

February 2002

Presentation by:

## Work Place Transport Accidents

Ray Cooke, HM Principal Inspector  
Health and Safety Executive

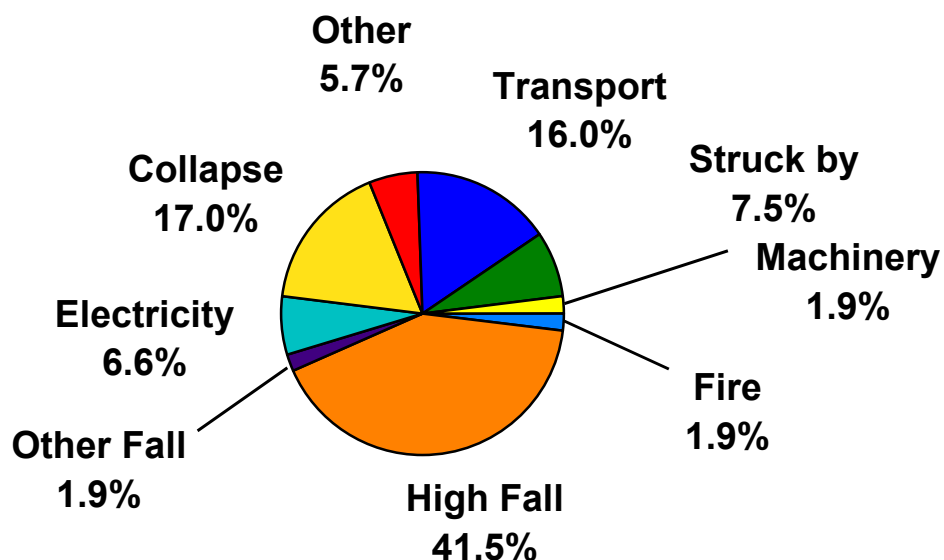
Gerry Mulholland, Barratt  
Developments PLC Group Health and  
Safety Manager AND

Roy Gill, Safety Manager Laing  
Construction Midlands Ltd

**Ray Cooke** launched this triple presentation by reminding the members that the problem was not just limited to Construction sites. He also added a reminder that in the recently introduced Regulations for rollover protection it was essential to use seat belts, otherwise drivers may be thrown out of the vehicle and crushed. He went on to say that the HSE was concerned about transport safety because of its significant contribution to accidents. Every year there were about 70 fatalities and 1600 seriously injured, affecting all industry sectors. The most common accident cause is being hit or run over by vehicle, with about 25% of all workplace fatalities caused by reversing. Of those fatalities, 50% were to drivers and the total figure was rising, yearly.

The HSE priorities, Ray added, were based on the accident statistics and he said that the latest were for 2000/01, shown below. Unfortunately, a recent Labour Force Survey had shown that there was about 40% under reporting on RIDDOR accidents, so it was difficult to get an accurate picture

### CONSTRUCTION FATAL ACCIDENTS ALL WORKERS 2000/01





The most significant Construction accidents were: -

- Loading & unloading (specific areas needed)
- Reversing (Use aids like CCTV and restrict reversing to defined areas)
- Driving & parking on slopes
- Work near excavations (Clearance and edge protection needed)
- Access to height on vehicles
- Tipping of loads
- Slewing operations (Training and Banksmen needed)
- Coupling/uncoupling trailers

Ray commented on recent accidents, which claimed the lives of four workers laying cones on motorways. This indicated a need to address working methods as well as the training of operatives. He concluded by referring members to an HSE Consultative Document, **DDE18 – Preventing workplace transport accidents.**

**Gerry Mulholland** then took over to present the view of the small-to-medium sized development, describing the Barratt Group operations which covered from Aberdeen to Exeter, across 32 Divisions, with a turnover of approximately £1.6 billion, on 450 sites. He displayed two large apartment blocks in Birmingham City centre and an office in Coventry.

He outlined the basic principles by referring back to the requirements of the law regarding construction transport management. Regulation 15 (Traffic Routes) of the Construction (Health Safety and Welfare) Regulations states that: -

**“Every construction site shall be organised in such a way that, so far as is reasonably practicable, pedestrians and vehicles can move safely and without risks to health”**

This could be achieved by establishing these key strategies: -

- Pedestrian-only areas from which vehicles are excluded
- Safe, designated pedestrian routes to work locations
- Vehicle-only areas, limited space or heavy traffic
- Safe vehicles route around site

The HSE Guidance in "**HSG144, The safe use of Vehicles on Construction Sites**" is very helpful in four key areas: -

**1. Safe Workplaces**

*Separation of pedestrians and vehicles, with safe routes for both.  
Loading and storage areas  
Public Protection*

**2. Safe Vehicles**

*Selection of well designd vehicles, suited to the task.  
Efficient Vehicle Inspection and Maintenance*

### 3. Safe Driving and Work Practices

- *Reversing*
- *Signallers*
- *Site Dumpers*
- *Excavators*
- *Loads*
- *Safe work practices for specific vehicles*
- *Lift Trucks and Telescopic Handlers*
- *Tipper Lorries and Lorry Loaders*
- *Drivers*

### 4. Managing construction transport

- *Clients*
- *Principal contractors*
- *Designers*
- *Planning Supervisors*
- *Contractors*

Gerry also referred to the associated guidance in "**HSG151, Protecting the Public**" which covered such key transport issues as: -

- Separate the construction area from the public
- Control access to the site (if possible)
- Inform the residents and/or purchasers about the controls.
- Establish footpaths and roads ASAP
- Impose speed limits
- Establish parking areas for sales areas
- Provision of clear signs and instructions to pedestrians
- Monitoring of controls
- Review of controls when circumstances change
- 

Small  
Child

As a good example of the sort of problem that could arise as properties are sold on a residential site, Gerry showed this photograph of a child at risk from telescopic loader activities.

Gerry added that this type of situation posed an area of potential risk to the Group, which justifies the need for specific procedure/guidance



This risk was addressed by a **Barratt Group Standard, BGS 02 Traffic Management** which: -Offers a suite of options to the local management

- Control measures to reflect the assessment of risk for individual sites
- Reviews periodically as circumstances change or through evolution

These standards included definitions of terms, as follows: -

- **Permanent routes**  
*Existing main roads*
- **Primary routes**  
*Infrastructure for the development*
- **Secondary routes**  
*Identified as haul roads*
- **Off Road routes**  
*General access areas for site plant*

These important elements of the local transport arrangements are shown clearly on a wall map in the site office with the key areas colour coded

- **Permanent**      Black Diagonal Lines
- **Primary**        Blue
- **Secondary**      Yellow
- **Pedestrian**     Green
- **Reversing**      Red
- **Parking**        Orange
- **Compound**     Green Diagonal
- **Directional**    Black Arrows

Other transport-related considerations are: -

- Cabins-Toilets
- Muster Points
- Lay Down Area's
- Car Parking
- Primary & Secondary Routes
- Occupied areas
- Speed Humps
- Holding Areas
- One Way Systems
- Signs
- Banksmen & Signals
- Segregation Barriers
- Speed Limits
- Traffic Lights/Controls
- Pedestrian Crossing points
- Segregation Area's
- One Way Systems (If app)
- Reversing Area's
- Sales arena and parking
- Timed Deliveries
- Lay Down Areas
- Pre Delivery Notice
- Vehicle size permitted
- Reversing Control
- Barriers
- Resident Information
- Road Cleaning

Selection of well-designed vehicles and accessories are an important feature of transport management and Gerry illustrated this with the assessment of reversing risks. The first step should always be to avoid/reduce the need for reversing manoeuvres. Where it cannot be avoided then it is possible to use accessories such as CCTV or special mirrors to overcome vehicle blind spots.

- Suitable & Sufficient Mirrors
- CCTV, All round Vision Mirror (AVM) or convex mirror at the rear
- Reach/Distance had to be determined
- Remaining Blind Spots should be identified
- Banning articulated trucks
- Restrictions/Controls at site taken into account

He added a note of caution about CCTV, which had a 3 sec 'crystallising' time on the screen, so it is advisable to delay reversing to allow for this.

Gerry then showed many slides to illustrate the extensive efforts Barratts made to provide segregation, with a very comprehensive range of signs to indicate crossing points, speed limits, haul roads, footpaths, location of key site areas and reversing restrictions. There was an excellent sign manual to cover most site requirements to ensure a consistently high standard.! The whole of this strategy was reinforced by actions at all stages: -

- **Through the contract documentation**  
*Subcontractors & their suppliers*  
Suppliers
- **Induction training for site operatives**  
*"Reversing card" from the Site Safety Starter Pack*
- **Awareness for visitors & customers**  
*Signs*  
*Instruction*  
*Directional signs*

The final part of the presentation was given by **Roy Gill** who talked about a typical large project in a most restricted site, off Colmore Row in the centre of Birmingham. He went on to illustrate the various hazards, which are commonly associated with transport on sites: -

#### **Vehicular incidents causing damage and injury**

- Collisions between vehicles and pedestrians (especially in restricted areas)
- Overturning vehicles (especially on steep gradients)
- Reversing vehicles
- Contact with overhead obstructions
- Contact with dangerous parts of machinery
- Loads falling from vehicles and loading bays
- Vehicles operating on slopes

The risks faced are: -

- Injury to vehicle operators
- Injury to pedestrians
- Damage to vehicles
- Damage to property

- Electrocution.
- Injury to maintenance personnel

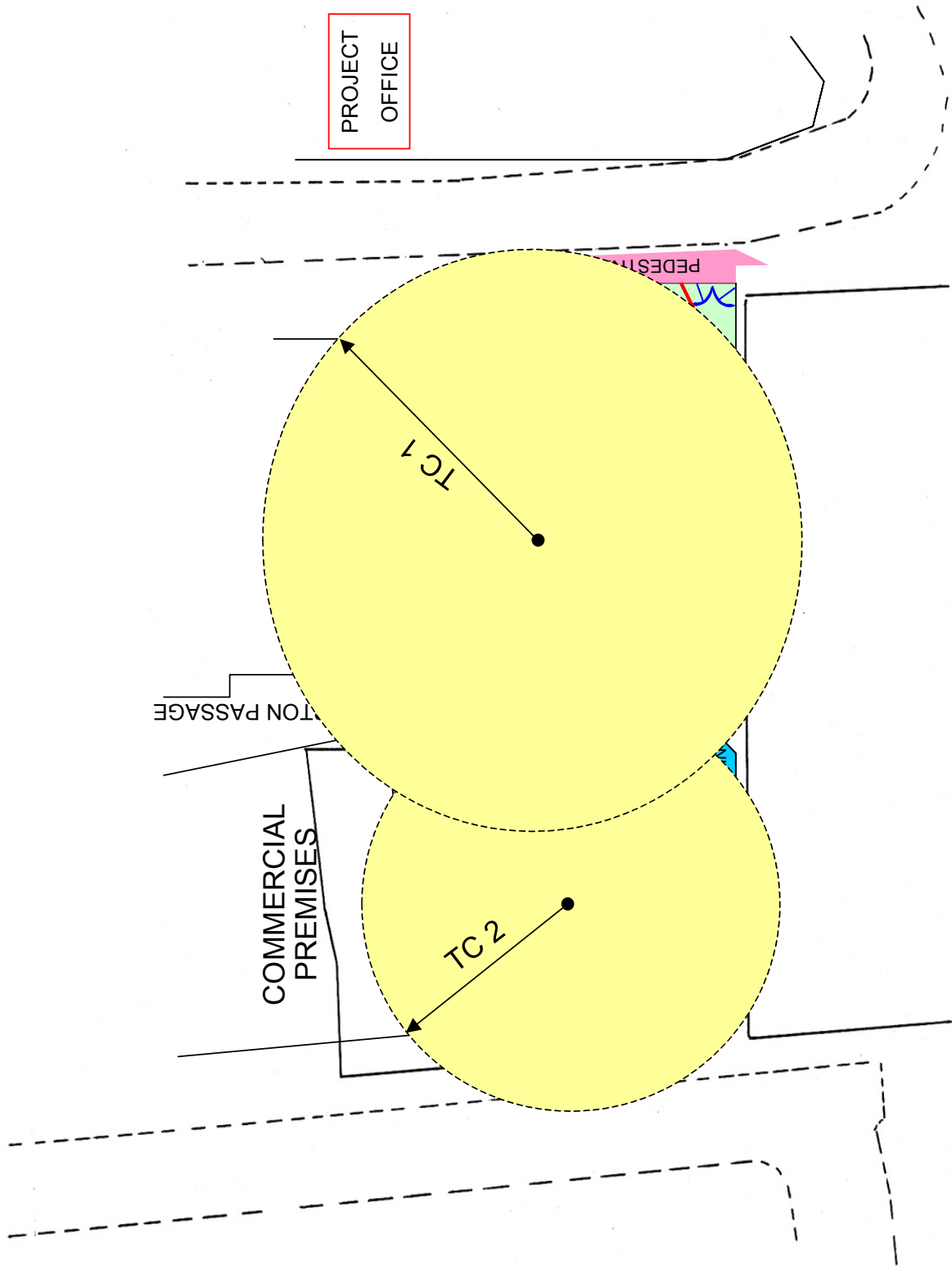
The Risk Category is usually very high if: -

- Detailed vehicle management procedures are not prepared, implemented and reviewed
- Operators are not trained and supervised adequately
- Traffic routes are inadequate and loading bays are poorly constructed

The technical solution is to prepare and adopt a detailed Traffic/Vehicle Management Procedure for the Project. This Procedure will need to be actively managed in accordance with the HASAWA 1974, MHSW Regs 1999 and the PUWER 1998 (see also references). It should also be supported by suitable training using the CITB CTA Scheme and effective Organisational Controls, with the following elements: -

- An appointed Traffic/Vehicle Manager/Coordinator who will ensure that the procedures are implemented and actively managed.
- A regular, formal review of the procedures (Project Manager and Contracts Manager). This review to include training/re-training requirements
- The avoidance of vehicle movements, laterally across slopes
- Weekly/Periodic reviews (Management)
- Inspections and audits (Safety Dept)
- A Test and Inspection programme (Vehicles)
- Maintenance Programmes (Plant Dept)
- Statutory Inspection (Lifting Appliances/Loading Bays/ Work Equipment).
- Temporary Works Inspection (Temporary Roads, Bridges, Ramps, Loading Bays etc)

As an example of these principles in action, Roy described the commercial project at 125 Colmore Row in the centre of Birmingham. This construction had a 15 metre basement, surrounded tightly by other occupied, commercial premises and public highways in continual use (one with a busy bus route and parked cars.). There was a constant flow of machinery being unloaded, with materials like Readymix concrete. This plan shows some of the complexities of this site.





Some of the hazards that were to be addressed were: -

- Falling loads adjacent to other vehicles
- Slopes in the construction area
- Collapsing boundary walls
- Dust in adjacent Bank Cash dispensers
- Fast moving buses close to the site
- Two Tower Cranes!

Some control measures employed were: -

- Overhead protection above walkways for members of the public
- Boundary and site lighting
- A Fan over the fire escape from adjacent commercial premises
- One way access, but with the exit through a busy commercial district
- A "Holding Area" at Bordesley, where incoming vehicles were asked to wait until the loading area was clear in Colmore Row
- Storage of re-bar in the loading bay after "Just-in-Time" deliveries
- A bund in the loading bay and a "Switch-off" policy for vehicles, to stop fumes entering the deep basement. This was supported by a gas monitoring procedure in the basement
- Emergency escape route from the basement

## *Members' Questions*

**Mike Thomson of Mee Construction** asked how much involvement the safety section was given and when it took place. **Roy Gill** replied that it occurred after the tender stage only and that all plans were covered by the CDM Regulations. Mike went on to ask if revisions to the plans were made and Roy said that even modifications to the site gates were covered by plan revisions. In reply to another question from Mike, Roy stated that all suppliers were told that there could not be any parking near the site and that all deliveries had to be scheduled well in advance.

**David Callaby of D.C. Associates** enquired how Laing ensured compliance with their procedures. Roy answered that they were clearly stated in the pre-contract documents and reinforced at pre-contract meetings. Subsequently the policies were discussed at weekly programme meetings and measures like the holding area were well supported.

**Michael Colles of the Weedon Partnership** asked if Designers could do more to enhance site safety. Roy said that they certainly could do a lot more and cited measures to arrange agreements for boundaries and oversailing rights for tower cranes which did not have to wait until just before moving on to site! He went on to say that sometimes

building designs were even conflicted with safe construction methods! **Ray Cooke** agreed and said that much more advance preparation could be done by Designers and Clients, also. He added that at the **Touchwood** site in Solihull, deliveries to neighbouring businesses were schedule outside site working hours because of the intense congestion.

**Mark Hoare of Birmingham University** commented that he had seen plenty of evidence that completed buildings in use were not designed to accept safe deliveries of materials. **Gerry Mulholland** agreed and said that there was more concern with construction problems than with what happened after completion. **Ray Cooke** added that, of course, the CDM Regulations were concerned with the safe lifetime use of any structure and more attention must be paid to this obligation.

**Mike Robertson of Costain** asked what enforcement action had been taken against whom, under PUWER and LOLER. **Ray Cooke** replied that the action depended on the degree of risk involved, but action had been taken against Principal Contractors, Vehicle Owners and might be against one OR more persons.

**David Hughes** commented that there was often a need to train persons exposed to risk who were not even plant operators and wondered what the speakers thought. **Gerry Mulholland** agreed that all staff had to be competent, but there was also a great need to observe the basic need for avoidance policies with separated vehicle/pedestrian routes, High-Visibility jackets, meaningful site signs and speed limits, consistently monitored and enforced. **Roy Gill** added that Managers were trained in the theoretical aspects of plant operator training, which enabled them to monitor compliance more effectively. **Ray Cooke** that site safety was significantly affected by the individual Manager's professional attitude and ability.

As there were no more questions, the Chairman, David Hughes, thanked Warwick Adams for organising the event and the speakers for their well-planned and very informative presentation. The members thanked them in the traditional way.