People plant interface: Excavator restricted zone

This visual standard clarifies information within the management system concerning the control of people-plant interface. It shall be included as part of local training programmes, management plans or procedures.

**Restricted zone:**
Danger zone. Keep clear at all times.

**Machine operator’s line of sight:**
This is the safest area for approaching an excavator, as it provides the greatest chance of being seen by the operator.

To enter the operator’s line of sight:
1. Make **eye contact** with the operator.
2. **Indicate** that you wish to **approach** by giving a **thumbs-up**.
3. **Wait** for the operator to **ground** the excavator’s bucket.
4. Wait for the operator to apply the **deadman’s lever**.
5. Only approach once the **operator** indicates with a **thumbs-up** that it is safe to do so.

**Things to remember for operators:**

- Lower the boom/bucket or attachment to ground level.
- Power down and apply the deadman’s lever when anyone approaches the excavator.
- Remove the keys when the excavator is left unattended.
- Only release the deadman’s lever when everyone is clear.
- Make sure your clothes don’t get in the way of controls, inadvertently operating the machine.

If in doubt, stay out of a machine’s working area.

Ref. EHS 010-G08.1
People plant interface: Working within the restricted zone

To work within the restricted zone, a safe system of work must firstly be in place:

1. Ensure the Risk Assessment and Method Statement fully covers the work involved e.g. laying drainage.
2. Have a full plan of when and how to enter and exit safely.
3. Only the person(s) who need to reach the machine bucket or lifting point areas, may enter a restricted area. These person(s) entering must be:
   - Experienced in working alongside excavators.
   - Fully briefed on working within a restricted red zone.
   - Informed on the specific risks involved in working in close proximity.
4. The operator must be able to see the person(s) working in the restricted red zone at all times.
5. Agree on the means of communication to be used e.g. radios, verbal or hand signals.

To enter the restricted (red) zone:
- Make eye contact with the operator.
- Indicate that you wish to approach.
- Wait for the operator to ground the excavator’s bucket.
- Wait for the operator to apply the deadman’s lever.
- Only approach once the operator indicates with a thumbs-up that it is safe to do so.
- Only approach through the orange zone.
- Leave by the same way you entered.
- The operator can only move when you are outside the restricted area.

If you are not part of the working group around an excavator – stay away from the restricted zone.
This visual standard clarifies information within the management system concerning the control of people-plant interface. It shall be included as part of local training programmes, management plans or procedures.

- **Restricted zone:**
  - Danger zone. Keep clear at all times.

- **Machine operator’s line of sight:**
  - This is the safest area for approaching a forward tipping dump truck, as it provides the greatest chance of being seen by the operator.
  - To enter the line of sight:
    1. Make **eye contact** with the operator.
    2. **Indicate** that you wish to **approach** by giving a **thumbs up**.
    3. Wait for the operator to apply the **brake** and put the machine in neutral.
    4. Only approach once the **operator** indicates with a **thumbs-up** that it is safe to do so.

- **Crush area:**
  - Avoid crush areas at all times.

**Things to remember for operators:**
- Lower the skip/bucket.
- Apply the handbrake and put the machine in neutral when anyone approaches the truck.
- Remove the keys when the truck is left unattended.
- Only release the brake when everyone is clear.
- Make sure your clothes don’t get in the way of controls, inadvertently operating the machine.

**If in doubt, stay out** of a machine’s working area.
People plant interface:
Large articulated dump truck 10 tonne restricted zone

This visual standard clarifies information within the management system concerning the control of people-plant interface. It shall be included as part of local training programmes, management plans or procedures.

Restricted zone:
Danger zone. Keep clear at all times.

Machine operator’s line of sight:
This is the safest area for approaching a large articulated dump truck, as it provides the greatest chance of being seen by the operator.

To enter the line of sight:
1. Make eye contact with the operator.
2. Indicate that you wish to approach by giving a thumbs-up.
3. Wait for the operator to apply the brake and put the machine in neutral.
4. Only approach once the operator indicates with a thumbs-up that it is safe to do so.

 Crush area:
Avoid crush areas at all times.

If in doubt, stay out of a machine’s working area.

Things to remember for operators:
- Lower the skip/dump body.
- Apply the handbrake and put the machine in neutral when anyone approaches the truck.
- Remove the keys when the truck is left unattended.
- Only release the brake when everyone is clear.
- Make sure your clothes don’t get in the way of controls, inadvertently operating the machine.

Ref. EHS 010-G08.4
This visual standard clarifies information within the management system concerning the control of people-plant interface. It shall be included as part of local training programmes, management plans or procedures.

**Restricted zone:**
Danger zone. Keep clear at all times.

**Machine operator’s line of sight:**
This is the safest area for approaching a shovel loader, as it provides the greatest chance of being seen by the operator.

To enter the line of sight:
1. Make **eye contact** with the operator.
2. Indicate that you wish to approach by giving a **thumbs-up**.
3. **Wait** for the operator to **ground** the loader’s bucket.
4. Wait for the operator to apply the **brake** and put the machine in neutral.
5. Only approach once the **operator** indicates with a **thumbs-up** that it is safe to do so.

**Crush area:**
Avoid crush areas at all times.

**Things to remember for operators:**
- Lower bucket/shovel to ground level.
- Apply the handbrake and put the machine in neutral when anyone approaches the loader.
- Remove the keys when the loader is left unattended.
- Only release the brake when everyone is clear.
- Make sure your clothes don’t get in the way of controls, inadvertently operating the machine.

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If in doubt, stay out of a machine’s working area.
This visual standard clarifies information within the management system concerning the control of people-plant interface. It shall be included as part of local training programmes, management plans or procedures.

**Restricted zone:**
Danger zone. Keep clear at all times.

**Machine operator’s line of sight:**
This is the safest area for approaching a dozer, as it provides the greatest chance of being seen by the operator.

To enter the line of sight:
1. Make **eye contact** with the operator.
2. Indicate that you wish to approach by giving a **thumbs-up**.
3. Wait for the operator to apply the **deadman’s lever**.
4. Only approach once the operator indicates with a **thumbs-up** that it is safe to do so.

**Things to remember for operators:**
- Lower blade to ground level.
- Power down and apply the deadman’s lever when anyone approaches the dozer.
- Remove the keys when the dozer is left unattended.
- Only release the deadman’s lever when everyone is clear.
- Make sure your clothes don’t get in the way of controls, inadvertently operating the machine.

If in doubt, stay out of a machine’s working area.
This visual standard clarifies information within the management system concerning the control of people-plant interface. It shall be included as part of local training programmes, management plans or procedures.

**People plant interface:**

**Tele-handler restricted zone**

- **Restricted zone:**
  - Danger zone. Keep clear at all times.

- **Machine operator’s line of sight:**
  - This is the safest area for approaching a tele-handler, as it provides the greatest chance of being seen by the operator.
  - To enter the line of sight:
    1. Make **eye contact** with the operator.
    2. Indicate that you wish to approach by giving a **thumbs-up**.
    3. **Wait** for the operator to **ground** the fork.
    4. **Wait for** the operator to apply the **brake** and put the machine in neutral.
    5. **Only approach** once the operator indicates with a **thumbs-up** that it is safe to do so.

**Things to remember for operators:**

- Lower boom/forks to ground level.
- Apply the handbrake and put the machine in neutral when anyone approaches the tele-handler.
- Remove the keys when the tele-handler is left unattended.
- Only release the brake when everyone is clear.
- Make sure your clothes don’t get in the way of controls, inadvertently operating the machine.

**If in doubt, stay out** of a machine’s working area.

Ref. EHS 010-G08.7
This visual standard clarifies information within the management system concerning the control of people-plant interface. It shall be included as part of local training programmes, management plans or procedures.

**Restricted zone:**

Danger zone. Keep clear at all times.

**Machine operator’s line of sight:**

This is the safest area for approaching a small sit-on roller, as it provides the greatest chance of being seen by the operator.

To enter the line of sight:
1. Make **eye contact** with the operator.
2. **Indicate** that you wish to approach by giving a **thumbs-up**.
3. Wait for the operator to apply the **brake** and put the machine in neutral.
4. Only approach once the **operator** indicates with a **thumbs-up** that it is safe to do so.

**Crush area:**

Avoid crush areas at all times.

**Things to remember for operators:**

- Apply the handbrake and put the machine in neutral when anyone approaches the roller.
- Remove the keys when the roller is left unattended.
- Only release the brake when everyone is clear.
- Make sure your clothes don’t get in the way of controls, inadvertently operating the machine.

**If in doubt, stay out** of a machine’s working area.

Ref. EHS 010-G08.8
This visual standard clarifies information within the management system concerning the control of people-plant interface. It shall be included as part of local training programmes, management plans or procedures.

**Restricted zone:**

Danger zone. Keep clear at all times.

**Machine operator’s line of sight:**

This is the safest area for approaching a large roller, as it provides the greatest chance of being seen by the operator.

To enter the line of sight:
1. Make **eye contact** with the operator.
2. **Indicate** that you wish to **approach** by giving a **thumbs-up**.
3. Wait for the operator to apply the **brake** and put the machine in neutral.
4. Only approach once the **operator** indicates with a **thumbs-up** that it is safe to do so.

**Crush area:**

Avoid crush areas at all times.

**Things to remember for operators:**

- Apply the handbrake and put the machine in neutral when anyone approaches the roller.
- Remove the keys when the roller is left unattended.
- Only release the brake when everyone is clear.
- Make sure your clothes don’t get in the way of controls, inadvertently operating the machine.

**If in doubt, stay out** of a machine’s working area.
Group size:
• Ideally between 5 and 20 people (if bigger – see notes at end).

You need:
• A quiet space to talk with your group.
• A 20x20 metre cordoned off part of site e.g. car park or site area with good ground conditions and no vehicle movements.
• A 15te excavator (or as close to it as possible) to place in the centre of the area, with good even ground to walk around it. This session can be delivered using any item of plant in order to illustrate the red zones.
• Some barriers or cones to mark out the red zone in front of the plant (doesn’t need to be all the way round).

Example script:
• Introduce yourself!
• Explain why you are doing this session. For example, “Because I am really worried about people getting hurt by getting hit by plant.” Make the message personal to you.

Does anyone know of some recent accidents involving people being hit by plant?
(If no response, use the following as examples: Mihai Hondru, the banksman/vehicle marshal that was run over by a Dozer on the M25 in 2010, or more recently Ian Walker who got crushed by a wheeled excavator in Aberdeen).
“These examples are enough to tell us that we all have a real risk of being seriously hurt or killed by plant. The positive message is if you take in and follow the instructions in this session you will not get hurt!”

What is the restricted or RED ZONE?
The correct answer is the working area of plant. It is the full swing radius of an excavator, or the immediate area that a wheeled/tracked item can move into and hit you. Restricted zones are areas where access is strictly controlled. You can only enter the red zone if you follow the correct procedure; otherwise keep clear at all times.

Explain the three main activities that you will do:
1. **Sit in cab of machine.** Objective is to appreciate the visibility inside the cab and the blind spots.
2. **Walk around the machine.** Objective is to imagine how you would feel if machine was running.
3. **Thumbs up.** Demonstrate this positive form of communication to attract attention of the operator.

• Ask everyone to give you a thumbs up.
• Walk everyone over to the machine and show them the deadman lever – locked and unlocked position – and explain the difference.
If we are standing here in the red zone, what position should the lever be?

“Never stand here if the machine is unlocked.”

- Show everyone how to safely get in and out of the machine (3 points of contact, back facing outwards)
- Explain to them (and show them) that when you are in the machine to put the deadman lever into the unlocked position and look for the person wanting to enter your working area, giving you a thumbs up. When you see them, lock the deadman lever and give them a thumbs up back.
- Walk everyone back out of the red zone, and select the first candidate to get into the cab.
- Assemble everyone else behind a barrier or cone, facing the front of the machine.
- In groups of 2 or 3 get them to attract the attention of the operator with a thumbs up, get them to check that the machine has been disabled and then ask, “Are you happy to walk up now?”
- Walk them to the rear of the machine, in touching distance of the counterweight. Ask them “If the engine was running and you were stood here, how would you feel?” or “What would your family say to you if you were standing here?” Ask the same question on the blind side of the machine.
- Walk them back to the rest and repeat the walk-around with the next group of 2-3 people. Also switch the person in the cab of the machine for each walk round.
- Once everyone has done the walk-around, get the remaining people who haven’t been in the cab of the machine to get in line. In turns they will indicate via thumbs up to get the person in the cab’s attention to enter the red zone and replace them.

Summary:

1. What have you learnt about visibility from the cab? Is it good or bad?
   “Even though there are 360º cameras that eliminate the blind spots, which are great for the operator, it doesn’t change how much at risk you are by standing close to plant.”

2. How did you feel standing close to the plant? Good or bad?
   “You all gave me similar answers. So why are people on site sometimes so close to plant?”

3. Thumbs Up: how aware do you think the operator was of you when he gave you the thumbs up?
   “It is now very common for plant to have a sign on it saying ‘Give a thumbs up to the operator before approaching’. This is great but do we all do it? Think of the rail industry - if you are trackside and a train approaches, everyone has been trained to signal the driver. So if they can do it on rail, why can’t we do it with plant? Especially as it is a more frequent activity.”

   When you give a thumbs up to an operator it is more powerful than just eye contact. You are asking them if you can come into their area and that they look after you when you are there. When the operator acknowledges and gives you a thumbs up back, they are accepting you into this area and responsibility for you.

   Thumbs up is what we do EVERY TIME on this project to keep ourselves and others safe.

4. What are we going to do, every time, around plant?
   Correct answer is: Keep clear of the working area of plant (red zone), unless the operator has disabled the machine and given you a thumbs up.

End of session:
- Give out red zone stickers (where provided).
- Thank everyone for their participation.
- Ask for feedback; sometimes there are some important points people raise, especially operatives, either about what things are really like on site or simple improvement measures. Raise these with a Senior General Foreman, Works Manager or H&S Manager.

Notes:
- For bigger groups:
  - It might be time-consuming to get every person to sit in the machine. Try and focus on those who’ve never been inside plant before or have some people get in and out of the cab after the session.
  - Have more than one person walk around the plant at the same time, e.g. groups of 5.

- This is just a guide; each trainer who does this session will have their own style of delivery.
- Be aware that not everyone will be completely fluent in or the same standard of English - use visual props and actions, don’t just talk.
- There is deliberately very little mention of technology and safety specification on plant, because this session is focused on the right behaviours around plant.

Acknowledgement:
Our thanks go to Rob Lynch (Director of L Lynch) for sharing the original material this content is based upon.
People plant interface: CFA piling rig restricted zone

This visual standard clarifies information within the management system concerning the control of people-plant interface. Where applicable, it must be included as part of local training programmes, management plans or procedures.

**Operator’s line of sight:**

This is the **safest zone for approaching**, as it provides the greatest chance of being seen by the operator. To enter the operator’s line of sight:

1. **Make eye contact** with the rig attendant.
2. **Indicate** that you wish to approach.
3. **Wait** for the operator to cease auger rotation.
4. **Only approach** once the rig attendant indicates with a thumbs-up that it is **safe** to do so.

**Restricted zone:**

- Only the rig attendant can authorise access to the restricted zone.
- Only enter the restricted zone once the rig attendant indicates it is safe to do so.
- The operator shall neither track nor slew whilst personnel, other than the rig attendant, are in the restricted zone.
- Plant with a fully-enclosed cab can enter the restricted zone whilst the auger is rotating, when authorised and controlled by the rig attendant.
- Personnel are permitted to work within the restricted area to set the parameters of the rig or receive rig training. They must be in a position of safety on the running board and protected by an overhead canopy.

**Things to remember:**

- **Fences and walkways** – If perimeter fences or site walkways are within the piling restricted zones, ensure there are controls in place, such as:
  - Covered walkways
  - Increased height hoardings
  - A pedestrian marshall

- **Rig attendant** – Challenge anyone entering the restricted zone who does not have your permission, and inform a supervisor.

- **Rig operator** – Stop rig operations if an unauthorised person enters the restricted zone.

**Minimum coverage of barriers** to be placed within the restricted zone.
People plant interface:
Rotary piling rig restricted zone

This visual standard clarifies information within the management system concerning the control of people-plant interface. Where applicable, it must be included as part of local training programmes, management plans or procedures.

Operator’s line of sight:
This is the safest zone for approaching, as it provides the greatest chance of being seen by the operator. To enter the operator’s line of sight:

1. Make eye contact with the rig attendant.
2. Indicate that you wish to approach.
3. Wait for the operator to cease auger rotation.
4. Only approach once the rig attendant indicates with a thumbs-up that it is safe to do so.

Restricted zone:
- Only the rig attendant can authorise access to the restricted zone.
- Only enter the restricted zone once the rig attendant indicates it is safe to do so.
- The operator shall neither track nor slew whilst personnel, other than the rig attendant, are in the restricted zone.
- Plant with a fully-enclosed cab can enter the restricted zone whilst the auger is rotating, when authorised and controlled by the rig attendant.

Things to remember:

Fences and walkways – If perimeter fences or site walkways are within the piling restricted zones, ensure there are controls in place, such as:
- Covered walkways
- Increased height hoardings
- A pedestrian marshall

Rig attendant – Challenge anyone entering the restricted zone who does not have your permission, and inform a supervisor.

Rig operator – Stop rig operations if an unauthorised person enters the restricted zone.

Minimum coverage of barriers to be placed within the restricted zone.

Ref. EHS 010 G08.12
Driller’s line of sight:

This is the safest zone for approaching, as it provides the greatest chance of being seen by the driller. To enter the driller’s line of sight:

1. Make eye contact with the spanner man.
2. Indicate that you wish to approach.
3. Wait for the driller to cease auger rotation.
4. Only approach once the spanner man indicates with a thumbs-up that it is safe to do so.

Restricted zone:

- Only the spanner man can authorise access to the restricted zone.
- Only enter the restricted zone once the spanner man indicates it is safe to do so.
- The driller shall neither track nor slew whilst personnel, other than the spanner man, are in the restricted zone.
- Plant with a fully-enclosed cab can enter the restricted zone whilst the auger is rotating, when authorised and controlled by the spanner man.

Things to remember:

Fences and walkways – If perimeter fences or site walkways are within the piling restricted zones, ensure there are controls in place, such as:

- Covered walkways
- Increased height hoardings
- A pedestrian marshall

Spanner man – Challenge anyone entering the restricted zone who does not have your permission, and inform a supervisor.

Driller – Stop rig operations if an unauthorised person enters the restricted zone.

This poster depicts the standard restricted zone. When flushing arisings, using water or air, a larger restricted zone is likely to be required.

Minimum coverage of barriers to be placed within the restricted zone.