



AMERICAN INSTITUTES FOR RESEARCH®

Knowledge's Captured on the National Cable Splicing Certification Program's Core Knowledge Exam

A. Electrical Theory	
1.	Knowledge of Ohm's Law and related formulas
2.	Knowledge of resistance/impedance and its effects
3.	Knowledge of inductance and capacitance
4.	Knowledge of series, parallel, and combination circuits
5.	Knowledge of direct current (DC) theory
6.	Knowledge of alternating current (AC) theory
7.	Knowledge of system configurations (e.g., delta, wye)
8.	Knowledge of ferro-resonance and its effects in underground systems
B. Grounding	
9.	Knowledge of the principles of grounding theory
10.	Knowledge of cable systems grounding requirements
11.	Knowledge of bonding
12.	Knowledge of how conditions affect grounding (e.g., atmospheric conditions, soil conditions, building materials)
13.	Knowledge of ground conductor routing (e.g., phase ground creepage, fault indicators, shield breaks)
C. Basic Math Principles	
14.	Knowledge of how to apply basic math and measurement principles (e.g., decimals, ratios, order of operations, fractions)
D. Safety	
15.	Knowledge of hazards of energized circuits
16.	Knowledge of personal protective grounding theory and practices
17.	Knowledge of first aid
18.	Knowledge of CPR
19.	Knowledge of emergency response procedures (e.g., manhole entry procedures, pole top rescue)
20.	Knowledge of appropriate OSHA safety regulations and standards
21.	Knowledge of jobsite safety requirements (e.g., contractor, customer)
22.	Knowledge of personal protective equipment (PPE)
23.	Knowledge of proper procedures when working with hazardous materials

E. Cable Properties	
24.	Knowledge of cable and cable components including their electrical/mechanical functions and ratings
25.	Knowledge of the care and handling of cable
26.	Knowledge of the common causes of cable and cable accessory failure
27.	Knowledge of how to avoid damaging cable and cable accessories
28.	Knowledge of cable phasing and rotation
29.	Knowledge of appropriate fire proofing procedures
30.	Knowledge of effective environmental sealing techniques
F. Cable Preparation	
31.	Knowledge of cutbacks and why, when, and how to make them
32.	Knowledge of why, when, and how to pencil insulation

G. Splices	
33.	Knowledge of types, parts, and properties of splices
34.	Knowledge of electric stress control in a splice
35.	Knowledge of how environmental conditions will affect splices
36.	Knowledge of how to build an effective environmental seal
37.	Knowledge of type, properties, and application of connectors
38.	Knowledge of common causes of splice failure and how to avoid them
H. Terminations	
39.	Knowledge of types, parts, and properties of terminations
40.	Knowledge of electric stress control in a termination (e.g., geometric, capacitive, resistive stress control)
41.	Knowledge of how environmental conditions will affect a termination
42.	Knowledge of how to build an effective environmental seal for a termination
43.	Knowledge of type, properties, and application of terminal connectors (e.g., pin terminals, lugs)
44.	Knowledge of tracking protection (e.g., external insulation between conductor and ground)
45.	Knowledge of common causes of termination failure and how to avoid
46.	Knowledge of the difference between load and dead break connectors
I. Splicing and Terminating Materials	
47.	Knowledge of types, properties, and appropriate application of tape
48.	Knowledge of basic type of kits, kit components, and appropriate applications
49.	Knowledge of the type, properties, and appropriate application of cable cleaners
50.	Knowledge of type, properties, and appropriate application of other cable splicing and terminating materials (e.g., silicone grease, potting compound, oxide inhibiting compounds, sealants)

J. Diagrams and Drawings	
51.	Knowledge of how to read and interpret blueprints/CAD drawings, including symbols and scales used
52.	Knowledge of how to read and interpret schematic diagrams (e.g., circuit diagrams)
53.	Knowledge of how to read and interpret company, engineer, or manufacturer supplied instructions
K. Tools and Equipment	
54.	Knowledge of how to select and use tools and equipment
55.	Knowledge of how to maintain tools and equipment
L. Management of Cable Splicing and Terminating Tasks	
56.	Knowledge of scope of job
57.	Knowledge of the design of the system circuits and equipment
58.	Knowledge of how to select the appropriate splice, termination, or separable connector

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