

# 2015-2016 FFA/GEMC

## Speech/Demonstration Topic

**PROBLEM:** The contestant will be expected to thoroughly explain the operating principles and installation of two, 120 volt circuits installed in an 800 ft<sup>2</sup> barn that will be used for raising beef show calves. The 15 Amp lighting circuit will consist of one single pole switch with a weatherproof and corrosion resistance toggle switch cover with actuating lever and two vapor tight ceiling mounted lights. The 20 Amp receptacle circuit shall be Ground-Fault Circuit-Interrupter protected (GFCI) (breaker type), and shall consist of two duplex receptacles. Conductors will be solid THHW (individual conductors) run in PVC conduit. All devices and conductors will be in weatherproof boxes with weatherproof covers listed as suitable for use in wet locations.

### **Materials List:**

The following list of materials will either be attached to the demo frame or laid out for the contestant to use as they explain the installation of the circuits.

- 2 - 4" Round die-Cast Aluminum Box, weatherproof and corrosion resistance, 16.1 cubic inches
- 3 - 1 Gang deep, Die-Cast Aluminum Boxes, weatherproof and corrosion resistance, 23 cubic inches
- 2 - Cast, weatherproof and corrosion resistance coverplates, duplex receptacle, vertical, 2 self-closing lids
- 1 - Cast, weatherproof and corrosion resistance toggle switch cover with actuating lever; mounts directly over switch
- 2 - Vapor proof ceiling fixture, die-cast aluminum, silicone gasket, porcelain socket, one piece die-cast guard
- 2 - 20 Amp duplex receptacles
- 1 - Single-pole toggle switch
- 1 - 20 Amp GFCI single-pole breaker
- 1 - 15 Amp single-pole breaker
- 1/2" PVC Conduit, schedule 40
- 3 - 1/2" PVC elbows
- 1 - 1/2" PVC "T"
- 6 - 1/2" PVC couplings
- 9 - 1/2" PVC male threaded couplings
- 9 - 1/2" Lock nut
- 8 - 1/2" Plastic bushing
- 8 - 1/2" PVC straps
- 4 - #12 AWG Grounding pigtailed with screws
- 4 - Green solderless connectors
- 4 - Red solderless connectors
- 4 - Yellow solderless connectors
- #14 AWG, THHW solid, white conductor
- #14 AWG, THHW solid, black conductor
- #14 AWG, THHW solid, green conductor
- #12 AWG, THHW solid, white conductor
- #12 AWG, THHW solid, black conductor
- #12 AWG, THHW solid, green conductor

### References:

2014 National Electric Code  
AAVIM – Electrical Wiring  
Agricultural Wiring Handbook  
Student Guide to Wiring  
Poster Size Schematic Drawing



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