

BNSF Railway Safety Vision

We believe every accident or injury is preventable. Our vision is that BNSF Railway will operate free of accidents and injuries. BNSF Railway will achieve this vision through:

A culture that makes safety our highest priority and provides continuous self-examination as to the effectiveness of our safety process and performance ...

A work environment, including the resources and tools, that is safe and accident-free where all known hazards will be eliminated or safeguarded ...

Work practices and training for all employees that make safety essential to the tasks we perform ...

An empowered work force, including all employees, that takes responsibility for personal safety, the safety of fellow employees, and the communities in which we serve.

This version contains the following revised or added pages:

October 28, 2007: Title Page, 2, 5, 6, 11, 12, 35, 36, 37, 38.



System Special Instructions

All Subdivisions No. 15

In Effect at 0001

Central, Mountain and
Pacific Continental Time

Sunday, October 28, 2007

(Including revisions up to
October 28, 2007)

Table of Contents

| | |
|--|--|
| <p>1. Speed Restrictions 3</p> <p> 1(A). Control of Harmonic Rocking on Jointed Rail 4</p> <p> 1(B). Maximum Speed of Engines 4</p> <p> 1(C). Multiplatform Equipment -All Types and Single Unit Intermodal Equipment TOB/Car Count and Speed Restriction 4</p> <p>2. Locomotive and ETD Information 5</p> <p> 2(A). 2-Way ETD Grade Reference Chart for 2-Mile / 2% Grades 5</p> <p> 2(B). Locomotive Data Tables 6</p> <p>3. Equipment Restrictions 7</p> <p> 3(A). Multi-Platform and Stack Intermodal Cars 7</p> <p> 3(B). Rotary/Rapid Discharge Coal Cars 7</p> <p> 3(C). V-Slope Flat Cars 7</p> <p> 3(D). Two-Axle Cars 7</p> <p> 3(E). Air Dump Cars 7</p> <p> 3(F). Caboose Placement 8</p> <p> 3(G). Georgetown Equipment Restrictions 8</p> <p> 3(H). GTTX Equipment 8</p> <p> 3(I). AMGX Equipment Restrictions 8</p> <p> 3(J). Herzog Articulated Equipment 8</p> <p> 3(H). Herzog Rail Unloading Car 8</p> <p>4. Geometry Test Car Instructions 8</p> <p>5. Car Restrictions 8</p> <p>6. Work Order: Instructions for Reporting Work 9</p> <p>7. Dimensional and Special Shipment Restrictions 11</p> <p>8. Trackside Warning Devices (TWD) 12</p> <p> 8(A). Description 12</p> <p> 8(B). Detector Radio Message 12</p> <p> 8(C). Detector Message and Train Crew Action 12</p> <p> 8(D). Train Inspection 14</p> <p> 8(E). Testing Bearing Temperature 15</p> <p> 8(F). Consecutive Alarm Messages 15</p> <p> 8(G). Alarms Indicated on Locomotive or Caboose 15</p> <p> 8(H). Special Conditions 15</p> <p> 8(I). High Water Detectors 15</p> <p> 8(J). Slide Detectors 15</p> <p> 8(K). Warm Journal Detectors 16</p> <p> 8(L). Track Integrity Warning System (TIW) 16</p> <p>9. Amtrak Instructions 16</p> <p>10. Storage of Cars Within Yard Limits In Non-Signaled Territory 17</p> <p>11. Shunting the Track 18</p> <p>12. Turnouts Equipped with Two Switch Machines (Moveable Point Frogs/Swing Nose Frogs) 18</p> <p>13. In Effect on BNSF Railway 18</p> <p>14. General Code of Operating Rules, Changes and Additions 18</p> <p>15. General Code of Operating Rules and Maintenance of Way Operating Rules, Supplemental Instructions 22</p> | <p>16. Maintenance of Way Operating Rules, Changes and Additions 24</p> <p>17. Air Brake and Train Handling Rules, Changes and Additions 26</p> <p>18. Safety Rules, Changes and Additions 26</p> <p>19. Train Dispatcher's, Operator's and Control Operator's Manual, Changes and Additions 29</p> <p>20. Hazardous Material Instructions, Changes and Additions 30</p> <p>21. Hy-Rail Limits Compliance System (HLCS) 30</p> <p> Automatic Cab Signals 30</p> <p>23. Remote Control Operations 31</p> <p> 23(A). Remote Control Operating Instructions 31</p> <p> 23(B). Setup and Testing 31</p> <p> 23(C). Operating the Equipment 31</p> <p> 23(D). Securing Equipment 31</p> <p> 23(E). Remote Control Area 31</p> <p> 23(F). Remote Control Zone (RCZ) 31</p> <p> 23(G). RCO Terms 31</p> <p>24. Switch Tender Instructions 31</p> <p>25. FRA Random Drug Testing 32</p> <p>26. Verification of Rules Examination 32</p> <p>27. Cars Set Out Bad Order 32</p> <p>28. Grade Crossing Accidents 32</p> <p>29. System Work Train Policy 32</p> <p>30. Track Condition Messages 33</p> <p>31. Securing Track Warrants 33</p> <p>32. Engineer Training Assistance Hotline 33</p> <p>33. Excessive Wind, Tornado, Flash Flood, Cold Weather, and Earthquake Instructions 33</p> <p>34. Duplicate Mile Posts 35</p> <p>35. Switching Business Cars 35</p> <p>36. Instructions for Handling Continuous Rail 35</p> <p>37. Handling of FRA Track Geometry Inspection Cars 36</p> <p>38. Inhalation Hazard Car Handling Instructions 38</p> <p>39. Rule of the Week/Dispatcher Daily Job Briefing 38</p> <p>40. Rear End Restricted Cars 38</p> <p>41. Car Identification B-End 38</p> <p>42. Gravity Switch Moves 39</p> <p>43. Signal Awareness/Position of Switch Form 39</p> <p>44. Report of Unsafe Motorist/Trespasser 40</p> <p>45. Network Operations Center Notification Requirements 40</p> <p>46. Special Car Handling Instructions 40</p> <p>47. Train Make-Up Instructions 42</p> <p>48. Operations Testing 43</p> <p>49. Engineer Responsibilities and Certification 43</p> <p>Appendix A - Track Flagging Examples 46</p> <p>Appendix B - Roadway Signs 49</p> <p>Appendix C - Division/Subdivision Index 50</p> |
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Note: Multiplatform (articulated or non-articulated) intermodal equipment (other than coal multiplatform equipment) is identified with a single initial and number and its individual units identified by a letter designation (refer to Special Instruction, Item 41). Individual units of multiplatform solid drawbar-connected (non-articulated) coal equipment are identified as individual cars with a unique initial/number for each unit. Not all conventional intermodal equipment is listed in the table.

Car Kind Codes

Car kind codes are usually 3 characters. On cars shown above, only the first two characters are required to identify car type, with the exception of CSX, M3F, and QDE.

Definitions of Multiple-Unit Equipment

Articulated—Refers to cars with multiple units (segments) that are connected with an articulated couplings that share a common truck.

Non-Articulated—Refers to cars with multiple units (segments) that are connected with solid drawbars. Each unit is a stand-alone unit and does not share a common truck with another unit.

Tons Per Operative Brake (TOB)

Tons per operative brake on cars above are determined by dividing the number of control valves/car count into the weight of the car. This can be determined without inspection as follows:

Articulated cars = total number of units divided by two, rounded up to next number divided into total weight of the car.
(Example: five unit doublestack, Car kind code QY=3 by car count)

Non-articulated cars = total number of units divided into weight of car.
(Example: Four Unit doublestack Car Kind Code QX=4 by car count)

Speed

In order to limit truck hunting, trains must not exceed 55 MPH unless all cars in train are loads. Caboose and any car loaded with container chassis are considered loads for the purpose of the rule.

Articulated Cars—Articulated spine cars (Car kind Codes QM, QC, QO, Q5, QE) are considered loads if it can be determined that car is loaded with at least one empty or loaded, container or trailer. Due to the load bearing characteristics of shared trucks on articulated cars, truck hunting is limited even when such cars have empty units. Empty articulated doublestack cars (Car Kind Codes QY or QV) and AutoMax cars (Car Kind Code M3F) may operate at maximum authorized speed when completely empty due to constant contact side bearings which prevent truck hunting.

* *Non-Articulated Cars*—Non-articulated cars (Car Kind Codes QW, QX, QD, QB, QL, QT and QDE) are restricted to 55 MPH unless each unit is loaded with an empty or loaded trailer or container. These cars do not share a common truck and empty units are subject to truck hunting as with any empty, conventional car. (This may require a review of train documentation to determine). Non-articulated, Twin Flats (TTEX, FEC and CN) can be loaded with three 48'-57' or four 45' or shorter trailers. When loaded with three trailers, trailer can straddle the drawbar. Each unit must be loaded with all or one-half of a trailer to be considered loaded for movement at speeds greater than 55 MPH. (More than 90' of total trailer length shown on train documentation indicates each unit is loaded or the car must be visually inspected.)

2. Locomotive and ETD Information

Locomotives coupled together in multiple-unit configuration must be limited to 12 locomotives.

When locomotive consist exceeds 8 locomotives, 200 tons per locomotive exceeding 8 will be included when calculating TOB.

2(A). 2-Way ETD Grade Reference Chart for 2-mile / 2% Grades

Trains operating on the following grades listed must be equipped with an operable 2-way end-of-train telemetry device (ETD and HTD) or equivalent device. However, passenger trains do not require a 2-way EOT or equivalent device.

| | |
|---------------------|---------------------------------------|
| Cajon Sub..... | MP 56.6 to MP 80, all tracks |
| Raton Sub..... | MP 639 to MP 660 |
| Glorieta Sub..... | MP 775 to MP 810 and MP 818 to MP 842 |
| Pikes Peak Sub..... | MP 52 to MP 66 |
| Hi Line Sub..... | MP 1151 to MP 1166, both tracks |
| Midway Sub..... | MP 0.5 to MP 5, both tracks |
| St. Paul Sub..... | MP 430 to MP 5, both tracks |
| Scenic Sub..... | MP 1694.5 to MP 1731.3 |
| Stampede Sub..... | MP 41.0 to MP 58.5 |
| San Diego Sub..... | MP 250 to MP 255 (SDN RR) |
| Gateway Sub..... | MP 178.0 to MP 188.0 |

On UP Railroad:

| | |
|------------------------|---|
| Mojave Sub..... | MP 331.3 to MP 381.3 |
| Moffat Tunnel Sub..... | MP 19 to MP 50 and MP 58.1 to MP 61.7 |
| Provo Sub..... | MP 630.5 to MP 638.1 and MP 652 to MP 682 |
| Roseville Sub..... | MP 115 to MP 170 and MP 195 to MP 210 |

2(B). Locomotive Data Tables

| DC Traction Locomotives | | | | |
|-------------------------|---------------------|---------------------------|------------|---------------|
| Model | Rated Powered Axles | Rated Dynamic Brake Axles | Horsepower | Weight (Tons) |
| SW1 | 4 | 0 | 600 | 99 |
| SW10 | 4 | 0 | 1,000 | 125 |
| NW10 | 4 | 0 | 1,200 | 126 |
| SW12 | 4 | 0 | 1,200 | 125 |
| SW15 | 4 | 0 | 1,500 | 131 |
| MK1200G | 4 | 0 | 1,200 | 125 |
| SWBL-W | 4 | 0 | 1,500 | 131 |
| GP7 | 4 | 0 | 1,500 | 125 |
| GP9 | 4 | 4 * | 1,750 | 130 |
| GP9B | 4 | 0 | 1,750 | 124 |
| GP10 | 4 | 0 | 1,800 | 130 |
| GP15 GP15-1 | 4 | 0 | 1,500 | 129 |
| GP18 | 4 | 0 | 1,800 | 124 |
| GP20 | 4 | 4 BT | 2,000 | 131 |
| GP28 M/P | 4 | 4 BF | 1,800 | 130 |
| GP30 | 4 | 4 BT | 2,500 | 131 |
| GP35 | 4 | 4 BT | 2,500 | 133 |
| GP38, GP38-2 | 4 | 4 ET | 2,000 | 143 |
| GP39, GP39-2 | 4 | 4 EF # | 2,300 | 135 |
| GP40 M,E,-2 | 4 | 4 BF | 3,000 | 139 |
| GP40X | 4 | 4 BF | 3,000 | 139 |
| GP50 | 4 | 4 EF | 3,600 | 138 |
| GP53, GP53L | 4 | 4 EF | 3,000 | 136 |
| GP60M | 5 + | 5 EF + | 3,800 | 137 |
| GP60B | 5 + | 5 EF + | 3,800 | 135 |
| B23-7 | 4 | 4 EF | 2,300 | 134 |
| B30-7A | 4 | 4 BF | 3,000 | 138 |
| B36-B-7 | 6 + | 4 EF | 3,600 | 140 |
| B-39-8 | 6 + | 5 EF + | 3,900 | 140 |
| B-40-8 | 6 + | 5 EF + | 4,000 | 142 |
| SD7 | 6 | 5 BF + | 1,500 | 157 |
| SD9 | 6 | 5 * | 1,750 | 184 |
| SD18 | 6 | 0 | 1,800 | 175 |
| SD35 | 6 | 5 * # | 2,500 | 195 |
| SD38-2 | 6 | 6 * # | 2,000 | 184 |
| SC38P | 6 | 6 BF | 2,000 | 196 |
| TEBC6 | 6 | 6B | 2,000 | 194 |
| SD39 | 6 | 6 EF | 2,500 | 195 |
| SD40, SD40-2 | 6 | 6 EF * # | 3,000 | 196 |
| SD45, SD45-2 | 6 | 6 ET | 3,600 | 198 |
| SD50 | 6 | 6 EF | 3,600 | 194 |
| SD60, SD60M | 7 + | 8 EF **+ | 3,800 | 201 |
| SD70M | 7 + | 9 EF + | 4,000 | 200 |
| SD75M | 7 + | 9 EF + | 4,300 | 197 |
| C30-7 | 6 | 6 EF # | 3,000 | 209 |
| SF30C | 6 | 6 EF | 3,000 | 160 |
| C36-7 | 6 | 6 EF | 3,600 | 197 |
| C40-8 | 7 + | 8 EF + | 4,135 | 197 |
| C44-9W | 8 + | 8 EF + | 4,400 | 196/210 |
| ES44DC | 8 + | 8 EF + | 4,500 | 210 |

+ Power or dynamic brake axle rating exceeds actual axles
 * May not be equipped with dynamic brakes
 # May be equipped with standard range dynamic brake

| AC Traction Locomotives | | | | |
|---|---------------------|---------------------------|------------|---------------|
| Model | Rated Powered Axles | Rated Dynamic Brake Axles | Horsepower | Weight (Tons) |
| C44AC ¹ AC4400CW ¹ AC4400EV ¹ CW44AC ¹ | 8 + | 10 EF + | 4,400 | 210 |
| 1 TM c/o | 8 + | 8 EF + | | |
| 2 TM c/o | 6 | 6 EF | | |
| 3 TM c/o | 4 | 5 EF | | |
| 4 TM c/o | 3 | 3 EF | | |
| 5 TM c/o | 2 | 2 EF | | |
| | | | | |
| C60 ¹ C60AC ¹ | 8 + | 12 EF + | 6,000 | 210 |
| 1 TM c/o | 8 + | 10 EF + | | |
| 2 TM c/o | 8 + | 8 EF + | | |
| 3 TM c/o | 6 | 6 EF | | |
| 4 TM c/o | 4 | 4 EF | | |
| 5 TM c/o | 2 | 2 EF | | |
| | | | | |
| ES44AC | 8 + | 10 EF + | 4,500 | 208 |
| 1 TM c/o | 8 + | 10 EF + | | |
| 2 TM c/o | 8 + | 8 EF + | | |
| 3 TM c/o | 6 | 6 EF | | |
| 4 TM c/o | 4 | 4 EF | | |
| 5 TM c/o | 2 | 2 EF | | |
| | | | | |
| SD70MAC | 8 + | 8 EF | 4,000 | 208 |
| 1 Truck c/o | 4 | 5 EF | | |
| | | | | |
| SD70ACE | 8 + | 10 EF + | 4,300 | 208 |
| 1 TM c/o | 6 | 6 EF | | |
| | | | | |
| SD80MAC | 8 + | 10 EF | 5,000 | 210 |
| 1 Truck c/o | 5 + | 5 EF | | |
| | | | | |
| SD90/43MAC | 8 + | 10 EF | 4,300 | 208 |
| 1 Truck c/o | 4 | 6 EF | | |
| | | | | |
| SD90MAC | 8 + | 11 EF | 6,000 | 208 |
| 1 Truck c/o | 6 | 6 EF | | |

+ Power or dynamic brake axle rating exceeds actual axles
¹ GE Locomotives (C44AC, C60AC, etc.) have one inverter per axle and can have individual traction motors cut out as with DC locomotives.
² Dynamic braking is operational with Inverters/Traction motors cut out on AC locomotives.

Electronic Device – Computer reporting will not require any written documentation to be forwarded.

Conductors and engine foremen are required to call their designated Customer Support Specialist anytime there are questions or problems with work order information or work to be performed during their tour of duty.

Work Order Codes

There are three types of work order codes that appear on work orders: Request Codes, Status Codes and Hold Codes.

| Request Codes | |
|--|---|
| Code | Displays Work to Be Performed |
| SP | SPOT - Customer request to spot car for loading/unloading. |
| PU | PULL - Customer request to move a car from an industry track to another track or scheduled destination. |
| IP | INTRA-PLANT SWITCH - Customer request to move a car originally spotted correctly to another spot or track within the industry. Cars are commonly moved per this request to complete loading, for inspection, etc. This switch is chargeable to the customer. |
| RS | RESPOT - This switch is not chargeable to the customer and should be used only when correcting a railroad error. Customer request to move a car to a different track or spot within the industry after being placed incorrectly. |
| TU | CARS TURNED ON WYE OR TURNABLE - Request to turn a car previously spotted and re-spot. |
| PK | PICKUP - Cars available to be picked up by train, local, road switcher at station. |
| SO | SETOUT - Cars scheduled to be set out by train, local, road switcher at station. |
| Status Codes | |
| Displays Current Status of Cars (Does not require any work to be performed) | |
| Code | |
| PL | PLACED - Car on spot. (Displays car status and not a request.) |
| CP | CP - Constructive placement. (Condition between carrier and customer.) |
| OF | CARS OFFERED OR NEEDING OFFER TO A CONNECTING ROAD - Displays to the carrier, cars normally delivered in interchange cannot be delivered due to connecting road's inability or unwillingness to accept cars. |
| DD | CARS DELIVERED IN INTERCHANGE - Displays cars scheduled for interchange delivery to a connecting road. |

| Hold Codes | |
|--|--|
| Carrier/Customer Instructions Have Not Been Provided | |
| Code | |
| HOLD MT | Car not scheduled for outbound train. (Hold code appears in the Scheduled Train field.) |
| HOLD NI | Car has no instructions for spotting. (Hold code appears in the Scheduled Train field.) |
| HOLD HL | Car is HIWIDE and has not been scheduled to a train. (Hold code appears in the Scheduled Train field.) |
| HOLD LS | Car is on floating lease. (Hold code appears in the Scheduled Train field.) |
| HOLD ED | Car to be held for equipment distribution. (Hold code appears in the Scheduled Train field.) |
| HOLD WH | Car is to be held for weighing. (Hold code appears in the Scheduled Train field.) |
| HOLD OT | Car is to be held for local order. (Hold code appears in the Scheduled Train field.) |
| HOLD ME | Car is to be held for mechanical inspection. (Hold code appears in the Scheduled Train field.) |
| HOLD EH | Car is to be held for embargo. (Hold code appears in the Scheduled Train field.) |
| NC * | Non-credit customer. DO NOT SPOT. (Code appears in the SCHI field.) |
| DO * | Written delivery order. DO NOT SPOT. (Code appears in the SCHI field.) |
| SO * | Car billed shipper's order. DO NOT SPOT. (Code appears in the SCHI field.) |
| Zn Tk Sp * 00 00 00 | * Do not spot cars with '00 00 00' in the ZNTKSP field or cars with NC, DO or SO in the SCHI field. (Cars may be pulled or picked up and moved to a location for further disposition when these codes are displayed.) |

Work order documents will display work order codes as outlined by customer or carrier for specific instructions to conductors or engine foremen. They will be located in the Special Car Handling Instructions (SCHI) column or in the Scheduled Train column.

Hours of Service

Conductors or engine foremen should plan ahead and report scheduled and unscheduled work before hours of service expire. Conductors and engine foremen who relieve crews whose hours of service have expired will be responsible for reporting work performed during their tour of duty. If a crew's hours of service expire and they are unable to report scheduled or unscheduled work, the information must be passed on to the relieving conductor, engine foreman or supervisor who will be responsible to report work for the previous job.

Pick Up in Block

When picking up cars, enroute, trains must pick up in block unless otherwise advised by train dispatcher or in conflict with current train make-up instructions.

7. Dimensional and Special Shipment Restrictions

All employees involved in handling dimensional or special shipments must be familiar with and are governed by these instructions.

Note: Dimensional loads on BNSF are defined as wider than 11' and/or higher than 17' ATR and/or longer than the length of the car.

- a. Any dimensional and/or oversize car or special shipment must be accompanied by one of the following: message included with train's work order, track bulletin or message issued by BNSF Clearance Bureau.

- b. Before a dimensional or special shipment can be moved in a train, yard forces or employee in charge of station where no yard forces on duty, must obtain permission from the train dispatcher. This does not relieve conductor from complying with Rule 1.47 of the General Code of Operating Rules. When yard supervisors are notified of expected arrival of wide cars, precautions must be taken to safeguard employees in yard.
- c. Before a dimensional shipment is picked up on line, conductor must obtain permission from the train dispatcher. When dimensional or special shipment is set out on line, conductor must promptly notify the train dispatcher.
- d. Train dispatcher must issue appropriate track warrant, track bulletin or message when dimensional shipment restricts opposing train and confirm message received.
- e. Train with dimensional shipment must not pass or be passed by a train in the same direction unless authorized by the train dispatcher or proper safeguards taken.
- f. To provide for close observation enroute, all dimensional shipments must be placed in a block next to the lead locomotive consist and Boeing dimensional shipments identified as having contents ACFTEQ on the train list, if any, must be ahead of all other dimensional shipments. Only 10 dimensional Boeing loads/empties having contents ACFTEQ or only 25 Boeing empties having contents ACFTEQ may be placed in a train. Exception: BNSF 800026 through BNSF 800039 empties do not count toward the 10 car limit even if they have ACFTEQ in the contents column. Note: In the application of the above, FTTX flatcars and autoveyors (car kind M3E and M3F) are not considered dimensional shipments. (See Item 46)
Exceptions:
1. On trains destined to or operating in the state of California, and train room permits, dimensional shipments must be no closer than the 6th car or platform from the lead locomotive consist.
 2. Dimensional shipments, including idler cars moving with dimensional shipments, must be placed in compliance with minimum weight requirements outlined in train make up rules. However, placement of dimensional shipments must otherwise be as close to lead locomotive as possible.
 3. Trains received from foreign railroads with dimensional shipment placement other than described above, may proceed to a location specified by train dispatcher to correct the condition.
 4. When dimensional shipment is found to be a shiftable load, GCOR Rule 1.37 will apply.
- g. Employees are prohibited from riding excessive dimension cars.
- h. Train crews handling dimensional and/or oversize car or special shipment car(s) approaching locations in CTC, interlocking or double track territory where these car(s) are restricted should communicate with the dispatcher and jointly determine if a meet or pass of any other equipment at the restricting location(s) can be accomplished safely.
- i. When the dimensional message indicates "Stop, Proceed on Hand Signals" at a bridge in conductor only operations, the following will apply:
- Stop the train before entering the bridge.
 - Conductor will check the dimensional load for shifted contents.
 - Engineer will protect his side of the train through the mirror.
 - Conductor will protect the other side of the train.
 - Move through the bridge not exceeding 5 MPH until the dimensional shipment clears the bridge.

8. Trackside Warning Devices (TWD)

8(A). Description

Trackside warning devices (TWD) inspect passing trains for defects or monitor for unusual trackside conditions that could adversely affect the safe and efficient movement of trains. Examples of such devices include the following:

- Overheated journal bearings (hot box) (HBD)
- Hot wheels
- Dragging equipment detector (DED)
- High/Wide/Shifted load (SLD)
- High water detector
- Earth/Rock slide fence

Individual subdivision special instructions identify the following:

- Detector location
- Detector type

Unless otherwise stated, protection will be hot journal and dragging equipment with bidirectional operation.

Exceptions will be shown as follows:

- Northward direction only (NWD)
- Southward direction only (SWD)
- Eastward direction only (EWD)
- Westward direction only (WWD)
- Dragging equipment only (DED)
- Shifted load only (SLD)
- Detectors that protect bridges, tunnels or other structures
- Exception Reporting detector

When a shifted load or dragging equipment detector is actuated at a point where an adjacent main track or controlled siding may be obstructed, crew must provide protection as prescribed by Rule 6.23.

8(B). Detector Radio Message

A message "You have a defect" will be transmitted during train passage if a defect is detected. When this message is received from a TWD, immediately reduce train speed to less than 30 MPH, utilizing train handling methods that minimize in-train forces. After train passes the detector, a radio message will be transmitted (unless defined as "Exception Reporting" or "Failure Reporting" in Item 5(B) of the individual division timetables).

This message will indicate "no defects" or will state any "alarms" or "integrity failures" that were detected during train passage.

The detector message is not complete until "Out" is received.

Train Approaching Detector

Except in emergency, when approaching train is within 150 feet of a TWD, DO NOT make a radio transmission until the entire train has passed the TWD.

Train crew must have the radio set to "in service" radio channel, for the Subdivision and location of the TWD, as shown in the timetable. The radio channel should not be changed until entire train has passed by the TWD location and you have allowed time for the TWD to transmit any messages.

8(C). Detector Message and Train Crew Action

Use the following table to determine crew requirements when a detector message is received. If detector indicates more than one detector message or circumstance, comply with each train crew action shown. Radios at Exception Reporting detectors will only transmit a message when an alarm is present. Do not report a failure to transmit to the train dispatcher as is required with other types of detectors.

Note: 5(A) indicates detectors that protect bridges, tunnels or other structures. 5(B) indicates other TWD locations.

| Magnitude Range | Criteria for Response | Group 1 Radius | Group 2 Radius | Group 3 Radius | Group 4 Radius |
|-----------------|---|----------------|----------------|----------------|----------------|
| Less than 5.0 | No Inspection Required | N/A | N/A | N/A | N/A |
| 5.0 to 5.49 | Trains proceed at restricted speed until signals have been inspected. | 30 Miles | 40 Miles | 70 Miles | 70 Miles |
| 5.5 to 5.99 | Trains proceed at restricted speed until signals, track and bridges have been inspected. | 30 Miles | 40 Miles | 70 Miles | 70 Miles |
| 6.0 to 6.49 | Trains proceed at restricted speed until signals, track and bridges have been inspected. | N/A | N/A | N/A | 150 Miles |
| | Trains stop until signals, track and bridges have been inspected. | 50 Miles | 80 Miles | 150 Miles | 80 Miles |
| 6.5 to 6.99 | Trains proceed at restricted speed until signals, track and bridges have been inspected. | N/A | N/A | N/A | 220 Miles |
| | Trains stop until signals, track and bridges have been inspected. | 70 Miles | 140 Miles | 220 Miles | 140 Miles |
| 7.0 to 7.49 | Trains proceed at restricted speed until signals, track and bridges have been inspected. | N/A | N/A | N/A | 400 Miles |
| | Trains stop until signals, track and bridges have been inspected. | 100 Miles | 300 Miles | 400 Miles | 300 Miles |
| 7.5 and above | Trains stop until instructed to proceed after inspection of track, signals and bridges completed. | As Directed* | As Directed* | As Directed* | As Directed* |

* Radius at discretion of command center but not less than for magnitude 7.0 to 7.49

Group 1: California and Baja California, Mexico
Group 2: Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah and Wyoming; Alberta, Canada; and Sonora and Chihuahua, Mexico
Group 3: Area east of Group 2
Group 4: Oregon, Washington and British Columbia, Canada

34. Duplicate Mile Posts

On subdivisions where duplicate mile posts exist, an alpha suffix has been added (i.e. MP 345X, MP 420Z). This alpha character may not be on the physical mile post sign at this time. When the alpha suffix is indicated in track warrant, track bulletins and other documents, reference must be made to the individual subdivision's timetable for station locations of the mile posts indicated.

35. Switching Business Cars

The following instructions will be complied with in regard to movement of these cars in other than assembled trains. Business cars must be handled as outlined in accordance with General Code of Operating Rules 7.3 and 7.9.

- a. Air Brakes—The business car air brake system must be connected to the locomotive and the automatic air brake used in controlling movement during switching.
- b. Coupling—When coupling into business cars, business car equipment or when it is coupled to other equipment, the movement must be stopped approximately 50 feet from point at which the coupling will be made. All movements to accomplish coupling must be governed by a crew member on the ground using hand signals. Business cars must not be cut off while in motion and no car moving under its own momentum should be allowed to couple to them.
- c. After Coupling—Once the coupling is made to the business car, the couplers must be fully compressed and stretched to know the couplers are locked before making air, electrical or communications connections.
- d. When cars are to be coupled to the observation end of BNSF Business Car 30 (Glacier View) and Business Car 32

(William B. Strong), the car next to the business car must be an empty flat, gondola or other type of car with a low profile.
 e. BNSF employees must not disconnect the 480 volt electrical jumper cables between business cars or any other cars so equipped while the cables are energized.

36. Instructions for Handling Continuous Rail

(excluding articulated loads of 80 ft. length rail or less) Rail trains loaded with continuous welded rail must not be kicked, nor allowed to be struck by other kicked cars; and, must be handled through all turnouts with extreme care. Before a switching move is made, an air brake inspection and test as prescribed by Rule 100.11 must be performed.

Switching movements must be made using automatic air brakes to control slack in either a bunched or stretched condition. Extreme care must be used when stopping movements to avoid injury to employees or damage to equipment. Use of locomotive brake must be avoided, when possible, to stop the movement. When exceeding 12 rated axles of power during shoving movements, use only the minimum amount of tractive effort necessary to begin movement.

Except during necessary switching moves and train makeup, or when moving as a work train under supervision of maintenance of way, suitable cars must be placed at each end of the "rail" cars to act as a buffer and idler. Rail cars equipped with barrier plates or cars labeled "Buffer/Idler" in addition to other cars taller than the height of the top rails on a loaded train meet this requirement. Tunnel cars equipped with barrier doors eliminate the need for buffer cars if doors are closed and secured. (Tunnel cars numbered BNSF 920119 through BNSF 920173 have these barrier doors). Trains handling rail trains should not be required to make setouts or pickups enroute.

Two loaded rail trains must not be moved together in same train, unless authorized by the manager of the rail facility or his representative. When a two loaded rail train movement is authorized, the maintenance representative will designate which rail train will be placed at the head end. The other rail train must then be positioned in the train immediately at the rear of the first or head end of rail train separated by a suitable buffer car.

Full-length rail strings, when loaded, will have their lengths constructed so that the ends will fall between the green stripes painted on end ramp cars. When the rail train is stretched or bunched, and during transit, rail ends must be between the red stripes painted on end ramp cars, or else the train must be held until released by the general roadmaster or his representative. A white stripe will be applied across top of all rails between tie-down stands on center car of the rail train so it can be determined at inspection points whether rail has slipped or shifted.

Loaded Rail Trains

1. Trains without Rail Movement Detectors (RMD):
 - must be handled in special service.
 - must not be required to make setouts and pickups en route.
 - must have suitable cars placed at each end of loaded rail train to act as buffer and idlers except during necessary switching moves and train makeup, or when moving as a work train under the supervision of maintenance of way.
2. Trains with Rail Movement Detectors (RMD)

May be handled in trains other than special service under the following conditions:

 - Rail train must be on head end.
 - Train length limited to 64 cars.
 - Should not be required to make setouts and pickups enroute.
 - Suitable cars placed at each end of loaded rail train to act as buffer and idlers.

- If cars other than loaded rail train are included in movement, and RMD (i.e. strobe lights) becomes inoperative en route, a maintenance representative (a rider) must accompany each train during transit, unless rail train is then moved in special service. When the RMD is inoperative, each time the train stops, the rider must inspect the cars carrying the continuous welded rail for shifted, bowed, or broken rail, and to ensure that each base clamp (tie-down block) is tight. Defective strobe lights must be reported to the train dispatcher, who will notify the manager of rail facility so that the problems can be documented and repairs can be arranged as soon as possible.
- Strobe lights at each end ramp car must be observed frequently en route. When strobe lights are observed to be flashing, the train must be stopped and all cars carrying continuous welded rail must be inspected to determine any rail movement. If movement is found, observe and complete the following:
 - a) If adjacent track or standard clearances are not fouled, train may be moved to clear main track not exceeding speed of 10 MPH.
 - b) If adjacent track or standard clearances are fouled, protection must be provided and train must not be moved until inspected by proper personnel.
 If no movement is found, cancel flashing strobe lights by depressing the reset button at the control box for three seconds. The train may proceed at authorized speed.

The RMD consists of electrically activated screens/gates, four amber-colored strobe lights, and associated controls. There are two 12-volt absolute batteries, charged by an array of solar cells mounted between the tunnel stand strobe lights, to power the system. RMDs are installed on all rail train ramp cars, which are placed at each end of a rail train. If a rail string becomes loose and makes contact with the screen, strobe lights will commence flashing. The strobe lights are mounted on the ramp cars, positioned at the uppermost corners toward each end. Two are mounted on each side of the adjustable ramp stand, and the other two are mounted on each side of the tunnel stand.

The "ramp or tunnel" strobe lights operate in a parallel mode with a common activation (redundancy); thus each set will flash independently.

To check that strobe lights are operational, use a metal rod, bare wire or other metal object to make simultaneous contact between the screen and any rail in the load or other metal ground. After observing the lights flash, depress the reset button, which is located on the control box, for three seconds to turn off and conserve batteries. The lights should flash approximately 60 times per minute; and fully charged batteries will operate them for about sixteen hours.

The RMD system is inspected and tested at rail complexes before rail trains are released for movement. When second-hand welded rail is picked up and loaded in the field, the RMD system will be inspected and tested by the rail train supervisor before train is released for movement.

Routing of rail trains from the Rail Welding Facility, Pueblo, CO, to points west should be via Amarillo, TX, instead of the northern route through Raton, NM; unless train has stop(s) to deliver rail between La Junta, CO, and Belen, NM. When a rail train is to be routed via the northern route, loading parameters of welded rail strings will be held more restrictive to allow a greater degree of safety for movement through tight curves and mountains.

Unless under special service, the 6x12 rail train (center tie-down car number ATSF 187023, ordinarily consisting of 32 cars rail and 2 buffers) should always be routed through Amarillo, TX, because of its greater amount of slack due to the increased number of cars and limited ramp car length.

At designated intermediate inspection points, make mechanical inspection of cars in compliance with FRA requirements. Manager Rail Complex in Laurel, Pueblo, or Springfield must be advised if any mechanical repairs are needed.

Open End Gondola Consist (Any Ownership)

Maximum authorized speed for trains handling short lengths of continuous welded rail in open end gondola consist is 45 MPH.

Open end gondola consist loaded with continuous rail must not be kicked; nor allowed to be struck by other kicked cars.

Loaded open end gondola consist should be handled within 25 cars of the head end of trains. Loading of rail into open end gondola consist shall comply with the following instructions:

1. Continuous lengths of welded rail will not be loaded more than one layer high.
2. Width of layer will not exceed 67 percent of the inside width of the narrowest gondola.
3. Rail will be centered width wise in open end gondola consist. If practical, spikes, cleats or blocks will be driven into bearing timbers (raised fashion) to prevent walking of load near sides. Rail lengths will be spotted lengthwise from outboard ends of open end gondola consist to allow sufficient distance to exist for clearance (i.e. to exceed the amount of coupling slack). Amount will be determined by number of cars in consist.
4. Continuous lengths of rail will be supported upon timbers with a minimum size of 4" x 4" hardwood. These timbers will be spaced equally throughout load in sufficient number to prevent rail from contacting floor of cars or bottom flanges used for gondola end retention, and provide friction necessary to limit rail shifting.
5. Couplers of cars will be gagged and locked to prevent accidental opening.
6. Outboard ends of open end gondola consist will have ends installed or stacked timbers arranged into a barricade with a minimum height that exceeds the height of rail.
7. Continuous welded rail lengths will be loosely banded (to allow the required linear movement of the individual lengths of rail when consist is negotiating a curve) to keep all pieces grouped together.

Empty Rail Train Blocks (Any Ownership)

When handling empty 'rail train' blocks, all cars weighing 50 tons or less, by car count, must be placed behind all cars weighing more than 50 tons per car.

37. Handling of FRA Track Geometry Inspection Cars

Federal Railroad Administration (FRA), Office of Safety manages high-speed railbound track geometry inspection cars (identified as either the FRA T-16, T-17, T-18, T-19 or T-20 Geometry Car) that measure track geometry for compliance with the Federal Track Safety Standards nationwide. The T-17, T-18 and the T-19 may be operated self propelled. The T-16 and the T-20 must be towed. Hereafter the term FRA Geometry Car refers to all vehicles except where otherwise specified.

1. Each train dispatcher and train crew or pilot will be governed by these instructions.
2. Prior to each day's survey, the Survey Director will conduct a safety briefing to all occupants of the FRA Geometry Car on general safety, applicable operating and protection procedures.

3. Whenever the T-17, T-18 or T-19 FRA Geometry Cars are operated, including through a designated "yard or restricted" limits and 'other than main track' territories, the railroad will provide either a Locomotive Engineer/Pilot, Traveling Engineer or Road Foreman to pilot the vehicle. The T-17, T-18 and the T-19 Geometry Cars will be governed by applicable operating rules when operating in either signal or non-signal system territories (except that auto routing and automatic clearing features will not be used and all dual control switches will be blocked). Absolute block protection or alternate protection methods, controls or authority (including within "yard or restricted" limit territory), will be applied to protect the T-17, T-18 and the T-19 Geometry Cars against following and opposing trains or on-track equipment. The absolute block will not be required for the T-16 and T-20 when being towed and operating as a train.
4. FRA T-17, T-18 and the T-19 Geometry Cars will operate as a train. Authorization will not be issued to the FRA T-17, T-18 and the T-19 Geometry Cars within the same or overlapping limits of another train or on-track equipment, except to facilitate the FRA T-17, T-18 and the T-19 Geometry Car's disabled movement, if necessary, and in accordance with the railroad's operating rules. The FRA T-17, T-18 and the T-19 Geometry Cars will not be operated by lineup, movement of track cars or similar on-track equipment authorities.
5. The Survey Director, prior to the FRA Geometry Car operation, will communicate directly with the train dispatcher and train crew or pilot, to insure that all operating rules, in effect on the route to be traveled, are understood and confirm the FRA Geometry Car is being dispatched as a train. Reference to applicable operating documents will be made to confirm such information, prior to departure. The Survey Director will be stationed in the immediate vicinity where the FRA Geometry Car method of operation, procedures and movement can be monitored.
6. All mandatory directives will be transmitted and received in compliance with railroad rules and instructions. For purposes of this instruction, all references to assigned crew member apply only to the train crew or pilot. The FRA Geometry Car operator relies on the train crew or pilot to identify relevant railroad physical characteristics, movement authority limits and authorized speeds, a sufficient distance in advance.
7. In automatic block signal system or traffic control system territory, the FRA Geometry Car should not be stopped on sand or other similar rail surface conditions affecting the shunting of the track circuit. If such a stop cannot be avoided, the FRA Geometry Car will be moved immediately a sufficient distance to clear that affected portion of the rail.
8. Interlocking machines will be operated manually for the FRA Geometry Car movements (automatic clearing and routing features will not be used). The control machine operator will be kept informed of the progress of the FRA Geometry Car from one control point to another. An interlocking control operator will not change the position of any switch or indication of any signal, until informed that the FRA Geometry Car is clear of the interlocking or a section thereof. Where provided, electrical or mechanical blocking devices will be used on switch and signal controls. If the FRA Geometry Car is stopped within the limits of any interlocking, the control operator or dispatcher will be notified of the stop and the precise location. The FRA Geometry Car will not be stopped within the limits of automatic interlocking or a non-interlocked, at grade, railroad crossing.
9. The FRA T-17, T-18 and the T-19 Geometry Cars are equipped with operating controls at either end. When appropriate, instructions will be given to the FRA Geometry Car operator to change ends and operate from the rear of the FRA Geometry Car. Any reverse movement will be conducted, in accordance with the railroad's operating rules.
10. In the event the FRA T-17, T-18 and the T-19 Geometry Car operators are to be relieved for any reason, the Locomotive Engineer/Pilot may be utilized (if agreeable) to continue FRA Geometry Car operations to the day's final tie-up point. If the Locomotive Engineer/Pilot is not willing or prohibited from operating the FRA Geometry Car, the survey should be stopped at a suitable point short of the scheduled tie-up or a locomotive will be requisitioned for tow-in. This contingency is one that will be addressed at the beginning of the survey to allow for ample planning.
11. Self propelled FRA Geometry Car will approach all highway-rail grade crossings equipped with automatic warning devices prepared to stop, until it is determined that the warning devices activate and the FRA Geometry Car occupies the crossing. On ground protection against highway vehicles will be provided when automatic warning devices fail to fully activate, the FRA Geometry Car interferes with the normal function, or when prescribed by railroad rules or instructions.
12. The maximum operating speed of the T-17, T-18 and the T-19 is 90 MPH when self-propelled, and 110 mph when towed by a locomotive. The vehicle is not equipped with automatic cab signal, automatic train stop, or automatic train control systems. FRA T-17, T-18 and the T-19 Geometry Cars cannot negotiate curves greater than 20-degrees. Additionally, due to truck center length, the center of car swing-out clearance is limited on curves greater than 13-degrees, therefore may restrict safe movement. The maximum authorized speed of the T-16 and T-20 is 125 MPH and is not restricted by special track work.
13. Neither FRA nor contractor employees will operate a railroad switch or derail and will rely upon a railroad employee to perform that function. Protective devices (i.e., blue signal, derails and locking devices, owned by FRA) will be applied by contractor employees after receiving authority for placement from the appropriate railroad representative. A 'blue signal' will be displayed on or near the FRA Geometry Car control stand at a readily visible location and the 'key' removed when on ground instrument verification (i-v's) checks are made. Similarly, positive protection (brakes placed in emergency position and surrendering of the locomotive reverser) will be imposed by FRA when the FRA Geometry Car is towed by a locomotive.
14. Except within a locomotive servicing area or car shop area, the FRA Geometry Car may be repositioned by the FRA at anytime on a track or portion of a track that is exclusively occupied by the FRA Geometry Car and protected by FRA owned devices. Within a locomotive servicing area or car shop area, a 'railroad's blue signal rules' will be in place and complied with, to protect 'anyone' on, under or about the FRA Geometry Car. The FRA Geometry Car may be repositioned, only after the movement is authorized by the railroad employee-in-charge of the workmen and approved by the FRA.

15. When unoccupied and at the request of FRA, FRA Geometry Car protection will be provided by the railroad. Additionally, the FRA Geometry Car will not be relocated or coupled to other rolling equipment without permission by the FRA. To prevent undesirable access, a remotely controlled or manually operated switch providing entrance to the track occupied by the FRA Geometry Car will be aligned against movement to that track. Where provided, electrical or mechanical blocking devices will be used on the switch and signal controls. Additionally, the switch will be secured with an effective locking device, exclusive to FRA. The switch stand's operating mechanism will be equipped with a visible all-weather display tag warning any users, "**Out of Service-Do Not Operate.**" If a switch cannot be aligned and locked, as described, derails capable of restricting access will be used instead of an effective locking device. The placement (Protective devices, owned by FRA, will be placed not less than 150-feet from each end of the FRA Geometry Car, where appropriate of front and rear "portable train control" signs will be displayed in the center of the track, adjacent to derails, marking the presence of the FRA Geometry Car. The warning sign will consist of 16x24-inch red placard, signifying rolling equipment cannot pass. A FRA Geometry Car wheel will be securely chocked to prohibit movement on its own.

38. Inhalation Hazard Car Handling Instructions

The following are requirements for handling tank car shipments containing materials that require the notation "Poison (Toxic)-Inhalation Hazard" and "Inhalation Hazard" operating in non-signaled track warrant control territory on the following subdivisions:

- Amory Subdivision - Between Amory and Columbus
- Beatrice Subdivision - Between Crete and Beatrice
- Conroe Subdivision - Between Silsbee and Somerville
- El Paso Subdivision - Between Belen and El Paso
- Gateway Subdivision - Between Klamath Falls and Keddie
- Great Falls Subdivision - Between Great Falls and Shelby
- Laurel Subdivision - Between Great Falls and Laurel
- Marshall Subdivision - Between Wilmar and Sioux City
- Oregon Trunk Subdivision - Between Chemult and Bend
- Phoenix Subdivision - Between West Williams Jct. and Phoenix
- Silsbee Subdivision - Between Beaumont and Silsbee
- Sioux City Subdivision - Between Sioux City and Ashland
- Sweet Grass Subdivision - Between Shelby and Sweet Grass
- Zap Line Subdivision - Between Beulah and Mandan

Work Order documents and other TSS commands will identify shipments with the "IH" SCHI code.

The train list and profile for train crews will carry the banner wording of "IH TRAIN" when moving on the restricted subdivisions and carrying two or more loaded poison (toxic) inhalation hazard tank cars and/or inhalation hazard tank cars.

Note: On the Phoenix Subdivision between MP 172.5 and Phoenix, the following instructions will be in effect if the train is carrying one or more loaded poison (toxic) inhalation hazard tank cars and/or inhalation hazard tank cars. The two or more loaded tank car requirement will remain in effect between West Williams Jct. and MP 172.5.

The following instructions are in effect on the subdivisions or part of the subdivisions listed above:

- The route must be evaluated prior to an IH Train operating on the subdivisions indicated above. The IH Train must be the next movement on these subdivisions after the evaluation. If an authority is granted after the route evaluation has been performed, and the IH Train has not passed location where track will be entered, another route evaluation must be performed prior to authorizing the IH Train.

- The Transportation Service Plan gathers cars to run on .. specified days. On days scheduled to operate with TIH/PIH cars, a train should not be reduced to one TIH/PIH car in an effort to avoid the required Track Evaluation.
- Maximum speed of IH Trains is 35 MPH.
- When meeting any other train, the IH Train will hold the main track. When meeting another IH Train, the IH train with the most Poison (Toxic)-Inhalation Hazard and Inhalation Hazard shipments will hold the main track.
- A train on a siding to meet an IH Train must be stopped before the IH Train on the main track passes. Conductors of the IH Trains will be advised by the dispatcher of meeting points and the conductors will verify that the train in the .. siding is stopped before the IH Train has passed.
- MW employees must not operate main track switches when using individual train detection (lone worker or lookout for minor work or routine inspection). Authority must be obtained to operate main track switches.
- When MW employees are working with a Form B Track .. Bulletin, after the route is evaluated for the IH Train movement, main track switches must not be operated and maintenance must not be performed on the track until the IH Train has passed.

Unless relieved of the requirement to do so by the BNSF train dispatcher, the crew operating a TIH/PIH train on a foreign railroad must, at the earliest opportunity, notify the other railroad's train dispatcher that the train is a TIH/PIH train.

39. Rule of the Week /Dispatcher Daily Job Briefings

All TY&E, Engineering and Mechanical employees must review the requirements of the Rule of the Week. Train Dispatchers must review the Dispatcher Daily Job Briefing distributed by email. Please direct any questions you may have to your immediate supervisor. You should be prepared to discuss the requirements of the Rule of the Week or the Dispatcher Daily Job Briefing with your supervisor. These rules/briefings will be included in Operations Testing procedures.

40. Rear End Restricted Cars

Cars restricted to "rear end only" may be in train up to five cars ahead of rear car. Certain cars may require extreme rear end movement because of mechanical deficiencies.

41. Car Identification B-End

Conventional Equipment: The "B" end of the car is the end where the hand brake is located. Face the "B" end of the car. The left side of the car is to your left and the right side of the car is to your right as you face the "B" end. Count axles from the "B" end beginning with No. 1 being closest to you and No. 4 being farthest away. If the defective journal or wheel is the third axle away from the "B" end of the car on the left side as you face the equipment you will report it as "L3."

Articulated Equipment: The important thing is to locate the "B" end of the car. Each segment or unit of such cars is identified by a letter. This letter and the car number are shown on small badge plates located on each segment or unit of the car. The end segments are designated "A" and "B." The interior segments or units are designed (beginning at the "B" end) by the letters "C" through "E" on the five unit or segment cars. Locate the "B" end of the car as indicated by the stencil. Do not rely on the location of the hand brake. Many of these cars are equipped with a hand brake on each end.