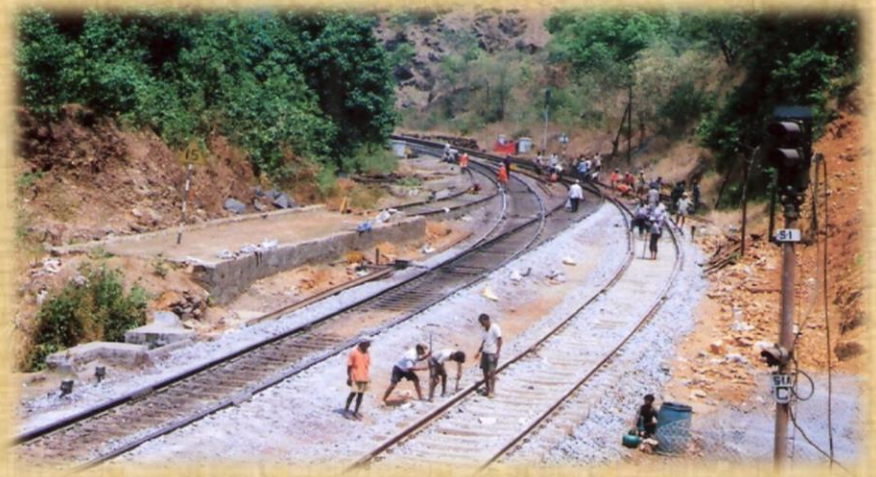
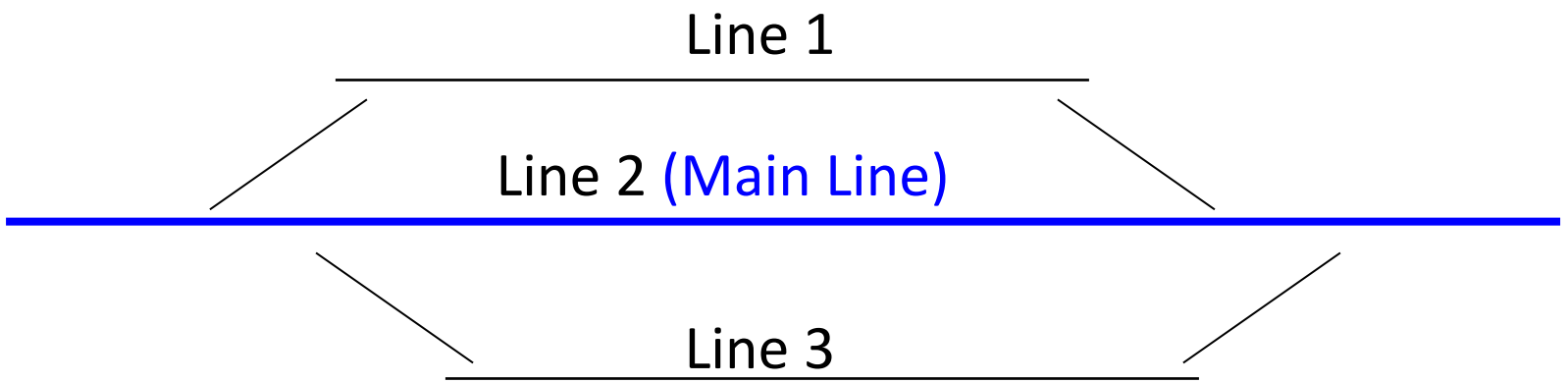
Module 10

Isolation and its Implementations



Isolation: Definition



- Isolation means a condition in which a line is separated from all adjoining lines in such manner that it cannot be fouled by any movement taking place on the adjoining lines.

Isolation: Definition

- The term isolation denotes the condition in which line for a particular movement of a train is separated from all adjoining lines connected to it in such a manner that it cannot be fouled or interfered with by any movement taking place on the adjoining lines .

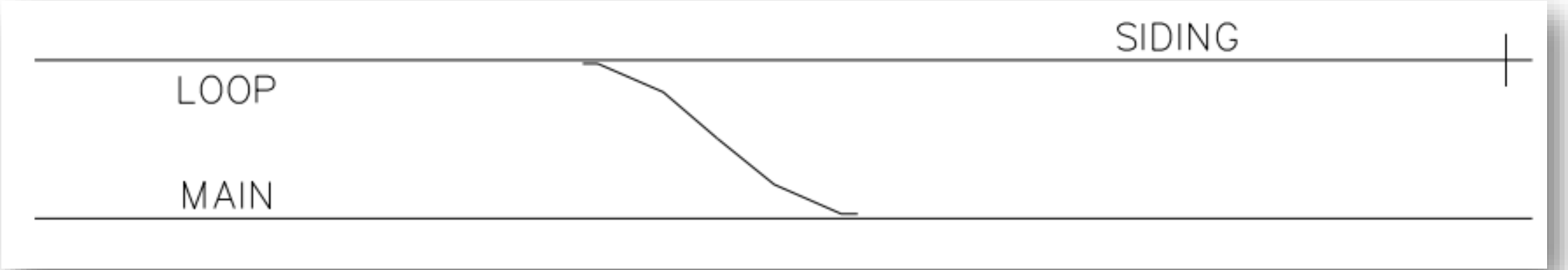
Isolation: Definition

❑ Rules regarding isolation:

- A line, on which train movements at speeds higher than 50 KMPH are permitted, should be isolated from all connected lines.
- Passenger lines should be isolated from all connected goods lines and sidings, whatever the speed may be.
- Isolation of goods reception lines from sidings is considered desirable.
- To maintain safety in through running, points and trap sidings should be not be inserted in the main or through line except with the permission of CRS.
- Where other means cannot be adopted to permit simultaneous reception on a single line.
- To trap vehicles running away from a station.
- To avoid trains entering from block section due to heavy falling gradient

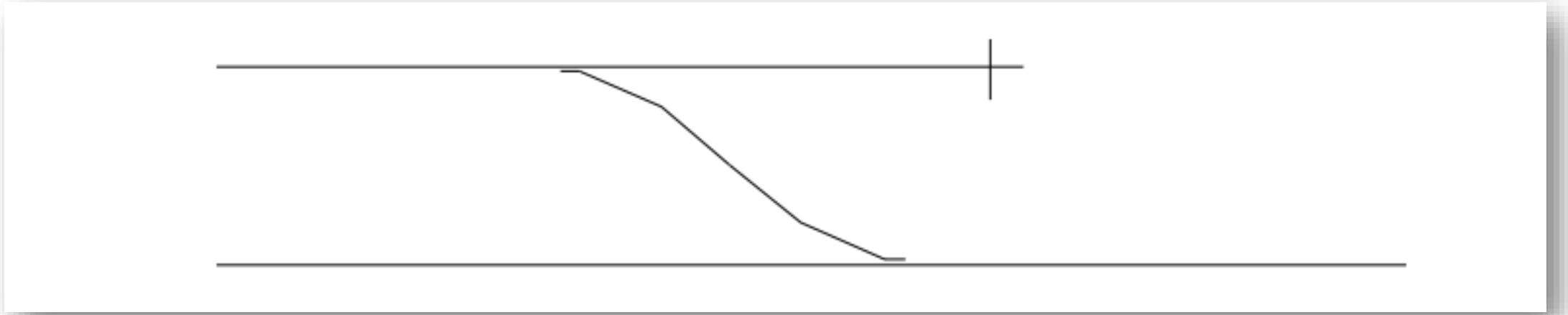
Isolation: Methods

1. Connecting to another line or a siding. :



Isolation: Methods

2. Provision of short dead end siding (Vehicles not to be stabled on siding) :



Isolation: Methods

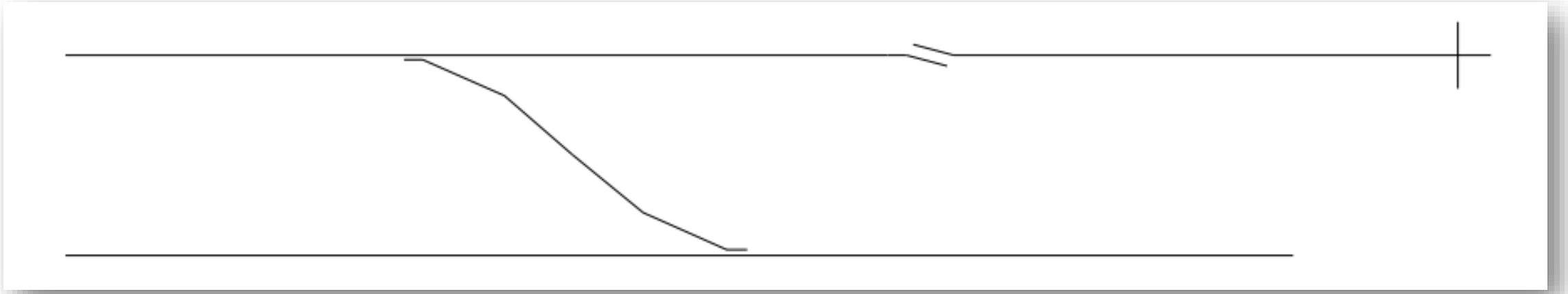
3. Provision of traps derailing switches

Isolation: Methods

4. **Provision of double derailing switch with lead rails without crossing**

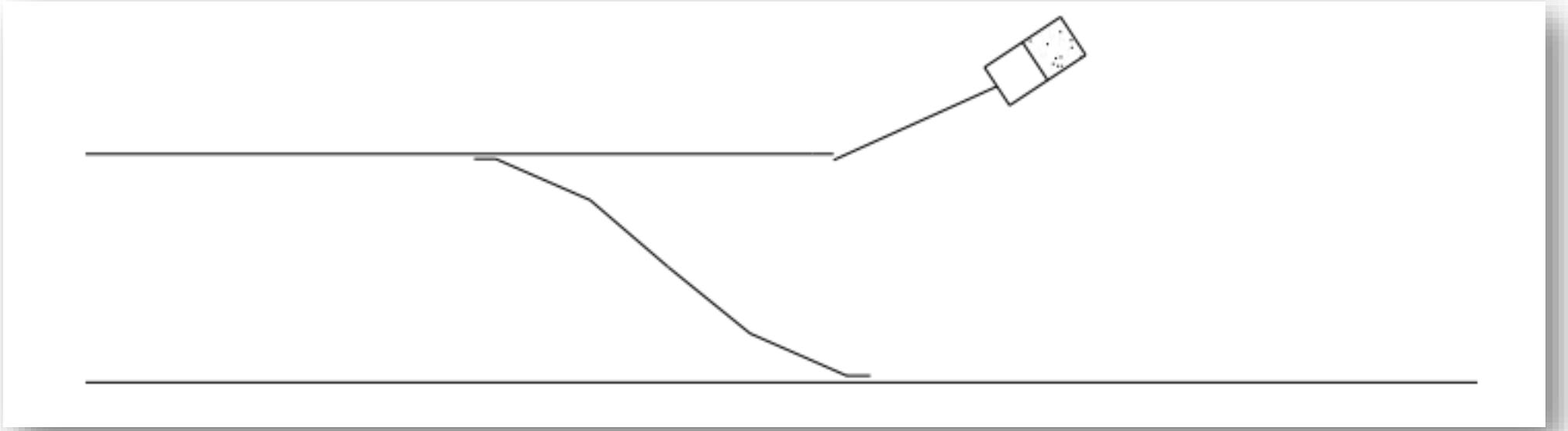
Isolation: Methods

5. Long dead end siding with trap (vehicles can be stabled on this siding).



Isolation: Methods

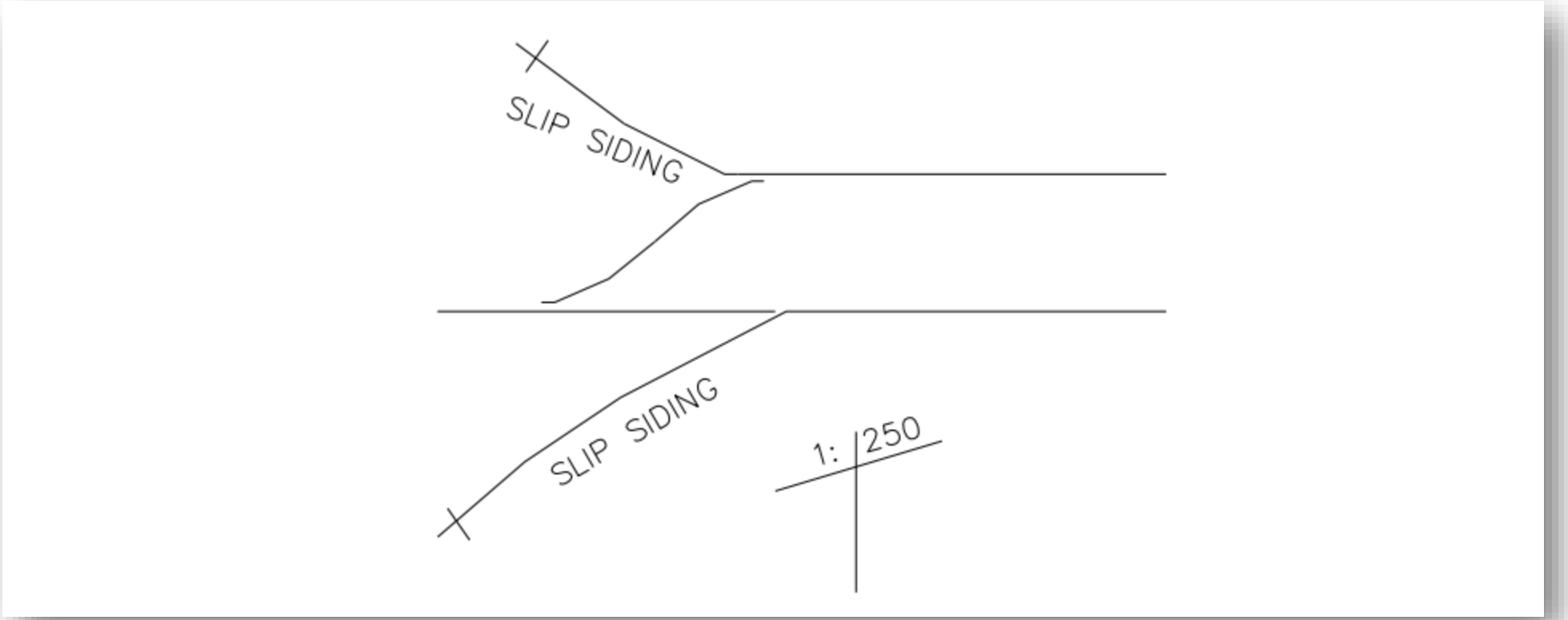
6. Provision of Sand humps.



Isolation: Slip & Catch Sidings

Slip Siding & Catch Siding: On Indian Railways for all gauges the maximum gradient permitted is 1:400, where as1:1200 is usually allowed within the station yard. No station yard should be steeper than 1:260, except due to geographic conditions. Where such gradient cannot be avoided with in the station yard, condo nation of CRS is to be to be obtained for providing „SLIP SIDING„. Slip siding will prevent vehicles entering block section.

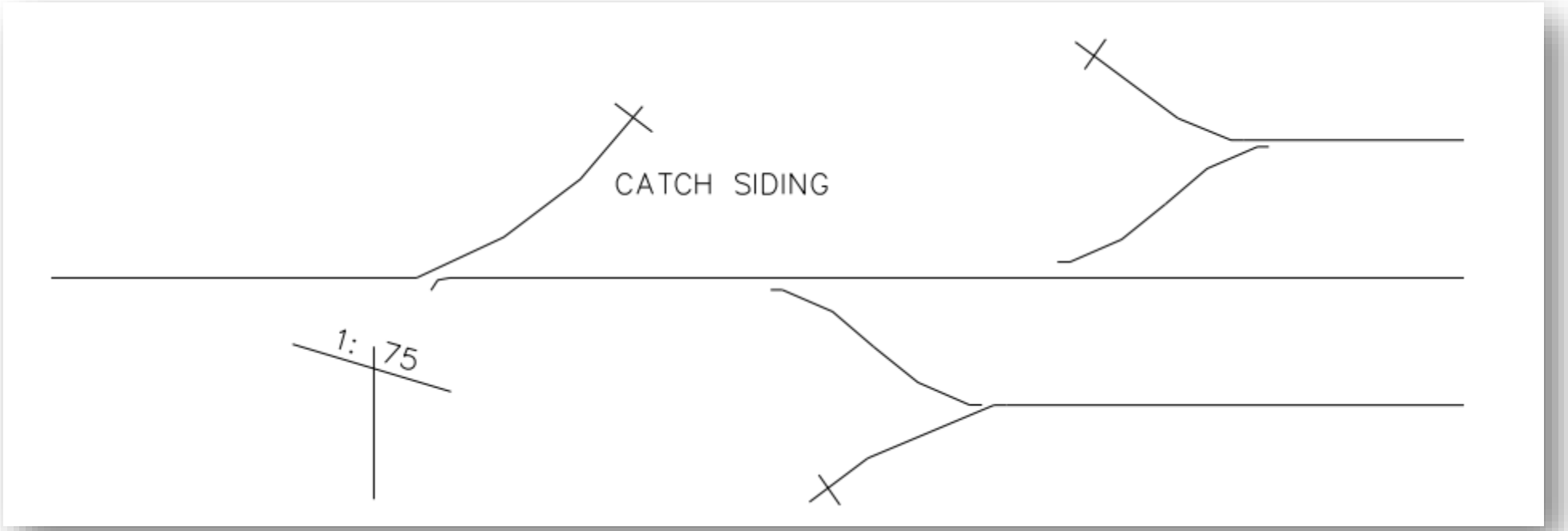
Isolation: Slip & Catch Sidings



Isolation: Slip & Catch Sidings

Where gradients are steeper than 1:80 falling towards the station, to prevent vehicles entering station section from block section. This arrangements is know as „CATCH SIDING“ Catch siding will prevent vehicles entry into block section.

Isolation: Slip & Catch Sidings

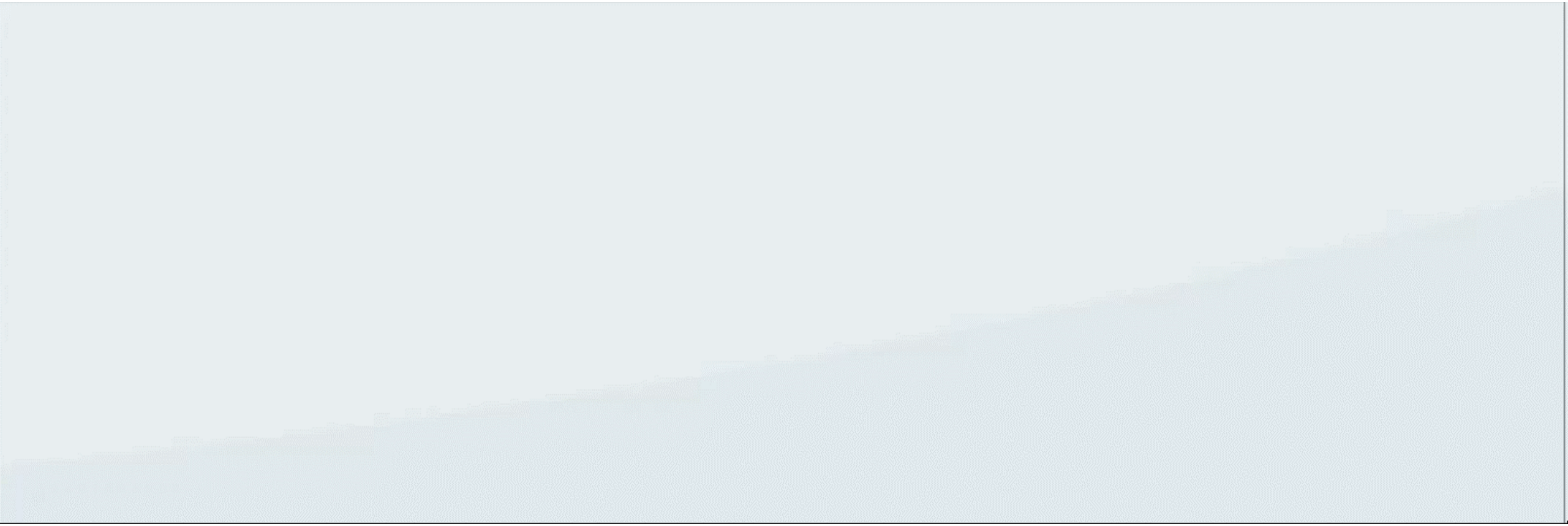


Slip sidings and „Catch sidings" points must be interlocked with block instruments and these sidings should not be used for shunting or stabling purposes.

Isolation: Methods

- **1. :**

Requirements of Isolation:



Isolation: Definition

- **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.

- Isolation means a condition in which a line is separated from all adjoining lines in such manner that it cannot be fouled by any movement taking place on the adjoining lines.

Isolation: Definition

- to protect moving OR stable train on a line, from obstruction by train on adjacent connecting lines
- Purpose:- Risk assessment in probable case of infringement/ Obstruction of line from all adjacent connecting lines.
- Function:- to prevent probable accidents in event of possible unintentional/ uncontrolled/ accidental movement of train on adjacent line towards train concerned .

Isolation: Requirements

GR 4.11 Limits of speeds while running through stations

(1) No train shall run through an interlocked station at a speed exceeding 50 kmph ... unless the line on which the train is to run has been isolated from all other lines by the setting of points and interlocking is such as to maintain this condition during the passage of the train.

(2) In every case in which trains are permitted to run through on a non-isolated line, all shunting shall be stopped and no vehicle unattached to an engine or not properly secured may be kept standing on a connected line which is not isolated.

(3) Rules for the opening of a Railway for the public carriage of passengers lay down vide Chapter VIII

(4) All passenger running lines shall be isolated from all goods lines or sidings connected thereto.

Isolation: Requirements

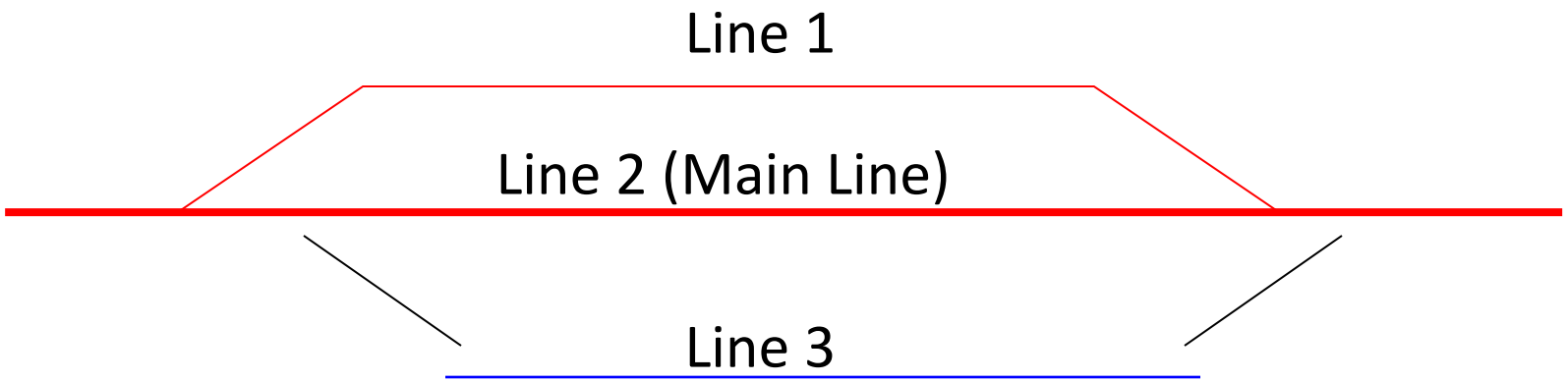
(6) All goods running lines may be isolated from all sidings connected thereto.

(7) It is not necessary to isolate one goods receiving line from another

(8) Isolation may be accomplished by -

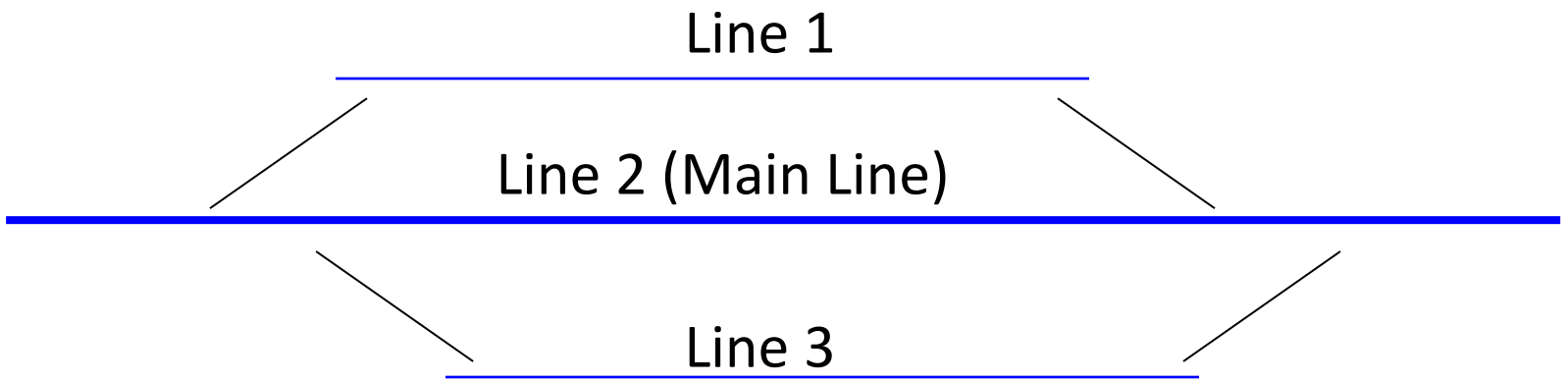
- (a) connection to another line or long siding;
- (b) the provision of short dead end siding; or
- (c) the provision of trap.

Isolation: Implementation



- Main Line **NOT** Isolated from Line 1;
- Hence run through speed **cannot** exceed 50 KMPH

Isolation: Implementation

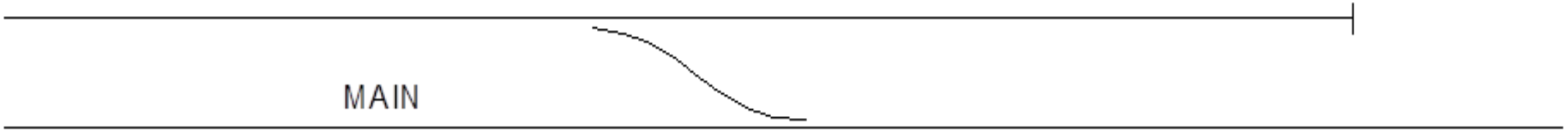


- Main Line Isolated from Line 1 & 3;
- Hence run through speed **can** exceed 50 KMPH

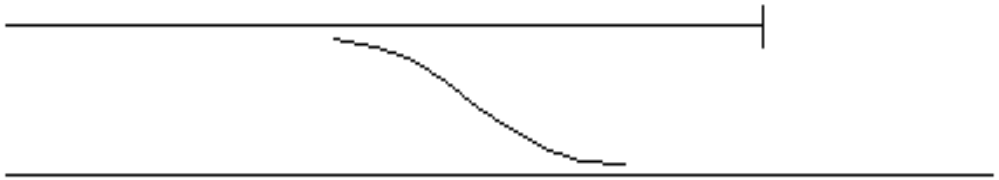
Means of Isolation

- Connection to another line or siding
- The provision of short dead and sidings
- The provision of traps, viz., single or double derailing switches

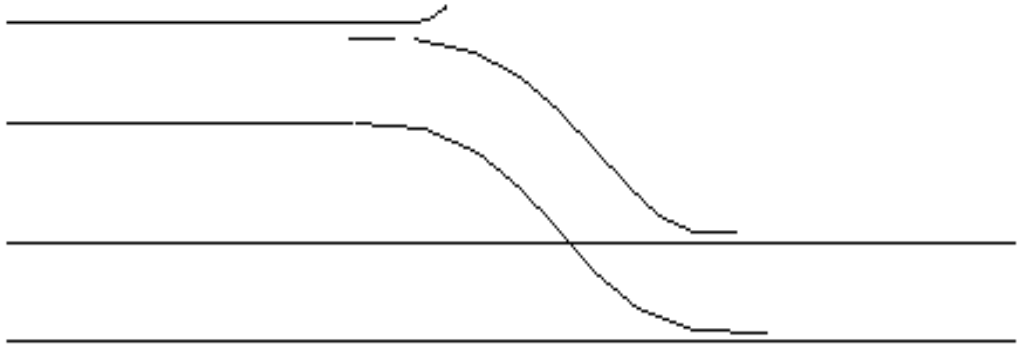
Isolation: Siding, Dead End & Single Derailing Switch



(a) CONNECTION TO ANOTHER LINE OR SIDING

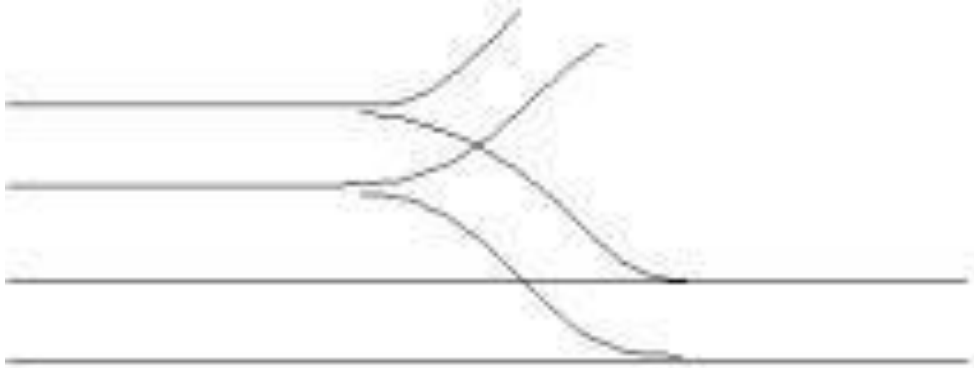


(b) SHORT DEAD END SIDING

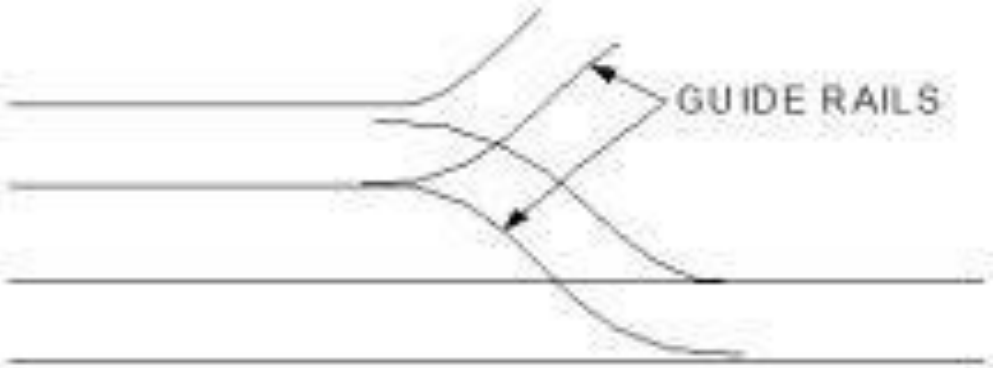


(c) SINGLE DERAILING SWITCHES
ALSO KNOWN AS TRAPS

Isolation: Derailing Switch, Dead End & Sand Hump

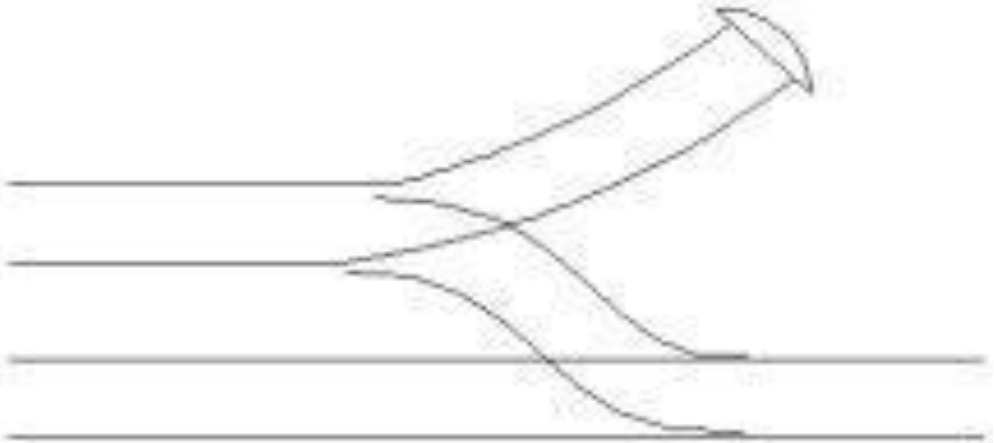


(d) DOUBLE DERAILING SWITCH WITH DEAD RAILS BUT WITHOUT CROSSING.



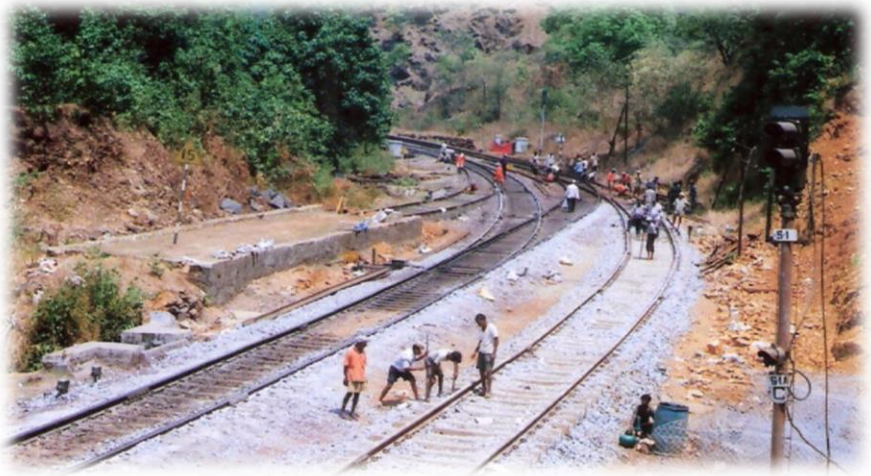
(e) SINGLE DERAILING SWITCH WITH GUIDE RAILS

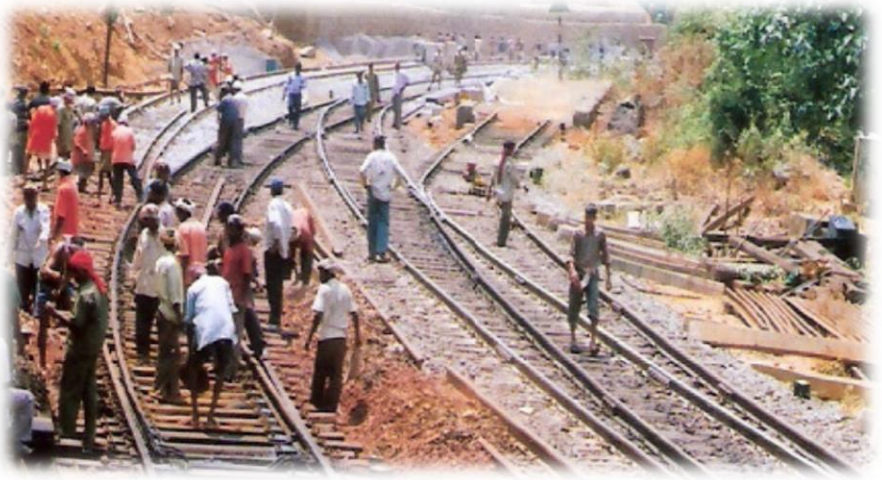
(f) SHORT DEAD END SIDINGS EXTENDED TO ENABLE VEHICLES BEING STABLED



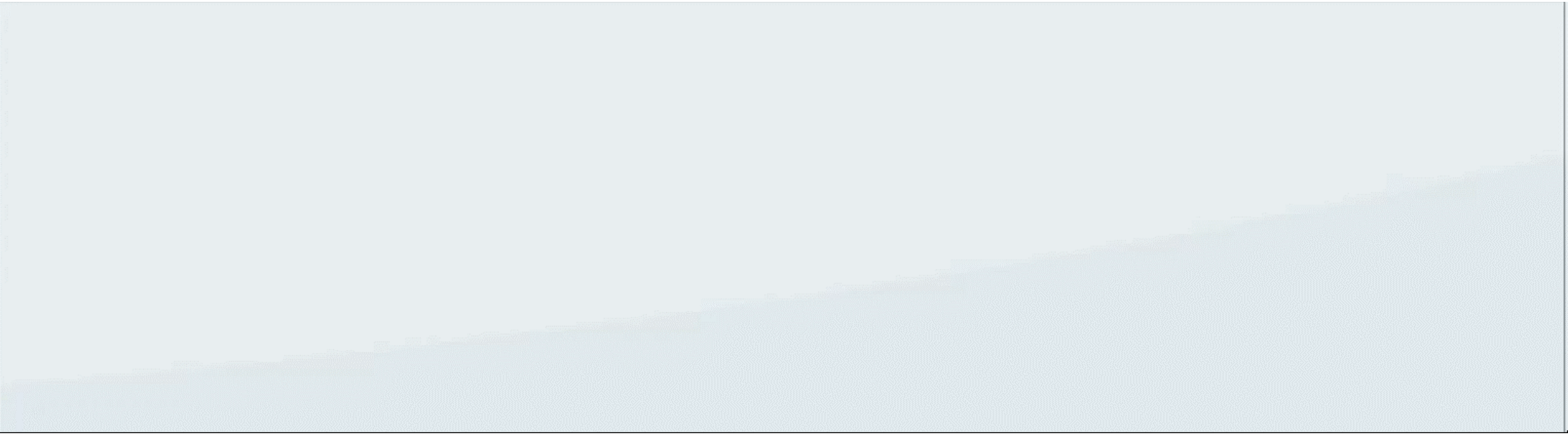
(g) SAND HUMP SIDING

Isolation: Derailing Switch, Dead End & Sand Hump

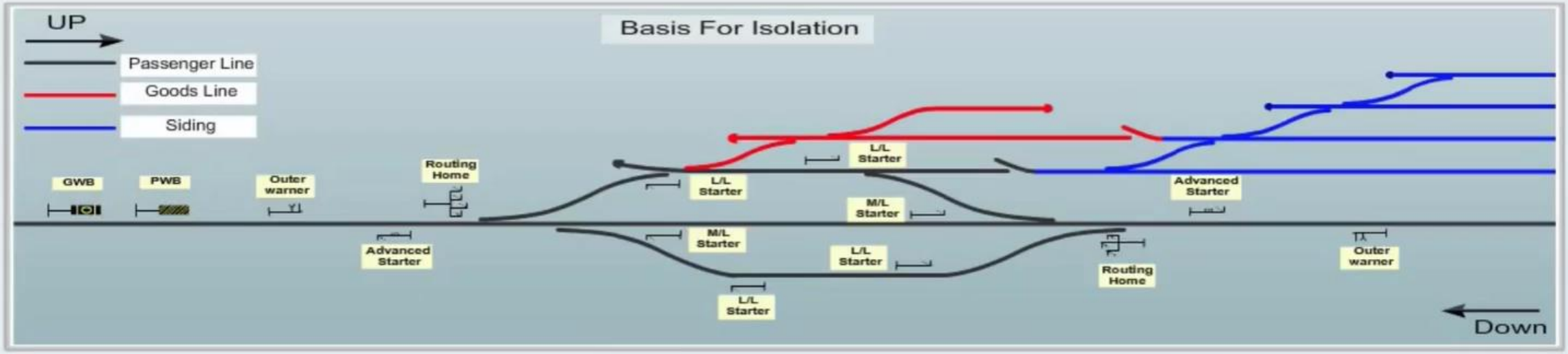




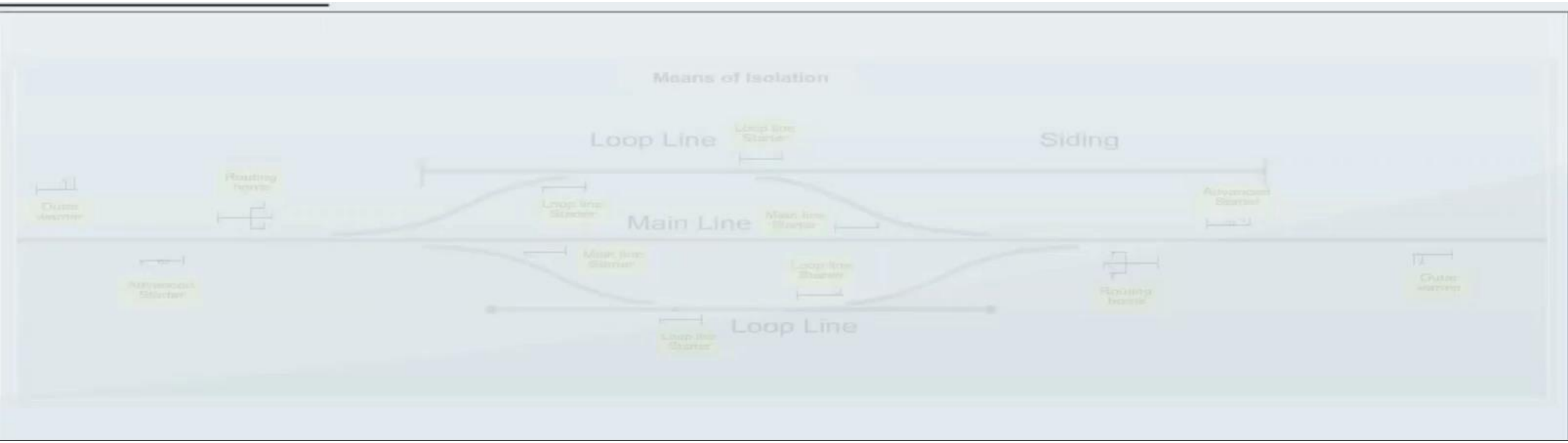
What is Isolation ?



Isolation:


UP
Basis For Isolation
Passenger Line
Goods Line
Siding
GWB
PWB
Outer warner
Routing Home
Advanced Starter
L/L Starter
M/L Starter
L/L Starter
M/L Starter
L/L Starter
L/L Starter
Advanced Starter
Routing Home
Outer warner
Down

Means of Isolations



ISOLATION

Isolation means a condition in which a line is separated from all adjoining lines in such a manner that it cannot be fouled by any movement taking place on the adjoining lines.

Isolation: Requirements

GR 4.11 Limits of speeds while running through stations

(1) No train shall run through an interlocked station at a speed exceeding 50 kmph … unless the line on which the train is to run has been isolated from all other lines by the setting of points and interlocking is such as to maintain this condition during the passage of the train.

(2) In every case in which trains are permitted to run through on a non-isolated line, all shunting shall be stopped and no vehicle unattached to an engine or not properly secured may be kept standing on a connected line which is not isolated.

Isolation: Requirements

Rules for the opening of a Railway for the public carriage of passengers lay down vide Chapter VIII

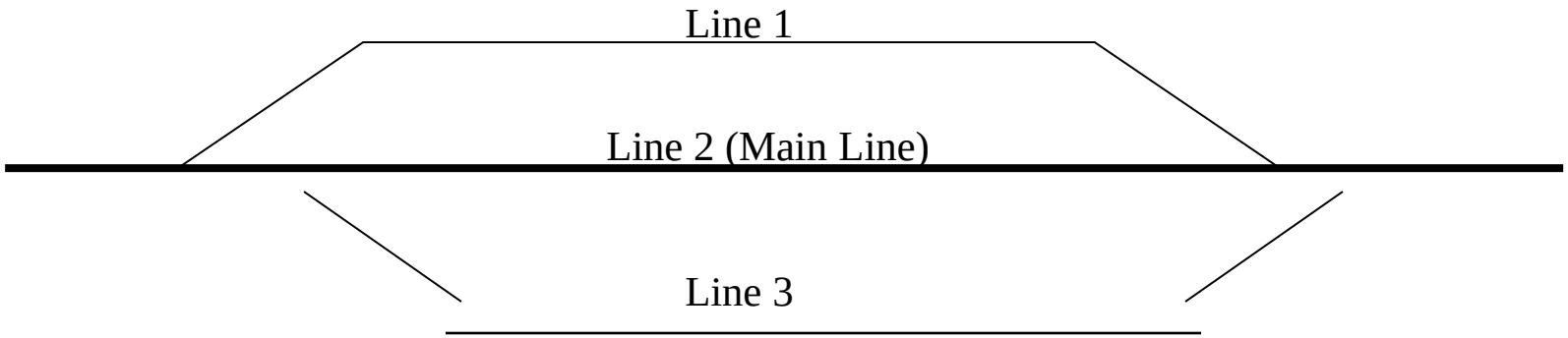
- All passenger running lines shall be isolated from all goods lines or sidings connected thereto.
- All goods running lines may be isolated from all sidings connected thereto.
- It is not necessary to isolate one goods receiving line from another
- Isolation may be accomplished by -

(a) connection to another line or long siding;

(b) the provision of short dead end siding; or

(c) the provision of trap.

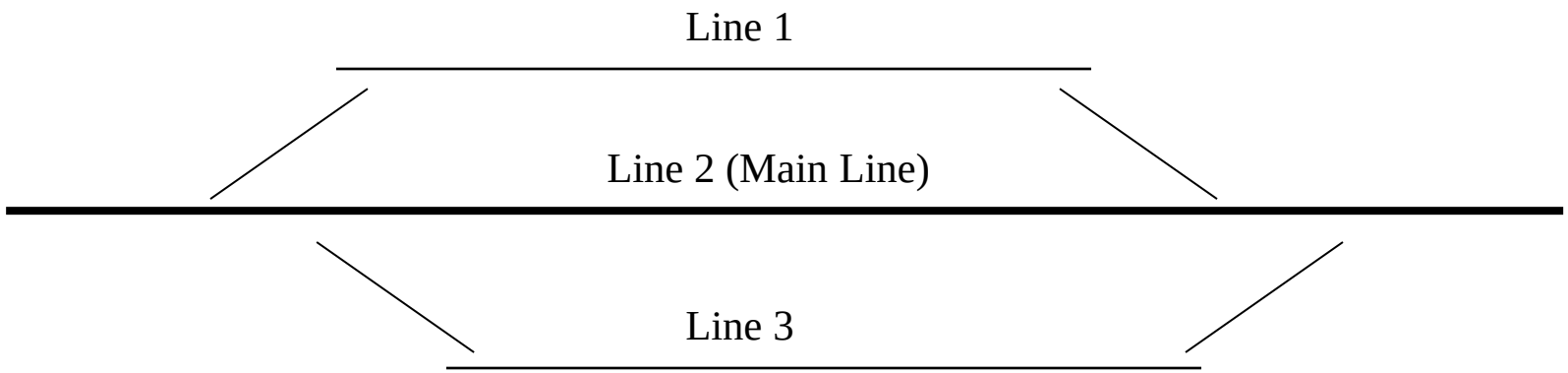
Isolation: Implementation



Main Line **NOT** Isolated from Line 1;

Hence run through speed **cannot** exceed 50 KMPH

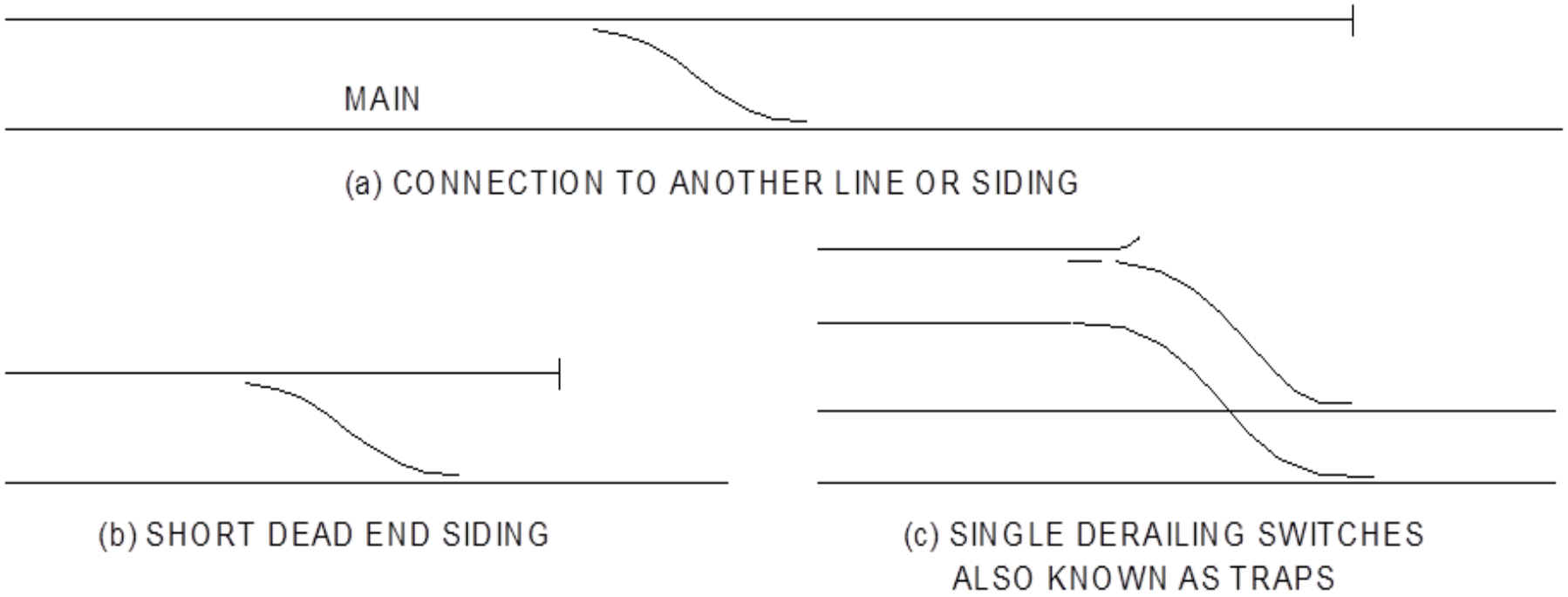
Isolation: Implementation



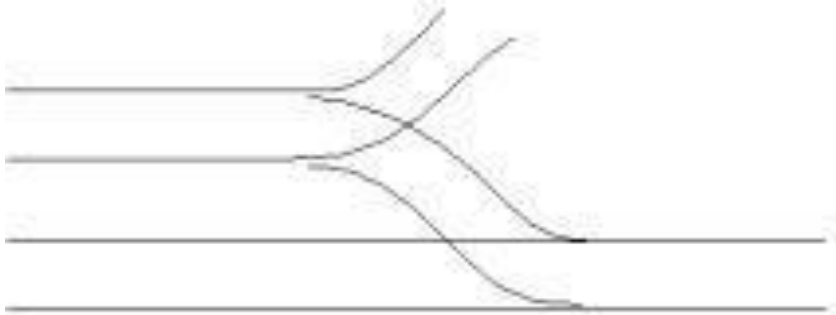
Main Line Isolated from Line 1 & 3;

Hence run through speed **can** exceed 50 KMPH

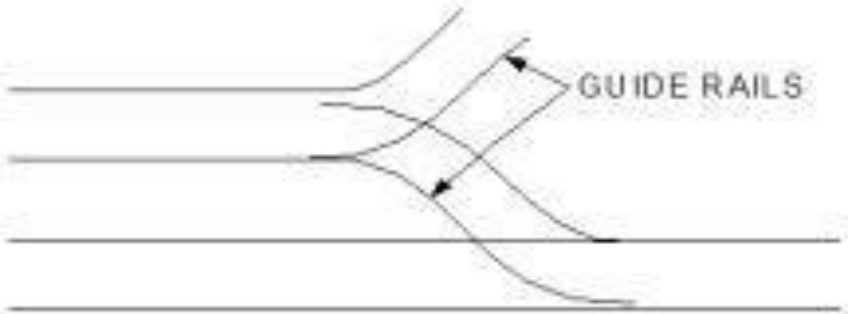
Siding, Dead End, Single Derailing Switch



Derailing Switch, Dead End, Sand Hump



(d) DOUBLE DERAILING SWITCH WITH DEAD RAILS BUT WITHOUT CROSSING.



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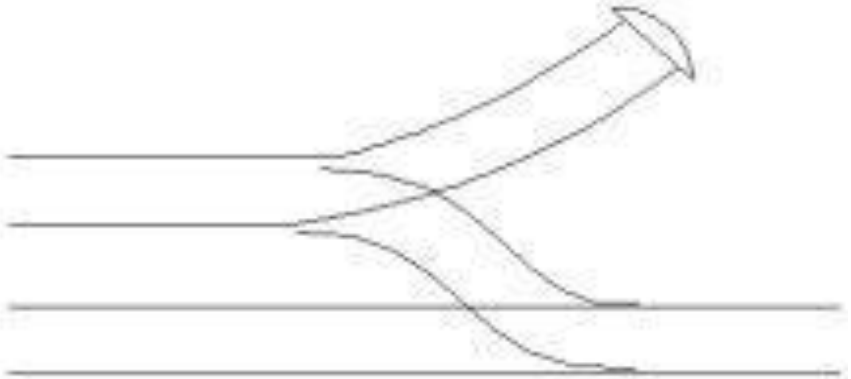
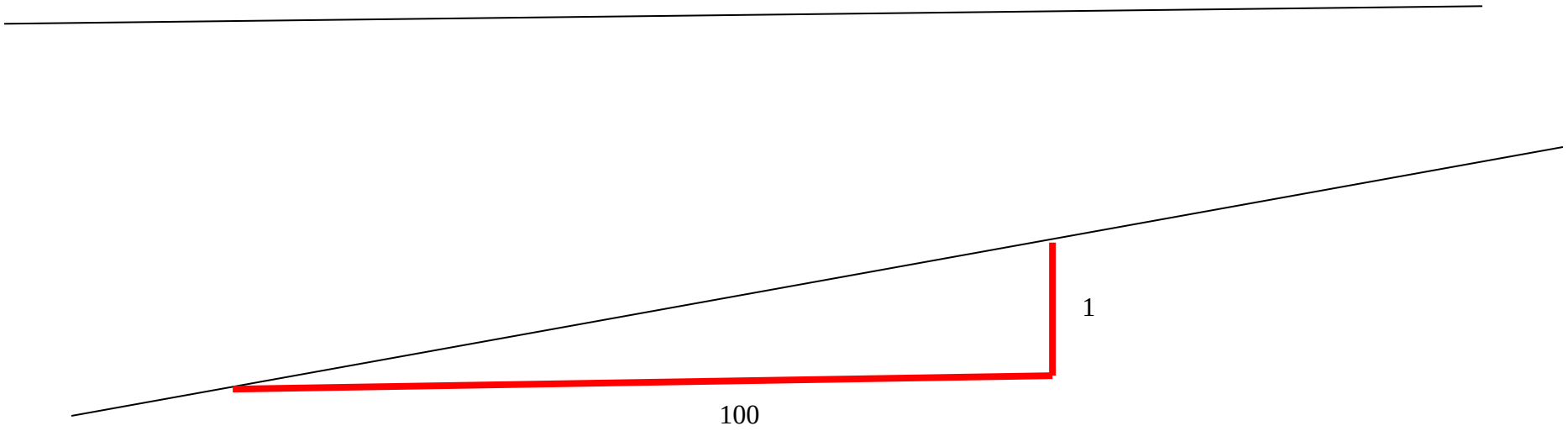
(f) SHORT DEAD END SIDINGS EXTENDED TO ENABLE VEHICLES BEING STABLED



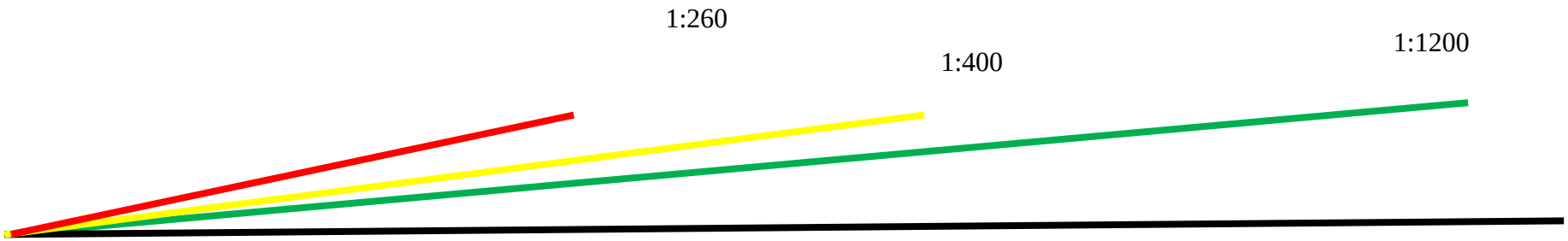
(g) SAND HUMP SIDING

GRADIENT



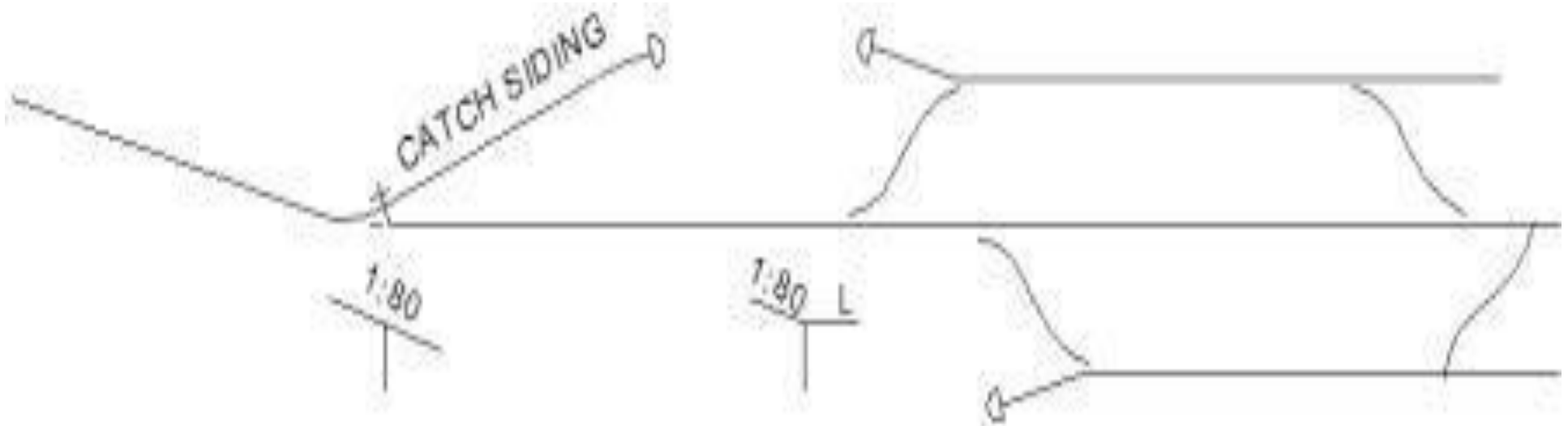
The Gradient is called as 1:100 (or) 1 in 100

GRADIENT



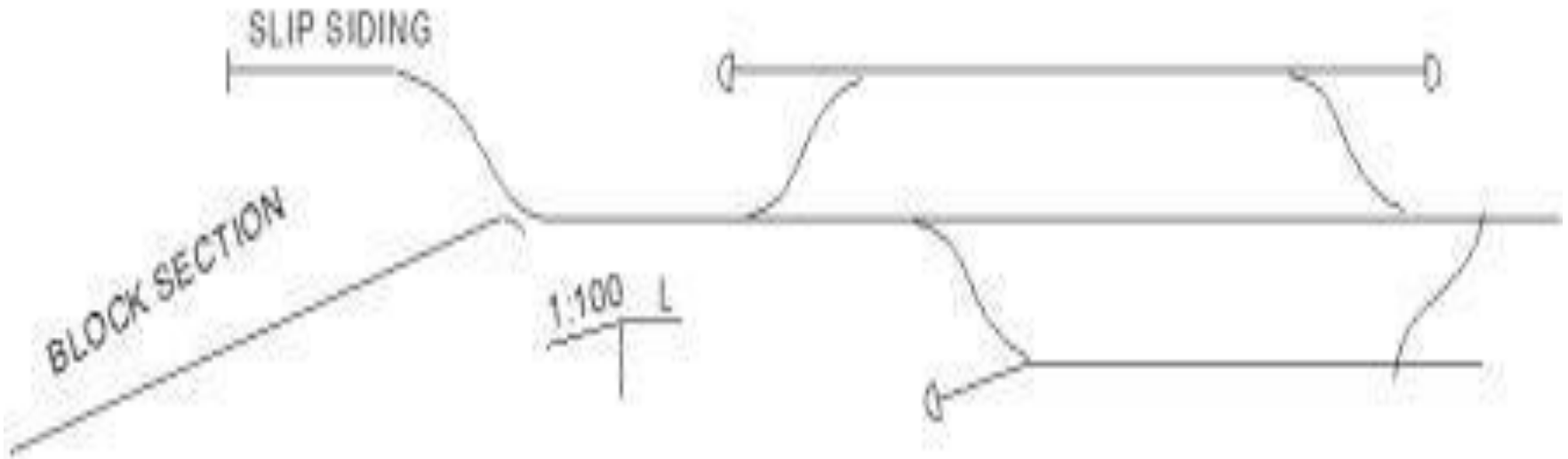
1. Station yard should be provided in the level Gradient.
2. Maximum permitted Gradient in the Station Yard is 1:400 and Recommended gradient is 1:1200
3. Gradient steeper than 1:400 upto 1:260 CRS Sanction is required.
4. Gradient steeper than 1:260 Railway board approval required through CRS.
5. Gradient between 1:1200 and 1:400 GM sanction is required

CATCH SIDING



(h) CATCH SIDING DUE TO FALLING GRADIENT WHILE APPROACHING THE STATION IF STEEPER THAN 1:80

SLIP SIDING



SLIP SIDING DUE TO GRADIENT STEEPER THAN 1:100, FALLING AWAY FROM THE STN IN THE CLOSE NEIGHBOUR HOOD

QUESTIONS

1. The commissioner of railway safety works under the administrative control of (
)

a) Railway ministry.
b) Civil aviation ministry.
c) Surface &transport ministry.
d) Home ministry.

2. The most important duties of CRS are. (
)

a) Inspection of new lines before opening for the public.
b) Inspection of gauge conversion work.
c) Inspection of doubling of lines.
d) All A, B, and C

3. The head quarter of chief commissioner of railway safety. (
)

a) AGRA
b) KANPUR.
c) LUCKNOW.
d) PATNA.

QUESTIONS

4. The recommended gradient in a station yards ( )

a) 1 in 100
b) 1 in 260.
c) 1 in 400.
d) 1 in 1200

5. The signaling works which require CRS sanction. ( )

a) Provision of telephone at already manned LC gate
b) All types of track circuits within the yard.
c) Provision of lifting barriers in place of already interlocked leaf gate
d) New station temporary or permanent

6. The signaling work which do not require CRS sanction. ( )

a) Addition, alteration or extension to existing block.
b) Change in block signaling and interlocking scheme
c) New station temporary or permanent
d) Provision of lifting barriers in place of already interlocked leaf gate

QUESTIONS

7. The validity of CRS sanction is ( )

a) 1 year.
b) 2 year.
c) 3 year.
d) 4 year.

8. Catch siding is provided if the gradient is steeper than _____ falling towards the station ( )

a) 1:200 b) 1:80 c) 1:100 d) 1:260

9. Slip siding is provided if the gradient is steeper than _____ falling away from the station ( )

a) 1:200 b) 1:80 c) 1:100 d) 1:260

10. Gradient is steeper than _____CRS Sanction is Required ( )

a) 1:1200 b) 1:400 c) 1:100 d) 1:260

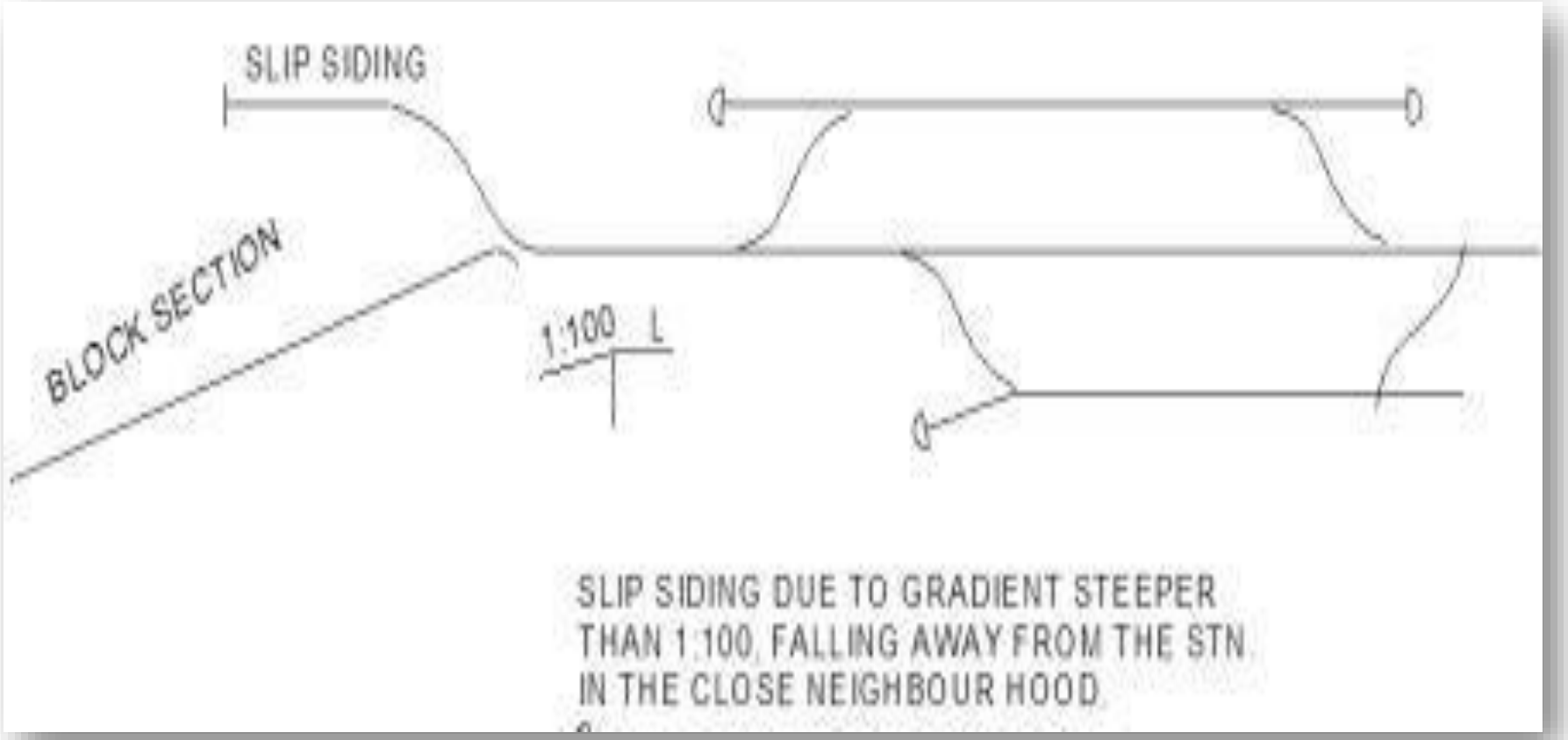
Opening of Railways

OUTCOME

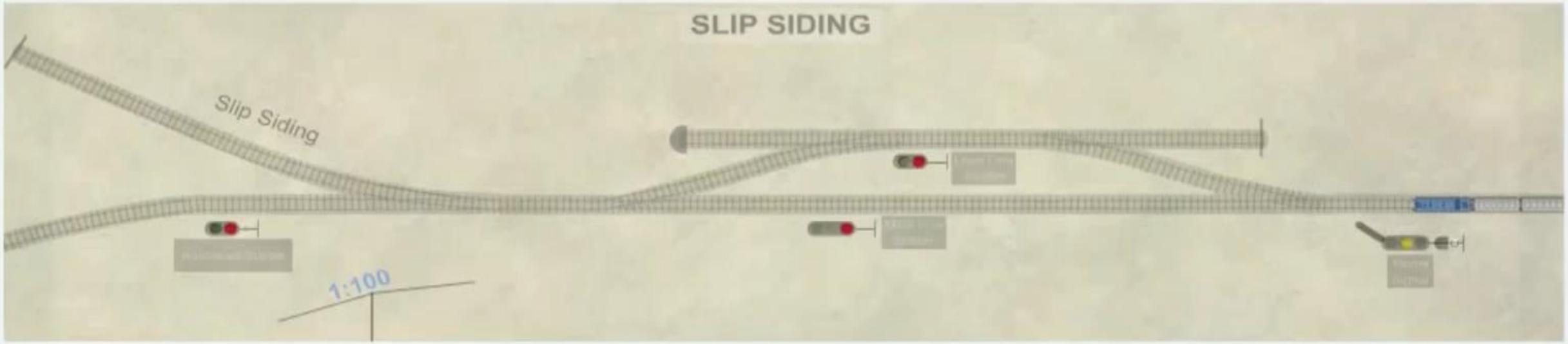
Trainee understands the opening of Railways, role of CRS , Requirement and recommendations of Signalling and Interlocking installations, Gradients Slip siding and Catch siding reg.,

THANK YOU

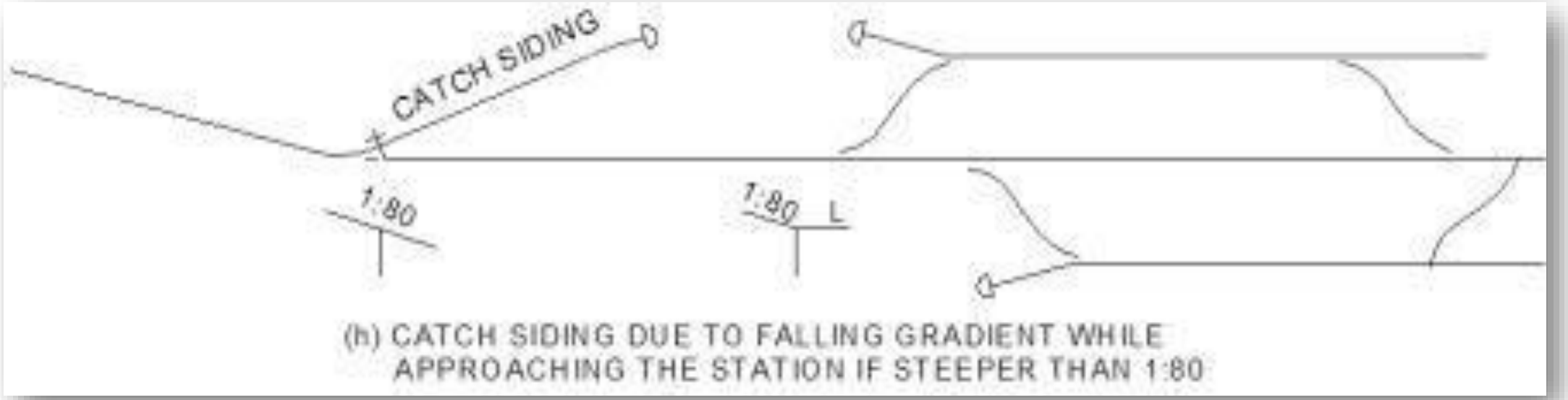
Isolation: Slip Siding



Isolation: Slip Siding

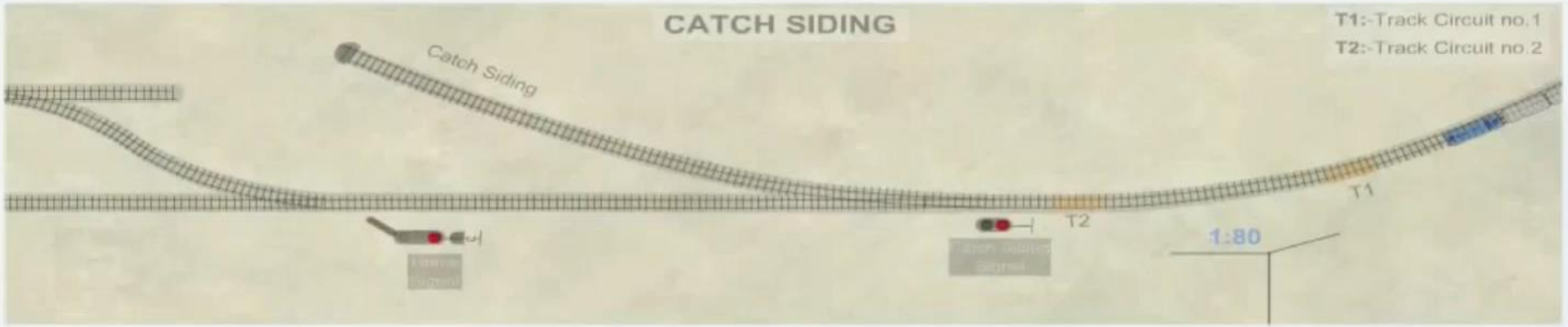


Isolation: Catch Siding



(h) CATCH SIDING DUE TO FALLING GRADIENT WHILE APPROACHING THE STATION IF STEEPER THAN 1:80

Isolation: Catch Siding




THANK
YOU

Qs..????.