HICKORY CREEK

ON THE LAKE

THOROUGHFARE PLAN

2008

Compiled & presented by

DANNENBAUM
ENGINEERING COMPANY - DALLAS, LLC

LEE ENGINEERING

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EXISTING ROADWAY NETWORK

Hickory Creek is located in Denton County along the eastern shore of Lake Lewisville. The Town of hickory Creek is bisected by the Interstate 35E corridor. The Town is bordered to the north by the City of Corinth along FM 2181 (Swisher Road).

The existing roadways within Hickory Creek are primarily two-lane undivided roadways approximately 24 feet in width. These facilities serve as both arterial and collector roadways.

Bidirectional traffic counts were collected on December 12, 2007 at 22 locations throughout the Town of Hickory Creek as shown in Figure 1. One count location was in Lake Dallas and is not shown on the count map, though it appears in the count data table.

The collected traffic volumes appear in Table 1. As seen in the 2007 traffic volume table, the roadways nearest the IH-35E and Swisher Road intersection and the accompanying commercial developments carry a large portion of traffic within the town. Main Street, between Hook Street and the Lake Dallas city limit is the highest volume city roadway on the east side of IH-35E. Hickory Creek Boulevard is the highest volume roadway west of IH-35E. The Denton Drive overpass of IH-35E carries a higher volume, but is typically considered a TxDOT roadway.

All of the roadways within the Town of Hickory Creek currently carry less than 10,000 vehicles per day.

Figure 1: Existing Traffic Count Locations

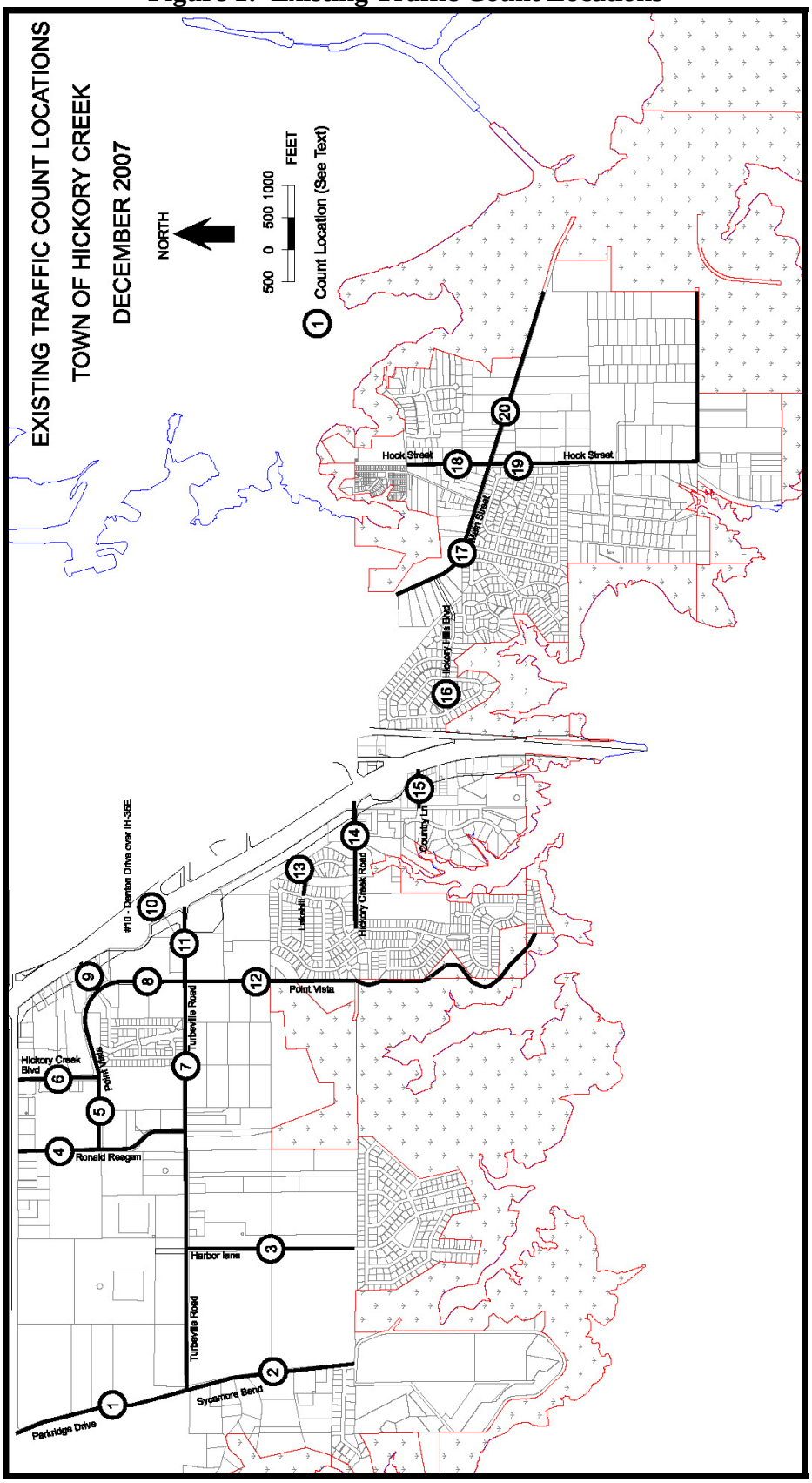


Table 1: 2007 Existing Daily Traffic Volumes

Roadway Name	From	To	Location Number	2007 Daily Volumes
Partridge Drive	Swisher	Turbeville	1	90
Sycamore Bend Rd	Turbeville	Hidden Hills	2	253
Harbor in	Turbeville	Strait in	3	805
Ronald Reagan	Swisher	Turbeville	4	2,420
Point Vista St	Ronald Reagan	Hickory Cr Blvd	5	1,580
Hickory Cr Blvd	Swisher	Point Vista St	6	3,674
Turbeville	Ronald Reagan	Point Vista St	7	1,546
Point Vista St	Ventana rd	Turbeville	8	1,609
Ventana	Point Vista	IH 35E SBFR	9	2,163
Denton Dr S	IH 35 SBFR	Hundley Dr	10	5,472
Turbeville	IH 35 SBFR	Point Vista St	11	2,781
Point Vista St	Turbeville	Hickory Cr Rd	12	1,056
Lakehill Dr	IH 35 SBFR	Whitney	13	1,528
Hickory Cr Rd	IH 35 SBFR	Point Vista St	14	572
Country Lane	IH 35 SBFR	End of Rd	15	72
Hickory Hills Blvd	IH 35 NBFR	Royal Oaks	16	798
Main St	Royal Oaks Blvd	Hook St	17	3,514
Hook St	Main St	End of Rd	18	520
Hook St	Main St	Lakewood Dr	19	933
Hook St	Lakewood	End of Rd	20	302
Main St	Hook St	End of Rd	21	185
Carlisle Dr	Denton Dr	Main St	22	2,591

PLANNED AREA ROADWAY IMPROVEMENTS

Significant roadway construction is expected in the Town of Hickory Creek along IH-35E during the next 3-5 years. IH-35E will be widened which will facilitate travel to and from the north and south. FM 2181 (Swisher Road) is also planned for expansion west of IH-35E in the near term. Additionally, Swisher Road east of IH-35E is expected to begin carrying significantly higher traffic volumes after the completion of the NTTA Lake Lewisville Toll Bridge to the east.

Roadways within the Town of Hickory Creek, with the exception of IH-35E, primarily carry local traffic with origins or destinations within the town itself. There is little if any, thru traffic along Hickory Creek roadways due to the lake bordering the city to the south, and a major arterial, FM 2181 bordering it to the north.

The project team obtained and reviewed thoroughfare information for the surrounding areas where available. Parkridge Drive appears on the City of Corinth's thoroughfare plan as a 60' collector roadway. This is the only notable connection between Hickory Creek and an adjacent city. No roadways on Corinth's thoroughfare plan appeared to line up with either Ronald Reagan or Hickory Creek Blvd. Lake Dallas's thoroughfare plan was not available to the project team, however, the zoning map for the city was reviewed as part of the land use and travel demand modeling process.

Working in conjunction with Dannenbaum Engineering and their land use team, Lee Engineering developed a travel demand model for the Town of Hickory Creek that generated and distributed traffic to the area roadway links based on the demographic information for the Town. Traffic Survey Zones for the Town were developed and are shown in Figure 2. Population, residential dwelling units, and potential commercial land uses (retail, office, government, etc) were developed for each traffic survey zone and then used to develop volume projections that were then distributed from each zone to the external entry/exit points of the Town. Existing traffic volumes and patterns, as well as changing

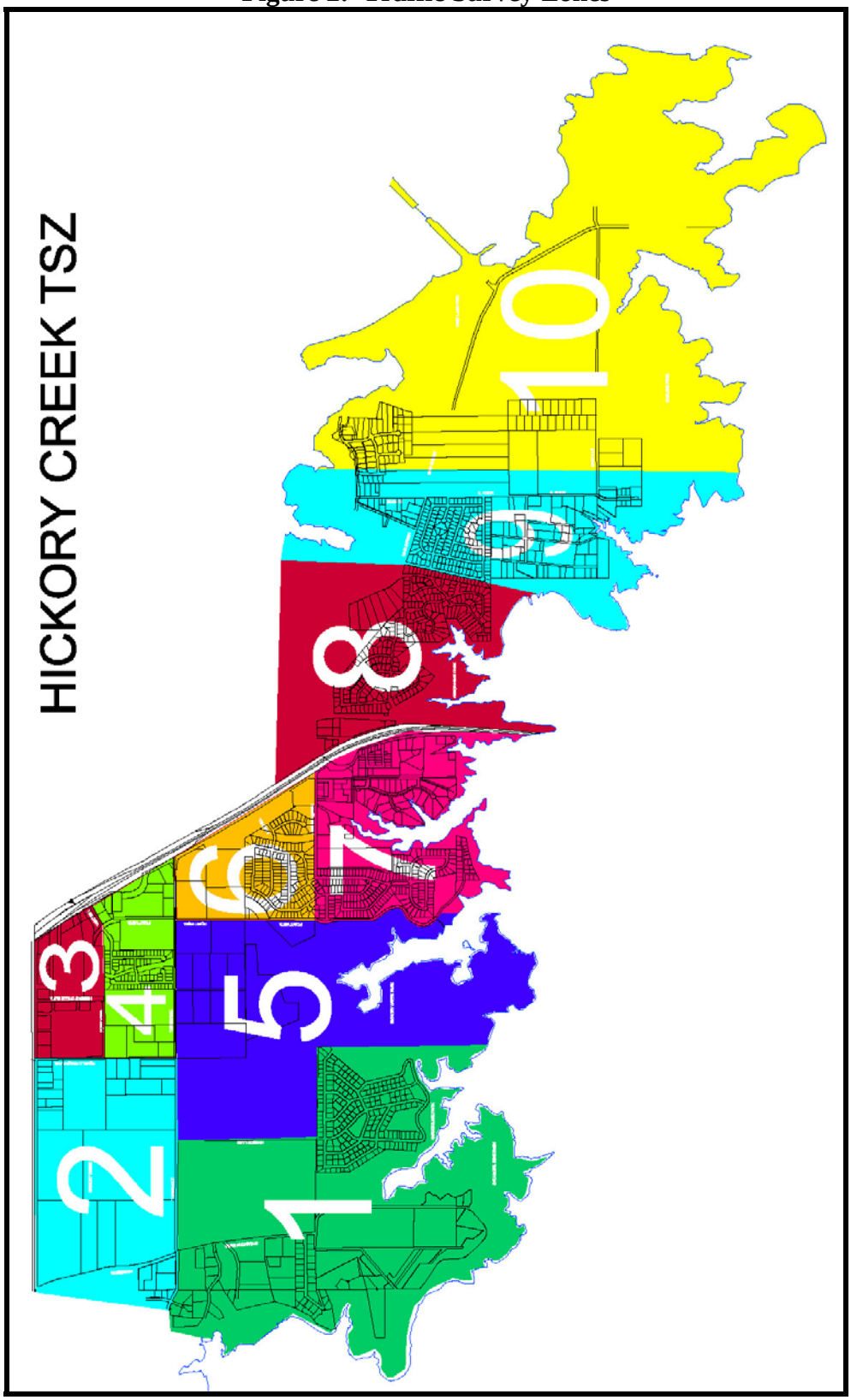
patterns from the development of new roadways in the area were all taken into consideration as volumes were developed.

The estimated new trips per traffic survey zone are shown in Table 2. The "commercial" trip designation applies to all non-residential trips, office, retail, government, etc.

Table 2: Roadway Trips by Traffic Survey Zones

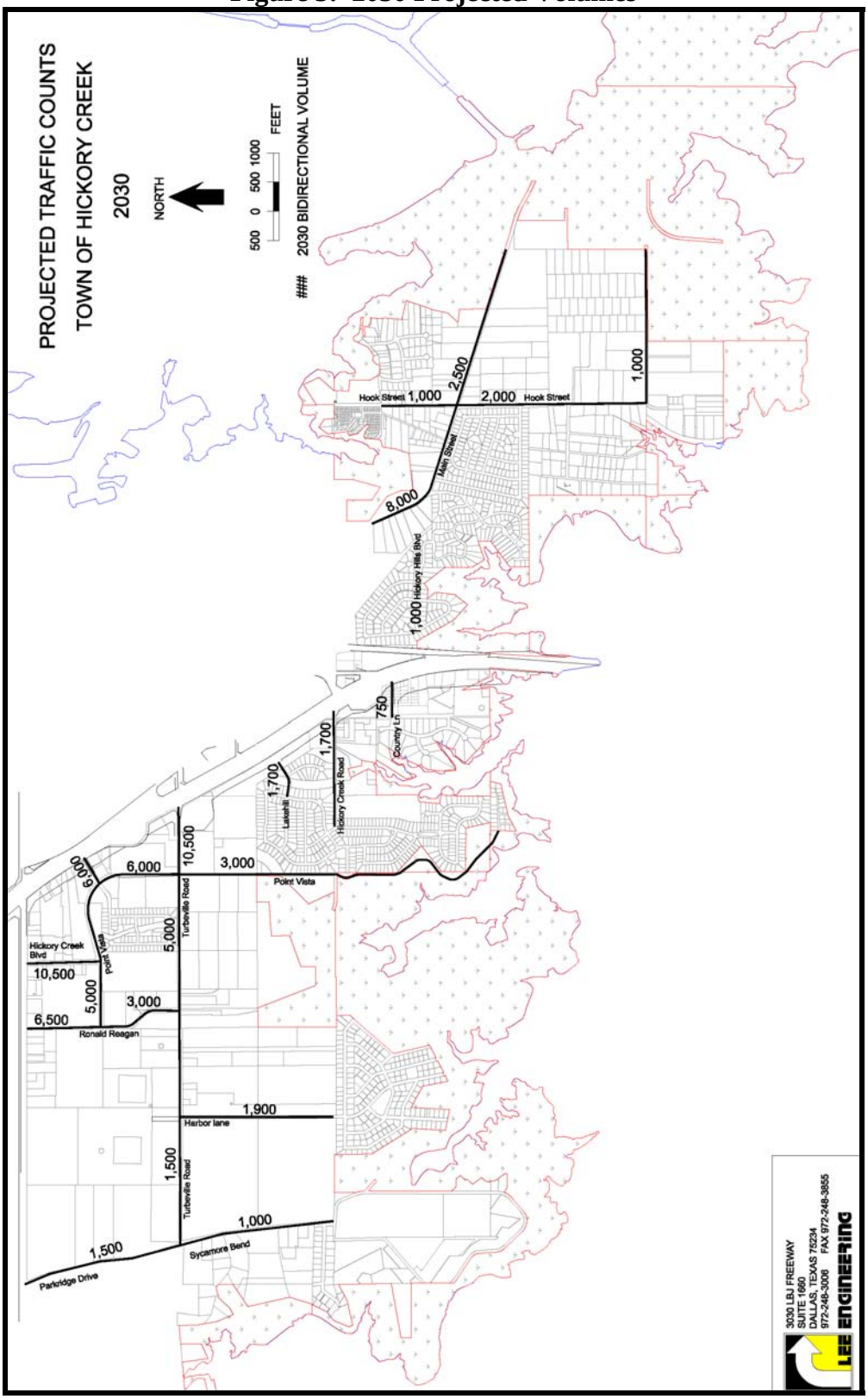
Projected New Trips		
TSZ	**Residential Trips**	**Commercial Trips**
Area 1	1,967	-
Area 2	1,040	-
Area 3	-	5,589
Area 4	-	11,560
Area 5	1,740	-
Area 6	290	1,826
Area 7	700	1,764
Area 8	343	932
Area 9	587	-
Area 10	3,461	-
TOTAL	10,128	21,671

Figure 2: Traffic Survey Zones



The volumes developed through this process were then assigned to the area roadway network, resulting in the volumes depicted graphically in Figure 3. These volumes were then used in assessing what roadway cross section would be necessary along a route in order to adequately handle traffic in the area. The roadway cross sections shown on the thoroughfare plan map are a result of this volume to capacity analysis process, as well as the consideration given to the roadway classification and character in adjoining jurisdictions and the Town of Hickory Creek.

Figure 3: 2030 Projected Volumes



PROPOSED ROADWAY CROSS SECTIONS

Summary

Many of the roadways in Hickory Creek are projected to carry traffic volumes approaching the capacity of a two-lane undivided roadway but well under the capacity of a four-lane roadway. Additionally, many of the roadway segments fall into a region where operationally, the two lane cross section begins to break down at intersections or any place where significant turning movements are experienced.

The cross sections developed, and the designations shown on the thoroughfare plan map are likely to provide significant additional capacity for the roadway network.

The thoroughfare and collector cross sections shown in the following sections all provide adequate right-of-way for the development of a single left-turn lane at major intersections or traffic generators. The cross sections would all need to be widened to provide for a right-turn lane at a major traffic generator or intersection, as well as at any location requiring a dual left-turn lane.

The thoroughfare roadway shown in Figure 4 can be developed such that, when desired, only one lane is provided in each direction with a wider center median. This configuration will allow the future expansion and development of the two inside lanes without significant impacts to driveways along the outside edges of the roadway. This type of staging would allow for two-lanes to be built initially, yet the two additional lanes could be added once capacity problems materialize. However, the majority of roadways with this designation in Hickory Creek have already been widened to four lanes.

The major collector, two-lane divided, roadway section provides a two-lane roadway that is physically divided. The center median is of sufficient width to allow the development of a left-turn lane where necessary. The two major collector cross sections are unique in that no additional right-of-way is

necessary for left-turn lane development. The undivided three lane collector provides a continuous two-way left-turn lane, while the two lane divided section allows for a left-turn lane to easily be provided.

It is important to emphasize that as roadway links reach their capacity, capacity problems are typically seen at intersections along the link before the link itself experiences congestion. The interruption of traffic flow from the presence of stop signs, traffic signals, or turning vehicles in the thru lanes is usually the cause of difficulties along a route as the volumes approach the capacity of the facility.

One efficient way of developing a roadway network is to practice the wide node, narrow road concept. As such, the provision of suitable turn lanes and higher capacity intersections, such as roundabouts, is critical in maximizing the efficiency of the roadway network. By modifying intersections in a manner that allows them ample capacity (wide node), the need to widen the roadway between the intersections is minimized (narrow road). Roundabouts, dual-left turn lanes at signals, or other intersection treatments may be necessary in order to maximize the network capacity of the Town of Hickory Creek roadways.

When intersection capacity problems have been minimized, the need to widen a roadway can be delayed until such time that midblock capacity problems begin to develop. Roundabout intersections can be utilized in place of traffic signal control in many circumstances. Roundabouts provide high capacity intersections with a higher level of safety than similar signalized intersection while also providing significant landscaping and aesthetic opportunities.

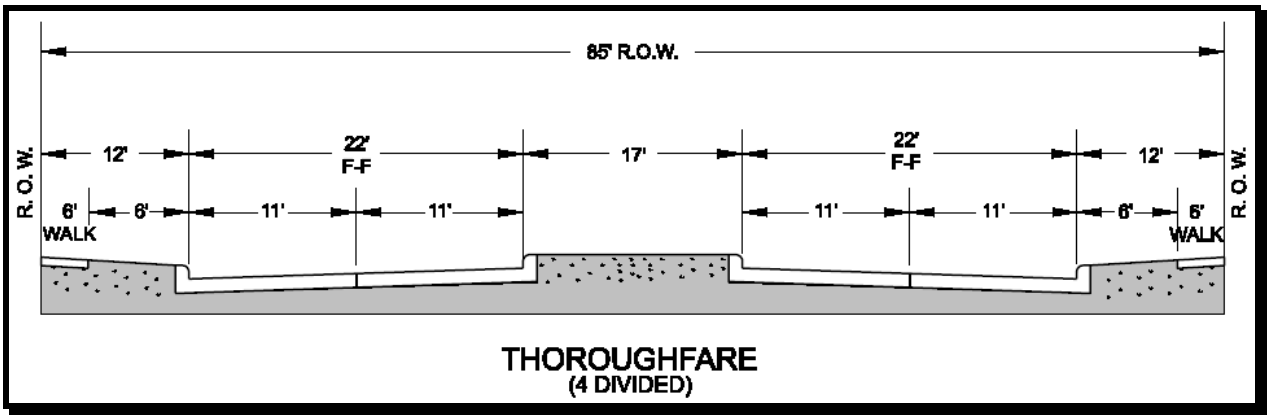
Thoroughfare – 4 Lane Divided – (85' ROW)

The thoroughfare designation is a four-lane divided roadway within an 85 foot wide right-of-way. The primary purpose of this facility is to provide mobility for longer trip lengths and general connectivity to areas outside of Hickory Creek. This facility is also necessary within areas of significant commercial development.

This facility consists of a 6 foot wide sidewalk on either or both sides of the roadway. The facility consists of a 17 foot wide median allowing for the construction of a left-turn lane at major intersections. The roadway consists of two 11 foot wide travel lanes in either direction of travel. Vertical curbs are present along this facility and drainage will be provided through storm drains.

The desirable design speed for this type of facility is 35 to 40 miles per hour. This facility has a maximum daily capacity of approximately 24,000 vehicles.

Figure 4: Thoroughfare – 4 Lane Divided – (85' ROW)



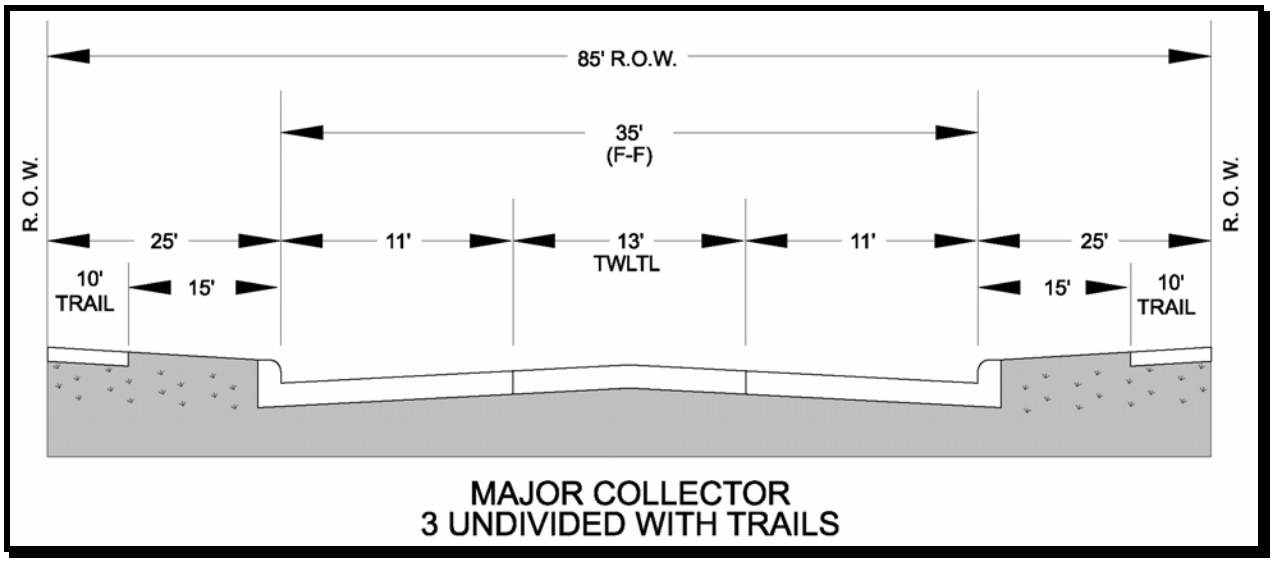
Major Collector – 3 Lane Undivided – (85' ROW)

The major collector designation consists of a two separate cross sections within a 85 foot wide right-of-way. The first cross section discussed is a three lane undivided roadway with multi-use trails. This facility serves the primary purpose of collecting trips within the various subareas of Hickory Creek and providing access to the larger thoroughfares or exterior roadways bordering the Town.

This facility has two 11 foot wide travel lanes in each direction and a 13 foot wide two-way left-turn lane in the center. This facility also provides two 10 foot wide trails. If the need ever develops to use this cross section within a residential subdivision, homes should not front or access this facility directly.

Vertical curbs are provided on this cross section and drainage is provided through storm drains. The desirable design speed for these facilities should be 30 to 35 miles per hour. This facility has a daily capacity of approximately 12,000 to 14,500 vehicles per day.

Figure 5: Major Collector – 3 Lane Undivided – (85' ROW)



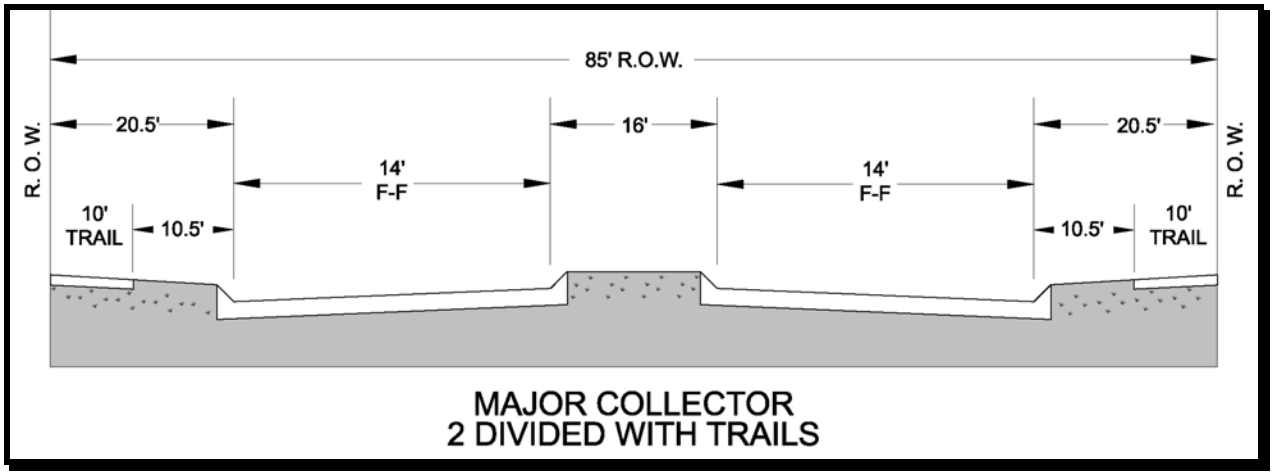
Major Collector – 2 Lane Divided – (85' ROW)

The second type of major collector cross section consists of a two-lane divided roadway with multi-use trails within a 85 foot wide right-of-way. Once again, this facility serves the primary purpose of collecting trips within the various subareas of Hickory Creek and providing access to the larger thoroughfares or exterior roadways on the periphery of the Town.

This facility has a 10 foot wide trail segment along both sides of the roadway. A 16 foot wide median along the center of the roadway allows for the construction of a single 10 foot wide left-turn lane at a major intersection or traffic generators. Additional right-of-way would be necessary to provide a right-turn deceleration lane, or additional left-turn lanes.

The travel lanes in each direction are 14 feet wide and drainage is provided through storm drains. Four to six inch mountable curbs should be used along this facility. The design speed for these facilities should be 30 to 35 miles per hour. This facility has a daily capacity between 12,000 and 14,500 vehicles per day.

Figure 6: Major Collector – 2 Lane Divided – (85' ROW)



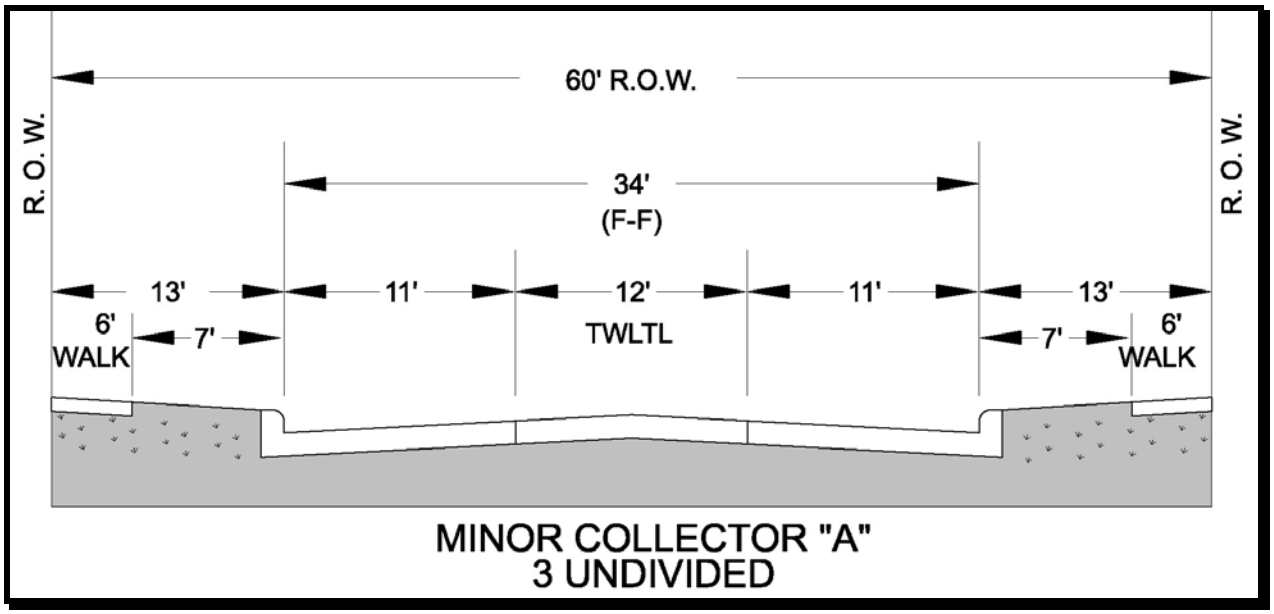
Minor Collector "A" – 3 Lane Undivided – (60' ROW)

The minor collector designation consists of three separate cross sections within a 60 foot wide right-of-way. The first two cross sections provide left turn lanes and are designated as Minor Collector "A". The first cross section discussed is a three lane undivided roadway. This facility serves a similar purpose as the major collector; however, this facility does not have multi-use trails.

This facility has two 11 foot wide travel lanes in each direction and a 12 foot wide two-way left-turn lane in the center. This facility also provides two 6 foot wide sidewalks. If the need ever develops to use this cross section within a residential subdivision, homes should not front or access this facility directly.

Vertical curbs are provided on this cross section and drainage is provided through storm drains. The desirable design speed for these facilities should be 30 to 35 miles per hour. This facility has a daily capacity of approximately 12,000 to 14,500 vehicles per day.

Figure 7: Minor Collector "A" – 3 Lane Undivided – (60' ROW)



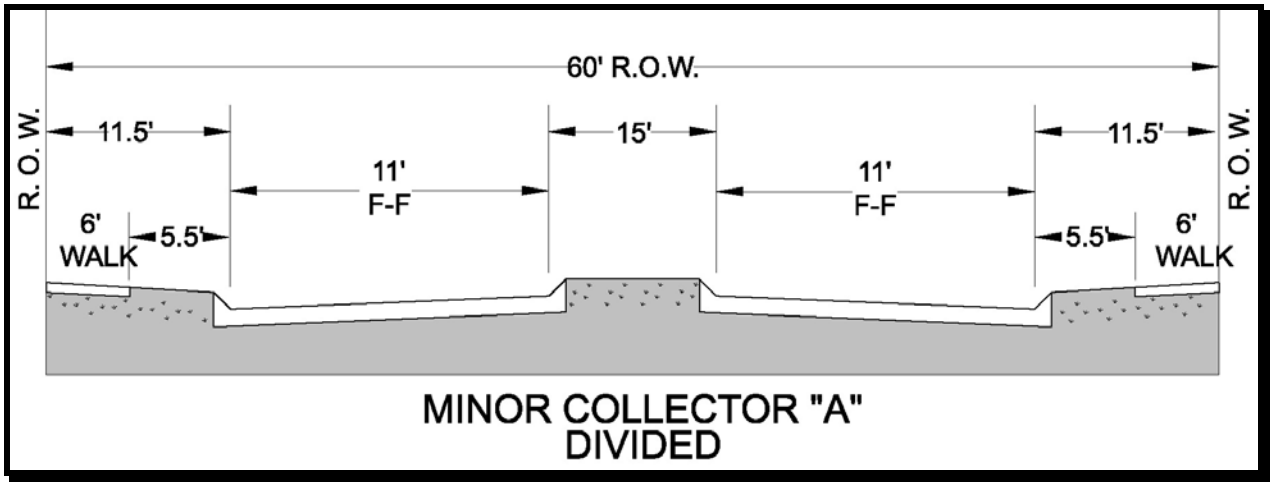
Minor Collector "A" – 2 Lane Divided – (60' ROW)

The second type of Minor Collector "A" cross section consists of a two-lane divided roadway with a 60 foot wide right-of-way. Once again, this facility serves a similar purpose as the major collector; however, this facility does not have multi-use trails.

This facility has 6 foot wide sidewalks along both sides of the roadway. A 15 foot wide median along the center of the roadway allows for the construction of a single 10 foot wide left-turn lane at a major intersection or traffic generators. Additional right-of-way would be necessary to provide a right-turn deceleration lane, or additional left-turn lanes.

The travel lanes in each direction are 11 feet wide and drainage is provided through storm drains. Four to six inch mountable curbs should be used along this facility. The design speed for these facilities should be 30 to 35 miles per hour. This facility has a daily capacity between 12,000 and 14,500 vehicles per day.

Figure 8: Minor Collector "A" – 2 Lane Divided – (60' ROW)



Minor Collector "B" – 2 Lane Undivided – (60' ROW)

The Minor Collector "B" designation consists of a two lane undivided roadway with a 60 foot wide right-of-way. This facility also serves the purpose of collecting trips within subareas of Hickory Creek or within a residential subdivision and provides access to the larger collector network of streets throughout the Town. This facility also serves the important purpose of providing alternative connectivity routes, allowing traffic to disperse better throughout the town.

This facility has two 11 foot wide travel lanes in each direction and a 4 foot striped shoulder along the outside edge of pavement. Striping the shoulder in lieu of providing a 15 foot lane reduces speeds along the facility.

This facility also provides two 6 foot wide sidewalks. Vertical curbs are provided on this cross section and drainage is provided through storm drains. When used within a residential subdivision, homes should not front or access this facility directly. The desirable design speed for these facilities should be 30 miles per hour. This facility has a daily capacity of approximately 5,000 to 7,500 vehicles per day.

Figure 9: Minor Collector "B" – 2 Lane Undivided – (60' ROW)

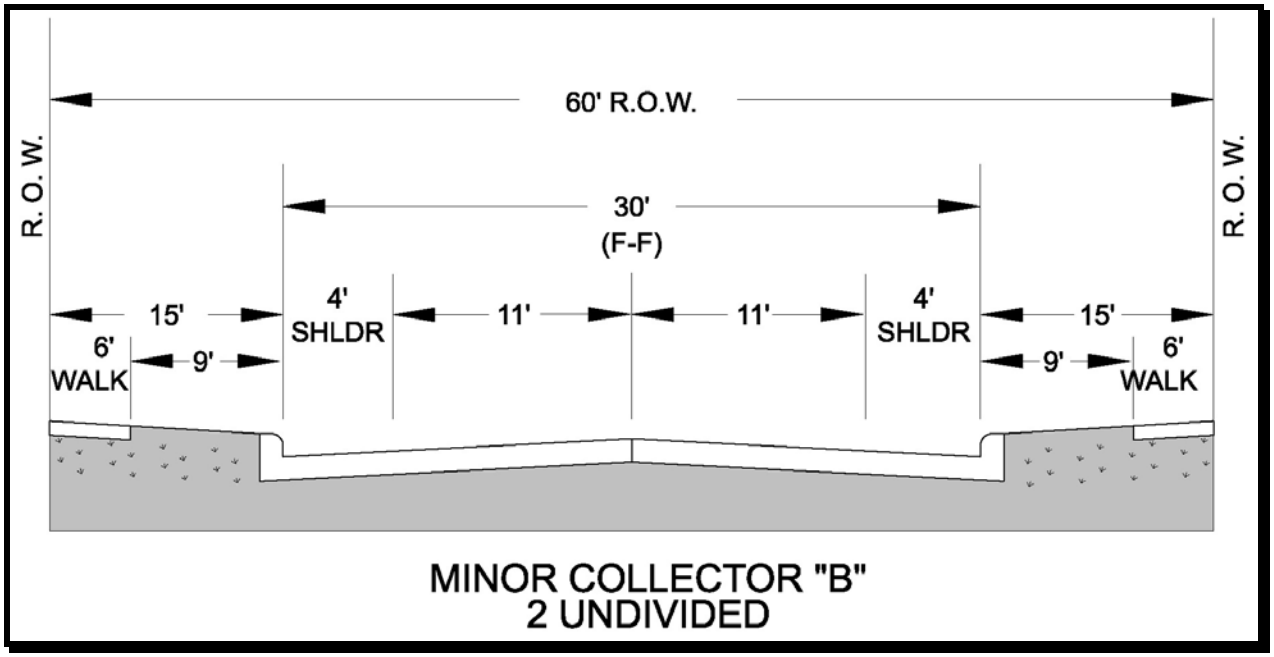
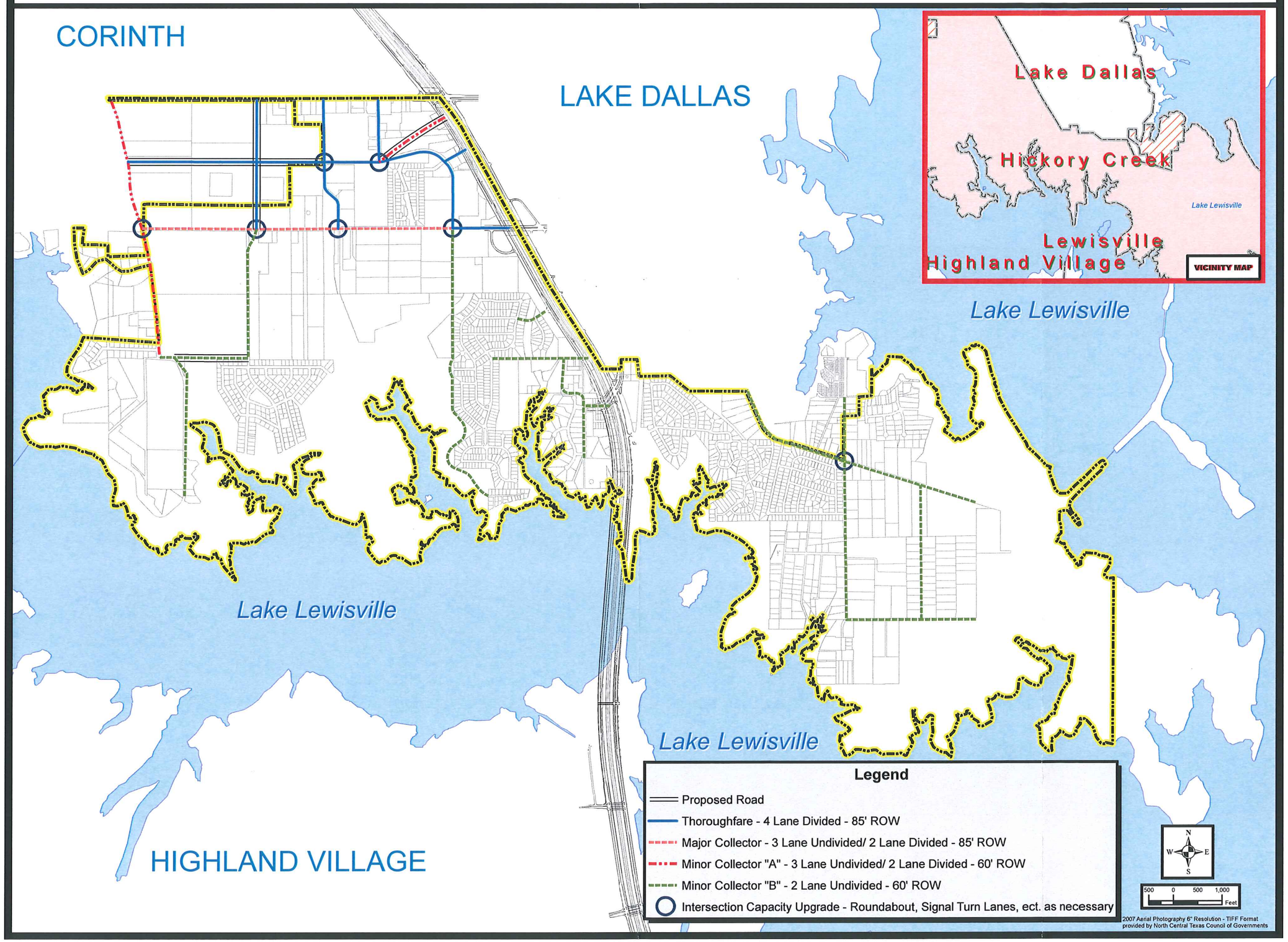


EXHIBIT A

MASTER THOROUGHFARE PLAN

Hickory Creek Master Thoroughfare Plan

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