

TABLE 1

WEIGHTING PERCENTGES FOR EVALUATION OF APPLICATIONS

<u>Section</u>	<u>Item</u>	<u>Weighting (%)</u>
17.1 (a)	Identity of Applicant	--
(b)	Cable Experience of Applicant	15
(c)	Description of the Proposed Cable System	20
(d)	Schedule of Proposed Rates and Charges	20
(e)	Commitment on New Services	15
(f)	Financial Data	15
(g)	Response to Community Need and Interest	15
(h)	Additional Information	--
17.2	Application Fee	*
17.3	Bid Bond	*
		<hr/> 100%

(Note: \*Mandatory Requirements)

TABLE 2

EXAMPLE OF EVALUATION TABULATION

Item	Weighting (W)	Applicant A		Applicant B		Applicant C	
		Rating	R x W	Rating	R x W	Rating	R x W
17.1 (b)	15%	3	45	2	30	1	15
17.1 (c)	20%	1	20	2	40	3	60
17.1 (d)	20%	1	20	3	60	2	40
17.1 (e)	15%	2	30	2	30	3	45
17.1 (f)	15%	1	15	1	15	2	30
17.1 (g)	15%	3	45	3	45	1	15
Total	100%		175		220		205

SCHEDULE A

CABLE COMMUNICATIONS SYSTEM DESIGN

SCHEDULE ACABLE COMMUNICATIONS SYSTEM DESIGN1. Design Concept

The design configuration for the Portland/Multnomah County Cable Communications System shall be as illustrated in Figure 1.

(a) Initial Configuration

- The initial system configuration shall provide a single trunk cable ("A" Cable) to serve all residences and institutions in the designated initial franchise area. A tunable set-top converter with a minimum tuning capacity of 30 channels will be provided to enable reception of up to 30 channels of TV-format programming.
- The converters shall be manufactured to include or delete the tuning elements for designated channels or blocks of channels to permit private-channel reception by providing only authorized recipients with converters that can receive the private channels.
- The A Cable shall incorporate at least 3 reverse, or upstream, video channels, to accept signals from specified locations within the community using the sub-band frequency range below 54 MHz.
- The initial system shall include a second trunk Cable "B", designed to permit signal origination from a number of designated institutions throughout the City/County area. Approximately 100 cable/miles of B Cable shall be installed initially, providing access to designated institutions. Included among the initial connections shall be all institutions in the City/County either currently possessing video studio facilities, or planning such facilities for installation before construction of the cable system begins. The B Cable shall have an ultimate capacity of at least 28 channels, with a minimum of 7 inbound channels activated initially. The frequency assignments shall be approved by the Grantor before activation.

Initial -- Cable A throughout franchise area.

Cable A only originates upstream; Cable B only to selected institutional users. Signals originated on Cable B are received on unused downstream channels of Cable A.

### Growth Increments

- (1) Expand Cable B to other institutional users.
- (2) Add Cable C when downstream capacity of Cable A approaches saturation. At that time, Cables B/C form dedicated network, and Cable A provides full 30-channel capacity to subscribers.
- (3) Add a duplicate of Cable A when the 30-channel downstream capacity to subscribers approaches saturation.

FIGURE 1

PORTLAND/MULTNOMAH COUNTY CABLE SYSTEM -- RECOMMENDED SYSTEM CONFIGURATION

- The B Cable shall be a one-way inbound cable, transmitting signals from their point of origin to the Master Headend, at which point they will be converted in frequency and redistributed to recipients via downstream channels of the A Cable. The leased access channels of the A Cable shall be used initially for this purpose, if the applicant proposes on both the A and B cable system. If the applicant proposes only on the B cable system, the B cable shall provide both inbound and outbound channels.

(b) System Expansion

The initial system configuration shall be expanded in accordance with the following expansion milestones:

- When 7 or more channels of the inbound B Cable are utilized at capacity for a six-month period ("capacity" is defined as either being leased by a user to the exclusion of others, or averaging over six hours of transmission a day), the Grantee shall be required to install an outbound "C" Cable for institutional use, as shown on Figure 1, within one year after Grantor request. The A/<sup>B</sup>/C Cable configuration shall maintain the ability to send communications from B to institutional recipients along Cable C, or to the cable subscribers on Cable A, or both.
- When 24 or more channels of the A Cable are utilized at capacity for a six month period, the Grantee shall be required to install a fourth cable, duplicating Cable A in that it will connect to all residences and institutions in the franchise area. This "D" Cable shall be completely installed within two years after Grantor request. The Grantee shall have the right to defer the installation of converters on the D Cable until at least 6 channels of the D Cable are in use.

If it is feasible to provide more channels on the A Cable, by using higher frequencies and new converters with greater channel capacity, rather than installing a D Cable, the Grantor shall have the option of accepting or rejecting this approach.

- At 3-year increments, beginning with the date the initial B Cable is energized and available for use, the Grantor shall have the right to require the Grantee to expand the geographical coverage of the B Cable to include additional institutional users, as designated. The C Cable, whenever activated, shall cover the identical area and users as the B Cable at all times.

## 2. Design Details

### (a) Franchise Area

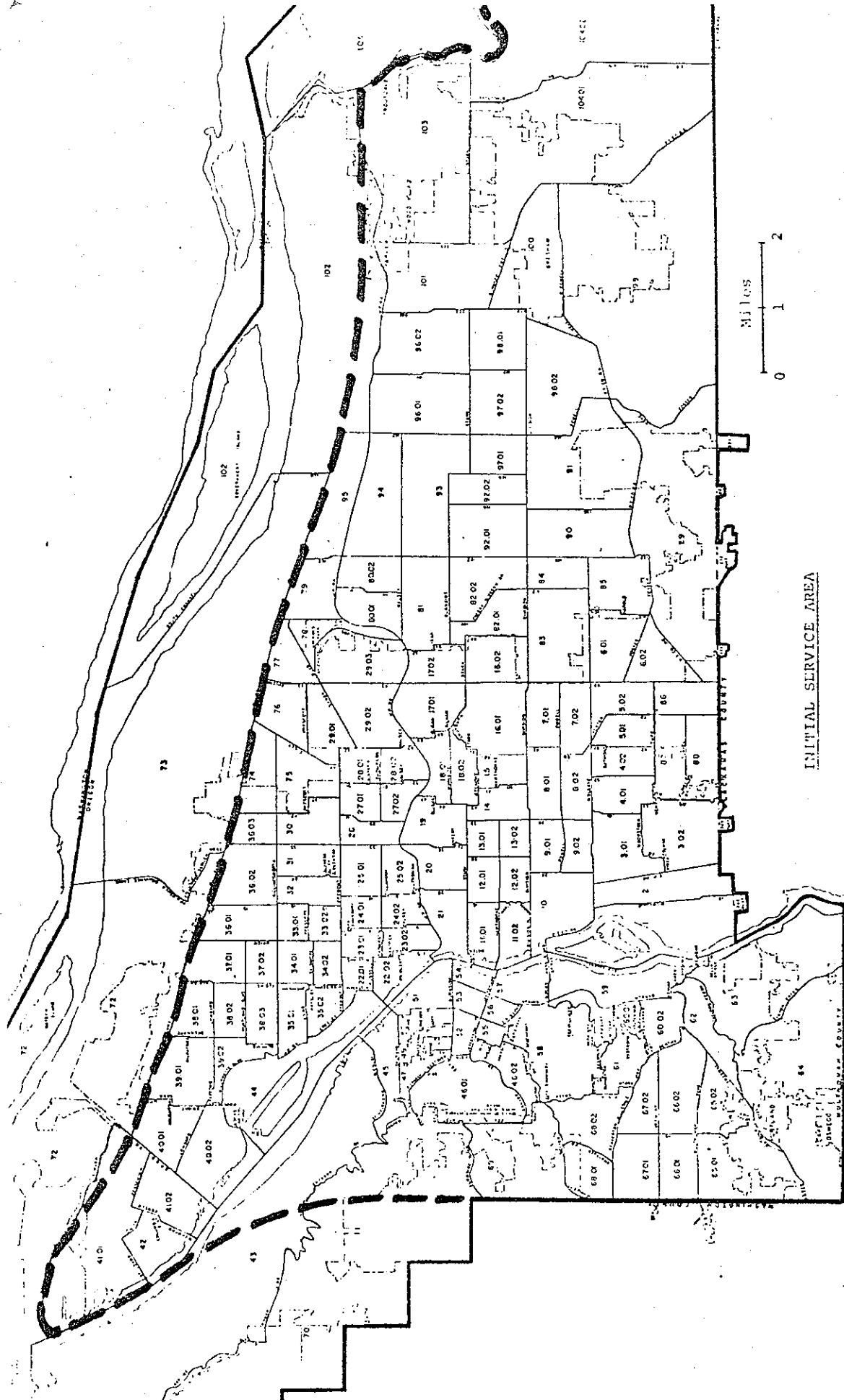
The total franchise area under consideration includes all of Multnomah County. Within this total, an initial service area has been selected which includes all of the City of Portland and a County Service Area that can be served economically by a cable system.

Figure 2 defines the initial service area, bounded on the east by the Sandy River, but excluding the incorporated cities of Gresham, Troutdale, Wood Village, Fairview and Maywood Park. The major demographic characteristics are:

- Area: 141 square miles
- Population: 541,000
- Dwelling Units: 202,000
- Average Dwelling Units/Sq. Mile: 1,432
- Average Dwelling Units/Street Mile: 107
- Street Miles: 1,888

Within this initial service area, a key geographic factor is the Willamette River which divides Portland, and makes microwave Local Distribution Service (LDS) a probable choice for signal distribution across the barrier of the river.

For the County areas outside the initial service area, the Grantor shall have the right to require service to be extended to contiguous developing sections when the population density has reached a minimum of 50 dwelling units per street mile. In that event, Grantee shall provide service within one year after Grantor's request.



INITIAL SERVICE AREA

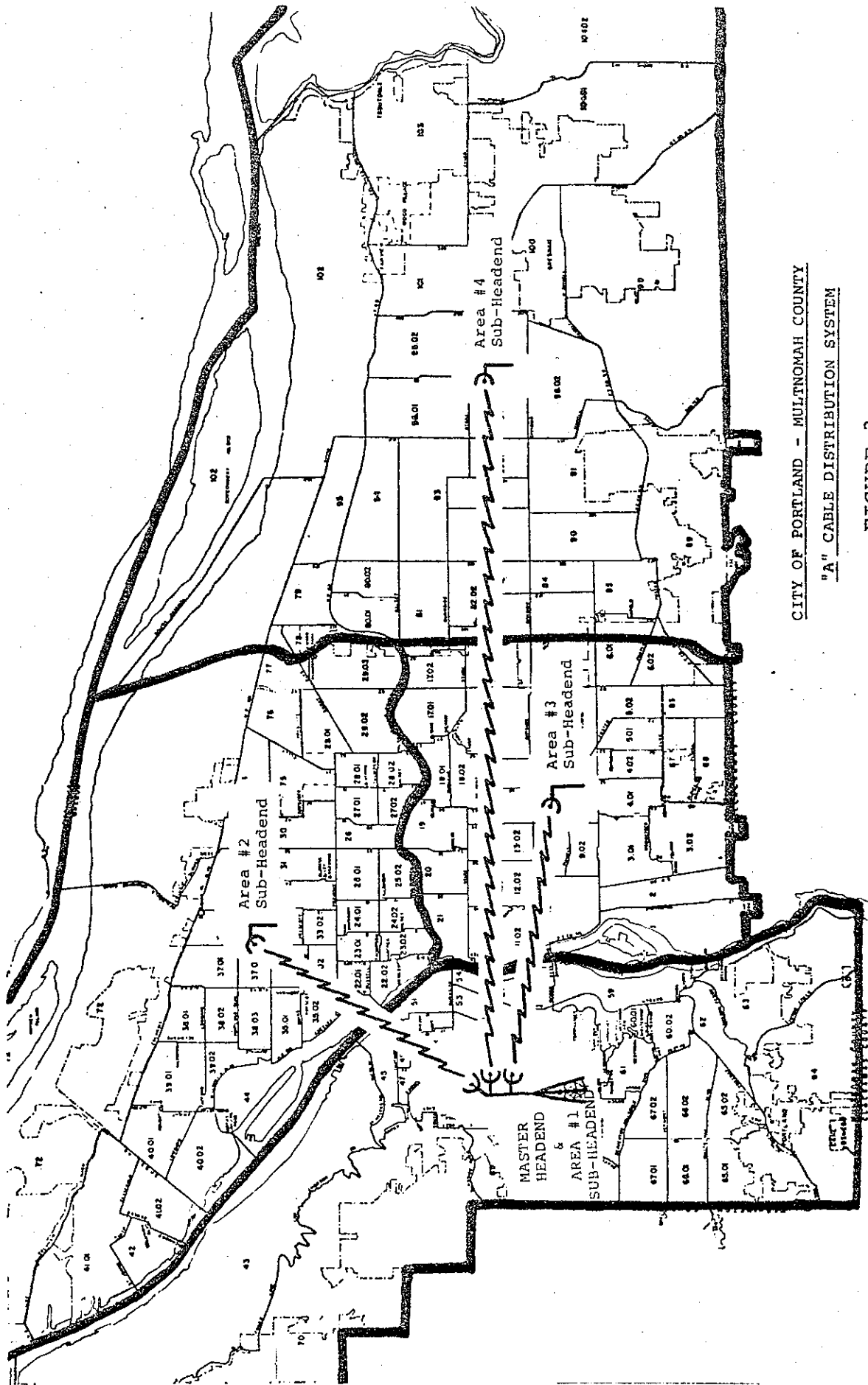
FIGURE 2



(b) Headend(s) and Signal Distribution

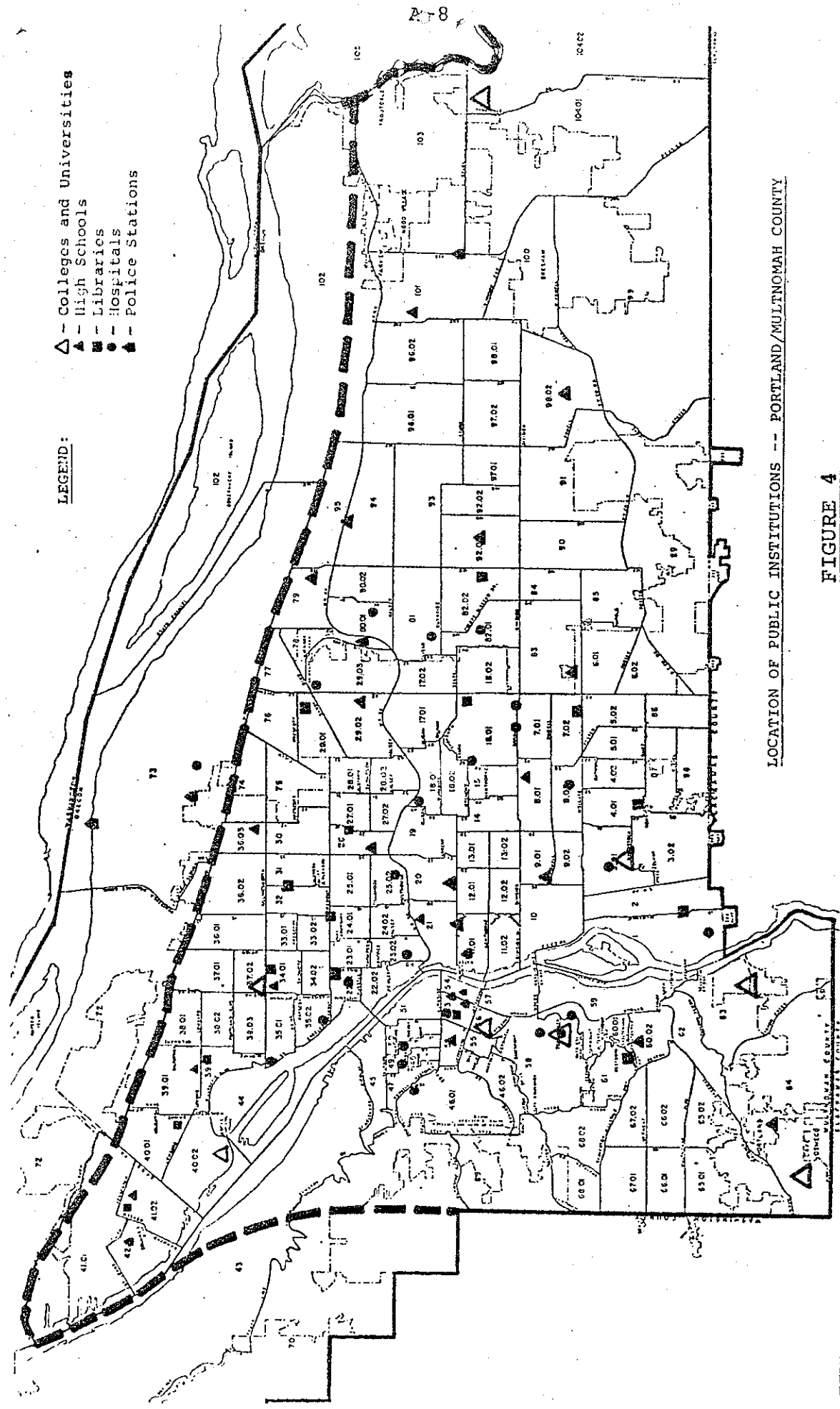
The initial service area shall be served by the following headend and distribution configuration:

- The system shall incorporate a Master Headend and 4 Area Sub-Headends, located approximately as shown on Figure 3. The Master Headend may be combined with the Area #1 Sub-Headend if a suitable location is found which permits both tower/antenna installation and distribution hub facilities.
- The Master Headend shall have the capability to transmit, via multichannel microwave (Local Distribution Service), up to 30 active outbound channels of TV programming to each of the Area Sub-Headends. Each Area Sub-Headend shall have the capability to receive up to 30 video channels, and shall serve as the distribution hub to the surrounding area.
- The Area Sub-Headends shall have the capability to transmit up to 3 active reverse channels.
- Trunk Cable A shall distribute signals radially from each Area Sub-Headend Hub. It is anticipated that each hub will have 2-4 associated "spokes" for Cable A.
- Each hub trunk cable shall have provision for at least one community access point for signal transmission upstream to the Area Sub-Headend. At least one upstream channel of the A Cable shall be assigned as the community access channel, and its signal shall be up-converted at the Area Sub-Headend and retransmitted down the same trunk line from which the signal originated. There shall also be provision at the Area Sub-Headend to interconnect any or all downstream community access channels, for common programming.
- The path of the B Cable shall be determined by the institutions required to be connected. Figure 4 shows the location of major public institutions, and Figure 5 outlines a B Cable path that would link these institutions to the cable system. Figure 5 shall be a minimum network for the initial configuration of Cable B.



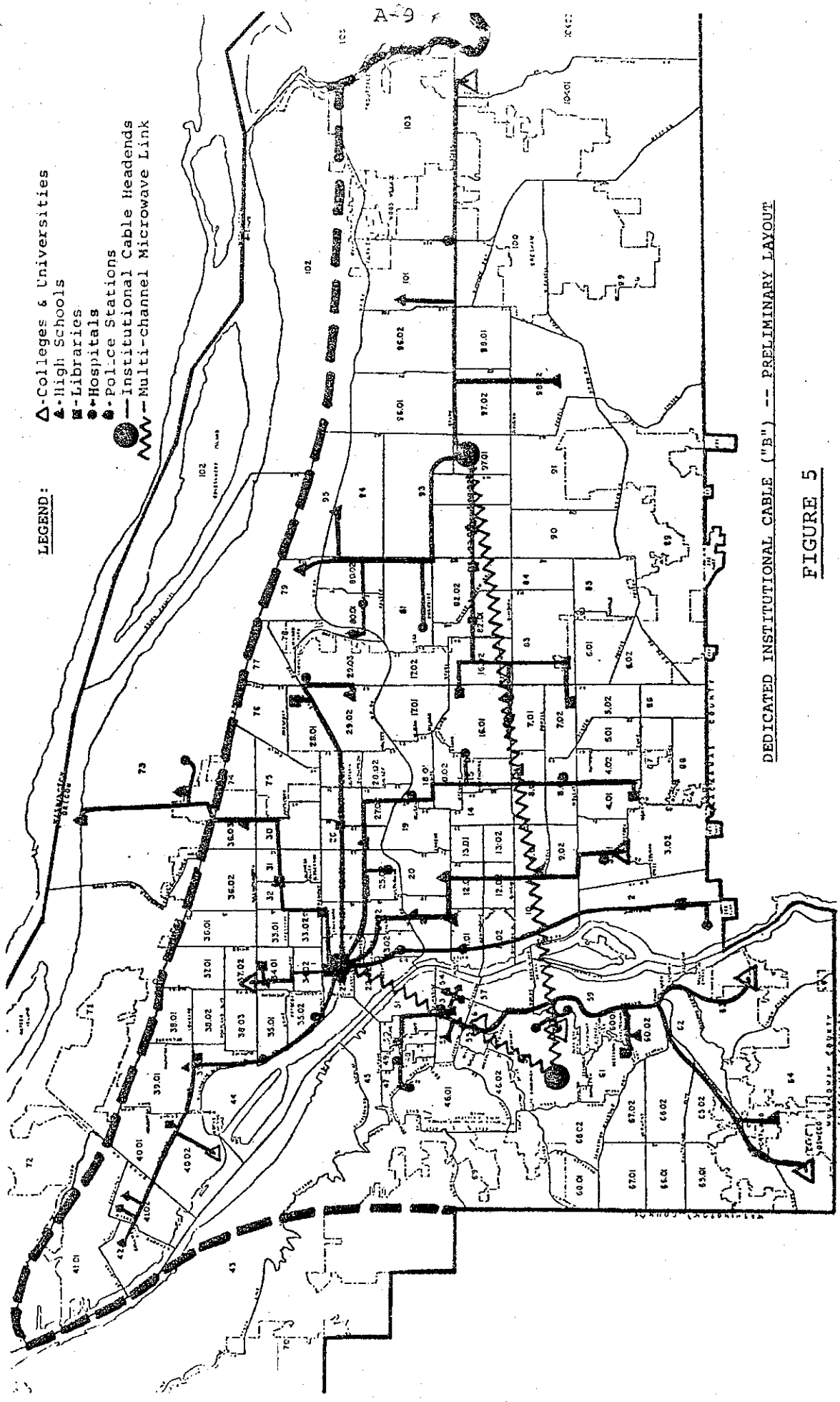
CITY OF PORTLAND - MULTNOMAH COUNTY  
 "A" CABLE DISTRIBUTION SYSTEM

FIGURE 3



LOCATION OF PUBLIC INSTITUTIONS -- PORTLAND/MULTNOMAH COUNTY

FIGURE 4



DEDICATED INSTITUTIONAL CABLE ("B") -- PRELIMINARY LAYOUT

FIGURE 5

- To minimize B Cable signal degradation and provide as high quality signals as possible, the use of low frequency transportation techniques, or other to maintain specified technical standards, shall be considered. Since a signal may originate at the eastern extreme of the franchise area, travel inbound to the Master Headend and then be sent out on the A Cable to recipients also in the East County, a total transportation distance of 20-30 miles will be required. The system shall be designed to provide signals exceeding FCC technical standards under these conditions.
- Sub-Headends shall be used on the B Cable also, with multichannel microwave links back to the Master Headend as shown in Figure 5. These Sub-Headends may be at the same locations as the A Cable Sub-Headends if the outbound and inbound microwave links do not interfere with each other.
- A minimum of 7 active inbound channels shall initially be provided on the B Cable. If low frequency signal transportation techniques are used, two cables each carrying seven channels in the 6-48 MHz band, shall be provided.
- The B Cable shall also have the capacity to carry data and audio signals, as well as video, with the addition of appropriate modulator terminals at the origination points, and demodulator terminals at the receiving points (on the A Cable). At least 2 of the 7 inbound channels shall be allocated for subdivision into data and/or audio subchannels.
- The 7 inbound B Cable channels, plus the matching outbound A Cable channels, shall be considered the equivalent of leased access channels, subject to the appropriate franchise ordinance regulations.
- The Master Headend and Sub-Headends shall, in the initial configuration, contain all provisions for signal processing equipment capable initially or as later expanded, of performing the following functions:
  - distribute up to 30 video channels on the A Cable to all residences and institutions in the franchise area.

- accept, and process for redistribution, up to 3 inbound video channels from community origination points along the A Cable, and retransmit these channels either separately to the originating communities, or simultaneously to all communities.
- accept, and process for redistribution, up to 26 inbound video channels and 2 inbound data/audio channels (divided into subchannel increments), from origination points along the B Cable.
- If other techniques, such as "supertrunk" are proposed for Master Headend-to-Sub-Headend linkage, it must be demonstrated that signal quality will not be degraded. Similarly, if transportation along the B Cable is proposed at VHF frequencies, acceptable signal quality must be demonstrated for a 30-mile end-to-end path.
- The Master Headend and Sub-Headends shall each provide the capability to accept up to 6 channels from future sources outside the normal trunk cable access points (e.g., from a mobile satellite ground station, or inter-connection to other cable systems).

(c) Cablecasting Facilities

- The system shall provide four cablecasting studios, one for each Sub-area. The studio associated with the Master Headend shall be utilized for:
  - local origination by the cable operation
  - community and public access
  - leased channel access
  - program production

The three sub-area studios shall each be utilized for:

- community and public access
- leased channel access
- program production

- Color capability shall be provided at each studio. The initial equipment cost is estimated at:

Master Headend Studio -- \$250,000 minimum

Area Sub-Headend Studios -- \$125,000 minimum

for each

- A mobile cablecasting van, with color capability, shall be provided for cablecasting events at various field locations through the franchise area (estimated cost \$125,000).
- Portable black-and-white video camera and 1/2-inch tape recorders ("PortaPak" or equivalent) shall be stocked at each cablecasting facility for free public and community use outside the studios. At least 4 camera-recorder units shall be available at each studio.
- An FM radio cablecasting studio, capable of live and taped programming, shall be provided.

(d) Interconnection

The system design for Portland/Multnomah County shall include the following internal interconnection features:

- Interconnection among the Master Headend and 3 Area Sub-Headends, providing 30 channels outbound and an initial 7 channels (expandable to 28) inbound, via microwave link.
- Sub-districting, as shown in ~~Figure A-15~~, Figures 6 and 7, that can originate programs to be distributed either to that subdistrict only or to any or all other subdistricts.

This follows from the 4-hub design. From each hub, 2-4 trunk cables will carry signals to subscribers. Consequently, 12 trunk cables will be provided, reaching, correspondingly, 12 different subareas.

For local community programs, the upstream channel shall use one of the 3-4 low-band reverse channels, to bring signals from an origination point within the community to the

hub. At the hub, the signals would be translated in frequency to match an available downstream channel slot, and be sent back over the same trunk to residents of that community only (See Figure 6).

- Each hub shall also provide the capability to interconnect downstream community channels. This will permit areawide viewing of any community-generated program, when desired.

A program can therefore originate at any point in any subdistrict and either be sent only to the residents of that community, or to some combination or all of the subdistricts simultaneously.

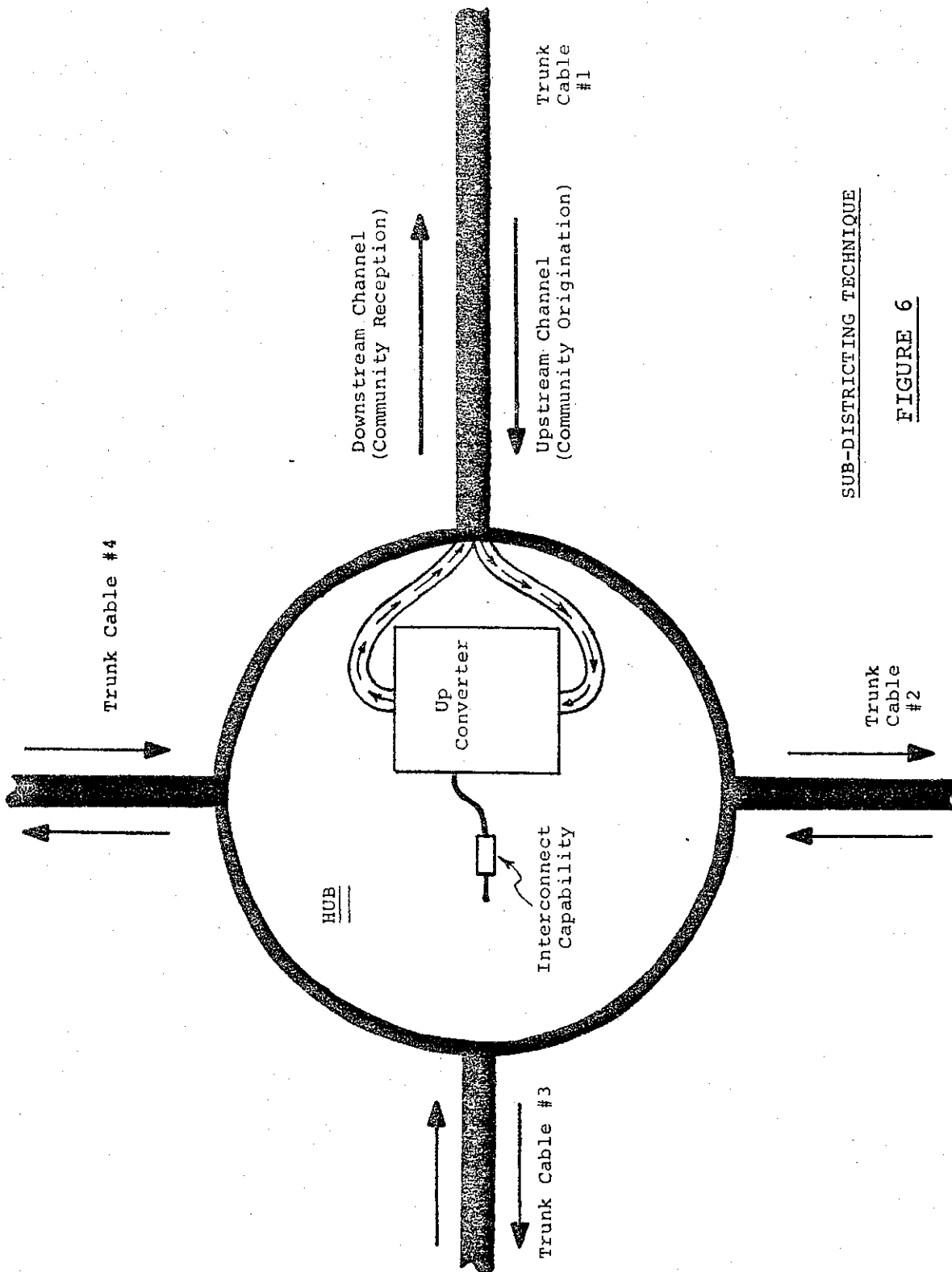
- Interconnection between the institutional trunk cable(s) A and the subscriber trunk cable(s) B, to permit programs originated at any institution to be directed to any other institution, or to the cable subscribers, or both.

So far as external interconnection is concerned, the specific requirements cannot be determined at this time. All interconnections shall be programmable from a convenient centralized location. However, the following generalized situations can be envisioned:

- Interconnection to cable systems in adjacent or neighboring communities (e.g., the east County incorporated cities, or Washington or Clackamas County).
- Regional interconnection (e.g., to an Oregon state-wide educational network).
- National interconnection (e.g., via communications satellite).

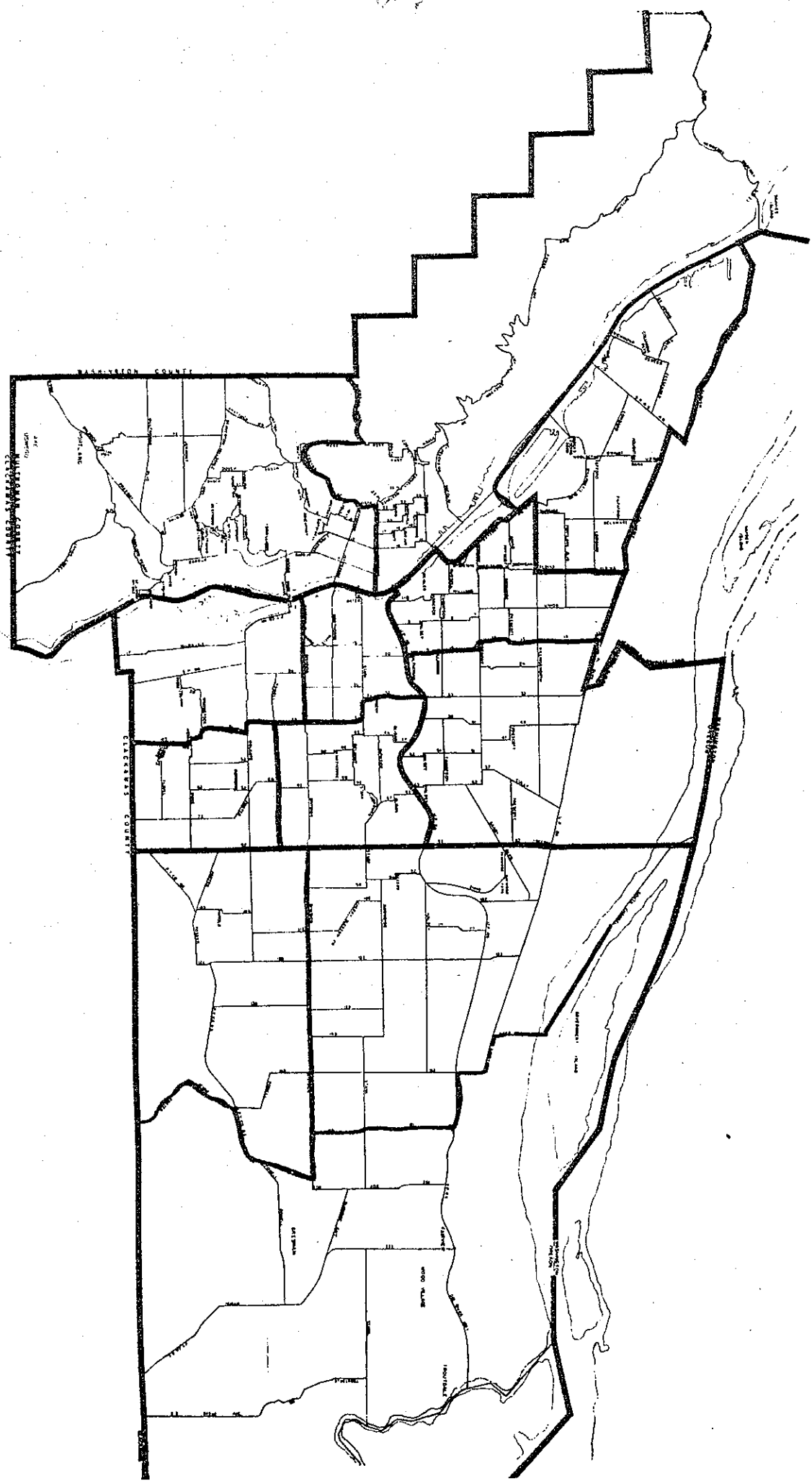
All of these requirements (with the possible exception of the first) normally involve distances too great for cable, since the signal degradation would be unacceptable. Consequently, it is anticipated that microwave interconnection will be utilized. The system design shall accommodate such addition at any future time.





SUB-DISTRICTING TECHNIQUE

FIGURE 6



Multnomah County  
Existing Neighborhood Service Boundaries  
Figure 7

SCHEDULE B

CONSTRUCTION COMPONENT AND TECHNIQUES

SCHEDULE BCONSTRUCTION COMPONENT AND TECHNIQUES1. Construction

- Trunk cable shall be of the highest commercial quality with a diameter no less than 3/4-inch.
- Amplifiers shall utilize harmonic suppression and be designed for best performance for the combination of 3/4-inch cable, 300 MHz maximum frequency and nominal amplifier gain.
- Associated components shall be as required to pass to subscribers at the farthest point from the Master Headend, a Class I signal on Cable A equal to or better than FCC standards at least 99% of the scheduled operating time.
- No more than two extender amplifiers will be used in any feeder line.
- For upstream communications on Cable B, the system shall be able to accept a standard video signal, modulated for any channel, that originates at the farthest point from the Master Headend, and pass it to the farthest point on the A Cable at a quality equal to or better than FCC standards at least 99% of the scheduled operating time.
- Special care in design, choice of components and construction techniques shall be exercised to minimize noise and/or interference arising from any combination of the following three operation conditions:
  - (a) Multiple signal origination points;
  - (b) Bidirectional transmission (on Cable A);
  - (c) Simultaneous multichannel transmission on both cables.
- Particular attention shall be paid to eliminating RF interference in the sub-band region (5-40 MHz). This may require any or all of the following:

- Installing high-pass filters and/or pole couplers at subscribers' TV receivers;
- Using high-integrity solid conductor shielding for the trunk and feeder cables;
- Using solid conductor or double-foil and braid shielded drop cables;
- Shielding directional taps with RFI gasket material; and providing high-pass filters on all taps not actively used for upstream communications;
- Installing silver-impregnated "O" rings and shielding collars in the cable connectors.
- Consideration shall be given to the possibility of employing special techniques such as "coherent", frequency-locked techniques at the headend to reduce interference.

## 2. Preconstruction Tests

- Before beginning the actual system installation, all components shall be tested individually for electromagnetic susceptibility and radio frequency interference. In addition, a bi-directional cascade subsystem, including a cable reel and chain of 10-20 bidirectional amplifiers, with bridger amplifiers, feeder cable and directional taps added to simulate a portion of Cable A, shall also be tested under conditions 1. (a), (b) and (c) above.
- A one-way cable subsystem, simulating Cable B, shall also be tested before installation, with send/receive terminals of the following types (and associated modulator/demodulator):
  - Video
  - Audio
  - Teleprinter
  - Facsimile
- There shall be +/- 2 db change in video signal level with the system operating at ambient temperatures between 30° F. and 90° F., and with +/- 10% variation in AC power voltage.

- Tests shall be witnessed by a representative of the Grantor. The results of all construction tests shall be submitted to the Grantor for approval before proceeding with cabling and installation.

### 3. Construction Tests

During construction system performance tests shall be performed on a phased basis to match completion and activation of each trunk-feeder combination. The results of such performance tests shall be submitted to and approved by the Grantor before proceeding with further construction.

SCHEDULE C

TECHNICAL AND PERFORMANCE STANDARDS

SCHEDULE CTECHNICAL AND PERFORMANCE STANDARDS1. FCC Technical Standards

The Grantee shall consider the FCC Technical Standards for Class I channels, (Part 76, Subpart K of the FCC Rules and Regulations) as a minimum requirement rather than a design objective.

2. System Performance Objectives

The following system performance objectives are considered as important, superseding in some cases the FCC standards. The Grantee shall indicate specifically whether these objectives will be achieved.

- Visual signal level to system noise ratio to be not less than 43 db across 4 Megahertz, as measured across 75 ohms through the longest cable run of the system.
- Intermodulation products, exclusive of cross modulation triple beat and pile up, to be not less than 57 db below the visual signal level, for the worst channel at the termination of the longest cable run.
- Ghosts, echoes, hum modulation and other interferences to be not less than 40 db below the visual signal level, throughout the system.
- Radiation from any component shall be less than 10 microvolts per meter, at 10 feet, and shall at any distance be less than the limitation imposed by the Federal Communications Commission's Rules and Regulations related to spurious radiation.
- The visual signal level shall not be less than 2 milivolt (6 DBMV) across the subscribers' 75-ohm terminating impedance.
- Adjacent channel levels shall not vary more than 3 decibels.
- System frequency response shall be +/-2 db from -.75 MHz of the picture carrier to +4 MHz of the picture carrier.
- Terminal isolation shall be no less than 40 db between any 2 subscriber service outlets.



- The group envelope delay relationship of one signal to any other signal transmitted within the same 6 MHz segment of the cable spectrum used for video transmission shall not be altered by more than  $\pm 100$  nano-seconds when measured at any subscriber terminal.
- FM Radio Transmission -- AGC'd FM processors used in radio signal distribution shall meet the requirements of FCC rules, Sec. 73.317 and 73.322. The FM carrier level shall be no less than 15 db below the visual carrier level.

### 3. System Reliability

- A desirable objective of the cable system is the achievement of an "up time" (operation without malfunction, and meeting all performance requirements) of at least 99% of the total scheduled operating time. A system malfunction is defined as any failure of one or more feeder or trunk lines.
- The Grantee shall specify its method of achieving this objective, with specific reference to:
  - selection of reliable components;
  - analysis of failure modes;
  - use of redundancy and standby equipment (e.g., backup power supplies);
  - "burn-in" of components;
  - malfunction detection techniques.

### 4. System Maintainability

- A desirable objective of the cable system is the achievement of a "mean-time-to-repair" for system malfunction (not individual subscriber problems) of less than 1 hour.
- The Grantee shall specify its method of achieving this objective, with specific reference to:
  - use of modular, plug-in components;
  - stocking of spare parts;
  - maintenance personnel training;
  - test and repair facilities.

SCHEDULE D

SERVICES

SCHEDULE DSERVICES1. Services to be Provided:

The Cable Communications System shall provide, as a minimum, the services listed in Table 1. The FCC-Required and Initial Services shall be available upon initiation of service in each Sub-Area, in accordance with construction schedules. The Deferred Services shall be provided after mutual agreement between the Grantor and Grantee.

2. Rates for Services:

The rates for all services shall be established as specified in the franchise. Written approval by the Grantor must be received before increasing any established rate, or before establishing a rate for a new service.

TABLE 1

## CABLE SERVICES

REQUIRED BY FCC	INITIAL SERVICE	DEFERRED SERVICE
<p>-- Local TV Station Carriage ----- 5 Channels</p> <p>Ch. 2 -- KATV (ABC)</p> <p>Ch. 6 -- KOIN-TV (CBS)</p> <p>Ch. 8 -- KGW-TV (NBC)</p> <p>Ch. 10 -- KOAP-TV (PBS)</p> <p>Ch. 12 -- KPTV (Ind.)</p> <p>-- Grade B Contour, Educational TV Station- 1 Channel</p> <p>Ch. 7 -- KOAC-TV (PBS) Corvallis*</p> <p>-- Local Origination----- 1 Channel</p> <p>-- Government Access----- 1 Channel</p> <p>-- Educational Access----- 1 Channel</p> <p>-- Public Access----- 1 Channel</p> <p>-- Leased Access (minimum required)----- 10 Channels</p> <p>----- 20 Channels</p>	<p>(A) <u>SUBSCRIBER SERVICES</u></p> <p>-- Distance TV Station Carriage</p> <p>1 - (to be proposed)</p> <p>1 - Vancouver, B.C.</p> <p>-- Radio Carriage</p> <p>All local FM stations</p> <p>Local closed circuit radio</p> <p>Subcarrier</p> <p>Distant stations receivable off air</p> <p>Local educational and commercial</p> <p>AM stations</p> <p>1 Vancouver, B.C. (along with TV)</p> <p>-- FM Radio Cablecasting</p> <p>Weather/Time</p> <p>Stereo</p> <p>Short-wave</p> <p>-- Cablecasting access and reception at community centers</p> <p>-- Free drop and service to public agencies</p> <p>-- Subdistracting capability</p> <p>(B) <u>INSTITUTIONAL SERVICES</u></p> <p>-- Ability to originate and receive signals among (as a minimum):</p> <p>City/County agencies</p> <p>Educational institutions</p> <p>Health Care institutions</p> <p>Business organizations</p> <p>-- Ability to carry non-video communications</p> <p>-- Ability for institutions to send programs to cable subscribers</p> <p>-- Sufficient geographical and institutional coverage to permit development and evaluation of new services</p> <p>-- Assistance provided by "Cable Services Support Group"</p>	<p>(A) <u>SUBSCRIBER SERVICES</u></p> <p>-- Distant ETV/PBS Station(s)</p> <p>-- Pay-cable</p> <p>-- Capacity for Subscriber Response Services</p> <p>-- Capacity for Electronic Information Handling Services</p> <p>-- Capacity for Interconnection, Regional and National</p> <p>(B) <u>INSTITUTIONAL SERVICES</u></p> <p>-- Expansion of channel capacity and geographical coverage as new services develop</p>

(\*Programming, almost identical to Ch. 10, may permit deletion so long as this continued to exist.)