PROPOSED

TRANSPORTATION MASTER PLAN FOR DADE COUNTY

A SUMMARY

FEB 1969

Joseph M. Brown
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PROPOSED
TRANSPORTATION MASTER PLAN
FOR DADE COUNTY — 2 MILLION POPULATION
(1985 Estimate)

Summary Prepared By
The Metropolitan Dade County Planning Department for
the Miami Urban Area Transportation Study
702 Justice Building
1351 N. W. 12 Street
Miami, Florida 33125

February 1969

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Alan M. Voorhees, Transportation Advisory Consultant for Metropolitan Dade County

Come 1975...the majority of the 1½ million residents forecast for Dade County ought to be driving on computer-regulated expressways that automatically direct heavy traffic to parallel express streets.

Tourists and residents alike should be able to take short domestic flights in and out of Tamiami general aviation airport as well as the Miami International Airport. The terminal at MIA must be modified to handle subsonic aircraft carrying as many as 900 passengers.

The new Port of Miami should be developed on both sides of Dodge Island to accommodate the projected increase in cruise passengers and roll-on and roll-off cargo. Trucking, rail, and bus companies ought to begin expanding or seeking supplementary terminal locations for the expected growth in passengers and freight.

These are only part of the recommendations of the Transportation Master Plan prepared as part of the Miami Urban Area Transportation Study also known as MUATS. The five-year study completed in February 1969, includes master plan elements for airports, seaports and waterways, and trucking, rail, and bus terminals as well as detailed developments of a rapid transit and street and highway system.

The plan represents the cooperative effort of county, state, and Federal authorities and consultants. Alan M. Voorhees and Associates, transportation and planning consultants of Washington,

D. C. was the transportation advisory consultant for the entire project. Metropolitan Dade County[1] was assisted by Simpson and Curtin, transportation engineers, Philadelphia, Pennsylvania and Henry J. Kaiser Company, engineers, Oakland, California. The Florida State Road Department was assisted by Mel Conner and Associates, Inc., consulting engineers, Tallahassee, Florida.

RECOMMENDATIONS FOR 1985

Come 1985...the majority of the 2 million residents forecast for Dade County should be served by a fast moving rapid transit system as well as a larger network of expressways, and express streets than in 1975...linking airports, seaports and terminals with user destinations.

A second commercial airport ought to be in operation at the Homestead Air Force Base or the Everglades Training Center to handle the overflow at the Miami International Airport. Opa-locka as well as Tamiami general aviation airports and the commercial terminals ought to handle short domestic flights. Three new secondary general aviation sites should be developed to relieve the general aviation airports of private training activities.

The new Port of Miami ought to be expanded to include both Dodge and Lummus Islands to accommodate passenger and cargo needs. Additional access will be needed to accommodate increased traffic. Consideration should be given to development of an industrial seaport in South Dade if determined feasible and hydraulic

1/ Metropolitan Dade County Planning, Public Works, Seaport and Traffic and Transportation Departments, Metropolitan Transit Authority, and Port Authority.

model studies indicate no damage to the ecological conditions of the bay.

Terminals for truck, rail, and bus companies should have completed expansion plans to meet 1985 demands.

Authorization will be requested immediately from the Board of County Commissioners to prepare for widespread community review, a full color summary fold-up map of the proposed Transportation Master Plan. Following public hearings, the Planning Advisory Board will review the plan for approval and the County Commissioners will consider the plan for adoption.

The approved plan would be used as an official document for establishing priorities for construction, determining means of financing, and making decisions pertaining to the elements of the transportation plan.

FINANCING THE PLAN

Estimated total cost of developing the streets and highways and mass transit elements for 1985 is about $1.5 billion.

Cost of the Street and Highway Master Plan recommendations for 1975 is about $350 million. Existing gas taxes fall $200 million short of meeting these costs. The deficit will have to be met by 10¢ tolls on some new expressways, additional gas taxes, tag increases, general obligation bonds, or by a combination of these sources.

Highway projects planned between 1975 and 1985 total about $450 to $550 million and ought to be able to be financed without additional expressway tolls provided Federal highway aid is increased when the interstate system is completed.

Total cost of the public transit program is estimated at between $400 and $660 million. If 50 percent Federal aid is assumed, it will still be necessary to raise $200 to $300 million from other taxes (including possible diversion of gas taxes) to build the needed system. Staging of the program has not been established.

PLANNING PROCESS

The MUATS Study area consists of 764 square miles of the 980 square miles of developable land in Dade County. The balance was omitted because the area was not expected to be developed for urban purposes by 1985. The 764 square miles were divided into 550 traffic zones for which information was obtained, analyzed and projections made.

Estimates and forecasts of population, school enrollment, and income were made by the Metropolitan Dade County Planning Department. Traffic movements were ascertained by an "Origin and Destination" study conducted by the Florida State Road Department consultant.

The characteristics and movements of travelers were programmed for a computer by traffic zone. Different proposed highway

networks and transit routes were tested simulating 1975 and 1985 conditions until an efficient highway and transit system was obtained for the movement of people and goods.

A series of technical reports were prepared by MUATS staff and consultants pertaining to traffic and transit data, a work program, and goals of the study. Other technical reports were prepared relating to regional shopping centers, laws and ordinances, and a continuing program for transportation planning. (See Appensix for a complete list of reports and publications of MUATS.)

The elements of the Transportation Master Plan were evolved and published for streets and highways, public transit, airports, seaports and waterways, and trucking, rail, and bus terminals. The plan represents a refinement and detailing of the transportation component of the Approved Dade County General Land Use Master Plan (1965). When the transportation plan is adopted it will be considered a part of Dade County's evolving comprehensive master plan which includes several component parts. The Transportation Master Plan will be continually reviewed and updated just as the General Land Use Master Plan is reviewed, to conform to changing urban trends and development. This will be a cooperative effort of the county, state and Federal agencies who have participated in MUATS.

TRANSPORTATION MASTER PLAN

Streets and Highways

To meet forecast travel demands, the Street and Highway Master Plan for 1985 recommends an estimated $800 to $900 million program for the addition of nine expressways, development of eight express streets and new and improved major arterials. Additional monies should be spent for improved operational procedures on major arterials and expressways, including computer-controlled gates to regulate expressway usage.

The plan would be financed from anticipated revenues of $650 to $750 million from the 7¢ per gallon Florida State gasoline tax, Federal funds, and other city and county funds. Calculations of a deficit of $150 to $200 million are based upon a cushion against inflation, an increase in per capita driving, and transferring of Federal 90% Interstate contributions to other street and highway construction.

Potential sources of funds to take care of the deficit are: 10¢ tolls for two or three proposed expressways and a tunnel proposed from Fisher Island to south Miami Beach, and increased gas taxes, tag fees or general obligation bonds. Tolls would continue on Venetian and Rickenbacker Causeway to pay for widening of these corridors.

Expressways for which a charge could be made are LeJeune-Douglas and South Dade, and possibly South Dixie, if this corridor is not designated part of the Interstate system.

The recommended principal street and highway system for 1985 generally conforms to a north-south and east-west grid system extending from the Atlantic Ocean to the western hinterlands with existing streets comprising a large part of the network. A total of 328 new miles of arterial streets will be added to the existing network to serve an average of 5 million vehicle trips per day by 1985. There were 2 million in 1964.

Expressways: About 153 miles of new expressways should be built and 25 miles of existing expressways should be widened at a cost of $500 million. By 1975, five expressways costing $212 million should be in operation. The first three expressway corridors should be constructed simultaneously with the other expressways following in the order listed:

- South Dade Expressway (from Palmetto Expressway to Hainlin Mill Drive near the proposed South Dade Government Center)
- South Dixie Expressway (from I-95 and S. W. 26 Road to S. W. 112 Street)
- Snapper Creek (from South Dixie Expressway to South Dade Expressway)
- LeJeune-Douglas Expressway (from Golden Glades Expressway to South Dixie Expressway)
- Interama (from I-95 and Snapper Creek Expressway to South Dade Expressway)

Recommended for development between 1976 and 1985 are the addition of four, extension of five, and widening of three expressways. No priorities have been established.

The following four expressways should be added to the network:

- Snake Creek Expressway (from I-95 and Interama to Opa-locka Expressway)
- Opa-locka Expressway (from Interama Expressway to West Dade Expressway)
- Beach Causeway-Hialeah Expressway (Alton Road to West Dade Expressway)
- West Dade Expressway (from Opa-locka Expressway to 177th Avenue)

Extension of the following five is recommended:

- South Dade Expressway (from Hainlin Mill Drive near the proposed South Dade Government Center to South Dixie Expressway)
- LeJeune-Douglas Expressway (from Golden Glades Expressway to Snake Creek Expressway)
- East-West Expressway (from Palmetto Expressway to West Dade Expressway)
- Interama Expressway (from Opa-locka Expressway to I-95 and S. W. 29 Road)
- South Dixie Expressway (from S. W. 112 Street to S. W. 312 Street)

Widening of the following three expressways is recommended:

- Golden Glades Expressway (from I-95 to Palmetto Expressway) 6 lanes
- Palmetto Expressway (from Golden Glades to Hialeah Expressway) 6 lanes; (from Hialeah Expressway to South Dade Expressway) 8 lanes
- I-95 (from Golden Glades Interchange to county line) 8 lanes

1975 PRIORITIES

EXPRESSWAYS

ARTERIALS

Express Streets: Eight existing arterial streets covering about 50 miles are recommended for conversion to express type streets at a minimum cost of $43 million. To facilitate smoother flow of heavy traffic, these arterials should be widened within existing rights-of-way. Medians should be constructed to prohibit intersecting and left turns at minor intersections. Overpasses should be built at major intersections.

By 1975 recommendations call for redesigning the following arterials as express streets:

- S. W. 40 Street or Bird Road (from S. W. 57 Avenue or Red Road to Palmetto Expressway)
- Red Road or 57 Avenue (from Perimeter Road to U. S. 1)
- 163 Street (from Intracoastal Waterway bridge to Golden Glades Interchange)
- N. W. 17 Avenue (from 79 Street to S. W. 1 Street)

Recommended for development as express streets by 1985 are:

- S. W. 40 Street Extension (S. W. 57 Avenue to U. S. 1; Palmetto Expressway to West Dixie)
- N. W. 17 Avenue Extension (from S. W. 1 Street to S. W. 8 Street)
- N. W. 7 Street (from N. W. 17 Avenue to 72 Avenue)
- N. W. 20 Street (from N. W. 7 Avenue to Okeechobee Road)
- State Road 9 (from Golden Glades Interchange to N. W. 27 Avenue)

. N. W. 27 Avenue (from State Road 9 to U. S. 1)

Major Arterials: An estimated 175 new miles of major arterials should be added to the existing system of roads and about 500 miles widened or improved by 1985 at an estimated cost of $261 million. By 1975 some 50 miles of new arterials should be added including a tunnel under Government Cut ship channel between Fisher Island and south Miami Beach with a new connection to the new Port of Miami at Dodge Island and widening of Rickenbacker and Venetian Causeways. A 195th Street Causeway is scheduled for 1985 between A-1-A and U. S. 1.

Operational Improvements: Continued operational improvements are recommended for both major arterials and expressways. For major arterials, conversion of parallel streets to one-way pairs such as at S. W. 7 and 8 Street and Flagler and S. W. 1 Streets would relieve congestion and improve traffic flow in a relatively inexpensive manner.

Special right and left turn lanes and more traffic light synchronization would reduce traffic bottlenecks and accidents. Removal of curbside parking spaces in certain streets would provide more roadway capacity. Installation of modern intersection controls would reduce travel time.

On expressways, some usage control should be exercised during peak periods to avoid overloading and to maintain an efficient level of service. Computers should be utilized to relay commands

activating special signs and lights to direct traffic to alternate streets and open and close ramps according to vehicle volumes, speeds, and directional densities at critical points.

Employers should stagger working hours and peak-hour commuters should be encouraged to switch to a high speed transit system.

Public Transit

A combination of 24 miles of rapid transit, 22 miles of busways, and 43 surface bus routes will be required to provide efficient public transportation for 1985 at a cost of $400 to $660 million. The number of passengers is expected to double to 103 million for 1985 and continue to represent about 6 percent of all travel.

Future requirements call for more than fare box revenue to meet financial obligations. Revenues are calculated at an average fare of 23¢ per passenger for surface bus travel and 30¢ average for rapid transit with point-to-point charges. Net operating revenues through 1985 of $26.9 million are anticipated.

Possibilities of subsidizing part of the transit system should be considered. Some communities have held referendums voting to match Federal funds, if available, with community funds. Application should be made as soon as possible to the Federal government for Federal assistance with the county contributing a percentage of the cost. Federal aid totaling $331 million would reduce deficits to $304 million based on estimated maximum costs. General obligation bonds are suggested to obtain financing for the difference.

Development of a rapid transit program to serve primarily workers, tourists, shoppers, and residential recreational travelers who want direct convenient service should be in stages. Since two-thirds of transit travelers are expected to be traveling

within or going to Miami Beach or downtown Miami, the first stage calls for construction, in order of feasibility, of 24 miles of rapid transit consisting of:

- A Miami Beach corridor from Haulover to MacArthur Causeway.
- A link across MacArthur Causeway connecting the new Port of Miami and downtown Miami.
- A link from Haulover to Interama to North Miami FEC station.
- A corridor with direct access from Miami Beach and downtown Miami to the Miami International Airport.

Electric powered rapid transit cars with rubber tires are recommended to minimize noise on exclusive grade separated reinforced concrete tracks or guideways to provide reliable and safe transportation at a minimal cost. Portions of the system would be elevated with structures aesthetically acceptable to our resort area, and portions could be at ground level, on an exclusive right-of-way. Well designed stations would be conveniently located at centers of activity.

Car interiors would be colorful and attractive. Large glass areas would provide good visibility. Automatic controls would operate doors, start and stop cars, determine speed, and route selection.

Special cars would be used by major airlines for direct and time-saving transportation. Possibilities of either driving or towing transit cars by tractor off the guideway directly to the

aircraft should be considered.

The 22 miles of busways on the mainland should include construction of:

- A north corridor along the FEC from Flagler to N. W. 163 Street with plans to continue to the county line and possibly beyond after 1985.
- A corridor along the FEC from Flagler to Kendall with plans to continue to Homestead after 1985.

Consideration should be given at the time of construction to three different types of vehicles. The most feasible recommendation calls for a two-lane paved busway along the railroad corridor for exclusive use of buses with full grade separation. Buses would collect people in residential areas, travel to the nearest busway access point, speed to its destination, exit at specified ramps and circulate. When the Interama Expressway is above the FEC railroad, an exclusive busway lane with pull-out facilities could be designed and built as part of the expressway.

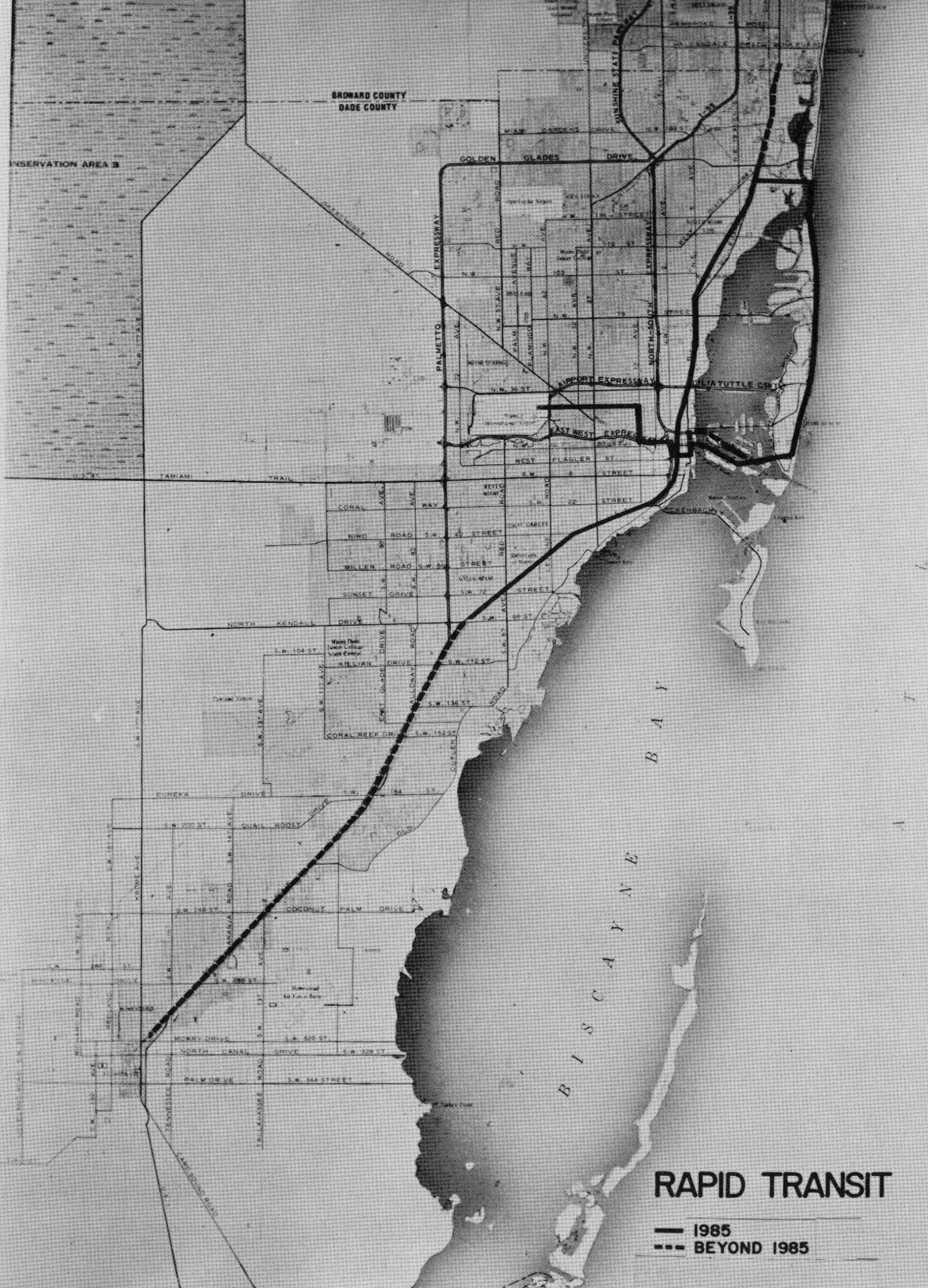
The second possibility is use of rail-buses capable of operating on both rail and street, assuming the availability of the FEC tracks, either on an exclusive or scheduled basis. The rail-bus would collect people in residential areas, and operate in the same manner as the bus traveling along side of the tracks.

The third alternative calls for a fixed rapid transit of single cars or short trains self-propelled by diesel, turbine power, or electric tramways on the FEC tracks.

In addition to the rapid transit and busway system, the LeJeune-Douglas Expressway should have express bus routes. Demand is not likely to be large enough for exclusive lanes. Express bus routes also should be planned for the East-West Expressway to serve residential areas west of downtown.

The surface system should feed the high-speed links and provide rapid service to all areas of population concentration. The entire mass transit system would carry 6,000 passengers per hour.

A more detailed analysis will be conducted with a Federal Mass Transportation Technical Study Grant currently underway. Studies will be made to ascertain the best alternatives and best method of financing. A survey of transit riders and the general public will be made to better determine revenues from the proposed system. Precise alignments will be recommended for the corridors identified in MUATS.


BROWARD COUNTY
DADE COUNTY
NSERVATION AREA 3
GOLDEN GLADES DRIVE
SUNSHINE STATE PARKWAY
PALMETTO EXPRESSWAY
NORTH-SOUTH EXPRESSWAY
AIRPORT EXPRESSWAY
EAST WEST EXPRESSWAY
DELIA TUTTLE CSWY
TAMIAMI TRAIL
WEST FLAGLER ST.
CORAL WAY
BIRD ROAD S.W. 40 STREET
MILLER ROAD S.W. 56 STREET
SUNSET DRIVE S.W. 72 STREET
NORTH KENDALL DRIVE S.W. 88 ST
KILLIAN DRIVE S.W. 112 ST
CORAL REEF DRIVE S.W. 152 ST
EUREKA DRIVE S.W. 184 ST
QUAIL ROOST DRIVE S.W. 200 ST
COCONUT PALM DRIVE S.W. 192 ST
MONEY DRIVE S.W. 320 ST
NORTH CANAL DRIVE S.W. 328 ST
PALM DRIVE S.W. 344 STREET
BISCAYNE BAY
RAPID TRANSIT
1985
BEYOND 1985

Airports

Recommendations call for development of a modern multi-airport system to serve a forecasted 500 percent increase in air passengers for the air-oriented Miami urban area between 1968 and 1985. The Miami International Airport should be the center of the system with either the Everglades Training Center or Homestead Air Force Base providing supplemental air transportation to the 31 to 38 million air passengers expected by 1985. New criteria and technology for locations and operations of military installations may render the military base completely available for commercial use or available on a joint basis with the military.

MIA and the second major commercial airport should be designed to serve domestic and international flights in new subsonic aircraft that carry as many as 900 passengers in planes 75 percent longer than the jets of 1969.

The expansion potential of the Miami International Airport is not great enough to serve all passengers in 1985. The 39-square mile Everglades Training Center, located 52 miles from Miami Beach, could serve as a second commercial airport if the need and support services including ground transportation are economically justified. Otherwise, the Homestead Air Force Base could supplement the Miami International Airport until the Everglades Training Center is also needed as a third commercial airport after 1985.

The decision of the development of the Everglades

Training Center or the Homestead Air Force Base as the second major commercial airport by 1985 should be made only after careful consideration is given to the attitude and convenience of the traveling public, alternate cost of ground and/or air transportation, impact on urban development (existing and future) and technological development of the aircraft of tomorrow.

The Miami urban area is expected to continue to be the hub of regional activity as aircraft fly shorter distances more economically. Existing Opa-locka and Tamiami general aviation airports should become part of the commercial multi-airport system to provide additional domestic short flights up to 500 miles. This would provide more efficient and safe use of air space by allocating space to activities offering the greatest benefits to the community.

The designation of these sites as combination general aviation and commercial airports would provide convenient accessibility to air transportation for residents and visitors throughout all of the Miami urban area. Excellent ground transportation would be provided by a well-planned network of expressways and major arterials linking airports to tourist, residential, and industrial areas.

A passenger satellite terminal should be built at Miami Beach to serve as a check-in and check-out terminal for baggage and airline reservations as well as a place to transfer by rapid transit to the airport. Possibilities of using new type vertical take-off

and landing aircraft also should be explored.

Driving time should be limited to a maximum of 30 minutes to an airport for a long flight, and a maximum of 20 minutes for short flights. Domestic activity has been the largest source of air travel and is expected to continue to be, with half the domestic flights out of State and the other half, within Florida.

Growth trends indicate Florida is expected to increase 75 percent in population between 1967 and 1985, a considerably greater percentage than the 33 percent forecast for the United States. Dade County estimates indicate a 65 percent growth during the same period.

General aviation growth has been spectacular with the Opa-locka Airport recording more operations than any other airport in the United States in 1967 including commercial airports. Figures for 1968 are not yet available. General aviation activities should continue, not only at Tamiami and Opa-locka, but at the Homestead general aviation airport, and at least three new secondary general aviation airports should be built to relieve these existing general aviation airports of some activities. Each secondary general aviation airport would have a landing strip for student training, pleasure flying, or crop dusting as the only facility.

Local ordinances should be passed requiring insulation of buildings located within a certain distance from airports or flying patterns to enhance the quality of urban environment. Zoning

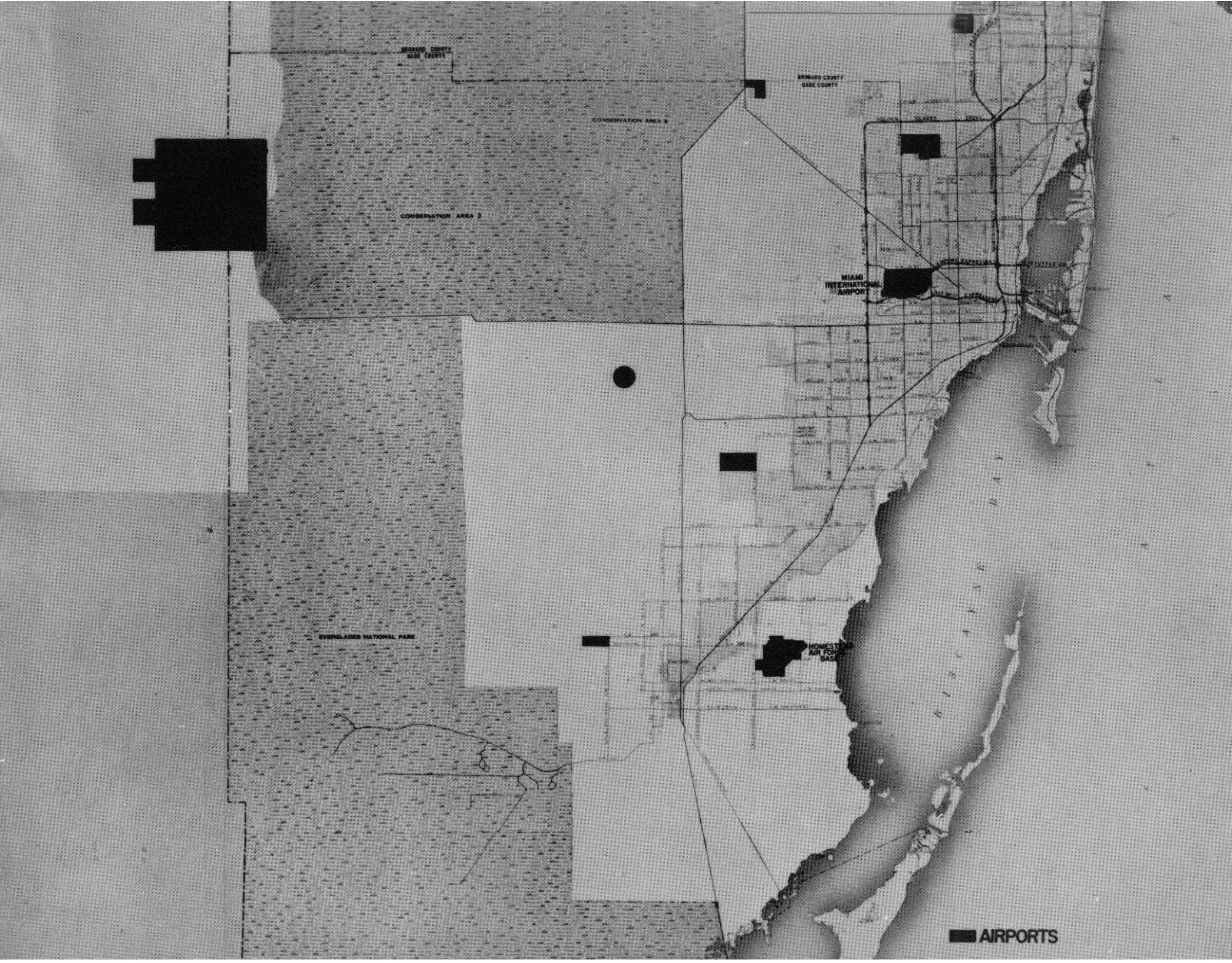
ordinances regulating land use activity around these airports should be established and strictly enforced.

A technical advisory committee should be appointed to review latest air transportation innovations and encourage use of new technology as part of the continuing transportation planning program.

The Federal Aviation Administration, Palm Beach County, and Broward County should consider constructing an airport in the northerly section of Broward County to provide a regional approach to the location of airports in southeast Florida and to better relate to existing and proposed airports within the tri-county area.

A $50.5 million revenue bond issue was financed in 1968 for improvements at the Miami International Airport and for developing the training center, based upon revenues received by the Port Authority from the airlines and other airport users.

Revenues are expected to be great enough to repay the present debt service each year and to be sufficient to obtain additional revenue bonds to finance, with Federal assistance, the Airport Master Plan proposals.


BROWARD COUNTY
DADE COUNTY
CONSERVATION AREA 3
MIAMI
INTERNATIONAL
AIRPORT
EVERGLADES NATIONAL PARK
HOMESTEAD
AIR FORCE
BASE
AIRPORTS

Seaports and Waterways

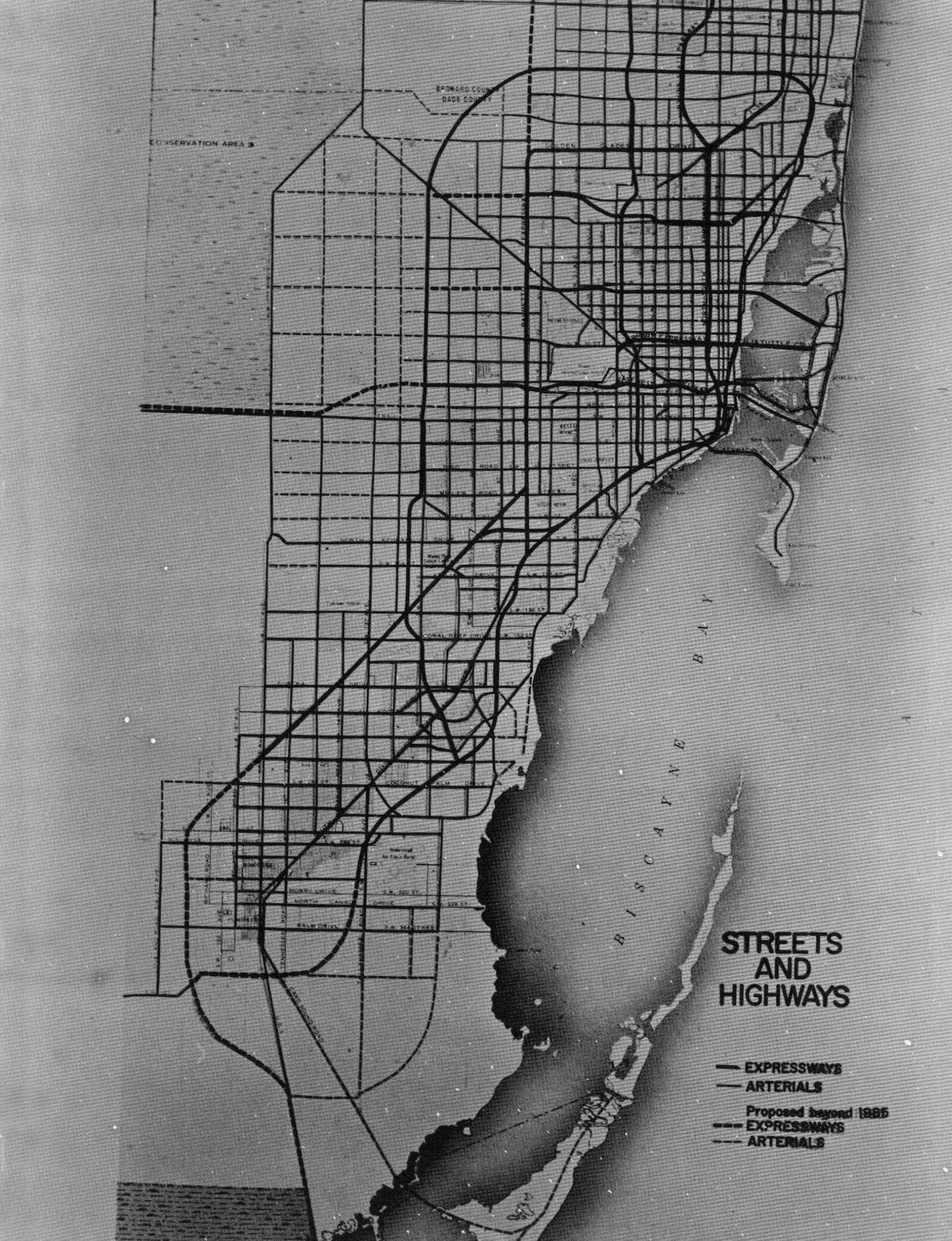
Seaport recommendations call for the development of the new Port of Miami at Dodge Island as a major point of embarkation for pleasure cruises and as a roll-on, roll-off packaged cargo center. Consideration should be given to digging a ship channel south of Dodge Island, adding another passenger terminal complex on the south-side of the Port, and expanding Port cargo activities to include Lummus Island. Work should begin by 1985.

Cost of additional improvements recommended by 1975 will be $22 million with a total expenditure of $49 million by 1985. Revenue bonds, Federal assistance, and general county funds will be used to finance the $49 million program for continued development of the Port of Miami.

Local and Federal funds will be used to dredge the channel to increase the drawing depth to 36 feet to enable larger ships to enter the port.

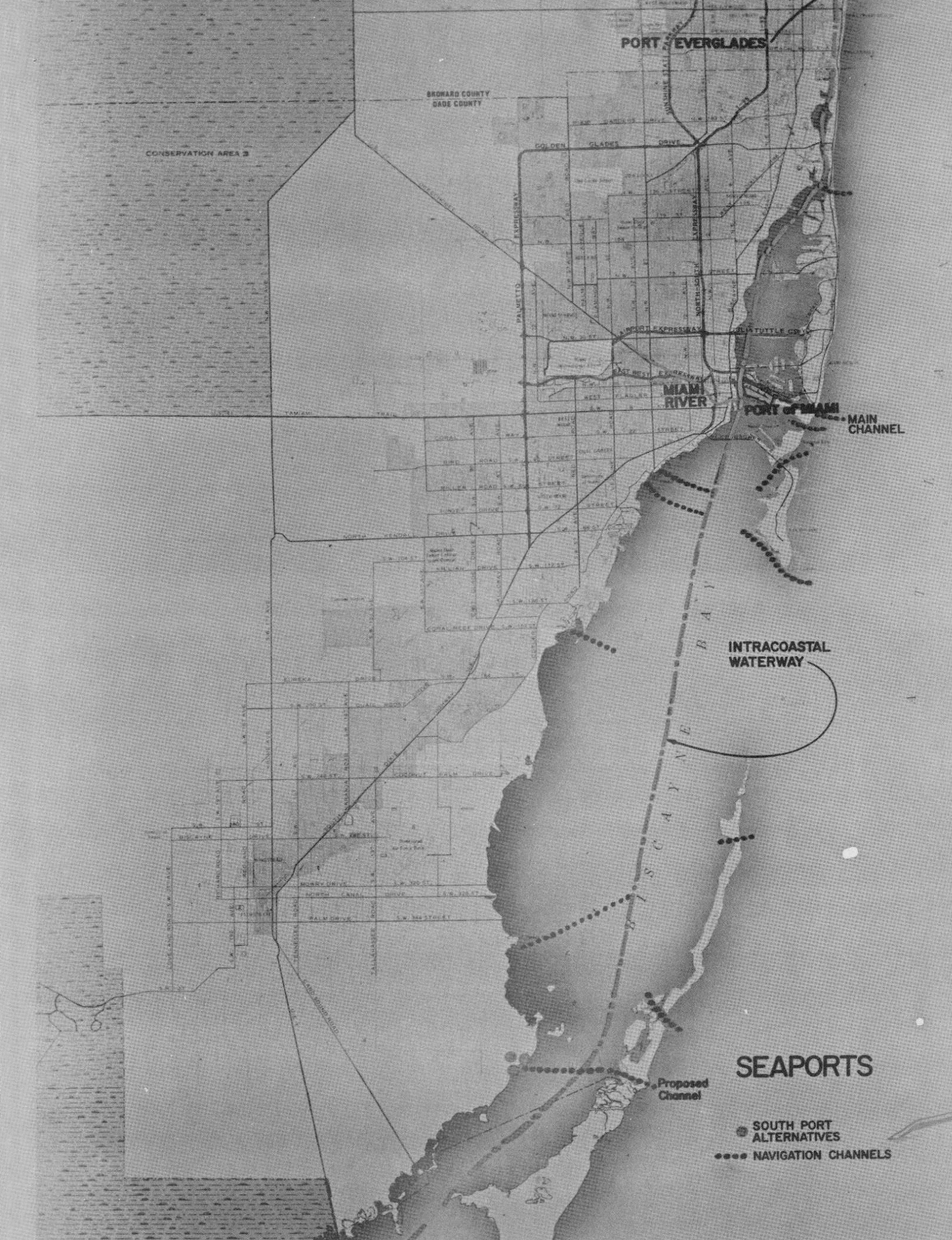
A rapid transit service should be provided to the new Port of Miami from Miami Beach and the mainland. A tunnel should be built between south Miami Beach and Fisher Island and a causeway between Fisher Island and Virginia Key. Additional automobile access should be provided to Dodge Island with another road to the east connecting Fisher Island.

Consideration also should be given to the development of an industrial seaport in South Dade if the ecology of Biscayne Bay is


BROWARD COUNTY
DADE COUNTY
CONSERVATION AREA 3
BISCAYNE BAY
STREETS AND HIGHWAYS
EXPRESSWAYS
ARTERIALS
Proposed beyond 1985
EXPRESSWAYS
ARTERIALS

not damaged and if the results of an economic feasibility study currently underway by Bechtel Corporation indicate a justifiable need. The Bechtel study is sponsored by a local citizen's group. An hydraulic model study should be undertaken to determine the effect of the proposed port on the ecology of the bay. The proposed highway network provides for ample development of ground transportation to a South Dade port. Rail and air connections are also readily available.

Waterway recommendations call for an active program of water pollution control and redevelopment of areas along the Miami River with stricter zoning requirements to control commercial and industrial land uses.


PORT EVERGLADES
BROWARD COUNTY
DADE COUNTY
CONSERVATION AREA 3
GLADES DRIVE
PALMETTO EXPRESSWAY
NORTH-SOUTH EXPRESSWAY
AIRPORT EXPRESSWAY
TAMIAMI TRAIL
MIAMI RIVER
PORT of MIAMI
MAIN CHANNEL
INTRACOASTAL WATERWAY
BISCAYNE BAY
Proposed Channel
SEAPORTS
SOUTH PORT ALTERNATIVES
NAVIGATION CHANNELS

Terminals

Recommendations are made for either expansion of existing truck, rail, and bus operations or for new terminal locations to meet the expected increase in both cargo and passengers by 1985. Parking needs also are projected.

Private enterprise in response to market demand should finance the cost of enlarging trucking, rail and bus terminals to meet the demands of 1985.

Trucks: An ordinance should be passed establishing special zoning districts for truck terminals in specific areas to meet the 100% increase forecast in truck tonnage between 1965 and 1985 for ICC licensed general commodity common carriers.

Such controls would enhance the urban environment and minimize truck trips and lengths by locating terminals so that they are easily accessible to centers of activity by major arterials and expressways. To expedite truck movements and improve automobile traffic flow, special truck routes should be established through selected critical areas surrounding major truck terminals, as well as at seaports and airports.

Expansion of existing terminals should be encouraged only when they are located within the proposed terminal zoning districts. New designs should be used to improve delivery operations, safety characteristics, and overall terminal operations.

A 54 to 74% increase in terminal building square footage is the estimated need for 1985 over 1965. Total space needs are expected to triple to 100 acres.

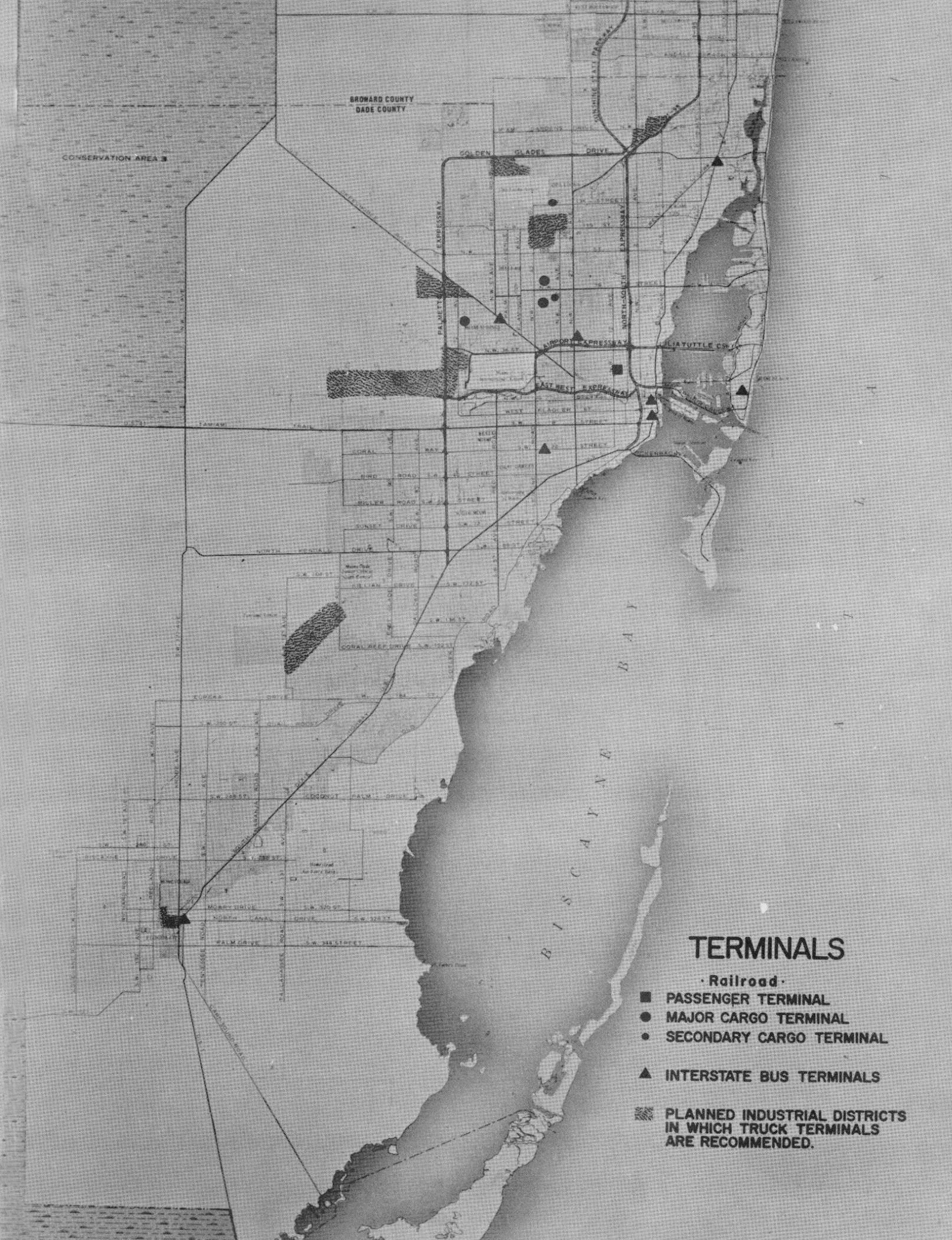
Rail: Rail freight also is expected to double between 1965 and 1985, calling for expansion of existing freight terminals and rail sidings within industrial areas. An attempt should be made to eliminate the rate differential south of S. W. 146 Street.

Passenger terminals likely will be adequate to serve the projected passenger traffic for 1985. If high speed passenger trains come into use, another main station and substation would be necessary. The main station should be located in the downtown area or at, or near, the Miami International Airport where there would be good accessibility to both the highway network and public transit. Substations should be located near public transit and major arterials.

Intercity Bus: Intercity bus terminals should be expanded or located close to an interchange point with other modes of public transportation to meet the 75% increase expected in passengers between 1965 and 1985. The Downtown Transportation Center recommended by Doxiadis Associates should be considered as a possible location for intercity bus terminals.

Package express volume is expected to continue to increase, but will be adequately served by the terminals existing in 1965.

Parking: A total of 68,042 parking spaces likely will be needed by 1985 in the central business district of Miami, the business district of Coral Gables and the south Miami Beach section. This is an increase of 37% from 49,057 spaces existing in these study areas in 1964. Over half of the 18,400 increase should be in the Miami CBD where 9,400 more parking spaces are expected to be needed. The forecast calls for an addition of 7,720 more spaces in south Miami Beach and 1,250 in Coral Gables.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SUNSHINE STATE PARKWAY
PALMETTO EXPRESSWAY
NORTH-SOUTH EXPRESSWAY
AIRPORT EXPRESSWAY
EAST-WEST EXPRESSWAY
JIA TUTTLE CSWY
TAMIAMI TRAIL
CORAL WAY
BIRD ROAD
SUNSET DRIVE
NORTH KENDALL DRIVE
CORAL REEF DRIVE
COCONUT PALM DRIVE
PALMETTO EXPRESSWAY
PALM DRIVE
BISCAYNE BAY
TERMINALS
·Railroad·
PASSENGER TERMINAL
MAJOR CARGO TERMINAL
SECONDARY CARGO TERMINAL
INTERSTATE BUS TERMINALS
PLANNED INDUSTRIAL DISTRICTS IN WHICH TRUCK TERMINALS ARE RECOMMENDED.

CONCLUSION

The five elements of the Transportation Master Plan provide a comprehensive plan for a well balanced integrated system for moving people and goods in 1985.

Recommendations are based upon serving the needs of 2 million residents in addition to visitors to the Miami urban area.

Plans have been approved by the Policy and Technical Advisory Committees of MUATS representing the cooperative efforts of the county, State and Federal governments. Authorization will be requested for presenting a fold-out color summary to be distributed to the community for review. Public hearings will be held followed by Planning Advisory Board review. Then, formal adoption will be requested by the Board of County Commissioners. The Transportation Master Plan is a detailed component of the General Land Use Master Plan.

The procedure for adoption is similar to that used to obtain the approval of the General Land Use Master Plan by the Board of County Commissioners.

Both The Transportation Master Plan and the General Land Use Master Plan are subject to continuing evaluation and updating to meet constantly changing urban and technological developments.

The continuing evaluation of the Transportation Master Plan will be conducted by the Policy and Technical Advisory Committees of MUATS. The Policy Committee consists of Michael O'Neil,

member, Florida State Road Board, 4 District; Porter W. Homer, manager, Metropolitan Dade County, and Morris E. Monroe, division engineer, Florida Division, U. S. Bureau of Public Roads, ex-officio member.

The Technical Advisory Committee consists of representatives from the Metropolitan Dade County Planning, Public Works, Traffic and Transportation, and Seaport Departments, Metropolitan Transit Authority, Port Authority, Florida State Road Department, and U. S. Bureau of Public Roads.

APPENDIX

TECHNICAL REPORTS

Before the elements of the Transportation Master Plan were prepared, background and technical reports were prepared by the Metropolitan Dade County Planning Department and the Florida State Road Department to assist in the development of the recommendations. Only a limited supply were printed for internal use. Reports published by staff or consultants of this department include:

Study Design

March 1965

The study design provides the scope and methodology for a continuous program of collection and analysis of data and the formulation of plans in keeping with latest trends; a comprehensive program taking into consideration all factors involved in land use and transportation planning; and a cooperative program of participation of all county and state agencies involved in the development of the metropolitan region.

Goals for Transportation Planning

December 1968

Objectives and standards were established to guide the future growth and development of Dade County's transportation system in keeping with the goals of the General Land Use Master

Plan; that is, to promote efficiency and economy, health and safety, economic prosperity, and the amenities and conveniences.

Economic, Population and Land Use Projection Factors

December 1968

Population and land use were projected indicating an increase in population to almost 2 million (1,955,000) by 1985 from 1,240,000 January 1969. School enrollment was forecast to about double in size from 1964 when the study began.

Personal income was projected at $8½ billion, 3.4 times greater than the $2½ billion in 1964. Automobile registration was forecast at 1 million in 1985 compared with 381,000 cars available to tourists and residents in 1964.

Community Attitudes for Transportation Planning

September 1968

The features most liked and disliked at the metropolitan and neighborhood level were ascertained by a sampling of citizens. Results indicated the county as a whole liked least the transit service, lack of job opportunities, and low wages. Dade County's climate ranked as the best feature followed by the county's general appearance, educational facilities, and shopping areas.

Commercial Model Development for Transportation Planning

November 1968

Nine regional shopping centers and 32 community shopping

centers were located radiating from the central business district to serve as the framework for the commercial structure of Dade County in 1985. Development of a commercial model indicated regional shopping center retail sales would total $483.7 million in 1985 compared with $149.4 million in 1963.

Laws and Ordinances

October 1968

An inventory of existing laws and ordinances relating to transportation was undertaken and recommendations were made for the passage of local and state legislation to provide more funds and greater freedom of transportation planning for local governments; and for the county to adopt a land development ordinance with specific standards for transportation facilities and to test the authority to pass an Official Map Act to give the county power to designate the right-of-way for highways and rapid transit in advance of need to keep costs down.

Implementation of the Plan

December 1969

Recommendations were developed for source of funds, priorities, and method of financing of the Transportation Master Plan.

Transit Cost Allocation Model Development

July 1967

Operating expense accounts of the Metropolitan Dade County Transit Authority were analyzed to develop a formula for relating route operating characteristics, including vehicle miles, vehicle hours, peak vehicle needs and passenger revenue to the average cost of route operation. This formula will be applied to future transit system alternatives to estimate operating costs for each alternate system. The memorandum also includes a revenue/cost analysis for each of the existing MTA routes.

Evaluation of Present Transit Services

August 1968

Existing transit service was evaluated for the purpose of establishing standards of coverage, frequency of service, directness of service, and other service characteristics to judge existing operations and establish goals for the future mass transit master plan.

Corridors for Transit Improvements

July 1968

Corridors of movement within Dade County which appear to justify improved transit service were identified. A grade-separated rapid transit system is developed to meet anticipated volumes of 1985 movement. Alternative systems are also developed

including a "do-nothing" bus system and bus rapid transit.

Route, System Design, Cost Estimates for Rapid Transit

August 1968

Routes, design, and cost for a rapid transit system were examined for the alternative plans identified in the transit study. Data was presented for the fixed rapid transit links in Miami Beach and the mainland. The cost of a busway development in the FEC corridor was also determined. General engineering details were also included.

Forms of Mass Transportation

May 1968

Existing and new forms of mass transportation were evaluated and details presented on their state of development, operating characteristics, geometric design characteristics and other facts relating to the selection of a mass transit system to meet projected travel needs in Dade County.

Evaluation of Alternate Transit Plans

August 1968

Future transit systems developed in the corridor's report were evaluated with regard to the revenues to be derived from each alternate as compared with capital and operating expenses under each plan. In addition to revenue/cost analysis, community benefits to be derived from improved transit services are discussed.

Continuing Program for Transportation Planning

October 1968

MUATS is the beginning of a continuing joint effort of the county, state, and Federal Government to evaluate the transportation needs of the area in terms of land use and technological changes. This report recommends the organization and administrative responsibilities of the different agencies responsible for the transportation planning.

Technical reports published by staff or consultants of the Florida State Road Department include:

Traffic Data Collection

August 1964

The study area was divided into 550 traffic zones. An Origin and Destination Study was conducted among automobile, truck, and transit drivers and riders to determine the time of day, route traveled, occupation of traveler, and purpose and destination of trip.

Traffic Processing and Tabulating

June 1966

Information was fed to computers to develop an extensive data bank with in-depth understanding of travel patterns and travel characteristics.

Development of Travel Models

August 1968

Development and testing of mathematical models which were used for estimating person travel are discussed in detail for the Miami Urban Area Transportation Study.

Development and Testing of Modal Split Models

July 1968

Development and testing of mathematical equations which were used in MUATS for estimating the "modal split" of travel between transit and highway modes is discussed in detail.

Highway Program—Cost and Financing

October 1968

Detailed studies were made to determine costs of the recommended street and highway network and the transit system. Methods of financing the program were recommended.

Development of the Recommended 1985 Principal Street Plan

October 1968

Technical procedures used in testing and evaluating alternate street and highway plans are discussed in detail. The final principal street plan which is estimated to meet 1985 travel demands is presented.

Growth Projections

August 1968

Growth factors developed by the Metropolitan Dade County Planning Department are described. The use of these factors as inputs for computer projections of future travel demands is demonstrated.

APPENDIX

SUMMARY
OF COSTS AND ALTERNATIVES FOR FINANCING THE GROUND TRANSPORTATION SYSTEMS, MUATS

1969-1975 and 1976-1985

Costs in Millions

Facility	1969-1975	1976-1985	Totals
Expressways	$229.4	$332.7	$562.1
Other Arterials	126.9	207.5	334.4
Mass Transportation	-	662.0	662.0
Totals	$356.3	$1,202.2	$1,558.5

Revenues in Millions

Sources	1969-1975	1976-1985	Totals
State Gas Taxes	$140.8	$277.8	$418.6
Federal Aid to Highways	23.2	217.5	240.7
Federal Aid to Mass Transportation	-	331.0	331.0
Net Mass Transportation Revenues	-	26.9	26.9
Totals	$164.0	$853.2	$1,017.2

Ground Transportation Deficits

	1969-1976	1976-1985	Totals
Costs	$356.3	$1,202.2	$1,558.5
Revenues	164.0	853.2	1,017.2
Deficit	$192.3	$ 349.0	$ 541.3

Costs

Expressway and arterial costs have been inflated by $104.5 million from a current dollar estimate of $791.9 million to allow for probable increases in construction costs. The rate of in-

crease in mass transit construction costs is 5% per year, compounded annually, increasing the basic, current-dollar cost of $378 million by some $267 million.

Revenues

Revenue estimates are based on projected gasoline tax revenues as presently constituted, on an estimate of future mass transportation revenues, and on assumptions of large increases in federal aid to highways and mass transportation. It is assumed that the present federal gas tax will be retained after completion of the interstate system, and that urban areas will receive a substantial portion of this revenue. It is further assumed that federal funds will be available for the construction of mass transportation facilities in amounts equal to at least 50% of the cost of these facilities.

Additional Revenue Sources

Strictly speaking, the assumed increase in federal aid to highways after 1975 and the assumed 50% federal funding of mass transportation facilities are sources of additional revenue. But even with these critical assumptions, additional revenue will be needed if the proposed MUATS system of expressways, arterials and mass transportation is to become a reality.

The 1969-1975 Program (Priority 1)

The deficit for the Priority 1 program has been estimated at $192 million, and consists entirely of highway improvements. If

I-95 were to be extended to Homestead, this deficit would be reduced by about $75 million. If I-75 is extended from Tampa to Miami, there would be no appreciable reduction in the deficit unless the I-75 extension includes the urban connector between the East-West Expressway and South Dixie Expressway. (Estimated cost of urban connector - $15 million.) In any event, additional revenue will be needed. The following ways of raising this revenue have been considered:

1. Additional expressway tolls.

   Ten cent tolls have been used to finance the Airport and East-West Expressways and could be used for revenue bond financing of additional expressways proposed in the Priority 1 program:

Expressway	Cost in Millions
South Dixie	$ 74.5
South Dade	20.2
LeJeune-Douglas	93.5
Snapper Creek	5.8
Interama (part)	23.3
Total	$217.3

2. County gasoline sales tax.

   A one-cent county gasoline tax would raise an estimated $29 million during the years 1970-1975 inclusive. The average annual revenue of approximately $5 million could presumably produce a

bonding capacity of $75 million, assuming a bonding factor of 15.

3. Increased vehicle registration tax.

   An average increase of $10 per vehicle would produce an estimated $48 million during 1970-1975 inclusive. Average annual revenue of approximately $8 million could presumably produce a bonding capacity of $120 million.

4. Property tax assessment.

   If the property tax assessment is increased one mill, an estimated $45 million in revenues would be produced. Average annual revenue of approximately $7 million could presumably produce a bonding capacity of $105 million.

Any one source or combination of these sources could be used to raise the additional revenue required to meet the deficit. Another possible source — an increase in the state gasoline tax — has not been included. It is part of a package of State Road Department recommendations that would significantly change the ways in which gas tax money is distributed. It is not possible at this point to estimate how much of the revenue from the proposed increase would be returned for use on Dade County's streets and highways.

The 1976-1985 Program (Priority 2)

The deficit for the Priority 2 program has been estimated

at $376 million and consists entirely of mass transportation improvements. With the exception of the state gasoline tax increase, any of the above revenue sources could also be used to finance the Priority 2 program - provided that additional toll stations are county owned and operated and use of the county gas tax revenue is controlled at the county level. Use of toll and county gas tax funds would under these circumstances be a result of local decision and local responsibility. They could be used to finance either highway or mass transportation improvements.

If, on the other hand, toll and county gas tax revenues are earmarked for highway improvements, the sources of potential revenue are reduced to two — property tax assessments and increased vehicle registration fees.