

APPENDIX - B THOROUGHFARE CAPACITY ANALYSIS

B

Mobility addresses vehicular, bicycle, and pedestrian movements within and through an area. Whether for transportation or recreation, good connectivity improves the quality of life for area residents. The purpose of mobility is to ensure that all modes and routes of transportation are safe, reliable, and minimize congestion on the road system. This is accomplished by providing an adequate and efficient street network, designated bike facilities, sidewalk network, and local transit services.

Wellborn Land Use Thoroughfare Capacity Analysis

This planning process considered the rural character and history; the future land uses proposed in the plan, traffic generated, different modes of travel and developed a plan that would reflect the desires of the community and ensure that the transportation network would function accordingly in the future.

One of the major discussion items that occurred as part of the planning process was the future of F.M. 2154. F.M. 2154 is a TxDOT facility and the existing section of F.M. 2154 along the planning study area consists of a two lane farm to market roadway. The City's current Thoroughfare Plan designates the section of F.M. 2154 through the study area as a future four lane major arterial (**Map 3.1 Existing Thoroughfare Plan**). For the future of F.M. 2154 not to require upgrade beyond the four lanes proposed in the City's Thoroughfare Plan, the future capacity of the roadway had to be analyzed and compared to the future land uses proposed and the trips generated by those land uses. The concern from City Staff was that along F.M. 2154 significant small scale commercial would be proposed that would generate trips beyond the roadway capacity of the future four-lane F.M. 2154. Below is the analysis:

Assumptions

- The 68 acre Edison property was divided into three sub land uses: 15% small scale commercial, 15% open space and 70% restricted suburban with 15,000 sq. ft lots.
- The land use "Institutional/Public" assumed one elementary school with 620 students, one middle school with 904 students and the remaining land use as small scale commercial (i.e. Wellborn Community Center, Post Office, etc).
- The existing traffic counts on F.M. 2154 were from TxDOT data.

- The trip distribution assumptions are illustrated in **Figure B.2 Trip Distribution**.
- The trip generation rates are from the *Institute of Transportation Engineers Report 8th Edition* and translated and extrapolated to vehicles per day per acre.
- Allowable land use “units” per acre were from the City of College Station *Unified Development Ordinance*.
- The volume capacity per thoroughfare classification was used from the *Bryan/College Station Design Guidelines*.
- Internal trip capture between uses is assumed to be 10%

Wellborn Area Land Uses Proposed and Trips Generated

Land Use	Land Use Code	Trip Generation Vehicles Per Day
Rural 1 Acre Lots = 565 acres	210	5,407 vpd
Eidson Property:		
Small Scale Commercial = 11.23 acres	820	5,305 vpd
Open Space = 11.23 acres		0 vpd
Wellborn Restricted Suburban 15,000 sq ft lots = 52.31 acres	210	1,455 vpd
1 acre clustered = 24.44 acres	210	230 vpd
Clustered greater than .5 acres = 19.9 acres	210	381 vpd
Institutional/Public = 75.3 acres	520, 522, 820	2,857 vpd
Small Scale Commercial = 46.03 acres	820	21,740 vpd
Wellborn Business Park = 66.71 acres	770	13,620 vpd
Creek Meadows - 5,000 sq. ft lots residential = 19.01 acres	210	1,455 vpd
	Sub total	52,450 vpd
Existing traffic on F.M. 2154		4,032 vpd
	Total Trips	56,482 vpd
Internal trip capture (trip reduction)	10%	Adj trips 50,834 vpd

Figure B.1 Trip Generation

Trip Distribution

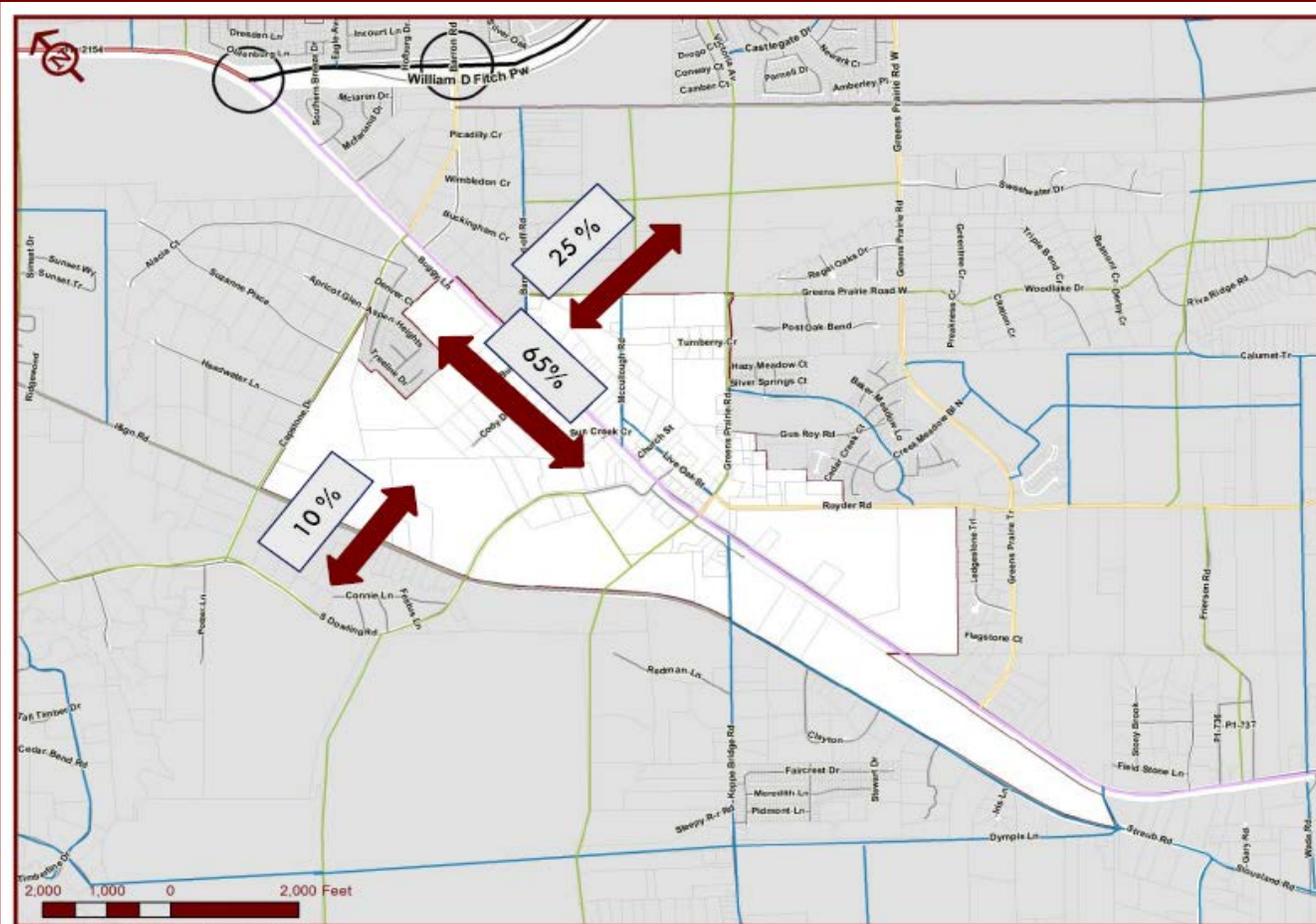


Figure B.2 Trip Distribution

Thoroughfare Classification, Capacity & Level of Service (LOS) "D"

- F.M. 2154 - 65% = 33,042 vpd LOS "D" = 33,000 vpd for a 4 lane major arterial.
- Some of this traffic will utilize IGN Road. Remaining traffic east and west bound east of F.M. 2154 = 8,260 vpd (25%)
- Remaining traffic east and westbound west of F.M. 2154 = 3,304 vpd (10%)

Observations, Conclusions and Recommendations

Based on the trips generated by the proposed land uses, the proposed four lane major arterial classification for F.M. 2154 will remain adequate into the future and build out of this plan. LOS will remain at acceptable levels. The transportation network east and west of F.M. 2154 will function at LOS or better than the acceptable levels. However, F.M. 2154 at its current state will not support build-out of this plan. The recommendation is to phase development and monitor LOS so development can occur concurrently to the widening of F.M. 2154. F.M. 2154 is a TxDOT facility and coordination with TxDOT must be maintained. An example of phasing development is as follows:

- Current capacity of F.M. 2154 based on two lanes of a four lane major arterial is 20,000 vpd LOS "D" 16,000 vpd
- Current traffic on F.M. 2154 is 4,032 vpd
- Capacity available to keep LOS "D" is 11,968 vpd
- Recommendation as part of the plan is to limit development based on capacity of F.M. 2154 until TxDOT upgrades F.M. 2154 to four lane major arterial.

This equals to 25 acres of additional small scale commercial or a combination thereof such as 15 acres of Wellborn Business Park and 19 acres of small scale commercial.