



ROAD IMPACT FEE STUDY
for the
TOWN OF FARRAGUT, TENNESSEE

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INTRODUCTION AND SUMMARY

The Town of Farragut is committed to developing a complete roadway system in order to create a community that is a great place to live and work. One of the challenges facing the Town is how to fund road infrastructure required to serve new development without reducing the levels of service provided to existing residents. The Town does not levy a local property tax, and relies primarily on local sales tax and state revenue sharing for both operating and capital expenditures.

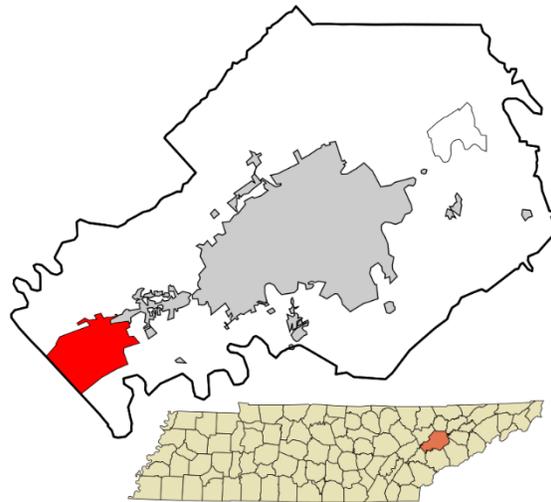
The purpose of this project is to assist the Town of Farragut in the preparation of a road impact fee program. Impact fees are one-time charges assessed on new development, typically at time of building permit, to cover the cost of infrastructure improvements attributable to growth. This study calculates the maximum impact fees that the Town could charge for road facilities. Two approaches were evaluated: zonal and town-wide. For reasons enumerated in this document, the Town-wide approach was determined to be the most practical. This study calculates road impact fees on a Town-wide basis.

Background

Farragut is a suburban community located in southwest Knox County, eight miles west of downtown Knoxville (see Figure 1). The Town is ideally located for commuting to Knoxville, Oak Ridge, Maryville and Alcoa. In addition to its convenient location, the community benefits from the recreational opportunities of the Tennessee River and nearby Smoky Mountains.

Farragut's municipal government operates with a mayor-aldermanic charter. The Board of Mayor and Aldermen, which consists of a mayor and four aldermen, serves as the governing body. All Tennessee municipalities incorporated under the Mayor-Aldermanic Charter are authorized by State law to enact impact fee ordinances.² The mayor-aldermanic statute provides the authority to assess fees for the use or impact upon facilities including roads, parks, general government facilities, libraries, public utilities, sewers and drains.

Figure 1. Town of Farragut Location Map¹

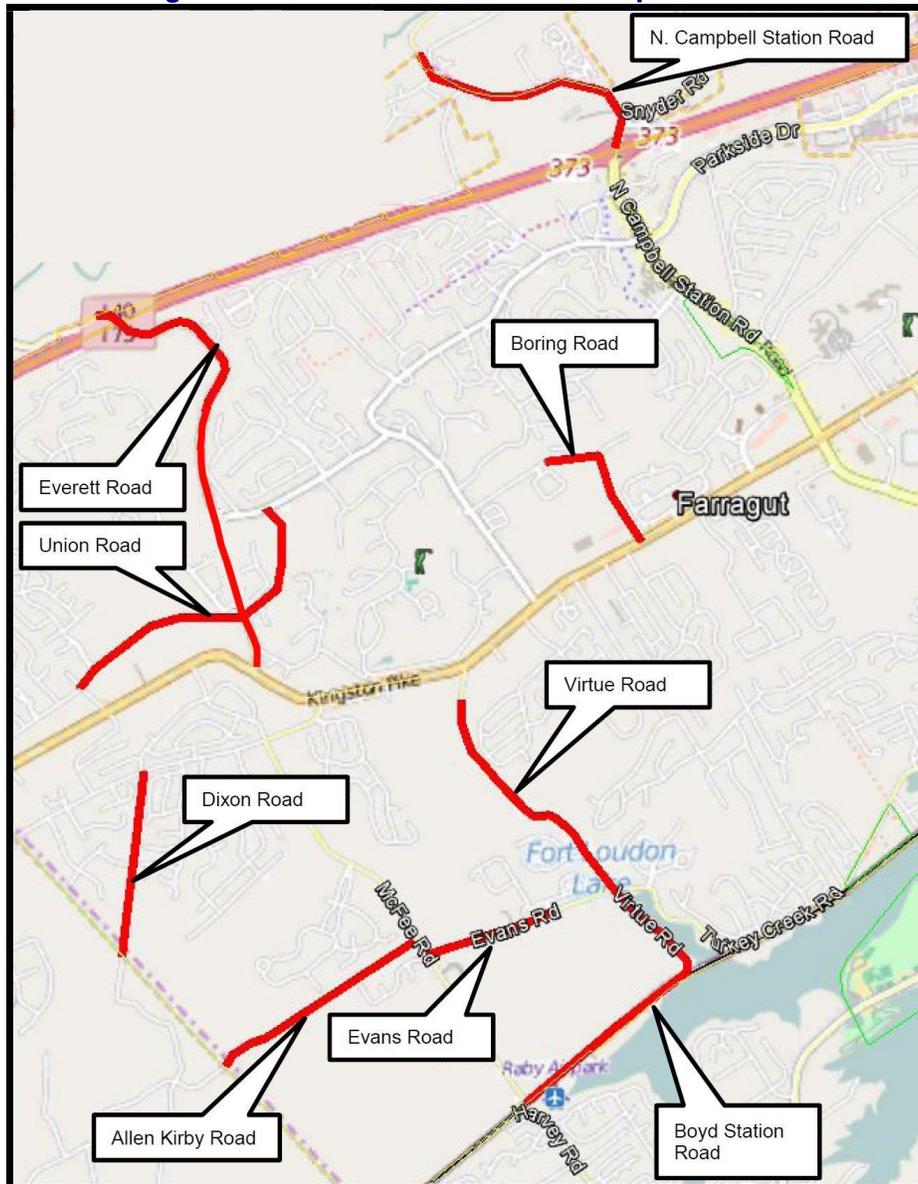


¹ "Knox County Tennessee incorporated and unincorporated areas Farragut highlighted" by Rcsprinter123 - Own work. Licensed under CC BY 3.0 via Commons - https://commons.wikimedia.org/wiki/File:Knox_County_Tennessee_incorporated_and_unincorporated_areas_Farragut_highlighted.svg#/media/File:Knox_County_Tennessee_incorporated_and_unincorporated_areas_Farragut_highlighted.svg

² Tennessee Code Annotated 6-2-201 (14) and (15)

The Town recently adopted an Everett Road Corridor Improvement Fee to provide funding for the planned improvement to Everett Road by assessing a fee on new development that will benefit from the corridor improvement. The Town now desires to develop a more comprehensive road impact fee, which could either be a uniform Town-wide fee applicable to all new development in the Town, or corridor-specific fees that would apply only to new development in selected corridors. The Town has identified a number of other collector roads, in addition to the portion of Everett Road covered by the current area-specific improvement fee, that are similarly in need of improvement in order to accommodate growth (see Figure 2).

Figure 2. Needed Collector Road Improvements



Project Approach

The purpose of a road impact fee is to fund the fair share cost of required improvements attributable to future growth. As development occurs, traffic generated by the occupants of new dwelling units and commercial square footage will place additional burdens on the Town's roads. The guiding principal is that new development should not burden existing residents with the cost of improvements required to accommodate growth.

The following best practices will be followed in developing the road impact fees:

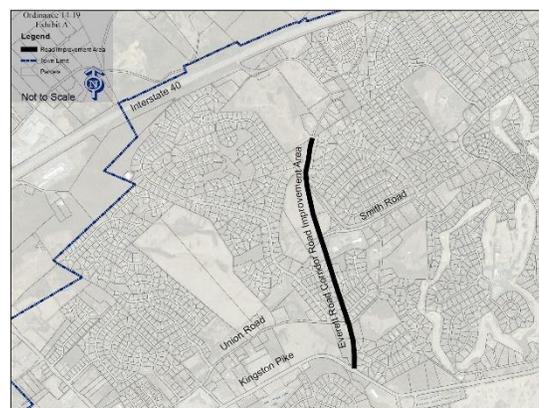
- The imposition of a fee must be rationally linked to the impact created by new development and the resulting need for growth-related capital improvements.
- A fee cannot be imposed to correct previously existing deficiencies, except to the extent they are exacerbated by new development.
- The improvements must benefit the developments that pay the fee.
- The amount of the fee must be a proportionate fair share of the costs of the improvements made necessary by new development and must not exceed the cost of the improvements.
- New developments should not pay more than their fair share when other types of taxes and fees are considered.

The two alternative approaches that were evaluated are described below.

Zonal Approach

This approach is modeled on the Town's existing Everett Road Corridor Improvement Fee. This fee was developed by dividing the cost of the needed improvement by the future trips (both existing and new) that would take access to the larger transportation system via the affected stretch of Everett Road (see Figure 3). The improvement cost, with sidewalks, was estimated to be \$1.815 million. Dividing this cost by the estimated 3,205 future trips resulted in a fee of \$566.30 per trip, or \$6,241 per unit at an assumed trip generation rate of 11.02 daily trips per unit.

Figure 3. Everett Road Corridor



The Everett Road Corridor Improvement Fee was based on a conservative cost estimate. The actual full cost of the Everett Road improvement, which provides 12'-wide lanes and a 6' sidewalk in 60 feet of right-of-way) is \$3,274,042, which is in line with the cost estimates prepared for the Town's other needed collector road improvements for this study. The Everett Road Corridor fee calculations used only 55% of the full actual cost of the road improvement. If the full actual cost of the improvement had been used, the fee would have been \$11,258 per unit.

Because the trips generated by existing development (about 26% of build-out trips) are not be subject to the fee, the \$6,241 per unit fee will only recover about 41% of the full cost of the improvement. The consultant's analysis of potential zones for other improvements, using a zonal approach similar to the Everett Road Corridor fee analysis, yielded similar results (full-cost fee in excess of \$10,000 per unit), although the fees would vary significantly from one zone to the next.

The most important consideration is the restriction on the expenditure of fee revenues that is required by the zonal approach. The Everett Road Corridor fee revenues can only be used to defray or reimburse the Town for the cost of the Everett Road improvement. This is not a problem in this case, because the improvement has been funded by the Town and is currently under construction. However, creating multiple other zonal fees would commit the Town to initiating all of these improvements within a reasonable amount of time, such as the next ten years. Impact fee case law suggests that impact fees collected must actually be spent within a reasonable amount of time in order to demonstrate that the development paying the fee receives reasonable benefit, or else they would need to be refunded. A Town-wide fee would allow the Town to pool the fees and spend them on selected improvements anywhere in the Town, avoiding the need for refunds.

Town-Wide Approach

The concept of the Everett Road Corridor fee analysis is that development taking direct access to the affected collector roadway should bear the full cost of the improvement. The alternative is to recognize that all development in the Town benefits from a more complete and functional collector road network. The collector road network provides alternative vehicular routes to the often-congested arterial network. Adding sidewalks and multi-use paths as part of the projects provides additional connectivity for alternative modes of travel. New development will benefit from these improvements, even if located in areas where a better collector road system already exists. Even though the Town may have already provided a more complete collector system in an area does not mean that new development in that area should be exempt from paying for its share of the remaining collector road improvements required to complete the system. In sum, these needed collector road improvements can reasonably be considered to provide a benefit to all new development in the Town.

Advantages of the Town-wide over the zonal approach are three-fold. First, it avoids restricting expenditures to small areas, which would be likely to lead to the need to refund fees in some areas. Second, it makes possible to significantly lower fees (\$4,013 per single-family unit, compared to the current \$6,241 fee in the Everett Road corridor, which would be \$11,258 if recalculated at actual cost) by spreading costs over more development. Finally, if adopted at full cost it would cover a much higher portion of actual costs (about 74%)³ than the Everett Road Corridor fee (41%). Given these advantages, the Town-wide approach is used in this study.

³ See Table 15

The potential road impact fees, based on a Town-wide analysis, are summarized in Table 1. Because of its dependence on sales tax revenue, the Town may be reluctant to assess full-cost road impact fees on new commercial development. However, the Town has the option to pay all or a portion of the fees for commercial development from other Town funds.

Table 1. Potential Road Impact Fees

Land Use	Unit Type	Fee/Unit
Single-Family Detached	Dwelling	\$4,013
Multi-Family	Dwelling	\$2,522
Commercial	1,000 sf	\$4,703
Industrial/Warehouse	1,000 sf	\$1,517
Mini-Warehouse	1,000 sf	\$1,065
Public/Institutional	1,000 sf	\$2,948

Source: Table 14.

If adopted at full cost for all land use types, these fees would generate approximately \$38.7 million of the total \$52.0 cost of the improvements, as shown in Table 2. The remaining \$13.3 million is not attributable to growth and would need to be funded with non-impact-fee revenue.

A partial or complete waiver of the fees for commercial development would increase the Town's responsibility. For example, a full waiver of road impact fees for all new commercial development would increase the Town's non-impact-fee financial responsibility to \$25.6 million. Under this scenario, the impact fees would generate about 51% of the revenue needed to fund the improvements.

Table 2. Summary of Road Costs and Revenues

	Full Cost Fees	Commercial Fee Waiver	
		50%	100%
Road Impact Fee Revenue	\$38,677,514	\$32,511,881	\$26,346,248
Additional Town Funds	\$13,287,948	\$19,453,581	\$25,619,214
Total Improvement Cost	\$51,965,462	\$51,965,462	\$51,965,462
Percent Impact Fee Revenue	74.4%	62.6%	50.7%
Percent Additional Town Funds	25.6%	37.4%	49.3%
Total Revenue	100.0%	100.0%	100.0%

Source: Table 15.

METHODOLOGY

Key components of the road impact fee methodology are briefly described in this chapter in order to provide an overview of the methodology used to calculate Farragut’s road impact fees. The key components of the methodology are service units, level of service, cost per service unit, net cost per service unit the proposed road impact fee schedule. Subsequent chapters address each of these components in greater detail.

Service Units

Impact fee analysis requires a common unit of demand, referred to as a “service unit.” Trip generation is the most commonly-used measure of demand generated by a development on the roadway system. Trip generation rates published by the Institute of Transportation Engineers (ITE) are used in most road impact fee studies. The ITE rates represent “trip ends.” Every trip has two trip ends – an origin and a destination. A trip from home to work and back home is counted as two trip ends for the home and two trip ends for the workplace, for a total of four trip ends. In order to avoid double-counting trips, the number of trip ends has been divided by two, so that the service unit is trips rather than trip ends. In addition, trips for retail/commercial uses are adjusted downward to account for the portion of trips that are pass-by trips that do not impose an additional burden on the road system. Finally, the two time periods most often used in traffic analysis are the 24-hour day (average daily trips or ADT) and the single hour of the day with the highest traffic volume (peak hour trips or PHT). This study uses ADT.

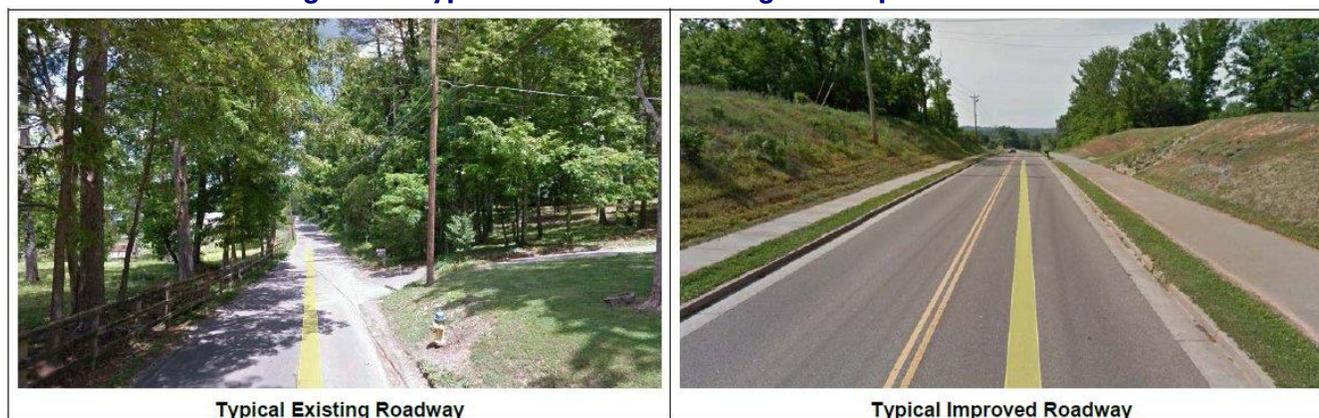
The service unit chapter determines the travel demand schedule (trips per dwelling unit or per 1,000 square feet of nonresidential development) as well as the total number of existing and build-out trips generated by development in the Town of Farragut.

Plan-Based Approach

The proposed fees are based on the cost of improvements needed to essentially complete the Town’s system of major collector roads. The improvements that have been identified by the Town are all major collector roadways that are substandard in terms of lane width and lack sidewalks and/or multi-use paths. The typical conditions of the existing and improved roadway segments and planned improvements are illustrated in Figure 4 on the following page.

There are basically two types of impact fee methodologies: “standards-based” and “plan-based.” A standards-based approach, sometimes referred to as “incremental expansion,” bases the fee on the current ratio of capacity to demand, and assumes that as demand increases with growth, capacity will need to be expanded proportionately. In contrast, a plan-based approach essentially divides the cost of planned improvements needed to expand capacity over a long-term planning horizon (or to build-out) by the new service units anticipated over that same planning horizon. Given that the Town is approaching build-out and is able to identify the improvements needed to complete its major collector roadways, a plan-based methodology is used in this analysis.

Figure 4. Typical Profiles of Existing and Improved Roads



Level of Service

“Level of service” is the basic concept in impact fee methodology. Impact fees should not charge new development for the cost to provide a level of service higher than what is currently provided for existing development. In the context of this study, the level of service of existing and planned major collector roads is evaluated on the basis of four parameters: lane width, presence of sidewalks and multi-use paths, and amount of right-of-way. The level of service analysis determines the portion of the cost of the planned improvements that does not exceed the existing level of service, and is therefore reasonable to attribute to new development.

Cost per Service Unit

The cost per service unit used in the fee calculations is derived by dividing the portion of the cost of the planned improvements that is attributable to new development based on the level of service analysis by the new trips that will be generated by the future build-out of the Town.

Net Cost per Service Unit

The net cost per service unit is the cost per service unit less any credits required to ensure that new development does not pay more than its fair share. The need for credits is evaluated in the Net Cost per Service Unit chapter.

Impact Fee Schedule

The net cost per service unit is multiplied by the service unit (trips) per development unit to determine the fee for various types of land uses.

SERVICE UNITS

This chapter defines the service unit for the road impact fee analysis, develops a service unit demand schedule for different land use types, and calculates existing and build-out service units for the Town.

Service Unit Definition

Impact fee analysis requires a common unit of demand, referred to as a “service unit.” Trip generation is the most commonly-used measure of demand generated by a development on the roadway system. Trip generation rates published by the Institute of Transportation Engineers (ITE) are used in most road impact fee studies. The service unit for this road impact fee study is average daily trips.

Service Unit Demand Schedule

The service unit demand schedule is based on trip generation data. The published ITE rates represent “trip ends.” Every trip has two trip ends – an origin and a destination. A trip from home to work and back home is counted as two trip ends for the home and two trip ends for the workplace, for a total of four trip ends. In order to avoid double-counting trips, the number of trip ends has been divided by two, so that the service unit is trips rather than trip ends.

Trip rates for commercial uses need to be adjusted by a “primary trip factor” to exclude pass-by and diverted trips. This adjustment is needed to avoid over-counting additional travel induced by the new development. Pass-by trips are those trips that are already on a particular route for a different purpose and simply stop at a development on that route. For example, a stop at a convenience store on the way home from the office is a pass-by trip for the convenience store. A pass-by trip does not create an additional burden on the street system and therefore should not be counted in the assessment of impact fees. A diverted-linked trip is similar to a pass-by trip, but a diversion is made from the regular route to make an interim stop. The reduction for pass-by and diverted trips utilized in this study was drawn from the ITE *Trip Generation Handbook*.

The final consideration is the length of the trip. A trip that is shorter than average has less impact on the road system than a longer trip. The following adjustment factors are based on national average trip lengths from the *National Household Travel Survey*.

Table 3. Trip Length Adjustment Factor

Land Use	ITE Code	Unit Type	Avg. Trip Length	Adjustment Factor
Single-Family Detached	210	Dwelling	9.16	0.99
Multi-Family	220	Dwelling	8.30	0.89
Retail/Commercial	820	1,000 sf	6.27	0.68
Office	710	1,000 sf	9.28	1.00
Industrial/Warehouse	150	1,000 sf	9.28	1.00
Mini-Warehouse	151	1,000 sf	9.28	1.00
Public/Institutional	620	1,000 sf	8.47	0.91

Source: Average trip lengths from U.S. Department of Transportation, *National Household Travel Survey*, 2009 (retail/commercial based on shopping, office and industrial/warehousing based on average, public/institutional based on school/church).

The result of combining trip generation rates, primary trip factors and adjustment factors is a demand schedule that establishes the average number of daily trips during a weekday generated by various land use types per unit of development. The recommended trip generation schedule is presented in Table 4.

Table 4. Trip Generation by Land Use

Land Use	ITE Code	Unit Type	Total Trip Ends	Total Trips/Unit	% Primary Trips	Trip Length Adjustment	Adjusted Trips/Unit
Single-Family Detached	210	Dwelling	9.52	4.76	100%	0.99	4.71
Multi-Family	220	Dwelling	6.65	3.33	100%	0.89	2.96
Retail/Commercial	820	1,000 sf	42.70	21.35	42%	0.68	6.10
Office	710	1,000 sf	11.03	5.52	100%	1.00	5.52
Industrial/Warehouse	150	1,000 sf	3.56	1.78	100%	1.00	1.78
Mini-Warehouse	151	1,000 sf	2.50	1.25	100%	1.00	1.25
Public/Institutional	620	1,000 sf	7.60	3.80	100%	0.91	3.46

Source: Total trip ends are average daily trip ends on a weekday from Institute of Transportation Engineers (ITE), *Trip Generation*, 9th ed., 2012; total trips/unit are 1/2 of total trip ends; percent primary trips from ITE, *Trip Generation Handbook*, June 2004; trip adjustment factor from Table 3; adjusted trips/unit is product of total trips/unit, % primary trips and adjustment factor.

Existing and Build-Out Development

The amount of existing residential development in the Town is estimated from census and building permit data in Table 5. The total 2010 housing unit count from the 2010 Census is applied to the percentage distribution from Census sample data to estimate 2010 units by housing type. The number of building permits issued over the last six years is added to estimate 2016 units by housing type.

Table 5. Existing Dwelling Units

Housing Type	Percent of Units	2010 Units	Bldg. Permits	2016 Units
Single-Family Detached	88.3%	7,048	488	7,536
Multi-Family	11.7%	934	3	937
Total	100.0%	7,982	491	8,473

Source: Percent of units from U.S. Census Bureau, American FactFinder, 2010-2014 American Community Survey 5-year 5% sample estimates; total 2010 units from 2010 U.S. Census, SF-1 100% counts; building permits for the 2010-2015 calendar years from U.S. Census Bureau; 2016 units is sum of 2010 units and building permits.

Existing nonresidential development in the Town is derived from tax records. Existing building square footage by land use type is summarized in Table 6.

Table 6. Existing Nonresidential Square Feet

Land Use	Bldg. Sq. Feet
Retail/Commercial	3,105,444
Office	893,624
Industrial/Warehouse	0
Mini-Warehouse	109,063
Public/Institutional	116,968
Total	4,225,099

Source: Knox County Property Assessor, January 25, 2016.

The consultant developed estimates of build-out growth in residential dwelling units and nonresidential building square footage based on analysis of vacant land and current development intensities. The amount and type of vacant land was determined using the Town’s GIS file of property parcels. The parcel file identified all vacant parcels, and whether the parcels were zoned for residential or commercial development. For this study, parcels were deemed to be vacant if the land use is recorded as “UNUSED”, or "101: 1-FAMILY" with a blank property description, or if the tax class is recorded as “A,” which is agricultural. The assumption is that at build-out there will be no more agricultural land, and all parcels will be fully occupied. All vacant land is allocated to either residential or commercial uses. Land is assumed to be residential, unless the Town’s zoning map shows the land to be zoned for commercial, office, or community services. The estimated build-out of residential and nonresidential vacant land remaining in the Town is summarized in Table 7.

Table 7. Existing and Build-Out Development

	Land Use Type (Unit)	
	Residential (Dwelling)	Nonresidential (1,000 sq. ft.)
Existing Units	8,473	4,225
÷ Developed Acres	4,353	627
Existing Units per Acre	1.95	6.74
x Vacant Acres	3,490	411
New Units	6,806	2,770
Existing Units	8,473	4,225
Build-Out Units	15,279	6,995

Source: Existing units from Table 5 and Table 6; developed and vacant acres from analysis of Town GIS parcel files by The Corradino Group.

Existing and Build-Out Service Units

Table 8 determines build-out (“future”) development by land use type from the information provided above, and multiplies by trip generation rates to determine the number of average daily trips generated by existing, new, and build-out development in the Town.

Table 8. Existing and Build-Out Trips

Land Use	Unit Type	Number of Units			Trips/Unit	Number of Trips		
		Existing	New	Future		Existing	New	Future
Single-Family Detached	Dwelling	7,536	5,955	13,491	4.71	35,495	28,048	63,543
Multi-Family	Dwelling	937	851	1,788	2.96	2,774	2,518	5,292
Subtotal, Residential		8,473	6,806	15,279		38,269	30,566	68,835
Retail/Commercial	1,000 sf	3,105	2,036	5,141	6.10	18,941	12,419	31,360
Office	1,000 sf	894	586	1,480	5.52	4,935	3,235	8,170
Industrial/Warehouse	1,000 sf	0	0	0	1.78	0	0	0
Mini-Warehouse	1,000 sf	109	71	180	1.25	136	89	225
Public/Institutional	1,000 sf	117	77	194	3.46	405	266	671
Subtotal, Nonresidential		4,225	2,770	6,995		24,417	16,009	40,426
Total						62,686	46,575	109,261

Source: Existing units from Table 5 and Table 6; total future (build-out) residential and nonresidential units from Table 7; future residential and nonresidential units by type based on distribution of existing units by type; new units is difference between existing and future units; trips per unit from Table 4; trips is product of units and trips per unit.

LEVEL OF SERVICE

“Level of service” is a basic concept in impact fee methodology. Impact fees should not charge new development for the cost to provide a level of service higher than what is currently provided for existing development.

This study calculates road impact fees to address the cost of needed improvements to the Town’s system of major collector roads. The rationale for a Town-wide fee is that all development in the Town benefits from having a more complete collector road system. The fact that some development will be occurring in areas with access to collector roads that the Town (or previous developers) provided does not mean that they should be exempt from paying for their impact on the collector road system. They benefit from those past improvements, and should be required to pay their fair share so that adequate funding is available to complete the collector road system. In this context, an appropriate level of service analysis is to compare the existing condition of major collector roads to the planned future condition, in order to ensure that new development is not held to a higher standard of improvement than existing development.

Collector Road Standards

The Town of Farragut’s Roadway Standards for new collectors require a minimum lane width of 12 feet and 60 feet of right-of-way (ROW). The Town of Farragut’s Roadway Standards and Pedestrian and Bicycle Plan call for 5-foot sidewalks and/or an 8-foot multi-use path adjacent to the collector roadway, and a 6-foot wide grassy strip.

Lane width is a key indicator of roadway adequacy. Geometric features, such as roadside design and/or sharp horizontal or vertical curves are also important, but are considerably more difficult to quantify on a town-wide planning-level basis than lane widths.

The Town of Farragut’s Roadway Standards call for a minimum right-of-way width of 60 feet for major collector roadways. If sidewalks and multi-use paths are not provided, this minimum right-of-way width should still be provided as part of any roadway improvement. It should not be reduced due to the absence of a sidewalk or path. Adequate right-of-way widths provide locations for utilities; improve sight distances, especially in curves; and perhaps most importantly, allow for the development of a safe roadside environment. The safe roadside environment includes a “clear zone” directly adjacent to the roadway where dangerous obstructions can be removed from the path of errant vehicles.

Level of Service Parameters

This analysis uses four measures of the level of service provided by the existing and planned collector road system: miles with 12-foot lane widths, miles with sidewalk, miles with multi-use path, and square feet of right-of-way. These characteristics are summarized in Table 9 below.

Table 9. Existing and Planned Collector Roads

Road Name	Segment Description	Mi. by Lane Width			Mi. w/Sdwlk		Mi. w/Path		ROW (ft.)	Sq. Feet of ROW	
		12'+	<12'	Total	Exist	New	Exist	New		Existing	New
Allen Kirby	Co. Line to McFee	0.00	0.95	0.95	0.00	0.95	0.00	0.95	55	275,880	25,080
Boring Road	Unimproved to Kingston Pike	0.00	0.62	0.62	0.00	0.62	0.00	0.62	40	130,944	65,472
Boyd Station Rd	McFee Rd. to Virtue Rd.	0.00	0.87	0.87	0.00	0.87	0.00	0.87	55	252,648	22,968
Dixon Road	Co. Line to Old Stage Rd.	0.00	0.77	0.77	0.00	0.77	0.00	0.77	55	223,608	20,328
Evans Road	McFee To Cottage Stone Blvd.	0.00	0.55	0.55	0.00	0.55	0.15	0.40	40	116,160	58,080
Everett Road	Kingston Pike to Split Rail Ln.	0.00	0.94	0.94	0.00	0.94	0.00	0.00	50	248,160	49,632
Everett Road	Split Rail Ln. to Town Limit	0.00	0.86	0.86	0.00	0.86	0.00	0.86	40	181,632	90,816
N. Campbell Sta.	I-40/75 to Town Limit	0.00	1.12	1.12	0.00	1.12	0.00	1.12	55	325,248	29,568
Union Road	N. Hobbs to Saddleridge	0.00	0.09	0.09	0.09	0.00	0.00	0.09	40	19,008	9,504
Union Road	Saddle Ridge Dr to Everett Rd	0.00	0.71	0.71	0.00	0.71	0.00	0.71	40	149,952	74,976
Union Road	Everett Rd. to Smith Rd.	0.00	0.54	0.54	0.00	0.54	0.00	0.54	50	142,560	28,512
Virtue Road	Unimproved to Boyd Station	0.00	1.55	1.55	0.42	1.13	0.00	1.55	45	368,280	122,760
Subtotal, Collector Road Segments to be Improved		0.00	9.57	9.57	0.51	9.06	0.15	8.48		2,434,080	597,696
Admiral Road	Kingston Pike to 0.15 mi. E	0.00	0.15	0.15	0.00	0.00	0.00	0.00	75	59,400	0
Admiral Road	0.15 mi. E Kingston Pk-Sonja	0.00	0.56	0.56	0.00	0.00	0.00	0.00	40	118,272	0
Boring Road	Smith Road to Unimproved	0.38	0.00	0.38	0.38	0.00	0.00	0.00	65	130,416	0
Boyd Station Rd	RR Trestle to McFee Rd.	0.00	0.06	0.06	0.00	0.00	0.00	0.00	40	12,672	0
Evans Road	Cottage Stone to Virtue Rd.	0.28	0.00	0.28	0.00	0.00	0.28	0.00	50	73,920	0
Grigsby Chapel Rd	Smith Rd. to Fretz Rd.	1.12	0.00	1.12	1.12	0.00	0.82	0.00	60	354,816	0
Jamestowne Blvd	N. Campbell Sta.-Kingston Pk	0.45	0.00	0.45	0.28	0.00	0.00	0.00	60	142,560	0
Kingsgate Rd.	Peterson to Midhurst	0.23	0.00	0.23	0.00	0.00	0.00	0.00	50	60,720	0
Loudon Road	Kingston Pike to None	0.00	0.14	0.14	0.00	0.00	0.00	0.00	50	36,960	0
Midhurst Drive	Kingsgate to Redmill	0.91	0.00	0.91	0.00	0.00	0.00	0.00	50	240,240	0
Old Stage Road	Loudon Co. Line to S. Watt Rd.	0.00	0.15	0.15	0.15	0.00	0.15	0.00	60	47,520	0
Old Stage Road	S. Watt Rd. to S. Hobbs Rd.	0.00	0.24	0.24	0.24	0.00	0.24	0.00	60	76,032	0
Old Stage Road	S. Hobbs to Dixon	0.00	0.22	0.22	0.22	0.00	0.22	0.00	50	58,080	0
Old Stage Road	Dixon to McFee	0.00	0.53	0.53	0.53	0.00	0.27	0.00	60	167,904	0
Old Stage Road	McFee to Kingston Pike	0.33	0.00	0.33	0.33	0.00	0.33	0.00	60	104,544	0
Peterson Road	Kingston Pike to Kingsgate	0.71	0.00	0.71	0.00	0.00	0.00	0.00	50	187,440	0
Red Mill Lane	Midhurst to Turkey Creek	0.00	0.50	0.50	0.00	0.00	0.00	0.00	50	132,000	0
N. Hobbs	Union Rd to Kingston Pike	0.00	0.15	0.15	0.15	0.00	0.09	0.00	60	47,520	0
S. Hobbs	Kingston Pike to Old Stage	0.46	0.00	0.46	0.00	0.00	0.18	0.00	50	121,440	0
Smith Road	Everett To Grigsby Chapel	0.82	0.00	0.82	0.31	0.00	0.00	0.00	50	216,480	0
Smith Road	Grigsby Chapel-Kingston Pike	0.97	0.00	0.97	0.97	0.00	0.00	0.00	50	256,080	0
Sonja Drive	N Campbell Sta-Woodland Tr	0.03	0.00	0.03	0.03	0.00	0.00	0.00	80	12,672	0
Sonja Drive	Woodland Trace Dr to Admiral	0.00	0.68	0.68	0.68	0.00	0.00	0.00	40	143,616	0
Turkey Creek Rd	Virtue to Concord	2.60	0.00	2.60	0.00	0.00	2.60	0.00	60	823,680	0
Virtue Road	Kingston Pike to Unimproved	0.13	0.00	0.13	0.13	0.00	0.13	0.00	60	41,184	0
West End Ave	End to Kingston Pike	0.24	0.00	0.24	0.24	0.00	0.24	0.00	60	76,032	0
Subtotal, Other Existing Collector Roads		9.66	3.38	13.04	5.76	0.00	5.55	0.00		3,742,200	0
All Collector Roads		9.66	12.95	22.61	6.27	9.06	5.70	8.48		6,176,280	597,696

Source: Data for collectors to be improved from The Corradino Group (see Appendix); data for the current Everett Road improvement and other collector roads from Town of Farragut, February 5, 2016 or derived from aerial photography by Duncan Associates.

Level of Service Analysis

Each of the four parameters described above are divided by the number of daily trips generated by development in Farragut as a measure of the level of service. The existing level of service is based on the characteristics of existing collector roads and the number of average daily trips generated by existing development. The level of service being required of new development is based on the characteristics of planned collector road improvements and the number of new trips that will be generated by future development of the Town to build-out. To the extent that the planned improvements represent a higher standard than currently exists, only a portion of the cost of the improvements should be attributed to growth.

The growth percent is calculated as the ratio of the existing level of service to the new level of service. Adjusting the costs by this ratio ensures that new development is attributed only the percentage of the costs of planned improvements that reflect the level of service that has been provided for existing development. As shown in Table 10, about three-quarters of the planned road construction costs, about half of the costs of sidewalks and multi-use paths, and all of the right-of-way costs of the planned projects are attributable to growth.

Table 10. Collector Road Level of Service Analysis

	Existing	New	Growth Percent
Miles with 12' Lanes	9.66	9.57	
÷ Trips	62,686	46,575	
Miles with 12' Lanes per Trip	0.000154	0.000205	75.0%
Miles with Sidewalks	6.27	9.06	
÷ Trips	62,686	46,575	
Miles with Sidewalks per Trip	0.000100	0.000195	51.4%
Miles with Multi-Use Path	5.70	8.48	
÷ Trips	62,686	46,575	
Miles with Multi-Use Path per Trip	0.000091	0.000182	49.9%
Square Feet of ROW	6,176,280	597,696	
÷ Trips	62,686	46,575	
Square Feet of ROW per Trip	98.5	12.8	>100%

Source: Miles and square feet of ROW from Table 9; trips from Table 8.

COST PER SERVICE UNIT

This chapter calculates the cost per service unit that is attributable to new development in the Town. Planned road improvement project cost estimates were prepared by the Corradino Group (see Appendix). The total cost of the planned improvements is about \$52 million, as summarized in Table 11.

Table 11. Road Improvement Costs

Road	Miles	Construction/Engineering Cost			ROW Cost	Total Cost
		Pavement	Sidewalk	Path		
Dixon Rd	0.77	\$2,707,450	\$115,500	\$192,500	\$294,000	\$3,309,450
Everett Rd (current)	0.94	\$2,688,728	\$125,000	\$0	\$460,314	\$3,274,042
Everett Rd (proposed)	0.86	\$3,010,520	\$129,000	\$215,000	\$656,730	\$4,011,250
Union Rd	1.34	\$4,799,700	\$201,000	\$335,000	\$1,023,270	\$6,358,970
Boring Rd	0.62	\$2,296,020	\$93,000	\$155,000	\$118,360	\$2,662,380
Allen-Kirby Rd	0.95	\$3,494,080	\$142,500	\$237,500	\$362,730	\$4,236,810
Evans Rd	0.55	\$2,001,270	\$82,500	\$137,500	\$420,000	\$2,641,270
Virtue Rd	1.55	\$13,791,630	\$232,500	\$387,500	\$1,893,820	\$16,305,450
Boyd Station Rd	0.87	\$3,302,710	\$130,500	\$217,500	\$31,110	\$3,681,820
N Campbell Sta. Rd	1.12	\$3,966,930	\$168,000	\$280,000	\$1,069,090	\$5,484,020
Total Cost	9.57	\$42,059,038	\$1,419,500	\$2,157,500	\$6,329,424	\$51,965,462

Source: The Corradino Group, November 9, 2015 from Appendix (costs for current Everett Road project from Town Engineer, March 4, 2016 – share of cost for sidewalk estimated).

The portion of the planned improvement costs attributable to growth is determined by multiplying the growth-attributable percentage for each of the four parameters by the planned cost of those components. As shown in Table 12, 76% of planned collector improvement cost, or about \$40 million, is attributable to future growth in Farragut.

Table 12. Planned Collector Road Costs Attributable to Growth

	Pavement	Sidewalk	Path	ROW	Total
Planned Collector Road Improvement Cost	\$42,059,038	\$1,419,500	\$2,157,500	\$6,329,424	\$51,965,462
x Percent of Cost Attributable to Growth	75.0%	51.4%	49.9%	100.0%	76.4%
Growth-Related Cost	\$31,544,279	\$729,623	\$1,076,593	\$6,329,424	\$39,679,919

Source: Costs from Table 11; growth percentages from Table 10.

Dividing the growth-related cost by future trips to be generated by new development in Farragut yields the cost per service unit of \$852 per average daily trip generated by new development, as shown in Table 13.

Table 13. Cost per Service Unit

Cost Attributable to Future Growth	\$39,679,919
÷ New Trips Generated by Future Growth	46,575
Cost per Trip	\$852

Source: Attributable cost from Table 12; new trips from Table 8.

NET COST PER SERVICE UNIT

As noted in the Project Approach, impact fees should not result in new development paying twice for the same type of facilities, once through impact fees and again through future taxes and fees. In impact fee analysis, this is avoided by deducting credits for the present value of such future payment by new development from the cost per service unit. The result is the net cost per service unit. This section evaluates the need for revenue credits, and determines that none are warranted.

One of the most fundamental principles of impact fees, rooted in both case law and norms of equity, is that impact fees should not charge new development for a higher level of service than is provided to existing development. While impact fees can be based on a higher level of service than the one existing at the time of the adoption of the fees, two things are required if this is done. First, another source of funding other than impact fees must be identified and committed to fund the capacity deficiency created by the higher level of service. Second, the impact fees must generally be reduced to ensure that new development does not pay twice for the same level of service, once through impact fees and again through general taxes that are used to remedy the capacity deficiency for existing development. In order to avoid these complications, the general practice is to base the impact fees on the existing level of service.

A corollary principle is that new development should not have to pay more than its proportionate share when multiple sources of payment are considered. As noted above, if impact fees are based on a higher-than-existing level of service, the fees should be reduced by a credit that accounts for the contribution of new development toward remedying the existing deficiencies. A similar situation arises when the existing level of service has not been fully paid for. Outstanding debt on existing facilities that are counted in the existing level of service will be retired, in part, by revenues generated from new development. Given that new development will pay impact fees to provide the existing level of service for itself, the fact that new development may also be paying for the facilities that provide that level of service for existing development could amount to paying for more than its proportionate share. Consequently, impact fees should be reduced to account for future payments that will retire outstanding debt on existing facilities. Credit should also be provided for future outside funding or dedicated local funding that will be available to fund the same improvements.

In summary, revenue credits against the fees are warranted under three situations: (1) there are existing deficiencies, (2) there is outstanding debt on facilities serving existing development, or (3) there are dedicated local revenues or outside funding for the same improvements. Deficiencies are an issue when the fees are based on a level of service that exceeds the existing level of service provided to existing development. This study has determined that some of the planned improvement costs do exceed the existing level of service, and has removed those costs from the fee calculations, thus addressing the deficiency issue. The Town has no outstanding debt on existing road facilities, does not have a dedicated local source of funding for road improvements, and does not anticipate receiving State funding for these improvements. Consequently, no revenue credits are warranted.

POTENTIAL FEE SCHEDULE

The maximum fee per unit of development is the product of daily trips generated by a unit of development and the cost per trip. The potential fee schedule is presented in Table 14. Retail/commercial and office uses are proposed to be combined into a single fee category, because these uses are often mixed together in a single development. Rather than an average rate, which would overcharge office uses, the fee for the proposed commercial category is based on the somewhat lower fee for office.

Table 14. Potential Road Impact Fee Schedule

Land Use	Unit Type	Trips/ Unit	Cost/ Trip	Fee/ Unit
Single-Family Detached	Dwelling	4.71	\$852	\$4,013
Multi-Family	Dwelling	2.96	\$852	\$2,522
Commercial	1,000 sf	5.52	\$852	\$4,703
Industrial/Warehouse	1,000 sf	1.78	\$852	\$1,517
Mini-Warehouse	1,000 sf	1.25	\$852	\$1,065
Public/Institutional	1,000 sf	3.46	\$852	\$2,948

Source: Trips per unit from Table 4 (commercial based on office rate); cost per trip from Table 13.

Because of its dependence on sales tax revenue, the Town may be reluctant to assess full-cost road impact fees on new commercial development. However, the Town has the option to pay all or a portion of the fees for commercial development from other Town funds. Some non-impact-fee revenue will be required to complete the improvements. The Town can track its expenditure of non-impact-fee funds on the planned improvements as its reimbursement of the impact fee fund for the waived or reduced commercial fee revenue.

Potential road impact fee revenue should be sufficient to cover approximately three-quarters of the cost of the planned improvements, as shown in Table 15. The Town would need to fund the remaining costs (about \$13.3 million) through non-impact fee revenue. If the Town opts for a complete waiver of commercial fees, the Town's financial responsibility would be about \$25.6 million.

Table 15. Potential Road Impact Fee Revenue

Land Use	Unit Type	New Units	Fee/ Unit	Potential Revenue
Single-Family Detached	Dwelling	5,955	\$4,013	\$23,897,415
Multi-Family	Dwelling	851	\$2,522	\$2,146,222
Commercial	1,000 sf	2,622	\$4,703	\$12,331,266
Industrial/Warehouse	1,000 sf	0	\$1,517	\$0
Mini-Warehouse	1,000 sf	71	\$1,065	\$75,615
Public/Institutional	1,000 sf	77	\$2,948	\$226,996
Total Potential Impact Fee Revenue				\$38,677,514
÷ Total Planned Improvement Cost				\$51,965,462
Percent of Total Cost Potentially Paid by Impact Fees				74.4%

Source: New units from Table 8; fee per unit from Table 14; total cost from Table 11.

APPENDIX: IMPROVEMENT COST ESTIMATES

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PROJECT COST ESTIMATES

Town of Farragut Impact Fee Study and Program

Abstract

Nine roads are under consideration for improvement under the Town of Farragut's proposed Impact Fee Program. The estimated costs to improve the routes to meet current Town of Farragut Standards and Policies is \$48.7 million.



278 Franklin Road
Building IV, Suite 238
Brentwood, TN 37027

February 26, 2016

Town of Farragut Impact Fee Study and Program Project Cost Estimates

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1.0 ROADS UNDER STUDY

Nine roads are under consideration for improvement under the Town of Farragut's proposed Impact Fee Program. The roads include Dixon Road, Everett Road, Union Road, Boring Road, Allen Kirby Road, Evans Road, Virtue Road, Boyd Station Road, and North Campbell Station Road. The total length of improvement equals 8.63 miles. A listing and map of each route is provided on the following page. Additional information concerning each route, including an aerial map, topographical map, profile view, and street view is provided on following pages. Sources used to develop the improvement recommendations, the cost calculation methodology, and cost calculations are provided in following sections.

The estimated cost to improve the routes to meet current Town of Farragut Standards and Policies is \$48.7 million.

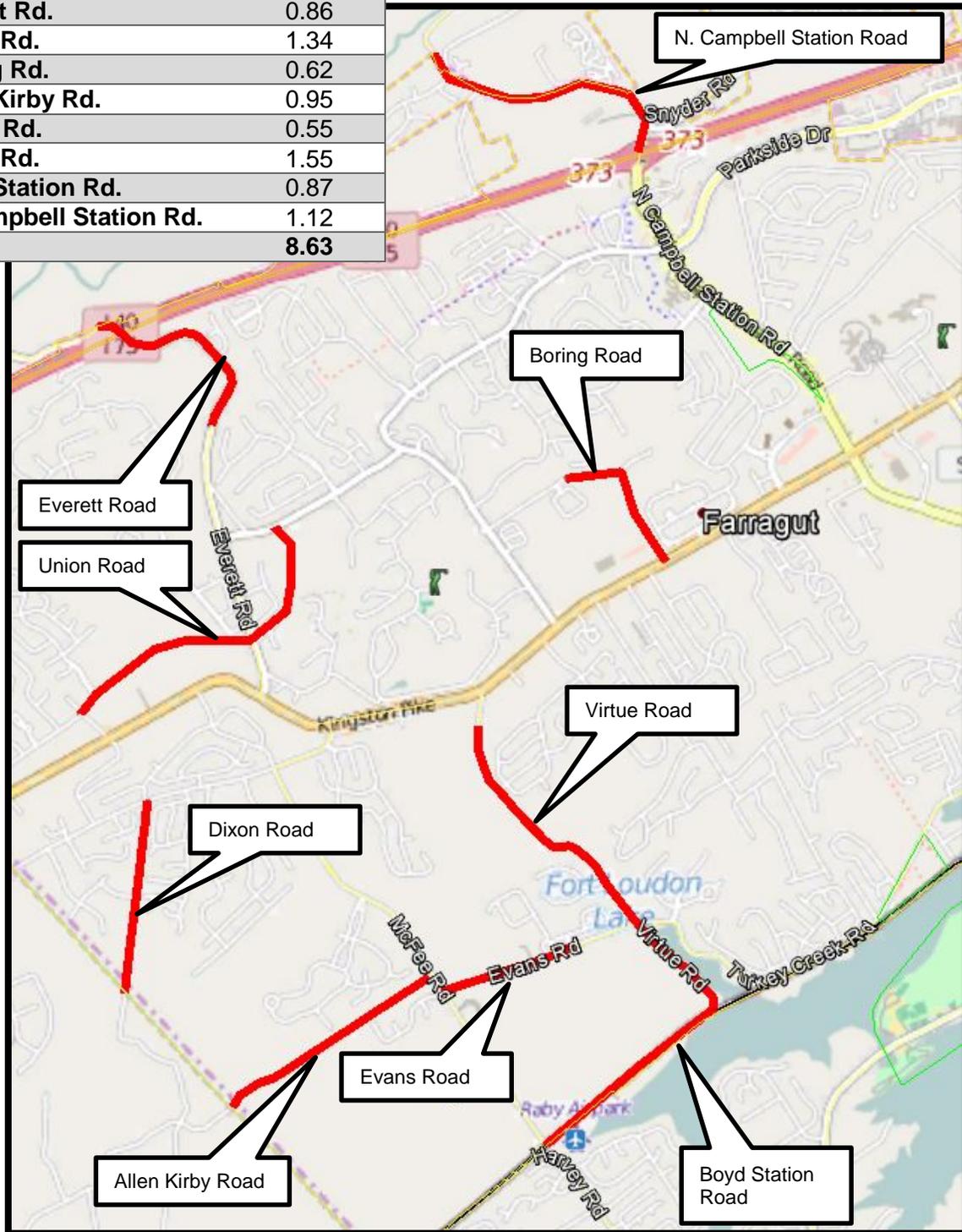
SUMMARY OF ROADWAY IMPROVEMENT COSTS

Road	Length (miles)	Construction + Contingency	ROW	Preliminary Engineering	Construction Engineering	Total Project Cost
Dixon Rd.	0.77	\$ 2,512,870	\$ 294,000	\$ 251,290	\$ 251,290	\$ 3,309,450
Everett Rd.	0.86	\$ 2,795,440	\$ 656,730	\$ 279,540	\$ 279,540	\$ 4,011,250
Union Rd.	1.34	\$ 4,446,420	\$ 1,023,270	\$ 444,640	\$ 444,640	\$ 6,358,970
Boring Rd.	0.62	\$ 2,120,020	\$ 118,360	\$ 212,000	\$ 212,000	\$ 2,662,380
Allen-Kirby Rd.	0.95	\$ 3,228,400	\$ 362,730	\$ 322,840	\$ 322,840	\$ 4,236,810
Evans Rd.	0.55	\$ 1,851,050	\$ 420,000	\$ 185,110	\$ 185,110	\$ 2,641,270
Virtue Rd.	1.55	\$ 12,009,690	\$ 1,893,820	\$ 1,200,970	\$ 1,200,970	\$ 16,305,450
Boyd Station Rd.	0.87	\$ 3,042,250	\$ 31,110	\$ 304,230	\$ 304,230	\$ 3,681,820
N. Campbell Station Rd.	1.12	\$ 3,679,110	\$ 1,069,090	\$ 367,910	\$ 367,910	\$ 5,484,020
Totals:	8.63	\$ 35,685,250	\$ 5,869,110	\$ 3,568,530	\$ 3,568,530	\$ 48,691,420

Source: The Corradino Group, calculated 11/9/2015

MAP OF ROUTES

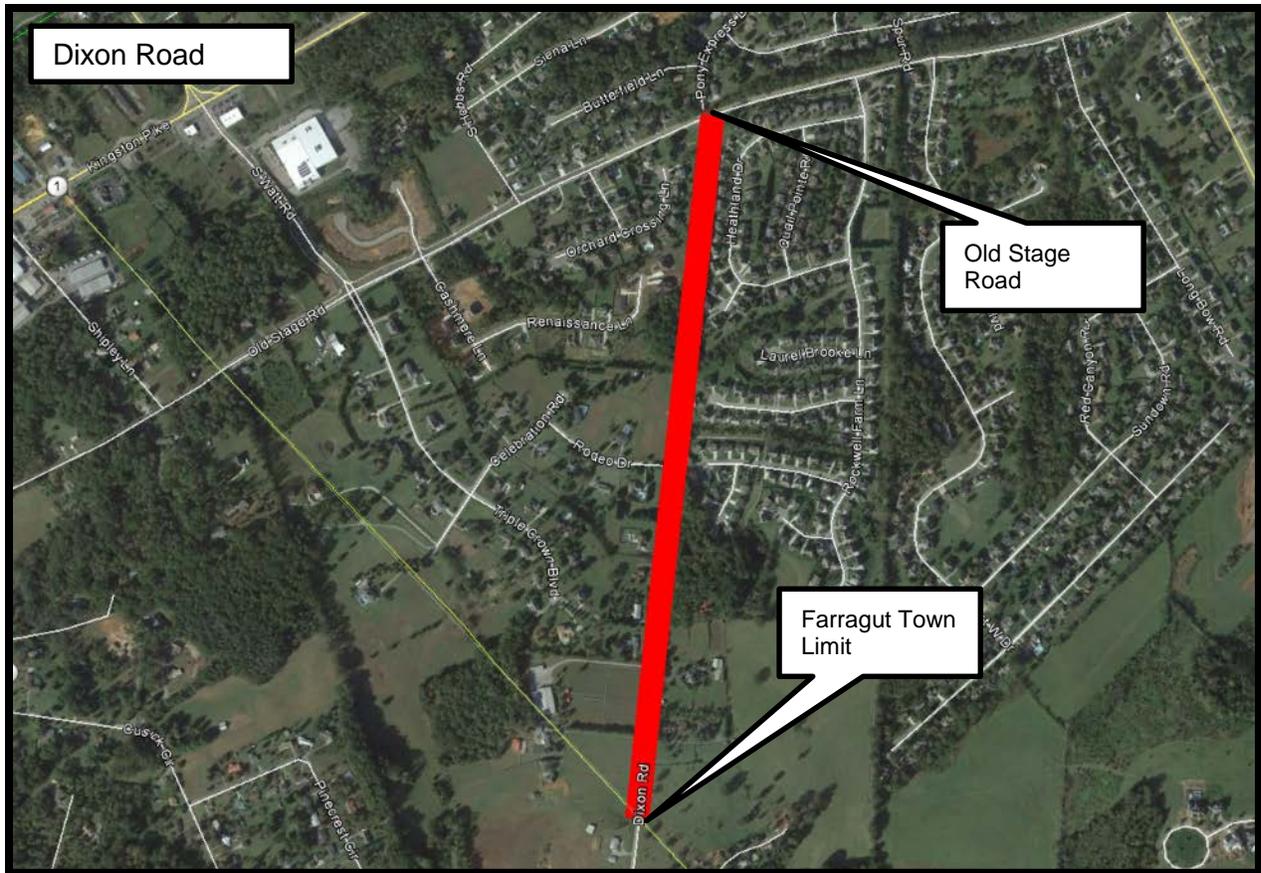
Road	Length (Miles)
Dixon Rd.	0.77
Everett Rd.	0.86
Union Rd.	1.34
Boring Rd.	0.62
Allen-Kirby Rd.	0.95
Evans Rd.	0.55
Virtue Rd.	1.55
Boyd Station Rd.	0.87
N. Campbell Station Rd.	1.12
Total:	8.63



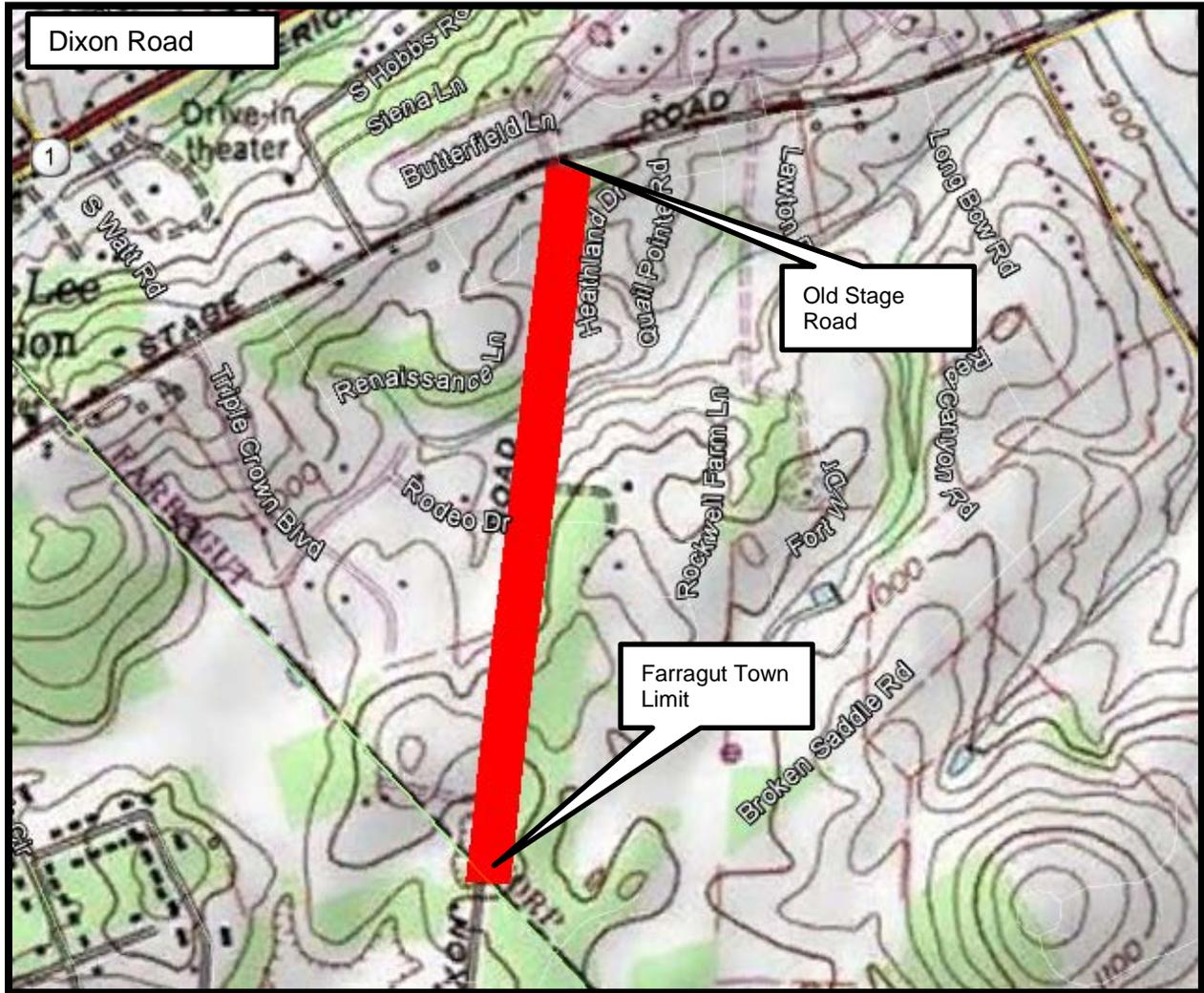
1.1 DIXON ROAD

County:	Knox, Town of Farragut
Description:	From Farragut Town Limit to Old Stage Road
Length:	0.77 Miles
Classification	Major Collector
Exist. ROW	50 feet
Exist. Width	20 feet

AERIAL VIEW:



USGS CONTOUR MAP:



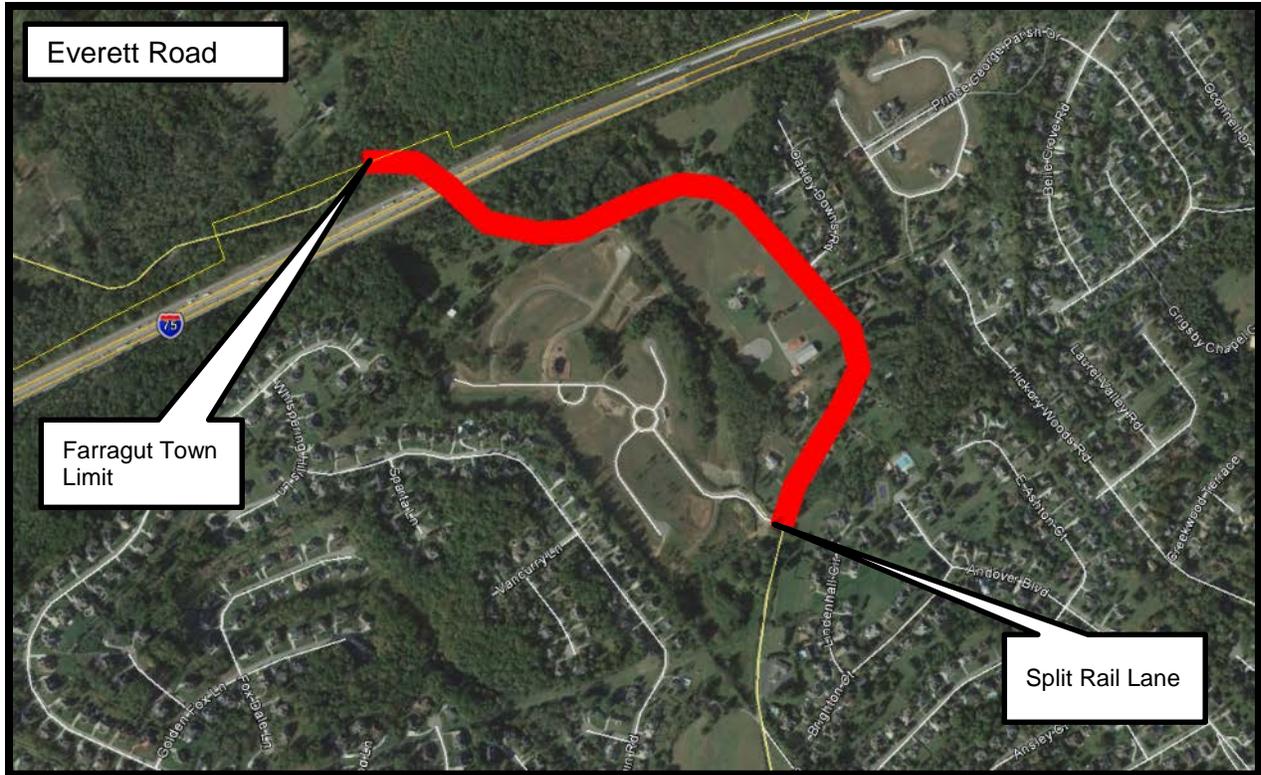
TYPICAL STREET VIEW:



1.2 EVERETT ROAD

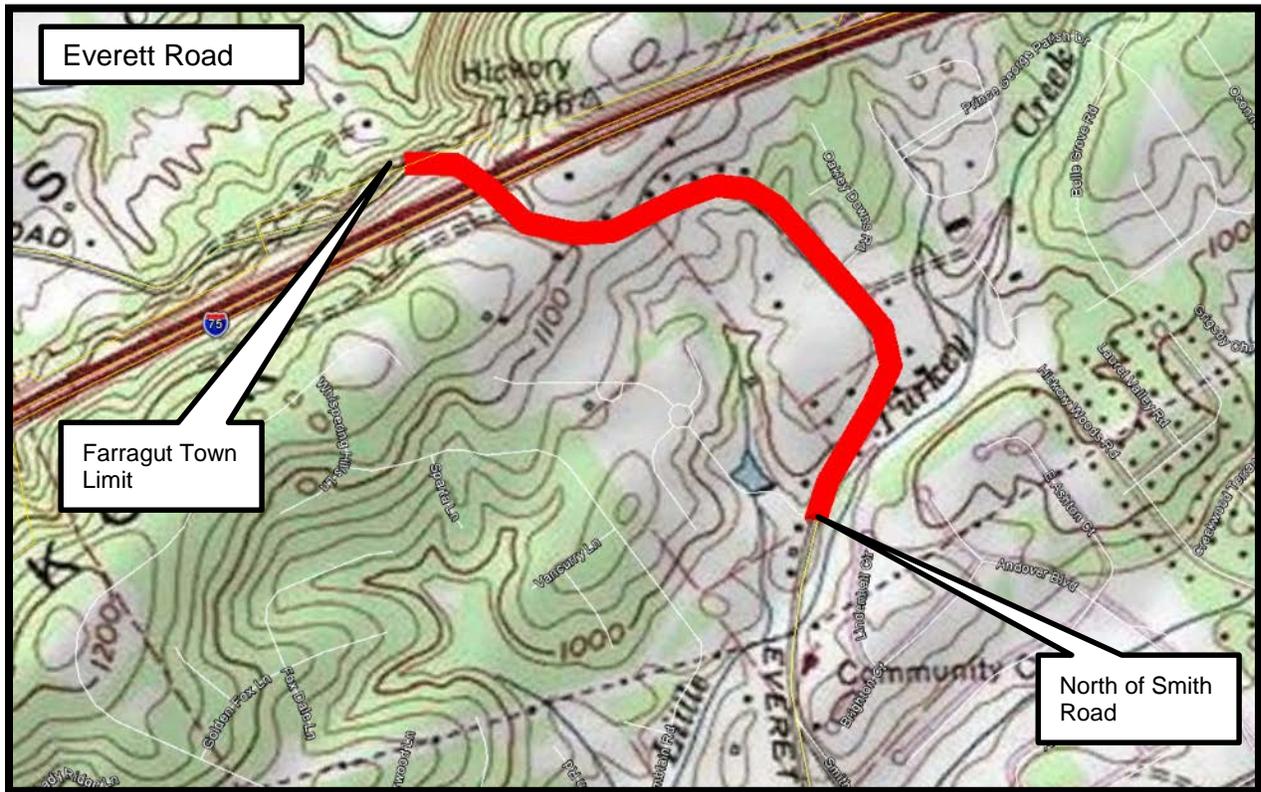
County:	Knox, Town of Farragut
Description:	From Split Rail Lane to Farragut Town Limit
Length:	0.86 Miles
Classification	Major Collector
Exist. ROW	40 feet
Exist. Width	20 feet

AERIAL VIEW:



Town of Farragut Impact Fee Study and Program Knox County

USGS CONTOUR MAP:



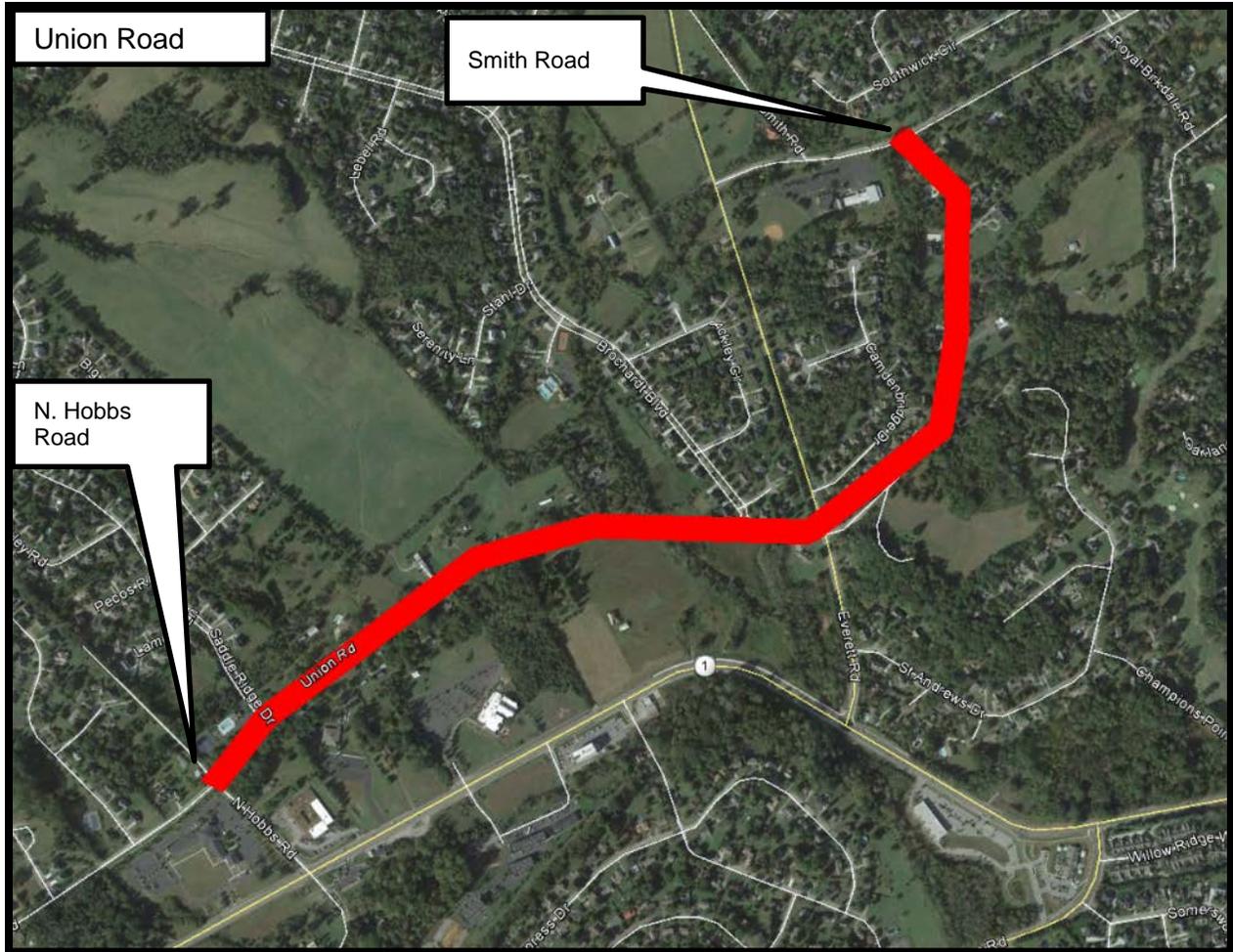
TYPICAL STREET VIEW:



1.3 UNION ROAD

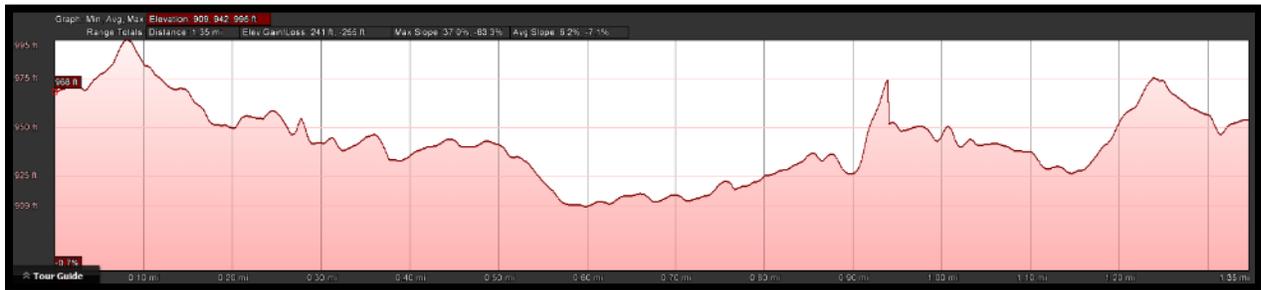
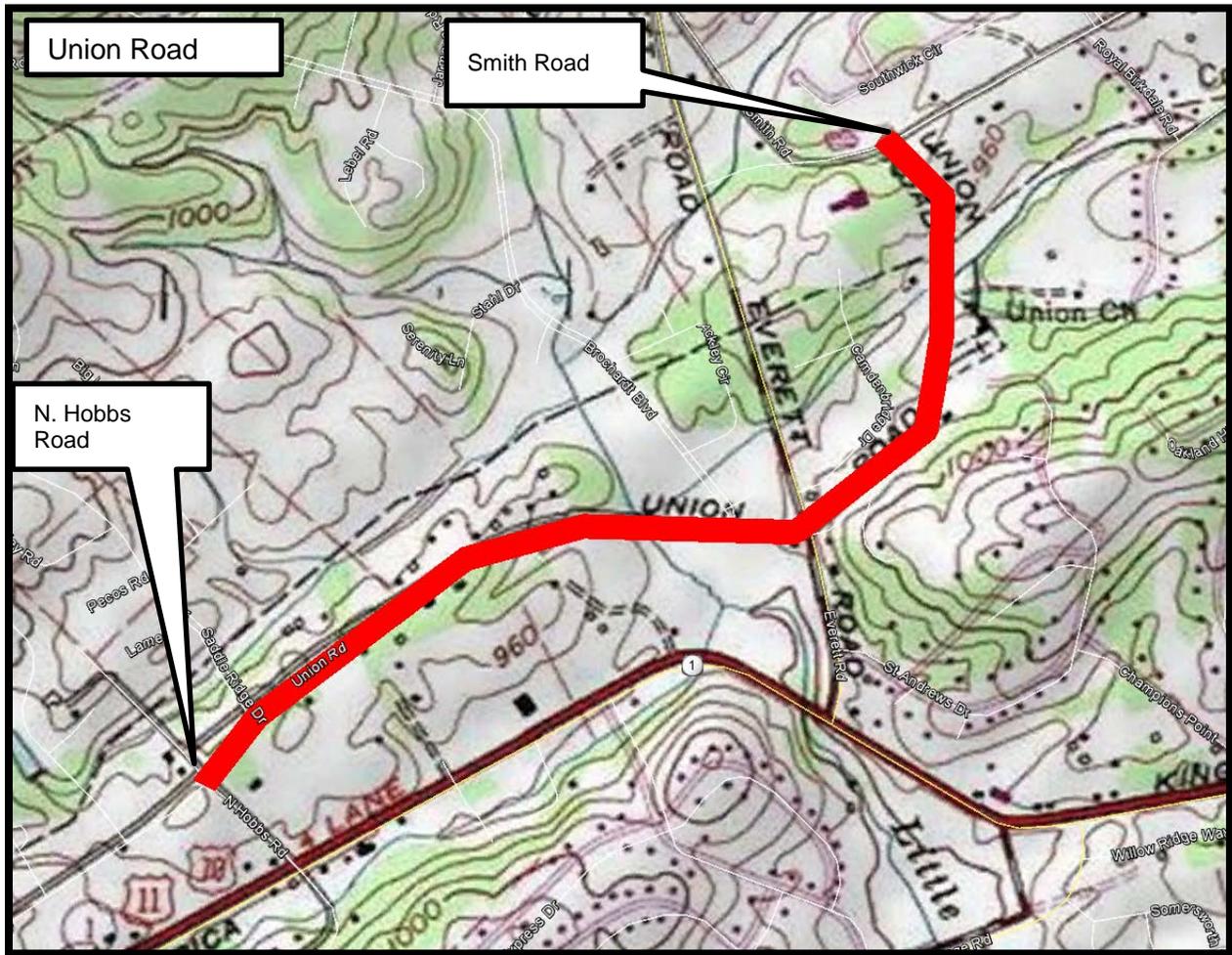
County:	Knox, Town of Farragut
Description:	From N. Hobbs Road to Smith Road
Length:	1.34 Miles
Classification	Major Collector
Exist. ROW	40 feet
Exist. Width	16 feet

AERIAL VIEW:

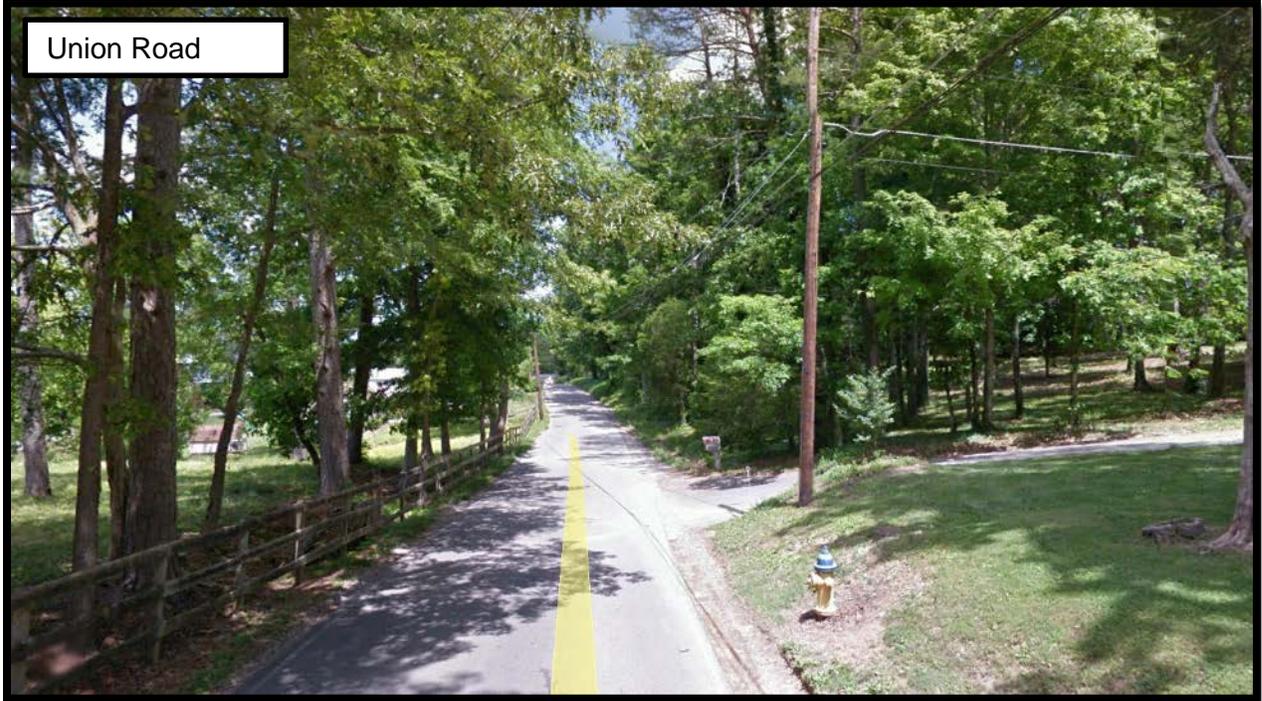


Town of Farragut Impact Fee Study and Program
Knox County

USGS CONTOUR MAP:

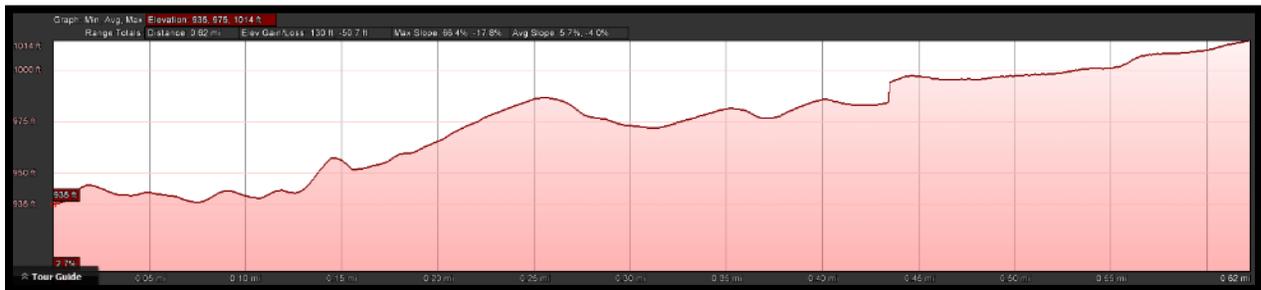
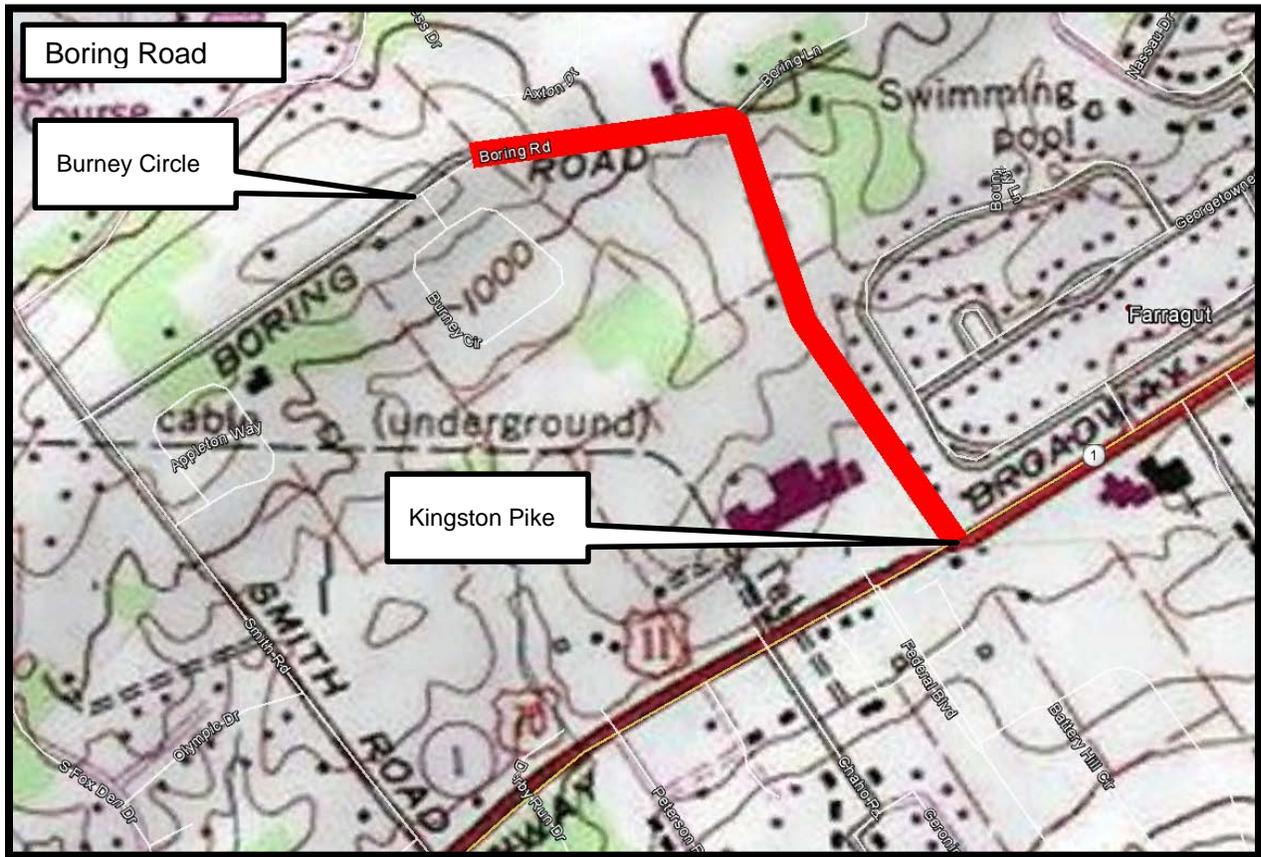


TYPICAL STREET VIEW:



Town of Farragut Impact Fee Study and Program
Knox County

USGS CONTOUR MAP:



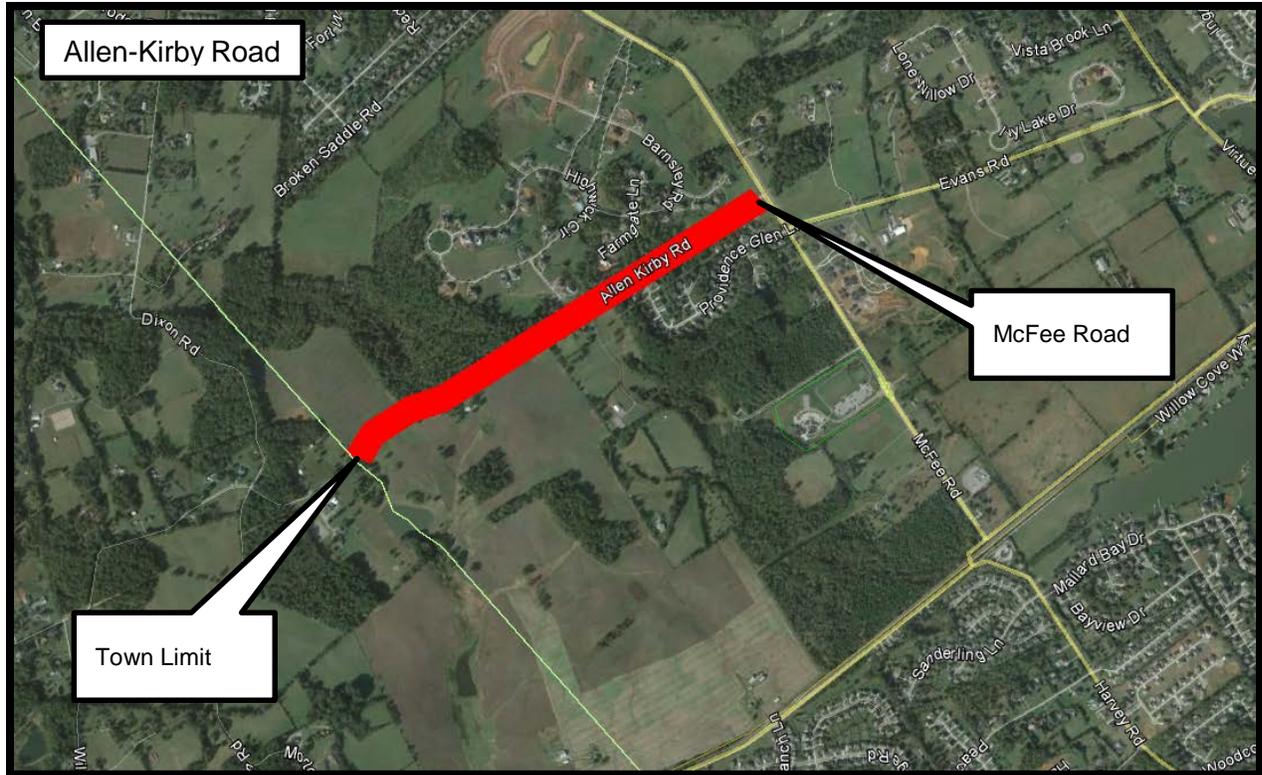
TYPICAL STREET VIEW:



1.5 ALLEN-KIRBY ROAD

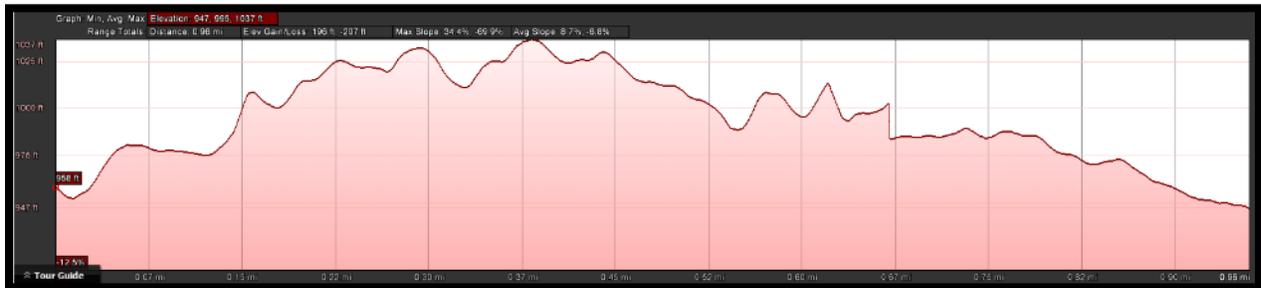
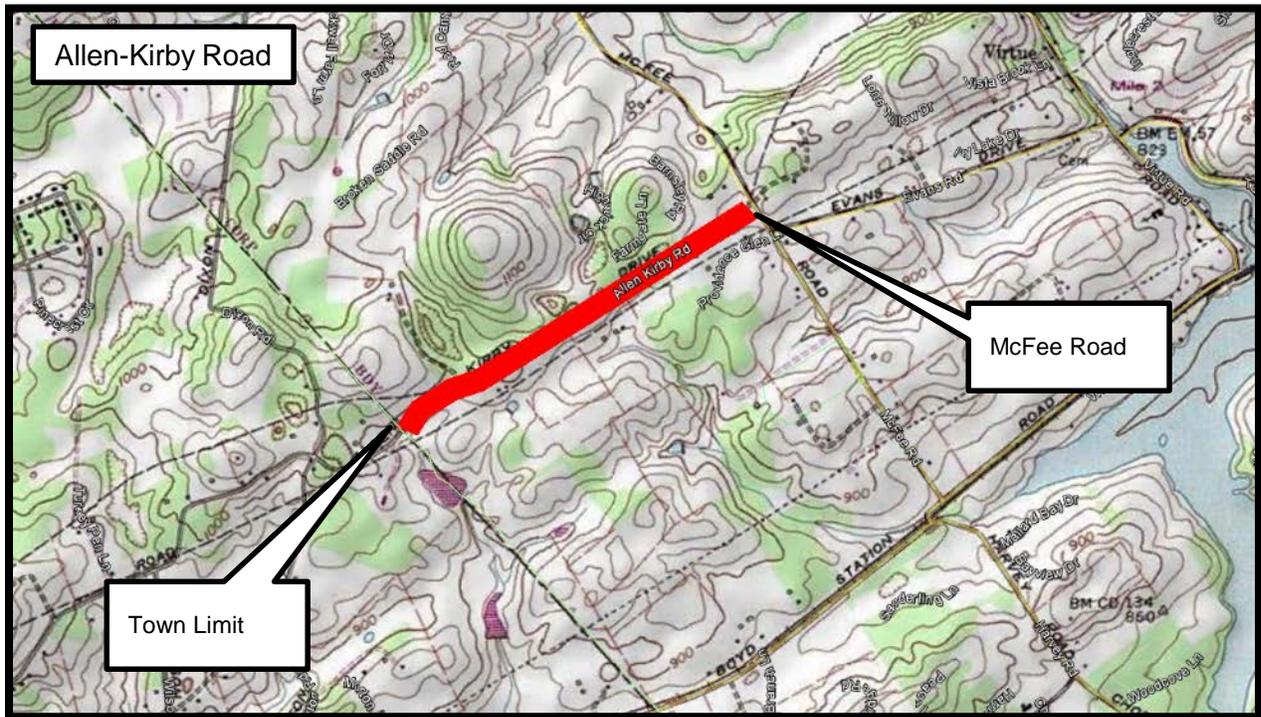
County:	Knox, Town of Farragut
Description:	From the Town Limit to McFee Road
Length:	0.95 Miles
Classification	Major Collector
Exist. ROW	50 feet
Exist. Width	14 feet

AERIAL VIEW:



Town of Farragut Impact Fee Study and Program Knox County

USGS CONTOUR MAP:



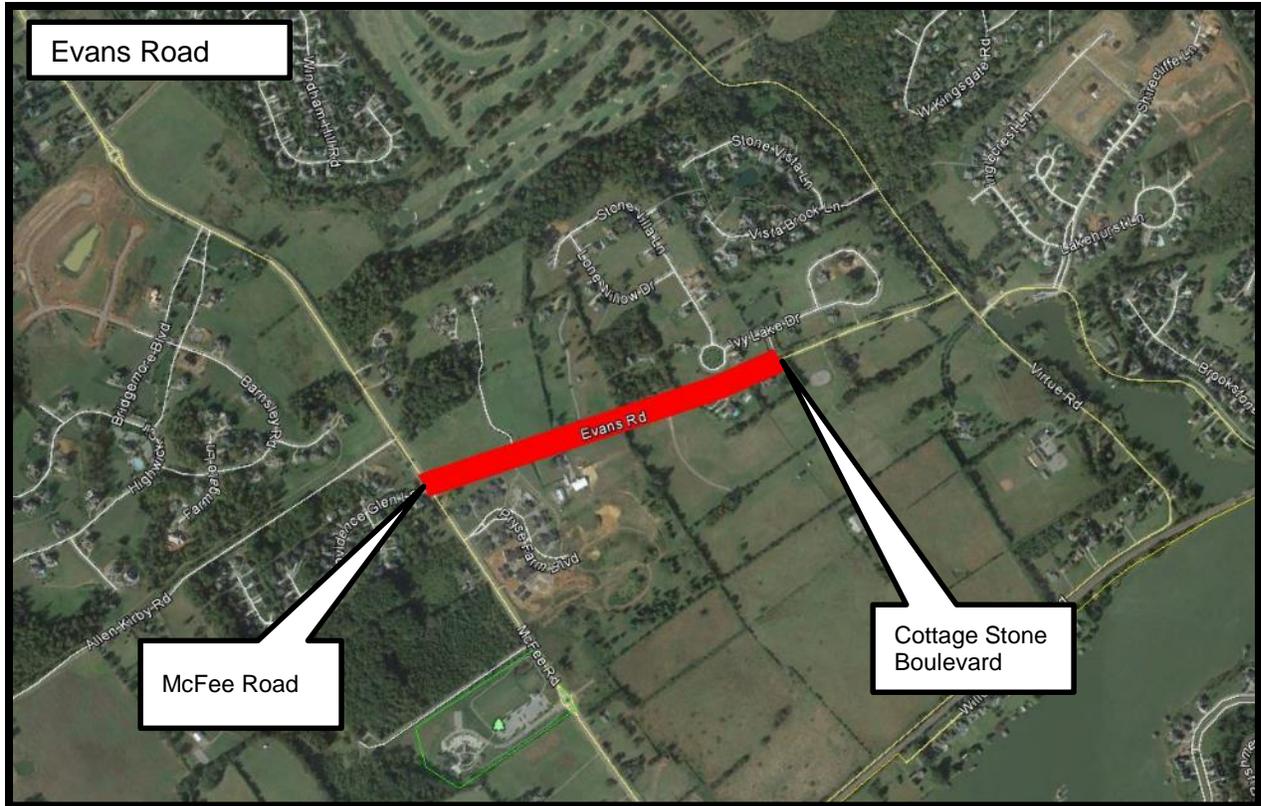
TYPICAL STREET VIEW:



1.6 EVANS ROAD

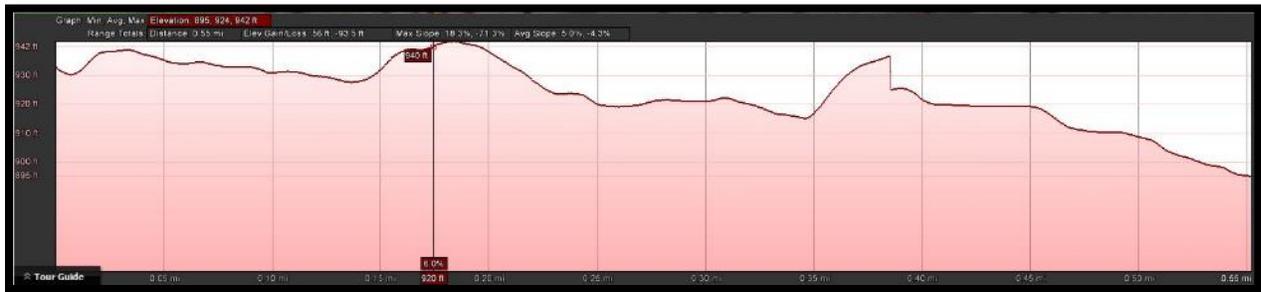
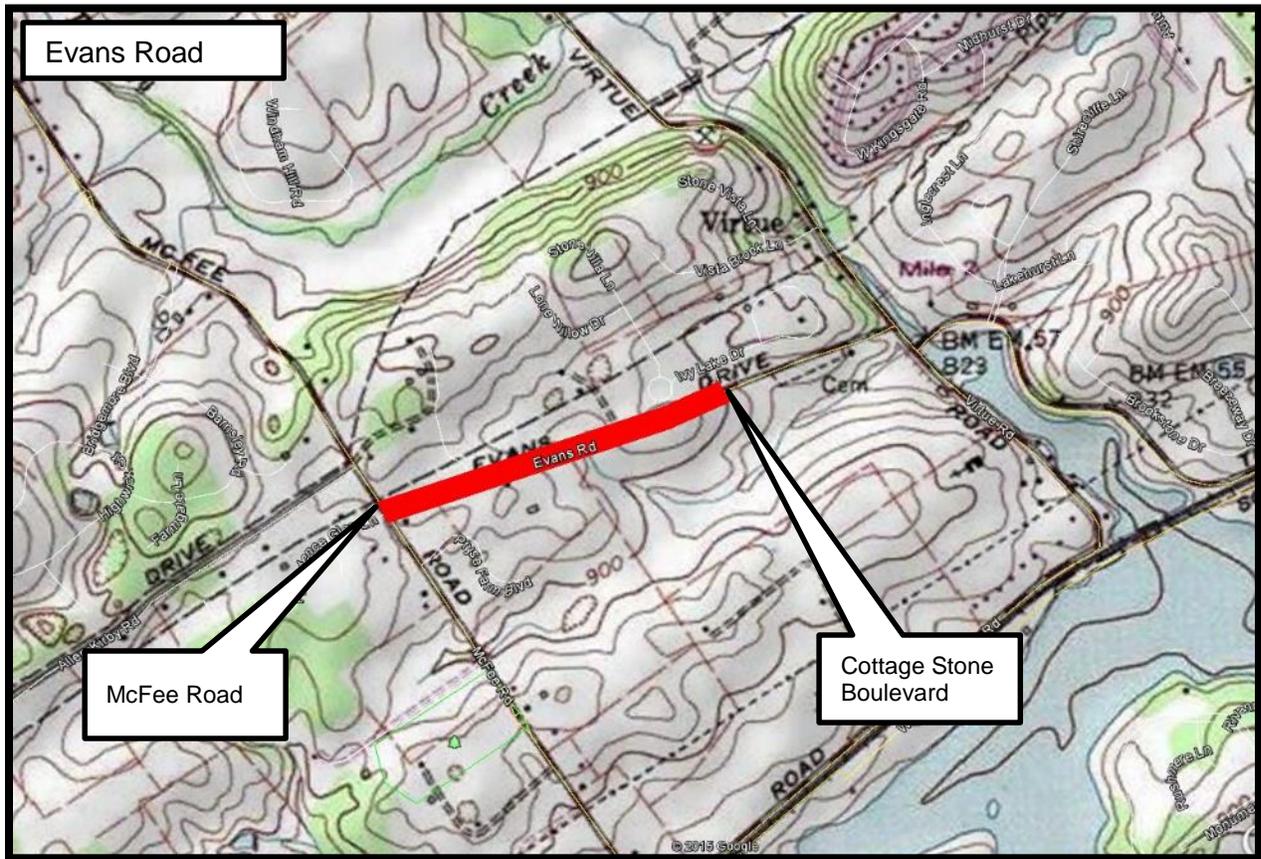
County:	Knox, Town of Farragut
Description:	From McFee Road to Cottage Stone Boulevard
Length:	0.83 Miles
Classification	Major Collector
Exist. ROW	40 feet
Exist. Width	18 feet

AERIAL VIEW:



Town of Farragut Impact Fee Study and Program
Knox County

USGS CONTOUR MAP:



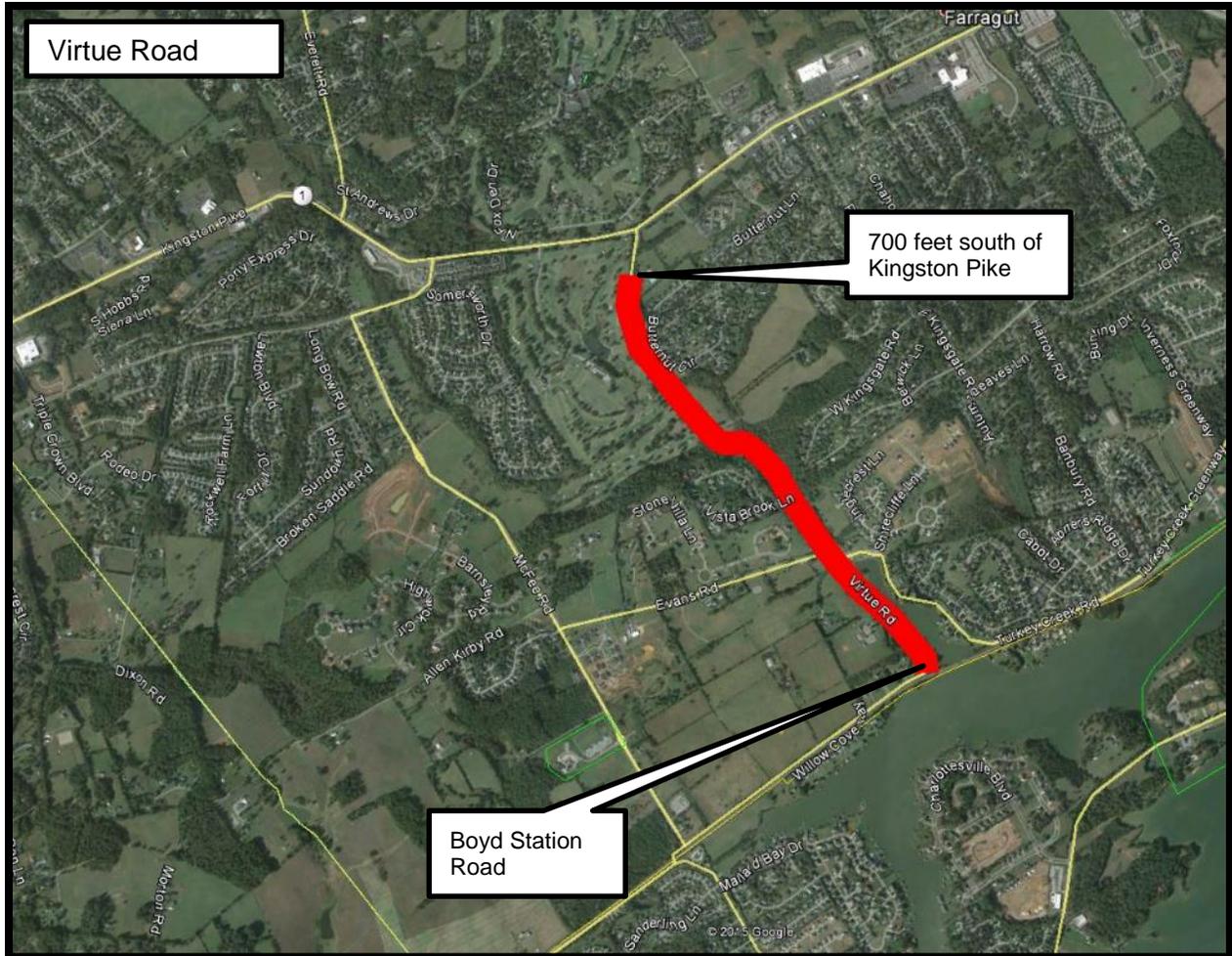
TYPICAL STREET VIEW:



1.7 VIRTUE ROAD

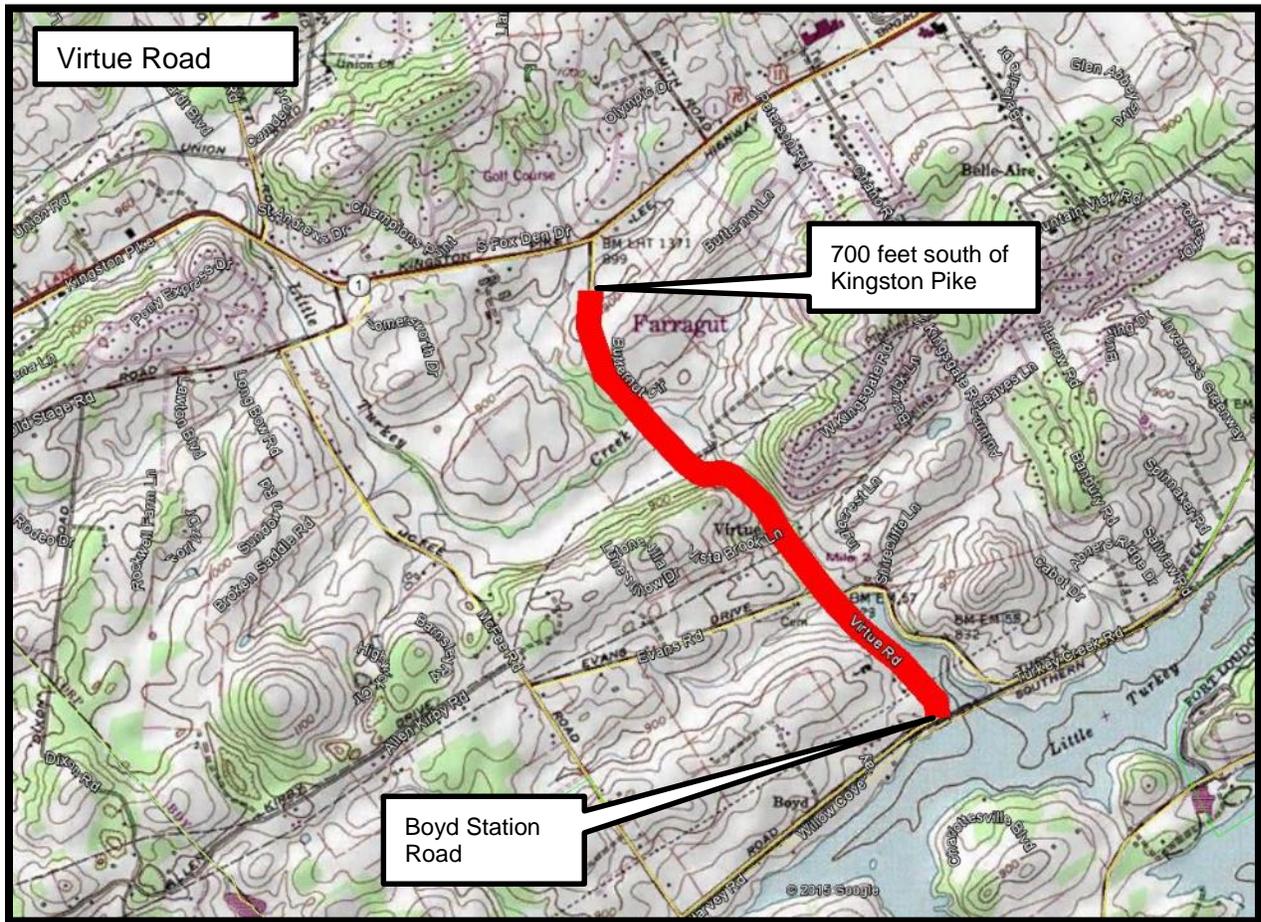
County:	Knox, Town of Farragut
Description:	From Boyd Station Road to 700 feet south of Kingston Pike
Length:	1.55 Miles
Classification	Major Collector
Exist. ROW	40 feet
Exist. Width	22 feet

AERIAL VIEW:



Town of Farragut Impact Fee Study and Program Knox County

USGS CONTOUR MAP:



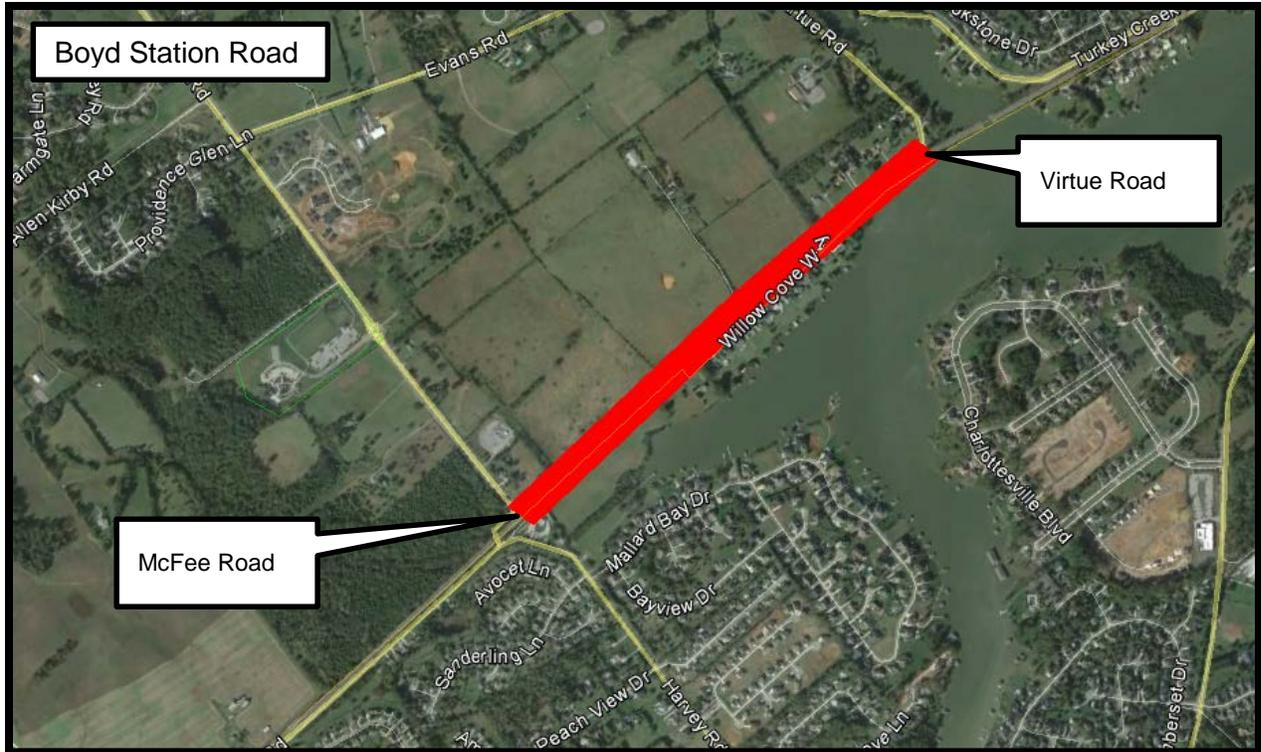
TYPICAL STREET VIEW:



1.8 BOYD STATION ROAD

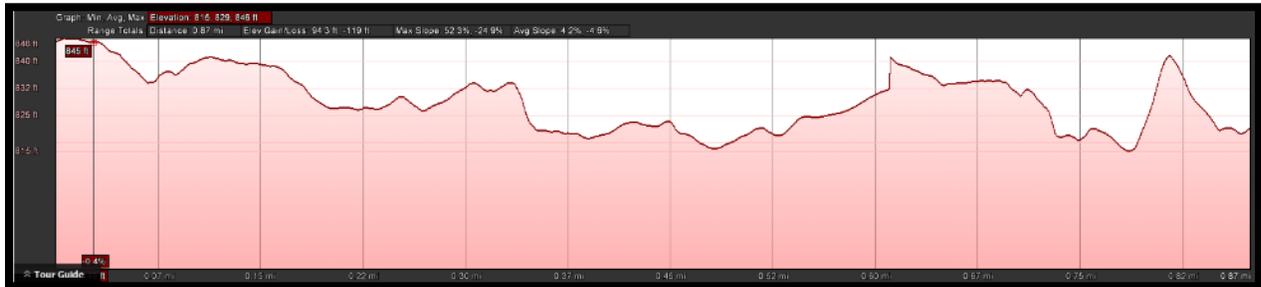
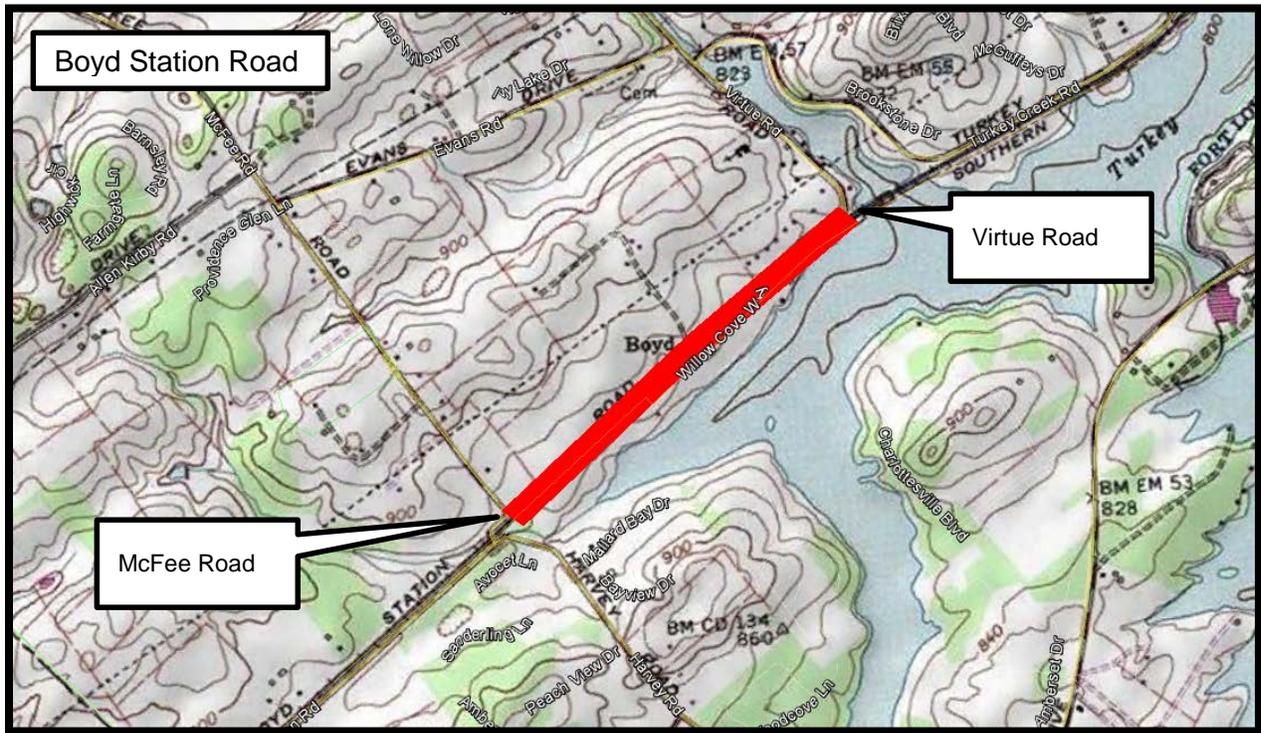
County:	Knox, Town of Farragut
Description:	From McFee Road to Virtue Road
Length:	0.87 Miles
Classification	Major Collector
Exist. ROW	55 feet
Exist. Width	20 feet

AERIAL VIEW:



Town of Farragut Impact Fee Study and Program
Knox County

USGS CONTOUR MAP:



TYPICAL STREET VIEW:



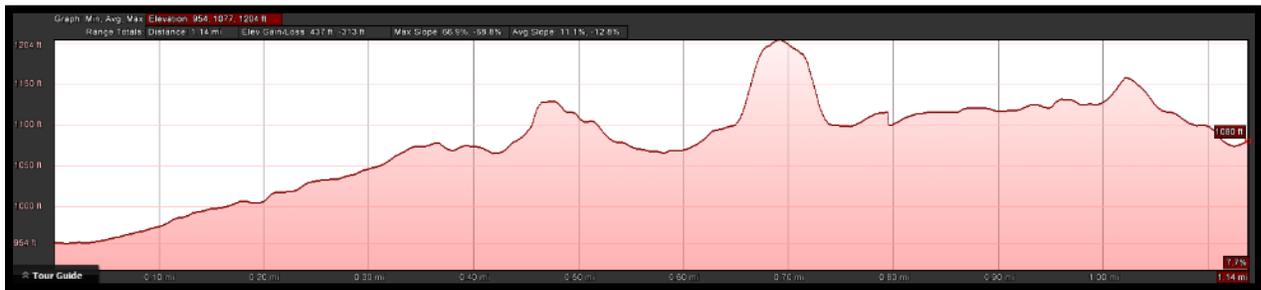
1.9 N. CAMPBELL STATION ROAD

County:	Knox, Town of Farragut
Description:	From past I-40/I-75 to Town Limits
Length:	1.12 Miles
Classification	Minor Arterial
Exist. ROW	55 feet
Exist. Width	20 feet

AERIAL VIEW:



USGS CONTOUR MAP:



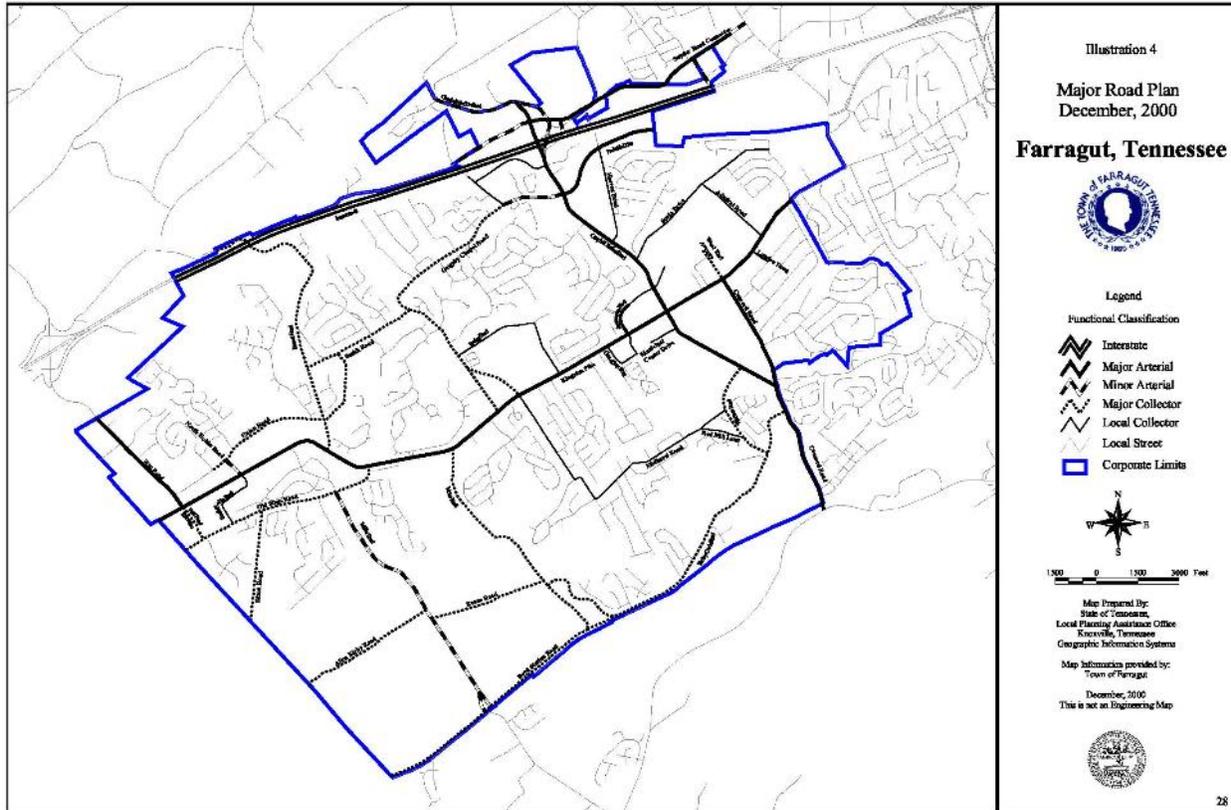
TYPICAL STREET VIEW:



2.0 SOURCES USED TO DEVELOP IMPROVEMENT REQUIREMENTS

The minimum required right-of-way width, lane widths, grass buffer widths, and bicycle and pedestrian facilities were obtained from The Town of Farragut's *Roadway Standards and Pedestrian and Bicycle Plan*. The roadway classifications were obtained from the Town's *Land Use and Transportation Policy Plan*. Relevant data from each source is provided beginning below.

ROADWAY CLASSIFICATIONS



Source Farragut Land Use and Transportation Policy Plan 2001 - 2011

2.1 TOWN OF FARRAGUT ROADWAY STANDARDS

The following standards are excerpted from the *Subdivision Regulations of the Town of Farragut*, revised June 2013 (pp 31 – 39).

ARTICLE III. GENERAL REQUIREMENTS AND MINIMUM STANDARDS OF DESIGN

A. Streets

4. Right-of-Way and Pavement widths

The minimum width of any right-of-way is measured from lot line to lot line. The width of pavement is measured from pavement edge to pavement edge, thus excluding the gutter and curb section. Standards for both right-of-way and lane width for

applications falling within the jurisdiction of these regulations shall not be less than as follows:

b. Minor Arterial Streets

right-of-way 80 feet
curb & gutter (TDOT 6-30) 30 inches
lane width 12 feet*

*Reduction in lane width may be permitted due to existing conditions based on the recommendation of the Town Engineer.

Such streets are used primarily to handle moderate to high traffic speeds and volumes. These streets should be reflected on the Major Road Plan. Turn lanes may be required by the planning commission if warranted by the Traffic Impact Study.

The Planning Commission may, at the recommendation of the Town Engineer, elect to allow three (3) twelve (12) foot lanes distributed as follows:

right-of-way 70 feet
curb & gutter (TDOT 6-30) 30 inches
lane width 12 feet*

c. Major Collector Streets

right-of-way 60 feet
curb & gutter (TDOT 6-30) 30 inches
lane width 12 feet

Such streets are used primarily to carry slow to moderate traffic speeds and volumes. These streets act primarily as the transition between local traffic and through traffic. These streets should be reflected on the Major Road Plan. Turn lanes may be required by the planning commission if warranted by the Traffic Impact Study.

d. Local Collector Streets

right-of-way 50 feet
curb, extruded 8 inches
lane width 13 feet

Such streets are used primarily to carry slow traffic speeds and volumes. The streets primarily serve the internal movements of residential areas to Major Collector Status Streets. These streets should be reflected on the Major Road Plan. Turn lanes may be required by the planning commission if warranted by the Traffic Impact.

B. Sidewalks and Other Pedestrian Facilities

1. Provisions for Sidewalks and Other Pedestrian Facilities

Sidewalks shall be constructed on all collector and arterial streets which a subdivision fronts.

Sidewalks shall be constructed on at least one (1) side of all new spine streets.

Spine streets are those main streets located within a subdivision which connect less traveled streets located deeper within the subdivision to the subdivision entrance(s).

Additional sidewalks along non-spine streets internal to a subdivision may also be required by the planning commission. In making their determination, the planning commission shall consider the anticipated use of such facilities, the frequency of pedestrian/vehicular conflicts, and whether such additional facilities would significantly contribute to the Town's existing or projected pedestrian network.

In lieu of sidewalks being constructed along spine and/or non-spine streets, the planning commission may approve an alternate comprehensive pedestrian system for the subdivision. Such system shall include sidewalks, bicycle/pedestrian paths, greenways, or any combination thereof.

2. Placement of Sidewalks and Other Pedestrian Facilities

Where possible, pedestrian facilities which are adjacent to roadways shall be located in the right-of-way no less than one (1) foot from the property lines so as to minimize conflicts with fencing, hedges, or other plantings or structures that may be placed on the property line at a later date.

A grassed strip of at least three (3) feet in width shall be provided between the street curb and the edge of the approved pedestrian facility on all streets classified as a local street on the Major Road Plan. A grassed strip of at least six (6) feet in width shall be provided between the street curb and the edge of the approved pedestrian facility on all streets classified as a collector street on the Major Road Plan. A grassed strip of at least eight (8) feet in width shall be provided between the street curb and the edge of the approved pedestrian facility on all streets classified as an arterial street on the Major Road Plan. When there is a deceleration lane and the right-of-way is not of adequate width to accommodate a six (6) foot or eight (8) foot grass strip between the street curb and the edge of the pedestrian facility, the grass strip may be reduced in width to a minimum of three (3) feet.

If the Town of Farragut is constructing a new pedestrian facility on an existing street next to an existing residential subdivision, a grassed strip of at least three (3) feet in width shall be provided between the street curb and the edge of the approved pedestrian facility.

3. Widths of Sidewalks and Other Pedestrian Facilities

Sidewalks fronting on access easements or public streets shall be a minimum of five (5) feet in width. Bicycle/pedestrian paths and greenways shall be a minimum of eight (8) feet in width.

2.2 TOWN OF FARRAGUT PEDESTRIAN AND BICYCLE PLAN

The following Policy Statements are excerpted from the *Pedestrian and Bicycle Plan - 2010* of the Town of Farragut (pg. 7).

Strategies:

- Continue to require pedestrian facilities as part of all new developments or redevelopments on both sides of streets with the classification of a collector or arterial street on the Town's *Major Road Plan*. As part of this requirement encourage a minimum eight (8) foot wide asphalt walking path that would benefit a greater range of users.
- Continue to require pedestrian facilities to be constructed along residential spine streets and along the frontages of all roads which the subdivision fronts.
- If a walking path runs behind houses, the path should be connected to the ends of cul-desacs.
- As part of a development or re-development, walking trails should be constructed to stub into adjacent vacant properties and tie into the overall pedestrian circulation system.
- In lieu of concrete sidewalks, particularly along collector and arterial streets, consideration should be given to using asphalt walking paths with a minimum width of eight (8) feet. This wider surface would invite more use by providing a greater passing area and a surface that would create less physical impact to the body than concrete.

3.0 CALCULATION METHODOLOGY

The minimum required right-of-way width, lane widths, grass buffer widths, and bicycle and pedestrian accommodations were obtained from The Town of Farragut's *Roadway Standards and Pedestrian and Bicycle Plan*. The roadway classifications were obtained from the Town's *Land Use and Transportation Policy Plan*. Existing right-of-way widths were obtained from GIS data. The data are summarized in the **Proposed Right-of-Way (ROW) and Roadway Characteristic Summary Table** on the following page.

The cost calculations were developed to a level consistent with TDOT's Long Range and Strategic Transportation Investments Divisions' methodology. The costs are based on the current average unit prices for construction materials and right-of-way (ROW) cost data, as collected and made publicly available by TDOT. Inputs include adjacent land use; complexity of construction; if there will be sidewalks, curb and gutter, or multi-use paths; terrain; and other existing and proposed roadway characteristics. The cost calculations are unique for each road. The calculations are provided in **Section 4**.

PROPOSED RIGHT-OF-WAY AND ROADWAY CHARACTERISTIC SUMMARY TABLE

Road	Class	Min. ROW	ROW based on Standards & Policies										Prop. ROW	Exist. ROW*	
			Buffer	Side-walk	Multi-use Path	Grass Strip	Curb & Gutter	Road	Curb & Gutter	Grass Strip	Side-walk	Buffer			Total Based on Stand.
Dixon Rd.	Major Collector	60	1	0	8	6	2.5	24	2.5	6	5	1	56	60	50
Everett Rd.	Major Collector	60	1	0	8	6	2.5	24	2.5	6	5	1	56	60	40
Union Rd.	Major Collector	60	1	0	8	6	2.5	24	2.5	6	5	1	56	60	40
Boring Rd.	Local Collector	60	1	0	8	6	2.5	24	2.5	6	5	1	56	60	55
Allen-Kirby Rd.	Major Collector	60	1	0	8	6	2.5	24	2.5	6	5	1	56	60	50
Evans Rd.	Major Collector	60	1	0	8	6	2.5	24	2.5	6	5	1	56	60	40
Virtue Rd.	Major Collector	60	1	0	8	6	2.5	24	2.5	6	5	1	56	60	40
Boyd Station Rd.	Major Collector	60	1	0	8	6	2.5	24	2.5	6	5	1	56	60	55
N. Campbell Station Rd.	Minor Arterial	80	1	0	8	8	2.5	24	2.5	8	5	1	60	80	55

* Measured from <http://www.kgis.org/kgismaps/Map.htm> on 11/9/15

Source: The Corradino Group

TYPICAL IMPROVEMENT IMAGES



Typical Existing Roadway



Typical Improved Roadway

4.0 PROJECT COST CALCULATIONS

The cost calculations for each roadway are provided on the following pages.

Year 2015 Planning-Level Cost Estimate



Consultant Name: The Corradino Group
 Date: 11/9/2015
 Roadway: Dixon Rd.
 Description: from Farragut Town Limit to Old Stage Road
 County: Knox
 Project Length: 0.77 miles (L.M. 0.00 - 0.77)

Summary of Project Information

Predominant Adjacent Land Use: Residential
 Predominant Terrain Type: Rolling
 Project Complexity: Non-Complex
 Typical Section: Collector
 Total Number of Travel Lanes: 2 Lane Typical Section
 Required ROW (Acres): 0.93
 Project Type: Sidewalk/Curb & Gutter
 Number of Bridge Removals: 0
 Number of Bridge Widening: 0
 Number of New Bridges: 0
 Length of Shared Use Path: 0.77 miles
 Number of Roundabouts: 0
 Number of Traffic Signals: 0
 Length of ITS Installation: 0 miles
 Utility Relocation: N/A
 Additional User Input Cost: N/A

Summary of Project Cost

Construction + Contingency	\$2,512,870
Right-of-Way	\$294,000
Utility Relocation	\$0
Preliminary Engineering (10%)	\$251,290
Construction Engineering & Inspection	\$251,290
TOTAL PROJECT COST	\$3,309,450

Consultant Project Notes:

2015 Conceptual Planning Cost Estimation Tool



Project Location

Roadway State Route or Interstate

From Local Road

To

County

TDOT Region

Existing Roadway Information

Right of Way Width ft. Var. Width

Land Valuation Method New Old Experimental

Predominant Adjacent Land Use Var. Land Use

Terrain Var. Terrain

Existing Pavement Width ft. Var. Width

Proposed Project Information

Project Complexity 15% Contingency Applied

New Typical Section Roadway Width (ft) Outside Shoulder (ft) Inside Shoulder (ft) Required ROW Width (ft.)

Total Proposed Lanes Var. Lanes

Project Type Sidewalk/Curb & Gutter Shoulder/Roadside Slope

Project Length miles

Vertical/Horizontal Improvements (percent of total project length)

Bridge Removals Box Concrete Girder Steel

Bridge Widening Box Concrete Girder Steel

New Bridges Box Concrete Girder Steel

Length of Shared-Use Path miles

Number of Roundabouts

Number of Traffic Signals

Length of ITS Installation miles

Additional User Input Cost

Advanced Project Information (optional)

Modify Pavement Thickness

Retaining Walls

Average Height ft.

Total Length ft.

Utility Relocation

Construction + Contingency	\$2,512,870
Right-of-Way	\$294,000
Utility Relocation	\$0
Preliminary Engineering (10%)	\$251,290
Construction Engineering & Inspection	\$251,290
Total Estimated Project Cost	\$3,309,450

Preliminary Estimated Roadway Estimate

Table 1st Row
7
Table Last Row
355

Dixon Rd.
Knox
0.77
Collector

Section	ITEM #	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	COST
Collector	105-01	CONSTRUCTION STAKES, LINES AND GRADES	LS	1	\$47,376.74	\$47,377
Collector	203-01	ROAD & DRAINAGE EXCAVATION (UNCLASSIFIED)	C.Y.	31621	\$4.39	\$138,818
Collector	203-03	BORROW EXCAVATION (UNCLASSIFIED)	C.Y.	3162	\$3.58	\$11,320
Collector	303-01	MINERAL AGGREGATE, TYPE A BASE, GRADING D	TON	5349	\$15.56	\$83,235
Collector	307-02.01	ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING A	TON	1091	\$59.90	\$65,347
Collector	307-02.02	ASPHALT CEMENT (PG70-22)(BPMB-HM) GRADING A-S	TON	28	\$526.70	\$14,615
Collector	307-02.03	AGGREGATE (BPMB-HM) GRADING A-S MIX	TON	826	\$45.00	\$37,171
Collector	307-02.08	ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING B-M2	TON	715	\$64.00	\$45,737
Collector	402-01	BITUMINOUS MATERIAL FOR PRIME COAT (PC)	TON	10	\$452.98	\$4,341
Collector	402-02	AGGREGATE FOR COVER MATERIAL (PC)	TON	38	\$24.74	\$939
Collector	403-01	BITUMINOUS MATERIAL FOR TACK COAT (TC)	TON	4	\$561.91	\$2,176
Collector	411-01.07	ACS (PG64-22) GR "E"	TON	0	\$75.50	\$0
Collector	411-02.10	ACS MIX(PG70-22) GRADING D	TON	718	\$87.40	\$62,776
Collector	415-01.02	COLD PLANING BITUMINOUS PAVEMENT	S.Y.	4517	\$1.30	\$5,873
Collector	604-07.01	RETAINING WALL	S.F.	0	\$75.00	\$0
Collector	607-05.02	24" CONCRETE PIPE CULVERT (CLASS III)	L.F.	4553	\$53.00	\$241,334
Collector	611-07.01	CLASS A CONCRETE (PIPE ENDWALLS)	C.Y.	25	\$591.11	\$14,656
Collector	611-07.02	STEEL BAR REINFORCEMENT (PIPE ENDWALLS)	LB.	2356	\$1.61	\$3,793
Collector	611-12.02	CATCH BASINS, TYPE 12, > 4' - 8' DEPTH	EACH	28	\$3,092.57	\$86,592
Collector	611-14.02	CATCH BASINS, TYPE 14, > 4' - 8' DEPTH	EACH	14	\$5,515.55	\$77,218
Collector	611-42.02	CATCH BASINS, TYPE 42, > 4' - 8' DEPTH	EACH	4	\$3,972.26	\$15,889
Collector	701-01.01	CONCRETE SIDEWALK (4 ")	S.F.	36590	\$3.48	\$127,335
Collector	702-03	CONCRETE COMBINED CURB & GUTTER	C.Y.	647	\$197.10	\$127,460
Collector	705-02.02	SINGLE GUARDRAIL (TYPE 2)	L.F.	2236	\$15.34	\$34,301
Collector	705-04.07	TAN ENERGY ABSG TERM (NCHRP 350,TL3)	EACH	2	\$2,030.00	\$3,126
Collector	710-04	FILTER CLOTH UNDERDRAIN (WITH PIPE)	L.F.	8131	\$4.00	\$32,525
Collector	712-01	TRAFFIC CONTROL	LS	1	\$151,638	\$151,638
Collector	712-02.02	INTERCONNECTED PORTABLE BARRIER RAIL	L.F.	203	\$24.96	\$5,074
Collector	713-16.20	SIGNS	EACH	154	\$158.00	\$24,332
Collector	716-13.06	SPRAY THERMO PVMT MRKNG (40 mil) (4IN LINE)	L.M.	3	\$1,208.00	\$3,721
Collector	801-01	SEEDING (WITH MULCH)	UNIT	146	\$24.00	\$3,513
Collector	801-01.07	TEMPORARY SEEDING (WITH MULCH)	UNIT	110	\$16.00	\$1,756
Collector	801-02	SEEDING (WITHOUT MULCH)	UNIT	110	\$14.00	\$1,537
Collector	N/A	TRAFFIC SIGNAL	EACH	0	\$120,000.00	\$0
Collector	N/A	ITS	L.M.	0	\$200,000.00	\$0
Collector	N/A	SHARED-USE PATH	L.M.	1	\$250,000.00	\$192,500
Collector	N/A	ROUNDAABOUT	EACH	0	\$1,100,000.00	\$0
Collector	N/A	BRIDGE REMOVAL	S.F.	0	\$20.00	\$0
Collector	N/A	WIDEN EXISTING BRIDGE (BOX)	S.F.	0	\$0.00	\$0
Collector	N/A	WIDEN EXISTING BRIDGE (CONCRETE GIRDER)	S.F.	0	\$0.00	\$0
Collector	N/A	WIDEN EXISTING BRIDGE (STEEL)	S.F.	0	\$0.00	\$0
Collector	N/A	NEW BRIDGE (BOX)	S.F.	0	\$105.00	\$0
Collector	N/A	NEW BRIDGE (CONCRETE GIRDER)	S.F.	0	\$120.00	\$0
Collector	N/A	NEW BRIDGE (STEEL)	S.F.	0	\$150.00	\$0
Collector	N/A	Urban - Standard Diamond	EACH	0	\$25,000,000.00	\$0
Collector	N/A	Urban - Tight Diamond	EACH	0	\$30,000,000.00	\$0
Collector	N/A	Urban - Single Point Urban Interchange (SPUI)	EACH	0	\$35,000,000.00	\$0
Collector	N/A	Rural - Diamond	EACH	0	\$12,500,000.00	\$0
Collector	N/A	Rural - Partial Cloverleaf	EACH	0	\$15,000,000.00	\$0
Collector	N/A	Rural - Full Cloverleaf	EACH	0	\$17,500,000.00	\$0

Subtotal	\$1,668,023
Mobilization	\$80,061
Subtotal	\$1,748,084
Other Construction Items (25%)	\$437,021
Total	\$2,185,105

Year 2015 Planning-Level Cost Estimate



Consultant Name: The Corradino Group
 Date: 11/9/2015
 Roadway: Everett Rd.
 Description: From Split Rail Lane to Farragut Town Limit
 County: Knox
 Project Length: 0.86 miles (L.M. 0.00 - 0.86)

Summary of Project Information

Predominant Adjacent Land Use: Residential
 Predominant Terrain Type: Rolling
 Project Complexity: Non-Complex
 Typical Section: Collector
 Total Number of Travel Lanes: 2 Lane Typical Section
 Required ROW (Acres): 2.08
 Project Type: Sidewalk/Curb & Gutter
 Number of Bridge Removals: 0
 Number of Bridge Widening: 0
 Number of New Bridges: 0
 Length of Shared Use Path: 0.86 miles
 Number of Roundabouts: 0
 Number of Traffic Signals: 0
 Length of ITS Installation: 0 miles
 Utility Relocation: N/A
 Additional User Input Cost: N/A

Summary of Project Cost

Construction + Contingency	\$2,795,440
Right-of-Way	\$656,730
Utility Relocation	\$0
Preliminary Engineering (10%)	\$279,540
Construction Engineering & Inspection	\$279,540
TOTAL PROJECT COST	\$4,011,250

Consultant Project Notes:

2015 Conceptual Planning Cost Estimation Tool



Project Location

Roadway State Route or Interstate

From Local Road

To

County

TDOT Region

Existing Roadway Information

Right of Way Width ft. Var. Width

Land Valuation Method New Old Experimental

Predominant Adjacent Land Use Var. Land Use

Terrain Var. Terrain

Existing Pavement Width ft. Var. Width

Proposed Project Information

Project Complexity 15% Contingency Applied

New Typical Section Roadway Width (ft) Outside Shoulder (ft) Inside Shoulder (ft) Required ROW Width (ft.)

Total Proposed Lanes Var. Lanes

Project Type Sidewalk/Curb & Gutter Shoulder/Roadside Slope

Project Length miles

Vertical/Horizontal Improvements (percent of total project length)

Bridge Removals Box Concrete Girder Steel

Bridge Widening Box Concrete Girder Steel

New Bridges Box Concrete Girder Steel

Length of Shared-Use Path miles

Number of Roundabouts

Number of Traffic Signals

Length of ITS Installation miles

Additional User Input Cost

Advanced Project Information (optional)

Modify Pavement Thickness

Retaining Walls

Average Height ft.

Total Length ft.

Utility Relocation

Construction + Contingency	\$2,795,440
Right-of-Way	\$656,730
Utility Relocation	\$0
Preliminary Engineering (10%)	\$279,540
Construction Engineering & Inspection	\$279,540
Total Estimated Project Cost	\$4,011,250

Preliminary Estimated Roadway Estimate

Table 1st Row
7
Table Last Row
355

Everett Rd.
Knox
0.86
Collector

Section	ITEM #	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	COST
Collector	105-01	CONSTRUCTION STAKES, LINES AND GRADES	LS	1	\$47,376.74	\$47,377
Collector	203-01	ROAD & DRAINAGE EXCAVATION (UNCLASSIFIED)	C.Y.	35317	\$4.39	\$155,043
Collector	203-03	BORROW EXCAVATION (UNCLASSIFIED)	C.Y.	3532	\$3.58	\$12,644
Collector	303-01	MINERAL AGGREGATE, TYPE A BASE, GRADING D	TON	5975	\$15.56	\$92,963
Collector	307-02.01	ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING A	TON	1218	\$59.90	\$72,985
Collector	307-02.02	ASPHALT CEMENT (PG70-22)(BPMB-HM) GRADING A-S	TON	31	\$526.70	\$16,323
Collector	307-02.03	AGGREGATE (BPMB-HM) GRADING A-S MIX	TON	923	\$45.00	\$41,516
Collector	307-02.08	ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING B-M2	TON	798	\$64.00	\$51,083
Collector	402-01	BITUMINOUS MATERIAL FOR PRIME COAT (PC)	TON	11	\$452.98	\$4,848
Collector	402-02	AGGREGATE FOR COVER MATERIAL (PC)	TON	42	\$24.74	\$1,049
Collector	403-01	BITUMINOUS MATERIAL FOR TACK COAT (TC)	TON	4	\$561.91	\$2,430
Collector	411-01.07	ACS (PG64-22) GR "E"	TON	0	\$75.50	\$0
Collector	411-02.10	ACS MIX(PG70-22) GRADING D	TON	802	\$87.40	\$70,114
Collector	415-01.02	COLD PLANING BITUMINOUS PAVEMENT	S.Y.	5045	\$1.30	\$6,559
Collector	604-07.01	RETAINING WALL	S.F.	0	\$75.00	\$0
Collector	607-05.02	24" CONCRETE PIPE CULVERT (CLASS III)	L.F.	5086	\$53.00	\$269,542
Collector	611-07.01	CLASS A CONCRETE (PIPE ENDWALLS)	C.Y.	28	\$591.11	\$16,369
Collector	611-07.02	STEEL BAR REINFORCEMENT (PIPE ENDWALLS)	LB.	2632	\$1.61	\$4,237
Collector	611-12.02	CATCH BASINS, TYPE 12, > 4' - 8' DEPTH	EACH	31	\$3,092.57	\$95,870
Collector	611-14.02	CATCH BASINS, TYPE 14, > 4' - 8' DEPTH	EACH	16	\$5,515.55	\$88,249
Collector	611-42.02	CATCH BASINS, TYPE 42, > 4' - 8' DEPTH	EACH	4	\$3,972.26	\$15,889
Collector	701-01.01	CONCRETE SIDEWALK (4 ")	S.F.	40867	\$3.48	\$142,218
Collector	702-03	CONCRETE COMBINED CURB & GUTTER	C.Y.	722	\$197.10	\$142,357
Collector	705-02.02	SINGLE GUARDRAIL (TYPE 2)	L.F.	2497	\$15.34	\$38,311
Collector	705-04.07	TAN ENERGY ABSG TERM (NCHRP 350,TL3)	EACH	2	\$2,030.00	\$3,492
Collector	710-04	FILTER CLOTH UNDERDRAIN (WITH PIPE)	L.F.	9082	\$4.00	\$36,326
Collector	712-01	TRAFFIC CONTROL	LS	1	\$168,739	\$168,739
Collector	712-02.02	INTERCONNECTED PORTABLE BARRIER RAIL	L.F.	227	\$24.96	\$5,667
Collector	713-16.20	SIGNS	EACH	172	\$158.00	\$27,176
Collector	716-13.06	SPRAY THERMO PVMT MRKNG (40 mil) (4IN LINE)	L.M.	3	\$1,208.00	\$4,156
Collector	801-01	SEEDING (WITH MULCH)	UNIT	163	\$24.00	\$3,923
Collector	801-01.07	TEMPORARY SEEDING (WITH MULCH)	UNIT	123	\$16.00	\$1,962
Collector	801-02	SEEDING (WITHOUT MULCH)	UNIT	123	\$14.00	\$1,716
Collector	N/A	TRAFFIC SIGNAL	EACH	0	\$120,000.00	\$0
Collector	N/A	ITS	L.M.	0	\$200,000.00	\$0
Collector	N/A	SHARED-USE PATH	L.M.	1	\$250,000.00	\$215,000
Collector	N/A	ROUNDAABOUT	EACH	0	\$1,100,000.00	\$0
Collector	N/A	BRIDGE REMOVAL	S.F.	0	\$20.00	\$0
Collector	N/A	WIDEN EXISTING BRIDGE (BOX)	S.F.	0	\$0.00	\$0
Collector	N/A	WIDEN EXISTING BRIDGE (CONCRETE GIRDER)	S.F.	0	\$0.00	\$0
Collector	N/A	WIDEN EXISTING BRIDGE (STEEL)	S.F.	0	\$0.00	\$0
Collector	N/A	NEW BRIDGE (BOX)	S.F.	0	\$105.00	\$0
Collector	N/A	NEW BRIDGE (CONCRETE GIRDER)	S.F.	0	\$120.00	\$0
Collector	N/A	NEW BRIDGE (STEEL)	S.F.	0	\$150.00	\$0
Collector	N/A	Urban - Standard Diamond	EACH	0	\$25,000,000.00	\$0
Collector	N/A	Urban - Tight Diamond	EACH	0	\$30,000,000.00	\$0
Collector	N/A	Urban - Single Point Urban Interchange (SPUI)	EACH	0	\$35,000,000.00	\$0
Collector	N/A	Rural - Diamond	EACH	0	\$12,500,000.00	\$0
Collector	N/A	Rural - Partial Cloverleaf	EACH	0	\$15,000,000.00	\$0
Collector	N/A	Rural - Full Cloverleaf	EACH	0	\$17,500,000.00	\$0

Subtotal	\$1,856,131
Mobilization	\$88,526
Subtotal	\$1,944,657
Other Construction Items (25%)	\$486,164
Total	\$2,430,822

Year 2015 Planning-Level Cost Estimate



Consultant Name: The Corradino Group
 Date: 11/9/2015
 Roadway: Union Rd.
 Description: From N. Hobbs Road to Smith Road
 County: Knox
 Project Length: 1.34 miles (L.M. 0.00 - 1.34)

Summary of Project Information

Predominant Adjacent Land Use: Residential
 Predominant Terrain Type: Rolling
 Project Complexity: Non-Complex
 Typical Section: Collector
 Total Number of Travel Lanes: 2 Lane Typical Section
 Required ROW (Acres): 3.25
 Project Type: Sidewalk/Curb & Gutter
 Number of Bridge Removals: 0
 Number of Bridge Widening: 0
 Number of New Bridges: 0
 Length of Shared Use Path: 1.34 miles
 Number of Roundabouts: 0
 Number of Traffic Signals: 0
 Length of ITS Installation: 0 miles
 Utility Relocation: N/A
 Additional User Input Cost: N/A

Summary of Project Cost

Construction + Contingency	\$4,446,420
Right-of-Way	\$1,023,270
Utility Relocation	\$0
Preliminary Engineering (10%)	\$444,640
Construction Engineering & Inspection	\$444,640
TOTAL PROJECT COST	\$6,358,970

Consultant Project Notes:

2015 Conceptual Planning Cost Estimation Tool



Project Location

Roadway State Route or Interstate

From Local Road

To

County

TDOT Region

Existing Roadway Information

Right of Way Width ft. Var. Width

Land Valuation Method New Old Experimental

Predominant Adjacent Land Use Var. Land Use

Terrain Var. Terrain

Existing Pavement Width ft. Var. Width

Proposed Project Information

Project Complexity 15% Contingency Applied

New Typical Section Roadway Width (ft) Required ROW Width (ft.)

Outside Shoulder (ft)

Inside Shoulder (ft)

Total Proposed Lanes Var. Lanes

Project Type Sidewalk/Curb & Gutter Shoulder/Roadside Slope

Project Length miles

Vertical/Horizontal Improvements (percent of total project length)

Bridge Removals Box Concrete Girder Steel

Bridge Widening Box Concrete Girder Steel

New Bridges Box Concrete Girder Steel

Length of Shared-Use Path miles

Number of Roundabouts

Number of Traffic Signals

Length of ITS Installation miles

Additional User Input Cost

Advanced Project Information (optional)

Modify Pavement Thickness

Retaining Walls

Average Height ft.

Total Length ft.

Utility Relocation

Construction + Contingency	\$4,446,420
Right-of-Way	\$1,023,270
Utility Relocation	\$0
Preliminary Engineering (10%)	\$444,640
Construction Engineering & Inspection	\$444,640
Total Estimated Project Cost	\$6,358,970

Preliminary Estimated Roadway Estimate

Table 1st Row
7
Table Last Row
355

Union Rd.
Knox
1.34
Collector

Section	ITEM #	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	COST
Collector	105-01	CONSTRUCTION STAKES, LINES AND GRADES	LS	1	\$47,376.74	\$47,377
Collector	203-01	ROAD & DRAINAGE EXCAVATION (UNCLASSIFIED)	C.Y.	62891	\$4.39	\$276,090
Collector	203-03	BORROW EXCAVATION (UNCLASSIFIED)	C.Y.	6289	\$3.58	\$22,515
Collector	303-01	MINERAL AGGREGATE, TYPE A BASE, GRADING D	TON	10196	\$15.56	\$158,645
Collector	307-02.01	ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING A	TON	2170	\$59.90	\$129,967
Collector	307-02.02	ASPHALT CEMENT (PG70-22)(BPMB-HM) GRADING A-S	TON	55	\$526.70	\$29,067
Collector	307-02.03	AGGREGATE (BPMB-HM) GRADING A-S MIX	TON	1643	\$45.00	\$73,929
Collector	307-02.08	ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING B-M2	TON	1421	\$64.00	\$90,965
Collector	402-01	BITUMINOUS MATERIAL FOR PRIME COAT (PC)	TON	19	\$452.98	\$8,633
Collector	402-02	AGGREGATE FOR COVER MATERIAL (PC)	TON	75	\$24.74	\$1,867
Collector	403-01	BITUMINOUS MATERIAL FOR TACK COAT (TC)	TON	7	\$561.91	\$3,672
Collector	411-01.07	ACS (PG64-22) GR "E"	TON	0	\$75.50	\$0
Collector	411-02.10	ACS MIX(PG70-22) GRADING D	TON	1250	\$87.40	\$109,247
Collector	415-01.02	COLD PLANING BITUMINOUS PAVEMENT	S.Y.	6289	\$1.30	\$8,176
Collector	604-07.01	RETAINING WALL	S.F.	0	\$75.00	\$0
Collector	607-05.02	24" CONCRETE PIPE CULVERT (CLASS III)	L.F.	7924	\$53.00	\$419,984
Collector	611-07.01	CLASS A CONCRETE (PIPE ENDWALLS)	C.Y.	43	\$591.11	\$25,505
Collector	611-07.02	STEEL BAR REINFORCEMENT (PIPE ENDWALLS)	LB.	4100	\$1.61	\$6,602
Collector	611-12.02	CATCH BASINS, TYPE 12, > 4' - 8' DEPTH	EACH	48	\$3,092.57	\$148,443
Collector	611-14.02	CATCH BASINS, TYPE 14, > 4' - 8' DEPTH	EACH	24	\$5,515.55	\$132,373
Collector	611-42.02	CATCH BASINS, TYPE 42, > 4' - 8' DEPTH	EACH	6	\$3,972.26	\$23,834
Collector	701-01.01	CONCRETE SIDEWALK (4 ")	S.F.	63677	\$3.48	\$221,595
Collector	702-03	CONCRETE COMBINED CURB & GUTTER	C.Y.	1125	\$197.10	\$221,813
Collector	705-02.02	SINGLE GUARDRAIL (TYPE 2)	L.F.	3891	\$15.34	\$59,693
Collector	705-04.07	TAN ENERGY ABSG TERM (NCHRP 350,TL3)	EACH	3	\$2,030.00	\$5,440
Collector	710-04	FILTER CLOTH UNDERDRAIN (WITH PIPE)	L.F.	14150	\$4.00	\$56,602
Collector	712-01	TRAFFIC CONTROL	LS	1	\$268,653	\$268,653
Collector	712-02.02	INTERCONNECTED PORTABLE BARRIER RAIL	L.F.	354	\$24.96	\$8,830
Collector	713-16.20	SIGNS	EACH	268	\$158.00	\$42,344
Collector	716-13.06	SPRAY THERMO PVMT MRKNG (40 mil) (4IN LINE)	L.M.	5	\$1,208.00	\$6,475
Collector	801-01	SEEDING (WITH MULCH)	UNIT	255	\$24.00	\$6,113
Collector	801-01.07	TEMPORARY SEEDING (WITH MULCH)	UNIT	191	\$16.00	\$3,056
Collector	801-02	SEEDING (WITHOUT MULCH)	UNIT	191	\$14.00	\$2,674
Collector	N/A	TRAFFIC SIGNAL	EACH	0	\$120,000.00	\$0
Collector	N/A	ITS	L.M.	0	\$200,000.00	\$0
Collector	N/A	SHARED-USE PATH	L.M.	1	\$250,000.00	\$335,000
Collector	N/A	ROUNDAABOUT	EACH	0	\$1,100,000.00	\$0
Collector	N/A	BRIDGE REMOVAL	S.F.	0	\$20.00	\$0
Collector	N/A	WIDEN EXISTING BRIDGE (BOX)	S.F.	0	\$0.00	\$0
Collector	N/A	WIDEN EXISTING BRIDGE (CONCRETE GIRDER)	S.F.	0	\$0.00	\$0
Collector	N/A	WIDEN EXISTING BRIDGE (STEEL)	S.F.	0	\$0.00	\$0
Collector	N/A	NEW BRIDGE (BOX)	S.F.	0	\$105.00	\$0
Collector	N/A	NEW BRIDGE (CONCRETE GIRDER)	S.F.	0	\$120.00	\$0
Collector	N/A	NEW BRIDGE (STEEL)	S.F.	0	\$150.00	\$0
Collector	N/A	Urban - Standard Diamond	EACH	0	\$25,000,000.00	\$0
Collector	N/A	Urban - Tight Diamond	EACH	0	\$30,000,000.00	\$0
Collector	N/A	Urban - Single Point Urban Interchange (SPUI)	EACH	0	\$35,000,000.00	\$0
Collector	N/A	Rural - Diamond	EACH	0	\$12,500,000.00	\$0
Collector	N/A	Rural - Partial Cloverleaf	EACH	0	\$15,000,000.00	\$0
Collector	N/A	Rural - Full Cloverleaf	EACH	0	\$17,500,000.00	\$0

Subtotal	\$2,955,178
Mobilization	\$137,983
Subtotal	\$3,093,161
Other Construction Items (25%)	\$773,290
Total	\$3,866,451

Year 2015 Planning-Level Cost Estimate



Consultant Name: The Corradino Group
 Date: 11/9/2015
 Roadway: Boring Rd.
 Description: From Kingston Pike to near Burney Circle
 County: Knox
 Project Length: 0.62 miles (L.M. 0.00 - 0.62)

Summary of Project Information

Predominant Adjacent Land Use: Residential
 Predominant Terrain Type: Rolling
 Project Complexity: Non-Complex
 Typical Section: Collector
 Total Number of Travel Lanes: 2 Lane Typical Section
 Required ROW (Acres): 0.38
 Project Type: Sidewalk/Curb & Gutter
 Number of Bridge Removals: 0
 Number of Bridge Widening: 0
 Number of New Bridges: 0
 Length of Shared Use Path: 0.62 miles
 Number of Roundabouts: 0
 Number of Traffic Signals: 0
 Length of ITS Installation: 0 miles
 Utility Relocation: N/A
 Additional User Input Cost: N/A

Summary of Project Cost

Construction + Contingency	\$2,120,020
Right-of-Way	\$118,360
Utility Relocation	\$0
Preliminary Engineering (10%)	\$212,000
Construction Engineering & Inspection	\$212,000
TOTAL PROJECT COST	\$2,662,380

Consultant Project Notes:

2015 Conceptual Planning Cost Estimation Tool



Project Location

Roadway State Route or Interstate

From Local Road

To

County

TDOT Region

Existing Roadway Information

Right of Way Width ft. Var. Width

Land Valuation Method New Old Experimental

Predominant Adjacent Land Use Var. Land Use

Terrain Var. Terrain

Existing Pavement Width ft. Var. Width

Proposed Project Information

Project Complexity 15% Contingency Applied

New Typical Section Roadway Width (ft) Required ROW Width (ft.)

Outside Shoulder (ft)

Inside Shoulder (ft)

Total Proposed Lanes Var. Lanes

Project Type Sidewalk/Curb & Gutter Shoulder/Roadside Slope

Project Length miles

Vertical/Horizontal Improvements (percent of total project length)

Bridge Removals Box Concrete Girder Steel

Bridge Widening Box Concrete Girder Steel

New Bridges Box Concrete Girder Steel

Length of Shared-Use Path miles

Number of Roundabouts

Number of Traffic Signals

Length of ITS Installation miles

Additional User Input Cost

Advanced Project Information (optional)

Modify Pavement Thickness

Retaining Walls

Average Height ft.

Total Length ft.

Utility Relocation

Construction + Contingency	\$2,120,020
Right-of-Way	\$118,360
Utility Relocation	\$0
Preliminary Engineering (10%)	\$212,000
Construction Engineering & Inspection	\$212,000
Total Estimated Project Cost	\$2,662,380

Preliminary Estimated Roadway Estimate

Table 1st Row
7
Table Last Row
355

Boring Rd.
Knox
0.62
Collector

Section	ITEM #	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	COST
Collector	105-01	CONSTRUCTION STAKES, LINES AND GRADES	LS	1	\$47,376.74	\$47,377
Collector	203-01	ROAD & DRAINAGE EXCAVATION (UNCLASSIFIED)	C.Y.	30008	\$4.39	\$131,735
Collector	203-03	BORROW EXCAVATION (UNCLASSIFIED)	C.Y.	3001	\$3.58	\$10,743
Collector	303-01	MINERAL AGGREGATE, TYPE A BASE, GRADING D	TON	4820	\$15.56	\$74,999
Collector	307-02.01	ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING A	TON	1035	\$59.90	\$62,013
Collector	307-02.02	ASPHALT CEMENT (PG70-22)(BPMB-HM) GRADING A-S	TON	26	\$526.70	\$13,869
Collector	307-02.03	AGGREGATE (BPMB-HM) GRADING A-S MIX	TON	784	\$45.00	\$35,275
Collector	307-02.08	ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING B-M2	TON	678	\$64.00	\$43,404
Collector	402-01	BITUMINOUS MATERIAL FOR PRIME COAT (PC)	TON	9	\$452.98	\$4,119
Collector	402-02	AGGREGATE FOR COVER MATERIAL (PC)	TON	36	\$24.74	\$891
Collector	403-01	BITUMINOUS MATERIAL FOR TACK COAT (TC)	TON	3	\$561.91	\$1,686
Collector	411-01.07	ACS (PG64-22) GR "E"	TON	0	\$75.50	\$0
Collector	411-02.10	ACS MIX(PG70-22) GRADING D	TON	578	\$87.40	\$50,547
Collector	415-01.02	COLD PLANING BITUMINOUS PAVEMENT	S.Y.	2728	\$1.30	\$3,546
Collector	604-07.01	RETAINING WALL	S.F.	0	\$75.00	\$0
Collector	607-05.02	24" CONCRETE PIPE CULVERT (CLASS III)	L.F.	3666	\$53.00	\$194,321
Collector	611-07.01	CLASS A CONCRETE (PIPE ENDWALLS)	C.Y.	20	\$591.11	\$11,801
Collector	611-07.02	STEEL BAR REINFORCEMENT (PIPE ENDWALLS)	LB.	1897	\$1.61	\$3,054
Collector	611-12.02	CATCH BASINS, TYPE 12, > 4' - 8' DEPTH	EACH	22	\$3,092.57	\$68,037
Collector	611-14.02	CATCH BASINS, TYPE 14, > 4' - 8' DEPTH	EACH	11	\$5,515.55	\$60,671
Collector	611-42.02	CATCH BASINS, TYPE 42, > 4' - 8' DEPTH	EACH	3	\$3,972.26	\$11,917
Collector	701-01.01	CONCRETE SIDEWALK (4 ")	S.F.	29462	\$3.48	\$102,529
Collector	702-03	CONCRETE COMBINED CURB & GUTTER	C.Y.	521	\$197.10	\$102,630
Collector	705-02.02	SINGLE GUARDRAIL (TYPE 2)	L.F.	1800	\$15.34	\$27,619
Collector	705-04.07	TAN ENERGY ABSG TERM (NCHRP 350,TL3)	EACH	1	\$2,030.00	\$2,517
Collector	710-04	FILTER CLOTH UNDERDRAIN (WITH PIPE)	L.F.	6547	\$4.00	\$26,189
Collector	712-01	TRAFFIC CONTROL	LS	1	\$127,864	\$127,864
Collector	712-02.02	INTERCONNECTED PORTABLE BARRIER RAIL	L.F.	164	\$24.96	\$4,085
Collector	713-16.20	SIGNS	EACH	124	\$158.00	\$19,592
Collector	716-13.06	SPRAY THERMO PVMT MRKNG (40 mil) (4IN LINE)	L.M.	2	\$1,208.00	\$2,996
Collector	801-01	SEEDING (WITH MULCH)	UNIT	118	\$24.00	\$2,828
Collector	801-01.07	TEMPORARY SEEDING (WITH MULCH)	UNIT	88	\$16.00	\$1,414
Collector	801-02	SEEDING (WITHOUT MULCH)	UNIT	88	\$14.00	\$1,237
Collector	N/A	TRAFFIC SIGNAL	EACH	0	\$120,000.00	\$0
Collector	N/A	ITS	L.M.	0	\$200,000.00	\$0
Collector	N/A	SHARED-USE PATH	L.M.	1	\$250,000.00	\$155,000
Collector	N/A	ROUNDAABOUT	EACH	0	\$1,100,000.00	\$0
Collector	N/A	BRIDGE REMOVAL	S.F.	0	\$20.00	\$0
Collector	N/A	WIDEN EXISTING BRIDGE (BOX)	S.F.	0	\$0.00	\$0
Collector	N/A	WIDEN EXISTING BRIDGE (CONCRETE GIRDER)	S.F.	0	\$0.00	\$0
Collector	N/A	WIDEN EXISTING BRIDGE (STEEL)	S.F.	0	\$0.00	\$0
Collector	N/A	NEW BRIDGE (BOX)	S.F.	0	\$105.00	\$0
Collector	N/A	NEW BRIDGE (CONCRETE GIRDER)	S.F.	0	\$120.00	\$0
Collector	N/A	NEW BRIDGE (STEEL)	S.F.	0	\$150.00	\$0
Collector	N/A	Urban - Standard Diamond	EACH	0	\$25,000,000.00	\$0
Collector	N/A	Urban - Tight Diamond	EACH	0	\$30,000,000.00	\$0
Collector	N/A	Urban - Single Point Urban Interchange (SPUI)	EACH	0	\$35,000,000.00	\$0
Collector	N/A	Rural - Diamond	EACH	0	\$12,500,000.00	\$0
Collector	N/A	Rural - Partial Cloverleaf	EACH	0	\$15,000,000.00	\$0
Collector	N/A	Rural - Full Cloverleaf	EACH	0	\$17,500,000.00	\$0

Subtotal	\$1,406,505
Mobilization	\$68,293
Subtotal	\$1,474,798
Other Construction Items (25%)	\$368,699
Total	\$1,843,497

Year 2015 Planning-Level Cost Estimate



Consultant Name: The Corradino Group
 Date: 11/9/2015
 Roadway: Allen Kirby Rd.
 Description: Generic Cost-Per-Mile Sample for Town of Farragut
 County: Knox
 Project Length: 0.95 miles (L.M. 0.00 - 0.95)

Summary of Project Information

Predominant Adjacent Land Use: Residential
 Predominant Terrain Type: Rolling
 Project Complexity: Non-Complex
 Typical Section: Collector
 Total Number of Travel Lanes: 2 Lane Typical Section
 Required ROW (Acres): 1.15
 Project Type: Sidewalk/Curb & Gutter
 Number of Bridge Removals: 0
 Number of Bridge Widening: 0
 Number of New Bridges: 0
 Length of Shared Use Path: 0.95 miles
 Number of Roundabouts: 0
 Number of Traffic Signals: 0
 Length of ITS Installation: 0 miles
 Utility Relocation: N/A
 Additional User Input Cost: N/A

Summary of Project Cost

Construction + Contingency	\$3,228,400
Right-of-Way	\$362,730
Utility Relocation	\$0
Preliminary Engineering (10%)	\$322,840
Construction Engineering & Inspection	\$322,840
TOTAL PROJECT COST	\$4,236,810

Consultant Project Notes:

2015 Conceptual Planning Cost Estimation Tool



Project Location

Roadway State Route or Interstate

From Local Road

To

County

TDOT Region

Existing Roadway Information

Right of Way Width ft. Var. Width

Land Valuation Method New Old Experimental

Predominant Adjacent Land Use Var. Land Use

Terrain Var. Terrain

Existing Pavement Width ft. Var. Width

Proposed Project Information

Project Complexity 15% Contingency Applied

New Typical Section Roadway Width (ft) Required ROW Width (ft.)

Outside Shoulder (ft)

Inside Shoulder (ft)

Total Proposed Lanes Var. Lanes

Project Type Sidewalk/Curb & Gutter Shoulder/Roadside Slope

Project Length miles

Vertical/Horizontal Improvements (percent of total project length)

Bridge Removals Box Concrete Girder Steel

Bridge Widening Box Concrete Girder Steel

New Bridges Box Concrete Girder Steel

Length of Shared-Use Path miles

Number of Roundabouts

Number of Traffic Signals

Length of ITS Installation miles

Additional User Input Cost

Advanced Project Information (optional)

Modify Pavement Thickness

Retaining Walls

Average Height ft.

Total Length ft.

Utility Relocation

Construction + Contingency	\$3,228,400
Right-of-Way	\$362,730
Utility Relocation	\$0
Preliminary Engineering (10%)	\$322,840
Construction Engineering & Inspection	\$322,840
Total Estimated Project Cost	\$4,236,810

Preliminary Estimated Roadway Estimate

Table 1st Row
7
Table Last Row
355

Allen Kirby Rd.
Knox
0.95
Collector

Section	ITEM #	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	COST
Collector	105-01	CONSTRUCTION STAKES, LINES AND GRADES	LS	1	\$47,376.74	\$47,377
Collector	203-01	ROAD & DRAINAGE EXCAVATION (UNCLASSIFIED)	C.Y.	47373	\$4.39	\$207,969
Collector	203-03	BORROW EXCAVATION (UNCLASSIFIED)	C.Y.	4737	\$3.58	\$16,960
Collector	303-01	MINERAL AGGREGATE, TYPE A BASE, GRADING D	TON	7543	\$15.56	\$117,363
Collector	307-02.01	ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING A	TON	1634	\$59.90	\$97,899
Collector	307-02.02	ASPHALT CEMENT (PG70-22)(BPMB-HM) GRADING A-S	TON	42	\$526.70	\$21,895
Collector	307-02.03	AGGREGATE (BPMB-HM) GRADING A-S MIX	TON	1238	\$45.00	\$55,688
Collector	307-02.08	ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING B-M2	TON	1071	\$64.00	\$68,521
Collector	402-01	BITUMINOUS MATERIAL FOR PRIME COAT (PC)	TON	14	\$452.98	\$6,503
Collector	402-02	AGGREGATE FOR COVER MATERIAL (PC)	TON	57	\$24.74	\$1,406
Collector	403-01	BITUMINOUS MATERIAL FOR TACK COAT (TC)	TON	5	\$561.91	\$2,562
Collector	411-01.07	ACS (PG64-22) GR "E"	TON	0	\$75.50	\$0
Collector	411-02.10	ACS MIX(PG70-22) GRADING D	TON	886	\$87.40	\$77,451
Collector	415-01.02	COLD PLANING BITUMINOUS PAVEMENT	S.Y.	3901	\$1.30	\$5,072
Collector	604-07.01	RETAINING WALL	S.F.	0	\$75.00	\$0
Collector	607-05.02	24" CONCRETE PIPE CULVERT (CLASS III)	L.F.	5618	\$53.00	\$297,750
Collector	611-07.01	CLASS A CONCRETE (PIPE ENDWALLS)	C.Y.	31	\$591.11	\$18,082
Collector	611-07.02	STEEL BAR REINFORCEMENT (PIPE ENDWALLS)	LB.	2907	\$1.61	\$4,680
Collector	611-12.02	CATCH BASINS, TYPE 12, > 4' - 8' DEPTH	EACH	34	\$3,092.57	\$105,147
Collector	611-14.02	CATCH BASINS, TYPE 14, > 4' - 8' DEPTH	EACH	17	\$5,515.55	\$93,764
Collector	611-42.02	CATCH BASINS, TYPE 42, > 4' - 8' DEPTH	EACH	4	\$3,972.26	\$15,889
Collector	701-01.01	CONCRETE SIDEWALK (4 ")	S.F.	45144	\$3.48	\$157,101
Collector	702-03	CONCRETE COMBINED CURB & GUTTER	C.Y.	798	\$197.10	\$157,255
Collector	705-02.02	SINGLE GUARDRAIL (TYPE 2)	L.F.	2759	\$15.34	\$42,320
Collector	705-04.07	TAN ENERGY ABSG TERM (NCHRP 350,TL3)	EACH	2	\$2,030.00	\$3,857
Collector	710-04	FILTER CLOTH UNDERDRAIN (WITH PIPE)	L.F.	10032	\$4.00	\$40,128
Collector	712-01	TRAFFIC CONTROL	LS	1	\$194,941	\$194,941
Collector	712-02.02	INTERCONNECTED PORTABLE BARRIER RAIL	L.F.	251	\$24.96	\$6,260
Collector	713-16.20	SIGNS	EACH	190	\$158.00	\$30,020
Collector	716-13.06	SPRAY THERMO PVMT MRKNG (40 mil) (4IN LINE)	L.M.	4	\$1,208.00	\$4,590
Collector	801-01	SEEDING (WITH MULCH)	UNIT	181	\$24.00	\$4,334
Collector	801-01.07	TEMPORARY SEEDING (WITH MULCH)	UNIT	135	\$16.00	\$2,167
Collector	801-02	SEEDING (WITHOUT MULCH)	UNIT	135	\$14.00	\$1,896
Collector	N/A	TRAFFIC SIGNAL	EACH	0	\$120,000.00	\$0
Collector	N/A	ITS	L.M.	0	\$200,000.00	\$0
Collector	N/A	SHARED-USE PATH	L.M.	1	\$250,000.00	\$237,500
Collector	N/A	ROUNDAABOUT	EACH	0	\$1,100,000.00	\$0
Collector	N/A	BRIDGE REMOVAL	S.F.	0	\$20.00	\$0
Collector	N/A	WIDEN EXISTING BRIDGE (BOX)	S.F.	0	\$0.00	\$0
Collector	N/A	WIDEN EXISTING BRIDGE (CONCRETE GIRDER)	S.F.	0	\$0.00	\$0
Collector	N/A	WIDEN EXISTING BRIDGE (STEEL)	S.F.	0	\$0.00	\$0
Collector	N/A	NEW BRIDGE (BOX)	S.F.	0	\$105.00	\$0
Collector	N/A	NEW BRIDGE (CONCRETE GIRDER)	S.F.	0	\$120.00	\$0
Collector	N/A	NEW BRIDGE (STEEL)	S.F.	0	\$150.00	\$0
Collector	N/A	Urban - Standard Diamond	EACH	0	\$25,000,000.00	\$0
Collector	N/A	Urban - Tight Diamond	EACH	0	\$30,000,000.00	\$0
Collector	N/A	Urban - Single Point Urban Interchange (SPUI)	EACH	0	\$35,000,000.00	\$0
Collector	N/A	Rural - Diamond	EACH	0	\$12,500,000.00	\$0
Collector	N/A	Rural - Partial Cloverleaf	EACH	0	\$15,000,000.00	\$0
Collector	N/A	Rural - Full Cloverleaf	EACH	0	\$17,500,000.00	\$0

Subtotal	\$2,144,347
Mobilization	\$101,496
Subtotal	\$2,245,843
Other Construction Items (25%)	\$561,461
Total	\$2,807,304

Year 2015 Planning-Level Cost Estimate



Consultant Name: The Corradino Group
 Date: 11/9/2015
 Roadway: Evans Rd.
 Description: From McFee Road to Cottage Stone Boulevard
 County: Knox
 Project Length: 0.55 miles (L.M. 0.00 - 0.55)

Summary of Project Information

Predominant Adjacent Land Use: Residential
 Predominant Terrain Type: Rolling
 Project Complexity: Non-Complex
 Typical Section: Collector
 Total Number of Travel Lanes: 2 Lane Typical Section
 Required ROW (Acres): 1.33
 Project Type: Sidewalk/Curb & Gutter
 Number of Bridge Removals: 0
 Number of Bridge Widening: 0
 Number of New Bridges: 0
 Length of Shared Use Path: 0.55 miles
 Number of Roundabouts: 0
 Number of Traffic Signals: 0
 Length of ITS Installation: 0 miles
 Utility Relocation: N/A
 Additional User Input Cost: N/A

Summary of Project Cost

Construction + Contingency	\$1,851,050
Right-of-Way	\$420,000
Utility Relocation	\$0
Preliminary Engineering (10%)	\$185,110
Construction Engineering & Inspection	\$185,110
TOTAL PROJECT COST	\$2,641,270

Consultant Project Notes:

2015 Conceptual Planning Cost Estimation Tool



Project Location

Roadway State Route or Interstate

From Local Road

To

County

TDOT Region

Existing Roadway Information

Right of Way Width ft. Var. Width

Land Valuation Method New Old Experimental

Predominant Adjacent Land Use Var. Land Use

Terrain Var. Terrain

Existing Pavement Width ft. Var. Width

Proposed Project Information

Project Complexity 15% Contingency Applied

New Typical Section Roadway Width (ft) Required ROW Width (ft.)

Outside Shoulder (ft)

Inside Shoulder (ft)

Total Proposed Lanes Var. Lanes

Project Type Sidewalk/Curb & Gutter Shoulder/Roadside Slope

Project Length miles

Vertical/Horizontal Improvements (percent of total project length)

Bridge Removals Box Concrete Girder Steel

Bridge Widening Box Concrete Girder Steel

New Bridges Box Concrete Girder Steel

Length of Shared-Use Path miles

Number of Roundabouts

Number of Traffic Signals

Length of ITS Installation miles

Additional User Input Cost

Advanced Project Information (optional)

Modify Pavement Thickness

Retaining Walls

Average Height ft.

Total Length ft.

Utility Relocation

Construction + Contingency	\$1,851,050
Right-of-Way	\$420,000
Utility Relocation	\$0
Preliminary Engineering (10%)	\$185,110
Construction Engineering & Inspection	\$185,110
Total Estimated Project Cost	\$2,641,270

Preliminary Estimated Roadway Estimate

Table 1st Row
7
Table Last Row
355

Evans Rd.
Knox
0.55
Collector

Section	ITEM #	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	COST
Collector	105-01	CONSTRUCTION STAKES, LINES AND GRADES	LS	1	\$47,376.74	\$47,377
Collector	203-01	ROAD & DRAINAGE EXCAVATION (UNCLASSIFIED)	C.Y.	24200	\$4.39	\$106,238
Collector	203-03	BORROW EXCAVATION (UNCLASSIFIED)	C.Y.	2420	\$3.58	\$8,664
Collector	303-01	MINERAL AGGREGATE, TYPE A BASE, GRADING D	TON	4003	\$15.56	\$62,284
Collector	307-02.01	ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING A	TON	835	\$59.90	\$50,011
Collector	307-02.02	ASPHALT CEMENT (PG70-22)(BPMB-HM) GRADING A-S	TON	21	\$526.70	\$11,185
Collector	307-02.03	AGGREGATE (BPMB-HM) GRADING A-S MIX	TON	632	\$45.00	\$28,447
Collector	307-02.08	ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING B-M2	TON	547	\$64.00	\$35,003
Collector	402-01	BITUMINOUS MATERIAL FOR PRIME COAT (PC)	TON	7	\$452.98	\$3,322
Collector	402-02	AGGREGATE FOR COVER MATERIAL (PC)	TON	29	\$24.74	\$718
Collector	403-01	BITUMINOUS MATERIAL FOR TACK COAT (TC)	TON	3	\$561.91	\$1,531
Collector	411-01.07	ACS (PG64-22) GR "E"	TON	0	\$75.50	\$0
Collector	411-02.10	ACS MIX(PG70-22) GRADING D	TON	513	\$87.40	\$44,840
Collector	415-01.02	COLD PLANING BITUMINOUS PAVEMENT	S.Y.	2904	\$1.30	\$3,775
Collector	604-07.01	RETAINING WALL	S.F.	0	\$75.00	\$0
Collector	607-05.02	24" CONCRETE PIPE CULVERT (CLASS III)	L.F.	3252	\$53.00	\$172,381
Collector	611-07.01	CLASS A CONCRETE (PIPE ENDWALLS)	C.Y.	18	\$591.11	\$10,469
Collector	611-07.02	STEEL BAR REINFORCEMENT (PIPE ENDWALLS)	LB.	1683	\$1.61	\$2,710
Collector	611-12.02	CATCH BASINS, TYPE 12, > 4' - 8' DEPTH	EACH	20	\$3,092.57	\$61,851
Collector	611-14.02	CATCH BASINS, TYPE 14, > 4' - 8' DEPTH	EACH	10	\$5,515.55	\$55,156
Collector	611-42.02	CATCH BASINS, TYPE 42, > 4' - 8' DEPTH	EACH	3	\$3,972.26	\$11,917
Collector	701-01.01	CONCRETE SIDEWALK (4 ")	S.F.	26136	\$3.48	\$90,953
Collector	702-03	CONCRETE COMBINED CURB & GUTTER	C.Y.	462	\$197.10	\$91,043
Collector	705-02.02	SINGLE GUARDRAIL (TYPE 2)	L.F.	1597	\$15.34	\$24,501
Collector	705-04.07	TAN ENERGY ABSG TERM (NCHRP 350,TL3)	EACH	1	\$2,030.00	\$2,233
Collector	710-04	FILTER CLOTH UNDERDRAIN (WITH PIPE)	L.F.	5808	\$4.00	\$23,232
Collector	712-01	TRAFFIC CONTROL	LS	1	\$111,586	\$111,586
Collector	712-02.02	INTERCONNECTED PORTABLE BARRIER RAIL	L.F.	145	\$24.96	\$3,624
Collector	713-16.20	SIGNS	EACH	110	\$158.00	\$17,380
Collector	716-13.06	SPRAY THERMO PVMT MRKNG (40 mil) (4IN LINE)	L.M.	2	\$1,208.00	\$2,658
Collector	801-01	SEEDING (WITH MULCH)	UNIT	105	\$24.00	\$2,509
Collector	801-01.07	TEMPORARY SEEDING (WITH MULCH)	UNIT	78	\$16.00	\$1,255
Collector	801-02	SEEDING (WITHOUT MULCH)	UNIT	78	\$14.00	\$1,098
Collector	N/A	TRAFFIC SIGNAL	EACH	0	\$120,000.00	\$0
Collector	N/A	ITS	L.M.	0	\$200,000.00	\$0
Collector	N/A	SHARED-USE PATH	L.M.	1	\$250,000.00	\$137,500
Collector	N/A	ROUNDAABOUT	EACH	0	\$1,100,000.00	\$0
Collector	N/A	BRIDGE REMOVAL	S.F.	0	\$20.00	\$0
Collector	N/A	WIDEN EXISTING BRIDGE (BOX)	S.F.	0	\$0.00	\$0
Collector	N/A	WIDEN EXISTING BRIDGE (CONCRETE GIRDER)	S.F.	0	\$0.00	\$0
Collector	N/A	WIDEN EXISTING BRIDGE (STEEL)	S.F.	0	\$0.00	\$0
Collector	N/A	NEW BRIDGE (BOX)	S.F.	0	\$105.00	\$0
Collector	N/A	NEW BRIDGE (CONCRETE GIRDER)	S.F.	0	\$120.00	\$0
Collector	N/A	NEW BRIDGE (STEEL)	S.F.	0	\$150.00	\$0
Collector	N/A	Urban - Standard Diamond	EACH	0	\$25,000,000.00	\$0
Collector	N/A	Urban - Tight Diamond	EACH	0	\$30,000,000.00	\$0
Collector	N/A	Urban - Single Point Urban Interchange (SPUI)	EACH	0	\$35,000,000.00	\$0
Collector	N/A	Rural - Diamond	EACH	0	\$12,500,000.00	\$0
Collector	N/A	Rural - Partial Cloverleaf	EACH	0	\$15,000,000.00	\$0
Collector	N/A	Rural - Full Cloverleaf	EACH	0	\$17,500,000.00	\$0

Subtotal	\$1,227,449
Mobilization	\$60,235
Subtotal	\$1,287,684
Other Construction Items (25%)	\$321,921
Total	\$1,609,605

Year 2015 Planning-Level Cost Estimate



Consultant Name: The Corradino Group
 Date: 11/9/2015
 Roadway: Virtue Rd.
 Description: Generic Cost-Per-Mile Sample for Town of Farragut
 County: Knox
 Project Length: 1.55 miles (L.M. 0.00 - 1.55)

Summary of Project Information

Predominant Adjacent Land Use: Residential
 Predominant Terrain Type: Mountainous
 Project Complexity: Moderately Complex
 Typical Section: Collector
 Total Number of Travel Lanes: 2 Lane Typical Section
 Required ROW (Acres): 6.01
 Project Type: Sidewalk/Curb & Gutter
 Number of Bridge Removals: 1
 Number of Bridge Widening: 0
 Number of New Bridges: 1
 Length of Shared Use Path: 1.55 miles
 Number of Roundabouts: 0
 Number of Traffic Signals: 0
 Length of ITS Installation: 0 miles
 Utility Relocation: N/A
 Additional User Input Cost: N/A

Summary of Project Cost

Construction + Contingency	\$12,009,690
Right-of-Way	\$1,893,820
Utility Relocation	\$0
Preliminary Engineering (10%)	\$1,200,970
Construction Engineering & Inspection	\$1,200,970
TOTAL PROJECT COST	\$16,305,450

Consultant Project Notes:

Bridge Removal and replacement near Broadwood Dr. (175 ft)
Estimate a need for retaining walls along 15% of the route

2015 Conceptual Planning Cost Estimation Tool



Project Location

Roadway State Route or Interstate

From Local Road

To

County

TDOT Region

Existing Roadway Information

Right of Way Width ft. Var. Width

Land Valuation Method New Old Experimental

Predominant Adjacent Land Use Var. Land Use

Terrain Var. Terrain

Existing Pavement Width ft. Var. Width

Proposed Project Information

Project Complexity 60% Contingency Applied

New Typical Section Roadway Width (ft) Required ROW Width (ft.)

Outside Shoulder (ft)

Inside Shoulder (ft)

Total Proposed Lanes Var. Lanes

Project Type Sidewalk/Curb & Gutter Shoulder/Roadside Slope

Project Length miles

Vertical/Horizontal Improvements (percent of total project length)

Bridge Removals Box Concrete Girder Steel

	Number	Length (ft)	Width (ft)
Concrete Girder	<input type="text" value="1"/>	<input type="text" value="175"/>	<input type="text" value="22"/>

Bridge Widening Box Concrete Girder Steel

New Bridges Box Concrete Girder Steel

	Number	Length (ft)	Width (ft)
Concrete Girder	<input type="text" value="1"/>	<input type="text" value="175"/>	<input type="text" value="43"/>

Length of Shared-Use Path miles

Number of Roundabouts

Number of Traffic Signals

Length of ITS Installation miles

Additional User Input Cost

Advanced Project Information (optional)

Modify Pavement Thickness

Retaining Walls

Average Height ft.

Total Length ft.

Utility Relocation

Construction + Contingency	\$12,009,690
Right-of-Way	\$1,893,820
Utility Relocation	\$0
Preliminary Engineering (10%)	\$1,200,970
Construction Engineering & Inspection	\$1,200,970
Total Estimated Project Cost	\$16,305,450

Preliminary Estimated Roadway Estimate

Table 1st Row
7
Table Last Row
355

Virtue Rd.
Knox
1.55
Collector

Section	ITEM #	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	COST
Collector	105-01	CONSTRUCTION STAKES, LINES AND GRADES	LS	1	\$47,376.74	\$47,377
Collector	203-01	ROAD & DRAINAGE EXCAVATION (UNCLASSIFIED)	C.Y.	151404	\$4.39	\$664,664
Collector	203-03	BORROW EXCAVATION (UNCLASSIFIED)	C.Y.	15140	\$3.58	\$54,203
Collector	303-01	MINERAL AGGREGATE, TYPE A BASE, GRADING D	TON	13075	\$15.56	\$203,454
Collector	307-02.01	ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING A	TON	2902	\$59.90	\$173,824
Collector	307-02.02	ASPHALT CEMENT (PG70-22)(BPMB-HM) GRADING A-S	TON	74	\$526.70	\$38,875
Collector	307-02.03	AGGREGATE (BPMB-HM) GRADING A-S MIX	TON	2197	\$45.00	\$98,876
Collector	307-02.08	ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING B-M2	TON	1901	\$64.00	\$121,662
Collector	402-01	BITUMINOUS MATERIAL FOR PRIME COAT (PC)	TON	25	\$452.98	\$11,546
Collector	402-02	AGGREGATE FOR COVER MATERIAL (PC)	TON	101	\$24.74	\$2,497
Collector	403-01	BITUMINOUS MATERIAL FOR TACK COAT (TC)	TON	7	\$561.91	\$4,081
Collector	411-01.07	ACS (PG64-22) GR "E"	TON	0	\$75.50	\$0
Collector	411-02.10	ACS MIX(PG70-22) GRADING D	TON	1446	\$87.40	\$126,367
Collector	415-01.02	COLD PLANING BITUMINOUS PAVEMENT	S.Y.	5001	\$1.30	\$6,502
Collector	604-07.01	RETAINING WALL	S.F.	12000	\$75.00	\$900,000
Collector	607-05.02	24" CONCRETE PIPE CULVERT (CLASS III)	L.F.	9166	\$53.00	\$485,802
Collector	611-07.01	CLASS A CONCRETE (PIPE ENDWALLS)	C.Y.	50	\$591.11	\$29,502
Collector	611-07.02	STEEL BAR REINFORCEMENT (PIPE ENDWALLS)	LB.	4743	\$1.61	\$7,636
Collector	611-12.02	CATCH BASINS, TYPE 12, > 4' - 8' DEPTH	EACH	50	\$3,092.57	\$154,629
Collector	611-14.02	CATCH BASINS, TYPE 14, > 4' - 8' DEPTH	EACH	26	\$5,515.55	\$143,404
Collector	611-42.02	CATCH BASINS, TYPE 42, > 4' - 8' DEPTH	EACH	7	\$3,972.26	\$27,806
Collector	701-01.01	CONCRETE SIDEWALK (4 ")	S.F.	73656	\$3.48	\$256,323
Collector	702-03	CONCRETE COMBINED CURB & GUTTER	C.Y.	1302	\$197.10	\$256,574
Collector	705-02.02	SINGLE GUARDRAIL (TYPE 2)	L.F.	8593	\$15.34	\$131,820
Collector	705-04.07	TAN ENERGY ABSG TERM (NCHRP 350,TL3)	EACH	7	\$2,030.00	\$14,413
Collector	710-04	FILTER CLOTH UNDERDRAIN (WITH PIPE)	L.F.	16368	\$4.00	\$65,472
Collector	712-01	TRAFFIC CONTROL	LS	1	\$547,976	\$547,976
Collector	712-02.02	INTERCONNECTED PORTABLE BARRIER RAIL	L.F.	409	\$24.96	\$10,214
Collector	713-16.20	SIGNS	EACH	310	\$158.00	\$48,980
Collector	716-13.06	SPRAY THERMO PVMT MRKNG (40 mil) (4IN LINE)	L.M.	6	\$1,208.00	\$7,490
Collector	801-01	SEEDING (WITH MULCH)	UNIT	393	\$24.00	\$9,428
Collector	801-01.07	TEMPORARY SEEDING (WITH MULCH)	UNIT	295	\$16.00	\$4,714
Collector	801-02	SEEDING (WITHOUT MULCH)	UNIT	295	\$14.00	\$4,125
Collector	N/A	TRAFFIC SIGNAL	EACH	0	\$120,000.00	\$0
Collector	N/A	ITS	L.M.	0	\$200,000.00	\$0
Collector	N/A	SHARED-USE PATH	L.M.	2	\$250,000.00	\$387,500
Collector	N/A	ROUNDAABOUT	EACH	0	\$1,100,000.00	\$0
Collector	N/A	BRIDGE REMOVAL	S.F.	3850	\$20.00	\$77,000
Collector	N/A	WIDEN EXISTING BRIDGE (BOX)	S.F.	0	\$0.00	\$0
Collector	N/A	WIDEN EXISTING BRIDGE (CONCRETE GIRDER)	S.F.	0	\$0.00	\$0
Collector	N/A	WIDEN EXISTING BRIDGE (STEEL)	S.F.	0	\$0.00	\$0
Collector	N/A	NEW BRIDGE (BOX)	S.F.	0	\$105.00	\$0
Collector	N/A	NEW BRIDGE (CONCRETE GIRDER)	S.F.	7525	\$120.00	\$903,000
Collector	N/A	NEW BRIDGE (STEEL)	S.F.	0	\$150.00	\$0
Collector	N/A	Urban - Standard Diamond	EACH	0	\$25,000,000.00	\$0
Collector	N/A	Urban - Tight Diamond	EACH	0	\$30,000,000.00	\$0
Collector	N/A	Urban - Single Point Urban Interchange (SPUI)	EACH	0	\$35,000,000.00	\$0
Collector	N/A	Rural - Diamond	EACH	0	\$15,000,000.00	\$0
Collector	N/A	Rural - Partial Cloverleaf	EACH	0	\$17,500,000.00	\$0
Collector	N/A	Rural - Full Cloverleaf	EACH	0	\$20,000,000.00	\$0

Subtotal	\$6,027,735
Mobilization	\$271,109
Subtotal	\$6,298,844
Other Construction Items (25%)	\$1,574,711
Total	\$7,873,556

Year 2015 Planning-Level Cost Estimate



Consultant Name: The Corradino Group
 Date: 11/9/2015
 Roadway: Boyd Station Rd.
 Description: From McFee Road to Virtue Road
 County: Knox
 Project Length: 0.87 miles (L.M. 0.00 - 0.87)

Summary of Project Information

Predominant Adjacent Land Use: Agricultural
 Predominant Terrain Type: Flat
 Project Complexity: Non-Complex
 Typical Section: Collector
 Total Number of Travel Lanes: 2 Lane Typical Section
 Required ROW (Acres): 0.53
 Project Type: Sidewalk/Curb & Gutter
 Number of Bridge Removals: 0
 Number of Bridge Widening: 0
 Number of New Bridges: 0
 Length of Shared Use Path: 0.87 miles
 Number of Roundabouts: 0
 Number of Traffic Signals: 0
 Length of ITS Installation: 0 miles
 Utility Relocation: N/A
 Additional User Input Cost: N/A

Summary of Project Cost

Construction + Contingency	\$3,042,250
Right-of-Way	\$31,110
Utility Relocation	\$0
Preliminary Engineering (10%)	\$304,230
Construction Engineering & Inspection	\$304,230
TOTAL PROJECT COST	\$3,681,820

Consultant Project Notes:

Road will have to be shifted the entire route due to the adjacent railroad tracks.

2015 Conceptual Planning Cost Estimation Tool



Project Location

Roadway State Route or Interstate

From Local Road

To

County

TDOT Region

Existing Roadway Information

Right of Way Width ft. Var. Width

Land Valuation Method New Old Experimental

Predominant Adjacent Land Use Var. Land Use

Terrain Var. Terrain

Existing Pavement Width ft. Var. Width

Proposed Project Information

Project Complexity 15% Contingency Applied

New Typical Section Roadway Width (ft) Outside Shoulder (ft) Inside Shoulder (ft) Required ROW Width (ft.)

Total Proposed Lanes Var. Lanes

Project Type Sidewalk/Curb & Gutter Shoulder/Roadside Slope

Project Length miles

Vertical/Horizontal Improvements (percent of total project length)

Bridge Removals Box Concrete Girder Steel

Bridge Widening Box Concrete Girder Steel

New Bridges Box Concrete Girder Steel

Length of Shared-Use Path miles

Number of Roundabouts

Number of Traffic Signals

Length of ITS Installation miles

Additional User Input Cost

Advanced Project Information (optional)

Modify Pavement Thickness

Retaining Walls

Average Height ft.

Total Length ft.

Utility Relocation

Construction + Contingency	\$3,042,250
Right-of-Way	\$31,110
Utility Relocation	\$0
Preliminary Engineering (10%)	\$304,230
Construction Engineering & Inspection	\$304,230
Total Estimated Project Cost	\$3,681,820

Preliminary Estimated Roadway Estimate

Table 1st Row
7
Table Last Row
355

Boyd Station Rd.
Knox
0.87
Collector

Section	ITEM #	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	COST
Collector	105-01	CONSTRUCTION STAKES, LINES AND GRADES	LS	1	\$47,376.74	\$47,377
Collector	203-01	ROAD & DRAINAGE EXCAVATION (UNCLASSIFIED)	C.Y.	24499	\$4.39	\$107,551
Collector	203-03	BORROW EXCAVATION (UNCLASSIFIED)	C.Y.	2450	\$3.58	\$8,771
Collector	303-01	MINERAL AGGREGATE, TYPE A BASE, GRADING D	TON	8922	\$15.56	\$138,827
Collector	307-02.01	ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING A	TON	2113	\$59.90	\$126,572
Collector	307-02.02	ASPHALT CEMENT (PG70-22)(BPMB-HM) GRADING A-S	TON	54	\$526.70	\$28,308
Collector	307-02.03	AGGREGATE (BPMB-HM) GRADING A-S MIX	TON	1600	\$45.00	\$71,998
Collector	307-02.08	ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING B-M2	TON	1384	\$64.00	\$88,589
Collector	402-01	BITUMINOUS MATERIAL FOR PRIME COAT (PC)	TON	19	\$452.98	\$8,407
Collector	402-02	AGGREGATE FOR COVER MATERIAL (PC)	TON	73	\$24.74	\$1,818
Collector	403-01	BITUMINOUS MATERIAL FOR TACK COAT (TC)	TON	4	\$561.91	\$2,086
Collector	411-01.07	ACS (PG64-22) GR "E"	TON	0	\$75.50	\$0
Collector	411-02.10	ACS MIX(PG70-22) GRADING D	TON	812	\$87.40	\$70,928
Collector	415-01.02	COLD PLANING BITUMINOUS PAVEMENT	S.Y.	0	\$1.30	\$0
Collector	604-07.01	RETAINING WALL	S.F.	0	\$75.00	\$0
Collector	607-05.02	24" CONCRETE PIPE CULVERT (CLASS III)	L.F.	5145	\$53.00	\$272,676
Collector	611-07.01	CLASS A CONCRETE (PIPE ENDWALLS)	C.Y.	28	\$591.11	\$16,559
Collector	611-07.02	STEEL BAR REINFORCEMENT (PIPE ENDWALLS)	LB.	2662	\$1.61	\$4,286
Collector	611-12.02	CATCH BASINS, TYPE 12, > 4' - 8' DEPTH	EACH	38	\$3,092.57	\$117,518
Collector	611-14.02	CATCH BASINS, TYPE 14, > 4' - 8' DEPTH	EACH	20	\$5,515.55	\$110,311
Collector	611-42.02	CATCH BASINS, TYPE 42, > 4' - 8' DEPTH	EACH	5	\$3,972.26	\$19,861
Collector	701-01.01	CONCRETE SIDEWALK (4 ")	S.F.	41342	\$3.48	\$143,872
Collector	702-03	CONCRETE COMBINED CURB & GUTTER	C.Y.	731	\$197.10	\$144,013
Collector	705-02.02	SINGLE GUARDRAIL (TYPE 2)	L.F.	230	\$15.34	\$3,523
Collector	705-04.07	TAN ENERGY ABSG TERM (NCHRP 350,TL3)	EACH	2	\$2,030.00	\$3,532
Collector	710-04	FILTER CLOTH UNDERDRAIN (WITH PIPE)	L.F.	9187	\$4.00	\$36,749
Collector	712-01	TRAFFIC CONTROL	LS	1	\$183,675	\$183,675
Collector	712-02.02	INTERCONNECTED PORTABLE BARRIER RAIL	L.F.	230	\$24.96	\$5,733
Collector	713-16.20	SIGNS	EACH	174	\$158.00	\$27,492
Collector	716-13.06	SPRAY THERMO PVMT MRKNG (40 mil) (4IN LINE)	L.M.	3	\$1,208.00	\$4,204
Collector	801-01	SEEDING (WITH MULCH)	UNIT	165	\$24.00	\$3,969
Collector	801-01.07	TEMPORARY SEEDING (WITH MULCH)	UNIT	124	\$16.00	\$1,984
Collector	801-02	SEEDING (WITHOUT MULCH)	UNIT	124	\$14.00	\$1,736
Collector	N/A	TRAFFIC SIGNAL	EACH	0	\$120,000.00	\$0
Collector	N/A	ITS	L.M.	0	\$200,000.00	\$0
Collector	N/A	SHARED-USE PATH	L.M.	1	\$250,000.00	\$217,500
Collector	N/A	ROUNDAABOUT	EACH	0	\$1,100,000.00	\$0
Collector	N/A	BRIDGE REMOVAL	S.F.	0	\$20.00	\$0
Collector	N/A	WIDEN EXISTING BRIDGE (BOX)	S.F.	0	\$0.00	\$0
Collector	N/A	WIDEN EXISTING BRIDGE (CONCRETE GIRDER)	S.F.	0	\$0.00	\$0
Collector	N/A	WIDEN EXISTING BRIDGE (STEEL)	S.F.	0	\$0.00	\$0
Collector	N/A	NEW BRIDGE (BOX)	S.F.	0	\$105.00	\$0
Collector	N/A	NEW BRIDGE (CONCRETE GIRDER)	S.F.	0	\$120.00	\$0
Collector	N/A	NEW BRIDGE (STEEL)	S.F.	0	\$150.00	\$0
Collector	N/A	Urban - Standard Diamond	EACH	0	\$25,000,000.00	\$0
Collector	N/A	Urban - Tight Diamond	EACH	0	\$30,000,000.00	\$0
Collector	N/A	Urban - Single Point Urban Interchange (SPUI)	EACH	0	\$35,000,000.00	\$0
Collector	N/A	Rural - Diamond	EACH	0	\$10,000,000.00	\$0
Collector	N/A	Rural - Partial Cloverleaf	EACH	0	\$12,500,000.00	\$0
Collector	N/A	Rural - Full Cloverleaf	EACH	0	\$15,000,000.00	\$0

Subtotal	\$2,020,426
Mobilization	\$95,919
Subtotal	\$2,116,345
Other Construction Items (25%)	\$529,086
Total	\$2,645,432

Year 2015 Planning-Level Cost Estimate



Consultant Name: The Corradino Group
 Date: 11/9/2015
 Roadway: N. Campbell Station Rd.
 Description: From past I-40/I-75 to Town Limits
 County: Knox
 Project Length: 1.12 miles (L.M. 0.00 - 1.12)

Summary of Project Information

Predominant Adjacent Land Use: Residential
 Predominant Terrain Type: Rolling
 Project Complexity: Non-Complex
 Typical Section: Arterial
 Total Number of Travel Lanes: 2 Lane Typical Section
 Required ROW (Acres): 3.39
 Project Type: Sidewalk/Curb & Gutter
 Number of Bridge Removals: 0
 Number of Bridge Widening: 0
 Number of New Bridges: 0
 Length of Shared Use Path: 1.12 miles
 Number of Roundabouts: 0
 Number of Traffic Signals: 0
 Length of ITS Installation: 0 miles
 Utility Relocation: N/A
 Additional User Input Cost: N/A

Summary of Project Cost

Construction + Contingency	\$3,679,110
Right-of-Way	\$1,069,090
Utility Relocation	\$0
Preliminary Engineering (10%)	\$367,910
Construction Engineering & Inspection	\$367,910
TOTAL PROJECT COST	\$5,484,020

Consultant Project Notes:

2015 Conceptual Planning Cost Estimation Tool



Project Location

Roadway State Route or Interstate

From Local Road

To

County

TDOT Region

Existing Roadway Information

Right of Way Width ft. Var. Width

Land Valuation Method New Old Experimental

Predominant Adjacent Land Use Var. Land Use

Terrain Var. Terrain

Existing Pavement Width ft. Var. Width

Proposed Project Information

Project Complexity 15% Contingency Applied

New Typical Section Roadway Width (ft) Required ROW Width (ft.)

Outside Shoulder (ft)

Inside Shoulder (ft)

Total Proposed Lanes Var. Lanes

Project Type Sidewalk/Curb & Gutter Shoulder/Roadside Slope

Project Length miles

Vertical/Horizontal Improvements (percent of total project length)

Bridge Removals Box Concrete Girder Steel

Bridge Widening Box Concrete Girder Steel

New Bridges Box Concrete Girder Steel

Length of Shared-Use Path miles

Number of Roundabouts

Number of Traffic Signals

Length of ITS Installation miles

Additional User Input Cost

Advanced Project Information (optional)

Modify Pavement Thickness

Retaining Walls

Average Height ft.

Total Length ft.

Utility Relocation

Construction + Contingency	\$3,679,110
Right-of-Way	\$1,069,090
Utility Relocation	\$0
Preliminary Engineering (10%)	\$367,910
Construction Engineering & Inspection	\$367,910
Total Estimated Project Cost	\$5,484,020

Preliminary Estimated Roadway Estimate

Table 1st Row
7
Table Last Row
355

N. Campbell Station Rd.
Knox
1.12
Arterial

Section	ITEM #	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	COST
Arterial	105-01	CONSTRUCTION STAKES, LINES AND GRADES	LS	1	\$47,376.74	\$47,377
Arterial	203-01	ROAD & DRAINAGE EXCAVATION (UNCLASSIFIED)	C.Y.	45995	\$4.39	\$201,917
Arterial	203-03	BORROW EXCAVATION (UNCLASSIFIED)	C.Y.	4599	\$3.58	\$16,466
Arterial	303-01	MINERAL AGGREGATE, TYPE A BASE, GRADING D	TON	9337	\$15.56	\$145,282
Arterial	307-02.01	ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING A	TON	1851	\$59.90	\$110,892
Arterial	307-02.02	ASPHALT CEMENT (PG70-22)(BPMB-HM) GRADING A-S	TON	40	\$526.70	\$21,258
Arterial	307-02.03	AGGREGATE (BPMB-HM) GRADING A-S MIX	TON	1201	\$45.00	\$54,067
Arterial	307-02.08	ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING B-M2	TON	1039	\$64.00	\$66,527
Arterial	402-01	BITUMINOUS MATERIAL FOR PRIME COAT (PC)	TON	14	\$452.98	\$6,314
Arterial	402-02	AGGREGATE FOR COVER MATERIAL (PC)	TON	55	\$24.74	\$1,365
Arterial	403-01	BITUMINOUS MATERIAL FOR TACK COAT (TC)	TON	6	\$561.91	\$3,165
Arterial	411-01.07	ACS (PG64-22) GR "E"	TON	0	\$75.50	\$0
Arterial	411-02.10	ACS MIX(PG70-22) GRADING D	TON	1045	\$87.40	\$91,311
Arterial	415-01.02	COLD PLANING BITUMINOUS PAVEMENT	S.Y.	6571	\$1.30	\$8,542
Arterial	604-07.01	RETAINING WALL	S.F.	0	\$75.00	\$0
Arterial	607-05.02	24" CONCRETE PIPE CULVERT (CLASS III)	L.F.	6623	\$53.00	\$351,031
Arterial	611-07.01	CLASS A CONCRETE (PIPE ENDWALLS)	C.Y.	36	\$591.11	\$21,318
Arterial	611-07.02	STEEL BAR REINFORCEMENT (PIPE ENDWALLS)	LB.	3427	\$1.61	\$5,518
Arterial	611-12.02	CATCH BASINS, TYPE 12, > 4' - 8' DEPTH	EACH	40	\$3,092.57	\$123,703
Arterial	611-14.02	CATCH BASINS, TYPE 14, > 4' - 8' DEPTH	EACH	20	\$5,515.55	\$110,311
Arterial	611-42.02	CATCH BASINS, TYPE 42, > 4' - 8' DEPTH	EACH	5	\$3,972.26	\$19,861
Arterial	701-01.01	CONCRETE SIDEWALK (4 ")	S.F.	53222	\$3.48	\$185,214
Arterial	702-03	CONCRETE COMBINED CURB & GUTTER	C.Y.	941	\$197.10	\$185,396
Arterial	705-02.02	SINGLE GUARDRAIL (TYPE 2)	L.F.	3252	\$15.34	\$49,893
Arterial	705-04.07	TAN ENERGY ABSG TERM (NCHRP 350,TL3)	EACH	2	\$2,030.00	\$4,547
Arterial	710-04	FILTER CLOTH UNDERDRAIN (WITH PIPE)	L.F.	11827	\$4.00	\$47,309
Arterial	712-01	TRAFFIC CONTROL	LS	1	\$222,217	\$222,217
Arterial	712-02.02	INTERCONNECTED PORTABLE BARRIER RAIL	L.F.	296	\$24.96	\$7,380
Arterial	713-16.20	SIGNS	EACH	224	\$158.00	\$35,392
Arterial	716-13.06	SPRAY THERMO PVMT MRKNG (40 mil) (4IN LINE)	L.M.	4	\$1,208.00	\$5,412
Arterial	801-01	SEEDING (WITH MULCH)	UNIT	331	\$24.00	\$7,948
Arterial	801-01.07	TEMPORARY SEEDING (WITH MULCH)	UNIT	248	\$16.00	\$3,974
Arterial	801-02	SEEDING (WITHOUT MULCH)	UNIT	248	\$14.00	\$3,477
Arterial	N/A	TRAFFIC SIGNAL	EACH	0	\$120,000.00	\$0
Arterial	N/A	ITS	L.M.	0	\$200,000.00	\$0
Arterial	N/A	SHARED-USE PATH	L.M.	1	\$250,000.00	\$280,000
Arterial	N/A	ROUNDAABOUT	EACH	0	\$1,100,000.00	\$0
Arterial	N/A	BRIDGE REMOVAL	S.F.	0	\$20.00	\$0
Arterial	N/A	WIDEN EXISTING BRIDGE (BOX)	S.F.	0	\$0.00	\$0
Arterial	N/A	WIDEN EXISTING BRIDGE (CONCRETE GIRDER)	S.F.	0	\$0.00	\$0
Arterial	N/A	WIDEN EXISTING BRIDGE (STEEL)	S.F.	0	\$0.00	\$0
Arterial	N/A	NEW BRIDGE (BOX)	S.F.	0	\$105.00	\$0
Arterial	N/A	NEW BRIDGE (CONCRETE GIRDER)	S.F.	0	\$120.00	\$0
Arterial	N/A	NEW BRIDGE (STEEL)	S.F.	0	\$150.00	\$0
Arterial	N/A	Urban - Standard Diamond	EACH	0	\$25,000,000.00	\$0
Arterial	N/A	Urban - Tight Diamond	EACH	0	\$30,000,000.00	\$0
Arterial	N/A	Urban - Single Point Urban Interchange (SPUI)	EACH	0	\$35,000,000.00	\$0
Arterial	N/A	Rural - Diamond	EACH	0	\$12,500,000.00	\$0
Arterial	N/A	Rural - Partial Cloverleaf	EACH	0	\$15,000,000.00	\$0
Arterial	N/A	Rural - Full Cloverleaf	EACH	0	\$17,500,000.00	\$0

Subtotal	\$2,444,383
Mobilization	\$114,997
Subtotal	\$2,559,380
Other Construction Items (25%)	\$639,845
Total	\$3,199,225