



AUSTRALIAN RAIL TRACK CORPORATION LTD

Ref No: 08-08-11-029

## **New Equipment & Systems Approval - Dual Gauge Turnouts modified to ARTC Requirements**

### **1. Determination of Need**

The original design of dual (standard and broad) gauge turnouts was developed by the South Australian Railways in the early 1970's and subsequently by Australian National in various configurations. They were designed for relatively low speeds and traffic levels, and used 41 or 47kg rail. They were extensively used in the Adelaide area, and later in the Melbourne area by ARTC.

During 2002 the Victorian Department of Infrastructure modified the AN design in order to strengthen the design and increase the turnout speed to 35km/h by using 50kg rail and altering the turnout geometry. This design was type approved by the DOI.

This design was further modified for use within ARTC in Victoria and South Australia following experience with the AN type in Victoria and by specifying concrete bearers and head hardened rail in order to further strengthen the assembly.

### **2. Significant Change or Not**

This change in equipment is assessed as **MINOR** as this is an improvement to designs existing in South Australia for over 30 years.

### **3. Review Panel**

- John Cowie - Manager, ISP, Standards and Systems
- Tim Calver - Standards and Technical Services Engineer
- Ian Domleo – Senior Track and Civil Consultant

A third party design review of the DOI design was carried out by the Queensland Rail track design office.

### **4. Equipment Suitability**

Suitable for use in Victoria and South Australia for new dual gauge installations and for replacement of existing AN type dual gauge turnouts.



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5. Approval




Approval is granted installation at any suitable dual gauge (standard and broad) site on ARTC tracks.

6. Conditions of Approval

None

7. Sign off

Review Panel:

John Cowie		Date	27.4.06
Tim Calver		Date	27/4/06
Ian Domleo		Date	27.4.06

**Extract from Report:** Dual Gauge Turnouts – 16 April 2012 – Version 1.2  
**Report Prepared by:** John Furness (Manager Standards)  
**Added to type approval May 2012**

Speeds for dual gauge turnouts:

DG Turnout Type	BG (km/h)		Standard Gauge (km/h)		Comments
	Straight	Diverge	Straight	Diverge	
23	95	NA	95	35	Recommend redesign as a normal SG turnout with a third rail outside this normal turnout. (Normal would be a 60kg turnout with flex blade and 1:8 RBM - V. Just add the third rail for BG)
24	95	-	95	35	
25	70	NA	70	25	Update maintenance inspection to monitor the stock rail support.  Recommend a designer be engaged to investigate the improvement in stock rail and support to allow increased speed to 95 kph for 25 tonne axle load. Designer to sign off on the design axle load/speed.
27	95	25	70	NA	
28	95	25	70	-	
29	70	35	70	25	Update maintenance inspection to monitor the stock rail support.  Recommend a designer be engaged to investigate the improvement in stock rail and support to allow increased speed to 95 kph for 25 tonne axle load. Designer to sign off on the design axle load/speed.
30	70	35	70	25	Update maintenance inspection to monitor the stock rail support.  Recommend a designer be engaged to investigate the improvement in stock rail and support to allow increased speed to 95 kph for 25 tonne axle load. Designer to sign off on the design axle load/speed.
34	NA	35	95	35	Recommend redesign as a normal SG turnout with a third rail outside this normal turnout (60 kg flex blade and 1:8 RBM V – add third rail)
35	NA	25	70	30	Recommend redesign as a normal SG turnout with a third rail outside this normal turnout (60 kg flex blade and 1:8 RBM V – add third rail)

**DUAL GAUGE TURNOUTS MODIFIED TO ARTC REQUIREMENTS**

	DESCRIPTION	ARTC DRAWING NUMBER
1	1 in 8 Dual Gauge Lead Assembly Type 29 1600mm & 1435mm Gauge	ARTCS1060001000
2	1 in 8 Dual Gauge Lead Assembly Type 40 1600mm & 1435mm Gauge	ARTCS1060019000
3	1 in 8 Dual Gauge Lead Assembly Type 39 1600mm & 1435mm Gauge	ARTCS1060013000
4	1 in 8 Dual Gauge Lead Assembly Type 30 1600mm & 1435mm Gauge	ARTCS1060007000
12	1 in 8 Crossing Panel 'ER' For Type 39 Turnout	ARTCS2060014000
13	1 in 8 Crossing Panel 'FR' For Type 30 Turnout	ARTCS2060008000
21	1 in 8 Dual Gauge LH Switch Assembly Type 29 1600mm & 1435mm Gauge	ARTCS1060002000
22	1 in 8 Dual Gauge LH Switch Assembly Type 40 1600mm & 1435mm Gauge	ARTCS1060020000
23	1 in 8 Dual Gauge RH Switch Assembly Type 39 1600mm & 1435mm Gauge	ARTCS1060015000
24	1 in 8 Dual Gauge RH Switch Assembly Type 30 1600mm & 1435mm Gauge	ARTCS1060009000
27	1 in 8 Dual Gauge 'K' Crossing Assembly For Turnout Types 29 and 30	ARTCS1060025000
28	1 in 8 Dual Gauge 'K' Crossing Assembly For Turnout Types 39 and 40	ARTCS1060033000
29	1 in 8 Crossing Panel 'EL' For Type 40 Turnout	ARTCS2060021000
30	1 in 8 Crossing Panel 'FL' For Type 29 Turnout	ARTCS2060003000
31	1 in 8 Turnout Crossing Typical Coring Detail	ARTCS2060042000
32	Switch Blade Detail for Single Switch Assembly For Turnout Types 29,30,39 & 40	ARTCS1060043000
33	Stock Rail Detail for Single Switch Assembly For Turnout Types 29,30,39 & 40	ARTCS1060044000
34	UIC33 Check Rail Detail For Turnout Assembly Types 29 & 30	ARTCS1060026000
35	AS50 Kg Check Rail Detail & ICCI Closure Rail For switch Assembly Types 29 & 30	ARTCS1060027000
36	Outer Switch Blade Detail for Double Switch Assembly For Turnouts 29,30,39 & 40	ARTCS1060045000
37	Inner Switch Blade Detail For Double Switch Assembly Types 29,30,39 & 40	ARTCS1060046000
38	Inside Stock Rail Detail For Double Switch Assembly Types 29,30,39 & 40	ARTCS1060047000
39	Stock Rail Detail for Double Switch Assembly Types 29,30,39 & 40	ARTCS1060048000
41	Crossing Plates for Turnout type 30	ARTCS2060010000
42	Distance Blocks for Turnout type 29, 30,39 & 40	ARTCS3060074000
43	Double Rail Heel Joint Assembly for Turnout Type 30 & 40 (Mirror Image For Turnout Type 29 & 39)	ARTCS2060049000
44	Sleeper Plate Single Rail CSR1 29	ARTCS3060050000
45	Single Rail Cast Guard Plate CSG129	ARTCS3060051000
46	Double Rail Cast Guard Rail Plate CDG294	ARTCS3060052000
47	Sleeper Plate Double Rail CDR294	ARTCS2060053000
48	Single Rail Cant Reducing Plate 431S, 432S, 433S	ARTCS3060054000
49	Heel Plates for 50Kg Turnout type 30	ARTCS2060011000
50	Cast Heel Guard Rail Plates for Turnout type 30	ARTCS2060012000
51	HDPE Pads for Turnout Types 29,30,39 & 40	ARTCS1060055000
52	Block and Spacer Details	ARTCS2060056000
53	Dual Rail Cant Reducing Plates 431D,432D, 433D	ARTCS2060057000
54	Slide Plate type SPC with Guard Support	ARTCS3060058000
55	Single Rail Heel Joint Assembly for Turnout Type 30 & 40 (Mirror Image For Turnout Type 29 & 39)	ARTCS2060059000
56	Double Rail Joint Assembly	ARTCS2060060000
57	Slide Plate Single Rail Type SPS	ARTCS3060061000
59	Double rail and Centre Block Details	ARTCS3060062000
60	Single Rail Check Panel For Types 29 & 30 Turnouts	ARTCS1060028000

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	<b>DESCRIPTION</b>	<b>ARTC DRAWING NUMBER</b>
61	Double Rail Check Panel For Types 29 & 30 Turnouts	ARTCS1060029000
62	Crossing Plates for Turnout Type 40	ARTCS2060022000
63	Crossing Plates for Turnout Type 29	ARTCS2060004000
64	Crossing Plates for Turnout Type 39	ARTCS2060016000
65	Heel Plates for 50Kg Turnout Type 40	ARTCS2060023000
66	Heel Plates for 50Kg Turnout Type 29	ARTCS2060005000
67	Heel Plates for 50Kg Turnout Type 39	ARTCS2060017000
68	Cast Heel Guard Rail Plates for Turnout Type 40	ARTCS2060024000
69	Cast Heel Guard Rail Plates for Turnout Type 29	ARTCS2060006000
70	Cast Heel Guard Rail Plates for Turnout Type 39	ARTCS2060018000
72	Arrangement Of Stretcher Bars	ARTCS2060063000
73	Details Of Cast Web Washer	ARTCS2060064000
74	Centre Bracket for Stretcher Bar	ARTCS1060065000
75	Rod Detail for Stretcher Bar	ARTCS3060066000
76	Stretcher Basket Details	ARTCS2060067000
77	Web Drive Bracket	ARTCS3060068000
78	End Bracket for Stretcher Bars	ARTCS1060069000
31	Outer Switch Drive Rod	ARTCS1060070000
88	Single Rail Check Panel For Types 39 & 40 Turnouts	ARTCS1060034000
89	Double Rail Check Panel For Types 39 & 40 Turnouts	ARTCS1060035000
90	1 in 8 Dual Gauge Switch sections 1600mm & 1435 Gauge	ARTCS1060071000
91	Crossing Check & STD Plate Sections	ARTCS2060072000
92	UIC33 Check Rail Detail for Turnout Assembly Types 39 & 40	ARTCS1060036000
93	AS50 Kg Check Rail Detail For switch Assembly Types 39 & 40	ARTCS1060037000
A	Concrete Bearers For Types 29 & 30 Turnouts	ARTCS1060030000
B	Concrete Bearers For Types 39 & 40 Turnouts (Bearers 1 to 31)	ARTCS1060038000
B1	Concrete Bearers For Types 39 & 40 Turnouts (Bearers 32 to 51)	ARTCS1060039000
C	Baseplate For Plate Support Assembly For Types 29 & 30 Turnouts	ARTCS1060031000
D	Plate Support Assembly For Types 29 & 30 Turnouts	ARTCS1060032000
E	Baseplate For Plate Support Assembly For Types 39 & 40 Turnouts	ARTCS1060040000
F	Plate Support Assembly For Types 39 & 40 Turnouts	ARTCS1060041000
J	Sleeper double rail joint plate	ARTCS2060073000
K	Operating assembly for type 30 & 40 straight mainline side	ARTCS2060074000
L	Operating assembly for type 30 & 40 turnout side	ARTCS2060075000
M	Operating assembly for type 29 & 39 straight mainline side	ARTCS2060076000
N	Operating assembly for type 29 & 39 turnout side	ARTCS2060077000
	Operating component detail drawings	
Z	Drawing conversion from Victorian DOI to ARTC numbers and logo	