

# Working Around Electrical Equipment

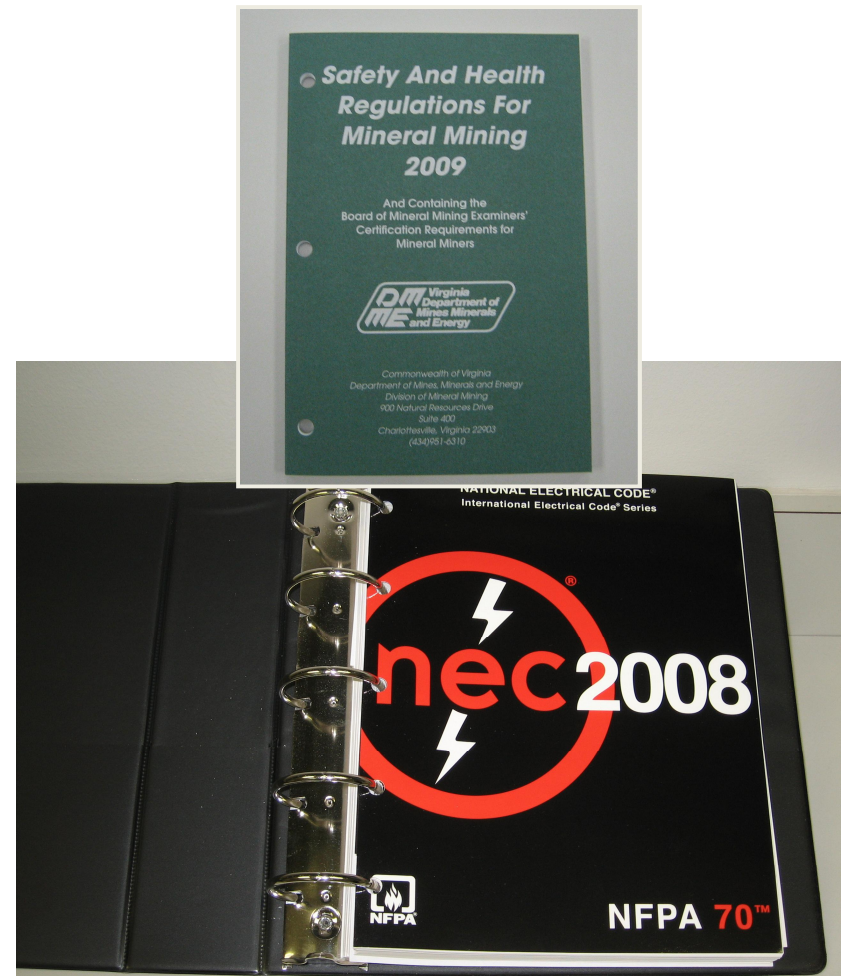
**DMME**

**Division of Mineral Mining**

**AR 2012**

# Part XII And The NEC

- Virginia's Safety and Health Regulations for Mineral Mining, Part XII, covers electricity.
- **4VAC25-40-90/2015.** The National Electrical Code (NEC) is incorporated into the safety and health regulations by reference.



# Warning Signs



- Can anyone tell what is in this building?
  - **4VAC25-40-2190.**  
Suitable danger signs shall be posted at all major electrical installations.
  - **4VAC25-40-2200.**  
Areas containing major electrical installations shall be entered only by authorized persons.

# Labeling Switchgear

- **4VAC25-40-2160.**  
Principal power switches shall be labeled to show which units they control....





# Clearance Around Equipment

- **4VAC25-40-2170.** At least 3 feet of clearance shall be provided around all parts of stationary electric equipment or switch gear where access is necessary.
- Electrical installations should not be used as employee rooms/areas.



# Storage Of Materials



- **4VAC25-40-2540.** Materials shall be stored and stacked in a manner which minimizes stumbling or fall of material hazards.
- The NEC prohibits the work area around electrical equipment from being used for storage.



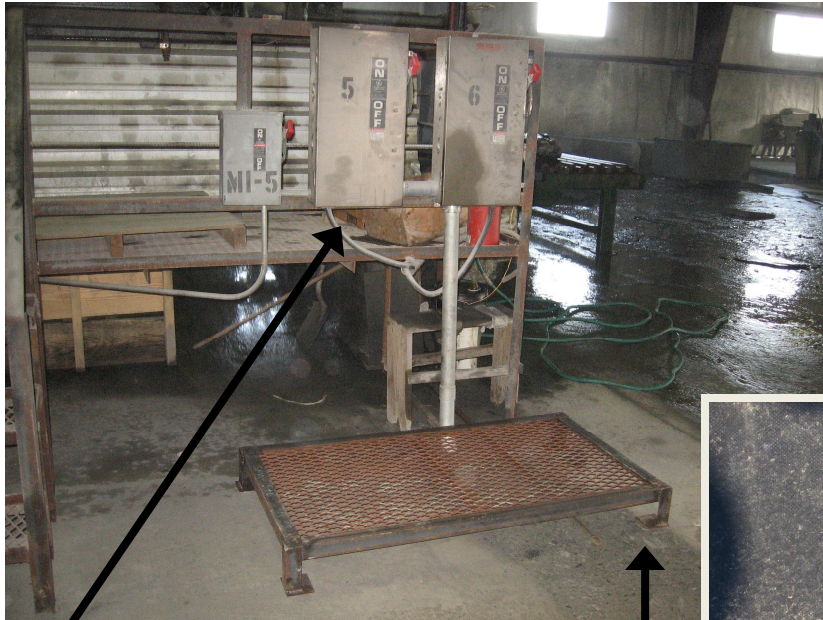
# Nonconductive Electrical Safety Mats

- **4VAC25-40-2180.** Dry, wooden platforms, insulating mats, or other electrically nonconductive material shall be kept in place at all switchboards and power-control switches where shock hazards exist. However, metal plates on which a person normally would stand and which are kept at the same potential as the grounded, metal, non-current-carrying parts of the power switches to be operated may be used.



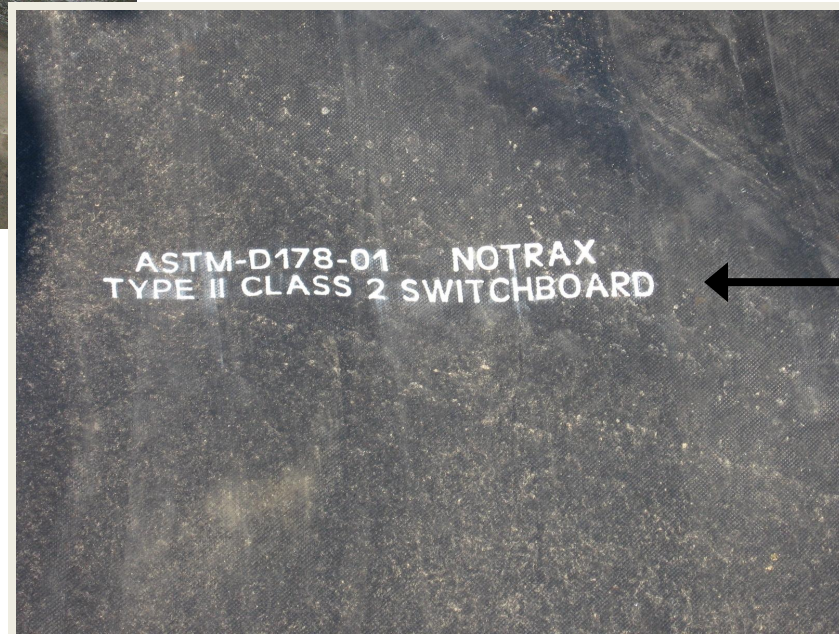
# Nonconductive Mats, cont.

- Use the right materials for the job!!



NEMA #12, stainless steel switch boxes in a severe application.

Heavy angle iron and expanded metal.



Proper electrical rubber matting.



# Nonconductive Mats, cont.

- Is there anything wrong with these installations?



Does it matter if the metal platform is grounded back to the structure?

# Nonconductive Mats, cont.

- Is this the best protection?
  - If you stand on the rubber mat, you are insulated from the grounded metal platform, totally defeating the purpose of the platform!!
- Keep in mind that rubber mats must be replaced periodically since they will deteriorate over time and may become conductive!





# De-energize And Lockout/Tag Out

- **4VAC25-40-2140/2150**  
Electrically powered equipment and power circuits shall be de-energized before work is done on the equipment or circuits. Switches are to be locked out and tags or other notices are to be placed at the power switches that are signed by the persons placing them. The locks and tags shall be removed only by those who put them in place or by an authorized person.



# De-energize To Avoid Arc Flash/Blasts



- A number of serious injuries and deaths in recent years have been due to arc blasts.
- Failure to properly de-energize circuits prior to work can result in these dangerous occurrences.



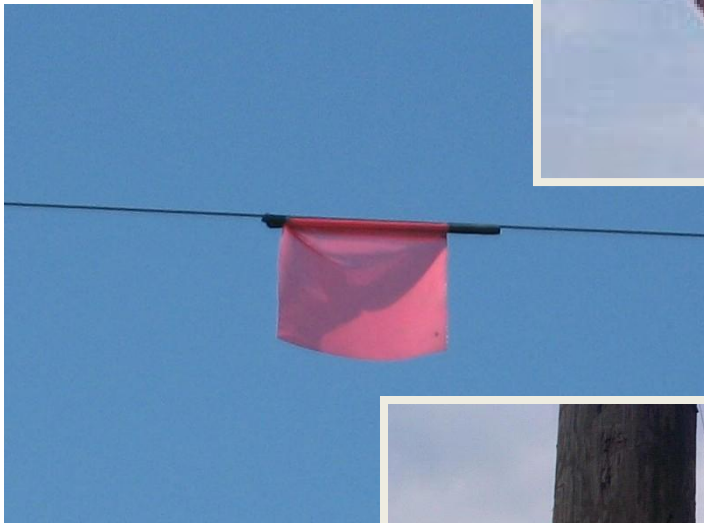
# Arc Flash/Blast Results

- All circuits in close proximity to your work must be de-energized, not just the one being worked on. Current will sometimes arc across a considerable distance resulting in severe injuries and death.

\* These pictures are associated with those on the previous slide. This person suffered scorching/burns to his face as well.



# Overhead Power Lines



- **4VAC25-40-2500.**  
When equipment must be moved or operated near energized power lines and the clearance is less than 10 feet, the lines shall be de-energized or a warning sign posted or other precautionary measures taken.