

Cable Lore

ANACONDA 

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THE GREATER THE SOPHISTICATION IN CABLE DESIGN, THE MORE URGENT THE NECESSITY FOR EXACTNESS IN CABLE HANDLING, TERMINATING AND SPLICING

In a sense the only cable component necessary for transmitting power is the conductor. Additional components are added only when additional functions are required and justified. These usually fall into the following areas:

- (1) **Space is at a Premium.**
The simple substitution of suspended insulated cables for bare overhead wires at least triples the cost of a power circuit, and the installation of a conduit or duct runs increases the cost many more times.
- (2) **Safety is of Prime Concern.**
- (3) **Once a decision to use insulated cables is justified -- furnishing a design that will provide maximum performance.**
- (4) **An auxiliary component is required, such as a ground monitoring wire.**

It is well established that, in most applications requiring our immediate interest, space is at a premium. The basic building blocks of a cable for this set of conditions are: (1) a conductor; (2) an insulation; (3) a protective sheath. Historically this construction has been reliable through 600 volts and has a good record through 2000 volts. From 2001 to 5000 volts, a calculated risk is involved. Above 5-kV the cable, from a safety point of view, should be treated like a bare conductor.

To satisfy customers' safety requirements, or to improve performance, one or more of the following is usually added to the basic cable design:

- (1) **Strand Shield**
- (2) **Semiconducting Tapes**
- (3) **Conductor Shields**
- (4) **Grounding Conductors**
- (5) **Insulated Control Wires**

Each additional component added to the basic design requires an additional degree of exactness in handling, terminating, and splicing. Certain cable practices, then, become mandatory, otherwise what was intended in added safety and performance can be completely defeated and becomes a potential hazard.

Following are a few samples:

- (1) Shielded cables are vulnerable to mechanical damage and must be handled with extreme care.
- (2) Shielding systems must be grounded -- a floating shield is a hazard.
- (3) As a rule of thumb, any cable with a shield over the conductor should be terminated with stress relief cones.
- (4) Semiconducting tapes must be removed at terminations and the surface of the insulation cleaned.
- (5) Grounding conductors must be continuous and grounded.

Sophisticated cables cost more money. You get your money's worth when you take time to understand the function of each component and make provisions for each component to work at top efficiency.

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