

Section 7

Train Area Marshalling; Switching; Equipment and Load Marshalling; and Handling

Train Area Marshalling

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TRAIN AREA MARSHALLING (TrAM)

1.0 Train Area Marshalling (TrAM) Overview

1.1 Introduction

Train Area Marshalling (TrAM) is CP's system of train marshalling instructions.

TrAM enables CP to operate:

- Heavier trains, and
- Distributed Power trains with a mix of different car types, both loaded and empty.

The TrAM marshalling rules are computer supported.

1.2 TrAM Scope

The Train Area Marshalling instructions include the following:

- Trailing tonnage limits for specific types of car equipment. These limits vary depending on the type of car, length of the car, length of adjacent car, weight of the car (content plus tare), and curvature and grade of the track over which the car will operate.
- Placement of cars with cushioned drawbars.
- Placement of remote locomotive consists.
- Restrictions on the use on dynamic brake.
- Restrictions on placement of light cars on certain ascending grades.

1.3 TrAM Areas

For the purposes of train marshalling, the CP network has been divided into six areas: TrAM Areas 1 to 6.

Specific marshalling instructions apply to each area. Therefore, the relatively restrictive marshalling instructions that apply to trains operating on mountain grades, for instance, do not apply to trains operating in areas of lower grades and curvatures.

Area Descriptions

The TrAM areas are defined by their combination of grade and curvature.

On some subdivisions, the TrAM area differs depending on direction or track.

TrAM areas are indicated in Time Tables.

1.4 Train Consist Enhancement

The train consist provides detailed marshalling messages under the heading Train Area Marshalling Messages. See item 3.0 for an overview of the marshalling messages and Appendix 1 of this section for a list of messages with descriptions.

2.0 Definitions

2.1 General Definitions

- a) **Ascending Grade Weight Zone** – Applies to Mixed, Light Bulk and Light Uniform trains and restricts car or platform weight on the extreme head end. See Item 8.0 for rules and restrictions.
- b) **Cars or Platforms** – When used together, it means conventional car(s) or platforms. "Cars or platforms" is usually used with a number, such as "10 cars or platforms." Conventional cars count as one. Multi-platform cars count by the number of platforms (i.e., a five-pack counts as five).
- c) **Container Slot** – Space for a container on a platform of an intermodal car. Intermodal cars have more slots than platforms. Double stack cars have bottom slots and top slots.
- d) **Cushioned Drawbar** – Designed to dampen the car coupling and in-train forces by using a hydraulic-style car impact cushioning system with longer travel than typical drawbars. Cars that often have cushioned drawbars include:
 - multi-level automobile cars,
 - automobile parts boxcars,
 - centrebeam lumber cars,
 - intermodal flat cars (greater than 80 feet in length and capable of holding two FEUs),
 - flat cars used to ship loads prone to shifting.

Cars that **do not** have cushioned drawbars include:

 - covered hopper cars,
 - hopper cars,
 - gondolas,
 - tank cars.
- e) **Extreme Head End** – First car or cars on the train immediately next to the lead locomotive consist.
- f) **Extreme Rear of Train** – Last car or cars on the train with no other cars trailing except an operating caboose or "crew transportation car." Cannot be ahead of a remote locomotive consist.
- g) **FEU** – Stands for "Forty-foot Equivalent Unit." It refers to a container 40 feet long, or its equivalent. Equivalent means two TEUs, or a single container 40 feet or longer (for example, 45 feet, 48 feet, or 53 feet).

- h) **Maximum Trailing Car Tonnage** – The trailing car tonnage that a car can safely handle in a train. It depends on the type and weight of the car. The maximum trailing car tonnage usually varies by TrAM area.
- i) **Outside Length** – The distance between pulling faces of couplers. It is not stencilled on the car, but can be found on the train consist documents.
- j) **Platform** – Loading area of a car. Conventional cars have one platform. Multi-platform cars typically have 2 to 5 platforms. Intermodal platforms have container slots.
- k) **Remote Zone** – Applies only to Mixed Distr Pwr trains. The Remote Zone restricts car types, and car or platform weights immediately ahead of the remote locomotive consist. See item 7.5 for zone size and restrictions.
- l) **TEU** – Stands for “Twenty-foot Equivalent Unit.” One twenty-foot long container is one TEU.
- m) **Threshold Tonnage** – Maximum train tonnage that can be handled without the possibility of causing a maximum trailing car tonnage violation. Threshold tonnage applies to Mixed Conventional trains and differs by TrAM area. (See item 6.4.)
- n) **Trailing Car Tonnage** – Applies to Mixed trains. On a Mixed Conventional train, the trailing car tonnage is the total weight of all the other cars following that car in the train. On a Mixed Distributed Power train, the trailing car tonnage of cars located ahead of one or more remote locomotive consists is determined by a computer calculation that depends on the position of the remote locomotive consists in the train. The trailing car tonnage of cars located behind the last remote locomotive consist is determined in the same manner as it is for conventional trains.

- o) **TrAM Check** – Computer assisted verification of train area marshalling. When there is a marshalling violation, the crew receives instructions on how to correct or avoid the violation.
- p) **Train** – In these instructions, the term Train can apply to Trains / Transfers or Engines handling equipment.

2.2 Car Type Definitions

- a) **Multi-platform Car** – Any car with two or more platforms.
- b) **Articulated Car** – A car with two or more platforms sharing common inboard trucks.
- c) **Articulated Double Stack Car** – Articulated intermodal container car with 2 or more platforms. They have deep wells that permit double-stacking (i.e., have bottom container slots and top container slots).
- d) **Spine Car** – Articulated intermodal container car with 2 or more platforms. These cars do not have deep wells to permit double stacking (i.e., single-stack, with bottom container slots only).



- e) **Solid Drawbar Connected Car** – A car with two or more platforms that do not share common in-board trucks. Platforms are connected by solid drawbars.
- f) **Solid Drawbar Connected Double Stack Car** – a solid drawbar connected intermodal car capable of handling double stacked containers (i.e., have bottom container slots and top container slots).



- g) **Long-Runner Car** – a solid drawbar connected intermodal car capable of handling up to either three or four trailers. This diagram shows how a long runner car that can handle a maximum of three trailers would be loaded.



- h) **Conventional Car** – Any freight car equipped with two trucks and a standard or cushioned drawbar at each end.

2.3 Train Types

- a) **Conventional Train** – a train in which all operating locomotives are located at the head end of the train.
- b) **Distributed Power (Distr Pwr) (DP) Train** – A train in which operating locomotives are located at the head end of the train, AND in up to 3 additional positions throughout the train. All locomotives are controlled from the head end locomotive consist.

Note: For the purposes of train area marshalling, a train operating with Distr Pwr equipment powered up, but with all operating locomotives at the head end of the train, is considered to be a conventional train. See Section 17, item 2.0 a).

All CP trains are further classified as one of the train types in the following table.

The train type is assigned by the computer and listed in Part 1 - Train Information of the Train Area Marshalling Messages. Each train type is defined in the table below.

Train Type ^{1, 2, 4} (Conventional or Distr Pwr)	ALL cars on the train meet these conditions	
	Weight	Length
Heavy Bulk	<ul style="list-style-type: none"> • at least 100 tons (contents plus tare) 	<ul style="list-style-type: none"> • 65 feet or less (outside length)
Light Bulk	<ul style="list-style-type: none"> • less than 45 tons (contents plus tare) 	<ul style="list-style-type: none"> • 65 feet or less (outside length)
Heavy Uniform ³	<ul style="list-style-type: none"> • at least 45 tons (contents plus tare) for each car or platform • maximum weight difference between cars or platforms is 20 tons 	<ul style="list-style-type: none"> • maximum length difference between cars or platforms is 10 feet
Light Uniform	<ul style="list-style-type: none"> • 35 to 55 tons (contents plus tare) 	<ul style="list-style-type: none"> • 65 feet or less (outside length)
Mixed	Any train that does not qualify as one of the types of Bulk or Uniform Trains listed above.	

Notes:

1. If a Bulk or Uniform Train lifts even one car that does not meet the weight and length conditions in the definition, then the train is considered a Mixed Train.
2. When a train meets the definition for both Bulk and Uniform train types, the computer assigns the "Bulk" type to the train.
3. Heavy Uniform trains may have multi-platform cars, other Bulk and Uniform train types can only have conventional cars.
4. Distributed Power trains will be identified in the Train Type line by the addition of the words DISTRIBUTED POWER followed by LEAD + # (# will indicate the number of remote locations)
e.g.: TRAIN TYPE - HEAVY BULK - DISTRIBUTED POWER - LEAD + 2

3.0 Train Area Marshalling Messages

Because the train marshalling instructions are complex, the TrAM rules are computer checked against the actual train consist. Train Area Marshalling Messages are printed on the train consist after the Dangerous Commodity Marshalling Messages.

The main parts of the Train Area Marshalling Messages are:

- Part 1 – Train Information: Provides essential information about the train, such as train type.
- Part 2 – Caution Messages: Provides warnings and information, and sometimes an instruction for the crew (e.g., “obtain NMC authority”), but not marshalling violations.
- Part 3 – Marshalling Violations: Lists marshalling violations that must be corrected before the train can proceed. This part is divided into marshalling messages that apply to **all** areas (“***** ALL AREAS *****”), and marshalling messages that are **specific** for each TrAM area (e.g., “***** AREA 1 *****”). These “specific” messages are listed for TrAM Areas 1 to 6 on all train consists regardless of the TrAM areas in which the train actually operates. Train crews must ensure there are no marshalling violations applicable to the TrAM area(s) in which they will operate.

Example: This train is marshalled correctly to operate in TrAM Areas 1, 2 and 3, because there are “no violations that apply to all areas,” and no area “specific violations” in TrAM Areas 1, 2 and 3. However, this train has “specific violations” that apply to Areas 4, 5 and 6. These marshalling violations would need to be corrected before the train operates in Area 4, 5 or 6.

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PART 3 - MARSHALLING VIOLATIONS
***** ALL AREAS *****
NO VIOLATIONS THAT APPLY TO ALL AREAS
PASSES REMOTE ZONE MARSHALLING
CD RULE 1 - NO CUSHIONED DRAWBAR RESTRICTIONS
***** AREA 1 *****
NO SPECIFIC VIOLATIONS FOR THIS AREA
***** AREA 2 *****
NO SPECIFIC VIOLATIONS FOR THIS AREA
***** AREA 3 *****
NO SPECIFIC VIOLATIONS FOR THIS AREA
***** AREA 4 *****
MAXIMUM TRAILING CAR TONNAGE EXCEEDED ON                                02 CARS
ETTX908301 ETTX803330
***** AREA 5 *****
MAXIMUM TRAILING CAR TONNAGE EXCEEDED ON                                02 CARS
ETTX908301 ETTX803330
***** AREA 6 *****
MAXIMUM TRAILING CAR TONNAGE EXCEEDED ON                                02 CARS
ETTX908301 ETTX803330
*****                               END TRAIN AREA MARSHALLING MESSAGES                               *****
    
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Appendix 1 provides a complete list of messages that may appear in the Train Area Marshalling Messages portion of the train consist.



4.0 Verifying Train Area Marshalling

4.1 Major Yards, Terminals, and Crew Change Locations

Marshalling Requirement

Supervisors in Major Yards and Terminals are responsible for listing and marshalling trains according to TrAM rules, including tonnage distribution and Remote Zone protection on Distr Pwr trains, and cushioned drawbar rules.

Trains should be marshalled to meet the most restrictive TrAM requirements to the next marshalling point.

Verifying Train Marshalling at a Major Yard or Terminal

Train crews must ensure there are no marshalling violations applicable to the TrAM area(s) in which they will operate the train.

Use the following table to help verify train marshalling.

Step	Action
1	Use the train consist to check: <ul style="list-style-type: none"> • Consist header messages • Car information messages • Train statistics messages • Dangerous Commodity marshalling messages • Train Area Marshalling Messages: <ul style="list-style-type: none"> - Part 1 – Train Information - Part 2 – Caution Messages - Part 3 – Marshalling Violations
2	If there are no marshalling violations, then proceed , but comply with any applicable Train Area Marshalling Caution messages. If there are any marshalling violations that apply to your train on your route, then notify the responsible yard or terminal staff and request instructions.

Verifying Train Marshalling at a Crew Change Location

Pre-departure checks at regular and relief crew change locations should include all of the checks summarized in the table above.

When the make-up of a train has changed without new documents being generated, also check:

- Crew to Crew Information Form under “Other information important to subsequent crews,”
- train consist, and
- Form 125 or appropriate Conductor Report.

If there are any marshalling violations applicable to the TrAM area(s) in which you will operate the train, notify the RTC and request instructions.

If marshalling information is incomplete or missing, and you are unable to determine whether marshalling is correct for the TrAM area(s) in which you will operate the train, then notify the RTC and request a TrAM check.

4.2 En Route Lifts and Setoffs

TrAM check requirements for en route lifts and setoffs (including operating locomotives) are shown in the following table:

Type of Train	Conventional Train	Distr Pwr Train
Heavy Bulk	<ul style="list-style-type: none"> • Not required for setoff or lift of operating locomotives. • Not required for setoff of cars. • Not required for lift of cars if it is known that cars being lifted meet requirements of a Heavy Bulk train, otherwise requirements for a Mixed Conventional train apply. 	Required *
<p>* Note: When lifting a Heavy Bulk train from customer tracks at origin, where exact order of cars may not be known in advance, crew will be instructed where to place the remote locomotive consist(s) in the train, based on number of cars from head end or rear of train. When remote locomotives are placed in train in accordance with these instructions, train will be considered to have passed a TrAM check, with no restriction on the use of dynamic brake.</p>		
Light Bulk	<ul style="list-style-type: none"> • Not required for setoff or lift of operating locomotives. • Not required for setoff of cars. • Not required for lift of cars if it is known that cars being lifted meet requirements of a Light Bulk train, otherwise requirements for a Mixed Conventional train apply. • Crews remain responsible to ensure that AGWZ rules concerning trains with more than 24 equivalent driving axles are complied with (see item 8.2). 	Required
Heavy Uniform	<ul style="list-style-type: none"> • Not required for setoff or lift of operating locomotives. • Not required for setoff of cars. • Requirements for a Mixed Conventional train apply when lifting cars. 	Required
Light Uniform	<ul style="list-style-type: none"> • Not required for setoff or lift of operating locomotives. • Not required for setoff of cars. • Requirements for a Mixed Conventional train apply when lifting cars. • Crews remain responsible to ensure that AGWZ rules concerning trains with more than 24 equivalent driving axles are complied with (see item 8.2). 	Required
Mixed	<ul style="list-style-type: none"> • Not required for setoff or lift of operating locomotives. • Not required for setoff or lift of cars, if it is known that total train weight after setoff or lift does not exceed threshold tonnage for the TrAM area in which the train is being operated (see item 6.4). • Train must also comply with item 5.3 with respect to Cushioned Drawbar cars on train. Note that item 5.3 may require a TrAM check to be obtained even if not otherwise required by this item. • If TrAM check not received, train crews are responsible to ensure that no long car/short car violations occur (see item 6.2). • Crews remain responsible to ensure that AGWZ rules concerning trains with more than 24 equivalent driving axles are complied with (see item 8.2) 	Required



4.3 Documenting Equipment Lifts and Setoffs

The following table summarizes crew documentation after lifting or setting off en route.

Lift or Setoff	Documentation
Planned lift or setoff	Leave updated documents with train.
Unplanned lift or setoff, including bad order setoff	Document on the Crew to Crew Information Form under "Other information important to subsequent crews," noting whether train required a TrAM check (see item 4.2), and if so whether it passed the TrAM check and AGWZ Rules (if applicable) after lift or setoff.
Locomotives	When lifting, setting off, or isolating lead or remote locomotives, or cutting traction motors in or out, document on the Crew to Crew Information Form, Part 1. If remote locomotives were lifted, set off or isolated, document whether train received a TrAM check and if so whether it passed the TrAM check.

4.4 En route Train Area Marshalling Violations

In the event a TrAM marshalling violation is discovered while a train is en route, the train must be stopped and NMC contacted. The NMC will provide instructions to the crew on how to remarshall the train to remove the marshalling violation, and, if the train is able to be moved before the marshalling violation is corrected, what restrictions will apply to movement of the train. When stopping, consideration must be given to prevent blocking of crossings, siding switches, etc.

Note: If authority is received from the NMC to move a train with a marshalling violation, it may only be moved to the first location where the marshalling violation can be corrected.

5.0 Cushioned Drawbar (CD) Rules

5.1 Where cushioned drawbar rules apply

Cushioned drawbar rules apply in all TrAM Areas.

5.2 Cushioned Drawbar Rules

All trains are subject to one of three cushioned drawbar rules, as shown below. The computer system checks each train consist to determine which rule applies.

CD Rule 1: Train may operate with no restrictions related to cushioned drawbars. The following Train Area Marshalling Message will appear on train consist:

CD RULE 1 - NO CUSHIONED DRAWBAR RESTRICTIONS

CD Rule 2: Under certain train make-up conditions, trains handling cushioned drawbars will be speed restricted at specific locations. The locations of speed restrictions will be shown in time table footnotes. Train crews are responsible to apply cushioned drawbar speed restrictions when these are applicable. The following Train Area Marshalling Message will appear on train consist when cushioned drawbar speed restrictions apply:

CD RULE 2 - CUSHIONED DRAWBAR SPEED RESTRICTIONS APPLY

CD Rule 3: Train has a prohibited configuration of cushioned drawbar cars, and/or the last remote locomotive consist on a Distr Pwr train does not comply with marshalling rules. The train must be remarshalled or reduced before proceeding. One or more of the following Train Area Marshalling Messages will appear on train consist:

CD RULE 3 - CUSHIONED DRAWBAR CARS EXCEED MAXIMUM - REDUCE

CD RULE 3 - INSUFFICIENT CD CARS NEAR REAR OF TRAIN - REMARSHALL

CD RULE 3 - REMOTE LOCO INCORRECTLY PLACED FOR OVER 40 CD CARS

5.3 Application of Cushioned Drawbar Rules

The following tables summarize the application of the cushioned drawbar rules based on the number of cushioned drawbar cars on the train and train weight. The first table may be used when lifting cars on a conventional train and no new train consist is available. (See item 4.2)

When a table entry indicates:

- CD Rule 1 or CD Rule 2; or
- CD Rule 2 or CD Rule 3,

may apply, it is the distribution of cushioned drawbar cars on the train that determines which of the two rules will apply. This distribution is computer checked against complex rules that take into consideration the weight and location of cars with and without cushioned drawbar in the train. As a general rule, the fewer non-cushioned drawbar cars that are located at or near the rear of the train, the more likely the less restrictive of the two rules will apply.

Conventional Trains		
Number of cars with Cushioned Drawbars	Train Weight	Application of Cushioned Drawbar Rules
0 to 30	Any weight	CD Rule 1 applies.
31 to 80	5000 tons or less	If it is known that train is in this category, and train consist not available, a TrAM check for cushioned drawbars is not required.
	Over 5000 tons	Either CD Rule 1 or CD Rule 2 applies, as indicated on train consist. If it is known that train is in this category and no train consist available, CD Rule 2 will apply unless a TrAM check received indicating that CD Rule 1 applies.
81 to 120	Any weight	Either CD Rule 2 or CD Rule 3 applies, as indicated on train consist. If train may be in this category and no train consist available, a TrAM check must be received before proceeding. Exception: If all cars are equipped with cushioned drawbars, CD Rule 2 applies and TrAM check for cushioned drawbars is not required.
Over 120	Any weight	CD Rule 3 applies

Distributed Power Trains		
Number of cars with Cushioned Drawbars	Train Weight	Application of Cushioned Drawbar Rules
0 to 40	Any weight	CD Rule 1 applies.
41 to 80	6000 tons or less	Either CD Rule 1 or CD Rule 3 applies, as indicated on train consist.
	Over 6000 tons	CD Rule 1, CD Rule 2 or Rule 3 may apply, as indicated on train consist.
81 to 120	Any weight	Either CD Rule 2 or CD Rule 3 applies, as indicated on train consist.
Over 120	Any weight	CD Rule 3 applies

Note: Distributed Power trains require a TrAM check – see item 4.2.

6.0 Mixed Train Instructions – Conventional and Distributed Power

These instructions apply to Mixed Conventional and Mixed Distributed Power Trains ONLY.

6.1 Marshalling Heavy and Light Cars or Blocks

To reduce undesirable track/train dynamics in Mixed trains, apply the following marshalling instructions, subject to destination blocking.

Heavy Cars and Blocks

- Marshall heavy cars as close as possible to the head end.
- Do **not** marshall heavy blocks of cars to the rear of train unless blocks of cars ahead are equally as heavy.

Light Cars and Blocks

- Marshall light cars or blocks as close as possible to the rear, unless the cars behind are also relatively light.

Notes:

1. The Train Area Marshalling Messages **do not** indicate whether train marshalling fulfills the intent of this item.
2. Destination blocking does not take precedence over TrAM marshalling violations that are shown on the train consist.

6.2 Short Car Coupled to Long Car (32/65 Rule and 41/80 Rule)

A car with an outside length less than 32 feet must not be coupled to a car or platform greater than 65 feet in outside length.

A car with an outside length less than 41 feet (other than operating cabooses or “crew transportation cars”) must not be coupled to a car or platform greater than 80 feet in outside length.

When either of these rules is violated, a message appears in the “All Areas” portion of Part 3 – Marshalling Violations of the train consist.

Exception: Cranes coupled to Idler cars are exempt from this item, and any short car/long car violation message in Part 3 related to the crane/idler combination does not apply.

All speed restrictions shown in item 18,1 continue to apply.

6.3 Maximum Trailing Car Tonnage for Cars Greater than 65 Feet in Outside Length

On Mixed trains there is a maximum trailing car tonnage for all cars greater than 65 feet in outside length. The maximum trailing car tonnage varies by TrAM area, by car type, and weight. Part 3 of the Train Area Marshalling Messages lists, by TrAM area, cars that have more than the allowable maximum trailing car tonnage. (See example in item 3.0.)

A train cannot be operated in a TrAM area in which maximum trailing car tonnage violations are listed. Cars must be re-marshalled or set off before the train may proceed in that TrAM area.

6.4 Threshold Tonnage

When the train tonnage is lighter than the threshold tonnage, maximum trailing car tonnage violations will **not** occur. Threshold tonnages vary by TrAM area and are listed in the following table and apply to Conventional Trains only.

TrAM Area	Threshold Tonnage
	Conventional Trains
1	9550 tons
2	8000 tons
3	4200 tons
4	6000 tons
5	2800 tons
6	3500 tons

7.0 Distributed Power Train Instructions – All Train Types

See Section 17, Distributed Power, for additional instructions not covered by Section 7.

Note: For the purposes of TrAM, conventional train instructions apply when operating with all locomotives on the head end as described in Section 17, Item 2.0 a).

7.1 Lead and Remote Locomotive Consist Combinations

TrAM supports Distributed Power operations with up to 3 remote locations through the train. The permitted combinations of **operating** lead and remote locomotives is based on equivalent driving axles. A consist message in Part 3 – Marshalling Violations displays "Locomotive capacity exceeds maximum" followed by the location (i.e. Lead / Remote 1) when the number of operating locomotives in either the lead or remote locomotive consists exceeds the number permitted. The violation can be corrected by isolating or removing locomotives.

Note: Due to the risk of high in-train forces, if there is a locomotive failure on any remote consist, the RTC must be notified and a TrAM check performed

The table in Appendix 2 is used to determine equivalent driving axles.

Maximum Driving Axles – Distr Pwr Trains			
Train Type	Lead Consist	In Train Remote(s)	Remote (extreme rear)
All train types except Heavy Bulk	24	24	12
Heavy Bulk	30	24	

7.2 Remote Locomotive Consist Placement

The placement of the remote locomotive consist(s) depends on the distance (in feet and number of cars or platforms) between the lead and remote locomotive consist(s) as well as the percentage of total train weight behind the remote locomotive(s).

Standard examples for the distribution of remote locomotives in a Heavy Bulk train that minimize in-train forces will be provided for locations where remote locomotives are normally added to Heavy Bulk trains. This does not eliminate the requirement for a TrAM check.

7.3 Maximum Distance between Lead and furthest Remote Locomotive Consist

Maximum distance	10,000 feet
All locomotives in the remote consist(s) are placed in IDLE mode	No maximum ¹
Note: 1. Under this condition, the train is considered to be a conventional train and a TrAM check may be required. (See item 4.2)	



Note: The maximum distance requirement is based on the ability to perform a comm loss idle down of the remotes when the train is operating in a state of "Comm Loss" as indicated in Section 17 Item 5.0. It is **not** based on radio communication.

7.4 Dynamic Brake

The TrAM system will determine the maximum allowable dynamic brake force on distributed power trains. When use of Dynamic Brake is not restricted, the following TrAM message will appear in Part 1:

DYNAMIC BRAKE NOT RESTRICTED

When use of Dynamic Brake is restricted, instead of cutting out dynamic brakes, locomotive engineers will be directed by TrAM message to restrict dynamic brake force to nnn in thousands of pounds as per the effort indicator on the locomotive display. In such case, the following TrAM message will appear in Part 2:

DYNAMIC BRAKE RESTRICTED - DO NOT EXCEED nnn KLBS RETARDING FORCE

7.5 Remote Zone – Mixed Distributed Power Trains ONLY

These rules apply to Mixed Distributed Power Trains ONLY.

On Mixed Distributed Power trains, the cars immediately ahead of the remote locomotive consist(s) form the Remote Zones.

The TrAM system will analyze the equipment ahead of each remote location to verify that the train passes Remote Zone Rules.

For a Mixed Distr Pwr train, in Part 3 of the Train Area Marshalling Messages on the train consist there will be a message that indicates one of the following:

- that train passes remote zone marshalling, or
- that specific cars have failed remote zone marshalling, or
- that remote zone rules do not apply. (See Exception below)

Cars that fail remote zone marshalling must be remarshalled or set off before train proceeds.

Exception: The Remote Zone rules do **not** apply to a Mixed Distr Pwr train when **both** of the following conditions are met:

- a) All cars on the train, except cars on the extreme head end, meet the conditions of a Light Bulk train or a Light Uniform train. (The "extreme head end" in this case includes all cars up to and including the car furthest from the head end that does not meet the conditions of a Light Bulk or Light Uniform train, as the case may be.)
- b) The number of cars or platforms on the "extreme head end" as defined in paragraph a) does not exceed 10% of the total number of cars or platforms between the lead and first remote locomotive consist.

7.6 Buff and Draft Forces on Distributed Power Trains

With multiple remote locomotives in a train, the total tonnage of a train will be divided between each locomotive grouping. Depending on the tonnage in each section of train (between locomotive groups), locomotives could be generating draft (pulling), buff (pushing) or a combination of both forces.

TrAM will calculate each section of train tonnage based on the Haulage Factor of all locomotives on the train and the tonnage of that portion of the train.

When draft or buff forces are exceeded, TrAM messages will appear in Part 3:

DRAFT FORCES EXCEED MAXIMUM LEAD REMOTE 1 REMOTE 2 REMOTE 3

BUFF FORCES EXCEED MAXIMUM REMOTE 1 REMOTE 2 REMOTE 3

8.0 Ascending Grade Weight Zone (AGWZ) Rules

- 8.1 At certain locations in TrAM Areas 4 and 5, the combination of severe ascending grades and curvature can create undesirable in-train forces that affect all lighter weight cars under certain operating conditions. These locations are referred to as Ascending Grade Weight Zones. See item 8.5 for the locations of Ascending Grade Weight Zones.
- 8.2 Certain train types operating in Ascending Grade Weight Zones must comply with the following additional marshalling restrictions. Heavy Bulk trains are not affected by the Ascending Grade Weight Zone Rules.

Conventional Trains			
Train Type	Up to 24 Equivalent Driving Axles ² - Any Tonnage	More than 24 Equivalent Driving Axles ²	
		Not more than Threshold Tonnage for a Mixed Conventional Train (item 6.4)	Greater than Threshold Tonnage for a Mixed Conventional Train (item 6.4)
<ul style="list-style-type: none"> • Mixed 	Ascending Grade Weight Zone restrictions do not apply		Cars or platforms on extreme head end must pass minimum weight requirement shown in item 8.3
<ul style="list-style-type: none"> • Light Bulk¹ • Light Uniform¹ 	Ascending Grade Weight Zone restrictions do not apply		Prohibited
<ul style="list-style-type: none"> • Heavy Uniform¹ 	Ascending Grade Weight Zone restrictions do not apply		Prohibited, unless it is known that extreme head end of train complies with requirements of item 8.3
Distributed Power Trains			
If maximum Buff and Draft forces are not exceeded anywhere on the train, the train complies with AGWZ Rules. Excessive Buff and Draft forces, if applicable, are shown in Part 3 of TrAM Messages.			

Note 1: Crews are responsible to ensure that Light Bulk, Light Uniform and Heavy Uniform Conventional trains do not operate in an AGWZ in violation of these requirements. There will NOT be any TrAM message concerning AGWZ for these types of trains.

Note 2: See Appendix 2 for equivalent driving axle counts.

- 8.3 Cars or platforms on the extreme head end of Mixed Conventional trains affected by Ascending Grade Weight Zone Rules (see item 8.2) are restricted as follows:

TrAM Area	Extreme head end of Train ¹
4	First 10 cars or platforms must each have a minimum weight of 60 tons
5	First 12 cars or platforms must each have a minimum weight of 75 tons
	OR First 15 cars or platforms must each have a minimum weight of 60 tons
Note 1: When an articulated or solid drawbar connected car extends beyond the first 10, 12 or 15 cars or platforms as required in this table, the minimum weight rules apply to each platform on that car.	

8.4 TrAM Messages and Crew Responsibility

Part 3 of the Train Area Marshalling Messages, Areas 4 and 5, will indicate, for Mixed Conventional trains only, whether or not the cars or platforms on the extreme head end of the train meet the minimum weight requirements for operation with over 24 equivalent driving axles in an Ascending Grade Weight Zone.

When operating in an Ascending Grade Weight Zone, crews are responsible to ensure that the number of equivalent driving axles on their train does not cause a violation of the Ascending Grade Weight Zone Rules. TrAM messages do NOT state if the train is operating with too many equivalent driving axles for that train configuration in an Ascending Grade Weight Zone.

8.5 Locations of Ascending Grade Weight Zones

Service Area	Subdivision and TrAM Area	Ascending Grade Weight Zone Located between	Direction
BC Interior	Mountain Area 5	Albert Canyon and Glacier	Eastward
		Fraine and Stoney Creek (Connaught Track)	Westward
Alberta	Laggan Area 5	Hill and Field	Eastward
		Field and Divide	Eastward

9.0 This item number is reserved for future TrAM instructions

10.0 This item number is reserved for future TrAM instructions

11.0 This item number is reserved for future TrAM instructions

12.0 This item number is reserved for future TrAM instructions



SPEED RESTRICTIONS

Refer also to operating bulletins and subdivision footnotes under the heading "EQUIPMENT RESTRICTIONS."

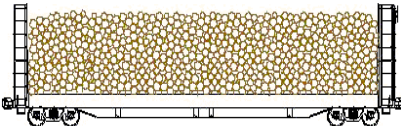
DEFINITION:

"Authorized Freight Train Speed or Freight Train Speed" is defined as the lowest of the following speeds:

- maximum subdivision speed for that train;
- permanent speed restriction;
- temporary speed restriction account track condition.

13.0 Speed Restrictions

Use the following table to identify speed restrictions for various kinds of loads and equipment.

Speed Restrictions for Various Equipment			
	Equipment Type	Must NOT Exceed...	Additional Information
A.	Business Car Train	50 MPH	See item 22.1. Freight train speed not exceeding 50 MPH (notification provided on consist)
	Passenger Equipment	Passenger Train Speed as indicated in Time Table	Unless otherwise advised or restricted by operating agreement, applies to Passenger Train equipment (other than CP Business cars) such as GO, Via, AMT, Amtrak, West Coast Express, Rocky Mountaineer..etc.
B.	Business Cars handled on Freight Trains	50 MPH	See item 21.2. Freight train speed not exceeding 50 MPH (notification provided on consist)
C.	Bulkhead flats: a) empty	45 MPH	When required - Notification provided on consist as well as when these cars are lifted en route. Exception: Authority to exceed 40 MPH may be secured from the Director Operations – NMC if able to confirm that the crossways loaded logs have been loaded as per AAR Open Top Loading Rules Fig. 11-C (Rev.9/94) (NOT shown).
	b) loaded crossways with pulp wood or other logs Example: 	40 MPH	
D.	Cranes, Combination crane-pile drivers, and other similar equipment.		See item 18.1.
E.	CWR and Strings of Bolted Rail		See item 26.1 (when operating on CP) and 26.2 (when operating on CN).
F.	Gondola cars – empty	50 MPH	Notification provided on consist as well as when these cars are lifted en route.

Continued on next page...

Speed Restrictions for Various Equipment			
	Equipment Type	Must NOT Exceed...	Additional Information-
G.	Freight Trains	50 MPH	Restriction applies when: <ul style="list-style-type: none"> the gross weight of the train including locomotives exceeds 4000 tons; AND weight per operative brake is 115 tons or greater. Part 1 of the Train Area Marshalling Messages displays weight per operative brake. Note: This item does not apply on the CN Yale Subdivisions.
	Freight Trains	30 MPH	When specified by GBO or DOB to apply while passing business cars, or occupied service equipment.
H.	48 foot Open Hopper Cars in MSDR series – empty	50 MPH empty	
I.	Occupied Service Equipment	35 MPH	Except as outlined in item 20.4.
J.	Ore Cars: <ul style="list-style-type: none"> series CP 370000 to 377249 foreign cars 30 feet and less outside length 	50 MPH loaded 40 MPH empty	
K.	Scale Test Cars		See item 17.1.
L.	Snowplows and Spreaders handled deadhead Note: When operating, speed will be at the direction of the Track Maintenance Supervisor but not exceeding authorized freight train speed.	35 MPH, handled in direction of travel.	If it is not possible to handle the snowplow or spreader in the direction of travel, then the train speed must not exceed 25 MPH.
M.	TEC (Track Evaluation Cars)		For TEC equipment on freight trains, see item 23.3.



HEAVY CARS AND LOADS

Refer also to operating bulletins and subdivision footnotes under the heading "EQUIPMENT RESTRICTIONS."

Also see item 15.0 for switching, loading, and spotting restrictions; and see item 16.0 for marshalling restrictions.

14.0 Heavy Cars and Loads – Authority Required

Note: See Section 10 item 2.2 e) for overloaded cars.

14.1 Cars Exceeding Maximum Standard Weight

A Protection Notice or authority from the Director Operations - NMC must be obtained for the following cars:

- car (less than 42 feet) exceeding 268,000 pounds
- car (42 feet or longer) exceeding 286,000 pounds.

14.2 Articulated Multi-platform Cars

- a) Restrictions are specified in subdivision footnotes for movement of articulated multi-platform cars having a content weight on ANY platform up to **106,000 pounds**.
- b) Unless authorized by Protection Notice, authority must be secured from the Director Operations - NMC for movement of articulated multi-platform cars:
 - having a content weight on ANY platform in excess of 106,000 pounds; or
 - having a content weight on ANY platform in excess of 118,000 pounds (when equipped with 125 ton trucks).

Note: See item 2.2 for the definition of articulated multi-platform cars.

14.3 Solid Drawbar Connected Multi-platform Cars

- a) Restrictions are specified in subdivision footnotes for movement of solid drawbar connected multi-platform cars having a content weight on ANY platform up to **173,000 pounds**.
- b) Unless authorized by Protection Notice, authority must be secured from the Director Operations - NMC for movement of stand-alone multi-platform cars having a content weight on ANY platform in excess of 173,000 pounds.

Note: See item 2.2 for definition of solid drawbar connected multi-platform cars.

SWITCHING, SPOTTING and LOADING

15.0 Switching, Spotting, and Loading

15.1 Coupling Cars Safely

Maximum coupling speed is 4 MPH (unless further restricted elsewhere). To prevent damage to equipment and lading, couple while moving at the slowest speed possible.

Do not attempt to couple a car or locomotive to another piece of equipment, unless the couplers are in line with each other. When it is necessary to adjust a mismatched coupler, follow this procedure. (See also Transportation Field Operation Safety Rules and Work Procedures.)

Step	Action
1	Stop the movement.
2	Allow a safe distance, not less than 50 feet , for working room between equipment. (Whenever necessary, signal locomotive engineer to reverse the movement and stop a second time to obtain a safe amount of room).
3	Wait for: <ul style="list-style-type: none"> • the movement to come to a complete stop, and • the slack to adjust and settle. (Do not overlook unexpected movements resulting from liquids sloshing in tank cars.)
4	Before fouling the track or making a movement between equipment to adjust knuckles, adjust drawbars, or couple brake pipe hoses, request the locomotive engineer establish three point protection. <div style="background-color: #cccccc; padding: 5px; margin-top: 5px;"> <p>Three Point Protection – Locomotive Engineer:</p> <p>To establish 3 point protection, complete the following steps in sequence.</p> <ol style="list-style-type: none"> 1. Fully apply locomotive brakes and if the air is cut in, make at least a minimum reduction. 2. Centre the reverser. 3. Open the generator field switch. <p>Then the locomotive engineer will:</p> <ol style="list-style-type: none"> 4. Notify the requesting employee that three point protection is provided. 5. Maintain three point protection until the employee requesting it advises that he is clear and that protection is no longer necessary. <p>To remove 3 point protection, complete the following steps in sequence.</p> <ol style="list-style-type: none"> 1. Close the generator field switch. 2. Move the reverser out of neutral. 3. Release the locomotive brakes. <p>Then the locomotive engineer will:</p> <ol style="list-style-type: none"> 4. Confirm that three point protection is removed. </div>
5	Inspect cars not attached to the locomotive to ensure that they are stopped, and if necessary, secure with a sufficient number of hand brakes to prevent movement.
6	Check for other movements on the track on which you are working.
7	Make the necessary adjustments (to drawbars/couplers) following safe work procedures.
8	Step clear of the equipment. (Do not foul adjacent track.) Notify the locomotive engineer to continue with the coupling.
9	After coupling, slack must be taken or be seen to run out, to ensure a proper coupling has been made.
Note	When switching using RCLS (Remote Control Locomotive System), refer to RCLS Job Aids on RailCity or the Internet.



15.2 Switching Restrictions and Precautions - Equipment

Use the following table to identify switching restrictions for specific equipment.

Refer to Section 8, Dangerous Goods, and Section 10, Dimensional Traffic, for additional restrictions.

Switching Restrictions – Types of Equipment		
	Equipment	Switching Restrictions and Precautions
A	Service Equipment	See item 20.3
B	Cars over 65 feet (outside length), including Multi-level autos	Whether loaded or empty: <ul style="list-style-type: none"> • Couple to other cars on straight track (when possible). • Follow the steps in item 15.1, Coupling Cars Safely, to properly align coupler heads before coupling. • Shove fully clear of adjacent tracks before being uncoupled. In addition, loaded multi-level automobile cars should not be hung onto during switching.
C	Multi-platform cars	a) When loaded or empty: <ul style="list-style-type: none"> • Do not hump or cut off in motion. • Do not allow to be struck by a car moving under its own momentum. • Do not couple onto with more force than necessary to complete the coupling. b) In addition, when loaded with one or more trailers or containers: <ol style="list-style-type: none"> 1. Stop between 12 and 6 feet from a stop block or from the equipment being coupled onto. CAUTION: If required to align coupler heads, follow the steps in item 15.1, Coupling Cars Safely. 2. Couple with care to avoid damage to lading.
D	Two axle scale test cars	See item 17.3.
E	TEC (Track Evaluation Car)	See item 23.4.
F	Cuts of 20 or more cars	When cuts of 20 or more cars are subject to damage from overspeed impact: <ol style="list-style-type: none"> 1. Stop between 12 and 6 feet from the cars to be coupled. (CAUTION: If required to align coupler heads, follow the steps in item 15.1, Coupling Cars Safely.) 2. Couple with care to avoid shock.
G	SBU (Sense and Braking Unit)	Remove the SBU before lifting or setting off cars from the rear of the train.

15.3 Switching Restrictions and Precautions - Loads

Use the following table to identify switching restrictions for specific loads.

Refer to Section 8, Dangerous Goods, and Section 10, Dimensional Traffic, for additional restrictions when switching those kinds of loads.

Switching Restrictions – Types of Loads		
	Load	Restrictions and Precautions
A	<ul style="list-style-type: none"> • Transformers • Circuit Breakers • Traction Motors • Wheelsets 	Do not hump. Always switch with locomotive attached.
B	CWR or Strings of bolted rail	See item 26.3.
C	Trailers or Containers	Trailers and containers should not be: <ul style="list-style-type: none"> • humped or cut off in motion; or • struck by a car moving under its own momentum. Caution: If these actions cannot be avoided, then ensure the movement, and following movements, are properly controlled.
D	Bridge girders, pipe, poles, or similar lading	When loaded on three or more flat or gondola cars: <ul style="list-style-type: none"> • Do not hump or cut off in motion.
E	Prone to shifting and subject to damage	Use extreme care when switching commodities subject to damage, especially when cars are partly loaded or unloaded. (E.g., shed, team, or industrial tracks)

15.4 Spotting Multi-level Automobile Cars at Automobile Compound Ramps

- a) Before placing the car against the stop block, stop the car between 12 and 6 feet from the stop block. (**CAUTION:** If required to align coupler heads, follow the steps in item 15.1, Coupling Cars Safely.)
- b) Set hand brakes on all cars.
- c) Do **not** couple together multi-levels that have over 3 inches difference in deck heights

Use the following table to determine the distance between railcars.

Bridge Plate Length	Distance between railcars
53 inch	Position multi-level car with 38 to 46 inches between cars. Do not compress or extend cushioned couplers to attain this distance.
56 inch	Position multi-level car with 41 to 49 inches between cars. Do not compress or extend cushioned couplers to attain this distance.
Adjustable length	Position multi-level car with 38 to 56 inches between the centre point to centre point of the barrel rings on adjacent multi-level cars. Do not compress or extend cushioned couplers to attain this distance.

15.5 Spotting Cars Loaded with Trailers at Unloading Ramps

Complete the following actions when spotting cars loaded with trailers at unloading ramps.

- a) Stretch slack.
- b) Apply hand brakes.
- c) If there is a ramp coupler, test to ensure coupling is made to the ramp.

15.6 Loading Bridge Girders, Pipe, Poles, or Similar Lading on Ferries or Barges

- a) Load when the aprons are as level as possible.
- b) After loading, carefully examine blocking and tie down fastenings.



MARSHALLING EQUIPMENT AND LOADS

16.0 Marshalling Restrictions

These marshalling restrictions describe where particular loads and equipment may be placed in a train. See item 13.0 for speed restrictions and item 15.0 for switching, loading and spotting restrictions.

Note: These Marshalling Restrictions are in addition to Train Area Marshalling.

16.1 Marshalling Restrictions – Equipment

Use the following tables to identify marshalling restrictions for various kinds of equipment.

Marshalling Restrictions – Equipment		
	Equipment Type	Instructions to Marshall in FREIGHT TRAINS
A	Multi-Level Autos – LOADED	Marshalling loaded multi-level autos: <ul style="list-style-type: none"> • Do NOT place immediately behind open top cars containing coal, sand, gravel, sulphur, or similar commodities. • Separate from these open top cars by at least 1 closed type car, when practicable.
B	Snowplows and Spreaders handled deadhead	a) Marshall at the extreme rear of train, or immediately ahead of operating caboose (where provided). b) Run in the direction of travel. <ul style="list-style-type: none"> • If not possible to run in the direction of travel: <ul style="list-style-type: none"> ▪ wings must remain properly secured; ▪ snow must not pack behind wings during movement; ▪ snow-plow or spreader must be turned at first available wye or turntable. c) Do not marshall "nose to nose" account limited clearance on curves. d) See Speed Restriction Chart, item 13.0.
C	Cranes, Combination crane-pile drivers, and other similar equipment.	See item 18.2.
D	Scale Test Cars	See items 17.4 and 17.5.
E	Service Equipment	See item 20.4.
F	Mechanical Test Car 66	a) When marshalled in the front half of a train, or in the lead consist, the locomotives allowed ahead of car 66 are a maximum of: <ul style="list-style-type: none"> • 2 DC, or • 1 AC. Note: When marshalled at the direction of Mechanical Services in the lead locomotive consist, with only one AC locomotive operating ahead of Car 66, a TrAM check not required as per item 11.2 (Extreme Head End). b) When marshalled in the remote consist in any position only one AC locomotive is allowed ahead of car 66. c) Do not handle as last car on a train, unless a special adapter is available to mount an SBU.
G	TEC Equipment	See item 23.7.
H	Caboose, and Crew Transportation Car 422988 (Occupied or Unoccupied)	Trailing car tonnage must not exceed 2500 tons. Note: Train Area Marshalling messages do not indicate when trailing car tonnage exceeds this maximum. This item also applies to Caboose that have been modified for use by other departments.

Marshalling Restrictions – Equipment		
	Equipment Type	Instructions to Marshall in FREIGHT TRAINS
I	Business cars	See item 21.2.
J	***BAD ORDER***	<p>A train receiving this Car Movement Restriction Message (CMRM) on any of the following documents:</p> <ul style="list-style-type: none"> • Work Order, • Car Handling Report, • Outbound Wheel Report or • Tonnage Profile <p>Indicates car(s) have Mechanical defect(s) and subject car(s) must not be lifted or moved unless instructions are received from the RTC that car(s) are safe to travel, these instructions may or may not include Restrictions or Special Handling information. In some cases, a Mechanical Services (MS) employee may provide the required handling instructions directly to the crew.</p> <p><u>In all instances</u>, the train crew must record the handling information received from either the RTC or MS employee on the Crew to Crew form.</p>
K	B/O, SAFE TO TRAVEL	A train receiving this Car Movement Restriction Message (CMRM) has a Bad Order car that has been deemed safe to travel by Mechanical Services, and can/must be handled on the train, in accordance with the CMR Messages received.
L	Rotary Couplers	When enroute, rotary couplers must not be coupled to each other, unless it is confirmed that one of the couplers has been secured to prevent it from turning.



16.2 Marshalling Restrictions – Loads

Use the following table to identify marshalling restrictions for various kinds of loads. When handling placarded cars, see also Section 8, item 6.0, Marshalling.

Marshalling Restrictions – Loads		
	Load Type	Instructions
A	CWR, or Strings of bolted rail	See item 26.4.
B	<p>Loads prone to shifting (E.g., pipe, timber, poles, metal rods, or other similar material.) Marshalling restrictions apply when lading is both:</p> <p>a) in an open:</p> <ul style="list-style-type: none"> - top car, - trailer moving in piggyback service, or - container in the end position on the car; and <p>b) not protected by end bulkheads extending to top of lading.</p> <p>Note: These loads are not prone to shifting:</p> <ul style="list-style-type: none"> • flat cars loaded with steel plates or machinery; • bulkhead flats loaded with banded or packaged lumber that does not extend above the bulkhead by more than 50 percent. 	<p>On trains operating without a manned caboose, marshal loads prone to shifting not more than:</p> <ul style="list-style-type: none"> • 3000 feet from leading locomotive (EXPRESSWAY), or • 2000 feet from the leading locomotive (all other trains). <p>Separate loads prone to shifting from occupied:</p> <ul style="list-style-type: none"> • cabooses, • service equipment cars, and • passenger cars, <p>by at least two cars of any type, or by one:</p> <ul style="list-style-type: none"> • full sized steel box car, • car loaded with one or more containers, or • bulkhead type car the ends of which extend above the load being protected against. <p>Separate loads prone to shifting from:</p> <ul style="list-style-type: none"> • a locomotive, • a car containing livestock, • an SBU (Sense and Braking Unit) <p>by at least one car of any type.</p>
C	Special loads requiring observation	<p>Marshal as close as possible to leading locomotive, and not exceeding 2000 feet from the leading locomotive.</p> <p>Notification that a special load is in the train is given by:</p> <ul style="list-style-type: none"> • train consist or protection notice (as per GOI Section 10 Item 5.7), or • Service Area Manager – Field Operations.
D	Transformers, or Circuit breakers	Marshal at head-end of the train, no more than 15 car lengths (approximately 600 feet) from the locomotive, when practicable.
E	Traction motors, or Locomotive wheelsets	Marshal at head-end of the train to facilitate switching to shops, when practicable. (Do not delay trains to accommodate this instruction.)

SPECIFIC EQUIPMENT AND LOAD INSTRUCTIONS

Refer also to operating bulletins and subdivision footnotes under the heading "EQUIPMENT RESTRICTIONS."

The loads and equipment in this section have detailed instructions for their switching, marshalling and handling. When switching, see item 15.1, Coupling Cars Safely.

17.0 Scale Test Cars

17.1 Speed Restrictions

Use the following table to identify speed restrictions for scale test cars.

Scale Test Car Speed Restrictions			
Car Type	Car Numbers	When authorized freight train speed is:	Maximum speed with scale test cars is:
Two-axle	420926, 420928, 420932, 420939, 420941 CN 52104, CN 52108, CN 52109, CN 52257, CN 52258, CN 52274, CN 52277, GTW 52264, GTW 52265, MNWX 444, MNWX 555	30 MPH or over	30 MPH
		25 MPH or less	Authorized freight train speed
Short, four-axle	420927, 420930, 420934, 420935, 420936, 420938, CN 52280, CN 52281, CN 52284, CN 52285	50 MPH or over	50 MPH
		45 MPH or less	Authorized freight train speed
Unrestricted	420937, 420942, 420940 CN 52259, CN 52279 CANX 61300, CANX 61301, MNWX 333	Any speed	Authorized freight train speed

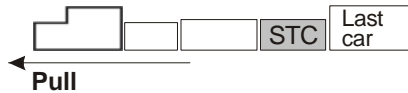
17.2 Permission for Movement

Before placing a scale test car in a train, the responsible NMC Manager (Operations Manager Calgary / Asst. Manager RTC Montreal) must give permission.

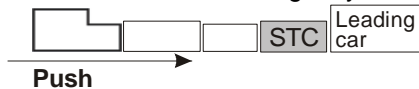


17.3 Switching Two-axle Scale Test Cars (STC)

- a) Do not hump.
- b) Adjacent car(s) must **not** be longer than 55 feet outside length.
- c) When pulling, marshal two-axle scale test car immediately in front of the last car in the direction of travel, unless handling only scale test car(s). Last car must not exceed 40 tons gross weight.



- d) When pushing, marshal two-axle scale test car immediately behind the leading car in the direction of travel, unless handling only scale test car(s). Leading car must not exceed 40 tons gross weight.

**17.4 Marshalling Two-axle Scale Test Cars**

- a) Marshal immediately ahead of:
 - the operating caboose (where provided), or
 - the rear car. (Maximum rear car weight is 40 gross tons.)
- b) Adjacent car(s) must have:
 - an outside length of 55 feet or less, and
 - operative brakes.
- c) Only one two-axle test car may be handled per train.

Note: When a two-axle scale test car listed in item 17.1 is marshalled incorrectly, Part 3 of the Train Area Marshalling Messages on the train consist displays:

"XX nnnnnn SCALE TEST CAR MARSHALLED INCORRECTLY."

17.5 Marshalling Short Four-axle Scale Test Cars

Maximum length of adjacent car(s) is 80 feet (outside length).

Note: When a short four-axle scale test car listed in item 17.1 is marshalled incorrectly, Part 3 of the Train Area Marshalling Messages on the train consist displays:

"XX nnnnnn SCALE TEST CAR MARSHALLED INCORRECTLY."

18.0 Cranes, Combination Crane-Pile Drivers, and High-Rail Cranes

18.1 Speed Restrictions

Use the following table to identify speed restrictions for cranes, combination crane-pile drivers, and hi-rail cranes.

Crane Speed Restrictions			
Tons Capacity	Series	When Authorized Freight Train Speed is:	Train must not exceed (unless otherwise specified in Time Table Footnotes)...
40	414233	40 MPH or over	35 MPH
		30 MPH to 35 MPH	25 MPH
		25 MPH or less	Authorized Freight Train Speed
40/50	414232	45 MPH or over	45 MPH
		40 MPH or less	Authorized Freight Train Speed
150	414400	30 MPH or over	25 MPH
		25 MPH or less	15 MPH
200	414479 and 414480	40 MPH or over	35 MPH
250	414502 and 414503	30 MPH to 35 MPH	25 MPH
250	414650	25 MPH or less	Authorized Freight Train Speed
150/250	CN 50416 and CN 50108	Boom trailing	
		40 MPH or over	35 MPH
		25 to 35 MPH	5 MPH less than Authorized Freight Train Speed
		20 MPH or less	Authorized Freight Train Speed
		Through all turnouts	5 MPH
		Boom NOT trailing	
		25 MPH or over	20 MPH
		20 MPH or less	Authorized Freight Train Speed
Through all turnouts	5 MPH		
Combination Crane-Pile Driver Speed Restrictions			
30	414212 to 414214, SOO 751209	30 MPH or over	25 MPH
		25 MPH or less	15 MPH
40/50	414216 to 414222 incl.	45 MPH or over 40 MPH or less	45 MPH Authorized Freight Train Speed
Self-Propelled Hi-Rail Crane Speed Restrictions			
		Forward Direction	Hi-Rail Crane must not exceed...
100	414030 and 414031	25 MPH or over	25 MPH
		20 MPH or less	Authorized Freight Train Speed
110	414032 and 414033	Through all turnouts	5 MPH
130	414041 to 404043 incl.	Reverse Direction	
		15 MPH or over	15 MPH
		10 MPH or less	Authorized Freight Train Speed
		Through all turnouts	5 MPH



18.2 Marshalling Restrictions

- a) **Trailing car tonnage:** Marshall cranes, combination crane-pile drives, or other similar equipment (except crane CP 414232, and combination crane-pile drivers CP 414216 to 414222 inclusive), such that:
- Trailing car tonnage behind this equipment does **not** exceed 3000 tons.
- Note:** Train Area Marshalling messages do **not** indicate when the maximum trailing car tonnage is exceeded.
- b) **Direction of Travel:** When marked by arrows to indicate the direction of travel, marshal the equipment to move in this direction. On wrecking cranes, where no direction of travel is indicated, boom may be trailing or facing the direction of travel.
- c) **Separation:**
- Except crane CP 414232, and combination crane-pile drivers CP 414216 to 414222 inclusive, separate from
 - the leading locomotive by at least one car, but not by more than 500 feet; or
 - an occupied operating caboose by only one car.
 - Cranes up to 150 tons capacity, and Combination Crane-Pile Drivers:
 - Also separate by at least two cars from car(s) heavier than 220,000 pounds gross weight (or lesser weight where restricted by subdivision footnote).
 - Cars used for separation must have an outside length of at least 44 feet.
 - Cranes of 200 to 250 tons capacity:
 - Also separate by at least one car from cars heavier than 142,000 pounds (or lesser weight where restricted by subdivision footnote) shall be marshalled closer than the second car from each piece of this equipment.
 - Cars used for separation must have an outside length of at least 44 feet.

- d) **Marshalling Exceptions:** When Mechanical Services personnel supervise and accompany the movement, the equipment may be marshalled:
- anywhere in the train, provided it is separated from occupied equipment by at least one car.
 - opposite the direction of travel indicated by an arrow.

18.3 Permission and Protection Notice

- a) Before placing a crane, combination crane-pile driver, or high-rail crane in a train, get permission from the responsible NMC Manager (Operations Manager Calgary / Asst. Manager RTC Montreal). The Responsible NMC Manager then ensures:
- connecting service areas, conductors, locomotive engineers and all concerned with a movement are given complete instructions regulating the movement.
 - combination crane-pile driver CP 414219 and cranes CN 50108 and CN 50416 are accompanied by a protection notice when moved. (These are dimensional shipments.)
- b) Before handling foreign cranes (except self-propelled hi-rail cranes), get permission from the Railway Line Clearance Bureau. (The movement may require a protection notice.)
- In an emergency, the Director Operations - NMC in consultation with Mechanical Services may authorize movement in a regular train consist.
- c) Restrictions for the movement of cranes, combination crane-pile drivers, and high-rail cranes are described in time table subdivision footnotes.

19.0 Service Equipment Cars – Person in Charge Responsibilities

19.1 Service Equipment Safety

The person in charge of service equipment cars must ensure:

- a) Each occupied service equipment car is equipped with:
 - a means of voice communication with the train crew, or
 - an emergency brake valve.
- b) Propane cylinders installed for use in service equipment cars are equipped with;
 - an automatic shut off valve for the supply of fuel from each propane cylinder; and
 - a pilot flame monitoring device to automatically shut off the supply of fuel in the event of pilot flame failure.

Note: Spare propane cylinders must not be carried in occupied service equipment cars.

19.2 Before Moving

Before allowing the movement of service equipment cars, the person in charge of these cars must ensure:

- a) **occupied** service equipment has:
 - all heavy furniture, appliances, and other heavy objects securely fastened to the structure of the car; and
 - all tools and equipment secured in a place isolated from living quarters.
- b) **unoccupied** propane equipped service equipment cars have:
 - all flame extinguished and main propane valves closed;
 - water systems fully drained during freezing weather.

19.3 Notification

- a) The person in charge of service equipment cars who arranges for their movement, must inform the Operations Manager - NMC:
 - whether any of the cars will be “occupied” or “not occupied”;
 - if not occupied whether they contain stoves, propane ranges, tables, etc.;
 - of any subsequent change in this status.
- b) **The RTC or person in charge of the cars must give this information to the conductor.**

19.4 Protection in Sidings, Back Tracks, or Other Tracks

- a) The person in charge of occupied service equipment cars placed in sidings, back tracks, or other tracks must protect these cars against other train movements by:
 - Requesting a GBO or DOB that states:

“Occupied service equipment cars placed in (track) at (location)”;

Note: GBO not required when occupied service equipment cars are placed in yard.
 - spiking the switches of back tracks and other tracks, or locking them with special locks;
 - where practicable, spiking the switches of sidings, or locking them with special locks;
 - not coupling to or moving, unless authorized by the foreman in charge.
- b) In addition, when occupied service equipment cars are placed in a track adjacent to a main track and within 30 feet, track centre to track centre:
 - the person in charge must request GBO or DOB speed restriction that states:

“Do not exceed 30 MPH while passing occupied service equipment cars in (track) at (location).”

Note: Track speed may be reduced based on site conditions such as curvature, elevation differences, proximity of switch and/or crossing locations. This will be determined based on assessment of each location in consultation between the person in charge, Field Operations and the Manager Operations NMC.

When the distance separating such adjacent track and a main track exceeds 30 feet between track centres, a speed restriction is **not** required.

20.0 Service Equipment Cars – Train Crew Responsibilities

20.1 Definition

Service Equipment:

- Cars used to house employees at work sites;
- Material cars used to:
 - transport maintenance-of-way equipment, or
 - for other railway purposes (except revenue service);
- Auxiliaries.

20.2 Speed Restrictions

A train handling occupied service equipment must not exceed 35 MPH, except as specified in item 20.4 below.

20.3 Switching Restrictions

The following instructions apply when switching occupied service equipment cars, or unoccupied service equipment cars equipped with stoves, propane ranges, or tables.

- a) Do **not** couple to or move occupied service equipment cars, unless authorized by the person in charge.
- b) Do **not** cut off in motion.
- c) Do **not** cut off other cars in motion towards these cars.
- d) Before coupling to or moving occupied service equipment:
 1. Stop between 12 and 6 feet from the cars to be coupled or moved.
(**CAUTION:** If required to align coupler heads, follow the steps in item 15.1, Coupling Cars Safely.)
 2. Notify persons in or about the cars.
 3. Check cars to ensure all cables, hoses, temporary ladders etc., have been removed.
 4. After receiving the proper signal, couple carefully to avoid shock.

Note: The conductor will be informed when these restrictions apply to unoccupied service equipment.

20.4 Marshalling Restrictions

a) Location:

- Freight train: marshall at the rear of a freight train immediately ahead of operating caboose, where provided.
- Mixed freight and passenger train: marshall immediately ahead of any passenger cars.
- Where track configurations require extreme care in set-off movements, may be marshalled:
 - directly behind the lead locomotive consist;
 - at **speed not exceeding 20 MPH**;
 - for distance not exceeding 20 miles.

Note: These location restrictions do not apply to flangers, snow plows, spreaders and test cars are exempted from this item.

b) Maximum number of cars - A train handling:

- 30 OR LESS occupied service equipment cars, is restricted to 60 cars in total.
- MORE THAN 30 occupied service equipment cars is restricted to:
 - 80 cars total, and
 - service equipment cars only.
- Unoccupied service equipment cars containing stoves, propane ranges, or tables is restricted to 80 cars in total.

c) Unoccupied service equipment: The conductor will be notified when these restrictions apply to unoccupied service equipment

21.0 Business Cars

21.1 List of Business Cars and Car Numbers (##)

Name	Car #	Car Type	Air Brake	Max Speed MPH
Banffshire	85	Business	2 pipe	50
Craigellachie	84	Business	2 pipe	50
Killarney	71	Business	2 pipe	50
Mount Stephen	74	Business	2 pipe	50
NR Crump	79	Business	2 pipe	50
Royal Wentworth	78	Business	2 pipe	50
Strathcona	82	Business	2 pipe	50
Van Horne	77	Business	2 pipe	50
Assiniboine	70	Business	1 pipe	50
Lacombe	83	Business	1 pipe	50
Mount Royal	73	Business	1 pipe	50
Dominion	101	Coach	1 pipe	60*
HD Bowen	110	Sleeper	1 pipe	60*
Smokey Smith	102	Coach	1 pipe	60*
CP	105	Coach	1 pipe	60*
CP	106	Coach	1 pipe	60*
APU	95	Power	1 pipe	50
APU	96	Power	1 pipe	60*
CP	29114	Tool Car	1 pipe	60*
CP	99	Display	1 pipe	60*
CP	401750	Stage Car	1 pipe	60*
CP	401753	Stage Car	1 pipe	60*
CP	100	Baggage	1 pipe	60*

***Note:** If the cars indicated are operated in passenger or excursion train service, then passenger speed is permitted on CP track only, not exceeding maximum authorized speed as indicated.

Note: These cars normally operate in "Business Car Trains." They may also be handled in freight trains (see item 21.2).

21.2 Marshalling Business Cars in Freight Trains (Occupied or Unoccupied)

Business Cars handled on Freight Trains, must be marshalled as follows:

- A**
- On trains equipped with a Tail End Remote (TER), Business cars are to be marshalled immediately behind the TER. **Note:** cars equipped with a 2 pipe air brake system must have the brake pipe and main reservoir pipes properly coupled.
 - On Conventional trains, Business cars may be handled on the head end provided the total weight of the train, including the business cars, does not exceed 3500 tons.
 - On Conventional trains where the train weight will exceed 3500 tons, business cars that:
 - do **not** have a 2 pipe air brake system must be marshalled at the extreme rear of a freight train, or immediately ahead of operating caboose(s) (where provided).
 - have a 2 pipe air brake system must be marshalled at the rear of the train to comply with Section 13 items 16.0 through 16.6 (movement of cars with inoperative brakes). (That is, there must be at least 3 cars with operative brakes at the rear, and no more than 2 cars with inoperative brakes can be coupled together). The brakes on these cars are considered inoperative when handled on a freight train with only the brake pipe coupled.

B APU cars 95 & 96 may be marshalled within a train provided trailing tonnage does not exceed 3500 tons.

C Business cars must not be coupled to cars equipped with shelf couplers.

D See item 13.0, Speed Restrictions and Item 21.1, Maximum Authorized Speed.

Note: Single pipe brake system Business cars as indicated in item 21.1, may be equipped with a secondary bypass line to allow for use with a 2 pipe air brake system if necessary.



22.0 Business Car Trains**22.1 Speed Restrictions**

On ALL tracks (including CN) do not operate a Business Car Train or any train handling cars listed in item 21.1 at a speed greater than time table freight train speed not exceeding 50 MPH.

Note: these speed restrictions only apply to CP business cars listed and do not apply to foreign business cars unless otherwise directed.

22.2 Protection

When an occupied Business Car Train (e.g., RCP Train) is placed in sidings, back tracks or other tracks, the person in charge (conductor or company officer) must arrange the following:

- a) GBO or DOB protection against other train movements reading as follows:
 - “Occupied passenger equipment placed in (track) at (location) must not be coupled to or moved, unless authorized by (employee in charge - name and telephone number).
 - Do not exceed 30 MPH while passing occupied service equipment cars.
- b) Lock the switches of the occupied track(s) (e.g. sidings, back tracks or other track) with special locks.

22.3 Locomotive Brakes

- a) A-unit 1401 and B-unit 1900 are normally assigned to business car trains. These Locomotives are **not** equipped with **dynamic brakes**.
- b) Use light **independent brake** in conjunction with the automatic brake when:
 - necessary depending on the number of cars/locomotives in the train,
 - descending heavy or mountain grades. (Note: Using only train air brakes may cause premature wheel wear, or brake shoe wear.)

22.4 Air Brakes

- a) To ensure brakes apply throughout the train, make an initial air brake application of at least 10 psi. (**Note:** Business car brake cylinder pressure was substantially reduced to prevent wheel slides caused by the new high friction composition brake shoes.)
- b) When conditioning brake shoes in the winter, also keep this reduced brake cylinder pressure in mind.
- c) Standard Brake Pipe Pressure is 90 psi. Brake Cylinder Pressures are as follows:

Reduction	BC pressure
10 psi	12 psi
Full Service	32 psi
Emergency	38 psi

- d) **CAUTION:** Business car air brakes are set for direct release, **not** graduated release. Do **not** attempt a graduated release, because some business cars are still equipped with freight train brakes.

22.5 Train Air Brake Test

- a) Before performing a train air brake test:
 - Supply main reservoir pressure to all cars in the train.
 - Verify there is sufficient main reservoir pipe on the rear car.
 - i) At a **safety inspection locations** verify with car department personnel that a permanent or portable gauge on rear car indicates main reservoir pressure is at least 105 psi, **OR**
 - ii) At **other locations**, where a gauge is not available, verify by completing the following steps:
 1. Firmly grasp the main reservoir hose on the rear car.
 2. CAREFULLY crack open the trailing main reservoir valve.
 3. Listen for the sound of pressurized air.
 4. Close the valve.
- b) Complete the brake test as per Section 13, items 5.2 and 5.3.
- c) At crew change points, the outgoing crew may confirm the integrity of the main reservoir air with the incoming crew.

22.6 Uncoupling/Coupling

- a) Before uncoupling from cars with a 2 pipe air brake system, close the main reservoir pipe valves on the locomotive and car.
 - Do not part the main reservoir hoses by hand.
 - In regard to brake pipe angle cocks, comply with Section 14, item 2.0 (Uncoupling and Leaving a Portion of a Train Standing with Emergency Air Brakes Applied).
- b) When coupling or uncoupling one business car from another, handle main reservoir pipe and brake pipe as per items 22.6 a) and 22.5, above.
 - If there are electric cables, communication cables, or other compressed air connections between the cars, be governed by instructions from the person in charge (e.g., train manager, road manager, or Mechanical Services employee).

23.0 Track Evaluation Cars (TEC) - 63, 64, 65, 68, 424993 & 424994

23.1 TEC Train Sets

The TECs operate with locomotives 8217 and 8218 in two dedicated train sets. The train sets can be marshalled into any combination, but usually as follows:

Train Set 1	
8217	Dedicated locomotive GP-9 DRS-17 type;
68	Accommodation Car;
424993	Generator/Gauge Restraint Measurement System (GRMS) car;
63	Track Evaluation Car (TEC).
Train Set 2	
8218	Dedicated locomotive GP-9 DRS-17 type;
424994	Generator car;
65	Accommodation car;
64	Track Evaluation Car (TEC).

23.2 Equipment Description

Air Brakes and Hand Brakes

- a) Hand brakes are located on the vestibule ends of cars 63, 64, and 65.
- b) Hand brakes on cars 68, 424993 and 424994 are located on the “B” end of the cars.
 - Car 68 does **not** have a vestibule.
- c) The instrumented truck of car 64 has a valve that applies brakes during an emergency application, but not during a service application. This is considered operative brakes in the application of air brake rules.
 - Car 64 can be marshalled at rear of train.

Additional Information

- a) TV/Video cameras are mounted on the forward end of the dedicated locomotive to allow the TEC operators to see up-coming track appliances.
- b) An intercom system located in the cab of the dedicated locomotive connects the Locomotive Engineer with the TEC staff when testing.
- c) Cars 63 and 64 have a protective skirt installed over the gauge measuring beam, which extends to the top of the rail. This approved installation creates no risk to the movement of these cars, or to the public.
- d) 424993 is equipped with a Gauge Restraint Measurement System (GRMS). This assembly applies the test loads of the measurement system to the track during a “gauge stress measurement test.” TEC staff retract the assembly when not required.

23.3 Speed Restrictions

- a) When used as the lead locomotive, the ditch lights and pilots at the rear end of locomotives 8217 and 8218 allow for reverse operation at track speed.
- b) Unless otherwise restricted by TEC staff, when testing or deadheading, it is permissible to operate at time table speed for the fastest freight train, but not exceeding **60 MPH**.
- c) On CNR Yale and Ashcroft Subs, the TEC train is permitted to operate at Express Speed when testing or when running light.



- d) Fuel conservation speed restrictions do not apply to the TEC train when TESTING or when RUNNING LIGHT. The restrictions do apply when the TEC train is DEADHEADING.

TEC staff will advise train crew when the following restrictions apply:

- e) When car 63 or 64 is testing in reverse direction with locomotive pushing, speed must not exceed **25 MPH**. With locomotive leading, test speed will be track speed.
- f) During a “gauge stress measurement test” (GRMS), speed must not exceed **35 MPH**.

23.4 Switching TEC Cars

- a) Handle with extreme care to avoid damage.
- b) Do not pass over tracks with a hump or inert retarders.
- c) Do not uncouple TEC cars and TEC locomotives without permission from TEC staff.

23.5 Handling TECs

- a) Handle with extreme care to avoid damage. (Cars 63 and 64 are equipped with shock sensors.)
- b) Do not uncouple TEC cars and TEC locomotives without permission from TEC staff.
- c) Handle as “occupied passenger equipment” (Section 9, item 7.0), unless otherwise indicated. (This includes switching and train handling, when running light or deadheading, with or without the TEC staff aboard).
- d) When testing, cars 63 and 64 should have the “A” end (with viewing window) trailing, unless authorized by the TEC staff to facilitate handling.

23.6 RTC Responsibility During Testing

- a) Ensure the TEC train holds the main track during meets with other trains, unless the siding involved has been designated for testing.
- b) When not practicable to hold the main track, contact staff on the TEC **before** the TEC train enters the siding, to prevent loss of data.

23.7 Marshalling TEC Equipment on Freight Trains

Do **not** handle on freight trains, except under special circumstances when authorized by the TEC staff.

- a) When deadheading, marshall directly behind the trailing locomotive.
- b) When testing, marshall all cars in the set at the rear of the train.
 - If the dedicated locomotive accompanies the TEC cars, marshall the locomotive at head end of the train.

24.0 Brake Pipe Run-around Hose

24.1 Mechanical Services Responsibility

- a) When a brake pipe run-around hose is applied to a car, the Mechanical Services employee in charge must:

Arrange to have an appropriate message generated on the train consist advising train crews that a brake pipe run-around hose is applied to that car.

For example, the message would say:

```
*****
CAUTION-TEMP BRAKE PIPE
RUN-AROUND HOSE
*****
```

- b) When a brake pipe run-around hose is applied that protects more than one car, the Mechanical Services employee in charge must:
 - Secure the uncoupling levers between the protected cars and render them in-operative.
 - Arrange to have an appropriate message generated on the train consist advising train crews that the applicable car(s) cannot be uncoupled from adjacent car(s) account run-around hose applied.

For example, the message would say:

```
*****
CAUTION-TEMP BRAKE PIPE
RUN-AROUND HOSE
MARRIED TO CP123456
*****
```



24.2 Conductor Record Keeping

The conductor must record this information on the Crew to Crew Form for the outbound train crew and at the car's or cars destination, advise the Supervisor responsible.

24.3 Handling Restrictions

- a) Non-sensitive traffic: Set off the car for repair at the next repair point reached en route to destination.
- b) Car(s) with brake pipe run-around hose:
 - are captive to CP and must not interchange with another railway;
 - must not leave Canada.

24.4 Destination or Repair Point - Car Setoff

1. Before uncoupling brake pipe run-around hose gladhands, ensure the brake pipe pressure is 0 psi.
 - Trains equipped with an SBU - The locomotive engineer must activate the TIBS emergency feature as per Section 14 item 2.0 a).
 - Trains **not** equipped with an SBU - The locomotive engineer must make an emergency brake application using the automatic brake valve.
2. Part brake pipe glad hands by hand. It is prohibited to "pull the pin" and allow the hoses to part by car/locomotive movement.
3. After hoses are parted, attach any excess length of run-around hose securely to the car body.
4. Advise the responsible supervisor that the brake pipe run-around hose is no longer in use.

25.0 Container Traffic - Electric Power Cable Strung Between Cars

25.1 Consist Warning Message – Bad Order Setoff

The train consist displays warning advising train crews that the applicable cars cannot be uncoupled from each other account electric supply cable connecting car to car.

For example, if there were 3 cars involved (e.g. DTTX 1, DTTX 2, DTTX 3) the warning would list each car. For example:

```

*****
WARNING DO NOT UNCOUPLE FROM CAR
DTTX 1, DTTX 2, DTTX 3
ACCOUNT ELECTRIC CABLE CONNECTIONS
*****
    
```

To set off a bad order en route, set off the bad order plus all cars connected to it with electric power cables. It is not possible to set off one of these cars from the set. Ensure the RTC is advised as per Section 5, item 16.0.

25.2 Appearance of Cables and Affixed Warning Signs

To alert all employees that electrical cables are connected and that cars should not be uncoupled until cables are removed, warning tags will be applied to the electrical cable(s) between the cars.



Electrical Cable Strung between Cars with affixed warning signs:



26.0 Handling Continuous Welded Rail (CWR) or Strings of Bolted Rail

26.1 Speed Restrictions – Strings Longer than 150 Feet

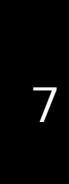
- a) **Less than 16 strings** - Cars containing fewer than 16 strings of CWR or bolted rail may be moved in regular trains, or special trains, without speed restrictions providing:
 - CWR equipment is used;
 - the train consist includes a buffer car at each end of the rail; and
 - each string is secured.
- b) **16 Strings or more** -The following speed restrictions apply:

	16 – 25 Strings	More than 25 Stings
Maximum authorized speed	45 MPH	30 MPH
Through turnouts	15 MPH	10 MPH
Through curves 8 degrees or over*	20 MPH	15 MPH

*Curves 8 degrees or over are located between the following locations.

Alberta Service Area
Brecht Sub
Mile 0.0 and Mile 1.0
Cardston Spur
Mile 0.0 and Mile 0.1
Crowsnest Sub
Mile 97.6 and Mile 101.1
Laggan Sub
Mile 122.7 and Mile 136.5
Mile 122.6 and Mile 123.2 South Track
Pecten Sub
Mile 25.8 and Mile 26.4
Shantz Sub
Mile 0.0 and Mile 0.1
Stirling Spur
Mile 84.1 and Mile 84.3

BC Interior Service Area
Boundary Sub
Mile 1.0 and Mile 1.4
Mile 8.2 and Mile 11.0
Mile 20.9 and Mile 25.4
Cranbrook Sub
Mile 2.9 and Mile 9.7
Mile 36.6 and Mile 37.7
Mile 53.6 and Mile 53.9
Mile 67.8 and Mile 68.1
Mile 70.1 and Mile 70.5
Mile 95.5 and Mile 95.8
Fording River Sub
Mile 0.5 and Mile 0.7
Mile 33.5 and Mile 33.7
Mountain Sub
Mile 1.5 and Mile 7.23
Mile 11.3 and Mile 11.5
Mile 13.0 and Mile 13.2
Mile 15.1 and Mile 15.4
Mile 20.0 and Mile 21.0
Mile 22.6 and Mile 33.8
Mile 53.4 and Mile 54.1
Mile 66.1 and Mile 66.3 Both Tracks
Mile 69.8 and Mile 72.1 Connaught Track
Mile 75.4 and Mile 76.4 Connaught Track
Mile 92.1 and Mile 92.9
Mile 94.5 and Mile 99.4
Mile 123.6 and Mile 124.7
Moyie Sub
Mile 0.0 and Mile 0.7
Mile 14.3 and Mile 19.6
Mile 26.0 and Mile 30.7
Mile 36.2 and Mile 36.4
Mile 42.6 and Mile 43.4
Nelson Sub
Mile 42.7 and Mile 43.2
Mile 46.6 and Mile 51.9
Mile 54.2 and Mile 66.0
Mile 69.8 and Mile 117.1
Mile 120.9 and Mile 137.3
Rosland Sub
Mile 1.0 and Mile 2.5
Mile 8.2 and Mile 17.4
Shuswap Sub
Mile 4.2 and Mile 4.5 North Track
Mile 16.6 and Mile 16.8
Mile 28.3 and Mile 28.4
Mile 36.4 and Mile 36.5



Mile 46.0 and Mile 53.5
Mile 59.2 and Mile 60.6
Mile 68.6 and Mile 68.7
Mile 73.5 and Mile 73.7
South Track
Mile 75.3 and Mile 75.5
South Track
Mile 82.1 and Mile 89.7
Mile 92.2 and Mile 92.4
Mile 99.8 and Mile 100.1
Windermere Sub
Mile 14.6 and Mile 14.9
Mile 48.9 and Mile 50.9
Mile 63.4 and Mile 64.0
Mile 66.5 and Mile 66.7
Mile 67.8 and Mile 68.0
Mile 75.4 and Mile 75.6
Mile 76.8 and Mile 77.1
Mile 83.4 and Mile 84.4
Mile 91.0 and Mile 91.4
Mile 112.6 and Mile 112.9

Montreal Service Area
Farnham Connection Sub
Mile 1.1 and Mile 1.4

Northern Ontario Service Area
Heron Bay Sub
Mile 72.4 and Mile 74.1
Mile 81.5 and Mile 81.6
Mile 101.4 and Mile 101.8
Nemegos Sub
Mile 13.5 and Mile 13.7
Nipigon Sub
Mile 4.5 and Mile 4.7
Mile 27.6 and Mile 27.8

Vancouver Service Area
Cascade Sub
Mile 4.3 and Mile 4.7
Mile 7.0 and Mile 11.6
Mile 13.0 and Mile 14.5
Mile 16.9 and Mile 17.3
Mile 20.8 and Mile 21.6
Mile 22.9 and Mile 25.8
Mile 37.5 and Mile 37.8
Thompson Sub
Mile 8.8 and Mile 15.6
Mile 21.7 and Mile 22.0
Mile 26.6 and Mile 29.7
Mile 36.3 and Mile 36.6
Mile 50.2 and Mile 50.7

Mile 56.7 and Mile 57.2
Mile 66.6 and Mile 66.7
Mile 73.0 and Mile 76.3
Mile 79.9 and Mile 80.2
Mile 83.5 and Mile 83.7
Mile 86.7 and Mile 88.3
Mile 90.2 and Mile 92.0
Mile 100.0 and Mile 103.1
Mile 108.4 and Mile 110.8
Mile 112.6 and Mile 114.4
Mile 117.2 and Mile 118.9

26.2 Speed Restrictions - CP CWR trains on CN Track

The following speed restrictions apply to CP CWR trains operating on CN Track.

- a) When **loaded** (maximum 82 cars) with 1 or more rails, do not exceed:
 - 40 MPH on straight track
 - 30 MPH on curves
 - 10 MPH through turnouts

Note: Loaded CP CWR cars (maximum 40) may be moved in regular trains on CN Track, provided the cars (including buffers at each end), are marshalled on the Head End of the train.

- b) When **empty**, maximum authorized speed: 50 MPH.

26.3 Switching Restrictions

- a) Avoid sudden stops and rough coupling.
- b) Do not cut off in motion.
- c) Do not allow to be struck by a car moving under its own momentum.

26.4 Marshalling Restrictions

- a) When cars loaded with CWR or bolted rail:
 - have more than 15 strings, and
 - the strings are longer than 150 feet;
 then MOVE THESE CARS IN SPECIAL TRAIN, and include a buffer car at each end of the rail.
- b) Two loaded rail trains (one of which has 15 strings or more of CWR or bolted rail) must not be coupled together.



26.5 RTC Instructions

When practicable, ensure the rail train holds the main track during meets with other trains.

26.6 Break-in-two - Cars Carrying Long Strings of Rail

- a) Notify RTC immediately. Give location and all pertinent information regarding break-in-two.
- b) If possible, clear the main track before attempting to re-couple. When attempting to re-couple, ensure all rails enter the proper compartment on the roller racks.
- c) If the train is on a grade, apply sufficient hand brakes to secure cars, until air pressure behind the break-in-two is restored. (This prevents movement if the air brakes leak off.) Where grades are involved, it is preferable to handle on descending grades to set off point.
- d) If the train is on level or nearly level grade, cars of rail may be safely pulled to the nearest set-off point providing:
 - The movement is made using extreme caution, and
 - Abrupt starts and stops are avoided.

- e) To restore air throughout the entire train and to tie cars together at the point of break-in-two, the following equipment is located in brackets on the side of the anchor car near the centre of the rail train.
 - Two 25-ft. and one 15-ft. air hoses with connections,
 - Two 25-ft. and one 15-ft. length of 1" cable with hooks.

26.7 Rail Shifting

If one or more strings of welded rail shifts:

- a) Notify the RTC immediately. Give location and all pertinent information.
- b) If possible, remove anchors and loosen tie-down bolts on displaced strings.
- c) To pull strings into place, use:
 - safety pull hoists (located in the side of the roller rack on the first car behind the tie-down car), or
 - winch on "threader car" (if available).
- d) After readjusting strings and recoupling cars, re-tighten all hold-down bolts and reapply anchors.

APPENDIX 1: Train Area Marshalling Messages

Note: Locomotive consists on a Distr Pwr train may be identified as follows in these messages:

- L - Lead locomotive consist
- R1 - First remote locomotive consist
- R2 - Second remote locomotive consist
- R3 - Third remote locomotive consist

**** TRAIN AREA MARSHALLING MESSAGES ****
 LOG KEY nnnnnnnnnnnnnnn

- When shown, this line provides information to computer personnel about the train consist, but does not form part of the Train Area Marshalling Messages.

PART 1 - TRAIN INFORMATION

TRAIN TYPE - XXXXXXXXXXXXXXXXXXXX

- This line indicates the train type. (See definitions, item 2.3.)

WEIGHT PER OPERATIVE BRAKE nnn TONS

- Shows total train weight, including locomotives, divided by the total number of operative control valves. Used in the application of item 13.0 (G) and Section 16 - Appendix 1, Descending Heavy Grade Job Aid and in time tables under General Footnotes.

DYNAMIC BRAKE - APPLY GOI INSTRUCTIONS FOR A CONVENTIONAL TRAIN

- This line will appear for each conventional train. Apply GOI Section 16 Item 7.1 to limit total dynamic brake if required.

DYNAMIC BRAKE NOT RESTRICTED

- This line will appear for a Distributed Power train for which full available Dynamic Brake may be utilized.

CARS OR PLATFORMS: ON TRAIN nnn

- On a conventional train, lists the total count, cars or platforms.

LENGTH DISTRIBUTION (FEET) - L nnnnn R1 nnnnn R2 nnnnn R3 nnnnn

- This line will appear for a Distributed Power train, and indicates the train length in each segment of the train.

WEIGHT DISTRIBUTION (TONS) - L nnnnn R1 nnnnn R2 nnnnn R3 nnnnn

- This line will appear for a Distributed Power train, and indicates the train weight in each segment of the train.

PERCENTAGE OF TRAIN WEIGHT BEHIND LAST REMOTE LOCOMOTIVE nn %

- Indicates the percentage of total train weight behind the last remote locomotive. This information may be required when the train is handling over 40 cars with cushioned drawbars.

CARS ON TRAIN WITH CUSHIONED DRAWBARS nnn

- Indicates the total number of cushioned drawbar cars on the train. (See item 5.0.)

CD OVER: vvv REAR 25%: www WGT: xx% NO: yy% MAX BLOCK: zzzzz TONS

This line will only appear if Cushioned Drawbar Rule 2 or Rule 3 can apply to the train. It provides information to those responsible for making up trains in yards and terminals on how train should be marshalled to avoid having Rule 2 or Rule 3 apply to the train. It does not provide information required for train crews.



PART 2 - CAUTION MESSAGES

Some messages in Part 2 give an instruction to the train crew. For example:

DYNAMIC BRAKE RESTRICTED - DO NOT EXCEED nnn KLBS RETARDING FORCE

- This line will appear for a Distributed Power train for which use of DP is restricted to avoid excessive in-train forces. It may be possible to reduce or eliminate this restriction by placing remote locomotive(s) in a different position in the train.

CD RULE 2 - CUSHIONED DRAWBAR SPEED RESTRICTIONS APPLY

- See item 5.2.

DRAFT FORCES EXCEED 24 AXLES LEAD REMOTE 1 REMOTE 2 REMOTE 3

- This line appears when the draft forces in a Heavy Bulk Distributed Power train exceed the maximum permitted for 24 axle territory (but do not exceed the equivalent of 30 driving axles), and indicates behind which locomotive(s) draft forces are exceeded. Unless operating only in 30 axle territory, train must be remarshalled. See GOI Section 15, Item 4.3.

The following messages are for information only and do not require crew action.

WAYBILL INFORMATION MISSING - PROCESSED AS EMPTIES nnn CARS

PLATFORM LOADING PATTERN UNKNOWN FOR nnn CARS

- Cars received at interchange may be missing loading pattern information; therefore the computer system assumes the most restrictive loading pattern.

MORE THAN 24 CARS MEET THIS CONDITION - INDIVIDUAL CARS NOT SHOWN

- Whenever "nnn CARS" or "nn CARS" is shown at the end of a message, the individual car numbers that meet that condition are listed, up to 24 cars, in the lines immediately following. If there are more than 24 cars that meet the condition, then this message is displayed. This message is also displayed, when appropriate, in Part 3.

VALID MASTER/REMOTE NOT DETECTED LEAD REMOTE 1 REMOTE 2 REMOTE 3

- This means that the computer did not detect a valid master/remote locomotive in one or more positions on a Distributed Power train. Only those positions in which a valid master/remote was not detected will be shown. This may be a foreign locomotive that is not in our system. Note that TrAM processing will still be done when this message appears.

CAR(S) AHEAD OF LEAD LOCOMOTIVE - TRAM PROCESSING NOT COMPLETED

- When a train is submitted to TrAM computer processing, and there is not a locomotive in the lead position (such as a snowplow train), this message will appear. In such case no other Caution message, or Part 1 or Part 3 of the Train Area Marshalling Messages, will appear on the train consist.

MORE THAN 3 REMOTE LOCOS DETECTED - TRAM PROCESSING NOT COMPLETED

- When a train is submitted to TrAM computer processing, and the system detects that there are 4 or more remote locomotive consists, this message will appear. In such case no other Caution message, or Part 1 or Part 3 of the Train Area Marshalling Messages, will appear on the train consist.

NO CAUTION MESSAGES

PART 3 - MARSHALLING VIOLATIONS

- This part is divided into messages that apply to **all** TrAM areas ("ALL AREAS"), and messages that are **specific** for each TrAM area (e.g., "***** AREA 1 *****").

******* ALL AREAS *******

CP 654321 LESS THAN 32 FEET COUPLED TO CAR GREATER THAN 65 FEET

- See item 6.2.

CP 123456 LESS THAN 41 FEET COUPLED TO CAR GREATER THAN 80 FEET

- See item 6.2.

CP 456789 SCALE TEST CAR INCORRECTLY MARSHALLED

- See items 17.4 and 17.5.

BUFF FORCES EXCEED MAXIMUM REMOTE 1 REMOTE 2 REMOTE 3

- This line appears when the buff forces in a Distributed Power train exceed the maximum permitted, and indicates ahead of which remote locomotives buff forces are exceeded. Train must be remarshalled.

DRAFT FORCES EXCEED MAXIMUM LEAD REMOTE 1 REMOTE 2 REMOTE 3

- This line appears when the draft forces in the train exceed the maximum permitted for that type of train, and indicates behind which locomotives draft forces are exceeded. Train must be remarshalled.

LOCO CAPACITY EXCEEDS MAXIMUM LEAD REMOTE 1 REMOTE 2 REMOTE 3

- This line appears when there is more than maximum permitted equivalent locomotive capacity at any position in a Distributed Power train (see item 7.1), and indicates the position(s) in which locomotive capacity is exceeded. This may be corrected by removing or isolating locomotives, but another TrAM check is required after doing so.

MAXIMUM LENGTH xxxxx FT LEAD TO LAST REMOTE - EXCEEDED BY nnnnn FT

- See item 7.3.

FAILED REMOTE ZONE x MARSHALLING nn CARS

- See item 7.5. Applies to Mixed trains only. Message indicates ahead of which remote locomotive position remote zone fails. Message will be repeated if more than one remote zone fails remote zone marshalling.

REMOTE ZONE RULE DOES NOT APPLY

- Applies to certain Mixed trains only. See item 7.5.

REMOTE ZONE PROCESSING NOT DONE - PROHIBITED LOCO COMBINATION

- Displayed when there is a locomotive combination at any location in train which is prohibited. Locomotives must be remarshalled or set off and another TrAM check done.

PASSES REMOTE ZONE MARSHALLING

- Displayed when there are no Remote Zone marshalling violations. See item 7.5.

CD RULE 3 - CUSHIONED DRAWBAR CARS EXCEED MAXIMUM - REDUCE

- Displayed when there are over 120 cushioned drawbar cars on the train. See items 5.2 and 5.3.

CD RULE 3 - INSUFFICIENT CD CARS NEAR REAR OF TRAIN - REMARSHALL

- Displayed when train has a prohibited configuration of cushioned drawbar cars. See items 5.2 and 5.3.

CD RULE 3- REAR REMOTE LOCO INCORRECTLY PLACED FOR OVER 40 CD CARS

- Displayed when the rearmost remote locomotive consist is incorrectly placed for a train with over 40 cushioned drawbar cars. See item 5.2.

CD RULE 1 - NO CUSHIONED DRAWBAR RESTRICTIONS

- Displayed when there are no restrictions or violations related to cushioned drawbar cars. See item 5.2.

NO VIOLATIONS THAT APPLY TO ALL AREAS

- Displayed when there are no "all areas" violations.

***** AREA n *****

The following two messages can appear under Areas 1 to 6.

MAXIMUM TRAILING CAR TONNAGE EXCEEDED ON nnn CARS

- Applies to mixed trains only. See item 6.3.

NO SPECIFIC VIOLATIONS FOR THIS AREA

- No violations for the area, but there may still be "all areas" violations, listed above.

The following three messages can appear under Areas 4 and 5:

INSUFFICIENT WEIGHT FOR AGWZ IF OVER 24 EQ DRIVING AXLES nn CARS

- Applies to certain Conventional trains in Ascending Grade Weight Zones (AGWZ) only. See item 8.0.

EXTREME HEAD END MEETS MINIMUM WEIGHT REQUIREMENTS FOR AGWZ

- Applies to certain Conventional trains in Ascending Grade Weight Zones (AGWZ) only. See item 8.0.

TRAIN WEIGHT LESS THAN THRESHOLD - AGWZ DOES NOT APPLY

- Applies to certain Conventional trains in Ascending Grade Weight Zones (AGWZ) only. See item 8.0.

***** END TRAIN AREA MARSHALLING MESSAGES *****

APPENDIX 2: Locomotive haulage ratings and equivalent axle counts

CP Unit Type and/or Model	Traction Motors	Haulage Rating	Equivalent Axles	CP Unit Type and/or Model	Traction Motors	Haulage Rating	Equivalent Axles			
DS-15 ¹ DS-17 ¹	All in	1000	4	DRF-43 (SD90MAC) SD70MAC SD70ACe	All In	2220	9			
	1 out	500	2		3 out	1100	4.5			
	More than 1 out	0	0		All in	2950 ²	12			
DRS-17	All in	1000	4		3 out	1500 ²	6			
	1 out	500	2		More than 3 out	0	0			
	More than 2 out in Mother	0	0	Other Foreign Road Models⁴						
DRS-20 (GP38) not PTC or QEG equipped	All in	1000	4	GP50	All in	1450	6			
	1 out	750	3		1 out	725	3			
	More than 1 out	0	0		More than 1 out	0	0			
DRS-20 (GP38) PTC or QEG equipped	All in	1200	5	SD50	All in	1800	7			
	1 out	900	3.5		2 out	1200	5			
	All in	1300 ²	5 ²		More than 2 out	0	0			
	1 out	975 ²	4.0 ²	SD70 SD70M	All in	2340	9.3			
	More than 1 out	0	0		2 out	1570	6.5			
DRS-30 (GP40)	All in	1000	4	SD80MAC	More than 2 out	0	0			
	1 out	750	3		All in	2460	10			
	More than 1 out	0	0		3 out	1700	7			
DRF-30 (SD40) not PTC or QEG equipped	All in	1500	6	B-30-7A B-36-7 B-32-8 B-40-8	More than 3 out	0	0			
	2 out	1000	4		All in	1200	5			
	More than 2 out	0	0		1 out	600	2.5			
DRF-30 (SD40) PTC or QEG equipped	All in	1710	7	C-30	More than 1 out	0	0			
	2 out	1140	4.5					All in	1500	6
	All in	1790 ³	7 ³					2 out	1000	4
	2 out	1190 ³	5 ³	More than 2 out	0	0				
	More than 2 out	0	0	C-32, C-36	All in	1800	7			
DRF-38 (SD60)	All In	2000	8		2 out	1200	5			
	2 out	1330	5.5		More than 2 out	0	0			
	More than 2 out	0	0	C-39	All in	2340	9.3			
DRF-44 (AC4400)	All in	2220	9		2 out	1570	6.5			
	1 out	1850 ⁵	8		More than 2 out	0	0			
	2 out	1450	6	D-8 D-9 D-9-40CW D-9-44CW	All in	2340	9.3			
	3 out	1100	4		1 out	1940	8			
	More than 3 out	0	0		2 out	1570	6.5			
	All In	2950 ²	12 ²		3 out	1170	4.5			
	1 out	2450 ^{2/5}	10 ^{2/5}		More than 3 out	0	0			
	2 out	1950 ²	8 ²	Notes: 1. Must not be used in multiple with any other class of locomotive. 2. Applies only if all locomotives in consist are QEG or PTC equipped, and/or if they are DRF-38, DRF-44, DRF-43 and DRF-60. 3. Applies only to Bulk or Uniform trains. 4. All models of locomotives not shown, including Passenger Locomotives used in Freight Service, will be handled and rated at the direction of the NMC. 5. Providing HP/ton and/or weather and rail conditions permit, the NMC may authorize movements without a reduction if only one traction motor is disabled / cut-out.						
	3 out	1475 ²	6 ²							
	More than 3 out	0	0							