


Section: T 003

Subject: TRACK

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**This document supersedes Infrastructure Group Code :
Section: T 003 Issue 3 ; Date Effective October 2004**

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ORGANISATION AND GENERAL

P.1 DOCUMENTS RELATED TO THIS SECTION OF THE CODE provide further information and details on procedures and technical matters.

These documents include:

- T100 Track Supplements
- T:200 Engineering Handbook
- Training Records
- Rail Operating Rules & Procedures
- National Rail System Standards

and other appropriate manuals and codes that form part of the quality system.

P.2 ABBREVIATIONS AND DEFINITIONS used in this section of the Code are:

Infrastructure	Includes track, structures, signaling, electrical, telecommunications and traction
Owner	Person representing the Owner of the infrastructure
Engineering	Group that provides infrastructure standards, replacement strategies and technical guidance
Infrastructure Operations	Infrastructure Operations representing the Owner to provide maintenance and related services for track assets
Area Manager	Person appointed to be in overall charge of the Infrastructure Operations Personnel in a defined area.
General Manager Infrastructure	The person(s) appointed to manage the Infrastructure Group for the Owner.
Operator	Company or group that operates trains on the rail network managed by the Owner

Ganger(s) Length	Length Ganger Refers to a section of track including track on mainlines, loops, yard sidings, private sidings and sidings on wharves on which rolling stock runs.
Special Ganger(s)	Includes Ganger(s) in charge of Track Machines, Spot Resleeper Group, Mobile Flash Butt Welder, Ballast Cleaner Consist, Heavy Maintenance Gang and any other special or project gang.
Handbook EM80	T:200; Engineering Handbook Track evaluation car
CSP	Track code supplement
CSG/Q	General code supplement – new prefix is Q
NDT	Non destructive testing
H/W	Heavy weight
M/W	Medium weight
S/H	Second hand
CWR	Continuously welded rail
S & I Rule	Signaling and interlocking arrangements diagram Refers to a rule in the Rules and Procedures of the Owner
Access Agreement	An agreement between an Operator and the Owner.
NRSS	National Rail System Standard. Standards adopted by the Owner and all operators using the track provided by the Owner
Competent Person	That person who has been deemed competent through training and demonstration of suitability with training records available to be produced as required.
Infrastructure database	IDB. The database that contains data on track, bridges and other assets
HRV	High rail vehicle
MGT	Million gross tonnes of railway traffic
M	metres
mm	millimetres
LNI	Local Network Instructions - part of the Rail Operating Rules & Procedures

TSR	Temporary speed restriction
T.I.	Track Inspector
Moth	Mothballed Line
SAP	Asset management work order financial system
Sirius/Maximo	Asset management system replacing IDB

P.3 T100 TRACK CODE SUPPLEMENTS

Track Code Supplements are controlled documents.

Track Code Supplements define procedures which must be complied with by personnel working in the areas of design, inspection, maintenance and construction of track and associated works. Personnel must be familiar with the contents of the Track Supplements issued to them.

P.4 TASK INSTRUCTIONS - Task Instructions are issued to personnel as appropriate and are primarily maintained by Infrastructure Operations. These are controlled documents but do not form part of the quality system. Refer to Task Instructions Contents and Index for lists of Task Instructions.

P.5 T:200 ENGINEERING HANDBOOK – The Track handbook for use in the field providing standards for maintenance and some construction standards.

P.6 WHEN SPECIAL GANGS ARE WORKING ON A LENGTH either as Operations personnel or contracted by Infrastructure Operations, it is the responsibility of the Area Manager to ensure that there is clear understanding between the two leading hands on their respective duties before the work is commenced.

Infrastructure Operations must take special care to ensure that personnel and/or contractors have a clear understanding of their personal responsibilities whenever some overlap of duties could occur.

Should the special gang be contracted outside Infrastructure Operations, a permit is required for the work and shall contain details of responsibilities on a case by case basis.

P.7 THE SPECIAL GANGER WILL BE RESPONSIBLE for the protection procedures over the length affected by his work. He shall keep the Length Ganger fully informed of all aspects of his work that affect safety of trains and of any occasions when the special gang will be absent during appointed working hours.

In any case the placing of any speed restrictions needed is the responsibility of Infrastructure Operations, except if previously agreed and the special ganger is qualified to do so.

P.8 IF ANY DANGER, OBSTRUCTION OR SERIOUS DEFECT IS DISCOVERED which affects the line, immediate action must be taken in accordance with Rules 1, 5 and 6 by the person making the discovery. Protection must be provided in accordance with the appropriate rule. As soon there after as possible, and by the quickest means, the Area Manager must always be advised.

Where necessary a speed restriction should be enforced to maintain track safety.

P.9 INFRASTRUCTURE OPERATIONS PERSONNEL MUST ASSIST OTHER RAIL PERSONNEL whenever they are instructed by the Area Manager, with any works which are necessary for the safe and efficient running of trains.

P.10 INFRASTRUCTURE OPERATIONS MAY BE REQUIRED TO CARRY OUT OTHER GENERAL WORK

Provided it is in the interest of the Network or Operator that the work be done. This would normally only be in an emergency that would be considered a safety critical matter or otherwise as arranged by the Owner

P.11 CODES, TRACK SUPPLEMENTS, SAFETY PLANS AND SPECIAL INSTRUCTIONS regarding lengths must be kept up to date and handed over by Gangers and Special Gangers to their successors.

P.12 THE RESPONSIBILITIES OF the Infrastructure Operations personnel must be contained within their management system.

Some specific responsibilities and details of those responsibilities shall require the approval of the Regional Manager.

Infrastructure Operations personnel and sub-contractors have responsibility to comply with the requirements of this code and other related documents and manuals.

In particular:

- track inspections and special inspections, including reporting
- construction and maintenance standards
- repair and reporting of defects, exceedances and failures
- general track safety. Refer Clause P.8.

P.13 Exemptions to this code and related documents (refer P.1) may be granted by the Engineering Groups responsible for that standard to Infrastructure Operations. These exemptions are recorded in the Infrastructure database.

P.14 - P.19 Reserved

INSPECTIONS

P.20 TRACK INSPECTIONS

Inspections are to be made in accordance with clauses P.21- P.29. These inspections ensure the track and structures are safe for the passage of trains at authorised speeds until the next scheduled inspection.

In areas where a hi-rail vehicle or a motor trolley is unable to be used, code exemptions must be granted or foot inspection must be carried out.

P.21 TRACK INSPECTION FREQUENCY

Mainlines and Crossing Loops

Mainlines and crossing loops are to be inspected in compliance with clause P.20 and the following table.

Line	Frequency	Inspection by
<p>Over 2 MGT or regularly scheduled Passenger Services</p> <p>NIMT NAL 0 – 36.1 km Newmarket Manukau Onehunga Mission Bush Rotowaro ECMT Murupara Kinleith Mt Maunganui MNPL 0 – 130.6 km PNGL 0 – 45 km Napier Port 0 – 2.2 km Johnsonville Melling Wairarapa 0- 91 km MNL Midland SNL MSL 0 – 390.88 km Taieri 0 - 3.5km</p>	<p>Twice per week (with a maximum of 5 days between inspections)</p>	<p>Track Inspectors</p>

Line	Frequency	Inspection by
All other lines or sections of lines	Once per week (with a maximum of 10 days between inspections)	Track Inspector

Where lines that have seasonal traffic and do not operate passenger trains the inspection frequency may be altered from twice weekly to weekly once the traffic volumes have reduced under 2MGTPA.

The objective of track inspections is to find defects and programme corrective action such that the track is maintained within critical limits for track geometry and material condition.

Sidings, Yards, Terminals, Private Sidings, Track on retained land:

Inspection frequency for these tracks will be in accordance with the developed and approved schedule which is agreed between Terminal Managers and Area Managers for KiwiRail.

Different inspection frequencies for areas of yards that have more use than others such as arrival/departure roads shall be set

The frequency of inspection will be determined through evaluation of a number of factors that include (but not limited to) :

- Use of the track i.e. volume, speed and load limits
- Assessed frequency of track geometry deterioration
- Track material condition and assessed rate of track material deterioration
- Previous inspections details including any known incidents

Consideration is to be given to altering the inspection frequency if any changes in use of any yard or siding are made. This process must be recorded for future reference.

All track that forms part of the National Rail System must be inspected at least once each calendar year.

The inspection schedule shall be held in the Management System such as SAP.

Inspections shall be carried out by personnel deemed to be competent by Engineering and Infrastructure Operations.

Competency will be established through training and demonstration of suitability.

P.22 SPECIAL INSPECTIONS

In times of possible danger special inspections shall be carried out. Area Managers must arrange for such inspections as considered necessary to safeguard the passage of trains when:

- There is a likelihood of damage or obstruction of the line due to storm, flooding, earthquake, fire or wind. (ref fig P.96 for wind speeds)
- There is risk to trains from any other cause such as track damage from defective rolling stock, dragging equipment and overgauge or displaced loads.
- There is a possibility of track buckles.

Special inspections by any qualified staff member do not relieve the Track Inspector from their inspection.

These inspections are to be reported on an approved form.

P.23 HOLIDAY INSPECTIONS & SUSPENDED SERVICES

When a holiday falls on any day on which an inspection is normally made or when otherwise normal services are cancelled the following provisions shall apply:

- When regular services have been cancelled or suspended, if there have been no trains for more than five (5) days, an inspection is not required. Where services are to be reinstated an inspection is required at least the day before resumption of traffic to allow time for repair, etc.

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- Inspection days are to be rescheduled in accordance with P.21 when holidays fall on normal inspections days or when line status changes. For example; if passenger services are suspended and freight traffic is less than 2 MGT then reschedule as appropriate in conjunction with P.21 e.g. Main South Line

P.24 THE REQUIREMENTS OF A TRACK INSPECTION

- (a) Observe the track, including on bridges, looking for any significant change to top or line, and checking they are satisfactory.
- (b) Watch for train damage, such as wheel burns, impacts from dragging gear or fallen loads.
- (c) Check drains and waterways are clear.
- (d) Visually check all level crossing surfaces, flangeways, alarm equipment and check operation of selected alarms as directed by Code P.127 if required.
- (e) Visually check, measure gauge, cant, switch and frog wear in turnouts
- (f) Observe trackside signs to ensure they are in place and visible. This includes all TSR boards.
- (g) Review faults that are known yet remain unrepaired to ensure that no further deterioration has taken place or mitigate the issue by implementing a TSR.
- (h) Watch for stock trespass or potential stock trespass.
- (i) In electrified areas, observe the overhead lines and structures for signs of damage.
- (j) Check areas which have been specially listed in the essential features list, refer P.36.
- (k) Check for any other matters which could affect the safe running of trains, including clearance encroachments.
- (l) Observe any locked turnouts - CSP/73 Section 6 refers.

Inspectors are to advise their Area Manager of any illegal activity that they may observe i.e. trespassing, occupation of land without a permit to enter, dumping of rubbish.

P.25 MINIMUM INSPECTION REQUIREMENTS

The following table summarises the minimum inspection requirements:

Inspection Type	Code Clause	Frequency	Carried out by	Inspection Responsibility
M186 Inspection	P.26	Once every 6 months	<i>Track Inspector or Field Engineer</i>	<i>Area Manager</i>
Engineering Inspections	P.29	Once every 12 months	<i>Engineering Inspector, or qualified Area Manager</i>	<i>Regional Manager</i>
Track Inspection, including essential features list	P.21	Once or twice per week	<i>Track Inspector or qualified Ganger</i>	<i>Area Manager</i>
	P.28	Annually	<i>Area Manager</i>	
Yard Inspections	P.21	<i>As required by the scheduled plan</i>	<i>Track Inspector or qualified Ganger</i>	<i>Area Manager</i>
Turnout Inspections	P.26	Once every 12-24 months	<i>Track Inspector</i>	<i>Area Manager</i>
Locomotive Cab Runs	P.28	Once every 4 months	<i>Area Manager</i>	<i>Area Manager</i>
EM80 Exceedances	P.91	As required by code	<i>Track Inspector or qualified Ganger</i>	<i>Area Manager</i>
	P.28			

NOTES : The responsibility for inspections must be detailed by the Infrastructure Area Managers and held within a suitable scheduling system (e.g. SAP) . Inspections may be delegated to suitably competent staff.

An EM.80 run may be used as a locomotive cab run provided :

- all the requirements of a locomotive cab run are met
- EM.80 run cannot be used for consecutive locomotive cab runs

P.26 TRACK INSPECTORS INSPECTIONS

Track Inspectors are responsible for the following inspections :

(a) Track Inspections

Track inspections shall be carried out in accordance with clause P21 & P.24 and reported on an approved form to the Area Manager.

Track Inspectors are to report every inspection and all inspection findings on an approved form. More than one inspection may be recorded on a form provided details of the inspection findings for each inspection are clearly identified. Reports shall contain no more than two inspections of the same Gang length.

The report must include essential data such as date of inspection, length inspected and priority of the track condition found. In addition it should detail all defects, track geometry faults, altered status on essential features, level crossing defects and items outside of code or requiring attention to prevent further deterioration that have not been repaired.

If nothing new is found on the inspection the form is to be returned as a nil report to demonstrate the inspection was completed.

(b) Yard and Siding Inspections

Inspections shall be carried out on each yard or siding within a specific maximum period in accordance with clause P21 and reported on the appropriate form to the Area Manager upon completion of each inspection. These reports shall be detailed as track inspection reports.

(c) M186 Inspection

Once every 6 months a complete check on all curve boards, permanent speed boards and other essential signage track side using the M186 forms. The completed report is forwarded to the Area Manager and defects listed on the appropriate form, unless for safety of operations immediate action to correct defects has taken place.

(d) Turnout Inspections

Once every 12 months the Track Inspector shall complete a check on all mainline & arrival/departure road turnouts. The completed report is to be forwarded to the Area Manager and defects listed on the appropriate form. A 24 monthly check of all Yard & Siding turnouts is to be completed as above.

P.27 RESERVED

P.28 AREA MANAGERS INSPECTIONS

Area Managers are required to carry out inspections as per clause P.25.

(a) Track Inspections:

Sufficient inspections are to be carried out to ensure: Each length is being maintained to the required standard, construction and material standards for new work are being complied with.

Area Manager should do their inspection in conjunction with Length Gangers and inspect the mainline and yards under their management at least once over a twelve month period.

(b) Locomotive Runs:

Locomotive Run Inspections are to be made by Area Managers over all main lines on which day time trains operate to assess:

- the ride quality of the track
- positioning of track signs, including TSR and CSB sites
- view lines at level crossings, to signage and signals
- level crossing surfaces, lineside drainage

(c) Track Evaluation Car – EM80 : (refer CSP50)

The EM80 must be accompanied at least once annually by the Area Manager and all runs by either Field Engineers and/or Track Inspector.

Length gangers must also be present at least once annually.

P.29 ENGINEERING INSPECTIONS

Regional Managers shall be responsible for ensuring that the track in their entire area receives a full Engineering Inspection once every calendar year.

Engineering Inspections must be carried out by a competent person, and authorized by the Track Technical Committee..

All track that forms part of the National Rail System must be inspected at least once each calendar year. This includes mainlines, yards, terminals, private sidings, wharf sidings, private lines, enclosed track and track on retained land unless otherwise specially identified in an Access Agreement

The inspection shall be carried out by foot, slow moving HRV or slow moving trolley such as an Alumicart or Hi-rail quad bike.

The inspection shall be recorded on the track log and entered into Infrastructure database on completion. Refer Section 21 of Track Supplements.

After processing, the inspections shall be filed by year and kept for a period of at least 5 years.

The Infrastructure Operations annual engineering inspection plan must be developed, for a calendar year, no later than 31st December of each year and provided to Track Engineering.

Track that is showing signs of deterioration between inspections must have the inspection frequency reviewed and consideration be made to increase the frequency of inspections. This review process must be documented and records held with the appropriate forms.

P.30 PRIVATE SIDINGS AND PRIVATE LINES over which any rolling stock is authorised to run must have an engineering inspection, in accordance with clause P29, at least once every 12 months. Any repairs done or further work required is to be arranged by the Area Manager or notified to the owner of the private siding or line for action. Responsibility for maintenance and renewals of private sidings or line is defined by Private Siding agreement.

Inspectors should advise Private Siding agreement holders when inspections are being done or alternatively advise the appropriate representative of the owner of the private siding or line operator.

In cases where the party holding the private siding right regularly attends to maintenance the output reports are to be provided to them. Inspectors must state in their reports, the name of the person to whom, and when, they have drawn attention to the work required.

This also applies to enclosed track and track on retained land unless otherwise defined in an Access Agreement.

P.31 SIDINGS ON WHARVES are to be treated as private sidings and private lines.

P.32 ENCLOSED TRACK and track on retained land are to be treated as private sidings and lines unless specially identified in an Access Agreement.

Inspectors are to advise Operators when inspections are being done.

In cases where the Operator regularly attends to maintenance, Inspectors must state in their reports, the name of the person to whom, and when, they have drawn attention to the work required.

P.33 - P.35 Reserved

P.36 ESSENTIAL FEATURES LIST

An essential features list is to be completed by the Area Manager for each track length, maintained within Infrastructure database, and a copy held by the Length Ganger and Track Inspector.

The list shall record any features on the length which are to be specially checked during every inspection of the length or features that should be specifically monitored on a special inspection e.g. slips or flood levels at bridges during heavy rainfall.

It must be reviewed and reissued as required. The list must be signed by the Area Manager and show the date of issue.

Essential features lists are to be available to any staff that may be required to carry out a track inspection or special inspection.

P.37 REPORTS ON INSPECTIONS

Reports on Inspections are to be provided by Track Inspectors on the appropriate form in accordance with clause P.26(a), (b) .

Upon receipt of the reports :-

The Area Manager is responsible for :-

- Recording that the inspection has been completed in accordance with all code requirements. All inspections and inspection findings are to be entered into the appropriate area of the Infrastructure database.. Also refer to Track Code Supplements; Sections 01 and 21
- Take appropriate action where inspections have not been performed, are incomplete, are not reported adequately or below expected standard
- Ensure reports are sufficiently complete and reflect the Area Managers own knowledge of his area
- Sign the report form when received from the Inspector
- Print out summary report of outstanding work and issue to Length Gangs and Track Inspectors at least monthly
- Review all outstanding P.1 reports to determine if the work is completed or other appropriate action has been taken to ensure code compliance and track safety.
Appropriate action may be :-

- Repaired but not reported
- Priority reassessed after inspection
- Under TSR

File the report forms by gang length and retain these inspection records for at least 12 months.

Appropriate Infrastructure staff must :-

- Take appropriate remedial action on the inspection findings based on the requirements of T:200 Engineering Handbook clause 336.
- Note action taken on the inspection report or summary report provided

- Advise their Area Manager of date repaired or other action taken e.g. TSR
- Return summary reports to their Area Manager as required.

P.38 AREA MANAGERS REPORTS

Area Managers are to complete and forward an M120 Part A Compliance Certificate for every area to the Regional Manager on a 3 monthly cycle.

Any exceptions to code compliance should be noted along with plans to achieve compliance and target dates for completion. Any granted exemptions are to be attached with the M 120.

Completed M120 Part A & B certificates are to be forwarded to the General Manager Infrastructure & Engineering, or otherwise as advised, by the 15th of the month following the end of the month.

All concerns which cannot be overcome within delegated authorities or resources available must be included in the report.

P.39 ENGINEERING INSPECTION PROGRAMME AND REPORTS

Regional Managers shall each December programme the engineering inspections required for the following year and the person responsible for completing the inspection. A copy of this programme should be forwarded to the Engineering Manager

Regional Managers shall monitor inspections completed and report progress quarterly on Form M120b and forward to the General Manager Infrastructure & Engineering by the 15th of the month following the end of the cycle.

Refer also to clause P.29. A summary report of each inspection shall be completed and a copy provided to Track Engineering.

P.40 Reserved

CONSTRUCTION AND MAINTENANCE STANDARDS

P.41 THE RAILWAY SYSTEM IS DIVIDED INTO THREE CLASSES for the purpose of defining standards for construction, renewals and maintenance.

- Class A: Principal Lines
- Class B: Secondary Lines
- Class C: Minor lines

(a) Speed

Each line is given a speed category rating, the maximum allowable speeds for each category being defined as:

Speed Category Allowable Speed : km/hr

	Maximum	Comments
1	110	Railcars only at maximum
2	70	
3	50	
4	40	
5	25	Includes yards and terminals

The classification and speed category for each line or portion thereof is as shown in clauses P.42 and P.43.

Actual line speed may be less than those given above, and are shown in the LNI.

(b) Axle Loads

The maximum or allowable axle load of rolling stock for most routes is shown in the RORP.

Either speed or axle loads may be reduced to overcome track deficiencies.

P.42 NORTH ISLAND LINES CLASSIFICATION AND SPEED CATEGORY

Line	Speed Category	From	To
<u>Class A: Principal Lines</u>			
NIMT	1	Wellington	Auckland
ECMT	1	Hamilton	Kawerau
Wairarapa Line	1	Wellington	Masterton
PNGL	1	Palmerston North	Napier
NAL	1	Westfield	Waitakere
Kinleith Branch	1	Waharoa	Putaruru
	2	Putaruru	Kinleith
Murupara Branch	2	Kawerau	Murupara
Mission Bush Branch	2	Paerata	Mission Bush
MNPL	2	Marton	Whareroa
Mt Maunganui Branch	2	Te Maunga	Mt Maunganui
Newmarket Line	2	New Market	Auckland
Onehunga Branch	3	Penrose	Onehunga
Manakau Branch	2	Wiri	Manakau
Johnsonville Line	2	Wellington	Johnsonville
Melling Branch	2	Petone Jcn	Melling
<u>Class B: Secondary Lines</u>			
NAL	2	Waitakere	Whangarei
MNPL	2	Whareroa	New Plymouth
Wairarapa Line	2	Masterton	Woodville
Gracefield Branch	2	Woburn	Hutt Wshops
MNPL	3	New Plymouth	Breakwater
Kapuni Branch	4	Te Roti Jcn	Kapuni
Napier Port Branch	4	Napier Jcn	Napier Port
Rotowaro Branch	5	Huntly	Rotowaro
Southdown Branch	5	Westfield	Southdown

Line	Speed Category	From	To
<u>Class C: Minor Lines</u>			
NAL	3	Whangarei	Otiria
Dargaville Branch	4	Waiotira	Dargaville
Whangarei Port Branch	5	Whangarei	Whangarei Port
Hautapu Branch	5	Ruakura	Hautapu
Waitoa Branch	5	Morrinsville	Waitoa
Wanganui Branch	5	Aramoho	Wanganui
Castlecliff Line	5	Wanganui	Castlecliff
SOL (moth)	2	Stratford	68.5 km
PNGL (moth)	2	Napier	Gisborne
Rotorua Branch (moth)	3	Putaruru	Rotorua
SOL (moth)	3	68.5 km	Okahukura
Taneatua Branch (moth)	5	Hawkins Jcn	Taneatua

P.43 SOUTH ISLAND LINES CLASSIFICATION AND SPEED CATEGORY

Line	Speed Category	From	To
<u>Class A: Principal Lines</u>			
MNL	1	Addington	Picton
MSL	2	Lyttelton	Middleton
MSL	1	Middleton	Invercargill
Midland	1	Rolleston	Greymouth
SNL	2	Stillwater	Ngakawau
<u>Class B: Secondary Lines</u>			
Port Chalmers Branch	3	Sawyers Bay	Port Chalmers
Taieri	4	Wingatui	3.5km
Rapahoe Industrial	3	Greymouth	Rapahoe

Line	Speed Category	From	To
<u>Class C: Minor Lines</u>			
Hornby Branch	5	Hornby Jcn	Hornby
Hokitika Line	4	Greymouth	Hokitika
Westport Industrial	5	Westport Jcn	Westport
Finegard Branch	5	Balclutha	Finegard
Ohai Line	3	Invercargill	Ohai
Bluff Line	4	Invercargill	Bluff

P.44 - P.50 Reserved

P.51 CURVE LUBRICATORS

Curves are to be lubricated to reduce rail wear. Lubrication may be by HRV lubricators or trackside lubricators.

Lubrication frequency may alter according to the type of lubricant being used. Lubrication effectiveness may be measured using a Tribometer.

Area Managers shall ensure adequate lubrication of track is occurring at the correct frequency.

P.52 POINTS LEVERS SPRING TYPE Refer to CSP/64 for detailed instructions on maintenance of points levers.

- (a) Must be installed so that they operate only by pulling the lever in the direction away from the frog. This does not apply to flush mounted levers which fold down and stow at rail level.
- (b) Spring levers must not be chain locked. If locking is required a padlock is to be fitted with a pin through the stock rail and switch in accordance with current procedures.
- (c) Spring type points must be adjusted carefully to ensure the crank has equal throw to the right and to the left. They must be regularly checked as part of track and/or yard inspections.

- (d) When one or two components are worn or broken, they are to be replaced and the whole assembly re-used. When the whole assembly is in fair order, or is so damaged that it has to be renewed completely, all reusable items are to be saved.

Repairs to points boxes are to be arranged by the Area Manager who will issue instructions on who will repair these mechanisms.

Only approved materials are to be used for repairs, complying with a standard issued by Track Engineering.

- (e) Points levers type selection:

- The standard replacement points lever for manual operation without interlocking, is the spring type referred to above. Other types maybe installed as approved by Track Engineering.
- Where existing levers are chain-locked or are the non-reversible types such as “A” (Goose neck) or “B” (where pinned), they must not be replaced by spring levers without the approval of Track Engineering.

P.53 BOXING-IN OF NON-INTERLOCKED POINTS CONTROL RODS must be provided and maintained by Infrastructure Operations.

P.54 PLACING OF TRAP SWITCHES AND STOP BLOCKS: Refer to CSP/70. Infrastructure Operations must ensure that:

- (a) No trap switch or derailing block is to be placed on any main line or crossing loop except as shown on S. & I. circulars or signalling hand sketches.
- (b) On any siding parallel to, and spaced at 4 metres centres or less from a main line or crossing loop, the point of the trap switch or the stop block is to be placed where the parallel section of the siding ends, and the siding begins to curve and converge towards the main line or crossing loop.
- (c) On any siding not parallel to the main line or crossing loop or which is spaced at greater than 4 metres centres the point of

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the trap switch or the derailing block must be placed no closer than 4 metres measured square from the main line or crossing loop.

- (d) On any curved siding which runs out from the main line or crossing loop without reversing, the point of the trap switch or the derailing block must be placed no closer than 5.2 metres measured square from the main line or crossing loop.
- (e) In any track layout, interlocked trap switches or safety points (interlocked complete turnouts), are to be placed exactly as shown on S. & I. circulars or signalling hand sketches. Safety points may be located at 3.35 metres clearance from a main line or crossing loop provided a complete turnout is used.
- (f) Derailing blocks:
 - Must be mounted, when open, entirely below rail level.
 - Must be mounted, when closed, so as to divert any wagon away from the main line, loop, or siding being protected.
 - Must be closed and locked when there is no authorised shunting movement. If Signals staff have not fitted a locking device, other Infrastructure staff must fit a points padlock.
 - Must be installed as directed by Track Engineering or as shown on S & I Diagram.
 - Must be inspected regularly for serviceability and security.

P.55 SECURITY OF HAND LEVER OPERATED MAIN LINE POINTS

Unless specially authorised, or as shown on the S & I Diagram, or as detailed in LNI, all main line points which are not interlocked or worked by frame levers must be fitted with levers arranged to lock only for the main line.

P.56 - P.60 Reserved

TRACK MATERIAL STANDARDS

P.61 TRACK MATERIAL STANDARDS (refer Section 60)

(a) Maintenance Work

All materials shall be replaced with identical materials except that A clips shall be replaced by a fastening system with bedplates in A & B Class lines, in conjunction with major maintenance or renewals.

(b) Capital Works/Private Sidings

Track Engineering will from time to time set standards for the installation of materials. Details of approved materials will form part of the annual Capital Track Renewals plan.
Refer to CSP/01

P.62 Recovered Materials (refer Section 61)

NOTE: Unloading of welded rails must be carried out under the direction of a person who is competent in this work. Task instructions give more details.

Recovered track fastenings are to be consigned as directed by Material Coordinators or Inventory

It is policy to remove short 91 lb fishplates from track (including track structures) as time and circumstances permit.

All A class mainline track with 85lb and short plated 91 lb joints shall be programmed for welding or have the rail ends cropped and long fishplates fitted. This includes those in track structures when an opportunity arises.

P.63 - P.70 Reserved

TRACK ON BRIDGES

P.71 RESPONSIBILITY OF INFRASTRUCTURE

The maintenance of bridges and culverts including track, is the responsibility of the Infrastructure Operations.

The inspection of rails, sleeper/fastening connection is the Track Inspectors responsibility.

The inspection of sleeper /bridge connection is the Structures Inspectors responsibility.

Track staff must report any other obvious faults noted on bridges, during inspections or HRV travel, to the Area Manager. (See Code P.82)

P.72 CWR on BRIDGES

CWR on bridges may only be formed with the approval of both Track & Structures Engineering. This is to allow the effect of CWR stresses in the bridge to be evaluated.

Where approval has been given, after completion of destressing an M37 report must be forwarded to Structures Engineering for entry into the Infrastructure database.

P.73 LINE ON BRIDGES is the responsibility of the track gang whilst the sleeper bridge connection is the responsibility of structures gang. Before starting work on lining or gauging the track on bridges, the Area Manager must ensure any necessary instructions are arranged. The Area Manager and/or Structures staff should first ascertain the cause of the line variations, as prior bridge work may be necessary. Also refer to Handbook

P.74 BRIDGE APPROACHES must be constructed in accordance with Drawing CE 100320. This drawing shows the requirements for both ballast guards and track formation.

P.75 TRACK ON BRIDGES must be regularly checked by the Track Inspector to ensure it is in sound condition, that all rail fastenings are secure and approaches firmly packed. If line and top variation

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is not due to the track itself, the Area Manager must be informed promptly of the possibility of a bridge defect.

P.76 - P.80 Reserved

DEFECTS, EXCEEDANCES, FAILURES, DERAILMENTS

P.81 TRACK DEFECTS found during inspections must be attended to promptly and permanent repairs made as soon as possible. When a serious defect cannot be remedied immediately or when length gangs do not have the means to effect repairs, all necessary precautions must be taken and prompt advice given to the Area Manager (See Code P.8).

Defects found in rails in particular must be dealt with in accordance with T:200 Engineering Handbook Clause 465, 501 – 508 and M.130 the rail management form.

P.82 DEFECTS IN TUNNELS, STRUCTURES, EMBANKMENTS OR CUTTINGS must be reported to the Area Manager without delay. If the defect is serious, immediate action must be taken in accordance with Code P.8.

Defects in the parts of bridges and structures, which are the responsibility of Structures staff, must be reported immediately to the Area Manager if a defect is visible or suspected. If the defect appears serious, immediate action should be taken (see Code P.8). Track staff must not interfere with the structure itself except where it is possible to prevent or reduce further damage. When considered necessary the Asset Manager responsible for that asset must also be advised.

P.83 BLOCKED OR OBSTRUCTED CULVERTS OR DRAINS when found the Inspector must attempt to clear the obstruction as soon as possible. If the task is beyond the resources of the gang, any action necessary to safeguard rail traffic must be taken, and the Area Manager informed.

P.84 DEFECTS IN SIGNALS, SIGNALLING OR OVERHEAD TRACTION EQUIPMENT, if visible or suspected, must be reported immediately to Train Control.

P.85 - P.88 Reserved

P.89 TRACK BUCKLES AND PULL-APARTS are potential derailment hazards and must be dealt with as soon as found or reported. Refer T: 200 Engineering Handbook

If a buckle occurs or a pull-apart occurs leaving an excessively wide rail gap, appropriate action must be taken to protect rail traffic (code P8 refers), and the Area Manager advised as soon as possible. Corrective action is to be implemented. If necessary the Area Manager will obtain directions on action to be taken, and technical assistance from Track Engineering.

Track buckles and pull-aparts caused by high or low temperatures must be reported on the appropriate form. Completed forms must be sent to the Area Manager and to Track Engineering **within 3 days.**

The buckle location must be recorded on the rail with a letter B and marks must clearly indicate the start and end points of the buckle

The reason for track buckles and pull-aparts must be investigated. and Area Managers should be advised as soon as possible. Area Managers must arrange for technically competent personnel to investigate the buckle and provide an appropriate report

Track Buckles and Misalignments caused by high temperatures must be reported on form M150. It is also required by code to complete a Track Buckle / Misalignment Investigation Report form M151.

Completed forms must be sent direct to Area Manager and Track Engineering within 3 days and advised to the Regional Manager as directed.

Pull Aparts caused by low temperatures must be reported on form M160. Completed form M160 must be sent direct to Area Manager and Track Engineering within 3 days and advised to the Regional Manager as directed.

NOTE: Broken or cracked rails or welds must be reported as Rail Failures on form M.58A and not pull-aparts.

P.90 SPECIAL PRECAUTIONS IN HOT WEATHER

In hot weather when rail temperatures are high and there is a likelihood of track buckles, precautions must be taken in accordance with this clause, to ensure the safety of the operation.

Track that is at high risk of misalignment must be identified. These sites will be shown on special bulletins and subject to speed restrictions as described in the Rules.

Rail heat sensors are located in track at various locations in the network and will alert train control when the trigger temperature is reached. When rail temperatures exceed the pre-determined levels the speed restriction of 40 km/hr will be imposed by train control who will then advise track staff.

Inspections are required as per clause P.22

Track staff will undertake an inspection as close to the hottest likely time and prior to the passage of trains during this period and advise train control when speed restrictions are to be lifted unless otherwise shown on the appropriate bulletin. Rail temperatures should be measured at heat sensor sites and sites under H40 restrictions and recorded on M127H form.

Should rail temperatures significantly exceed pre-determined levels, consideration must be given to :

- Imposing speed restrictions over longer track sections
- Piloting trains through some track sections
- Reducing the value of speed restrictions below 40 km/hr

NOTE : 40 ° C has been the common trigger rail temperature.

Through track inspections and rail temperature monitoring, the trigger temperature for heat sensor length, may be raised beyond 40 ° C where the track is proven to be stable above this temperature as outlined in CSP38.

Some track conditions may require the trigger temperature, for invoking a speed restriction, to be less than 40 ° C

Track affected:

1. That track identified and listed will have speed restrictions applied as above.
2. Other track that will be affected is:
 - track recently disturbed by tamping
 - track with a reduced number of effective fastenings due to track work being carried out or deteriorating track condition.
 - track that has been tamped in winter and not yet settled adequately or had sufficient alignment change to be considered.
 - Refer also to relevant Handbook clauses and Section 38

P.91 EM80 TRACK GEOMETRY EXCEEDANCES - CLASSIFICATION AND ACTION

Exceedances recorded on the Track Evaluation Car (EM80) at the time of the run, are classified in the following table. With the action to be taken by the Area Manager.

- Class 1** is defined as at or above the maximum allowable limit and must be planned as below.
- Class 1 is defined as below the maximum allowable but above the maintenance tolerance limit and must be planned as below.
- Class 2 is defined as at the acceptable maintenance tolerance limit & should be planned as a normal maintenance activity to bring within tolerance.

The repair action is to be completed within timescales and the safety action is to mitigate the safe operation of trains until the repair action has been completed. In any case the work is to be treated as high priority and done as soon as possible.

Track Evaluation Car				
Repair and Safety Actions for Track Geometry Exceedances				
EM80 - track geometry	Class 1** Repair Action	Class 1** Safety Action	Class 1 Repair Action	Class 1 Safety Action
Wide Gauge	See below	See below	4 weeks	40
4m Twist	See below	See below	4 weeks	40
Cant	See below	25	4 weeks	40
Top	See below	40	4 weeks	60
Line	See below	40	4 weeks	60
Cyclic Line	See below	40	4 weeks	60
ROCOCD	See below	40	4 weeks	60
Tight Gauge	See below	60	4 weeks	60
Class 1** SC 1 and 2 lines				
	Repair Action		Safety Action	
Twist ≥ 32mm	Fix before next train		Close line until repaired	
Twist 28-31mm	Fix within 2 days		Immediate TSR of 25	
Class 1** Twist < 28mm	Fix within 7 days		Immediate TSR of 40	
Gauge ≥ 1105mm	Fix before next train		Close line until repaired	
Gauge 1100 – 1104mm	Fix within 2 days		Immediate TSR of 25	
Gauge at 1098 or 1099mm	Fix within 2 days		Immediate TSR of 40	
Class 1** Gauge at ≤ 1097mm	Fix within 7 days		Immediate TSR of 60	
All other Class 1** exceedances	Fix within 7 days		See above	
Class 1** SC 3, 4 and 5 lines				
	Repair Action		Safety Action	
Twist 35mm or more	Fix before next train		Close line until repaired	
Twist 28-34 mm	Fix within 7 days		Immediate TSR of 25	
Class 1 ** Twist < 28mm	Fix within 14 days		Immediate TSR of 40	
Gauge ≥ 1105 mm	Fix before next train		Close line until repaired	
Gauge 1097 -1104 mm	Fix within 7 days		Immediate TSR of 25	
Class 1** gauge < 1097 mm	Fix within 14 days		Immediate TSR of 40	
All other Class 1** exceedances	Fix within 14 days		See above	

SC = speed category and is defined in clauses P.41, 42 and 43.

Any approved manual track recorder e.g., the Amber Trolley shall use the values in T: 200 clause 336.

All outstanding exceedances not corrected prior to a subsequent run will become null and void if not re-detected. For remedial action priorities, the date of the latest run is deemed to be the date the exceedances are recorded.

(A) Gangers in conjunction with Area Managers must ensure that appropriate action is taken. (Refer T: 200 clause 882)

Until corrected, Track Inspectors (or other competent track staff) must check the condition of Class 1** and Class 1 exceedances. This would normally be during inspections and is a check to ensure that the track is still suitable for the passage of trains under any operating restriction that

may be in place. The EM80 exceedances sheet will be used as an aid to inspections and must be made available to any relieving Ganger/Track Inspector.

(B) Area Managers must ensure the length Ganger receives the EM80 exceedance reports for attention, within 24hrs after the run. To ensure this, the Area Manager or a representative for the Area Manager must be present on the car to prioritize exceedance correction and collect the reports & trace. When only loops are being recorded by the EM80 it is not necessary for a representative to be on board during recording.

(C) The Area Manager must take the following action on recorded defects:

(i) Class 1** Exceedances must be individually checked on site by the Area Manager or Track Inspector within one week of the run to ensure correct mitigation has been taken as per T:200 Clause 882.

Where the numbers of exceedances are so excessive the Area Manager could not check all exceedances the following must apply:

(a) A representative sample of each type of exceedance must be checked on site, over the length.

(b) The Area Manager must have a process in place to ensure that the Class 1** exceedances have been checked as above. He must certify that exceedances have been corrected, with exceptions listed and appropriate TSR's in place. This process must be recorded on M91 form.

(ii) Class 1 Exceedances must be individually checked on site by the Area Manager or Track Inspector within 4 weeks. Where the number of exceedances is so excessive and all exceedances could not be checked, the following must apply:

(a) A representative sample of each type of exceedance must be checked on site over the length.

(b) Area Managers must review exceedances during their first general inspection after the EM80 run, of any Gang length.

- (c) The Area Manager must have a process in place to ensure that Class 1 exceedances have been checked as above. They must certify that exceedances have been corrected, with exceptions listed and appropriate TSR's in place. This process must be recorded on M91 form.
- (iii) Area Managers should view exceedance reports and compare with past recordings to identify trends for appropriate action.
- (D) Repeated exceedances must be given special attention by Area Managers. Where the remedial work has proved ineffective the Area Manager should report details to the Manager, Track Engineering who will approve any special work or provide technical advice.
- (E) Class 2 exceedances should be investigated for a root cause and planned intervention programmed within 6 months to bring the track condition within maintenance tolerances.

P.92 ESTABLISH THE CAUSE OF DERAILMENTS.

- (a) When a mainline derailment occurs immediate action must be taken to establish the cause, to restore traffic, and to make initial reports. Refer clause 94, CSP/34 and the relevant clauses in NRSS/5.
- (b) Shunting derailments, involving any locomotive or considerable damage to track or rolling stock must be investigated on the scene as soon as possible and serious incidents reported to the Area Manager.
- (c) Minor shunting derailments need not be investigated personally by the Area Manager.

OM.4 report forms for shunting derailments are initiated by appropriate Rail Operator's Staff who complete part 1. The form is then handed to the Ganger concerned. The Ganger then signs on behalf of or forwards the completed copy to the Area Manager.

A Length Ganger must note all shunting derailments that he is aware of. Should no OM.4 be given to the Ganger he should request an OM.4 from the Operator. If no OM.4 is then produced the Ganger must advise their Area Manager, giving details of the derailment.

P.93 POINT OF DERAILMENT is defined as the point where the flange of the wheel of the first axle that derailed commenced to mount the head of the rail or where the wheel dropped between the rails. It must be marked as soon as possible by a grease crayon (or similar) arrow in the rail web or foot with the letters POD.

If this point cannot be identified easily from wheel marks, the location of the POD must be agreed with the senior representatives of Infrastructure Operations and the Operator, present at the site.

P.94 SITE REVIEW AT MAIN LINE DERAILMENTS must be recorded on form MLD.1, (refer NRSS/5 and CSP/34). More specifically and in addition, the following information is also to be obtained and recorded.

- (a) Train number and direction.
- (b) Metrage of point of derailment (in km to 3 decimal places).
- (c) Metrage at which derailed vehicle stopped.
- (d) Class(es) and serial number of all vehicle(s) derailed.
- (e) Sketch or description of position of rolling stock at rest and whether wheels derailed or not giving direction of travel.
- (f) Vehicle(s) load type, or empty to be described.
- (g) Side of line (in direction of travel) to which vehicle derailed
- (h) Joints position, type (welded or bolted insulated), condition, number of bolts.
- (i) Sleeper type, condition and spacing near P.O.D.
- (j) Ballast, class, condition and profile.
- (k) Cant and gauge at measured intervals of 1m for 109m before the point of derailment and 30m beyond, and at all rail joints in this zone.

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- (l) Cant and gauge at the position of all other axles of the first vehicle to derail, at the moment of derailment.
- (m) Alignment details:
 - 1. Nominal radius, if curved, to right or to left in direction of the train's travel.
 - 2. Metrage of "S" & "CTP" pegs in zone as for (k) above.
 - 3. Track off-sets accurate to 1mm, at 1 metre intervals from a 20 metre chord to be recorded on MLD.1 in the zone as for (k) above.
- (n) If present, position of turnout frog heel, point of switch, bridge end, expansion joint.
- (o) All marks on rails, sleepers or elsewhere caused by wheels or other parts of derailed vehicles in the vicinity of the POD.

The Regional Manager must arrange to obtain all the above information by a competent investigator before any repairs are instigated.

Track Engineering may request further specific information be obtained to assist with the establishment of the cause, or issues arising from personal injury or damage to private property.

P.95 EVIDENCE OF CAUSE OF ACCIDENTS AND DERAILMENTS
which require investigation must be carefully preserved.

Specifically where a derailment investigation is necessary, the track at and approaching the POD must not be disturbed until all the measurements have been taken, and the information has been assessed. All evidence must be preserved until such time as the investigator has released it.

Where the root cause of the derailment has not been established and agreed upon in writing on site by all parties (Freight Operations, Infrastructure and Mechanical) a 25kph TSR is to be established for 100m either side of the POD before the line is reopened to traffic

and until such time the root cause has been established by subsequent investigation.

Track Engineering may also insist upon a site inspection to determine cause and also to establish resultant damage and repair plan. In this case minimal work to reopen the track initially is to be carried out until representatives can attend the site.

All track repairs are to be carried out to the satisfaction of Track Engineering

P.96 ACTION TO BE TAKEN WHEN WINDS REACH HIGH SPEED

Force 8: Gangers are to examine their lengths and watch the
(gale) passage of trains, especially box and container wagons on trains or in yards, or any damage to buildings is to be reported. Any obstructions blown onto the track are to be cleared. Gangers must remain on standby while the gale continues, arranging for relief as required.

Force 9: In addition to the precautions for gale force winds,
(Strong) Train control must be advised of the locality, wind
(gale) direction and estimated speed, and all necessary steps taken to safeguard the passage of trains.

Force 10: Gangers must stop all trains and report their action to
Train Control.

(Storm)
Scale of wind speed is shown in Fig P.96.

Fig P.96 Scale of Wind Speeds

FORCE NO.	EXPLANATORY NAME	SPECIFICATION OF SCALE FOR USE ON LAND	APPROX. WIND SPEED KMH	APPROX. MAX GUST SPEED KMH
0	Calm	Calm, smoke rises, vertically.	1	1
1	Light Air	Direction of wind indicated by smoke drift, but not by wind vanes.	3	5
2	Slight Breeze	Wind felt on face; leaves rustle; ordinary vane moved by wind.	10	12
3	Gentle Breeze	Leaves and small twigs in constant motion; wind extends light flag.	15	25
4	Moderate Breeze	Raises dust and loose paper; small branches moved.	25	35
5	Fresh Breeze	Small trees in leaf begin to sway, wavelets form on inland waters.	30	50
6	Strong Breeze	Large branches in motion; whistling heard in telegraph wires; umbrellas used with difficulty.	40	60
7	Near gale	Whole trees in motion; inconvenience felt when walking against wind.	50	70
8	Gale	Breaks twigs off trees; generally impedes progress.	65	90
9	Strong gale	Slight structural damage. Impossible to stand.	80	120
10	Storm	Seldom experienced inland; trees up-rooted; considerable structural damage occurs.	100	145

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11	Violent Storm	Very rarely experienced, accompanied by widespread damage.	110	170
12	Hurricane		Above 110	Above 170

P.97 STANDARD REPORTS ON DEFECTS, ACCIDENTS, AND INCIDENTS required are:

EVENT	REPORT FORM	CODE INSTRUCTION
Main Line Derailment (General)	MLD.1	P.92
Main Line Derailment (Track Measurements)	MLD.1	P.94, CSP/34
Shunting Derailment	OM.4	P.92
Track Buckle/pull-apart	M.150	P.89
Rails Failure Report	M58A	T:200
Personal Injury	As per IMSP	Q 320
<i>Special inspection</i>	<i>M.127</i>	<i>P.22</i>
<i>Rail Management form</i>	<i>M.130</i>	<i>T:200</i>

Refer also to NRSS/5

P.98 - P.100 Reserved.

LINESIDE WARNING BOARDS, SIGNS AND POSTS

All now found in T: 200 Engineering Handbook |

P.101 - P.110 Reserved. |

LEVEL CROSSINGS AND ROADS

Mostly now found in T: 200 Engineering Handbook

P.110 – P.119 Reserved

P.120 ACCESS ROADS

When provided for trackside and maintenance purposes, must be maintained in safe usable condition by suitable vehicles or else closed off. Discussions between all involved road users must be held prior to any road being closed off.

P.121 STATION YARD SURFACES are to be dealt with in accordance with the current instructions.

When a yard surface requires major work, agreement between the Terminal Manager and Area Manager on the extent of the work to be undertaken prior to the work commencing is to be undertaken.

P.122 - P.125 Reserved

SIGNALLING AND INTERLOCKING

P.126 ANY DISTURBANCE OF SIGNALLING EQUIPMENT including bumping, shifting, disarrangement or breaking, must be reported immediately to the nearest Signal Section staff, appropriate Area Manager or to Train Control. This includes minor bumping of relay shelters even if damage is not visible externally.

P.127 TRACK STAFF CHECKING OPERATION OF WARNING DEVICES AT LEVEL CROSSINGS during inspections. Code Clause P.21 applies. This check should be done on the first inspection of the week. Area Managers are to ensure a suitable notebook is in the Ganger's test box at each level crossing that has alarms. The person doing the inspection/check and hence checking the operation of the alarms is to record results in the notebook:

- date of check
- write "OKAY" or "DEFECT" as necessary
- signature of person doing check.

Any defect found during this check and any other item identified by visual inspection is to be reported to Train Control

Updated lists of level crossing alarms to be checked for operation will be issued by the S & T Manager as required.

P.128 TESTING OF INTERLOCKED POINTS AFTER ANY REPAIRS, tightening or adjustments to any part of the track structure including packing of sleepers, must be arranged by the Ganger in conjunction with signals section staff. The testing must be carried out as soon as the track gang has completed its work, and before traffic is allowed to pass.

P.129 BONDS AT RAIL JOINTS in track circuited areas are essential to safe working of the signalling system. Work at joints must be carried out carefully to avoid damaging them and ballast must be kept clear. During track work, which creates new fish plated joints by any method or requires existing joints to be rebonded, the responsibility for installing new bonds shall be as follows:

(a) Non-Electrified Areas

Track staff who have been properly instructed in the correct methods are responsible for installing new bonds. Signalling staff will supply materials and instruction. The Signals Section staff must be advised of the work. Alternatively, if mutually acceptable arrangements are made with the Area Manager, signalling staff may do the work. If such assistance is sought, adequate notice must be give to the Signals Sectionman.

(b) DC Electrified Areas

Signals section staff are responsible for installing new traction bonds and Signals section staff for installing new signal bonds. In either case adequate notice must be give. Damage to bonds must be advised to Signals staff immediately.

(c) AC Electrified Areas

Signals staff are responsible for installing all new permanent or temporary bonds. However temporary bonds may be installed by Track staff who have been properly instructed in the correct methods. The Signals Section staff must be advised of the work in adequate time, and will supply the temporary bonds.

Training of Track staff to install the temporary bonds may be arranged by the Area Manager assisted by suitable Signals section staff. The bond installation methods must be in accordance with instructions issued. (CSP/72 CSS/TCO16 - CST334)

(d) Other electrical connections

All electrical connections to rails, other than the bonds across rail joints, may only be worked on by Signals section staff or Traction staff. Track staff are to promptly report any damage, or suspected damage, to the electrical connections.

(e) General

Particular care must be taken to avoid damage to rail bonds when track machines are being operated. It is the responsibility of the track machine gang to inspect and immediately replace any bonds damaged with a temporary bond and to advise the Signals Section staff as soon as possible.

When a broken rail in a track-circuited area is temporarily repaired using fishplates and temporary bonds applied, or when any other temporary rail joint is made, or when bonds are damaged in anyway the Signals Section staff for the area is to be advised immediately.

Special attention should be made to ensure that rail bonds and track circuit connections on the approaches to level crossings equipped with alarms are not left in a damaged state. This could lead to a subsequent failure of the alarms.

P.130 DRAINAGE AROUND POINTS MOTORS, frame lever points, switchstands, rodding equipment and relay shelters must be given careful attention. Existing drains and channels must be kept clear and new drains dug if necessary.

P.131 INTERLOCKING POINT SWITCHES AND BED PLATES AT UNATTENDED STATIONS must be cleaned and oiled as required by competent personnel. If any other work is necessary, Code P.128 applies. Area Managers must confer with the Terminal Managers to determine responsibility at each location.

P.132 SIGNS ON WARNING DEVICE STANDARDS are the responsibility of signalling staff to both install and maintain, but track staff must inspect and report any defects. (See T:200)

P.133 RAIL RENEWALS IN TRACK CIRCUITED AREAS. Because the coating of rust or mill scale on rails newly laid is capable of preventing wheel sets correctly operating track circuits, special precautions are necessary when rails are laid in track circuited areas to avoid abnormal operation of signalling or level crossing alarm equipment.

Staff in charge of rail renewals in track circuited areas must notify their Area Manager and the Signals Section staff at least 10 working days in advance of the proposed date of the work so that the necessary arrangements for the safe operation of trains can be made. Where rails are renewed in track circuited areas under emergency conditions, the clearance to Train Control for traffic to resume must not be given by Gangers until the Signals Section staff has given their approval or laid down any conditions necessary for safe operation.

P.134 TRACKWORK IN SIGNALLED AREAS, whether new or altered, must not be brought into use until a new or amended “S & I” Arrangement has been issued.

P.135 - P.140 Reserved.

WORK PROGRAMMING

P.141 THE EXECUTION OF PROGRAMMED WORK must be carefully planned by Infrastructure Operations. They must ensure that blocks of line, work trains, setting out pegs and plant and material resources are arranged in good time. Where the programmed work affects the activities of the Operator, ensure sufficient co-ordination is arranged. This may include liaison with the Asset Manager.

Any maintenance or renewal work that Infrastructure is responsible for, must be planned as far as practicable, to suit train timetables.

P.142 MATERIALS FOR TRACK WORK. Infrastructure Operations must ensure, using the correct procedures or sections within the quality system, that materials required by track staff for both routine maintenance, and approved planned work are:

- (a) Ordered, correctly described, and identified as to intended use allowing sufficient time for supply.
- (b) Requested in adequate but not excessive quantities.
- (c) Received and placed where they can be re-handled without wastage.

P.143 TRACK MAINTENANCE MACHINES are to be worked strictly to the programmes provided or approved.

- (a) The scheduled machine programme will be advised to all organisations as required.
- (b) Line Managers must confirm that conditions remain suitable for the use of machines. Ballast quality and quantity must be such that results are to standard.
- (c) Operation of Tampers and other Track Maintenance machines are detailed in Track Code Supplements Section 10 to CSP/15.

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P.144 WORK IN YARDS OR LOCOMOTIVE DEPOTS which may affect shunting operations or the safety of staff is not to be commenced until the person in charge of the yard or depot has been informed. At the end of each day's work the site is to be left in a safe condition with moveable barriers, obstruction marker lights, or other protection as may be required.

In major yards, Infrastructure Operations will arrange for a bulletin to be issued if work is to be carried out on or adjacent to the main line or crossing loop.

P.145 Reserved.

CLEARANCES

CLEARANCES TO ROLLING STOCK FOR NEW WORK AND MAJOR RENEWALS

These are defined in the T: 200 Engineering Handbook

P.146 - P.147 Reserved

TRACK UNDER ELECTRIFIED OVERHEAD LINES

P.148 IN OVERHEAD ELECTRIFIED TRACK AREAS special limitations apply to alterations to the vertical and horizontal position of the track during track maintenance and construction. If the track alignment is to be changed or altered the effects of both the overhead and rail neutral temperatures must be considered.

This instruction is applicable to all electrified track where traction overhead running wire are installed to allow the operation of electrified vehicles.

(a) Managed Track

“Managed Track” is a classification where the position of ballasted track is strictly controlled so that close tolerance clearances to traction overhead can be maintained in tight clearance situations. These areas are monumented by data plates and the area affected listed in the Asset Management System.

All tunnels, platforms and other restricted areas such as those with limited overhead clearance and or side clearance reduced to 2.6m from centerline, e.g. overbridge, are regarded as “Managed Track”.

Track must be maintained to specified tolerances in this code and no work in these areas altering the alignment or track level shall take place without approval of the Area Manager.

(b) Track tolerances

The permissible variations from line (horizontal position), level (vertical position) and cant shown on track data plates (TDP's) attached to the adjacent traction poles are:

Track Parameter	Normal Track Tolerance	Tolerances for "Managed Track"
Line (horizontal position) - straights and curves above 800m radius	25mm to DP (new construction) 75mm to TDP (existing track)	25mm to TDP
Line (horizontal position) - curves less than 800m radius	75mm to TDP	25mm to TDP
Level (vertical position) (Set to low rail on curves)	25mm to current tamped level	10mm to TDP

(c) Track maintenance allowance

The design of traction overhead has a built in "Track Maintenance Allowance" of 150mm for heavy track maintenance including tamping which allows the track to be lifted up to a maximum of 150mm from the "Design Rail Level" (level at which track is initially laid, or design level as determined by Track Engineering) for normal open ballasted track. When the track maintenance allowance of 150mm has been reached and further tamping is required the track must be re-instated to the "Design Rail Level" as shown on the TDP.

For "Managed Track" the track may only be lifted to a maximum of 50mm. When this track maintenance allowance of 50mm has been reached and further tamping is required the track must be re-instated to the "Design Rail Level" as shown on the TDP.

(d) Level crossings

At level crossings, track must not be lifted or lowered more than 25mm without prior adequate consultation with the Traction Supervisor Overhead who will ensure the required clearances to the roadway can be maintained. Once the planned track lift is completed traction may be a need to re-adjust the overhead contact wire height to retain the required clearances.

(e) Wellington Electrified Area

Older poles in the WEA do not have Track datum plates installed. The tolerances to existing track position must apply so that the overhead remains in the correct geographical alignment with the overhead contact wire.

(f) Variations to specified code standards

All proposed new or “as installed” variations to these code standards must be referred to Track Engineering who will consult with Traction Engineering before approving or otherwise.

Where out of tolerance situations are found, or changes are proposed to track position that exceed the specified tolerances, the Traction Supervisor Overhead must be consulted so that traction lines staff can assess the situation and take appropriate interim mitigating action.

(h) Track Data Plates

Track Data Plates are to standard plan ET60037 and the information contained on them must be engraved. The information is to be entered into the Asset Management System.

P.149 - P.150 Reserved.

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FENCES

P.151 INSTRUCTIONS AND POLICY on fences is contained in Code Part 2 L30 and Code Supplement CSG/416.

P.152 - P.155 Reserved

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GROWTH CONTROL

P.156 INSTRUCTIONS ON VEGETATION AND WEED CONTROL are generally included in T: 200 Engineering Handbook

P.157 - P.160 Reserved

PRIVATE SIDINGS AND LINES

P.161 PRIVATE SIDINGS are those built for the exclusive use of one or more customers. For many older private sidings, the siding holders own the track materials and have to meet all costs of maintenance, repairs, and renewals. For some newer private sidings, different arrangements for material ownership and maintenance may have been agreed. The agreements could vary according to whether the sidings are wholly or partly on the Owners land, on leased land, or on private land.

All private siding agreements include a plan showing the land boundaries, the track layout (at least up to the Railway boundary), and the point up to which the Owner must keep the track safe and useable. In all cases private sidings with direct connections to a mainline, or a yard turnout, have to be in a condition safe for the Operators staff and locomotives to run.

Construction must not commence until a plan has been agreed to by all appropriate parties. This will include, but not be limited to, the Owner, siding operator and siding holder. The plans must be consulted whenever work on any private siding is necessary.

P.162 MAINTENANCE, RENEWAL OR ALTERATION WORK ON ENCLOSED TRACK, PRIVATE SIDINGS AND LINES is not to be done without the approval of the Regional Manager. The Regional Manager will advise the extent of the work that is approved and the account to which costs are to be charged after consulting with the owner, Private Siding holder and the Operator.

The Private Siding holder is to be consulted prior to any work being carried out to ensure it meets with their approval.

P.163 PRIVATE SIDINGS THAT ARE UNFIT FOR SAFE USE should be closed off by Gangers and the Area Manager advised immediately. This may be through disabling the turnout points or securing them so they cannot be operated.

Obstructions to clearances where the Operators staff do the shunting may also require closure of a private siding.

Any Private Siding not in use should be closed off by the Infrastructure Operations personnel in conjunction with Engineering and Property.

P.164 PRIVATE SIDINGS PROCEDURES are covered by separate documentation. Reference should be made to this documentation.

Private Siding construction will often involve capital expenditure and KiwiRail's procedures for approval of capital expenditure must be followed.

When Infrastructure Operations staff are working on sites not controlled by KiwiRail, they must comply with all appropriate clauses within that site safety plan.

Standard Health & Safety requirements must be met.

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