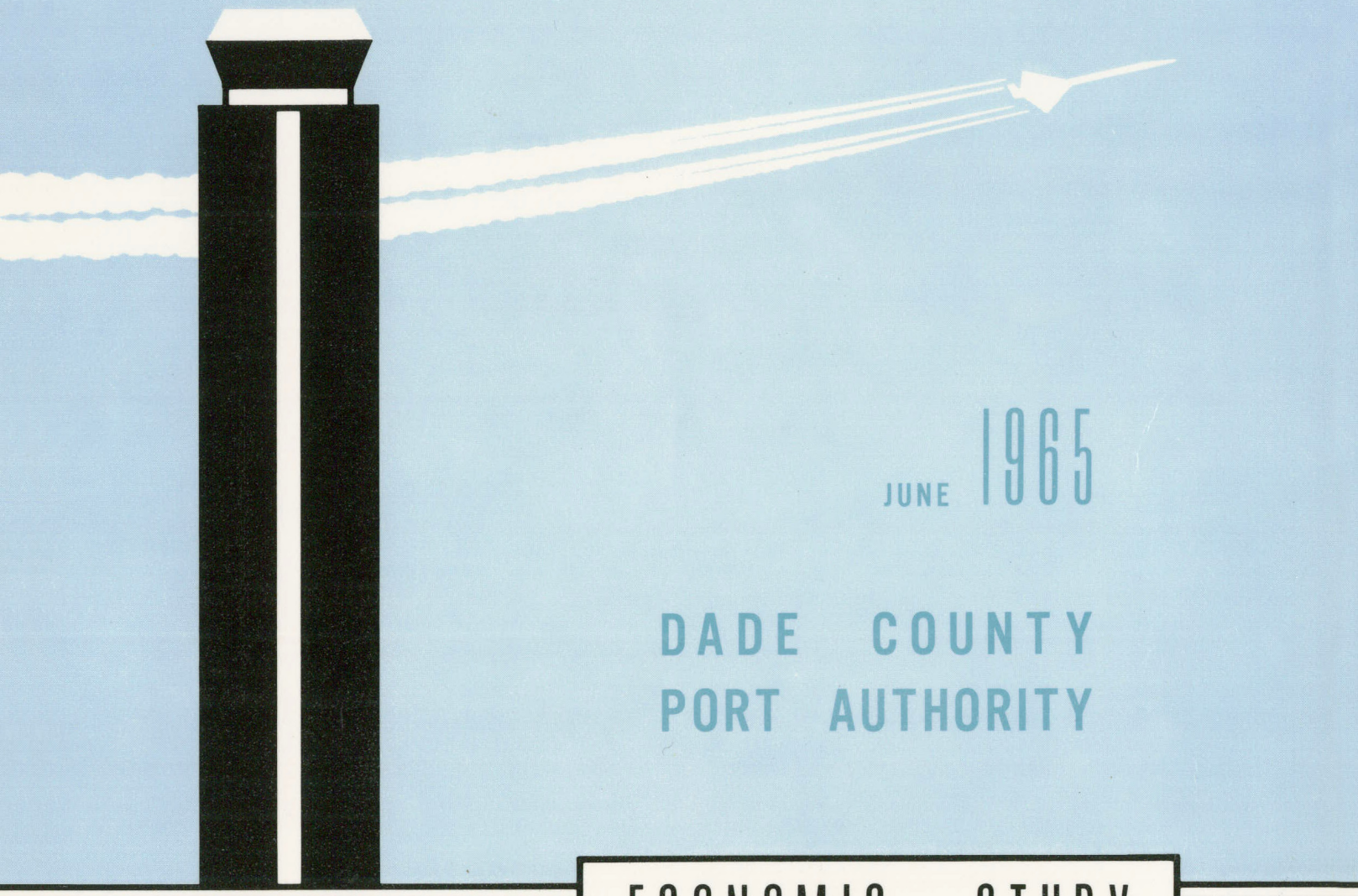
CONNECTOR ROUTE
To
MIAMI INTERNATIONAL AIRPORT



JUNE 1965

DADE COUNTY
PORT AUTHORITY

ECONOMIC STUDY

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INDEX

INTRODUCTION

Surface accessibility to the 20th Street Terminal area is slowly being strangled. A combination of burgeoning traffic growth and interchange facilities that were designed and built as temporary interim expedients pending the hardening of designs and development of the Dade County Expressway system is resulting in peak hour congestion that will become general congestion in the near term future unless adequate relief facilities are developed. These facilities should ultimately be in the form of directional expressway-type connectors to both East-West Expressways with design characteristics that will permit the movement of traffic to and from the 20th Street Terminal area with a maximum of speed and a minimum of inconvenience and delay.

An idea of the potential congestion was starkly demonstrated February 13, 1964 when the "Beatles" arrived at the Miami International Airport for their first area visit. Over two hours were required to clear up the exit routes and restore normal traffic movement. Conditions similar to this will be eventually generated by the continuing and dynamic growth of normal airport traffic. If the present growth pattern continues through 1965, a two year growth record of one-third will have been achieved. In five years this rate of growth will double traffic. This will saturate the capability of the present airport and terminal system and will substantially and critically exceed the capacity of the current surface access to the terminal area.

In 1955 the Port Authority recommended the construction of an east-west expressway directly from the entrance to the 20th Street Terminal area to the MacArthur and Venetian Causeways interchanging with all north-south arterial and expressway facilities en route. This project was studied as a toll facility since no other means of financing was then available. It failed because the traffic engineers' estimate showed less than required revenues for feasibility. The 1956 Major Highway Plan that has been the basic document for the planning of the Dade County Expressway System placed such a low value on potential airport traffic generation that the 20th Street Tollway was abandoned and two expressways, one at 36th Street and the other at 14th Street, were recommended.

This conclusion was a great disappointment to your airport staff and its consulting engineers. It was their feeling that the potential of the yet-to-be-built 20th Street Terminal complex would have far greater traffic than the assignment it received but proof of this was lacking because the facility plans were incomplete.

Accordingly, the Port Authority was left little choice in the planning of its connector to the proposed Expressway System except to follow the schematic system proposed in the 1956 Dade County Major Highway Plan. The then Director and the Port Authority Engineer did, however, express clearly the dissatisfaction of the staff when they certified approval of the master plan for the present LeJeune Road Interchange. This approval showed the present construction to be a temporary expedient with a future plan for a projected expressway in an indefinite direction to the East of LeJeune Road and aligned directly with the 20th Street

entrance to the new 20th Street Terminal Area.

This temporary interchange has functioned in a reasonably successful and satisfactory manner. However, the traffic level of the past winter season indicates that the time for a permanent and effective solution is now at hand. Continued delay in resolving this problem can only operate adversely in its effect on the growth pattern of Miami International Airport and accelerate the date of obsolescence of this vital facility to the regional economy. Failure to provide the highest possible level of all appurtenant services to Miami International Airport can logically develop air traffic diversions to newer and improved facilities now being constructed at Tampa and Jacksonville to the detriment of Dade County and its air service economy.

CURRENT STUDIES

In the traffic engineering report entitled CONNECTOR ROUTE FROM EAST-WEST TOLLWAY TO MIAMI INTERNATIONAL AIRPORT, submitted to the Dade County Port Authority in November 1963, three alternate route locations for providing direct access to the Miami International Airport from the East-West Expressway were presented. Traffic forecasts included in that report indicated that roadway capacity for the primary airport entrance on LeJeune Road had reached the critical stage.

Following the submission of the original report, the decision to perform supplementary route location studies was made by the Dade County Port Authority.

A total of ten alternate routes and/or combinations of routes have been studied and are shown schematically in the Appendix. Service Ratings including Benefit-Cost Analysis have been prepared for the purpose of determining and selecting the most feasible connector route.

TRAFFIC

A comprehensive transportation study entitled A MAJOR HIGHWAY PLAN FOR METROPOLITAN DADE COUNTY, FLORIDA, prepared for Dade County in 1956 forecast an ADT (Average Daily Traffic) volume of 26,400 vehicles entering and exiting the LeJeune Road entrance to the airport in 1975. The 1965 ADT volume is 42,000 vehicles. This tremendous increase over the original traffic forecasts is attributed to the unprecedented growth in commercial aviation as well as the growth of Miami International Airport in recent years as a traffic generator. During the calendar year 1964, air passenger traffic at Miami International Airport increased 14.5% over that generated in 1963. The national growth rate for 1964 was 14% over 1963. Air passenger traffic at the Miami International Airport in 1965 to date exceeds 1964 by 19.5%. As this upward trend continues, ground transportation facilities serving all of the nation's major airports will require more and more intensive planning and improvement.

In the 1963 Connector Route Report, the 1985 ADT traffic volume forecast for the 20th Street entrance to the airport terminal area was 70,000 vehicles per day. Based on the known 1965 ADT, which far exceeds that predicted in 1956 for 1975, it is now believed that the 1985 ADT forecast may be unnecessarily conserva-

tive unless growth at M.I.A. is restrained.

Currently, during the A.M. and P.M. seasonal peak hours, critical congestion is experienced on the outbound ramp of the interchange with LeJeune Road which feeds traffic onto northbound LeJeune Road. As the volume of this movement continues to increase, the provision of a direct connection with either or both of the East-West Tollways will become mandatory if reasonable traffic movement to and from the 20th Street Terminal Area is to be maintained.

Since the traffic forecast of 1956 for the design year of 1975 at Miami International Airport has already been exceeded and since no feasible plan for the development of the LeJeune Road Expressway has been developed in the interim, it must now be concluded that the 1956 report plans for the handling of airport traffic are, in fact, inadequate. This is not to say that a LeJeune Road Expressway System cannot or will not be developed. The pointed avoidance of meeting this challenge by the agencies involved in spite of the fact that existing LeJeune Road from 14th Street to 36th Street is one of the heaviest traveled arterial streets in Dade County seems to indicate the frustrations and lack of physical dimension to develop such a satisfactory scheme for this unit of the expressway system. The Port Authority has not endeavored to analyze this possibility more than superficially since this is clearly the province and obligation of other agencies of government.

One thing is clear. The Port Authority cannot wait any longer on the highway building agencies to achieve a satisfactory level of surface access to Miami International Airport if it is to avoid a complete breakdown of its terminal area ingress and egress. It must push ahead with some alternate plan that will improve its accessibility to and from the east where most of its air passengers generate. A partial purpose of this report is to explain, reaffirm and emphasize the urgency of this need.

ROUTE LOCATION STUDIES

Description

Ten alternate route location schemes have been analyzed in this report and conclusions and recommendations presented are based upon computed service ratings of each of the individual schemes. These are described below:

Scheme	Description
"A"	A direct connection to the proposed 14th St. Tollway across the East side of the City of Miami golf course.
"B"	A direct connection to the proposed 14th Street Tollway through Grapeland Park east of N.W. 37th Ave.
"C"	A direct connection to the proposed 14th Street Tollway on a viaduct over N.W. 37th Avenue.
"YA"	Direct connection to the Airport Expressway on the north along N.W. 39th Avenue and on the south along the eastern extremity of the City of Miami golf course, west of N.W. 37th Avenue connecting with the 14th St.

Scheme	Description
	Tollway.
"YB"	Direct connection to the Airport Expressway on the north along N.W. 39th Avenue and on the south along the east side of N.W. 37th Avenue connecting with the 14th Street Tollway.
"YC"	Direct connection to the Airport Expressway on the north along N.W. 39th Avenue and on the south along N.W. 37th Avenue on viaduct over the existing street connecting with the 14th Street Tollway.
"D"	Direct connection to N.W. 14th Street Tollway at LeJeune Road along an alignment lying west of LeJeune Road.
"E"	Improvement of the existing LeJeune Road between N.W. 14th Street and N.W. 36th Street providing marginal roads and expanding the existing interchange at the airport entrance.
"F"	Direct connection to the N.W. 14th Street Tollway along the western extremity of the City of Miami golf course east of LeJeune Road.
"G"	Direct connection to the Airport Expressway along N.W. 39th Avenue.

Service Ratings

A means of analysis of the tangible factors surrounding each of the alternate schemes has been developed based on the American Association of State Highway Officials and Bureau of Public Roads criteria as set forth in their Policy of Geometric Design. Because the centroid of the mass air passenger origin in Dade County lies east of the airport, the formerly proposed 20th Street Tollway scheme is arbitrarily evaluated as the optimum level of service to the 20th Street Terminal Area and is accorded a rating of 100. All other schemes are compared to this basis and rated accordingly.

The service rating does not directly lend itself to the evaluation of such intangible considerations as the amenities of the recreation areas, the loss of cherished homesites, the loss of airport growth expansion areas and the potential economic effect of a retarded growth at Miami International Airport that would likely result from a deterioration of surface accessibility. Service ratings of tangible items must be adjusted for these intangibles which are subject to a broad spectrum of opinion depending on the individual viewpoint.

In evaluating the service ratings in terms of total community interest, the analysis performed herein can be taken as a reasonable and fair measure because the bulk of the citizens in Dade County will be relatively unaffected by the intangible considerations.

As an initial step towards evaluating service ratings for the ten alternate schemes, it is necessary to compute a benefit-cost ratio for each individual

scheme. This benefit-cost ratio represents one of numerous parameters that constitute part of the final service rating. Considering the approximate centroid of the mass air passenger origin in Dade County, the proposed 20th Street Tollway is the scheme that would have provided the optimum level of service for ground transportation and all schemes are compared with it. Since it would not now be feasible to consider the construction of the 20th Street Tollway, no benefit-cost ratio has been computed for this facility.

To compute a benefit-cost ratio for the various schemes, each alternate scheme is compared with a basic condition, in this instance the existing facility currently being utilized. For each alternate scheme and for the existing facility, road user costs are computed. The following road user unit costs are used:

For OPERATION ON A FREEWAY	$0.09/vehicle mile
For OPERATION ON A LOCAL STREET	$0.11/vehicle mile
For EACH STREET STOP	$0.02
For EACH RAILROAD STOP	$0.12

Highway costs are then computed for all facilities involved. The highway costs include cost of construction, cost of property acquisition, annual maintenance costs and costs of providing interest and amortization.

In accordance with Bureau of Public Roads standards, 10% of the total aggregate highway costs provides the average annual highway costs spread over a twenty year design period. The benefit-cost ratio is the quotient of the difference of annual road user costs and annual highway costs computed for the basic condi-

tion and the alternate scheme being studied. The benefit-cost ratio constitutes the primary parameter of the service rating for each individual scheme.

The second parameter is the actual comparison of highway improvement and operating costs. Each alternate is compared with the basic condition and weighed.

The third parameter is capacity. The number of lanes provided, effects of vertical and horizontal alignment, weaving sections, etc., for each individual facility are considered in weighing the ability of the particular facility to accommodate the volume of traffic that has been assigned to it.

The fourth parameter, adaptability, involves the consideration of aesthetics, how the particular facility lends itself to the traffic desire pattern and to the existing topography, type of interchange and intersection treatment.

The fifth parameter, design features, such as vertical and horizontal alignment, sight distance, superelevation, pavement widths and auxiliary lanes, is considered in rating each individual scheme. Where design features must be sacrificed to confine a facility within a fixed corridor, the rating will reflect this sacrifice. There is a direct relationship between design features and operational characteristics. Any sacrifice in design features will naturally result in a lower rating for operational characteristics. Factors such as merging, diverging and weaving conditions are typical of the conditions that must be evaluated.

Attainability, the sixth parameter, involves chiefly the order-of-magnitude

of public resistance. It is necessary for the engineer to recognize the effect of direct damage to facilities such as cemeteries, churches and schools as well as intangible damages which would be imposed upon a community. Local public resistance to the construction of a particular scheme may be affected by the economy of construction cost and/or the cost of property acquisition. Each scheme is evaluated and weighed in accordance with the degree of relative attainability that is determined.

The last parameter to be considered in the compilation of the service ratings is maintenance of traffic during construction. Factors weighed are the expense of detours which will be required during the construction period and the degree of inconvenience that will be suffered by the user during that period.

Analysis of Various Schemes

The individual weights assigned to the various parameters are tabulated and totaled. The ratings for the ten schemes considered in this report are indicated numerically on Exhibit No. 1 and graphically on Exhibit No. 2.

Examination of the ten schemes shown indicates that Scheme "A" shown on Exhibit No. 3 is the route location having the highest level of service. This scheme was recommended in the original traffic engineering report as being the most desirable route to service the airport traffic. It remains the preferred location considering only the tangible benefits.

Schemes "B" and "C" are ranked Nos. 3 and 6 respectively, as far as de-

sirability. These are shown on Exhibits 4 and 5.

Schemes "YA", "YB" and "YC" shown on Exhibits 6, 7 and 8 are identical to "A", "B" and "C" respectively, with the addition of a connection north from the LeJeune Road Interchange to the Airport Expressway. Because of the construction costs, all three of these schemes have relatively low benefit-cost ratios. All three ratios are less than 1.0; therefore, these three alternates cannot be recommended at this time in spite of the excellent level of service that they would provide. These three schemes are presented solely for the purpose of indicating the optimum level of roadway capacity that could be provided as an alternate to the originally proposed 20th Street Tollway that has now been pre-empted.

Scheme "D" shown on Exhibit 9 is an alternate route lying west of LeJeune Road and connecting with the airport access road immediately west of the National Air Lines entrance on the airport property. This scheme would provide relatively little service compared with all but one of the other study schemes. Its only merit is that it does provide direct airport connections for traffic with the proposed 14th Street Tollway. However, considerable sacrifice of geometric design standards was necessitated in establishing this route. Further, approximately one-quarter of one mile of adverse travel distance is created. All non-airport traffic assigned to eight of the other alternate schemes is denied the use of this facility. The consequential damage to the airport and the inhibition of its future capability to provide its maximum required function under this scheme is substantial. Both the Federal Aviation Agency and the State Road Department have expressed informal

objections to this plan and requested further information as a basis for expression of a formal opinion. One purpose of this report is to provide this additional information.

As a result of the reduction in the traffic that can be assigned to this facility, the benefit-cost ratio is less than one. The service rating of the facility due to a low benefit-cost ratio, adverse horizontal alignment and sacrifice of optimum design features, is only 41.

The only scheme with a rating lower than that of Scheme "D" is Scheme "E", shown on Exhibit No. 10, which is an alternate involving the improvement of LeJeune Road to a six-lane express facility with full control of access. The airport traffic would be completely separated and carried on additional frontage roads located on either side of LeJeune Road. The rating of this service is 37 in spite of a relatively high benefit-cost ratio because of the lack of capacity and adaptability of this scheme.

Scheme "F", indicated on Exhibit No. 11, is adaptable to the same traffic pattern as Scheme "D" and, by virtue of a benefit-cost ratio of only 1.02, is barely feasible. Less adverse distance is involved than on Scheme "D" and therefore more economy is realized. The service rating for this scheme is 67, which ranks it fourth in the table of rating.

Scheme "G", indicated on Exhibit No. 12, has a service rating of 70 which ranks it second only to Scheme "A" and has a benefit-cost ratio of 3.15. This scheme, although it is not the most ideal from an economic standpoint, will serve to temporarily

eliminate the problem of public acceptance that is associated with the Grapeland Park Area. It will probably generate new objectors but with less personal feeling since most of the alignment is over industrial property. Potential local service to the LeJeune Industrial Area is an asset to this scheme.

SUMMARY AND CONCLUSIONS

It has been stressed that Miami International Airport's traffic congestion is of a critical nature and the Dade County Port Authority must proceed on a priority basis to resolve the problem of selecting a final route location for the airport connector. All indications are that resistance to the original proposal to locate this facility in the Grapeland Park-City of Miami Golf Course vicinity will continue. There is no easy way to overcome these objections without accepting a substantial loss in the level of traffic service to the 20th Street Terminal. The consequences of such a loss are intangible in degree but are certain to adversely affect the future capability of the airport facility to adequately serve the community.

In the event a low level service scheme is selected or no improvements at all are made at this time, the Port Authority must plan for the ultimate construction of Schemes "A" and "G" - OR - the improvement of LeJeune Road by others to an adequate capacity to efficiently move airport generated traffic to the two East-West Expressways (the Port Authority to assume the costs of modifying its LeJeune Road - 20th Street Interchange) - OR - immediate planning must be commenced for a new airport facility to supplement MIA where an adequate level of surface accessibility is attainable and other attendant problems could be eliminated.

It is the recommendation of your engineers that the Dade County Port Authority adopt -

1. Scheme "A"

or failing this, adopt

2. Scheme "G"

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

General Consultants

SERVICE RATINGS

Description	Legend	Optimum Ratings	SCHEME "YA"	"YB"	"YC"	"A"	"B"	"C"	"D"	"E"	"F"	"G"
Road User Benefit Cost Ratio		25	3	3	2	17	14	9	2	9	5	10
Highway Improvement and Operating Costs		20	6	5	0	18	16	12	14	14	20	13
Capacity		15	15	15	15	10	10	10	6	3	8	10
Adaptability		10	8	6	4	8	6	4	2	1	9	7
Design Features		10	10	10	10	10	10	10	8	5	10	10
Operational Characteristics		10	10	10	10	8	8	8	5	3	8	10
Attainability		8	2	0	4	2	0	4	2	2	3	7
Maintenance of Traffic During Construction		2	2	2	2	2	2	2	2	0	2	2
	TOTALS		56	51	47	75	66	59	41	37	65	69
	RANK		(6)	(7)	(8)	(1)	(3)	(5)	(9)	(10)	(4)	(2)

EXHIBIT NO. 1

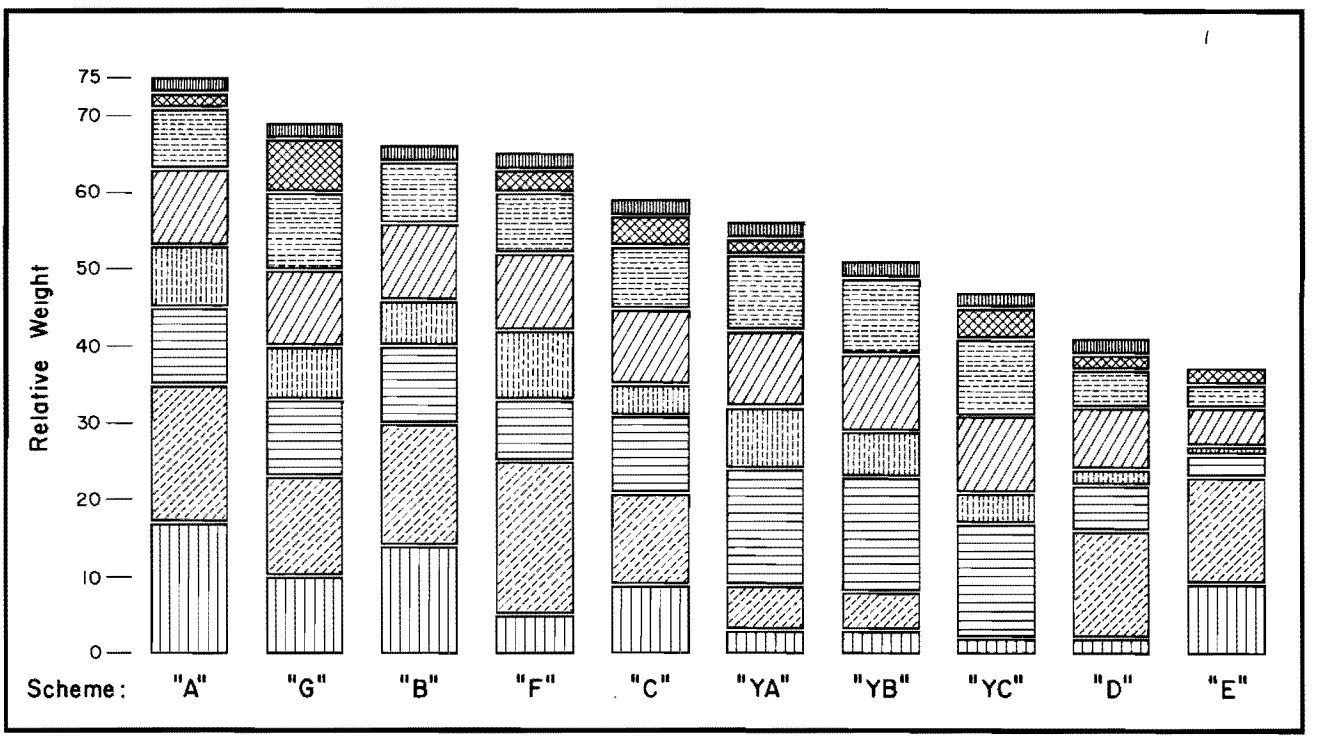

EXHIBIT NO. 2

SCHEME "A"

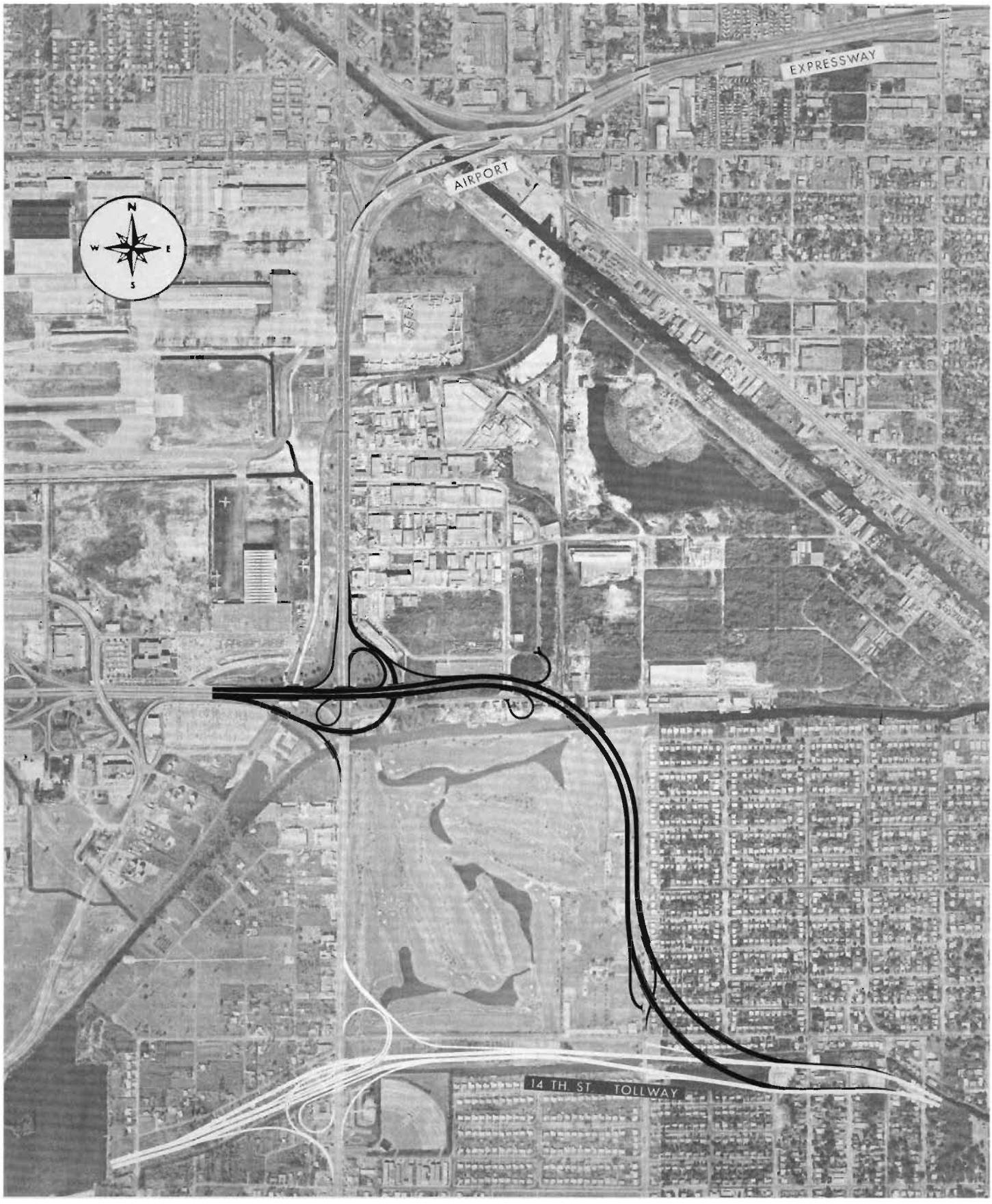

EXHIBIT NO. 3

SCHEME "B"

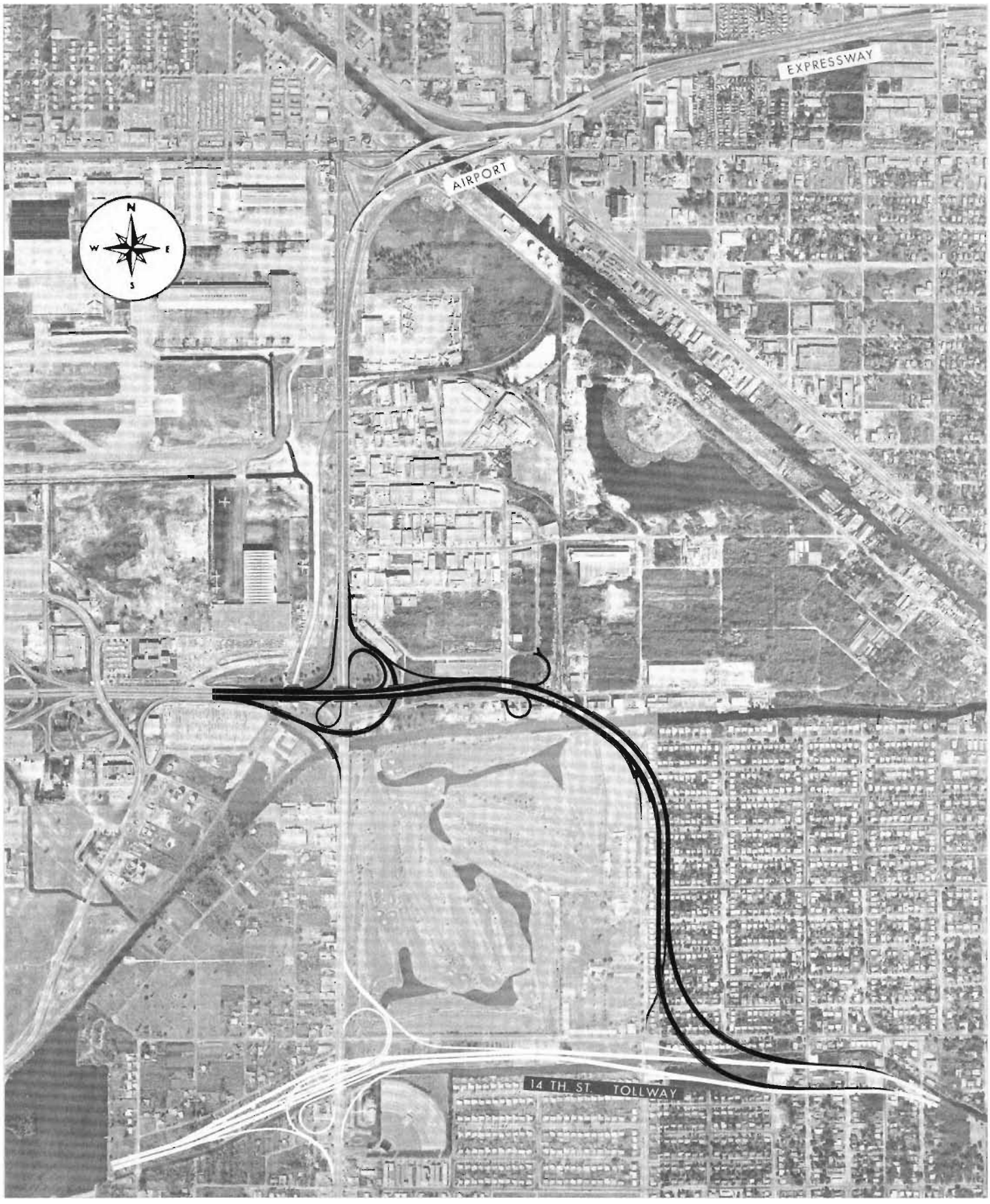

EXHIBIT NO. 4

SCHEME "C"

EXHIBIT NO. 5

SCHEME "YA"

EXHIBIT NO. 6

SCHEME "YB"

EXHIBIT NO. 7

SCHEME "YC"

EXHIBIT NO. 8

SCHEME "D"

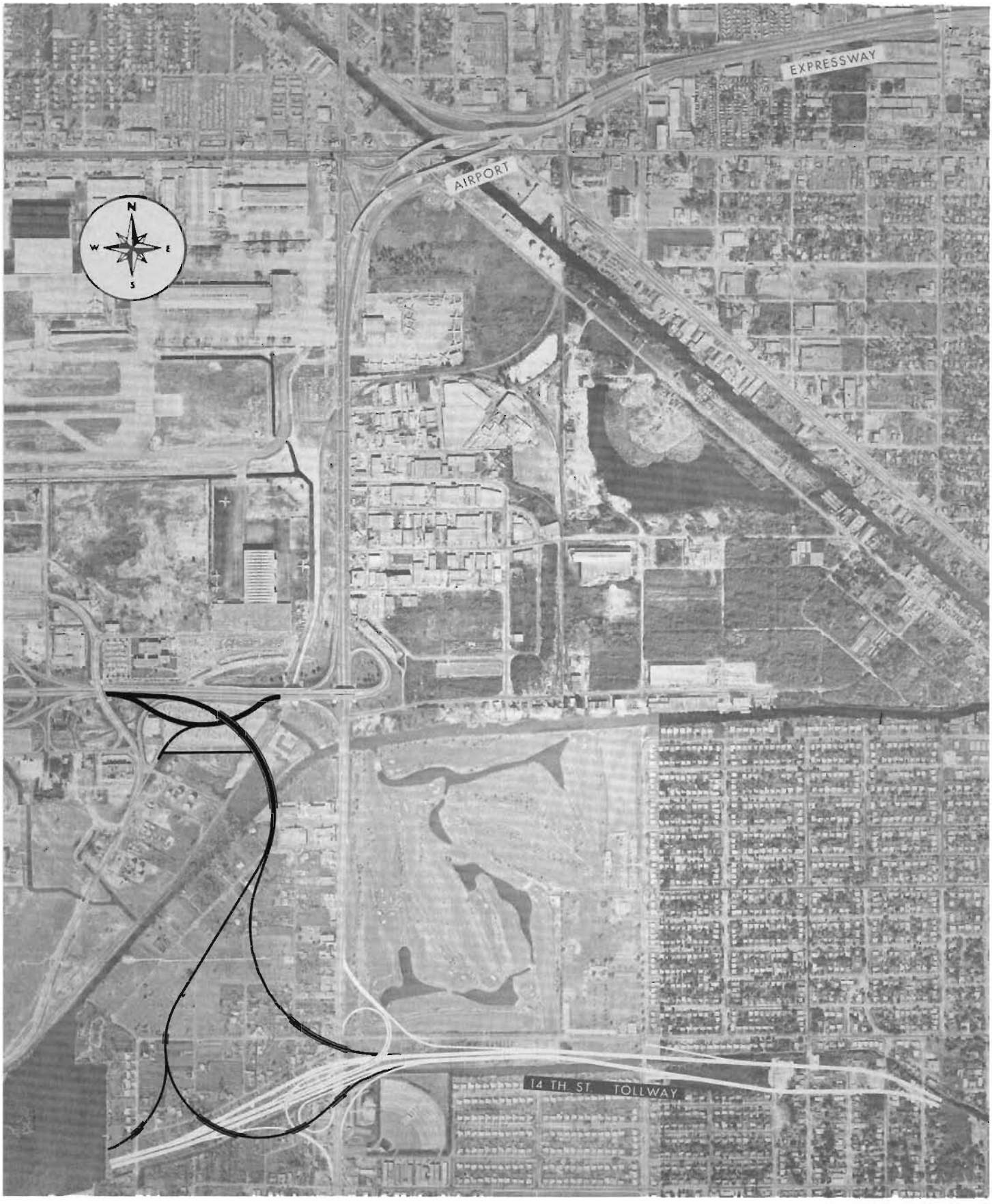

EXHIBIT NO. 9

SCHEME "E"

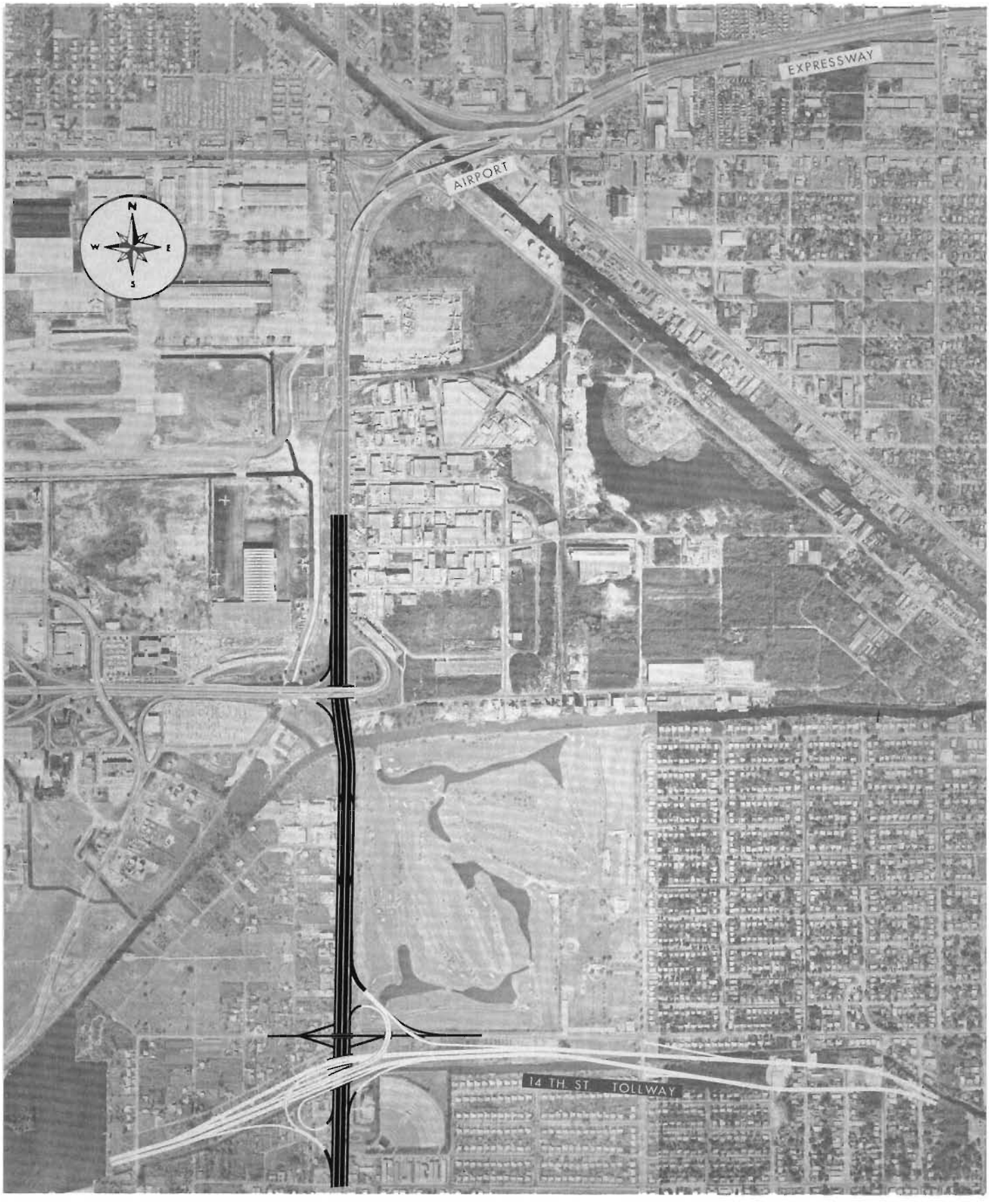

EXHIBIT NO. 10

SCHEME "F"

EXHIBIT NO. 11

SCHEME "G"

EXHIBIT NO. 12

EXPRESSWAY CONNECTOR STUDY
MIAMI INTERNATIONAL AIRPORT

SCHEME	PROJECT COST*	1985 Traffic Assignment ADT
A	$ 5,000,000	36,300
B	5,900,000	36,300
C	8,840,000	36,300
YA	12,584,000	35,900**
YB	13,484,000	35,900**
YC	16,424,000	35,900**
D	4,447,000	14,200
E	7,202,500	36,300
F	3,548,000	14,200
G	7,584,000	35,500

*Preliminary Estimate

**Average of Assignments to Each Leg Total Traffic will be 71,800 ADT

EXHIBIT NO. 13