Grounding and Bonding Electrical Circuits

<https://youtu.be/LoQVdEQlmXM> - Grounding and bonding system

Questions

1. What are 2 possible causes of a “Short Circuit”?
   1. Loose wire, frayed insulation on a conductor and contact between the conductor and a metal surface
2. Grounding and bonding systems are designed to create a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. Low impedance path
3. A low impedance path consists of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. (list 3)
   1. Metal box, metal raceway (EMT conduit), grounding conductor, set screw, lock nuts
4. Fault current travels back to the service panel by means of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. Conduit (raceway) or grounding conductor
5. What is the purpose of the bonding screw?
   1. Bond the panel to the grounding bus and the neutral conductor to provide a path for fault current to return to the transformer and complete a path back to the circuit breaker
6. Based on Ohms Law, what is the relationship between resistance (impedance) and current (amps)
   1. Low impedance = high current
7. What causes the circuit breaker to trip?
   1. It is a magnetic “switch”. The low impedance ground fault path causes high current to return by the low impedance path to the transformer and through one of the source conductors back to the circuit breaker “breaking” , “tripping” or opening the switch and opening the circuit.

Service Raceway Bonding – When do I remove the bonding screw?

<https://youtu.be/oFSt_rAZGn0> - What is a neutral bonding screw?

Questions

1. What is the purpose of the bonding screw in an electrical enclosure?
   1. Connect the neutral bus to the enclosure
2. The bonding screw should be installed in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. The first enclosure after the meter
3. When should the bonding screw be removed?
   1. If the enclosure is a sub-panel after the first metal enclosure
4. Why should the bonding screw be removed from a sub-panel?
   1. Because the neutral and grounding conductor are separate in a sub-panel