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SUNRISE BOULEVARD MULTIMODAL CORRIDOR STUDY
CONGESTION MANAGEMENT STRATEGIES

I. INTRODUCTION

Sunrise Boulevard is a principal east/west arterial within central Broward County. It stretches approximately 15.3 miles from the Sawgrass Expressway in the west to SR A1A in the east (see Exhibit 1). Sunrise Boulevard is mainly a six-lane divided roadway except the segment between Hiatus Road to Pine Island Road, which is a four-lane divided road. This segment exists as four lanes and it was scheduled to be widened to six lanes in November 2001. Sunrise Boulevard is a County maintained facility from the Sawgrass Expressway to University Drive (SR 817) and a state road (SR 838) from University Drive to SR A1A.

Sunrise Boulevard is located within the following municipal boundaries: unincorporated Broward County, City of Sunrise, City of Plantation, City of Lauderhill, and City of Fort Lauderdale. The north/south boundaries for the corridor study are Oakland Park Boulevard and Broward Boulevard. This is the extended study area. The multimodal corridor study focuses on Sunrise Boulevard while analysis along Oakland Boulevard and Broward Boulevard is limited to providing congestion mitigation and travel mobility strategies. Land use varies along Sunrise Boulevard. The western portion is typically a mix of residential and commercial land use and becomes more industrial with some commercial land use between Powerline Road and Dixie Highway. The corridor transitions back to abutting commercial and office land use with residential bordering between Dixie Highway and SR A1A.

Broward County's Congestion Management System (CMS) identified Sunrise Boulevard as a priority corridor in need of congestion mitigation. The Broward County CMS was developed with the purpose to monitor and analyze the magnitude of congestion on multimodal transportation systems with the main goal of reducing congestion and enhancing corridor performance.

This study is a compilation of the Existing Conditions Analysis (Technical Memorandum 1), Short-term Analysis (Technical Memorandum 2), and Implementation Plan and Funding Sources (Technical Memorandum 3).

Technical Memorandum Number One presented a summary of the data collection effort, the identified performance measures, and the existing conditions analysis. A summary of the significant findings from Technical Memorandum Number One include:

- There are four FDOT construction projects addressing some of the access management and roadway issues.
- There are many high activity bus stops devoid of basic amenities and with ADA deficiencies.
- There is a corridor level transit service along Sunrise Boulevard. This service is heavily used in the central portion of the corridor, between the Turnpike and I-95. However, this service is deficient in intermodal connectivity.

- There are various intermodal locations within the study area with some connectivity and ADA deficiencies.
- The Level of Service analysis indicates that most sections of Sunrise Boulevard are operating over capacity resulting in congested conditions.
- Other deficiencies are identified at pedestrian facilities, bicycle facilities and access management.

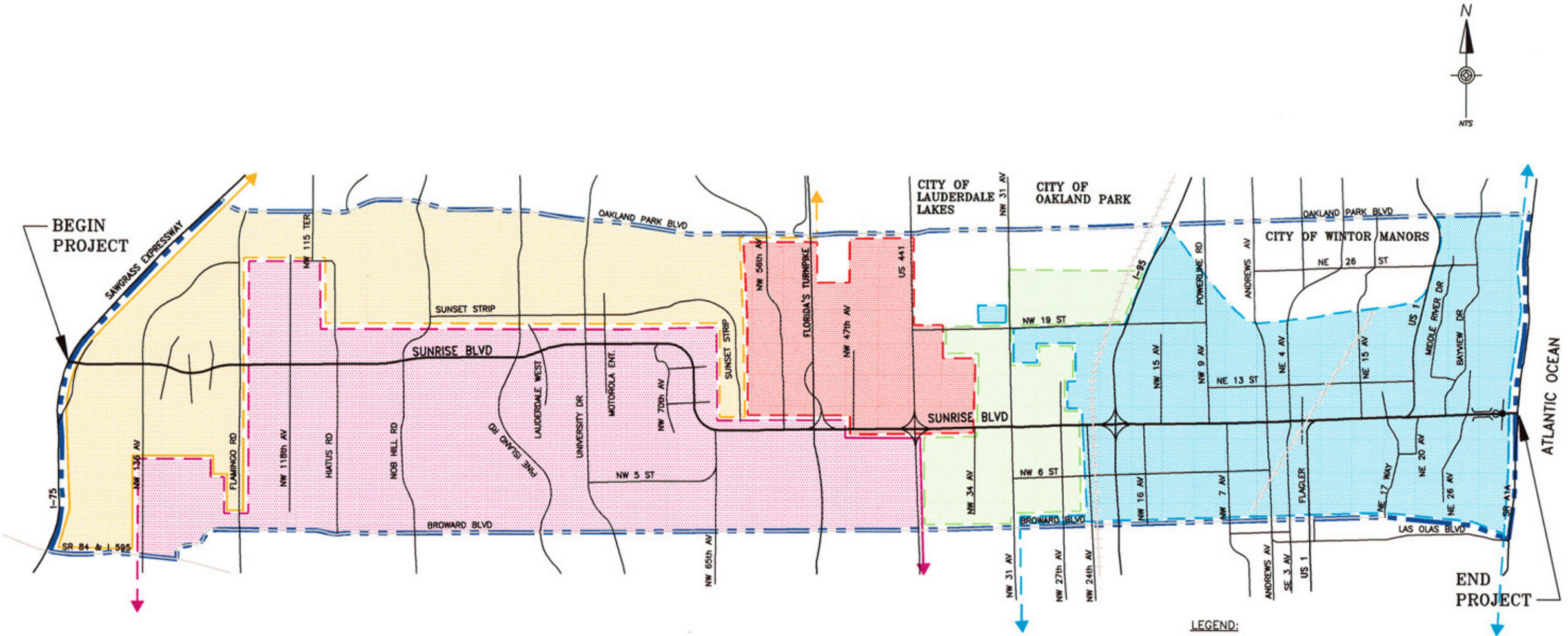
Technical Memorandum Number Two focused on analyzing the future five year (year 2005) traffic conditions and identifying congestion management strategies. A summary of the significant findings of this report includes:

- There are several construction projects that include pedestrian and bicycle improvements throughout the corridor.
- Overall traffic along Sunrise Boulevard appears to have stabilized and will grow at a slow rate during the next five years. However, stabilization has occurred at a congested level.
- Arterial and signalized intersection levels of service will continue to deteriorate in the future.
- Over 60 short-term congestion management strategies have been identified for multiple modes of transportation.

Technical Memorandum Number Three presented the ranking of the strategies using a benefit/cost methodology used to evaluate the list of congestion management strategies identified in Technical Memorandum Two as well as a discussion of the available funding sources. An implementation schedule is also included in this Technical Memorandum. The top ten ranking strategies based on the evaluation process are:

- Safety Study at University Drive
- Installation of a Pedestrian Signal
- Monitoring Transit Operations
- Pedestrian Sidewalk Improvements
- Creation of Community Bus Systems - City of Plantation
- Bicycle Lane Improvements
- Signal Timing Optimization
- Transit Improvements
- ADA Accessibility
- Dillard School Zone Improvements

The financial analysis indicates that significant resources are available for the funding of the congestion management strategies. Programmed funding resources over the next five years are also presented in this report. Technical Memorandum Number Three contains a detailed discussion of some of the new and innovative available funding resources.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NTS
BEGIN PROJECT
SAWGRASS EXPRESSWAY
I-75
SR 84 & I 595
NW 136 AV
FLAMINGO RD
NW 115 TER
NW 118th AV
HIATUS RD
NOB HILL RD
PINE ISLAND RD
LAUDERDALE WEST
UNIVERSITY DR
MOTOROLA ENT.
NW 70th AV
NW 65th AV
OAKLAND PARK BLVD
SUNSET STRIP
SUNRISE BLVD
BROWARD BLVD
NW 5 ST
NW 56th AV
FLORIDA'S TURNPIKE
NW 47th AV
US 441
CITY OF LAUDERDALE LAKES
NW 31 AV
NW 34 AV
CITY OF OAKLAND PARK
NW 19 ST
NW 6 ST
I-95
POWERLINE RD
NW 15 AV
NW 9 AV
NW 16 AV
NW 7 AV
NW 31 AV
NW 27th AV
NW 24th AV
ANDREWS AV
CITY OF WINTOR MANORS
NE 26 ST
NE 13 ST
NE 4 AV
NE 15 AV
US 1
MIDDLE RIVER DR
BAYVIEW DR
FLAGLER
NE 17 WAY
NE 20 AV
NE 26 AV
SE 3 AV
LAS OLAS BLVD
SR A1A
ATLANTIC OCEAN
END PROJECT
LEGEND:

II. DATA COLLECTION

Transportation data were obtained from several sources including: existing transportation studies, Broward County Transportation Planning Division of the Department of Planning and Environmental Protection, Broward County Division of Mass Transit, Broward County Traffic Engineering Division, Florida Department of Transportation (FDOT), Cities within the study area, and field observations.

The following data was obtained:

- Intersection Lane Assignments
- Approach Counts
- Turning Movement Counts
- Vehicle Occupancy
- Transit Ridership
- Transit Information
- Accident Data
- Travel Time Information
- Heavy Vehicle Percentages
- Traffic Signal Timing Information
- Sidewalk Continuity Survey
- Multimodal Connectivity Survey
- Bus Stop Amenities Survey

Interviews were conducted with representatives from the municipalities and Broward County agencies to address specific concerns:

- Broward County Government
  Mass Transit Division
  Bicycle Coordinator
  Traffic Engineering Division
  Transportation Planning Division / MPO

- City Governments
  Sunrise
  Plantation
  Lauderhill
  Fort Lauderdale

- Florida Department of Transportation (FDOT)
  Planning
  Public Transportation
  Traffic Operations

III. PERFORMANCE MEASURES

Performance measures for the Sunrise Boulevard Multimodal Corridor Study were developed for each mode based on four categories: congestion, mobility, accessibility and human environment (see Table). They were determined based on Broward County standards, past CMS experience, and characteristics unique to Sunrise Boulevard. The measures and associated standards need to provide a two-fold function: provide a realistic measure of a given mode and a reasonable approach for future monitoring activities. The following table summarizes these measures.

Table 1. Performance Measures & Targets

MODE	PERFORMANCE CATEGORIES	MEASUREMENTS	TARGET
Pedestrian	Accessibility	Continuous Facilities	100%, ADA Requirements
		Level of coverage, major generators	90% - 100%
Bicycle	Mobility	Roadway Condition Index (RCI) for bicycles	Bicycle LOS "C", no more than moderate to high amount of interaction with traffic.
	Accessibility	Existence & Continuity of Facilities	80% of major generators
Transit	Congestion / Utilization	Peak Load Factor	=>1.0 / < = 1.0
	Mobility	Passengers / Mile Passengers / Hour	Increase Passengers / Mile by 10% Increase Passengers / Hour 10%
		Transit Travel Time	No more than twice the time as by auto
		Frequency of Service	At least 15 minutes in peak period (Transit Needs Assessment – Final Report, Aug 1996)
	Accessibility	Transit Coverage Area	Coverage within 1/4 mile of a bus stop
		Pedestrian Access	Meet ADA Requirements
		Transportation Barriers	Canals. Walled communities, etc.
	Human Environment	Survey of availability of User Amenities	Should provide User Amenities
Intermodal	Accessibility / Connectivity of Modes	Intersecting Bus Routes	Should provide Intermodal Facilities
		Park & Ride Lots	
		Intermodal Terminals	
	Human Environment	Survey of availability of User Amenities	Should provide User Amenities
Roadway) *(auto*	Congestion	ART-PLAN - Arterial	LOS "D / E"
		2000 HCM - Intersection	LOS "D / E" for all lane groups
	Mobility	Auto Occupancy	Increase auto occupancy by 10%.
	Accessibility	Access Management: Medians, & Signals	FDOT Access Management Classification
	Safety	Accident Rate	Safety Ratio
	Human Environment	Pollution / Noise Levels; Income / Quality of Life Levels	Comply with Title 6 & Environmental Justice Issues

These measures were used to identify deficiencies within the existing corridor and ascertain benefits of future proposed CMS strategies.

IV. EXISTING CONDITIONS ANALYSIS

The collected data were analyzed to quantify the existing conditions along Sunrise Boulevard. This analysis aided in identifying those areas for possible improvement. The findings of the existing conditions analysis are summarized below.

Pedestrian

- *Accessibility*: The sidewalk survey revealed that a sidewalk system exists along Sunrise Boulevard. However, the coverage does not meet the standard of 100% since there are discontinuous areas resulting from constricted sidewalk space, constricted curb ramps, and lack of curb ramps.

Bicycle

- *Mobility*: Bicycle mobility is measured by the Roadway Condition Index (RCI) for bicycles. The target for RCI is a Bicycle Level of Service (BLOS) C with no more than a moderate to high amount of traffic interaction with traffic. The study revealed that east of NW 65th Avenue to Bayview Drive, the study corridor has a high to extremely high amount of interaction with traffic. West of NW 65th Avenue, Sunrise Boulevard has a bicycle RCI of BLOS C.
- *Accessibility*: Bicycle accessibility relates to the existence and continuity of facilities and the target is a level of coverage of 80% of the trip generators covered by bicycle facilities. The study reveals that there are various trip generators within the study area and that west of NW 65th Avenue, there is great potential for developing a safe bicycle network due to the combination of major trip generators and BLOS C. The same is not true east of NW 65th Avenue, where BLOS are below the established threshold.

Transit

- *Utilization*: The analysis revealed that Broward County Transit (BCT) Route 36 is heavily utilized in the eastbound direction between the Lauderhill Mall and NW 13th Avenue where load factors exceed 1.0 in this segment of Sunrise Boulevard. In the westbound direction, high transit utilization occurs between NW 27th Avenue and NW 65th Avenue. The analysis also revealed that the bus stops served by BCT's Route 56 along Sunrise Boulevard have load factors below 1.0. The load factor data analysis indicates that vehicular peak hour traffic along Sunrise Boulevard does not coincide with the periods in which transit is heavily used. This is true with the exception of the segment between NW 34th Avenue and NW 13th Avenue where periods of transit congestion coincide with the traffic peak period in the eastbound direction. This may be explained by the fact that this route serves other trip purposes such as shopping, school, etc. between NW 56th Avenue and NW 15th Avenue.
- *Mobility*: Passengers per hour and passengers per mile are related to transit mobility measures, increasing them will improve transit mobility. The transit mobility standard is 10% of both passenger miles and passengers per hour. Currently, the passengers per hour and passengers per mile are 43.67 and 3.14, respectively for BCT's Route 36. This compares well with the overall BCT average of 34.27 passengers per mile and 2.51 passengers per

hour. Further increases to these mobility measures by 10% for Route 36 will improve overall mobility for the corridor while reducing congestion.

- *Accessibility*: The standard for this measure is compliance with ADA requirements. Pedestrian access is enhanced by providing continuous ADA accessible sidewalk facilities within a ¼ mile of Route 36 and 56. Transit access is also accomplished by bicycle. Enhanced transit amenities at bus stops are important especially to encourage the use of transit. Along the study corridor there are 64 eastbound bus stops and 64 westbound bus stops and in general, limited enhanced amenities are provided.

Intermodal

- *Accessibility*: Two surveys were conducted to determine intermodal accessibility. The first survey analyzed four locations, two transfer stations and two terminals. The two transfer stations are located in close proximity to Sunrise Boulevard. The two terminals are located in the periphery of the study area along Broward Boulevard. The study showed that these four intermodal facilities are not serving Sunrise Boulevard efficiently. In addition to this, new intermodal hubs and transfers stations were identified by examining passenger daily activity at all bus stops along the corridor study. A total of 67 (52%) bus stops with daily passenger activity equal or greater than 25 were identified along the corridor. The bus stops were ranked from high to low based on daily passenger activity. The second survey analyzed each bus stop along Sunrise Boulevard. The results show that 56 (89%) eastbound bus stops and 54 (83%) westbound bus stops do not meet ADA requirements, 39 (62%) eastbound and 32 (49%)westbound bus stops are deficient in benches, and 60 (95%) eastbound and 54 (83%) westbound bus stops have no shelters.

Roadway

- *Congestion*: The results of the PM peak arterial analysis indicated that for the most part the westbound direction carried more traffic than the eastbound. Of the 36 links studied, seventeen westbound links and nine eastbound links were found to operate below the target LOS D. The intersection capacity analysis shows that 20 (of the 24 intersections studied) perform at LOS below the target D. The overall capacity analysis indicates the extent at which Sunrise Boulevard is operating under congested conditions. Most links and intersections operate below the target LOS D. Under these conditions, minor improvements such as signal retiming and rephasing will not provide substantial benefits to the corridor as a whole. Without the possibility of widening Sunrise Boulevard, non-traditional strategies other than the typical congestion actions will have to be implemented. In particular, the Turnpike is a barrier to east-west travel. There are no alternative crossings of the Turnpike between Sunrise Boulevard and Oakland Park Boulevard. This forces a great deal of traffic to use Sunrise Boulevard and to compete with Turnpike interchange traffic for roadway capacity.
- *Mobility*: Occupancy rates varied throughout the length of Sunrise Boulevard. The lowest auto occupancies were found in the area between the Sawgrass Expressway and University Drive. Higher occupancies were found between the Turnpike and I-95. The areawide average peak hour occupancy rate of 1.34 is relatively low compared to the County-wide daily average of 1.55 (SR7/US 441 Corridor Study, April 1998). Increasing by 10% the occupancy rate would bring the peak hour to 1.47.

- *Accessibility*: The access management survey indicates that the majority of full and directional median openings do not meet the State of Florida access management requirements. The survey also shows that 49% of the traffic signals do not meet the accepted spacing requirements.

Safety

- *Roadway:* The traffic accident analysis reveals that locations with safety ratios greater than 1.0 exist at 13 intersections along Sunrise Boulevard. The three highest crash locations on Sunrise Boulevard are at University Drive, Pine Island Road and Nob Hill Road. Together, these three locations have had more than 1,000 crashes in three years.
- *Pedestrian*: The majority of pedestrian crashes occurred east of N.W. 34th Avenue. Many of the highest concentrations of pedestrian crashes coincide with the locations of school crossings.
- *Bicycle:* The majority of bicycle crashes occurred east of N.W. 34th Avenue. Many of the highest concentrations of bicycle crashes coincide with the locations of school crossings.

V. SHORT-RANGE (YEAR 2005) TRAFFIC CONDITIONS ANALYSIS

This section presents an analysis of short-range (Year 2005) transportation conditions and system deficiencies. For this, other relevant sources of future traffic and transit information, such as committed development analysis, funded improvement inventory and activity center analysis were also considered. Programmed transportation improvements listed in Broward County's Transportation Improvement Program (TIP) (FY 2000/01 – 2004/05) will be assumed to be in place by Year 2005 and their impacts will be incorporated in the short-range analysis.

Short-range (Year 2005) traffic projections were determined using 1996 and 2020 Florida Standard Urban Transportation Model Structure (FSUTMS) data and historic traffic data available at count stations along Sunrise Boulevard. Arterial Level-of-Service (LOS) analyses were performed to identify deficient links. Intersection capacity analyses were again performed in two formats: at each of the major intersections along the corridor and at intersections located adjacent to the links operating below the adopted LOS, in this case LOS "D."

The short range analysis identified the following areas in addition to the areas identified in the existing conditions analysis.

Pedestrian

- A section of sidewalk will be provided on the south side of Sunrise Boulevard at both Sunset Strip and N.W. 56th Avenue where none presently exists. A signalized pedestrian crosswalk will also be provided at both of these intersections enabling pedestrians to cross Sunrise Boulevard safely.
- The Broward County's Transportation Improvement Program (TIP) (FY 2000/01 – 2004/05) includes a streetscaping project between Davie Boulevard and Sunrise Boulevard at Andrews Avenue and 3rd Avenue. In addition, sidewalks will be built on both sides of Sunrise Boulevard between Hiatus Road and Pine Island Road.

Bicycle

- The 2001 Broward County Existing and Designed Facilities includes unmarked lanes between Nob Hill Road and University Drive and a bike lane between University Drive and the Florida Turnpike.
- The Broward County's Transportation Improvement Program (TIP) (FY 2000/01 – 2004/05) indicates that a multi-purpose path is planned at Bayview Drive between Sunrise Boulevard and Commercial Boulevard.
- The City of Plantation developed a Greenway Pilot Program. The proposed program would run in the north-south direction along the east side of the Florida Turnpike from south of Broward Boulevard to Sunrise Boulevard, and in the east-west direction on the south side of Sunrise Boulevard from the Florida Turnpike to SR 7.

Transit

- The Broward County Transit Development Plan includes the following transit improvements:
  - Proposed Route 23 along Flamingo Road will connect to the Sawgrass Mills Mall (implemented April 15th, 2001)
  - Year Two of the program indicates that Route 2 will be extended into Miami – Dade County, thus improving east/west and north/south connection transit options (implemented April 15th, 2001).
  - Year Three establishes a new route (Route D) to serve SR A1A from the Galleria Mall to the Aventura Mall and also the Hollywood/ Fort Lauderdale Airport.
  - Year Four of the program proposes express services to heavily transit corridors including Sunrise Boulevard.
  - The Broward County's Transportation Improvement Program (TIP) (FY 2000/01 - 2004/05) has included BCT Contracts for providing feeder bus service to Tri-Rail, a countywide project for improving and providing landscaping at BCT Bus shelters, and a BCT bus shelter program for CMS corridor projects.

Roadway

- The arterial capacity analysis results indicated that the roadway congestion conditions improve where TIP projects are implemented. This occurs between Hiatus Road and Pine Island Road. Excluding this, congestion along Sunrise Boulevard will continue to exist. In the eastbound direction nine links of the six segments studied will operate below the target LOS D. In the westbound direction there are sixteen links failing operating below the target LOS D. The widening between Hiatus Road and Pine Island Road produces LOS C in segment II, which is an improvement.
- The intersection traffic analyses revealed that of the twenty-four intersections studied twenty-one intersections would operate below LOS D, in comparison to the 20 failing intersection during existing conditions.

VI. CONGESTION MANAGEMENT STRATEGIES

The existing conditions and short-range analyses provided the basis for the identification of over 60 congestion management strategies. These strategies were ranked by a benefit/cost method as shown in Table 2.

Table 2. Ranking of Congestion Management Strategies - Benefit/Cost Analysis

Strategy Description	Strategy #	Locations	Benefit	Cost	Ranking	Ranking Position
Safety Studies	68	University Drive Intersection	1	1	91%	1
Add pedestrian Signals	7	NE 17th Way – across NB + SB approaches	1	1	89%	2
Monitor transit headways+LFs	24	Route 36 between NW 56th Avenue and NW 13th Avenue	1	1	88%	3
Safety Studies	64	94th Avenue Signal Warrant/Safety study	1	1	88%	4
Sidewalk continuity	2	North Side (See Table 23 for specific locations)	1	1	84%	5
Sidewalk continuity	1	South Side (See Table 22 for specific locations)	1	1	84%	6
Community Buses	37	Plantation Community Shuttle	2	1	81%	7
Bicycle lanes	12	US 1 Gateway – SR A1A	1	4	81%	8
Signal Timing Optimization	55	Sunset Strip	2	1	80%	9
Signal Timing Optimization	56	US 1 Gateway,	2	1	80%	10
Signal Timing Optimization	57	Bayview Drive	2	1	80%	11
Signal Timing Optimization	58	SR A1A	2	1	80%	12
Signal Timing Optimization	59	US 1 Searstown - 5 Years	2	1	80%	13
Signal Timing Optimization	60	US 1 Gateway - 5 Years	2	1	80%	14
Signal Timing Optimization	61	NE 20th Avenue - 5Years	2	1	80%	15
Signal Timing Optimization	62	Bayview Drive - 5 Years	2	1	80%	16
Signal Timing Optimization	63	SR A1A - 5 Years	2	1	80%	17
Mid-block bus bays	18	Flagler Drive / US 1 Intersection (see Exhibit 18)	1	5	79%	18
Safety Studies	65	Btwn Flamingo Road and Hiatus Road	2	1	79%	19
Safety Studies	66	Nob Hill Road Intersection	2	1	79%	20
Safety Studies	67	Pine Island Road Intersection	2	1	79%	21
Bus stops ADA accessible	21	Route 36 and 56 (see Tables 32 and 33 for deficiencies)	2	5	77%	22
Dillard School Zone	3	Dillard School Complex	1	8	77%	23
Mid-block bus bays	19	Birch Road – WB direction	1	4	75%	24
Community Buses	38	Ft. Lauderdale Community Shuttles	1	8	73%	25
Community Buses	39	Extended Service for Ft. Lauderdale Trolley Shuttle	1	8	73%	26
ITS Strategies	40	Bus Priority System	2	6	73%	27
Multi-purpose path	9	Connect Plantation to Lauderhill	2	4	72%	28
BCT new service	36	Express/Limited East-West Bus Route	2	9	72%	29
Queue Jumpers	27	Pine Island Road	2	5	71%	30
Queue Jumpers	28	University Drive	2	5	71%	31
Queue Jumpers	29	NW 31st Avenue	2	5	71%	32
Queue Jumpers	30	NW 27th Avenue	2	5	71%	33
Queue Jumpers	31	NW 24th Avenue	2	5	71%	34
Bicycle lanes	11	Sawgrass Expressway – Florida Turnpike	2	5	71%	35
School Zone East of I-95	4	Lauderdale - Sunland Park Schools	1	8	70%	36
TDM – TMI programs	25	Sawgrass Expressway - NW 136th Avenue area	2	4	70%	37
TDM – TMI programs	26	Pine Island Road – Motorola entrance area	2	4	70%	38

Table 2. Ranking of Congestion Management Strategies - Benefit/Cost Analysis

Strategy Description	Strategy #	Locations	Benefit	Cost	Ranking	Ranking Position
Multi-purpose path	10	Lauderhill (East of Tpke-MLK)	2	6	69%	39
Open walls in Communities	6	Between Nob Hill Rd - Pine Island Rd.	2	1	68%	40
Intermodal Strategies	53	Upgrade Lauderhill Mall Transfer	2	8	68%	41
School Xing at NW 65th Ave	5	Adding a pedestrian bridge	1	8	68%	42
ITS Strategies	44	Dynamic Message Signs	2	8	66%	43
Multi-purpose path	8	Following the existing canal system - Plantation	2	8	65%	44
ITS Strategies	49	Voluntary Probes	3	1	64%	45
Bike racks on Buses	14	Sunrise	3	1	63%	46
Bike racks on Buses	15	Plantation	3	1	63%	47
Bike racks on Buses	16	Lauderhill	3	1	63%	48
Bike racks on Buses	17	Ft. Lauderdale	3	1	63%	49
Intermodal Strategies	52	Creation of Hub at Sawgrass Mills Mall	2	8	63%	50
Bicycle racks at bus stops	13	High activity locations	3	2	62%	51
Queue Jumpers	32	NW 9th Avenue – Long Range	2	5	61%	52
Queue Jumpers	33	Andrews Avenue – Long Range	2	5	61%	53
Queue Jumpers	34	NE 4th Avenue – Long Range	2	5	61%	54
Queue Jumpers	35	NE 15th Avenue – Long Range	2	5	61%	55
ITS Strategies	50	Travel Speed Monitoring Devices	2	4	60%	56
Tri-Rail Feeder Bus	23	Service to Motorola, American Express, Racal-Milgo	1	8	60%	57
ITS Strategies	43	CCTV Cameras	3	5	57%	58
ITS Strategies	48	Changeable Lane Assignment Signals	3	5	57%	59
Tunnel Reopening	22	City of Lauderhill	1	8	57%	60
Bus Shelters w/benches+L	20	High activity locations (Table 16)	3	5	56%	61
ITS Strategies	41	Radar Detectors	3	4	54%	62
ITS Strategies	42	AVI Readers	3	4	54%	63
ITS Strategies	51	Traffic Advisory Web Site	3	4	54%	64
ITS Strategies	47	Blank-out signs	4	3	54%	65
ITS Strategies	45	Highway Advisory Radio	4	5	53%	66
Intermodal Strategies	54	Creation of Hub at Galleria Mall	3	8	52%	67
ITS Strategies	46	Trail Blazers	4	5	51%	68

6.1 Summary of Short-Term Strategies

Short-term strategies address the five-year short-range traffic conditions; summarizes future conditions for transit, bicycle, and pedestrian modes; and identifies and evaluates congestion management strategies. Traffic conditions will continue to operate at congested levels within the next five years. The proposed CMS strategies have been identified to alleviate the anticipated congested conditions. The results of the CMS strategies ranking by the different modes of travel are summarized below.

1. Pedestrian
   - The deficiencies to the sidewalk along the north and south sides of Sunrise Boulevard are minor and have a high ranking (84%).
   - The improvements to the Dillard School Zone have a ranking of 77%. These improvements should enhance pedestrian safety while reducing traffic congestion within the City of Lauderhill.
2. Bicycle
   - The proposed bike lane between US 1 Gateway to SR A1A has a high ranking of 81%.
   - Three multipurpose paths are proposed. One in Plantation (72% ranking), one in Lauderhill (69% ranking) and a third one along the canal system in Plantation (65% ranking).
3. Transit
   - The highest ranked strategies for transit included monitoring transit headways, creation of community buses, midblock bus bays and improvements to ADA accessibility
   - The proposed express / limited east-west bus route has a ranking of 72%.
   - The proposed bus priority system ranked at 73%.
   - Queue jumpers at key intersections are ranked at 71%.
   - The re-opening of the Lauderhill Tunnel is given a low ranking (57%) due to its high cost.
4. Roadway
   - Signal timing optimization is shown as a favorable strategy (80% ranking) due to its low cost and relative ease of implementation.
   - Safety studies are shown as having high rankings (91% at University Drive) due to the immediate availability of funds and their low cost.
   - Installation of a pedestrian signal at the intersection of NE 17th Street has also a high ranking (89%).
5. Intermodal
   - Intermodal hubs have been proposed at Sawgrass Mills Mall (63%) and Galleria Mall (52%).
   - Upgrade of the Lauderhill Transfer Terminal has a ranking of 68%.
6. ITS Strategies
   - ITS strategies have a potential to increase the benefit of all modes of travel. However, most of the identified ITS strategies ranked low due to cost.

VII. COST ESTIMATES

The benefit/cost analysis for the strategy evaluation was calculated utilizing a range of costs. Costs were developed based on information from FDOT and Broward County. The cost estimate should be considered preliminary and could be subject to change. A detailed summary of costs for the strategies is shown in Table 3. The cost estimate takes into account capital, operation, and maintenance expenditures.

VIII. POTENTIAL FUNDING SOURCES

In 1998, the U.S. Congress passed a sweeping six-year transportation bill known as the Transportation Equity Act for the 21st Century (TEA-21). This bill reauthorized most of the funding programs set forth in the previous Intermodal Surface Transportation Efficiency Act (ISTEA) legislation and significantly increased overall funding for both highway and transit. The current TEA-21 authorization extends through September 2003. "Reauthorization" (i.e. the successor to the 1998 TEA-21 bill) will be enacted by Congress in 2003 and will presumably contain a program structure generally similar to the existing TEA-21. The multi-year Transportation Improvement Program (TIP) makes this assumption for the years after 2003.

The recommended approach to Federal funding is to consolidate as many of the proposed strategies (i.e. projects) into a single comprehensive investment package, and pursue it as an integrated whole. This will ensure a complete, consistent and complimentary combination of transportation improvements. It will also limit the level of effort Broward County needs to expend to obtain the necessary funding.

The total cost of the projects described is $ 30.7 million (see Table 4). Of this, $22.1 million or 71.9 percent, are capital costs eligible for funding from federal and local sources. The breakdown and eligible funding sources for each element proposed in the Multimodal Corridor Study appear in the accompanying table.

The best approach to finance is a proposal that covers all proposed strategies. A single proposal ensures completeness, consistency, and requires much less effort to prepare a proposal to state and federal authorities. Almost all funds needed to realize the goals of the Sunrise Boulevard Multimodal Corridor Study can be packaged in one or the other of the following combined programs:

- Surface Transportation Program. With 10% dedicated to STP Transportation Enhancement Activities and another 10% dedicated to STP Hazard Elimination; plus
- Transportation Outreach Program
- County Incentive Grant Program

Surface Transportation Program (STP) combined with STP Transportation Enhancement Activities (TEA) and STP Hazard Elimination programs are the best matches for the proposed activities. Pursuing STP and its subsidiary programs has the advantage that Broward County will be able to pursue one large umbrella of funds for this integrated plan, rather than several; and expend less effort than if it pursued many different Federal programs.

Table 3: Congestion Management Strategies Cost Estimates

Mode	Strategy Description	Strategy #	Locations	Units	Unit $	Quantity	Total $
Pedestrian	Sidewalk continuity	1	South Side (See Table 6 of TM 2 for specific locations)	LM	23,000	0.923	21,229
	Sidewalk continuity	2	North Side (See Table 6 of TM 2 for specific locations)	LM	23,000	0.211	4,853
	Dillard School Zone	3	Dillard School Complex				
			Close Median Opening	EA	40,000	1	40,000
			Hedges	TBD	TBD	TBD	TBD
			Pedestrian Overpass w/Handicap Ramps	SF	300	3528	1,058,400
			Sidewalk continuity	LM	23,000	0.475	25,925
			Subtotal				1,098,400
	School Zone East of I-95	4	Hedges	TBD	TBD	TBD	TBD
			Multi-purpose path corridor along the Sunland Park	LM	175,000	0.46	80,500
			Pedestrian Overpass w/Handicap Ramps	SF	300	3528	1,058,400
			Sidewalk continuity	LM	23,000	0.211	4,853
	School Zone NW 65th Avenue	5	Pedestrian Overpass w/Handicap Ramps	SF	300	3528	1,058,400
	Open walls in Communities	6	Plantation	TBD	50,000	TBD	50,000
	Add pedestrian Signals	7	NE 17th Way – across NB + SB approaches	EA	1,500	2	3,000
Bicycle	Multi-purpose path	8	Following the existing canal system - Plantation	LM	175,000	13.317	2,330,475
	Multi-purpose path	9	Connect Plantation to Lauderhill	LM	175,000	0.95	166,250
	Multi-purpose path	10	Lauderhill (East of Tpke-MLK)	LM	175,000	3.04	532,000
	Bicycle lanes	11	Sawgrass Expressway – Hiatus Road	LM	189,000	2.632	497,448
	Bicycle lanes	12	US 1 Gateway – SR A1A	LM	189,000	1.13	213,570
	Bicycle racks at bus stops	13	High activity locations	EA	800	23	18,400
	Bike racks on Buses	14	Sunrise	EA	700	4	2,800
	Bike racks on Buses	15	Plantation	EA	700	4	2,800
	Bike racks on Buses	16	Lauderhill	EA	700	4	2,800
	Bike racks on Buses	17	Ft. Lauderdale	EA	700	4	2,800
Transit	Mid-block bus bays	18	Flagler Drive / US 1 intersection (see Exhibit 18 of TM	EA	150,000	2	300,000
	Mid-block bus bays	19	Birch Road – WB direction	EA	150,000	1	150,000
	Bus Shelters w/benches+L	20	High activity locations (Table 16 of TM 2)	EA	12,000	23	276,000
	Bus stops ADA accessible	21	Route 36 and 56 (see Tables 33 and 34 of TM 2)	EA	2,500	110	275,000
	Tunnel Reopening	22	City of Lauderhill	EA	1,000,000	1	1,000,000
	Tri-Rail Feeder Bus	23	Service to Motorola, American Express, Racal-Milgo				
			Capital Costs	PERBUS	300,000	8	2,400,000
			Operating Costs (1)	HR/BUS	40	7800	312,000
			Subtotal				2,712,000
	Monitor transit headways+LFs	24	Route 36 between NW 56th Avenue and NW 13th		3,000	1	3,000
	TDM – TMI programs	25	Sawgrass Expressway - NW 136th Avenue area	EA	100,000	1	100,000
	TDM – TMI programs	26	Pine Island Road – Motorola entrance area	EA	100,000	1	100,000
	Queue Jumpers	27	Pine Island Road	EA	150,000	2	300,000
	Queue Jumpers	28	University Drive	EA	150,000	2	300,000
	Queue Jumpers	29	NW 31st Avenue	EA	150,000	2	300,000
	Queue Jumpers	30	NW 27th Avenue	EA	150,000	2	300,000
	Queue Jumpers	31	NW 24th Avenue	EA	150,000	2	300,000
	Queue Jumpers	32	NW 9th Avenue – Long Range	EA	150,000	2	300,000
	Queue Jumpers	33	Andrews Avenue – Long Range	EA	150,000	2	300,000
	Queue Jumpers	34	NE 4th Avenue – Long Range	EA	150,000	2	300,000
	Queue Jumpers	35	NE 15th Avenue – Long Range	EA	150,000	2	300,000
	BCT new service	36	Express/Limited East-West Bus Route				
			Capital Costs	PERBUS	300,000	8	2,400,000
			Operating Costs (1)	HR/BUS	58	95,680	5,549,440
			Subtotal				7,949,440
	Community Buses	37	Plantation Community Shuttle - started operating OCT 01				
	Community Buses	38	Ft. Lauderdale Community Shuttles				
			Capital Costs	EA	50,000	4	200,000
			Operating Costs (1)	PER/BUS	343,750	4	1,375,000
			Subtotal				1,575,000
	Community Buses	39	Extended Service for Ft. Lauderdale Trolley Shuttle				
			Capital Costs	EA	50,000	4	200,000
			Operating Costs (1)	PER/BUS	343,750	4	1,375,000
			Subtotal				1,575,000

Table 3: Congestion Management Strategies Cost Estimates

Mode	Strategy Description	Strategy #	Locations	Units	Unit $	Quantity	Total $
ITS	ITS Strategies	40	Bus Priority System	LS	500,000	1	500,000
	ITS Strategies	41	Radar Detectors	EA	10,000	10	100,000
	ITS Strategies	42	AVI Readers	EA	20,000	5	100,000
	ITS Strategies	43	CCTV Cameras	EA	10,000	30	300,000
	ITS Strategies	44	Dynamic Message Signs	EA	100,000	14	1,400,000
	ITS Strategies	45	Highway Advisory Radio				
			HAR Transmitter	EA	100,000	1	100,000
			HAR Alert Signs	EA	10,000	20	200,000
	ITS Strategies	46	Trail Blazers	EA	15,000	20	300,000
	ITS Strategies	47	Blank-out signs	EA	5,000	10	50,000
	ITS Strategies	48	Changeable Lane Assignment Signals	EA	80,000	5	400,000
	ITS Strategies	49	Voluntary Probes				
	ITS Strategies	50	Travel Speed Monitoring Devices	EA	20,000	5	100,000
	ITS Strategies	51	Traffic Advisory Web Site	LS	100,000	1	100,000
			Subtotal				3,650,000
			Total (includes 20% for contingencies)				4,380,000
Intermodal	Intermodal Strategies	52	Creation of Hub at Sawgrass Mills Mall				
			Canopy/Shelter/Benches + Landscaping	EA	17,000	1	17,000
			Pedestrian improvements				
			Bus Loading Areas	EA	150,000	1	150,000
			ITS Kiosks w/ATIS service	EA	100,000	1	100,000
			Subtotal				267,000
	Intermodal Strategies (2)	53	Upgrade Lauderhill Mall Transfer Station				2,200,200
	Intermodal Strategies	54	Creation of Hub at Galleria Mall				
			Canopy/Shelter/Benches + Landscaping	EA	17,000	1	17,000
			Pedestrian improvements				
			Bus Loading Areas	EA	150,000	1	150,000
			ITS Kiosks w/ATIS service	EA	100,000	1	100,000
			Subtotal				267,000
Roadway	Signal Timing Optimization	55	Sunset Strip	PI	1,500	1	1,500
	Signal Timing Optimization	56	US 1 Gateway,	PI	1,500	1	1,500
	Signal Timing Optimization	57	Bayview Drive	PI	1,500	1	1,500
	Signal Timing Optimization	58	SR A1A	PI	1,500	1	1,500
	Signal Timing Optimization	59	US 1 Searstown - 5 Years	PI	1,500	1	1,500
	Signal Timing Optimization	60	US 1 Gateway - 5 Years	PI	1,500	1	1,500
	Signal Timing Optimization	61	NE 20th Avenue - 5Years	PI	1,500	1	1,500
	Signal Timing Optimization	62	Bayview Drive - 5 Years	PI	1,500	1	1,500
	Signal Timing Optimization	63	SR A1A - 5 Years	PI	1,500	1	1,500
	Safety Studies	64	94th Avenue Signal Warrant/Safety stduy	PI	2,500	1	2,500
	Safety Studies	65	Btwn Flamingo Road and Hiatus Road	PI	3,000	1	3,000
	Safety Studies	66	Nob Hill Road	PI	2,000	1	2,000
	Safety Studies	67	Pine Island Road	PI	2,000	1	2,000
	Safety Studies	68	University Drive	PI	2,000	1	2,000

Table 4. Funding Sources

Funding Type				Federal : State + Local								State Share (vs.Local):		
Funding Programs				Surface Transportation Program	STP Transportation Enhancements Activities (TEA)	STP Hazard Elimination (Section 1401)	Urbanized Area Formula Grants (Section 5307)	Transit Enhancements (1% of Section 5307)	Bus: Discretionary (Section 5309)	Transportation Community and System Preservation (TCSP) Pilot Program (Section 1221)	Metropolitan Planning Program (Section 5303)	Transportation Outreach Program (DOT)	County Incentive Grant Program (FDOT)	State Infrastructure Bank (FDOT)
Mode	Congestion Management Strategy	Cost (US$,'000)		80 / 20	80 / 20	80 / 20	80 / 20	80 / 20	80 / 20	100 / 0	80 / 20	100% State	35 - 60% State	n.app.
Pedestrian	Sidewalk Continuity	$27			Y	Y						Y		
	School Crossing Improvement	$3,468			Y	Y						Y	Y	Y
	Open Walled Communities	$50	*					Y		Y		Y	Y	Y
	Add Pedestrian Signals	$3			Y	Y						Y	Y	
Bicycle	Multi-purpose Paths	$3,029			Y	Y						Y	Y	Y
	Bicycle Lanes	$747			Y	Y						Y	Y	Y
	Bike Racks on Buses	$18			Y			Y				Y	Y	Y
	Bike Racks at Bus Stops	$11			Y			Y				Y	Y	Y
Transit	Mid-Block Bus Bays	$450		Y			Y		Y			Y		Y
	Queue Jumpers	$2,400		Y			Y		Y			Y		Y
	Bus Shelter w/ Benches & Landscaping	$276		Y			Y	Y	Y			Y		Y
	ADA-accessible Bus Stops	$275		Y			Y	Y	Y			Y		Y
	Tunnel Reopening	$1,000	*	Y			Y	Y	Y	Y		Y		Y
	Tri Rail Feeder Bus: Capital	$2,400		Y[1]			Y[1]		Y[1]			Y		Y
	Tri Rail Feeder Bus: Operations	$312												
	New BCT Bus Service: Capital	$2,400		Y[1]			Y[1]		Y[1]			Y		Y
	New BCT Bus Service: Operations	$5,549												
	Community Bus: Capital	$400		Y[1]			Y[1]		Y[1]			Y		Y
	Community Bus: Operations	$2,750												
	Monitor Transit Headway & Load Factors	$3	*	Y			Y				Y	Y		Y
	TDM - TMI programs	$200		Y							Y			Y

Funding Type				Federal : State + Local								State Share (vs.Local):		
Funding Programs				Surface Transportation Program	STP Transportation Enhancements Activities (TEA)	STP Hazard Elimination (Section 1401)	Urbanized Area Formula Grants (Section 5307)	Transit Enhancements (1 % of Section 5307)	Bus: Discretionary (Section 5309)	Transportation Community and System Preservation (TCSP) Pilot Program (Section 1221)	Metropolitan Planning Program (Section 5303)	Transportation Outreach Program (DOT)	County Incentive Grant Program (FDOT)	State Infrastructure Bank (FDOT)
Mode	Congestion Management Strategy	Cost (US$,'000)		80 / 20	80 / 20	80 / 20	80 / 20	80 / 20	80 / 20	100 / 0	80 / 20	100% State	35 - 60% State	n.app.
ITS	Bus Priority System	$500		Y			Y		?				Y	Y
	CCTV Cameras	$300		Y [1]									Y	Y
	Dynamic Message Signs	$1,400		Y [1]									Y	Y
	Highway Advisory Radio	$300		Y [1]									Y	Y
	Voluntary Probes	$50	*	Y [1]									Y	Y
	Traffic Advisory Web Site	$100		Y [1]									Y	Y
	Radar Detectors	$100		Y [1]									Y	Y
	AVI Readers	$100		Y [1]									Y	Y
	Trail Blazers	$300		Y [1]									Y	Y
	Blank-Out Signs	$50		Y [1]									Y	Y
	Changeable Lane- Assignment Signals	$400		Y [1]									Y	Y
	Travel-Speed Monitoring Device	$100		Y [1]									Y	Y
Intermodal	Bus Bay Construction	$600		Y			Y		Y			Y		Y
	Bus Shelter & Associated Furniture	$170			Y		Y		Y			Y		Y
	ITS Kiosk	$300		Y				Y				Y		Y
	Pedestrian Improvements	$120	*				Y							
Roadway	Signal Timing Improvements	$14		Y								Y	Y	Y
	Safety Studies	$12		Y							Y	Y	Y	Y
Cost of Eligible Projects		**$30,683**		**$ 14,430**	**$ 7,473**	**$ 7,274**	**$ 10,874**	**$ 1,930**	**$ 10,371**	**$ 1,050**	**$ 215**	**$ 18,052**	**$ 11,051**	**$ 21,922**
Federal Support				**$11,544**	**$5,978**	**$5,819**	**$8,699**	**$1,544**	**$8,297**	**$1,050**	**$172**			
State and Local Funding Required				**$2,886**	**$1,495**	**$1,455**	**$2,175**	**$386**	**$2,074**	**$0**	**$43**	**$18,052**	**$11,051**	**$21,922**

The STP program has an 80% Federal / 20% State financing rule, and would thus provide $17.5 million in Federal funds. TEA or STP Hazard Elimination carries the same Federal / State cost sharing rule and could provide another $5.8 million. The remaining $4.6 million of total capital costs are eligible for funds under the State's Transportation Outreach Program (TOP) and County Incentive Grant Program (CIGP). These two state programs distribute roughly $150 million a year, so Broward's share should cover the $4.6 million state and/or local requirement. If the State agrees to provide TOP funds, then no local matching funds are required. If the Sunrise Boulevard Multimodal Corridor plan receives CIGP funding, then the County, Ft. Lauderdale, and other cities involved must dedicate $2.2-3.9 million in local funds.

IX. IMPLEMENTATION SCHEDULE

The objective of this section is to develop an implementation schedule for the congestion management strategies based on the cost estimates and funding sources. This process is outlined below:

1. Establish cost estimates for the congestion management strategies.
2. Determine funding sources for the selected optimum strategies.
3. Re-evaluate the CMS based on cost estimates and funding availability.
4. Develop implementation schedules for the recommended short-range strategies.

Table 5 presents an implementation schedule for all of the congestion management strategies. The purpose of implementation schedules is to provide the order of activities required for the implementation of the recommended strategies. Funding availability was considered in the scheduling of the various activities. A typical list of implementation activities in sequential order is provided as follows:

1. Adoption of all strategies into the overall Broward County Congestion Management System.
2. Submittal for inclusion in the Transportation Improvement Program TIP or submittal for utilization of programmed funds yet not committed.
3. Detailed analysis, when required
4. Design of improvements, when required.
5. Implementation of the improvement.
6. Monitor the operation of the improvement.

The responsible agencies have been identified throughout the process. The MPO will be the main source for adoption, implementation, and monitoring for most of the improvements with assistance from Broward County Traffic Engineering, Broward County Transit, Broward County Engineering, Florida Department of Transportation, and the municipalities. The implementation plan is subject to change and is flexible depending on available funding and priority status. The majority of the improvements are easily implemented and could be completed in the five-year study period.

Table 5. Implementation Schedule

Strategy	Immediate		Year 1		Year 2		Year 3		Year 4		Year 5
	Activity	Agency	Activity	Agency	Activity	Agency	Activity	Agency	Activity	Agency	Activity
Signal Timing	Adoption into CMS	MPO	Include in TIP	MPO	Begin Implementation	BCTE	Begin monitoring with	BCTE	Continue Monitoring	BCTE	Continue Monitoring and
			Evaluate Exist. Conditions	BCTE			Arterial Analysis &				Complete Annual Report
							Spot Speed Studies				
Add Pedestrian Signal	Adoption into CMS	MPO	Include in TIP	FDOT/MPO	Conduct Detailed Study	BCTE/FDOT	Begin implementation	BCTE/FDOT	Begin Monitoring	BCTE/FDOT	Continue Monitoring
					Public Involvement	BCTE/FDOT					
Monitor Transit Headways & Transit Load Factors	Adoption into CMS	MPO	Include in TIP	BCT/MPO	Begin Implementation	BCT	Begin monitoring	BCT	Continue Monitoring	BCT	Continue Monitoring
Sidewalk Continuity	Adoption into CMS	MPO	Include in TIP	MPO	Design Improvements	FDOT/BCE/	Implement Improvements	FDOT/BCE	Field Inspections	Cities	Begin Maintenance
						Cities					
Plantation Community Bus	Begin Marketing	City			Begin Monitoring	City/BCT	Continue Monitoring	City/BCT	Continue Monitoring	City/BCT	Continue Monitoring
	Already Operating	City									
Safety Studies	Adoption into CMS	MPO	Include in TIP	FDOT/MPO	Conduct Detailed Study	BCTE/FDOT	Prioritize Intersections	BCTE/FDOT	Begin Monitoring	BCTE/FDOT	Continue Monitoring
	Include in TIP	FDOT/MPO			Public Involvement	BCTE/FDOT	Begin Implementation	BCTE/FDOT			
Bus Stops ADA Accessible	Adoption into CMS	MPO	Include in TIP	FDOT/MPO	Design Improvements	BCE/BCT	Begin Monitoring	MPO	Continue Monitoring	MPO	Continue Monitoring
					Implement Improvements	BCE/BCT					
Mid-Block Bus Bays	Adoption into CMS	MPO	Include in TIP	FDOT/MPO	Design Improvements	BCE/BCT	Begin Monitoring	MPO	Continue Monitoring	MPO	Continue Monitoring
					Implement Improvements	BCE/BCT					
BCT Express Limited Service	Adoption into CMS	MPO/City	Include in TIP	MPO/City	Conduct Public Meetings	MPO/City	Purchase Equipment	City/BCT	Develop and Print Schedule	City	Begin Monitoring
			Submit for Funding	MPO/City	Develop Municipal Partner	MPO/City	Develop Marketing Program	City/BCT	Begin Marketing	City	
									Begin Operation	City	
Queue Jumpers	Adoption into CMS	MPO	Include in TIP	MPO/City	Prioritize by Site	BCT	Continue Design	FDOT/BC	Continue ROW Acquisition	FDOT/MPO	Continue Implementation
			Submit for Funding	MPO/City	Begin Design	FDOT/BC	Begin ROW Acquisition	FDOT/MPO	Begin Implementation	FDOT/BC	Begin Monitoring Impacts
											to Transit
Dillard School Zone Complex	Adoption into CMS	MPO	Include in TIP	FDOT/MPO	Study School Crossing	BC/City	Complete Design	BC/City	Begin Monitoring	MPO/City	Continue Monitoring
					Begin Design	BC/City	Begin Construction	BC/City			
School Zone East of I-95	Adoption into CMS	MPO	Include in TIP	FDOT/MPO	Study School Crossing	BC/City	Complete Design	BC/City	Begin Monitoring	MPO/City	Continue Monitoring
					Begin Design	BC/City	Begin Construction	BC/City			
Bicycle Lanes	Adoption into CMS	MPO	Include in TIP	FDOT/MPO	Prepare Striping Plans	FDOT	Implement/Resurface	FDOT	Implement/Resurface	FDOT	
					Implement/Resurface	FDOT	Begin Monitoring	FDOT/MPO	Continue Monitoring	FDOT/MPO	
TDM - TMI Programs	Adoption into CMS	MPO	Include in TIP	MPO/City	Conduct Public Meetings	MPO/City	Purchase Equipment	City/BCT	Begin Marketing	City	Begin Monitoring
					Conduct Meetings w/	SFCS	Develop Marketing Program	City/BCT	Begin Operation	City/SFCS	
					Employers						
Open Walls in Communities	Adoption into CMS	MPO	Include in TIP	MPO/City	Design Improvements	FDOT/City	Implement Improvements	FDOT/City			
					Implement Improvements	FDOT/City					
					Public Involvement	City					
Multipurpose Paths	Adoption into CMS	MPO	Include in TIP	FDOT/MPO	Prepare Plans	FDOT/BC	Implement	FDOT/BC	Implement	FDOT	
					Implement/Resurface	FDOT	Begin Monitoring	FDOT/MPO	Continue Monitoring	FDOT/MPO	
Intermodal Hub Sawgrass Mills Mall	Adoption into CMS	MPO	Include in TIP	FDOT/MPO	Select Site	BCT/City/	Design Terminal	BCT/City/	Implement Terminal	BCT/City/	Begin Monitoring
					Develop Local Partnership	Private	Develop Marketing Plan	Private	Begin Operations	Private	

Table 5. Implementation Schedule

	Immediate		Year 1		Year 2		Year 3		Year 4		Year 5
Strategy	Activity	Agency	Activity	Agency	Activity	Agency	Activity	Agency	Activity	Agency	Activity
Ft. Luaderdale Community Buses	Adoption into CMS	MPO/City	Include in TIP	MPO/City	Conduct Public Meetings	MPO/City	Purchase Equipment	City/BCT	Develop and Print Schedule	City	Begin Marketing
			Submit for Funding	MPO/City	Develop Municipal Partner	MPO/City	Develop Marketing Program	City/BCT			Begin Operation
Ft. Lauderdale Trolley Extended Service	Adoption into CMS	MPO	Include in TIP	FDOT/MPO	Develop Route Changes	City	Purchase New Equipment	City/BCT	Continue Operation	City	Continue Operation
	Include in TIP	FDOT/MPO					Begin Operation	City	Continue Monitoring	City	Continue Monitoring
Intermodal Hub Lauderhill Mall	Adoption into CMS	MPO	Include in TIP	FDOT/MPO	Design Terminal	BCt/City/	Implement Terminal	BCt/City/	Begin Monitoring	BCt/City	Continue Monitoring
					Develop Marketing Plan	Private	Begin Operations	Private			
Pedestrian Bridge NW 65th Avenue	Adoption into CMS	MPO	Include in TIP	FDOT/MPO	Study School Crossing	BC/City	Complete Design	BC/City	Begin Monitoring	MPO/City	Continue Monitoring
					Begin Design	BC/City	Begin Construction	BC/City			
Tunnel Re-opening City of Lauderhill	Adoption into CMS	MPO	Include in TIP	FDOT/MPO	Conduct Detailed Study	FDOT/TPKE	Begin Implementation	FDOT/TPKE	Begin monitoring	BCT/City	Continue Monitoring
	Include in TIP	FDOT/MPO		TPKE	Public Involvement	BCT/City		BCT/City			
		TPKE									
Bicycle Racks at Bus Stops	Adoption into CMS	MPO	Include in TIP	MPO	Purchase Bike Racks	BCT	Monitor Impact on Transit	BCT/	Continue Monitoring	BCT/	Continue Monitoring
					Install at Bus Stops	BCE		Cities		Cities	
Tri-Rail Feeder Bus Improvements	Adoption into CMS	MPO	Include in TIP	FDOT/MPO	Rider Survey at Motorola,	Tri-Rail/	Develop Route Change	Tri-Rail	Begin Monitoring	Tri-Rail/	Continue Monitoring
					American Express,	MPO	Begin Operation	Tri-Rail		MPO	
					Racal-Milgo						
Bicycle Racks Community Buses	Adoption into CMS	MPO	Include in TIP	MPO	Purchase Bike Racks	BCT	Monitor Impact on Transit	BCT/	Continue Monitoring	BCT/	Continue Monitoring
					Install on Buses	Cities		Cities		Cities	
CCTV Cameras ITS	Adoption into CMS	MPO	Include in TIP	FDOT/MPO	Conduct Study	FDOT/BCTE	Begin Design	FDOT/BCTE	Begin Implementation	FDOT/BCTE	Begin Operation
					Prioritize Locations	FDOT/BCTE					Begin Monitoring
					Layout/Procurement	FDOT/BCTE					
Bus Shelters	Adoption into CMS	MPO	Include in TIP	MPO	Prioritize Sites	BCT/Cities	Begin Design of	BCT/	Begin Monitoring	Cities	Continue Implementation
			Submit for Funding	BCT	Begin Cities' Involvement	BCT/Cities	Bus Shelters	Cities	Continue Implementation	Cities/	Continue Maintenance
					with Bus Shelter Program		Begin Implementation			Private	Monitor Impact to Transit
Voluntary Vehicle Probes ITS	Adoption into CMS	MPO	Include in TIP	FDOT/MPO	Conduct Employee Survey	BCTE/	Training	BCTE/	Begin Monitoring	BCTE/	Continue Monitoring
					Purchase Equipment	City/	Begin Operation	City/		City/	
						FDOT		FDOT		FDOT	
Highway Advisory Radio ITS	Adoption into CMS	MPO	Include in TIP	FDOT/MPO	Identify System	FDOT/MPO	Integrate into ATIS	FDOT/MPO	Begin Monitoring	FDOT/MPO	Continue Monitoring
							Begin Operation	FDOT/MPO			
Changeable Message Signs ITS	Adoption into CMS	MPO	Include in TIP	FDOT/MPO	Conduct Study	FDOT/BCTE	Begin Design	FDOT/BCTE	Begin Implementation	FDOT/BCTE	Begin Operation
					Prioritize Locations	FDOT/BCTE					Begin Monitoring
Bus Priority System ITS	Adoption into CMS	MPO	Include in TIP	FDOT/MPO	Evaluate Test Case Results	FDOT/MPO	Purchase Equipment		Begin Operation		Begin Monitoring
					Conduct Preliminary Study	FDOT/MPO	Install Equipment				
					Prioritize Sites	FDOT/MPO					
Traffic Advisory Web Site ITS	Adoption into CMS	MPO	Include in TIP	FDOT/MPO	Identify ISP	BCTE/	Integrate into Traffic Control	BCTE/	Continue Integration	BCTE/	Continue Integration (ATM
	Include in TIP	FDOT/MPO			Develop Web Page	FDOT	System	FDOT	Begin Monitoring	FDOT	Continue Monitoring

X. CONCLUSIONS

The Sunrise Boulevard Multimodal Corridor Study was undertaken to develop recommendations and strategies to alleviate congestion, improve transportation deficiencies, and improve overall mobility. Sunrise Boulevard is identified as a congested roadway in Broward County's Congestion Management System. This designation was the genesis for this corridor study. The focus of the study was to develop strategies (other than roadway widening) that are reasonable and capable of implementation by the target year of 2005. The strategies identified in this corridor study reflect a harmonization of traditional improvements such as traffic signal retiming to more advanced applications such as intelligent transportation systems.

As the title of this study indicates, all facets and modes of transportation were considered. Recommendations were developed to improve the available multimodal transportation system including pedestrian, bicycle, transit, and vehicles. However, it became apparent that real improvements could be realized in the intermodal aspect or the connections between the different modes. The intermodal improvements ranged from completion of sidewalks to the development of transit transfer hubs.

The corridor study was completed based on a methodological approach which included several tasks and technical memorandums. Technical Memorandum One contained the existing conditions analysis which included: data collection; interviews with representatives from the municipalities, Broward County and the Florida Department of Transportation; analysis of the current transportation condition; and identification of areas for possible improvement.

Technical Memorandum Two continued the process by developing future traffic, analyzing future traffic and land use impacts on transportation conditions, and identifying specific congestion management strategies.

Technical Memorandum Three completed the process by ranking the strategies based on a benefit-cost analysis, calculating cost estimates for all strategies, identify innovative and traditional funding sources, and finally creating an implementation program for the strategies.

The Sunrise Boulevard Multimodal Corridor Study essentially creates an intermodal vision which can improve congestion for the short term and continue further. The overall success of the strategies will depend on the participation by all of the responsible local agencies. The first step in the realization of the plan is to get the strategies into the Florida Department of Transportation Work Program and Broward County's Transportation Improvement Program. The implementation schedule demonstrates that many of the strategies can be easily implemented and can quickly result in real benefits for Sunrise Boulevard.