

Chapter 18

Level Crossings



Level Crossings

- What and Why
- Classification
- Requirements

Level Crossings



Level Crossings

LEVEL CROSSING GATE

- Level crossing- means intersection of road with rail track at same level.
- Level crossing gate any type of moveable barrier, including chain capable of being closed across road at the level crossing but dose not include a wicket gate.
- Types of gate
 - Movable barrier
 - Swing barrier
 - Lifting barrier



What and Why

- When road traffic crosses the rail traffic at the same level, they are known as level crossings.
- At level crossings, the road is brought upto the level of rail table and guard rails are provided to ensure clearance for wheel flanges.
- LCs become necessary because the alternative of over/under bridges is very expensive

What and Why

- A level crossing will have an arrangement to stop road traffic on either side of the X - ing (except at D class X - ings).
- This arrangement can be swing gates, lifting barriers or even a chain across the road.
- It will have check rails to keep the flange-way clear.
- Provision of Warning signs are mandatory on either side of the LC for warning road users

Norms for deciding Class of a LC

- Classification is done considering class of road, visibility and volume of road and rail traffic
- Number of trains per 24 hrs. multiplied by number of road vehicles per 24 hrs. gives the Train Vehicle Units for the LC.
- Category I, TVUs more than 3000, Category II , less than 800m visibility to road users and TVU more than 2500 **manning** should be done.
- TVUs over 20,000 Qualifies for interlocking.
- Min TVUs should be 1 lakh to become eligible for ROB/RUB on cost sharing basis.

LC Gates are classification depends on

- Depends on nature of road
- The no. of road vehicles passing
- The no. of trains passing.

LC Gates are classified

1. SPL – Class - More than 50,000 (TVU)
2. 'A'-Class – More than 30,000 (TVU)
3. 'B-1' – Class – More than 25000 (at least 750 buses/day) [TVU]
4. 'B-2'- Class- More than 20000 (TVU)
5. 'C' – Class – All there road user
6. 'D' – Class – For cattle crossing.

“Sencess will be taken once in three year, 7 days consecutive, on an average”.

Additional information For L.C.Gates

1. TVU- Train Vehicle Unit (train unit x vehicle unit)
2. Train, Motor vehicle, bullock carts & tongues – 1 unit
3. Cycle rickshaw & auto rickshaw – ½ unit
4. Visibility of manned gate – 5M.
5. Fencing parallel to the track – 15M
6. Gate lodge –6M from center of track
7. Speed Breakers – 20M from center of track
8. Height gauge – 8M from center of track
9. Gate post – 3M from center of track
10. TVU is more than 6000 or L.C.Gate visibility is poor –Un manned gate is converted into Manned gate.

Classes of level crossings

- Special class : TVUs > 50,000
- A' class : TVUs > 30,000 and <50,000
- B1 class : TVUs > 25,000 and <30,000
- B2 class : TVUs > 20,000 and <25,000
- C' class (Md) : Category I > 3000 Cat II > 2500
- D' class : Cattle crossing

(TVU's > 20,000 Shall be Normally kept open to Road Traffic C' class if interlocked, shall be normally kept open to RT)

If average number of trains is less "say up to 14 in a day", the normal position can be changed to "Open to road traffic" regards less of TVU's

Classes of level crossings

Sl. No.	DETAILS	CLASSES					Other Stipulations
		Special Class > 50,000	‘A’ > 30,000 < 50,000	‘B1’ > 25,000 < 30,000	‘B2’ > 20,000 < 25,000	‘C’ Cat I > 3000 Cat II > 2500	
1	Interlocking Gates with Signals						
a	If within station limit	Should be interlocked with station signals			Should be interlocked with station signals		
b	If outside the station limit	Should be interlocked with gate signals			Should be interlocked with gate signals		Sub Urban & Auto section all to be interlocked
c	Normal position	Open to road traffic			Open to road traffic if Inter Locked		
2	Telephone Communicated from the Gate lodge						
a	Within or outside station limit	Telephone to be provided with the ASM's office with all the manned LC Gates					
3	Warning bell or Hooters operated by App Trains						
a	Within or outside station limit	Should be provided			Should be provided		
4	Type of Lifting Barrier						
a	Within or outside station limit	Electrically Operated Lifting Barrier			EOLB in SU		
5	Approach Locking						
a		To be provided in Sub Urban section Others - DA Locking -30 sec			To be provided in SU Others - DAL-30 sec for EOLB		

Gate Signals

SEM 7.43 A Gate Stop Signal shall be fixed at an adequate distance from the gate.

SEM 7.44 The Gate Stop Signal shall be provided with 'G' marker except where prohibited under special instructions.

Interlocked Gates outside Station Limits

SEM 7.45.1

TALQ signalling, a Stop Signal at 400 metres from the gate shall be provided.

Where the section is provided with separate Warner signals, such a signal shall be provided at a distance of not less than 1.2 km from the Gate Stop Signal.

SEM 7.45.2 :

Multiple aspect/modified lower quadrant signalling, a Stop Signal at 180 metres from the gate and a Distant signal at 1 km in rear of the Stop Signal may be provided.

Interlocked Gates within Station Limits

SEM 7.46.1 On sections provided with two aspect lower quadrant signalling,

- (a) The Outer Signal shall be located at a minimum distance of 400 metres from the gate;
- (b) Where the Outer Signal cannot be so located and the Outer Signal falls in between Home Signal and Gate, a separate Gate Signal may be located at a distance of 400 metres in rear of the gate;

Interlocked Gates within Station Limits

- (c) Where there is adequate visibility of Outer Signal as prescribed in para 7.7.1, the Gate Signal shall work independent of the Outer Signal;
- (d) Where the visibility of Outer Signal is not adequate, the Outer Signal shall be shifted and combined with the Gate Signal where feasible or inter slotting arrangement shall be provided between the Outer Signal and the Gate Signal.

Interlocked Gates within Station Limits

SEM 7.46.2 On sections provided with Multiple aspect/modified Lower Quadrant signalling, when the interlocked gates are situated between Distant and Home signal-

- (a) The Gate Signal shall be located at 180 metres in rear of the gate;
- (b) The Distant Signal shall be located at not less than 1 km in rear of the Gate Signal and will function as Gate Distant as well.

Interlocked Gates markers



Gate Stop
Signal

Refer GR 3.17



Gate Stop Signal in
Automatic Block Territory
(Letter A shall be lit only
when gates are closed
and locked against road
traffic)



Gate Stop Signal in semi-
automatic territory
(Letter A shall be lit only
when gates are closed
and locked & points are
correctly set and locked.
Letter AG shall be lit
when points are
correctly set and locked
but gate is open or
defective.)

Protection of Level Crossings outside Station Limits

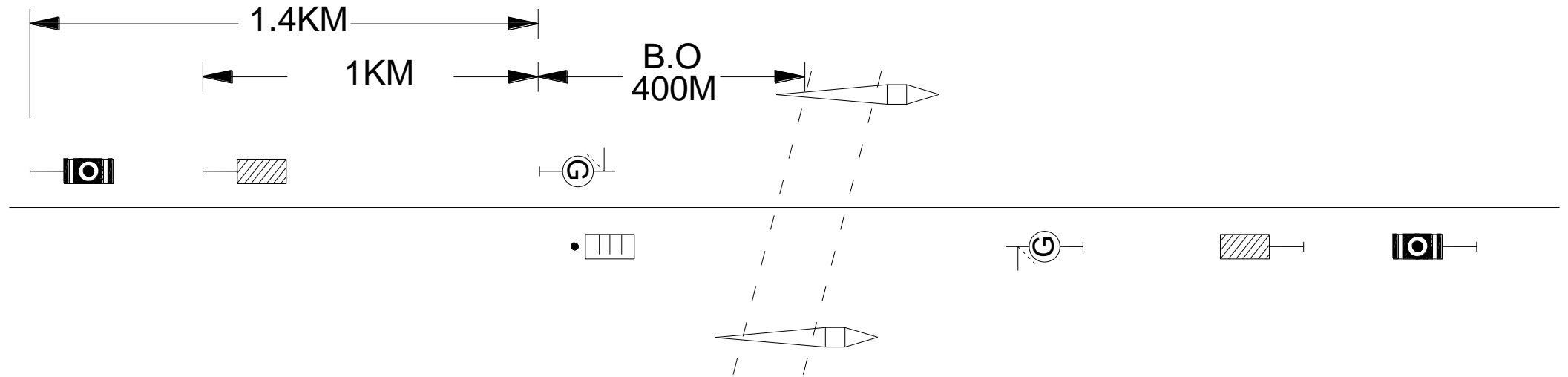
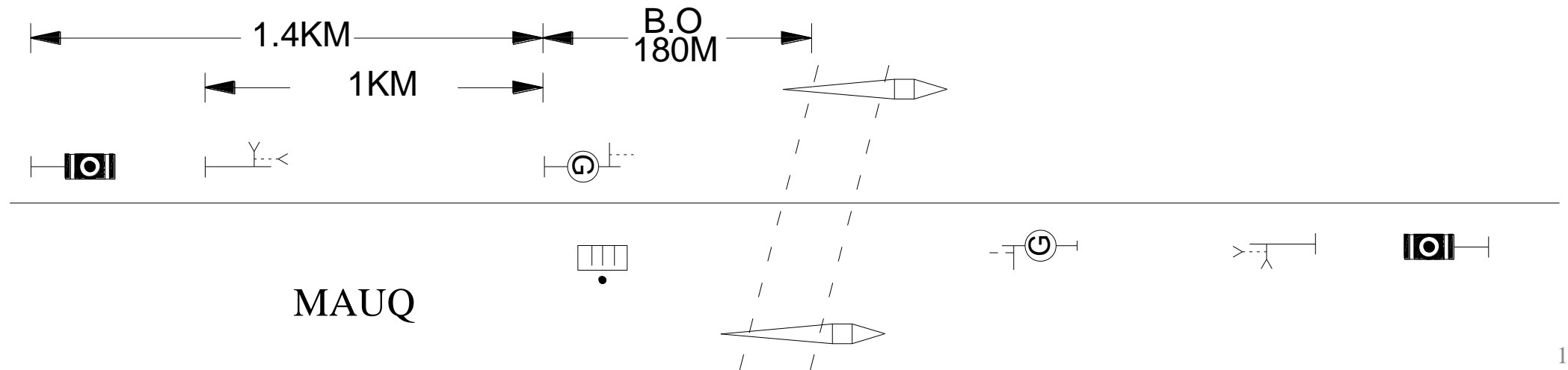
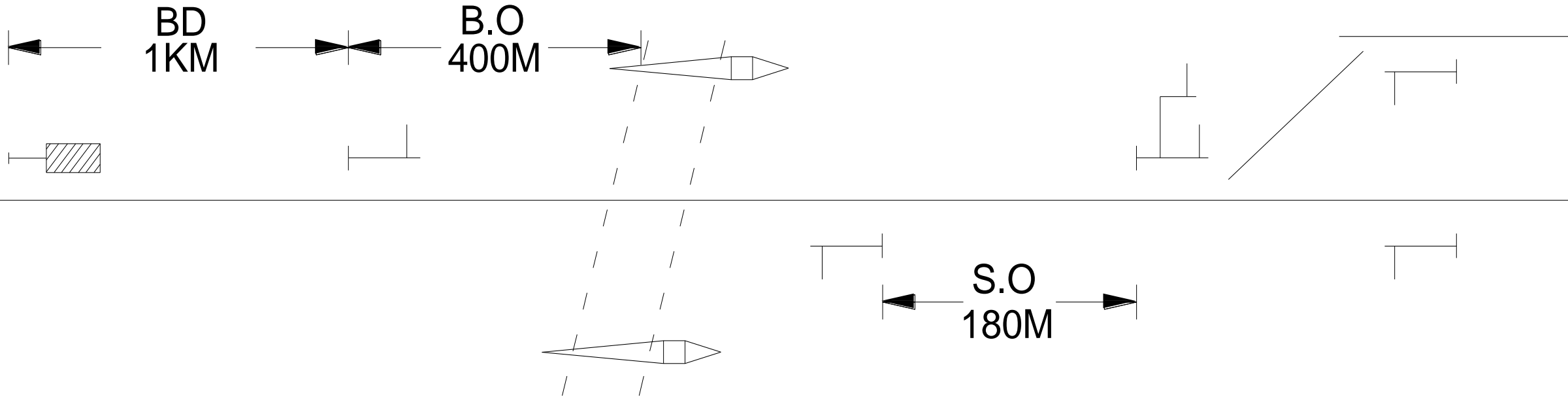


Fig (a) 2 - ASPECT

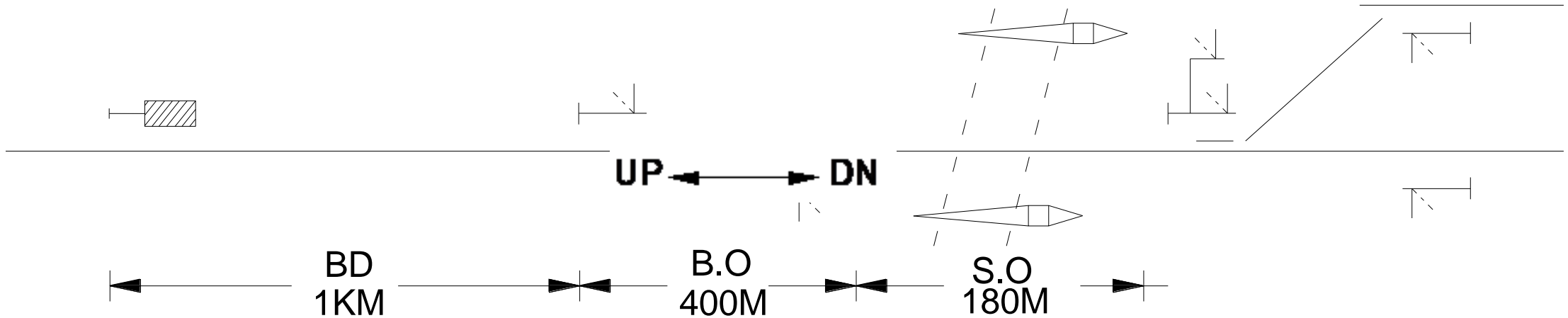


L.C Gate is between outer and advance starter



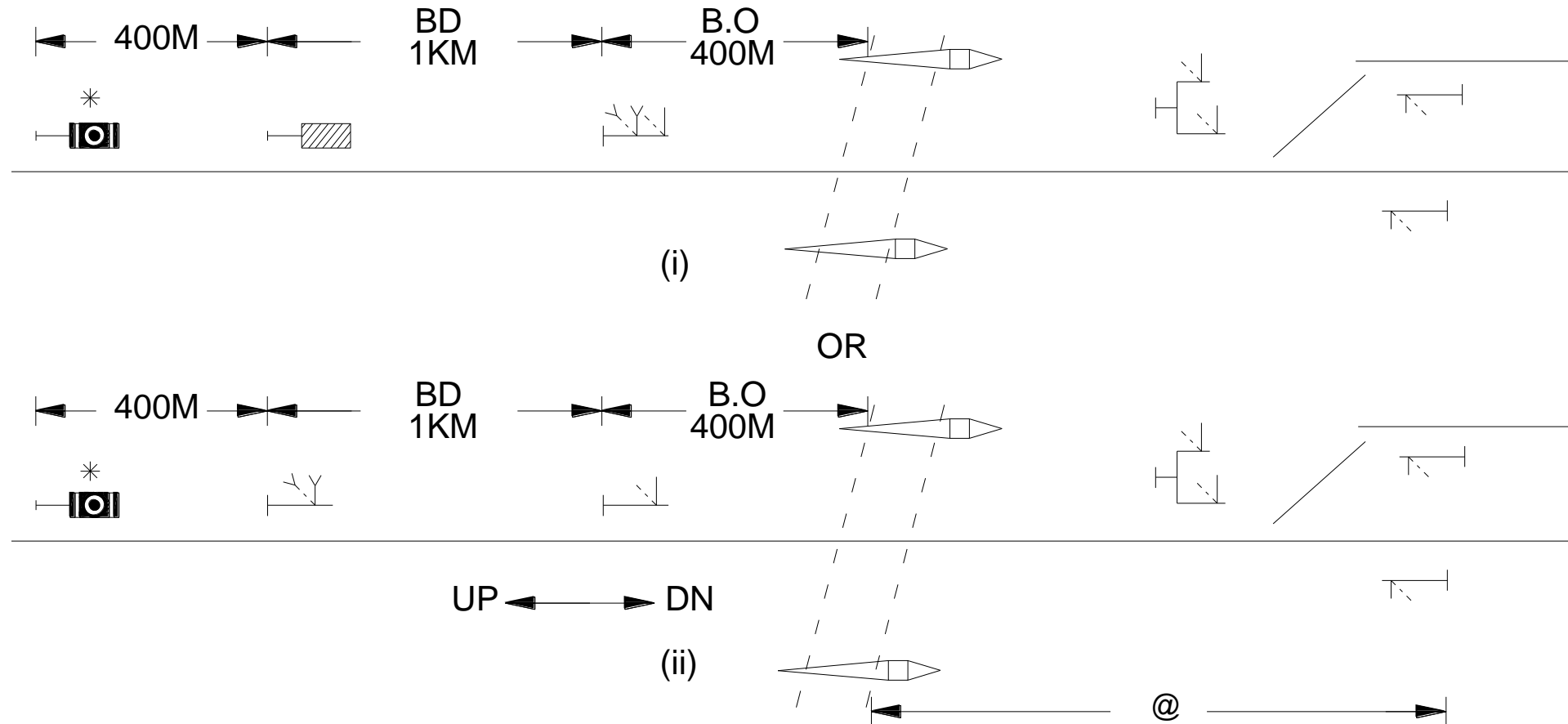
- The gate interlocked with outer and with advance starter
- L.C. gate controlling Signals are not provided with 'G' Marker.

L.C Gate is between Home and Advance starter



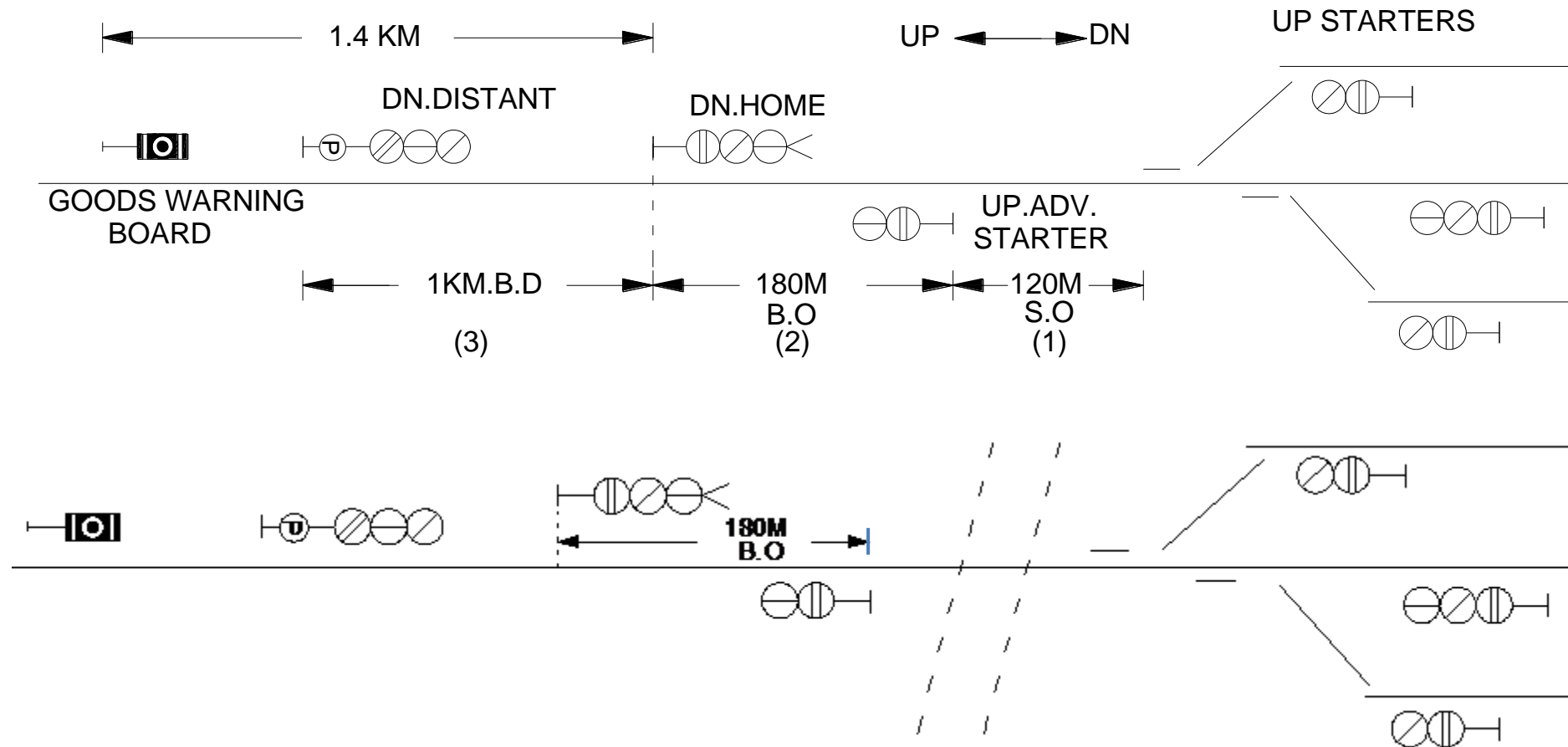
- Interlocking will be extended up to Up home signals in addition to the Down Homes, up advance starter and starters
- L.C. gate controlling signals are not provided with 'G' Marker.

Level Crossings at Class `A' and `C' Stations



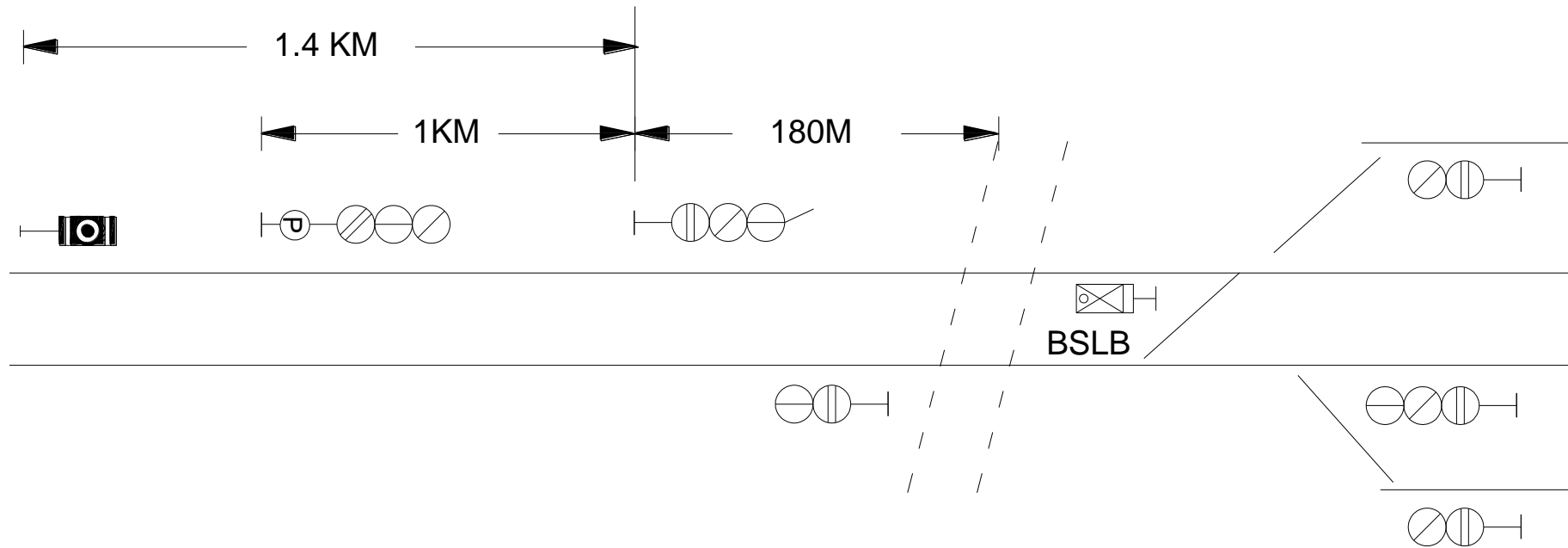
- Up direction, gates are interlocked with the starter signal, if distance between starter and the level crossing is less than 180m the interlocking should be extended to the Up home signal also

Level crossing located within station limits in MAS signalling



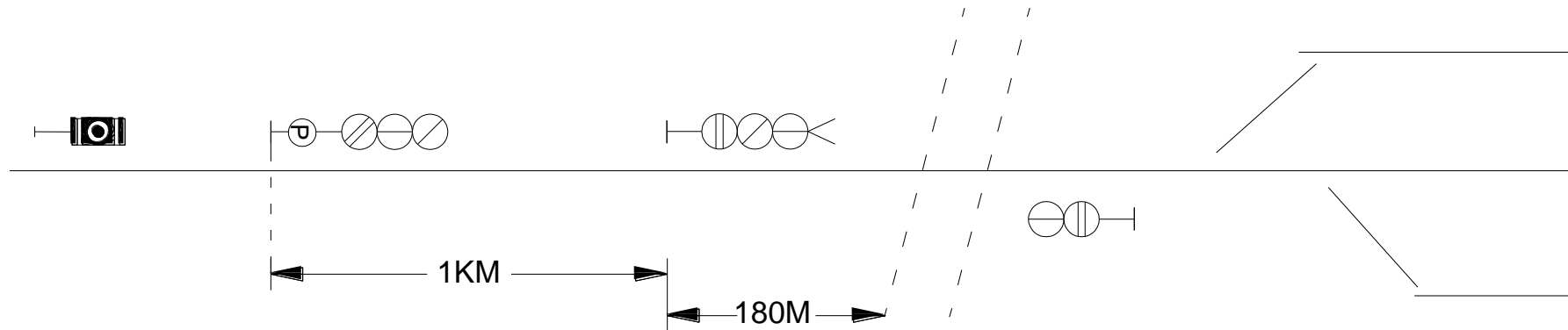
The gate shall be interlocked with down Homes, up starter, up advance starter and up Homes

Level crossing located within station limits in Double Line MAS signalling

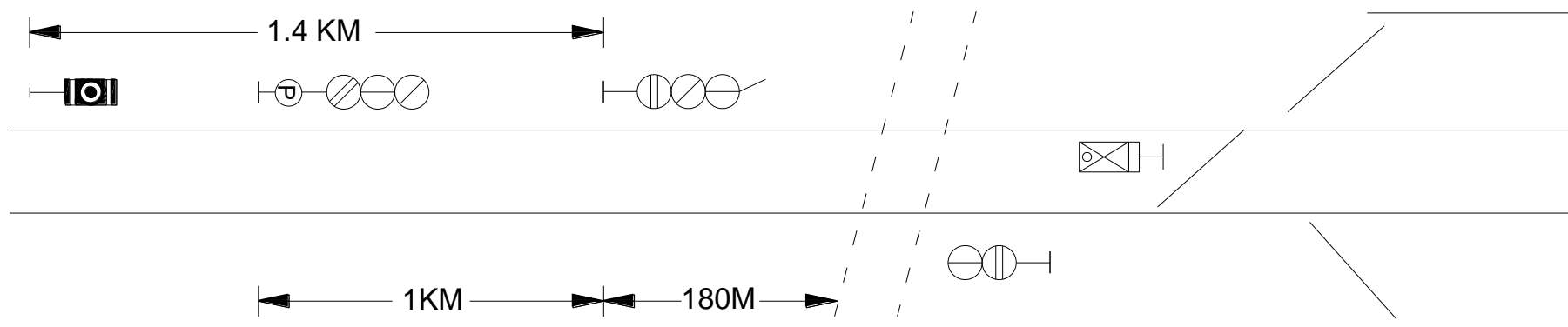


The gate shall be interlocked with down Homes, up starter, up advance starter and up Homes

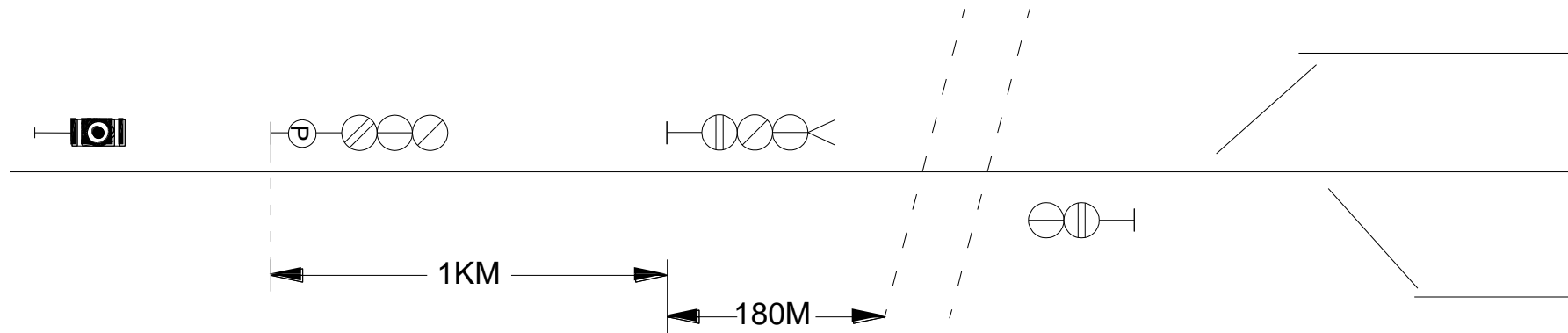
L.C gate is between the down Homes and up advance starter



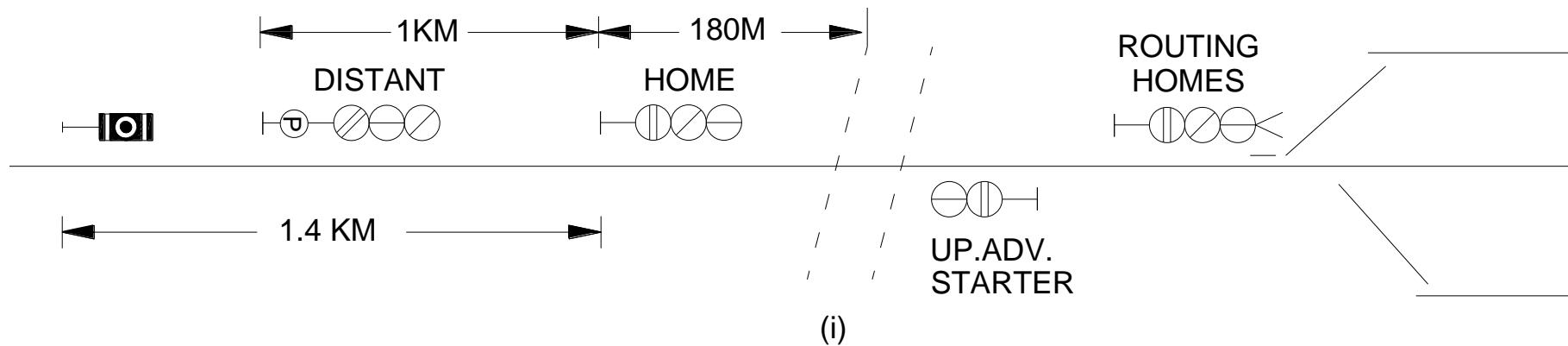
The gate should be interlocked with down Homes and up advance starter only



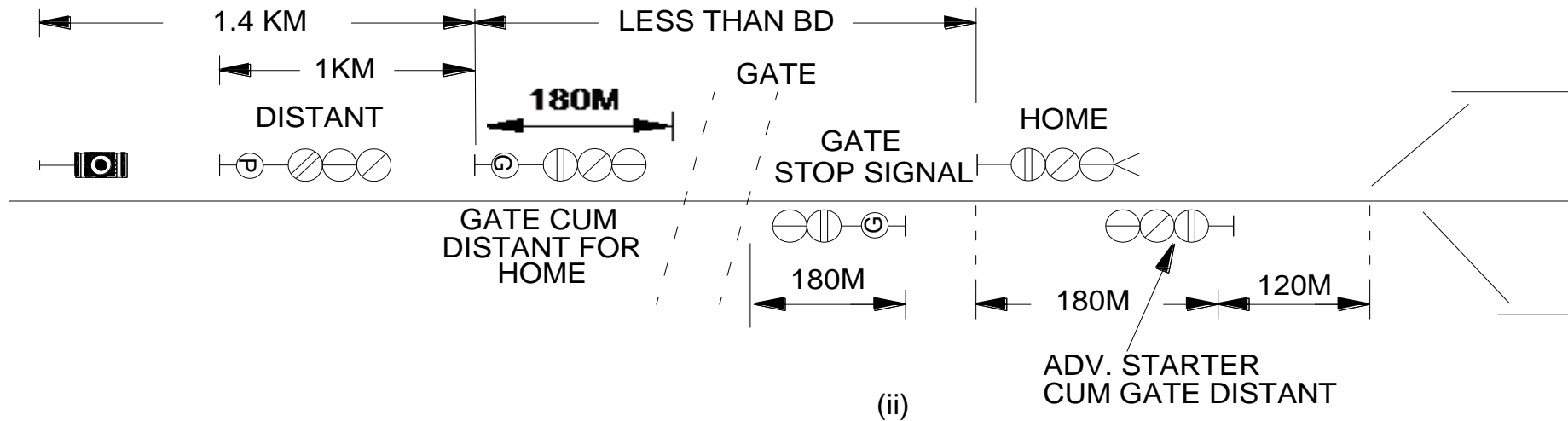
L.C gate is between the down Home and Down Distant



If the gate is just in rear of the Homes the Home may be shifted at 180m in rear of the gate

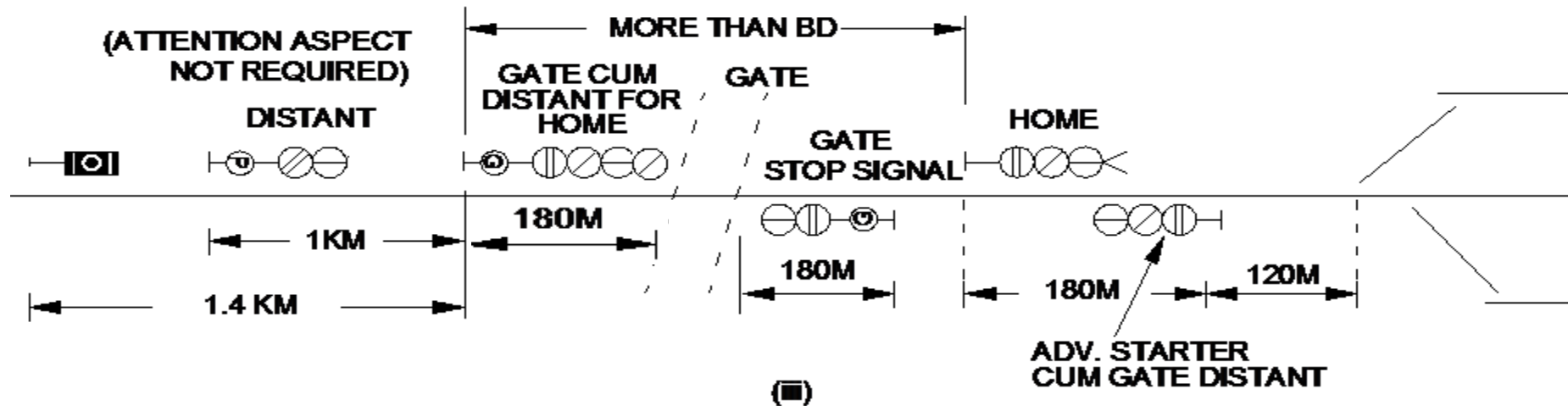


L.C gate is little away from the down Homes, The gate interlocked with down Home signal and the up advanced starter and with routing homes if required.



Sr.	Distant	Gate cum Distance	Home	Remarks
1	YELLOW	RED	----	Stop at Gate Signal
2	DOUBLE YELLOW	YELLOW	RED	Stop at Home Signal
3	DOUBLE YELLOW	YELLOW	YELLOW / YELLOW WITH ROUTE	Going to be received on main line / loop line
4	GEREEN	GEREEN	GEREEN	Train is on run through via main line

L.C. gate is located more than a train length in rear of the Homes and less than BD. (1km) between gate signal and Homes. The gate stop signals in both directions have to be provided with 'G' marker at 180 m in rear of the L.C gate



Sr.	Distant	Gate cum Distance	Home	Remarks
1	YELLOW	RED	----	Stop at Gate Signal
2	GEREEN	YELLOW	RED	Stop at Home Signal
3	GEREEN	DOUBLE YELLOW	YELLOW / YELLOW WITH ROUTE	Going to be received on main line / loop line
4	GEREEN	GEREEN	GEREEN	Train is on run through via main line

L.C gate is just ahead of the Distant Signal and far in rear of Homes. The gate stop signals with 'G' markers are provided on either side of the L.C. gate at 180 metres. The down distant will have only yellow and green aspects, the YY (attention) aspect can be dispensed with.

LEVEL CROSSING GATE

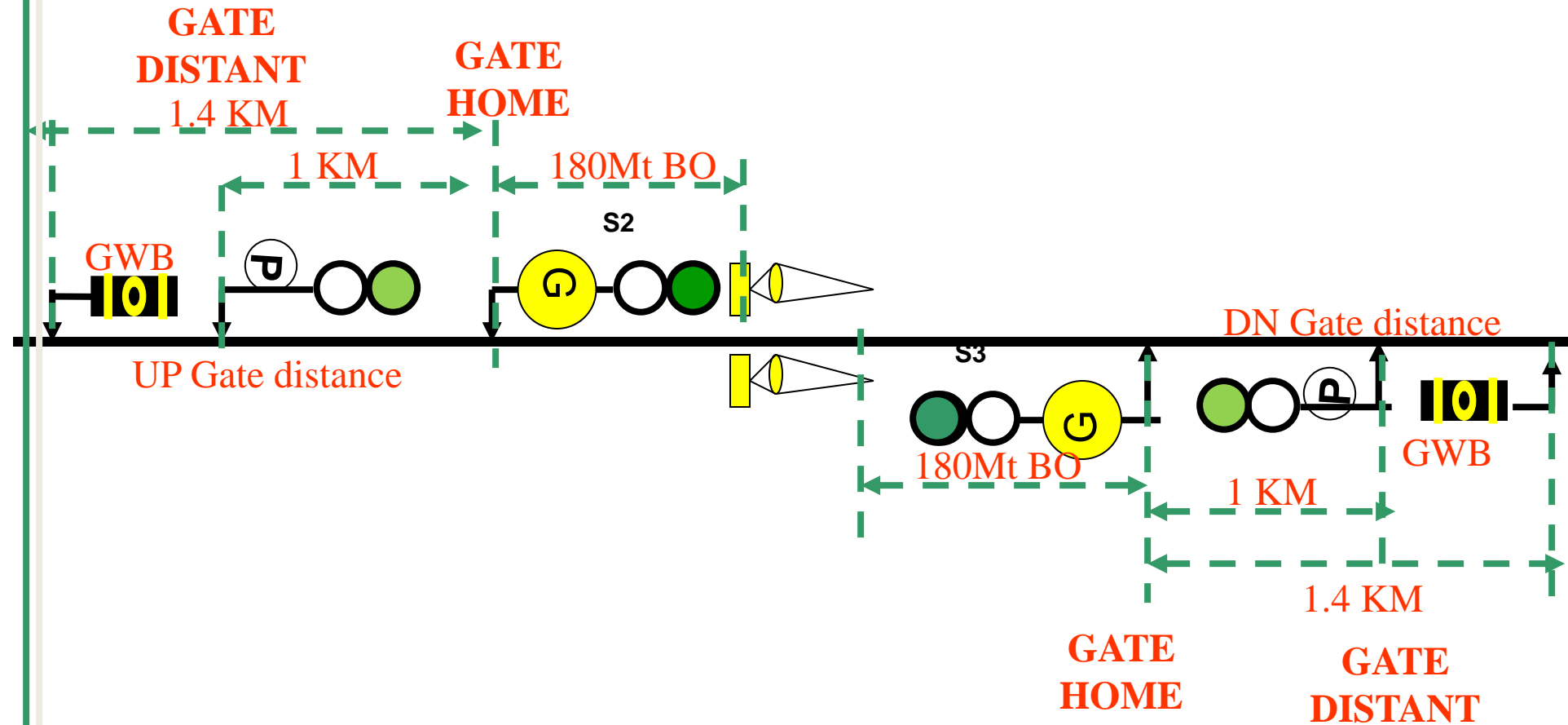
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- Types of gate
 - Movable barrier
 - Swing barrier
 - Lifting barrier

LC Gates are classified

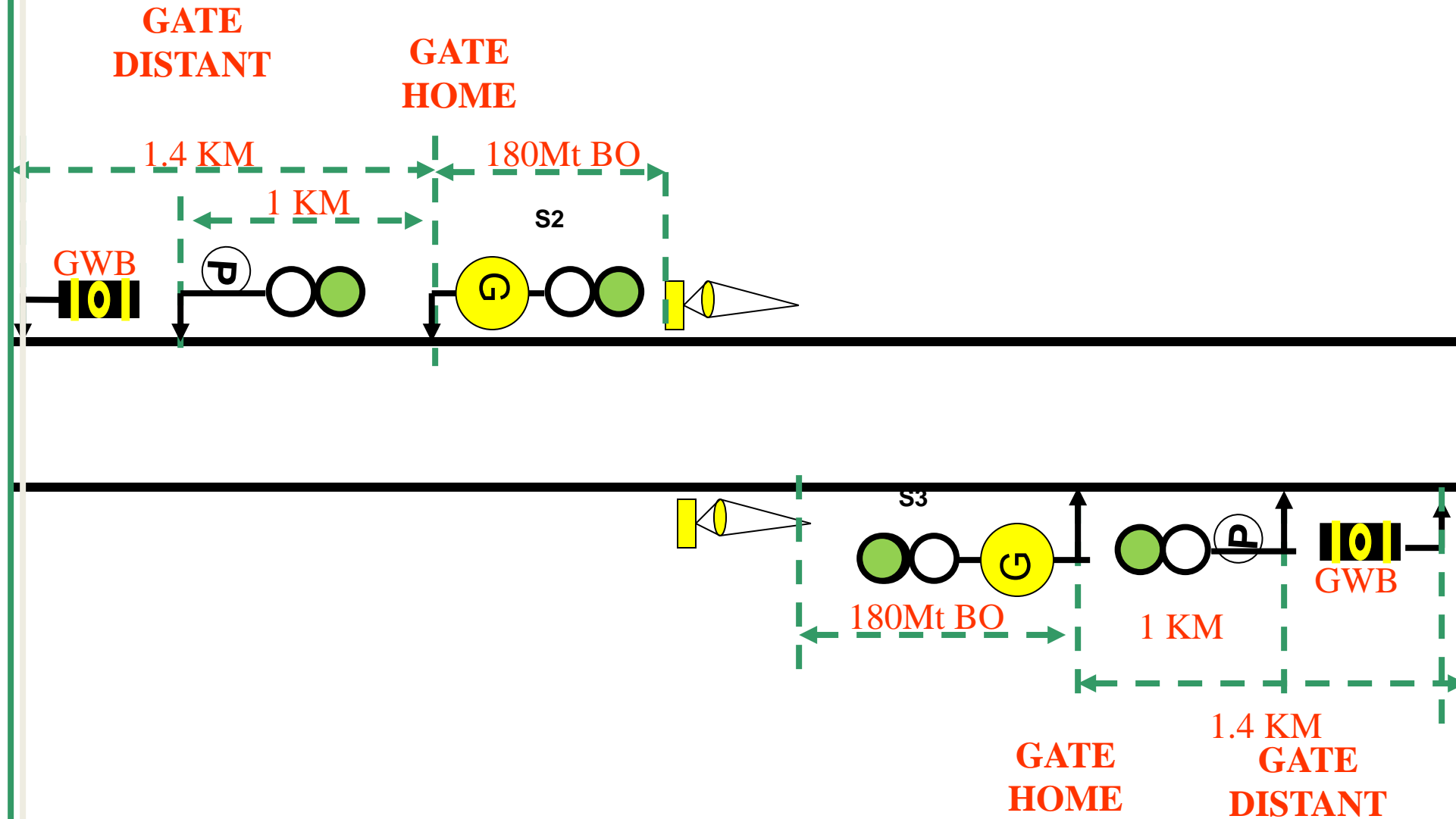
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4. 'B-2'- Class- More than 20000 (TVU)
5. 'C' – Class – All there road user
6. 'D' – Class – For cattle crossing.

“Sensor will be taken once in three year, 7 days consecutive, on an average”.

Section gate on single line with MACLS



SECTION GATE ON DOUBLE LINE WITH MACLS





THANK
YOU



Qs..????.