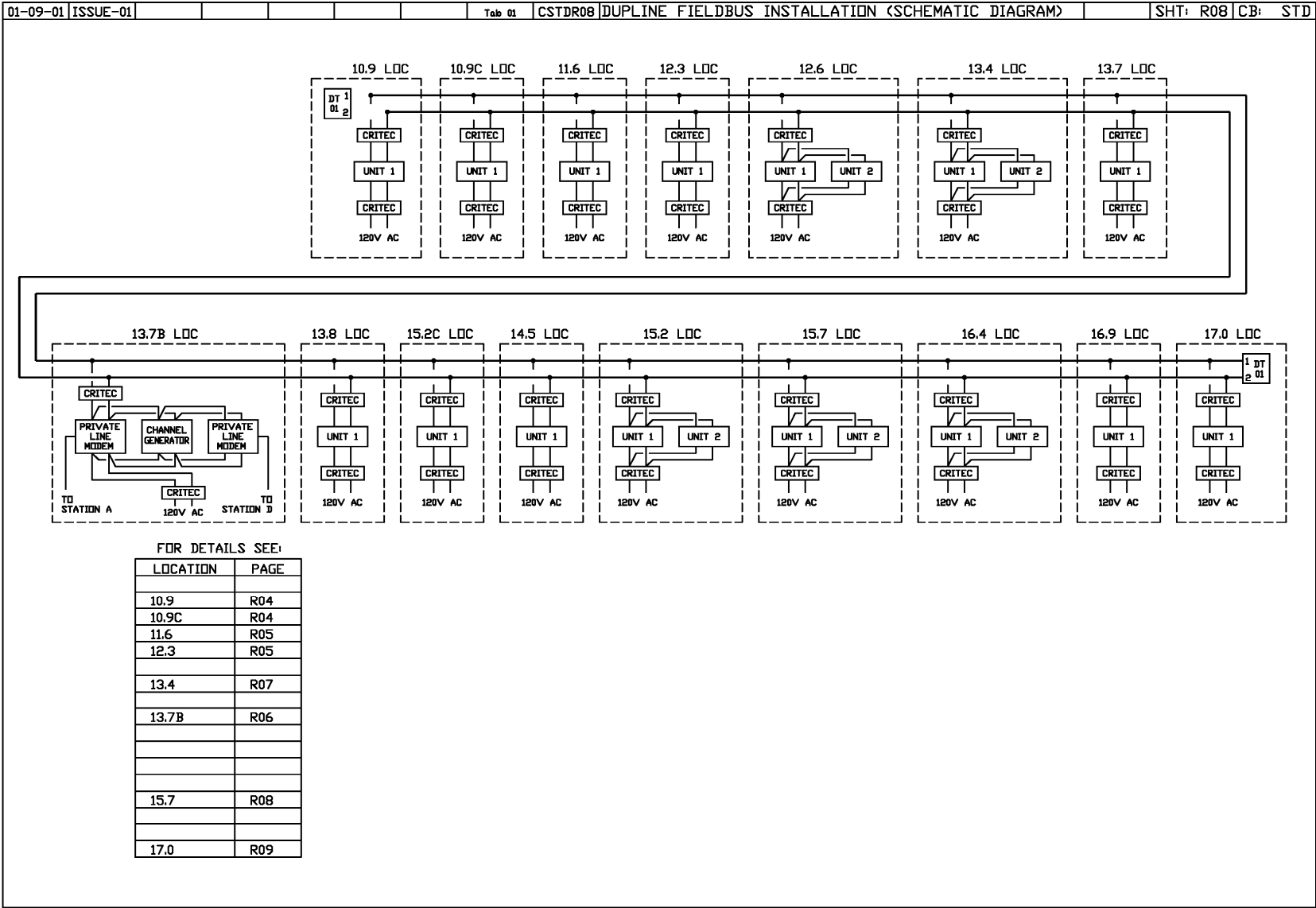












01-09-01	ISSUE-01					Tab 01	CSTD09	DUPLINE	FIELDBUS CHANNEL ALLOCATIONS		SHT: R09	CB:	STD
STATION A TO STATION B SYSTEM 1 (10.9 LOCATION TO 17.0 LOCATION)													
LOCATION	FUNCTION	INPUT CONNECTIONS		CHANNEL	MODULE								
		TERMINAL	INPUT										
SPARE	SPARE			A1 A2 A3	1								
10.9	10.9AT 10.9 RGKR 10.9 NGKR 10.9 ECR SPARE SPARE SPARE	5-4 6-4 7-4 8-4 25-24 26-24 27-24 28-24	5 6 7 8 1 2 3 4	A4 A5 A6 A7 A8 B1 P5	1								
10.9C	10.9BT 10.9CT 11.6BT DIRECT INPUT	5-4 6-4 7-4 8-4 25-24 26-24 27-24 28-24	5 6 7 8 1 2 3 4	B2 B3 B4 B5	1								
11.6	11.6AT 12.6BT 11.6 RGKR 11.6 NGKR 11.6 ECR 11.6 50V WARNING SPARE SPARE	5-4 6-4 7-4 8-4 25-24 26-24 27-24 28-24	5 6 7 8 1 2 3 4	B6 B7 B8 C1 C2 C3 C4 C5	1								

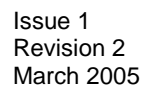
LOCATION	FUNCTION	INPUT CONNECTIONS		CHANNEL	MODULE								
		TERMINAL	INPUT										
12.3	10.9DT 12.3AT 12.3 RGKR 12.3 NGKR 12.3 ECR 12.3 50V WARNING SPARE SPARE	5-4 6-4 7-4 8-4 25-24 26-24 27-24 28-24	5 6 7 8 1 2 3 4	C6 C7 C8 D1 D2 D3 D4 D5	1								
12.6	12.6AT 12.3BT 13.4BT 12.6 RGKR 12.6 NGKR 12.6 ECR 12.6 50V WARNING DIRECT INPUT SPARE SPARE	5-4 6-4 7-4 8-4 25-24 26-24 27-24 28-24 5-4 6-4 7-4 8-4 25-24 26-24 27-24 28-24	5 6 7 8 1 2 3 4 5 6 7 8 1 2 3 4	D6 D7 D8 E1 E2 E3 E4 E5 E6 E7	1 2								
13.7B	CHANNEL GENERATOR AND PRIVATE LINE MODEMS												

01-09-01	ISSUE-01		26-04-01	14:09		Tab 01	CSTDRI0	DUPLINE FIELD BUS CHANNEL ALLOCATIONS		SHT: R10	CB: STD
STATION A TO STATION B											
SYSTEM 1 (10.9 LOCATION TO 67.0 LOCATION)											
LOCATION	FUNCTION	INPUT CONNECTIONS		CHANNEL	MODULE						
		TERMINAL	INPUT								
13.4	13.4AT	5-4	5	E8	1						
	13.8BT	6-4	6	F1							
	13.4 RGKR	7-4	7	F2							
	13.4 NGKR	8-4	8	F3							
	13.4 ECR	25-24	1	F4							
	SPARE	26-24	2	F5							
	SPARE	27-24	3	F6							
	SPARE	28-24	4	F7							
	SPARE	5-4	5	F8	2						
	DIRECT INPUT	6-4	6	G1							
	FRAME CD NR	7-4	7	G2							
	REL SW AN	8-4	8	G3							
	13.4 120V&50V WARNING	25-24	1	G4							
	SPARE	26-24	2	G5							
	SPARE	27-24	3	G6							
	SPARE	28-24	4								
13.7	12.3CT	5-4	5	G7	1						
	13.7AT	6-4	6	G8							
	13.7 RGKR	7-4	7	H1							
	13.7 NGKR	8-4	8	H2							
	13.7 ECR	25-24	1	H3							
	13.7 50V WARNING	26-24	2	H4							
	SPARE	27-24	3	H5							
	SPARE	28-24	4	H6							
LOCATION	FUNCTION	INPUT CONNECTIONS		CHANNEL	MODULE						
		TERMINAL	INPUT								
13.8	13.8AT	5-4	5	I1	1						
	15.2CT	6-4	6	I2							
	13.8 RGKR	7-4	7	I3							
	13.8 NGKR	8-4	8	I4							
	13.8 ECR	25-24	1	I5							
	13.8 50V WARNING	26-24	2	I6							
	SPARE	27-24	3	I7							
	SPARE	28-24	4	I8							
15.2C	13.7BT	5-4	5	J1	1						
	15.2BT	6-4	6	J2							
	DIRECT INPUT	7-4	7	J3							
		8-4	8								
		25-24	1								
		26-24	2								
		27-24	3								
		28-24	4								
14.5	13.7CT	5-4	5	J4	1						
	14.5AT	6-4	6	J5							
	14.5 RGKR	7-4	7	J6							
	14.5 NGKR	8-4	8	J7							
	14.5 ECR	25-24	1	J8							
	14.5 50V WARNING	26-24	2	K1							
	SPARE	27-24	3	K2							
	SPARE	28-24	4	K3							

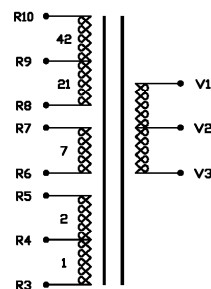
01-09-01 | ISSUE-01 | | | | Tab 01 | CSTDRI1 | DUPLINE FIELDBUS CHANNEL ALLOCATIONS | | SHT: R11 | CB: STD

STATION A TO STATION B
SYSTEM 1 (10.9 LOCATION TO 17.0 LOCATION)

LOCATION	FUNCTION	INPUT CONNECTIONS		CHANNEL	MODULE
		TERMINAL	INPUT		
15.2	14.5BT	5-4	5	K4	1
	15.2AT	6-4	6	K5	
	16.4CT	7-4	7	K6	
		8-4	8		
	15.2 RGKR	25-24	1	K7	
	15.2 NGKR	26-24	2	K8	
		27-24	3		
		28-24	4		
	15.2 ECR	5-4	5	L1	2
	12.5 50V WARNING	6-4	6	L2	
	DIRECT INPUT	7-4	7	L3	
	SPARE	8-4	8	L4	
	SPARE	25-24	1	L5	
		26-24	2		
		27-24	3		
		28-24	4		
15.7	14.5CT	5-4	5	L6	1
	15.7AT	6-4	6	L7	
	16.4BT	7-4	7	L8	
		8-4	8		
	15.7 RGKR	25-24	1	M1	
	15.7 NGKR	26-24	2	M2	
		27-24	3		
		28-24	4		
	15.7 ECR	5-4	5	M3	2
	15.7 120V&50V WARNING	6-4	6	M4	
	DIRECT INPUT	7-4	7	M5	
	SPARE	8-4	8	M6	
	SPARE	25-24	1	M7	
		26-24	2		
		27-24	3		
		28-24	4		
16.4	16.4AT	5-4	5	M8	1
	15.7BT	6-4	6	N1	
	15.7CT	7-4	7	N2	
	17.0BT	8-4	8	N3	
	16.4 RGKR	25-24	1	N4	
	16.4 NGKR	26-24	2	N5	
		27-24	3		
		28-24	4		
	16.4 ECR	5-4	5	N6	2
	16.4 50V WARNING	6-4	6	N7	
	DIRECT INPUT	7-4	7	N8	
		8-4	8		
	SPARE	25-24	1	O1	
	SPARE	26-24	2	O2	
		27-24	3		
		28-24	4		
16.9	15.7DT	5-4	5	O3	1
	16.9AT	6-4	6	O4	
	DIRECT INPUT	7-4	7	O5	
		8-4	8		
		25-24	1		
		26-24	2		
		27-24	3		
		28-24	4		
17.0	17.0AT	5-4	5	O6	1
	17.0 RGKR	6-4	6	O7	
	17.0 NGKR	7-4	7	O8	
	17.0 ECR	8-4	8	P1	
	17.6DT	25-24	1	P2	
	SPARE	26-24	2	P3	
	SPARE	27-24	3	P4	
		28-24	4		



19-09-91 ISSUE-02 Rev 01 CSTD0T02UM71 CSEE RECEIVER ADJUSTMENTS SHT: T02 CB: 0



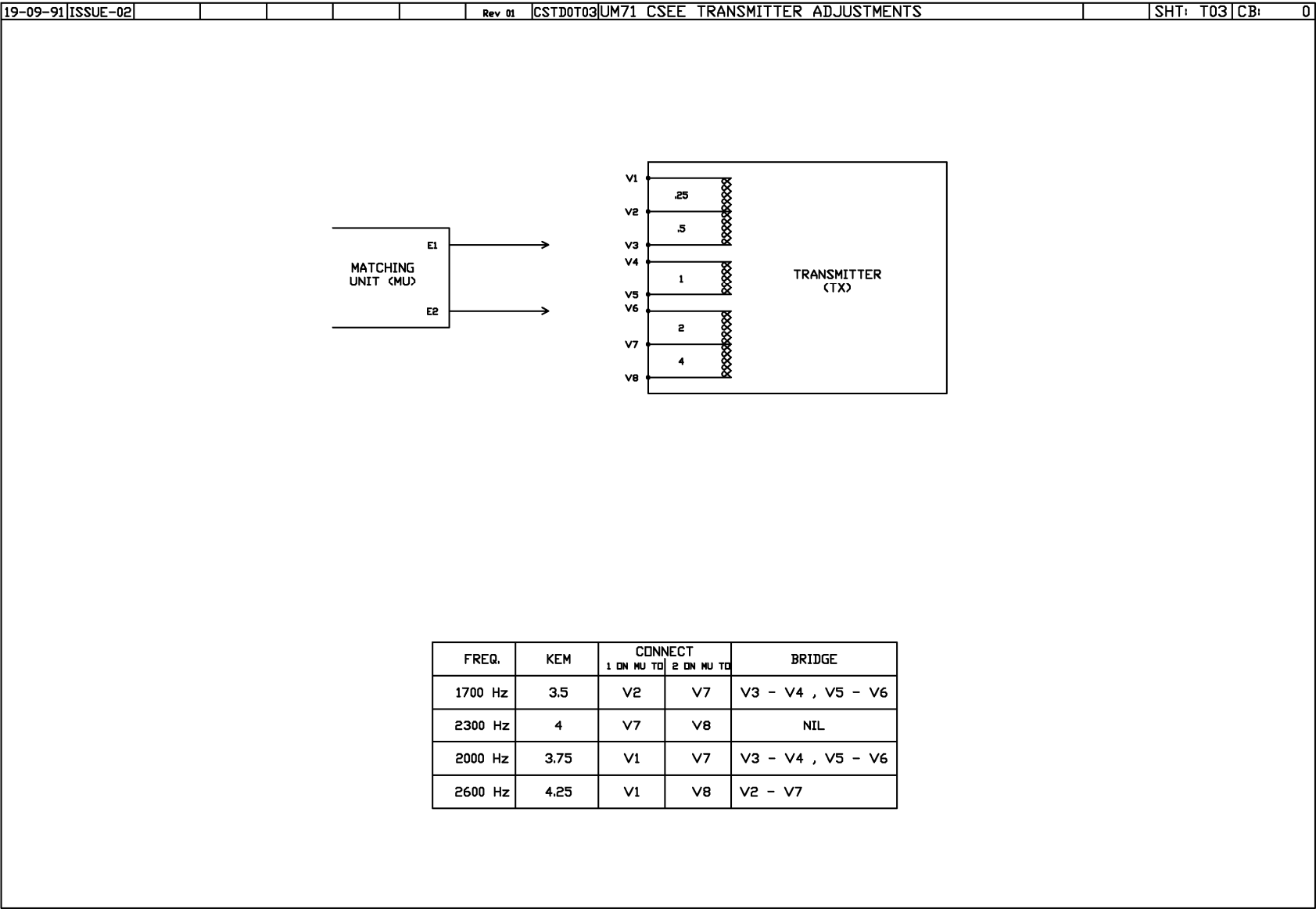
NOTE:
 THIS INFORMATION IS ALSO INCLUDED
 ON THE BACK OF CSEE HISTORY CARDS

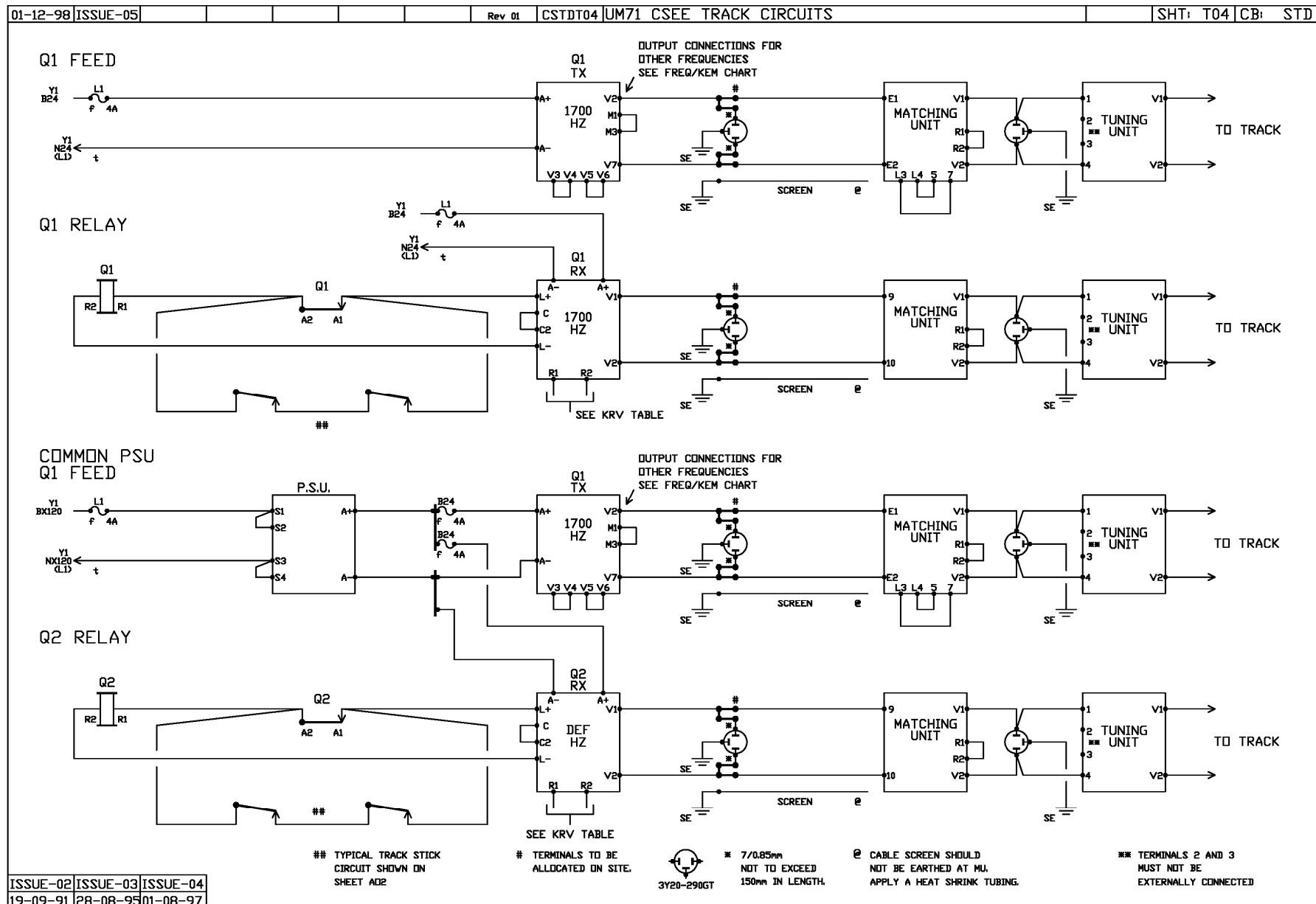
KRV	CONNECT R1 TO	R2 TO	BRIDGE
1	R3	R4	
2	R5	R4	
3	R3	R5	
4	R5	R7	R3 - R6
5	R5	R7	R4 - R6
6	R4	R7	R3 - R6
7	R6	R7	
8	R3	R7	R4 - R6
9	R4	R7	R5 - R6
10	R3	R7	R5 - R6
11	R9	R7	R3 - R8 R5 - R6
12	R9	R7	R4 - R8 R5 - R6
13	R9	R7	R3 - R8 R4 - R6
14	R9	R7	R6 - R8
15	R9	R3	R4 - R7 R6 - R8
16	R9	R4	R5 - R7 R6 - R8
17	R9	R3	R5 - R7 R6 - R8
18	R9	R5	R3 - R8
19	R9	R5	R4 - R8
20	R9	R4	R3 - R8

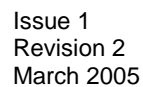
KRV	CONNECT R1 TO	R2 TO	BRIDGE
21	R9	R8	
22	R9	R3	R4 - R8
23	R9	R4	R5 - R8
24	R9	R3	R5 - R8
25	R9	R5	R3 - R6 R7 - R8
26	R9	R5	R4 - R6 R7 - R8
27	R9	R4	R3 - R6 R7 - R8
28	R9	R6	R7 - R8
29	R9	R3	R4 - R6 R7 - R8
30	R9	R4	R5 - R6 R7 - R8
31	R9	R3	R5 - R6 R7 - R8
32	R10	R7	R5 - R6 R3 - R9
33	R10	R7	R5 - R6 R4 - R9
34	R10	R7	R4 - R6 R3 - R9
35	R10	R7	R6 - R9
36	R10	R7	R3 - R6 R4 - R9
37	R10	R7	R4 - R6 R5 - R9
38	R10	R7	R3 - R6 R5 - R9
39	R10	R5	R3 - R9
40	R10	R5	R4 - R9

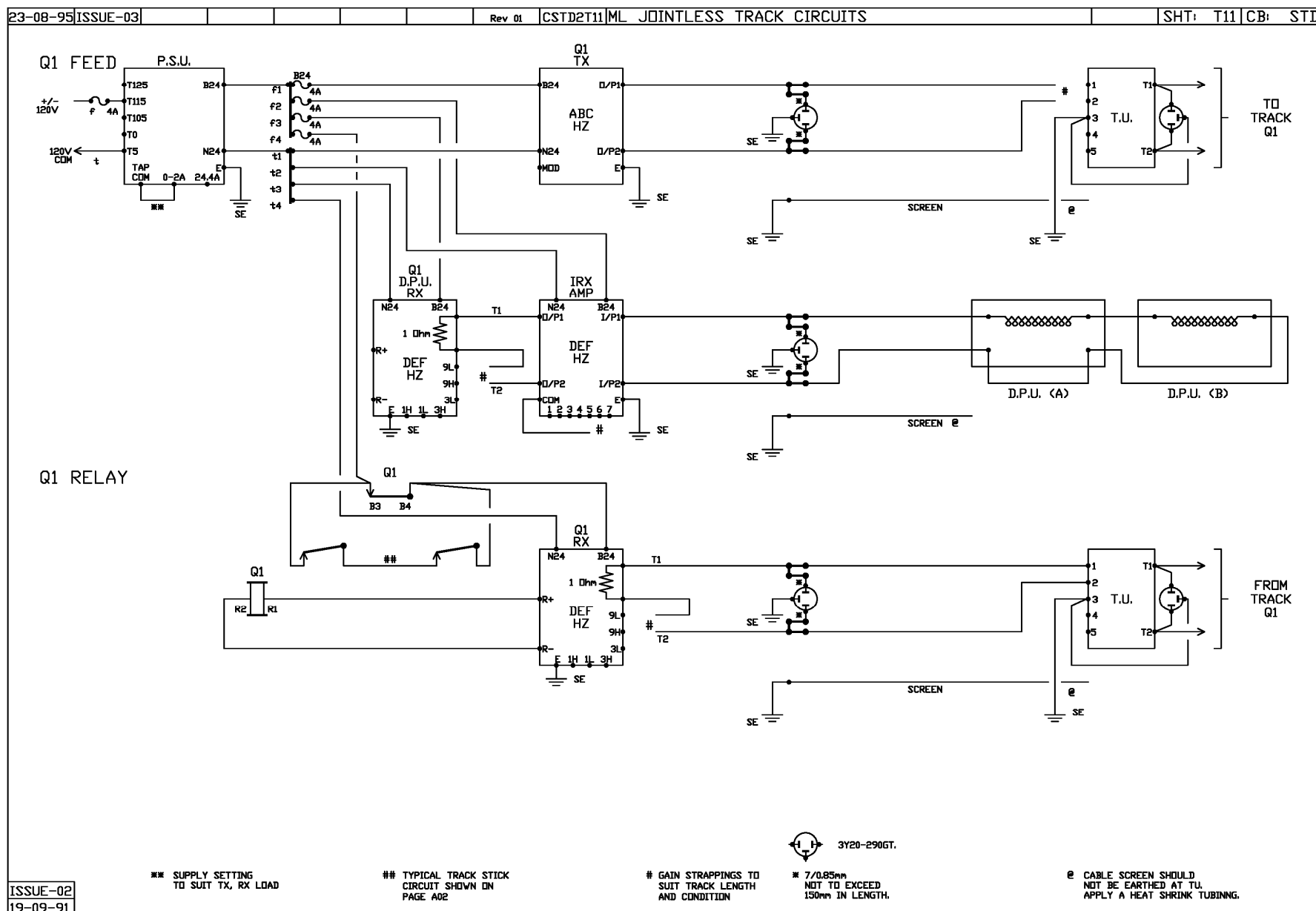
KRV	CONNECT R1 TO	R2 TO	BRIDGE
41	R10	R4	R3 - R9
42	R10	R9	
43	R10	R3	R4 - R9
44	R10	R4	R5 - R9
45	R10	R3	R5 - R9
46	R10	R5	R3 - R6 R7 - R9
47	R10	R5	R4 - R6 R7 - R9
48	R10	R4	R3 - R6 R7 - R9
49	R10	R6	R7 - R9
50	R10	R3	R4 - R6 R7 - R9
51	R10	R4	R5 - R6 R7 - R9
52	R10	R3	R5 - R6 R7 - R9
53	R10	R7	R5 - R6 R3 - R8
54	R10	R7	R5 - R6 R4 - R8
55	R10	R7	R4 - R6 R3 - R8
56	R10	R7	R6 - R8
57	R10	R7	R3 - R6 R4 - R8
58	R10	R7	R4 - R6 R5 - R8
59	R10	R7	R3 - R6 R5 - R8
60	R10	R5	R3 - R8

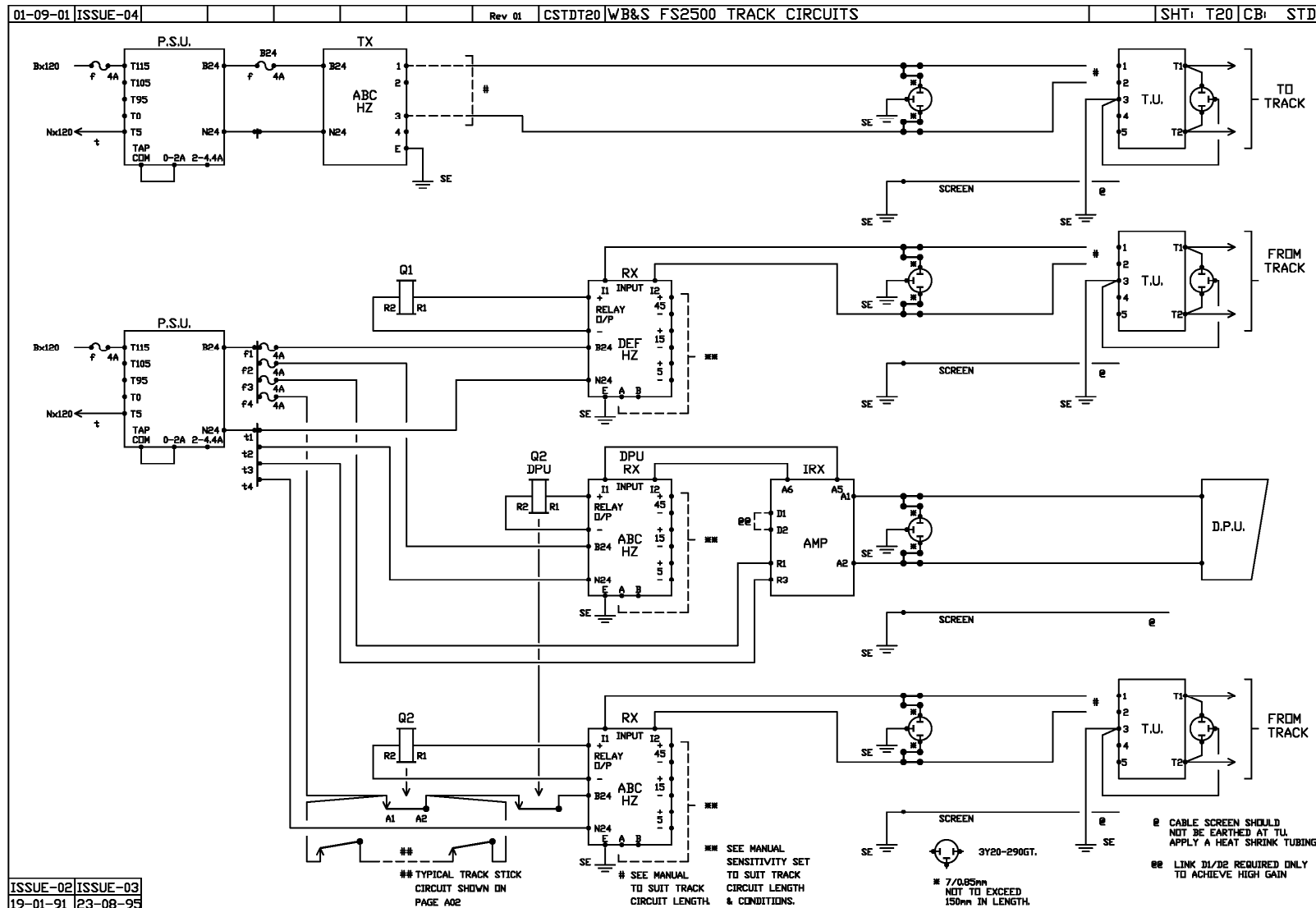
KRV	CONNECT R1 TO	R2 TO	BRIDGE
61	R10	R5	R4 - R8
62	R10	R4	R3 - R8
63	R10	R8	
64	R10	R3	R4 - R8
65	R10	R4	R5 - R8
66	R10	R3	R5 - R8
67	R10	R5	R3 - R6 R7 - R8
68	R10	R5	R4 - R6 R7 - R8
69	R10	R4	R3 - R6 R7 - R8
70	R10	R6	R7 - R8
71	R10	R3	R4 - R6 R7 - R8
72	R10	R4	R5 - R6 R7 - R8
73	R10	R3	R5 - R6 R7 - R8

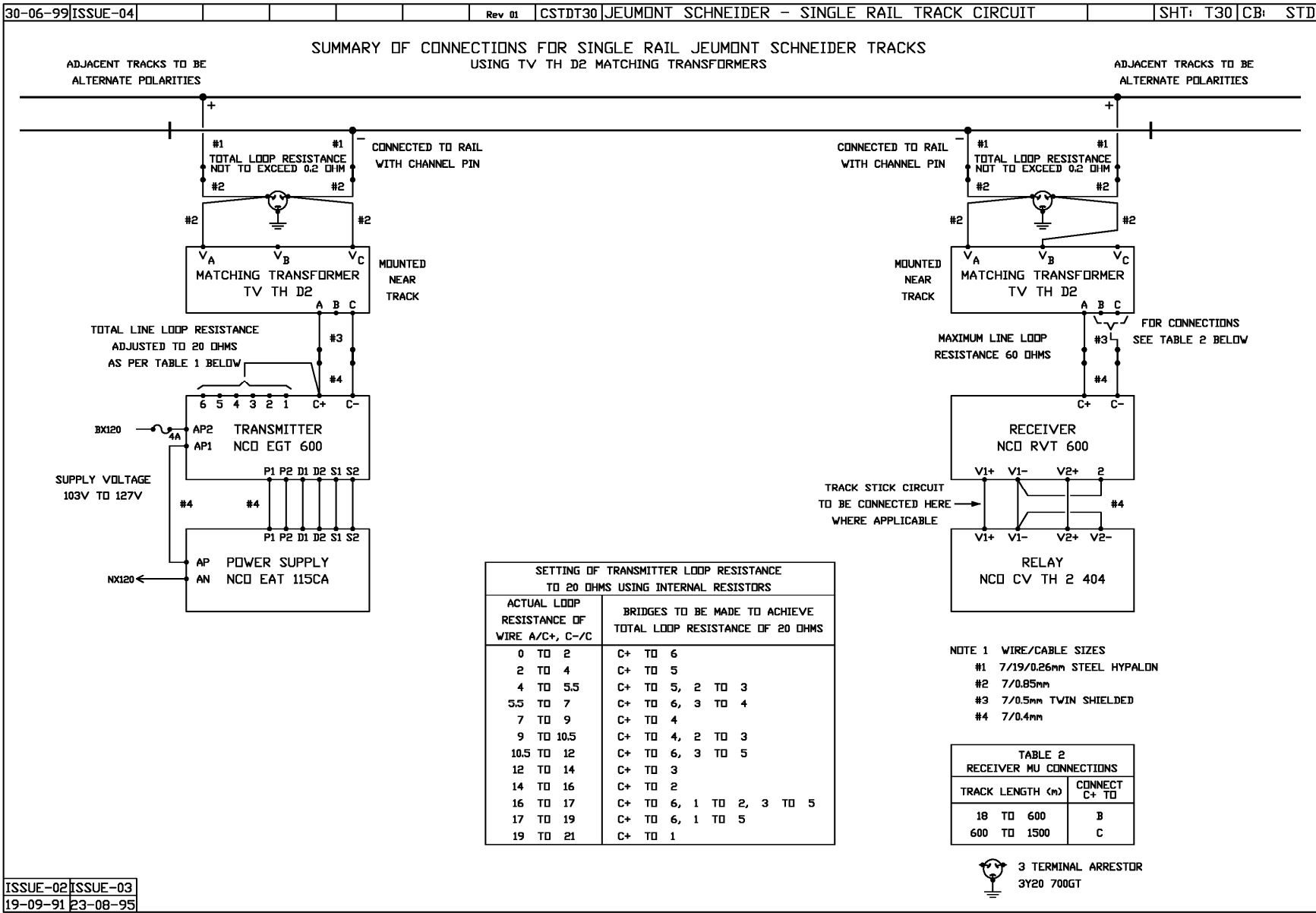


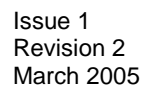


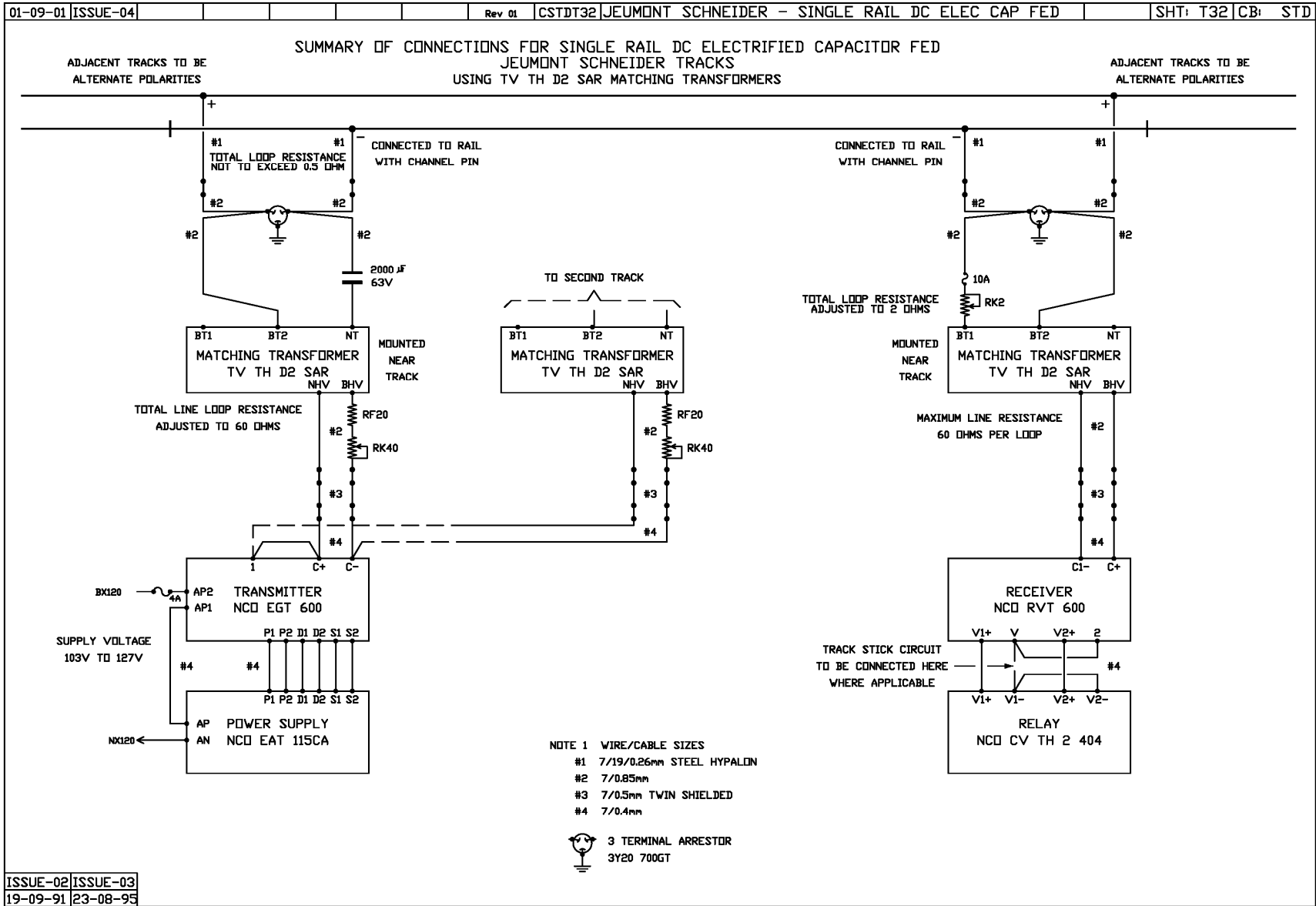


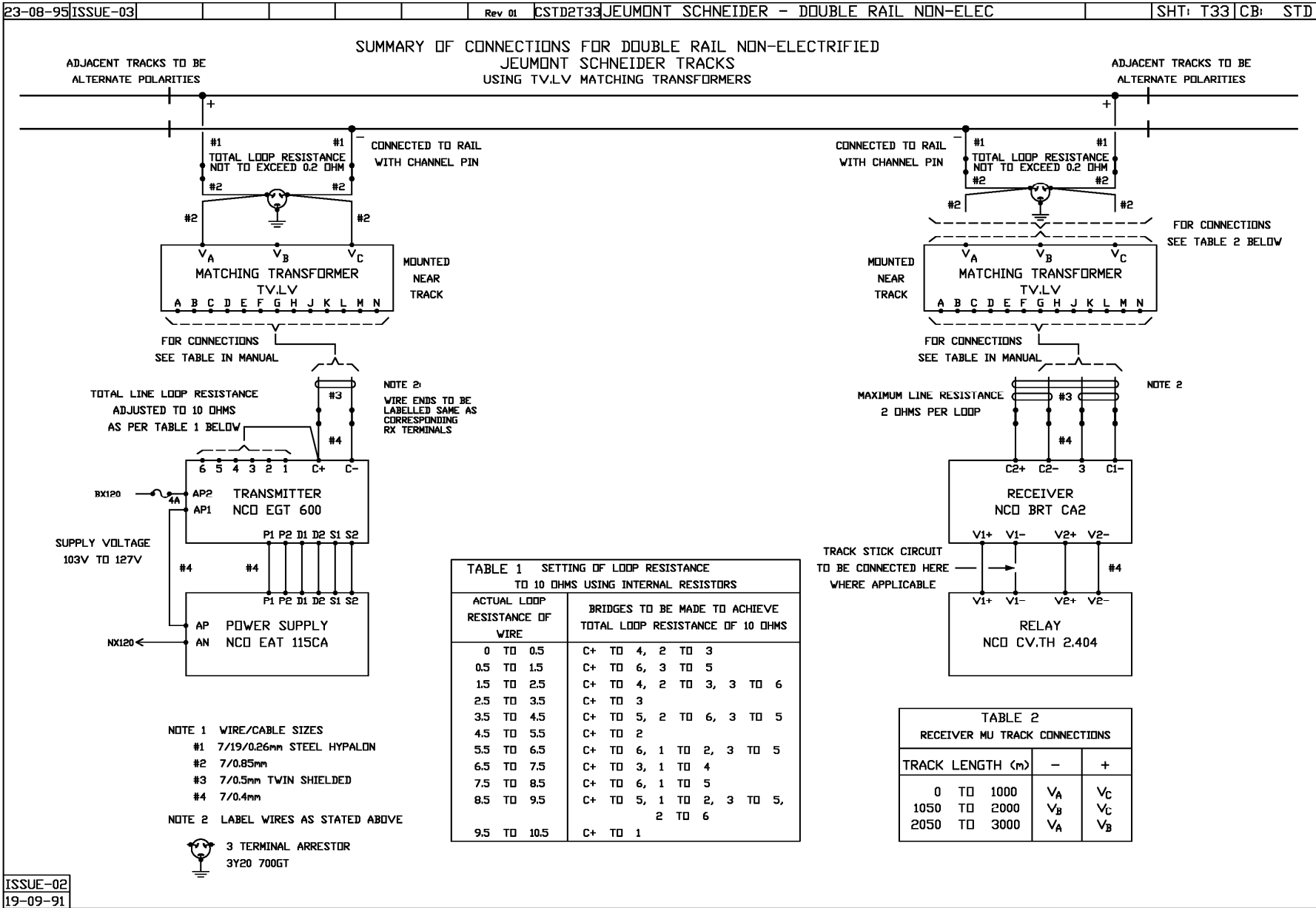


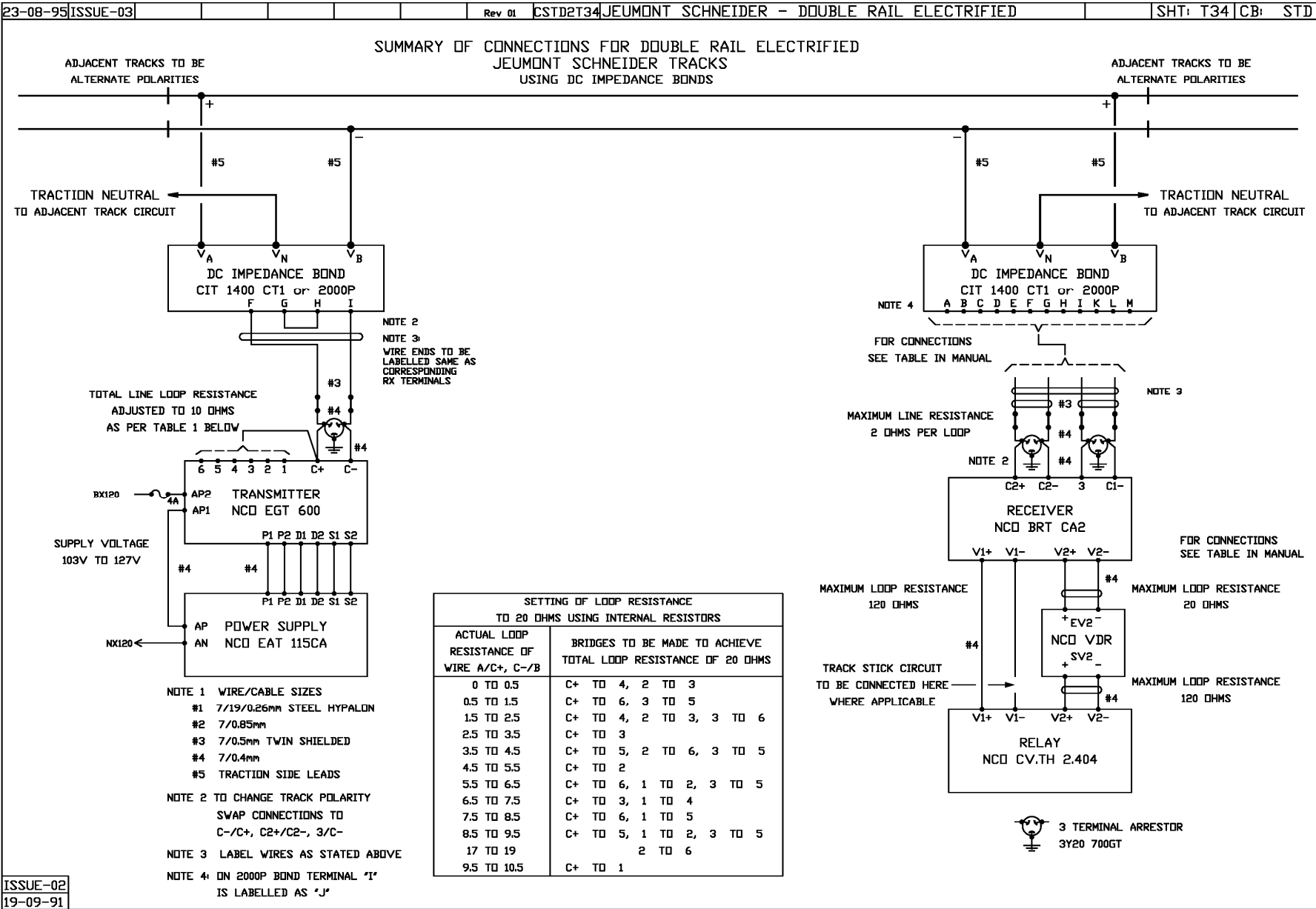






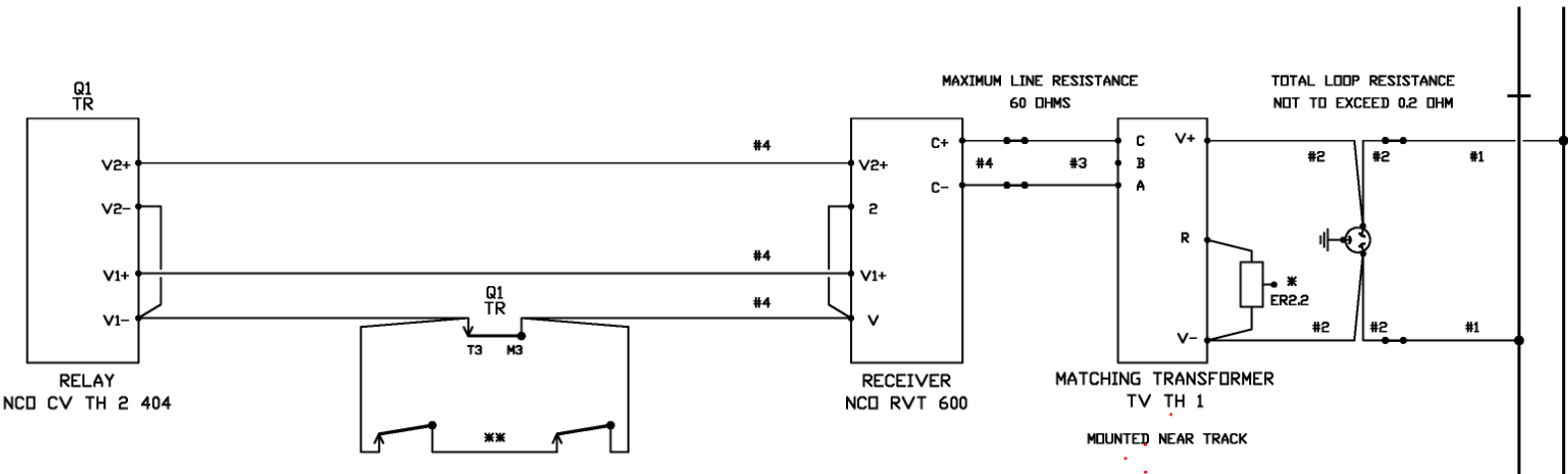






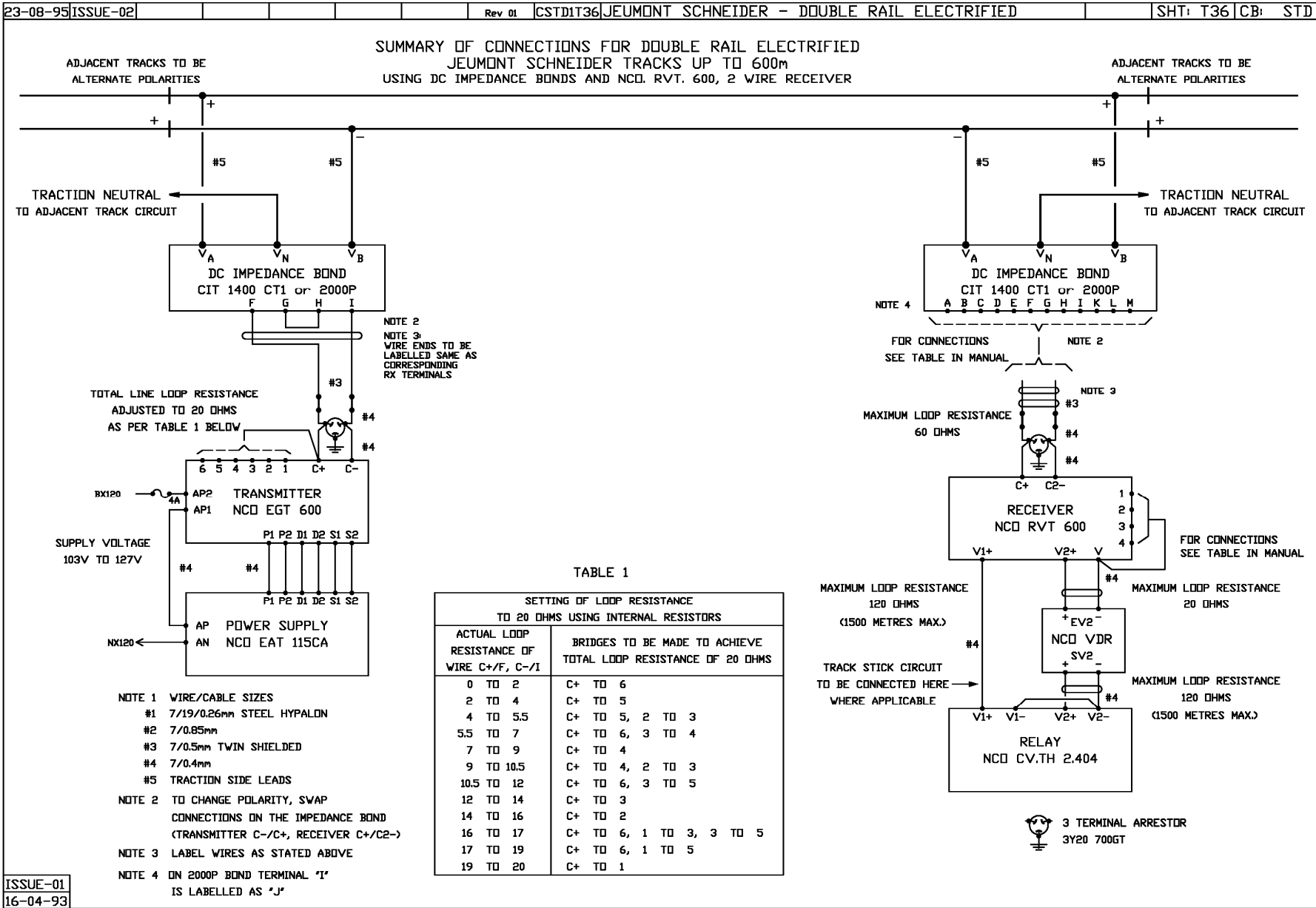
23-08-95	ISSUE-03					Rev 01	CSTD2T35	JEUMONT SCHNEIDER – SINGLE RAIL TRACK CIRCUIT		SHT: T35	CB: STD
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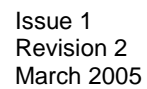
SINGLE RAIL JEUMONT SCHNEIDER TRACKS
 TYPICAL 2-WIRE RECEIVER WITH TRACK STICK



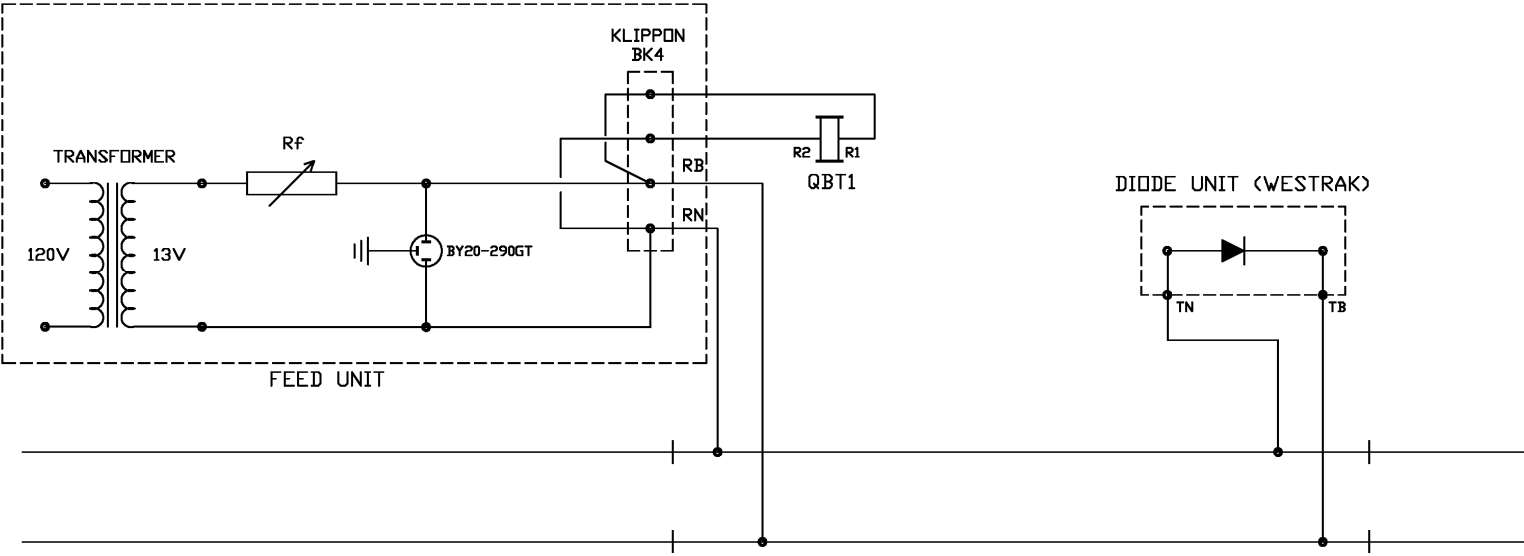
- NOTE 1 WIRE/CABLE SIZES
- #1 7/19/0.26mm STEEL HYPALON
 - #2 7/0.85mm
 - #3 7/0.5mm TWIN SHIELDED
 - #4 7/0.4mm
 - GREEN/YELLOW WIRE TO BE ISOLATED WITH AN INSULATED END CAP
 - TYPICAL TRACK STICK CIRCUIT SHOWN ON PAGE A02
 - 3 TERMINAL ARRESTOR 3Y20 700GT

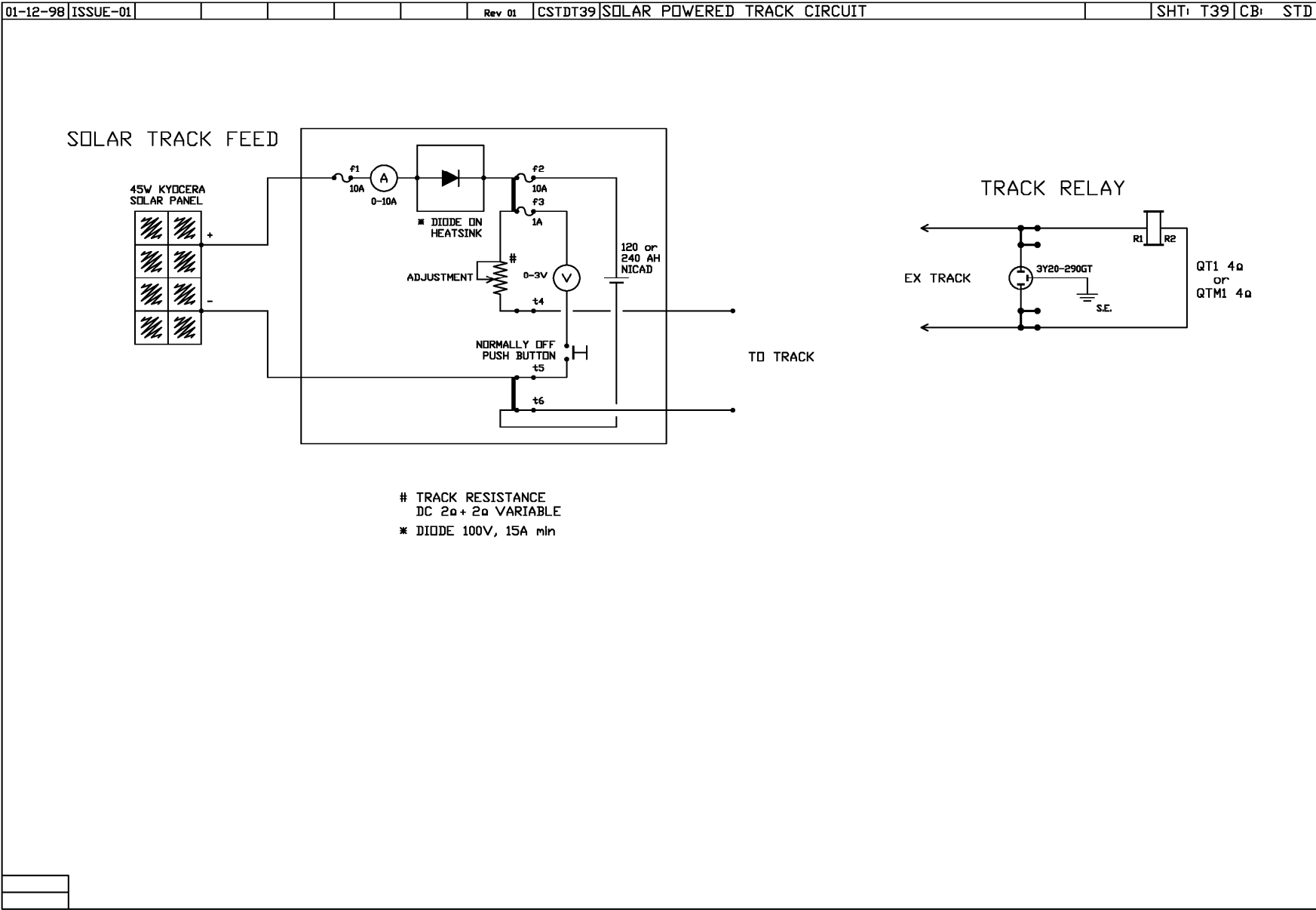
ISSUE-02
 19-09-91

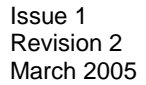


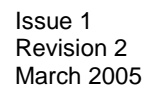


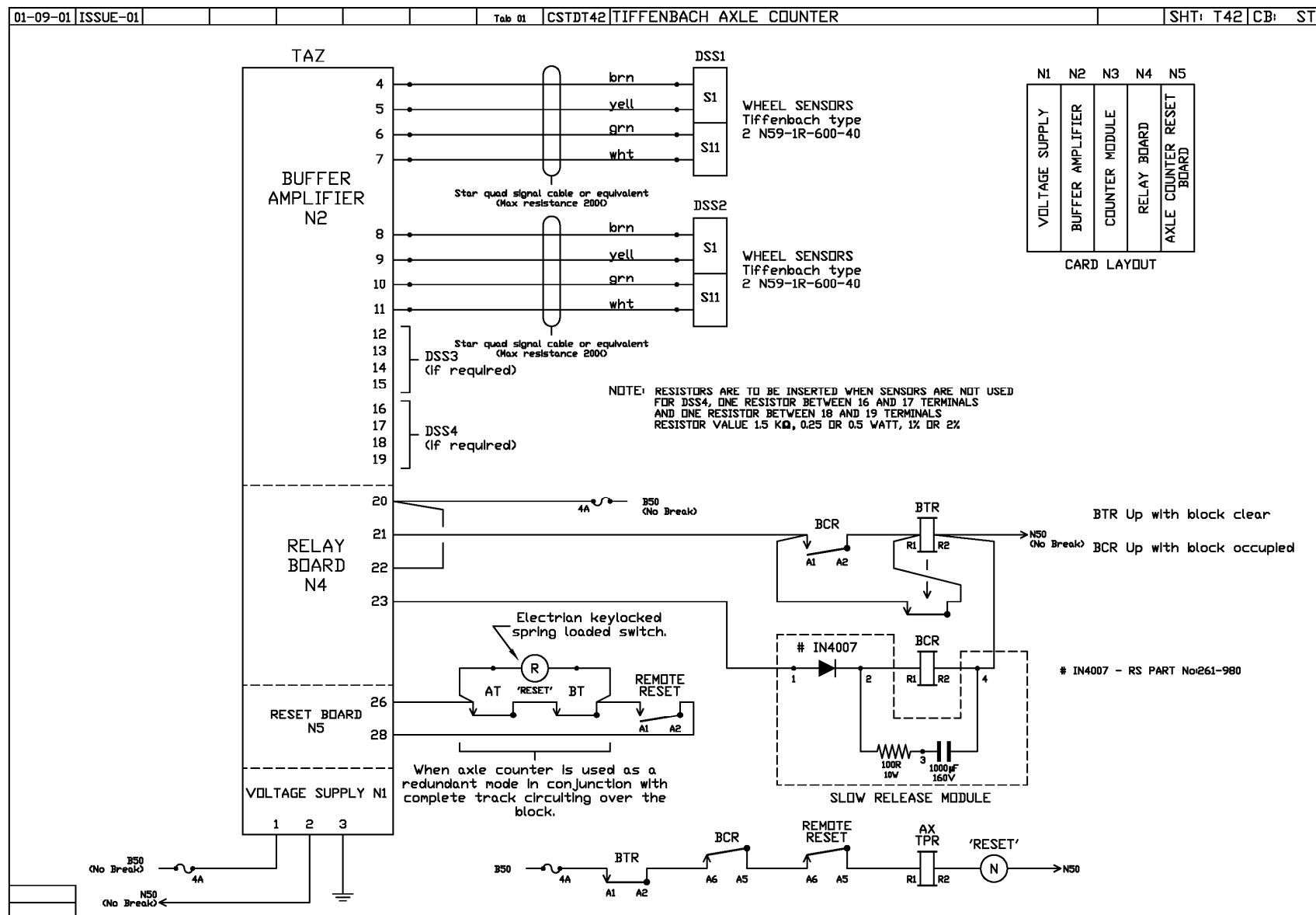
01-06-98	ISSUE-01						CSTD38	'WESTRAK' TRACK FEED UNIT		SHT: T38	CB:	0
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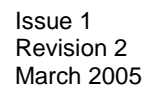




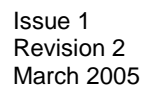


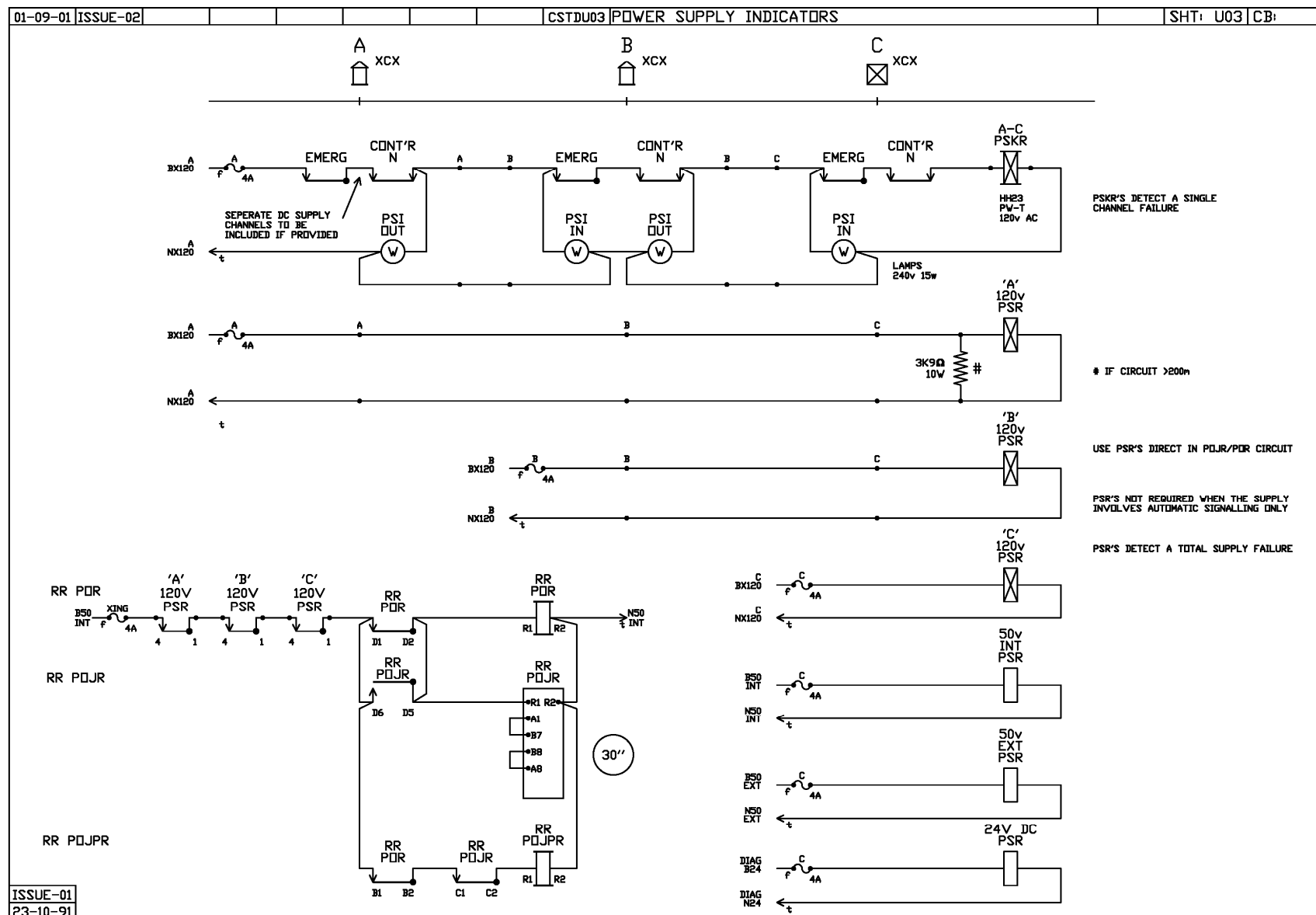


ISSUE-01
23-10-91

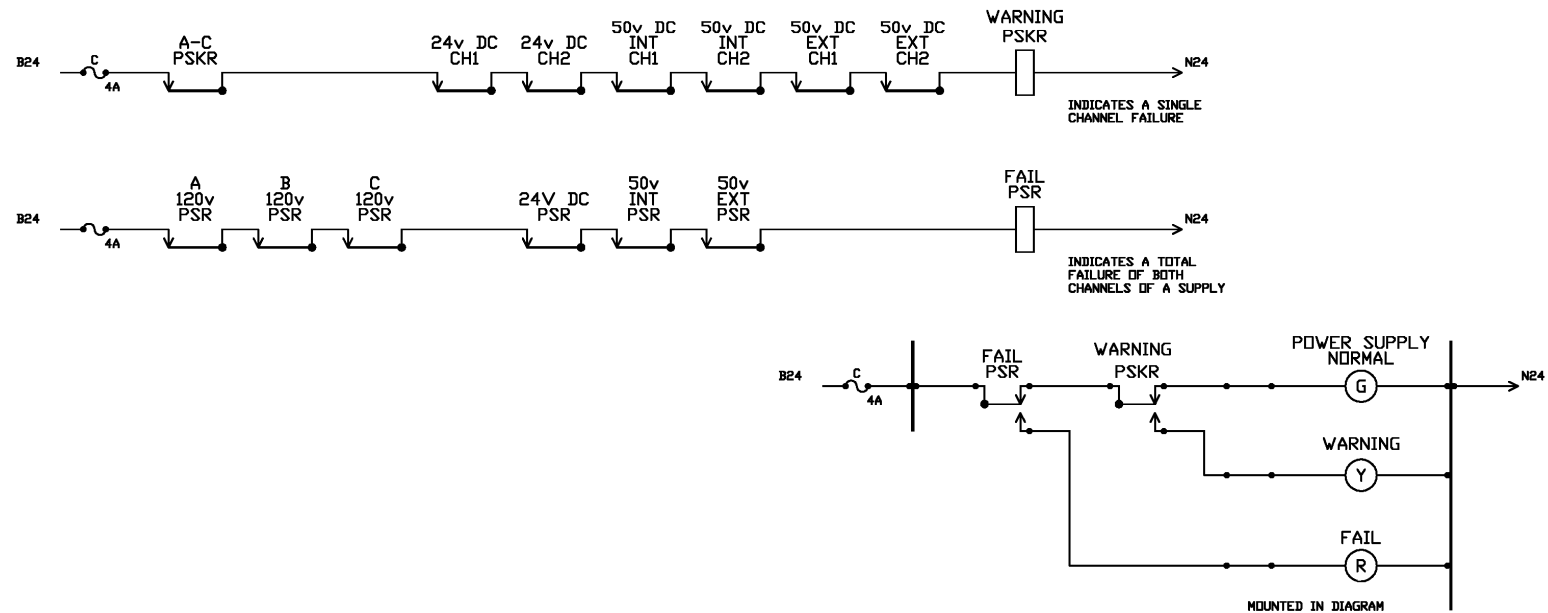


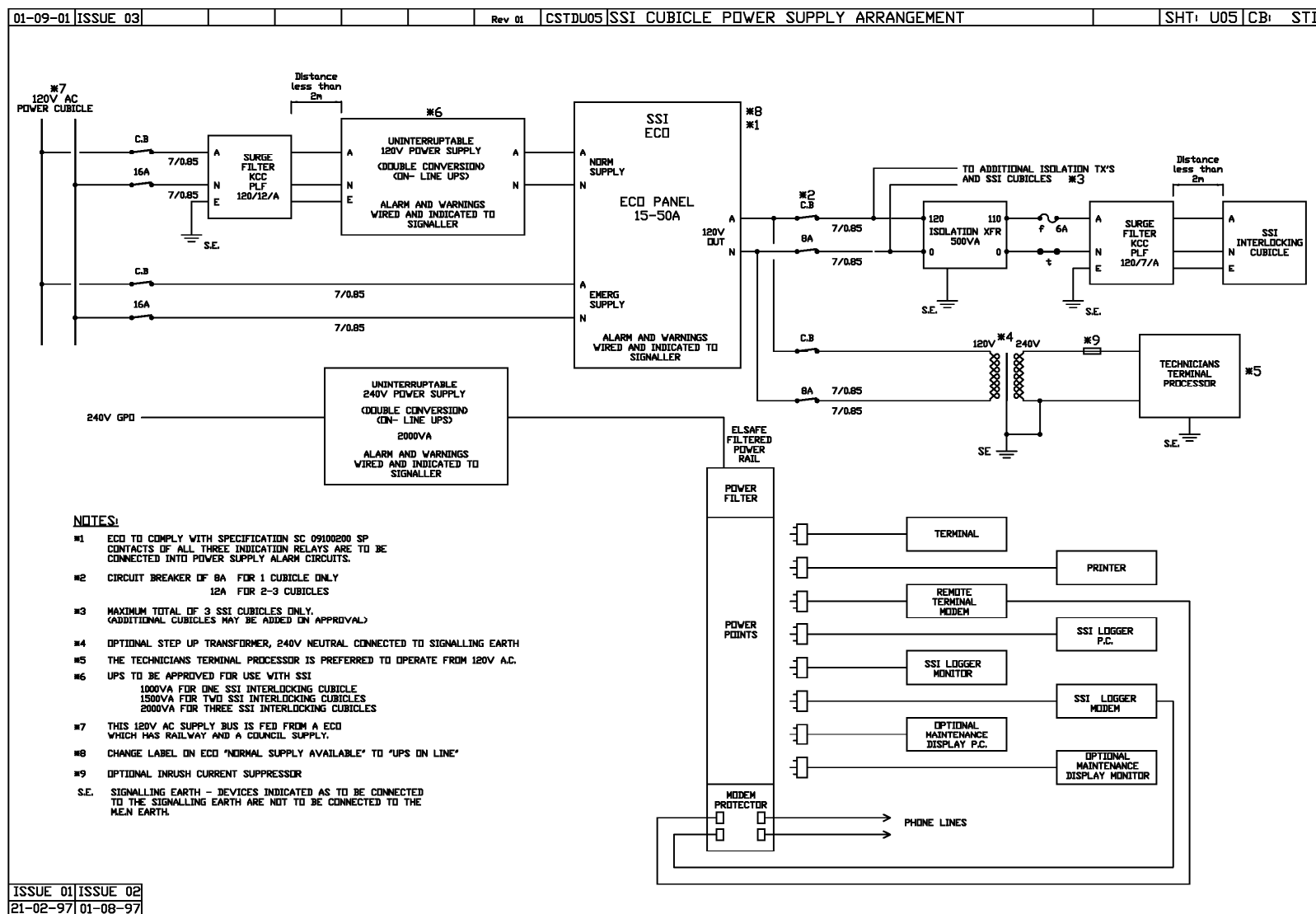
ISSUE-01
23-10-91

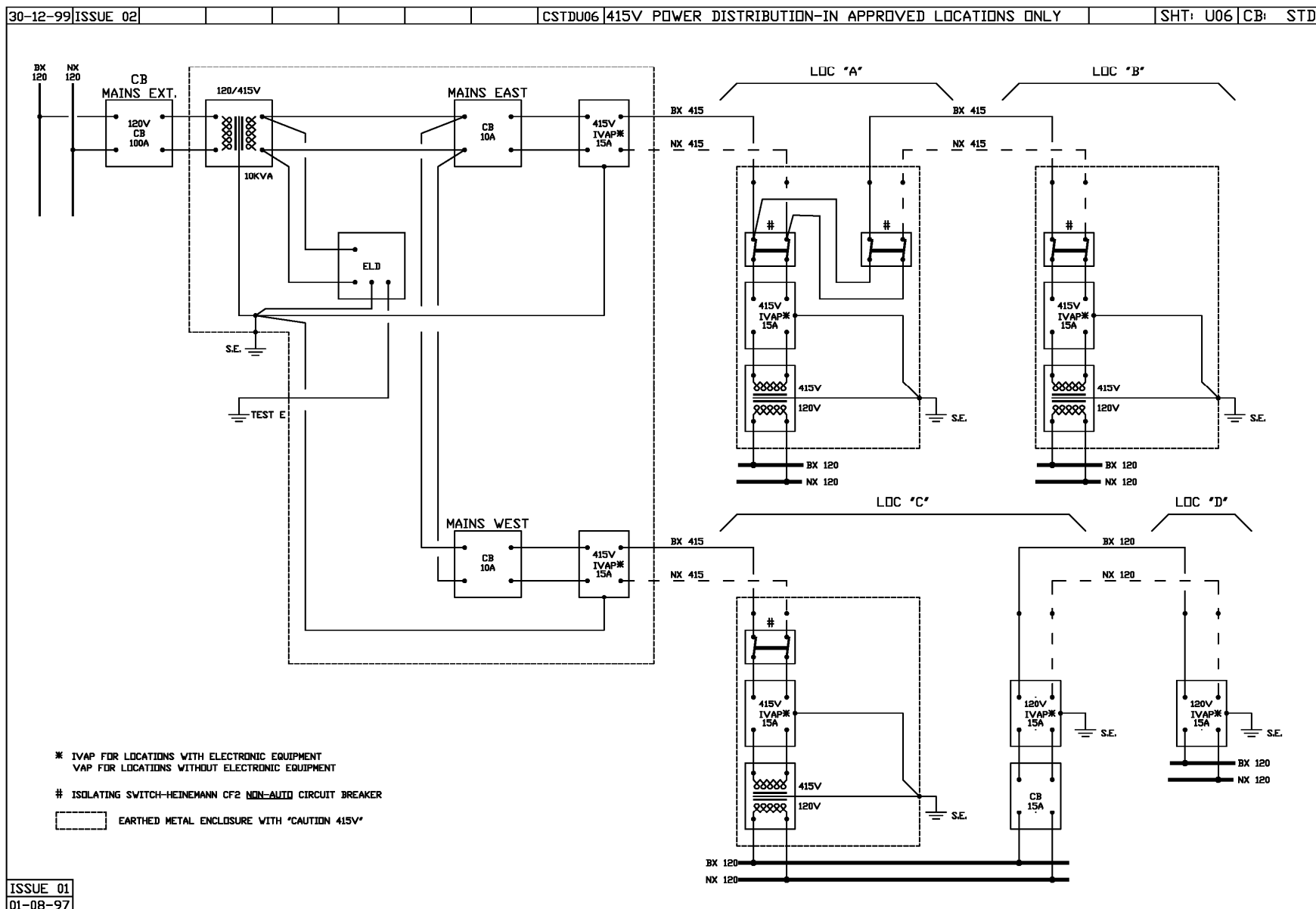


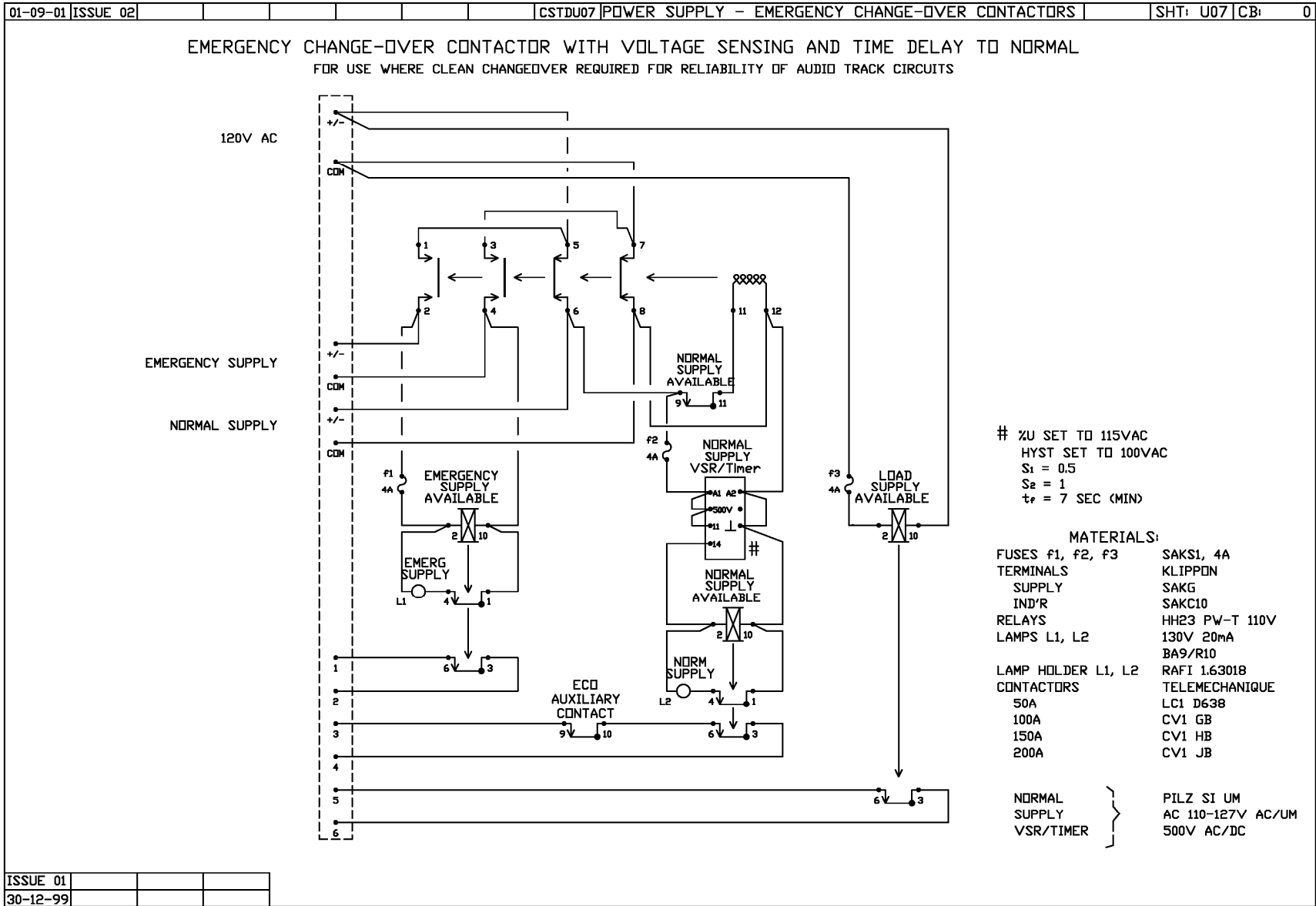


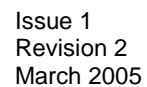
23-10-91	ISSUE-01							CSTD00U04	POWER SUPPLY INDICATORS		SHT: U04	CB: 0
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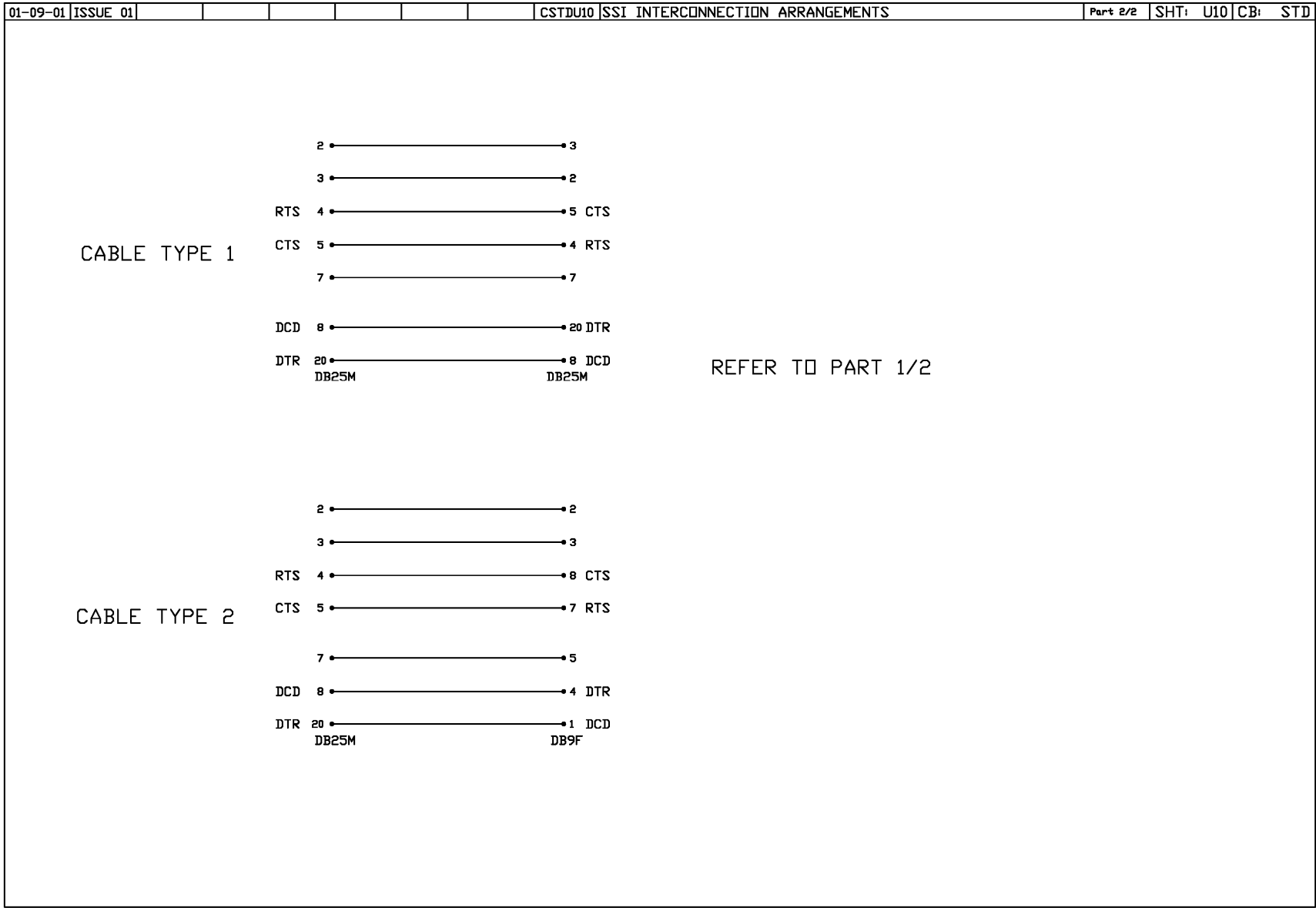


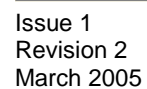


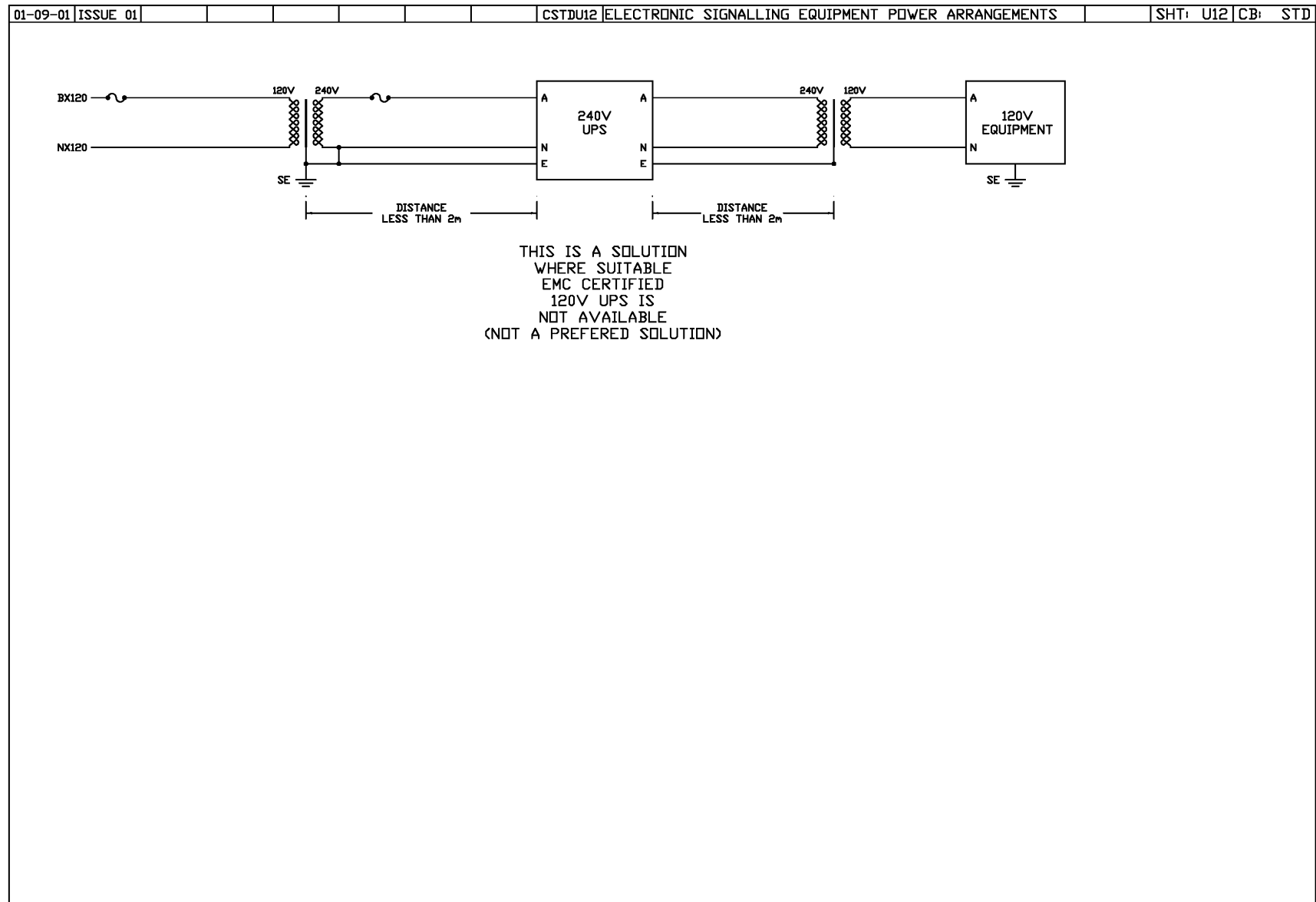


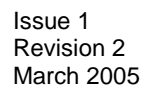


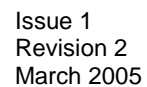


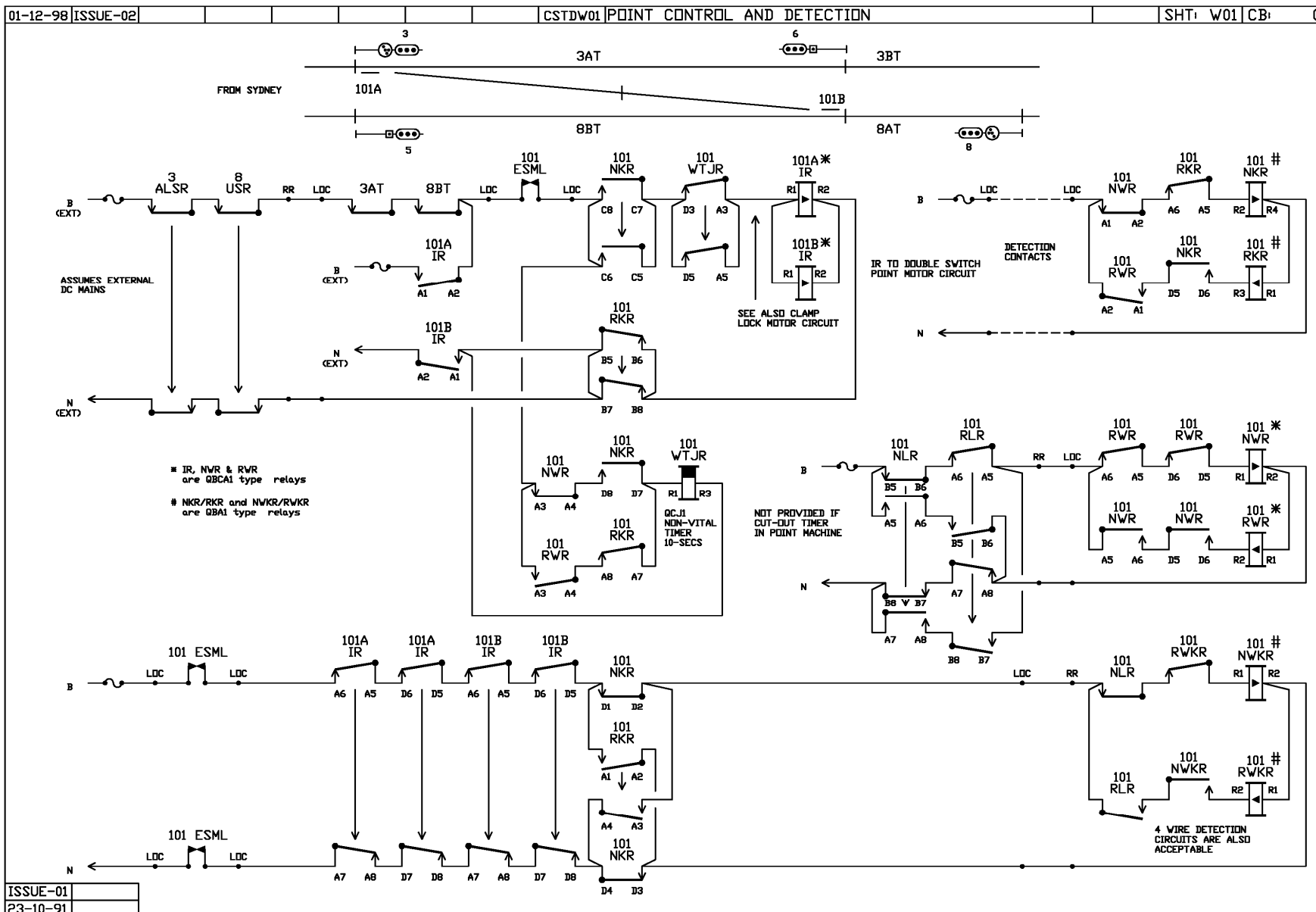


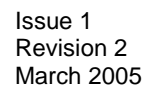


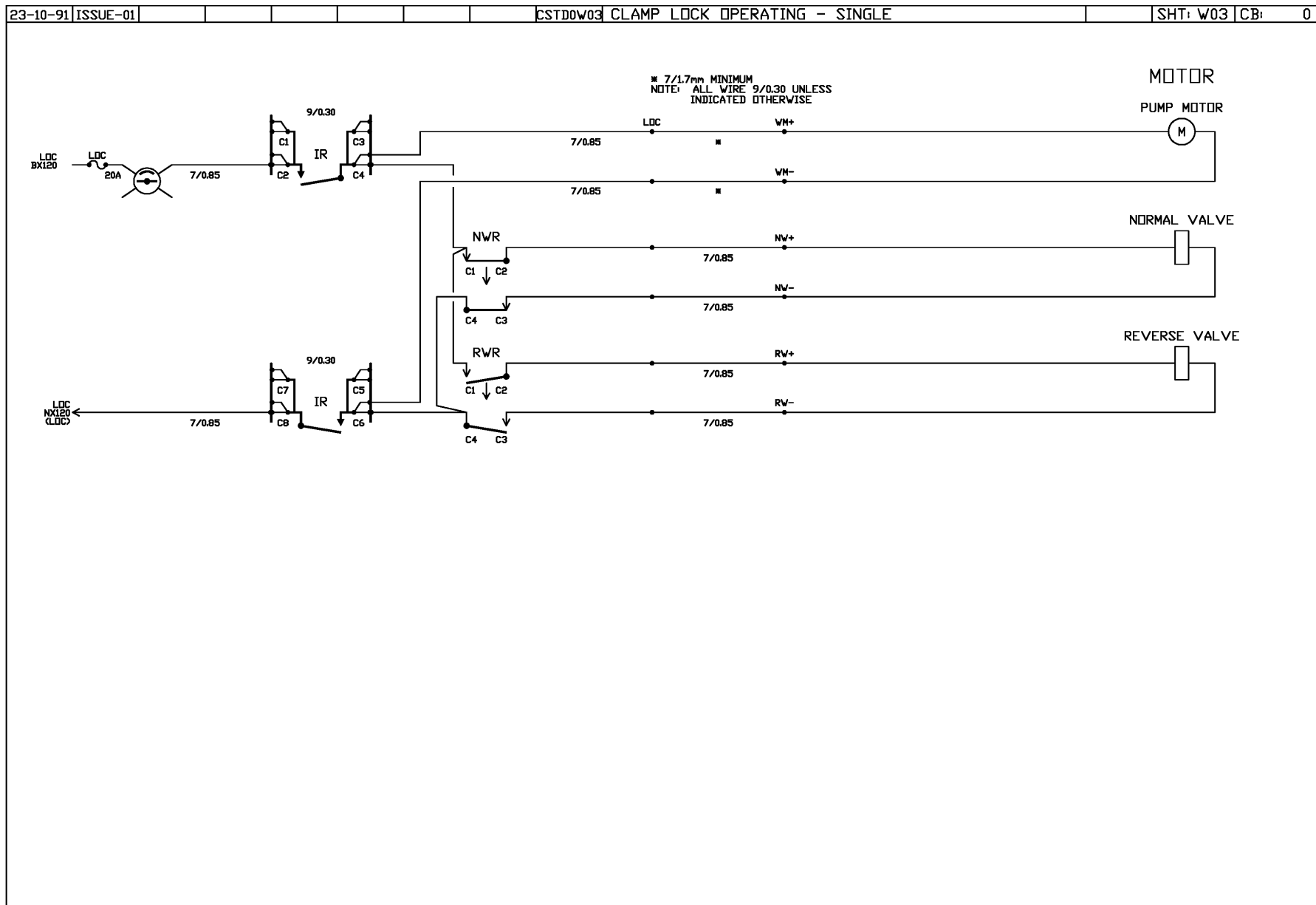






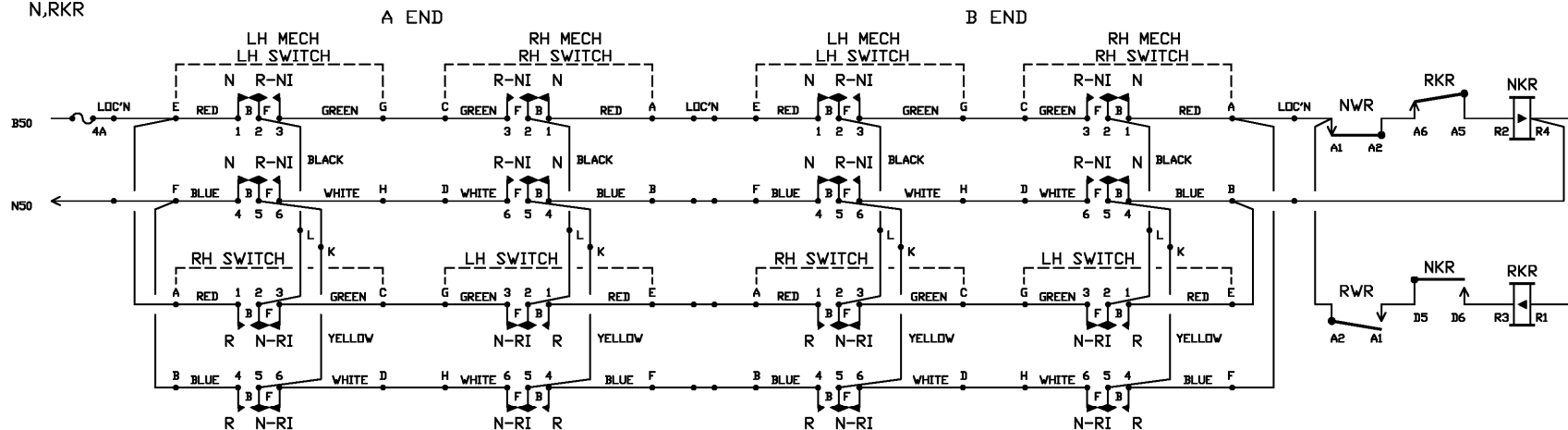






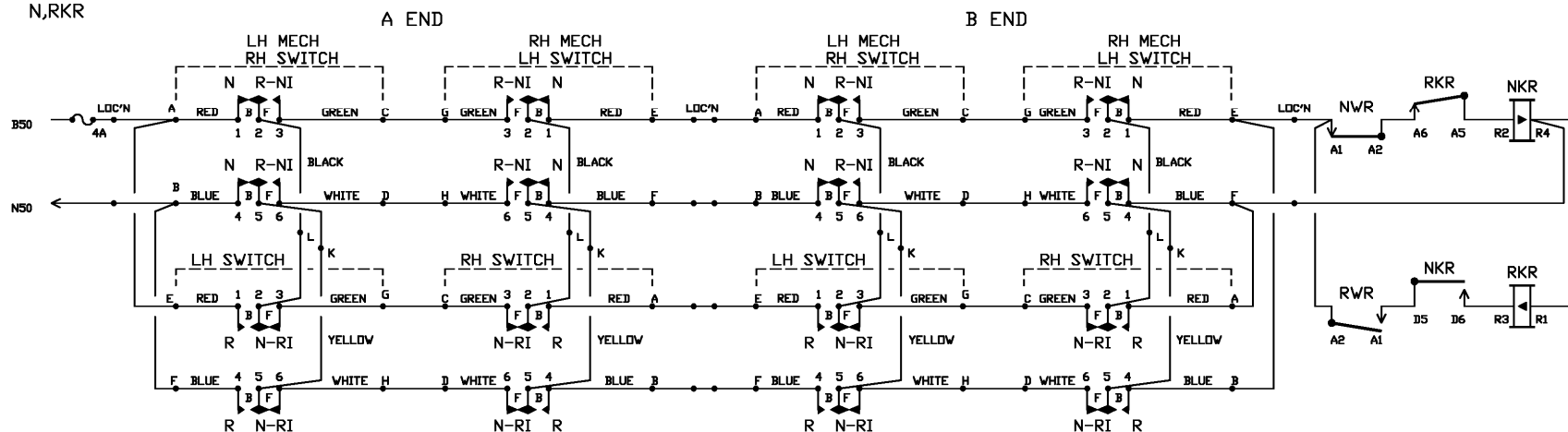
23-10-91 ISSUE-01 CSTD0W04 CLAMP LOCK DETECTION - DOUBLE SHT: W04 CB: 0

DOUBLE LEFT HAND
 N,RKR



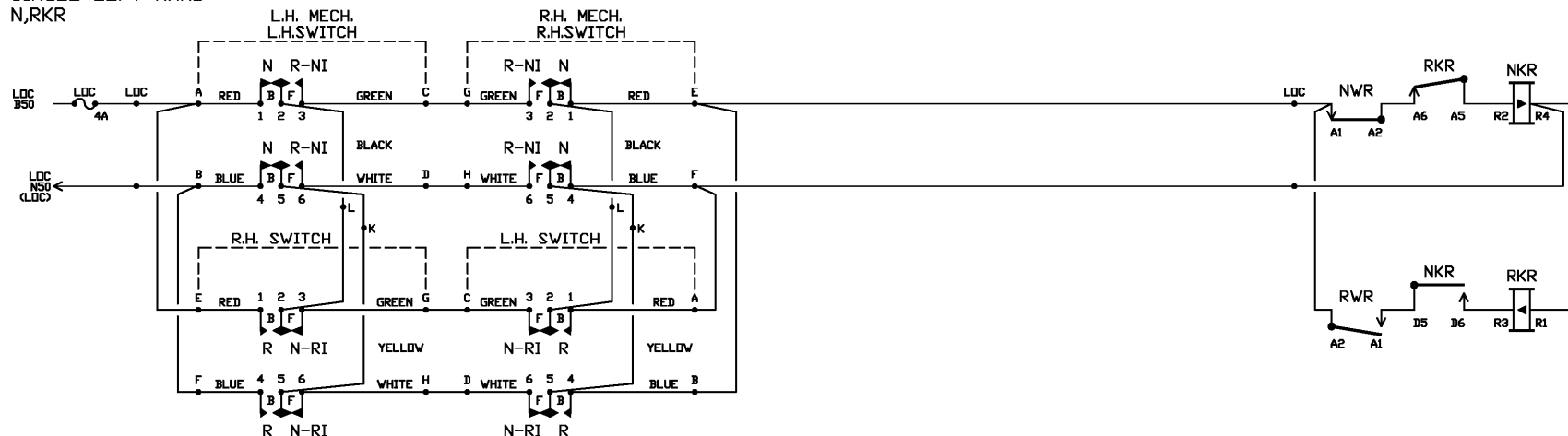
NOTE : CONTACTS 1-2 AND 4-5 OF LEFT HAND SWITCH IN EACH MECHANISM
 DETECT THE POINT SWITCH CLOSED AND LOCKED

DOUBLE RIGHT HAND
 N,RKR



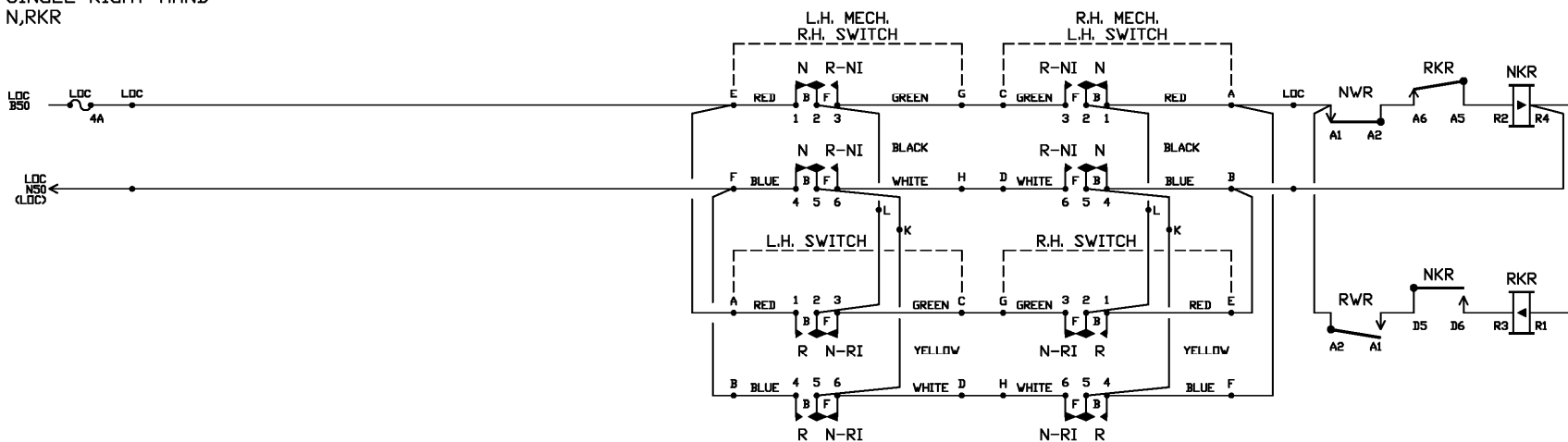
23-10-91 ISSUE-01 CSTD0W05 CLAMP LOCK DETECTION – SINGLE SHT: W05 CB: 0

SINGLE LEFT HAND
 N,RKR

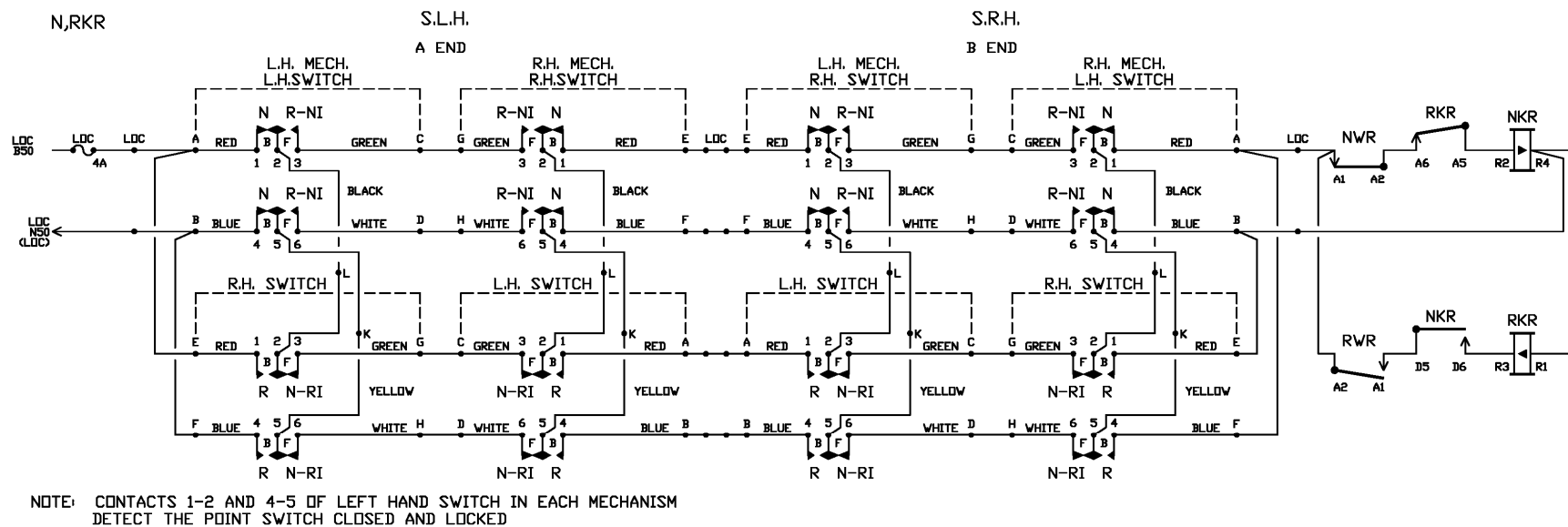


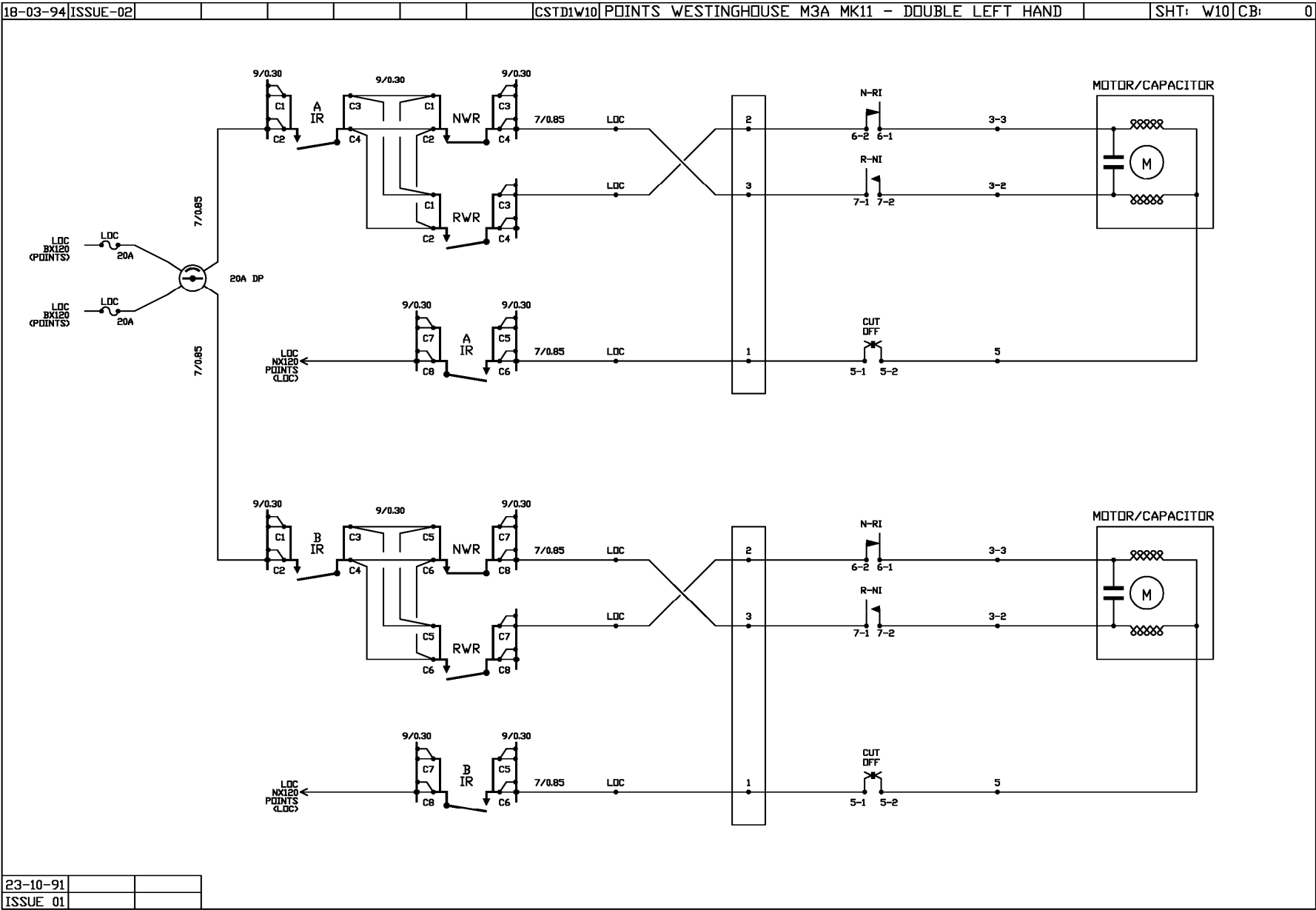
NOTE: CONTACTS 1-2 AND 4-5 OF LEFT HAND SWITCH IN EACH MECHANISM
 DETECT THE POINT SWITCH CLOSED AND LOCKED

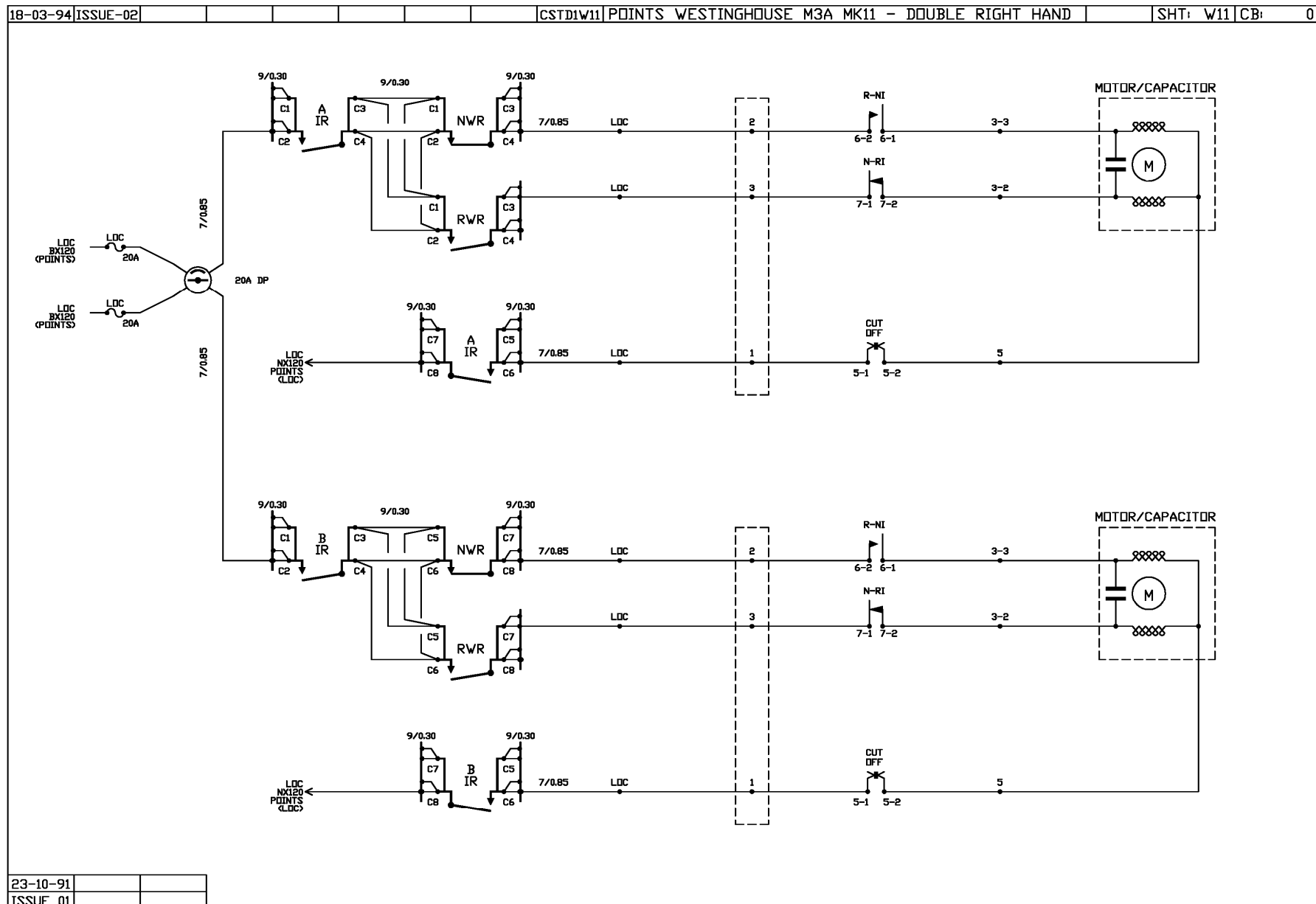
SINGLE RIGHT HAND
 N,RKR



23-10-91 ISSUE-01 CSTD0W06 CLAMP LOCK DETECTION – COMBINED SINGLE SHT: W06 CB: 0

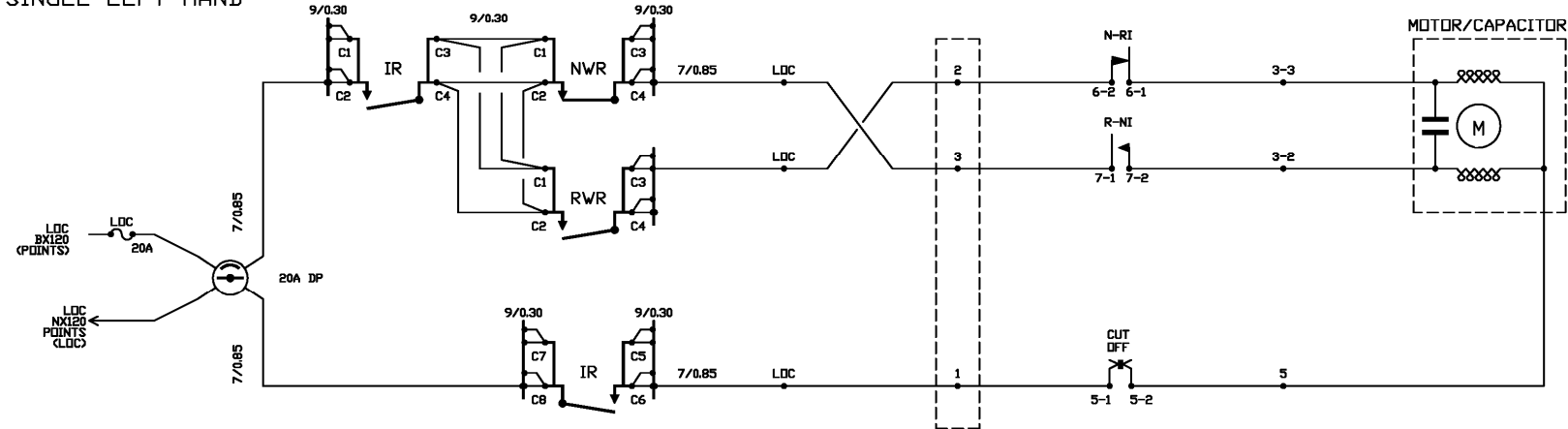




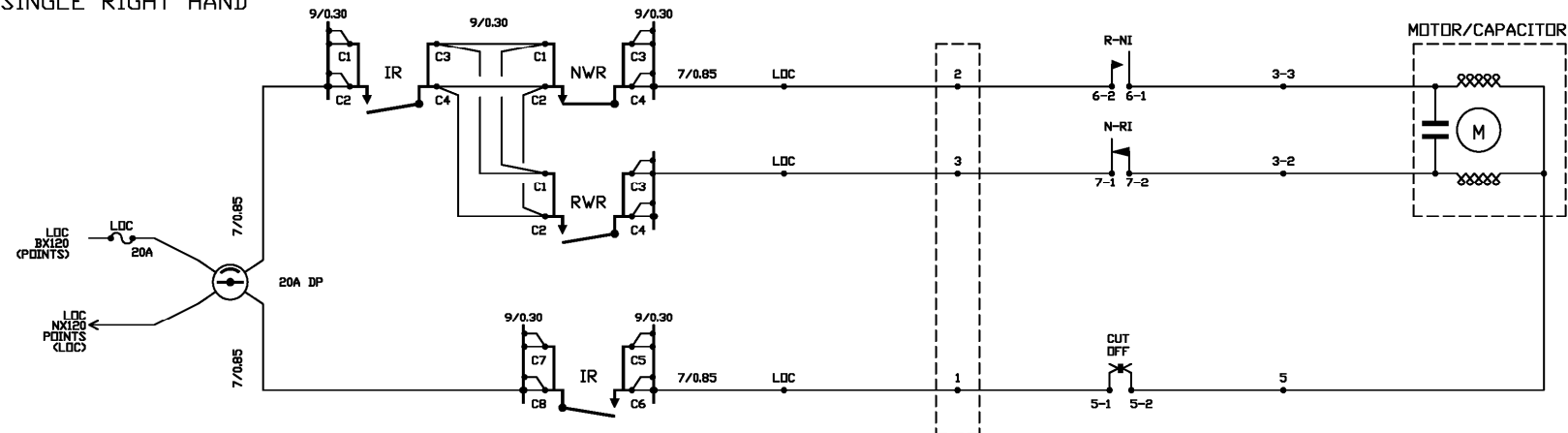


18-03-94|ISSUE-02| | | | |CSTD1W12|POINTS WESTINGHOUSE M3A MK11 - SINGLE| |SHT: W12|CB: 0

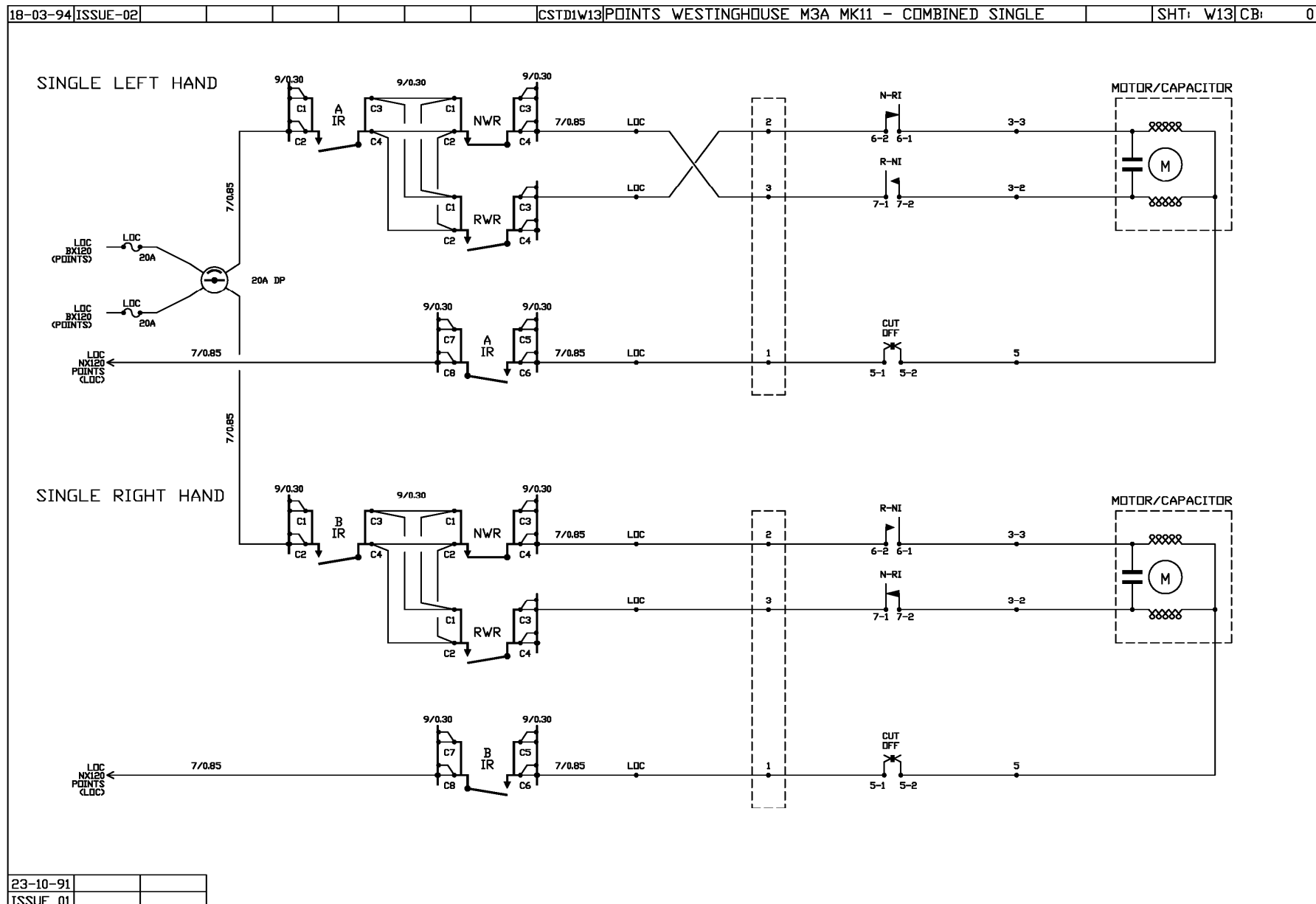
SINGLE LEFT HAND



SINGLE RIGHT HAND

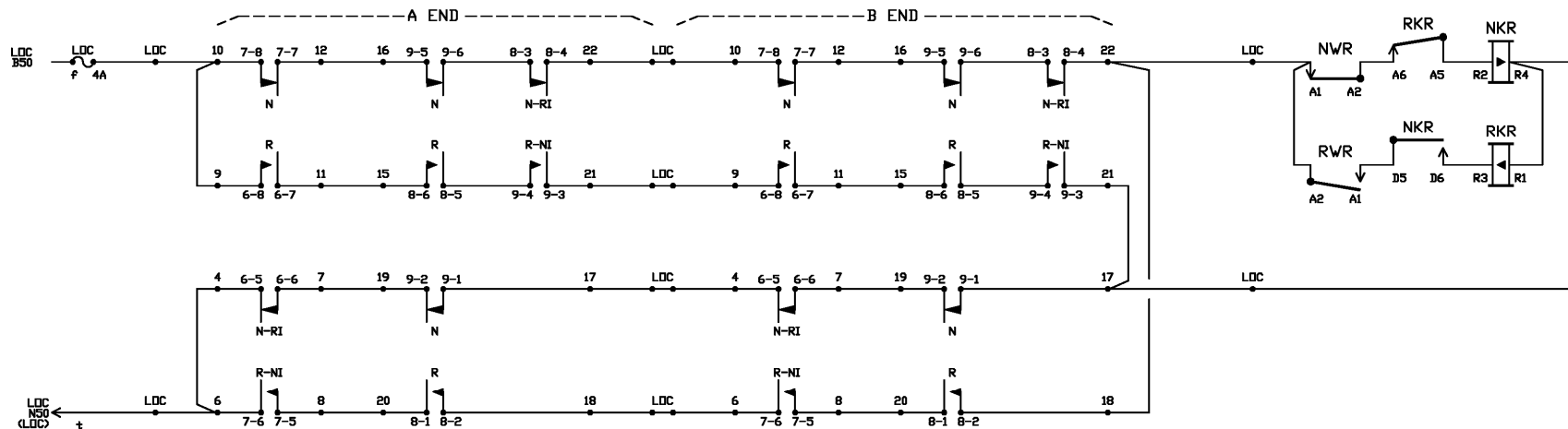


23-10-91
ISSUE 01

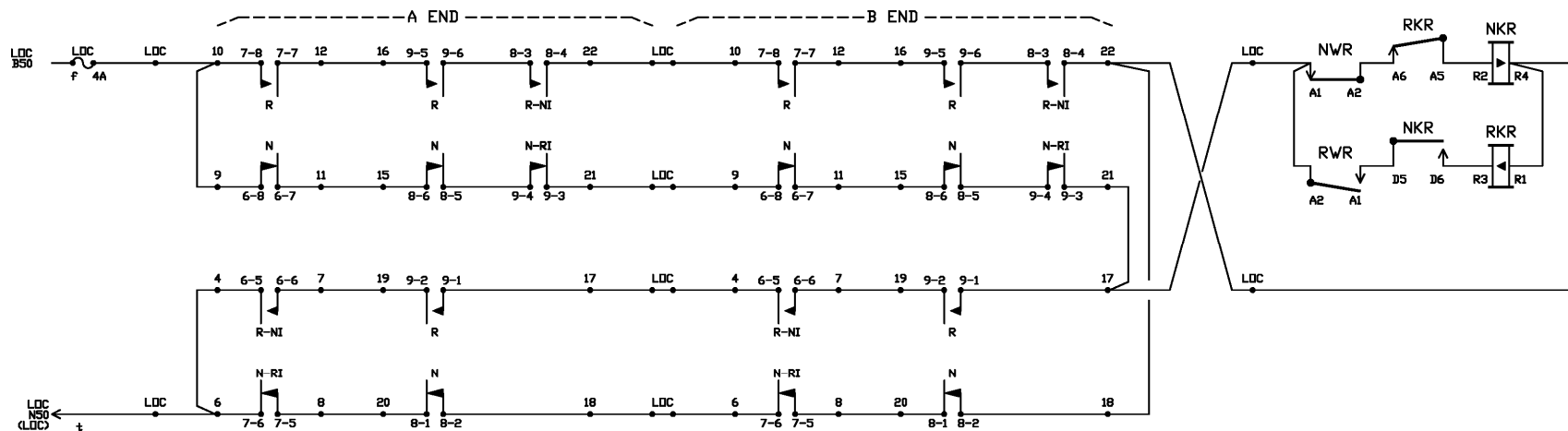


01-08-97 ISSUE-04 21-08-97 10:56 CSTD3W14 POINTS LOCAL DETECTORS W/HOUSE M3A MK11 - DOUBLE SHT: W14 CB: STD

DOUBLE LEFT HAND



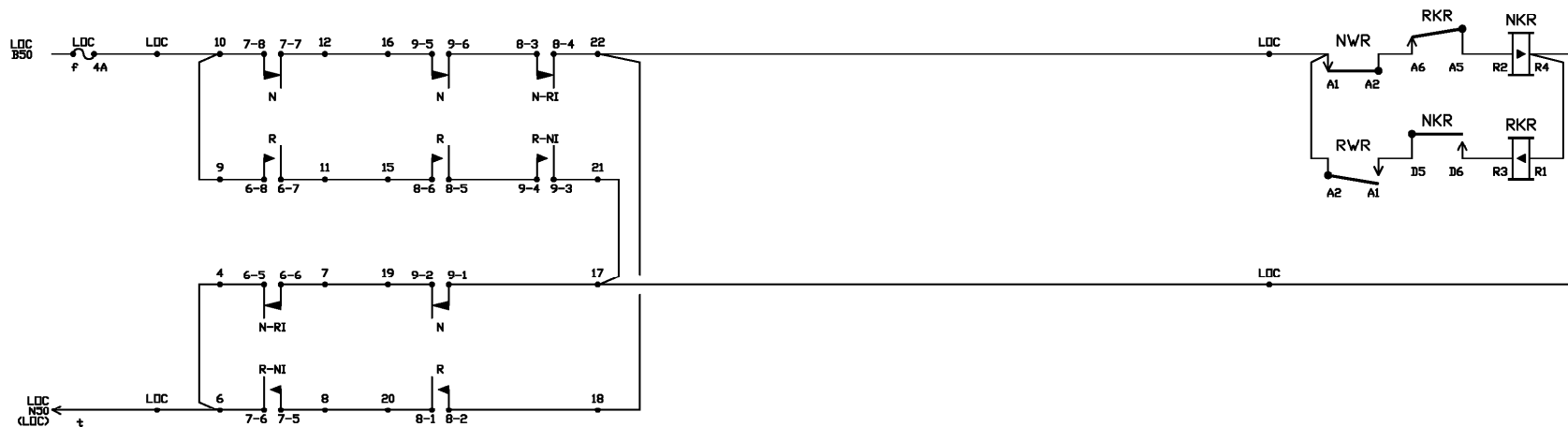
DOUBLE RIGHT HAND



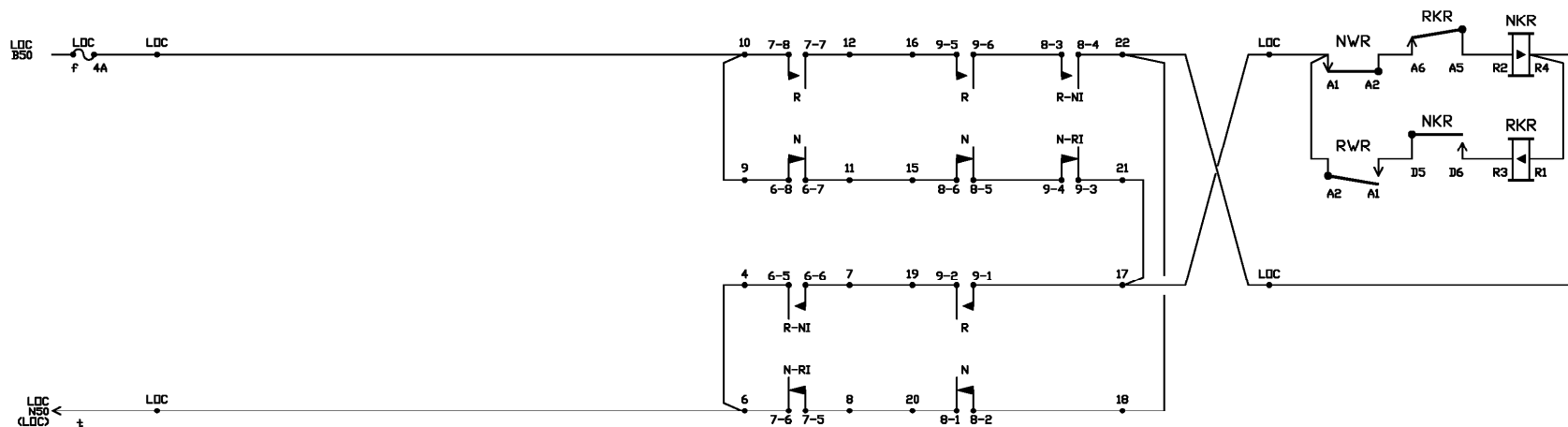
ISSUE 01	ISSUE 02	ISSUE 03
23-10-91	18-03-94	23-08-95

23-08-95 ISSUE-03 CSTD2W15 POINTS LOCAL DETECTOR W/HOUSE M3A MK11 - SINGLE SHT: W15 CB: STD

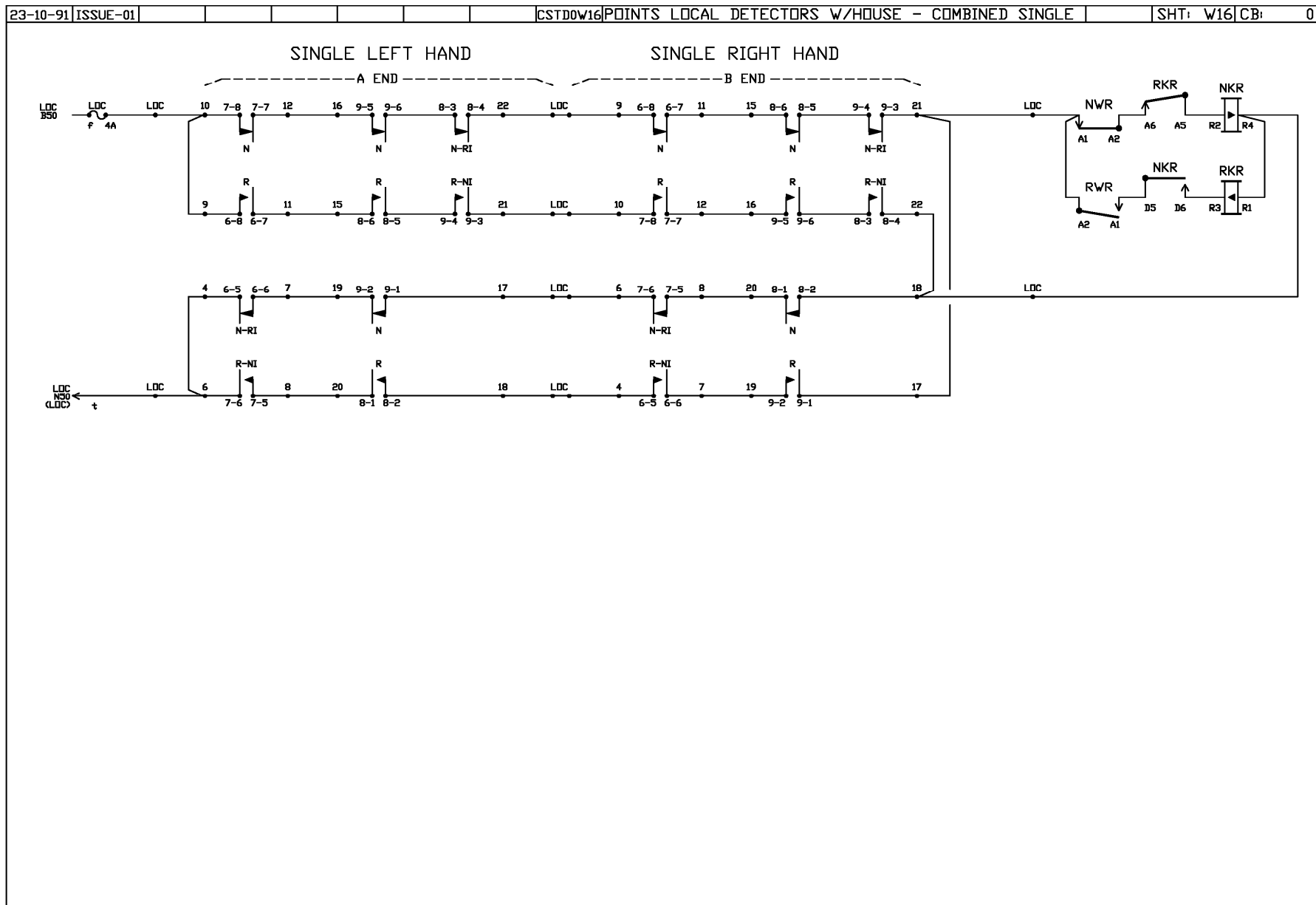
SINGLE LEFT HAND



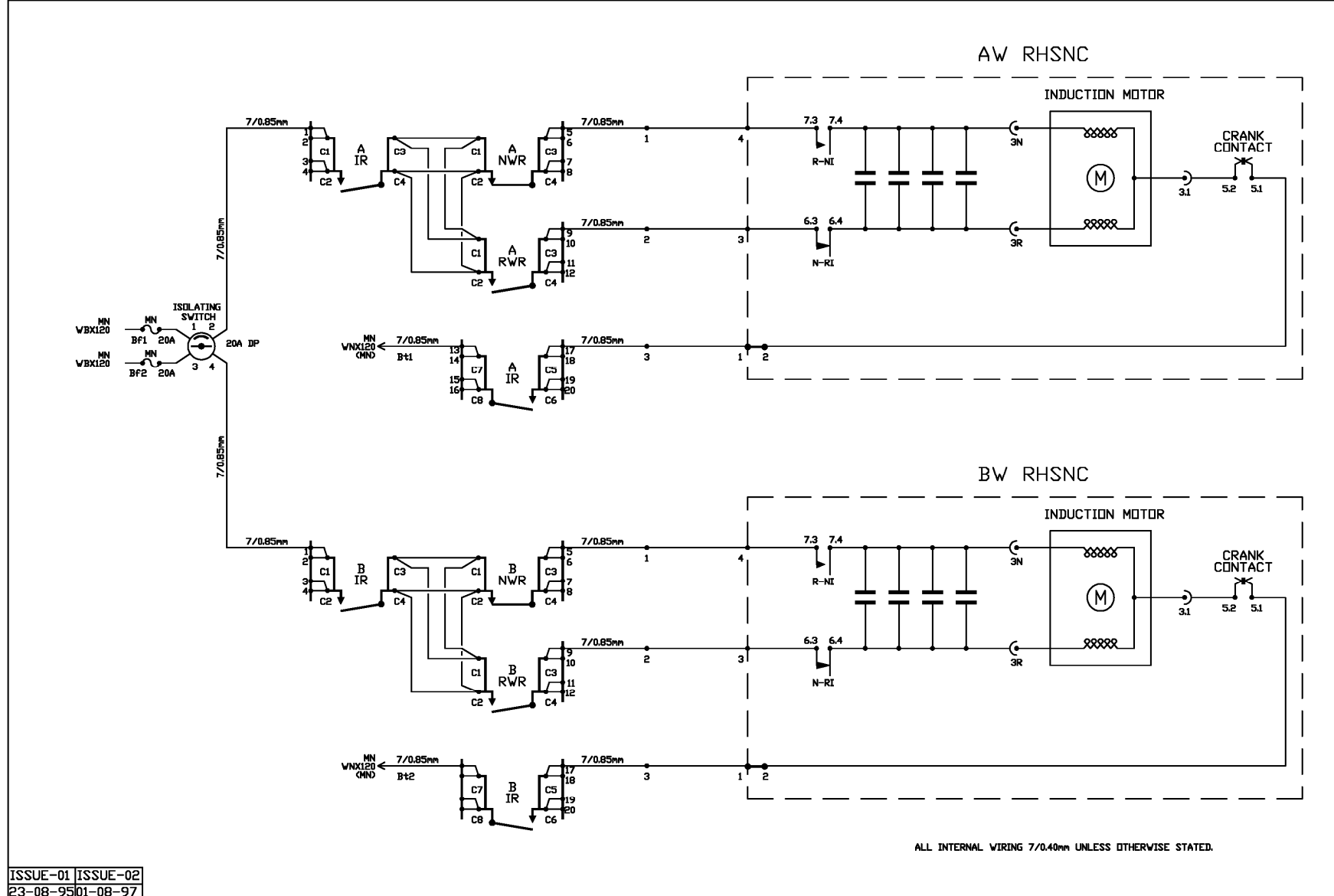
SINGLE RIGHT HAND



ISSUE 01	ISSUE 02
23-10-91	18-03-94

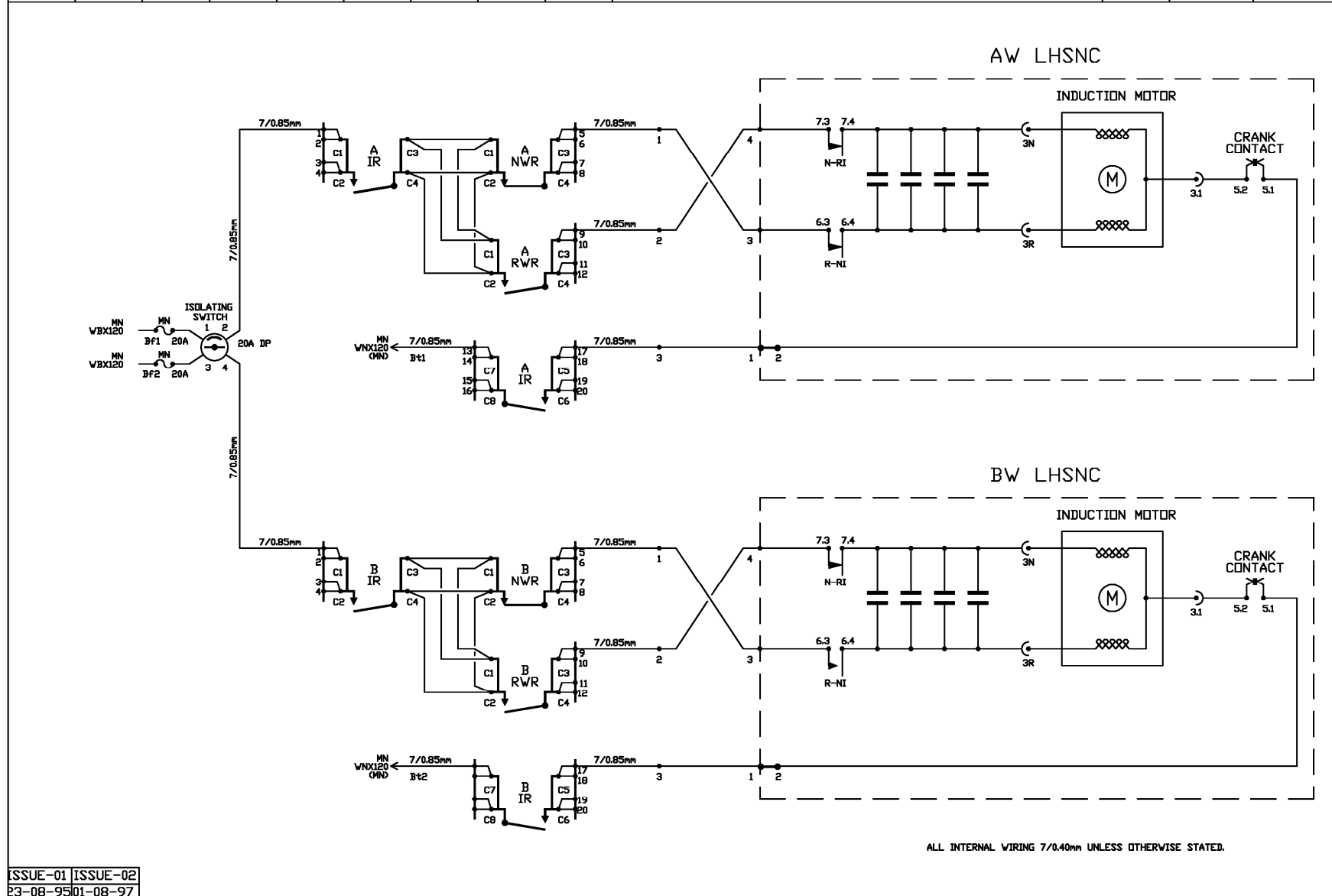


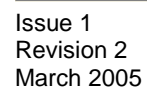
30-06-99|ISSUE-03| Rev 01 |CSTDW17|WBS 84M POINTS - DOUBLE RIGHT HAND| PART 1/2 |SHT: W17|CB: STD



ISSUE-01 |ISSUE-02|
 23-08-95 |01-08-97|

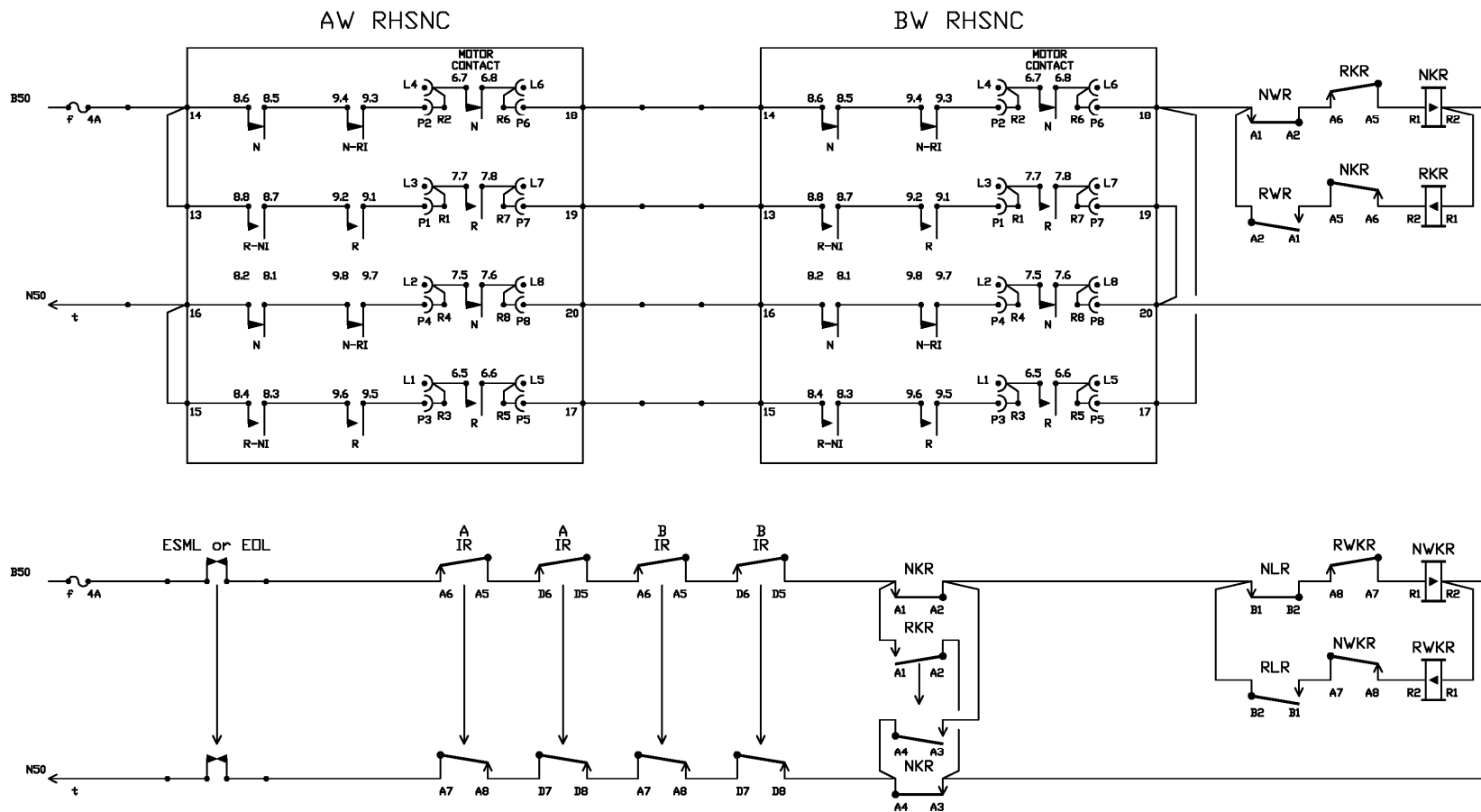
30-06-99|ISSUE-03| Rev 01 |CSTDW17| WBS 84M POINTS - DOUBLE LEFT HAND | PART 2/2 |SHT: W17|CB: STD





01-12-98 ISSUE-04 | | | | | Rev 01 | CSTDW18 | WBS 84M-DOUBLE RIGHT HAND | PART 2/2 | SHT: W18 | CB: STD

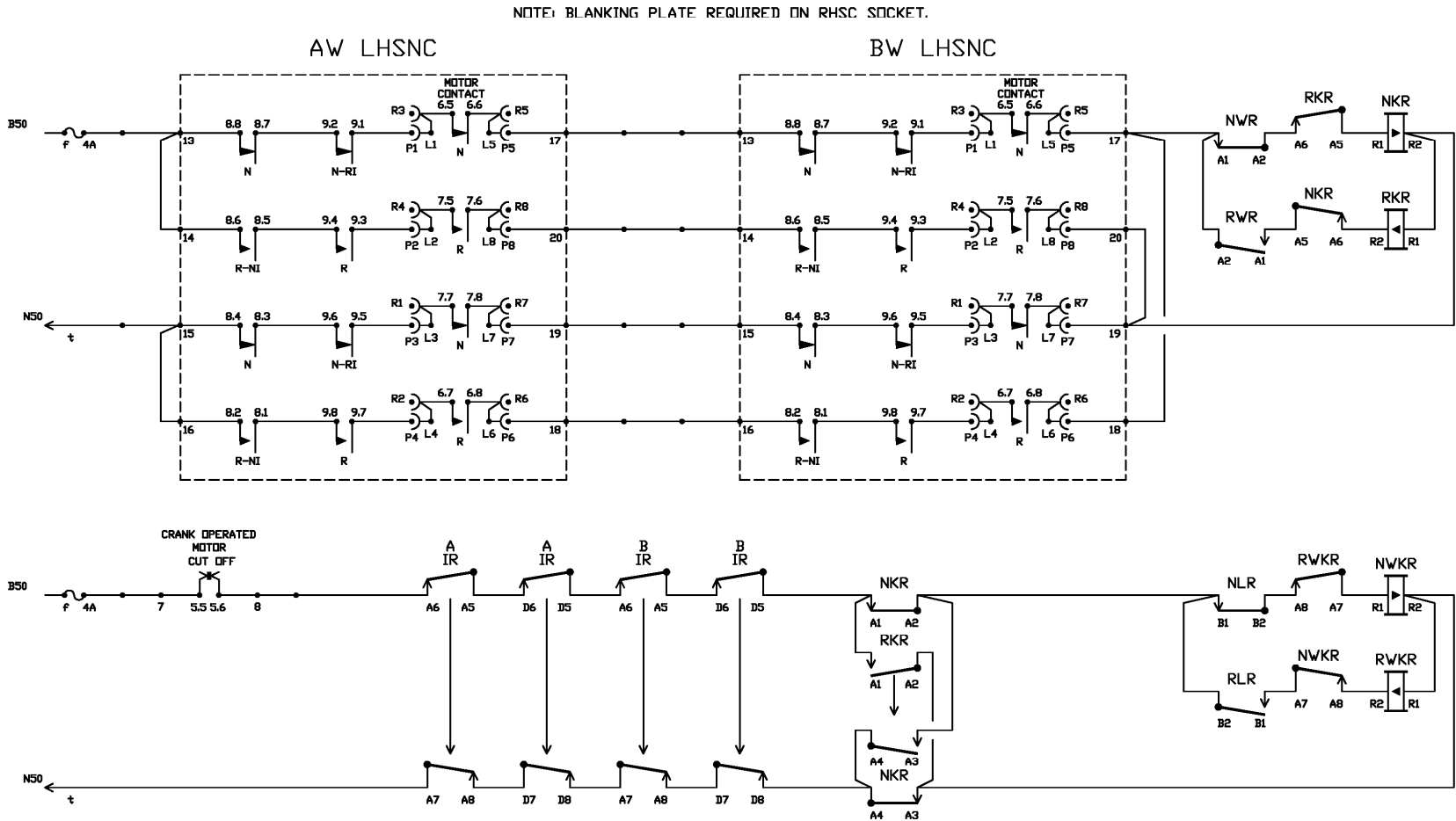
NOTE: BLANKING PLATE REQUIRED ON LHSC SOCKET.



ALL INTERNAL WIRING 7/0.40mm UNLESS OTHERWISE STATED.

ISSUE-01 | ISSUE-02 | ISSUE-03
 23-08-95 | 01-05-96 | 01-08-97

01-08-97|ISSUE-02|14-08-97|10:34|Rev 01|CSTD1W19|WBS TD84M-DOUBLE LEFT HAND|PART 1/2|SHT: W19|CB: STD

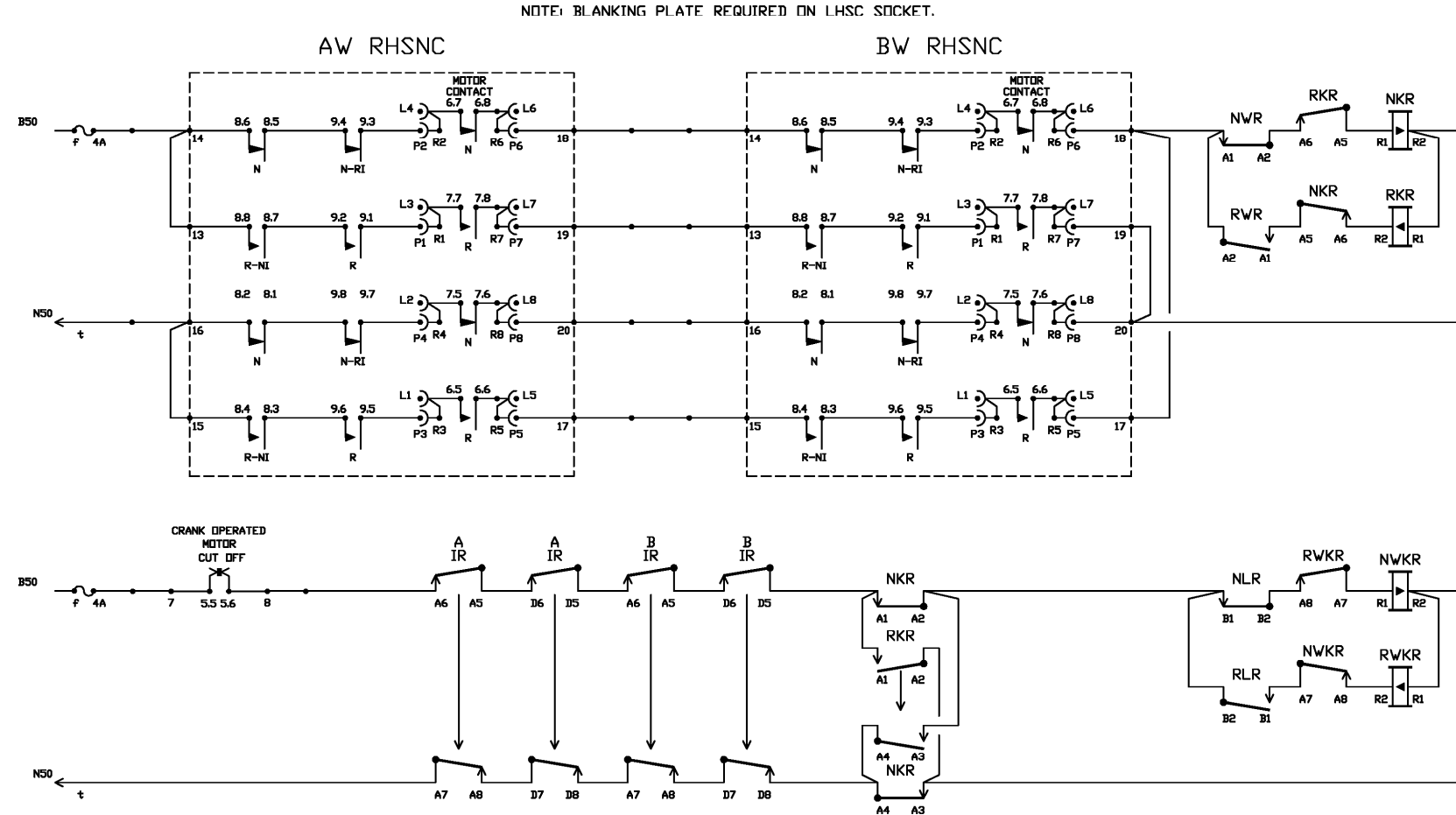


NOTE: THIS ARRANGEMENT IS SUITABLE ONLY
WHEN ESML IS NOT PROVIDED - Eg FREIGHT YARDS

ALL INTERNAL WIRING 7/0.40mm UNLESS OTHERWISE STATED.

ISSUE-01
01-05-96

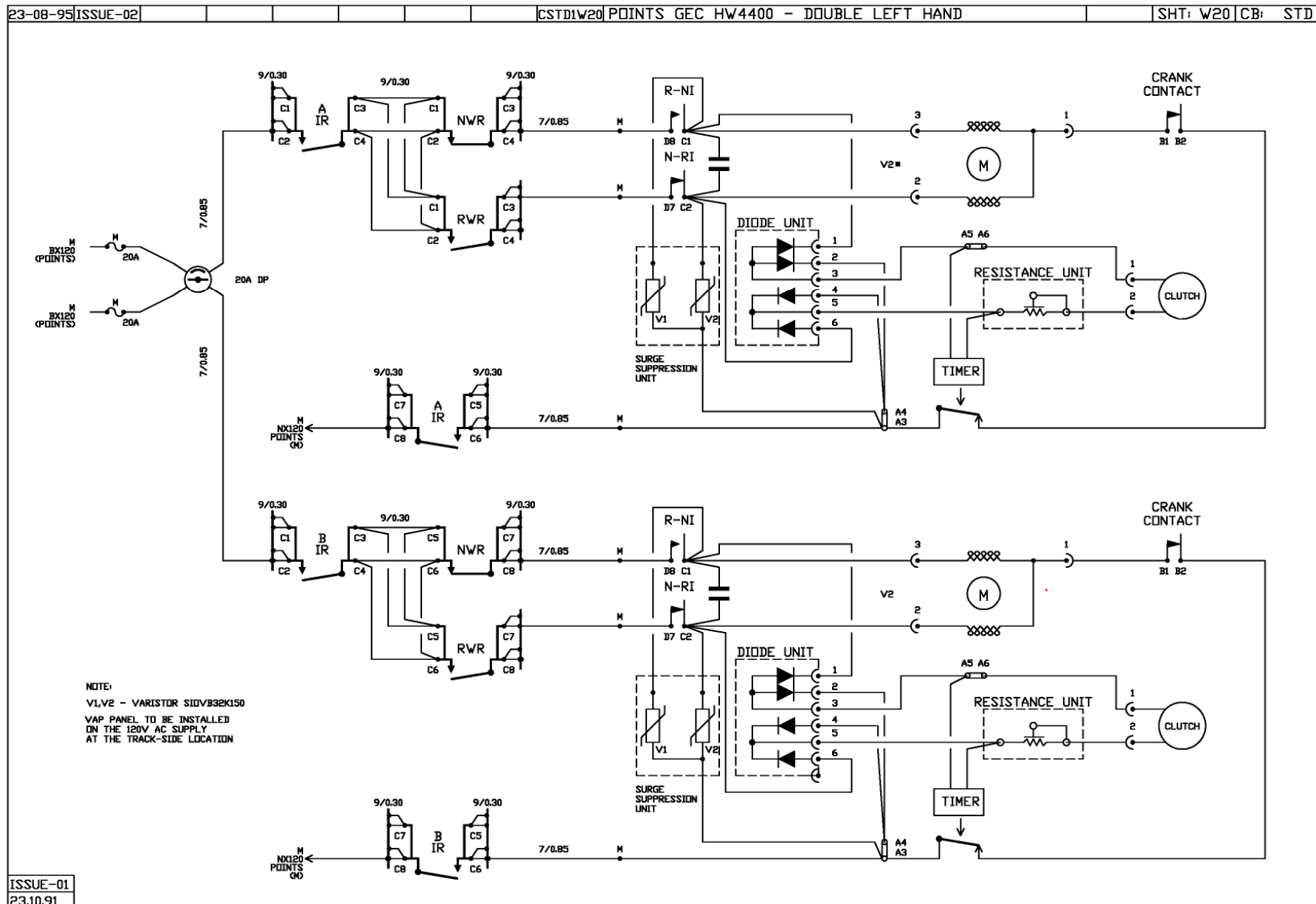
01-08-97 | ISSUE-02 | 14-08-97 | 10:34 | Rev 01 | CSTD1W19 | WBS TD84M-DOUBLE RIGHT HAND | PART 2/2 | SHT: W19 | CB: STD

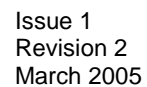


NOTE: THIS ARRANGEMENT IS SUITABLE ONLY
 WHEN ESML IS NOT PROVIDED – E.g. FREIGHT YARDS

ALL INTERNAL WIRING 7/0.40mm UNLESS OTHERWISE STATED.

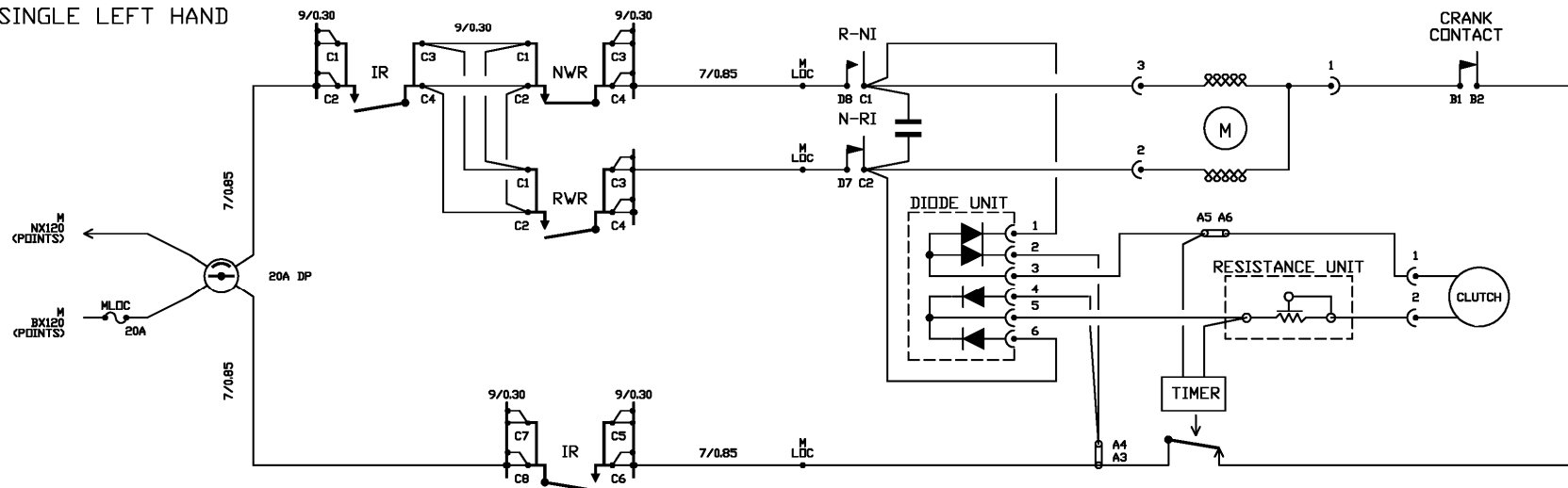
ISSUE-01
 01-05-96



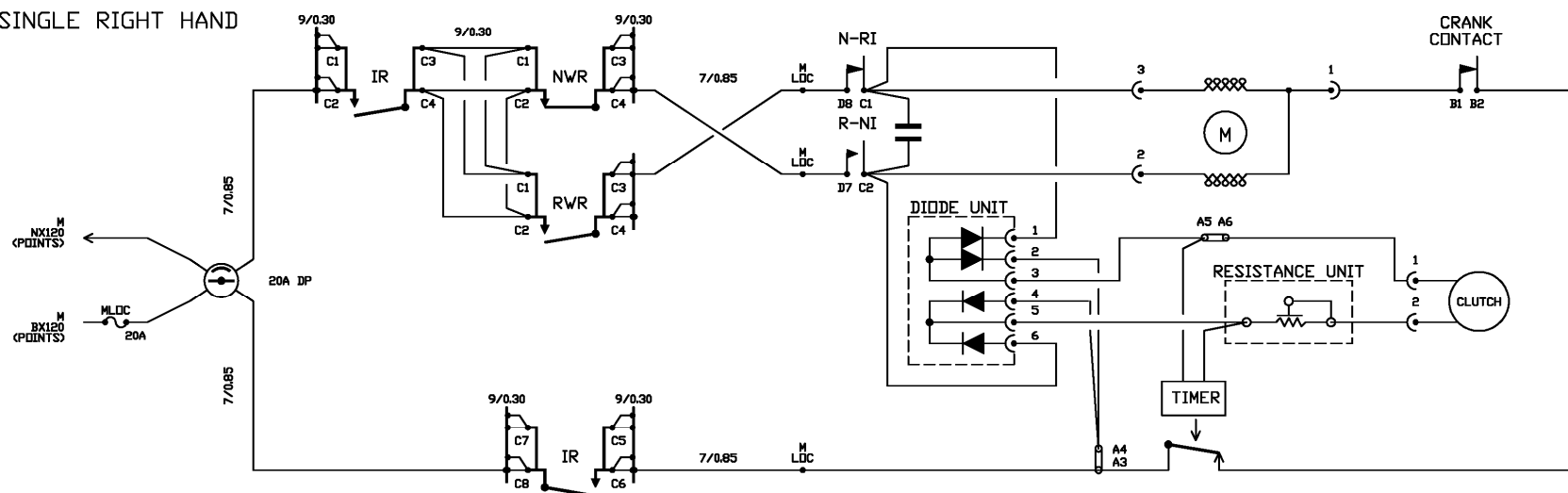


23-10-91 ISSUE-01 CSTD0W22 POINTS GEC HW4400 - SINGLE SHT: W22 CB: 0

SINGLE LEFT HAND

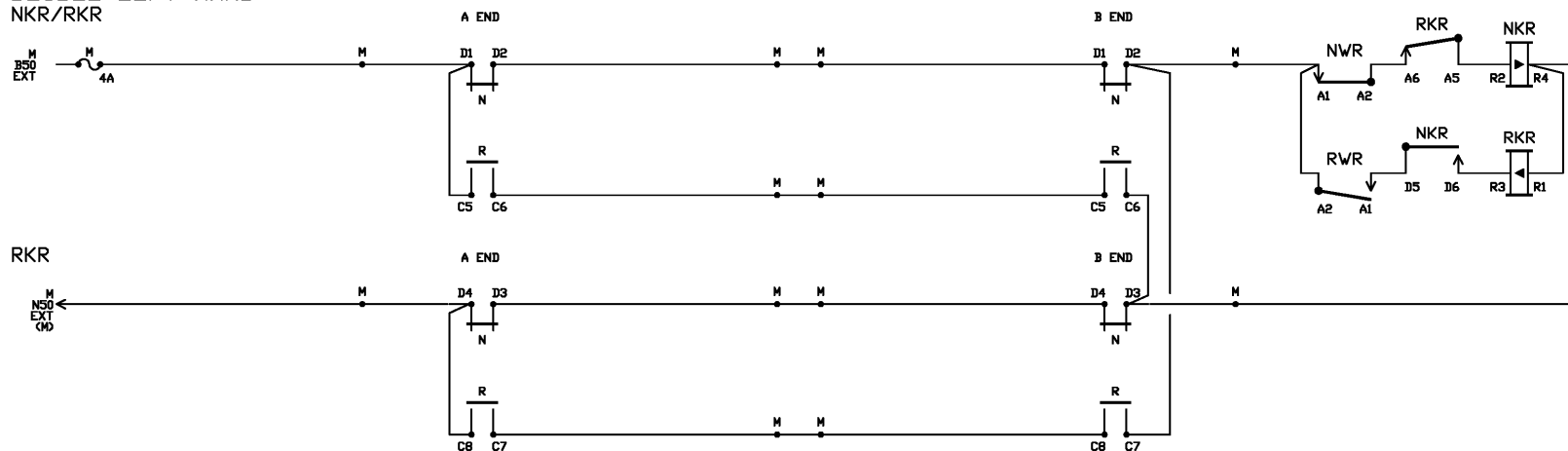


SINGLE RIGHT HAND



23-10-91 ISSUE-01 CSTD00W23 POINT LOCAL DETECTOR GEC HW 4400 - DOUBLE SHT: W23 CB: 0

DOUBLE LEFT HAND
 NKR/RKR

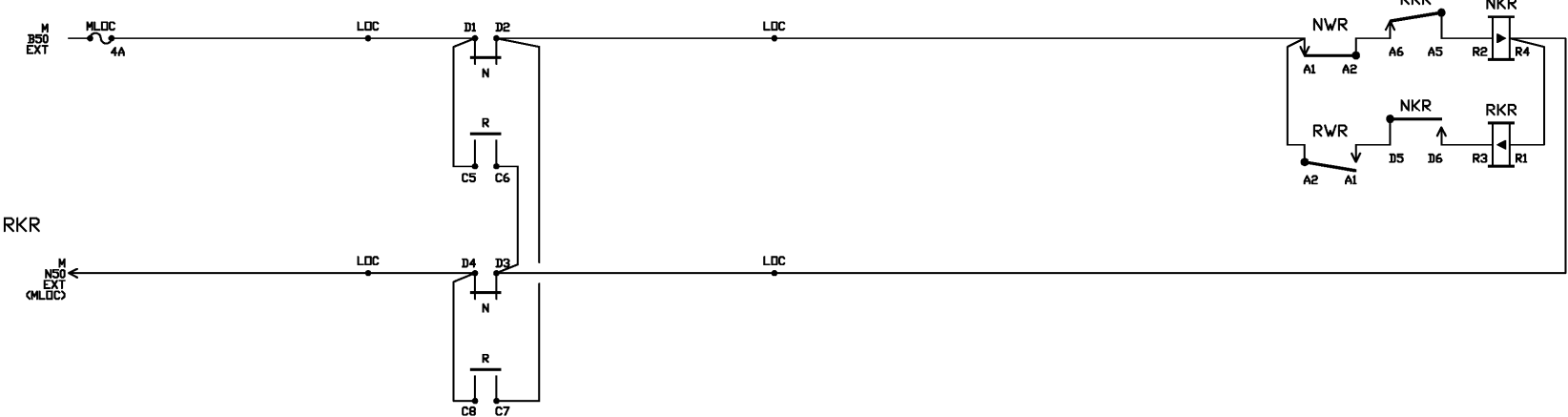


DOUBLE RIGHT HAND
 NKR/RKR

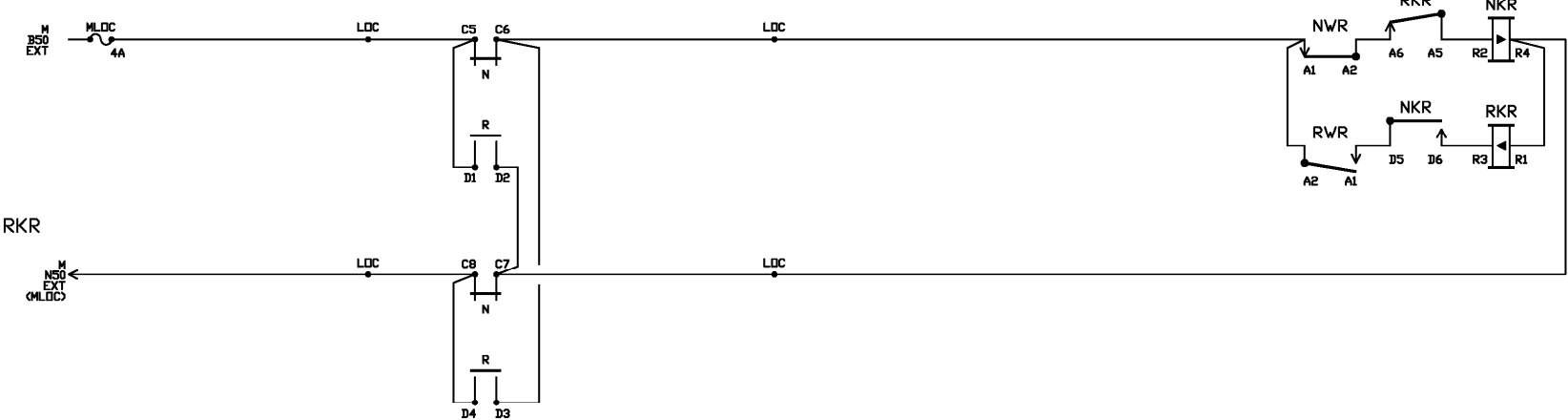


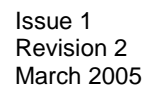
23-10-91 ISSUE-01 CSTD00W24 POINTS LOCAL DETECTOR GEC HW 4400 - SINGLE SHT: W24 CB: 0

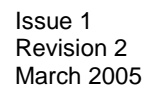
SINGLE LEFT HAND
 NKR/RKR

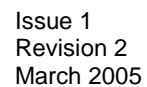


SINGLE RIGHT HAND
 NKR/RKR

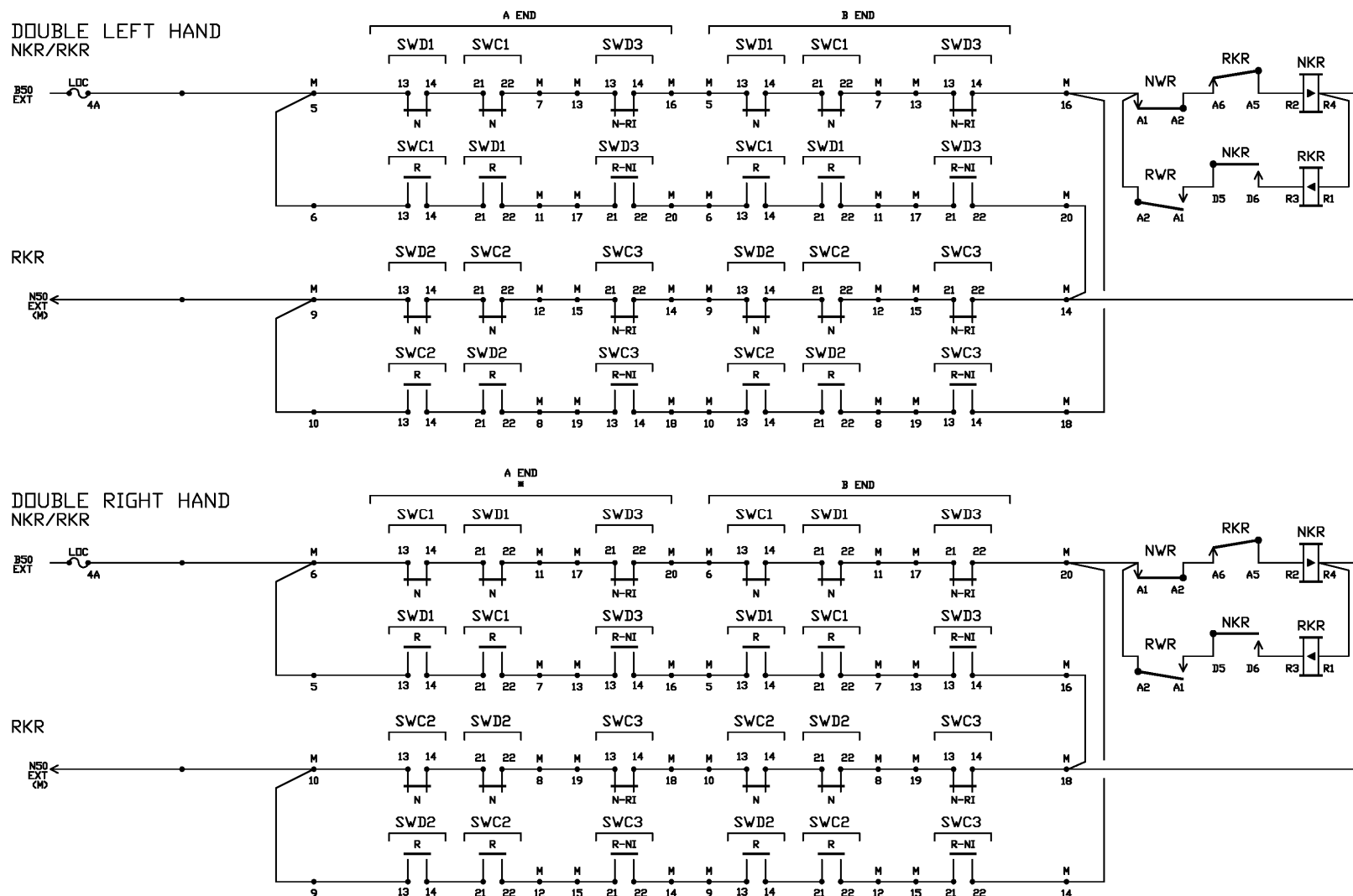






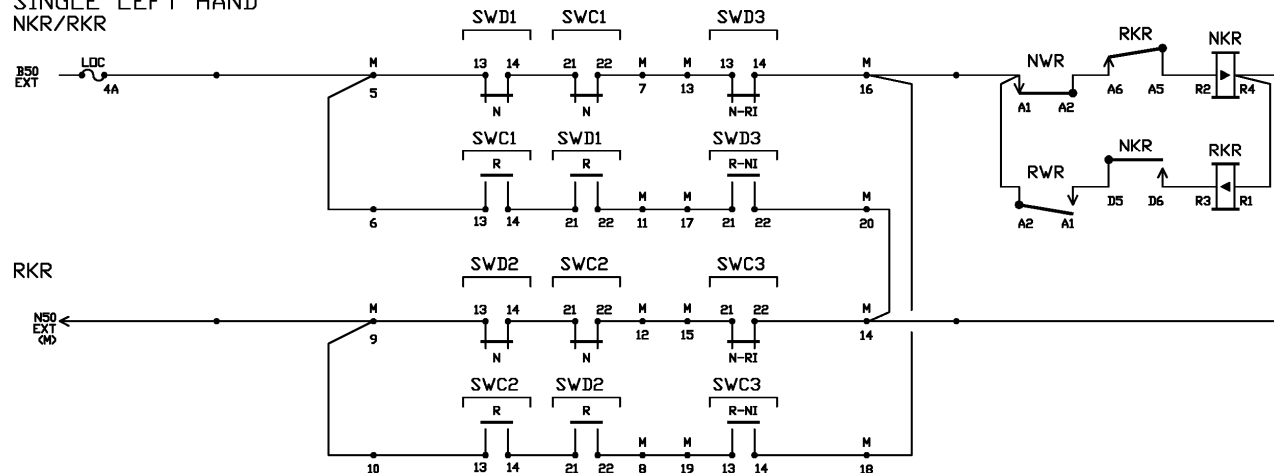


23-08-95 ISSUE 01 Rev 01 CSTD0028 POINT LOCAL DETECTOR GEC HW LZW – DOUBLE SHT: W28 CB: STD

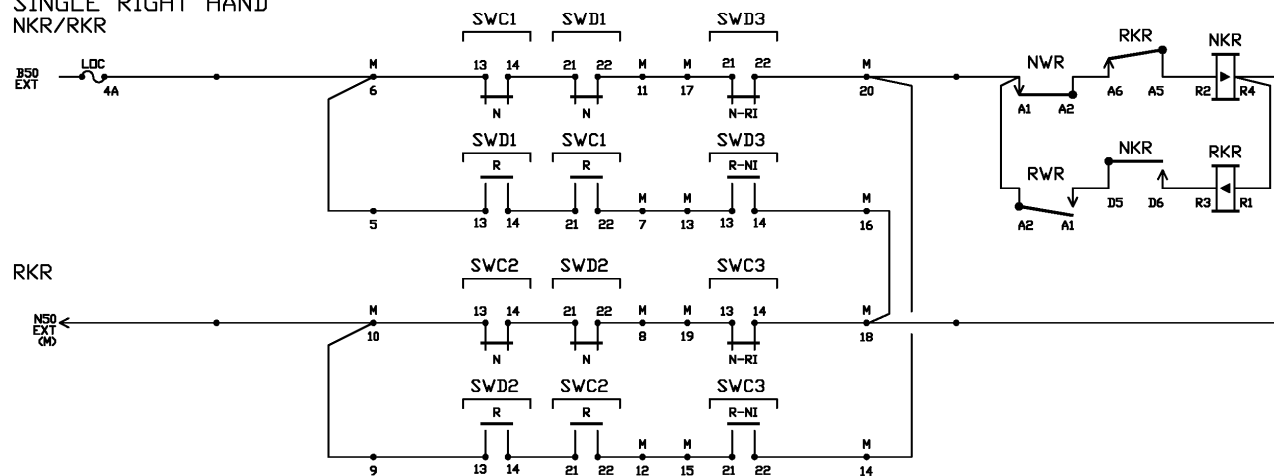


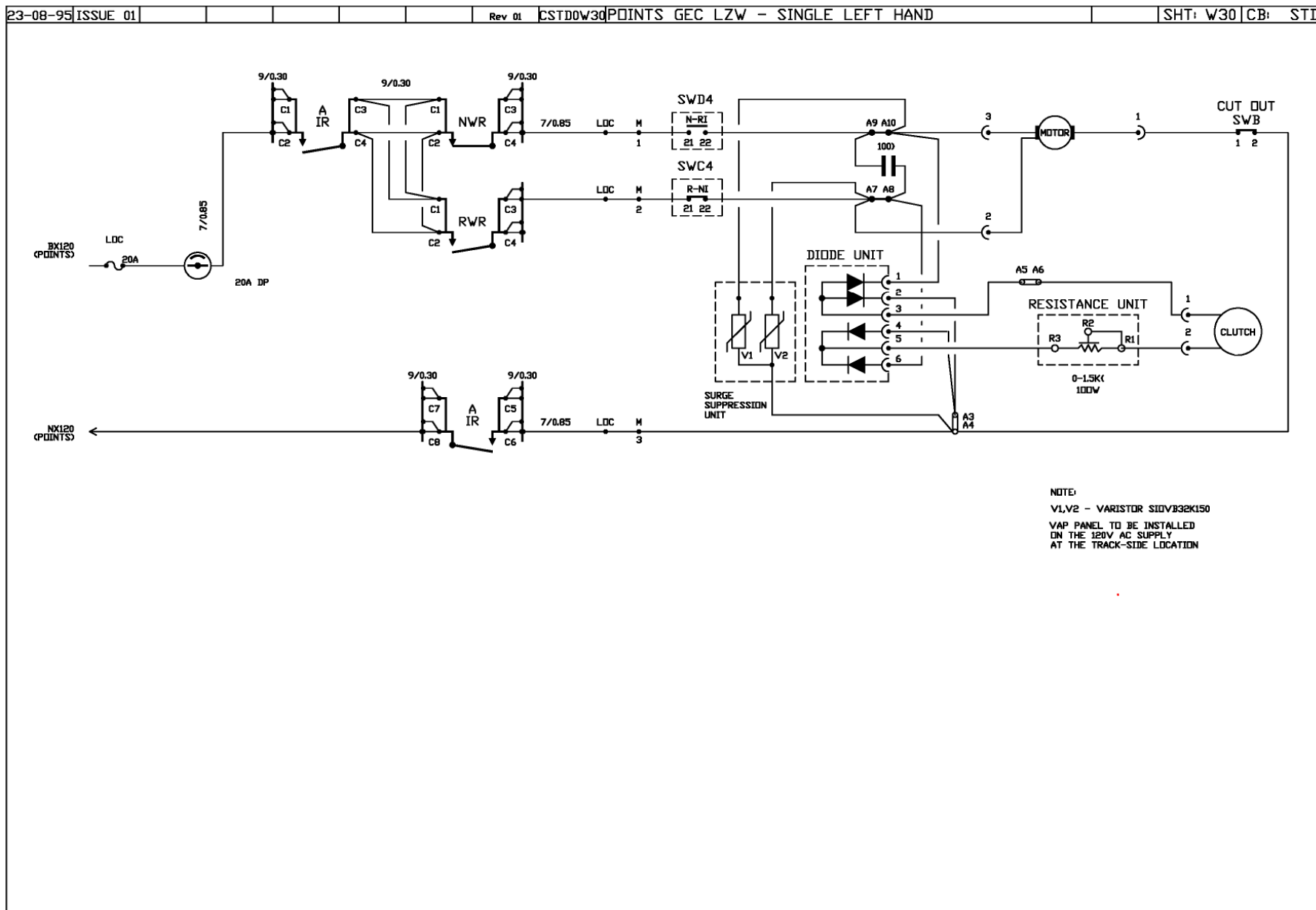
23-08-95 ISSUE 01 Rev 01 CSTD0W29 POINT LOCAL GEC HW LZW – SINGLE SHT: W29 CB: STD

SINGLE LEFT HAND
 NKR/RKR

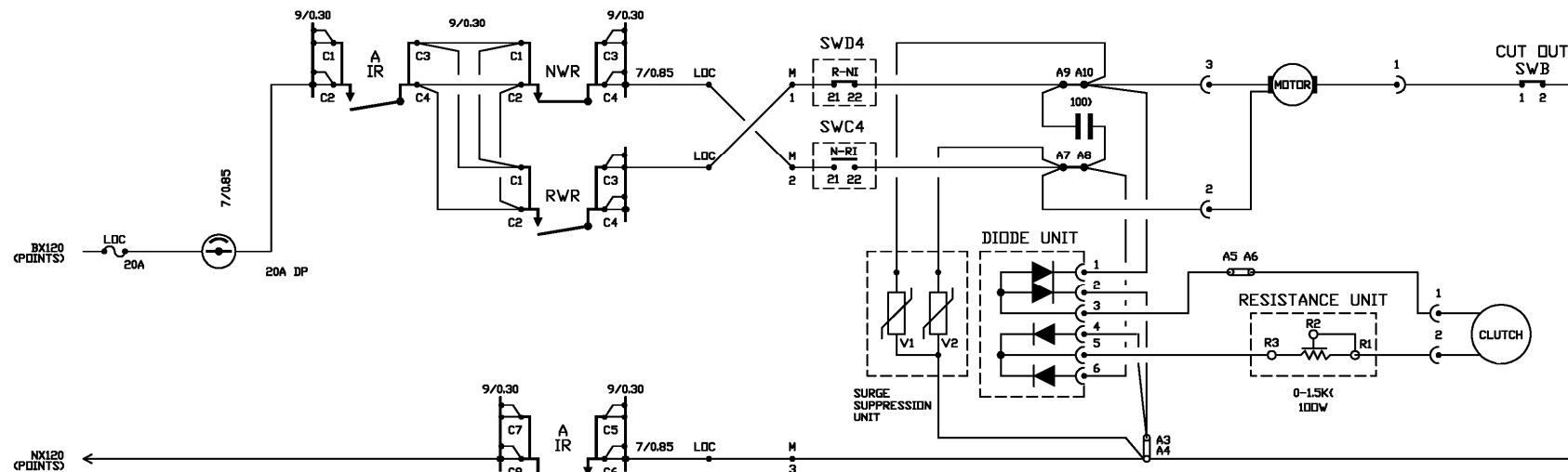


SINGLE RIGHT HAND
 NKR/RKR

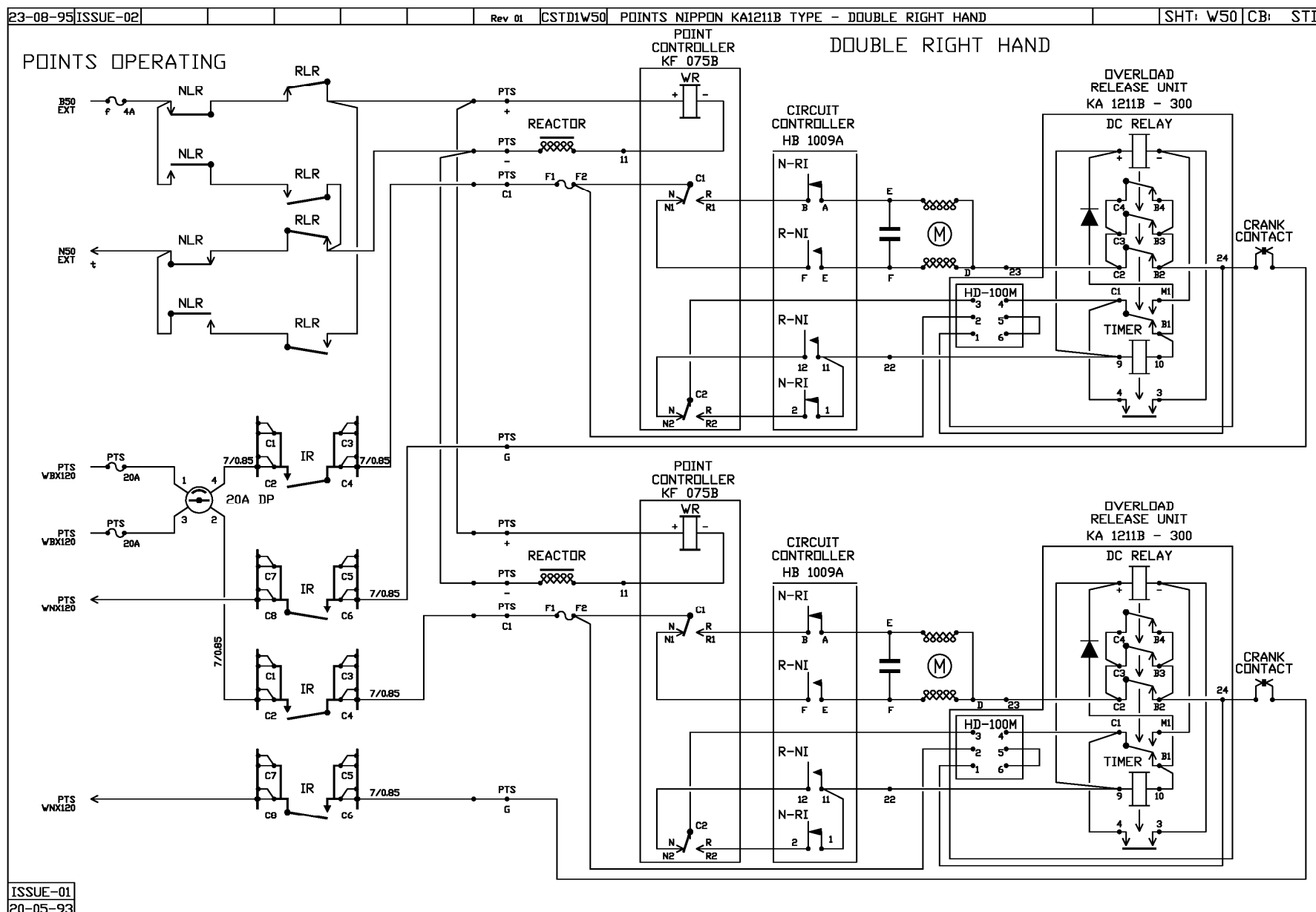


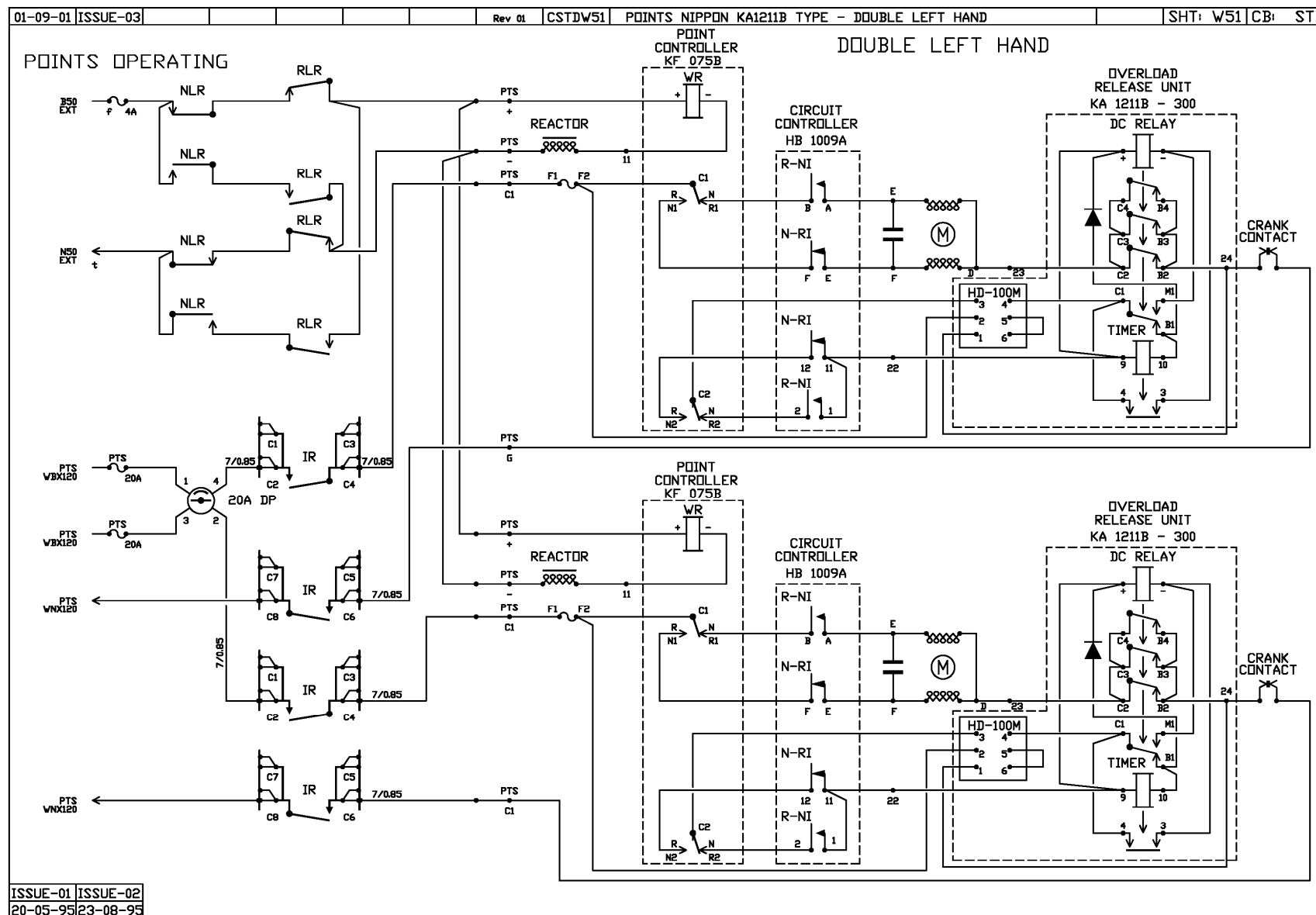


23-08-95 ISSUE 01 Rev 01 CSTD0W31 POINTS GEC LZW – SINGLE RIGHT HAND SHT: W31 CB: STD

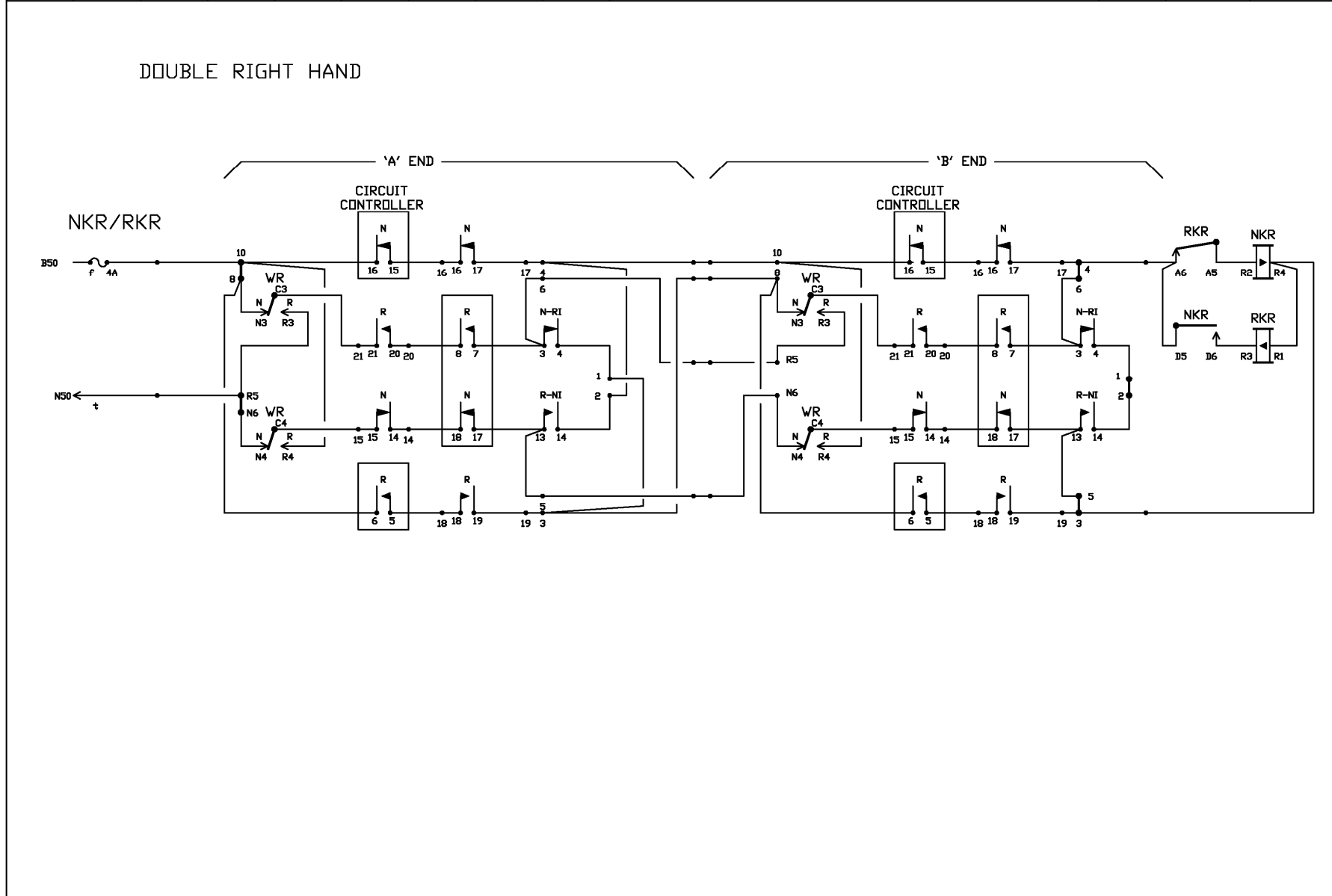


NOTE:
 VL/V2 - VARISTOR 100V32K150
 VAP PANEL TO BE INSTALLED
 ON THE 120V AC SUPPLY
 AT THE TRACK-SIDE LOCATION

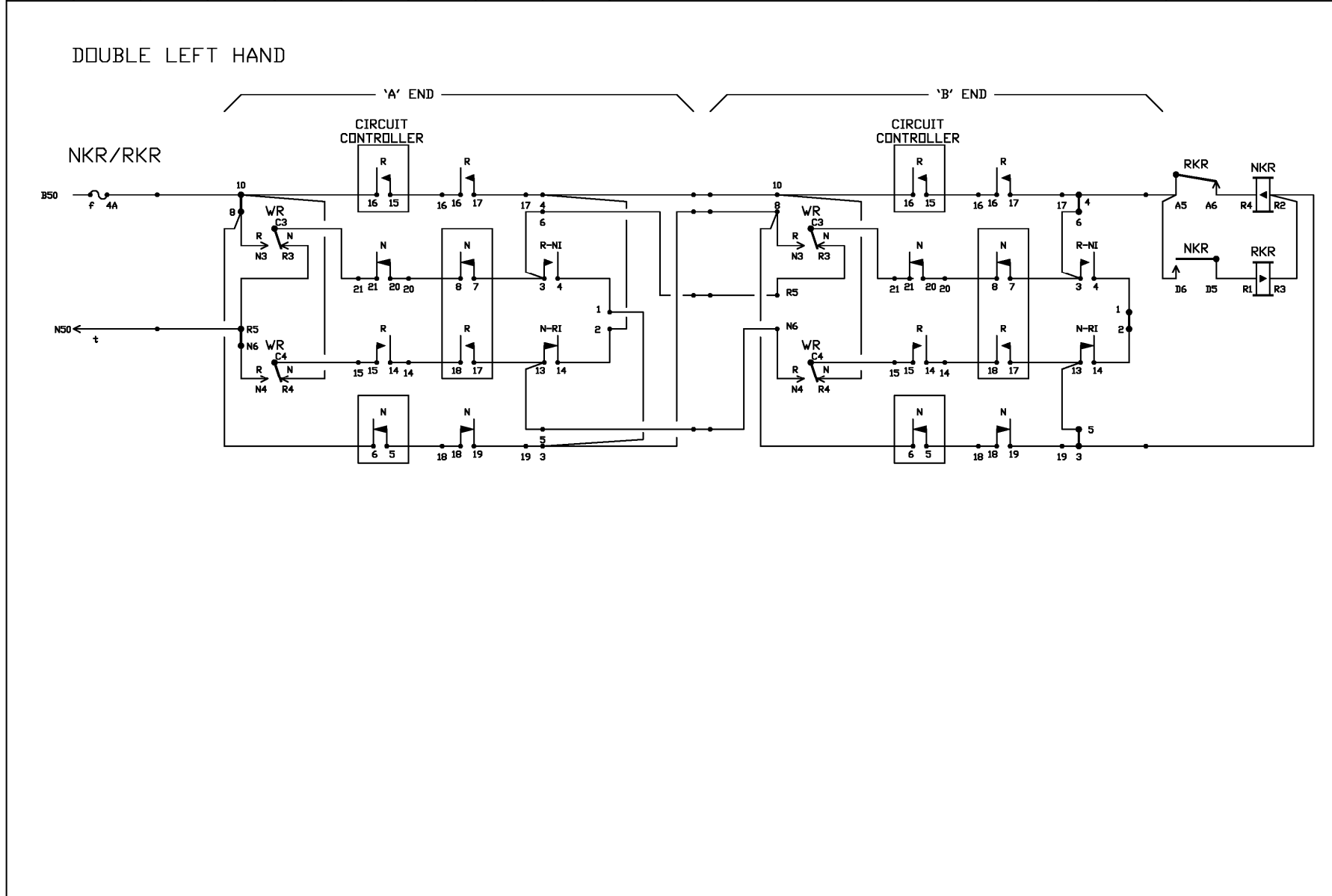


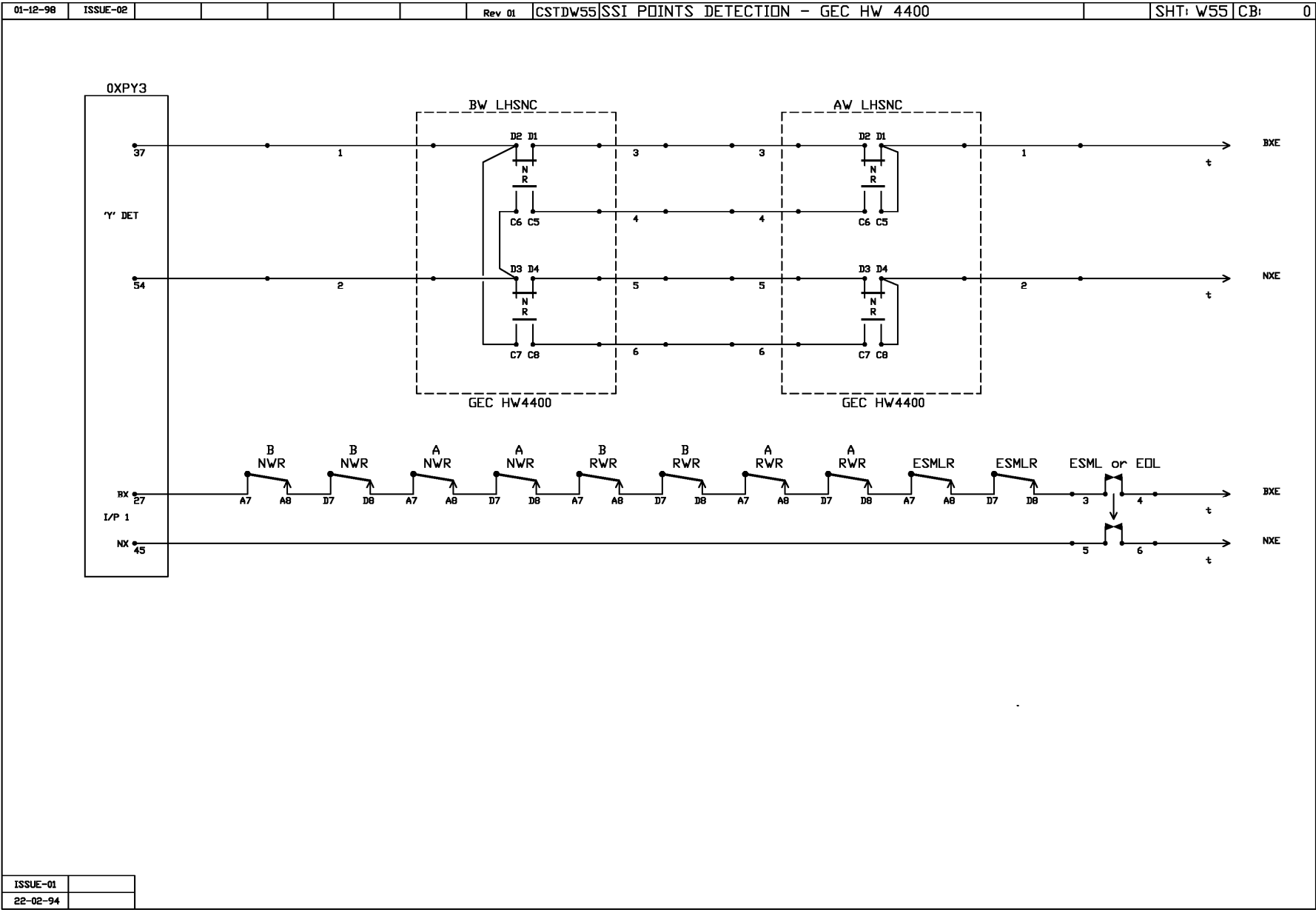


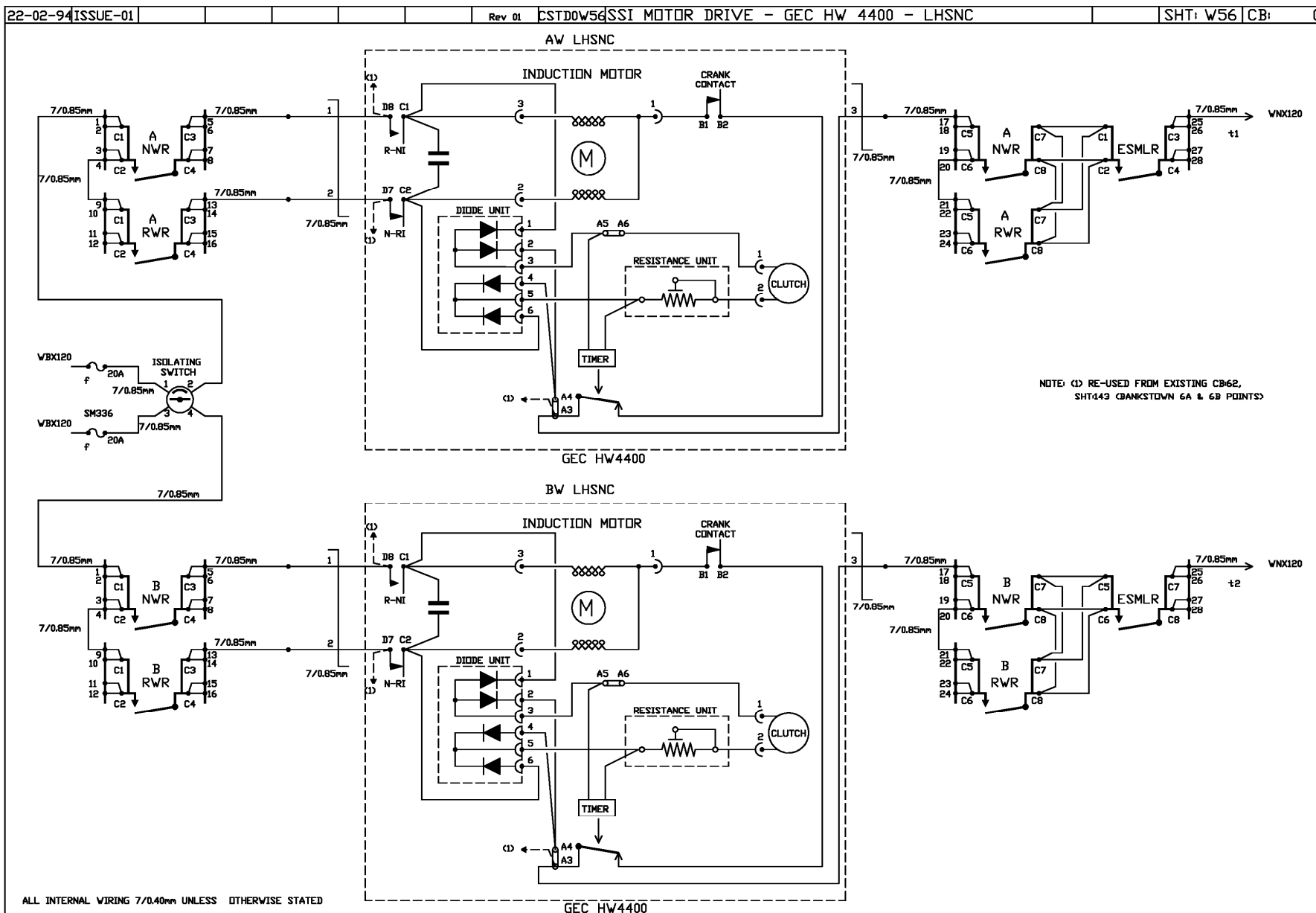
20-05-93 ISSUE-01 Rev 01 CSTD0W52 POINTS NIPPON KA1211B TYPE - DOUBLE RIGHT HAND - DETECTION SHT: W52 CB: STD

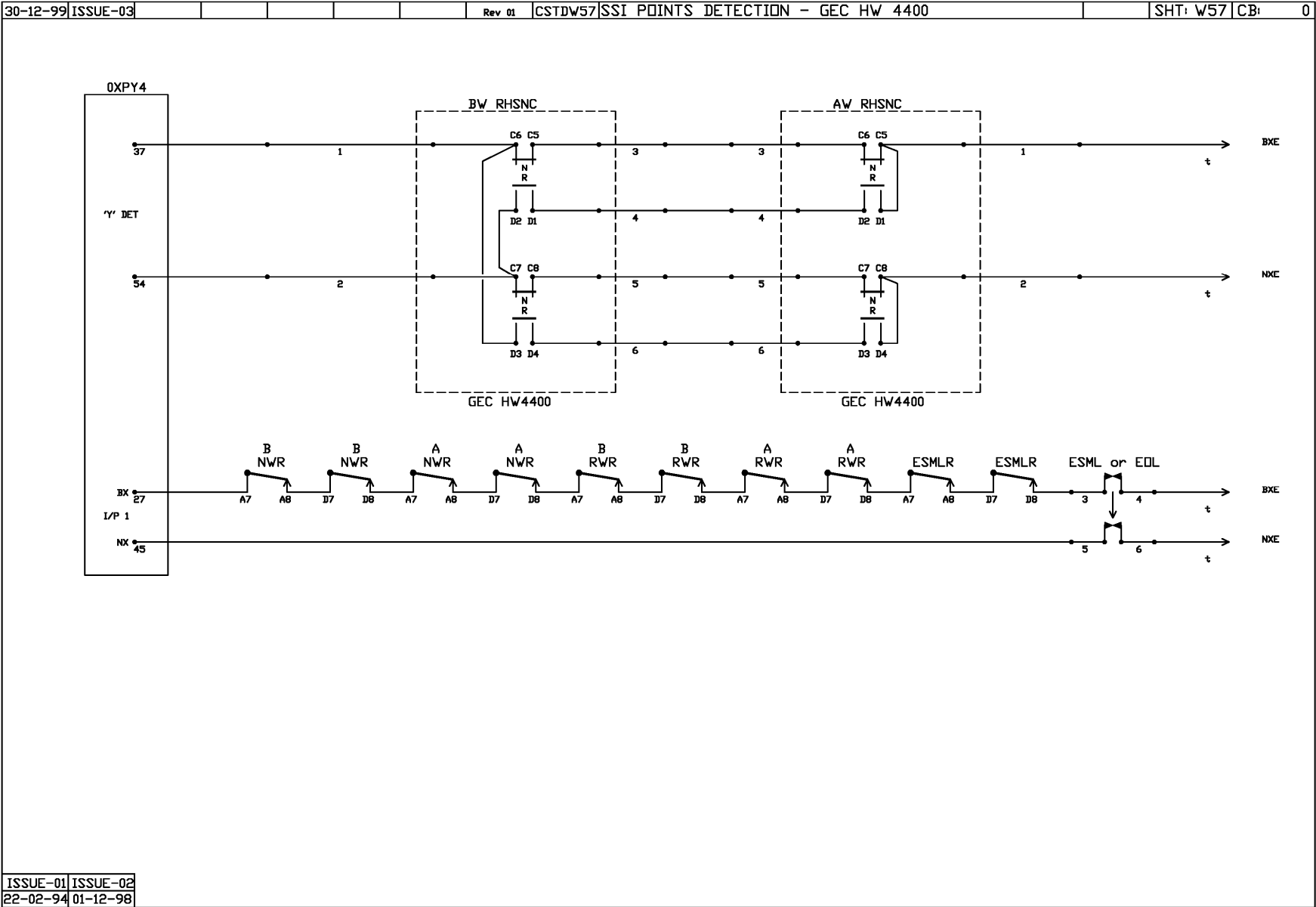


20-05-93 ISSUE-01 Rev 01 CSTD0W53 POINTS NIPPON KA1211B TYPE - DOUBLE LEFT HAND - DETECTION SHT: W53 CB: STD

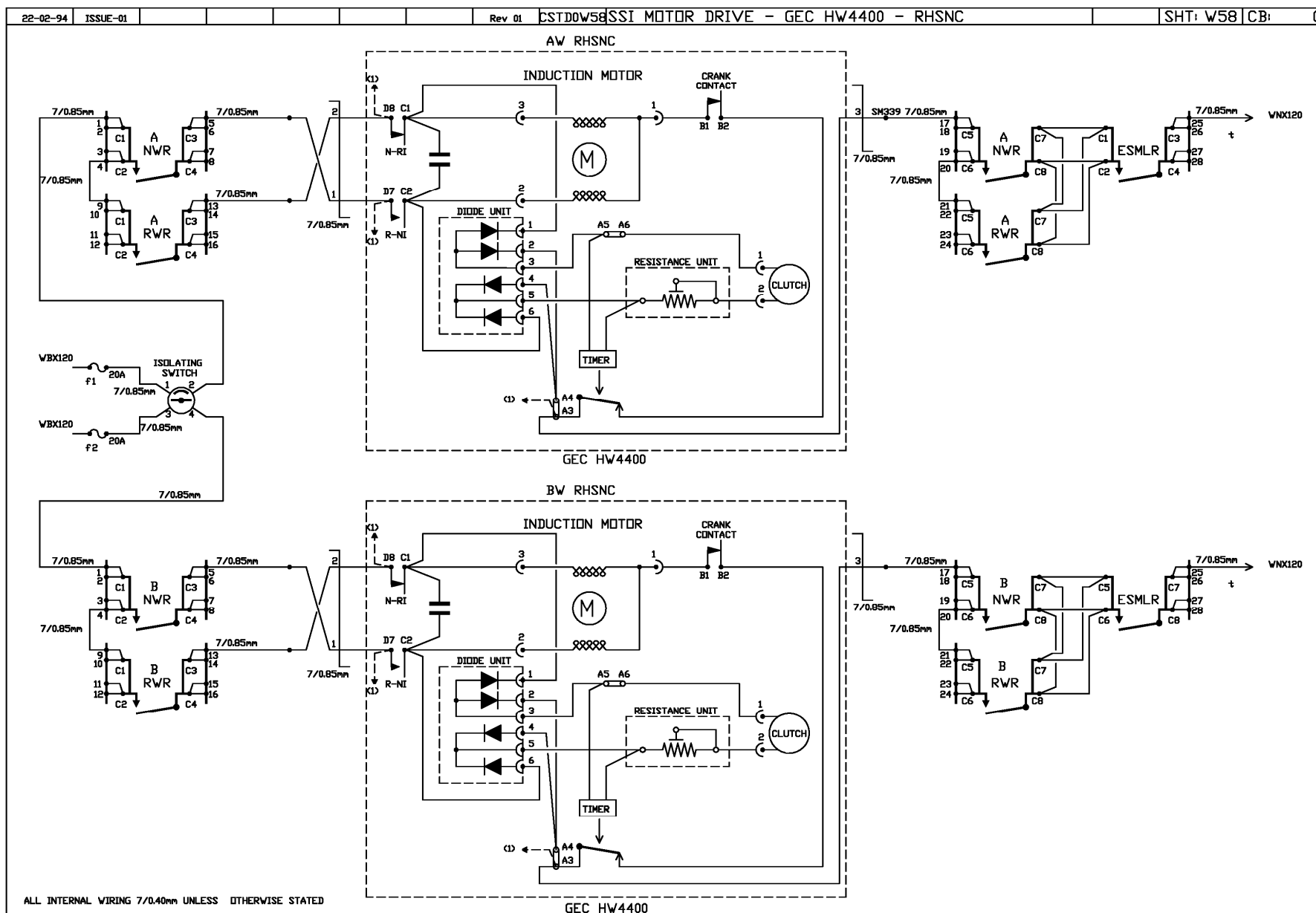


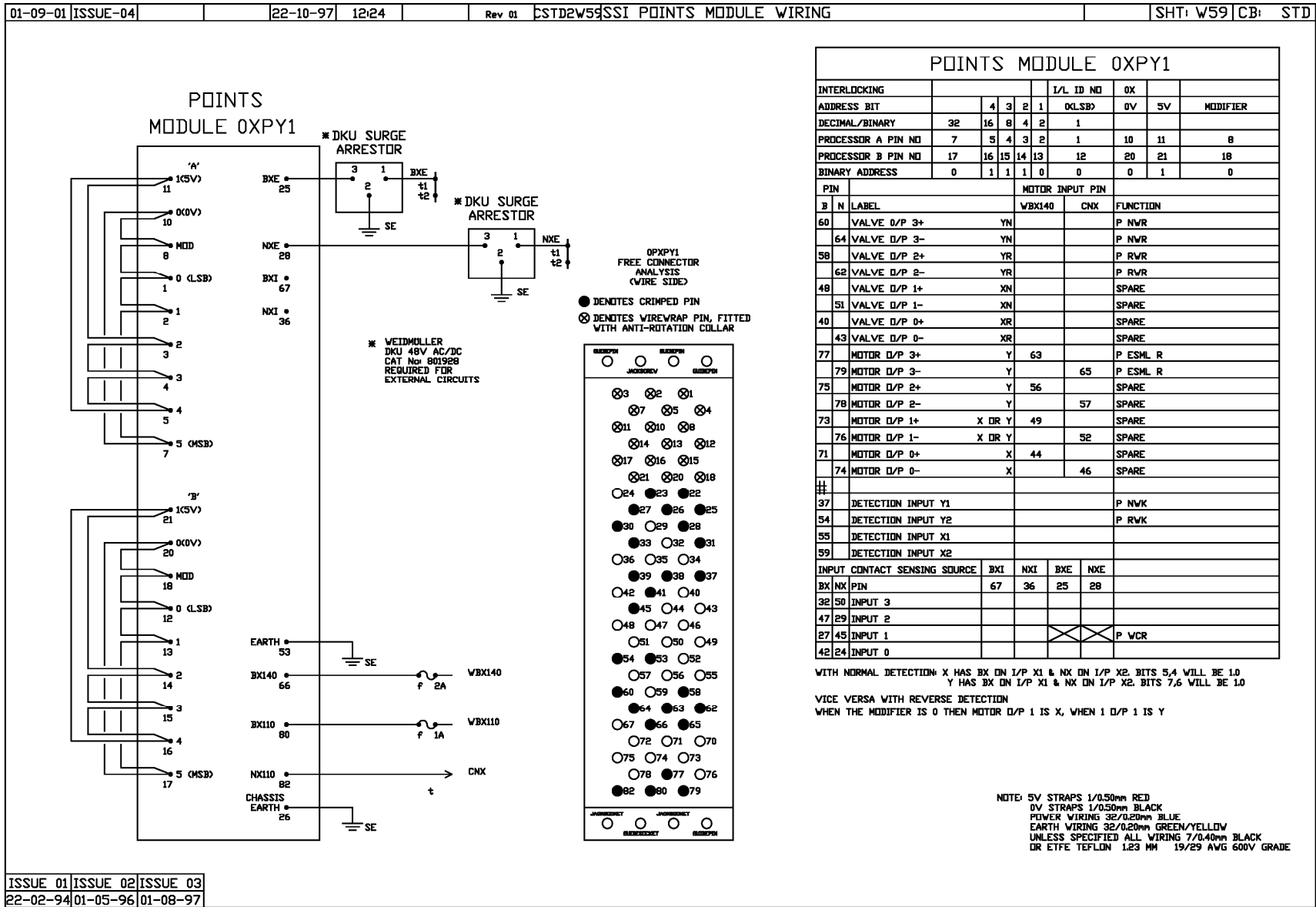


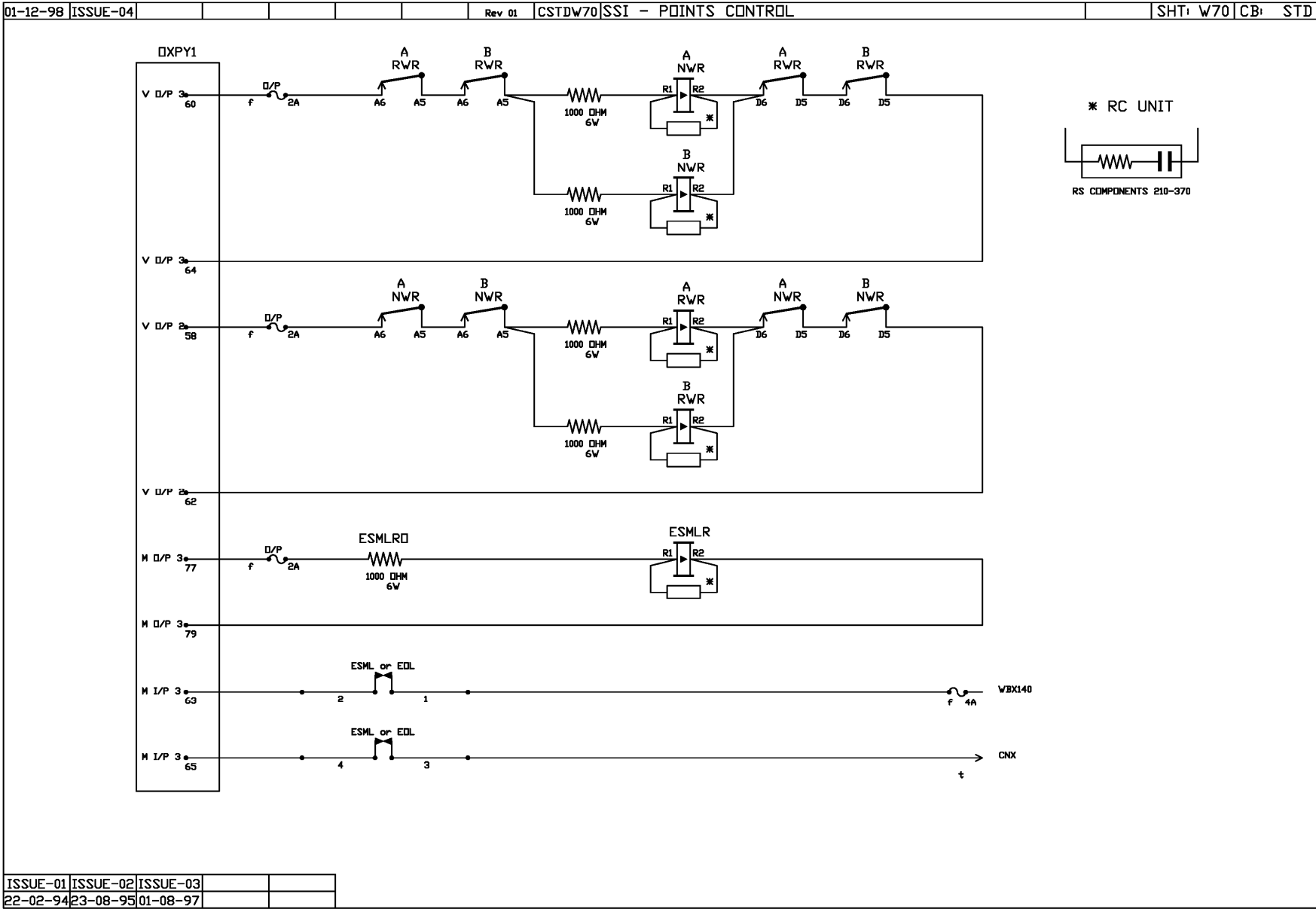




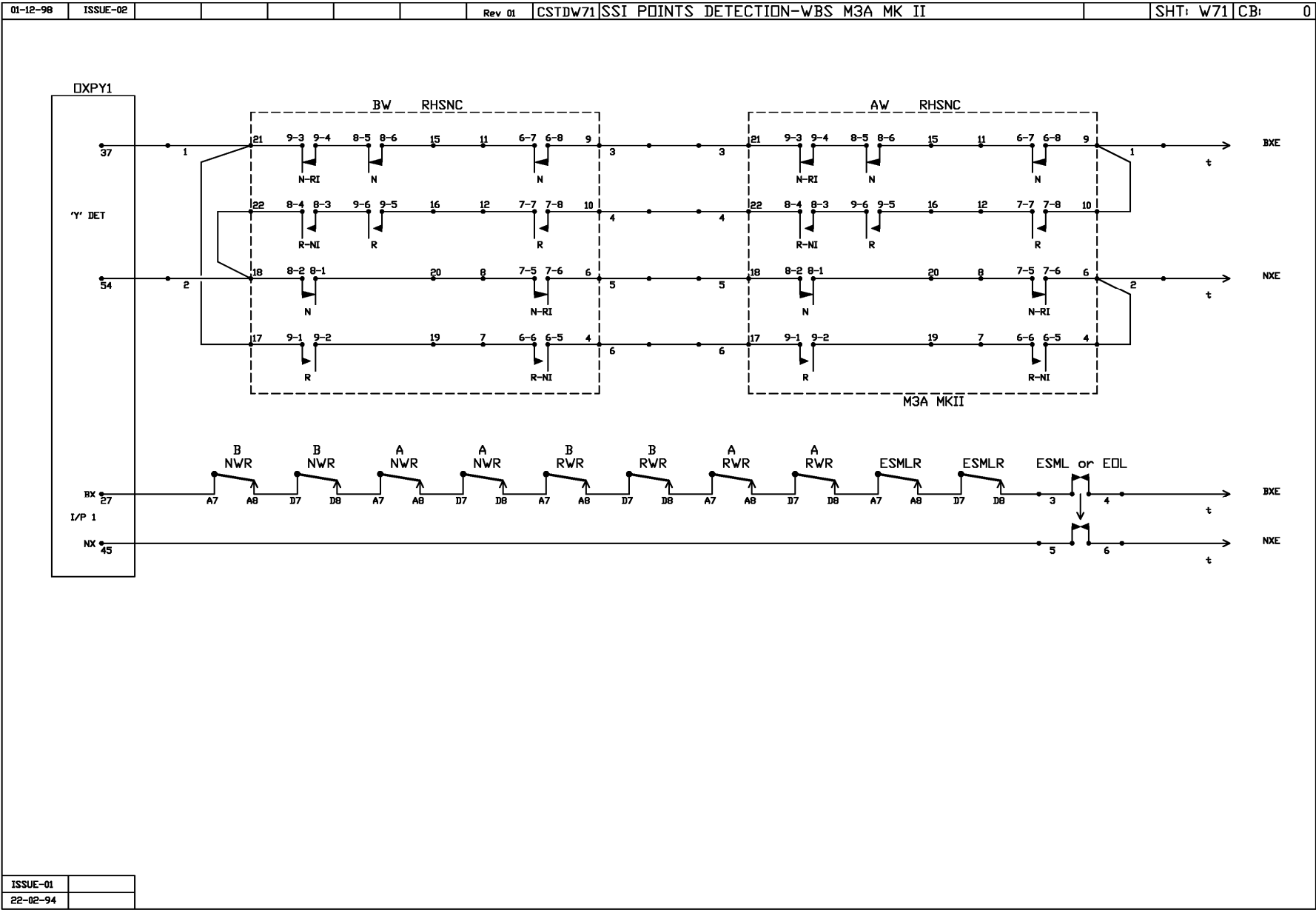
ISSUE-01	ISSUE-02
22-02-94	01-12-98

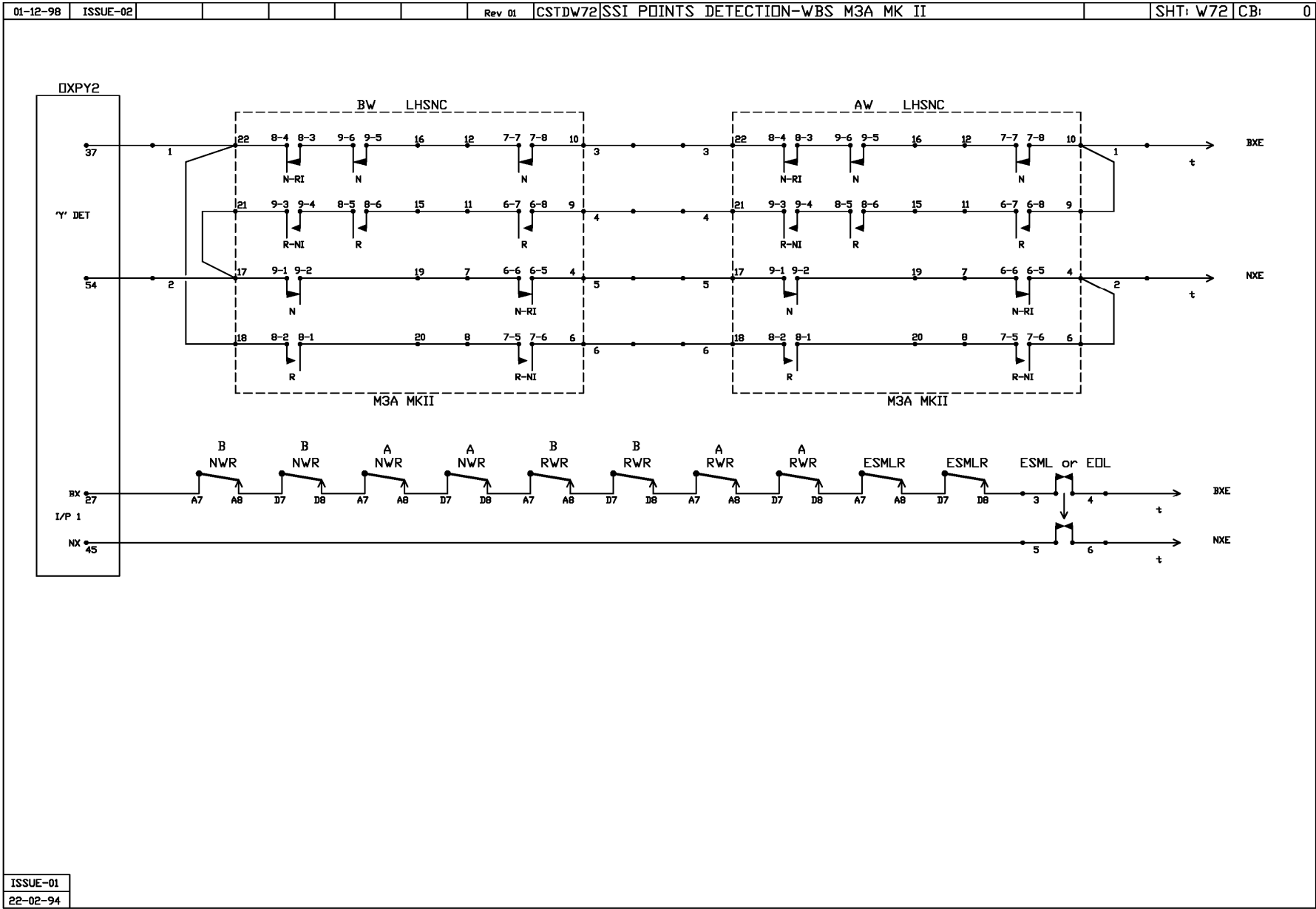




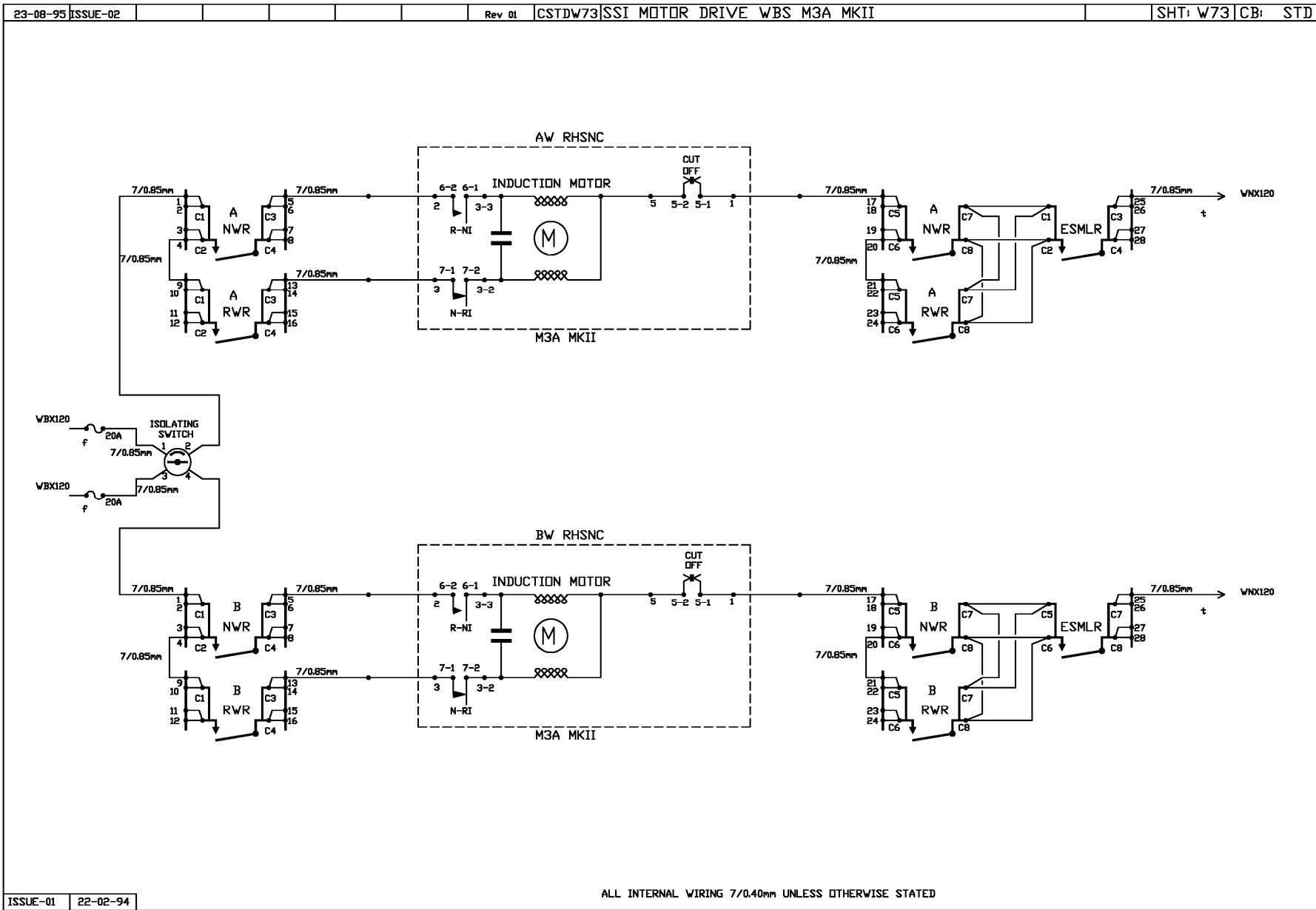


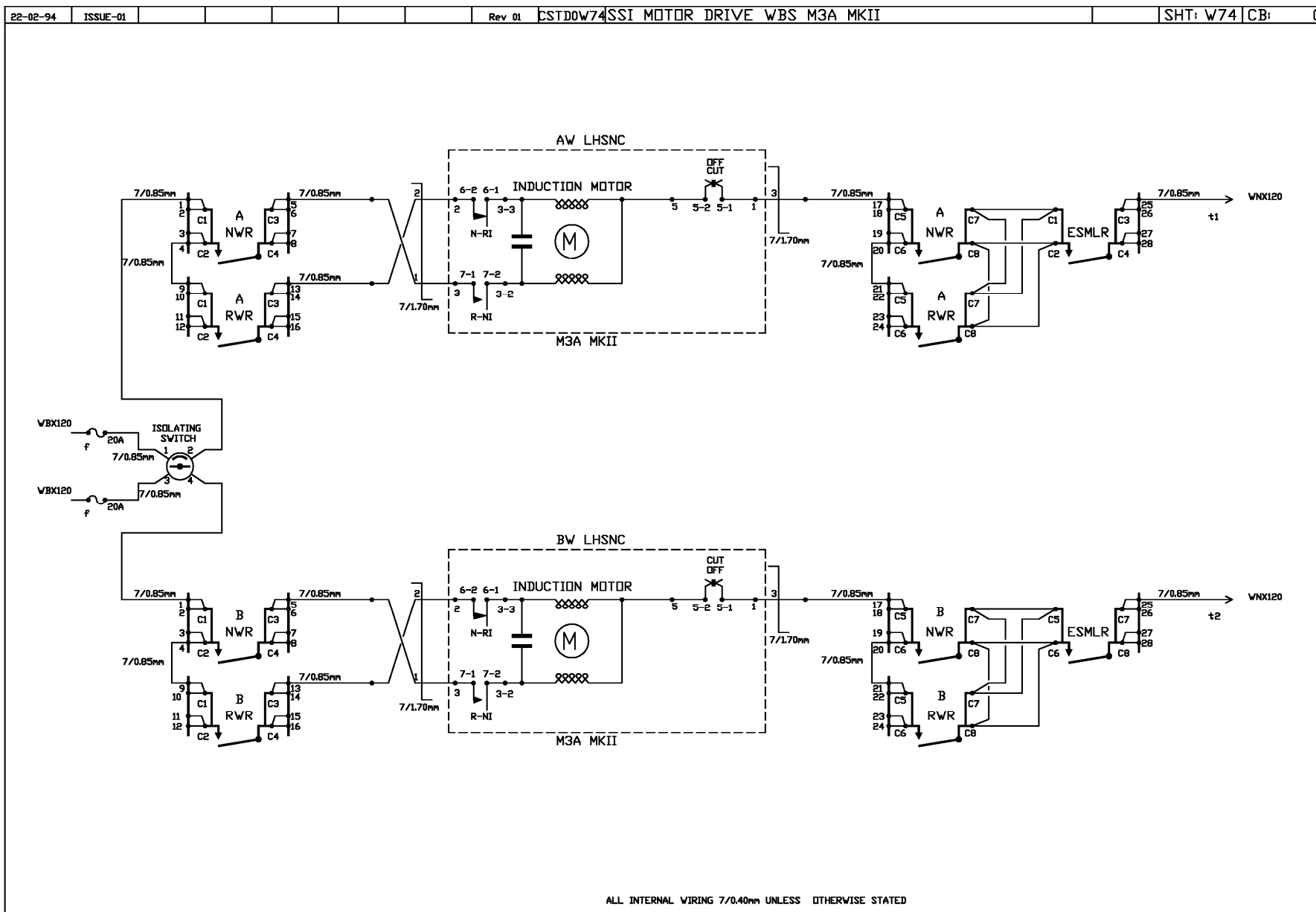
ISSUE-01	ISSUE-02	ISSUE-03		
22-02-94	23-08-95	01-08-97		

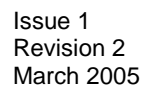


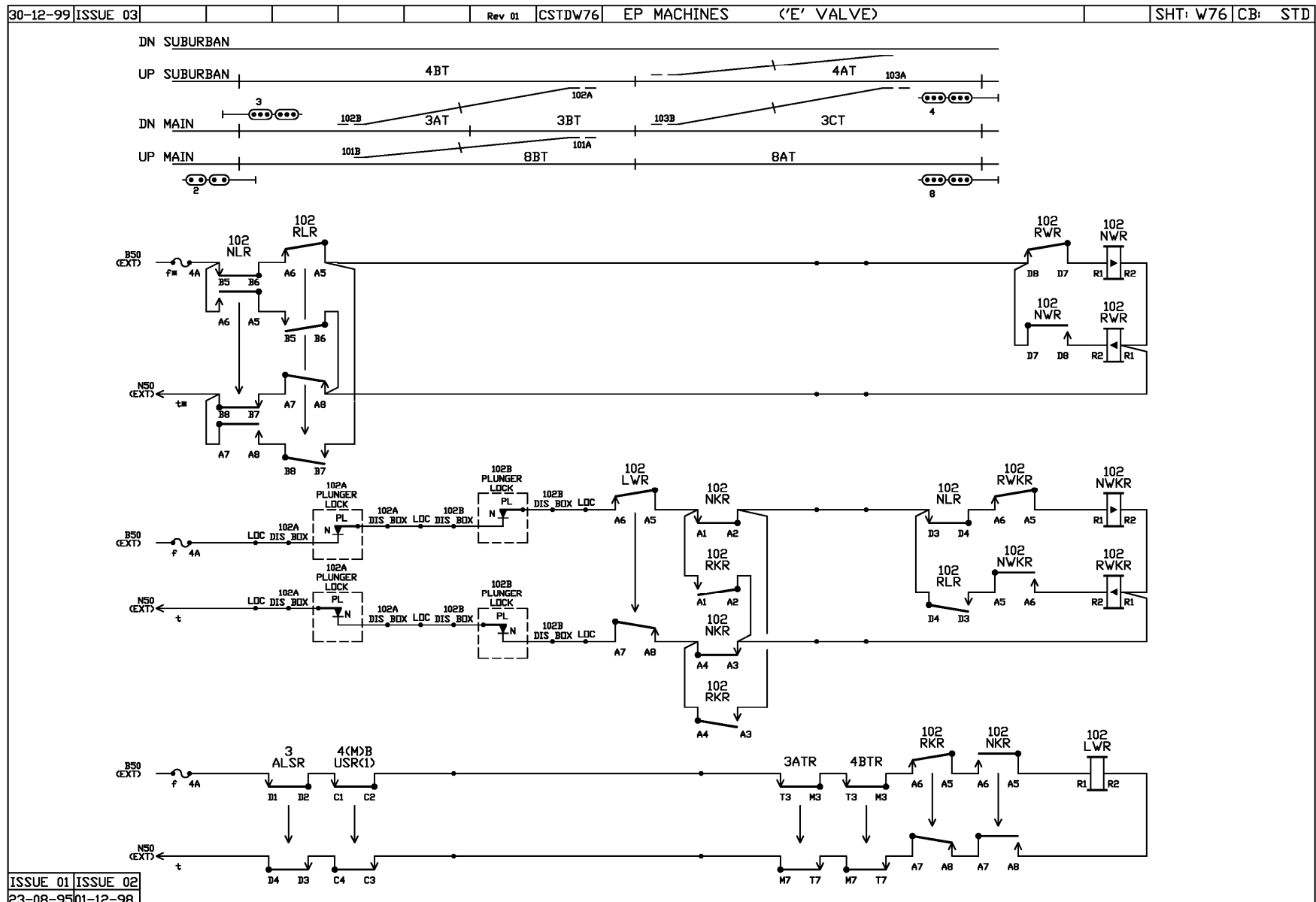


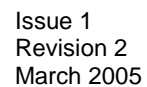
ISSUE-01
 22-02-94

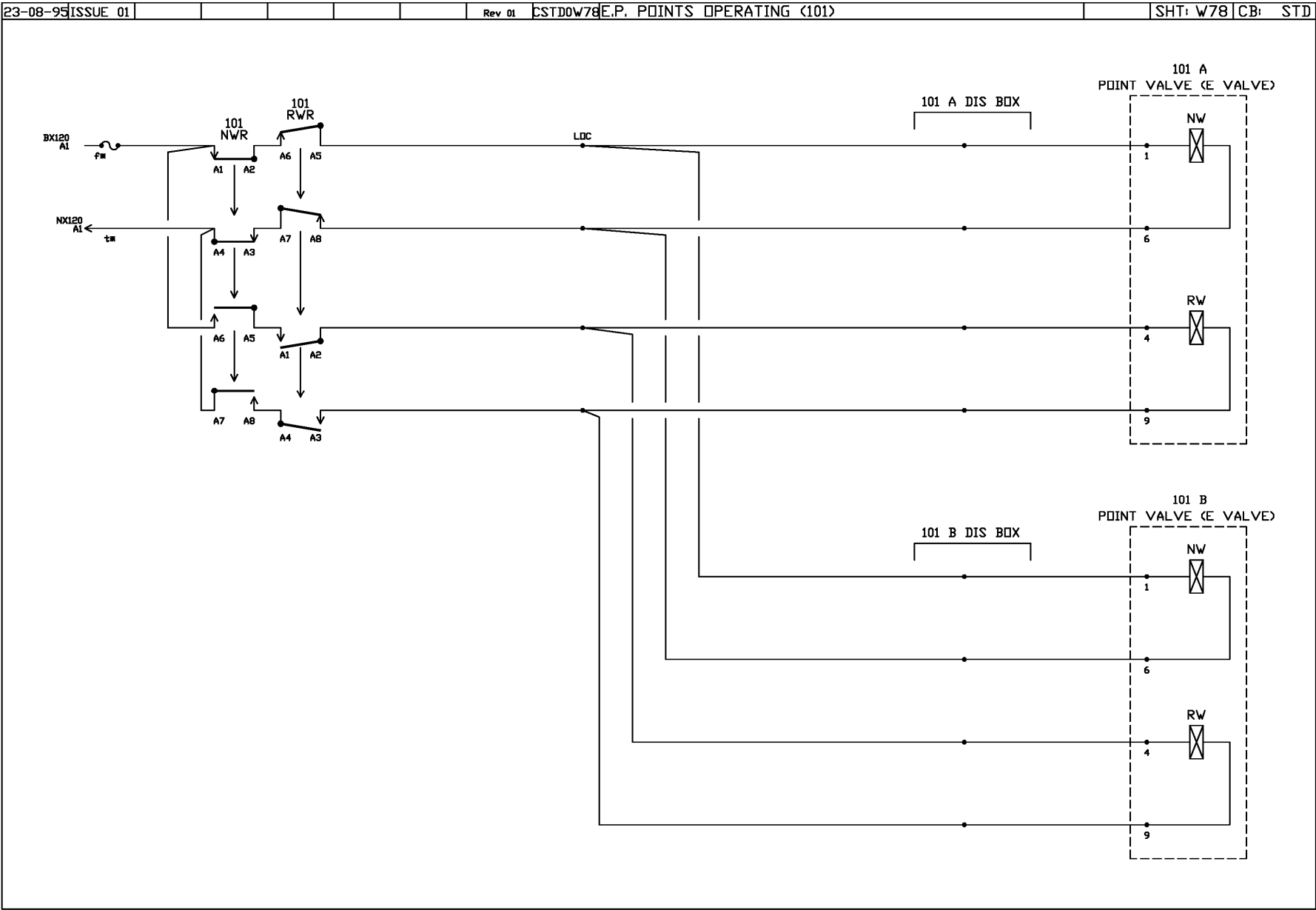


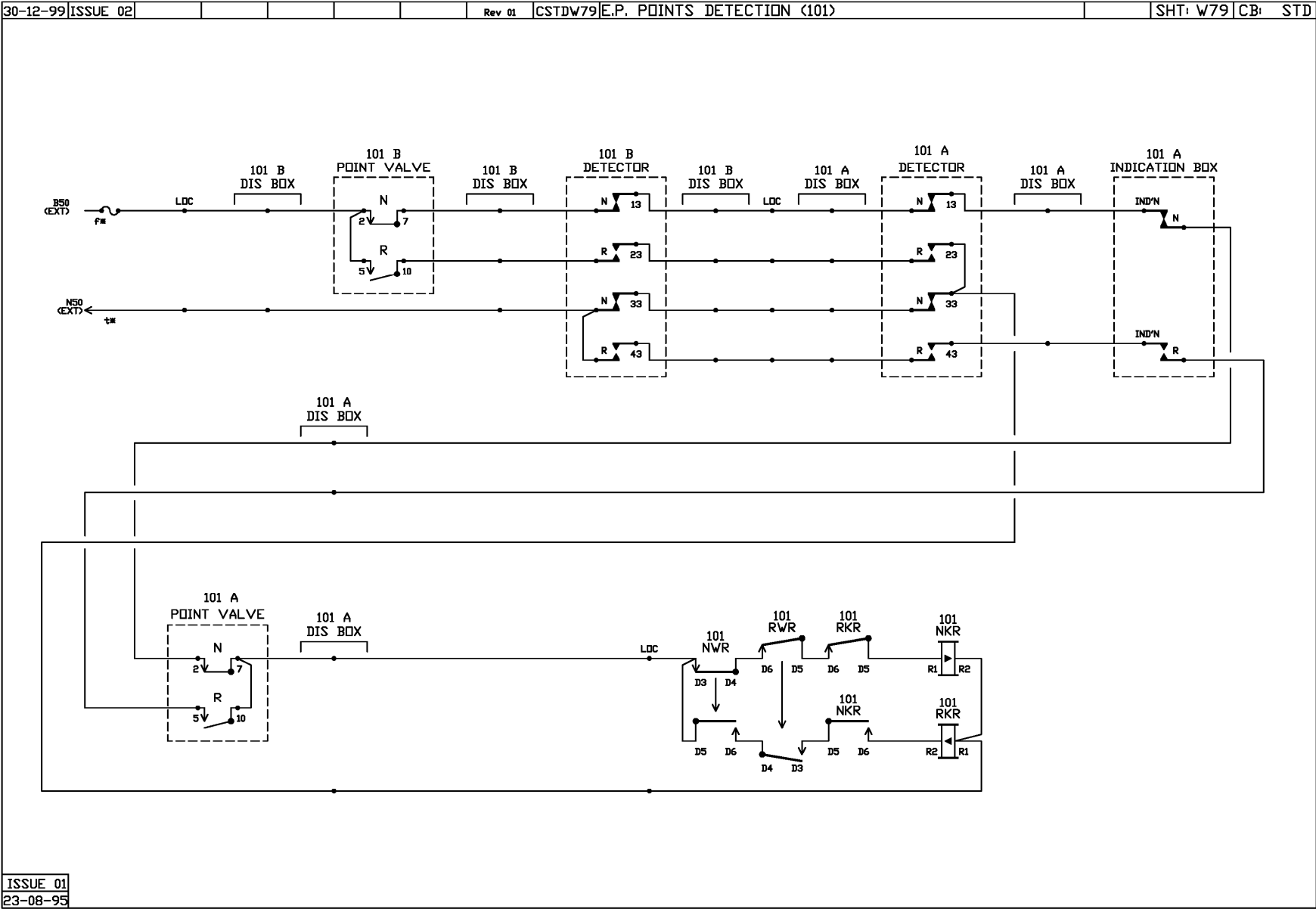






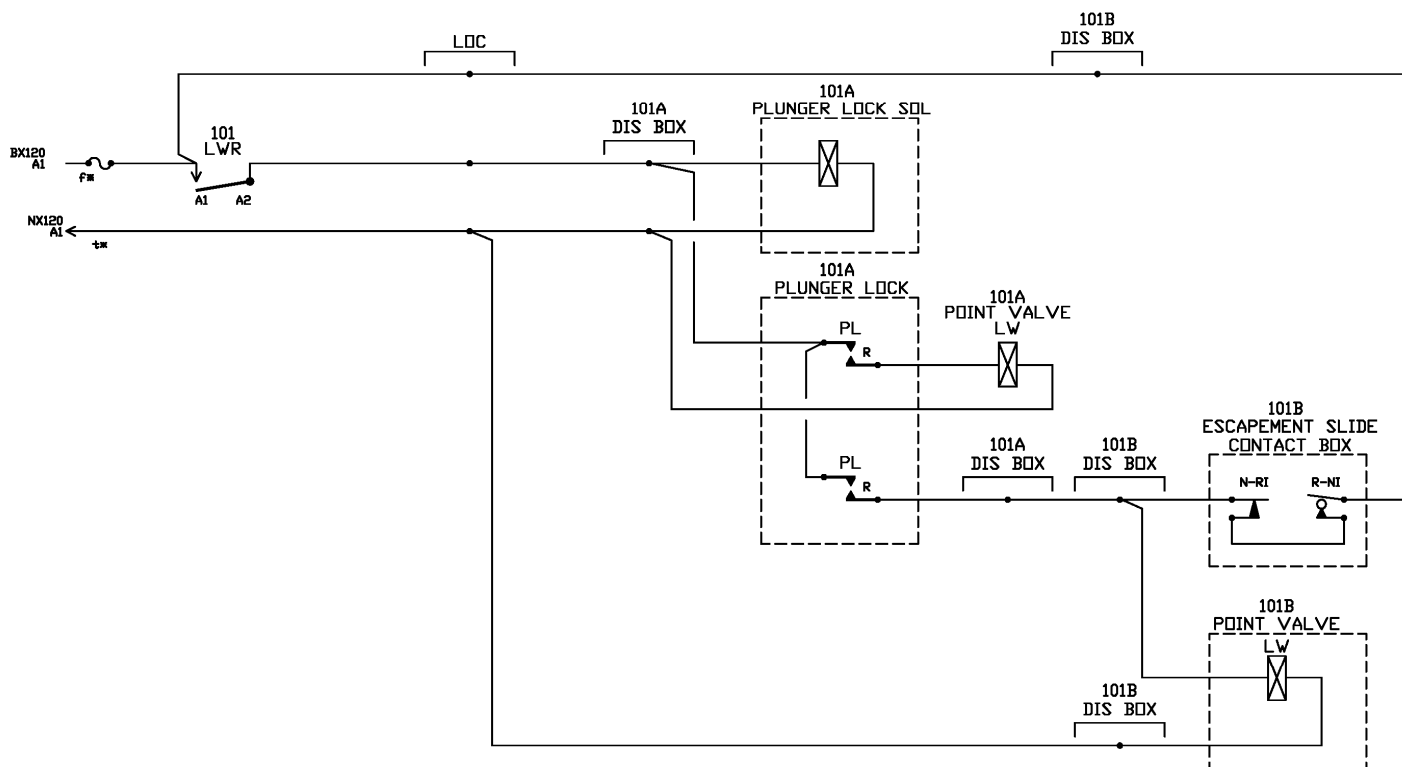


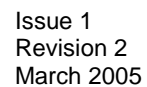


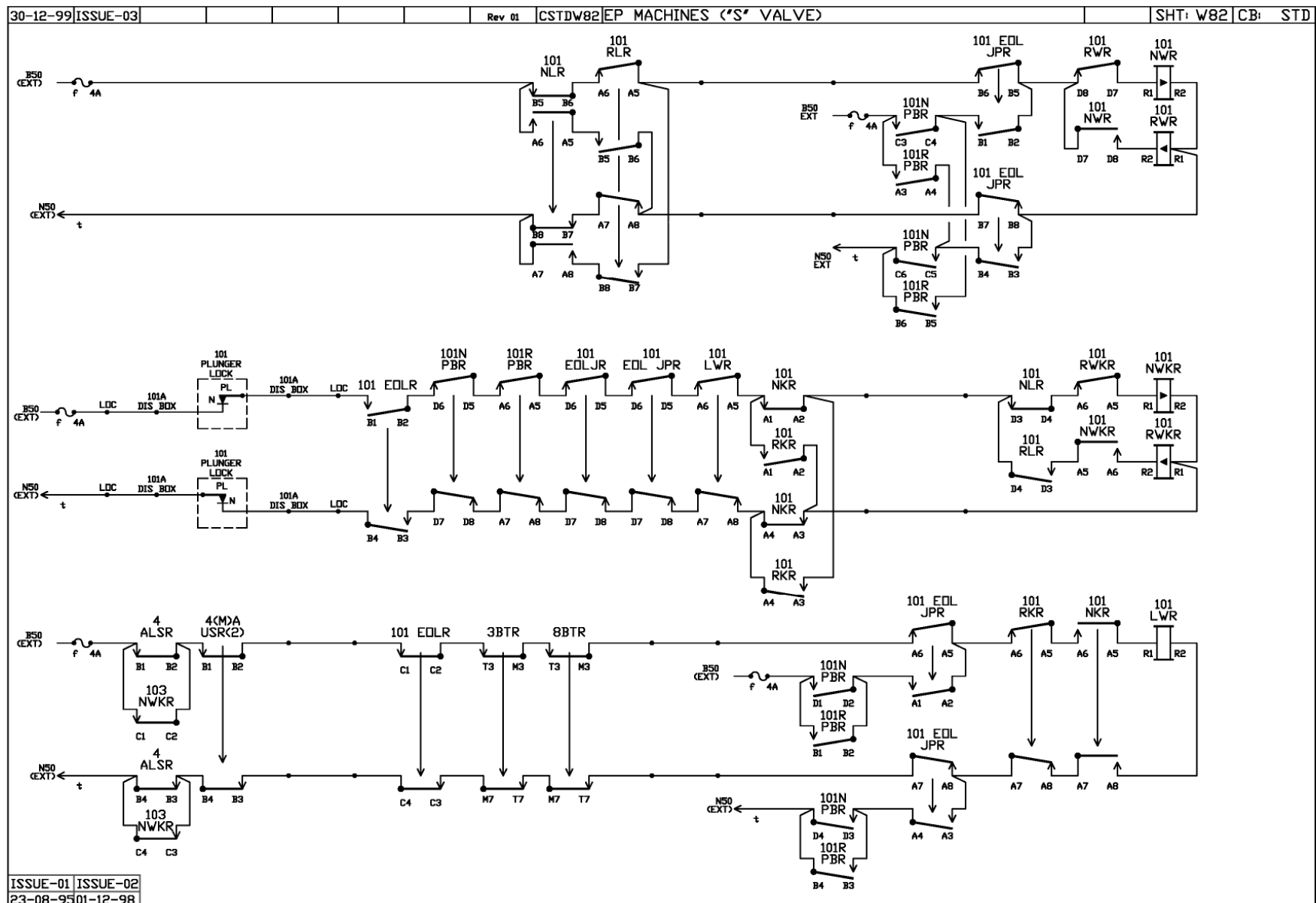


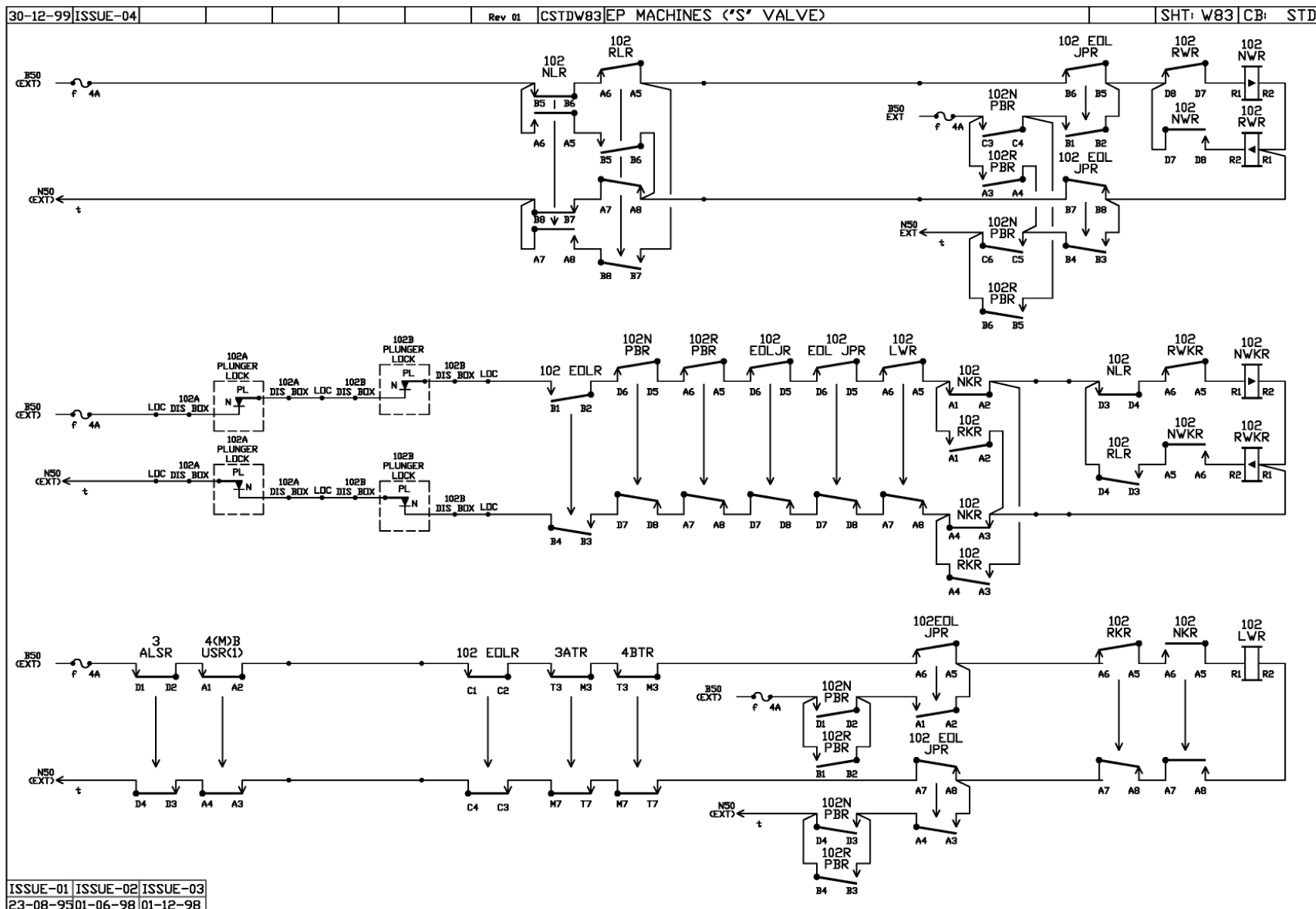
ISSUE 01
 23-08-95

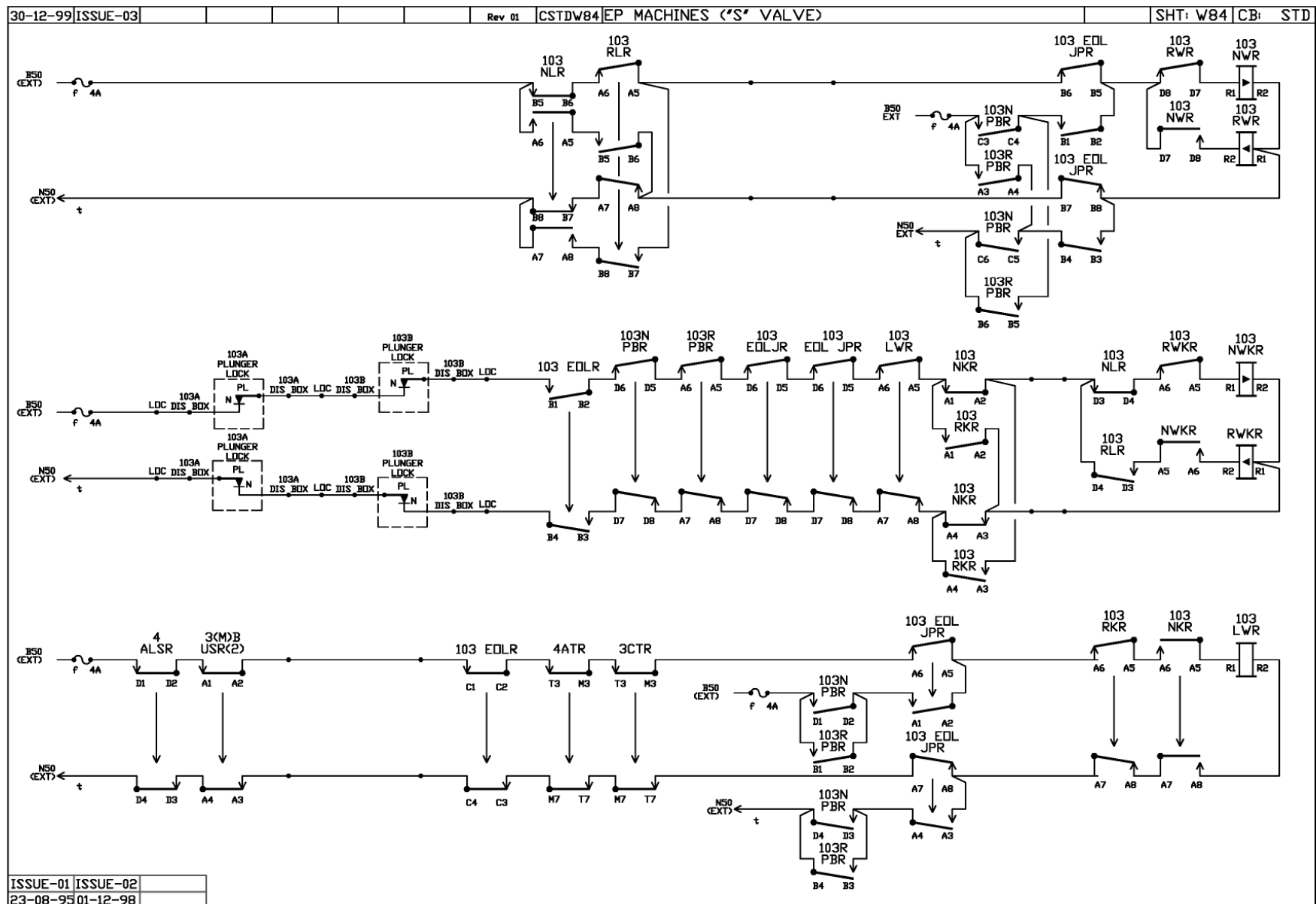
23-08-95 ISSUE 01 Rev 01 CSTD0W80 EP POINTS FACING TRAILING PLUNGER LOCK CCT (101) SHT: W80 CB: STD

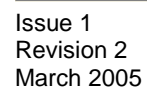


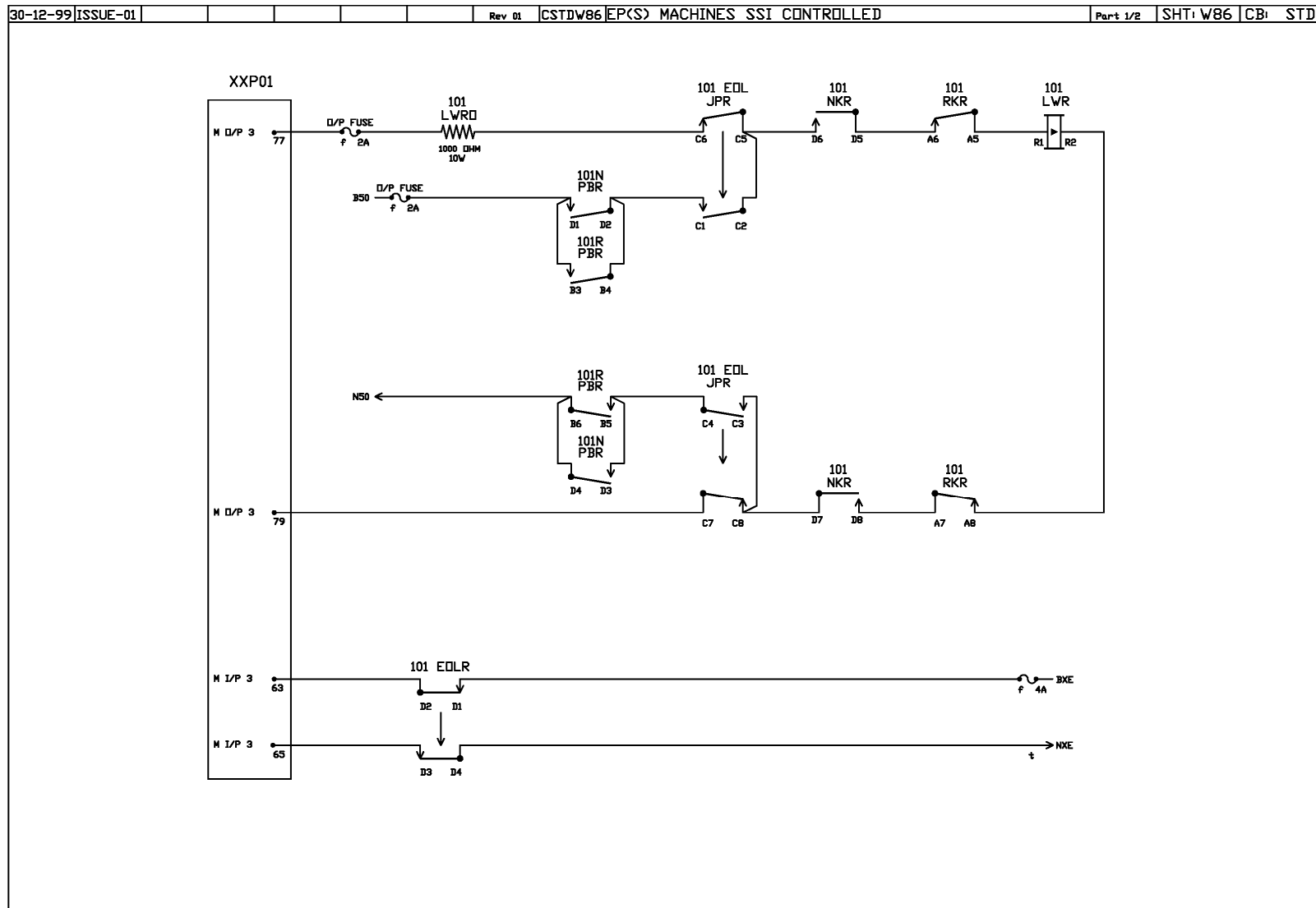


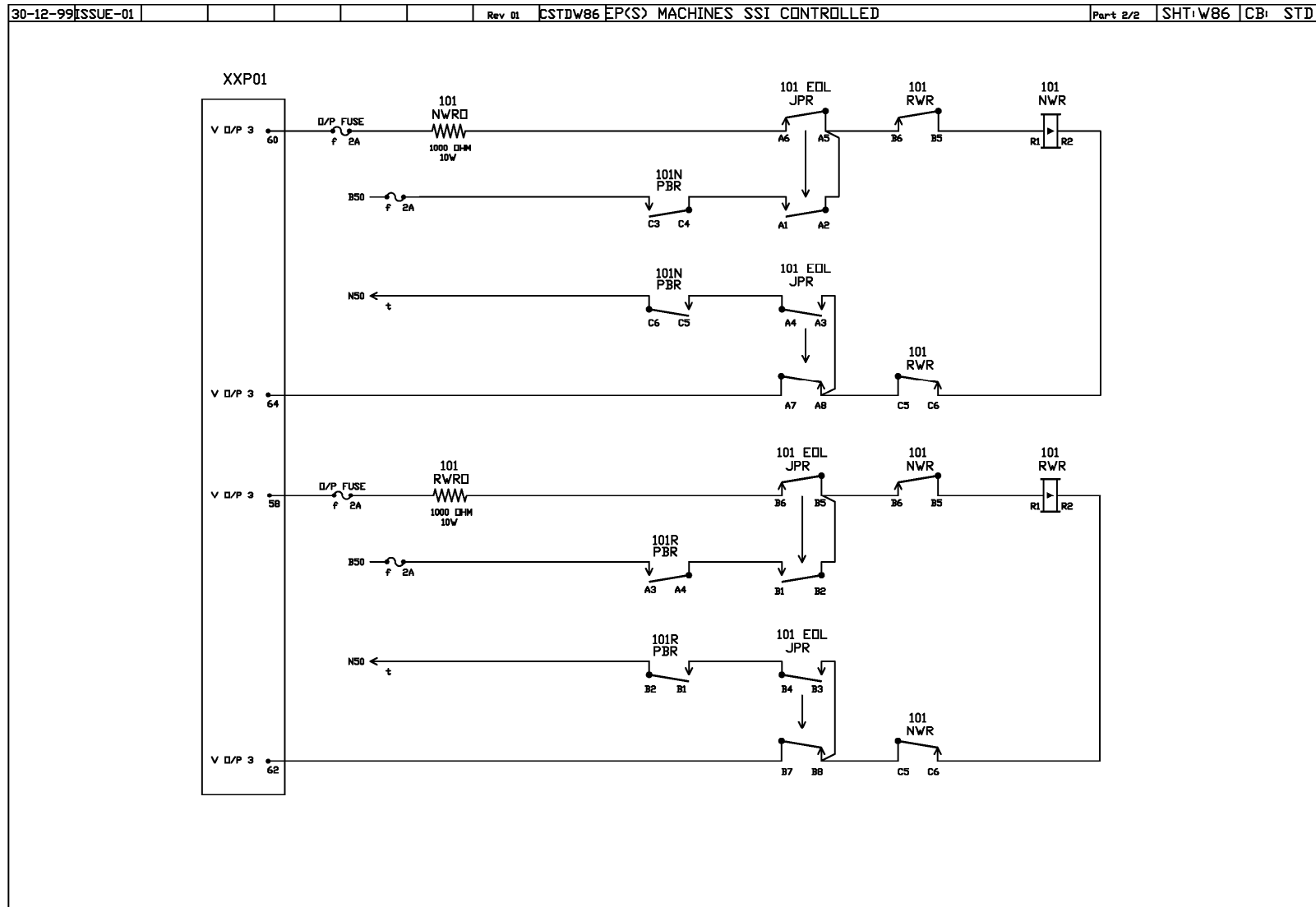




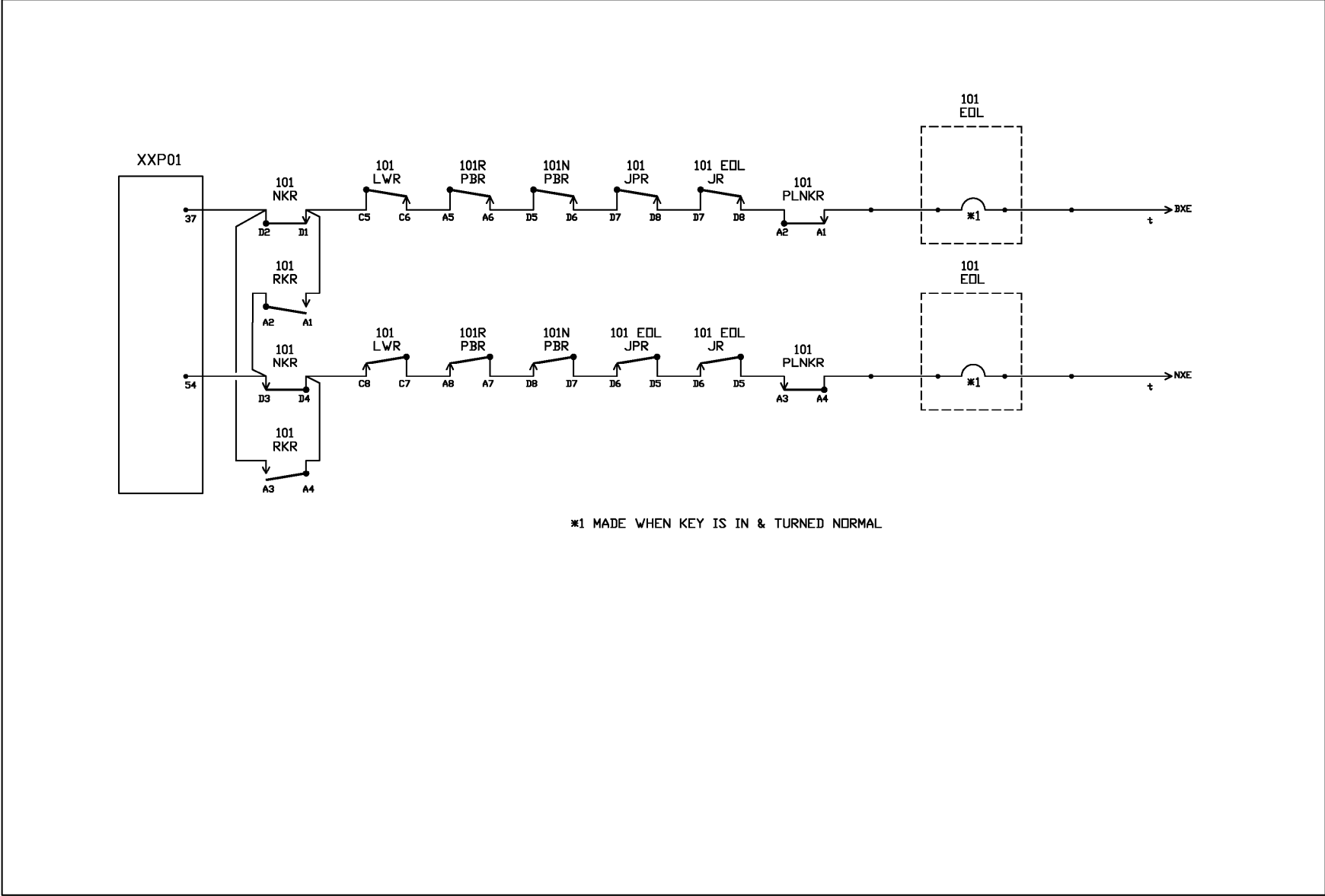




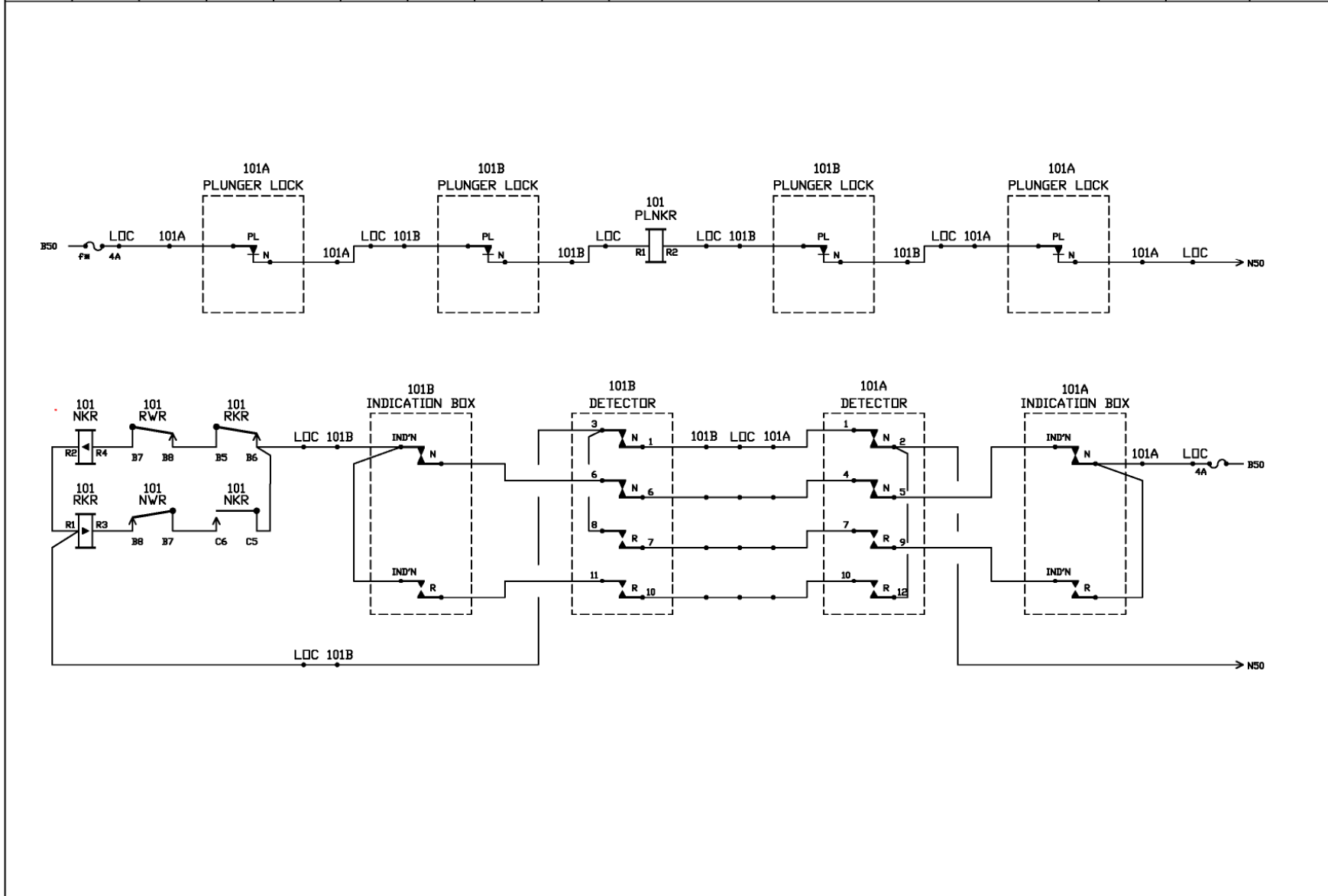


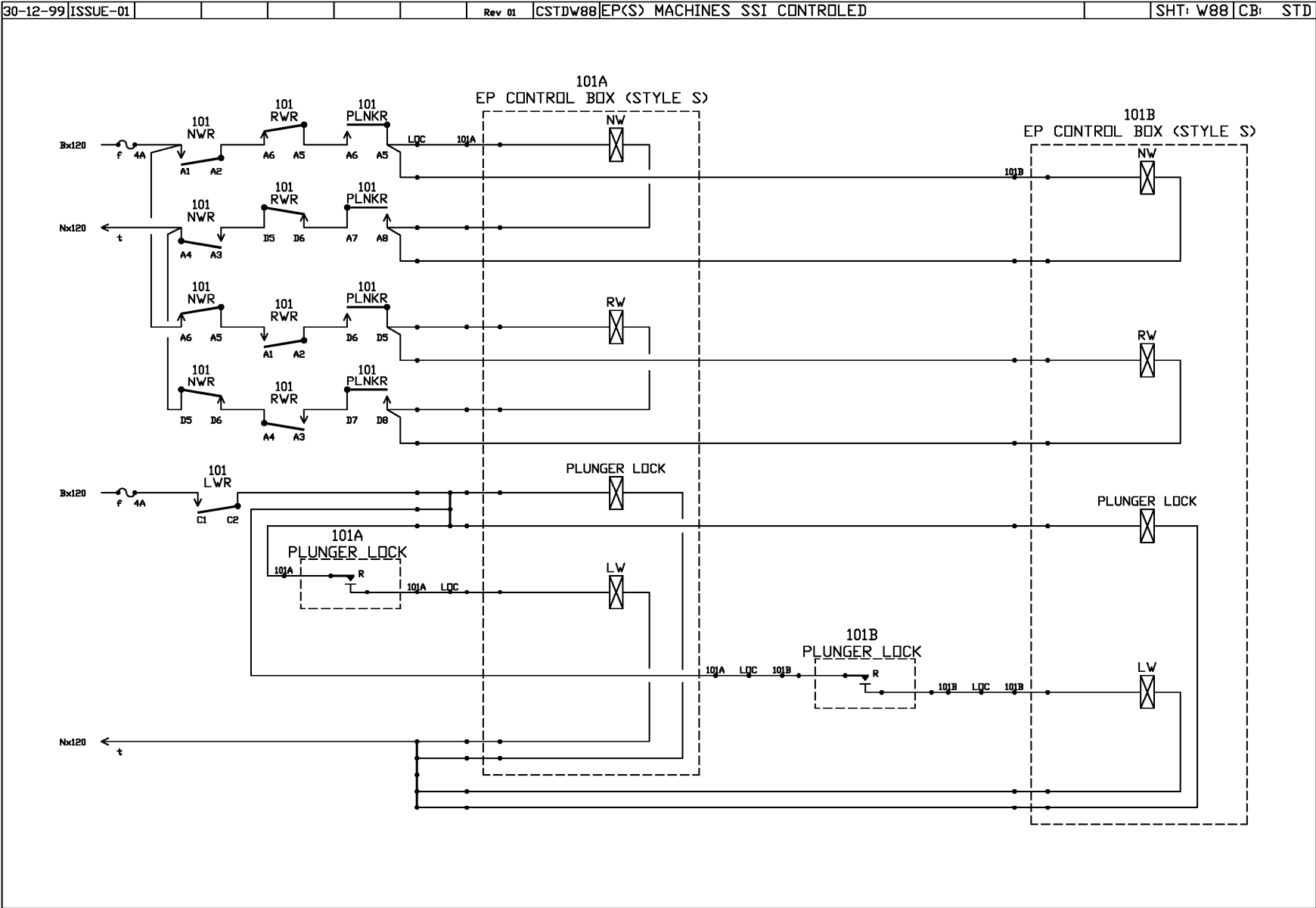


30-12-99 ISSUE-01 Rev 01 CSTDW87 EP(S) MACHINES SSI CONTROLLED Part 1/2 SHT: W87 CB: STD

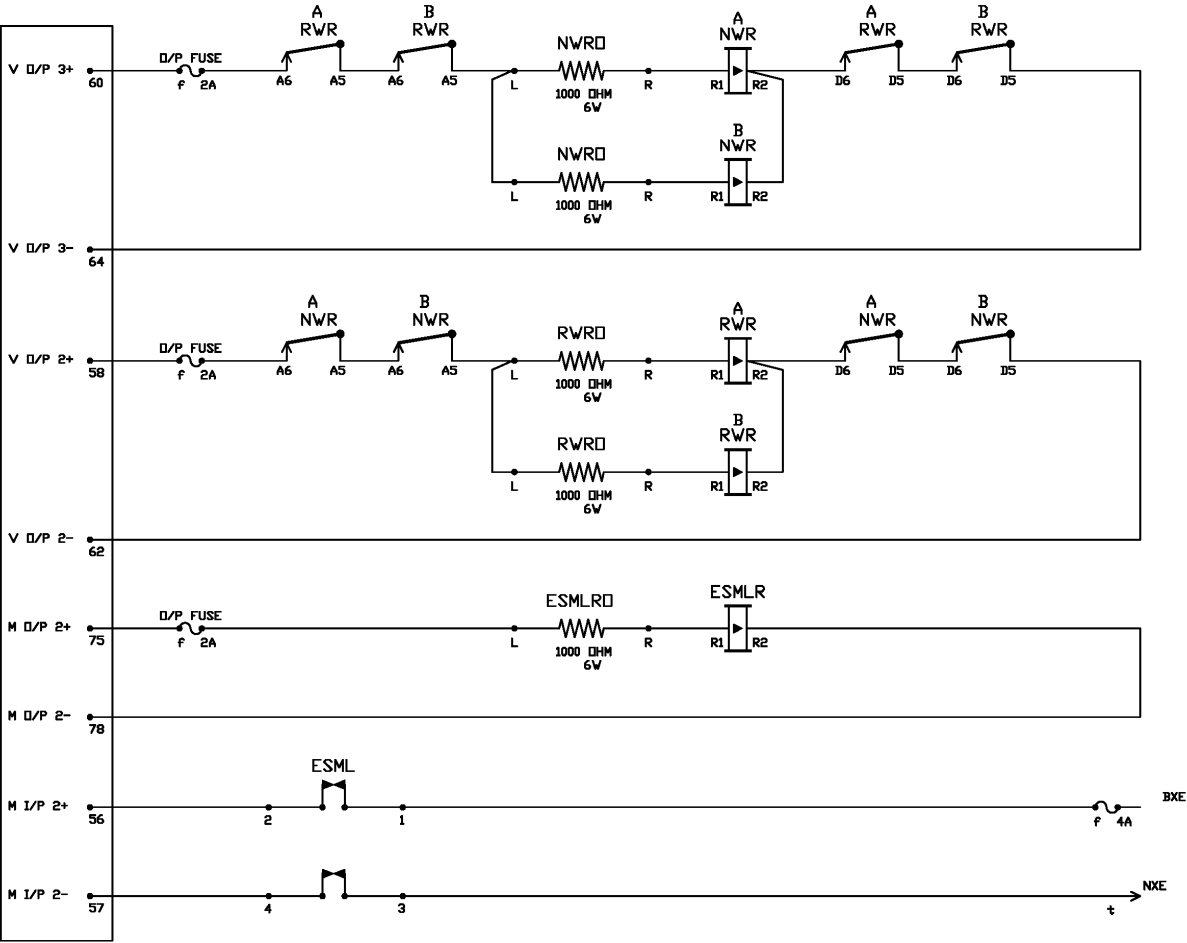


30-12-99 ISSUE-01 Rev 01 CSTDW87 EP(S) MACHINES SSI CONTROLLED Part 2/2 SHT: W87/CB: STD



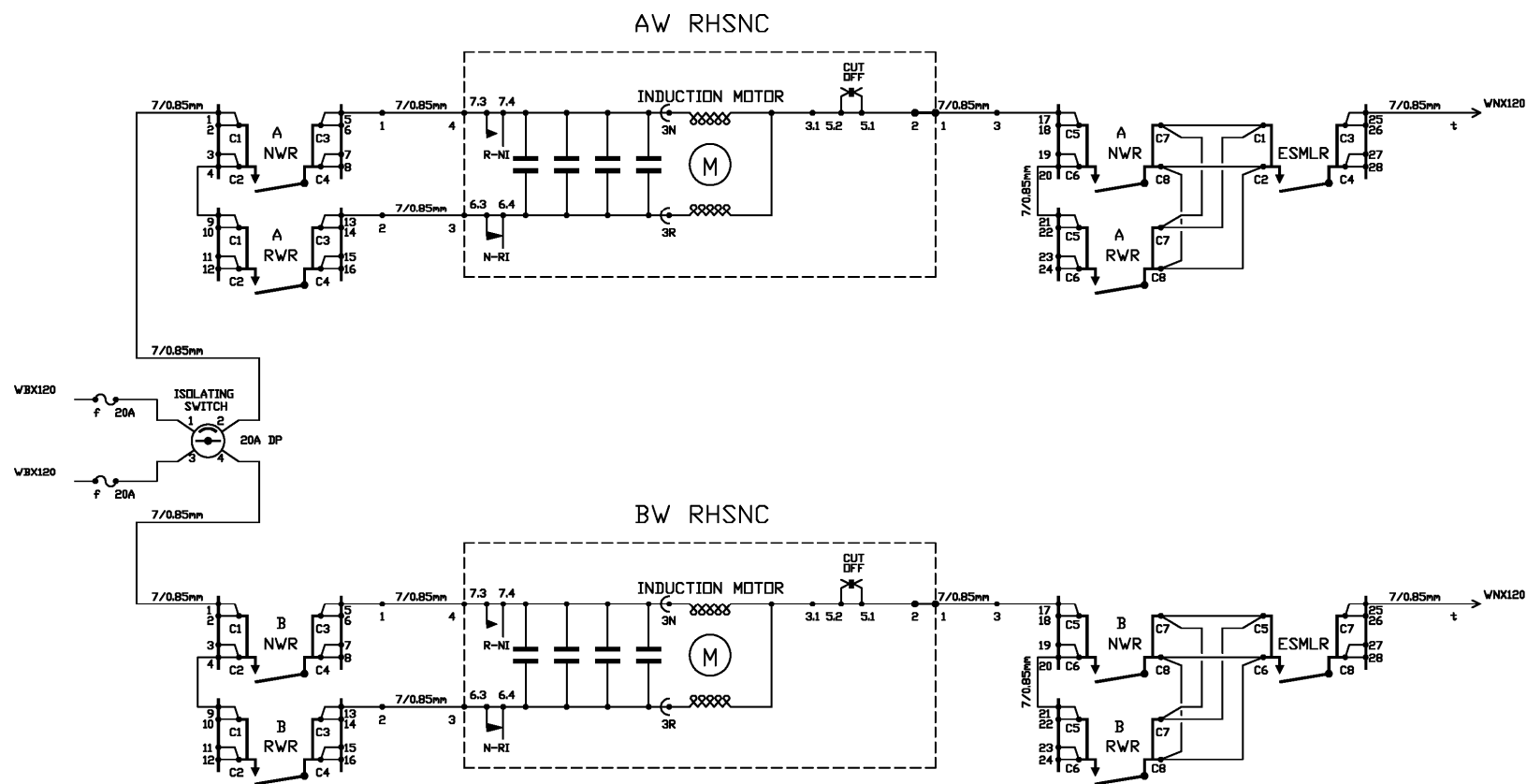


30-12-99 ISSUE-02 Rev 01 CSTDW90 WBS 84M POINTS-DOUBLE RIGHT HAND SSI CONTROLLED SHT: W90 CB: STD



ISSUE-01
23-08-95

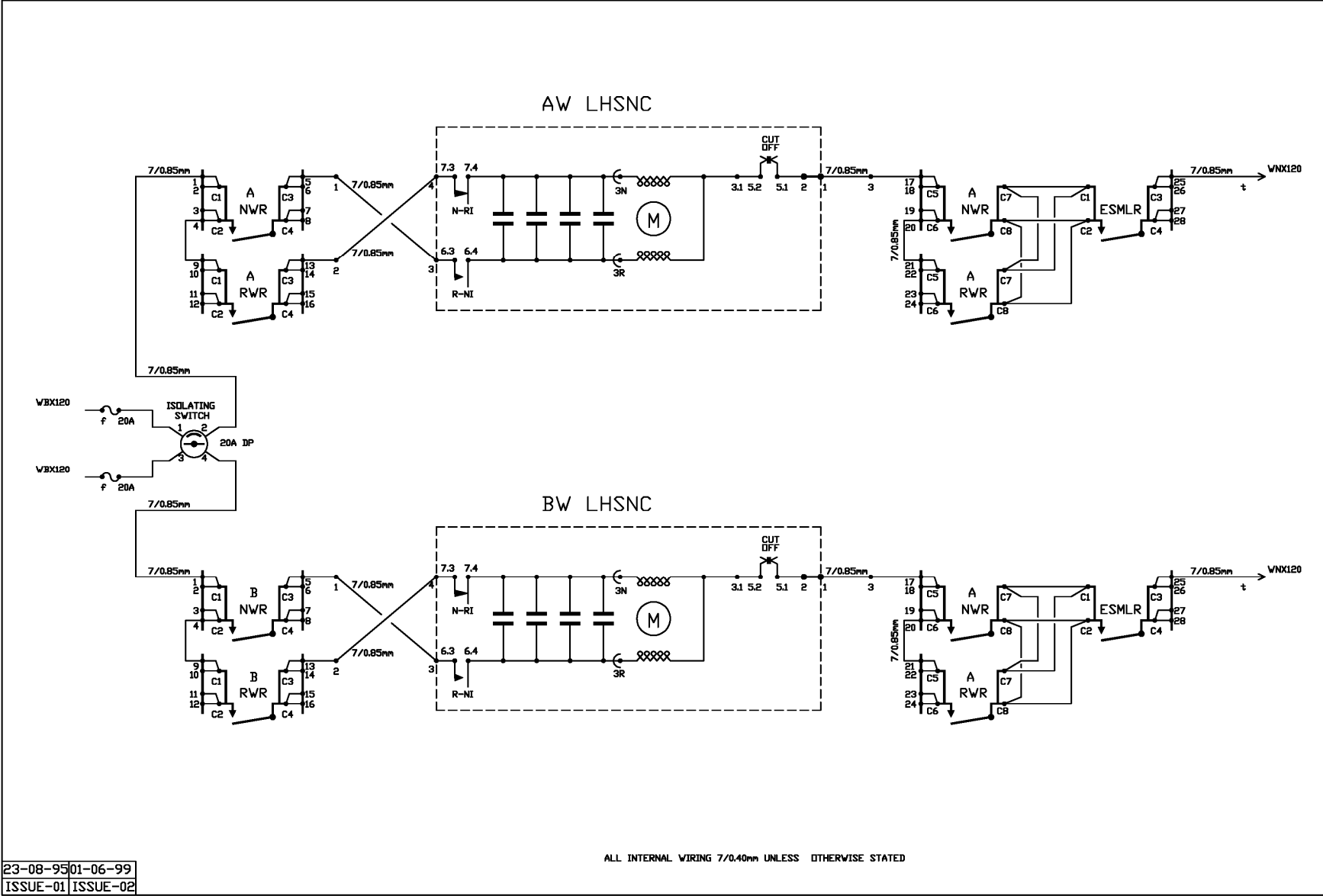
30-06-99 ISSUE-03 Rev 02 CSTDW91 WBS 84M – DOUBLE RIGHT HAND-SSI CONTROLLED SHT: W91 CB: STD



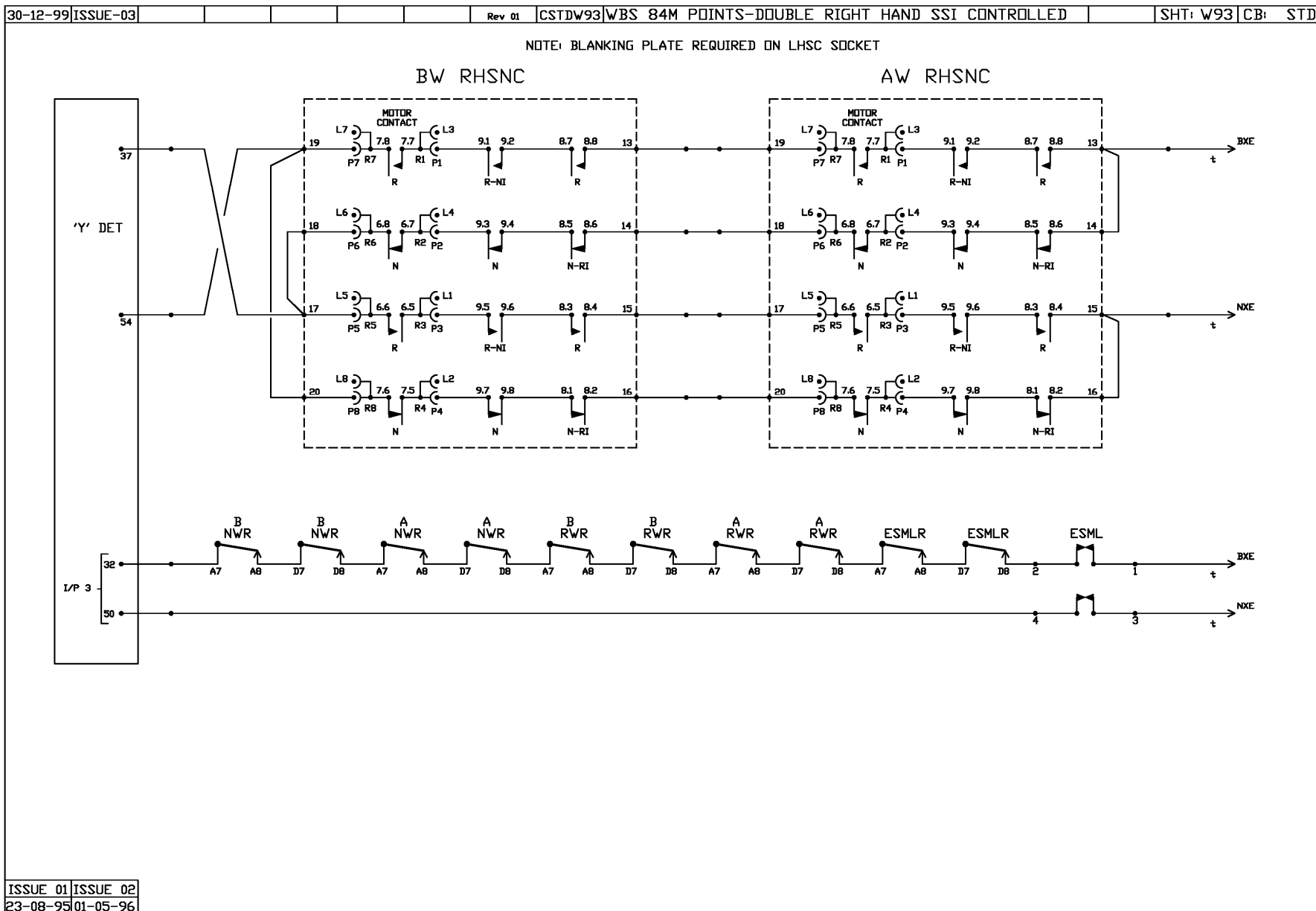
ALL INTERNAL WIRING 7/0.40mm UNLESS OTHERWISE STATED

23-08-95 01-08-97
 ISSUE-01 ISSUE-02

30-06-99 ISSUE-03 Rev 02 CSTDW92 WBS 84M – DOUBLE LEFT HAND-SSI CONTROLLED SHT: W92 CB: STD

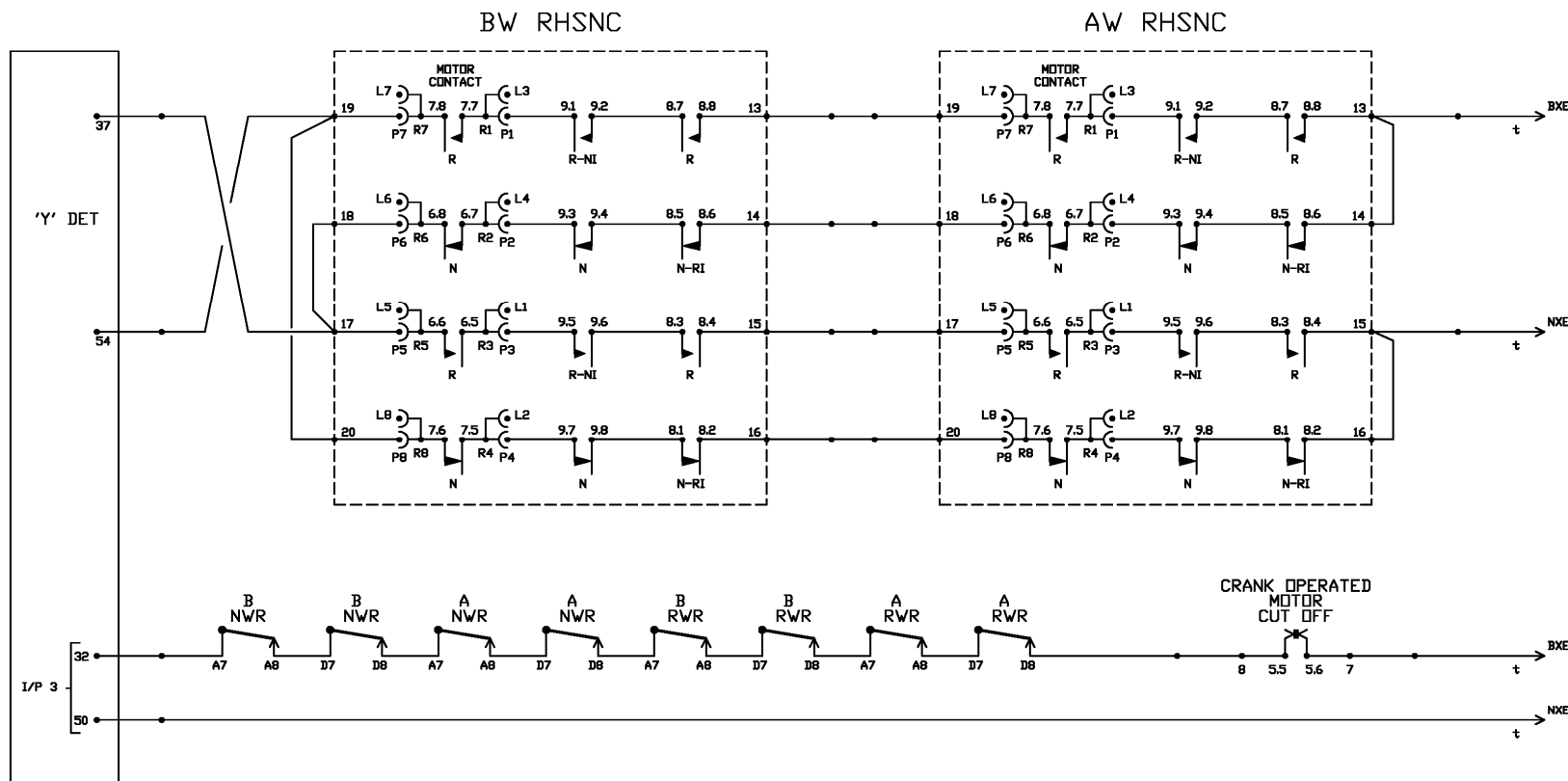


23-08-95 01-06-99
ISSUE-01 ISSUE-02

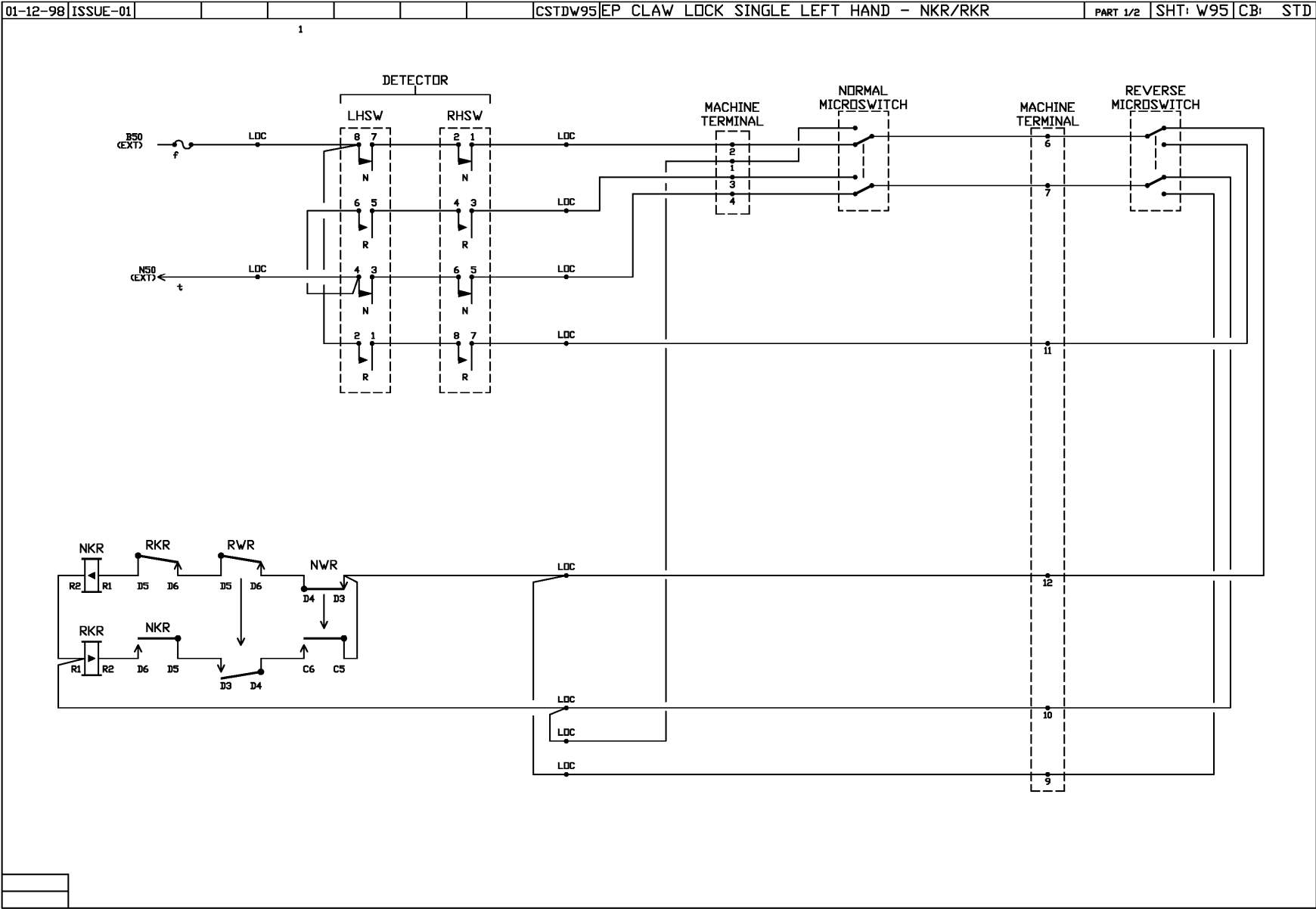


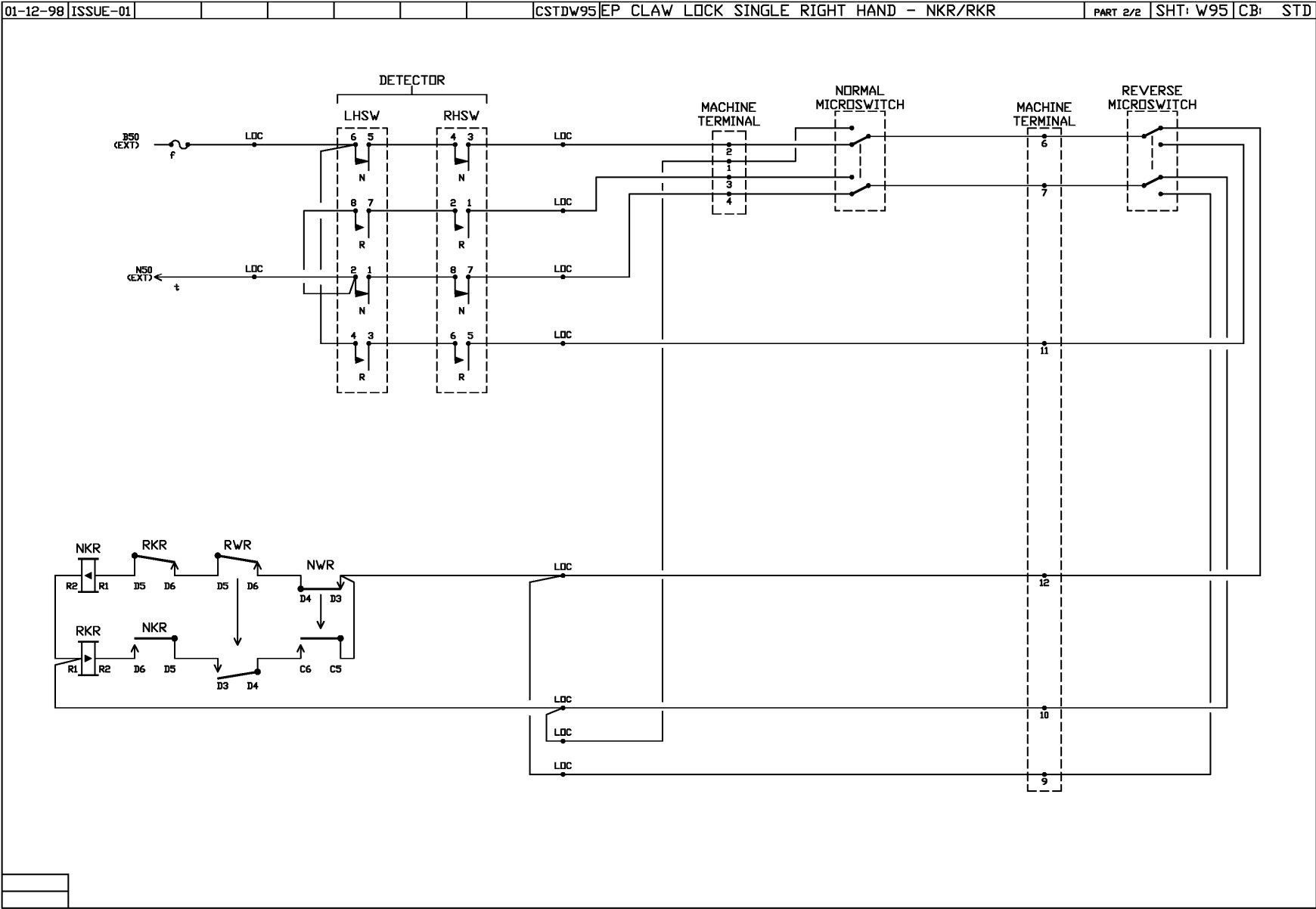
01-05-96 ISSUE-01 Rev 01 CSTD0W94 WBS TD84M POINTS-DOUBLE RIGHT HAND SSI CONTROLLED SHT: W94 CB: STD

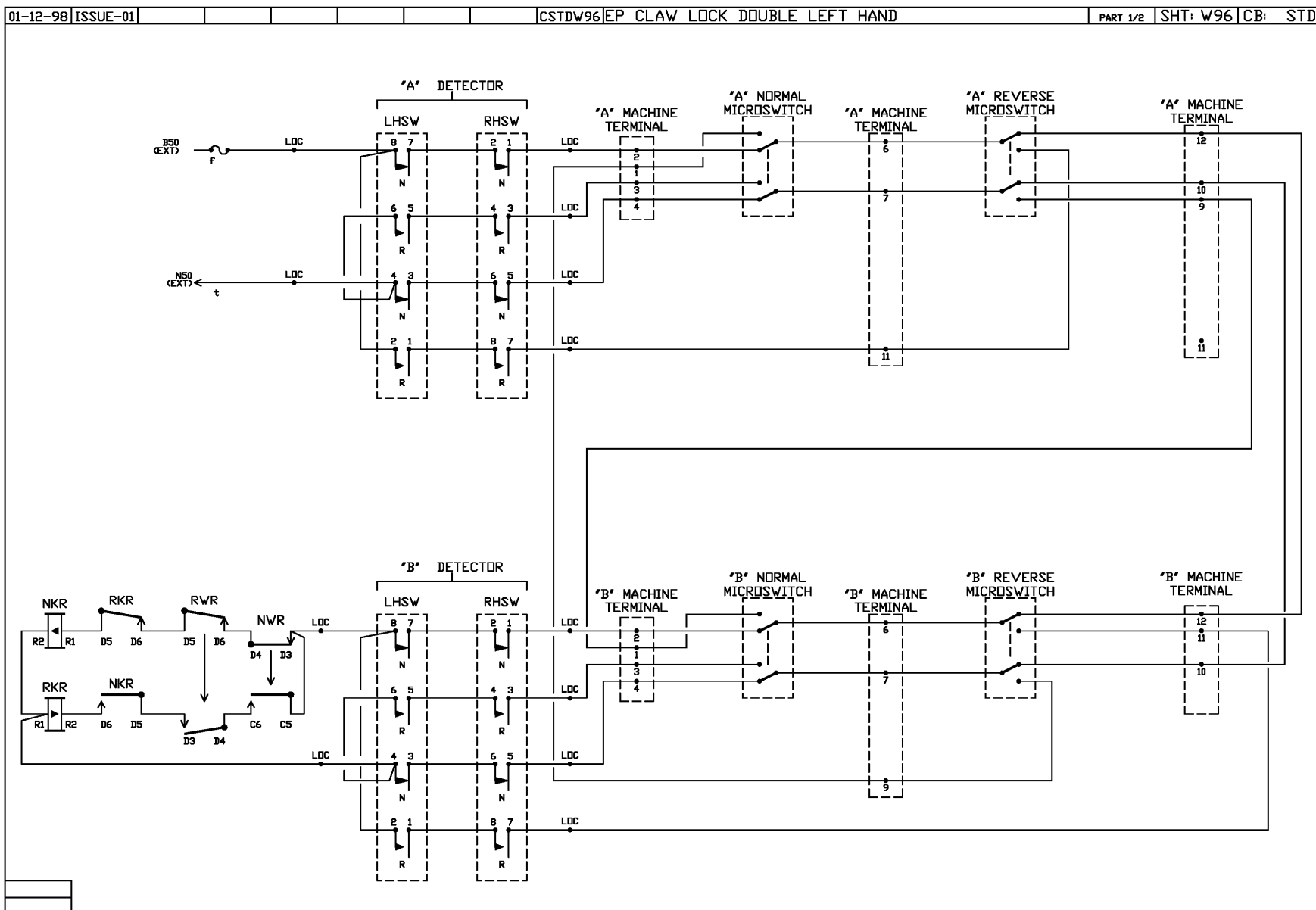
NOTE: BLANKING PLATE REQUIRED ON LHSC SOCKET.



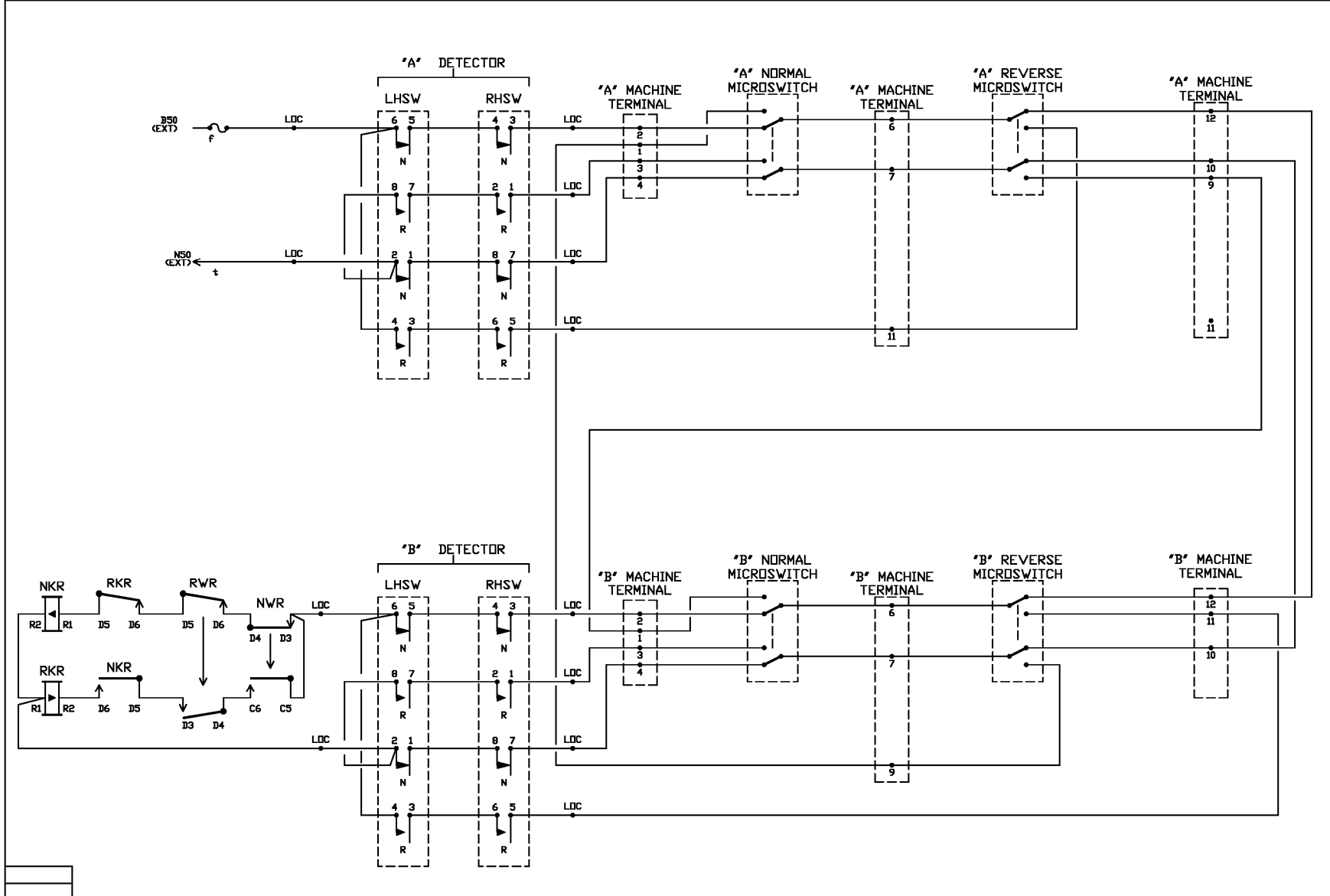
NOTE: THIS ARRANGEMENT IS SUITABLE ONLY
 WHEN ESML IS NOT PROVIDED-Eg FREIGHT YARDS

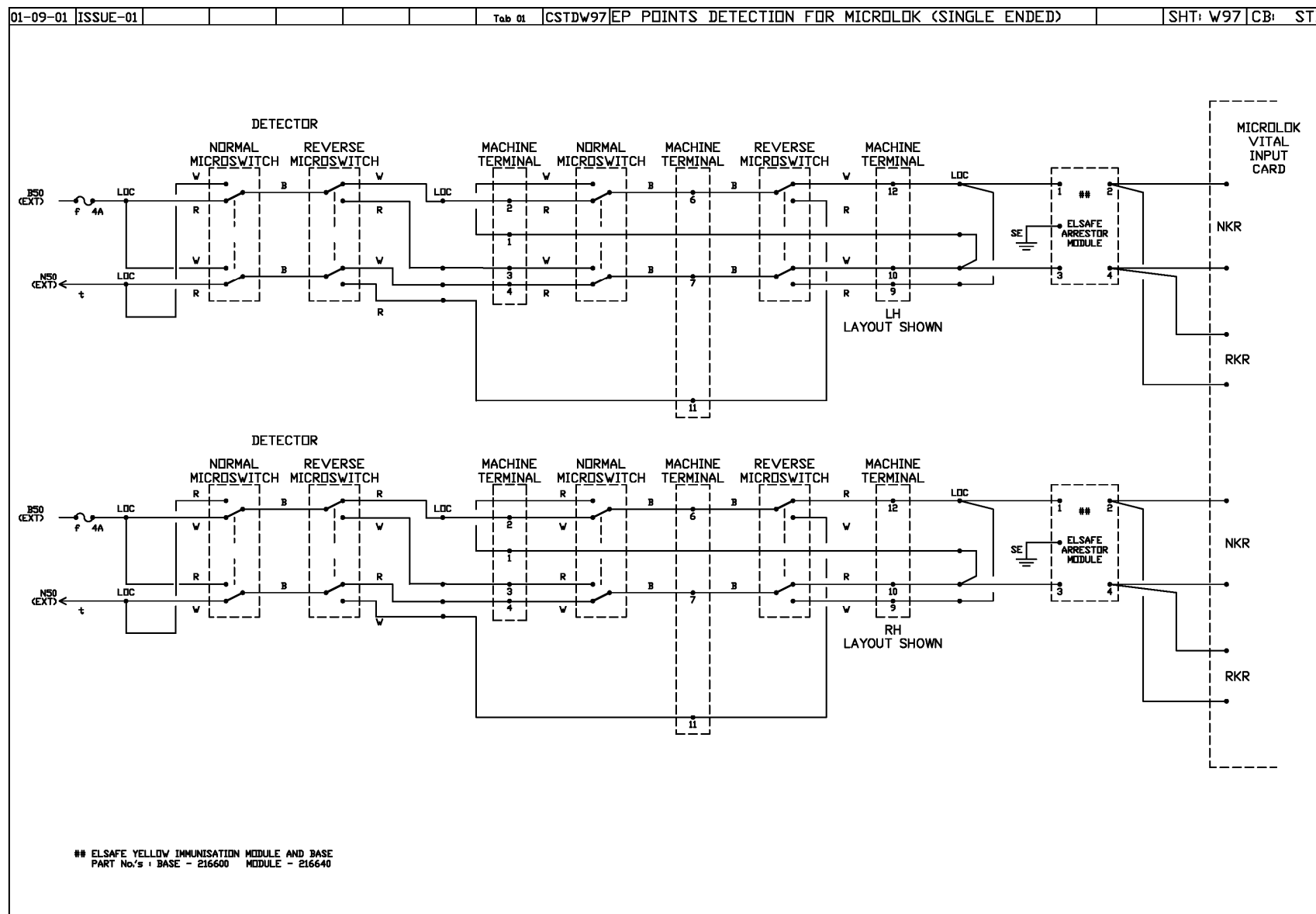




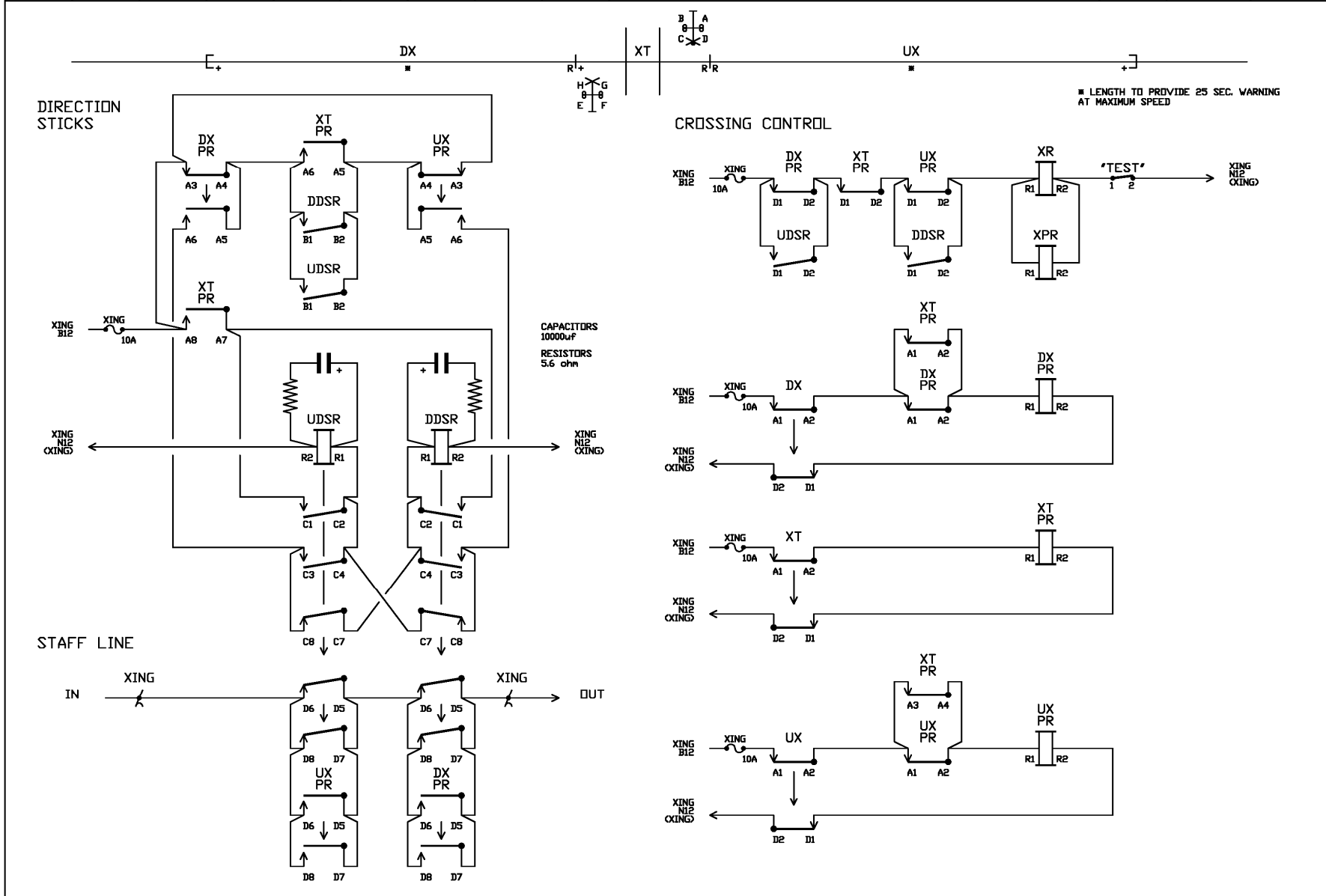


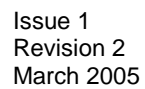
01-12-98 ISSUE-01 CSTDW96 EP CLAW LOCK DOUBLE RIGHT HAND PART 2/2 SHT: W96 CB: STD

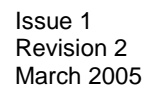


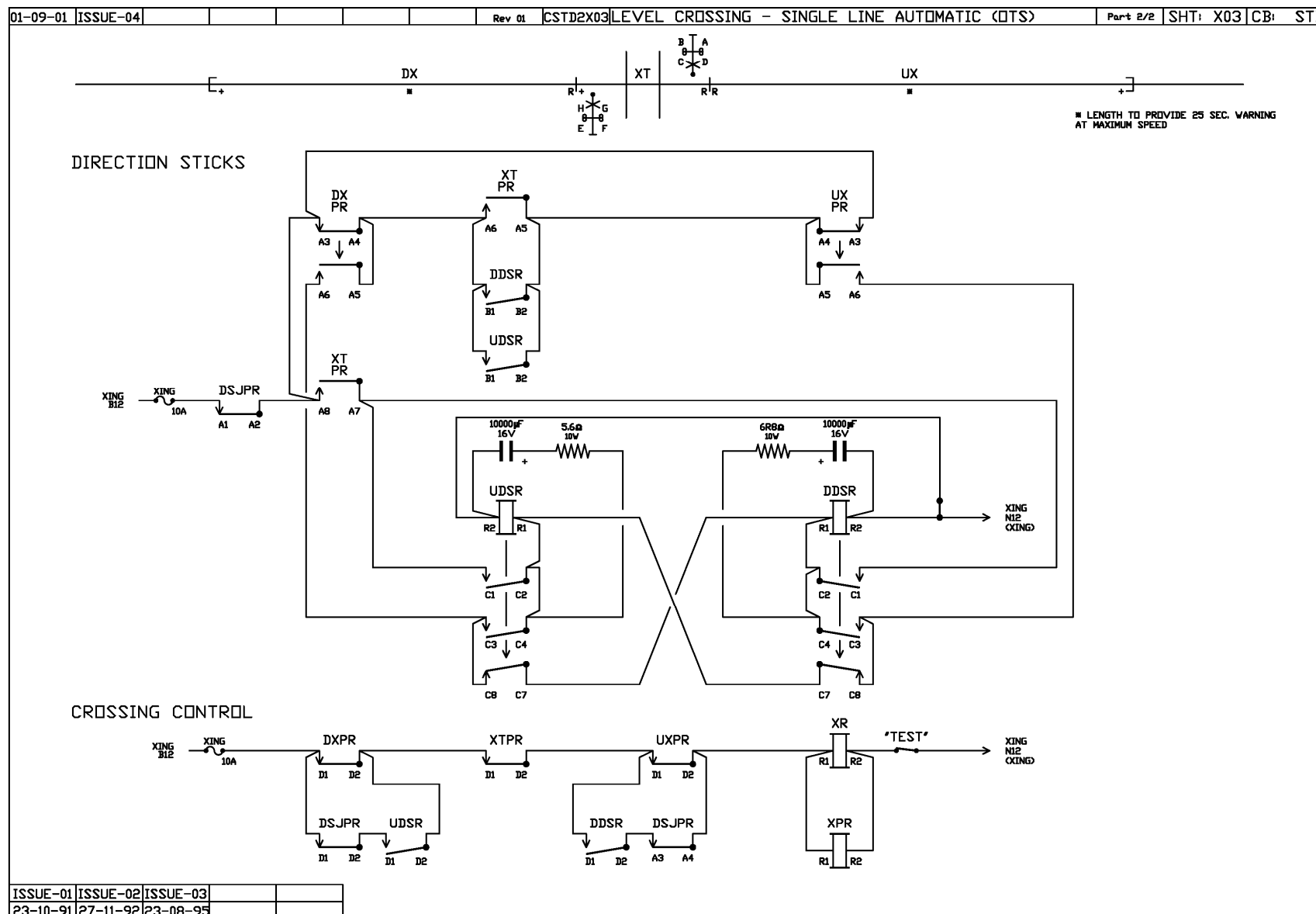


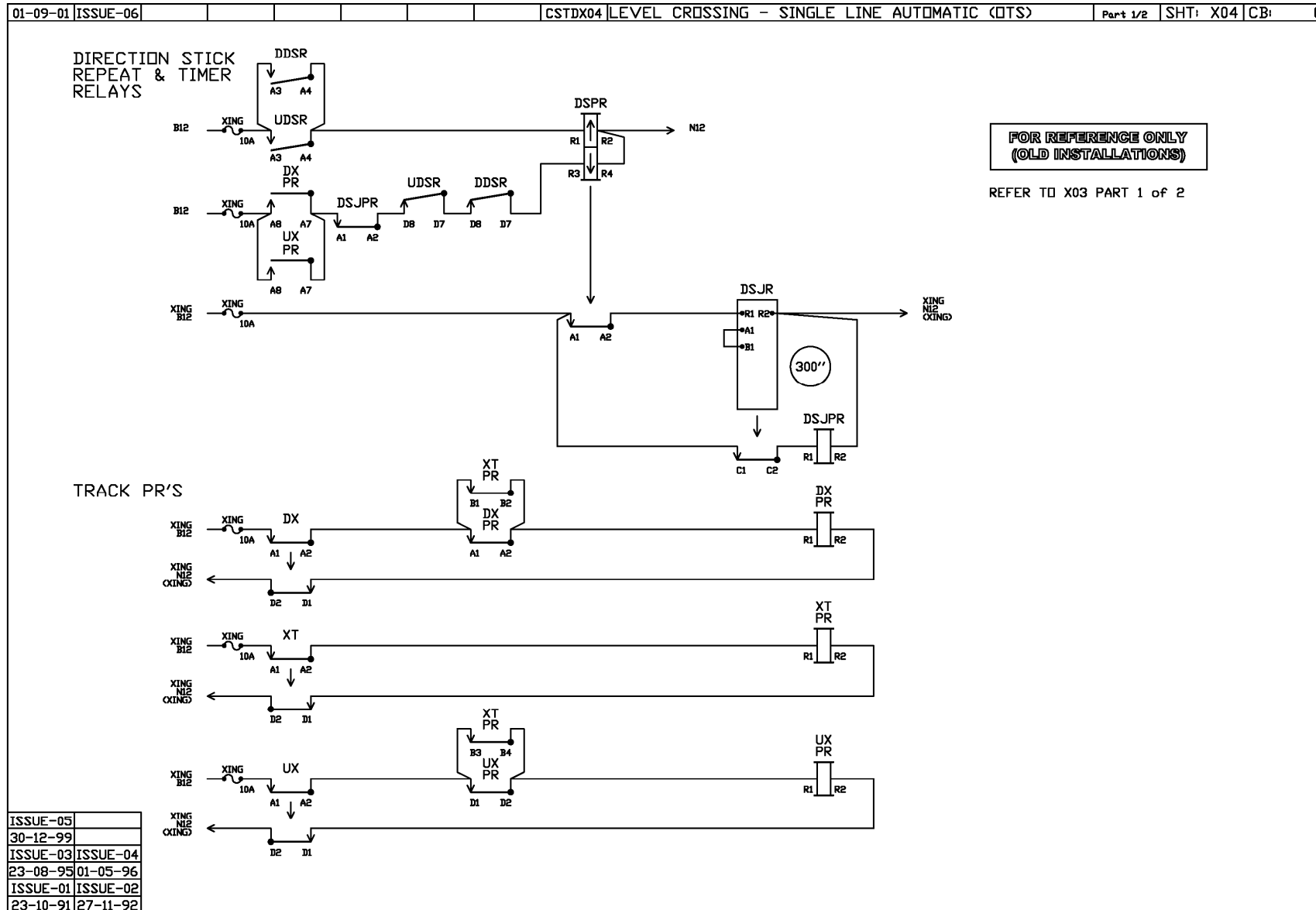
23-10-91 ISSUE-01 CSTD0X01 LEVEL CROSSING – SINGLE LINE AUTOMATIC (ETS) SHT: X01 CB: 0





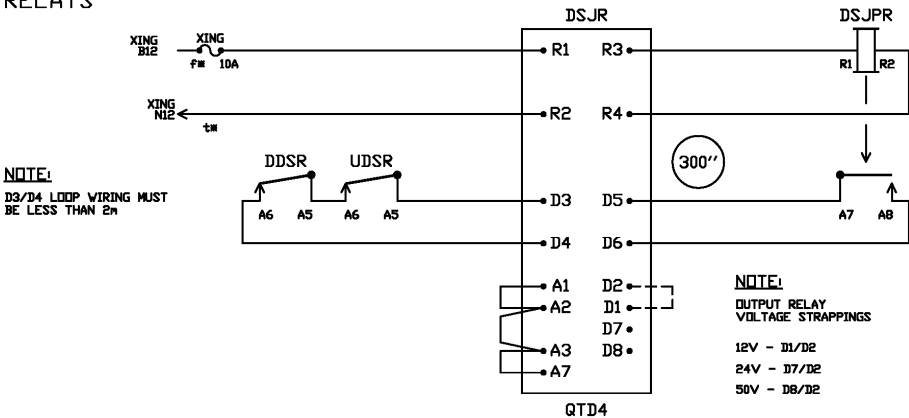




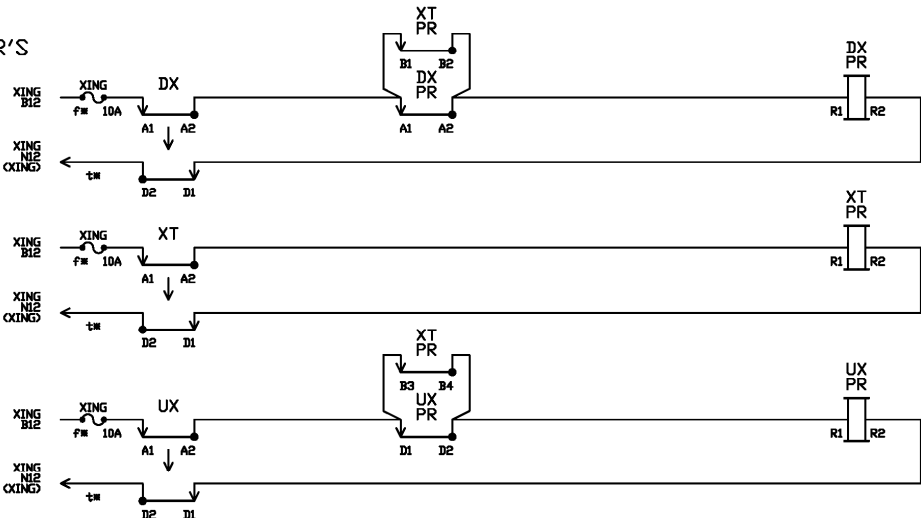


01-09-01 ISSUE-06 Rev 01 CSTD04 LEVEL CROSSING - SINGLE LINE AUTOMATIC (OTS) Part 2/2 SHT: X04 CB: STD

DIRECTION STICK
PROVING & TIMER
RELAYS

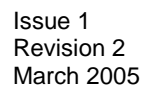


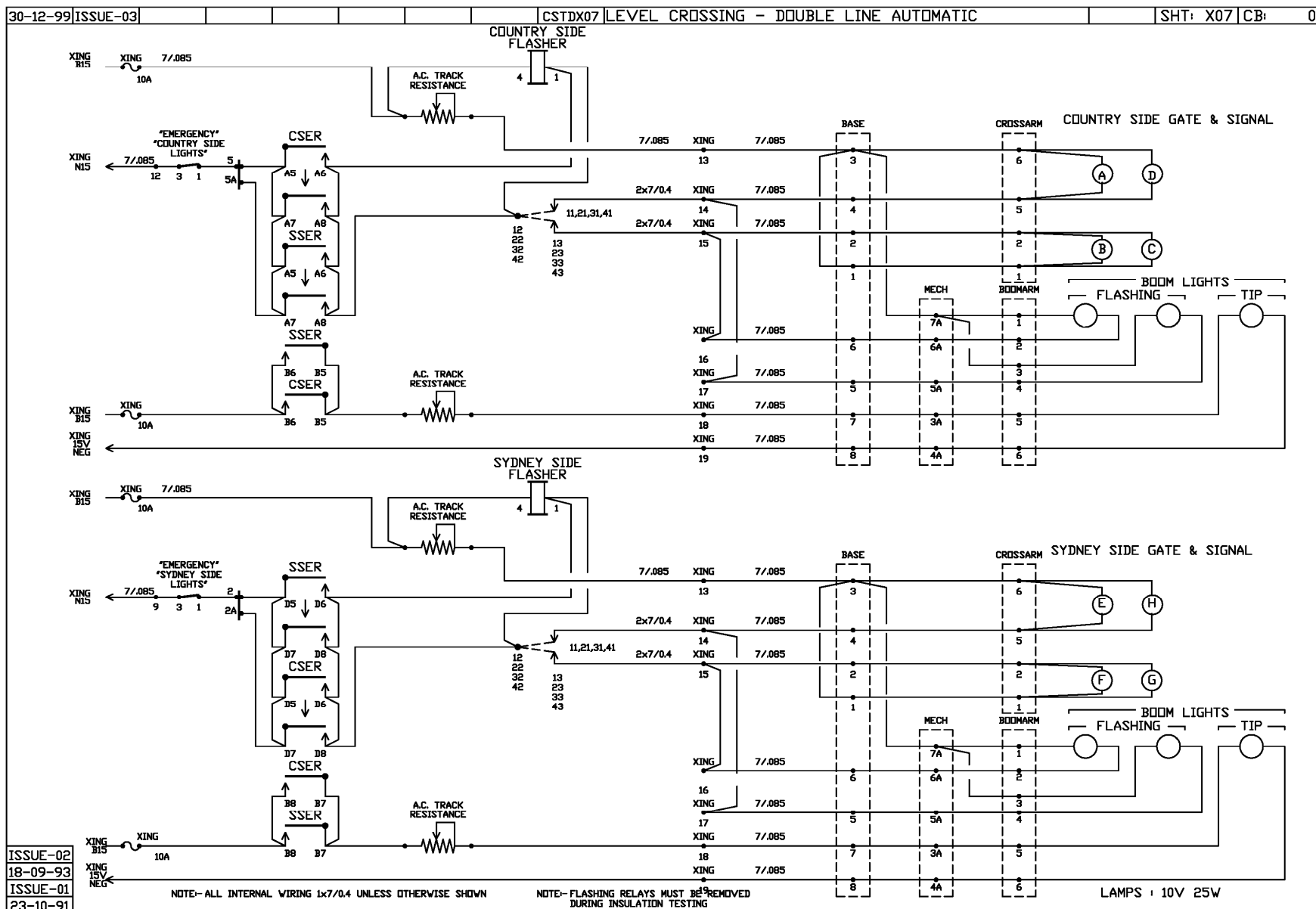
TRACK PR'S

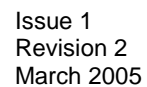


ISSUE-05	
30-12-99	
ISSUE-03	ISSUE-04
23-08-95	01-05-96
ISSUE-01	ISSUE-02
23-10-91	27-11-92

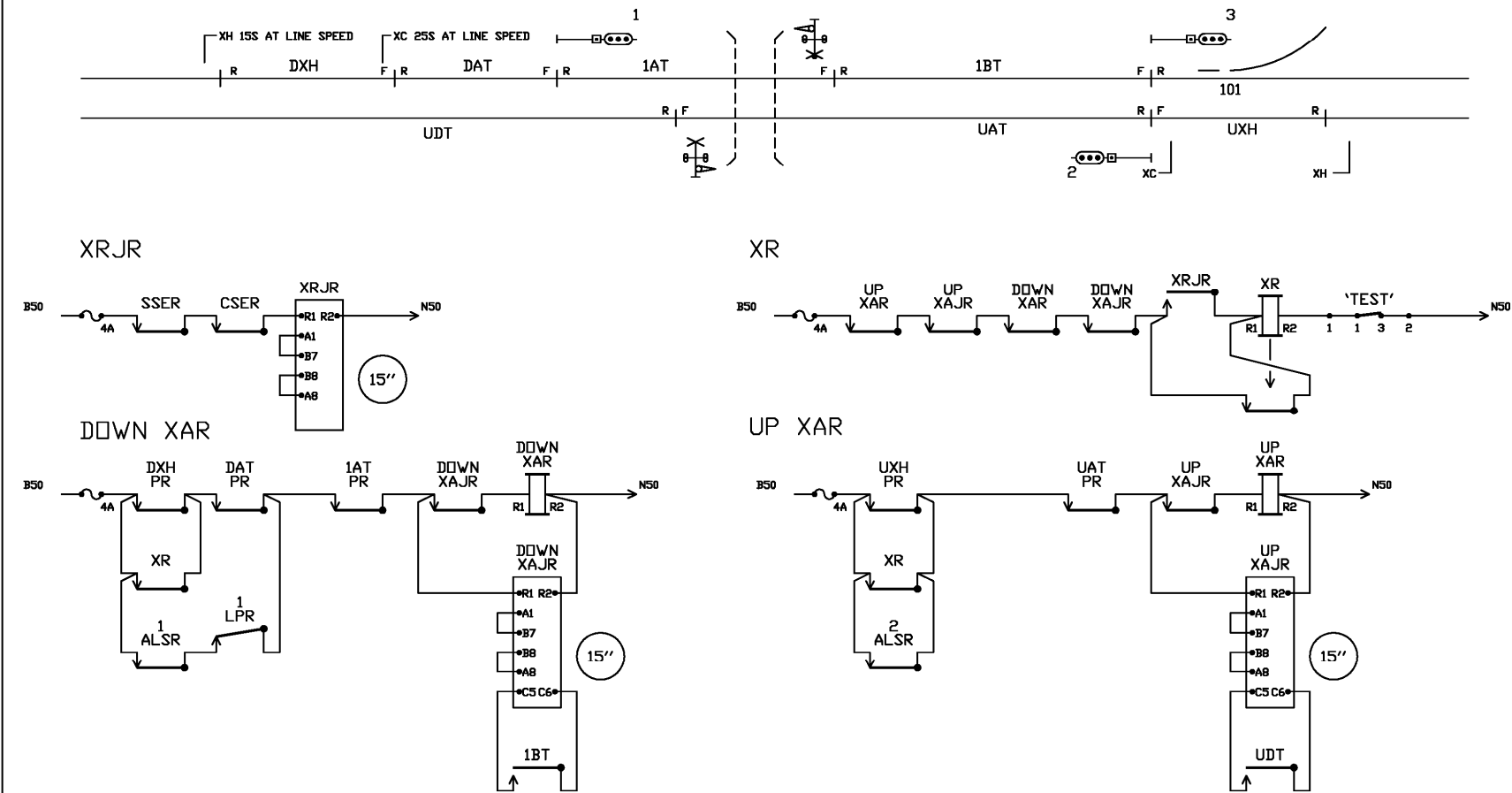






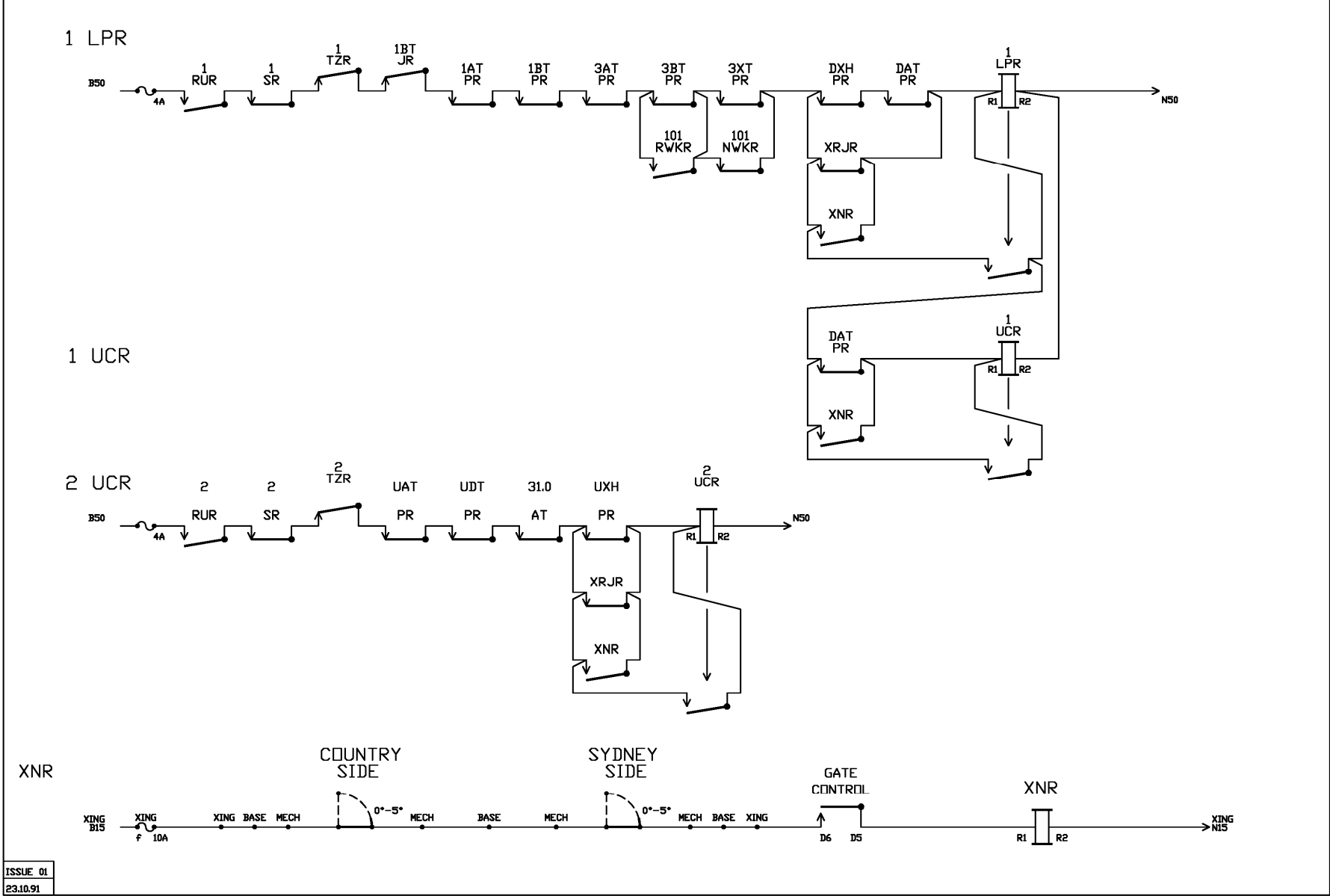


21-06-94 ISSUE-02 CSTD1X09 LEVEL CROSSING WITH CONTROLLED SIGNALS SHT: X09 CB: 0

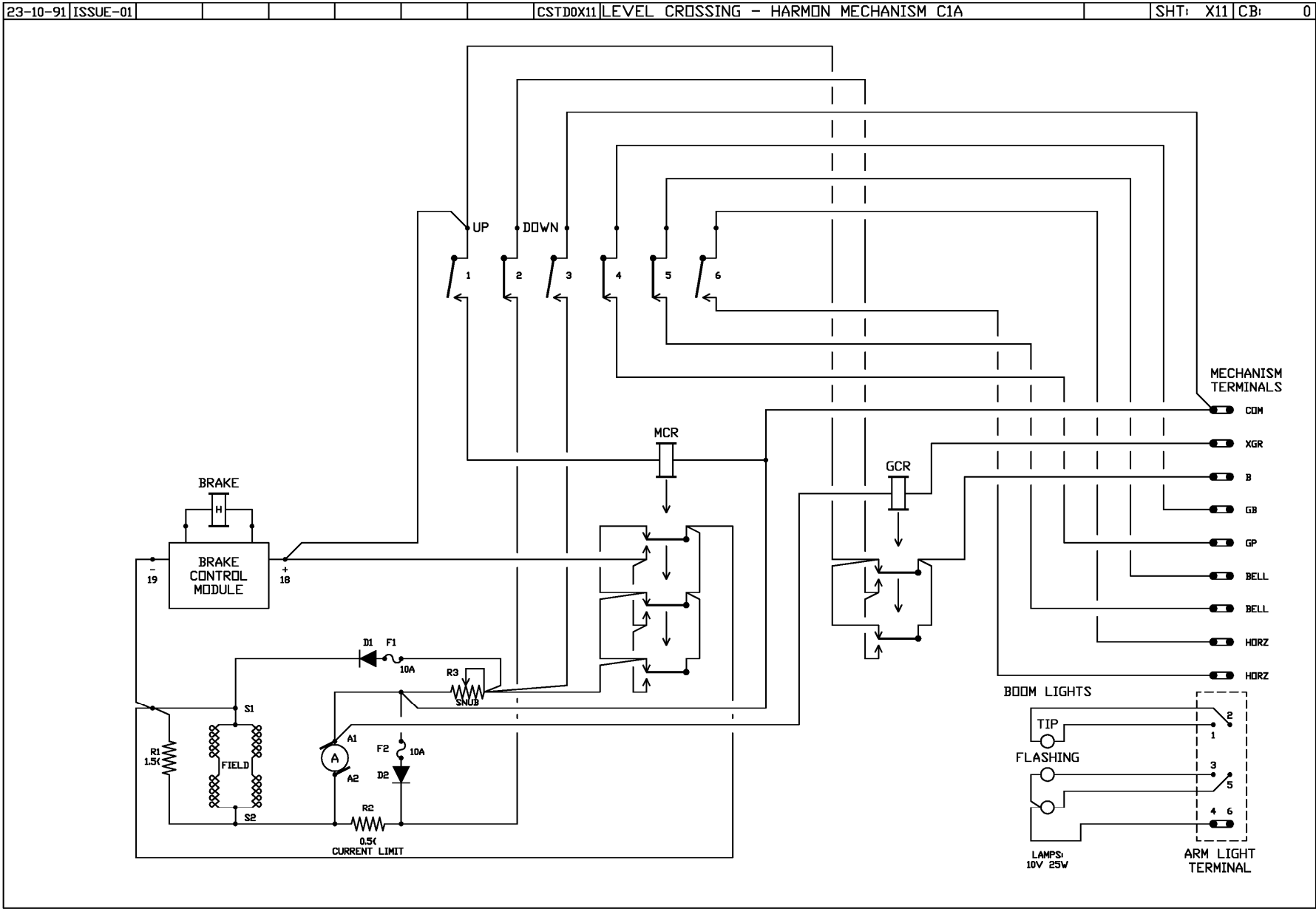


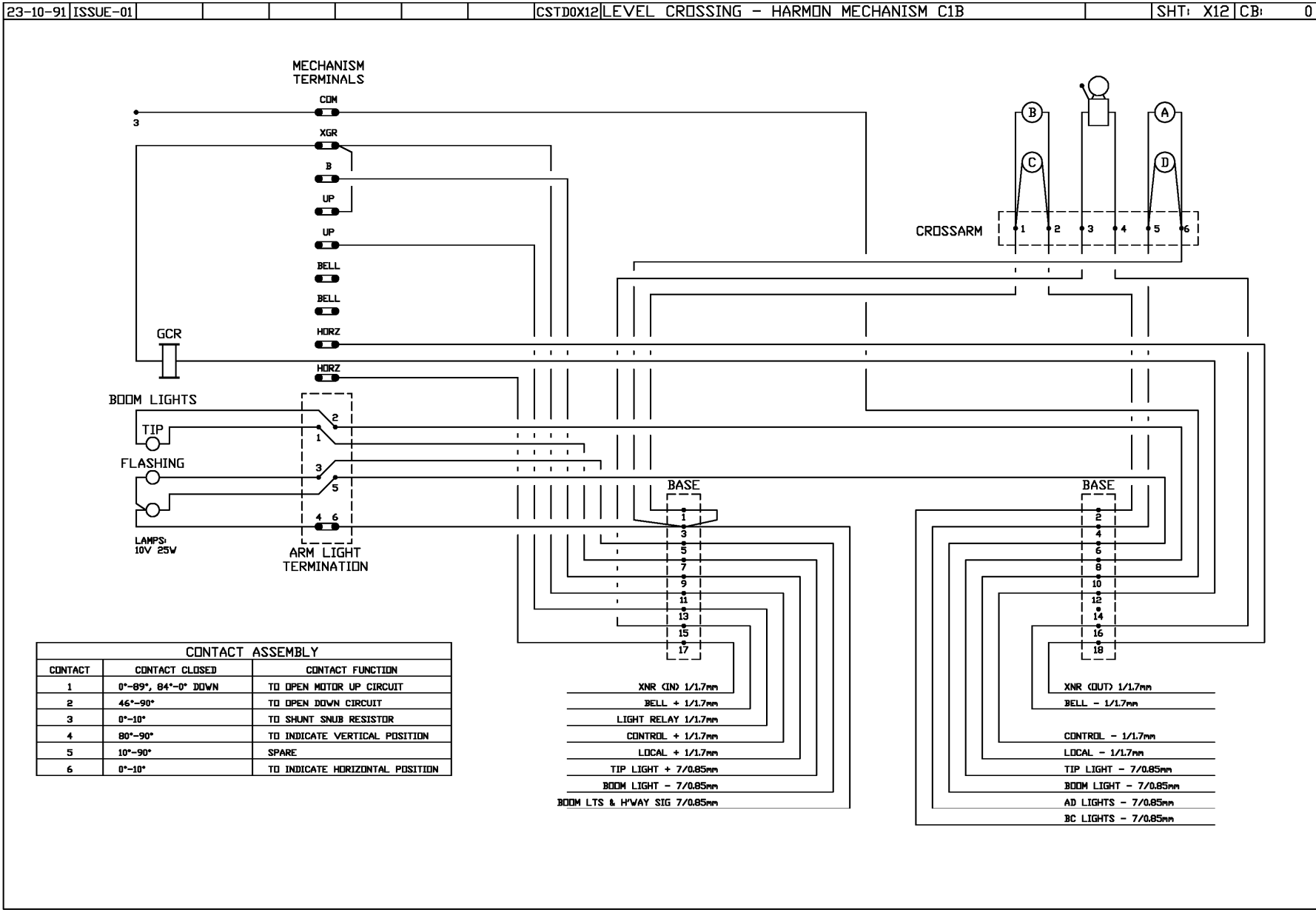
ISSUE 01
 23.10.91

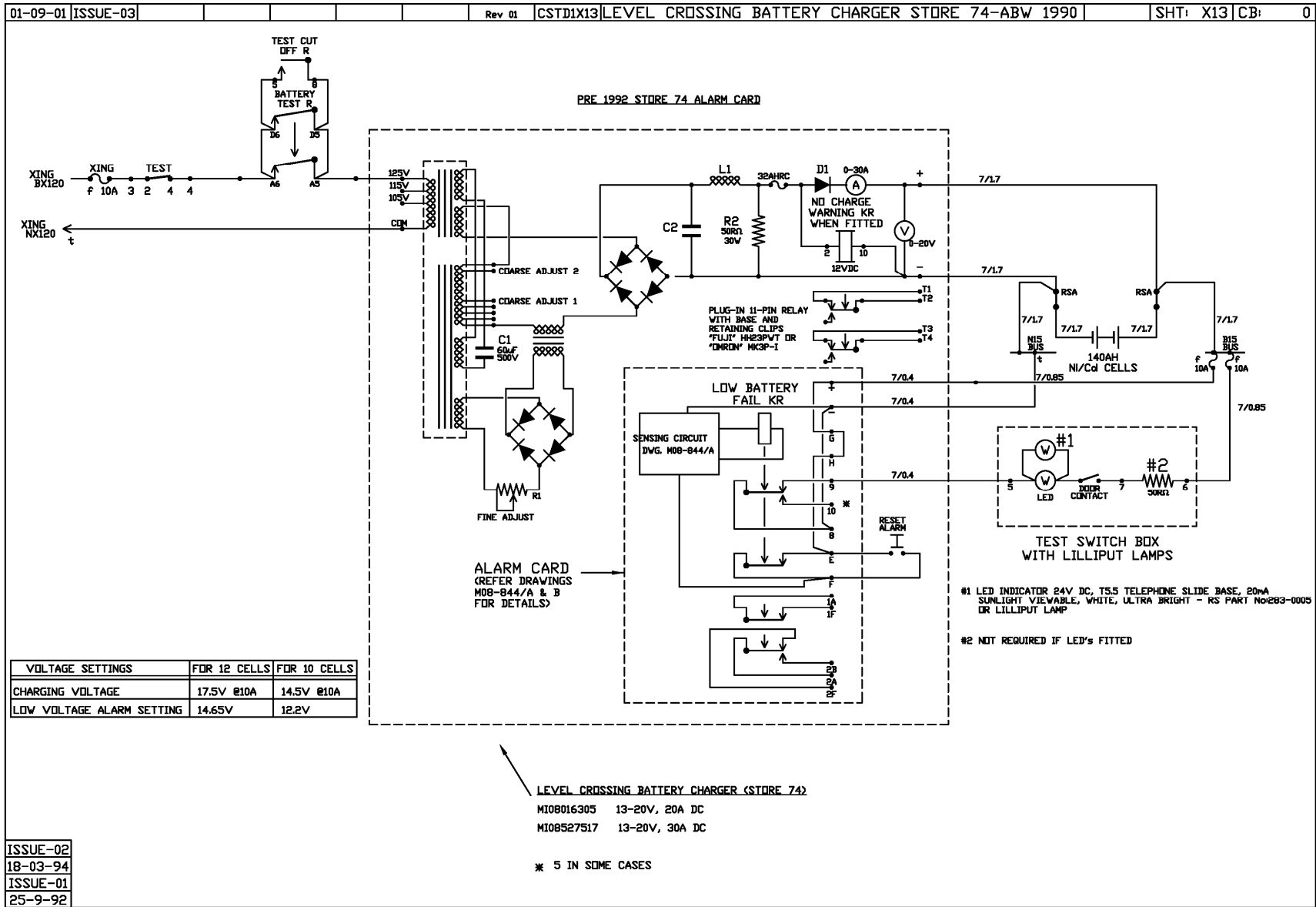
16-06-94 ISSUE-02 CSTD1X10 SIGNAL CONTROLS OVER LEVEL CROSSING SHT: X10 CB: 0

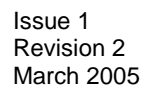


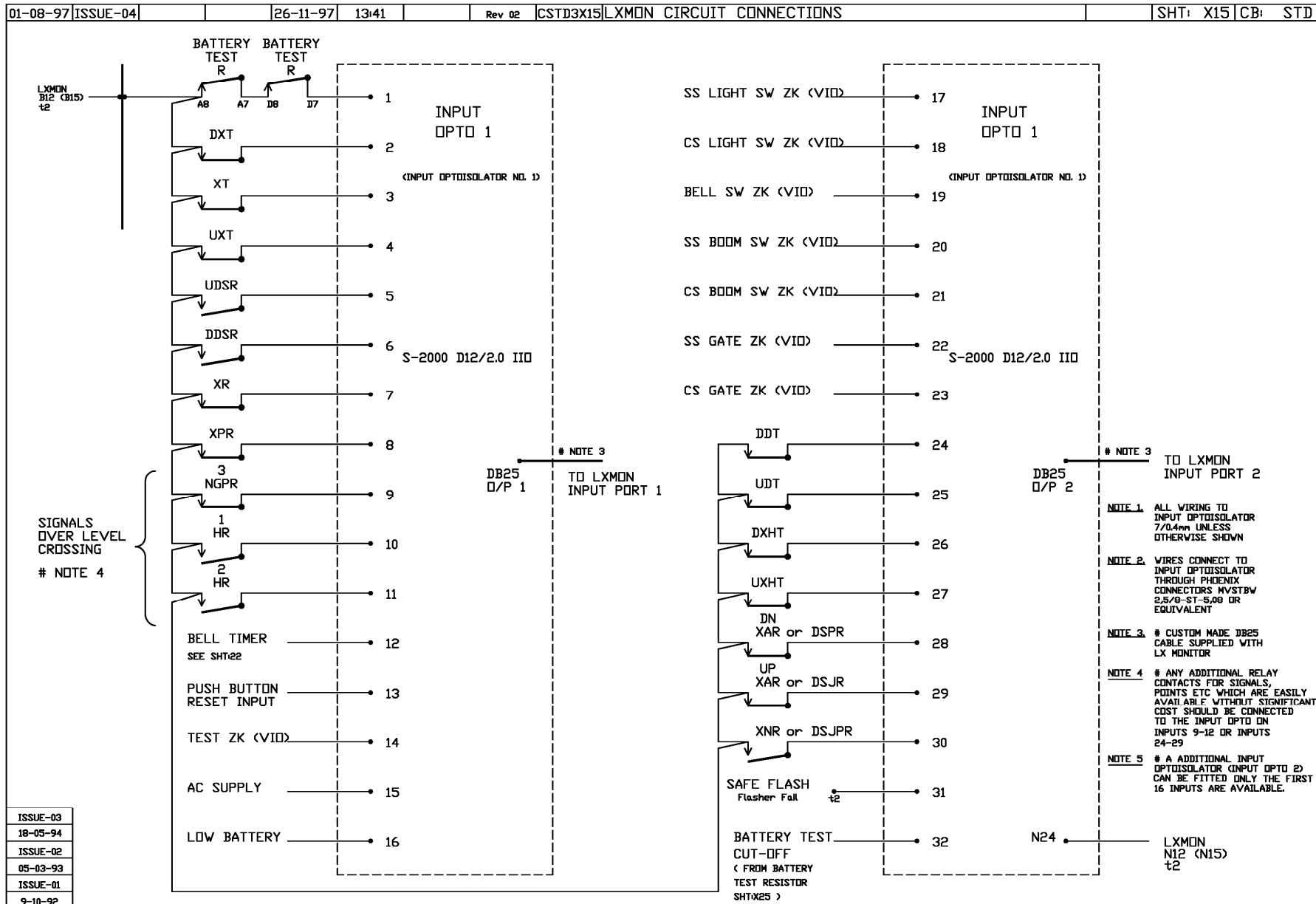
ISSUE 01
23.10.91

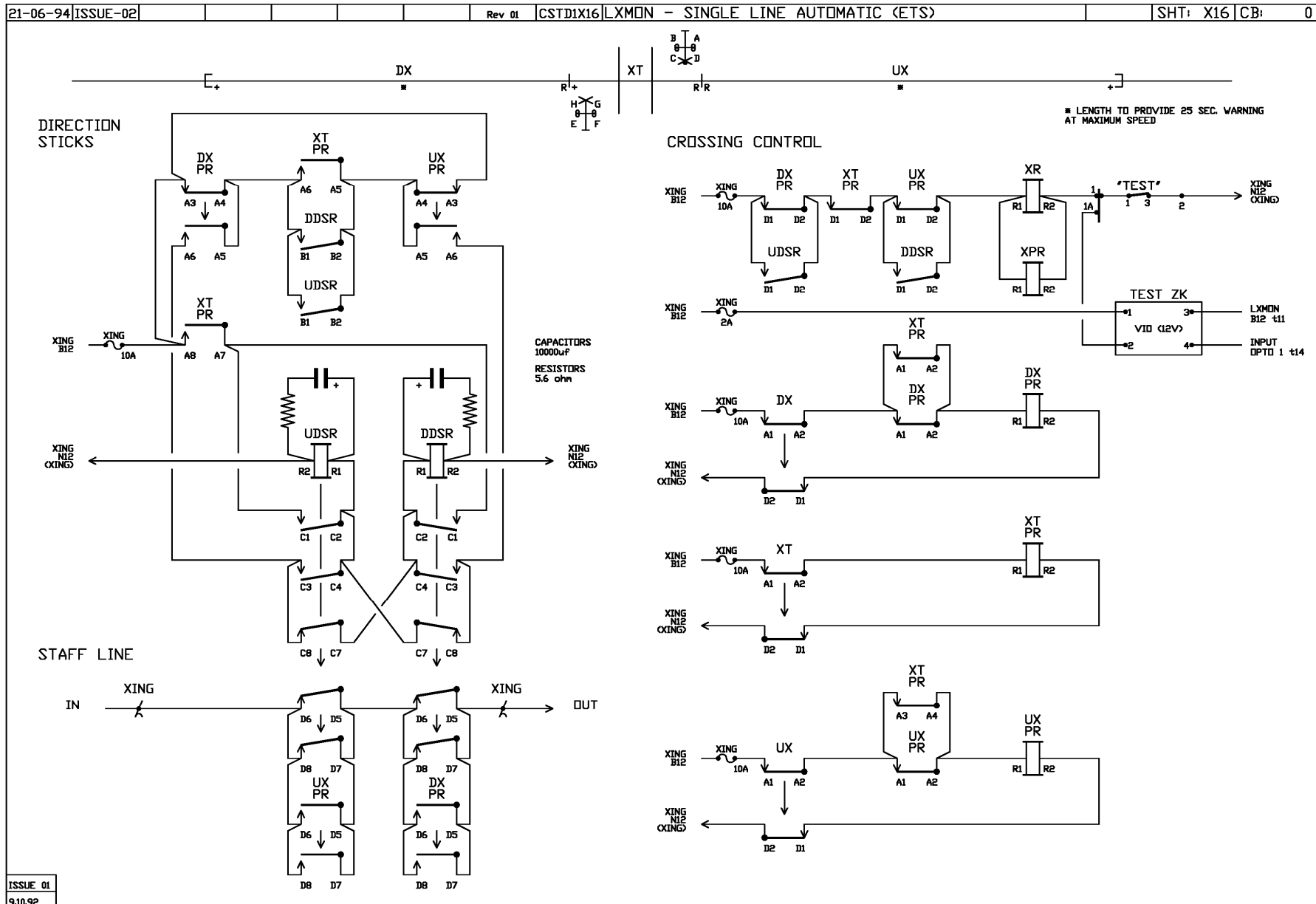


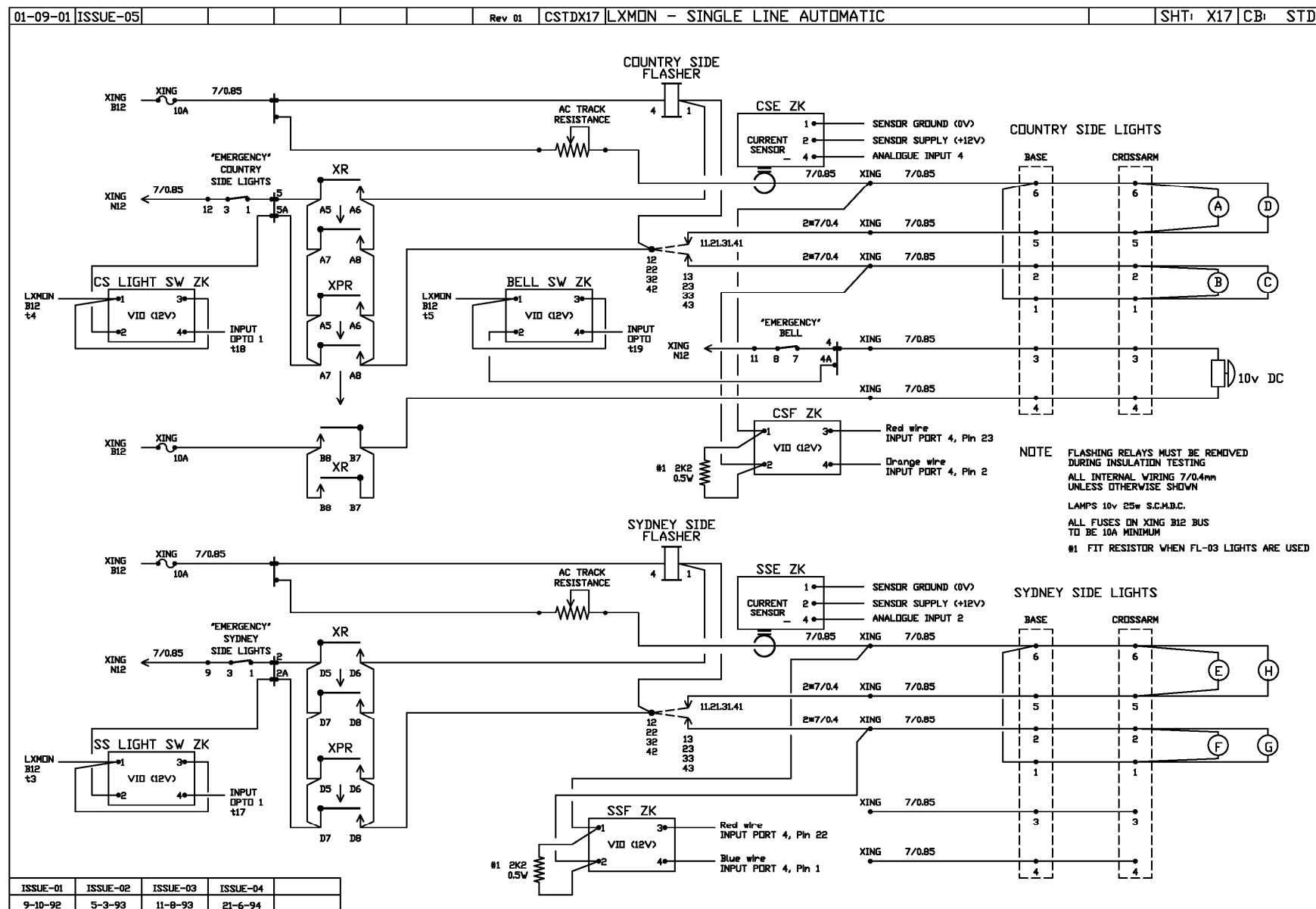


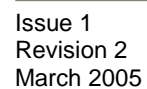


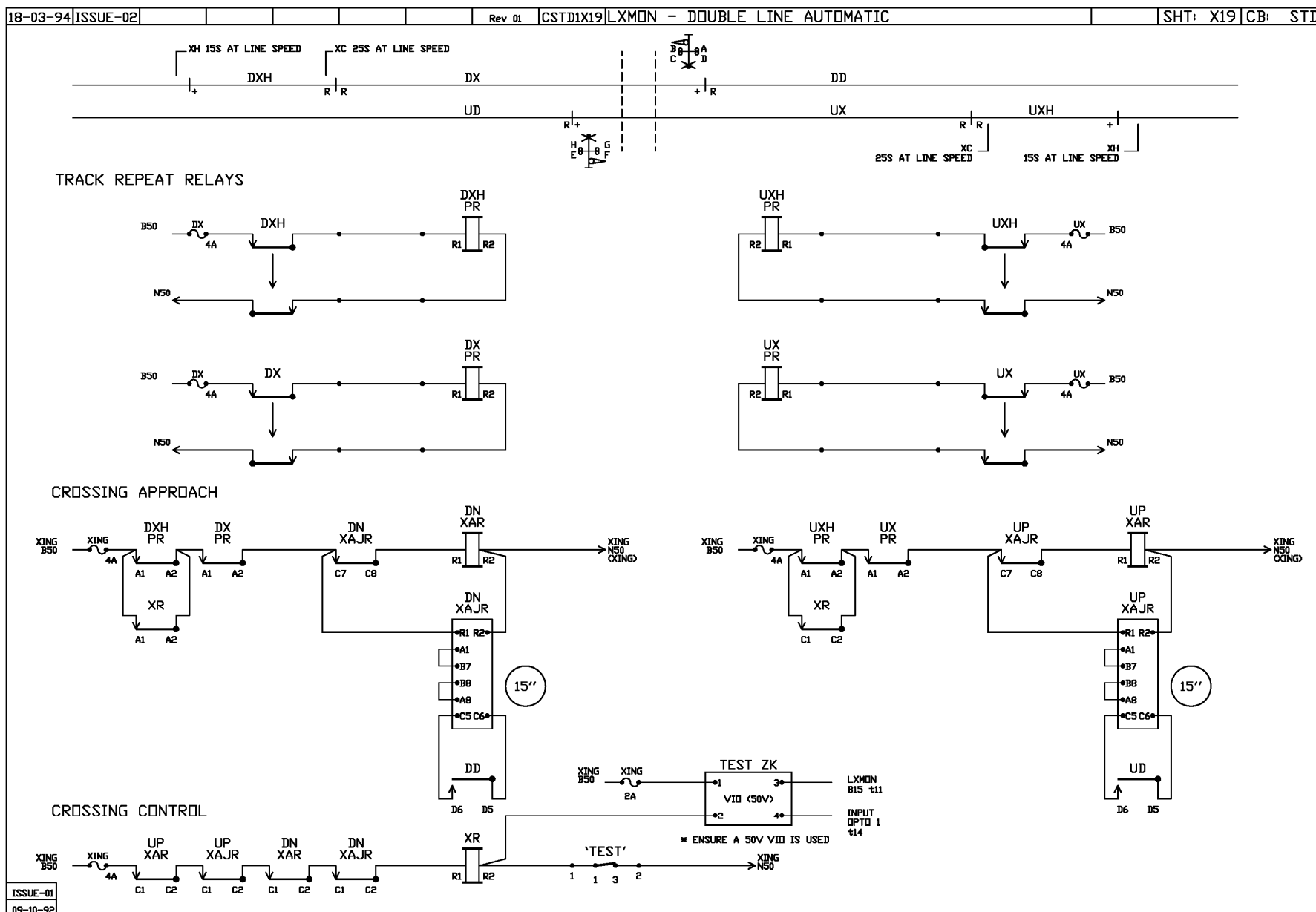


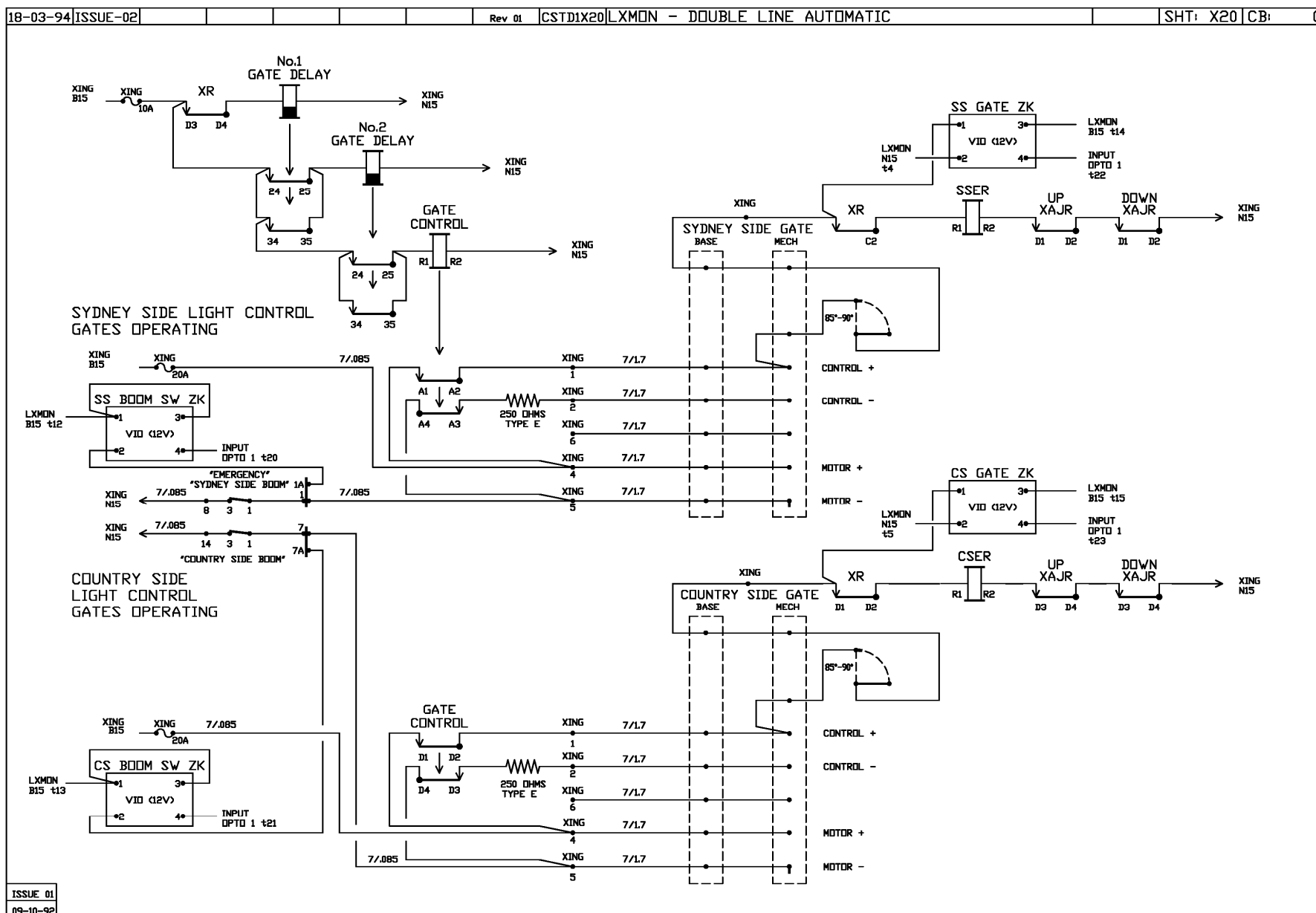


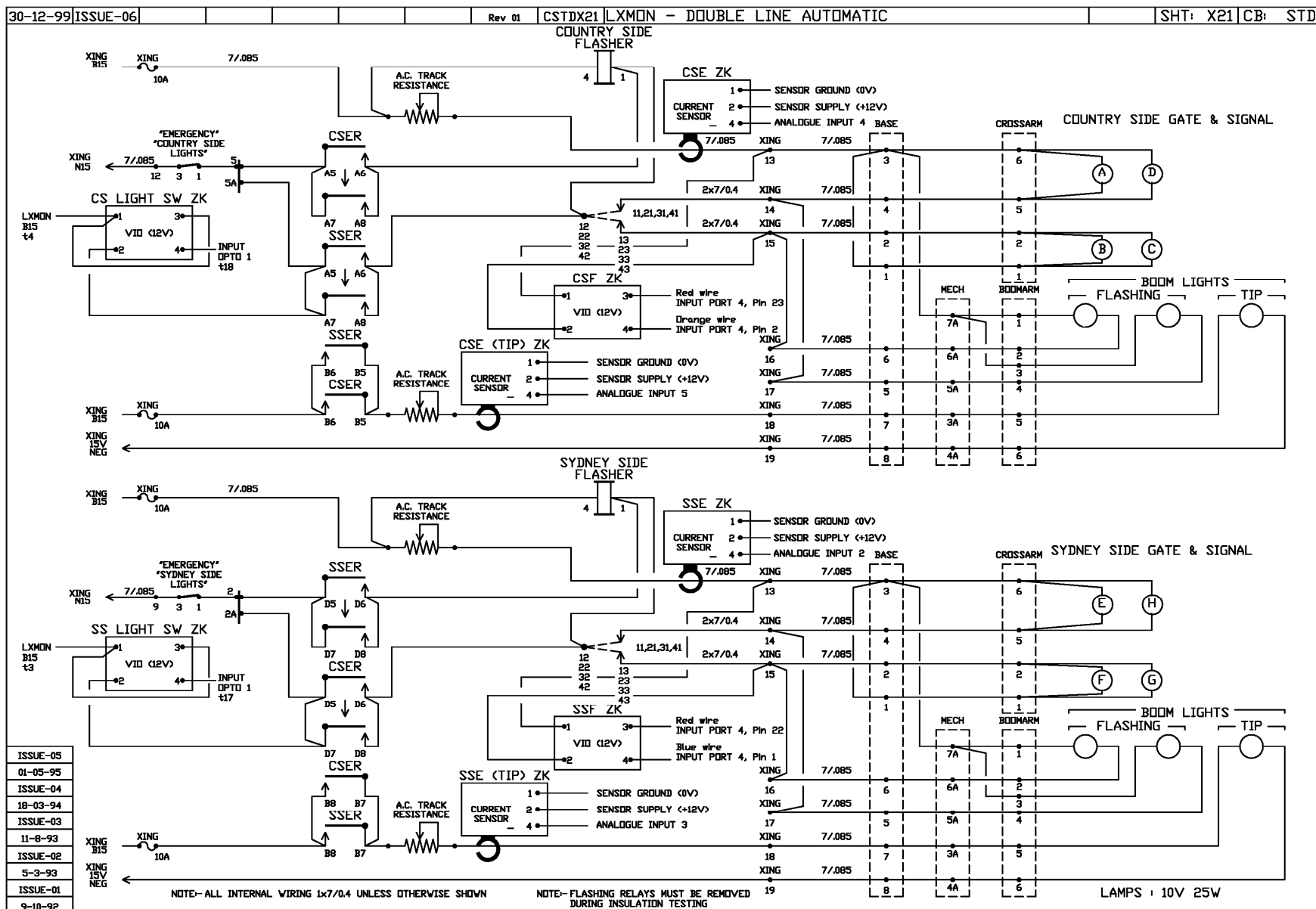


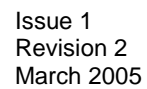


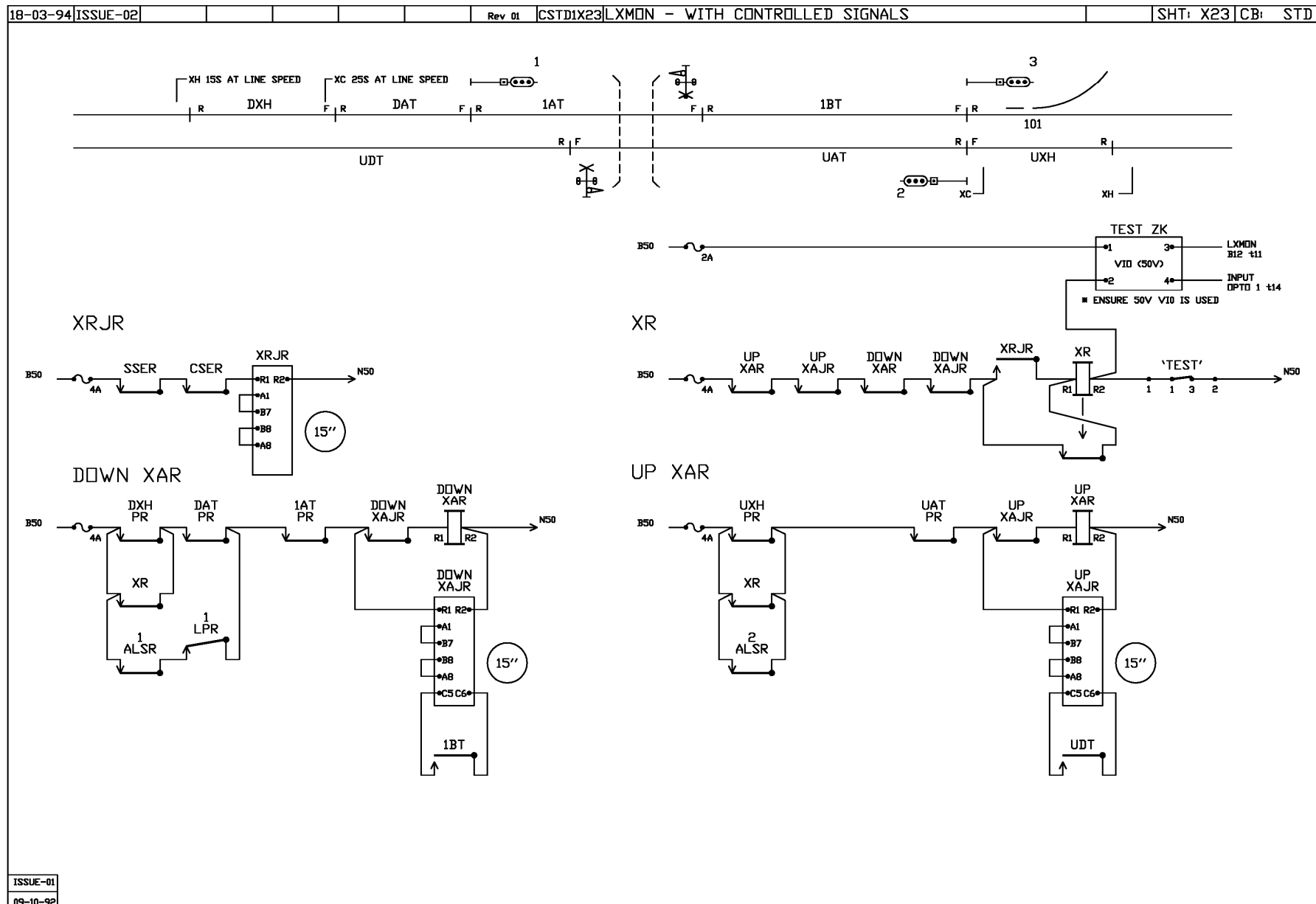






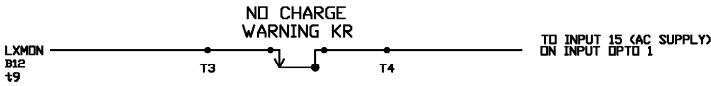




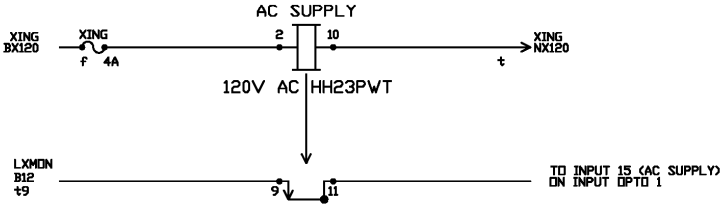


18-03-94	ISSUE-02		29-08-94	09:39		Rev 01	CSTDIX24	LXMON – AC SUPPLY ALARMS		SHT: X24	CB: STD
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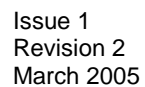
EXAMPLE 1: CURRENT MODEL STORE 74

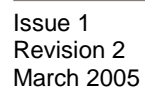


EXAMPLE 2: FOR LEVEL CROSSINGS WITHOUT THE NO CHARGE WARNING KR RELAY

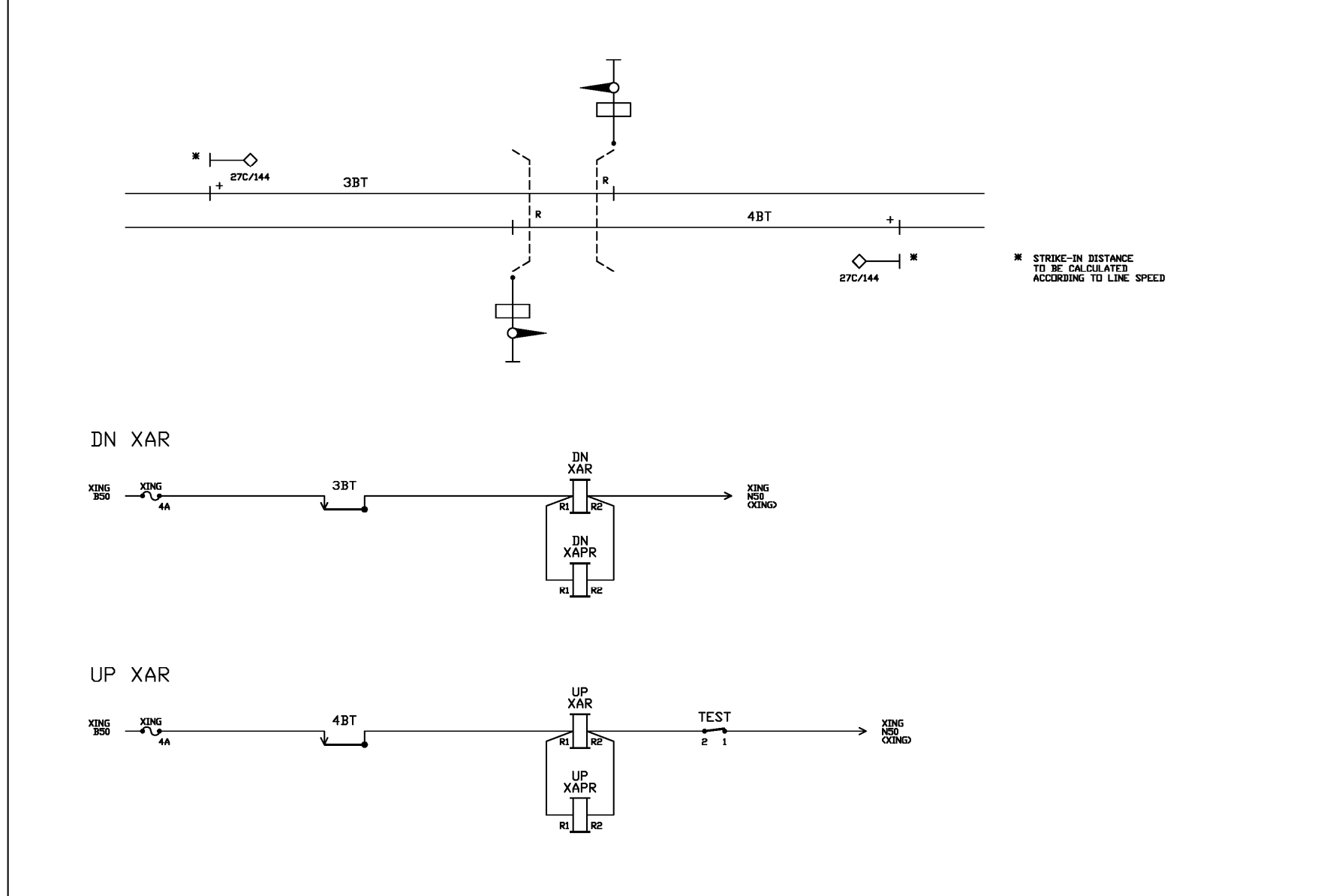


ISSUE 01	
9-10-92	



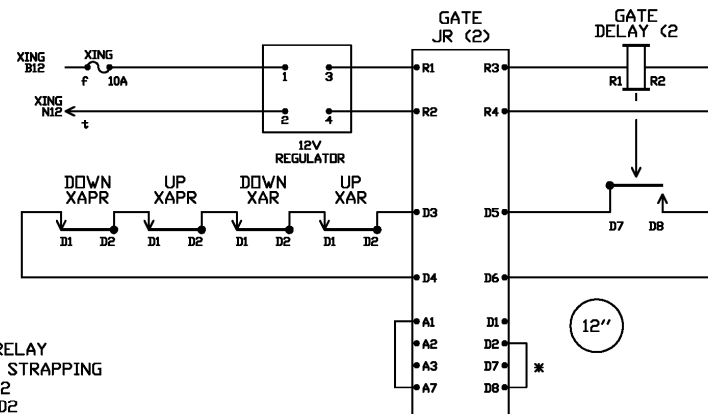
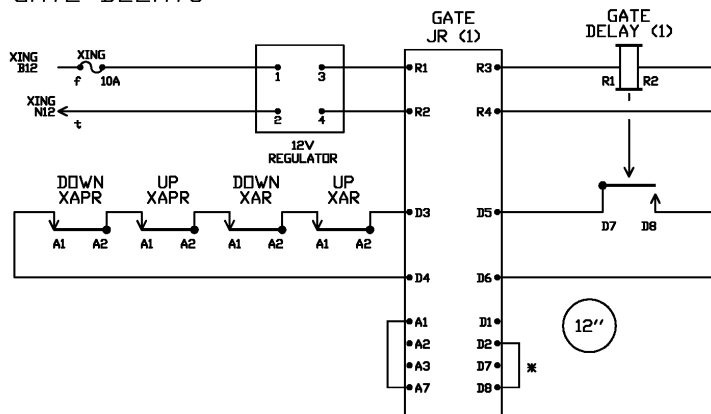


26-10-92	ISSUE-01					Rev 01	CSTDx27	PEDESTRIAN CROSSING ON DOUBLE LINE		SHT: X27	CB:	0
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30-12-99|ISSUE-02| Rev 01 |CSTDx28|PEDESTRIAN CROSSING ON DOUBLE LINE| SHT: X28|CB: 0

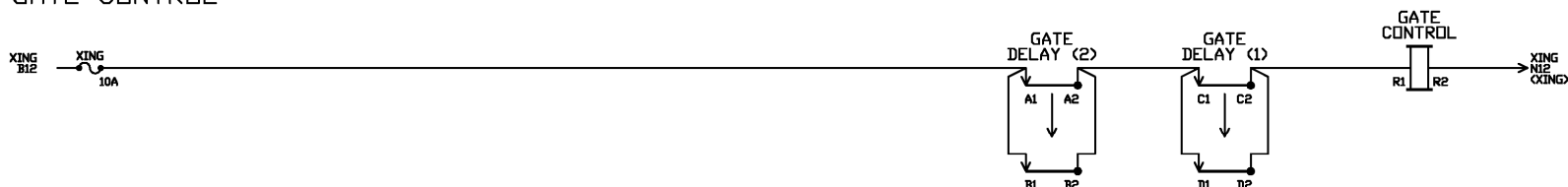
GATE DELAYS



NOTE:
 OUTPUT RELAY
 VOLTAGE STRAPPING
 12V-D1/D2
 24V-D7/D2
 50V-D8/D2

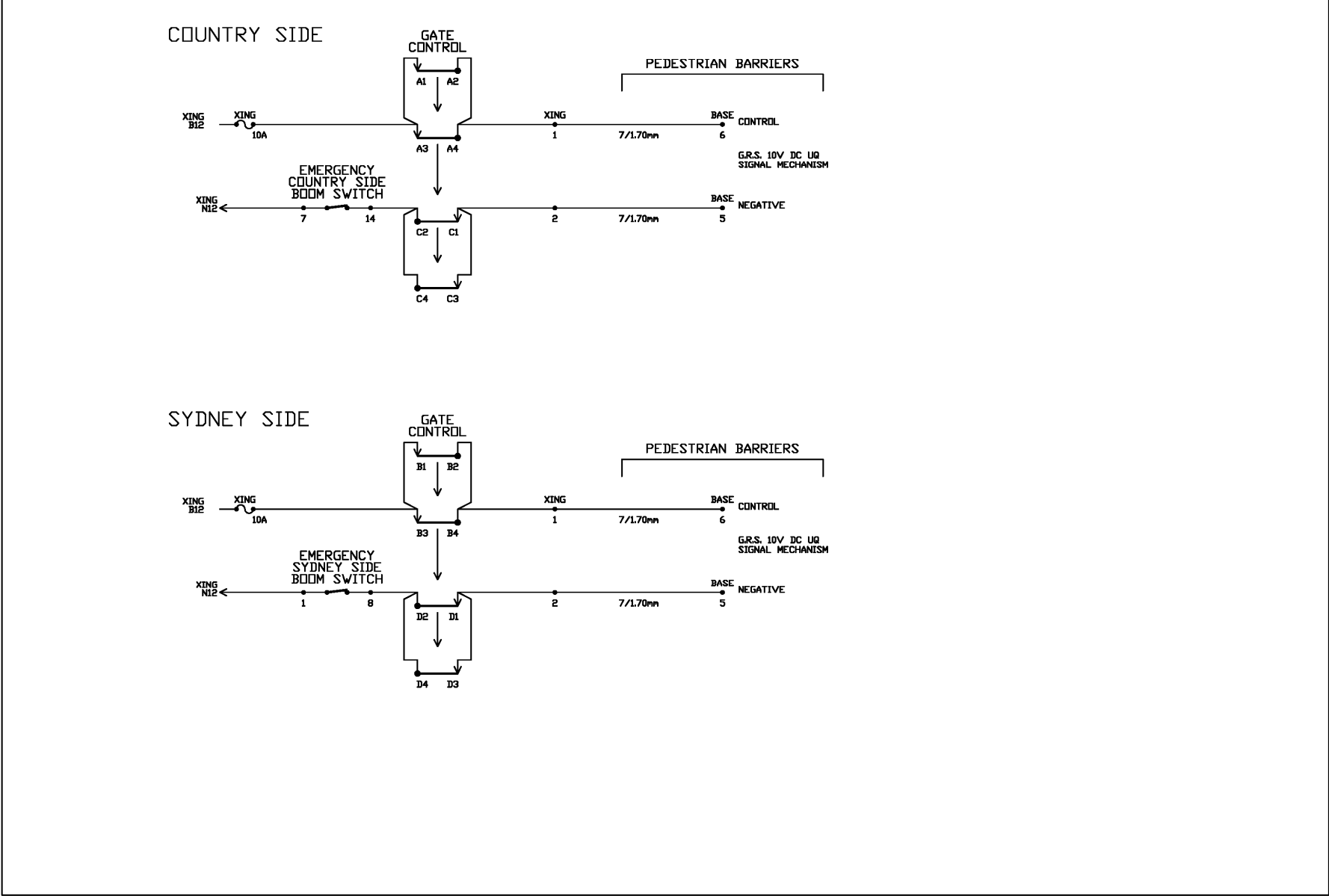
* STRAPPING SHOWN FOR
 50V GATE DELAY RELAY

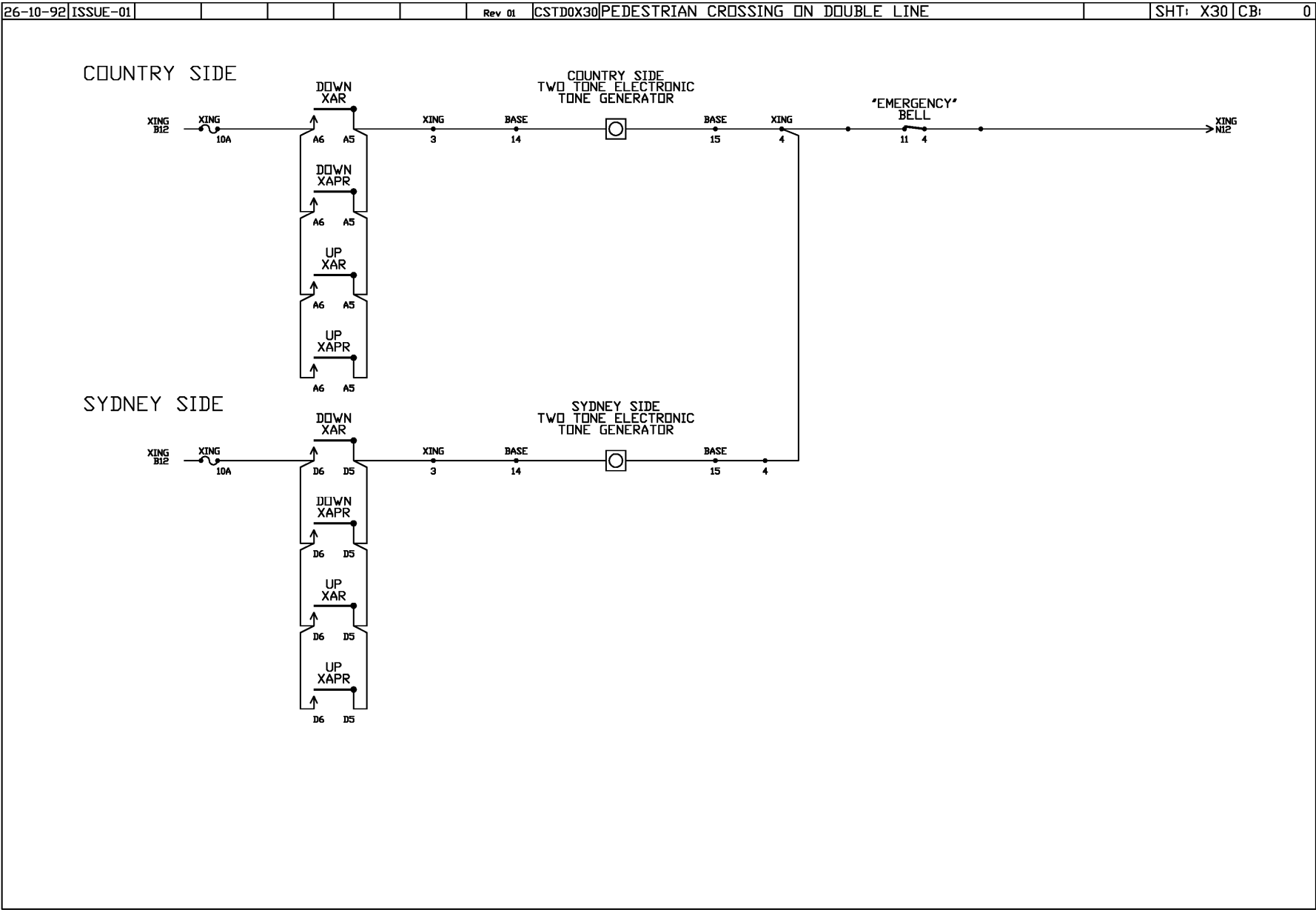
GATE CONTROL



ISSUE-01
 26-10-92

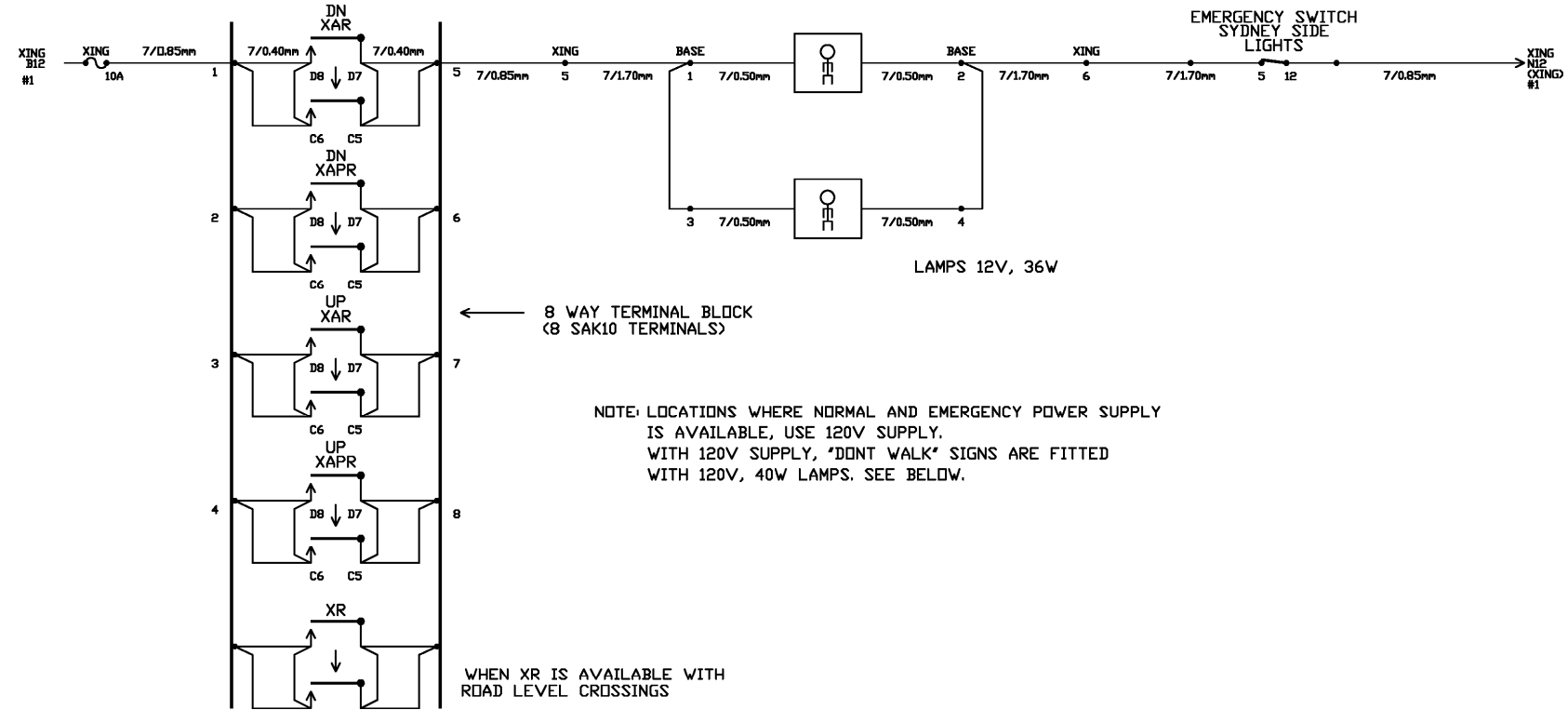
26-10-92	ISSUE-01					Rev 01	CSTD0X29	PEDESTRIAN CROSSING ON DOUBLE LINE		SHT: X29	CB: 0
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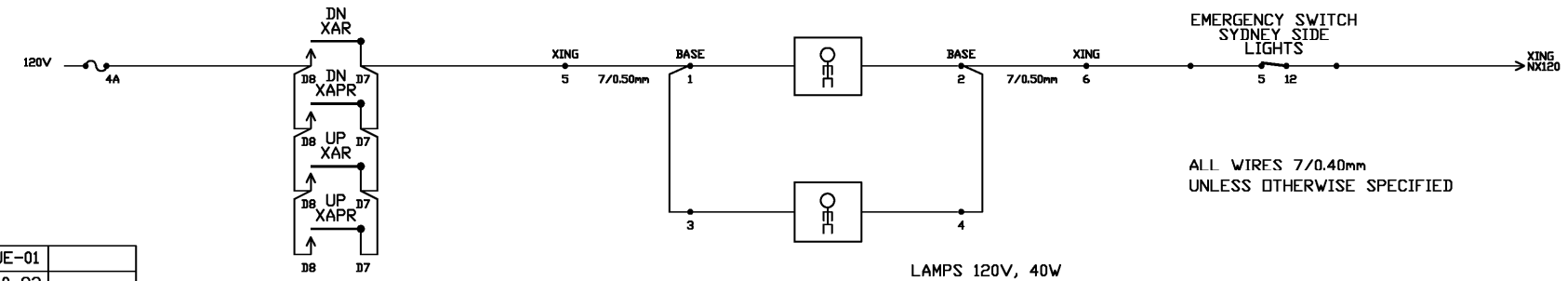


01-06-98 ISSUE-02 Rev 01 CSTDX31 PEDESTRIAN CROSSING ON DOUBLE LINE SHT: X31 CB: 0

SYDNEY SIDE "DON'T WALK"



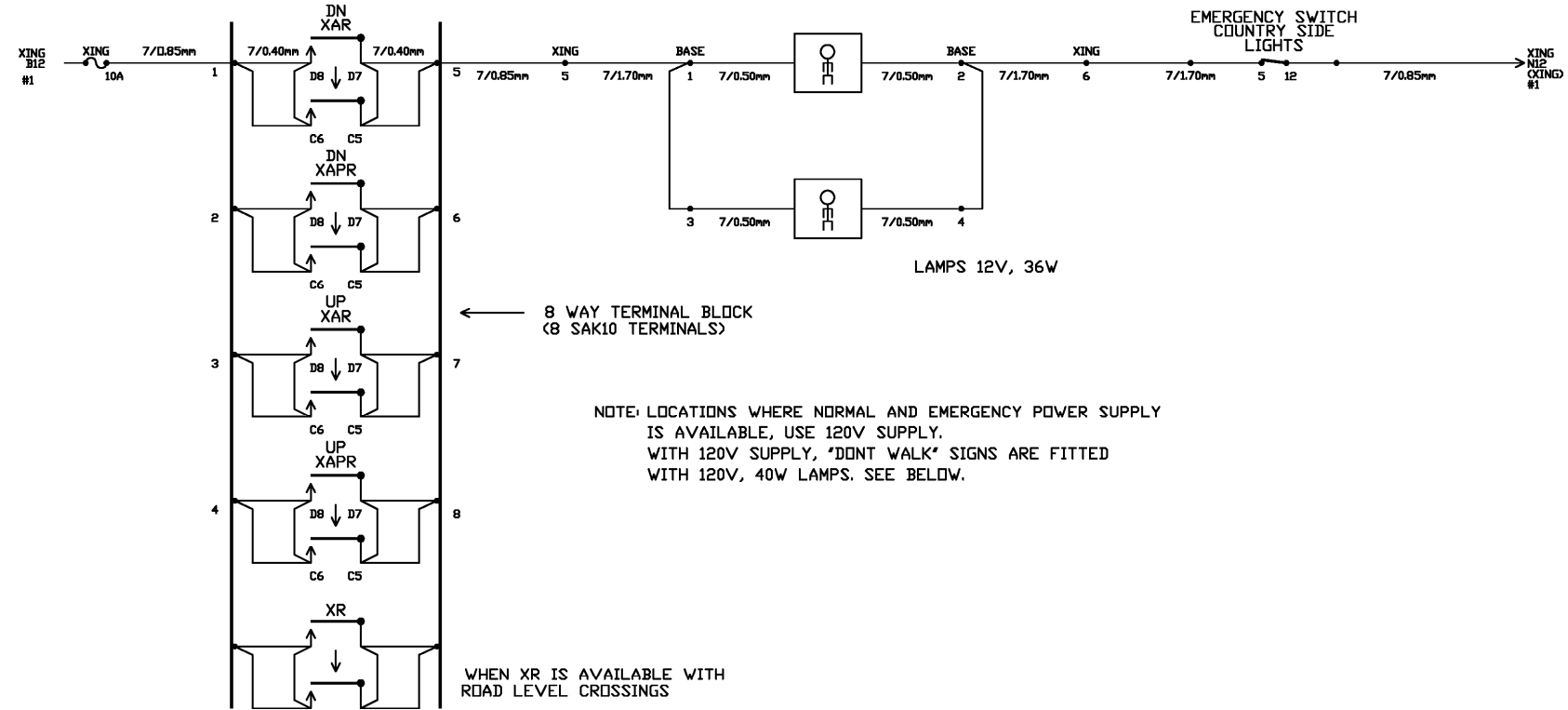
ALTERNATE CIRCUIT WHERE 120V SUPPLY IS AVAILABLE



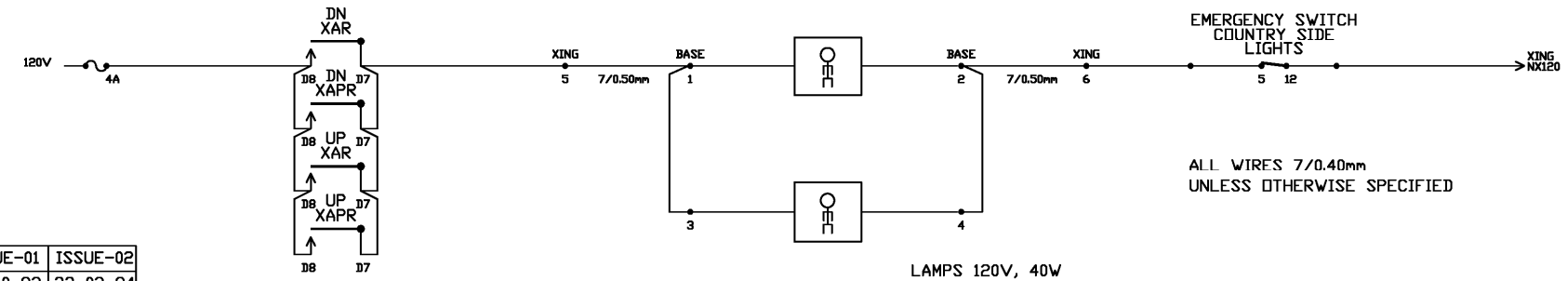
ISSUE-01	
26-10-92	

01-06-98 ISSUE-03 Rev 01 CSTD32 PEDESTRIAN CROSSING ON DOUBLE LINE SHT: X32 CB: 0

COUNTRY SIDE "DON'T WALK"



ALTERNATE CIRCUIT WHERE 120V SUPPLY IS AVAILABLE

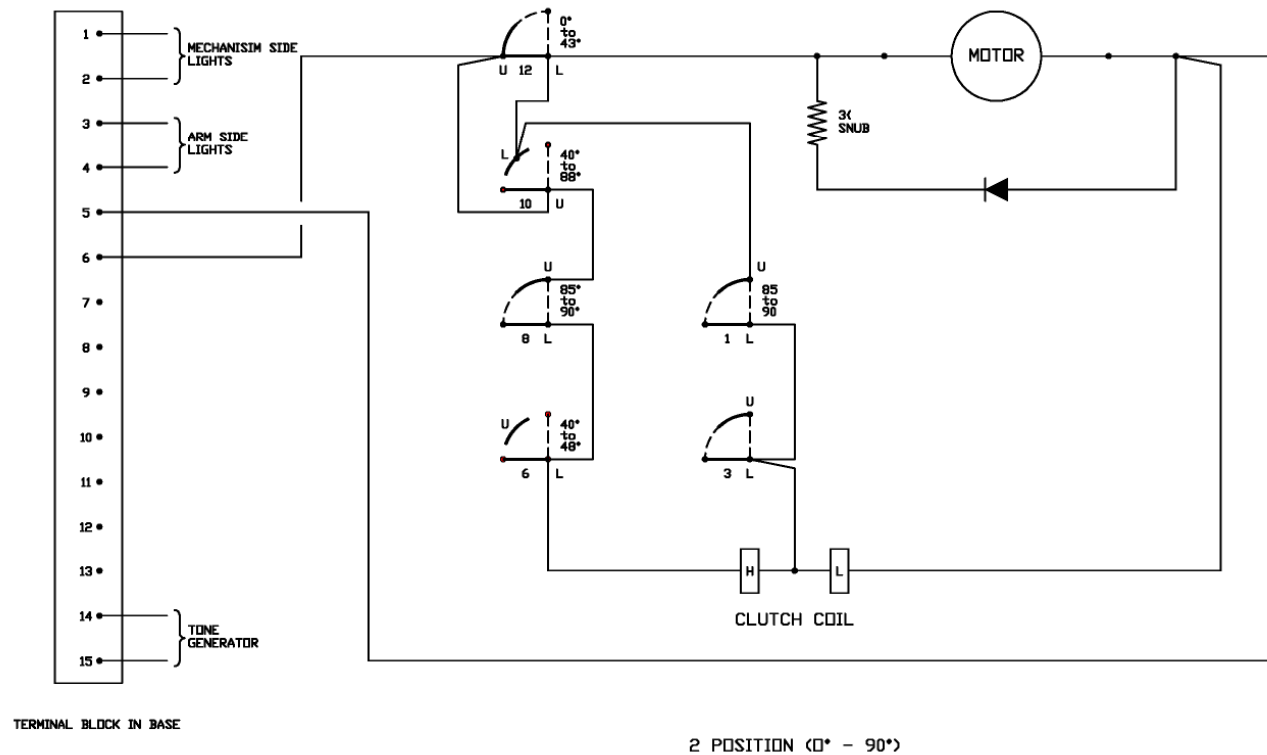


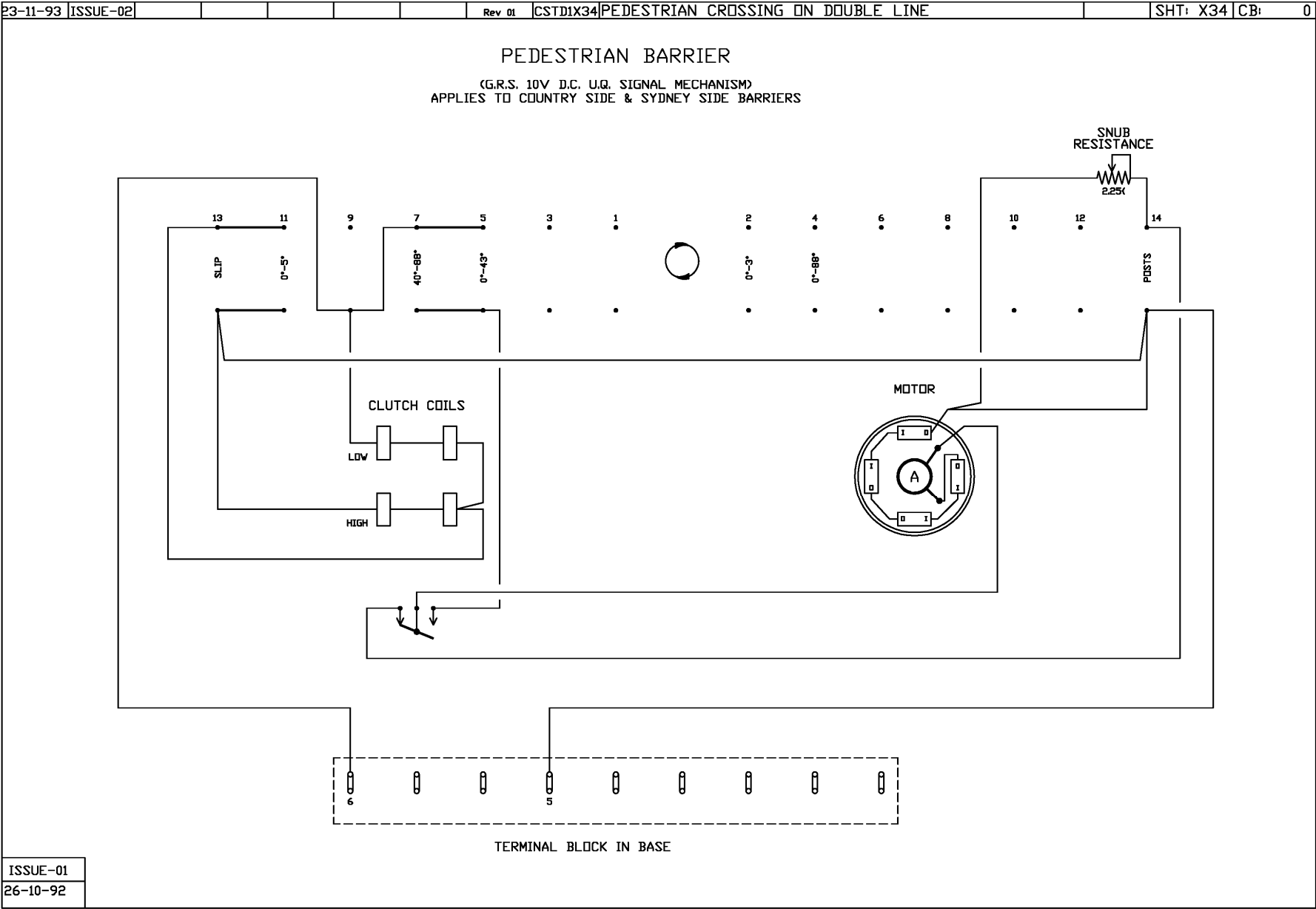
ISSUE-01	ISSUE-02
26-10-92	22-02-94

26-10-92	ISSUE-01					Rev 01	CSTD0X33	PEDESTRIAN CROSSING ON DOUBLE LINE		SHT: X33	CB: 0
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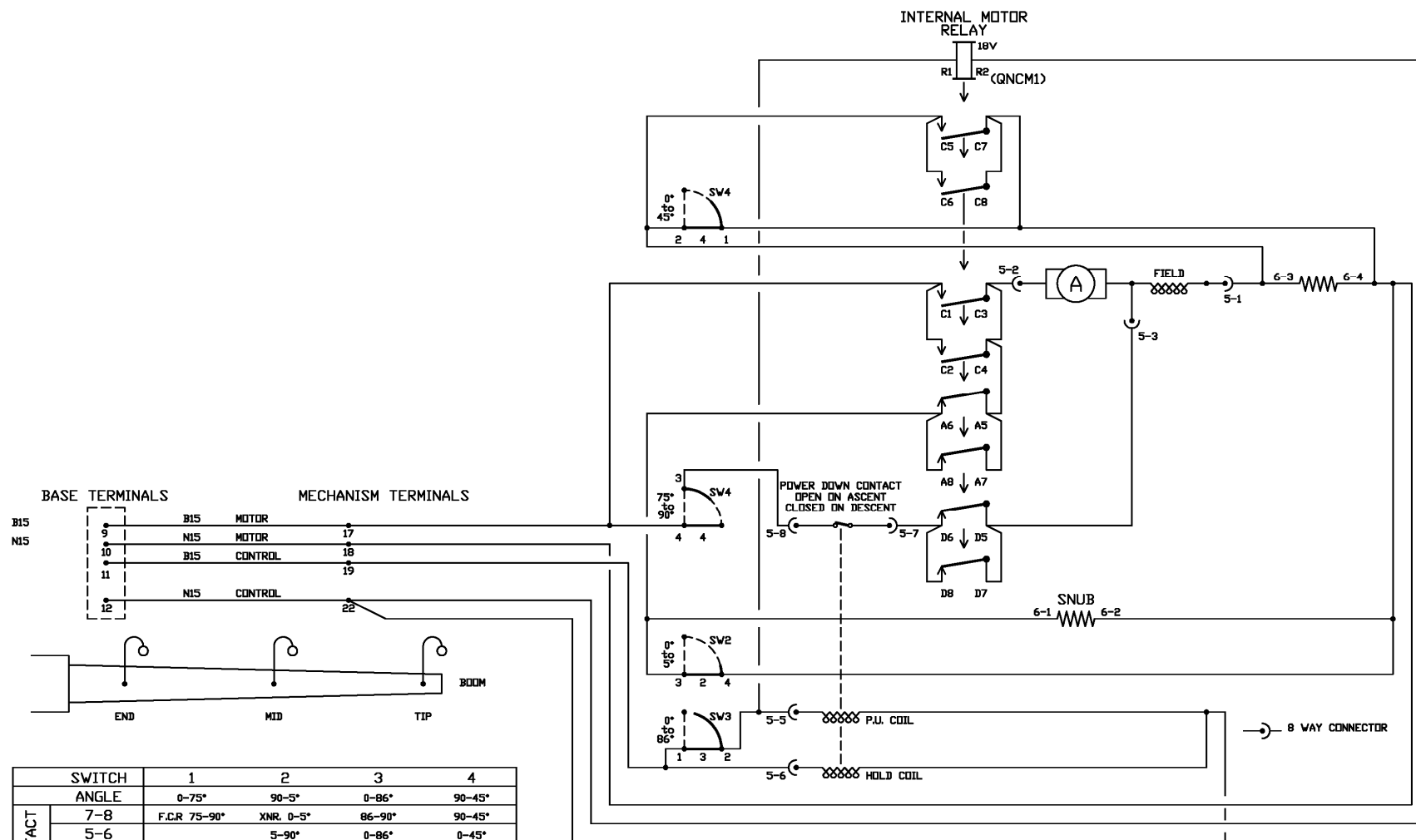
MV-GRS MODEL 2AS 10V UQ MOTOR

* APPLIES TO COUNTRY SIDE
 AND SYDNEY SIDE BARRIERS
 PEDESTRIAN LEVEL CROSSING.





01-08-97 ISSUE-03 18-08-97 09:37 Rev 01 CSTD2X35 WESTINGHOUSE EB 12V BOOM MECHANISM 'POWER DOWN' TYPE BOOM SHT: X35 CB: STD



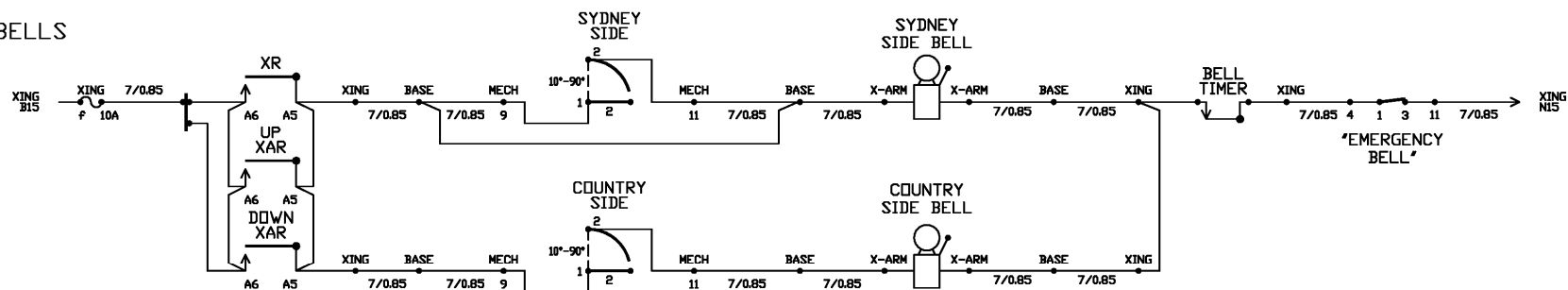
THE ANGLE GIVEN IS THE ANGLE THROUGH WHICH THE CAM LIFTS THE CAM FOLLOWER
 FCR - FLASHING CONTROL RELAY
 CO - CUT OFF

NOTES: 1. ALL SWITCHES ARE SHOWN WITH CONTROL DE-ENERGISED AND BARRIER HORIZONTAL.
 2. INDICATION OF LOWERED POSITION OF BARRIER IS GIVEN BY CONTACTS 7-8 OF SWITCH No.2

ISSUE-01 ISSUE-02
 27-11-92 23-11-93

18-03-94 ISSUE-02 CSTD1X36 WESTINGHOUSE EB 12V 'POWER DOWN' TYPE BOOMS ONLY SHT: X36 CB: 0

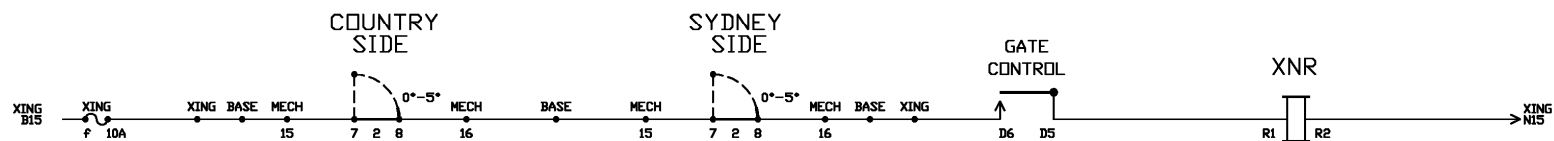
BELLS



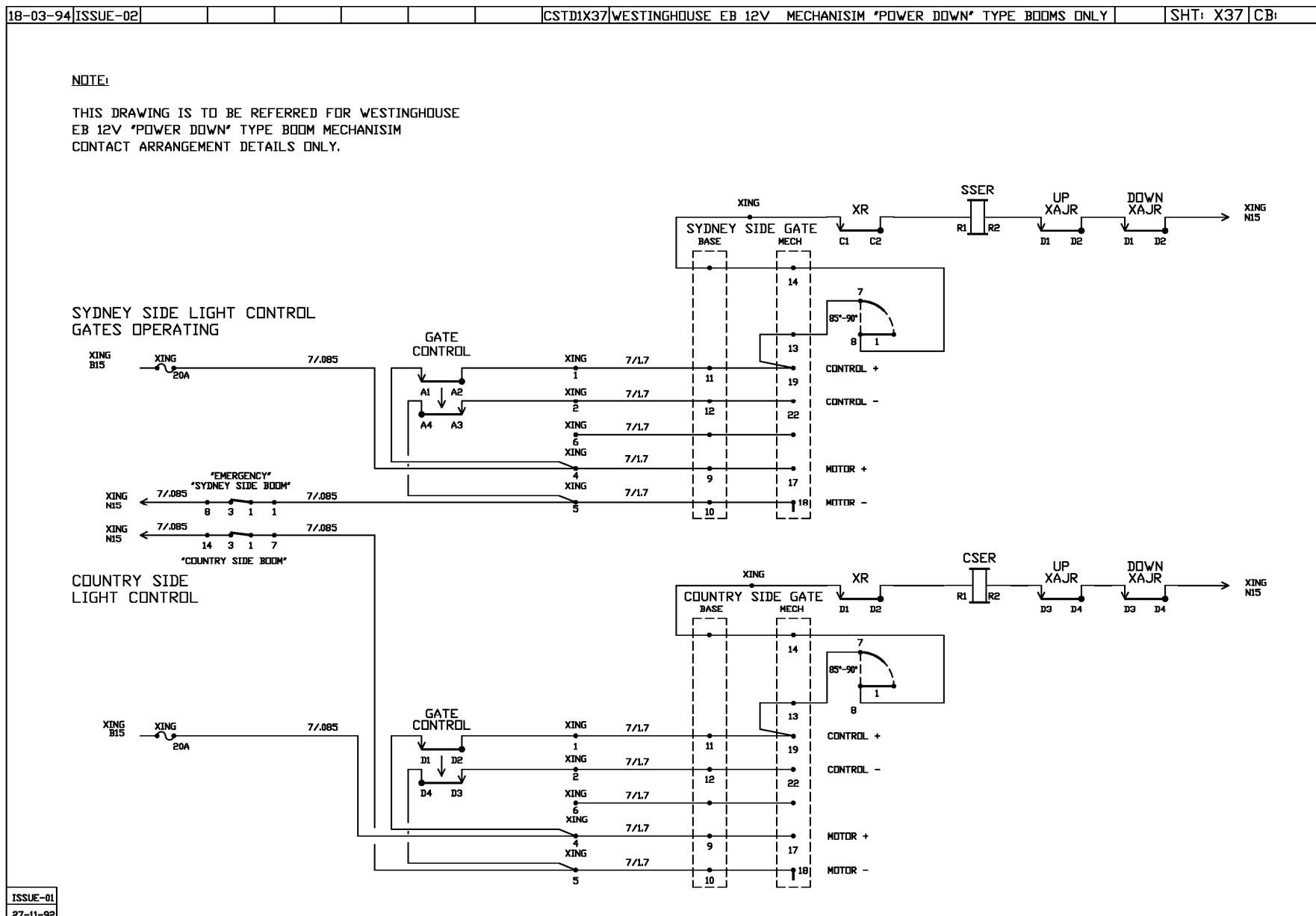
NOTE:

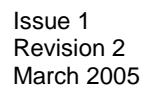
THIS DRAWING IS TO BE REFERRED FOR WESTINGHOUSE
 EB 12V 'POWER DOWN' TYPE BOOM MECHANISM
 CONTACT ARRANGEMENT DETAILS ONLY.

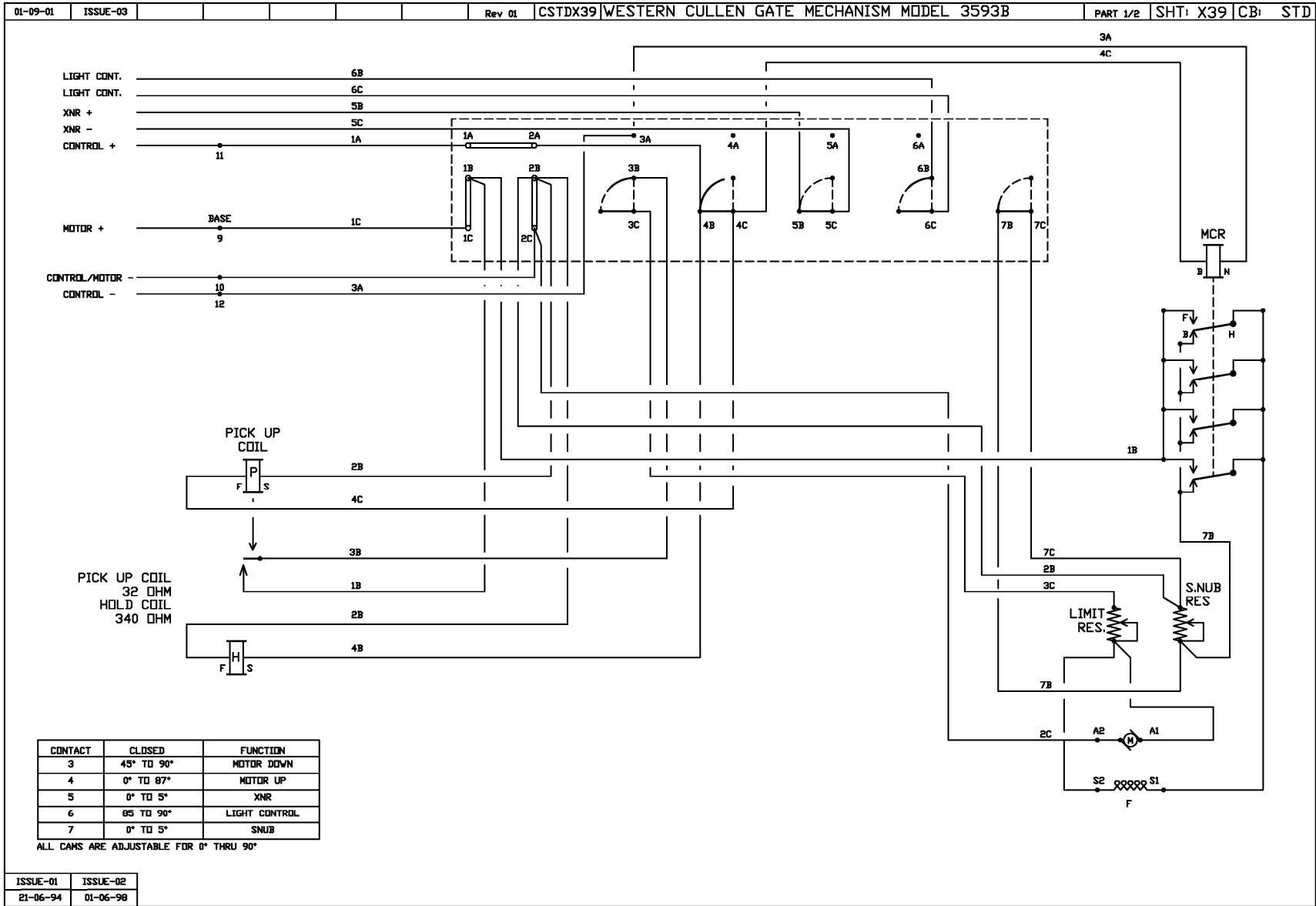
XNR

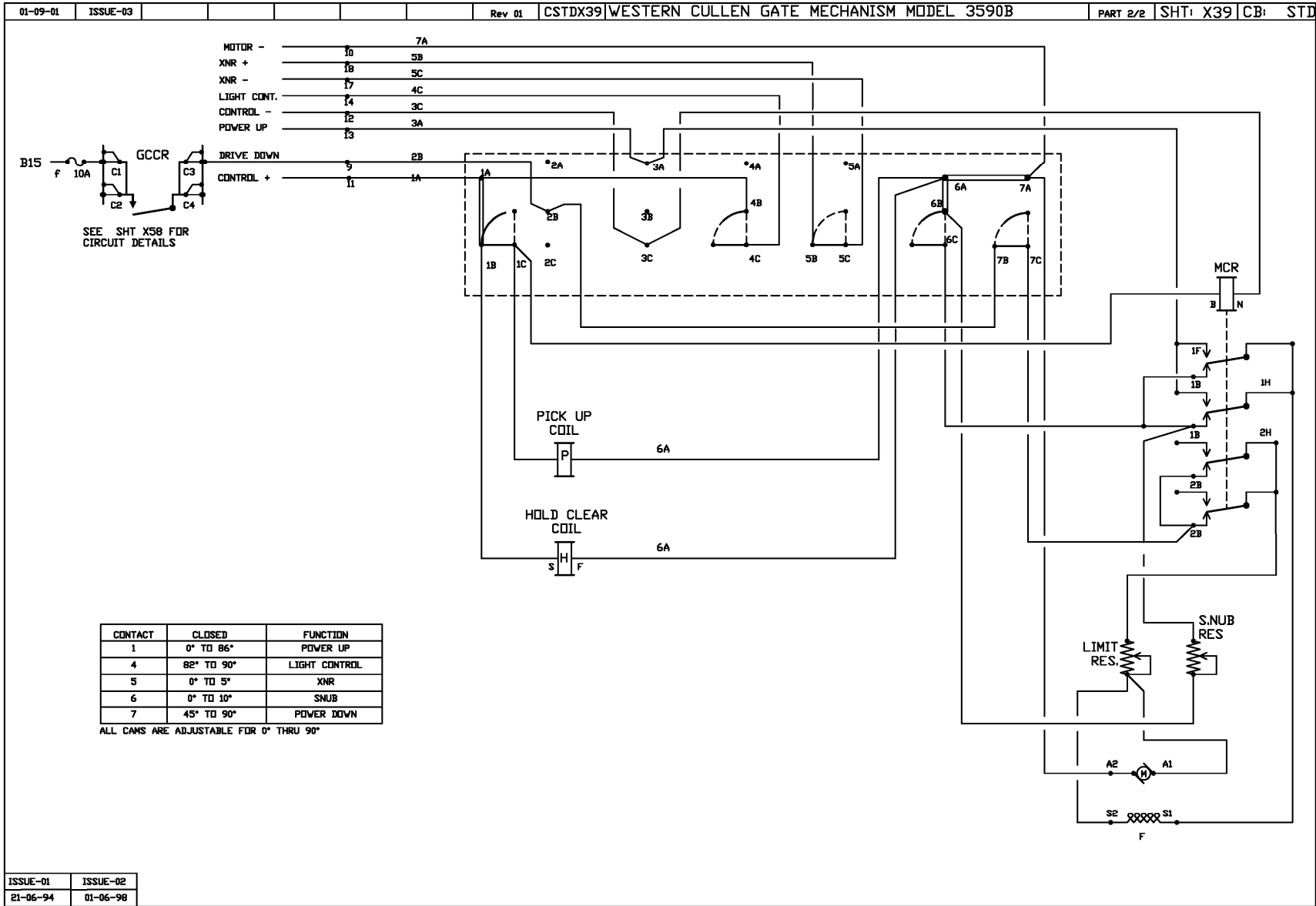


ISSUE-01
 27-11-92





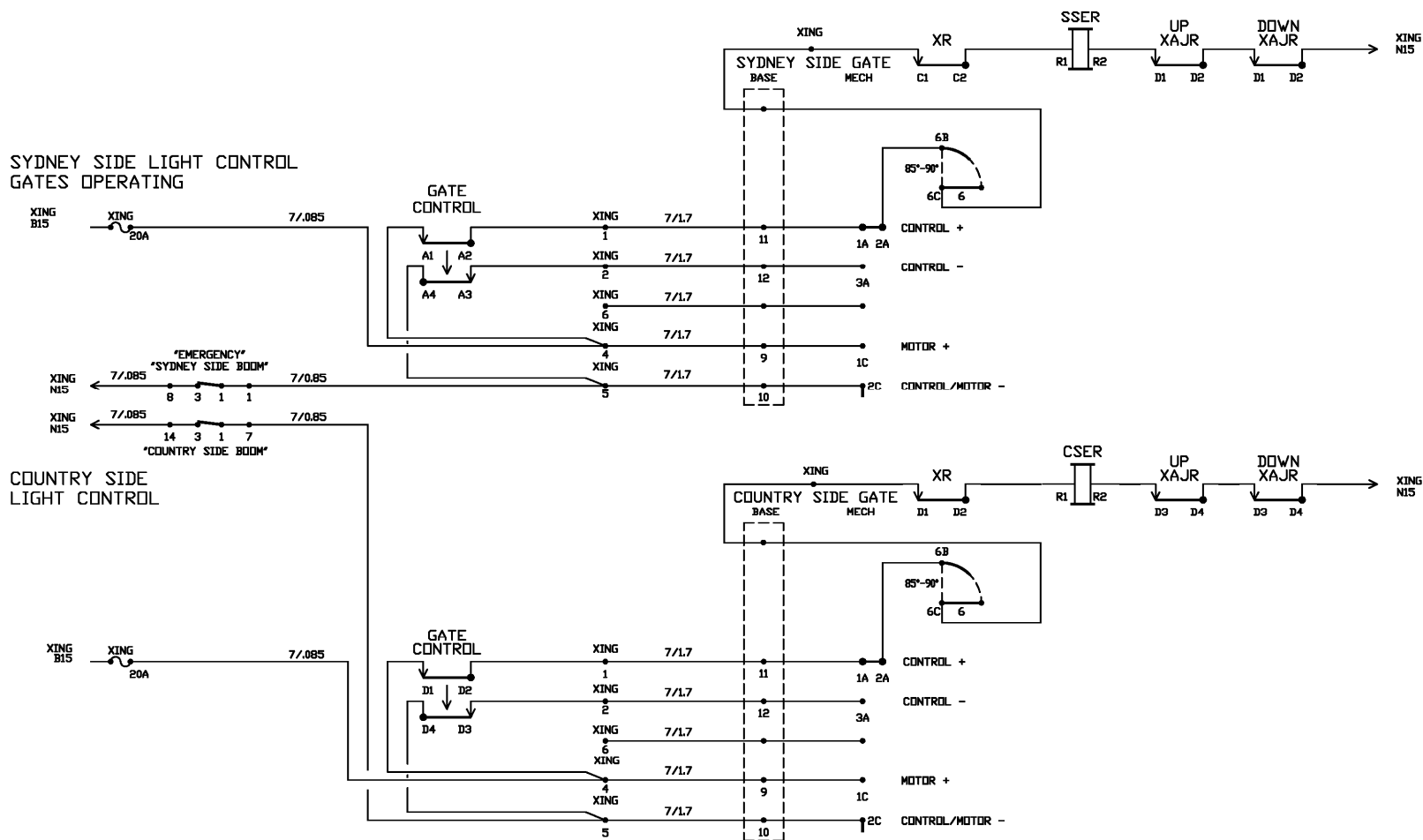


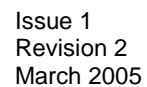


21-06-94 ISSUE-01 CSTD0X40 WESTERN CULLEN GATE MECHANISM MODEL 3593B SHT: X40 CB:

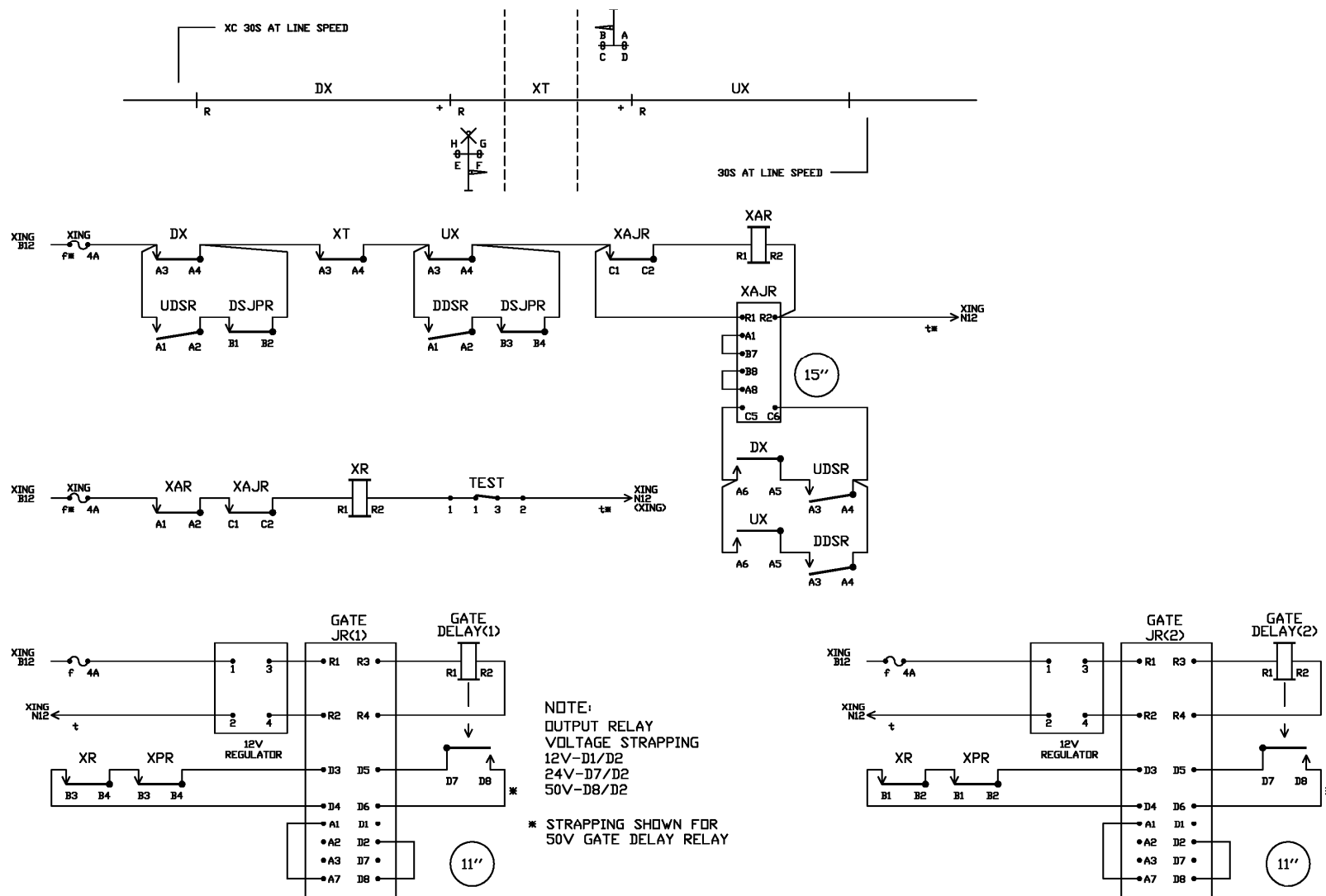
NOTE:

THIS DRAWING IS TO BE REFERRED TO FOR
 WESTERN CULLEN GATE MECHANISM MODEL 3593B
 CONTACT ARRANGEMENT DETAILS ONLY.

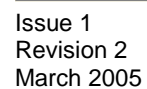


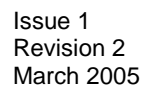


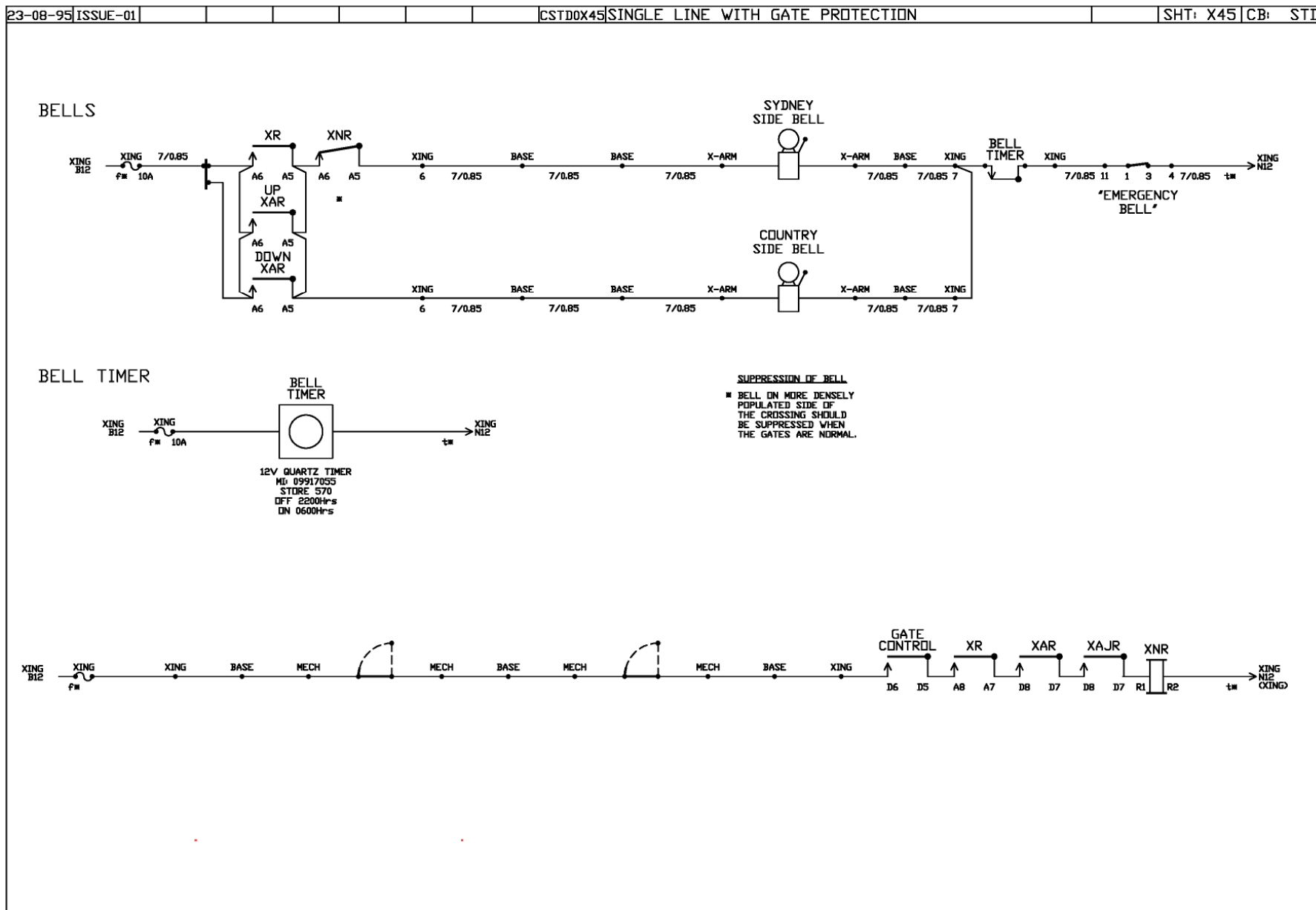
30-12-99|ISSUE-02| Rev 01|CSTD42|SINGLE LINE WITH GATE PROTECTION|SHT: X42|CB: STD

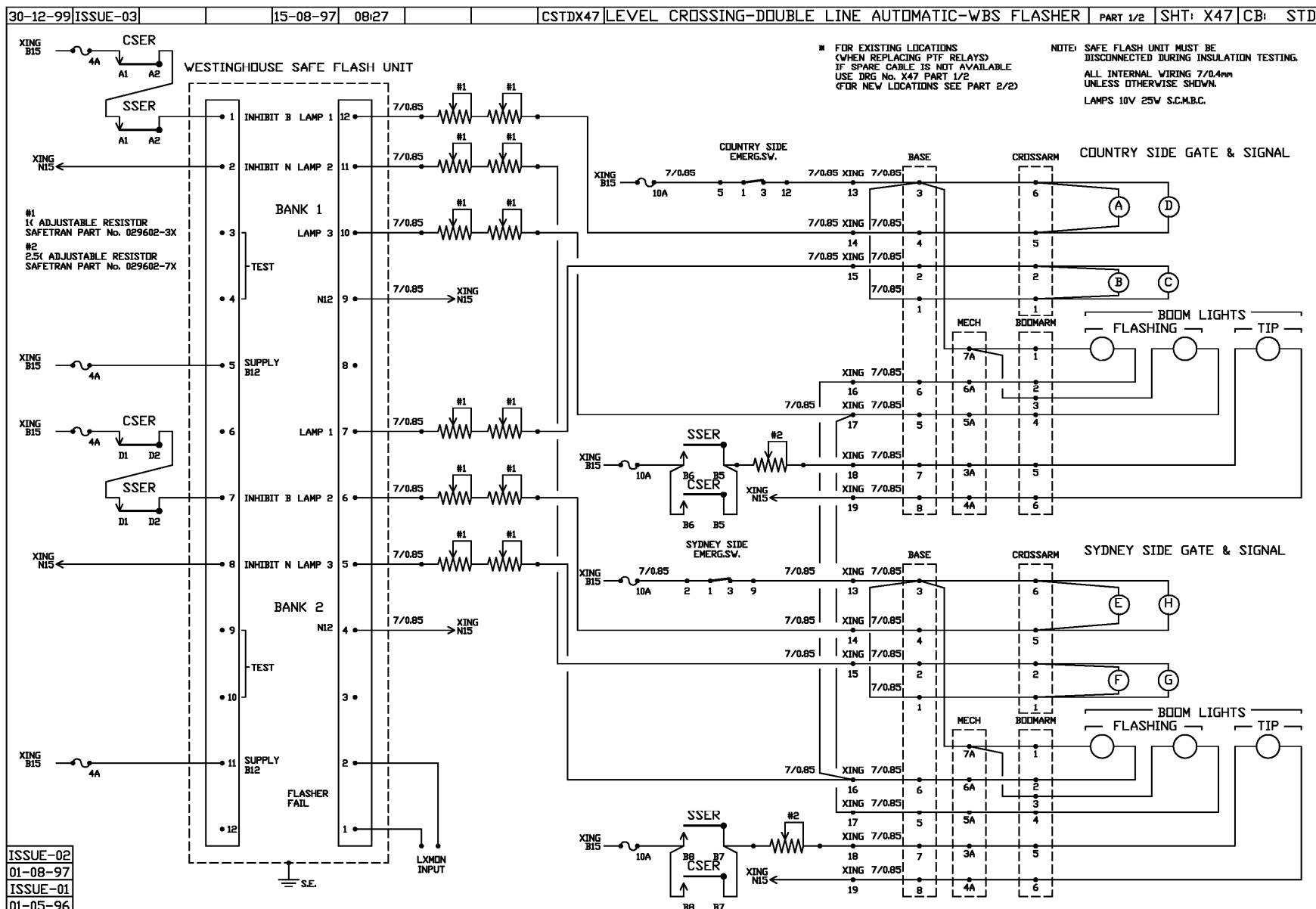


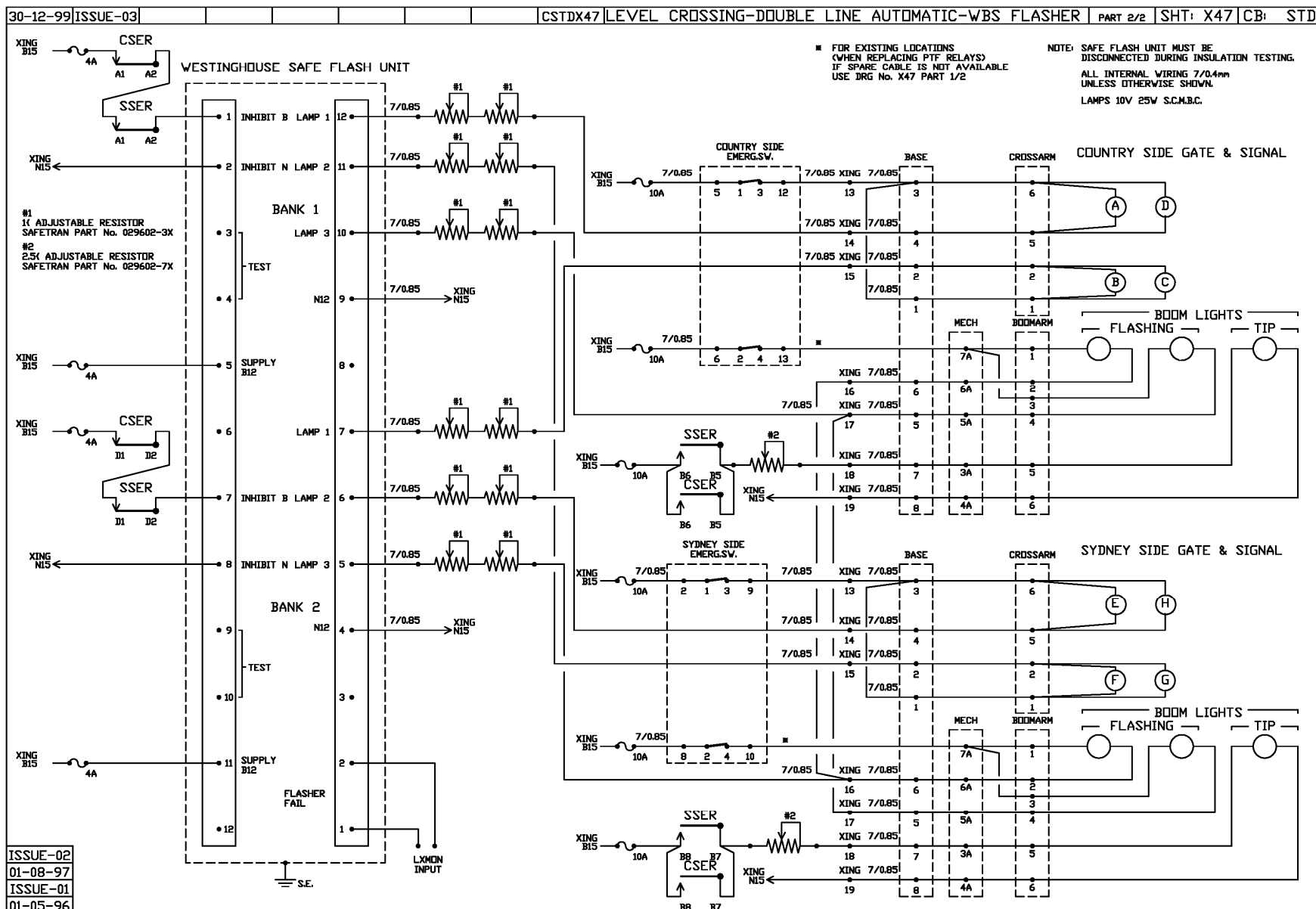
ISSUE-01
 23-08-95

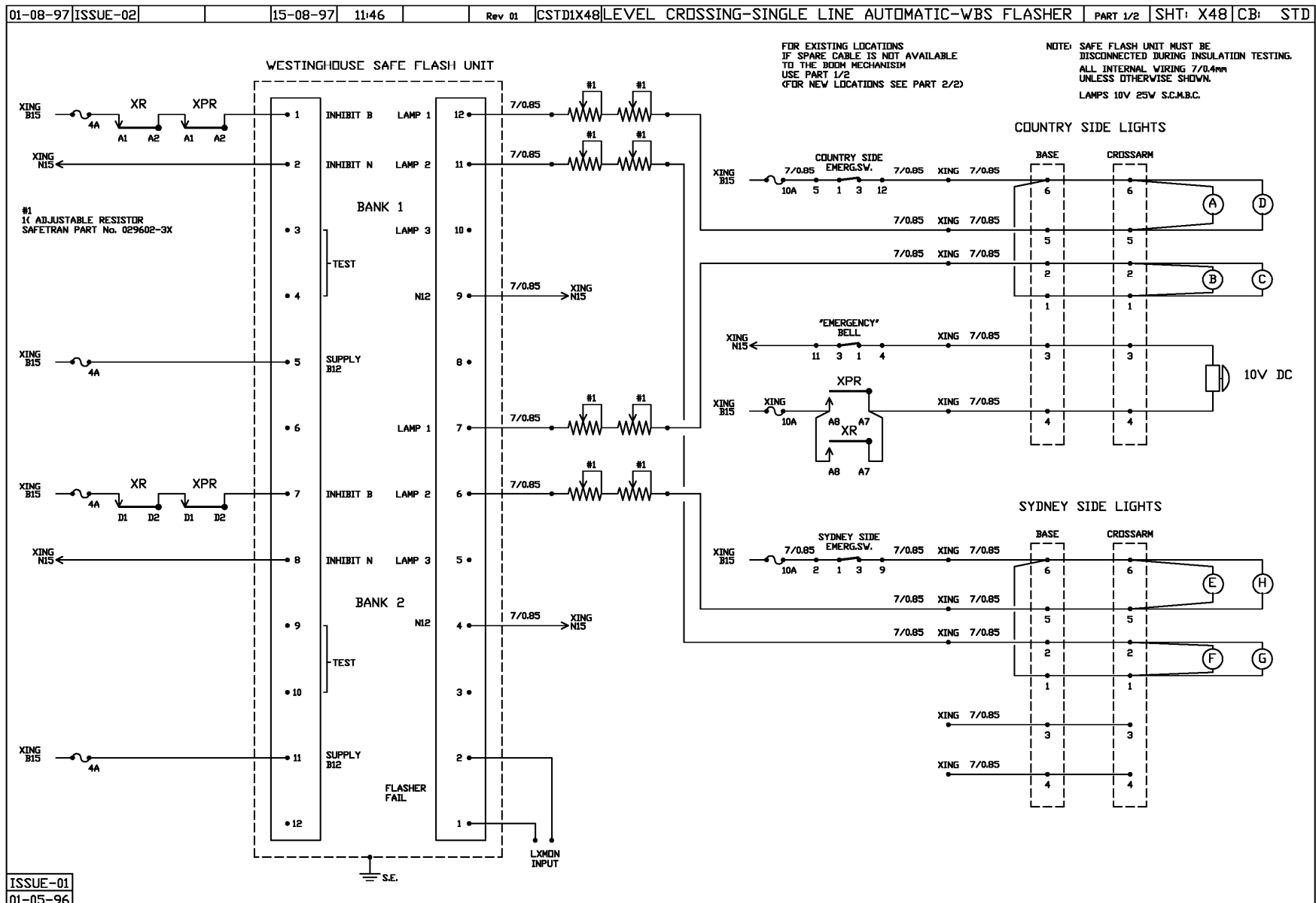


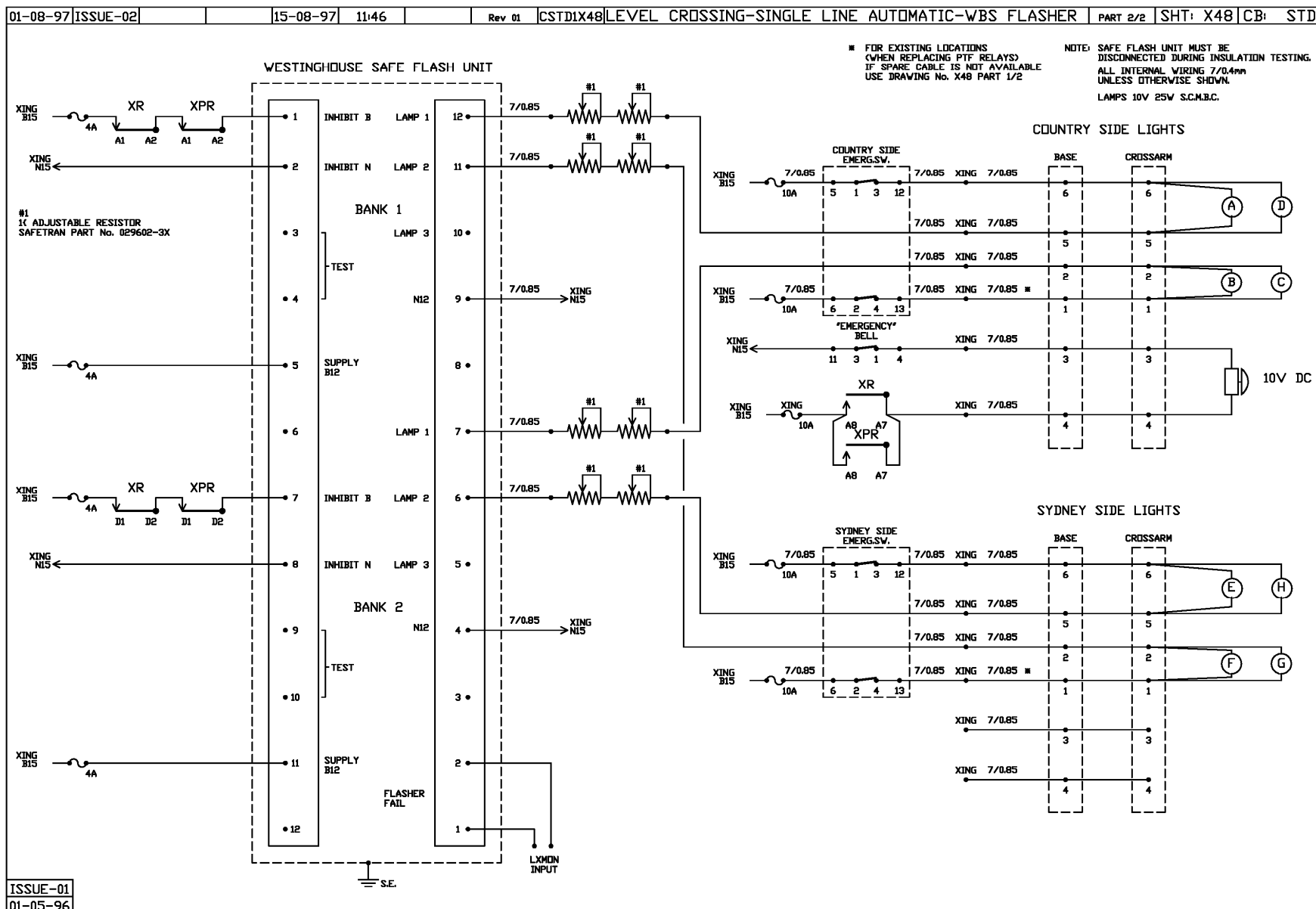


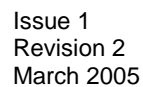


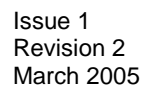


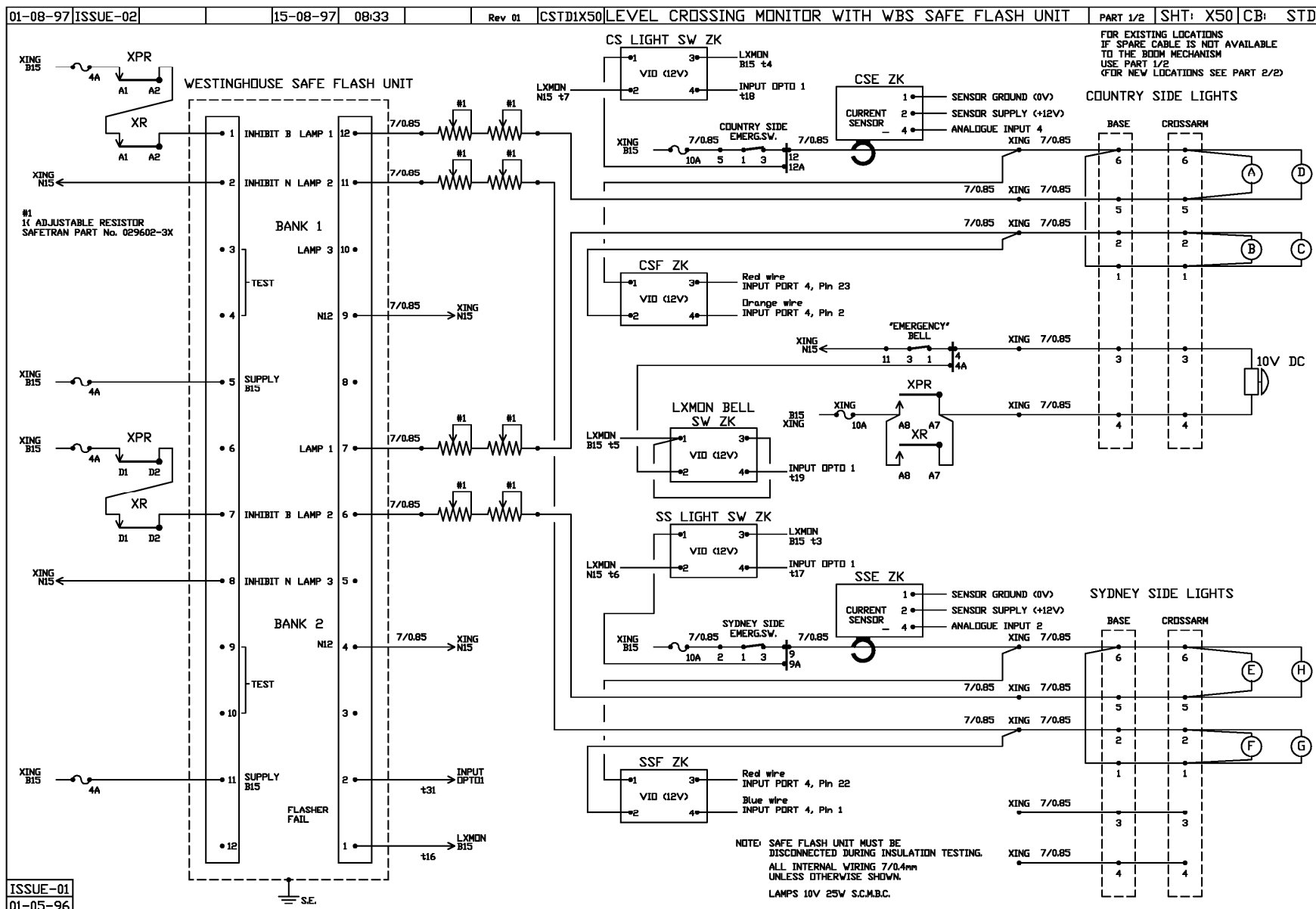


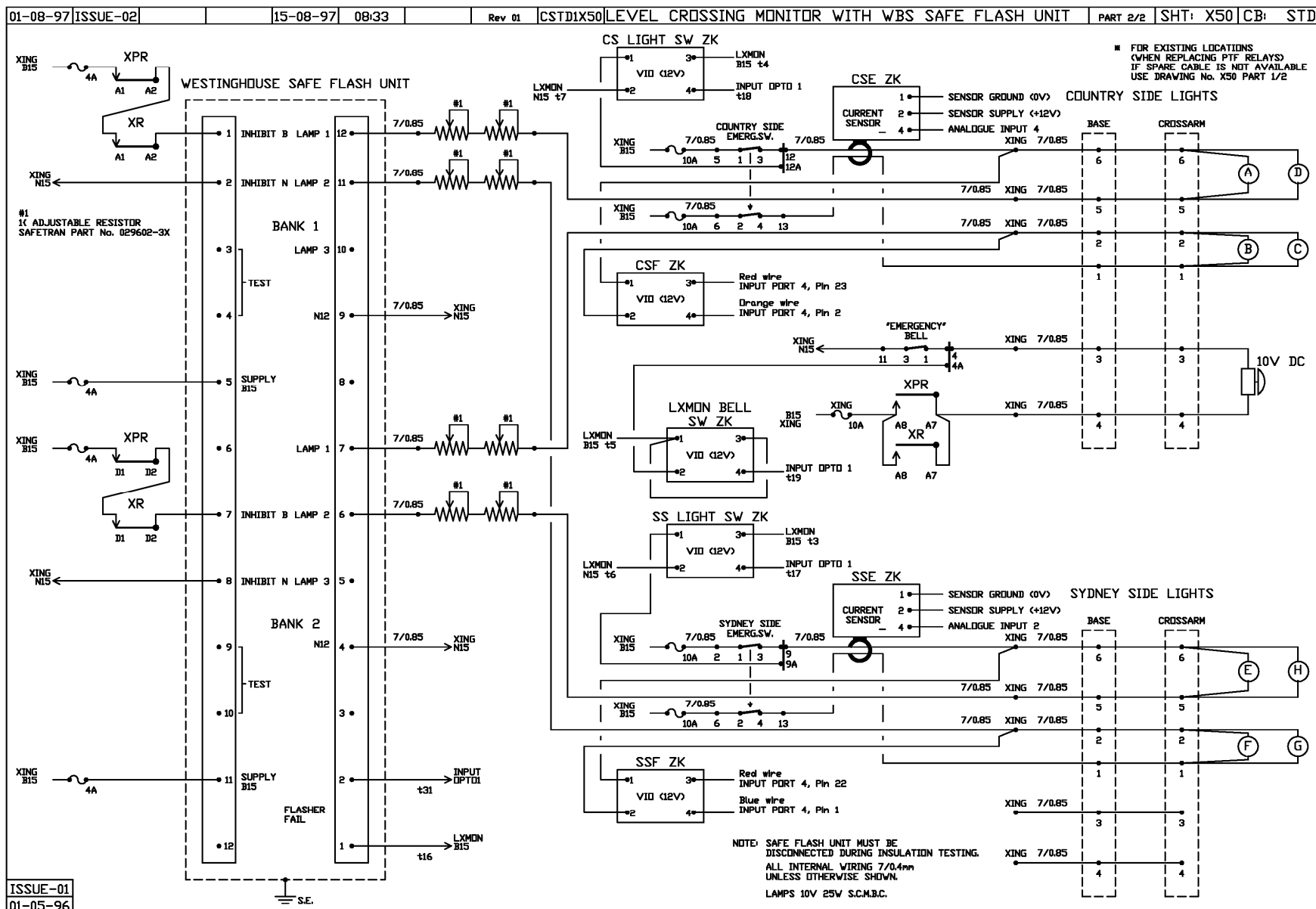


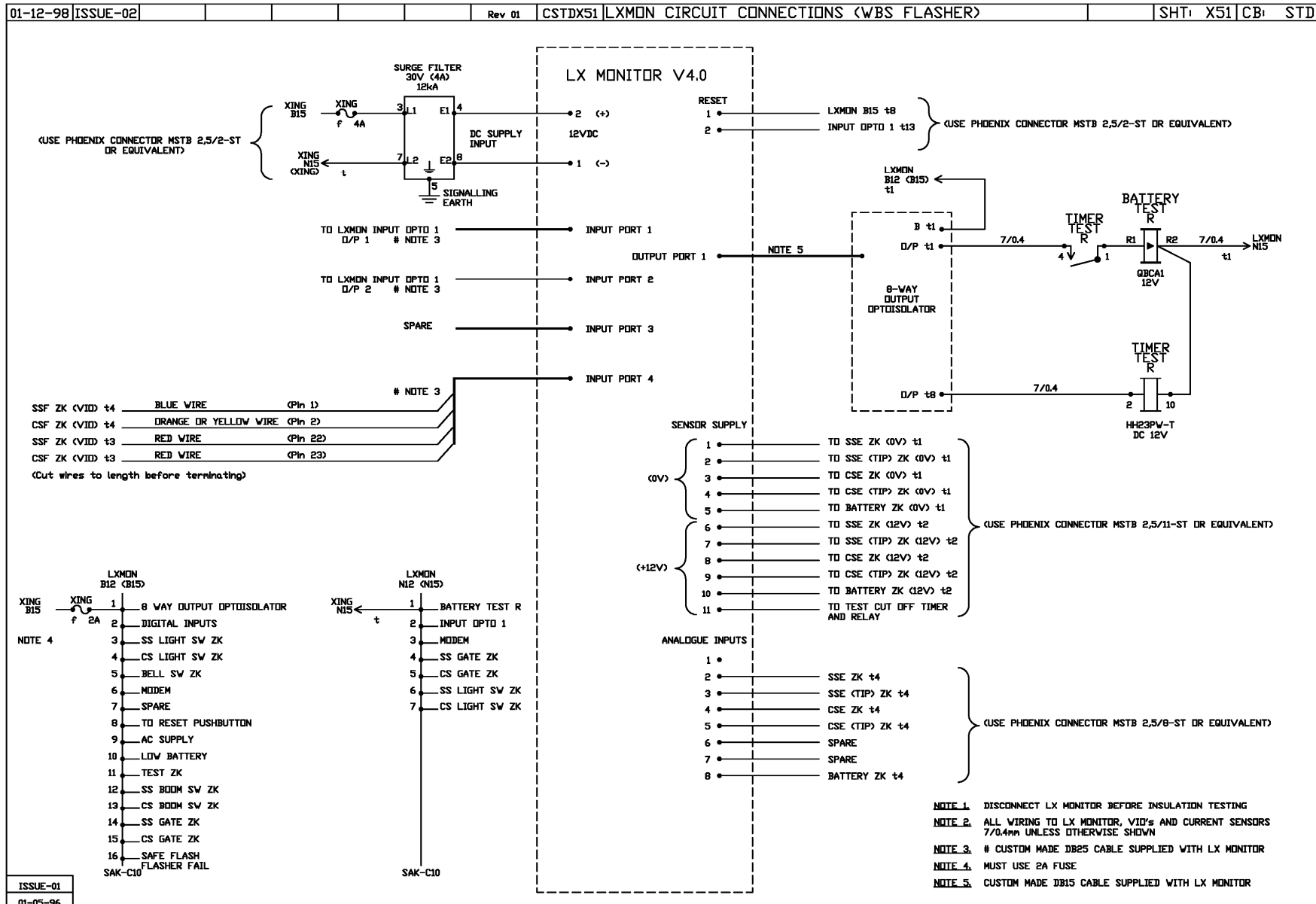


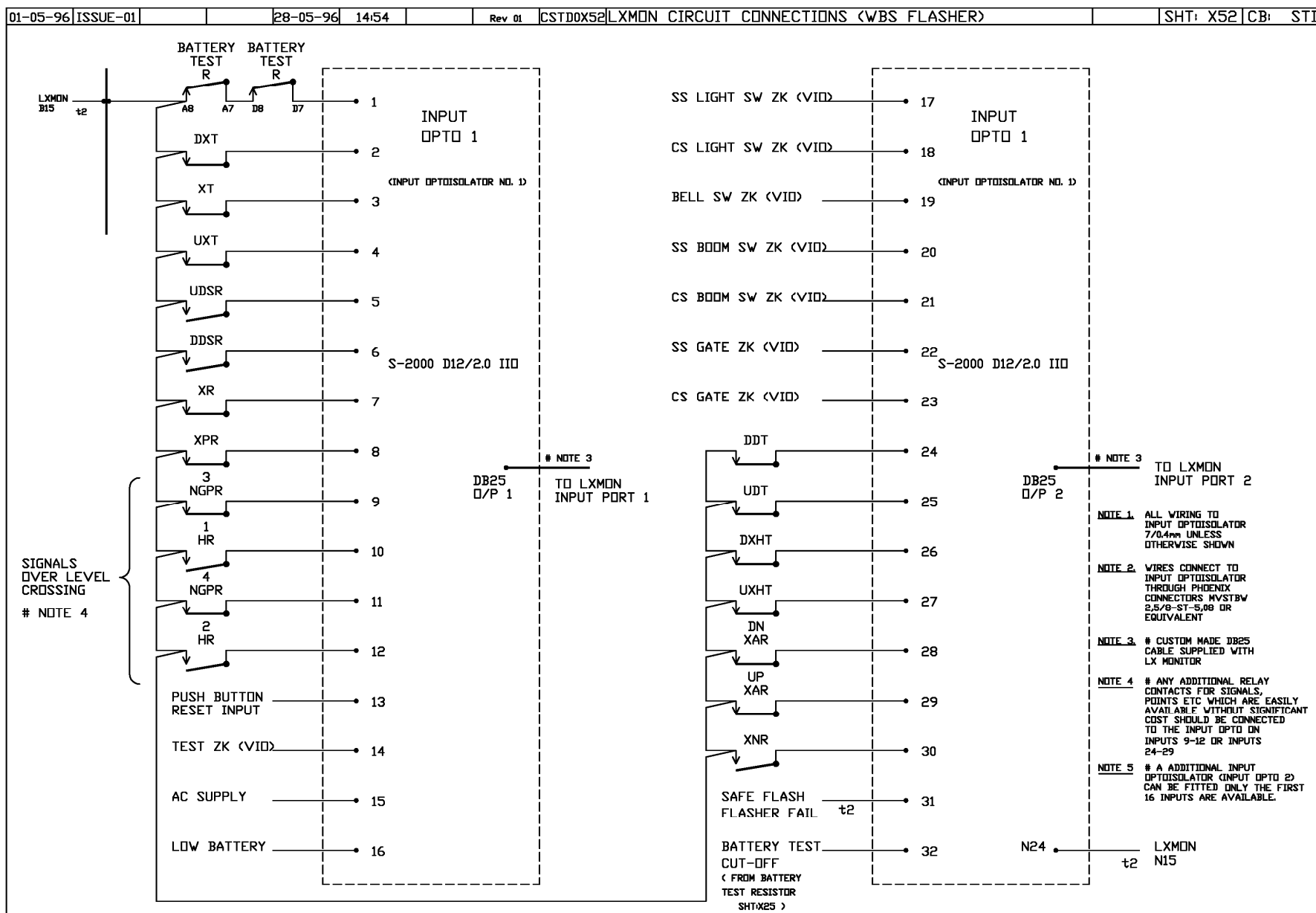


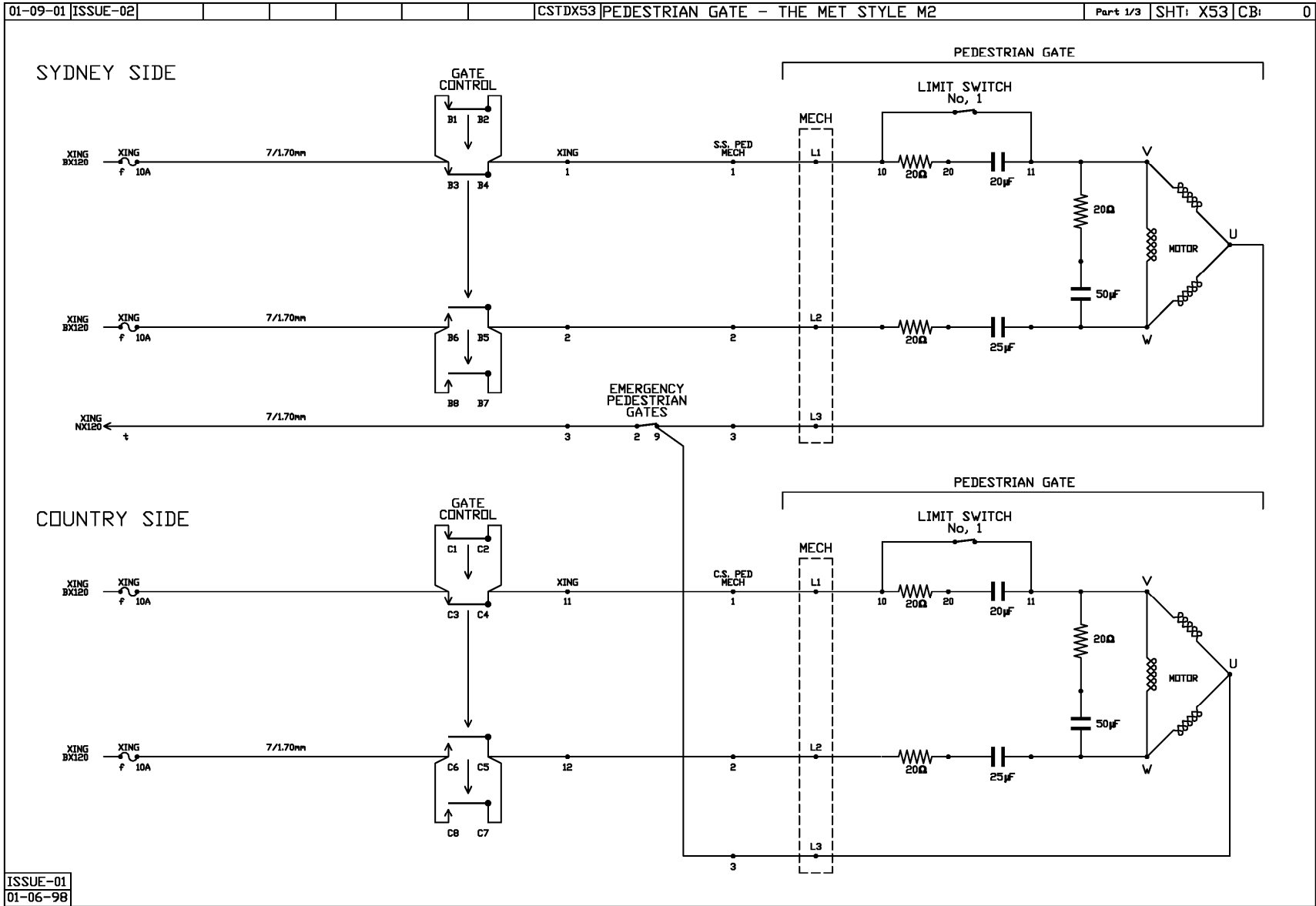




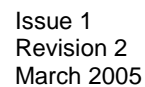


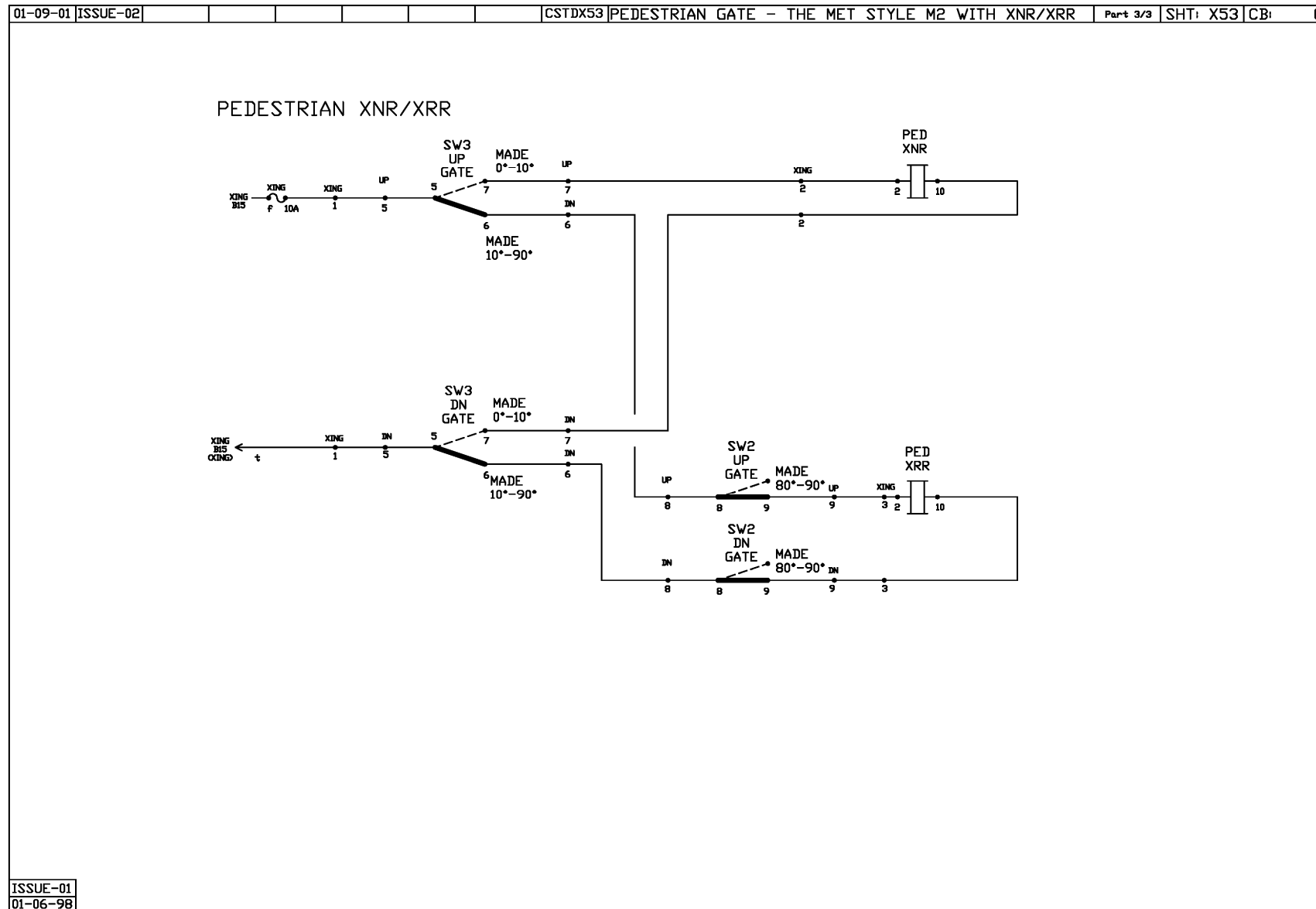




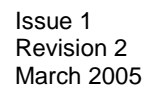


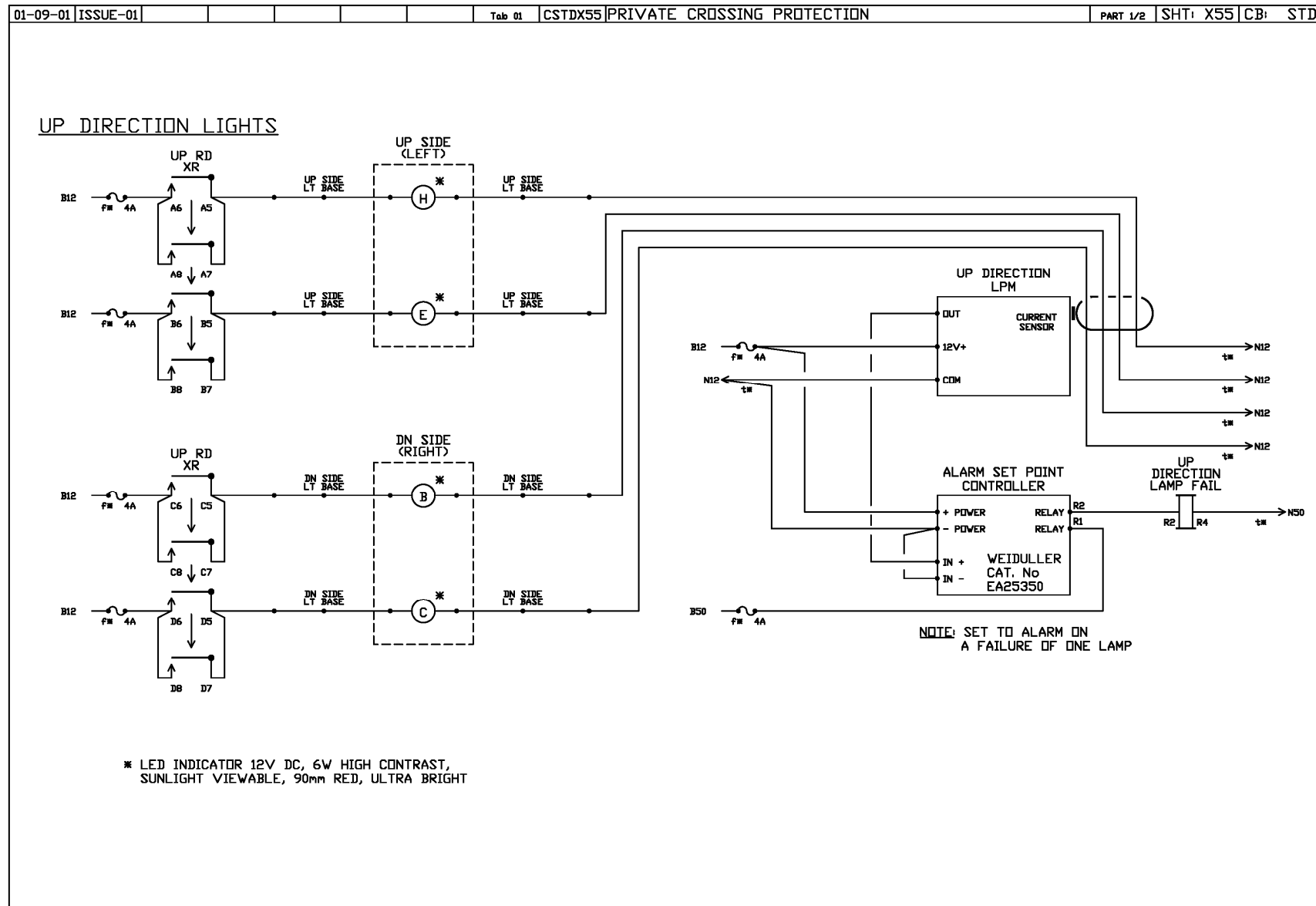
ISSUE-01
01-06-98

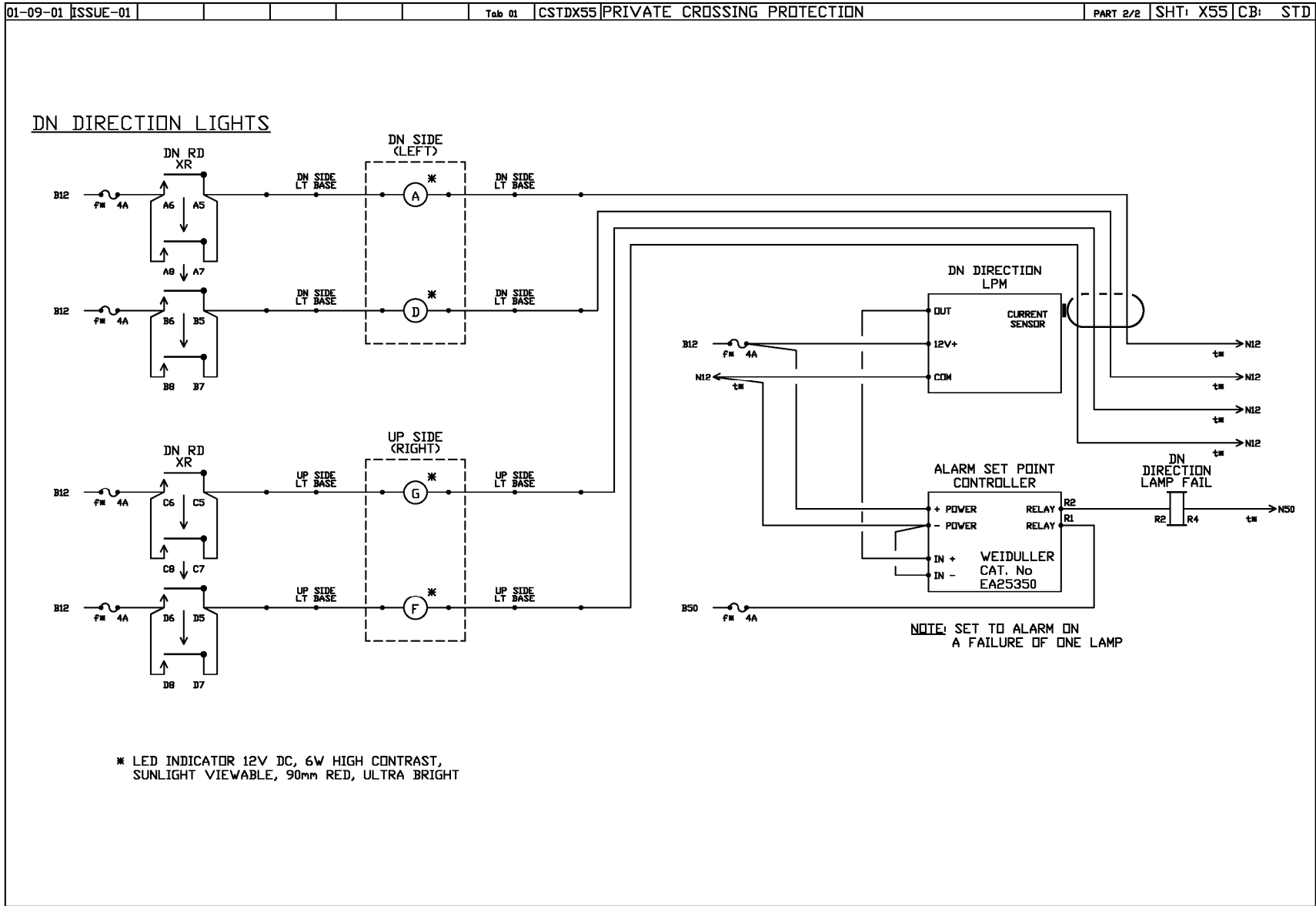


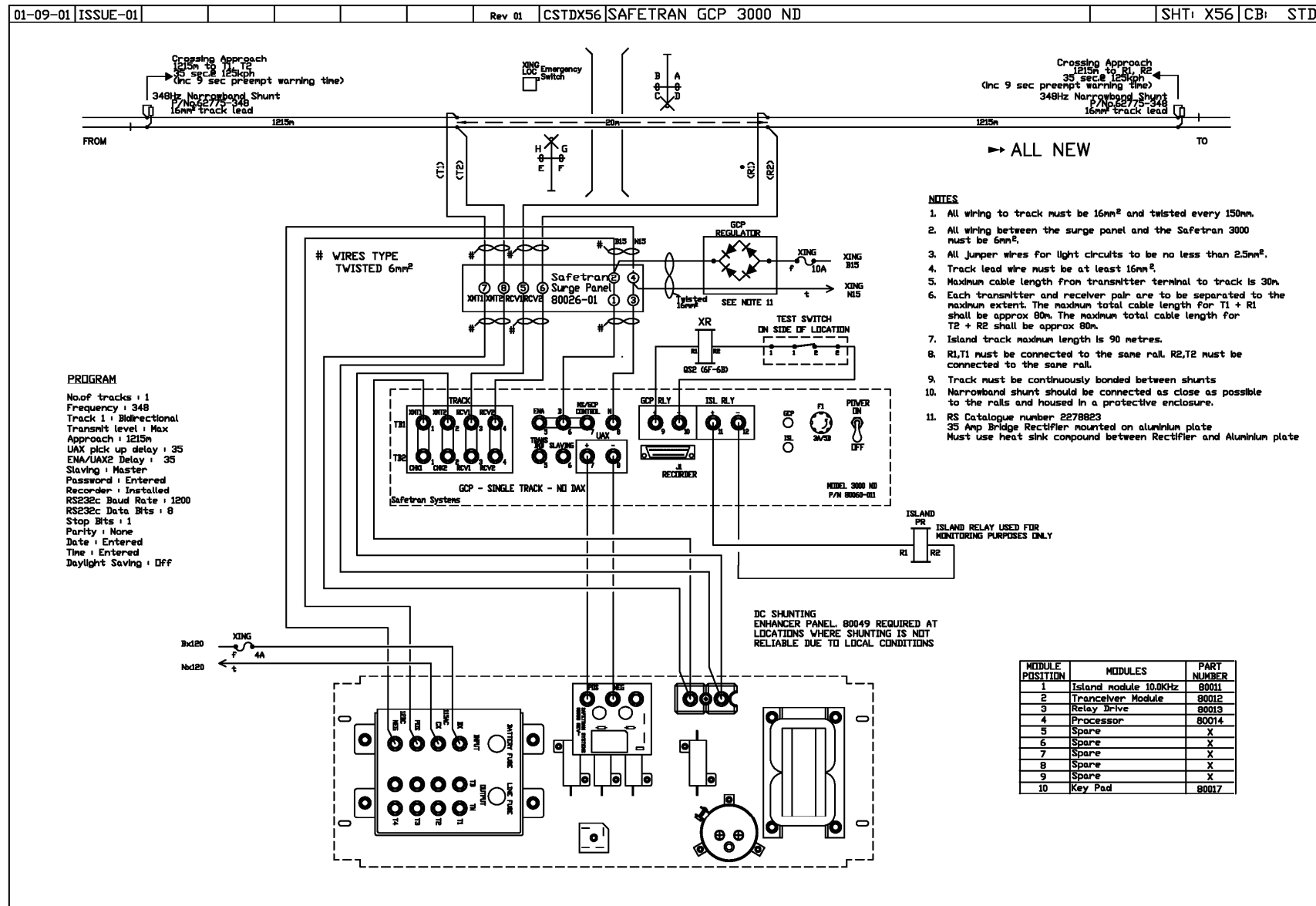


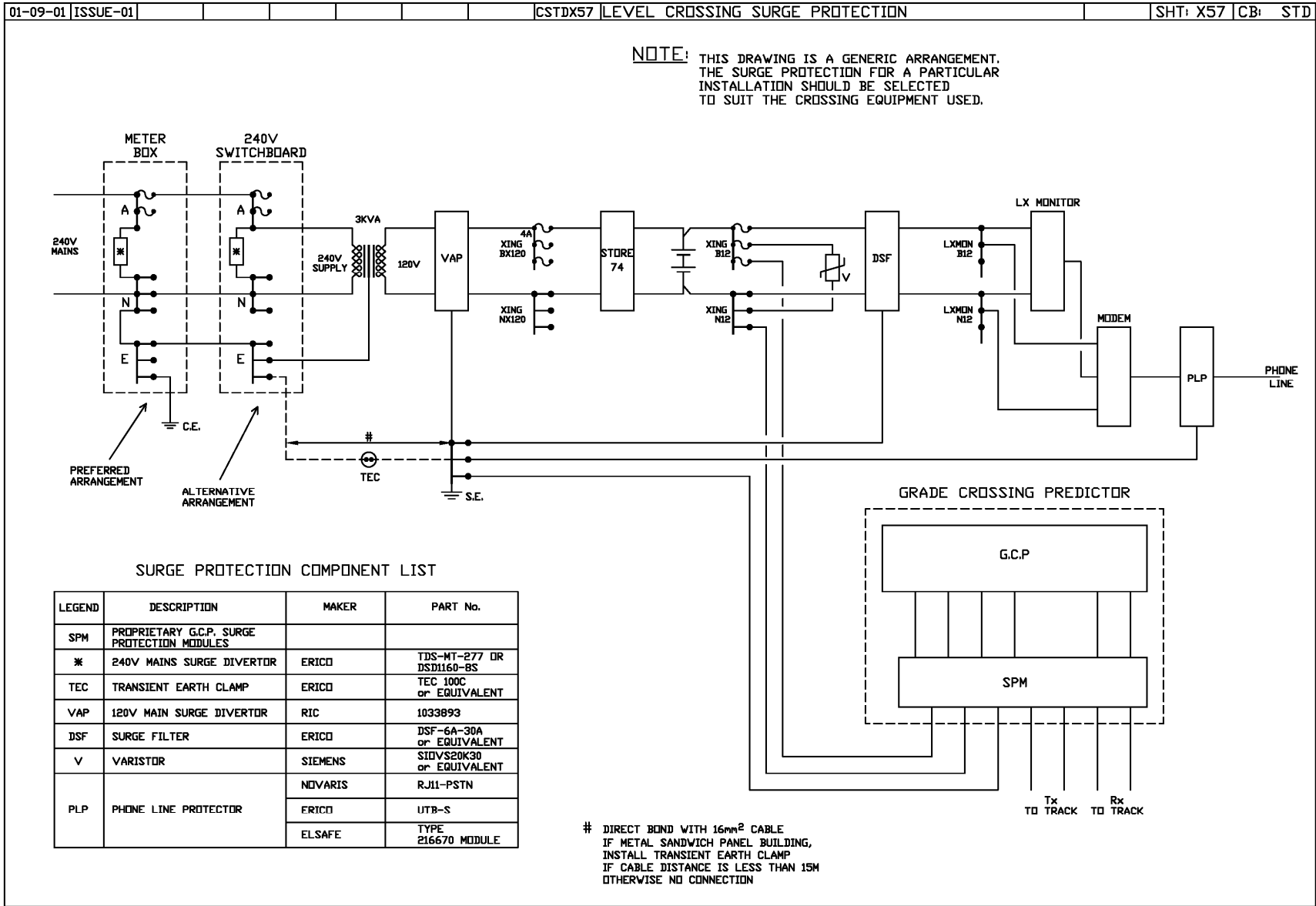
ISSUE-01
 01-06-98

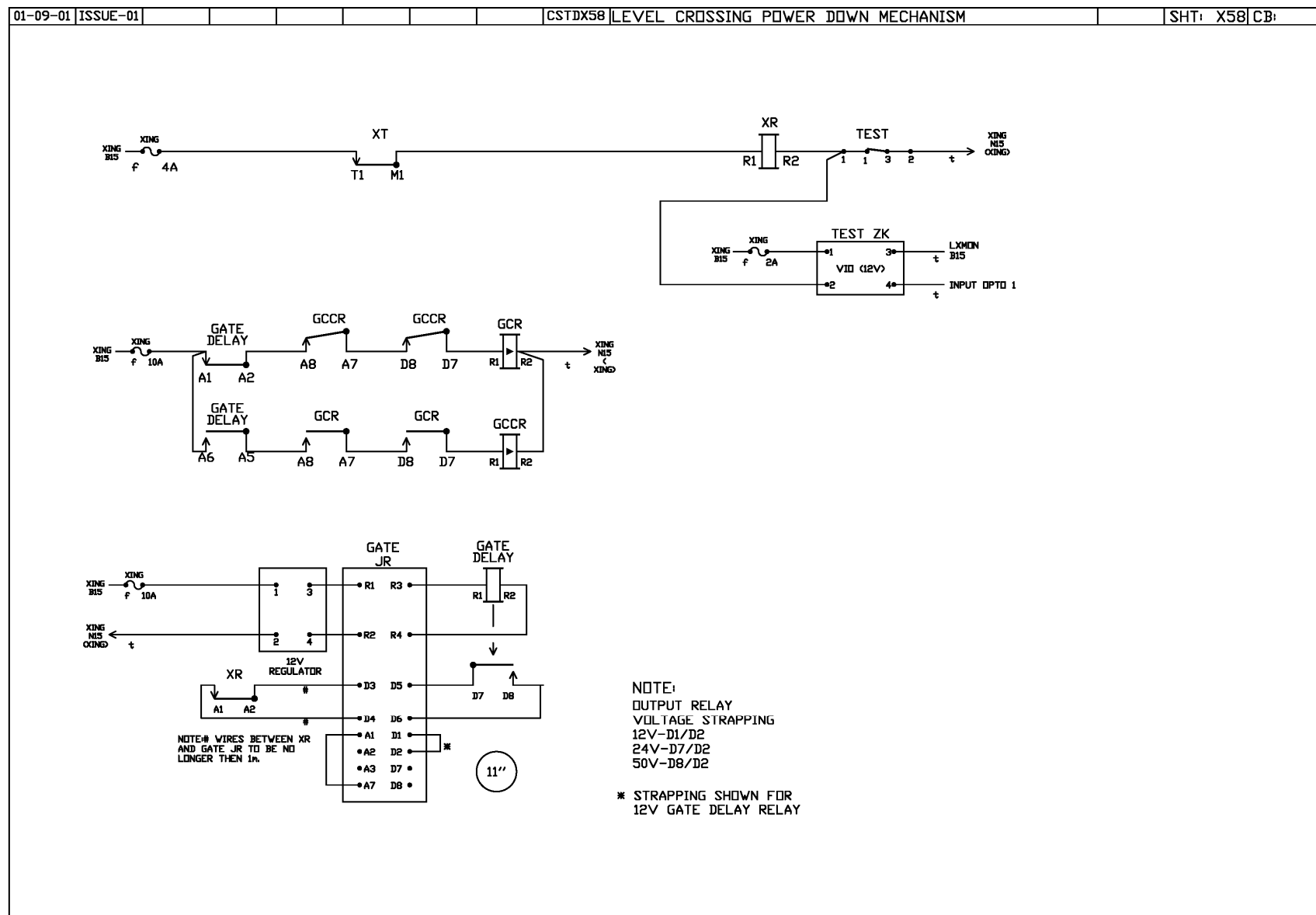


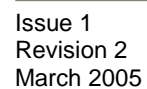


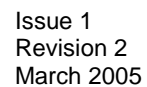


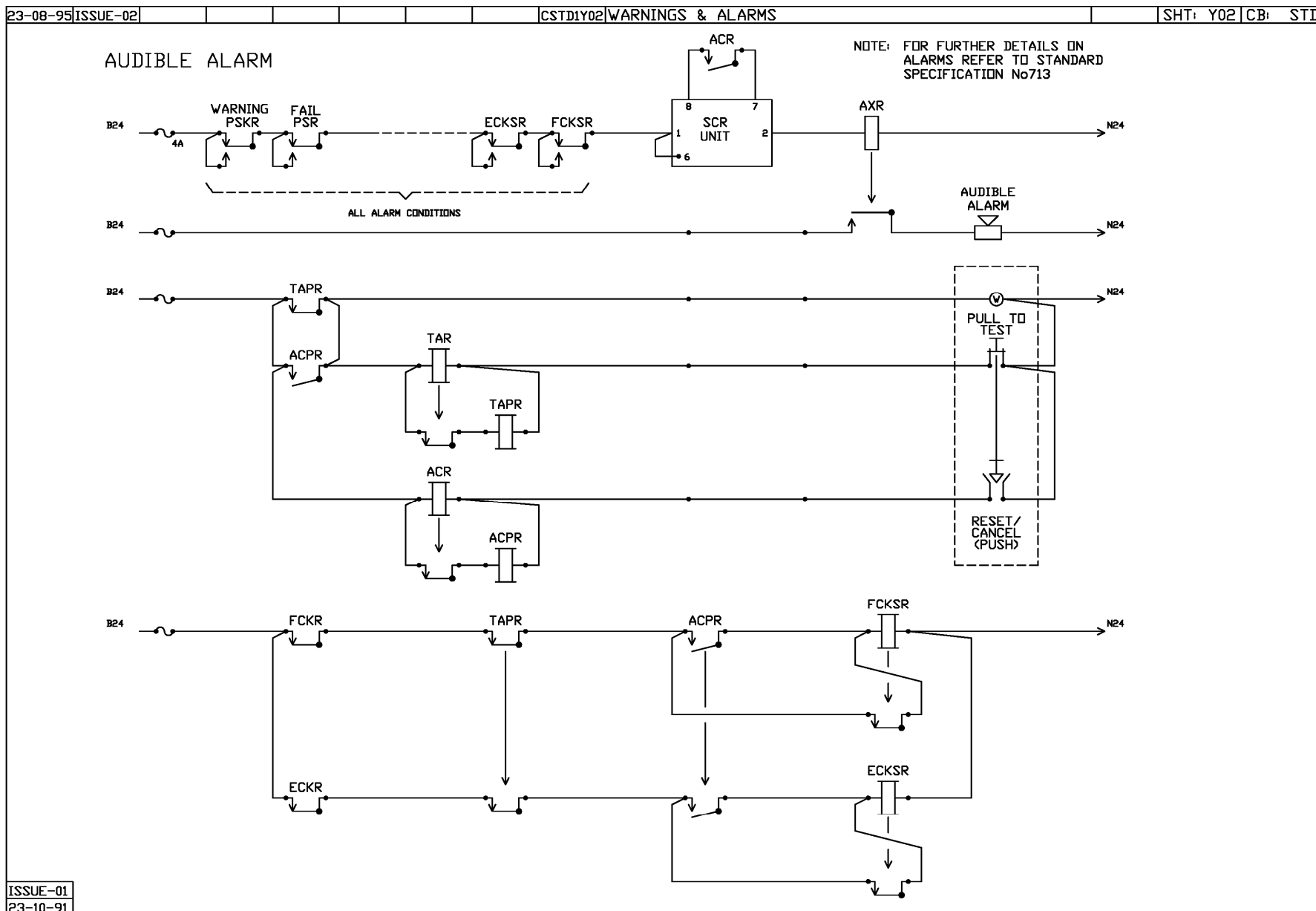




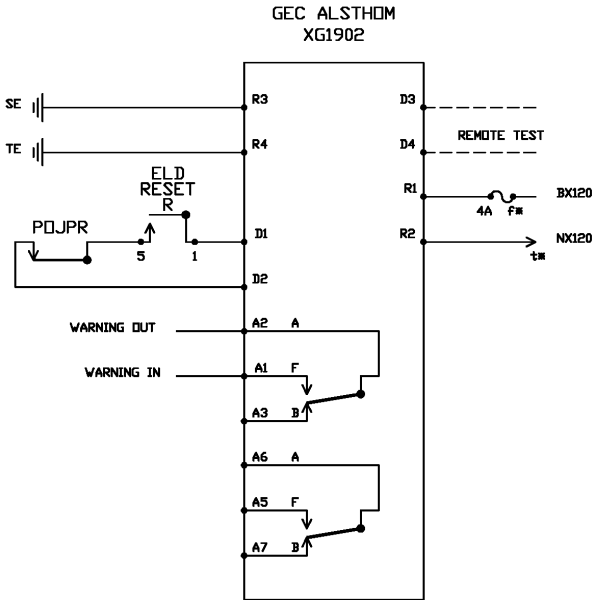




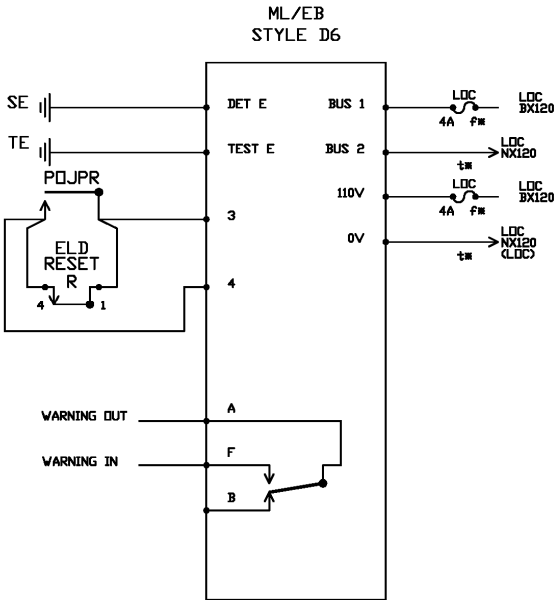




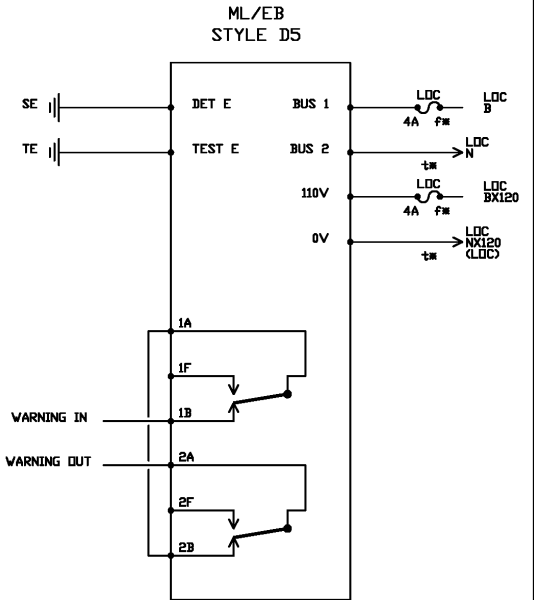
24-02-92 ISSUE-01 CSTD0Y03 EARTH LEAKAGE DETECTORS SHT: Y03 CB: 0



DESIGNER'S NOTES:
 1. BUS VOLTAGE: BX/NX 120
 2. RESET AFTER POWER OFF: MOMENTARY MAKE
 3. CAUTION: RESETS MUST NOT BE WIRED IN PARALLEL



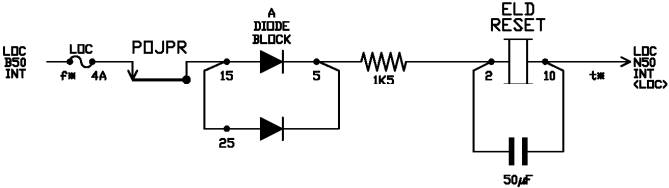
DESIGNER'S NOTES:
 1. BUS VOLTAGE: BX/NX 120
 2. RESET AFTER POWER OFF: MOMENTARY BREAK
 3. CAUTION: RESETS MUST NOT BE WIRED IN PARALLEL



DESIGNER'S NOTES:
 1. BUS VOLTAGE: BX/NX 120 OR B/N 50
 2. RESET AFTER POWER OFF: NOT REQUIRED

EARTHING OF EARTH LEAKAGE DETECTORS

SE THE MAIN EARTH ROD MUST BE OVER 2M FROM THE TEST EARTH RODS
 TE THE TEST EARTH RODS MUST BE AT LEAST 0.5m APART



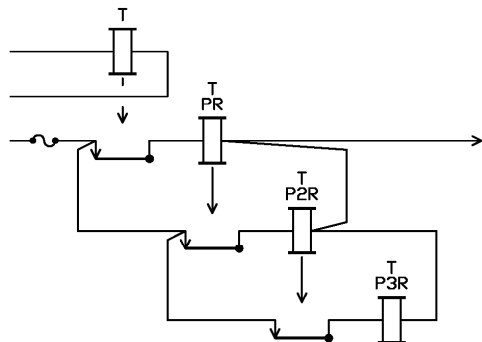
23-10-91 ISSUE-01					CST00201 CIRCUIT NOMENCLATURE					SHT: Z01 CB: 0				
RELAY NAME	MEANING	FUNCTION	LOCATED AT	REFER PAGE	RELAY NAME	MEANING	FUNCTION	LOCATED AT	REFER PAGE					
FDR CTDR CFMR	BUTTON PRESSED BUTTON PULLED (CONTACTS MADE) BUTTON PULLED (CONTACTS BROKEN)	ROUTE SETTING INTERLOCKING REPEATS PUSH BUTTON OPERATION - CFMR PROVIDES FOR EMERGENCY REPLACEMENT OF SIGNAL	INTERLOCKING USUALLY NON-VITAL RELAY	N01	NVR	NORMAL POINT CONTACTOR RELAY	ROUTE SETTING & DCS SYSTEMS OPERATES POINTS TO NORMAL POSITION	LOCAL POINTS LOCATION	V01					
					RVR	REVERSE FRONT CONTACTOR RELAY	OPERATES POINTS TO REVERSE POSITION	LOCAL POINTS LOCATION	V01					
					NVNR	NORMAL POINTS INDICATING RELAY	INDICATES NORMAL POINT POSITION	INTERLOCKING	V01					
					RVNR	REVERSE POINTS INDICATING RELAY	INDICATES REVERSE POINT POSITION	INTERLOCKING	V01					
CRPR	BUTTON REVERSE (PRESSED) REPEAT RELAY	USED IN RING CIRCUIT TO ENSURE ONLY 1 (CONE) BUTTON PRESSED AT A TIME. OPERATES COMMENCE & FINISH RELAYS	INTERLOCKING	N01	NKR	NORMAL INDICATING RELAY	INDICATES POINTS NORMAL	LOCAL POINTS LOCATION	V01					
					RKR	REVERSE INDICATING RELAY	INDICATES POINTS REVERSE	LOCAL POINTS LOCATION	V01					
CoR	COMMENCE RELAYS	DEFINES & INITIATES ROUTE TO BE SET FROM	INTERLOCKING	N01	NVAR	NORMAL POINTS AVAILABLE RELAY	DETERMINES IF POINTS WOULD GO NORMAL IF OTHER CONDITIONAL LOCKING RELEASED	INTERLOCKING	N10					
FoR	FINISH RELAYS	DEFINES END OF ROUTE IN CONJUNCTION WITH CoR, SETS ROUTE	INTERLOCKING	N02	RVAR	REVERSE POINTS AVAILABLE RELAY	DETERMINES IF POINTS WOULD GO REVERSE IF OTHER CONDITIONAL LOCKING RELEASED	INTERLOCKING	N11					
MoR	MACHINE IN USE RELAY	OPERATES WHEN COMMENCED RELAY IS UP TO MAKE NEXT BUTTON OPERATION A FINISH	INTERLOCKING	N02	WTJR	POINTS TRANSIT TIMER RELAY	CUTS POINTS SUPPLY IF MACHINE FAILS TO COMPLETE TRAVEL	LOCAL POINTS LOCATION	V01					
FoPR	FINISH REPEAT RELAY	INITIATES TIMING SEQUENCE TO REMOVE ROUTE CALL	INTERLOCKING	N02	NOLR	NORMAL OVERLAP RELAY	SELECTS NORMAL OVERLAP IF CLEAR	INTERLOCKING						
FoJR	FINISH TIMING RELAY	PROVIDES TIMING SEQUENCE INITIATED BY FINISH FUNCTION	INTERLOCKING	N02	ROLR	REVERSE OVERLAP RELAY	SELECTS REVERSE OVERLAP IF CLEAR	INTERLOCKING						
FoJPR	FINISH TIMING REPEAT RELAY													
FoJP2R	FINISH TIMING REPEAT (No2) RELAY													
ONR	NORMALISING RELAY	NORMALISES ROUTE	INTERLOCKING	N02 N03	SR	LEVER STICK RELAY	PREVENTS SIGNALS AUTOMATICALLY RELEASING AFTER TRAINS	INTERLOCKING	M01 N13					
TZR	TRACK (SPECIAL) RELAY	AUTO NORMALISING GUARANTEES INTEGRITY OF AUTOMATIC NORMALISING PATH	INTERLOCKING	N03	UCR	ROUTE CHECKING RELAY	CHECKS ALL TRACKS & POINTS DETECTION FOR SIGNAL CONTROLS	INTERLOCKING	M01 N06 P02					
					LSPr	LOW SPEED RELAY	OPERATES LOW SPEED LIGHT	SIGNAL LOCATION	P02					
NLR > SIGNALS RUR	NORMAL LOCK RELAY REVERSE ROUTE RELAY	ROUTE SETTING & DCS SYSTEMS MAIN INTERLOCKING RELAY. INDICATES WHEN ROUTE IS NORMAL. PICKS WHEN ROUTE IS SET. CALLS POINTS TO CORRECT POSITION.	INTERLOCKING	N04 P01	HR	SIGNAL CAUTION RELAY	OPERATES SIGNAL LIGHTS TO CAUTION	SIGNAL LOCATION	A01 N06 B02					
					HDR	SIGNAL MEDIUM RELAY	OPERATES SIGNAL LIGHTS TO MEDIUM	SIGNAL LOCATION	A02					
					DR	SIGNAL CLEAR RELAY	OPERATES SIGNAL LIGHTS TO CLEAR	SIGNAL LOCATION	A02					
					ECR	LAMP CHECKING RELAY	PROVES LAMPS ALIGHT	SIGNAL LOCATION	A01					
IR	ISOLATING RELAY	CUTS POINT MOTOR CIRCUIT TO ENSURE NO MOVEMENT DUE TO LEAKAGE CURRENTS	POINT LOCATION	V01 V02	NGPR	SIGNAL NORMAL REPEAT RELAY	PROVES SIGNAL (& TRAINSTOP) IS NORMAL	INTERLOCKING	N06					
					RGKR	SIGNAL REVERSE INDICATING RELAY	INDICATES SIGNAL CLEARED	INTERLOCKING	N06					
NLR > POINTS RLR	NORMAL LOCK RELAY REVERSE LOCK RELAY POINTS FREE RELAY POINTS TIMER RELAY	MAIN INTERLOCKING RELAY FOR POINTS NORMAL POSITION MAIN INTERLOCKING RELAY FOR POINTS REVERSE POSITION INDICATES IT'S POINTS ARE FREE & WOULD RESPOND TO A CALL PROVIDES ADDITIONAL TIME DELAY BEFORE POINTS BECOME FREE TO COVER BOBBING TRACKS	INTERLOCKING	N05 P03 N05 P03	VNR	TRAIN STOP NORMAL RELAY	TRAIN STOP NORMAL RELAY	SIGNAL LOCATION	A02 A04					
					VRR	TRAIN STOP REVERSE RELAY	TRAIN STOP REVERSE RELAY	SIGNAL LOCATION	A02 A04					
					VCSR	TRAIN STOP CHECKING STICK RELAY	PROVES TRAIN STOP NORMALISING AFTER TRAIN PASSAGE	SIGNAL LOCATION	A02					
					VR	TRAIN STOP RELAY (FOR CONTACTOR)	OPERATES TRAIN STOP	SIGNAL LOCATION	A02					
NLKR	POINTS NORMAL & LOCKED INDICATING RELAY	CHECKS THAT POINTS ARE IN THE NORMAL POSITION & LOCKED	INTERLOCKING	N05 P03	ALSR	APPROACH LOCK STICK RELAY	HOLDS LOCKING IF SIGNAL REPLACED IN IN FACE OF TRAIN	INTERLOCKING	N07 P01					
RLKR	POINTS REVERSE & LOCKED INDICATING RELAY	CHECKS THAT POINTS ARE IN THE REVERSE POSITION & LOCKED	INTERLOCKING	N05 P03	ALSJR	APPROACH LOCK TIMER RELAY	TIMES OUT APPROACH LOCKING	INTERLOCKING	N07 P01					

23-10-91 ISSUE-01					CSTD0202 CIRCUIT NOMENCLATURE					SHT: Z02 CB: 0				
RELAY NAME	MEANING	FUNCTION	LOCATED AT	REFER PAGE	RELAY NAME	MEANING	FUNCTION	LOCATED AT	REFER PAGE					
TRACK LOCKING					ROUTE SETTING NON-VITAL DIAGRAM RELAYS									
(M) AR	MAIN APPROACH RELAY	DROPS WHEN MAIN ASPECT AT SIGNAL IS CLEARED & HELD BY APPROACH STICK	INTERLOCKING	P01	FEKR	BUTTON LIGHT INDICATING (FLASHING) RELAY	CAUSES BUTTON LIGHT TO FLASH WHEN COMMENCE RELAY OPERATED	CONTROL PANEL LOCATION	N51					
USR	ROUTE STICK RELAY	HOLDS LOCKING AFTER TRAIN ENTERS ROUTE	INTERLOCKING	N07	FEK2R	BUTTON LIGHT INDICATING No2 (STEADY) RELAY	CAUSES BUTTON LIGHT TO BECOME STEADY & INITIATES ROUTE LIGHTS WHEN ROUTE SETS		N51					
JR	TIMING RELAY	TRACK TIMING TO RELEASE ROUTE LOCKING OR CONDITIONALLY CLEAR SIGNALS, DEPENDING ON APPLICATION	INTERLOCKING	N07										
JPU	DATA PICK UP UNIT	DETECTS POSITION OF TRAIN ON TRACK CIRCUITS (PRINCIPALLY CSEE TYPE)	SIGNAL LOCATION	A04										
POJR	POWER OFF TIMER RELAY	DISCONNECTS QUICK RELEASE PATH IN APPROACH STICKS & TZR TO RETAIN LOCKING DURING POWER OUTAGES	INTERLOCKING		NVKKR	NORMAL POINTS INDICATION RELAY	OPERATES NORMAL FLASHING LIGHTS IN ROUTE OVER POINTS & LIGHT BEHIND POINT LEVER	CONTROL PANEL LOCATION	N52					
					RVKKR	REVERSE POINTS INDICATION RELAY	OPERATES REVERSE FLASHING LIGHTS IN ROUTE OVER POINTS & LIGHT BEHIND POINT LEVER		N52					
					WZKR	POINTS FREE INDICATION RELAY	OPERATES GREEN FREE LIGHT BEHIND POINT LEVER		N52					
RELEASING SWITCHES					TRACK ROUTE RELAY									
NR	NORMAL RELAY	DETECTS RELEASING SWITCH NORMAL	INTERLOCKING	N12	TUR	TRACK ROUTE RELAY	DROPS OUT IF POINTS TRACK OCCUPIED WITH NO ROUTE SET, TO ILLUMINATE ALL RED LIGHTS OVER POINTS	CONTROL PANEL LOCATION	N51					
NKR	NORMAL INDICATING RELAY	DETECTS RELEASING SWITCH NORMAL (FOR DIAGRAM)	INTERLOCKING	N12										
SINGLE LINE & BI-DIRECTIONAL					ROUTE RELAY									
YR	DISENGAGING RELAY	CALLS SECTION CONTROL WHEN SETTING ROUTE INTO SINGLE LINE SECTION	INTERLOCKING	C01	U2R	No2 ROUTE RELAY	WHEN ROUTE SET, ROUTE RELAY OPERATES WHITE ROUTE LIGHTS USED IF MORE THAN 1 (ONE) TRACK CIRCUIT IN ROUTE (IF ROUTE IS NORMALISED AFTER TRAIN TAKES ROUTE, ROUTE RELAYS HOLD ROUTE LIGHTS IN FRONT OF TRAIN)	CONTROL PANEL LOCATION	N51					
JDSR	DOWN DIRECTION STICK RELAY	PROVES TRAIN TRAVELLING IN DOWN DIRECTION	INTERLOCKING, LEVEL CROSSING & SIGNAL LOCATION	C01 X03	U2KR	No2 ROUTE INDICATING RELAY ROUTE INDICATING RELAY No2	FIRST REPEAT OF U2R SECOND REPEAT OF UR	CONTROL PANEL LOCATION	N51					
UDSR	UP DIRECTION STICK RELAY	PROVES TRAIN TRAVELLING IN UP DIRECTION												
JSCR	DOWN SECTION CONTROL RELAY	CHECKS SECTION CLEAR FOR DOWN TRAIN	INTERLOCKING	C01 B01	UK2R	ROUTE INDICATING RELAY No2	FIRST REPEAT OF U2R SECOND REPEAT OF UR	CONTROL PANEL LOCATION	N51					
USCR	UP SECTION CONTROL RELAY	CHECKS SECTION CLEAR FOR UP TRAIN	INTERLOCKING	C01 B02										
JSCJR	DOWN SECTION CONTROL TIMER RELAY	CHECKS SECTION CLEAR FOR REQUIRED TIME	INTERLOCKING	C01	TKR	TRACK INDICATING RELAY	TRACK CIRCUIT INDICATING RELAY FOR DIAGRAM	CONTROL PANEL LOCATION	N52					
USCJR	UP SECTION CONTROL TIMER RELAY	CHECKS SECTION CLEAR FOR REQUIRED TIME	INTERLOCKING	C01	JKR	TIMER INDICATING RELAY	TIME RELEASE LIGHT FOR DIAGRAM	CONTROL PANEL LOCATION	N54					
SCR	SECTION CONTROL RELAY	CHECKS SECTION		B02	NGKKR	SIGNAL NORMAL INDICATING RELAY	DIAGRAM INDICATION FOR SIGNAL REPEATER	CONTROL PANEL LOCATION	N52					
JGMR	DOWN SIGNAL NORMAL RELAY	PROVES DOWN DIRECTION SIGNALS NORMAL		B01	RGKKR	SIGNAL REVERSE INDICATING RELAY								
UGMR	UP SIGNAL NORMAL RELAY	PROVES UP DIRECTION SIGNALS NORMAL		B02										
LEVEL CROSSING					APPROACH LOCK STICK INDICATING RELAY									
XR	CROSSING CONTROL	OPERATES LEVEL CROSSING EQUIPMENT	CROSSING LOCATION	X01 X03	ALSKR	APPROACH LOCK STICK INDICATING RELAY	PROVIDES FLASHING RED SIGNAL REPEATER IF SIGNAL IS AT STOP BUT APPROACH LOCKED	CONTROL PANEL LOCATION	N52					
JDSR	DIRECTION STICK REPEAT RELAY	ENSURES CROSSING FAILS SAFE IF DIRECTION STICKS FAIL TO DROP AWAY AFTER TRAIN	DTS SECTION LEVEL CROSSING LOCATION	X04	GZKR	SIGNAL SPECIAL INDICATING RELAY	FLASHES FIRST WHITE ROUTE LIGHT IF LEVER STICK OR RUR IS DOWN	CONTROL PANEL LOCATION	N52					
JJSR	DIRECTION STICK TIMER RELAY													
MECHANICAL INTERLOCKING					ROUTE SETTING - NON VITAL CONTROL RELAYS									
LNPR	LEVER NORMAL REPEAT RELAY	REPEATS LEVER POSITION	INTERLOCKING	M03	(NDR) (RR) (CR)	NORMAL RELAY REVERSE RELAY CENTRE RELAY	REPEATS POINT LEVER POSITION	INTERLOCKING	N02, N03, P03					
LRPR	LEVER REVERSE REPEAT RELAY		INTERLOCKING	M03	RSR	ROUTE SETTING RELAY	SETS ROUTE WHEN BUTTON PRESSED	INTERLOCKING	P01					
NLR	NORMAL LOCK RELAY	PROVES LEVER NORMAL & LOCKED	INTERLOCKING	M03	UNR	NORMAL ROUTE RELAY	CANCELLS ROUTE WHEN BUTTON PRESSED	INTERLOCKING	P01					
RLR	REVERSE LOCK RELAY	PROVES LEVER REVERSE & LOCKED	INTERLOCKING	M03	NZR	NORMAL SETTING RELAY	SETS POINTS NORMAL WHEN ROUTE CANCELLED	INTERLOCKING	P03					
					RZR	REVERSE SETTING RELAY	SETS POINTS REVERSE WHEN ROUTE CANCELLED	INTERLOCKING	P03					

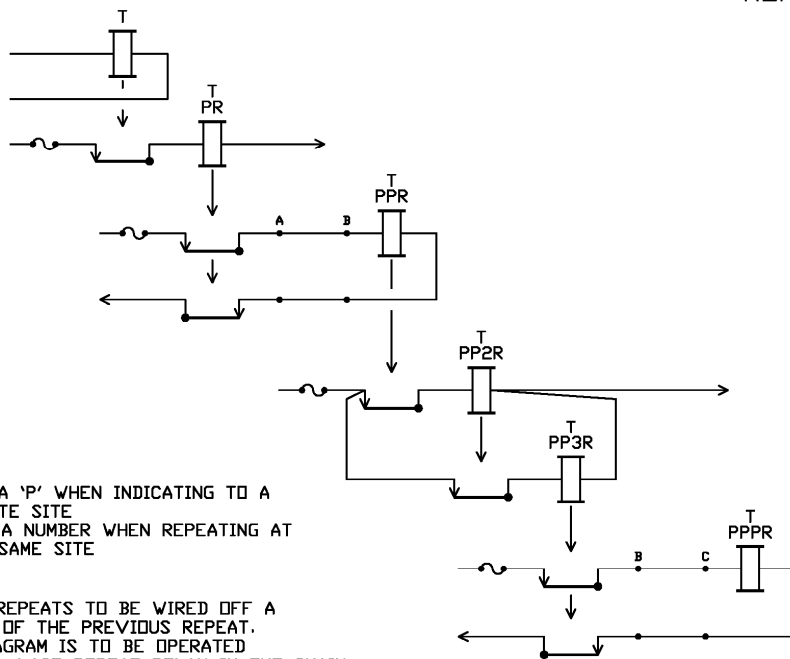
23-10-91 ISSUE-01 CSTD0203 CIRCUIT NOMENCLATURE SHT: Z03 CB: 0

STANDARD NAMING OF REPEAT & INDICATING RELAYS

TRACK REPEAT RELAYS



INDICATING RELAYS



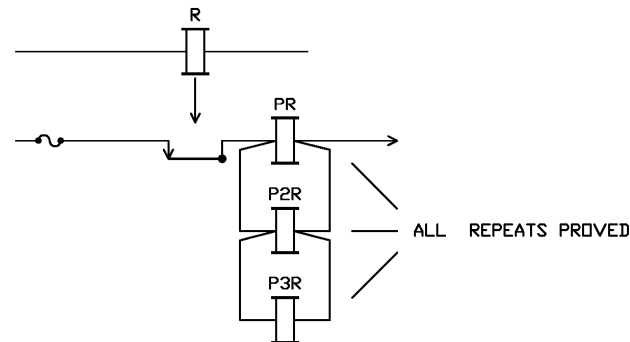
RULES

1. ADD A 'P' WHEN INDICATING TO A REMOTE SITE
2. ADD A NUMBER WHEN REPEATING AT THE SAME SITE

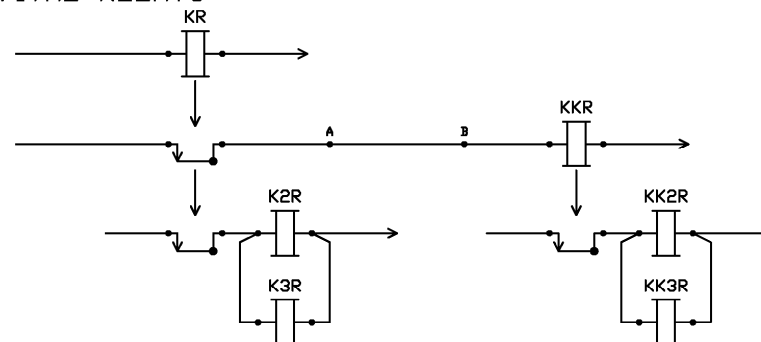
NOTE

TRACK REPEATS TO BE WIRED OFF A FINGER OF THE PREVIOUS REPEAT. THE DIAGRAM IS TO BE OPERATED BY THE LAST REPEAT RELAY IN THE CHAIN

REPEAT RELAYS OF PROVED FUNCTIONS



NON-VITAL RELAYS



RULES

1. ADD A 'K' WHEN INDICATING TO REMOTE SITE
2. ADD A NUMBER WHEN REPEATING AT THE SAME SITE