

Planning in advance for thoroughfare development is important for the City and County in preparing to meet future travel demands and ensuring safe and orderly movement of traffic within and through neighborhoods and throughout the region. It is also important in achieving economic development objectives to improve access to and from the area, whether by air, rail, bus, or interstate highways. A well-planned and regularly maintained transportation system also contributes to character and appearance, as well as to the quality of life of residents.

Transportation

4.1 INTRODUCTION

The transportation system is made up of a network of roads ranging from regional roads to local streets. Regional roads connect Paducah and McCracken County to their neighboring counties (Ballard, Carlisle, Graves and Marshall), the rest of Kentucky, and the multi-state region. Local streets provide access to collector and arterial roads that link neighborhoods with one another and to employment areas, business districts, schools, government buildings, community activity centers, and parks. Beyond the surface transportation system, transport is also provided via commercial and air cargo services, freight rail service, waterborne transport, and trails and sidewalks. Together, these individual modes form a comprehensive, interconnected urban and rural transportation system.

Primary roadway access to the County and City is by way of Interstate 24, which connects through Nashville to Chattanooga, Tennessee on the south and to Interstate 57 in southern Illinois. This interstate provides connections to I-65 and I-40 in Nashville, I-64 and I-57 in southern Illinois. Each of these interstate corridors extends throughout the eastern United States, eventually connecting to other interstates providing access across the country and to Canada and Mexico. In addition to I-24, there are numerous state routes providing local and regional access, including KY 305/Cairo Road, KY 994/Old Mayfield Road, KY 998/Olivet Church Road, KY 1286/Friendship Road, KY 1954/John L. Puryear Drive, and KY 218/Husbands Road.

A county wide transportation plan was completed in 2002. The transportation element of the Paducah and McCracken County

Planning Factors

A set of broad objectives defined in Federal legislation to be considered in the planning process include:

- ◆ Support the economic vitality of the area;
- ◆ Increase the safety and security of the transportation system for motorized and non-motorized users;
- ◆ Increase the accessibility and mobility options available to people and freight;
- ◆ Protect and enhance the environment, promote energy conservation, and improve quality of life;
- ◆ Enhance the integration and connectivity across and between modes;
- ◆ Promote efficient system management and operation; and
- ◆ Emphasize the preservation of the existing system.

Comprehensive Plan establishes a system to accommodate local and regional travel demand through the Year 2020 and beyond and in the adoption of this plan the 2002 plan should formally be adopted. It is closely coordinated with each of the other elements of the plan to create a strong and successful area-wide transportation network. As a reflection of today's system of travel, the transportation element has emphasis on the street and highway system, yet also addresses air and freight transportation, bicycling, and walking. The principal aim of transportation planning is to ensure safe and efficient movement of people and goods. To achieve this end, this element includes a Thoroughfare Plan and goals, objectives, and actions to support it, which provides a long-term plan for developing an overall system of thoroughfares for the City and County. Particularly, this plan is to be used as a guide for securing needed rights-of-way and upgrading and extending the network of streets, roads, and highways in an orderly and timely fashion.

4.2 FOCUS ON ISSUES

The participation process described in *Section 1.5, Participation in Plan Development* contributed to the identification of important issues relating to the transportation system in the County and City. The approach began as an open-ended forum for identifying any and all problems or concerns about the local and regional transportation system. This was achieved through small group interviews, tours with County and City staff, professional observations of the consultant, and the Citizens' Congress. The individual issues articulated by those persons who participated in the involvement process

were organized into the followed broad issue areas. While the issues are generalized in this discussion, the recommendations relate to specific focuses of the broader issues.

4.2.1 Comprehensive street network for improved urban/rural mobility

The transportation system is made up of a network of highways, major and minor arterial roadways, collector roadways, and local streets, each designed to serve a functional role in the overall system. The classification of roadways distinguishes the design and functional capacities of individual road links for moving traffic within and around the County and City. Each roadway

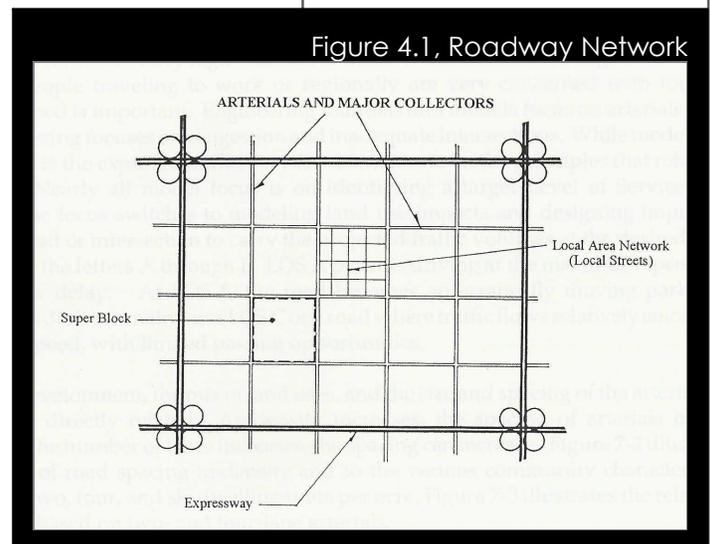
Residents who attended the Citizens' Congress contributed to identifying transportation issues.



connection contributes to the efficiency and effectiveness of the overall system, making each individual link important. Therefore, discontinuous and staggered roadways and those not yet extended or improved create an incomplete network, causing traffic to be re-routed onto roadways that are not designed to function at a higher capacity. This creates congested conditions and leads to increased accident rates and less than optimal travel times.

Within the urbanized area, the arterial street network is well established, particularly in the original town area where there is a traditional street grid. Federal and state roadways, such as KY 305//Cairo Road, U.S. 60, U.S. 62, U.S. 45, KY 994/Old Mayfield Road/16th Street, and KY 1954/John L. Puryear Drive, each extend radially from downtown and the riverfront, intersect I-24, and continue into and across the County. As a result of the traditional street grid, there is a dense network of streets forming a hierarchical thoroughfare system, collecting traffic from local residential streets and distributing it to collector and arterial roadways and onto the local and regional highway system.

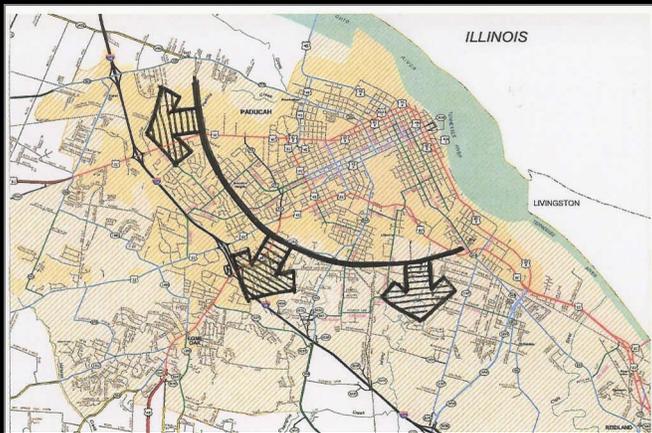
As shown in **Figure 4.1, Roadway Network**, the traditional approach to thoroughfare planning in much of the United States is to form a grid of roadways, with a hierarchy of functional service including expressways, arterials, collectors, and local streets. The highest level of functional service (expressways and interstates) is intended for high speed, uninterrupted regional travel with the greatest spacing between roadways. The only access to expressways is via controlled interchanges. The arterial street system commonly includes major and minor arterials, with design capacities, travel speed, and spacing commensurate with its intended functional role. Arterial roadways are intended for relatively uninterrupted, longer travel distances at higher speeds. To maintain this function it is essential for there to be access limitations to preserve the traffic carrying capacity of the roadway. Situations where there are too many property access points, together with local and collector street intersections (such as that around the Kentucky Oaks Mall), impede traffic flows, thereby creating congested conditions. Collector roadways are designed to collect traffic from local neighborhood streets and distribute it to the arterial street network. They, too, are intended to efficiently convey traffic



without significant interruptions. Driveway access, regular spacing of local streets, and major land uses with direct access serve to lessen their capacity and functional role in the thoroughfare system. The role of local streets is to provide access to individual properties. They are narrower in width and designed for slower speeds to ensure safe neighborhood traveling conditions.

The arterial street network forms superblocks, which contain a dense grid of local streets and collector roadways. A typical trip to work or the grocery store is assumed to begin on a local street leading to a collector roadway and on to the arterial street system. Therefore, a network works most efficiently when there is a high degree of connectivity. However, there are natural, historic, and man-made constraints to formation of a perfect grid. Examples include rivers, streams, and wetlands; railroads; existing development; and topographic considerations. In the case of McCracken County, the road pattern was a farm-to-market road system established when the area was settled in the early 1800s, and followed a meandering pattern that responded to topography and property ownership. That pattern represents constraints and forms barriers to creating an effective network. The City was laid out in a series of grids by surveyors, while the farm-to-market road pattern is apparent in the peripheral and outlying areas. The challenge is to convert the farm-to-market pattern to an effective urban system as growth moves into the County. In many instances, existing development or large ownership tracts limit or deny – without expensive and difficult decisions to acquire property for rights-of-way – opportunities for re-aligning and extending roads that are now functioning well beyond their design capacities. These roads are strained due to the amount of suburban fringe development and the associated volumes of traffic. This is critical for those roads forced to serve as collector and arterial roads.

Recent development outside of the original town area reflects a curvilinear street network.



Of significance to an efficient system is the continuity of the street network. The continuity of the roadway network is well defined in the urbanized area – generally east of Interstate 24 - by nature of the arterial roads and dense grid of collector and local residential streets. This network is less defined, however, within the band of more recent developments that generally encircle the original town area and in the developing periphery where subdivisions are being designed with curvilinear street patterns, cul-de-sacs, and looping, discontinuous collector streets. To result in a functional thoroughfare system, it is essential for development to

occur in a well-planned manner, ensuring adequate roadway continuity, integration with the existing street network, and formation of a network grid.

The market for new homes has led to the design of subdivisions with curvilinear streets and cul-de-sacs, which is desirable due to less through-traffic, generally larger lots, and a sense of increased privacy. From the perspective of an efficient thoroughfare system, this street system is not fundamentally flawed as long as it is within a superblock framework. There are two components that are essential, the framework of arterial and collectors that create super blocks and connectivity within the super block. Maintaining and improving the arterial and collectors is one component that is critical, because breaking any links results in congestion. Maintaining connectivity within super blocks reduces pressure on the system. A trip to a friends house within the super block should not force people out to the collector or arterial system. Cul-de-sacs are fine internally, but not when they lead off the major roads. One thing to be avoided at all costs is gated communities. These breakdown connectivity as well as damage neighboring.

For the urbanized area, I-24 serves as a circumferential roadway that effectively conveys traffic around the periphery of the community. In the outlying developing area of the County, however, there are no circumferential roads directly connecting KY 305, U.S. 60, U.S. 62, and U.S. 45. The proposed outer loop project-Phase 1, displayed in **Figure 4.2, Outer Loop Alignment**, extending from U.S. 60 adjacent to the west of the Information Age Business Park south and east across U.S. 62, KY 1322, and KY 339 to U.S. 45 south of Lone Oak would accomplish this mobility objective for the County. If extended north to KY 305 and south back to I-24 connecting to KY 1954/John L. Puryear Drive, this would further improve mobility for County residents. The outer loop alone, however, will not solve the current mobility issues in the County. This roadway must be integrated into the existing roadway network, meaning existing roads must be re-aligned and/or extended to intersect the loop, thereby creating a series of superblocks. This will be a difficult task considering both fiscal and physical constraints.

4.2.2 Requisite coordination of land use and transportation plans

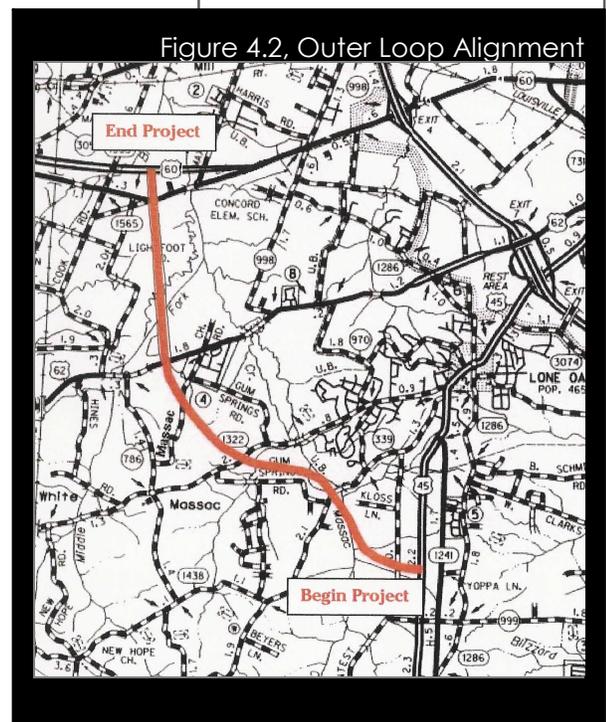


Figure 4.2, Outer Loop Alignment

Level of Service (LOS) is a qualitative rating of the effectiveness of a roadway in serving traffic, in terms of operating conditions such as traffic flow, using an alphabetical scale from A to F with A being the best (free flow) and F being the worst (stopped traffic)

Concurrency requirements have been enacted by many local and state governments to ensure that public services and facilities are not overburdened by the impacts of new development. Concurrency requirements can cover any number of required public services or facilities, including roads, as well as police services, fire protection services, schools, parks, water and sewer services, and solid waste removal. By instituting concurrency requirements, there may be a more effective link of the approval of development applications to both long-term planning and the provision of public services and facilities. In this way, communities and new residents are protected against the potential that developments reach completion before adequate services and facilities are available.

The size and spacing of the collector and arterial road network is directly attributable to the use and character of land. As density increases, the spacing of roads must be closer and their functional role and capacity designed to convey the volume of traffic generated by the abutting land uses. Therefore, in densely developing and mixed-use areas, there must also be a dense grid of thoroughfares. Comparatively, the spacing and width of roadway pavement and right-of-way may be much less in areas planned for very low density, such as large lot residential estates, rural countryside development, and agricultural areas. Without a plan and implementing mechanism to effectively manage the use and character of development, it is difficult – if not impossible – to ensure an adequate thoroughfare system concurrent with new development.

Until recent Federal legislation recognized the inherent relationship between land use and transportation, thoroughfare planning considered land use only as a means for quantifying trip generation rates and volumes, as well as roadway level of service. Therefore, the design of the thoroughfare system generally neglected to consider any community objectives other than transportation. Developing a land use and future growth plan simultaneous with the transportation plan allows the thoroughfare network to be designed and rights-of-way identified commensurate with the traffic volumes generated by planned land uses. It also enables the City and County to program its capital improvements to occur concurrent with development within designated preferred growth areas. In effect, this allows design and construction of the road system to be timed and sequenced according to a regional growth plan.

The established and continuing pattern of land use is an increasing intensification of development outward from the urbanized area. In fact, since 1960, the County’s population has been increasing, while the population in the City has decreased from 34,479 persons in 1960 to 26,275 persons in 2000. This shift in population has also shifted local markets, causing commercial development to locate in closer proximity to the growing areas. The Kentucky Oaks Mall and its surrounding retail development, for instance, is now located more toward the center of the population base. Since commercial development is now more conveniently located for rural residents, it encourages the decision to relocate to the outlying areas. As more population continues to move farther out, there is increased demand for other conveniences, causing strip commercial development along many of the roadway corridors. This prevailing development pattern emphasizes the need

to reconcile the availability and adequacy of infrastructure with new development.

Thoroughfare system planning is the process to assure development of the most efficient and appropriate street system necessary to meet existing and future travel needs. The twin objective of a thoroughfare plan is to identify, in advance, major roads and to ensure that adequate right-of-way is preserved on appropriate alignments and of sufficient width to allow the orderly and efficient expansion and improvement of the thoroughfare system. Proposed alignments are shown for planned new roadways and roadway extensions, but actual alignments will vary depending on the design and layout of development and necessary amendments to and refinement of the thoroughfare plan. Requirements for rights-of-way dedication and construction of street improvements should apply to all subdivisions of land within both the City and County.

Developing an adequate thoroughfare network for the future urbanized area is solely dependent upon the pattern, type, and character of future development and the degree of control imposed to manage it. In many instances, the existing rural road network is incapable of safely supporting increased capacity without substantial improvements, including additional right-of-way acquisition, pavement surface widening, shoulder and drainage improvements, and resolving existing alignment issues. Along roadways that have not yet exceeded the capacity threshold, there is an increment of additional volume that can be safely supported. Development beyond this threshold, however, poses a circumstance of overburdening the traffic carrying capacity and safety of the roadway network. In other words, without a mechanism to manage land use in the outlying areas – other than imposition of the subdivision regulations – the infrastructure system will become increasingly burdened, thereby further stretching the fiscal resources of the County. If a growth plan is adopted, allowing for market flexibility and achievement of economic development objectives, existing capacity deficiencies may be resolved and future problems may be avoided.

The thoroughfare, land use, and growth plans must be closely coordinated. Significant variation of either will have bearing, with multiple variations having a collective impact necessitating amendment. These plans are not intended to be static, but, rather, to be reviewed regularly and amended to account for necessary adjustments. Such variations, though, must warrant change and accomplish other objectives.

“Walkability is the cornerstone and key to an urban area’s efficient ground transportation. Every trip begins and ends with walking. Walking remains the cheapest form of transport for all people, and the construction of a walkable community provides the most affordable transportation system any community can plan, design, construct and maintain. Walkable communities put urban environments back on a scale for sustainability of resources (both natural and economic) and lead to more social interaction, physical fitness and diminished crime and other social problems. Walkable communities are more liveable communities and lead to whole, happy, healthy lives for

The land use and thoroughfare plans are implemented by the zoning and subdivision regulations of the City and County. Consistent standards and application of these regulations will be essential in plan implementation.

Development without sidewalks creates unsafe walking conditions for pedestrians.



4.2.3 Planning for improved pedestrian and bicycle mobility

Planning for pedestrian and bicycle mobility involves more than simply requiring sidewalks as part of the subdivision development process. While this is an integral part of becoming a more “walkable” community, in fact, the pattern of land use and connectivity of the street system have significant influence on the propensity of this travel choice. In other words, sidewalks that end at the edge of a neighborhood, are intermittent within the development, or do not offer convenient access to desirable destinations do not lead to regular use. Instead,

pedestrians will most often choose to drive or, alternatively, walk along the edge of the street where there is a continuous hard surface for walking or bicycling.

Through the citizen involvement process conducted during the reconnaissance and discovery phase of this planning process, there were numerous comments articulated by residents regarding the availability – or lack thereof - of sidewalks and pedestrian pathways throughout the City and County. In particular, there were comments made about the maintenance of sidewalks in “tired” areas of the community, missing sections in both new and old neighborhoods, waivers of the sidewalk requirements within County subdivisions, and a lack of opportunities for bicycling throughout the area. Residents expressed their preferences to see sidewalks required and constructed on both sides of all streets within the City and County; reconstructed and repaired sidewalks in the older sections of town; more greenways and linear linkages tying neighborhoods together and connecting to schools, parks, and activity centers; bike paths constructed with all new roadway projects, such as the proposed outer loop; and improved shoulders along each of the rural roads to accommodate distance cycling.

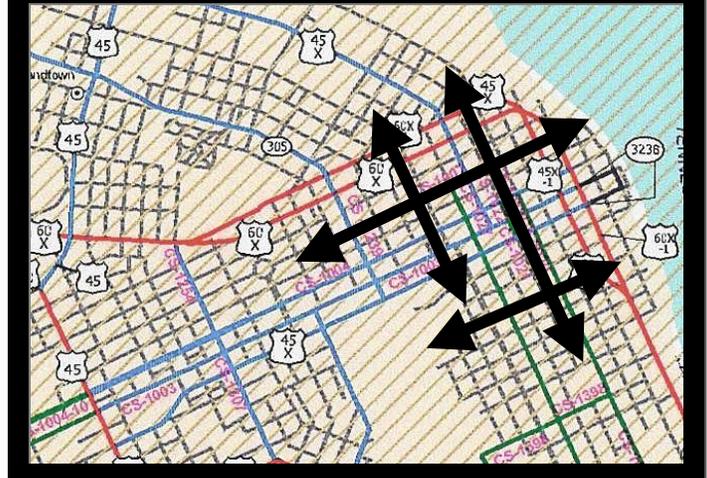
The City’s subdivision regulations require the subdivider to provide concrete sidewalks at least five feet wide and five inches thick on each side of the street

included with a plat submitted for approval, which must be within the right-of-way and constructed to the City's engineering standards. There are variance provisions in the case of an extreme hardship or due to peculiarities of the site where a departure from the regulations may be allowed by the Commission, as long as it does not destroy the intent of the requirement. The County's regulations also require sidewalks on both sides of streets, with the specifications of width and thickness of concrete dependent upon the type of development. The regulations allow for a waiver of the requirement by the Commission without any specified criteria. It was expressed by residents that waivers are commonly given for rural subdivisions. In addition to requirements for the construction of sidewalks, the regulations must include provisions for public access easements to provide connections to nearby sidewalks or trails. In this way, circuitous routes are not required to reach a sidewalk or trail adjacent to the next street.

The current County pattern of farm roads infilled with individual subdivision streets is difficult to tie together due to the physical separation and lack of linkages between subdivisions. As these areas begin to grow together, the system of sidewalks – where they exist - will begin to form a more complete pedestrian system. There will likely be missing links for periods of time where development either has occurred or will not occur for a myriad of reasons. An alternative growth pattern that results in a more compact form of development offers greater opportunity for connectivity and creation of a walkable community, consistent with the desires of those residents who participated in the involvement process.

Modern subdivision street patterns, such as those located west of Joe Clifton Drive and throughout the County, are auto-oriented compared to the community's older neighborhoods that have a traditional street grid pattern. The established neighborhoods accommodate cars, but offer enhanced mobility solutions for pedestrians. A grid pattern is dense and regular, allowing pedestrians several choices of routes to parks and other walking destinations. The older established neighborhoods offer a lesson toward creating walkable neighborhoods.

A traditional street grid is exemplified by the original town area within and around the Downtown.

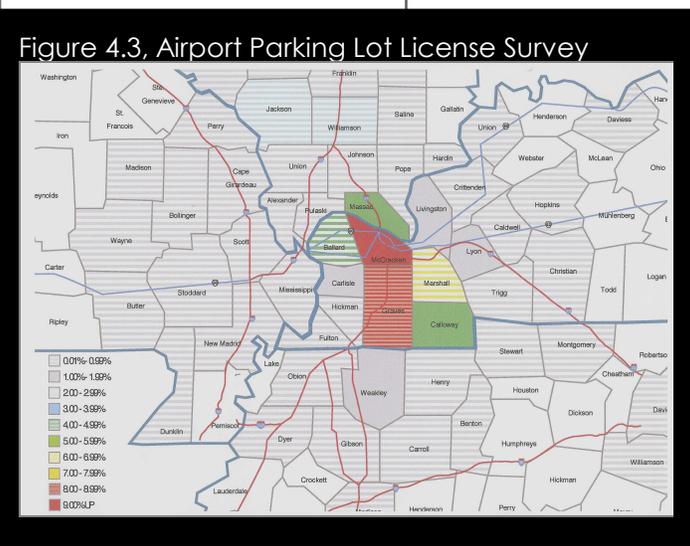


Traditional Neighborhood Development (TND) includes a variety of housing types and land uses in a defined area. The variety of uses permits educational facilities, civic buildings, and commercial establishments to be located within walking distance of private homes. A TND is served by a network of paths, streets, and lanes suitable for

Traditional neighborhood development (TND), for instance, is a relatively new term that is returning the design of subdivisions to their traditional forms. Streets do not have to be on a rigid grid pattern; they do need to offer connectivity within super blocks and to local conveniences and destinations. Allowing a mixture of uses within a planned environment also leads to increased walking and bicycling. While curvilinear street patterns and cul-de-sacs provide interest and appeal to the homeowner, pedestrians have fewer choices of direct routes to destinations within or outside their subdivision. Rather, the pedestrian is left with the alternative of following streets that, at times, meander away from their destination. Similar to automobile traffic, pedestrians rely on a series of connecting paths to make their trips. These paths may include sidewalks, off-street trails and walkways, linear parks and connections, crosswalks, or any other form of linkage. Most importantly, the system of paths must be well-connected and continuous.

4.2.4 Sustained and improved air transportation and cargo services

Barkley Regional Airport is a significant contributor to the economy of Paducah and McCracken County. In fact, based on a recent study, it is estimated that the annual direct, indirect, and induced economic impacts generated by the airport total nearly \$26 million. This economic impact is the result of airline and general aviation passenger spending, employment of 160 persons with an annual payroll of \$3 million, and general aviation services such as aircraft servicing, maintenance, avionics, aircraft charter, flight instruction, and aircraft sales.



In addition to the local economic impact, the regional airport is also a valued asset for the region’s major employers. A recent survey revealed that roughly 60 percent of the largest employers utilize airline service as a part of their routine business functions. Additionally, 80 percent have customers or suppliers who use the airlines, and 50 percent use the air cargo and package express services for transporting business materials. Therefore, a reduction or loss of service would have a detrimental effect on the local and regional economies and employers.

Currently, there is one commercial airline provider, Northwest Airlinck connecting to Memphis, TN. and

AmericanConnection serving St. Louis, MO. Together these two airlines offer non-stop or one plane change service to 122 domestic and nine international destinations. Based on a survey, as shown in **Figure 4.3, Airport Parking Lot License Survey**, the market area of the airport reaches up to a 60-mile radius, representing a population of approximately 500,000 persons. This market area stretches an equal distance in each direction occupying portions of Illinois, Tennessee, Missouri, and Kentucky.

As with all regional airports, and especially during this time of uncertainty in the airline industry, there is a constant threat of reduced air service, loss of state and/or federal funding, and even possible closure. In fact, area cities that have lost all air service include Cairo, Sikeston, Murray, Union City, Dyersburg, Paris, Clarksville/Hopkinsville Ft. Campbell, and Bowling Green, among others. Since this plan started, American Airlines has stopped service to Barkley Regional Airport. Therefore, while increased service and reduced fares are desired by area residents and an objective for strengthening the economy,¹ an underlying goal – at least in the near- and mid-terms – is, at a minimum, to sustain a similar level of service. Of course, expansion or introduction of another commercial air provider with service to Detroit or another hub city location is preferred and continually being pursued.

With respect to the location of the airport, it is situated a sufficient distance from the City that encroachment by housing development has not emerged as an issue. However, if development patterns continue to move outward, this may become an increasing concern in the future. Particularly with the eventual construction of the outer loop, thereby improving mobility and travel times, development may begin to occur in closer proximity to the airport without a means for managing it.

The construction of the outer loop will generally improve access to the airport by way of a circumferential artery west of I-24. However, to aid better access, particularly for the residents of Graves, Marshall, and Calloway Counties to the south and east, there will need to be an improved, more direct route from the loop to the airport. There is roughly four miles

Figure 4.4, Current Airport Terminal



¹ Strategic Plan 2005 – 2010, March 2005

Paducah-McCracken County Riverport Authority



between the airport and the alignment of the loop.

Another issue that was cited by participants in the involvement process was the need for a new terminal building. The concerns expressed related to better and more efficient space, opportunities for expanded services and operations, and enhanced first impressions by visitors. As shown in **Figure 4.4, Current Airport Terminal**, the present terminal building was completed in 1953 and has been expanded on three separate occasions. The age of the structure alone signifies that it is nearing its useful life. Here again, though, is a limitation of funding for such a facility. It is estimated that a new terminal building and associated facilities would cost around \$17 million, with roughly \$8 million to \$10 million needed from local sources.

4.2.5 Increasing multi-modal transportation opportunities

According to the City’s 2005 Policy Agenda, direction and land acquisition for a riverport container on barge facility is a high priority. It is also identified as a strategic planning principle to aid in the success of river-related businesses. Therefore, waterborne transportation is recognized as an economic development strategy, as well as for its importance to the local and regional multi-modal transportation system. From an economic perspective, Kentucky is the leading shipping state within the Ohio River Basin, with over 72 million tons of commodities worth over \$5.4 billion.²

The Paducah-McCracken County Riverport Authority is a full-service public terminal with on-site rail and truck service and capabilities for offloading, storage, packaging, or transport. As the nation’s northernmost ice-free riverport facility, movement of cargo can occur year-round. The port facility is located to provide easy access to I-24. It is served by 15 truck lines with nearby terminals and rail transport via CSX Transportation with support from Paducah & Louisville regional railroad. There are three dock facilities that can handle up to four barges. A variety of bulk, aggregate, and grain cargoes can be handled.

The port facility is located on the Tennessee River (between mile markers 1.3 and 2.1) and along Wayne Sullivan Drive in the southeastern quadrant of Paducah. It and other related and unrelated industrial activity areas are situated in reasonable near proximity to the downtown area. This location is generally necessary for exposure and access to the river, yet presents issues of

² Ohio River Navigation System, Outreach 2000

compatibility with downtown development. Increased development and expansion of this industrial area to accommodate container loading/off-loading and storage will heighten the issues concerning the compatibility of this intensive area with the use and character of downtown. Land use planning provisions will be necessary to mitigate environmental impacts.

Development of a riverport container on barge facility likely means increased barge traffic on the river, which may present conflict with recreational boat traffic. In fact, this issue was mentioned from the perspective of public safety and efficient barge and tug operations during the public participation process. Perhaps a competing objective is to expand the commercial and recreational focus of the downtown riverfront, meaning opportunity for more recreational boaters and infrastructure, such as a marina and docking facility. This is an issue that warrants more discussion and attention, with the outcomes to be determined in the Riverfront Masterplan.

A container port facility also likely means increased truck and rail traffic to both deliver and transport containers away from the terminal facility. Provisions for truck and hazardous materials routes will be necessary to ensure safe routing of industrial traffic. Since the materials transported by container are sometimes hazardous, there is a public safety perspective to be considered, as well. Handling of hazardous materials and chemicals may require additional training and possibly hazmat equipment and response vehicles. Here again, land use and transportation policy may be formulated to plan for and remedy the impacts of such industrial development.

4.3 GOALS, OBJECTIVES, AND RECOMMENDATIONS

The purpose of this section is to provide additional focus to the above issue statements in the form of goals, achievable objectives, and specific recommendations. The recommendations are a direct response to resolving the identified issues, including the general discussion above and more detailed interaction with City and County staff, City and County Planning Commissions, City Council, County Fiscal Court, and key stakeholders from throughout the County.

GOAL 4.3.1 A transportation network for the City and County that allows safe and efficient movement of people and goods

- Benefits of Thoroughfare Planning include:**
- Preserving adequate rights-of-way for future long-range transportation improvements.
 - Minimizing the amount of land required for street and highway purposes.
 - Identifying the functional role that each street should be designed to serve in order to promote and maintain the stability of traffic flow and land use patterns.
 - Informing citizens of the streets that are intended to be developed as arterial and collector thoroughfares, so that private land use decisions can anticipate which streets will become major traffic facilities in the future.
 - Providing information on thoroughfare improvement needs, which can be used to determine priorities and schedules in the Capital Improvement Program (CIP) and capital budget.
 - Minimizing the negative impacts of street widening and construction on neighborhood areas by recognizing where future improvements may be needed and incorporating

Table 4.1, Street Cross-Sections

| Classification | Right-of-Way | Pavement Width |
|---------------------|--------------|----------------|
| Arterial | | |
| - Principal | 100' | 48' |
| - Minor | 80' | 40' |
| Collector | | |
| - Major | 60' | 40' |
| - Minor | 60' | 36' |
| - Rural | 60' | 32' |
| Local Street | | |
| - Large lot | 50' | 24' |
| - Standard lot | 50' | 28' |
| - Rural | 40' | 20' |

Source: Kendig Keast Collaborative

Objective A: Adopt a thoroughfare plan and roadway classifications to meet the current and projected future mobility needs of the City and County.

Action 1: Adopt and regularly reconsider and amend a thoroughfare plan for the City and the urbanizing portion of the County, which indicates a functional hierarchy of roadways. The classifications should include highways, principal and minor arterials, collectors, and local streets. A distinction may also be made for primary/major and secondary/minor collector roadways, as applicable. The thoroughfare plan will

show approximate alignments for planned new roadways and roadway extensions that must be considered in the platting of subdivisions, right-of-way preservation and dedication, and construction of collector and arterial roadways within the urbanizing area.

Action 2: Amend the right-of-way and pavement widths of the City and County subdivision regulations as shown in **Table 4.1, Street Cross-Sections**.

Action 3: Adopt a strict policy requiring collector/arterial roadway spacing to relate to density, as shown in **Table 4.2 Road Spacing and Density**. The actual spacing of the roads is subject to additional considerations. The presence of commercial use requires closer spacing. The spacing needs to be developed in this plan in coordination with land use. If areas are subject to change, closer road spacing should be used. One

problem that McCracken County faces that has caused problems across the nation is that most rural roads are classified as local streets because of very low traffic volumes and agricultural land uses. As the use changes, a local road converts to a collector or arterial. The thoroughfare plan must, therefore, envision 50 years of growth or build-out in designating the road classifications. Too often, communities create access and other problems that make collectors and arterials less functional because the road is treated as

Table 4.2, Road Spacing and Density

| Lot Size | Gross Density | Road Spacing |
|----------------------|-----------------|--------------|
| One (1) acre | 0.75 units/acre | 1.75 miles |
| One-half (1/2) acre | 1.38 units/acre | 1.5 miles |
| One-third (1/3) acre | 2.01 units/acre | 1.0 mile |
| 10,000 square feet | 2.52 units/acre | 0.7 mile |
| 8,000 square feet | 2.90 units/acre | 0.5 mile |
| 6,000 square feet | 4.07 units/acre | 0.4 mile |

Source: Kendig Keast Collaborative

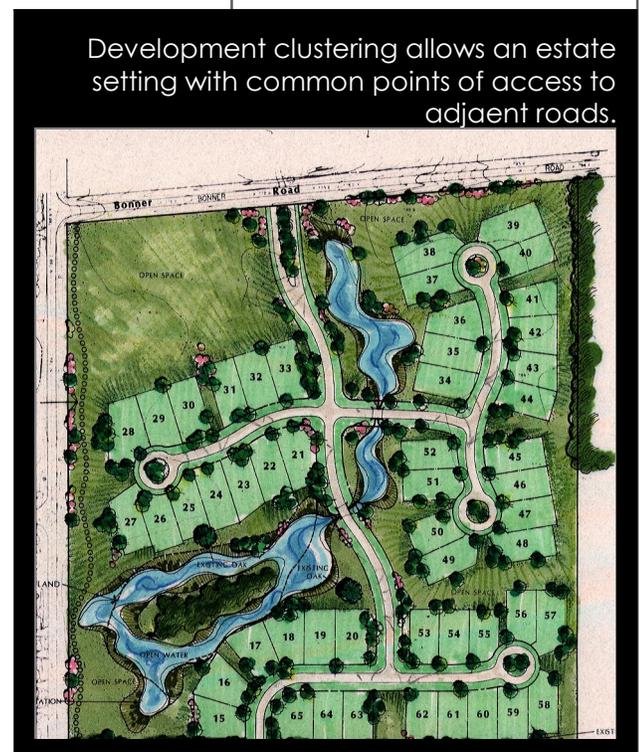
a local street. (Note: Conventional traffic analysis for level of service does not address the local residential street. During peak hours, one car per dwelling unit will be on a local street. At between 60 and 120 homes, the traffic becomes unacceptable to residents – one to two cars per minute.)

Action 4: Initiate a capital program of acquiring, by way of donation, dedication, or fee simple purchase, the necessary additional right-of-way along each roadway that is in non-compliance with the right-of-way standards adopted as part of the Comprehensive Plan. Such program should be prioritized using a volume to capacity (V/C) ratio. In this way, those roadway segments that are operating beyond their functional design capacity would be addressed as a high priority. It should be noted that the City of Paducah requires R-O-W dedication as part of the subdivision process. Subsequently, establish a capital improvement program (CIP) for widening and improving the priority road segments consistent with the adopted right-of-way and pavement standards. Alternatively, consider the use of traffic sheds to restrict development density commensurate with the existing roadway capacity. Refer to **Chapter Five, Growth Policies** for more information.

Objective B: Adopt consistent design standards for the City and County.

Action 5: Perform a comprehensive assessment and critique of the City and County subdivision regulations and engineering design standards to identify conflicts and differences. Subsequently, reconcile the two individual sets of standards into a single, unified land development code. Specifically, the standards should be substantially consistent within the urbanizing area. A distinction may be made to allow for rural development standards for the area beyond the defined urbanizing area, subject to appropriate development criteria and applicable zoning standards. Provisions that are particularly necessary to reconcile are the street cross-sections, access permits, required improvements, and plat submittal requirements.

Action 6: Adopt access management controls for the City and County, which should contain provisions for the number, location, and spacing of driveways; street intersections; medians and median openings; marginal access roads; turn lanes; and acceleration/deceleration lanes. Amend the subdivision regulations of the City and County, preferably within a unified code, to



Development clustering allows an estate setting with common points of access to adjacent roads.

Preservation of right-of-way is important to:

- Avoid costly acquisition of developed land and structures on planned alignments and, thereby, reduce commercial and residential displacements;
- Prevent the foreclosure of desirable location options;
- Prevent inconsistent development standards of thoroughfares;
- Reduce costs;
- Permit orderly project development; and
- Minimize or avoid environmental, social, and

include a requirement to plat “limits of no access” along all collector and arterial roads and highways.

Action 7: Amend the subdivision regulations to allow for and encourage, through incentives, alternative development types such as clustered, conservation (50% open space), and preservation (80% open space) subdivisions. Such subdivision designs allow alternative character types, while sharing a common access to a collector or arterial roadway. Therefore, a rural countryside or estate character can be maintained without individual lots fronting on the adjacent thoroughfare, each with separate points of access.

Action 8: Adopt strict access management standards for the planned outer loop. All property access points shall be from an intersecting collector or arterial roadway, marginal access road, or reverse frontage road. Furthermore, the spacing of intersecting streets should be planned, designed, and strictly adhered to. Full access points (allowing left and right hand turning movements) should be no closer than 1,320 feet; right-in/right-out access points with acceleration/ deceleration lanes, no closer than 660 feet apart.

GOAL 4.3.2 Coordinate the City’s future growth concurrent with provision of adequate transportation infrastructure

Objective A: Reconcile the capacity of the roadway system with the density of development to ensure safe and efficient travel conditions.

Action 1: Adopt the criteria reflected in Table 4.2, **Functional Classification Criteria**, concerning the functional role, spacing, access, and relationship, among other criterion. Such criteria may be used for land use and zoning decisions to ensure the proposed land use and its projected trip generation can be adequately accommodated on the thoroughfare network. This review and analysis may serve as a basis for acceptance or denial of a zoning amendment, requirement for street dedication or off-site improvements, impact fees, or modification and amendment of the Future Land Use and/or Thoroughfare Plans.

Action 2: Utilize a growth plan to determine the timing and sequencing of capital transportation improvements. Adopt decision criteria in prioritizing improvements, including consideration of the intended direction of new development. Alternatively, recommend to the County to amend zoning district designations and their applicable dimensional standards to better manage the density of development adjacent to under-improved rural roads. The latter approach would

Table 4.3, Functional Classification Criteria

| Criterion | Regional | Principal Arterial | Minor Arterial | Collector | Local Street |
|--|---|---|---|--|--|
| Functional Role | Entirely through traffic movement with no direct access to property. | Mobility is primary, access is secondary. Connects Freeways and other Arterials. | Connects Freeways, Principal Arterials, and lower classification roadways. Access is secondary. | Collects traffic destined for the Arterial network. Connects Arterials to Local Streets. Also land access. | Access is primary. Little through movement. |
| Roadway Continuity | Inter-city, regional, and interstate | Connects Freeways to lower classification roadways. Connects major activity centers. | Connects Freeways and Principal Arterials to lower classification roadways. | Continuous between Arterials. May extend across Arterials. | Discontinuous. Connects to Collectors. |
| Roadway Length | Usually more than 5 miles | Usually more than 5 miles | Usually more than 3 miles | Varies from roughly one-half mile to 2 miles | Generally less than 1 mile |
| Traffic Volumes (VPD = vehicles per day) | 40,000+ VPD | 20,000 to 60,000 VPD | 5,000 to 30,000 VPD | 1,000 to 15,000 VPD | 100 to 5,000 VPD |
| Desirable Spacing | 5 miles or more | 2 miles or more | Generally one-half to 2 miles | Generally one-quarter to one-half mile | Varies with block length (at least 125 feet between) |
| Posted Speed | 55 to 70 mph | 40 to 55 mph | 30 to 45 mph | 30 to 35 mph | 20 to 30 mph |
| Access | Controlled access. Grade separated interchanges and frontage/service roads. | Intersects with Freeways, Arterials, Collectors, and Local Streets. Restricted driveway access. | Intersects with Freeways, Arterials, Collectors, and Local Streets. Restricted driveway access. | Intersects with Arterials and Local Streets. Driveways limited. | Intersects with Collectors and Arterials. Driveways permitted. |
| On-Street Parking | Prohibited | Restricted | Restricted | Normally permitted | Permitted |
| Community Relationship | Defines neighborhood boundaries | Defines neighborhood boundaries | Defines and traverses neighborhood boundaries | Internal and traverses neighborhood boundaries | Internal |
| Through Truck Routes | Yes | Yes | Permitted | No | No |
| Bikeways | No | Limited | Permitted | Yes | Yes |
| Sidewalks | No | Yes | Yes | Yes | Yes |

Source: Kendig Keast Collaborative

require rezoning areas where one-acre zoning allows densities and associated trip volumes to exceed the design capacity of the roadways.

Action 3: Conduct a pavement management inventory throughout the urbanizing portion of the City and County to document and map current pavement widths, drainage system types, alignment issues, and encroachments and barriers to improvement. Also, map the accurate widths of right-of-way, as applicable. Such exercise will allow

determination of roadway design capacity and the available threshold capacity. Use this data in refinement of the growth plan and as a determinant for zoning approval.

Objective B: Manage future growth commensurate with the availability and adequacy of the roads to support increased traffic volumes.

Action 4: Utilize the Future Land Use Plan adopted as part of this Comprehensive Plan to make zoning decisions in compliance with KRS 100. This is important to effectively sequence development concurrent with the availability and adequacy of the transportation infrastructure, as well as to deter premature development of agricultural land. Prepare and incorporate zoning decision criteria into the zoning ordinances of the City and County regarding the consistency of the use with the Future Land Use and Thoroughfare Plans, existing trip volumes and travel conditions of the adjacent thoroughfare, and the timing of capital improvements sufficient to accommodate the proposed use.

Action 5: Use the Land Use Plan to identify the future high density and non-residential development areas to plan and coordinate the necessary street system to convey the projected traffic volumes to the thoroughfare system. Ensure adequate preservation and dedication of rights-of-way for collector and arterial roads, marginal access and reverse frontage roads, as applicable, concurrent with land development in the area. Amend the subdivision regulations of the City and County to require submittal and acceptance of a general development plan showing all site access points and integration of the internal circulation system with the adopted Thoroughfare Plan. This

will be essential around each of the interchanges with I-24, including those that exist and the planned new interchange at KY 994/Old Mayfield Road/16th Street.

In-lieu of sidewalks, trails are an effective means for meeting pedestrian mobility needs.



GOAL 4.3.3 A community that is pedestrian- and bicycle-friendly, offering increased opportunities for non-motorized transportation

Objective A: Achieve a comprehensive, continuous, and connected system of pathways and linkages.

Action 1: Amend the subdivision regulations to reconcile the differences in City and County sidewalk requirements and standards. Specifically, the required widths and standard for pavement depth should be consistent. Provisions should also be incorporated regarding requirements for rural versus

urban subdivisions, distinguished by the street section and gross density. Basing such provisions on lot size alone does not account for alternative development types, such as clustered subdivisions. In cases where the cluster development has a strong internal greenway, bicycle path, and walkway system, the requirement for sidewalks on both sides of all roads can be relaxed. Arterials and collectors require sidewalks and a provision for bicycles. Most other local streets can have them on one side only where an internal system directly serves the units. For subdivisions that do not exceed 0.33 units per acre, the requirement for an internal sidewalk system would be exempt, excluding that portion adjacent to collector and arterial streets. Incorporate into the regulations the criteria warranting waiver of the sidewalk requirements. Furthermore, require that all sidewalks, trails, and access easements be submitted with the preliminary plan for review and approval.

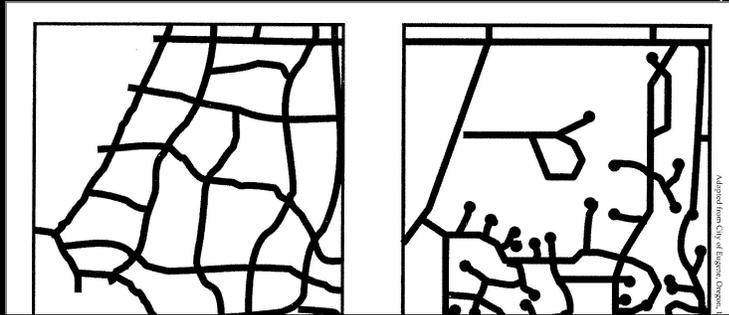
Action 2: Amend the subdivision regulations to account for increased connectivity. Among the varying options to accomplish this objective, at a minimum, limit block and cul-de-sac lengths shorter than the current standard and require public access easements to maximize pedestrian access to parks, existing or planned conveniences, and collector and arterial streets. At the more restrictive end of the spectrum, consider a point-based system with a required ratio of street nodes to links.

Action 3: Utilize a performance-based approach with density bonuses allowed for meeting mixed-use objectives and a specified connectivity index. In other words, there would be a range of development options available within a certain character-based residential district with incentives to enhance subdivision connectivity. Regardless of the option selected, the character of the district would be maintained by provisions for open space and gross density. Such approach may improve connectivity similar to traditional neighborhood designs.

Objective B: Invest and reinvest in sidewalks and other essential pedestrian improvements in both new and old areas of the City and County.

Action 4: Conduct an inventory and condition assessment of sidewalks within the City and all outlying subdivisions. Subsequently, map the inventory to identify areas that warrant priority attention. Sidewalks may either be required for installation and improvement by the property owner or, alternatively, funded by the City and/or County. If

The design of subdivisions is essential to create connections within and between neighborhoods. These graphics exhibit a typical subdivision versus one that accounts for connectivity.



the latter is chosen, prepare a prioritized improvement program and allocate annual funding. Concurrent with the inventory and improvement, curb cuts, crosswalks, and pedestrian signage must be installed. In locations around schools, parks, and other public buildings and facilities, warning lights, stop signs and reduced speed signs may be warranted.

Action 5: Develop a checklist of planning items to be inspected and confirmed prior to issuance of a certificate of occupancy. Among the items would be whether the sidewalk is installed to City/County standards and specifications. The City and County may consider forming an escrow account for sidewalks, paid into by the developer or individual homebuilders, which may be used to construct a complete sidewalk system when the subdivision reaches an established percent of build-out. Consideration may also be given to requiring or providing incentives for a home association, with a required portion of the association dues allocated for sidewalk and street maintenance.

Objective C: Seize opportunities for use of stream corridors, greenway linkages, and enhanced roadway corridors for leisure, sight-seeing, and recreational purposes.

Action 6: Continue implementation of the trail and greenway plan³, which is planned to extend from the Perkins Creek Nature Preserve along Stuart Nelson Park connecting to Bob Noble Park, past the Peck

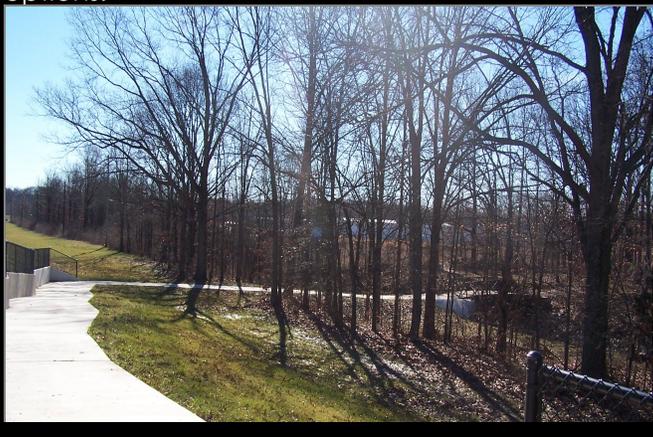
Addition to the river levee leading to downtown. This linear linkage should be expanded to include a loop and complete network throughout the City. To do so, prepare a comprehensive bikeway and trail system plan, including both on- and off-street segments. Upon adoption of the plan, amend the subdivision regulations requiring dedication of right-of-way concurrent with subdivision approval. Consideration should be given to incentives in the form of density bonuses for connectivity to the trail and greenway plan.

Action 7: Incorporate provisions for adequate trail and bikeway rights-of-way within the street cross-sections. This is particularly important to be planned and designed for major new corridors, such as the Outer Loop. Along each of the County highways and arterials there should be consideration for adequate pavement

width to accommodate wide shoulder lanes for use by distance cyclists. The design of intersections and access points must also consider the

³ Paducah – McCracken County Parks and Recreation Master Plan, November 2002.

Creation of an eventual loop and network of trails and greenways will greatly enhance pedestrian options.



safety of pedestrians and bicyclists, including controlling the number and spacing of access points, continuous sidewalks and trails, medians as refuges in wide street sections, curb cuts, crosswalks, and pedestrian and bicycle actuated traffic signals.

GOAL 4.3.4 Sustained, expanded, and improved air transportation services

Objective A: Promote increased utilization of the airport by employers and residents throughout an expanded market area.

Action 1: Conduct a special generator survey at Barkley Regional Airport (BRA) to gather information from and about those persons utilizing airport facilities. To get a valid sample, the survey should be conducted on two typical weekdays and two typical weekend days. By typical, it is intended that the survey would not be conducted during a peak or holiday period. The surveys should be conducted at two different times of the year to account for seasonal travel patterns and behaviors. A special survey should also be conducted on two peak days for comparison purposes. The survey should include travel surveys indicating arrival direction, vehicle type, time, and vehicle occupancy. In addition, intercept surveys should be conducted in the terminal to collect information regarding trip origin/destination, numbers and ages of travelers, travel frequency, variables in selecting travel mode and location, and household characteristics, among other questions.

Action 2: Utilize the findings of the special generator survey to develop a target marketing campaign with a focus for those areas represented by the survey. A complete marketing and advertising plan should be developed, including methods of distribution, advertising mediums, and measures of effectiveness. The campaign should be sustained on an ongoing basis to inform residents within the market area of their travel options, with favorable comparisons with other travel markets and flight choices.

Action 3: Conduct a survey of major employers throughout the immediate region and the larger market area to identify their needs for airline service, including commercial air, general aviation, charter services, and air cargo and package express services for shipping and receiving business materials. Design the survey to also serve as public information to educate businesses about the services available and their respective costs and benefits. Specifically, the survey should identify deficiencies and gaps in business-related services for which improvements may be made to increase utilization of the airport for

Northwest AirlinK serves the Barkley Regional Airport



these purposes. Regularly re-survey the employers to gauge the effectiveness of utilization and improvements.

Action 4: Continuously pursue expansion of air service by Northwest Airlink, and pursue a second and third commercial airline provider. The intent of the expansion is to improve travel options and directions for airport users, while introducing competition to possibly reduce fares. Terminal and other facility improvements will likely be necessary to accommodate or entice increased air service.

Objective B: Improve roadway access and infrastructure to support the airport and its surrounding development.

Action 5: In addition to the evaluation of siting a possible new terminal facility, prepare a complete feasibility study for a new main terminal building. The feasibility study should include, among other tasks, market area capture, projections of enplanements and deplanements, airport service and revenue projections, preliminary design schematic, an estimate of construction costs, and both probable and possible sources of funds. Specifically, the necessary local share needs to be identified to indicate the level of commitment necessary to replace the terminal and associated facilities.

Action 6: Coordinate with the Paducah-McCracken County Joint Sewer Agency (JSA) to extend public sewer service to the airport and the adjacent properties. Such infrastructure will be essential in the expansion of the airport, as well as to allow increased use of the area for commercial warehousing and industrial development. Other infrastructure improvements, such as natural gas, also are needed to support possible future development of an airport business park.

Action 7: Improve transportation access to the airport by extending the four-lane improvement of U.S. 60 to the airport entrance and beyond. Improved access from U.S. 62 from the south and the planned outer loop from the east will also be necessary in the future to enhance access from other directions. The improvements include roadway widening, intersection enhancements, traffic control, turn lanes, acceleration/deceleration lanes, and improved way-finding signage. Utilize the Thoroughfare Plan to ensure adequate preservation of rights-of-way concurrent with land development.

Objective B: Protect the long-term interests of the airport for expansion and business growth potential.

Action 8: Periodically re-file with the Administrator of the Kentucky Airport Zoning Commission⁴ a map showing the airport and the area

⁴ Kentucky Revised Statutes (KRS) 183.861, Establishment of Airport Zoning Commission

The **Kentucky Airport Zoning Commission** is empowered to issue orders, rules, and regulations pertaining to use of land within and around all public-use and state-licensed, private-use (with a paved runway greater than 2,000') airports to promote the public interest and protect and encourage the proper use of the airports

surrounding the airport used for approach and landing purposes. Upon completion of a new airport master plan – a recommendation of this Comprehensive Plan – it should also be submitted to the Administrator. For local planning purposes, the City and County should conduct a compatibility use study to define a boundary for an area of airport influence. Any requests for building permits or development within the defined area, whether or not within the authority of the zoning commission, should be subjected to a higher level of review to avoid encroachment of the airport. There is nothing in the state statutes preventing local government from adopting more stringent land use regulations and zoning standards.

GOAL 4.3.5 Expand waterborne freight transportation access into and from the region

Objective A: Plan for the long-term expansion of river transportation industries.

Action 1: Prepare a long-range land acquisition and development plan for the area around the Riverport. Such plan will identify specific parcels targeted for acquisition, necessary razing and redevelopment, infrastructure provision and relation, access and circulation patterns, possible new streets or right-of-way vacations, and mitigating improvements for any environmental impacts. An essential element of this plan will be compatible integration of container storage or other intensive industrial facilities and activities with the surrounding environment.

Action 2: Perform an internal assessment for development and expansion of a container port to identify potential impacts and their mitigating measures. Such impacts may include transport, handling, and storage of potentially harmful materials; increased rail and truck traffic; additional container barge traffic on the river; light and noise; air and water quality; and aesthetic impacts associated with stacked container storage.

Objective B: Provide the necessary infrastructure improvements and facilities to support the Riverport and related industries.

Action 3: Re-evaluate and designate both truck and material transport routes to ensure safe routing of industrial traffic. This will also include identifying and enforcing no truck zones. An important consideration with container transport may be bridge clearances and the heights of power lines and other potential transport obstructions. This may apply to both highway and railroad overpasses, which may warrant or

Airport Compatible Land Use

Noise and safety are the two fundamental compatibility concerns. In addressing noise concerns, consideration should also be given to the impacts of aircraft over flights in locations beyond the normally mapped noise contours. Safety compatibility policies should address both protection of people and property on the ground near airports and protection of airport airspace from obstructions and other hazards to flight. Compatibility plans should:

- ◆ Clearly indicate the scope of the plan, geographically and in terms of authority and purpose;
- ◆ Describe information about the airport and airport plans, which provide the basis for the compatibility plan;
- ◆ List compatibility policies and criteria;
- ◆ Include appropriate maps of the airport compatibility zones;
- ◆ Indicate the procedures to be used in conducting compatibility reviews; and
- ◆ Provide an assessment of the consistency between the Comprehensive Plan, City and County ordinances, and policies set forth in the

require new bridges. Special zoning provisions will also be necessary adjacent to the designated routes to minimize issues of incompatibility and to mitigate impacts on existing uses.

Action 4: Study whether any major improvements are necessary to support an increase in waterborne transportation, such as new rail lines or spurs, extended or widened roadways, modifications to the geometry of street intersections, traffic control, or new weight bearing bridges. Also, identify whether additional fire apparatus, fire fighting equipment or vehicles, and/or personnel training will be required to serve a container port facility. Coordinate with other agencies and jurisdictions, as necessary.

4.4 TRANSPORTATION MODES

Paducah and McCracken County currently possess each of the modes of transportation, which offer increased opportunities for expanding and improving the multi-modal options available to residents and businesses. The opportunities described above in the goals, objectives, and recommendations represent improvements to economic development, community recreation, the environment, and local quality of life.

The term “multi-modal” refers to the full range of transportation modes that together form the local and regional transportation system, including single and multiple occupant vehicles, waterborne transit, and walking and bicycling, as well as rail and air transportation. The existing improvements and services and the opportunities for enhancement are discussed below.

Walking and Biking

A true multi-modal transportation system includes a variety of transportation options, including those that are the most basic: walking and bicycling. In Paducah and McCracken County, similar to most other areas, the role of walking and biking has diminished over the years as dependence on the automobile has increased. In recent years, though, there has been a renewed interest in making communities more livable, which means making neighborhoods, commercial districts, and public spaces more pedestrian-friendly.

Over the last several decades, dependence upon the automobile as the preferred mode of transportation has become an increasing national trend. This trend is apparent in the City and County, denoted by ongoing investments in transportation infrastructure. Reliance on the automobile has

resulted in more choice for how and where to live, work, and play, leading to sprawling development patterns.

Dependence upon the automobile has not come without cost – a cost that is being realized in the form of increased taxes, reduced levels of public services, such as police and fire protection, less affordable housing, degradation of prime agricultural lands and environmentally sensitive areas, increased pollution of air and water, and many other well-documented costs. The automobile has changed development patterns, causing land uses to be segregated, setbacks to be increased, and nearby neighborhoods to become rural subdivisions outside the City limits. All of these occurrences have contributed to reduced accessibility and less walkable communities.

Not unlike most communities, the local transportation system is highly automobile-oriented. While much of this chapter addresses improved mobility that is focused on street and highway improvements, the importance of other transportation modes is not overlooked. Each travel mode plays a vital role in the overall transportation system.

Pedestrian System Planning

Pedestrian trails, sidewalks, and crosswalks are part of the transportation system that serves the needs for pedestrian movement in residential neighborhoods, the downtown and other commercial districts, and around each of the schools, parks, and other public facilities. Safe and well-maintained pedestrian facilities are needed in the older neighborhoods where they were not originally installed or have fallen into disrepair, as well as in many of the more recent development around the fringe of the community. While the location and conditions of existing sidewalks have not been inventoried, consideration must be given to conducting such an assessment to ensure proper and timely maintenance of sidewalk facilities, implement compliance with the American’s with Disabilities Act (ADA), and establish sidewalks and other pedestrian-ways in all neighborhoods.

Eliminating barriers to pedestrian mobility is an important feature in planning and developing an effective pedestrian network. The I-24 corridor, in particular, as well as each of the other major arterial roadways, railroads, and creeks imposes barriers to pedestrian access and mobility. These barriers must be overcome by access improvements and other provisions made during the course of roadway and subdivision design. Fully integrating the concepts of neighborhood schools and parks, as well as neighborhood

convenience retail centers, contributes to less reliance on the automobile for short trips and, thus, improved opportunities for walking and bicycling.

Climate has an influence on the pedestrian system, as well. In terms of transportation and thoroughfare design, the design of the unoccupied public right-of-way becomes quintessential. Recommendations for street design considerations in a pedestrian-friendly community include:

- ◆ Cul-de-sac streets should be carefully managed to ensure they are not over utilized. Pedestrian linkages in the form of public access easements and walkways connecting parts of the neighborhood together and providing access to schools and parks should be required.
- ◆ Sidewalks and/or trails should be required in all new development, concurrent with street construction, and installed in areas where they are not currently available. Sidewalks should be provided on both sides of all streets. Trade-offs may be permitted in suburban estate developments to allow off-street trails in lieu of sidewalks, thereby meeting the needs of walkers and bicyclers.
- ◆ Mid-block connections in the form of public access easements and walkways should be required to provide linkages between blocks and, particularly, to common facilities, such as parks and open areas. This is particularly important with contemporarily-designed developments with a curvilinear street pattern.
- ◆ Streets, sidewalks, and other pedestrian connections and public gathering areas should be encouraged to create sheltered areas from inclement weather.
- ◆ Tree cover and other landscaping should be required along pedestrian paths for both aesthetic and environmental reasons. Trees break the wind and form a sense of enclosure around pedestrian paths. Other vegetation, such as flowers and shrubs, are also encouraged to further compliment the streetscape. To the extent practicable, native plant material that is more tolerant of local conditions should be used.

Pedestrian tunnels and other improvements are necessary to overcome barriers to pedestrian mobility.



Planning for Bicycle Transportation

Designated bicycle routes, on-street bikeways, and off-street bicycling and jogging trails should be developed in accordance with the Paducah-McCracken County

Parks and Recreation Master Plan to link major attractions and destinations throughout the City and County, including neighborhoods and apartments, parks, schools, churches, library and community centers, major employment centers, and shopping areas. In this way, bicycle routes can provide an alternative mode of transportation, while also serving the recreational needs of area residents.

The State of Kentucky recognizes a bicycle as a vehicle, with all rights and responsibilities for roadway use that are provided to motor vehicles. As such, cyclists can legally ride on any street in the City or County. Highway funds may be used for the construction and development of bicycle paths wherever a highway, road, or street is being constructed, reconstructed, or relocated. Additionally, drainage corridors, parks and recreation areas, and various rights-of-way and easements that traverse the City and County represent opportunities for future development of bicycle and pedestrian facilities. These opportunities can be incorporated as transportation enhancement projects, such as multi-use trails and scenic beautification areas. The master plan should guide the development and implementation of an interconnected network of bike and pedestrian trails.

Pedestrian and Bicycle Accommodations in Kentucky⁵

In February 2000, the United States Department of Transportation (USDOT) issued the Design Guidance, Accommodating Bicycle and Pedestrian Travel: A Recommended Approach, as required by the federal highway authorization act, Transportation Equity Act for the 21st Century (TEA-21). The U.S. Congress included this requirement in the act because of increased public support and advocacy to improve the safety, comfort, and convenience of non-motorized travel. The Federal Highway Administration (FHWA) convened a task force comprising representatives of the FHWA, Institute for Transportation Engineers (ITE), American Association of State Highway and

Without designated bicycle lanes and off-street paths, bicycles must share the right-of-way with other vehicles.



Tree-lined streets improve the micro-climate for pedestrians and bicyclists.



⁵ Pedestrian and Bicycle Travel Policy, Commonwealth of Kentucky Transportation Cabinet, July 2002

Transportation

Maintenance of Pedestrian and Bicycle Facilities

Sidewalks - Maintenance of sidewalks within city limits is the responsibility of the city. Maintenance of sidewalks outside city limits is the responsibility of the Kentucky Transportation Cabinet (KYTC) if the KYTC constructed the facility. Maintenance of facilities constructed by the fiscal court or city is the responsibility of that entity. Maintenance by the KYTC is limited to repairing the surface, mowing, and clearing vegetation. This maintenance is on the same schedule as normal roadway maintenance.

Bicycle Lanes - Maintenance of bicycle lanes is considered incidental to normal KYTC roadway maintenance. Maintenance by the KYTC is limited to repairing the surface, resurfacing, removing snow, striping, signing, and sweeping if the KYTC normally sweeps the roadway. This maintenance is on the same schedule as normal roadway maintenance.

Shared Use Paths - Maintenance of shared-use paths is the responsibility of the local government.

Source: Pedestrian and

Transportation Officials (AASHTO), bicycle and pedestrian travel groups, state and local agencies, U.S. Access Board and disability organizations to seek advice on how to create policy and design guidelines to develop well-designed and context-sensitive multimodal facilities. The FHWA developed the Design Guidance to provide a recommended approach to the accommodation of bicyclists and pedestrians.

The USDOT's Design Guidance paved the way for establishing the Kentucky Pedestrian and Bicycle Task Force, a multidisciplinary group whose charge was to draft a set of recommended policies and guidance to improve accessibility and safety for non-motorized travel in Kentucky. The task force developed policy statements in accordance with the Kentucky Transportation Cabinet (KYTC) Strategic Plan's mission and goals of improving accessibility, mobility, and safety for travelers throughout the Commonwealth of Kentucky in an environmentally and fiscally sound manner.

Thoroughfare System Planning

Thoroughfare system planning is the process to assure development of the most efficient and appropriate street system necessary to meet existing and future travel needs. The primary objective of a thoroughfare plan is to ensure that adequate right-of-way is preserved on appropriate alignments and of sufficient width to allow the orderly and efficient expansion and improvement of the thoroughfare system. Proposed alignments are shown for planned new roadways and roadway extensions, but actual alignments will vary depending on the design and layout of development and necessary amendments to and refinement of the thoroughfare plan. Requirements for rights-of-way dedication and construction of street improvements should apply to all subdivision of land within the City and County.

The thoroughfare system of highways, arterial roadways, and collector streets shows approximate alignments for planned thoroughfares that will be considered in platting of subdivisions, right-of-way dedication, and construction of major roadways within the City and urbanizing portion of the County. Within the outermost portions of the County, the thoroughfare designations, functional classifications, and right-of-way requirements are as designated by the Kentucky Transportation Cabinet.

Some elements of the thoroughfare system, such as those roadways for which abutting development has already occurred or is planned to occur, will require new or wider rights-of-way and may ultimately be developed as two-

lane or multi-lane roadways with various cross sections. Some streets identified as arterials or collectors on the plan will not necessarily ever be widened due to severe physical constraints and right-of-way limitations. Instead, the designation signifies its traffic-handling role in the overall street system and the importance of maintaining it and similar streets in superior condition to maximize their traffic capacity since they most likely cannot be improved to an optimal width and cross section.

The plan does not show future local streets because they function principally to provide access to individual sites and parcels and their future alignments will, therefore, vary depending upon individual land development plans. Local street alignment should be determined by the City and County in conjunction with landowners as part of the subdivision development process. Likewise, collectors are required with new development, but are not shown in all places on the Thoroughfare Plan since their alignments will depend on the surrounding street system and the particular development concept. They are, nevertheless, vital to an efficient and viable transportation network and must, therefore, not be overlooked during the subdivision development review process. Collectors should be situated on a case-by-case basis to connect arterial streets with other collectors and local streets.

The Thoroughfare Plan will affect the growth and development of Paducah and McCracken County since it guides the preservation of rights-of-way needed for future thoroughfare improvements. As a result, the plan has significant influence on the pattern of traffic movement and the desirability of areas as locations for future development. While other elements of the plan look at foreseeable changes and needs over a 20-year period, thoroughfare planning requires an even longer-range perspective, extending into the very long-term future. Future changes in transportation technology, cost structure, service demand, and long-term shifts in urban growth and development patterns require a far-sighted and visionary approach to thoroughfare planning decisions.

Classification of Roadways

In the administration and enforcement of the Thoroughfare Plan, special cases and unique situations will occasionally arise where physical conditions and development constraints in certain areas conflict with the need for widening of designated thoroughfares to the planned right-of-way width and roadway cross section. Such special circumstances require a degree of flexibility and adaptability in the administration and implementation of the plan. Acceptable minimum design criteria and special roadway cross sections may have to be

“Collectors are required with new development, but are not shown in all places on the Thoroughfare Plan since their alignments will depend on the surrounding street system and the particular development concept. They are, nevertheless, vital to an efficient and viable transportation network and must, therefore, not be overlooked during the subdivision development review process. Collectors should be situated on a case-by-case basis to connect arterial streets with other collectors and local streets.”

Functional classification is the process in which streets and highways are ranked according to the character of service they provide. Basic to the development of any logical highway system is the recognition that a road does not by itself serve traffic needs. Travel involves movement through a network of inter-related roads and streets. The movement must be channeled through an efficient hierarchical system that progresses from a lower classification handling short, locally oriented trips to higher classifications that connect regional and inter-regional traffic generators, handling longer trips. The Kentucky Transportation Cabinet recognizes four levels of service and two localities, rural and urban.

applied in constrained areas where existing conditions limit the ability to meet desirable standards and guidelines. Special roadway cross sections should be determined on a case-by-case basis when a unique design is necessary, and these exceptions should be subject to approval by the City Engineer. Otherwise, standard roadway cross sections should be used in all newly developing areas and, whenever possible, in existing developed areas.

A single set of standards for development within the City versus that within the County may be problematic. Standards for development within the City limits, with rare exception, should reflect its auto-urban and suburban character, with provision for curb and gutter construction, sidewalks, street lighting, signage and sufficient open space. In the outlying areas of the County where the character of development is estate or rural, for example, the standards must be varied to mirror the character, yet be both reasonable and feasible.

The roads and streets in the City and County are grouped into functional classes according to their role for traffic movement and land access. Characteristics of each functional class of roadway differ to meet the corridor’s intended purpose. The functional classification of area roadways includes freeways and expressways (handled by KYTC), principal and minor arterials, major and minor collectors, and local streets.⁶

Local Streets

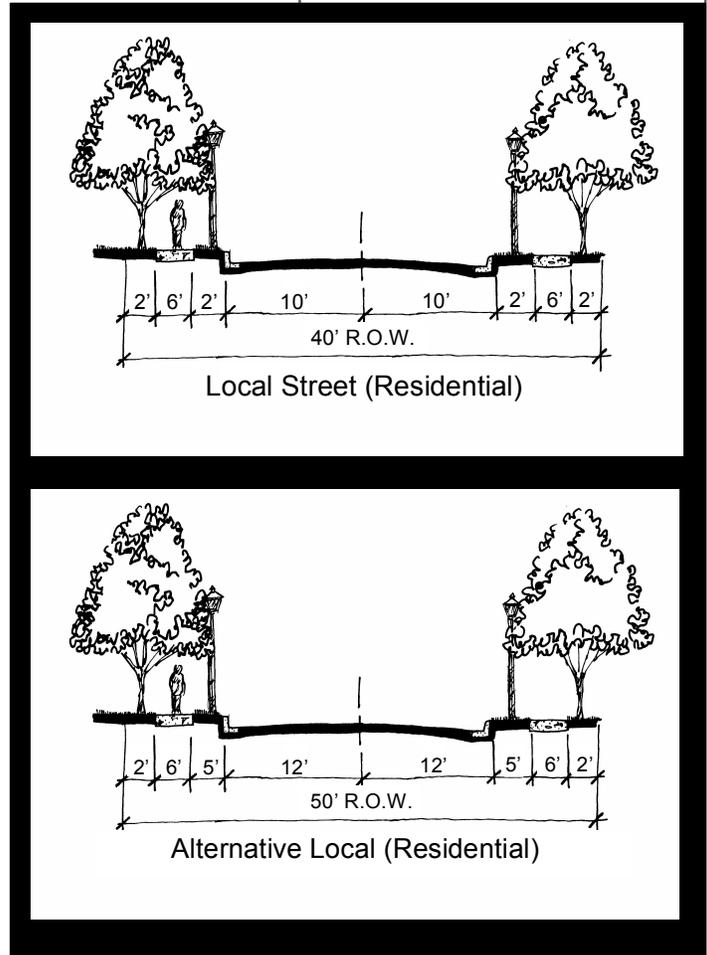
Local streets allow direct property access within residential and commercial areas. Through traffic and excessive speeds should be discouraged by using appropriate geometric designs, traffic control devices, curvilinear alignments, discontinuous streets, and traffic calming techniques. Local streets typically comprise about 65 to 80 percent of the total street system.

The Thoroughfare Plan does not differentiate between local streets by assigning class. Instead, the plan proposes alternative local street widths that may change according to need, including such characteristics as on-street parking, presence of bike lanes, choice of trails or sidewalks, anticipated traffic volume, and location within an urban, urbanizing, or rural setting.

⁶ McCracken County, Kentucky, Functional Classification, Kentucky Transportation Cabinet, Department of Highways, Division of Planning

The current standard for local streets (referred to as minor streets in the McCracken County Subdivision Ordinance) by the County is 50 feet of right-of-way and 20 feet of pavement width. The City’s subdivision regulations require 40 feet of right-of-way and a pavement width of 22 feet.

This plan proposes two alternate local street cross sections, which require a minimum 50 feet of right-of-way with minimum pavement widths of 24 and 28 feet. The narrow pavement width would be limited in the subdivision regulations to developments with fewer, larger lots taking access onto the local street. On-street parking would not be allowed on the narrower street width, while it would be allowed on only one side of the wider street section. Such parking restriction will necessitate review of lot sizes, setbacks, and on-lot parking provisions to accommodate parked vehicles out of the public right-of-way. These pavement widths are designed to adequately carry immediate local traffic and sufficient to accommodate fire apparatus, yet being of a width to allow neighborhood traffic calming. Narrower streets encourage reduced travel speeds, an increased distance between the street and sidewalk, and a wider streetscape.



Local streets may also be adapted to an estate or rural character to include an open or closed ditch system, as opposed to curb and gutter. The right-of-way of local streets within these environments may be reduced to 40 feet with a 20-foot pavement width. The street cross section must include adequate provision for storm water management by way of sufficient ditch cross sections. For very low-density developments, trails may be constructed in lieu of sidewalks. Alternatively, a striped pedestrian/bicycle lane may be used within the right-of-way assuming a minimum pavement width of 24 feet. There is an alternative residential street approach where there are a large number of width options that are governed by lot area and width, building setback, and the number of dwellings served. The width of the pavement and right-of-way are governed by the need for parking and, at the low end, by the frequency that two cars might meet where there is a single traffic lane. Under this system, a seven-lot subdivision on two-acre lots with 50 feet of right-of-way and no sidewalk could be served by a 10- to 12-foot road since two cars

are likely to meet less than once every 30 days during rush hour, there is no parking in the street, and the driveways have adequate storage capacity.

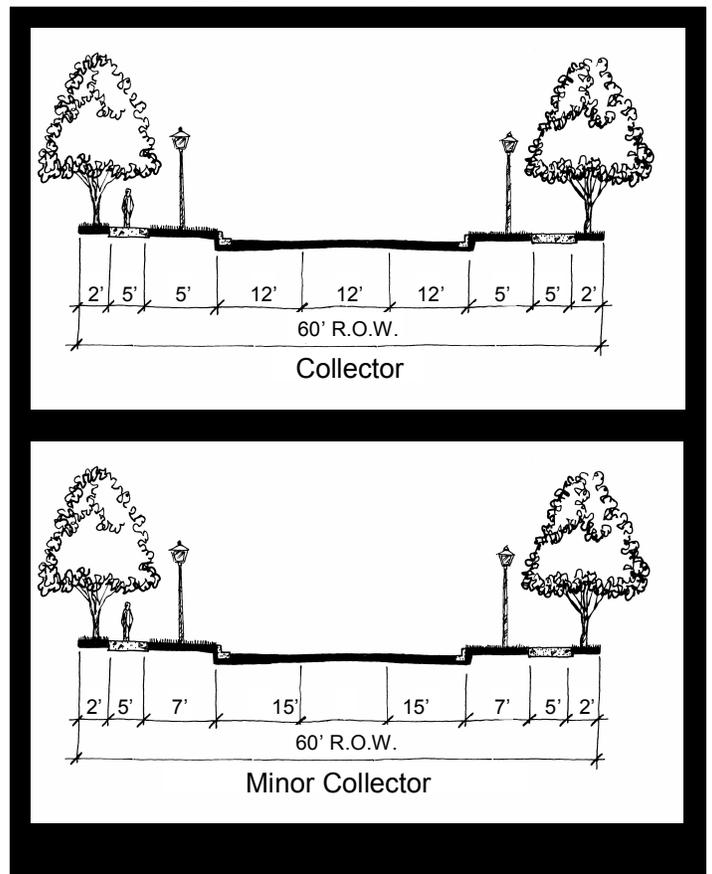
Classifications for alleys and marginal access streets are a function of service and property access and, therefore, are not included in the recommended classification system of the Thoroughfare Plan. This is not to indicate that the Thoroughfare Plan ignores the possibility of alleys in a development. In fact, the plan recognizes the valuable contribution of alleys to the urban fabric and establishment of community character and proposes that they be used, as appropriate.

Collector Streets

Subdivision street layout plans and commercial and industrial districts must include collector streets in order to provide efficient traffic ingress/egress and circulation. Since collectors generally carry higher traffic volumes than local streets, they require a wider roadway cross-section or added lanes at intersections with arterials to provide adequate capacity for both through traffic and turning movements. However, since speeds are slower and more turn movements are expected, a higher speed differential and much closer intersection/access spacing can be used than on arterials.

Collectors typically make up about five to ten percent of the total street system.

The standards for collector streets within both the City and County require 60 feet of right-of-way, which is sufficient. The pavement width differs significantly as the City requires 37 feet, while the County requires only 22 feet. This is largely due to lesser traffic volumes within the outlying areas of the County; however, as development density increases, the volumes are

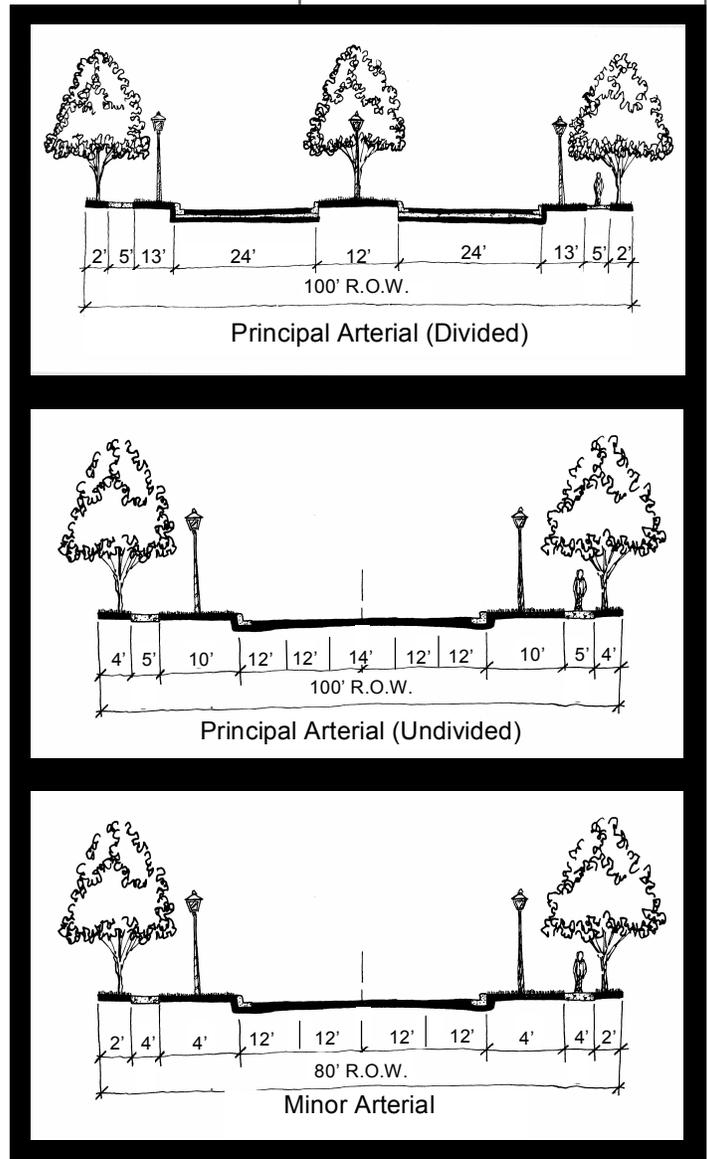


reaching similar levels, thereby – in many cases - necessitating similar standards. This plan proposes classifications of major and minor collectors distinguished by the volume of traffic. A major collector is designed for 7,500 to 15,000 vehicles per day (VPD), which requires a pavement width of 40 feet. Alternatively, a minor collector may allow a pavement width of 36 feet, which is for 1,000 to 7,500 VPD. The subdivision regulations would include provisions to distinguish the warrants and criteria for major and minor collector roadways.

Another option possible for estate and rural development is consideration of collector roads without sidewalks or curb and gutter. This permits the development to maintain the look and feel of a rural area, but, similarly, may not provide the drainage system offered with roads that utilize a curb and gutter system. In this type of development, significant green space and an interior trail system would be necessary to compensate for the loss of sidewalks. Pavement width could be reduced to 32 feet, while the right-of-way requirement would remain at 60 feet to account for the space required for open or covered ditches.

Arterial Streets

Arterial streets form an interconnecting network for broad movement of traffic. Although they usually represent only five to ten percent of the total roadway network, arterials typically accommodate about 30 to 40 percent of an area's travel volume. Since traffic movement, not land access, is the primary function of arterials, access management is essential to avoid traffic congestion and delays caused by turning movements for vehicles entering and exiting driveways. Likewise, intersections of arterials with other public streets and private access drives should be designed to limit speed differentials between turning vehicles and other traffic to no more than 10 to 15 miles per hour. Signalized intersection spacing should be long enough to allow a variety of signal cycle lengths and timing plans that can be adjusted to meet changes in traffic volumes and maintain traffic progression (preferably one-third to one-half mile spacing).



The cross section of arterials may vary from multi-lane roadways with three, four, or five lanes, down to two-lane roadways in the developing fringe and rural areas of the County where traffic volumes either have not increased to the point that more travel lanes are needed or are not warranted due to limited density. Functional classification is not dependent on the existing number of lanes since the functional role served by a roadway typically remains constant over time, while the roadway's cross section is improved to accommodate increasing traffic volumes. Thus, lower-volume roadways that are continuous over long distances may also function as an arterial, particularly in the rural areas.

There are not any provisions in the subdivision ordinances of either the City or County for arterial streets. Therefore, this plan proposes new thoroughfare classifications for principal and minor arterial streets, consistent with the state functional classification system. A principal arterial would require a minimum of 100 feet of right-of-way, which could accommodate both divided and undivided roadway sections. An undivided pavement section would include four 12-foot travel lanes, with a total pavement width of 48 feet. The divided section would include the four 12-foot travel lanes, plus a 12-foot raised median. The median would be of sufficient width to accommodate a turning lane at intersections, plus provide for decorative street lighting, landscaping, and added green space.

A minor arterial roadway is proposed to have a total right-of-way of 80 feet, which accommodates a pavement width ranging from 40 to 48 feet. The distinction between principal and minor arterial roadways is their traffic volume, roadway length, spacing, posted speeds, and community relationship, as identified in *Table 4.2, Functional Classification Criteria*.

Plan Implementation

Implementation of thoroughfare system improvements occurs in stages over time as the City and County grow and, over many years, builds toward the ultimate thoroughfare system shown in the Thoroughfare Plan. The fact that a future thoroughfare is shown on the plan does not represent a commitment to a specific timeframe for construction or that the City and/or County will build the roadway improvement. Individual thoroughfare improvements may be constructed by a variety of implementing agencies, including the City of Paducah, McCracken County, and the Kentucky Transportation Cabinet (KYTC), as well as private developers and land owners for sections of

roadways located within or adjacent to their property. Road construction can be implemented by individual entities or in partnership, as is the case for construction of roads that are identified in the Statewide Transportation Plan.

The City, County, and KYTC, as well as residents, landowners, and developers, can utilize the Thoroughfare Plan in making decisions relating to planning, coordination, and programming of future development and transportation improvements. Review of preliminary and final plats for proposed subdivisions in accordance with the City and County subdivision ordinances should include consideration of compliance with the Thoroughfare Plan in order to ensure consistency and availability of sufficient rights-of-way for the general roadway alignments shown on the plan. It is of particular importance to provide for continuous roadways and through connections between developments to ensure mobility. By identifying thoroughfare locations where rights-of-way are needed, landowners and developers can consider the roadways in their subdivision planning, dedication of public rights-of-way and provision of setbacks for new buildings, utility lines, and other improvements located along the right-of-way for existing or planned thoroughfares.

Requirements and Standards

This section outlines criteria for certain characteristics of street and land development. These criteria supplement or expand upon the design standards of the City and County subdivision ordinances. These policies should be regulated through ordinance provisions to ensure proper implementation.



Continuous collector streets and other internal street connections improve mobility and the efficiency of the street

- ◆ **Location and alignment of thoroughfares** - The general location and alignment of thoroughfares must be in conformance with the Thoroughfare Plan, as currently expressed in the City and County ordinances. Subdivision plats should provide for dedication of needed rights-of-way for thoroughfares within or bordering the subdivision. Any major changes in thoroughfare alignment that are inconsistent with the plan should require the approval of the City and County Planning Commissions through a public hearing process. A major change would include any proposal that involves the addition or deletion of established thoroughfare designations or changes in the planned general alignment of thoroughfares that would affect parcels of land beyond the specific tract in question.

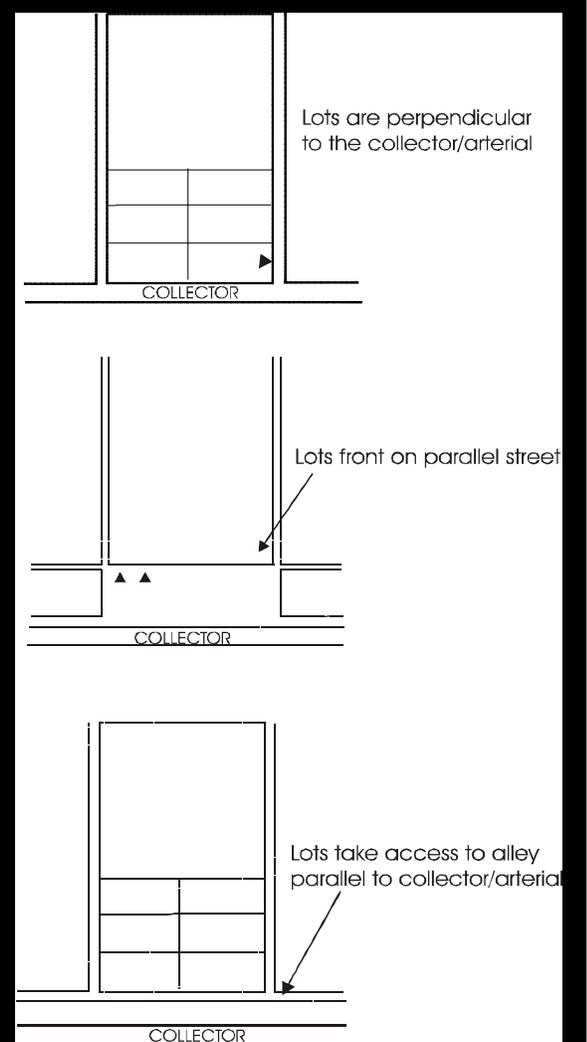
- ◆ **Location and alignment of collectors** - Generally, to adequately serve their role to collect traffic from local streets and distribute it to the arterial street system, collectors should be placed between arterial streets, with a spacing of approximately one-quarter to one-half mile for minor and major collectors, respectively. Collectors must be shown on all proposed subdivisions of land consistent with the Thoroughfare Plan. In cases where a collector is not shown on the Plan, but is warranted due to development

density and projected traffic volumes, it is also required and must be shown.

- ◆ **Roadway continuity** – To maximize mobility, it is essential that collector streets traverse adjacent neighborhoods to provide access and circulation not only within, but also between, neighborhoods. Collector streets

should generally connect bounding arterials, rather than allowing developments to design a street system with limited or no points of ingress/egress other than the primary entrance(s) to the development. Rather than allowing waivers of this requirement, the subdivision regulations must identify warrants and criteria for exemption.

- ◆ **Right-of-way and pavement width** - The pavement and right-of-way width for thoroughfares must conform to minimum standards unless a waiver is granted using formalized criteria. Properties proposed for subdivisions that include or are bordered by an existing thoroughfare with insufficient right-of-way width must be required to dedicate land to compensate for any right-of-way deficiency of that thoroughfare. When a new thoroughfare extension is proposed to connect with an existing thoroughfare that has a narrower right-of-way, a transitional area must be provided.
- ◆ **Continuation and projection of streets** - In accordance with the policies and recommendations of this plan, existing streets in adjacent areas should be continued, and, when an adjacent area is undeveloped, the street layout must provide for future projection and continuation of streets into the undeveloped area. In particular, the arrangement of streets in a new subdivision must make provision for continuation of right-of-way for the principal existing streets in adjoining areas - or where new streets will be necessary for future public requirements on adjacent properties that have not yet been subdivided. Where adjacent land is undeveloped, stub streets must include a temporary turnaround to accommodate fire apparatus.
- ◆ **Location of street intersections** - New intersections of subdivision streets with existing thoroughfares within or bordering the subdivision should be planned to align with existing intersections to avoid creation of off-set or "jogged" intersections and to provide for continuity of existing streets, especially collector and arterial streets.
- ◆ **Angle of intersection** - Consistent with the design standards in the subdivision ordinances, the angle of intersection for street intersections should be as nearly at a right angle as possible. Corner cutbacks or radii should be required at the acute corner of the right-of-way line to provide adequate sight distance at intersections.



The layout of lots contributes to the traffic carrying capacity, safety, and efficiency of collector streets.

- ◆ **Offset intersections** – Consistent with the design standards in the City’s subdivision ordinance, offset or "jogged" street intersections should have a minimum separation of 200 feet between the centerlines of the intersecting streets.
- ◆ **Cul-de-sacs** - Through streets and tee-intersections are preferable to cul-de-sacs. Care should be taken so as not to over utilize cul-de-sacs, which limits through access, restricts pedestrian circulation, increases response times, and confuses motorists. However, when cul-de-sacs are used, they should have a maximum length of not more than 500 feet measured from the connecting street centerline to the centerline of radius point, with a paved turnaround pad of at least 100 feet and a right-of-way diameter of at least 120 feet in residential areas and at least 180 feet diameter on a street with a 200 feet right-of-way diameter in commercial and industrial areas. A cul-de-sac with an island should have a diameter of not less 150 feet.
- ◆ **Residential lots fronting on arterials** - Subdivision layout must avoid the creation of residential lots fronting on arterials with direct driveway access to the arterial street. Lots should be accessed from collector or, preferably, local streets within or bordering the subdivision or an auxiliary street designed to accommodate driveway traffic.
- ◆ **Residential lots fronting on collectors** - Subdivision layout must minimize - and preferably avoid - the arrangement of lots to access collector streets, particularly within 180 feet of an intersection. To the extent practicable, lots should be accessed from local streets.
- ◆ **Geometric design standards and guidelines** - Other requirements and guidelines for the geometric design of thoroughfares and public streets should be provided in the subdivision ordinance and standard specifications. This includes special provisions for lot width and building setbacks on corner lots to preserve sight distances at adjacent intersections.
- ◆ **Private streets** - The City or County should not approve plats containing private streets unless adequate precautions are taken to ensure minimum standards of construction, necessary space for utilities and street widening, sufficient room for maneuvering emergency vehicles, and appropriate pedestrian circulation and emergency access.
- ◆ **Sidewalks** – Within the boundaries of a subdivision, sidewalks must be installed on both sides of local, collector, and arterials streets unless the development occurs in an estate or rural area and provisions are made and assurances committed for an internal trail or pathway system.
- ◆

Access Management

Access management is an important component of the thoroughfare management process. Access management is the coordination between land access and traffic flow. The basic premise of access management is to preserve and enhance the performance and safety of the major street system. It manages congestion on existing transportation facilities and protects the capacity of future transportation systems by controlling access from adjacent development. Properly utilized, it can eliminate the need for street widening or right-of-way acquisition.

Techniques to accomplish access management include limiting and separating vehicle (and pedestrian) conflict points, reducing locations that require vehicle deceleration, removing vehicle turning movements, creating intersection spacing that facilitates signal progression, and providing on-site ingress and egress capacity. In addition, regulation focuses on the spacing and design of driveways, street connections, medians and median openings, on-street parking and parking facilities, on-site storage aisles, traffic signals, turn lanes, freeway interchanges, pedestrian and bicycle facilities, bus stops, and loading zones.

The following access management strategies may be used to coordinate the access needs of adjacent land uses with the function of the transportation system:

- ◆ **Intergovernmental coordination** - Access management is most effective as a regional strategy that involves members of the Kentucky Transportation Cabinet who are involved in the design and construction of area roadways. Through coordinated efforts, such as the design of the Outer Loop, access management can add to the functionality and ultimate efficiency of thoroughfares.
- ◆ **Separate conflict points** - Two common conflict points are driveways and adjacent intersections. Spacing driveways so they are not located within the area of influence of intersections or other driveways is a method to achieve access management objectives.
- ◆ **Restrict turning movements at un-signalized driveways and intersections** - Full movement intersections can serve multiple developments through the use of joint driveways or cross-access easements. Turning movements can be restricted by designing accesses to limit movements or by the construction of raised medians that can be used to provide turn lanes.

Traffic Calming Devices



Flat-top speed hump



Roundabout



Narrowed entrance



Street closure



Choker

- ◆ **Establish design standards** - Design standards within the subdivision ordinance addressing the spacing of access points, driveway dimensions and radii, sight distance, and the length of turn lanes and tapers are effective mechanisms for managing the balance between the movement of traffic and site access.
- ◆ **Locate and design traffic signals to enhance traffic movement** - Interconnecting and spacing traffic signals to enhance the progressive movement of traffic is another strategy for managing mobility needs. Keeping the number of signal phases to a minimum can improve the capacity of a corridor by increasing green bandwidth by 20 seconds.
- ◆ **Remove turning vehicles from through travel lanes** - Left and right turn speed change lanes provide for the deceleration of vehicles turning into driveways or other major streets and for the acceleration of vehicles exiting driveways and entering major highways.
- ◆ **Encourage shared driveways, unified site plans, and cross access easements** - Joint use of driveways reduces the proliferation of driveways and preserves the capacity of major transportation corridors. Such driveway arrangements also encourage sharing of parking and internal circulation among businesses that are in close proximity.

Traffic Calming

An approach to decrease the amount of “non-local” traffic in residential areas is adopting traffic calming programs, which are aimed at controlling cut-through traffic, speeding on neighborhood streets, and generally aggressive driving that threatens the safety of other drivers and pedestrians.

Traffic calming measures are instrumental in providing livable neighborhoods where residents feel safe walking, biking, and playing. Traffic calming is defined as “the combination of mainly physical features that reduce the negative effects of motor vehicle use, alter driver behavior, and improve conditions for non-motorized street users.” In addition to addressing motor vehicle issues, traffic calming can also involve disparate objectives, such as improving aesthetics, promoting urban renewal, reducing crime, and increasing water filtration into the ground.

The broad goals for traffic calming include increasing quality of life, incorporating the preferences and requirements of nearby residents and others who use the area adjacent to streets and intersections, creating safe and attractive streets, helping to reduce the negative effects of motor vehicles on

the environment (pollution, urban sprawl, etc.), and promoting walking and bicycle use. More specific objectives are to:

- ◆ Achieve slower speeds for motor vehicles;
- ◆ Reduce collision frequency and severity;
- ◆ Increase safety and the perception of safety for non-motorized users of the street;
- ◆ Reduce the need for police enforcement;
- ◆ Enhance the street environment (streetscaping, etc.);
- ◆ Increase access for all modes of transportation; and
- ◆ Reduce cut-through traffic through neighborhoods.

Traffic calming is accomplished through a combination of measures that control both traffic speed and volume. Volume controlled measures include street closures, restrictive one-way streets, and turn restrictions. These measures are effective in reducing traffic on streets; however, such measures do not reduce speed and often result in the diversion of unwanted traffic onto other residential streets. Speed controlled measures are important in reducing injury accident rates. They also increase walking and bicycling on streets. Speed control measures should be designed into the community through urban design and land use features such as smaller setbacks, street trees, short streets, sharp curves, center islands, traffic circles, and textured pavements.