SOMERSAULT

MAY 2005
Vol 28, No 3

SIGNALLING RECORD SOCIETY OF VICTORIA INC

This mechanism is the 'operating movement for gate stops' (B360). This drives the gate stops at interlocked gates from the movements of the gate wheel and gate stop lever. The motion was invented by two Victorian Railways signal engineers, G.H. Wion and J.A. Malan, in 1920 (patent 16985/20) to solve the problem of road traffic breaking the gate stops as the gates were being closed. The mechanism uses two motion plates (one of which can be seen at the top) with specially shaped cam slots and a common roller to drive the gate stops. This mechanism provides a sophisticated movement of the gate stops when the gates are being closed. During the initial movement of gates the gate stops remain stationary, only begininning to rise above ground level when the gates have completed about a quarter of their movement. When the gate wheel is normal, the stops are high enough to engage with the gates , however the final movement of the gate stop lever to the fully normal position raises the gate stop even higher, locking the gates and preventing road users from freeing the gates. When the train has passed the gate stop lever is fully reversed and this immediately and completely drops the gate stops. In this view the gate wheel motion plate is seen in the fully reversed position. The connection to the gate stop motion plate can be seen through the cam slot. The particularly novel feature of this operating mechanism was that it was housed entirely in the signalbox; conventional UK designs were installed under the road surface with consequent maintenance problems. Photo taken at Kyneton in 1987.

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Signalling Alterations

The following alterations were published in WN 7/05 to WN 14/05 and ETRB A circulars. The alterations have been edited to conserve space. Dates in parenthesis are the dates of publication, which may not be the date of the alteration.

14.02.2005 **Nagambie, Murchison East, Toolamba** (SW 24/05, WN 5/05)

On Monday, 14.2., the TAILS equipment was decommissioned and ETAS operation substituted. The location boards were relocated 1000 m further out and provided with ETAS clearance signs.

(15.02.2005) **Eltham** (SW 17/05, WN 6/05)

No 3 Track was removed. Amend Diagram 83/97 (Watsonia - Hurstbridge).

15.02.2005 **Menzies Creek** (A 3/05)

On Tuesday, 15.2., a track indication diagram was provided. The diagram will indicate all track circuits from the Up end of the platforms to the outer extremity of the Up approach track; the lie of the Down end main line points (but not the position of the plunger lock); the operation of the flashing lights; and the operation of the power supply. The track circuit indicators will normally be out and will illuminate red when the track is occupied. The point indicators will normally show white to indicate the lie of the points when the track is unoccupied and red when the appropriate track is occupied. If the points are not fully home no light will be shown. The two flashing light indicators will flash red alternately in corrspondence with the lights at the level crossing. The power on indicator will normally show green when the indication power is available and the power fail indicator will light red when a supply fault occurs.

(18.02.2005) **Emerald** (A 4/05)

Authorisation is given to stable vehicles required for the 'Day out with Thomas' shows to be left overnight in No 2 Road between shows on adjacent days.

19.02.2005 **Kensington - Essendon - Broadmeadows** (SW 23/05, WN 7/05)

On Saturday, 19.2., the Train Number transmitters at these signal boxes were changed to PC based equipment.

19.02.2005 **Kensington - Epsom Road - Showgrounds - Flemington Racecourse** (SW 23/05, WN 7/05)

On Saturday, 19.2., the Train Number transmitters at these signal boxes were changed to PC based equipment.

20.02.2005 **Cheltenham** (SW 27/05, WN 7/05)

On Sunday, 20.2., an additional track circuit (No 11 track) was provided for the turnout fouling project.

20.02.2005 **Frankston** (SW 26/05, WN 7/05)

On Sunday, 20.2., an additional track circuit (No A15 track) was provided for the turnout fouling project.

(22.02.2005) **Footscray - Spotswood** (SW 24/05, WN 7/05)

Diagram 39/04 was issued 'as in service'.

(22.02.2005) **Paisley - Werribee** (SW 25/05, WN 7/05)

Diagram 43/04 was issued 'as in service'.

26.02.2005 **Spencer Street** (SW 39/05, WN 8/05)

On Saturday, 26.2., the absolute occupation of Nos 4, 4A, 5 South, 6, and 7 South tracks was returned. Concurrently absolute occupation was taken on the final 30 metres of No 4 South, 5 South and 7 South tracks, and the Up end of No 6 track beyond Home 308.

27.02.2005 **Caulfield** (SW 34/05, WN 8/05)

On Sunday, 27.2., additional track circuits (Nos 623, 670, 750, & 751 tracks) wer provided for the turnout fouling project.

04.03.2005 **Camberwell** (SW 44/05, WN 9/05)

On Friday, 4.3., Dwarf 62 was relocated to a new mast.

05.03.2005 **Essendon** (SW 40/05, WN 9/05)

On Saturday, 5.3., additional track circuits (Nos 9 & 9A tracks) were provided for the turnout fouling project.

06.03.2005 **Pacific National** (SSN 1/05, SW 8/05)

As from 0001 hours Sunday, 6.3., Pacific National policies and operating procedures will apply across all ex Freight Australia employees and sites following approval of Pacific National's rail safety accreditation. However, the current safeworking rules, procedures, and network rules will continue to apply.

12.03.2005 **Williamstown** (SW 45/05, WN 10/05)

On Saturday, 12.3., additional track circuits were provided for the turnout fouling project.

19.03.2005 **Sandringham** (SW 51/05, WN 11/05)

On Saturday, 19.3., an additional track circuit (No 15 track) was provided for the turnout fouling project.

20.03.2005 **Ringwood - Ringwood East** (SW 53/05, WN 11/05)

On Sunday, 20.3., Up Home RWD 315 was altered to be approach cleared for moves to Up Home RWD303 (No 3 Track). Up Automatic H 822 was altered to be approach cleared when Up Home RWD 315 is at Stop. Up Automatic H 858 was provided with a working 'B' light.

20.03.2005 **Heathmont - Bayswater** (SW 49/05, WN 11/05)

On Sunday, 20.3., pedestrian gates were provided at the foot crossings at Allens Road (28.772 km) and Armstrong Road (29.290 km).

30.03.2005 **Spencer Street** (SW 69/05, WN 14/05)

From 2200 hours, Wednesday, 30.3., Absolute Occupation has been granted over No 2 Track from Home 62 to the dead end, No 2A Track from Home 32 to the dead end, No 2B Track from a point 22 metres on the Up side of Dwarf 246 to the dead end, and No 3 Track from a point 30 metres on the Up side of Home 244 to the dead end. Absolute Occupations were also granted over No 2 North and No 2A North Tracks.

No 2 and 2A Tracks are protected by Points 73 being secured normal and Points 176 being secured normal unless required for a movement into No 1 Track. Baulks are provided on the broad gauge lead to No 2 and 2A tracks clear of the fouling point of Points 175. Home SST178 is prevented from clearing for a move toward No 2 Track. Home 248 is prevented from clearing towards No 2B South track. The Homes leading towards No 3 Track will only display an approach operated low speed indication. Homes 248 and 250 will display 'Low speed Caution' only.

A path is provided between Platforms 1 and 3 under the Bourke Street bridge to provide access to No 1 Platform for standard gauge trains. Gates are provided at each end of the path and they will only be opened for standard gauge arrivals and departures. During this time all trains (including docks) must be hauled towards the baulks in No 2B and 3 Tracks.

31.03.2005 **Spencer Street** (SW 60/05, WN 12/05)

From Thursday, 31.3., the Overland will be required to arrive and depart from No 1 Track due to the closure of No 2 Platform. As the Overland is longer than this platform and the platform lacks a run-around loop, the arrival and departure of the train will require a drop-on locomotive and will prevent access to the Bank Sidings.

At 1900 hours the Signaller at No 1 Box must contact the ARTC Train Controller to obtain the arrival time of the Overland and pass this on to the Yardmaster. If the Overland is running late, the Signaller must regularly check with the ARTC Train Controller and keep the Yardmaster informed. Prior to signalling the Overland into No 1 Track, the Signaller must obtain permission from the Yardmaster.

The 'drop on' locomotive must not be signalled onto the Overland until the Train Manager advises that the locomotive may be attached.

When the Overland is ready to depart the Platform Supervisor must inform the Signaller at No 1 Box. The Signaller must inform the ARTC Train Controller and obtain control for the single line section. Home SST 202 must be cleared and the Signaller must display a green hand signal to the Driver.

03.04.2005 **Ivanhoe** (SW 61/05, WN 13/05)

On Sunday, 3.4., searchlight Automatics S304, S318 and S340 were converted to Alstom Tri-colour LEDs.

09.04.2005 **Werribee** (SW 66/05, WN 13/05)

On Saturday, 9.5., indications for Automatic G1033 and GG1033 were provided on the control panel. This was to indicate to the Signaller when these signals have been restored to stop as a consequence of Homes 2 or 14 (respectively) being restored to stop.

10.04.2005 **Camberwell** (SW 63/05, WN 13/05)

On Sunday, 10.4., Down Home 34 at the Up end of No 2 Track was replaced by a new mast with LED heads. In the signalbox the pilot staffs (which have been out of use for some time) for the Riversdale, Box Hill, and Burnley sections were removed. The emergency point handle was also removed as this type of point machine is no longer in service at Camberwell.

10.04.2005 **Gardiner** (SW 65/05, WN 13/05)

On Sunday, 10.4., a 'b' head was installed on Up Automatic DG316. This signal will now display an approach operated, time delayed, medium speed aspect when the platform track at Gardiner is occupied.

17.04.2005 **Upfield** (SW 74/05, WN 15/05)

On Sunday, 17.4., an indication was provided for Automatic C515.

17.04.2005 **Alphington - Ivanhoe** (SW 67/05, WN 14/05)

On Sunday, 17.4., Down Automatics S299, S311, S325, and S341 were converted to Alstom Tri-colour LEDs.

17.04.2005 **Caulfield** (SW 75/05, WN 15/05)

On Sunday, 17.4., additional track circuits 608A, 624A, 647A, and 648A were provided.

25.04.2005 **Camberwell** (SW 4/05, WN 14/05)

On Monday, 25.4., the existing interlocking at Camberwell was replaced with an NX panel and SSI interlocking. Diagram 9/05 (East Richmond to East Camberwell) replaced 13/04.

The Drivers control of the points in Sidings B, C, D, and E was abolished and the points are now worked conventionally from the panel. The Up and Down end Driver operated control units were abolished.

Up Automatics H310 (Centre line) and L310 (Up line), and Down Automatic L269 (Down line) were converted to Home signals and renumbered CAM325, CAM335, and CAM302 respectively. Low speed aspects are not provided on these posts. Post telephones were provided.

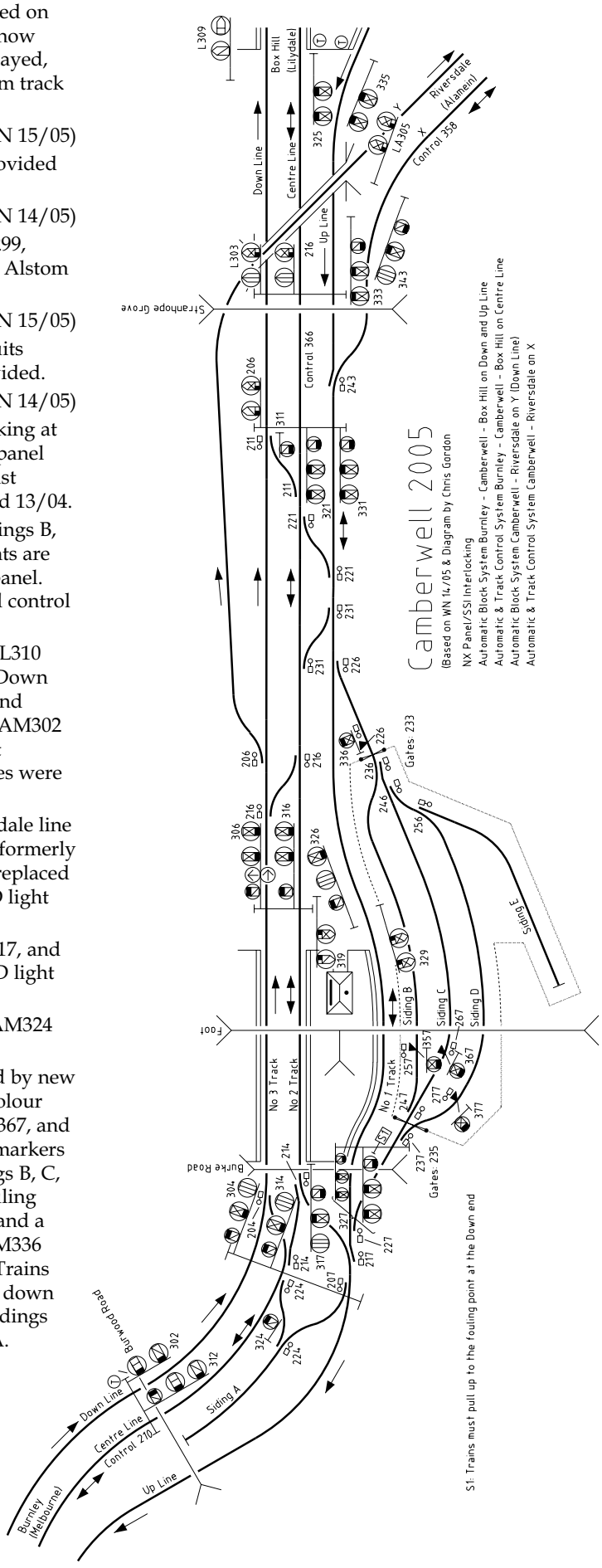
The gantry on the bi-directional Riversdale line was removed and Up Home CAM343 (formerly 54) and Down Automatic LA305 were replaced by ground masts with tri-coloured LED light units.

Automatics L303, L309, L316, L317, H317, and LA313 were converted to tri-colour LED light units.

A train stop was provided at Dwarf CAM324 (formerly 24) at the exit of Siding A.

Up Dwarfs 60, 62, and 64 were replaced by new Dwarf signals on 2.5m masts with tri-colour LEDs and renumbered CAM357, CAM367, and CAM377 (respectively). Fouling point markers are provided at the Down end of Sidings B, C, D, and E. Drivers must not pass the fouling point until authorised by the Signaller and a proceed aspect is shown on Dwarf CAM336 (formerly 22). A notice board lettered 'Trains must pull up to the fouling point at the down end' is provided at the Up end of the sidings for Down trains entering from Siding A.

Continued on Page 55



Indicators for Plunger Locked Points

Arthur Brook

Indicators for plunger locked points are described in the General Appendix (1953) as a type of Point Indicator :–

> Type in use at Plunger Locked Points.–Where this type of Point Indicator is provided, it consists of a disc, which is connected to and operates in connection with the plunger. The aspect of the Disc when the plunger is "IN" is a "Green enamelled face" for facing movements, and a "White enamelled face" for trailing movements. When the plunger is withdrawn, the Disc is off.

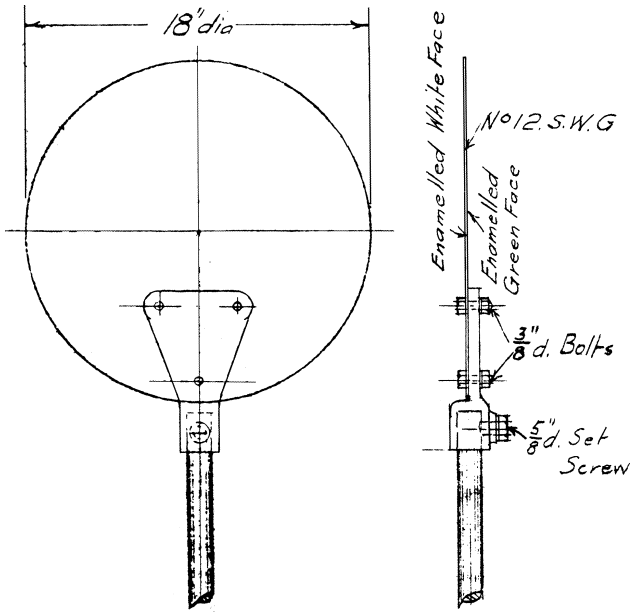
In 1919 the value of installing Indicators at Plunger Locked Points was considered. In November 1921, the Engineer of Signals reported to the Chief Engineer of Way & Works :–

> This matter was brought up in 1919 but the correspondence in connection therewith cannot be traced. The General Superintendent of Transportation asked for an estimate of cost but did not favor the suggestion. It was then estimated that it would cost £3500 to equip plunger-locked points with indicators and the additional annual expense would be £700. The estimate provided was for a double faced indicator which would be illuminated at night.
>
> We have 610 plunger locks in service and on the average have 100 run through, with plunger in, per annum. When this happens damage in each instance is at least equal on the average to £1 is caused.
>
> I believe a cheaper form of indicator, as shown on attached sketch and which could be provided for £1525, would suffice [Figure 1]. If these were enamelled white in the trailing direction, illumination could be dispensed with and at least 90% of our run-throughs should be prevented.
>
> Plunger locks are provided at Darling station and I suggest that a sample indicator be fitted on trial there.
>
> Some means of knowing whether the plunger is in or out when trailing through points appears from our experience to be highly desirable."

The Plunger Indicator was installed at Darling during December 1922, only to be removed in January 1923 and relocated to the up end at Eltham in February.

A sketch for an indicator with an 18 inch diameter circular disc was requested in May 1923 (Figure 2). A sample disc was made in June and apparently placed on the Plunger Indicator at Eltham in July. When interlocking was installed at Eltham in Jaunary 1924, the Plunger Indicator was removed, but by that time a second example had been installed at Camperdown.

By July 1926, seven Plunger Indicators had been on trial for a reasonable time, one in each Block & Signal Inspector's District, and the results tabulated (see Table 1 on page 44).



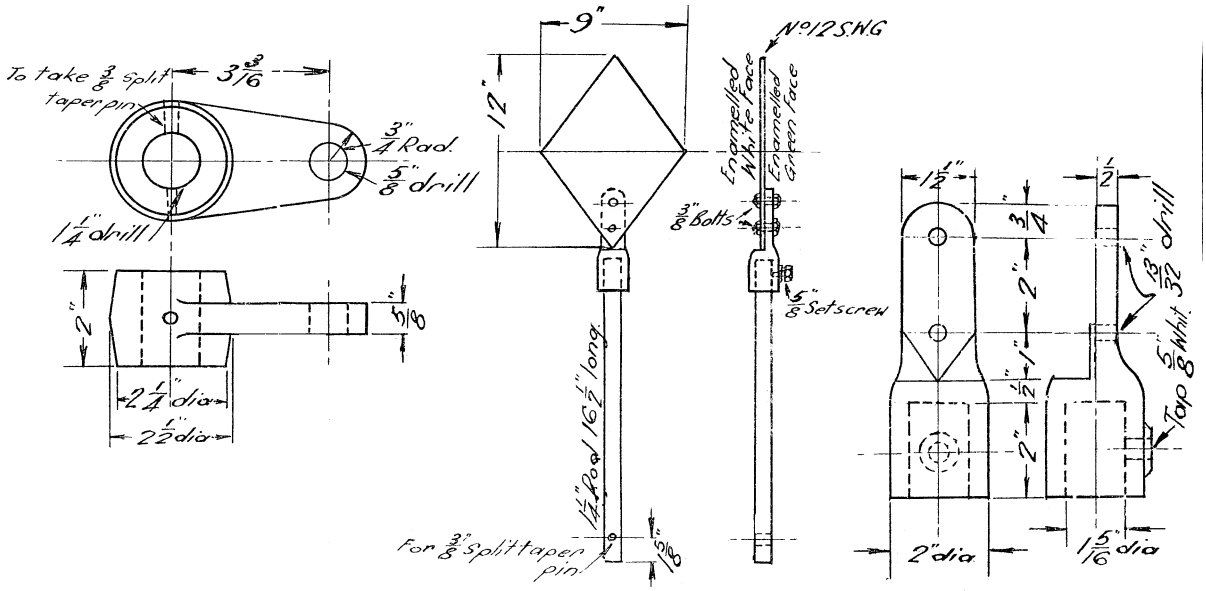
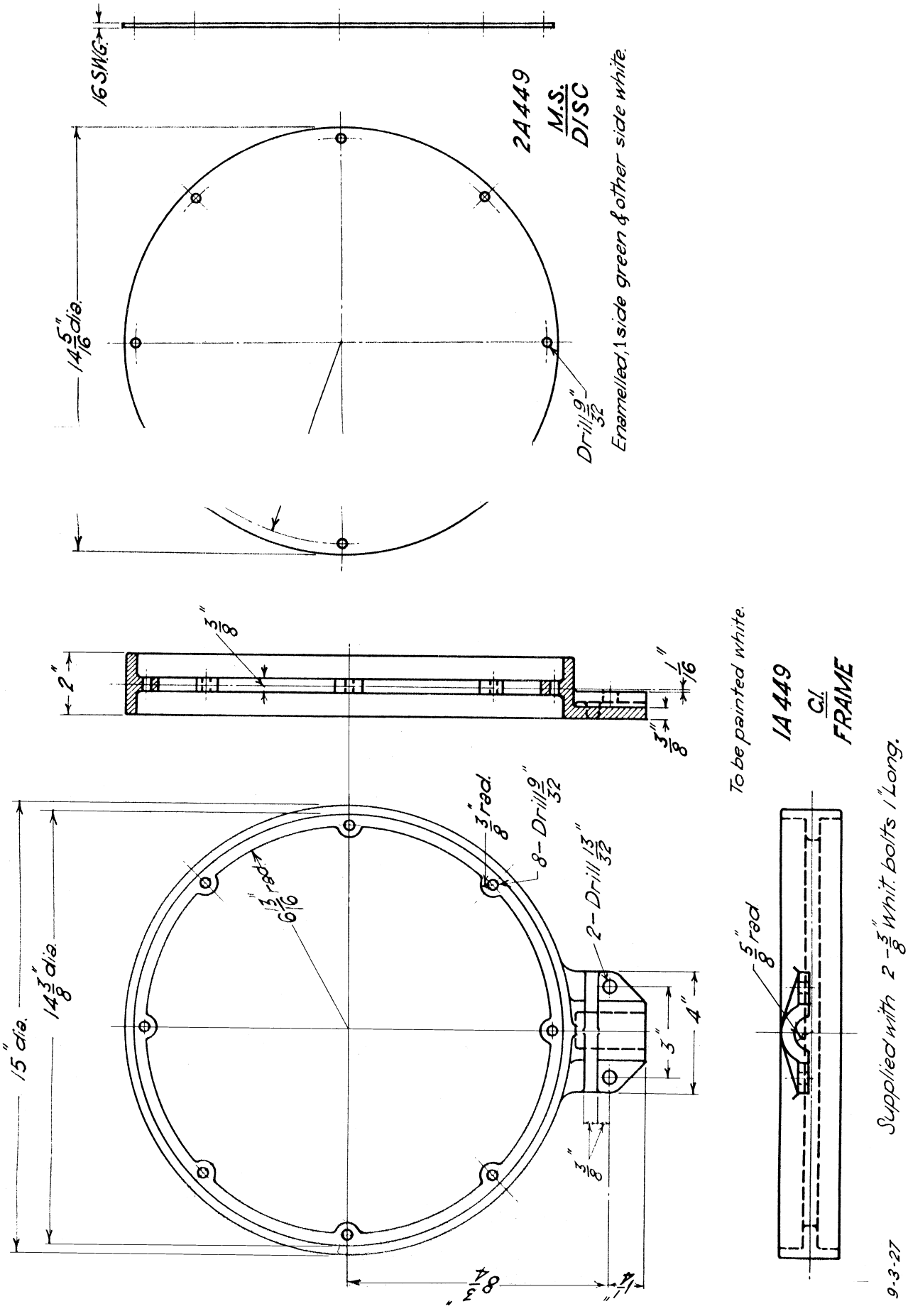


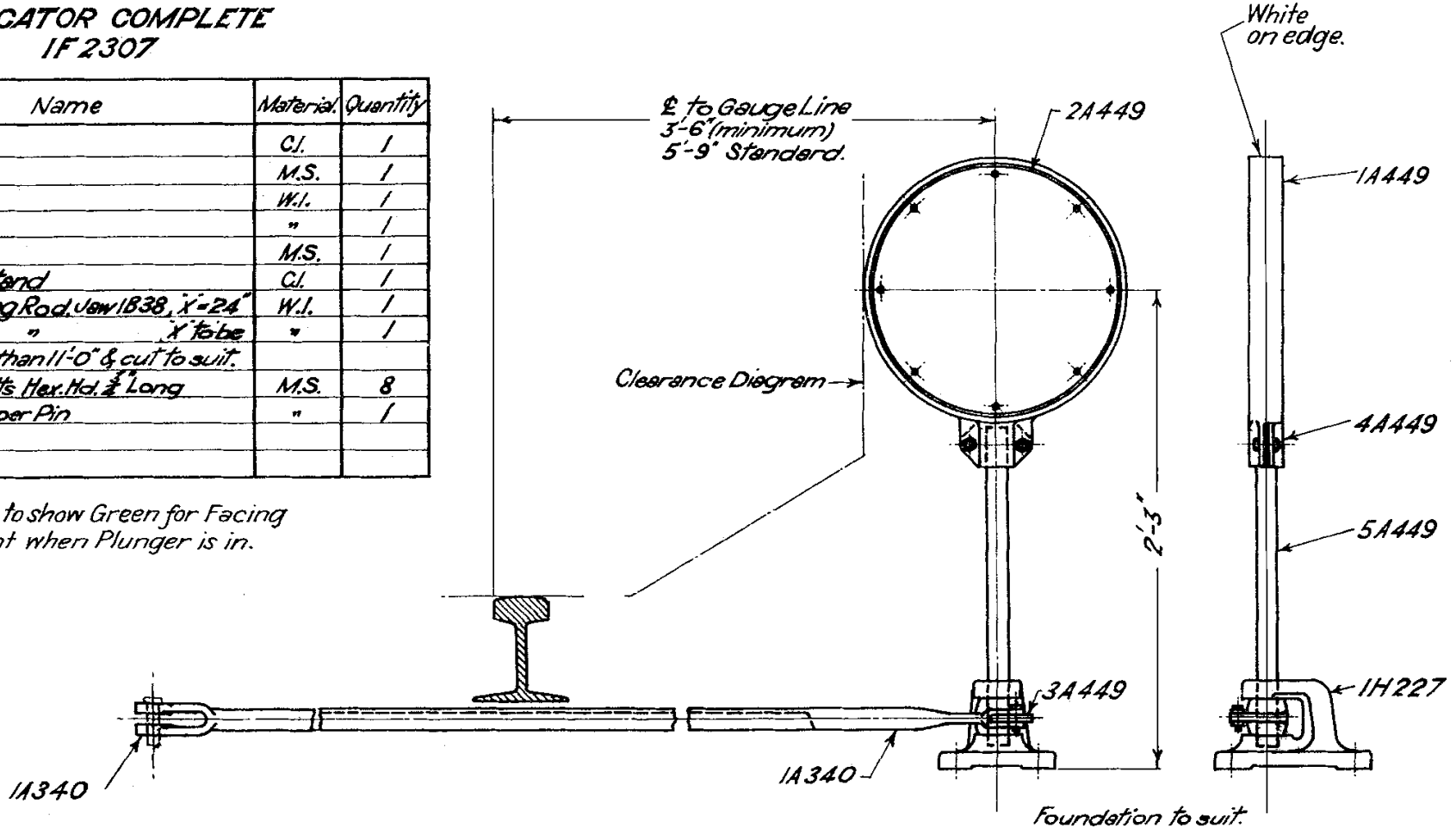
Figure 1 (below). The proposed plunger indicator by the Engineer of Signals in 1921. Figure 2 (right) The replacement 18 inch target trialled in 1923. Figure 3 (over the page, left) The 15 inch replacement indicator. Figure 4 (over the page, right) The application of the 15" indicator. Figures 1 and 2 are from VPRS 421/P1, Unit 141, File 21/22682 and are copyright, State of Victoria. They are reproduced with the permission of the Keeper of Public Records, Public Record Office Victoria, Australia.


16 SWG
14 5/16" dia.
24449
M.S.
DISC
Drill 9/32"
Enamelled, 1 side green & other side white.
3/8"
2"
1/16"
3/8"
15" dia.
14 3/8" dia.
3/8" rad.
8- Drill 9/32"
1 3/16" rad.
2- Drill 13/32"
4"
3"
3/8"
8 1/4"
1/4"
To be painted white.
IA449
C/
FRAME
5/8" rad
Supplied with 2 - 5/8" whit. bolts 1" Long.
9-3-27

INDICATOR COMPLETE
IF 2307

Part №	Name	Material	Quantity
1A449	Frame	C.I.	1
2A449	Disc	M.S.	1
3A449	Crank	W.I.	1
4A449	Clamp	"	1
5A449	Spindle	M.S.	1
1H227	Crank Stand	C.I.	1
1A340	Connecting Rod. Jaw 1838, x'-24"	W.I.	1
1A340	" " x' to be	"	1
	not less than 11'-0" & cut to suit.		
Stock	1/4" Whit. bolts Hex. Hd. 1/2" Long	M.S.	8
"	1/8" Split Taper Pin	"	1

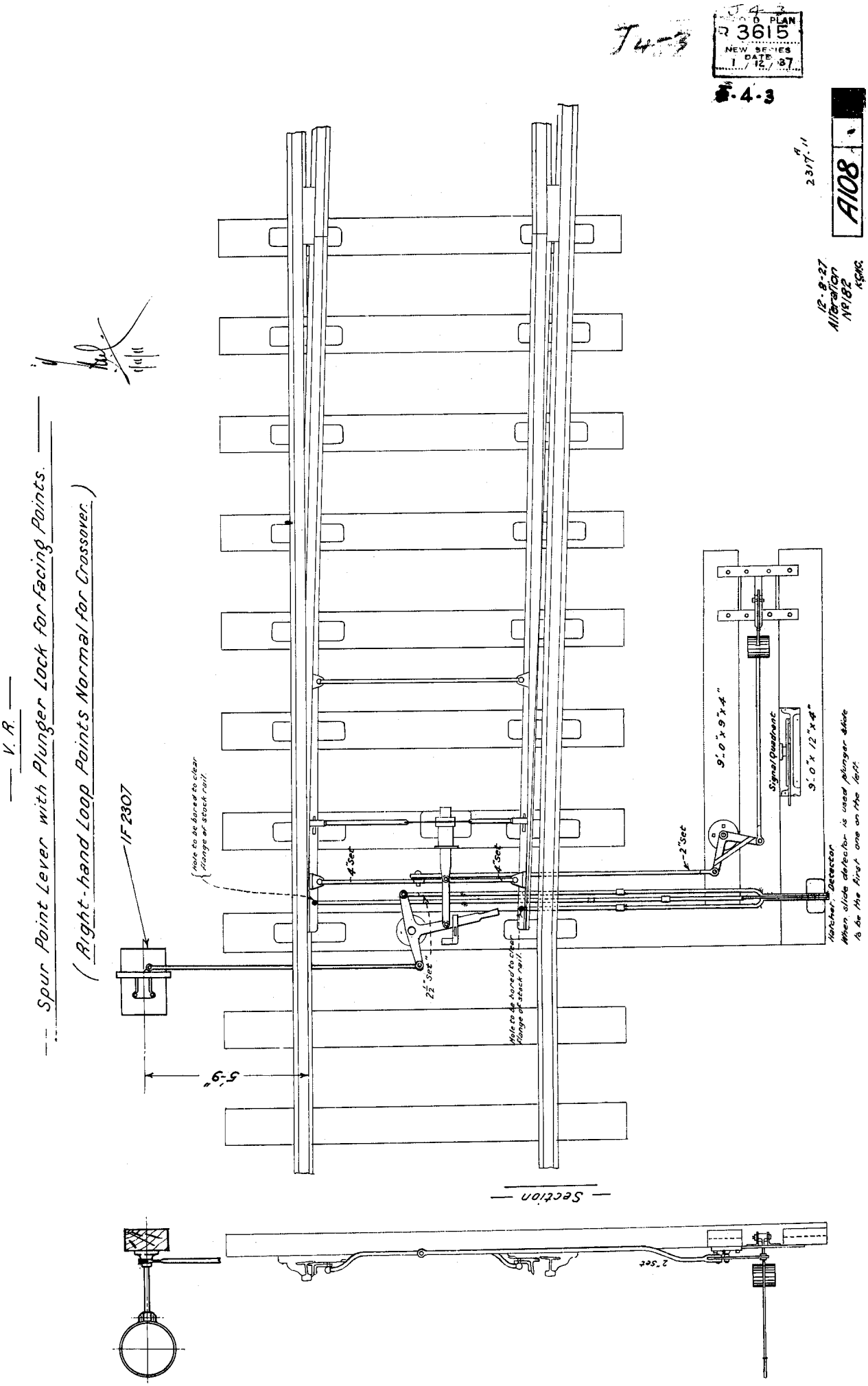
Note:- Indicator to show Green for Facing movement when Plunger is in.



Q1-83

IF 2307

12-8-27 Alteration № 182	V.R. INDICATOR FOR PLUNGER ON PLUNGER LOCKED POINTS. ASSEMBLY 9-3-27 SCALE 1½"-1 FT.	Chief Engr Sigs. & Tels.	Drawn by K.C.H.C.	Traced by K.C.H.C.	F2307


R 3615
NEW SERIES
DATE 1/12/87
A108
12-8-27
Alteration
No 182
K.S.M.
V. R.
Spur Point Lever with Plunger Lock for facing Points.
(Right-hand Loop Points Normal for Crossover.)
IF 2307
Hole to be bored to clear flange of stock rail
4" Set
2½" Set
5'-9"
9'-0" x 9" x 4"
Signal Quadrant
9'-0" x 12" x 4"
2" Set
Section

(Left) The general arrangements of an X layout set of points with plunger lock and plunger indicator.

After considering the results and the reports from employes involved, it was generally agreed that unless equipped with a light the indicators were useless at night, and were also dangerous to the shunting Staff when turned edge on. There was a unanimous opinion from Block and Signal Inspectors that the reports were very inconclusive about the value of the Indicators in preventing damage to Plunger Locked Points.

In October 1926, further trials were proposed but these trials were not proceeded with.

During August 1927 a new style of Indicator with a 15 inch diameter disc, enamelled white on one side and green on the other, framed in a 2 inch wide flange enamelled white, was installed on Plunger Locked Points at the down end of Donald yard (Figure 3). At first the Indicator was not installed correctly and gave confusing indications, but by December 16, the Block and Signal Inspector reported it was working efficiently. However, he considered that the new 15 inch disc with the wider edge did not show up as plainly as the older 18 inch type, and consequently he preferred the 18 inch type.

By January 1928, another 15 inch diameter, 2 inches wide disc had been placed at the Up end of Noyra.

On February 8, 1928, Indicators on Plunger Locked points had been installed at :–

Buninyong	Up end	(1)
Camperdown	Up end	(1)
Donald	Up end	(2)
Healsville	Up end	(1)
Leongatha	Down end	(1)
Numurkah	Down end	(1)
Nyora	Up end	(2)
Wycheproof	Up end	(1)

Notes:
(1) Older 18 inch diameter disc, thin edge.
(2) New 15 inch diameter disc with 2 inch wide edge.

On February 16, 1928, the General Super-intendent of Transportation decided that no further installations of Plunger Indicators were to be made, except in exceptional cases after the matter had been thoroughly investigated and approved by the Transportation Branch.

References

Most of the information in this article has been drawn from VPRS 421/P1, Unit 141, File 21/22682 held at PROV.

Table 1 Results of trial of 18" Plunger Indicators

District	Station	Date Indicator installed	Number of run-throughs 12 months prior to Indicator installation	After installation of Indicator
Geelong	Camperdown	08.11.1923	5	Nil
Seymour	Numurkah	27.01.1925	3	Nil
Dandenong	Leongatha	28.01.1925	1	Nil
Bendigo	Wycheproof	24.04.1925	Nil	Nil
Ballarat	Buninyong	17.03.1925	Nil	Nil
Maryborough	Donald	?	3	Nil
Metropolitan	Healesville	04.02.1925	5	Nil

Sandown Park

(Continued from page 50)

end of the platform. The information I have is a little confusing as the up end key switch, provided on 25 April 1987, is shown in the Weekly Notice as controlling D780 when Springvale is switched out but the diagram does not make any mention of that. The diagram does make mention of D793 being controlled by a 5P key switch but the Weekly Notice does not mention it at all.

In closing this little piece, which I will mention arose out of some discussion on the Signalling Australasia internet chat list in late December 2003, I would like to thank all those who have provided me with bits of information over the years especially Jack McLean who has been particularly kind by allowing me to copy many of his Victorian Working Timetables which are a goldmine for historians no matter what part of the railway your are researching. As usual, there are always gaps in our knowledge on matters of railway history so if you can help fill some of these gaps, I would be particularly keen to hear from you.

Letters to the Editor

George Hooper (george-hooper@excite.com) writes:-

> I am interested in obtaining details of the Victorian Railways "Safeworking" procedure for the operation of the road up Mt Buffalo when the road was not wide enough to pass vehicles in opposte directions. I have seen the three phones that were used, which are on display at the Mount Buffalo Chalet. I have not been able to ascertain details of the procedures. I have thoroughly searched the book "The Mount Buffalo Story, 1898 - 1998" by Dan Webb and Bob Adams. This book was published in 1998 by Melbourne University Press, ISBN 0 522 84783 8.

If any member knows anything about this method they can contact George by email.

Sandown Park

David Langley

Sandown Park was situated 15 ¼ miles (24.5 kilometres) from Flinders Street and 144' (44 metres) above sea level (sometimes this was quaintly shown as above the low water mark Hobson's Bay). The book "Names of Victorian Railway Stations, their origins and meanings …." compiled by Thomas O'Callaghan says that Oakleigh Park was a racecourse at this location and in 1891 the Committee of the Victorian Trotting Club changed the name to Sandown Park after a racecourse in Surrey, England.

Opening

The line between Oakleigh [15.4 km] and Bunyip was opened 8 October 1877 and was single line with the first station from Oakleigh being Dandenong [29.9 km]. The intermediate stations between Oakleigh and Dandenong were opened as shown hereunder:-

* Eastoakleigh [17.1 km] (later Huntingdale) opened 25 June 1927
* Clayton's Road [19.3 km] (later Clayton) opened 16 January 1880
* Westall [21.4 km] opened 6 February 1951
* Spring Vale [23.3 km] (later Springvale) opened 1 September 1880
* Sandown Park (2nd station) [24.4 km]
* Oakleigh Racecourse [24.5 km] (later Sandown Park)
* Noble Park [26.1 km] opened 3 February 1913
* Yarraman [28km] opened 21 December 1976.

The line was worked under the Staff and Ticket system with staff stations being Dandenong, Berwick, Pakenham and Bunyip. Spring Vale became a staff and ticket station on 17 December 1888 and probably did so because of the commencement of local passenger trains to Dandenong which were first shown in the working timetable dated 1 Oct 1888. Clayton became a staff station on 11 July 1891 and may well have been done so to facilitate the operation of plant and ballast trains working on the duplication.

The line was duplicated from Oakleigh to Dandenong on 14 December 1891 and block instruments provided at Oakleigh, Clayton's Road (renamed Clayton 6 July 1891), Spring Vale and Dandenong. (Block working had reached Oakleigh from Caulfield on 18 January 1888.) Clayton was closed as a regular block post on 1 May 1895 but the instruments remained in situ and were able to be used on race days. It appears that the signals were left standing at "all clear" but in 1898 the starting signals were crossed so perhaps something happened but we are not told what. It became a permanent block post again in December 1912.

Oakleigh Park Racecourse was opened on 12 August 1889. Oakleigh Racecourse station is shown in the Directory of Stations in the 1890 WTT, at 15 miles, but it does not appear in the Eastern line timetable. The directory doesn't mention which side of the line horses are discharged nor what the station was actually open for. (Later entries in the Directory of Stations show that horse were discharged on the down side of the line.) It is interesting to note that the timetable makes no reference to "Park" in the name of the station.

At this time there was most likely only a down platform but my information does not say whether the back platform and sidings were here yet, although I guess some facilities existed to enable race trains to terminate and return to Melbourne after the race meeting was concluded.

The station appears to have been renamed Sandown Park Racecourse in 1891 (and certainly by the timetable dated 9 May 1892), and it now appears in the actual timetable for the first time. Somewhere between the issue of the 1903 WTT and the 1908 WTT, the word "Racecourse" was dropped and the station was now merely Sandown Park.

The WTT for 1903 shows Clayton as switching in on special occasions (mostly race days one would think) and by the 1908 WTT Sandown Park is also shown as switching in "on special occasions" but that was later amended to "on race days". I don't know exactly when the block instruments were provided at Sandown Park as I don't have any WTT's for the 1903-1908 period and the Weekly Notice is strangely silent on the matter. However the Weekly Notice does tell us that the up and down home and distant signals were crossed in August 1898 so perhaps the block dates back to then and this is a subtle way of announcing it (no starting signals were provided at Sandown Park Racecourse by this date). The 1902 General Appendix notes that Sandown Park had crossovers at the Up and Down ends that were spiked over.

On 1 November 1909, a 14 lever rocker interlocking machine was provided at Sandown Park and was located in a "Combined Signal Box and Booking Office" located just off the platform at the Melbourne end. The litho diagram numbered 743'1909 was issued concurrently and is shown on the next page. A two lever auxiliary apparatus was also provided to work the down crossovers at the down end of the yard.

The entry from the 1913 Book of Signals details the individual signals at Sandown Park and also gives additional information regarding the facilities at the station.

SANDOWN PARK

(See Engineer's Diagram, No. 743/09)

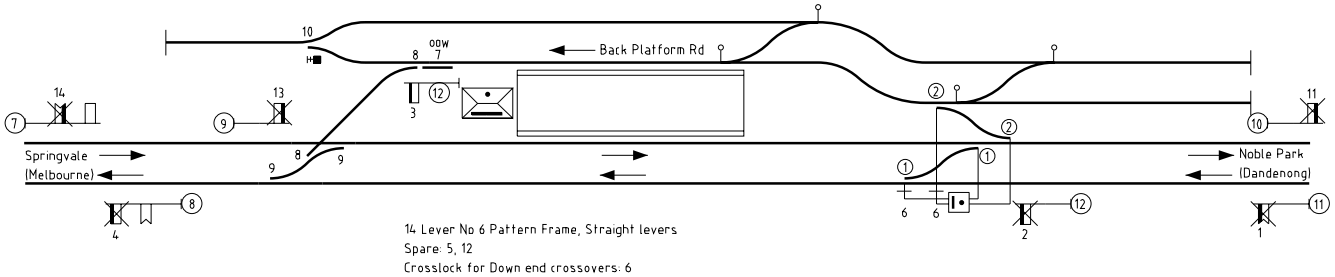
Semaphore Post No.	PARTICULARS
7	Two arms, Down signals:- Top arm, Down Starting Signal, worked from Spring Vale. Bottom arm, Down Distant Signal.
8	Two arms, Up signals:- Top arm, Up Starting Signal. Bottom arm, Up Distant Signal, worked from Spring Vale.
9	One arm, Down Home Signal.
10	One arm, Down Starting Signal.
11	One arm, Up Distant Signal.
12	One arm, Up Home Signal.
13	One arm, Up Home Signal from Back Road, up to Post No. 8.

NOTES.-1. The Crossover Points which lead from the Up Line to the Down Line and from the Down Line to the Back Road at the Down end of the station are rodded together and worked from an Auxiliary Frame, which is situate on the outside of the Up Main Line near the Points, and which is cross-locked from the Signalbox. When the Auxiliary Frame is used the employe working it must see that the catch of the lever is firmly down in the notch, that the Points close properly, that the train is clear of the Points before the lever is reversed and that the lever is set in its normal position as soon as the shunting is completed.

2. A Point Indicator works in conjunction with the Points leading from the Dead-end Siding to the Back Road.

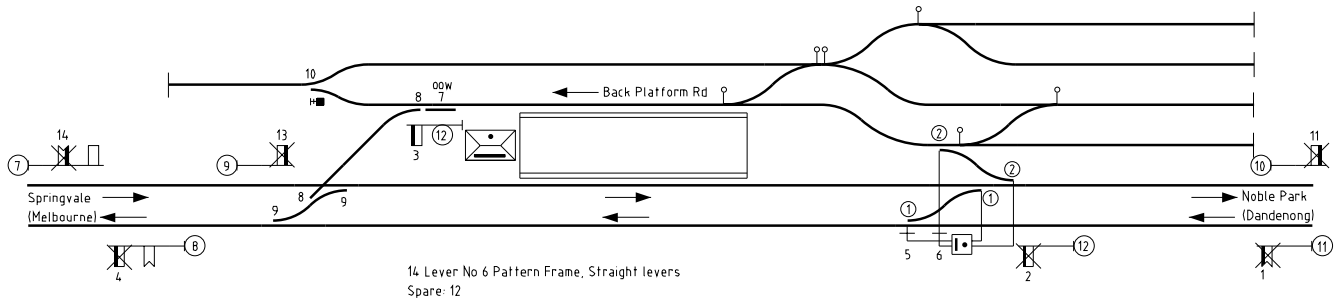
3. When Sandown Park is closed, the Fixed Signals are out of use and crossed in the way provided in Regulation 91.

Traffic operations at Sandown Park would have been something like the following. Traffic would have com-



Sandown Park 1909

(Based on Diagram 743'09 and Interlocking Sketch A208 amended to 3.11.54)



Sandown Park 1929

(Based on Diagram 743'09, Interlocking Sketch A208 amended to 3.11.54, & 1929 Track Chart)

menced with a series of Down special trains in the morning, spread over an hour or so, possibly augmented by stopping the regular Dandenong trains. Unlike the leisurely morning traffic, the homewards traffic would be frantic as the punters descended on the station after the last race and all attempted to get home at once. A rapid sequence of Up special trains would have been provided.

From an operational point of view, the Down trains would have arrived into the Down platform to discharge their passengers. The train would then be drawn forward towards Home 11 and set back into the Back Platform Road. The locomotive would run around and push the train into the storage siding. The fire would then be banked and the train would wait until the last race. It appears that up to six trains could be stabled in the sidings. No doubt one of the train crew was delegated as 'watchman' and the rest watched the races.

As an alternative, the two main line crossovers could be used to run around Down arrivals at the Down platform and the train could then depart empty cars back to Melbourne.

In the evening the trains would dock at short intervals in the Back Platform. After loading the patrons they would start their journey back to Melbourne.

At this time, there were seven signals, three points, one lock bar, and one crosslock worked from the 14 lever frame which left two spare levers. However one of the these spare levers was brought into use on 3 May 1912 when the down end crosslocked connections became separately released from the Signalbox. This alteration would now enable trains to continue running along the up line whilst shunting moves were being conducted between the down line and the Back Road. Previously all signals leading over these connections would have been secured at the stop position whenever eith of the crossovers were in use.

I have in my possession a copy of the locking sketch from Sandown Park. The original locking sketch survived for the whole life of the 14 lever interlocking frame so there are quite a few bits rubbed out, but a close look seems to indicate that lever 5 was the spare that was brought into use in 1912 and was used to crosslock the Down Line to Back Road crossover, lever 6 remaining to crosslock the crossover between the Up and Down Lines.

A glimpse of working at Sandown Park in 1927 can be gained from C2/27 which covers the Foundation Day services on 31 January. On this day there was a Labor picnic at Sandown Park. The instructions stated:

LABOR PICNIC AT SANDOWN PARK ON FOUNDATION DAY
31 JANUARY

An attendance of 1,500 to 2,000 is expected.

On forward journey picknickers will travel by trains leaving Flinders-street between 10 a.m. and 11 a.m., and as shown in schedule, the 10 a.m., 10.18 a.m., 10.39 a.m., and 11.16 a.m. will stop to set down at Sandown Park, and the 11 a.m. Down will terminate at Sandown Park.

On return journey Special trains are scheduled to leave at 7.15 p.m. and 7.30 p.m.

TICKETS
Flinders-street will be supplied with a special issue for Sandown Park. Other stations to book in ordinary way.

STAFF
Metro. Supt. to arrange.

RETURNS
Flinders-street is to furnish return of bookings, and Officer-in-Charge, Sandown Park, is to include in his report approximating numbers alighting and joining trains, also total attendance.

SANDOWN PARK
(a) Sandown Park will be open as a Temporary Block Post (subject to Block Rule 26) from 10 a.m. until the "Train Arrival" signal is received from Spring Vale for the 7.30 p.m. Up Special; during this time the Block Sections will be Spring Vale - Sandown Park, Sandown Park - Noble Park.
(b) During the time that Sandown Park is a Block Post the Up and Down Signals at that station will be in use. The Crosses to be removed before the station is opened as a Block Post and replaced after it is closed. See Regulation 91. The Signal lamps, if lighted, must also be extinguished after switching out. Bracket

platform lamps at Sandown Park to be lit up if necessary for return traffic, and roof lamps to be lit up early.
(c) The Crossover Points from the Up Line to the Down Line and from the Down Line to the Back Road at the Down end of the station are rodded together and worked from a two-lever Auxiliary Frame, which is placed on the outside of the Up Main Line near the Points, and cross-locked from the Signal-box. At any time when the Auxiliary Frame is used, the employe working it must see that the catch of the lever is firmly in the notch in either position; that the Points close properly; that the train is clear of the Points before the lever is reversed, and that the lever is set in its normal position as soon so as the shunting is completed.

The keys of Sandown Park Signal-box, and the keys of Overhead Branch Section Switches at Sandown Park 47/1/1 on Structure 787 and 47/1/1/1 on Structure 799 are kept at Spring Vale. These keys must be obtained from the Officer-in-Charge at Spring Vale by the Signalman, and returned after Picnic traffic is over. The normal position of all Switches controlling Sidings is "In," i.e., Switch closed (handle in upward position). Wire Live and dangerous to touch.

See instruction 18 of Weekly Notic 13/26.

Authorised employes must at all times exercise due care to avoid interference with overhead equipment, whether current is supposed to be off or on.

The Station-master at Spring Vale to arrange to have the Signal Lamps for Sandown Park cleaned and trimmed; the Officer-in-Charge at Sandown Park to have them lighted, in accordance with the Regulations, if required.

The timetable portion of C 2/27 gives more details of the train service on this day. The 1000, 1018, and 1039 Down Dandenong trains (ex Flinders Street) stopped at Sandown Park. In addition there was a special 1100 departure from Flinders Street which went 'off' at Sandown Park upon arrival there at 1138. Finally, the 1221 Dandenong stopped at Sandown Park to set down (pick up?) crew. In the afternoon the 1833 Up Dandenong stopped at Sandown Park to set down crew. In the meantime an empty cars departed Flinders Street at 1814 and arrived at Sandown Park at 1852. This formed a 1915 departure for Flinders Street. The train that had been 'off' at Sandown Park then came 'on' to form a 1930 departure for Flinders Street. As can be seen, only one train was stabled at Sandown Park for this traffic.

Unfortunately I do not have any details for a race day; the traffic arrangements could have been completely different.

The track chart of Road Foreman's Section Oakleigh No 1, dated 1 September 1929, indicates that by this date there were four sidings at the down end parallel to the main line on the down side of the line. The locking sketch shows the two nearest the main line but not the others so I conclude that they were added later and because they caused no changes to the signalling, were ignored by the signalling department. The additional two sidings may have been added during or soon after electrification (Oakleigh-Dandenong was electrified on 11 December 1922) as additional storage space for suburban electrics waiting for the return race traffic to commence. Weekly Notice 45/29 contained the following instructions for shunting electric trains at Sandown Park "Stabling a Local Race Train terminating at Down Platform.- Drive from front end from Down Platform to Down line, push train to Back Road and drive to Sidings."

SPRING VALE AND SANDOWN PARK.

Alterations to Fixed Signals:

On 6.4.38, the Up Starting Signal for Sandown Park, which was erected on Post 8, was abolished and in lieu thereof a new Up, Home Signal (Post 14) for Sandown Park was provided and erected on the Down side of the Crossover at the Up end of Sandown Park.

The particulars of Signal on Post No. 8 at Spring Vale and of all Signals at Sandown Park are now as follow :-

SPRING VALE

Semaphore Post No.	PARTICULARS
8	Up Distant Signal, Dandenong line.

SANDOWN PARK

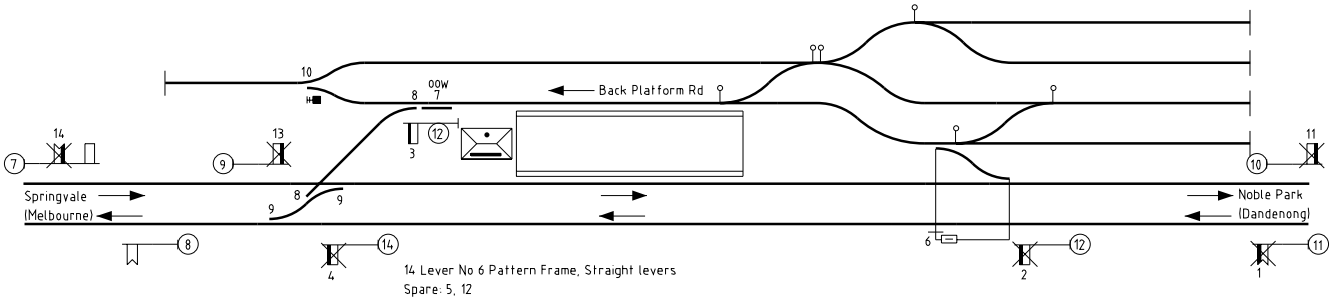
(See Engineer's Diagram, No. 743/09)

Semaphore Post No.	PARTICULARS
7	Two arms, Down signals:- Top arm, Down Starting Signal, worked from Spring Vale. Bottom arm, Down Distant Signal.
9	One arm, Down Home Signal – to Post 10.
10	One arm, Down Starting Signal.
11	One arm, Up Distant Signal.
12	One arm, Up Home Signal – to Post 14.
13	One arm, Up Home Signal from Back Road.
14	One arm, Up Home Signal from Up Line.

NOTES.-1. The points that lead from the Down Line to the Back Road at the Down end of the station are rodded together and worked from an Auxiliary Frame, which is situated near the Points, and which is cross-locked from the Signalbox.

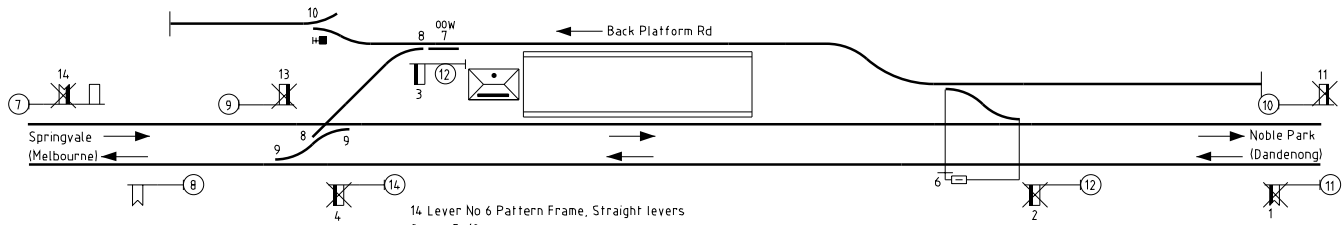
2. A Point Indicator works in conjunction with the Points leading from the Dead-end Siding to the Back Road at the Up end of Station Yard.

3. When Sandown Park is closed, the Fixed Signals are out of use and crossed.
from Spring Vale.
Amend page 144, Book of Signals and Engineer's Diagrams Nos. 15/22 and 743/09 accordingly.
(A.G.S.T. 11 /414 /3). (A. 593138). (W.N. 16 /1938).



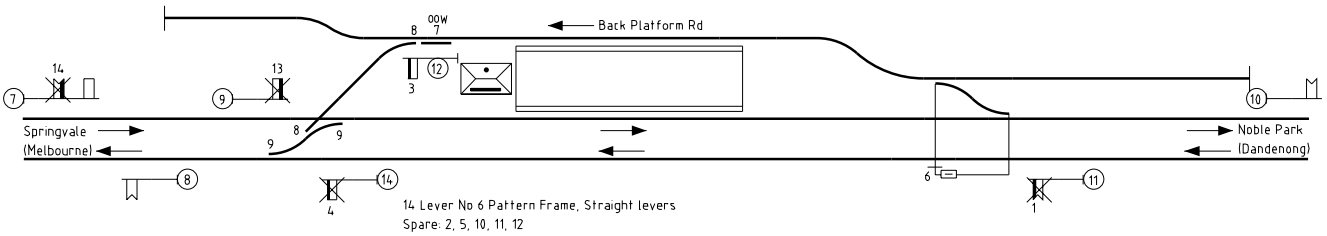
Sandown Park 1938

(Based on Diagram 743'09, Interlocking Sketch A208 amended to 3.11.54, & 1929 Track Chart)



Sandown Park 1943

(Based on Diagram 743'09, Interlocking Sketch A208 amended to 3.11.54)



Sandown Park 1954

(Based on Diagram 743'09, Interlocking Sketch A208 amended to 3.11.54)

On 10 November 1933 a Traffic Branch memo noted that the "interlocked points at Sandown Park are spiked in the normal position and the spectacles and signal lamp cases have been removed and are stored in the signal box. If Sandown Park switched in, Signal Adjustor must attend to release points and install signal spectacles. See correspondance [AGST] 9/200/4."

In 1935, A155/35 gave instructions for opening of Sandown Park on Australia Day; probably again for a picnic. Sandown Park was opened as a block post on Friday, 25 January so that the 1250 Down Dandenong Parcels Coach could test the overhead. On Monday, 28 January, Sandown Park was open from 1800 until the 2005 Up special passenger cleared Springvale, or later if a later Up special ran. Although I do not have the timetable for this year, the instructions suggest that the traffic to Sandown Park in the morning was handled entirely by through Dandenong trains. In the evening traffic from Sandown Park was probably handled by Up specials formed from empty cars. This would avoid laying over trains all day at Sandown Park.

The Weekly Notice No 24 for 1937 announced that the crosslocked main line crossover was abolished and the Interlocking Register says that it was on 5 July 1937, whereupon lever 5 became spare. The two lever auxiliary apparatus was abolished and the remaining crossover was worked by a small point lever.

Yet another relatively minor alteration occurred on 6 April 1938 when the up starting signal was removed from post 8 and placed on a new post, numbered 14, and located on the Noble Park side of No 9 points leading from the Back Road. This probably facilitated the movement of trains during race traffic by allowing up trains on the main line to move out of the block section from Noble Park and permit line clear to be given for another up train to approach. Sandown Park was, at this time, a Block Terminal on the up.

As part of the war effort, I guess, "the three sidings adjoining the Back Road" were removed on 14 August 1943. This left the Back Platform Road with a dead end extension at each end. Soon after the removal of the sidings, points 10, which now were merely acting as a catch point and were now not required, were removed on 12 October 1943. Perhaps the entire up end dead was removed as well.

The up home signal on post 12 was abolished on 17 July 1945, why I don't know and all my references remain silent on the fact, and that caused the Block Terminal status to be removed from Sandown Park. Three months later, on 18 October to be precise, the up distant signal was moved 300 yards nearer the signal box, perhaps someone thought that the now longer distance between the distant and the up home was too great but seeing as how Sandown Park was probably little used at this time, I don't see how that would have caused any real problems.

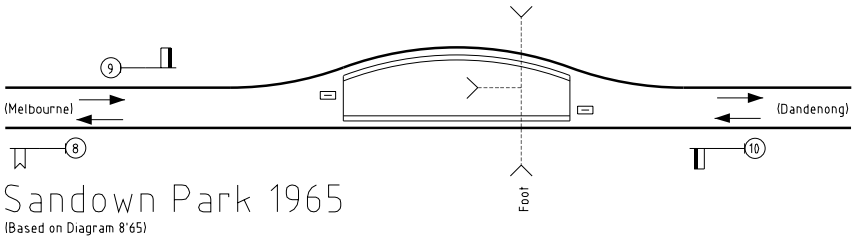
S938/48 details the arrangements for 'Speed Coursing' at Sandown Park on Tuesday, 22 June 1948. A special seven car electric train ran Flinders Street (depart 1250) to Sandown Park (arrive 1331). It returned at 1617 to arrive at Flinders Street at 1656. Sandown Park was opened as a block post from 1305 until the 1617 cleared Spring Vale. Similar conditions applied as in 1927, however the Circular specifically mentioned that the dead end extension of the Back Platform Road at the Down end was not available for traffic. A similar circular, S819/48, dated 25 May 1948, did not contain this proviso.

A minor alteration occurred on 8 April 1954 when the down starter on post 10 was abolished but the post was not removed. Instead it was used for the down distant signal for Noble Park, which had to be moved further out due to the Noble Park's down home signal also being moved further out in connection with the provision of flashing lights at Heatherton Road, Noble Park.

The Weekly Notice No. 43 for 1953 announced that Sandown Park was to be "temporarily disestablished as a Block Post and the instruments were to be removed". Maybe they were – maybe they weren't, I don't know but one year later, on 3 November 1954, the Back Road and all the sidings were placed "out of use" although the signal box remained in service. The final part in the intial chapter on Sandown Park occurred on 16 May 1955, when the station was disestablished as a Double Line Block Post and all the signals and interlocking machine abolished.

Now, if I were a minister I could now say – here endeth the first lesson – because the second lesson was to start shortly.

In fact it was to be 10 years and one month later, but like a phoenix, Sandown Park "rose from the ashes" and a new station, this time a island platform 483 feet in length, was provided on 19 June 1965 at practically the same location. Like the previous station, it was at first purely for race traffic but by now housing had sprung up in the area and no



Sandown Park 1965
(Based on Diagram 8'65)

doubt pressure was brought to bear and Sandown Park became a regular station from 4 October 1965. It was staffed under caretaker conditions, usually meaning porters only, and was supervised by the Station-master Spring Vale. The Directory of Stations shows also that it was connected to the railway telephone system and had a Public Address system, a rare thing outside the major stations of the time. However, I guess it proved its worth on race days.

The only signalling provided at the new station were the obligatory up and down home signals because Double Line Block Telegraph still reigned supreme along this part of the eastern main line and Victorian block rules provided for intermediate stations to have up and down home signals. These signals were worked from quadrant levers located at their respective ends of the station although unusually not in the normal position on the platform, but were located on the ground at either end of the platform.

The Double Line Block was replaced on 9 May 1971 and litho diagram No. 3'1971 was issued and this diagram showed that it was a fairly cheap job with just one pair of signals on each line at Noble Park effectively replicating the double line block post of old with no effort made to increase the possible headways. There had been a fire at Noble Park on 22 August 1970 and a temporary signal box was erected over the existing levers so perhaps that also caused this resignalling to be done in a hurry. It should be noted that on the upside of Spring Vale, there were many more signals further adding to the "hurry to commission" theory.

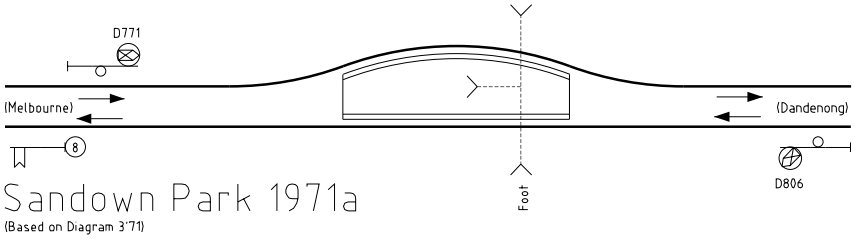
Up and down automatic signals were also provided on either side of Sandown Park, replacing the mechanical signals, and whilst they permitted a minor improvement in headways, they had little effect because of their close proximity to Spring Vale.

Shortly after, on an unknown date, litho 10'1971 was issued and now shows the autos at Sandown Park dressed as home signals with illuminated letter "A" lights but still numbered as formerly – D771 and D806. If we look at the signatures of the Signal and Telegraph Engineer, K. C. H. Cousins and note the dates thereon, we can conclude that 10'1971 was issued in May 1971 perhaps correcting on paper what was actually in the field. Perhaps diagram 3'1971 got it wrong and these signals were homes from the beginning, not the first time that a diagram needed reissuing to reflect the actual rather than the previously proposed signalling arrangements. It is worth noting that the Weekly Notice makes no reference to this subtle change to the signalling.

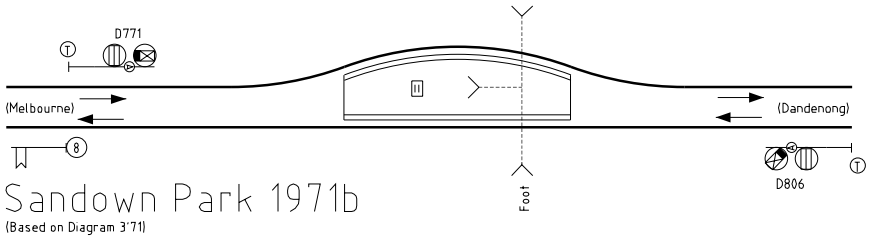
By mid 1985, with nearly four years of the improved country passenger service under the railways belt, the delays between Springvale (renamed from Spring Vale in February 1972) and Dandenong due to the lengthy signal spacing (I travelled a fair bit in those days and stopping at auto signal D 863 on the down side of Noble Park was quite common), a project was put in hand and new signalling arrangements were commissioned on 10 August 1985 which saw five additional signals provided in each direction. As part of this work, home signal D 806 at Sandown Park was moved to near the end of the platform and renumbered D794 whilst a new signal D810 was provided a little in the rear of its former position.

The final change that appears to have happened at Sandown Park, is the provision of 5P key switches at either

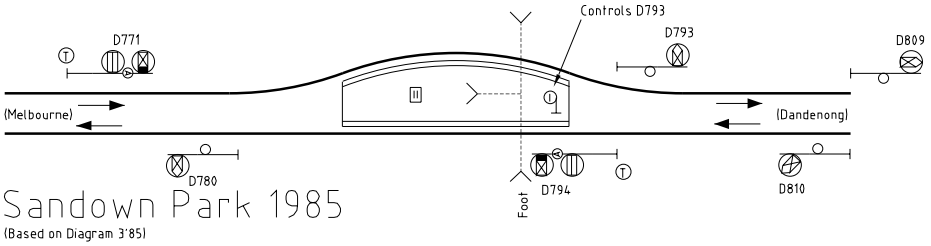
Continued on Page 45



Sandown Park 1971a
(Based on Diagram 3'71)

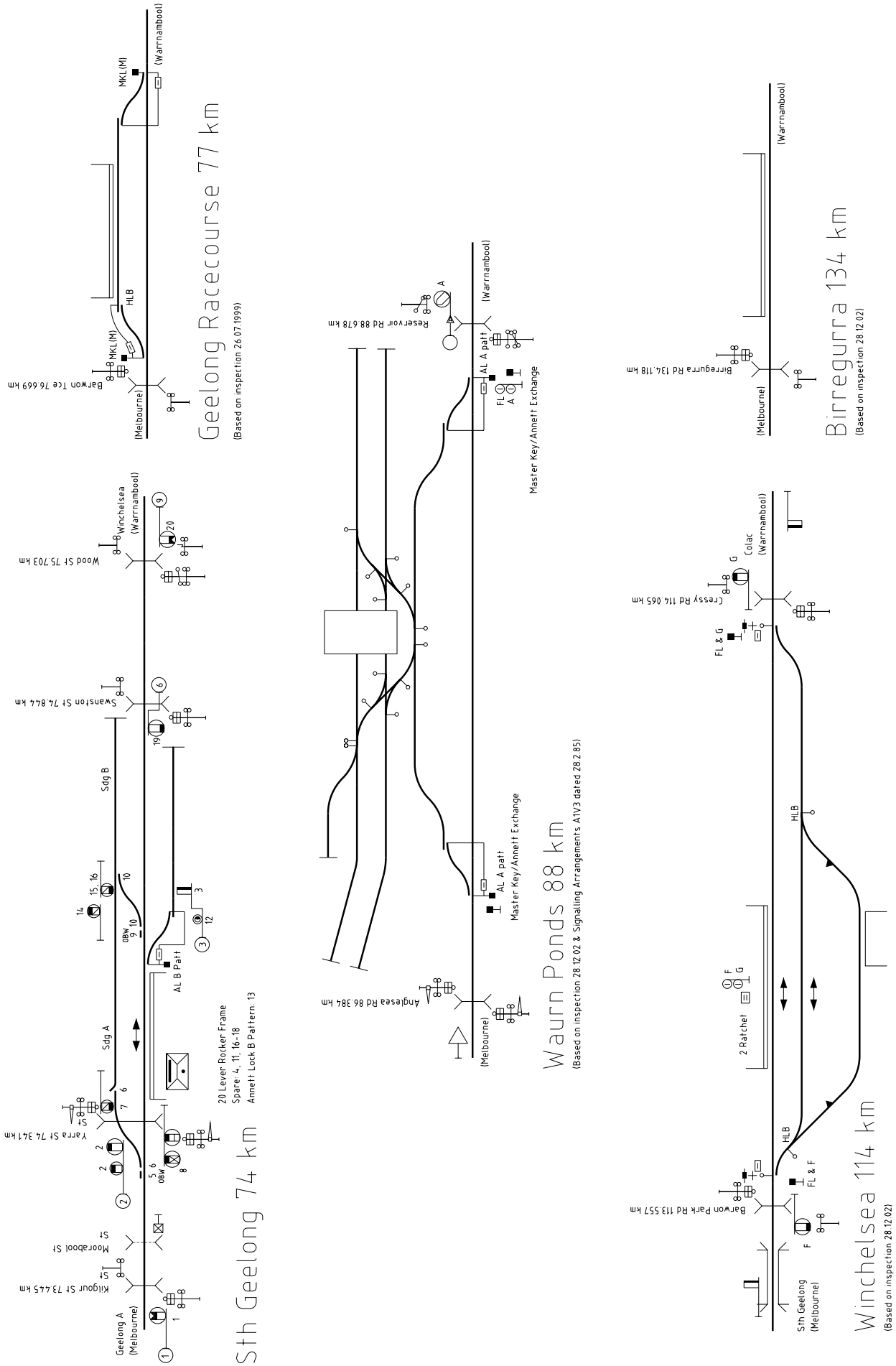


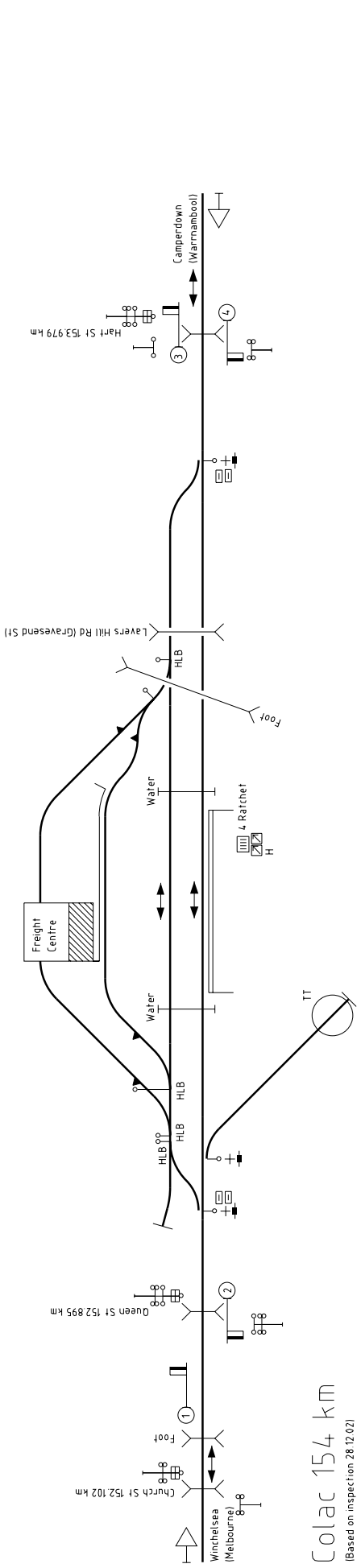
Sandown Park 1971b
(Based on Diagram 3'71)

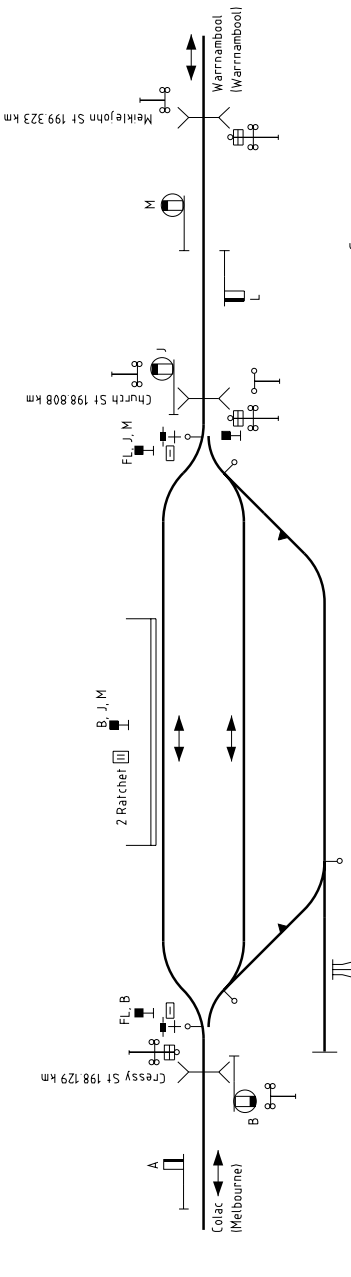


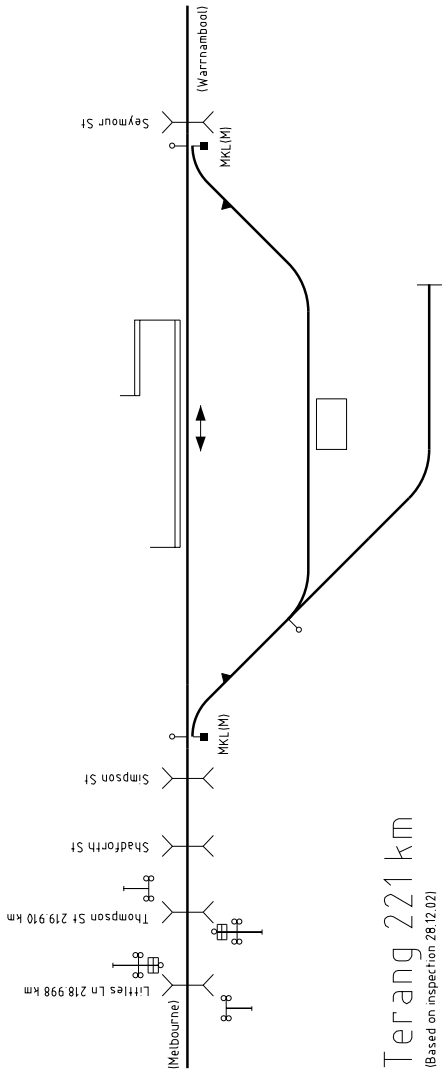
Sandown Park 1985
(Based on Diagram 3'85)

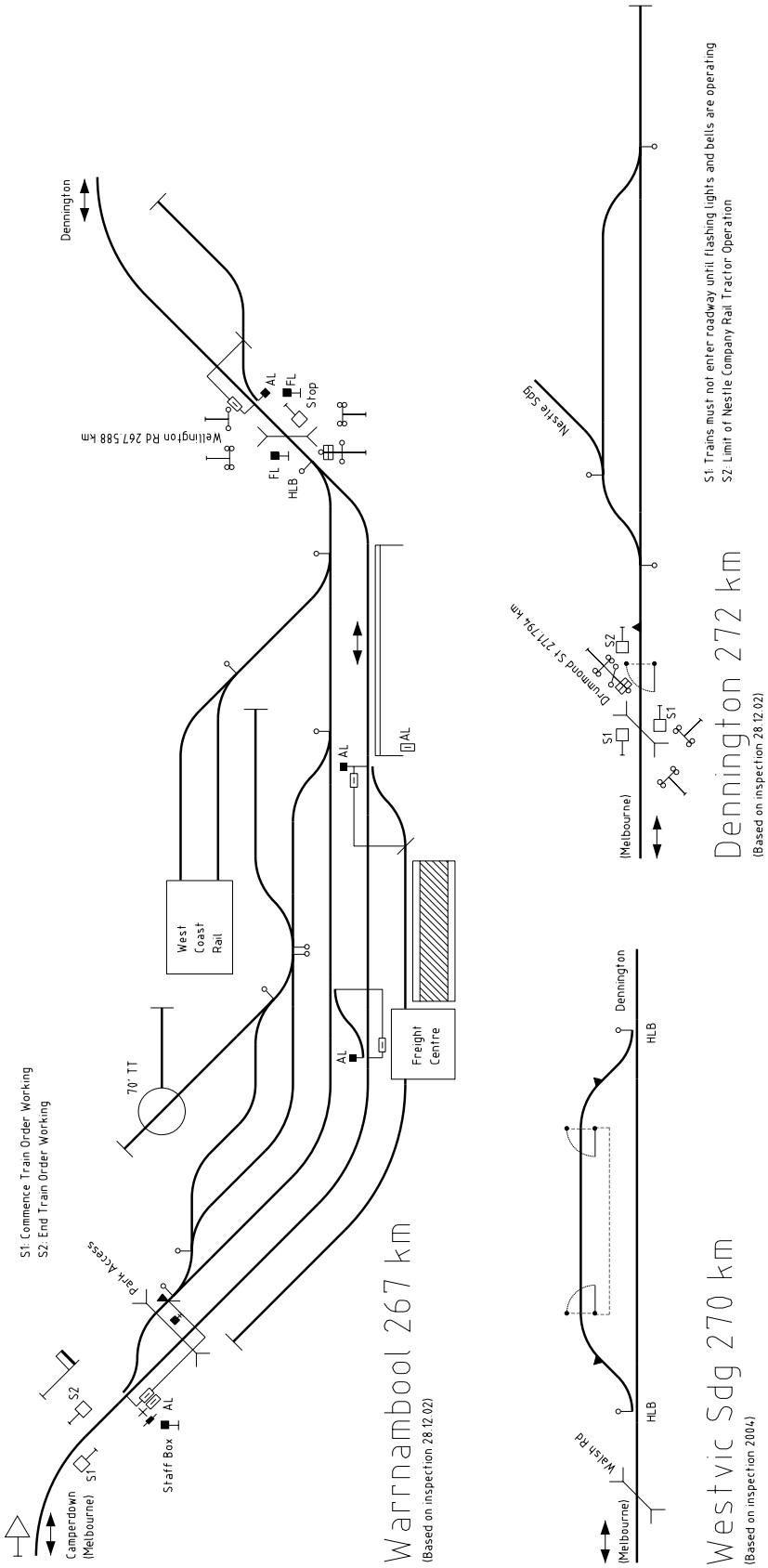
GEELONG - DENNINGTON 2000




Winchelsea (Melbourne)
Church St 152.102 km
Foot
Queen St 152.895 km
HLB
HLB
HLB
HLB
Water
Water
Freight Centre
4 Ratchet
H
TT
Foot
Layers Hill Rd (Gravesend St)
HLB
Camperdown (Warrnambool)
Hart St 153.979 km
Colac 154 km
(Based on inspection 28.12.02)


Colac (Melbourne)
A
B
Cressy St 198.129 km
FL B
2 Ratchet H
B, J, M
FL J, M
Church St 198.808 km
J
L
M
Meiklejohn St 199.323 km
Warrnambool (Warrnambool)
Camperdown 198 km
(Based on inspection 28.12.02)


(Melbourne)
Littles Ln 218.998 km
Thompson St 219.910 km
Shadforth St
Simpson St
MKL(M)
MKL(M)
Seymour St
(Warrnambool)
Terang 221 km
(Based on inspection 28.12.02)


Warrnambool 267 km
(Based on inspection 28.12.02)
S1: Commence Train Order Working
S2: End Train Order Working
Camperdown (Melbourne)
Staff Box
Park Access
70' TT
West Coast Rail
Freight Centre
Wellington Rd 267.588 km
Dennington
Stop
FL
HLB
AL
Dennington 272 km
(Based on inspection 28.12.02)
S1: Trains must not enter roadway until flashing lights and bells are operating
S2: Limit of Nestle Company Rail Tractor Operation
Nestle Sdg
Drummond St 271.796 km
(Melbourne)
Westvic Sdg 270 km
(Based on inspection 2004)
Walsh Rd

SIGNALLING ALTERATIONS

(Continued from Page 40)

The following signals were renumbered and converted to tri-colour LED light units: 4 (CAM304), 6 (CAM306), 12 (CAM312), 14 (CAM314), 16 (CAM316), 24 (CAM324), 26 (CAM326), 28 (CAM311), 34 (CAM317), 38 (CAM321), 44 (CAM327), 48 (CAM331), 50 (CAM333), L290 (CAM329), H290 (CAM319), L301 (CAM206), and H303 (CAM216).

The following points were renumbered: 7 (207), 9 (217), 13 (204), 15 (227), 21 (206), 51 (243), D1 (236), D2 (246), D3 (256), U1 (237), and U2 (247). The following crossovers were renumbered: 5 (224), 11 (214), 23 (231), 27 (216), 29 (221), and 31 (211). Points/Derail 25 was renumbered 226. Derails 15 (Siding B), 15 (Siding C), and 15 (Siding D) were renumbered 257, 267, and 277 (respectively). The Down end gates were runumbered 233 and the Up end gates 235. Note that points 226, 227 and derails 257, 266, 267, and 277 are self normalizing.

Replace the existing operating instruction No 36 (Section 34):

Burnley - Camberwell - Box Hill, Camberwell - Riversdale ATC sections, Issue of Caution Orders

The Automatic and Track Control system of train signalling is in force for the Centre line between Burnley - Camberwell - Box Hill, and the bi-directional 'X' line between Camberwell - Riversdale. Form 2382 (which authorises the issue of an ATC Caution Order) will not be in use on these sections. The Signallers at Burnley, Camberwell, Box Hill and Riversdale will be responsible for the authorisation and issue of ATC caution orders.

If the Home Departure signal fails to clear, the Signallers at both ends of the section must check that the block light is lit, the control levers/switch or exit button has been reversed, the opposing Home Departure signal will clear, and that no train or vehicle has been placed outside the Home Departure signal. If the Home Departure signal has failed, the Signaller at the opposite end of the section must sleeve the lever/ switch/exit button working the Home Departure signal normal. When this has been done, the Signaller where the signal has failed can complete a Caution Order to pass the defective signal and deliver it to the Driver.

Camberwell - Special instructions if the Home Departure signals fail when Box Hill is switched out

If Homes CAM306, CAM316, or CAM 326 or Dwarf CAM336 fail for a movement to the Centre line while Box Hill is switched out, the Signaller at Camberwell must: check that the block light is lit (if the block light is out the Signaller must check that the section is clear) and then advise the Train Controller of the failure. The Signaller and Train Controller must then jointly check that Box Hill is switched out and no Signaller is in attendance. If this is so, the Signaller at Camberwell must set and sleeve the route to the Centre line and complete a Caution Order to pass the defective signal and deliver it to the Driver. This procedure is to be followed for each train required to pass the defective signal.

Replace the existing operating instruction No 38 (Section 34):

Camberwell - Failure of Signals

Camberwell is provided with an NX SSI panel. For any movements not governed by a fixed signal, or whenever it is required to pass a signal at Stop, it is necessary to operate each point lever in the route to the required position and to maintain the levers in this position until the movement has cleared the points.

Failure of Points

HWMKII and electro-hydraulic point machines are installed at Camberwell. Emergency point handles are provided for both in the event of a failure. The point handles are secured in locked boxes and may be removed at any time without affecting the signalling. If the points fail, the Signaller must set the operating switch on the panel to the position required and then manually operate the points. With the electro-hydraulic points, only a technician can restore the points to power operation. With the HWKMII points, they may be restored to the 'Motor' position, but must be clipped for for facing movements, even if detection is restored, until inspected by a technician.

Stabling Sidings

Set back movements are not permitted from the Up Main line to No 3 Track. Trains must be signalled to Siding A and then set back to the required track.

The Security gates operate automatically when a route is set to or from the yard. If the gates fail, a technician must manually operate the gates. The control lever must be operated and trains may be signalled once the gates have been detected reverse.

A maintainers control unit is provided between D and E sidings to prevent a route being signalled to or from a siding whilst maintenance work is being carried out on trains in the siding. To lock out a siding, the Maintainer must request permission from the Signaller. The Maintainer will then operate the switch for that siding; a red light will go on in the Maintainers panel and a red light will also be displayed on the panel under the siding concerned. The Signaller must confirm with the Maintainer that the appropriate lights have been displayed and sleeve the exit buttons of the affected siding. The Maintainer must lock the box containing the control unit. When the maintenance work has finished, the Signaller is to be informed, the switch restored to normal, and the lever sleeves removed. All details must be entered in the TRB.