



Traffic Impact Fee Study Report

Town of Zebulon, North Carolina

June 2024



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Town of Zebulon, North Carolina

Prepared by:



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EXECUTIVE SUMMARY

The purpose of this Traffic Impact Fee Study Report is to update the “cost per trip” value for the Town of Zebulon’s current Traffic Impact Fee (TIF). The Town has a TIF in place that collects funds from developers based on an existing "cost per trip" fee. This report reviews the projected traffic operations analysis in the Town through the horizon (2050) buildout years, considering the anticipated traffic volume growth within the Town and extraterritorial jurisdiction limits. This report also discusses potential improvements required for deficiency mitigation within the Town and examines the methodology to calculate the “cost per trip” rate to fund the construction of these proposed improvements.

The traffic analysis in this report considers total daily trips and includes the following scenarios:

- ❖ **2021 Base Year Conditions:** Existing geometry including any improvements underway and will be complete in the near future with 2021 traffic volumes.
- ❖ **2050 No Build Conditions:** Existing geometry including any improvements underway which will be complete in the near future with 2050 traffic volumes.
- ❖ **2050 Build Conditions:** Recommended improvements including any improvements underway which will be complete in the near future with 2050 traffic volumes.

The results of the analysis indicate that with the anticipated growth in the Town over the next 20-25 years, some corridors and intersections will experience decreased levels of service (LOS) and congestion without any roadway geometry improvements. Therefore, conceptual recommended improvements were developed to mitigate this projected delay. Recommended improvements to the following corridors include:

- ❖ **Widening of NC 97 from the western study boundary to US 64 Business** to either a 4-lane or 5-lane roadway (2 travel lanes in each direction with TWLTL)
- ❖ **Widening of NC 97 from NC 96 to the northern study boundary** to either a 4-lane or 5-lane roadway (2 travel lanes in each direction with TWLTL)
- ❖ **Widening and/or converting of NC 96 from NC 97 to the northern study boundary** to a 4-lane boulevard roadway
- ❖ **Widening NC 39 from the southern study boundary to US 264** to 3 lanes (1 travel lane in each direction with a TWLTL)
- ❖ **Widening Old Bunn Road/Riley Hill Road (SR 2320) from Parks Village Road to Sheppard School Road** to either a 4-lane or 5-lane roadway (2 travel lanes in each direction with TWLTL)
- ❖ **Widening Sheppard School Road (SR 2406) from Old Bunn Road to NC 97** to 3 lanes (1 travel lane in each direction with a TWLTL)
- ❖ **Widening of US 64 Business from southern study boundary to NC 97** to either a 4-lane or 5-lane roadway (2 travel lanes in each direction with TWLTL)

The intersections of Pearces Road & Proctor Street and Pearces Road & Pippin Road, which were not on the above corridors, were identified by the Town and reviewed as part of this analysis. After review, it

was determined the intersection of Pearces Road & Proctor Street is anticipated to reach a LOS E in 2037.

With the improvements included in the Build Conditions, the projected LOS along the identified corridors and intersection are anticipated to be improved to acceptable levels by the Town. An estimated cost for each project was developed using current NCDOT cost estimating tables.

The future cost of the aforementioned improvements is estimated to be \$197,960,000. This cost was estimated based upon the NCDOT Contract Standards and Development Unit Preliminary Estimate Section Statewide Planning Construction Cost Per Mile spreadsheet, dated March 8, 2022, construction cost per mile of road widening improvements. This cost/mile includes construction costs (earthwork, pavement, traffic signals, concrete, pedestrian infrastructure, drainage, landscaping, erosion control, etc.), utility relocation, and construction admin cost. An estimate of right-of-way costs, design cost, and a 20% contingency were added to the construction cost to obtain a total cost for each project.

Cost per trip determines the value assigned to each vehicle trip in the Town that addresses future year deficiencies deemed eligible for impact fee funding. This value was developed using the estimated construction costs to address deficient links and estimated average daily traffic. The formula developed to determine the cost per trip is shown below. It considers future and base year construction cost, future and base year traffic, discounts for through trips and trip ends.

$$CPT = \left(\frac{2050 \text{ Construction Cost} - 2023 \text{ Construction Cost}}{2050 \text{ AADT} - 2021 \text{ AADT}} \right) * (1 - \text{Through Trips}) * (1 - \text{Trip End Discount})$$

The through trip discount, which represents trips that neither originate nor stop in the town limits, was determined to be 54.90%. The trip end discount (50%) ensures that two-way trips are not double charged with a trip beginning and ending at the same place. Based on the information compiled in this report, the cost per trip is **\$221.53**.

The maximum allowable impact fee is determined using only “new” generated trips. Therefore, Passby Trips, based on the most recent ITE Manual, must be removed from the final impact fee for a development. Therefore, the following formula must be used to determine the final maximum impact fee:

$$(Trips \text{ Generated} - \text{Passby Trips}) * \text{Cost Per Trip}$$

Pass-by trips in the formula account for trips already using the transportation system that would visit the site as they pass by on the adjacent street.

Finally, Town Commissioners may choose to apply a discount rate to the maximum allowable impact fees presented herein. The discount rate could be used to provide a reasonable fee for continued residential or non-residential investment or to ensure that impact fees collected for transportation do not exceed the cost of providing capital improvements identified to accommodate new growth.

For illustrative purposes only, an example of how the impact fee for a single development that contains multiple uses would be calculated based on the methodology presented in this report is on the following page.

Traffic Impact Fee Example

Approved Multi-Use Development

100 homes
5,000 square foot medical office
2,500 square foot fast food restaurant with a drive thru

ITE Trip Generation Manual, 11th Edition, Average Daily Trip Rates

Homes – Average Daily Trips – 9.43, Passby Trips – 0%
Medical Office – Average Daily Trips – 36/1000 square feet, Passby Trips – 0%
Fast Food Restaurant – Average Daily Trips – 467/1000 square feet, Passby Trips – 49%

Approved Development Calculations

Homes - # of homes * 9.43 = 100 * 9.43 = 943 trips * \$221.53 = \$208,903
Impact fee per home = \$2,089
Medical Office – Building Square Footage/1000 * 36 = 5000/1000*36*\$221.53 = \$39,875
Fast Food Restaurant – Building Square Footage/1000 * 437 * (1-.49) =
2500/1000*467*\$221.53 * .51= \$131,904

Total Impact Fee - \$380,682

1. INTRODUCTION

The State of North Carolina grants the power for towns and cities, individually, to collect impact fees on new development pursuant to the rules and regulations set forth in the appropriate statute passed by the North Carolina General Assembly (NCGA), for each individual town or city. The NCGA first gave the Town of Zebulon the power to enact impact fees in 1987 for water and wastewater improvements. This was done by House Bill 871 of the 1987 General Session. The General Assembly provided the Town the power to collect impact fees for roadway and drainage projects in 1989 by amending the Town charter with House Bill 802. This bill was amended in 2015 by House Bill 307 to again amend the Town charter to remove restrictions on the use of collected fees.

If a town or city wishes to collect impact fees, NC Law requires several things be completed prior to the passing of an Impact Fee Ordinance. The first requirement is a report containing a description of the anticipated capital cost to the town for each additional or expanded road project, a description of relevant characteristics of construction (population, trip generation, stormwater runoff, etc.) which require the projects, and a plan providing the projects. The second requirement, prior to passing an Impact Fee Ordinance, is a public hearing that conforms to requirements in G.S. 160A-364. Finally, the law requires that the funds be expended within 10 years of being collected.

1.1. WHAT ARE IMPACT FEES?

As the state of North Carolina continues to grow, the demands placed on a community's infrastructure continue to rise and eventually necessitate additional capacity improvements to maintain adequate levels of services (LOS). Usually, cities and counties have relied on rising property taxes in addition to state or federal funding to pay for future years' capital improvements. However, rising resistance to increased property taxes, decreases in governmental funding, and increased construction costs have led many local governments to consider alternative mechanisms for funding needed improvements.

Impact fees are financial payments made from a developer to the local government to assist in the funding of certain off-site capital improvements required due to residential or commercial growth. Fees may be collected for many different public facilities and services. These range from transportation, to water and sewer, to new or increased municipal facilities and services. They generally provide a means for orderly development by mitigating the negative impacts of new growth, while passing costs onto new development rather than existing taxpayers.

Impact fees are best used in communities that have rapid growth and have significant land available for development. According to a recent national survey, approximately 60 percent of all cities and towns with a population over 25,000 use some form of impact fees to offset the costs of accommodating new development (results summarized on www.impactfees.com).

Two items determine if impact fees can legally be collected. The first of these is the entity must have legal authority to collect the fees. Second, the design and implementation of impact fee requirements must not be unfair, arbitrary, unreasonable, or without rational basis. In addition, impact fees must not violate a developer's right to due process or be discriminatory.

1.2. STATE ENABLING LEGISLATION

The State of North Carolina grants the power for cities and towns to collect impact fees on new development pursuant to the rules and regulations set by the individual NCGA bill that provide for changes to the Town charter. Copies of the State enabling legislation is included in Appendix A of the report.

Eligible transportation system improvements include new streets and sidewalks; paving, grading, resurfacing, and widening of existing streets; traffic control, signals, and markers; lighting; grade crossings or the elimination thereof; and grade separations. Project costs that are eligible to be paid for by impact fees include design, acquisition, engineering, and financing attributable to those improvements. Revenues collected by the Town may not be used for administrative or operating costs associated with imposing the impact fee. All revenues from impact fees must be maintained in a separate account prior to expenditure on recommended improvements.

1.3. STUDY AREA

The study area for this analysis was determined by Zebulon Town officials during a meeting on January 12, 2023 (see Figure 1.1 on the following page). It includes land generally encompassed by the polygon formed by the Little River to the west, Ferrell Road to the north, Moccasin Creek to the east, and the Wake/Johnston County line to the south. One service zone was assumed to represent all of the study area.

1.4. ANALYSIS PERIOD

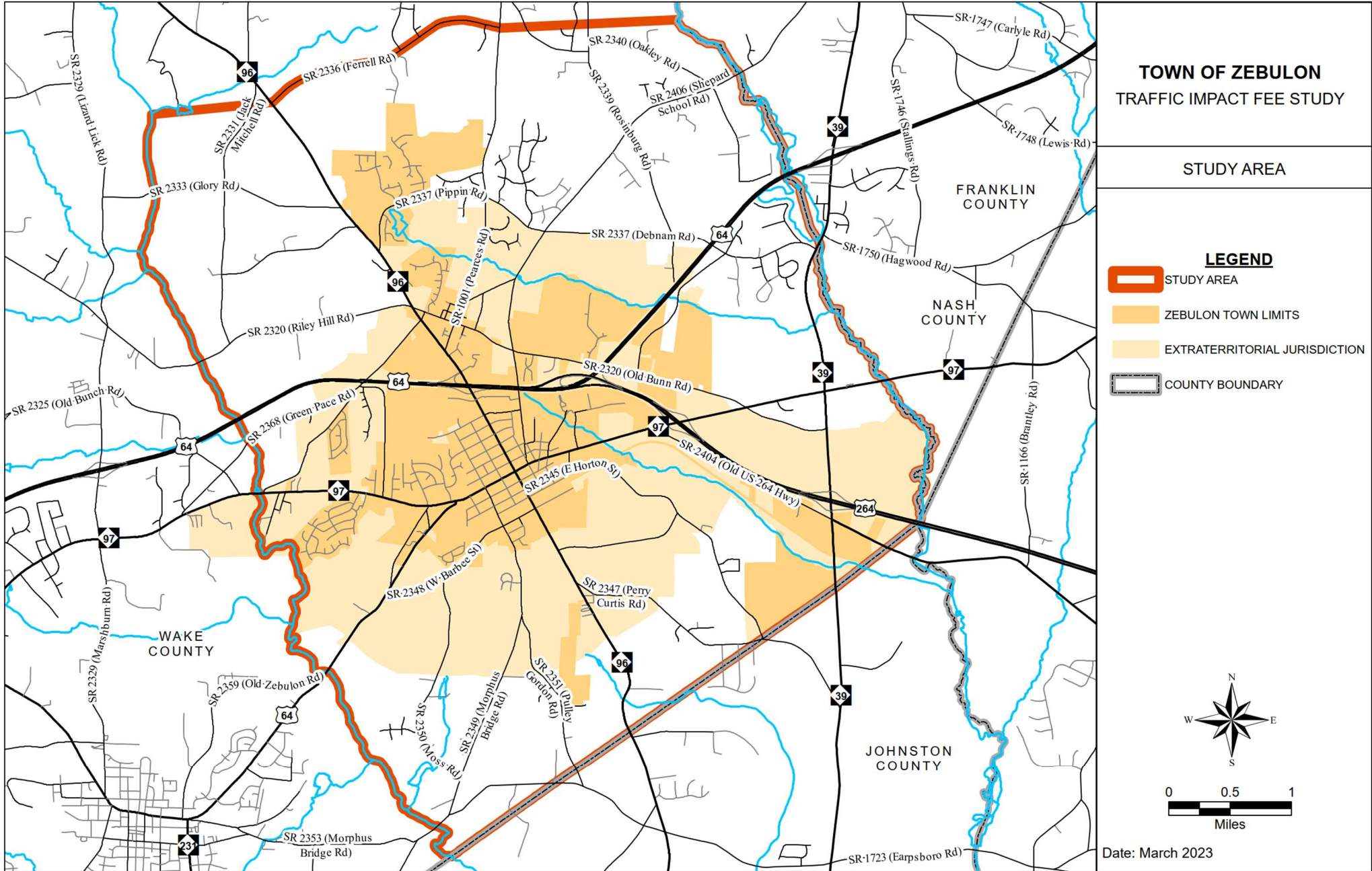
The base year for the development impact fee study is 2021. The planning horizon is 2050. The 2050 horizon year is reasonable and falls in line with the new CAMPO Regional Travel Demand Model future year, which is also 2050.

1.5. TRAFFIC FLOW DATA

A vital element needed when determining impact fees is traffic data. Existing traffic, development traffic, and future traffic are all essential when determining impact fee structure. Since this analysis will only be determining which transportation facilities are currently or will be failing in the future, existing counts and future traffic are required.

The current traffic data is being obtained using the NCDOT Traffic Count data. The 2021 data was recently released (November 17, 2022) and will be used to determine any current deficiencies. For the 2050 projection, the growth rates developed as part of the Zebulon CTP (adopted August 2, 2021) and the 2050 CAMPO Triangle Model will be used to determine a growth rate for each link to determine any projected deficiencies.

Figure 1.1 – Study Area Map



2. CURRENT & FUTURE TRANSPORTATION DEFICIENCIES

The transportation system in Zebulon includes two major facilities (US 64 & US 264) maintained by the NCDOT, that are divided, control of access facilities that operate similar to interstates. These two facilities were not considered in this analysis. The majority of the traffic on these two facilities travel through the town. Most of the road network in the town are small two-lane collector streets that funnel the traffic from neighborhood roads to the two main thoroughfares or older neighborhood roads that connect directly to the thoroughfares. As part of the report, existing transportation facilities were inventoried, and current and future traffic volumes were obtained. From this inventory, current and projected links where the volume to capacity ratio exceeds or equals 1.0 were collected. The roadways that met these criteria are shown in Figure 2.1.

2.1. METHODOLOGY

The deficiencies shown in Figure 2.1 were developed by comparing current AADTs and future traffic projections to the NCDOT Transportation Planning Branch (TPB) publication *Level of Service (LOS) D Standards for System Level Planning* (10/14/2011 Revision). This allows capacities to be developed depending on the number of lanes, speed, and road characteristics. The deficiencies were not based on peak hour volumes but were instead compared to Annual Average Daily Traffic (AADT) and capacities.

Since the Town currently has an impact fee structure in place, all existing deficiencies have to be improved using the existing impact fee structure. All future deficiencies will be used in the calculation of the future impact fee rate structure. The future deficiencies determined in this report will be used to update the cost per trip fee used by the Town to calculate future impact fees. Any funds collected under the fee structure determined in this report should be kept in a separate fund from previously collected fees. The most recent Institute of Transportation Engineers (ITE) Trip Generation Manual will be used to determine the impact fee for the land use of the development.

2.2. TRAFFIC VOLUMES

2.2.1. Base Year Traffic Volumes (2021)

Base year traffic volumes (2021) for the roads in the study area were obtained from the North Carolina Department of Transportation (NCDOT) AADT count. Base year traffic volumes (2021) assumed for this analysis are presented in Appendix B of the report.

2.2.2. Future Year Traffic Volumes (2050)

Future year traffic volumes (2050) were developed using the growth rates developed as part of the Zebulon CTP and the 2050 CAMPO Triangle Model. The volumes for 2050 were used to determine the expected traffic on each segment of roadway reviewed as part of this study. The assumed volumes for this analysis are presented in Appendix B of the report.

2.3. MAXIMUM SERVICE CAPACITY

All routes that had a published AADT in the study area, except for US 64 & US 264, were evaluated using the AADT volume capacities derived from the NCDOT TPB publication *LOS D Standards for System Level Planning*. The NCDOT TPB publication uses the 2005 North Carolina Level of Service (NCLOS) Version 2.1 Program developed by the Institute for Transportation Research and Education (ITRE) at North Carolina State University. The NCLOS Program is based on the 2000 Highway Capacity Manual. The HCM is the foremost recognized and accepted analysis tool. This publication was used in the development of the Zebulon CTP.

Capacities for each road and cross-section were calculated using area type, number of lanes, posted speed limit, and median configurations. A summary of roadway types and capacities are shown in Table 2.1 below. Assumptions made for factors and thresholds used in determining roadway capacities are listed in Appendix B.

Table 2.1 - Maximum Capacity Thresholds (LOS D) by Cross-Section (Vehicles/Day)						
Major Thoroughfare						
	Urban		Suburban		Rural	
	2 Lanes Per Direction	w/ TWLTL	2 Lanes Per Direction	w/ TWLTL	2 Lanes Per Direction	w/ TWLTL
55 MPH	25800	28400	29100	31800	30200	33000
45 MPH	24600	26800	25500	27600	29300	32000
35 MPH	22200	24300	23500	26000		
25 MPH	22100	24200				
	1 Lane Per Direction	w/ TWLTL	1 Lane Per Direction	w/ TWLTL	1 Lane Per Direction	w/ TWLTL
55 MPH	12900	14200	14600	15900	15100	16500
45 MPH	12200	13300	12700	13800	14600	16000
35 MPH	11100	12700	11600	12900		
25 MPH	11000	12700				
Boulevard						
	Urban		Suburban		Rural	
1 Lanes Per Direction						
55 MPH	19900		20200		22600	
45 MPH	17500		18300		21800	
35 MPH	14000		15600			
25 MPH	12500					
2 Lanes Per Direction						
55 MPH	40000		40500		45200	
45 MPH	35100		36600		43600	
35 MPH	28100		31600			
25 MPH	25400					

2.4. FACILITY LINK ANALYSIS

A facility link analysis was performed for roads previously discussed to evaluate existing and future year conditions. US 64 and US 264 were excluded from the analysis because it was assumed improvements to these facilities would be the responsibility of the NCDOT. Worksheets summarizing the details of the link analysis are included in Appendix B.

Currently there are several major funded projects slated for the roadways within town limits between now and 2050 outside of intersection improvements. Two of these projects are slated for US 64 and are being undertaken by NCDOT. There are 7 projects in the CAMPO LRTP, however all projects are included in the 2050 Horizon portion of the plan. With this being the case, the majority of the lane geometry (number of lanes) for existing and future year conditions were the same, so current cross-sections were used to determine deficiencies in both years. Thresholds to identify appropriate capacity improvements

for expected demands were determined using average daily traffic volumes and maximum service capacity thresholds summarized in Table 2.1.

The number of additional lanes (i.e., new road capacity) required to address existing or future year deficiencies were identified by comparing traffic volumes (demand) to maximum service capacities (supply) for links in the study area. A ratio greater than or equal to 1.0 (demand / supply) supported the need for a capacity improvement to address traffic congestion.

2.4.1. Base Year Conditions (2021)

Base year conditions (2021) were analyzed using average daily traffic volumes and maximum service capacities. Those links, with a volume to service capacity ratio greater than 1.0 were determined to be deficient in the base year. Based on this methodology, one link (0.53 centerline miles) was identified as deficient for the base year conditions analysis. Since this link is currently deficient, it is not eligible for construction with funds collected under this study and subsequent ordinance. However, the funds collected under the current ordinance are available to improve this roadway. This link is listed below and is illustrated in Figure 2.1 on page 8. Worksheets summarizing the facility link analysis for all 40 links in the base year analysis are presented in Appendix B.

- **NC 97– US 64 Business to NC 96**

2.4.2. Future Year Conditions (2050)

Future year conditions (2050) were analyzed using average daily traffic projections and maximum service capacities. Those links with a volume to service capacity ratio greater than or equal to 1.0 were determined to be deficient in the future year. Based on this methodology, 13 links (11.16 centerline miles) were identified as deficient for the future year conditions analysis. Impact fees associated with this study and subsequent ordinance can be used to improve these segments. Funds collected as part of this study should be kept in a separate account from previously collected transportation impact fees and should only be used to complete work on the deficient links listed below. These links are listed below and are illustrated in Figure 2.2 on page 9. Worksheets summarizing the facility link analysis for all 43 road segments in the future year analysis are also presented in Appendix B.

- **NC 97 – western study boundary to Worth Hinton Road**
- **NC 97 –Worth Hinton Road to US 64 Business**
- **NC 97 – NC 96 to the eastern study boundary**
- **NC 96 – NC 97 to US 64**
- **NC 96 - US 64 to Pearces Road**
- **NC 96 - Pearces Road to SR 2320**
- **NC 96 - SR 2320 to the northern study boundary**
- **NC 39 – southern study boundary to US 264**
- **SR 2320 – Parks Village Road to Sheppard School Road**
- **SR 2406 – Old Bunn Road to Judd Street**
- **SR 2406 – Judd Street to NC 97**
- **US 64 Business – southern study boundary to Barbee Street**
- **US 64 Business – Barbee Street to NC 97**

2.4.3. Impacts of Anticipated Growth

New growth and development in the study area is expected to significantly impact the transportation system, which is enumerated using a comparison of results for base year (2021) and future year (2050) conditions. Overall, results in the facility link analysis table identify 7 future year deficient road segments that would be eligible for development impact fee funding. These links are listed below and shown in Figure 2.3 on page 10 illustrating the road segments eligible for impact fee funding. Details on the list of deficient links eligible for some level of development impact fee funding are included in Appendix B.

- **NC 97 – western study boundary to US 64 Business**
- **NC 97 – NC 96 to US 264**
- **NC 96 – NC 97 to the northern study boundary**
- **NC 39 – southern study boundary to US 264**
- **SR 2320 – Parks Village Road to Sheppard School Road**
- **SR 2406 – Old Bunn Road to NC 97**
- **US 64 Business – southern study boundary to NC 97**

2.5. FACILITY INTERSECTION ANALYSIS

After a review of the Facility Link Analysis with Town Officials, the Town requested a capacity analysis of two intersections that were not included on any of the links recommended for upgrading. Both intersections are on Pearces Road, a corridor that isn't anticipated to need improving as a whole. However, Town Officials requested an analysis on the two intersections listed below.

- **Pearces Road & Proctor Street**
- **Pearces Road & Pippin Road**

After completing a capacity analysis on the two intersections, it was determined that the intersection of Pearces Road and Proctor Street would reach LOS E in 2037. Since the intersection reached an unsatisfactory LOS prior to 2050, it was added to the list of projects included in the Cost per Trip calculations. Synchro reports of the capacity analysis are included in Appendix B.

Figure 2.1 – Map of Deficient Links (2021)

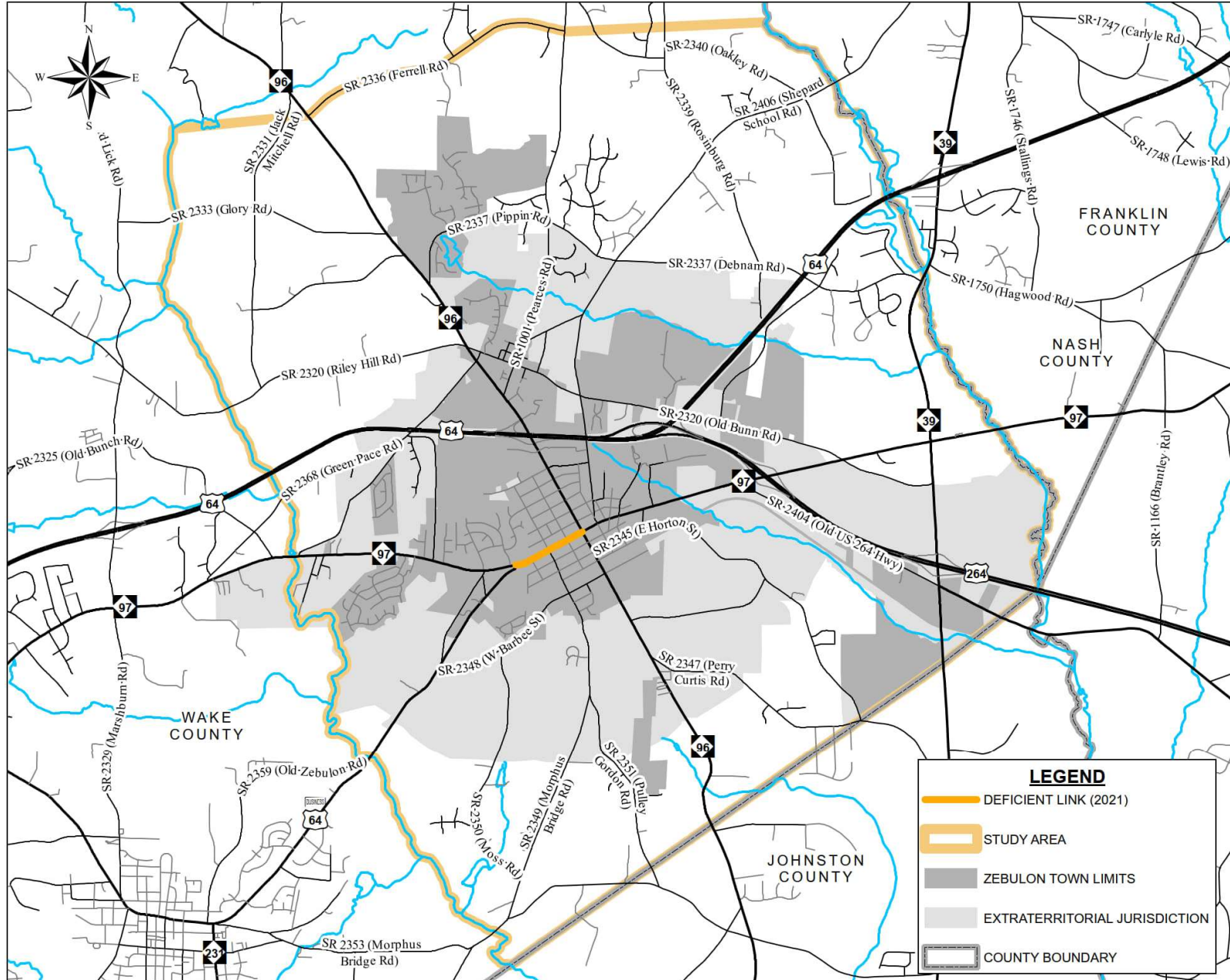


Figure 2.2 – Map of Deficient Links (2050)

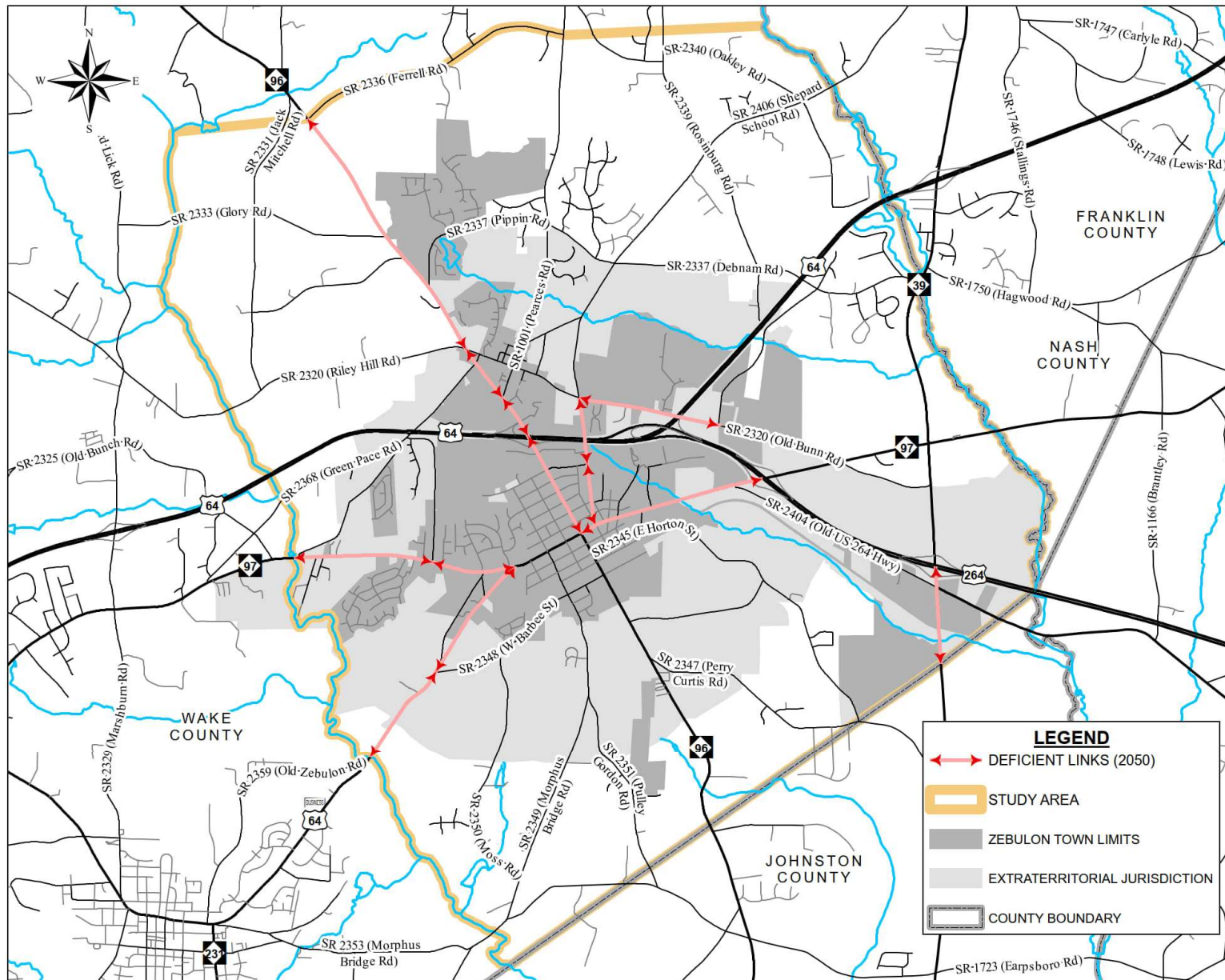
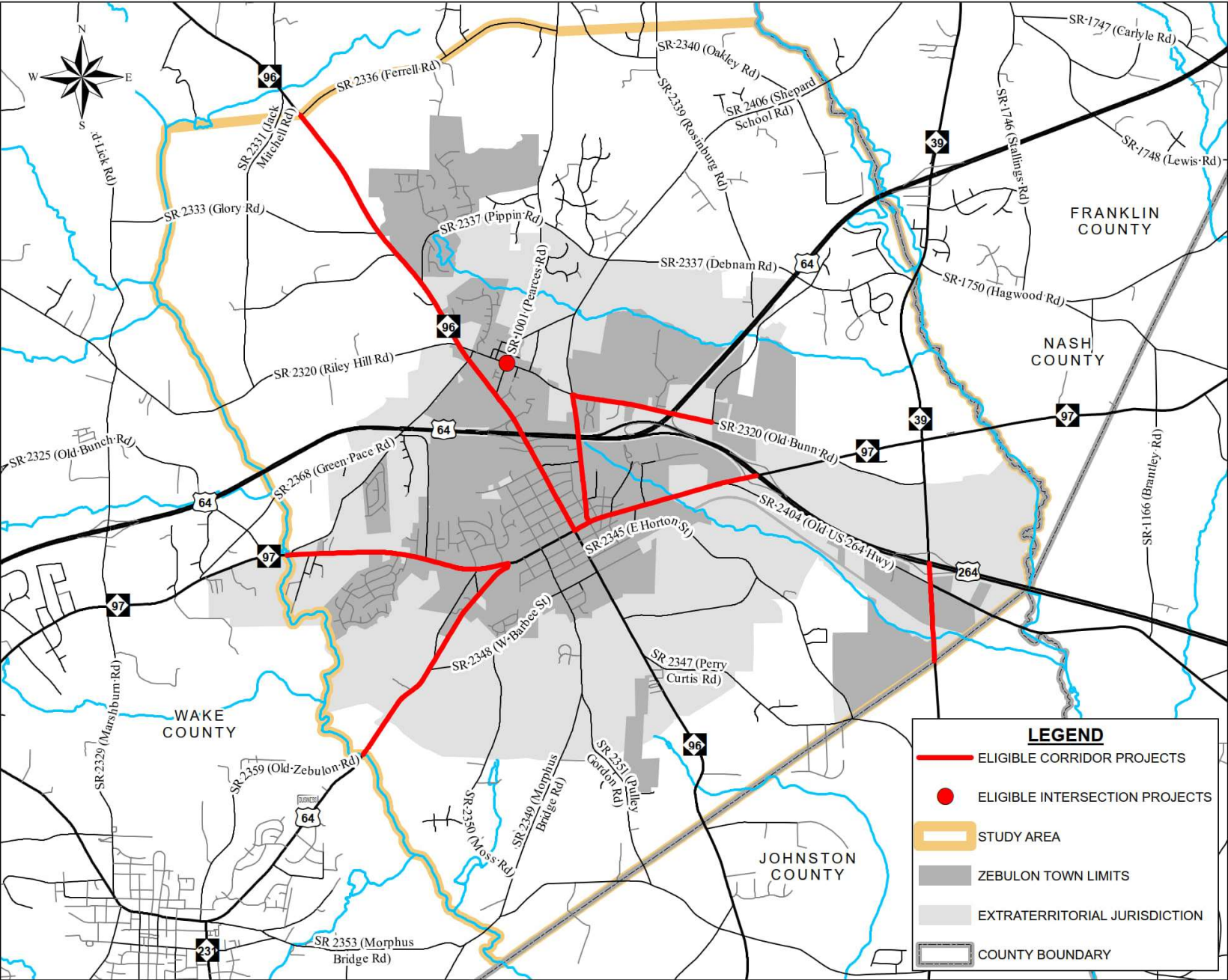


Figure 2.3 – Map of 2050 Eligible Projects



2.6. TRANSPORTATION FACILITY IMPROVEMENT COSTS

The cost to improve roadways overburdened with congestion is calculated by determining the complete construction cost of widening the facility, including preliminary engineering (PE), right of way (ROW), and construction. In most cases, the typical section included widening the same number of lanes on both sides of the roadway.

Five capacity improvements were made available for addressing deficient links in the study area. These improvements are presented in Table 2.2.

Table 2.2 - Roadway Improvement Project Type	
Existing Cross-Section	Improved Cross-Section
Two-Lane no turn lanes	Three-Lane, 1 Travel Lanes each direction, TWLTL**
Two-Lane no turn lanes	Four-Lane Boulevard
Two-Lane no turn lanes	Divided Four-Lane w/ Left Turns at Major Intersection
Two-Lane no turn lanes	Five-Lane, 2 Travel Lanes each direction, TWLTL**
Three-Lane, 2 Travel Lanes, TWLTL**	Five-Lane, 2 Travel Lanes each direction, TWLTL**

**.-TWLTL – Two-way Left Turn Lane

2.6.1. Construction Costs

Construction costs for the capacity improvements were developed using the latest NCDOT Cost Per Mile spreadsheet (Revised 3-8-22). The spreadsheet provides a general cost per mile for new location facilities, widenings, bridge replacements, and for converting a facility to full control of access. Table 2.3 summarizes estimated construction costs (per centerline mile) for each of the identified typical cross sections.

Table 2.3 – Conceptual Construction Costs	
Type of Improvement	Construction Cost (per mile)**
Widen 2-lane road to 3 lanes	\$3,850,000
Widen 2-lane road to 4-lane Boulevard	\$6,600,000
Widen 2-lane road to 4 lanes w/ raised median	\$5,500,000
Widen 2-lane road to 5 lanes	\$6,000,000
Widen 3-lane road to 5 lanes	\$5,500,000

** - Per Mile Cost do not include bridges, utilities, super street, etc.

2.6.2. Right-of-Way Costs

Right-of-way (ROW) costs for widening facilities in the study area was calculated using a NCDOT ROW Estimate spreadsheet for a project in Wake County. The right-of-way width of the proposed improvement was compared to the existing right-of-way width using GIS data. The NCDOT ROW spreadsheet had a calculated cost per acre, however this value was adjusted depending on the size, usage, (commercial, residential, industrial, etc) and/or location of the property. Costs for the ROW of each project are included in Appendix B.

2.6.3. Professional Services

North Carolina Legislation allows recovery of certain professional services through impact fees. Eligible professional services include studies and reports, cost to design, obtain ROW, and construct transportation projects. Professional service fees vary greatly based on each transportation corridor's topography, natural and cultural resources. Design services usually range between 10-15% of the project's construction cost. The cost to administer the construction of the project, otherwise known as Construction Engineering and Inspection (CEI), usually ranges from 20-25%. For all professional services, a comprehensive value of 40% of the construction cost was used.

2.7. CREDITS & OFFSETS

Credits and offsets are developed using currently funded projects that would increase capacity using a different source of funding. The Town has two other sources of funding. The STIP funds that flow down from the NCDOT through the Capital Area Metropolitan Planning Organization (CAMPO) to Zebulon are distributed on a competitive basis using formulas prescribed by the NCDOT. Currently, there are no capacity projects that would be considered as committed in the current STIP window.

The second source of funding for the town is the funds received from developers to pay for the required mitigation when a new development occurs within the town limits. However, these mitigations can be installed by the developer instead of providing the funds to the town.

A through trip represents a trip on the transportation network that neither begins nor ends in the Town of Zebulon. In most cases, an offset is assumed to the cost of improvements eligible for development impact fee funding to account for through trips. Streetlight Data was obtained that provides the percent of traffic that travels through the town. From this data, it was determined that 54.90% of the trips neither begin or end in the town and constitute through trips. Therefore, implementation costs for the proposed improvements in the Town of Zebulon were reduced by 54.90% to account for through trips on the transportation network.

2.8. RECOMMENDED ROAD PROJECTS

Based on the analysis, new growth and development in the Town of Zebulon is expected to significantly impact congestion levels on the transportation network through 2050. Several transportation improvements are recommended to address these deficiencies, as follows:

2.8.1. Base Year Deficiencies (2021)

The following transportation improvement is recommended to address deficiencies observed in 2021. This project is eligible for current development impact fee funding because the Town already has an impact fee in place. More detailed information on the transportation link analysis can be found in Section 2.4 of the report.

- **NC 97 from US 64 Business to NC 96** – The link analysis for this roadway shows a current AADT of 14,500 vehicles per day (vpd) and a capacity of 12,900 vpd. The volume to capacity ratio is 1.12. The recommended improvement would be to widen to either 4 or 5 lanes (2 travel lanes in each direction) The construction cost for this segment is \$ 6,100,000. This link can only be improved with funds collected under the existing fee structure.

2.8.2. Future Year Deficiencies (2050)

The following transportation improvements are recommended to address deficiencies observed in 2050. These projects are eligible for development impact fee funding. More detailed information on the transportation link analysis can be found in Section 2.4 of the report.

- **NC 97 – western study boundary to US 64 Business** – The link analysis for this roadway has a projected 2050 AADT ranging from 15,000 to 19,000 with a capacity of 12,900. The volume to capacity ratio is 1.25. The recommended improvement would be to widen to either a 4-lane or 5-lane roadway (2 travel lanes in each direction with TWLTL). The estimated 2023 construction cost for this segment is \$13,700,000.
- **NC 97 – NC 96 to the northern study boundary** – The link analysis for this roadway has a projected 2050 AADT ranging from 15,000 to 19,000 with a capacity of 12,900. The volume to capacity ratio is 1.25. The recommended improvement would be to widen to either a 4-lane or 5-lane roadway (2 travel lanes in each direction with TWLTL). The estimated 2023 construction cost for this segment is \$15,200,000.

- **NC 96 – NC 97 to the northern study boundary** – The link analysis for this roadway has the projected 2050 AADT ranging from 17,700 to 43,600 with a capacity of ranging from 13,800 to 27,600. The volume to capacity ratio ranges from 1.21 to 1.68. The recommended improvement would be to widen and/or convert to a 4-lane boulevard roadway. The estimated 2023 construction cost for this segment is \$42,300,000.
- **NC 39 – southern study boundary to US 264** – The link analysis for this roadway has the projected 2050 AADT to be 12,200 with a capacity of 11,600. The volume to capacity ratio is 1.05. The recommended improvement would be to widen to 3 lanes (1 travel lane in each direction with a TWLTL). The V/C ratio reaches 1.0 in 2032. The estimated 2023 construction cost for this segment in 2032 is \$9,500,000.
- **SR 2320 – from Parks Village Road to Sheppard School Road** – The link analysis for this roadway has the projected 2050 AADT to be 23,900 with a capacity of 14,600. The volume to capacity ratio is 1.64. The recommended improvement would be to widen to either a 4-lane or 5-lane roadway (2 travel lanes in each direction with TWLTL). The estimated 2023 construction cost for this segment is \$4,300,000.
- **SR 2406 – from Old Bunn Road to NC 97** – The link analysis for this roadway has the projected 2050 AADT ranging from 10,700 to 12,500 with a capacity ranging from 10,700 to 12,300. The volume to capacity ratio ranges from 1.0 to 1.02. The recommended improvement would be to widen to 3 lanes (1 travel lane in each direction with a TWLTL). The estimated 2023 construction cost for this segment is \$6,650,000.
- **US 64 Business – from southern study boundary to NC 97** – The link analysis for this roadway has the projected 2050 AADT ranging from 12,200 to 15,400 with a capacity ranging from 11,600 to 14,200. The volume to capacity ratio is 1.05. The recommended improvement would be to widen to either a 4-lane or 5-lane roadway (2 travel lanes in each direction with TWLTL). The estimated 2023 construction cost for this segment is \$19,100,000.

2.9. COST PER TRIP

Cost per trip determines the value assigned to each vehicle trip in the Town that addresses future year deficiencies deemed eligible for impact fee funding. This value was developed using the estimated construction costs to address deficient links and estimated average daily traffic.

A formula was developed to determine the cost per trip. This formula consisted of, in the numerator, the total 2050 deficient link construction cost minus the 2023 deficient link construction cost. This value was then divided by the total difference between the total number of 2050 trips and 2021 trips. Since no current projects could be considered as an offset to the total construction cost, the calculated construction cost was not reduced. The credit for through trips was included in the formula as a reduction to the cost per trip value.

The formula used to compute the cost per trip is shown below.

$$CPT = \left(\frac{2050 \text{ Construction Cost} - 2023 \text{ Construction Cost}}{2050 \text{ AADT} - 2021 \text{ AADT}} \right) * (1 - \text{Through Trips}) * (1 - \text{Trip End Discount})$$

The through trip discount (54.90%) explained earlier represents trips that neither originate nor stop in the town limits. The trip end discount (50%) ensures that two-way trips are not double charged with a trip beginning and ending at the same place. Based on the information compiled in this report, the cost per trip is **\$221.53**.

2.10. MAXIMUM ALLOWABLE IMPACT FEES

A maximum allowable impact fee schedule was developed to quantify development's cost of providing increased capacity to the transportation system. The maximum impact fees based on the cost per trip calculated in Section 2.9 for various Land Use Categories is shown in Appendix C. The fees are calculated based on the average daily trips by using the most recent **ITE Trip Generation Manual**. The maximum allowable impact fee formula is as follows:

$$(\text{Trips Generated} - \text{Passby Trips}) * \text{Cost Per Trip}$$

Pass-by trips in the formula account for trips already using the transportation system that would visit the site as they pass by on the adjacent street.

2.11. DISCOUNT RATE

Town Commissioners may choose to apply a discount rate to the maximum allowable impact fees presented herein. The discount rate could be used to provide a reasonable fee for continued residential or non-residential investment or to ensure that impact fees collected for transportation do not exceed the cost of providing capital improvements identified to accommodate new growth.

3. SUMMARY

Unparalleled growth over the past couple of decades has turned the Town of Zebulon from simply being a suburb of Raleigh to a thriving hub. This expansion is expected to continue through 2050, which will continue to overburden the local transportation system that in many places is already at its maximum capacity. Therefore, it is appropriate to implement some type of additional funding source for funding transportation projects. A development impact fee program could help mitigate some of the anticipated future deficiencies associated with new growth. The area around the Town continues to have plenty of room for expansion and is ripe for both commercial and residential development. However, the balance of imposing impact fees is a fine one in such that the Town doesn't want to overburden new expansion to the point that additional cost discourages growth.

One of the ways to ensure that that balance is met is through discount rates. Maximum allowable impact fees may be adopted at less than 100% of the amounts presented in the previous section. If it so chooses, Town Commissioners can apply a discount rate to provide a reasonable fee for continued residential or non-residential investment or to ensure that impact fees collected do not exceed the cost of the recommended capital improvements. Ultimately, the discount rate applied to maximum allowable impact fees will be a policy decision of Town Commissioners.

APPENDIX A – State Enabling Legislation

GENERAL ASSEMBLY OF NORTH CAROLINA
1987 SESSION

CHAPTER 668
HOUSE BILL 871

AN ACT TO ALLOW THE TOWNS OF KNIGHTDALE AND ZEBULON TO
IMPOSE WATER AND WASTEWATER CAPACITY CHARGES.

The General Assembly of North Carolina enacts:

Section 1. Definitions. The following definitions apply to this act, unless the context clearly requires otherwise:

- (1) "Capital costs" means costs spent for protecting, upgrading, expanding and/or developing new water treatment facilities and/or wastewater treatment facilities intended to serve the customers of the towns' water and/or wastewater treatment system.
- (2) "Developer" means an individual, corporation, partnership, organization, association, firm, political subdivision, or other legal entity constructing or creating new construction.
- (3) "New construction" means any new development, construction, or installation that results in the use of the towns' water treatment facilities or wastewater treatment facilities and includes current users of that system that require additional capacity from said water or wastewater treatment facilities.
- (4) "Capacity charge" means the charge imposed upon new construction as defined herein pursuant to the grant of regulatory authority contained herein.

Sec. 2. Subject to the conditions hereinafter set forth, a town may adopt an ordinance or ordinances imposing and collecting a regulatory fee defined herein as a "capacity charge" on all new construction.

Sec. 3. The amount of each "capacity charge" imposed and collected shall be based upon reasonable and uniform consideration of capital costs ultimately to be incurred by the town as a result of the new construction. The "capacity charge" must bear a direct relationship to the additional or expanded capital costs incurred or ultimately to be incurred for the protecting, upgrading, expanding or developing of new water or wastewater treatment facilities to serve the town.

Sec. 4. The amount of each "capacity charge" shall be based on qualified needs and specific classifications and rates, which shall be uniformly applied to all members of a class; however, the town may vary the charges according to classes of service and may adopt different schedules of charges to be imposed upon new construction within the town limits versus new construction outside of the town limits.

Sec. 5. Before adopting or amending any "capacity charge" ordinance authorized by this act, the town governing board shall hold a public hearing on it. A notice of the public hearing shall be given so as to conform with G.S. 160A-364, as it may be amended from time to time. No "capacity charge" ordinance shall be adopted or amended without first giving the planning board a reasonable opportunity to make comments and recommendations to the town governing board.

Sec. 6. Monies collected as "capacity charges" shall be placed in a separate trust fund. All such revenues shall be spent for the capital facilities for which they were collected.

Sec. 7. A cause of action as to the validity of any "capacity charge" adopted under this act shall be brought within 90 days after its assessment.

Sec. 8. The town is authorized to enact ordinances, resolutions, rules and regulations that are necessary or expedient to carry this act into execution and effect.

Sec. 9. The powers conferred in this act shall be supplementary to all other powers and procedures authorized by any other general or local law. Assessments, charges, fees, or rates authorized by any other general or local law are not affected by this act.

Sec. 10. This act applies to the Towns of Knightdale and Zebulon only.

Sec. 11. This act is effective upon ratification.

In the General Assembly read three times and ratified this the 24th day of July, 1987.

GENERAL ASSEMBLY OF NORTH CAROLINA
1989 SESSION

CHAPTER 606
HOUSE BILL 802

AN ACT TO AMEND THE CHARTER OF THE TOWN OF ZEBULON RELATING TO DRIVEWAYS, SITE PLAN AND SUBDIVISION APPROVAL, ROAD OR DRAINAGE PROJECT FEES, OPEN SPACE PROJECT FEES, AND RECREATIONAL FEES.

The General Assembly of North Carolina enacts:

Section 1. The Charter of the Town of Zebulon being Chapter 386, Session Laws of 1973, is amended by adding new sections to read:

"Sec. 8.29. Site Plan Approval.

(a) Site Plans. The Town Council may as part of its zoning regulations require that a site plan be submitted, and approved prior to the issuance of a building permit for new construction, excluding renovation and repair of existing structures, and excluding accessory uses and their structures, unless such renovations and repairs and accessory uses shall cause an increase in the off-street parking requirement or a change in occupancy as occupancy is defined by the North Carolina State Building Code. Such local law shall specify the elements to be included in site plans submitted for approval in accordance with standards of zoning code; such elements may include, where appropriate, those relating to off-street parking, driveway access, internal circulation, screening, signs, landscaping, architectural features, locations and dimensions of buildings, topography and grading, utilities, drainage structures, street and sidewalk improvements, loading and service areas, fire hydrants, and such other elements as may reasonably be related to the health, safety and general welfare of the community. Where appropriate, approval of site plans may be conditioned to include requirements that street and utility rights-of-way be dedicated to or reserved by the public, or street and utility improvements be made to the same extent as required by the local subdivision regulations. This provision shall not apply to additions of less than five percent (5%) of gross floor area on an annual basis unless such addition causes an increase in the off-street parking requirements or a change in occupancy as occupancy is defined by the North Carolina State Building Code. The Town Council shall prescribe procedures for review and approval of such site plans to insure that development of property shall conform to applicable zoning or other relevant laws or regulations, with approvals by designated Town staff, or the Town Council. Appeals shall lie from the staff to the Town Council. The Town Council may require that site plans be in conformity with previously approved subdivision plans for the same property; further, in the event of conflict between a requirement for site plan approval and requirements for previously approved subdivision plans, the latter shall control.

"Sec. 8.30. Road or Drainage Projects Fees.

(a) Definitions. The following words in this section are defined as follows, unless the contrary clearly appears from the context:

- (1) 'Capital costs' means costs spent for developing new road or public storm drainage projects or road or public storm drainage improvements; such costs may include land acquisition, design, and construction, and no other.
- (2) 'Road or drainage project' means road or public storm drainage improvements provided or established by the Town or in conjunction with other units of government which are required in addition to those required by the subdivision regulations.
- (3) 'Developer' means an individual, corporation, partnership, organization, association, firm, political subdivision, or other legal entity constructing or creating new construction.
- (4) 'Road or drainage project fee' means the charge imposed upon new construction pursuant to the grant of regulatory authority contained herein.
- (5) 'New construction' means any new development, construction, or installation that results in real property improvement or which requires a building permit. This term shall include the installation of a mobile home and factory built and modular housing. This term shall not include fences, billboards, poles, pipelines, transmission lines, advertising signs, or similar structures and improvements, or renovations and repairs, which do not generate the need for additional or expanded road or drainage projects upon completion of the new construction.

(b) Subject to the conditions hereinafter set forth, the Town of Zebulon, following the adoption of an ordinance or ordinances, may impose and collect a regulatory fee defined herein as a road or drainage project fee on all new construction within its Town limits and extraterritorial jurisdiction.

(c) Requirements and limitations.

- (1) No road or drainage project fee shall be enacted until the Town Council has caused to be prepared a report containing: (i) a description of the anticipated capital costs to the Town of each additional or expanded road or drainage project; (ii) a description of the relevant characteristics of construction which give rise to additional or expanded road and drainage projects, such as population, trip generation, stormwater runoff, and flow characteristics; (iii) a plan for providing one or more road or drainage projects.
- (2) Before adopting or amending any road or drainage project fee ordinance authorized by this section, the Town Council shall hold a public hearing. A notice of the public hearing shall be given so as to conform with G.S. 160A-364, as it may be amended from time to time. No such ordinance shall be adopted or amended without receiving the

planning commission recommendation to the Town Council. If the planning commission shall fail to return a recommendation within 60 days of submittal of an ordinance, the ordinance shall be returned to the Town Council and deemed to have a favorable recommendation as submitted to the planning commission.

- (3) The amount of each fee imposed and collected hereunder shall be based upon reasonable and uniform considerations of capital costs to be incurred by the Town as a result of new construction and shall bear a reasonable relationship to such capital costs. Such fee shall be based upon reasonable classifications and rates which shall be uniformly applied to all members of a class; however, the fees may differ within zones which may be established depending on the special needs and costs of road and drainage projects in such zones. To the extent that the developer installs and dedicates road or public storm drainage improvements for which the use of the fee is designated, which immediately become the property of the Town or another unit of government, and which are not otherwise reimbursed by the Town, the fee shall be reduced by an amount equal to the value of the improvements or dedications.
- (4) All monies from fees collected hereunder shall be placed in a separate trust fund. Expenditures from such trust fund for any one road or drainage project shall not exceed fifty percent (50%) of the capital costs of such individual project. No expenditures from such trust fund shall be made for any purpose other than a road or drainage project undertaken by the Town, or by the Town in conjunction with other units of government. Road or drainage project fees shall be spent for those community service facilities authorized by this Section 8.30 which the Town provides within six years after its collection and within 10 years for those community service facilities authorized by this Section 8.30 which the Town provides in conjunction with other units of government.

"Sec. 8.31. Open Space Project Fees.

(a) Definitions. The following words in this section are defined as follows, unless the contrary clearly appears from the context:

- (1) 'Capital costs' means costs spent for the purchase only of land for open space but not for development thereof.
- (2) 'Open space project' means the acquisition of any space or area which is predominantly undeveloped land whose existing openness, natural condition, or present state of use, if retained, would enhance the present or potential value of abutting or surrounding urban development.
- (3) 'Developer' means an individual, corporation, partnership, organization, association, firm, political subdivision, or other legal entity constructing or creating new construction.

- (4) 'Open space project fee' means the charge imposed upon new construction pursuant to the grant of regulatory authority contained herein.
- (5) 'New construction' means any new development, construction, or installation that results in real property improvement or which requires a building permit. This term shall include the installation of a mobile home and factory built and modular housing. This term shall not include fences, billboards, poles, pipelines, transmission lines, advertising signs, or similar structures and improvements, or renovations and repairs, which do not generate the need for additional or expanded open space projects upon completion of the new construction.

(b) Subject to the conditions hereinafter set forth, the Town of Zebulon, following the adoption of an ordinance or ordinances, may impose and collect a regulatory fee defined herein as an open space project fee on all new construction within its Town limits and extraterritorial jurisdiction.

(c) Requirements and limitations.

- (1) No open space project fee shall be enacted until the Town Council has caused to be prepared a report containing: (i) a description of the anticipated capital costs to the Town of each additional or expanded open space project; (ii) a description of the relevant characteristics of construction which give rise to additional or expanded open space projects; (iii) a plan for providing one or more open space projects.
- (2) Before adopting or amending any open space project fee ordinance authorized by this section, the Town Council shall hold a public hearing. A notice of the public hearing shall be given so as to conform with G.S. 160A-364, as it may be amended from time to time. No such ordinance shall be adopted or amended without receiving the planning commission's recommendation to the Town Council. If the planning commission shall fail to return a recommendation within 60 days of submittal of an ordinance, the ordinance shall be returned to the Town Council and deemed to have a favorable recommendation as submitted to the planning commission.
- (3) The amount of each fee imposed and collected hereunder shall be based upon reasonable and uniform considerations of capital costs to be incurred by the Town as a result of new construction and shall bear a reasonable relationship to such capital costs. Such fee shall be based upon reasonable classifications and rates which shall be uniformly applied to all members of a class; however, the fees may differ within zones which may be established depending on the special needs and costs of open space projects in such zones. To the extent that the developer acquires and dedicates open space for open space projects for which the use of the fee is designated, which immediately becomes the property of the Town, or another unit of government, and which is

not otherwise reimbursed by the Town, the fee shall be reduced by an amount equal to the value of the open space dedications.

- (4) All monies from fees collected hereunder shall be placed in a separate trust fund. Expenditures from such trust fund for any one open space project shall not exceed fifty percent (50%) of the capital costs of such individual project. No expenditures from such trust fund shall be made for any purpose other than an open space project undertaken by the Town, or by the Town in conjunction with other units of government. Open space project fees shall be spent for those community service facilities authorized by this Section 8.31 which the Town provides within six years after its collection and within 10 years for those community service facilities authorized by this Section 8.31 which the Town provides in conjunction with other units of government.

"Sec. 8.32. Recreation Project Fees.

(a) Definitions. The following words in this section are defined as follows, unless the contrary clearly appears from the context:

- (1) 'Capital costs' means costs spent for the purchase of land and development of such land for the recreational needs of the citizens.
- (2) 'Recreation project' means the acquisition of land and development of the same in those areas needed as a result of new construction and development in order to enhance the present and potential value of abutting or accessible property surrounding such urban development and provide a more wholesome place to live.
- (3) 'Developer' means an individual, corporation, partnership, organization, association, firm, political subdivision, or other legal entity constructing or creating new construction.
- (4) 'Recreation project fee' means the charge imposed upon new construction pursuant to the grant of regulatory authority contained herein.
- (5) 'New construction' means any new development, construction, or installation that results in real property improvement or which requires a building permit. This term shall include the installation of a mobile home and factory built and modular housing. This term shall not include fences, billboards, poles, pipelines, transmission lines, advertising signs, or similar structures and improvements, or renovations and repairs, which do not generate the need for additional or expanded recreational projects upon completion of the new construction.

(b) Subject to the conditions hereinafter set forth, the Town of Zebulon, following the adoption of an ordinance or ordinances, may impose and collect a regulatory fee defined herein as recreational project fee on all new construction within its Town limits and extraterritorial jurisdiction.

(c) Requirements and limitations.

- (1) No recreational project fee shall be enacted until the Town Council has caused to be prepared a report containing: (i) a description of the anticipated capital costs to the Town of each additional or expanded recreational project; (ii) a description of the relevant characteristics of construction which give rise to additional or expanded recreational projects; (iii) a plan for providing one or more recreational projects.
- (2) Before adopting or amending any recreational project fee ordinance authorized by this section, the Town Council shall hold a public hearing. A notice of the public hearing shall be given so as to conform with G.S. 160A-364, as it may be amended from time to time. No such ordinance shall be adopted or amended without receiving the planning commission's recommendation to the Town Council. If the planning commission shall fail to return a recommendation within 60 days of submittal of an ordinance, the ordinance shall be returned to the Town Council and deemed to have a favorable recommendation as submitted to the planning commission.
- (3) The amount of each fee imposed and collected hereunder shall be based upon reasonable and uniform considerations of capital costs to be incurred by the Town as a result of new construction and shall bear a reasonable relationship to such capital costs. Such fee shall be based upon reasonable classifications and rates which shall be uniformly applied to all members of a class; however, the fees may differ within zones which may be established depending on the special needs and costs of recreational projects in such zones. To the extent that the developer acquires and dedicates recreational land or recreational facilities for which the use of the fee is designated, which immediately become the property of the Town, or another unit of government, and which are not otherwise reimbursed by the Town, the fee shall be reduced by an amount equal to the value of the land and recreational facilities so dedicated.
- (4) All monies from fees collected hereunder shall be placed in a separate trust fund. Expenditures from such trust fund for any one recreational project shall not exceed fifty percent (50%) of the capital costs of such individual project. No expenditures from such trust fund shall be made for any purpose other than recreation projects undertaken by the Town, or by the Town in conjunction with other units of government. Recreation project fees shall be spent for those community service facilities authorized by this Section 8.32 which the Town provides within six years after its collection and within 10 years for those community service facilities authorized by this Section 8.32 which the Town provides in conjunction with other units of government.

"Sec. 8.33. **Implementing.**

(a) The Town is authorized to enact ordinances, regulations, and rules that are reasonable, necessary or expedient to carry into execution and effect the authority given by Sections 8.29 through 8.32 of this Charter.

(b) The powers conferred by Sections 8.29 through 8.32 of this Charter shall be in addition to all other powers and procedures authorized by any other general or local law. Assessments, charges, fees, or rates authorized by any other general or local law shall not be affected by the provisions of this section and Sections 8.29 through 8.32 of this Charter.

(c) The powers conferred by this section and Sections 8.29 through 8.32 of this Charter shall apply to the areas within the Zebulon Town Limits and the said Town's extraterritorial jurisdiction."

Sec. 2. (a) G.S. 160A-373 reads as rewritten:

"§ 160A-373. Ordinance to contain procedure for plat approval; approval prerequisite to plat recordation; statement by owner.

Any subdivision ordinance adopted pursuant to this Part shall contain provisions setting forth the procedures to be followed in granting or denying approval of a subdivision plat prior to its registration.

The ordinance may provide that final approval of each individual subdivision plat is to be given by

- (1) The city council,
- (2) The city council on recommendation of a planning agency, ~~or~~
- (2a) The city manager or those officials or employees to whom he may delegate such authority; or
- (3) A designated planning agency.

From and after the time that a subdivision ordinance is filed with the register of deeds of the county, no subdivision plat of land within the city's jurisdiction shall be filed or recorded until it shall have been submitted to and approved by the appropriate agency, as specified in the subdivision ordinance, and until this approval shall have been entered on the face of the plat in writing by the chairman or head of the agency. The register of deeds shall not file or record a plat of a subdivision of land located within the territorial jurisdiction of a city that has not been approved in accordance with these provisions, nor shall the clerk of superior court order or direct the recording of a plat if the recording would be in conflict with this section. The owner of land shown on a subdivision plat submitted for recording, or his authorized agent, shall sign a statement on the plat stating whether or not any land shown thereon is within the subdivision-regulation jurisdiction of any city."

(b) This section applies only to the Town of Zebulon.

Sec. 3. This act is effective upon ratification.

In the General Assembly read three times and ratified this the 11th day of July, 1989.

**GENERAL ASSEMBLY OF NORTH CAROLINA
SESSION 2015**

**SESSION LAW 2015-127
HOUSE BILL 307**

AN ACT AMENDING THE CHARTER OF THE TOWN OF ZEBULON TO REMOVE
RESTRICTIONS ON THE USE OF CERTAIN FEES COLLECTED BY THE TOWN.

The General Assembly of North Carolina enacts:

SECTION 1. Section 8.30 of the Charter of the Town of Zebulon, being Chapter 386 of the 1973 Session Laws, as amended by Chapter 606 of the 1989 Session Laws, and renumbered as Section 6.29 by Town Ordinance No. 2015-09 adopted pursuant to G.S. 160A-496, reads as rewritten:

"Sec. 6.29. Road or Drainage Projects Fees.

...

(c) Requirements and limitations.

- (3) The amount of each fee imposed and collected hereunder shall be based upon reasonable and uniform considerations of capital costs to be incurred by the Town as a result of new construction and shall bear a reasonable relationship to such capital costs. In addition, the fee shall be rationally related to and no greater than the amount roughly proportional to the impact reasonably expected to be generated by the new construction. Such fee shall be based upon reasonable classifications and rates which shall be uniformly applied to all members of a class; however, the fees may differ within zones which may be established depending on the special needs and costs of road and drainage projects in such zones. To the extent that the developer installs and dedicates road or public storm drainage improvements for which the use of the fee is designated, which immediately become the property of the Town or another unit of government, and which are not otherwise reimbursed by the Town, the fee shall be reduced by an amount equal to the value of the improvements or dedications.
- (4) All monies from fees collected hereunder shall be placed in a separate trust fund. ~~Expenditures from such trust fund for any one road or drainage project shall not exceed fifty percent (50%) of the capital costs of such individual project. No expenditures from such trust fund shall be made for any purpose other than a road or drainage project undertaken by the Town, or by the Town in conjunction with other units of government. All expenditures from the trust fund for any road or drainage project shall be in accordance with the general laws of the State of North Carolina. Road or drainage project fees shall be spent for those community service facilities authorized by this Section 8.30 which the Town provides within six years after its collection and within 10 years for those community service facilities authorized by this Section 8.30 which the Town provides in conjunction with other units of government.~~section within 10 years after its collection."

SECTION 2. Section 8.31 of the Charter of the Town of Zebulon, being Chapter 386 of the 1973 Session Laws, as amended by Chapter 606 of the 1989 Session Laws, and renumbered as Section 6.30 by Town Ordinance No. 2015-09 adopted pursuant to G.S. 160A-496, reads as rewritten:

"Sec. 6.30. Open Space Project Fees.

...

H307-v-3

- (c) Requirements and limitations ...
- (3) The amount of each fee imposed and collected hereunder shall be based upon reasonable and uniform considerations of capital costs to be incurred by the Town as a result of new construction and shall bear a reasonable relationship to such capital costs. In addition, the fee shall be rationally related to and no greater than the amount roughly proportional to the impact reasonably expected to be generated by the new construction. Such fee shall be based upon reasonable classifications and rates which shall be uniformly applied to all members of a class; however, the fees may differ within zones which may be established depending on the special needs and costs of open space projects in such zones. To the extent that the developer acquires and dedicates open space for open space projects for which the use of the fee is designated, which immediately becomes the property of the Town, or another unit of government, and which is not otherwise reimbursed by the Town, the fee shall be reduced by an amount equal to the value of the open space dedications.
- (4) All monies from fees collected hereunder shall be placed in a separate trust fund. ~~Expenditures from such trust fund for any one open space project shall not exceed fifty percent (50%) of the capital costs of such individual project.~~ No expenditures from such trust fund shall be made for any purpose other than an open space project undertaken by the Town, or by the Town in conjunction with other units of government. All expenditures from the trust fund for any open space project shall be in accordance with the general laws of the State of North Carolina. Open space project fees shall be spent for those community service facilities authorized by this Section 8.31 which the Town provides within six years after its collection and within 10 years for those community service facilities authorized by this Section 8.31 which the Town provides in conjunction with other units of government. section within 10 years after its collection."

SECTION 3. Section 8.32 of the Charter of the Town of Zebulon, being Chapter 386 of the 1973 Session Laws, as amended by Chapter 606 of the 1989 Session Laws, and renumbered as Section 6.31 by Town Ordinance No. 2015-09 adopted pursuant to G.S. 160A-496, reads as rewritten:

"Sec. 6.31. Recreation Project Fees.

(c) Requirements and limitations.

- (3) The amount of each fee imposed and collected hereunder shall be based upon reasonable and uniform considerations of capital costs to be incurred by the Town as a result of new construction and shall bear a reasonable relationship to such capital costs. In addition, the fee shall be rationally related to and no greater than the amount roughly proportional to the impact reasonably expected to be generated by the new construction. Such fee shall be based upon reasonable classifications and rates which shall be uniformly applied to all members of a class; however, the fees may differ within zones which may be established depending on the special needs and costs of recreational projects in such zones. To the extent that the developer acquires and dedicates recreational land or recreational facilities for which the use of the fee is designated, which immediately become the property of the Town, or another unit of government, and which are not otherwise reimbursed by the Town, the fee shall be reduced by an amount equal to the value of the land and recreational facilities so dedicated.
- (4) All monies from fees collected hereunder shall be placed in a separate trust fund. ~~Expenditures from such trust fund for any one recreational project shall not exceed fifty percent (50%) of the capital costs of such individual project.~~ No expenditures from such trust fund shall be made for any purpose other than recreation projects undertaken by the Town, or by the Town in conjunction with other units of government. All expenditures from the trust fund for any recreation project shall be in accordance with the general laws

~~of the State of North Carolina. Recreation project fees shall be spent for those community service facilities authorized by this Section 8.32 which the Town provides within six years after its collection and within 10 years for those community service facilities authorized by this Section 8.32 which the Town provides in conjunction with other units of government.~~
section within 10 years after its collection."

SECTION 4. This act is effective when it becomes law.

2015. In the General Assembly read three times and ratified this the 29th day of June,

s/ Daniel J. Forest
President of the Senate

s/ Tim Moore
Speaker of the House of Representatives

APPENDIX B – Transportation Data, Assumptions & Analysis Tables

Roadway Link Analysis

Mainline	From-To	General Street Characteristics						2021 Conditions		Growth Rates		2050 Conditions		
		Length	No. of Travel Lanes	NCDOT AADT (2021)	Posted Speed Limit	Center Left Turn Lanes	NCDOT LOS D Base Capacity	Volume to Capacity Ratio (2021)	Meets 2021 Capacity Threshold?	Growth Rate (CTP/2050 Model)	Adjusted Growth Rate	Adjusted 2050 Average Daily Traffic	Adj Volume to Capacity Ratio (2050)	Meets Capacity Threshold?
NC 97	Study Boundary (west) to Worth Hinton Road	1.05	2	7900	45	N	12700	0.62	Yes	0.0244	0.0244	15900	1.25	No
	Worth Hilton Road to US 64 Business	0.23	3	9900	35	Y	12900	0.77	Yes	0.0244	0.0244	19900	1.54	No
	US 64 Business to NC 96	0.61	3	14500	35	Y	12900	1.12	No	0.0166	0.0166	23400	1.81	No
	NC 96 to US 264	1.40	2	10500	35	N	12700	0.83	Yes	0.0159	0.0159	16600	1.31	No
	US 264 to Study Boundary (north)	1.52	2	4300	45	N	14600	0.29	Yes	0.0064	0.0150	6600	0.45	Yes
NC 96	Study Boundary (south) to SR 2347/Perry Curtis Road	1.25	2	3700	45	N	12700	0.29	Yes	0.0035	0.0150	5700	0.45	Yes
	SR 2347/Perry Curtis Road to Barbee Street	0.69	2	5200	45	N	12700	0.41	Yes	0.0035	0.0150	8000	0.63	Yes
	Barbee Street to Horton Street	0.18	2	6100	25	N	11000	0.55	Yes	0.0035	0.0150	9400	0.85	Yes
	Horton Street to NC 97	0.34	2	6700	25	N	11000	0.61	Yes	0.0035	0.0150	10300	0.94	Yes
	NC 97 to US 64	0.78	3/4	13000	35	Y	19000	0.68	Yes	0.0215	0.0215	24100	1.27	No
	US 64 to Pearces Road	0.35	5	23500	45	Y	27600	0.85	Yes	0.0215	0.0215	43600	1.58	No
	Pearces Road to SR 2320	0.42	3	12500	45	Y	13800	0.91	Yes	0.0215	0.0215	23200	1.68	No
	SR 2320 to Study Boundary (north)	2.03	2	10500	45	N	14600	0.72	Yes	0.0182	0.0182	17700	1.21	No
	NC 39	Study Boundary (south) to US 264	0.59	2	7100	35	N	11600	0.61	Yes	0.0188	0.0188	12200	1.05
US 264 to Study Boundary (north)		2.18	2	4400	45	N	12700	0.35	Yes	0.0188	0.0188	7600	0.60	Yes
SR 2320 Old Bunn Road/ Riley Hill Road	NC 39 to Parks Village Road	1.61	2	1400	55	N	14600	0.10	Yes	0.0744	0.0500	5800	0.40	Yes
	Parks Village Road to Sheppard School Road	1.02	2	5800	55	N	14600	0.40	Yes	0.0744	0.0500	23900	1.64	No
	Sheppard School Road to Pearces Road	0.53	2	3700	35	N	11600	0.32	Yes	0.0231	0.0231	7200	0.62	Yes
	Pearces Road to NC 96	0.36	2	2700	35	N	11600	0.23	Yes	0.0231	0.0231	5200	0.45	Yes
	NC 96 to Study Boundary (west)	1.82	2	1400	45	N	12700	0.11	Yes	0.0231	0.0231	2700	0.21	Yes
SR 2406 Sheppard School Road	Study Boundary (north) to Pippin Road	2.07	2	2400	45	N	14600	0.16	Yes	0.0122	0.0122	3400	0.23	Yes
	Pippin Road to Old Bunn Road	1.06	2	6000	45	N	14600	0.41	Yes	0.0175	0.0175	9900	0.68	Yes
	Old Bunn Road to Judd Street	0.47	2	5800	35	N	10700	0.54	Yes	0.0213	0.0213	10700	1.00	No
	Judd Street to NC 97	0.45	3	6800	35	Y	12300	0.55	Yes	0.0213	0.0213	12500	1.02	No
SR 1001 Pearces Road	Study Boundary (north) to Pippin Road	1.38	2	4200	45	N	12700	0.33	Yes	0.0161	0.0161	6700	0.53	Yes
	Pippin Road to Tippet Road	0.91	2	5400	45	N	12700	0.43	Yes	0.0111	0.0111	7400	0.58	Yes
	Tippet Road to NC 96	0.39	2	6800	35	N	11100	0.61	Yes	0.0111	0.0111	9400	0.85	Yes
US 64 Business Mack Todd Road	Study Boundary (south) to Barbee Street	0.82	2	6100	45	N	14600	0.42	Yes	0.0326	0.0326	15400	1.05	No
	Barbee Street to NC 97	0.94	2	4800	45	N	11600	0.41	Yes	0.0326	0.0326	12200	1.05	No
SR 2337 Debnam/Pippin Road	Study Boundary (east) to Sheppard School Road	1.79	2	1100	45	N	12700	0.09	Yes	0.0233	0.0233	2100	0.17	Yes
	Sheppard School Road to NC 96	2.29	2	1300	45	N	12700	0.10	Yes	0.0051	0.0150	2000	0.16	Yes
SR 2347 Perry Curtis Road	NC 96 to Study Boundary (south)	1.72	2	1400	55	N	15100	0.09	Yes	--	0.0500	5800	0.38	Yes
SR 2345 Horton Street	Study Boundary (south) to Naomi Street	0.41	2	600	25	N	11000	0.05	Yes	0.0233	0.0233	1200	0.11	Yes
	Naomi Street to NC 96	2.33	2	950	55	N	14600	0.07	Yes	0.0051	0.0150	1500	0.10	Yes
SR 2348 Barbee Street	US 64 Business to NC 96	1.46	2	1400	35	N	11100	0.07	Yes	0.0377	0.0377	4100	0.37	Yes
SR 2349 Morphus Bridge Road	NC 97 to Barbee Street	0.33	2	4000	35	N	11100	0.36	Yes	0.0153	0.0153	6200	0.56	Yes
	Barbee Street to Study Boundary (south)	2.47	2	2800	45	N	14600	0.19	Yes	0.0073	0.0150	4300	0.29	Yes
SR 2368 Green Pace Road	NC 96 to Study Boundary (west)	1.74	2	3000	55	N	14600	0.19	Yes	0.0366	0.0366	8500	0.58	Yes
SR 2331 Jack Mitchell Road	Riely Hill Road to Study Boundary (north)	2.00	2	850	55	N	14600	0.06	Yes	--	0.0500	3500	0.24	Yes

Recommended Current & Future Project Cost

Facility	Termini From-Termini To	Construction Descriptions and Cost							
		Improvement Description	Professional Services Cost	Right-of-Way Cost	Construction Cost	Contingency	2023 Total Project Cost	Construction Year	Future Total Project Cost
NC 97 Gannon Avenue	Study Boundary (west) to Worth Hinton Road	Widen to 4 or 5 lanes	\$2,520,000	\$665,280	\$6,300,000	\$1,897,056	\$11,382,000	2041	\$19,958,406
	Worth Hilton Road to US 64 Business	Widen to 4 or 5 lanes	\$506,000	\$145,728	\$1,265,000	\$383,346	\$2,300,000	2032	\$3,091,008
	NC 96 to US 264	Widen to 4 or 5 lanes	\$3,360,000	\$887,040	\$8,400,000	\$2,529,408	\$15,176,000	2034	\$21,637,347
NC 96/Arendell Avenue	NC 97 to US 64	4-Lane Boulevard	\$2,059,200	\$494,208	\$5,148,000	\$1,540,282	\$9,242,000	2039	\$15,275,618
	US 64 to Pearces Road	4-Lane Boulevard	\$924,000	\$221,760	\$2,310,000	\$691,152	\$4,147,000	2029	\$5,100,287
	Pearces Road to SR 2320	4-Lane Boulevard	\$1,108,800	\$266,112	\$2,772,000	\$829,382	\$4,976,000	2026	\$5,600,532
	SR 2320 to Study Boundary (north)	4-Lane Boulevard	\$5,359,200	\$1,286,208	\$13,398,000	\$4,008,682	\$24,052,000	2040	\$40,946,920
NC 39	Study Boundary (south) to US 264	Widen to 3-lanes	\$908,600	\$373,824	\$2,271,500	\$710,785	\$4,265,000	2048	\$9,197,862
SR 2320/Old Bunn Road/ Riley Hill Road	Parks Village Road to Sheppard School Road	Widen to 4 or 5 lanes	\$2,244,000	\$646,272	\$5,610,000	\$1,700,054	\$10,200,000	2040	\$17,364,817
SR 2406 Sheppard School Road	Old Bunn Road to Judd Street	Widen to 3-lanes	\$723,800	\$297,792	\$1,809,500	\$566,218	\$3,397,000	2050	\$7,772,090
	Judd Street to NC 97	Widen to 3-lanes	\$693,000	\$285,120	\$1,732,500	\$542,124	\$3,253,000	2049	\$7,225,853
US 64 Business Mack Todd Road	Study Boundary (south) to Barbee Street	Widen to 4 or 5 lanes	\$1,968,000	\$519,552	\$4,920,000	\$1,481,510	\$8,889,000	2049	\$19,745,038
	Barbee Street to NC 97	Widen to 4 or 5 lanes	\$2,256,000	\$595,584	\$5,640,000	\$1,698,317	\$10,190,000	2049	\$22,634,935
Pearces Road & Proctor Road Intersection		Add Turn Lanes and Traffic Signal	\$340,000	\$100,000	\$850,000	\$258,000	\$1,548,000	2037	\$2,411,734
TOTAL							\$113,017,000		\$197,962,446

Town of Zebulon

Development Impact Fee Report

Cost Per Trip Calculations

Average Daily Trip	Recommended Projects for Funding Cost	Through Trip Discount	Trip End Discount	Cost Per Trip
(2050)	(2050)	54.90%	50.00%	\$221.53
415,800	\$197,962,446			
(2021)	(2023)			
220,500	\$6,100,195			

Pearces Road & Proctor Street Synchro Report

Intersection	
Intersection Delay, s/veh	14.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	7	105	33	71	89	13	14	77	97	33	326	36
Future Vol, veh/h	7	105	33	71	89	13	14	77	97	33	326	36
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	117	37	79	99	14	16	86	108	37	362	40
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.2	12	11	17.6
HCM LOS	B	B	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	7%	5%	41%	8%
Vol Thru, %	41%	72%	51%	83%
Vol Right, %	52%	23%	8%	9%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	188	145	173	395
LT Vol	14	7	71	33
Through Vol	77	105	89	326
RT Vol	97	33	13	36
Lane Flow Rate	209	161	192	439
Geometry Grp	1	1	1	1
Degree of Util (X)	0.314	0.266	0.322	0.646
Departure Headway (Hd)	5.414	5.937	6.028	5.301
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	660	601	594	680
Service Time	3.485	4.012	4.099	3.357
HCM Lane V/C Ratio	0.317	0.268	0.323	0.646
HCM Control Delay	11	11.2	12	17.6
HCM Lane LOS	B	B	B	C
HCM 95th-tile Q	1.3	1.1	1.4	4.7

Intersection	
Intersection Delay, s/veh	13.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	35	60	17	41	52	12	27	331	59	16	178	13
Future Vol, veh/h	35	60	17	41	52	12	27	331	59	16	178	13
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	39	67	19	46	58	13	30	368	66	18	198	14
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10.5	10.4	16.2	11
HCM LOS	B	B	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	31%	39%	8%
Vol Thru, %	79%	54%	50%	86%
Vol Right, %	14%	15%	11%	6%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	417	112	105	207
LT Vol	27	35	41	16
Through Vol	331	60	52	178
RT Vol	59	17	12	13
Lane Flow Rate	463	124	117	230
Geometry Grp	1	1	1	1
Degree of Util (X)	0.635	0.204	0.193	0.338
Departure Headway (Hd)	4.934	5.898	5.951	5.287
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	732	607	602	678
Service Time	2.965	3.947	4.002	3.326
HCM Lane V/C Ratio	0.633	0.204	0.194	0.339
HCM Control Delay	16.2	10.5	10.4	11
HCM Lane LOS	C	B	B	B
HCM 95th-tile Q	4.6	0.8	0.7	1.5

Intersection	
Intersection Delay, s/veh	75.7
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	157	49	106	133	19	21	115	145	49	487	54
Future Vol, veh/h	10	157	49	106	133	19	21	115	145	49	487	54
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	174	54	118	148	21	23	128	161	54	541	60
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	19.7	23.2	21.9	144.8
HCM LOS	C	C	C	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	7%	5%	41%	8%
Vol Thru, %	41%	73%	52%	83%
Vol Right, %	52%	23%	7%	9%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	281	216	258	590
LT Vol	21	10	106	49
Through Vol	115	157	133	487
RT Vol	145	49	19	54
Lane Flow Rate	312	240	287	656
Geometry Grp	1	1	1	1
Degree of Util (X)	0.612	0.509	0.606	1.237
Departure Headway (Hd)	7.6	8.337	8.28	6.792
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	478	434	439	538
Service Time	5.6	6.337	6.28	4.856
HCM Lane V/C Ratio	0.653	0.553	0.654	1.219
HCM Control Delay	21.9	19.7	23.2	144.8
HCM Lane LOS	C	C	C	F
HCM 95th-tile Q	4	2.8	3.9	25.2

Intersection	
Intersection Delay, s/veh	57.8
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	52	90	25	61	78	18	40	495	88	24	266	19
Future Vol, veh/h	52	90	25	61	78	18	40	495	88	24	266	19
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	58	100	28	68	87	20	44	550	98	27	296	21
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	15	14.8	99.1	19.4
HCM LOS	B	B	F	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	31%	39%	8%
Vol Thru, %	79%	54%	50%	86%
Vol Right, %	14%	15%	11%	6%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	623	167	157	309
LT Vol	40	52	61	24
Through Vol	495	90	78	266
RT Vol	88	25	18	19
Lane Flow Rate	692	186	174	343
Geometry Grp	1	1	1	1
Degree of Util (X)	1.126	0.37	0.351	0.605
Departure Headway (Hd)	5.858	7.616	7.696	6.669
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	616	475	471	546
Service Time	3.954	5.616	5.696	4.669
HCM Lane V/C Ratio	1.123	0.392	0.369	0.628
HCM Control Delay	99.1	15	14.8	19.4
HCM Lane LOS	F	B	B	C
HCM 95th-tile Q	21.4	1.7	1.6	4

Lanes, Volumes, Timings
1: Pearces Road & Proctor Street

Improved 2050 AM
Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	157	49	106	133	19	21	115	145	49	487	54
Future Volume (vph)	10	157	49	106	133	19	21	115	145	49	487	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	100		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.964			0.981			0.916			0.985	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1796	0	1770	1827	0	1770	1706	0	1770	1835	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	1796	0	1770	1827	0	1770	1706	0	1770	1835	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1278			1024			1185			4093	
Travel Time (s)		24.9			19.9			23.1			79.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	174	54	118	148	21	23	128	161	54	541	60
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	228	0	118	169	0	23	289	0	54	601	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	14.0	25.0		14.0	25.0		25.0	25.0		14.0	25.0	
Total Split (s)	14.0	25.0		16.0	27.0		25.0	65.0		14.0	54.0	
Total Split (%)	11.7%	20.8%		13.3%	22.5%		20.8%	54.2%		11.7%	45.0%	
Maximum Green (s)	7.0	18.0		9.0	20.0		18.0	58.0		7.0	47.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)	9.5	17.9		11.2	32.2		9.9	30.6		9.5	36.5	
Actuated g/C Ratio	0.11	0.21		0.13	0.37		0.11	0.35		0.11	0.42	
v/c Ratio	0.06	0.61		0.51	0.25		0.11	0.48		0.28	0.78	
Control Delay	45.0	43.0		50.2	26.8		43.9	24.8		46.9	30.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	45.0	43.0		50.2	26.8		43.9	24.8		46.9	30.3	
LOS	D	D		D	C		D	C		D	C	
Approach Delay		43.1			36.4			26.2			31.7	
Approach LOS		D			D			C			C	

Lanes, Volumes, Timings
 1: Pearces Road & Proctor Street

Improved 2050 AM
 Timing Plan: AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	5	99		55	50		11	129		25	244	
Queue Length 95th (ft)	26	#254		#164	176		41	198		79	490	
Internal Link Dist (ft)		1198			944			1105			4013	
Turn Bay Length (ft)	100			100			100			100		
Base Capacity (vph)	195	440		238	682		433	1248		195	1101	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.06	0.52		0.50	0.25		0.05	0.23		0.28	0.55	

Intersection Summary






















Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 86.3
 Natural Cycle: 100
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.78
 Intersection Signal Delay: 33.3
 Intersection LOS: C
 Intersection Capacity Utilization 68.5%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Pearces Road & Proctor Street



Lanes, Volumes, Timings
1: Pearces Road & Proctor Street

Improved 2050 PM
Timing Plan: PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	90	25	61	78	18	40	495	88	24	266	19
Future Volume (vph)	52	90	25	61	78	18	40	495	88	24	266	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	100		0	100		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.967			0.972			0.977			0.990	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1801	0	1770	1811	0	1770	1820	0	1770	1844	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	1801	0	1770	1811	0	1770	1820	0	1770	1844	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1278			1024			1185			4093	
Travel Time (s)		24.9			19.9			23.1			79.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	58	100	28	68	87	20	44	550	98	27	296	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	58	128	0	68	107	0	44	648	0	27	317	0
Turn Type	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	14.0	22.5		14.0	22.5		14.0	22.5		14.0	22.5	
Total Split (s)	14.0	23.0		15.0	24.0		14.0	68.0		14.0	68.0	
Total Split (%)	11.7%	19.2%		12.5%	20.0%		11.7%	56.7%		11.7%	56.7%	
Maximum Green (s)	7.0	16.0		8.0	17.0		7.0	61.0		7.0	61.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)	10.8	14.8		11.4	18.8		10.8	47.3		10.8	44.5	
Actuated g/C Ratio	0.13	0.18		0.14	0.23		0.13	0.59		0.13	0.55	
v/c Ratio	0.24	0.39		0.27	0.25		0.18	0.60		0.11	0.31	
Control Delay	46.5	41.6		45.9	37.1		45.9	20.6		45.8	17.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	46.5	41.6		45.9	37.1		45.9	20.6		45.8	17.3	
LOS	D	D		D	D		D	C		D	B	
Approach Delay		43.1			40.5			22.2			19.5	
Approach LOS		D			D			C			B	

Lanes, Volumes, Timings
 1: Pearces Road & Proctor Street

Improved 2050 PM
 Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	27	58		32	47		20	231		12	125	
Queue Length 95th (ft)	87	153		98	129		71	497		50	199	
Internal Link Dist (ft)		1198			944			1105			4013	
Turn Bay Length (ft)	100			100			100			100		
Base Capacity (vph)	239	486		265	552		239	1423		239	1442	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.24	0.26		0.26	0.19		0.18	0.46		0.11	0.22	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	80.3
Natural Cycle:	90
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.60
Intersection Signal Delay:	26.6
Intersection LOS:	C
Intersection Capacity Utilization	51.6%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 1: Pearces Road & Proctor Street

14 s	68 s	15 s	23 s
14 s	68 s	14 s	24 s

Pearces Road & Pippin Road Synchro Report

Intersection												
Int Delay, s/veh	5.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	44	32	36	29	28	12	58	19	69	231	4
Future Vol, veh/h	4	44	32	36	29	28	12	58	19	69	231	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	49	36	40	32	31	13	64	21	77	257	4

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	545	524	259	557	516	75	261	0	0	85	0	0
Stage 1	413	413	-	101	101	-	-	-	-	-	-	-
Stage 2	132	111	-	456	415	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	449	458	780	441	463	986	1303	-	-	1512	-	-
Stage 1	616	594	-	905	811	-	-	-	-	-	-	-
Stage 2	871	804	-	584	592	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	388	426	780	364	431	986	1303	-	-	1512	-	-
Mov Cap-2 Maneuver	388	426	-	364	431	-	-	-	-	-	-	-
Stage 1	609	558	-	895	802	-	-	-	-	-	-	-
Stage 2	801	795	-	478	556	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	13.4		14.6		1.1		1.7	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1303	-	-	517	478	1512	-
HCM Lane V/C Ratio	0.01	-	-	0.172	0.216	0.051	-
HCM Control Delay (s)	7.8	0	-	13.4	14.6	7.5	0
HCM Lane LOS	A	A	-	B	B	A	A
HCM 95th %tile Q(veh)	0	-	-	0.6	0.8	0.2	-

Intersection												
Int Delay, s/veh	4.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	14	35	13	29	37	47	15	238	53	25	113	4
Future Vol, veh/h	14	35	13	29	37	47	15	238	53	25	113	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	39	14	32	41	52	17	264	59	28	126	4

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	558	541	128	539	514	294	130	0	0	323	0	0
Stage 1	184	184	-	328	328	-	-	-	-	-	-	-
Stage 2	374	357	-	211	186	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	440	448	922	453	464	745	1455	-	-	1237	-	-
Stage 1	818	747	-	685	647	-	-	-	-	-	-	-
Stage 2	647	628	-	791	746	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	370	431	922	403	446	745	1455	-	-	1237	-	-
Mov Cap-2 Maneuver	370	431	-	403	446	-	-	-	-	-	-	-
Stage 1	807	729	-	675	638	-	-	-	-	-	-	-
Stage 2	555	619	-	719	728	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	14.1		14.2		0.4		1.4	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1455	-	-	466	518	1237	-
HCM Lane V/C Ratio	0.011	-	-	0.148	0.242	0.022	-
HCM Control Delay (s)	7.5	0	-	14.1	14.2	8	0
HCM Lane LOS	A	A	-	B	B	A	A
HCM 95th %tile Q(veh)	0	-	-	0.5	0.9	0.1	-

HCM 6th TWSC
2: Pearces Road & Pippin Road

No Build 2050 AM
Timing Plan: AM Peak

Intersection												
Int Delay, s/veh	8.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	66	48	54	43	42	18	87	28	103	345	6
Future Vol, veh/h	6	66	48	54	43	42	18	87	28	103	345	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	73	53	60	48	47	20	97	31	114	383	7

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	815	783	387	831	771	113	390	0	0	128	0	0
Stage 1	615	615	-	153	153	-	-	-	-	-	-	-
Stage 2	200	168	-	678	618	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	296	325	661	289	331	940	1169	-	-	1458	-	-
Stage 1	479	482	-	849	771	-	-	-	-	-	-	-
Stage 2	802	759	-	442	481	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	225	287	661	195	293	940	1169	-	-	1458	-	-
Mov Cap-2 Maneuver	225	287	-	195	293	-	-	-	-	-	-	-
Stage 1	470	434	-	834	757	-	-	-	-	-	-	-
Stage 2	701	745	-	304	433	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	20.5		29.5		1.1		1.7	
HCM LOS	C		D					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1169	-	-	364	297	1458	-
HCM Lane V/C Ratio	0.017	-	-	0.366	0.52	0.078	-
HCM Control Delay (s)	8.1	0	-	20.5	29.5	7.7	0
HCM Lane LOS	A	A	-	C	D	A	A
HCM 95th %tile Q(veh)	0.1	-	-	1.6	2.8	0.3	-

HCM 6th TWSC
2: Pearces Road & Pippin Road

No Build 2050 PM
Timing Plan: PM Peak

Intersection												
Int Delay, s/veh	7.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	21	52	19	43	55	70	22	356	79	37	169	6
Future Vol, veh/h	21	52	19	43	55	70	22	356	79	37	169	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	23	58	21	48	61	78	24	396	88	41	188	7

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	832	806	192	801	765	440	195	0	0	484	0	0
Stage 1	274	274	-	488	488	-	-	-	-	-	-	-
Stage 2	558	532	-	313	277	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	288	316	850	303	333	617	1378	-	-	1079	-	-
Stage 1	732	683	-	561	550	-	-	-	-	-	-	-
Stage 2	514	526	-	698	681	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	203	295	850	239	311	617	1378	-	-	1079	-	-
Mov Cap-2 Maneuver	203	295	-	239	311	-	-	-	-	-	-	-
Stage 1	714	654	-	548	537	-	-	-	-	-	-	-
Stage 2	389	513	-	594	652	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	22.6		25.6		0.4		1.5	
HCM LOS	C		D					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1378	-	-	305	357	1079	-
HCM Lane V/C Ratio	0.018	-	-	0.335	0.523	0.038	-
HCM Control Delay (s)	7.7	0	-	22.6	25.6	8.5	0
HCM Lane LOS	A	A	-	C	D	A	A
HCM 95th %tile Q(veh)	0.1	-	-	1.4	2.9	0.1	-

APPENDIX C – Max Impact Fee based on Most Recent ITE Trip Generation Manual

Maximum Allowable Impact Fee Schedule for Transportation

	Type of Land Use	ITE Code	Daily Trip Rate ^A	Pass By % _{B,C}	Cost Per Trip	Maximum Allowable Impact Fee
Residential						
	Single Family (per dwelling unit)	210	9.43	0%	\$221.53	\$2,089
	Single Family Attached (per dwelling unit)	215	7.2	0%	\$221.53	\$1,595
	Multifamily Housing (Low Rise) (per dwelling unit)	220	6.74	0%	\$221.53	\$1,493
	Multifamily Housing (Mid Rise) (per dwelling unit)	221	4.54	0%	\$221.53	\$1,006
	Mobile Home Park (per occupied dwelling unit)	240	7.12	0%	\$221.53	\$1,577
Hotel/Motel						
	Hotel (per room)	310	7.99	0%	\$221.53	\$1,770
	All Suites Hotel (per room)	311	4.4	0%	\$221.53	\$975
	Business Hotel (per room)	312	4.02	0%	\$221.53	\$891
	Motel (per room)	320	3.35	0%	\$221.53	\$742
Recreational						
	Golf Course (per hole)	430	30.38	0%	\$221.53	\$6,730
	Golf Driving Range (Tees/Driving Positions)	432	13.65	0%	\$221.53	\$3,024
	Movie Theatre	445	78.09	0%	\$221.53	\$17,299
	Soccer Complex (Fields)	488	71.33	0%	\$221.53	\$15,802
	Recreational Community Center (per 1,000 s.f.)	495	28.82	0%	\$221.53	\$6,384
Institutional						
	Elementary School (per student)	520	2.27	0%	\$221.53	\$503
	Middle/Junior High School (per student)	522	2.1	0%	\$221.53	\$465
	High School (per student)	530	4.11	0%	\$221.53	\$910
	Junior/Community College (per student)	540	1.15	0%	\$221.53	\$255
	University/College (per student)	550	1.56	0%	\$221.53	\$346
	Church (per 1,000 s.f.)	560	7.6	0%	\$221.53	\$1,684
	Daycare (per 1,000 s.f.)	565	47.62	0%	\$221.53	\$10,549
	Library (per 1,000 s.f.)	590	72.05	0%	\$221.53	\$15,961
Medical						
	Hospital (per bed)	610	22.32	0%	\$221.53	\$4,945
	Nursing Home (per bed)	620	3.06	0%	\$221.53	\$678
	Clinic (per 1,000 s.f.)	630	37.6	0%	\$221.53	\$8,330
	Animal Hospital/Veterinary Clinic (per 1,000 s.f.)	640	21.5	0%	\$221.53	
	Medical/Dental Office (per 1,000 s.f.)	720	36	0%	\$221.53	\$7,975
Office Space						
	General Office	710	10.84	0%	\$221.53	\$2,401
	Corporate Office	714	7.95	0%	\$221.53	\$1,761
	Single tenant Office	715	13.07	0%	\$221.53	\$2,895
	Office Park	750	11.07	0%	\$221.53	\$2,452
	Research & Development Center	760	11.08	0%	\$221.53	\$2,455
	Business Park	770	12.44	0%	\$221.53	\$2,756
Retail (per 1,000 s.f.)						
	Building Materials/Lumber Store	812	17.05	0%	\$221.53	\$3,777
	Free Standing Discount Superstore	813	50.52	21%	\$221.53	\$8,841
	Free Standing Discount Store	815	53.87	23%	\$221.53	\$9,189
	Hardware/Paint Store	816	8.07	26%	\$221.53	\$1,323
	Nursery/Garden Center	817	68.1	0%	\$221.53	\$15,086
	Shopping Center	820	37.01	34%	\$221.53	\$5,411
	Automobile Sales	841	27.06	0%	\$221.53	\$5,995
	Automobile Parts Sales	843	54.57	43%	\$221.53	\$6,891
	Tire Store	848	27.69	28%	\$221.53	\$4,417
	Supermarket	850	93.84	36%	\$221.53	\$13,305
	Discount Club	857	42.46	30%	\$221.53	\$6,584
	Farmers Market	858	174.9		\$221.53	\$38,746
	Sporting Goods Superstore	861	23.78	0%	\$221.53	\$5,268
	Home Improvement Superstore	862	30.74	0%	\$221.53	\$6,810
	Electronics Superstore	863	41.05	40%	\$221.53	\$5,456
	Pet Supply Superstore	866	3.55	0%	\$221.53	\$786
	Office Supply Superstore	867	2.77	0%	\$221.53	\$614
	Pharmacy/Drugstore w/o Drive Thru	880	90.08	53%	\$221.53	\$9,379
	Pharmacy/Drugstore w/ Drive Thru	881	108.4	49%	\$221.53	\$12,247
	Furniture Store	890	6.3	53%	\$221.53	\$656
Industrial						
	General Light Industrial (per 1,000 s.f.)	110	4.87	0%	\$221.53	\$1,079
	Industrial Park (per 1,000 s.f.)	130	3.37	0%	\$221.53	\$747
	Warehouse (per 1,000 s.f.)	150	1.71	0%	\$221.53	\$379
	Mini-Warehouse (per 1,000 s.f.)	151	1.45	0%	\$221.53	\$321
Services						
	Drive-In Bank (per 1,000 s.f.)	912	100.35	26%	\$221.53	\$16,451
	Quality Restaurant (per 1,000 s.f.)	931	83.84	44%	\$221.53	\$10,401
	High-Turnover Sit Down Restaurant (per 1,000 s.f.)	932	107.2	43%	\$221.53	\$13,536
	Fast Food w/ Drive-Thru Window (per 1,000 s.f.)	934	467.4	49%	\$221.53	\$52,807
	Gas Station w/ Convenience Store (per pump)	945	265.12	56%	\$221.53	\$25,842
Notes:						
A = Daily trip generation rates based on ITE's Trip Generation Manual, Eleven Edition						
B = Pass-by capture represents trips already on the road network that will make a trip to the site as they pass-by on the adjacent street.						
C = Pass-by percentage published in ITE's Trip Generation Handbook, Third Edition.						