THE INFLUENCE ON RURAL COMMUNITIES OF INTERURBAN TRANSPORTATION SYSTEMS

VOLUME II
TRANSPORTATION AND COMMUNITY DEVELOPMENT: A MANUAL FOR SMALL COMMUNITIES
CHAPTER IV: Community Inventory

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The set of planning guides contained in Volume II would be of interest to the community representatives. The guides are designed for the layperson and are written in non-technical language. The purpose of the manual is to promote a more informed participation in the national, state, and regional decision-making process as it relates to transportation, and to provide the basis for initiating and continuing comprehensive local planning for small urban places (cities and towns with a population of 25,000 or less).

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PREFACE

BACKGROUND

This document is one in a series developed as an outgrowth of research sponsored by the U. S. Department of Transportation, Office of University Research, through the Council for Advanced Transportation Studies, The University of Texas at Austin. The topic of this research project, "The Influence on Rural Communities of Interurban Transportation Systems," was one of five conducted under the general title, "Transportation to Fulfill Human Needs in a Rural/Urban Environment." The overall objective of this project was to investigate the nature of interurban transportation influence on small "rural" communities (below 25,000 in population) and to assess the relationship between changes in the interurban system and the potential for growth and development of small communities.

The project consisted of four basic stages:

(1) a review and analysis of transportation impact studies leading to the identification and investigation of areas deemed important to rural communities and intercity transportation systems,

(2) an investigation of high probability areas of impact to ascertain data availability and appropriateness of various methodological concepts in studying transportation impacts on rural communities,

(3) a detailed case study of selected rural communities in terms of their response, real and perceived, to changes in their intercity transportation systems and accessibility, and

(4) the development and field testing of a set of transportation planning guides designed for use by the layperson in the rural community and the regional planner.

The research is documented in two volumes:

Volume I: The Influence on Rural Communities of Interurban Transportation Systems, and

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The set of planning guides contained in Volume II would be of interest to the community representatives. The guides are designed for the layperson and are written in non-technical language. The purpose of the manual is twofold:

(1) to promote a more informed participation in the national state, and regional decision-making process as it relates to transportation and

(2) to provide the basis for initiating and continuing comprehensive local planning for small urban places (cities and towns with a population of 25,000 or less).

The MANUAL is divided into an executive summary and seven chapters, each individually bound and designed for use separately or in conjunction with others. The seven chapters are:

Chapter I. The Transportation Planning Process,

Chapter II. Transportation Impact,

Chapter III. Goals and Objectives,

Chapter IV. Community Inventory,

Chapter V. Development of Alternatives and Preliminary Assessment,

Chapter VI. Evaluation, and

Chapter VII. Glossary and Bibliography.

This document contains the fourth chapter of Volume II. It provides a process for developing community information. The process defines and details several important characteristics of a small community. This information can be used to help determine appropriate objectives for community goals, and as a basis for future community plans. The categories under which general information is gathered are:

1) Population Characteristics
2) Land Use and Capability
3) Transportation
4) Community Controls
5) Financial Resources
6) Economic Studies

For each category, a discussion of the purpose for gathering the information, the type of information required, and some general guidelines on how to obtain the information, are provided.

CHAPTER IV. COMMUNITY INVENTORY

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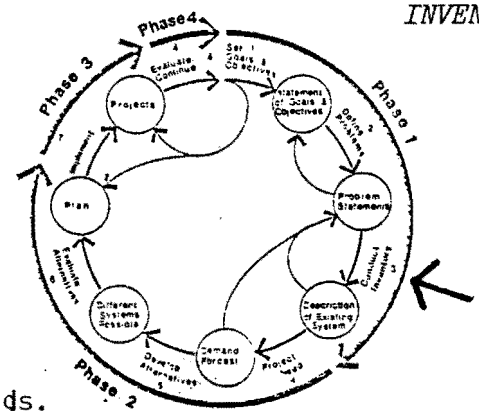
CHAPTER IV

COMMUNITY INVENTORY

BASIC PLANNING INVENTORY



4.1 The basic planning inventory needed for a comprehensive plan covers all aspects of the community's social, cultural, economic, political, and physical environment. The extent to which each of these community characteristics is studied will be determined by the community's goals, objectives, and needs.

If, for example, a community goal is to provide adequate transportation for the elderly, then the inventory would need to focus particular attention on that group of people. If, however, none of the community goals pertain to the elderly, then an in-depth study of that population group will probably not be necessary.

Information in the following categories comprises a comprehensive planning inventory:

Population characteristics

Land use and capability

Transportation facilities

Community controls

Financial resources

Economic conditions

Open space, recreation, historical preservation, conservation

Initially, general information will be needed in each of these categories, regardless of the specific goals expressed by the community. This general information should be up-dated periodically. As community goals are further developed, more specific information will be required. General information includes data that will be useful as input to the regional transportation planning agency. Therefore, by concentrating first on general information in the categories on the previous page, the community can establish an information base from which to build a comprehensive plan and provide useful input to the regional planning process.

The elements of a general inventory, listed under the appropriate category, are:

Population Characteristics

1. Current population
2. Projected population

Land Use and Capability

3. Current land use by classifications
4. Land capability (as defined by hydrology, soil characteristics, and slope)

Transportation

5. Highways and streets
   a) functional classification and responsibility
   b) street use
   c) accident data
   d) traffic engineering features
   e) terminal and transfer facilities

6. Public transit

   a) bus

   b) taxi

   c) paratransit, etc.

7. Rail

8. Air

Community Controls

9. Enabling legislation and ordinances

10. Policy and programs

11. Other

Financial Resources

12. Tax revenue

13. Bonding capacity

14. Other significant sources of revenue

Economic Conditions

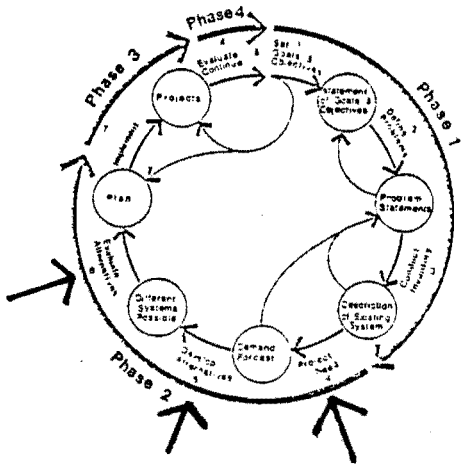
15. Employment statistics

16. Income distribution and other

The rest of this chapter will describe a simple method of gathering useful data for each of the 16 elements in the basic planning inventory.

POPULATION: INVENTORY AND FORECAST

4.2 A projection of population is needed for planning community growth and expansion of public services. The projection is necessary to determine the magnitude of community problems and potentials. A good population projection for your area will



allow you to 1) make estimates of future community needs and 2) evaluate proposals based on different population projections.

Population projections may be available for your community from state or regional agencies. However, it is useful to check on these estimates by determining the current population of your community and adjacent area. This check can be made quite easily by using information from one of the utility companies in your area, for example. (See worksheet 4.1)

If your present population estimate is within 10% of that projected by state or regional agencies, then you may consider their population projections generally reliable, at least in the short run. If the two estimates do not agree, then you may wish to make your own population projection or request another forecast from the appropriate state or regional agency.

There are numerous population projection techniques that you can use to determine the potential for population growth in your area. These techniques range from the simple ratio and correlation trend line projection through the complex Cohort-Survival-Migration technique.[1] The Cohort-Survival-Migration technique is theoretically the most accurate of the methods currently used. Its

[1] A general discussion of Population Projections can be found in: Isard, Walter, Methods of Regional Analysis, Cambridge: MIT Press, 1972, Chapter 2.

strength lies in its ability to predict natural increase (births and deaths) and migration of new families by five year segments, but it is relatively expensive to use.[2]

4.3 Studies of current land use and projections of future land use form the basis of physical planning. A current land use study reveals the location and intensity of existing activities within the city. A projection of future land use shows where activities are likely to be located or should be located in five to ten years. The type of study performed will depend on whether the community wishes to allow growth according to current patterns or seeks to alter current patterns according to the capability of areas to sustain desired activities

LAND USE AND CAPABILITY

4.4 Before projecting future land use one must first develop a picture of the current situation. Many cities that have land use controls already have a land use map; however, even if the land use map does exist, it may not be up to date. In some cases, of course, a land use map will have to be developed.

CURRENT LAND USE

There are three methods of updating or creating a map of current land use:

1. Survey of the area by auto and walking
2. Examination of tax records
3. An analysis of aerial photographs .

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[2] A description of the use of this technique can be found in: F. Stuart Chapin, Jr., Urban Land Use Planning, Urbana: University of Illinois Press, 1965, chapter on "Population Studies."

A choice of methods or combination of methods will normally depend on 1) city size, 2) the level of detail required, and 3) financial resources available.

Usually, the smaller the city is, the less time-consuming and difficult producing a land use map will be. In a very small city two people in an auto can gather the necessary basic information in one day. In a larger city, aerial photos may be used to determine major land use patterns. A supplementary "windshield" survey as described above may be necessary to fill in the detail. In either case, a good base map showing property lines and streets will be required for recording information.

The level of detail should be suited to the planning needs of the community. In most cases, a general land use map will suffice. This map will show the predominate use in different areas of the city according to seven basic categories:

1. Residential
2. Manufacturing
3. Transportation, communication, and utilities
4. Commercial (trade and services)
5. Cultural, entertainment, recreational
6. Resources production and extraction
7. Underdeveloped land and water areas

This map will be sufficient to 1) delimit areas of different use, 2) identify potential conflicts between incompatible land uses, and 3) serve as a basis for projecting future land use.

In special cases a greater level of detail may be needed than would be obtained through a general land use classification. Specific community goals often require that the general categories be further refined and more detailed information collected. Residential areas, for example, may be divided into multifamily and single-family residences when an objective might be to help develop a zoning map of the community. Determining the level of effort will be dependent on the need for special studies. A standard land use classification manual has been developed by the U. S. Department of Transportation for the subclassification of land uses.[3]

FINANCIAL RESOURCES

The availability of financial and administration resources will, of course, influence both the methods employed in gathering information and the level of detail which is possible. The costs of labor and materials (in the case of aerial photographs, for example) should be considered and balanced against the community's planning needs. If special studies are going to be required, it may be less expensive to gather information in some detail at the outset rather than be forced to return later and cover the same ground.

LAND CAPABILITY

4.5 Land capability studies are used to determine the potential of the natural environment to sustain different types of land use. A basic land use capability study will contain information concerning the following aspects of the environment.

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[3] Federal Highway Administration, Standard Land Use Coding Manual, Washington, D. C.: U. S. Government Printing Office, 1969.

1. Location and type of water resources
2. Slope and typography
3. Soil conditions of the area

Hydrologic, topographic, and geologic studies will provide the information on the above aspects of the environment and thus reveal where the best areas for different types of development are located. Matching land use with the capability of the environment ensures, for example, that subdivisions will not be located in areas with high flood possibilities, houses will not be built on shifting, sinking, or expansive soils, and the city drinking water will not be contaminated by industrial wastes.

HYDROLOGIC STUDIES

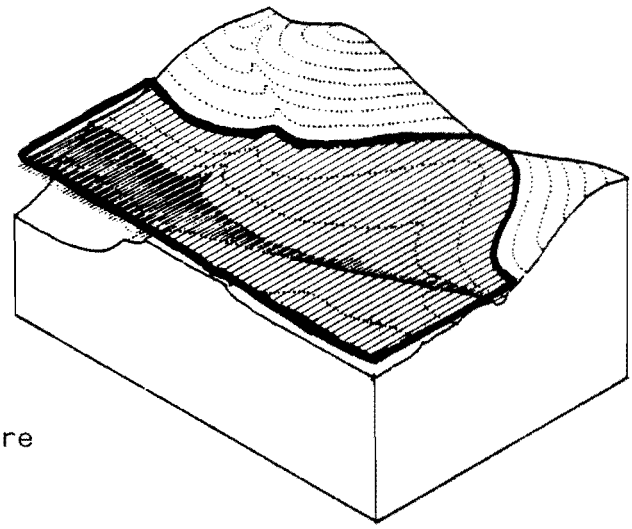
4.6 The natural occurrence of water imposes constraints on the development potential of land. The following aspects of water in the community area should be documented:

1. 100 year flood plain
2. Location and description of aquifers and recharge areas
3. Drainage system
4. Percolation rates of the soil

FLOOD PLAIN The extent and frequency of probable flooding affects the prospects for certain types of development. Each stream has a potential for flooding a substantial land area around its banks. Most floods are relatively minor and occur on a yearly basis; however, every now and then a large flood will swell the streams and larger bodies of water and cause extensive damage. One way of describing this is by the frequency probability that a flood

will cover a particular area. A 100-year flood plain is that area adjacent to a body of water that has a 1% probability of flooding in any given year. Because of the very real possibilities for extensive damage occuring in the 100 year flood plains, the federal government has refused to insure home and business loans to people who wish to build in these areas. Banks are therefore very hesitant to lend money for property or improvements within the designated flood plain area. The U. S. Corps of Engineers is currently mapping all of the flood plains in the U. S. A map of your area can be obtained from the regional Corps office. If they have not completed the mapping of your area, the local bankers should be willing to work with you to develop a map of such areas. (Low density land uses, i.e., parks, farming and open space, and expensive "flood proof" buildings are permissible in the flood plains.)

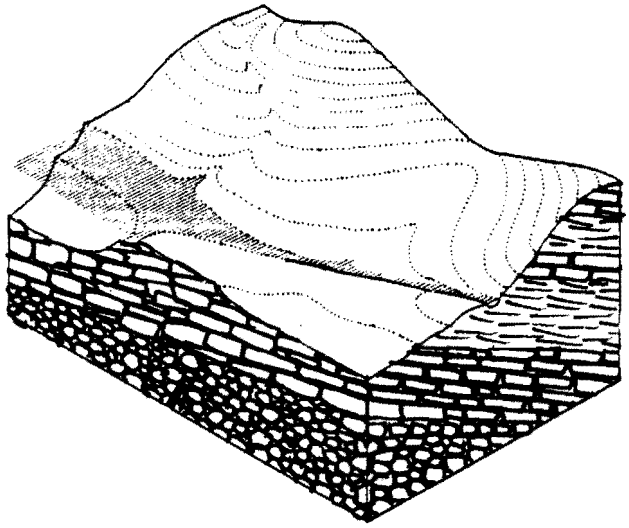
100 YR. FLOOD PLAIN



AQUIFER

An aquifer is a subsurface soil area that contains a large amount of water. The presence of an aquifer can be both an advantage and a constraint to the process of development. The advantage is that aquifers will often produce potable water without any pumping. The reason for this is that they are, in essence, huge sponges filled with water that is under a great deal of pressure. The presence of an aquifer is an advantage to development because

AQUIFER RECHARGE ZONE



wells can be dug that will supply water. The constraint aquifers place on development is that they are easily contaminated. An aquifer has "recharge" zones, i.e., places where cracks in the surface or porous soils allow water to flow from the surface to the underground aquifer. If development is placed on a recharge area the possibility of contaminating the aquifer (and possibly the community water supply) with storm-water run off and liquid wastes is increased. Some low density residential, recreational, or agricultural land uses may not create a problem, but large-scale development probably will.

A map showing the presence of aquifers and recharge areas should be obtainable from the local agricultural extension agent.

PERCOLATION Percolation tests should be made to determine the rate of water absorption into the soil. These tests are useful to determine

1) where standing water may accumulate
2) where septic systems may be economically used, and
3) where there is a danger of contaminating the underground aquifer.

A percolation test is simple to conduct. A small hole is dug and a specified amount of water is placed in the hole. The speed that the water is absorbed by the surrounding soil is called the percolation rate. The faster the rate, the more porous is the soil.

Porous soils are good for septic systems but they may cause pollution problems if waste water runs into a body of water without the impurities being filtered out. Non-porous soils, on the other hand, may cause standing water and associated health and building problems.

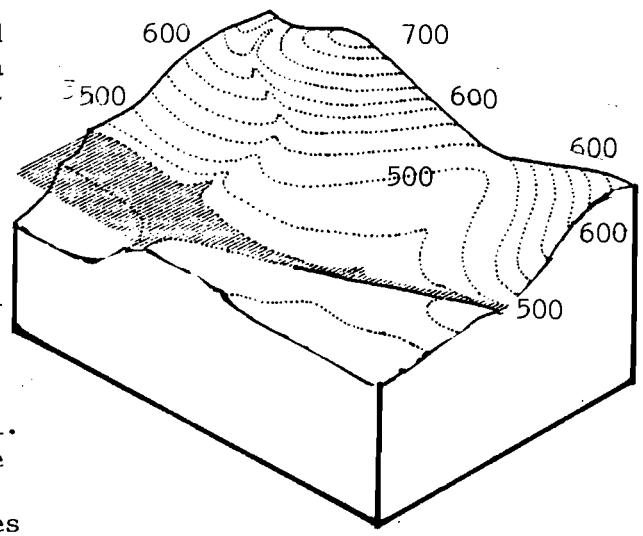
TOPOGRAPHIC STUDIES

4.7 Topographic studies will reveal the slope and character of your area's terrain, which will indicate where different types of development are possible. A general rule of thumb is that both very flat and very steep terrains can present problems for development. A very flat area will often create standing water (i.e., a bog or marsh) when the soil is not highly porous. The lack of slope may present problems in the disposal of sewage and storm water. Steep slopes, on the other hand, may present significant engineering handicaps to the construction of roads, utilities lines, and foundations.

Slope is the rise in elevation divided by the distance along the surface. An ideal slope for most types of development is between 1% and 10%.

In order to determine the slope for a particular area, a topographic map* should be used.

A topographic map is a two dimensional representation of a three dimensional surface. The map has contour lines which connect all the points that are at a uniform elevation above sea level. The steeper the slope of the area, the closer the contour lines become. In relatively flat areas the contour lines aare quite far apart. By measuring the distance between the lines and by dividing that distance by the difference in elevation, a determination of the slope can be made. (See Worksheet 4.2.)



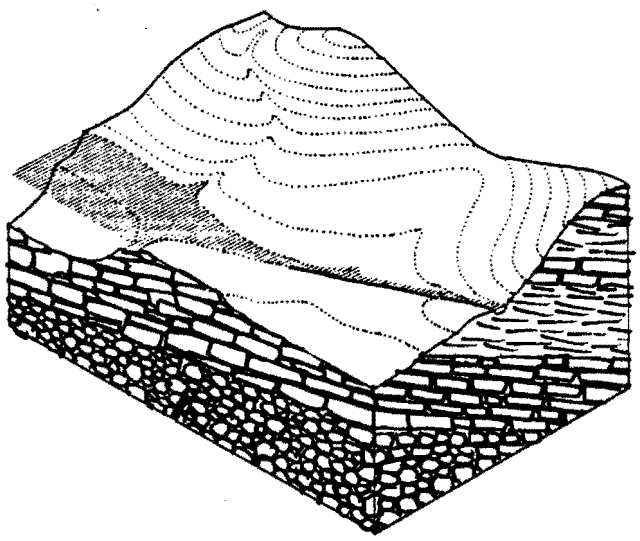
Contour Lines Showing Topography

*Topographical maps are available from the U. S. Geological Service.

GEOLOGY

4.8 The subsurface conditions provide additional information concerning the suitability of different areas to support development. Two fairly common soil types have a potential to cause structural failure in buildings that are not constructed with special structural and foundation characteristics.

Crossection of Soils



The two soil types are <u>expansive</u> and <u>collapsing</u> soils. Expansive soils are clays or silty clays that change volume with slight changes in moisture content. Collpasing soils are more porous soils with innumerable air pockets that change with pressure. As a general guide, expansive soils should not be built on if moisture causes changes in volume of more than 6-8%. Collapsing soils may be built on if suitable foundations are used.

The Department of Agriculture or the U. S. Geological Service has soils information for your area. The presence of expansive and porous soils should be carefully examined before development is encouraged.

THE LAND CAPACITY MAP AND "BEST" USE CONCEPT

4.9 The kinds of information described in sections 4.4 through 4.8 should lead to the development of separate maps for:

1) Flood plains and aquifers
2) Slope
3) Soils.

Taken together, these maps constitute a basic land capability map. (These maps should be drawn at the same scale as the land use map on tracing paper or "milar" so that they may be overlayed on the land use map.) Some additional information on man-made features may be included if it is important to the community. Examples of features that the community might want to consider are:

1) Scenic areas,

2) Historic buildings and archaeological sites, and

3) "Prime" farmland,

These features may also be overlayed on the land use map.

The information from the set of land use and land capability maps may be used to set development criteria in accordance with the "best" use concept. Best use implies that environmentally sensitive areas, i.e., flood plains, land with expansive soils, and steep slopes, are not developed or are developed with low density land uses that are not detrimental to the environment. Almost any development in an environmentally sensitive area will have to be specially designed and constructed.

More broadly defined, the best use concept includes environmental capability, compatibility with existing land uses, and adequate access to community services. Compatibility with existing land uses means that new development is not located next to previously developed areas unless the uses are compatible, e.g., residential development is not located next to heavy industry, garbage dumps, airports, etc. Access to community services implies that the new development is not located in an area where community services

(i.e., water and sewer lines, schools, libraries, etc.) are either unavailable or expensive to provide.

TRANSPORTATION

4.10 The purpose of a local transportation inventory is threefold:

1. To determine the capability of the current system;
2. To identify or refine information and problems that are related to transportation; and
3. To provide information useful for determining future transportation needs.

The basic analysis of the transportation network entails a description of the present system and a determination of the needs of both current and future users of the system. As mentioned in Chapter I, a transportation inventory that describes the present system can be divided into several elements, as shown in Table 4.1.

STREET USE

4.11 The object of an inventory of street use is to classify existing streets according to their function. The accomplishment of this task will enable the community to determine where problems currently exist and where they are likely to occur in the future. The ideal is to achieve a "balanced" network where there are sufficient streets of each functional class to maintain an efficient and safe flow of traffic.

The street and highway system as a whole consists of two separate networks: the rural (or interregional) network and the urban network. (The latter includes the street systems of all sizes of cities.). The functional classes of each network and the bases

TABLE 4.1: ELEMENTS CONSIDERED IN A TRANSPORTATION SYSTEM INVENTORY

I. The Transportation System Proper

A. Facilities

1. The Guideway (i.e., highways, rails, and other fixed pathways)
2. Vehicles (autos, taxis, buses, trucks, rolling stock, etc.)
3. Terminal and Transfer Facilities (including parking, air, rail, truck, freight and passenger terminals, etc.)
4. The Control System (including speed regulations, signals, turn lanes, etc.)

B. Operational Characteristics

1. Traffic Volume and Capacity
2. Travel Patterns (trip types, purposes, origins, and destinations)
3. Public Transit Service (routes, schedules, etc.)
4. Frequency and Location of Accidents

II. Related Conditions

A. Economic Factors (including income, employment, labor force, and consumption patterns)

B. Population (including size, composition, and growth rate)

C. Land Use (including distribution and intensity of various activities, flood hazards, and public and private plans for future development)

D. Community Controls (zoning, licensing powers, building codes, etc.)

E. Financial Resources (sources of revenue, financial conditions, and expected revenues)

F. Social and Community Value Factors (need for open space and recreation, neighborhood integrity, etc.)

of classification are shown in Table 4.2.

TABLE 4.2: FUNCTIONAL CLASSIFICATION OF STREETS AND HIGHWAYS (a)

	Classification	Principal Service Function
Urban Network	Expressway	Through movement exclusively
	Arterial	Through movement with some land access
	Collector	Through movement and land access
	Local	Land access
Rural Network	Interstate	Through movement exclusively
	Primary	Through movement with some land access
	Secondary	Through movement and land access
	Tertiary	Land access, some through movement

(a) Adapted from L. J. Pignataro, Traffic Engineering: Theory & Practice, Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1973, p. 21.

As can be seen from the table, the functional classes of the two systems are analogous to each other. In the urban network, local streets feed traffic into collectors, which in turn feed arterials, which may then feed the expressway. The rural network is composed of a similar hierarchy where traffic flows from tertiary and secondary to primary and/or interstate facilities. It is important to note that a single facility may serve a function in both networks. For example, the main street of town may be the primary arterial of the city network and a secondary or primary route in the interregional network.

In classifying the city street system, one must keep in mind that the actual use of the street determines its functional class. Even though the design should be appropriate to the current use of the facility, this may not be the case. The primary purpose, in fact, of classifying the city's streets is to identify those facilities which are, or may become, inadequate to operate at an acceptable level of service for their present or anticipated use.

In most small cities, an expedient street use classification can be made by almost anyone who is familiar with the city and its traffic patterns. Field observation may be necessary, however, in cases where the person developing the map is unsure of the actual traffic pattern. A good map of the street system is required and a set of colored markers for differentiating the classes of streets.

Begin by identifying the expressways (if any) and arterials. Expressways provide for rapid and controlled movement of traffic. Generally, the facility will have limited or controlled access to abutting lands or frontage roads. Speed limits on expressways are normally 55 MPH. Arterials have two primary functions: to serve through movement of traffic entering the city along important highway routes and to connect major activity centers within the city. A secondary function is to provide access to adjacent land and land use activities by allowing some unloading of passengers and goods, entrance to parking areas, and some on-street parking. Arterials are generally limited to speeds between 35 and 45 miles per hour.

Once arterials and expressways have been identified, the collector and local street systems may be defined. The collector system

functions primarily to provide for traffic movement between the local street system and the arterial system and to provide for traffic movement within an area (shopping trips, for example). Access to abutting properties is direct and uncontrolled and on-street parking may be permitted. Speed limits may range from 25 to 35 MPH. The local system has as its main purpose the provision of access to abutting properties and as its secondary purpose connection to the collector system. The main distinction between the local street system and the higher classes of systems is that local streets do not carry through-traffic. Local streets may be subdivided into residential, commercial, and industrial according to the type of activity they serve. (Note: a local commercial street may carry high volumes of traffic, as is often the case in the Central Business District, or CBD, for example.) Typical speed limits are normally 20-30 MPH.

Figure 4.1 illustrates a hypothetical street system in a small town. Note that the size of the street does not necessarity indicate the functional class of the street.

In order to ensure that a complete and proper inventory classification is made for your city, you should keep the following considerations in mind.

1) Make sure that you are considering the actual (not the intended or desired) use of the street in question.

2) It may be necessary to divide a street into more than one section according to different functional classes. For example, a street may serve as a local street along one stretch and still serve as a collector along another.

3) Classify each street or street segment according to its primary or peak-hour use. When in doubt, it is best to use a higher classification rather than a lower one.

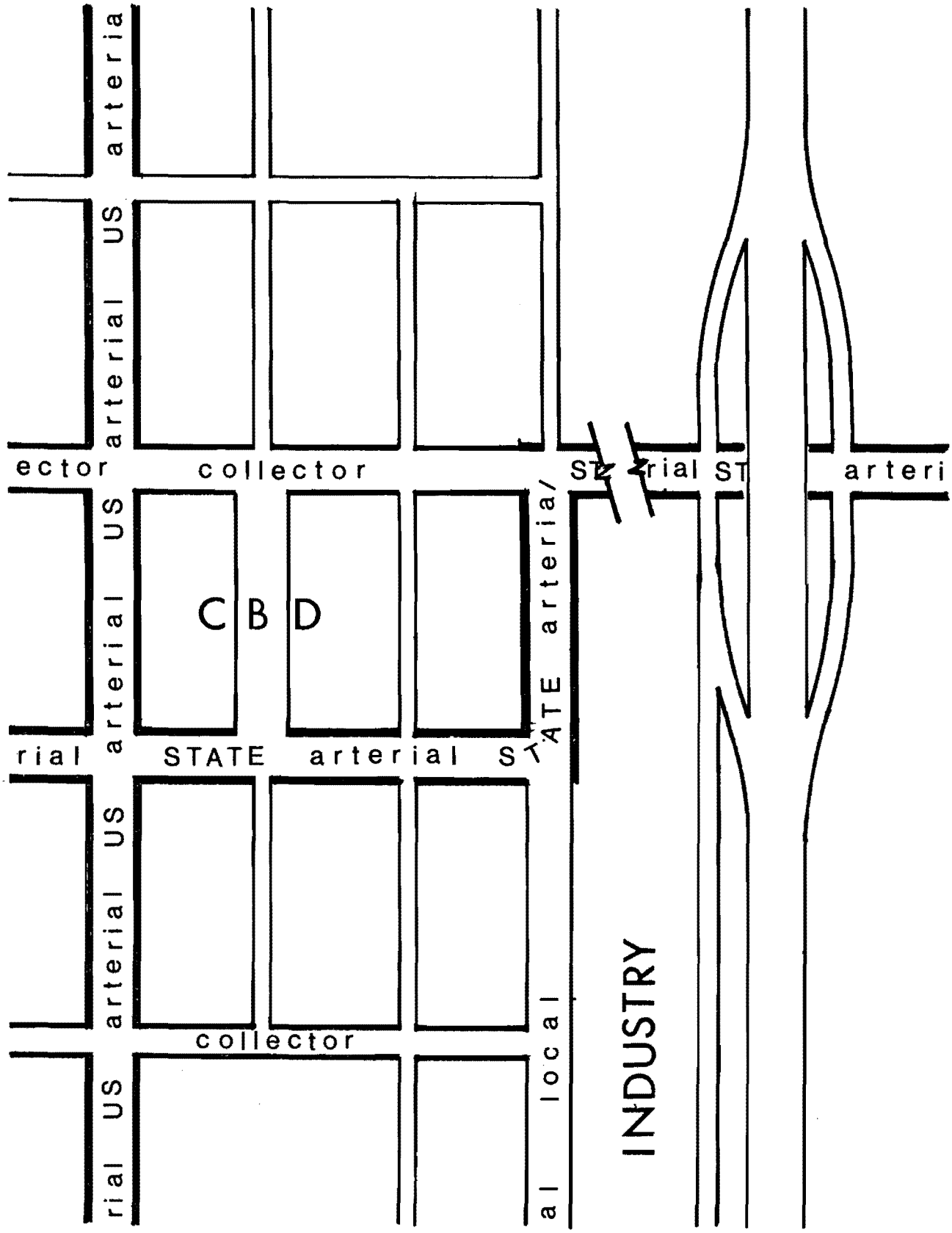


Figure 4.1. Hypothetical Street System

Worksheet 4.3 is provided at the end of the chapter for the inventory of the street system. Once the inventory has been completed, an analysis can be made of the problems which exist or may exist in the future. For example, streets may be functioning at a level above that for which they were designed, creating problems of inconvenience, safety, and annoyance. An upgrading of existing facilities may be required, or better control and traffic engineering features may be called for to change the traffic pattern.[4]

ACCIDENT DATA

4.12 Complete accident records are important in analyzing accidents and for planning accident prevention through engineering, education, and enforcement. Accident reports are used by the police, insurance companies, highway engineers, and community planners. The small community can benefit from the maintenance and analysis of accident records in their problem formulation process. Places where severe or frequent accidents occur can be identified as problem areas, and, once identified, the problems can be addressed through the setting of community goals and objectives.

Accidents are caused by drivers, vehicles, and roadways. The accidents that are caused by roadways are the ones that are most easily prevented through traffic engineering solutions. Roadway problems are the ones that the regional planner will be most interested in because his plan will be predominately physically oriented.

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[4]For additional information, see: National Committee on Urban Transportation, Procedure Manual 1A and 5A, Public Administration, Chicago, 1958.

Forms completed by drivers and police should include detailed information on:

1) Time of accident
2) Location of accident
3) Driver
4) Vehicles
5) Persons injured
6) Extent of damage to vehicles
7) Location and description of traffic control devices
8) Regulations in force
9) Roadway and weather conditions
10) Possible violations
11) Probable causes
12) Diagram of accident

The community officials may wish to maintain a motor-vehicle-related accident location map "pin-pointing" the accident location, type of accident, security indication, and accident report number. Other information as described in the official accident report need not be posted unless desired. A current map will provide interested community officials and residents with an immediate indicator of accident prone locations, leading to corrective action by the appropriate responsible agency.

TERMINAL AND TRANSFER FACILITIES

4.13 Terminal and transfer facilities are those areas where people or goods either end a trip or transfer from one mode to another.

Most people will quickly identify bus terminals, train stations, and airports as terminal and transfer facilities, but not so easily recognize many other facilities which also fall into this category. Anywhere people or goods are regularly loaded and unloaded are terminal and transfer facilities. These places include schools, churches, factories, stores, parks, warehouses, etc.

An analysis of terminal and transfer facilities will reveal where short and long term parking areas are located, the location of freight and passenger terminals, and, indirectly, the location of major employment, shopping, or recreational centers. This is important information in the inventory because of the impact these facilities have on the transportation system. Parking facilities and terminals affect the flow of traffic movement through the area if separation from the traffic flow is not adequate. In addition, the large traffic volumes that flow in and out of major facilities will have a significant influence on the use classification of nearby roads. (See Worksheet 4.4.)

Roads that carry through traffic in addition to providing access to adjacent property, i.e., collector and arterial streets, may need special engineering design features to keep the through traffic moving at a reasonable speed. These engineering features might include traffic signals and turn lanes, off street parking with limited access to the street, and lane division determined by the destination of the traffic.

A listing of the various terminal and transfer facilities should include:

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[5] Ibid. Procedural Manual, 3C and 3D.

1) Freight and passenger terminals

   a) Truck

   b) Train

   c) Air

   d) Water

   e) Bus

2) On-street and off-street parking facilities and loading zones

   a) On-street

   b) Off-street

      (1) School

      (2) Church

      (3) Shopping

      (4) Recreation and cultural

      (5) Commercial or business

      (6) Industrial

PUBLIC TRANSPORTATION

4.14 Public transportation is a term that covers all modes of transportation that are not privately owned and operated for personal use. Thus, public transportation includes all types of vehicles from buses, vans, taxis, common carriers, trains, and airplanes to boats. In addition, public transportation includes special service modes such as church and school buses, ambulances, vehicles for the aged, handicapped, and other special groups.

Both local and regional public transportation plays an important role in many small communities. The movement of products by airplane and parcels by bus are among the many important services

public transportation provides small communities. The more developed the public transportation service to a community is, the greater the access that community will have to other communities and larger cities.

As a part of your transportation inventory you should collect and record information about public transportation and special purpose transportation service. Either service may be publicly or privately owned. There are many forms of operations associated with public transportation. Basically the two major operational forms are fixed route service and demand responsive. An example of fixed routes is the regularly scheduled buses serving established routes. Demand responsive service is exemplified by traditional taxi service.

Information should be gathered on the current system and on the programs that are available to community residents. By doing this, the community may be able to determine which groups of people are using the system and which people are eligible for service but are not receiving any at the present. After determining the inadequacies, the community may wish to develop a set of objectives that might help to remove the transportation deficiencies. (See Worksheet 4.5.) The information gathered should cover each transportation provider.[6]

COMMUNITY CONTROLS OF LAND USE

4.15 The purpose of this phase of the inventory is to assess the community's present capability to control future development. Table 4.3 classifies and lists examples of the areas of community controls that should be investigates.

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[6] A more extensive inventory of mass transit use is found in NCUT Procedure Manual 4A.

TABLE 4.3: AREAS OF COMMUNITY CONTROLS

I. Public Ownership and Use

- A. Local (incorporated places)
- B. County
- C. Regional governments, Councils of Governments, etc.
- D. Special purpose districts
- E. State
- F. Federal

II. Legal Controls

- A. Police powers
  - 1. Health and safety ordinances (building codes, etc.)
  - 2. Zoning controls
  - 3. Subdivision regulations
- B. Taxation
  - 1. General taxes (property, sales, income)
  - 2. Assessments
- C. Power of Eminent Domain
  - 1. Taking for public use
  - 2. Easements
- D. Power of Public Trust

III. Policy Controls

- A. Provision of service
- B. Taxation procedures
- C. Other incentive procedures

PUBLIC OWNERSHIP AND USE

4.16 Public ownership of property can influence the development process in three ways. First, property that is publicly owned and used (i.e. parks, roads, building) presents a constraint on private development because government property is rarely sold. If, for example, a park or state school is located in your community, you will have to accept its presence as a given, a prior condition, and develop around it. Second, public agencies can purchase property in anticipation of development and may sell or lease the property to private developers (dependent upon local ordinances, etc.), who would then have to comply with prescribed public agency standards incorporated in deed restrictions. The third type of influence that public ownership can have on development is impact on surrounding land values. Publicly owned property may influence surrounding land values (and thus development). A publicly owned lake, for example, will probably increase the value of surrounding private property.

Each level of government, local, state, and federal, can own property. Property owned by the federal government is primarily for the benefit of all people in the country (i.e., national parks, defense bases, government buildings). Likewise, state and local units of government hold land primarily for the benefit of residents within their respective jurisdictions.

Local governments own property for the use of people in the community, i.e., neighborhood parks, swimming pools, etc. This

ownership of public property at all government levels will influence the location of new development because some land is removed from private use and other land may be made more desirable because of its location near public property. Perhaps the most influential example of this type of influence on growth results from the location of schools (particularly elementary and junior high schools). People with families will almost always gravitate towards those areas where new schools are being constructed.

"Land banking" is another method of influencing community growth. Public acquisition of land in anticipation of development is commonly called land banking because the land is purchased and then retained until the time when development is desired. The local municipality can purchase the land and hold it until development reaches the area or it can actively encourage development through the provision of services (see Policy Controls, section 4.18). In either case, the land would eventually be leased or sold to a private developer who agrees (through deed restrictions) to develop the land in a particular fashion. This process can be very effective in the unincorporated areas near the city which normally are not subject to city control.

LEGAL CONTROLS

4.17 In most states, the officials of incorporated cities ~~are granted by state~~ law the legal power to regulate growth in their communities. This power is granted to foster a community's ability to promote the health, safety, and general welfare of its residents. The police power, the power of taxation and the power

of eminent domain are the traditional powers exercised by cities. The power of public trust has recently been added to the other two as a method of controlling development for the public good.

POLICE POWER

The police power enables cities to develop and enforce health and safety ordinances, zoning controls, and subdivision regulations. Health and safety ordinances, such as building codes, are adopted to insure that construction practices are consistent with the requirements necessary to promote a safe and healthful environment. Zoning regulations pertain more to the location of land uses relative to one another than to building practices. Subdivision regulations are in an intermediate position because they pertain to the location of the building on the site, size of streets and location of utility easements, and other regulations that lend uniformity of design throughout the city.

Zoning and subdivision regulations are more adaptable for development control than are building codes and other health ordinances. The major purpose for development control is to ensure that all areas are adequately served by community services and the transportation and utility systems. In addition, the capability of the natural environment (as opposed to city services) to support different types of development without negative impacts is a legitimate basis for zoning controls. Both approaches are constitutionally valid, but the traditional approach is more widely

used.[7,8]

TAXATION

Taxing powers have an important impact on city development. The amount of taxes levied on property will influence its use. For example, when farmland is assessed at high rates there is a good chance that the farmland will be marketed for other use, specifically residential. Income from farming will not justify the cost of holding that land. Likewise, residential areas assessed at relatively high rates will probably be marketed as commercial property.

Special assessments are a particular form of taxation in which the cost of a specific community project is carried by those people who benefit directly. Assessments can assist development (that might not otherwise occur) in certain areas where funding from general revenue sources is not possible. Special assessments are sometimes levied when a road is improved, a sewer main extended, or city water service provided to a developing area.

"Preferential taxes" can be assessed by the community when it wishes to preserve special areas in the town. A preferential tax is a tax based on current use of a property with no expectations of future conversion to a different use. Therefore, even though all the property around a particular parcel may be changing to

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[7] A general discussion of zoning is included in: International City Manager's Association, Principles and Practice of Urban Planning, Washington, D. C., 1968, p. 404.

[8] Environmental zoning is discussed in: C. Thurow, W. Toner, and Duncan Erley. Performance Controls for Sensitive Lands, Washington D. C.: Prepared for EPA by American Society of Planning Officials, June 1975.

higher uses, this would not justify an increase in taxes for the owner whose property was in a preferential tax zone. A fairly common example of this is the tax rate that applies to historically zoned areas of town. In a historic zone, changes in land use are stringently controlled and generally kept to a minimum. Generally, preferential taxes are levied in accordance with specially zoned areas.

POWER OF EMINENT DOMAIN

The power of eminent domain is granted to a community by state enabling legislation to facilitate community acquisition of property (at fair market price) in locations that are most suitable for community purposes. There are two types of eminent domain powers, taking for public use and easements. The taking for public use occurs when the community (or state) needs to provide a facility in a particular area. The taking of property for highways is perhaps the most common exercise of this power. In all cases of taking for "public use" the community must indicate what the property will be used for and prove that it is a use which is in the public interest. Easements are used primarily for utilities or public access through private property. The ownership of the property remains with the original property owner, but someone else retains the legal right to place a pipeline in a certain area, run overhead wires, or drive down a specified road section. In all exercises of the eminent domain power, the original owner is compensated at fair market value for the land or property that has been taken.

DOCTRINE OF PUBLIC TRUST

The public trust doctrine is a currently reemerging power that relates to aesthetic and environmental protection. In essence,

it represents the view that natural resources are not the property of a single person or generation, but in fact belong to the entire nation, including unborn generations. Therefore, areas that have significant historic, landmark, or scenic attributes may be preserved from development, even without public ownership of the property.

The community may use the public trust doctrine to broaden its use of the police powers into the area of aesthetic and environmental protection. The use of "scenic easements" to preserve a view of great natural beauty is an application of the doctrine of public trust.

4.18 The declaration of intent to do something will tend to "lock in" the community to implement what they have said they will do. *POLICY CONTROLS*

An example of this in operation would be the declaration by city leaders that they wish to increase the street and highway bonding capacity to account for anticipated development to the northwest. Even before the bond election date has been set, investors will be trying to purchase options on property in the northwest area. If the community votes in the new bonding capacity needed to create the funds necessary for street and highway expansions, the investors will purchase the property they have optioned and the process of development of the northwest will begin.

Local governments conventionally adopt policies on the provision of utilities and other services. Usually the policy (whether it

is stated or not) is that private development should take the initiative and that the public responsibility is to maintain high levels of service to the developing areas. For example, a fairly typical procedure is for a developer to purchase property outside the city limits, subdivide the property, begin housing construction and then petition the city for annexation. If the annexation is approved, then the city will annex the property and agree to provide city services within a specified time period.[9]

An alternative to this practice would be to develop a plan calling for only that development which is economically end environmentally justifiable. The plan could be adopted as a statement of city policy, which would have a significant influence on the actual process of development. The advantage of this planned approach would be that the city could encourage concentration of development (with less wasted space) in areas where city utilities could be provided eocnomically and where the environment could be preserved.

Additional policy controls could be exercised through the legal means discussed earlier.[10]

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[9] Sloan, A. K., and Baker, M. S., Enhancing the Public Share of Highway Benefits, Washington, D. C.: DOT, Office of Program and Policy Planning, November 1974.

[10] Einoweiler, R. C., et al., "Comparative Descriptions of Selected Municipal Growth Guidance Systems," in Management and Control of Growth, Vol II, edited by Randall W. Scott, Washington, D. C.: Urban Land Institute, 1975.

4.19 Each city will have different sources of funds and capacity for borrowing. The extent of the financial resources will be based on the use of the following mechanisms. *FINANCIAL RESOURCES*

1. City income
   a) Taxes (property, sales, income)
   b) Fees, fines, etc.
2. Utilities
3. Bonds
   a) General obligation
   b) Limited obligation
   c) Revenue
4. Intergovernmental receipts
   a) Revenue sharing
   b) Categorical grant

City income is, in a sense, the income derived by the city from the sale of certain services. The magnitude of the income is, therefore, related to the type and extent of services provided. A small community that provides water and sewer service, police protection, and limited administrative services will have very little income. If, on the other hand, the city provides such services as electricity and garbage collection, the city income will be proportionately higher. The costs in the latter case will be greater, but the quality of life available to community residents would probably outweigh the higher costs.

The city sells its services by charging fees and levying taxes. Taxes are generally levied against all the local residents and

are used for general "public" purposes (special taxes were covered earlier). Fees, fines, and other charges are user oriented and are paid only by those that receive a particular service (i.e., electric power, water in the home, parking in a public lot, etc.)

The city can also raise money by borrowing from the public. Borrowing may take the form of General and Limited Obligation Bonds or Revenue Bonds. The city makes a bond sale at a specified interest rate to the general public. The amount of money obtainable through this source is dependent on 1) the local bonding capacity as established by law and 2) the interest rate as established by the bond rating of such rating services as Standard & Poors.

The city may also receive funds from other units of government on a general revenue sharing or categorical grant basis. General revenue sharing is granted on a formula basis and can be little affected by local contribution. There are, however, tax sharing options available in some states. Tax collected at the local level for the state is later reimbursed to the community by the state government in a lump sum. Categorical grants are available to cities for a multitude of special projects ranging from the construction of a sewer treatment plant to special assistance to the aged in the community.[11]

All of these sources of funds taken together comprise the city's budget and therefore its ability to finance projects.

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[11] For a listing of current Federal categorical grant programs, see The Catalogue of Federal Domestic Assistance, U.S. Government Printing Office, Washington, D.C., 1976.

4.20 The purpose of conducting an inventory of economic conditions is to enable the community to assess its current economic status and determine a basis for future economic growth. The assessment of current economic status involves the collection of data on employment and income for persons in the community. *ECONOMIC CONDITIONS*

Employment information consists of facts about who is working at what jobs producing which goods and services. In a small community the most relevant questions are: *EMPLOYMENT*

1) How many people are employed by each firm?

2) Where do the firm's sales go?

3) What products or services are produced by the firm?

These facts should be obtainable through the community employers. A phone call or brief visit should be sufficient to determine this information. The data collected from each firm should be combined to determine the employment characteristics of the entire community.

By using the firm's sales data, one may make a very rough determination of EXPORT EMPLOYMENT. Export employment refers to the number of people in the community who produce goods and services that are sold to residents or businesses from other areas. This type of employment normally falls into the categories of Farming, Fishing, Mining, Manufacturing and Construction, but it may also include some of those who work in service establishments (e.g., a retail store selling a product to a tourist, a restaurant selling a meal to a hunter from a nearby city, etc.). Most export sales, however, are made over long distances (e.g., local minerals are sold to a manufacturing company 500 miles away, local products are shipped for

distribution to a large city, etc.). In either case the sales are bringing in dollars form other areas, which is important for the local community's well-being. (See Worksheets 4.6 and 4.7.)

There are, or course, many people that work at jobs that support the community. These are local jobs. LOCAL EMPLOYMENT refers to the number of people who work at producing goods and services consumed in the community. These activities fall into the categories of Trade, Services, Government, Finance, Insurance, Real Estate, Communications, Transportation and Utilities when the activities are primarily conducted for the benefit of local consumers. When the export employment in the community is very low (i.e., less than 30% of the total employment), then the prospects for economic growth under present conditions are also quite low. However, a low export employment does not <u>necessarily</u> mean that the community is not viable. A community that sells almost all of its products or services to outside areas may be in a precarious economic position if it also buys most goods and services from the outside. Areas such as the Lower Rio Grande Valley in Texas and many northern ski resort towns are in the position of almost total reliance on the outside. A town that oonducts only a limited business with outside areas may be more secure because it does not rely heavily on the economic fortunes, i.e., price fluctuations, inflation, etc., of other areas for its own well-being. The prospects of <u>growth</u> in such a self-sufficient community can only be enhanced through the pursuit of <u>new</u> economic roles.

ADDITIONAL ECONOMIC INFORMATION

In addition to an examination of the type and amount of employment in a community, an urban economic inventory would include information on total sales, per captia income, transfer payments, unemployment, and possible migration. However, the methods of obtaining this information in an urban area are much more direct than the methods possible in a rural area. For all SMSA cities of 50,000 or more persons, the U. S. Bureau of the Census conducts an in-depth analysis of the population and employment characteristics every ten years. In addition, the larger urban areas have many public and private research groups that conduct numerous studies which produce information about city residents. Thus, there is usually a wealth of primary information in urban areas that can be used to fill out the economic inventory. For smaller cities the information is available at the county level, but county data may not be directly applicable to a particular city. Smaller cities have to rely on secondary sources for the information that they are interested in.

PER CAPITA INCOME

Information may be desired on per-capita income in order to determine how well the community compares with other communities in the region. Because this data is not available from census data for the community, the community may have to rely on the census information for the county and just assume that it is a reasonable estimate for the community.

UNEMPLOYMENT

Information about unemployment in the community may be desired. The community might realize that it has an unemployment problem, but not know how many people are involved. A method for determining

this might be a trip to the local Employment Commission Office and a scrutiny of its records to find out how many people are receiving unemployment compensation. By comparing this number with the total community employment, an estimate of the unemployment rate could be made.

TRANSFER PAYMENTS

In order to determine how many people in the community are on welfare or receive social security income, a trip to the post office might be in order. A careful counting of the checks received on the 15th and 30th of the month at the post office from the Social Security Administration or Welfare Department should provide a good estimate on the number of recipients in the community.

MIGRATION

A check of new telephone listings from year to year might provide a good estimate of how many people are moving in and out of the community. If you know the total number of listings, and the number of new listings each year, then an annual estimate of in- (new listings) and out- (1 year old listings plus new listings minus the current total) migration of households is possible.

SUMMARY

4.21 The community inventory should accomplish two objectives. First, the inventory should present more specific information on problems that were identified in Chapter III. Second, the inventory should identify areas where further study is needed. In either case, the inventory begins the process of refinement that will result in the determination of alternatives discussed in Chapter V.

For example, while investigating terminal and transfer facilties and accident data, it may be discovered that the location of parking and loading facilities is causing accidents. This discovery may help to refine the understanding of safety problems already identified in the course of developing community goals and objectives. In addition, the investigation may indicate that the inadequate separation of local and through traffic is compounding the parking and congestion problem.

The identification of "new" problems may necessitate a restatement of previous goals and objectives but it is likely that the problem will be a subproblem of one that was identified earlier.

In the case above, the major problem identified earlier may have been the congestion evident on streets all over town. The mixed use of a local street for both through traffic movement and local access is the subproblem.

In many cases the information gathered in an inventory will not be sufficient to permit the development of viable alternatives. Additional study may be needed on the problem area to refine the problem and identify some of the causes. This can be appropriately accomplished through the alternative development and preliminary evaluation phase discussed in Chapter V.

WORKSHEET 4.1

POPULATION PROJECTIONS

1. In the first part of the table list the agencies that have recent (less than 5-year-old) population projections for your community (e.g., State Department of Community Affairs, COG, MPO, business research groups, universities) along with their projected population numbers.

Agency	Past Years						Present Year		Future Years			
	1970	71	72	73	74	75	1976	77	78	79	80	81
1.												
2.												
3.												
4.												
5.												

Agency	Estimate Ratio							Average
1.								
2.								
3.								
4.								
5.								

2. Contact the local electrical power provider and ask them to calculate the total number of residential hookups within the community for each "past year." Number _____ Multiply this number by the average household size for small urban areas in your part of the country. (Note: The 1975 Statistical

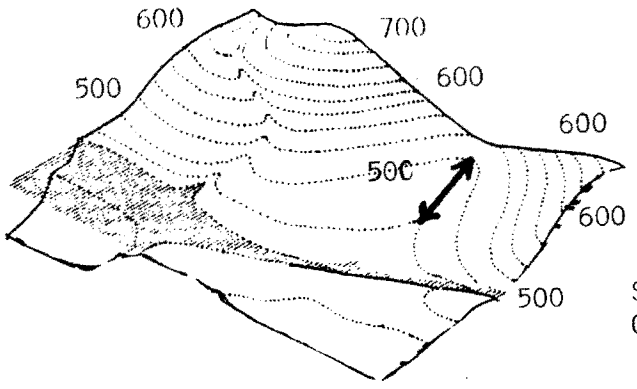
Abstract of the U. S. estimates national average household size at 2.97 persons.)

Hookups _____ Household size _____ = _____(Current and Past Population Estimate)

3. Divide each agency population figure by your estimate for that year. Place the resulting ratio in the boxes provided on the preceeding page. Now, average the ratios obtained for all the past years from each agency projection. Select from among those averages the "best" estimate. Use this agency projection for future years that has the "best" estimate for past and current years.

Note: If the average ratio computed above is greater than 1.2 or less than .8, it is suggested that you do not use that agency projection, even if it is the "best."

WORKSHEET 4.2 TOPOGRAPHY



Scale: 1" = 100'
Contour lines represent
25' elevations

Topographic Map

Shown above is a small section of a hypothetical topographic map. Each contour line represents a 25 foot change in elevation from the previous line. In order to determine the slope, the rise in elevation must be divided by the distance. To find the slope of the area designated by the arrow, the distance must be established. When 1" = 100', 7/16" equals 43.75'. Dividing 25 by 43.75 gives a slope, as a decimal, of .57 or 57%. This would obviously be a very poor place to build.

Similar calculations can be made on any topographic map in the following manner.

1) Determine two points between which the slope needs to be determined.
2) Measure the elevation by looking at the difference between the contour lines running through the two points.
3) Determine the distance between the points by measuring the distance between the points and then multiplying by the scale of the map.
4) Divide the elevation by the distance between the points to get a decimal. Multiply the decimal by 100 to establish the percent of slope.

WORKSHEET 4.3

INVENTORY OF STREET SYSTEM

1. Make a street map of your town (at the same scale as the land use map) which includes the following:[1]

   1) Location and dimension of streets and rights-of-way - designated as

      a) Paved

      b) Unpaved

      c) Unimproved

   2) Location of curbs and storm gutters (if applicable)

   3) Location and type of controls (stop sign, signal light, etc.)

   4) Use characteristics (See section 4.11, pages 4 - 14.)

2. Additional information concerning the streets may be placed on maps of individual control sections. A control section is a linear portion of the street network. A map of a control section should be at a scale which will allow a lot of information to be placed directly on the map. A control section can be of any length so long as a general uniformity of street use is observed. The use of streets usually changes when

   1) Street width and pavement condition changes,

   2) Land uses adjacent to the street change abruptly, or

   3) Speed limits change.

Information for each control section should include all of the information from the general street map plus:

   1) Quality of road surface

   2) Lane widths

---

[1] National Committee on Urban Transportation, Procedure Manual 5A and 7A, Public Administration Service, Chicago, 1958.

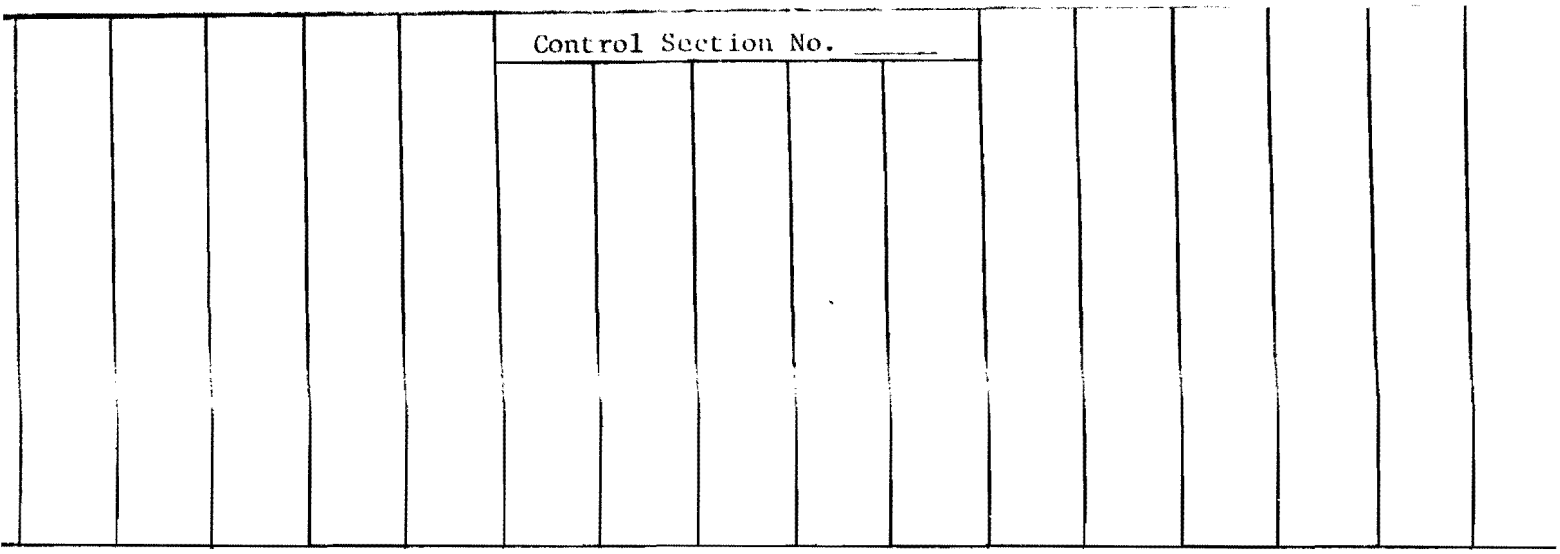
3) "Cross slopes" (curvature of road for drainage)

4) Shoulder type

5) Sidewalk and crosswalk location

6) Location of curbs, guardrails, and guide posts

3. The basic inventory of the street systems will provide a guide to the use and activities in the city. Traditionally, the small city will be layed out in a "grid" system, which may facilitate traffic operations and the inventory. The inventory should be updated periodically (every five years) and can be used as one indication of change in the community over time.



Street Name: From: To: Scale $\frac{1}{2}$" = ___ft.

	Date:	Date:	Date:
I. Classification			
1. Administrative (check one)			
State Highway	____	____	____
City Street	____	____	____
Other	____	____	____
2. Functional (check one)	____	____	____
Interstate			
Arterial	____	____	____
Collector	____	____	____
Local	____	____	____
	____	____	____
II. Inventory			
1. Length of section	___ft___miles	___ft___miles	___ft___miles
2. Pavement area	_____ sq.yds.	_____sq.yds.	_____sq.yds.
3. Width (curb to curb)	_____ft	_____ft	_____ft
4. Width (shoulder to shoulder)	_____ft	_____ft	_____ft
5. Width (row)	_____ft	_____ft	_____ft
6. Median width	_____ft	_____ft	_____ft
7. Sidewalk width	___ft(l)___(r)	___ft(l)__ft(r)	__ft(l)___(r)
8. Pavement Type (Estimate year constructed)			
Surface Type	_____	_____	_____
Base	_____	_____	_____
Sub-base	_____	_____	_____
9. Ride quality (satisfactory)	_____sat.	_____sat.	_____sat.
(unsatisfactory)	_____unsat.	_____unsat.	_____unsat.
10. Drainage Type			
Storm sewer	_____	_____	_____
Curb & gutter	_____	_____	_____
Paved side ditch	_____	_____	_____
Unpaved side ditch	_____	_____	_____
V gutter	_____	_____	_____
11. Traffic flow	__2-way__1-way	__2-way__1-way	__2-way__1-way
12. Average daily peak-period traffic	_____vph	_____vph	_____vph
13. Illumination (check one)			
1. none	1.none __	1.none __	1.none __
2. intersection	2.intersect.__	2.intersect.__	2.intersec.__
3. continuous	3.contin. __	3.contin. __	3.contin. __
14. Parking practices: parallel	_____	_____	_____
(check one) diagonal	_____	_____	_____

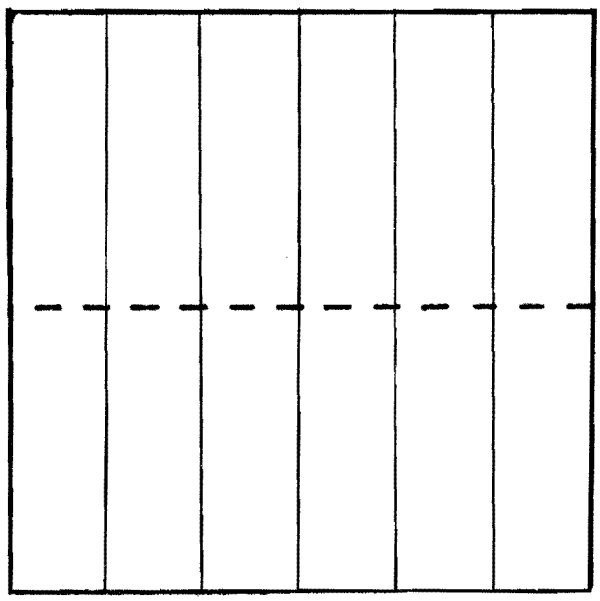
Control Section No. _____

II. Inventory (continued)

	Date:	Date:	Date:
15. Operational controls			
(a) signal overhead	(a)_____	(a)_____	(a)_____
(b) stop signs on this street	(b)_____	(b)_____	(b)_____
(c) cross st. w/stop sign	(c)_____	(c)_____	(c)_____
16. Railroad crossing at grade			
(a) Number of tracks	(a)_____	(a)_____	(a)_____
(b) Number of trains per day	(b)__passenger __freight	(b)__passenger __freight	(b)__passenger __freight
(c) Approx. speed of trains	(c)_____pass. _____frght.	(c)_____pass. _____frght.	(c)_____pass. _____frght.

17. Public Utilities (Locate symbol on cross section below, along with date observed)

Overhead	Underground	
Power "P"	Water "W"	Power "P"
Telephone "T"	Gas "G"	San Sewer "SAS"
Trolley "O"	Telephone "T"	Storm Sewer "SS"



Cross Section of Control Section

Ground Level

Scale ½" = _____ft.

[1]Adapted from National Committee on Urban Transportation, Procedure Manual 5A, Public Administration Service, Chicago, 1958.

WORKSHEET 4.4

TERMINAL AND TRANSFER FACILITIES

I. List the terminal and transfer facilities in your community.

Terminal and Transfer Facilities	Off Street/ On Street	Short-Term/ Long-Term	Passengers Goods Both
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			

II. Locate the facilities on the street map by number. You may wish to start at one side of the community and work to the other so that sequential numbers occur in adjacent areas.

WORKSHEET 4.5

PUBLIC TRANSPORTATION

A. Providers

1. Who provides public transportation in the area?

2. Are the routes and schedules for each service available?

3. What are the limitations on the service provided? Is the service limited to specific groups of people, types of commodities, or size of shipment?

4. Who are the primary users of the service?

5. Are there identifiable groups not being served by this service? Who are they?

B. Programs

1. What programs are available to serve the transportation needs of your community?*

2. Are these programs being operated in your community? Who is the provider?

3. What type of service does the program provide? Who receives the service?

4. Do the programs seem appropriate to meet the needs of your community?

*State Welfare Agencies, Community Action Groups, and Councils of Government should have information on programs that provide transportation service.

WORKSHEET 4.6

EMPLOYMENT

Firm Name _____

SIC Classification _____

1. Employment # _____

2. Products or service produced _____

3. % of sales outside the community _____

4. % sales x employment = % employment for exported goods

_____ x _____ = _____

5. % basic employment

WORKSHEET 4.7

EMPLOYMENT: SUMMARY DATA

INDUSTRY	NUMBER OF EMPLOYEES	
	Export	Local
A. Agriculture Forestry and Fishing		
B. Mining		
C. Construction		
D. Manufacturing		
E. Transportation, Communications and Public Utilities		
F. Wholesale Trade		
G. Retail Trade		
H. Finance, Insurance, and Real Estate (FIRE)		
I. Services		
J. Government and Other		
TOTAL EMPLOYMENT: BASIC/LOCAL		

Total basic employment divided by total employment (basic and local) will result in the % basic employment of the community.

Basic ÷ Total = % basic

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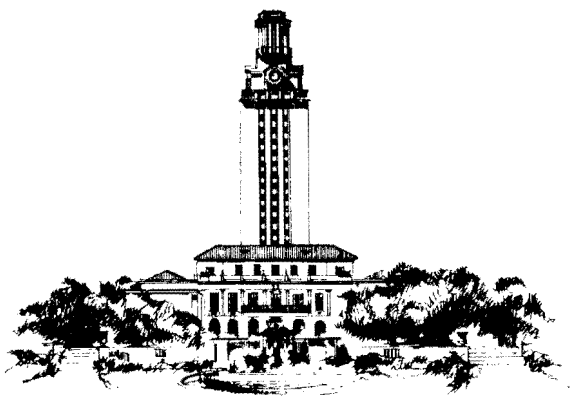

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