

**THE GALVESTON
CONNECTION**
FORMULA FOR IMPLEMENTATION

The steam whistles from station and wharf echo in shrill counterpoint to the soft clack of trolley wheels and horse drawn wagons.

People and goods move in endless procession across the bustling harbor, up and down the Strand, along the beach and through the quiet tree canopied streets.

This tapestry of affluence and industry spoke eloquently of Victorian Galveston, and was a magnet for resident and visitor alike.

If the past is indeed prologue, certainly the future will write a dramatic postscript to Galveston Island.

That future is very much a focus of the Galveston Connection.

INTRODUCTION

EXISTING CONDITIONS

CONCEPT

IMPLEMENTATION

INTRODUCTION

The Galveston Connection is by concept and definition a proposed network of transportation and linkage systems designed to draw together the disparate existing and potential visitor attractions with which Galveston is identified. It is the objective of the "Connection" to facilitate the visitor's access to and from each of these attractions in such a way as to enhance the entire experience while minimizing the impact of visitor activities on the life of the Galveston resident.

Conceived as having certain interpretive potential and in fact the quality of an attraction in itself, the Connection represents a potential new dimension to Galveston's already ample visitor appeal, as well as an integrated and comprehensive view of the city through which its inherent qualities will be best appreciated.

The Study

Authorized in response to the potential benefit of developing a planned and systematic enhancement to tourism and a stimulus for development of many facets of Galveston Island, the study was initiated with an intense three-day "Charrette" in which members of the study team together with key city personnel convened to review Galveston's history, tourism and transpor-

tation facilities. The areas of special expertise represented by the study team included the following:

Attractions Development and Market Analysis

William L. Haralson
Economics Research Associates
Dallas, Texas

Transportation Assistance & Analysis

Robert W. Feldsburg
Alan M. Voorhees & Associates, Inc.
Aurora, Colorado

Programming & Interpretative Design

Barry Howard & Fred Blumlein
Barry Howard & Associates, Inc.
Scarsdale, New York

Planning and Physical Design

Boone Powell, AIA & Coy Ballard, ASLA
Ford, Powell & Carson, Inc.
San Antonio, Texas

Management & Operations Analysis

Petr G. Spurney
Petr Spurney & Associates
Washington, D. C.

The participation of various local interests was essential, and the following local groups and agencies were among those included:

The City of Galveston

Galveston City Planning Department
Galveston Traffic Department
The Galveston Wharves
The Galveston Historical Foundation
The Moody Foundation
The Chamber of Commerce
Park Board of Trustees
Galveston County Cultural Arts Council
Central Plaza Merchants
Strand Association
Hotel/Motel Owners Association

The product of this effort is reflected in the material contained within the study document. As expressed in detail by the Study team's initial proposal for the work, the principal goal and various secondary goals of the Galveston Connection are as follows:

Principal Goal:

Identify and implement a unique, economic and efficient system of connecting people with major tourist and commercial activities in Galveston. This system should spur a growth of year-round tourism on the island, improve the economy and promote the development of a new range of permanent tourist-related and other ancillary jobs.

Secondary Goals:

Find ways of bringing large numbers of people into the Central Historic Area and

particularly, to The Strand and the Center for Transportation and Commerce without imposing additional automobile traffic and consequential parking requirements in that relatively dense area.

Identify ways of providing interesting interpretive experiences for visitors not only at the points specifically dedicated to reflecting on Galveston's history and society but while in transit between these two points as well.

Develop a mutually acceptable plan to provide the public an opportunity to observe the Wharves operations and the Port and its commercial activities by developing a deliberate and carefully conceived plan for visitor traffic without interfering with the regular duty affairs of the industrial and commercial community which for the most part occupy these streets.

Provide the basis for an intelligent reappraisal of potential resumption of mass transit between Galveston and Houston by rail.

Determine need for and feasibility of potential new interpretive facilities such as a Maritime Museum at the second level of Pier 25, a potential Corps of Engineers project, a visitor's facility somewhere in the downtown area and public appreciation and interpretation of the "Elissa" now that it has been returned to Galveston for final restoration.

Create potential new tourist themes for Galveston that will greatly increase both the quality and quantity of tourism on Galveston Island.

Promote a new spirit of cooperation and team effort between beach front and downtown businesses and commercial interests, which in turn will result in a better image and feeling in the community.

Contribute to the revitalization of The Strand as both a place to live as well as to work. With the re-institution of trolley service from UTMB and other fringe areas such a transportation system could be employed by residents going to and from work and home as well as by tourists. This same compatible utilization can be seen in the case of the cable car routes in San Francisco.

Establish a concept that is adaptable so that in years to come, the community can bring into focus yet unidentified activities which will be developed as tourism grows and at the same time bypass components which have not lived up to their expectations without eroding the basic system.

As the initial step in accomplishing these stated goals, the study document pre-

sents consultant recommendations which are intended to accomplish three primary functions; these can be summarized as follows:

1. To examine and identify the events, places and qualities of Galveston Island which constitute visitor attractions.
2. To devise a system of linkage both physical and philosophical between these focal areas which would support and enhance the visitor experience.
3. To characterize and evaluate the viability of specific proposals for implementing The Connection.

It is the intent of the consultants that the recommendations generated by the study effort shall serve not as a generalized plan to be achieved at some vague future time, but rather as a formula for the implementation of immediately manageable concepts precedent to others which will develop as conditions relative to tourism evolve.

To this end, the major sections of the following text outline the primary findings of the study. Also, included for further documentation of the study process are the individually prepared analyses of consultants from four areas of the investigation: Interpretative Planning; Transportation; Planning and

and Physical Design; Market; and Management and Operations.

This study was accomplished over a period of several months beginning in February, 1979, and the analyses prepared by individual consultants were submitted in April, 1979. It should be noted that all cost estimates in the individual analyses and the primary text are quoted in 1979 dollars.

The Consultants
January, 1980

Special thanks are extended to those
whose contributions funded the Galve-
ston Connection:

City of Galveston
Eiband's Department Store
Galveston Historical Foundation
Galveston Wharves
Gaido's Restaurant
Harris and Eliza Kempner Foundation
Mitchell Energy and Development Corporation
Moody Foundation
Occidental Trading Company
Strand Merchant's Association

EXISTING CONDITIONS

The Hypothesis

Assume for a moment that it was possible to raise oneself high above Galveston and to remain suspended, recording all of the activities which take place on Galveston Island, Pelican Island and the harbor which lies between, throughout a period of 12 months. Were this fantasy a possibility, it would surely become evident that the patterns of movement both by people and machines comprise an exciting and provocative matrix.

Perhaps the most apparent image would be one of the complex of industry and transportation associated with the Port. Grain and cotton are transferred from warehouse to ocean going vessels; every manner of goods and machinery captured within sealed containers are lifted by giant cranes from vessels to wharf and eventually to railroad cars arrayed on parallel track as far as the eye can see.

Commercial boats in quest of fish and shrimp daily leave the Port for nearby fishing beds. Charters regularly depart the pier to explore the Gulf for game fish.

Vessels are constructed and repaired at a giant shipyard and smaller vessels of every sort traverse the harbor. Pleasure boats add to the scene so that at almost any time the Port is a complex of activity dedicated

to a broad range of maritime objectives.

Vehicular traffic can also be observed, particularly during the summer season, in a continuous procession across the causeway and on to the Island, bringing sun lovers and fisherman alike to this beautifully situated resort Island. At other times of the year, however, the vehicular traffic decreases substantially and much of the Island outside of the Port seems almost static.

Looking closer at the city, one can identify the broad Strand; and the Santa Fe building which is its western terminus. One can pick out the many beautifully restored Victorian homes of the residential historic districts and can see the concentration of business in the downtown area. Activity around Old Red on the UTMB campus is constant if somewhat subdued. Far to one side of the scene is Sea Wolf Park and across the harbor, the sites of the Lone Star Drama and the Sea-Arama Theatre.

Motels and hotels dot the southern perimeter of the Island and in season, thousands of tanned visitors may be seen from Stewart Beach to the more exclusive residential areas of the West end. Campers and picnickers fill the parks, while water slides, golf courses and tennis courts are in constant use.

In a sense, each of these activities is

parallel and on-going almost without regard to the other. In another sense, each of these activities seems directed to a different kind of person.

If it were possible to weave a thread from area to area which would allow all of those participating in each event to be easily transferred from place to place, while at the same time creating an opportunity for them to understand the context and significance of their experience, then it would be possible to understand the basis for the Galveston Connection.

One would discover as well, in this remarkable overview, not only the logic of connecting these existing facilities, but also the absence of certain other events which might now logically be made available to the visitor through the Connection itself.

For example, a Center for Transportation and Commerce developed under the auspices of the Moody Foundation and occupying the entire site west of the Santa Fe building would easily "connect" to the mainstream of the system. Redeveloped Pier 19 at the edge of the harbor would offer a view of the Mosquito Fleet, a restaurant and the berthing for a harbor tour. This area too can be connected within the planned system. Sea Wolf Park if greatly expanded to accommodate new and interesting attractions would become accessible by boat as well as automobile.

At Pier 25 the upper floor, converted to a cruise ship terminal and Maritime Museum, would be made accessible from a new parking garage established diagonally across from the Santa Fe building by an overpass across the active railroad tracks. To the east of this Pier, the Elissa, a sailing ship being restored by the Galveston Historical Foundation could be permanently berthed at Pier 22. If directly linked by an element of the Connection to attractions at Pier 25, public access to the restoration process would be facilitated.

With all of these events to be experienced, a single day's visit will simply not be adequate. As a consequence, new hotels must be built and restaurants and shops must grow to respond to the demand of these new visitors.

The formula is time worn and tested. Provide the facility and the visitor will come. Prove that the visitor will come and services will grow in response.

In the simplest terms, this is the essence of the Galveston Connection.

The Audience

In order to measure the potential for the various components of the Connection, it is desirable to understand the nature and magnitude of those visitors who might be expected to use them.

On the surface, projecting such information would seem relatively simple, given the known demographics within one-hundred miles of Galveston and the documentation of visitor statistics in recent years. However, this information may well be more misleading than beneficial.

For example, past statistics relating to Strand attendance can only reflect the extent of the existing facilities and attractions along the Strand. Although great strides have been made, these are relatively few, considering the potentials of the street. In addition, the Center for Transportation and Commerce, a major interpretive event, is barely out of the conceptual stage. How then can we rely on any past information dealing with Strand visitation until these facilities become available to the public. Similarly, the Port is an attraction to tourists, but conflict with cargo operations makes visitation difficult at best. As discussed in the Pier 19 Master Plan report, Piers 19 and 22 are particular cases in point. Hence, present statistics are not a meaningful indicator of future potential for these sites either.

Yet the great potential of these experiences is fundamental to The Connection. Past sta-

tistics, however, do indicate clearly that Galveston is already a major tourist destination. The 1978 Texas Visitor Industry Report (Texas Highways, May 1979) lists Galveston as the sixth most frequently visited city in the State, with a total estimate of over two million person visits. Of this total, approximately 93% are classified as "short term" visitors.

A visitor profile, therefore, extrapolated from past and current information must of necessity reflect a visitor who is predominately drawn by the beach during the summer and tends to stay on the Island for only one day at a time. At present most multi-day visits also occur during the summer season, as indicated by figures drawn from information developed by the Hotel/Motel Association and the Beach Park Board. According to this data, the occupancy percentages for Galveston hotels/motels averaged approximately 88% during June, July and August for the years 1972-73 through 1977-78; while occupancy averaged only 55% for the remaining nine months.

Although these facts certainly underscore the importance of tourism to the city, the high rate of summer visitation is also evidence of the fairly narrow range of visitor interests, and an indication that non-beach related tourism is hampered by the lack of year-round major attractions and very real transportation difficulties.

CONCEPT

The Plan

As in any good planning program, the primary objective is to project design toward an ultimate realization of the whole with the assumption that integral components will develop on a "phased" schedule commensurate with the success of the program. Obviously, both good judgment and fiscal responsibility militate against implementing the plan in its entirety at the outset. By the same reasoning, however, it would be equally inadvisable to proceed with step one, without a well engineered and integrated series of successive steps. The "Connection" is, therefore, presented as a "Master Plan" with increments that can be implemented strategically and as funds become available.

The Connection may be divided into two categories.

The Events: or the various activities which should be available and accessible.

The System: or the transportation and linkage elements connecting the events.

The Events

Of the events, perhaps the most prominent and potentially broad based is the Strand, Building on recent preservation successes, the restoration and reuse of this significant

historic area can easily become an even more important focus for entertainment, shopping and culinary pleasure. Concentrated at first between 20th and Rosenberg Avenue (25th Street), the Strand would develop eastward toward UTMB, given the Connection and increased activity as a catalyst. Mechanic Street would also benefit with expanded restoration efforts bringing new tenants to long empty buildings. Though of a different era, the restoration of the Santa Fe headquarters, re-christened Shearn Moody Plaza, will add further historic accent to the Strand experience and bring many hundreds of additional people to the Strand each day.

To the west of Shearn Moody Plaza on acreage once the terminus for the Santa Fe Railroad, an event of a different kind is proposed for development. Sustaining once again the historic theme of the Strand area, the Center for Transportation and Commerce will bring artifacts, media, graphics and myriad dramatic presentations together to convey the exciting story of Galveston's unique transportation heritage. Everything in the program reinforces the sense of quality and distinction which underlies the city's early affluence.

The many visitors circulating between the Strand and the Center will be joined by tenants of the revitalized Shearn Moody Plaza office tower. Still more activity will be generated by other visitors whose destination may be the new multi-

story parking garage to be built northeast of the Plaza or the new Cruise Ship Terminal proposed for the second level of Pier 25.

The generous space at the upper level of Pier 25 is proposed to serve both as a terminal for cruise ship passengers and as a Maritime Museum which could be developed as a complementary part of the Center for Transportation and Commerce.

The visitor facilities at Pier 25 could be extended the length of the structure offering access to its eastern limit and spectacular harbor activities. At the extreme eastern end, a proposed viewing gallery would provide an excellent vantage point from which to observe and understand the restoration of the Elissa, if berthed permanently at Pier 22..

Just to the east of Pier 22, the planned redevelopment of Pier 19 is seen as yet another major Connection event. Here the existing attraction of the Mosquito Fleet, fish houses and party boats will be enhanced by additional restaurant, retail and visitor facilities.

At 20th Street a few steps away from Pier 19, The Connection envisions using to best advantage the new visitor infor-

mation center soon to be opened on the Strand. Conveniently relating the eastern end of the Strand area to the Port, the center will provide the visitor a personal orientation and introduction to the City, particularly since it is being developed in association with the new Galveston Historical Foundation offices in the restored Hendly Building. Assuming the provision of parking facilities at this location, visitors would be able to leave their cars at the Galveston Historical Foundation Center and use the Galveston Connection System to move around the Island.

Beyond these specific proposals, still more activities can be added to The Connection's portfolio of events, of course, complementing all the other exciting Galveston attractions, such as the beach, the historic districts, and the Open House. For example, visitor facilities at the Marine Science Center, a Corps of Engineers interpretative presentation and expanded attractions at Sea Wolf Park could be added to the matrix - to name only a few intriguing possibilities.

Together, these many events would bring the visitor, for the first time, in contact with the heartbeat of Galveston. -- The wharf and its industrial activity, the harbor and its maritime traditions, the Strand and the Railroads -- adding an incredible dimension to visiting and experiencing the City.

The System

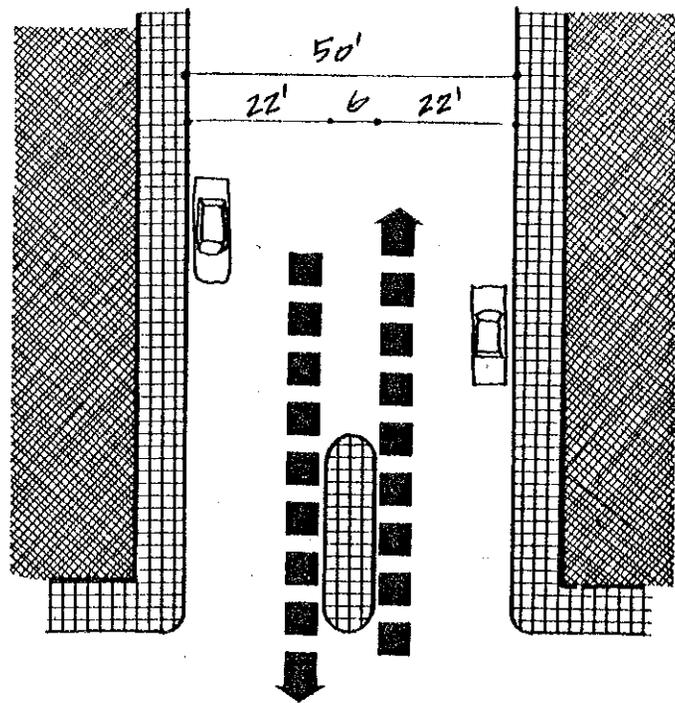
Obviously, the combined attraction of these events could well impose a severe strain on the immediate community through the influx of automobiles which traditionally bring the visitor from the mainland. Increased congestion, parking requirements and pollution could outweigh the benefits. For these and other reasons there will be a need to provide mass transportation from various sections of the city to the major visitor attractions as well as intra-event linkage to optimize the experience.

A pivotal component of the System proposed by the Connection is the return of trolley service to the City. The trolley, in its ideal final form, would provide linkage through a three segmented operation. Along the Strand as part of the first segment, trolleys would move up and down the historic street, connecting the Center for Transportation and Commerce and Shearn Moody Plaza with 20th Street at the eastern end of the area. In the second, service would be extended east of 20th Street, down the Strand to the University of Texas Medical Branch, providing access to and from the Strand and UTMB areas. The third segment of the system would tie activities and events on the north-side of the Island with those along the beach-

front on the south, via Mechanic (in effect creating a convenient trolley "loop in the Strand area) and 21st Street.

As presently visualized, the trolley would be of vintage character (1820-1920) adapted for on-board propane, butane, diesel or electric power. New tracks would be laid down the center of the Strand, and reuse of the existing rails on 21st Street and Mechanic Street would be investigated, along with the possible restoration of the once handsome brick paving now hidden by asphalt.

It should be noted that placement of the trolley on the street will be very important. Optimum placement should provide adequate visibility, easy and safe operation, convenient passenger loading and unloading, and minimum conflict with vehicular and pedestrian traffic. As cases in point, the Strand is an example of a relatively wide right-of-way situation, with Mechanic as the prototypical narrow street. (Figures 1 and 2). Also, consideration should be given to a reorganization of vehicular circulation patterns on the Strand along with introduction of the trolley. As illustrated in Figure 3, such an arrangement could be on a block-by-block basis building on the existing one-way streets. This would allow a primacy of pedest-



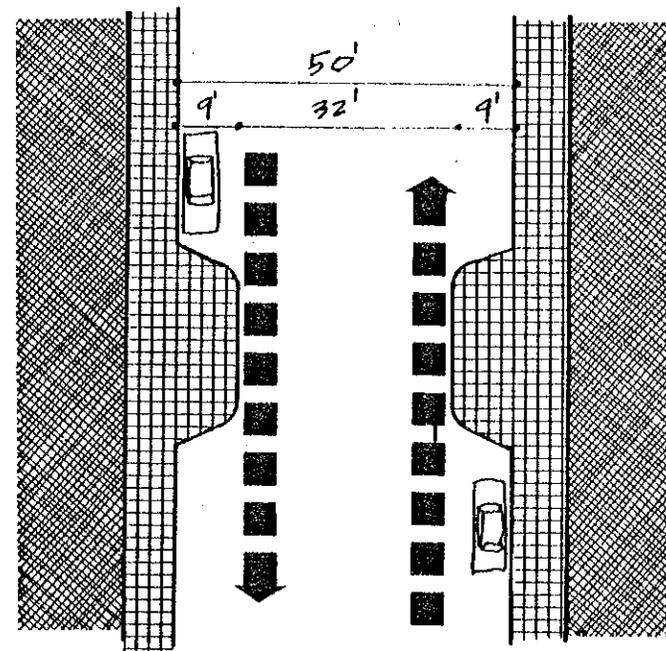
1. Access At Intersections

ADVANTAGES

- Allows passenger loadings at logical points of pedestrian access
- Does not eliminate existing parking
- Allows staged implementation of tracks

DISADVANTAGES

- Center island not as comfortable or protected
- Auto passing lane periodically eliminated by trolley



2. Mid Block Access

ADVANTAGES

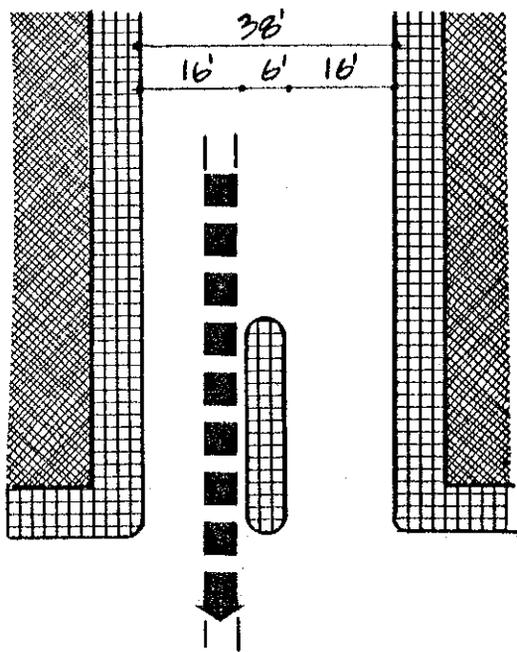
- Simplifies major intersections
- Utilizes building canopies for waiting areas

DISADVANTAGES

- Eliminates some on-street parking
- Parking could slow trolley and result in accidents
- Not as suitable for phasing

TROLLEY SERVICE: STRAND

FIGURE I



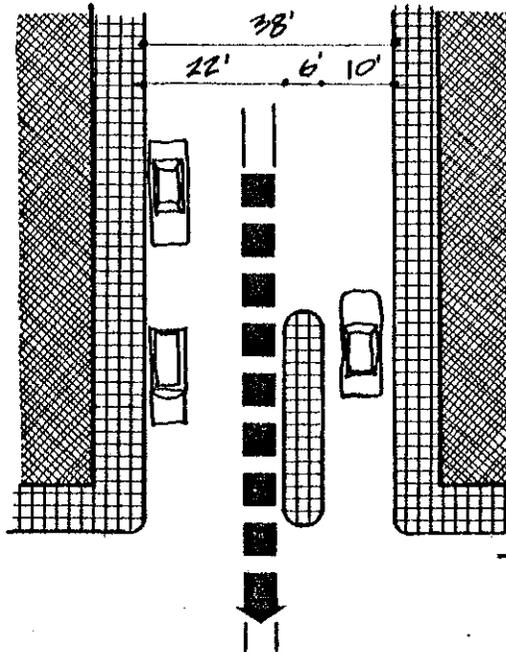
1. Island At Centerline

ADVANTAGES

- Provides logical pedestrian access at major intersections

DISADVANTAGES

- Eliminates all on-street parking
- Street too narrow for two-way traffic



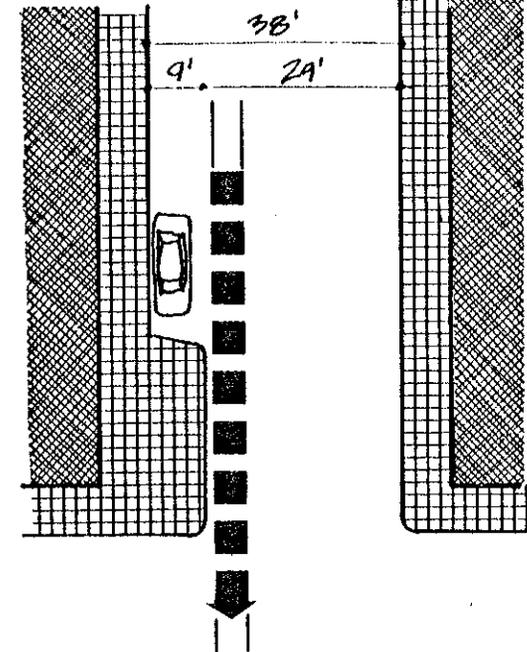
2. Track At Centerline

ADVANTAGES

- Provides logical pedestrian access at major intersections

DISADVANTAGES

- Eliminates on-street parking on one side
- Street too narrow for two-way traffic



3. Island At Sidewalk

ADVANTAGES

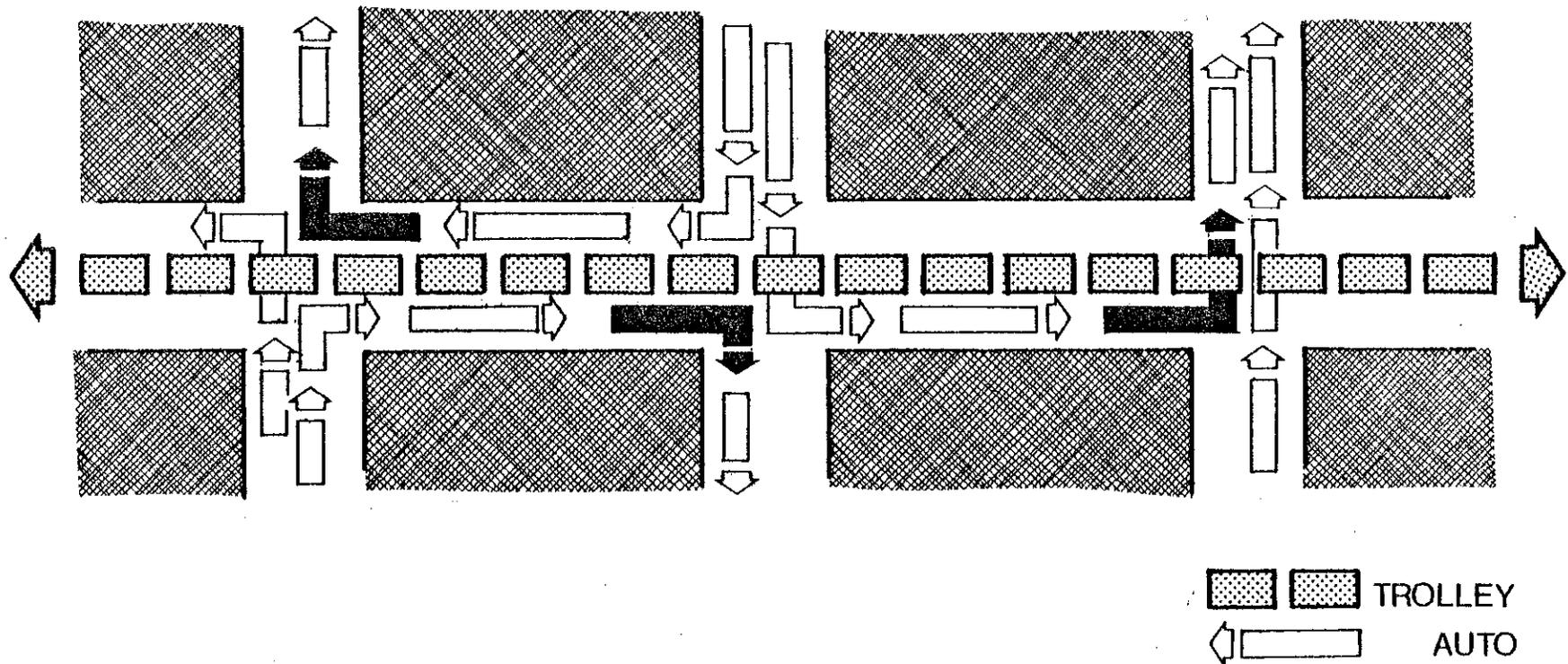
- Maintains on-street parking
- Access could be at mid-block

DISADVANTAGES

- Decreases available on-street parking spaces
- Possible interference with parked cars

TROLLEY SERVICE: MECHANIC

FIGURE 2



PROPOSED GENERAL CIRCULATION ON THE STRAND: UTILIZING THE EXISTING ONE-WAY STREET SYSTEM, THE STRAND WOULD REMAIN TWO-WAY, BUT WITH NO TRAFFIC PROCEEDING MORE THAN ONE BLOCK BEFORE TURNING ON TO CROSS STREET.

- The Strand would become a more pleasant pedestrian environment.
- The Strand would incorporate the Trolley as both a convenient mode of transportation and a positive addition to the ambience of the district.
- All turning movements and service access points would remain.
- All on-street parking maintained.
- Proposed system could be accomplished in stages.

STRAND CIRCULATION

FIGURE 3

rian use on the Strand, with continued provisions for on-street parking and business services.

Second only in impact, is the Harbor Tour, which would leave from Pier 19 and provide the visitor with an extraordinary introduction to waterfront and harbor activities. Live interpretation and film aboard the tour boat would add further excitement to the unique water-level views of giant tankers and cranes. With the provision of dining facilities aboard the vessels, nighttime dining tours could also be added to the program.

In addition to the hour to two hour tour of the harbor, a regular stop for each tour would be Sea Wolf Park which could be expanded to include interpretative experiences evoking a sense of the multi-national heritage brought to Galveston by thousands of immigrants during the late nineteenth and early twentieth century. The existing naval vessels as well as other newly acquired artifacts could remind the visitor of Galveston's strategic role in two World Wars.

Additional elements of the Connection System would also provide badly needed linkage

and access. The Strand trolley and the Harbor Tour as well as all of Pier 19 would be inter-connected by the redevelopment of 20th Street from the Strand to Pier 19 into a convenient well landscaped and signed corridor for pedestrians.

A more dramatic north-south link between the Strand and the harbor would be provided via a raised walkway connecting the new multi-level parking garage on Rosenberg Avenue and the Strand with the upper floor of Pier 25. Most visitors would make the transition between the garage and the proposed Cruise Ship Terminal/interpretive areas on foot, pausing once or twice at glazed "bubbles" on either side of the walkway, suspended above the many parallel tracks.

Electric vehicles -- perhaps adaptations of the traditional Galveston "cottoncart" -- could transfer baggage and also provide transportation for the elderly, the handicapped or those carrying luggage. These same vehicles could be employed to convey the visitor down the length of Pier 25 to an interpretative overlook perched above Pier 22.

As interest in this overview of the harbor and the "living history" associated with the Elissa, if berthed permanently at Pier 22, intensified, the addition of a more formal people-mover should

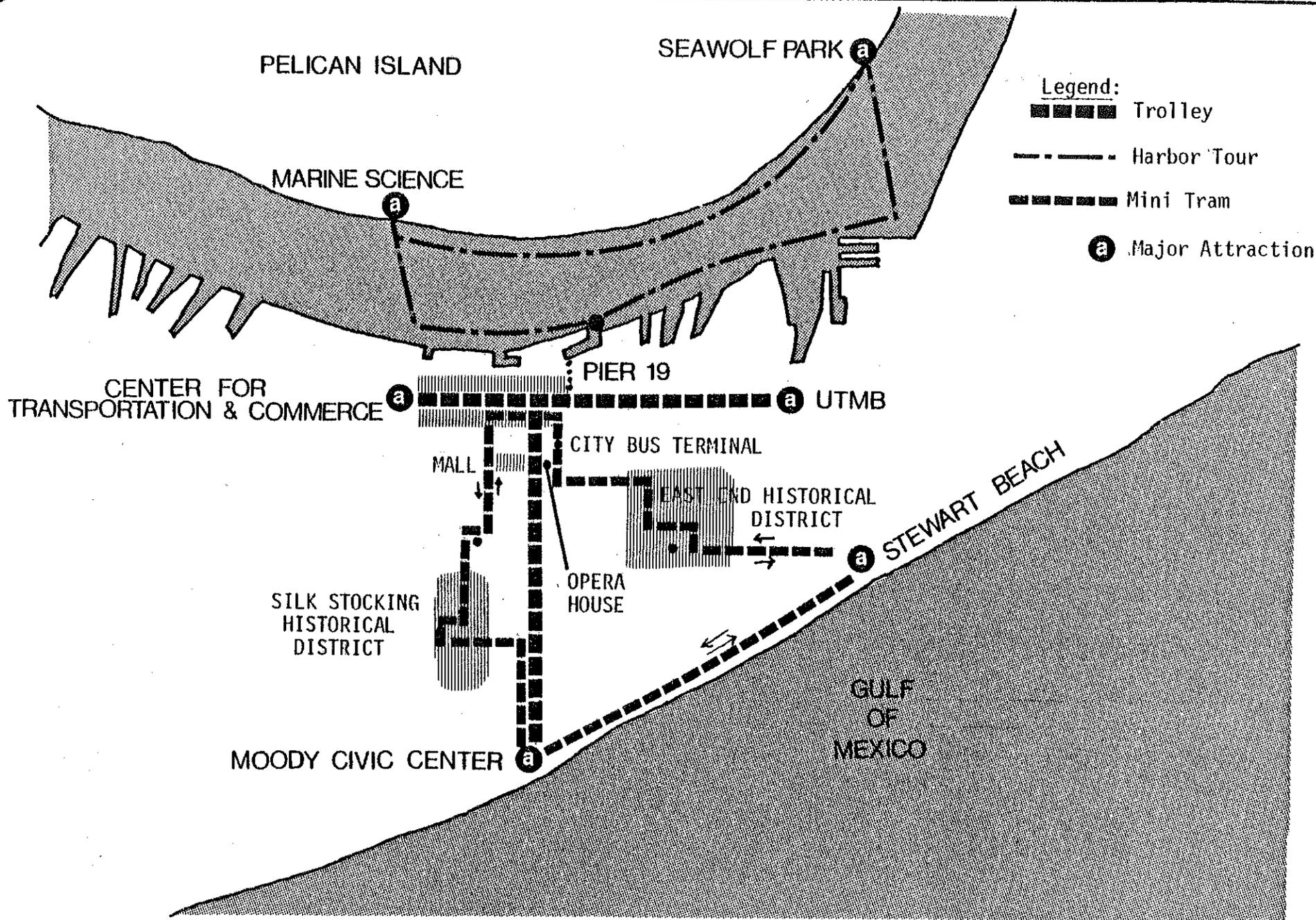
be investigated. The substitution of the more disciplined treatment of the visitor will permit a more controlled interpretive effort. Despite the desirability of such a controlled program, present projections even expressed optimistically would seem to discourage an expensive engineering system at this time. Given the more permissive technique combining pedestrian access with individual electric carts, interpretation will be provided at fixed stations distributed along the path.

In addition to the various elements of the system thus far described, incentive for the sun and surf crowd to visit this nucleus of activity is provided not only by the trolley link along 21st St. to the Moody Center, but a tractor drawn rubber tired minitram, operating a variety of flexible tour schedules from Stewart Beach, through the residential historic districts, the downtown area and the Strand. Schedules and routes, as well as the on-board narrated tour, should be varied to satisfy demand and to reduce the impact of tourism on the residential neighborhoods.

Finally, the Connection System would reach well beyond the limits of the Island to the great population center of Houston through the re-institution of excursion rail service between the two cities. It is, of course,

no more than fitting that the excursion train should integrate with the other system components at the inter-modal arrival building at the entrance to the Center for Transportation and Commerce. If future conditions allow, excursion service could be expanded to a fullfledged commuter train operation, potentially adding yet another dimension to the Connection concept as well as the transportation and economic provile of the Island.

Thus is the transportation "circle" of the Connection completed, provided options and enticements to the many Island visitors unique among comparable visitor opportunities. This overall concept of The Connection is graphically illustrated in the following Master Plan diagram (Figure 4).



MASTER PLAN

FIGURE 4

IMPLEMENTATION

A formula for implementation of the several components which constitute the Galveston Connection presupposes at the outset an understanding of the nature, cost characteristics and ultimate application for each component. These descriptions are included in this section.

Once these characteristics have been reviewed in their relative order of priority, it is then necessary to identify the various factors which will impact a decision to implement one or all of the components at any given time. These factors include: (As illustrated in Figure 5).

- 1) The Magnitude of Visitation - Although one cannot project in specific quantities the number of additional visits to Galveston which would immediately signal the implementation of another connection component, obviously the most available statistic on which such implementation would be justified is a significant increase in overall visitation.
- 2) Visitor Profile - Sheer numbers

are not the only visitor connected criteria which might well influence implementation of a given component. The nature of the visitor is also an important consideration. For example, if the current balance in terms of the visitor profile is heavily weighted in favor of the beach oriented visitor (young, single or young marrieds with small children), then it stands to reason that components relating to those visitor types and their likely destination would be of primary concern. If, however, through the construction of attractions around the Strand and waterfront, the complexion of the visitor would change toward a more adult family group with more diversified recreation objectives, then such a shift in the visitor profile could well signal the implementation of new connection components.

- 3) Requirements for Local Mass Transportation - Although the connection is conceptually oriented toward visitor utilization, there is an acknowledged potential for direct application to community needs.

Should certain urban development programs reach maturity particularly in the form of hotel and residential construction

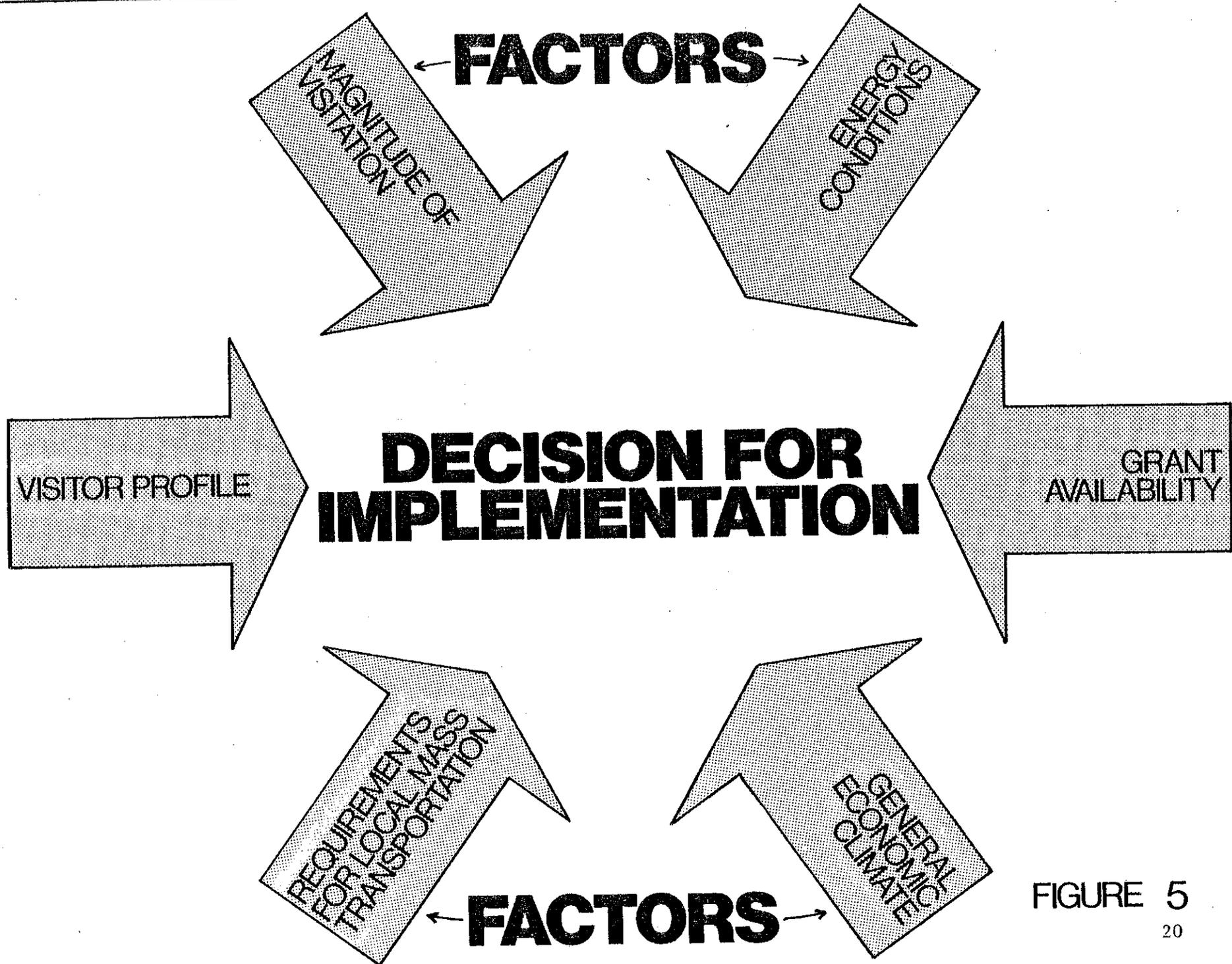


FIGURE 5

along the Strand close to U.T.M.B, the consequential emergence of ridership on a Strand transportation system might well be an important factor in the implementation of that system.

- 4) The General Economic Climate - All other factors notwithstanding the environment for implementation of connection components could very well be strongly influenced by economic factors which transcend not only the connection concept but Galveston as well. Both State and National economic conditions might tend to encourage or discourage further implementation if and as those conditions might have substantial impact on both visitation and construction costs.
- 5) Grant Availability - Insofar as possible, the more costly components of the connection are viewed as being funded in part or in total by agencies outside of the community. The ebb flow of such funding, particularly UDAG, UTMA, and EDA monies, are of prime importance to implementation. Clearly the availability of these funds would have to be considered in the scheduling of any major cost item in the connection.

- 6) Energy Conditions - The connection components have been prioritized in such a way as to basically reflect circumstances relating to the visitor arriving by automobile and bus. While these conditions are likely to prevail for some time, serious changes in the energy situation might well influence the revitalization of inter-urban mass transit. Under these conditions, the component or components meeting such a need could very well be accorded a new and higher priority and might be implemented based on this consideration alone.

Funding sources for all and any of the connection components should be considered from every possible area. A brief review of funding potential is listed in this section.

Finally, an appropriate organizational framework within the community should be developed to insure the orderly implementation and operation of the system. Recommendations for such an organization are incorporated in the closing pages of this section

THE COMPONENTS

The following describes the specific characteristics of the various components which collectively constitute the Galveston Connection.

Ground Transportation Connecting the Strand, Historic Residential Districts and Beaches (Figure 6)

A minitram operated as part of the municipal Island Transit system is recommended. The service should be routed as would be necessary to provide access to and from major tourist destination points on the Island including: the Strand area, the residential historic districts, Moody Civic Center and Visitor Center, beach-front hotel/motel accommodations, and Stewart Beach. A "loop" routing configuration is preferred to allow users to use the system for access to any or all of the destinations and return to their automobiles as desired.

Projected annual ridership is estimated at \$100,000 with the following unit costs being applicable:

| | |
|-------------------------|---------------|
| Minitram (power unit) | \$25,000 each |
| Minitram (trailer unit) | \$10,000 each |

Operating and maintenance costs (including driver wages) are estimated to be \$12.00/hour for the power units and \$4.00/hour for the trailer units, making the cost for a two-unit train approximately \$8.00 per round trip.

These relatively low capital and operation costs make immediate implementation of the element very feasible. It will also be possible to operate this element as a private business if necessary.

Harbor Tour (Figure 7)

This component consists of an interpretative boat tour of the general harbor area originating from Pier 19; it also would provide alternative transportation between the Island and Sea Wolf Park.

A conventional hull vessel(s) with a maximum capacity of 100 to 150 passengers is recommended. Acquisition costs for each vessel would range between \$250,000 and \$500,000 depending on quality and appointments. (Figure 8). Typical operating and maintenance costs would be in the range of \$110-\$120 hourly at an annual cost of \$100,000 to \$125,000. (Memorial Day to Labor Day season only). Annual ridership is projected at 106,000 passengers, and it is anticipated that these costs would be clearly offset by reasonable passenger fares. Annual costs for year-round operations would, of course, be greater, but could be justified given appropriate demand.

It is recommended that the system be operated by a private investor.

STRAND

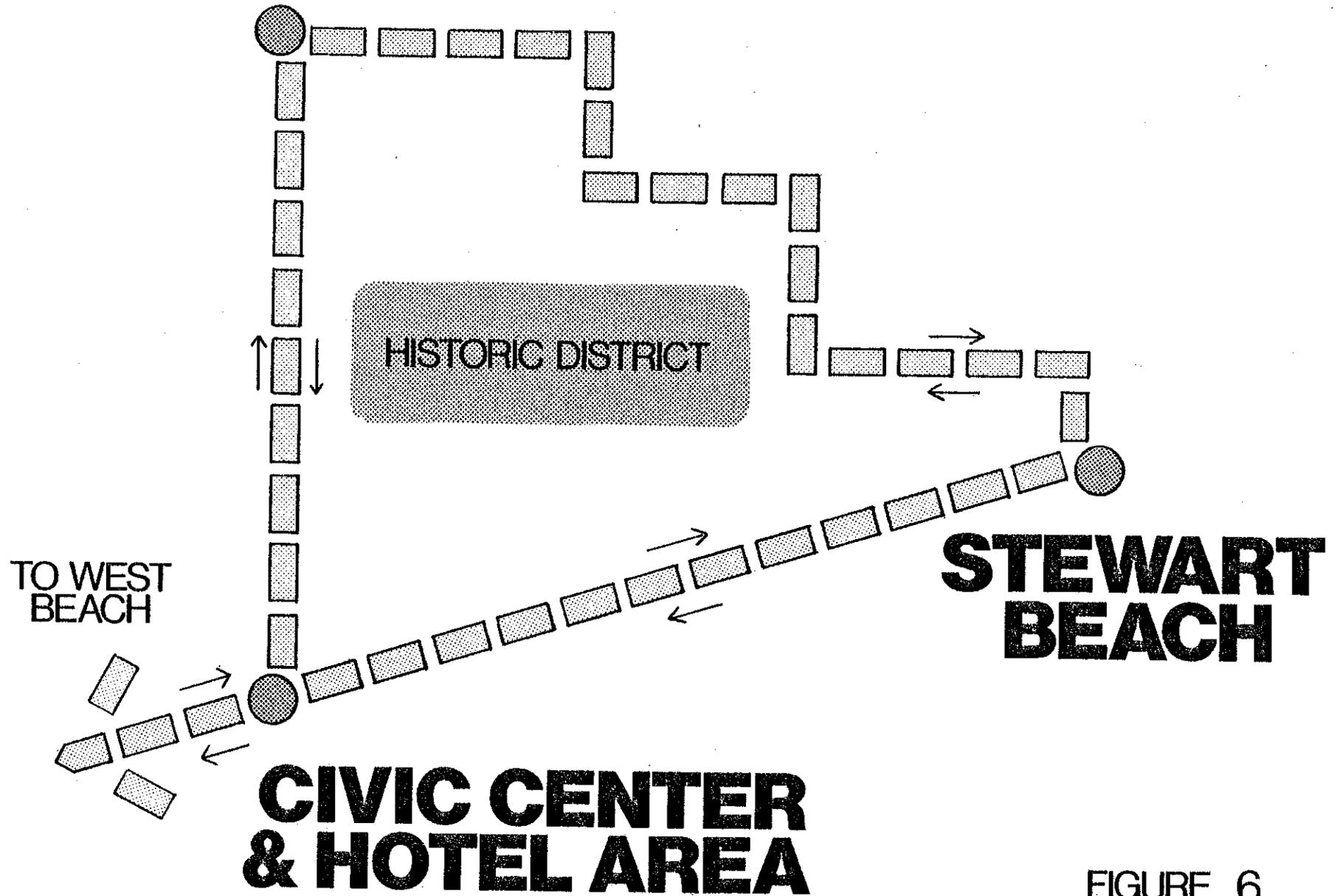
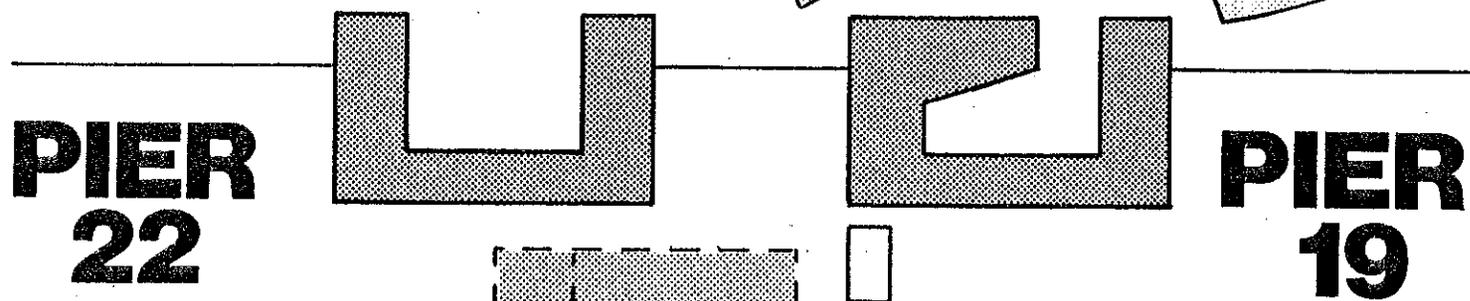


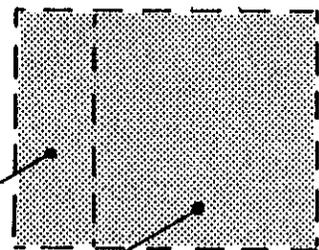
FIGURE 6

SEA WOLF PARK

HARBOR TOUR



PARKING

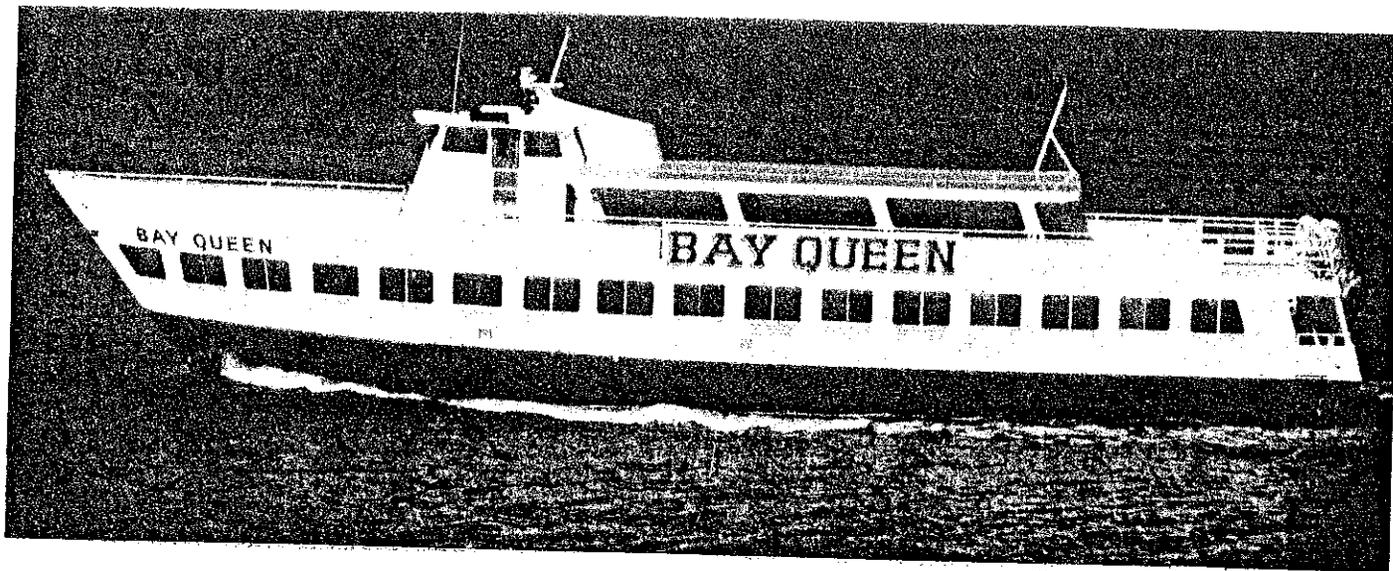


WALKWAY

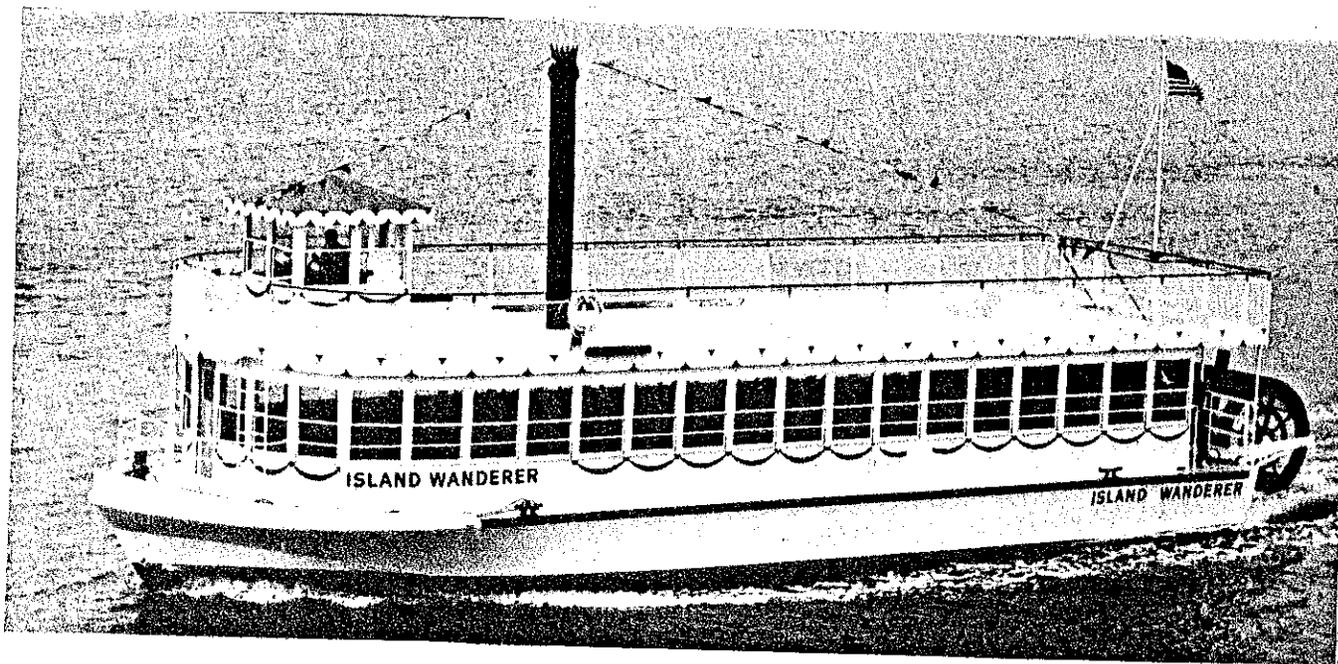
WELCOME CENTER
(POSSIBLE LOCATION)

STRAND

FIGURE 7



CABERARET - RESTAURANT VESSEL



65' - 95' PASSENGER FERRIES

FIGURE 8

The Trolley (Figure 9)

Re-instituting trolley service is a central focus of The Connection idea. It is recommended that a vintage character trolley car running on a fixed rail be used. (Figure 10 and 11). The vehicle(s) should be adapted for on-board power fueled by butane, propane or diesel; self-contained electric power, although somewhat less satisfactory for mixed traffic situations, should also be explored as alternative power source. An overall trolley system composed of three inter-connected lines or segments should be planned; these are as follows:

The Strand Line: running to and from the Galveston Center for Transportation/ Shearn Moody Plaza (Strand at Rosenberg Ave.) and 20th Street.

The Strand Line (Second Phase): extension of service running to the UTMB campus.

The Beachfront Line: running to and from the Strand area and Seawall Boulevard via Mechanic (creating a trolley "loop" with The Strand Line) and 21st Streets.

A projected annual ridership for the Strand line of the trolley system is estimated at 200,000 round trips. The following unit costs can be applied; these are "ballpark" figures and will vary as special conditions arise:

| | |
|-------------------------|-----------------------|
| Trolley cars | \$70,000-\$80,000 ea. |
| Trackage (single track) | \$100/foot |
| Trackage (double track) | \$200/foot |

Operation and maintenance costs are estimated at \$25 per vehicle hour of operation; that is inclusive of expenses for maintenance of the way, maintenance of the vehicles, fuel costs, driver wages, and general administrative costs. If two trolleys operated throughout the year, for 14 or 15 hours per day, for example, the annual operation and maintenance costs would be between \$250,000 and \$275,000; or for one car operation, approximately \$125,000-\$150,000.

It is also recommended that the trolley be operated as part of the municipal Island Transit system. This would allow a more coordinated approach to transit on the Island and should reduce overhead and operational costs.

Link Between the Strand and Pier 19 (Figure 7)

A street level link between the Strand and Pier 19 should be created, using 20th Street as a well-defined pedestrian corridor. Appropriate landscaping, paving, signage, and a signalized crosswalk at Port Industrial Boulevard (Water Street) should be planned, as well as similar steps to closely identify this link with the nearby Galveston Historical Foundation visitor center and/or off street parking facilities. An initial phase of this element is already planned and funded as a part of scheduled improvement to the 20th Street entrance

TRANSPORTATION MUSEUM

MEDICAL CENTER

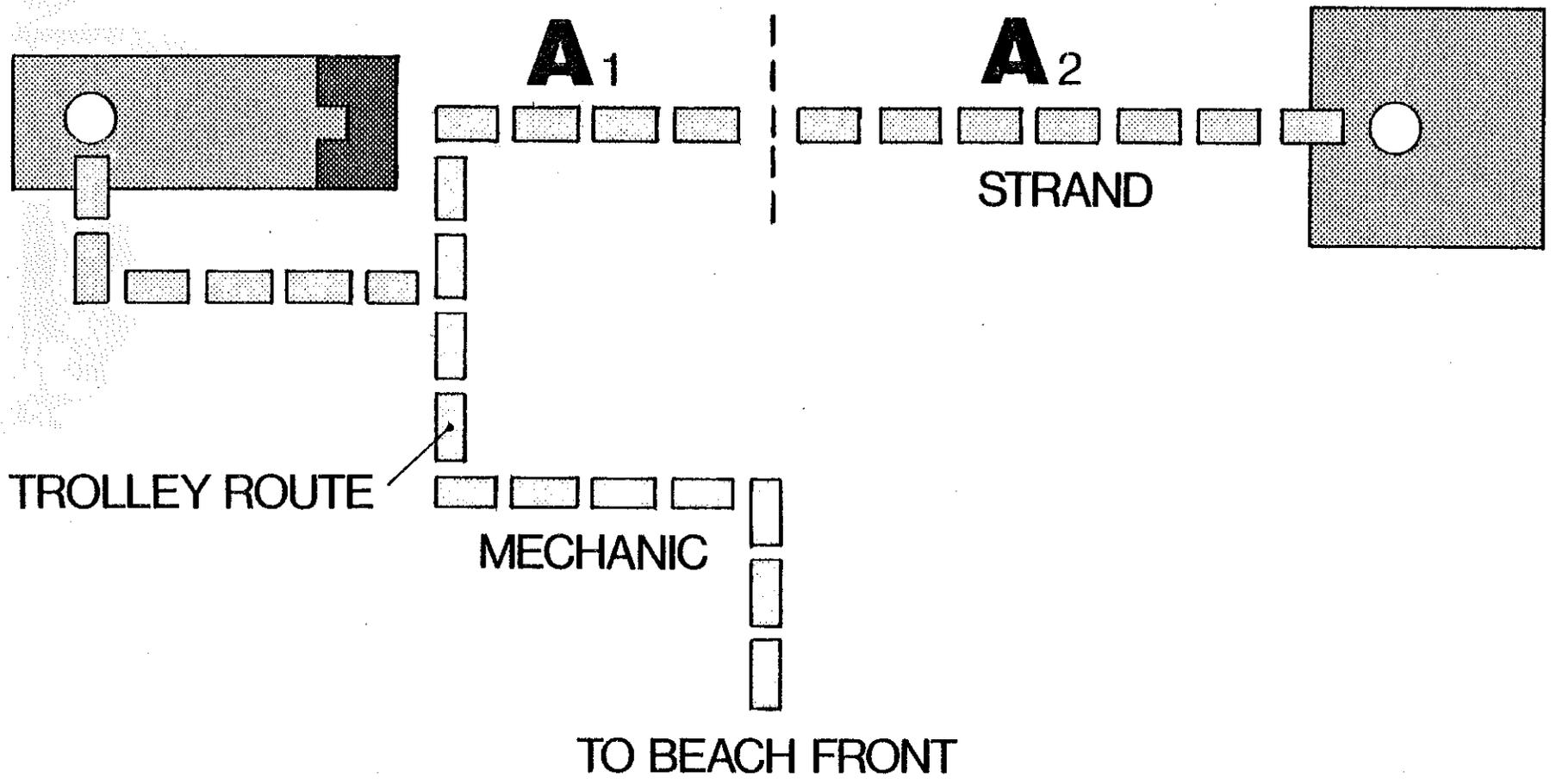
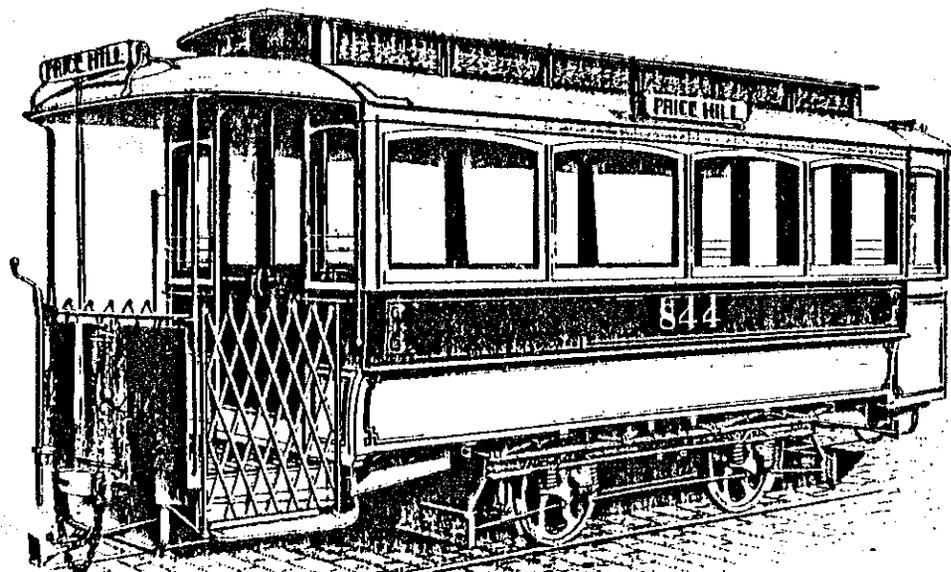


FIGURE 9

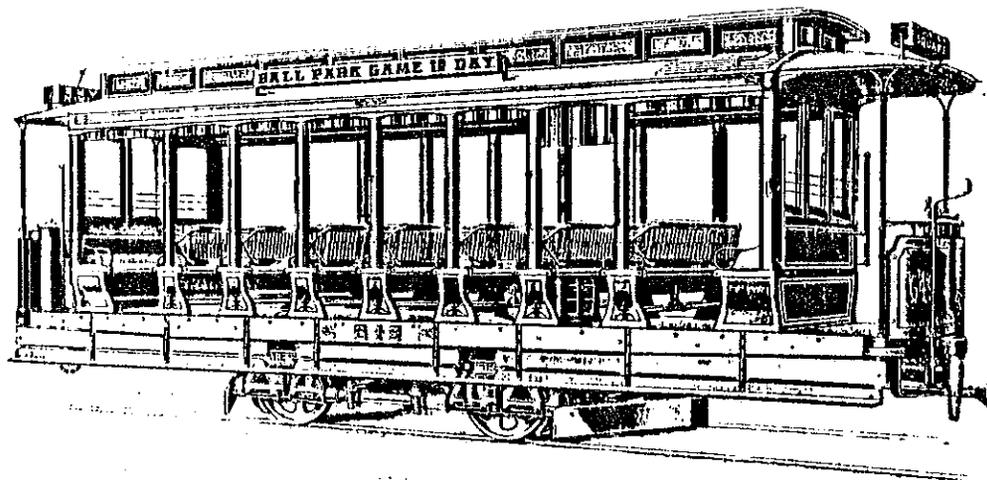


GENERAL DIMENSIONS

| | |
|-------------------------|---------|
| LENGTH OVER ALL | 27' 7" |
| LENGTH OVER BODY | 18' 7" |
| WIDTH OVER ALL | 7' 7" |
| WIDTH AT SIDE SILLS | 6' 5" |
| WIDTH OF SEATS | 15" |
| HEIGHT OVER TRACK | 10' 11" |
| HEIGHT RAIL TO STEP | 12" |
| HEIGHT STEP TO PLATFORM | 12" |
| POST CENTERS | 4' 5" |
| WIDTH OF AISLE | 4' 6" |
| WHEEL BASE | 120" |
| SIZE OF WHEELS | 22" |

4 WINDOW CLOSED BOX CAR

FIGURE 10



GENERAL DIMENSIONS

| | |
|-------------------------|-----------|
| LENGTH OVER ALL | 30' 6" |
| LENGTH OVER BODY | 23' 0" |
| WIDTH OVER ALL | 8' 2 3/4" |
| WIDTH AT SIDE SILLS | 6' 7" |
| WIDTH OF SEATS | 13 3/4" |
| HEIGHT OVER TRACK | 10' 9" |
| HEIGHT TO RUNNING BOARD | 12" |
| RUNNING BOARD TO FLOOR | 12" |
| POST CENTERS | 30" |
| DISTANCE BETWEEN SEATS | 17" |
| WHEEL BASE | 120" |
| SIZE OF WHEELS | 22" |

9 BENCH OPEN SINGLE-TRUCK CAR

FIGURE II

of Pier 19, as was recommended by the Pier 19 Master Plan.

Pier 25 Overpass (Figure 12)

An elevated pedestrian link connecting the planned parking garage at The Strand and Rosenberg Avenue with the proposed Cruise Ship Terminal at Pier 25 is recommended. This element should take the form of an overpass linking the upper levels of the two structures. It should be of suitable size and design to accommodate both pedestrians and small electric "cotton wagons" for transferring luggage and/or passengers. Overlooks should be provided at various points for interpretation of the adjacent wharves areas. Funding for construction could be incorporated as part of future UDAG applications; maintenance costs, within the garage maintenance budget.

Harbor Overview (Figure 13)

The idea of an elevated, mechanized "people mover" running above the Port area from Shearn Moody Plaza to Pier 19 or beyond has not proven feasible for immediate implementation. Based on projected demand, the extremely high implementation costs can not be justified presently. As with the proposal for passenger train service, this concept should be retained and re-evaluated in the future.

However, it is entirely feasible to develop a non-mechanized system of walks and interpretative overlooks arranged parallel to the harbor on the roof of Piers 25-22. This system might also accept individual self-propelled vehicles for the elderly or handicapped.

Access to the system could be via the other components such as the Pier 25 overpass or the pedestrian route connecting Pier 19 and the Strand.

Train Link to Houston (Figure 14)

Revival of commuter passenger train service between Galveston and Houston is not feasible at present because of the high costs and numerous difficulties required to implement and operate such a system. However, the concept has potential, and should be kept in mind for the future if proper circumstances evolve.

On the other hand, specially scheduled excursion trains between the two cities is a somewhat more feasible option that should be fully explored. Although it is unlikely that the railroad freight companies which control existing trackage will welcome the prospect, negotiation for shared and reasonable schedules should be pursued. When achieved, the excursion train should be incorporated into the development of facilities for the Galveston Center for Transportation and Commerce now being planned at Shearn Moody Plaza.

**PIER 25
CRUISE
TERMINAL**

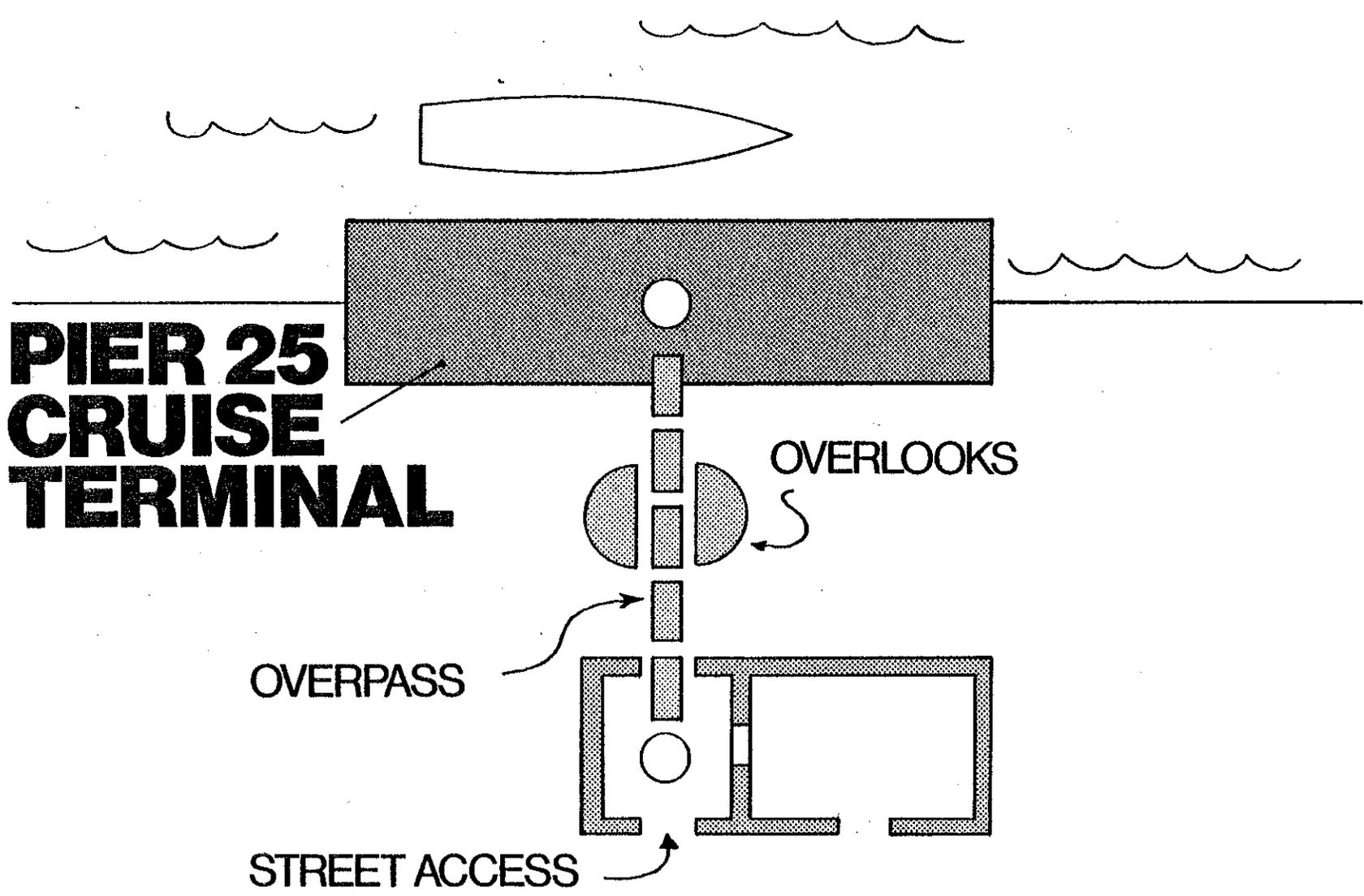
OVERPASS

STREET ACCESS

OVERLOOKS

STRAND

FIGURE 12



PIER 25 22 19

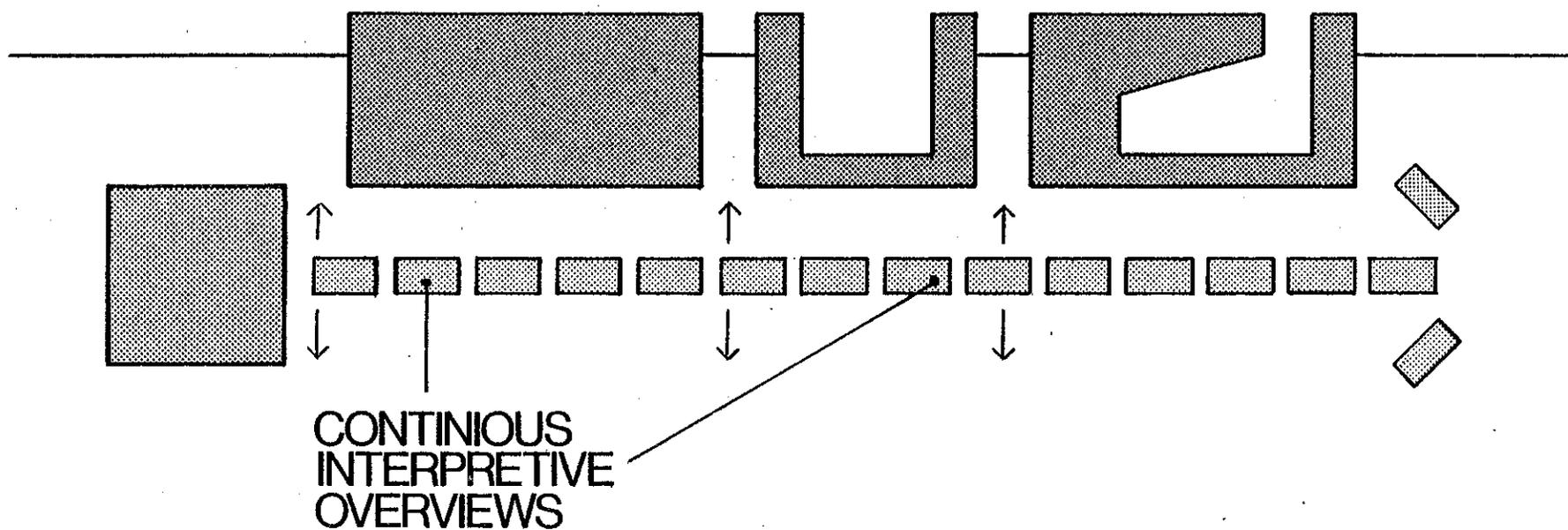
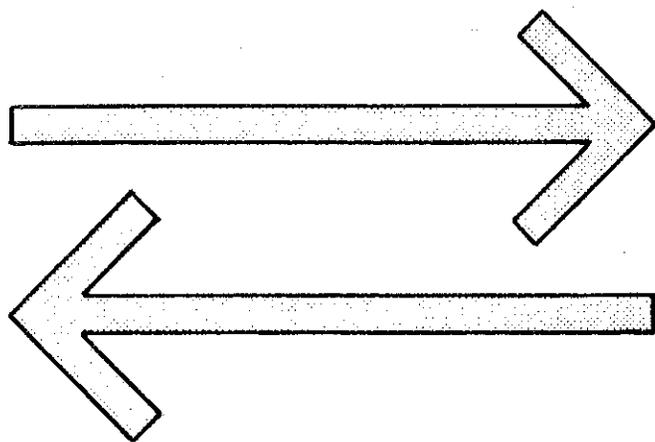


FIGURE 13

TRANSPORTATION MUSEUM



EXCURSION TRAINS –
HOUSTON LINK

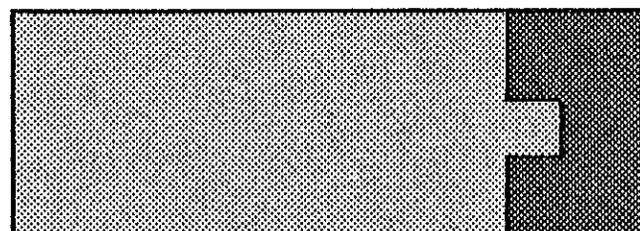


FIGURE 14

FUNDING

All possible sources of implementation and operation funding for the various components of The Connection should be fully investigated, particularly with view to imaginative combining of monies from diverse, multiple sources -- Federal and Municipal, as well as the private sector.

The specific circumstances and requirements of each individual element are widely varied, precluding indepth analysis at this time. Funding strategies and subsequent applications for support in the form of grants-in-aid or subsidies must be appropriately tailored for each situation. However, the following lists various potential funding sources which, individually or collectively, seem most likely and should be investigated.

Federal Sources

- Urban Mass Transit Administration (UMTA)
- Economic Development Agency (EDA)
- Housing and Urban Development (HUD)
- Urban Development Action Grant (UDAG)
- Community Development Block Grant (CD)

Local Sources

- Revenues from fares
- Municipal funds
- Park Board of Trustees (Hotel/Motel tax)
- Special assessment districts
- Conventional sources
- Philanthropy
- Local merchants and/or business associations
- Special revenue bonds

INITIAL IMPLEMENTATION STEPS

Identifying transportation elements which can be implemented in the near future is basic to the Galveston Connection idea. Of the proposed systems, one -- the initial phase of the Strand/Pier 19 link -- has already been funded and soon will be constructed; plans for this component should be followed through and set into operation as quickly as possible. Three others -- the Minitram, the Harbor Tour, and the Trolley -- are most practical and important; steps should be taken immediately to plan for their implementation and operation. The remaining systems which were evaluated -- the mechanized Harbor Overview and the Train Link to Houston -- do not appear to be immediately feasible because of their complexity and cost; however, these proposals have potential merit and should be retained for future re-evaluation.

As an overall tourism concept, the Galveston Connection will benefit the Island as a whole. In order to succeed, its implementation will require the cooperation and team effort of the community in general -- the beachfront and downtown businesses; commercial, preservation and recreational interests.

As the initial step in this process, a private non-profit organization should be established and legally chartered to facilitate and coordinate implementation. Suitable office space and personnel should be provide and an experienced administrator should be hired as a liason between a volunteer steering committee and related outside interests. The goals and purposes of this

"Galveston Connection" organization should include the following:

Promote understanding and support of the overall Connection concept in the community and elsewhere.

Organize fund raising locally and from other available sources.

Submit grant applications as appropriate.

Locate and evaluate potential operators for the Connection systems, weighing the benefits of public versus private operation.

Coordinate implementation with City agencies and groups to achieve a properly integrated transportation/interpretative system.

Monitor and encourage other development in the community which will complement the Connection and improve the quality and quantity of tourism on the Island.

With the proper organization and administrative impetus, rapid progress in initiating primary components of the overall system is realistic; however, it is unlikely that major segments of the Connection could be implemented before Spring 1981, given the most optimum circumstances. This underscores the importance and necessity of beginning immediately to establish a workable organization structure that can take full advantage of present planning interest and support.

Beyond these circumstances, it is important to note several additional factors which are critical to the success of the effort. These include the following:

The importance of concurrently developing new hotel and convention facilities in other areas of the City as well as on the beachfront is essential. Additional accommodations and services will benefit their immediate areas and will contribute to expanding the length of the tourist season. The Strand, where a quality, moderate size hotel should be built, is a case in point.

Similarly, developing additional "non-seasonal" tourist attractions to broaden the appeal of the City should also be stressed.

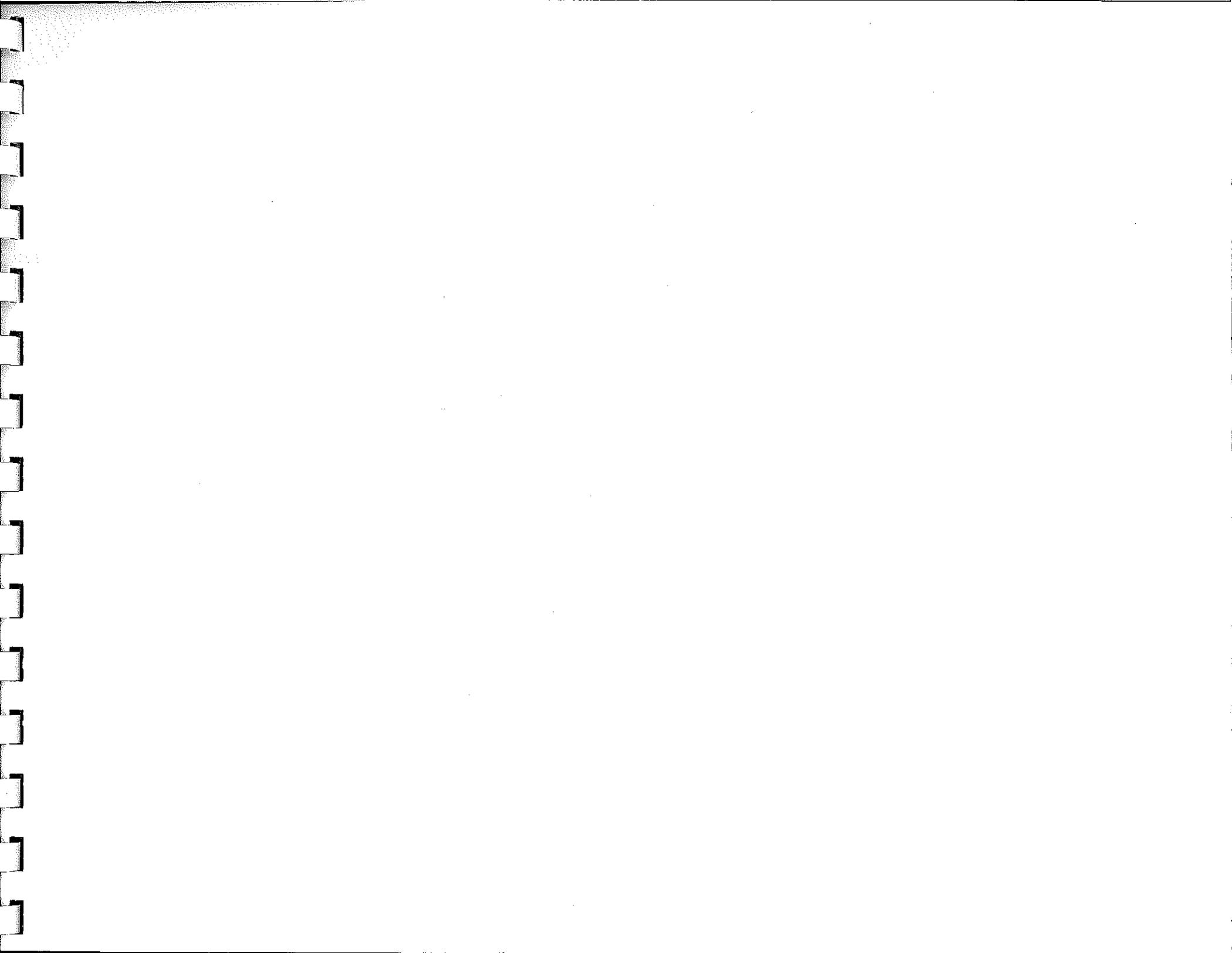
The ultimate impact of the Galveston Connection depends on developing the system as a whole; however, an opportunity to properly implement an individual component should not be missed simply to concentrate phasing more closely. For example, if an operator for a quality Harbor Tour can be found immediately, the tour should be implemented independently of other components; however,

The selection of operators for the various elements should be deliberate and discriminating. Each element associated with the Connection must be a quality product, properly

planned, programmed, and designed;
otherwise, the whole system is eroded.

Initially, some elements such as the Trolley and the Minitram may have to be subsidized until tourism and service demand increases enough so that the system can be self-sufficient. Given the positive impact such systems will make on Galveston's economic revitalization and quality of life, such contributions are warranted and can be fully justified.

More than ever before, Americans are coming to realize that quality of life closely relates to the pleasantness and ease with which they can efficiently move throughout their City. In summary, "The Galveston Connection" is an innovative concept for the integration of visitor and interpretative services on the daily life of Galveston Island in an entertaining, informative, orderly, and profitable manner without disturbing the daily life of the Community.





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MARKET ANALYSIS

April 1979

MARKET ANALYSIS

This section of the report was prepared by Economics Research Associates to provide a statistical basis for the proposed components of the Galveston Connection. Prior to evaluating the various components certain relevant information is presented relating to Galveston.

DEVELOPMENT PATTERNS AND TRENDS

Galveston is an old city, dating back to the early 1800's under Mexican rule. In 1825, Mexico declared Galveston a provisional port and customs entry. Since then, port activities have been a dominant influence on development patterns within the city. The port was developed along the north shore of the east end of Galveston Island; therefore, the city initially developed there, including the central business district, port-related businesses and Galveston's original residential area. As the city grew, it expanded westward. The Galveston Storm of 1900 had a devastating effect on the Island and prompted the construction of the seawall extending from the east end of the Island westward to a line even with 103rd Street.

Today the permanent character of Galveston is well-established. The north side of Galveston from the causeway as far east as the Galveston Yacht Basin is in port-related industrial uses. The south side of the Island as far west as 61st Street is comprised primarily of tourist-related facilities, including hotels and motels, restaurants, souvenir shops and the like. The major commercial concentration is still the downtown area. Other commercial areas include the Galvez Mall at 64th and Broadway and Port Holiday Mall, near the east end of the Strand. In addition, there is strip commercial development along Broadway and Seawall Boulevards. The University of Texas Medical Branch and the Port Holiday complex occupy a substantial area on the Island's east end. Also located there are a number of rental apartment complexes which cater primarily to students and staff of UTMB.

Most of the developable land behind the seawall has been absorbed for one use or another with the result being a curtailment of development activity on the Island. Future growth of Galveston, for the most part, must now take place on the remaining land behind the seawall west of 61st Street, farther west on Galveston Island beyond the protection of the seawall, on Pelican Island and eventually on spoil areas located on the eastern tip of Galveston Island and on Pelican Island.

REDEVELOPMENT AND RESTORATION

There are three specific redevelopment and restoration projects that deserve mention in an overview of Galveston.

First among these is the redevelopment of The Strand. In the 19th century, The Strand was the "Wall Street of the Southwest" and was the center of business in early Galveston. Recently, a program was undertaken by the Galveston Historical Foundation to restore The Strand's historic buildings and make it a viable and integrated component of the community. In 1973, the Foundation received grants totaling \$215 thousand to set up a revolving fund for acquisition of property for rehabilitation and reuse. Since the program began, a number of buildings have been rehabilitated or in some way refurbished. As a result, The Strand is breathing new life. Buildings that had stood vacant and in disrepair have now been converted to restaurants, shops and even apartment units. As The Strand continues to be redeveloped, it will add a measure of stability to the general downtown area, and also provide an additional attraction for visitors to Galveston.

Yet another effort at restoration is underway in Galveston's historic East End, an area bounded by Broadway, 11th Street, Market Street and 19th Street. This area has been designated an historical zoning district for the preservation and restoration of buildings there. Evidence of this effort is readily apparent when touring this area.

A third project is the Downtown Mall. In 1968, the decision was made to develop a mall of Post Office Street, the location of the downtown's major retail facilities. The development of this mall has served to mitigate a long-term trend of deterioration and has provided a more stable environment in the downtown.

POPULATION TRENDS

Shown below are population data for the City of Galveston and Galveston County:

| <u>Year</u> | <u>City of Galveston</u> | <u>Galveston County</u> | <u>City Share</u> |
|-------------|--------------------------|-------------------------|-------------------|
| 1920 | 44,255 | 53,150 | 83.3% |
| 1930 | 52,938 | 64,401 | 82.2 |
| 1940 | 60,862 | 81,173 | 75.0 |
| 1950 | 66,568 | 113,006 | 58.9 |
| 1960 | 67,175 | 140,364 | 47.9 |
| 1970 | 61,809 | 169,812 | 36.4 |
| 1975 | 61,600 (est.) | 183,500 (est.) | 33.6 |

It may be noted that for many years, population growth in Galveston County has far outstripped that of the city. There appears to be several reasons for this pattern, including a greater number of jobs created in the refineries around Texas City and the integration of the mainland portion of Galveston County into the Houston socioeconomic sphere. However, ERA also found that a high percentage of those persons working in Galveston live on the mainland, in large measure, because of a lack of suitable housing on the Island. For example, in a survey of 15 Island employers with a total of 3,134 workers taken in 1972, 39 percent of those workers lived on the mainland. ERA's discussions with major employers in Galveston indicate that the percentage of Galveston workers living on the mainland is presently 40 percent or more.

As shown above, the population of the City of Galveston, in recent years, has stabilized at around 61 thousand. Barring major unforeseen events, there is little reason to expect a drastic change in the level of population -- up or down. Even with an increase in employment on the Island, there will probably not be a corresponding increase in population since developable, reasonably priced land is in short supply, and ample housing alternatives are available on the mainland.

ECONOMIC PROFILE

Complete employment statistics are available for Galveston County, but not for the city. Therefore, an analysis of these data is not helpful in describing the city's economic status. In lieu of such data, ERA has reviewed the major sectors comprising the Galveston economy.

It is generally accepted that there are four mainstays of the city's economy. These are:

1. The UTMB Medical complex
2. American National Insurance Company
3. The Port of Galveston
4. Tourism

University of Texas Medical Branch

The medical complex is the largest single employer on Galveston Island. Current employment is around 6,500 compared to 2,785 in 1967. UTMB has had a history of growth and expansion and new facilities are being planned. This complex is clearly the most important segment of the city's economic base.

American National Insurance Company

Galveston is the headquarters for American National Insurance Company (ANICO). At present, ANICO employs some 1,560 persons of which one-third are managerial and technical and two-thirds are clerical. Employment is down somewhat from recent levels and according to ANICO management, the company's present objective is reduction of employment -- particularly

managerial -- through attrition. Approximately 40 percent of ANICO's employees live on the mainland although some are moving to the Island. To encourage this, ANICO has offered mortgages with lower interest rates and down payments to employees buying homes on the Island.

Port Activities

A significant sector of the Galveston economy is centered around the Port of Galveston. Officially named Galveston Wharves, the port itself is one of the largest dry cargo ports in the United States, exporting large quantities of grain, cotton, flour, fertilizer, rice and chemicals. Galveston Wharves presently employs between 600 and 700 blue-collar workers.

In addition to the port authority, the Galveston waterfront is the site of several significant water-oriented industries. The largest of these is Todd Shipyards Corporation which presently employs 1,200 to 1,500 employees.

Port-related activities in Galveston have a long-term potential for growth with the industrial development of Pelican Island. The Port of Galveston has filed for a permit to establish and operate a U.S. Foreign Trade Zone on Pelican Island. If successful in obtaining the trade zone, economic activity and employment will have the potential for significant growth.

Tourism

The fourth major segment of Galveston's economy is tourism. While it is difficult to determine the total contribution of tourism to the local economy, a reasonable estimate would be total expenditures of \$40 million annually. However, there is a general concensus of opinion that the tourist industry is underdeveloped on the Island. One explanation suggests that Galveston Island primarily attracts certain people from the Houston area who come to the beach with their ice chest full of food and beverages, stay for a few hours, and return home without spending money locally. A more plausible explanation is that Galveston lacks the attractions (other than beaches), overnight facilities and other support facilities necessary to generate higher levels of tourist spending. In support of this theory, it should be noted that, at present, there are approximately two thousand hotel/motel rooms on the Island. Assuming full occupancy from Memorial Day to Labor Day, 3.0 persons per room and an average length of stay of two nights, the total number of tourists which can be accommodated in the Island's room inventory would be approximately 270 thousand. Further, assuming the summer period accounts for 70 percent of the yearly total, annual overnight hotel/motel tourist visitation would be approximately 386 thousand. In addition to hotel/motel guests, campers at the State Park add approximately 100 thousand overnight visitors, so that the total would be approximately 486 thousand. In fact, this estimate is only a small share of the total leisure-time visitors to Galveston. The balance are day trippers from Houston and elsewhere, many of which might opt to stay overnight if accommodations were available.

One alternative to increasing the tourist market through hotel room expansion is to attempt to achieve a higher utilization rate of hotel space during the off-season. This has been achieved successfully in certain other cities that have a successful convention business. It is extremely difficult to attract off-season tourists without a strong convention business; or some special set of circumstances. However, while no dramatic changes are anticipated in Galveston's seasonal tourist pattern, the promotion of greater off-season visitation is a worthy endeavor which could meet with moderate success. This is particularly true if the visitor's experience can be shifted toward attractions other than those which are beach-related.

GALVESTON ISLAND ATTRACTIONS

As noted previously, the major attraction on Galveston Island is the beaches. In addition, however, there are several other attractions available to tourists. The more significant of these are discussed below.

Sea-Arama Marineworld

Sea-Arama is an aquatic attraction featuring a variety of animal acts including porpoises, sea lions, birds, bears, etc. Given the entertainment offering, visitors probably remain between three and four hours. The visitor experience is comprised primarily of spectating, a form of entertainment which does not encourage repeat visitation. Attendance at Sea-Arama has averaged around 360 thousand per year. Its best year was 1972, when attendance reached 404,883. During the past two years attendance has been somewhat lower due to competition from Astro-world in Houston, which has recently added animal acts. At the present time, management of Sea-Arama is considering adding new forms of entertainment to attract more visitors. Visitor surveys conducted at Sea-Arama indicated that 40 to 50 percent of their visitors come from the greater Houston area.

Stewart Beach Park

Stewart Beach is located on the east end of Galveston Island. The Park offers not only swimming but also a children's amusement park, miniature golf, and the Water Coaster waterslides. In 1978, attendance was approximately 400 thousand. The Water Coaster, which opened in 1977, had a 1978 attendance of 200 thousand.

Seawolf Park

Located on Pelican Island, Seawolf Park is publicly owned and operated. On display is a World War II submarine, a destroyer escort, a tank, anti-aircraft gun and jet fighter. There is a charge of \$1.00 for each car entering the park and a separate per capita charge to go through the submarine and destroyer escort. Approximately 200 thousand people per year

visit Seawolf Park, about half of which pay the additional charge to tour the ships.

Galveston Island State Park

Located on the western end of Galveston Island, the State Park bisects the entire Island, thereby providing frontage on both the Bay and the Gulf. Facilities in the Park are limited to 180 campsites and 60 picnic sites. The major draw of the Park is its 1.5 mile stretch of beach on the Gulf. About 92 percent of the 1.2 million visitors entering the park do so for the day only. The remaining eight percent stay overnight in designated campsites.

Other Attractions

Other attractions in Galveston are primarily historic in nature. These include the Bishop's Palace, Ashton Villa and the East End Historic District. And, as it develops, the Strand is becoming an increasingly significant attraction.

In addition to the existing attractions cited above, there are several other attractions which are planned or proposed. The most significant of these is the transportation center to be housed in the Shearn Moody Plaza. This attraction which will tell the story of all modes of transportation, is projected to draw as many as 360 thousand visitors per year, making it one of the major attractions on the Island. It is believed that the transportation center will draw not only from the existing tourist market, but will be of interest to school children and other groups in the greater Houston-Galveston region.

In addition to the transportation center, consideration is being given to the creation of a maritime museum to be located at Pier 25; and plans have been prepared for the renovation and expansion of Pier 19, Galveston's Fisherman's Wharf. Also, a sailing schooner, the Ellisa, is to be permanently docked at Sea Wolf Park or elsewhere in the Galveston ship channel.

EVALUATION OF THE GALVESTON CONNECTION

The remainder of this section presents an evaluation of the Galveston Connection and its various components. Prior to the evaluation, we believe it is appropriate to recap the relevant characteristics of the market and offer certain other observations about the concept.

Recap and General Comments

Presented below in summary fashion is a recap of relevant information concerning Galveston.

- o The major tourist draws at Galveston Island are the beaches and beach-related activities.

- o The major market for Galveston Island tourism is the Greater Houston area which accounts for roughly half of the Island's tourist visitors.
- o The tourist market appears to be comprised of the following components:

| | |
|------------------------------|------------------|
| Overnight hotel/motel guests | 386,000 |
| Overnight campers | 100,000 |
| Day visitors | <u>1,500,000</u> |
| Total | 1,986,000 |

- o The major constraint on the tourist market is the lack of hotel/motel rooms and other support services.
- o A second major constraint is simply the lack of quality entertainment and recreation on the Island.

The Galveston Connection was conceived of as a step toward improving the tourist environment on the Island by connecting several existing attractions to one another and to some attractions that are planned, thereby creating a package whose whole would be greater than the sum of its components. The general concept is valid, and one which has proven successful in other cities. Its application in Galveston, however, must take into account certain significant mitigating factors -- namely, constraints on the overnight tourist market and the character and inter-relationship of existing and planned attractions.

The central tenet of the Galveston Connection concept is the physical linking of attractions, which is proposed to be accomplished by providing transportation or pedestrian walkways between and among attractions. From ERA's perspective, each proposed linkage should be evaluated in terms of the following:

- o Is a particular linkage necessary or desirable?
- o Does it have entertainment or educational value?
- o Is it economically justified and can a sponsor be found?

Obviously, these are difficult questions to answer within the context of this study. Moreover, they are somewhat subjective in nature, so that different persons will express conflicting opinions. Nevertheless, ERA has attempted to evaluate the various components of the Galveston Connection as our contribution to this assignment.

Trolley on The Strand

This proposal envisions some type of rail transportation along The Strand from the Shearn Moody Plaza east, perhaps as far as UTMB. An alternative route would have some trackage on Mechanic Avenue, thus effecting a loop. At Shearn Moody Plaza, the proposal calls for the track to extent around the building on the south side and curl into the courtyard where passenger loading and unloading would take place.

ERA believes there are several benefits to be derived from this proposed facility. It would provide a new dimension of entertainment activity on The Strand, connect The Strand to UTMB (if extended that far), and give additional stimulus to the redevelopment of the corridor between The Strand and UTMB. If included on the route, Mechanic Avenue's restoration would benefit, also.

Ridership on the Trolley would stem from two generic sources: persons requiring transportation along the route and persons seeking an entertainment experience. Market segments that might support the system would include tourists to The Strand area and UTMB employees. The extent to which these markets would support this system would depend on a number of variables -- many of which are yet to be determined. As a preliminary estimate, ERA has assumed that the system would receive the following level of support from the tourist market.

| | <u>Total</u> | <u>Percent Riding Trolley</u> | <u>Ridership</u> |
|------------------------------|------------------|-------------------------------|------------------|
| Overnight hotel/motel guests | 386,000 | 25% | 96,500 |
| Other tourists | <u>1,600,000</u> | <u>5%</u> | <u>80,000</u> |
| Total | 1,986,000 | | 176,500 |

Ridership stemming from UTMB is assumed to occur primarily at lunch time when employees wish to go to restaurants on The Strand. Additional ridership may also occur throughout the day as UTMB staff travel between the main campus and UTMB offices to be located in The Shearn Moody Plaza. This ridership will be constrained by the hourly capacity of the system as well as that of the restaurants along The Strand. For purposes of this analysis, ERA has assumed ridership support from this source to average 100 persons per day throughout the year or approximately 36,000 annually. Thus, total ridership from tourists and UTMB employees is projected to be 194,500. Assuming other minor market segments will also support the system, total ridership is rounded off at 200 thousand per year. This figure is very preliminary and subject to revision as additional information becomes available.

Rolling stock required to accommodate projected ridership will depend on the seasonal daily and hourly pattern of demand and the level of service provided. The demand pattern of tourists will vary considerably on seasonal and daily basis but less so on a hourly basis. Peak month demand will probably account for around 25 percent of the annual total. Peak day demand will occur on weekend days which will account for approximately 30 percent of weekly demand. Peak hour demand is assumed at 15 percent of the day. Based on these factors, the design level of capacity to support the tourist market is derived as follows:

| | |
|--|---------|
| Projected Annual Ridership (round trips) | 176,500 |
| Peak month | 44,000 |
| Weekly average for peak month | 99,000 |
| Weekend day | 3,000 |
| Peak hours | 450 |

Approximately half of the UTMB ridership (50 per day) is assumed to occur during the lunch hour, so that the total peak hour ridership is estimated at 500.

The number of cars required and their capacity will also depend on the frequency of service which is a function of route distance, speed and number of stops. Assuming headways ranging from 12 to 20 minutes, hourly capacity would range from 90 to 180 seats.

A final comment concerns the proposed extension of the Trolley line around the Shearn Moody Plaza. ERA views this feature as unnecessary and potentially disruptive to the orderly operation of the Trolley system. In our view, a better solution would be to open up the Shearn Moody Plaza so that visitors to the transportation center have direct pedestrian access to The Strand. If the proposed extension is implemented, the system should have a bypass option to be employed as appropriate.

Pier 25 Overpass

This proposal calls for a linkage between the planned parking garage and Pier 25. The initial purpose of this linkage would be to provide access over the railroad tracks to Pier 25 for cruise ship passengers. It would also provide sightseers with access to the pier from which they could view activities along the ship channel. Ultimately, a Maritime museum might be developed at Pier 25, and visitors to this facility would also use the overpass. Funding for this linkage has already been provided.

Harbor Tour

This proposal calls for a harbor tour which would tentatively originate at Pier 19 and transport passengers to Sea Wolf Park. The intervening journey would provide passengers with a view of ships and port activities.

ERA views this proposal as an opportunity to provide tourists with an additional legitimate entertainment/educational experience. It would also have a beneficial impact on Sea Wolf Park. Preliminarily, ERA estimates ridership on the harbor tour as follows:

| | <u>Total</u> | <u>Percent Taking Tour</u> | <u>Ridership</u> |
|------------------------------|------------------|----------------------------|------------------|
| Overnight hotel/motel guests | 386,000 | 15% | 58,000 |
| Other tourists | <u>1,600,000</u> | <u>3%</u> | <u>48,000</u> |
| Total | 1,986,000 | * | 106,000 |

Since this system would cater almost exclusively to the tourist market, it would probably operate during the peak tourist season between Memorial Day and Labor Day. Moreover, the level of service is less critical, and headways of 30 minutes or more could be anticipated. Accordingly, capacity requirements are estimated as follows.

| | |
|---------------------------------------|---------|
| Ridership (summer season) | 106,000 |
| Peak month @ 40% of season | 42,000 |
| Average per week | 9,600 |
| Weekend days @ 40% of week | 2,800 |
| Peak hourly demand @ 15% of day | 432 |
| Required capacity @ 30 minute headway | 216 |
| @ 60 minute headway | 432 |

Since the proposed harbor tour involves the transport of passengers back from Sea Wolf Park, it is essential that the hourly capacity of the system be adequate to avoid undue delay in getting back to Galveston Island.

Link Between The Strand and Pier 19

A link between The Strand and Pier 19 is proposed to improve access and safety. This link will be particularly important if the Harbor Tour operates from Pier 19. This link could take the form of a pedestrian overpass or merely improved signage at ground level.

Train Excursion to Houston

This proposal is viewed as being an infrequent event for promotional purposes. As an entertainment experience alone, this proposal could not be justified. It should probably be undertaken as part of a larger event. For example, some type of Strand Festival could be created and

the train could be used to bring people to Galveston for the day or weekend. Consideration might also be given to providing Pullman sleeping cars -- particularly if hotel rooms are in short supply.

Public Access Along the Ship Channel

This proposal calls for the provision of public access along the ship channel from Pier 25 east to Pier 19 and perhaps beyond. The nature of this access has not been defined. It might be a pedestrian walkway or some type of people-mover system. From ERA's perspective, this proposal is somewhat redundant in that it tends to duplicate the functions served by the proposed Pier 25 observation area and the Harbor Tour. We are not convinced that there will be a strong desire among visitors to Pier 25 to proceed directly to Pier 19 and vice versa. Further, we are of the opinion that a people-mover system along this corridor would serve no valid function.

Ground Transportation Connecting The Strand, Historic District and Beach

This proposal calls for some type of system to provide ground transportation among various points on Galveston Island. This concept is employed in various forms in a number of tourist areas across the country. It serves to "package" an area's tourist attractions so that tourists can park their cars at one spot and use the system to take in a number of attractions which are located too far apart to permit a walking tour. The proposed system might use special equipment or existing transit equipment.

Ridership on the proposed system will depend on a number of variables not determined at this point. For purposes of this analysis, ERA has assumed annual ridership of 100 thousand and the design level of demand to be 400 riders per hour.

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TRANSPORTATION ANALYSIS

April 1979

TRANSPORTATION ANALYSIS
GALVESTON CONNECTION

INTRODUCTION

This analysis presents an evaluation of the individual components comprising the Galveston Connection from the viewpoint of transportation planning. The issues involved are numerous for each of the components because the connection is viewed with two general purposes:

- To meet the basic transportation needs of both the tourists to Galveston Island and the residents.
- To provide a unique interpretive experience and to enhance the experiences which would otherwise exist.

From a transportation planning standpoint, the system or systems should be evaluated on:

- Their ability to provide the necessary service.
- The market that they will serve.
- Their capability to interface with other transportation operations on the Island.
- Their economic feasibility.
- The availability of a mechanism for implementation and operation.

To be evaluated from the interpretive aspect, the following factors should be considered:

- Tourist appeal
- Capability to present an interpretive program with the ride.
- Passenger comfort.

Each of the components or elements of the Galveston Connection is discussed separately in the following text.

ELEMENT A--TROLLEY ON THE STRAND

The proposal to re-implement a trolley service on the Strand serves as the backbone of the Galveston Connection. It would not only provide a transportation service along the Strand, but would also enhance the ambience and the historic experience in the area.

Routing Options

The basic alternative would be to run the trolley from the Transportation Center at the Shearn Moody Plaza to UTMB on the east end. This routing would serve the following functions:

- Connect the Transportation Center to the Strand.
- Add the UTMB to the Strand market.
- Encourage development along the route.

An element included in this and all alternatives is the extension of the trolley line around the Shearn Moody Plaza to a terminal located in the rear section of the Transportation Center. Its purpose is to provide a terminal in close proximity to the tourist parking area west of the Center. While this is a significant benefit of the extension, there are several disadvantageous characteristics of the extension:

- The additional length would decrease the system capacity by 10% - 15%.
- The section between the terminal and the Strand would have no appeal to the rider. Unfortunately, this would be the first and last portions of a round trip and would have the most lasting impression on the rider.
- It would require the line to make several turns in the vicinity of Rosenberg Avenue, creating the potential for operational and safety difficulties caused by mixing the trolley with auto traffic.

- Such a location would seem to interrupt and divert many tourists prior to the Museum.

All of these concerns could be alleviated if the trolley system began at the front of Shearn Moody Plaza. In fact, such a location could possibly increase visitation to the Transportation Center by directing all tourists through a portion of the Center to reach the Strand or the trolley.

An alternative routing which should be considered would be to route the trolley along the Strand in one direction and on Mechanic Street in the other direction. The obvious advantages to such a routing would be: (1) to provide a more varied ride to the passenger, and (2) to encourage redevelopment along Mechanic Street as well as along the Strand. On the other hand, this alternative would require more track, at least in the initial stage.

Yet another alternative would be to develop a short trolley loop on the Strand and Mechanic Street only in the historic area and to provide a supplemental transit service from the end of the loop to UTMB. This alternative was conceived because of the two distinct markets involved. At the west end of the route the ridership would be predominately tourists; their interests would, in most cases, not be beyond Pier 19 and, thus, the route could end at this point for this market. The route east of this point would be patronized mostly by UTMB related persons. However, according to ERA's estimates, only 10% of the entire ridership would be represented by this element of the market. Therefore, it could be appropriate to

implement a less costly transportation service for the eastern segment of the route. This could take the form of standard buses or the double-decker bus which currently runs this route during the lunch hour.

Although these other options have been defined, the primary focus of the evaluation which follows is directed at the basic alternative.

Vehicle Type

Consideration was initially given to several vehicle types, including refurbished trolleys powered by electricity, trolleys modified to run on rails but to be powered by fuel combustion engines, trolley buses powered by electricity, and rubber-tired buses designed with bodies to simulate trolleys. The latter was discarded immediately from further consideration because the lack of authenticity was not considered to be consistent with the quality of redevelopment being experienced on the Island. A similar reaction was generated by the possible use of trolley buses, which never operated on the Island.

From the standpoint of authenticity, trolleys operating on rails and powered through overhead electrical wires would be the most appropriate vehicle type. In addition, such vehicles would generate less noise and air pollution and would not directly consume precious petroleum fuels.

Interest in converting trolleys to a conventional engine power source was raised by a desire to eliminate the visual impact

created by overhead wires. Such vehicles have been recently developed and are available, although they would have to be specially produced. They can be adapted to gasoline, butane or propane fuels or rechargable battery systems, running on rails or rubber tires. Performance reports indicate that they are reliable and operate efficiently with the advantage of no overhead wires.

In our opinion, the overhead wire system could be designed to be aesthetically pleasing. Therefore, re-implementing the trolley as authentically as possible, including rails and overhead wires, is an acceptable alternative. However, a trolley on rails powered by a conventional engine is also an appropriate option which should be fully explored.

Trackage

The amount of trackage necessary is dependent on the level of service required to meet the demand. If only two cars need to be operated, a single track with a turn-out provided at the midpoint could function adequately. However, if more cars are necessary, it would be advisable to construct a double track system. A single track in this case could result in excessive delays because close schedules would be difficult to maintain when mixing with auto traffic on the street.

It is recommended that new rails be constructed rather than uncovering and restoring existing rails which have been covered with pavement. Although no relevant experience is available, restoring existing tracks would seem to be more costly than new construction because of the intensity of labor involved. Other problems, such as interference with

drainage facilities and other utilities, could also be encountered in the restoration process.

Although the tracks could be placed on one side of the street or on both sides, the most appropriate location would be in the center of the street for the following reasons:

- Provides best service to both sides of the street.
- Does not affect parking or truck loading operations along the curb.
- Trolleys conflict with left turns of autos, but motorists expect conflicts while making left turns (few conflicts are anticipated when turning right).

However, a major disadvantage to the center location is that boarding and alighting passengers are forced into conflict with the auto traffic on the street. Therefore, special care must be taken to design protected loading zones in the street. Removal of traffic from the Strand in the historic area would create a pleasant and safer pedestrian environment and could enhance operation of the trolley.

Service Characteristics

The length of the route from Shearn Moody Plaza to UTMB is approximately one mile. Assuming an average speed of 10 mph (including stops) and terminal time, it is estimated that the average round trip time would be about twenty minutes. Therefore, two trolleys could provide service at ten-minute headways. At this frequency, the system capacity would be approximately 180 round trip seats per hour, or 360 one-way seats per hour. Although this capacity would probably be adequate

during most times, delays of about 30 minutes could be expected during peak hours (based on ERA's patronage estimates).

Costs

The following units costs could be applied to any of the alternative routing schemes. These are "ballpark" costs and will vary as special conditions arise.

| | |
|-----------------------------------|------------------------|
| Trolley Cars (refurbished | \$25,000-\$35,000 each |
| Track and Guideway (single track) | \$500,000/mile |
| Trach and Guideway (double track) | \$1,000,000/mile |
| Overhead System | \$225,000/mile |
| Underground feeder | \$235,000/mile |
| Substation (1 per mile) | \$350,000 each |

The cost to operate and maintain trolley systems are more difficult to estimate. However, based on available data, it appears that a system of this type would probably cost about \$25 per vehicle-hour of operation. These costs include maintenance of the way, maintenance of the vehicles, power costs, driver wages, and general administrative costs. Thus, if two trolleys operated throughout the year for 14 or 15 hours per day, the annual operating and maintenance costs would be between \$250,000 and \$275,000.

Unit cost figures for the conventional engine trolley would be similar for trackage and equipment, exclusive of cost for overhead power systems. Acquisition costs for the cars themselves are anticipated to run between \$70,000 and \$80,000 per unit. Specific operation and maintenance figures are not available

at this time, but are estimated to be slightly higher than those for electric systems.

Funding

It is doubtful that funding for the trolley system could be obtained through the Urban Mass Transportation Administration. Experience has shown a strong reluctance of UMTA to fund systems directed primarily at tourist or recreation markets. The possibility of a UDAG grant should not be dismissed, however, and support from local merchants should be solicited.

ELEMENT B--PIER 25 OVERPASS

The primary purpose of this link is to provide a connection from the proposed parking garage to Pier 25 for use by cruise ship passengers. The concept of an overpass has been proposed in order to minimize conflicts between pedestrians and the significantly high volumes of traffic which will be utilizing Industrial Boulevard. Funding has already been made available for this particular link in connection with the design of the parking garage. However, this link is also conceived as a possible element in the Galveston Connection because it could provide a linkage for tourists from the Strand to Pier 25 where viewdecks and possibly a Maritime Museum could be developed. Therefore, consideration must be given to the impact that such a combined use would have on the design of this linkage. Several comments are worthy of note regarding its development:

- To provide for adequate use by tourists, some type of convenient vertical transportation must be provided in conjunction with the overpass. To be convenient, the design must not force the tourists to mix with the parking garage activity. Secondly, the location of the vertical transportation should be at the closest possible point to both the Strand and the proposed transportation center at the Shearn Moody Plaza.
- Because cruise ship passengers tend to be in older age brackets and because these passengers have considerable baggage which must be transported, it is anticipated that some type of transportation system must be provided on the overpass. It would appear that a small rubber-tired system, such as modified "cotton carts", would be an appropriate system for this purpose. A system of this type could also be utilized for transporting tourists across the overpass; however, such service is not nearly as critical for the tourist population. The distance is the equivalent of no more than two blocks, which could

be readily traversed on foot by the majority of tourists. Furthermore, by providing overlooks along the overpass, pedestrians could stop at will at these points to view the activities of the wharves at their leisure.

ELEMENT C--HARBOR TOUR

This proposal would call for the establishment of a transportation link from Pier 19 to Sea Wolf Park by means of a marine vessel. Such a system would not only provide an alternative means for transportation to the park, but would also provide a unique interpretive experience for the visitor to view the harbor and wharf activities from the vantage point of the harbor itself. This opportunity would provide a completely different viewpoint of the bustling activity than one gains from the land side. Furthermore, the greatest advantage of boat transportation is its enjoyment by many recreationists as a form of leisure activity. Experience has shown that any boat trip is widely identified as a recreational activity, with transportation as an almost incidental benefit. The obvious economic advantage of marine transportation is its operation on a natural right of way that will need development and maintenance only at its terminals.

It is believed that a conventional hull vessel would be best suited for this service. Single hull vessels, usually constructed of steel, are available in sizes from 100 to 500 passengers. A maximum size of 150 to 200 passengers would be appropriate for the type of operation perceived for Galveston. The ability to also transport private vehicles should not be considered a requirement for this vessel. Such conventional vessels are very reliable, have no special operating requirements of the crew, provide a comfortable ride, and could interface well with other boats operating in the harbor. Although

boats of this type, whether new or used, have generally good availability, the range and quality of such boats is significant and, thus, the costs vary considerably. However, it can be estimated that such a vehicle would generally cost in the range of \$250,000 to \$500,000.

An initial concept had been to implement this service utilizing hydrofoil vessels because of the uniqueness of such boats. However, this idea was discarded for several reasons. Such craft are extremely expensive and their inherent excessive noise and vibration are not conducive to a comfortable interpretive experience. Furthermore, hydrofoils operate best at high speeds which would be in conflict with the nature of operations in the harbor.

If the route followed by the vessel is a fairly direct route from Pier 19 to Sea Wolf Park, the total round trip would be approximately four miles in length. At an average operating speed of 15 mph, the round trip travel time would be about sixteen minutes. Adding terminal time for loading and unloading at each end, the total round trip time would be approximately thirty minutes. Therefore, if this route were followed, one vessel could be used to provide service with about thirty minute headways, a level of service adequate for the recreational characteristic of this transportation element. However, if the tour were extended to include any additional routing beyond the direct route (such as to a Marine Science Center), two or more vessels would be required to provide the same level of service.

ELEMENT D--LINK FROM THE STRAND TO PIER 19

The proposed development of Pier 19 will generate significant pedestrian activity to and from the Pier, much of which will involve the same tourist and local market visiting the Strand. Implementation of the Harbor Tour at Pier 19 will further strengthen the need for a pedestrian link between the Pier and the Strand.

Although an overpass over Industrial Boulevard (similar to Element B) would provide the safest type of link, it is doubtful that an overpass would be heavily used unless it connected one or more activities at the elevated level. However, an overpass could be appropriate if constructed in conjunction with an additional parking structure, a visitor center, or an observation deck on Pier 19.

In lieu of an overpass, an improved pedestrian crosswalk should be considered. This link should include several elements:

- A signalized crosswalk at Industrial Boulevard with a separate phase for the pedestrian movement.
- A well defined corridor along the route to restrict and identify pedestrian movement through the other activities occurring in the area. Such definition could be provided by improved signing, landscaping, or other physical elements.

ELEMENT E--TRAIN LINK TO HOUSTON

This element of the Galveston Connection would involve the re-institution of a rail link between Galveston and Houston, similar to the Interurban Service which used to operate between the two cities. This link has been considered for two possible functions: (1) excursions for cultural interchange and the promotion of tourism on Galveston Island, and (2) commuter route for persons living in Galveston and working in Houston. The concept would be to utilize existing rail lines and to focus the terminal function in Galveston on the Transportation Center being developed in the Shearn Moody Plaza.

There appear to be two major detriments to implementation of such a service. The first of these is the use of existing right-of-way and rail lines. It would certainly be difficult to justify the construction of a new line to operate this service; therefore, arrangements would have to be made with one of the operating railroads to utilize available space on an existing line. Experience in other locations has shown a strong reluctance on the part of railroads to share space with passenger service on lines which carry heavy volumes of freight traffic, such as the present lines feeding into Galveston. Railroads make their greatest revenues from freight traffic and, thus, delays to freight trains caused by passenger trains is seldom tolerated. For this reason, the railroads, if they are to approve such an operation, must be convinced that the impacts on operations will be minimal

and that they will be adequately remunerated to offset any economic impacts. In addition to the railroads' concerns, the City must also be concerned about the impacts on freight service in this case. The economic viability of Galveston is heavily reliant upon the port and its wharves, which in turn are reliant upon rail service. Therefore, significant interference with the rail service could have serious impacts on the economics of the community.

The second major concern is the lack of a proper terminal at the Houston end of the line. The existing terminal is currently scheduled to be razed, thereby creating a need to replace it if a regular passenger service were to be reinstated.

The potential for the excursion train concept would seem to be positive. Such trips would probably run only on weekends and holidays, when freight service on the tracks would be less frequent (although locals indicated that only Sunday was a slow day on the rail lines). Furthermore, excursions could be advertised and pre-booked so that they only ran with a sufficient volume to offset the costs.

The operation of a regular commuter service would be much more difficult to implement. Because such a service would have to run on a regularly scheduled basis, it would be expensive to operate. Secondly, a commuter service would by necessity run during times when interference with freight operations could be significant. Finally, the demand does

not yet appear to exist. Although people have referred to a commuter service as providing an opportunity for persons working in Houston to reside in Galveston, there is not adequate space on the Island for a significant amount of growth. Therefore, this pattern of growth could force persons working on the Island to live off the Island, thereby creating another transportation problem.

In summary, the excursion train concept may have potential, but the first step toward implementation should be serious discussions with the railroads owning the lines over which the service would operate.

ELEMENT F--HARBOR OVERVIEW

This element would involve the provision of a linkage between Pier 25 and Pier 19 along the wharves. In our opinion, the need for such a link is not apparent. As purely a transportation link, it would seem to provide only the same service as available via links A, B, and D. In fact, if it were available, it may divert persons from the Strand, a result which would be in direct conflict with the goals of the study.

Its other purpose would be to provide an overview of the activities along the wharves. However, the demand for this function is questionable. The link would not be appropriate if Pier 25 is not developed for tourist activity and, if the Pier is developed, its design could allow for this same type of activity. Therefore, this link would not be necessary.

If the link were to be constructed, it would be very important that it not interfere with the operation of the Port. Therefore, it should be vertically separated from the bustling ground activities. We are of the opinion that an elevated, sheltered, open-air walkway would be best suited for this link. It would allow for leisurely viewing of the wharves and at the same time provide for an interpretive opportunity. If demand warranted, moving walkways or small rubber-tired vehicles could be implemented along this structure.

Although other systems were also considered for this link, it does not appear that the demand (ERA input) could warrant their implementation. The original concept called for a

monorail system. A monorail system consists of small passenger compartments (4-6 passengers) operating in a supported or suspended fashion over a number of surfaces on a rather large beam. Such systems have typically been implemented in amusement parks, zoos, and expositions where the novelty has marketing advantages. These systems are costly, ranging from \$1.5 to \$3.5 million per mile. In addition to the high costs, monorail systems have other significant disadvantages. Its visual impact can be significant as it is important to realize that the beam, or support structure, is not a delicate object with small dimensions. Furthermore, typical installations of this type have support columns spaced at sixty foot intervals. Emergency egress from failed vehicles poses serious problems. Suitable maintenance and storage areas may be difficult to provide at this location. Finally, the personnel necessary to maintain and operate the system must be highly trained.

Aerial cable systems present another possibility for this link. A slow moving gondola system could provide an interpretive experience similar to that of a monorail system. They are considerably less costly (\$250,000 to \$500,000 per mile); they involve fairly simple operation and maintenance; and their visual impact is slightly less. On the other hand, loading and unloading is tricky on nonstop operations, many people feel uneasy riding in these suspended gondolas; and operation needs to be shut down in high winds, which may be frequent in Galveston.

It is expected that, due to its primarily tourist orientation, the system would operate primarily during the tourist season, which generally runs from Memorial Day to Labor Day (103 days per year). For use in estimating operating costs, it was assumed that the service would be operated for approximately ten hours per day (from 8:00 a.m. to 6:00 p.m.). Data indicate that the typical operating and maintenance costs for such a vessel are in the range of \$110 to \$120 per hour. Thus, the annual operating costs would range between \$110,000 and \$125,000 for each vessel operated. ERA has indicated that the likely annual ridership would be approximately 106,000 passengers. Therefore, it can be seen that at one dollar per passenger the operating costs of one vessel would be nearly offset from the passenger revenue. The system could very feasibly be expanded to year around operation, given appropriate demand.

Based in this review, the harbor tour appears to be a likely candidate for implementation in the near future for several reasons:

- The system would be relatively easy to implement with very minimum construction requirements.
- Because the system would appear to have potential for making profit, it is likely that a private operator could be enticed into implementing the system.
- The demand for such an entertainment and transportation service already exists with present tourists to the Island and is, therefore, not necessarily dependent upon other tourist developments.

In summary, it is believed that the cost of either of these systems could not be justified by the demand. Although the cable system would be considerably less expensive than a monorail, many tourists would probably not find such a system appealing.

ELEMENT G--LINKAGE OF STRAND, HISTORIC DISTRICT,
STEWART BEACH, AND THE CIVIC CENTER

The concept supporting this element of the Galveston Connection is the desire to link a number of the Island's attractions via a transportation service which would thus provide an alternative to the private automobile. Several modes of transportation have been considered for this element, including an extension of the trolley system, a modification of the existing Island Transit system, and a small rubber-tired minitram system similar to that of the Treasure Island Tour Train.

The trolley system does not appear to be feasible at this time. The primary concern would be the excessive cost to construct a complete trolley system to serve the entire proposed loop. The discussion in Element A is also relevant to this element in regards to the equipment and costs.

Probably the least expensive and the most implementable technique to provide this service would be to modify the existing Island Transit routes to operate between these sites. Assuming that there is a demand for this service, the revisions to the system could be justified. The route schedules could be designed such that the buses could be used on commuter routes during the peak commute hours and then rerouted during the remainder of the day to serve the tourist market; an operation of this type could make more efficient utilization of the bus fleet. It should be noted, however, that the existing buses could be used to provide a connecting transportation link, but they are not well suited to providing an appealing interpretive

experience along the way. Just their size, appearance, and general operating characteristics do not present an appealing image to tourists. A more attractive bus for this operation would be a smaller mid-size bus seating 20-25 passengers.

The other vehicle type considered was a minitram type transit vehicle often used in amusement parks. This open-sided vehicle is designed to provide the visitor with the greatest amount of interpretive exposure to the surrounding environment. It is very easy to operate and allows for easy boarding and alighting by visitors. The power unit seats approximately 25 passengers and, because it is a four-wheel drive unit, has excellent traction. The trailer unit seats approximately 30 passengers and because all four wheels turn, each coach tracks the same as the preceding coach or power unit. Two-unit or three-unit trains (power unit plus one or two coaches) can be utilized efficiently, particularly along terrain such as on Galveston Island which has little or no grade. The vehicle (with one trailer or coach unit) can travel at a speed of 17 mph. It can also be converted to propane fuel. Several equipment options which may be appropriate for Galveston are also available. These include wheelchair storage areas, rain curtains (which could also be used in the winter), a public address system, and a passenger signal system. This type of unit is ideally suited for summer operation and, although it is inefficient in providing warmth for passengers in the event of cold weather, it should be adequate for Galveston's climate.

Although a specific route has yet to be identified, an approximate round trip length of five miles has been assumed. At an average speed of 10 mph (including all stops), a train could make a round trip in approximately 30 minutes. If two power units were purchased, four round trips could be completed each hour. To provide ultimate flexibility for riders, one train could be operated in each direction. Thus, 30 minute headways could be maintained in each direction. However, assuming two-unit trains (which would be most appropriate for operation along city streets), this would provide a maximum system capacity of 220 passengers per hour. This would probably be adequate at most times, but ERA's peak hour demand estimate is 400 passengers. To satisfy this demand, four two-unit trains would have to be operated during this time. Regardless of the operation, a spare power unit should always be available in the event of a vehicle failure.

These vehicles, in comparison to more standard transit vehicles, are relatively inexpensive. The power unit can be purchased for approximately \$25,000, while each trailer unit costs about \$10,000. Thus, with a life expectancy of ten years at a 10% interest rate, the annualized costs for these vehicles would be about \$4,000 per power unit and \$1,600 per trailer. The operating and maintenance costs (including driver wages) are generally about \$12.00/hour for the power unit and \$4.00/hour for each trailer unit.

Although it is difficult to estimate total annual operating cost without being able to better define the specific operation,

a relevant estimate is the cost per round trip. Applying the rates in the previous paragraph, it can be estimated that each round trip for a two-unit train would cost only about \$8.00 (excluding capital costs for vehicles and maintenance of equipment and areas).

For the following reasons, this element has significant potential for immediate implementation:

- Relatively low capital costs to initiate the service.
- An interest has already been expressed by a private operator to implement a similar system.
- Vehicle type has maximum flexibility to adjust its capacity to meet ever-changing demands.
- System would benefit the largest number of attractions of any one element.

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THE GALVESTON CONNECTION: AN INTERPRETIVE VIEWPOINT

January 14, 1980

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It has been postulated from the outset that the concept of a Galveston Connection was at once a system of transportation and an interpretive device. That is to say, the integrated conveyance of visitors from point to point while fundamental to tourism as well as residential mass transit can at the same time become a novel attraction which properly planned and carefully designed could well reflect and enhance the character and history of Galveston.

In assessing an interpretive viewpoint for the study, we acknowledge the fact that many pragmatic constraints relating to marketing, traffic planning, funding, and management expense have intentionally been set aside in order to focus on program and content.

To best appreciate the interpretive potential for the Galveston Connection, it is first necessary to recognize the wide variety of attractions which are currently available to the Galveston visitor, as well as those which are in the conceptual or planning stages. These might be listed as:

The Strand; its Historic Environs
The Two Areas of Fine Victorian Homes, Particularly the
Bishop's Palace and Ashton Villa
The Center for Transportation & Commerce (planned)
The Beach (all of Seawall and Stewart Beach)
Sea-a-Rama
Lone Star Drama
The Wharves
Pier 19 (proposed)
The University of Texas Medical Building (particularly Old
Red)
Sea Wolf Park
The Elissa (planned to berth at Pier 22)
The Opera House (soon to be open)

In addition to the above defined sites, it has also been proposed that a Maritime Museum might well share the space proposed for the cruise ship terminal at the second level of Pier 25 and that a Marine Science Center might be developed at one of several sites with the cooperation of the Moody Foundation and Texas A & M University. Reviewing the location of these events and places (see Plate I) it becomes obvious that were the visitor to attempt a tour of all or even several of these attractions by automobile during a one or two day visit, both Galveston and Pelican Island

could easily become snarled with automobile traffic. This condition would not only have a negative environmental impact but would detract from the very Victorian quality with which the City is identified. It also seems obvious that the experience of making the transition from place to place could well be a rewarding adventure in itself and ought not be limited to private automobiles.

To maximize, therefore, the potential for attracting the visitor and communicating the complex story of Galveston, it is pertinent to structure a planned, integrated interpretive system which we have chosen to identify as the "Galveston Connection".

In a very real sense, the story of Galveston is a story of contradictions and contrasts. It is a city which boasts contemporary architecture, fast food chains and a beach front lined with motels, yet its most eloquent architectural expression is in the Victorian homes which proliferate in the downtown area.

It is a city which struggles for every tax dollar to support its city services, yet a century ago it was one of the most affluent communities west of the Mississippi.

It is a city that looks upon its current port activities as wholly an industrial expression virtually ignored by the tourist

and often a subject of controversy in the community. Yet, it is the precursor of these modern transportation systems which molded the cultural and political history of Galveston.

Finally, it is a city which enjoys a contemporary reputation as a moderately priced resort area typical of many gulf communities, conservative, American and relatively homogenous. Yet, Galveston historically has been a port of immigration for a broad spectrum of middle European nationals, many of whom stayed in the Galveston area and are very much a part of its cultural structure.

For the most part, visitors to Galveston are completely unaware of the rich heritage in which modern Galveston is rooted. For these people, it is the sun and surf which are the magnet and their experience on the Island is confined primarily to Stewart Beach, Seawall Boulevard and occasional excursions to Sea-a-Rama, the Lone Star Drama and the public park.

Obviously, it would be to the advantage of both the visitor and the community if this multi-faceted history was organized and presented in a clear and understandable form. From the interpretive viewpoint, the Galveston Connection will provide just such a vehicle.

Telling the Story

Of the many components comprising the "Connection" none is more in character with the halcyon days of Galveston affluence than the antique trolleys which move up and down The Strand. Clicking comfortably along the narrow rails and clanging their warning bells at each intersection the trolleys complement the restored Victorian structures which flank this wide nineteenth century thoroughfare.

The interpretive impact of the trolley is not, however, restricted to The Strand restoration. That quality is sustained by the continuation of the trolley route along the southern limit of The Center for Transportation & Commerce and its termination at the intermodal arrival point at the entrance to the Center. The juxtaposition at this point, of trolley and the Center underscores the symbiotic history of transportation and the Galveston economy.

Little more of an interpretive nature is required to emphasize the trolley ride except perhaps for the motorman who, dressed appropriately for the turn of the century, tends to speak with the passengers about events and conditions of the time. The intersection of 22nd Street, Strand and north of the harbor is converted to a landscaped pedestrian mall leading to a visitor information center developed within a restored or reconstructed

building. Here, the visitor may acquire maps, information and advice concerning the Connection and other Galveston facilities.

A brief stroll from the Visitor Center brings the visitor to Pier 19, home for the small "mosquito" fleet of commercial fishing boats and berth for the tour boats which regularly bring the visitor into direct contact with the busy harbor. The harbor tour is a significant interpretive opportunity, offering a rare view of maritime activity from water level. From this vantage point, the giant tankers, grain barges and container ships seem even more massive. The changing scene within the harbor or ship's channel provides a wide spectrum of subjects which the live interpreter aboard the boat can use as illustrations of the city's maritime heritage. That heritage is reinforced by other programs aboard the tour boat including photographs, film and graphics of harbor traffic dating back to the era of sailing ships and steam. The vehicles have changed and the cargo is more sophisticated, but the rhythm of the port has been constant almost from the first. Where cotton was everywhere, now grain and oil are prevalent. Super sized container vessels lie at anchor where a dozen sailing ships might have been accommodated. Evident also in the bustling harbor is the effect of the ship's channel to Houston as tugs nudge foreign flag vessels through the narrow access and north to the inland port.

All of this and more expand the visitor's appreciation of this important aspect of Galveston's history.

A bonus of the tour is the stop at Sea Wolf Park. Here, stimulated by the World War II submarine are a variety of programs interpreting the role that Galveston has played in the Nation's military history.

Here too, is a media and graphic presentation attesting to Galveston's function as a port of immigration for tens of thousands of Europeans. To a considerable extent the immediacy of the immigration facilities on Pelican Island is responsible for the ethnic mix at the base of Galveston culture.

Continuing on the harbor tour, the visitor will learn something of the hydrology and shoreline ecology which effects the physical character of Galveston Island. The effects of dredging by the U.S. Army Corps of Engineers, particularly the dumping of spoils on the Island is covered.

Returning once again to Pier 19, the visitor may choose to wander among the several restaurants and shops which are themed to the cultural background and craft of the shrimp fisherman, the sports fisherman and the various industries which support the fleet.

Another interesting interpretive opportunity available within a short walk from The Strand is the Pier 25 complex. Here, accessible by a raised walkway spanning the many parallel tracks of the Wharf Railroad is a generous upper level space shared with the cruise ship terminal. The space is configured to provide a presentation of maritime history. Within this environment logically related to ongoing maritime activities is an assembly of models, media artifacts and technology which traces the evolution of the sea-going vessel, the history of the Galveston wharves and the handling of cotton, grain and other goods which have historically been the source of wharf income over the years. The nearby grain elevators are woven into the story so that when viewed from the elevated walkway or from other vantage points, they gain additional significance for the visitor.

In many ways, the Maritime Museum extends and reinforces the thrust of the program which the visitor will have experienced at the Center for Transportation & Commerce just across the tracks west of the Shearn Moody Plaza. In fact, this Museum is a part of that event, and is programmed to embellish the context of Galveston's transportation heritage.

The chronology of the Maritime Museum, inevitably leads to the present and no better expression of contemporary maritime

operations could be created than the live activity of the port, viewed from a continuous "sky-ride" running eastward atop the Piers and parallel to the harbor. From this exciting example of "people-mover" technology a narrated program describes and interprets harbor activity as far as the eye can see.

For the less daring visitor, a covered arcade just below the sky-ride travels the same path.

The ride continues overhead to Pier 19 where access is available to those events previously described. The walkway, however, terminates at the east end of the Pier where the iron hulled sailing ship Elissa is under the process of restoration. This living history experience is a fitting culmination to the maritime presentation and permits the visitor an opportunity to learn and view such crafts and ships chandlery as are identified with the sailing vessel.

Returning to The Strand, visitors can re-board the trolley and travel eastward where other aspects of Galveston history await. For example, the historic districts incorporating the Bishop's Palace and Ashton Villa may be viewed by walking tour, or perhaps, with greater interpretive emphasis from the tour vehicle which originates at Stewart Beach and follows one of several routes through Galveston.

Either way, the visitor has an opportunity to identify with the Victorian era of Galveston affluence and to appreciate the quality of life to which the nineteenth century Galvestonian was accustomed.

In addition, the visitor will develop an understanding of the restoration process and the importance of preserving and reusing these valuable architectural assets.

At the extreme east end of The Strand is yet another but very different architectural artifact. The original building housing the first Texas medical school, affectionately known as "Big Red", stands in stately splendor amidst the large complex of modern buildings which comprise the contemporary medical school.

Within the nineteenth century building, the visitor will find artifacts and graphics, instruments and other presentations reflective of medical advancement spanning almost a century and a half.

The interpretive opportunities associated with the Galveston Connection are focused on the north side of the city for all of the reasons which motivated the Study. However, with the connection by trolley as well as rubber tired vehicle to Stewart Beach and Seawall, interpretation need not be limited to that area.

A point on Seawall should be developed as an interpretive facility concentrated on marine biology and particularly the flora and fauna of both land and sea.

In summary, an interpretive viewpoint of the Galveston Connection must conclude that there is implicit in the concept, an unparalleled opportunity to create an integrated continuous web of information embracing the whole of Galveston's culture and industry.

This carefully stitched fabric of history will act as a catalyst to stimulate interest on the part of new visitors; will slowly change the image of a Galveston from that of a one season resort to a year-round visitor attraction; will help immeasurably to bolster the existing programs at Lone Star Drama and Sea-a-Rama. Finally, awakened interest in the historic districts will lead to accelerated development on The Strand and Mechanic Street as well as other areas as yet unexplored.

INTERPRETIVE BUDGET PARAMETERS

| | |
|--|--------------------|
| The Strand Trolley | - |
| The Harbor Tour (graphics & media) | \$ 25,000 - 35,000 |
| Sea Wolf Park (military & immigration) | 200,000 - 250,000 |
| Pier 19 (graphics & artifacts) | 35,000 - 40,000 |
| Visitor Center (graphics & brochures) | 25,000 - 30,000 |
| UTMB (Medical Museum) | 75,000 - 100,000 |
| Historic District (markers & signings) | 10,000 - 15,000 |
| Maritime Museum | 250,000 - 300,000 |
| Wharf Overlook & Elissa (graphics & media) | 65,000 - 85,000 |
| Seawall Marine Center | 250,000 - 300,000 |

KEY TO INTERPRETIVE PLAN

A. The Strand

1. "Wall Street of the South"
2. Merchant History
3. 19th Century Urban Architecture
4. Early Labor Unions
5. Urban Transportation

B. The Harbor

1. Marine History
2. Shipping and Water Transportation
3. Ship Building
4. Marine Science and Shoreline Ecology
5. Engineering

C. Sea Wolf Park

1. Military History
2. Immigration

D. Pier 19

1. Commercial Fishing
2. Party Boats
3. Fishing Culture
4. Indigenous Foods

E. UTMB

1. Old Red
2. Medical History

F. Historic Districts

1. Victorian Architecture
2. Galveston Families
3. Restoration Technology
4. Registry of Historic Places
5. Victorian Lifestyles

KEY TO INTERPRETIVE PLAN (CONT'D.)

G. The Center for Transportation & Commerce

1. Transportation History
2. Cultural History
3. Mercantile History
4. Classic Connection by Rail to Houston
5. The Santa Fe Railroad
6. Lifestyles

H. Pier 25

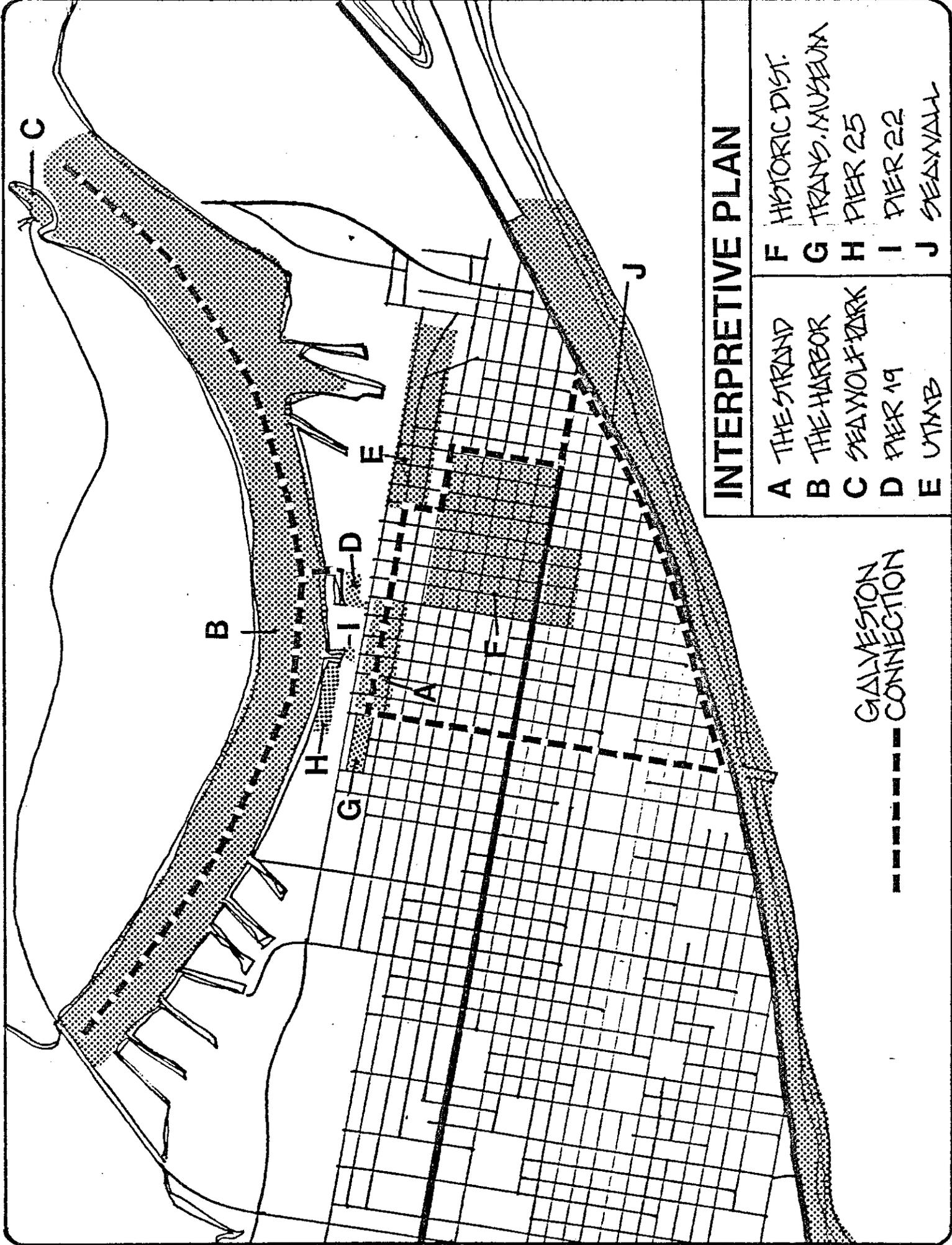
1. The History of the Wharves
2. Shipping and Wharves Operations
3. Rail Transportation
4. Maritime History and Engineering

I. Pier 22

1. Marine Restoration
2. History of Sailing Vessels
3. Exploration

J. Seawall

1. 19th and 20th Century Culture
2. Shoreline Geology
3. Flora and Fauna
4. Marine Biology



INTERPRETIVE PLAN

| | |
|------------------|----------------|
| F HISTORIC DIST. | A THE STRAND |
| G TRANS. MUSEUM | B THE HARBOR |
| H PIER 25 | C SEAWOLF PARK |
| I PIER 22 | D PIER 19 |
| J SEAWALK | E UTMB |

GALVESTON
CONNECTION



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PLANNING AND PHYSICAL DESIGN ANALYSIS

April 1979

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PLANNING AND PHYSICAL DESIGN ANALYSIS

INTRODUCTION

The intent of this section of the report is to assess the planning and physical design implications of the Galveston Connection. This evaluation weighs the combined components of the proposal as a broad planning concept and also considers the probable impact each will have on the specific physical and aesthetic character of the City.

The following text evaluates each individual component of the Connection idea. From the standpoint of planning and physical design issues, the most important factors which were taken into consideration for each system are as outlined below:

- 1) Economic feasibility for construction, implementation, and operation.
- 2) Appropriateness of image to the unique character and ambience of Galveston.
- 3) Environmental impact on visual and aesthetic qualities of the City.

ELEMENT A - TROLLEY SYSTEM

Interest in this particular system is a direct outgrowth of increasing local appreciation of Galveston's very special historic heritage and the many values to be realized through its preservation. Not the least among these benefits is increased tourism, as is evidenced by the growing popularity of such historic areas as The Strand, Pier 19 and the various residential historic districts. Reinstating trolley service offers the dual advantage of providing a viable transportation alternative for tourists that is compatible with the historic character of Galveston and interpretative goals as well. In addition, the system also has the potential in a more general sense to serve as functional transportation and as a landuse development tool.

Concept

As a transportation planning concept, re-introduction of the trolley can be viewed in at least three related segments which are illustrated in Figure 1. The total trolley component could provide a basic backbone for a coordinated system of vehicular and pedestrian access. By interfacing with other elements of the Galveston Connection and existing transportation systems, it ultimately

Galveston Historical Foundation
Visitor Center & Proposed
Public Parking

Link to Harbor Tour
@ Pier 19

THE STRAND AREA

Public Parking
UDAG Project

Center for Trans-
portation & Commerce

UTMB

Opera House
Potential Redevelopment
Corridor

Parking Facilities

To Visitor Center &
Beach Front Facilities
via Mechanic & 21st Streets

PROPOSED TROLLEY SYSTEM

Figure 1

has the potential of linking major attractions and activities throughout the Island.

The Strand area is the logical focus for the initial phase of the trolley system. As a central element of recent revitalization efforts, the area's outstanding architectural character and strong appeal to visitors and local residents provides an optimum setting and an identifiable market for ridership. Introduction of the trolley would benefit both existing activities and uses, as well as other attractions and facilities which are now underway or could be developed in the future.

The basic approach would establish a trolley line connecting Shearn Moody Plaza and the Galveston Center for Transportation and Commerce, on the west, with the eastern end of the Strand area. This route would service the section of the Strand where the primary users and activities are now concentrated, and would also improve access to the Cruise Ship Terminal (Pier 25), Pier 19, and other attractions in adjacent areas. Of the possible routing alternatives, this simple, direct alignment would provide maximum exposure to the trolley with a minimum of investment for rolling stock, trackage and support facilities. It creates a direct link between the planned off-street parking facilities at the Cruise Ship Terminal garage and Shearn Moody Plaza, and as an additional advantage, locates the trolley as a "living" interpretative element for the Galveston Center for Transportation History.

A second possible variation of the trolley idea would expand service east from 20th Street to the University of Texas Medical Branch. Several advantages support this option. The UTMB campus, with its large "population" of faculty, staff and students, potentially provides a significant ridership market. Trolley service would provide a stronger link between the campus, the Strand area, and the Central Business District in general, and would make these areas of the City more accessible and convenient as a logical place to shop, live and be entertained. In concept, this option also could greatly increase the attractiveness of the section of the Strand between 20th Street and the UTMB campus as a future redevelopment area -- in effect serving the dual function of a transportation system and a land use development tool. The cost of implementing and operating this variation would be significant; however, considering the size and potential of the UTMB "market", connecting the campus with the Strand and the CBD in a viable way should be a priority. Also, continuation and expansion of the existing London Bus service between the two areas will be an interim step to implementing the trolley per se.

A third approach to utilizing trolley service would connect the Strand area with the southside of the Island via Mechanic and 21st Streets. This option would provide a direct link to the major attractions and activities generated by Stewart Beach, the Moody Civic Center, southside hotel/motel accommodations and various tourist/entertainment facilities. It also would establish a significant public transportation alternative along the route for residents of adjacent areas needing to move between the CBD/Strand area and Seawall Boulevard destinations. Including Mechanic Street specifically could potentially encourage redevelopment of that significant historic street.

Several important points should be considered regarding this option. An obvious implication is the added length and inherent increased cost of trackage; also the narrow width of Mechanic Street presents an added difficulty to successfully integrating the trolley line with automobile traffic. Additional rolling stock would probably be required to maintain frequent headways throughout the length of the system. Perhaps most importantly, the Mechanic Street - 21 St. southside option should be the outgrowth of a market created by a combination of the following factors: 1) upgrading and expanding the beachfront hotel accommodations, 2) expanding convention trade and supporting facilities, and 3) developing a user tradition established by a minitram or similar conveyance on the route. Subsequent to these factors creating a definite ridership demand, the trolley element could be implemented on a very sound basis.

Design Implications

Several vehicle types should be evaluated for this system. The traditional electric trolleys on rail is perhaps the most obvious consideration. Although trolleys of any sort were never used on the Strand, there is historical precedent in Galveston for this type of vehicle. Refurbished rolling stock is available, and would, in the strictest sense, be the most authentic alternative; however, in terms of aesthetics and safety, several major considerations should be noted. The visual impact of overhead electric wires and support standards required by typical vehicles is a major disadvantage. Even though technically authentic, they are unsightly and would greatly impair the visual quality of the streetscape. Issues of authenticity aside, they are no more desirable than other types of exposed utility lines, poles and equipment, and serious consideration should be given to their use. Electric trolleys powered by a third rail at grade, while much more visually acceptable, are extremely dangerous for pedestrians and should not be considered as a feasible alternative on that basis.

Refurbished or newly manufactured trolleys powered by conventional gasoline, propane or diesel engine is the preferred alternative. Like the conventionally powered trolleys, these vehicles offer the same advantage in terms of design and "authentic" appearance with minimum impact on the visual quality of the street. They are safe, and the substantial capital cost of overhead or at grade power equipment is eliminated. Also, currently available designs more than adequately reduce noise and other pollution to acceptable levels.

Rather than strict authenticity, the image of the vehicle selected and its positive effect on the ambience of the City should be the primary consideration. An engine powered car running on rail, -- or tires, if dictated by cost -- would deliver the same efficiency, excitement and visual stimulus as overhead electric vehicles with far fewer design disadvantages. The lines and detailing of the cars whether new or restored should be as simple and aesthetically pleasing as possible, and the appropriate features to insure safety and passenger comfort should be a minimum standard.

Another important design consideration is the placement of the trolley in the street. Optimum placement should provide adequate visibility, easy and safe operation, convenient passenger loading and unloading, and minimum conflict with vehicular and pedestrian traffic.

The design studies illustrated by Figures 2 and 3 present the various advantages and disadvantages of different track placement on the street. As cases in point, the Strand is used as an example of a relatively wide right-of-way situation, with Mechanic as the prototypical narrow street.

Various alignment configurations are possible both with single and double track systems. Tracks can be located on one or both sides of a street or at the centerline. In general center placement offers maximum advantages in design and safety; however, on narrow streets, side placement is often the most viable alternative in the interest of safety and maintaining on-street parking. Consideration must also be given to the location of passenger loading areas. Access points could be restricted to the ends of blocks and/or could be provided a mid-block location. It is also possible to allow loading and unloading at will throughout the length of the line, although safety and ticketing, if fares are charged, must be carefully analyzed.

Regardless of specific placement, trolley lines should be located in such a way that there is minimum interference with drainage facilities and other utilities.

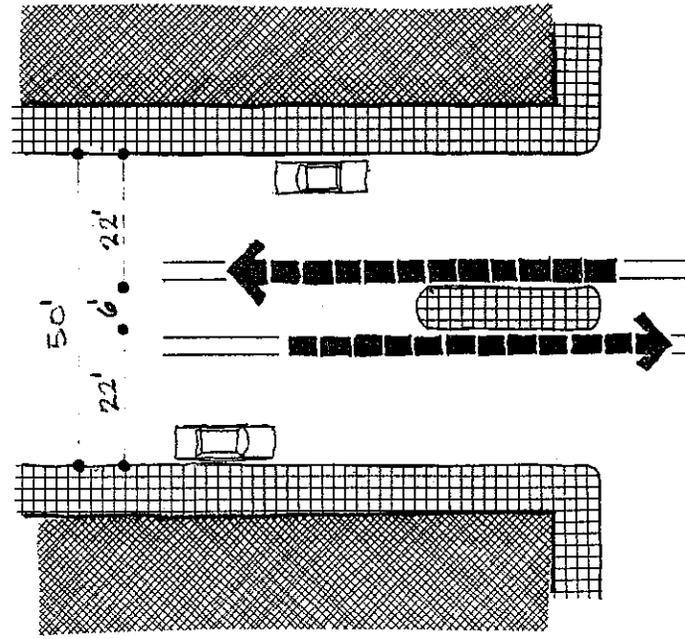
Planning Implications

Other than the potential significance of the trolley as an added element of Galveston's strong preservation planning emphasis, several other planning related factors should be stressed.

Perhaps more than any of the other components of the Galveston Connection, the trolley system must be carefully coordinated with the established transportation master planning of the City. This is true regardless of the ultimate routing scheme, but it will be especially essential in the immediate Strand area.

Given the present level of revitalization, vehicular and pedestrian circulation are already becoming critical factors. As activity in the area increases, conflicts between automobiles and people will undoubtedly increase. The trolley is intended to help alleviate congestion by offering an alternative to the individual car and encouraging walking. However, introduction of the system also has the potential to add yet another element to the transportation "puzzle", if not carefully integrated with both pedestrian and vehicular flow. Banning auto and truck traffic from the Strand itself is not seen as a viable option at present, and considering the service needs of both retail and commercial businesses on the streets, a "pedestrian mall" solution does not seem feasible in the future.

One possible alternative which should be considered involves a reorganization of vehicular circulation patterns on a block-by-block basis building on the existing system of one-way streets. As illustrated in Figure 4, such an arrangement could allow vehicular access to each block of Strand and Mechanic Streets while also adequately accommodating a centerline trolley system and safe pedestrian access. The impact of the new major arterial thoroughfare planned for Industrial Boulevard north of the Strand, and the need for adequate on-street parking, additional surface parking lots and parking garages must also be considered.



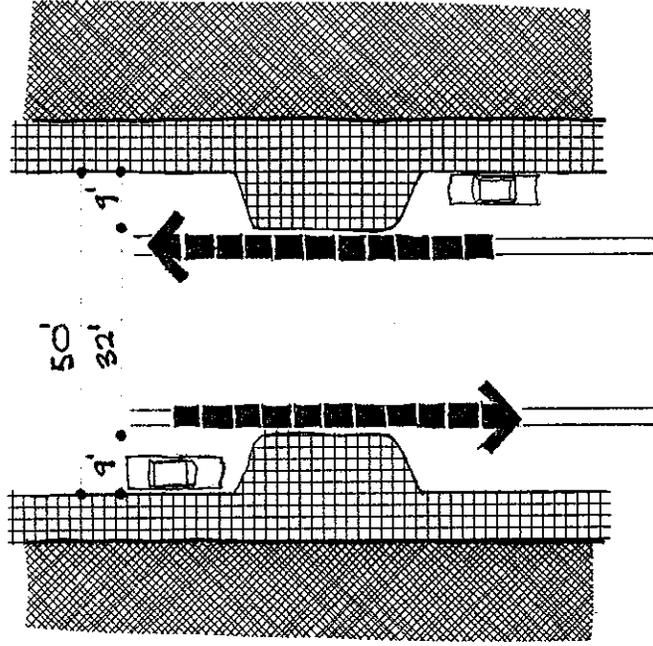
1. Access At Intersections

Advantages

- Allows passenger loading at logical points of pedestrian
- Does not eliminate existing parking
- Allows Staged Implementation of tracks

Disadvantages

- Center island not as comfortable or protected
- Auto passing lane periodically eliminated by trolley



2. Mid Block Access

Advantages

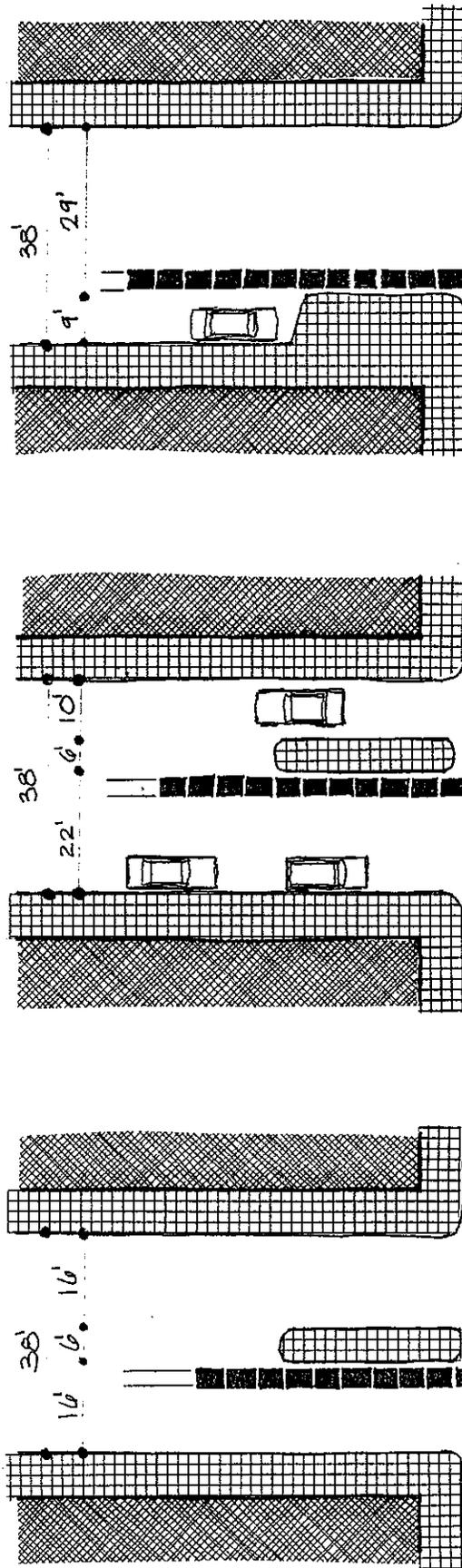
- Simplifies major intersections
- Utilizes Building Canopies for waiting areas

Disadvantages

- Eliminates some on-street parking
- Parking could slow trolley / cause accidents
- Not as suitable for phasing

TROLLEY SERVICE • STRAND

Figure 2



1. Island at Centerline

Advantages

- Logical pedestrian access at major intersections

Disadvantages

- Eliminates all parking
- Street too narrow for 2 way Traffic

2. Track at Centerline

Advantages

- Logical pedestrian access at major intersections

Disadvantages

- Eliminates parking on one side
- Street too narrow for 2 way traffic

3. Island at Sidewalk

Advantages

- Parking both sides
- Access could be at mid-block

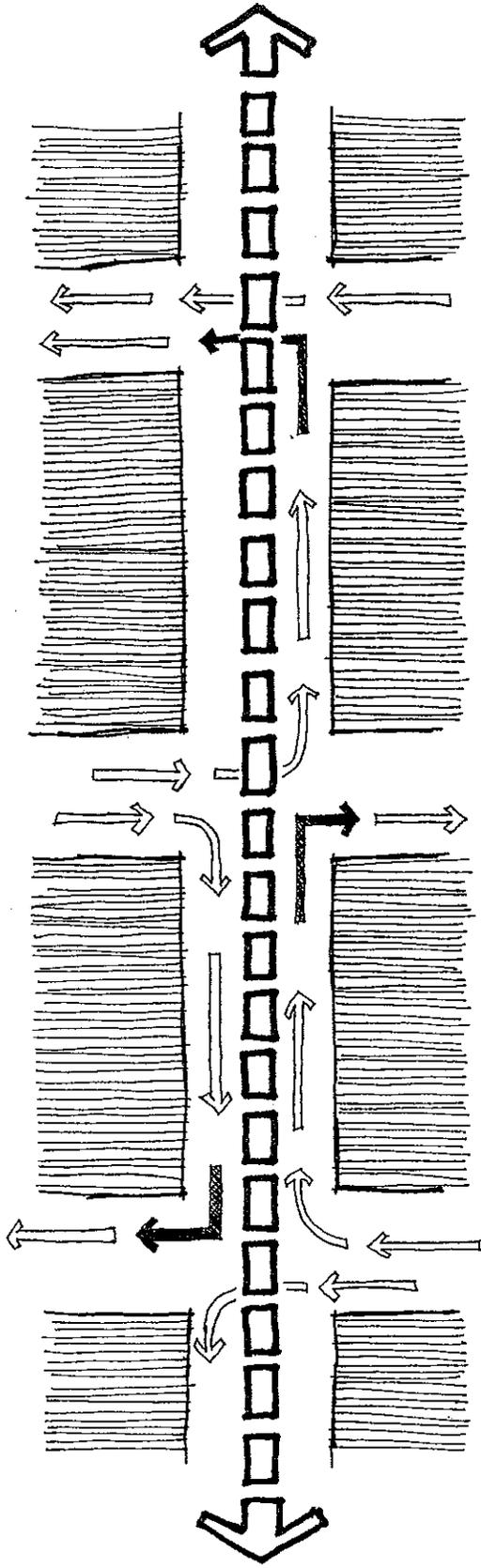
Disadvantages

- Eliminates some parking
- Possible interference with parked cars

TROLLEY SERVICE • MECHANIC

Figure 3

→ AUTOMOBILE □□□ TROLLEY



The Strand Should Remain 2 way But With No Traffic Proceeding More Than **1** Block Before Turning Off On Side Street.

- Strand will be more pedestrian oriented
- Strand would incorporate a people mover system which would combine convenience with increased Ambience
- All turning movements & Service remain
- All parking remains
- Proposed System can be done in stages

PROPOSED GENERAL VEHICULAR CIRCULATION • STRAND

Figure 4

The economic aspects of planning the trolley system are also important. Given adequate ridership demand and other advantages sufficient to support implementing the system, funds for both implementation and operation are obviously required. Dollar amounts in both instances do not appear to be prohibitive, but the costs are significant and, therefore, must be closely evaluated.

Initially the trolley would be primarily tourist oriented, and as a result, funding from the Urban Mass Transportation Administration for implementation is highly unlikely. Should the system be expanded in the future as a full-fledged component of the local public transportation network, UMTA assistance would seem at least feasible. At present, however, funding from a UDAG grant and/or funds from other federal sources, conventional private or public sources is the most probable alternative for money to construct the first phase (s) of the system.

In addition to these costs, operating and maintenance funding must also be arranged. A number of sources singly or in combination should be fully investigated. These include the following:

- 1) Revenues from fares charged for the system.
- 2) Allocations from current revenue sources of the Park Board of Trustees.
- 3) A percentage addition to the present hotel/motel room tax.
- 4) Special revenue bond issues by the Park Board of Trustees or other City entities with such authority.
- 5) Support from merchants in areas served by the system.

Closely related to funding issues, responsibility for operating the trolley must also be resolved. Operation by the Galveston Island Transit, operators of the City bus line, is preferable, although the possibilities of a private concession should be investigated.

Phasing of trolley is another important planning issue. It is highly unlikely that the ultimate system connecting Shearn Moody Plaza with UTMB and the south side of the Island as well could be funded initially. Implementation of manageable segments of the whole will be essential. In terms of planning priorities the following phasing schedule seems most appropriate:

- 1) The Strand from the Galveston Center for Transportation and Commerce to 20th Street.
- 2) 20th Street to the University of Texas Medical Branch.
- 3) The Strand to Seawall Boulevard via Mechanic and 21st Streets.
- 4) It should be noted that phasing can also be accomplished by initially constructing a single track system that could be expanded to double-tracks according to demand.

Existing Trackage and Brick Paving

A further comment on phasing and routing with respect to existing trolley tracks should also be made. The ultimate success of any segment of the system will depend directly on its location relative to the highest demand. If these locations coincide with existing trackage and the equipment can be economically recycled, every effort should be expended to utilize these alignments. It is not recommended, however, that the routing of the trolley be dictated according to existing buried tracks if these locations do not satisfy demands for service. It should be noted that if old tracks can be salvaged, the possibility of restoring the brick paving in conjunction with the work should also be investigated. The brick paving which is below the asphalt topping on Strand and some of the other streets where tracks were located would add a great deal of quality to the look of the streets if it is feasible to again expose it for service. This possibility must be carefully analyzed.

ELEMENT B - PIER 25 OVERPASS

From a planning and physical design standpoint, a grade separated connection between the parking garage to be constructed on The Strand at 25th Street and Pier 25 is essential to the successful, safe and efficient operation of the proposed Cruise Ship Terminal. Without this link, transfer of passengers and baggage at street level will be in direct conflict with the frequent railroad traffic and on-going cargo operations nearby. Also, the scheduled development of Port Industrial Boulevard into a major arterial thoroughfare will present a further obstacle for passenger service to and from the terminal in the very near future.

As an element of the Galveston Connection, the overpass would also serve as a pedestrian link for other tourists from Shearn Moody Plaza and The Strand areas in general. Providing this access to Pier 25 is a logical complement to developing observation areas directly on the ship channel and ultimately a Maritime Museum as an adjunct to the Cruise Ship Terminal. As pedestrians move across the overpass, they will be afforded the added interpretative experience of overlooking the railroad and cargo facilities of the Galveston Wharves adjacent to the site. The element is definitely in keeping with the idea of providing visitors with an in-depth understanding of the Island's history, and first hand knowledge of the City's maritime heritage and the continued importance of the Port is essential to that goal.

Funding for the overpass is provided for along with construction of the parking garage. The primary planning and design considerations to be acknowledged deals with effectively providing access to the link from street-level. An elevator or other mechanical transportation is a must so as not to discourage the typical tourist, as well as the handicapped, from utilizing the link. For optimum success, this vertical connection should be obvious and convenient to both the Strand and the Center for Transportation and Commerce at Shearn Moody Plaza. Quality graphics to identify and explain access to users is a must. Also, adequate separation between pedestrians and the vehicles using the garage must be provided, and the addition of overlooks at various points along the overpass will facilitate interpretation. It is likely that a motorized system for transporting passengers baggage will be needed. A small "cotton cart" type vehicle which is typical of the Port area

could be adapted for this function, and if necessary, could also provide transportation for people.

It should also be noted that the construction of the parking garage itself is also important to the Galveston Connection concept. This structure, as well as several others at various convenient locations, will provide badly needed tourist and resident parking with minimum impact on the environmental character of the City.

ELEMENT C - HARBOR TOUR

The proposal to institute a boat tour of the Galveston Harbor is one of the most exciting prospects of the Galveston Connection. As well as being an unique interpretative alternative which should receive wide acceptance and use, it has outstanding planning potential in terms of ease of implementation, operation and maintenance. It would also fulfill two valuable functions at once : 1) provide an additional major visitor attraction, and 2) provide an alternative route to Sea Wolf Park on Pelican Island north of the City.

As with the Pier 25 overpass, this element is complementary to the maritime environment and orientation of Galveston and would provide tourists with a completely different perception of the Island as City, port and recreation spot. Pier 19 or Pier 22 are possible locations for the terminal area. Each is operated primarily as a small craft basin, minimizing potential conflict between the Harbor Tour and on-going Port operations; however, Pier 19 is the most logical choice for a number of reasons.

Originating the tour at Pier 19 will add yet another intriguing activity to the site which is conveniently located midway between the Strand area and UTMB. In combination with the local Mosquito Fleet, fish houses and charter fishing services, the ambience and economic basis of the area as a major attraction will be strengthened. The recently adapted Pier 19 Master Plan, when implemented, could allow for accommodating the tour. If carefully coordinated with existing and planned facilities, the tour can be successfully integrated, especially if additional parking is provided in the immediate vicinity to supplement on-site spaces and those available (on a periodic basis) at the adjacent Pier 21 banana terminal. It should be noted that an improved pedestrian connection between the Strand and Pier, as proposed by the Pier 19 Master Plan, becomes even more necessary with the addition of the harbor tour.

At Pier 22, on the other hand, space problems for parking and boats would be significant. It is doubtful that the site could satisfactorily accommodate both its existing uses and increased demand for services if the Harbor Tour were introduced.

However, if these difficulties could be successfully handled with minimum impact on surrounding Port operations, the popular seafood restaurant on the site would be an asset to the tour activities. Also, an association between tourist facilities at nearby Pier 25 could possibly be emphasized.

Revenue for the Harbor Tour should be sufficient to fund its implementation and operation. This is likely to be very attractive to a private operator, such as a charter boat service at Pier 19, making this element of the Connection independent of other tourist development if necessary.

ELEMENT D - LINK BETWEEN THE STRAND AND PIER 19

The various activities at Pier 19 draw substantial numbers of visitors and local residents at present, and it is anticipated that its appeal will increase significantly when the recent master plan for redevelopment is implemented. Revitalization of some of the facilities is already underway, and others, including the improvement of the 20th Street entrance, are planned for the near future. With the proposed addition of the Harbor Tour and the planned upgrading of Water Street (Port Industrial Boulevard) to a major arterial, a workable pedestrian link between the Strand and the Pier 19 site becomes crucial.

Several options should be considered to allow pedestrians to safely negotiate the heavy vehicular and railroad traffic which separates Pier 19 from the Strand area. Of these, a direct street level link as proposed by the Pier 19 Master Plan is most feasible in terms of function and economics. Properly landscaped, paved and signalized, this approach would provide much improved access and encourage pedestrians rather than vehicles at Pier 19.

This general redevelopment of 20th Street as a major pedestrian link could also capitalize on the scheduled upgrading of Water Street by creating a visitor center and parking facilities (possibly a parking structure) adjacent to the 20th Street-Port Industrial intersection. Needed off-street parking for Pier 19 as well as the eastern end of the Strand District could be provided and the facilities could serve as an auxiliary orientation center for general tourism. Locations to the east and west of 20th Street should be investigated; but the idea of coordinating such development with the Pier 19 improvements and the renovation of the Hendly Building by the Galveston Historical Foundation for its offices has particular potential.

Some type of overhead walkway could also be considered as an alternative. Although this approach would completely eliminate the many hazards of crossing at grade, special steps would have to be taken to attract pedestrians. Under usual circumstances, such an elevated overpass is most successful when combined with upper level uses at either end of the system. The high cost and considerable difficulty of aligning an overpass between a parking garage south of Port Industrial and an observation tower at Pier 19, for example, would be very difficult to justify.

Whether at grade or elevated, the planning and design of this element should be coordinated with redevelopment at Pier 19 and should be compatible with the architectural character and circulation patterns of the area. UDAG and Community Development Block Grant funding, as well as other municipal sources, should be investigated to support the cost of implementation and maintenance.

ELEMENT E - TRAIN LINK TO HOUSTON

The proposal of direct passenger train service between Houston and Galveston is conceptually a revival of the legendary Inter-Urban line which connected the two cities. Once the fastest inter-urbans in the country, the line was abandoned in the 1930's, and its right-of-way was converted to a powerline easement. Interest in reinstating a similar service has resulted in much speculation and at least two planning studies.

As envisioned by the Galveston Connection, a passenger train terminal area would be incorporated in the development of the Center for Transportation and Commerce at Shearn Moody Plaza. In addition to providing authenticity to the transportation center housed in the former Santa Fe Railroad complex, this element can be viewed as an intriguing transportation alternative for commuters as well as a mechanism to directly link Galveston with the Houston tourist market.

At the present time, the construction cost of a new rail line is prohibitive. Several existing lines which are used by various freight operations are theoretically available, but the cooperation of these companies to allow passenger service to share their facilities is at best, very questionable. More fruitful relations can possibly be arranged in the future, and if so the potential of excursion trains for special Galveston events such as the Dickens Festival on the Strand or special performances at the Opera House should be fully explored. With these in-roads and already significant gasoline costs, the possibility of commuter rail service as a sound planning concept may be much more feasible in the near future.

ELEMENT F - HARBOR OVERVIEW

As has been stated in reference to other connection elements associated with the maritime character of the Island, the importance of the Port of Galveston historically and at present is a potential interpretative resource which should not be overlooked. The heritage of the City and the Port are inseparably inter-related, and a clear perspective on this relationship is essential to perceiving Galveston itself -- past, present and future. The historical plays an important role in this attraction, but the fact that the Port is a living, working waterfront is equally alluring must also be recognized. Not even considering the tremendous impact of the Port as an economic mainstay, the unique ambience, intriguing diversity and sheer size of its operation has incredible appeal for the visitor. However, this very situation creates difficulties from an interpretative planning standpoint. The probable conflict between tourist and on-going Port activities is substantial, and the potential safety hazards and inefficiency of a major tourist-Port interface are very real for the Galveston Connection concept. In its most functional form, this link is seen as an elevated transportation system that would provide safety through vertical separation while maximizing interpretative potential. This element would be directly tied to the operation of the Center for Transportation and Commerce at Shearn Moody Plaza and would establish an interpretative transportation link from Grain Elevator "B" on the west and along the ship channel to Pier 19 or beyond on the east. Identifying a unique mode of transportation which would in itself be an attraction was also part of the rationale.

As originally conceived, an elevated monorail or similar kinetic system was proposed for consideration. This approach solves the basic problems inherent in the proposal, and offers the advantage of adding an unique, somewhat futuristic dimension to the Galveston Connection and the "inter-modal" arrival plaza at the Transportation Center.

Unfortunately, the high costs and complicated technical requirements of such systems can not be justified now or in the near future based on anticipated demand, making immediate implementation unpromising; however, on closer

evaluation, the basic concept remains an exciting option and should be retained for the future.

Other alternatives to the monorail were considered, including an elevated, open-air walkway or an overhead gondola cable system. These also present difficulties and in terms of other proposed elements such as the overviews at Piers 19 and 25, are realistically more of a duplication rather than a significantly different component of the Connection. On this basis they should be dismissed from immediate consideration also.

ELEMENT G - GROUND TRANSPORTATION CONNECTING THE STRAND, HISTORIC RESIDENTIAL DISTRICTS AND BEACHES

This element suggests the possibility of a continuous ground transportation system linking major concentrations of tourist activity on Galveston Island. These are the Strand area (including Shearn Moody Plaza, Pier 25, and Pier 19), the Central Business District, the residential historic districts, and important beachfront facilities (including Moody Civic Center, hotel/motels, and Stewart Beach).

The proposal postulates a unified vehicular system which could establish viable access to and from these primary destinations independent of the private automobile. In its most comprehensive application, such a system would interconnect or improve access to the maximum number of areas and activities possible. Ultimately a "loop" configuration across the Island would encourage visitors to arrive at various points along the route, park their cars and enter the system. Ideally, the frequency and direction of service would allow users to take advantage of any or all of the available destinations and return to their automobiles as desired.

Several routing options have been identified. These can be considered either as possible limits to the system or as suggestions for manageable implementation phases depending on demand and operational restraints. The "loop" characteristic should, in any case, be presented to insure convenience and flexibility. Various choices of vehicle types are also available. The most feasible include the following: trolley, municipal bus (or similar vehicle), and minitram.

Adaptation of the trolley car for this purpose is basically a further elaboration of the concept proposed by Element A. In general, the same observations as to advantages and disadvantages of this system can be applied; however, the extended distances in this situation further magnify the problems of cost and engineering outlined previously on this basis, the trolley as a feasible choice for the entire system is limited at present.

City-operated buses are a second alternative. Although the relative expense and easy coordination of this choice (given adequate demand) is an advantage, the suitability of the typical large city bus for satisfactory interpretation is a definite negative factor. Using the City bus system to interface with this element, however, is an attractive option which should be kept in mind.

A minitram, the third choice under consideration, seems to be most suitable for various reasons. The size, operational characteristics, and image of the system

support interpretative goals -- particularly for touring the residential historic areas where streets are narrow and canopied with trees. Environmental impact in all areas could be kept to a minimum with maximum interpretative flexibility.

Two possible approaches to operating the minitram are also distinct advantages. Preferably the system could be added to the Island Tourist operations. This would increase its reliability as general transportation and allow easy interface with other public transportation and common municipal terminals. On the other hand, the minitram, like the Harbor Tour, could be operated successfully and profitably by a private entrepreneur. It is very similar to the existing Treasure Island Tour Train, and in addition, a private operator has already proposed a similar system for the beachfront area.

Several general planning and design considerations should be noted regardless of the vehicle type selected. Routing must be carefully coordinated with the City transportation plan, and the specific design of the vehicle should insure passenger comfort and safety. Special precautions must be taken to reduce the impact of the system, especially in residential areas, with respect to noise, visual qualities, and pollution. It is also recommended that routes through residential areas be varied slightly; this will give the total districts maximum exposure and safeguard the privacy of residents as well. Lastly, this element could easily be operated on a year-round basis given adequate demand and provisions for unseasonable weather; and considering its profit potential, it could be implemented immediately, independent of other components of the Connection.

CONCLUSION

In addition to general comments made throughout this analysis, the following points should be noted and/or re-emphasized:

- 1) Although the central focus of the Galveston Connection is the physical linkage and proper interpretation of tourist attractions, the potential of the concept to enhance the ambience of the City and the quality of life for both visitors and residents is outstanding.
- 2) The Galveston Connection was conceived as a composite of elements that together could become a major tourist attraction; however, many of the components have individual merit and can be implemented independently.
- 3) To be most successful, implementation of the Connection -- or its individual elements -- must be coordinated with the Planning and Transportation Departments of the City.
- 4) With respect to funding, implementation and operation, the opportunity to interface the public and private sectors at all levels should be used to maximum advantage.
- 5) Tourism is a valuable commodity which can become an even more important economic mainstay of the community. Emphasis should be placed on developing quality, year-round attractions, such as the Galveston Center for Transportation and Commerce, to compliment beach-related activities. Upgrading existing hotel and convention

accommodations, such as the proposed Galvez Hotel revitalization, and providing new support facilities are also essential. A comprehensive master plan for tourism on the Island should be considered.

MANAGEMENT AND OPERATIONS ANALYSIS

Petr Spurney & Associates
Washington, D.C.

April 1979

NOTES TO ORGANIZATIONAL CHART

The Board of Directors would consist of the Mayor, prominent citizens, council members, Historic Foundation, Moody Foundation, etc.

Executive Committee would consist of 5 to 7 members elected from the Board.

Executive Director is responsible for overall management and direction as well as liaison with Federal, state and local fund raising institutions.

Financial would be an accounting firm.

Legal would be a legal firm.

Director of Operations is responsible for transportation, harbor tour, Strand trolley, elephant train, production, staging and communication.

Director of Marketing would be responsible for admissions, commissions, advertising, public relations, and promotion.

Director of Programs would be responsible for festivals (Dickens, Sea Food), entertainment (opera house, sidewalk entertainers, pantomimes, puppets, etc., house tour, education.

Annual Budget

| | | |
|---------------------------------|-----------------|---------------------|
| Salaries | \$82,800 | |
| Legal & Accounting Services | 2,500 | |
| Rent | 3,600* | |
| Utilities & Phone | 2,400 | |
| Travel & Entertainment | 2,000 | |
| Misc. Office Expenses - Postage | 3,000 | |
| | <u>\$95,500</u> | *could be volunteer |

(Approximately \$100,000 per year.)

This budget does not include advertising and promotion which would be covered by present room tax.

By using more volunteers and donated facilities, budget would probably approach \$75-80,000. In order to minimize initial expenses, you would consider using volunteer committees in the areas of marketing, operations and programs.

This is the minimum organization to operate Galveston Connection. Does not include any revenues, projections or cost of operations.

