2007 Hamilton County Thoroughfare Plan Update

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Figure 1: Location map of Hamilton County within Indiana.

Vision

To develop a safe, efficient, and balanced transportation system for the movement of people and goods. Such a system will provide for economic growth and recreational opportunities though a convenient, accessible, and multi-modal system designed to meet the current and future transportation needs of Hamilton County.

Thoroughfare Plan Overview

Hamilton County's previous review of the Thoroughfare Plan was in 1990. Over fifteen years later, the County determined it was appropriate to review the assumptions of the 1990 Hamilton County Thoroughfare Plan, creating the 2007 Hamilton County Thoroughfare Plan Update.

The intent of the 2007 Hamilton County Thoroughfare Plan Update is to look at Hamilton County as a whole and develop recommendations to assist with transportation issues.

It is recognized that there are various jurisdictions within the County, each of which has control of improvements within their own planning area. Actually, many of these jurisdictions have individually adopted thoroughfare plans which take precedence over the Hamilton County Thoroughfare Plan. The 2007 Hamilton County Thoroughfare Plan Update has communicated with and included the various jurisdictions in the Update process. The 2007 Hamilton County Thoroughfare Plan Update looks holistically across the entire County, placing an emphasis on regional connectivity; and in such, there may be instances where the 2007 Hamilton County Thoroughfare Plan Update does not match the locally adopted thoroughfare plans.

The 2007 Thoroughfare Plan Update process occurred in 2006 and 2007, following the Comprehensive Plan Update which occurred in 2006. The 2007 Thoroughfare Plan Update is intended to be adopted as a part of the Comprehensive Plan. These two documents are created to give reasonable reassurance about the future direction of the County. Both the Comprehensive Plan and the Thoroughfare Plan are long-range guiding documents which provide direction to County Officials. The Plans should be reviewed on a regular basis and updated every five to ten years to properly reflect changes in growth and development.

A Thoroughfare Plan is a transportation planning tool which provides guidance on configuring the transportation system to support the community's future needs. As part of the County's Comprehensive Plan, it is based on the Land Use Plan and designates which routes need to be dedicated as "Thoroughfares" so the County can adopt appropriate right-of-way and roadway design standards. A Thoroughfare Plan considers all modes of transportation which are, or could be, made available to the public.

Transportation System Overview

Hamilton County is comprised of several local jurisdictions, each of which has control over roadway improvements in their area. These jurisdictions are highlighted in Figure 2. To serve the traveling needs of the residents, INDOT has a network of major regional routes established.

Two interstates serve the County, with I-69 extending through the southeastern portion of the area and I-465 crossing the extreme southern portion of the County. In addition, several multi-lane limited access expressways exist which move large volumes of traffic quickly throughout the region. US 31 extends through the west-central portion of the county; SR 431 extends from I-465 to US 31 in the Carmel area; and SR 37 extends from I-69 in Fishers to the north though Noblesville and then turns northeast. These roadways are oriented in a north-south direction, which is the direction of travel for the majority of the commuter traffic for the County.

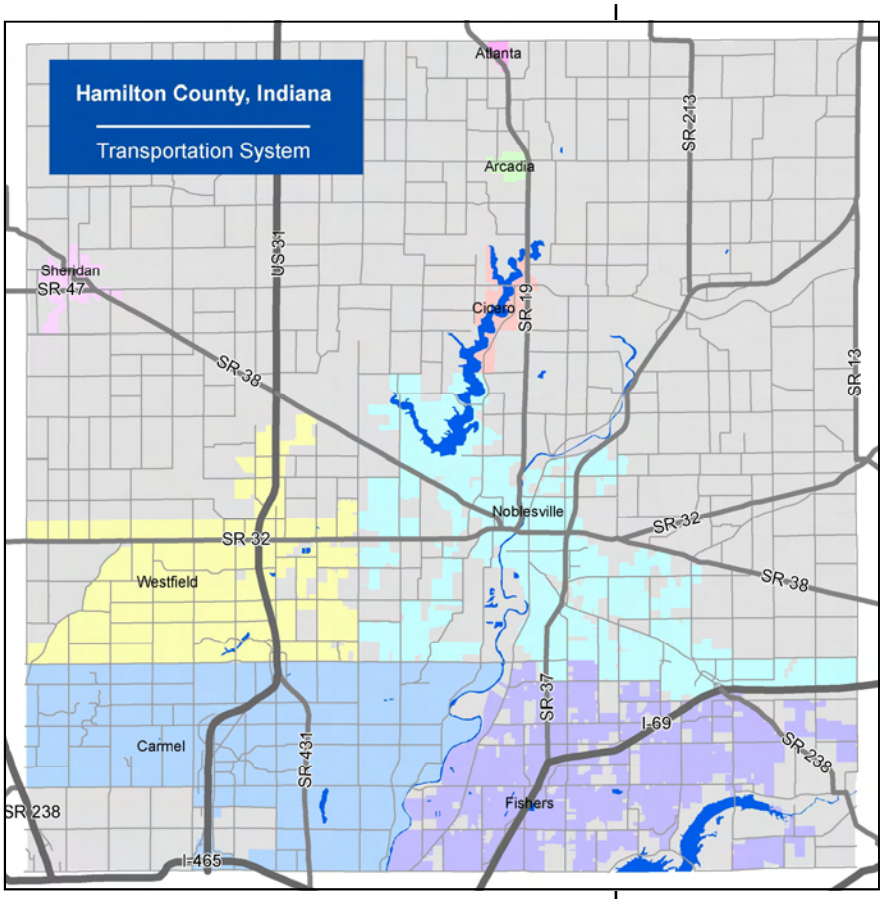


Figure 2: Hamilton County transportation system map.

The remainder of state-controlled routes in the County, while not limited access, are still vital for regional travel. SR 32 and SR 38 cross the County in an east-west direction, while SR 19, SR 213, and SR 13 cross portions of the County in a north-south direction. Finally, US 421, SR 238, and SR 47 all have very short segments of roadway within the County and therefore serve limited portions of Hamilton County traffic.

PUBLIC OUTREACH

During the 2007 Hamilton County Thoroughfare Plan Update, a variety of public input opportunities were utilized to gather information from the jurisdictions, residents, and businesses throughout the County. The following is a brief description of the public outreach components.

Comprehensive Plan

The 2007 Hamilton County Thoroughfare Plan Update is a component of the Hamilton County Comprehensive Plan. The Hamilton County Comprehensive Plan was updated in 2006 and adopted in January of 2007. The Comprehensive Plan involved public involvement and public input opportunities. In addition, many transportation topics were discussed during the Comprehensive Plan and were considered as part of the 2007 Hamilton County Thoroughfare Plan Update.

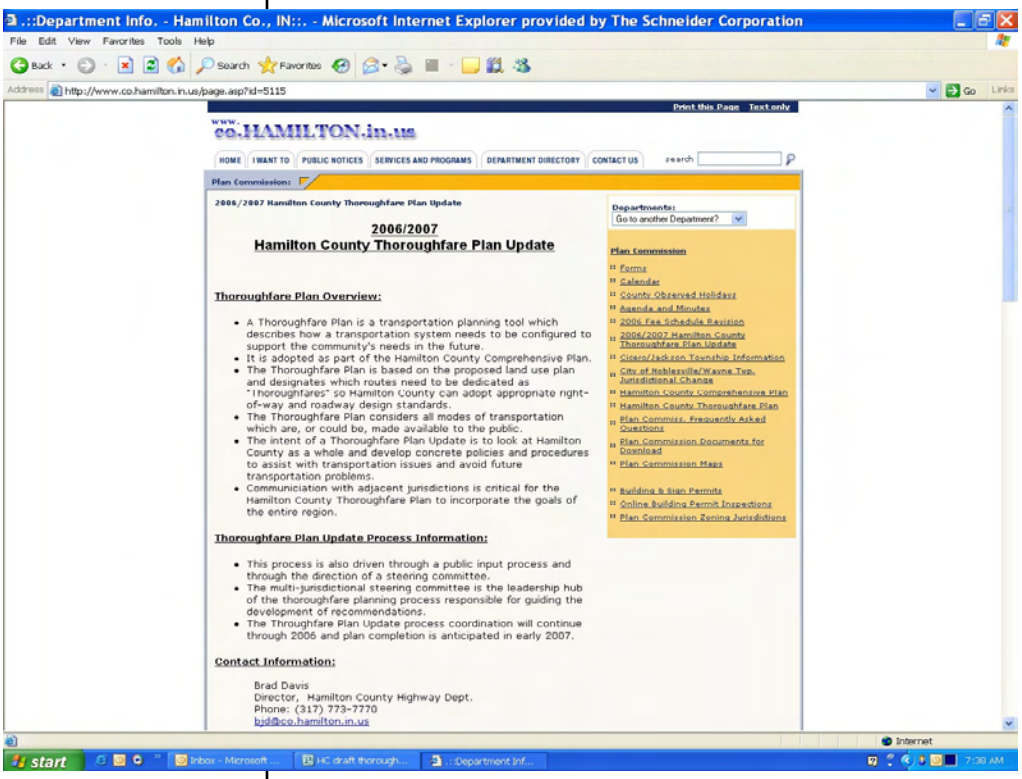


Figure 3: Thoroughfare Plan Website

Website

A website was created on the Hamilton County Plan Commission webpage for the 2007 Hamilton County Thoroughfare Planning Update process. Information available on the website included contact information, meeting agendas, meeting minutes, document reports, and maps.

Steering Committee

A Steering Committee was created as the leadership hub of the Thoroughfare Planning process responsible for guiding the development of recommendations. Members on the Steering Committee represented the following: Hamilton County Alternative Transportation (HCAT), Hamilton County Commissioners, Hamilton County Council, Hamilton County Highway Department, Hamilton County Parks and Recreation, Hamilton County Plan Commission, Hamilton Heights Schools, Hamilton Southeastern Schools, INDOT, Noblesville Schools, Marion-Adams Schools, City of Carmel, City of Noblesville, Town of Arcadia, Town of Atlanta, Town of Fishers, Town of Sheridan, Town of Westfield, and Washington Township Parks. The Steering Committee members attended meetings to guide the planning process, participated in miscellaneous correspondence and reviewed plans. Steering Committee meeting notes can be found in Appendix C.

Public Comment

Public comment is always solicited for any items presented or adopted by the Plan Commission and the County Commissioners. The adoption of the Hamilton County Thoroughfare Plan Update goes through the standard Hamilton County adoption process.

EXISTING SOCIO-ECONOMIC FACTORS

Figure 4 summarizes socio-economic statistics for Indiana, the Indianapolis Metropolitan Statistical Area (MSA), and Hamilton County by comparing Census data from 1990 and 2000.

Population in the nine-county Indianapolis MSA grew 16% compared to the population increase of 10% statewide. Hamilton County had a significant population increase of 68%. In 2000, Hamilton County made up 11.4% of the total MSA population.

The housing unit numbers mirror the pattern of population increase. Indiana and the Indianapolis MSA increased in housing units by 13% and 19%, respectively. Hamilton County once again had substantial increases in housing units, gaining 69%.

Employment growth also occurred between 1990 and 2000. Employment has increased 12% in Indiana, 28% in the Indianapolis MSA, and 82% in Hamilton County.

Median household income increased significantly between 1990 and 2000. Over the ten year period, the Indiana median household income increased 44%. The MSA and Hamilton County's median household income increased 31% and 55%, respectively.

Based on these socio-economic statistics, it is apparent that Hamilton County has been experiencing significant growth in terms of population, housing units, employment, and income when compared to the State of Indiana. Demands on the transportation system will need to be addressed to accommodate the anticipated continued growth of the Indianapolis area.

US Census Bureau Data			
	Indiana	Metropolitan Statistical Area	Hamilton County
1990 Population	5,544,159	1,380,491	108,936
2000 Population	6,080,485	1,607,486	182,740
Population Change 1990-2000	10%	16%	68%
1990 Housing Units	2,246,046	571,246	41,074
2000 Housing Units	2,532,319	681,144	69,478
Housing Units Change 1990-2000	13%	19%	69%
1990 Employment	2,788,838	664,833	57,748
2000 Employment	3,117,897	847,853	105,000
Employment Change 1990-2000	12%	28%	82%
1990 Median Household Income	$28,797	$34,708	45,748
2000 Median Household Income	$41,567	$45,548	71,026
Median Household Income Change 1990-2000	44%	31%	55%

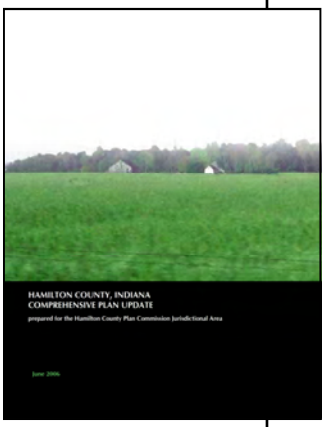
Figure 4: Socio-economic data from the US Census Bureau, SF1, SF3

Recent Planning Initiatives

The following is a list of various initiatives or planscompleted by either the Hamilton County, INDOT, or the Indianapolis Metropolitan Planning Organization (MPO). Please note these are brief summaries and overviews of each initiative.

Hamilton County Thoroughfare Plan

The 1990 Hamilton County Thoroughfare Plan was originally prepared as an element of the 1990 Hamilton County Comprehensive Plan. As part of the Comprehensive Plan, a circulation plan was created based on existing circulation conditions, the proposed land use plan, a designation of different roadway types, and related geometric design standards. The Thoroughfare Plan was then created based on this analysis and the creation of a 'grid pattern' providing a maximum degree of continuity. Specific considerations influenced the Thoroughfare Plan including special land uses, reservoirs, access to adjoining counties and commercial traffic generators. In 1994, the Thoroughfare Plan was revised to reflect an up-to-date land use evaluation and upgraded the roadway classifications; however, there have been map revisions since that date with the most recent revision occurring September of 2002. The 1994 Thoroughfare Plan document described land use patterns, identified roadway classifications, right-of-way classifications, and bridge locations. The roadway classifications included: interstate; expressways; primary, secondary, and residential parkways; primary arterials; secondary arterials; and collectors. Cross sections included options of multiuse paths. In addition, the 2002 Thoroughfare Plan Map highlights locations for special studies or intersection improvements.



Hamilton County's Comprehensive Plan

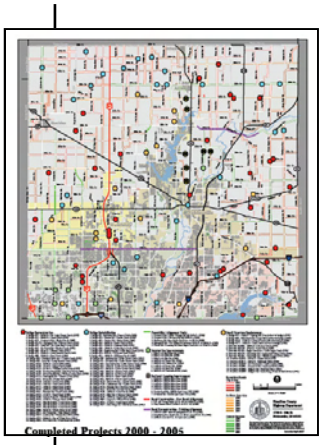
Hamilton County began to update its 1990 Comprehensive Plan in 2004 and completed the process in 2006. As one of the ten most rapidly growing counties in the country, Hamilton County is experiencing change at an ever-increasing rate and the Hamilton County Plan Commission must be proactive with its land use policies. This Comprehensive Plan is grounded in an ecologically-based planning approach and incorporates the opinions and desires of current residents through an ongoing public participatory process. The plan includes land use maps and policy statements regarding land use, development practices, and transportation.

Ideally, this Comprehensive Plan Update will positively affect the growth and development of the Hamilton County Plan Commission Jurisdiction in a way that reflects the values and ideals of its citizenry. It is intended to serve as a resource and guide to those involved with the planning, design, and development of properties in the Hamilton County Plan Commission Jurisdiction. Through planned growth and development of lands within the Plan Commission Jurisdiction, it is also intended to promote a healthy environment and sound economy. This vision is intended to help build vibrant, vital communities for current and future residents to live, work, play, and learn.

Hamilton County Alternative Transportation Plan

The Hamilton County Alternative Transportation Plan (HCAT) was adopted in 1995 identifying locations in Hamilton County appropriate for bikeways and multi-use trails. This plan includes a map along with text identifying pathway standards and design guidelines.

Hamilton County Recent Infrastructure Improvements
The Hamilton County Highway Department produces a map identifying recently completed projects related to bridge reconstruction, bridge rehabilitation, feasibility/alignment study locations, intersection improvements, railroad crossing improvements, road reconstruction, small structure replacement, and road resurfacings. The map obtained for this update was revised on May 24, 2006 and shows completed projects from 2000 through 2005.



MPO's Indianapolis Travel Demand Model (TDM)
The Indianapolis Travel Demand Model (TDM) is a traditional 4-step model using year 2000 data from the Indianapolis region, national data on travel behavior, and Indianapolis growth estimates to make 20-year forecasts for regional travel. The Indianapolis MPO runs this model for the Metropolitan Planning Area's 9-County Region.

The TDM is a useful tool to assess the impact of regional growth and major transportation investments on regional travel and highway congestion. The TDM is not typically used to forecast traffic at the facility level and does not contain the underlying data necessary to test the impacts of minor changes. Current outputs are limited to daily averages, rather than separated by time of day.

The 2010, 2020, and 2030 forecasts received from the Indianapolis MPO for the 2007 Thoroughfare Plan Update were generated in early 2006 based on latest planning assumptions related to regional growth and federally funded transportation improvements listed in the 2030 Regional Transportation Plan. The Indianapolis MPO is currently working to make significant improvements to the model and the data underlying it. By late 2007, the model will include vastly improved base year data on population, employment, travel speeds, and volumes by time of day, and transit trips in Indianapolis. Model outputs will continue to evolve over time as the data underlying the model is updated with the latest planning assumptions. In addition, improvements will make the model more responsive to policy questions. It is recommended to review Hamilton County's forecasts as model updates continue.

MPO's Regional Pedestrian Plan
The MPO's Regional Pedestrian Plan is a guide to integrating the pedestrian mode of travel into the urban transportation system throughout Marion County and the adjacent counties. This study incorporates pedestrian considerations into the MPO's long-range transportation plan and encourages the adoption of the plan by the individual jurisdictions within the MPO planning area to create a network of pedestrian facilities that will form a linked, regional pedestrian system.

MPO's Regional Rapid Transit Study
The MPO's Regional Rapid Transit Study is a comprehensive study of rapid transit in the greater Indianapolis area. This study is examines rapid transit service for the Indianapolis region, determining a preferred system of transit corridors and technology. As of 2007, the study had identified a system of travel corridors and prospective rapid transit technologies. An Alternatives Analysis was conducted for the Northeast Corridor, and a Comprehensive Operational Analysis was completed for IndyGo. In addition, potential funding sources have been identified and a Financial Implementation Plan was completed.

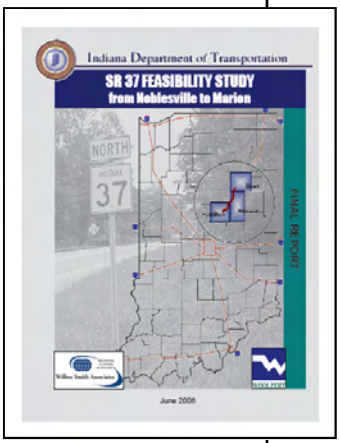
MPO's IndyGo Comprehensive Operational Analysis (COA)
A Comprehensive Operational Analysis (COA) was funded through the Rapid Transit Study to provide baseline information as to growth necessary to support a Rapid Transit System, identify short range interim transit solutions, and identify system-wide service improvements for IndyGo.

Traffic Counts
A variety of organizations gather traffic counts to assess and analyze the transportation system. Hamilton County updates traffic counts as deemed necessary, and additional counts were taken for the 2007 Thoroughfare Plan Update in 2006. Traffic counts were also gathered from the jurisdictions in Hamilton County with traffic counting programs. Finally, INDOT recently completed traffic counts along state routes in Hamilton County.

CISTMS Study
INDOT initiated the Central Indiana Suburban Transportation and Mobility Study (CISTMS) to examine transportation and mobility needs among and between the communities surrounding Indianapolis in order to identify suburban travel needs and develop recommendations for improvements. Many studies have been conducted for radial routes leading to Marion County. Few have addressed "crosstown" travel between surrounding counties as was accomplished by this study.

Hamilton County Bridge Study
The 1998 Hamilton County Bridge Study evaluates all reasonable locations for a new crossing of the White River to the south between Clay and Delaware Townships and to the north in Noblesville. Four main matrices were utilized in evaluating each location and included land use comparisons, traffic evaluation, engineering requirements, and the socio-economic-environmental effects of the respective areas. Each of the matrices evaluated alternatives on a macro level which would aid in the selection of a preferred corridor alignment.

Noblesville White River Bridge Study Technical Memorandum
Building upon the Hamilton County Bridge Study of 1998, this memorandum investigated three alternatives for a White River crossing on a more microscopic level. As part of the evaluation, impact evaluation matrices were used to further compare each of the alternatives. Each alternative — Pleasant Street, 186th Street, and 191st Street — was measured against one another with respect to engineering parameters, land use requirements, and socio-economic-environmental effects. Based on the results, Pleasant Street was the preferred alternative due to its large reduction in network traffic for both local and regional areas. In addition, the proposed two lane alternative is already an element of the Noblesville Thoroughfare Plan, making future extensions possible.



SR 37 Study
The SR 37 Feasibility Study examines the existing conditions of SR 37 and explores the various measures that may be appropriate to reduce crash frequency and improve level of service. Existing characteristics were examined for their deficiencies, which included vertical and horizontal alignment problems as well as sight distance problems. Numerous background studies showed that an increase in the number of travel lanes would not only improve capacity but also encourage economic growth in the study corridor. Various criteria including feasibility, cost, and ability to meet purpose and need were used to rank various alternatives and compared to a "no build" alternative. In conclusion, three alternatives were recommended for further evaluation, all of which included at least a small portion of SR 37 being improved into a 4-lane roadway.

Goals and Objectives

The goals and objectives defined below were established by the Steering Committee members to set forth the vision for Hamilton County's future transportation system. The goals set direction, while the objectives define ways in which the goals can be achieved. These goals and objectives are compiled from various planning documents throughout the region.

Goal #1: Safety and Efficiency
Provide a balanced transportation network that will facilitate safe and efficient movement to meet existing and long-range needs serving all areas of Hamilton County.
Objectives:

- Preserve rights-of-way for future thoroughfare expansion and continuation of identified corridor extensions.
- Encourage dialogue between the county, adjacent counties, jurisdictions, and the private sector to coordinate thoroughfare improvements.
- Identify high traffic impact areas to develop initiatives to improve safety.
- Ensure the thoroughfare system has sufficient capacity by functional classification for the development densities served, being responsive to major land-use needs.
- Integrate sidewalks and bikeways to safely accommodate pedestrians and bicyclists on appropriate roadways.
- Promote development and design patterns that encourage the reduction of vehicles trips and vehicle miles traveled.
- Provide cost effective transportation improvements that address mobility problems and reduce the growth in traffic congestion.
- Ensure all signalization is spaced for maximum progression of traffic flow on primary and secondary arterials.
- Evaluate proposed developments and their impact on existing and proposed thoroughfares.
- Protect capacity by implementing access management.
- Implement sound safety engineering principles and practices in the area of street lighting, street layout, speed limits, street signage, street pavements striping, and traffic signals.
- Encourage heavy trucks and through traffic to use arterial streets, avoiding local streets.
- Be proactive in the planning and development of thoroughfares so the system is both functional and aesthetic.
- Improve accessibility to regional employment and activity centers.
- Foster strategies that reduce the growth in peak-hour vehicle travel.
- Pavement should be minimized while maintaining the functional aspects of roads and parking facilities.
- Road widths should be kept to the minimum to accommodate anticipated traffic volumes with the least amount of pavement to install and maintain.

Goal #2: Sustainable and Proactive
Implement the recommendations of the thoroughfare plan in a manner to meet existing and long-range needs. Encourage the development of a county thoroughfare system that efficiently uses the limited funding and maintenance resources.
Objectives:

- Coordinate the use of private, municipal, county, state and federal funding sources to maximize capital availability for thoroughfare improvements.
- Coordinate with regional transportation agencies (INDOT, MPO, and adjacent jurisdictions) and continue to be involved in transportation planning processes.
- Encourage orderly growth by planning and providing an arterial street network paid for from public and private sources in a fair and equitable manner.
- Develop a system to prioritize maintenance, preservation, and proposed projects.
- Encourage private-sector participation in the design, right-of-way, and construction of transportation improvements.

Goal #3: Regional Values
Promote a transportation system which continues to improve the quality of life in Hamilton County.
Objectives:
- Ensure transportation system and land use are complementary.
- Promote a transportation system which reinforces economic development.
- Provide residents with choices and alternatives for getting between home, work, school, shopping, play and other activities.
- Enhance transportation system sustainability and minimize the impact of the transportation system on the built and natural environment.
- For heavier traffic areas, design or retrofit roadways for a boulevard or parkway appearance with landscaped medians, street tree plantings, bike lanes, and sidewalks.
- Protect significant cultural resources (including roadways and bridges).
- Minimize the negative impacts of street widening and construction on neighborhood areas.
- All transportation infrastructure should be constructed and maintained with pedestrian-scale use and visibility in mind.
- Construct bicycle lanes on all appropriate roadways.
- Avoid curb, gutter, and storm sewer construction in the rural landscape.
- In rural areas, road widths shall be kept to rural road two-lane cross sections with additional left and right turning lanes to accommodate increased traffic volumes as necessary before four or six lane expansion is considered.
- Create quiet residential lanes with narrower streets to slow traffic and enhance community atmosphere.
- Rustic Road program should be considered to preserve rural roadway sight lines, cross sections, topography, and landscape.

Goal #4: Multi-Modal
Improve the efficiency of Hamilton County's thoroughfare system by integrating all modes of transportation.
Objectives:
- Sidewalks should be constructed on one or both sides of all roadways.
- Participate in efforts to promote transit, rail, and pedestrian facilities in appropriate areas of the County including supporting the Rapid Transit Study (RTS).
- Assess transportation and development projects to assure multi-modal components are reasonably included.
- Share rights-of-way with alternative transportation modes.
- Consider relevant bicycle and pedestrian elements in all new transportation projects.
- Priority should be placed on sidewalks along busier roadways where there are potential pedestrian/traffic conflicts.
- Support and promote the expansion of the Comprehensive Operational Analysis (IndyGo) to serve county residents and relieve pressures on the county's transportation infrastructure.

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Background Information

The following background information was used to update the 2007 Hamilton County Thoroughfare Plan.

Transportation Elements

Traveling by automobile is still the major transportation mode in Hamilton County. However, there is a continued emphasis on promoting a variety of modes of transportation beyond the utilization of vehicular transportation. The transportation network should be designed to get people to their destinations more efficiently through a variety of transportation modes. In addition, air quality and traffic congestion affect a communities' quality of life and it is increasingly important to plan the roadway network with alternative transportation modes.

It is also important to recognize the significant relationship between land use and transportation decisions. The location and types of development has a direct influence on the demands placed on the transportation system in terms of street capacity, traffic distribution, traffic flow, transit use, and pedestrian utilization. In addition, modifications in transportation facilities affect the accessibility to land uses and can influence where certain types of land uses will develop.

Access management is needed to facilitate the movement of traffic from one point to another. On arterials and other major collectors, as traffic volumes on roadways increase, there is a need to control access to adjacent properties. It is in Hamilton County's best interest to regulate access characteristics in order to ensure safety and efficiency on roadways. This regulation can include requirements for driveway spacing, number of driveways, access points, access driveways consolidation, connecting properties, and appropriate internal circulations plans.

Hamilton County can benefit from better connectivity. Connectivity provides opportunities for shorter trips and allows for additional choices of travel modes. Also, road connectivity leads to more cost effective public services and infrastructure. Emergency services have better access to locations and can serve a broader area without increasing operating costs. In addition, other community services, like waste collection, can decrease travel time and mileage achieving significant cost savings.

Below is a summary of the variety of transportation modes available in Hamilton County.

Roadway

The existing transportation network continues to focus primarily on the roadway system and vehicular transportation. The Indianapolis MPO indicates a continued regional commuting pattern based on data from the U.S. Census. The most significant commuting pattern is to and from Marion County; however, as other MSA employment centers are created, more dominant cross-county community patterns will be developed. This commuting pattern reinforces a potential need for park and ride services for regional commuters.

Rail

No commercial rail lines are currently in use in the Hamilton County area; however, the Indiana Transportation Museum in Noblesville, Indiana operates a small section of rail with restored locomotives. Throughout the year, trains are available for special trips to the state fair grounds, dining events, and holiday festivities.

Air

Four regional airports are located within Hamilton County including the Indianapolis Metropolitan Airport, Sheridan Airport, Noblesville Airport, and the Westfield Airport. Both

the Noblesville and Westfield Airports are composed of grass runways, while the Indianapolis Metropolitan Airport and Sheridan Airport have more modern accommodations.

The Indianapolis Executive Airport is located near Zionsville, not within the boarders of Hamilton County, but it has a large economic impact on the surrounding area. The airport supports local economic development agencies in the area while continuing to upgrade their facilities and increase growth to become in the top ten airports in Indiana.

Bike and Pedestrian

Bicycle and pedestrian travel as an alternative mode of transportation is becoming very common in the Hamilton County. The County and other jurisdictions continue to build an area-wide trail and sidewalk system to provide for a safe transportation alternative separated from the high speed vehicular traffic on area streets.

The Indianapolis MPO has recently created a Regional Pedestrian Plan which is a guide toward full integration of pedestrian modes of travel into the overall Indianapolis Urban Transportation System. Based on qualitative and quantitative analyses, the plan recommends pedestrian facilities, corridors, and districts for the entire Indianapolis Region.

Hamilton County continues expanding bicycle and pedestrian facilities. In addition to multi-purpose trails off the roadway network, the County considers multi-use paths along roadways, dedicated bicycle routes, and safe walking zones around schools. Continued support of multi-use facilities is vital in creating a more diverse transportation network allowing for multiple travel options both inside the County and regionally.

Transit Services

Currently, there is no permanent public transportation serving Hamilton County; however, IndyGo continues to introduce temporary express bus services into the County. In addition, the area does have access to private transportation services. There may be a future demand for public transportation as population continues to grow and with the increasing number of persons with special needs who may not have other transportation options.

There are two ongoing initiatives that may extend transit service to Hamilton County. The first being the DiRecTions study which is looking for opportunities for fixed guideway transit opportunities. The first selected corridor for DiRecTions extends from downtown Indianapolis to southern Noblesville. The second initiative was the creation of the regional transit authority (RTA). One goal of the RTA is to expand transit services beyond Marion County.

Federal Highway Administration's (FHWA) Functional Classification

Functional classification is the process by which streets and highways are grouped into classes, or systems, according to the character of service they are intended to provide. A roadway's functional classification determines how well it serves an area's wide-ranging transportation needs. For a road improvement to be eligible for federal funding, it must have a functional classification greater than a local street.

The current functional classification map for Hamilton County was approved by FHWA in 1993 and can be seen in Figure 6. This classification is to be modified in the future as the Urban Area Boundary has been altered since the 2000 Census. There is a need to reevaluate Hamilton County's functional classification system to better reflect the traffic function of the area now and in the foreseeable future.

The FHWA functional classification system is used by transportation planners. This classification contains arterial, collector, and local classifications. There is a relationship between FHWA's functional classification system and mobility and land access as seen in Figure 5.

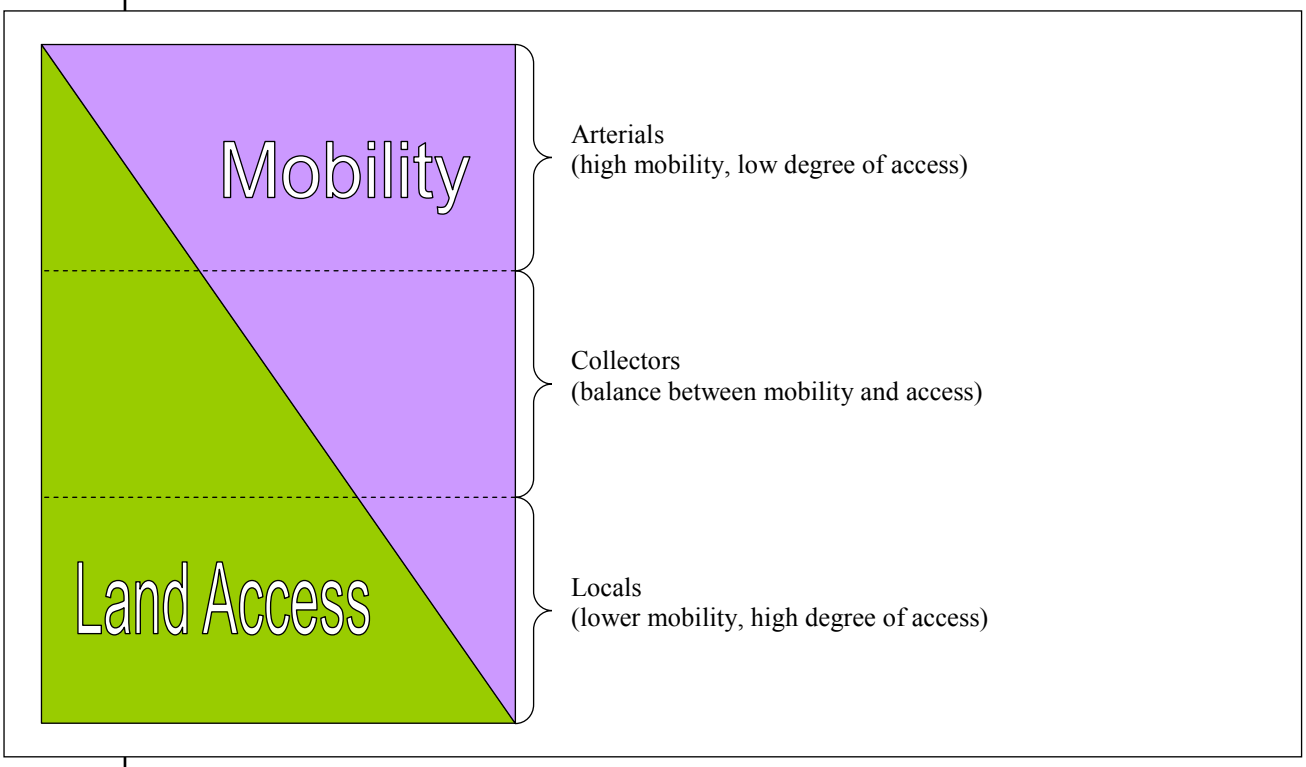

Figure 5: Diagram relating functional classification to mobility and land access.

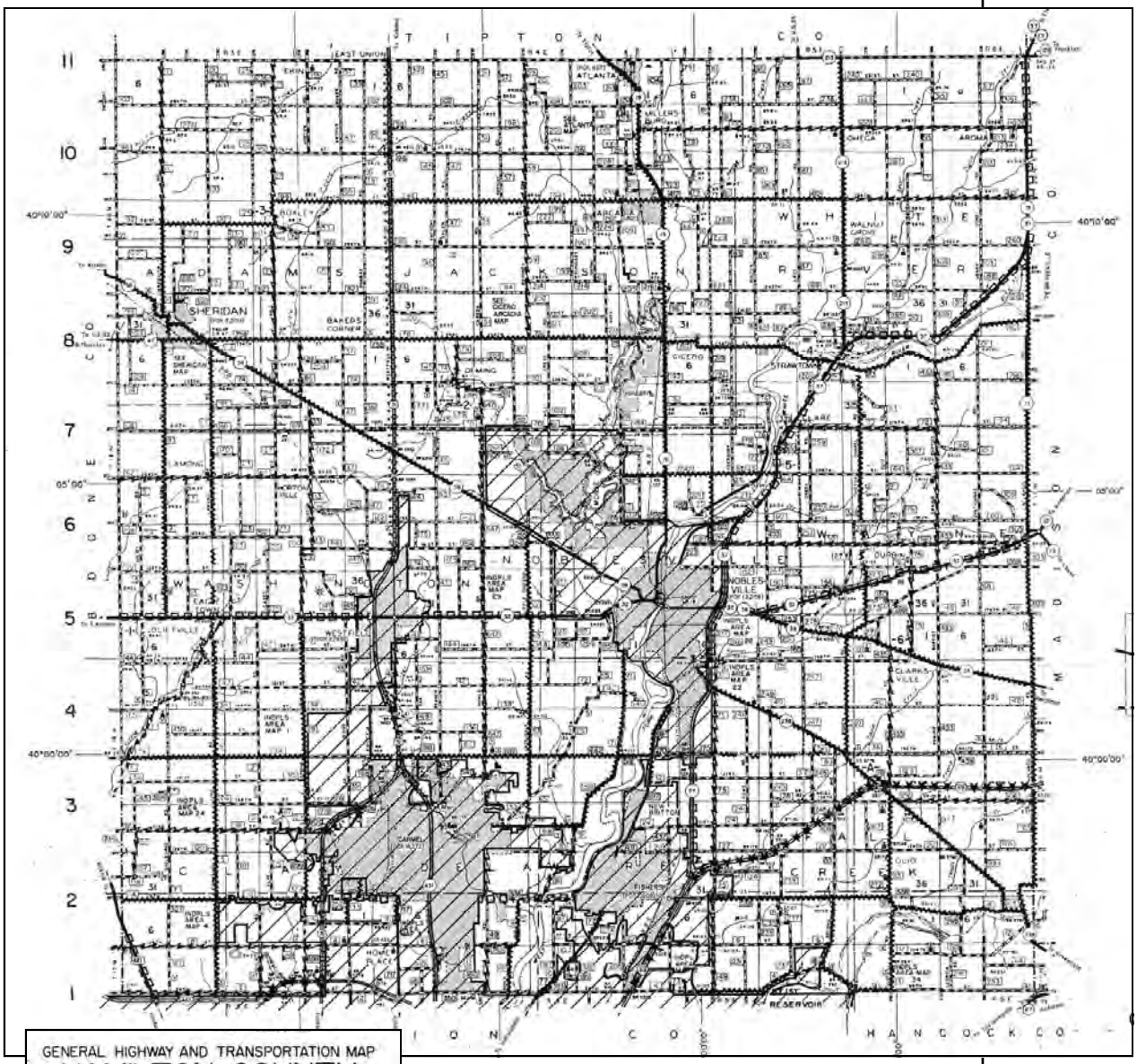

Figure 6: FHWA's approved functional classification map (1993).

Traffic Volumes and Growth Rates

Existing traffic counts were gathered from a variety of sources in order to project future traffic volumes. The list below details the source for the traffic data used in this study.

- Hamilton County conducts traffic counts every year, on a rotating schedule, for all of the roads under the County's jurisdiction. Traffic counts from 2002 through 2006 were available and utilized in this plan update. Also, as a part of the 2007 Hamilton County Thoroughfare Plan Update, additional counts were taken at key locations in 2006.
- INDOT conducts traffic counts on all state-maintained routes on a rotating schedule, generally once every three years. Traffic counts for state-maintained routes in Hamilton County from 1998, 2001, and 2004 were available for this plan update.
- Several jurisdictions within Hamilton County regularly update traffic counts for roads under their control. The City of Carmel submitted counts ranging from 1997 to 2006; the City of Noblesville contributed counts from 2002 through 2005; the Town of Fishers submitted counts from 2002 through 2004; and the Town of Westfield contributed counts completed in conjunction with their Thoroughfare Plan update.

Based on the most recent average daily traffic counts available, 2006 traffic are shown in the 2006 Volume Map (Map A1). When the actual 2006 volumes were not available, the most recent traffic counts were projected to calculate a 2006 volume.

The 2010, 2020, and 2030 forecasts received from the Indianapolis MPO's Travel Demand Model (TDM) for the 2007 Thoroughfare Plan Update were generated in early 2006 based on latest planning assumptions related to regional growth and federally funded transportation improvements listed in the 2030 Regional Transportation Plan. Growth rates were determined by analyzing the TDM, reviewing existing traffic count increases over time, looking at proposed land use patterns from the Hamilton County Comprehensive Plan, as well as jurisdictional Comprehensive Plans, and existing development growth rates and patterns. Based on this assessment, an Estimated Growth Rate Maps (Map A2, A3, and A4) were created.

It is recommended to review Hamilton County growth rates and traffic estimates once the TDM is updated in 2007. In general, the 2007 Thoroughfare Plan growth rates match the TDM estimated growth rates. However, in areas where dense development is expected, particularly in areas currently on the edge of urban development, the growth rate was adjusted upward to account for a large spike in growth in the near-term, then adjusted downward to ensure the projected traffic is not unrealistically large in the long-term.

On major roads where the existing traffic volumes are high and intersections are near capacity, there is little opportunity for volumes to increase. The intersection acts as a valve for the roadway network. If the approaching traffic volume is larger than the valve can handle, the roadway traffic volume will be the capacity of the intersection and will not increase, even as the number of queuing vehicles keeps growing. When this situation occurs, a lower growth rate is experience along the major roadway since less capacity exists for new vehicle trips to be added.

Similar to intersection capacity, the capacity of a roadway also limits the growth in traffic volumes. For example, when traffic volumes increase to a certain point and reach the capacity of the roadway or intersection, volumes will not grow further and will possibly decrease due to the serious congestion.

Once the growth rates were established, they were applied to the 2006 traffic volumes to calculate the 2026 Projected Traffic Volumes (Map A5).

Adjacent Jurisdiction Classifications

It is recognized that there are various jurisdictions within Hamilton County, each of which has control of the thoroughfares and improvements within their own planning area. Many of these jurisdictions have individually adopted thoroughfare plans which take precedence over the 2007 Hamilton County Thoroughfare Plan Update. While gathering background information from each jurisdiction, a composite map of all adjacent jurisdictional classifications was created (Map A6).

Planned Improvements

To accurately identify important thoroughfares across the County, it was necessary to determine where capacity and connectivity improvements were planned. If a certain roadway was planned to be widened from two lanes to four lanes in a jurisdiction, it would be more likely to draw traffic from adjacent roadways, and more likely to serve as a regional route rather than solely a local roadway. Based on information gathered from the jurisdictions within the County, the improvements included in the MPO's 2030 Regional Plan, and projects listed on INDOT's 10-year plan, a map was created to depict all of the planned capacity and connectivity improvements in the County (Map A7).

Future Land use

Many of Hamilton County's jurisdictions have adopted Comprehensive Plans identifying future land use patterns. While gathering background information from each jurisdiction, a composite map was created (Map A8) generalizing the future land use intensity throughout the County based on the adopted Comprehensive Plans.

Multi-Modal Components

The Hamilton County Alternative Transportation Plan (HCAT) was adopted in 1995 identifying roads within Hamilton County which provide the safest routes for alternative transportation. Pathway standards and design guidelines were included in this plan. Map A9 shows the location of these identified routes. Since this plan has been adopted, many jurisdictions within the County have since created their own, more up-to-date multi-modal plans.

In 2006, the Hamilton County Parks and Recreation Department initiated a trail identification coordination effort with all jurisdictions within Hamilton County. All existing, proposed, and planned trails were digitized and categorized based on use, condition, and materials (Map A10). This information was then given to the MPO to be incorporated into the Regional Pedestrian Plan.

Also in 2006, the Indianapolis MPO completed a Regional Pedestrian Plan (Map A11). This plan is regional in scope to encourage the establishment of a connected pedestrian system that crosses county and jurisdictional lines. The intent of this plan is to reduce reliance on the automobile, develop a balanced and inter-modal transportation system, emphasize accessible multi-modal opportunities, and improve the quality of life for citizens.

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Thoroughfare Classifications and Thoroughfare Plan

Thoroughfare Classifications

The following are the street classifications used on the Thoroughfare Plan Update Map to classify road and streets into a functional, hierarchical system. These classifications vary from each other based on the number of lanes, the amount of traffic, and the level of access provided. The classifications defined below are similar to the FHWA's functional classifications.

Primary Arterial

Primary Arterials serve large traffic volumes generally traveling longer distances and cross county connections. These routes carry the majority of commuter traffic into and out of the county and the adjacent land uses are usually quite dense. Mobility of through traffic, rather than access to adjoining land uses, is the main focus of the roadway. The cross section is marked by a large right-of-way requirement, multiple travel lanes, and wide buffer zones between vehicle and pedestrian facilities.

Secondary Arterial

Secondary Arterials serve large traffic volumes; however, they accommodate both commuter and local trips frequently. These routes provide direct, efficient access to Primary Arterials, but can also serve as a reliever roadway for a Primary Arterial experiencing high levels of congestion. The cross section is marked by large to moderate right-of-way requirements, the potential for multiple travel lanes, and moderate buffer zones between vehicle and pedestrian facilities. Some leniency in cross section requirements allow for a narrower roadway in densely developed urban areas.

Collector

Collectors serve to connect neighborhoods to Arterials. These routes generally carry less traffic than Arterials, and the trips are usually shorter along the route. The adjacent land uses are usually light and generally residential in nature. The cross section is marked by moderate right-of-way requirements, two travel lanes, and moderate to narrow buffer zones between vehicle and pedestrian facilities.

2007 Hamilton County Cross-Sectional Design Elements

	Primary Arterial	Secondary Arterial	Collector
Right-of-way	150' * †	110' * †	100' *
Number of Lanes	4	2 or 4	2
Median	Yes (12-16' Curbed / 22' Uncurbed)	Optional (0' - 16')	Optional (0' - 16')
On-street Parking	Not Permitted **	Not Permitted **	Permitted (0, 1, or 2 sides)
Curb / Shoulders	2' Curbs / 8' Paved Shoulders	2' Curbs / 8' Paved Shoulders	2' Curbs / 3' Stone Shoulders
Clear Zone	10' Curbed / 25' Uncurbed	10' Curbed / 25' Uncurbed	10' Curbed / 23' Uncurbed
Paths / Sidewalks	Two 10' paths and/or 5' sidewalks	Two 10' paths and/or 5' sidewalks	Two 10' paths and/or 5' sidewalks

Notes: * Add 10' width to the right side of the roadway at intersections (500' in length from the intersection)
** Parking may be permitted on a case-by-case basis, particularly in an urban context
† May be reduced in an urban context

Figure 7: Table identifying updated Cross-Sectional Design Element for Hamilton County.

Design Element Description

Figure 7 depicts the cross-sectional design elements the 2007 Hamilton County Thoroughfare Plan Update. In addition, Figure 8 compares the cross-sectional design elements for various jurisdictions within and adjacent to Hamilton County. The proposed design elements for the Thoroughfare Plan Update were constructed to minimize potential conflicts, where jurisdictional boundaries meet. Figure 7 and 8 describe the proposed standard right-of-way for each classification, the number of lanes, and width of median (if present). The drainage section (curbed or shoulders), the clear zone outside of the shoulders for vehicle recovery and pedestrian

Adjacent Jurisdiction Cross Section Comparison

PRIMARY ARTERIAL							
	2007 Hamilton Co.	**Carmel**	**Fishers**	**Noblesville**	**Westfield**	**Marion Co.**	**Boone Co.**
Right-of-way	150' * †	150'	140'	140'-200'	150'	140'	130'-150'
Number of Lanes	4	4	4	4	4	4	4
Median	Yes (12-16' Curbed / 22' Uncurbed	Yes (16')	Yes (16')	Yes (16')	Yes (16')	Yes (16')	Yes (16')
On-street Parking	Not Permitted **	Not Permitted	--	--	--	--	--
Curb / Shoulders	2' Curbs / 8' Paved Shoulders	2' Curbs	2' Curbs	2' Curbs	2.5' Curbs	2' Curbs	--
Clear Zone	10' Curbed / 25' Uncurbed	8'	5'	8'	15'	5'	--
Paths / Sidewalks	Two 10' paths and/or 5' sidewalks	Two 10' paths	Two 8' paths	Two 8' paths	Two 8' paths	Two 5' Sidewalks	--

SECONDARY ARTERIAL							
	2007 Hamilton Co.	**Carmel**	**Fishers**	**Noblesville**	**Westfield**	**Marion Co.**	**Boone Co.**
Right-of-way	110' * †	100'	90'	100'	120'	80'-140'	110'-130'
Number of Lanes	2 or 4	4	4	4	4	2 or 4	2 or 4
Median	Optional (0' - 16')	Optional (16')	None	None	Yes (16')	Optional (16')	Yes (16')
On-street Parking	Not Permitted **	Not Permitted	--	--	--	--	--
Curb / Shoulders	2' Curbs / 8' Paved Shoulders	2' Curbs	2' Curbs	2' Curbs	2.5' curbs	2' Curbs	2' Curbs
Clear Zone	10' Curbed / 25' Uncurbed	8'	5'	6'-8'	8'	5'	--
Paths / Sidewalks	Two 10' paths and/or 5' sidewalks	Two 10' paths	Two 8' paths and/or 6' sidewalks	Two 8' paths and/or 5' sidewalks	Two 8' paths	Two 5' Sidewalks	Two 4' Sidewalks

COLLECTOR							
	2007 Hamilton Co.	**Carmel**	**Fishers**	**Noblesville**	**Westfield**	**Marion Co.**	**Boone Co.**
Right-of-way	100' *	80'-100'	90'	80'	100'	70'	60'-100'
Number of Lanes	2	2	2	2	2	2	2
Median	Optional (0' - 16')	None	None	Yes (12')	Yes (16')	--	None
On-street Parking	Permitted (0, 1, or 2 sides)	Permitted (0, 1, or 2 sides)	--	--	--	--	--
Curb / Shoulders	2' Curbs / 3' Stone Shoulders	2' Curbs	2' Curbs	2' Curbs	2.5' curbs	2' Curbs	2' Curbs / Paved Shoulder
Clear Zone	10' Curbed / 23' Uncurbed	6'	5'	6'	10'	5'	--
Paths / Sidewalks	Two 10' paths and/or 5' sidewalks	Two 10' paths	Two 8' paths	Two 5' Sidewalks	Two 8' paths	Two 5' Sidewalks	Two 4' Sidewalks

Notes:

* Add 10' width to the right side of the roadway at intersections (500' in length from the intersection)
** Parking may be permitted on a case-by-case basis, particularly in an urban context
† May be reduced in an urban context

Figure 8: Table comparing the cross-sectional design elements of jurisdictions within and adjacent to Hamilton County.

safety, the availability of on-street parking, and the extent of paths and/or sidewalks for each classification are also described in these figures. In addition, attention should be given to projects in urban areas, as right-of-way requirements and on-street parking availability may be modified to better reflect the context of the area.

Overall, the cross sections were designed to allow for flexibility in the project design stage to shape the roadway to fit the area's context rather than dictate a specific look for every roadway throughout the Hamilton County.

THOROUGHFARE PLAN MAPS

Three maps in Appendix B (Map B1, B2, B3) depict the Thoroughfare Plan in various stages for clarity. Map B1 shows only Primary Arterials, Map B2 shows Primary and Secondary Arterials, and Map B3 shows the composite roadway network. In addition, the maps delineate the corporate limits of the cities and towns within the County, as well as other potential context sensitive areas. Map B3 outlines needed studies to determine proposed roadway corridor alignments and environmental impacts.

Classification designations were assigned based on the previous thoroughfare plan, traffic volumes and projections, future land use, planned improvements, adjacent jurisdiction classifications, appropriate distances between classifications, and input from the Steering Committee.

To determine the Primary Arterials, several key roadways were first identified. Those roadways which fit the definition of a Primary Arterial, roadways which serve traffic traveling into and out of the County, were chosen first. Roadways which cross major bodies of water were also chosen as Primary Arterials, due to the draw of vehicle trips to the roadway over other adjacent roadways. The remainder of the Primary Arterials were chosen based on either the local jurisdiction's classification in their own thoroughfare plan, or for spacing reasons to create a grid framework of Primary Arterials over the County as a whole.

Secondary Arterials were determined based on several factors. These roadways fit the definition of Secondary Arterials by connecting a large portion of the County, but do not necessarily function as a regional route. Additionally, these routes serve as alternatives to heavily congested Primary Arterials and are often within one to two miles of a Primary Arterial. The spacing of Secondary Arterials, in the same way as Primary Arterials, was utilized to ensure the County is covered in a grid-like roadway network.

The remainder of the public through roadways in the County were classified as collector roads. These roadways funnel traffic from local roads and neighborhoods to the Arterials, and generally fill the gaps between Primary and Secondary Arterials in the County-wide grid.

Focus Areas

Focus Areas

Focus Areas are transportation routes or physical locations along transportation routes that require particular evaluation and attention when transportation improvements are being made. Each focus area listed below details a physical boundary, description, identified goals, and potential ways to address the goal for each focus area. The Focus Area Maps are available in Appendix A (Map A12 through A21).

Capacity Focus Area

Location:

Level of Service D, E, or F at various intersections indicating poor levels of service (Map A12).

Description:

Theoretical capacity analysis for each intersection along Primary Arterials and other roadways with a 2006 ADT higher than 10,000 vehicles per day. Capacity issues at these intersections create congestion, delaying the travel of commuters, goods, and services in the area. In addition, traffic congestion on Primary Arterials contributes to traffic patterns shifting to Secondary Arterials and Collectors.

Goal:

To lower the congestion levels, improving safety and level of service, especially on Primary Arterials.

Potential Ways to Address Goal:

- Construct Signals or Roundabouts as warranted.
- Construct turn lanes as appropriate.
- Widen roadways as appropriate.
- Limit access to local roadways.

Context Sensitive Focus Area

Location:

Mixed-use and higher-density centers throughout Hamilton County (Map A13).

Description:

Destinations and locations with a mix of uses at a higher density where character should be retained.

Goal:

Promote improvements that are sensitive to the current development patterns emphasizing a balance of pedestrian activity and vehicular mobility.

Potential Ways to Address Goal:

- Create networks of safe pedestrian linkages with clear and safe pedestrian and bicycle access.
- Promote transit oriented development and a mix of uses.
- Allow for flexibility, allowing future changes and development to incorporate the existing pattern of streets, lots, and sidewalks.
- Design flexibility for typical cross sections.
- Strengthen pedestrian connectivity by the construction and upkeep of sidewalks, paths, and safe street crossings.

ENVIRONMENTALLY SENSITIVE FOCUS AREA

Location:

Areas in Hamilton County containing steep slopes, wetlands, or floodplains (Map A14).

Description:

Land in Hamilton County that would have development constraints because of natural features.

Goal:

Minimize projects from impacting environmentally sensitive areas.

Potential Ways to Address Goal:

- Select connections and alignments which avoid environmentally sensitive areas.
- Encourage projects which emphasize environmental design.

FIXED ROUTE TRANSIT (BUS) FOCUS AREA

Location:

½ mi buffer along future fixed-route alignments (bus) throughout the Carmel, Fishers, and Noblesville areas, near the 116th Street transit centers (near Keystone Ave and I-69) and supporting park and ride areas (Map A15).

Description:

The Indianapolis MPO and IndyGo have identified alignments for a fixed route (bus) transit system designed to assist the region with the development of improved transit service. In addition, transit centers and park and rides areas have been identified to serve southern Hamilton County. These areas should promote transit oriented development.

Goal:

Create an environment which promotes transit travel by connecting pedestrians with transit thus reducing vehicular trips and improving travel times and conditions both within Hamilton County and to neighboring county destinations.

Potential Ways to Address Goal:

- Include transit to selected cross sections (bus pull offs, transit stations, parking, pedestrian facilities, transit oriented development).
- Incorporate signage.
- Incorporate safer pedestrian access.
- Monitor the Rapid Transit Study and IndyGo ensuring land uses surrounding mass transit is transit oriented.
- Preserve and maintain the corridors, identifying locations and right-of-way for bus stops and stations.
- Encourage transit oriented development.

Pedestrian Focus Area

Location:

1/10 mile buffer surrounding routes identified in the MPO Pedestrian Plan and Hamilton County Alternative Transportation Routes (Map A16).

Description:

Future multi-use trails are identified in the Alternative Transportation Plan and the Pedestrian Plan throughout Hamilton County. These trails intersect various thoroughfares or are placed within thoroughfare right-of-way throughout the County. Safety issues potentially arise whenever pedestrians and vehicles have the opportunity to interact.

Goal:

Enhance safety of pedestrians and alert drivers of potential pedestrian interactions.

Potential Ways to Address Goal:

- Promote traffic calming measures.
- Incorporate signage.
- Reduce speed limits.
- Incorporate lighting.
- Introduce grade separated structures.

Rapid Transit Study Focus Area

Location:

½ mi buffer along potential Northeast corridor fixed guideway alignments (Map A17).

Description:

The MPO has four potential corridors within Hamilton County to incorporate rapid transit technology. These corridors will be evaluated and one preferred alternative will move forward.

Goal:

Create an environment which promotes transit travel by connecting pedestrians with transit thus improving travel times and conditions both within Hamilton County and to neighboring county destinations.

Potential Ways to Address Goal:

- Include transit to selected cross sections (bus pull offs, transit stations, parking, pedestrian facilities, transit oriented development).
- Incorporate signage.
- Incorporate safer pedestrian access.
- Monitor the Rapid Transit Study ensuring land uses surrounding mass transit are transit oriented.
- Preserve and maintain the corridors, preserving locations and right-of-way for stations.
- Encourage transit oriented development.

SAFETY FOCUS AREA

Location:

Intersections in Hamilton County that have significant crash rates of greater than 2 crashes per million entering vehicles (Map A18).

Description:

Based on INDOT crash records from January 2003 through December 2005, locations with a significant crash rate in accidents per million entering vehicles.

Goal:

Create an awareness of crash incidents to incorporate safety measures.

Potential Ways to Address Goal:

- Ensure safety features are incorporated when improvements are made at these locations.
- Introduce appropriate safety measures to lower crash rates.

SCHOOL ZONE FOCUS AREA

Location:

¼ mile buffer for a 5-minute walkable catchment area around Hamilton County schools (Map A19).

Description:

Increased pedestrian activity is desirable for many areas within Hamilton County. In many school districts, children walk to schools. Providing for pedestrian facilities and improving driver awareness of school zones is desired.

Goal:

Create a safe environment to promote walkable school zones.

Potential Ways to Address Goal:

- Promote traffic calming measures.
- Modify cross sections through school zones.
- Incorporate signage.
- Incorporate lighting.
- Install signals as warranted at school locations.
- Explore INDOT's new safe routes to school program for potential funding opportunities.

SR 37 FOCUS AREA

Location:

SR 37 from Noblesville to Marion, IN (Map A20).

Description:

½ mile buffer along this rapidly growing and frequently traveled thoroughfare in Northeastern Hamilton County. Previous studies, including the Northeast Connections study and Rapid Transit Study, have shown that growth in the area has created low levels of service along some sections of SR 37. These low levels of service, as well as other current deficiencies, warrant increased attention to this area. INDOT recently completed a SR 37 Feasibility Study to improve mobility in this corridor from Noblesville to Marion.

Goal:

Improve service, safety, and mobility along SR 37.

Potential Ways to Address Goal:

- Increase capacity to lower level of service to acceptable levels.
- Reduce crash frequency by improving sight distances.
- Preserve this corridor, limiting improvements within the selected alignments.
- Continue the SR 37 Feasibility Study into the NEPA/EIS phase.

US 31 FOCUS AREA

Location:

US 31 (Map A21).

Description:

¼ mile buffer along this heavily traveled corridor, the location of INDOT's US 31 Improvement Project. Near capacity traffic volumes along US 31, combined with the intense land use along this corridor, creates significant congestion and safety issues. The section of US 31 south of SR 38 is currently undergoing design for improvements including better access management, interchanges and grade separated structures, and congestion reduction.

Goal:

To lower the congestion levels, improving safety and level of service.

Potential Ways to Address Goal:

- Limiting access.
- Widening the roadway.
- Improve intersections and/or install interchanges with major roadways.
- Interconnect adjacent land uses.