

Quarries National Joint Advisory Committee (QNJAC)

Plant Information Sheet 2
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A Guide to Pedestrian Safety in Quarries and Surface Mining

Please Note: The case studies linked to this guidance are not currently available. A tool box talk will also be available in 2017. However, QNJAC felt it important to publish this document in its present form as soon as possible in view of the importance of the subject matter



This information sheet has been developed by the Quarries National Joint Advisory Committee (QNJAC) to help quarry operators, contractors, managers and others make health and safety improvements in the quarry industry. This guidance may go further than the minimum you need to do to comply with the law.



“ Follow our Footsteps “

A Guide to
Pedestrian Safety
in
Quarries and Surface Mining



Contents :

1. Guidance

- 1.1 : Scope of this guidance
- 1.2 : Who is a pedestrian?
- 1.3 : What Site Management must consider
- 1.4 : What Site Management must do.
- 1.5 : Who do you involve?
- 1.6 : When to Review.

2. Appendices

- 2.1 : Fatal Accident - A Case Summary
- 2.2 : Illustrated Examples of Improvements to Pedestrian Safety Controls on Sites
- 2.3 : Personal Protective Equipment (PPE) for Pedestrians.
- 2.4 : Pedestrian Safety Poster : *"Let's Pretend"*

3. References

4. Legislation

1. Guidance

1.1 Scope of this guidance

This guidance is for all those with responsibilities for the management of quarries and surface mining operations, including managers and supervisory staff. It builds upon the existing section of the Coalpro Traffic Management guidance for avoiding risks to pedestrians from vehicle movements.

Pedestrian safety will be improved if the Coalpro Traffic Management guidance is followed in respect of safe vehicles and safe operators. A site where vehicles are well maintained, have good visibility, trained and competent operators, well designed roadways, and minimised reversing manoeuvres will automatically put pedestrians at less risk of an accident than sites where this is not the case. The interaction between vehicles and pedestrians is potentially dangerous if not well managed.

Therefore, this guidance is intended to deal specifically with the residual risk to pedestrians, after specific safe vehicle measures have been introduced but will include consideration of other hazards on site that impact on their safety.

However, pedestrians are still being hurt and worse on our sites.

Appendix 2.1 of this document contains an account of what CAN, and in this case, DID happen when a man just went to work as normal on an ordinary day but never made it home safe.

This guidance cannot cover every risk and is not comprehensive, but will highlight those key matters of concern. The risks associated with your particular operation, and the methods of reducing those risks, should be revealed during your risk assessment.

1.2 Who is a pedestrian?

A “Pedestrian” in this context can be defined as someone who is ON SITE and ON FOOT but is not in an office, weighbridge or welfare building.

A key task in maintaining and improving pedestrian safety is to identify who the pedestrians are on your site and understanding how they interact with the environment they are in.

Pedestrians are:

- All employees
- All contractors
- All hauliers
- All delivery drivers
- All official visitors (including enforcement officers/regulators)
- All members of the public:
 - Customers/visitors to site
 - Persons using public rights of way that cross through operational areas of quarries (this category might also include cyclists and horse riders)
 - Persons accidentally or deliberately trespassing
- **YOU!**

Pedestrian safety is an aspect of quarry work which will affect everybody in the quarry at some point during any working day.

Each person will have different expectations of how they should behave in relation to vehicles and other hazards on site and the extent to which they understand or perceive the dangers from them.

For example, do not assume that all pedestrians will understand the additional risks posed by large quarry mobile plant such as reduced visibility, variable stopping distances, overriding noise etc., as different from the interaction they may have with conventional road vehicles.

1.3 What Site Management must consider.

Inadequate separation of pedestrians and vehicles can result in accidents that could have been avoided by careful planning and proper design of the quarry or surface mine. Pedestrian safety must be paramount when developing your Manager's, Site and Vehicle Rules

When planning and designing a work activity, one should go through the 'risk assessment hierarchy of control' where in this instance, the first question is "Can the need for some pedestrian activities on site be avoided?". Guidance on risk assessment can be found at <http://www.hse.gov.uk/risk/controlling-risks.htm> .

This will reduce your areas of concern and enable you to focus on those areas and occasions where pedestrian activity is unavoidable, necessary or likely to occur

The next step is to identify the hazards on site such as:-

- Vehicle movements / proximity to pedestrians
- Underfoot conditions
- Rock Faces
- Rock Piles
- Blasting practices
- Stockpiles
- Fixed-Plant access / proximity
- Working machinery proximity
- Water's edge issues
- Environmental factors - weather conditions, lighting
- Geo-technical hazards and weaknesses of formation.
- Other operational activities (e.g. Plant & Site maintenance)
- Blind spots, poor sight lines
- Dynamic nature of quarry site
- Use of public rights of way within the quarry boundary and public access to the quarry

Then assess the risks from those hazards to the various pedestrian categories on site.

Once this has been completed, you will be in a position to consider the reasonably practicable level of protection required to provide the necessary controls. These will include :-

- Physical segregation of pedestrians and vehicles, barriers or rerouting of pedestrians to avoid hazards
 - Mark-out and sign the vehicle, pedestrian and hazardous areas.
 - Mark-out and sign crossing points for both drivers and pedestrians
 - Instruct, inform and alert both drivers and pedestrians about routes, rules and layout. Consider site inductions, tailored brief-inductions, toolbox-talks, maps, leaflets, signage, etc.
 - Effective communications – radios, hand signals
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- Appropriate PPE, who provides it and what standards of wear are expected on your site (see Appendix 2.3)

1.4 What Site Management must do.

The following list is not exhaustive, but highlights some of the key actions required.

- Design a scheme for the safe management and movement of pedestrians on site.
- Thoroughly review your existing arrangements and check where improvements can be made.
- Organise the site such that vehicles and pedestrians can move around safely, effectively and are not 'free-to-roam'. Arrangements should be such that persons are fully aware of the environment they are in but are suitably warned and protected from the hazards in it.
- Implement routes for persons and vehicles such that they are of suitable construction, number, size and location and incorporate the following principles :-
 - Provide separate entry & exit points for pedestrians only.
 - Provide firm, level, well-drained walkways that take the most direct available route.
 - Provide clearly signed & lit crossing points where drivers & pedestrians can see each other easily.
 - Provide clearly signed restricted walk areas where permission has to be sought to enter due to increased hazards.
 - Ensure walkways remain unobstructed and are not awkward to negotiate
 - Ensure they are sufficiently clear or protected from any risk of being struck by falling materials
 - Ensure they are sufficiently clear of unstable or potentially unstable ground
 - Ensure they are not susceptible to rapid deterioration under adverse weather conditions.
 - Provide a physical barrier between walkways & roadways wherever practicable.
 - Tackle unsafe and distracting behaviours such as uncontrolled use of mobile phones or stopping for a chat at whatever point persons happen to meet.
 - Ensure public rights of way are managed
- Provide simple & clear rules that both pedestrians and drivers can follow that are relevant to their tasks on site and support the existing Site Managers Rules.
- Provide suitable information, instruction and direction that is easily understood and recognised by your target audience.
- Consider working with local authorities to re-route public rights of way outside quarry boundary
- Ensure awareness is maintained via any suitable and available means (e.g. Toolbox Talks, Safety Bulletins, Safety Stand-downs, poster campaigns, ongoing training courses / presentations etc.).
- Inspect and maintain the arrangements you have made
- Review your arrangements at regular and suitable intervals.
- Be able to demonstrate you have gone through this assessment process and it properly reviewed.

1.5 Who do you involve?

Depending on the person's role, task, experience and reason for being on site, their view of what is 'safe' will vary considerably. This makes it vitally important that the workforce, which includes everybody who works at the quarry, plus representatives from the other pedestrian groups mentioned above, are involved and engaged in the planning, design and implementation of measures to improve pedestrian safety. This gathering of views and differing perspectives may take a little time but will ensure the development of a more robust plan that works for everyone.

1.6 When to review.

Quarries and surface mining operations are dynamic environments. Regular reviews by site management in line with current regulations and Company Policy is required. Other triggers for a review include:

- Alterations to stocking, excavation and tip arrangements
 - Temporary works
 - Changes in activity levels
 - Construction activities
 - Changes in mobile plant
 - Incidents and near misses
 - Seasonal conditions
 - Unusual weather conditions
 - Workforce feedback
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2. Appendices

2.1 Fatal Accident – A case summary

This is what can go wrong when vehicles and pedestrians are not segregated.

On a Saturday morning a foreman and quarry operative were processing materials in a small quarry. Following a midmorning tea break together in the canteen near the quarry entrance, they both set off to return to the working quarry. The quarry operative drove his front end loader and the foreman walked along the haul road to his 360 tracked excavator. This was something they had done several times a day for over six years. It was a bright sunny winter day with the sun very low in the sky. As the quarry operative drove the front end loader forwards along the quarry floor to the processing area, towards the low sun, he did not see the foreman and ran over him. The foreman never recovered consciousness and later died of his injuries.



This incident highlights the importance of segregating pedestrians from quarry traffic and why you should tackle it now!

It is vital for each quarry to establish safe pedestrian access routes and ensure that plans and rules are communicated to both drivers and pedestrians and that they are monitored, enforced and regularly reviewed.

2.2 Illustrated Examples of Improvements to Pedestrian Safety Controls on site

There will be a link to case studies here in due course

2.3 Personal Protective Equipment (PPE) for Pedestrians

Site Rules normally require pedestrians to wear Safety Helmet, Safety Boots and Hi-Vis clothing as a minimum. There are often areas within the quarry requiring additional ppe such as Safety Glasses, Hearing Protection and suitable gloves. It is good practice to have all these items on your person so you are equipped to enter areas of the site that require these additional items.

It is important to note that High Visibility clothing is the last line of defence in preventing incidents between vehicles and pedestrians. In a collision it will not protect against injury, and should not be relied upon to always make you visible to vehicle operators. They may not see you for all sorts of reasons, such as being distracted, or having vision temporarily impaired by, for example, bright sunshine, reflections from surface water, or you not being in their direct line of site.

However,

Hi-Vis clothing of the appropriate standard is the front-line of pedestrian visibility PPE on site and must always be worn according to site rules and where persons would be at risk when not clearly seen by others such as vehicle drivers, fixed-plant operators, fitters, supervisors, colleagues etc.

It must be maintained and kept in good order and replaced when appropriate.

It should never be considered acceptable to wear poorly maintained high visibility clothing in designated areas. We should not accept that grubby & poorly maintained high visibility clothing is ever a “Badge of Honour”.



Fitters for example, due to the nature of their work, may well need to change outer workwear more often in order to maintain the effectiveness of hi-visibility clothing. It is important that this type of activity is assessed against the clothing provided. More frequent laundering, additional spare sets over and above that issued to other trades on site should be considered. It is also most important to consider the contrast in colour between hi-vis PPE and a given back-ground. DO NOT ASSUME that a bright yellow or orange will ALWAYS stand out against any background. Each site will have its unique shades of whatever minerals are being processed there, so consider the contrast.

The same goes for faded PPE, in that it may have started as a stark contrast to its background but when dulled over time, will often blend dangerously with its background.

In addition, note that particular weather conditions can also alter a back-drop such as low, bright sunshine or glare off a water or icy surface



This photograph illustrates how the light source behind the high visibility clothing reduces the effectiveness of the reflective material



This photograph illustrates how dulled PPE can start to blend with the background



These two photographs show the effect of glare from a wet surface

- **NEVER ASSUME YOU WILL AUTOMATICALLY BE SEEN BY OTHERS**
 - **JUST BECAUSE YOU CAN SEE THEM – IT DOES NOT NECESSARILY MEAN THEY CAN SEE YOU**
 - **WHEN APPROACHING VEHICLES ON FOOT ENSURE YOU FOLLOW THE SITE VEHICLE APPROACH PROCEDURES AND GET VISUAL CONTACT AND ACKNOWLEDGEMENT OF YOUR PRESENCE BEFORE PROCEEDING.**
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2.4 : Pedestrian Safety Poster : “Let’s Pretend”

Let’s Pretend ...

Let’s pretend you’re my Dad today,

Let’s pretend I’m at work with you & let’s pretend I’m by your side everywhere you go,

- To & from your machine
- To & from your control cabin
- To & from the weighbridge
- To & from the canteen
- To & from the workshops
- To & from that job on the plant
- To & from the Site Office



NOW YOU’VE GOT **ME** TO THINK ABOUT, WILL YOU STILL

- Short-cut across the yard?
- Wander down the haul road?
- Stray across the workshop apron?
- Stop , chat or phone where plant is operating?

OR WILL YOU

- Stay alert?
- Think about the dangers around you?
- Make sure you keep us both out of harm’s way?

*LET’S PRETEND -
THAT’S WHAT I DO
NOW... ‘COS MY DAD
FORGOT TO WHEN
HE WAS AT WORK*



3. References:

- Surface Mining - Traffic Management. Coalpro (July 2012)
- Workplace transport safety – an employers’ guide, Health and Safety Executive, HSG 136 11/2005
- Workplace Transport Safety: A brief guide INDG199(rev2) published 05/13
- Traffic management on site – HSE web site, safety topics, traffic management
- Separating pedestrians and vehicles – HSE web site, workplace transport, separating

4. Legislation:

- Safe Quarry – Quarries Regulations 1999 – Regulation 6
 - Risk assessment – Management of Health and Safety at Work Regulations 1999 – Regulation 3
 - Controlling risks from vehicles – Quarries Regulations 1999 – Regulation 14
 - Pedestrian safety and traffic routes – Workplace (Health, Safety and Welfare) Regulations 1992 – Regulation 17
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