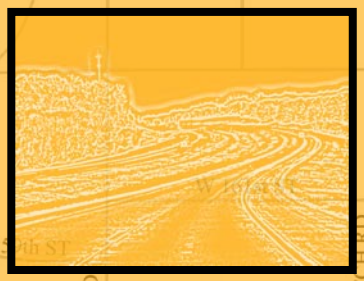
WESTFIELD THOROUGHFARE PLAN

December 2006



Adopted through Town of Westfield Resolution 07-05 by the Westfield Town Council at a meeting held on April 9, 2007

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Steering Committee
Ann Cavaluzzi
Renee Goff
Jack Hart
Tom Higgins
Jennifer Miller
Joe Plankis
Jerry Rosenberger
Al Salzman
Kurt Wanninger

MPO Project Manager
Kevin Mayfield

Consultant
HNTB Corporation
111 Monument Circle, Suite 1200
Indianapolis, IN 46204
www.hntb.com

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Chapter 1

Introduction

A transportation, or thoroughfare plan, identifies a hierarchy of streets and highways to serve the long term needs of the community so that these needs can be most effectively met with minimal cost and disruption to the area being served. The transportation plan identifies a functional classification system of roadways needed to serve anticipated future conditions. The functional classifications are tied to standards that assist the town in providing appropriate infrastructure as development occurs.

An update of the Westfield Transportation Plan is timely in order to accommodate the pending US 31 upgrade and respond to growth in the township. Adopting an updated transportation plan will:

- Promote good public and private decision-making
- Establish development requirements related to transportation
- Meet requirements for federal funding of projects through the Metropolitan Planning Organization (MPO)

This transportation plan update activity is supported by federal transportation funds made available by the Indianapolis Metropolitan Planning Organization (MPO) for planning studies of regional significance by local government agencies.

Planning Purpose

An updated Westfield Transportation Plan will accomplish a number of functions for the community, including the following:

- Establish right-of-way requirements for new development (in combination with zoning and subdivision standards)
- Identify appropriate standards for the use of developers and design engineers
- Inform citizens, elected officials, adjacent communities, INDOT and the Indianapolis MPO of the community's long range plans
- Guide decision-making by the Advisory Plan Commission and the Council
- Officially recognize individual roadway functions within the total network for the purpose of leveraging state and federal transportation funds

Planning Process

The Westfield Transportation Plan process involved four elements: an agency and public input process, an evaluation of past trends and future forecasts, a determination of future needs, and development of the recommended transportation plan.

The agency and public input process included working with a Technical Steering Committee and hosting public presentations of the plan. The Steering Committee included staff of the Westfield Departments of Community Services and Public Works, the town engineer, a public

schools representative, and a citizen member of the Comprehensive Plan Update Steering Committee. A public information meeting was held on November 9, 2006, and a public hearing was held at the November 27 meeting of the Westfield Area Plan Commission.

The trends and forecasts stage involved a range of technical data gathering and analysis activities, such as land use inventories, traffic counting, accident reviews, and review of future conditions.

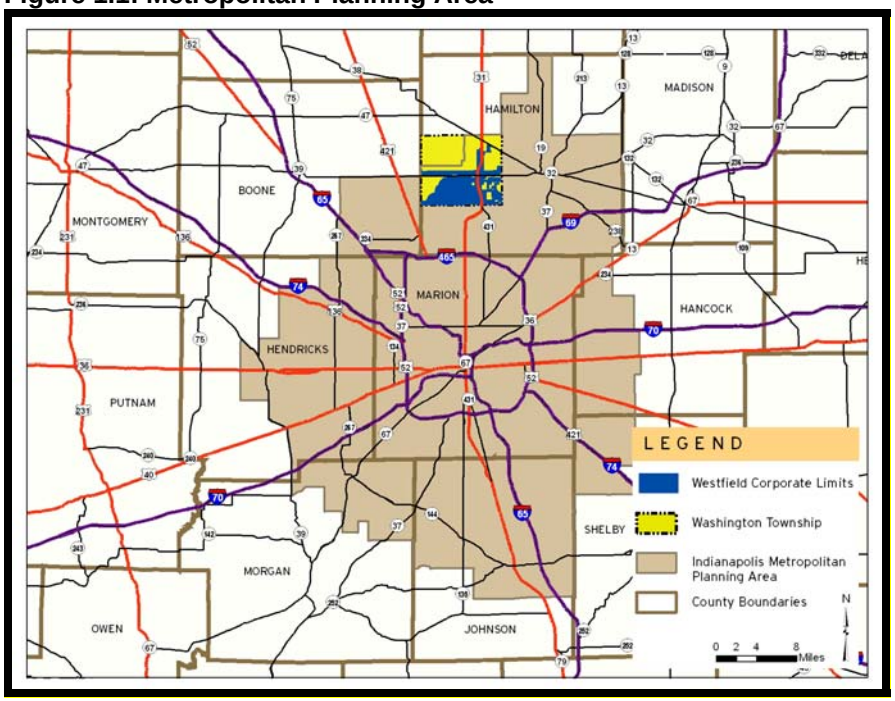
The future needs and recommendations stage in the process identified needs based on existing conditions, future development, Hamilton County and INDOT plans, and regional traffic forecasts from the regional transportation planning process. Needs for the local roadway network, pedestrian and bicycle systems, and regional transit were also considered.

The recommended thoroughfare plan stage involved the identification of a recommended functional classification system, associated right-of-way standards, future pedestrian corridors, and preferred interchange and preferred crossover locations for US 31.

Planning Area

In order to include areas that may be a part of Westfield during the planning period, the planning area includes the incorporated area of Westfield and surrounding areas of Washington Township. Figure 1.1 shows the location of Washington Township and Westfield within the urbanized area of the Indianapolis Region. As shown on the figure, Westfield lies at the northern edge of the Metropolitan Planning Area (MPA). Transportation planning for this area is the responsibility of the Indianapolis Metropolitan Planning Organization (MPO).

Figure 1.1: Metropolitan Planning Area



Related Plans

Continuity with other jurisdictions is important for any transportation plan since movement in modern society is fluid, and the system does not end at the corporate limits of the community. Transportation plans define the role of the local roadways within the regional system. Transportation systems also need to be considered in the context of land use, both existing and future, making coordination with the Comprehensive Plan an important element of a successful Transportation Plan.

Other plans that need to be considered in the Westfield Transportation Plan are the Indianapolis Regional Transportation Plan, the Hamilton County Transportation Plan, the Carmel Transportation Plan, INDOT plans for US 31, and the Westfield Comprehensive Plan. In addition, it is important to consider the Regional Pedestrian Plan and current transit planning studies of the Indianapolis MPO.

Indianapolis Regional Transportation Plan

The Regional Transportation Plan is maintained by the Indianapolis Metropolitan Planning Organization as a long-range (25 year) plan for transportation improvements in the Indianapolis Metropolitan Planning Area. This area includes Marion County and portions of eight other Central Indiana counties. The most recently adopted update of this plan is dated April 2005 and has a planning horizon of 2030. A major review and update of the Regional Transportation Plan is currently underway and will extend the planning horizon to 2035.

The Regional Transportation Plan identifies several transportation improvements for construction by 2030 that will have an impact on Westfield. These are shown in Table 1.1.

Table 1.1: Regional Transportation Plan Improvements

Agency	Funding Period	Facility	Location	Description	Cost ($)
INDOT	2006-2010	SR 32	Spring Mill to US 31	W 2-ln to 4-ln	5,100,000
INDOT	2011-2020	SR 32	US 31 to Moontown	W 2-ln to 4-ln	6,546,000
INDOT	2011-2020	SR 32	Moontown to River Ave.	W 2-ln to 5-ln	7,338,000
INDOT	2011-2020	US 31	96th to 216th	Upgrade to Fwy	483,000,000
Carmel	2006-2010	Illinois St.	103rd to 136th	New 4-ln	15,900,000
Carmel	2006-2010	Range Line Rd.	136th to US 31	W 2-ln to 4-ln	3,750,000
Carmel	2021-2030	Towne Rd.	141st to 146th	W 2-ln to 4-ln	1,784,728
Carmel	2021-2030	Spring Mill Rd.	131st to 146th	W 2-ln to 4-ln	3,279,635
Hamilton Co.	2011-2020	146th St.	Boone Co. Line to Spring Mill	W 2-ln to 4-ln	-
Hamilton Co.	2021-2030	Towne Rd.	96th to 141st	W 2-ln to 4-ln	9,369,823

Source: Draft Amendments to Indianapolis 2030 RTP, Indianapolis MPO, 2/15/06

Hamilton County Transportation Plan

An update of the Hamilton County Transportation Plan was underway as this plan was being prepared. Draft plans have been shared and common elements have been reviewed and, in most cases, coordinated to provide a consistent regional plan. Priorities in the formulation of the Preliminary Thoroughfare Plan for Hamilton County are integration of the road network with the proposed land use plan and creation of a "grid pattern" to provide for system continuity throughout the county.

Carmel Thoroughfare Plan

The City of Carmel and Clay Township Thoroughfare Plan was last updated in July 2005. The plan shows the proposed functional classification and recommended geometric design standards for all roads in Clay Township. The primary north-south arterials and parkways proposed in the plan are Towne Road, US 31, Keystone Avenue, and Hazel Dell Parkway. 146th Street is also designated as a primary arterial.

An Alternative Transportation Plan for Carmel and Clay Township is also included as part of the Thoroughfare Plan. This map was last updated in

August 2003 and shows pedestrian and bicycle accommodations for all thoroughfares in Clay Township. With the exception of US 31, each of the roads mentioned above is proposed to include a 10-foot wide parallel multi-use path within the roadway right-of-way.

INDOT US 31 Plan

US 31, Meridian Street, is the main north-south highway serving Hamilton County, the City of Carmel and the Town of Westfield. Traffic congestion already is a problem in the US 31 corridor. With projected growth, traffic conditions will worsen unless steps are taken to improve transportation in the area.

The existing roadway is a four-lane (six lanes from I-465 to 106th Street) limited-access divided roadway. There are currently 22 intersections along US 31 between I-465 and SR 38, 15 of which are signalized. Access is generally limited to major intersections, spaced one-half to one mile apart. Right and left turn lanes exist at all major intersections.

A Major Investment Study (MIS) completed in 1997 identified the need for improvement and found that significant benefits would come from improving highways in the corridor. The study recommended upgrading US 31 to interstate highway standards from I-465 north to 196th Street.

The project is now in the Draft Environmental Impact Statement (DEIS) phase, soliciting public input. The Final Environmental Impact Statement will recommend a specific route for improvements. If the Federal Highway Administration (FHWA) and INDOT select one of the "build" alternatives, the next steps will be final design, right-of-way acquisition and construction.

Westfield Comprehensive Plan

The update of the Westfield Comprehensive Plan began in 2005 and continued as a parallel activity as this transportation plan was being prepared. The preliminary land use plan provides an important base condition for the transportation planning process. In addition, the Comprehensive Plan process provides insights about managing growth, maintaining local identity and setting priorities for future transportation.

Concerns regarding growth management include desires to:

- Preserve rural/agricultural character;
- Preserve environmental features; and
- Plan and direct growth

In terms of community identity, the Comprehensive Planning process indicates that the citizens of Westfield wish to advance policies that:

- Retain small town atmosphere;
- Foster historic preservation; and

- Maintain and improve the “old downtown” area of Westfield.

Two important transportation priorities identified in the planning process relate to improved mobility for vehicles and pedestrians. The first is to improve east/west traffic flow. As employment and retail centers have become more dispersed throughout the region, it has increased the travel on east-west routes. This is most evident on SR 32, where travel has increased by nearly 50% in the last ten years. Improved east-west thoroughfares are needed to serve this increased cross-county demand and to link major north-south thoroughfares to allow them to operate most effectively within an overall system.

A second transportation priority identified in the planning process is to encourage the development of trails as a part of a program to provide additional public open spaces and parks. The need for more recreation facilities (parks and trails) was the most frequently mentioned item at public input sessions. The success of the Monon Trail in Indianapolis and Carmel presents an opportunity for Washington Township to continue this trail system northward. Likewise, implementation of the Midland Trace trail will provide a major east-west link for Westfield. The comprehensive planning process indicated that there continues to be a strong community commitment to trail development within these rail corridors.

Indianapolis Regional Pedestrian Plan

The Indianapolis Metropolitan Planning Organization (IMPO) has recently completed a regional pedestrian plan for the Indianapolis Metropolitan Planning Area. The plan identifies recommended facilities for pedestrians, bicycles and other non-motorized travelers within the planning area. This includes facilities in Westfield. The plan also includes recommended design guidelines for these facilities plus a number of exclusive bicycle/pedestrian trails for Westfield that follow existing roads or scenic natural corridors. In addition, the plan recommends the designation of “pedestrian districts” and “pedestrian corridors” in Westfield to promote better pedestrian accessibility.

Indiana Trials, Greenways and Bikeways Plan

This plan provides an inventory of existing recreational trails throughout the state and identifies a planned network of interconnected trails. The plan also discusses issues and strategies related to developing the planned trail network. The Monon Trail is included in the Indiana Trials, Greenways and Bikeways Plan.

Hamilton County Alternative Transportation Plan

The Hamilton County Alternative Transportation Plan, adopted in 1995, identifies routes planned as: separated paths; shared roadway paths; separated, parallel multi-use paths; or the White River corridor.

The portion of the plan in the Westfield area identifies separated paths along Tomlinson Road and south of State Road 32. It also identifies a shared roadway path along both 161st Street and Westfield Boulevard. Finally, it shows a separated, parallel multi-use path along 146th Street.

Oak Ridge and Carey/Grassy Branch Corridor Plans

As this plan was being prepared, a concurrent study was underway to provide prototypical design standards for access control, aesthetic elements and roadside features within major corridors of Westfield. Oak Ridge Road and Carey/Grassy Branch Road corridors were used as prototypes for planning. Common elements of the studies were coordinated during preparation of the Transportation Plan.

Comprehensive Operational Analysis of IndyGo

A Comprehensive Operational Analysis (COA) of the IndyGo Transit System was conducted in 2005 for the Indianapolis Metropolitan Planning Organization as part of the “DiRecTionS” Regional Rapid Transit Study. This effort evaluated the existing service provided by IndyGo for the Indianapolis region and recommended operational improvements to serve future demand. The Village Park Plaza area was identified as a park and ride lot for a new northern express route included in the plan. Funding support for the route has not yet been identified.

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Chapter 2

Planning Context

Transportation planning is local but it must be conducted within a regional context. This is particularly true for growing communities like Westfield where adjacent communities are also experiencing high growth. Internal mobility and good regional connections are critical elements of any effective plan. They need to be understood within a larger context including demographic trends, land use patterns, existing roadways, bicycle and pedestrian systems, and transit opportunities.

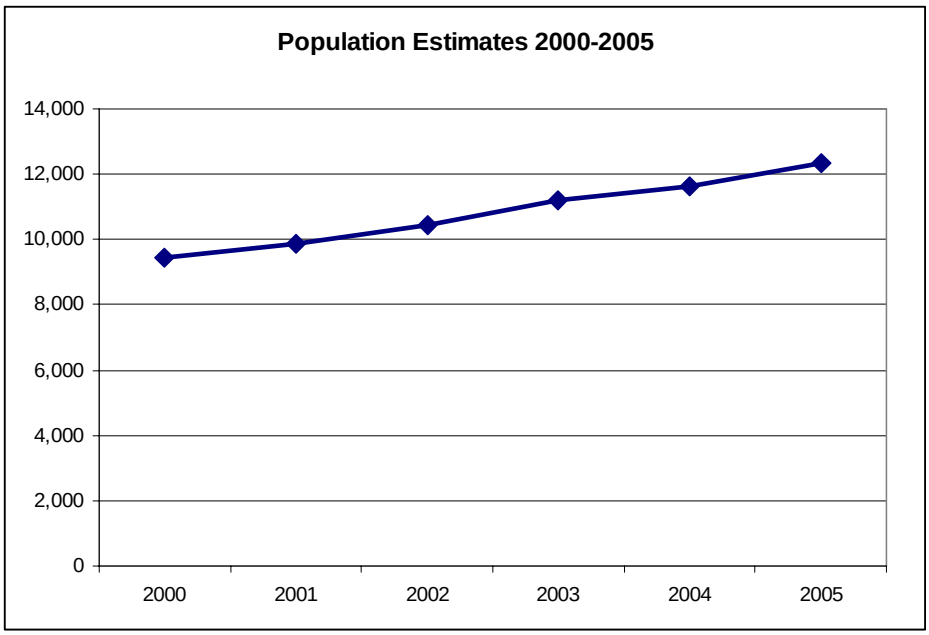
Demographic Trends

Westfield is a fast-growing community in Hamilton County, the fastest growing county in the State of Indiana. Hamilton County communities are primarily suburbs of Indianapolis, though many of the communities, including Westfield, have their own commercial and office bases.

To better accommodate this growth, Westfield is in the process of changing from the town form of government to the city form of government.

As shown in Figure 2.1, the population of Westfield grew from 9,293 in 2000 to 12,322 in 2005, a change of nearly 32 percent. A special Census that includes the newly annexed areas places the current population much higher, at 24,075.

Figure 2.1: Population Estimates 2000-2005



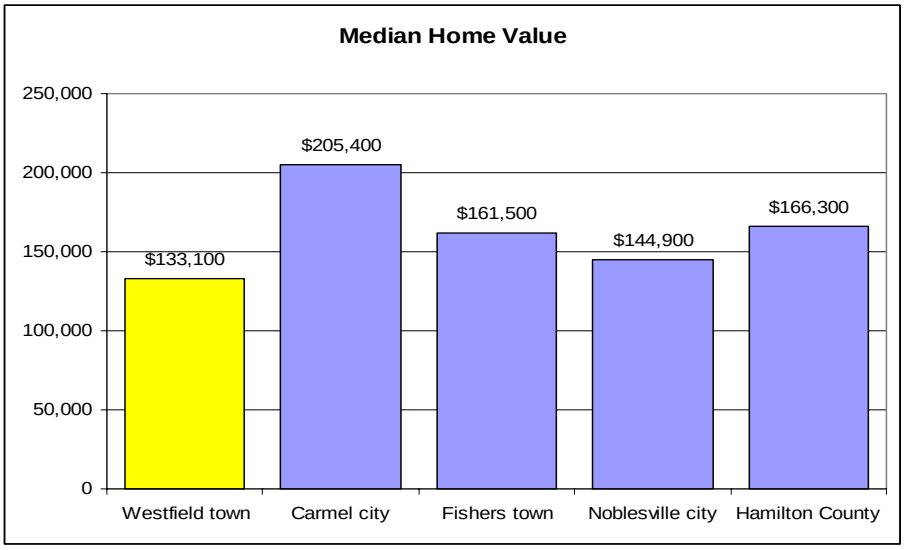
The median household income in Westfield in 2000 was $52,963. This is higher than the statewide median, but lower than the median income in some other Hamilton County communities. It should be noted that Hamilton County has the highest median household income of all Indiana counties.

In 2000, Westfield had 3,606 housing units. The estimated number of households based on the Special Census is 8,043.

The median home value in Westfield was also higher than the statewide average, but lower than other communities in Hamilton County according to

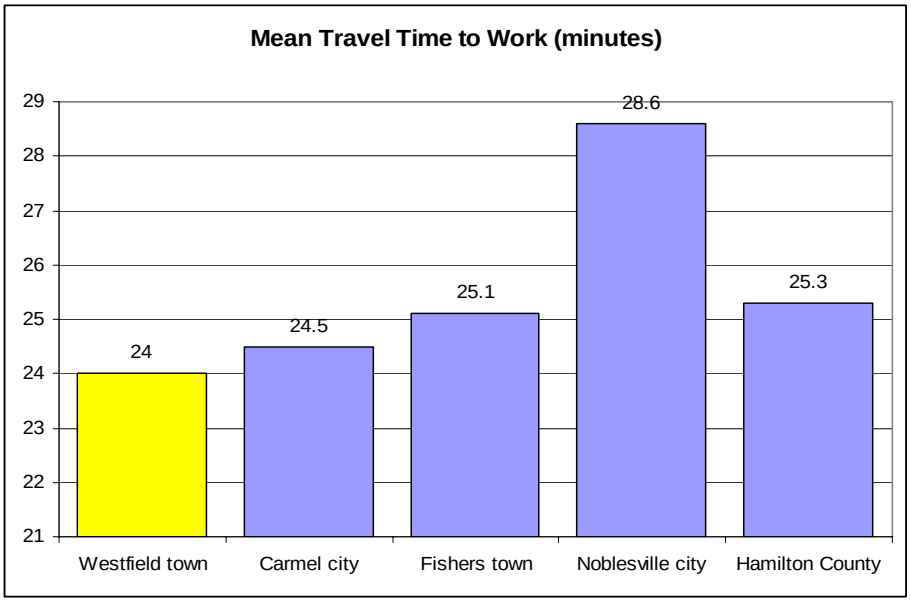
the 2000 Census of Population and Housing. As shown in Figure 2.2, the median home value in Westfield was reported as $133,100, compared to $166,300 countywide.

Figure 2.2: Median Home Value



Westfield had the shortest average commuting time among Hamilton County communities in 2000. The median travel time to work for Westfield residents was 24 minutes, compared to more than 25 minutes countywide and more than 28 minutes in Noblesville.

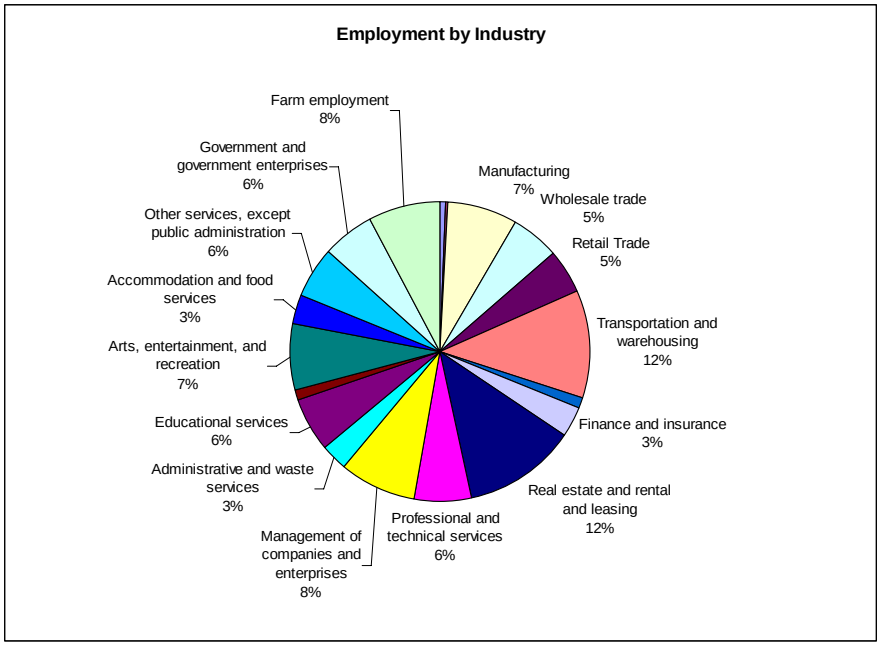
Figure 2.3: Mean Travel Time to Work



Employment is measured on an annual basis by the Bureau of Economic Analysis at the county level. The employment measure is based on the employment in Hamilton County, rather than the sectors of those businesses that may employ Hamilton County residents. As shown in Figure 2.4, employment is well diversified in Hamilton County. The largest employment sectors are Real

Estate Rental; and Leasing and Transportation and Warehousing. The total employment in Hamilton County in 2004 was 137,839, an increase of 12 percent over 2001.

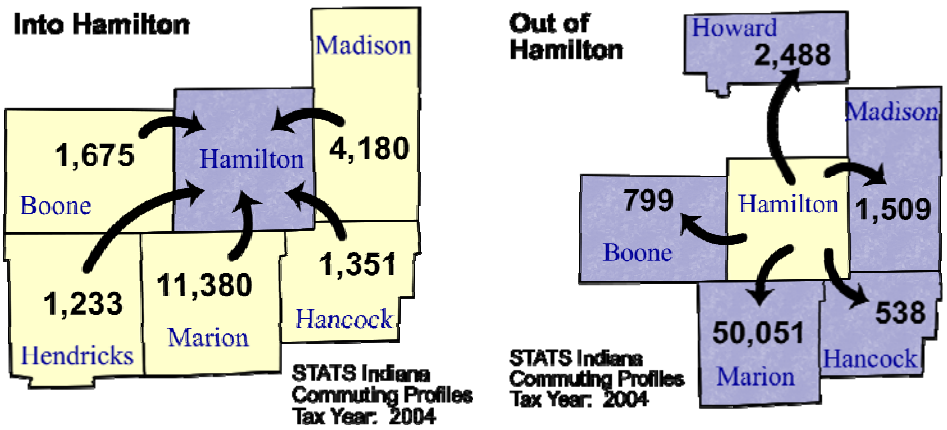
Figure 2.4: Hamilton County Employment by Industry



Unemployment is generally low in Hamilton County. Nevertheless, the average annual unemployment rate in 2005 was 3.1 percent, among the highest it has been in the county in 15 years.

As shown in Figure 2.5, nearly 34,000 more people leave the county for work than come into the county to work from other places. More than 50,000 Hamilton County residents work in Marion County.

Figure 2.5: Hamilton County Commuting Patterns



Land Use

Land use needs to be considered on two levels. The first is the existing pattern of land uses in the community, what is actually on the ground at this point in time. The second is the planned future land use. This is the direction that the community is headed. Future land use is a major determinant of future transportation system needs.

Existing Land Use

Most of the developed land uses in Washington Township, where Westfield is located, are in the southeast portion of the township, in and around Westfield (See Figure 2.6). There has been some scattered development along the US 31 corridor and along the western edge of the township. These areas are likely to fill in during the planning period.

More than 60 percent of the township is currently in agricultural use. Residential uses (residential, residential attached, and non-urban residential) are the next largest land use, occupying more than 17 percent of the township. Industrial and commercial uses combined account for fewer than five percent of land uses in the township.

The location of commercial land use is significant for transportation planning because these uses are destinations for large numbers of trips. Typically, the origins of these trips are residential areas that are much more dispersed within the region.

Existing commercial areas of Westfield are concentrated downtown and along the state highways US 31 and SR 32. The largest traffic generator is the Village Park Plaza area, located along US 31 north of 146th Street. Other commercial areas are located along SR 32, particularly east of US 31.

The area of Westfield that is most developed with the highest residential density is located along US 31, particularly to the east. This is a consideration in identifying the appropriate spacing for arterial routes included in the Transportation Plan.

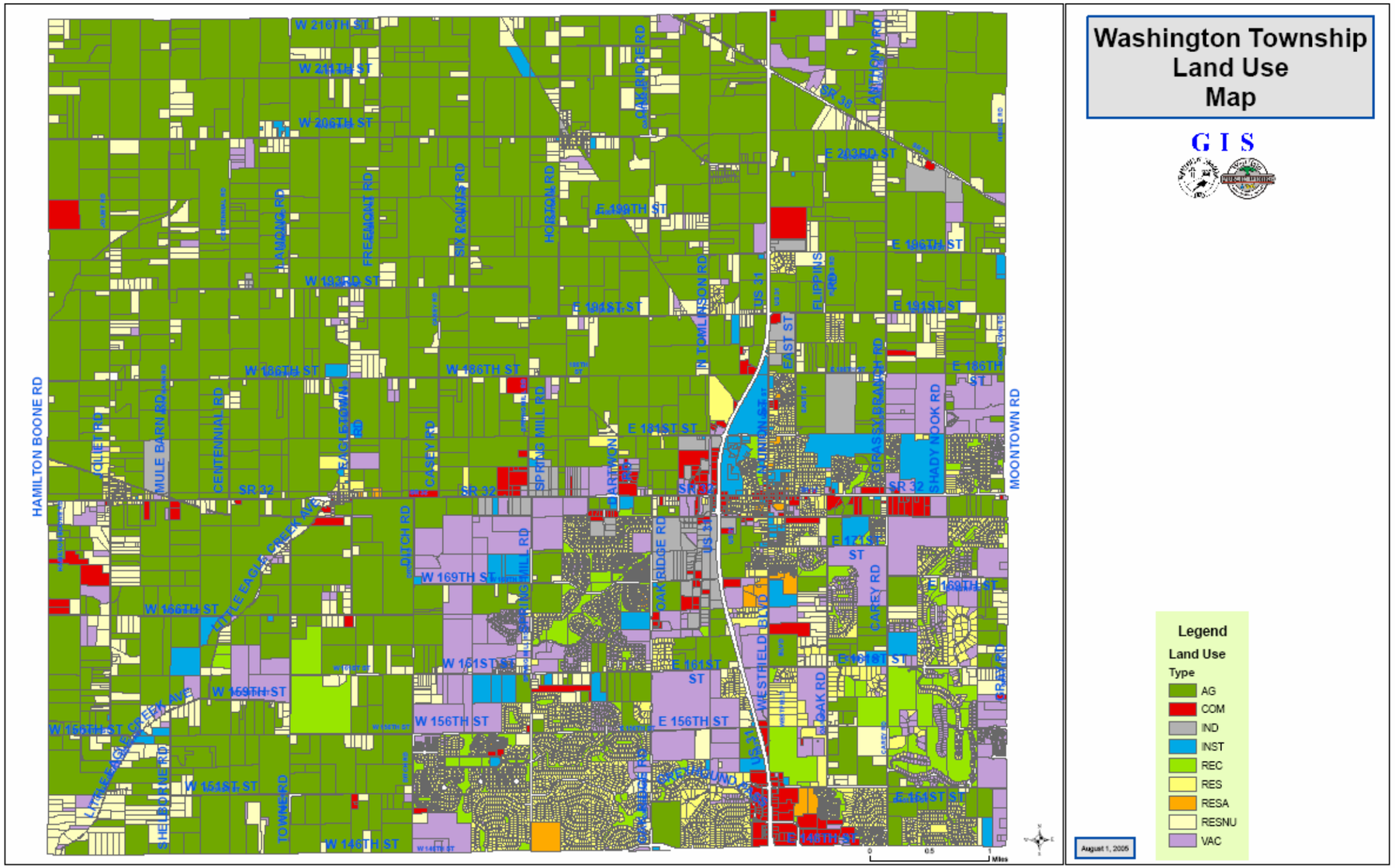
Future Land Use

The preliminary Land Use Concept Plan, or Future Land Use map, for Westfield and Washington Township is shown in Figure 2.7. This map shows the anticipated land use pattern for the community as it continues to grow. The concept plan focuses primarily on business, commercial, and residential development.

The concept map shows a continuation of employment center (commercial) development along US 31 and SR 32 west of US 31. Local commercial development is shown east of the downtown on SR 32. Business parks are shown northwest of the US 31/SR 32 intersection, along SR 32 at Hamilton Boone Road, and east of US 31 south of SR 38.

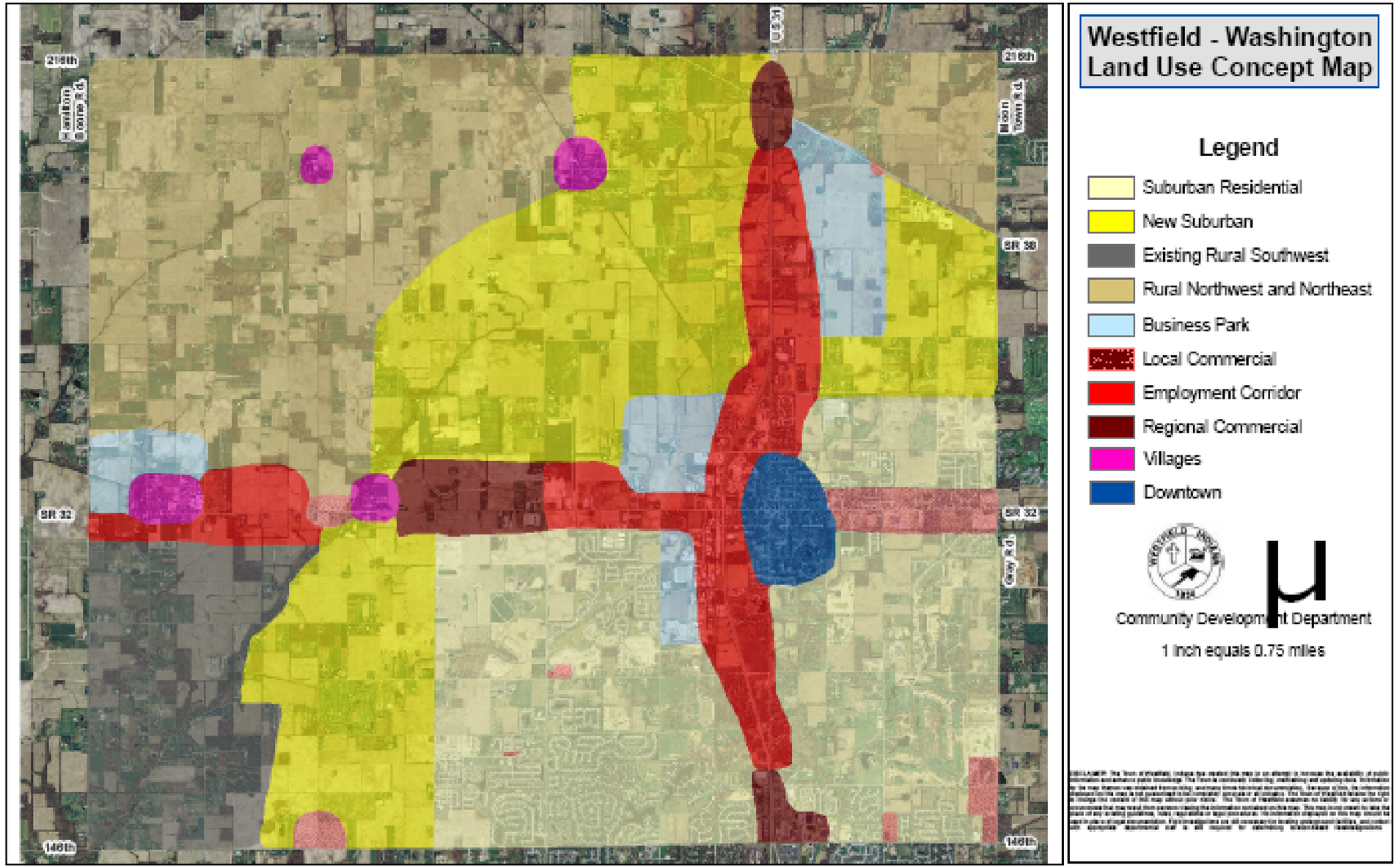
Suburban residential development and four villages make the rest of the urbanized land uses on the concept plan map. Generally, these commercial uses are intended to serve the residential areas that surround them. Although local traffic may converge there, these centers are not expected to influence

Figure 2.6: Existing Land Use



CLAIMER: The Town of Westfield, Indiana has created this map in an attempt to increase the availability of public information and enhance public knowledge. The Town is continually collecting, maintaining and updating data. Information for the map themes was obtained from existing, and many times historical documentation. Because of this, the information displayed on this map is not guaranteed to be completely accurate or all inclusive. The Town of Westfield retains the right to change the content of this map without prior notice. The Town of Westfield assumes no liability for any actions or occurrences that may result from persons viewing the information contained on this map. This map is not meant to take the place of any existing guidelines, rules, regulations or legal procedures. No information displayed on this map should be used in place of legal documentation. Field investigations are still necessary for locating underground facilities, and contact with appropriate departmental staff is still required for determining location-based fees/designations.

Figure 2.7: Future Land Use/Land Use Concept Plan



regional trips in the manner of the designated employment centers or the downtown area. Other areas are shown to continue as rural areas in the foreseeable future.

Existing Roadway System

The base condition for transportation planning is the roadway network that exists today. An effective plan will address current network deficiencies as it responds to future demand. This requires an understanding of the existing pattern of roadways and how they interact, as well as existing demand, locations where congestion is occurring, service levels, high hazard locations, and traffic controls currently in use or likely to be in use during the planning period.

Existing Street and Highway Network

As shown in Figure 2.8, three state highways and a major county arterial form the spine of the existing roadway network of Westfield. US 31 is the most heavily traveled highway in the study area, consisting of a four-lane divided roadway that links Indianapolis with Kokomo, Peru, Plymouth, South Bend, and destinations in Michigan.

East-west traffic movements through the township are served by SR 32 and 146th Street. SR 32 is a significant east-west roadway linking Westfield with Lebanon to the west and Noblesville to the east. It is a two-lane roadway over much of its length, although auxiliary lanes exist over much of the distance east of Westfield. 146th Street was developed by Hamilton County as a four-lane divided arterial to serve cross-county movements between US 31 and I-69. SR 38 links the Town of Sheridan with Noblesville and crosses the northeast corner of Washington Township.

Roadways serving north-south movements include Towne Road, Spring Mill Road, Oak Ridge Road, Union Street, Carey Road and Gray Road. This system of parallel north-south roadway provides a range of options for travelers south of SR 32, but several have jogs at SR 32 where much of the continuity of the system breaks down. Providing continuous routes to the northern parts of Washington Township is a goal of the Hamilton County Transportation Plan as well as the Westfield Transportation Plan.

East-west movements are not as well served by local routes. SR 32 and 146th Street are currently the only continuous routes across Washington Township. 161st Street crosses the eastern two-thirds of the township and extends to a point west of White River near Noblesville. Other routes, although shorter, provide access to the local roadway network from US 31 and serve as important links between the major north–south routes in the area. These include 151st Street, 156th Street, 161st Street, 166th Street, 169th Street, 181st Street, 191st Street, 196th Street, and 203rd Street. The reliance of Westfield on this dispersed pattern of east-west streets makes the placement of future overpasses and interchanges on US 31 an issue of particular local significance.

Current Traffic Operations

Estimates of existing average daily traffic volumes in the planning area are represented graphically in Figure 2.9. This information came from a number of different sources, including INDOT traffic counts, Hamilton County estimates, and the traffic count database maintained by Westfield.

As would be expected, the most heavily traveled roadway in the study area is US 31, which carries more than 40,000 vehicles per day through Westfield. This is followed by 146th Street and SR 32, with 46,000 and 18,000 vehicles per day, respectively. Following is a listing of the top ten most highly traveled roadways in Westfield:

US 31	46,000 vehicles per day
146th Street	30,600 vehicles per day
SR 32	18,000 vehicles per day
151st Street	10,300 vehicles per day
Carey Road	8,300 vehicles per day
Gray Road	6,600 vehicles per day
SR 38	6,500 vehicles per day
Spring Mill Road	6,200 vehicles per day
Union Street	6,100 vehicles per day
161st Street	5,800 vehicles per day

All other roadways in Westfield are estimated to carry fewer than 5,000 vehicles per day. This traffic volume listing highlights the importance of US 31, SR 32 and 146th Street in serving the daily traffic needs of Westfield.

Although the traffic volume flow map and the listing of average daily traffic flows provides a useful snapshot of existing traffic movements, it gives little insight regarding traffic growth trends. INDOT has maintained a regular counting program for many years, which allows trend data to be plotted for the most heavily traveled routes through Westfield.

Figure 2.8: Existing Roadway Network

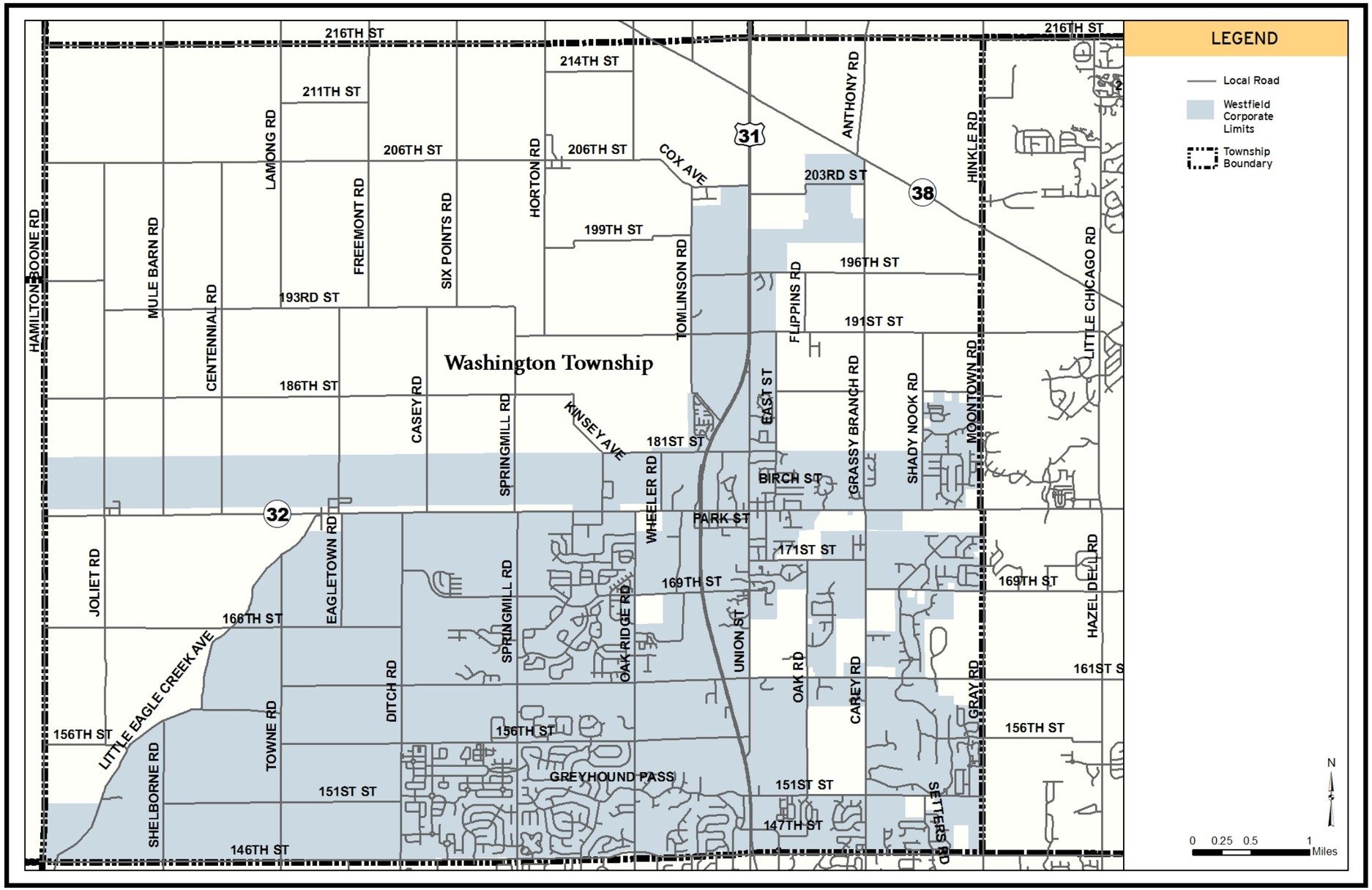
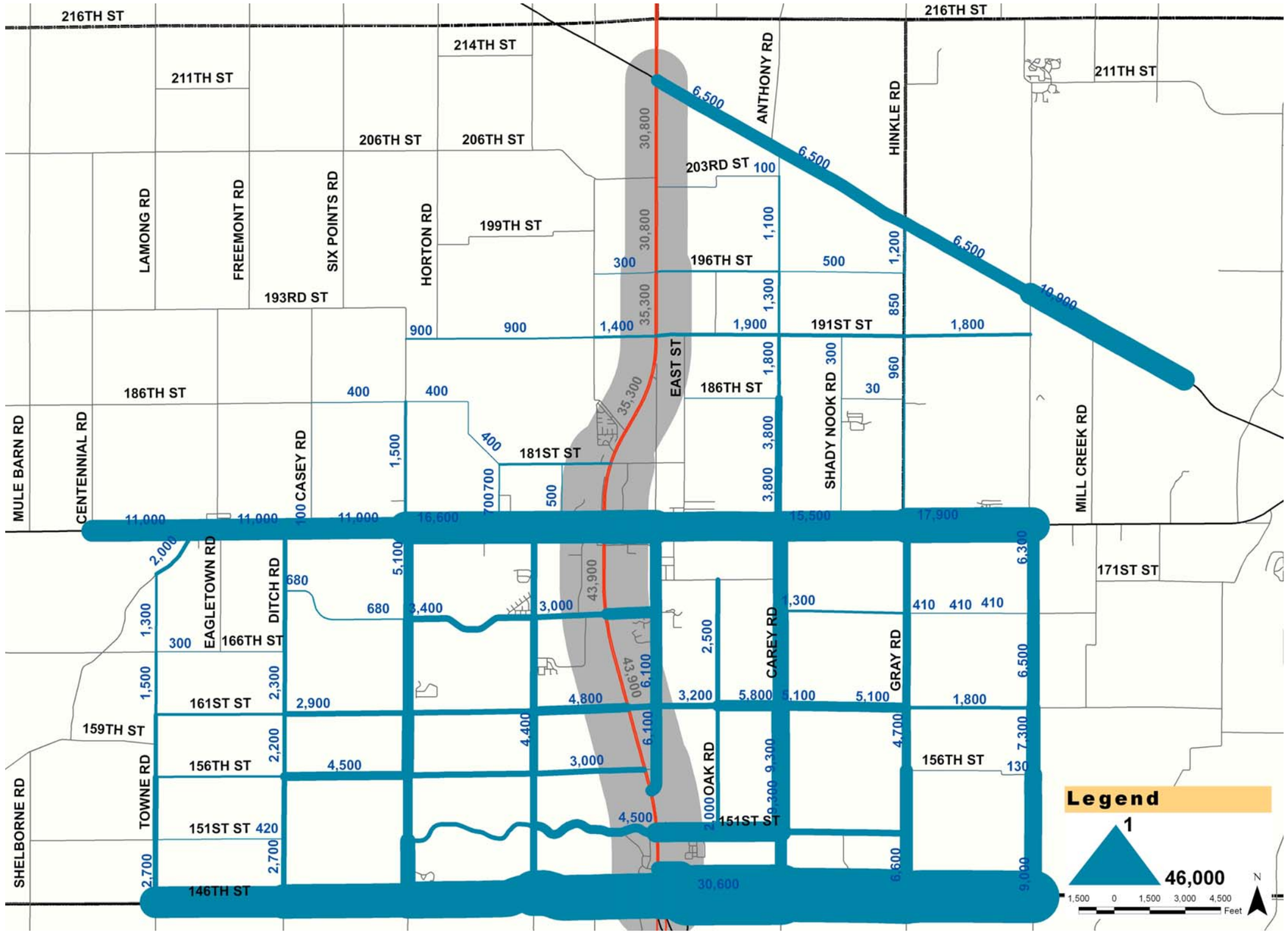
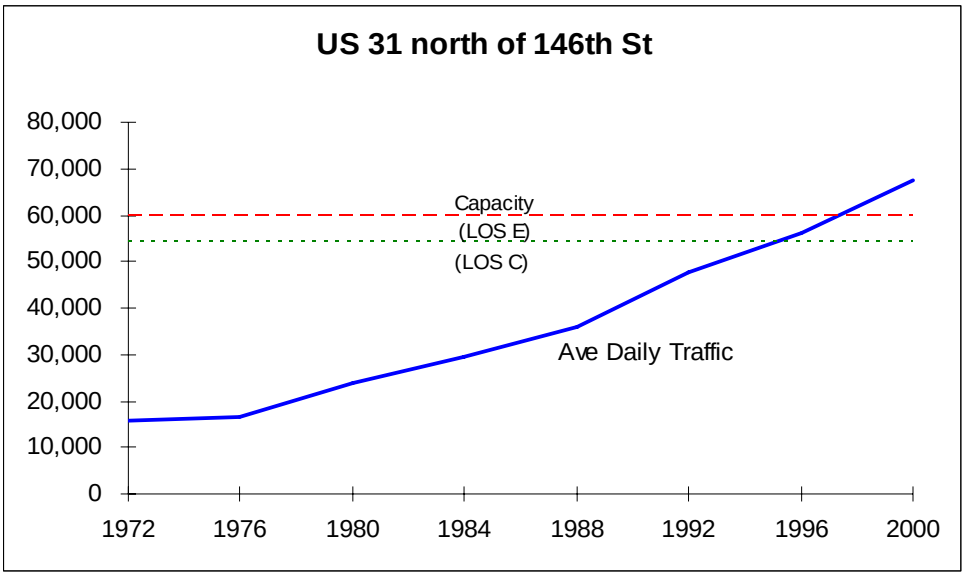


Figure 2.9: Estimated Average Daily Traffic Volumes



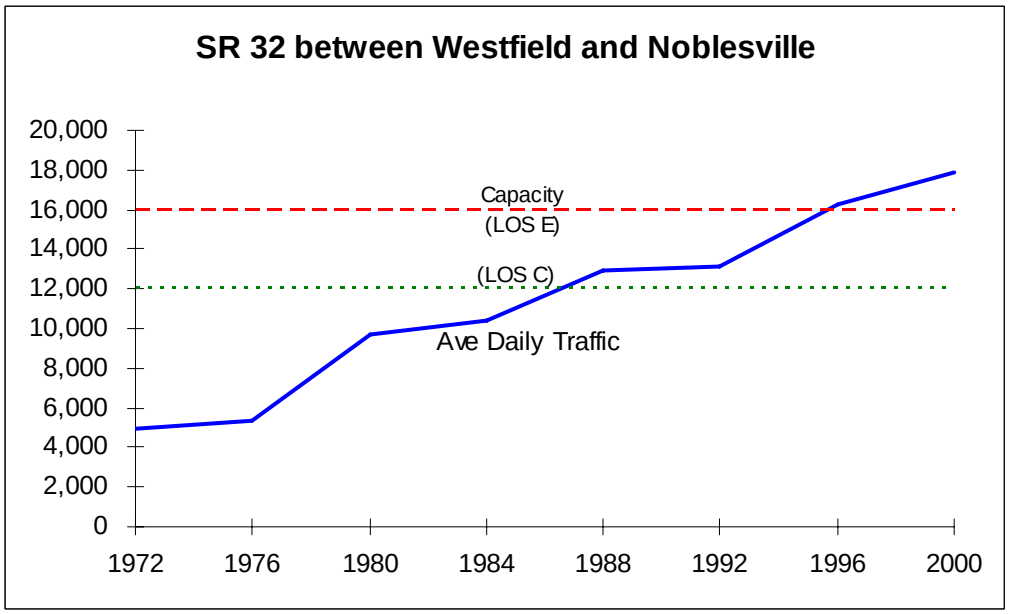
As shown in Figure 2.10, traffic growth on US 31 has been steady for the last 30 years as Hamilton County emerged as the fastest growing county in the state. This has led to the current plan of elevating US 31 to a freeway.

Figure 2.10: US 31 Traffic Volume Trend



During recent years, traffic growth on SR 32 has accelerated, as indicated in figure 2.11. This reflects the dispersed pattern of jobs and retail areas in the region, and the corresponding increase in cross-county travel. This highlights the importance in considering east-west traffic flow in the development of the Westfield Transportation Plan.

Figure 2.11: SR 32 Traffic Volume Trend



The base condition defined by existing traffic volumes and traffic growth trends is important, but it must be coupled with an understanding of anticipated land use growth and increases in regional travel demand to fully support the development of the transportation plan. This is addressed in the next chapter.

Bicycle and Pedestrian System

Hamilton County Alternative Transportation (HCAT) Plan

In 1995, Hamilton County adopted the Hamilton County Alternative Transportation (HCAT) Plan and the Hamilton County Alternative Transportation Pathway Standards and Design Guidelines. As shown in Figure 2.12, the HCAT plan called for multi-use trails along most major roadways in the county.

MPO Regional Pedestrian Plan

The Indianapolis Metropolitan Planning Organization's (MPO) Regional Pedestrian Plan analyzed the planned pedestrian facilities, destinations, developing areas, and opportunities for future facilities in Hamilton County and Westfield. These factors were the basis for possible future pedestrian connections. The information collected contributed to the qualitative analysis included in the creation of the MPO's plan.

The portion of the Regional Pedestrian Plan for Hamilton County is shown in Figure 2.13.

Demographics, Land Use Patterns, and Quantitative Analysis

As stated in the Regional Pedestrian Plan, Hamilton County is the fastest growing county in the State of Indiana with the majority of the growth occurring in the southern half of the County (south of 216th Street). This new residential and commercial growth is creating many new needs in Westfield, including an increased demand for pedestrian facilities.

In the development of the MPO's plan, demand for pedestrian facilities was determined for Hamilton County with respect to five pedestrian access characteristics: access to home, work/ commerce, recreation, education, and transit. A sixth factor of walkability of social justice considered minority populations, unemployment, poverty, disability factors, use of public transportation to work, and number of people who walk to work. A one-mile walk zone was created around land uses with the above characteristics to identify demand areas for pedestrian facilities.

The location and concentration of residential development, employment centers, and existing recreation areas indicates that Westfield has a demand for pedestrian facilities throughout the majority of the town as well as near the local schools. The walkability factors related to social justice depict a higher demand for pedestrian facilities on the western portion of the town.

Figure 2.12: Hamilton County Alternative Transportation Plan

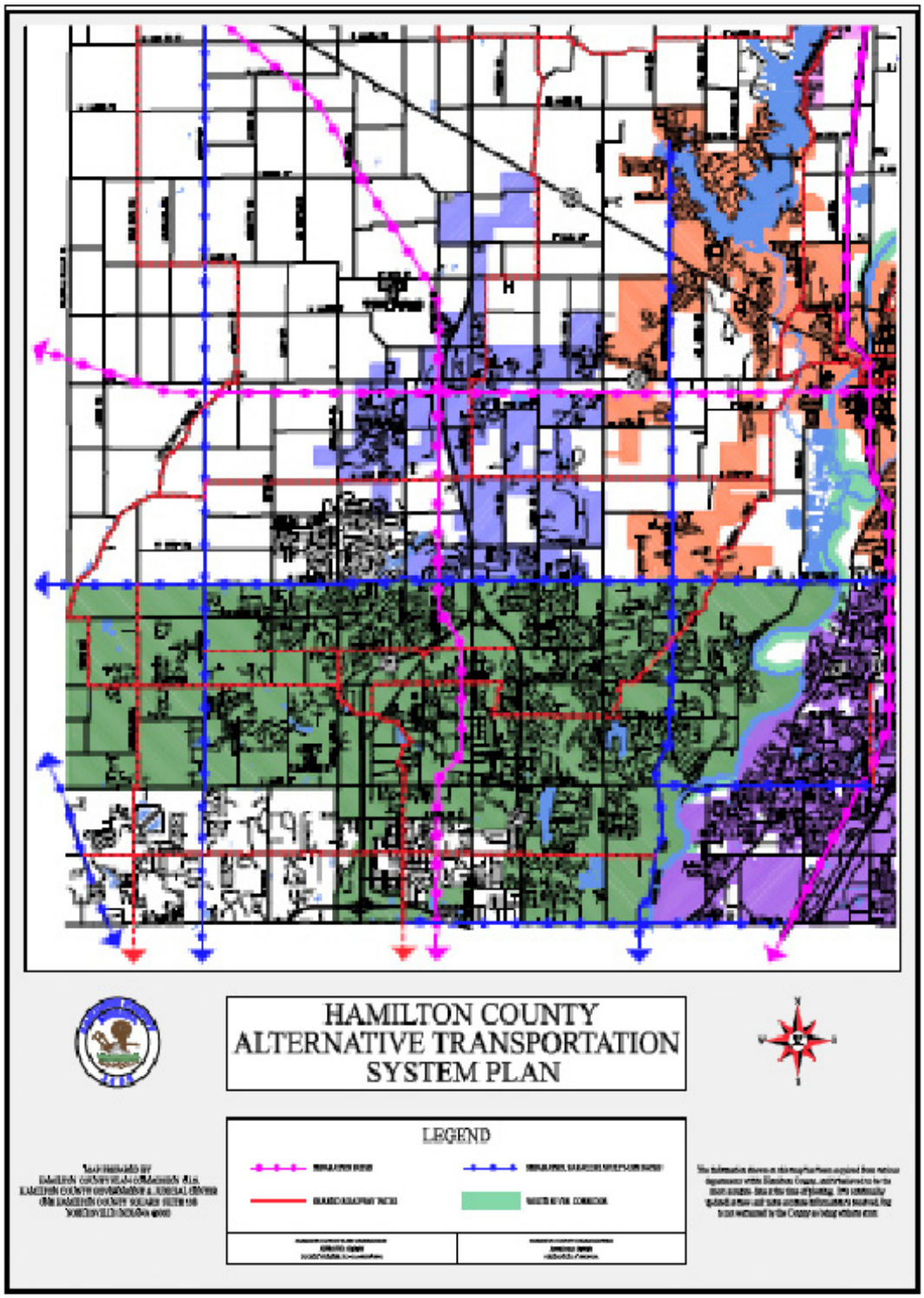
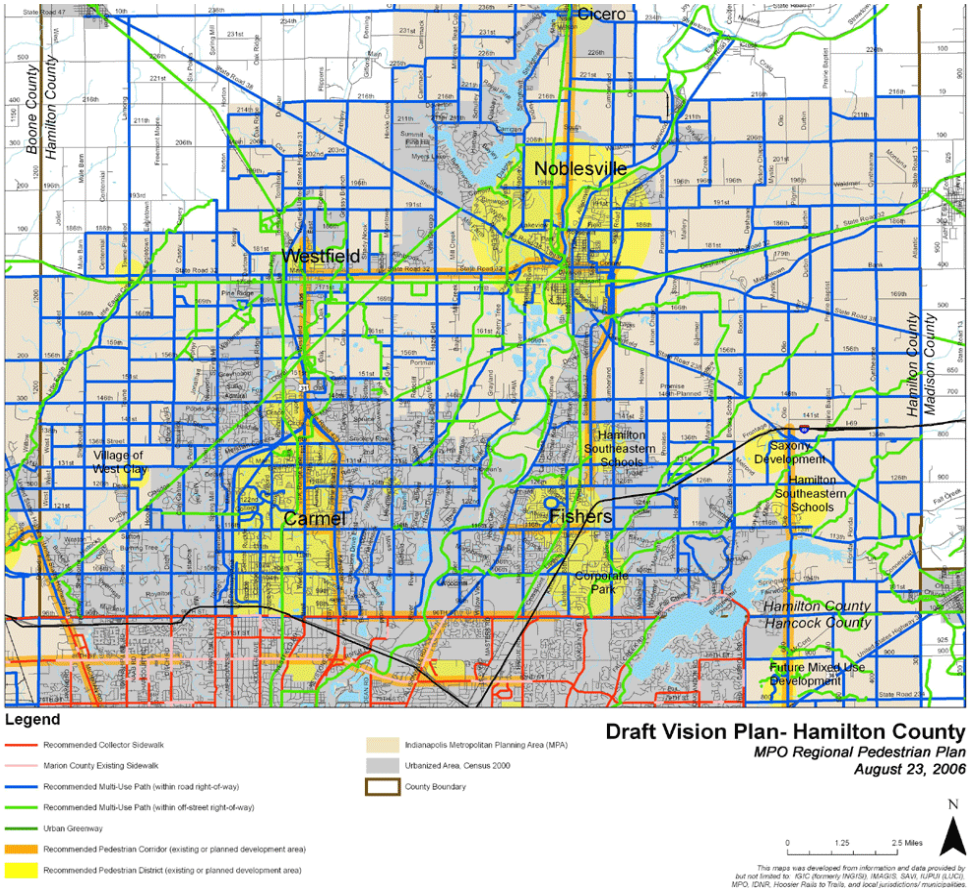


Figure 2.13: MPO Regional Pedestrian Plan - Hamilton County



Existing and Planned Pedestrian Facilities

Besides the multi-use trails along major roadways called for in the MPO and HCAT plans, Westfield is in the process of developing two off-street trails.

The Monon Trail will extend the existing trail from Carmel northward to the Washington Township line, providing a linkage for bicycles and pedestrians to access the Indianapolis greenway system. When done, it will be possible to go from Westfield to downtown Indianapolis without traveling on a highway or street.

Westfield is also developing the Midland Trace Trail. This multi-use off-road trail will utilize the abandoned CSX right of way just south of SR 32, providing an all-Important east-west non-motorized route through the planning area.

Transit

Currently, there is no linkage to the regional transit system operated by IndyGo. As described in Chapter 1, the Indianapolis MPO recently completed a Comprehensive Operational Analysis of IndyGo, which included recommendations for express bus service to the area of US 31 and 146th Street, and cross town service to Noblesville. (See Figures 2.14 and 2.15.) These were among a large number of proposed expansions to the Greater Indianapolis system, and there is no indication of when or if such service would be provided.

Figure 2.14: Proposed Long-Range Plan – Express Bus System

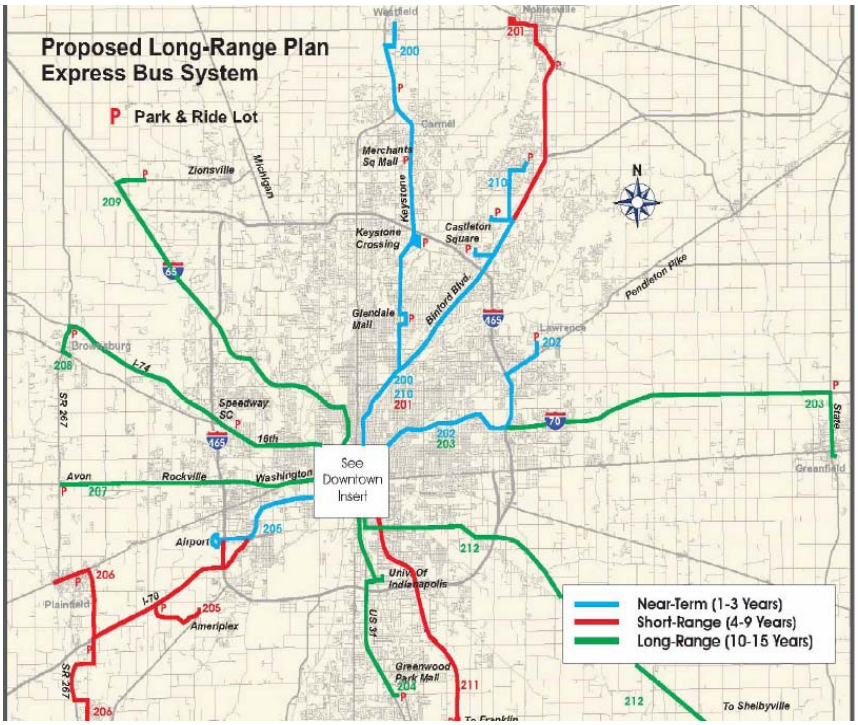
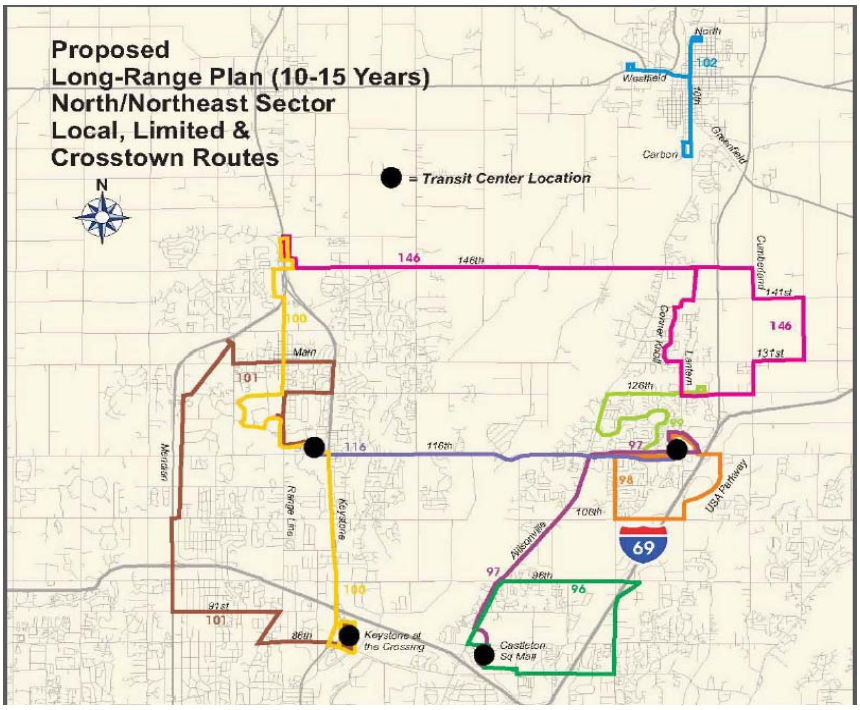


Figure 2.15: Proposed Long-Range Plan – North/Northeast Sector Routes



Westfield should continue to monitor and participate in future transit planning for the region, but in terms of the transportation plan, the key point now is that there are no regional transit routes serving the town. For the foreseeable future, Westfield will need to rely on its roadway and bicycle/pedestrian systems to meet local travel needs.

Chapter 3

Future Transportation Needs

Forecasted Travel Demand

Travel demand forecasts developed through regional and statewide planning activities often provide important indications of future roadway needs. The Westfield area is included in two large-scale models used for traffic forecasting. These are a regional travel demand model maintained by the Indianapolis MPO and a statewide travel demand model maintained by INDOT.

The Indianapolis MPO used the regional travel demand model to forecast 2030 conditions to support the development of the current Regional Transportation Plan. That model is being updated to simulate 2035 conditions and to provide better estimates of future transit demand. Forecasts developed by the Indiana Department of Transportation using its statewide travel demand model have been used in recent studies of US 31.

These models are not sufficiently detailed to identify future traffic volumes on Westfield's local transportation network. However, the models are useful in identifying areas where the regional arterial system is likely to be overloaded in the future. The models forecast that US 31, SR 32 and SR 38 will all experience congestion problems in Washington Township by 2030, even with the planned upgrade of US 31 to a freeway. This emphasizes the need to provide adequate capacity on other routes to serve Westfield's local travel needs and relieve the pressure that these trips place on the regional network.

US 31 Upgrade

The most significant change likely to occur to the transportation system during the planning period is the upgrade of US 31 to a freeway designed to interstate highway standards. Planning has been underway for several years and the project is currently at the stage of Final Environmental Impact Statement (FEIS) completion and approval. In addition to significantly increasing north-south roadway capacity through the area, the provision of complete access control on US 31 will create a potential barrier to east-west travel through Westfield.

Local Connections

Westfield has been working with INDOT throughout the current US 31 study to insure that there is an awareness of local access and mobility needs, and to see that potential impacts to adjacent properties are minimized. From a transportation standpoint, the key elements are interchange locations that provide access to the freeway and points of crossover to maintain the continuity of existing roadways.

Recognizing that there are spacing requirements that must be met between interchanges and considering the need for connections with the most important local routes, Westfield has provided specific input to INDOT regarding interchange locations. Just as importantly, Westfield has identified preferred locations for overpasses or underpasses to be

provided to maintain the continuity of roadways across the fully access controlled US 31 corridor.

The Westfield Transportation Plan provides the opportunity to confirm the role of these interchanges and crossings in the overall system, and to indicate formally and clearly to INDOT that these are priority locations within the Westfield transportation network.

Review of Potential Interchange Types

Whereas the location of interchanges and crossovers will affect future access and mobility, the layout of these interchanges will determine localized impact and long term function. For these reasons, it is reasonable that Westfield review potential interchange types as well as location.

A wide range of interchange layouts could be used to link US 31 with roadways in Westfield. Given the volume of traffic served and the nature of the area, however, interchanges are likely to be fall within one of the following categories:

- Cloverleaf (or partial cloverleaf) Interchange
- Diamond Interchange
- Single Point Urban Interchange
- Roundabout Interchange

Each of these interchange types provides advantages and disadvantages, depending on traffic demand and the locations where they are being installed. A review of these factors is provided below.

Cloverleaf Interchanges provide a separate ramp for each movement, and all vehicles enter and exit the interchange by merging and diverging from traffic without stopping. Loop ramps are used to handle left turn movements. An interchange with loop ramps in each of the four quadrants is called a “full cloverleaf.” If adjacent loop ramps are close to each other, problems can occur where entering and exiting vehicles must weave in a short space. This situation can be alleviated by the use of collector-distributor roadways that separate the ramp traffic from the mainline traffic. With lower left turn volumes, a loop ramp can be replaced by an intersection on the crossing road. This results in a “partial cloverleaf” interchange, which is a lower cost alternative but does require left turns and some stopped traffic on the cross street. An example of a partial cloverleaf interchange is US 31 and I-465.

Of all the interchange alternatives presented, cloverleaf and partial cloverleaf interchanges take up the most area and would therefore have the greatest impact on adjacent land owners.

Diamond Interchanges utilize signalized intersections to join ramps with the cross street. They take up less area than a cloverleaf or partial clover leaf interchange and generally provide good service for the traffic volume levels expected at most Westfield interchanges. The ramp intersections should be spaced far enough apart to allow for left turn lanes.

A *Single Point Urban Interchange* is a diamond interchange that combines all the left turn movements into one signalized intersection that is located either directly above or below the freeway. The advantage of this type of interchange is the reduced need for right-of-way in comparison with a diamond or cloverleaf interchange.

Roundabout Interchanges are like diamond interchanges, but the signalized intersections are replaced by roundabout intersections. The interchange cost can be lower than that for an equivalent diamond interchange since the minor roadway can span the freeway with a fewer number of lanes.

In most cases, diamond interchanges would be adequate to meet the traffic needs of Westfield, but single point urban interchanges (SPUIs) should be considered due to their smaller “footprint” and the associated reduced impact on surrounding property. Equally important, nearby intersections at the cross street may work poorly with the addition of the two intersections used with the standard diamond. Operations at adjacent intersections may improve with installation of only one traffic signal for a SPUI.

Although the cost may be greater, it is recommended that single point urban or roundabout interchanges be considered by INDOT at all proposed US 31 interchanges within the Town of Westfield. These types of interchanges will minimize right-of-way impacts, and the intersections will have sufficient capacity to accommodate future traffic levels.

Regional Corridor Needs

Some routes within Westfield play a significant role as part of a larger regional transportation system, as indicated by plans of adjacent communities. Understanding these regional functions is important for planning effectively for these corridors. Of particular importance are the plans of Carmel to the south, Noblesville to the east, and Hamilton County as a whole. Elements of each plan that affect Westfield corridors are reviewed below.

Carmel Transportation Plan

In order to serve office complexes and other commercial uses along US 31, Carmel included parallel four-lane service roads, Illinois Street and Pennsylvania Street, in its 1991 Transportation Plan update. Since then, these roadways have been gradually extended and improved as development has occurred. Of particular interest to

Westfield is the northern extension of Illinois Street, which is planned to link with Oak Ridge Road, as shown in Figure 3.1.

The impacts of linking Illinois Street to Oak Ridge Road are difficult to predict, particularly since the section of Oak Ridge Road south of 146th Street is currently two-lane, with no clear plans for future widening. Whether or not this turns out to be a four-lane roadway, the new linkage will increase the traffic demand on Oak Ridge Road by providing a new continuous north-south local roadway west of US 31.

Noblesville Transportation Plan

The most significant transportation problem in Noblesville is congestion on SR 32 where it crosses the White River in the downtown area. Many solutions have been considered over the years, but all have proven to be infeasible. Widening existing roadways would cause severe impacts and there are no opportunities to disperse traffic due to a limited number of river crossings.

The solution to SR 32 congestion reflected in the Noblesville Transportation Plan is to construct a new White River bridge south of SR 32 at Pleasant Street. The new Pleasant Street crossing would extend westward to connect with Cherry Tree Road (a southern extension of Hague Road), which would provide a route to 161st Street. 161st Street would then serve as a parallel route to relieve increasing demands on SR 32 west of Noblesville.

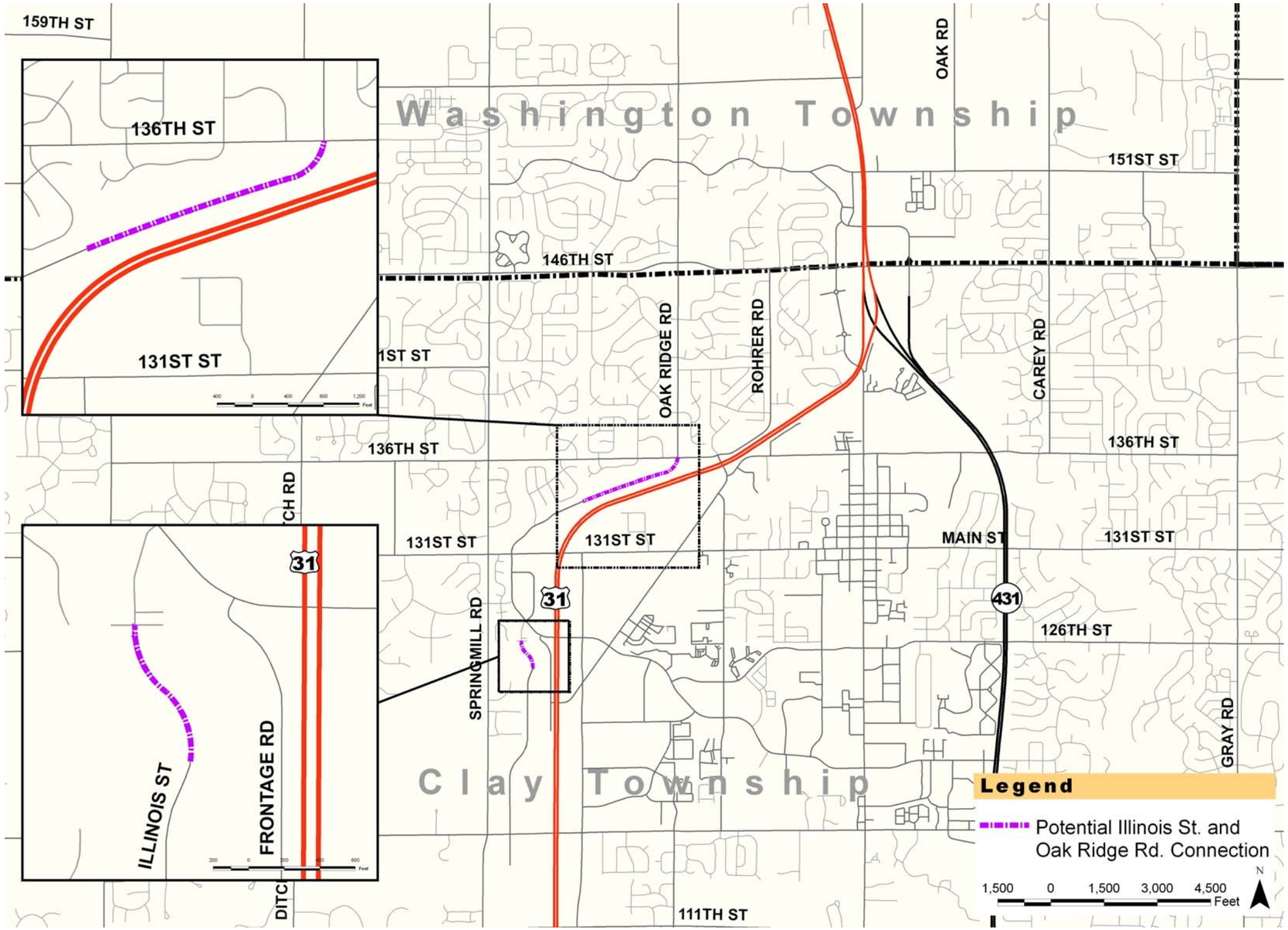
The Noblesville plan is important for Westfield because it will contribute to the importance of 161st Street for cross-county travel. It is likely that many motorists will utilize this route to access the planned 161st Street interchange at US 31.

Hamilton County Transportation Plan

The Hamilton County Transportation Plan could impact the Westfield system in a number of ways. 146th Street will take on increased importance in the future as it is extended to I-69 on the east and widened to provide additional lanes on the west. The plan also calls for “filling in the gaps” to provide continuity through the county on Shelborne Road, Towne Road, Spring Mill Road, and Oak Ridge Road. The county plan includes a new east-west link on the north side of Westfield, probably by linking 203rd and 206th Streets.

In addition to new roadway linkages and connections, the Hamilton County Plan is of interest to Westfield in terms of right of way standards. For many years, Westfield has maintained a consistency of standards with the county for purposes of setting aside right of way. This reduces confusion for developers and provides continuity when areas are annexed.

Figure 3.1: Illinois – Oak Ridge Connection



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Hamilton County is currently updating their transportation plan and, as in the past, the county has expressed an intent to accommodate local plans directly where the continuity of the county system is not compromised.

Drafts of the Westfield and Hamilton County Transportation Plans, as well as proposed right of way standards, have been compared and discussed at critical junctures during this plan development process.

Future Intersection Needs

The traffic count database maintained by Westfield was used to identify locations where high congestion levels are present. These intersections are operating at or near capacity even before considering future traffic growth and new traffic patterns due to land use changes. Identifying these current needs is a first step in determining how future trends in land use and demand will be addressed.

Figure 3.2 shows stop-controlled intersections that are experiencing congestion due to increasing traffic volumes. The level of congestion is indicated by the number of hours that a traffic signal warrant is met at an intersection. If warrants are met for 8 hours of the day, a traffic signal should be installed. Intersection geometric improvements should be made (left turn lanes as a minimum) with the installation of a traffic signal.

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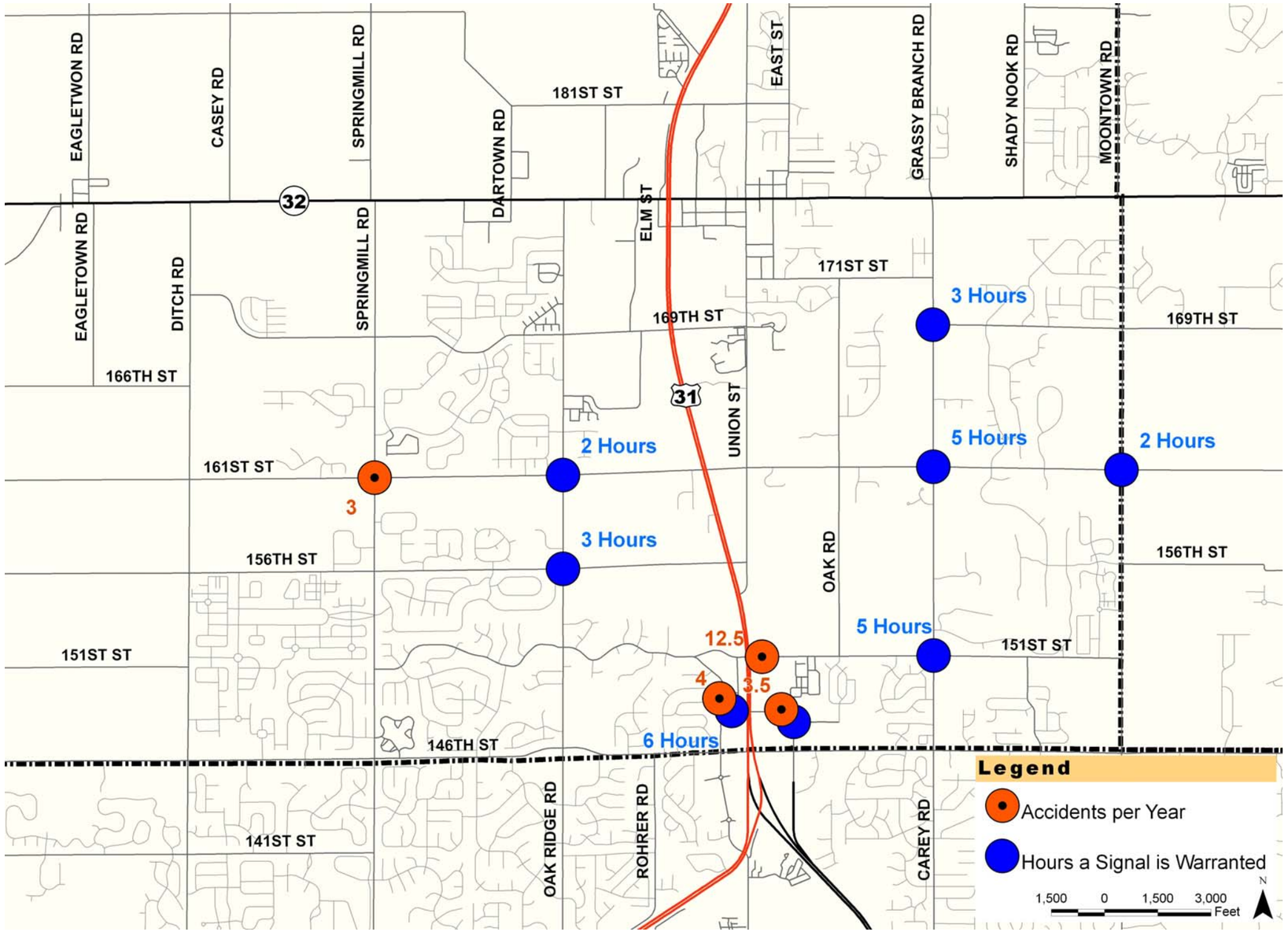
Figure 3.2: Congested Intersections



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Intersections where traffic volumes warrant a signal for at least 50% of the recorded time are:

- Greyhound Pass & 147th Street 9 hours
- 151st Street & Carey Road 5 hours
- 161st Street & Carey Road 5 hours
- 169th Street & Carey Road 3 hours

Other locations in Westfield present increasing congestion levels but they are not yet approaching the level to warrant a traffic control upgrade.

Figure 3.2 also shows intersections with a yearly accident rate of at least 3 collisions per year. Many of these intersections experience higher volumes and therefore there is a greater chance of a collision occurring. A higher accident rate also can indicate a problem with roadway geometry or traffic control. Three locations shown in Figure 3.2 will have traffic signals installed in upcoming projects since these locations have met the required warrants. These intersections include:

- 161st Street/Spring Mill Road
- Greyhound Pass/Greyhound Court
- Greyhound Pass/147th Street

The intersection at 151st Street/Thatcher Lane averages 12.5 collisions per year. This intersection is signalized and is interconnected with the 151st Street/US 31 intersection. This intersection is located close to US 31 and has operational difficulties since traffic backs up from US 31 into the Thatcher Lane intersection.

Collisions occur as vehicles block the intersection and create interference with opposing traffic. Traffic engineering studies should be conducted to determine whether additional measures could be implemented to improve the intersection operation. This traffic signal was installed in 2001.

Roundabout Intersections

As Westfield has grown, the community has faced the question of when and how to upgrade local intersections from stop control to a higher capacity method of regulating traffic. Typically, this has been through the installation of traffic signals, with associated lane improvements to allow the devices to work effectively.

At many locations, roundabout intersections would provide a viable alternative to traffic signals or multi-way stop control. Roundabouts were developed in England in the 1950's. Over several decades,

many improvements have been made to their design and performance, and they have gained acceptance and popularity worldwide. Roundabouts designs can vary significantly, but all modern roundabouts share four common features:

- One-Way Circular Flow: All traffic circulates around a center island in a single direction, which allows traffic to enter the roundabout safely from multiple directions at the same time.
- Yield at Entry: Traffic entering the roundabout yields to traffic already circulating within the roundabout.
- Approach Deflection: Traffic is deflected from a straight path as it enters the roundabout in order to circulate around the central island. This forces entering traffic to travel at low speeds and thus increases the safety of the intersection.
- Precise Geometry: The roundabout size and geometry are designed to meet the specific traffic patterns and physical constraints of a particular intersection.

Roundabouts are increasingly being selected for roadway intersections rather than traffic signals or multi-way stop control due to their superior traffic flow, safety, reduced delay, attractive appearance, and speed control. Roundabouts are not the best solution at every intersection, but they have many applications in suburban communities such as Westfield.

Safety is one of the primary reasons that roundabouts are becoming more popular. Crash rates are generally 40-60% less than a signalized intersection and injury crashes are 35-80% less. The crashes that do occur at roundabouts are typically much less serious and rarely fatal. The improved safety results from an absence of broadside and head-on collisions, lower traffic speeds, and the provision of a safety refuge for pedestrians. Roundabouts usually cause less delay than traffic signals at moderate traffic levels and can eliminate the need to widen narrow roads.

Roundabouts are still relatively new in the United States and in Indiana, although they have been installed much more frequently in Hamilton County during recent years. As drivers grow accustomed to them, they are likely to gain wider acceptance. Following is a list of potential advantages and disadvantages of roundabouts that might be helpful when considering their installation at a specific location:

Potential Roundabout Advantages

- Provide good traffic operations with low delay for vehicles over a wide range of volumes
- Accommodate high left turn volumes better than traffic signals
- Provide improved safety for vehicles compared to traffic signals or stop control when designed properly
- Slow all entering traffic to provide a calming effect

- Can be combined with non-traversable medians as an effective access management tool
- Look attractive, especially with center island landscaping
- Can be modified to accommodate changing traffic conditions
- Often reduce the need for additional lanes on intersection approach roads
- Eliminate the electrical power and maintenance costs of traffic signals

Potential Roundabout Disadvantages

- Bicyclist use of multilane roundabouts can be a safety problem
- Blind pedestrians may have trouble negotiating roundabouts
- Often require more right-of-way immediately adjacent to the intersection
- Many U.S. drivers are still unfamiliar and must learn how to negotiate roundabouts
- May require more lighting than a stop-controlled or signalized intersection
- Landscaping treatments often require maintenance

When warrants are met for the installation of a traffic signal or at any intersection where all-way stop control exists, the installation of a roundabout should be considered as an alternative traffic control measure.

Roundabouts are particularly effective in residential areas for traffic calming and aesthetic reasons, at locations where traffic signal approaches would require bridge widening, and where roadways approach at odd angles.

A single lane roundabout should typically provide adequate service at an intersection of two collector roadways. A two-lane roundabout may be necessary at the intersection of secondary or primary arterials.

Roundabouts should be spaced far enough from signalized or all-way stop controlled intersections so that traffic queues from these intersections do not interfere with the operation of the roundabout. Closely spaced intersections are best served by using either paired roundabouts or coordinated traffic signals at both intersections in order to provide a smooth flow of traffic along the main roadway.

Chapter 4

Recommended Transportation Plan

The basic structure of a thoroughfare plan is a functional classification system of roadways that designates the role of each major route within the local and regional network. These functional classifications are linked with guidelines for design and standards for right of way to be set aside as development occurs. Thoroughfare plans also identify new roadway links and connections (typically not specific alignments) and other major features, such as interchanges, to guide future local and regional planning.

In recent years, many transportation plans have been expanded to include all surface transportation modes of travel. They often include plans for non-motorized travel and transit. In addition to a thoroughfare plan, a bicycle and pedestrian plan is recommended for adoption as a component of the Westfield Transportation Plan, consistent with the Hamilton County Plan, the MPO Regional Pedestrian Plan, and Westfield's current policies.

A transit component is not currently proposed for Westfield since there is no current service this far from the urban core. Potential express service to the Village Park Plaza area and a possible crosstown link to Noblesville were identified in a recent Comprehensive Operations Analysis of IndyGo, as described in Chapter 2. The community should continue to monitor regional transit planning activities in order to recognize and respond to future transit opportunities as they occur.

Purpose and Approach

The purpose of this activity is to classify major Westfield roadways according to their role in the overall transportation network, identify new roadway links, and add pertinent features such as interchanges and overpasses to provide a complete thoroughfare plan. It is also to identify a system of trails and multi-use paths to form a bicycle and pedestrian plan for the community.

The development of the functional classification system is the core activity of the thoroughfare planning process. The methodology applied here has been in use for many years. This structured approach is adapted from a process identified by the Federal Highway Administration in 1974, with only minor modifications over time. The process is described, then is applied in a step-by-step fashion to illustrate the role of each roadway in the full system. Proposed interchanges, overpasses and selected safety improvements are added to complete the plan.

The bicycle and pedestrian plan is developed as a companion to the thoroughfare plan based on regional plans and current plans and policies of the Town of Westfield.

Functional Classification System Process

The functional classification of a road typically guides decisions including potential lane requirements, right of way set-asides,

appropriate design standards, cross section elements, and access management components. Functional classification also has implications for the financing of roadway improvements, as most types of federal funding are not available for roads that are classified as "local."

Functional classifications are defined in the context of the overall roadway network to provide a balanced system that meets both travel and access needs. Failure to provide a well-planned network of streets in a variety of functional classifications can result in congested streets that were not designed for high traffic volumes, cut through traffic on neighborhood streets, high crash rates and other operational problems.

Definitions

Functional classes are defined based on their basic role within the roadway network with respect to mobility ("through" travel) and access to adjoining property. The functional classifications used in Westfield are consistent with those used by Hamilton County and the Indianapolis MPO.

Four classifications of roadways are used in the Westfield Transportation Plan: primary arterials, secondary arterials, collectors, and local streets. These classifications are defined below.

Primary Arterials

Primary arterials are intended mainly for through traffic movement rather than land access. Full or partial control of access is desirable on these facilities. In rural areas, these facilities serve substantial statewide or interstate travel. Within urbanized areas, these facilities serve both through trips and longer intra-city trips. It is important that primary arterials are coordinated across jurisdictional lines since, by definition, they serve trips that typically originate or end outside the planning area.

Interstate highways and freeways are always primary arterials since they are intended exclusively for mobility with no direct land access. Ordinarily, state highway routes are also designated primary arterials due to their significant mobility function.

Secondary Arterials

Secondary arterials are intended to serve a mobility function, with some access to land. Generally, they provide lower travel speeds and accommodate shorter trips that primary arterials. Secondary arterials connect with and supplement the primary arterial system. These facilities provide for major intra-city trips and provide connections to the surrounding primary and secondary arterial system. Although secondary arterials have an access role, they should not penetrate neighborhoods and good access management practices should be applied to protect their essential mobility function.

Collectors

Collectors serve a balanced role with respect to mobility and access. As the name implies, they collect traffic from local roads and provide a link

with arterials. Collectors provide service to residential, commercial and industrial areas. If not served directly by an arterial, all major traffic generators and neighborhoods should be served by a collector roadway. Collectors penetrate neighborhoods to link the arterial network with local streets.

Local Roads and Streets

All public roads and streets not classified as arterials or collectors are classified as local roads and streets. They provide direct access to abutting properties and are intended to serve only local traffic movements. Traffic speeds and volumes are generally low, and through traffic is discouraged.

Functional Classification Principles and Approach

Guidelines provided by the Federal Highway Administration provide a structured approach for the classification of roadways within a transportation network. Basic principles and the process used to classify roadways in Westfield are described below.

Functional Classification Principles

The classification of a roadway by function is dependent on a number of considerations. These considerations include:

- Rural vs. urban
- Adjacent land use
- Internal vs. external trips
- Typical trip lengths
- Traffic volumes
- Destinations served
- Spacing
- System balance of road miles and vehicle miles traveled

System balance should be achieved that reflects the fact that most roadway mileage within any jurisdiction is on local streets, while most vehicle miles of travel occurs on arterial streets. Collectors fall somewhere between, as illustrated in Table 4.1.

Table 4.1: Highway Functional Classification

System	% of Miles Traveled		% of Road Mileage	
	Rural	Urban	Rural	Urban
Primary Arterials	30-55%	40-65%	2-4%	5-10%
Primary and Secondary Arterials	45-75%	65-80%	6-12%	15-25%
Collectors	20-35%	5-10%	20-25%	5-10%
Local Roads	5-20%	10-30%	65-75%	65-80%

Source: "Highway Functional Classification—Concepts, Criteria and Procedures"; U.S. Department of Transportation, Federal Highway Administration; July, 1974.

Spacing of roadways of different functional classes is another consideration in establishing a system. The spacing of arterials should correspond with the density of development (and travel demand), as illustrated by the following table:

Table 4.2: Roadway Spacing

Area Type	Arterial Spacing
Central Business District	1/8 to 1/2 mile
Urban	1/2 to 1 mile
Suburban	1 to 2 miles
Low Density Development	2 to 3 miles

In addition to the guidelines above, key considerations include system linkages and continuity. In this regard, two "rules" should be applied in establishing a functional classification system:

- Arterials and collectors link to form a continuous network. By definition, these classifications do not "end." They connect to other arterials or collectors.
- All arterials and collectors end at intersections. These classifications do not change on a roadway section between intersections.

With the above principles in mind, the process of determining the functional classifications for a transportation system is defined as follows:

1. Identify future land use patterns
2. Identify highways as primary arterials

3. Identify entering arterials from adjacent areas
4. Identify secondary arterials based on spacing and role within the system, considering linkages from other communities
5. Review the arterial system for area coverage
6. Identify the collector street system based on spacing and role within the system
7. Identify the local street system as the remaining roadways
8. Review the system as a whole for "balance and reasonableness"

A review of the above process indicates that the key considerations in establishing a functional classification system are land use, adjacent plans, roadway spacing, and system linkages and continuity. Each of these factors is considered in applying the process for Westfield.

Recommended Functional Classification System

To illustrate the process of developing the recommended functional classification system for Westfield, the system is constructed step by step in this section, from primary arterials to collectors.

Primary Arterials

The core of the network is the regional highway system. Figure 4.1 shows the location of state highways within the planning area: US 31, SR 32 and SR 38. These are identified as primary arterials by definition. This is fitting given the role they play in the local and regional roadway network.

Figure 4.2 shows additional roadways recommended as primary arterials, reflecting their connectivity to other jurisdictions and their mobility role within the Westfield roadway network.

Towne Road is added as a north-south primary to provide appropriate arterial spacing west of US 31. Although Hazel Dell/Little Chicago Road is outside the planning area, it is designated as a primary arterial by the county and is shown to indicate the spacing of north-south arterials east of US 31.

East-west primary arterials include 146th Street, 191st Street (primarily east of US 31), and 206th Street (primarily west of US 31). These routes are selected largely due to spacing considerations and for reasons of connectivity and plan consistency outside Westfield and Washington Township boundaries.

New roadway linkages are shown between Towne Road and Lamong Road, and 206th Street and 203rd Street. These connections will improve the connectivity and continuity of the system. They are

longstanding components of the Hamilton County Transportation Plan.

Overall, the primary arterial system shown in Figure 4.2 provides good spacing, balance and connectivity with the surrounding area. It should be noted that the broader spacing of east-west arterials west of US 31 reflects lower density expectations in that area of the township.

Secondary Arterials

Figure 4.3 shows the addition of proposed secondary arterials to the system. These roadways "fill in the gaps" in the arterial system. They are spaced to reflect the higher density of land use and trips in the more built-up portion of Westfield near US 31.

North-south secondary arterials west of US 31 include Shelborne/Mule Barn Road, Ditch Road, Spring Mill/Six Points Road, and Oak Ridge Road. New connections or extensions are recommended for each of these routes to provide continuity of the roadway system. These proposed linkages are consistent with the Hamilton County Transportation Plan.

North-south secondary arterials east of US 31 include Union Street, Carey/Grassy Branch Road and Gray/Moontown Road. An extension of Union Street is shown between 186th Street and SR 38 to provide improved north-south mobility and to establish a parallel local roadway when US 31 is upgraded to a fully access controlled freeway.

Both Carey/Grassy Branch and Gray/Moontown Roads were considered for designation as primary arterials as these recommendations were being prepared. Given the role of Hazeldell Road in the regional system, it was deemed reasonable to include both roadways as secondary arterials to share the function of serving major north-south travel through this portion of Westfield.

East-west secondary arterials include all or portions of 151st Street, 156th Street, 161st Street, 169th Street, 181st Street, and 196th Street. All of these roadways are designated as secondary arterials near US 31, reflecting the higher densities of that area and the need to provide for crossing of the restricted access corridor. As these routes extend further from US 31, they either end at "T" intersections or are reduced to collectors.

Collector Roadways

The system of recommended collector streets is added in Figure 4.4 to provide a complete functional classification system for Westfield and Washington Township. Consistent with the guidelines for system development, there are many more miles of collectors than arterials. They link the arterial system with all local roadways within the planning area.

Figure 4.1: Regional Highway System

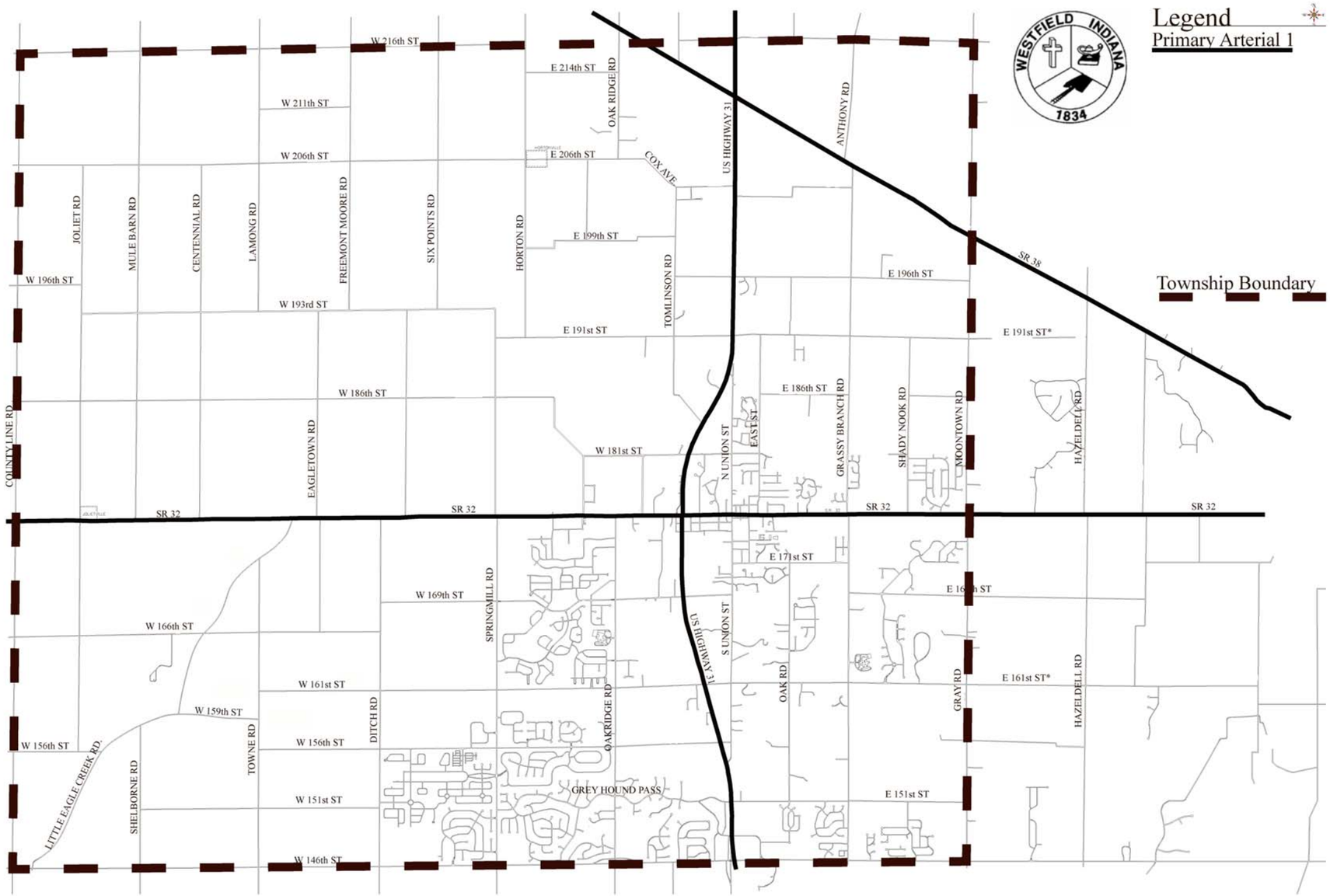


Figure 4.2: Primary Arterial System

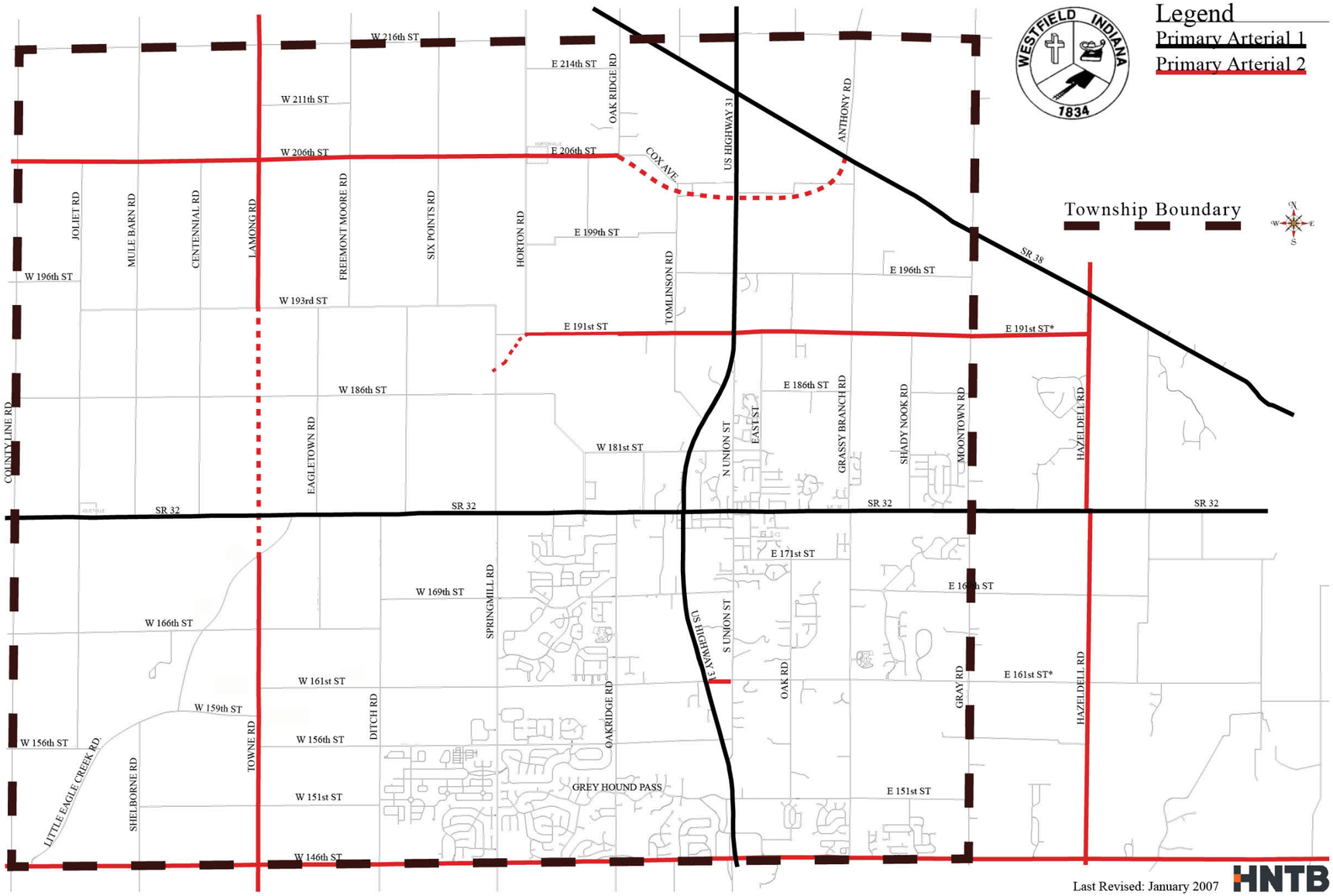


Figure 4.3: Secondary Arterial System

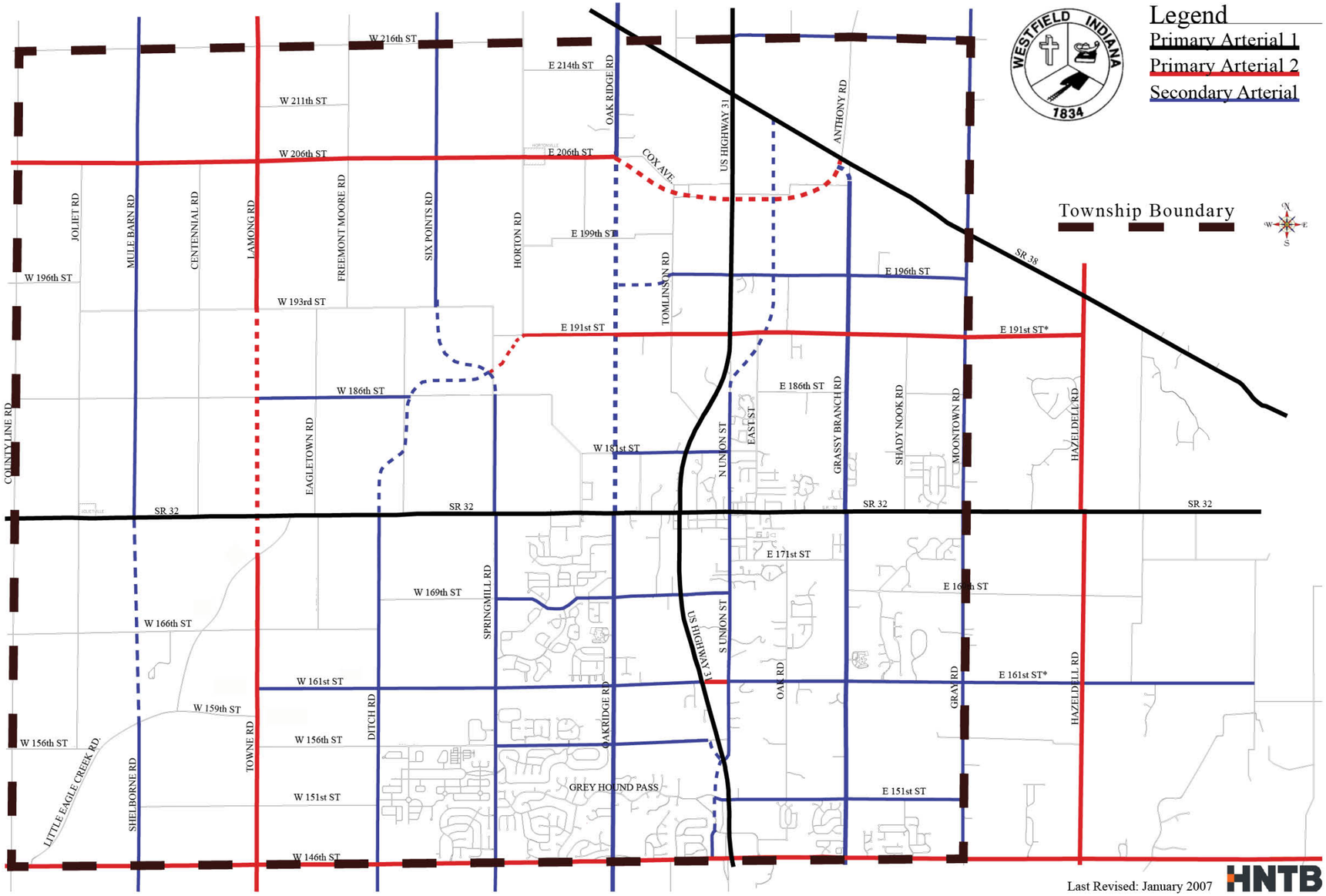
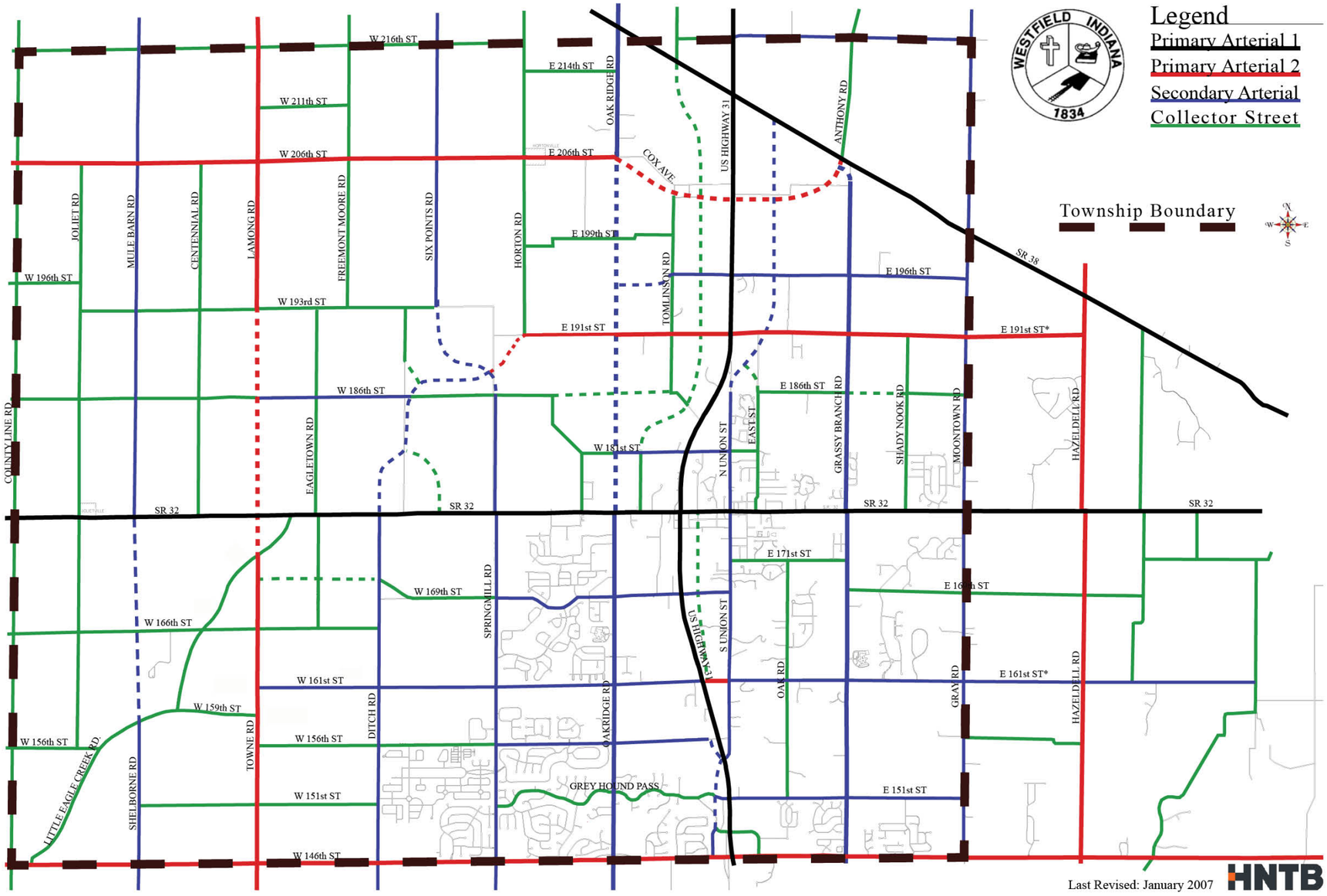


Figure 4.4: Collector System



Proposed collector roadways are too numerous to list, but it is useful to highlight some of the new connections shown for the system. Several new linkages are shown parallel to US 31, reflecting the future need for local mobility and access to properties when the US 31 freeway project is implemented. These include a new connector between 161st and SR 32 between US 31 and Union Street, and between 181st Street and SR 38 just west of US 31.

New collector links are also shown on 169th Street and 186th Street to fill in gaps and improve the overall continuity of the system. The remainder of the proposed collector system of roadways is made up of existing roadway segments.

Local Roadways

All public roadways not shown as arterials or collectors are designated as local roadways. Although they are not shown on the map, local roadways play an important role in the overall transportation system. There are standards in place for the design and right of way for these roadways just as there are for arterials and collectors.

System Balance and Reasonableness

The final step in establishing the recommended functional classification system is to review the final result for system balance and reasonableness. The plan was reviewed by the project technical steering committee, presented at a public information meeting and a public hearing, reviewed by an Area Plan Commission special committee the Town Council. The recommended functional classification system presented in Figure 4.4 includes adjustments and refinements suggested during those meetings.

Overall, there was consensus that the system passes the test of system balance and reasonableness, with respect to local needs and connections to the transportation plans of surrounding jurisdictions. This system forms the core of the recommended transportation plan presented in a subsequent section of this chapter.

Bicycle and Pedestrian Plan

The Westfield bicycle and pedestrian system is a component of the Regional Pedestrian Plan recently developed by the Indianapolis Metropolitan Planning Organization (described in Chapter 2). The regional plan identifies pedestrian facilities, corridors and districts throughout the metropolitan planning area (MPA), including Westfield and the southern portion of Hamilton County. Design guidelines are also provided in the MPO's plan.

Using the Regional Pedestrian Plan as a base, the Westfield Bicycle and Pedestrian Plan was formulated by applying revisions to better fit localized opportunities and challenges, and to provide consistency with recently approved plans, including the Westfield Comprehensive

Plan and the Thoroughfare Plan presented elsewhere in this chapter. The revised plan was also reviewed in the context of the Indiana State Trail Plan "Hoosiers on the Move" and the Hamilton County Alternative Transportation Plan to insure that the plans were consistent and mutually supportive.

Regional Pedestrian Plan Components

Consistent with the Regional Pedestrian Plan, two types of major pedestrian facilities are recommended for development in Westfield – collector sidewalks and multi-use paths. Collector sidewalks are hard surface paths exclusively for pedestrian use. These types of pedestrian facilities should be located within local developments. Multi-use paths are wider and may be located within or outside street rights of way.

Multi-use paths within the road right of way are the preferred path type in Hamilton County due to the existing roadway access to regional and local destinations. As Westfield grows, pedestrian facilities should be included with the site developments in order to provide connections not only within the development but also to other regional destinations. Multi-use paths within the road right-of-way are recommended on most of the major roadways in Westfield.

The second type of multi-use path recommended in Westfield is the multi-use path within off-street right-of-way. This type of pedestrian facility is usually located along natural features, active or unused rail lines, or utility corridors. These paths can link urban and rural areas in addition to increasing walkability within Westfield.

The Monon Trail extension and the Midland Trace Trail are recommended multi-use paths within the off-street right-of-way of Westfield. The Monon Trail would provide for north-south travel as an extension of existing trail sections in Carmel and Indianapolis. The Midland Trace Trail is intended to be similar to the Monon Trail, serving east-west travel through Washington Township from Gray Road to the Boone County line on the abandoned Central Indiana Rail corridor.

Other off-street paths identified in the Regional Pedestrian Plan include the Little Eagle Creek Trail and the Cool Creek Trail that will link Carmel and Westfield and the crossing of the Monon Trail and the Midland Trail, which will provide access to the Cool Creek Park and Nature Center.

Due to the increasing traffic volumes in Westfield and Hamilton County, all intersections of pedestrian paths and major vehicular thoroughfares are considered "critical crossings" and require special consideration for design and traffic management.

In addition to focusing on network considerations and corridors of opportunity, the Regional Pedestrian Plan also relates planned facilities to adjacent land use through the designation of pedestrian corridors and pedestrian districts.

A pedestrian corridor consists of a linear distribution of higher density, mixed-use developments along a vehicular street. The Regional Pedestrian Plan identifies four pedestrian corridors within Westfield:

- State Road 32, east of the designated Downtown area to Gray Road/Moontown Road;
- US 31 north of 146th Street to approximately 156th street;
- Union Street north of 156th Street to the south limits of the Downtown area; and
- State Road 32 west of the intersection of SR 32 and US 31 to Hamilton-Boone Road.

Aspects of these corridors are consistent with the Regional Pedestrian Plan criteria of planned or existing mixed-use development, pedestrian destinations within a five-minute walk or one mile length, and a planned multi-use path corridor adjacent to the vehicular right of way. However, planned thoroughfare upgrades along the identified roadways and land uses recommended in a recent Comprehensive Plan update may support intensity and scale less consistent with the MPO Regional Pedestrian Plan design guidelines.

Any disparity between the preferred land use identified in the 2007 Comprehensive Plan and the recommended regional pedestrian network should be carefully evaluated in the context of any request to modify property rights. Commitments for pedestrian scale structures and architecture, character, and amenities should be pursued in change-in-zoning situations, even in cases where the proposed land use is generally consistent with the adopted long-range plan. To avoid missed opportunities when dealing with the development of previously-zoned property, overlay district standards implementing pedestrian-scale development should be devised and adopted for the identified corridors.

Three pedestrian districts are recommended in Westfield. These are areas of high density, mixed-use development that could support central or multiple transit modes. Pedestrian districts have high pedestrian activity, and typically place an emphasis on walking as the preferred transportation mode. The districts should have both internal and external links. Designated pedestrian districts in Westfield are downtown Westfield, the area on State Road 32 between Eagletown Road and Towne Road, and where 146th Street intersects with the Monon Trail. These three areas were chosen based on the following criteria:

- complementary or related uses exist within a quarter mile or five minute walk; and
- district is linked by a recommended path.

These three areas are village mixed-use pedestrian districts. This district type includes historic downtown areas with flexible boundaries to accommodate new growth. Downtown Westfield is located adjacent to school campuses and is therefore also considered a campus pedestrian district.

Bicycle and Pedestrian Plan Refinements

Westfield is fortunate to have the opportunity to develop two rail-trail projects that will serve local circulation needs while liking the community directly with state and regional systems. The Monon Trail will link with completed sections to the south to provide a non-motorized route to downtown Indianapolis. The Midland Trace Trail will establish an east-west corridor between Boone County and (potentially) Noblesville, eastern Hamilton County, and beyond. These trails will cross in the vicinity of downtown Westfield.

Although the junction of these two trails near downtown provides a significant opportunity, it also provides significant challenges for planning and design. Largely in recognition of the need for a better plan for this area, the Westfield Advisory Plan Commission formulated a special subcommittee to review components of the Regional Pedestrian Plan and suggest refinements.

The Monon Corridor is located very close to US 31 where a major interchange is planned with SR 32 when US 31 is upgraded to a freeway. An existing development on the north side of SR 32 requires realignment through that area. Moreover, the location of the Monon Corridor west of US 31 limits opportunities to connect with Westfield schools and the downtown area on the east side of US 31.

If constructed within the old rail corridor, the Midland Trace Trail would be located within the interchange of US 31 and SR 32. This would provide a less than desirable route for the trail, and in any case, INDOT has deemed this option unacceptable in terms of their designs. The challenge is to develop a plan that provides regional continuity through this area for both the Midland Trace Trail and the Monon Trail, while establishing local access and a major trailhead junction in the vicinity of downtown Westfield.

Responding to these challenges and opportunities, the Westfield planning subcommittee devised a new trail configuration identified as the Westfield Monon-Midland Trace Loop. This loop would serve as a collector-distributor for regional trail traffic to and from all directions, while providing direct access to Westfield schools and establishing a major regional trailhead downtown.

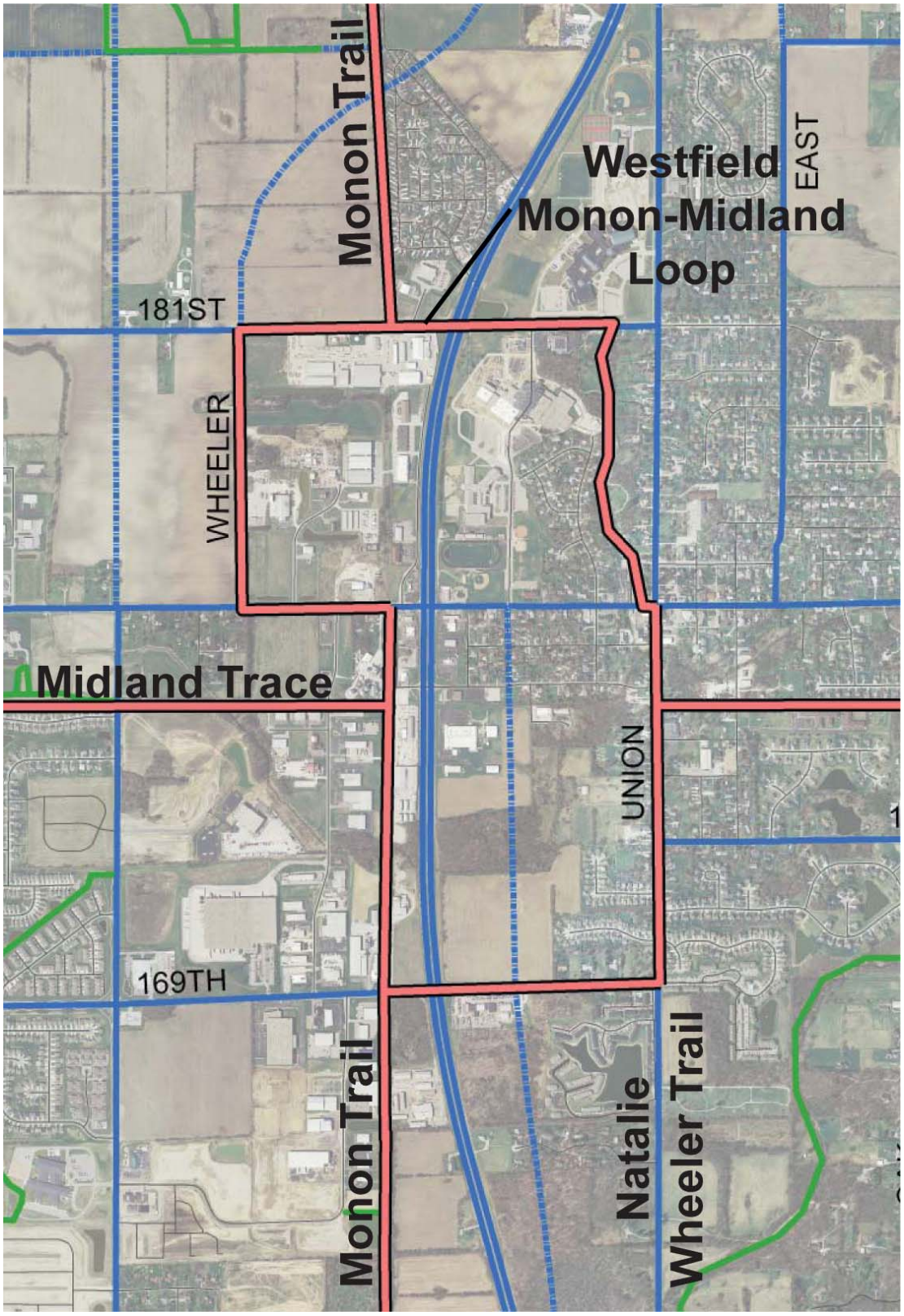
As shown on Figure 4.5, the Westfield Monon-Midland Trace Loop would utilize an extension of the Natalie Wheeler trail through the downtown area on the east, the Monon corridor and Wheeler Street on the west, the 169th Street corridor on the south, and the 181st Street (Hoover Street)

corridor on the north. The western leg follows SR 32 for a short distance to Wheeler Street to avoid an existing development in that area.

The benefits of the Westfield Monon-Midland Trace Loop for trail connectivity and continuity are clear. Opportunities are provided for movements in all directions. In addition, the loop can be used as a local travel or recreation facility in its own right. All major destinations in the vicinity are served. It is anticipated that the concept will be developed further in the context of the downtown plan instituted by Westfield in February, 2007.

Other adjustments to the Regional Pedestrian Plan to meet the needs of Westfield are more modest. Trails within pipeline corridors were deemed infeasible by the planning subcommittee and are eliminated. Several routes are adjusted to reflect thoroughfare plan changes to roadway corridors. Pedestrian corridors and pedestrian districts shown in the regional plan are retained, although the SR 32 pedestrian corridor is widened to include the Midland Trace Trail and runs throughout the entire township.

Figure 4.5 Monon – Midland Trace Loop



Recommended Bicycle and Pedestrian Plan

Westfield has adopted an aggressive policy of installing multi-use paths along major local routes in addition to maintaining the past requirement of installing sidewalks in new developments. Westfield has also developed an extensive network of local trails and pathways to serve its residents. As a result, Westfield is in the process of implementing effective linkages for non-motorized travel throughout the community.

Drawing from the Indiana State Trail Plan "Hoosiers on the Move," the MPO's Regional Pedestrian Plan, and the Hamilton County Alternative Transportation Plan, the proposed Bicycle and Pedestrian Plan for Westfield is presented in Figure 4.6

The bicycle and pedestrian plan shown on Figure 4.6 is an enhanced local plan that is current with the recently adopted Comprehensive Plan and Thoroughfare Plan, and reflects the demonstrated policies of Westfield with respect to non-motorized travel facilities.

Recommended Transportation Plan

The Recommended Thoroughfare Plan is based on the functional classification system shown in Figure 4.4. At the suggestion of the project technical steering committee and a special committee of the Area Plan Commission, additional elements are added complete the plan. These elements are US 31 interchange locations, US 31 crossover locations, selected intersections or roadway segments that require realignment for improved safety, and areas where the context of future roadway improvements will warrant special design considerations.

Westfield has previously provided input to INDOT regarding locations for accessing or crossing US 31 with local roadways. The transportation plan provides the opportunity to consider and incorporate these locations in development of the functional classification system, and to formally adopt these locations as part of the plan approval process.

The following locations are designated by Westfield as preferred locations for local interchanges with US 31:

- 146th Street
- 151st Street
- 161st Street
- SR 32
- 191st Street
- SR 38

The following locations are designated by Westfield as preferred locations for overpasses or underpasses to allow the crossing of US 31 by local roadways:

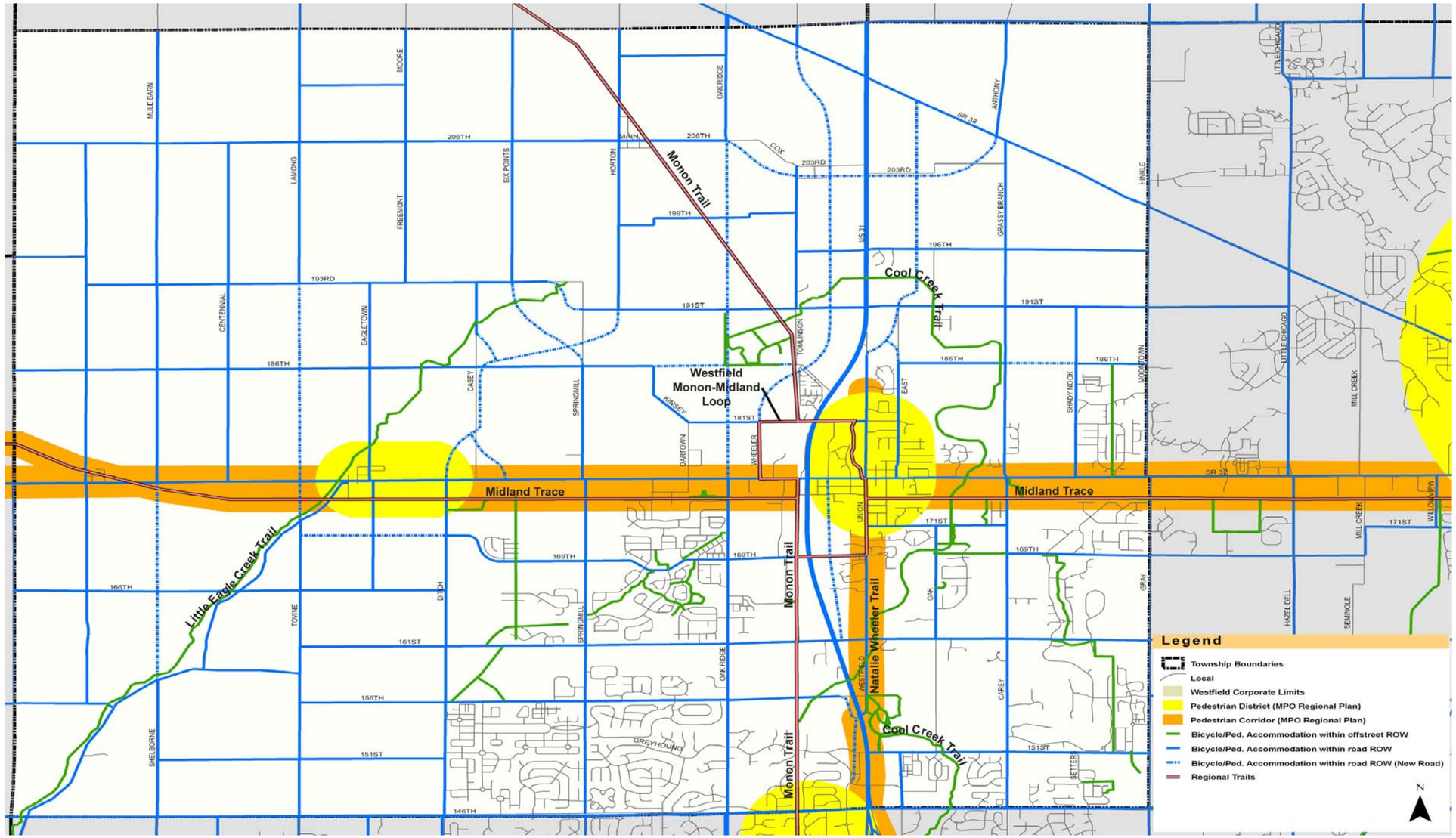
- Greyhound Pass
- South Union Street/Western Way
- 169th Street
- 181st Street
- 196th Street
- 203rd Street

Locations identified by the project technical steering committee for localized realignment to improve safety include the following:

- SR 32 and Spring Mill Road intersection (align north and south approaches)
- East Street, just north of SR 32 (realign roadway to remove jog)

These additions are shown in Figure 4.7, Recommended Westfield Thoroughfare Plan. Coupled with the Bicycle and Pedestrian Plan (Figure 4.6), this constitutes the recommended Transportation Plan for the Town of Westfield.

Figure 4.6: Bicycle and Pedestrian Plan



NOTE:
This map based on Draft Regional Pedestrian Plan of the Indianapolis MPO. Revisions were made to fit local conditions.

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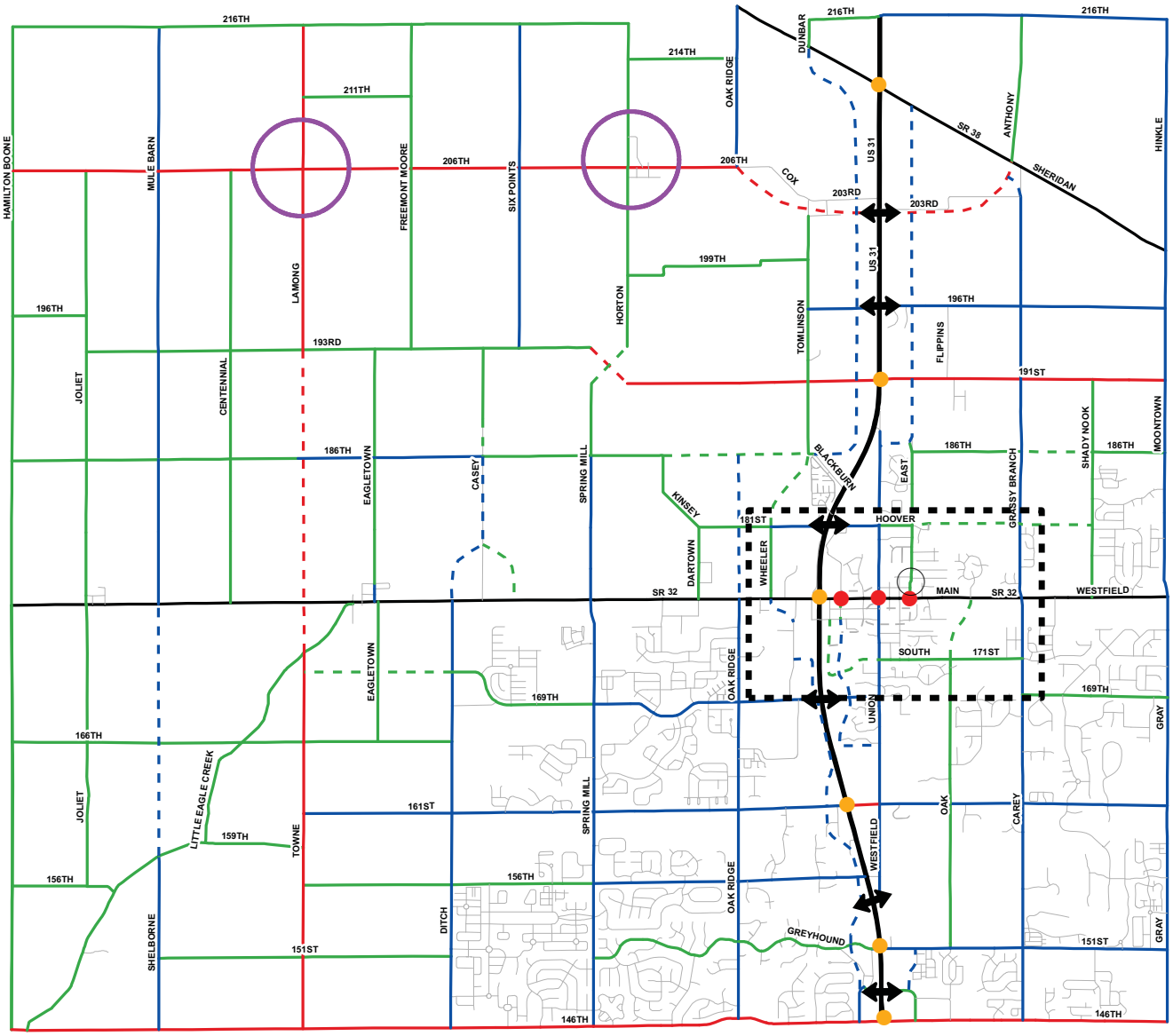
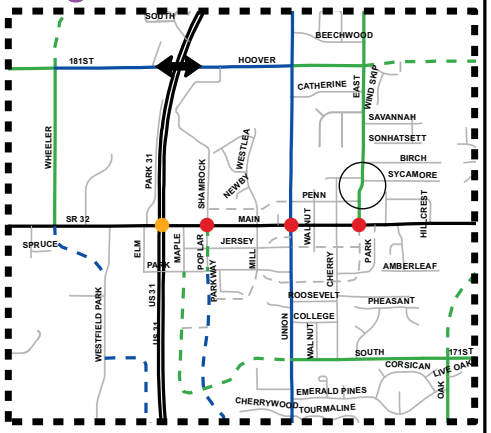
City of Westfield Thoroughfare Plan

Collector System Map
Supersedes Figure 4.7
from 2010 Summer Amendment



Legend

- Local
- Proposed Local
- Collector
- Proposed Collector
- Primary Arterial 1
- Primary Arterial 2
- Proposed Primary Arterial 2
- Secondary Arterial
- Proposed Secondary
- Proposed Full Access Intersections
- Interchanges
- Under/Over Passes
- Safety Improvements
- Context Sensitive Areas



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Maps Are Not To Scale

CITY OF Westfield INDIANA

Disclaimer: The City of Westfield, Indiana has created this map in an attempt to increase the availability of public information and enhance public knowledge. The City is continually collecting, maintaining and updating data. Information for the map themes was obtained from existing, and many times historical documentation. Because of this, the information displayed on this map is not guaranteed to be completely accurate or all inclusive. The City of Westfield retains the right to change the content of this map without prior notice. The City of Westfield assumes no liability for any actions or occurrences that may result from persons viewing the information contained on this map. This map is not meant to take the place of any existing guidelines, rules, regulations or legal procedures. No information displayed on this map should be used in place of legal documentation. Field investigations are still necessary for locating underground facilities, and contact with appropriate departmental staff if still required for determining location-based fees or designations.

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Chapter 5

Right of Way Standards

Right of way is publicly owned land reserved for a transportation facility or other public uses. One of the primary purposes of the transportation plan is to classify roadways to guide the preservation of right of way as development occurs so that future system improvements can be made with minimal cost and disruption. A different process is used to acquire right of way from existing property owners as projects are implemented. This chapter describes the differences in those two processes and presents a set of recommended right of way standards for arterials, collectors and roundabouts.

Right of Way Preservation (from new developments)

Right of way is ordinarily set aside as a condition of rezoning or other development approval action for proposed developments based on functional classifications identified in the thoroughfare plan and standards adopted as part of the community's subdivision control ordinance. Typically, half of the needed right of way is requested from developments located on one side of a road.

Additional right of way may be set aside as a part of the approval process for individual projects if the need is identified by traffic impact studies associated with the development. This additional requirement is frequently driven by a need for auxiliary lanes, approach realignment or roundabout construction at intersections, or to accommodate alternative transportation.

Where there is no rezone, plan approval or other action by the Plan Commission or Council, right of way is acquired only for specific project needs, as described in the next section. The transportation plan and associated right of way standards have no relationship to this process and thus, have no direct relationship to right of way acquisition from individual property owners.

Right of Way Acquisition (from existing property owners)

In the absence of a development approval action as described above, right of way is acquired from property owners on a case-by-case basis as projects are developed. Right of way needs are identified based on specific project requirements identified through the project design process. Generally, the process is as follows:

1. A project is identified through engineering and environment studies.
2. Hearings are held to inform the public of the project.
3. Field surveys are conducted to define existing features and property lines.
4. Designs are refined to identify specific project details and right of way needs.
5. More hearings are held to present project details to the public.

6. Right of way needs are identified for each adjoining parcel to meet specific project needs.
7. Right of way is acquired in accordance with state law and funding program requirements. Some of this right of way may be temporary for off site grading or in order to construct drive connections. Either way, property owners are compensated.
8. The project is bid and constructed.

Although the transportation plan can (and should) be a factor in driving the definition of project definition and design, it has no direct relationship to the acquisition of property from individual property owners.

These minimum ROW standards are intended for the reservation of right of way in new development areas as projects are being reviewed. These standards are NOT intended for general right of way acquisition from existing property owners. Where necessary, ROW will be acquired from existing property owners through a separate project design that will be sensitive to each unique set of circumstances.

Design features, such as those listed below, can be used to minimize the amount of land needed from existing property owners.

1. Use of roundabouts.
2. Shifting from 8 foot paths to 4 foot sidewalks
3. Eliminating sidewalks or paths from one or both sides of street.
4. Offsetting the centerline of the road.
5. Acquiring temporary construction easements instead of ROW.
6. Acquiring landscape easements instead of ROW.

Recommended Right of Way Standards

Roadway rights of way must be wide enough to accommodate travel lanes, auxiliary turning lanes, medians, parking lanes, sidewalks, bicycle and pedestrian facilities, roadway drainage, utilities, safety buffer and landscaping. Sufficient right of way should be set aside at the time development occurs to accommodate these uses.

It is important to identify right of way requirements in advance so that adequate space will be set aside for transportation needs as an area is developed. While these widths will accommodate the additional right and left turn lanes typically required at driveways and intersections, additional right of way could be required to accommodate unusual circumstances or traffic flow patterns. Conversely, when a road is to be constructed or improved in an area that is already developed or is environmentally sensitive, the Town may request less right of way at the time of development.

A roadway facility should typically be centered within the right of way, but this may also be altered at the discretion of the Town in order to accommodate special circumstances.

The minimum right of way to be set aside at the time of new development is based on the functional classification of the roadway. The following minimum right of way widths are recommended:

Primary Arterials	150 feet
Secondary Arterials	120 feet
Collectors	100 feet

In most cases, the recommended right of way widths are adequate to provide sufficient roadway capacity, along with multi-use paths and the other items listed above. Typical sections that illustrate these right of way reservation requirements are provided in Figure 5.1. Right of way recommendations by functional classification are described below.

Primary Arterials

Right-of-way for primary arterials is recommended to be 150 feet to provide room for a four-lane divided roadway and two multi-use paths. Travel lanes are 12 feet wide and the center median is 16 feet wide to accommodate a 4-foot median and a 12-foot left turn lane. Multi-use paths are assumed to be 8 feet wide to accommodate users flowing primarily with traffic. There is sufficient right-of-way to accommodate wider paths in lieu of selected landscape components.

This right-of-way width is adequate to allow for the construction of additional through lanes, right-turn lanes, deceleration lanes and acceleration lanes as necessary. The right-of-way will allow for the construction of utilities without placing the utilities under the roadway pavement.

Secondary Arterials

The minimum right-of-way for secondary arterials is set at 120 feet to accommodate a four-lane divided roadway, with two multi-use paths and a modest degree of landscaping. Travel lane and median dimensions are the same as primary arterials. The right-of-way width is adequate to allow for the construction of auxiliary lanes and the provision of utilities without the need to place them under the roadway pavement.

Collectors

A minimum right-of-way width of 100 feet is recommended for collectors to accommodate a three-lane roadway and two multi-use paths. Travel lanes are 12 feet wide and the center lane is 16 feet wide to accommodate a two way left turn lane (TWLTL) or a future raised median (4 feet) and a 12-foot left turn lane. These multi-use paths are 8 feet wide to accommodate users flowing primarily with traffic. This right-of-way will allow for the construction of right-turn lanes, deceleration lanes and acceleration lanes as necessary. Utilities can generally be installed outside pavement areas.

Local Roadways

Local roadway standards are covered by standard drawings which are a part of the Town's Construction Standards. These standards cover items such as on-street parking, street trees and underdrains. Right-of-way width varies and is dependent on the roadway alternative selected by the developer. The use of narrow streets requires the provision of off-street parking. Wider streets accommodate on-street parking. Boulevard streets are wide enough to accommodate on-street parking and allow the passing of a stalled vehicle.

Roundabouts

Additional right of way could be reserved at the corners of public road intersections to provide sufficient area to construct roundabouts. These right of way needs would best be identified through specific site design studies. In the absence of site specific studies, right of way could be set aside in a manner similar to roadway sections by applying standards based on the functional classification of intersecting roadways. This is illustrated in Figures 5.2 and 5.3.

It is recommended that an area within a 300-foot diameter circle centered on the intersection should be reserved as right of way at arterial intersections. At any other public road intersection, an area within a 200-foot diameter circle centered on the intersection should be reserved as right of way.

For simplicity in right of way description, a straight line corner cut could be used between the points where the required diameter crosses the right of way lines of the approach roads.

This right of way reservation for arterial intersections would typically provide sufficient area to construct either a single lane roundabout or a two-lane roundabout. The right of way reservation for other intersections would typically provide sufficient area to construct a single lane roundabout.

In some circumstances, roundabouts may be designed with bypass lanes to accommodate large turning movement volumes. Roundabouts may also be moved slightly away from the center point of the intersecting roads because of geometric constraints. These design decisions could result in the need to acquire additional right of way beyond that reserved by these typical requirements.

Figure 5.1: Typical Roadway Sections

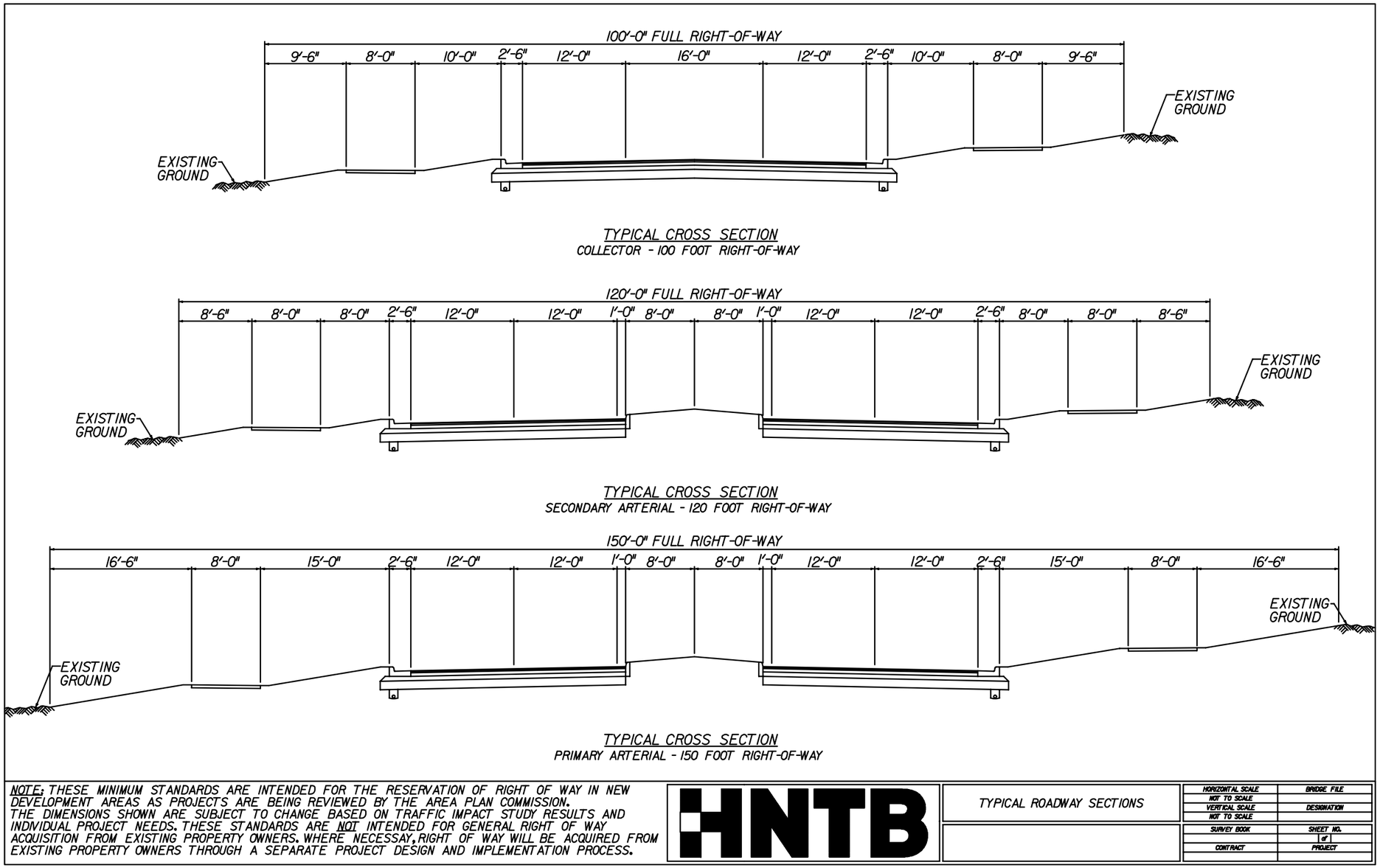


Figure 5.2: Typical Roundabout Right of Way – Arterial

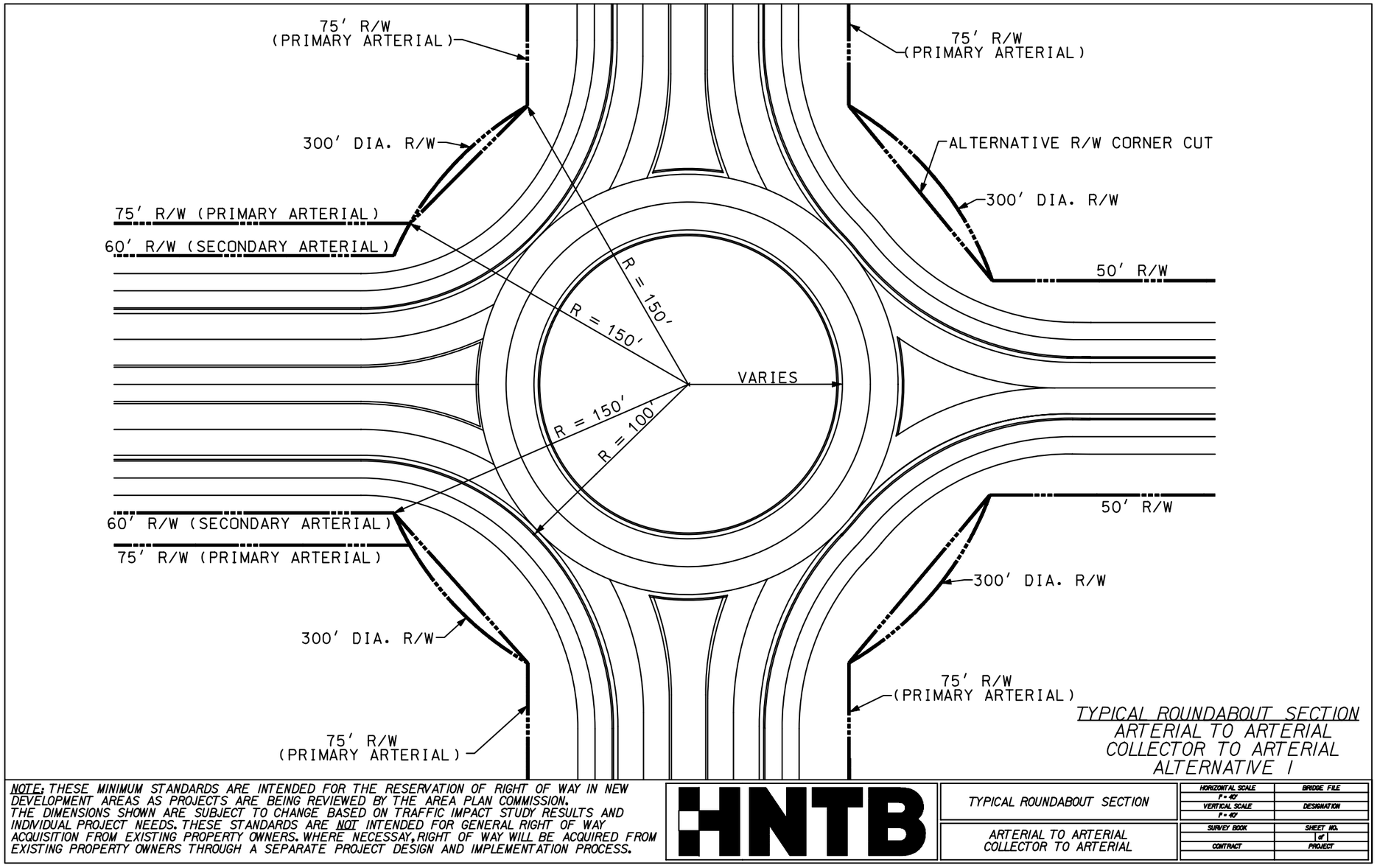
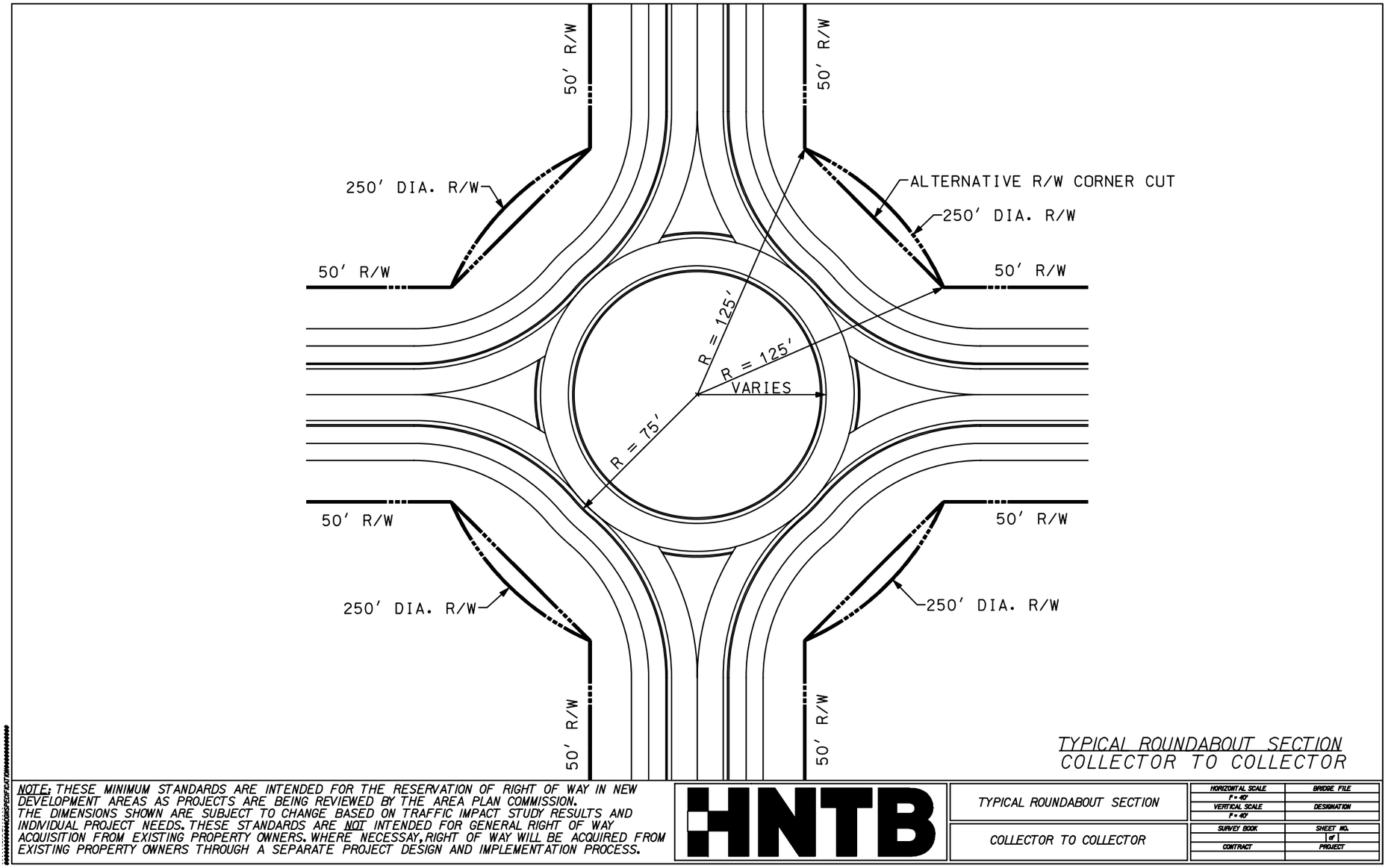


Figure 5.3: Typical Roundabout Right of Way – Collector



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Chapter 6

Adoption and Implementation

Adoption and implementation of the transportation plan is straightforward since the basic ordinances and processes necessary to properly utilize the plan are already in place. It is suggested that Westfield complement the transportation plan with effective access management policies, including the adoption of a formal requirement for traffic impact studies for projects of a selected magnitude.

This chapter addresses the issue of access management, followed by a listing of actions the community should take to adopt and carry out the provisions of the transportation plan.

Recommended Access Management Policies

Access management involves the implementation and control of roadway design elements in order to allow safe and efficient access to property while preserving the traffic movement function of the transportation system. Access management typically involves ordinances that control the location, spacing and design of intersections and driveways on arterial and collector roads.

Proper access management can preserve the throughput of a corridor, reduce congestion, minimize crashes, provide for more aesthetic pedestrian and landscaped areas, encourage business and residential development, and increase property values.

Access management is an important issue for Westfield, where new developments are being constructed at a rapid rate. Obtaining adequate right of way to construct necessary roadway improvements will help to address some of the congestion problems often caused by land development. It will also be important for Westfield to actively control access to arterial and collector roads in order to maintain traffic carrying capacity.

As a minimum, it is recommended that Westfield take the following steps to manage access on its roadways:

- Establish intersection and driveway spacing requirements for arterial and collector roads, including setback requirements from freeway ramp terminals.
- Assure that minimum lot size and frontage requirements along arterials support driveway spacing and intersection corner clearance requirements.
- Review property access requirements to assure that they discourage direct property access to arterial roads and encourage shared access to adjacent developments.
- Require that existing properties be brought into compliance with access management requirements upon:
  - Subdivision of the property
  - Change in zoning
  - Significant increase in trips generated by the property

- Request for new a driveway permit

- Require traffic impact studies for developments that are expected to generate 100 or more new peak direction trips to or from the site. Impact studies should be required to follow the Recommended Practice for Transportation Impact Analyses for Site Development by the Institute of Transportation Engineers

Adoption and Implementation Process

The first steps in implementing the Westfield Transportation Plan will be the forwarding of a recommendation for adoption by the Westfield Advisory Plan Commission. This would be followed by formal adoption by ordinance of the Westfield Town (or City) Council.

Once the Transportation Plan is formally adopted, Westfield should take the following actions to carry out its recommendations:

- Revise municipal ordinances as necessary to implement the right-of-way and access management standards recommended in the plan
- Request incorporation of plan recommendations in the Indianapolis Regional Transportation Plan maintained by the Indianapolis Metropolitan Planning Organization
- Request that the Indiana Department of Transportation review the existing functional classification changes discussed in the plan
- Continue to coordinate with the Indianapolis Metropolitan Planning Organization, the Indiana Department of Transportation, and other affected local jurisdictions on the planning and development of projects identified in this plan
- Continue an ongoing process to identify, evaluate and implement spot network improvements
- Monitor changing local and regional conditions and assess the need for updating the transportation plan