Government of South Australia

Department of Planning, Transport and Infrastructure

DEPARTMENT OF PLANNING, TRANSPORT AND INFRASTRUCTURE

PUBLIC TRANSPORT SERVICES

CHANGE TO:

TRACK AND CIVIL INFRASTRUCTURE CODE OF PRACTICE
VOLUME TWO - TRAIN SYSTEM [CP2]

TO SUPPORT HIGHER TRACK SPEEDS

TC1-DOC-000386

Knet # 7840112

CPTS 952

Table 3.1 to be removed,

~~**Table 3.1: Operating regime**~~

~~**1.1.1.1 Designation**~~	~~**Maximum axle load**~~	~~**Maximum operating speed**~~
~~Passenger diesel or diesel electric multiple units~~	~~21 tonnes~~	~~90km/hr~~
~~Locomotives~~	~~22 tonnes~~	~~65km/hr~~
~~Freight rolling stock~~	~~21 tonnes~~	~~65km/hr~~

and be replaced with:

Table 3.1: Operating regime

1.1.1.2 Designation	**Maximum axle load**	**Maximum operating speed**
Passenger diesel, diesel electric multiple units	21 tonnes	110km/hr
Locomotives	22 tonnes	65km/hr
Freight rolling stock	21 tonnes	65km/hr

CPTS953

Table 2.2 to be removed,

~~**Table 2.2: Speeds for freight trains**~~

~~Where the passenger train speed is:~~	~~90~~	~~80~~	~~70~~	~~60~~	~~50~~	~~40~~	~~30~~	~~20~~	~~10~~
~~the corresponding speed for freight trains shall be:~~	~~65~~	~~50~~	~~40~~	~~35~~	~~30~~	~~25~~	~~20~~	~~15~~	~~10~~

and be replaced with:

Table 2.2: Speeds for freight trains

Where the passenger train speed is:	110	90	80	70	60	50	40	30	20	10
the corresponding speed for freight trains shall be:	65	65	50	40	35	30	25	20	15	10

The following changes to CPTS-TS-956 are needed to support 110kph running:

Table 2.2 to be removed,

~~**Table 4.2: Minimum response requirements and allowable train speeds.**~~

~~Measured parameters in mm with track under load~~						~~Maximum speed [1]~~			
~~Gauge~~		~~Horiz. align. versine on 10m. chord see note [2]~~	~~Short top 5m~~	~~Twist~~		~~90~~	~~65~~	~~40~~	~~20~~
~~Wide~~	~~Tight~~			~~Short 2m~~	~~Long 14m~~				
~~≥38~~	~~≥20~~	~~-~~	~~≥36~~	~~≥25~~	~~≥70~~	~~E1~~	~~E1~~	~~E1~~	~~E1~~
~~35-38~~	~~19-20~~	~~-~~	~~30-36~~	~~23-25~~	~~61-70~~	~~E1~~	~~E2~~	~~E2~~	~~E2~~
~~29-34~~	~~17-18~~	~~>45~~	~~26-29~~	~~21-22~~	~~53-60~~	~~E2~~	~~P1~~	~~P1~~	~~P2~~
~~27-28~~	~~15-16~~	~~35-45~~	~~22-25~~	~~19-20~~	~~47-52~~	~~P1~~	~~P2~~	~~N~~	~~N~~
~~25-26~~	~~10-14~~	~~25-34~~	~~19-21~~	~~17-18~~	~~41-46~~	~~P2~~	~~N~~	~~N~~	~~N~~

and be replaced with:

Table 4.2: Minimum response requirements and allowable train speeds.

Measured parameters in mm with track under load						Maximum speed [1]				
Gauge		Horiz. align. versine on 10m. chord see note [2]	Short top 5m	Twist		110	90	65	40	20
Wide	Tight			Short 2m	Long 14m					
>38	>20	-	>36	>25	>70	E1	E1	E1	E1	E1
35-38	19-20	-	30-36	23-25	61-70	E1	E1	E2	E2	E2
29-34	17-18	>45	26-29	21-22	53-60	E1	E2	P1	P1	P2
27-28	15-16	35-45	22-25	19-20	47-52	E2	P1	P2	N	N
25-26	13-14	25-34	19-21	17-18	41-46	P1	P2	N	N	N
23-24	11-12	19-24	16-18	15-16	36-40	P2	N	N	N	N

Pre-existing values found in table 4.2 are the same as those found in Australian Standard 7635 for passenger traffic, excluding top vales. Table 4.2 has been modified to include the new speed class (110 kph) adopted from Australian Standard 7635 115kph speed class. Currently PTS relies upon an EM30 track recorder that measures top using a 2m/3m chord is not covered by the Australian Standard which relies upon a 20m measurement. Existing values for top are the same as those previously used by RIC 2m/3m chord. The RIC 115 kph limit for top has been adopted.

Table 4.3 to be removed,

~~**Table 4.3: Minimum response requirements for cant variation.**~~

~~Cant variation~~	~~Tangent track (incl radii ≥ 2000m~~	~~Curved track including transitions, radii < 2000m~~	
		~~Insufficient cant based on maximum design speed~~	~~Excess cant based on maximum design speed~~
~~Absolute cant > 160mm requires E1 response [note 3]~~			
~~>60~~	~~E2~~	~~E2 [note 4]~~	~~E2 [note 6]~~
~~50-60~~	~~P1~~	~~P1 [note 5]~~	~~P1 [note 6]~~

and be replaced with:

Table 4.3: Minimum response requirements for cant variation.

Cross level variation from design	Tangent track (Tangent & Radii >2000m)	Curved track including transitions (Radii <2000 m)		Additional action required for insufficient superelevation
		Insufficient cant based on track design see note 4	Excess cant based on track design see note 6	
Absolute superelevation >160mm requires E1 response				
>75	E1	E1	E1	
60-75	E2	E2	E2	Restrict 40km/h below posted speed
51-60	P1	E2	P1	Restrict 40km/h below posted speed
41-50	P2	E2	P2	Restrict 30km/h below posted speed
15-40		P1	P2	Restrict 20km/h below posted speed
<15				No action required

Pre-existing cant and cant variation limits do not reflect the detail used in previously known standards for 115kph. The adopted table meets both the existing limits found in AS 7635 as well as the pre-existing PTS limits.

Numbered comments 4 and 5 page 30 to be removed,

~~[4] The response can be reduced to P1 by a speed reduction of 40km/h from the design speed.~~

~~[5] The response can be reduced to P2 by a speed reduction of 30km/h from the design speed.~~

and replaced with:

[4] The response can be reduced to P1 or P2 by a speed reduction determined using the rating process.

Changes to table 4.3 to include speed responses make comments 4 and 5 unsuitable. However a replacement comment 4 leaves the possibility to reduce the response if a rating process is followed.

Risk Assessment

Risk	Controls	Outcome
Derailment - due to inadequate track geometry at speeds greater than 90 kph	Adopted, tighter, intervention limits established for 110 kph speeds class consistent with practice elsewhere to manage the risk at higher speeds. Existing design and rating process for horizontal and vertical geometry accounts for speed and is suitable for 110kph.	No increase in risk.
Derailment - due to track geometry deterioration between inspection	Tighter limits with existing inspection frequencies provides the equivalent certainty that track will not drop below base operating standard. Additional track recorder runs to be programmed at six weekly intervals for first six months.	Track to be monitored to ensure that deterioration rate does not increase risk.
Collision – With another train on adjacent track or structure	Structural clearance assessment is independent of speed, although vehicle dynamic movements may increase. Kinematic values used in current code are consistent with those used for the DIRN which operates at 110kph.	Minor increase in risk but current controls suitable for higher speed.
Collision – with another train on the same track	This risk is not controlled by the track and civil code of practice. Operation at higher speeds will require that operational safety, signalling design, sighting be assessed.	Controlled by other means.
Collision – due to inadequate sighting	Sighting distances in the code are based upon time and therefore adjusted suitably for the change in speed.	No increase in risk.

General Information

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