# The Stratus Safety Bulletin

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## GFCIs AT WORK AND HOME

**Definition: GFCI =** Ground Fault Circuit Interrupter. The GFCI is a fast-acting circuit breaker that senses small imbalances in an electrical circuit caused by the electrical current leaking to ground. If this imbalance occurs, the GFCI shuts off the electricity within a fraction of a second.
How it works: The GFCI device continually matches the amount of current going to an electrical device against the amount of current returning from the device along the electrical circuit path. Whenever the amount "going" differs from the amount "returning" by approximately 5 milliamps, the GFCI interrupts the electric power by closing the circuit within as little as 1/40 of a second.

**What a GFCI Can and Can Not do:** It does provide protection against the grounding fault--which is the most common form of electrical shock hazard. A grounding fault occurs when a "hot" wire comes into contact with a grounded enclosure. If you happen to be in contact with the grounded enclosure of an electrical tool when a ground fault occurs, you will be subject to a shock unless a GFCI device is in use, and functioning as intended. The GFCI will not protect you from line-to-line contact hazards (i.e., holding two "hot" wires or a hot and a neutral wire in each hand).

**Where GFCIs are needed in construction work:** Your employer is required to provide approved ground-fault circuit interrupters for all 120-volt, single phase, 15-and 20-ampere receptacle outlets being used on construction sites that are not a part of the permanent wiring of the building or structure. Since extension cords are not part of the permanent wiring, any electrical tools or equipment plugged into extension cords must be protected by a GFCI device. Insulation around flexible extension cord conductors can be damaged through hard usage or excessive wear. If the "hot" wire conductor of the extension cord were to come into contact with the grounding wire conductor, a ground fault would occur. GFCIs should certainly be used in wet environments. When a cord connector is wet, hazardous current leakage can occur to the grounding conductor and to anyone who picks up that connector if they also provide a path to ground. An alternative method of protection is the Assured Equipment Grounding Program. This method is achieved by establishing a direct ground for the equipment and doing a continuity check of the equipment and cords being used.

**Where GFCIs are needed at home:** The shock hazards of a grounding fault are not isolated to just your work place. A grounding fault may occur at home in areas such as bathrooms, kitchens, garages, and basements. You need to be vigilant and make sure that the circuits you are "plugged" into are protected by GFCIs whenever using electrical tools or equipment in potentially wet environments. Most local building codes require receptacles in potentially wet locations, such as near sinks in bathrooms and kitchens, to be equipped with a GFCI device. It is also recommended that you use a GFCI device whenever you have any concerns about the integrity of the tool, equipment, or cord system.
Actions you should take for electrical safety: Always make sure the tools and cords you use are in good working condition and inspect them regularly for any visible damage. Failure in the insulation or grounding protection of your tools or cords could result in ground faults. Use GFCI devices. Take a little extra care so that you will not have a SHOCKING experience. **Remember** You are not alone, if you need guidance or have questions about this or any other health and safety matter, the Stratus EH&S team is here to assist you. Give us a call at (714) 622-3920, or e-mail at ***aweir@stratusinc.net***.

***Safety Short*-**

*Working safely may get old, but so do those who practice it. ~Author Unknown*

## In this Issue:



## LATEST NEWS

Stratus will be conducting our monthly safety meeting and training on Friday, April 29th at 10:30 am. This month's topic will be Disaster Preparedness, we will be discussing the important preparations you and your family should be taking to prepare for a disaster.

Also, check out our website for our new "Disaster Response" section, this new area can be used to "check in" after a major incident to complete headcounts and gain assurance of who is accounted for and who needs checking up on, this is a helpful tool for family members as well.

## Kudos Corner!

Kudos to ***Allan Dudding*** from our Cameron Park office for submitting a great safety observation from the field. Allan was working on a drilling job when he observed a Driller's Helper cross behind a vehicle parked outside of the established exclusion zone. As the helper crossed behind the parked vehicle, the driver suddenly and unexpectedly reversed at high speed. The helper was nearly struck by the vehicle, however, his quick response and anticipation of the potential hazard saved him from injury. Allan handled the incident per Stratus procedure, by executing his stop work authority and conducting a safety talk about the near miss! Well done Allan!

## Lessons Learned

**BRIEF ACCOUNT OF INCIDENT:**
While cutting a concrete slab at the plant entrance, the cutting saw cut into a 12kV electric cable, buried under the slab. This caused an electrical short circuit which resulted in total power loss to the whole blend plant. While this incident had the potential for severe personal injury or even fatality, the contractor involved was not injured.

**WHAT WENT WRONG (CRITICAL FACTORS)**

- The 12kV cable was laid at a depth of approx. 6 ½ inches at the point where it diverted out from the cable trench which allowed it to be cut by the concrete cutting disc, set at 8 inches. The cable had not been laid in compliance with the relevant depth standard in force at the time of 24 inches.
- There were no accurate drawings of the area available within the available drawing set for the site which might have indicated the risk from the concrete cutting work. The local authority drawing of the 12kV cable routing was marked "Location Unknown" The risk assessment conducted prior to work commencing was therefore based on inaccurate information.
- There was no cable depth data on the drawings provided and it was wrongly assumed that the cable would be buried to current standards (min 27 ½ inches).

**LESSONS LEARNED!**

- Attempt to identify any other similar situations on site, i.e. where there is evidence or knowledge of buried cables, gas lines, etc but their exact location is not clear.
- Investigate potential for identifying exact locations using best available technology (e.g. ground penetrating radar) and include relevant information on site drawings.
- Mark areas so that it is clear to observers that there are buried high risk utilities in those locations. The scanning should include ground and walls to determine presence of cables, pipes etc.
- Always be prepared for the unexpected, especially when dealing with ground disturbance activities.