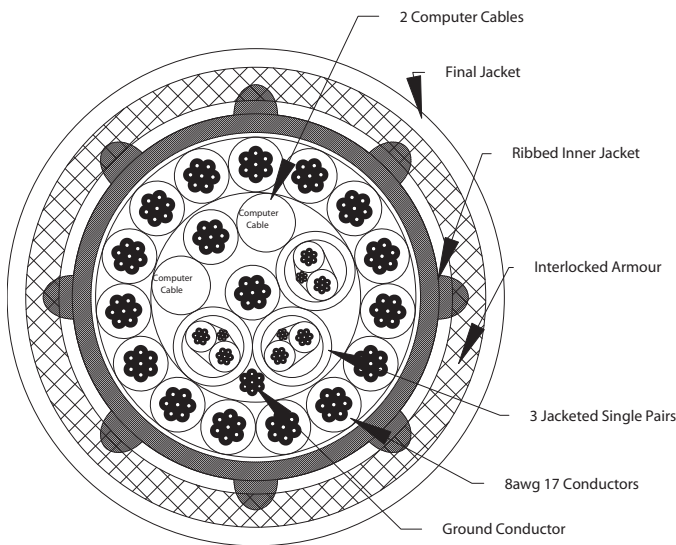


Cable Design

by Janice Ferguson

Designing a cable starts with a customer requirement that can range from a detailed, multi-page specification to a single line description. In any case, a drawing is used to determine spatial orientation of the various components.

An outcome of a customer cable requirement is the cable shown below. It consists of two computer cables, three single pair 14 AWG instrument cables with a 35 mil jacket, seventeen 8 AWG conductors and a bare ground conductor. The cable is to be suspended vertically in a mine shaft thus the need for a ribbed inner jacket. The steel interlocked armour bites into the ribs to "lock in" the cable core and prevent longitudinal movement due to gravity.



The design starts with laying out the cable components using drawing software such as AutoCAD.

The cable core construction is determined with consideration given to the cable application. This could involve the amount of flexibility, any components sensitive to stress, ground wire placement, symmetry of design and diameter restrictions.

The optimum design would normally be the smallest circular diameter possible in order to keep cable cost and weight to a minimum.

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ShawFlex The Circuit

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Special Points of Interest:

- Lead times are back to 5-6 weeks x factory
- Please remember lead times are x factory dates and you must allow for freight time to your location. In the West that can sometimes be 5-7 days.
- ShawFlex Sales Managers are available for training sessions with your branches if you require.

Cable Design *continued*

The complexity of the design increases with greater number of components of varying sizes.

In the previous cable, the inner layer consists of two computer cables, three jacketed single pairs and two single conductors, all supporting the outer layer. The inner layer is designed first through trial and error until a diameter is obtained to support the outer layer seen on page 1. Fillers are used in the inner interstices to ensure that the inner components stay in place and provide a circular core for the outer layer of components.

If this cable was being used in a flexing application the components that are sensitive to the stresses of bending would be brought to the inner layer but not to the center. The center tends to be a high stress area. Cables used in flexing applications are usually comprised of layers with reverse lay to prevent the cable core from loosening and to allow the layers to move freely. This core construction is more concentric and, in some composite constructions, challenging to design.

Optimum ground wire placement is closest to the center of the core. Careful consideration must be given to the fact that the ground wire is often bare and if placed in compression with insulated conductors can cause damage to the insulation of adjacent conductors.

The customer often gives restrictions to the overall size of the cable. Size constraints can be challenging to the designer.

Designing a cable core can take more than several attempts especially when limitations are in place. Custom cables with complex designs, whether it is size restrictions, custom specification or special requirements, are in demand in the cable industry.

ShawFlex is a custom cable manufacturer of composite cable designs including components such as coax, fibre optic, computer cables, strength members, multiple gauge size components and numerous other specialty constructions. The specialty constructions may utilize special tapes, water blocking gels, and special insulating and jacketing compounds. At ShawFlex designing a cable is all about the special requirements of our custom-



**Introducing the new ShawFlex
VP of Sales and Marketing**

Mr. Doug Wood



Introducing More ShawFlex Team Members

New VP, Sales and Marketing and all around good guy (it's on his card!) is Doug Wood. Doug was recently the National Sales Manager for Canada and has been with ShawFlex for six years. Doug's knowledge and background in wire and cable will certainly assist ShawFlex in moving ahead with our sales and marketing format.

Central Canada's Inside Sales: Hardworking, knowledgeable, likeable and fun best describes the Central Canada inside salesperson Marnie Thomas. In 2002 she celebrated the completion of eleven years of dedicated service with ShawFlex. Marnie became quite the celebrity in 2001 when she outperformed everyone else in the weekly NFL pool picks. What made this tough for the guys

was the fact that she has no interest in football and never watched any of the games!! Give her a call; maybe she will give you her secret.



Upcoming Events:

October 18, 2002
Electro Federation Track side Tent Event
Toronto, ON
Information: Leah Mitchell, 905 602 6712

October 24, 2002
Grande Prairie Electrical Learning EXPO
Crystal Centre, Grande Prairie, AB
Information: Tara Ternes, 403 514 3085

November 1, 2002
IEE/IEEE Ottawa Electricity Deregulation
Ben Franklin Place, Centrepointhe Theatre
Ottawa, ON
Information at Aldan Foss

May 8-10, 2003
Electrical Industry Conference
Blue Mountain Resort
Collingwood, ON



Trivia Challenge

Trivia Answer Volume #5:

What is the day job of this weekend pirate?
Answer: VP, Sales and Marketing, ShawFlex

New Challenge

How much wood could a woodchuck chuck if a woodchuck could chuck wood?

- a) 10 board feet
- b) 25 board feet
- c) 45 board feet

News from Across the Country

Western Droppings

Kyoto is the talk of the town in the West right now. CNRL, True North and even Petro Canada have announced slowdowns at the engineering stage of their projects in the Fort McMurray and Fort Saskatchewan regions of Alberta as they decide if these projects will proceed.

BC Hydro has announced they will proceed with their project short list of co-generation stations. The final selection will take place January 2003 and the commercial operation must be in place by November 1, 2005. BC Hydro is targeting 800 new gigawatt hours per year on line.

Eastern Tidbits

After much criticism, Hydro Quebec have stepped on the gas on development projects. It has been estimated that within five years the demand for electricity would surpass their capacity. There are currently four projects underway, Eastmain, Ste-Marguerite, Tounoulstouc and Grand-Mere with three worth over \$1 billion. An additional six projects are being developed, including the controversial gas generating plant not far from Montreal. A total of 4,248 mW are planned. Such development by HQ is always a good sign of upcoming economic prosperity.

Central Crumbs

Ontario's long, hot summer stretched the available power supply to the limit. Demands exceeded 25,000 mW on several occasions. Additional supply had to be imported. The province has stated that its reforms will encourage private investors to add additional generating capability.

The Bruce NPG project should finish on schedule next year. The \$340 million project, which will refit two reactors at the Bruce A plant, should deliver 1,500 mW.

The Brighton Beach project, scheduled for completion in the first quarter 2004, will deliver an additional 580 mW.

There are several other co-gens planned in the province.