gbca SAFETY **TOOLBOX TALKS**

Electrical Arc Flash Dangers

How does an arc flash happen?
An arc flash happens when electric current flows through an air gap between conductors. Accidents caused by touching a test probe to the wrong surface or slipped tool are the most common cause of an arcing fault. Arc flashes can also be caused by the following:

- Sparks due to breaks or gaps in the insulation.
- Equipment failure due to use of substandard parts, improper installation, or even normal wear and tear.

What is a short circuit or arc fault?
Short circuits and arc faults are extremely dangerous and potentially fatal to personnel. An arc fault current and voltage concentrated in one place can result in enormous amounts of energy released and can produce temperatures four times the temperature of the Sun's surface.

What is an arc concussion wave?
Arc concussion blast wave's result as the high arc temperature vaporizes the conductors from a solid to a vapor, the copper vapor expands to 67,000 times the volume of solid copper producing a considerable pressure wave and sound blast. In some cases, the pressure wave has sufficient energy to snap the heads of 3/8-inch steel bolts and to knock over construction walls.

An arc blast can cause the following injuries:

- Injuries related to being knocked off your feet:
    - Concussion and loss of memory or brain function
    - Other physical injuries from being blown off ladders, into walls, etc.
- Hearing loss from ruptured eardrums. The sound from an arc blast can exceed the sound of a jet engine.
- Exposure risks from flying debris, such as shrapnel wounds from metal parts.
- Shock hazard due to touching energized conductors.
- Severe burns to the body from the electricity, or from clothing set on fire.
- Eye damage from extreme light as well as heat, particles.
- Operating with extreme caution is always the directive when working with electricity, only trained skilled electricians should handle electrical systems.