Handbook 20

General duties of a safe work leader (SWL) working outside a possession

Issue 2
September 2015
Comes into force
05 December 2015
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Sighting distance chart (in miles and yards)
1 Competence and identification

To act as a safe work leader (SWL), you must have with you a valid SWL certificate of competence issued by your employer.

You must wear a SWL armlet on the left arm or a SWL badge on the upper chest when you are carrying out the duties of a SWL.

You must not wear the SWL armlet or badge at any other time.

Except when you are the SWL in charge of a work site in a possession, the armlet or badge must have SWL in white letters on a blue background.

2 Work that you can do without the line being blocked

2.1 Work that does not affect the safety of the line

If the work will not affect the safety of the line and nobody will come within 2 metres (6 feet 6 inches) of the nearest running rail of an open line, or 1.25 metres (4 feet) if a rigid or tensioned barrier or permanent fence is used, you may carry out the work without blocking that line.
2.2 Patrolling, examining or inspecting when alone

You can patrol, examine or inspect an open line when you are alone if you are sure you will be able to look up often enough (at least every 5 seconds) to see any train approaching and:

- you will be able to reach a position of safety at least 10 seconds before any approaching train arrives, and
- you can reach that position of safety without crossing any open line other than the one you are on.

You must not rely on these arrangements during darkness, poor visibility or when in a tunnel.

3 Work that needs the line to be blocked

3.1 Work group at risk from trains

If the activity could be carried out using lookout or equipment warning but neither is available, the line concerned must be blocked or another safe system used.
3.2 Work affecting the safety of the line

Unless specifically allowed in your company instructions, you must consider the following as types of work that affect the safety of the line.

- Carrying heavy or awkward equipment or materials across or along the line.
- Work that will affect the condition of the track.
- Digging a hole or stacking material or equipment close to the line or near the edge of a platform.
- Placing a hand trolley on the line.
- Using plant within 2 metres (6 feet 6 inches) of the line.
- Using a road vehicle within 2 metres (6 feet 6 inches) of the line.
- Using on-track plant (OTP) that will foul the line.
- Using a crane or other lifting equipment that will foul the line.
- Attaching anything to a railway structure, such as a bridge, a station roof or building, a signal post or gantry, or electrical equipment.
- Using a ladder, unless secured so that it cannot fall towards the line.
- Using scaffolding or a climbing tower, unless secured so that it cannot fall or move towards the line.
- Felling or trimming trees.
3.3 Before starting work

You must not start or allow your group to start work as shown in section 3.1 or 3.2 unless the line concerned is blocked by one of the following methods.

- You have blocked the line as shown in handbook 21.
- The line has been blocked by a protection controller (PC) and you have agreed a safe system of work with that PC, as shown in handbook 21.
- Your site of work is within a siding and you have taken possession of the siding, or you have agreed a safe system of work with the person in charge of the siding possession (PICOS) as shown in handbook 13.
4 Working with a group

4.1 Remaining with your group

You must stay with your group so that you are able to personally observe and advise everyone until:

- work is completed and your group is no longer on or near the line, or
- you are replaced by another SWL or a COSS.

4.2 Safe systems of work

The following are the safe systems of work available.

**Safeguarded** - where every line at the site of work has been blocked to normal train movements.

**Fenced** - where there is a suitable barrier between the site of work and any line open to the normal movement of trains.

**Site warden warning** - where there is a distance of at least 2 metres (6 feet 6 inches) between the nearest running rail of an open line and the site of work, and a site warden has been appointed.

There must be an identifiable limit to the site of work.

If it is only you and one other person in the group, you do not need to appoint a site warden. However, you must make sure neither of you go any closer than 2 metres (6 feet 6 inches) to the nearest running rail of the open line.
Equipment warning - where there is equipment provided to give enough warning to allow everyone involved to reach a position of safety before any train arrives at the site of work.

Lookout warning - where one or more lookouts are positioned to provide enough warning to allow everyone involved to reach a position of safety before any train arrives at the site of work.

4.3 Setting up the safe system of work

There must be at least 3 metres (10 feet) between any open line and any member of your group.

Where this is not possible, the instructions shown in 4.4, 4.5, 4.6, 4.7 or 4.8 must be applied.

Before allowing your group to walk to the site of work or to start work, you must have:

- set up the safe system of work so that nobody in the group will be put in danger by a passing train
- tested the safe system of work to make sure it is adequate
- briefed everyone in the group about the safe system of work.
4.4 Blocking the line

You may use a blocked line as part of the safe system of work.

You must only consider a line to be blocked if at least one of the following applies.

- You have blocked the line or lines concerned as shown in handbook 21.
- The line or lines concerned have been blocked by a PC and you have agreed a safe system of work with that PC.
- Your site of work is within a siding and you have agreed the safe system of work with the PICOS, as shown in handbook 13.

When all lines are blocked, you may consider your safe system of work as safeguarded.
4.5 Safe system of work using a safety barrier (fenced)

If there is a safety barrier that is approved by the infrastructure manager between you and any open line, you may work as follows.

Rigid or tensioned barrier or permanent fence
As long as the barrier or fence is at least 1.25 metres (4 feet) from the nearest running rail of the open line, you may allow work to start on the safe side of the fence.

Fence made of barricade tape or plastic netting
If the fence is placed at 1.25 metres (4 feet) from the nearest running rail of the open line and the maximum speed on the open line is no greater than 40 mph (65 km/h), you may work on the safe side of the fence.

If the fence is at least 2 metres (6 feet 6 inches) from the nearest running rail of the open line, you may work on the safe side of the fence. There is no restriction on the speed of trains on the open line.

Note: A rigid or tensioned barrier placed at 0.9 metres (3 feet) from an open line along with automatic track warning system (ATWS) is sometimes used when on-track plant is being used close to an open line. You must not use a barrier at this distance as part of your safe system of work.
4.6 Safe system of work using site wardens (site-warden warning)

You may set up a safe system of work using one or more site wardens as long as all of the following conditions apply.

- There will be at least 2 metres (6 feet 6 inches) between the site of work (the safe area) and the nearest running rail of an open line.
- You appoint one or more site wardens to watch all members of the group to make sure no one is allowed to go outside the safe area.
- You and each site warden can clearly identify the limits of the safe area.
- If you act as a site warden, you must take no part in the actual work.

Before starting work

You must check that each site warden is competent and is correctly wearing a site warden armlet or badge.

You must point out the limits of the safe area and who will be the site wardens to each member of the group.

You must agree with each site warden and each member of the group what warning the site warden is to give if anyone attempts to move out of the safe area.

You must position each site warden so that the limits of the safe area and everyone in the group can clearly be seen and the warning will be heard by everyone in the group.
You must test the warning before allowing work to start.
You must make sure nobody distracts the site warden.

**Note:** If it is only you and one other person in the group, you do not need to appoint a site warden, but you must make sure neither of you go any closer than 2 metres (6 feet 6 inches) to the nearest running rail of the open line.

### 4.7 Safe system of work using ATWS, TOWS or LOWS (equipment warning)

If there is an automatic track warning system (ATWS), train operated warning system (TOWS) or lookout operated warning system (LOWS), you can use this equipment to give warning of approaching trains as long as all of the following conditions apply.

- You or a member of your group are competent to use the equipment at that location.
- The equipment will provide an adequate warning of all approaching trains on the line or lines concerned.
- You and all members of the group will be able to stop work and reach the position of safety at least 10 seconds before the train arrives.

You must test the warning before allowing work to start.

If the equipment is already in use when you arrive, you must reach a clear understanding with the other person using it so that you each know what is happening.

When leaving the site of work, you must agree with anyone else using the equipment whether or not to leave the equipment in use.
4.8 Safe system of work using lookouts (lookout warning)

Conditions
You may set up a safe system of work using one or more lookouts as long as all of the following conditions apply.

• There is no realistic alternative safe system of work that can be used.
• Using lookouts at that location is not prohibited.
• You do not act as a lookout.
• There will be no need for anyone to cross more than two open lines to reach the position of safety.
• The group will not need to walk more than 25 metres (approximately 25 yards) along the line to reach the position of safety.
• The warning time needed is not more than 45 seconds.
• The warning time will be enough for everyone in the group to stop work and to then reach the position of safety at least 10 seconds before any train arrives (this is called the required warning time).
Arranging lookouts
You must make sure each lookout:

• knows the direction and lines that need to be watched for approaching trains
• is not distracted
• takes no part in the actual work
• has no other duties.

You must check that each lookout is competent and is correctly wearing a lookout armlet or badge.

You must position site lookouts so that:

• any train approaching can clearly be seen
• the required warning time is available (use distant and intermediate lookouts if necessary)
• the warning will be received by everyone in the group (if necessary, use more than one site lookout).

On single or bi-directional lines, or when single line working is taking place, you must make sure enough warning is given for both directions.

You must test the warning before allowing work to start.
Deciding what is an approaching train
In deciding which lines the lookout needs to watch for approaching trains, you must consider all of the following.

a) A line on which the group is walking or working.

b) A line adjacent to a) that could also put anyone in the group in danger.

c) A line that has to be crossed to reach the position of safety.

d) A line on which a train could be routed towards a), b), or c) from any direction.

e) A line where, at the required sighting distance, it is not possible to tell whether a train is on a line shown in a) to d) above.

Note: A lookout is not needed for an adjacent line, as shown in b) above, if a train approaching on the adjacent line cannot put the group in danger, for example where the group will not pass beyond the six-foot rail.
Using distant and intermediate lookouts
If the site lookout cannot achieve enough sighting to provide the required warning time, you may appoint distant and intermediate lookouts as long as the following conditions apply.

- It is daylight with clear visibility.
- Not more than one distant and one intermediate lookout is used in any direction.

You must make sure that any distant or intermediate lookouts are located in a position of safety.

However, if the site of work is mobile and the intermediate and distant lookouts will walk while carrying out their duties, they may leave the position of safety when they need to pass an obstruction.

You must make sure the distant lookout or intermediate lookout communicate correctly with each site lookout by using the blue and white chequered flags.

Method of warning used by a site lookout
You must choose the warning to suit the type of work and the location from:

- a horn
- a whistle
- a touch.

You may, if necessary, also get the lookout to shout.
When a site lookout gives the warning
You must make sure everyone goes to the position of safety when the warning is given.

If someone does not immediately stop work and go to the position of safety, the lookout will give an urgent warning.

Make sure tools and equipment are taken to the position of safety, unless they are too heavy to be moved by the slipstream of a passing train and are left clear of the line.

Working out the required warning time
You must consider how long it will take to stop work and place any tools or equipment down and how long it will take to get to the position of safety.

You may take into account an emergency speed restriction (ESR) or temporary speed restriction (TSR) as long as it has been imposed for the work.

You must add the following:
• 5 seconds for each additional direction the site lookout will be looking
• 5 seconds for each distant lookout
• 5 seconds for each intermediate lookout.

You must then add 10 seconds to be in the position of safety before the train arrives.

Use the sighting distance chart, shown at the back of this handbook, to work out the required sighting distance needed for your safe system of work.
You must not use lookouts as your safe system if:

• they cannot achieve the required sighting distance
• the warning time needed is more than 45 seconds
• the number of lookouts needed is not available.

**Using lookouts during darkness, poor visibility or when in or near a tunnel**

You may use lookouts during darkness, poor visibility or when in or near a tunnel as long as:

• the speed of approaching trains is no greater than 20 mph (30 km/h)
• the site lookout has enough sighting distance available
• you do not need to use a distant lookout or an intermediate lookout.

**4.9 Working in a siding**

If you are competent to do so, you may be the PICOS.

If it is necessary to block one or more sidings for the work to take place, you must not allow that work to start until you have taken possession of the siding, or if you are not the PICOS, the PICOS has given you permission to start work.
5 SWL briefing

Before your group goes on or near the line, you must make sure each person fully understands the safe system of work.

You will need to tell the group:

• the nature of the work
• the location of the work
• which lines have been blocked and which are still open
• if they are using a safety barrier, not to pass beyond the barrier and not to lean or place tools on it
• if they are using site wardens, who the site wardens are and the limits of the safe area
• if they are using equipment warning, the method of warning and the position of safety
• if they are using lookouts, who the site lookouts are, the method of warning and the position of safety.

You must make sure each member of the group confirms they understand the safe system of work by signing your safe-work briefing form (RT9909).
6 Visitor permits

If a person is issued with a visitor permit as shown in your company instructions, you may allow that person to take part in the work even though they do not hold the required track safety competence.

The person concerned must give you a document telling you that their visit onto the operational railway has been approved.

You must:

- brief the person on the safe system of work
- sign and keep the visitor permit
- stay with the person until they leave the operational railway.
## Aid to working out warning times

<table>
<thead>
<tr>
<th></th>
<th>Up</th>
<th>Down</th>
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<tbody>
<tr>
<td>Maximum speed (from the Sectional Appendix or TSR or ESR)</td>
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<tr>
<td>Time needed to stop work and down tools</td>
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<td>Time needed for everyone to reach a position of safety</td>
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<tr>
<td>Add 5 seconds for each additional direction the site lookout is looking</td>
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<td>Add 5 seconds for each distant lookout</td>
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<tr>
<td>Add 5 seconds for each intermediate lookout</td>
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<tr>
<td>Add 10 seconds (minimum time to be in a position of safety)</td>
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<td>Total warning time needed (Must be no more than 45 secs)</td>
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<td>Sighting distance needed</td>
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<td>Sighting distance available</td>
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## Sighting distance chart (in metres) mph

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<th>Maximum Speed</th>
<th>125 mph</th>
<th>120 mph</th>
<th>115 mph</th>
<th>110 mph</th>
<th>105 mph</th>
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### Notes
- Maximum Speed: The maximum speed at which the vehicle can travel.
- Sighting distance, in metres (m), needed to give a warning time of: The distance at which a warning must be given to allow the driver to react.
- Issue 2

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### Sighting distance chart (in metres) mph

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</tr>
<tr>
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<td>440m</td>
<td>880m</td>
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<tr>
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<td>4800m</td>
<td>5280m</td>
<td>5760m</td>
</tr>
</tbody>
</table>

Sighting distance, in metres (m), needed to give a warning time of

- 15 secs
- 20 secs
- 25 secs
- 30 secs
- 35 secs
- 40 secs
- 45 secs

Reported by Dr. John Smith

Date: 05/12/2015

Uncontrolled When Printed
Document comes into force on 05/12/2015
Supersedes GERT8000-HB20 Iss 1 on 05/12/2015
### Sighting distance chart (in metres) km/h

<table>
<thead>
<tr>
<th>Maximum Speed</th>
<th>15 secs</th>
<th>20 secs</th>
<th>25 secs</th>
<th>30 secs</th>
<th>35 secs</th>
<th>40 secs</th>
<th>45 secs</th>
</tr>
</thead>
<tbody>
<tr>
<td>200 km/h</td>
<td>900m</td>
<td>1200m</td>
<td>1400m</td>
<td>1700m</td>
<td>2000m</td>
<td>2300m</td>
<td>2600m</td>
</tr>
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<td>195 km/h</td>
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<td>1550m</td>
<td>1800m</td>
<td>2050m</td>
<td>2300m</td>
</tr>
<tr>
<td>185 km/h</td>
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<td>1000m</td>
<td>1200m</td>
<td>1450m</td>
<td>1700m</td>
<td>1950m</td>
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<tr>
<td>175 km/h</td>
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<td>1500m</td>
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<td>1900m</td>
</tr>
<tr>
<td>170 km/h</td>
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<td>800m</td>
<td>800m</td>
<td>1000m</td>
<td>1200m</td>
<td>1200m</td>
<td>1400m</td>
</tr>
<tr>
<td>160 km/h</td>
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<td>800m</td>
<td>900m</td>
<td>1100m</td>
<td>1100m</td>
<td>1300m</td>
</tr>
<tr>
<td>155 km/h</td>
<td>650m</td>
<td>650m</td>
<td>850m</td>
<td>850m</td>
<td>850m</td>
<td>850m</td>
<td>850m</td>
</tr>
<tr>
<td>150 km/h</td>
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<td>800m</td>
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</tr>
<tr>
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</tr>
<tr>
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</tr>
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<td>125 km/h</td>
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<td>350m</td>
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<td>300m</td>
</tr>
<tr>
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<td>250m</td>
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<td>250m</td>
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<tr>
<td>110 km/h</td>
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<td>200m</td>
<td>200m</td>
</tr>
<tr>
<td>105 km/h</td>
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<td>150m</td>
<td>150m</td>
<td>150m</td>
<td>150m</td>
<td>150m</td>
<td>150m</td>
</tr>
<tr>
<td>100 km/h</td>
<td>100m</td>
<td>100m</td>
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<td>100m</td>
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<td>100m</td>
<td>100m</td>
</tr>
</tbody>
</table>
## Sighting distance chart (in metres) km/h

<table>
<thead>
<tr>
<th>Maximum Speed</th>
<th>95 km/h</th>
<th>90 km/h</th>
<th>80 km/h</th>
<th>70 km/h</th>
<th>65 km/h</th>
<th>60 km/h</th>
<th>55 km/h</th>
<th>50 km/h</th>
<th>40 km/h</th>
<th>30 km/h</th>
<th>25 km/h</th>
<th>15 km/h</th>
<th>10 km/h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sighting distance, in metres (m), needed to give a warning time of</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45 secs</td>
<td>1250m</td>
<td>1100m</td>
<td>1000m</td>
<td>900m</td>
<td>920m</td>
<td>820m</td>
<td>720m</td>
<td>620m</td>
<td>540m</td>
<td>460m</td>
<td>320m</td>
<td>220m</td>
<td>120m</td>
</tr>
<tr>
<td>40 secs</td>
<td>1100m</td>
<td>950m</td>
<td>800m</td>
<td>720m</td>
<td>640m</td>
<td>540m</td>
<td>480m</td>
<td>400m</td>
<td>360m</td>
<td>280m</td>
<td>180m</td>
<td>100m</td>
<td>80m</td>
</tr>
<tr>
<td>35 secs</td>
<td>950m</td>
<td>800m</td>
<td>650m</td>
<td>570m</td>
<td>500m</td>
<td>440m</td>
<td>380m</td>
<td>300m</td>
<td>260m</td>
<td>200m</td>
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<td>40m</td>
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<tr>
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<td>600m</td>
<td>520m</td>
<td>460m</td>
<td>400m</td>
<td>340m</td>
<td>280m</td>
<td>240m</td>
<td>160m</td>
<td>80m</td>
<td>40m</td>
<td></td>
</tr>
</tbody>
</table>
## Sighting distance chart (in miles and yards)

<table>
<thead>
<tr>
<th>Maximum Speed</th>
<th>125 mph</th>
<th>120 mph</th>
<th>115 mph</th>
<th>110 mph</th>
<th>105 mph</th>
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<th>95 mph</th>
<th>90 mph</th>
<th>85 mph</th>
<th>80 mph</th>
<th>75 mph</th>
<th>70 mph</th>
<th>65 mph</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 secs</td>
<td>920 y</td>
<td>860 y</td>
<td>820 y</td>
<td>780 y</td>
<td>740 y</td>
<td>700 y</td>
<td>660 y</td>
<td>640 y</td>
<td>600 y</td>
<td>560 y</td>
<td>520 y</td>
<td>480 y</td>
<td></td>
</tr>
<tr>
<td>20 secs</td>
<td>1240 y</td>
<td>1180 y</td>
<td>1140 y</td>
<td>1100 y</td>
<td>1040 y</td>
<td>1000 y</td>
<td>1140 y</td>
<td>1100 y</td>
<td>1040 y</td>
<td>1000 y</td>
<td>960 y</td>
<td>920 y</td>
<td>880 y</td>
</tr>
<tr>
<td>25 secs</td>
<td>1540 y</td>
<td>1480 y</td>
<td>1420 y</td>
<td>1360 y</td>
<td>1300 y</td>
<td>1240 y</td>
<td>1360 y</td>
<td>1300 y</td>
<td>1240 y</td>
<td>1180 y</td>
<td>1140 y</td>
<td>1080 y</td>
<td>1040 y</td>
</tr>
<tr>
<td>30 secs</td>
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<td>1780 y</td>
<td>1720 y</td>
<td>1660 y</td>
<td>1600 y</td>
<td>1540 y</td>
<td>1660 y</td>
<td>1600 y</td>
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<td>1480 y</td>
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</tr>
<tr>
<td>35 secs</td>
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<td>1900 y</td>
<td>1840 y</td>
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<td>2320 y</td>
<td>2260 y</td>
<td>2200 y</td>
</tr>
</tbody>
</table>

Sighting distance chart (in miles and yards), needed to give a warning time of 20 secs, 25 secs, 30 secs, 35 secs, 40 secs, 45 secs.
### Sighting distance chart (in miles and yards)

<table>
<thead>
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<th>Maximum Speed</th>
<th>14 mile</th>
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<th>10 mile</th>
<th>8 mile</th>
<th>6 mile</th>
<th>4 mile</th>
<th>2 mile</th>
<th>1 mile</th>
</tr>
</thead>
<tbody>
<tr>
<td>60 mph</td>
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<td>1080 y</td>
<td>980 y</td>
<td>880 y</td>
<td>780 y</td>
<td>680 y</td>
<td>580 y</td>
<td>480 y</td>
</tr>
<tr>
<td>55 mph</td>
<td>1040 y</td>
<td>960 y</td>
<td>860 y</td>
<td>760 y</td>
<td>660 y</td>
<td>560 y</td>
<td>460 y</td>
<td>360 y</td>
</tr>
<tr>
<td>50 mph</td>
<td>920 y</td>
<td>840 y</td>
<td>740 y</td>
<td>640 y</td>
<td>540 y</td>
<td>440 y</td>
<td>340 y</td>
<td>240 y</td>
</tr>
<tr>
<td>45 mph</td>
<td>800 y</td>
<td>720 y</td>
<td>620 y</td>
<td>520 y</td>
<td>420 y</td>
<td>320 y</td>
<td>220 y</td>
<td>120 y</td>
</tr>
<tr>
<td>40 mph</td>
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<td>580 y</td>
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<td>280 y</td>
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<td>40 y</td>
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<td>35 mph</td>
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<td>160 y</td>
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<td>80 y</td>
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<td>80 y</td>
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</tr>
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<td>40 y</td>
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<td>5 y</td>
</tr>
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<td>5 y</td>
<td>5 y</td>
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</tbody>
</table>