



STUDY MATERIAL FOR
PRO. TRAIN MANAGER

बहु विभागीय क्षेत्रीय प्रशिक्षण
संस्थान बिलासपुर
**MULTI DISCIPLINARY ZONAL
TRAINING INSTITUTE BILASPUR**

DEFINITION

1. **Act-** Means The Railway Act, 1989 (24 of 1989)
2. **Adequate Distance-** Means the distance to ensure safety.
3. **Approaching Light-** means an arrangement in which the lighting of signals is controlled automatically by the Commissioner of Railway Safety.
 - a. **Block Overlap-**While granting line clear to a train, the distance kept clear beyond the first stop signal of the same direction is called **Block Overlap**. It shall be not less than 400 meters in TALQ signaling system and not less than 180 meters in MAUQ/MACLS signaling system.
 - b. **Signal Overlap-**For the direct reception of train without stopping at the first stop signal, while taking OFF the first stop signal, the line should be clear of any obstructions not only up to the Starter Signal (double line)/Trailing point (single line) but also for an adequate distance beyond it .This adequate distance is called **Signal Overlap**. It shall be not less than 180 meters in TALQ signaling system and not less than 120 meters in MALQ/MACLS signaling system.
4. **Approved Special Instruction-** Means special instructions approved of or prescribed by the Commissioner of Railway Safety.
5. **Authorized Officer-** Means the person who is duly empowered by general or special order of the Railway Administration, either by name or by virtue of his office, to issue instructions or to do any other things.

The **Principal Chief Operations Manager** is empowered by a Special order issued by name by the General Manager and is the Authorized Officer under this Rule for the purpose.
6. **Authority to Proceed-** It means the authority given to the Loco pilot of a Train, **under the system of working**, to enter the Block Section with his train.
 - a. On **Double line**, the authority to proceed is **Taking Off** the Last Stop Signal. In the event of taking off the last stop signal is not possible, the Loco Pilot shall be given T/369(3b) as authority to proceed, on which the private number obtained from the station in advance while getting line clear, is written.
 - b. **On Single Line**
 1. Where Token less block instrument is provided, taking OFF the last stop signal is the Authority to Proceed.
 2. Where Token Block Instrument is provided, token is given to the Loco Pilot as Authority to Proceed.
 3. Where Line Clear is obtained over telephone, paper line clear ticket TC-1425(UP)/ TD-1425(DN) is issued to the Loco Pilot as Authority To Proceed.
 4. When Token Block Instrument becomes defective, paper line clear ticket TC-1425(UP)/ TD-1425(DN) is issued to the Loco Pilot as Authority to Proceed.
 5. Where Token Block Instrument is provided, token is extracted but it is not possible to Take OFF the last stop signal, T/369(3b) shall be issued to the Loco Pilot as Authority to Proceed.

7. **Axle Counter-** Means an electrical device which, when provided at two given points on the track, proves by counting axles in and counting axles out, whether the section of the track between the said points is clear or occupied.
8. **Block Back-** Means to dispatch a message from a block station intimating to the Block Station immediately in rear on the double line, or to the next block station on either side on a single line, that the block section is obstructed or is to be obstructed.
9. **Block Forward-** Means to dispatch a message from a block station on a double line to the block station immediately in advance the fact that the block section in advance is obstructed or is to be obstructed.
10. **Block Section-** Means that portion of the running line between two block stations on to which no running train may enter until Line Clear has been received from the block station at the other end of the block station.
11. **Centralized Traffic Control-** Means a system by which the working of the trains over a route, to which the system applies, is governed by fixed signals remotely controlled from a designated place.
12. **Centralized Traffic Control Operator-** Means the person on duty who may for the time being is responsible for the working of trains on the centralized traffic control.
13. **Chief Commissioner of Railway Safety-** Means an inspector appointed to exercise any function under the **Act**, and includes a Commissioner of Railway Safety.
14. **Competent Railway Servant-** Means the railway servant duly qualified to undertake and perform the duties entrusted to him.
15. **Connections-** When used in reference to a running line, means the points and crossings or other appliances used to connect such line with other lines or to cross it.
16. **Controller-** Means a railway servant on duty who may for the time being be responsible for regulating the working of traffic on a section of a railway provided with the system of speech communication.
17. **Day-** Means from sunrise to sunset.
18. **Direction of Traffic-** Means
 - a) On double line, the direction for which the line is signaled.
 - b) On single line, the direction for time being established, under the system of working, to allow trains to move in that direction.
19. **Driver-** Means the engine driver or any other competent railway servant for the time being in charge of driving the train.
20. **Electrical Communication Instrument-** Means either a telephone or a Morse Telegraph instrument.

21. Facing And Trailing Points- Points are facing or trailing in accordance with the direction of a train or vehicle moves over them. Point are said to be **facing points** when by their operation, a train approaching them can be directly diverted from the line upon which it is running. Otherwise the points are called **Trailing Points**.

22. Fixed Signal- Means a signal of fixed location indicating a condition affecting the movement of a train and includes a semaphore arm or disc or fixed light for use by the day and fixed light for use by night.

S.R. 1.02(22)-1- Colour light signals- A colour light signal is also a fixed signal. A colour light signal is a signal which shows a coloured light (or lights) both by day and by night.

23. Fouling Mark- Means the mark at which the infringement of Fixed Standard Dimensions occurs, where two lines cross or join one another.



24. Gangman- Means a railway servant employed on permanent way or work connected therewith.

25. Gangmate- Means the person in charge of a gang of workmen employed on permanent way or work connected therewith.

26. Gateman- Means a competent railway servant posted at a level crossing for working of Gates.

27. Goods Train- Means a train (other than a material train) intended solely or mainly for the carriage of animals or goods.

28. Guard- Means the railway servant in charge of a train and includes a Assistant Guard or any other railway servant who may for the time being be performing the duties of a Guard.

29. Inspectors of Way or Works- Means any Inspector of Assistant Inspector responsible for the construction and maintenance of permanent way, points and signals, bridges or other works connected therewith.

S.R. 1.02(29).Inspector of Way and Works and other technical supervisors have also been designated as Junior Engineer Grade I/II.

30. Interlocking- Means an arrangement of signals, points and other appliances, operated from a panel or lever frame, so interconnected by mechanical locking or electrical locking or both that their operation must take place in a proper sequence to ensure safety.

31. Intermediate Block Post- Means a “C” Class station on a single/double/multiple line, remotely controlled from the block station in rear.

32. Intermediate Block Signaling- Means an arrangement of signaling on single/double/multiple line in which a long block section is split into two portions each constitutes a separate block section by providing an Intermediate Block Post.

- 33. Isolation-** Means an arrangement, secured by the setting of points or other approved means, to protect the line so isolated from the danger of obstruction from other connected line or lines.
- 34. Last Stop signal-** Means the fixed Stop signal of a station controlling the entry of trains into the next block section.
- 35. Level crossing-** Means the intersection of road with railway track at the same level.
- 36. Level crossing gate-** Means any form of movable barrier, including a chain, capable of being closed across the road at the level crossing, but does not include a wicket or a turnstile for the use of pedestrians;
- (a) Traffic Gates-** Level crossing gates which are located between the outermost stop signals of a station are termed as Traffic Gates. The manning and operation of traffic gates shall be under the control of operating department.
- (b) Engineering Gates** – Level crossing gates, other than Traffic gates, are termed as Engineering Gates.
- 37. Line Clear-** Means the permission given from a block station to a block station in rear for a train to leave the latter and approach the former; or the permission obtained by a block station from a block station in advance for a train to leave the former and proceed towards the latter.
- 38. Main Line-** Means the line ordinarily used for running trains through and between stations.
- 39. Material train-** Means a departmental train intended solely or mainly for carriage of railway material when picked up or put down or for execution of works, either between stations or within station limits.
- 40. Mixed train-** Means a train intended for the carriage of passengers and goods, or of passengers, animals and goods.
- 41. Multiple-aspect signaling-** Means a signaling arrangement in which signals display at any one time any one of the three or more aspects and in which the aspect of every signal is pre-warned by the aspect of the previous signal or signals.
- 42. Night-** Means from sunset to sunrise.
- 43. Obstruction-** And its cognate expressions include a train, vehicle or obstacle on or fouling a line, or any condition which is dangerous to trains.
- 44. Overhead Equipment-** Means the electrical conductors over the tracks together with their associated fittings, insulators and other attachments, by means of which they are suspended and registered in position for the purpose of electric traction.
- 45. Passenger Train-** Means a train intended solely or mainly for the carriage of passengers and other coaching traffic, and includes a troop train.

46. Point and Trap Indicators- Are not signals, but are appliances fitted to and working with points to indicate by day or by night the position in which the points are set;

. Point Indicators :- All the Point Indicators must show a white target by day or white light by night in both directions when the points are set for the straight, no target by day but a green light by night in both directions when the points are set for the turnout.

Trap Indicators:- Trap Indicators installed to protect and indicate the position of the trap points or derailing switches must show a red target by day and red light by night in both directions when the switch is open or the derail is on the rail and no target by day but a green light by night in both directions when the switch is closed or the derail is off the rail.

Sr. No.	Point Indicator	Trap Indicator
1	It is installed to show the indication of the of the points	It shows the indication of the trap or the derailing switch.
2	When the point are set for the straight line, it shows white mark by day and white light by night	When the derailing switch is open, it shows red mark by day and red light by night.
3	When the points are set for the T/out, it shows no mark by day and green light by night.	When the derailing is closed, it shows no mark by day and green light by night.

47. Running Line- Means the line governed by one or more signals and includes connections, if any, used by a train when entering or leaving a station or when passing through a station or between stations.

48. Running Train- Means a train which has started under an authority to proceed and has not completed its journey.

49. Shunting- Means the movement of a vehicle or vehicles with or without an engine or of any engine or any other self-propelled vehicle, for the purpose of attaching, detaching or transfer or for any other purpose.

50. Special Instruction- Means instructions issued from time to time by the authorized officer in respect to particular cases or special circumstances.

51. Station- Means any place on the line of railway at which traffic is dealt with, or at which an authority to proceed is given under the system of working.

S.R. 1.02(51)-1. Definition of Station- Whenever the word “Station” is used in the Subsidiary rules; it must be understood to mean either a Block Station or a Block Cabin.

52. Station Limit- Means the portion of a railway which is under the control of a Station Master and is situated between the outermost signals of the stations or as may be specified by special instructions.

S.R. 1.02(52)-1. On double line, station limits will be separate for each direction.

- 53. Station Master-** Means the person on duty who is for the time being responsible for the working of the traffic within station limits, and includes any person who is for the time being in independent charge of the working of any signals and responsible for the working of trains under the system of working in force.
- 54. Station Section-** Means that section of the station limits-
1. At a B Class station provided with two-aspect signals, which is includes
 - a) **On a double line**, between the Home Signal and the Last Stop Signal of the station on either direction.
 - b) **On single Line-**
 - i) Between Shunting Limit Board (SLBs) or Advance Starters (if any), or
 - ii) Between Home Signals if there are no Shunting Limit Boards or Advance Starters; or
 - iii) Between the outermost facing points, if there are no Home Signals of Shunting Limit Boards or Advance Starters;
 2. At B Class Station, provided with manually operated multiple aspect or modified lower quadrant signals, which is include-
 - a) **On Double Line-**
 - i) Between the outermost facing points and the Last Stop Signal of the station in either direction, or
 - ii) Between the Block Section Limit Board (BSLB) , where provided, and the Last Stop Signals of the station in either direction, or
 - b) **On Single Line-**
 - i) Between the Shunting Limit Boards or Advance Starters (if any), or
 - ii) Between the outermost facing points, if there are no Shunting limit Boards or Advance Starters.

55. Subsidiary Rule- Means a special instruction which is subservient to the General Rule to which it relates and shall not be at variance with any General Rule.

56. System Of Working- Means the system adopted for the time being for the working of trains on any portion of railway.

57. Track Circuit- Means an electrical circuit provided to detect the presence of a vehicle on a portion of track, the rails of the track forming a part of the circuit.

58. Train- Means an engine with or without vehicles attached, or any self-propelled vehicle with or without a trailer, which cannot be readily lifted off the track.

59. Train Examiner- Means a railway servant duly qualified to examine trains and certify their fitness for safe running and includes any other railway servant who may for the time being be performing the duties of a Train Examiner.

60. Two-aspect signaling- Means a signaling arrangement in which each signal displays at any one time either of the two aspect

CLASSIFICATION OF STATION

Need for division into Block and Non Block Stations:

Under the Absolute Block System a line is divided into a number of units or sections according to the speed and density of Traffic by providing stations – called Block Stations.

To serve the needs of public sometimes some small stopping place have to be opened in the middle of the Block Section, which are purely for commercial purpose – These are Non Block Stations.

1. Block Station-

Block Stations are those stations at which the Loco Pilot must obtain an Authority to Proceed under the system of working to enter the block section with his train. There are three classes of stations under the Absolute Block System

'A' Class Station

A station where line clear may not be granted for a train unless the line on which it is intended to receive the train is clear off any obstruction for at least 400 meters beyond the home signal or up to the starter.

Note- 'A' Class stations are found only in single /double line and in TALQ signalling system.

Neutral Zone- besides the Starter signal, if Advance Starter Signal is provided in A Class Station, the portion between the Starter and Advance Starter signal is called the neutral zone. This section is neither a part of the block section in rear nor a part the block section in advance. The Block Section in rear ends at Starter Signal and the block section in advance starts at the Advance Starter Signal.

'B' Class Station-

The Station where line clear may be given for a train before the line has been cleared for the reception of the train within the station section. Station section is found only in B Class Station.

B Class Stations are found in TALQ, MAUQ/MACLS, Single Line and in Double Line.

'C' Class Station-

It is block hut, where line clear may not be granted for a train, unless the whole of the last preceding has passed completely at least 400 meters beyond the home signal, and is continuing its journey. This will also include an intermediate block post (IBP).

2. Non-Block Station or 'D' Class Station-

These stations are stopping place which are situated between two consecutive block stations, and do not form the boundary of any block section.

3. Special Class Station

This is a station which cannot be worked under 'A', 'B', 'C' and 'D' Class conditions. The SWR of such station must have the approval of CRS.

Minimum Signals In different Classes of stations

Station	TALQ		MAUQ		Remark
	Single Line	Double Line	Single Line	Double Line	
A Class	Warner, Home, Starter	Warner, Home, Starter	-----	-----	Neutral Zone
B Class	Outer, Home	Outer, Home , Starter	Distant, Home, Starter	Distant, Home, Starter	Station Section
C Class	Warner, Home	Warner, Home	Distant, Home	Distant, Home	Overlapping Block Section
Spl Class	Signals are provided as per the approval of CRS				

SIGNALS

NECESSITIES OF SIGNALS:

1. To protect the Obstructions.
2. To give prior information about the obstructions.
3. To give pre-indication of route to the loco pilot.
4. To control the traffics.

PRINCIPLES OF SIGNALS:

1. Unless and until approved by special instructions, the signals shall always be placed to the left of or above the related line.
2. The fixed signals shall be so fixed that; it would be continuously visible to the loco pilot.
3. The front side of the semaphore signals shall be painted with the color which it is illuminated at night at its ON position.
4. The arm of the semaphore stop signals is painted red and there is white strip on it. If the arm is painted yellow, then the strip will be painted black instead of white strip.
5. In general, the normal position of any stop signal shall be ON and shall be taken OFF just before the arrival of the train and shall be taken ON after passage of the train. On the other hand the normal aspect of Automatic Stop Signal is "Proceed" (Green).
6. The signals are so designed that it will remain at ON when they become defective.
7. If any signal is not in use, it shall not be illuminated at night and a wooden cross bar will be provided on it.
8. If a signal is not visible to the to the SM or signal operator from his office (Cabin or SM's Office) then a Signal Repeater will be provided for the signal.
9. At one time, only one signal will be provided at a signal post, but under approved special instruction more than one signal may be provided in a single post. In that situation, the highest semaphore arm will represent the main signal and left arm will indicate the loco pilot to move in left line and the right arm will indicate to move in the right line.
10. No signal shall be fixed without prior approval of the Commissioner Of Railway Safety (CRS)
11. No signals shall be taken OFF without the permission of SM.
12. The signals used at night may be used in the day in tunnels and tempestuous weather.
13. If a new signal is to be erected or it needs to be change the position of the signal, then caution orders shall be issued to the Loco Pilot and Guard for 15 days to inform them about the position of the signal.
14. If a signal is not visible to the Loco Pilot at its minimum sighting distance, then Repeating Signal or Co-Acting Signal shall be provided as per the requirement.
15. At Non-Interlocked Station, a single signal shall be provided for all the lines in same direction.
16. At Interlocked Stations, Bracketed Signal or Route Indicator should be provided to give indication of different lines.

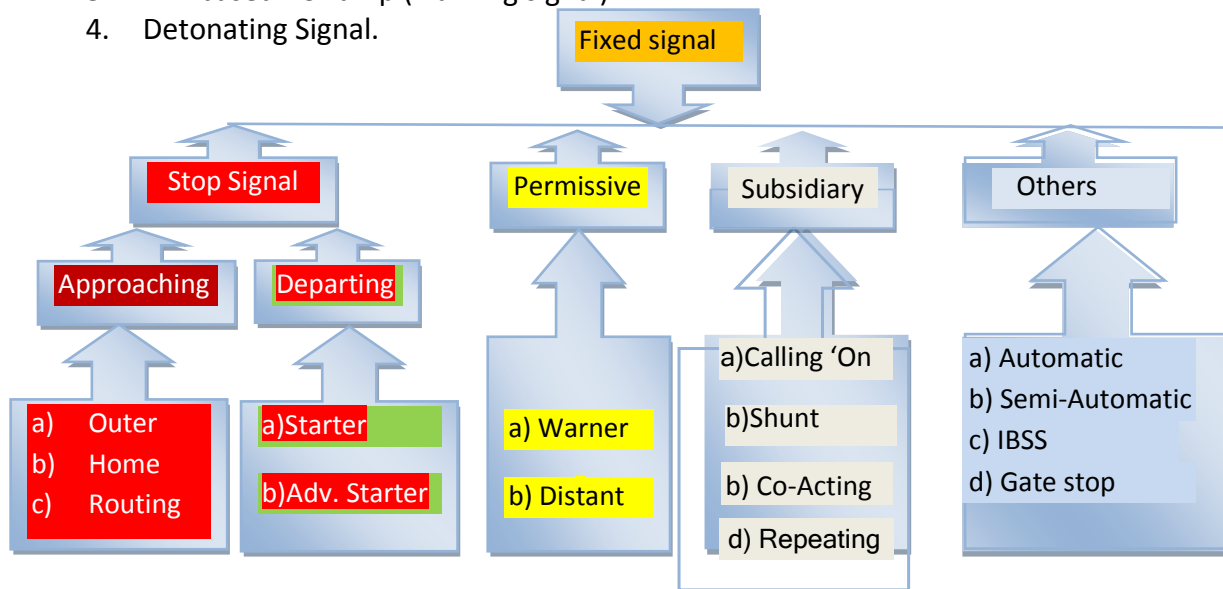


17. Where the Traffic are very low, under approved special instruction, a stop signal may be provided for both the direction at an adequate distance from the facing point.
18. In TALQ signaling system, where the trains pass through the station with a speed of more than 50 KMPH a Warner Signal may be provided.
19. The signal, once visible to the Loco Pilot should remain visible to him continuously until he reaches the signal. In regard to MACL all signal shall be visible for minimum period of 5 second at MPS.
20. In semaphore signal the back side of the signal shall be painted white and there will be a black strip on it.

In TALQ system the arm shall be lowered by 45° to 60° from its normal parallel position at ON when it is taken OFF. On the other hand in MAUQ system the arm will be raised by 45° or 90° from its normal parallel position at ON. At ON position the arm shall remain parallel. If the position of the arm is not as above, the signal shall be treated defective.

TYPES OF SIGNAL:

1. Fixed Signal
2. Hand Signal
3. LED based HS Lamp (warning signal)
4. Detonating Signal.



Minimum Sighting Distance (Advance Correction Slip-13 part 9)

It means, the minimum specified distance from which a signal shall be visible to the Loco Pilot, and it shall be as follows.

In TALQ system-

- Outer Signal
 - a) 1200 meters in those sections where sectional speed is 100 KMPH or above.
 - b) 800 meters where sectional speed is less than 100 KMPH.
 - c) 400 meter where Warner signal is separated.
- 2. Warner Signal on a post by itself 400 Meters
- 3. Home Signal 400 meters
- 4. Main Starter Signal 400 meters
- 5. All other signals 200 meters

In MAUQ/MACLS system-

- | | |
|--------------------------|------------|
| 1. Distance Signal | 400 meters |
| 2. Inner Distance Signal | 200 meters |
| 3. All Stop Signals | 200 meters |

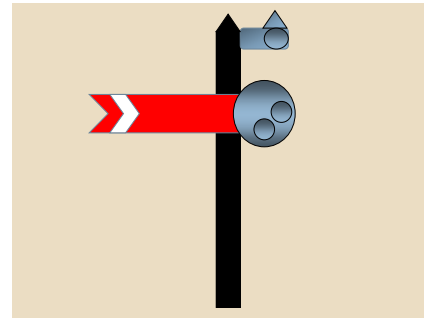
Note:- Where adequate visibility of stop signals cannot be maintained, Repeater Signal or Co-Acting Signal shall be provided, and if not possible, a suitable speed restriction shall be imposed.

Permissive Signal

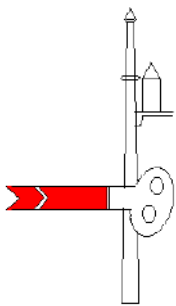
It is those signals which can be passed by the Loco Pilot even if the aspect of the signal is ON. The Warner Signal in TALQ signaling System and The Distance Signal in MAUQ/ MACLS signaling system are the permissive signals.

Warner Signal:- GR 3.6

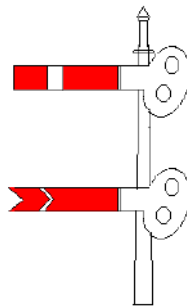
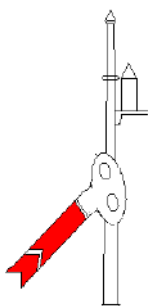
1. It is a permissive signal which is found only in TALQ signaling system in Central Railway.
2. The arms of these signals are painted red and the extreme end of the signal is fish-tailed. A parallel white strip is found at this end.
3. The Warner Signal is provided to warn the Loco Pilot that he is approaching to a stop signal or it indicates him about the condition of the block section ahead.
4. The Warner Signal is provided on a single post by itself or it may be provided below the first stop signal or below the last stop signal.
5. When Warner Signal is provided on a single post, a fixed green light shall be illuminated 1 ½ to 2 meters above it.
6. When Warner Signal is placed below the first stop signal or the last stop signal, the variable light of the Stop Signal take the place of fixed green light of the Warner signal and the mechanical arrangement shall be such that the Warner Signal cannot be taken OFF while the stop signal above it is ON.
7. If Warner Signal is provided on a post by itself, it will be placed at an adequate distance before the First Stop signal or Gate Stop Signal.
8. When Warner Signal is provided below a stop signal, the Loco Pilot shall first obey the aspect of Stop Signal.
9. At ON position the arm of the Warner Signal will be parallel to the ground in the day and at night it will be illuminated with red light. The 'ON' aspect of the Warner Signal warns the Loco Pilot to proceed cautiously and be prepared to stop at next stop signal.
10. Warner Signal shall be taken OFF in ASHOW order. In OFF condition the arm of the signal shall be lowered by 45-60 degree in the day and will be illuminated with green light at night.



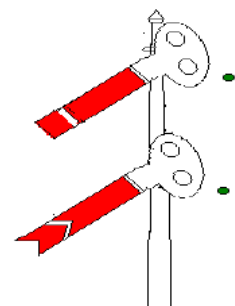
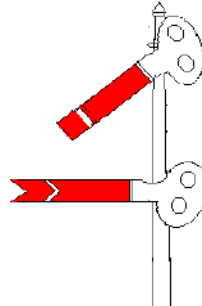
11. The OFF aspect of the Warner Signal indicates the followings-
- a) The block section ahead is free from any obstruction
 - b) Line clear has been obtained for the train.
 - c) The train has to pass THROUGH main line.
 - d) All the approaching and departure signals of the main line has been taken OFF for the train.



Proceed cautiously proceed
proceed



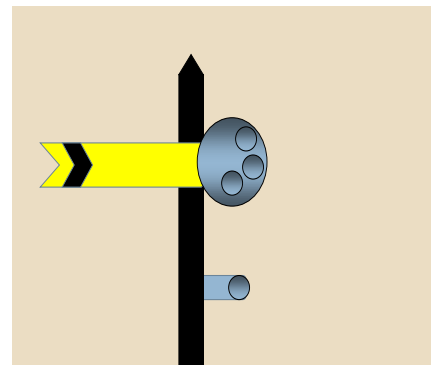
stop and proceed



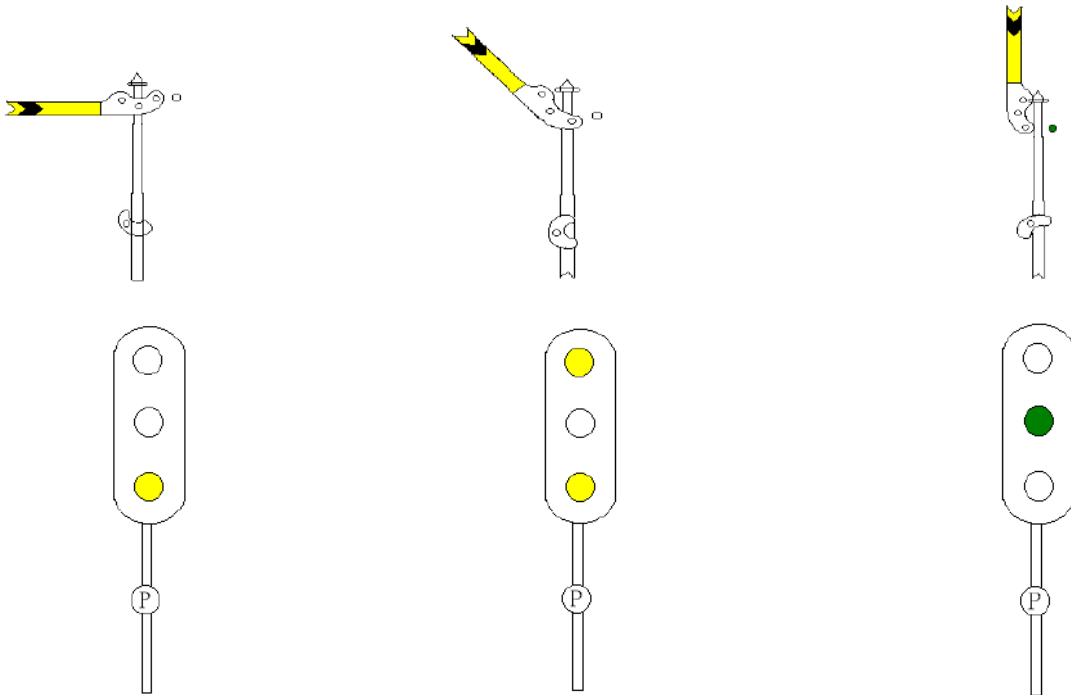
proceed cautiously

DISTANT SIGNAL. GR 3.07

1. It is permissive signal which is found only in MAUQ / MACLS signaling system.
2. A semaphore Distant Signal has a fish tailed arm painted with yellow color and has a black strip at its end.
3. In MACLS system it is provided with a white circular disk on which "P" is painted in black for its identification.
4. It is placed at 1000 meters in rear of the First Stop Signal of the station or the Gate Stop signal.
5. It indicates the condition of the Stop Signal ahead.
6. It is provided on a post by itself or in MACLS system, it may be provided with the Last Stop Signal of the station or with the Gate Signal under the approved special instruction. In such condition the "P" marker shall not be provided with.
7. When provided with the LSS of the station or with the Gate signal oe IBSS, the arrangement shall be such that the signal shall not display less restrictive than the "Stop" aspect till "Line Clear" has been obtained from the station ahead in the former case and until the level crossing gates have been closed and locked against the road traffic in the later case.



8. Where necessary more than one Distant Signal may be provided. In such case, the outermost signal is called the Distant Signal and is located at an adequate distance(2000 m) from the FSS. The other is called Inner Distant Signal.
9. Where double Distant Signals are provided, the Distant Signal is identified by alternate Yellow and Black bands painted on the post with “P” marker.



Aspects of Distant Signal where one distant signal is provided

Aspects	Meaning
One Yellow (Caution)	Proceed and be prepared to stop at next stop signal
Two Yellow (Attention)	Proceed and be prepared to pass next signal at such restricted speed as may be prescribed by special instruction.
Green (Proceed)	Proceed *

* Provided that all concerning is informed about the changing.

Aspects of Distant Signal where double distant signals are provided:

S.	Distant Signal	Inner Distant Signal	Home Signal	Indication
1	Green	Green	Green	For run through trains
2	Green	Double Yellow	Single Yellow	For trains being received on main line.
3	Double Yellow	Double Yellow	Yellow with Route Indicator	For trains being received on loop line.
4	Double Yellow	Single Yellow	Red	For trains being stopped at Home signal

STOP SIGNALS

Stop signals are such signals which the Loco Pilot shall not pass at its ON position without any authority. They are of two categories.

- 1) Approaching Stop Signals
- 2) Departure Stop Signals.

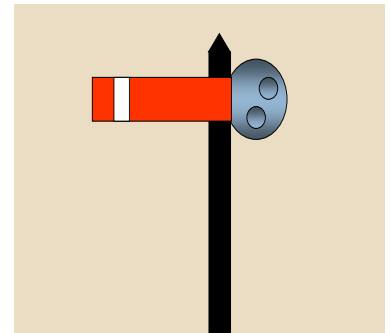
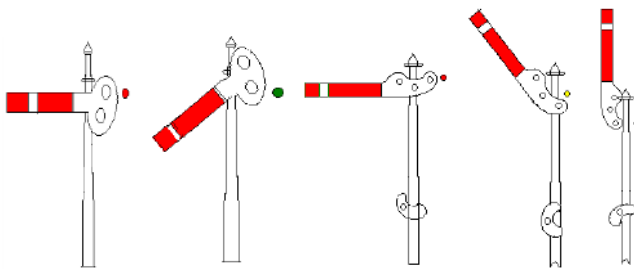
Approaching Stop Signals

The Stop Signals which controls the movement of trains approaching a station are called Approaching Stop Signals. They are of three kinds- Outer, Home, Routing Signals.

TALQ- Home, Routing

MAUQ- Home, Routing

MACLS- Home, Inner Home or Junction type Route Indicator.



OUTER SIGNAL GR-3.09

1. Outer Signal is found only in B Class Station and in TALQ Signaling System.
2. It is found both in Single and Double Line.
3. It is the First Stop Signal (FSS) of the Station. (In B-Class, TALQ). It is provided at an adequate distance outside the point up to which the line may be obstructed after Line Clear has been granted to or obtained by a station in rear.
4. This Signal cannot be taken OFF for Shunting purpose.
5. In double line it is located at 400 meters in rear of the Home Signal and in single line it is located 400/ 580 meters in rear of the Home Signal.
6. In Central Railway the Outer Signal is interlocked with Home Signal.
7. Under approved special instruction, one Outer Signal may be provided in either direction in the single line section at an adequate distance from the facing point.

HOME SIGNAL GR-3.09

1. It is approaching stop signal.
2. The Home Signal is the First Stop Signal (FSS) of the station where no outer signal is provided. But it is second stop signal where an outer signal is provided. At C-Class Station it is first and last stop signal of the station.
3. It shall be provided outside all connections and points on the line to which it refers.
4. It protects the all the facing points of the line it refers and in OFF condition it guarantees all the facing points being set and locked for the related line.
5. Where there are multiple lines, in TALQ/MAUQ Bracketed Home is provided on a single post and in MACLS system Home Signal is provided with Route Indicators (otherwise called Lunar Light, in which 5 bulbs is provided out of which at least 3 bulbs should be illuminated unless it is treated to be defective.)
6. At C-Class Station, Home Signal being the First and Last Stop Signal of the station, cannot be taken OFF until line clear is obtained from the station in advance.

ROUTING SIGNAL GR-3.09

1. It is approaching stop signal which controls the movement of the train approaching to a station.
2. This signal is provided in such situation where the home signal fails to indicate the Loco Pilot on which line out of a number of lines he will proceed with his train.
3. In semaphore signal it is of bracketed type.
4. It can not be taken OFF for shunting purpose.

DEPARTURE STOP SIGNALS GR-3.10

The Stop signal which controls the movement of the trains leaving the station are called the departure signals. They are of three kinds-

1. Starter
2. Intermediate Starter
3. Advance Starter.

STARTER SIGNAL-

1. When train leaving a station is guided by only one starting signal, it is the Last Stop Signal of the station and is called the Starter.
2. It located in such a place that it protects the facing points connecting the other lines and the fouling mark.
3. THE OFF condition of this signal guarantees the Loco Pilot about the line being clear of any obstruction up to the next stop signal and also guarantees about the points being set and locked.
4. If the Starter Signal is the Last Stop Signal of the station it can only be taken OFF when line clear is obtained from the station in advance.
5. If the Starter signal is free from Advance Starter, it can be taken OFF for shunting purpose.

ADVANCE STARTER SIGNAL-

1. When train leaving a station is guided by more than one Starter Signal, the outermost starting signal is the Last Stop Signal of the Station and is called the Advance Starter.
2. The Starter where only one such signal is provided or the Advance Starter, shall be fixed at the limit beyond which no train may pass, unless the Loco Pilot is given the authority to proceed required under the system of working and shall be placed outside all the connections and points on the line to which it refers
3. Being the Last Stop Signal of the Station, it controls the entrance of the train into the Block Section.
4. On double line, taking OFF the Advance Starter Signal is Authority to Proceed for the Loco Pilot.
5. On double line and on single line with token less block instrument, the Advance Starter signal is interlocked with the block instrument.
6. This signal cannot be taken OFF for shunting operation or shunting operation beyond this limit shall be carried out only in accordance with the special instructions.

INTERMEDIATE STARTER SIGNAL-

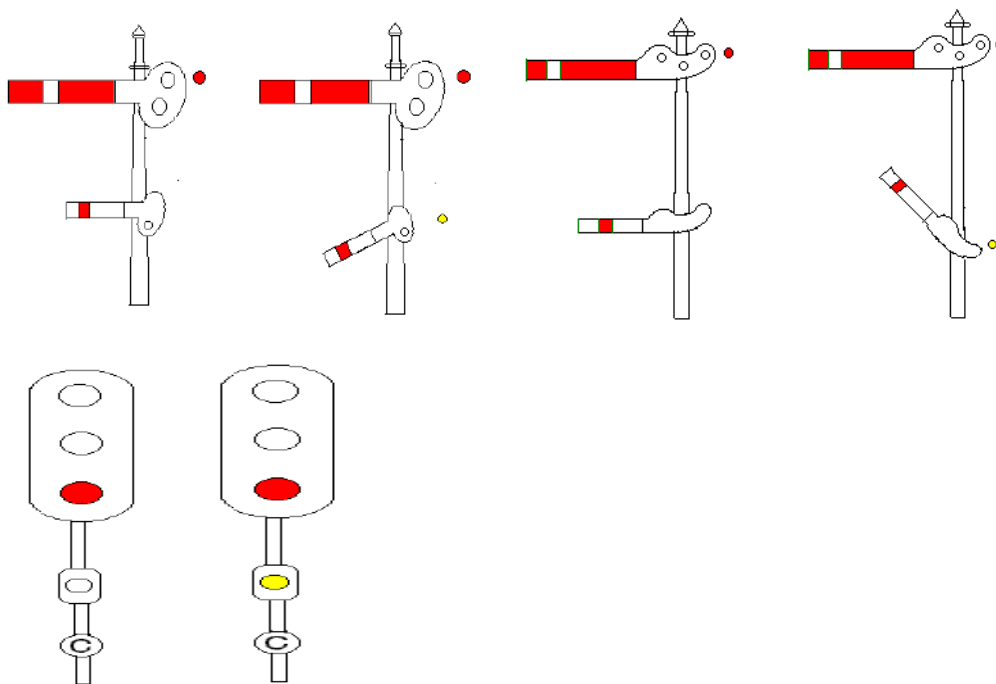
1. At junction stations, Intermediate Starter signal is provided between Starter and Advance Starter signals as per the requirement.
2. Intermediate Starter signal can be of Bracketed type or provided with route indicator.
3. It guarantees the line being clear up to the next stop signal and the points being set and locked.

SUBSIDIARY SIGNALS

Besides the main signal, some signals are provided at the station for the safe movement of the trains. These signals are called Subsidiary Signals.

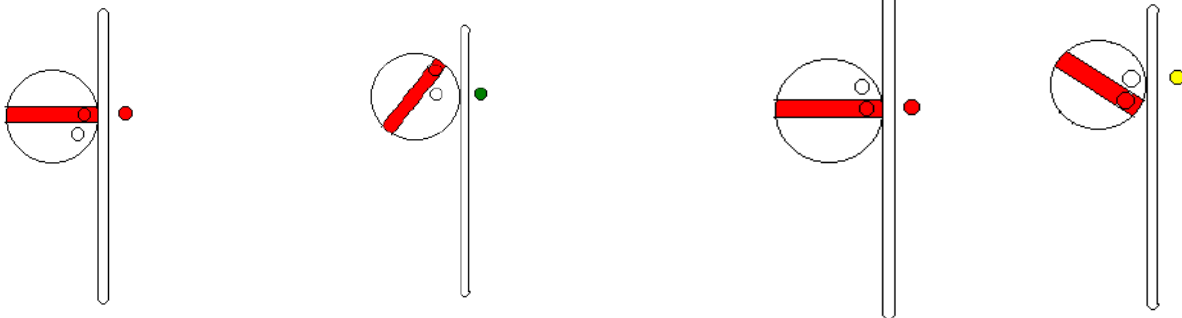
CALLING-ON SIGNAL-

- 1) Calling-On signal is a subsidiary signal which has no independent aspect in the On position and shall be –
 - a. a short square ended semaphore arm, or
 - b. a miniature colour light provided with a (C) marker.
- 2) A calling-on signal shall be fixed below a stop signal governing the approach of a train.
- 3) Under approved special instruction, a calling-on signal may be provided below any other Stop Signal except the Last Stop Signal.
- 4) A calling-on signal, when taken OFF, calls the Loco Pilot of a train to draw ahead with caution, after the train has been brought to a stop even though the Stop signal above is at ON and indicates to the Loco Pilot that he should be prepared to stop short of any obstruction.
- 5) A calling-on signal shall show no light in the ON position.
- 6) Calling-on signal is taken OFF under the following circumstances:
 - i) Main signal is defective.
 - ii) Condition of taking OFF the main signal is not fulfilled.
 - iii) Reception of train on an obstruction line.
 - iv) Track circuit/ axle counter is failed.



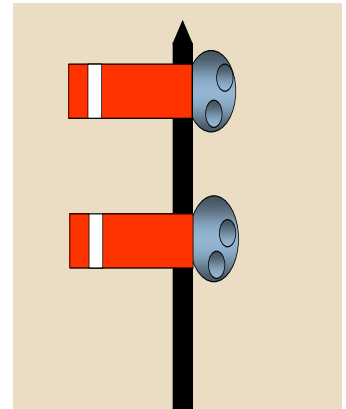
SHUNT SIGNAL-

- 1) It is subsidiary signal and shall be either
 - a) A white disk with a red bar across it.
 - b) A position light signal
 - c) Under special instruction a shunt signal may be miniature semaphore arm.
- 2) Shunt Signal controls the shunting movement.
- 3) A shunt signal may be placed on a post by itself or below a stop signal other than the first stop signal of a station.
- 4) More than one shunt signal may be provided on the same post and when so placed the top most shunt signal shall apply to the extreme left hand line and the second shunt signal from the top shall apply to the next line from the left and so on.
- 5) When a Shunt Signal is Taken OFF, it authorizes the Loco Pilot to draw ahead with caution for shunting purposes although stop signal, if any, above it is at ON.
- 6) When a Shunt Signal is placed below a Stop Signal, it shall show no light in ON position.
- 7) In case shunt signals are not provided, hand signal may be used for shunting.
- 8) If a Shunt Signal becomes defective during shunting, no separate authority is issued to pass it at ON position rather shunting description are written on T-806.



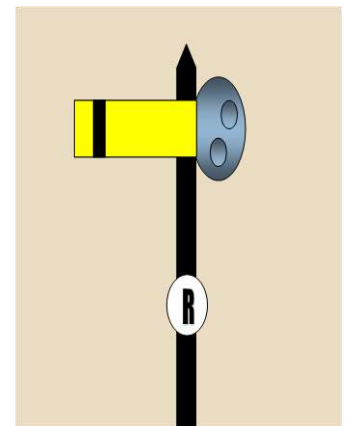
CO-ACTING SIGNAL-

1. **Co-Acting Signal** is a duplicate signal fixed below the main signals and are provided where, in consequence of the height of the signal post or there being an over bridge or any other obstructions, the arm of the main signal or the light in not visible to the Loco Pilot continuously when he is approaching it.
2. Co-Acting signals are fitted in such a height that either of the main signal or the co-acting signal is visible to the Loco Pilot continuously.
3. Both the Co-acting and Main Signals are operated by same lever. If one is defective other will be treated defective.



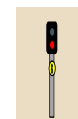
REPEATING SIGNAL-

1. When a signal is not visible from its minimum sighting distance due to curvature or any other reason a Repeating Signal is provided.
2. A signal fixed in rear of the a fixed signal for the purpose of repeating the aspect of the signal to the Loco Pilot of an approaching train in advance is called a Repeating Signal.
3. A repeating Signal shall be provided with an “R” marker and shall be of-
 - a. Banner type
 - b. A square ended semaphore arm
 - c. A Color Light Signal.
4. It is permissive type signal. It gives yellow light at its ON position which means the next signal is at its ON position. It shows a green light at its OFF position which means the next signal is also at its OFF position.



GATE STOP SIGNAL-

- 1) Gate stop signals are those signals which are placed at an adequate distance from the level crossing gate.
- 2) Generally the Gate Stop Signals of traffic gate are interlocked with the stop signals of the station.
- 3) Gate Stop Signal controls the rail traffics and protects the road traffics.
- 4) In OFF condition it ensures the Loco Pilot that the gate being closed and locked against the road traffics. On the other hand at its ON condition it informs Loco Pilot that the gate is open for the road traffic or is defective.
- 5) These signals are of two types-
 - i) G marker Gate Stop Signal
 - ii) Without G marker Gate Stop Signal.



- 6) **G marker Gate Stop Signal** - For the identification if these signals a yellow circular disk is provided on the signal post and "G" is painted in black. The Loco Pilot can pass these signals at their ON position after halting at the signal one minute by day and two minutes by night.
- 7) **Without "G" marker Gate Stop Signal**-Without G marker Gate Stop Signal is provided at such places if there is a Bridge or Rail-Cum-Road bridge in between the Gate and Gate Stop Signal or in case of traffic gate. The Loco Pilot cannot pass this signal at its ON position unless the train is piloted by the gateman.

GATE STOP SIGNALS IN AUTOMATIC SECTIONS- SR- 3.17-1

- I. Gate Stop Signal in Automatic Section
- II. Gate Stop Signal on Semi-Automatic Section.

1. Gate Stop Signal in Automatic Section with 'G' & illuminated 'A' marker-

- I. It is provided with the letter "G" in black on a yellow circular disk and white illuminated letter "A" against the black background.
- II. Illuminated "A" marker indicates that the Gate is closed and locked against the road traffic. At this situation if the main signal is at ON position, the Loco Pilot can pass this signal like the Automatic signal at ON.
- III. Extinguished 'A' marker indicates that the gate is open for the road traffic or the gate signal is defective. The Loco Pilot shall pass it at ON position as per the rules applicable to pass "G" marker Gate Stop Signal at ON.

2. .Gate Stop Signal in Automatic Section with illuminated'A' & 'AG' marker-

1. It protects the points in addition to the level crossing gate and shall be provided with white illuminated 'A' and white illuminated "AG" marker against black background. The indications of these signals are as follows-
 - Either "A" or "AG" will be illuminated at a time.
 - "A" marker will be illuminated when the gate is closed against the road traffic and the points are set and locked for the route. The Loco Pilot shall pass it at ON position as per the rules applicable to pass an automatic signal at ON position.
 - "AG" marker will be illuminated only when the gates are either open for the road traffic or have failed but points are correctly set and locked for the route and the Loco Pilot shall pass it at ON position as per the rules applicable to the 'G' marker type Gate Stop Signal.
 - If neither the "A" marker nor the "AG" marker is illuminated it means that neither the gate is closed against the road traffic nor the points are set and closed. The Loco Pilot shall not pass it at ON position until proper authority is issued to him.
- If both marker is illuminated it means gate signal is defective. The Loco Pilot shall not pass it at ON position until proper authority is issued to him.

KINDS OF FIXED STOP SIGNAL IN AUTOMATIC BLOCK TERRITORIES

1. It is stop signal found only in automatic signaling territories.
2. "A" is written on a white circular disk provided on the signal post for identification of this signal.
3. The normal aspect of these signals are PROCEED (GREEN).
4. These signals are automatically controlled by the passage of train.
5. These signals are found in those sections where no gates or points are found.
6. The Loco Pilot can pass these signals at their ON position by stopping one minute by day and two minutes by night at the signal.
7. When the Loco Pilot passes these signals at their OFF position, they automatically turn ON position and shall not replace to their OFF position until the line is clear from any obstructions not only up to the next stop signal but also for an adequate distance (120 mts) beyond the it (D/L section). In single line section line signal shall not assume 'OFF' unless line is clear upto next Automatic signal, provided that 180 m beyond next stop signal is manual signal, the line is clear 180 m beyond next manual stop signal.

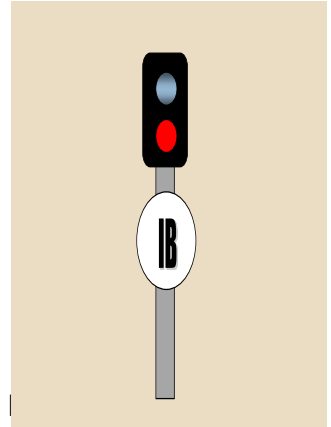
SEMI-AUTOMATIC STOP SIGNALS

1. A Semi-Automatic Stop Signal is capable of being operated either as an Automatic or as a Manual stop signal as per the requirement.
2. An illuminated white "A" marker is provided on the signal post for its identification.
3. These signals are operated by either by king lever or by AGGN/AGGYN button on the panel.
4. When "A" marker is illuminated on the signal post, the signal works as an Automatic Stop Signal. At this time the Loco Pilot can pass this signal at its ON position as an Automatic Stop Signal by halting at the signal by one minute in the day and two minutes by night.
5. When the "A" marker is extinguished, it works as a manually operated stop signal. At this situation the Loco Pilot cannot pass this signal at its ON position without proper authority.
6. These signals are generally provided at those automatic sections where gates and points are found.

S. N	Automatic Stop Signals	Semi-Automatic Stop Signals
1	"A" is written on a white circular disc on the signal post for its identification.	Illuminated "A" marker is provided on a black circular disc on the signal post for its identification.
2	This signal can be operated only as an automatic signal.	This signal can be operated both automatically and manually as per the requirement.
3	These signals are provided for the straight lines or lines without points and gates.	These signals are generally provided before- Cross Over, points in automatic sections.
4	The Loco Pilot can pass this signal at its ON position by halting at the signal one minute by day and two minutes by night.	When the "A" marker is illuminated, the Loco Pilot can pass this signal at ON like an automatic stop signal by halting one minute by day and two minutes by night. But when the "A" marker is extinguished the Loco Pilot cannot pass this signal at ON without any proper authority.
5	These signals are controlled automatically by the passage of trains.	These signals are operated by either king lever or by buttons on the panel.

INTERMEDIATE BLOCK SIGNALLING (IBS)

1. It is provided on single/double/multiple line MACLS territories.
2. It is an un-manned "C" class station, remotely controlled by the SM in rear.
3. The purpose of this system is to divide a long block section into two smaller block sections.
4. In this system the stop signal, provided in the block section is called as IBS.
5. Letters "IB" in black is painted on white circular disc for its identification.
6. Distant signal is provided at a distance OF 1000 meters for this signal.
7. The line between the LSS of the station in rear and up to 400 meters either track circuited or provided with the axle counters.
8. A track berthing indicator is provided at the station in rear to indicate whether the track circuited portion is clear or not. Track berthing indicator shows green or no light, if the track circuited portion is clear, and it shows red light if the track circuited portion is not clear.
9. A signal post telephone is provided on the IBS signal post to communicate with the SM in rear.
10. IBS signal is interlocked with the block instrument of the station in advance.
11. Line clear is obtained by the track circuit / axle counter indicator and the train can be dispatched up to the IBS signal. Line clear is obtained on the block instrument from the station in advance to take OFF the IBS signal.
12. As soon as the train clears the track circuited portion, another train can be dispatched up to the IBS signal.



Circumstances under Which the IBS signal is treated Closed

1. During TSL working on the double line.
2. On failure of the IBS signal itself.
3. On failure of the Distant Signal of the IBS at OFF position.
4. On failure of the Block Instruments.
5. On failure of the Track Circuit/Axle Counter.
6. On failure of the IBS signal repeater.
7. During All Communication Fail. (ACF).
8. On failure of T/C or/and BPAC between L.S.S and IBSS

PASSING IBS AT "ON"/ DEFECTIVE CONDITION- GR 3.75

1. When the Loco Pilot finds the IBS signal at On position, he shall bring his train to a stop in rear of the signal, advise the Guard of the fact by sounding one continuous long whistle and contact the SM in rear by the signal post telephone (SPT) provided on the IBS signal.
2. If the IBS is defective and the SM in rear has obtained line clear, then SM will give the private number & ID no. with his initial to the Loco Pilot, which the Loco Pilot must enter in his memo book and sound 0—0 whistle and start his train after exchanging alright signal with the Guard with normal speed.

3. If the talk back is defective, the Loco Pilot shall wait for 5 minutes at the signal and if the IBS is not taken OFF within this period, he shall sound one long whistle (—) and start his train after exchanging alright signal with the Guard. Under such circumstances the speed of the train shall not exceed 15 KMPH if the visibility is clear and 8KMPH if the visibility is not clear and he shall be extremely vigilant and continue to proceed cautiously till he reaches the foot of the next stop signal. On being received at the station ahead, he shall report the SM about the failure of the IBS signal and SPT.
4. As soon as SM in rear comes to know that the IBS signal along with SPT are defective, he shall treat the IBS signaling as closed and after obtaining line clear from the station ahead, he will issue T/369(3b) for next train clearly mentioning that Line Clear has obtained from the station in advance and quoting the private number & ID no received on getting Line Clear from the station in advance. Both the block section will be considered as a single block section. -
5. The SM on being contacted by LP unable to obtain line clear from station in advance, shall call Guard through LP. On being contacted by Guard he shall advise the Guard about the circumstances and give P/no. to prepare memo in duplicate and authorise LP through P./No mentioning therein to proceed next station with 15/8 KMPH speed restriction.

DETONATING SIGNAL
(GR- 3.59, 3.60. 3.61, SR. 3.61-1, GR. 3.62, 3.63, 3.64, SR. 3.64-1,2,3,4,5)

Detonating Signals, otherwise known as detonators or fog signals, are appliances which are fixed on the rails and when an engine or a vehicle passes over them, they explode with a loud report so as to attract the attention of the Loco Pilot.

- A detonator when required to be used shall be placed on the rail with the label or brand facing upwards and shall be fixed to the rail by bending the clasps around the head of the rail.
- In case of mixed gauge, detonators shall be placed on the common rail or on one rail of each gauge.
- It is stored in a small red colored tin case.
- The date and year of manufacturing is written on the detonators.
- The detonators are provided to all the staffs directly related to operation of train i.e. SM, Loco Pilot, Guard, Motor Man, Petrol Man, Gate Man etc. they all are supplied with a box of 10 detonators in their personal store.
- The Normal shelf life of detonators manufactured during 2010 & thereafter shall be 5 years, reckoned from the year of its manufacture. It can however be extended for maximum of 3 more years, provided that detonators which are more than 5 year old are effective. For this purpose 02 detonators of each batch / lot should be tested at end of 5 years and if the result of these test are satisfactory, life of detonator of that batch should be extended for 01 more year, on expiry of which similar tests should be conducted annually to extend the life of detonators of that particular batch / lot up to a maximum of 08 years from the date of manufacture. After the expiry of this period, unused detonators shall be returned to the issuing officer for replacement.



STORAGE OF DETONATORS- SR. 3.64-3

- a) Detonators must carefully be handled as they are liable to explode if handled roughly.
- b) Detonators shall be kept in the tin cases specially supplied and they shall be stored in dry places and not left in contact with the brick walls, damp wood, chloride or lime or other disinfectants, nor exposed to dampness or steam or other vapours.
- c) Detonators must be used in the orders of their manufacturing dates stamped on them. Those of the oldest date being always used first. To facilitate ready withdrawal in this sequence, they should be stored also accordingly.

SUPPLY OF DETONATORS SR. 3.64-2

- Station Master will supply detonators to Guards headquartered at their stations and to Gateman working under their control.
- PW inspectors shall supply detonators to the Gangmates, Keyman, Gatemen, Bridge Guard, Cutting Guard and patrolman.
- Loco foreman will supply detonators to the Loco Pilots.

- The supervisor supplying detonators shall be responsible to ensure that the railway servant working under his supervision has prescribed number of detonators with them and they have the knowledge of exploding them. He will supervise them in every three months.

TESTING OF DETONATORS. SR-3.64-5

At station, Loco Sheds etc. where stocks of detonating signals are kept for issue to Guards, Loco Pilot, fog signal man, or other Railway Servants, the CYM, Station Manager, the Loco Foreman or other Railway persons in-charge of such stock must test at least one from each batch issued to the Staff. The testing should be under taken in every 12 months and an up to date record should be maintained. Where stocks are kept by store clerk of the division, the divisional officer of the concerned department may nominate the Sr. Supervisor for the testing of the detonators. Detonators shall be tested under empty wagon moving at 8 to 11 KMPH.

DISPOSAL OF DETONATORS SR 3.64-6

If the detonators are not used during their testing or within their date of expire, they shall be destroyed by either of the following processes-

- They will be kept in mineral oil for 48 hrs and put into the fire.
- Burning in the insinuator.
- By exploding them under the wagon during shunting.
- Destroying them in the deep sea.

NECESSITY OF DETONATING SIGNAL DURING STORM, FOGGY WEATHER

- If it is necessary to use detonators at the station, the two detonators shall be used at a distance of 270 meters from the first stop signal (FSS). The first detonators shall be placed at a distance of 270 meters and the second shall be placed at a distance of 10 meters from the first detonator,
- In "B" class stations, where Warner Signal is provided, the detonators shall be placed at a distance of 270 meters from the Home Signal.
- In "B" class stations in TALQ signaling territories detonators shall be placed 270 meters from the Outer Signal.
- In MAUQ/MACLS system where separate Distance Signal is provided, detonators shall be placed at a distance of 270 meters from the Home Signal.
- The Fog Signal Post shall be provided only at those stations where there is a provision of using detonators.
- In Absolute Block System the Loco Pilot shall proceed with his train in restricted speed so that he will be able to bring his train to a stop before any obstruction. The speed shall at any circumstances not exceed 60 KMPH.
- The Loco Pilot shall not exceed the following speed in automatic block system-
 - Green Signal- 60 KMPH
 - Double Yellow- 30 KMPH
 - One Yellow- with restricted speed and prepared to stop at next stop Signal.

USE OF DETONATORS

One Detonator

- During Testing- Placed on the rail and an empty wagon is run on it at the speed of 8 to 11 KMPH.
- In case of Emergency- if it is not possible to protect as per the rules, then one detonator can be placed as far as possible from the obstruction for protection in emergency.
 - whenever F.S. S.signal or Gate signal fails in 'OFF' position and can not be kept in 'ON' position one detonator shall be placed 90 m outside the signal. Each time it shall be replaced when train passes on it.

TWO DETONATORS

- To warn the Loco Pilot in fog and tempestuous weather that he is approaching the signals of the station. They will be placed 10 meters apart from the Fog Signal Post provided at a distance of 270 meters from the first stop signal.

THREE DETONATORS

- Placed at a distance of 250—250—10 meters apart from the train in case of ACF, when the trains stop in the block section.
- Placed at a distance 90—90—10 meters apart from the train in case of stoppage of train in the automatic block section.
- Placed at a distance of 600—610—620 meters by the Engg. staff in case of material train comes to stand 15 minutes or in the event of train approaching where a banner flag is placed at a distance of 600 meters from material train.
- Placed at a distance of 1200—10—10 meters apart from the work site in case of engineering works lorry work where a banner flag is placed at a distance of 600 meters from the work site.

FOUR DETONATORS

- Placed at a distance of 600—600—10—10 meters apart on BG and 400—400—10—10 meters apart on NG as per GR. 6.03 and SR.6.03-1 and is called normal protection.

When not necessary to place detonator during foggy weather

Under the following circumstances, the use of detonators is dispensed with to so the position of the signals.

1. In those sections where reliable fog safety device is fitted in the engine.
2. If there are facilities of pre warning or in those stations where there is provision of double distant.
3. In those stations where maximum speed of the train is 15 KMPH and warning board is installed, even if there is no pre warning signal.
4. In those sections where sectional speed is less than 50 KMPH (but more than 15 KMPH) and the first signal of the station is not a stop signal.
5. In the automatic signaling section.

6. At the Gate Stop Signal.
7. At starter (departure) Signal.
8. Places where temporary speed restriction is in force for the maintenance of Railway track/OHE/signals.

DUTIES OF ENGINE CREW ON EXPLOSION OF DETONATORS GR 3.78

If the engine explodes a detonator the Loco Pilot immediately bring his train under his control. And he will be guided by the signals that he may receive or if no hand signal or other signals are at once visible to him, he shall proceed up to 1.5 KM cautiously and be prepared to stop short of any obstruction. If there is no further explosion of detonators, he will resume his normal speed and shall inform the same to the SM of next station.

DUTIES OF RAILWAY SERVANT IN FOGGY AND TEMPESTUOUS WEATHER SR 3.61-1

1. In foggy and tempestuous weather, when the Visibility Test Object (VTO) is not visible to the SM from his station building, he shall ensure himself that all the signals of the station are lit
2. He shall then send two trained men to act as fog signal men, one in either direction, to the fog signal posts which are erected at all stations 270 meters in rear of the outermost signals. Each of these men shall be provided with 20 detonating signals or as lesser number as may be prescribed under special instructions.
3. The fog signal men shall place one detonator at the fog signal post and the other at a distance of 10 meters from it and will stand at 45 meters with another detonator to warn the Loco Pilot of his proximity to the Outer, Warner or Distant Signal of the station.
4. As soon as the engine explodes two detonators, the Loco Pilot shall immediately bring his train under his control and shall be ready to follow the aspects of the signal to come 270 meters ahead.
5. The fog signal man shall immediately replace two fresh detonators on the passage of train.
6. In single line section, the fog signal man shall show proceed hand signal to the Loco Pilot of the train leaving the station.
7. The SM shall depute two trained men to act as fog signal men. He may depute off duty staffs for this purpose if ON duty staffs are not available. If necessary, two trained gang men can be deputed by permanent way supervisor.
8. Divisional Railway Manager (DRM) will notify the names of the stations at which fog prevails persistently. At each such station, four class IV staffs shall be posted to act as fog signal men.
9. These four men will be on intermittent duty, one on duty at each end of the station and two resting at the station each shall be supplied with 24 detonators and performing 3 Hrs ON and 3 Hrs OFF duty.
10. At the double line station if the fog appears for about 7 days in the month it should be treated as persistent fog and separate fog porters should be appointed.
11. If fog is for less than 7 days in a month the SM will immediately call out two of the class IV staffs who are OFF duty to work at the station as porter, and the staffs who are ON duty will be utilized for fog signaling duties.
12. Only the permanent employees of the Railway shall work as fog signal man.

13. At single line stations where the station porters are required for delivering tokens also, The DRM should examine both the duration of fog and the number of days in a month on which it appears and then taking the overall work into consideration, determine whether special fog porters are required or not.
14. On branch lines or section on which the traffics is light, instead of fog signal man remaining continuously on duty at each fog signal post, a fog signal man may be send out to place detonating signals for each individual trains. This procedure may only be adopted under special instruction. In such cases, line clear shall not be given for a train, unless the fog signal man has been sent out at least 30 minutes before the is due to leave the station in rear.
15. The SM shall ensure that fresh supplies of detonators are sent to the men in replacement of those used.
16. A “ station detonator register ” must be maintained at each station , and must show the names of fog signal men, on duty, periods of duty, the stocks of detonators, the number of detonators sent out with each fog signal man, the number of each train under which the detonators have been exploded , and the number of un used detonators and used cases returned each time by fog signal man to the SM on duty.
17. The SM will obtain in the “Station Detonator Register” the signature or thumb impression of all men deputed and/or posted to his station as fog signal man as an acknowledgement that they understand the rules relating to the fog signaling of train.

HAND SIGNAL

(GR.3.52, 53, 54, 55, 56, 57, 58)

- In course of the operation of trains hand signal may be used in place of fixed signal as per the requirement. Red and Green flags are used as hand signal by day and if the flags are not available then only hand signal may be exhibited.
- The Green flag should be hold in the left hand and the Red flag in the right hand. The Red Flag is folded and should be hold in such a manner that it can be taken into use immediately when necessary.
- Hand signal Lamps are used as hand signal by night in which Red and Green glass slides are provided. A white light waved violently shall be used as a stop signal only when the red light is not available.

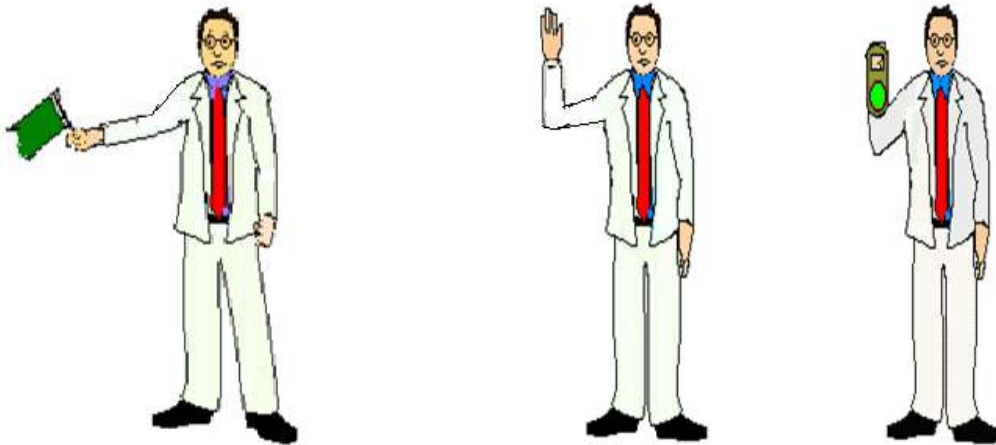
HAND SIGNALS RELATED TO TRAIN OPERATION

STOP HAND SIGNAL-



If it is necessary to show signals to stop the train, then by day, red flag will be held in right hand in front and parallel to the body and by night a red light will be held in front. If red flag is not available in the day then both hands will be raised above the shoulder with palms facing the train. And by night white light shall be waved violently along the knee from left to right.

PROCEED HAND SIGNAL-



To give the train an indication to proceed, by day, a Green Flag will be held steadily in the left hand and by night a green light will be shown to the Loco Pilot. If Green Flag is not available in the day, then the right hand will be raised above the shoulder facing the palm towards the train.

PROCEED CAUTIOUSLY-

To give this signal, Green Flag by day and Green Light by night will be waved slowly in front of the body. If Green Flag is not available in the day, then hand will be waved up and down.

Note- if speed of the train is to be reduced further, then the signal will be waved in slower motion. And the train is to be stopped, Stop hand signal will be shown.

HAND SIGNAL FOR SHUNTING-

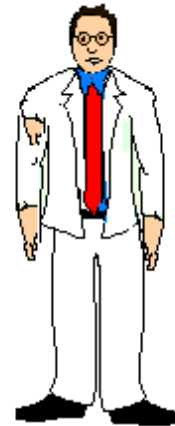
➤ MOVE TOWARDS THE PERSON SIGNALLING

If the person performing shunting wants to call the Loco Pilot to proceed towards him during shunting, in the day he will move a Green Flag or Hand side to side across the body and at night he will wave a Green Light across his body as shown below-



➤ **MOVE AWAY FROM THE PERSON SIGNALLING**

If the person performing shunting wants to say the Loco Pilot to move away from him, Green Flag by day and Green Light by night shall be waved up and down in front of the body as shown below-



➤ **MOVE SLOWLY FOR COUPLING-**

During shunting, when two or more coaches or wagons or engines are to be coupled, coupling indication shall be given to the Loco Pilot. By day, The Green and Red Flags shall be raised above the shoulder and waved across. By night the Green Light shall be waved with the help of wrist as shown below-



BANNER FLAGS- GR.3.57

A banner flag is a temporary fixed danger signal, consisting of red cloth supported at each end on a post and stretched across the line to which it refers.

KNOWLEDGE AND POSSESSION OF HAND SIGNAL- GR.3.58

1. Every Railway Servant connected with the movement of trains, shunting operations, maintenance of installations and works of any nature affecting safety of trains shall have
 - a) A correct knowledge of hand signal.
 - b) The requisite hand signals with him while on duty and keep them in good working order and ready for immediate use.
2. Every Railway Servant shall see that the staff under him concerned with use of hand signals are adequately supplied with all necessary equipments for hand signaling and have a correct knowledge of their use.
3. A Red Flag and a Green Flag by day or a Lamp, which is capable of showing red, green and white lights by night, shall constitute the requisite equipment for hand signaling.
4. Every SM shall see that his station is adequately supplied with all necessary equipments for hand signaling.

EXCHANGE OF HAND SIGNALS- GR.4.42 SR-4.42-1-6

Hand signals must be exchanged between Loco Pilot and Guards and among the Loco Pilot, Guard and SM.

SR. 4.42-1 – Hand signals must be exchanged between the Guard and Loco Pilot as detailed below

- a) When the train starts after stopping at the station.
- b) When train starts after stopping between stations.
- c) When a train runs through a station.

RULES FOR EXCHANGING HAND SIGNAL

1. Hand signal must be exchanged between Loco Pilot and Guard until the engine has passed the Advance Starter signal or the outermost points where Advance Starter signal is not provided . If the Loco Pilot does not get the signal from the Guard , he shall whistle and if there is no response, he shall stop the train and ascertain the cause.
2. The LP may depute the ALP to exchange hand signal on his behalf.
3. If the guard fails to exchange the signal with driver the driver will sound two short (00) whistles to attract the attention of guard. Then also guard is not exchanging the signal, driver will stop his train and enquire the reason.
4. In case the driver cannot see the guard signal due to any reason , station master shall arrange repeat the signal exhibited by the guard.
5. When a train carrying passenger starts from a station after stopping , hand signal shall normally be exchanged from the platform side unless the track is on a curve and signals cannot be seen from that side.
6. When a train starts after stopping outside the station limits , signal must be exchanged on the left hand side , unless the track is on right hand curve , in this case signals shall be exchanged from the right side.

7. In case of a train starting from a station when the Guard's signal cannot be seen by the LP for any reason, the Guard after ensuring from the LP that the Advance Starter signal has taken OFF, can permitted the LP on walkie-talkie to start the train and shall exchange hand signal with the LP until the LP acknowledge it. If the Guard cannot communicate with the LP, the SM shall repeat the hand signal of the Guard to the LP.
8. When a train has passed the station after stopping or not stopping, the Guard shall look back and satisfy himself that no danger signal or other indication is given by any of the station staff, as warning that there is anything wrong with the train.
9. Whenever a train stops out of course in a section due to ACP or for any other reason, where the signal between the Guard and LP cannot be seen by each other due to curvature or any other reason, the LP shall not start his train until the Guard does not exchange hand signal with him to start. If the LP is unable to see the hand signal of the Guard due to curvature or any other reason, the LP shall depute his ALP to walk back to the spot from where he can see the signal of the Guard. The ALP, on receipt of the alright signal from the Guard, shall proceed to the engine and assure the LP that everything is all right. The LP will then start. But the Guard and the LP shall exchange hand signal until they are visible to each other. Guard can permit the Loco Pilot to start his train where hand signal between Guard and LP cannot be all-right seen due to curvature or any other reason.

EXCHANGE OF HAND SIGNAL BETWEEN GUARD, DRIVER AND STATION STAFFS

1. When the train is booked to run through the station, a green hand signal shall be exchanged by the SS/Dy.SS/SM/ASM on duty from the SM office side or from where it can be easily seen by the LP and Guard. After exchanging signals, he will physically verify that the complete train has passed the Advance Starter and both the signals Starter and Advance Starter have been put back to ON.
2. When train runs through a station, signal shall be exchanged between LP & GD as soon as last vehicle of the train has passed over the point while quitting yard.
2. The cabin staffs shall exchange hand signal with the Guard and LP even if the train runs through the station or start after stopping at the station. They shall be prepared to exchange danger signal with the LP and Guard, if any abnormality is observed by them in the train.
3. In case a train is running through a station the SM shall depute a points man on the offside of the station to exchange hand signal with the train crew.
4. The cabins of the station which are free from exchanging hand signal with Guard and LP, shall also keep a sharp look on the train and shall be prepared to exchange danger hand signal if any unsafe condition is found in the train.
5. During night, while exchanging all right signals the cabin staff must not display the green hand signal light towards the approaching train, which is likely to mistaken for a stop signal by the crew. The green light should be at right angle to the track, so that the hand signal is visible only when the train passes the cabin.

6. If there is any unsafe or danger condition observed in the train running through the station, the station staffs shall exchange danger signal to attract the attention of the LP and Guard and shall take every possible steps to stop the train. If the train does not stop even after warning, the SM shall give 6-1 beats (stop and examine the train) on the block instrument to the SM of the station in advance.
7. On double line where trains run on opposite directions, the Guard and LP of each train shall examine each other's train and exchange green hand signal. They will be prepared to exchange danger hand signal with each other if any abnormality is observed by them

When a train starts after stopping between station:-

1. Driver shall not proceed unless the guard shows proceed hand signal.
2. When a driver is unable to see the hand signal of guard due to curvature or other obstruction, he will send Asst. Driver/ Asst guard to go back and ensure the proceed hand signal of guard.
3. After starting train, driver and guard will exhibit hand signal till both of them are able to see each other's hand signal, then driver will increase the speed.
4. Hand signal should be exchanged from left side only. If curvature is there, then the signal can be exchanged from right side.
5. The exchange of signal between LP & Guard of the train having A/C Guard compartment shall not required when train start after stopping outside station limit.

When a train Run Through a Station:-

1. When a train passes through a station a green hand signal shall be exhibited by station master on duty from the SM office side to the LP and guard.
2. Station master will depute one pointsman to exchange hand signal from off side.
3. Driver and guard shall exchange green hand signals with block and non-block cabin also.
4. Whenever station master or cabin staff notices any danger or unsafe condition, the danger hand signal shall be shown to the LP and guard to stop the train.
5. On double line in case of the train running opposite direction, the LP and guard should exchange green hand signal to each other. Should any condition noticed with train which may endanger its safety and if the LP/Guard does not exchange signal Guard of the train noticing such condition shall bring to stop his train and report to SM in writing.

6. At station on D/L or M/L if more than one train running through simultaneously or one train standing on the adjacent line, the SM shall depute one station staff on other side. Where no cabin situated or cabin and SM office on the same side and traffic gate lodge is available on other side, Gateman will follow the rules for exchanging signal as pointsman.
7. Motorman & Guard of EMU/MEMU/DMU shall exchange signal by ringing bell in their cab as per code.
8. Guard of train having A/C Guard's compartment is not required to exchange signal with station staff but sharp look out must be kept and be prepared to stop train by seeing danger signal
7. Failure on the part of station staff to exchange hand signal with LP or guard, shall be remark in Guard journal and remain vigilant. If LP and/or Guard fail to exchange signal with station staff and also sounding whistle by LP while passing through a station shall at once reported to SCR and station in advance who shall stop train and hand over warning ticket to default staff

Some indications are given below:-

SN	Indication	How exhibited
01	Stop dead	a) By day—(1)by showing a red flag or -(2) by raising both arms with hand above the head (in emergency only) b) By night—(1) by showing a red hand signal lamp/ light. - (2)When red glass is broken, by violently waving a white hand signal lamp/ light horizontally across the body.
02	Proceed	a) By day—(1)by holding a green flag or -(2)by holding one arm (hand) steadily (in emergency only). b) By night--by holding green hand signal lamp/ light steadily.
03	Move away from the person signalling	a) By day—(1)by moving green flag slowly vertically up and down or -(2)by moving one arm (hand) slowly vertically up and down (in emergency only). b) By night-by moving green HS lamp/ light slowly vertically UP and DN.
04	Move towards the person signalling	a)By day—(1)by moving green flag side to side across the body. (2)by moving one arm side to side across the body (in emergency only) b)By night-by moving green hand signal lamp/ light side to side across the body.
05	Move slowly for coupling	a)By day—(1)by green and red flag held above the head and moved towards and away from each other. (2)by both arms raised over the head and moved towards and away from each other (in emergency only). b) By night-- by green hand signal lamp/ light held above the head

		and moved by twisting the wrist.
06	To indicate SM/ Cabin man for movement of points for shunting	(a)By day—(1) by waving green and red hand signal flags across overhead. (2) By both arms raised over the head and moved across overhead (in emergency only). (b)By night-by waving red hand signal lamp/ light up and down three times.
07	To indicate the LP about train parting	(a)By day--by waving in repeated motions a green hand signal flag up and down vertically as high as low as possible. (b)By night- - by waving in repeated motions a white hand signal Lamp/ light up and down vertically as high as low as possible.
08	All right signal	(a)By day-by waving green hand signal flag horizontally. (b)By night--by waving green hand signal lamp/ light horizontally.

DEFECTIVE SIGNALS

Signals are considered to be defective in the following situations-

1. When the signals are not controlled by lever/ button.
2. When arm of the signal is inclined more or less.
3. When signals become blank.
4. When the glass of the signals are broken or cracked.
5. When signal post or the arms are broken.
6. When the signals indicate more than one aspect at one and at the same time.
7. When the signal is flashing or bobbing.
8. When the points of concerned signals are defective, the signals will also be considered as defective.
9. When the home signals become defective, the outer signals are also considered defective.
10. When signals show conflicting aspects-
 - a. Warner signal is in OFF condition where as the stop signal above is ON.
 - b. Outer signal is in OFF condition where as the Home signal is ON.
11. When on Single Line, the approach signals of one direction are OFF where as the departure signals of the opposite direction are OFF at the same time.
12. When the wire of the signals are broken.
13. When Signal Repeater of a Signal fails.

DUTIES OF STATION MASTER WHEN SIGNAL IS DEFECTIVE-

1. The SM shall immediately arrange to place the signal at its ON position.
2. Find out the cause of defect and remedy if any.
3. At an interlocked station, all the points detected by signals are treated as non-interlocked and SM/CASM/Cabin man will be responsible to ensure that the points are correctly set, clamped and padlocked before authorizing any movement of train on them. If the person ensuring the setting, clamping, locking the points and the person issuing the authority are different, then private number shall be exchanged between them.
4. He shall advise the SCR and signal inspector about the defect.
5. Make an entry of the defect of the signal in the signal failure register.
6. If the red glass of the signal is broken, no light shall be illuminated. But the other glasses are broken then light shall be illuminated and traffic shall continue considering the signals defective.
7. On being put-right, the SM/CASM/Cabin Master/ Cabinman will personally ensure that the signal is working properly and signs the reconnection memo.

DEFECTIVE APPROACH SIGNALS

DEFECTIVE WARNER/DISTANT SIGNAL- SR 3.71

1. If the Warner/Distant signals become defective in their ON position, the SM shall inform the concerned signal inspector and section controller about the defect.
2. However if the Warner/Distant become defective at OFF position and it will not be possible to turn it to its ON position the SM shall advise the SM in rear with exchange of private number.

3. If the Warner signal is placed on an independent post, he shall extinguish the fixed green light on the post.
4. Line Clear shall not be granted to any train to come to his station, unless-
 - a. A pointsman in uniform has been deputed under the signal with a danger hand signal.
 - b. The green light above the post has been extinguished.
5. The SM of the station in rear shall inform the same to the LP in writing and obtain his acknowledgement.
6. The LP who has been so advised shall bring his train to a stop at the foot of the signal and proceed with the hand signal exhibited by the pointsman.
7. In case of defective Warner signal of a gate stop signal, the signal light shall be extinguished and the gate man shall intimate the SM, who shall advise the SM of the station in rear exchanging the private number to stop the train and issue caution order to the LP of each train to stop short of the defective signal and further act on the aspect of the gate stop signal ahead.
8. If there is no communication between the gate man and any station on either side, keeping the gate signal in ON position and for the first train, advises the LP of the circumstances after closing the gate against the road traffic. The road traffic may pass only when ensured that no train is approaching. The gateman shall exhibit danger signal from the defective permissive signal and pilot the train past the gate. The LP shall report the matter to SM of station ahead to issue caution order to all the succeeding trains till the defect is put right.

PROCEDURE FOR PASSING STOP SIGNALS AT "ON" OR DEFECTIVE CONDITIONS-

1. By issuing pre-warning in **T/369(1)**.
2. By taking OFF the calling-on signal provided under the stop signals.
3. As per the special instructions, by issuing private number on signal post telephone.
4. By issuing written authorities **T/369(3b)**.
5. As per the marker provided on the signal post i.e. automatic, repeater etc.

Defective Outer signal- SR 3.69-2

1. Whenever the Outer signal of a station is out of order, home signal shall be kept in its ON position along with the Outer.
2. The SM shall take the following actions-
 - (i) **When the LP is given pre-warning from the station in rear**
 - a. SM shall depute a pointsman in uniform with hand signal at the foot of the Outer signal after ensuring that the conditions for taking OFF the Outer signal are full filled.
 - b. The LP shall be issued T/369 (1) from the station in rear.
 - c. The pointsman shall exhibit alright hand signal to the approaching train according to the aspect of Home signal. The LP, on seeing the alright hand signal of the pointsman, shall proceed cautiously and pass the Outer signal at ON with a restrictive speed not exceeding 15 KMPH.

(II) When no pre-warning is given to the LP

- a. The train shall be stopped at the Outer Signal.
- b. The SM after ensuring the conditions of taking OFF the Outer Signal has been fulfilled shall depute a pointsman in uniform with hand signal and the authority **T/369 (3b)** at the foot of the signal.
- c. After train has come to stop pointsman shall exhibit proceed signal towards cabin man who shall then 'off' Home signal
- d. On seeing the Home signal 'off' the Pointsman shall hand over the authority to the LP and pilot the train .

Home Signal Defective- SR 3.69-3

(I) When Home Signal is the first stop signal of the station-

When the Driver is pre-warned-

1. The SM on duty after ensuring that the condition for taking 'OFF' home signal is full filled shall depute a pointsman in uniform with hand signal at the foot of the home signal.
2. T/369(1) will be issued from rear SM.
3. The LP on seeing the all right hand signal of pointsman under the foot of the Home signal shall proceed and followed the speed of 15 KMPH.

(II) When Driver is not pre-warned-

1. The SM on duty after ensuring that the condition of taking 'OFF' home signal is full filled shall admit train either by taking 'off' C-on signal, or authorise LP through Private number on SPT or send a points man in uniform with hand signal and authority T/369(3b) at the foot of the home signal.
2. The train shall come to a stand at the foot of the signal
3. Point's man shall hand over the authority to the driver and he will exhibit a green hand signal to the LP.
4. On receiving the authority under the foot of Home signal and all-right signal by the Pointsman LP will blow one short- one long- one short (0-0) and exchange hand signal from Guard and proceed the speed of not more than 15 KMPH.

(III) When home signal is the second stop signal-

1. No pre warning will be given.
2. Home and outer both to be treated as defective since both are inter-locked and shall be kept at 'ON' position.
3. The train shall be brought to a stop at the Outer Signal.
4. After full filling the condition of taking 'OFF' Home and Outer signals, the SM will send a pointsman in uniform with a hand signal and authority T/369(3b) to pass outer and home signal at 'ON' at the foot of outer signal.
5. When the train comes to stand at Outer Signal the pointsman will hand over the authority to the LP and exhibit green hand signal to him.
6. LP shall proceed to the station with a speed not exceeding 15 KMPH past Outer and Home signal.

(IV) When Home Signal is the first and last stop signal of the station ('C' class station)-

1. No pre warning.
2. Train shall be brought to a stand at the foot of the Home Signal.
3. SM shall obtain line clear from the station in advance.
4. SM will issue T/369(3b) to the LP by quoting private number obtained from the station in advance at home signal.
5. Pointsman will hand over the authority T/369(3b) to the LP and exhibit green hand signal to the driver at home signal.

Routing Signal Defective SR 3.69-4

(I) When inter-locked with Home Signal-

1. No pre-warning shall be given.
2. The Home and Outer shall also be treated as defective since they are interlocked with the Routing signal. All of them shall be kept ON.
3. After fulfilling the conditions of taking OFF the Routing, Home and Outer signals the SM shall depute a pointsman in uniform with hand signal and authority **T/369 (3b)** (to pass all these three signals) at the foot of the outer signal.
4. The pointsman will hand over the authority to the LP after the train is stopped at the Outer signal.
5. The train shall be piloted-in up to the station.

(II) When the Routing Signal is not inter-locked with the Home signal-

1. The Home and Outer signals shall not be treated defective..
2. The train shall be brought to a stand at the Outer Signal.
3. After fulfilling the conditions for taking OFF the Routing Signal, the SM shall admit train either by taking 'off' C-on signal, or authorise LP through Private number on SPT or send a pointsman in uniform with hand signal and authority T/369 (3b) to pass the defective Routing Signal at ON at the foot of the Routing Signal.
4. Outer and Home signal shall be taken OFF only after the train is stopped at the Outer Signal.
5. T/369(3b) will be handed over to the LP at the foot of the Routing signal. After stopping at the signal the LP will check the authority and line mentioned in it.
6. The train shall be piloted up the station.

DEFECTIVE DEPARTURE SIGNALS GR3.70

Starter Signal Defective SR 3.70-1

1. No pre-warning shall be given for the defective departure signals.
2. The trains shall be brought to a stop at the station.
3. If Calling-on signal is provided below the starter signal, the starter shall be passed by taking OFF the calling-on signal. Otherwise after the conditions for taking OFF the starter signal is fulfilled, T/369(3b) shall be issued to the LP to pass the starter at ON.
4. The LP shall proceed only when he is handed over the authority T/369(3b) and at the foot of signal alright hand signal is exhibited by the pointsman.
5. If the starter signal is the Last Stop Signal of the station, the SM shall first obtain Line Clear from the station in advance and quote the private number on the authority clearly stating that "Line Clear has been obtained from the station in advance".

6. Before issuing the authority to the LP, the SM shall personally ensure that the concerned points are correctly set and locked. If it is the responsibility of the CASM/Cabin man/Cabin Master to set and lock the points, the SM shall exchange private number with them to ensure himself.

Advance Starter Signal Defective SR 3.70-3

1. The trains shall be brought to a stop at the station.
2. The SM shall obtain Line Clear from the station in advance.
3. If there are points on the line, the SM/ASM/Switch Man shall ensure himself that all the concerned points are correctly set and locked. Authority shall be issued clearly mentioning the speed of the train not exceed 15 KMPH while negotiating over the points.
4. T/369(3b) in case of double line or paper line clear tickets T/C 1425 UP or T/D 1425 DN in case of single line provided with token less block instrument shall be issued to the LP as authority to proceed on which the private number received on getting line clear from the station in advance is written.
5. The Starter signal shall be taken OFF.
6. No need to exhibit proceed signal if Advance starter not protects any point.

Note- if the Starter Signal is inter-locked with the Advance Starter Signal, the Starter Signal cannot be taken OFF when the Advance Starter signal is defective. The SM shall stop all the trains at his station and obtain Line Clear from the station in advance. All the points on the route shall correctly be set and locked. T/369(3b) shall be issued to pass Starter and Advance Starter at ON and the private number received from the station in advance on getting line clear will be written on it. The pointsman shall hand over the authority to the LP and exhibit alright green hand signal at the foot of the Starter Signal.

Defective Advance Starter Signal beyond which IBS is provided in working condition

1. In that case both signal shall be treated defective and entire section shall be treated one section. The SM shall stop all the trains at his station.
2. Line Clear shall be obtained from station in advance supported with P/No and exchange ID no. The LP shall be issued T/369(3b) to pass the Advance Starter Signal at ON and to pass IBS at ON. There is no need to exhibit proceed signal if Advance starter not protecting any point.

If both Advance Starter and IBS are defective-

1. The IBS shall be out of use and both the sections shall be treated as one block section.
2. The trains will be stopped at the station.
3. The SM shall obtain Line Clear from the station in advance.
4. One T/369(3b) shall be issued to the LP to pass Advance Starter and to pass IBS at ON which shall contain the private number received from the station in advance on getting line clear.

Defective Gate Stop Signal GR 3.73 & SR 16.06-1

1. The gate stop signal shall be kept at its ON position.
2. If the LP finds the gate stop signal **with G marker** at ON he shall sound a long whistle and bring his train to a stop before the signal.

3. If after waiting for 1 minute by day and 2 minutes by night , the signal is not taken OFF, he should proceed ahead with his train cautiously and stop again a short of the level crossing.
4. The gate man after closing and locking the gate against the road shall pilot the train past the level crossing.
5. In the absence of gateman or if no signal is given by the gate man, he shall stop his train before the LC gate and the ALP/Guard shall close the gate against the road traffic and pilot the LP to pass the gate. Again the train shall stop passing the gate and the ALP/Guard shall open the gate for road traffic and proceed.
6. If the gate stop signal **without G marker** is defective, it shall be kept ON. The LP finding the gate stop signal without G marker at ON shall bring his train to a stop in rear of the signal and shall sound a long whistle to attract the attention of the gateman.
7. The gateman after closing and locking the gate against the road traffic shall go to the signal post and report the LP about the defective signal. He shall then pilot the train past the gate.
8. In respect of the Gate stop signal referred above, the LP of the first train shall stop his train at the next station and report about the defective signal to the SM on duty who will then advise the station at the other end. The SM of the station immediately in rear shall stop all the trains and issue caution order.

Rules for passing Automatic Stop Signal at "ON" GR 9.02

1. If the LP find an automatic stop signal or a semi-automatic stop signal with illuminated A marker at ON, he will bring his to a stop before the signal.
2. He shall wait 1 minute by day and 2 minutes by night for the signal to be taken OFF. If during such period the signal is not taken OFF, he shall sound a long whistle to attract the attention of the Guard. He shall proceed cautiously with his train after exchanging hand signal with the Guard.
3. At any circumstances the speed shall not exceed **15 KMPH** when the visibility is clear and **10 KMPH** when the visibility is not clear. During this period the LP shall be vigilant and ready to stop his train before any obstruction.
4. While passing the automatic stop signal at ON, the LP shall ensure himself that at no circumstances the distance between his engine and the train running ahead/any obstruction will be less than 150 meters of 2 OHE. In the case of EMU this distance should not be less than 75 meters or 1 OHE.

Semi-Automatic Stop Signal Defective- SR 9.02-1,2,3.

1. If the A marker is illuminated, the LP shall pass at its ON position like an automatic stop signal.
2. If the A marker is not illuminated, the LP, considering it to be manually operated, shall not pass it at ON until an authority is issued.

Gate Stop Signal defective in Automatic Section-

(I) A and G marker Gate Stop signal defective-

1. This Gate Stop signal is provided with G marker on a yellow circular board and an A marker.
2. If the A marker is illuminated it means the gate is closed and locked against the road traffic and the LP shall proceed with his train as per the rules applying to the Automatic Stop signal.

3. When the A marker is extinguished, the LP shall wait for 1 minute by day and 2 minutes by night for the signal to be taken OFF. If during that period the signal is not taken OFF the LP shall pass the signal at its ON position and proceed cautiously up to the gate. If alright signal is exhibited by the gateman he shall proceed past the gate. If no signal is exhibited by the gateman the LP shall ensure himself of closing and locking of the gate and then proceed.

(II) A marker and AG marker Gate Stop Signal defective SR 9.15-2

A Gate Stop signal with white A/AG marker on black back ground will be provided in an automatic section when it protects the gate as well as the points ahead it. The LP will pass this signal at ON as follows-

1. If the A marker is illuminated, the LP shall pass it as the rules applying to the automatic stop signal.
2. If the AG marker is illuminated, the LP shall wait for 1 minute by day and 2 minutes by night for the signal to be taken OFF. If even then the signal is not taken OFF the LP shall proceed cautiously and pass the gate if alright signal is exhibited by the gateman. If not so the LP shall ensure him of closing and locking of the gate and then proceed. -
3. If neither marker glow mean points are not set & locked and gate is not closed. -
4. If both markers glow, signal should be treated defective.

Calling-on Signal Defective-

1. Whenever the calling-on signal is defective, its operation will be stopped.
2. It shows no indication at ON so, no authority shall be issued for it when it is defective.

Shunt Signal Defective-

1. If a shunt signal is defective, no separate authority shall be issued to pass it at ON.
2. The description to pass it at ON shall be mentioned on **T/806** and green hand signal shall be exhibited by the pointsman at the foot of the signal.

Co-acting Signal Defective-

1. If a co-acting signal is defective, both main signal and co-acting signal itself will be treated defective.
2. Single authority shall be issued to pass both of them at ON.

Repeating Signal Defective-

1. Whenever the repeating signal is defective, the main signal will not be treated defective as in the case of Co-acting signal.
2. The signal shall be kept ON and no authority shall be issued for it as the LP can pass the signal at ON.

IBS Signal Defective GR 3.75 SR 3.75-1

1. In such case, the entire Block section shall be treated as **One Block section** and no train shall be allowed to proceed up to the IBS unless Line clear has been obtained from the Block station in advance.
2. In case of IBS becomes defective the IBP shall be deemed to be closed and the entire block section will be treated as one block section. In this case SM in rear shall issue T/369(3b) to pass IBS at On to the LP.
3. But if the Block Instrument or the LSS fails of the station in rear, then the SM shall issue T/369(3b) to the LP.
4. If the IBS becomes defective after the train has left the station in rear of IBS, the LP shall stop the train before the IBS and contact the SM in rear on the IBP telephone, if provided.
5. The SM in rear, on being contacted on telephone by the LP, shall then obtain Line clear for the train from the Block station in advance, authorize the LP on the telephone, to pass the IBS at 'On' and also will give the Pvt. No. & ID no.
6. If the telephone is not provided or out of order, the LP after waiting for 05 minutes at the IBS, shall pass the IBS at 'On' with a speed not exceeding 15 KMPH when visibility is clear and 08 KMPH if view is not clear at slow speed.
7. The LP will proceed cautiously up to the FSS of the station in advance, if it is in 'Off' position and intimate the matter to the SM through a written memo and get acknowledgement.
8. The SM of the advanced station shall verify the Pvt. No. from the TSR and keep the memo, if any pasted in the SM's Diary.
9. For subsequent train, the SM in rear shall issue T/369(3b) to pass the IBS at 'ON' for Double line.

Absence of a Fixed Signal or a Signal Without a light GR 3.74 SR 3.74-1)

- a) If there is no fixed signal at a place where a fixed signal is generally shown, or
- b) If the light of a signal is not lighting when it should, or
- c) If a white light is shown in place of a color light, or
- d) If the aspect of a signal is misleading or imperfectly shown, or
- e) If more than one aspect is displayed, the driver shall act as if the signal was showing its most restrictive aspect.

Provided that during night, if in the case of semaphore stop signal for approaching trains only, the LP finds the signal light extinguished he shall bring his train to a stop at such signal. If he finds that the day aspect of such signal is clearly visible and is satisfied that the signal is in the OFF position, he shall proceed past up to the station cautiously at a restricted speed

obeying all intermediate stop signals. If any, relating to him, and report the matter to the SM for necessary action.

- 2) A station equipped with color light signal provided with a P marker, the LP shall bring his train to a stand if it does not show any light or shows as imperfect aspect and having satisfied himself that the signal is provided with P marker, shall proceed preparing to stop at the next stop signal and shall be guided further by its aspect.

SR 3.74-1

Conflicting signal shall be treated defective. In case colour light signal found to be flickering/ bobbing, the LP shall bring to stop his train and obey the aspect of signal only if remain steady for 60 seconds. If signal continues flickering/bobbing and except in case of Automatic signal if any signal shows more than one aspect, it shall be deemed to be defective signal.

- 1) At stations provided with color light signal where lights cannot be kept illuminated due to power failure including failure of standby arrangements, the SM must inform the SM on either side and section controller immediately who shall inform the Sr. DEE/DEE and Sr. DSTE/DSTE concerned.
- 2) Before dispatching a train to such a station, SM of the station in rear shall issue caution order T/409 to the LP advising him of the absence of any light on the signal and therefore keeping good vigil and to stop at the foot of the first stop signal of the station where the signal lights are out.
- 3) Authority to pass defective signal {(T/369(3b))} (separately for first stop signal and for starter for all departure signals) should be issued to the LP by the SM of the station where the failure has occurred, at the foot of the first stop signal and starter signal.
- 4) In this situation, neither the SM in rear shall be pre-advised nor shall the LP be issued T/369 (1).
- 5) As soon as the electric supply is resumed and signal is lit again, the advise as indicated above shall be cancelled and the LP of the train shall be guided the aspect of the signal.

Reception/dispatch of train on obstructed/non- signaled/ line

Provided with common starter

Reception of train on an obstructed line GR 5.09

- 1) In case of reception of train on an obstructed line, the SM shall-
 - a) Whenever possible intimate the LP through the SM of the station in rear that the train is to be received on an obstructed line.
 - b) Ensure that the signal or signals controlling the reception of the train are not taken OFF.
 - c) Ensure that all the points over which the train has to pass are correctly set and the facing points are locked.
- 2) After the train has been brought to a stand at the relevant stop signal, it may be received on the obstructed line by-
 - a) Authorizing the LP to pass the stop signal at ON by taking OFF the Calling-on signal, where provided.
 - b) Authorizing the LP on the signal post telephone, where provided, to pass the stop signal at ON in accordance with the special instructions.
 - c) Authorizing the LP to pass the relevant signal or signals at ON through a written authority (T/509) to be delivered by competent railway servant who shall pilot the train past such signal or signals.
- 3) The train shall be brought to a stand at the facing point leading on the reception line until hand signaled forward by a competent railway servant.
- 4) A stop hand signal shall be exhibited at a distance of not less than 45 meters from the point of obstruction to indicate the LP as to where the train shall be brought to a stand.
- 5) The LP shall keep his train well under his control and be prepared to stop sort of any obstruction.

Reception of a train on a non-signalled line GR 5.10

- 1) Should it be necessary, in an emergency, to receive a train on a line which is not signaled for reception, the SM shall ensure that-
 - a) The train is brought to a stand at the First Stop Signal (FSS).
 - b) The line on which it is intended to receive the train is clear up to the trailing points or up to the place at which the train is required to come to a stand.
 - c) All the points over which the train has to pass are correctly set and facing points are locked.
 - d) The LP is authorized to pass the approach stop signal at ON through a written authority Pilot in memo(T/510) to be delivered by competent railway servant who shall pilot the train on the non-signaled line.
- 2) The LP, while entering a non-signaled line, shall proceed cautiously and be prepared to stop sort of any obstruction.

Departure of a train from a Non-Signaled line GR 5.11

- 1) In the event of a train having to be started from a line not provided with a starter signal, the LP shall be given a written permission **(T/511)** to start:
Provided that such permission may be dispensed with where a tangible authority to proceed is given to the LP.
- 2) The written permission **(T/511)** or the tangible Authority to proceed referred to shall not be given unless all the points for the departure of the train have been set and the facing points are locked.

Departure of train from a line provided with a Common Departure Signal GR 5.12

- 1) In the event of train having to be started from a line out of a group of lines provided with a common departure signal, the LP shall be given a written permission **(T/512)** to start in addition to the authority to proceed under the system of working.
- 2) The written permission and authority to proceed referred to shall not be given unless all the points for the departure of the train have been set and the facing points are locked.

Use of lever Collars, Slide Collars/Pins, Buttons/Switch Collars-

The person nominated to operate panel, lever and switches are responsible to put Lever Collars, Slide Collars/Pins, Buttons/Switch Collars under the following situations-

- 1) The Collars must be placed on the relevant lever/buttons/switch/slide, whenever the line is occupied by a train, or for any other reason like a load vehicle /engine is left standing or when the line is otherwise obstructed.
- 2) Collars must also be used to protect the reception line on which a train stops to cross or to give precedence to another train in ordinary course.
- 3) Similarly collars must be used to prevent operation of departure signals i.e. Starter of the occupied line by a train and Advance Starter when block section ahead is occupied.
- 4) The lever shall be placed in the following manners-
 - a) When the running line is occupied, the lever collars on the levers/buttons of point and Home signals/calling-on signal/routing signal and button collar on the button and slide pin must be used.
 - b) If the non-running line is occupied it should be used on relevant point.
 - c) If the block section ahead is occupied, it should be used on the levers/buttons of Advance Starter.
 - d) In case of power block/traffic block it should be used on concerned signals/points including cross-over if involved.
- 5) The Collars will be removed as soon as cause of placing it is over. The Collars not in use must be placed on spare lever/buttons.
- 6) SM/Inspectors/Officers who conduct inspections of stations or cabins should ensure that the staffs involved have adequate knowledge of rules of using levers/slide pins/buttons.
- 7) If a material train is stabled on a station at night, lever collar/button should be used for the line on which the material train is stabled.

SYSTEM OF WORKING GR. 7.01

The following SYSTEMS OF WORKING is applicable on Indian Railway.

1. Absolute Block System
2. Automatic Block System
3. Following Train System
4. Pilot & Guard System
5. Train Staff & Ticket System
6. One Train Only System

SR 7.01-1 Following three systems of working are applicable to the SEC Railway.

1. Absolute Block System
2. Automatic Block System

ABSOLUTE BLOCK SYSTEM GR. 8.01

1. When trains are worked under Absolute Block System.
 - a. No train shall be allowed to leave a Block Station unless Line Clear has been received from the block section in advance, and
 - b. On Double line such line clear shall not be granted, unless the line is clear, not only up to the first Stop signal of the station at which such line clear is granted but also for an adequate distance from it,
 - c. On Single Lines such Line Clear shall not be given unless the line is clear of trains running in the same direction not only up to the First Stop Signal of the block station at which such line clear is granted but also for an adequate distance beyond it, and also the Line is clear of trains running in the direction towards the block station to which such line clear is given.
2. Unless and otherwise directed by approved special instructions, the adequate distance referred to in above clauses shall not be less than
 - a. 400 meters in case of TALQ and
 - b. 180 meters in case of MAUQ/ MACLS.

ESSENTIALS OF LOCK AND BLOCK SYSTEM- SR 8.01-1

1. It shall not be possible to take OFF the Last Stop Signal (LSS) to permit a train to leave a block station until "Line Clear" has been received from the block station in advance.
2. The entry of a train into a block section shall cause the Last Stop Signal (LSS) to be automatically replaced at "ON".
3. Line Clear shall not be given and it shall not be possible to clear the section by the block station in advance until the preceding train has passed over the section clearing track circuit or its equivalent provided beyond the first stop signal and until stop signal/ signals in rear of the train has/have been replaced to "ON" position.

CONDITIONS FOR GRANTING LINE-CLEAR

Condition of Granting Line Clear in “A” Class Stations- GR 8.02

In ‘A’ Class station, the Line shall not be considered clear and Line Clear shall not be granted to any train unless-

1. The whole of the last proceeding train has arrived complete,
2. All signals have been put back to their “ON” position behind the said train,
3. The line on which it is intended to receive the incoming train is clear up to the Starter,
4. All the points have been correctly set and all facing points are locked for the admission of the train on the said line.

Note- There are no “A” Class station on the single line on CR.

CONDITIONS FOR GRANTING LINE CLEAR AT A “B” CLASS STATION

1. At a “B” Class Station on **Double Line**, the line shall not be considered clear and Line Clear shall not be granted, unless-

- a. The whole of the last proceeding train has arrived complete,
- b. All necessary signals have been put back to “ON” behind the said train,
- i. At station equipped with TALQ signaling-
Up to the Home signal, or
At a station equipped with MAUQ signaling-
Up to the outermost facing points or the Block Section Limit Board if any.

2. At a “B” Class station on **Single Line**, the Line shall not be considered clear and Line Clear shall not be given, unless-

- a. The whole of the last proceeding train has arrived complete,
- b. All necessary signals have been put back to their “ON” position behind the said train,
- c. The line is clear-
- i. In TALQ signaling system, up to the Shunting Limit Board or Advance Starter (if any) at the end of the station nearest to the expected train
or
Up to the Home Signal if there is not any SLB or Advance Starter.
or
Up to the outermost facing points if there is no SLB or Advance Starter Signal or Home signals.

- ii. In **MACLS system**-

Up to the SLB or Advance Starter (if any) at the end of the station nearest to the excepted train.

or

Up to the outermost facing points if there is no SLB or Advance Starter.

AUTOMATIC BLOCK SYSTEM

In the following sections of the South East Central Railway the Automatic Block System is applicable-

1. KAV- BMY,
2. NIA-GTK
3. CPH-GAD

ESSENTIALS OF THE AUTOMATIC BLOCK SYSTEM ON DOUBLE LINE GR-9.01

1. Where train on a double line are worked on the Automatic Block System-
 - a. The line shall be provided with continuous track circuiting or axle counters,
 - b. The line between two adjacent block stations may, when required, be divided into a series of automatic block signaling section each of which is the portion of the running line between two consecutive stop signals, and the entry into each of which is governed by a stop signal, and
 - c. The track circuits or axle counters shall so control the stop signal governing the entry into an automatic block signaling section that-
 - i. The signal shall not assume an "OFF" aspect unless the line is clear not only up to the next stop signal in advance but also for an adequate distance beyond it, and
 - ii. The signal is automatically placed to 'On' as soon as it is passed by the train .
2. Unless otherwise directed by approved special instruction, the adequate distance referred to in above shall not be less than 120 meters.
3.
 - a. Under special instructions one of the automatic stop signal between two stations in the Automatic block signaling territories in each direction made as **MODIFIED SEMI AUTOMATIC STOP SIGNAL**.
 - b. **The** Mid-Section Modified Semi-Automatic Stop Signal so provided shall be interlocked with the signal of the station ahead through track circuits or axle counters or both and shall be controlled by the SM of the station ahead, the relevant indications whether the signal is in normal Automatic mode or Modified Semi-Automatic mode shall be available to the SM at both ends.
 - c. Advance Starter Signal of the station in rear shall be interlocked with the Mid-Section Modified Semi-Automatic Stop Signal in such a way that when the **A** marker is extinguished, the Advance Starter shall assume **OFF** aspect or be taken **OFF** only when the line is clear up to an adequate distance beyond the Mid-Section Modified Semi-Automatic Stop Signal. Similarly the Mid-Section Modified Semi-Automatic Stop Signal shall assume **OFF** aspect automatically or be taken OFF only when the line is clear up to an adequate distance beyond the Home Signal of the station ahead.
 - d. During abnormal conditions like fog, bad weather, impairing visibility, the Mid Section Modified Semi-Automatic Stop Signal may be worked by extinguishing the **A** marker in the manner prescribed under special instructions and this action shall also ensure that the **A** marker of the Advance Starter of the station in rear and Home Signal of the station in advance shall also be extinguished.
 - e. The Adequate Distance mentioned above shall not be less than 120 meters .
 - f. During normal condition, the Mid Section Modified Semi-Automatic Stop Signal shall work as normal automatic stop signal.
4.
 - a. When the LP finds the Mid-Section Modified Semi-Automatic Stop Signal with the **A** marker extinguished in **ON** position, he shall stop his train in the rear of the signal and inform this fact to the SM of the station ahead on approved means of communication as prescribed under special instruction.

- b. The SM of the station ahead may authorize the LP to pass the Mid-Section Modified Semi-Automatic Stop Signal working with **A** marker extinguished in **ON** position through approved means of communication after ensuring conditions and procedures prescribed under special instructions.
- c. In case of the LP is unable to contact with the SM of the station ahead, he shall pass the signal at **ON** after waiting for five minutes at the signal and proceed cautiously and be prepared to stop short any obstructions at a speed not exceeding **10 KMPH** up to the next signal and act as per the aspect of the signal, and
- d. The LP shall report the failure of Mid-Section Modified Semi-Automatic Stop Signal to the SM of the station ahead.

Essentials of the Automatic Block System (S/L)

1. Provision of Continuous Track Circuiting and Axle Counter.
2. Direction of Traffic is to be established before allowing a train.
3. For L/C, the line must be clear not only up to the First Stop Signal of the L/C giving station but also for an adequate distance beyond it.
4. The line between two adjacent block stations may, where required, be divided into two or more automatic Block signalling Sections by provision of Automatic Stop Signal
5. Movement of trains into through and out of each automatic block signalling section shall be controlled by the concerned Automatic Stop Signal.
6. Automatic Stop Signal shall not assume 'OFF' unless the line is clear up to the next Automatic Stop Signal.
7. If the next stop signal is a Manual Stop Signal, the line must be clear not only up to the next Stop Signal but also for an adequate distance beyond it.
8. All Stop Signals against the direction of traffic shall be at "ON".
9. Unless otherwise directed by approved special Instructions, the adequate distance shall not be less than 180 meters **Except as given above 'essentials on modified semi automatic Stop Signal' will be same as given in Double line.**

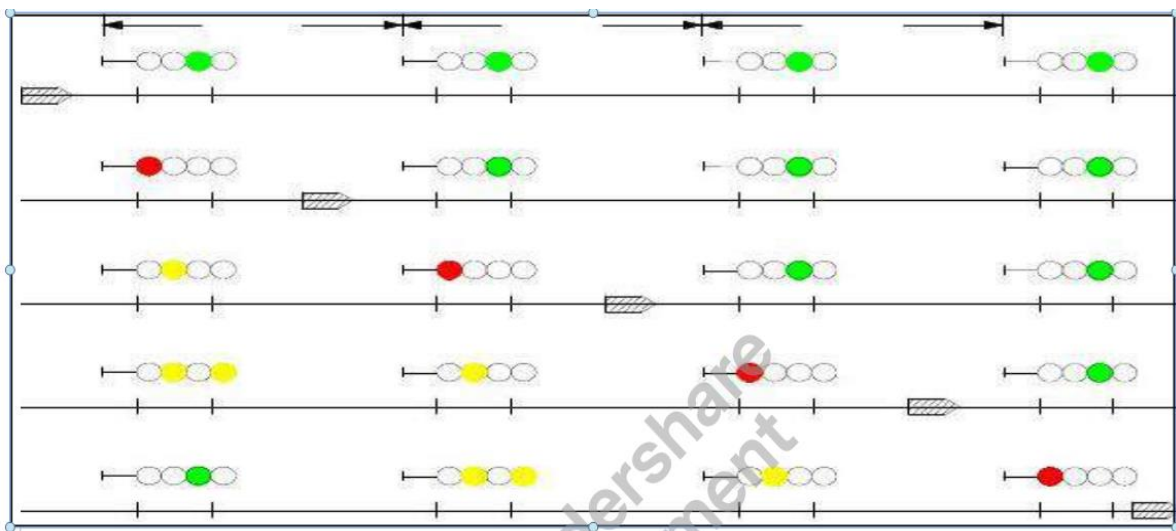
AUTOMATIC STOP SIGNAL GR 3.17

1. These signals are provided in Automatic Signaling territories.
2. The letter **A** is written in black on a white circular disk on the signal post for its identification.
3. The normal conditions of these signals are Green.
4. These signals assume their ON or OFF position automatically on the passage of the train.
5. These signals are provided where the line is straight i.e. there are no points, gates or crossings. The LP can pass these signals at their ON position by stopping at these signals 1 minute by day and 2 minutes by night and with a speed not exceeding 15 KMPH when the visibility is clear and 10 KMPH when the visibility is not clear.

SEMI AUTOMATIC STOP SIGNAL GR 3.17

1. A Semi-Automatic Stop Signal is capable of being operated either as an Automatic or as a Manual stop signal as per the requirement.
2. An illuminated white "A" marker is provided on the signal post for its identification.
3. These signals are operated by either by king lever or by AGGN/AGGYN button on the panel.
4. When "A" marker is illuminated on the signal post, the signal works as an Automatic Stop Signal. At this time the Loco Pilot can pass this signal at its ON position as an Automatic Stop Signal by halting at the signal by one minute in the day and two minutes by night..
5. When the "A" marker is extinguished, it works as a manually operated stop signal. At this situation the Loco Pilot cannot pass this signal at its ON position without proper authority.
6. These signals are generally provided at those automatic sections where gates and points are found.

MDZTI/BSP/SECR



DUTIES OF TRAIN CREWS WHEN AUTOMATIC STOP SIGNAL FOUND AT ON POSITION.

1. If the loco pilot finds an "A" marker automatic stop signal at ON position, he shall stop his train before the signal and shall sound a continuous long whistle.
2. After bringing his train to a halt before the signal, he shall wait for one minute in the day and for two minutes at night for the signal to be taken OFF.
3. If the signal is not taken off even after waiting, he shall sound a long whistle and exchange hand signals with guard.
4. The LP shall draw his train to the next stop signal very cautiously and shall be vigilant to stop his train before any obstruction.
5. He shall maintain a speed restriction of 15 KMPH when the visibility is clear and 10 KMPH when the visibility is not clear.

TRAFFIC AND ENGINEERING BOARD

SHUNTING LIMIT BOARD (SLB) GR.3.32

1. A rectangular board painted yellow with a black cross on the facing side
2. It bears the words "Shunting Limit" under the cross mark.
3. A small white light is lit up at night – visible from station side.
4. It is provided at a class 'B' station worked on the Absolute Block system on single line section, if there is no Advance Starter of the opposite direction.
5. Side at an adequate distance from the First Stop Signal (FSS). It is provided irrespective of signalling system.
6. It is provided at a distance of 400 meters from the First Stop Signal in TALQ
7. System and at a distance of 180 meters from the FSS in MAUQ/MACLS system.
8. It demarcates the boundaries of Station Section and Block Section.
9. Station Section may be enhanced providing Shunting Limit Board.



BLOCK SECTION LIMIT BOARD (BSLB)

1. A rectangular board painted yellow with a black cross on the facing side bearing the words "Block Section Limit".
2. A small white light is lit up at night visible from station side.
3. It demarcates the boundaries of station section and Block section.
4. It is not a signal.
5. It shall be placed at a distance of not less than 180 meter in advance of the Home Signal and shall protect the fouling mark of the outer most trailing point if any.
6. The following conditions are necessary for providing aBSLB.
 - a) 'B' class station on double line section
 - b) Worked under Absolute Block System.
 - c) Equipped with Multiple Aspect Signalling.
 - d) Outer most point (at an adequate distance from the FSS) is not Facing or there is no point at the approaching end of the train.

Difference between SLB and BSLB

S.	SLB	BSLB
1	The board is provided in the S/L section in B class station if there is no Advance Starter Signal of the opposite direction at an adequate distance from the First Stop Signal (FSS).	The board is provided in MACLS/MAUQ system only at B class station of D/L section, if there is no FACING POINT at an adequate distance from the First Stop Signal (FSS) or there is no point at all.
2	The board is provided at a distance of at least 400 meters from the First Stop Signal (FSS) in TALQ system and at a distance of at least 180 meters in MAUQ/MACLS system.	The Board is provided only in MAUQ/MACLS system at an adequate distance of at least 180 meters from the FSS.
3	The position of points is not taken into consideration while installing the SLB.	The board is installed depending upon the position of the outermost facing points.
4	The word SLB is written on this board.	The word Block Section Limit Board (BSLB) is written on this board.

WARNING BOARDS SR. 3.26-5

The Warning Boards are provided to warn the LP that he is approaching to a signal. They are of three types-

- a) Passenger Warning Board
- b) Admiral Board
- c) Advance Approach Warning System Board.

PASSENGER WARNING BOARD

- It is a rectangular board with yellow stripes diagonally painted on black background facing towards the approaching train.
- It is located at 1000 meters in rear of the First Stop signal/ Gate Stop signal. But at the stations where there is Distant Signal provided at a distance of 1000 meters from the FSS or there is a Warner Signal on a single post itself, the Passenger Warning Board is not provided.
- Intention is to warn the LP of the approaching train that he/ she is approaching the First Stop signal of a station/ Gate Stop signal.
- The yellow strips on this board are reflected by the head light of the approaching train at night.
- It is provided only in Two Aspect territory.



GOODS WARNING BOARD

- It is a rectangular board with a circular yellow band at the centre and two yellow horizontal bands one above and the other below the circular band on a black background facing towards the approaching train.
- It is located at 1400 meters in rear of the First Stop signal/ Gate Stop signal.
- Intention is to warn the LP of the approaching train that he is approaching the First Stop signal of a station/ Gate Stop signal.
- The yellow strips on this board are reflected by the head light of the approaching train at night.



VISIBILITY TEST OBJECT (VTO) & VISIBILITY TESTPOST (VTP)

- Except at that station where under as per the Station Working Rule (SWR), the lights of any signal or its back lights or arms of a semaphore signal are used as VTO, separate visibility objects are provided at a distance of 180 meters from the SM's office on either end.
- VTP is a steel or wooden slipper on which black and yellow alternative strips are painted.
- VTO is a battery operated flashing HS lamp with red aspect shall be put on visibility test post for the purpose of checking visibility
- If the VTO is not visible to the SM during foggy, storm and tempestuous weather, the SM understands that the visibility at his station is poor. And he shall arrange to send the fog signal men to the fog signal post.



VISIBILITY TEST POST



FOG SIGNAL POST

FOG SIGNAL POST n

- This Fog Signal Post is provided in all stations except in automatic block system.
- It is steel or wooden slipper on which black and white alternative slant strips are painted.
- This post is provided at those stations where it is necessary of use of detonating signal.
- This post is provided at a distance of 270 meters from the First Stop Signal (FSS) of the station.
- It helps the fog signal man in thick and foggy weather. The Fog Signal Man places the first detonator at this post and the other at 10 meters apart.
- In thick and foggy weather when two detonators explodes at this post the LP shall be informed that he is approaching to the FSS of the station and he becomes alert.

S. N	Visibility Test Object	Fog Signal Post
1	The signal or its back light or any other post can be used as VTO.	Only the post is used as FSP.
2	If a post is used as VTO then black and yellow strips are painted on it.	Black and white strips are painted on this post.
3	The VTO is provided at a distance of 180 meters from the SM's office on either end.	This post is provided at a distance of 270 meters from the First Stop Signal of the Station.
4	The VTO is illuminated at night.	The FSP is not illuminated at night.
5	It is related to the SM.	It is related to the fog signal man.

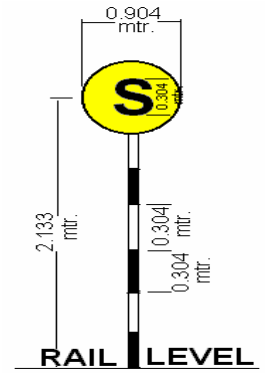
PH Board

- It is a rectangular board on which 'PH' is written with black in yellow back ground.
- This board is provided at those “D” class stations
- This board is provided at a distance of 400 meters from middle of P/ F of ‘D’ class stations.
- As soon as the LP sees this board, shall sound a long whistle to warn the passengers at the station.



OUT-LYING SIDING INDICATOR

1. This indicator is provided to inform the LP about the position of the facing points of the outlying siding. It is a yellow circular disk on which the word **S** is written.
2. It is provided 30 metre rear of facing point which shall be preceded by a caution indicator fixed 800 m. rear of this board.



TAIL BOARD GR. 4.16

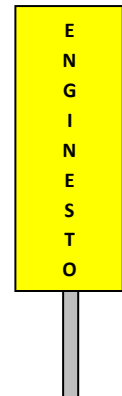
- It is a red circular board on which the word **LV** is written in white.
- This board is provided to the Guard in his personal store. He uses the same in the day by fixing it on the last vehicle.
- The Station staffs are ensured that the train has arrived completely at the station on seeing this board and the section is cleared thereafter.



ENGINE STOP BOARD SR.3.26-4

It is a yellow rectangular board on which the word "**ENGINE STOP**" is written in black.

- This board is provided on "D" Class station at a distance of 15 meters from the end of the platform where the engine has to stop.
- While stopping the engine at "D" class station the LP shall stop the engine at this board.



ENGINEERING FIXED INDICATORS/ENGINEERING BOARD

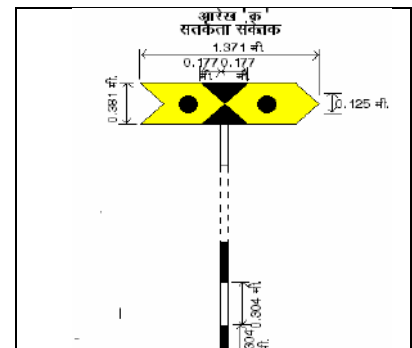
When it is necessary to indicate the LP where trains are to run at a restricted speed or where trains have to come to a stop due to the line being under repairs or due to any other obstructions, the Engineers will provide engineering speed restriction indicators both by day and night to indicate the place where such restrictions are to be observed.

They are of following types

1. Caution Indicators.
2. Speed Indicators.
3. Stop Indicators.
4. Termination Indicators.
5. Caution Board.
6. Whistle Indicators.
7. W/L Indicators for Level Crossing Gate.

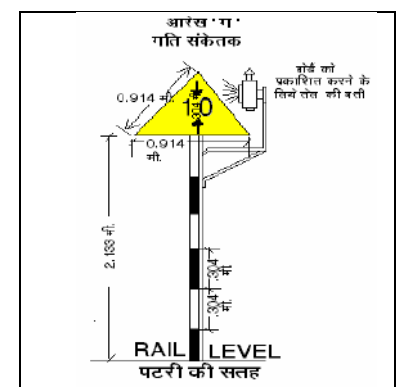
CAUTION INDICATORS

1. It consists of a horizontal board 1.371 meters wide and 0.381 meters deep fish tailed at one end and pointed at the other end.
2. A black cross is painted on it and two black circles at either end of the cross.
3. If there is a speed indicator provided at a distance of 30 meters from the work place, the caution indicator will be provided at a distance of 800 meters from the work place in plain area and at a distance of 930 meters in case of Ghat Section.
4. If there is a stop indicator provided at a distance of 30 meters from the work place, the caution indicator will be provided at a distance of 1200 meters from the work place.
5. By night the indicators for temporary restrictions shall display two yellow lights in the horizontal line, the indicators for permanent restrictions shall however display no light.
6. As soon as the LP sees this board shall immediately control his train and try to see the next indicator.



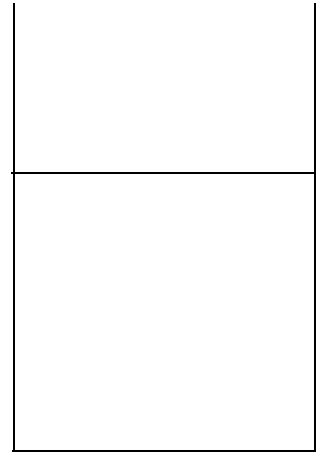
SPEED INDICATORS

1. This board shall consist of a yellow equilateral triangular board, with 0.914 meters side painted yellow and it shall indicate in kilometres the speed at which a train is to proceed past the indicator.
2. The speed shall be provided for both permanent and temporary restrictions.
3. The indicators for temporary restrictions shall be illuminated by night fixing a hand signal lamp in front of it. The indicator for permanent restrictions shall not be illuminated.
4. This is placed at a distance of 30 meters from the work place.

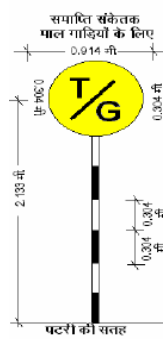
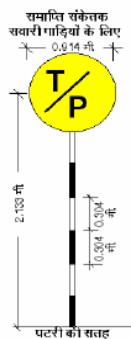


STOP INDICATOR

1. This shall consist of a horizontal board of 1.371 meters length and 0.381 meters wide and painted red and white vertical strips as shown in the adjacent diagram.
2. It is fixed at a distance of 30 meters from the obstruction.
3. It is illuminated with two red light at night.
4. A man of engineering department shall be deputed at this board with a book with him. The LP shall stop his train at this board and gives his initial in this book with the train No., Name, Date. Then alright signal shall be shown to the LP by this man to proceed with his train.



TERMINATION INDICATOR



1. This is yellow circular board consisting of 0.914 meters diameter disk bearing the letters “T/P” for passenger train and “T/G” for goods train in black as shown in the figure above.
2. The termination indicator for passenger train “T/P” is provided beyond the restricted length equal to the length of the longest passenger train running in that section. In the same way the termination indicators for goods train “T/G” is provided at a distance equal to the longest goods train running in that section. In broad guage “T/P” is provided at 550 metre and “T/G” provided at a distance 700 metre beyond the restriction
3. The LP of passengers and goods train shall resume their normal speed from these indicators.
4. If the passenger train or the goods train is of short length or its an engine then, the LP shall resume their speed on the hand signal of the Guard before the ‘T/P’ or ‘T/G’ board.

Caution & Termination indicator at vulnerable places

1. Caution indicator board are provided at such bridges where during monsoon water level may touch danger level mark or such vulnerable location as considered necessary.

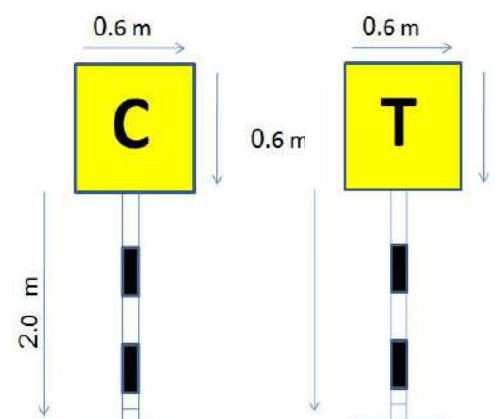
2. It is placed 1200 metres at point from such bridge or vulnerable location starts.

3. Termination board is provided a distance beyond the vulnerable place of length equal to the length of the longest train running in the section.

4. Where distance between the ‘C’ & ‘T’ board exceeds 1.6 km a series of ‘C’ board shall be fixed at interval of 800 metres to remind LP that vulnerable has not been passed completely.

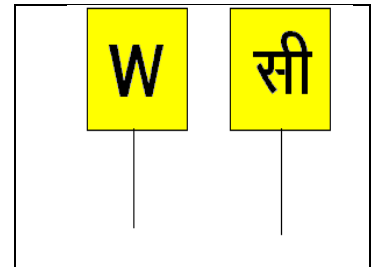
5. On single line the first & last board may have letter ‘C’ & ‘T’ painted on opposite faces so that, no extra ‘T’ board need be provided.

Intermediate board, if any shall have the letter ‘C’ painted on both faces.



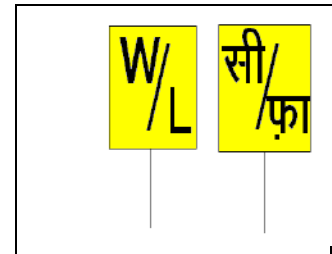
WHISTLE (W) BOARD

1. It is a square yellow board on which the letter “W” in Bi-languag is painted in black.
2. This board provided where the visibility is restricted upto 800 meter ahead for LP due to curvature or tunnel.
3. The LP shall sound a continuous long whistle as he passes this board.



WHISTLE GATE BOARD

1. It is a square yellow board on which the letter “W/L” in English is painted in black.
2. This board is provided at a distance of 600 meters from the level crossing gate in the direction of approaching train.
3. As soon as the LP sees this board, he shall sound frequently short whistles upto RW/L board which is fixed 250 rear of L/Xing gate . LP shall give contineous long whistle while passing and keep a sharp look on the Level Crossing Gate.





Brake Power Certificate (BPC)

1. This certificate is issued to the LP and Guard of the train by the TXR.
2. Prepared in triplicate copies and signed by SE/JE(C&W)
3. Details like train no. and name, engine no., line no., vehicle no., tonnage, number of vehicles, etc. are written.

Column A- Air pressure centimeters in the engine and brake van.

Column B- Air pressure Kg/cm² in the engine and brake van.

Column C- Number of Cylinders working/ number of defective cylinders and brake power percentage.

Formula for calculating brake power % -

$$\text{Total number of cylinders} - \text{Number of defective cylinders} / \text{Total cylinders} * 100$$

BRAKE POWER PERCENTAGE

Descriptions of the Trains	Originating Station	On the way
M/Exp, Pass. Train	100%	90%
CC Rake Goods Train	100%	90%
Premium Train	95%	Not mention
Intensive (End to End) Train	90%	75%

4. Validity of BPC-

- i) Coaching trains- 04 days/3500 km
- ii) CC rake- 30 days/6000km or 35 days/3500km
- iii) Premium rake- 12+3 days
- iv) End to end (Intensive) rake- From TXR point to loading point and from loading point to destination.

5. Colour of BPC

- i) CC rake - Yellow(Booklet)
- ii) Premium rake- Green with red diagonal strip.
- iii) Intensive- Green
- iv) Coaching- White

6. BPC becomes invalid when-

- i) 10 or more units /04 or more 8- wheeler wagon detached or attached.
- ii) Destination is not mentioned (In case of intensive rake).
- iii) Not run on dedicated route(In case of CC rake)
- iv) If rake is stabled more than 24 hrs on TXR point.
- v) rake has completed stipulated date/km is over (In case of CC rake)

Note: If KM is not logged by LP/GD than validity of BPC of CC rake will be reduced to 20 days.

GUARD'S PERSONAL Equipment SR 4.19-1

A Guard should have the following in his possession in his personal stores.

1. G & SR book , WTT of that section , Operating manual , Accident manual (hard copy or Electronic). These should be complete and up to date or such portion thereof as relevant to his duty. He should produce these books on demand by his inspectors.
2. Guard memo T/609 book.
3. A box of 10 detonators.
4. One red flag and one green flag mounted on sticks.
5. Padlock-3 and its keys.
6. Four rubber washers for joining hose pipe.
7. Parcel loading pamphlets.
8. LED based tail lamp and a tail board.
9. Air pressure gauge with adaptor.(Goods Guard)
10. Tail lamp/Tail board.
11. A clamp with padlock & keys for fixing LVI
12. W/T(for passenger Guard).
13. Guard journal (T/20 B).

Besides the above, the guard of passenger train should have the following things in his personal store.

1. Guard Certificate (Com- 164 B)
2. Carriage keys.
3. Complaint book.
4. A torch with cells. (with green and red lamp)
5. First Aid box.
6. Keys to put right the ACP.

In brake van of passenger train-

1. 2 brake van side lamps.
2. 2 wedges in each brake van.
3. 2 DCPT fire extinguishers.
4. 1 portable field telephone with instructions for use.
5. Emergency lighting equipment

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The time of attendance for Guard- SR 4.04-1

1. The Guard of passenger train must report for duty at least 30 minutes before the scheduled departure of the train.
2. The Guard of Sub-Urban train must report for duty at least 15 minutes before the scheduled departure.
3. In the case of goods train, the time of attendance will be prescribed by the DRM.

Tail Lamp/ Tail Board. GR 4.16

In order to indicate the station staff that the train is complete, the last vehicle shall be distinguished by affixing to the rear of it-

- a) By day, a tail board of approved design or a red painted tail lamp of approved design which may be unlit.
- b) By night, as well as in thick and foggy or tempestuous whether impairing visibility during day, a red lamp of flashing red light to indicate last vehicle check device.
- c) In emergency a red flag of approved design can be used in place of tail board.
- d) The rear most vehicle on EMU train shall red cross on white background in the train indicator. A similar indication is not given in any part of the train. At night at least one red light will be shown in addition to the red cross in the train indicator which will be illuminated.
- e) A light engine or engines moving in the block section must carry a red tail light of panel marker is lit behind the rear most engine.

1. This is a document containing the vehicles/wagons number attached to the train, type of vehicles/wagons, name of the owning railway, whether the wagons are loaded or empty, name of the originating and destination stations etc.
2. The form number of vehicle guidance is T/81 F for passenger trains and T/81 F(A) for goods trains.
3. This is prepared by TNC in two foils or more as per the requirement.
4. The vehicle guidance is prepared by TNC on the basis of number taker book.
5. Guard shall obtain this VG from the TNC or from the SM at originating station and shall check the load as per the VG.
6. If any vehicle/wagon is attached to or detached from the train at the station, the Guard shall endorse the same in the VG and obtain the signature of the SM.
7. The Guard shall make over this VG to the SM or yard staffs at the destination.
8. The VGs of all passenger trains and special trains are sent to the COM's office.
9. The VGs of all goods trains or mixed trains are sent to the DRM office.

FIRST-AID BOX- (SR 4.19-5)

1. The Guard of the Mail/ Exp. train, passenger train, mixed train, material train, military train shall obtain a First-Aid Box from the HQ station and shall check the box to ensure that there are no deficiencies.
2. The First-Aid Box is painted with the name of the Division, name of the station and serial number of the First-Aid Box.
3. The Guard shall hand over this First-Aid Box to the SM at the end of his duty at home station.
4. First -aid box shall be refilled in every three month if not exhausted.
5. The Medical Superintendent, Divisional Medical Officers, Divisional Asst. Medical Officers will inspect the First-Aid Box and initial the inspection card in the First-Aid Box.
6. The Transportation Inspectors and other Officers should also check the First-Aid Box.
7. If the Guard uses the First-Aid Box during his journey, he will note this in the journal, and must also submit a report to the DRM giving the following information-
 - a. Train Number and Date.
 - b. Name, designation and address of the person to whom first aid was rendered. In case of passengers, details of tickets held also are recorded.
 - c. Serial number of the First-Aid Box used.
 - d. Nature of injury, and
 - e. Name, designation, and address of the person who rendered the first aid.
8. The requirements of the First-Aid Box shall be provided by the hospitals of the HQ stations.

STATION WORKING RULES (SWR)

- 1) Powers to issue working instructions are delegated to Divisional Railway Managers within their own divisions and to their Sr. DOM.
- 2) The Station Working Rules should be framed jointly and signed by Sr. DOM and Sr. DSTE for Interlocked Stations.
- 3) The Station Working Rules should be framed jointly and signed by Sr. DOM and Sr. DEN for Non-Interlocked Stations.
- 4) The appendices signed by concerned officer only.
- 5) In addition to GR & SR each station shall be provided with a station working Rules under special instruction.
- 6) SWR is issued depending upon the local condition of the station concerned.
- 7) The issue of SWR must be in conformity with the GR & SR.
- 8) Object of issue of SWR is to regulate the safe working of trains in between station and shunting operation both in normal and abnormal condition.
- 9) The language of SWR should be easy, understandable and convenient for the staff.
- 10) SWR shall be re-issued afresh after every five years or after issue of three amendment slip.

ASSURANCE REGISTER

Assurance register is maintained at each and every block station for the purpose of obtaining assurance for every staff connected with trains passing works. Two kinds of "Assurance Register" are maintained. One for Group-"C" staff and another for Group-"D" staff separately.

The assurance is obtained from staff in the following cases:-

- 1) When a staff report at a station newly for Trains passing works.
- 2) When a staff remain on leave/sick/out of head quarter 15 days or more at a stretch.
- 3) When any amendment is entered in the SWR or any change in lay-out of a station is occurred.

Basic rule for signing in the "Assurance Register":-

- 1) Before signing in the "Assurance Register" the staff must go through the station working Rules, understand the duties entrusted to him and capable of performing his duties independently. In case of illiterate staff, the SM shall personally explain the SWR and duties to him and after getting him capable of performing duties independently his Signature/Thumb impression should be obtained in the Assurance Register as a token of having done so.
- 2) Staff concerned shall produce valid competency certificate at the time of signing in the "Assurance Register".

Summary of the detail prescribed on SWR:-

- 1) Station Working Rule Diagram.
- 2) Description of Station.
- 3) System and means of working.
- 4) System of Signaling and interlocking.
- 5) Telecommunication.

MDZTI/BSP/SECR

- 6) System of Trains working.
- 7) Blocking of lines.
- 8) Rules of shunting.
- 9) Abnormal working.
- 10) VTO.
- 11) Essential equipment at the station.
- 12) Fog Signalmen nomination.

List of Appendices of SWR:-

- Appendix -A - working of LC Gate(s)
- Appendix - B - System of signaling and interlocking, communications.
- Appendix – C - ACD
- Appendix – D - Duty roster of Trains passing staff.
- Appendix - E - Essential equipments.
- Appendix – F - Rules for working IBH, IBS, Halts, DK class station and outlying siding.
- Appendix – G - Working of train in electrified sections.

Copies of SWR should be supplied to:

- 1) Station/ Cabin/ Panel.
- 2) CRS
- 3) PCOM
- 4) CSTE
- 5) Sr. DSTE
- 6) Sr. DEN
- 7) Sr. DEE (TRD)

WORKING TIME TABLE

1. Working Timetable is a gazette issued by the operating branch of each Zonal Railway separately for each division.
2. This is issued once in a year and its currency is from the 1st July.
3. This WTT is jointly prepared by PCOM and CPTM.
4. In sub-urban area it is issued by PCOM, CPTM and DRM.
5. It is supplied to all the staffs related to train operation like LP, Guard, SM, PWI, LI, TI etc.
6. The followings are described in a WTT:
 - a. Lay out of the division and route kilometer.
 - b. Caution notice station.
 - c. Do's and Don'ts for safety staff concern,
 - d. Definitions and explanations of signs and abbreviations used,
 - e. System of working provided on different stations,
 - f. Particular of engines as regards weight, maximum permissible speed, and axle loads etc.
 - g. Statement showing the list of trains,
 - h. Max. permissible loads of the train,
 - i. Permanent speed restrictions,
 - j. Rake link and normal composition of trains,
 - k. Arrival and Departure timing of various trains at different station,
 - l. List of nominated and notice stations,
 - m. Standard of interlocking in various stations,
 - n. Location and composition of ART, Break Down, and ARME,
 - o. Jurisdiction of senior subordinates,
 - p. Recovery times
 - q. Minimum and normal running time for different block section, etc.
 - r. It is an official book and cannot be sold in public.
 - s. Permanent caution Order.

MAXIMUM PERMISSIBLE SPEED (MPS)

1. Maximum permissible speed is determined by CRS.
2. While determining the maximum permissible speed the conditions of Engines vehicle tracks and gradient in the section are taken into consideration.
3. This MPS is indicated in the working time table of the section.
4. In any circumstances the Loco pilot shall not exceeds this speed.
5. When train runs with MPS the time taken to cover the distance between two stations is called **Minimum Running Time**.
6. The MPS is 10% more than the booked speed.

BOOKED SPEED

1. The booked speed is decided by PCOM.
2. This speed is 10% less than the MPS.
3. The strength of Engine, track, gradient, Rolling stock, signaling system etc. are taken into consideration while determining the Booked speed.
4. The Booked speed is indicated in the working time table in accordance with the section.
5. When train runs with this speed the time taken to cover the distance between two stations is called **Normal Running Time**.

MINIMUM RUNNING TIME (MRT)

It is the time taken by a train to cover the distance between two station when it runs with maximum permissible speed. The followings are taken into consideration.

- a. While calculating this speed, the type of engine attached to the train and the maximum permissible speed in that section are taken into consideration.
- b. The permanent speed restriction of the section is taken into account.
- c. The Gradient turn out etc are considered while calculating the MRT.

NOTE- MRT is mentioned in WTT Appendix-1

NORMAL RUNNING TIME (NRT)

The Normal Running Time is mentioned in the WTT at Appendix-1

- a. It is the time taken by the train between two stations when it runs with Booked speed.
- b. Permanent speed restrictions are taken into consideration while calculating the NRT.
- c. The Gradients, turn outs in the section are considered while determining NRT.
- d. The time for Acceleration and Deceleration are also considered for calculating NRT.

Public Time Table

1. This time table is prepared for the guidance of general public.
2. Information regarding the passenger trains are published in this time table-
 - a. Reservation/cancellation rules
 - b. Refund rules
 - c. Fare table
 - d. Rules for booking luggage and parcels
 - e. Information regarding passenger amenities.
3. It is common for all divisions in a zone. And is different for different zones.
4. It is published once in a year with effect from 1st July.
5. It can be sold to the public on price.
6. This is jointly prepared by PCOM, CPTM, CCM and members of ZRUCC, NRUCC.
7. The map (lay out) of concerned zone and Indian railway is printed in the PTT.
8. This is prepared in English, Hindi and in Regional language.

CAUTION ORDER (G.R.4.09)

Whenever it is necessary to give driver special instruction in regards to restriction of speed, need for caution to be observed due to damage repair to track, overhead equipment (OHE), signaling and interlocking instrument or for any other reason endangering safety, a caution order issued for safety of traffic.

The Circumstances Are Listed Below

1. When engineering works are undertaken inside or outside station.
2. When rough running on heavy lurch is reported by the driver.
3. When any patrolman does not report within 15 minutes of his scheduled arrival on station.
4. Unsafe condition of bunds of tank or river.
5. When water level rises over the danger level marked at bridges.
6. When gate signal outside the station limit are reported to be defective.
7. When there is doubt or suspicion that a block section may have been affected or obstructed during the passage of an earlier train.
8. Trolley or lorry working in section as required under rules.
9. When signal is newly erected or resited on the section (15 days continuous c/o to be served).
10. On a double line section when a passenger train does not arrive within 10 minutes or a goods train within 20 minutes of its normal running time issued for the train proceeding in opposite direction.
11. When OHE is damaged or under taken for repair.
12. When signaling and interlocking equipment is damaged or under taken for repair.
13. When sending engine to assist disabled train in section.
14. In condition of TSL and ACF working in D/L and S/L section.
15. Any other condition or circumstance necessitating issue of caution order.

Procedure for issuing caution order

1. The SM of caution notice station shall issue caution order (T/409) to the LP and guard of all train leaving his station. If he has received no information of any special precaution to be observed between his station and next notice station of the train, in the direction of movement he shall issue 'Nil' caution order (T/A 409).
2. Neither the LP shall start his train nor shall the Guard give signal to start the train until they get the caution order.
3. In case the train crew en-route, the LP/guard taking over charge must make over all caution order relating to his train giving acknowledgement to the LP/guard who is being relieved.
4. During ACF in S/L on D/L, the SM of rear station shall issue caution order.
5. The full name of the station, kilometer, cause, speed restrictions shall be written on the caution order.

6. Date with signature must be written on the caution order. It should not be overwritten.
7. The caution order to the LP and guard should be handed over either by the SM himself or by any competent railway servant and their acknowledgement should be obtained.
8. If there is more than one engine attached to the train, caution order must be given to the driver of first engine. Before it, the LP of the other engine must go through the caution order and his signature must be obtained.
9. If there is banking engine attached to the train, a copy of the caution order should also be handed over to the LP of the banking engine.
10. At all station where caution orders are issued the SM shall keep on up to date record of all speed restriction imposed with the dated of their enforcement and cancellation authority, nature, etc. in the **caution order register** and bring forward every **Monday at 9.00 hours**. The record of caution orders are kept in safe custody for 12 months.
11. The LP and Guard should hand over the caution orders to the Loco foreman and SM respectively at the end of their duty along with other train papers.
12. The Guard must supervise whether the caution order is followed by the LP or not.

OVER DIMENSIONAL CONSIGNMENT

STANDARD MOVING DIMENSION:-

Standard moving dimensions are prescribed to each gauge for safe conveyance of loads so that the load should not come in contact with the fixed structures like platform, signal post, OHE masts, Bridge, and Tunnels etc.

Conditions	Broad Gauge 1676 mm	Narrow Gauge 762 mm	Narrow Gauge 610 mm
Height from Rail level to top center	4115 mm	3200 mm	2896 mm
Height from Rail level to top side	3505 mm	2895 mm	2743 mm
Width	3252 mm (coach) 3200 mm (Goods- 4 wheeler) & 3050 mm (Goods- 8 wheeler)	2286 mm	2133 mm

The consignment which, at any place during the course of its movement from its origin after loading to its destinations (including the change of Gauge) infringes the maximum moving dimension is called ODC/ISMD.

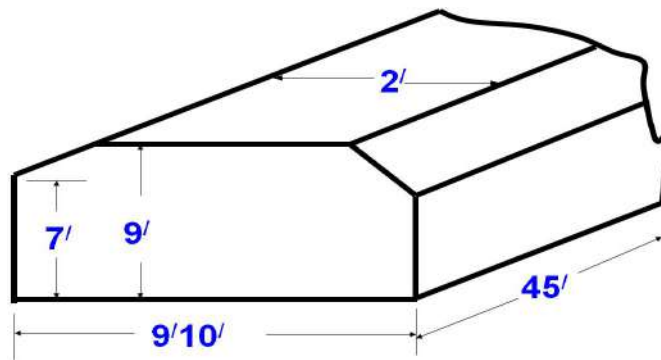
Loads which infringe the standard moving dimension will not be dispatched without the sanction of the COM who will if necessary obtain the sanction of CRS through CE.

On the basis of gross clearance (in standing position) and clearance the ODC are classified into three categories.

1. A-class ODC
2. B-class ODC
3. C-class ODC

- Distance between stable train and fixed structure is called Gross clearance.
- Distance between running train and fixed structure is called net clearance.

Description	A class ODC	B class ODC	C class ODC
Net clearance	6" to 9" inches	3" or more and less than 6"	3"-1" inches
Gross clearance	9" or more	6" or more and less than 9"	4" or more and less than 6"
Permission	Local (DRM), Foreign (COM)	COM	CRS through CRS
Speed	Booked	40/15kmph	25/8kmph/WP
Escort staff	Not required	SE(C&W) at night and critical section	SE (P. Way), DTI, SE(C& W), OHE Staff
Day/night	Day/ night	Day/night	Only in day



FIXED STANDARD MOVING DIMENSIONS

MOVEMENT OF ODC IN ELECTRIFIED SECTION:

- I. 15 km/h in electrified sections where the clearance of the load is less than 1' 3 1/2" but more than 1' 1 1/2" from the 'OHE'
- II. No consignment with less than 100mm gross clearance from the overhead contact wire will be permitted over the electrified section.
- III. A representative of the traction department should also accompany all ODCs as specified in (II) and (III).
- IV. A representative of the Traction Department should accompany all ODC, having width of more than 1981mm for BG and 1910mm for MG from the centre line of the track.
- V. Section controller and Traction Power controller must co-ordinate, while on ODC moves in an Electrified section.
- VI. A list of structure , where clearances are restricted on the electrical traction area and also clearance available under over bridges should be with the Section Controller and Traction Power Controller

PRECAUTIONS FOR THE MOVEMENT OF LOADS WITH ODC

1. For movement of ODC , consigner shall submit the particulars of the consignment like complete measurement , weight booking and destination station mode of loading and unloading, and sketch of the consignment.
2. Proper sanction must be obtained as per extant rule.
3. Such load shall be carried only on the specified route.
4. Loco yards, goods sheds transshipment (TP) sheds and high level platforms should be avoided.
5. Passenger Trains should not carry ODC consignment.
6. B class and C class ODCs shall not be crossed in the same section on double line.
7. 'ODC' should be written on the pocket level.
8. Vehicle loaded with ODC must be kept in the center.
9. ODCs should be carried in through trains without any shunting enroots.
10. Loose shunting, rough shunting of ODC wagon is prohibited.
11. The speed of the special train with BWL wagon will be 30 kmph and it shall be booked beyond the Indian Territory.
12. There should be at least 6 goods wagon between BWL wagon and engine.
13. If there is a banking engine attached behind the BWL then there should be at least 6 goods wagon between Banking Engine and BWL.

MARSHALLING

Marshalling:- Marshalling means scientific and systematic arrangement of vehicles on train to meet specific transportation needs such as safety and security, operational efficiency, elimination of delay, optimum utilization of transport capacity and maximum facility in dealing with traffic during run, at terminal station and beyond.

ANTI TELESCOPIC MARSHALLING:-

The marshalling done by using anti telescopic coach is called Anti Telescopic Marshalling. In this marshalling some special type of coach are attached next to engine and in rear of the train. The Anti Telescopic coach is so designed that the impact of collision on other part of the train is nullified on negligible.

ANTI TELESCOPIC MARSHALLING OF MAIL/EXPRESS TRAIN

1. Engine + SLR + 2 ATC + other coaches + 2 ATC + SLR

2. Anti Telescopic Marshalling of passenger Train

Engine + SLR + 1 ATC + other coaches + 1 ATC + SLR

3. Anti Telescopic Marshalling of Train on branch line

Engine + 1 ATC + other coaches + SLR + other coach + 1ATC

The SLR itself is considered as anti telescopic coach because both side of passenger compartment of SLR are provided with luggage compartments. The SLR is attached in the middle of the train in the branch line to reduce the delay due to shunting.

- a. In case of SLRs having passenger portion on one side, luggage cum brake portion on other side, it should be scrutinized in such a way that luggage cum brake portion is trailing outermost on next to engine.
- b. Passenger portion of SLR should be locked if scrutinized next to engine or trailing outermost.
- c. In case of newly designed SLR with passenger portion in the middle, there can be positioned in either way.
- d. In case of shortage of SLRs, suitable other coaching vehicles or VPU may be provided and in case of coaching vehicle, used as SLR, its doors should be locked to ensure that passengers can't occupy it.
- e. Two ATCs should be scrutinized inside the ATC SLRs at both ends.
- f. After providing for Mail/Express trains, all available anti-telescopic/steel bodied SLR should be used on main line passenger train and passenger trains.

SPECIFICATION OF ANTI TELESCOPIC COACH (ATC):-

1. The ATC are designed with stainless steel and are very light weight in comparison to general coaches so that engine can haul a longer train.
2. The under frame, side and the roof are made of with single frame.
3. Each corner is providing with toilets and next to it doors are provided. The sitting berths are provided in between the doors of either ends.
4. The sides are weaker than other part of the coach. Collapsible tubes are fitted under the toilets and under frames. The energy created during head-on-collision is observed by the

sides and the collapsible tubes are damaged which keeps the middle part of the coach for the passenger safe.

5. For identification of this coach cross, mark is painted rear the buffer.
6. Coiled springs are provided between axle and bogie which absorb the shock.
7. Each joints of the bogie frame is fitted with special type of Rubber so that fitness of the coach is kept intact and less sounds are produced.

MARSHALLING OF PASSENGER & MIXED TRAIN

1. The composition and marshaling of Mail/Express, passenger and mixed train is prescribed by special instruction, issued by PCOM from time to time.
2. On Passenger/Mail Exp/Mixed Train, there must be at least two SLR out of which one is attached next to engine and other in rearmost.
3. If two SLRs are not available at least one SLR should be attached in rear.
4. On short service shuttle trains, one SLR may be attached in the middle of the train to avoid reversing in shunting provided not more than three bogies are on either side in addition to inspection carriage.
5. The marshaling arrangements on mixed trains shall ordinarily be Engine + Goods Vehicle + Passenger Vehicles + SLR.
6. Vehicle fitted with and connected with vacuum/air frame system of train throughout can be attached behind rear SLR .In passenger trains not more than two bogies may be attached behind rear SLR. In addition , one inspection van fitted with hand brake may be attached as rear most vehicle.
7. In mixed train one inspection van or power generator car may be attached as near most vehicle in addition to three bogies behind rear SLR, provided brakes of all vehicles are in working condition and the inspection van is provided with hand brake.
8. A single 4-wheeler vehicle must not be marshaled between two bogies or between engine and bogie (MT is Exceptional).
9. When 4-wheelers are attached to a passenger train, speed of train should not exceed 72 kmph subject to local restriction.
10. No goods stock shall be attached to a passenger train unless certified by the TXR that it is safe to run on passenger train. and No Goods Stock shall be used for passenger carriage without previous sanction of GM
11. Piped vehicle are not to be attached with passenger train. However, in case of mixed train they may be attached inside near brake van of fully vacuum/air brake train and not behind rear brake van, provided they do not cause any interference to train lighting connections.
12. TXRs at all coaching and goods "Maintenance" and "Fit to Run" stations shall examine all goods stock attached to passenger trains, even though the train to which they are attached is not ordinarily examined at that station. At these stations, the examination will be limited to the goods stock only and will be confined to safe to run examination.
13. On such stations where no C & W staff is provided on the terminal stations, the C&W staff at originating station of mixed train will give the certificate for both outward and inward journey of the wagon whether loaded or empty indicating the terminal station.
14. The pantry car should be marshaled in the middle and should be attached to vestibule stock.

15. Vestibule coaches should be attached in one group as far as possible no non-vestibule coach should be attached in between them.
16. All AC coaches should be Marshalled in one group and should be attached to vestibule coaches at proper place.
17. While marshaling the sectional coaches, it should be taken into consideration that if shunting engine is available at the junction station where shunting of the coaches is to be performed, then the coaches should be marshaled in rear of the train.
18. Maximum three inspection carriages occupied by the officers can be attached to light engine. In case more than 3 Inspection carriages are attached, rules regarding running of goods trains without brake van will apply.

MARSHALLING OF GOODS TRAIN:-

1. There should be at least one goods brake van in the rear of the train, except in case of train mentioned in SR-4.23-1.
2. No ODC shall be attached to a train without the sanction of DRM/PCOM.
3. A single four-wheeler must not be marshaled between two bogies
4. One damaged (or sick) vehicle/wagon, or engine certified fit to run may under special instructions, be attached outside of goods train during day light hours only.
5. A single empty four wheeler wagon must not be marshaled between loaded wagons on the Ghat section.
6. Dead engine (not defective) if fit to run with maximum permissible speed can be attached next to engine or rear of the train .

MARSHALLING CHART:-

S.N.	DESCRIPTION	GOODS TRAIN	PASSENGER /MIXED TRAIN
1	Live stock/ loaded Horse box	7th from engine	Not applicable
2	Damaged (or sick) vehicles/engine certificate fit to run.	Behind rear brake van during day light only	Not applicable
3	Dead engine	Next to engine or rear	Next to engine
4	Crane	4th from engine	Same subject to the speed restriction

GUARD WAGON - Empty wagon/coaching vehicle or loaded wagon/coaching vehicles, not loaded with explosive goods, inflammable goods or empty passenger coaches (looked) are used as guard wagon for safe carriage of explosive and inflammable goods. These guard wagons are attached in front and in rear of the wagons/vehicles loaded with explosive inflammable materials/ LPG gas. One eight wheeler can be used in place of two 4-wheelers as guard wagon.

DEAD AND DEFECTIVE ENGINE

- If dead locomotive is worked without any one of locomotive coupling or connecting rods, it is termed as unbalanced locomotive.
- Whenever a locomotive working a train fails in the block section, the dead train locomotive may be coupled to the relief engine and the train worked to the next block station where the dead locomotive should normally be detached.
- Otherwise the train may be worked double headed with the dead locomotive upto the destination.
- Only one dead engine can be attached to a train.
- The dead engine shall be attached next to the engine in passenger train not in the rear of the train.
- As far as possible the brake system of the dead engine should be in working condition . Otherwise the BP and FP of the working engine shall be coupled to the BP & FP of the vehicle next to the dead engine. The dead engine will be treated as piped vehicle.
- If a dead engine is attached to the engine, it shall be treated as piped vehicle.
- If double headed is not permitted in section , the minimum distance between the dead locomotive and the train engine /banking engine (if any) should not be less than the largest span of the bridge on the section where dead locomotive is hauled.
- When a dead engine is attached with faulty under gear parts or in the rear of a goods train, it should be accompanied by Asst. Loco Pilot.
- Dead engine shall be attached to the train in that section where working of double/tipple engine is permissible , other wise gap between train engine and dead loco should be not less than 91 metre or 11 wagon gap where banking is not feasible..
- Whenever a dead engine (Electric) works in a non-electrified section, it shall be treated as ODC in case of any interference.
- The Maximum permissible speed of the dead engine should not be less than the MPS of the train.
- A maximum of 3 engines (2 working + 1 dead) can be attached to the train provided the brake system of the dead engine is in working condition.
- A locomotive is sent to the workshop for POH should normally be sent on its own power or with a goods train.
- An unbalanced engine being sent to the workshop for repair, should be hauled by a light engine at a speed not exceeding 15 KMPH.

MARSHALLING OF WAGON LOADED WITH EXPLOSIVE:-

Maximum number of goods wagon or powder van with military Explosive or gun powder which can be marshaled with each class of trains should be marshaled as follows :-

- I. With Goods train – maximum 10
 - II. With mixed train – maximum 03
1. The wagons loaded with gun powder ammunition or explosive must be in one group at one place in a train.
 2. The explosive loaded in the wagon must not exceed the marked carrying capacity (as mentioned in red-traffic book).
 3. If the wagon loaded with explosive is to be attached near the engine, a guard wagon must be attached in between engine and Explosive wagon and separate with 03 guard wagon from other other stock and brake van..
 4. As far as possible, the wagons loaded with Explosive should be attached in rear of the coaching vehicles.
 5. The rules mentioned above for guard wagon is also applicable to military special.
 6. The marshaling of wagons loaded with explosive or gun powder ammunition in the military special must be in accordance with military traffic, but the maximum load should be in accordance with the sectional load mentioned in the load table.

Carriage of petroleum and other inflammable liquids by train:-

Petroleum and other inflammable materials are divided into class 'A' which are highly inflammable and class 'B' which are inflammable. The common types of class 'A' liquids carried on the railway are aviation, spirit, benzene, crude oil, petro (motor spirit), solvent oil, methanol and naphtha. The common types of class 'B' liquids are diesel oil, jet turbine fuel kerosene and turpentine. Details are given in the Red Traffic Book.

Carriage of petroleum and other inflammable liquids by passenger and mixed train:-

1. No restriction on the number of wagon.
2. Such wagon must be grouped together and close coupled to one another and also to the adjoining vehicles on either side and must be marshalled as far away as possible from the Loco Motive.
3. Wagon containing class 'A' liquid must be preceded and followed by three guard wagons exclusive of brake van. If wagon containing class 'A' liquid is marshalled next to engine, one guard wagon should be provided between engine and such wagon.
4. Wagon containing class 'B' liquids need to be separated by one guard wagon in front and one in rear.
5. The number of guard wagons in front and in rear will not be less than one and three respectively when wagons contain gases (compressed, liquefied or dissolved).
6. All empty wagons which had contained either class 'A' or class 'B' inflammable liquids should be treated in the same way as wagons actually containing the inflammable liquids and should be separated in front as per items 3 & 4 above.

GR-4.29 Working of Disabled Vehicle, Wagon or Damaged Engine:-

1. Whenever a Loco foreman or Train Examiner considers it is safe to attach disabled vehicle, wagon or damaged engine behind the rear brake van he shall issue a written advice to this effect to the SM.
2. SM, on receiving a written advise may attach such vehicle, wagon or engine behind the rear brake van of goods train or a mixed train on sections where no goods train generally run, during day light and in clear weather.
3. After sun set on if the weather is thick, foggy or tempestuous, the vehicle, wagon or engine must be detached and sent on again in day light or when the weather is clear.
5. Only one such vehicle, wagon or engine can be attached in the rear of a goods or mixed train. The Loco foreman or Head Train Examiner should depute a competent railway servant to accompany the train.

GHAT MARSHALLING /GHAT RULES:-

1. Information on Ghat section is mentioned in the working time table of the division.
2. Working instructions and marshalling of trains to be run in Ghat section is also mentioned in the WTT.
3. Brake power for goods train should have atleast 90 % .
4. The load in the train should not exceed the load prescribed in the load table.
5. Only trained LPs shall work the train in the Ghat Section. The LP should personally check the brake power before entering into the Ghat section.
6. If the train is likely to be stop for more than 10 minutes in the Ghat section, hand brake shall be applied immediately and wooden wedges shall be used.
7. No engine shall be detached from the train in the Ghat Section at any circumstances.
8. One empty wagon shall not be scrutinized between two loaded wagons.
9. All the loaded and empty stock shall be grouped in separate blocks and loaded stock shall be scrutinize next to engine followed by the empty stock.
10. Train should have a properly working vacuum/air brake system.

INTERLOCKING

INTERLOCKING has been defined in the General Rules as an arrangement of points , signal and other appliances operated from a panel or Lever frame so interconnected by mechanical locking or electrical locking or both that their operation must take place in proper sequence to ensure safety.

Necessity

- Eliminates the dependence on human element to achieve safety.
- Ensures that signal can be taken “OFF” only after the relevant facing points are correctly set and locked and trailing points are correctly set.
- Ensures that once the signal has been taken “OFF”, it should not be possible to change the position of the points or unlock them.
- Prevent conflicting signals.
- Increases speed over main line.

Principles/Essentials: -

- It must not be possible to take off a fixed signal to receive a train on a line unless
 - All facing points over which the train will pass are correctly set and locked and trailing points are correctly set,
 - Isolations and signal overlaps are correctly set/locked,
 - All points giving access to the running line from the siding / non running line are set and locked against such line,
 - Interlocked level crossing gates are closed and locked against road traffic.
- It must not be possible to take off the conflicting signal at one and the same time.
- After the signal has been taken off it must not be possible to move any point or lock on the route including isolation nor to release any interlocked gates unless the signal has been replaced to the ‘ON’ position.
- Operation of levers/switches must take place in proper sequence.
- Signal levers/switches when operated must lock or back lock as necessary.
- It must not be possible to take off the Warner signal until all the relevant Stop signals have first been taken off and when ‘Off’ it must back lock all such signals.
- When all signals are in the ON position all relative points must be free for shunting purposes.

Types of Interlocking :-

Direct -When the points and signals are operated directly from one lever frame/panel.

Indirect – When the points are set and locked from one place and the signals are operated from another place. It is affected by means of keys carried from one place to another.

Necessity of interlocking:-

- 1) To ensure more safety
- 2) To increase speed
- 3) To increase the section capacity

Normally Interlocking arrangement is between:

- 1) Points and Signals
- 2) Signal and Signal
- 3) Signal and Gate
- 4) Signal and Block Instruments
- 5) Key and Key
- 6) Lever and lever
- 7) Slide and Signal
- 8) Slot and Signal
- 9) Points and block Instruments

Methods -

- a) Mechanical :- Direct & Indirect.
- b) Electrical :- Using Electrical locks & relays.
- c) Hybrid :- Combination of Mechanical & Electrical Interlocking. Using relays.
- d) Electronic:- Solid State Interlocking. It uses micro-processors and logic circuits with electronic components. It saves Building construction, relays etc.

Revised Standard of Interlocking:-As per Amendment Slip no. 03(OM)

Standard of Interlocking	Standard – I (R)	Standard – II (R)	Standard – III (R)	Standard – IV (R)
Isolation	Recommended but not essential	Essential	Essential	Essential
Locking of Points	Key Lock/ FPL/HPL	FPL/Points Machine	FPL/Points Machine	Clamp Type
Interlocking	Direct or Indirect	Direct	Direct	Direct
Speed	50 KMPH	110 KMPH	140 KMPH	160 KMPH
Signals TALQ	Outer and Bracketed Home	Outer, Warner and B-Home/Routing, Starter and Advanced Starter are compulsory	Not Applicable	Not Applicable
Signals MAUQ/ MACLS	Distant, Home with route indicator and Starter in each direction	Distant, Home with route indicator, Starter and Advance Starter is compulsory	Distant, Home with route indicator, Starter and Advance Starter are essential. Double Distant are compulsory (Where breaking distance of Goods train more then 1 KM)	Distant, Home with route indicator, Starter and Advance Starter are essential. Double Distant are compulsory (Where breaking distance of Goods train more then 1 KM)

Non-interlocked station

- There is no relation between signal, points and other appliances.
- Signal can be taken off without correct setting and locking of relevant points and points can be altered before putting back of signal.
- Speed over facing points on main and loop line should not exceed 15 kmph.

NON-INTERLOCKED

Std	Speed	Lock on Facing points	isolation	interlocking	Signals on either side	
					TALQ	MAUQ/M ACLS
I	0-15	Cotter Bolt or Clamp Pad lock	Not required	Not required	Outer at 400 meters from outer most facing point	-----
MNI	0-15	Key Plunger Lock	Under developed	Under developed	Outer, Common Home	-----

Modified non-interlocked station

- Developed stage of Non-interlocked station.
- Home signal cannot be taken off without proper setting and locking of points at the approaching end and Outer signal cannot be taken off before taking off Home signal.
- But, Home signal cannot give the guaranty of the points at the trailing end.
- Speed over facing points on main and loop line should not exceed 15 kmph.
- Points are locked by Triples Hand Plunger Key-lock.

Interlocked station

- There is a relation between signal, points and other appliances such as L.C. Gate, Track circuit, lock bar, detector etc.
- A signal cannot be taken off until the relevant points are correctly set and locked and interlocked L.C. Gate is closed against the road traffic.
- The relevant points cannot be altered and the interlocked L.C. Gate cannot be opened until the signal has been put back to ON.
- Speed over facing points on turn out, cross over and loop line is generally not exceeding 15 kmph; but under approved special instructions speed over loop line may be exceeding 30 kmph.

Panel Interlocking

- All points and signals at a station are worked by the switches/push buttons provided at the panel in the SM's room.
- The lay-out of the station is indicated on the panel.

- The route which is set is indicated on the panel by appearance of white light on the signaling section concerned. As soon as the train enters a signaling section, red light is indicated on the section.
- Provided in ASM's room and operated by ASM/SM on duty.
- No staff except SM/ ASM on duty shall operate the panel.
- Indications of signal, points and lines are shown in the panel.
- There is considerable time saving in the train operation at a panel interlocked station.
- SM himself controls the operation of point and signals and no co-ordination with the cabin man or lever man is required as is the case in mechanical signaling.
- Panel interlocking also result in the considerable saving of staffs such as lever man, cabin man, etc..

Route Relay interlocking

- The entire geographical diagram is drawn on a single panel board.
- A number of buttons of different colors are used for different operations as follows-
 - ✓ Blue- Points
 - ✓ Red- Signals
 - ✓ Grey- Routes
 - ✓ Yellow- Shunt Signals
- All the points, isolations of a route are set and locked at once on a single operation of concerned route button and signal button within a short period of time.
- Provided for major yards and large junction stations where the traffic is busy.
- Provided in ASM's room and operated by ASM/SM on duty.
- No staff except SM/ ASM on duty shall operate the panel.
- Indications of signal, points and lines are shown in the panel.
- Operation of signal and concerned route button set and lock the desired route automatically and clear the signal.
- Facilities like taking ON the signals, cancellation of the route already set, taking OFF the calling-on signals to receive train on an obstructed line, operation of points even in case of track down, cancellation of signal overlap etc. are also the important advantages of RRI.
- Whole of the lines are track circuited and they are divided into smaller part on the panel so that any defects in the track circuit can be easily detected.
- Any defects can be detected by audio visual indication on the panel.
- The route in the rear of the train is automatically cleared on the progress of train on the route so that other train may be allowed to proceed.

DIFFERENCE BETWEEN RRI AND PANEL INTERLOCKING

S No	Panel Interlocking	Route Relay Interlocking
1	First the points are set for the concerned line (including isolation) then signals are taken OFF by pressing signal buttons and point buttons	Only the concerned signal and route button are operated. All the points (including isolations) on the route are automatically set and locked and signals go to their OFF position.
2	This is provided at smaller station.	This is provided at large and busy stations and yards.
3	Cabin system can be provided.	It is a centralized system
4	This system is economical in comparison to RRI.	It is very expensive in comparison to panel interlocking.
5	There is facility of SM key.	No facility of SM key.

Solid State Interlocking

- Micro-processor (computer) based interlocking.
- Provided in ASM's room and operated by ASM/SM on duty.
- No staff except SM/ ASM on duty shall operate the panel/ computer.
- Indications of signal, points and lines are shown in the panel/ monitor of the computer.
- It saves building construction and relays.
- Ensures greater safety at less expense

DETECTOR :

It is an appliance, provided at the facing points to ensure the points being correctly set before the relevant signal can be taken off. There are mechanical and electrical detectors. Mechanical detectors are of two types –Box (Slide) type and Rotary type. Detector also prevents the points being moved until the relative signal has been put back to 'ON'. Electrical detector gives the visual indication in Panel/Lever frame (Normal/ Reverse).

Track Circuit-

Whenever a train or vehicle enters on a track which is provided with continuous track circuit, the presence of the train/vehicles on the track is immediately known due to short circuiting of the track circuit by the axles of the locomotives/vehicles. The interlocking is so controlled electrically that the signals for a signalling section which is already occupied by a train or vehicle cannot be taken OFF for the movement of any other train or vehicle till the signalling section is clear. The track circuiting, therefore, ensure that two trains cannot enter the same signal line section simultaneously.

Axle Counter-

Axle counters are fixed at specific locations in the track so as to count in and count out the numbers of axles of the vehicles passing over them. An Axle counter fixed near the Advance Starter will count the total number of axles of a train which is despatched from that particular station. The axle counter fixed near the home signal of the station in advance at the end of the Block Section will count again the total number of axles when the train is received at the station in advance. Both the axle counters will be so electrically connected that the number of axles “counted in” at the station in rear should tally with the number of axles “counted out” at the station in advance for the same train. This will ensure complete arrival of the train at the station in advance and that no portion of the train is left behind in the section. Axle Counter may also be fixed at the entrance and exit of a running line. This will indicate that a train which had been received on that line has cleared that line without leaving behind any vehicle on the line.

Difference between Track circuit and Axle counter

S.N.	Track circuit	Axle counter
1.	Iron sleepers are not used for track circuit	Iron sleepers may be used for axle counter
2.	Rail breakage can be identified by track circuit	Rail breakage cannot be identified by axle counter
3.	Complete arrival of train cannot be detected	Complete arrival of train can be detected
4.	It can be failed during rain	Rain does not effect on proper working of axle counter
5.	It cannot be reset	It can be reset if required

Block Proving Axle Counter:-

1. Block Proving Axle Counter for last vehicle check is provided at station for ensuring clearance of block section as well as to ensure the complete arrival of train.
2. It is a device for ‘In-count’ of axle when a train passes over the transducer provided near Advanced Starter signals / Commencing point at block section entry point at sending end station and for ‘Out-count’ of axle when a train passes over the transducer provided near Advanced Starter signals / terminating point at block section clearance point at receiving end station . The Block Proving Axle Counter is interlocked with the concerned Block Instrument.
3. The SM on duty at station provided with BPAC shall ensure complete arrival of the incoming train by seeing the ‘Green’ indication on ‘Reset Box’ of BPAC. If the ‘In-count’ and ‘Out-count’ of the axles at the entry end and exit end are equal , a ‘Green’ indication will be displayed in the ‘Reset Box’ and which indicates that the nominated portion of track between two detection points is clear of any obstruction. After acknowledging the ‘Green’ indication by pressing the acknowledgement button, the concerned Block Instrument can be normalized.
4. When the BPAC fails , a ‘RED’ indication will appear on the ‘Reset Box’ concerned Block Instrument also fail in that case the SM on duty must obtain complete arrival certificate

from the Guard of the train on T/1410 then shall informed details to the SM at the other end under exchange of private number .

5. The SM on duty after ensuring the block section is clear then inserts resetting key turn clockwise and presses the key along with the resetting button and record the counter number on the appropriate register. After getting this information from the other end, the SM on duty at the other end shall do the same resetting operation and preparatory green indication will appear after few seconds at both ends.
 6. If by above procedure , the axle counter is not restored and the green indication does not appear in the reset boxes, this should be reported to the concerned JE/SE/SSE (Signal) of the section on written message for rectification and Piloting out shall be continued.
 8. Reset Box:- Reset Box consist of reset button , counter and indications. The following indications are provided in the Reset Box :-
 - i. Red for ' Occupation of track '
 - ii. Green for ' Clearance of track '
 - iii. Preparatory green for reset operation.
 - iv. Yellow for ' Power on '
- N.B:- The Key of the reset box shall be kept locked in a separate box with Station Master on duty under his personal custody.

DATA LOGGER-

It is such a system based on computerization that saves all the activities and real time operations of the panel and RRI. Introduction of this system in train operation makes it more transparent and any controversy during the train operation can be settled easily by this system.

ISOLATION

To prevent collision between trains while the same are being received or running through a station, the running lines are normally isolated from the adjoining lines. This ensures that while a train is being received on a running line or is running through the same, it will not be possible, even by mistake to foul the passage of the train by the other operations such as shunting etc. The various methods of providing isolation are as follows-

1. De-railing Switch & Trap Point
2. Sand Hump of approved design, Snag dead End, Over run Line
3. Hayes derail, Scotch Block

Note- the sand hump/long dead end are used for simultaneous reception of train and on double line, simultaneous dispatch train on the main line and reception of train on the loop line.

SHUNTING-GR 5.13 to 5.21

Shunting means the movement of a vehicle or vehicles with or without an engine on of any engine on any other self-propelled vehicle for the purpose of attaching, detaching with the train transfer on for any other purpose.

TYPES OF SHUNTING-

1. Hand shunting
2. Loose shunting
3. Fly shunting
4. Push and pull shunting/Engine Shunting

HAND SHUNTING:-

Hand shunting means pushing the vehicle/the vehicles by using man power for the purpose.

RULES OF HAND SHUNTING:-

1. Hand shunting shall be performed only under the supervision of responsible traffic staffs.
2. The coolies shall push such vehicles, in between the buffer or by the side of the vehicle.
3. The Hand brakes should be in proper working condition.
4. Where the gradient in the station /yard are within 400 meters beyond the outer most points is steeper than 1 in 400 No hand shunting or loose shunting of vehicle is permitted.

MERITS OF HAND SHUNTING:-

This type of shunting is beneficial from economical point of view because no engine or fuel is used.

DE-MERITS OF HAND SHUNTING:-

1. This type of shunting is very time consuming. So it is performed at those stations or in yards, where the frequency of shunting is very low. More man-power is utilized in this type of shunting.

LOOSE SHUNTING :-

Loose shunting means vehicles being pushed by an engine and being allowed to run forward unattached so that the vehicle shall reach the line for which the points are set.

Loose shunting shall not be performed in the case following vehicles.

1. Empty or loaded coaching vehicle,
2. Wagons loaded with livestock,
3. All types of tank wagons,
4. Wagons loaded with dangerous/ Explosive or Inflammable materials,
5. Wagons loaded with heavy machinery,
6. Cranes,
7. Wagons loaded with ODCs,
8. Damaged vehicles,
9. All other vehicles for which loose shunting is forbidden.

MERITS OF LOOSE SHUNTING:-

1. Train can be ready in lesser time.
2. Delay of wagons in the yard can be minimized.
3. Shunting Engine hours is minimized.

DEMERITS OF LOOSE SHUNTING:-

1. Wagons will be prone to damaged,
2. The consignment loaded in the wagon is damaged, so chances of claims are increased.
3. More skids, potter and brake changers are utilized. So it is less safe.

FLY SHUNTING:-

Fly shunting applies to two or more vehicles after receiving an impetus from an engine are uncoupled while on move by the points being sharply reversed between the vehicles in order to send them on desired line.

MERITS:-

1. This type of shunting is consuming very less time.

DEMERITS:-

All those which are described in loose shunting.

PUSH & PULL SHUNTING:-

This is very safe mode of shunting. At present most shunting is performed by this method. Wagons are pushed or pulled by engines. So this method is called push and pulls shunting. This shunting is performed under the control of shunt signal or by hand signal.

MERITS:-

This method is very safe. Neither the wagons nor the consignment loaded in the wagons are damaged. There is no chance of derailment.

DEMERITS:-

This method of shunting is more time consuming.

GENERAL RULES OF SHUNTING (SR 5.13-1 & 5.14-1)

1. Loco pilot should be given shunting order-T/806. However where shunting movement is governed by the fixed signal, the shunting authority T/806 is dispensed with.
2. Shunting must be performed under the supervision of properly authorized operating staff. It is performed only by the engine driver on the instruction of Station Master, Yard Master, Shunting Master, Guard (In case of road side station) or whoever may be in charge of shunting operation.
3. When pushing a train into a siding the Guard shall give necessary signal and travel in his brake-van and ready to apply hand brake, if required.
4. Maximum speed of shunting should not exceed 15 kmph.
5. Maximum speed of shunting of wagons loaded with Dangerous/Explosive/Inflammable goods should not exceed 8 kmph.

6. Impact speed of 5 NBOX wagon should not exceed 3 kmph.
7. Impact speed of 1 BOX wagon should not exceed 5 kmph.
8. The Outer, Home and the Last Stop Signal shall not be taken OFF for shunting movement.
9. If interlocking permits, lock bar shall be used to lock facing points at interlocked station. Otherwise all points at non-interlocked stations shall be locked either by a clamp/trough bolt with a pad lock provided points are not governed by shunt signal.
10. When there are two engines (multiple head), then shunting shall be performed by one engine only. But if two engines are connected as multiple engines, then they will be considered as one and shunting shall be performed.
11. Generally during shunting, there should be sufficient vacuums/air pressure throughout the train.
12. while shunting in dead end siding the traffic employee should place himself in position from where he can show signal to loco pilot and also have a view of dead end.
13. At 'B' class station on the single line, where the down gradient beyond the outermost points is steeper than 1 in 400, if shunting has to be performed the engine should be towards the front side.
14. All the staffs related to shunting should thoroughly understand the instructions of shunting and Guard should understand all the shunting restriction on that station.
15. Shunting instructions once given should not be changed and points should not be changed unless shunting operation is complete and shunting staffs have been advised.
16. Coupling must not be hanged down or dragged.
17. While attaching engines to the passenger train, the engine should be stopped at 20 meter away from the train and there after coupled carefully. It is the responsibility of SM and Guard to inform the passengers about the shunting.
18. Hand signal should be exhibited in such a manner that it is clearly visible to the driver. If hand signals are shown from a cabin such signals must be repeated by the person in charge of shunting operation from the ground. The driver shall act only on the latter's signals if shunting is performed on the basis of fixed signal/shunt signal there is no need of exhibiting hand signal.
19. The vehicles should be secured by the pointsman/ porter after shunting. The SM/Guard on shunting supervision should ensure it.
20. No other Engine, other than that involving shunting with passenger carrying train or train power should be brought on passenger carrying train .

PRACTICES TO BE PROHIBITED AT THE TIME OF SHUNTING

- Un-coupling of vehicle in motion.
- Riding on buffers/screw couplings in motion.
- Getting between vehicles before the engine comes to a stop.
- Passing under the vehicles during shunting.
- Sheltering under wagons.
- Sleeping in the yard.

- Working on vehicles under repair without any protections.
- Keeping slip coaches on a blocked line in near of a passenger train.

SHUNTING IN BLOCK SECTION

Whenever shunting is permitted in block section either in near or in front, the SM, after blocking back/forward the line as the case may be, shall issue T/806 authorizing the Driver to enter into the block section for shunting purpose. One of the followings may be given to the driver.

- a. Shunting key, or
- b. Block occupation key, or
- c. Taking off the shunt signal provided below the last stop signal, or
- d. Private No. In lieu of block back or block forward on T/806

PRECAUTIONS TAKEN TO PREVENT DERAILMENT DURING SHUNTING IN THE STATION

1. Hand signal shall be shown for shunting after ensuring that the relevant points are correctly set and locked.
2. The lever man/switch man shall show danger signal while changing the points.
3. Correct implementation of hand signal.
4. After observing the hand signal of shunting staff for change of points, the cabin man shall first ensure the train has stopped and then he shall change the points and show hand signal from the cabin.

FOLLOWING TRAIN SHUNTING ON A DOUBLE LINE-GR.8.06

1. Shunting or obstruction for any other purpose shall not be permitted in the block section in advance unless it is clear and blocked forward, provided when the block section in advance is occupied by a train travelling away from the station shunting or obstruction may be permitted behind the train under special instructions taking into consideration the speed, weight and brake power of the train and the gradient on the section. As soon as intimation has been received that the train has arrived at the block station in advance the line shall be blocked forward if it is still obstructed.
2. Station master shall obtain permission of SCOR before performing such shunting.
3. Following the train traveling away from the section, T/806 is issued to the Loco pilot of the shunting train, clearly mentioning that "Shunting is being done following a train traveling away from the station". The number and departure time of the train traveling away from the station along with the Private No. of block forward, if necessary, is mentioned on the authority.

SHUNTING OUTSIDE THE STATION SECTION ON SINGLE LINE

Block back shall be taken while shunting is performed in the block section. But where the Token Block Instrument is provided, shunting can be performed up to the outer signal in TALQ system and up to the Home signal in MAUQ/MACLS system without block back, provided line clear has not been granted to any train. As soon as line clear is asked by the SM at other and then the line shall be blocked back immediately.

NOTE: - On single line where token-less instrument is provided the line should be blocked back while shunting is done in the block section.

SR-5.20-2 SHUNTING ON LINES AT STATION WITH FALLING GRADIENT AND NOT ISOLATED FROM MAIN LINE

- a. At the station having falling gradients away from the station, while performing shunting the shunting engine should be leading towards the falling gradient.
- b. AT a station where it is not feasible to have shunting engine towards the falling gradient shunting may be performed from other end provided no line clear has been granted to the train coming from opposite direction .
- c. Additional precautions shall be observed while performing shunting.
 - I. No loose shunting shall be permitted.
 - II. Load should be fully on vacuum/air brake.
 - III. Detached wagons are secured by applying hand brakes and use of wedges.
- IV. While taking engine on load it should be stopped 20 meter short of the load and then be taken cautiously on load to avoid bumps.
- V. The point beyond which shunting shall not be permitted should be clearly demarcated.
- d. There Rules should be incorporated in the SWR of the concerned station.

WORKING OF TRAIN DURING STORM AND STRONG WIND SR-2.11-2

1. When warning message forecasting cyclone storm wind has been received from the meteorological department and there is a reasonable doubt that severe storm is going to break out endangering the safety of the passengers and trains etc. the station master shall in consultation with Guard and driver, detain the train at his station and also refuse to grant line clear to a train coming to his station until storm abates and he considers movements of train is safe.
2. Should the train caught on the run in cyclone storm or strong wind which in the opinion of loco pilot is likely to endanger the safety of the train, he shall immediately control the speed of his train and bring it to a stop at the first convenient place taking care as far as possible to avoid stoppage of the train at places like sharp curves, high embankments and bridges. In controlling the speed and bringing the train to a halt, the loco pilot shall stop his train without any jerk. He shall restart his train in consultation with Guard only after the cyclone, storm, strong winds abates and it is considered safe to proceed.
3. The Guard and the loco pilot /assistant loco pilot in co-operation with the railway staff travelling in the train shall try to see that doors and windows of the coaches are kept open by the passengers to allow free passage of the wind through the coaches.

ANEMOMETERS:

In case of vulnerable location and specially selected bridges where anemometers are installed at one of the station adjacent to bridges the station master shall take the following action if the anemometer is indicating wind velocity higher than the danger level of more than 72kmph on BG and 30kmph on NG.

- I. The station master shall inform the section controller and the station master on the other side immediately about the need to control the movement of train.
- II. The station master shall not start or allow the movement of train through his station and also not grant line clear to the train waiting at the adjacent station for his station.
- III. He shall resume normal working of trains in consultation with the section controller and the station master at the adjacent station after the wind velocity is again below the danger level.

MONSOON PATROLLING/ INSPECTION OF PARMANENT WAY/ (GR-15.04 & 05)

INSPECTION OF P.WAY-(SR-15.04-1)

The key man of each gang must walk daily over his length starting at sun rise and when necessary more frequently than once daily. He must tighten or replace any loose keys on fastenings. On lines with light and in frequent traffic this patrolling by key man may be once in two days under approved special instructions.

Patrolling of lines during monsoon (SR-15.04-2)

- a. SSE shall inspect full length of his section once in a week and JE who works under him to do so twice in a week
- b. Patrol chart is prepared by Divisional Engineer for different section will be distributed to the AEN, P.Way Inspectors and Controller and copy of the relevant portion of the chart will be supplied to each SMs with instructions to
 - I. Record timing of arrival and departure of patrol man in the patrol books and initial them.
 - II. Record timing of arrival and departure of patrol man in the patrol man and his names in the station diary.
- c. The patrol man whose beat commences at station 'A' will present the patrol book to the SM 'A' who will enter there in the date and time of arrival and departure of the patrol man and sign the book and return it to him. He will then walk over his beat and hand over the patrol book to the patrol man of the next beat and so on until the books from station 'A' continue its journey to station 'B' and vice-versa. The SM at 'A' is to enter the date and time of arrival of patrolman in the book for station 'B', sign it and hand it back to the patrolman for re-transmission to station 'B' and so shall be done by SM 'B' . In this manner the patrol book makes one journey in each direction per night.

If patrolman, on arrival at the end of the beat does not find the next patrolman waiting to take over his book, he must wait 15 minutes and proceed ahead on until he meets him and should report the absence of any man from his beat, to the gang mate in the morning.
- d. Station master will see that the patrolman come on duty so far.
- e. If a patrolman does not turn up within 15 minute of his scheduled time of arrival, the SM on duty will take the following action.
 - I. He must stop run-through trains proceeding into the block section.
 - II. He must advise the SM at the other end of the section to take similar action and also advise the Controller.
 - III. He must issue a caution order T/409 to all trains proceeding into the block section advising to the driver to be on the alert and specify a speed restriction of 40kmph during day and visibility is clear and 15kmph during the night or during the day when visibility is not clear.
 - IV. He shall also initiate action to ascertain the reason for the patrolman not turning up by either sending a gang man or pointsman, if available in the concerned section.
 - V. The caution order shall be issued until the patrolman has arrived and report the line is safe for passage of train.

WORKING OF TRAIN DURING THICK AND FOGGY WEATHER

1. **Use of night signal by day-** The signals prescribed for the use at night shall also be used by day in tunnels and in thick and foggy and tempestuous weather impairing visibility.
2. The lights of fixed signal must be lit during thick and foggy weather.
3. Whenever the signals are not visible to from the station during thick and foggy weather-
 - a. The SM 'ON duty' shall personally ensure that all the signals are illuminated.
 - b. He shall depute fog signal man at both end of the station at the fog signal post.
 - c. The fog signal post shall be provided at such station where there a provision of using detonators.
 - d. This fog signal post is provided at a distance of 270 meters from the first stop signal at either end of the station.
 - e. The fog signal post shall made of wooden or steel sleeper on which alternative black and white strips are painted.
4. **Action to be taken during foggy weather-**
 - a. The station, where continuous fog prevails, shall be notified by the Divisional Railway Manager.
 - b. 4 Group D employees shall be nominated to work as fog signal man at these stations.
 - c. On double line where the weather remains foggy for more than 7 days in a month, shall be notified as foggy station and separate fog signal man shall be deputed.
5. **Use of detonators in thick and Foggy weather-**
 - a. Stations where there is a provision of using detonators, two detonators shall be provided at the fog signal post provided at a distance of 270 meters from the first stop signal. The first will be provided at the fog signal post and the second at a distance of 10 meters from it.
 - b. At A class station provided with warner signal, the detonators shall be used at a distance of 270 meters from the home signal.
 - c. At B class station (TALQ) detonators shall be provided at a distance of 270 meters from the Outer signal.
 - d. In the MAUQ/MACLS signaling system, where the distance signal is provided independently, detonators shall be placed at a distance of 270 meters from the home signal.
6. **Detonators shall not be used in the following situations to warn the LP about the position of stop signals-**
 - a. Sections where fog safety device (FSD) is provided.
 - b. Stations where double distant signal is provided.
 - c. Station where maximum speed of 15 KMPH is permissible.
 - d. Section where the speed restriction is less than 50 KMPH but more than 15 KMPH.
 - e. In Automatic Signaling territory.
 - f. At LC Gate signals.
 - g. At departure signal.
 - h. Stations where temporary speed restriction is imposed due to repair of OHE/TRACKS/SIGNALS.

7. Duties of Guard and LP during thick and Foggy weather.-

- a. The LP shall work the train well under his control depending of the brake power and visibility.
- b. The LP shall work the train in such a speed in the absolute block section so that he can control his train at a minimum distance at the time of obstructions. Speed shall not exceed 60 KMPH.
- c. In Automatic signaling territories the LP shall not exceed the following speed-
 - i. Green signal- 60 KMPH
 - ii. Double yellow- 30 KMPH
 - iii. Single Yellow- restricted speed and ready to stop at next stop signal.
- d. The LP shall sound whistle frequently to warn the gate man to close the LC gate against the road traffic and to warn the tress passer that the train is approaching the LC gate.
- e. The LP shall ensure the proper focusing of flasher light, head light, marker light of the engine.
- f. If flashing light is seen from the approaching train proper action shall be taken and flasher light of own engine shall be used.
- g. Engine whistle shall be frequently used while approaching the LC gates, curvature, cutting, tunnels or engineering work places.
- h. If necessary train shall be protected as per the rules and caution orders shall be followed strictly.
- i. When required LP may seek assistance of Guard and call him engine cab to guide in respect of signal.

PUSHING BACK GR-4.12(SR 4.12-1)

In general, Engine must draw a train except under the following exception.

1. When within station limits, or where specially authorized.
2. Under special instructions when used as an assisting engine.
3. When it is necessary for train to push back to the station from which it entered the section under the instructions laid down in SR 4.12-2
4. In case of disabled train or accident a following engine may push the train or vehicle slowly to the next siding or to the first station or cabin at which the engine can be transferred to the front of the train.
5. When it is necessary for a train to push back to the site of accident in case of passenger being thrown out or a person being knocked down by a train outside the station limits except that such pushing back should not be done on Ghat section, in Automatic Block Signaling sections and at other places where prohibited by special instructions.
6. When the line is obstructed and trains are being worked to the points of obstruction on both side.
7. When required to assist train in starting as banking engine.
8. To work a material train provided the brake van is occupied by the guard in the leading vehicle.
9. When required by the General Manager, Principal Chief Operations Manager, Chief Engineer travelling on an Inspection special train.
10. Such permission can be granted to petrol train/search light special.

TRAIN PUSHING BACK FROM BLOCK SECTION (GR 9.13 & SR & SR 4.12.01)

- 1) Normally not to be backed against the direction of traffic except in case of emergency. Whenever due to unavoidable circumstances it becomes necessary to back train, the Guard may authorise the LP to do so issuing written memo
- 2) Before authorising the LP to back the train the Guard must receive an assurance from SM either
 - i) through portable telephone if available or
 - ii) written permission from SM by sending ALP or any other railway servant to the station or
 - iii) sending information through any train running on adjacent line and obtaining written permission from SM.
- 3). The station master at a station when the train starts from and pushes back to the station must advise the station in advance on telephone and also the section controller on controlled section that the train will push back to the station.
- 4) In obtaining the permission, at night or if the view ahead is not clear, the ALP or any other Rly servant to pilot the train with hand signal.
- 5) The Guard to travel in the Brake van and be prepared to apply the brake if necessary and if no Brake van travel in a vehicle from which the train can be stopped.
- 6). While the train is being pushed back from the section the LP and the Guard shall be vigilant and be prepared to stop short of any obstructions including obstructions at level crossing. The Driver shall make frequent use of engine whistle as a warning to the road traffic passing across the level crossing.
- 7) Train to be pushed at a walking pace.
- 8). On the single line when a train is required to be pushed back it must first come to a stand outside the outermost signal and whistle. If a line is clear for reception, signals may be taken OFF for its reception.
- 9) On double line LP to stop the train at the first stop signal either of the right or wrong line whichever comes first. Train to be received by issuing T/510 after setting and clamping the points on the route.
- 10). When the train returns the Guard shall sign the "complete train arrived intact register" and hand over the pushing back memo to SM.

WORKING OF TRAIN WITHOUT BRAKEVAN. GR. 4.23, SR-4.23-1

1. No train shall be allowed to enter a block section unless one or more brake vans or hand-braked vehicles are attached to it, except in an emergency or as provided for under special instructions.
2. This rule does not apply to rail cars, light engine or light engines coupled together.

Working of Goods Train Without Brake Van

- a) The Sr. DOM/DOM may authorize the working of trains without brake van only in an emergency.
- b) Train may run without brake van only in controlled section.
- c) Running train without brake van is prohibited during total failure of communication.
- d) No damaged wagon or vehicle should be attached to a train running without brake van.

Precautions to be Observed For Running Goods Train Without Brake Van

- I. The Guard shall travel on the engine while running through a station.
- II. The train shall be provided with continuous Vacuum /Air pressure from the engine to the rearmost vehicle and with adequate brake power. The TXR must mention in the BPC, the number and description of last vehicle.
- III. The tail lamp/tail board will be fixed on the last vehicle by the guard.
- IV. The Guard of the train travelling on the engine should look back frequently while in Run.
- V. When train is working without brake van there is no specific speed restriction but the speed must be equal to the Normal speed of the Goods train.
- VI. The guard shall relay the last vehicle number to SCR on telephone and in writing to the SM of originating station .
- VII. While asking line clear the SM shall specifically mention that the train for which line clear is being asked is running without brake van.
- VIII. The SM before reporting arrival/departure report and clearing back the section must verify that the train has passed safely with TL/ TB. During night,thick foggy weather or for any other reason if SM is unable to see LVI, he shall at once inform to SM in advance as well as SCR. The SM who was unable to see LVI shall withhold closing of block section and ensure that no train enter in block section.
- IX. The SM of advance station shall send the "Train Intact Register" in advance to the Guard who will satisfy the complete arrival of the train inside the fouling mark with the TL/TB after physically verifying the last vehicle.

- X. Where in a section a BPAC or continuous track circuiting between the stations, no need to withhold closing block section..
- XI. A register should be maintained in control office showing the trains running without brake van and Sr.DOM/DOM should sign in the register for permission to run the train without brake van.
- XII. In case of Automatic Block signalling or Intermediate Block signalling a second train shall not be allowed to leave unless previous train which has been allowed without B/V arrives at next block station.
- XIII. No train shall run without Guard but in emergency condition with the permission of Sr.DOM, the goods train can be run without Guard. In this case in place of Guard, a competent railway servant with detonators , Red & Green flags , LED based flashing tail lamp etc. may be deputed.
- XIV. Duties of the Guard which is performed on by his presence in Brake van, like applying hand brakes during parting, exchanging hand signals with the Driver etc. will not be applicable in this condition.

HOT AXLE

Symptoms of Hot Axle in plain Bearing:-

1. Axle becomes hot.
2. Whistling sound.
3. Burning smells of grease/ Lubricant oil.
4. Smoking.
5. Fire on Axle.

Symptoms of Hot Axle in roller Bearing:-

1. Oozing out of grease.
2. Burning of grease.
3. Discolourisation of Axle box.
4. Smoking from Axle box.
5. Axle Box becomes red hot and clearly visible red glow during night.
6. Metalling Noise.
7. Skidding of wheel and fire on rail.
8. Tilting of spring.

Duties of railway servants in case of Hot Axle/ any unusual condition on Running Train:-

1. Any railway servant, observing a hot axle, any hanging part, broken spring, and load shifting etc. on a running train must do everything in his power to stop the train and warn the train staffs.
2. Take immediate steps to short down the electric supply of OHE in electrified section.
3. If all attempts fail to draw attention of the train staffs, the Station Master/ Cabin Master/ ASM/ Switch Man shall inform the SM of the station in advance to stop and examine the train and shall inform the section controller.
4. On receiving the message "Stop and Examine the Train" the SM shall admit the train directly at station on Main Line.
5. In the event of the main line being not available and the train is to be received on a loop line after advising the LP of the train of the reason of the train being so stopped with speed restriction of 10 KMPH.
6. If the hot axle detected by Guard he shall advise to LP to stop . Guard shall check the Tail Lamp/ Tail board and tie red flag in day to hand rail or turn side lamp before checking.
7. LP & Guard shall check jointly and they should exercise his discretion with regard to the restricted speed at which it is safe for the vehicles or wagons to travel
8. Water must not be poured on the Hot Axle for to cool it but wait until it gets cooled by itself. If there is fire on the hot box then fire extinguisher, sand, soil can be used to extinguish the fire.
9. If the condition of Hot axle is serious, Guard shall inform same to SCR through Portable telephone for further action

10. The vehicles/ wagons with hot axle shall be detached from the train on arrival at the station. And it will be entered in the Wagon Exchange Register and the concerned TXR shall be informed about it.

FLAT TYRE:

If station staff observes hammering sound in the running train, he shall try to find out the exact reason of it and immediately inform the same to the station master of the station in advance and to the section controller to stop the train. The Loco Pilot, Guard and Asst. Station Master shall examine the train and the flatness of the wheel tread. If possible the train should run to the next TXR or Loco Examination Center with restrictive speed of 40 KMPH.

Permissible Flatness Limit:

Coaching Stock	:	50mm
Goods Stock	:	60mm
Engine	:	50mm

If the flatness exceeds the above limit the wheel is considered to be skidded. Flat tire damages the Rail, Weld Joint of the rail which leads serious accident. The concerned department should take every possible measure to avoid such damage.

TRAIN STALLED ON THE GRADIENT SR 6.04-2

If for any reason, a train is brought to a stand on a gradient of 1 in 150 or more steeper the following precaution should be taken by the train crew.

- 1) LP should apply the Loco brake in addition to the application of train brake. Train brake must not be released.
- 2) The LP should not normally leave locomotive. If required to leave in an emergency, he will ensure that the Asst. LP is present on the locomotive.
- 3) When the train is not likely to start within 15 minutes-
 - a) The driver should apply the locomotive hand brake.
 - b) He shall direct the Asst. LP to pin down the hand brake of 10 wagons load behind the loco and put wedges on the loco wheels.
 - c) Draw attention of the guard by sounding 3 short (000) whistle for applying brake followed by 4 short whistle (0000) for protection in rear.
 - d) Direct the Asst. LP in single line section for protection of the train in front.
- 5) The **GUARD** of the train will apply hand brake of the brake van and pin down hand brakes of 5 wagons .
- 6) In case of passenger carrying train he will put wedges to the wheel of two vehicles nearer to the brake van.
- 7) After this he will protect the train in rear.
- 8) The guard, after protecting the train in rear, should meet the LP/ALP and will take action for advising Control to arrange assisting engine or other sort of assistance.
- 9) The following procedure should be adopted to restart the train-
 - a) The LP has to recreate adequate Air pressure gradually.
 - b) Release the train brake fully with loco brake ON.
 - c) Notch up the loco by a few notches in forward direction in case of UP gradient or in reverse direction in case of down gradient.
 - d) Release the wagon hand brakes and remove wooden wedges both in front and in rear.
 - e) Guard to release hand brake of the brake van.
 - f) Exchange All Right signal with the guard.
 - g) Release the hand brake of the locomotive.
 - h) Gradually release the hand brake of the Loco and start.
 - i) Re-check the brake power at the first opportunity.
- 10) The LP himself or on his direction the ALP shall be responsible for the application and release of the hand brakes of the wagon behind the engine. The Guard shall be responsible for the similar action in regard to the wagons inside the brake van.

TRAIN PARTING

1. Meaning- Any portion of the train, if becomes detached while in motion is called train parting.

2. **Loco Pilot-**

a)

If the Loco Pilot comes to know that the train has parted, he should put on the flasher light and give long – short - long – short (—0—0) whistle repeatedly to attract the attention of the Guard till acknowledged by the Guard. He should keep the front portion of the train moving until the rear portion of the train has come to a stand. The guard shall acknowledge the loco pilot by waving up the and down a green signal by day and white light by night and shall promptly apply hand brake of the brake van.

b) If both the portion has come to a stand on a single line section, the loco pilot will depute the ALP to protect the train in front and the Guard shall protect the train in rear.

c) If front portion has already reached in station in advance, LP instantly warn the station master of the parting as also the incharge of cabin.

3. **Guard-**

If the Guard comes to know that the train has parted, he shall promptly apply hand brake of the brake van and then signal to the Loco Pilot by waving up and down a green signal by day and white light by night. The Loco Pilot must acknowledge this signal with (—0—0) whistles and use his judgment to keep the front portion of the train in motion until the rear portion has come to a stand. As soon as the rear portion has come to a stand in the section, the Guard must protect it both in rear and in front. If the front portion is out of sight, in accordance with G.R 6.03.

4. **Loco Pilot of Banking Engine-**

If there is a banking engine in the rear, the loco pilot of the banking engine when discover the parting, must bring the rear portion to a stand and at the same time repeatedly sounds (—0—0) whistle to attract the attention of the loco pilot of the leading engine. The loco pilot of the banking engine will protect the rear portion.

5. **Gate Man-**

If a gateman observe a train running in two or more portions, he will draw the attention if the loco pilot and the Guard by shouting and / or whistling. He should also show green hand signal during day and white light by night waving up and down vertically as high and as low as possible. He should show no other signals.

6. **Station Master-**

a) If the Station Master notice a train is running in two or more portions, he will endeavor to attract the attention of the Loco Pilot and Guard by waving green up and down a green signal by day and white light by night.

b) If the two portion enter the block section, the SM shall give the train divided signal (6-3 beats) to the station ahead.

- c) The SM of the Station in advance shall acknowledge the signal by giving 6-3 beats, He shall receive the train directly into the station on a vacant line and immediately inform the Station in rear that the train has parted and that the rear portion may roll back towards the later. If however the rear portion following the front the SM must endeavor to bring it to stop by heaping up earth on the rails or other suitable means or divert it, if possible to a vacant line.
 - d) The Points shall be set to the sand hump or derailing switch. But in case of passenger train, it shall be allowed to proceed ahead.
 - e) If there is no vacant line after receiving the first portion then the rear portion shall be tried to stop by heaping up earth on the rail and BWM 4.11 shall be followed.
7. When both the portions of the parted train are brought to stand and it is possible to couple then up, the Guard will be responsible for bringing the two portions together in a safe and proper manner.

TRAIN DIVIDING (GR 6.09 SR 6.09-1)

1. When a train stops in a block section in consequence of an accident or the inability of the engine to take the whole train forward, the Loco Pilot of the train will give four short (0000) whistles repeatedly and the Guard will take immediate steps to protect the train in rear in accordance with G.R.6.03.
2. After the train has been protected, the Guard will consult the Loco Pilot and if the engine, is capable of proceeding either light or with part of the load, the Guard will take immediate steps to pin down firmly hand brakes of adequate number of wagon and also apply the hand brake in the brake van. In air braked load close the angle cock of both the wagons/ coaches from where the load is to be divided.
3. The Guard will give T/609 to the Loco Pilot to proceed to the next station, clearly stating the number of vehicles and also the painted number and the owning railway of the vehicle of the load attached to the engine.
4. On a single line section the loco Pilot shall hand over the "token" or the line clear Ticket, whichever in use, to the Guard and obtain a receipt from him. The Guard shall retain the token or the line clear Ticket until the block section has been cleared of all the vehicles of this train. At this the TL/TB shall not be fixed on the rear of the first portion.
5. As soon as the engine with/without vehicle is drawn forward, at night or in thick foggy weather the Guard will place his red light in front of the remaining load and then Guard will protect load in front in accordance with G.R.6.03 (600-600-10-10).
6. On approaching the station ahead with the knowledge that the block section behind is obstructed, the Loco Pilot must stop at outside the Home signal and give (-0-0) whistles repeatedly to warn the station staff that only a part of load has arrived and the section behind is obstructed. If necessary inform to cabin incharge in writing and his signature shall obtain on guard's memo T/609.
7. The SM after understanding the station will take immediate steps to ensure that
 - a. The block section is not cleared
 - b. Advise the SM in rear that the section is obstructed
 - c. Shall inform the SCR
 - d. Receive front portion by Pilot in
8. On arrival at the station on the basis of T/609 the Loco Pilot and the SM must jointly check the front portion of his load to see that it has arrived complete.
9. When the SM sends the same Loco Pilot to pick up the remaining load, he shall issue the following authorities:
 - a. T/609(which is given by the Guard to the Loco Pilot, is endorsed by the SM)

- b. T/369(3b) or T/511 as the case may be,
 - c. T/409- caution order-the speed restriction of 15 KMPH
10. If the same Loco Pilot is not returning to pick up the load due to failure or otherwise, the SM shall keep T/609 with him and shall issue the following authorities to the Loco Pilot of another engine
- a. T/A-602. The kilo meter of obstruction shall be mentioned maximum speed shall be restricted to
 - i. 15 KMPH – when visibility is clear
 - ii. 10 KMPH – when visibility is not clear
 - iii. T/369(3b) or T/511 (as required)
11. While returning to pick up the load left in the section under instruction, the Loco Pilot must keep a sharp look-out and proceed cautiously and frequently sound the whistle.
12. As soon as the portion of the load left in the section is sighted by Loco Pilot, the engine will be brought to halt. The ALP will get down from the engine and Pilot the engine on to the load walking at a safe distance ahead of the engine.
17. The Guard who stood in rear of the train will be recalled by sounding a continuous long whistle, who shall return leaving 3 detonators on the line and picking up to intermediate detonators.
18. Guard, Asst. Loco Pilot shall connect the couplings/ hoses pipe, release the hand brakes and the remaining load is taken to the next station.
19. Before clearing back section the SM and Guard should jointly check that the complete load has arrived.

NOTE- If engine of a passenger train is unable to haul the full load it will not be detached but will remain couple up to the train until assisting engine arrives. After the train has been protected in rear in accordance with GR6.03 and if information cannot be covered to the controller on the field telephone, the Asst. Driver/Asst. Guard will be sent to the nearest station with a written message for assistance.

The engine of a train carrying passengers must not be detached on the train divided in section except

- In an emergency. •
- For testing bridges.
- For isolating a burning coach or coaches on a train carrying passenger.
 - If assisting engine is needed at the accident site immediately and there is no means of communication to inform, engine can be sent to the nearest station for giving information.

Disabled engine, assistance to- in the Block Section (SR-6.05-1)

1. When an engine is disabled in the block section , both the Guard and LP shall protect the train in accordance with GR6.03
2. Inform to SCR through PT phone. In case not possible , information in writing shall be given through LP/GD of train passing adjacent line.
3. Ascertain from the Loco Pilot, if it is necessary to requisite a relief engine. Should the Loco Pilot expect to be able to put the engine in working order within 30 minutes, he shall inform the Guard.
4. If the time is likely to be exceeded, the Guard and/or LP must advise to SCR through PT phone or send advice to the nearest station in accordance with SR 6.05-1 and call for relief engine.
5. After having asked for assisting engine , if subsequently the Loco Pilot is able to repair the damage and is in a position to restart the train , the Loco Pilot of train will inform the section controller/SM.
6. The train will move with walking speed but not unless a competent Rly servant has been sent with hand signal and detonators to protect the train. Such rly servant keeping distance 400 m in advance of the train
7. In case of passenger carrying train, once the assisting is called for, even if the engine is put to work the Loco Pilot shall not restart his train until the assisting engine arrives. The train must not be divided rather it must be detained with the engine coupled to the train.

BLOCK TICKET WORKING (SR 6.02.05)

The relief Engine / Train may be sent on the Obstructed line in case of Obstruction or Accident after observing the following procedure:-

- a) Absolute Block System between two stations shall be suspended.
- b) Trains shall be worked up to the place of obstruction on 'Block Ticket' (T/A 602) which should clearly mention
 - i) whether the train is to return or
 - ii) wait there for the arrival and return of another following train or
 - iii) to proceed to the next station.
- c) After sending a train on T/A 602, a following train shall not be despatched in the same direction unless:-
 - i) the previous T/A 602 collected & cancelled.
 - ii) endorsement has been made that a next train will follow and advised to wait at the site.
 - iii) the previous train has met with an accident or disabled or
- iv) Assurance to the SM by quoting the serial no of the T/A 602 that the same has been collected from the LP of the previous train by the Official-in-charge at the site and will be kept in his personal custody till the arrival of the next train.
- d) Trains sent out to the place of obstruction shall be protected by placing three detonators at a distance of 250, 500 & 510 meters.
- e) The speed shall not exceed 15 km/hr in day light hours when the visibility is clear and 10 km/hr at night and when the visibility is not clear.
- f) The engine whistle must be sounded frequently.
- g) The Guard & LP of the train must satisfy themselves by going through T/A-602 before starting the train.
- h) Either the kilometre of obstruction is mentioned if known and if the site of obstruction is not known, "to the site of obstruction" will be mentioned in the authority.

- j) Normal working may be resumed between the two stations after obtaining an assurance in writing as follows:-
 - i) From the Gd /LP under their signature that the Block Section is clear, if the cause of obstruction was due to failure of a train/engine.
 - ii) From the concerned SSE/JE (P.way & Traction) that the line is safe for the movement of trains with or without any restriction if the cause of obstruction was due to an accident/OHE failure or Engg. Block.
 - iii) The train to proceed to the station as mentioned in the authority or as per the direction of the Official in-charge at site after obtaining concurrence supported by a PN from the station to be sent.
 - k) More than one train may be coupled together to despatch in a particular direction as per the direction of the official-in-charge of the site to minimise the detention.
 - l) Otherwise trains from each direction will proceed according to the endorsement of the SM.
 - m) In case it becomes necessary to allow a train in following, an interval of 15 minutes shall elapse between the two and the speed of the following train shall not exceed 8 km/hr.
 - n) On arrival at the station, Block Tickets of the trains concerned shall be handed over to the SM indicating the time of arrival and that the train has arrived complete after being signed by the Guard & or the LP.
 - o) The SM shall then cancel the LP's foil and paste the same with the concerned record foil if it is issued from the same station and if it is issued from the other station, the same shall be sent to the next station for its cancellation and record.
 - p) Before introducing TSL working if it is necessary to run a train against direction of traffic for any reason, it can be done by issuing a Block Ticket after blocking back the section.
 - q) The following particulars shall be mentioned in the Caution Order portion of the Block Ticket-
 - i) existing speed restrictions.
 - ii) instructions to LP/Guard:-
 - a) to look out for possible obstruction and take action accordingly
 - b) to ascertain the condition of the train/obstruction over the adjacent line and to report the same at the next station in writing.
 - c) The LP to certify in writing, if the line over which it has passed is safe for introduction of TSL working.
- speed –maximum 15/10 km/hr.
- It shall be restricted to one train/engine only and the it shall not be a passenger carrying train.

TRAIN DELAYED IN THE BLOCK SECTION-(GR-6.04 SR.6.04-1)

If a train carrying passenger does not arrives within 10 minutes and a goods train does not arrives within 20 minutes after its normal running time from the station in rear, the train is said to be running late. The SM shall immediately take following action.

1. The SM shall immediately advise the SM in rear and the Section Controller of this fact.
2. Arrange to send a railway employee into the block section to fetch information regarding the whereabouts of the train and in case of mishap, the nature of assistance required.
3. On double line section if there is a tunnel and the train is delayed, the SM shall prevent any train from proceeding on its journey in the opposite direction until he has first ascertained that the line is clear. If there is no tunnel in the block section, SM must stop the first train proceeding in the opposite direction and inform the Loco Pilot of the circumstances and instruct him to proceed cautiously through caution order.
4. The Guard of the train carrying passenger which are provided with a set of portable field telephone, when delayed in the block section over 10 minutes will also inform the controller about the cause and probable duration of delay.
5. The controller or receipt of such advise shall immediately warn the station where a medical van or first aid van is available if required, so they would be kept ready for dispatch to the site of the accident on receipt of further information.

FIRE ON TRAIN (GR-6.10, SR-6.10-1, 6.10-2, 6.10-3)

1. On noticing a fire, likely to result in loss of life or cause damage to property shall take all possible steps to save life and property, to prevent it from spreading and to extinguish it.
2. Train shall be protected in accordance with GR-6.03 if not protected with fixed signal
3. Should any portion of train be discovered to be on fire, it should be brought to stand on a safe place and burning vehicle or vehicles separated at least 45 metre from the rest of the train and every exertion made to put out the fire with the least possible delay.
4. Should it be known that water is procurable within a short distance from the place where the fire is discovered and it is considered safe to run the burning vehicle onto that spot. A burning vehicle as far possible should not be moved unless the rear portion is detached. However it would depend upon the nature of the contents of the vehicle. The extent of fire and the liability of other vehicle being also set on fire the Guard and loco pilot of the train must exercise their discretion in such case.
5. When a fire is discovered in passenger train the safety of passengers must first be attended to and when a postal van or carriage is on fire every effort must be made to save the mails.
6. If fire on Goods train, efforts to make extinguish fire and save seal, wagon label and contents
7. If fire is discovered on electric engine the loco pilot shall take immediate steps to cut off power supply to the overhead equipment by lowering the pantograph. Only the special fire extinguishers provided, or sand shall only be used in extinguishing the fire.
8. The Guard shall give all possible assistance to LP in putting out the fire.
9. When the fire is finally put out, defective coach shall, if necessary be electrically isolated from the rest of the train.
10. In the event of the fire on any part of any traction electrical equipment, the affected part shall first be completely isolated from the electrical distribution system, if this has not been done automatically. If it is not possible to do so, the traction power controller (TPC) shall be informed immediately of the nature of the fire and extent to which it has affected supply.
11. SM shall stop all the trains on the affected sections.
12. Ordinary fire extinguisher or water from hose pipe or buckets shall on no account be allowed to extinguishing fires on live electrical equipments. If the services of the fire brigade are required, the brigade shall not be allowed to commence operations until all electrical equipments in the vicinity of the fire has been made dead.
13. When fire extinguishers are used to put out the fire it shall be replaced or recharged with least delay.

AM - 611- FIRE ON TRACK - Guard and Loco pilot who notices fire on track must stop the train and extinguish the fire. The guard shall advise the nearest P.way staff if any and the SM at the next station.

TRAIN ENTERED INTO THE BLOCK SECTION WITHOUT AUTHORITY TO PROCEED/ WITH A WRONG AUTHORITY (GR-6.06)

- 1) Should the LP enter into the block section without authority or with a authority not applicable to that section, he shall at once bring the train to a stop and sound whistle 0--0 which shall be acknowledge by Guard by red hand signal UP & DN .
- 2) Thereafter the train has brought to a stand it shall be protected by the guard in rear and by the ALP in the front by placing 4 detonators at a distance of 600—600—10—10 meters.
- 3) The Guard shall convey the report to the nearest station through portable phone if available ,or by sending ALP to obtain written permission or through LP/GD of train passing by the adjacent line with request to send written permission through one of the station staff.
- 4) On receiving the information by SM he shall inform the station master in advance and SCR. He shall issue written authority "**the caution order**" to LP either proceed ahead or back to station in rear.
- 5) On arrival of the train at the next station, the SM shall be informed about the situation in details by the Guard.

MURDER ON RUNNING TRAIN

- The compartment shall be emptied and locked up after closing all the shutters from outside.
- The blood stains, marks of struggle, foot prints, finger impressions etc. shall not be disturbed.
- 2nd class compartment shall be detached at the station where the crime is detected and kept under watch till police take over charge.
- Upper class compartment shall be locked up and allowed to proceed to the nearest station where it can be replaced.
- Railway police shall be deputed to watch the compartment till local police officer arrives.
- Nobody, except the person to attend injured persons, shall be allowed to enter the said compartment.
- The Rly Police, station concerned shall be informed at which station the compartment shall be detached.
- After taking over the charge by the Police, the carriage should not be removed or utilized otherwise without written permission from the police.
- In case of abnormal delay in releasing, the matter should be reported to the DRM.

RUN OVER CASE :

Life is not extinct:-

- ✓ Render first aid to the injured person.
- ✓ Call for medical help without delay
- ✓ Inform the on board RPF and GRP in case of passenger train.
- ✓ If person found near or on the track or knock down by train, a statement of person should be recorded. The particulars to be recorded are- name, father's name, caste, residence , how he happened to be on the line and how the wounds were inflicted . The statement should be prepared in duplicate under the signature of LP/Guard and reasonable witness, if any.
- ✓ The injured person should be carried to nearest station for onwards transmission of police authorities and medical help.
- ✓ Along with the statement, a memo (in G-3 form) showing date, time, place where the injured person was found and action taken thereof should also be handed over to the station master.

Life is extinct:-

- ✓ The evidence, specially the finger prints should be kept intact.
- ✓ Handling of the dead body by many people should be avoided.
- ✓ The dead body should not be removed until arrival of police.
- ✓ If dead body on track, to clear the line, the body may however be removed with minimum handling.
- ✓ A memo shall be prepared by Guard/LP in which following particulars have to be furnished-
 - Time and place the body was detected.
 - Position of the body in relation to the track.
 - Approximate age, sex of the deceased
 - Name father's name and full postal address, if possible.
 - Blood stains on ballast or engines, extent of injuries and prima-facie cause of the occurrence.
 - Position of any clothing etc. found on or near the rails.
 - Name father's name and full postal address of informant, if any.
- ✓ The body may be left in charge of village chowkidar or gangman.
- ✓ If no one is available body shall be removed to nearest gate lodge.
- ✓ If no gate lodge, it will be carried and handed over to SM of next station
- ✓ In all above cases a memo prepared by Guard and/or must be handed over along with body.
- ✓ The body shall be made over to the police along with the memo.

If the train is stopped in the block section due to the through out of the passenger from the train, following actions shall be taken along with the above- guard shall note-

1. Kilometer at which the passenger fell or knocked down shall be noted.
2. Was the accident noticed by the guard/LP and the train stopped or was the ACP was made to stop the train.
3. Was the train backed to the accident spot.
4. How the injured person was disposed off?
5. Name, age, sex, and address of the person, the particulars of the ticket held (if any)
6. If child, also the name relationship and address of the guardian.
7. Where was the person/child seated or standing at the time last seen by fellow passengers?
8. Owning Railway, painted number, compartment number, type description and position of the carriage from the engine.
9. Condition of the door, door's handle, shutter, safety latch, and window fastening in the carriage. Particulars details should be given of the door or window through which the passenger fell.
10. Was there any GRP staff on the train.
11. Brief statement of the injured passenger-
 - a. Possible cause of the accident shall be recorded, in presence of the Railway Police Constable, and countersigned by him. If the Railway Police Constable is not present, the signature of the passengers in whose presence the statement is recorded should be obtained.
 - b. In the case of a child, the statement of the guardian should be recorded duly attested by the Railway Police Constable or in his absence by two passengers present at the time of recording the statement.

Passenger getting sick in the train-

1. In case of passenger getting sick while in the train, he should be given the same medical attention as is given to a person injured in an accident.
2. The passenger should, however, be informed that he may be required to pay for the medical attention given.

3. If the passenger states that the sickness is due to some food he consumed from the pantry car or licensed vendors in the railway premises, the guard will report to the SM who will report the matter to the Section controller.
4. The Section Controller will obtain instructions of the Sr. DOM/DOM/ADMO and advise the SM of the arrangements to be made for the chemical examination of the food.

Passenger injured inside the train-

1. If the passenger is injured while travelling by a train, he should be given necessary medical assistant.
2. If the passenger is reported to be injured due to defective fittings, like window shutter, the fittings should be examined.
3. Evidence of other passengers should also be taken.
4. A full report must be made by the Guard, giving name of the passenger, particulars of the ticket, description of the carriage, condition of the fittings, etc.
5. The Guard/TS shall also issue a message to the Train Examiner of the station to examine the fittings of the compartment.

EXPLOSION ON TRACK/TRAIN

- In case of explosion on trains, the train concerned shall be stopped immediately.
- On receipt of the information SM shall immediately inform the SM's of both ends and controller.
- OC/Local Police/GRP, IPF, DM/DC & SP shall also be informed.
- SM shall inform PWI, IOW, TXR, LF & A/C
- He shall ensure protection of the track/train.
- In case of passenger train ARME must be called for
- Rly, Civil and Military Hospitals in the vicinity and Medical Practitioners shall also be called.
- First Aid shall be rendered to the injured passengers till arrival of the Medical team
- Restoration work shall not be started and no clue shall be disturbed till permitted by Police in writing
- Normal train running shall be resumed after obtaining 'track fit certificate from engineering official not below the rank of an inspector.

DEFECTIVE PERMANENT WAY(Bad riding) – SR 6.07(1)

In the event of the Loco pilot and/or Guard experiencing any abnormal condition in the track over which his train has passed and he considers that the portion of the track over which his train has passed is detrimental for safe running of subsequent trains will take action as under-

1. Note down KM and stop his train immediately. Examine train and track, there after proceed next block station and stop without clearing the block section, whistle frequently and inform the Station Master through available means of communication not to permit any train from either end of the affected block section in case of single line and from the rear in case of double line.
2. Proceed further, only after satisfying himself that Station Master has clearly understood so as not to permit further movement over the line until a written memo indicating the details of the occurrence is received by Station Master from the Loco pilot, Loco Pilot will then again stop in such a convenient place so as to deliver the written memo in detail to the Station Master.

- 3.(a) In case of IBP territory if LP experienced bad riding between rear station and IBSS, the LP shall note down KM and stop his train immediately. Examine train and track, thereafter contact SM of despatching end through IBH phone without clearing section. After ensuring that SM has clearly understood and shall not allow train in same direction he will start train from site and give written memo at next station.
- (b) In case no communication established with either SM(s) the LP shall advise Guard to protect the site (600-600-10-10) and leaving down all detonators before start. He shall stop train at next station and inform in writing.
- (c) If bad riding experienced between IBP and station in advance action shall be taken as mentioned in para no 1 & 2 above
- 4.(a) In Automatic block territories, the Loco pilot shall stop his train and Guard shall exhibit stop signal towards rear and must check tail board/lamp. The LP shall inform the station masters of concerned section (L/C gate may be used).
- (b) On receiving the message SM of despatching end shall stop the movement of train and convey the message to LP of the train which has already left in rear of affected train to stop and wait. Thereafter SM shall allow affected train to start from site.
- (c) If condition of track is not permitted to start LP shall advise Guard to protect train from rear (90-90-10) and he also.
- (d) If condition of track permits to start but LP unable to communicate with SMs, he shall advise Guard to protect site from rear (600-600-10-10), thereafter he shall recall Guard leaving down all detonators. **(no need of protection if in the mean time train left in rear has already arrives and stops in rear of affected train or on signal)**
In all cases LP shall give memo in writing at next station.
5. The station master on receipt of such a memo must issue a message addressed to the Station Master of the block station at the other end of the block section, and Junior Engineer / Section Engineer (P. Way), Assistant Engineer, Divisional Engineer, Chief Controller and Divisional Operations Manager.
6. Arrange to dispatch a rail maintenance machine / tower wagon / light engine or in their absence a train accompanied by an engineering official with a caution order to the effect to Stop Dead sufficiently short of the expected portion of the track. The engineering official accompanying will inspect the track and shall allow the train to pass only after satisfying that the track is safe for the passage of train. Advise the condition of the track and any restriction of speed to be imposed to the Station Master personally or through written memo which may be sent through the Loco pilot.
7. In the absence of engineering officials the trains with a caution order instructing the Loco pilot to 'Stop Dead' before the affected kilometers and after satisfying himself about the condition of track, pass over the track in question at **10** kilometers per hour. If Loco Pilot finds the line is unsafe to pass, return to station in rear. If the Loco pilot is not able to detect any thing doubtful, subsequent trains shall be dispatched with a speed restriction of 10 kmph over the affected track till the track is certified to be safe by engineering officials.
8. If the condition as reported earlier is confirmed by the Loco pilot, no train movement shall be allowed till certified to be safe by engineering officials.

Note: 1. In case the Guard of the train experiences any abnormal occurrence in the track while working his train, he must inform the Loco pilot of his train through walkie-talkie or other available means of communication between the Loco pilot and the Guard about the occurrence, after which the Loco pilot shall take action as mentioned in SR 6.07(1)(a) above

. 2. In the event of Guard unable to contact the Loco pilot, he should take action to stop the train and inform the Loco pilot.

Sabotage or Likely Sabotage, Explosion on Track or Train

- (a) As soon as information of sabotage or likely sabotage, bomb blast explosion etc. to the track, bridges or other fixed installation is received, the Station Master who becomes aware of it, will stop movement of trains in the affected block section as well as on adjacent lines on double/multiple line sections.
- (b) He will take action as per SR 6.07(1)(d) in consultation with the Section Controller except that only Rail maintenance machine/tower wagon/ light engine shall be sent to ascertain for the line to be safe for the movement of the train.
- (c) On hearing an explosion, the Loco Pilot must stop his train as soon as possible, and examine the track along with the Guard at the site of the explosion to ascertain the extent of the damage.
- (d) If the Loco Pilot does not bring the train to a stand within a reasonable time, the Guard shall draw the attention of the Loco Pilot by cautiously applying the air pressure by means of the Guards Van Valve.
- (e) The Loco Pilot shall also examine the train along with the Guard and if little or no damage has been done to the train and if it is safe for the train to proceed to the next block station.
- (f) The train will be taken ahead to the next block station and the Guard and Loco Pilot will jointly report the occurrence to Station Master on duty.
- (g) If the damage to the track is so serious as to render the track unsafe, a competent Railway servant will be left at the site with detonators to protect the spot in accordance with G.R.6. 03

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FAILURE OF RAIL FRACTURE (SR-15.17-1)-

If a rail badly fractured, no train shall be allowed to pass over the affected portion till made fit by an official not below the rank of JE. for this purpose rail shall be considered badly when

- (a) When gap more than 75mm (25 mm in case of outer rail on curve) on rail head or,
- (b) There is more than one fracture in a length of 1mm along with rail head.
- (c) A length of 150 mm of the rail foot is broken.
- (d) A fracture, irrespective of nature, has occurred on girder bridge.

If Rail fracture is less serious in nature the Key man /Gang mate shall after protecting the line, make necessary emergency repairs to the track and pass traffic at 20kmph. The temporary/permanent repairs to track shall be done by the PWI as soon as possible and restore traffic at normal speed.

In the event of the Loco pilot and/or Guard experiencing any obstruction or any other unsafe condition, on or near the track adjacent to the line over which his train has passed and which in his opinion is detrimental to safe train running, will take the following remedial action :-

- (a) Immediately switch "ON" the flasher light of his loco.
- (b) Inform the Station Master(s) concerned/ control through the available means of communication, and concurrently.
- (c) Stop his train and proceed with danger hand signals to protect the line in question as per GR 3.62. (Protect adjacent line by pacing detonators 600-600-10-10 from obstruction))
- (d) If protection of line can not be complied for any reason LP shall give continuous sharp short whistle until approaching train on adjacent line has been brought to stop.
- (d) Other wise after protection, he will continue journey to the next station cautiously keeping flasher light 'ON'; and
- (e) Be prepared to stop any incoming train approaching on the affected Track by communicating on walkie- talkie or other available means of communication and exhibiting danger hand signal.
- (f) Loco Pilot of opposite road, after seeing flasher light 'ON' shall at once take action to stop his train short of obstruction and proceed only after ascertaining that the line on which, he is proceeding is free from any obstruction. If, however, he finds that the line on which he is to proceed is obstructed, the train will be protected in accordance with GR 6.03.
- (g) On arrival at the next station he shall inform the Station Master through a written memo about the occurrence.
on receipt of such information the Station Master must inform all concerned .

HOT AXLE

Symptoms of Hot Axle in plain Bearing:-

1. Axle becomes hot.
2. Whistling sound.
3. Burning smells of grease/ Lubricant oil.
4. Smoking.
5. Fire on Axle.

Symptoms of Hot Axle in roller Bearing:-

1. Oozing out of grease.
2. Burning of grease.
3. Discolourisation of Axle box.
4. Smoking from Axle box.
5. Axle Box becomes red hot and clearly visible red glow during night.
6. Metalling Noise.
7. Skidding of wheel and fire on rail.
8. Tilting of spring.

Duties of railway servants in case of Hot Axle/ any unusual condition on Running Train:-

1. Any railway servant, observing a hot axle, any hanging part, broken spring, and load shifting etc. on a running train must do everything in his power to stop the train and warn the train staffs.
2. Take immediate steps to short down the electric supply of OHE in electrified section.
3. If all attempts fail to draw attention of the train staffs, the Station Master/ Cabin Master/ ASM/ Switch Man shall inform the SM of the station in advance to stop and examine the train and shall inform the section controller.
4. On receiving the message "Stop and Examine the Train" the SM shall not admit the train directly at station unless he is satisfied that the train has come to a stop at the first stop signal. Then only the approach signals shall be taken OFF for admission of train on Main Line.
5. In the event of the main line being not available and the train is to be received on a loop line, the SM, after ensuring that the train has come to stop outside the first stop signal, shall arrange to advise the LP of the train of the reason of the train being so stopped through a Station Staff/Points Man. The speed of train, while admitting on loop line, shall not be more than 10 KMPH.
6. The LP on being so advised shall examine the train to ascertain if it would be safe to work the train up to the station negotiating the crossover for entry into the loop line. The train, thereafter, shall be piloted up to the station after fixed signals have been taken OFF and it has been ascertained by the LP that it is safe to do so. The LP while negotiating the facing points shall observe the speed restriction, which under no circumstances, shall exceed 10 KMPH.
7. The vehicles/wagon with hot axle must not be worked onward with the train, instead they would be detached from the train or repaired.

8. If an axle box is observed to be running hot in the block section the train must be brought to a stand immediately and the axle box is examined by the LP. The LP should exercise his discretion with regard to the restricted speed at which it is safe for the vehicles or wagons to travel. On arriving at the first block station with detaching facilities the vehicles or wagons must be detached from the train.
9. Water must not be poured on the Hot Axle for to cool it but wait until it gets cooled by itself. If there is fire on the hot box then fire extinguisher, sand, soil can be used to extinguish the fire.
10. The vehicles/ wagons with hot axle shall be detached from the train on arrival at the station. And it will be entered in the Wagon Exchange Register and the concerned TXR shall be informed about it.

FLAT TYRE:

If station staff observes hammering sound in the running train, he shall try to find out the exact reason of it and immediately inform the same to the station master of the station in advance and to the section controller to stop the train. The Loco Pilot, Guard and Asst. Station Master shall examine the train and the flatness of the wheel tread. If possible the train should run to the next TXR or Loco Examination Center with restrictive speed of 20 KMPH.

Permissible Flatness Limit:

Coaching Stock	:	50mm
Goods Stock	:	60mm
Engine	:	50mm

If the flatness exceeds the above limit the wheel is considered to be skidded. Flat tare damages the Rail, Weld Joint of the rail which leads serious accident. The concerned department should take every possible measure to avoid such damage.

TRAIN STALLED ON THE GRADIENT SR 6.04-2

If for any reason, a train is brought to a stand on a gradient (1 in 150) the following precaution should be taken by the train crew.

- 1) The LP should immediately Put ON the flasher light.
- 2) LP should apply the Loco brake in addition to the application of train brake. Train brake must not be released.
- 3) The LP should not normally leave locomotive. If required to leave in an emergency, he will ensure that the Asst. LP is present on the locomotive.
- 4) When the train is not likely to start within 15 minutes-
 - a) The driver should apply the locomotive hand brake.
 - b) He shall direct the Asst. LP to pin down the hand brake of 10 wagons load behind the loco and put wedges on the loco wheels.
 - c) Draw attention of the guard by sounding 3 short (000) whistle for applying brake followed by 4 short whistle (0000) for protection in rear.
 - d) Direct the Asst. LP in single line section for protection of the train in front.
- 5) The **GUARD** of the train will apply hand brake of the brake van and pin down hand brakes of 5 wagons in case of 8 wheelers.
- 6) In case of passenger carrying train he will put wedges to the wheel of two vehicles nearer to the brake van.
- 7) After this he will protect the train in rear.
- 8) The guard, after protecting the train in rear, should meet the LP/ALP and will take action for advising Control to arrange assisting engine or other sort of assistance.
- 9) The following procedure should be adopted to restart the train-
 - a) The LP has to recreate adequate Air pressure gradually.
 - b) Release the train brake fully with loco brake ON.
 - c) Notch up the loco by a few notches in forward direction in case of UP gradient or in reverse direction in case of down gradient.
 - d) Release the wagon hand brakes and remove wooden wedges both in front and in rear.
 - e) Guard to release hand brake of the brake van.
 - f) Exchange All Right signal with the guard.
 - g) Release the hand brake of the locomotive.
 - h) Gradually release the hand brake of the Loco and start.
 - i) Re-check the brake power at the first opportunity.
- 10) The LP himself or on his direction the ALP shall be responsible for the application and release of the hand brakes of the wagon behind the engine. The Guard shall be responsible for the similar action in regard to the wagons inside the brake van.

TEMPORARY SINGLE LINE WORKING ON DOUBLE LINE (TSL) SR 6.02-1

1. Where an accident to a train or track or other obstructions takes place on a double line, one of line cannot be used, then the traffic may temporarily worked on single line, which is called TSL working. The traffic may work under any one of the following system.
 - a. By obtaining line clear on electrical instrument.
 - b. By the installation of single line block instruments and SLB demarcate the block section in the wrong direction if the affected line is likely to remain out of use for a substantial period.
2. On receipt of reliable information in writing that one line is clear the SM in consultation with SCOR and the SM of the station at the other end of the section shall take steps to introduce TSL working.
3. In case of doubt, track safe certificate shall be obtained by the engineering official not less than the rank of an inspector/SSE.
4. TSL working shall be introduced between the nearest station provided with cross over between UP and DN lines.
5. IBS and 'C' class stations shall be kept closed and the commutator of the concerned block instruments shall be locked in 'TOL' position. Caution indicator shall be hung on the handle of block instrument in case of Daido instruments.
6. SM proposing TSL working shall issue a message to the SM at the other end of affected section containing the following information under exchange of private numbers.
 - a. Cause of introduction of TSL working.
 - b. The line on which the TSL working is proposed.
 - c. Source of information that the said line is clear.
 - d. Place of obstruction.
 - e. Names of intermediate station, if any, which would be out of use.
 - f. Assurance that the trap points, if any, have been spiked or clamped and padlocked.
 - g. Assurance that if the train is running on the right line the Last Stop Signal shall be kept in ON position. In case the train is running on the wrong line all fixed signals shall be kept in the ON position and
 - h. The number and timing of the last train which arrived or left the block station issuing the message.
7. After exchanging of the above information line clear shall be obtained through the means of communication.
8. Authority :-
 - a. Right line – T/D 602
 - b. Wrong line – T/D 602 and T/511 (if requirement) or pilot out memo. The train shall be pilot out up to the last point.
9. Three parts of T/D 602 are as under:-
 - a. Line clear ticket
 - b. Authority to pass signals at ON position
 - c. Caution order in which the following are mentioned.
 - I. Line on which the train is going
 - II. Place of obstruction

- III. Speed of the first train shall be 25 KMPH subject to observance of other speed restrictions in force
- IV. Warning to observe neutral section for the train going on wrong line in electrified section and clamping/spiking of trap points if any
- V. In case of wrong line hand signal shall also be exhibited after giving the authority.
- 10. Loco pilot of the first train shall inform all gateman and gang men on the way about the introduction of TSL working specifying line on which the trains will run.
- 11. The loco pilot of the train proceeding on the wrong line shall switch-on the flasher light and sound frequently short whistles. If the flasher light is not found ON, the station staff/gatemen/gang men shall stop the train.
- 12. Second and subsequent trains may run at their booked speed subject to observance of other speed restrictions in force.
- 13. When the train is stopped in the block section on accounts accident, failure, and obstruction or for any other exceptional cause and the loco pilot finds that he cannot proceed, it shall be protected as per GR 6.03.

RECEIVING TRAIN IN THE NEXT STATION-

- 14. Trains proceeding on the wrong line shall stop opposite to the First Stop Signal of the right line or at the Last Stop Signal of the wrong line whichever comes first. The SM after ensuring that the points are set, clamped and pad locked shall depute a railway servant with a written authority (T/510) to stop the train with danger hand signal and there after pilot the train into the station.
- 15. Trains proceeding on the right line shall be received by taking 'OFF' the approach stop signal.
- 16. If the loco pilot finds that no railway servant in uniform has been deputed to pilot the train then GR-4.44 shall be followed.
- 17. After the ensuring that the whole of the train has arrived completely with tail lamp/tail board the SM shall clear the section by giving private the number on telephone.

RESUMPTION OF NORMAL WORKING

- a. On receipt of a written certificate from a responsible engineering official that obstructed line/ tracks is free and safe for the passage of trains, SM shall issue a message to the other station/stations under exchange of private number and in consultation with the SCOR normal working shall be resumed.
- b. Block instruments and all fixed signals including those of IBH which were treated as closed shall be brought into use immediately.
- c. An entry shall also be made in the TSR of all stations concerned showing the time of suspension of double line working and resumption of normal working.
- d. Loco pilot of the first train entering the section after resumption of normal working shall inform all gateman and gang men on the way about the resumption of normal working.
- 18. All the records in connection with the TSL working shall be retained at the station and the TI of the section must scrutinize and submit his report to the DRM within 7 days of the resumption of normal working.

ALL COMMUNICATION FAILURE ON DOUBLE LINE SR 6.02-3

- 1) In the event of total interruption of communication (TIC) occurring between two stations on a double line section i.e. when line clear cannot be obtained by any one of the following means stated in order of preference viz-
 - a) Block instruments, track circuit or axle counters
 - b) Telephone attached to the block instruments (block telephone)
 - c) Station to station fixed telephone wherever available
 - d) Fixed telephone such as railway auto phones and BSNL/MTNL phone
 - e) Control telephone
 - f) VHF sets:
- 2) Train shall be stopped and the loco pilot and the guard of the train shall be advised of the circumstance by the SM on duty.
- 3) SM shall issue T/C 602 to the loco pilot of each train which shall include 3 parts:
 - a) Authority to proceed without line clear
 - b) Authority to pass signals in on position
 - c) Caution order - 25 KMPH when view ahead is clear and 10 KMPH when the view ahead is not clear.
- 4) In the event of a loco pilot approaching or passing any portion of the line where the view ahead is not clear a railway employee with hand signals must be sent in advance to guided the further movement of the train. A sharp look out ahead should be kept and the engine whistle freely used.
- 5) The train shall be piloted by a railway employee equipped with hand signals and detonators through a tunnel only after ascertaining that it is clear. Before entering a tunnel the head lights, side and tail lights shall be lit.
- 6) Guard shall keep a sharp look out in the rear and be prepared to exhibit a hand danger signal to prevent the approach of a train from the rear and to protect if necessary.
- 7) When a train is stopped in the block section, on account of accident, failure, obstructions or other exceptional cause and the train cannot proceed, it shall be protected by placing three detonators at a distance of 250--250--10 meters apart from the train on the way out.
- 8) No train shall be backed. In unavoidable circumstances, it shall be backed only after placing three detonators at a distance of 250—250--10 meters apart in the rear of the point up to which the train is to be backed.
- 9) On approaching the station ahead, loco pilot shall stop the train outside the first stop signal and sound continuous long whistle.
- 10) If the signals is not taken OFF within 10 minutes and if the detention is likely to exceed 10 minutes, train shall be protected in the rear by placing three detonators at a distance of 250--250--10 meters apart, and LP shall send ALP to the station/cabin to inform the fact that the train is waiting at the signal for its admission into the station.
- 11) After the train being admitted into the station by taking OFF the signals, the loco pilot shall hand over the T/C 602 authority to the SM.

- 12) Trains shall be allowed to enter the block section after a clear interval of **30** minutes between each other. T/C 602 shall be issued to the loco pilot of each train. This speed should be **25KMPH** when the visibility is clear and **10 KMPH** when visibility is not clear.
- 13) The description of preceding and following train (just before and just after the train) shall be written on the authority T/C 602. The train must continue to work on this system until any one of the means of communications is restored by the competent authority.
- 14) As soon as any one means of communication has been restored both SMs must send messages under exchange of private number about the train dispatched and train received.
- 15) Line clear should not be granted or obtained on the restored communication instrument until both the station masters are satisfied that all the trains dispatched from their station have arrived completely at other station. When communications instrument is restored information about the complete arrival of the dispatched train and its arrival time shall be exchanged by both the SMs with exchange of private no.
- 16) T/I 602 shall be used by SMs at each ends. The SCOR shall be intimated about this.
- 17) All records in connection with the working of trains during the course of TIC shall be inspected by the TI of the section who shall prepare a report on the working of trains and shall forward the same along with his report to the DRM within 7 days of restoration of communication.

ALL COMMUNICATION FAILURE ON SINGLE LINE SR-6.02-4

1. In the event of total interruption of communication (TIC) occurring between two stations on a single line section i.e. when line clear cannot be obtained by any one of the following means stated in order of preference viz:-
 - a) Block instruments, track circuit or axle counter
 - b) Telephone attached to the Block Instruments
 - c) Station to station fixed telephones wherever available
 - d) Fixed telephone such as railway auto phones and BSNL/MTNL phone
 - e) Control telephone
 - f) VHF sets under special instructions but not as the sole means of communication on section where passenger trains run.

The following procedure shall be adopted for train passing:

2. The SM who has a train to dispatch through the affected block section shall open communications by establishing contact with the SM of the block station of the other end by sending an engine or self-propelled vehicle or any other vehicle as under, in the orders of preference :
 - a) Light engine
 - b) Train engine
 - c) Motor trolley/ Tower wagon accompanied by Guard or off duty SM.
 - d) Trolley /Cycle trolley /Moped trolley accompanied by a Guard or off duty SM.
 - e) Diesel car /Rail motor car/EMU rake after ensuring that all passengers have detrained.
3. The SM on duty shall advise the circumstances and the purpose to the staff being sent with the above engine/vehicle into the affected block section to open the communication. He must also satisfy himself that the staff thoroughly understand the rules of working of trains during Total Interruption of Communication on single lines and obtain their signature on the authority in token of acknowledgement.
4. T/B 602 is issued to the loco pilot of the vehicle going to open the communication after explaining the situation. It has following five parts:
 - a) An "Authority to proceed" without line clear
 - b) Authority to pass LSS at ON, in case there is a last stop signal at the station.
 - c) A Caution order specifying the speed up to which the engine or self-propelled vehicle referred to in para 2 may run to the affected block section. Which are:
 - In the day or when visibility is clear – 15kmph
 - At night or when visibility is not clear – 10kmph
 - Foggy weather – walking speed
 - While passing through the tunnel, the Asst. loco pilot and a person appointed by SM shall lead engine with detonator and danger hand signal.
 - d) Line clear enquiry message
 - e) Conditional line clear message to the SM of the block station at the other end of the affected block section to return the Light engine/ Train engine/ Tower wagon/ Moter trolley/ Trolley attaching to a train waiting to be dispatched from his station and if cannot be attached, loaded in the waiting train or alone (supported with P.N. of sending station).

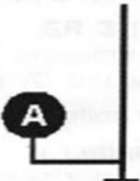
- ✓ T/E 602 as per requirement- the line clear enquiry message is written on part (IV) of T/B 602 for only one train. But when line clear is being asked for more than one train then T/E 602 is issued along with T/B 602. In this situation nothing shall be filled in part (IV) of T/B 602. All description shall be written on T/E 602.
 - ✓ When engine on any other vehicle is being dispatched in a non-signaled line the T/511 shall also be issued.
5. The train which is going to ask for line clear shall proceed putting ON the flasher light and sounding frequent short whistle. The loco pilot shall stop before the adequate distance, if any vehicle is seen coming from the opposite direction and decide to which station the engine/vehicle shall go. The followings are taken into account while deciding the same.
 - Importance of train
 - Distance covered
 - Gradients
 - Catch siding etc.
 6. Reaching on the FSS LP will stop his vehicle sounding continuous long vehicle at the station ahead. SM of the station admits the vehicle by taking off FSS. On arrival at the station the loco pilot/ pilots of both vehicles (if any) shall hand over the T/B 602 and T/E 602 (if any) to the station master. On the basis of these authorities, the station master shall issue the following authorities to the loco pilot to return with only engine or with other train.
 - Conditional line clear ticket - T/G 602 (UP) or T/H 602 (DN) (based on the conditional line clear message of T/B 602)
 - Caution order- T/409. When there is no engineering speed restriction it will proceed with booked speed.
 - T/369(3b) or T/511 as per the requirement.
 - T/F 602- reply to line clear enquiry message with private number.
 - T/E 602 – if trains are waiting for line clears on that station.
 7. While returning with or without train the SM shall receive the vehicle by taking OFF the first stop signal after it has come to a stop at the signal.
 8. SM shall issue the following authority to the waiting train before dispatching them.
 - a. Conditional line clear ticket (T/G 602 (UP), T/H 602 (DN) based on T/F 602.
 - b. Caution order – T/409, T/A 409. If no engineering speed restriction then with booked speed.
 - c. T/369(3b) or T/511 as per requirement.
 9. If station master at one end of the interrupted section has more than one train to dispatch in the same direction, he shall ask for line clear on one T/E 602. In T/E 602, it shall be stated that these later trains will be dispatched after the first train after interval of 30 minutes.
 10. If the station master at other end is in a position to receive all the trains, he shall reply to line clear enquiry message with one T/F 602 giving separate Pvt. No. to all the train.
 11. If there be an even number of trains in both directions, T/E 602 and T/F 602 for each succeeding train may be sent through the Guard of the proceeding train.
 12. If line clear has been received for more than one trains they shall be dispatched at an interval of 30 minutes issuing the following authorities-
 - a. Conditional line clear ticket- T/G 602 or T/H 602

- b. Caution order-T /409 in which speed restriction of 25 KMPH when visibility is clear and 10 KMPH when visibility is not clear and other (if any) prescribed by the engineering department is written.
- c. T/369(3b) or T/511 as per requirement.
- 13. When train is stopped in the block section due to exceptional reason it shall be protected by placing three detonators at a distance 250-250-10 meters apart in front and in rear. If the train is stopped on FSS for more than 10 minutes, it shall be protected in the above manner in rear.
- 14. When trains follow one another, no trains shall be backed. In exceptional cases when it is unavoidable, the train shall be backed only after providing protection by placing three detonators at a distance 250-250-10 meters apart in rear of the point up to which the train is to be backed.
- 15. If all trains have been dispatched for which line clear have been received and if there is any train to be dispatched, similar process of obtaining line clear is repeated.
- 16. During ACF on S/L if there is a light engine with or without brake van awaiting for line clear of a station of affected section and it has to continue its journey after reaching at the station of the affected section T/B 602 will be issued to LP leaving blank part IV and V of above said authority.
- 17. On restoration of any one of the means of communication, line clear shall not be obtained or given by means of communication restored until both the station masters are satisfied that all the trains/engine etc. dispatched from their station have arrived complete at other station. Normal working shall be resumed when both the station masters are satisfied that section is clear, under exchange of Pvt. No. T/I 602 is filled and normal working is resumed.
- 18. The SCOR is intimated when the control telephone is restored.
- 19. Details of the movement are entered in TSR which are examined by TI and a report will be prepared and sent to the DRM within 7 days.

WORKING IN AUTOMATIC SIGNALING SYSTEM

3.17. Distinguishing markers and signs for signals:-

1) Where necessary, signals shall be distinguished by prescribed markers. Such markers shall be fixed on the signal posts below the signals as under:-

Appearance	Provided on	Description
	Automatic Stop Signal	Letter 'A' in black on white circular disc
	Semi Automatic stop Signal	White illuminated letters. 'A' against black background when working as an Automatic Stop signal and letter 'A' extinguished when working as a Manual Stop signal Note:

3.37. Normal aspect of signals -

The normal aspect of an Automatic Stop signal is 'Proceed'. Where, however, the signal ahead is manually operated, the aspect normally displayed may be 'Caution' or 'Attention'.

SR 3.78.02 - All Loco pilot/Motorman/Asst. Loco pilot who are required to work trains on section having automatic Block system of working shall be imparted one day's intensive course once in every six months, about the rules pertaining to this system. Thereafter, they shall be examined and if found qualified a certificate of competency shall be issued to each Loco pilot /Motorman/Asst. Loco pilot by a competent Railway official as may be nominated by DME/DEE(RS-0).

SR 3.78.04 (A&C 40)

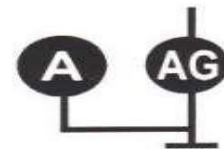
- (1) During fog when the loco pilot in his judgment feels that visibility is restricted due to fog, he shall run at a speed at which he control the train so as to be prepared to stop short any obstruction, this speed shall in any case not be more than 75 kmph .
- (2) Loco Pilot to whistle frequently to warn the gateman (where provided) and road users of an approaching train at level crossings.

- (3) In Absolute Block System the speed should not exceed *75kmph* as detailed at item (i) above.
- (a) In Automatic Block territory the speed will be After passing an auto. Stop signal at "green" the speed not to exceed *75 kmph*..
 - (b) After passing an automatic stop signal at 'Double Yellow' the speed not to exceed *30 kmph*.
 - (c) After passing an automatic stop signal at 'Yellow' the loco pilot to run at a further restricted speed so as to be prepared to stop at the next stop signal.

NOTE—

- (1) In case fog safe device is not available in locomotive or defective en route the speed 75 kmph reduced to 60 kmph.
- (2) Red tail lamp displaying a flashing red light during day or night to indicate last vehicle should be provided and lit.
- (3) First Stop Signal location kilometer chart be provided to each loco pilot in easy to carry card.
- (4) Prevailing fog situation should be advised to crew and guard during sign ON

A & AG MARKER SR 3.17.01- (A&C 11)



When a stop signal is a semi-automatic stop signal and protects level crossing gate in addition to the points/no points, it shall be provided with white illuminated letter 'A' and white illuminated letters 'AG' against black background.

- (1) **'A' glow** -- Gates are closed and locked against road traffic and points are correctly set and locked for the route.
- (2) **'AG' glows -- Gates are** either open to road traffic or have failed but the points are correctly set and locked for the route. However the loco pilots shall ensure that the level crossing is not obstructed and on being hand signaled by the Gateman, negotiate the level crossing cautiously.
- (3) **'A' & 'AG' both not glow** when the points are not correctly set and locked for the route or have failed.
- (4) **'A' & 'AG' both glow**; signal should be treated as defective.

GR 9.01- Essentials of the Automatic Block System on Double Line —

Where trains on a double line are worked on the Automatic Block System —

- a) The line shall be provided with continuous track circuiting or axle counters,
- b) The line between two adjacent block stations may, when required be divided into a series of automatic block signalling sections each of which is the portion of the running line between two consecutive Stop signals and the entry into each of which is governed by a Stop signal, and
- c) The signal shall not assume on 'OFF' aspect unless the line is clear not only upto the next Stop signal in advance but also for an adequate distance 120 M beyond it.

GR 9.02 - Duties of Loco pilot and Guard when an Automatic Stop signal on double line is to be passed at 'ON'.

- (1) When a Loco pilot finds an Automatic Stop signal with an 'A' marker at 'ON', he shall bring his train to a stop in the rear of the signal. After bringing his train to a stop in the rear of the signal, the Loco pilot shall wait there for 1 minute by day and 2 minutes by night.

If after waiting for this period, the signal continues to remain at 'ON', he shall give the long whistle and exchange signals with the Guard and then proceed ahead as far as the line is clear, towards the next Stop signal in advance exercising great caution so as to stop short of any obstruction.

- (2) The Guard shall show a Stop hand signal towards the rear when the train has been so stopped at an Automatic Stop signal,
- (3) The speed of the train shall NOT exceed 15 kmph even in normal conditions of visibility, for any possible obstruction/train and be prepared to stop short of the same. In all cases after passing an Automatic Stop signal at 'ON', shall ensure that a minimum distance of 150 meters or two clear OHE masts is maintained between his train (in clear weather) and the preceding train, or any obstruction on the line ahead.
- (4) In the case of MEMU/DEMU/EMU trains the minimum distance of 75 meters or one OHE mast shall be maintained between MEMU/DEMU/EMU train and a preceding train or any obstruction on line ahead.
- (5) During dense fog, curvature of line, rain or dust storm, engine working the train pushing it, or other Causes the line ahead cannot be seen clearly, after passing an Automatic Stop Signal at 'ON', speed not exceeding 10 kmph, should ensure that he maintains a reasonable distance at which he is able to observe the flashing tail lamp of the train ahead or the obstruction, as the case may be.

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- (6) If required, the Guard shall accompany on the engine cab,
 - (7) When an Automatic Stop signal has been passed at 'ON'. the Loco pilot shall proceed with great caution until the next Stop signal is reached. Even if this signal is 'OFF', the Loco pilot shall continue to look out for any possible obstruction short of the same. He shall proceed cautiously upto that signal and shall act upon its indication only after he has reached it.
 - (8) If the Loco Pilot exceeds the speed prescribed, the Guard shall take action as per GR4.45. In the case of EMU trains if the Motorman exceeds the speed prescribed, the Guard shall give three pause three rings on the bell code.

SR 9.07.01 Procedure to Pass Automatic Stop signal on "ON" in single line will be same as above.

A&C 32— For S/L & D/L – The space between the signals should not be less than the Braking distance. If the distance between two signals is less than the braking distance of a train, the speed of the train should be regulated to bring the braking distance within the spacing.

GR 9.14 Procedure to pass Semi-Automatic Stop signal is 'ON' —

- (1) When a Semi -Automatic Stop signal is worked as an Automatic stop signal, Rule 9.02 or 9.07 shall apply.
- (2) When a Semi-Automatic stop signal is working as a Manual stop signal and becomes defective. It may only be passed under relevant rules detailed in Chapter -III Section 'H' (GR 3.69 & GR 3.70)
- (3) When a Loco pilot is authorised to pass a Semi-Automatic stop signal at 'ON' by taking 'OFF' the Calling- ON-signal fixed below it, he shall follow the precautions stipulated in Rule 9.02 or 9.07 .

SR 9.14.01- Letters 'AG' shall glow only when the gates are either open to road traffic or have failed but the points are correctly set and locked for the route. However, the Loco pilots shall ensure that the level crossing is not obstructed and on being hand signaled by the Gate keeper shall negotiate the level crossing gate cautiously as per GR 9.02 and 9.07.

GR - 9.15 Passing Gate Stop Signal at 'ON' in Automatic Signalling territory-

- (1) If the Loco pilot finds a gate Stop signal at 'ON' in an Automatic signalling territory.—
 - (a) If the 'A' marker is illuminated he shall comply with the provisions of Rule 9.02 or 9.07,
 - (b) (i) If the 'A' marker light is extinguished, he shall sound the prescribed code of whistle to warn the Gateman and bring his train to a stop in rear of the signal,

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- (ii) If after waiting for 1 minute by day and 2 minutes by night, the signal is not taken
 - (iii) 'OFF', he shall draw his train ahead cautiously upto the level crossing.
 - (iv) If the Gateman is available and exhibiting hand signals, proceed further past the level crossing gate continuously, and If the Gateman is not available, or available but exhibiting hand signals, stop in rear of the level crossing and after ascertaining that the gates are closed against road traffic and on getting hand signals from the Gateman, and in his absence from Assistant Loco Pilot, the Loco Pilot shall sound the prescribed code of whistle and cautiously proceed upto the next Stop signal complying with the provision of Rule 9.02 or 9.07 as the case may be.

MID SECTION MODIFIED SEMI AUTOMATIC

- (1) One of the automatic stop signal between two stations in the automatic block signalling territory in each direction may be made as modified semi-automatic stop signal;
- (2) The mid-section modified semi-automatic stop signal shall be interlocked with the signals of the station ahead through track circuits or axle counters or both and shall be controlled by the Station Master of the station ahead,
- (3) The relevant indications whether the signal is in normal automatic mode or modified semi- automatic mode shall be available to the Station Masters at both ends;
- (4) Advanced starter signal of the station in rear shall be interlocked with the mid section modified semi-automatic stop signal in such a way that when working with "A" sign extinguished, the Advanced starter shall assume 'OFF' aspect or be taken 'OFF' only when the line is clear upto an adequate distance 120 M beyond the mid-section modified semi-automatic stop signal (In single line this distance will be 180 M); similarly the mid- section modified semi-automatic stop signal shall assume 'OFF' aspect automatically or be taken 'OFF' only when the line is clear upto an adequate distance 120M beyond the Home signal of the station ahead.
- (5) During abnormal conditions like fog, bad weather impairing visibility, the midsection modified semi- automatic stop signal may be worked by extinguishing 'A' marker this action shall also ensure that the 'A' marker of the Advance starter signal of the station in rear and Home signal of the station in advance shall also be extinguished.
- (6) During normal conditions, mid-section modified semi-automatic stop signal shall work as normal automatic stop signal.
- (7) When the Loco Pilot finds mid-section modified semi-automatic stop signal with 'A' marker extinguished in 'ON' position, he shall stop his train in the rear of the signal and inform this fact to the Station Master of the station ahead on approved means of communication.

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- (8) The Station Master of the station ahead may authorize the Loco Pilot to pass the med-section modified semi-automatic stop signal working with 'A' marker extinguished in 'ON' position through approved means of communication.
 - (9) In case the Loco Pilot is unable to contact the Station Master of station ahead, he shall pass the signal at 'ON' after waiting for 5 minutes at the signal and proceed cautiously and be prepared to stop short of any obstruction, at a speed not exceeding 10 kilometres an hour upto the next Signal and act as per aspect of this signal; and Loco Pilot shall report the failure to the Station Master of the station ahead.

NOTE —

- (1) *Signals shall be so spaced as to meet the operating requirements of the section. At the same time the distance between signals shall not be so great as to, cause serious repercussions during failures or so' small as to provide inadequate braking*
- (2) *If the distance between the caution and danger aspects in the case of three aspect signalling or attention and danger aspects in the case of four aspect signalling is less than the braking distance of a train, the speed of that train shall be so regulated as to bring the braking distance within the above mentioned signal spacing.*
- (3) *All yard controlled 'Semi-automatic Signals' shall be kept in 'Automatic' mode in Normal condition. However, it may be turned into 'Manual' mode as and when required for the purpose of yard shunting, passing road traffic at LC Gate etc.*

BOBBING AND FLICKERING

- (1) When a Loco Pilot comes across an Automatic stop signal which is flickering/ bobbing, he shall bring his train to a stop in rear of the signal. If the signal assumes a steady aspect and remains steady for at least 60 seconds, he shall act according to the steady aspect.
- (2) If the signal does not assume steady aspect for at least 60 seconds, he shall treat the signal as defective and take action in accordance with General Rule 9.02 and Subsidiary Rule 9.02.01.

SR 9.11.05- Displaying more than one aspect

When a Loco pilot / Motorman finds an Automatic Stop signal with an 'A' Marker or a Semi-Automatic Stop signal working as Automatic Stop signal displaying more than one aspect simultaneously, he shall obey the most restrictive aspect, out of the aspects displayed by the signal. He shall also inform accordance to SR 9.11.01.

SR 9.11.01- Loco Pilot to report failure –

After notice of any signal failure in Automatic signalling section –

- (1) The loco pilot shall immediately convey the failure quoting signal no(s) to the SMs of concerning stations through available means of communication and
- (2) Further report the matter to the SM/Lobby in-charge in writing quoting signal no(s) where he completes his duty or
- (3) Report to SM of first stopping station in the direction of movement where the train is controlled.

GR 9.03 Essentials of the Automatic Block System on single line

- (1) Where trains on a single line are worked on the Automatic Block System —
 - (a) The line shall be provided with continuous track circuiting or axle counters,
 - (b) The direction of traffic shall be established only after Line Clear has been obtained from the block station in advance.
 - (c) It shall not be possible to obtain Line Clear unless the line is clear, up to the FSS + Adequate distance 180 meter of next block station.
 - (d) The line between two adjacent block stations may, where required, be divided into two or more automatic block signalling sections by provision of Stop signals.
 - (e) Automatic Stop signal shall not assume 'OFF' position unless the line is clear upto the next Automatic Stop signal where the next Stop signal is a Manual Stop signal, the line is clear for an adequate distance 180 meters beyond it,
 - (f) All Stop signals against the direction of traffic shall be at 'ON'.

A&C 38 - SR 9.03.01:- Automatic Block system on Single Line:-

On Single line or Joint line section (Bi-directional) provided with Automatic Block System of working, all arrival & departure signals (Home signal & Starter Signal) of a Station shall invariably be Semi-automatic signals unless otherwise, which shall be permitted only through Special Instructions.

Note -- All yard controlled 'Semi-automatic Signals' shall be kept in 'Automatic' mode in Normal condition. However, it may be turned into 'Manual' mode as and when required for the purpose of yard shunting, passing road traffic at LC Gate etc.

GR 9.04 Minimum equipment of fixed signals in Automatic Block territory on single line—

(a) Manual Stop signals at a station: — (i) a Home, (ii) a Starter.

(b) An Automatic Stop signal in rear of the Home signal of the station.

Note - Under approved special instructions, the Automatic Stop signal may be dispensed with. In addition, such other fixed signals as may be necessary for the safe working of trains may be provided.

GR 9.06-Conditions for taking 'OFF' Manual Stop signals in Automatic Block territory on Single line —

(1) **Home signal**— When a train is approaching a Home signal otherwise than at terminal station, the signal shall not be taken 'OFF' unless the line is clear not only upto the Starter but also for an adequate distance 120 M beyond it.

(2) **Last Stop signal**--The last Stop signal shall not be taken 'OFF' for a train unless the direction of traffic has been established and the line is clear upto the next Automatic Stop signal, or when the next Stop signal is a Manual Stop signal for an adequate distance 180 m beyond it.

Note - A sand hump or subject to the sanction of the Commissioner of Railway Safety, a derailing switch shall be substitute for the adequate distance.

Rules applicable to both Double and Single lines

GR 9.10 Protection of a train stopped in an automatic block signalling section —

(1) When a train is stopped in an Automatic block signalling section, the Guard shall immediately exhibit a Stop hand signal towards the rear and check-up that the tail board or tail light is correctly exhibited.

(2) If the stoppage is on account of accident, failure or obstruction and the train cannot proceed, the Loco pilot shall sound the prescribed code of whistle and the train shall be protected immediately as per Rule 6.03 except that for the protection detonator will be placed 90—90—10 meter.

SR 9.11.04 - Whenever any Automatic Signal is passed at 'ON' the Guard shall record in his Journal the time of passing the next signal. All such cases of passing the Automatic Stop signal at 'on' together with the timings of passing the two signals, shall be recorded in a special Register to be maintained in Control Office, and this shall be periodically scrutinized by the Operating Officers to ensure that the Loco Pilots take not less than the minimum running time required for observing the speed restrictions and cautious driving.

SR 9.12

S.R. 9.12/1:-*In case of failure of signal or signals between two or more block stations in Automatic block system; The train working should normally be done in accordance with the provisions of Rule 9.02 or 9.07 as the case may be.*

S.R. 9.12/2 (A)-Prolong Signal Failure

In the event of conditions mentioned in sub-para (i) or (ii) below, the decision of Prolonged signal failure should be taken by Sr. Divisional Operations Manager / Divisional Operations Manager (in-charge).

- i. Failure of signal/s is likely to last for some time as advised in writing by the officials of S&T department, with the approval of Sr. DSTE/ DSTE concerned, to the section controller of the division; or
- ii. In case of the failure of signal/s causing or expected to cause serious delay in train operations on account of working during such failure in accordance with rule 9.12/1.

Procedure

1. (a) The intimation of prolonged failure shall be given to concerned duty station master by Section Controller under exchange of private number.
- (b) Train shall be brought to a stand and advised Loco Pilot/Motorman and Train Manager about circumstances by the Station Master. Section Controller and Station Master concerned ahead of the affected section shall also be informed.
- (c) The section between the two block stations will be treated as a Single Block Section
- (d) All the trains dispatched in the affected section have completely arrived at the station in advance. Additionally the last STOP signals of all stations dispatching trains and the first STOP signals of all stations receiving trains in the affected section, shall be put in manual mode and in "ON" position initially.
2. The Station Master shall obtain 'Line Clear' for the train by one of the following means of communications viz.
 - (a) Station to Station fixed telephones wherever available.
 - (b) Fixed telephone such as Railway auto phone & BSNL/MTNL phone with caller ID.
 - (c) Control Telephone.
 - (d) VHF set under special instructions, but not as the sole means of communication on sections where passenger trains run.
 - (e) FCT with CUG SIM which have been provided to the station only for official use by the on-duty Station Master.

NOTE:- Whenever line clear obtained on fixed telephone, such as Railway Auto Phone and BSNL/MTNL telephone identity of the concerned station should be confirmed through caller ID device provided on that telephone.

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3. The SM on duty at the station in advance shall not give such "Line Clear" unless:-
- (i) The whole of the last preceding train has arrived complete.
 - (ii) The first stop signal has been put back to 'ON' behind the last preceding train.
 - (iii) The line is clear not only up to the Semi-Automatic/Manual reception signal but also for an adequate distance beyond that.
 - (iv) The private number/s shall be exchanged with on duty gatemen, for closure of the level crossing gate/s under his control.
 - (v) The points of outlying sidings/ turnouts under his control are correctly set and locked.

4 . T/D 912 shall be given to LP to pass all Dearture/Automatic/Semi-Automatic/Manual signal. PHS for Semi-automatic/ Manual signal. Pass cautiously L/C gate only after ensuring closing the gate. Speed (25/10kmph). SM shall obtain Pvt.no from Gatemen for closing the gate before sending the train.

5. When approaching,the LP shall act upon the aspect of the first STOP signal of the receiving station. In case the first STOP signal is not in working condition then the Station Master shall depute a railway servant in proper uniform and issue authority on form no. T/369(3b)

6. Subsequent train may be run on sectional speed.

7. Clearance of the section by each train shall be intimated to the station in rear under exchange of Private Number , SCR shall be kept advise movement of each train

8. As soon as the signals are put right by the S&T officials in writing, section controller's permission should be obtained for resuming normal working of trains on Automatic Block System. A message shall be exchanged with Private Numbers by the Station Master assuring that the last train dispatched during the failure has arrived completely at the station in advance and the section is clear. Intimation of restoration shall be given to section controller under exchange of private number.

9. All the records in connection with train working on this system shall be retained at the station and the Transportation Inspector of the section must scrutinize them and submit his report to the Sr. Divisional Operations Manager / Divisional Operations Manager (in-charge) within 7 days of the resumption of normal working.

S.R. 9.12/2 (B): Failure of all signals likely to last for some time and cause serious delay when no means of communications are available in Double line:-

When line clear cannot be taken by any of the following means, viz.

- (i) Track circuit and Axle counter
- (ii) Station to Station fixed telephone wherever available.
- (iii) Fixed telephone such as Railway auto phone & BSNL/MTNL phone.
- (iv) Control Telephone.
- (v) VHF set under special instructions, but not as the sole means of communication on sections where passenger trains run.
- (vi) Fixed telephone with CUG sim provided to the station only for official use by the on duty Station Master.

The following procedure shall be adopted for train passing:-

- (i) Movement in the block section shall be controlled by the Station Master of either side.
- (ii) All the points over which the trains will run within the affected area shall be correctly set and locked
- (iii) Train shall be brought to a stand and the Loco Pilot and the Train Manager of the train shall be advised of the circumstances by the Station Master.
- (iv) The Station Master shall give the Loco Pilot/Motorman and Train Manager of each train:-

An Authority on form T/B 912 shall be handed over to the Loco Pilot and Train Manager which shall consist of-

(a) An authority to proceed without line clear.

(b) An authority to the Loco Pilot/Motorman Indicating the distinguishing numbers of departure, Automatic, Semi-Automatic/ Manual and Gate signal/signals required to be passed, shall also be indicated on the Authority authorising the Loco Pilot/Motorman to pass them at 'ON' position. For a semi-Automatic signal / manual/ mid-section gate signal, the loco pilot/Motorman shall pass the signal only when he receives a proceed hand signal from a railway servant in uniform. In the case of mid-section gate signals the loco pilot/motorman shall cautiously pass the level crossing only after ensuring that the gates are closed and locked for road traffic.

(c) A Caution Order restricting the speed to 15 Kmph over the straight line when view is clear and 10 kmph when approaching or passing any portion of the line where the view ahead is not clear due to curve, obstruction, rain, fog or any other cause subject to the observance of other speed restrictions imposed. Loco Pilot/Motorman must also ascertain that the points of the outlying siding/ turnouts, if any, are correctly set and locked before passing over them. Speed over facing points being restricted to 15 KMPH.

- (ii) No train shall be allowed to enter an affected section unless there is a clear interval of 25 minutes between the train about to leave and the preceding train.

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- (iii) (a) In the event of a Loco Pilot/Motorman approaching or passing any portion of a line where view ahead is not clear, the Assistant Loco Pilot/motorman or the Train Manager with hand signals must be sent in advance to guide the further movement of the train. A sharp look out ahead should be kept and the engine whistle freely used.
- (b) A tunnel shall be entered only after it has been ascertained that it is clear. If there is any doubt on this point, the train shall be piloted by a railway employee equipped with hand signals and detonators.
- (iv) The Train Manager shall keep a sharp look out in the rear and be prepared to exhibit a danger signal to prevent the approach of a train from rear side and to protect it, if necessary, as per extant rules. Before entering a section where there are tunnels, he shall also switch on the side and tail lights/lamps on EMUs etc.
- (v) If the train is unable to move further due to any reason, then the train manager should protect the train in rear by placing detonators 250-250-10.
- (vi) When approaching the next station the Loco Pilot/Motorman shall bring his train to a stand outside the first stop signal and sound one long whistle. The Station Master will arrange to depute a railway servant in proper uniform and issue authority on form no. T/369 (3b) for receiving the train, after ensuring that conditions to take OFF first STOP signal have been fulfilled.
- (vii) Trains must continue to work on this system until either the signals are put right or any one of the means of communications is restored by the S&T officials in writing.
- (viii) As soon as the signals are put right, normal working of trains shall be resumed.
- (ix) In case of any of the means of communication is restored as per condition in Para above, working shall be done in accordance with S.R. 9.12/2 (A) after ensuring that section is cleared and all trains reached at other station under the exchange of P.no.. SCR shall also be kept informed.
- (x) All the records in connection with train working on this system shall be retained at the station. Transportation Inspector of the section must scrutinize them and submit his report to the Sr. Divisional Operations Manager / Divisional Operations Manager (in-charge) within 7 days of the resumption of normal working.

S.R. 9.12/3 :-Rules and Regulations for working of trains under the Automatic Block System during obstruction of one line when signals are operative and communication are available (on Double Line Sections) :-

1. When it is desired to introduce temporary single line working on double line on electric communication instruments, the Station Master at one end of the affected section shall on receipt of reliable information in writing that one line is clear, take steps to introduce temporary single line working on that line in consultation with the Section Controller and the Station Master of the station at the other end of the section. The decision to introduce temporary single line working should be taken by Sr. Divisional Operations Manager / Divisional Operations Manager (in-charge). Temporary Single Line Working shall be introduced between the nearest stations provided with cross-over between Up and Down lines on either side of obstructions. Nomination of stations at both the ends of such stations shall be done by Sr. Divisional Operations Manager / Divisional Operations Manager (in-charge) of the division as mentioned in above.
2. If there is reason to suspect that the line over which temporary single line working is to be introduced is also fouled or damaged, temporary single line working shall not be introduced until a responsible engineering official not below the rank of a SSE/JE (P.Way) has inspected that section and certified that the track is safe for the passage of trains.
3. The movement of trains on the affected section shall be controlled by such stations and on such lines as are prescribed by special instructions.
4. The Semi-Automatic/Manual Despatch signals of the Stations at both the ends of the section where temporary single line is being introduced shall be put in manual mode in ON condition for the entire duration of temporary single line working. The concerned Semi-Automatic/Manual Reception signals of the stations at both the ends shall also be put in manual mode and in ON position initially, before introduction of temporary single line working.
5. Line clear shall be obtained on the following:
 - (a) Station to Station fixed telephones .
 - (b) Fixed telephone such as Railway auto phone & BSNL/MTNL phone with caller ID.
 - (c) Control Telephone.
 - (d) VHF set under special instructions, but not as the sole means of communication on sections where passenger trains run.
 - (e) Fixed telephone with CUG sim which have been provided to the station only for official use by the on-duty Station Master.

NOTE:- In all cases when L/C is obtained/granted, the identity of station shall be cross checked by calling station name & Pvt.no given for the last preceding train

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6. After ascertaining that one of the lines is clear for the passage of traffic, the Station Master proposing single line working shall issue a message under exchange of private Number, containing the following information, to the Station Master at the other end of the affected section :-
 - (a) Cause
 - (b) Place of obstruction;
 - (c) The line
 - (d) The source of information
 - (e) Restriction of speed, if any, on the line;
 - (f) The number and timings of the last train which arrived/left the station nominated.
 7. On receipt of acknowledgement from the Station Master at the other end and confirmed by a private number single line working may be introduced. Line clear shall be obtained on available means of communications as mentioned in para-5
 8. The Station Master on duty at the station in advance shall not give such "Line Clear" unless:-
 - (a) The Line is clear up to at least for an adequate distance beyond the Reception signal.
 - (b) The private number/s has been exchanged with on duty gatemen, for closure of the level crossing gate/s under his control.
 - (c) The points of outlying sidings/ turnouts under his control are correctly set and locked.
 - (d) For each first train running in the wrong line clear shall neither be asked nor given unless the two Station Masters have assured under exchange of private numbers that all the trains running in the right line have already arrived completely at the Station in advance.
 9. Train Signal Register, shall be introduced at stations on affected section.
 10. A written authority (form T/E 912) shall be given to Loco pilot/ motorman and Train Manager of all trains in right and wrong line which includes.
 - a) A 'line clear ticket' on Automatic block system during temporary single line working on double line.
 - b) Distinguishing numbers of departure, Automatic, modified Semi-Automatic /SemiAutomatic/ Manual and Gate stop signals required to be passed (including non-governing signals), shall also be indicated on the authority authorising the Loco Pilot/Motorman to pass them at 'ON' position. For a semi-Automatic / Manual and gate stop signal, the loco pilot shall pass the signal only when he receives proceed hand signal from a railway servant in uniform. In the case of mid-section gate stop signals the loco pilot/Motorman shall cautiously pass the level crossing only after ensuring that the gates are closed and locked for road traffic.

c) A caution order which shall clearly state:-

- i. The line on which the train or light engine is to run;
- ii. The kilometers between which the obstruction exists.
- iii. Any restriction of speed
- iv. The instruction that Automatic signals in the wrong line should be considered as out of use even though they may be showing 'Proceed' or 'Caution' aspect
- v. The train started on the wrong line shall be piloted out of the station after all the concerning points have been correctly set and locked.

11. Before any train in the wrong line is allowed to enter the block section by handing over the authority T/E 912, the station master shall ensure that private number/s has been received from the gatemen for closure of the gate/s under his control. It shall also be ensured that all points under control of train dispatching station over which the train will pass are correctly set and locked.
12. For every first train in the right line the procedure laid down for the trains running in the wrong line shall be followed and the authority T/E 912 shall be issued.
13. The subsequent trains running in the right line may be allowed to follow each other as per the signal aspect in Automatic Block System, provided that the station in rear has intimated the station in advance about the fact that he is permitting particular train/trains to follow and has ascertained the readiness of station in advance to receive, if following them. Private numbers shall be exchanged for every such movement.

The written authority (T/E 912) shall also be given to the subsequent trains following the first train running in the right line, after ensuring that the line is clear not only up to the first signaling section beyond the Last stop signal but also for an adequate distance beyond it. The station master shall however strike out the line clear ticket portion in the authority T/E 912.

14. An endorsement shall also be made on the form T/E 912 given to the Loco Pilot/Motorman of the first train introducing temporary single line working in the wrong line to stop and inform all Gatemen and Gangmen on the way about the introduction of temporary single line working. The line on which the trains shall run, also be specified. The Loco Pilot should switch "ON" the flasher light of the train engine while running on the wrong line on proper authority to proceed. In case, the train engine running on the wrong line without switching on the flasher light is noticed by the station staff, Gatemen and Gangmen they shall stop the train immediately."

15. (a) The speed of every first train running in the wrong line shall not exceed 25 Kmph subject to other speed restrictions. The subsequent trains in the wrong line, which would be dispatched on line clear may be permitted to run on sectional speed subject to other speed restrictions.

(b) The speed of every first train running in the right line shall not exceed 25 kmph subject to other speed restrictions. The trains which are following the first train in the right line on the aspects of the signals may be permitted to run at sectional speed, subject to other speed restrictions in force. However, the speed over facing points, if any, being restricted to 15 KMPH.

16.(a) When approaching the next station nominated under special instructions under S.R. 9.12/3, the Loco Pilot/Motorman of the train running in the wrong line shall bring his train to a stand before the point opposite the first stop signal pertaining to the correct line or the last Stop Signal pertaining to the wrong line on which he is running or any Shunt signal protecting the outer most Cross-over, whichever he comes across first, and sound one long whistle. The Station Master after satisfying himself that all points have been correctly set and locked, shall arrange for a man in uniform, to pilot the train from this signal, who shall obey hand signals, if any, relayed from the station platform. Manual/Semi-Automatic signals, if any, shall, however, be passed on a written authority on the prescribed form T/510 to be issued by the Station Master.

(b) When approaching the next station nominated under special instructions under S.R. 9.12/3, the Loco Pilot/Motorman of all the trains running in the right line shall be guided by the aspect of the first STOP signal of the receiving station. In case the first STOP signal is not in working condition then the Station Master will arrange to depute a railway servant in proper uniform and issue authority on form no. T /369 (3b) for receiving the train, after ensuring that conditions for taking OFF first STOP signal have been fulfilled.

17. Resumption of normal working.

On receipt of written certificate from a responsible engineering official that the obstruction on affected line is removed and obstructed line is free for passage of trains, the Station Master will issue a message to the other station/s, as the case may be under exchange of private numbers and decide, in consultation with Section Controller the train after the passage of which the normal working has to be introduced.

(a) An entry shall also be made in the Train Signal Register of all stations concerned showing the time at which double line working was suspended, single line working introduced and the time at which normal working was resumed.

18. All the records in connection with the temporary single line working shall be retained at the station and the Transportation Inspector of the section must scrutinize them and submit his report to the Sr. Divisional Operations Manager / Divisional Operations Manager (in-charge) within seven days of the resumption of normal working.

S.R. 9.12/4 Rules and Regulations for Single line sections in Automatic Block System when no means of communications are available in case of failure of Automatic signalling.

- (A) In the event of failure of all automatic signals occurring in an area consisting of two or more stations worked under Automatic Block System in single line and when line clear cannot be taken by any of the following means, viz.
- I. Track circuiting or Axle Counters;
 - II. Station to station fixed telephones wherever available;
 - III. Fixed telephone such as Railway Auto-phones & BSNL phones.
 - IV. Control Telephone;
 - V. VHF sets;
 - VI. CUG phones which have been provided to the station only for official use by the on-duty Station Master
- (B) The Station Master who has a train to despatch through the affected section shall open communications by establishing contact with the Station Master of the block station at the other end of the affected section by sending an engine or self-propelled vehicle or any other vehicle, enumerated below, in the order of preference laid down: —
- a. Light engine;
 - b. Train engine, after it is detached from the train by the Loco Pilot on instructions from the Station Master on duty;
 - c. Motor Trolley/Tower Wagon/Trolley/Cycle Trolley/Moped Trolley duly accompanied by a Train Manager or by a Station Master other than the Station Master on duty;
 - d. Diesel car/Rail Motor Car/EMU Rake after ensuring that all passengers have detrained.
- (C) Before the Light Engine/Train Engine/Motor Trolley/Tower Wagon/ Trolley/ Cycle Trolley/Moped Trolley/Diesel Car/Rail Motor Car/EMU Rake is sent into the affected section to open communications, the Loco Pilot/Motorman/ Train Manager/Station Master being sent to do so shall be advised by the Station Master on duty of the circumstances in which and the purpose for which he is being sent. The Station Master on duty shall also satisfy himself that the Loco Pilot/Motorman/Train Manager/Station Master being sent to open communications thoroughly understands the rules for working of trains during total failure of communications on the single line. If the Loco Pilot/Motorman/ Train Manager/ Station Master who is being sent to open communications, is not conversant with the Rules for working of trains during total failure of communications on single line, the Station Master on duty shall explain these rules to such staff. The Station Master on duty shall also obtain the signature of the Loco Pilot/Motorman/ Train Manager/Station Master on form no. T/B 602 'Authority for opening communication during total interruption of communication on single line section', in token of such staff having fully understood the circumstances in which and the purposes for which he is being sent and the Rules for Working of Trains during total failure of communications on single line. The Authority T/A 912 to pass Automatic signals in 'ON' position shall also be given to the LP and Train Manager.

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- (D) (i) Before despatching the Light Engine/Train Engine / Motor Trolley / Tower Wagon/ Trolley/ Cycle Trolley/ Moped Trolley/ Diesel Car/ Rail Motor Car/ EMU Rake, the Station Master on duty shall hand over Authority T/A 912 to pass Automatic signals in 'ON' position and form no. T/B 602 an 'Authority for opening of communication during total interruption of communication on single line section' to the Loco Pilot / Motorman / Train Manager/Station Master who is being sent to open communications, which includes:
- (a) An 'Authority to Proceed Without Line Clear'.
 - (b) A Caution Order, specifying the speed up to which the engine or self-propelled vehicle or other vehicle referred to in para (B) above may run through the affected section.
 - (c) A Line Clear Enquiry Message addressed to the Station Master of the block station at the other end of the affected section asking for Line Clear for the train waiting to be despatched to his station.
 - (d) A Conditional Line Clear Message to the Station Master of the block station at the other end of the affected section permitting him –
 - (1) To return the Light Engine/Train Engine, either light or attached to a train waiting to be despatched from his station, or attached with another engine; or
 - (2) To return Tower Wagon/Diesel Car/Rail Motor Car/EMU Rake running by itself; or
 - (3) To return Motor Trolley/ Trolley/ Cycle Trolley/ Moped Trolley either running by itself or loaded in a train waiting to be despatched from his station.
- (ii) The Loco Pilot/ Motorman/ Train Manager/ Station Master going to open communications shall, on receipt of form no. T/B 602 'Authority for opening communication during total interruption of communication on single line section and Authority T/A 912 to pass Automatic signals in 'ON' position shall sign on its original and carbon copy in token of his having understood its contents.
- (iii) In case a light engine or an engine and brake van is to be despatched to proceed to the next block station and then continue its journey onward after arrival at the next block station and is not meant for opening communications, the Loco Pilot/ Motorman of engine or the engine and brake van, shall be given with the 'Authority for opening communication during total interruption of communication on single line section' and the items 'Line Clear Enquiry Message and Conditional Line Clear Message' for its return journey mentioned in para (i) (c) & (d) above, shall be struck out in form. Such engines or engine and brake van shall be issued only the 'Authority to Proceed Without Line Clear', the Caution Order and the Authority to Pass the Last Stop signal in the 'ON' position, referred to in para (i) (a) & (b) above where necessary. When it is necessary to despatch another light engine or another engine and brake van in the same direction, an interval of at least 30 minutes shall be allowed to elapse before it is despatched.
- (iv) The Semi-Automatic/Manual Stop signal shall not be taken 'OFF', while permitting an engine or self-propelled vehicle or other vehicle to proceed to the next station on 'Authority for opening communication during total interruption of communication on single line section'.

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- (E) After an engine or self-propelled vehicle or other vehicle is despatched to the next station to open communications with Line Clear Enquiry Message and a Conditional Line Clear Message to the next station for the return journey of the engine or self-propelled vehicle or other vehicle, no other train or engine or self-propelled vehicle or other vehicle shall be allowed to leave the station and proceed in the same direction until the engine or self-propelled vehicle or other vehicle sent to open communications returns.
- (F) (i) The engine or self-propelled vehicle or other vehicle proceeding on 'Authority for opening communication during total interruption of communication on single line section' shall switch on the Flasher light, wherever provided and shall proceed at a speed not exceeding 15 kilometers per hour by day when the view is clear and 10 kilometers per hour during night or when the view is obstructed, making free use of engine whistle or horn of the self-propelled vehicle, where provided.

In thick, foggy or tempestuous weather, when visibility is impaired the engine or self-propelled vehicle sent for opening communication shall proceed at walking pace preceded by two men, one is displaying red signal and other carrying detonators. Normally one of these men will be provided by the Station Master from pointsman/gateman and the other from the crew of the engine or the person whose Motor Trolley/Trolley/Cycle Trolley/Moped Trolley is being used. In case of single manned self-propelled vehicle, both these men shall be provided by the Station Master. The Station Master on Duty shall explain to both of them their duties, in the presence of the Loco Pilot/ Motorman/ Train Manager/ Station Master in charge of the self-propelled vehicle or other vehicle being sent to the next station and satisfy himself that they understand the same.

- (ii) Both by day and night, a tunnel must not be entered until the Loco Pilot/Motorman/Train Manager/ Station Master has ascertained that it is clear. Should there be any doubt on this point, the engine or other vehicle etc. should be piloted by a railway servant equipped with hand signal and detonators. Before entering the tunnel the head lights, side and tail lights and other lights (where provided) shall also be lit.
- (iii) No obstruction of the line beyond the outermost facing points shall be allowed until the return of the Engine/ Tower Wagon/ Diesel Car/Rail Motor Car/ EMU Rake/ Motor Trolley/ Trolley/ Cycle Trolley/Moped Trolley.
- (G) In the event of an engine/self-propelled vehicle/other vehicle, proceeding on 'Authority for opening communication during total interruption of communication on single line section' meeting in the mid-section, an engine/self-propelled vehicle/other vehicle sent from the other end, the Loco Pilots/Motormen/Train Managers/Station Masters, as the case may be, shall, taking into consideration the importance of the train for which they are proceeding to get Line Clear, the distance from the nearest station, gradients to be encountered, the presence of catch sidings etc., decide to which of the two stations, the engines/self-propelled vehicle/vehicles should proceed. Before proceeding, the engines or self-propelled vehicles shall, if possible, be coupled up. If the engines/self-propelled vehicles cannot be coupled up they should run at a safe speed and adequate distance apart. In the case of Motor Trolley/Push Trolley/Cycle Trolley/Moped Trolley, meeting an

Engine and brake van/Diesel Car/Rail Motor Car/EMU Rake, the Motor Trolley/Push Trolley/Cycle Trolley/Moped Trolley shall, if possible, be loaded in the Brake Van/Diesel Car/ Rail Motor Car/EMU Rake.

- (H) On sighting the station to which the engine/self-propelled vehicle/ other vehicle running by itself or with another similar unit coupled together or separately, to which it is/they are proceeding, the leading engine/self-propelled vehicle/other vehicle shall stop outside (i.e. In rear of) the first Stop signal of the station. The engine or self-propelled vehicle or other vehicle following the leading engine/self-propelled vehicle/other vehicle, shall stop at a safe distance behind the leading engine/self-propelled vehicle/other vehicle. The Station Master shall be advised of the stoppage outside the first Stop signal either by using the engine whistle/horn of the self-propelled vehicle, if provided, or by sending a man if necessary. They shall not enter the station till permitted by the Station Master to do so either by taking 'OFF' the relevant signals or otherwise.
- (I) When the engine or engines/self-propelled vehicle or self-propelled vehicles/other vehicle or vehicles have been admitted into the Station, the 'Authority for opening communication during total interruption of communication on single line section' shall be delivered to the Station Master on duty, who shall keep this document in his safe custody and also post the Line Clear Enquiry Message and the Conditional Line Clear Message in his Line Clear Books. On the authority of the Conditional Line Clear Message for the return journey, the Station Master on duty shall make out a Conditional Line Clear Ticket on form no. T/G 602(UP) or T/H 602(DOWN) as the case may be and hand over it to the Loco Pilot/Motorman/Train Manager/ Station Master to return to the block station from where he came with his engine either light or attached to a train or another engine or a self-propelled vehicle if one is waiting to proceed in that direction.
- (J) In case of the engine or self-propelled vehicle or other vehicle returning to the station from which he was sent without reaching the next station, the 'Authority for opening communication during total interruption of communication on single line section' shall be taken back by the Station Master on duty of the station from which this was issued and cancelled. The original entries shall also be cancelled.
- (K) Station Master on duty before dispatching the engine either light or attached to a train/self-propelled vehicle/other vehicle, on the return journey shall hand over to the Loco Pilot/Motorman/ Train Manager/ Station Master, 'Conditional Line Clear Reply Message' on form no. T/F 602 for the 'Line Clear Enquiry Message', giving Line Clear for the train waiting at the other station, thereby authorizing the Station Master at that station to start the train waiting there on complete arrival of the engine, either light or attached to a train/self-propelled vehicle/other vehicle at his end. In addition the T/A 912, the Authority to pass Automatic signals in 'ON' position shall also be handed over to the loco pilot/TM.
- (L) The particulars of the engine either returning light or attached to a train or attached to another Engine/ Tower Wagon/Diesel Car/Rail Motor Car/EMU Rake/Motor Trolley or Trolley/ Cycle Trolley or Moped Trolley running by itself or loaded in a train as may be applicable shall be correctly filled in on form no. T/F 602 'Conditional Line Clear Reply Message'.

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- (M) On the return journey, the engine either light or attached to a Train/ Diesel Car/Rail Motor Car/EMU Rake/Train loaded with Motor Trolley/Push Trolley/Cycle Trolley/Moped Trolley may run at sectional speed observing speed limits in the Working Time Table and other relevant rules. The Motor Trolley /Push Trolley/Cycle Trolley/Moped Trolley returning by itself may run at their normal speed observing the rules governing their running on Line Clear.
- (N) On reaching the station, the engine either light or attached to a train/self-propelled vehicle/other vehicle shall again stop outside (i.e. in rear of) the first Stop signal of the station and thereafter be guided by the instructions from the Station Master, who may arrange to receive it by taking 'OFF' the relevant signals or otherwise.
- (O) On arrival at the station the 'Conditional Line Clear Reply Message' shall be handed over to the Station Master who shall record it in the Line Clear Message Book and on its authority issue a Conditional Line Clear Ticket on form no. T/G 602 or T/H 602 (as the case may be) for the waiting train.
- (P) If there be an even flow of trains in both directions, Line Clear Enquiry Message on form no. T/E 602 and Conditional Line Clear Messages for each succeeding train may be sent through the Train Manager of the preceding train.
- (Q) The arrival and departure time of all trains, engines, Trolleys etc. which are passed under the above rules must be carefully recorded in the Line Clear Enquiry and Reply Books and also in the record copy of the 'Authority for opening communication during total interruption of communication on single line section' and in the Train Signal Register.
- (R) If the Station Master at one end of the interrupted section has more than one train to despatch in the same direction before another train is normally expected from the opposite direction, he shall, in such cases, send the first available engine of a train to obtain 'Line Clear' not only for that train but also for the following trains which may be waiting or expected at his station. In the Line Clear Enquiry Message, it shall be stated that these latter trains will be despatched after the first train at intervals of 30 minutes. After the Loco Pilot returns with the Line Clear for the required number of trains to the station at which he had left the train, the Station Master shall despatch the first train on the authority of the Line Clear for the trains and shall also endorse on that Line Clear that a particular train (giving its number and description in full) shall follow at a specified interval. The Station Master shall give similar information to the Train Manager also in writing. The Loco Pilots of the second and subsequent following trains shall be given a caution order restricting the speed to 25 kilometers per hour over the straight when the view ahead is clear and to 10 kilometers per hour when approaching or passing any portion of the line where the view ahead is not clear due to curve, obstruction, rain, fog, or any other cause. When despatching a second and subsequent trains, the particulars of the last preceding train along with its time of departure will be endorsed on the Line Clear as also the particulars of the train that would follow. The Line Clear for the last train of the series should be endorsed with the particulars of the proceeding train together with its time of departure. While adopting this procedure, the Train Manager and the Loco Pilot should be instructed to keep a sharp look out and be prepared to stop short of any obstruction

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- (S) When a train is stopped in the affected section the Train Manager shall immediately exhibit a hand danger signal towards the rear and checkup that the tailboard or the taillight is correctly exhibited. If the stoppage is on account of accident, failure, obstructions or other exceptional cause and the train cannot proceed, the Loco Pilot shall sound the prescribed code of whistle to apprise the Train Manager of the fact, where upon the Train Manager shall protect the train by placing one detonator at 250 meters from the train on the way out and 2 detonators, 10 meters apart, at 500 meters from the train, irrespective of the gauge. When a train is detained outside signals and if the detention exceeds or is likely to exceed 10 minutes it shall also be protected accordingly. In the absence of the Train Manager, the duty of protecting the train shall devolve on the Loco Pilot.
- (T) When trains follow one another, no train shall be backed. In exceptional circumstances when it may be unavoidable to back a train, the train shall be backed only after providing protection by placing one detonator at 250 meters and 2 detonators, 10 meters apart, at 500 meters from the point upto which the train is to be backed.
- (U) Trains must continue to work on this system until anyone of the means of communications, mentioned in rule (4)(A) of SR 9.12 is restored by the S&T officials .
- (V) As soon as anyone of the means of communications has been restored, the Station Master must send a message to the Station Master at the other end of the section, on the form no. T/I 602. On receipt of the above message, the Station Master at the other end of the section must acknowledge in the form no. T/I 602.
- (W) Normal working shall not be restored, until both the Station Masters are satisfied that all trains and engines, etc. despatched from their stations have arrived complete at the other station. Even if the communication is restored immediately after the departure of the light engine/selfpropelled vehicle/any other vehicle referred to in Rule (A) above, sent under 'Authority for opening communication during total interruption of communication on single line section', normal working should not be resumed until the light engine/self-propelled vehicle/any other vehicle reaches the next station and both the Station Masters are satisfied under exchange of Private Numbers that no light engine/self-propelled vehicle/any other vehicle is on the section. Thereafter intimation about this shall be given to Section Controller also, on controlled sections, if communication with Section Controller has also got restored and normal working resumed. If, however, communication with Section Controller has not got restored along with restoration of communication between two stations, the Section Controller shall be advised of the position immediately on restoration of communication with him.
- (X) On the section where total interruption of communications occurs, the Transportation Inspector of the section, must scrutinize the train passing records of the station and submit his report to the Senior Divisional Operations Manager/ Divisional Operations Manager (incharge) within seven days of the resumption of communication.

S.R. 9.12/5 - Rules and Regulations for single line working on double line sections in Automatic Block System due to obstruction of one line when no means of communications are available in case of failure of automatic signalling.

The following rules must, in addition to the rules prescribed in SR 9.12 (4), be observed by the staff.

- (A) Whenever an accident to a train or track or other obstruction, precludes the use of one line on a double line section during total interruption of communications, single line working shall be introduced only after a responsible official of the Engineering Department, not less than SSE/JE(P.Way) in rank, has certified that the other line on which single line working is to be introduced is free and safe for passage of trains. Such engineering official shall give the certificate only to the Station Master of the station at that end of the affected section for which the unobstructed line shall be the right line for despatching trains. On receipt of this certificate only the Station Master at the end of the affected station for which the unobstructed line shall be the right line for dispatching trains will follow the rules prescribed in SR 9.12(4) for opening of communications.
- (B) Loco Pilots of trains, including light engines, shall be given a Caution Order , and shall be stated clearly.
 - (i) The line on which the train is to run;
 - (ii) Location where the obstruction exists;
 - (iii) Any restriction of speed, which may be imposed by Way & Works Staff;
 - (iv) Assurance to the effect that any trap points on the line in question have been spiked and clamped.
- (C) All the cross over points, over which the train shall proceed, while temporary single line working is in force, shall be clamped and padlocked.
- (D) In the case of a train proceeding on the right line:
 - (i) The Semi-Automatic/Manual signal Despatch signal of the station in rear of the affected section may be passed in the 'ON' position on a written authority issued by the Station Master in the prescribed form T/A912 and hand signals shall also be shown at the foot of this signal.
 - (ii) The approach Stop signals, if any, of the station in advance of the affected section, may be taken 'OFF'
- (E) In the case of a train proceeding in the wrong line:
 - (i) The train shall be piloted out of the station on a written authority issued by the Station Master after all the facing points have been correctly set and locked and trailing points correctly set over which the train will pass.
 - (ii) On reaching the next station, the Loco Pilot shall bring his train to a stop opposite the first Stop signal pertaining to the right line or at the last Stop signal pertaining to the wrong line (on which his train is running), whichever he comes across first.
 - (iii) The Station Master of the station in advance shall depute a railway servant in uniform at the foot of the signal (whichever the train would encounter first) who shall stop the train on hand danger signal and thereafter pilot it into the station on a written authority T/510 issued by the Station Master.

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- (F) It will be the responsibility of the person in charge of the first engine or self-propelled vehicle or other vehicle, sent under 'Authority for Opening Communication during total interruption of communication on single line section' to inform all the Gatemen and Gangmen en-route about the introduction of temporary single line working as also the line on which it is proposed to run the train. This information shall be conveyed through the Loco Pilot of a subsequent train also, if necessary.
- (G) **Resumption of normal working: —**
- (i) If after the introduction of single line working, communications are restored between two affected stations, the trains will continue to run under special rules until action is taken in accordance with the instructions contained in these rules for the cancellation of the procedure. Thereafter, trains will be run in accordance with the instructions for the movement of traffic during temporary introduction of single line working on double line.
 - (ii) If, however, before communications are restored, the other line is released for the passage of traffic, trains shall be worked, in accordance with the instructions for running of trains on double line section during total interruption of communications.

S.R. 9.12/6: Rules and Regulations for Single line sections in Automatic Block System when means of communications are available but direction of traffic cannot be established.

In such cases the procedure laid down under SR 9.12/2 (A) shall be followed.

9.13. Movement of trains against the direction of traffic on the Automatic Block System

- (1) In Automatic signalling territory, trains shall run in established direction of traffic only. Movement of trains against the established direction of traffic is not permitted.
- (2) When in an emergency it becomes unavoidably necessary to move a train against the established direction of traffic, this shall be done only under special instructions which shall ensure that the line behind the said train upto the station in rear is clear and free from obstruction.

SR 9.13.01 - When a train required to be pushed back, the procedure laid down in SR 4.12.01 shall be followed. The Station Master before giving the assurance referred to in SR 4.12.01.

SHUNTING RULE IN AUTOMATIC SIGNALING SYSTEM

(Block Working Manual)

6.07. Shunting

(The following rules are to be read in conjunction with General Rules 5.13 to 5.14 and 5.16 to 5.23 with Subsidiary Rules thereto)

1. (a) Shunting may be performed on line/lines only when such line(s) is/are isolated from the main line and or other adjacent line(s) and when the movement of running trains is not affected by such shunting.

(b) In case the shunting obstructs or is likely to obstruct the main running line, the Station Master shall ensure that manually operated stop signal as also the last stop signal is maintained at 'ON' and as for semi- automatic stop signal(s) the 'A' marker light is kept extinguished in addition.

(c) The above shunting shall be performed between the outermost points at the approaching end and the last Stop Signal of the Station on either direction.

Authority –

- 1 When such shunting cannot be controlled by fixed signals or while permitting shunting in Automatic signalling section the Driver shall be given authority for shunting in the prescribed form T/806.
2. No shunting shall be' permitted outside the outermost points at the approaching end of a station unless:-
 - (a) The lines between the station at which shunting is to be performed and the block station in rear is clear of trains;
 - (b) Working of trains between the block stations concerned under Automatic Block system is suspended, &
 - (c) The line is blocked back.

Authority – T/806 + Block back pvt no. of other end station master.

-
3. No shunting shall be permitted outside the Last stop signal unless:-
- (a) The line between the block station at which the shunting is to be performed and the block station in advance is clear.
 - (b) Working of trains between the block station concerned under Automatic Block system is suspended; and
 - (c) The line is blocked forward :- Provided that when the line between the block station at which shunting is to be performed and the block station in advance is occupied by a train travelling away from the block station, shunting may be permitted behind the train, if permitted under the provisions of station working rules which shall take into account the speed, weight, brake power of trains and gradient on the station and as soon as intimation has been received that the train has arrived at the other end block station, working of trains under Automatic Block' system between the stations concerned shall be suspended and the line blocked forward, if it is still obstructed.

Authority – T/806 + Block Forward pvt no. of other end station master.

If shunting is allowed in rear of a travelling away train, the circumstances under which such shunting is permitted shall be endorsed on the prescribed form (T/806).

6.18 Shunting in Single Line

Following rules are to be read in conjunction with General Rules 5.13, 5.14 and 5.16 to 5.23 with subsidiary Rules thereto—

- (1)(a) Shunting may be performed on line/lines only when such line or lines is/are isolated from the main line and/or other adjacent line(s) and when the movement of running trains is not affected by such shunting.
 - (b) In case the shunting obstructs or is likely to obstruct the main running line, the Station master shall ensure that 'Home' and the 'starter' signals are maintained at 'ON' and the 'A' marker light of Semi Automatic Stop signal(s) is/are kept extinguished.
 - (c) Shunting under sub-para (b) above, shall be performed between the outermost points of the station.
- 2(a) No shunting or any other obstruction shall be permitted outside the outermost points against the direction of traffic established unless the line has been blocked back.
- (b) No shunting or any other obstruction shall be permitted outside the outermost points in the established direction of traffic unless.-
 - (i) The line between the block station at which shunting is to be performed and the block station in advance is clear.
 - (ii) Working of trains under automatic block system on single line between the concerned block stations shall be suspended; and

(iii) The line has been blocked back: Provided that when the line between the block section is occupied by a train travelling away from the station, shunting or obstruction may be permitted behind the train if permitted under the provisions of station working rules taking into consideration the speed, weight and brake power of trains and the gradients in the section, and once such shunting is permitted, no train shall be signalled into the Block Section. As soon as intimation has been received that the last train has arrived at the other end block station, working of trains under automatic block system on signal line shall be suspended and the line shall be blocked back, if it is still obstructed.

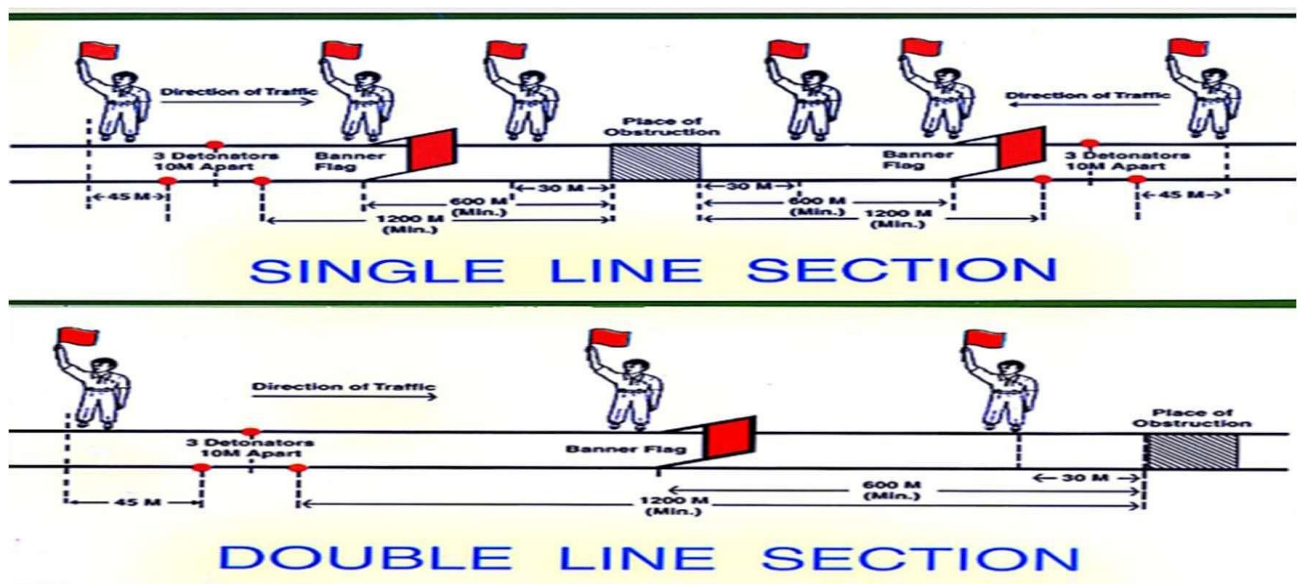
ENGINEERING PROTECTION IN AUTOMATIC SIGNALLING SYSTEM

GR 15.09- Showing of signals

(1) When the train is required to stop and the restriction is likely to last only for a day or less

A banner flag shall be exhibited at a distance of 600 meters and three detonators shall be placed, 10 meters apart, at a distance of 1200 meters from the place of obstruction. In addition, Stop hand signal shall be shown at distance of 30 meters from the place of obstruction, at the banner flag and at a distance of 45 meters from the three detonators.

The railway servant at the place of obstruction shall give Proceed hand signal to indicate to the LOCO pilot when he may resume normal speed after the train has been hand signaled past the place of obstruction.



(If gradient is 1/300 or more then the detonator will be placed at a distance of 1200-10-10 meters)

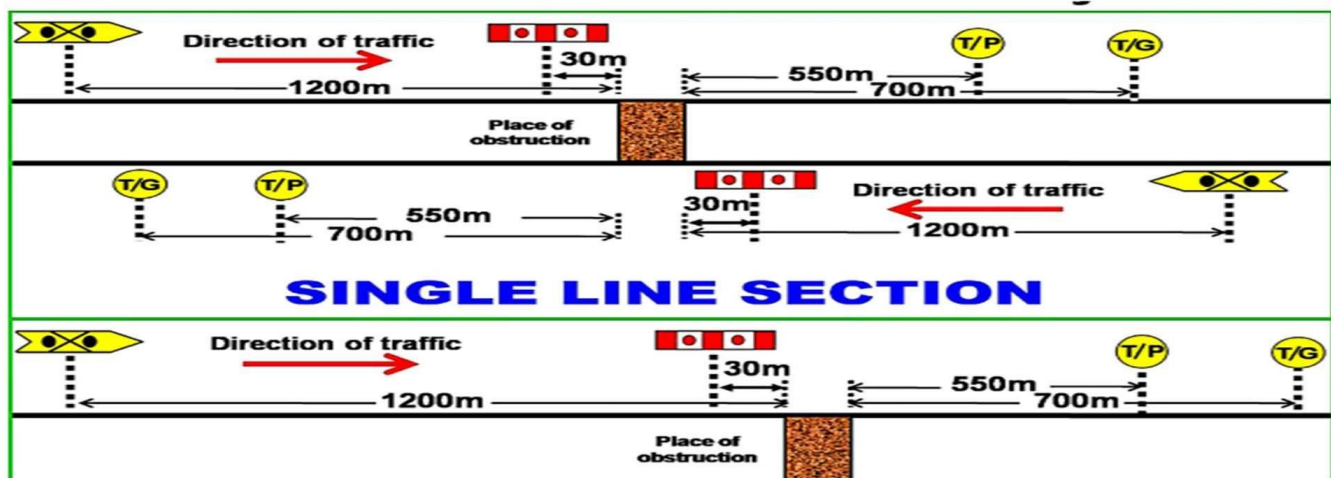
In Automatic Signaling territory, if the distance between the place of obstruction and the Automatic signal is less than 1200 meters and provided the automatic signal has been secured at 'ON'—

The banner flag and three detonators may be provided at 90 and 180 meters respectively;

(2) When the train is required to stop and the restriction is likely to last for more than a day

A stop indicator shall be exhibited at a distance of 30 meters from the place of obstruction and a caution indicator at 1200 meters from the place of obstruction.

In addition, termination indicators shall be provided at the place where a LOCO pilot may resume normal speed.



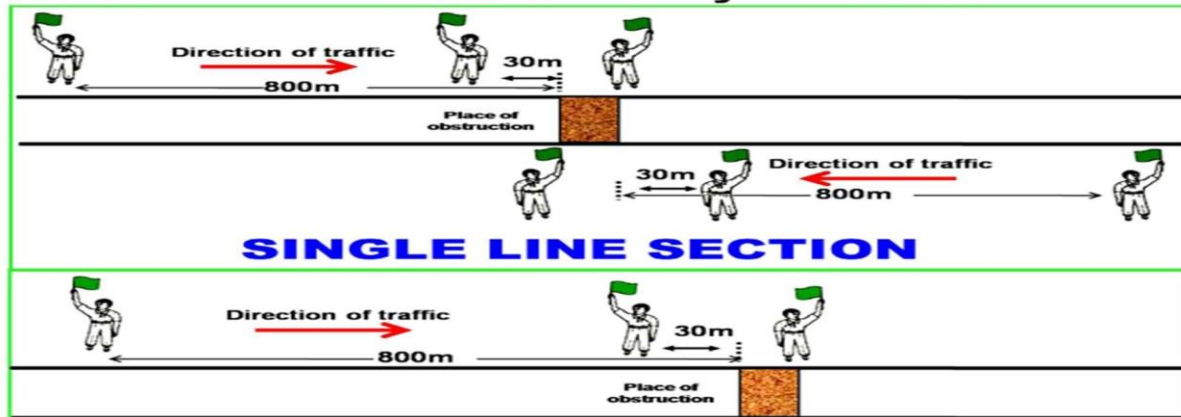
In Automatic Signaling territory, if the distance between the place of obstruction and the Automatic signal is less than 1200 meters and provided the automatic signal has been secured at 'ON'—

---- The caution indicator may be dispensed with.

(3) When the train is not required to stop and the restriction is likely to last only for a day or less.

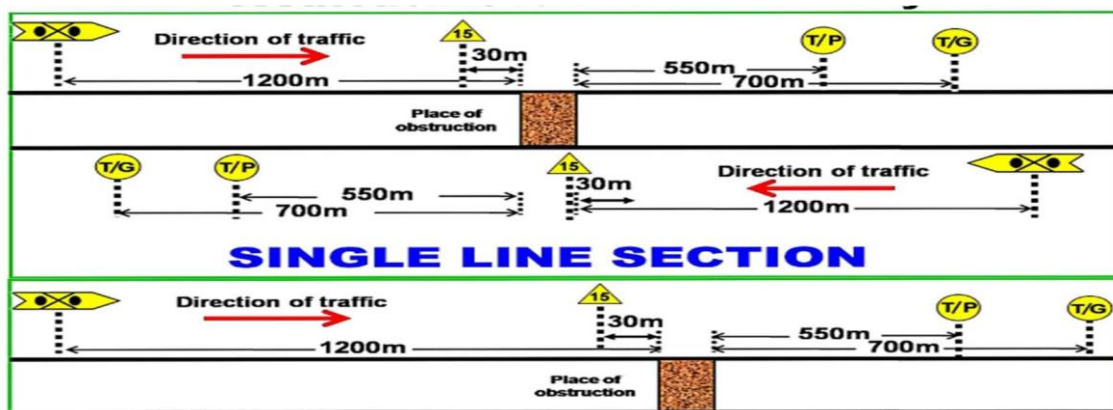
Proceed with caution hand signals shall be exhibited at a distance of 30 meters and again at a distance of at least 800 meters from the place of obstruction. The distance of 800 meters shall be suitably increased by special instructions, where required. The railway servant at the place of obstruction shall give Proceed hand signal to indicate to the Loco pilot when he may resume normal speed after the train has been hand signaled past the place of obstruction.

(If gradient is 1/300 or more then the proceed with caution hand signal will be exhibited at a distance of 1200 meters)



(4) When the train is not required to stop and the restriction is likely to last for more than a day

A speed indicator shall be exhibited at a distance of 30 meters from the place of obstruction and again a caution indicator at a distance of at least 1200 meters, where required. In addition, termination indicators shall be provided at the place where a Loco pilot may resume normal speed.



AUTOMATIC SECTION SINGLE LINE

S N	CIRCUMSTANCES	AUTHORITY	SPEED	REF.
1	Direction of traffic established but Last Stop Signal failed.	T/369 3(b)	15 kmph	USR 9.12
2	Direction of traffic established but manual starter/Semi-automatic starter working as a manual signal failed.	T/369 3(b)	15/10 up to the foot of the next automatic stop signal	USR 9.12
3	Direction of traffic cannot establish and Panel has to be suspended but means of communication available.	T/D912 T/B 409	1 st train 25 kmph, subsequent trains Normal.	USR 9.12
4	Prolong signal failure but means of communication available.	T/D912 T/B 409	1 st train 25 kmph, subsequent trains Normal.	USR 9.12
5	Working in Obstructed line	T/C 912	15/10 kmph.	USR 9.12
6	Total Interruption in Single line (For opening communication)	T/B 602 Working and authority will be same as total interruption in S/L ABS system T/A 912	15/10 kmph	USR 9.12
7.	Total Interruption in Single line (After opening communication)	1.T/G602(UP) or T/H 602 (DN) 2. T/A 912 3. C/O-Sectional speed 4. T/E 602 (if training at his station) 5. T/F 602 Conditional L/C reply message with P.no.	Sectional speed	USR 9.12

AUTOMATIC SECTION DOUBLE LINE				
S N	CIRCUMSTANCES	AUTHORITY	SPEED	REF.
1	Last Stop Signal Failed	T/369(3b)	15/10 up to the foot of the next automatic stop signal.	USR 9.12
2	Semi Automatic STARTER working as a Manual Stop Signal OR Manual Starter Signal Failed.	T/369(3b)	Proceed hand signal from foot of the signal and speed not exceeding 15 kmph up trailing point.	USR 9.12
3	Series of Auto and Semi automatic signal are failed.	T/D 912	1 st train 25 kmph, subsequent trains Normal.	USR 9.12
4	All signals are working but no means of communications are available.	Caution Order + List of series of trains	As per signal aspect	-----
5	All signals are failed and no means of communications are available (TIC)	T/B 912	15/10 kmph Interval -25 min.	USR 9.12
6	Obstruction of one line and means of communication available (TSL)	T/E912	1 st train in each direction -25 kmph, subsequent trains Normal.	USR 9.12
7	Working in Obstructed Line	T/C 912,	15/10 kmph	USR 9.12

MDZTI/BSP/ SECR

DUTIES OF GUARD IN VARIOUS CIRCUMSTANCES

1. Duties of Guard from “Sign ON” to “Sign OFF”

At originating Station-

1. The guard shall come to his duty with neat and clean uniform. He shall attend his duty as per the special instructions
 - a. Goods train- As per local order
 - b. Passenger Trains- before 30 minutes
 - c. Sub-urban train- before 15 minutes
2. The Guard shall thoroughly go through the guard instruction book provided at the HQ and shall give his initial.
3. Obtain the VG from the TNC after sign-on. Check the VG and shall tally the load of his train with the standard load of his section.
4. Shall match the vehicle number mentioned in the VG with the actual vehicle number of his train.
5. Shall ensure that the couplings and hose pipes are fitted properly.
6. Ensure that the marshaling of the train is as per the rule. If any discrepancies are found, he shall bring it to the notice of the SM/ YM.
7. Ensure that the doors of the vehicles are properly closed and sealed.
8. Obtain the caution order applicable to his section.
9. Shall check his personal stores.
10. Shall match his watch with the section controller or with the clock of the station or lobby.
11. Shall match the time with the LP and if the LP is illiterate he will explain the contents of the caution order to the LP.
12. Shall sign the BPC only after ensure the adequate Air pressure in his brake van.
13. Must see the train load does not exceed the prescribed load for the class of engine as per WTT.
14. Shall fix the TL/TB at the last vehicle.
15. In case of passenger train, shall ensure that the side lamp of the brake van is in working condition. The side lamp should be white towards the engine and red towards the rear.
16. Shall ensure that the parcels are loaded in the parcel van in geographical and scientific manner.
17. In case of passenger train, shall ensure that the ladies coach is attached near the guard coach and ensure that no male passengers are travelling in it.
18. After obtaining the Authority to Proceed from the SM, he shall exchange hand signal with the LP to start the train without any delay.

During Run-

1. The Guard shall be extremely vigilant during the run of the train and he shall ensure that the TL/TB is fixed properly.
2. He shall keep watch on the vehicles (if any) attached in rear of the brake van.
3. While passing through the level crossing gate or passing through the place of working of gang men, he shall exchange hand signal with them.
4. In case of double line section , he shall keep a sharp look over the train passing on the adjacent line and shall exchange hand signal with the LP and Guard of the train on the adjacent

- line and shall be ready to exchange danger hand signal if any unusual is found by him.
5. If the train is stalled in the block section due to failure, obstruction, and accident or for any other reason, he shall protect the train as per the rule GR 6.03 and SR 6.03-1.
 6. If a train is delayed at the first stop signal and it is likely to exceed 15 minutes, he shall immediately protect the train.
 7. He shall put right the ACP and if the train is likely to stop for more than 15 minutes due to ACP, it will be protected.
 8. He shall stop the passengers to entrain or detrain during the run of the train and prevents the passengers to travel on the footsteps.
 9. Shall enter each delay of the train during the course of its run in his journal.
 10. Shall follow the rules of shunting during any shunting operation in the intermediate stations.

At destination-

1. The Guard shall ensure that the train has arrived completely with its TL/TB and it is inside the fouling mark.
2. If the train is not inside the fouling mark, the Guard shall exchange danger hand signal with the near end cabin man or with the SM. In case banking engine LP shall sound three long whistle.
3. After the train has come inside the fouling mark he shall exchange hand signal in day and white light by night with the near end cabin man or with the SM.
4. The guard of the passenger train shall hand over the parcels to the parcel clerk at the destination station and obtain his signature.
6. Shall inform each delay in the section to the section controller.
7. At staff changing station the Guard shall not leave his train until his counterpart has taken over charge from him.
8. Then he shall sign off his duty at the nominated place.

2. Duty towards the Fouling Mark

1. When the train stops at the station , the guard shall ensure that his train has completely arrived at the station clearing the Fouling Mark or Derailing Switch if any. Then the guard shall exchange hand signal by day and white light by night with the near end cabin man to inform the same.
2. If the train has not come inside the Fouling Mark or inside the Derailing Switch, the Guard shall exchange danger hand signal with the Cabinman or with the SM. In case banking engine LP shall sound three long whistle.
3. If the Guard's hand signal is not visible from the cabin or station, the SM shall send a points man to the guard with train intact arrival register (T/1410)
4. After ensuring that the train has arrived completely inside the Fouling Mark or inside the Derailing Switch, the guard shall sign the register.
5. After obtaining the signature of the guard, the points man shall exchange hand signal with the SM and the section in rear shall be cleared.
6. The Guard shall ensure that all the signals protecting his train has replaced to their ON position. If the signals are not replaced ON, he shall inform the same to the cabin man or SM . He shall protect his train if necessary.

3. Train held up at First Stop Signal- GR- 4.44, SR 4.44-1

1. Whenever the detention of train at the first stop signal exceeds 15 minutes , necessary action shall be taken by the guard to protect the train in accordance with GR 6.03.
2. In this situation, the LP shall sound 4 short whistles (0000) to attract the attention of the Guard.
3. In the meantime, if the signal is taken OFF or authority to pass the signal at ON is received by the LP, the LP shall sound continuous long whistle to call the guard back to the brake van.
4. After coming back to the brake van, the guard shall exchange alright hand signal with the LP to proceed with his train.

4. Duties of Guard in case of ACP by passengers- SR- 4.18-2

1. On observing a drop in the BP pressure indicator, the LP must at once bring his train to a stand as quickly as possible and sound 2 short and 1 long whistle (0 0 --) to attract the attention of the guard.
2. The Guard shall acknowledge the same by waving red flag by day and red light by night.
3. If it is noticed that the ACP is done at a place which will necessitate the train being stopped on a bridge, viaduct, tunnel, cutting, catch point, spring point considered unsuitable for stopping the train, the LP shall re-create the pressure and work the train onto a safe place. He shall sound a short whistle to inform the guard that he is doing so.
4. When the train comes to a stand, the guard must immediately show a red hand signal and leave the brake van on the left side of the train, unless the train is standing on a right hand curve, in which case, he will detrained on the right side, and proceed to the carriage from which Alarm Chain has been pulled.
5. The Guard shall put right the ACP. The LP shall depute his Assistant to assist the Guard.
6. The carriage from which the ACP is done can be ascertained by the position of the red disk, and the compartment by slackness of the Alarm chain.
7. The Guard must immediately ascertain by whom the chain has been pulled and its cause. If necessary, attend the requirement of the passenger who used it.
8. If the train is likely to halt for more than 15 minutes it must be protected in accordance with SR 6.03-1 by placing 4 detonators at a distance of 600—600—10—10 meters.
9. Should it be found that the Alarm chain has been pulled mischievously for an un-justified causes, the Guard note the name of the person who pulled the chain. His name and address with those of other occupants must be obtained and report the matter at the next station of importance where the passenger can be dealt with in accordance with standing instructions issued by the DRM.

5. Securing vehicles at station- SR- 5.23-1

1. All vehicles standing at a station must be so placed and secured that they do not and cannot foul any running line. each vehicle must have its brake on and must-
 - a. Be within facing points so locked that it cannot escape.
 - b. Be inside a locked scotch block or derailing switch.
 - c. Be wedged.
 - d. Be chained and pad locked.
 - e. Be coupled with other vehicles secured in the manner indicated above, as circumstance may require.
2. When it is necessary to stable a vehicle on the running line , the brakes shall be put ON and it shall be secured by the method given in (d) above. Besides, the points must be set, clamped and locked against the line and the key kept with the SM.

Note-the safety chain must be passed twice round the wheel and rail and then tied and locked so that no strain falls on the pad lock.

Securing BOX wagons/ Roller bearing vehicles- SR-5.23-1

1. Whenever one or more BOX wagons or roller bearing wagons such as BOB, BRN etc. are detached from a train and stabled on a running line or a siding irrespective of the gradient at the station, it should be ensured that they are inside the fouling mark or derailing switch.
2. The hand brakes must be fully tightened before such wagons are un-coupled. Wooden wedges should also be used. The vehicles must be chained by passing a chain through the space between the head stock of the trolley frame and the wagon body to prevent the wagons rolling down.
3. Whenever possible, such wagons should be stabled on lines which are isolated from running line.
4. When these wagons are kept on the running line, the SM on duty should ensure that all points are set against this line and the points are clamped and pad-locked, keeping the leys in his personal custody.
5. If a rake of BOX wagon is stabled, at least 6 wagons from each end must have their brakes put ON tightly. All the wagon if number of wagon is less than 12 shall be firmly tightened by station staff. Both side end wagon must be chained by passing a chain through the space between the head stock of the trolley frame and the wagon body to prevent the wagons rolling down and apply skid/wooden wedges on that end where down gradient occurs..
6. The securing of vehicles should be done by the station staffs such as points man, potters or any other staff deputed for shunting under the personal supervision of the train Guard or SM/ASM on duty or the person in charge of shunting.
7. In big yards above precaution may be relaxed however, hand brakes and skid shall be used in that end of yard where escaping vehicle is apprehended.

6. Procedure of clearing Stable Load from the road side station-

1. First of all the LP and the Guard shall obtain the information of the stable load to be cleared from the SM.
2. Obtain the BPC and VG from the SM.
3. After taking the engine on load, the Hose Pipe, BP and FP shall be connected.
4. The front angle cock of the engine and the rear angle cock of the last vehicle shall be closed

5. The Guard, LP and the Points man shall check the load and open the hand brake of the vehicle if in applied condition.
6. The defective vehicles (if any) shall be attended and repaired otherwise detached from the train.
7. The ALP and the Guard shall jointly check if there is any leakage in the BP or FP.
8. Adequate pressure shall be created in the engine and in the brake van.
9. After complete charging of the BP and FP, GDR check shall be done. If the BPC of the load is invalid, brake power percentage must be ascertained.
10. There should be at least 75 % (90% in case of CC rake) brake power while clearing the load from the road side station (when BPC invalid).
11. The LP shall proceed only after receiving the authority to proceed and exchanging hand signal with the Guard.
12. Before start continuity test shall be conducted.

7. Duty of Guard towards Punctuality

1. The Guard should attend on the duty at prescribed time on receipt of call book.
2. While signing on his duty, he should read the entire safety circular before the arrival of the train.
3. After signing-on the duty, he should reach the brake van in time with his Line Box and other equipment.
4. On arrival of the train he shall take over the charge from his counterpart and shall fix the TL /TB on the last vehicle.
5. In passenger trains, he should finish the loading and un-loading process of luggage and parcel in time and seal the door luggage van.
6. In passenger train, if the passengers are facing any difficulties, he should inform the matter immediately to the concerned department and get the matter solved.
7. On receipt of proper signal he shall exchange hand signal with the LP without any delay to proceed ahead.
8. If the train is running late, he should try to start the train before the scheduled halt.
9. If the train is running late, he shall give necessary instructions to the LP to make-up the time.
10. If Alarm chain is pulled, he shall ascertain the cause of ACP and try to start the train as soon as possible.

SPEED RESTRICTION ON DIFFERENT CIRCUMSTANCES:

Sl.	Rule No.	Speed	Circumstances
1	SR3.40.03	10 KMPH	Passenger train admitting in goods
2	SR 3.70.01	yard 15 KMPH	Piloting in and piloting out
3	GR 4.10	30 KMPH	Non interlocked points
4	SR 4.10.01	15 KMPH	Passing through the loop line
5	SR 2.11.03	20 KMPH	When wheel slipping on electric loco then subsequent trains speed
6	SR 4.10.02	10 KMPH	1 in 8½ turnout (straight switch)
7	SR 4.11.01	50 KMPH ~~140 KMPH~~ 160 KMPH	Standard I interlocking Standard II interlocking Standard III interlocking Standard IV interlocking
8	GR 4.12	25 KMPH	Engine pushing
9	SR 4.20.01(a)	25 KMPH	Driver becomes incapacitated, Asst. driver to take the train up to the next station
10	GR 4.12	40 KMPH	Search light special
11	SR 4.27.03	40/15 KMPH	Steam crane attached to a train
12	SR 4.62.05	25/8 KMPH	Material train pushing
13	GR 5.13	15 KMPH	Shunting speed generally
14	SR 5.14.07 (c)(i)	8 KMPH	Shunting with inflammable goods
15	SR 5.14.07(c)(ii)	5 KMPH	All bogie wagons fitted with roller bearing
16	SR 5.14.07(c)(iii)	3 KMPH	When shunting a group of 5 wagon fitted with roller bearing and transition coupling (T.C.)
17	SR 5.14.07(d)(iii)	5 KMPH	The impact speed with rolling down hump yard
18	SR 6.02.01	25 KMPH	S/L working introduced on D/L speed for the first train
19	SR 6.02.03 (g)(ii)	15/10 KMPH	Train to run on wrong line without introducing S/L working on D/L
20	SR 6.02.02 (a) (ii)	15/10 KMPH	Train run with block ticket

Sl.	Rule No.	Speed	Circumstances
21	SR 6.02.03	25 /10 KMPH	Total interruption on D/L absolute block system
22	SR 6.02.04 and SR 9.12.06	15/10 KMPH	During total interruption on S/L section on absolute and auto block system
23	SR 9.12.02(B)	15/10 KMPH	Total interruption on D/L auto block system
24	SR 9.12.02(A)	25 /10 KMPH for 1 st train and booked speed for subsequent trains	Failure of auto signal when communications are available on D/L
25	SR 9.12.03	25 KMPH for 1 st train and booked speed for subsequent trains	Single line working introduced on D/L section
26	SR 15.05.01©	40/15 KMPH	When a patrolman not returned within 15 minutes of his schedule time
27	SR 15.17.02	20 KMPH	Rail fracture less serious in nature
28	SR 15.17.04	15 KMPH	Rail closure shorter than 5.5m.
29	SR 4.10.01	15 KMPH	1 in 12 turnout not provided with curve switch.
30	SR 4.62.06(e)(i)	8 KMPH	Material train pushing when brake van is not leading
31	SR 4.62.06(d)(i)	25/8 KMPH	Engine pushing and brake van is leading of 25 for straight material 8 for curve
32	SR 9.02.01	15/10 KMPH	Passing auto stop signal at ON
33	SR 17.09.01	35/20 KMPH 35 kmph by day& 20 kmph by night	On resumption of tension in OHE, train wants to move after experiencing of no tension on line for 5minutes or more and TPC could not be contacted
34	SR 3.78.04	Not exceeding 60KMPH	Working in thick and foggy weather in absolute block system+ Passing Green aspect in Automatic block system

35		Not exceeding 30 KMPH	Working in thick and foggy weather Passing Yellow aspect in Auto block system
36	OPM 17.15/17.37	32 KMPH	Non vacuum goods train or non air goods train
37	OPM 17.15/17.37	40 KMPH	Non-vacuum passenger train or non-air passenger train.
38	SR 4.10.01	30 KMPH	Over 1/12 turn out provided with curve switch
39	SR4.10.02	30KMPH	Over 1/8 ^{1/2} turn out provided with curve switches and laid as symmetrical splits
40.	OPM 15.03	Sectional speed	'A' class ODC
		40/15 KMPH	'B' class ODC
		25/8/WS	'C' class ODC

ACCIDENT

DEFINITION:- for the purpose of railway working, accident is an occurrence in the course of working of railway which does or may affect the safety of the railway, its engine, rolling stock, permanent way and works, fixed installations, passengers or servant which affect the safety of others or which does or may cause delay to train or loss to the railway property. For statistical purpose accident has been classified in categories from A to R excluding I and O.

CLASSIFICATION OF ACCIDENTS: Accidents are classified under following heads-

1. Train accidents
2. Yard accidents
3. Indicative accidents
4. Equipment failures
5. Unusual incidents.

1. Train accidents – train accidents is an accident that involve a train. Train accidents are further divided as-

a. Consequential train accidents – include train accidents having serious repercussion in terms of either one or many or all the following-

- Loss of human life
- Human injury
- Loss of railway property
- Interruption of rail traffic.
- Train accident under following classification will be termed as **consequential train accident**.

Collision – all cases under category A1 to A4

Fire – all cases under category B1 to B4

Level crossing – all case under category C1 to C4

Derailment – all case under category D1 to D4

Miscellaneous – all cases under category E1

b. Other train Accidents:- All accidents which are not covered under the definition of consequential train accident are to be treated as other train accident.

2. Yard Accidents :- All accidents that take place in a yard and does not involve a train are termed as yard accident. These include accidents falling under category A-5, B-7, C-9 and D-6.

3. Indicative Accident – In real term they are not accidents but are serious potential hazards and include all cases of

- I. Averted collision (F)
- II. Breach of block rule Train passing signal at danger (G)
- III. Train passing signal at danger (H)

- a) **Averted Collision:-** An averted collision is a circumstance under which but for the vigilance shown by any person or persons, a collision could have occurred, either in the block section or within the station limits between two trains or between a train and an obstruction. Provided further that such an occurrence may be treated as an 'Averted Accident'.

Exception:

- I. If, outside the station limits the distance between the two trains or the train and the obstruction at the time the train or trains have finally come to a stop, is 400 meters or more.
- II. If, within the station limits, there is an intervening stop signals at danger governing the moving train, and compliance by the moving train with the indication conveyed by the stop signals averted the collision between the trains or between the train and the obstruction.

- b) **Breach of Block Rules:-** The following situations constitutes breach of rules'

- I. When a trains enters a block section without any authority to proceed.
- II. When the train enters a block section with an improper authority to proceed.
- III. When a train is received on a blocked line not constituting an adverted collision.
- IV. When train enters or is received on a wrong line at a station or a catch /slip siding or sand hump.

- c) **Signal Passed at Danger** – Passenger train passed signal at danger without proper authority (H-1) and other train passed signal at danger without proper authority(H-2).

Reasons for signal passed at danger (SPAD) by LP

- I. In sufficient brake power in the train.
- II. Disobey of signals by the Loco Pilot.
- III. Not taking sufficient rest at running room or at home.
- IV. Train become over speed.
- V. Loco pilot becoming over- confident.
- VI. Over time duty /working hours
- VII. Brake not applying at right time.
- VIII. Signal not seen from minimum sighting distance.
- IX. High intensity lights near signals.
- X. Fault in the engine.

4. **Equipment failure:-** failure of railway equipments i.e. Engine, rolling stock, permanent way, OHE, signal and telecommunication (J, K, L, M)

5. **Unusual incident** – These include cases related to law and order but not resulting in train accidents and other incidents under classification N, P, Q & R

REPORTABLE TRAIN ACCIDENT

All accident falling under the purview of section 113 of railway act 1989 are termed as reportable train accident and include following.

- I. Any accident attended with loss of human life, or with grievous hurt.
- II. Any collision between trains of which one is a train carrying passenger or
- III. The derailment of any train carrying passenger, or of any part of such train, or

- IV. Accident which are attended with loss of human life in passenger trains involving train wrecking or attempted train wrecking, cases of running over obstructions placed on the line, of passengers falling out of train or of fires in trains or grievous hurt as defined in the Indian Penal Code, or serious damage of railway property of the value exceeding rupees 2 Crore which have not actually occur which by the nature of the accident might reasonably have been expected to occur and also caused interruption of any important through line of communications for at least 24 hours.

Means to report of an accident-

Every railway servant shall report with least possible delay every 'Accident' or 'Unusual occurrence' in the course of working the railway which may come to his notice, to the nearest station master or section in charge through the following any possible means-

1. PFT/EFT/WALKIE-TALKIE/VHF SET/MOBILE PHONE.
2. Gate telephone
3. By stopping train /Loco/Trolley or other vehicle passing on adjacent line.
4. BSNL/MTNL telephone
5. By sending message through a railway servant to the nearest SM.
6. Sending the light engine of the train before detaching the engine, SR- 6.09-1 should be followed however in case of suspected sabotage, engine etc should not be disturbed or
7. By road transport if available.

Threshold value:-

For the purpose of reporting of accident threshold value is the value beyond which the accident will be treated as having serious repercussion on the basis of loss to railway property or interruption to communication. It shall be constitute two portions.

- I. Threshold value of railway property loss which is fixed at **01 lakh**.
- II. Threshold value of interruption of communication either partial or total where duration of interruption to communication is equal to or more than number of hours specified against each cell.

Interruption	BG-A, B, C or D Spl.	BG-D, E, Spl.	BG-E, or NG
Total	3 hours	4 hours	6 hours
Or	Or	Or	or
Total + partial	6 hours	8 hours	12 hours

Duration of interruption is defined as duration of accident till starting of first train on line clear from adjacent station for movement over the affected line in that section.

SERIOUS ACCIDENT

Accident to a train carrying passenger which is attended with-

- I. Loss of life or
- II. With grievous hurt (as per section 320 of IPC) to a passenger in the train, or
- III. With serious damage to railway property of the value exceeding Rs-2crore and
- IV. Any other accident which in the opinion of the chief commissioner of railway safety or CRS requires the holding of an enquiry by the CRS shall also deemed to be a serious accident.

However the following shall be excluded –

- a) Cases of trespassers run over and injured or killed through their own carelessness or of passengers injured or killed through their own carelessness, and
- b) Cases involving persons being railway servant or holding valid passes/ticket or otherwise who are killed or grievously injured while traveling outside the rolling stock of a passenger train such as on foot board or roof or buffer but excluding the inside of vestibule between coaches, or run over to a level crossing or elsewhere on the railway track by a train, and
- c) Level crossing accident where no passenger or railway servant is killed or grievously hurt unless the Chief Commissioner of Railway Safety or Commissioner of Railway Safety is of the opinion that the accident requires the holding of an inquiry by the Commissioner of Railway Safety.

GRIVIOUS HURT IN IPC – 320

1. Emasculation
2. Permanent privation of either eye.
3. Permanent privation of the hearing of either ear
4. Privation of any member (organ or limb) or joint.
5. Destruction or permanent impairing of the power of any member (organ or limb) or joint.
6. Permanent disfiguration of the head or face.
7. Fracture or dislocation of bone or tooth.
8. Any hurt which endangers life or which causes the sufferer to be during the space of twenty days in severe bodily pain, or unable to follow his ordinary pursuits.
9. Unable to follow his ordinary pursuit for 20 days

General Hurt – The injury (hurt) is considered to be 'General' if the person resume his day to day work after 48 hours of the injury due to accident.

DUTIES OF GUARD IN CASE OF ACCIDENT

At the time of accident the Guard of the train must immediately-

1. **Date & Time-** Note the Date and Time and exact site of accident.
2. **Protection-** Ensure protection of the adjacent line/lines and then protect the same line in accordance to GR 6-03 and SR 6-03-1. taking the assistance of any qualified staff such as ALP, Gang man, gateman.
3. **Survey-** Make a quick survey of the casualties, injuries and damage to the rolling stocks and assistance required at the site of accident and advice nearest SM or controller.
4. **First-Aid-** Render First Aid to injured persons and take action to save lives with the assistance of the Railway Staff, doctors and/or volunteers on the train or near the site of accident and make entry in the Guard Journal.
5. **Information-** Convey information through the quickest possible means giving details of the accident and the nature of assistance required to the Controller/ SM on either side. In case the train engine of the disabled train is to be detached, the provision of SR 6-09-1 must be complied with before detaching the engine.
6. **Injured-** Arrange to shift the seriously injured passengers through road transport with local help to nearest hospitals whenever possible.
7. **Refreshment-** Arrange for Tea, Water and Refreshment to injured persons with the help of Ticket Checking Staff and other commercial staffs available.
8. **Cause-** Preserve and safe guard all clues of probable cause of accident.
9. **Protection-** Arrange protection of the belongings of passengers and Railway property with the help of GRP and other volunteers.
10. **Telephone-** Post a Railway servant to man the field telephone to ensure regular flow of information to the control till arrival of ART and remain in general charge till replaced by senior Railway Official.

DISASTER MANAGEMENT

“After accident, to cope up with the situation steps taken by rail administration called Disaster Management”. The top priority of Railway is to provide accident free, safe journey. For which continuous efforts are carrying on. New technology has been introduced in railway. Efforts are being taken to lessen dependence on human being and system are being made such, that human failure does not make any unusual.

The best training is being given to employee and how to lead a stress free life is also imparted by training. However there may be chances of accident and to cope up with the situation the system is called “Disaster Management”.

In every 150 to 200 km Accident Relief Train (ART) and Accident relief Medical Equipment (ARME) are provided and staffs are made available round the clock. Target time for dispatch of ART, MRV has also been fixed. Each railway employee are trained in First Aid. First Aid is available with Station Master and Guard. Phone Nos. of local administrative officers, hospitals and their names are displayed in the station building for quick information and assistance.

Object of disaster management

1. Protection of adjacent running line.
2. Protection of the site of accident.
3. Save life and alleviate suffering.
4. Protect property including mails.
5. Provide succor and help the passengers at the site of the accident.
6. Transportation of stranded passengers
7. Preservation of clues and ascertain the cause of the accident.
8. Restore through communication.

HOTTER CODE:-

Hotter will blow to inform about accident to all concerned on those station where accident relief train and medical relief van is available. Each hooter will blow for 60 second and the time interval between the hooter codes will keep 10 seconds for clear understanding.

The meaning of hooter code is as under:-

One long Hooter (180 second) –For OHE break down.

Target time

ART –Day (06:00-18:00 hrs) = 30 Minutes, Night (18:00 to 06:00 Hrs) = 45 Minutes

ARME – in case of double exit siding –**15** minutes and In case of single exit siding – **25** minutes.

GENERAL INSTRUCTIONS:-

1. Accident relief train run on priority, giving precedence to all trains.
2. AMRV should be preceded over Relief train.
3. AMRV and ART should be dispatched on their schedule time.
4. Relief train should not be delayed for Guard, the break down in charge will carry the train and Guard will send by following means.

Accident Drill-**INTENTION OF MOCK DRILL:**

- To test the practical knowledge of the staff concerned
 - Practice leads to perfection
 - To find out alertness of staff
 - To measure the results of training and drills
 - To check the equipments
 - Not only relief train staff, but the control staff, Guards, SMs, Supervisors (PWI,SI,LI,TI,CWI etc.) and Officers
1. To ensure that all staff required to attend the brake down trains and ARME in case of an accident are alert and are conversant with what they are expected to do at the time of accident, accident drill should be conducted in every 3 months even if there is no case of accident in that quarter.
 2. During such drills, the ARME and the Breakdown train should be actually turned out and made to proceed the nearby station.
 3. The Railway doctors and other medical staffs and the usual breakdown staffs should travel by these trains exactly as they would have to in case of an accident.
 4. The Railway ambulance should also be turned out. The officers and staffs of such other department who have specific duties to perform in case of accidents but may not have to accompany such trains shall also have to be practicable.
 5. These drills should be ordered by the DRM personally, and conducted under the direct supervision of ADRM/Sr. DSO/DSO.

. GOLDEN HOUR:

- One hour time from the time of accident
- Critical trauma patient without definite medical care within one hour - chances of ultimate recovery reduce drastically
- DM system must aim at recovery of critical patients within golden hour
- At least 30 to 40 railway employees should travel
- Core team for immediate rescue and relief work
- Guard must make announcement by PA system or other means
- Senior most Railway Official present will take charge
- All Railway men in the train should report to the Guard and carry out rescue work.

SIGNALS PASSED AT DANGER (SPAD)

FACTORS RESPONSIBLE:-

- ⇒ Taking alcoholic, sedatives, narcotics or stimulant drugs during on-duty or before 08 hrs. coming to duty
- ⇒ LP's expectation or hypothesis
- ⇒ Taking cognizance of wrong Signal
- ⇒ Glare due to sun shine
- ⇒ Signal showing wrong aspect /No light of signal
- ⇒ Momentary Mental blankness
- ⇒ Wrong practices
- ⇒ Lack of vigilance
- ⇒ Improper calling-out
- ⇒ Short cut methods
- ⇒ In competency
- ⇒ Signal suddenly fly back
- ⇒ Poor Brake power /invalid BPC
- ⇒ Fluctuation of Control decision
- ⇒ Excess load of the Train etc.

Reception signal passed at danger by L.P. with his train:-

Actions is to be taken:-

- ⇒ Guard shall inform the SM in writing.
- ⇒ SM shall proceed to the spot and examine the brake block of the first few vehicles to find out whether they are hot, warm or cold.
- ⇒ The SM also measure the distance overshoot in terms of vehicles/wagon length in presence of Guard and LP.
- ⇒ If everything is safe SM shall issue a "T/510" in duplicate, being countersigned by the Guard and hand it over to the LP duly acknowledged on the duplicate copy.
- ⇒ The signal(s), if any, ahead of the train shall be taken 'off'.
- ⇒ Then Guard shall then permit to the LP to restart the train.
- ⇒ If there is no signal ahead SM shall arrange to pilot the train in addition to issue of "Re-starting Memo" after ensuring proper setting and locking of relevant points.
- ⇒ SM shall issue "All Concerned Accident Message".
- ⇒ Guard and LP shall make entry in their respective combined Train Report/GTR and in Rough Journal.

Departing signal passed at danger by LP with his train

Actions is to be taken:-

- ⇒ Guard shall inform SM in writing.
- ⇒ SM shall proceed to the spot and examine the brake block of the first few vehicles to find out whether they are hot, warm or cold.

- ⇒ SM shall measure the distance overshooted in terms of rail length or vehicle/wagon length in presence of Guard/LP.
- ⇒ If everything is safe SM shall issue “Caution order” being countersigned by the Guard to the LP to start his train observing ‘off’ position of signal(s) ahead, if any.
- ⇒ A competent railway servant with proceed hand signal shall be deputed at the foot of starter signal.
- ⇒ If the train has entered into the block section without “Authority to proceed” the train shall be backed to the station making specific endorsement in the ‘Caution order’, and block instrument working shall be suspended.
- ⇒ SM shall issue “All Concerned Accident Message”.
- ⇒ Guard and LP shall make entry in their respective combined Train Report/GTR and in Rough Journal.

MURDER ON RUNNING TRAIN

- The compartment shall be emptied and locked up after closing all the shutters from outside.
- The blood stains, marks of struggle, foot prints, finger impressions etc. shall not be disturbed.
- 2nd class compartment shall be detached at the station where the crime is detected and kept under watch till police take over charge.
- Upper class compartment shall be locked up and allowed to proceed to the nearest station where it can be replaced.
- Railway police shall be deputed to watch the compartment till local police officer arrives.
- Nobody, except the person to attend injured persons, shall be allowed to enter the said compartment.
- The Rly Police, station concerned shall be informed at which station the compartment shall be detached.
- After taking over the charge by the Police, the carriage should not be removed or utilized otherwise without written permission from the police.
- In case of abnormal delay in releasing, the matter should be reported to the DRM.

RUN OVER CASE :

Life is not extinct:-

- ✓ Render first aid to the injured person.
- ✓ Call for medical help without delay
- ✓ Inform the RPF and GRP.
- ✓ If possible statment of injured person should be recorded which includes name , father’s name , caste , residence , how he happened to be on the line and how the wounds were inflicted. Time and place where the injured person was found should also be noted.
- ✓ Issue accident message and G-4 form.

Life is extinct:-

- ✓ The evidence, specially the finger prints should be kept intact.
- ✓ Handling of the dead body by many people should be avoided.
- ✓ The dead body should not be removed until arrival of police.
- ✓ To clear the line, the body may however be removed with minimum handling.
- ✓ When taken over from Guard of an incoming train, a memo must be obtained from him.
- ✓ The body shall be made over to the SM along with the memo.
- ✓ The particulars have to be furnished-
 - Time and place the body was detected.
 - Position of the body in relation to the track.
 - Blood stains on ballast or engines, extent of injuries and prima-facie cause of the occurrence.
 - Position of any clothing etc. found on or near the rails.
 - Name of the informant, father's name and full postal address.

If the train is stopped in the block section due to the through out of the passenger from the train, following actions shall be taken along with the above- guard shall note-

1. Kilometer at which the passenger fell or knocked down shall be noted.
2. Was the accident noticed by the guard/LP and the train stopped or was the ACP was made to stop the train.
3. Was the train backed to the accident spot.
4. How the injured person was disposed off?
5. Name, age, sex, and address of the person, the particulars of the ticket held (if any)
6. If child, also the name relationship and address of the guardian.
7. Where was the person/child seated or standing at the time last seen by fellow passengers?
8. Owning Railway, painted number, compartment number, type description and position of the carriage from the engine.
9. Condition of the door, door's handle, shutter, safety latch, and window fastening in the carriage. Particulars details should be given of the door or window through which the passenger fell.
10. Was there any GRP staff on the train.
11. Brief statement of the injured passenger-
 - a. Possible cause of the accident shall be recorded, in presence of the Railway Police Constable, and countersigned by him. If the Railway Police Constable is not present, the signature of the passengers in whose presence the statement is recorded should be obtained.
 - b. In the case of a child, the statement of the guardian should be recorded duly attested by the Railway Police Constable or in his absence by two passengers present at the time of recording the statement.

Passenger getting sick in the train-

1. In case of passenger getting sick while in the train, he should be given the same medical attention as is given to a person injured in an accident.
2. The passenger should, however, be informed that he may be required to pay for the medical attention given.

3. If the passenger states that the sickness is due to some food he consumed from the pantry car or licensed vendors in the railway premises, the guard will report to the SM who will report the matter to the Section controller.
4. The Section Controller will obtain instructions of the Sr. DOM/DOM/ADMO and advise the SM of the arrangements to be made for the chemical examination of the food.

Passenger injured inside the train-

1. If the passenger is injured while travelling by a train, he should be given necessary medical assistant.
2. If the passenger is reported to be injured due to defective fittings, like window shutter, the fittings should be examined.
3. Evidence of other passengers should also be taken.
4. A full report must be made by the Guard, giving name of the passenger, particulars of the ticket, description of the carriage, condition of the fittings, etc.
5. The Guard/TS shall also issue a message to the Train Examiner of the station to examine the fittings of the compartment.

EXPLOSION ON TRACK/TRAIN

- In case of explosion on trains, the train concerned shall be stopped immediately.
- On receipt of the information SM shall immediately inform the SM's of both ends and controller.
- OC/Local Police/GRP, IPF, DM/DC & SP shall also be informed.
- SM shall inform PWI, IOW, TXR, LF .
- He shall ensure protection of the track/train.
- In case of passenger train ARME must be called for
- Rly, Civil and Military Hospitals in the vicinity and Medical Practitioners shall also be called.
- First Aid shall be rendered to the injured passengers till arrival of the Medical team
- Restoration work shall not be started and no clue shall be disturbed till permitted by Police in writing
- Normal train running shall be resumed after obtaining 'track fit certificate from engineering official not below the rank of an inspector.

DEFECTIVE PERMANENT WAY – SR 6.07(1)

In the event of the Loco pilot and/or Guard experiencing any abnormal condition in the track over which his train has passed and he considers that the portion of the track over which his train has passed is detrimental for safe running of subsequent trains will take action as under-

- (a) Note down KM & stop his train immediately. Examine the track and train then report next next block station without clearing the block section .
- (b) Proceed further, only after satisfying himself that Station Master has clearly understood so as not to permit further movement over the line until a written memo indicating the details of the occurrence is received by Station Master from the Loco pilot. Loco Pilot will then again stop at the station at convenient place so as to deliver the written memo in detail to the Station Master.
- (c) The station master on receipt of such a memo must issue a message addressed to the Station Master of the block station at the other end of the block section , and Junior Engineer / Section Engineer (P. Way), Assistant Engineer , Divisional Engineer , Chief Controller and Divisional Operations Manager.
- (d) Arrange to dispatch a rail maintenance machine / tower wagon / light engine or in their absence a train accompanied by an engineering official with a caution order to the effect to Stop Dead sufficiently short of the expected portion of the track . The engineering official accompanying will inspect the track and shall allow the train to pass only after satisfying that the track is safe for the passage of train . Advise the condition of the track and any restriction of speed to be imposed to the Station Master personally or through written memo which may be sent through the Loco pilot.
- (e) In the absence of engineering officials the trains with a caution order instructing the Loco pilot to 'Stop Dead' before the affected kilometers and after satisfying himself about the condition of track, pass over the track in question at **10** kilometers per hour. If Loco Pilot finds the line is unsafe to pass , return to station in rear . If the Loco pilot is not able to detect any thing doubtful, subsequent trains shall be dispatched with a speed restriction of 10 kmph over the affected track till the track is certified to be safe by engineering officials.
- (f) If the condition as reported earlier is confirmed by the Loco pilot, no train movement shall be allowed till certified to be safe by engineering officials.
- (g) In case of IBS, the LP shall inform to station master of rear station without clearing IBH. After confirming the SM in rear has understood the message and will not allow any train the LP will start his train if track permits. If LP unable to contact SM ,shall advice Guard to protect train from rear (600-1200-1210-1220) and after protection he will call back Guard leaving down all deonators . If any abnormality is experianced between IBH & station in advance action will be taken as detailed in clause (a) & (b).
- (h) In Automatic territories , the Loco pilot shall stop train immediately checking the KM . He will inform the station master and Loco pilot of trains already left station in rear through available means of communications to stop movement of trains. If LP unable to communicate SM he will advice GD to protect train from rear (600-1200-1210-1220). In the mean time following train arrives and stop, there will be no need to protect the train.

Note: 1. In case the Guard of the train experiences any abnormal occurrence in the track while working his train, he must inform the Loco pilot of his train through walkie-talkie or other available means of communication between the Loco pilot and the Guard about the occurrence, after which the Loco pilot shall take action as mentioned in SR 6.07(1)(a) above .

2. In the event of Guard unable to contact the Loco pilot, he should take action to stop the train and inform the Loco pilot.

Sabotage or Likely Sabotage, Explosion on Track or Train – SR 6.07(4)

- (a) As soon as information of sabotage or likely sabotage, bomb blast explosion etc. to the track , bridges or other fixed installation is received, the Station Master who becomes aware of it, will stop movement of trains in the affected block section as well as on adjacent lines on double /multiple line sections.
- (b) He will take action as per SR 6.07(1)(d) in consultation with the Section Controller except that only Rail maintenance machine/tower wagon/ light engine shall be sent to ascertain for the line to be safe for the movement of the train.

Obstruction or unsafe condition on or near adjacent track– SR 6.07(5)

In the event of LP and /or Guard experiencing any obstruction or any unsafe condition on or near the adjacent line which is detrimental in their opinion, will take following action-

- i) Switch on flasher light.
- ii) Inform SM through available means of communication.
- iii) Stop his train and proceed with danger signal to protect adjacent line (600-1200-1210-1220)
- iv) Thereafter continue journey next station keeping flasher light on.
- v) Be prepared to stop incoming approaching train by communicating on W/T or available means of communication and exhibiting danger signal.
- vi) On arrival at next station inform SM through written memo.

FAILURE OF RAIL/WELDING (SR-15.17-1)

In the event of rail/weld failure the Key man/Gang mate / P.Way misty or cold weather patrolman , shall after protecting the line, make necessary emergency repairs to the track and pass traffic at 20kmph. The temporary/permanent repairs to track shall be done by the PWI as soon as possible and restore traffic at normal speed.

Note:- Rail is considered badly fractured and no train shall be allowed until made safe by an official not below the rank of SSE/SE/JE(P/WAY) when-

- i) A gap more than 75 mm (25 mm in case of outer rail on curve) has been formed on rail head
- ii) More than one fracture of 1 mm on rail head -
- iii) More than 150 mm of the rail foot is broken or, -
- iv) Fracture, irrespective of its nature, has occurred on a girder bridge.

In case of rail fracture less serious in nature than what has been indicated above, the Keyman /Gangmate may allow train at a speed of 20 kmph after making rail safe.

YARD

A yard may be defined on the basis of the functions it performs. It is a place or the activity centers on the Railway system, where the trains or rolling stocks are received, reformed into trains or loads after marshaling and are dispatched to their destination.

Necessity of Yard-

1. Formation of trains/loads by shunting of wagons as per their destinations.
2. To conduct intensive examination of trains/wagons.
3. For shunting of sick wagons in order to detach them from train for repairing.
4. To change engine or crew.
5. Acceptance of train without detention to them.
6. Minimizing average detention of wagons.
7. Forming Bulk load for farthest destination.
8. Maximize productivity of resources.
9. Ensuring safety.

Determination of place for construction of yard-

1. Places where trains from various directions arrives.
2. Where big industrial hubs are developed.
3. Where coal and mineral mines are located.
4. At big terminal station.
5. Big transshipment station.

Classification of yards-

Yards are classified into different types on the basis of following factors-

1. On the basis of geographical location.
2. On the basis of the functions it performs.

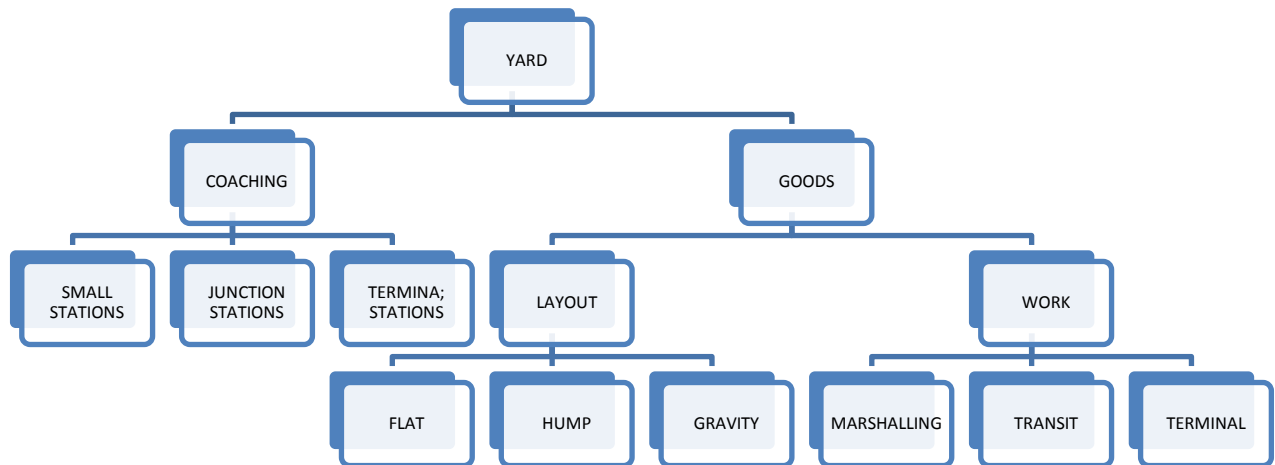
On the basis of geographical locations-

On the basis of geographical location yards can be classified into three types-

Flat Yards-

Flat yards are generally laid in the flat or level land where shunting operations are carried out by push and pull methods with the help of engines. These yards are constructed where lesser shunting operations are performed. Such yards are economically efficient but slow in working and wasteful in shunting engine hours.

Gravity Yards- Gravity yards are constructed where the natural contour of the land permits a suitable falling gradient stretched over a sufficient length. The falling gradient makes it possible to use the yards to the fullest extent in marshaling wagons/trains thus minimizing the use of engine power. Therefore gravity yards are more economical than flat yards but the layout of it dependent on the availability of plenty of land with the required topography which is seldom possible.



Hump Yards- Hump yards are constructed by providing gradient between reception and the sorting and despatch lines and the grids. The gradients are erected by construction of an artificial hump suitable for the purpose. The gradient of the hump is created in such a manner that the roll down on their own to specified sorting line. The load is pushed up by the engine towards the hump from one side of the hump so that the uncoupled portion of the load rolls away towards another side of the hump in sorting/dispatching line. These yards are economical to flat yards. So these yards are constructed where more shunting is performed.

Depending Upon Works- Depending upon works yards can be classified as

1. Terminal Yards
2. Marshaling Yards
3. Transit Yards

Terminal Yards- The station where train lines terminals is called Terminal station. The yards attached to terminal station are called Terminal yards, where large numbers of wagons are loaded and/or unloaded. Traffic either originates or terminates at these yards. e.g. JNPT yard.

Marshaling Yards- In these yards marshaling of trains are performed. Wagons are arranged in a particular manner and new trains are formed. Trains are broken up on different sorting lines for various directions on specified destinations, as per marshaling order so as to form them into trains and prepare them for connect marshaling lines. Mughalsarai yards are the biggest marshaling yards in Asia.

Transit Yards- The yards which receive and dispatch trains without any shunting on them are classified as Transit Yards. In such yards generally Crew, Engine on C&W examination etc. only take place in addition to formation of a few loads. Sectional trains are formed in these yards. These yards are constructed in between two marshaling yards. Through trains are not admitted at these yards so as to minimize detention of trains.

DUTIES OF STATION STAFF TO THE CONTROLLER.

1. The Station Staff, Shed Staff, Loco Pilot and Guard should strictly obey the instructions given by controller.
2. The instructions given by the controller should be note down in a register so that the date and time of instructions given by controller, name of the controller etc can be known easily. The SM should go thought this register while sign on the duty and shall intimate the same on the SM on duty while signing off duty.
3. Permission of the controller should be obtained prior to dispatching a train from the station. Whenever it is impossible for the SM to obtain line clear on the defective block instrument on block telephone, then line clear shall be obtained on the control telephone.
4. The SM of the station where trains are formed shall prepare out report which contains the following information.
 - I. Of train.Named No. of the train.
 - II. Description of the Engine.
 - III. Name of the Loco Pilot.
 - IV. Name of the Guard.
 - V. Load of the Train (Number of wagon and Tonnage.)
 - VI. Detail of shunting of intermediate halt, if any.
 - VII. Date and time of departure
5. The arrival of the train at station, departure of the train, Time of through trains shall immediately be informed to the controller by the SM.
6. If there are unusual in the train or at the station it shall be immediately reported to the controller.
7. Control telephone should be attended promptly on ring.
8. The clock should be tallied with the rung from controller at 16:00 hr and if shall be noted in the TSR Register. The SM on duty at big stations/terminal station/ yard shall obtain the details of the train approaching his station, from controller before sign on duty.

INFORMATION TECHNOLOGY IN OPERATING DEPARTMENT

FREIGHT OPERATION INFORMATION SYSTEM:- FOIS

1. The Indian railway carries nearly 900 million tons of freight in a year. This translates to about 5000 freight trains daily. Freight trains bring two thirds of the Indian Railway revenues and are referred to as the bread earners for the Railways. The major commodities carried by Indian railway are coal, Iron ore, Food grains, Iron and Steel, Cement, Petroleum products, Fertilizer and containerized traffic.

There are specialized wagons to handle the transportation needs of the different types commodities unlike passenger carrying trains, freight trains do not run to a fixed schedule and thus making freight operations a highly information intensive activity. Based on this information managers make allocation decisions continually to dynamically optimize utilization of resources like wagons, loco motives, crew and paths on the network. Real time information allows good decision making and thus ensures high levels of mobility within the system.

2. The freight operations information system (FOIS) was the first project which CRIS embarked upon. In fact the creation of CRIS is a byproduct of this effort in the mid eighties. FOIS began as an application to track and monitor the movement of wagons, loco motives and unit trains. Now it is a complete management module for freight trains handling the billing and revenue collections as well. It has played a major role in the improved wagon productivity on Indian Railway and the objective is to use the information to further improve productivity, customer services and thus meet the needs of a rapidly growing economy.
3. FOIS is used for increasing efficiency in management and control over operations. This system was initiated by CRIS in the eighties. This system has been adopted through high capacity computers to provide accurate and instant access over operation of goods trains run on BG under FOIS, a high capacity computer to provide accurate and instant access over operation of goods trains run on BG. Under FOIS, a high capacity computer is used, called central system computer. It is linked with the computers of Zonal Railways and field terminals, with which data can be transferred easily.
4. It is an on-line system which provides instant information about the movement of consignment to freight customers. Authorized users of this system such as CYMs, TNCs and DY. CHCs and CGSs operate through ARC and enquiry terminals. Network of this system is operated through OFC digital channel and terrestrial and VSAT channels leased by BSNL. It is developed through two modules.
5. A part from monitoring the movement of freight trains, the system calculates freight and other charge based on complex rules of business and generates the railway receipt, the bill payable by the shipper. Today electronic collection of freight has reached an astounding figure of Rs 100crores (US\$ 20 million) per day. The system has the capability of tracking and tracing consignments and publication of information to the end users. To bring in greater transparency, Indian railway have begun automatic allotment of rakes to customers for select commodities based on priority rules, operational restrictions, an commercial agreement. Services are provided to major customers by integrating FOIS with their legacy systems. It is capable of keeping record of asset ownership and maintenance, which is now being integrated to an SAP based asset maintenance management system.

6. Most importantly, it also generates performance reports for terminals train movements, asset use, financial statement and their trends over time that have been used for bringing about systemic improvements.

- I. RMS (Rake management system)
- II. TMS (Terminal management system).

7. **RMS:** - RMS software was developed in two phases, P1 module and P2 module. The important functions of this system are:-

- I. Planning of load, ordering of trains, formation of rakes, and information of arrival and departure of trains.
- II. Forecast of interchange, diversion, stabling of load, detention of trains, pre-departure detention of trains.
- III. BPC, Crew details, light engine movement, placement and release of piecemeal sick and fit report of piecement etc.

8. **TMS** – TMS software was developed in third phase. The important functions of this system are:-

- I. Planning of programmed traffic.
- II. Demand and forwarding note, advance registration fee particulars of restrictions.
- III. Generation of RR, calculation of freight, removal of wagons calculation of wharf age and demurrage.
- IV. Particulars of loading and unloading, diversions, rebooking.
- V. Account maintenance and e-payment etc.

9. Advantage of FOIS :-

- I. Optimum utilization of available resources.
- II. Reduction in the maintenance cost.
- III. Control over unconnected wagons.
- IV. Minimization of claims.
- V. Control and supervision over rakes.
- VI. Easy decision making based on factual information.
- VII. Watch over availability of rolling stock and their optimum utilization.
- VIII. Control over mistakes and quick and transparent working.
- IX. Customer satisfaction due to advance information of rakes and planning.
- X. Useful in increasing operating efficiency.

ICMS- INTEGRATED COACH MANAGEMENT SYSTEM

1. Millions of passenger book their journeys everyday with the confidence that when their rolls up on the appointed day, it would bring a coach which has place for Railways need to track over 50 thousand coaches. By efficiently deploying the fleet, railways are able to run more services for the benefit of their passengers, while minimizing any chance of disruption and disappointment. IR also must ensure that these assets receive timely servicing and maintenance. Depending upon the need, the system can deliver historical records from past years in printed reports or up-to-the-minute information on an official's cell phone.

The integrated coach management system does exactly all this and more. There are three modules that give a comprehensive view to the managers and facilitate quick identification of available resources and their allocation as per the requirement. The important modules are COIS, PAM, CMM.

2. The COIS (coaching operations information system) module of this application provides detailed, real time information for planning, executing and monitoring the operations of passenger services. Since the system is aware of the plans, it requires minimal data input. Even this input is easy because the users can literally drag and drop coaches in a virtual representation of their yards.
3. Another module, called the CMM or coach maintenance management module, has been developed to facilitate and record maintenance of coaches and the management of spare parts inventory. It is fully integrated with the operations modules for generating alerts, interchange for repairs, delivery and acknowledgement of certification of coaches for service, etc.
4. The punctuality analysis and monitoring (PAM) module of ICMS automatically picks up the delays from the control office application (COA) and produces real-time insight into the state of the operations. The system provides consistent and accurate reports for all level of management from the operative to the strategic. Since ICMS already has most of the related information it is the natural place to also monitor and analyze the punctual running of trains.

CONTROL OFFICE APPLICATION:-

1. Train operations on the Indian railways are controlled and monitored by the control rooms in each of the seventy seven divisional offices. The control room is the nerve centre of the division. The fluidity of train movement on the efficiency of the control room operations. The control office, by its very nature never shuts down and works all hours of the day and every day of the week. The control office application has changed the way the trains are monitored as trains movements are captured in real time and movement of scheduled and unscheduled trains planned and controlled through the computer aided interface.
2. The control office application is the latest addition to trains operations related IT applications along with freight operations information system(FOIS), COA has led to all information on train operations being computer generated. It is this application that feeds the National Train Enquiry System (NTES) that provides passengers up to date information on train running. The objective of the Indian railways is to further improve the operations by using technological aids that enable quicker data capture and intelligent applications that provide better planning and forecasting tools.
3. The application requires the controllers to enter data related to the train operations as they received information from the control points or stations. The application charts the running of the train in a section(a portion of the divisional network) and also generates the advance forecast based on various operational parameters. The train is then virtually handed over to the adjacent division as per its physical movement to maintain continuous flow of information.
4. The key feature of the application includes the ability of the controller to order trains, view all possible routes, divert or re-route trains if required. The application has the facility for capturing and viewing details of consist or composition of the trains, details of the crew and locomotive. Reporting o unusual events is enabled through the user friendly interface. There is also a chart that shows details of line occupancy, caution orders and abnormal working one of the key elements of the application is the ability to forecast or extrapolate the running of trains which allows the controller to plan better. For managerial supervision the charts can be printed apart from the fact that structured MIS reports are also generated. COA has been designed such as it can be integrated with any other application. The National Train Enquiry system (NTES), the Punctuality Analysis Module (PAM), and freight operations information system are all integrated through enterprise Application integration software. UTS, PRS, NTES.

5. **SATSANG** – (Software Aided Train Scheduling and Network Governance) many people find it extremely fascinating to pore over the Railway time table, especially while undertaking a train journey. The route that the train traverses through, the stations en route both significant and lesser known ones, the timings and the stoppages all these are part of the romance of train journey. The time table is something like the compass was for the early traveler or the star studded night sky for the seafarer. Creating a time table for trains on a busy network like the Indian Railways is an extremely challenging task. Planners on the Zonal Railways work independently and collaboratively with other zonal level planners to design the All India time table. The two main objectives are that it should be convenient to the passenger and feasible to run on the system. Introducing new train services and augmenting older ones is an art and a select group of planners are highly skilled in this task. Indian Railways decided to provide software tools to aid the planning process. The Software Aided Train Scheduling and Network Governance (SATSANG) project is entrusted with the task of building such a tool. The entire resource allocation process will now be aided by the tool leading to more efficient allocations and robust time table.

6. **Crew management system**- Indian Railways, the largest employer of the world, crew Management System (CMS) application managing its crew for operating trains on the largest rail network in the world. CMS project deals with all categories of train crew. Who are required to operate a train on Indian Railway.

Objective:- CMS application aims at-

- I. Optimum and effective utilization of crew through monitoring of mandatory requirements.
- II. Effective scheduling and assignment of train crew.
- III. Schedule rests (12/16) of the crew based on total duty hours completed.
- IV. Paper less lobby – calls for booking through SMS, caution order, circular, sign on/off.
- V. To generate computerized mileage report for direct submission to p branch for payments.

ANTI COLLISION DEVICE (KAVACH)

- a. **DEFINITION:- Anti Collision Device** is a network of “self acting” computer based communication devices which automatically apply Brakes to trains, thereby protecting the travelling public as well as road users at level crossing Gates from “collision” related accidents. It is a fully integrated Electronic Control System designed to minimize collision and increase safety on Railway system. It is a non- signaling system and provides additional over safety in train operation to prevent dangerous train collision caused due to human reasons or limitations and equipment failure. Being a non-Signaling and inter locking system it does not replace any existing signaling and inter locking system and does not alter any procedure of train operations in vogue. The world’s first ACD was taken into use on 19-10-1990 in Konkan Railway.
- b. On board computers use inputs from Global positioning system (GPS) for determination of train location, speed, course of travel and time. Both mobile and stationary components of ACD system exchange information and take decisions based on train working rules and embedded soft ware to apply brakes automatically without any inputs from the users. If two ACDs are deemed to be at a risk of collision the ACD system activates automatic braking operation to prevent collision. Loco ACD is designed to interface with various types of braking system of locomotives.
- c. ACD comprises varieties of devices such as board(mobile). ACD for locomotives and Guard vans and track-sides (stationary) ACDs, level crossing ACDs, Loco shed ACDs, .and sensor based ACDs and ACD, Repeaters. All these work on the principle of distributed control systems. All ACD along the ACD route communicate with each other through radio communication when they are within a radial range of at least 3kms.
- d. If two ACD units are within a predefined distance from each other and deemed to be at risk of collision, the ACD system activates automatic braking operation to prevent collision. ACD system provides audio-visual warning to the road users of level crossing Gate when train is approaching. In non interlocked manned LC gates, when approaching loco ACD detects ‘Gate open’ condition, the speed of the train/Loco is regulated, preventing level crossing Accident.
- e. Loco ACD warns the Loco pilot when the engine approaches a system. More over the Loco pilot, Guard, station master can stop the train in the event of any unusual, by applying SOS button,
- Now a day’s these devices a have already been applied in Konkan Railway North-east Frontier Railway. In near future it shall be used in whole Indian Railway.
- f. Purpose of ACD system:-
It works as “companion” to Driver
- ✓ To alert Driver on station approach.
 - ✓ To prevent “high” speed collisions in mid section.
 - ✓ To prevent “high” speed collisions in ‘Station Area’.

g. The ACD system provides capability to perform the following-

- Detection and prevention of Head on collision.
- Detection and prevention of Rear-end collision.
- Detection and prevention of side-collision in block sections in both directions.
- Detection and prevention of collision due to fouling.
- Detection of Train parting/Jumbling and alerting approaching trains.
- Station approach warning for driver
- Speed limit imposition.
- Approach warning for road users.
- SOS functionality.
