Electric Shock – Earthing Fault on Metallic Fittings

A technician received an electric shock after coming into contact with fittings within a meter chamber. The property had been earthed via the water pipe and an electrical fault within the customer’s property led to the pipe work being charged at 240V. The technician attended hospital and two days lost time.

From the descriptions of the incident it would suggest that the property did not have an adequate earth connection or an adequate potential bonding arrangement and as such had been earthed using the water pipe.

This is a timely reminder of what can happen if we do not ensure that Temporary Earth Safety Loops are used correctly when completing tasks on external meter installations.

The Benefits of Off-Site Manufacture (OSM)

As part of an environmental project to recover and reuse solvents a new tower was required to house the distillation columns, re-boilers, pipe work, flooring levels and associated control systems.

During the pre-sanction phase of the project whilst considering various process solutions the project team were also considering how to design out major construction risks in line with CDM requirements. The tower was estimated at 20m high X 4.5m 2. A traditional site build would have required significant working at height to install steelwork, permanent flooring, temporary platforms, guard rails and equipment installation within the tower.

The Risks

In line with the decision tree within the Working at Height Regulations 2005 (WAH) the team were looking to eliminate working at height where feasible and chose OSM to significantly reduce this hazard by building the complete structure including mechanical equipment, flooring, guard rails, pipe work and control systems before lifting into place as a complete unit.
The Solution
The unit was built on its side in a fabrication shop facilitating appropriate lighting, weather protection, fixed overhead cranes for lifting and easy MEWP access. This modular construction also delivered a reduction in timescales with all components being manufactured in parallel before being installed with no delays due to weather or lighting conditions.

The Benefits
- Minimal time working at height.
- Reduced overall site time.
- No weather delays.
- Safer Construction.

Roof Access – Permanent Fall Prevention Methods – Initial Design

Roof access fall prevention methods proportionate to the frequency of access requirements for maintenance activities whilst considering the aesthetic and cost considerations.

The Risks
Falls from height by plant maintenance operatives or roof workers.

Access is unlikely to be entirely eliminated on any roof due to annual inspections, clearance of rainwater outlets, etc.

The Solution
- Collective protection measures should be selected in preference to other methods of protection, especially in areas requiring plant maintenance on a frequent basis.
- Where other factors prevent the addition of roof edge parapets, balustrading or railings, mansafe type fall restraint systems may be appropriate, set back from roof perimeters.
- Fall arrest methods using mansafe systems are the least acceptable option and are only workable if fall recovery and rescue systems are in place. Consider adequate means of safe access to roof level for operatives with tools and kit.

The Benefits
Facilities managers, maintenance operatives and inspection staff can make low frequency visits eg. for rainwater outlet clearance if properly planned management measures are in place.

Key Points
- Early decisions must be made at Initial Design stages considering frequency of access in various roof zones.
- Detail of the roof access design may require further development at later stages as plant areas grow.
During a site inspection a single section of a metal flooring panel covering a distribution chamber gave way when walked upon by a member of the inspection team, resulting in a near miss incident. On investigation, it was found that the panel had been accessed several times since its installation eight months earlier and, on completion of the last access, the securing clips had not been re-fitted. With the clips removed, the panel moved laterally and was able to slip off its support angle. The investigation concluded that the two main reasons for the incident were securing clips not re-fitted and no lateral restraint for the panels. In order to prevent a re-occurrence; any flooring of a similar nature must have all clips re-fitted when the need arises for panels to be removed. To prevent any movement of flooring panels that have not been recessed and secured, and sit directly onto the concrete support wall, appropriate lateral restraints must be fitted. In this case “end plates” were fitted, as shown, to prevent any lateral movement of the panels. This is a fail-safe engineering solution for metal flooring that is not recessed, and would make for effective prevention of any lateral movement of metal floor panels.

While hand injuries are one of the most common types of injuries, the good news is they also are easily preventable. Avoiding hand injuries requires a commitment to pre-job planning, understanding the hazards involved in your work, using effective methods for eliminating or controlling hazards, and wearing the appropriate protection. This approach is effective at work and at home, from the shop floor to the office, to the backyard. The importance of our hands cannot be overstated, so take the time to keep them safe.

Remember to ask these questions to help prevent a hand injury:
Where am I about to place my hands? Whether you are reaching into a cabinet, desk drawer, under the hood of a vehicle, or a hole in the wall, take a moment to visually inspect where you are about to put your hands. Avoid reaching for things without first looking. Our hands are precious, and we depend on them thousands of times a day for the most simple to the most complex tasks. If you are unable to see where you need to put your hands because it is a tight space, try taking a flash picture with a camera or using a mirror to view the space to identify any potential hazards.
Are there sharp edges or crush, pinch, or chemical hazards? It is important to understand the hazards involved with your task and take the time before you start to identify and understand the hazards. For example, if you are cleaning with bleach, using a power drill, or sanding a surface, you should always read the instructions, labels, and safety data sheets where applicable to know what could hurt you and how. Only when you identify and understand the hazards can you adequately eliminate or control your risk of an injury.
Can I use tools, blocking, or guarding to eliminate hazards? While gloves and other personal protective equipment are an important part of protecting ourselves, they do not prevent us from encountering hazards; they limit the harm done. That is why every effort should be made to use more effective hazard methods. If possible, a hazard should be eliminated altogether. For example, if sharp edges are found on the corner of a filing cabinet, the edge should be filed down or protective padding placed over it until a permanent fix is made. If the hazard cannot be eliminated, as is the case with guiding a large load during a crane lift or making cuts using a saw, substitute a hand-held tool for your hands to keep the hazard at a distance.
This approach is practiced in construction and machine shops using push sticks to keep hands away from a load or blade. Better equipment also can be substituted to not only provide better safeguards, but also for a more efficient operation.

Do I have the appropriate type of gloves to protect me from the identified hazard? Some of the most common hand injuries involve cuts and punctures from sharp objects. Gloves can provide very effective protection if they are chosen wisely. However, a common shortfall is the selection of one type of glove for many different types of tasks without carefully considering the protective and performance needs of the people who perform that work.

Selecting the right glove is an inclusive process that must involve the people who will wear them. If performance needs like dexterity and grip are ignored in favour of better protection or the wrong sizes are ordered, then the people wearing them may be unable to complete their tasks with the gloves on. In these cases, they may remove the gloves for certain steps of their job, leaving their hands unprotected. When working with sharp edges, chemicals, and small parts, there may not be a single glove that meets all of your needs. In these cases, you may require two or more different sets of gloves. When the right gloves are worn, throughout the entire job, hands stay safe.

Safe Use of Articulated Bulk Tippers on Site

An articulated tipper recently overturned whilst tipping on site. Fortunately, no one was within the landing area of the unit, but the external haulage driver suffered 4 broken ribs and serious bruising. The incident could easily have been worse.

The lorry was delivering a bulk load of capping stone to the site, and was in the process of tipping. It became unstable after approximately half of the load had been discharged and subsequently overturned. The tipping area was flat and level and the load was relatively free flowing.

Cause of the Accident

The apparent cause of the incident was driver error. It appears that the cab unit was not in line with the tipper body when the tipping operation began and that shortly afterwards, the driver moved the vehicle forward. A combination of these factors led to the overturning.

Other Information

Articulated tippers can very easily become unstable when tipping, and there have been a number of other incidents. The overall picture is that it only needs a few small problems to occur, and a vehicle becomes unstable and liable to tip. A number of major contractors have prohibited the use of articulated bulk tippers on their sites. However, there is sometimes a commercial advantage in using bulk vehicles of this type, particularly on remote sites.

Vehicle Deliveries and CollectionsAdjacent to Railway Lines

There have been a number of accidents and close calls involving vehicle deliveries and collections near railway lines. These have involved articulated lorries, flat bed lorries (including those with lorry loaders), and vans. Those who are involved in the planning of deliveries adjacent to railway lines are reminded about the risks of working in close proximity to railway lines and the controls needed to protect infrastructure, trains, passengers, and others. Drivers who are moving, unloading or loading vehicles next to railway lines are reminded about the risks of working adjacent to railway lines and to adhere to their planned safe system of work.
Planning
All line side deliveries and collections that involve vehicles shall be risk assessed in advance of the works. The assessment must be specific to the site, the planned task, vehicle, and consideration given to a site visit with the identified delivery company.

Safe System of Work
Prior to delivery the author of the SSOW shall share and explain the documentation with the identified delivery company. The person in charge of site safety shall communicate, implement, and monitor the SSOW.

Drivers’ Guidance
Drivers are reminded of the Lifesaving Rule, to ensure that the required plans and permits are in place, before you start a job adjacent to railway lines. Drivers must not unload, load or manoeuvre vehicles next to railway lines unless they have had a safe system of work briefing, understand that briefing and can put in place the required risk controls.
- Drivers must monitor their activities to ensure they go no closer than 3 metres (10 feet) from the nearest railway line.
- Drivers must extinguish all red lights when parked near operational rail lines.

As a driver if you are unsure, you must place yourself and your vehicle in a position of safety, no closer than 3 metres from railway lines and STOP WORK. You must then escalate the concern to the person in charge of site safety.

IP Signalling
On Tuesday 2nd September 2014 a employee of a contractor sustained serious injuries when he was crushed by a brick-grab attachment during the unloading of bulk bags of aggregates from a Hi-Ab lorry.

During the delivery of pre-ordered one-tonne bags of aggregate at a slinger assigned to the delivery was detaching the bags from the HIAB. It appears he reached through the jaws of the lifting attachment to unhook one of the bulk bags straps when the device closed around him causing significant crush injuries.

An ambulance and air ambulance arrived on site and the IP was air lifted to hospital. The IP is in a stable condition in hospital.

Working Adjacent Level Crossings
A haulier employed to collect a piece of heavy plant crossed onto an Automatic Half Barrier Level Crossing (AHB) in order to undertake a reversing manoeuvre into an adjacent strategic mains site entrance. The level crossing in question is a type generally located in remote or rural areas and is designed to complete the entire process of control in no longer than 50 seconds. As the low loader drove onto the crossing without telephoning the signal box (which is a requirement) the barriers deployed, trapping the cab on the live line side. 30 seconds later a commuter train passed, narrowly missing the front of the cab at 68mph. THERE ARE NO NETWORK RAIL WARNING SYSTEMS FOR THIS TYPE OF CROSSING.

For any type work that falls within 200 Metres of any level crossing the following must be adhered to:
- Network Rail Asset Protection must be contacted for approval of the works.
- A Site Specific Risk Assessment and Method statement must be in place and approved by Network Rail.
All vehicular movements must be under the full control of a designated banksman.
If the crossing is “the phone to cross AHB type” this rule MUST be followed without exception.
Reversing, or any form of manoeuvre must not occur upon the level crossing, without consultation and authorisation from Network Rail Asset Protection.

Overhead Power Cable Strike

A pipelaying gang consisting of a banksman, lead pipelayer and a plant operator with a 21t excavator were engaged in a pipelaying operation underneath an 11KV overhead power line. The area of the operation was protected by “goalposts” and the excavator had a height limiter engaged.

Once the section of pipe had been laid the excavator operator was tasked to collect a compressor, at this stage he disengaged the height limiter. On his return to the pipe laying area he was then tasked with backfilling. He then moved under the goalposts into the vicinity of the overhead power line however he did not re-engage the height limiter and was not being guided by the banksman. As the excavator slewed during the backfill, the dipper arm caught and parted the cable.

No-one was hurt as a result of this dangerous occurrence.

Contributing factors:
- The height limiter fitted to the 21T excavator was dis-engaged when the compressor was collected and was not re-engaged before the backfill operation commenced.
- The excavator was allowed to operate under the overhead cable within the danger zone without any effective guidance from a banksman.
- There was no visible signage or reminders from the banksman for the operator to re-engage his height limiter as he passed underneath the goalposts.

Preventative measures:
- Wherever possible arrange for overhead services to be isolated prior to working underneath.
- If the above is not possible ensure that all work areas underneath overhead power lines are set up in accordance with HSE guidance note GS6.
- Goalposts where required should be positioned no more than 10m wide.
- All work in the vicinity of overhead power lines must be supervised by a nominated competent banksman who in turns is to check that height limiters fitted to excavators are engaged prior to passing underneath goalposts.
- Signage indicating the presence of overhead cables and reminding operator to engage height limiters must be visible on the goalposts.
Oil Filled Feeder Cable Hit by Piling Works

Damage due to an oil filled 25kv cable during piling operations. There is a serious risk to life if any excavations are made due to the uncertainty of damage to the other parallel feeder cable (still currently live at 25kv). Further learning will be issued on this in due course. Please refer to our Health & Safety Bulletin on Utility Strikes for further information.

Scalding from a Hot Pump

An experienced operator was sent to split an air-locked dry well pump. Before starting he assessed the heat of the pump, which felt warm at the time but not excessively hot. He made sure the pump was electrically isolated and in a locked off position, and loosened the bolts securing the pump body. A jet of steam erupted from the joint and scalded his arm and mid-rift. These injuries resulted in lost time.

The inlet pipe to the pump was blocked, preventing a flow of waste water. The air-locked pump had continued to work without passing forward the flow, and the trapped water in the pump became very hot and reached boiling point.

Lessons Learnt
- The pump must be electrically isolated and in locked off position prior to work being carried out
- Always complete a site specific task risk assessment if the task is not covered by a model task risk assessment
- Wait for hot equipment to cool before attempting to work on it
- Once cooled, release any built up pressure in a controlled manner using pressure release valves, opening of reflux valves etc.
- Be aware that overheating can occur in any equipment but especially pumps which continue to run when they are blocked or air locked
- Ensure full face shields are worn when splitting pipework that is believed to be under pressure or has been recently allowed to cool down

Fractured Wrist

The IP, a CPCS blue competent operator’s card holder for excavators, was tracking a 1.5T mini excavator in a space between a retaining wall constructed of gabion baskets and the wall of a concrete tank. The task was to place stone for blinding and constructing concrete stairs.

Whilst tracking up the slope, the machine rocked forward at the crown of a slope, the IP put his left hand onto the corner of the retaining wall. As the machine rocked forward onto its tracks the rear strut of the roll over protection system hit his elbow pushing his wrist against the gabion.

The operator reported discomfort but was not aware that any injury had occurred at the time of the incident and carried on working. He later drove home however, the pain and discomfort increased and became worse so he attended his local hospital. The injury was x-rayed and assessed as a fracture to the scaphoid bone in the IP’s left wrist.
Contributing factors:
- The IP reacted when he felt the mini excavator initially rock forwards onto its tracks as it reached the apex of the ramp by placing his hand on the corner of the retaining wall.
- The machine selected did not have fully enclosed rollover protection system which allowed the IP to be able to place his left hand outside of the protection and against a fixed structure.

Preventative measures:
- Ensure that all RAMS, whether generic or not, are checked to ensure that all hazards and risks relevant to the task being carried out have been sufficiently addressed and control measures put in place.
Listed below are the Clients and Contractors who regularly contribute to this report.

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<tr>
<th>Aecom</th>
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<tbody>
<tr>
<td>Anglian Water</td>
<td>Morgan Sindall</td>
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<td>Balfour Beatty</td>
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<td>Barhale WSP</td>
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<td>Network Rail</td>
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<td>NMC Nomenca</td>
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<td>Northumbria Water</td>
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<td>Environment Agency</td>
<td>Plowman Craven</td>
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<td>Forkers Ltd</td>
<td>Scottish &amp; Southern Energy</td>
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<td>Scottish Power Utilities</td>
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<td>Scottish Water Solutions</td>
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<td>Severn Trent Water</td>
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<td>The Construction Plant Hire Association</td>
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