

Information about this document

1. This document contains information about passenger trains that are permitted to operate on the line(s) and route(s) shown.
2. A valid Certificate of Technical Conformance (CTC), signed by London Underground's Professional Head of Rolling Stock, or signed by a person accredited by London Underground's Professional Head of Rolling Stock, is required for the operation of all trains on London Underground infrastructure.

Note a: It is possible that a train listed in this document, which has previously been permitted to operate over a specific route, is no longer permitted to do so. This would be the case if the validity of the previous CTC has expired, or if the CTC has been withdrawn. In this circumstance, it is the appropriate manager's responsibility to make sure an amended or new CTC is obtained before further operation of the train over the route concerned.

Note b: It is recognised and accepted that 'old' rolling stock will not necessarily have had a Certificate of Technical Conformance issued before their first operation on London Underground infrastructure.
3. Infrastructure Manager approval must be obtained from London Underground before the first operation of any train listed in this document.
4. Any train listed in this document must operate under a Safety Certificate with the prior agreement of the Safety Certificate Duty Holder.
5. All trains listed in this document must operate in accordance with London Underground rules and, where appropriate, Network Rail rules.
6. When a change is to be introduced that will affect this document, prior to the operation of the train(s) on the line(s) and route(s) shown, it is the appropriate manager's responsibility to notify London Underground Access Improvement of this change within reasonable timescales. Notification will enable this document to be appropriately updated and uploaded onto the Network Improvement website before the change becomes effective.

Abbreviations used in this document

Abb	Abbreviations
ATP	Automatic Train Protection
ATO	Automatic Train Operation
CRCL	Chiltern Railway Co. Ltd
CSDE	Correct Side Door Enable
CTC	Certificate of Technical Conformance
DMU	Diesel Multiple Unit
DTG-R	Distance To Go-Radio
EMU	Electric Multiple Unit
ICB	Inter Car Barrier
IR	Inner Rail
LTE	London Transport Executive
M&C	Metropolitan and Circle lines
N	Not permitted to operate over the route/section shown, in the formations used on the stock's home line
NB	Northbound
OPO	One Person Operation
OR	Outer Rail
P	Permitted to operate over the route/section shown, in the formations used on the stock's home line
PTI	Platform Train Interface
PWR	Permitted to operate over the route/section shown, subject to one or more restrictions explained in a note
SB	Southbound
SCAT	Speed Control After Tripping
SWT	South West Trains
TBTC	Transmission Based Train Control
TOC	Train Operating Company
TS	Tube stock.

Passenger rolling stock formations

Notes applicable to this table

- a) The passenger rolling stocks listed below are those normally used in passenger service on the lines shown. For information on all types of rolling stock that can be used on each line, refer to the tables shown in section 2 of this document.
- b) The requirements for operating short trains are shown in standard number 1-181.

Stock	Line	Operational conditions	Known operational restrictions
1967 TS	Victoria	8 car trains, and 4 car double ended or single ended units, must only operate in a Possession or Engineer's Current Area.	1967TS is not fitted with DTG-R ATP equipment.
1967 TS	Other lines	See permitted running route for the relevant line, and where not listed, approval must be sought as shown in standard S1538.	Tripcocks must be fitted at each end for operation on conventionally signalled lines. ICBs fitted in 1999 prevent operation on curved track where the curve radius is smaller than 65m. 1967 TS does not have a deadman's device installed.
1972 Mk2 TS	Bakerloo	7-car trains - normal train formation.	
1972 Mk2 TS	Bakerloo	4-car units - must operate without passengers.	The following equipment is not installed in 'D' end cabs: • passenger alarm unit • train radio • door controls • SCAT.
1972 Mk2 TS	Bakerloo	4-car unit 3299-4299-4399-3399 must not operate on its own outside depot limits.	This unit is single ended. There is no driving cab at the 'D' end.
1972 Mk2 TS	Bakerloo	3-car units - must not operate on their own outside depot limits.	No driving cab at 'A' end of units. Units have only one compressor installed.

Permitted Running Routes for Passenger Rolling Stock 12/09/2014

1972 Mk2 TS	Other lines	See the permitted running route for the relevant line, and where not listed approval must be sought as shown in standard S1538. The conditions and restrictions applying to the operation on the Bakerloo line of 4-car and 3-car units, also apply to operations on other lines.	1972 Mk2 TS is equipped with a static converter to supply auxiliary power for the cab air-conditioning equipment and saloon ventilation fans. The converter has been assessed to prove compatibility with the signalling on the Bakerloo line, but not on other lines.
1973 TS	Piccadilly	6-car trains – normal train formation.	
		3-car double ended units – see note b at the start of the section.	
1973 TS	Piccadilly	3-car single ended units – must not operate on their own outside depot limits.	No driving cab at one end of unit. Units have only one compressor installed.
1973 TS	Other lines	See the permitted running route for the relevant line, and where not listed approval must be sought as shown in standard S1538. The conditions and restrictions applying to the operation on the Piccadilly line of 3-car units, also apply to operations on other lines.	1973 TS is equipped with a static converter to supply auxiliary power for the cab air-conditioning equipment. The converter has been assessed to prove compatibility with the signalling on parts of the District and Metropolitan lines, but not on other lines. In 1998, 1973TS was fitted with ICBs which prevent operation where curved track has a radius smaller than 71.3m. Tests have taken place on the parts of the District and M&C lines used as diversionary routes for Piccadilly line train services, to ensure operation of 1973TS fitted with ICBs is possible. Tests have not been carried out on other lines. See document CN-98-0056-RS. Not gauged for operation on the Bakerloo, Central, Northern and Victoria lines.

Permitted Running Routes for Passenger Rolling Stock 12/09/2014

1992 TS	Central	8-car trains – normal train formation (Central line).	Must be fitted with Central line ATP equipment. Regenerative braking is allowed on the Central line subject to a limit on line voltage of 790V DC. If the air bag secondary suspension is deflated, a maximum speed limit of 20 mph/32 kph must be observed. See document RRN/0001A.
1992 TS	Central	6-car trains - must have a driving cab at each end of the train, and see note b at the start of the section.	Must be fitted with Central line ATP equipment. Regenerative braking is allowed on the Central line subject to a limit on line voltage of 790V DC. If the air bag secondary suspension is deflated, a maximum speed limit of 20 mph/32 kph must be observed. See document RRN/0001A.
1992 TS	Central	4-car trains - must have a driving cab at each end of the train, and see note b at the start of the section.	Must be fitted with Central line ATP equipment. Regenerative braking is allowed on the Central line subject to a limit on line voltage of 790V DC. If the air bag secondary suspension is deflated, a maximum speed limit of 20 mph/32 kph must be observed. See document RRN/0001A.
1992 TS	Central	2-car units – cannot operate on their own outside depot limits.	No driving cab at one or both ends of 2-car units.

Permitted Running Routes for Passenger Rolling Stock 12/09/2014

1992 TS	Waterloo & City	4-car trains - normal train formation (Waterloo & City line).	Regenerative braking is not allowed on the Waterloo & City line. Units designed for the Central line must not be used on the Waterloo & City line, because of non-standard inter-car jumper arrangements and other factors.
		2-car units - cannot operate on their own outside depot limits.	No driving cab at one end of 2-car units.
1992 TS	Other lines	1992 TS is confined to the Central and Waterloo & City lines. All movements on other lines must be as shown in standard S1538.	Limited clearance between traction motor gearbox and negative rail splays with wheel diameters less than 675mm. See document RRN/0002B. The propulsion equipment has not been checked for compatibility with the signalling on other lines. Requires tripcocks to be fitted at each end for operation on conventionally signalled lines.
1995 TS	Northern	6-car trains – normal train formation.	Regenerative braking is allowed on the Northern line subject to a limit on line voltage of 675V DC.
1995 TS	Northern	3-car single ended units – must not operate on their own outside depot limits.	No driving cab at one end of unit.
1995 TS	Other lines	1995 TS is confined to the Northern line. All movements on other lines require approval as shown in standard S1538.	The propulsion equipment has not been checked for compatibility with the signalling on other lines. Compatibility with the modernised tunnel telephone system, when installed on other lines, requires checking. Requires gauging for other lines.

Permitted Running Routes for Passenger Rolling Stock 12/09/2014

1996 TS	Jubilee	7-car trains - normal train formation.	Regenerative braking is allowed on the Jubilee line subject to a limit on line voltage of 790V DC. 1996TS is fitted with TBTC ATP equipment.
1996 TS	Jubilee	3-car and 4-car single ended units - must not operate on their own outside depot limits.	No driving cab at one end of unit.
1996 TS	Other lines	1996 TS is confined to the Jubilee line, plus a small part of the Metropolitan line within the mixed mode areas, for entry into and exit from Neasden depot purposes. All movements on other lines require approval as shown in standard S1538.	The propulsion equipment has not been checked for compatibility with the signalling on other lines. Requires gauging for other lines. Requires tripcocks to be fitted at each end for operation on conventionally signalled lines.
2009 TS	Victoria	8-car trains - normal train formation	Regenerative braking is allowed on the Victoria line subject to a limit on line voltage of 790V DC. 2009 TS is fitted with DTG-R ATP equipment.
2009 TS	Other lines	2009 TS is confined to the Victoria line. All movements on other lines require approval as shown in standard S1538.	The propulsion equipment has not been checked for compatibility with the signalling on other lines. Requires gauging for other lines. Requires tripcocks to be fitted at each end for operation on conventionally signalled lines.

Permitted Running Routes for Passenger Rolling Stock 12/09/2014

A60/62 stock	Metropolitan	8-car trains - normal train formation.	
		4-car single ended units must operate without passengers and carry a working portable train radio for communication with Service Control.	The following equipment is not installed in 'middle' cabs of single-ended units: • passenger alarm unit • train radio • door controls.
		4-car trains – can be used for a shuttle service between Chalfont & Latimer and Chesham, if required.	If a shuttle service is required to operate between Chalfont & Latimer and Chesham: • the track in bay road platform 3 at Chalfont & Latimer station might require some routine maintenance work carried out prior to use • 4-car units designated 'double ended' must be used • special de-icing units are used during the winter months.
		4-car double ended units - permitted to operate on other services, but see note b at the start of this section.	
A60/62 stock	Other lines	See permitted running route for the relevant line and where not listed approval must be sought as shown in standard S1538. The conditions and restrictions applying to the operation on the Metropolitan line of 4-car single-ended units, also apply to operations on other lines.	Surface stock - cannot operate on track sections built to tube gauge, or only accessible via tube gauge sections.
D78 stock	District	6-car trains - normal train formation.	
D78 stock	District	3-car double ended units - see note b at the start of the section.	

Permitted Running Routes for Passenger Rolling Stock 12/09/2014

D78 stock	District	3-car single ended units - must not operate on their own outside depot limits.	No driving cab at one end of unit. Units have only one compressor installed.
D78 stock	Other lines	D78 stock is confined to the District line, the Metropolitan line between Rayners Lane and Neasden depot, and a small part of the Piccadilly line (see Piccadilly line track sections for route availability) All movements on other lines require approval as shown in standard S1538.	Surface stock - cannot operate on track sections built to tube gauge, or only accessible via tube gauge sections.
S7 stock	Hammersmith & City, District and Circle lines	7-car trains - normal train formation.	Regenerative braking is allowed on the Hammersmith & City, District and Circle lines subject to a limit on line voltage of 650V DC, except for the following locations where line voltage is limited to 790V DC: Moorgate substation gaps to / from Hammersmith and Notting Hill sub station gaps (via Baker Street only).
S7 stock	Other lines	See permitted running route for the relevant line and where not listed approval must be sought as shown in standard S1538. The conditions and restrictions applying to the operation on the Hammersmith & City and Circle lines also apply to operations on other lines.	The propulsion equipment has not been checked for compatibility with the signalling on <u>some</u> other lines. Surface stock - cannot operate on track sections built to tube gauge, or only accessible via tube gauge sections.

Permitted Running Routes for Passenger Rolling Stock 12/09/2014

S8 stock	Metropolitan line	8-car trains - normal train formation.	Regenerative braking is allowed on the Metropolitan line subject to a limit on line voltage of 650V DC, except for the following locations where line voltage is limited to 790V DC: • Amersham and Chesham to Harrow on the Hill southbound platform 2 • Amersham, Chesham and Watford to Harrow on the Hill substation gap southbound local line • Harrow on the Hill substation gaps to Amersham, Chesham and Watford northbound local and main lines • Harrow on the Hill substation gap to Moorgate sub station gaps southbound lines • Moorgate to Harrow on the Hill substation gaps northbound lines. The maximum length of 125Hz track circuits that are permitted on the Metropolitan Line is 575 metres. The maximum length of LTE 1978 coded track circuits that are permitted on the Metropolitan Line is 300 metres.
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Permitted Running Routes for Passenger Rolling Stock 12/09/2014

S8 stock	Other lines	See permitted running route for the relevant line and where not listed approval must be sought as shown in standard S1538. The conditions and restrictions applying to the operation on the Metropolitan line also apply to operations on other lines. <u>Note</u> For the avoidance of doubt: • S8 stock is not permitted to operate into / out of Jubilee line platforms: - 2 & 3 at Neasden - 3 & 4 at Wembley Park • S8 stock is permitted to operate over the shared Jubilee line / Metropolitan line routes into / out of Neasden depot, onto / from the Metropolitan line only.	The propulsion equipment has not been checked for compatibility with the signalling on <u>some</u> other lines. Surface stock - cannot operate on track sections built to tube gauge, or only accessible via tube gauge sections.
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Passenger rolling stock normally used on LU lines

2.1 Bakerloo line

Track section	Stock	Abb	Operational conditions	Known operational restrictions
Elephant and Castle to LU/Network Rail boundary north of Queen's Park north shed, but excluding: - crossover at Piccadilly Circus - London Road depot.	1967 TS	PWR	4 cars only, without passengers.	Signalling berth length at Baker Street prevents the operation of trains longer than 7 cars.
	1972 Mk1 TS	P		
	1972 Mk2 TS	P		
Piccadilly Circus crossover	1972 Mk1 TS 1972 Mk2 TS 1967 TS	P	Through running movements in the right direction on the northbound line.	
	1972 Mk1 TS 1972 Mk2 TS 1967 TS	P	Through running movements in the right direction on the southbound line, excluding movements over 7A points with wheel skates fitted (see * below).	
	1972 Mk1 TS 1972 Mk2 TS 1967 TS	PWR	Through running movements in the wrong direction on the northbound line.	Maximum speed 5mph.
	1972 Mk1 TS 1972 Mk2 TS 1967 TS	PWR	Through running movements in the wrong direction on the southbound line, excluding movements over 7A points with wheel skates fitted (see * below).	Maximum speed 5mph.
	1972 Mk1 TS 1972 Mk2 TS 1967 TS	PWR	Shunt movements from signal BP4 on the northbound line to the southbound platform. See also * below.	1. Maximum speed 5mph. 2. Emergency use only when necessary to avoid detrainment or over-crowding, and the associated safety risks.

(continued on next page)

Permitted Running Routes for Passenger Rolling Stock 12/09/2014

Piccadilly Circus crossover (continued from previous page)	1972 Mk1 TS 1972 Mk2 TS 1967 TS	PWR	Shunt movements from signal BP10 on the southbound platform to the northbound line, excluding movements over 7A points with wheel skates fitted (see * below).	1. Maximum speed 5mph. 2. Movements must be made by at least one passenger train (empty or in service) per week.
	1972 Mk1 TS 1972 Mk2 TS 1967 TS	PWR	*Movements in any direction over 7A points if wheel skates have been fitted.	1. Maximum speed 5mph. 2. Before movements commence, either: - the wheel skates must be removed from the train, or - the housetop must be removed from the track.
LU/Network Rail boundary north of Queen's Park north shed to Harrow & Wealdstone, but excluding Willesden Junction bay road.	1972 Mk2 TS	P		This section is owned by Network Rail. All other LU passenger stock will require specific authorisation from Network Rail as specified in LU's Safety Certification and Authorisation accepted by Network Rail. Traction power is supplied at a nominal voltage of 680V DC.
Network Rail lines north of Harrow & Wealdstone.	All LU passenger rolling stock	N	All LU passenger rolling stock is prohibited.	This section is owned by Network Rail. The negative traction current rail is not maintained and has been removed in places. Any LU stock requiring to operate over this section will require specific authorisation from Network Rail.

Permitted Running Routes for Passenger Rolling Stock 12/09/2014

LU/Network Rail boundary north of Queens Park north shed to Kilburn High Road.	1972 Mk2 TS	P		This section is owned by Network Rail. It is used as a diversionary route for reversing at Kilburn High Road via the up main platform. All other LU passenger stock will require specific authorisation from Network Rail with the provisions of LU's Safety Certification and Authorisation accepted by Network Rail. Traction power is supplied at a nominal voltage of 680V DC.
Willesden Junction bay road.	All LU passenger rolling stock	N	All LU passenger rolling stock is prohibited.	This section is owned by Network Rail. Short berth length (60.8 metres) prevents operation of 1972 Mk2 TS.
London Road depot.	1967 TS	PWR	4 cars only, and must not operate on no. 1 road.	
	1972 Mk2 TS	P		
Queen's Park south shed.	1972 Mk2 TS	P		Traction current rail layout is intermittent. Other stock requires checking to determine risk of gapping when stabled.

Permitted Running Routes for Passenger Rolling Stock

12/09/2014

Stonebridge Park depot.	1972 Mk2 TS	P		Access to Stonebridge Park depot is via lines owned by Network Rail, whose permission will be required before other rolling stock can be transferred. Signalling berth length on depot entry/exit roads prevents the operation of trains longer than 7 cars.
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Permitted Running Routes for Passenger Rolling Stock 12/09/2014

2.2 Central Line

Track section	Stock	Abb	Operational conditions	Known operational restrictions
West Ruislip and Ealing Broadway to Epping. Woodford to Leytonstone via Hainault and Newbury Park.	1992 TS	P	All other passenger rolling stock requires a possession.	1992 TS originally built for use on the Waterloo & City line must not be used on the Central line. Traction supply can rise to a nominal voltage of 790V DC under regenerative braking.
Ruislip depot excluding: - ballast loading ramp - siding road B.	1967 TS	P		
	1972 Mk2 TS	PWR	Must have the auxiliary static converter isolated out of use, to prevent possible interference with signalling equipment.	
	1973 TS	PWR	ICBs must be removed and the auxiliary static converter must be isolated out of use, to prevent possible interference with signalling equipment.	
	1992 TS	P		
	A60/62 stock	P		
	S7 stock	PWR	Only one S stock, in any configuration, is permitted to be powered by traction current (by overhead trolley leads or rails) in Ruislip depot at any one time.	Traction current limitation is due to a power load application restriction. Permitted to operate on the Metropolitan line link to Ruislip siding and on 76 and 77 roads, but not permitted to operate on 23, 24, 25 and 26 roads.
(continued on next page)				

Permitted Running Routes for Passenger Rolling Stock 12/09/2014

Ruislip depot excluding: - ballast loading ramp - siding road B. <i>(continued from previous page)</i>	S8 stock	PWR	Only one S stock, in any configuration, is permitted to be powered by traction current (by overhead trolley leads or rails) in Ruislip depot at any one time.	Traction current limitation is due to a power load application restriction. Permitted to operate on the Metropolitan line link to Ruislip siding and on 76 and 77 roads, but not permitted to operate on 23, 24, 25 and 26 roads.
Ruislip depot ballast loading ramp and siding road B.	1967 TS	P		Surface stock is out of gauge.
	1972 Mk2 TS	PWR	Must have the auxiliary static converter isolated out of use, to prevent possible interference with signalling equipment.	
	1973 TS	PWR	ICBs must be removed and the auxiliary static converter must be isolated out of use, to prevent possible interference with signalling equipment.	
	1992 TS	P		
White City sidings, Hainault depot, Woodford sidings and Loughton sidings.	1992 TS	P		All other rolling stock requires a possession.

Permitted Running Routes for Passenger Rolling Stock 12/09/2014

2.3 District Line

Track section	Stock	Abb	Operational conditions	Known operational restrictions
Upminster to Barking plus Upminster depot but excluding: - Dagenham East bay road - Barking sidings - Barking bay road.	1967 TS	PWR	Permitted to operate without passengers.	Only one 4 car unit is permitted to operate in Upminster depot on north siding roads 17 to 24. In Upminster depot on north siding road 17, there is a <u>low</u> risk of gapping. Only use road 17 if no other road is available.
Upminster to Barking plus Upminster depot but excluding: - Dagenham East bay road - Barking sidings - Barking bay road.	1972 Mk2 TS	PWR	Permitted to operate without passengers, and the auxiliary converter must be isolated out of use, to prevent possible interference with signalling equipment. Platform berth lengths require checking before trains of 7 or 8 cars length can be operated in passenger service.	Permitted to operate in Upminster depot on north siding roads 17 to 24. In Upminster depot on north siding road 17, there is a <u>negligible</u> risk of gapping. Only use road 17 if no other road is available.

Permitted Running Routes for Passenger Rolling Stock 12/09/2014

Upminster to Barking plus Upminster depot but excluding: • Dagenham East bay road • Barking sidings • Barking bay road.	A60/62 stock	PWR	Only 4-car single or double ended units are permitted to operate for maintenance transfer purposes, to and from Upminster depot, as follows: • in a possession or in an engineer's current area • after the last passenger train on late current or in cancelled engineering hours • without passengers • with the train in the tare (empty) condition. Prior to transfer, the operator must be equipped with a fully functional Connect radio handset.	Not permitted to use: • Upminster platform 3 • Upminster depot reception roads 51 and 53 (wash road). Other surface stock trains are not permitted to simultaneously operate through this track section. Must traverse: • Upminster platform 5 at <u>extreme</u> caution speed • all other platform grounds in this track section at caution speed. Only one 4 car unit or one 5 car unit is permitted to operate in Upminster depot on north siding roads 17 to 24. In Upminster depot on north siding road 17, there is a <u>low</u> risk of gapping. Only use road 17 if no other road is available.
Upminster to Barking plus Upminster depot but excluding: • Dagenham East bay road • Barking sidings • Barking bay road.	D78 stock	P	In Upminster depot, also permitted to use roads 21, 22, 23 and 24, including access to / from road 51, for train preparation and service operations.	

Permitted Running Routes for Passenger Rolling Stock 12/09/2014

Upminster to Barking plus Upminster depot but excluding: • Dagenham East bay road • Barking sidings • Barking bay road.	S7 stock	PWR	East of Upney, must not carry passengers. In Upminster depot, only permitted to operate on: • 17 to 24 north siding roads • 38 to 49 roads • all entry and exit roads.	Beyond signal FF54 at Upney towards Upminster, operation is only permitted in cancelled engineering hours, on late or early current, in a possession or engineer's current area or in a closure.
Barking to the site of St Mary's Junction* (west of Whitechapel) plus Barking sidings excluding: • Barking bay road • Plaistow bay road • West Ham siding • Whitechapel no. 1 platform. <i>*For the purpose of this document, the site of St Mary's Junction will be as follows:</i> • <i>eastbound road - the Limit of Shunt sign located east of Aldgate East platform 2</i> • <i>westbound road - 43a points located west of Whitechapel platform 2.</i>	1967 TS	PWR	Permitted to operate without passengers.	

Permitted Running Routes for Passenger Rolling Stock 12/09/2014

Barking to the site of St Mary's Junction* (west of Whitechapel) plus Barking sidings excluding: • Barking bay road • Plaistow bay road • West Ham siding • Whitechapel no. 1 platform. <i>*For the purpose of this document, the site of St Mary's Junction will be as follows:</i> • eastbound road - the Limit of Shunt sign located east of Aldgate East platform 2 • westbound road - 43a points located west of Whitechapel platform 2.	1972 Mk2TS	PWR	Permitted to operate without passengers, and the auxiliary converter must be isolated out of use, to prevent possible interference with signalling equipment. Platform berth lengths require checking before trains of 7 or 8 cars length can be operated in passenger service.	
Barking to the site of St Mary's Junction* (west of Whitechapel) plus Barking sidings excluding: • Barking bay road • Plaistow bay road • West Ham siding • Whitechapel no. 1 platform. <i>*For the purpose of this document, the site of St Mary's Junction will be as follows:</i> • eastbound road - the Limit of Shunt sign located east of Aldgate East platform 2 • westbound road - 43a points located west of Whitechapel platform 2.	A60/62 stock	PWR	Only 4-car single or double ended units are permitted to operate for maintenance transfer purposes, to and from Upminster depot, as follows: • in a possession or in an engineer's current area • after the last passenger train on late current or in cancelled engineering hours • without passengers • with the train in the tare (empty) condition. Prior to transfer, the operator must be equipped with a fully functional Connect radio handset.	Other surface stock trains are not permitted to simultaneously operate through this track section. Must traverse all platform grounds in this track section at caution speed.