

tion of this approach places transit management in a better position to evaluate alternative strategies for improving information aids and to allocate their resources more effectively in support of the various information aids.

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# Communication Considerations for Transit Route and Schedule Brochures

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Route and schedule brochures provide information on the specific service features of fixed-route transit. Clear, concise, and easy to understand information on these pamphlets is important to both users and prospective users of transit services. To date, insufficient attention has been directed toward development of effective communication techniques on these pamphlets. Many are difficult to interpret, incomplete, or poorly formatted, which makes them of marginal value to prospective users. The assumption that the reader is familiar with transit service characteristics, and thus able to translate any printed information, can make the brochures difficult to comprehend for automobile-oriented individuals. Nonusers cannot be expected to use the transit mode if they are uncertain about the characteristics of a specific service. The paper outlines methods by which communication techniques can be improved for route and schedule brochures. The design process should be governed by rational and systematic design principles, which are proposed and explained. The principles have been applied to the redesign of Knoxville Transit's route and schedule brochures. Each element on the brochure cover, timetable, and route map is briefly discussed in terms of desirable design practices and the rationale for each.

Route and schedule brochures provide information basic to the use of fixed-route transit services. The pamphlets show the path of a particular route, the activity centers it serves, and the arrival times of a vehicle at specific locations. A prospective or regular user can then determine whether a transit route is suited to the time and spatial characteristics of a particular trip. The type of information provided on these pamphlets is usually more detailed than such instruments as bus stop signs, systemwide maps, and other supporting information devices. Therefore, route and schedule brochures

aid the user in gaining access to transit services and have an important influence on the user's understanding of those services.

#### ROLE OF ROUTE AND SCHEDULE BROCHURES

Although a printed information aid should not be considered a promotional device (1, pp. 52-60), the route and schedule brochure may have an important function when new users are attempting to understand transit services. A study by Liff (1, pp. 52-60) of 103 individuals who have varying amounts of transit experience indicated that 70 percent use passive information sources (the telephone or route map) or an acquaintance as their source of information to determine the correct route to take. In addition, no one would seek information from a stranger. This may reflect a desire to use passive information sources rather than to seek information from sources that one might find embarrassing or threatening. If so, it would be consistent with other consumer experiences, exemplified by self-service supermarkets and department stores.

Since route and schedule brochures provide the most basic and detailed information on fixed-route transit services, effective communication on these pamphlets is vital to user comprehension of the service and to successful promotional campaigns. Inquiries generated by promotional programs must be reinforced by readily available and easy to understand descriptions of the ser-

vice. Fare discount specials, media campaigns, and similar promotional programs may not fully achieve their objectives if the prospective user is frustrated by inadequate information devices.

#### Highway Versus Transit Information Systems

Traffic engineers have long recognized that a clear and functional highway information system is critical to automobile drivers. During the past 25 years, substantial resources have been allocated to test and develop an effective motorist information system. Through research, interagency communication, and technical evaluations, motorist information systems have been carefully developed to simplify driver decision making on the highway. Specific standards governing the design and placement of traffic signs, signals, and pavement markings are set forth in the Manual on Uniform Traffic Control Devices (2). The purpose of these standards is to ensure uniformity, clarity, and effective communication of traffic information to the motorist.

Relatively little attention has been focused on transit information materials, however. The content and format of transit information materials varies considerably throughout the country. On a subjective basis, their clarity and effectiveness also vary considerably (3, pp. 109-130). Many information devices seem difficult to interpret, incomplete, or poorly formatted, which makes them of marginal value to prospective users. These problems have been caused by (a) the large volume of information that must be transmitted, (b) the complexity of some transit routes, and (c) the assumption that the public is familiar with features of transit service. In fact, only frequent transit users (typically 1-4 percent of the urban population) are familiar with traveling by fixed-route bus.

#### Nonuser Information Needs

Prospective or occasional transit users have much different information needs than frequent users. Their lack of familiarity with transit services makes them more dependent on user information aids to learn about the service. Choice riders probably do not have unrestrained determination to use transit, particularly if the more familiar and convenient automobile is available. They are likely to be less tolerant of the obstacles posed by inadequate information materials. The prospective user may not be willing to spend even modest amounts of time in interpreting transit information materials, nor may he or she be willing to risk boarding the wrong bus and become lost or late for an appointment. These relatively severe consequences (compared to other \$0.25-\$0.50 consumer purchases) make clear descriptions of the service important.

Since the greatest share of any significant increases in transit ridership must come from the noncaptive market, the previous nonuser attributes have special implications for designers of transit route and schedule brochures. Since nonuser access to the system depends partly on their understanding of printed information aids, the brochure must clearly convey its intended message without ambiguity. The information must also be complete, to ensure that the brochure accurately represents all aspects of the service. Finally, the brochure must be immediately interpretable so that the reader does not have to spend large amounts of time assimilating its information.

#### OBSERVATIONS ON THE STATE OF THE ART

The discussion that follows is not based on empirical research but rather, it is intended to generate discussion within the transit field and to point out the need for clear definitions of what constitutes an effective communication technique. Such definitions should come from systematic and empirical research that would be used to guide the communication of transit information to the public.

In order to obtain ideas that have applications to local design problems, route and schedule brochures from approximately 20 transit properties throughout the country were examined. On a subjective basis, the communication effectiveness of these pamphlets was reviewed and the following observations made.

#### Brochure Cover

Most brochure covers included information on the name and number of the route, effective date of the service, the name and logo of the transit property, and the telephone information number. A picture of a transit vehicle was used on some brochures to indicate that it was a transit-related information piece; other properties used decorative graphics in place of the transit vehicle.

None of the transit properties indicated where the route traveled relative to the rest of the city on the cover of the brochure. A few of the brochure covers indicated the activity centers served by a particular route; however, most did not include this information.

#### Timetable

The weekday time schedules were frequently located on the opposite side of the brochure from the route map, making reference between the timetable and the route map difficult. In an effort to achieve maximum space utilization and to provide a greater number of time-point locations, some properties printed the description of the time-point location at 90° from the published times. This made reading the description somewhat awkward.

Most brochures do not have reciprocating symbols between route deviations on the timetable and the route map. This is also true of time-point locations. It was often difficult to translate a written description of the time-point location to an exact location on the route map. Some timetables showed arrival times in both the inbound and outbound directions in an effort to provide the user with more precise information. This feature added to the complexity of the brochure, although the added information may be of benefit to the user.

Some properties made extensive use of letters within the timetable column to denote route deviations or special services. If a large number of deviations were involved, the timetable became complicated and attempts to establish correspondence between the route map and the timetable became difficult. Various written descriptions and explanations occurred on the timetables that may or may not have been clear to users of a particular transit system. These written descriptions were often not reinforced by corresponding information on the route map.

#### Route Map

The use of secondary reference streets varied by transit property. Route variations and deviations that were represented on the route map were not always clearly identified on the timetable. On complicated routes, which

had several pieces of information associated with them, there was too little use of multiple line weights, variable shade intensities, and variable letter sizes, which would indicate hierarchies of information and improve the readability of the brochure. When an effort was made to represent many transfer points, activity centers, different fare zones, or express services, the map became complex and extremely difficult to understand.

### Summary

Each of the problems discussed above may not represent an insurmountable communication problem when considered individually. However, a large number of individual problems may make a particular brochure unreadable or difficult to understand.

The review of various pamphlets indicated that individual properties often used unique approaches that improved the clarity of a particular pamphlet. It was also apparent that a good deal of effort is being expended to solve communication problems. However, in the absence of formal guidelines, transit personnel have to rely on in-house experience and subjective judgment to guide their efforts. This may not be adequate in a society where most individuals are automobile oriented and have little or no transit utilization experience.

### PROPOSED COMPOSITION GUIDELINES

To address communication problems on route and schedule brochures in concrete terms, the following composition guidelines are proposed. These guidelines incorporate concepts that should be considered in the design of the brochure, and they represent a systematic approach to the design process. Although research is needed to validate and refine these concepts, they represent a starting point from which to improve communication techniques on the pamphlets.

1. Establish correspondence between elements of the timetable and route map. To accomplish this (a) position the map on the same side of the pamphlet as the weekday timetable to allow comparisons between the two (since weekend riders are more likely to be captive users and, therefore, more familiar with the transit system, it may be less important to have the Saturday and Sunday schedules on the same side of the page as the route map) and (b) establish common reference points and reciprocating symbols on the route map and timetable.

2. Minimize the time required to interpret the pamphlet by using symbols, rather than written explanations, as a primary means of information conveyance.

3. Provide enough detail to explain the service sufficiently to new and unfamiliar users. This principle can be accommodated without greatly increasing interpretation time by structuring information into hierarchies of importance. The most important information should be the most prominent and the briefest. For those who need more explanation, the more detailed and lengthier descriptions should be available in smaller and less prominent print. This will enable readers to pass over items with which they are familiar and to examine more closely those aspects of the service that they do not understand.

4. Separate distinct components of the timetable and maps through spatial or graphic separation methods: (a) spatially separate route deviation information from times on the timetable and (b) graphically separate unique elements of the route map (e.g., downtown maps, landmarks, supporting streets, and the route map), through shading, variations in type faces, and variations in line weights.

5. Simplify the graphic elements of the pamphlet and

avoid complicated techniques of representing the information. Minimize the number of lines and symbols that do not have a functional purpose and avoid graphic techniques that are ambiguous, confusing, or do not have a functional purpose.

6. Use graphic components to convey information. The utility of graphic elements of the brochure should be maximized: (a) cover graphics should be primarily used to convey information before fulfilling any extraneous purposes; (b) if more than one color is used, it may be possible to use color as a communication tool; and (c) if more than one shade (color intensity) is used, it should accomplish as many functional purposes as possible without causing confusion or interpretation conflicts; the meaning of shade variations should be immediately apparent.

7. Minimize the adverse impacts of format changes on existing riders. New brochures should use formats, written explanations, and letters for route deviations that will be understandable to current users. If changes in the brochures are substantial, it may be appropriate to introduce the modifications in stages.

### APPLICATION OF THE COMPOSITION GUIDELINES

As part of a marketing study conducted under the Urban Mass Transportation Act of 1964, Section 9 planning funds, the route and schedule brochures used by Knoxville Transit were redesigned and prototypes printed. Nine brochures, describing 20 routes, were reformatted and their graphic qualities upgraded. This effort was undertaken for several reasons: (a) the local transit operator did not have a marketing staff or graphic personnel to revise the pamphlets, and (b) the design and layout of each brochure is necessary if the unique formatting and communication problems of individual brochures are to be adequately addressed. Finally, if relatively advanced and expensive promotional programs are to be effective, user information materials must effectively convey information on the service.

#### Brochure Cover

The name and number of the route should be prominently displayed on the cover of the brochure. A picture or drawing of the transit vehicle (rather than the words bus schedule) illustrates the contents and purpose of the brochure. The illustration of the vehicle requires no time for reading and can be immediately interpreted by those who are unfamiliar with the brochure. A miniature city map of Knoxville with the transit route shown relative to the rest of the city (Figure 1) gives some general indication of the location of the route within the service area. Very large cities could modify this approach by showing only a sector or well-defined geographical area within the city.

The telephone number of the transit property should appear on the cover so that it can be quickly found if more information is desired. Print the effective date of the schedule on the cover to reduce the chances that a patron will use an outdated schedule. The logo of the transit property is also helpful for the purpose of having a common recognition symbol for transit materials. If sufficient space is available, a brief list of major activity centers served by each route is desirable.

#### Timetable

Reverse the element (white on black) for the day of the week to visually separate it from the route name (Figure

2). By positioning it as a heading, it can be easily located by the user.

If more than one route is shown on each brochure (as is the case in Knoxville), each timetable should be clearly labeled to indicate the route to which it applies (Figure 2). Horizontal descriptions of time-point locations (rather than 90° scripts) eliminate the need to turn the brochure when reading the scheduled times or when comparing the timetable to map locations.

A numbered time point reduces the need to search for the desired time point on the map. A user can associate locations on the route map with the correct timetable headings faster and with greater ease because it eliminates the need to search for specific street intersections (Figure 3).

Figure 1. Transit routes relative to the city map.

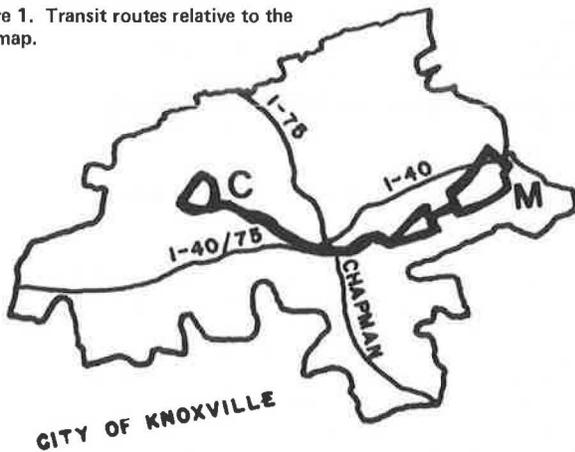
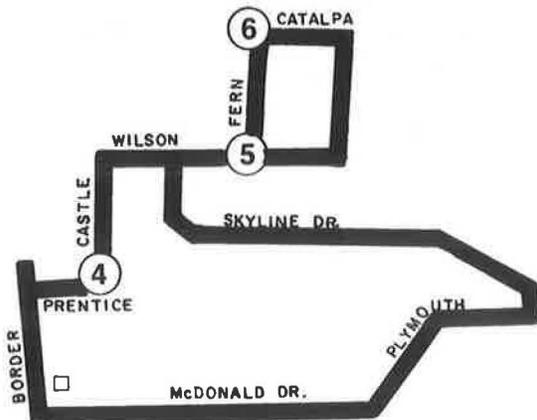


Figure 2. Day of the week and route name on the timetable heading.

**MONDAY thru FRIDAY**  
**COLLEGE ST**

Figure 3. Numbered time points on the timetable and route map.

PREN-TICE & Castle	FERN & Wilson	FERN & Catalpa	PREN-TICE & Castle
<b>4</b>	<b>5</b>	<b>6</b>	<b>4</b>
--	605	610	620
630	650	655	645
700	--	--	700
			715



The use of closed shading around the time point on the time schedule (a) visually separates this element from the verbal description of the time-point location and (b) highlights the importance of this element by making it graphically dominant.

Numbers within each time point convey the path of the vehicle along the route by their sequential arrangement (Figure 4). If there is some doubt about the path of a vehicle on a route (even after the words inbound or outbound have been provided), sequential numbering of time points (a) graphically illustrates the path and (b) reinforces any written descriptions.

Route deviation letters in the timetable should correspond to letters that denote route deviations on the route map (Figure 4). Graphic correspondence between the route map and timetable can be established with this technique. This permits rapid interpretation of letters on the timetable. White on black lettering is used because it is visually distinct from other elements of the route map. Offsetting typed letters in the route deviation columns (Figure 5) is done to (a) visually separate distinct deviations and (b) indicate the pattern of the deviations, if any.

Map

The use of numbered time points boldly shows time-

Figure 4. Letters denoting route deviations on the timetable and route map.

LEAVE UNION & GAY	I or	HAYNES STERCHI & CEDAR
<b>1</b>	<b>M</b>	<b>6</b>
	--	620
640	I	715
710	I	745

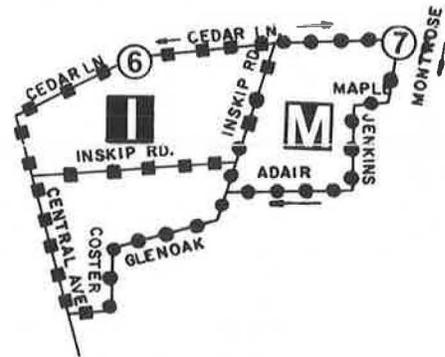
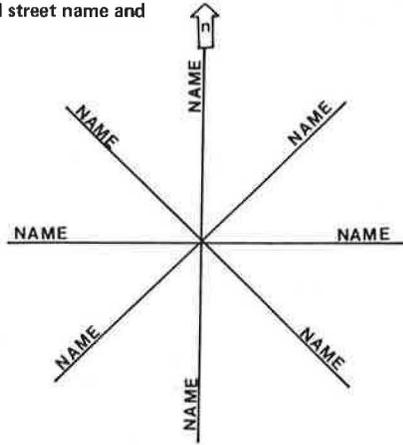


Figure 5. Route deviation column on the timetable (offset letters denote the pattern of the deviations).

I
or
M
M
M
M

Figure 6. Recommended street name and street line convention.



point locations and establishes graphic correspondence between the timetable and map. If possible, maps should be positioned on a page in the following manner:

1. North-south routes positioned vertically, with the northernmost section at the top of the page, and
2. East-west routes positioned horizontally, with the westernmost section at the left of the page.

The objective is to achieve some standardization between different route maps and to follow standard mapping layouts.

The use of white on black lettering to designate route deviations establishes graphic correspondence between the timetable and the route map. Route deviations that are periodic in nature or complex can be shown by dots or dashes to illustrate their variation from the regular route. However, more than three line variations (a solid line and two route-deviation lines) become difficult to interpret and could cause confusion. A large number of route deviations, directional variations, and transfer points can be difficult to understand and may warrant division of the map into components. The designer should recognize limits on a reader's ability to absorb complicated information. All route deviations referenced in the timetable should be shown on the map in some manner. One-time deviations to activity centers can be shown by simply locating the activity center on the map.

Secondary streets provide points of reference for users who may not be familiar with specific streets on the transit route. Street names should be positioned on the map in a consistent and easy to read manner. The reader should not have to alternately turn the brochure when comparing the route map and timetable. The street-name line convention shown in Figure 6 should be used when labeling street lines.

Landmarks provide additional points of reference for those who may not remember street names. It may be necessary, however, to omit landmarks if the route is complicated or the map is congested with higher-priority graphics. Landmarks should be presented by using less bold and prominent graphics than more important information on the map. A downtown map is needed to display directional paths through the downtown area to aid users in knowing on which side of the street to board.

#### SUMMARY AND IMPLICATIONS

A rational and systematic approach to the design of route and schedule brochures is necessary to achieve the effective communication of transit service information. Empirical data that describe the best methods of depicting transit services for the public are needed to form the basis for such an approach.

Other communication tools, such as bus stop signs, how-to-ride brochures, and systemwide maps, should also receive this kind of attention. Methods of clearly transmitting information on these devices should also be identified. Unless each element within the information-dispersal network achieves its purpose, access to transit services will be hindered by communication devices that are difficult to understand.

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## Plan for Transit Fare Prepayment Promoted by Employers

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This paper outlines a plan for the marketing program and the selection and solicitation of employers and their employees for participation in a transit-fare-prepayment program. Participating employers will make monthly transit passes available to their employees at their workplaces. The information in this paper was gathered from the experience of four transit systems and was applied to transit-fare-prepayment programs aimed at promoting a monthly transit pass through employers for single

mode and multimode systems. The methods described in this paper yielded the most positive response, from employers and their employees, of the methods tested. The plan described can be used as an aid for assisting transit systems in initiating similar programs.

The objective of the Sacramento Transit Fare