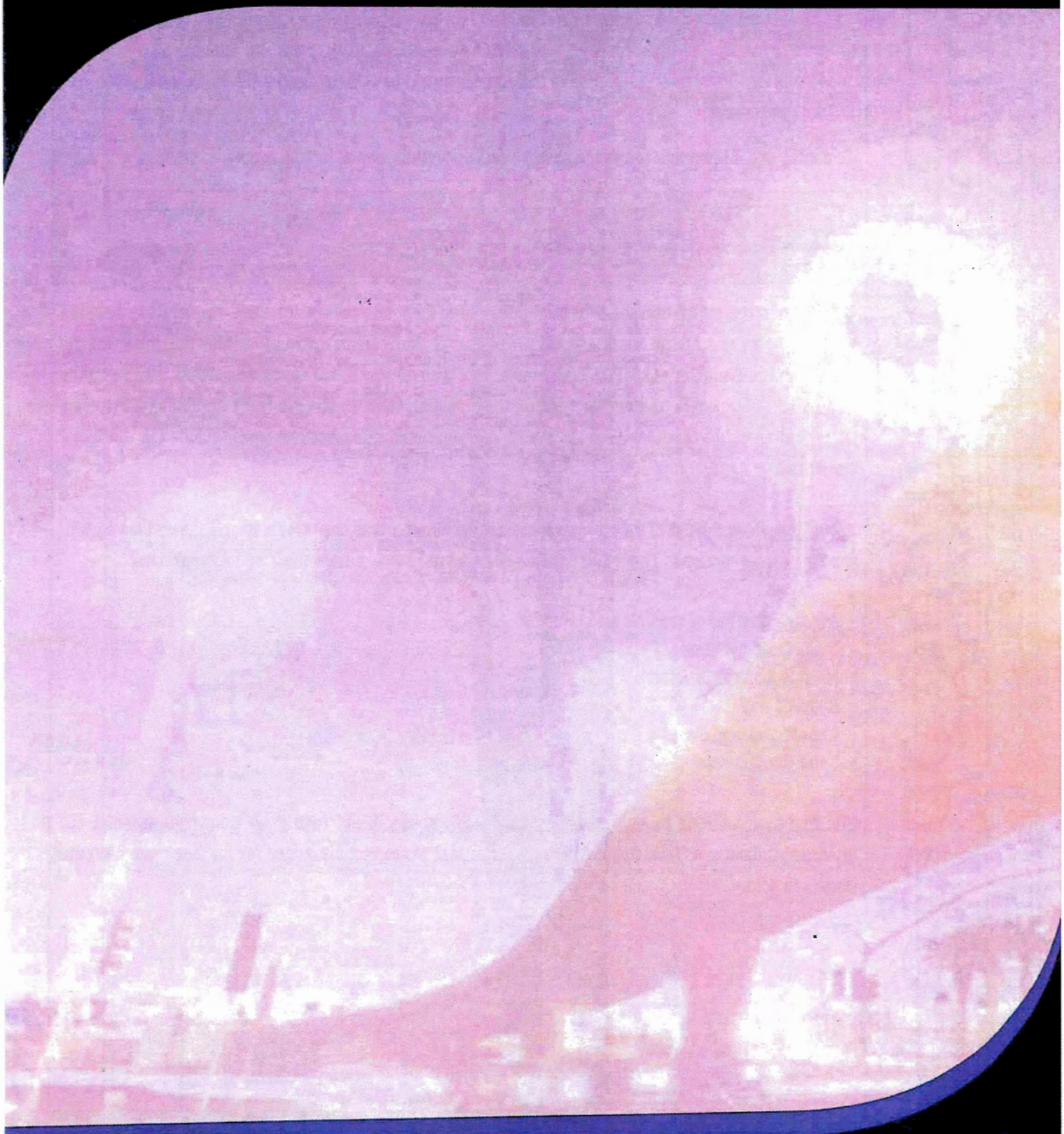
Miami-Dade County Grade Separation Study



Prepared for the Miami-Dade MPO

July 2005

BACKGROUND

This report examines high volume intersections throughout Miami-Dade County that could benefit from construction of what is now being termed, a "continuous flow intersection". A continuous flow intersection removes the heaviest flow movement from the signal cycle, providing more green time for all of the other movements in the intersection.. The key element throughout this study is identifying locations throughout the County that would be appropriate for development of an arterial grade separation.

Figures 1 and 2 illustrate the grade separation concept discussed in this report.

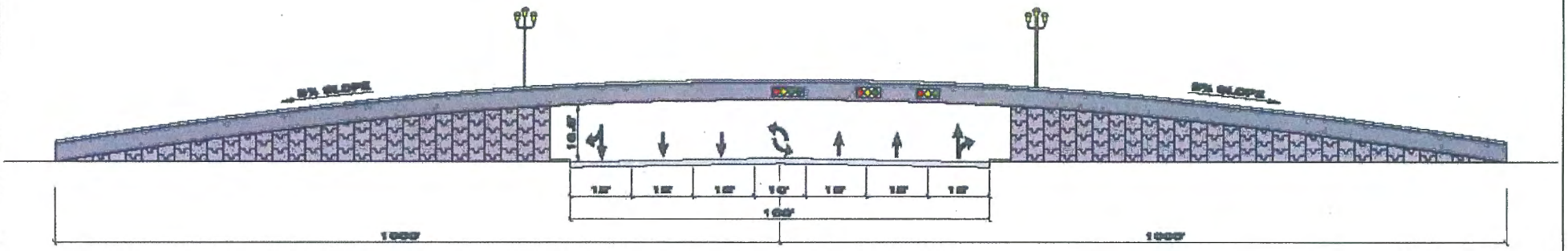
TIER I INTERSECTIONS

The initial set of intersections to be considered for grade separation were developed by sending a letter requesting nominations to members of the Transportation Planning Committee of the Miami-Dade County MPO. Also a letter was transmitted to those municipalities with a population of 100,000 people or more requesting their participation in the study by nominating intersections that would be considered in the study. All nominated intersections were included in the Tier I screening.

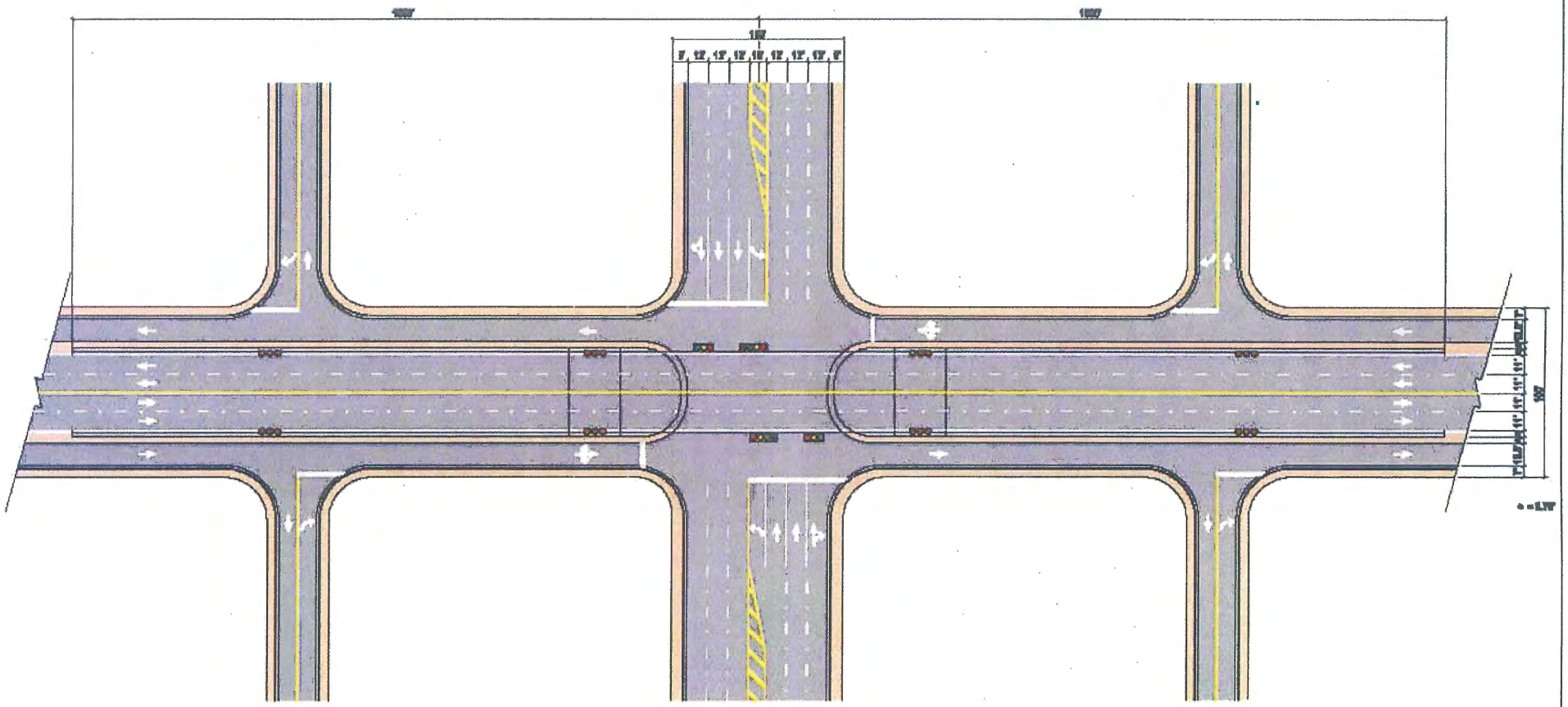
Table 1 provides the list of Tier I intersections and summarizes the information collected for each of the Tier I intersections. The following criteria were used to evaluate the Tier I Alternatives:

- Average number of crashes and injuries
- Total Traffic Volume
- Main Road Traffic Volume
- Right-of-Way
- Impact on Local Streets
- Land Use Impacts

The five intersections in each category that received the "best" rating are shown in green. A red quadrant indicates a "fatal flaw." The intersections that are recommended for further evaluation are shown in gold.



MIAMI - DADE M.P.O.	GRADE SEPARATION STUDY TYPICAL GRADE SEPARATION - PROFILE	FIGURE No. 1	The Corradino Group



MIAMI - DADE M.P.O.	GRADE SEPARATION STUDY TYPICAL GRADE SEPARATION - PLAN VIEW	FIGURE No. 2	The Corradino Group

TABLE 1: TIER I EVALUATION

Intersection	Average Crashes/ Injuries	Total Traffic Volume	Main Road Traffic Volume	Main Road ROW	Impact on Local Streets	Land Use Impacts
SW 42nd Ave @ 8th St.	25 / 10	96,500	50,000 (LeJeune)	100 ft.	Affects 6 cross streets	Car dealer at NW corner and gas station on SW corner need access from 42.
NW 42nd Ave. @ Flagler St.	34 / 24	94,000	53,500 (Flagler)	100 ft. (LeJeune)	Affects 1 cross street + 4 "T"	Fast food at NE corner and office on SW corner need access from 42nd Ave.
Milam Dairy Rd. @ NW 36th St.	36 / 18	94,500	62,500 (36th St)	150 ft.	No impact	Gas on SW corner loses access to WB traffic
NE 167th St @ NE 6th Ave.	58 / 48	76,900	56,500 (NE 167)	100 ft	Affects 2 cross streets + 1 "T"	Mixed commercial area on SW and gas station on NE corner lose partial access
Biscayne Blvd @ NE 163rd St	14 / 12	98,700	54,200 (NE 163)	150 ft.	Affects 1 cross street	Strong local opposition to project
SW 107th Ave. @ SW 8th St.	40 / 37	105,000	54,000 (SW 8)	150 ft.	Affects 1 "T" intersection	None
SW 27th Ave. @ S Dixie Highway	56 / 29	130,000	101,500 (US 1)	100 ft.	Affects 2 "T" intersections	Gas station on SW corner loses partial access
SW 87th Ave @ SW 8th St	40 / 45	95,500	58,000 (SW 8)	150 ft.	Affects 2 "T" intersections	Abandoned gas station loses WB access
SW 104th Street @ S. Dixie Highway	1-Feb	82,700	68,000 (US 1)	100 ft.	Affects 2 "T" intersections	Gas station on NE corner loses access to east bound traffic
SW Bird Rd. @ S. Dixie Highway	36 / 10	133,500	84,000 (US 1)	100 ft.	Affects 6 "T" intersections	Retail store and post office lose partial access.

TABLE 1: TIER I EVALUATION (CONTINUED)

Intersection	Average Crashes/ Injuries	Total Traffic Volume	Main Road Traffic Volume	Main Road ROW	Impact on Local Streets	Land Use Impacts
SW 57th Ave. @ S. Dixie Highway	21 / 16	111,000	89,000 (US 1)	100 ft.	Affects 2 "T" intersections and 1 cross	SB traffic looses all access to Sunset Place
NW 87th Ave. @ NW 12th St.					Conflicts with SR 835 ramps and overpass.	
N Kendall Dr. @ SW 127th Ave.	29/33	105,500	84,500	150 ft.	None	Home Depot center looses access to WB traffic.
441 @ Ives Dairy Road	46/44		65,500	100 ft. (Both)	Affect 3 "T" intersections.	Drug store on SW corner and Gas Station on NE corner lose partial access.
Red Road @ NW 135th St.	28/28	83,000	51,000	100 ft. (Red Rd)	Impact 1 "T" intersection.	No Impacts
US 1 @ SW 136th Street	2-Mar	86,500	74,000	116 ft. (US1)		
SW 152nd Ave @ SW 117th St.	143	63,556	41,000	130 ft at Turnpike.	Need flyover over turnpike and 117 Ave	

TIER II ALTERNATIVES

Five intersections were recommended for further evaluation for a grade separation because they rated the highest in 6 evaluation criteria categories. The intersections that were recommended are as follows:

- SW 107th Avenue and SW 8th Street with the grade separation on SW 8th Street
- SW 87th Avenue and SW 8th Street with the grade separation on SW 8th Street
- SW 27th Avenue and South Dixie Highway with the grade separation on South Dixie Highway
- North Kendall Drive and SW 127th Avenue with the grade separation on North Kendall Drive
- NW 36th Street and NW 72nd Avenue with the grade separation on NW 36th Street

SW 107th Avenue and SW 8th Street

Figure 3 shows that to the west of the intersection of SW 107th Avenue and SW 8th Street the implementation of a grade separation would have no impact on local circulation. The construction of a grade separation at the intersection of SW 107th Avenue and SW 8th Street would have no impact on access to property in three of the four quadrants of the intersection. Both the northeast and north-

west quadrants are bounded by a canal and there are no driveways or curb cuts on the north side of SW 8th Street. The Florida International University (FIU) campus lies to the southwest of the intersection and there are no driveways or curb cuts within 1000 feet to the west of the intersection being considered for this project. To the southeast, there are two properties that would be impacted by this project.

The grade separation at this location would impact three routes, the 8, 11 and 71. Altogether, these routes have eighteen buses. The grade separation would impact bus operations by providing 35 seconds more green time to SW 107th Avenue. Thus, 18 buses would be impacted by the additional 35 seconds of green time given to north-south traffic at this intersection.

SW 87th Avenue and SW 8th Street

Figure 4 show that the implementation of a grade separation along SW 8th Street (Tamiami Trail) would have minimal negative impacts to traffic circulation around the neighborhood. Access to properties along SW 8th Street would be minimally disrupted. There are no driveways along the north side of the street to be impacted by the grade separation structure. On the south side of SW 8th Street, the driveways are right turn only because of the concrete median. There is an opening in the concrete median that allows left turns into the retail plaza. Visually, the structure will block the views of retail facilities on the south side of the south west bound traffic.

The major positive impact will be the traffic flow in this vicinity. The grade separation at Tamiami Trail and SW 87th Avenue will impact two bus routes. The Route 8 operates through the intersection with 12 buses per hour. Depending upon the placement of the bus stop in relation to the grade separation, the 12 buses can either take advantage of the constant through movement if it is routed on the grade separation. If the bus stop on Tamiami remains close to the intersection, then the bus would continue to use the same route as local traffic goes through the signal at 87th Avenue not gaining any benefit.

SW 27th Avenue and South Dixie Highway

Figure 5 shows that the implementation of a grade separation along South Dixie Highway (US 1) at SW 27th Avenue would have minimal impact on neighborhood circulation. Because of the Metrorail right-of-way on the north side of US 1, there are no streets from the north intersecting US 1 that would be impacted by the implementation of a grade separation. To the east of SW 27th Avenue there are two local streets within the area impacted by a potential grade separation. The intersection only allows right turn in and right turn out of the street. The concrete median along US 1 crosses this intersection. No access to local streets would be lost due the construction of a grade separation at this intersection.

The grade separation would add 20 minutes per hour of additional flow to the 4,600 peak hour/peak direction vehicles operating as through traffic on US 1. There are no bus routes operating on US 1 in

Figure No. 3

SW 8th Street / SW 107th Avenue

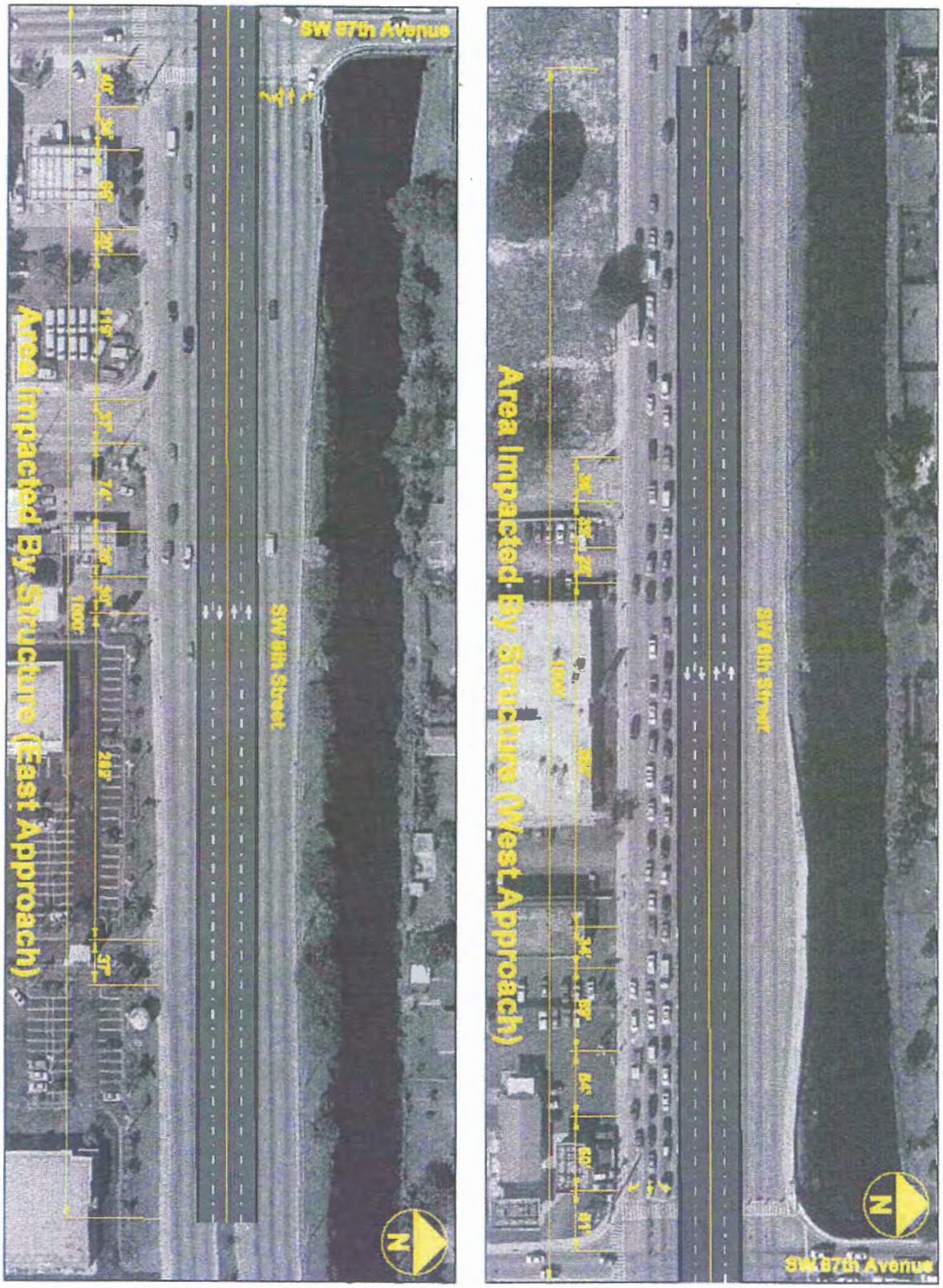


Figure No. 4 | **SW 8th Street / SW 87th Avenue**

this location to benefit from the continuous through operation of the grade separation. Twelve buses per hour operated on 27th Avenue would benefit from the 50% increase in green time that would revert to traffic operating on SW 27th Avenue.

North Kendall Drive and SW 127th Avenue

Figure 6 shows that the implementation of a grade separation along N. Kendall Drive at SW 127th Avenue will not impact circulation into or out of local streets.

Access to property east of SW 127th Avenue would be minimally impacted by the implementation of the project. On the south side of Kendall Drive there are only two driveways within the 1,000 foot impacted area. West bound traffic wishing to access this driveway, once the structure is in place, would be required to U-turn at SW 127th Avenue.

Access to property west of SW 127th Avenue would be altered by this project requiring u-turns under the grade separation.

Visually, the structure will block the views of the commercial facilities on the south side of the street from west bound traffic and on the north side of the street from east bound traffic.

The grade separation would provide 32 minutes of additional through time for the 3,100 peak hour/ peak direction through traffic on Kendall Dr. There are two bus routes operating on Kendall Drive that could both take full advantage of the grade separation.

NW 72nd Avenue and NW 36th Street

Figure 7 shows that the implementation of a grade separation project on NW 36th Street over NW 72 Avenue would not impact any local streets, as there are not any within the 1000 foot impact area of the intersection.

This project would, however, impact access to property in the area. In the northeast quadrant of the intersection are the County jail facilities. There are no curb cuts or driveways along the north side of NW 36th Street. In the southeast quadrant are more county facilities that use one driveway 300 feet east of the intersection. On the southwest quadrant of the intersection there are six driveways along NW 36th Street. Removal of the through traffic on NW 36th Street will provide a 1 minute 15 seconds of additional green time to the other movements in the intersection. This improvement would provide 33 minutes of additional through movement for the 2,800 peak hour/peak direction vehicles on NW 36th Street. There are four bus routes operating through this intersection that would require coordination to maximize savings from this project.

Figure No. 5 | **SW 27th Avenue / South Dixie Highway**

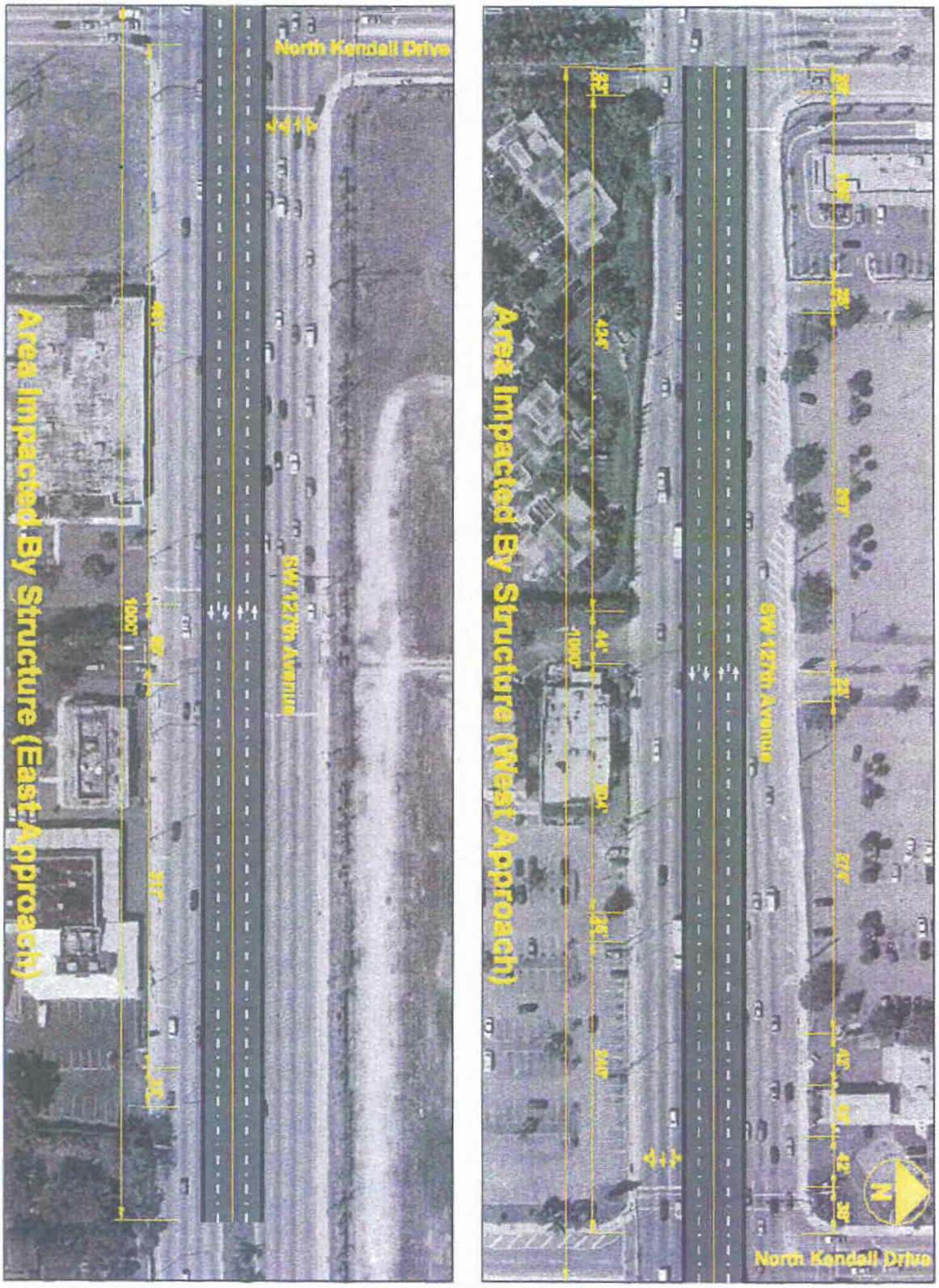


Figure No. 6 | **SW 127th Avenue / North Kendall Drive**

Figure No. 7

NW 36th Street / Milam Dairy Road

Implementation

The cost of a retained earth grade separation is close to $5.5 million per project, including contingencies, design, construction management, and agency costs. A precast grade separation would cost 2.5 times the cost of the retained earth grade separation or about $14 million dollars. The estimates do not include:

- utilities impacts
- maintenance of traffic
- real estate acquisition
- potential award for business damages .

The precast grade separation is by far the fastest construction method, causing the least impact to traffic. This alternative can be built in 14 to 15 months.

All of the Tier 2 alternative intersections operate at a level of service E or F. Arterial level of service would improve very little with the construction of a single grade separation; however delay on the arterial would certainly decrease. The intersection level of service would certainly increase to B or A in almost every circumstance. A critical aspect of the next phase of this study will be a detailed traffic analysis of each intersection recommended for improvements. Of the five intersections, the greatest benefit can be gained by from the intersections in this order.

1. SW 8th Street across SW 107th Avenue;
2. NW 36th Street across NW 72nd Avenue;
3. SW 8th Street across SW 87th Avenue;
4. US 1 across SW 27th Avenue, and
5. N. Kendall Drive across SW 127th Avenue.

Grade Separation Study