

A DOCUMENTATION PROCESS FOR CATV SYSTEMS

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Today's CATV systems are complex networks of specialized electronic equipment and cable -- much too complex to be retained wholly in the minds of the personnel responsible for the system operation. A uniform system of documenting this information must be adopted in order to maintain a CATV system under the standards we operate with today.

To fulfill this requirement, any documentation system must meet the following criteria:

1. Accurate, large-scale maps are needed for proper system design and to ensure correct placement of cable and electronic equipment during construction.
2. Smaller scale, less cumbersome, more durable maps are needed for everyday field use by maintenance and installation personnel.
3. The maps must be readily adaptable to periodic changes and additions that occur once the system is in operation.
4. A permanent copy must be available in storage in the event of accidental loss of the maps in use.
5. The maps must be easily interpreted to prevent costly mistakes during construction and when in operation.

The following system developed by Cox Cable Communications meets all of the above criteria. It has been proven on the drawing board as well as in systems under construction and in operation.

Design and Construction Prints:

The maps used for system design and construction must be on a scale large enough for accurate measurement and ease of comprehension, but also of a size that can be easily handled by men in the field. A map on the scale of one inch to two hundred feet and a size of 24"x36" fulfills both these requirements.

These maps are drawn in ink on pre-cut, pre-printed mylar border sheets (Fig. 1). The use of ink naturally requires a certain amount of additional time, but the combination of ink and mylar produces a master print of a quality and durability that easily compensates for this.

Using a pre-printed border sheet saves time and allows the inclusion of a symbol key strip along with each map. A one-inch overlap beyond the match line on all four sides ensures continuity into all adjoining sheets. The small numbers at the intersection of the match lines indicate the adjoining map numbers. The bar type scale at the bottom was chosen to allow accurate measurement when the map is enlarged or reduced.

Street names, railroads, rivers, poles, strand, span measurements and any other pertinent information is included in these maps to produce the street and strand master map (Fig. 2). Inexpensive blue-line work sheets are printed from this master for use in designing the electronics layout. At this time, an erasable mylar sepia second master also is printed.

The electronics layout, having been completed in pencil on the blue-line work sheet, is now transferred in ink onto the mylar sepia which becomes the electronics master. The electronics was placed on the sepia rather than the original for an important reason. The life of the electronic equipment and cable is much less than that of the mylar original and the strand information shown there. At some point in time, the electronics and cable will be replaced and the existence of the strand master free of electronics will eliminate the need to redraw this portion of the maps.

When the electronic masters are completed, blue-line work prints of whatever number are needed can be run without damage to the masters.

Maintenance Prints:

As a system progresses from the construction phase into normal operation a different set of maps becomes necessary. The original 24"x36" blue-line work prints can be used for maintenance and installation work, but when used constantly from a service truck these maps are difficult to handle and their life expectancy is very short. Therefore, a smaller, more durable set of maps becomes very valuable.

These maps are made by photographically reducing the 24"x36" electronic masters by fifty percent and printing them back on either wash-off mylar or cronaflex. This produces a 12"x18" reduced electronic master (Fig. 4).

From these small masters any number of very inexpensive blue-line prints can be made. These prints are then placed in a rugged plastic binder (Fig. 5) which gives them a life span many times greater than unprotected prints. By using this method it is possible to supply each service and maintenance truck with a complete record of the entire system.

As a bi-product of making the 12"x18" reduced electronic masters, a second very valuable product is also produced. The negative which must be made to accomplish the high quality reduction can be stored in a vault or other secure storage area. In the event of fire or other accident, the negatives can be used to reproduce either the 24"x36" or the 12"x18" masters thus saving considerable time and expense.

Updating:

No matter how accurate or costly any documentation system may be, it becomes virtually worthless if it is not kept up to date. A regular program of periodic updating must be established and carried on. As mentioned previously, we made 24"x36" erasable mylar sepia electronic masters and 12"x18" wash-off or cronaflex reduced masters. These materials were chosen because they accept changes and additions very readily.

Since the trucks are now carrying the smaller size maps it is very inexpensive to remove and discard any sheets where changes have occurred and replace them with new updated copies. By doing this, system personnel will always have an accurate set of maps readily available.

Cost:

The cost of producing a system such as this will vary dependent upon local reproduction cost, but the following figures should serve as a representative average:

| | | | |
|---------|---|--------|------|
| 24"x36" | Pre-printed Mylar Border Sheet..... | \$1.29 | each |
| 24"x36" | Erasable Mylar Sepia..... | 1.53 | each |
| 24"x36" | Blue-line Work Sheet..... | .19 | each |
| 12"x18" | Wash-off Mylar or Cronaflex Reduction..... | 1.85 | each |
| | Film Negative Used in Making Reduction..... | 1.65 | each |
| 12"x18" | Blue-line Print..... | .02 | each |
| | Custom Printed Plastic Binder for | | |
| | 12"x18" Prints..... | 1.83 | each |

The total cost, excluding labor, of one complete set of 12"x18" maps, including binder, for an average system of 150 miles or 40 sheets is \$263.03. This figure may appear high but the majority of the cost is in producing the first set. Each additional set will cost only \$.02 per sheet for the 12"x18" blue-lines and \$1.83 each for the protective plastic binders or a total of only \$2.63.

This method of system documentation will provide the necessary maps for all phases of system operation, from construction on through daily maintenance activities.

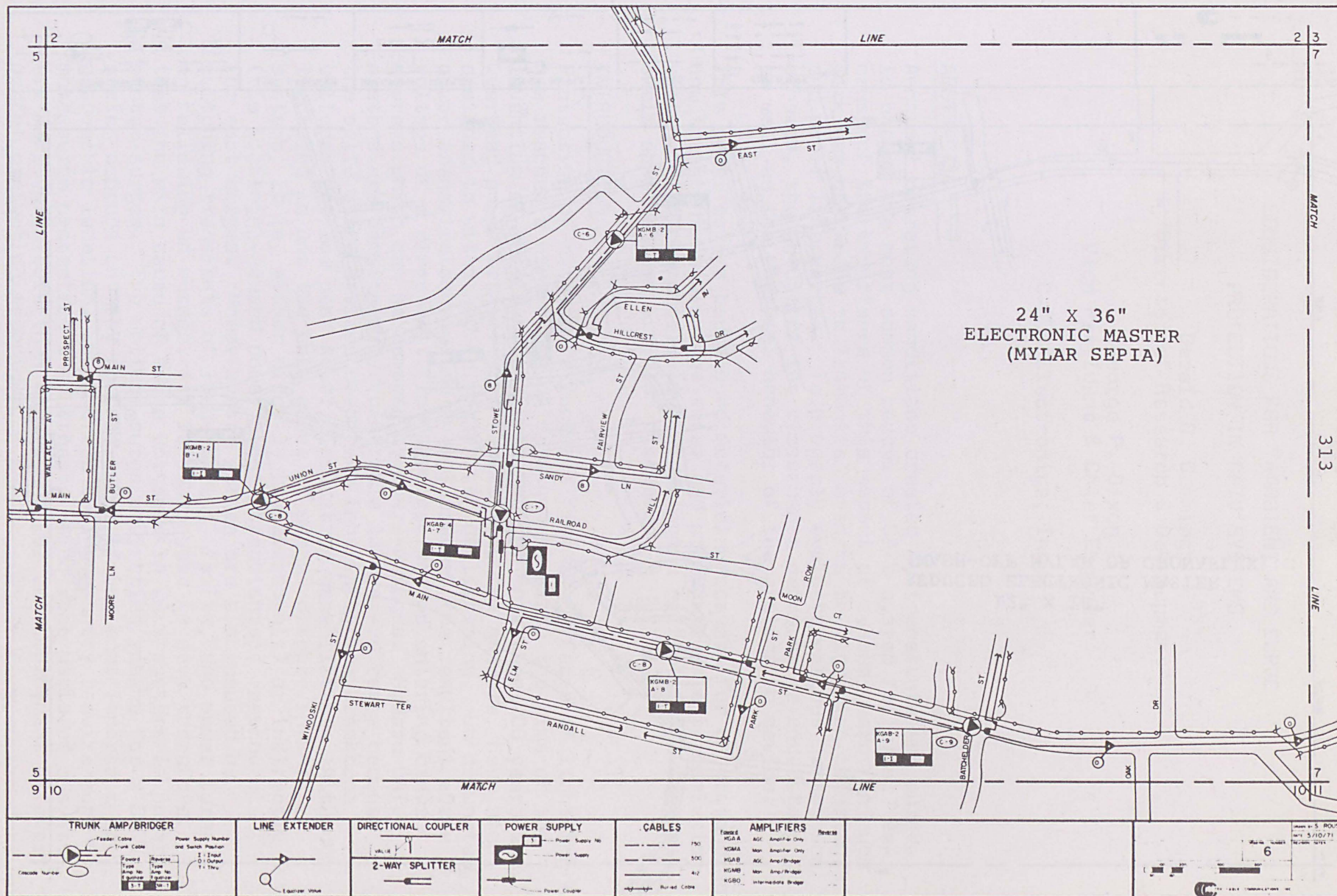


FIGURE 3

