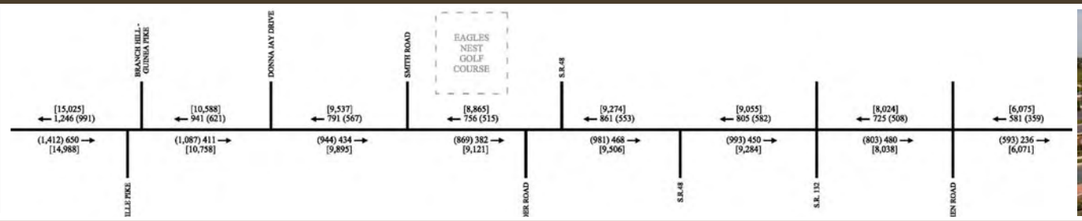
GOSHEN TOWNSHIP

LAND USE . . .



TRAFFIC PLANNING . . .

INFRASTRUCTURE . . .

ECONOMIC DEVELOPMENT . . .

STATE ROUTE 28 CORRIDOR IMPROVEMENTS TECHNICAL STUDIES REPORT

FEBRUARY 2009
**** FINAL DRAFT ****

PID # 82563

Prepared by:
KLEINGERS & ASSOCIATES

TRANSPORTATION IMPROVEMENT DISTRICT
CLERMONT COUNTY, OHIO

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EXECUTIVE SUMMARY

STATE ROUTE 28 CORRIDOR IMPROVEMENTS

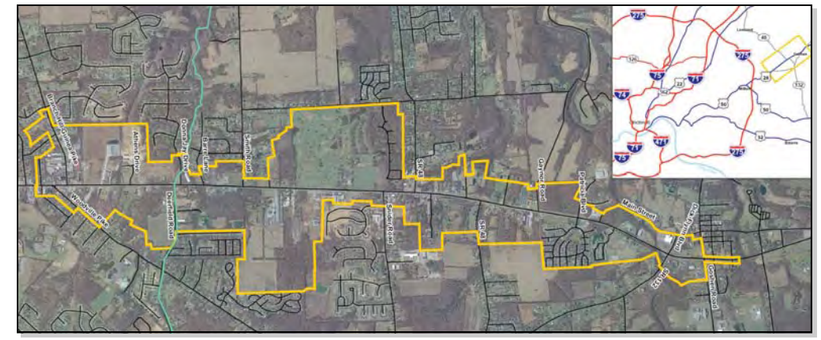
EXECUTIVE SUMMARY

Section 1: Project Overview

Clermont County, through the Clermont County Transportation Improvement District (CCTID), initiated this project to examine land use, zoning, and capacity and to develop a comprehensive access management strategy for the corridor. The project will consider both physical improvements to the roadway and its connections and assist the county in developing policies to manage future growth in this dynamic corridor.

Project Goals: The following project goals were developed from conversations with project stakeholders from the CCTID, Miami Township, and Goshen Township. These goals will be used as the basis for comparing alternatives and, ultimately, selecting a preferred alternative for this portion of the State Route 28 Corridor.

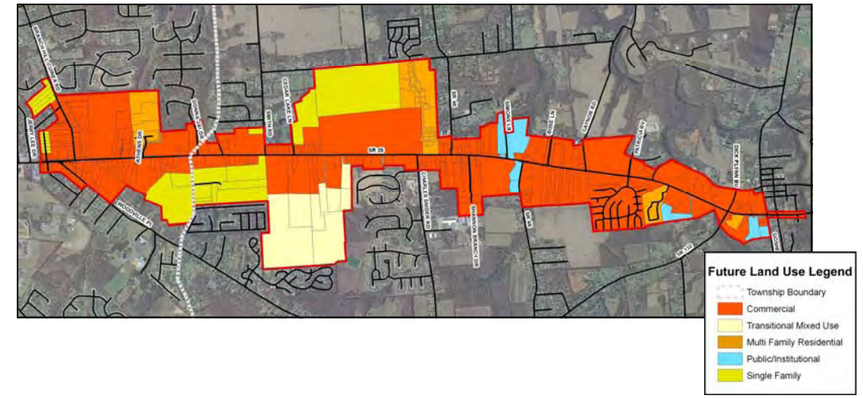
- To develop an access management plan for the Corridor with a focus on:
  - Long-term safety and congestion management
  - Economic development
- To provide a land-use planning tool
- To establish NEPA groundwork to help secure funding for infrastructure improvements
- To promote cooperation amongst stakeholders for their mutual benefit



Section 2: Land Use—Transportation and the Master Plan

The design of transportation facilities such as roads, driveway access points, sidewalks, and bike routes has a major impact on the community character of Miami Township and Goshen Township. These facilities are the result of land use decisions. This land use section provides planning and analysis on linking land use decisions with transportation facilities planning, funding and development. It serves to integrate and enhance the local master planning and corridor planning efforts of both communities to further the local community's development and transportation goals and objectives.

Future Corridor Land Use Plan: The future land use plan for the corridor study area establishes a framework for development patterns and assists in guiding land use decisions as new development and redevelopment activity takes place. The intent of this future land use plan is to display a picture of a possible build-out scenario for the corridor study area.

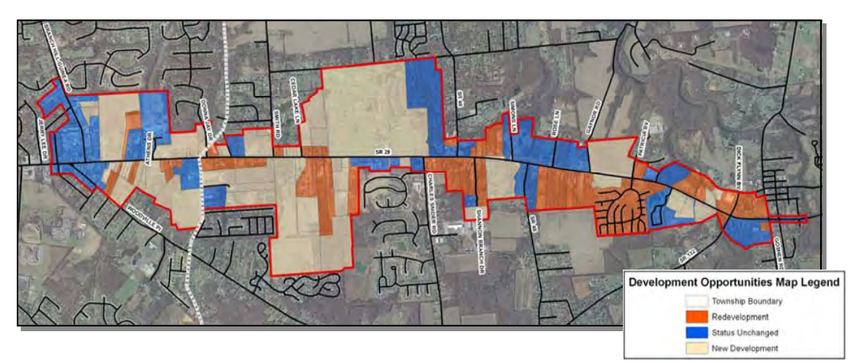


Section 3: Corridor Development Capacity

This Development Capacity Analysis seeks to establish a build-out threshold for the parcels within the study area designated as either "New Development" or "Redevelopment". These two types of designated areas form the foundation of the nodal development pattern suggested for the corridor study area.

Study Area Build Out Capacity Totals

Net Building Capacity	5,153,675 sq. ft.
Annual Property Tax Revenue	$10,133,420
Projected FTE Creation	5,726
Annual Income Tax Revenue *(Based on a JEDD Scenario)*	$1,079,584

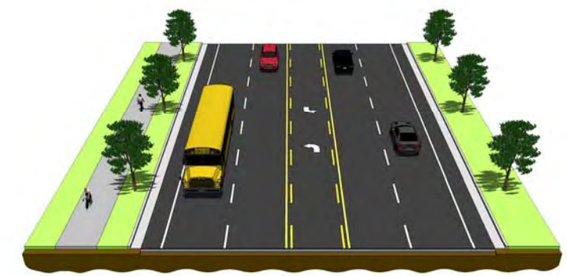


EXECUTIVE SUMMARY

Section 4: Existing Traffic Conditions

SR 28 in the study area is mainly a two-lane undivided roadway with four to five-foot wide paved shoulders. Auxiliary turn lanes have been constructed at several main intersections. The west end of the study area, including the intersections of SR 28 with Woodville Pike and with Branch Hill Guinea Pike, was widened to a 5-lane section as part of a recent improvement project completed by the Ohio Department of Transportation (ODOT). The majority of properties along the corridor have direct access to SR 28. In the 4+ mile length of SR 28 in the study area, there are 173 access points, well in excess of the number allowed under ODOT's access management regulations.

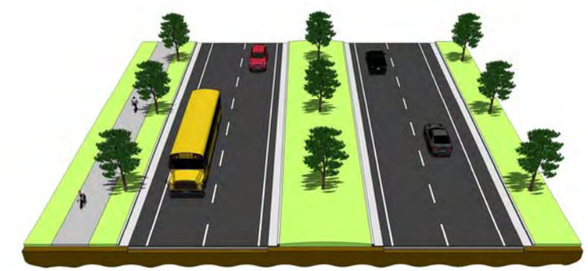
Capacity analyses were performed on SR 28 within the project area for the existing traffic volumes. SR 28, within the study area, currently operates at an acceptable Level of Service (LOS) which, according to the Highway Capacity is based on average travel speed through the corridor for this type of facility. However, the volume to capacity ratio for the western end of the corridor was calculated to be 0.91 during the PM peak traffic period indicating that the traffic volumes are approaching the capacity of the roadway.



Section 5: Future Conditions

Traffic volumes for the future year (2030) were developed in coordination with the OKI Travel Demand Model volumes. Capacity analyses performed on the existing infrastructure with these projected traffic volumes indicate the current roadway configuration is not sufficient to handle future traffic volumes. Average travel speeds along the corridor are expected to be as low as 10 to 15 miles per hour (LOS = F). In order to accommodate the increase in traffic volumes, SR 28 will need to be widened to provide two through lanes in each direction with auxiliary turn lanes at major intersections. Also, it is recommended that the offset intersections SR 28 with Woodville Pike and with Branch Hill Guinea Pike be combined to form a single four-leg intersection. This improvement will increase safety at the intersection and allow for smoother progression of traffic through the area.

Multiple transportation modes should be accommodated by the future roadway section. Transit is already available in the area via local bus routes. This service should be considered and promoted with infrastructure improvements in the area. Also, the improved condition should allow for safe and convenient travel by non-vehicular modes (walking, biking, etc). The proposed roadway section includes a multi-use path separated from the vehicular travel lanes by green space.



Section 6: The Nodal Development Approach

One land use planning method aimed at controlling traditional strip commercial growth along long corridors is the use of "development nodes." This concept is based upon confining growth to dense, interconnected clusters, or nodes, with open space, and featuring small scale commercial or residential areas in between the more active commercial nodes. Development nodes channel commercial development into the nodal districts or "pulse points." This nodal design combined with excellent inter-parcel access utilizing cross access easements, reverse frontage roads and sidewalks creates a more efficient internal site traffic flow and access to shared egress points. This type of development pattern also promotes a more pedestrian friendly environment by reducing the number of potential conflicts

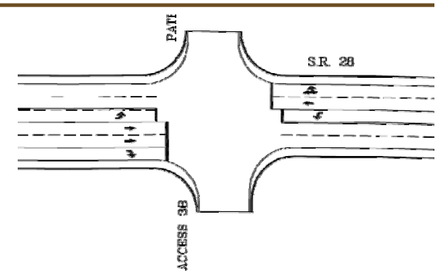
Benefits of a Nodal Development Approach for State Route 28

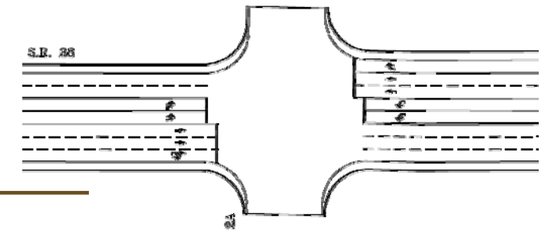
- The avoidance of scattered sprawl.
- Concentration of land uses allow the local governmental stakeholders to focus development-infrastructure dollars in one or two areas at a time.
- With much of the land held in large blocks of single ownership, unified development is more easily achieved.
- Consistent design themes through PUD and overlay zoning is easier to implement.
- Pedestrian oriented shopping experiences are fostered in these scenarios.
- Increased control of traffic and preservation of roadway capacity is better realized.

EXECUTIVE SUMMARY

Section 7: Nodal Traffic Analysis

The roadway network was analyzed with traffic generated from each of the described development nodes. These traffic volumes were significantly higher than those projected in OKI's travel demand model. Section 7 provides recommended intersection configurations for each of the nodal access points. It is important to note, though, that the projected land uses and related site-generated traffic are speculative at this point. The recommendations should be used as a general guide and should be re-evaluated when specific land uses are proposed.





Section 8: Node Development District Revenues and Improvements

This study analyzed the revenue capabilities of each Development Node District using a set of development assumptions utilizing both Tax Increment Financing district and Joint Economic Development Districts as further outlined in Section 8. Below are the revenue capability summaries for the four node districts:

Development Node #1 Build-out Summary

Total Commercial Building Capacity	= 464,149 square feet
Annual Property Tax Revenue	= $1,000,706
Net Annual Property Tax Revenue	= $500,353 (after 50% revenue split to school district)
New FTE Job Creation	= 516
Annual Earned Income Tax Revenue	= $97,322

Development Node #2 Build-out Summary

Total Commercial Building Capacity	= 1,010,294 square feet
Annual Property Tax Revenue	= $933,511
Net Annual Property Tax Revenue	= $466,876 (after 50% revenue split to school district)
New FTE Job Creation	= 1,123
Annual Earned Income Tax Revenue	= $211,836

Development Node #3 Build-out Summary

Total Commercial Building Capacity	= 678,262 square feet
Annual Property Tax Revenue	= $1,253,428
Net Annual Property Tax Revenue	= $626,714 (after 50% revenue split to school district)
New FTE Job Creation	= 754
Annual Earned Income Tax Revenue	= $142,216

Development Node #4 Build-out Summary

Total Commercial Building Capacity	= 186,624 square feet
Annual Property Tax Revenue	= $344,881
Net Annual Property Tax Revenue	= $172,440 (after 50% revenue split to school district)
New FTE Job Creation	= 207
Annual Earned Income Tax Revenue	= $39,131

Section 9: Access Management

Access management is the coordination of land use and access to a highway. The goal is to develop plans that will allow for economic growth and rational development while maintaining or improving safety and mobility along an existing roadway.

The benefits of an access management program for SR 28 includes:

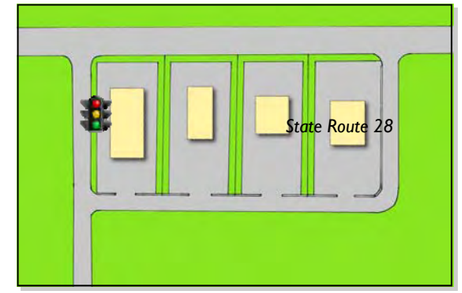
- Reduced vehicle crashes and crash potential.
- Preservation of roadway capacity and the useful life of SR 28.
- Decreased travel time and congestion.
- Improved business access to properties.
- Reduces the amount of public investment in the transportation infrastructure.

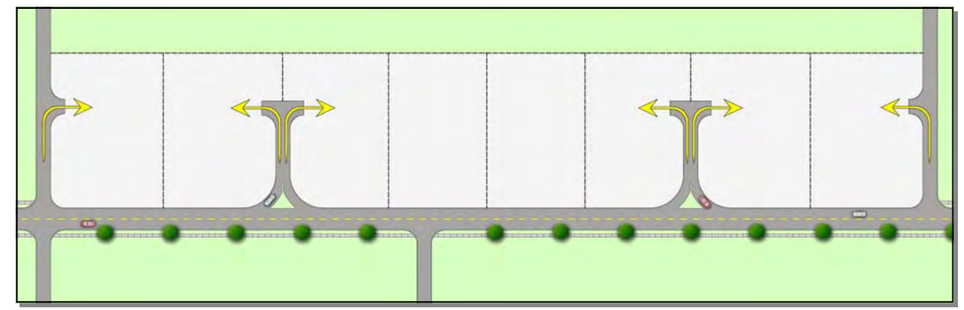
The Shared Benefit Approach to Corridor Land Development

Parcels assembled as part of a master planned development with access management techniques in place often retain a higher market value versus land sold separately for individual out parcel developments. Below is an illustration depicting a best practice scenario featuring multiple parcels fronting along the corridor roadway. These parcels are developed as a single master planned project for purposes of access management and internal traffic flow.

Access Management and Property Values

Access management balances mobility and access. Properties with direct access to the highway are often seen as most valuable, however; when access is permitted too close to an intersection, the access can become blocked by standing traffic making the property inaccessible over certain periods of time. Property has a greater value if its driveway locations are well planned and designed. Therefore, a primary goal of access management is to achieve a safe and efficient flow of traffic along a roadway while providing reasonable access to abutting properties. This generally creates higher sales volumes and more successful business districts.





Section 10: Implementation Plan

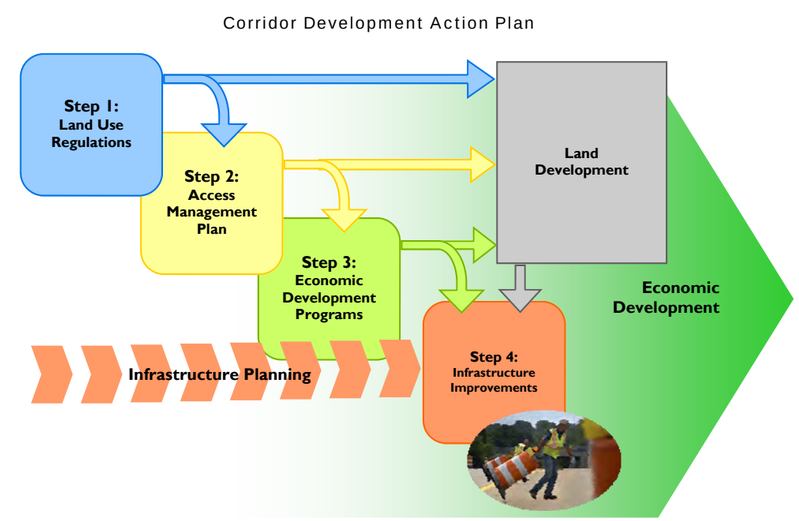
The proposed implementation plan is a multi-step process geared toward creating land use regulations, development guidelines, and access management criteria for the corridor to establish the foundation for infrastructure improvements which will, in turn, support future development. The steps are as follows.

Step 1: Land Use
- Amend local Township zoning regulations to include:
  - Overlay district guidelines for nodal development areas
  - A corridor-based Transportation Master Plan
- Engage in public education & development due diligence initiatives
- Establish right-of-way preservation regulations

Step 2: Access Management
- Establish planned corridor and/or nodal access management plans to supplement County access management standards
- Adopt corridor overlay district to implement local access management guidelines.

Step 3: Development Node Districts
- Work with the strategically located property owners in implementing Blanket Tax Increment Financing Districts over nodal areas designated for future commercial and office development.
- Consider the creation of a Joint Economic Development District in order to generate income tax revenue
- Establish Community Reinvestment Area Districts over the designated Development Node District properties.

Step 4: Infrastructure Improvements
- Continue developing plans and programs for construction of the needed infrastructure improvements to support the anticipated development.
- Use land development activity ("the market") as a trigger for initiating construction of planned improvements.
- The improved infrastructure should accommodate the increased traffic demands of development; thereby making the corridor attractive to prospective developers.



SECTION 1

PROJECT OVERVIEW

STATE ROUTE 28 CORRIDOR IMPROVEMENTS

PROJECT OVERVIEW

1.1 PROJECT BACKGROUND

Clermont County, Miami Township, and Goshen Township have identified operational deficiencies in the State Route 28 (SR 28) corridor between Woodville Pike/Branch Hill-New Guinea Pike and Goshen Road. This corridor serves as a critical link in northern Clermont County, providing connections between communities and access to the region's highway network. As development in Clermont County (and Brown County) continues, this corridor will grow in importance. Clermont County, through the Clermont County Transportation Improvement District (CCTID), initiated this project to examine land use, zoning, and capacity and to develop a comprehensive access management strategy for the corridor. The project will consider both physical improvements to the roadway and its connections and assist the county in developing policies to manage future growth in this dynamic corridor.

1.2 PROJECT GOALS

The following project goals were developed from conversations with project stakeholders from the CCTID, Miami Township, and Goshen Township. These goals will be used as the basis for comparing alternatives and, ultimately, selecting a preferred alternative for this portion of the State Route 28 Corridor.

- To develop an access management plan for the Corridor with a focus on:
  - Long-term safety and congestion management
  - Economic development
- To provide a land-use planning tool
- To establish NEPA groundwork to help secure funding for infrastructure improvements
- To promote inter-jurisdictional cooperation amongst stakeholders for their mutual benefit

1.3 STUDY APPROACH

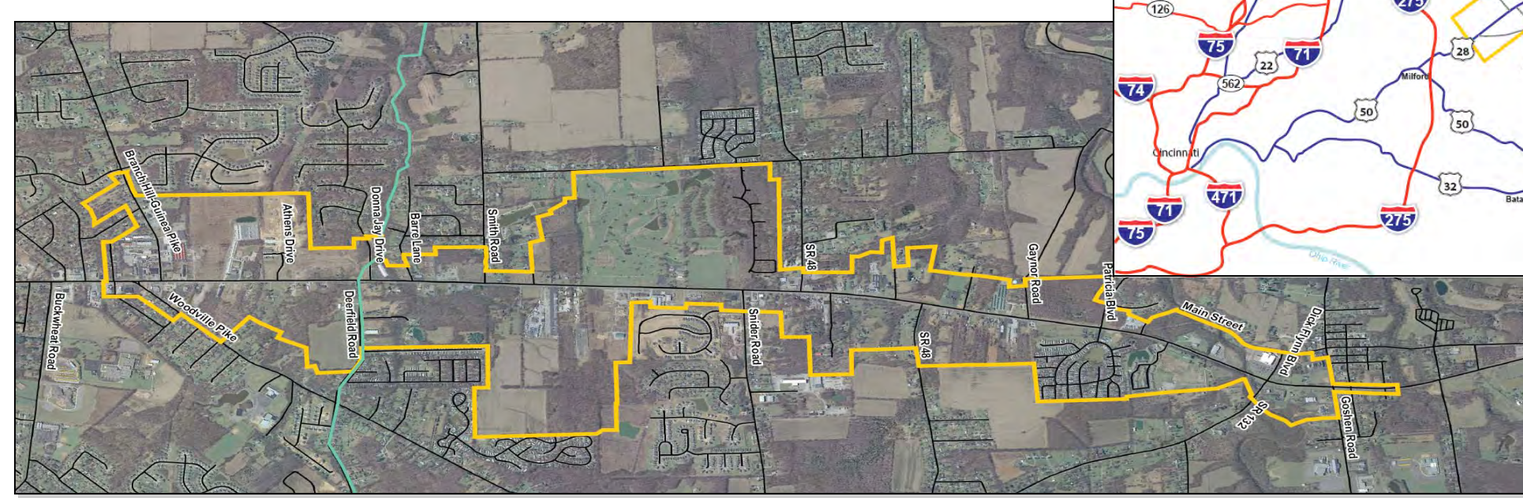
This study process recognizes the interdependencies of land use, infrastructure needs, and economic development potential for the identified corridor. As such, the project team undertook an iterative approach to the analyses; evaluating each of these factors concurrently, comparing results, and re-evaluating to adjust for these independencies. This Technical Studies Report is a compilation of those evaluations and lays the groundwork for implementing policies and infrastructure improvement plans that support the study goals.

The first sections of the report summarize existing and future land use conditions and identify infrastructure improvements that are needed to support existing and future traffic volumes. Following those sections is a summary of the State Route 28 corridor's economic development potential. The Nodal Development Approach concept is introduced in the later sections of the report as the development potential is focused at several defined "nodes" or districts along the corridor. The revenue potential for each of the districts is quantified (based on a series of assumptions and calculations). This introduces the concept of Value Capture Districts for the corridor which identifies developable regions as one source of financing for needed infrastructure improvements and other programs. The recommendations section of the report includes specific infrastructure needs along with policy recommendations for access management and other considerations.

1.4 STUDY AREA

The project study area limits, shown in Figure 1-1, were developed by the project team to encompass the area in which both transportation and future land use would be evaluated through this study. The study will consider transportation improvements on SR 28 from Woodville Pike to Goshen Road, as well as key intersections and intersecting roads along the corridor. Future land use will be considered for all properties immediately adjacent to SR 28 as well as several large parcels that could be incorporated into future development in the corridor.

SR 28 within the project area is classified by the Ohio Department of Transportation (ODOT) as an Urban Minor Arterial and is primarily a two-lane road with paved shoulders and with auxiliary turn lanes at major intersections. The legal speed limit on SR 28 in the study area ranges from 45 miles per hour to 55 miles per hour throughout this 4-mile stretch of SR 28. Recent roadway improvements to the west of the study area and including the intersections at Branch Hill New Guinea Pike and at Woodville Pike widened SR 28 to a five-lane roadway section.



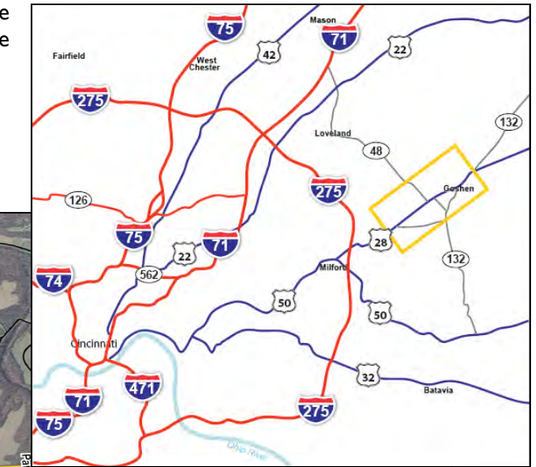


Figure 1-1: Project Study Area

SECTION 2

LAND USE

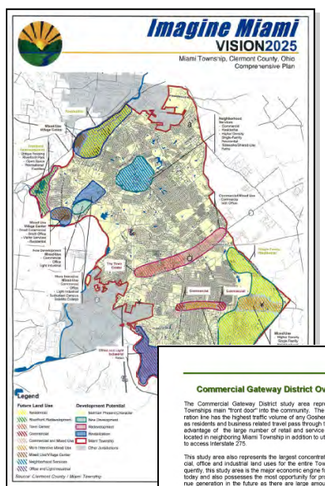
STATE ROUTE 28 CORRIDOR IMPROVEMENTS

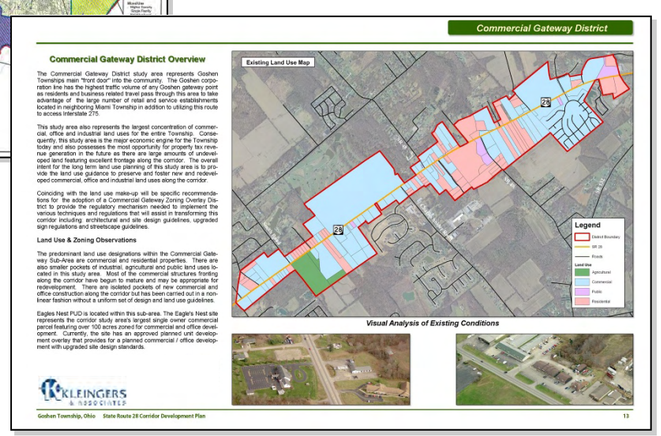
LAND USE –TRANSPORTATION AND THE MASTER PLAN

Community Master Plans and Corridor Land Use Plans describe a community's vision for the future and how it plans to achieve that vision. A critical component of these plans is the transportation element. Further, identifying strategies that leverage both land use and transportation planning is directly responsible for shaping a community's future. There are several ways in which these plans can address land use and transportation issues and establish a basis for future development. A well developed transportation plan element will define how the community's transportation system relates to the regional system, the vision for growth, and the intended function of the local transportation network. The transportation section for a Master Plan or Corridor Land Use Plan might include:

- Policies (i.e. what you want to achieve or commitments to do something— in the form of goals, principles and standards).
- Implementation Strategies (i.e. how you intend to achieve it).
- Background research and analysis for the policies and implementation programs including:

  - ➲ Description of existing conditions: types of roads; public transportation; location and condition of transportation facilities, bike routes, and sidewalks; the community's place in the region; and issues of regional concern.
  - ➲ Traffic counts for major roads and intersections.
  - ➲ Description of existing sidewalk and trail network. Whom do they service and what is their condition?
  - ➲ Identification of current problems with access (driveways) on roadways by examining accident patterns.
  - ➲ Consideration of future land uses, zoning, and current land use as it relates to the intended function of a roadway.
  - ➲ Identification of nodal development / zoning strategies to limit the amount of development along less developed, rural roads.
  - ➲ Incorporation of access management strategies as part of site plan review and subdivision regulations to ensure that development along highways does not significantly reduce traffic safety and carrying capacity.
  - ➲ Recommendation for traffic impact analysis for all Site Plan Review and Subdivision applications exceeding a prescribed threshold.





The communities in the study area currently address development related growth planning in the Miami Township Vision 2025 Plan and the Goshen Township State Route 28 Corridor Development Plan.

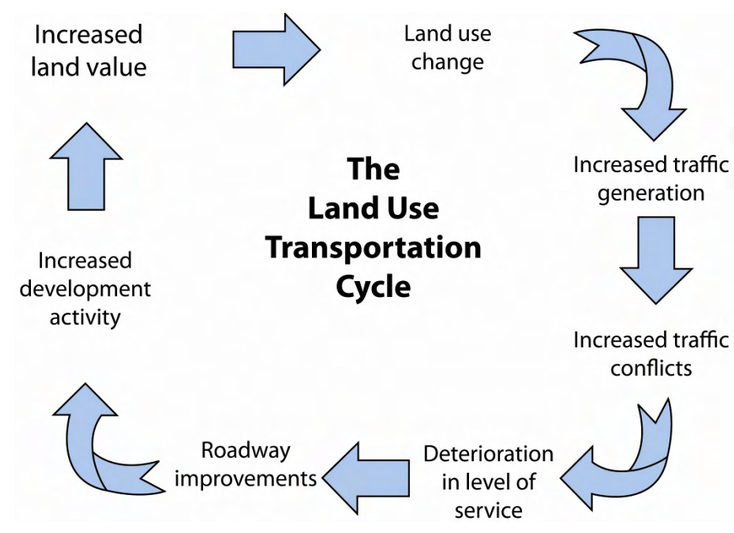
2.1 THE LINK BETWEEN LAND USE AND TRANSPORTATION

The design of transportation facilities such as roads, driveway access points, sidewalks, and bike routes has a major impact on the community character of Miami Township and Goshen Township. These facilities are the result of land use decisions. This land use section provides planning and analysis on linking land use decisions with transportation facilities planning, funding and development. It serves to integrate and enhance the local master planning and corridor planning efforts of both communities to further the local community's development and transportation goals and objectives.

Improved integration of land use and transportation planning can reduce the need for unnecessary highway expansion and maintain the quality of our communities. Two cost-effective strategies useful for integrating land use with transportation are: *Nodal Development & Zoning and Access Management*. Individually or together, these strategies can significantly improve the community. Nodal Development & Zoning concentrates development (e.g., creates concentrated and planned activity centers) to encourage higher density development around planned roadway and intersection improvements so that land between nodes can be used for low density, low traffic land uses.

Access Management is the ability to control the number and location of access points to a property. Adopting these strategies as land use and transportation policies and in incorporating them into the local zoning resolution as development standards, and implementing them via site plan and subdivision plan review will significantly improve the Miami Township and Goshen Township communities. Access Management strategies are described in greater detail in the access management chapter.

To effectively link transportation and land use, a Master Plan or Corridor Plan's land use section should consider roadways as having a direct impact to the type of desired land use. Development and zoning decisions should consider the existing capacity and intended function of a roadway and recognize the impact development will have on the transportation system and facilities.



2.2 EXISTING CORRIDOR LAND USE OVERVIEW

The existing State Route 28 Corridor Improvements project study area features a diverse mix of existing land uses ranging from low intensity agricultural land to higher intensity commercial and light industrial / assembly land uses. The study area also features parcels in virtually all cycles of the development life cycle including undeveloped "raw" land, newly constructed commercial and residential developments and older structures and land uses that have entered various stages of deterioration and thus represent prime redevelopment opportunities going forward.

Studying the existing land use is important to this overall land use and economic development analysis in order to provide a baseline land use designation. This existing land use data serves as the foundation for the creation of the Value Capture Districts under the economic development sections of this study. Land uses that are likely targets for redevelopment as well as newer land uses that are not likely to be redeveloped within a reasonable time frame are gleaned from this existing land use analysis.

The data used for the existing land use mapping is derived from the current Clermont County GIS data collection based upon auditor tax records. The parcels have been field checked and amended as needed to provide an extra level of accuracy. However, it is always a possibility that the exact land use for a given parcel is unable to be verified by these sources.

Windshield Survey of Existing Miami Township Land Use Conditions

Newer residential construction

Newer commercial construction

Light industrial and warehouse uses

Representative vacant land sites with utilities and SR 28 frontage

Typical corridor viewsheds

Windshield Survey of Existing Goshen Township Land Use Conditions

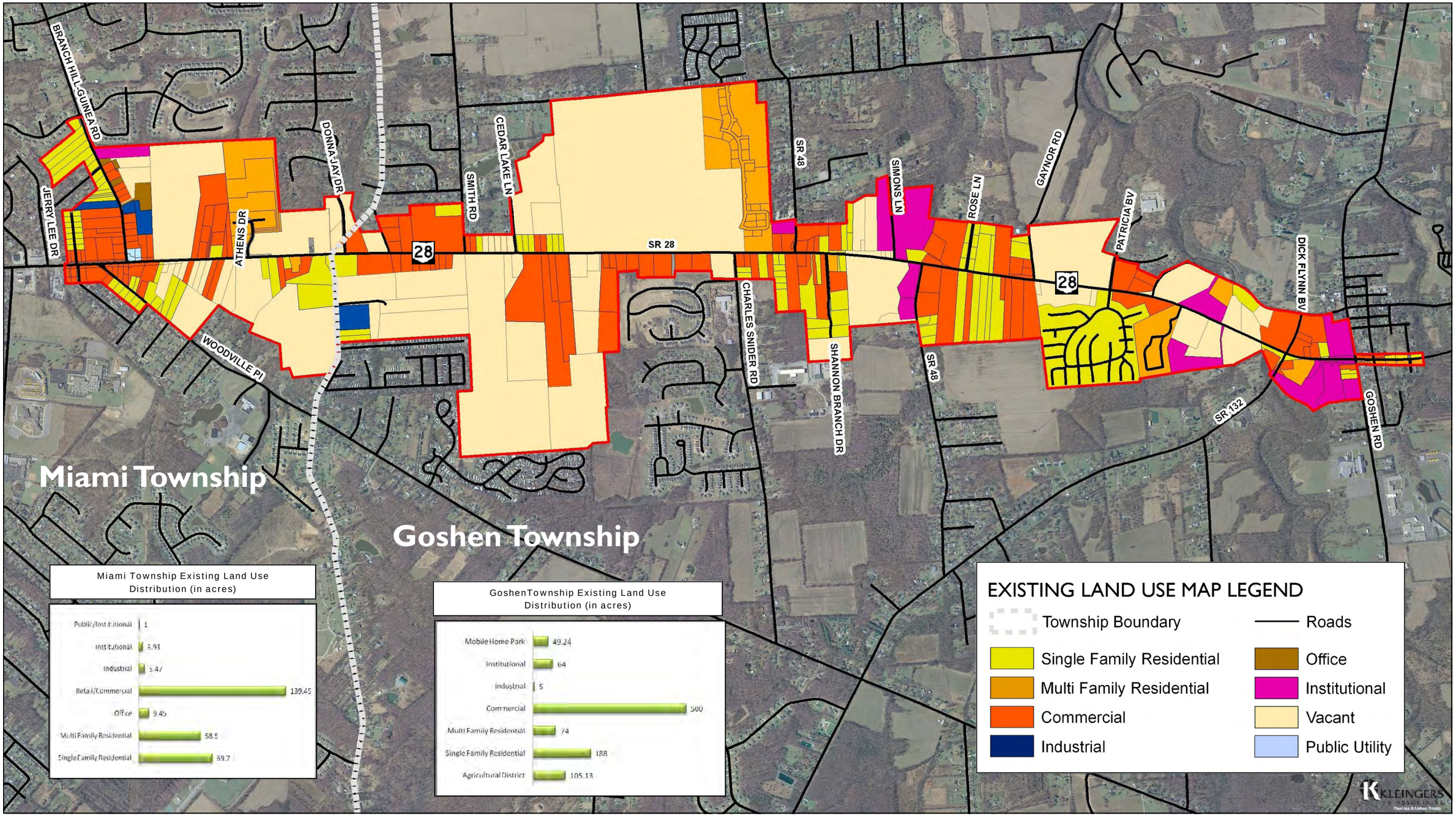
Properties that are currently underutilized and represent prime redevelopment opportunities

Representative vacant land sites with utilities and SR 28 frontage

Newer multi-family residential construction

Representative conversions of single family to commercial land uses

Representative "strip" retail and office developments


BRANCH HILL-GUINEA RD
JERRY LEE DR
ATHENS DR
DONNA JAY DR
WOODVILLE PI
SMITH RD
CEDAR LAKE LN
SR 28
28
SR 48
CHARLES SNIDER RD
SHANNON BRANCH DR
SIMONS LN
ROSE LN
GAYNOR RD
PATRICIA BV
DICK FLYNN BV
SR 132
GOSHEN RD
Miami Township
Goshen Township
Miami Township Existing Land Use Distribution (in acres)
Public/Institutional 1
Institutional 3.93
Industrial 5.47
Retail/Commercial 139.45
Office 9.45
Multi Family Residential 58.5
Single Family Residential 69.7
GoshenTownship Existing Land Use Distribution (in acres)
Mobile Home Park 49.24
Institutional 64
Industrial 5
Commercial 500
Multi Family Residential 74
Single Family Residential 188
Agricultural District 105.13
EXISTING LAND USE MAP LEGEND
Township Boundary
Roads
Single Family Residential
Office
Multi Family Residential
Institutional
Commercial
Vacant
Industrial
Public Utility

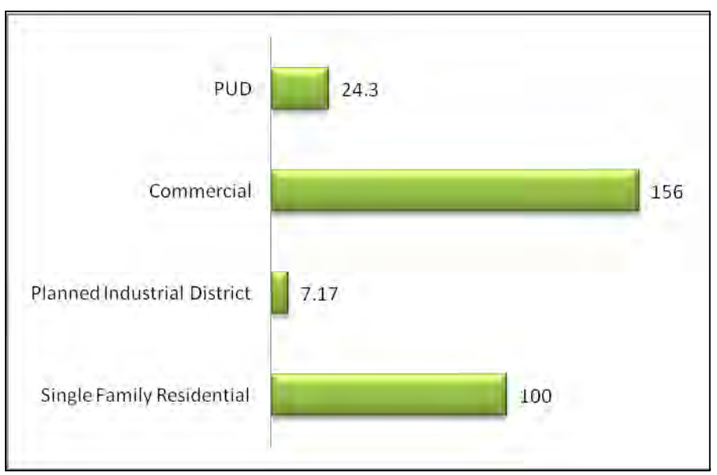
2.3 CORRIDOR ZONING

Corridor Zoning District Overview

Similar to the existing land use found in the corridor study area, the existing zoning classifications span a wide range of types and densities permitted from low density residential districts through a wide range of commercial and industrial zoning districts. Given the relatively large size of the corridor study area; the existence of so many different zoning districts is not uncommon.

However, as development and redevelopment continues to take place within the corridor study area, it will be advantageous to promote future rezoning actions to better align with the adopted future land use plans Miami Township and Goshen Township respectively.

Miami Township Zoning District Distribution (in acres)



Miami Township Zoning Overview

Existing Zoning: The existing Miami Township zoning map identifies the following zoning district designations found in the Miami Township portion of the corridor study area:

"B-2"	General Business
"R-2"	Single Family Residential
"R-PUD"	Residential Planned Unit Development
"I"	Planned Industrial

"B-2" General Business

The purpose of the B-2 General Business District is to establish areas of commercial activity that offer a wide variety of retail goods and personal services to the residents of the community. These commercial areas shall be located on primary arterials, and shall be designed as to encourage the clustering and integration of groups of businesses, to minimize the creation of undue traffic congestion and to minimize impact on adjoining residential.

"R-2" Single Family Residential

The purpose of the "R-2" Residence District is to provide land for low-density single-family detached housing units. Permitted uses include single family detached dwellings such that there shall be a restriction of one single-family unit per lot, and lot area shall be a minimum of twenty thousand (20,000) square feet. Other permitted uses include public and private forests and wildlife reservations or including the usual buildings similar conservation projects.

"I" Planned Industrial

The purpose of the "I" Planned Industrial Park District is to provide sites for industrial, manufacturing and warehousing uses at appropriate locations in relation to existing and potential developments of surrounding areas, and to arrange the location of buildings, parking areas, access, screening, and lighting to protect values and to harmonize the development with surrounding areas.
The provisions in this District are designed to provide for the establishment and generation of low intensity industrial uses in a manner that minimizes conflict between industrial uses and nearby residential areas.

"R-PUD" Residential Planned Unit Development

It is the purpose of the Residential Planned Unit Development Overlay District ("R-PUD") to provide a flexible alternative to strict application of certain dwelling unit type, lot area, density and other requirements in Residential and Agricultural Zoning Districts, in order to encourage coherent planned residential development that are in keeping with modern site planning standards, so as to promote the general public health, safety, and welfare, and other general purposes of the Miami Township Zoning Resolution.

The objective of the "R-PUD" zoning district is specifically designed to:

1. Encourage residential land development in consideration of topography, vegetation, community character, and compatibility with surrounding land uses,

2. Encourage creative design in the arrangement of buildings, open space, circulation, and all related factors by permitting maximum flexibility in design;

3. Achieve the most efficient land use by utilizing the special advantages of planned development and coordinated planning and design, and facilitating the economic arrangement of buildings, circulation systems, and utilities;

4. Create high quality living environments that balance certain permitted density increases with preservation of green space and/or provision of recreational amenities:

Goshen Township Zoning Overview

Existing Zoning: The existing Goshen Township zoning map identifies the following zoning district designations found in the Goshen Township portion of the corridor study area:

"A"	Agricultural	"PBDD"	Planned Business Development
"B-1"	Local Business	"PUDD"	Planned Use Development
"B-2"	General Business	"R-2"	Low Density Residential
"M-1"	Light Manufacturing	"R-3"	Medium Density Residential
"M-2"	Heavy Manufacturing	"R-6"	Medium Density Residential
		"T"	Mobile Home Park

"A" Agricultural

The purpose of the (A) District is to preserve and protect the decreasing supply of prime agricultural land. This district also is established to control the indiscriminate infiltration of urban development in agricultural areas which adversely affects agricultural operators.

"B-1" Local Business

The purpose of the B-1 District is to encourage the establishment of areas for convenience business uses which tend to meet the daily need of the residents of the immediate neighborhood. Also it is to encourage the establishment of small scale retail, including but not limited to executive, administrative, accounting, clerical, stenographic, and similar uses. This district is to preserve the character of "Old Goshen." Research uses shall not be permitted. Such district shall be centrally located within Goshen Township boundaries, with access to a collector thoroughfare. Marginal strip development shall be prohibited.

"B-2" General Business

The purpose of the B-2 District is to encourage the establishment of areas for general business uses to meet the needs of a regional market area. Activities in this district are often large space users and the customers using such facilities generally do not make frequent purchases. The clustering of Commercial uses will be encouraged. Shopping centers will be the predominant building approach. Strip development shall be prohibited. B-2 Districts shall be located on an arterial thoroughfare as specified in the Major Thoroughfare Plan.

"M-1" Light Manufacturing

The purpose of the M-1 District is to encourage the development of manufacturing and wholesale business establishments which are clean, quiet, and free of hazardous or objectionable elements such as noise, odor, dust, smoke, or glare; operate entirely within enclosed structures and generate little industrial traffic. Research activities are encouraged.

"M-2" Heavy Manufacturing

The purpose of the M-2 District is to encourage the development of major manufacturing, processing, warehousing and major research and testing operation. These activities require extensive community facilities and reasonable access to arterial thoroughfares; they may have extensive open storage and service areas, general heavy traffic but shall be prohibited if they create nuisances beyond the limitations set up by the Zoning Commission.

"PBDD" Planned Business Development

The Planned Business Development District provisions of this Article are intended to provide for business development within the Township in a planned cohesive manner. Such business development can include office, neighborhood and regional retail, service oriented uses or a mixture thereof. The development is to be in an integrated design that provides for adequate open space, landscaping and parking areas while providing a circulation system that furthers the traffic network in the Township. These regulations are established pursuant to authorization under Ohio Revised Code Chapter 519 (2001), as amended, for townships to adopt Planned Development Zoning.

"PUDD" Planned Use Development

The Planned Use Development provisions of this Article are intended to further the purpose of promoting the general public welfare, encourage the efficient use of land and resources, promote greater efficiency in providing public and utility services, and encourage innovation in the planning and building of all types of development. Furthermore, the Planned Development seeks to promote development types and patterns which are in compliance with the Goshen Township Growth Management Plan. These regulations are established pursuant to authorization under Ohio Revised Code Chapter 519 (2001), as amended, for townships to adopt Planned Development zoning.

"R-2" Low Density Residential

The purpose of the R-2 District is to permit the establishment of low density single family dwellings with lot sizes sufficient for individual water and sewer facilities, but not to exceed one (1) dwelling unit per 30,000 square feet. Centralized water and sewer facilities are, however, encouraged.

"R-3" Medium Density Residential

The purpose of the R-3 District is to encourage the establishment of single and two family dwellings not to exceed one single or one two family dwelling per 20,000 square feet in sewered areas and one single family dwelling per 20,000 square feet in un-sewered areas.

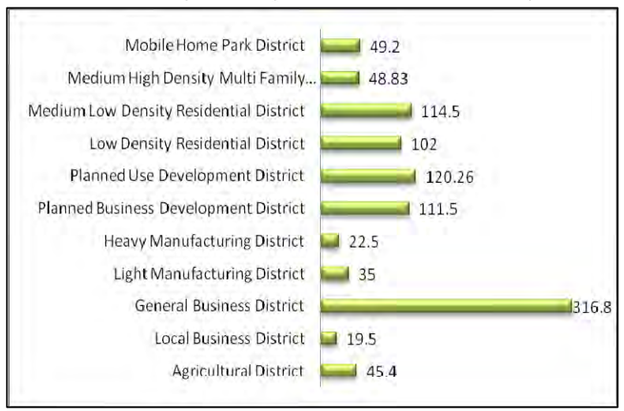
"R-6" Medium Density Residential

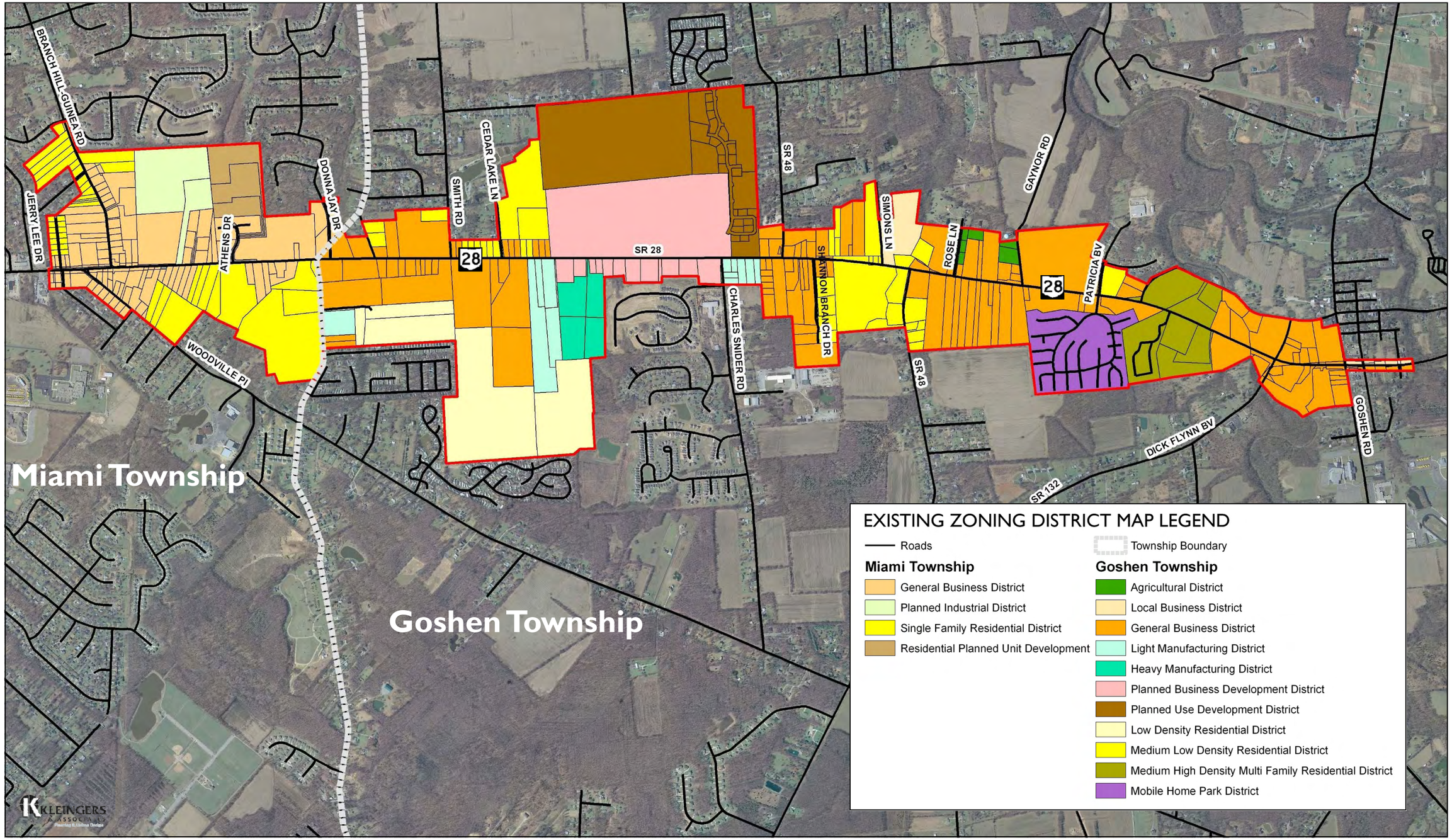
The purpose of the R-6 District is to permit the establishment of high density single family dwellings with group or Central Sewage treatment, and public water only per 12,800 feet.

"T" Mobile Home Park

The purpose of the T District is to encourage the development of mobile home parks in a well planned environment and shall be the only district within the Township wherein mobile homes may be located. Such districts shall abut upon an arterial or collector thoroughfare as identified on the Major Thoroughfare Plan. Mobile Home parks shall comply with regulations of Chapter HE-27 of the Ohio Sanitary Code as well as those general standards specified in Article 13 of this Resolution. Where the standards of the Ohio Sanitary Code and Article 13 conflict, the Ohio Sanitary Code shall apply.

Goshen Township Zoning District Distribution (in acres)




BRANCH HILL GUINEA RD
JERRY LEE DR
ATHENS DR
DONNA JAY DR
SMITH RD
CEDAR LAKE LN
SR 28
28
SR 48
SIMONS LN
ROSE LN
GAYNOR RD
PATRICIA BV
SHANNON BRANCH DR
CHARLES SNIDER RD
WOODVILLE PI
DICK FLYNN BV
GOSHEN RD
SR 132
Miami Township
Goshen Township
EXISTING ZONING DISTRICT MAP LEGEND
Roads
Township Boundary
Miami Township
General Business District
Planned Industrial District
Single Family Residential District
Residential Planned Unit Development
Goshen Township
Agricultural District
Local Business District
General Business District
Light Manufacturing District
Heavy Manufacturing District
Planned Business Development District
Planned Use Development District
Low Density Residential District
Medium Low Density Residential District
Medium High Density Multi Family Residential District
Mobile Home Park District

2.4 FUTURE LAND USE

Future Land Use Overview

The future land use plan for the corridor study area establishes a framework for development patterns and assists in guiding land use decisions as new development and redevelopment activity takes place. The intent of this future land use plan is to display a picture of a possible build-out scenario for the corridor study area.

The future land use designations prescribed in this plan are intended to compliment and work within the respective Miami Township and Goshen Township land use plans and zoning resolutions.

This future land use plan for the corridor study area may differ slightly from both Miami Township and Goshen Township future land use plans existing at the time of this corridor plan completion. However, substantial efforts have been undertaken to work with both Townships and propose a future land use framework that both jurisdictions can support.

A next implementation step for both Townships to consider includes the amendment of their future land use plans to create consistency between this future land use plan and each township plan. Doing so will provide a strengthened position when reviewing and deciding on new development and redevelopment issues in the future.

Future Land Use Designations

The corridor study area contains the following types of future land use designations:

- Commercial
- Transitional Mixed-Use
- Single Family Residential
- Multi-Family Residential
- Public & Institutional

Below is a brief description of the types of land uses targeted for each future land use designation. This list is not meant to be all inclusive, but rather provides an illustrative view of the general types and intensity of future land uses targeted for each district.

Future Commercial Land Use Designations

This category represents a mix of retail uses intended to serve the needs of both a local and broader regional market area. The larger scale retail uses may seek to draw a large customer base by offering significant discounts on merchandise, an extensive and diverse inventory and 24-hour service. Buildings for this land use can be quite large; they usually have extensive areas of surface parking in front of the buildings. The market for such commercial uses is typically drawn from a four (4) to eight (8) mile radius around the site. This land use can have significant impacts on adjacent development and should not be located next to residential land uses. This commercial category also represents low to medium intensity office development for professional services and general business operations. Office uses can be located adjacent to residential neighborhoods if adequate buffering and building setbacks are provided. Likewise, smaller scale neighborhood retail and specialty retail may also be appropriate for these areas to serve as more narrow market segment.

Future Transitional Mixed-Use Land Use Designations

This category represents a mix of land uses consisting of retail / office and residential. The area identified for this future land use is located in the Goshen Township study area and is directly adjacent to established residential neighborhoods on two sides. This district serves as a transition from residential to the higher intensity commercial land uses situated closer to the State Route 28 corridor. A plan featuring commercial at the northern and northeastern portions of the district transitioning into planned unit single family or planned unit multi-family may be appropriate for the district. However, a development pattern featuring planned unit residential over the entire district may be appropriate if adequate buffering is provided against the adjacent commercial or other non-residential areas. Likewise, adequate buffering, screening and building setbacks for any non-residential land uses permitted in this area should be required if located adjacent to any existing residential district.

Future Single Family Land Use Designations

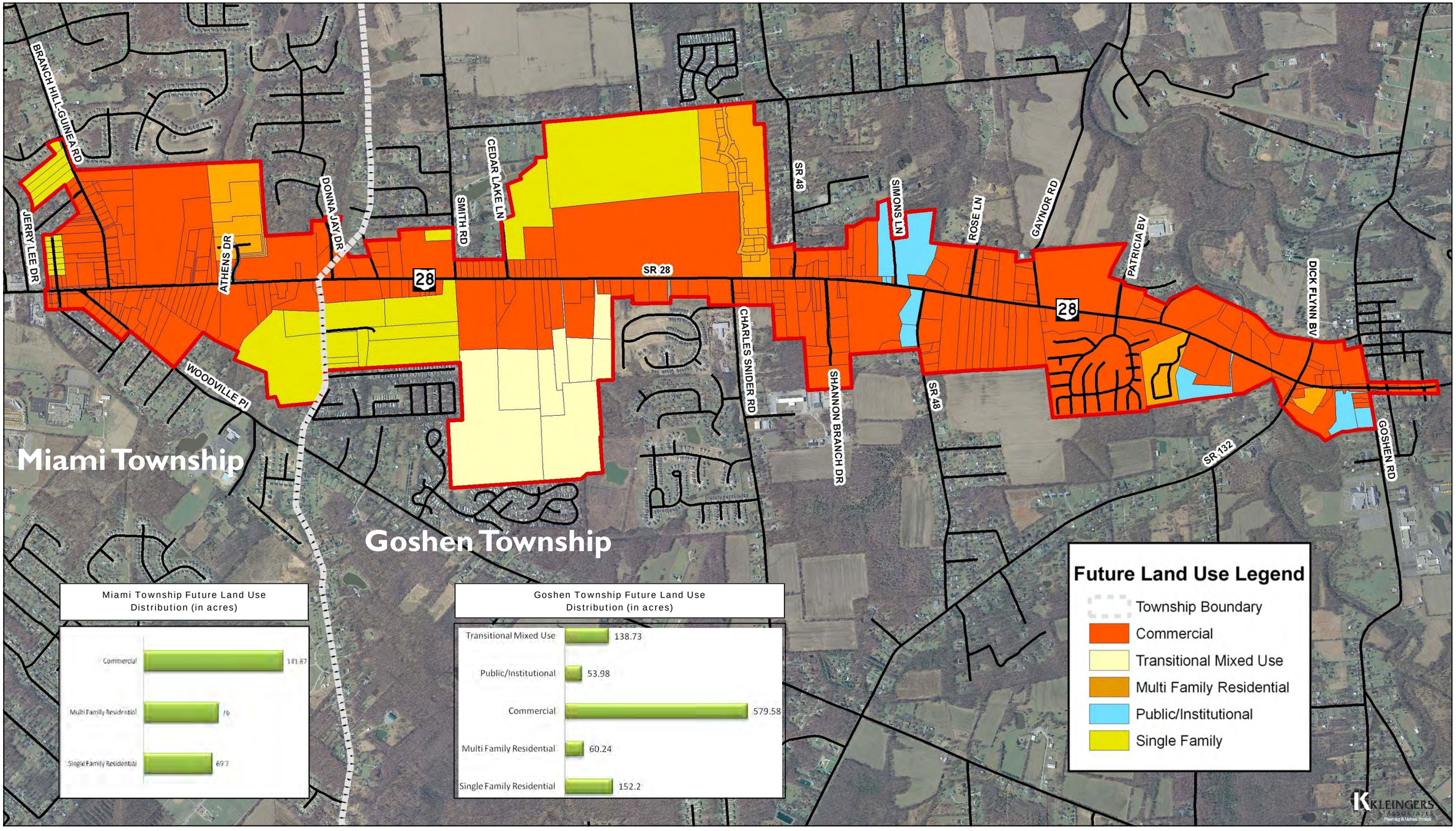
This category represents conventional single family detached homes or development. It is recommended that efforts be taken to promote the use of a Planned Unit Development overlay for these residential developments. The land within this area can support residential neighborhoods of low to medium density. Development occurs in a large enough area that a community – or village – is created. Mobile home park uses are not included within this land use designation. "Empty-Nester" and "landominium" style developments should be promoted in order to serve a local demographic market generally aged 55 and over that will likely be underserved in the future.

Future Multi-Family Residential Land Use Designations

This category represents residential development characterized by two (2) to three (3) story structures containing multiple residential units. It is recommended that efforts be taken to promote the use of a Planned Unit Development overlay for these residential developments. This land use is a higher density than single family development. It includes renter occupied (apartment) and owner-occupied (condominium) units.

Future Public / Institutional Land Use Designations

This category represents nonprofit, public or semi-public uses such as churches, synagogues, public and private schools, post offices, libraries, community centers, fire stations, and other government/municipal facilities.


BRANCH HILL-GUINEA RD
JERRY LEE DR
ATHENS DR
DONNA JAY DR
SMITH RD
CEDAR LAKE LN
SR 28
28
SR 48
SIMONS LN
ROSE LN
GAYNOR RD
PATRICIA BV
DICK FLYNN BV
GOSHEN RD
SR 132
CHARLES SNIDER RD
SHANNON BRANCH DR
WOODVILLE PI
Miami Township
Goshen Township
Miami Township Future Land Use Distribution (in acres)
Commercial
141.87
Multi Family Residential
70
Single Family Residential
69.7
Goshen Township Future Land Use Distribution (in acres)
Transitional Mixed Use
138.73
Public/Institutional
53.98
Commercial
579.58
Multi Family Residential
60.24
Single Family Residential
152.2
Future Land Use Legend
Township Boundary
Commercial
Transitional Mixed Use
Multi Family Residential
Public/Institutional
Single Family

SECTION 3

CORRIDOR DEVELOPMENT CAPACITY

STATE ROUTE 28 CORRIDOR IMPROVEMENTS

CORRIDOR DEVELOPMENT CAPACITY

3.1 DEVELOPMENT CAPACITY ANALYSIS APPROACH

This Development Capacity Analysis seeks to establish a build-out threshold for the parcels within the study area designated as either "New Development" or "Redevelopment". These two types of designated areas form the foundation of the nodal development pattern suggested for the corridor study area.

STEP #1: Parcel Designation

The analysis begins with a designation of the parcels within the study area into one of three categories: "New Development", "Redevelopment" or "Status Unchanged."

A "New Development" designation is utilized to classify larger parcels or clusters of adjacent parcels featuring no existing structures or limited structures found on the site. These parcels are identified as having the potential for future development activity facing minimal land assembly or structural demolition requirements.

A "Redevelopment" designation is utilized to classify individual parcels or clusters of parcels as having future redevelopment potential. These individual parcels or parcel clusters typically feature one or more existing residential structures or business operations that may be approaching an underutilized land use scenario where the highest and best use is not realized based on a variety of factors including: age and condition of existing structures, proximate location to key intersections or development nodes and surrounding property values.

A "Status Unchanged" designation is utilized to classify individual parcels or clusters of parcels as possessing low redevelopment opportunities. This designation is based on a variety of factors including: the age and condition of structures, the nature of the land use (i.e. public sector & institutional uses) and the land uses adjacent to the subject parcel. It is possible that some of these "Status Unchanged" parcels may experience redevelopment throughout this study period based on future increases in property values, but it is more likely they will remain in their current land use state.

STEP #2: A Macro & Micro Level Analysis

This Development Capacity Analysis is approached at both a broader (macro) level view taking into account large value capture districts as well as conducting a more detailed (micro) level analysis for specific development nodes (Value Capture Districts) identified along the State Route 28 corridor study area.

Macro Level Analysis of Overall Study Area

At the broader macro level detail, four value capture districts were identified consisting of the following:

- Miami Township "New Development" Parcels
- Miami Township "Redevelopment" parcels
- Goshen Township "New Development" parcels
- Goshen Township "Redevelopment" parcels

At this higher level of analysis, the potential revenue and building capacity for commercial, convenience service and office uses is examined. The resulting revenue and building capacity figures represent the potential for this area and assists in providing support for the expenditure of transportation improvement funding for the corridor aimed at supporting the planned development activity. In terms of the land use designations within these districts, an anticipated mix of retail, convenience services and office land uses translates to utilizing blended analysis benchmarks for floor area ratio and FTE jobs per square foot.

It should be noted that any development capacity analysis involves a variety of assumptions and different data variables that attempt to create a forecasted build-out scenario. That said, many factors can alter the analysis over time including unforeseen changes in the local, regional ad national economies and deviations in the proposed future land use designations through subsequent rezoning acts.

Micro Level Analysis of Development Nodes

The development capacity analysis performed at the development node level is a more detailed revenue and building capacity potential based on a smaller number of parcels and a better defined proposed development pattern for the node itself. Included in this micro level analysis is a greater attention to specific site constraints, future roadway and intersection improvement options and specific land use districts for the nodal areas. *Please refer to the Value Capture District revenue analysis in this plan.*

Step #3: Identifying Potential Funding Programs

The final step in this Development Capacity Analysis examines the most likely public infrastructure funding programs based upon the location of the value capture districts and the income and property tax revenue potential. Although many public infrastructure funding programs exist in Ohio, the two programs applied to this plan is the application of Tax Increment Financing districts and exploration of creating one or more Joint Economic Development Districts. These programs are implemented at the Township & County level and maintain a high degree of flexibility regarding establishing project eligibility thresholds.

These programs are also suggested because their revenue producing potential is directly related to increased land values and increased income tax respectively. Consequently, as investments in infrastructure improvements take place along the corridor, it is anticipated that this will have a direct impact on increasing the market value of parcels targeted for development or redevelopment activity which, in turn, will produce increased income tax potential.

Tax Increment Financing Districts

Tax Increment Financing (TIF) districts are a valuable tool for creating a revenue stream to construct the public improvements necessary to service the future development planned for the State Route 28 corridor study area. TIF's provide revenue from the increased real property valuation after new construction occurs within the district. The real property taxes derived from the increased property valuation may be used to service the debt for new public improvement projects including new roadways, sidewalks, pubic utility extensions, public parking facilities and public gateway projects. With local school district approval, a TIF can exist for a period up to 30 years.

TIF's may be created as a "blanket" TIF district without a specific project identified or may be created specifically for an identified project. Each parcel and nodal cluster must be examined to determine if a blanket TIF or project specific TIF should be utilized. In the event blanket TIF's are utilized, they should be created using "A Springing TIF" to maximize the 30 years term of the program.

Joint Economic Development Districts

The viability of creating a Joint Economic Development District (JEDD) or Joint Economic Development Zone (JEDZ) between Miami Township, Goshen Township and an adjacent municipality should be researched. These income tax districts are an effective way to create new revenue sources to be applied toward the investment and construction in new public improvement projects along the corridor. The potential income tax revenue figure found in the following development capacity spreadsheets uses a conservative 1% earned income tax rate for a possible JEDD or JEDZ district. It is possible that a higher income tax rate could be applied depending on the tax rate of the municipality.

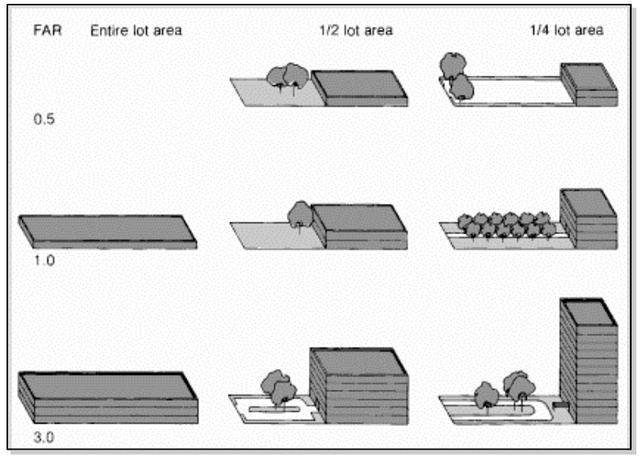


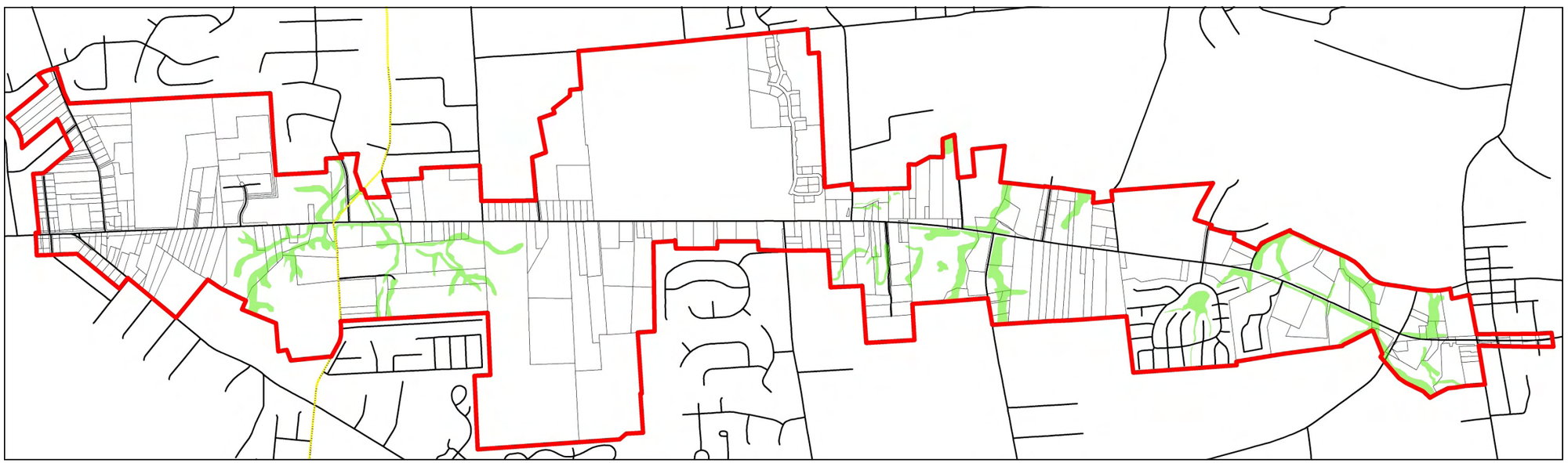
Illustration depicting various FAR examples.

Floor Area Ratio Methodology

Floor Area Ratio: The floor-to-area ratio (FAR) is the principal bulk regulation controlling the size of buildings. FAR is the ratio of total building gross floor area to the area of its zoning lot. Gross floor area means the total number of square feet within the inside finished wall surface of the outer building walls of a structure, excluding vent shafts, stairwells, and atriums. For purposes of calculating FAR, gross floor area also excludes parking and mechanical areas.

A FAR requirement, which, when multiplied by the lot area of the zoning lot, produces the maximum amount of floor area allowable in a building on the zoning lot. For example, on a 10,000 square-foot zoning lot in a district with a maximum FAR of 1.0, the floor area of a building cannot exceed 10,000 square feet.

This analysis utilizes a FAR of 0.15 for use in the macro level value capture district analysis as well as the nodal district analysis. This ratio represents a blended rate to account for a mix of different land uses consisting of retail, convenience services and office uses. For example, a 0.15 FAR equals 6,534 sq. ft. of building space per acre based on a single story structure. This blended rate is used to more accurately reflect the future FAR amounts for the study area. Conceptual site planning of commercial, office and shopping center uses was performed in the development node areas to produce a FAR factor that was realistic and appropriate for the greater SR 28 market area.



Topographic Constraints Map

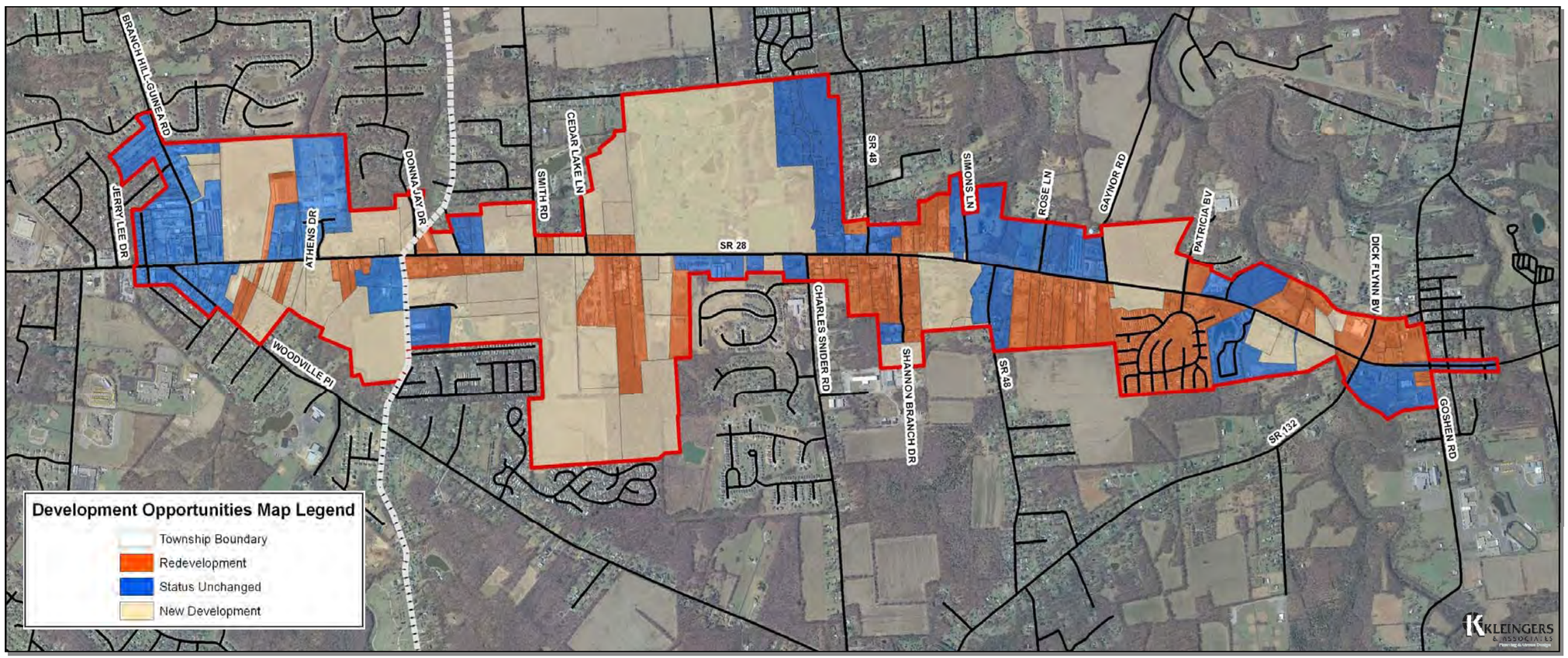
The floor area ratio had been adjusted to reflect environmental constraints occurring throughout the study area. The areas shaded green in the map above identify areas designated as having extreme topographic conditions to warrant those areas generally undevelopable due to either physical constraints or prohibitive costs associated with mitigating the particular topographic condition.

3.2 MAPPING DEVELOPMENT OPPORTUNITIES

This map depicts the three districts used in the development capacity analysis portion of this plan. Value capture districts are identified at a macro level to determine overall building capacity and revenue producing potential for the study area. The parcels identified as having development opportunities in either a "New Development" or "Redevelopment" scenario are utilized for this macro level capacity analysis. The areas indicated as "Status Unchanged" are not used in this analysis given the relatively low development or redevelopment opportunities existing for these parcels.

Corridor Development Capacity Summary

		Net Building Capacity	Annual Property Tax Revenue	Projected FTE's	Annual Income Tax
Goshen Township "New Development" Parcels	=	2,870,282 sq. ft.	$5,337,432	3,189	$601,834
Miami Township "New Development" Parcels	=	668,931 sq. ft.	$1,315,208	743	$140,260
Goshen Township "Redevelopment" Parcels	=	1,477,392 sq. ft.	$3,185,257	1,642	$308,749
Miami Township "Redevelopment" Parcels	=	137,070 sq. ft.	$295,523	152	$28,741
Build-out Totals	=	5,153,675 sq. ft.	$10,133,420	5,726	$1,079,584



3.3 GOSHEN TOWNSHIP "NEW DEVELOPMENT" PARCEL ANALYSIS

Parcel #	Acreage	Existing Zoning	Future Land Use	F.A.R.	Net Building Capacity (sq. ft.)	Projected Annual Property Tax	Projected FTE's	Potential Income Tax (1%)
0	6.18	R-3 MEDIUM LOW DENSITY RESIDENTIAL DISTRICT	Public/Institutional	N/A	N/A	N/A	0	N/A
1	4.40	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	28,750	$ 53,461	32	$ 6,028
44	0.18	PUDD PLANNED USE DEVELOPMENT DISTRICT	Multi Family Residential	N/A	N/A	N/A	0	N/A
45	164.43	PBDD PLANNED BUSINESS DEVELOPMENT DIST.	Commercial	0.15	1,074,399	$ 1,997,898	1,194	$ 225,278
46	2.04	R-3 MEDIUM LOW DENSITY RESIDENTIAL DISTRICT	Single Family	N/A	N/A	N/A	0	$ -
47	13.63	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	89,039	$ 165,572	99	$ 18,669
49	2.83	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	18,472	$ 34,349	21	$ 3,873
50	0.50	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	3,274	$ 6,087	4	$ 686
52	5.79	R-3 MEDIUM LOW DENSITY RESIDENTIAL DISTRICT	Commercial	0.15	37,832	$ 70,350	42	$ 7,933
56	18.34	R-3 MEDIUM LOW DENSITY RESIDENTIAL DISTRICT	Single Family	N/A	N/A	N/A	0	N/A
62	13.42	B-1 LOCAL BUSINESS DISTRICT	Public/Institutional	N/A	N/A	N/A	0	N/A
63	2.07	R-3 MEDIUM LOW DENSITY RESIDENTIAL DISTRICT	Commercial	0.15	13,525	$ 25,151	15	$ 2,836
95	3.02	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	19,733	$ 36,694	22	$ 4,138
97	6.26	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	40,903	$ 76,061	45	$ 8,576
99	6.00	R-6 MEDIUM HIGH DENSITY MULTI FAMILY RESIDENTIAL	Commercial	0.15	39,204	$ 72,902	44	$ 8,220
100	5.00	R-6 MEDIUM HIGH DENSITY MULTI FAMILY RESIDENTIAL	Commercial	0.15	32,670	$ 60,751	36	$ 6,850
102	3.02	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	19,733	$ 36,694	22	$ 4,138
103	1.78	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	11,631	$ 21,628	13	$ 2,439
121	6.62	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	43,255	$ 80,435	48	$ 9,070
127	30.10	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	196,686	$ 365,748	219	$ 41,241
133	22.87	R-3 MEDIUM LOW DENSITY RESIDENTIAL DISTRICT	Commercial	0.15	149,433	$ 277,877	166	$ 31,333
135	0.22	R-3 MEDIUM LOW DENSITY RESIDENTIAL DISTRICT	Public/Institutional	N/A	N/A	N/A	0	N/A
147	0.18	R-3 MEDIUM LOW DENSITY RESIDENTIAL DISTRICT	Public/Institutional	N/A	N/A	N/A	0	N/A
153	6.13	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	40,053	$ 74,481	45	$ 8,398
160	1.75	R-3 MEDIUM LOW DENSITY RESIDENTIAL DISTRICT	Commercial	0.15	11,435	$ 21,263	13	$ 2,398
169	12.61	B-2 GENERAL BUSINESS DISTRICT	Single Family	N/A	N/A	N/A	0	N/A
170	7.88	R-2 LOW DENSITY RESIDENTIAL DISTRICT	Single Family	N/A	N/A	N/A	0	N/A
171	14.73	R-2 LOW DENSITY RESIDENTIAL DISTRICT	Single Family	N/A	N/A	N/A	0	N/A
172	9.92	B-2 GENERAL BUSINESS DISTRICT	Single Family	N/A	N/A	N/A	0	N/A
175	16.65	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	108,791	$ 202,302	121	$ 22,811
176	16.65	B-2 GENERAL BUSINESS DISTRICT	Transitional Mixed-Use	0.15	108,791	$ 202,302	121	$ 22,811
177	71.83	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	469,337	$ 872,756	521	$ 98,410
179	1.76	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	11,500	$ 21,385	13	$ 2,411
190	24.42	R-2 LOW DENSITY RESIDENTIAL DISTRICT	Transitional Mixed-Use	0.15	159,560	$ 296,710	177	$ 33,456
193	2.55	PBDD PLANNED BUSINESS DEVELOPMENT DIST.	Commercial	0.15	16,662	$ 30,983	19	$ 3,494
195	1.38	PBDD PLANNED BUSINESS DEVELOPMENT DIST.	Commercial	0.15	9,017	$ 16,767	10	$ 1,891
199	2.14	PBDD PLANNED BUSINESS DEVELOPMENT DIST.	Commercial	0.15	13,983	$ 26,002	16	$ 2,932
200	6.40	M-2 HEAVY MANUFACTURING DISTRICT	Commercial	0.15	41,798	$ 77,725	46	$ 8,764
203	6.12	M-2 HEAVY MANUFACTURING DISTRICT	Transitional Mixed-Use	0.15	39,955	$ 74,299	44	$ 8,378
208	0.62	R-3 MEDIUM LOW DENSITY RESIDENTIAL DISTRICT	Commercial	0.15	4,051	$ 7,533	5	$ 849
209	0.62	R-3 MEDIUM LOW DENSITY RESIDENTIAL DISTRICT	Commercial	0.15	4,051	$ 7,533	5	$ 849
210	0.62	R-3 MEDIUM LOW DENSITY RESIDENTIAL DISTRICT	Commercial	0.15	4,051	$ 7,533	5	$ 849
211	0.62	R-3 MEDIUM LOW DENSITY RESIDENTIAL DISTRICT	Commercial	0.15	4,051	$ 7,533	5	$ 849
212	0.71	R-3 MEDIUM LOW DENSITY RESIDENTIAL DISTRICT	Commercial	0.15	4,659	$ 8,663	5	$ 977
251	0.00	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	N/A	N/A	0	N/A
255	0.00	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	N/A	N/A	0	N/A
				TOTALS =	**2,870,282**	**$ 5,337,432**	**3,189**	**$ 601,834**

Goshen Township "New Development" Parcel

The following development capacity and revenue potential figures represent an analysis at an estimated full build-out scenario of the "New Development" parcels in the respective Goshen Township study area. This macro-level analysis is intended to provide a snapshot of the potential of this district over a 20 year development period for use in considering preliminary transportation improvement funding mechanisms such as Tax Increment Financing Districts or Joint Economic Development Districts.

Total Commercial Building Capacity = 2,870,282 square feet

Annual Property Tax Revenue = $5,337,432

Net Annual Property Tax Revenue = $2,668,716 (after 50% revenue split to school district)

New FTE Job Creation = 3,189

Annual Earned Income Tax Revenue = $601,834

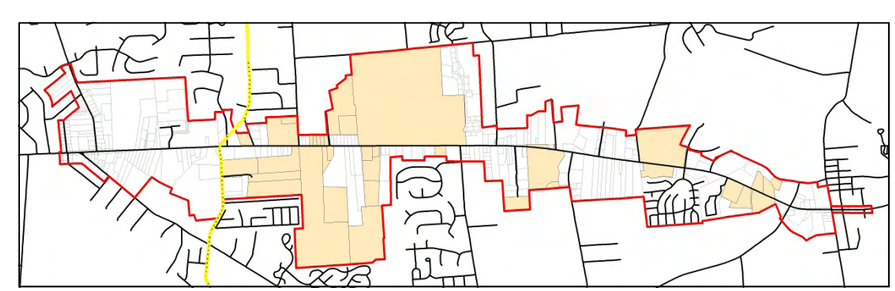
Development Capacity Analysis Assumptions

Future Land Uses = The future land use designations in this district represent a mixture of local and semi-regional retail, convenience services and professional office users. It is anticipated that retail and convenience services would account for a majority of this future developed land area.

Floor Area Ratio (F.A.R.) = This ratio (0.15) represents the maximum net building coverage per developable lot accounting for right-of-way, stormwater facilities, parking and excessive topography, etc.

New Job Creation = Includes a blended job/square foot rate of 1 FTE (full-time equivalent job) = 900 sq. ft. to compensate for a mix of commercial, retail, service and office uses.

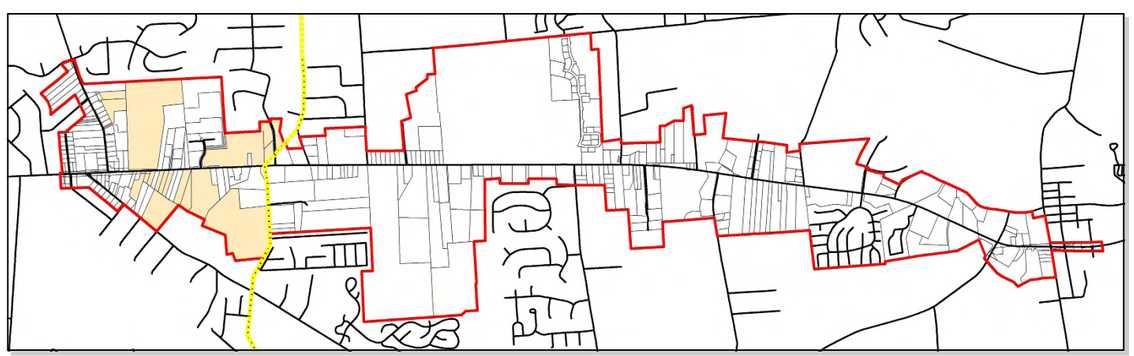
Projected Property Tax = Based on $110 / square foot for new building value.



Goshen Twp. "New Development" parcels are shaded.

3.4 MIAMI TOWNSHIP "NEW DEVELOPMENT" PARCEL ANALYSIS

Parcel #	Acreage	Existing Zoning	Future Land Use	F.A.R.	Net Building Capacity (sq. ft.)	Projected Annual Property Tax	Projected FTE's	Annual Income Tax (1%)
5	36.81	B-2 GENERAL BUSINESS	Retail-Commercial	0.15	240,503	$ 518,525	267	$ 50,428
36	0.39	B-2 GENERAL BUSINESS	Retail-Commercial	0.15	2,529	$ 4,702	3	$ 530
38	19.44	B-2 GENERAL BUSINESS	Retail-Commercial	0.15	127,027	$ 236,214	141	$ 26,635
40	1.63	B-2 GENERAL BUSINESS	Retail-Commercial	0.15	10,618	$ 19,744	12	$ 2,226
41	0.15	B-2 GENERAL BUSINESS	Retail-Commercial	0.15	980	$ 1,823	1	$ 206
42	2.32	B-2 GENERAL BUSINESS	Retail-Commercial	0.15	15,159	$ 28,189	17	$ 3,178
43	2.32	B-2 GENERAL BUSINESS	Retail-Commercial	0.15	15,159	$ 28,189	17	$ 3,178
49	31.53	R-2 SINGLE FAMILY RESIDENCE	Single Family	N/A	N/A	N/A	0	N/A
50	1.35	R-2 SINGLE FAMILY RESIDENCE	Retail-Commercial	0.15	8,821	$ 16,403	10	$ 1,850
64	8.34	R-2 SINGLE FAMILY RESIDENCE	Retail-Commercial	0.15	54,500	$ 101,346	61	$ 11,427
65	14.18	R-2 SINGLE FAMILY RESIDENCE	Retail-Commercial	0.15	92,652	$ 172,291	103	$ 19,427
66	0.70	B-2 GENERAL BUSINESS	Retail-Commercial	0.15	4,574	$ 8,505	5	$ 959
67	0.45	B-2 GENERAL BUSINESS	Retail-Commercial	0.15	2,908	$ 5,407	3	$ 610
70	0.98	B-2 GENERAL BUSINESS	Retail-Commercial	0.15	6,403	$ 11,907	7	$ 1,343
72	1.12	B-2 GENERAL BUSINESS	Retail-Commercial	0.15	7,318	$ 13,608	8	$ 1,534
74	1.26	B-2 GENERAL BUSINESS	Retail-Commercial	0.15	8,233	$ 15,309	9	$ 1,726
80	2.22	B-2 GENERAL BUSINESS	Retail-Commercial	0.15	14,519	$ 26,998	16	$ 3,044
82	2.86	R-2 SINGLE FAMILY RESIDENCE	Retail-Commercial	0.15	18,687	$ 34,750	21	$ 3,918
94	0.12	B-2 GENERAL BUSINESS	Retail-Commercial	0.15	771	$ 1,434	1	$ 162
133	2.14	R-2 SINGLE FAMILY RESIDENCE	Retail-Commercial	0.15	13,983	$ 26,002	16	$ 2,932
138	3.61	B-2 GENERAL BUSINESS	Retail-Commercial	0.15	23,588	$ 43,863	26	$ 4,946
				TOTALS =	**668,931**	**$ 1,315,208**	**743**	**$ 140,260**



Miami Twp. "New Development" parcels are shaded.

Miami Township "New Development" Parcel Summary

The following development capacity and revenue potential figures represent an analysis at an estimated full build-out scenario of the "New Development" parcels in the respective Miami Township study area. This macro-level analysis is intended to provide a snapshot of the potential of this district over a 20 year development period for use in considering preliminary transportation improvement funding mechanisms such as Tax Increment Financing Districts or Joint Economic Development Districts.

Total Commercial Building Capacity = 668,331 square feet

Annual Property Tax Revenue = $1,315,208

Net Annual Property Tax Revenue = $657,604 (after 50% revenue split to school district)

New FTE Job Creation = 743

Annual Earned Income Tax Revenue = $140,260

Development Capacity Analysis Assumptions

Future Land Uses = The future land use designations in this district represent a mixture of local and semi-regional retail, convenience services and professional office users. It is anticipated that retail and convenience services would account for a majority of this future developed land area.

Floor Area Ratio (F.A.R.) = This ratio (0.15) represents the maximum net building coverage per developable lot accounting for right-of-way, stormwater facilities, parking and excessive topography, etc.

New Job Creation = Includes a blended job/square foot rate of 1 FTE (full-time equivalent job) = 900 sq. ft. to compensate for a mix of commercial, retail, service and office uses.

Projected Property Tax = Based on $110 / square foot for new building value.

Potential Income Tax = Based on 1% earned income tax rate in a JEDD scenario.

3.5 GOSHEN TOWNSHIP "REDEVELOPMENT" PARCEL ANALYSIS

(ALSO CONTINUED ON NEXT PAGE)

Parcel ID	Acreage	Existing Zoning	Future Land Use	F.A.R.	Net Building Capacity (sq. ft.)	Projected Annual Property Tax	Projected FTE's	Potential Income Tax (1%)
2	3.67	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	23,980	$ 51,700	27	$ 5,028
3	2	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	13,068	$ 28,175	15	$ 2,740
5	1.89	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	12,349	$ 26,625	14	$ 2,589
6	0.96	R-3 MEDIUM LOW DENSITY RESIDENTIAL DISTRICT	Commercial	0.15	6,273	$ 13,524	7	$ 1,315
7	0.75	R-3 MEDIUM LOW DENSITY RESIDENTIAL DISTRICT	Commercial	0.15	4,901	$ 10,565	5	$ 1,028
10	1	R-3 MEDIUM LOW DENSITY RESIDENTIAL DISTRICT	Commercial	0.15	6,534	$ 14,087	7	$ 1,370
11	0.8	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	5,227	$ 11,270	6	$ 1,096
15	0.25	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	1,634	$ 3,522	2	$ 343
53	2.66	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	17,380	$ 37,472	19	$ 3,644
72	0.48	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	3,136	$ 6,762	3	$ 658
74	0.52	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	3,398	$ 7,325	4	$ 712
75	0.45	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	2,940	$ 6,339	3	$ 617
82	3.71	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	24,241	$ 52,264	27	$ 5,083
84	0.45	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	2,940	$ 6,339	3	$ 617
87	0.62	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	4,051	$ 8,734	5	$ 849
88	1.67	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	10,912	$ 23,526	12	$ 2,288
89	0.77	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	5,031	$ 10,847	6	$ 1,055
90	0.77	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	5,031	$ 10,847	6	$ 1,055
91	7.43	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	48,548	$ 104,669	54	$ 10,179
92	2.8	R-6 MEDIUM HIGH DENSITY MULTI FAMILY RESIDENTIAL	Commercial	0.15	18,295	$ 39,444	20	$ 3,836
93	1.292	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	8,442	$ 18,201	9	$ 1,770
94	4.15	R-6 MEDIUM HIGH DENSITY MULTI FAMILY RESIDENTIAL	Commercial	0.15	27,116	$ 58,462	30	$ 5,686
96	1.74	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	11,369	$ 24,512	13	$ 2,384
104	4.91	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	32,082	$ 69,169	36	$ 6,727
105	8.77	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	57,303	$ 123,546	64	$ 12,015
106	3.16	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	20,647	$ 44,516	23	$ 4,329
107	3.1	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	20,255	$ 43,671	23	$ 4,247
108	4.65	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	30,383	$ 65,506	34	$ 6,371
112	49.241	T MOBILE HOME PARK DISTRICT	Commercial	0.15	321,741	$ 693,673	357	$ 67,462
113	1.95	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	12,741	$ 27,470	14	$ 2,672
117	0.644	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	4,208	$ 9,072	5	$ 882
118	2.01	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	13,133	$ 28,315	15	$ 2,754
119	0.69	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	4,508	$ 9,720	5	$ 945
122	4.419	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	28,874	$ 62,252	32	$ 6,054
129	3.794	R-3 MEDIUM LOW DENSITY RESIDENTIAL DISTRICT	Commercial	0.15	24,790	$ 53,447	28	$ 5,198
131	0.61	M-1 LIGHT MANUFACTURING DISTRICT	Commercial	0.15	3,986	$ 8,593	4	$ 836
132	1.737	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	11,350	$ 24,470	13	$ 2,380
134	0.24	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	1,568	$ 3,381	2	$ 329
138	1	M-1 LIGHT MANUFACTURING DISTRICT	Commercial	0.15	6,534	$ 14,087	7	$ 1,370
139	3.478	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	22,725	$ 48,996	25	$ 4,765
140	1.4	M-1 LIGHT MANUFACTURING DISTRICT	Commercial	0.15	9,148	$ 19,722	10	$ 1,918
141	1.29	M-1 LIGHT MANUFACTURING DISTRICT	Commercial	0.15	8,429	$ 18,173	9	$ 1,767
142	3.2	R-3 MEDIUM LOW DENSITY RESIDENTIAL DISTRICT	Commercial	0.15	20,909	$ 45,079	23	$ 4,384
143	1.729	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	11,297	$ 24,357	13	$ 2,369
144	4.406	B-2 GENERAL BUSINESS DISTRICT	Commercial	0.15	28,789	$ 62,069	32	$ 6,036
145	0.75	M-1 LIGHT MANUFACTURING DISTRICT	Commercial	0.15	4,901	$ 10,565	5	$ 1,028

Goshen Redevelopment parcel analysis continued on the following page.

Development Capacity Analysis Assumptions

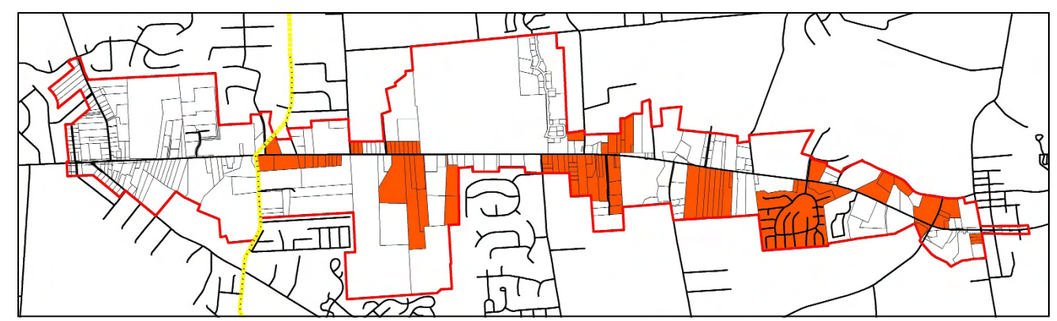
Future Land Uses = The future land use designations in this district represent a mixture of local and semi-regional retail, convenience services and professional office users. It is anticipated that retail and convenience services would account for a majority of this future developed land area.

Floor Area Ratio (F.A.R.) = This ratio (0.15) represents the maximum net building coverage per developable lot accounting for right-of-way, stormwater facilities, parking and excessive topography, etc.

New Job Creation = Includes a blended job/square foot rate of 1 FTE (full-time equivalent job) = 900 sq. ft. to compensate for a mix of commercial, retail, service and office uses.

Projected Property Tax = Based on $110 / square foot for new building value.

Potential Income Tax = Based on 1% earned income tax rate in a JEDD scenario.



Goshen Twp. "Redevelopment" parcels are shaded.

3.5 GOSHEN TOWNSHIP "REDEVELOPMENT" PARCEL ANALYSIS

Parcel ID	Acreage	Existing Zoning	Existing Land Use	Future Land Use	F.A.R.	Net Building Capacity (sq. ft.)	Projected Annual Property Tax	Projected FTE's	Potential Income Tax (1%)
146	0.52	M-1 LIGHT MANUFACTURING DISTRICT	Single Family	Commercial	0.15	3,398	$ 7,325	4	$ 712
148	0.63	M-1 LIGHT MANUFACTURING DISTRICT	Single Family	Commercial	0.15	4,116	$ 8,875	5	$ 863
149	0.73	B-2 GENERAL BUSINESS DISTRICT	Commercial	Commercial	0.15	4,770	$ 10,284	5	$ 1,000
150	0.936	B-2 GENERAL BUSINESS DISTRICT	Single Family	Commercial	0.15	6,116	$ 13,186	7	$ 1,282
151	0.54	B-2 GENERAL BUSINESS DISTRICT	Commercial	Commercial	0.15	3,528	$ 7,607	4	$ 740
152	0.76	B-2 GENERAL BUSINESS DISTRICT	Single Family	Commercial	0.15	4,966	$ 10,706	6	$ 1,041
155	2.192	R-3 MEDIUM LOW DENSITY RESIDENTIAL DISTRICT	Single Family	Commercial	0.15	14,323	$ 30,879	16	$ 3,003
156	1.72	R-3 MEDIUM LOW DENSITY RESIDENTIAL DISTRICT	Single Family	Commercial	0.15	11,238	$ 24,230	12	$ 2,356
157	2.071	R-3 MEDIUM LOW DENSITY RESIDENTIAL DISTRICT	Single Family	Commercial	0.15	13,532	$ 29,175	15	$ 2,837
159	3.39	B-2 GENERAL BUSINESS DISTRICT	Single Family	Commercial	0.15	22,150	$ 47,756	25	$ 4,644
162	3.417	B-2 GENERAL BUSINESS DISTRICT	Single Family	Commercial	0.15	22,327	$ 48,136	25	$ 4,681
163	4.47	B-2 GENERAL BUSINESS DISTRICT	Commercial	Commercial	0.15	29,207	$ 62,970	32	$ 6,124
164	1.1	B-2 GENERAL BUSINESS DISTRICT	Commercial	Commercial	0.15	7,187	$ 15,496	8	$ 1,507
165	1.38	B-2 GENERAL BUSINESS DISTRICT	Commercial	Commercial	0.15	9,017	$ 19,440	10	$ 1,891
166	0.63	B-2 GENERAL BUSINESS DISTRICT	Commercial	Commercial	0.15	4,116	$ 8,875	5	$ 863
167	1.255	B-2 GENERAL BUSINESS DISTRICT	Commercial	Commercial	0.15	8,200	$ 17,680	9	$ 1,719
168	0.65	B-2 GENERAL BUSINESS DISTRICT	Commercial	Commercial	0.15	4,247	$ 9,157	5	$ 891
180	0.46	B-2 GENERAL BUSINESS DISTRICT	Commercial	Commercial	0.15	3,006	$ 6,480	3	$ 630
181	0.65	B-2 GENERAL BUSINESS DISTRICT	Commercial	Commercial	0.15	4,247	$ 9,157	5	$ 891
182	0.532	B-2 GENERAL BUSINESS DISTRICT	Commercial	Commercial	0.15	3,476	$ 7,494	4	$ 729
183	12.19	B-2 GENERAL BUSINESS DISTRICT	Commercial	Commercial	0.15	79,649	$ 171,724	88	$ 16,701
185	12.28	M-1 LIGHT MANUFACTURING DISTRICT	Commercial	Commercial	0.15	80,238	$ 172,992	89	$ 16,824
186	3.823	M-1 LIGHT MANUFACTURING DISTRICT	Commercial	Commercial	0.15	24,979	$ 53,856	28	$ 5,238
187	2	M-1 LIGHT MANUFACTURING DISTRICT	Commercial	Commercial	0.15	13,068	$ 28,175	15	$ 2,740
201	5	M-2 HEAVY MANUFACTURING DISTRICT	Commercial	Transitional Mixed-Use	0.1	21,780	$ 46,958	24	$ 4,567
202	5.018	M-2 HEAVY MANUFACTURING DISTRICT	Commercial	Transitional Mixed-Use	0.1	21,858	$ 47,127	24	$ 4,583
204	5.656	M-1 LIGHT MANUFACTURING DISTRICT	Commercial	Transitional Mixed-Use	0.1	24,638	$ 53,119	27	$ 5,166
205	0.465	B-2 GENERAL BUSINESS DISTRICT	Commercial	Commercial	0.15	3,038	$ 6,551	3	$ 637
206	0.62	B-2 GENERAL BUSINESS DISTRICT	Commercial	Commercial	0.15	4,051	$ 8,734	5	$ 849
207	0.62	R-3 MEDIUM LOW DENSITY RESIDENTIAL DISTRICT	Single Family	Commercial	0.15	4,051	$ 8,734	5	$ 849
213	0.564	B-2 GENERAL BUSINESS DISTRICT	Single Family	Commercial	0.15	3,685	$ 7,945	4	$ 773
214	0.57	B-2 GENERAL BUSINESS DISTRICT	Single Family	Commercial	0.15	3,724	$ 8,030	4	$ 781
215	0.62	B-2 GENERAL BUSINESS DISTRICT	Single Family	Commercial	0.15	4,051	$ 8,734	5	$ 849
216	0.7	R-3 MEDIUM LOW DENSITY RESIDENTIAL DISTRICT	Commercial	Commercial	0.15	4,574	$ 9,861	5	$ 959
217	0.7	R-3 MEDIUM LOW DENSITY RESIDENTIAL DISTRICT	Commercial	Commercial	0.15	4,574	$ 9,861	5	$ 959
218	0.62	B-2 GENERAL BUSINESS DISTRICT	Single Family	Commercial	0.15	4,051	$ 8,734	5	$ 849
219	0.62	B-2 GENERAL BUSINESS DISTRICT	Single Family	Commercial	0.15	4,051	$ 8,734	5	$ 849
220	0.539	B-2 GENERAL BUSINESS DISTRICT	Single Family	Commercial	0.15	3,522	$ 7,593	4	$ 738
240	0.39	B-2 GENERAL BUSINESS DISTRICT	Single Family	Commercial	0.15	2,548	$ 5,494	3	$ 534
241	0.459	B-2 GENERAL BUSINESS DISTRICT	Single Family	Commercial	0.15	2,999	$ 6,466	3	$ 629
242	0.459	B-2 GENERAL BUSINESS DISTRICT	Single Family	Commercial	0.15	2,999	$ 6,466	3	$ 629
243	0.459	B-2 GENERAL BUSINESS DISTRICT	Single Family	Commercial	0.15	2,999	$ 6,466	3	$ 629
244	0.459	B-2 GENERAL BUSINESS DISTRICT	Single Family	Commercial	0.15	2,999	$ 6,466	3	$ 629
245	0.459	B-2 GENERAL BUSINESS DISTRICT	Single Family	Commercial	0.15	2,999	$ 6,466	3	$ 629
254	0	B-2 GENERAL BUSINESS DISTRICT	Single Family	Commercial	0.15	0	N/A	0	N/A
					TOTALS =	**1,477,392**	**$ 3,185,257**	**1,642**	**$ 308,749**

Goshen Township Redevelopment Parcel Summary

The following development capacity and revenue potential figures represent an analysis at an estimated full build-out scenario of the "Redevelopment" parcels in the respective Goshen Township study area. This macro-level analysis is intended to provide a snapshot of the potential of this district over a 20 year development period for use in considering preliminary transportation improvement funding mechanisms such as Tax Increment Financing Districts or Joint Economic Development Districts.

Total Commercial Building Capacity = 1,477,392 square feet

Annual Property Tax Revenue = $3,185,257

Net Annual Property Tax Revenue = $1,592,628 (after 50% revenue split to school district)

New FTE Job Creation = 1,642,

Annual Earned Income Tax Revenue = $308,749

Development Capacity Analysis Assumptions

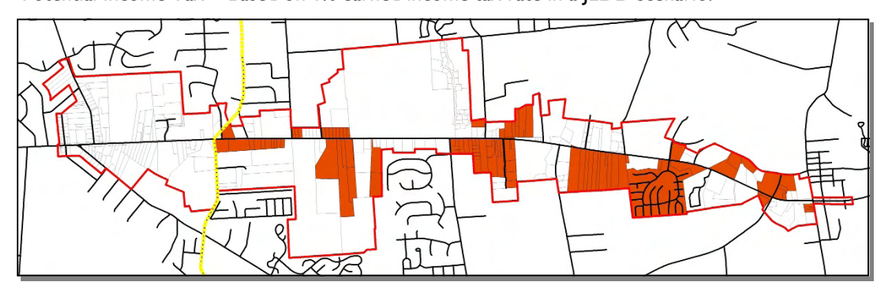
Future Land Uses = The future land use designations in this district represent a mixture of local and semi-regional retail, convenience services and professional office users. It is anticipated that retail and convenience services would account for a majority of this future developed land area.

Floor Area Ratio (F.A.R.) = This ratio (0.15) represents the maximum net building coverage per developable lot accounting for right-of-way, stormwater facilities, parking and excessive topography, etc.

New Job Creation = Includes a blended job/square foot rate of 1 FTE (full-time equivalent job) = 900 sq. ft. to compensate for a mix of commercial, retail, service and office uses.

Projected Property Tax = Based on $110 / square foot for new building value.

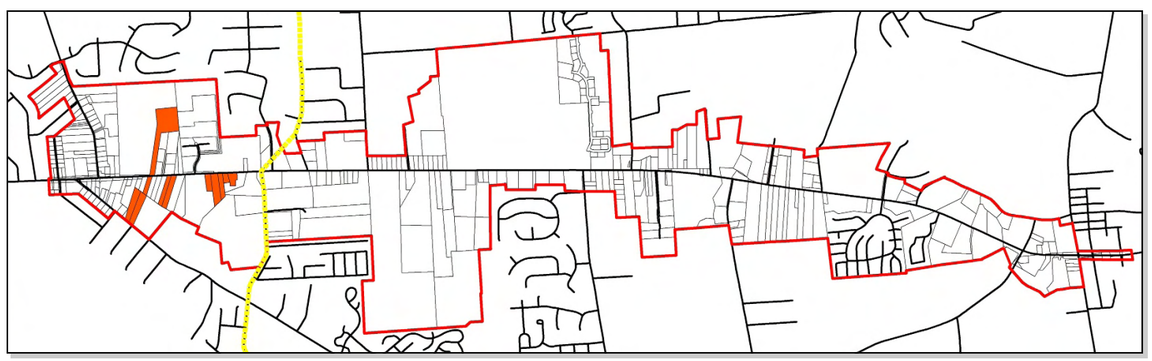
Potential Income Tax = Based on 1% earned income tax rate in a JEDD scenario.



Goshen Twp. "Redevelopment" parcels are shaded.

3.6 MIAMI TOWNSHIP "REDEVELOPMENT" PARCEL ANALYSIS

Parcel ID	Acreage	Existing Zoning	Existing Land Use	Future Land Use	F.A.R.	Net Building Capacity (sq. ft.)	Projected Annual Property Tax	Projected FTE's	Potential Income Tax (1%)
33	7.17	I PLANNED INDUSTRIAL	Retail-Commercial	Retail-Commercial	0.15	46,849	$ 101,006	52	$ 9,823
52	0.55	B-2 GENERAL BUSINESS	Single Family	Retail-Commercial	0.15	3,594	$ 7,748	4	$ 754
53	1	B-2 GENERAL BUSINESS	Multi Family Residential	Retail-Commercial	0.15	6,534	$ 14,087	7	$ 1,370
55	2.208	B-2 GENERAL BUSINESS	Single Family	Retail-Commercial	0.15	14,427	$ 31,105	16	$ 3,025
56	1.24	B-2 GENERAL BUSINESS	Retail-Commercial	Retail-Commercial	0.15	8,102	$ 17,468	9	$ 1,699
61	1.03	B-2 GENERAL BUSINESS	Single Family	Retail-Commercial	0.15	6,730	$ 14,510	7	$ 1,411
68	0.84	B-2 GENERAL BUSINESS	Retail-Commercial	Retail-Commercial	0.15	5,489	$ 11,833	6	$ 1,151
75	1.4	R-2 SINGLE FAMILY RESIDENCE	Retail-Commercial	Retail-Commercial	0.15	9,148	$ 19,722	10	$ 1,918
76	2	R-2 SINGLE FAMILY RESIDENCE	Single Family	Retail-Commercial	0.15	13,068	$ 28,175	15	$ 2,740
77	1.54	R-2 SINGLE FAMILY RESIDENCE	Retail-Commercial	Retail-Commercial	0.15	10,062	$ 21,694	11	$ 2,110
81	2	R-2 SINGLE FAMILY RESIDENCE	Single Family	Retail-Commercial	0.15	13,068	$ 28,175	15	$ 2,740
					TOTALS =	**137,070**	**$ 295,523**	**152**	**$ 28,741**



Miami Twp. "Redevelopment" parcels are shaded.

Miami Township Redevelopment Parcel Summary

The following development capacity and revenue potential figures represent an analysis at an estimated full build-out scenario of the "Redevelopment" parcels in the respective Miami Township study area. This macro-level analysis is intended to provide a snapshot of the potential of this district over a 20 year development period for use in considering preliminary transportation improvement funding mechanisms such as Tax Increment Financing Districts or Joint Economic Development Districts.

Total Commercial Building Capacity = 137,070 square feet

Annual Property Tax Revenue = $295,523

Net Annual Property Tax Revenue = $147,761 (after 50% revenue split to school district)

New FTE Job Creation = 152

Annual Earned Income Tax Revenue = $28,741

Development Capacity Analysis Assumptions

Future Land Uses = The future land use designations in this district represent a mixture of local and semi-regional retail, convenience services and professional office users. It is anticipated that retail and convenience services would account for a majority of this future developed land area.

Floor Area Ratio (F.A.R.) = This ratio (0.15) represents the maximum net building coverage per developable lot accounting for right-of-way, stormwater facilities, parking and excessive topography, etc.

New Job Creation = Includes a blended job/square foot rate of 1 FTE (full-time equivalent job) = 900 sq. ft. to compensate for a mix of commercial, retail, service and office uses.

Projected Property Tax = Based on $110 / square foot for new building value.

Potential Income Tax = Based on 1% earned income tax rate in a JEDD scenario.

SECTION 4

EXISTING TRAFFIC CONDITIONS

STATE ROUTE 28 CORRIDOR IMPROVEMENTS

EXISTING TRAFFIC CONDITIONS

4.1 TRAFFIC ANALYSIS INTRODUCTION

A traffic analysis of the SR 28 corridor has been performed to assess the existing and future operational and safety characteristics of the roadway. The purpose of this analysis is to estimate what improvements and/or initiatives should be pursued in order to safely and efficiently accommodate existing and projected traffic volumes in the area and to provide a framework for the development of an access management plan for the corridor. Traffic volume data was collected along the study corridor to capture current traffic volumes and patterns. Projected traffic volumes were obtained from the OKI Travel Demand Model. These volumes were used to estimate the future design year (2030) peak hour traffic volumes, which were used in the capacity analyses of the SR 28 corridor. Capacity analyses were performed for five specific scenarios:

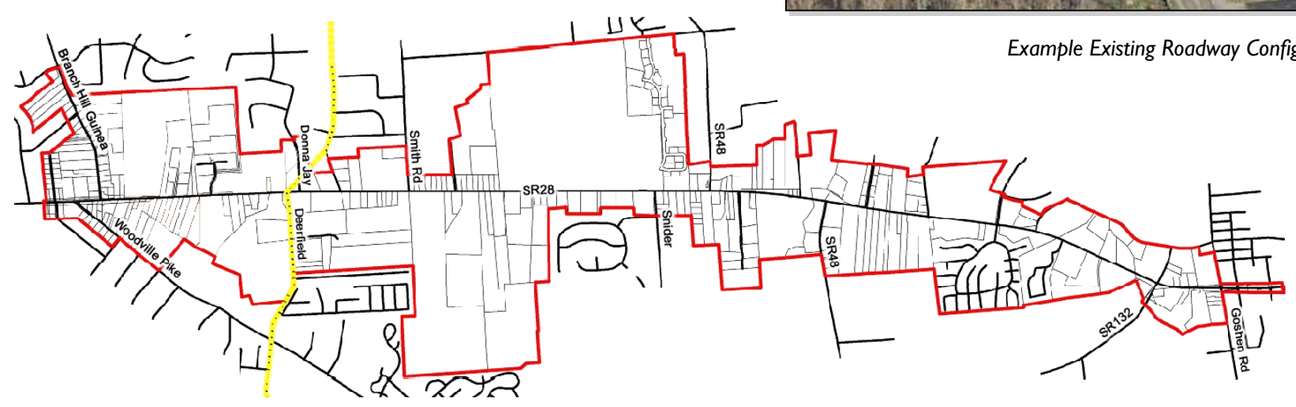
1. Existing Year (2008) Traffic – Existing Roadway Infrastructure
2. Future Design Year (2030) Traffic – Existing Roadway Infrastructure
3. Future Design Year (2030) Traffic – Improved Roadway Infrastructure
4. Future Design Year (2030) Traffic – Roadway Infrastructure necessary to accommodate projected background traffic volumes plus traffic generated by projected future land uses within the SR 28 corridor

Recommended improvements were based on analyses of crash data, capacity analyses, public input, ODOT access guidelines, and observations of traffic patterns and roadway configurations. These recommendations are outlined in Sections 5.4 to 5.6.

Example Existing Roadway Configurations

Example Existing Roadway Configurations

Existing Traffic Conditions



4.2 TRAFFIC VOLUME DATA COLLECTION

In order to assess the existing traffic conditions along the SR 28 corridor, traffic volume data, general roadway geometric information, traffic control information, and crash data were collected.

Turning movement counts were performed at the intersection of SR 28 and Woodville Pike and at the intersection of SR 28 and Branch Hill Guinea Pike on March 20, 2008 from 7:00 to 9:00 am and from 4:00 to 6:00 pm. Directional mechanical hose counts were performed along sections of SR 28 from March 18, 2008 to March 24, 2008 with the exception of the section between the south leg of SR 48 and SR 132. Due to equipment problems, the initial traffic counts that were performed in this section did not provide sufficient data. Therefore, additional mechanical hose counts for this section were performed on April 3, 2008. The sections of SR 28 where mechanical hose counts were collected are as follows:

- Buckwheat Road to Branch Hill Guinea Pike
- Branch Hill Guinea Pike to Donna Jay Drive
- Donna Jay Drive to Smith Road
- Smith Road to SR 48 (North)
- SR 48 (North) to SR 48 (South)
- SR 48 (South) to SR 132
- SR 132 to Goshen Road
- Goshen Road to Cozaddale Road

In general, the traffic volumes used in the analyses were developed by averaging the data over a three day period from Tuesday, March 18th through Thursday, March 20th. The count data throughout the corridor revealed that the peak hours occur from 7:00 to 8:00 am and from 5:00 to 6:00 pm. Figure 4-1 shows the AM and PM peak hour turning movement volumes for each of the counted intersections and the average daily traffic (ADT) volumes and peak hour traffic volumes for each roadway segment that was counted.

The 2006 Traffic Survey Report by the Ohio Department of Transportation (ODOT) was used to determine the percentage of truck traffic on SR 28. According to the report, approximately 4 percent of the traffic volume consists of truck traffic from the western end of the project area to SR 132. From SR 132 to the eastern end of the project area, approximately 5 percent of the traffic volume consists of truck traffic.

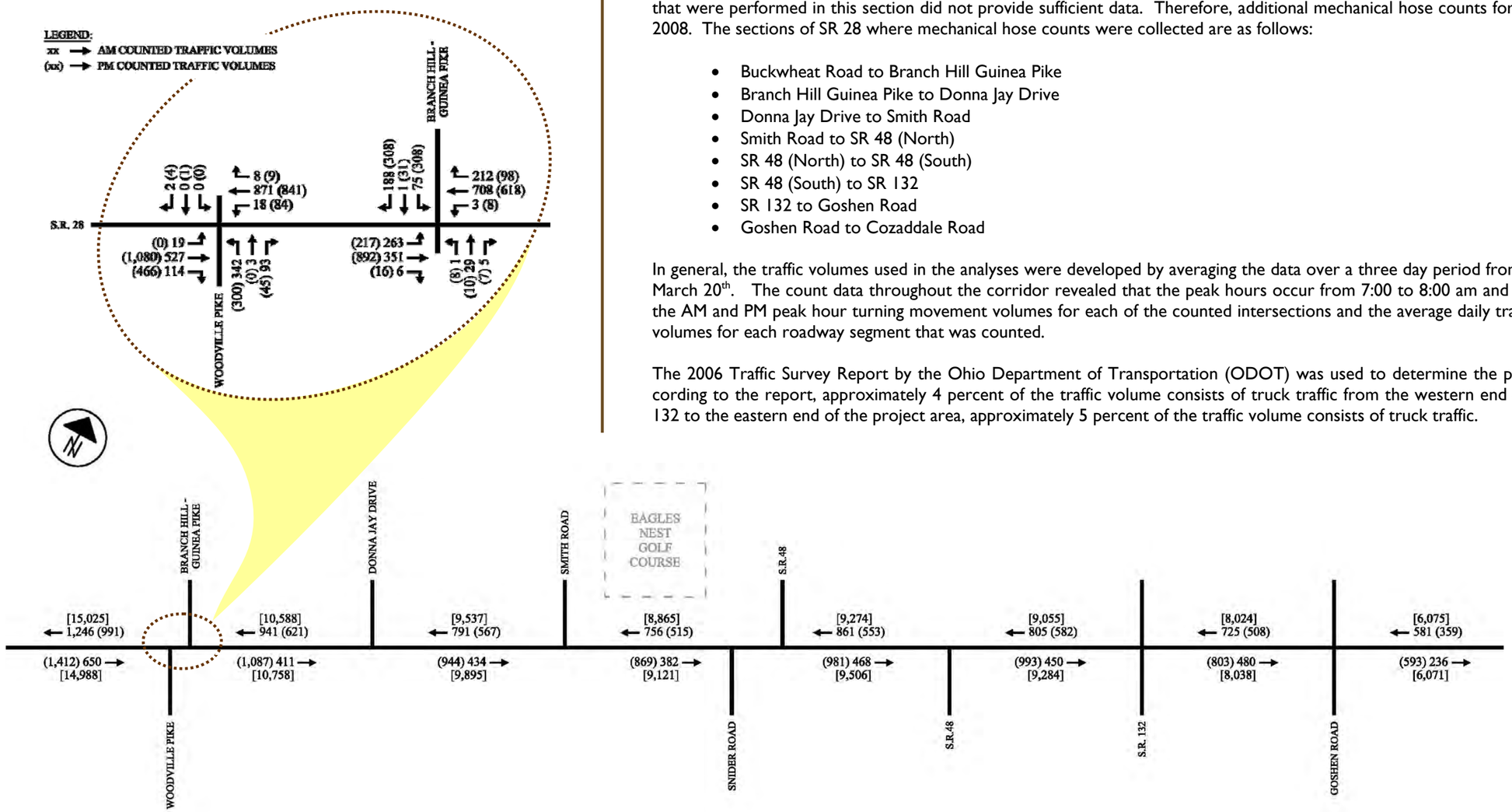


Figure 4-1: Existing Year (2008), Counted Traffic Volumes

4.3 EXISTING ROADWAY CONDITIONS

SR 28 within the project area is classified by the ODOT as an Urban Minor Arterial. SR 28 is a five lane roadway from the western end of the project area to a point just east of the Branch Hill Guinea intersection, where it becomes a two-lane roadway extending to the eastern end of the project area. Auxiliary turn lanes are in place at various intersections within the project area.

The legal speed limit on SR 28 is 45 mph from the western end of the project area to just east of Donna Jay Drive, 55 mph from just east of Donna Jay Drive to Snider Road, and 45 mph from Snider Road to the eastern end of the project area.

There are five existing signalized intersections within the SR 28 corridor including the SR 28 intersections with Branch Hill Guinea Pike, Woodville Pike, the north leg of SR 48, SR 132/Dick Flynn Boulevard, and Goshen Road. All other intersections within the study area are controlled by stop signs where traffic on SR 28 is not required to stop.

Auxiliary turn lanes are provided at the following locations along the SR 28 corridor:

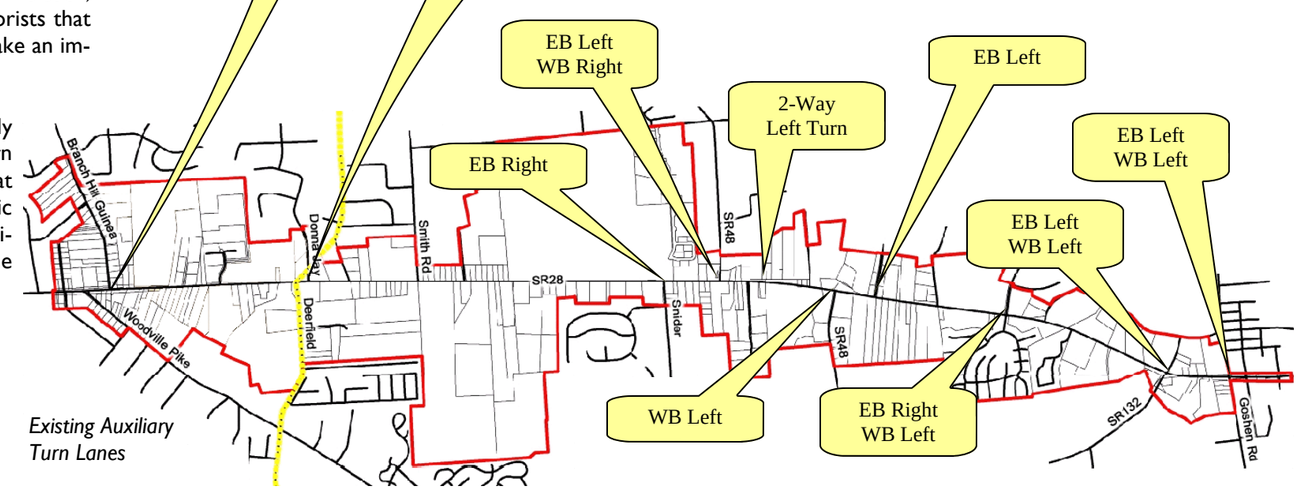
- Eastbound right-turn lane at Snider Road
- Eastbound left-turn lane and westbound right turn lane at SR 48 (North)
- Two-way-left-turn-lane between SR 48 (North) and SR 48 (South)
- Westbound left-turn lane at SR 48 (South)
- Eastbound left-turn lane at Rose Lane
- Eastbound right-turn lane and westbound left-turn lane at Country Lake Drive
- Eastbound and westbound left-turn lanes at SR 132
- Eastbound and westbound left-turn lanes at Goshen Road

Currently, the intersections of SR 28 with Woodville Pike and with Branch Hill Guinea Pike are offset by approximately 380 feet with Woodville Pike intersecting SR 28 to the west of the Branch Hill Guinea Pike intersection. In this configuration, vehicles on SR 28 that are in queue to turn left onto each of these roads store between the intersections. As such, the intersection offset limits the amount of left-turn storage space that is available at each location. Also, motorists that want to travel from Woodville Pike to Branch Hill Guinea Pike or vice-versa must turn right onto SR 28 then make an immediate left to continue in the desired direction.

Similarly, the intersections of SR 28 with Deerfield Road and with Donna Jay Drive are offset by approximately 225 feet with Deerfield Road intersecting SR 28 to the west of Donna Jay Drive. Currently, there are no left turn lanes along SR 28 in the area of these intersections. One of the problems that tends to occur at intersections that are offset as they are at this location is that vehicles on the mainline that are waiting for a gap in opposing traffic block other vehicles traveling in the same direction as the left-turning vehicle. At this location, only about 10 vehicles queued up behind the left turning vehicle will result in the blocking of the adjacent intersection, which has the potential of causing a gridlock situation.

Intersection of SR 28 with Woodville Pike and Branch Hill Guinea Pike

Intersection of SR 28 with Deerfield Road and Donna Jay Drive



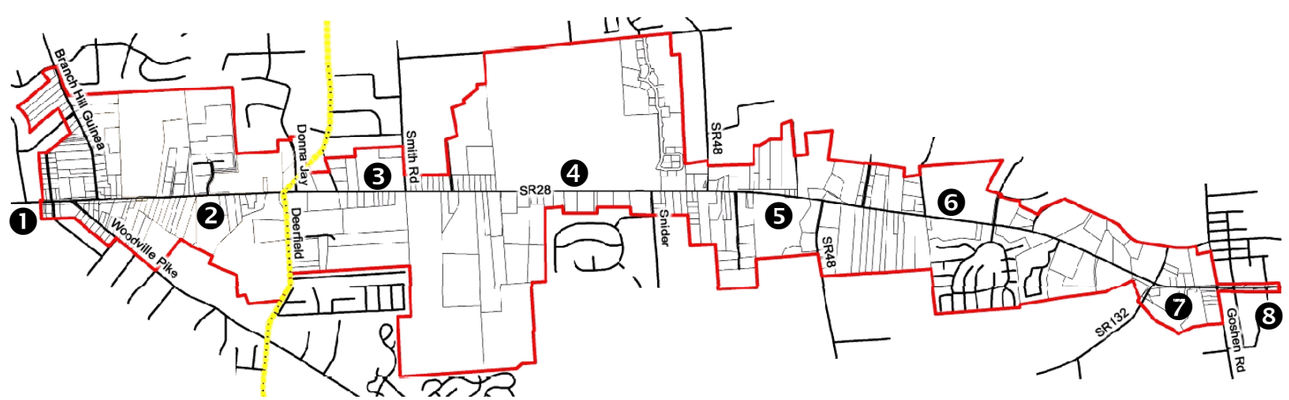
4.4 EXISTING ACCESS CONDITIONS

Currently, the majority of properties within the project area have direct access to SR 28, with very few properties being accessed by shared driveways. Some properties are served by multiple access points. An inventory of existing access points on each section of SR 28 within the project area was performed as part of this study and is shown in Table 4A.

		Length of Section (mi)	Eastbound		Westbound		Eastbound and Westbound Combined	
			No. of Access Points	No. of Access Points/mi	No. of Access Points	No. of Access Points/mi	No. of Access Points	No. of Access Points/mi
❶	**Buckwheat Road to Branch Hill Guinea Pike**	0.36	9	25	11	31	20	56
❷	**Branch Hill Guinea Pike to Donna Jay Drive**	0.68	17	25	11	16	28	41
❸	**Donna Jay Drive to Smith Road**	0.37	12	32	6	16	18	49
❹	**Smith Road to SR 48 (North)**	1.03	24	23	11	11	35	34
❺	**SR 48 (North) to SR 48 (South)**	0.40	10	25	12	30	22	55
❻	**SR 48 (South) to SR 132**	1.18	22	19	14	12	36	31
❼	**SR 132 to Goshen Road**	0.22	2	9	2	9	4	18
❽	**Goshen Road to Cozaddale Road**	0.74	6	8	4	5	10	14

Table 4A: Number of Access Points per Section - Summary

Existing Access Conditions



4.5 Crash Data and Analyses

Crash data was provided by the Clermont County Engineer's Office. This data includes information on crashes that occurred within Clermont County from January 2005 through March 2008. The data was queried to identify crashes that occurred within the study corridor.

It should be noted that construction was completed in the fall of 2007 along SR 28 in the area of Branch Hill New Guinea Pike and Woodville Pike, which widened the roadway from a two-lane section to the current five-lane section. As a result of these roadway modifications, the crash data in this area is not representative of the current roadway configuration. Also, this section of SR 28 was under construction from February 2006 to the Fall of 2007. Therefore, the number of accidents reported in this area may differ from what has historically occurred due to the presence of the construction zone.

In order to assess the level of safety along the corridor and to identify specific locations where abnormally high accident rates have occurred, the location of each crash that was reported along the project corridor was identified. Figure 4-2 shows the locations of crashes that were reported throughout the corridor and contain summaries of the types of crashes that have occurred. In order to identify specific crash patterns, crash diagrams were prepared for each intersection where crashes were reported. These crash diagrams are shown in Appendix A. According to the data, 211 crashes were reported along the study corridor, including 29 crashes that occurred outside the official project area; 25 crashes at the intersection of SR 28 and Floyd Place/Holland Drive and 4 crashes at the intersection of SR 28 and Wood Street.

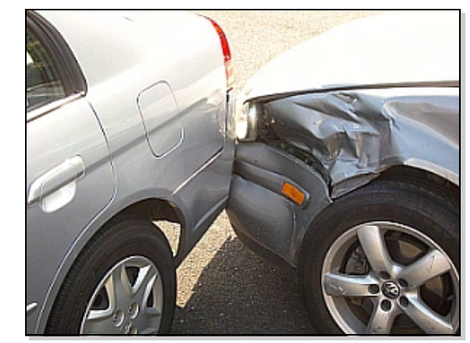
In order to determine whether or not the number of crashes reported on the SR 28 approaches to a particular intersection is higher than what should typically be expected, the methodology presented in a report titled, *Crash Base Rates for Intersections in Ohio*, dated February 2007 was used. The report presents mathematical models to estimate base crash rates on approaches to intersections with various geometric layouts, traffic control, and environmental conditions. The methodology presented in the report was used to determine the base crash rate and the standard deviation for the SR 28 approaches to intersections where crashes were reported. These statistical measures were quantified for the following crash types: rear-end, left-turn, property damage only, injury crashes, and total crashes.

In the analysis of the various crash types, the upper limit of the "normal" range was established as the base crash rate plus 2 times the standard deviation. Table A1 in Appendix A presents the statistical measures, the predicted number of crashes per year, and the actual number of crashes per year. The table also provides an indication as to whether the actual number of crashes per year is less than or equal than the predicted number (normal) or greater than the predicted number (high).

According to the analyses, a higher than normal number of crashes of various types were reported at the following locations within the study corridor:

- ❶ SR 28 at Deerfield Road (Westbound: rear-end crashes, property damage only crashes, and total crashes)
- ❷ SR 28 at Donna Jay Road (Eastbound: rear-end crashes)
- ❸ SR 28 at Smith Road (Eastbound: left-turn crashes—*Note: Only one eastbound left turn crash was reported at this intersection)*
- ❹ SR 28 at Snider Road (Eastbound: property damage only crashes and total crashes. Westbound: rear-end crashes, left-turn crashes, injury crashes, property damage only crashes, and total crashes)
- ❺ SR 28 at SR 48 South (Eastbound: injury crashes)

The crash data for the intersections of SR 28 at Floyd Place/Holland Drive and SR 28 at Wood Street, both of which are outside the study area, are shown as additional information. A higher than normal number crashes was reported at each of these intersections. However, much of the data for the Floyd Place/Holland Drive intersection represents crashes that were reported prior to and during the SR 28 widening through this intersection. Therefore, the crash data at this intersection was determined to not be representative of current roadway conditions. Also, at the intersection of SR 28 and Wood Street, the number of westbound left turning crashes was determined to be higher than normal. However, since only one westbound left-turn crash was reported at this location, the fact that the crash rate was identified as high was not considered to be significant.



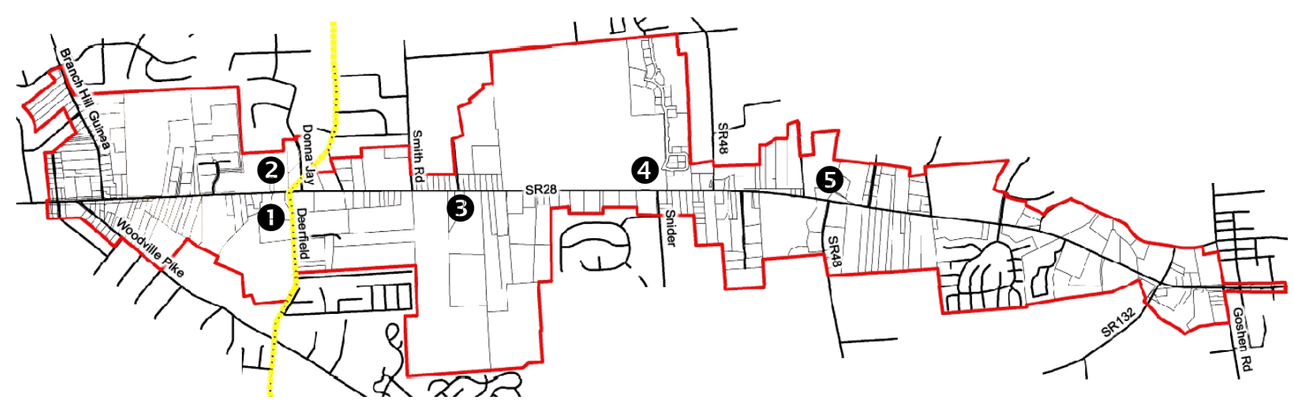
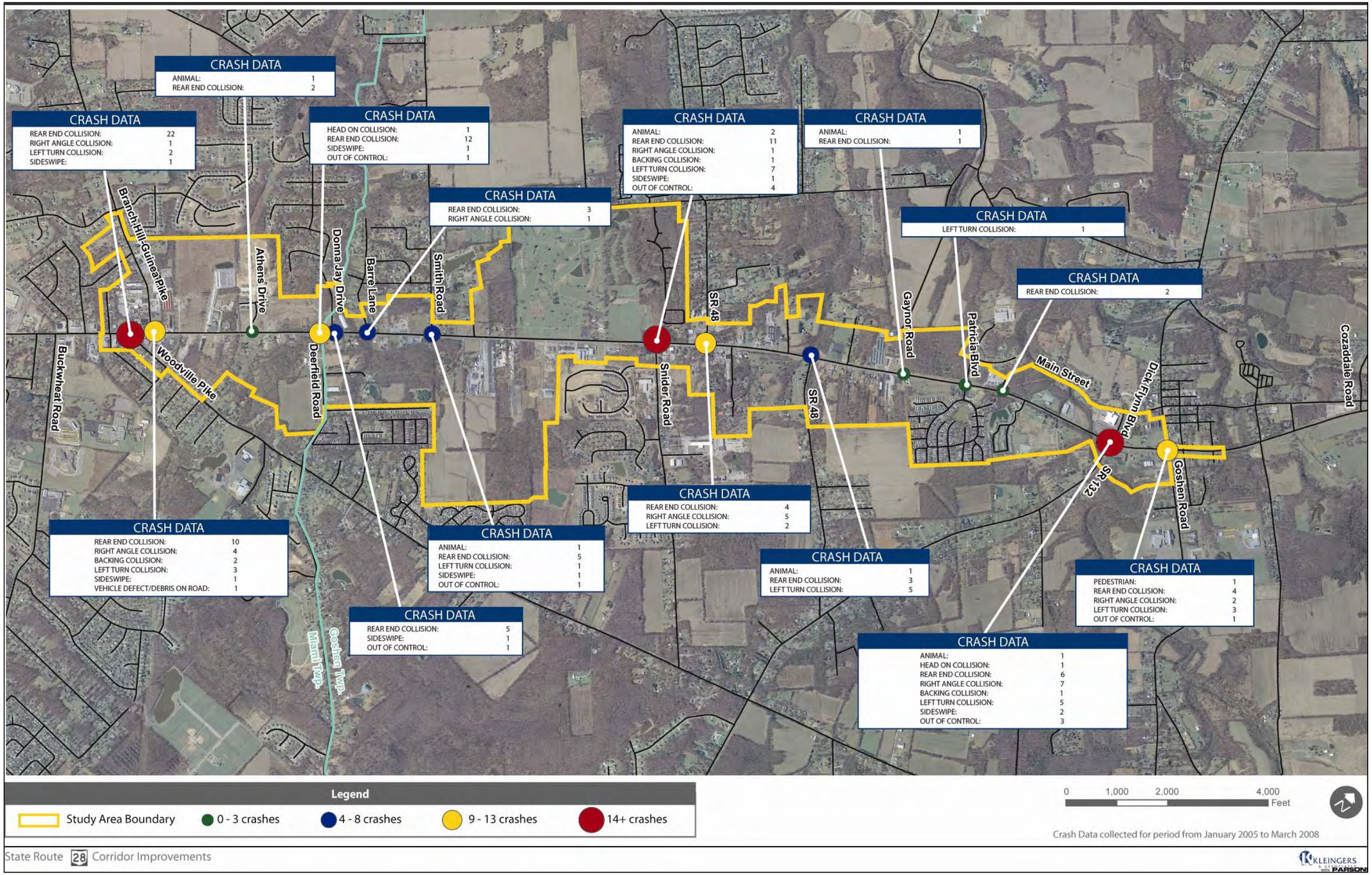


Figure 4-2: Crash Data



4.6 TRAFFIC CAPACITY ANALYSES

Capacity analyses were performed using McTrans *HCS+* capacity analysis software. This software was used to determine the level of service of the existing and proposed intersections and sections of roadway. Level of service values range from "A" (best) to "F" (failing). In accordance with the ODOT's *Policy for Applying Level of Service and Volume-to-Capacity Ratio in the Transportation Development Process,* effective February 1, 1998, intersections or sections of roadway with levels of service of "D" or worse are not considered to be operating acceptably.

Existing Conditions Capacity Analyses

(Existing Roadway, 2008 Traffic Volumes)

Existing conditions capacity analyses were performed on the existing roadway infrastructure using counted traffic volumes to assess the current operational conditions. Reports from each of the Existing Conditions Capacity Analyses are included in Appendix B.

Intersection Analyses

Intersection capacity analyses were performed at the intersection of SR 28 and Branch Hill Guinea Pike and at the intersection of SR 28 and Woodville Pike. The primary criteria for determining the level of service at an intersection is delay. Table 4B shows the calculated delays and levels of service for each intersection. Based on the analyses, both of these intersections currently operate at acceptable levels of service.

		Eastbound			Westbound			Northbound			Southbound			INT.
		LT	THRU	RT	LT	THRU	RT	LT	THRU	RT	LT	THRU	RT	
SR 28 at Woodville Pike	AM	13.7 B	15.4 B		12.1 B	18.0 B		19.2 B	12.7 B		11.7 B			17.0 B
	PM	7.3 A	31.7 C		56.5 E	11.1 B		34.1 C	17.1 B		16.5 B			26.3 C
SR 28 at Branch Hill Guinea Pike	AM	35.6 D	6.3 A		12.9 B	24.3 C		19.4 B	19.9 B		21.1 C	24.7 C		22.2 C
	PM	19.2 B	11.9 B		17.6 B	29.0 C		15.6 B	15.5 B		29.4 C	26.6 C		21.6 C

Table 4B: 2008 Existing Intersection Capacity Analyses Summary

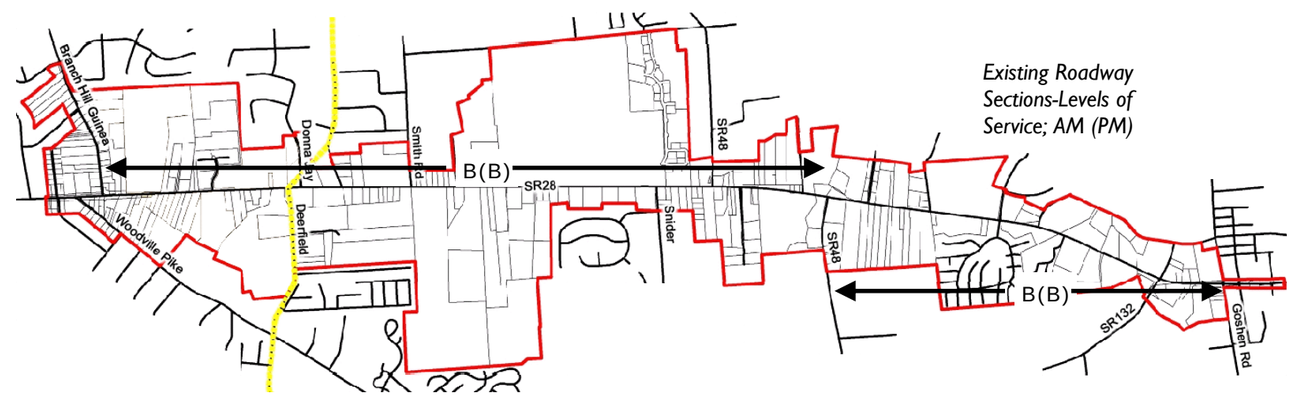
Arterial Roadway Analyses

Capacity analyses were performed on SR 28 within the project area using the Urban Streets methodology outlined in the Highway Capacity Manual. For these analyses, SR 28 was divided into two sections based on the projected 2030 OKI traffic volumes along the SR 28 corridor. These sections were established such that the projected traffic volumes throughout each section are relatively consistent. The western section extends from the end of the existing five-lane section just east of Branch Hill Guinea Pike to the south leg of SR 48. The eastern section extends from the south leg of SR 48 to Goshen Road.

According to the Highway Capacity Manual, the Level of Service (LOS) for Arterial Roadway sections is based on average travel speed through the corridor. For the existing conditions, the analyses show that both the western and eastern sections of SR 28 currently operate at acceptable levels of service. It should be noted that the volume to capacity ratio of 0.91 for the western section during the PM peak traffic period indicates that the traffic volumes are approaching the capacity of the roadway. Table 4C shows the calculated volume to capacity ratios, average travel speeds, and levels of service for each section of SR 28.

		Volume to Capacity Ratio (v/c)	Average Travel Speed (mph)	Level of Service (LOS)
Western Section SR 28 from Branch Hill Guinea Pike to SR 48 South	AM - Westbound	0.86	40.4	B
	PM - Eastbound	0.91	39.8	B
Eastern Section SR 28 from SR 48 South to Goshen Road	AM - Westbound	0.71	39.6	B
	PM - Eastbound	0.81	38.6	B

Table 4C: 2008 Existing Roadway - Arterial Capacity Analyses Summary



SECTION 5

FUTURE TRAFFIC CONDITIONS

STATE ROUTE 28 CORRIDOR IMPROVEMENTS

FUTURE TRAFFIC CONDITIONS

In order to assess the operational characteristics of the SR 28 corridor in the future design year (2030), traffic assignment plots were obtained from the Ohio-Kentucky-Indiana (OKI) Regional Council of Governments travel demand model for the years 2005 and 2030. Both of these plots are included in Appendix C. Traffic assignment plots for 2005 and 2030 were used to calculate average annual growth rates on the various sections of SR 28. These growth rates were applied to the 2008 AM peak, PM peak, and daily counted traffic volumes along SR 28 from Donna Jay Drive to the eastern end of the project area to generate the future design year traffic volumes to be used in the analyses.

When comparing the daily traffic volumes from the 2005 OKI traffic assignment plot with the 2008 counted traffic volumes on the section of SR 28 from the western end of the project area to Donna Jay Drive, the average annual growth rates for that time period were significantly higher than the average annual growth rates calculated from the 2005 and 2030 OKI traffic assignment plots. This is likely due to the additional capacity that was provided with the recent SR 28 widening project. As a result, for this section of SR 28, average annual growth rates were calculated for the increase in volumes between 2008 and 2030. The resulting growth rates were applied to the AM peak, PM peak and daily counted traffic volumes to generate the future design year traffic volumes for this section of SR 28.

Future traffic volumes projected using the average annual growth rates described above are shown in Figure 5-1.

Note: The growth in traffic volumes due to development within the development nodes along SR 28, was found to be significantly higher than that which was accounted for in the OKI traffic assignment plots. As a result, additional analyses based on trip generation from the actual projected land uses within the development nodes along the corridor are provided in Section 7.

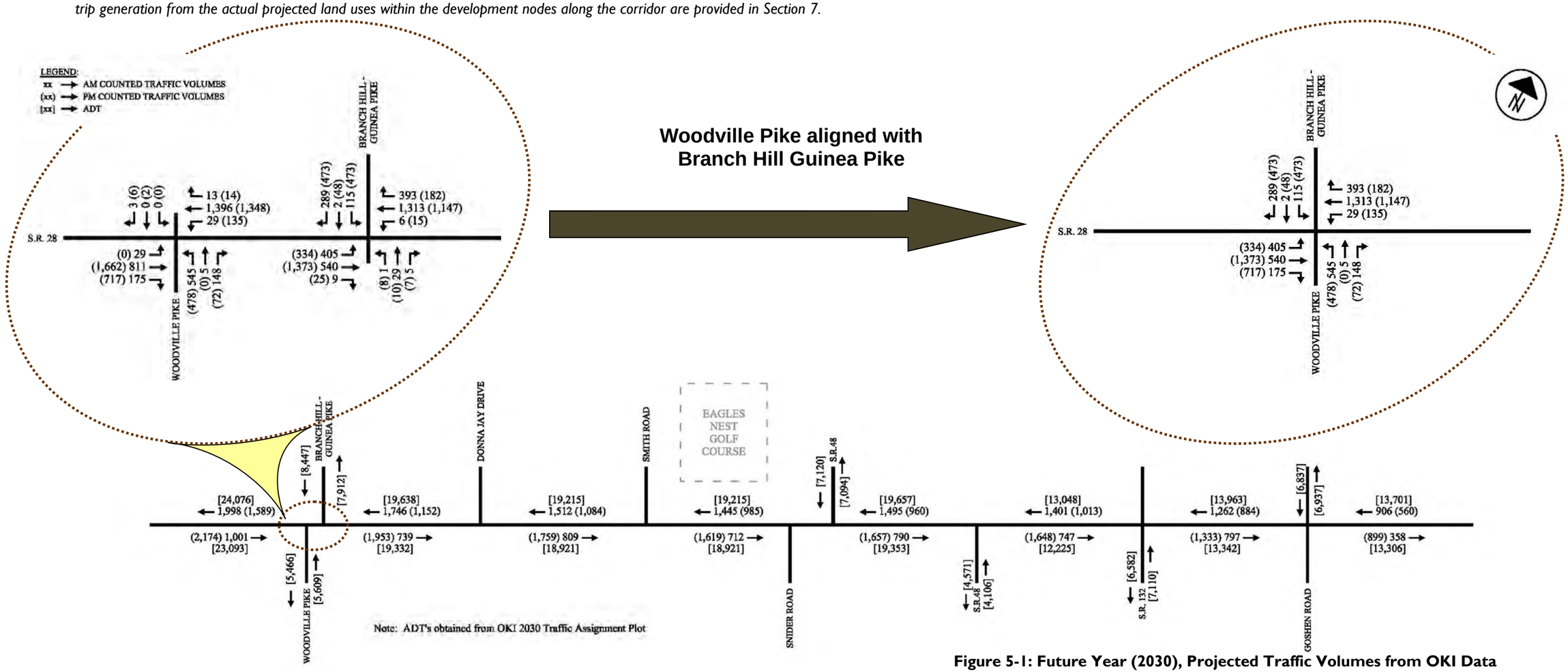


Figure 5-1: Future Year (2030), Projected Traffic Volumes from OKI Data

5.1 TRAFFIC CAPACITY ANALYSES

5.1.1 Future Conditions Capacity Analyses

(Existing Roadway, 2030 Traffic Volumes Based on OKI Traffic Demand Model)

Future conditions capacity analyses were performed on the existing roadway infrastructure using 2030 traffic volumes that were developed using the average annual growth rates as described in the previous section. As indicated previously, intersections or sections of roadway with levels of service of "D" or worse were not considered to be operating acceptably. Reports from each of the Future Conditions Capacity Analyses are included in Appendix D.

Intersection Analyses

Intersection capacity analyses were performed at the intersection of SR 28 and Branch Hill Guinea Pike and at the intersection of SR 28 and Woodville Pike. Table 5A shows the calculated delays and levels of service for each intersection. Based on the analyses, both intersections are expected to experience significant operational problems with unacceptable delays.

		Eastbound			Westbound			Northbound			Southbound			INT.
		LT	THRU	RT	LT	THRU	RT	LT	THRU	RT	LT	THRU	RT	
SR 28 at Woodville Pike	AM	30.1 C	24.2 C		21.7 C	55.2 E		64.1 E	16.7 B		14.8 B			44.6 D
	PM	8.0 A	188.9 F		425.6 F	16.9 B		190 F	24.2 C		22.9 C			140.4 F
SR 28 at Branch Hill Guinea Pike	AM	79.8 E	4.8 A		14.3 B	155.5 F		31.9 C	32.6 C		39.1 D	187.2 F		116.0 F
	PM	67.8 E	17.5 B		26.6 C	168.2 F		23.4 C	22.4 C		169.8 F	141.6 F		103.9 F

Table 5A: 2030 Existing Intersection Capacity Analyses Summary (based on OKI traffic volumes)

Arterial Roadway Analyses

Capacity analyses were performed on SR 28 within the project area using the Urban Streets methodology as described in Section 4.6. According to the analyses, both the western and eastern sections of SR 28 are expected to operate at unacceptable levels of service under the projected 2030 traffic volumes. Also, the volume to capacity ratios for each section of roadway are expected to exceed 1.00, indicating that the projected traffic volumes exceed the capacity of the existing roadway. Table 5B shows the calculated volume to capacity ratios, average travel speeds, and levels of service for each section of SR 28.

		Volume to Capacity Ratio (v/c)	Average Travel Speed (mph)	Level of Service (LOS)
Western Section SR 28 from Branch Hill Guinea Pike to SR 48 South	AM - Westbound	1.42	14.6	F
	PM - Eastbound	1.60	11.4	F
Eastern Section SR 28 from SR 48 South to Goshen Road	AM - Westbound	1.35	11.3	F
	PM - Eastbound	1.44	9.6	F

Table 5B: 2030 Existing Roadway - Arterial Capacity Analyses Summary

5.1.2 Future Conditions Capacity Analyses (Improved Roadway, 2030 Traffic Volumes Based on OKI Traffic Demand Model)

Intersection Analyses

In order to identify what improvements are needed to accommodate the projected 2030 traffic volumes at acceptable levels of service, capacity analyses were performed on the intersections of SR 28 and Woodville Pike/ Branch Hill Guinea Pike. In these analyses, it is assumed that the Woodville Pike approach to the intersection will be relocated toward the east along SR 28 such that it is in alignment with Branch Hill Guinea Pike. It is also assumed that the existing alignment of Woodville Pike will continue to be used by motorists turning right from SR 28.

According to the analyses, the following intersection configuration is needed in order to accommodate the 2030 traffic volumes.

- Eastbound: Four approach lanes (Two left-turn only, one through only, and one through-right shared)
- Westbound: Four approach lanes (One left-turn only, two through only, and one right-turn only)
- Northbound: Three approach lanes (Two left-turn only and one through-right shared)
- Southbound: Four approach lanes (Two left-turn only, one through-right shared, and one right-turn only)

It should be noted that this configuration is based on projected traffic volumes. The actual intersection configuration will need to be determined based on ODOT certified traffic volumes.

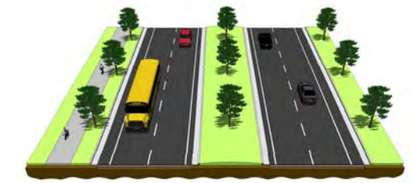
Table 5C shows the calculated delays and levels of service for each intersection. It should be noted that the recommended intersection configuration does not meet the level of service criteria outlined in ODOT's *Policy for Applying Level of Service and Volume-to-Capacity Ratio in the Transportation Development Process.* Acceptable levels of service cannot be achieved with an intersection configuration that is considered practical to construct.

		Eastbound			Westbound			Northbound			Southbound			INT.
		LT	THRU	RT	LT	THRU	RT	LT	THRU	RT	LT	THRU	RT	
SR 28 at Woodville/Branch Hill Guinea Pike	AM	77.8 E	19.9 B		19.8 B	58.9 E	20.4 C	72.9 E	50.4 D		64.3 E	57.4 E	57.9 E	52.8 D
	PM	55.3 E	50.1 D		73.3 E	52.6 D	11.9 B	79.6 E	58.5 E		77.7 E	68.1 E	77.3 E	58.9 E

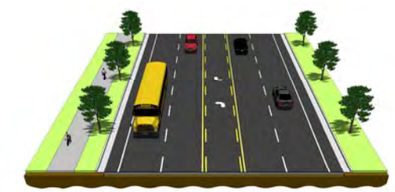
Table 5C: 2030 Improved Intersection Capacity Analyses Summary (based on OKI traffic volumes)

Arterial Roadway Analyses

In order to determine what roadway section is required to accommodate the projected 2030 traffic volumes, capacity analyses were performed using the Urban Streets methodology as described in Section 4.6. These analyses were performed using the assumption that additional traffic signals will be in place at nodal development access points as described in Section 8. According to the analyses, two travel lanes are needed for each direction of travel along the entire length of SR 28 within the project study area. Table 5D shows the calculated volume to capacity ratios, average travel speeds, and levels of service for each improved section of SR 28. Again, it should be noted that the resulting roadway configuration does not meet the level of service criteria outlined in ODOT's *Policy for Applying Level of Service and Volume-to-Capacity Ratio in the Transportation Development Process.* Acceptable levels of service cannot be achieved with a roadway configuration that is considered practical to construct.

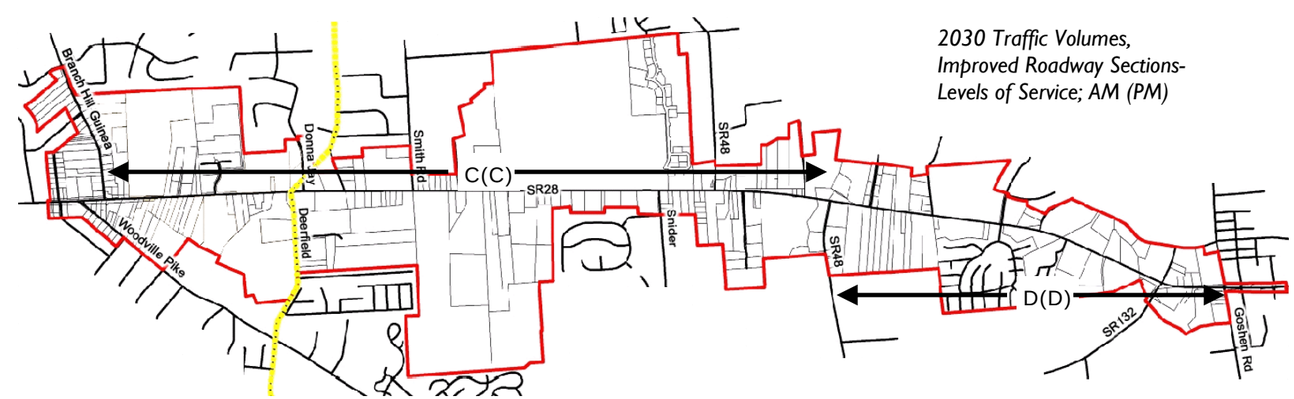


The graphics shown to the right represent options for typical roadway configurations needed to handle design year traffic conditions. A divided median is preferable to a two-way left turn lane for the purpose of access management; however, need for a two-way left turn lane should be based on the ability to effectively accommodate and control access to properties along each section of the corridor as the area develops.



		Volume to Capacity Ratio (v/c)	Average Travel Speed (mph)	Level of Service (LOS)
SR 28 from Branch Hill Guinea Pike to SR 48 South	AM - Westbound	0.81	30.7	C
	PM - Eastbound	0.91	29.4	C
SR 28 from SR 48 South to Goshen Road	AM - Westbound	0.77	22.6	D
	PM - Eastbound	0.82	22.2	D

Table 5D: 2030 Improved Roadway - Arterial Capacity Analyses Summary



5.2 SAFETY CONSIDERATIONS

As indicated in the crash analyses, higher than predicted numbers of crashes were reported at the following five intersections within the study corridor.

- SR 28 at Deerfield Road
- SR 28 at Donna Jay Road
- SR 28 at Smith Road
- SR 28 at Snider Road
- SR 28 at SR 48 South

The two main crash types that were identified as being high at these locations were rear-end and right-angle crashes.

Based on the existing roadway configuration within the study corridor, a likely contributing factor for many of the rear-end type crashes that occurred at a higher than expected frequency is the lack of auxiliary left-turn lanes. The recommended roadway configuration throughout the corridor includes either dedicated left-turn lanes or two-way left turn lanes. Providing these areas to store while motorists wait for a gap in opposing traffic should increase the level of safety and driver comfort since left turning vehicles will no longer be waiting to turn in high speed travel lanes.

While the crash patterns at locations where the frequency of rear-end crashes was considered to be high primarily involved left turning vehicles, consideration should also given to the construction of right-turn lanes at intersections where the volume of right turning vehicles is significant or where other factors indicate that a right-turn lane would be appropriate.

At the intersections of SR 28 with Snider Road and with SR 48 South, the number of right-angle crashes was determined to be higher than expected. It is anticipated that each of these intersections will require signalization at some point in the future. Traffic signals at these locations will assign alternating right-of-way to the conflicting approaches of these intersections, allowing motorists to enter the roadway without having to assess the adequacy of gaps in conflicting traffic.

In the public input meeting, comments were received regarding the difficulty that motorists experience in entering SR 28 from various side streets and driveways. With the anticipated development throughout the study corridor, the installation of traffic signals is expected to be needed at various locations to provide for safe and efficient traffic operations. These traffic signals will provide motorists with additional options for entering SR 28. Also, the multi-lane roadway section throughout the corridor will disperse SR 28 traffic more effectively than is possible with the existing two-lane roadway section, which will provide more gaps in traffic for motorists entering SR 28 from various roadways and driveways. In addition, two-way-left-turn lanes throughout the study corridor will allow motorists that are turning left from unsignalized intersections and driveways to make a two-stage left turn, which will reduce the need to find simultaneous gaps in both directions of SR 28 traffic.

5.3 MULTIMODAL TRANSPORTATION RECOMMENDATIONS

The traffic volumes along SR 28 are expected to experience considerable growth in the upcoming years. In fact, at many of the intersections along the study corridor, the SR 28 approaches are anticipated to be operating near capacity in the future design year, even with the recommended improved roadway configurations. In order to limit the number of vehicle trips while encouraging development growth in this area, it is recommended that transit facilities within development areas be provided where possible. It is also recommended that bicycle and pedestrian accommodations be a key component along the SR 28 corridor so that local residents and transit users can have a viable alternate mode of transportation between desired destinations.

The main focus area will be inside the four nodes identified earlier. The first objective is to create pedestrian connectivity between both sides of SR 28 within these nodes. The increased popularity of "lifestyle" retail developments giving suburban areas a compact and pedestrian oriented shopping environment is a popular trend n the marketplace. To make this work within the individual nodes, sidewalk improvements must be made. Wide sidewalks located parallel to SR 28 are encouraged so long as adequate pedestrian safety is maintained. This sidewalk network should strive to connect the activity areas located within each node. Providing bicycle lanes and pedestrian sidewalk areas along the shoulder of SR 28 within identified areas along the corridor in close proximity to residential development clusters will assist in further providing connections between destination based retail and service nodes and nearby residential areas.

Pedestrian safety and crossing SR 28 is a key concern. Crossing 4-6 lanes of traffic is a dangerous situation for persons of any age bracket. Pedestrians walking across turn lanes is also a concern, for both pedestrian safety and traffic backups. It is recommended to create aesthetic and safety enhanced pedestrian crossing points for each node to cross SR 28. This cross connection can provide a pedestrian link in the event the development opposite of the designated node areas grows as a complimentary land use that warrants pedestrian connectivity such as office uses seeking to access the restaurants and other amenities found in the node development areas.

Reducing vehicle trips can be helped by creating walkable nodes, but it is not realistic to walk from one node to another. Creating mass transit stops throughout each node is essential to reduce the number of trips made along the corridor. A bus line or shuttle running in a loop through the corridor is one option. Providing adequate transit facility locations should be included in the local planning and site plan review process.

During the plan design and review phases, attention should be given toward creating a pedestrian friendly environment to support multimodal sites located within and adjacent to new planned developments as shown in these representative photographs.

Multimodal stations can be incorporated in a planned development to continue the aesthetic theming and continuity throughout as depicted above.

5.4 POTENTIAL ALTERNATIVES FOR FUTURE TRAFFIC CONDITIONS

Based on information gathered and analyses performed throughout the course of this study, roadway improvements were identified that would be necessary to accommodate the projected future design year (2030) traffic volumes estimated in this study. The traffic volumes that were generated from the OKI Traffic Demand Model were used as a basis in the identification of these improvements. The potential alternatives also take into account findings from the crash analyses, information received in the public input meeting, and observations of traffic and roadway conditions in the study area.

It should be noted that the analyses performed in this study are based on assumptions related to the anticipated development and traffic patterns throughout the project area. Specific infrastructure needs, particularly at individual nodal development access points, as described in Section 7, will need to be determined via further analyses using ODOT certified traffic volumes.

5.5 GENERAL ROADWAY SECTION

Based on the capacity analyses, it is anticipated that the entire length of SR 28 within the project study area will need to be widened to provide two travel lanes in each direction. The construction of auxiliary left and right turn lanes turn lanes should considered at key intersections both inside and outside the development nodes in order to safely and efficiently accommodate the growing traffic volumes throughout the corridor. The crash analyses revealed higher than normal occurrences of rear-end crashes on SR 28 at Deerfield Road, Donna Jay Drive, and Snider Road. Each of these intersections should be considered for the construction of left turn lanes.

Also, it is recommended that a 45 mph speed limit be considered for SR 28 throughout the entire length of the study area. A single speed limit would provide consistency over the length of the roadway and would more compatible with the type and level of development that is anticipated to occur within the study area.

As widening projects occur within the study corridor, it is recommended that existing driveways be eliminated or combined where possible such that the access points are brought into compliance with ODOT's State Highway Access Management Manual.

5.6 EXISTING INTERSECTION CONFIGURATION

Based on observations of the study area roadway/intersection configurations and comments received from participants in the public input meeting as well as from members of the project team, it is recommended that consideration be given to the Woodville Pike approach to SR 28 being relocated to the east to intersect SR 28 directly opposite Branch Hill Guinea Pike. It is understood that this realignment has been and is currently being considered to be performed in the upcoming years. Aligning these intersections will allow motorists traveling north-south to cross SR 28 through a single intersection as opposed to through two intersections. Also, creating a single intersection of these two roadways will address problems that are occurring or are expected to occur with signal coordination, vehicle queuing and blocking, left-turn storage space between intersections, and safety.

According to intersection capacity analyses, the following intersection configuration is needed at the intersection of SR 28 and Woodville Pike/Branch Hill Guinea Pike in order to accommodate the 2030 projected traffic volumes :

- Eastbound: Four approach lanes (Two left-turn only, one through only, and one through-right shared)
- Westbound: Four approach lanes (One left-turn only, two through only, and one right-turn only)
- Northbound: Three approach lanes (Two left-turn only and one through-right shared)
- Southbound: Four approach lanes (Two left-turn only, one through-right shared, and one right-turn only)

It is also recommended that consideration be given to the realignment of the Deerfield Road/Donna Jay Drive approaches to SR 28. These approaches are currently offset by approximately 225 feet. Also, there are no left turn lanes along SR 28 in the area of these intersections. Vehicles on SR 28 that are waiting for a gap in opposing traffic to turn onto either Deerfield Road or Donna Jay Drive tend to block other vehicles traveling in the same direction. At this location, approximately 10 vehicles queued up behind the left turning vehicle will result in the blocking of the adjacent intersection, which has the potential of causing a gridlock situation. Realigning these approaches will also provide for improved traffic operations if a traffic signal is installed in the future.

SECTION 6

NODAL DEVELOPMENT APPROACH

STATE ROUTE 28 CORRIDOR IMPROVEMENTS

THE NODAL DEVELOPMENT APPROACH

6.1 What Are Development Nodes?

One land use planning method aimed at controlling traditional strip commercial growth along long corridors is the use of "development nodes." This concept is based upon confining growth to dense, interconnected clusters, or nodes, with open space, and featuring small scale commercial or residential areas in between the more active commercial nodes. Development nodes channel commercial development into the nodal districts or "pulse points." This nodal design combined with excellent inter-parcel access utilizing cross access easements, reverse frontage roads and sidewalks creates a more efficient internal site traffic flow and access to shared egress points. This type of development pattern also promotes a more pedestrian friendly environment by reducing the number of potential conflicts along the roadway or corridor.

For larger developments, an on-site access road system within the nodes allows traveling consumers to exit main thoroughfares, park, and walk to their desired locations instead of driving from store to store. This allows local governments to improve the appearance of commercial districts, incorporating the nodes into new "places" with aesthetically pleasing designs which will attract consumers, new businesses, and increased sales and property tax dollars. Nodal district acreage and lots should be appropriate for dense development and have population densities and compositions sufficient to support the desired commercial and mixed-use development.

6.2 The Benefits of Creating Development Nodes Along State Route 28

Nodal development patterns provide several advantages to the State Route 28 study area, the general public and the landowners. With an abundance of vacant land and land identified as possessing valuable redevelopment potential located along the corridor, the study area is situated at an ideal time relative to it's development curve. Additionally, recognizing the corridors' relatively light demand in the early years for commercial and office type uses and the prospect of implementing access management controls all bode well for successfully creating a true nodal development pattern along the State Route 28 corridor. The advantages of nodal development along State Route 28 include:

• The avoidance of scattered sprawl.

• Concentration of land uses allow the local governmental stakeholders to focus development-infrastructure dollars in one or two areas at a time.

• With much of the land held in large blocks of single ownership, unified development is more easily achieved.

• Consistent design themes through PUD and overlay zoning is easier to implement.

• Pedestrian oriented shopping experiences are fostered in these scenarios.

• There exists a greater potential and flexibility for mixed use development patterns.

• Increased control of traffic and preservation of roadway capacity is better realized.

6.3 Nodal Development Prevents Dysfunctional Commercial Strip Zoning

The state route lined on both sides with franchise restaurants, strip shopping centers, car dealerships and all sorts of other commercial development can be found so often in the southwest Ohio region that most people assume it has been entirely created by market forces. But the commercial strip is actually a zoning concept derived from an outmoded model adopted long ago by most local governments. In suburban and rural areas, shopping had always been organized along a main street or corridor. At first, this pattern had advantages, creating sites with plenty of parking for businesses that had been constricted by more urban locations. Strip zoning helped empty out traditional downtowns, especially in small communities where much commercial activity migrated out to the "interstate bypass" and beyond.

Today, in most places, the only available retail locations, and most office and hotel sites are along commercial strips or in traditional downtowns. The market has had little choice. But now many real estate investors and planners, especially transportation planners, are coming to believe that the strip-zoning pattern has been a mistake because it creates two incompatible functions. The highway's original purpose is to connect one place with another and in many suburban areas such connections are scarce and badly needed. At the same time, the highway is being used for access to individual stores and other businesses.

The more people drive into businesses along the strip, especially by making left turns between intersections, the more congested the traffic becomes. Even short trips between different destinations along the strip usually have to take place on the highway. Eventually the highway ceases to function well as a traffic artery while access to each business becomes more and more difficult. Much of the worst gridlock takes place along commercially zoned highways, many of which are state routes similar to State Route 28. By identifying development nodes and then concentrating infrastructure improvement dollars, adopting zoning and access management regulations and offering economic development incentives within those areas, a critical mass of development and traffic is created. This critical mass of activity is better managed from a traffic and access perspective and avoids the trappings of traditional commercial strip development.

6.4 Nodal Development as a Place Making Tool

Implementing a nodal development pattern along State Route 28 can also provide numerous urban design advantages. In conjunction with Planned Unit Development districts and corridor overlay districts, uniform building and site design may be achieved. This is an effective approach to creating a unique sense of place that sets the individual node apart from other areas. This, in turn, adds market value to the land within the node and creates a "destination" demand in the market place for new development investment dollars.

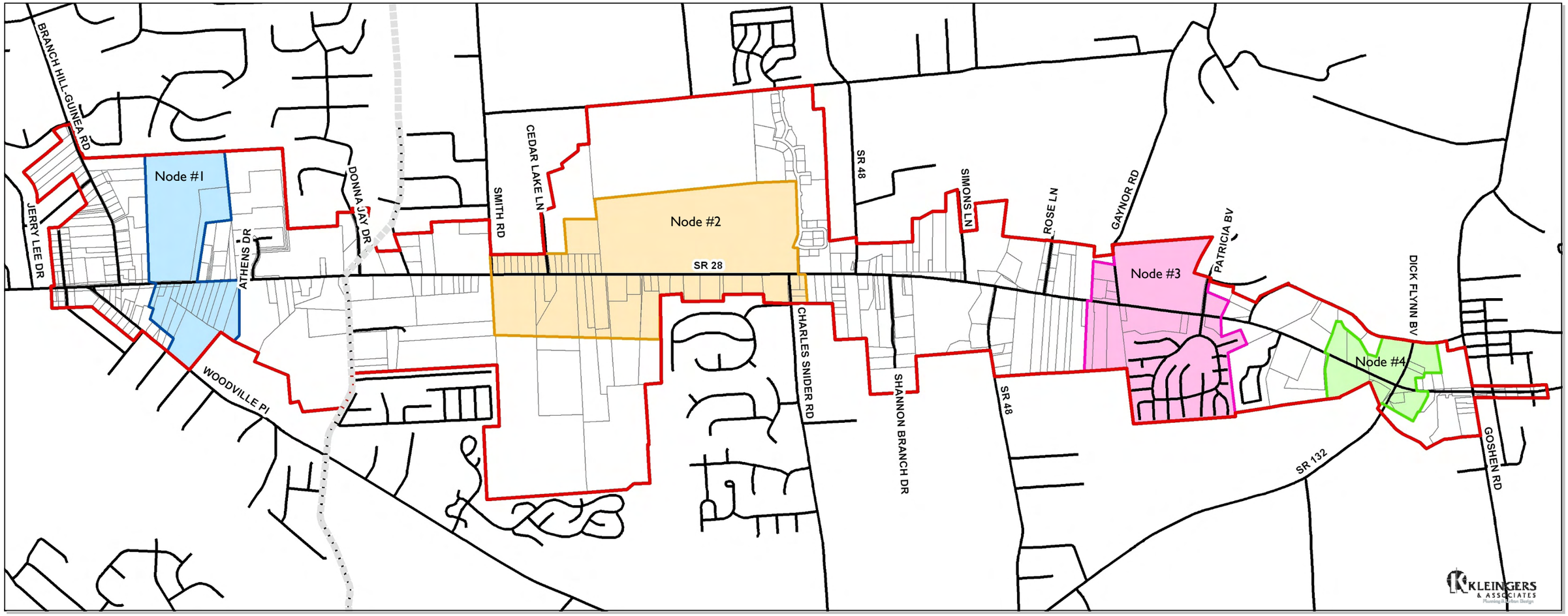
In addition to comprehensively approaching site access within a node, other development elements can be regulated to create a high quality development that will assist in attracting attention from the development community.

Elements to consider include:

- Coordinated sign standards.
- Architectural design guidelines.
- Landscape and gateway standards.
- Planned pedestrian connectivity and open space utilization.
- Promoting higher density, mixed-use development patterns.

These images represent planned mixed-use developments that form the foundation for creating higher density development nodes.

6.5 State Route 28 Node Development Map



The map above depicts the four development node districts identified in this plan. These districts represent the boundaries of the "Development Nodes" that are utilized for the revenue capability analysis provided in this plan.

How the Development Node Boundaries Were Determined

A combination of variables were utilized when determining the four development node boundaries. The key site related factor included the existence of a large single ownership parcels to serve as a district anchor parcel. The adjacency of parcels designated as either "New Development" and "Redevelopment" status helped determine the lineal distance of the district frontage along State Route 28. Other factors included the location of adjacent north-south collector roads, topographic constraints and lot depth.

SECTION 7

NODAL TRAFFIC ANALYSIS

STATE ROUTE 28 CORRIDOR IMPROVEMENTS

NODAL TRAFFIC ANALYSIS

7.1 TRAFFIC ANALYSES BASED ON FUTURE LAND USE WITHIN THE STUDY AREA

Traffic analyses were performed for the future design year (2030) in order to determine the roadway infrastructure and access requirements that are needed to accommodate the projected traffic volumes based on the future land uses within each development node. Individual parcels within each node were evaluated as to their potential to develop/redevelop within the study timeframe. For this portion of the study, groups of contiguous parcels were combined and analyzed as large developments with planned access points serving the entire group of parcels. While it is unlikely that developers will utilize an entire group of parcels within a node for a single large development, an access plan for each node should be put into effect such that the various individual developments that are constructed within the nodes are provided access based on the overall node plan. This section presents the methodology used in analyzing traffic operations along the SR 28 corridor and at the individual access points for each development node.

7.1.1 Node Access Locations

The access points for each of the development nodes were located in accordance with ODOT's State Highway Access Management Manual. For this study, SR 28 is assumed to have a 45 mph speed limit throughout the length of the corridor. The roadway is being evaluated as a Category III – High Emphasis area – roadway, which has the following driveway spacing recommendations:

- High Volume Driveway
  - Preferred spacing: ½ mile
  - Minimum spacing : 360 feet
- Medium Volume Driveway
  - Minimum spacing: 360 feet
- Low Volume Driveway
  - Discouraged
  - Minimum spacing if provided: 360 feet
- Minimum-Use Driveway
  - Minimum spacing: 360 feet
- Traffic Signal (Urban Highway Sections)
  - Preferred spacing: ½ mile
  - Minimum spacing: ¼ mile when there is no reasonable alternative access to the general street system.

The locations identified for the node access points as well as the anticipated traffic control method for each location are as follows.

Node 1:
Access 1A – Approximately 1,050 feet east of Branch Hill Guinea Road (full-access; signalized) - Located to provide access to Node 1 north and south of SR 28 while being located as far as possible from Branch Hill Guinea intersection.

Node 2:
Access 2A – Approximately 825 feet east of Smith Road (full access; signalized) - Located to align with Cedar Lake Lane, which is on the north side of SR 28
Access 2B – Approximately 2,200 feet west of Snider Road (full access; signalized) - Located to provide at least ¼ mile spacing from the other access points in Node 2
Access 2C – Located at the Snider Road intersection (full access; signalized)

Node 3:
Access 3A – Located at the Gaynor Road intersection (full access; signalized)
Access 3B – Located at the Patricia Boulevard intersection (full access; signalized)

Node 4:
Access 4A – Approximately 1,100 feet west of SR 132/Dick Flynn Boulevard (full access; signalized) - Located near the mid point of the section between Country Lake Drive and the nearby creek.
Access 4B – Located at the SR 132/Dick Flynn intersection (full access; signalized)

The design of these access points needs to be determined based on the specific site conditions when the engineering design is performed. It should be noted that the anticipated need for signalization is based on intersection capacity considerations. Formal signal warrant analyses would need to be performed at each location as specific developments are being planned in order to justify the traffic signal installations.

Due to roadway geometrics as well as high traffic volumes along SR 28 and those generated within the development nodes, the preferred ½ mile traffic signal spacing, and in some cases ¼ mile spacing, could not be achieved without adversely impacting traffic operations. As a result, access points that are anticipated to require signalization were located as far as practical from other intersections that are either currently signalized or are anticipated to be signalized at some point in the future.

In order to plan for development that could occur outside the defined development nodes, driveway locations were identified in a similar manner as was used in locating the access points within the development nodes. It should be noted that no traffic analyses of these access points were performed. These access points are as follows:

Access D1– Located at the Athens Drive intersection, providing access to the property south of SR 28.
Access D2– Located approximately 700 feet west of Donna Jay Drive, providing access to the property north of SR 28. If connectivity can be provided from this point to Donna Jay Drive, consideration should be given to restricting certain turning movements at Access D2.
Access D3– Located approximately 575 feet west of Smith Road, providing access to the north side of SR 28. Consideration should be given to restricting left turns exiting this property if indirect access to SR 28 can be provided via Smith Road.
Access D4– Located at the intersection of SR 28 and Oakland Road (SR 48 North), providing access to the property south of SR 28.
Access D5– Located approximately 850 feet west of SR 48 South, providing access to the north and south sides of SR 28. This access point was located to most adequately serve the properties on both sides of SR 28.

Figure 7-1 illustrates the locations of each of the access points described above.

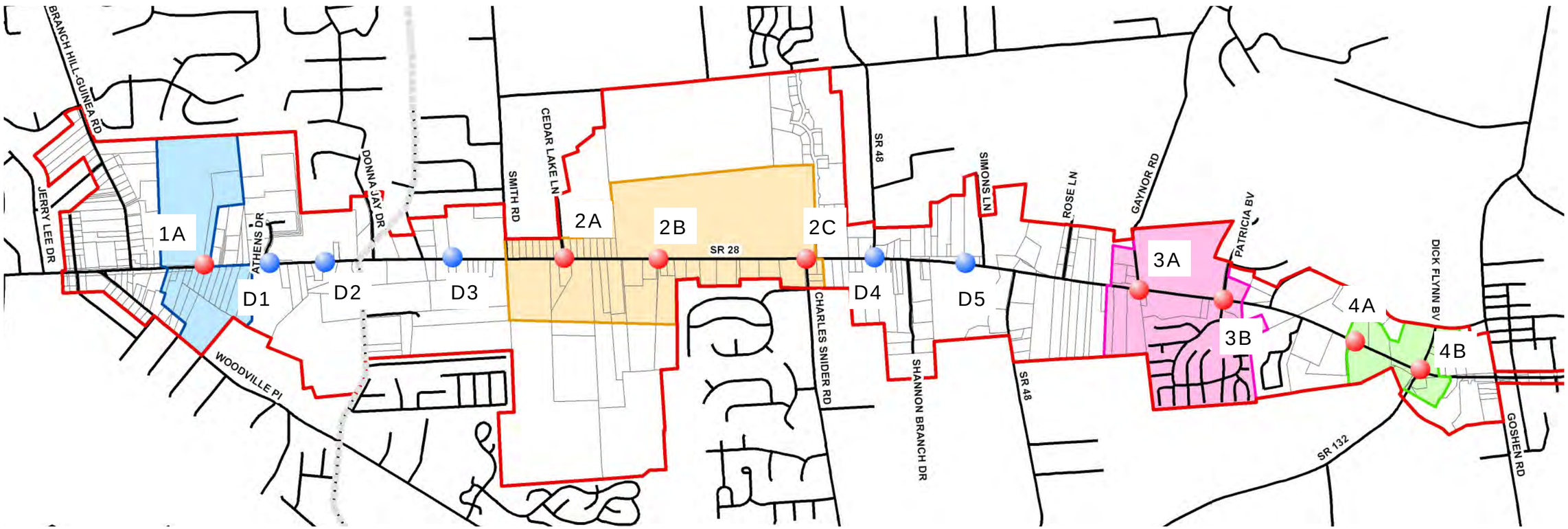


Figure 7-1: Potential access point locations

Proposed node access points

Proposed intermediate driveway locations

7.1.2 Background Traffic Projections

As indicated previously in this report, the growth in traffic volumes due to development within the development nodes along SR 28 was found to be significantly higher than that which was accounted for in the OKI traffic demand model. Therefore, it was assumed that while the OKI model likely accounts for some growth to occur within the project area, it does not account for the level of development that is projected in this study. As a result, the analyses performed in this section are based on traffic volumes generated by adding the estimated projected background traffic volumes (i.e. traffic volumes not associated with development in the project area) and the corridor-wide traffic volumes generated by all four development nodes.

The OKI traffic assignment plots indicate that at the eastern end of the project area, the average annual growth rate is projected to be approximately 2 percent. A portion of this growth rate can be attributed to growth within the corridor. For this study, it was assumed that a 1 percent annual growth rate would adequately account for the anticipated growth in traffic volumes that are not generated by developments within the project area. As a result, this 1 percent annual growth rate was applied to the existing traffic volumes to estimate the 2030 "background" traffic.

7.1.3 Node Generated Traffic Volumes

As part of this study, parcels within each development node were evaluated to determine the potential for new development or redevelopment. For parcels and groups of parcels where development activity is likely, estimates were made as to the likely future land uses as well as the building areas that parcels are expected to be able to accommodate.

Node-generated traffic volumes were calculated for each area that was identified for future development activity using ITE's publication Trip Generation (7th Edition). The following is information from the Trip Generation publication describing three of the main land uses that are expected to be applicable to the future development within the study area.

- Shopping Center—"A shopping center is an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit…Many shopping centers, in addition to the integrated unit of shops in one building or enclosed around a mall, include outparcels (peripheral buildings or pads located on the perimeter of the center adjacent to the streets and major access points). These buildings are typically drive-in banks, retail stores, restaurants, or small offices."
- Specialty Retail Center—"Specialty retail centers are generally small strip shopping centers that contain a variety of retail shops and specialize in quality apparel; hard goods, and services, such as real estate offices, dance studios, florists and small restaurants."
- Warehousing—"Warehouses are primarily devoted to the storage of materials, but they may also include office and maintenance areas."

Table 7A provides a summary of the expected land uses, building areas, and generated trips for both the AM and PM peak hour for each location where development activity is expected to occur. Tables showing the trip generation calculations for each development area are included in Appendix E.

Development Area	Future Land Use	Building Area (sq. ft.)	Peak-hour traffic volumes		
			Peak Hour	Enter	Exit
Node 1 - North of SR 28	Shopping Center	287,352	AM	180	115
			PM	603	654
Node 1 - South of SR 28	Shopping Center	176,797	AM	134	86
			PM	438	474
Node 2 - North of SR 28	Shopping Center	672,813	AM	300	191
			PM	1057	1146
Node 2 - South of SR 28 (west end)	Shopping Center	448,167	AM	235	150
			PM	809	876
Node 2 - South of SR 28 (east of Snider)	Shopping Center	16,400	AM	32	21
			PM	91	99
Node 3 - North of SR 28	Shopping Center	221,476	AM	154	98
			PM	508	550
Node 3 - South of SR 28 (west end)	Warehousing	146,300	AM	27	82
			PM	55	33
Node 3 - South of SR 28 (east end)	Shopping Center	372,902	AM	210	135
			PM	716	776
Node 4 - North of SR 28 (west end)	Specialty Retail	35,000	AM	22	14
			PM	42	53
Node 4 - North of SR 28 (east end)	Shopping Center	87,752	AM	88	57
			PM	276	299
Node 4 - South of SR 28 (west end)	Specialty Retail/Fast Food	31,500	AM	191	179
			PM	146	145
Node 4 - South of SR 28 (east end)	Drive-In Bank	3,000	AM	23	18
			PM	76	76

Table 7A: Summary of Node Land Uses and Generated Trips

7.1.4 Node-Generated Traffic Distribution

Node-generated traffic volumes were distributed to the east and west along SR 28 based on anticipated travel patterns within the study area. In general, it is assumed that 60 percent of the traffic volumes generated by each node will be oriented west of the node and 40 percent will be oriented east of the node.

It was assumed that after the general 60-40 directional split is applied, the node-generated traffic volumes will be distributed onto the various roadways that exit the project area corridor (including SR 28) proportionately to the traffic volumes on each roadway. For example, the 60 percent of traffic that exits a particular node toward the west was distributed to each significant roadway that exits the corridor west of that node, proportionate to each roadway's peak-hour traffic volumes. In most cases, the peak hour volumes for the roadways that intersect SR 28 were estimated from ADT information obtained from the OKI traffic assignment plots, ODOT, and the Clermont County Engineer's office. Peak hour volumes were typically assumed to be 10 percent of the average daily traffic volumes. No ADT information was located for Snider Road. It was assumed that 150 vehicles travel in each direction on Snider Road in both the AM and PM peak hours.

The node-generated traffic volumes were assigned to the access points for each development area based on the anticipated paths that motorists are likely to find most convenient.

7.1.5 Pass-by Trip Reductions

According to the ITE publication, *Trip Generation Handbook, Second Edition,* a portion of the traffic generated by the types of developments anticipated in this area could include traffic that was already passing by the site prior to the construction of the developments. That being the case, a portion of the trips generated by the site will not be new to the adjacent street system.

The majority areas that were identified for development activity in this study are anticipated to have a future land use of Shopping Center. According to the *Trip Generation Handbook,* the average pass-by trip percentage during the PM peak period for a shopping center is 34 percent. The pass-by trip percentages for some of the other less used development types along the SR 28 corridor, such as Drive-In Bank, and Fast-Food Restaurant with Drive-Through Window were higher than 34 percent. To be conservative, a 34 percent PM peak period pass-by trip reduction was applied to the projected "background" traffic volumes throughout the corridor. To simplify calculations, it was assumed that the pass-by trips are evenly split by direction and by entering and existing volumes. No data is presented for the AM peak period. Therefore, no reduction for the AM peak period was applied.

7.1.6 Total Traffic Volumes

In order to develop the total traffic volumes based on the projected development within the study corridor, the background projected traffic volumes were added to the distributed node-generated traffic volumes. For the PM peak hour, the calculated pass-by volumes were subtracted from the background volumes. The total volume turning movement counts at each of the node access points are shown in Figures 7-2 through 7-5. These total volumes were used in the intersection capacity analyses at each node access point. The total traffic volumes calculated for each section along SR 28 are shown in Figure 7-6.

FUTURE YEAR (2030), PROJECTED DEVELOPMENT TRAFFIC VOLUMES—NODE 1

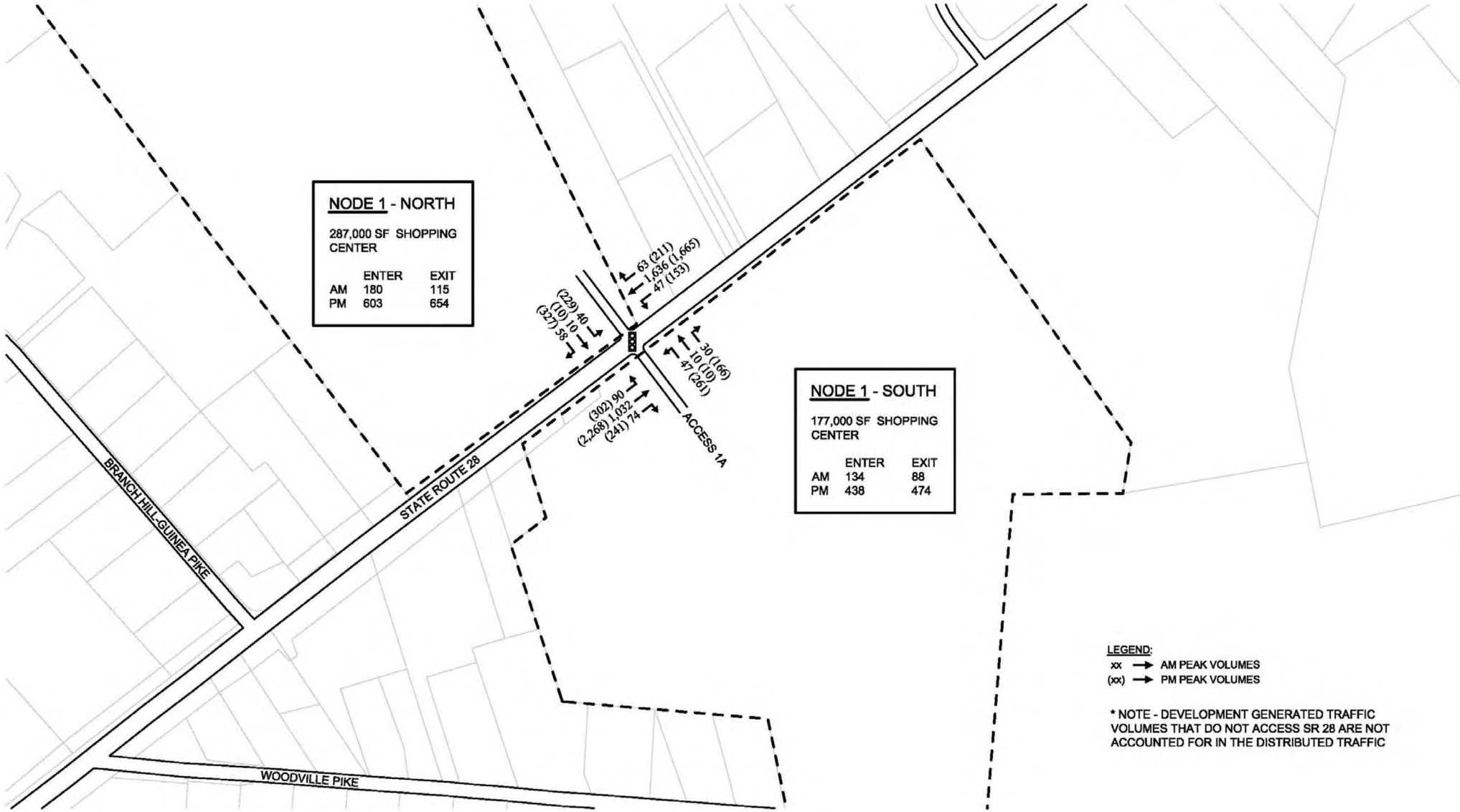


Figure 7-2: Future Year (2030), Projected Development Traffic Volumes—Node 1

FUTURE YEAR (2030), PROJECTED DEVELOPMENT TRAFFIC VOLUMES—NODE 2 (1 OF 2)

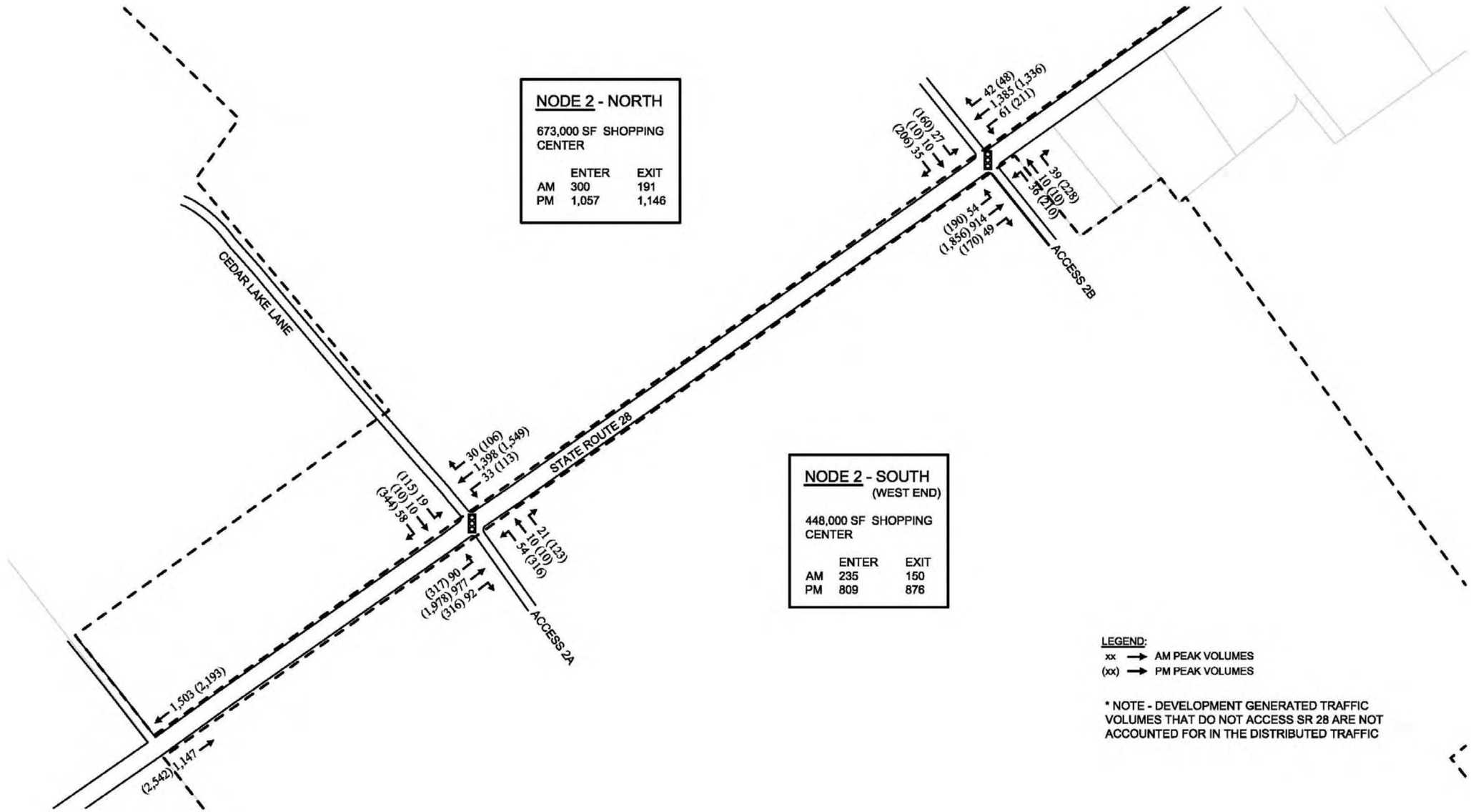


Figure 7-3: Future Year (2030), Projected Development Traffic Volumes—Node 2 (1 of 2)

FUTURE YEAR (2030), PROJECTED DEVELOPMENT TRAFFIC VOLUMES—NODE 2 (2 OF 2)

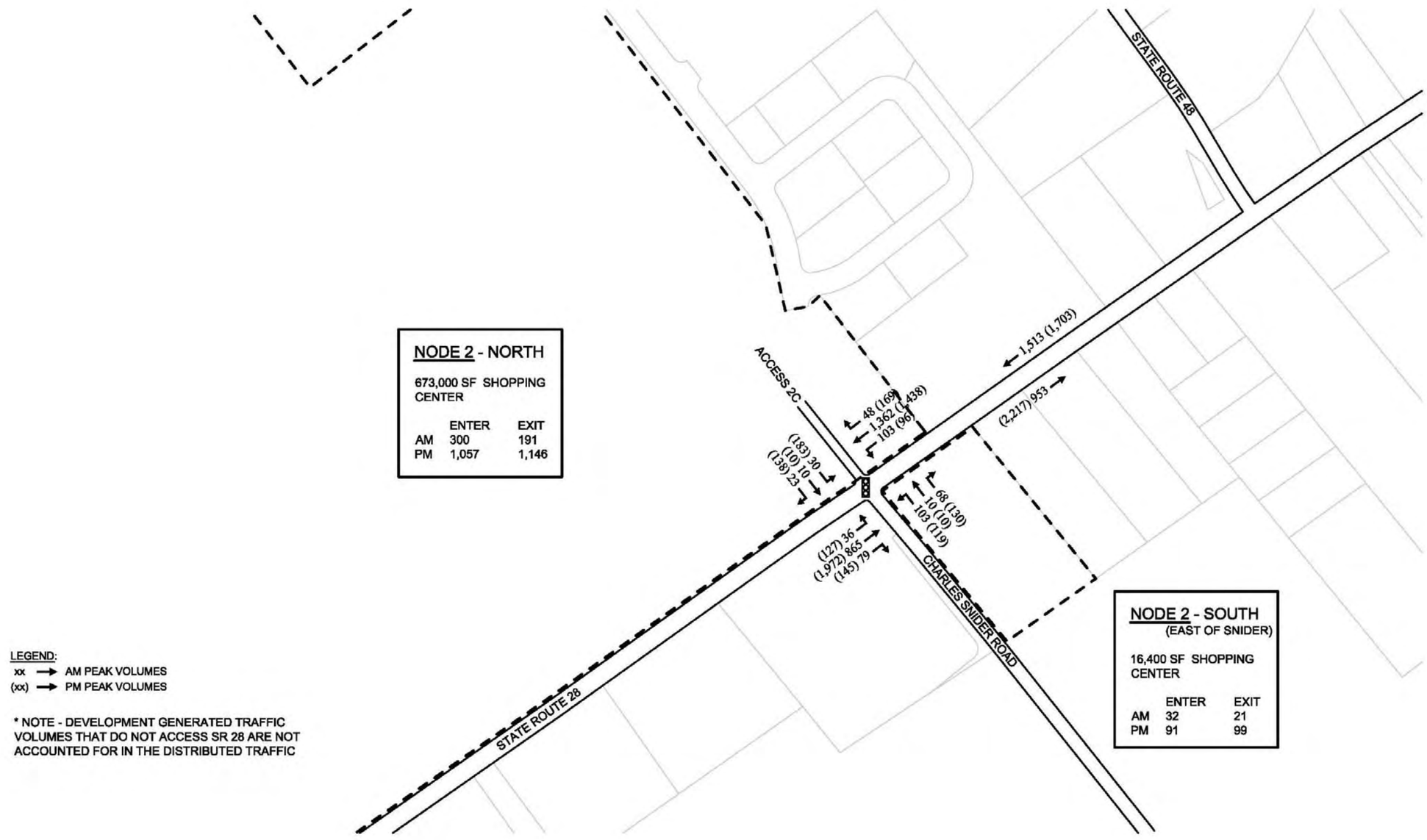


Figure 7-3: Future Year (2030), Projected Development Traffic Volumes—Node 2 (2 of 2)

FUTURE YEAR (2030), PROJECTED DEVELOPMENT TRAFFIC VOLUMES—NODE 3

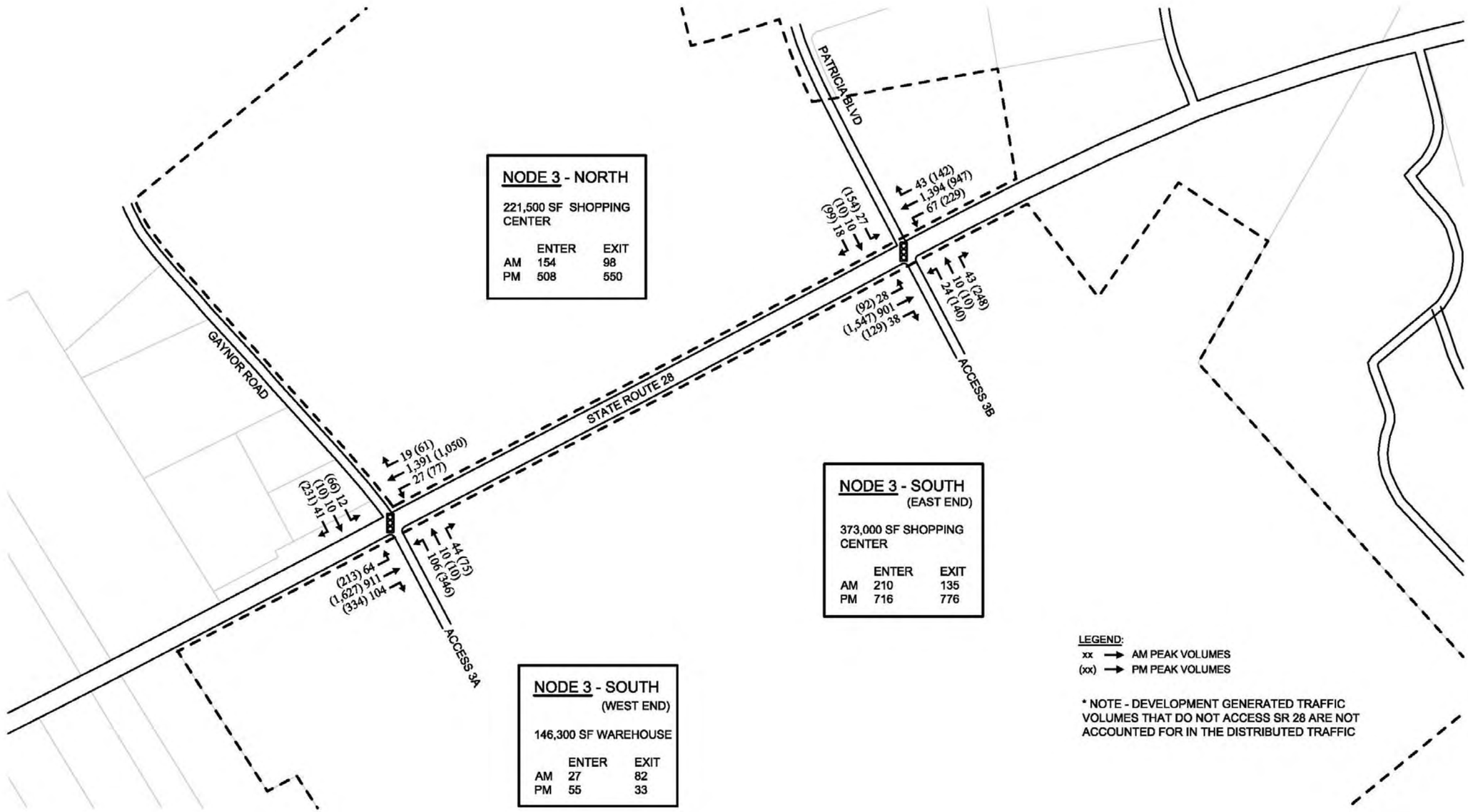


Figure 7-4: Future Year (2030), Projected Development Traffic Volumes—Node 3

FUTURE YEAR (2030), PROJECTED DEVELOPMENT TRAFFIC VOLUMES—NODE 4

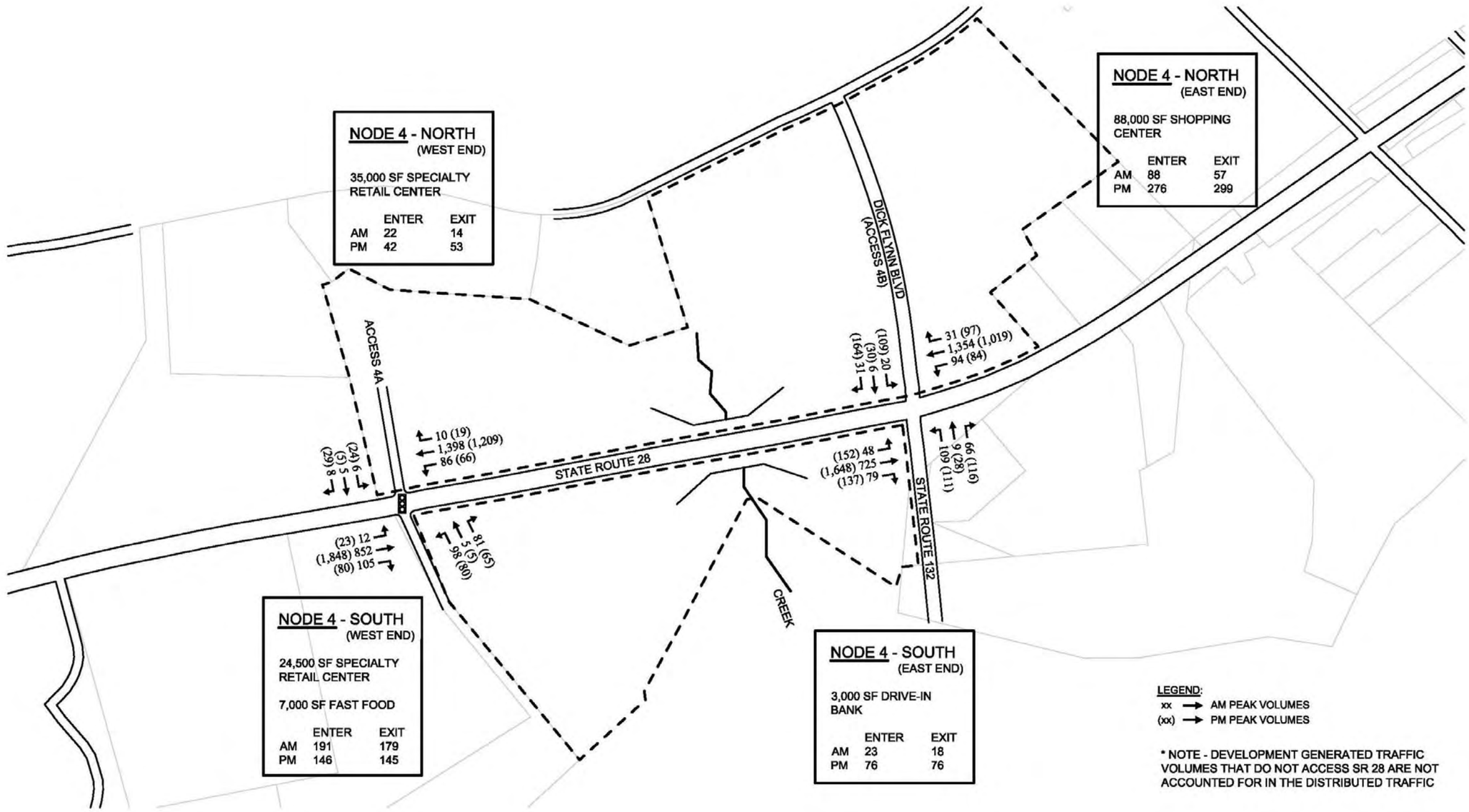
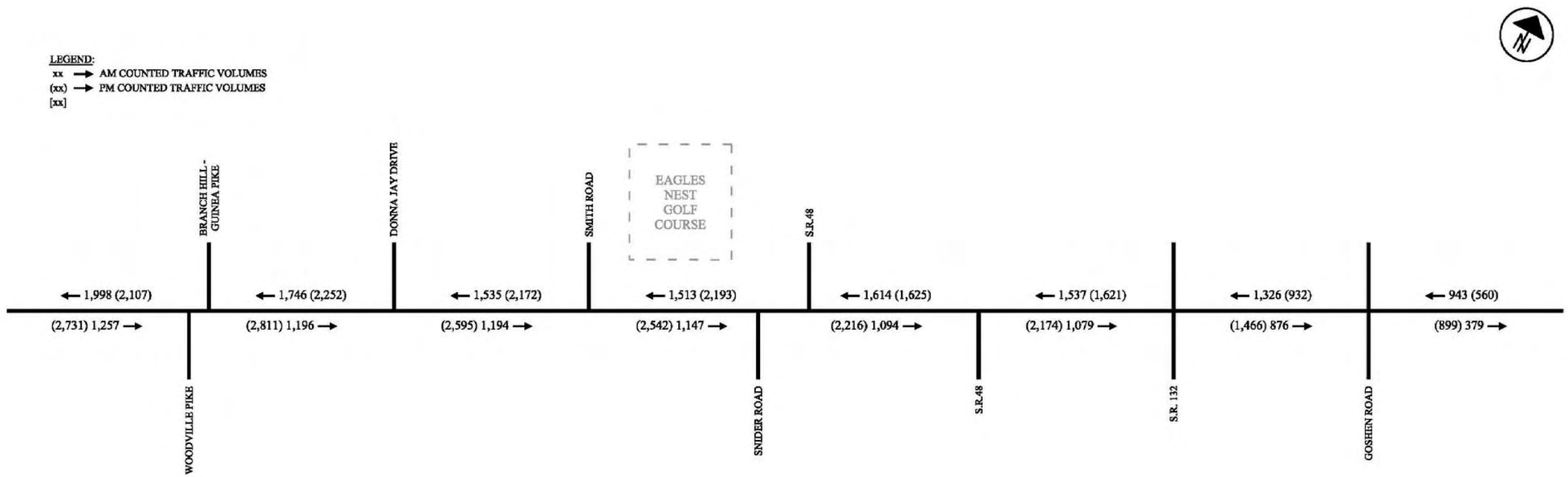


Figure 7-5: Future Year (2030), Projected Development Traffic Volumes—Node 4

FUTURE YEAR (2030), PROJECTED DEVELOPMENT TRAFFIC VOLUMES—ROADWAY SECTIONS



Note: ADT's obtained from OKI 2030 Traffic Assignment Plot

Figure 7-6: Future Year (2030), Projected Development Traffic Volumes—Roadway Sections

7.1.7 Nodal Development Traffic Capacity Analyses

Traffic capacity analyses based on the development that is anticipated to occur within the study area development nodes were performed using 2030 total traffic volumes that were developed as described in the previous section. These analyses were performed to determine the potential roadway capacity that may be needed if each of the development nodes reach their anticipated ultimate buildout. The roadway configurations that are expected to be needed at each of the node access points due to these ultimate buildout traffic volumes are outlined in this section. Table 7B summarizes the overall level of service for signalized intersections and the lowest level of service of all individual movements at unsignalized intersections. Table 7B also shows the highest volume to capacity ratio of all individual movements at the intersection. These intersection configurations are based on projected traffic volumes. The actual intersection configurations will need to be determined based on traffic impact studies for the individual developments using ODOT certified traffic volumes.

It should be noted that the analyses revealed that SR 28 is expected to operate at or very close to capacity at the majority of the node access points. In most cases, acceptable levels of service and volume-to-capacity ratios cannot be achieved with a roadway configuration that is considered practical to construct. Reports from each of the Capacity Analyses based on node-generated traffic volumes are included in Appendix F.

Intersection	Existing Roadway Network	
(2030 Total Volumes)	LOS	Max V/C
SR 28 at Node 1 - Access 1A	D / D	0.92 / 0.95
SR 28 at Node 2 - Access 2A	D / D	0.96 / 0.99
SR 28 at Node 2 - Access 2B	D / D	0.94 / 1.00
SR 28 at Node 2 - Access 2C	C / C	0.95 / 0.99
SR 28 at Node 3 - Access 3A	D / D	0.97 / 0.97
SR 28 at Node 3 - Access 3B	C / D	0.92 / 0.99
SR 28 at Node 4 - Access 4A	B / C	0.86 / 0.97
SR 28 at Node 4 - Access 4B	C / C	0.90 / 0.98

LOS = Level of service

Max V/C = maximum volume to capacity ratio experienced by any one movement at the intersection

- Intersection unaffected by background improvements

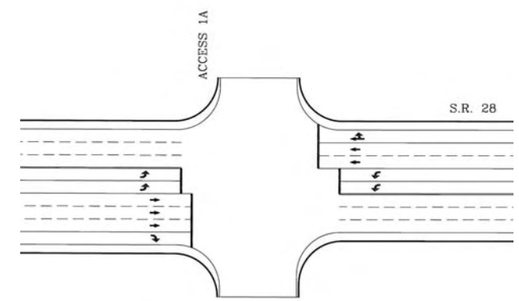
Note: LOS values shown for unsignalized intersections represent the highest delay movement

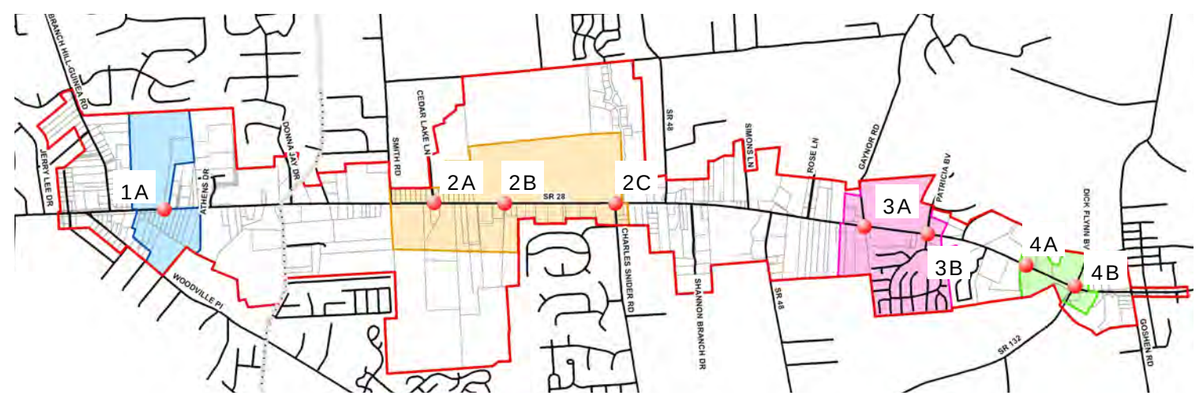
Table 7B: 2030 Node Access Points Intersection Capacity Analyses Summary (based on node-generated volumes)

Based on the intersection capacity analyses, the following lane configurations will be needed on SR 28 at the node access points to accommodate the projected traffic volumes:

Access 1A –

- Eastbound: Six approach lanes (Two left-turn only, three through only, and one right-turn only)
- Westbound: Five approach lanes (Two left-turn only, two through only, and one through-right shared)

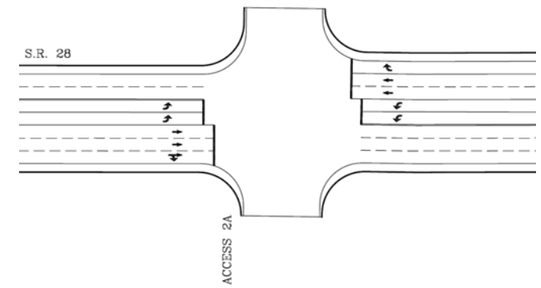




Development node access point locations

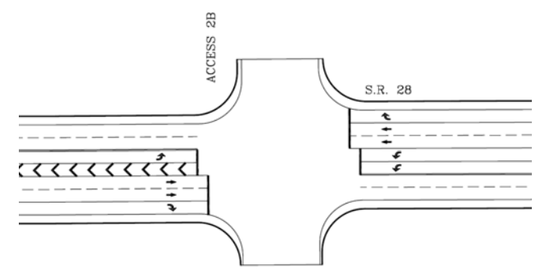
Access 2A –

- Eastbound: Five approach lanes (Two left-turn only, two through only, and one through-right shared)
- Westbound: Five approach lanes (Two left-turn only, two through only, and one right-turn only)



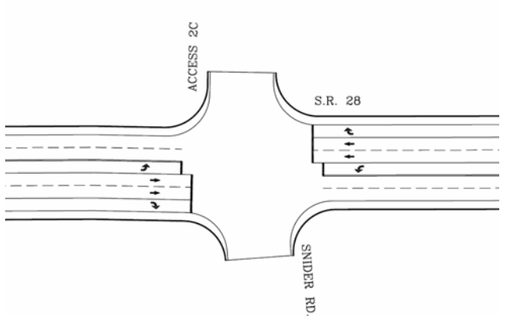
Access 2B –

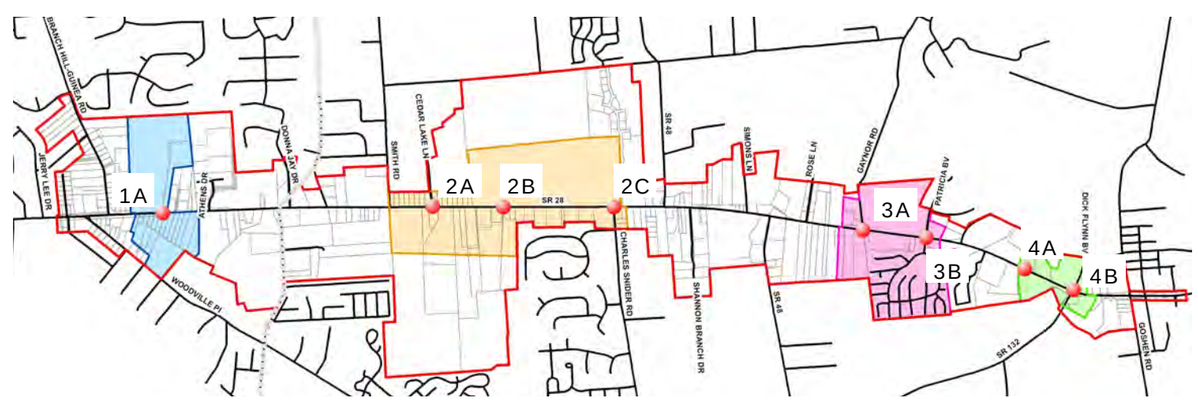
- Eastbound: Four approach lanes (One left-turn only, two through only, and one right-turn only)
- Westbound: Five approach lanes (Two left-turn only, two through only, and one right-turn only)



Access 2C –

- Eastbound: Four approach lanes (One left-turn only, two through only, and one right-turn only)
- Westbound: Four approach lanes (One left-turn only, two through only, and one right-turn only)

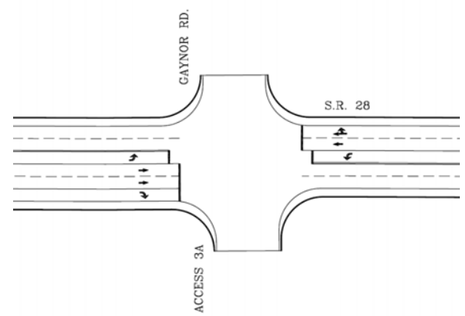




Development node access point locations

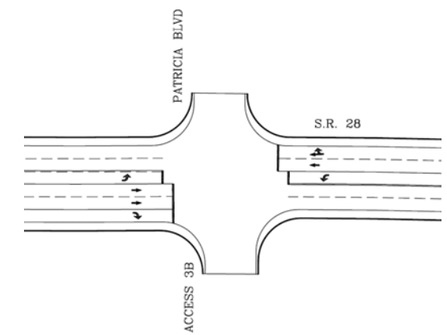
Access 3A –

- Eastbound: Four approach lanes (One left-turn only, two through only, and one right-turn only)
- Westbound: Three approach lanes (One left-turn only, one through only, and one through-right shared)



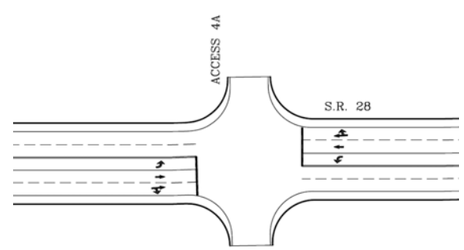
Access 3B –

- Eastbound: Four approach lanes (One left-turn only, two through only, and one right-turn only)
- Westbound: Three approach lanes (One left-turn only, one through only, and one through-right shared)



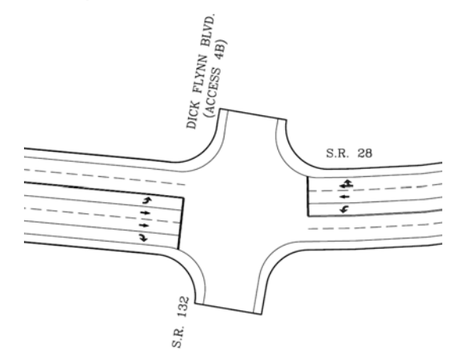
Access 4A –

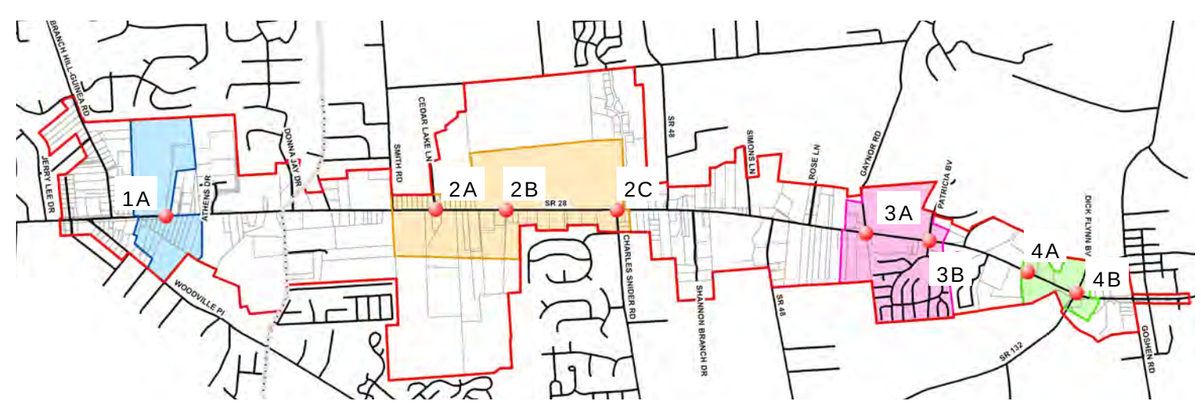
- Eastbound: Three approach lanes (One left-turn only, one through only, and one through-right shared)
- Westbound: Three approach lanes (One left-turn only, one through only, and one through-right shared)



Access 4B –

- Eastbound: Four approach lanes (One left-turn only, two through only, and one right-turn only)
- Westbound: Three approach lanes (One left -turn only, one through only, and one through-right shared)





Development node access point locations

SECTION 8

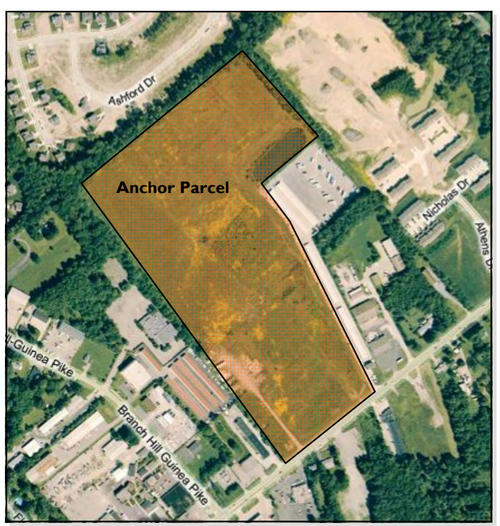
NODE REVENUES & IMPROVEMENTS

STATE ROUTE 28 CORRIDOR IMPROVEMENTS

DEVELOPMENT NODE REVENUES & IMPROVEMENTS

8.1 FISCAL IMPACT OF DEVELOPMENT NODE # 1 BUILD-OUT

Parcel ID	Acreage	Existing Zoning	Existing Land Use	Future Land Use	Development Opportunity Status	F.A.R.	Net Building Capacity	Annual Property Tax	Projected FTE's	Annual Income Tax
5	36.808	B-2 GENERAL BUSINESS	Vacant	Commercial	New Development	0.15	240,503	$ 518,525	267	$ 50,428
33	7.17	I PLANNED INDUSTRIAL	Commercial	Commercial	Redevelopment	0.15	46,849	$ 101,006	52	$ 9,823
50	1.35	R-2 SINGLE FAMILY	Vacant	Commercial	New Development	0.15	8,821	$ 19,018	10	$ 1,850
64	8.341	R-2 SINGLE FAMILY	Vacant	Commercial	New Development	0.15	54,500	$ 117,502	61	$ 11,427
66	0.7	B-2 GENERAL BUSINESS	Vacant	Commercial	New Development	0.15	4,574	$ 9,861	5	$ 959
67	0.445	B-2 GENERAL BUSINESS	Vacant	Commercial	New Development	0.15	2,908	$ 6,269	3	$ 610
68	0.84	B-2 GENERAL BUSINESS	Commercial	Commercial	Redevelopment	0.15	5,489	$ 11,833	6	$ 1,151
70	0.98	B-2 GENERAL BUSINESS	Vacant	Commercial	New Development	0.15	6,403	$ 13,806	7	$ 1,343
72	1.12	B-2 GENERAL BUSINESS	Vacant	Commercial	New Development	0.15	7,318	$ 15,778	8	$ 1,534
74	1.26	B-2 GENERAL BUSINESS	Vacant	Commercial	New Development	0.15	8,233	$ 17,750	9	$ 1,726
75	1.4	R-2 SINGLE FAMILY	Commercial	Commercial	Redevelopment	0.15	9,148	$ 19,722	10	$ 1,918
76	2	R-2 SINGLE FAMILY	Single Family	Commercial	Redevelopment	0.15	13,068	$ 28,175	15	$ 2,740
77	1.54	R-2 SINGLE FAMILY	Commercial	Commercial	Redevelopment	0.15	10,062	$ 21,694	11	$ 2,110
80	2.222	B-2 GENERAL BUSINESS	Vacant	Commercial	New Development	0.15	14,519	$ 31,302	16	$ 3,044
81	2	R-2 SINGLE FAMILY	Single Family	Commercial	Redevelopment	0.15	13,068	$ 28,175	15	$ 2,740
82	2.86	R-2 SINGLE FAMILY	Vacant	Commercial	New Development	0.15	18,687	$ 40,290	21	$ 3,918
							464,149	$ 1,000,706	516	$ 97,322



Development Node #1 Anchor Parcel Shown Above.

Development Node #1 Build-out Summary

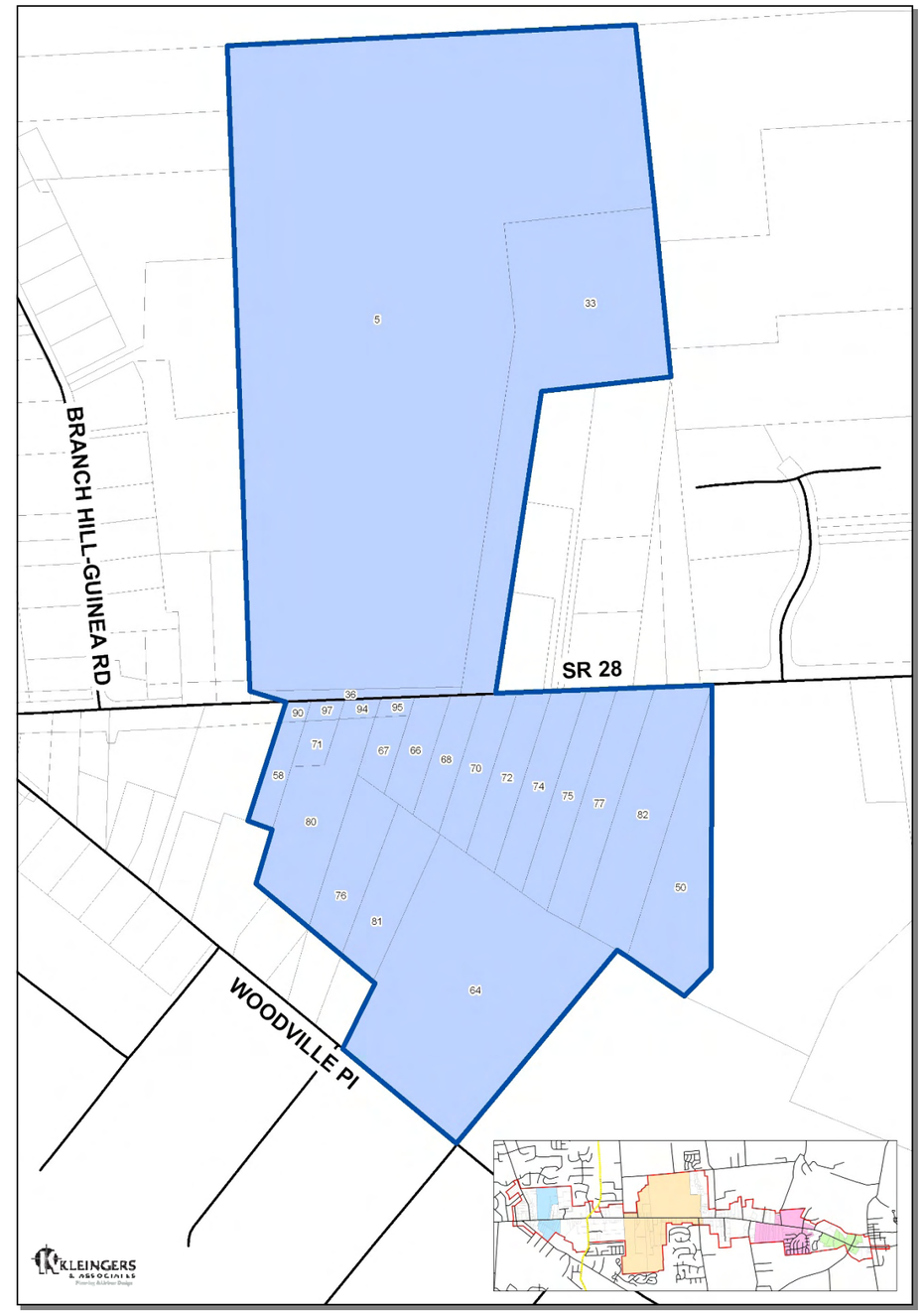
Total Commercial Building Capacity = 464,149 square feet
Annual Property Tax Revenue = $1,000,706
Net Annual Property Tax Revenue = $500,353 (after 50% revenue split to school district)
New FTE Job Creation = 516
Annual Earned Income Tax Revenue = $97,322

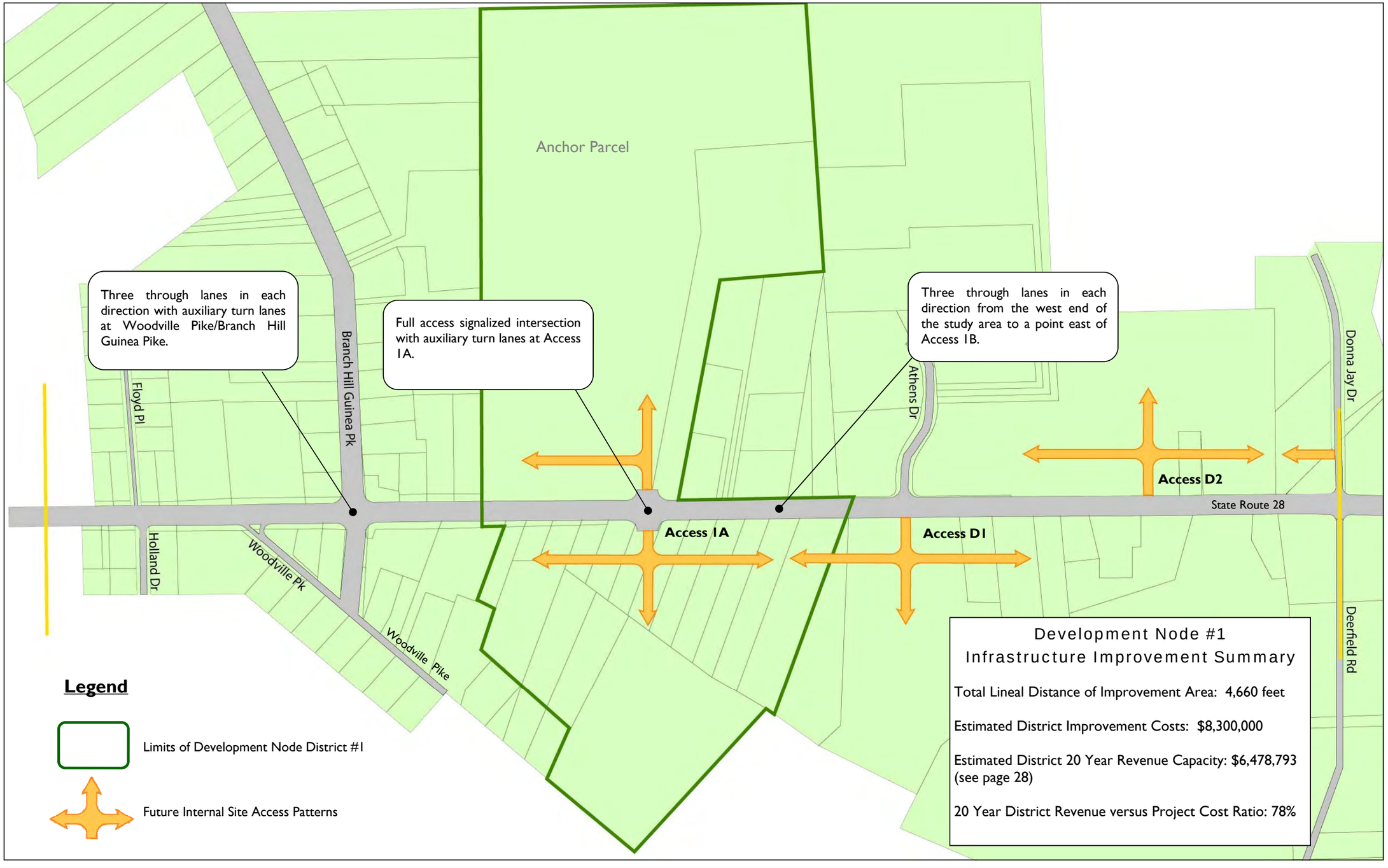
Development Considerations for Development Node #1

Development Node #1 Characteristics: This district is located entirely within Miami Township and features a 36 acre anchor parcel and a series of deep lots located on the south side of SR 28. This district would likely be the first district identified in this plan to build-out given its adjacency to recently development large scale commercial projects. This district features frontage on both SR 28 as well as frontage along Woodville Pike which creates opportunities for designing multiple access points on two established roadways. This double frontage layout would provide more efficient internal traffic flow and connectivity while creating less demand on the SR 28 access point.

Anchor Parcel Characteristics: Node #1 features a 36 acre single owner anchor parcel that maintains frontage along SR 28. This site has previously been considered for big-box retail projects. This anchor parcel is generally adjacent to commercial uses on the east and west property lines. A single family residential development shares the northern property line. It is anticipated that substantial buffering and screening would be required to protect the character of the residential neighborhood.

Development Node #1 District Boundaries




Anchor Parcel
Three through lanes in each direction with auxiliary turn lanes at Woodville Pike/Branch Hill Guinea Pike.
Full access signalized intersection with auxiliary turn lanes at Access 1A.
Three through lanes in each direction from the west end of the study area to a point east of Access 1B.
Branch Hill Guinea Pk
Floyd Pl
Holland Dr
Woodville Pk
Woodville Pike
Athens Dr
Donna Jay Dr
Deerfield Rd
State Route 28
Access 1A
Access D1
Access D2
Legend
Limits of Development Node District #1
Future Internal Site Access Patterns
Development Node #1
Infrastructure Improvement Summary
Total Lineal Distance of Improvement Area: 4,660 feet
Estimated District Improvement Costs: $8,300,000
Estimated District 20 Year Revenue Capacity: $6,478,793 (see page 28)
20 Year District Revenue versus Project Cost Ratio: 78%

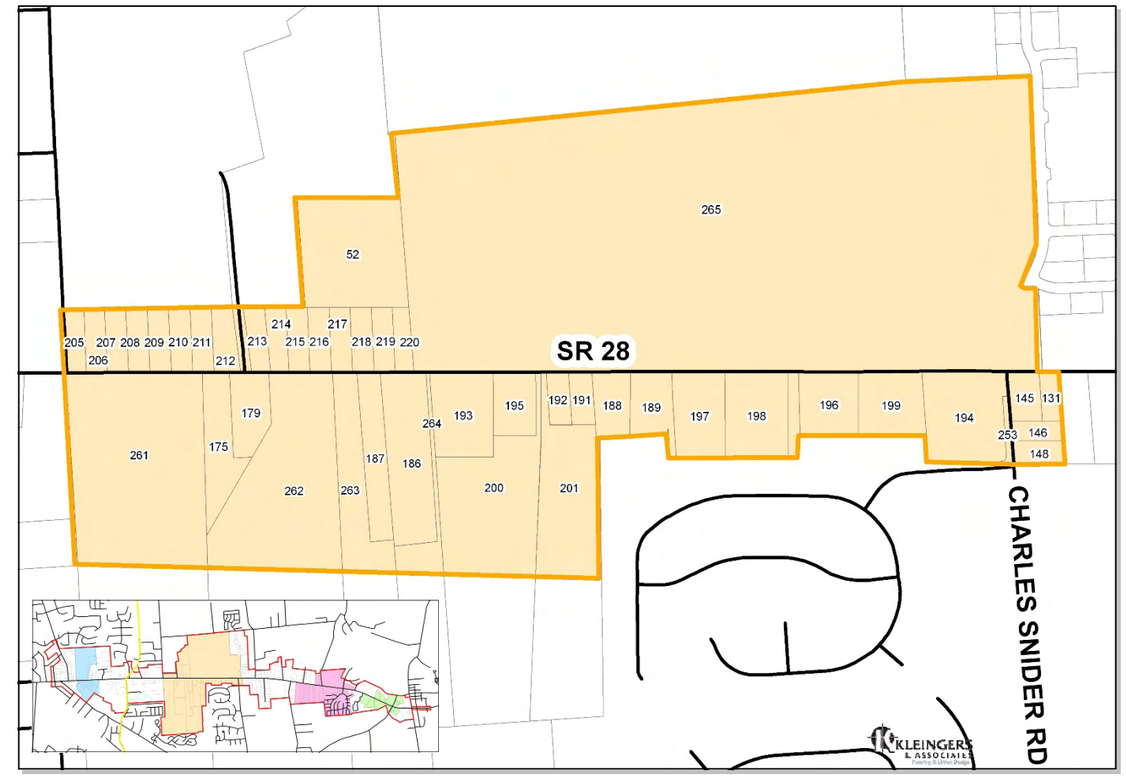
8.2 FISCAL IMPACT OF DEVELOPMENT NODE # 2 BUILD-OUT

Parcel ID	Acreage	Existing Zoning	Existing Land Use	Future Land Use	Development Opportunity Status	F.A.R.	Net Building Capacity	Annual Property Tax	Projected FTE's	Annual Income Tax
265	87.35	PBDD PLANNED BUSINESS DEVELOPMENT	Vacant	Commercial	New Development	0.15	570,745	$ 1,054,737	634	$ 119,673
52	5.79	R-3 MEDIUM LOW DENSITY RESIDENTIAL	Vacant	Commercial	New Development	0.15	37,832	$ 69,913	42	$ 7,933
131	0.61	M-1 LIGHT MANUFACTURING	Commercial	Commercial	Redevelopment	0.15	3,986	$ 7,366	4	$ 836
145	0.75	M-1 LIGHT MANUFACTURING	Commercial	Commercial	Redevelopment	0.15	4,901	$ 9,056	5	$ 1,028
146	0.52	M-1 LIGHT MANUFACTURING	Single Family	Commercial	Redevelopment	0.15	3,398	$ 6,279	4	$ 712
148	0.63	M-1 LIGHT MANUFACTURING	Single Family	Commercial	Redevelopment	0.15	4,116	$ 7,607	5	$ 863
175	2.2	B-2 GENERAL BUSINESS	Vacant	Commercial	New Development	0.15	14,375	$ 26,565	16	$ 3,014
261	13.06	B-2 GENERAL BUSINESS	Vacant	Commercial	New Development	0.15	85,334	$ 157,697	95	$ 17,893
179	1.76	B-2 GENERAL BUSINESS	Vacant	Commercial	New Development	0.15	11,500	$ 21,252	13	$ 2,411
262	9.61	B-2 GENERAL BUSINESS	Commercial	Commercial	Redevelopment	0.15	62,792	$ 116,039	70	$ 13,166
263	3.16	M-1 LIGHT MANUFACTURING	Commercial	Commercial	Redevelopment	0.15	20,647	$ 38,156	23	$ 4,329
186	3.823	M-1 LIGHT MANUFACTURING	Commercial	Commercial	Redevelopment	0.15	24,979	$ 46,162	28	$ 5,238
187	2	M-1 LIGHT MANUFACTURING	Commercial	Commercial	Redevelopment	0.15	13,068	$ 24,150	15	$ 2,740
193	2.55	PBDD PLANNED BUSINESS DEVELOPMENT	Vacant	Commercial	New Development	0.15	16,662	$ 30,791	19	$ 3,494
195	1.38	PBDD PLANNED BUSINESS DEVELOPMENT	Vacant	Commercial	New Development	0.15	9,017	$ 16,663	10	$ 1,891
199	2.14	PBDD PLANNED BUSINESS DEVELOPMENT	Commercial	Commercial	New Development	0.15	13,983	$ 25,840	16	$ 2,932
200	6.397	M-2 HEAVY MANUFACTURING	Vacant	Commercial	New Development	0.15	41,798	$ 77,243	46	$ 8,764
205	0.465	B-2 GENERAL BUSINESS	Commercial	Commercial	Redevelopment	0.15	3,038	$ 5,615	3	$ 637
206	0.62	B-2 GENERAL BUSINESS	Commercial	Commercial	Redevelopment	0.15	4,051	$ 7,486	5	$ 849
207	0.62	R-3 MEDIUM LOW DENSITY RESIDENTIAL	Single Family	Commercial	Redevelopment	0.15	4,051	$ 7,486	5	$ 849
208	0.62	R-3 MEDIUM LOW DENSITY RESIDENTIAL	Vacant	Commercial	New Development	0.15	4,051	$ 7,486	5	$ 849
209	0.62	R-3 MEDIUM LOW DENSITY RESIDENTIAL	Vacant	Commercial	New Development	0.15	4,051	$ 7,486	5	$ 849
210	0.62	R-3 MEDIUM LOW DENSITY RESIDENTIAL	Vacant	Commercial	New Development	0.15	4,051	$ 7,486	5	$ 849
211	0.62	R-3 MEDIUM LOW DENSITY RESIDENTIAL	Vacant	Commercial	New Development	0.15	4,051	$ 7,486	5	$ 849
212	0.713	R-3 MEDIUM LOW DENSITY RESIDENTIAL	Vacant	Commercial	New Development	0.15	4,659	$ 8,609	5	$ 977
213	0.564	B-2 GENERAL BUSINESS	Single Family	Commercial	Redevelopment	0.15	3,685	$ 6,810	4	$ 773
214	0.57	B-2 GENERAL BUSINESS	Single Family	Commercial	Redevelopment	0.15	3,724	$ 6,883	4	$ 781
215	0.62	B-2 GENERAL BUSINESS	Single Family	Commercial	Redevelopment	0.15	4,051	$ 7,486	5	$ 849
216	0.7	R-3 MEDIUM LOW DENSITY RESIDENTIAL	Commercial	Commercial	Redevelopment	0.15	4,574	$ 8,452	5	$ 959
217	0.7	R-3 MEDIUM LOW DENSITY RESIDENTIAL	Commercial	Commercial	Redevelopment	0.15	4,574	$ 8,452	5	$ 959
218	0.62	B-2 GENERAL BUSINESS	Single Family	Commercial	Redevelopment	0.15	4,051	$ 7,486	5	$ 849
219	0.62	B-2 GENERAL BUSINESS	Single Family	Commercial	Redevelopment	0.15	4,051	$ 7,486	5	$ 849
220	0.539	B-2 GENERAL BUSINESS	Single Family	Commercial	Redevelopment	0.15	3,522	$ 6,508	4	$ 738
264	1.06	M-1 LIGHT MANUFACTURING	Commercial	Commercial	Redevelopment	0.15	6,926	$ 12,799	8	$ 1,452
201	5	M-2 HEAVY MANUFACTURING	Commercial	Commercial	Redevelopment	0.15	32,670	$ 60,374	36	$ 6,850
							1,010,294	$ 933,511	1,123	$ 211,836

Development Node #2 Build-out Summary

Total Commercial Building Capacity = 1,010,294 square feet
Annual Property Tax Revenue = $933,511
Net Annual Property Tax Revenue = $466,876 (after 50% revenue split to school district)
New FTE Job Creation = 1,123
Annual Earned Income Tax Revenue = $211,836

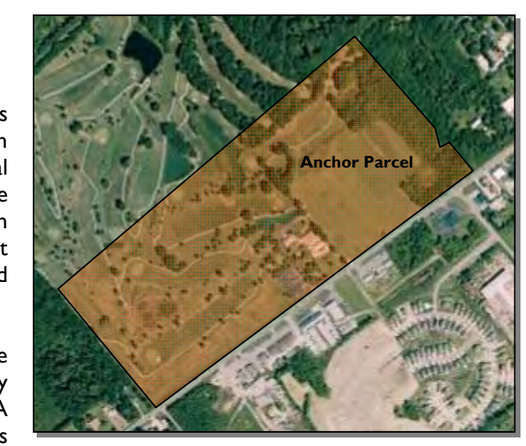
Development Node #2 District Boundaries



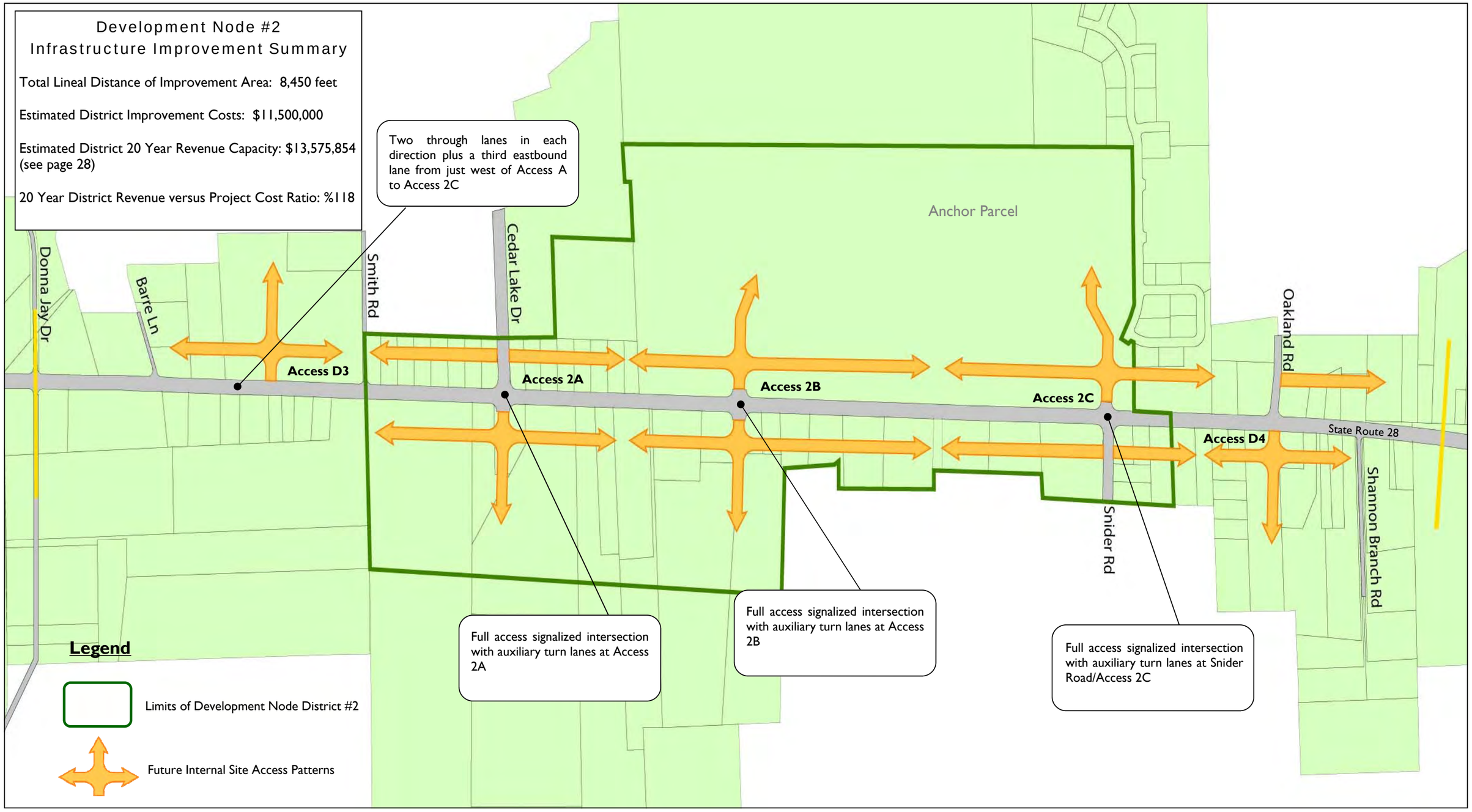
Development Considerations for Development Node #2

Development Node #2 Characteristics: This district features the largest single owner anchor parcel within the study area in addition to the potential for a large mixed-use commercial project on the south side of SR 28. This district is both the largest district identified in this plan and the first Goshen Township district likely to exhibit substantial development activity given its relatively close proximity to the established Miami Township market area.

Anchor Parcel Characteristics: This anchor parcel is part of the Eagles Nest Golf Course Site. This parcel is approximately 87.35 acres and maintains a substantial frontage along SR 28. A commercial planned unit development zoning designation has been applied for this section of the site and is slated for future retail, service and office related uses.

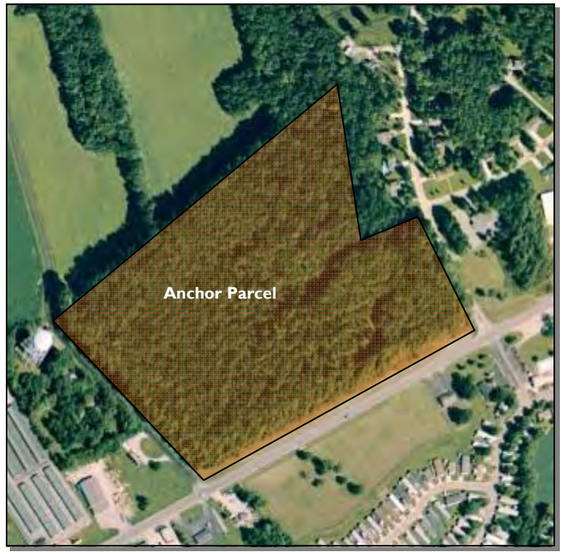


Development Node #2 Anchor Parcel Shown Above.


Development Node #2
Infrastructure Improvement Summary
Total Lineal Distance of Improvement Area: 8,450 feet
Estimated District Improvement Costs: $11,500,000
Estimated District 20 Year Revenue Capacity: $13,575,854 (see page 28)
20 Year District Revenue versus Project Cost Ratio: %118
Two through lanes in each direction plus a third eastbound lane from just west of Access A to Access 2C
Anchor Parcel
Donna Jay Dr
Barre Ln
Smith Rd
Cedar Lake Dr
Oakland Rd
Snider Rd
Shannon Branch Rd
State Route 28
Access D3
Access 2A
Access 2B
Access 2C
Access D4
Full access signalized intersection with auxiliary turn lanes at Access 2A
Full access signalized intersection with auxiliary turn lanes at Access 2B
Full access signalized intersection with auxiliary turn lanes at Snider Road/Access 2C
Legend
Limits of Development Node District #2
Future Internal Site Access Patterns

8.3 FISCAL IMPACT OF DEVELOPMENT NODE # 3 BUILD-OUT

Parcel ID	Acreage	Existing Zoning	Existing Land Use	Future Land Use	Development Opportunity Status	F.A.R.	Net Building Capacity	Annual Property Tax	Projected FTE's	Annual Income Tax
109	2.945	B-2 GENERAL BUSINESS	Commercial	Commercial	Redevelopment	0.15	19,243	$ 35,560	21	$ 4,035
110	4.776	B-2 GENERAL BUSINESS	Commercial	Commercial	Redevelopment	0.15	31,206	$ 57,669	35	$ 6,543
112	49.241	T MOBILE HOME PARK	Single Family	Commercial	Redevelopment	0.15	321,741	$ 594,577	357	$ 67,462
116	0.52	B-2 GENERAL BUSINESS	Vacant	Commercial	Redevelopment	0.15	3,398	$ 6,279	4	$ 712
119	0.69	B-2 GENERAL BUSINESS	Vacant	Commercial	Redevelopment	0.15	4,508	$ 8,332	5	$ 945
121	6.62	B-2 GENERAL BUSINESS	Vacant	Commercial	New Development	0.15	43,255	$ 79,935	48	$ 9,070
127	30.102	B-2 GENERAL BUSINESS	Vacant	Commercial	New Development	0.15	196,686	$ 363,477	219	$ 41,241
129	3.794	R-3 MEDIUM LOW DENSITY RESIDENTIAL	Commercial	Commercial	Redevelopment	0.15	24,790	$ 45,812	28	$ 5,198
111	5.117	B-2 GENERAL BUSINESS	Commercial	Commercial	Redevelopment	0.15	33,434	$ 61,787	37	$ 7,010
							678,262	$ 1,253,428	754	$ 142,216



Development Node #3 Anchor Parcel Shown

Development Node #3 Build-out Summary

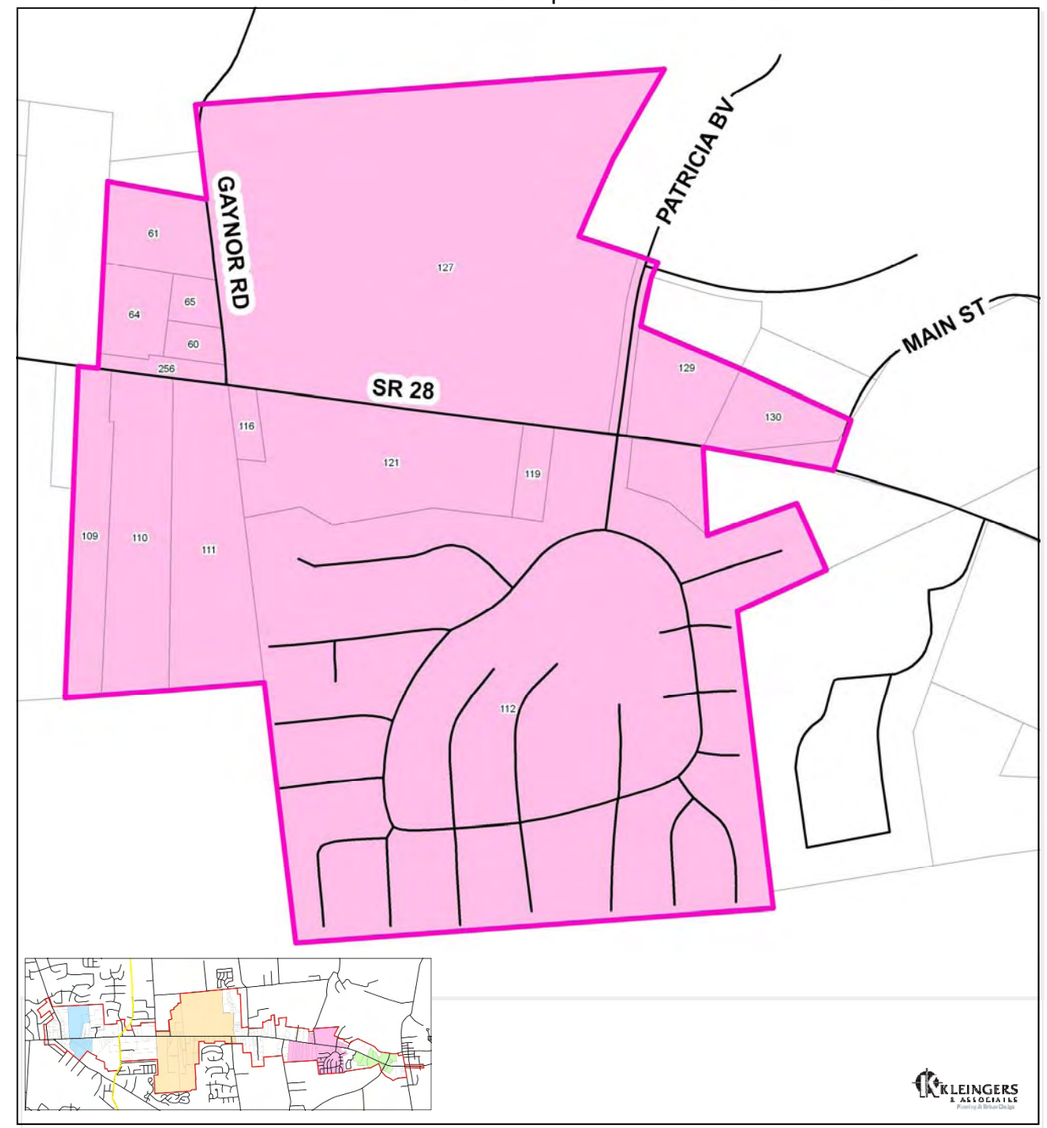
Total Commercial Building Capacity = 678,262 square feet
Annual Property Tax Revenue = $1,253,428
Net Annual Property Tax Revenue = $626,714 (after 50% revenue split to school district)
New FTE Job Creation = 754
Annual Earned Income Tax Revenue = $142,216

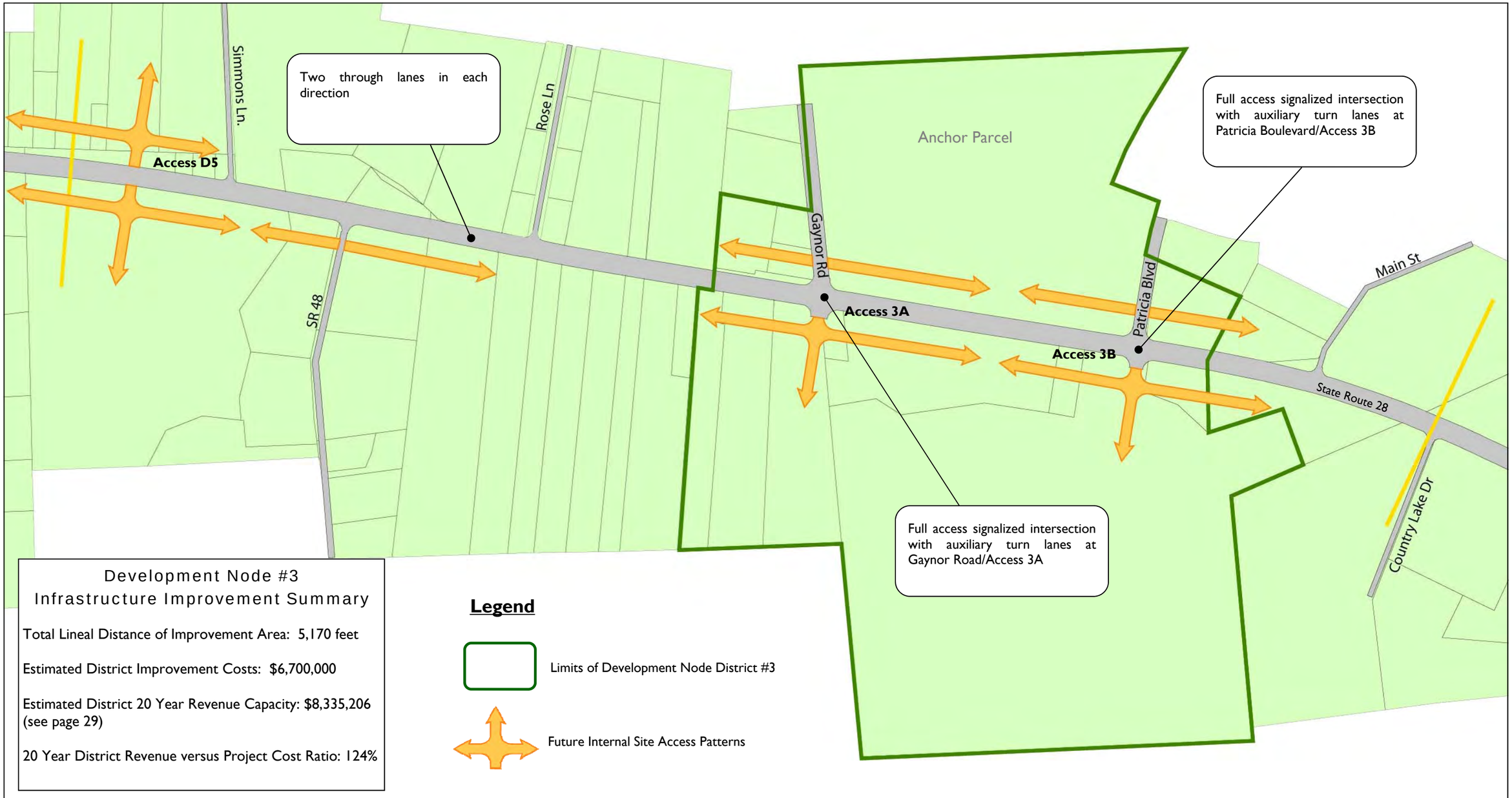
Development Considerations for Development Node #3

Development Node #2 Characteristics: This district is unique as it contains both a single owner anchor parcel that is currently vacant in addition to a second large parcel that has significant future redevelopment potential. This district is located near the center of Goshen Township and the community's planned Goshen Town Center district. Development in this district would likely consist of neighborhood commercial, professional services and related land uses catering to a concentrated Goshen consumer market.

Anchor Parcel Characteristics: The anchor parcel is approximately 30 acres in size and features frontage on SR 28, Gaynor Road and Patricia Boulevard. This triple frontage situation works well with access management guidelines aimed at combining access points and creating a reverse frontage road site layout.

Development Node #3 District Boundaries





Development Node #3
Infrastructure Improvement Summary

Total Lineal Distance of Improvement Area: 5,170 feet

Estimated District Improvement Costs: $6,700,000

Estimated District 20 Year Revenue Capacity: $8,335,206 (see page 29)

20 Year District Revenue versus Project Cost Ratio: 124%

8.4 FISCAL IMPACT OF DEVELOPMENT NODE # 4 BUILD-OUT

Parcel ID	Acreage	Existing Zoning	Existing Land Use	Future Land Use	Development Opportunity Status	F.A.R.	Net Building Capacity	Annual Property Tax	Projected FTE's	Annual Income Tax
82	3.71	B-2 GENERAL BUSINESS	Commercial	Commercial	Redevelopment	0.15	24,241	$ 44,798	27	$ 5,083
87	0.62	B-2 GENERAL BUSINESS	Commercial	Commercial	Redevelopment	0.15	4,051	$ 7,486	5	$ 849
88	1.67	B-2 GENERAL BUSINESS	Commercial	Commercial	Redevelopment	0.15	10,912	$ 20,165	12	$ 2,288
89	0.77	B-2 GENERAL BUSINESS	Single Family	Commercial	Redevelopment	0.15	5,031	$ 9,298	6	$ 1,055
90	0.77	B-2 GENERAL BUSINESS	Single Family	Commercial	Redevelopment	0.15	5,031	$ 9,298	6	$ 1,055
93	1.292	B-2 GENERAL BUSINESS	Commercial	Commercial	Redevelopment	0.15	8,442	$ 15,601	9	$ 1,770
95	3.02	B-2 GENERAL BUSINESS	Vacant	Commercial	New Development	0.15	19,733	$ 36,466	22	$ 4,138
97	6.26	B-2 GENERAL BUSINESS	Vacant	Commercial	New Development	0.15	40,903	$ 75,588	45	$ 8,576
102	3.02	B-2 GENERAL BUSINESS	Commercial	Commercial	Redevelopment	0.15	19,733	$ 36,466	22	$ 4,138
91	7.43	B-2 GENERAL BUSINESS	Commercial	Commercial	Redevelopment	0.15	48,548	$ 89,716	54	$ 10,179
							186,624	$ 344,881	207	$ 39,131

Development Node #4 Anchor Parcel Shown

Development Node #4 Build-out Summary

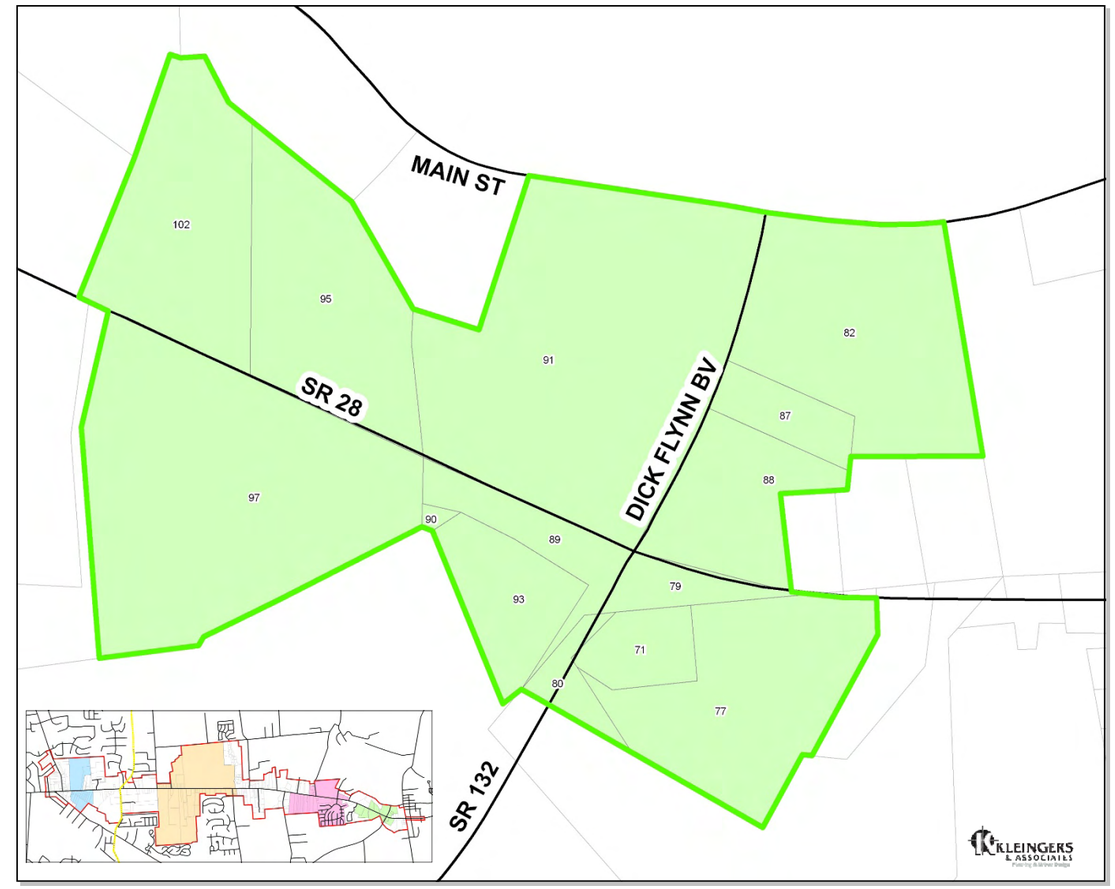
Total Commercial Building Capacity = 186,624 square feet
Annual Property Tax Revenue = $344,881
Net Annual Property Tax Revenue = $172,440 (after 50% revenue split to school district)
New FTE Job Creation = 207
Annual Earned Income Tax Revenue = $39,131

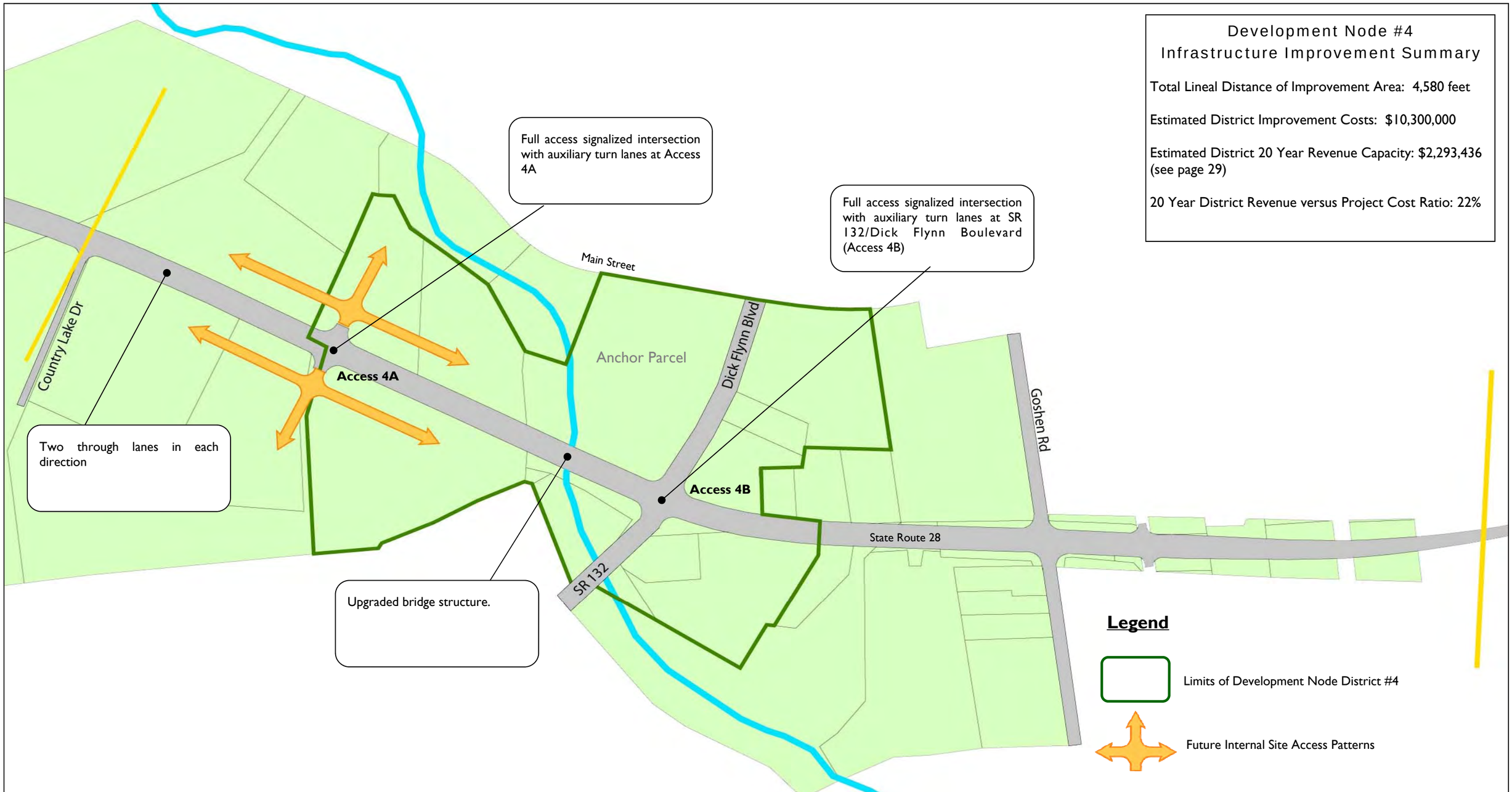
Development Considerations for Development Node #4

Development Node #4 Characteristics: This district features an anchor parcel that has redevelopment potential along with two vacant sites that could accommodate medium sized commercial and office developments. Parcel #97 features topographic constraints in the southern portion of the property, but can be designed to maintain a medium size commercial / office development with a single outparcel near SR 28. While, Parcels #95 and #102 could be assembled for development as a mid-30,000 sq. ft. commercial center.

Anchor Parcel Characteristics: The anchor parcel for this district currently features an existing grocery store with a smaller attached retail strip center. This corner parcel features triple frontage and enjoys access from a traffic signal at SR 28 and Dick Flynn Boulevard. This parcel has above average redevelopment potential given it's existing signalized access and its location as the designated gateway area into the Goshen Town Center.

Development Node #4 District Boundaries





Development Node #4
Infrastructure Improvement Summary

Total Lineal Distance of Improvement Area: 4,580 feet

Estimated District Improvement Costs: $10,300,000

Estimated District 20 Year Revenue Capacity: $2,293,436 (see page 29)

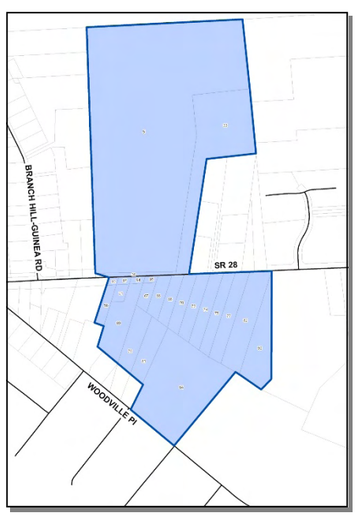
20 Year District Revenue versus Project Cost Ratio: 22%

8.5 20-YEAR REVENUE CAPABILITY

20 Year Phased Revenue Projections for Development Node #1

Development Year	Annual Property Tax	Annual FTE's Created	Annual Income Tax	Aggregate Annual Prop. Tax	Aggregate Annual Income Tax	Aggregate Annual Total $	Aggregate Annual FTE's
1	$ 15,011	15	$ 2,920	$ 15,011	$ 2,920	$ 17,930	16
2	$ 15,011	15	$ 2,920	$ 30,021	$ 5,839	$ 35,860	31
3	$ 20,014	21	$ 3,893	$ 50,035	$ 9,732	$ 59,767	52
4	$ 20,014	21	$ 3,893	$ 70,049	$ 13,625	$ 83,674	73
5	$ 20,014	21	$ 3,893	$ 90,064	$ 17,518	$ 107,581	93
6	$ 30,021	31	$ 5,839	$ 120,085	$ 23,357	$ 143,442	124
7	$ 30,021	31	$ 5,839	$ 150,106	$ 29,197	$ 179,302	155
8	$ 40,028	41	$ 7,786	$ 190,134	$ 36,982	$ 227,116	197
9	$ 40,028	41	$ 7,786	$ 230,162	$ 44,768	$ 274,930	238
10	$ 40,028	41	$ 7,786	$ 270,191	$ 52,554	$ 322,744	279
11	$ 40,028	41	$ 7,786	$ 310,219	$ 60,340	$ 370,558	320
12	$ 30,021	31	$ 5,839	$ 340,240	$ 66,179	$ 406,419	351
13	$ 30,021	31	$ 5,839	$ 370,261	$ 72,018	$ 442,279	382
14	$ 30,021	31	$ 5,839	$ 400,282	$ 77,857	$ 478,140	413
15	$ 20,014	21	$ 3,893	$ 420,296	$ 81,750	$ 502,047	434
16	$ 20,014	21	$ 3,893	$ 440,311	$ 85,643	$ 525,954	454
17	$ 20,014	21	$ 3,893	$ 460,325	$ 89,536	$ 549,861	475
18	$ 15,011	15	$ 2,920	$ 475,335	$ 92,456	$ 567,791	490
19	$ 15,011	15	$ 2,920	$ 490,346	$ 95,375	$ 585,721	506
20	$ 10,007	10	$ 1,946	$ 500,353	$ 97,322	$ 597,675	516

Total District Revenue for 20 Year Horizon = $ 6,478,793



Development Node #1 Infrastructure Improvement Summary

Total Lineal Distance of Improvement Area: 4,660 feet

Estimated District Improvement Costs: $8,300,000

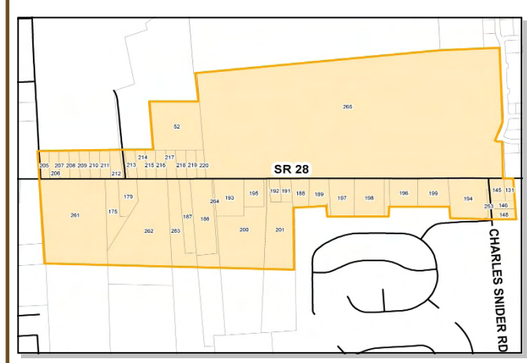
Estimated District 20 Year Revenue Capacity: $6,478,793

20 Year District Revenue versus Project Cost Ratio: 78%

20 Year Phased Revenue Projections for Development Node #2

Development Year	Annual Property Tax	Annual FTE's Created	Annual Income Tax	Annual Prop. Tax	Annual Income Tax	Annual Total $	Annual FTE's
1	$ 28,005	34	$ 6,355	$ 28,005	$ 6,355	$ 34,360	52
2	$ 28,005	34	$ 6,355	$ 56,011	$ 12,710	$ 68,721	86
3	$ 37,340	45	$ 8,473	$ 93,351	$ 21,184	$ 114,535	131
4	$ 37,340	45	$ 8,473	$ 130,692	$ 29,657	$ 160,349	175
5	$ 37,340	45	$ 8,473	$ 168,032	$ 38,131	$ 206,163	220
6	$ 56,011	67	$ 12,710	$ 224,043	$ 50,841	$ 274,883	288
7	$ 56,011	67	$ 12,710	$ 280,053	$ 63,551	$ 343,604	355
8	$ 74,681	90	$ 16,947	$ 354,734	$ 80,498	$ 435,232	445
9	$ 74,681	90	$ 16,947	$ 429,415	$ 97,445	$ 526,860	535
10	$ 74,681	90	$ 16,947	$ 504,096	$ 114,392	$ 618,488	624
11	$ 74,681	90	$ 16,947	$ 578,777	$ 131,338	$ 710,115	714
12	$ 56,011	67	$ 12,710	$ 634,788	$ 144,049	$ 778,836	782
13	$ 56,011	67	$ 12,710	$ 690,798	$ 156,759	$ 847,557	849
14	$ 56,011	67	$ 12,710	$ 746,809	$ 169,469	$ 916,278	916
15	$ 37,340	45	$ 8,473	$ 784,149	$ 177,942	$ 962,092	961
16	$ 37,340	45	$ 8,473	$ 821,490	$ 186,416	$ 1,007,906	1006
17	$ 37,340	45	$ 8,473	$ 858,830	$ 194,889	$ 1,053,720	1051
18	$ 28,005	34	$ 6,355	$ 886,836	$ 201,244	$ 1,088,080	1085
19	$ 28,005	34	$ 6,355	$ 914,841	$ 207,599	$ 1,122,440	1118
20	$ 18,670	22	$ 4,237	$ 933,511	$ 211,836	$ 1,145,347	1141

Total District Revenue for 20 Year Horizon = $ 12,415,566



Development Node #2 Infrastructure Improvement Summary

Total Lineal Distance of Improvement Area: 8,450 feet

Estimated District Improvement Costs: $11,500,000

Estimated District 20 Year Revenue Capacity: $13,575,854

20 Year District Revenue versus Project Cost Ratio: %118

Node Revenue Capability Analysis

Property Tax: The Development Node District property tax revenue is based on Tax Increment Financing districts including a 50% revenue split to the local school district.

Growth Factors: The Development Node build-out figures have been phased in over a 20 year development horizon with the most active development years occurring between Years 6 and Year 14. (see below)

Funding Assumption: Because the four Development Node Districts are closely interrelated, it is assumed that the District revenue may be applied to other District improvements.

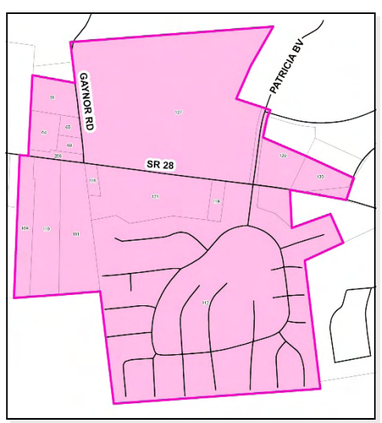
District Build-Out Annual Growth Factors

Year 1	Growth Factor	3%
Year 2	Growth Factor	3%
Year 3	Growth Factor	4%
Year 4	Growth Factor	4%
Year 5	Growth Factor	4%
Year 6	Growth Factor	6%
Year 7	Growth Factor	6%
Year 8	Growth Factor	8%
Year 9	Growth Factor	8%
Year 10	Growth Factor	8%
Year 11	Growth Factor	8%
Year 12	Growth Factor	6%
Year 13	Growth Factor	6%
Year 14	Growth Factor	6%
Year 15	Growth Factor	4%
Year 16	Growth Factor	4%
Year 17	Growth Factor	4%
Year 18	Growth Factor	3%
Year 19	Growth Factor	3%
Year 20	Growth Factor	2%

20 Year Phased Revenue Projections for Development Node #3

Development Year	Annual Property Tax	Annual FTE's Created	Annual Income Tax	Aggregate Annual Prop. Tax	Aggregate Annual Income Tax	Aggregate Annual Total $	Aggregate Annual FTE's
1	$ 18,801	23	$ 4,266	$ 18,801	$ 4,266	$ 23,068	29
2	$ 18,801	23	$ 4,266	$ 37,603	$ 8,533	$ 46,136	52
3	$ 25,069	30	$ 5,689	$ 62,671	$ 14,222	$ 76,893	82
4	$ 25,069	30	$ 5,689	$ 87,740	$ 19,910	$ 107,650	112
5	$ 25,069	30	$ 5,689	$ 112,809	$ 25,599	$ 138,407	142
6	$ 37,603	45	$ 8,533	$ 150,411	$ 34,132	$ 184,543	187
7	$ 37,603	45	$ 8,533	$ 188,014	$ 42,665	$ 230,679	232
8	$ 50,137	60	$ 11,377	$ 238,151	$ 54,042	$ 292,194	293
9	$ 50,137	60	$ 11,377	$ 288,288	$ 65,420	$ 353,708	353
10	$ 50,137	60	$ 11,377	$ 338,426	$ 76,797	$ 415,222	413
11	$ 50,137	60	$ 11,377	$ 388,563	$ 88,174	$ 476,737	474
12	$ 37,603	45	$ 8,533	$ 426,165	$ 96,707	$ 522,873	519
13	$ 37,603	45	$ 8,533	$ 463,768	$ 105,240	$ 569,009	564
14	$ 37,603	45	$ 8,533	$ 501,371	$ 113,773	$ 615,144	609
15	$ 25,069	30	$ 5,689	$ 526,440	$ 119,462	$ 645,902	639
16	$ 25,069	30	$ 5,689	$ 551,508	$ 125,150	$ 676,659	670
17	$ 25,069	30	$ 5,689	$ 576,577	$ 130,839	$ 707,416	700
18	$ 18,801	23	$ 4,266	$ 595,378	$ 135,106	$ 730,484	722
19	$ 18,801	23	$ 4,266	$ 614,180	$ 139,372	$ 753,552	745
20	$ 12,534	15	$ 2,844	$ 626,714	$ 142,216	$ 768,930	760

Total District Revenue for 20 Year Horizon = $ 8,335,206



Development Node #3 Infrastructure Improvement Summary

Total Lineal Distance of Improvement Area: 5,170 feet

Estimated District Improvement Costs: $6,700,000

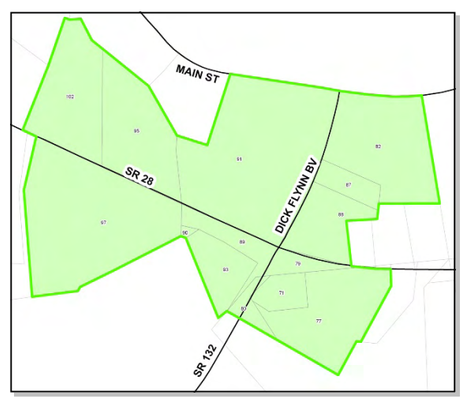
Estimated District 20 Year Revenue Capacity: $8,335,206

20 Year District Revenue versus Project Cost Ratio: 124%

20 Year Phased Revenue Projections for Development Node #4

Development Year	Annual Property Tax	Annual FTE's Created	Annual Income Tax	Aggregate Annual Prop. Tax	Aggregate Annual Income Tax	Aggregate Annual Total $	Aggregate Annual FTE's
1	$ 5,173	6	$ 1,174	$ 5,173	$ 1,174	$ 6,347	9
2	$ 5,173	6	$ 1,174	$ 10,346	$ 2,348	$ 12,694	15
3	$ 6,898	8	$ 1,565	$ 17,244	$ 3,913	$ 21,157	24
4	$ 6,898	8	$ 1,565	$ 24,142	$ 5,478	$ 29,620	32
5	$ 6,898	8	$ 1,565	$ 31,039	$ 7,044	$ 38,083	40
6	$ 10,346	12	$ 2,348	$ 41,386	$ 9,391	$ 50,777	53
7	$ 10,346	12	$ 2,348	$ 51,732	$ 11,739	$ 63,471	65
8	$ 13,795	17	$ 3,130	$ 65,527	$ 14,870	$ 80,397	82
9	$ 13,795	17	$ 3,130	$ 79,323	$ 18,000	$ 97,323	98
10	$ 13,795	17	$ 3,130	$ 93,118	$ 21,131	$ 114,249	115
11	$ 13,795	17	$ 3,130	$ 106,913	$ 24,261	$ 131,174	131
12	$ 10,346	12	$ 2,348	$ 117,260	$ 26,609	$ 143,869	144
13	$ 10,346	12	$ 2,348	$ 127,606	$ 28,957	$ 156,563	156
14	$ 10,346	12	$ 2,348	$ 137,953	$ 31,305	$ 169,257	169
15	$ 6,898	8	$ 1,565	$ 144,850	$ 32,870	$ 177,720	177
16	$ 6,898	8	$ 1,565	$ 151,748	$ 34,435	$ 186,183	185
17	$ 6,898	8	$ 1,565	$ 158,645	$ 36,000	$ 194,646	194
18	$ 5,173	6	$ 1,174	$ 163,819	$ 37,174	$ 200,993	200
19	$ 5,173	6	$ 1,174	$ 168,992	$ 38,348	$ 207,340	206
20	$ 3,449	4	$ 783	$ 172,441	$ 39,131	$ 211,572	210

Total District Revenue for 20 Year Horizon = $ 2,293,436



Development Node #4 Infrastructure Improvement Summary

Total Lineal Distance of Improvement Area: 4,580 feet

Estimated District Improvement Costs: $10,300,000

Estimated District 20 Year Revenue Capacity: $2,293,436

20 Year District Revenue versus Project Cost Ratio: 22%

Node Revenue Capability Analysis

Property Tax: The Development Node District property tax revenue is based on Tax Increment Financing districts including a 50% revenue split to the local school district.

Growth Factors: The Development Node build-out figures have been phased in over a 20 year development horizon with the most active development years occurring between Years 6 and Year 14. (see below)

Funding Assumption: Because the four Development Node Districts are closely interrelated, it is assumed that the District revenue may be applied to other District improvements.

District Build-Out Annual Growth Factors

Year 1	Growth Factor	3%
Year 2	Growth Factor	3%
Year 3	Growth Factor	4%
Year 4	Growth Factor	4%
Year 5	Growth Factor	4%
Year 6	Growth Factor	6%
Year 7	Growth Factor	6%
Year 8	Growth Factor	8%
Year 9	Growth Factor	8%
Year 10	Growth Factor	8%
Year 11	Growth Factor	8%
Year 12	Growth Factor	6%
Year 13	Growth Factor	6%
Year 14	Growth Factor	6%
Year 15	Growth Factor	4%
Year 16	Growth Factor	4%
Year 17	Growth Factor	4%
Year 18	Growth Factor	3%
Year 19	Growth Factor	3%
Year 20	Growth Factor	2%

SECTION 9

ACCESS MANAGEMENT

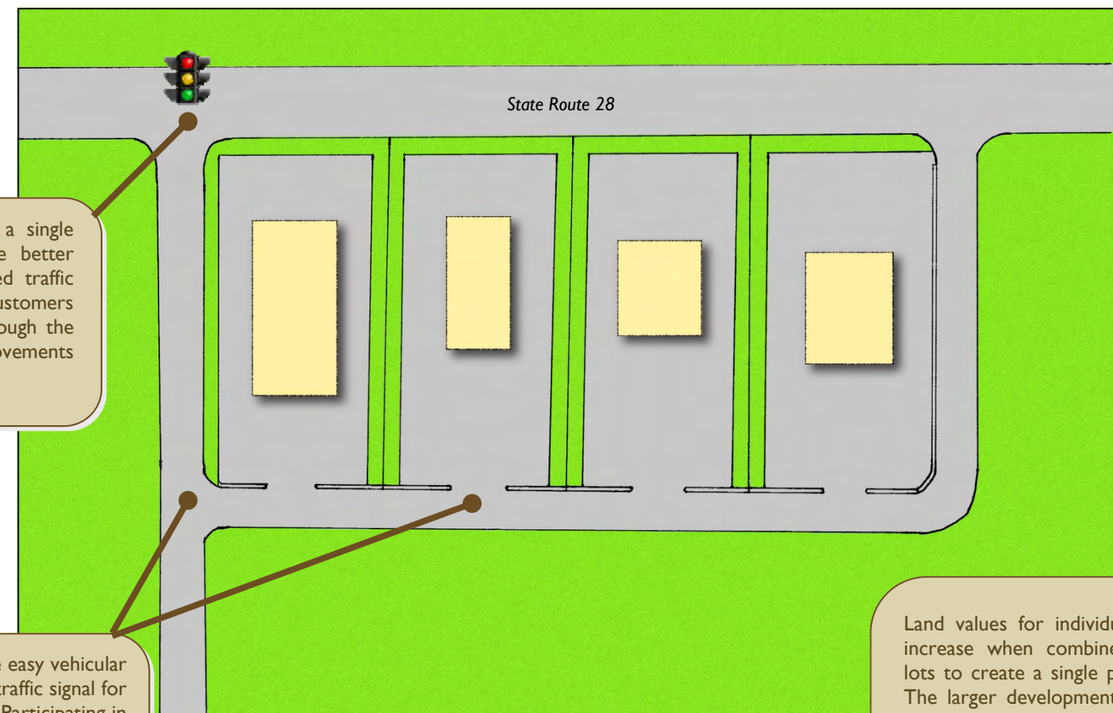
STATE ROUTE 28 CORRIDOR IMPROVEMENTS

ACCESS MANAGEMENT

9.1 ACCESS MANAGEMENT OVERVIEW

The Shared Benefit Approach to Corridor Land Development

Parcels assembled as part of a master planned development with access management techniques in place often retain a higher market value versus land sold separately for individual out parcel developments. Below is an illustration depicting a best practice scenario featuring multiple parcels fronting along the corridor roadway. These parcels are developed as a single master planned project for purposes of access management and internal traffic flow.



When lots are combined to form a single planned development, vehicles have better access to the signal. The improved traffic signal access translates to more customers and a safer driving environment through the reduction of dangerous left turn movements from individual lots.

Shared access is used to provide easy vehicular connections to a side street or traffic signal for all the lots in the development. Participating in shared access arrangements greatly improve the internal traffic movements and provides more flexibility when laying out individual lots for development.

Land values for individual lots will typically increase when combined with surrounding lots to create a single planned development. The larger development has more flexibility and options regarding development potential and types of users. Conversely, developing lots in a "piecemeal" fashion dramatically limits the development layout and land use choices in addition to creating more traffic congestion and accidents. These factors will decrease the value of the lot.

What is Access Management?

Access management is the coordination of land use and access to a highway. The goal is to develop plans that will allow for economic growth and rational development while maintaining or improving safety and mobility along an existing roadway. This can be a powerful tool to direct development and preserve agricultural properties along a corridor. In areas designated as development nodes along State Route 28, an access management plan can increase the capacity of the overall corridor to accommodate development while maintaining a high quality level of traffic service. In the areas not contained within the designated development nodes, access management can minimize development pressure associated with highways in areas where development is not planned.

The need for better access management is most obvious in strip commercial areas where driveways are found every few feet. Too many driveways can confuse drivers, who become uncertain as to when turns into or out of driveways will be made. Their existence results in a large number of turning movements and conflict points, increasing the potential for traffic accidents. In addition, where there are no turn lanes, each turning vehicle slows traffic and reduces the carrying capacity of the road. Unfortunately, once an access management problem is obvious, it is often too late to correct. By managing access along State Route 28 during site development, safe access can be provided while preserving traffic flow.

The Benefits of Access Management

When a growing corridor follows a well planned access management program, the amount of infrastructure improvements required to service the corridor properties is substantially less compared to retrofitting the corridor with costly improvements to correct traffic and access issues. The benefits of an access management program for SR 28 includes:

- Reduced vehicle crashes and crash potential.
- Preservation of roadway capacity and the useful life of SR 28.
- Decreased travel time and congestion.
- Improved business access to properties.
- Reduces the amount of public investment in the transportation infrastructure.

9.2 How Access Management Affects Business Operations

Customer Traffic Demand is Critical to the Survival of Commercial Business Districts

If you operate or develop commercial centers or stand-alone establishments, proper location and design of access is essential to customers and employees. For commercial centers, the Urban Land Institute's Shopping Center Development Handbook states "poorly designed entrances and exits not only present a traffic hazard, but also cause congestion that can create a negative image of the center." This is also true for small businesses, especially those on the intersection of busy roads. If a business is difficult or unsafe to enter or exit, then customers may likely be dissuaded from visiting.

The Effect of Traffic Congestion on a Business Corridor

Access management guidelines not only improve roadway safety, it also helps reduce the growing problem of traffic congestion. Frequent access and closely spaced signals increase congestion on major roads such as SR 28. As congestion increases, so does delay, which is bad for the economy and frustrating to potential customers. Well-managed arterial roadways can operate at speeds well above poorly managed roadways — up to 15 to 20 miles per hour faster. This means more traffic traveling past businesses and better exposure for those businesses. It also translates into a more convenient shopping experience for customers.

The Effect of Access Management Design Techniques on Business Sites

To address this question, it's important to first recognize that generally, a typical business corridor contains two primary types of business establishments, either drive-by business or destination business.

- **"Destination businesses"** are businesses that customers plan to visit in advance of the trip. Examples include specialty retailers, most professional services (office) uses, regional or national based retailers, sit-down restaurants, etc.
- **"Drive-by businesses"** are those that customers frequent more on impulse or while driving by, such as convenience stores, gas stations, or fast food restaurants.

Drive-by business customers will expect to get in and out of the site easily from the highway. The critical site issues are visibility, signage, and convenient access.

If the business site is relatively small, a driveway connecting to the highway may not be the best option. A driveway on a reverse frontage road or sharing access points among multiple sites can increase the convenience of access and the volume of customers that may be accommodated. Convenient access can be provided by cross access easements to access an intersection or curb cut along the arterial highway. Conversely, short driveways or open frontages not only cause safety hazards for pedestrians and traffic, but have less capacity than local roads or long driveways.

Destination business customers are planning their trips in advance.

A driveway on a congested highway or a highway that is perceived as unsafe may actually intimidate customers from making the trip. Most small destination businesses or specialty stores benefit more from access to a lower speed minor road, such as a neighborhood collector road. The greater exposure that a major road provides is an advantage for larger destination businesses, but it's a good idea to have access from more than one roadway. Allowing customers to enter and exit from different directions will increase both safety and convenience which translates into higher sales volume.

9.3 How Access Management Affects Property Values

Access management balances mobility and access. Properties with direct access to the highway are often seen as most valuable, however; when access is permitted too close to an intersection, the access can become blocked by standing traffic making the property inaccessible over certain periods of time. Property has a greater value if its driveway locations are well planned and designed. Therefore, a primary goal of access management is to achieve a safe and efficient flow of traffic along a roadway while providing reasonable access to abutting properties. This generally creates higher sales volumes and more successful business districts.

Property Values: Most property owners surveyed following an access management project do not report any adverse effect of the project on property values. Often, such projects can have a positive effect by cleaning up the patchwork of driveways and curb cuts. For example:

- A study of property values on Texas corridors with access management projects found that land values stayed the same or increased, with very few exceptions (1)
- More than 70% of the businesses impacted by a project in Florida involving several median opening closures reported no change in property value, while 13% reported some increase in value (2)
- A 2005 study of commercial property values along a major access management project in Minnesota found that property values depend more on the strength of the local economy and the general location of the property in the metropolitan area; changes in access seemed to have little or no effect on the value of parcels (3).
- A study of Kansas properties impacted by access changes found that the majority were suitable for the same types of commercial uses after the access management project was completed. This was true even for businesses that had direct access before the project and access only via frontage roads after project completion (4).

Sources:

(1) W. Eisele & W. Frawley, *A Methodology for Determining Economic Impacts of Raised Medians.*
(2) F. Vargas & Y. Guatam, Problem: Roadway Safety vs. Commercial Development Access.
(3) D. Plazak & H. Preston, Long-Term Impacts of Access Management on Business and Land Development Along Minnesota Interstate-394.
(4) M. Rees, T. Orrick & R. Marx, *Police Power Regulation of Highway Access and the Traffic Flow in the State of Kansas,* presentation
* *Information and text for other portions of this page was obtained from the Federal Highway Administration*

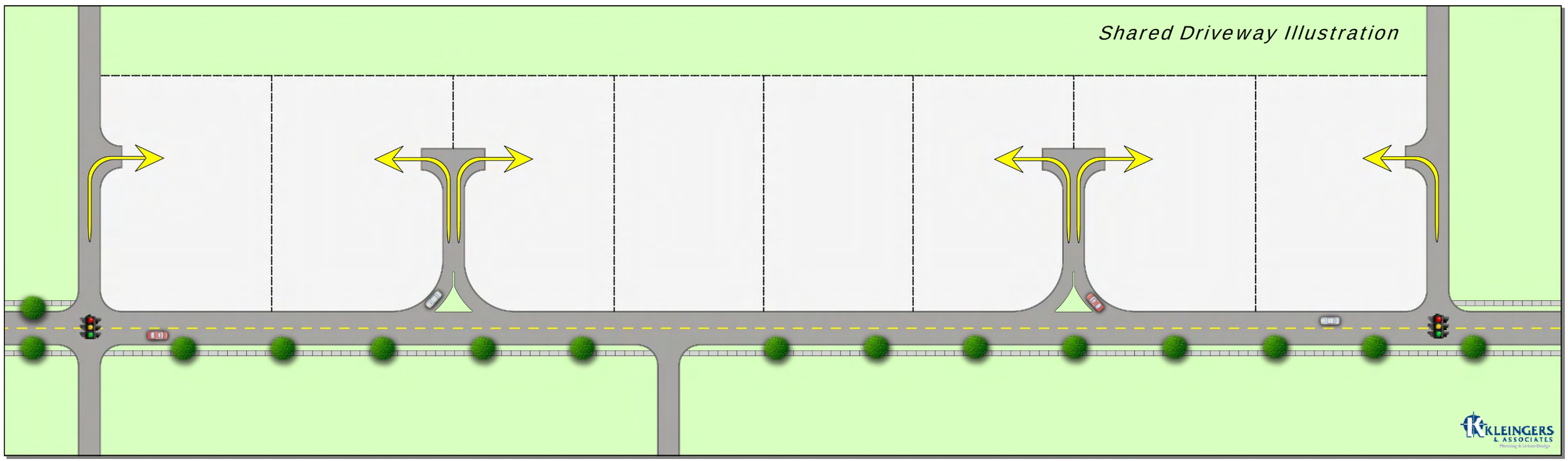
9.4 Shared Driveways

A shared driveway is when two or more adjacent properties use the same driveway for ingress and/or egress. Shared driveways are very common in newer commercial areas, for instance at strip commercial developments, regional shopping centers, and office developments. Sharing driveways represents good design practice since conflict points caused by motorists entering and leaving the businesses are reduced. This will, in turn, tend to reduce traffic accidents associated with turning traffic and improve the traffic flow on the State Route 28.

When is driveway sharing most valuable?

Sharing driveways is most valuable as an access management strategy when property frontages are short. That is, when the number of commercial properties along a typical rural corridor, 400 to 500 foot block face, is more than three or four. A rule of thumb on driveway sharing in a suburban / rural emerging area might be that properties with less than 50 to 60 feet of frontage along an arterial roadway should not have individual driveways. These properties would share drives with neighboring properties. Three to four commercial driveways per block face is a desirable maximum standard for suburban arterial roadway. This means that when there are more than three or four parcels or commercial buildings on a block face, driveway sharing, and other techniques such as implementing cross access easements, should be strongly encouraged. When the number of parcels and potential driveways along a block face is minimal, driveway sharing may not be needed.

The shared driveways shown above serve multiple freestanding uses per driveway, thus reducing the number of curb cuts.



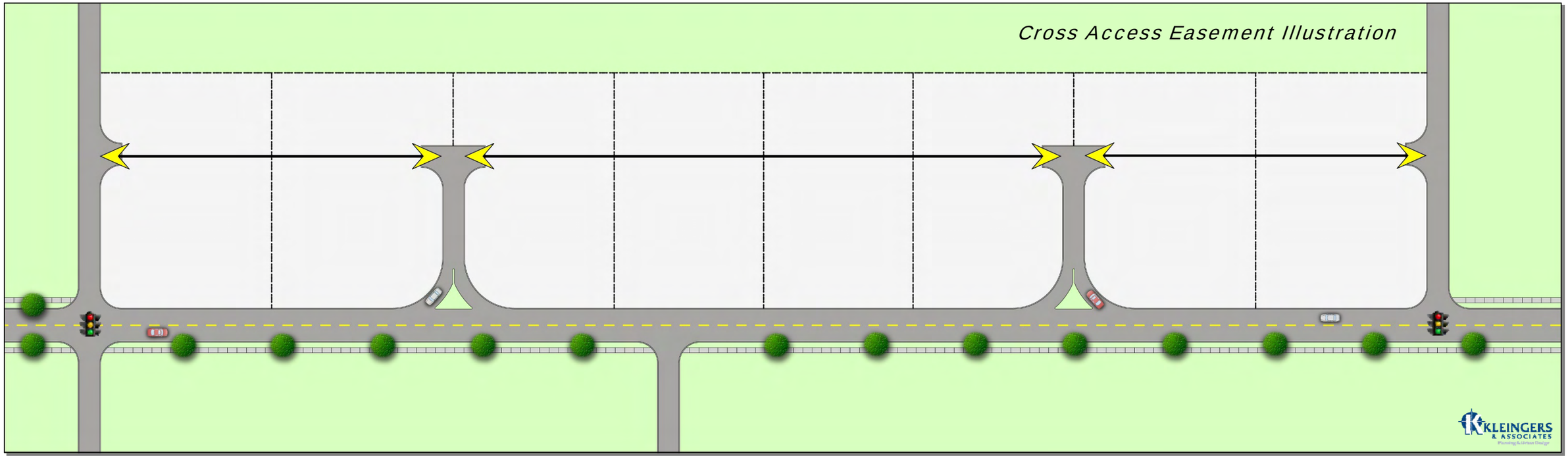
Shared Driveway Illustration: The drawing shown above illustrates how shared driveway access can be achieved for commercial outparcel development along State Route 28. The reduced curb cuts and restricted turning movements direct traffic to the more efficient roadway intersections which increases the safety and ease of access to all of the parcels.

9.5 Cross Access Easements

Cross access easements are formal, legal methods of ensuring that adjacent properties can share driveways and share access among adjacent sites. In the case of cross access easements, one property owner has the legal right to access and use a driveway that is on the adjacent property owner's land in addition to the ability to travel across the other lots parking areas or service roads to access a driveway or roadway. Because access is shared, it is also easier to share parking areas.

One way that joint access can be implemented is by prohibiting direct access from outparcels and lots that are carved from larger lots. Instead, the owner of the original parcel provides access rights from the old lot to the new. If the original host lot is not immediately developed, the developer of the newer lot may be allowed a temporary driveway, which would be closed when the original lot is developed. The easement or access agreement is recorded with the property records, along with a joint maintenance agreement, and an agreement to close the temporary driveway when the joint access system is complete. As an alternative, property owners can create a binding joint access and cross easement plan before subdividing their property.

The cross access easements highlighted above are situated over multiple individual properties in order to provide vehicular movement across several sites.

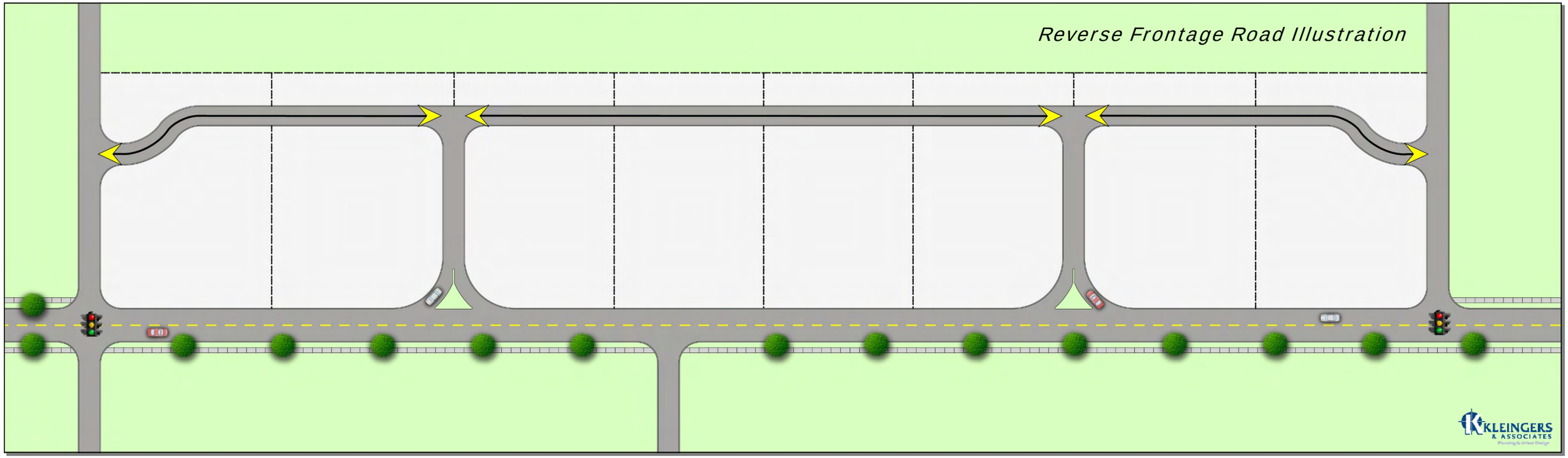


9.6 Frontage Roads and Reverse Frontage Roads

When land is subdivided for commercial and office developments along a corridor, the lots abutting the major arterial roadway should not be allowed direct vehicular access to the arterial street. Instead, an interior roadway (a frontage road or reverse frontage road) which provides access to the arterial roadway should be required. This eliminates the conflicts between high-speed traffic and traffic entering and exiting at closely spaced driveways. Access to the arterial roadway is provided at a location which can meet separation and corner clearance standards, and which can then be designed to safely handle the traffic generated by the development.

Reverse frontage roads are preferred over frontage roads when a commercial or office development contains both outparcels situated near the arterial roadway and a larger anchor user located behind the outparcels. In this instance, a reverse frontage roads meets the objectives of access management while also providing more efficient traffic flow for the entire development. Frontage roads are better suited for smaller strip style commercial and office developments where several outparcels are developed next to each other with no anchor use located behind those outparcel properties.

Reverse frontage roads provide efficient traffic movement in the rear yard areas of outparcels and can also serve larger "big box" uses situated behind the outparcel frontage lots.



SECTION 10

IMPLEMENTATION PLAN

STATE ROUTE 28 CORRIDOR IMPROVEMENTS

IMPLEMENTATION PLAN

STEP 1: Land Use Implementation Action Steps

Consider the following amendments to the local Township zoning resolutions:

Draft development node overlay district guidelines and implement over the designated nodal areas. Overlay requirements may address many site development issues including access management related elements including: joint (shared) access, parking lot cross access, reverse frontage roads, driveway spacing, and limitations on new driveways.

Create or update a Township Transportation Master Plan to set forth the planned improvements to State Route 28 and accessory roadways to establish development and infrastructure improvement expectations.

Create Nodal Transportation & Access plans setting forth reverse frontage road networks, planned consolidated curb cut plans and establishing primary nodal access points along State Route 28. These plans may be incorporated into the Development Node Overlay District standards.

Engage in Public Education& Development Due Diligence Initiatives

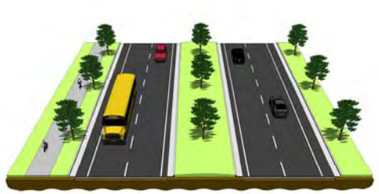
Engage in a proactive outreach program to property owners located in and adjacent to the identified development node areas regarding the financial benefits to adopting a "shared benefit" development approach and the direct property benefits of preserving future State Route 28 right-of-way when seeking to sell or develop their property.

Provide property owners with the various zoning and economic development tools available to them used to increase the market value and marketability of their property. Such programs may include the voluntary application of Development Node Overlay Districts, Blanket Tax Increment Financing Districts and Right-of-Way easement dedications.

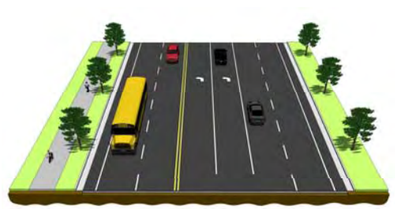
Right-of-Way Preservation

Establish the needed right-of-way width along the corridor and require proposed developments to dedicate / reserve land to accommodate future transportation improvements.

Based on the performed analyses, a 120-foot wide right-of-way is desired to provide sufficient room for the needed State Route 28 roadway section.



Controlled access segment: typical section



Signalized intersection approach: typical section

STEP 2: Access Management Plan Implementation Plan

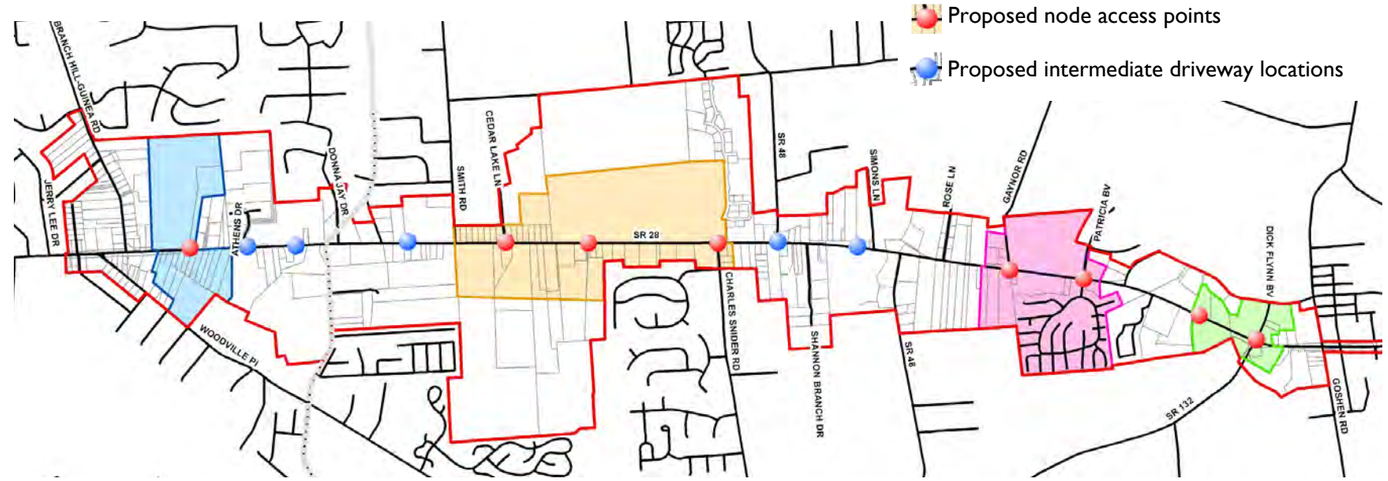
Supplement the Clermont County access management regulations through the adoption of local access management guidelines applicable to the specific needs of the planned development for each respective Township. Critical access management issues to address include:

- Regulate driveway spacing, sight distance, and corner clearance.
- Restrict the number of new driveways per existing parcel along State Route 28.
- Increase minimum lot frontage along State Route 28.
- Require immediate or future joint access and parking lot cross access.
- Review lot splits as a minor subdivision to prevent access problems.
- Regulate private roads and require maintenance agreements.
- Establish reverse frontage road requirements for commercial subdivisions.
- Require the use of unified circulation and parking plans.
- When practical, establish access locations for (re-)development to be consistent with a desired access point location plan.

Desired primary access point locations

Proposed node access points

Proposed intermediate driveway locations



Adopting Corridor Overlay Districts

An effective method for implementing uniform access management guidelines can be achieved through the adoption of Corridor Overlay Districts. These zoning district overlays may be applied to a variety of corridor areas throughout Clermont County and modified as required by each local jurisdiction. A suggested list of access management issues that may be included in a corridor overlay district includes:

- Site Access Standards
  Specific Elements May Include:
  - Joint and Cross Access
  - Internal Access to Outparcels
  - Vehicular Use Limitations
  - Service Roads
  - Future Access Closures / Joint Access Connections
  - Paved Shoulder By-Pass at Three-way Intersections
  - Left-Turn Bay at Median Opening
  - Right Turn Bay
  - Use of Alternative Access (when available)
  - Appropriate Residential and Commercial Driveway Design
  - Varying Permit Requirements Based on Use of Property'
  - Ensure Adequate Sight Distances
  - Shared Driveways
- Right-of-Way Preservation
  - Acquisition of Access Rights
  - Dedication of Future Right-of-Way
- Traffic Impact Study Requirements
- Pedestrian and Bicycle Amenities and Associated Safety Implication
- Transit Facility Considerations

STEP 3: Development Node Districts Implementation Plan

Implementing the Financing Tools to Create Development Node Districts

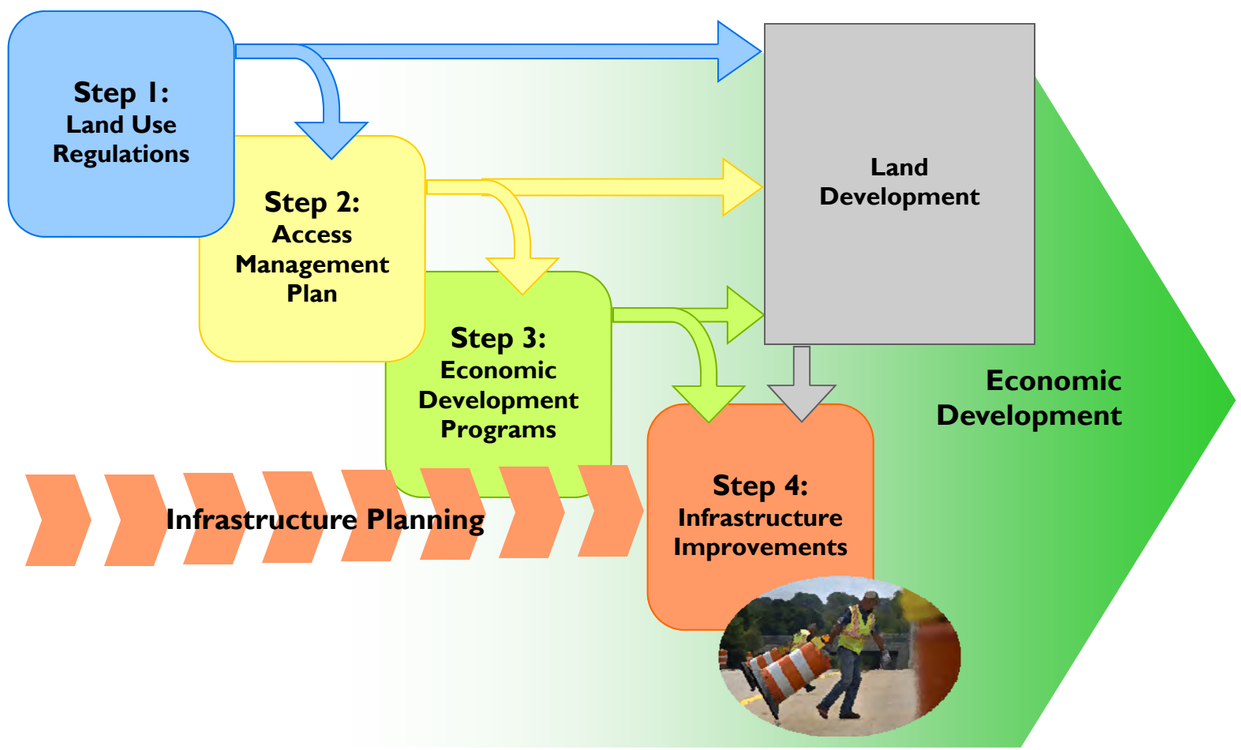
Proactively work with the strategically located property owners in implementing Blanket Tax Increment Financing Districts over nodal areas designated for future commercial and office development. A "Springing TIF" should be considered in order to preserve the statutory time provisions for TIF districts.

The local jurisdictions may consider approaching adjacent and nearby municipalities regarding the creation of a Joint Economic Development District in order to generate income tax revenue. A JEDD may be applied, along with a TIF District, over a designated nodal area to delineate the boundaries of a Development Node District through which revenue can assist in the funding of future infrastructure improvements benefiting the district.

Establish Community Reinvestment Area Districts over the designated Development Node District properties. Appropriate development guidelines and project thresholds should be applied as part of a CRA program stipulating eligibility for project incentives including new FTE job creation, annual payroll minimums and real property investment minimums. For tax collection purposes, CRA abatements take priority over established TIF district revenue. Therefore, a critical part of CRA project eligibility criteria should include provisions for developer financed off-site improvements as required by the intensity of the proposed development plan based upon the findings of a development traffic impact study.

STEP 4: Infrastructure Improvement Action Steps

The previous steps establish the foundation and basis for providing infrastructure improvements needed for the corridor. As the analyses shows, in order to support the anticipated development, infrastructure improvements are required to State Route 28.

The timing for construction of the improvements is largely dependent on the development market; therefore, it is difficult to establish a firm date for when an expanded roadway section is needed. However, as the private market is known to fluctuate suddenly and develop projects quickly (much more rapidly than a typical public infrastructure project progresses), it is important to have planned infrastructure improvements "ready to go" in order to make this area desirable for potential development. Based on this theory, continued development of infrastructure improvement plans could overlap the schedule for completion of Steps 1 through 3 in order to take advantage of market opportunities.

Corridor Development Action Plan