



Transportation Engineering Analysts

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October 1, 2002

MEMORANDUM

TO: City Council
City of College Station, Texas

THROUGH: Mitchell & Morgan
Consulting Engineers
ATTN: Ms. Veronica Morgan
511 University Drive East, Suite 204
College Station, Texas 77840

RE: *Grade Separation/Interchange Discussion
Along State Highway 6 in South College Station*

It is my understanding that there has been some discussion concerning the planning of a grade separation or interchange along State Highway 6 (an urban freeway) between Rock Prairie and Greens Prairie Roads in College Station. (This Memorandum shall consider a grade separation as a roadway constructed over or under State Highway 6 that does not include ramps connecting the frontage roads with the freeway travel lanes on State Highway 6. Such a roadway is called a *crossover* if it is elevated over the freeway, or an *underpass* if it is constructed under the freeway. An interchange includes the roadway under or over State Highway 6 AND ramps connecting the frontage roads with the freeway travel lanes.) I have been asked to assist in the analysis and justification for a grade separation or interchange.

Currently, there are existing interchanges along State Highway 6 at Rock Prairie and Greens Prairie Roads. (See Attachment 1.) The distance between these two interchanges is about 2.4 miles. Current suggested spacing between adjacent urban freeway interchanges is more than two miles so that acceleration and deceleration lanes on the freeways between adjacent interchanges do not interfere with one another. However, in Texas, it is not unusual to find interchanges spaced one mile apart because of frequent use of frontage roads and the desire (at least in the past) to provide more accessibility to developments adjacent to the freeway. It is also my understanding that the local Texas Department of Transportation (TexDOT) office is planning to construct an interchange at or near the current site of Barron Road, which is located about 1.1 miles south of Rock Prairie Road and 1.3 miles north of Greens Prairie Road. Because Barron Road is located essentially in the middle of the two existing interchanges, this would be a likely and appropriate site for an

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interchange. Assuming that an interchange will be constructed at Barron Road, it is readily obvious that another interchange between Rock Prairie and Greens Prairie Roads will not be approved by TexDOT. I agree with this position. I certainly would not recommend or even suggest relocating the proposed Barron Road interchange or constructing a second interchange along State Highway 6 between Rock Prairie and Greens Prairie Roads.

A grade separation, however, could be provided, if it is justified. A grade separation would not interfere with traffic along the main travel lanes of State Highway 6. Also, a grade separation would permit movements from one side of the freeway to the other, thereby reducing traffic volumes at interchanges. As long as the grade separations are constructed to provide appropriate clearances, I would assume that TexDOT would not object to the city of College Station constructing grade separations (either crossovers or underpasses). I would not expect TexDOT to assist in the financing of the grade separations, however.

The concerns that must be addressed is whether the city of College Station needs a grade separation or is willing to fund the construction of a grade separation. Obviously, there would be no justification for linking two collector streets from one side of the State Highway 6 freeway to the other. There has to be sufficient traffic volumes to warrant such a cost expenditure. Hence, any consideration for a grade separation should include the linkage of two arterial streets and a high demand for crossover trips. In other words, there has to be a high traffic demand (vehicle trips) from one side of the freeway to the other to justify a grade separation. Also, there needs to be at least some reasonable separation distance between the grade separation and an interchange, preferably at least ½ mile.

Reviewing the existing layout of the street system north of Barron Road reveals no apparent location for a grade separation. South Graham Road is the only potential roadway that might be linked to a roadway on the east side of the freeway because it connects Wellborn Road to State Highway 6, and functions as a minor arterial. However, South Graham Road is located too close to Rock Prairie Road to be considered. (See Attachment 2.)

There exists about 1.3 miles between Barron and Rock Prairie Roads, so there is a reasonable amount of distance within which a grade separation can be provided. There is little existing development in this area. There is one existing roadway (Southern Plantation) on the west side of the freeway that intersects with the State Highway 6 frontage road; however, it is a collector street for a relatively low-density residential area. (See Attachment 3.) It should *not be considered* as a candidate for extension as a overpass or an underpass. Hence, any grade separation would have to be planned with future arterial streets.

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I am aware of the master plan for Spring Creek Corporate Campus. The plan includes an extension of Pebble Creek Parkway north of Greens Prairie Road to the State Highway 6 east frontage road. This intersection is located about 4,500 feet north of Greens Prairie Road. (See Attachment 4.) I am also aware of the preliminary master plan for the "Crowley Tract" which includes a roadway that intersects the State Highway 6 west frontage road. This roadway intersects the frontage road about 2,900 feet north of Greens Prairie Road. Hence, these two proposed intersections are not aligned to connect as an overpass or an underpass. The alignment of Pebble Creek Parkway through the Spring Creek Corporate Campus was chosen to allow for a large developable lot at the front of the campus. There is no clear reason to realign Pebble Creek Parkway to match up with the Crowley roadway. If an additional roadway is constructed from Lakeway to align with the Crowley Tract roadway, then the extension would have to take place along the greenway dedication of the Campus. However, even if this connection was provided, as shown in Attachment 5, the grade separation would essentially provide a loop from Greens Prairie Road on the east side of State Highway 6 to Greens Prairie Road on the west side of State Highway 6. I do not believe that this loop would attract large volumes of traffic from one side of the freeway to the other because it would be more efficient to use Greens Prairie Road to cross State Highway 6 than use the "loop". There is no clear benefit to this option, therefore it is not recommended.

The proposed intersection of Pebble Creek Parkway extension and the State Highway 6 east frontage road, as shown in the Spring Creek Corporate Campus Master Plan, is located relatively close to the middle between the proposed Barron Road interchange and the Greens Prairie Road interchange. If a grade separation was to be constructed over or under State Highway 6, this would be the most logical and appropriate location. (See Attachment 6.) At this time, there is no "link" on the west side of the freeway for the Pebble Creek Parkway extension. If a link is provided, then a grade separation may be constructed. The City would need to amend the Thoroughfare Plan to accomplish this by showing this collector street on the west side of SH6. The question that should be considered is what benefit does this grade separation provide. As seen on Attachment 6, this potential connection would provide one additional parallel roadway from Lakeway/Greens Prairie Road east of SH6 to the extension of Decatur.

Before making this decision, however, the design of this grade separation must be considered. The grade separation may intersect with the freeway frontage road or it may extend over or under the frontage road. I would not recommend separation with the frontage road. Hence, the grade separation should extend from one frontage road to the other frontage road. The grade separation should either go over the freeway or under the freeway. At the site of the proposed intersection of the Pebble Creek Parkway extension and State Highway 6 east frontage road, the frontage road is essentially at the same grade as the freeway main lanes. I would not expect TexDOT to permit reconstructing the freeway and I do not believe the city would want to entertain such high costs.

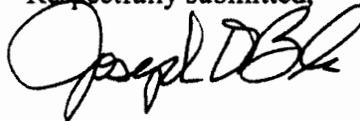
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Hence, it would be more likely that the least costly construction would incorporate an overpass. The grade separation would require reconstructing and elevating the frontage roads, the construction of the approaches of the arterial streets to meet the elevated frontage roads, and the overpassing structure. In order to provide the clearances on the freeway, the frontage roads and the approaches to the frontage road intersections would have to begin their "rise" toward the frontage road intersections at distances of 800 to 1,000 feet from the frontage road intersections. One can imagine the size of the embankments to accommodate this grade separation and overpass structure, and the high costs for construction. Also, providing access to developments near these elevated frontage road intersections will be difficult.

At this time, I cannot imagine development in the vicinity of the potential site of this grade separation to generate the high volume of traffic (vehicle trips) that would travel from one side of the freeway to the other that would warrant the extremely high costs of construction associated with this grade separation. At the same time, I cannot guarantee that the demand for crossover traffic will never exist. Development may occur that actually would justify the construction of this grade separation. I would not assume, however, that a grade separation should be made a part of the city's master thoroughfare plan. However, for planning purposes, the city may include on its thoroughfare plan a minor arterial street that intersects the State Highway 6 west frontage road across from proposed intersection of the Pebble Creek Parkway extension with the State Highway 6 east frontage road.

I hope this discussion provides some assistance to you. Please do not hesitate to contact me if you have any questions.

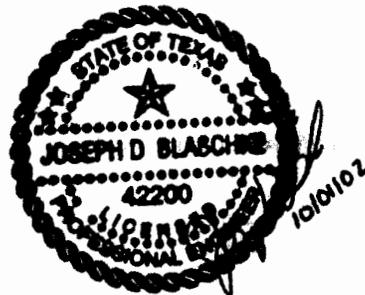
Respectfully submitted,

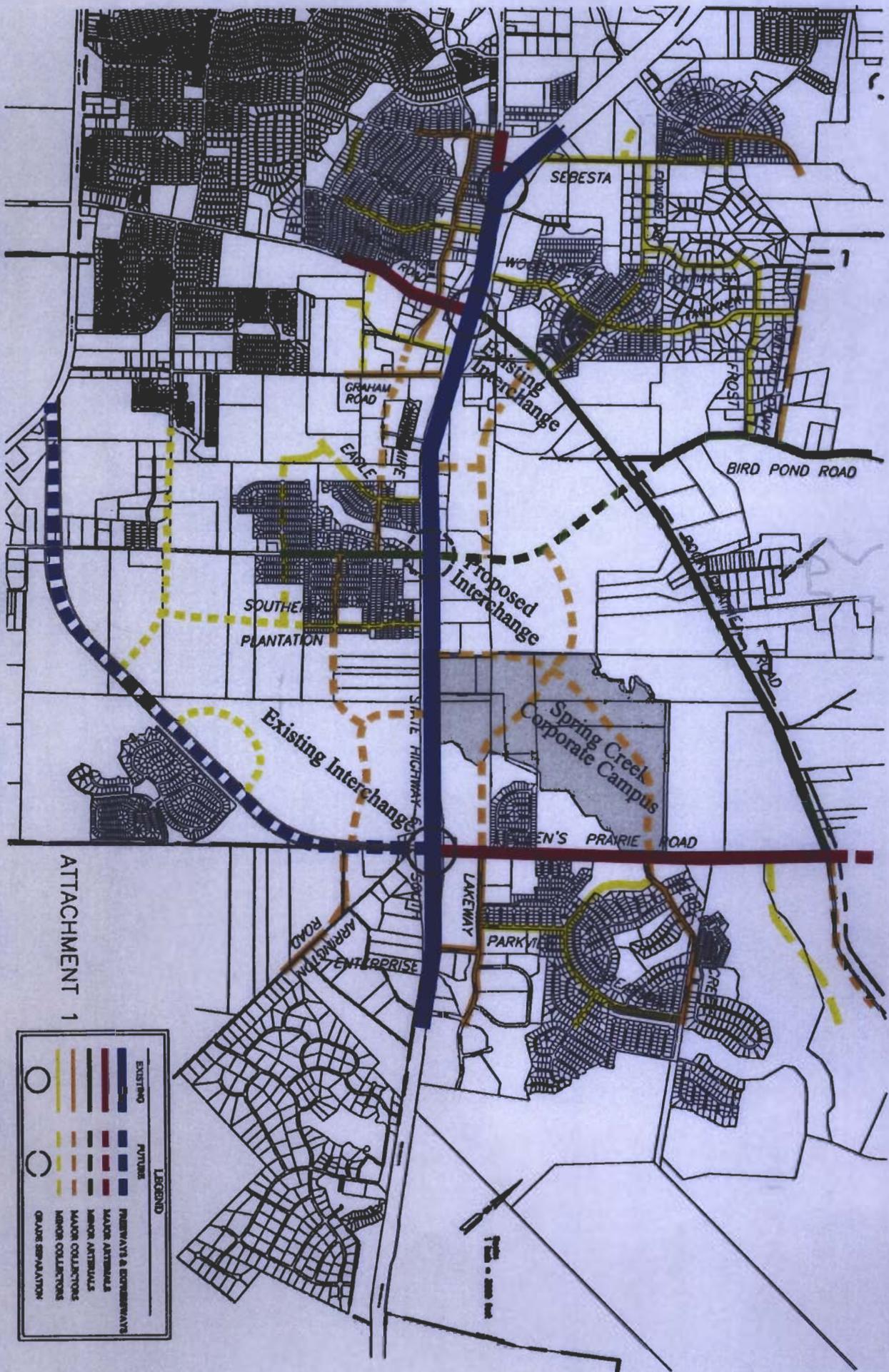


Joseph D. Blaschke, D.Eng., P.E.
President

JDB/sb

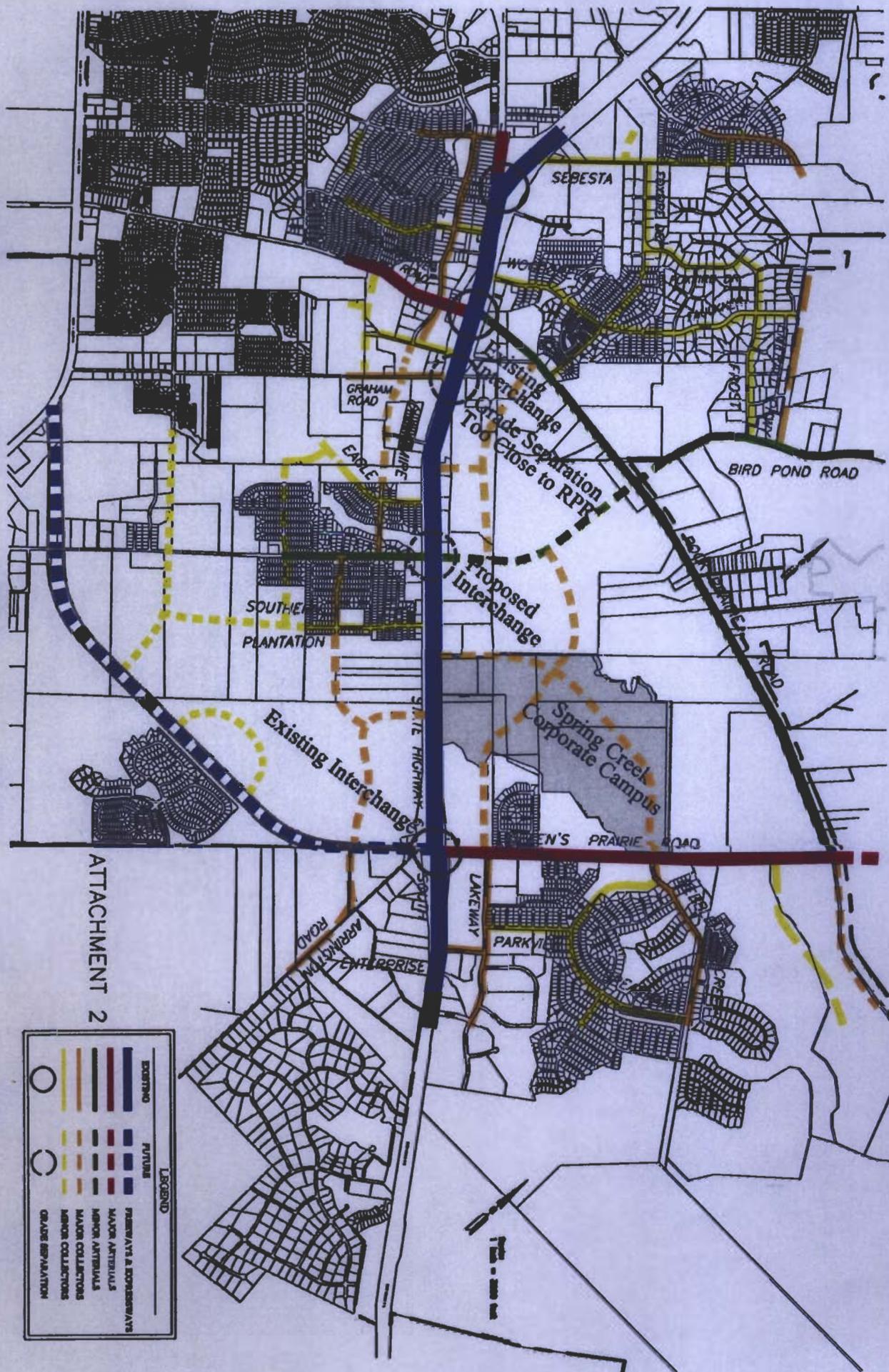
Attachments



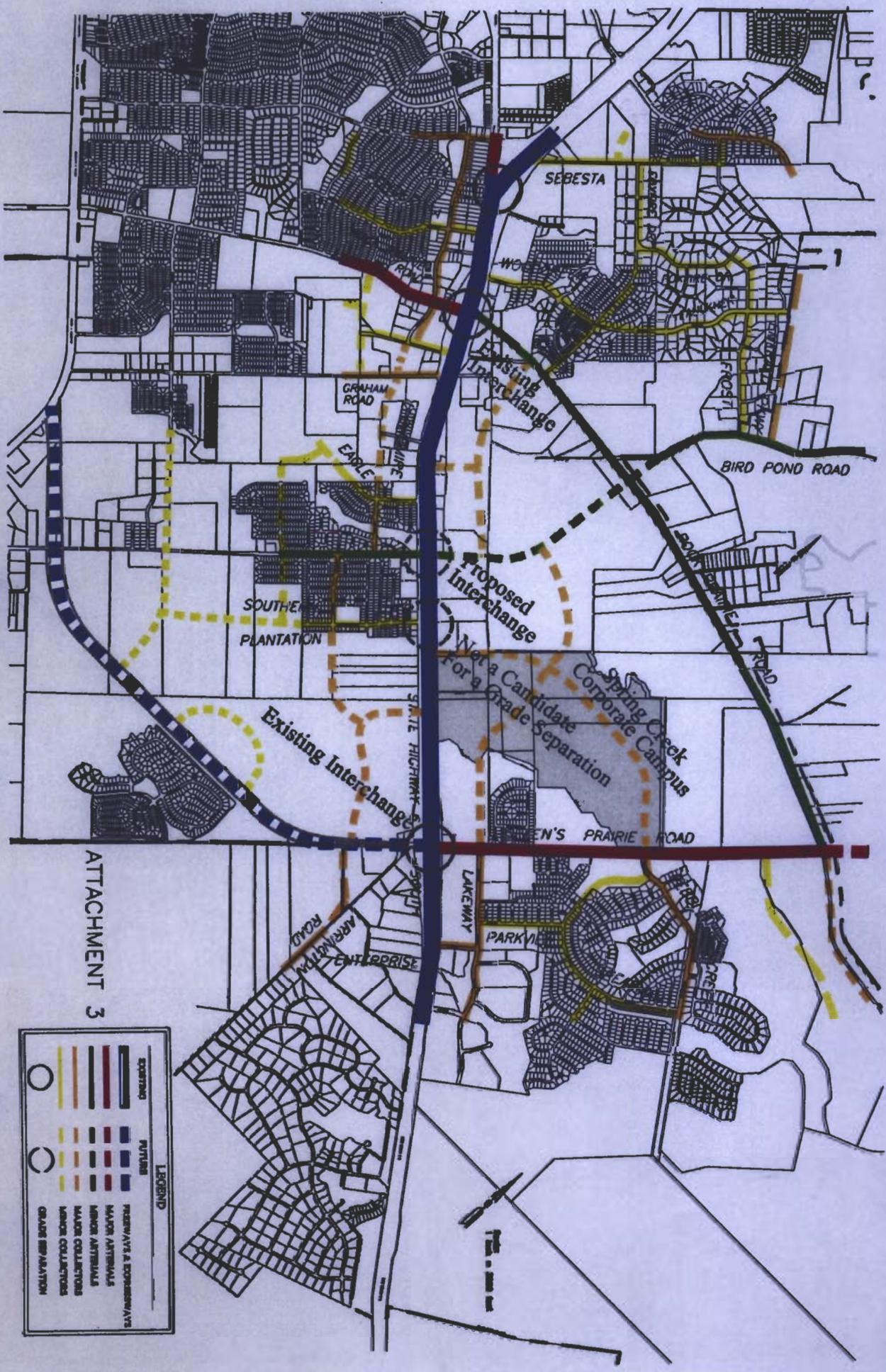


ATTACHMENT 1

LEGEND	
	EXISTING
	FUTURE
	PREVIOUS & DOWNSTREAMS
	MAJOR ARTERIALS
	MINOR ARTERIALS
	MAJOR COLLECTORS
	MINOR COLLECTORS
	GRADE SEPARATION

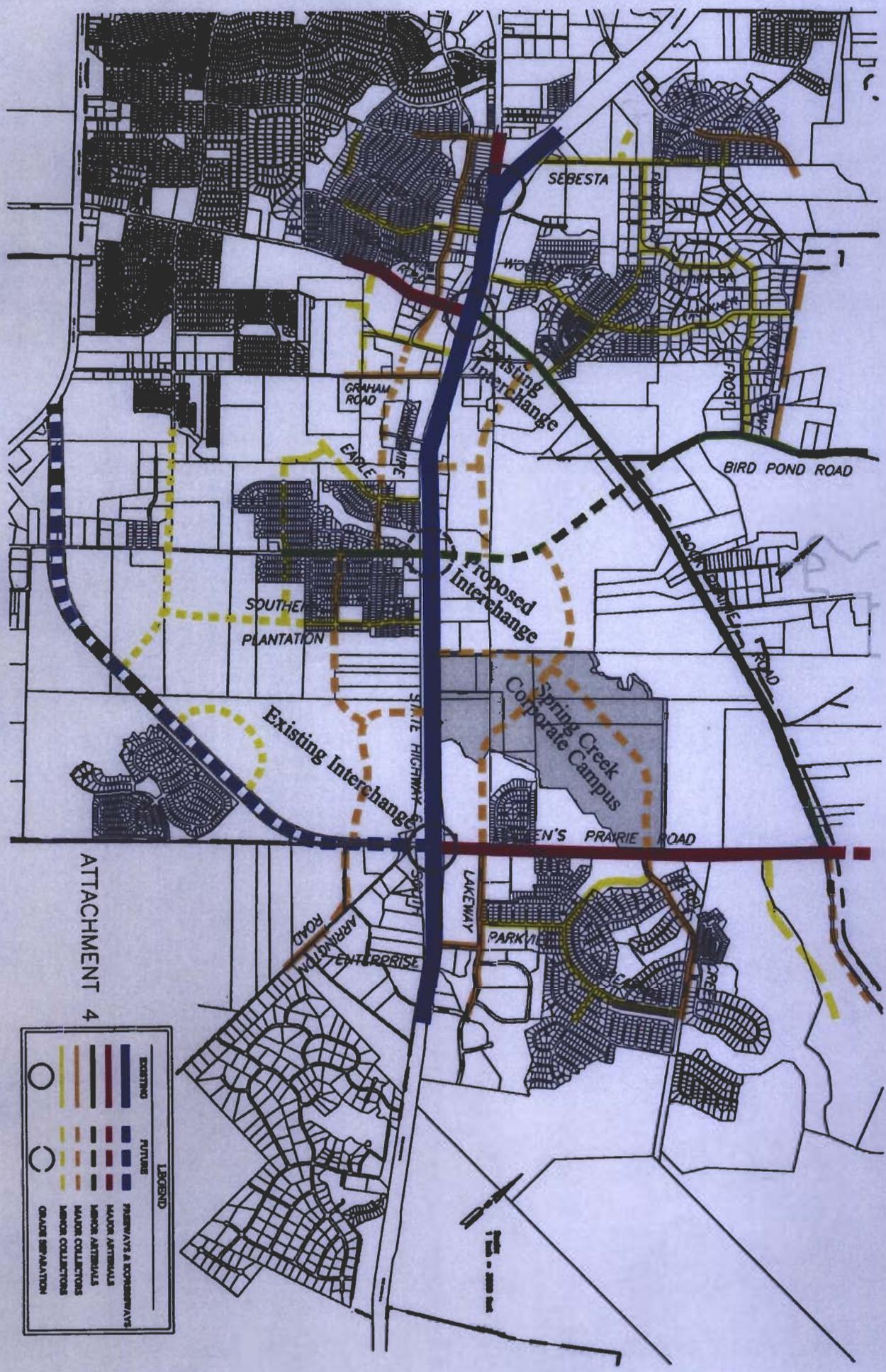


ATTACHMENT 2



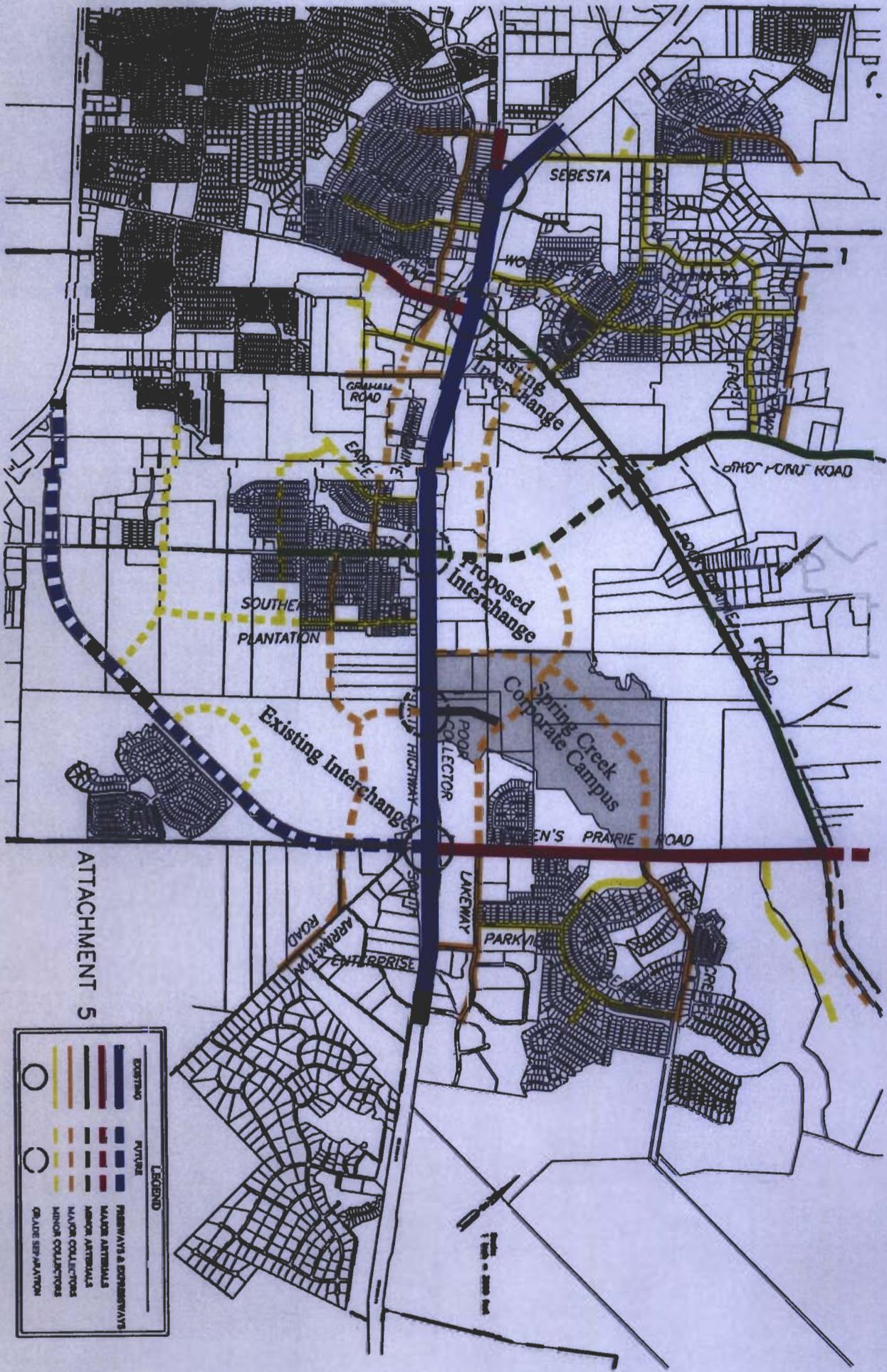
ATTACHMENT 3

LEGEND	
	EXISTING
	FUTURE
	PRINCIPAL AVENUES & EXPRESSWAYS
	MAJOR ARTERIALS
	MINOR ARTERIALS
	MAJOR COLLECTORS
	MINOR COLLECTORS
	GRADE SEPARATION

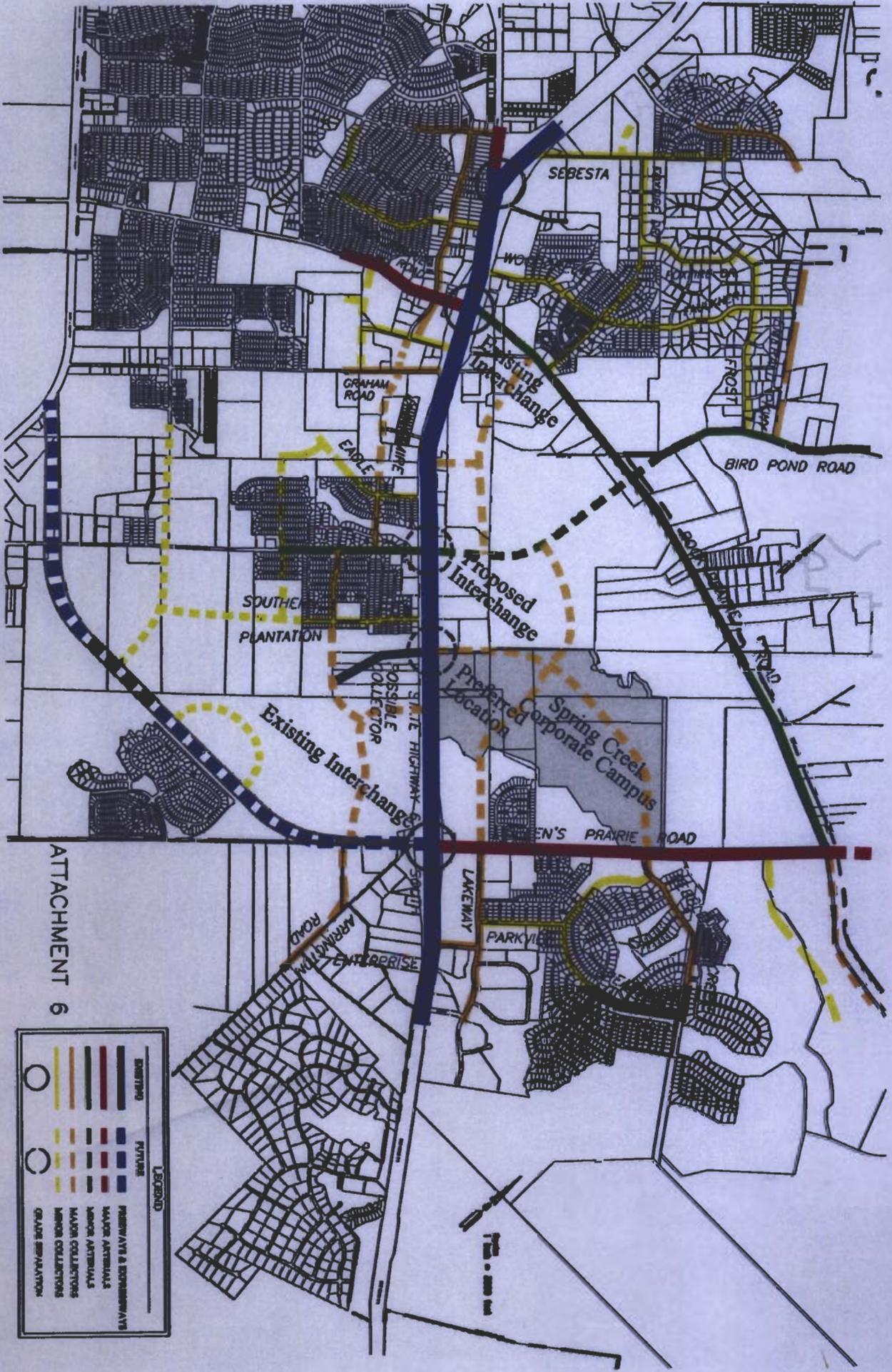


ATTACHMENT 4

LEGEND	
	EXISTING
	FUTURE
	PRIVATES & EGRESSWAYS
	MAJOR ARTERIALS
	MAJOR ARTERIALS
	MAJOR COLLECTORS
	MAJOR COLLECTORS
	GRADE SEPARATION



ATTACHMENT 5



ATTACHMENT 6

LEGEND

EXISTING		FUTURE	
	PRIVACY & SIDEWAYS		MAJOR ARTERIALS
	MAJOR ARTERIALS		MAJOR ARTERIALS
	MAJOR ARTERIALS		MAJOR ARTERIALS
	MAJOR COLLECTORS		MAJOR COLLECTORS
	MINOR COLLECTORS		MINOR COLLECTORS
	GRADE SEPARATION		GRADE SEPARATION

Scale: 1" = 2000' 0"