

## Spacer Cable for Transmission Underbuild Lower Profile, Higher Reliability, Lower Cost

An outstanding application for aerial spacer cable is as distribution underbuild on an overhead transmission line. When electric utilities have a need for a distribution circuit that closely parallels an existing transmission circuit, the use of bare conductors leaves the utility with several options, none of which are desirable. One possibility is to build an entirely new distribution circuit on a new right of way parallel to the existing transmission circuit (such as on the other side of the road). This is the most expensive approach, requires maximum right of way, and causes maximum sight impact.

The second possibility is to build the distribution circuit under the transmission conductors using the existing transmission poles or structures as support. The long transmission spans commonly require the setting of new intermediate poles to avoid the closer spaced distribution conductors from making contact in the wind. This is also expensive and may actually cause an even more objectionable sight impact. Finally, this bare wire underbuild may create a reliability issue. If one of the transmission conductors falls onto a bare wire below, it might energize the distribution circuit at transmission voltage. This could cause extensive damage to equipment such as motors, microwave ovens, clocks, equipment panels and controls connected to the distribution circuit.

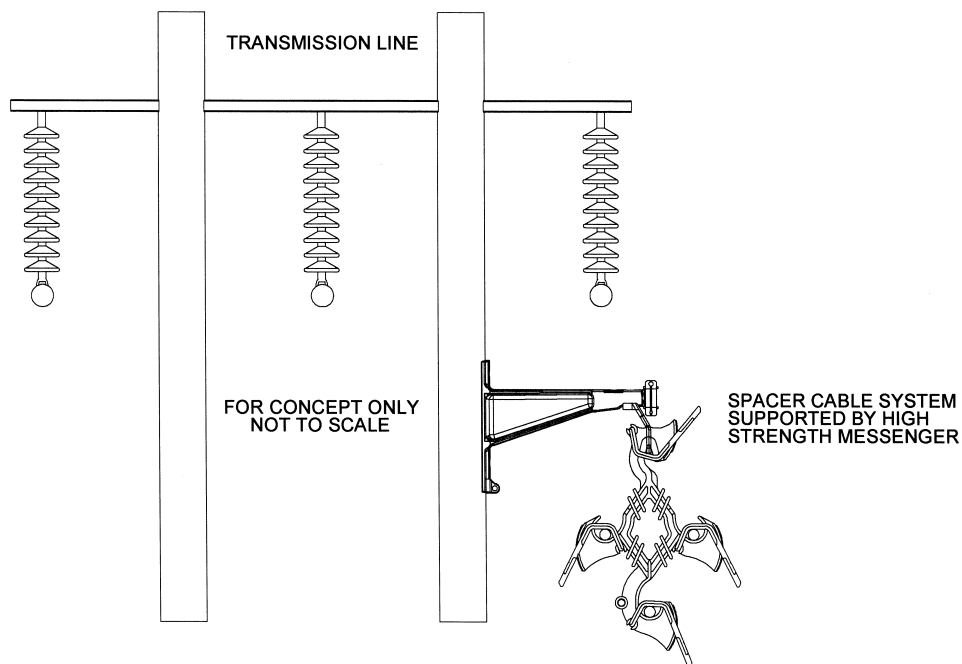


Fig. 1 - Spacer Cable Underbuild

### **Compare Spacer Cable Underbuild with Bare Wire**

A spacer cable circuit (Fig. 1 and Photo A) does not require additional spacing between phases with longer span lengths as the spacers maintain the phase spacing as a constant, regardless of span length. The need for intermediate poles for this purpose is eliminated. Not only is the cost savings large, but sight impact is minimized. In this case, reliability (and safety) is enhanced. A downed transmission conductor is most likely to contact the high strength, well-grounded messenger. The inrush of fault current results in rapid relaying to disconnect the transmission circuit. The higher impulse strength of the covering on the phases may avoid energizing at transmission voltage due to an unlikely momentary contact.



**Photo A - Spacer Cable Underbuild – Golf Course**

By way of comparison, consider a 556 kcmil bare wire transmission circuit (4/0 ACSR shield wire) mounted on 55ft., Class 2, western red cedar wood poles with 400 ft. spans. A 266 kcmil, 15kV spacer cable circuit could be added to the existing poles, instead of a 4/0 ACSR bare wire circuit, with a conservatively estimated 20% cost savings.

In summary, the benefits of spacer cable over bare wire for these applications are:

- Lower first cost
- Lowest right of way requirement
- Lower sight impact
- Enhanced safety and reliability

Hendrix Spacer Cable is clearly the smart choice for transmission underbuilds.