

2019-2020 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 ft² 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; a junction box will be installed and serve as the pull point for conductors. Conductors will be stranded 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
- 4 - 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
- 1 - Cast, weatherproof and corrosion resistance outlet box cover
- 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
- 3 - 1/2" PVC couplings
- 12 - 1/2" PVC male threaded couplings
- 2 - 1/2" Lock nut
- 4 - 1/2" PVC straps
- 1 - #12 AWG Grounding pigtailed with screws
- 1 - Red solderless connectors
- 1 - Yellow solderless connectors
- 14 AWG insulated Fork Connectors
- 12 AWG insulated Fork Connectors
- Crimping Pliers
- #14 AWG, THHW stranded, white conductor
- #14 AWG, THHW stranded, black conductor
- #14 AWG, THHW stranded, green conductor
- #12 AWG, THHW stranded, white conductor
- #12 AWG, THHW stranded, black conductor
- #12 AWG, THHW stranded, green conductor

References:

2017 National Electric Code
AAVIM – Electrical Wiring
Agricultural Wiring Handbook
Student Guide to Wiring
Poster Size Schematic Drawing



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