

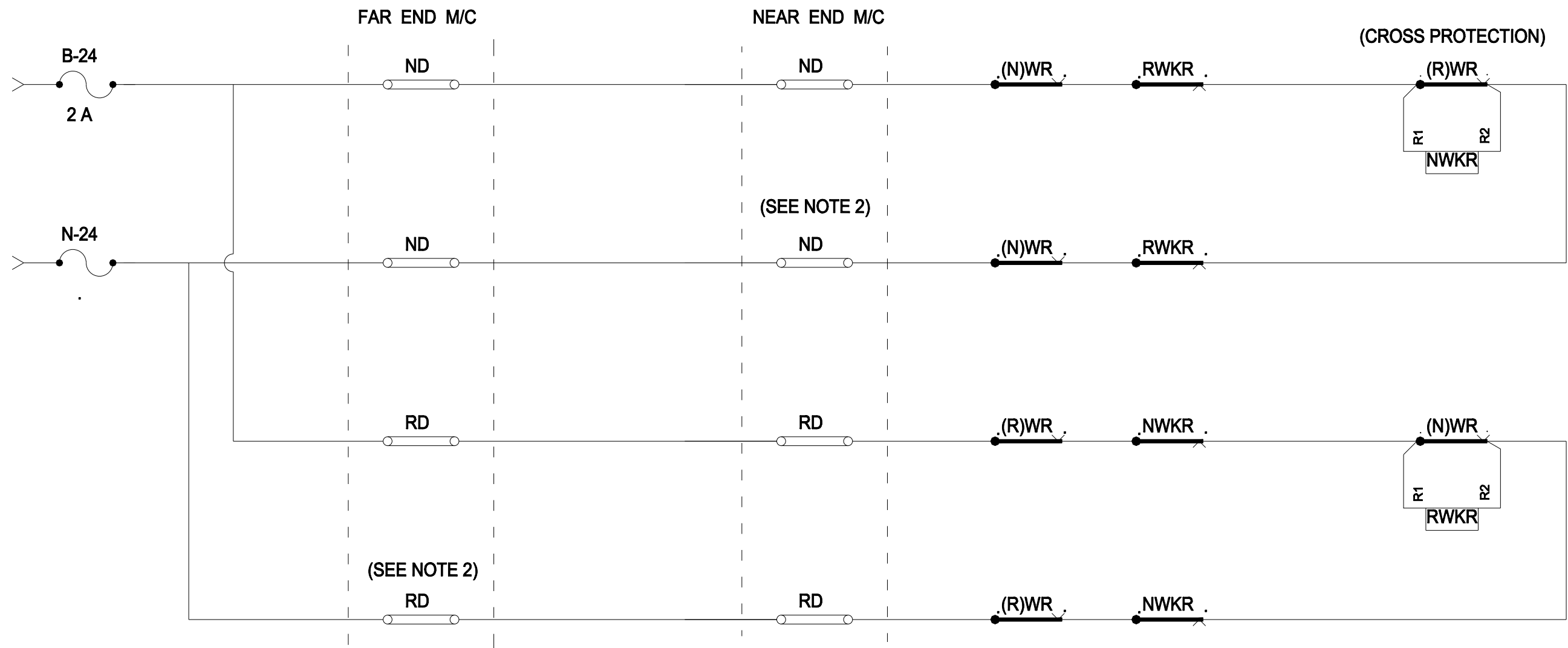
(H) POINT DETECTION RELAY (NWKR/RWKR) CIRCUIT

- These relays pick up proving the live detection at site, i.e., NWKR will pick up with Normal detection make contacts and RWKR will pick up with Reverse detection make contacts.

- The circuit for NWKR for the given yard is as following. The circuit for RWKR is also to be prepared in similar lines to NWKR.

POINT CIRCUITS

(K) POINT DETECTION EXTERNAL CIRCUIT -



NOTE :- 1) LATCH RELAY CONTACT CONFIGURATION SHALL BE 11F - 4 B ONLY

2) IF SERIES OPERATION OF POINT IS PROVIDED THEN ONLY SINGLE CUTTING OF DETECTION CONTACT FOR 1ST OPERATED PT. MACHINE WILL BE AVAILABLE. BUT DETECTION CONTACT OF LAST OPERATED PT. MACHINE WILL BE DOUBLE CUTTING IN DETECTION CKT.IT MAY BE NOTED THAT 2ND MACHINE OPEATED THROUGH DETECTION CONTACT OF 1ST POINT MACHINE ONLY. FOR PARALLEL OPERATION OF POINTS DELAYS IN POINT OPERATION AND POWER SUPPLY NEED TO DESIGN SUITABLY.

NOTE :-
1) THESE CIRCUITS APPLICABLE ONLY TO ELECTRONIC INTERLOCKING INSTALLATION AND SHALL NOT BE USED FOR METAL TO CARBON INSTALLATION.

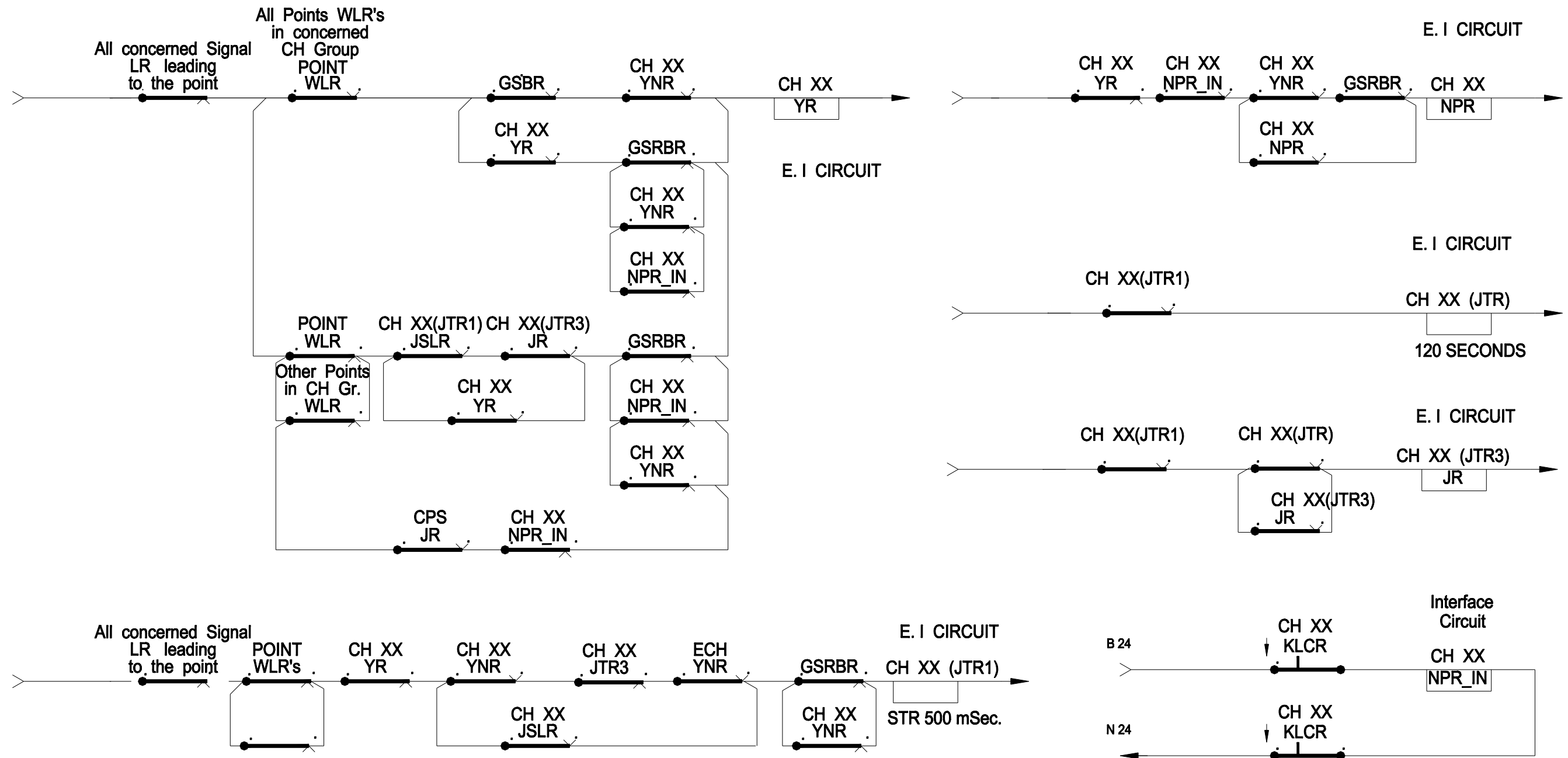
					Dir./Sig/ RDSO	ALOK KATIYAR	POINT DETECTION CIRCUIT POINT CIRCUITS	SHEET 26/49
			DY. CSTE/ P & D SE.RLY	S. MAJUMDAR	DY. CSTE/ P & D W.RLY	SHYAM VERMA		
			SSTE/D NC RLY	S. YADAV	SSTE/C/D SC RLY	O.S.SASTRY	RDSO LUCKNOW	
	REVISIONS		A			DRG. NO.	RDSO/	

III. CIRCUITS RELATED TO OTHER CONTROLS :

1. CRANK HANDLE CONTROLS :

- Crank Handle is provided to enable operation of the point in Normal or Reverse, manually, in case the point is failed for operation from the panel electrically.
- Generally, each cross over is provided with one Crank Handle. In case of major yards, the Crank Handles of different points can be grouped to economise the number of Crank Handles. If the Crank Handle of a particular group is taken out, all points belonging to that group are treated as failed. So, while grouping the Crank Handles, care should be taken to allow maximum yard flexibility, if the Crank Handle of a particular group is taken out.
- The Crank Handle is chained / welded to a key which is locked inside a EKT.
- The Crank Handle should be interlocked with a signal such that -
 - (a) for taking out the Crank Handle, all concerned signals must be proved at 'ON'.
 - (b) After the Crank Handle is taken out, no signal requiring the points controlled by the Crank Handle can be taken 'OFF'.
- The Circuit for Crank Handle interlocking is as following :

CRANK HANDLE CONTROLS



NOTE :- Emergency crank Handle Release Operation shall be given with Special Button ECHYN and shall be provided with 120 seconds time delay. Flashing indication when timer in progress) shall be provided below ECH button. This operation shall be counted by special counter.

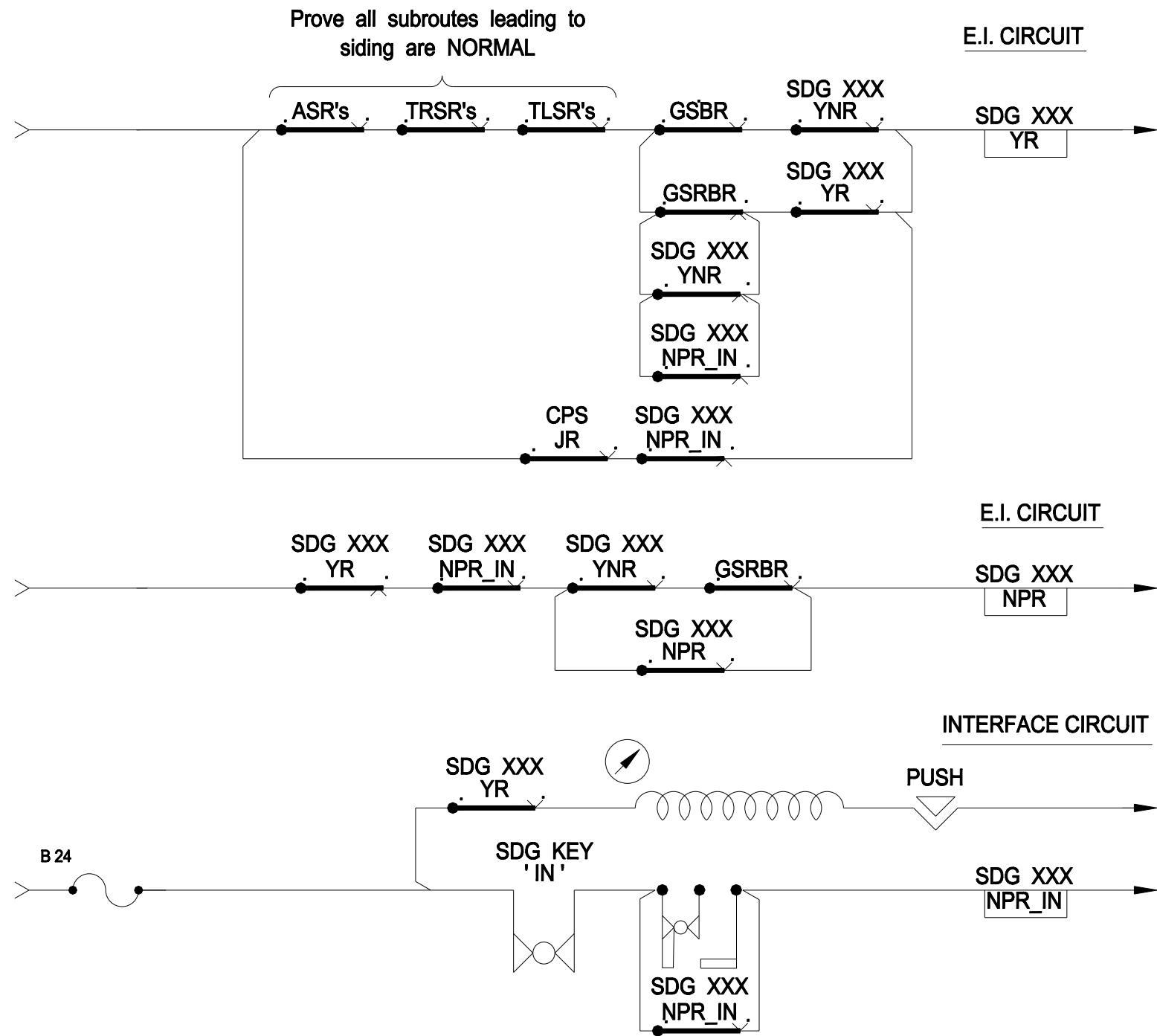
NOTE :-
1) THESE CIRCUITS APPLICABLE ONLY TO ELECTRONIC INTERLOCKING INSTALLATION AND SHALL NOT BE USED FOR METAL TO CARBON INSTALLATION.

				Dir./Sig./RDSO	ALOK KATIYAR	CRANK HANDLE CONTROLS		SHEET 27/49
				DY. CSTE/ P & D SE.RLY	S. MAJUMDAR	DY. CSTE/ P & D W.RLY	SHYAM VERMA	
				SSTE/D NC RLY	S. YADAV	SSTE/C/D SC RLY	O.S.SASTRY	
REVISIONS				A		DRG. NO.	RDSO/	

2. SIDING CONTROL CIRCUITS :

- Siding points of low frequency operation are generally provided with locally operated points and locked by a key. Such points, as a matter of policy, to be avoided on the passenger lines.
- The key intended to unlock the siding points is kept locked in an EKT meant for it.
- The key controlling the siding points shall be interlocked in such a way that -
 - (a) for taking out the siding control key, all concerned signals must be proved at 'ON'.
 - (b) After the key is taken out, no signal requiring the siding points can be taken 'OFF'.
- The Circuit for siding control is as following :

SIDING CONTROL



NOTE :- External circuit with EKT or can be with KLCR then circuit of CH shall be followed

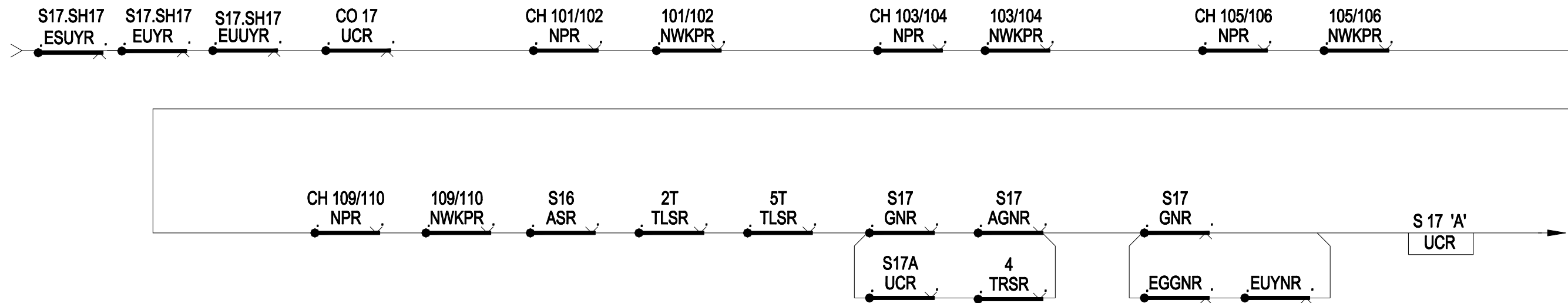
NOTE :-
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				Dir./Sig/ RDSO	ALOK KATIYAR	SIDING CONTROL	SHEET. 28 / 49
				DY. CSTE/ P & D W.RLY	SHYAM VERMA	RDSO LUCKNOW	
				ESTE/ SC RLY	O.S.SATRY	DRG. NO.	RDSO/
				B	A	REVISIONS	

ILLUMINATED 'A' MARKER CIRCUIT :

- Illuminated 'A' marker has to be provided below a semi-automatic signal.
- In conventional relay interlocking circuits, the circuit for this illuminated 'A' marker was very simple. Debate has been done on this and it is opined that –
 - (i) the circuit should be full-fledged for illuminated 'A' marker also like a main signal and
 - (ii) a latch relay is required for illuminated 'A' marker to restore the condition of the same, once the EI fails and restores.
- The circuit for Illuminated 'A' marker should be as follows :

'A' SIGN UCR CIRCUIT

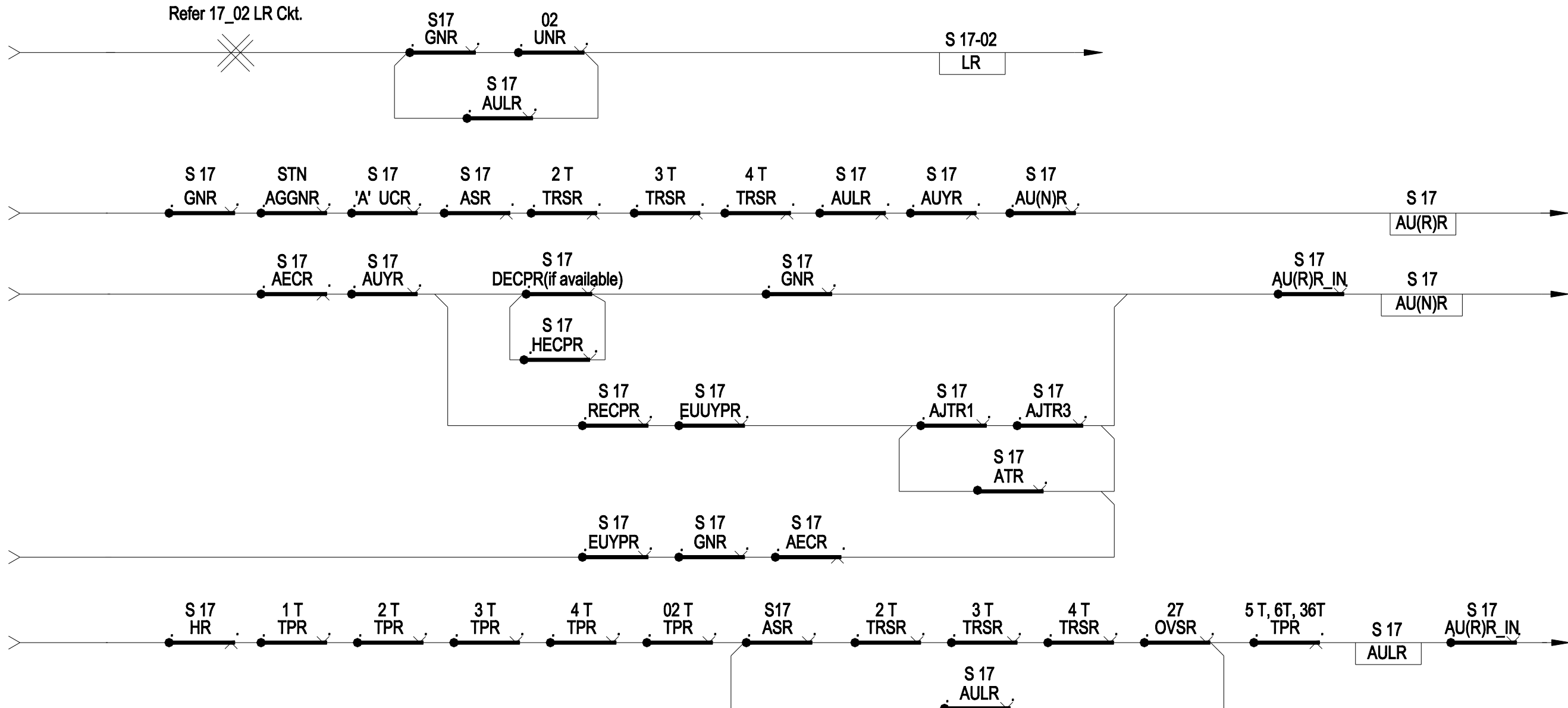


- NOTE : (1) S 17 'A' Sign UCR Back contact to be proved in S17 ASR circuit
- (2) S 17 ASR will remain the same for Main Signal, Calling On Signal & 'A' sign.
- (3) S 17 'A' UCR Back contact to be proved in S17 'CO' UCR circuit.

NOTE :-
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					Dir./Sig/ RDSO	ALOK KATIYAR	'A' UCR CIRCUIT SEMI AUTOMATIC SIGNAL CKT.	SHEET 29/49
			DY. CSTE/ P & D SE.RLY	S. MAJUMDAR	DY. CSTE/ P & D W.RLY	SHYAM VERMA		
			SSTE/D NC RLY	S. YADAV	SSTE/C/D SC RLY	O.S.SASTRY	RDSO LUCKNOW	
	REVISIONS		A		DRG. NO.	RDSO/		

'A' SIGN AU(R)R, AU(N)R, AULR CIRCUITS



E. I. OUTPUTS ARE

INTERNAL

S 17 AU(R)R ▲
S 17 AU(N)R ▲
S 17 'A' HR ▲

E. I. INPUTS ARE

S 17 AECR ↑
S 17 AU(N)R_IN ↑
S 17 AU(R)R_IN ↑

O/P RELAYS

- ➔ S 17 AURR
- ➔ S 17 AUNR
- ➔ S 17 'A' HR

← S 17 AECR ↑
 ← S 17 AU(N)R
 ← S 17 AU(R)R

NOTE :-

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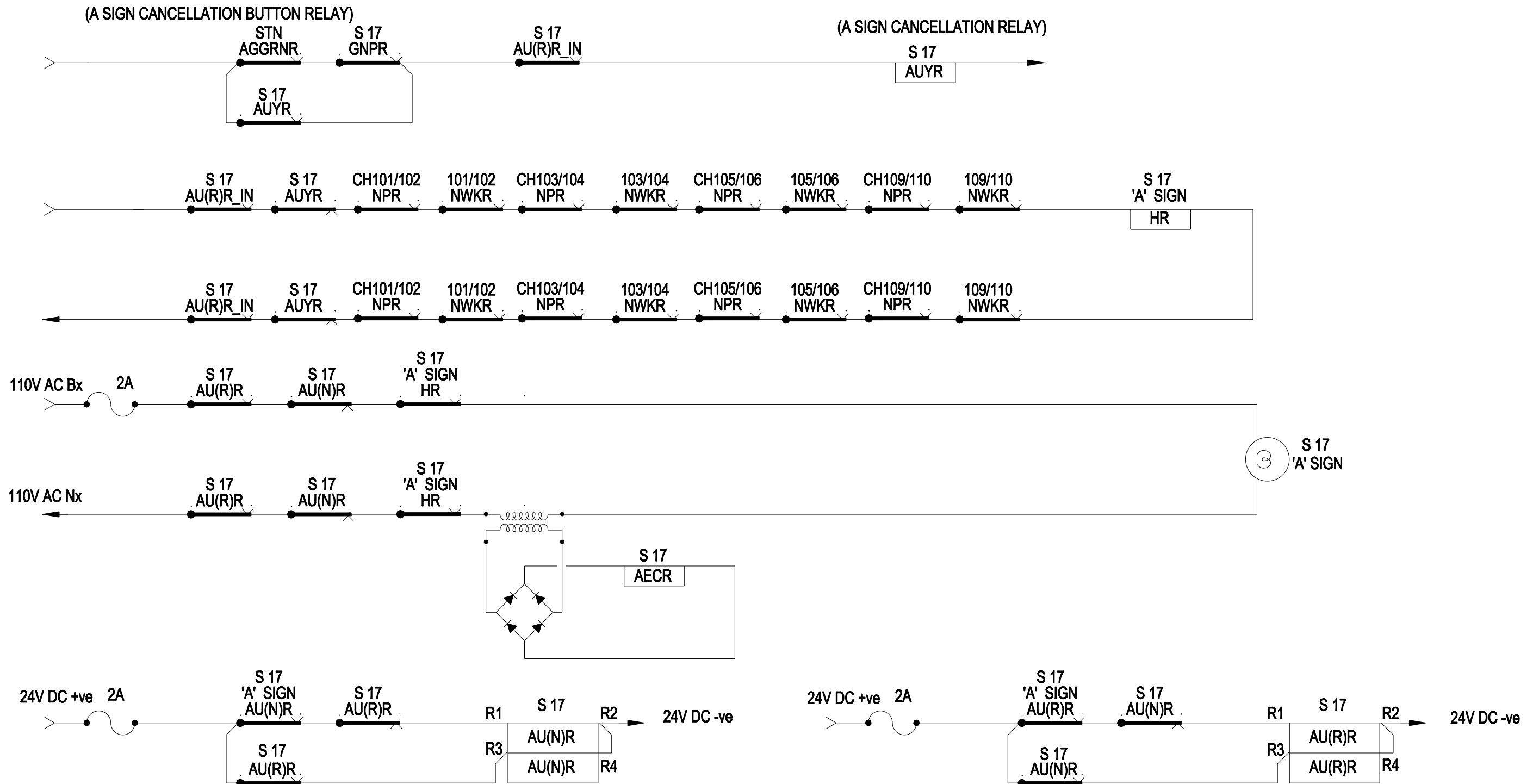
				Dir./Sig/ RDSO	ALOK KATIYAR	AULR CIRCUIT SEMI AUTOMATIC SIGNAL CKT.	SHEET 30/49
		DY. CSTE/ P & D SE.RLY	S. MAJUMDAR	DY. CSTE/ P & D W.RLY	SHYAM VERMA		
		SSTE/D NC RLY	S. YADAV	SSTE/C/D SC RLY	O.S.SASTRY		
REVISIONS		A		DRG. NO.		RDSO/	

Note :

- ❖ S17 'A' UCR back contact to be provided in S17 ASR circuit.
- ❖ S17 ASR will be the same for main signal, calling on signal and illuminated 'A' marker.
- ❖ S17 'A' UCR back contact to be provided in S17 COUCR circuit.
- ❖ The details of EI inputs and outputs are as following :

	INTERNAL BIT	OUTPUT
EI OUTPUTS	S17 'A' URR	S17 'A' URR
	S17 'A' UNR	S17 'A' UNR
	S17 'A' HR	S17 'A' HR
EI INPUTS	S17 'A' ECR	S17 'A' ECR
	S17 'A' U(N)R_IN	S17 'A' AU(N)R
	S17 'A' U(R)R_IN	S17 'A' AU(R)R

'A' HR & LIGHTING CKT & CANCELLATION CKT



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				Dir./Sig/ RDSO	ALOK KATIYAR	AECR CIRCUIT SEMI AUTOMATIC SIGNAL CKT.	SHEET 31/49
		DY. CSTE/ P & D SE.RLY	S. MAJUMDAR	DY. CSTE/ P & D W.RLY	SHYAM VERMA		
		SSTE/D NC RLY	S. YADAV	SSTE/C/D SC RLY	O.S.SASTRY		
REVISIONS		A		DRG. NO.	RDSO/		

**(D) POINT NORMAL/REVERSE CONTROLLING (OPERATION)
OUTPUT RELAY (NWR/ RWR) CIRCUIT**

- This relay in the final output relay from the EI and picks up the concerned latch relay (NWR-latch or RWR-latch).
- This circuit is very similar to the Z₁NWR circuit except that it picks up after Z₁NWR as the latter's front contact is proved in this circuit.
- The circuit for NWR for the given yard is as following. The circuit for RWR is also to be prepared in similar lines to NWR.

POINT LATCH RELAY CIRCUIT :

- Hitherto there is no latch relay for points in many Railways.
- Some Railways like ER and NCR are providing them with an idea that the last operation by the operator should be registered for an easy diagnosis after any incidence.
- The necessity of these relays was discussed at length under the environment of data loggers. Some Members have not agreed to for this arrangement, finally Convenor has decided to provide the same.
- The circuit for the Point latch relays is in the following page:

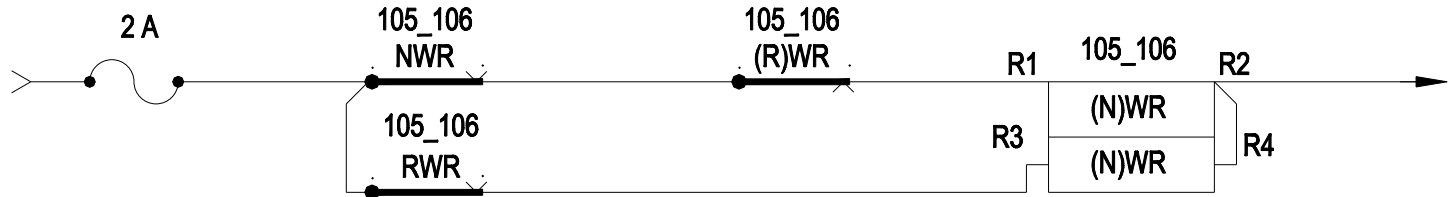
Note : The details of EI inputs and outputs are as following :

	INTERNAL BIT	OUTPUT
EI OUTPUTS	105-106 NWR	105-106 NWR
	105-106 RWR	105-106 RWR
	105-106 NWCR	105-106 NWCR
	105-106 RWCR	105-106 RWCR
	105-106 NWCR ₁	105-106 NWCR ₁
	105-106 RWCR ₁	105-106 RWCR ₁
EI INPUTS	105-106 NWKR	105-106 NWKR

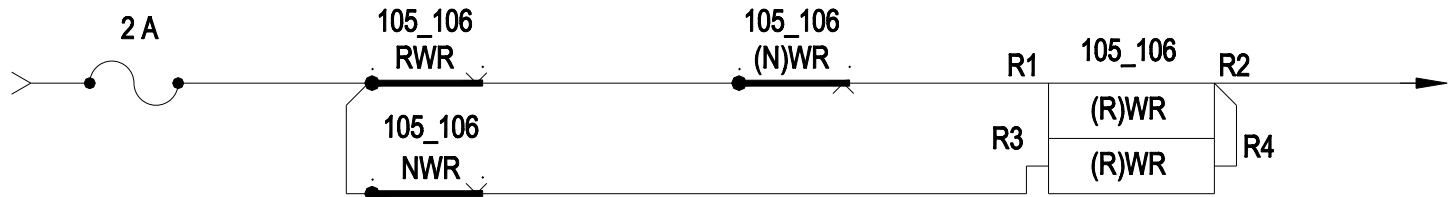
	105-106 RWKR	105-106 RWKR
	105-106 NWR_IN	105-106 (N)WR
	105-106 RWR_IN	105-106 (R)WR

- ❖ 110V DC point operation supply is extended through (NWCR Up + NWCR₁ Up) or (RWCR Up + RWCR₁ Up)

(I) POINT LATCH RELAY CIRCUITS-



PL ALSO REFER SHEET No. 14



(J) E. I. INPUT & OUTPUT REQUIREMENT -

INTERNAL BITS		EXTERNAL RELAYS	
E. I. OUTPUTS ARE	105_106 NWR ↑	→	105_106 NWR
	105_106 RWR ↑	→	105_106 RWR
	105_106 NWCR ↑	→	105_106 NWCR
	105_106 RWCR ↑	→	105_106 RWCR
	105_106 NWCR1 ↑	→	105_106 NWCR1
	105_106 RWCR1 ↑	→	105_106 RWCR1

INTERNAL BITS		EXTERNAL RELAYS	
E. I. INPUTS ARE	105_106 NWKR_IN ←	←	105_106 NWKR ↑
	105_106 RWKR_IN ←	←	105_106 RWKR ↑
	105_106 NWR_IN ←	←	105_106 (N)WR ↑
	105_106 RWR_IN ←	←	105_106 (R)WR ↑

NOTE - 110 V DC POINT OPERATION SUPPLY IS EXTENDED THRO NWCR↑ + NWCR1↑ OR RWCR↑ + RWCR1↑ ONLY

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					Dir./Sig./ RDSO	ALOK KATIYAR	POINT LATCH RELAY CIRCUIT	SHEET 32/49
			DY. CSTE/ P & D SE.RLY	S. MAJUMDAR	DY. CSTE/ P & D W.RLY	SHYAM VERMA	POINT CIRCUITS	
			SSTE/D NC RLY	S. YADAV	SSTE/C/D SC RLY	O.S.SASTRY	RDSO LUCKNOW	
	REVISIONS		A		DRG. NO.	RDSO/		

CALLING ON LR CIRCUIT :

- All points in Route and Isolation along with Crank Handle proved set to required position or free to operate and opposite control command not initiated. (Similar to main signal LR)

- Opposite direction signal not set (similar to main signal LR)

- Opposite direction signal not initiated (similar to main signal LR)

But if criss-cross movements through crossovers in overlap portion is allowed, then opposite sub-route in overlap portion will be bypassed by NWKR / RWKR suitably.
Eg.

- In same direction, other route LRs Dn :

- Opposite direction overlap normal :

Same as main signal ... OVSRs Up

- Previous shunt movement in the same direction has been completed by proving SH TRSR or SH TLSR as the case may be.

- Shunt signal movements in rear, leading to main/calling on movements ahead shall be locked by proving SH LR Dn and SH TRSR/TLSR Up (last sub route in rear of Signal)

- Calling on signal shall prove calling on track down.

- Calling on signal LR shall prove main signal LR Dn for the same route. This will require pressing of GN + EGGN button together just before initiating of calling on signal.

This will drop the main signal LR which has picked up earlier for main signal operation, otherwise main signal route can get set (as main signal LR is already Up) after train movement on calling on signal, which is not a desirable condition.

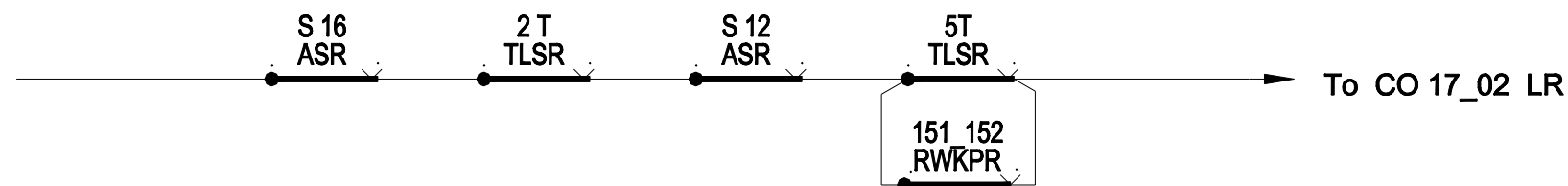
- COLR shall also prove GNR Up + COGGNR Up (COGGNR is stick through main signal button) + UNR Up and all these contacts bypassed by COLR Up.

- The circuit for COLR circuit is as following :

CALLING - ON L R CIRCUIT

CO 17 - 02 LR -

- 1) All points in route & Isolation along with crank handle proved set to required position or free to operate and opposite control command not initiated (Similar to Main Signal LR) (Refer 17_02 LR Ckt.)
- 2) Opposite direction Signal not set by proving concerned ASR/TRSR/TLSR up . (Similar to Main Signal LR, Refer 17_02LR Ckt). But if criss-cross movements through cross-overs in overlap porition is allowed then opposite sub route in overlap portion shall be bypassed by NWKPR/RWKPR suitably. E. g. for CO 17-02 LR to prove



- 3) Opposite direction Signal not initiated by proving concerned LR's down. (Similar to Main Signal LR, Refer 17_02LR Ckt.)
- 4) In Same Direction other route LR's ↓
S 17_02 LR ↓ , SH 17_02 LR ↓ , SH 19 ASR ↑ , SH 4T_TRSR ↑ , SH 19_02 LR ↓ SH 2T TRSR ↑
- 5) Opposite Direction OVERLAP Normal -
To be proved similar to Main Signal i.e. by proving 26 OVSR ↑ , 16 OVSR ↑

NOTE :-

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					Dir./Sig/ RDSO	ALOK KATIYAR	CALLING ON L R CIRCUIT	SHEET 33/49
			DY. CSTE/ P & D SE.RLY	S. MAJUMDAR	DY. CSTE/ P & D W.RLY	SHYAM VERMA		
			SSTE/D NC RLY	S. YADAV	SSTE/C/D SC RLY	O.S.SASTRY	RDSO LUCKNOW	
	REVISIONS		A		DRG. NO.	RDSO/		

CALLING - ON L R CIRCUIT

6) Previous shunt movements in the same direction have been completed by proving SH_TRSR or SH_TLSR as the case may be



7) Shunt Signal movements in rear, leading to Main / Calling-On movements ahead shall be locked by proving SH_04 LR ↓ and SH MNT_TRSR ↑ (Last subroute in rear of S 17)

8) Calling-On Signal LR shall prove Calling-On track down. 04T_TPR ↓

9) Calling-On Signal LR shall also prove GNR ↑ + CO GGNR ↑ (CO GGNR is stick thro main signal button) + UNR ↑ and bypassed by CO LR ↑

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					Dir./Sig/ RDSO	ALOK KATIYAR	CALLING ON L R CIRCUIT	SHEET 34/49
			DY. CSTE/ P & D SE.RLY	S. MAJUMDAR	DY. CSTE/ P & D W.RLY	SHYAM VERMA		
			SSTE/D NC RLY	S. YADAV	SSTE/C/D SC RLY	O.S.SASTRY	RDSO LUCKNOW	
	REVISIONS		A		DRG. NO.	RDSO/		

CALLING ON UCR CIRCUIT :

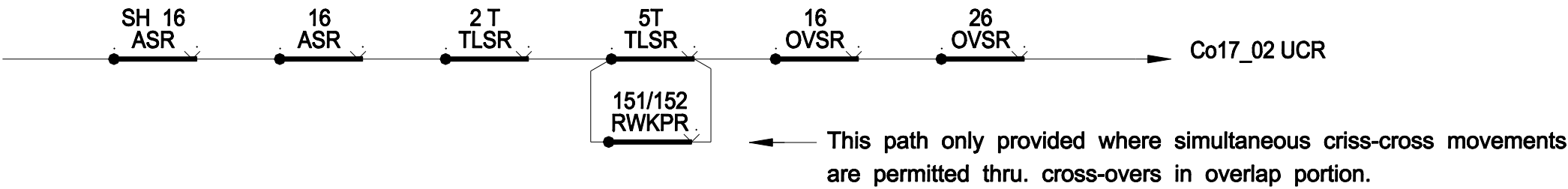
- All points NWKR/RWKR Up in route and isolation along with CHNPR Up (Key in proving relay).
- Concerned calling on LR Up.
- Opposite direction – No route/overlap is set. i.e., concerned ASR/TLSR/TRSR Up.
- Previously initiated and set shunt route in the same direction are normal i.e., concerned TRSRs/TLSRs Up.
- Main signal UCR Dn shall also be proved and COLR Up, COTPR Dn.
- Approach lock timer relays are Dn. Calling on timer relay Dn by passed by COUCR front contact.
- Conditional locking of point for isolation purpose to isolate shunt movements. Same as main signal UCR circuit.
- The circuit for calling on UCR is as following :

CALLING - ON U C R CIRCUIT

CO 17 - 02 UCR -

- 1) All points NWKPR/RWKPR's in route & Isolation along with CHNPR (Key in proving)
- 2) Concerned Calling-On LR
- 3) Opposite direction - No Route / Overlap set

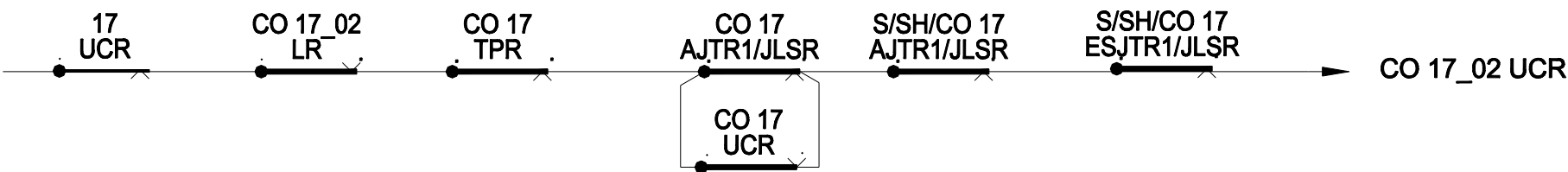
E. g. for CO 17-02 UCR to prove



- 4) Previously initiated and set shunt route in the same direction are normal



- 5) Main Signal UCR shall also be proved and CO LR, CO TPR
- 6) Approach lock timer relays (120 Seconds time delay) are down. Calling-on timer relays (60 Seconds time delay) are down bypassed by CO UCR



- 7) Conditional locking of point for isolation purpose to isolate Shunt movements is same as Main Signal UCR circuit. (Refer S17-02 UCR ckt)

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				Dir./Sig/ RDSO	ALOK KATIYAR	CALLING ON U C R CIRCUIT	SHEET 35/49
				DY. CSTE/ P & D SE.RLY	S. MAJUMDAR		
				SSTE/D NC RLY	S. YADAV	RDSO LUCKNOW	
REVISIONS				A	DRG. NO.	RDSO/	

APPROACH LOCK TIMER RELAY CIRCUIT :

- Concerned main, shunt and calling on UCR Dn.
- Concerned 'Off' aspect controlling relays Dn.
- Concerned 'Off' ECRs including UECRs relays Dn.
- All back lock track circuits are picked up.
- (i) For main signal cancellation, main RECR Up shall be proved in Main ASR circuit and
(ii) for shunt signal cancellation, SH RECR need not be proved in SH ASR circuit.
- (i) For Main and calling on cancellation path, main ASR Dn + (EUUYNR Up + Main GNR Up + App.Track Dn + AJTR₃ Dn) in parallel with (AJTR₁ Up for stick path) in parallel with (CPSJR Up + App. Track ATPR Up).
(ii) For Shunt signal cancellation path, shunt ASR Dn + (EUUYNR Up + shunt GNR Up + App.Track Dn + AJTR₃ Dn) in parallel with (AJTR₁ Up for stick path) in parallel with (CPSJR Up + App. Track ATPR Up).
- To initiate timer for full route cancellation – 3 button operation shall be a must i.e., concerned GN pressed + EUUYN pressed and keeping GN pressed, release EUUYN, press concerned UN. This is ensured through EUUYR Up in AJTR₁ path.
- Full route shall cancelled, after a time delay of 120 Sec. if app. Track occupied, automatically without the need of any action as part of operator.
- The circuit for Approach lock timer relay is as following :

APPROACH LOCK TIMER RELAY CIRCUIT

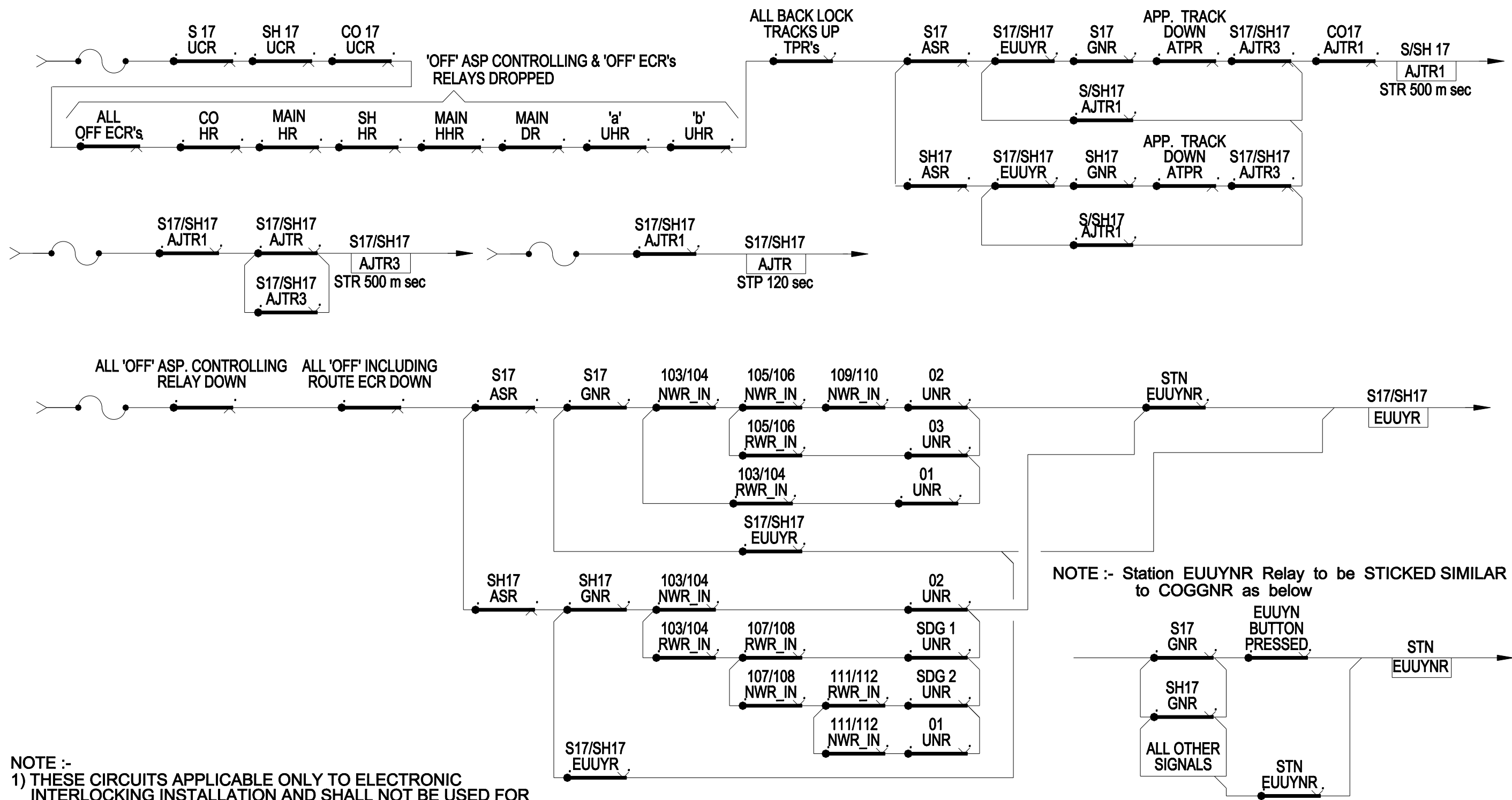
- 1) Concerned Main, Shunt and Calling-On UCR ↓
- 2) Concerned 'OFF' aspect controlling relays down.
- 3) Concerned 'OFF' ECR's including UECR's relays down
- 4) All backlock track circuits are picked up
- 5) (i) For Main Signal cancellation, Main RECR ↑ shall be proved in Main ASR circuit in TORR path.
(ii) For Shunt Signal cancellation, Shunt RECR ↑ need not be proved in Shunt ASR circuit.
- 6) (i) For Main & Calling-On cancellation path Main ASR ↓ + (EUUYR ↑ + Main GNR ↑ + App. Track ↓ + S17/SH17 AJTR3 ↓)
in parallel with (S17/SH17 AJTR1 ↑ for stickpath)

(ii) For Shunt Signal cancellation path Shunt ASR ↓ + (EUUYR ↑ + Shunt GNR ↑ + App. Track ↓ + S17/SH17 AJTR3 ↓)
in parallel with (S17/SH17 AJTR1 ↑ for stickpath)
- 7) To initiate timer for full route cancellation - 3 Button cancellation shall be a must i. e Concerned GN pressed +
EUUYN pressed and keeeping GN pressed, release EUUYN + concerned UN pressed. This is ensured thru EUUYR ↑ in AJTR1 circuit.
- 8) Full route shall be cancelled, after a time delay of 120 sec if app. track occupied, automatic without the need of any action on part of operator.
i.e. no need for second time button pressing.

NOTE :-
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INTERLOCKING INSTALLATION AND SHALL NOT BE USED FOR
METAL TO CARBON INSTALLATION.

					Dir./Sig/ RDSO	ALOK KATIYAR	APPROACH LOCK TIMER RELAY CIRCUIT	SHEET 36/49
			DY. CSTE/ P & D SE.RLY	S. MAJUMDAR	DY. CSTE/ P & D W.RLY	SHYAM VERMA		
			SSTE/D NC RLY	S. YADAV	SSTE/C/D SC RLY	O.S.SASTRY	RDSO LUCKNOW	
	REVISIONS		A		DRG. NO.	RDSO/		

APPROACH LOCK TIMER RELAY CIRCUIT



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				Dir./Sig/ RDSO		APPROACH LOCK TIMER RELAY CIRCUIT		SHEET 37/49
				DY. CSTE/ P & D SE.RLY	S. MAJUMDAR	DY. CSTE/ P & D W.RLY	ALOK KATIYAR SHYAM VERMA	
				SSTE/D NC RLY	S. YADAV	SSTE/C/D SC RLY	O.S.SASTRY	
REVISIONS				A	DRG. NO.		RDSO/	

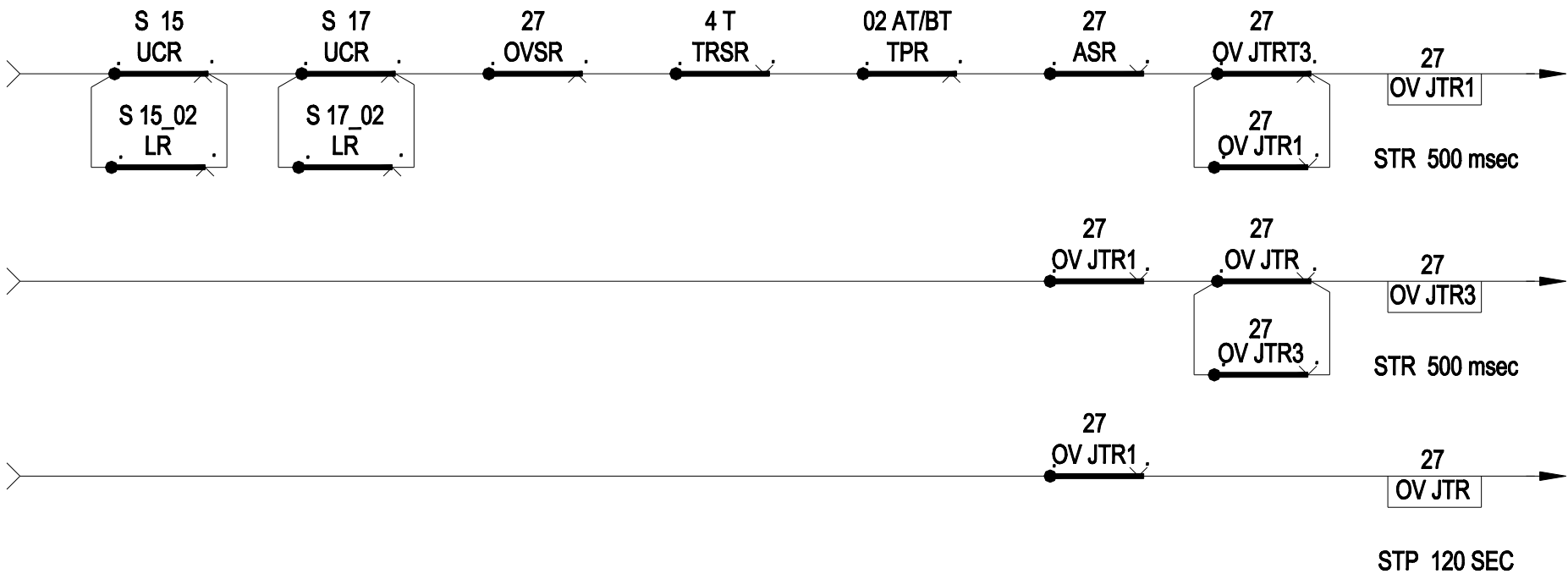
OV – JTR₁ CIRCUIT :

- Concerned UCR Dn and concerned route LR Dn proved in parallel for each reception signal towards due overlap in series.
- Overlap set by OVSR Dn.
- Last sub route 'Normal' by TRSR Dn or TLSR Up.
- Berthing track occupied.
- Ahead main signal route not set for run through card like OV JTR₁
- The circuit for OV JTR₁ is as following :

OV - JTR1 CIRCUIT

- 1) Concerned UCR ↓ and concerned route LR ↓ proved in parrallel for each reception Signal towards the overlap in series.
- 2) Overlap set by OVSR ↓
- 3) Last sub-route 'NORMAL' by TRSR ↑ or TLSR ↑
- 4) Berthing track occupied
- 5) Ahead Main Signal route not set for run through condition

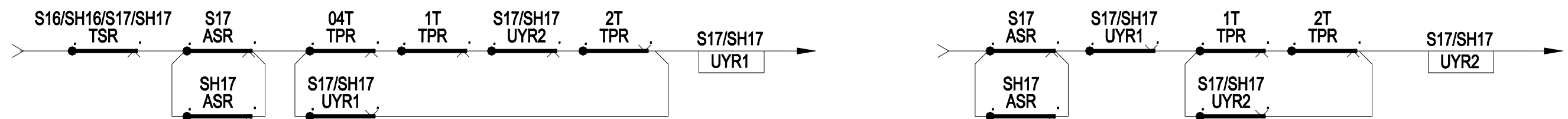
e.g. 27 OVJTR1



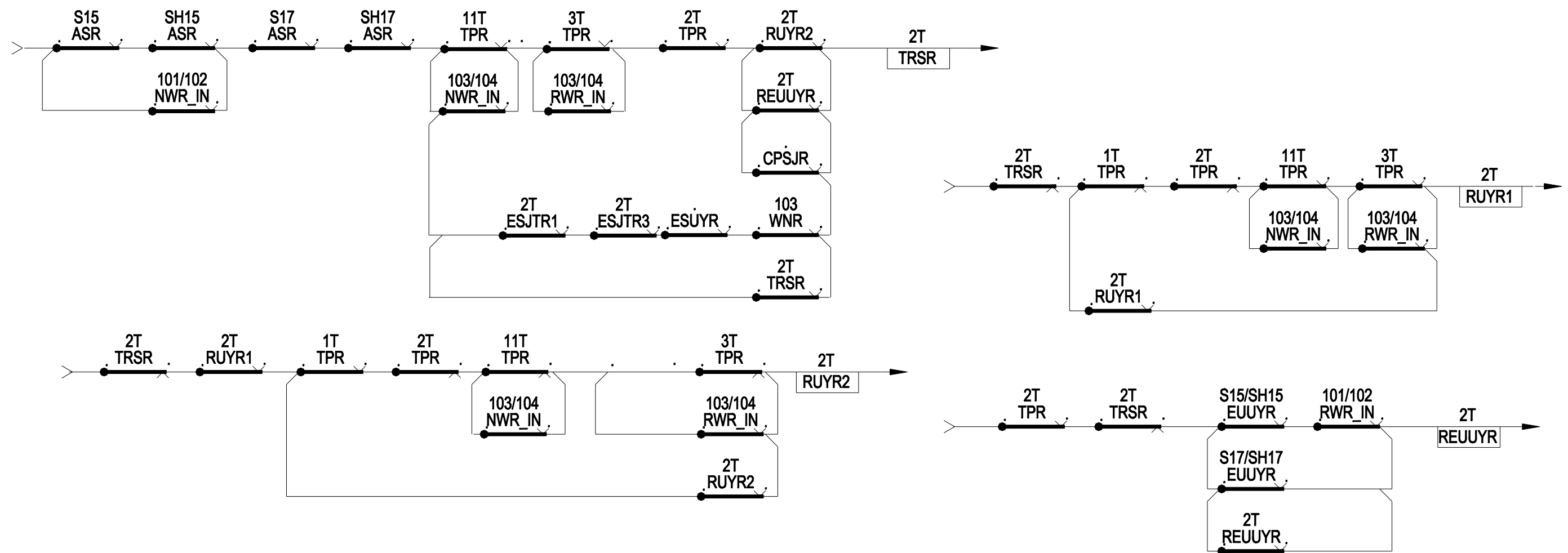
NOTE :-
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					Dir./Sig/ RDSO	ALOK KATIYAR	OV - JTR1 CIRCUIT	SHEET 38/49
			DY. CSTE/ P & D SE.RLY	S. MAJUMDAR	DY. CSTE/ P & D W.RLY	SHYAM VERMA		
			SSTE/D NC RLY	S. YADAV	SSTE/C/D SC RLY	O.S.SASTRY	RDSO LUCKNOW	
	REVISIONS		A			DRG. NO.	RDSO/	

ROUTE RELEASE CIRCUIT (UYR1, UYR2, TRSR, TLSR)



NOTE :- The next Track Circuit . 2 T - TPR picked up condition shall be proved in S 17 ASR and SH 17 ASR as per SEM part. II



NOTE :- (1) 2 T RUYYR1, 2 T RUYYR2, REUYYR etc are for train movements from left to right.

(2) Similarly there will be 2 T - LUYYR1, 2 T - LUYYR2, 2T - LEUYYR, etc will be there for Right to Left train movement.

NOTE :-

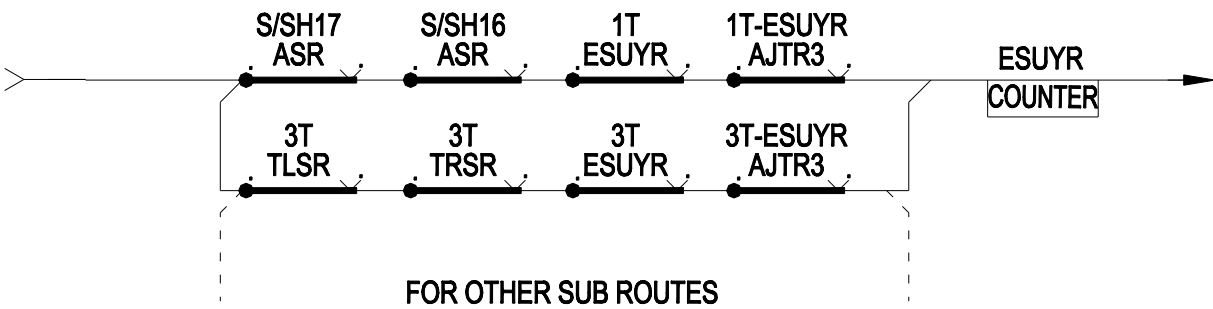
1) THESE CIRCUITS APPLICABLE ONLY TO ELECTRONIC INTERLOCKING INSTALLATION AND SHALL NOT BE USED FOR METAL TO CARBON INSTALLATION.

				Dir./Sig/ RDSO	ALOK KATIYAR	ROUTE RELEASE CIRCUIT (UYR1, UYR2, TRSR, TLSR)	SHEET 39/49
				DY. CSTE/ P & D W.RLY	SHYAM VERMA		
				ESTE/ SC RLY	O.S.SATRY	RDSO LUCKNOW	
	B		A	REVISIONS	DRG. NO.	RDSO/	

ESUYR CIRCUIT

NOTE :-

- 1) To initiate ESUYR Timer, concerned point button shall be pressed by Panel ASM and group ESUYN push button (which is provided away from the panel at a distance so that same person can't operate this button with panel point button) shall be pressed by another panel ASM / Pointsman. This will initiate timer.
- 2) Emergency Sub Route Cancellation Timer in progress is indicated beside the concerned point by RED flashing and after lapse of 120 sec, by RED steady.
- 3) After lapse of 120 sec, which is indicated by steady RED indication beside the concerned point button, the panel ASM will then press the concerned Point button again to release the required sub-route. This group ESUYN button need not to be pressed again. This operation will be counted by separate counter.



- NOTE :-
- 1) THESE CIRCUITS APPLICABLE ONLY TO ELECTRONIC INTERLOCKING INSTALLATION AND SHALL NOT BE USED FOR METAL TO CARBON INSTALLATION.

					Dir./Sig/ RDSO	ALOK KATIYAR	ESUYR CIRCUIT	SHEET 40/49
			DY. CSTE/ P & D SE.RLY	S. MAJUMDAR	DY. CSTE/ P & D W.RLY	SHYAM VERMA		
			SSTE/D NC RLY	S. YADAV	SSTE/C/D SC RLY	O.S.SASTRY	RDSO LUCKNOW	
	REVISIONS		A		DRG. NO.	RDSO/		

CRANK HANDLE INDICATIONS :

1	When the 'CH' key is 'In' and 'locked'	Indicated by steady yellow indicator on ASM Panel.
		No indication below concerned CH key in KLCR box.
2	When 'CH' key control is transferred by pressing concerned 'CH' button and GSBI Group Slot Button) but 'CH' key not extracted.	Indicated by flashing red indication on ASM panel and steady white indication will extinguish.
		Green LED indication below concerned CH key in KLCR box.
3	When 'CH' key is extracted from KLCR box.	Indicated by steady red indication on ASM panel.
		Green LED indication below concerned CH key in KLCR box will continue to lit.
4	When 'CH' key inserted back after shunting operation, in KLCR box.	Steady Red indication turned to flashing Red on ASM panel.
		Green LED indication below concerned CH key in KLCR box will continue to lit.
5	Now panel ASM withdraw the CH control by pressing concerned 'CH' button + GSRB (Group slot withdrawing button)	Flashing Red indication will extinguish in panel and steady Yellow indication will lit.
		Green LED indication will extinguish below concerned CH key in KLCR box.

Note :

- ❖ Emergency crank handle release can be dispensed with as emergency sub route release facility is provided to panel ASM in accordance to revised SEM Part – I.
- ❖ Similar indications shall be provided for LC Control, siding control.

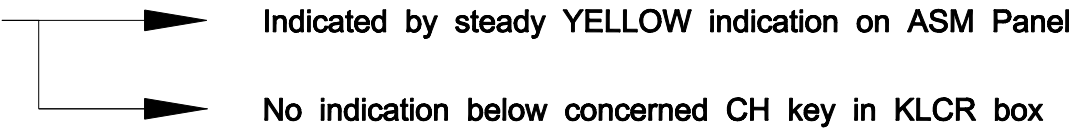
- In case of EI system Dn, to facilitate train operation super emergency crank handle key release facility shall be provided by picking up of E.CHR relay in form of physical wired circuit duly proving back contact of all signals HR (Interface relays) and OPCR Dn or VCOR Dn or system down condition and by turning a switch or key. The switch/key should be kept in glass sealed cover in custody of panel ASM.

E.CHR Up contents will be used for release of CH 'NX' key.

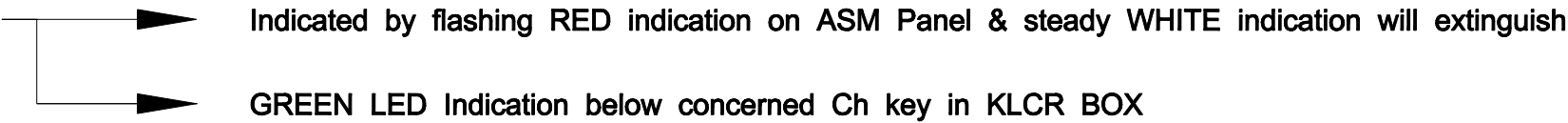
CRANK HANDLE INDICATIONS

CRANK HANDLE INDICATIONS

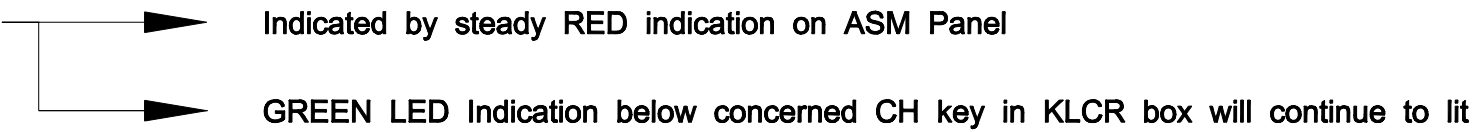
1) When the 'CH' key is 'IN' and 'LOCKED'.



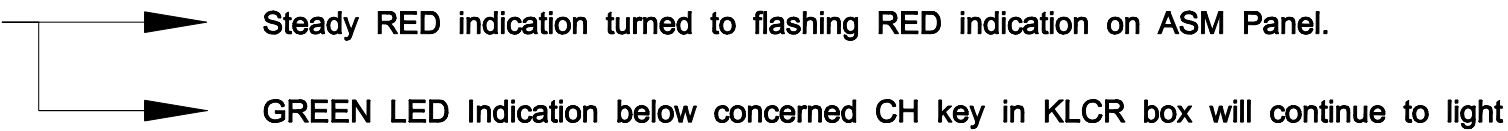
2) When the 'CH' key control is transferred by pressing concerned 'CH' button & GSB (Group Slot Button) but 'CH' key not extracted



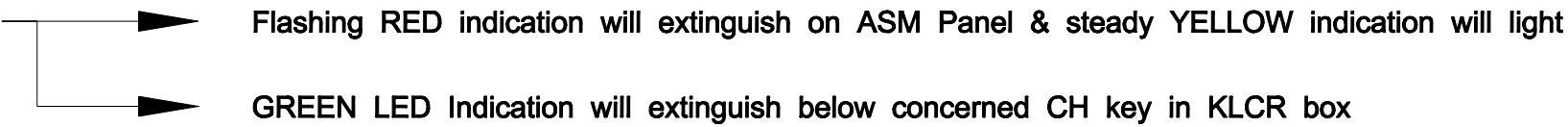
3) When the 'CH' key is extracted from KLCR box



4) When the 'CH' key is inserted back, after SHUNTING operation in KLCR box



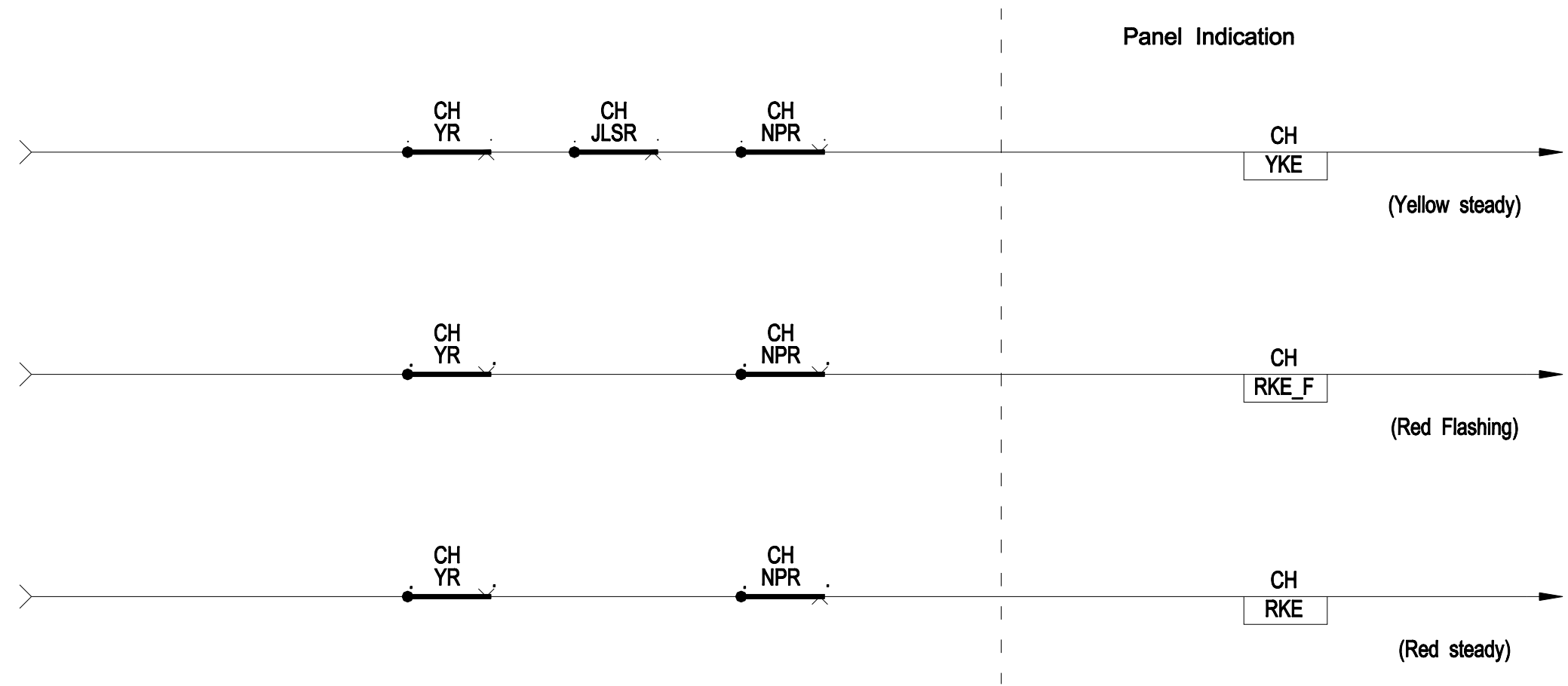
5) Now PANEL ASM withdraws the CH control by pressing concerned 'CH' button & GSRB (Group Slot Withdrawing Button)



NOTE :-
1) THESE CIRCUITS APPLICABLE ONLY TO ELECTRONIC INTERLOCKING INSTALLATION AND SHALL NOT BE USED FOR METAL TO CARBON INSTALLATION.

					Dir./Sig./ RDSO		CRANK HANDLE INDICATIONS	SHEET 41/49
			DY. CSTE/ P & D SE.RLY	S. MAJUMDAR	DY. CSTE/ P & D W.RLY	ALOK KATIYAR		
			SSTE/D NC RLY	S. YADAV	SSTE/C/D SC RLY	SHYAM VERMA		
	REVISIONS		A		DRG. NO.	O.S.SASTRY	RDSO LUCKNOW	RDSO/

CRANK HANDLE INDICATIONS



NOTE :- (1) Emergency Crank Handle Release can be dispensed with as Emergency sub-route release facility is provided to panel ASM in accordance to revised S. E. M Pt. I

(2) Similar indications shall be provided for L. C control, siding control, etc

In case of E. I. system down, to facilitate train operation, Super Emergency Crank Handle key release facility shall be provided by picking up of E. CHR relay in form of physical wired circuit duly proving back contacts of all signals HR (Interface relays) and OPCR ↓ or VCOR ↓ or system down condition and by turning a switch or Key. The Switch / Key should be kept in Glas Sealed Cover in custody of Panel ASM

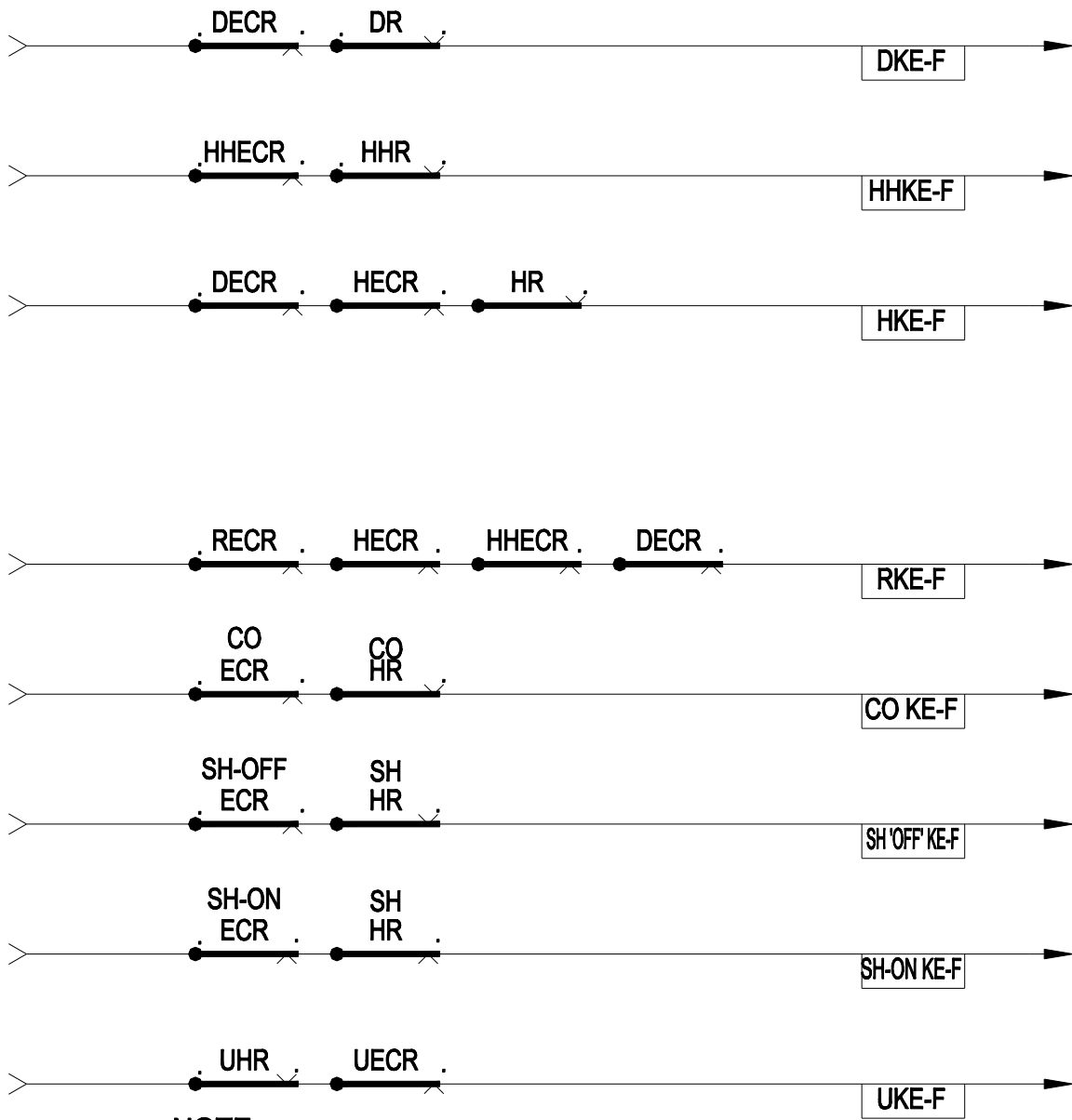
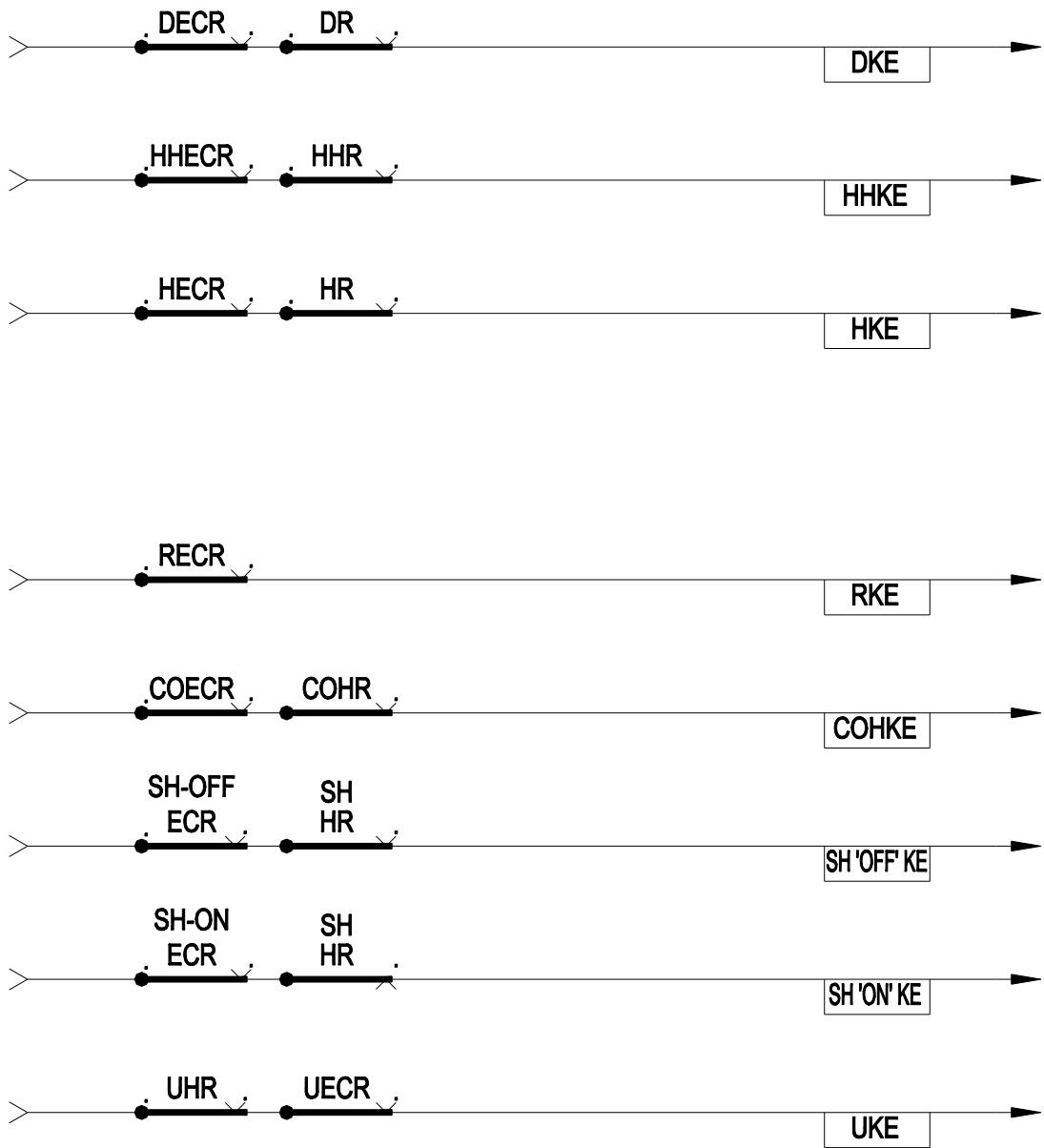
E CHR ↓ contacts will be used for release of CH 'NX' key

NOTE :-
1) THESE CIRCUITS APPLICABLE ONLY TO ELECTRONIC INTERLOCKING INSTALLATION AND SHALL NOT BE USED FOR METAL TO CARBON INSTALLATION.

					Dir./Sig./ RDSO		CRANK HANDLE INDICATIONS	SHEET 42/49
			DY. CSTE/ P & D SE.RLY	S. MAJUMDAR	DY. CSTE/ P & D W.RLY	ALOK KATIYAR		
			SSTE/D NC RLY	S. YADAV	SSTE/C/D SC RLY	SHYAM VERMA		
						O.S.SASTRY		
REVISIONS			A		DRG. NO.	RDSO/	RDSO LUCKNOW	

INDICATIONS

SIGNALS

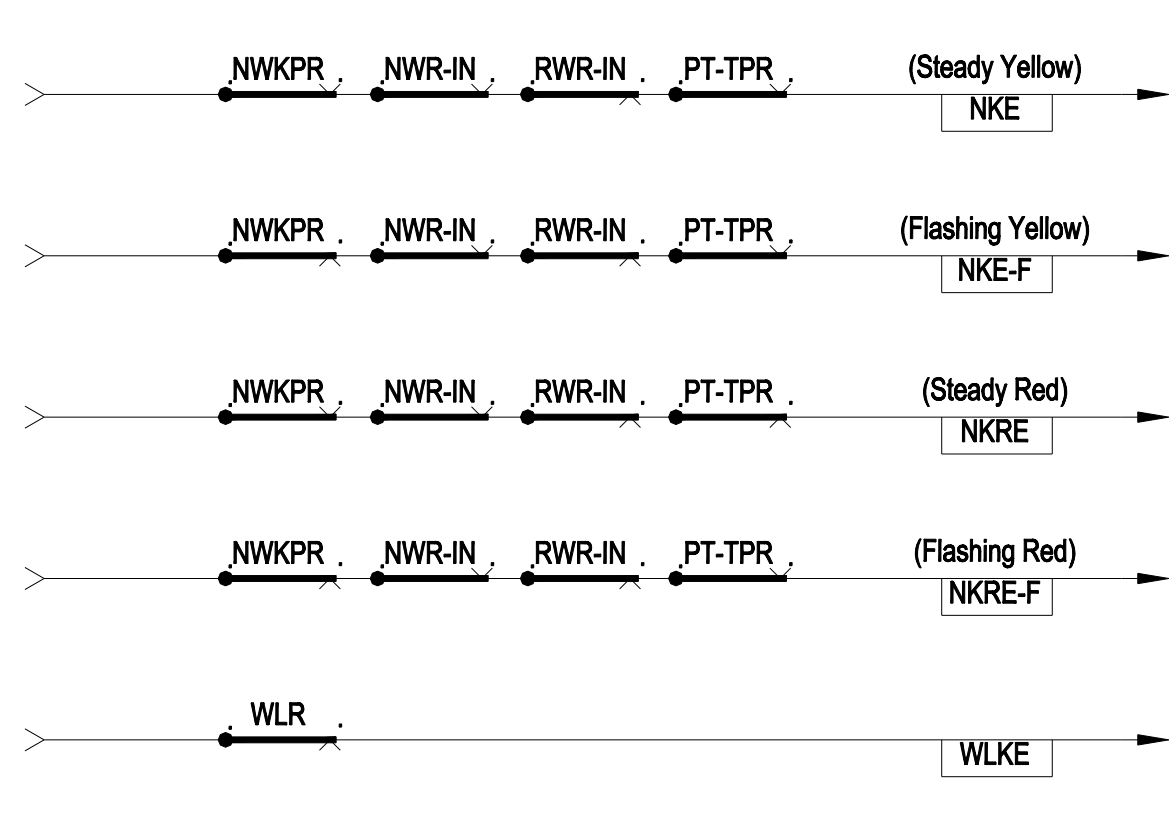


NOTE :-
1) THESE CIRCUITS APPLICABLE ONLY TO ELECTRONIC INTERLOCKING INSTALLATION AND SHALL NOT BE USED FOR METAL TO CARBON INSTALLATION.

					Dir./Sig/ RDSO	ALOK KATIYAR	INDICATIONS	SHEET 43/49
			DY. CSTE/ P & D SE.RLY	S. MAJUMDAR	DY. CSTE/ P & D W.RLY	SHYAM VERMA		
			SSTE/D NC RLY	S. YADAV	SSTE/C/D SC RLY	O.S.SASTRY	RDSO LUCKNOW	
	REVISIONS		A			DRG. NO.	RDSO/	

POINT INDICATION CIRCUIT

NORMAL



SAME FOR REVERSE

TRACK CIRCUIT INDICATION

Track Circuit Free → No Indication

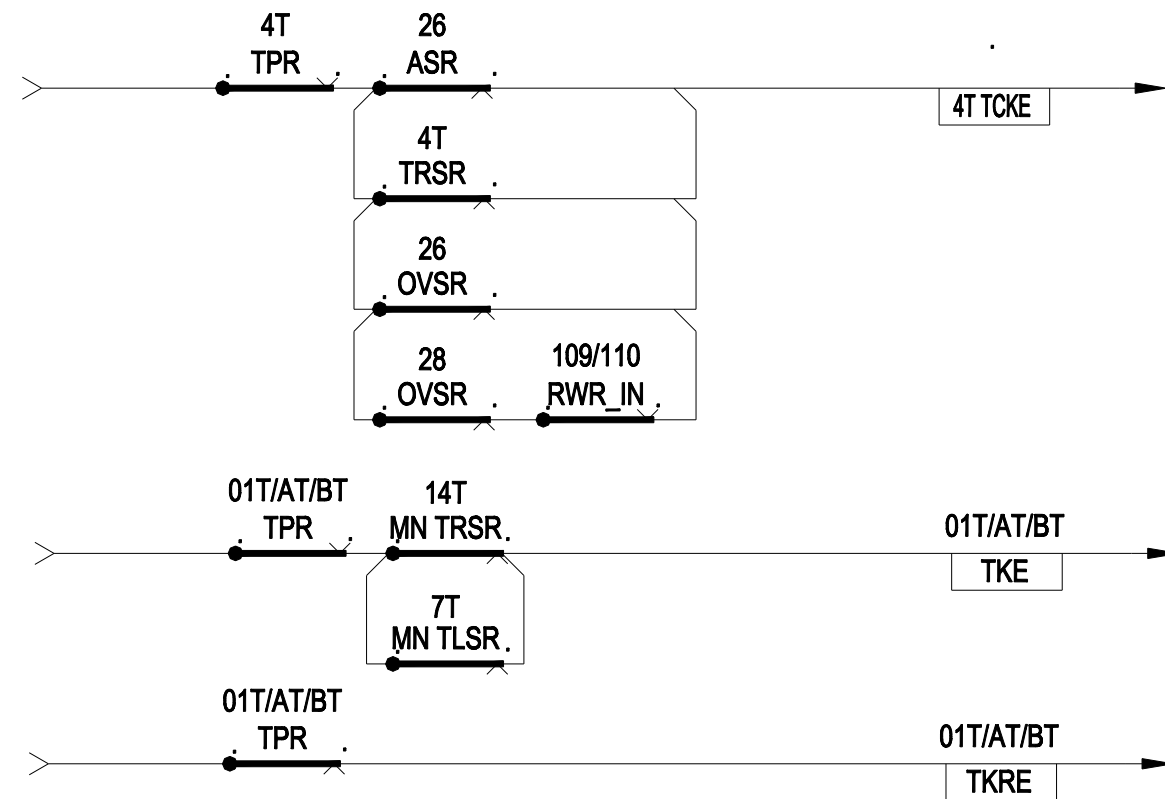
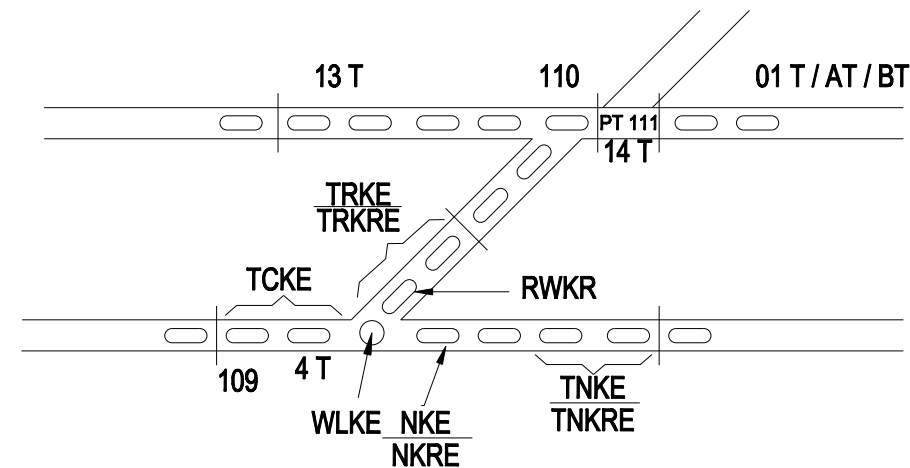
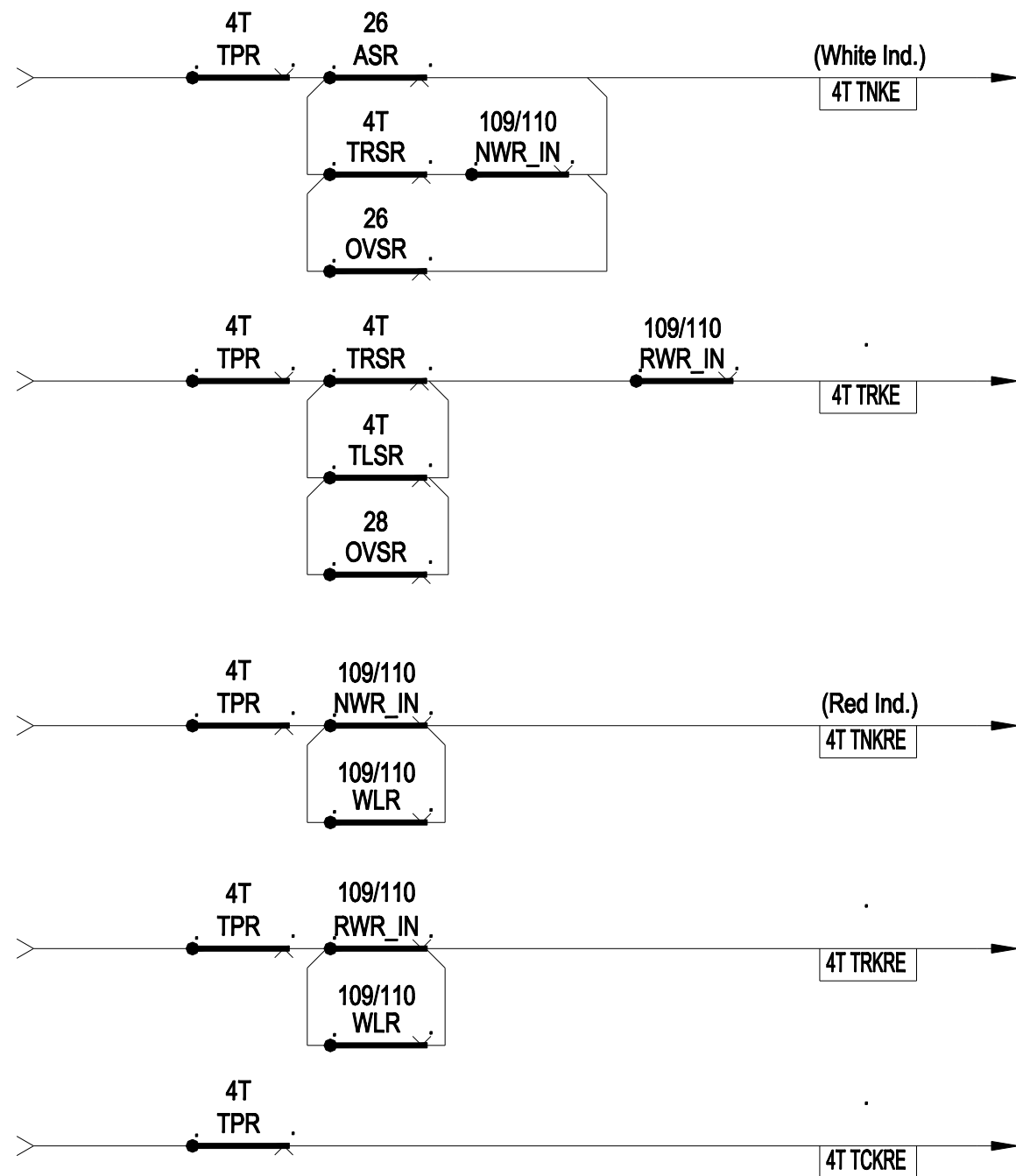
Route Set but Track Circuit Free → Yellow Indication

Track Circuit Occupied → Red Indication
Without Route Set

NOTE :-
1) THESE CIRCUITS APPLICABLE ONLY TO ELECTRONIC
INTERLOCKING INSTALLATION AND SHALL NOT BE USED FOR
METAL TO CARBON INSTALLATION.

					Dir./Sig/ RDSO	ALOK KATIYAR	INDICATIONS	SHEET 44/49
			DY. CSTE/ P & D SE.RLY	S. MAJUMDAR	DY. CSTE/ P & D W.RLY	SHYAM VERMA		
			SSTE/D NC RLY	S. YADAV	SSTE/C/D SC RLY	O.S.SASTRY	RDSO LUCKNOW	
	REVISIONS	A			DRG. NO.	RDSO/		

ROUTE INDICATION CIRCUIT



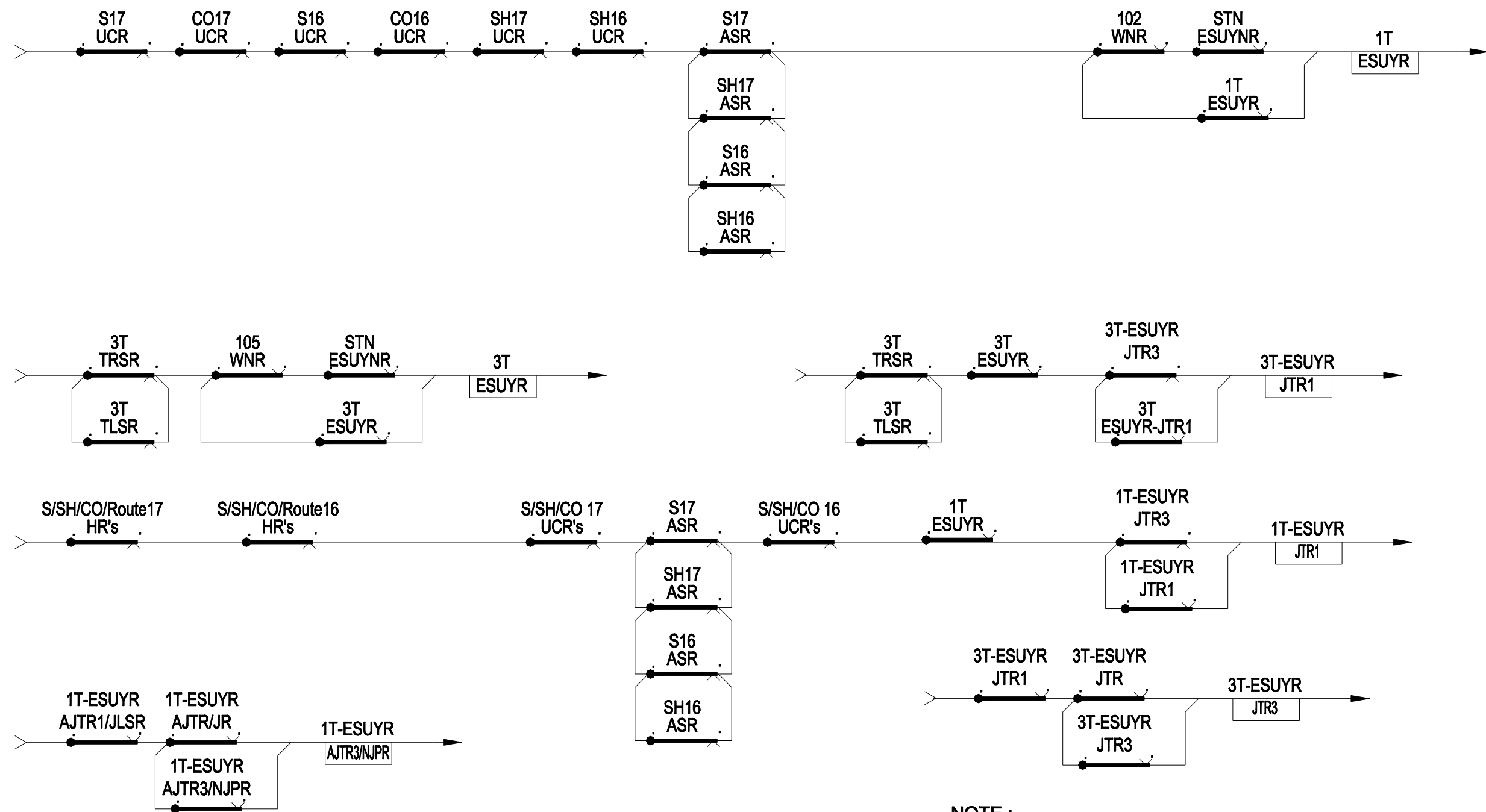
NOTE :-
1) THESE CIRCUITS APPLICABLE ONLY TO ELECTRONIC INTERLOCKING INSTALLATION AND SHALL NOT BE USED FOR METAL TO CARBON INSTALLATION.

				Dir./Sig./RDSO	ALOK KATYAR	INDICATIONS	SHEET 45/49
				DY. CSTE/ P & D SE.RLY	S. MAJUMDAR	SHYAM VERMA	
				SSTE/D NC RLY	S. YADAV	O.S.SASTRY	
REVISIONS				A	DRG. NO.	RDSO/	RDSO LUCKNOW

EMERGENCY SUB-ROUTE CANCELLATION BY OPERATING STAFF CIRCUIT (ESUYR)

- To initiate ESUR timer, concerned point button shall be proved by Panel ASM and Group ESUYN Push button, which is provided away from the panel at a distance, so that same person cannot operate this button with panel button, shall be pressed by another Panel ASM / Pointsman. This will initiate timer.
- Emergency sub-route cancellation timer in progress is indicated beside the concerned point by Red flashing and after elapse of 120 Sec. by Red steady.
- After lapse of 120 Sec., which is indicated by steady Red indicator beside the concerned point button, the Panel ASM will press the concerned point button again to release the required sub-route. This operation will be countered by timer.

ESUYR (EMERGENCY SUB-ROUTE CANCELLATION BY OPERATING STAFF CIRCUIT



NOTE :-
1) THESE CIRCUITS APPLICABLE ONLY TO ELECTRONIC INTERLOCKING INSTALLATION AND SHALL NOT BE USED FOR METAL TO CARBON INSTALLATION.

					Dir./Sig/ RDSO	ALOK KATIYAR	ESUYR (EMERGENCY SUB-ROUTE CANCELLATION BY OPERATING STAFF CIRCUIT	SHEET 46/49
			DY. CSTE/ P & D SE.RLY	S. MAJUMDAR	DY. CSTE/ P & D W.RLY	SHYAM VERMA		
			SSTE/D NC RLY	S. YADAV	SSTE/C/D SC RLY	O.S.SASTRY	RDSO LUCKNOW	
	REVISIONS		A			DRG. NO.	RDSO/	

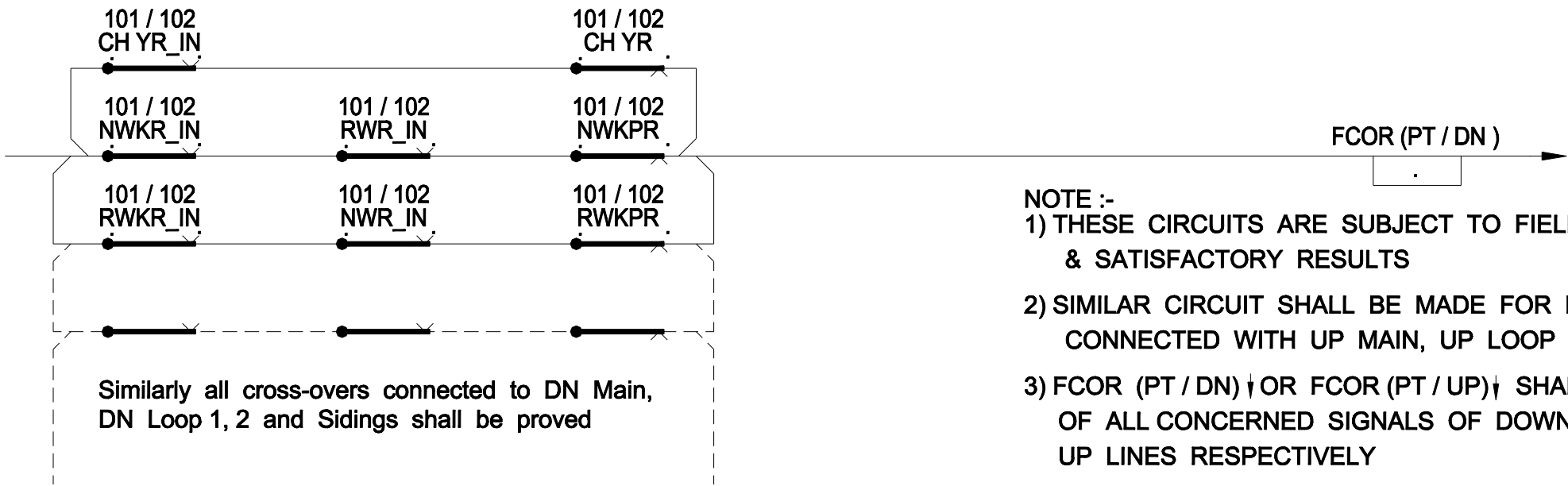
L. C GATES / SIDING POINTS / CRANK HANDLE CONTROLS OUT OF CORRESPONDENCE CIRCUIT



NOTE :- FCOR (LC XX) ↓ contact shall be used in L. C Gate controlling signals HR circuits as per Route Control Table.



NOTE :- FCOR (SDG 'XXX') ↓ contact shall be used in concerned signals HR circuits which leads towards such sidings as per Route Control Table.



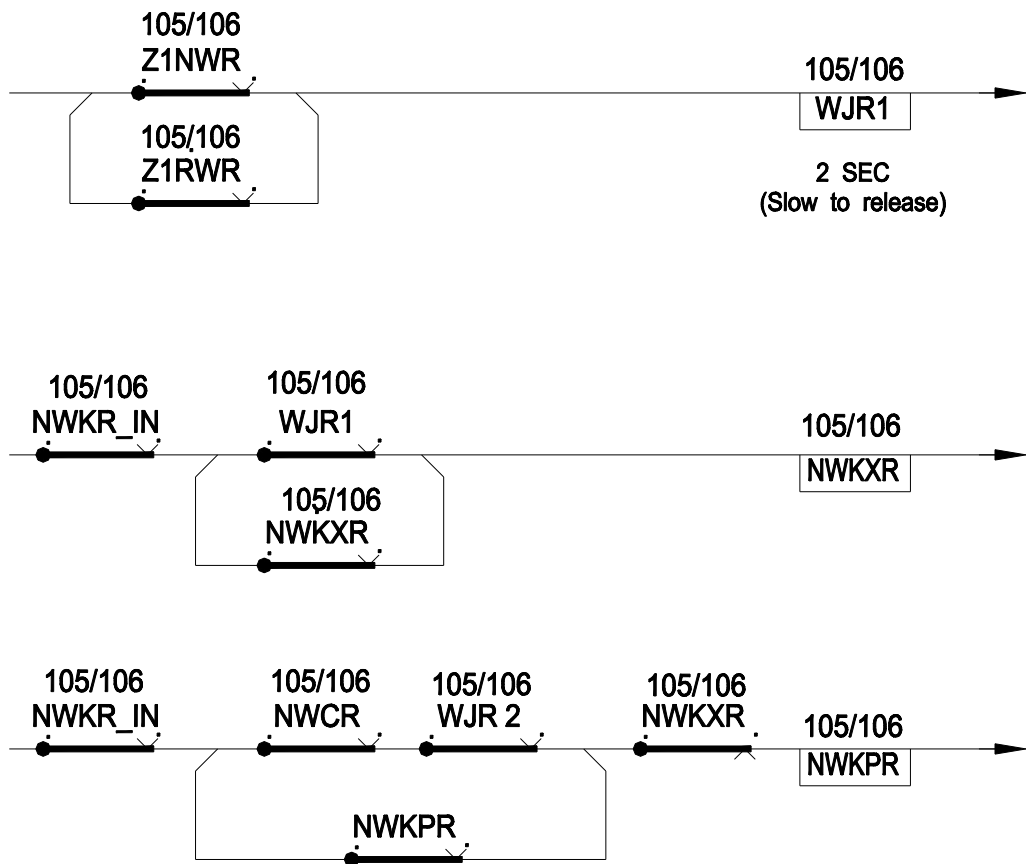
- NOTE :-
- 1) THESE CIRCUITS ARE SUBJECT TO FIELD TRIALS BY VARIOUS VENDORS & SATISFACTORY RESULTS
 - 2) SIMILAR CIRCUIT SHALL BE MADE FOR FCOR (PT / UP) FOR CROSSOVERS CONNECTED WITH UP MAIN, UP LOOP 1, 2, 3 etc AND RELATED SIDINGS
 - 3) FCOR (PT / DN) ↓ OR FCOR (PT / UP) ↓ SHALL BE PROVED IN HR CIRCUITS OF ALL CONCERNED SIGNALS OF DOWN LINES OR UP LINES RESPECTIVELY

NOTE :-

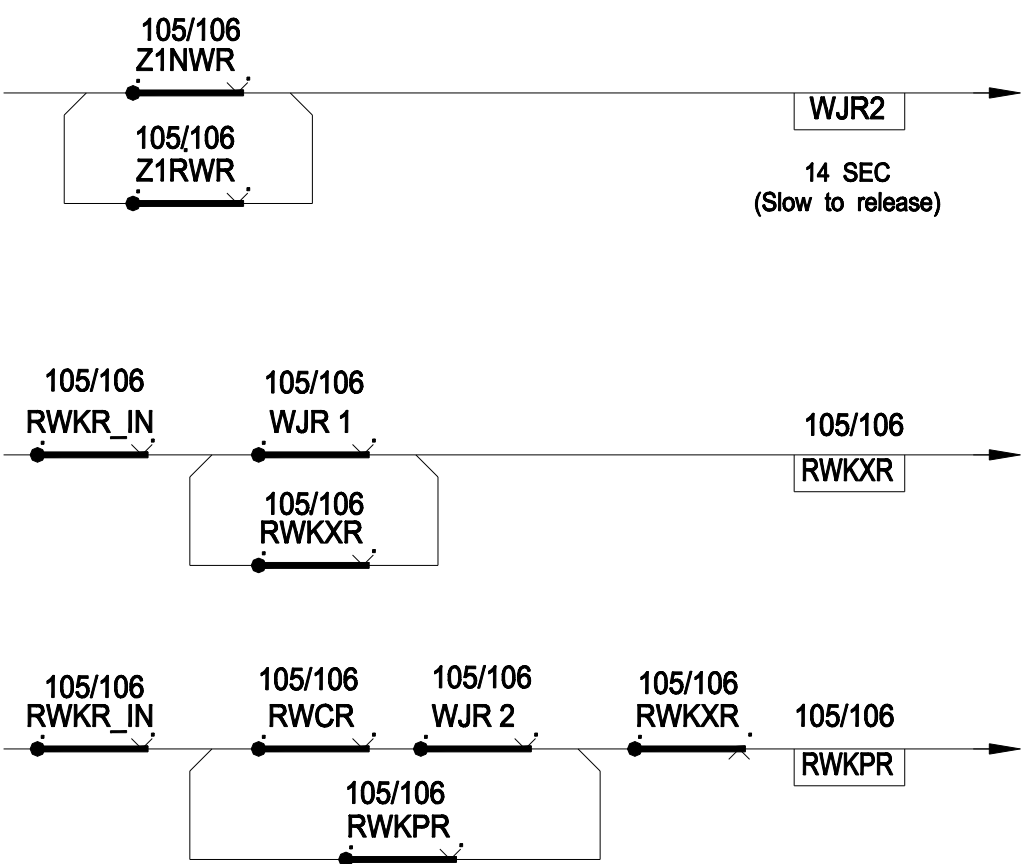
1) THESE CIRCUITS APPLICABLE ONLY TO ELECTRONIC INTERLOCKING INSTALLATION AND SHALL NOT BE USED FOR METAL TO CARBON INSTALLATION.

					Dir./Sig/ RDSO	ALOK KATIYAR	LC GATES/SDG/CH OUT OF CORRESPONDANCE CIRCUIT	SHEET 47/49
			DY. CSTE/ P & D SE.RLY	S. MAJUMDAR	DY. CSTE/ P & D W.RLY	SHYAM VERMA		
			SSTE/D NC RLY	S. YADAV	SSTE/C/D SC RLY	O.S.SASTRY	RDSO LUCKNOW	
	REVISIONS		A		DRG. NO.	RDSO/		

POINTS OUT OF CORRESPONDENCE & VALID POINT DETECTION ENSURING CIRCUIT



Point Indication Circuit for valid point operation & correspondence

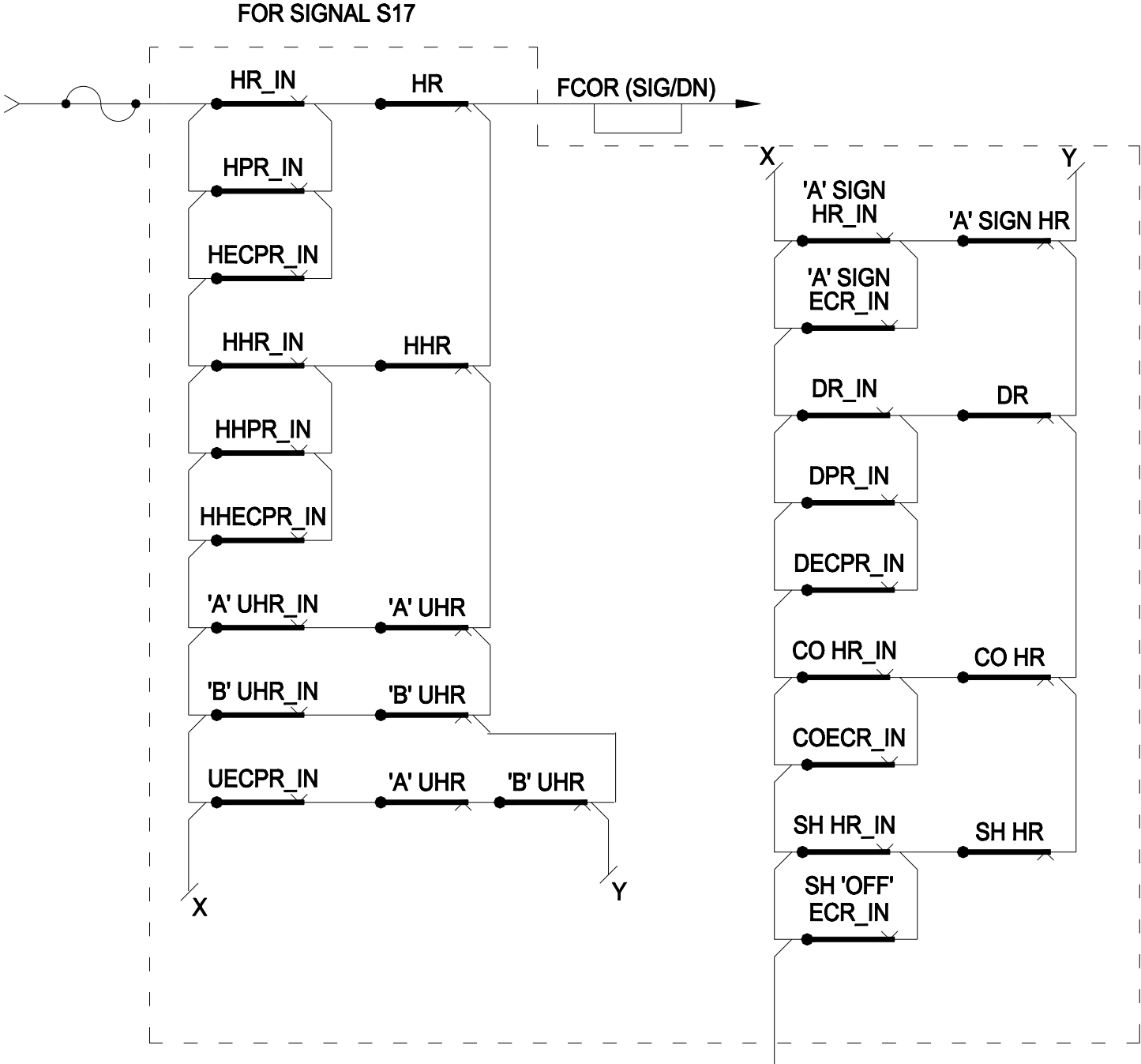


- NOTE :-
- 1) THESE CIRCUITS ARE SUBJECT TO FIELD TRIALS BY VARIOUS VENDORS & SATISFACTORY RESULTS.
 - 2) ONLY NWKPR & RWKPR BITS ARE TO BE USED FOR INTERLOCKING PURPOSE.

- NOTE :-
- 1) THESE CIRCUITS APPLICABLE ONLY TO ELECTRONIC INTERLOCKING INSTALLATION AND SHALL NOT BE USED FOR METAL TO CARBON INSTALLATION.

				Dir./Sig/ RDSO	ALOK KATIYAR	OUT OF CORRESPONDANCE AND VALID POINT OP./DET. CIRCUIT	SHEET 48/49
				DY. CSTE/ P & D SE.RLY	S. MAJUMDAR		
				SSTE/D NC RLY	S. YADAV	RDSO LUCKNOW	
REVISIONS				A	DRG. NO.	RDSO/	

SIGNAL OUT OF CORRESPONDANCE FAULT CIRCUIT



- NOTE :-
1. FCOR (SIG/DN) ↓ CONTACT SHALL BE PROVED IN HR CKT. (IN INTERLOCKING) OF ALL DOWN DIRECTION SIGNALS TO RESTRICT THEM AT RED.
 2. SIMILARLY FOCR (SIG/UP) CKT. SHALL BE MADE FOR ALL UP DIRECTION SIGNALS.
 3. IN MULTIPLE LINE SECTIONS, FOCR (SIG) CAN BE MADE LINEWISE & SHALL BE PROVED ACCORDINGLY.
 4. THE SIGNAL SUBJECTED TO WRONG FEED MAY CONTINUE TO EXHIBIT THE 'OFF' ASPECT.

SIMILARLY ALL OTHER DOWN DIRECTION SIGNALS S/CO/SH 16,25,27,29 & SH19 SHALL NEED TO BE PROVED (AS INCLUDED IN THE GIVEN SIGNALLING LAYOUT)

- NOTE :-
- 1) THESE CIRCUITS APPLICABLE ONLY TO ELECTRONIC INTERLOCKING INSTALLATION AND SHALL NOT BE USED FOR METAL TO CARBON INSTALLATION.

				Dir/Sig/ RDSO	ALOK KATIYAR	OUT OF CORRESPONDANCE CIRCUITS FOR SIGNALS	SHEET 49/49
		DY. CSTE/ P & D SE.RLY	S. MAJUMDAR	DY. CSTE/ P & D W.RLY	SHYAM VERMA		
		SSTE/D NC RLY	S. YADAV	SSTE/C/D SC RLY	O.S.SASTRY	RDSO LUCKNOW	
REVISIONS				A	DRG. NO.	RDSO/	