

Ref	NR/GN/SIG/I 1004
Issue	2
Date	December 2003

Symbols for Plans and Sketches Used in Signalling Applications (formerly RT/E/C/I 1004)

This temporary front sheet facilitates change to the new Network Rail Standards referencing nomenclature.

The Ref above will be formally allocated to this standard when it is next changed in the meantime the contents, date and issue number of this Network Rail Standard are **UNCHANGED and with immediate effect it should be referred to as “(new ref) formerly (old ref)”.**

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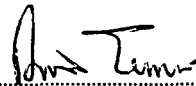
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Issue	2
Date	December 2003

Company Code of Practice

Symbols for Plans and Sketches Used in Signalling Applications

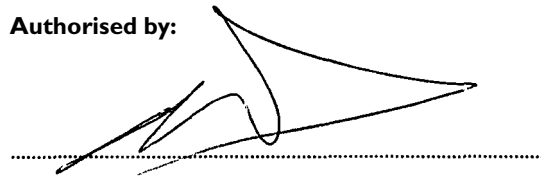
Endorsement & Authorisation

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Issue record

Issue	Date	Comments
1	August 2000	New Document
2	December 2003	Minor Revisions

Implementation

Issue two of this Code of Practice shall be implemented from 7 February 2004.

Superseded documents	Issue	Date
RT/E/C/11004	1	August 2000

Compliance

The guidance given in this Code of Practice should be followed by Network Rail and contractors from the implementation date.

Where this guidance is not used, equivalent procedures should be followed that give the same level of safety integrity, are capable of being audited and have been agreed with the Infrastructure Controller.

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1 Purpose

This Code of Practice, in support of [RT/E/S/11201](#), defines the symbols for plans and sketches used in signalling applications, to ensure that the correct information is always conveyed without ambiguity.

2 Scope

The Code of Practice applies to all signalling plans, scheme plans, location area plans, bonding plans, level crossing ground plans, operating notices, standards and instructions for use within the Railway Group. It incorporates the relevant symbols from British Standard BS 376: Part 1: 1951. Symbols, whether drawn manually or generated by computed aided design (CAD) systems, should comply with this Code of Practice.

This Code of Practice does not apply to signalling control and display systems, which are covered by [GK/RT0025](#) and [RT/E/S/17504](#).

It does not apply to electrification plans, with the exception of bonding plans that include information from both electrification and signal engineering disciplines. Symbols for a.c. section diagrams are shown in code of practice [EHQ/CP/P/209](#). Symbols for conductor rail plans are given on d.c. electrical track equipment drawing [RT/ETE/5/2/1](#); and for negative bonding plans on drawing [RT/ETE/5/3/1](#).

The Code of Practice does not apply to symbols for permanent way plans, which are shown in [RT/CE/S/049](#), Section F. The symbols that identify signalling requirements to be shown on permanent way plans are given in [RT/E/S/11752](#).

The Code of Practice does not specify what information should be shown in any particular type of signalling design document, which is defined in [RT/E/C/11701](#).

3 Reference documentation

Railway Group Standards

GE/RT8000	Rule Book
GI/RT7004	Requirements for the Design, Operation and Maintenance of Points
GI/RT7012	Requirements for Level Crossings
GI/RT7033	Lineside Operational Safety Signs
GK/RT0009	Identification of Signalling and Related Equipment
GK/RT0025	Signalling Control and Display Systems
GK/RT0032	Provision of Lineside Signals

Network Rail Company Standards

EHQ/CP/P/209	Code of Practice for the Preparation of Section Diagrams for A.C. Electrified Lines
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RT/CE/S/049	Track Design Handbook
RT/E/C/11701	Signalling Design: Production Guidance
RT/E/G/11710	Signalling Design Handbook
RT/E/S/10075	Level Crossing Ground Plans
RT/E/S/10133	Train Protection and Warning System (TPWS) Design Guidelines
RT/E/S/11201	Signalling Design: Production
RT/E/S/11752	Train Detection
RT/E/S/17504	IECC Operating Specification Railway Signalling Control and Indications Purposes

Standard Drawings

RT/ETE/5/2/1	Conductor Rail General Notes and Symbols Used on Conductor Rail Drawings
RT/ETE/5/3/1	Symbols Used on Negative Bonding Drawings

British Standards

BS 376: Part 1	Railway signalling symbols: Schematic symbols
BS EN 60617	Graphical symbols for diagrams

4 Definitions

Definitions are provided in [RT/E/G/11710](#).

5 Alterations to Existing Installations

This Code of Practice is applicable to new and redrawn plans. Its application should be considered when plans of existing installations are to be altered, provided that no confusion is likely to arise by the use of these symbols within design, installation, commissioning or maintenance activities.

The mixing of different symbol conventions on an individual plan is not permitted. Alterations to plans containing obsolete symbols should be dealt with either:

- a) by altering the plan using the former conventions or symbols; or
- b) by redrawing the plan in accordance with this Code of Practice.

6 General

Presentation and convention for plans is covered in [RT/E/C/11701](#).

The plan symbols represent all trackside equipment in general use, but have been designed so that symbols may be combined where a single symbol does not adequately represent the complete apparatus (e.g. a semaphore shunt signal that is both power operated and floodlit).

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The symbols are shown relative to the track, which in this Code of Practice, is assumed to be the horizontal. On actual drawings the track may be drawn in other orientations, as necessary, and the symbols should be rotated accordingly.

Certain supplementary symbols, where the feature is provided consistently throughout the plan, need not be shown at each application but may be covered by a general note on the plan (e.g. the provision of signal post telephones at main signals capable of displaying a red aspect, or points requiring insulated soleplates). Any exceptions then require to be individually identified. Certain other features may be listed on the signal box notes in order to relieve congestion on the plan. Details are given in [RT/E/C/11701](#).

Individual equipment should be further identified by means of the standard nomenclature specified in [GK/RT0009](#) and other Railway Group Standards, including [GK/RT0032](#), [GI/RT7004](#) and [GI/RT7012](#). The nomenclature should be used consistently throughout an installation.

7 Symbols for Use on Signalling Layout Plans

The standard symbols for use on layout plans where the track is represented by a single line (e.g. signalling plans, scheme plans, location area plans and operating notices) are given in Appendix A.

Note that symbols depicting the normal aspect of signals should generally be used, with the exception of operating notices which should use variants of the symbols that do not depict normal aspects.

Additional engineering information necessary for location area plans is also identified.

The sizes shown are the optimum for a 1:500 scale drawing, but may also be used for smaller scales. These standard sizes may, however, be varied if necessary, provided the symbols remain readable.

The symbols are grouped as follows:

Appendix	
A.1	Signals and Indicators: colour light; semaphore; relationship to track; slots; signal controls; repeating; and indicators.
A.2	Lineside Signs: AWS; signalling; speed; and signal post.
A.3	Switches and Crossings: layouts; and control.
A.4	Track and Train Detection: general; track circuits; overlap limit; track circuit type identification; other train detectors; warning and protection systems; electrification; and additional information required on location area plans.
A.5	Other Apparatus: block instruments; electric token; bells;

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	telephones; and plungers.
A.6	Level Crossings: gated; barrier; and miscellaneous.
A.7	Structures: signals; civil engineering; electrification; and signalling control points.

8 Symbols for Use on Bonding Plans

The standard symbols for use on plans where the track is represented by a double line (e.g. bonding and track plans) are given in Appendix B.

The tables are divided to show the different requirements for non-electrified lines, a.c. electrified lines and d.c. electrified lines. Those items of equipment that it is not considered necessary to depict on bonding plans are also identified.

The sizes shown are the optimum for a 1:500 scale drawing, but may also be used for smaller scales. These standard sizes may, however, be varied if necessary, provided the symbols remain readable.

The symbols are grouped as follows:

Appendix	
B.1	Signals and Indicators: not required (see B.7 Structures).
B.2	Lineside Signs: not required (see B.7 Structures).
B.3	Switches and Crossings: plain line; and S&C layouts.
B.4	Track and Train Detection: buffer stops; track circuits; IRJs; bonding; track circuit type identification; other train detectors; AWS; and electrification.
B.5	Other Apparatus: not required.
B.6	Level Crossings: as for layout plans (see Appendix A.6).
B.7	Structures: signals; civil engineering; electrification; and GFs.

9 Symbols for Use on Level Crossing Ground Plans

The standard symbols for depicting level crossing equipment on large scale plans are given in Appendix C. Any other general engineering symbols necessary should be taken from BS EN 60617.

Symbols for use on elevation drawings are also identified.

The requirements for level crossing ground plans, including typical drawings showing the colouring convention, are given in [RT/E/S/10075](#).

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10 Non-Standard Symbols

If a symbol required for signalling purposes does not appear in this Code of Practice, another symbol (preferably from BS EN 60617) may be used, with a legend where necessary to explain its meaning.

In certain instances, where neither the symbol nor the nomenclature fully conveys the information required, a sign (e.g. #) may be used to indicate that reference to notes on the diagram is necessary.

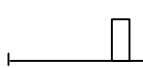

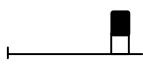

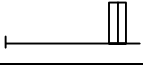

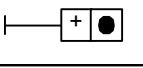

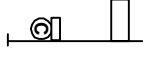
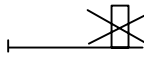
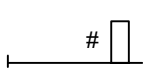

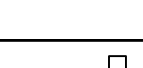

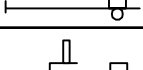

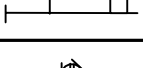
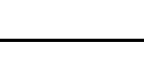


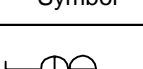
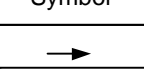
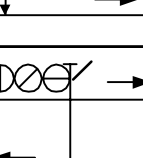
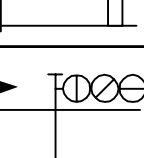
Some obsolete symbols, which are not generally appropriate for new drawings, are shown in Appendix D for reference purposes only. Where old symbols are used which are not included in Appendix D, a legend should be provided to explain the meaning.

Appendix A Layout Plan Symbols

A.1 Signals and Indicators

Colour Light Signals			
Colour of aspects:- 			
APPROACH LIT ASPECTS 			
A Double Line represents the Normal Aspect of a signal where this needs to be shown.			
Description	Symbol	Description	Symbol
Non-passable Signal, controlled, Multi-unit, Two Aspect, R:G.	01	Multi-unit, Two Aspect, Y:G.	02
Multi-unit, Three Aspect, R:Y:G.	03	Multi-unit, Four Aspect, R:Y:YY:G.	04
Aspect, Capable of Flashing, eg:- Double Yellow.	05	Aspect, Not Used. eg:- Green.	06
Position Light, associated with a Main Aspect, Beneath Main Aspect, Normally "OUT".	07	Position Light, associated with a Main Aspect, Offset, Normally "OUT".	08
Multi-unit, Three Aspect, R:Y:G, Position Light, Alphanumeric Standard Route Indicator suspended, alternative orientation shown.	09	Multi-unit, Four Aspect, R:Y:YY:G, Position Light, Standard Route Indicators: mounted at Ground level, e.g. Co-acting Signal.	10
Light Signal, Single Unit Searchlight, Three Aspect, R:Y:G.	11	Light Signal, Single Unit Searchlight, Four Aspect, R:Y:YY:G.	12
Example of Aspect Positioning and Splitting Distant Signals. Lower Speed Diverging Main Route to Left. Aspects of equal height for equal speed routes.	13	Auxiliary Lights used with single filament lamps. a) shows auxiliary yellow. b) shows 4 aspect searchlight: # explains aux. top R & bottom G.	14a 14b
Non-passable Signal, automatic, e.g. protecting traction supply section. Example shows signal replacement facility.	15	Colour Light Signal, Temporarily Not in Use.	16
Independent Position Light Signal, normally "ON" indicated by bar. a) RW:WW (3 aperture). b) RR:WW (3 or 4 aperture).	a) b)	Independent Position Light, normally "OFF", example shown elevated.	18
Independent Position Light Signal, with separately mounted alphanumeric miniature route indicator.	19	Limit of Shunt. a) Position Light, RR. b) Indicator. All can be elevated.	a) b)
Proceed on Sight Aspect, associated with a main signal.	21	Shunting, Set Back White Signals, Normally "OUT", W when "OFF".	22



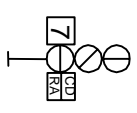
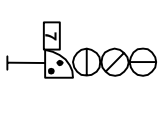



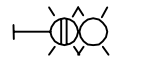
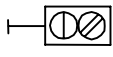
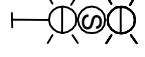










Represents the supplementary information that is required elsewhere on the plan. The requirement is explained in the description column.

A.1 (continued) Semaphore Signals			
Description	Symbol	Description	Symbol
Stop Signal, Generic symbol where no further information need be conveyed.	 23	Distant Signal, Generic symbol where no further information need be conveyed.	 24
Stop Signal, Power Operated (all types).	 25	Distant Signal, Power Operated (all types)	 26
Stop Signal, Fixed.	 27	Distant Signal, Fixed.	 28
Reflectorised Stop Board. + supplementary legend to be shown.	 29	Reflectorised Distant Board.	 30
Subsidiary Signal, Letter if displayed:- "C" = Call On, "S" = Shunt Ahead.	 31	Semaphore Signal, Temporarily Not in Use.	 32
Special Note, # symbol positioned adjacent to apparatus explained by # reference note.	 33	Example of Arm Stepping and Splitting Distant Signals, e.g. Lower Speed Diverging Main Route to Left. Arms of equal height for equal speed routes.	 34
Signal, Intensified Light.	 35	Signal, Electric Lamp.	 36
Miniature Arm, offset.	 37	Shunting Signal, Single, Red Arm, Normally "ON", Can be shown elevated.	 38
Shunting Signal, Floodlit.	 39	Shunting Signal, Power Operated.	 40
Shunting Signals, Multiple, eg.:- Three Arms, bottom signal shown Normally "OFF".	 41	Tall Siding Signals, Miniature Arms, eg.:- Three Arms, bottom signal shown Normally "OFF".	 42
Signals; Relationship to track			
Description	Symbol	Description	Symbol
Straight Post, Colour Light Signal, Left of Track for direction of running to which it applies (preferred arrangement).	 43	Straight Post, Semaphore Signal, Right of Track for direction of running to which it applies.	 44
Colour Light Signals, example shows suspended below or on the face of gantry or cantilever.	 45	Colour Light Signals, example shows mounted above gantry or cantilever.	 46

+ Represents the supplementary information that is required adjacent to the symbol on the plan. The requirement is explained in the description column.

A.1 (continued) Slots			
Description	Symbol	Description	Symbol
Semaphore, Stop Signal, slotted from another box.	48	Semaphore, Distant Signal, slotted from another box.	49
Backslot, Slot operated by Semaphore Stop Signal Ahead. (Slot between "stop" & "distant" arm on same post not to be shown.)	50	Slots, Multiple, add one additional arm for each control, example shows stop signal.	51
Slot. a) Semaphore Shunting Signal. b) Independent Position Light Signal.	a) b) 52	Slots, Main Colour Light Signal & associated Position Light Signal.	53
Controls			
Description	Symbol	Description	Symbol
Signal, the lever of which is Electrically Locked (semaphore or colour light). Only required on mechanical frames.	54	Signal, the controls of which are Released by the Block at "Line Clear" (semaphore or colour light).	55
Signal, the controls of which are Released by Token (semaphore or colour light).	56	Signal, the controls of which are Released by Key (semaphore or colour light).	57
Automatic Signal, having Replacement facilities from the Signal Box.	* 58	Signal, Last Wheel Replacement Facilities (shown in Signal Route Tables only).	* 59
Controlled Signal, Automatic Working Facility provided.	* 60	Signal, Controlled by Level Crossing Gate Box but Supervised by Main SB.	* 61
Repeating [any combination at a signal as required]			
Description	Symbol	Description	Symbol
Arm or Aspect, Electrically Indicated in SB.	* AR	Light, Electrically Indicated in SB.	* LR
Slot, Electrically Indicated in SB.	* SR	Arm or Aspect and Slot ON, Slot OFF, Electrically Indicated in SB.	* ASR
Banner Repeater, a) Normally "ON" b) Normally "OFF".	a) b) 66	Banner Repeater, Splitting, eg.:- Lower Speed Diverging Main Route to the Left.	67

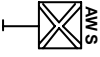
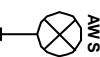















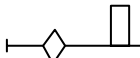
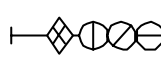

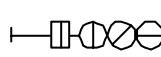
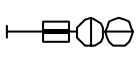
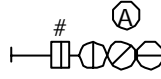
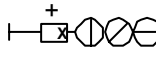

* These signaller's facilities may be shown in the Signal Box Notes or Table of Signal Routes (see RT/E/C/11701) rather than on the plan.

A.1 (continued) Indicators			
[Alphanumeric Standard Indicator drawn Square / Miniature Indicator drawn half size and Rectangular]			
Show relative position of indicators to signal.			
Route characters, signal class and descriptions to be shown in Table of Signal Routes (see RT/E/C/11701).			
Description	Symbol	Description	Symbol
Junction Indicator, showing all possible diverging route indicators.	 68	Alphanumeric Standard Route Indicator(s). Numeral indicates the number of route indications.	 69
Alphanumeric Standard Route Indicator, eg.: alternative position, avoiding conflict with Miniature Indicators for "CD" - Close Door & "RA" - Right Away.	 70	Alphanumeric Miniature Route Indicator(s), associated with position light signal routes. Numeral indicates the number of route indications.	 71
Alphanumeric Indicator, Double Sided, miniature. No Longer Permitted with Signals. Example shows platform indicator hung from canopy.	 72	Alphanumeric Indicator, can indicate:- [TT] Tripcock Test / [OFF] Off / [BT] Brake Test / [BU] Barriers Up / [RA] Right Away / [CD] Close Doors.	 73
Loading / Unloading Indicators,	 74	Driver's Level Crossing Indicator, [DCI]:- aspects R:W Flashing	 75
Points Indicator.	 76	Signal Passed At Danger Indicator.	 77
Carriage Depot Indicator. # supplementary legend.	 78	TPWS Lineside Status Indicator for RETB Lines, Blue Light on White Board.	 79
Composite RETB/TPWS Stop Board. # supplementary legend.	 80	Composite RETB/TPWS Distant Board.	 81
Markers			
Description	Symbol	Description	Symbol
Fixed Block Marker. For use on lines with cab signalling. Arrow points to applicable line.	 82	Shunt Limit Marker. For use on lines with cab signalling. Arrow points to applicable line.	 83
Platform Stop Marker, where required for signal sighting purposes. + No. of cars or class of train.	 84	Mid-platform Train Berth Marker.	 85
Rear Clear Marker.	 86	Radio Electronic Token Block, Station Limits/Loop Clear Marker.	 87

Represents the supplementary information that is required elsewhere on the plan. The requirement is explained in the description column.





















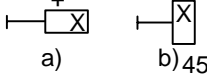

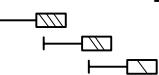

+ Represents the supplementary information that is required adjacent to the symbol on the plan. The requirement is explained in the description column.

A.2 Lineside Signs (see GI/RT7033 for application details)

Train Warning and Protection Systems			
Description	Symbol	Description	Symbol
Cancelling Indicator.	 01	Commencement of Gap.	 02
Termination of Gap.	 03	Warning of Cab Signalling.	 04
Commencement of Cab Signalling.	 05	Termination of Cab Signalling.	 06
Signalling Signs			
Description	Symbol	Description	Symbol
Notice Board, Reflectorised, # supplementary legend.	 07	Notice Board, Internally Lit. # supplementary legend.	 08
Notice Board, Flood Lit, # supplementary legend.	 09	Notice Board, Flood Lit, # supplementary legend.	 10
Cab Secure Radio [CSR], reflectorised, Radio Channel Change Board. ++ channel number.	 11	National Radio Network [NRN], reflectorised, Radio Channel Change Board. +++ channel number.	 12
GSM-R equipped area, reflectorised, a) commencement, b) termination.	a)  b)  13	Radio Electronic Token Block [RETB], reflectorised, Radio Channel Change Board. +++ channel number.	 14
Advanced Warning Board for AOCL / ABCL / OC Level Crossings, Reflectorised.	 15	Whistle Board.	 16
Signal Post Signs			
Description	Symbol	Description	Symbol
White "Diamond".	 17	Combined "Diamond" and "X" sign.	 18
Limited Clearance Telephone.	 19	Passable Signal, automatic.	 20
Intermediate Block Home Signal.	 21	Passable Signal, controlled, # type of control, e.g. "single button control". Example shows automatic working facility.	 22
Special Speed Restriction Board, miniature, repeating. + speed (in mph).	 23	Distant Signal.	 24

Represents the supplementary information that is required elsewhere on the plan. The requirement is explained in the description column.



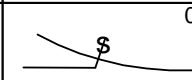

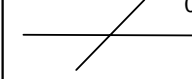
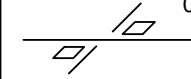





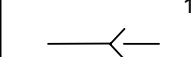
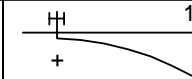
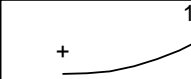
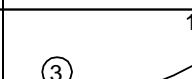
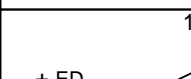
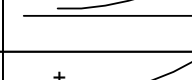


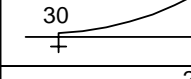
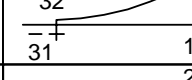
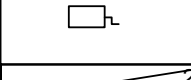
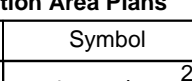
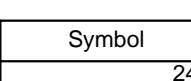
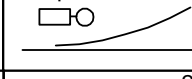



+ Represents the supplementary information that is required adjacent to the symbol on the plan. The requirement is explained in the description column.

A.2 (continued)		Speed	
Description	Symbol	Description	Symbol
Permissible Speed Warning Indicator, Directional arrow as required.	 25	Permissible Speed Warning Indicator, Non-standard Differential speeds.	 26
Permissible Speed Indicator, Directional arrow as required to indicate divergence speed.	 27	Permissible Speed Indicator, Non-standard Differential speeds.	 28
Permissible Speed Warning Indicator, Standard Differential speeds.	 29	Permissible Speed Indicator, Standard Differential speeds.	 30
Permissible Speed Warning Indicator, miniature, for limited clearance or as repeater, example.	 31	Permissible Speed Indicator, miniature, for limited clearance or as repeater, example.	 32
Enhanced Permissible Speed (EPS) Warning Indicator / Permissible Speed Warning Indicator for TASS enabled areas	 33	Enhanced Permissible Speed (EPS) Indicator / Permissible Speed Indicator for TASS enabled areas	 34
Temporary Speed Warning Board, directional arrow as required, reflectorised.	 35	Temporary Speed Warning Board, Differential Speeds, reflectorised.	 36
Emergency Speed Warning Indicator.	 37	Temporary Speed Repeating Warning Board, reflectorised.	 38
Temporary Speed Indicator, directional arrows as required, reflectorised.	 39	Temporary Speed Indicators, Differential Speed, reflectorised.	 40
Temporary Speed Restriction Termination Indicator, reflectorised.	 41	Spate Indicator, reflectorised.	 42
Open Level Crossing, Combined Speed Restriction / Whistle Board.	 43	Temporary AWS Cancelling Indicator, reflectorised.	 44
Automatic Level Crossing, Special Speed Restriction Board. a) Right Direction. b) Wrong Direction.	 45	Automatic Level Crossing, Special Speed Restriction Board, Differential Speeds.	 46
Countdown Markers.	 47	Signal Reminder Board. # Supplementary wording, e.g. "700m to signal L100".	 48

+ Represents the speed (in mph) that is required adjacent to the symbol on the plan. (Where speeds in km/h are necessary, they should be prefixed by "K".)

Represents the supplementary information that is required elsewhere on the plan. The requirement is explained in the description column.

A.3 Switches and Crossings

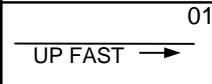

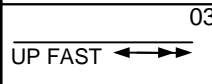
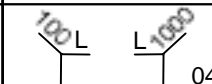
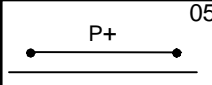
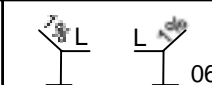
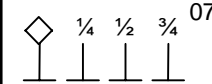
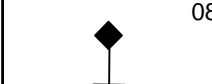
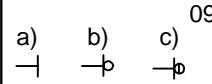

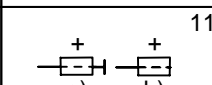
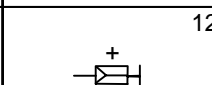
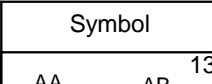
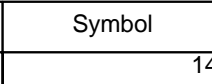

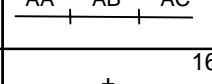
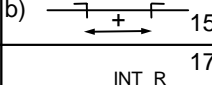


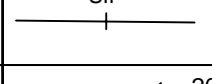
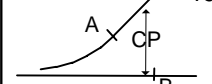
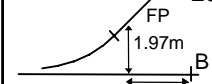
Point Layouts			
Description	Symbol	Description	Symbol
Lie of Points, set for straight route, showing normal position.	 01	Hand Worked Points, Ordinary, [2 way spring], trailable.	 02
Hand Points, One Way Spring, eg. Catch Points.	 03	Swing Nose Crossing.	 04
Fixed Diamond Crossing.	 05	Movable Switch Diamond.	 06
Single Slip.	 07	Double Slip.	 08
Trap Points, Double Switch.	 09	Trap Points, Single Switch.	 10
Derailer, arrow indicates direction of derailment.	 11	Trap Points, Wide to Gauge.	 12
Control Types			
Description	Symbol	Description	Symbol
Hydro-Pneumatic Self Restoring Points, Train Operated. + Identification Number.	 13	Points, worked from Signal Box, straight route when function normal. + Lever Number and Identification Letter.	 14
Points, Worked by Ground Frame, Ground Panel or Shunting Frame, all released from a controlling Signal Box. Number enclosed in a symbol (but not a square or rectangle).	 15	Detection of Mechanical Points, Mechanical Detection shown in Table. Electrical Detection shown ED. + Lever Number and Identification Letter.	 16
Points with Facing Point Lock, 2 Levers. + Lever Numbers and Identification Letters.	 17	Points with FPL, but no bar, 1 lever.	 18
Points with FPL and FPL bar, 2 levers. Example shows 32 works points; 31 operates FPL & bar.	 19	Point Operating Handle, for manual point operation.	 20
Points Clipped and Padlocked "Out Of Use" in accordance with GI/RT7004.	 21	 22	
Additional Information for Location Area Plans			
Description	Symbol	Description	Symbol
6 foot Point Operating Mechanism, includes FPL unless noted, e.g. on LH of track. May be shown on Sch Plan. + Point No. and suffix, type of mechanism, e.g. HW, 63, HPSS.	 23	4 foot Point Operating Mechanism e.g. Clamp Lock, includes FPL. + Point Number and Suffix, type of mechanism, e.g. CL.	 24
Special Note, # symbol positioned adjacent to points explained by # reference note. (Can be used for split detection or extra backdrives.)	 25	Yard points, Power Operated, trailable.	 26
Point Crank Handle (CH) / Pump Handle (PH), for manual point operation.	 27	Point Heating, controlled from SB. GPH = Gas. EPH = Electric.	 28

+ Represents the supplementary information that is required adjacent to the symbol on the plan. The requirement is explained in the description column.

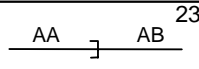
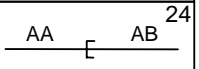
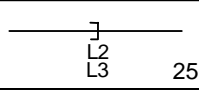
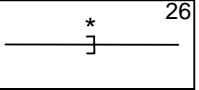
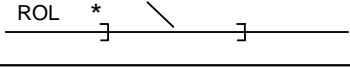
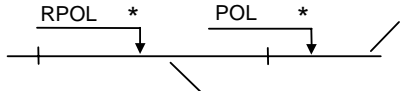
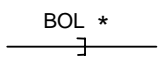
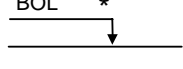
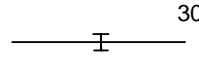
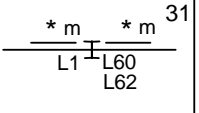
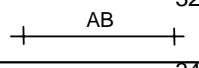
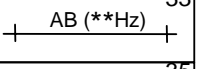
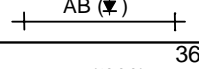
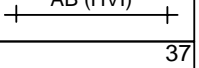

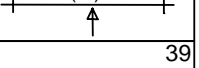
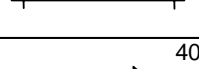
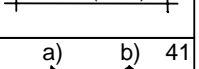
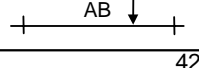
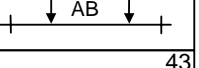
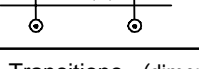
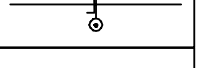
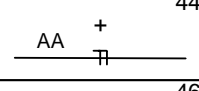
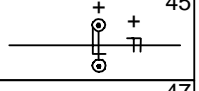
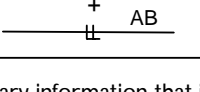
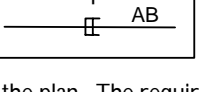
* This information may be shown in the Signal Box Notes (see RT/E/C/11701) rather than on the plan.

Ref	RT/E/C/11004
Issue	2
Date	December 2003

A.4 Track and Train Detection

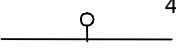
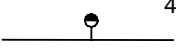
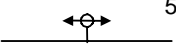
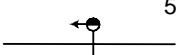
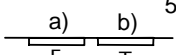
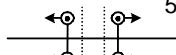
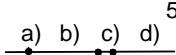











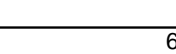
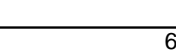
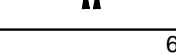
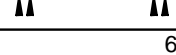
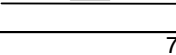
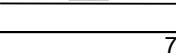
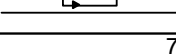
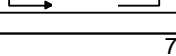


Miscellaneous			
Description	Symbol	Description	Symbol
Track Normal Direction Arrow, and Line Name.	 01	Track and Directional Arrows, Bi-directional.	 02
Track and Directional Arrows, Bi-directional with predominant direction of movement.	 03	Gradient Posts, lengths for unit rise or fall, eg:- falling 1 in 100; Level; Rising 1 in 1000.	 04
Pull Wires (trip wires). + length.	 05	Gradient Posts for unit rise or fall in % terms.	 06
Mile Post, also Quarter, Half and Threequarter Posts.	 07	Kilometre Post.	 08
Buffer Stop, with:- a) No Light, b) White Light, c) Red Light.	 09	Scotch Block.	 10
Sand Drag. a) with Buffer Stop, b) without Buffer Stop. + length.	 11	Sand Hump. + length.	 12
Track Circuits			
Description	Symbol	Description	Symbol
Track Circuit boundary, track circuits in both directions, includes jointless track circuits.	 13	Individual Track Sections, generic, example of identification lettering.	 14
a) Short Track Section. b) Gap. + lengths.	 15	Stainless Steel Welded Strip. + length.	 16
Track Circuit Interrupter, INT R to be shown where interrupter relay is repeated separately from Track Circuit.	 17	Strike in Point, with track circuit joint.	 18
Clearance Point Joint A foul, Joint B clear.	 19	Critical Clearance Point identified as Fouling Point, Joint B at Fouling Point plus critical measurement. (See GK/RT0011.) State measurement required, e.g. 1.97m + 4.88m (min).	 20
Impedance Bond, External Tuning.	 21	Impedance Bond, Internal Tuning.	 22

+ Represents the supplementary information that is required adjacent to the symbol on the plan. The requirement is explained in the description column.

A.4 (continued) Overlap Limits			
Description	Symbol	Description	Symbol
Overlap for signal on left, standard length (180/183m).		Overlap for signal on right, standard length (180/183m).	
Where applicable to several signals and identification is required. Example shows signals 2 & 3 at Signal Box "L".		Non-standard overlap length. * length.	
Restricted Overlap for warning aspect and Full Overlap. * overlap length.			
Restricted and Full Phantom Overlaps. * effective overlap length.			
Block Acceptance Overlap (Clearing Point). a) co-incident with track circuit boundary, b) not co-incident. * effective overlap length.		a)  b) 	
Bi-directional Line, Common Overlap for opposing signals. Add signal numbers if confusing.		Bi-directional Line, Common Overlap for opposing signals, dimensioned, with Signal Numbers. * overlap lengths.	
Type Identification (may be shown on Location Area Plan instead)			
Description	Symbol	Description	Symbol
Generic Track Circuit Symbol (all types of continuous train detection).		Alternating Current [AC]. ** frequency.	
DC Diode.		DC HVI.	
Frequency, Aster / UM / Reed. Aster/UM: **** frequency in Hz. Reed: *** frequency channel (f211 to f219).		Frequency, Centre Fed. * frequency in Hz, or channel.	
TI 21. * channel (A,B,C, etc.)		FS2600. * channel (1,2,3, etc.)	
Overlay Track Circuit.		a) TC AID D [detects in direction of arrow only] b) TC AID N [detects both ways].	
Axle Counter Section, counting in and out.		Axle Counter, example with overlap.	
Transitions (dimension to centre of symbols).			
Description	Symbol	Description	Symbol
Track Circuit on left, none on right.		Axle Counter end section. Example shows track circuit to left and axle counter to right.	
Track Circuit on right, none on left.		Track Circuit on right, none on left, example with overlap.	

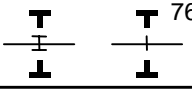
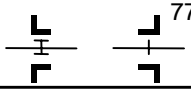
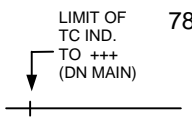
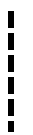

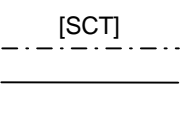
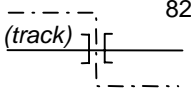
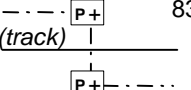
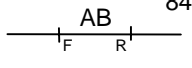
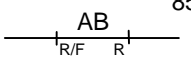
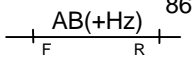
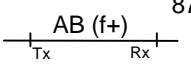

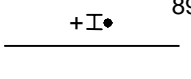
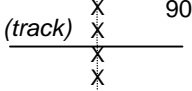
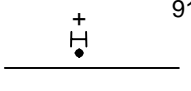
* Represents the supplementary information that is required adjacent to the symbol on the plan. The requirement is explained in the description column.

+ The element located at the centre line of these symbols should be used for dimensioning and scaling purposes.

Other Train Detectors			
Description	Symbol	Description	Symbol
Treadle, Operational Both Ways, Contacts Normally Open.	 48	Treadle, Operational Both Ways, Contacts Normally Closed.	 49
Treadle, Operational Both Ways, Independent Contacts, Normally Open.	 50	Treadle, Operational One Way, Contacts Normally Closed, Example shows treadles on both rails.	 51
Depression Bars, electrical. a) Independent. b) Working with track circuit.	 52	Axle Counter, arrow indicates effective direction of operation. Example shows level crossing use.	 53
Detonator Placer. a) single shot, normally ON. b) single shot, normally OFF. c) double shot, normally ON. d) double shot, normally OFF.	 54	Hot Axle Box Detector.	 55
Train Warning and Protection Systems			
Description	Symbol	Description	Symbol
Trainstop.	 56	Trip Cock Tester.	 57
Automatic Warning System, Permanent Magnet Only.	 58	AWS, Permanent & Electromagnet at 180/183m from signal, where signal can display a green aspect, effective for direction of line only.	 59
AWS, Depot Test Inductor.	 60	AWS, effective for movement in direction shown, suppressed for opposing moves.	 61
AWS, non-standard distance. + distance to signal, e.g. 230m for line speeds over 100mph.	 62	AWS, Selected suppression for normal direction of traffic, e.g. unfitted to fitted routes & SPAD.	 63
AWS, one installation on bi-directional line, effective in both directions, non standard distances. + signal number(s) and distance(s) as necessary.	 64	Portable AWS.	 65
Track-Train Data Transmitter. Arrow indicates direction of travel.	 66	Track-Train Data Transmitter, Infill transmission limits.	 67
ATP, remote beacon. Arrow indicates direction of travel. + distance to signal, e.g. 800m.	 68	ATP, beacon at signal. Arrow indicates direction of travel.	 69
ATP, loop, short. Arrows indicate direction of travel. + length, e.g. 100m.	 70	ATP, loop, long. Arrows indicate direction of travel. + length, e.g. 800m.	 71
TPWS, overspeed sensor, arming & trigger loops. + frequencies. Arrow indicates direction of travel. Other details as per RT/E/S/10133.	 72	TPWS, trainstop, arming & trigger loops at signal. + frequencies. Arrow indicates direction of travel. Other details as per RT/E/S/10133.	 73
ETCS type Balise on Uni-directional line (one balise symbol shown), + Identification Number # application code, e.g. "TASS". a) travelling to right, b) to left.	 74	Balise on Bi-directional line (two balise symbols shown) + Identification Number. Example shows TASS balises.	 75























+, # Represents the supplementary information that is required adjacent to the symbol on the plan. The requirement is explained in the description column.

Ref	RT/E/C/11004
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A.4 (continued) Staff Protection			
Description	Symbol	Description	Symbol
Train Activated Warning System. Limits of Protection.	 76	Lockout System limits of protection. If protection is not complete, notes to cover.	 77
Fringe Areas			
Description	Symbol	Description	Symbol
Area Covered by a Signal Box, Limit. +++ Signal Box name.	 78	Boundary of Area Covered by Interlocking, across width of plan if possible. Note: ARS sub-areas and SPAD sub-areas not to be shown on plan, but listed elsewhere.	 79
Additional Information for Location Area Plans			
Description	Symbol	Description	Symbol
Area Covered by Location Case or Relocatable Equipment Building, dotted line surrounds equipment area on all lines.	 80	Cable Routes: [SCT] surface concrete troughing, [GRC] glass reinforced concrete, [BD] buried direct, [BCT] buried concrete troughing, [BTR] buried tube route, [BKS] on brackets, or [CAP] concrete asbestos on post.	 81
Cable Bridge or Gantry.	 82	Cable Pit and Under track Crossing [UTX]. + number of ducts.	 83
Generic Track Circuit, F = feed, R = relay.	 84	DC Track Circuit, Feed end relay.	 85
AC Track Circuit, + frequency. HVI similarly, but with Tx & Rx.	 86	Frequency Track Circuit, e.g. TI 21, Reed, Aster, or FS2600. Tx = transmitter, Rx = receiver.	 87
Frequency Track Circuit, Centre Fed.	 88	Location Case, preferred arrgmt. + = number of cases, • = front.	 89
Power Lines crossing railway.	 90	Location Case, non-preferred arrangement. + = number of cases, • = front.	 91

+ Represents the supplementary information that is required adjacent to the symbol on the plan. The requirement is explained in the description column.

A.5 Other Apparatus

Description	Symbol	Description	Symbol
Block Instrument, Permissive, Peg.	* 	01 Block Instrument, Permissive, Non-Peg.	* 
Block Instrument, Absolute, Peg, Uncontrolled.	* 	03 Block Instrument, Absolute, Non-Peg, Uncontrolled.	* 
Block Instrument, Absolute, Peg, Controlled, + add WELWYN CONTROL adjacent if applicable.	* 	05 Block Instrument, Absolute, Non-Peg, Controlled.	* 
Block Instruments, Combined, Controlled, Bell, Welwyn Control.	* 	07 Block Switch, a) Plain, b) With Control.	* 
Electric Token Instrument, K = Key, S = Staff, T = Tablet, MS = Miniature Staff. Configuration to be shown. 'A' = Configuration.		09 No Signaller Token Instrument. Arrow indicates section.	
Key Release Instrument.		11	10
Occupation Key Instrument, or Patrolman's Lockout. + SB Release Number.	+ 	13 Switch Lock and Indicator (track).	
Bell / Gong: a) Trembler, b) Single Stroke Bell / Gong.	a)  b) 	15 K = Klaxon; H = Horn; S = Siren; Y = Yodalarm. Single and Double Sided.	
Telephone: a) Direct to Signaller, b) Other. PZ = point zone telephone, E = electrification telephone.	a)  b) 	17 Telephone Plug Point.	
Telephone, Two Way Ringing, + function of telephone.	* 	19 Public / Occupation / Accommodation Level Crossing, Block Indicator. (Show two if double indicator.)	
PLUNGER OR SWITCH; (one symbol per switch or plunger) Indications to Driver: BT = Brake Test, CC = Crossing Clear, CD = Close Door, ES = Emergency Stop, RA = Right Away. Indications to Signaller: CDI = Carriage Depot Indicator, SR = Shunters Release, TA = Train Arrived, TRTS = Train Ready To Start. Staff Protection control: LT = Lockout, TAWS = Train Activated Warning System, Other; to be defined on drawing.			

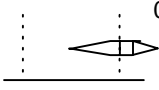
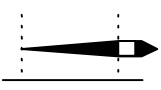
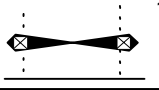

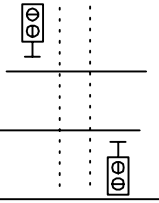
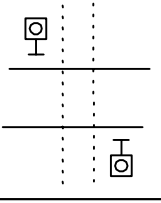
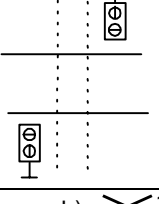
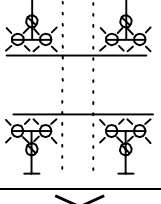
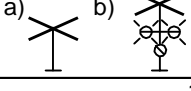
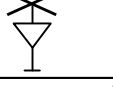




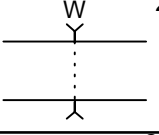
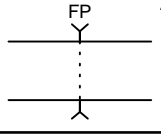


- * This information may be shown in the Signal Box Notes or the general notes (see RT/E/C/11701) rather than on the plan.
- + Represents the supplementary information that is required adjacent to the symbol on the plan. The requirement is explained in the description column.

A.6 Level Crossings

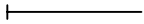

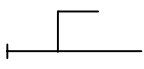


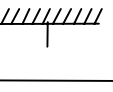
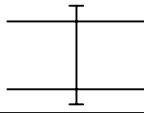
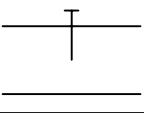
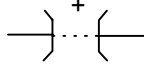
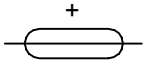
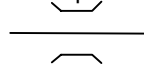



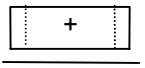
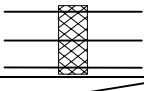
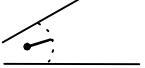
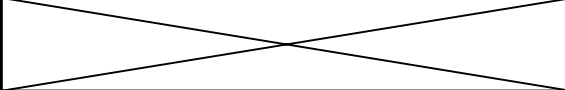
General			
Terminology	Symbol	Terminology	Symbol
Generic Level Crossing, +++ Crossing name and type: ABCL Automatic Barrier Crossing, locally monitored, AHBC Automatic Half Barrier Crossing, AOCL Automatic Open Crossing, locally monitored, BC Barrow Crossing, MCB(CCTV) Closed Circuit TV Crossing, MCB Manually Controlled Barrier, MG Manned Gates, MSL Miniature Stop Lights, MWL Miniature Warning Lights (not for new work), OC Open Crossing, MCB(RBC) Remote Barrier Crossing (not for new work), TOB Traincrew Operated Barriers, TOG Traincrew Operated Gates, UWC User Worked Crossing.			
Gated			
Terminology	Symbol	Terminology	Symbol
Gate, Uncontrolled, Worked from ground, normal position of gate solid, swing and direction dotted, opening away from railway, add K if lock provided.		Gate, Interlocked, Worked from ground.	
Gate, Interlocked, worked from Box. # indicates position of Wicket, Spring Gate or Cage as required.		Manned Gate Operation Control L = Lever, W = Wheel, P = Power Operated, B = Blacks Locks, C = 'C' Locks, K = Key Locks.	
Gate, Non Sympathetic, two, Interlocked with signalling. Add note referring to type of operation.		Gates, Sympathetic, four, Interlocked with signalling, worked from SB, add note referring to type of operation.	
a) Spring Gates, b) Wickets, c) Cages, d) Control for above, add C to gate.			

- + Represents the supplementary information that is required adjacent to the symbol on the plan. The requirement is explained in the description column.

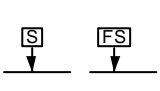
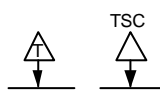
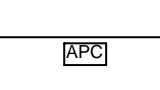
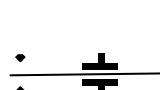
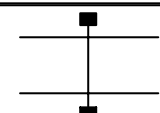
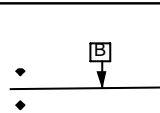
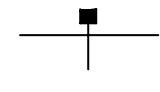
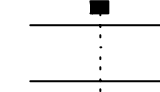


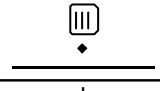

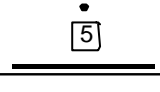
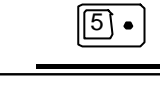
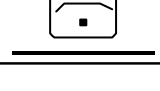
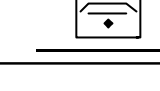

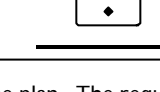
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A.6 (continued)		Barrier	
Description	Symbol	Description	Symbol
Half Barrier, not worked from SB. Applicable to AHBC & ABCL.	 09	Full Barrier, controlled by other than SB, eg. Single barrier, applicable to TOB, RBC & UWB.	 10
Full Barrier, controlled from SB, eg. using two barriers, applicable to MCB & CCTV.	 11	Position of Local Control Unit.	 12
Miscellaneous			
Description	Symbol	Description	Symbol
Miniature Stop (Warning) Lights (Pedestrian).	 13	Barrow Crossing Lights, (white only).	 14
Miniature Stop (Warning) Lights (Vehicular).	 15	Road Traffic Lights, (RTL).	 16
St Andrews Cross Sign. a) OC, b) AOCL.	 17	Give Way Sign, (open crossing).	 18
Level Crossing Illumination, (floodlight).	 19	Closed Circuit Television Camera.	 20
Foot Access Point to Railway.	 21	Vehicle Access Point to Railway.	 22
Authorised Walkway Across Railway (Staff Crossing).	 23	Footpath Across Railway. Public Crossings, a) FP = Footpath, b) BW = Bridleway.	 24
Driver's Operating Device e.g. plunger or pull wire for AOCL.	 25		 26

A.7 Structures

Signals [mileage / kilometrage to be shown at base of structure]			
Description	Symbol	Description	Symbol
Signals, Straight Post.	 01	Half Bracket.	 02
Side Bracket on Straight Post.	 03	Tee Bracket, Equal Sided Bracket.	 04
Suspended Doll from other construction.	 05	Side Fixing on other construction.	 06
Signal Gantry.	 07	Signal Cantilever.	 08
Railway Constructions			
Description	Symbol	Description	Symbol
Overbridge, + number. or Tunnel, + name and length.	 09	Bridge, Movable Span Swing Bridge, + name and number.	 10
Underbridge: + number, or Viaduct: + name, number and length.	 11	Turntable, Engine.	 12
Turntable, Wagon or Coach.	 13	Turntable bolt.	 14
Station Platform, + name and number, effective length.	 15	Traverser over 3 tracks.	 16
Water Column eg.- for 2 tracks.	 17		

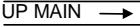

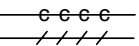
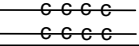

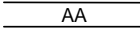

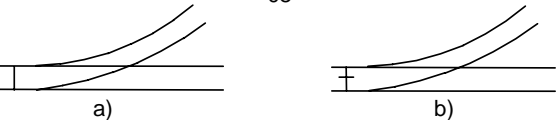
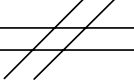
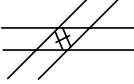
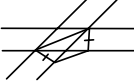
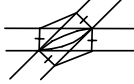
+ Represents the supplementary information that is required adjacent to the symbol on the plan. The requirement is explained in the description column.

A.7 (continued)		Electrification	
Description	Symbol	Description	Symbol
Electric Traction: Sub Station (S), Feeder Station (FS). Arrow indicates connection point of return feeder.	 18	Track Paralleling Hut (T), Track Sectioning Cabin (TSC), Arrow indicates connection point of return feeder.	 19
Automatic Power Control Magnets (APC) (if symbol required).	 20	Neutral Section. Dots indicate limits of restricted area for signal positioning.	 21
Electrification Gantry, not shown on signalling plans.	 22	Booster Transformer. Arrow indicates connection point to overhead line. Dots indicate limits of restricted area for signal positioning.	 23
Electrification Mast, not shown on signalling plans.	 24	Electrification Mast with Headspan, not shown on signalling plans.	 25
Signalling Control Points			
Description	Symbol	Description	Symbol
Crossing Keeper's Hut, or Gate Box (unless a symbol below is applicable).	 26	Relay Room, RR, Relocatable Building, REB.	 27
Ground Frame, Uncovered, e.g. Operator back to track. No. of Strokes = No. of levers. + SB release number and method if mechanical.	 28	Ground Frame, Covered, e.g. Operator Sideways to Track, + SB release number and method if mechanical.	 29
GF, Ground Panel, Uncovered, e.g. Operator Facing Track, No. indicates the No. of functions. + SB release number.	 30	GF, Ground Switch Panel, Covered e.g. Operator sideways to track, No. indicates No. of functions. + SB release number.	 31
Power Signal Box, with Panel only.	 32	Power Signal Box, Console and Diagram.	 33
Signal Box (Control Centre), with VDU Workstation.	 34	Signal Box, Lever Frame, example shows operator back to track.	 35

+ Represents the supplementary information that is required adjacent to the symbol on the plan. The requirement is explained in the description column.

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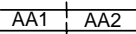

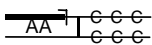
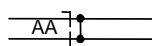
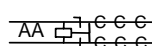
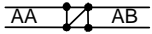
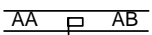
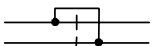
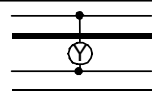

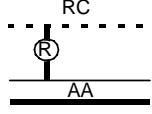
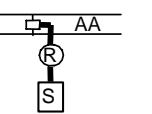



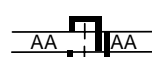
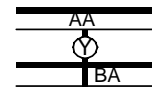
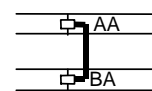


Appendix B Bonding Plan Symbols

Description	Non Electrified Line Symbol [NE]	AC Electrified Line Symbol [AC]	DC Electrified Line Symbol [DC]
B.1 Signals and Indicators: [see B.7 for Structures].	Signal Base position and distance (miles / kilometres).	Additionally, base to be earthed.	Signal Base position and distance (miles / kilometres).
B.2 Lineside Signs: [see B.7 for Structures].	Not Shown.	Any raised metal post signs shall be shown as for [AC] signal above.	Not Shown.
B.3 Switches and Crossings:			
Description	Non Electrified Line Symbol [NE]	AC Electrified Line Symbol [AC]	DC Electrified Line Symbol [DC]
Plain Line. Not Track Circuited, line name and directional arrows.	01 	Not Electrified, no continuity bond. 02 	
		Continuity bond one rail. 03 	
		Continuity bond both rails. 04 	
Plain Line. Track Circuited. Alternative convention of colouring the insulated rail is described in RT/E/C/11701.	Single Rail. Thick line indicates insulated rail. Thin line indicates common rail.	05 	
		Double Rail. 06 	
		Stainless Steel Welded Strip, along length shown. 07 	
Points:- Lie of points and methods of control (with the exception of motor points requiring extended timbers & soleplates) do not need to be a) not insulated, b) insulated (symbol not required if all soleplates insulated).		08 	09
Permanent Way Layouts: The point identities and insulated rail joints are not shown in these examples, as they vary with the installation.			
a) Fixed Diamond Crossing, b) Switch Diamond Crossing.	 a)	10  b)	11
a) Single Slip, b) Double Slip.	 a)	12  b)	13


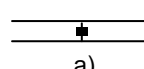
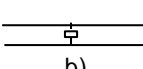
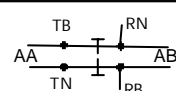
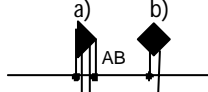
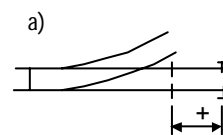
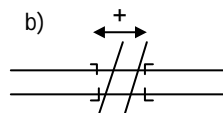


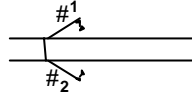
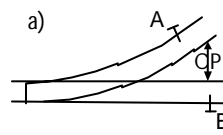
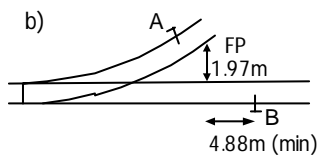
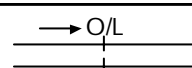
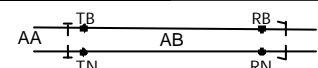
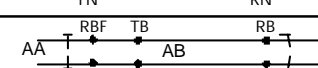
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B.3 Permanent Way Layouts (continued).			
Description	Non Electrified Line Symbol [NE]	AC Electrified Line Symbol [AC]	DC Electrified Line Symbol [DC]
a) Trap Point without crossing, b) Trap Point with crossing.	 a)	14	 a)
a) Wide to Gauge Trap, b) Derailer.	 a)	16	 b)
Scissors Crossover			18
a) Swing Nose Crossing, b) Points Clipped & Padlocked Out Of Use [C&P].	 a)	19	 b)
a) Point Numbering and Identification Lettering, b) Point controlled by Point Motors [Left Hand fixing shown], requiring extended sleepers & soleplates.	 a)	21	 b)
B.4 Track and Train Detection: Line Names, Directional arrows and Mile / Kilometre Posts should be shown. Gradient Posts need not be shown, but may assist location of equipment. Sand Drags and Sand Humps as A.4, but over both rails.			
Description	Non Electrified Line Symbol [NE]	AC Electrified Line Symbol [AC]	DC Electrified Line Symbol [DC]
Buffer Stops, a) insulated, b) not insulated.	 a)	01	 b)
Scotch Block requiring insulating.			03
Track Circuits [TC]			
Description	Non Electrified Line Symbol [NE]	AC Electrified Line Symbol [AC]	DC Electrified Line Symbol [DC]
Insulated Rail Joints [IRJ] between separate TC's.	Single Rail.	 insulated rail common rail (used for traction return)	04
For alternative presentation using coloured rails, see RT/E/C/11701.	Single to Double Rail.		06
	Double Rail.		08
	 05		
	 07		

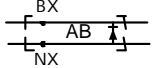
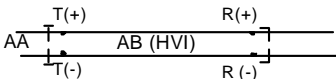
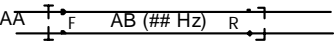
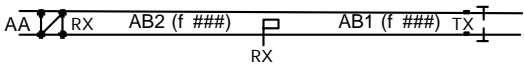
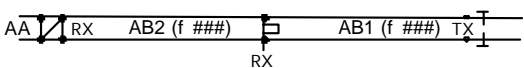
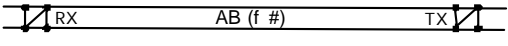
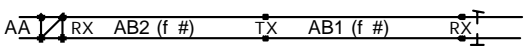
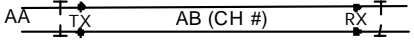
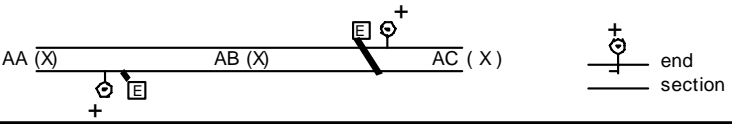
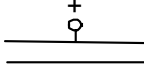
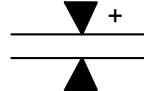

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B.4 Track Circuits [TC] (continued)					
Description	Non Electrified Line Symbol [NE]	AC Electrified Line Symbol [AC]	DC Electrified Line Symbol [DC]		
IRJ between sections of the same TC or overall TC. Double rail TC's shown.			09		
IRJ, TC to left, none to right.	Single Rail. 10 		11		
	Double Rail. 12 		13		
Jointless connection between two separate TC's: Tuned Zone.			14		
Jointless connection between two separate TC's: Overlay (one end feed), RH end.			15		
Standard Track Circuit Series Bond.			16		
Track Circuit Paralleling or Continuity Yellow Bond.		17 N / A	18		
Traction Return Bond.	N / A	19		20	
Traction Red Bond.	N / A	21		22	
		23		23	
Transposition Bonds.	Single Rail. 24 			25	
	Double Rail. 26 			27	
Traction Cross Bonds or Continuity Yellow bond.	N / A	28	Single Rail. 	29	
	N / A	30	Double Rail. 	31	
AC Traction, a) Earth Wire, b) Return Conductor.	N / A	32	a) EW  b) RC 	33 N / A	34

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B.4 Track Circuits [TC] (continued)			
Description	Non Electrified Line Symbol [NE]	AC Electrified Line Symbol [AC]	DC Electrified Line Symbol [DC]
DC Traction Return Imbalance Bond / Jumpers. Alternatively symbol 27 may be used.	N / A 35	N / A 36	37 
Impedance Bond, a) Internally Tuned, b) Externally Tuned.	N / A 38	39  a)	40  b)
Track Circuit end connections; show tail cables only when not shown on circuit diagrams.			41
TCAID a) D (only in one direction as arrow), b) N (both directions).			42
a) Short TC, b) Gap, + state length.		43	44 
Trap Points with insulated Interrupter.			45
Trap Points. Add INT R Where insulated Interrupter is repeated separately from track circuit.			46
Wide to Gauge Trap Points fitted with two insulated interrupters and Relay.			47
a) Clearance Point; Joint A foul, Joint B adequately clear, b) Critical Clearance Point identified as Fouling Point: Joint B at fouling point, plus critical measurement. (See GK/RT0011.) State measurement required, e.g. 1.97m + 4.88m (min).		48	49 
Overlaps.			50
Track Circuit Type Identification: Single or Double Rail TC's, Joints and Impedance Bonds not shown for clarity.			
Description	Non Electrified Line Symbol [NE]	AC Electrified Line Symbol [AC]	DC Electrified Line Symbol [DC]
Direct Current [DC] feed [T] and relay end [R], B = positive, N = negative.		51	52 N / A
Direct Current [DC] with additional feed end relay.		53	54 N / A

+ Represents the supplementary information that is required adjacent to the symbol on the plan. The requirement is explained in the description column.

B.4 Track Circuit Type Identification (continued)			
Description	Non Electrified Line Symbol [NE]	AC Electrified Line Symbol [AC]	DC Electrified Line Symbol [DC]
Diode.		55 N / A	56
Alstom; DC High Voltage Impulse [HVI]. + = positive, - = negative.			57
Alternating Current [AC], ### state frequency: 50, 75, 83 1/3 F = Feed, R = Relay. (Phase stagger determined on site.)			58
Frequency Track Circuits, Reed. ### state frequency code. TX = Transmitter, RX = Receiver / Relay, LP = Low Power.	Example: jointless (LH end), intermediate simple loop, jointed (RH end).		59
	Example shows Compound Loop.		60
T121 Jointless. # state frequency Key as above.	Example shows use of Track Tuning Units.		61
T121 Centre fed. # state frequency Key as above.	Example: Track Tuning Unit (LH end), End Termination Unit (RH end).		62
ASTER Jointless. #### state frequency. Key as above.	Type U or SF15	63 N / A	64
FS2600 Jointed. # state frequency Key as above.			65
Axle Counters, Track Sections to be shown and identified. Example shows heads fitted to one rail and EAK30 type Units bonded to common rail.			66
Treadles to be shown as attached to one rail or both and as shown in A.4.			67
Hot Axle Box Detectors to be shown attached to each rail.			68
Depression Bars, Electrical to be shown adjacent to appropriate rail, a) Independent (E), b) Working with track circuit (T).		69 	70

Represents the track circuit frequency information that is required within the track circuit on the plan. The requirement is explained in the description column.

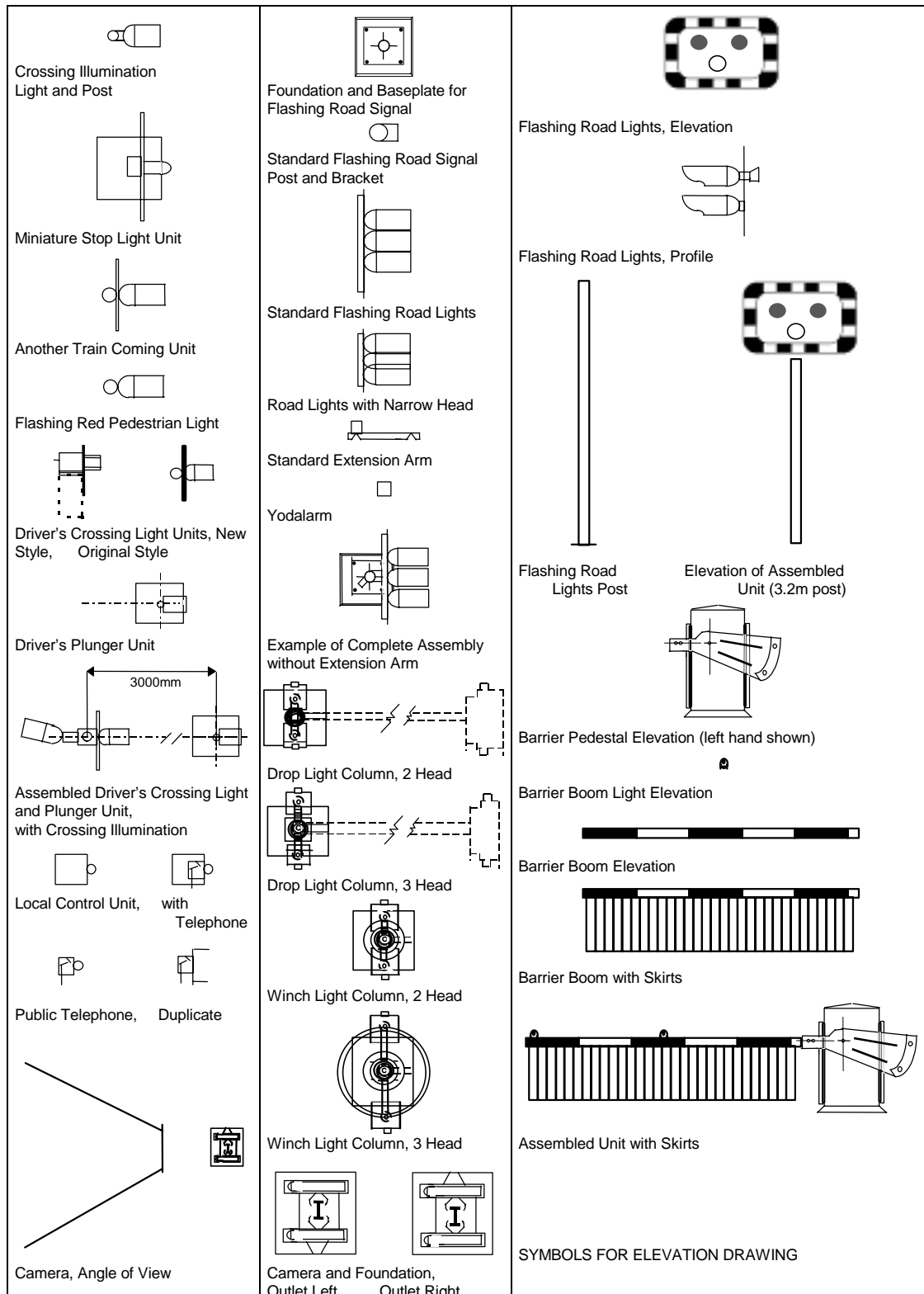
+ Represents equipment identities to be shown.

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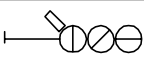


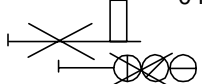
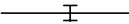
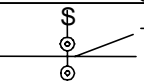
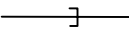
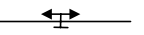
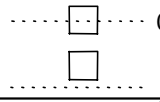
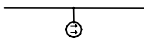




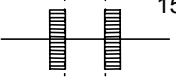


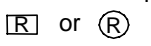


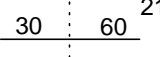



B.4 (continued) Train Warning and Protection Systems (where required to be shown).			
Staff Protection Systems need not be shown.		Trainstops need not be shown.	
Description	Non Electrified Line Symbol [NE]	AC Electrified Line Symbol [AC]	DC Electrified Line Symbol [DC]
AWS to be shown with effective direction.	N / A	71	72
TPWS system, showing arming & trigger loops. + frequencies, ++ distances (or stated in a table), OSS = overspeed sensor system, TSS = trainstop system. Arrow indicates effective direction.			73
DC Electrification (where required to be shown).			
Description	Non Electrified Line Symbol [NE]	AC Electrified Line Symbol [AC]	DC Electrified Line Symbol [DC]
DC Electrification Conductor Rail and Gaps.	N / A	74	75
Conductor Rail Protection, Single Board and Double Board.	N / A	76	77
B.5 Other Apparatus: no items need be shown.			
B.6 Level Crossings: All the level crossing symbols to be shown as in A.7. On AC Electrified lines all raised metal structures, including metal gates and barriers, to be shown and earthed as shown below.			
B.7 Structures: Bonding (to the common rail or earth wire) shown as considered necessary.			
Description	Non Electrified Line Symbol [NE]	AC Electrified Line Symbol [AC]	DC Electrified Line Symbol [DC]
All types of signal or sign with metal post. For signal, add signal number.	1m1038y (EN101) 01 	1m1038y (EN101) 02 	1m1038y (EN101) 03
Metal Overbridge. + as A.7.	as A.7 04	05	as A.7 06
Metal Underbridge or Swing Bridge. + as A.7.	as A.7 07	08	as A.7 09
Station Platform, Metal Awning or Railings.	as A.7 10	11	as A.7 12
Electric Traction Sub Stations and TP Huts, etc: shown as A.7, but with traction bonding.			
Description	Non Electrified Line Symbol [NE]	AC Electrified Line Symbol [AC]	DC Electrified Line Symbol [DC]
All Electrification Masts and Gantries. + post numbering to be identified.	N / A 13	14	N / A 15
All Metal Location supports, Ground Frame supports/ structures and other metal raised structures within 2m of line.	N / A 16	17	N / A 18

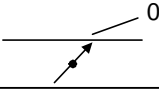
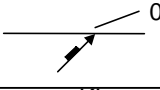
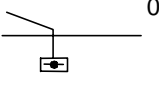
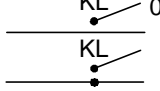


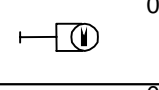
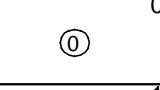

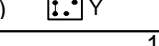
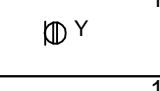
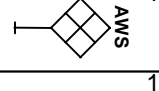
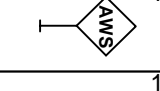
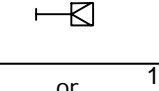
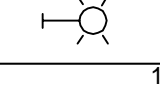
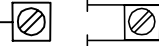


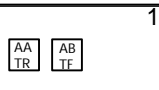
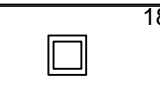
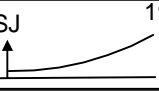
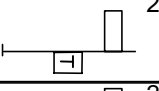
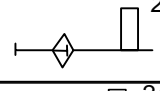
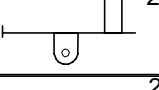
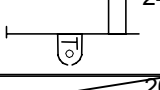
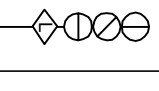
+ Represents the supplementary information that is required adjacent to the symbol on the plan. The requirement is explained in the description column.

Ref	RT/E/C/11004
Issue	2
Date	December 2003



Appendix D Obsolete Symbols

D.1 Obsolete Symbols: (included for reference purposes only and not for use on new plans)			
Description	Symbol	Description	Symbol
Light Signals, Slot.		01 Banner Signal.	
Illuminated Sign.		03 Signals to be removed.	
Obsolete meaning (see section A.4): Overlap TC joint.		05 Points spring 2 way.	
Obsolete meaning (see section A.4): Overlap TC joint, with no TC on the right.		07 Overlap TC joint, both directions on bi-directional line.	
Impedance Bond.		09 Trip Cock Test indicator.	
Crank Handle Release instrument.		11 Road Crossing Signal (visual).	
Road Crossing signal (audible).		13 Level Crossing road sign.	
Cattle Guard.		15 Telephone Sign.	
Points fitted with switch heater.		17 Right Away indicator "R".	
Permanent speed restriction warning indicator, also, differential speed signing.		19 Radio Channel.	
Line Speeds.		21 Turnout Speeds.	
AWS, suppressed in direction shown.		23 Apparatus Case.	

D.2 Obsolete Equipment: (not generally appropriate for new work)			
Description	Symbol	Description	Symbol
Points released by Token.	 01	Points released by Key on Token.	 02
Points released by Key from SB.	 03	Point Key Locks One/Two Way.	 04
Semi-automatic Signal.	 05	Emergency Replacement Button for auto signal (without lamp proving).	 06
Fishtail Banner Signal.	 07	Facilities on panel to override track circuit control.	 08
Independent Position Light a) YW:WW(3 aperture). b) YY:WW (3 or 4 aperture).	a)  Y b)  Y	Shunting Signal, Yellow Arm.	 10
Commencement of Special Working (SIMBIDS).	 11	Termination of Special Working (SIMBIDS).	 12
Remote Ground Frame Marker Board.	 13	Driver's Level Crossing Indicator, [DCI]:- W Flashing only.	 14
Points Indicator.	 or  15	Points Indicator.	 16
Old style Apparatus Housings.	 17	Alphanumeric Indicator, Double Sided, standard.	 18
Slotted Joint, arrow indicates direction of control.	 19	Point Machine, Dual Control.	 20
"T" Telephone sign.	 21	Combined "Diamond" and "T".	 22
"D" sign, (Fireman's Call Plunger).	 23	Combined "D" and "T" sign.	 24
Combined "Diamond" and "L" sign (loudspeaker SPT).	 25	Symbol for combined diamond and L: a diamond with a circle and a triangle. 26	Symbol for combined diamond and L: a diamond with a circle and a triangle. 26

NETWORK RAIL

(Chief Engineer)

BRIEFING NOTE

RT/E/C/11004

Symbols for Plans and Sketches

Used in Signalling Applications

Issue 2

December 2003

Compliance Date: 7 February 2004

Background

A design workshop was held in February 2002, promoted by Supply Chain Management, in order to improve efficiency in certain areas. A number of inconsistencies and minor improvements in symbols were identified that will facilitate the design process.

The revisions proposed have resulted in this reissue of the Signalling Design Handbook. They affect the following standards:

RT/E/S/11201	Signalling Design: Production
RT/E/C/11701	Signalling Design: Production Guidance
RT/E/C/11115	Correlation of Signalling Records
RT/E/C/11004	Symbols for Plans and Sketches Used in Signalling Applications

Key Changes

References have generally been updated and the name Railtrack changed to Network Rail.

The following symbols have been revised, including some proposals originating from Group Standards:

- 1) Appendix A.1 (Signals & Indicators)
 - Restriction on approach lighting removed (draft GK/RT0060 iss.4).
 14. Ansaldo type auxiliary aspects added (Manchester South).
 15. Non-passable Auto added (GK/RT0032).
 21. Proceed on Sight Aspect added (draft GE/RT8071).
 54. Note: Electric lock only needs to be shown with mechanical frames.
 72. Note: Double Sided Route Indicators no longer permitted (GK/RT0031).
 - 79 to 81. TPWS Status Indicator added, with composite boards (TPWS team).
- New section on Markers:
 83. Shunt Limit Marker added for cab signalling (GI/RT7033).
 84. Platform Stop Marker added for use with signal sighting (GK/RT0037).
 85. Mid-platform Train Berth Marker added (GI/RT7033).
 86. Rear Clear Marker added (GI/RT7033).

- 2) Appendix A.2 (Lineside Signs)
 04. Cab Signalling Warning Sign added (GI/RT7033).
 13. GSM-R Signs added (GI/RT7033).
 19. Limited Clearance Telephone Sign added (GE/RT8048).
 22. Passable Controlled Signal added (GK/RT0032).
 23. Miniature Special Speed Restriction Board added.
 - 31 & 32. Miniature Speed Indicators added (SCSWG).
 - 33 & 34. Enhanced Permissible Speed Indicators added (TASS team).
 48. Signal Reminder Board - example legend added (GK/RT0037).

Note: speeds in km/h should be prefixed by "K".
- 3) Appendix A.3 (Switches & Crossings)
 20. Point Operating Handle made independent of technology.
 23. Point Machine symbol redefined as 6 Foot Operating Mechanism.
 24. Clamp Lock symbol redefined as 4 Foot Operating Mechanism.
 - 23 to 28. Point symbols moved to new section on Location Area Plans.
- 4) Appendix A.4 (Track & Train Detection)
 - 25, 31 & 64. Signal Box prefix added to avoid confusion.
 43. Combined Axle Counter and Overlap symbol added.

New section on Transitions:

 - 44 to 46. End of Track Circuit symbol revised to avoid confusion.
 45. Axle Counter end section added.
 47. End of Track Circuit and Overlap symbol added.
 53. Directional Axle Counter symbol clarified with level crossing application.
 62. Note: Clarified that AWS is non-standard distance over 100mph.
 - 74 & 75. ETCS type Balises for TASS added (TASS team).
 79. Note added regarding ARS and SPAD detection sub-areas.
- 5) Appendix A.5 (Other Apparatus)
 13. Clarified that symbol applies to Patrolman's Lockout. Signal Box Release No. is required.
- 6) Appendix A.6 (Level Crossings)
 01. UWG and UWB combined as UWC (HMRI RSPG).
- 7) Appendix A.7 (Structures)
 09. Tunnel symbol changed to that for Overbridges to assist in dimensioning.
 - 28 to 31. GF note: Clarified that Signal Box Release No. is required.
- 8) Appendix B.4 (Bonding Plans - Track & Train Detection)

Many IRJ symbols corrected.

 66. Axle Counter end section and EAK30 type Units with rail bonding shown.
 73. TPWS dimensioning can be provided in a separate table to avoid clutter.
TSS loop position corrected.

- 9) Appendix D.1 (Obsolete Symbols)
- 07. Old SSP51 symbol for End of Track Circuit and Overlap added.
 - 16. Signal Post Telephone Sign moved from Section A.2.
 - 23. Old SR symbol for suppressed AWS added.
 - 24. Old "tombstone" symbol for Apparatus Case added.
- 10) Appendix D.2 (Obsolete Equipment)
- 05. Semi-Auto Signal symbol moved from Section A.2 (GK/RT0032).
 - 09 & 10. Yellow Shunt symbols moved from Section A.1 (GK/RT0031).
 - 11 & 12. SIMBIDS AWS sign symbols moved from Section A.2 (GE/RT8035).
 - 13. Remote GF Marker Board moved from Section A.2 (GK/RT0032).
 - 14. Flashing White DCI moved from Section A.1 (GK/RT0031).
 - 15 & 16. Old style Points Indicators added (GK/RT0031).
 - 17. Old "rabbit hutch" symbols for Apparatus Housings added.
 - 18. Double Sided Route Indicators no longer permitted (GK/RT0031).
 - 19 & 20. Dual control points no longer permitted, moved from Section A.3 (former GS/ST0081).
 - 21 to 24. Old style Telephone Signs moved from Sections A.2 & D.1.
 - 25. Obsolete "L" Telephone Sign added.

Implementation

These changes are mandated by RT/E/S/11201, and shall be implemented from 7 February 2004.

Technical Workscope Applicability (Please tick relevant boxes)	Design		Equipment			Construction				
	General	System Design	General	Design	MI & T	General	Equipment Site Inst.	Equipment Site Test	System Comm.	Maintenance
Key: M, I & T = Manufacture, Inspection & Test at Works Comm. = Commissioning Inst. = Installation										
A – All										
C&S – Civil & Structural										
E&P – Electrification (AC and/or DC) & Plant										
M – Maintenance										
P – Track										
S – Signalling	✓									
T – Telecoms	✓									
H – Safety & Site Working										

Of Interest To:

Those designing, altering or using signalling plans and sketches, representing Network Rail or its contractors.

Name and Title of Author

John Govey, Standards Consultant