TECHNICAL REPORT 3

JACKSONVILLE DPM

ALTERNATIVES EVALUATION PROCESS

JACKSONVILLE DOWNTOWN PEOPLE MOVER FEASIBILITY AND IMPACT STUDIES

PREPARED FOR
JACKSONVILLE TRANSPORTATION AUTHORITY
APRIL, 1979

PARSONS BRINCKERHOFF/FLOOD & ASSOCIATES
A JOINT VENTURE

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INTRODUCTION

This report is technical documentation of a major portion of Task 4 of the Jacksonville Downtown People Mover Technical Study. The work includes the determination of system parameters, the formulation of a planning balance sheet and a discussion of the important steps in the analysis and evaluation of the system alternatives.

The first step in the alternatives selection process was to formulate goals and objectives for both the DPM project and this technical/feasibility study. These goals and objectives were selected and written by the Citizens Advisory Committee (CAC), the JTA staff and a consultant, and were approved by the CAC on August 4, 1978. A copy of these goals and objectives are included in the appendix of this report.

The second step in the selection process was the formulation of the system parameters which are a general description of the boundaries of system elements used in the evaluation. These system elements include route alternatives, guideway types, station locations, development policies, maintenance proposals, vehicle selection, system controls, operations scenarios, capacities, performance options, safety requirements, reliability levels and passenger amenities. Each of these elements were reviewed and the acceptable limits or parameters were delineated. The various alternatives to be analyzed were described from these limits or parameters.

The third step is to find a method to quantitatively compare the various alternatives to be analyzed. The method chosen uses a planning balance sheet in the form of a matrix. On one axis of the matrix are written the goals of the DPM project as adopted by the CAC. As a supplement to these goals are a list of criteria and the weights by which each of the alternatives is judged. Along the other axis of the matrix are the various alternatives to be judged during the alternatives analysis. The CAC members, through their subcommittee organization and the Task Force, will be asked to employ this balance sheet during the evaluation of the various system alternatives.

After these three elements of the evaluation process are in place, each of the candidate alternatives can be evaluated. The process will eliminate all alternatives deemed unacceptable for Jacksonville. The alternative which best fulfills the goals and objectives of this project will be recommended to the JTA Board at one of its formal meetings. When the final alternative is selected, the system parameters will be narrowed so a single alternative can be described. The Reference System will be written in the form of preliminary system specifications to be used in the measurement of environmental impacts and the determination of system feasibility.

Study Background

The Jacksonville Downtown People Mover will be built as a fully automated guideway transit system under the terms of the grant requirements of the Urban Mass Transportation Administration (UMTA). A more complete description of the automated guideway transit (AGT) will be given in the following paragraphs, but its outstanding characteristics are that the vehicle is driverless and controlled remotely; the vehicle travels on its own separated and dedicated right-of-way; and it has the same general characteristics as a horizontal elevator.

The first study for a downtown people mover in Jacksonville, Florida was done in 1972 under the auspices of the Florida Department of Transportation (FDOT) and in response to local interest in having such a transit alternative. In 1976, the Jacksonville DPM study was updated and modified by the Jacksonville Transportation Authority (JTA) and submitted to UMTA as an application for a demonstration grant to build a downtown people mover in Jacksonville, Florida. This application was an entry in a nationwide competition sponsored by UMTA to fund the engineering and construction of at least three DPM systems in the United States. This demonstration will prove the feasibility of DPM's in an actual urban environment. The Jacksonville application was one of eleven finalists in the screening process. After due consideration, UMTA selected initially four cities for construction of a DPM; Jacksonville was not one of the four cities. However, the Jacksonville application was of such merit that UMTA issued a request for proposals to do the Jacksonville DPM Technical/Feasibility Study. By mid-June, 1978 a consultant was selected, a contract negotiated, and work had begun.

Study Purposes

The Jacksonville DPM Technical/Feasibility Study as conceived, has three broad purposes. First, the study is to formulate and describe a series of alternatives for the DPM in Jacksonville, analyze their relative ability to satisfy the goals and objectives of the program and to select one single alternative as the basis for further application for capital grant funds from UMTA. Two, the study is to measure, in a preliminary way, the environmental impacts of a DPM on the downtown area of Jacksonville and its surroundings. This environmental impact survey is not meant to completely satisfy the federal requirements for such investigation. It is to analyze for the JTA, the broad and critical environmental impacts of an AGT system as one part of the DPM feasibility. Third, the study is to test the financial, physical, transit service and social feasibility of creating a downtown people mover in the Jacksonville area.

The alternatives analysis is just one step in the decision for a downtown people mover in Jacksonville. It is, however, a pivotal step in the public acceptance of the DPM system. The fullest practical examination of various alternatives as they reflect regional interests will produce the single best alternative for transit in the core area of Jacksonville.

System Parameters

The system parameters are a generalized description of the Jacksonville DPM as it was conceived in this early stage of the investigative process. Because they test a wide range of alternatives, the system parameters do not describe a single system configuration or a single alignment. Rather, the system parameters describe only the acceptable limits or boundaries of the system configurations. Throughout the system parameters, the particular element of the system will be described, either as alternatives or a range of values. The vehicle/system's range of values includes most, but not all of the acceptable proprietary AGT systems now approved by UMTA. The range of values also describes most, but not all of the possible system and route alternatives in downtown Jacksonville.

The system parameters were chosen in concert with the JTA staff, the Task Force, and the CAC Technology, Planning and Design Subcommittee. The TPD Subcommittee especially devoted long hours and many sessions attempting to interpret the expected public acceptance and identify the interest and expectations of the ultimate user of the DPM.

The system parameters cover four basic areas—physical design, vehicle/systems, operations, and environmental impacts. Each of these areas of the system parameters are discussed in sufficient detail in the following paragraphs to gain a fuller understanding of the alternatives to be analyzed.

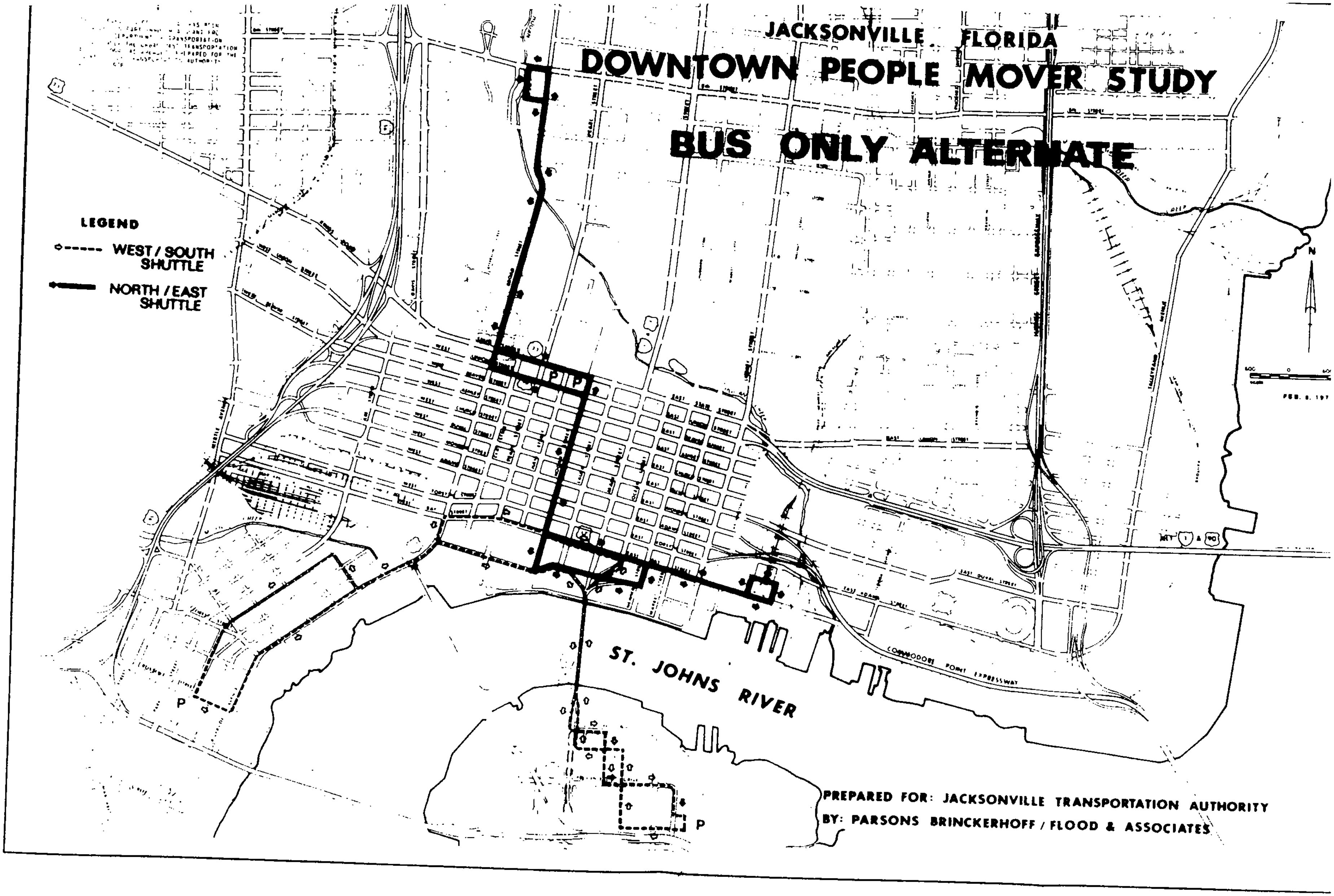
Routes

The most outstanding physical element of the DPM is its route. It was decided early in the study that four basic corridor alternatives would be examined. These are now called: 1) Do-Nothing, 2) Bus Only, 3) Proposal DPM Alternative, and 4) CAC DPM Alternative. The description of these alternatives are in the form of generalized corridors which will have, during the course of the study, many more detailed route variations.

Do-Nothing Alternative

The Do-Nothing Alternative is basically the 1985 projected transportation system as recently formulated, updating the Jacksonville Urban Area Transportation Study (JUATS) highway and transit networks and revising the 1985 socio-economic variables from the Jacksonville Area Planning Board (JAPB). The Do-Nothing Alternative consists of a modified street and updated transit network, using existing streets and adding certain relevant transportation improvements, including the one loop street reconstruction, the Acosta Bridge reconstruction, and the Acorn Street connection to the central business district (CBD). All of the street improvements affect the degree of traffic passing through or on the perimeter of the CBD, and therefore affect its access.

In addition, there are a number of bus route and service improvements that will be in place by 1985. These include the maintenance of the three downtown shuttle loops now operating with addition-


JACKSONVILLE, FLORIDA
DOWNTOWN PEOPLE MOVER STUDY
BUS ONLY ALTERNATE
LEGEND
WEST / SOUTH SHUTTLE
NORTH / EAST SHUTTLE
ST. JOHNS RIVER
COMMODORE POINT EXPRESSWAY
PREPARED FOR: JACKSONVILLE TRANSPORTATION AUTHORITY
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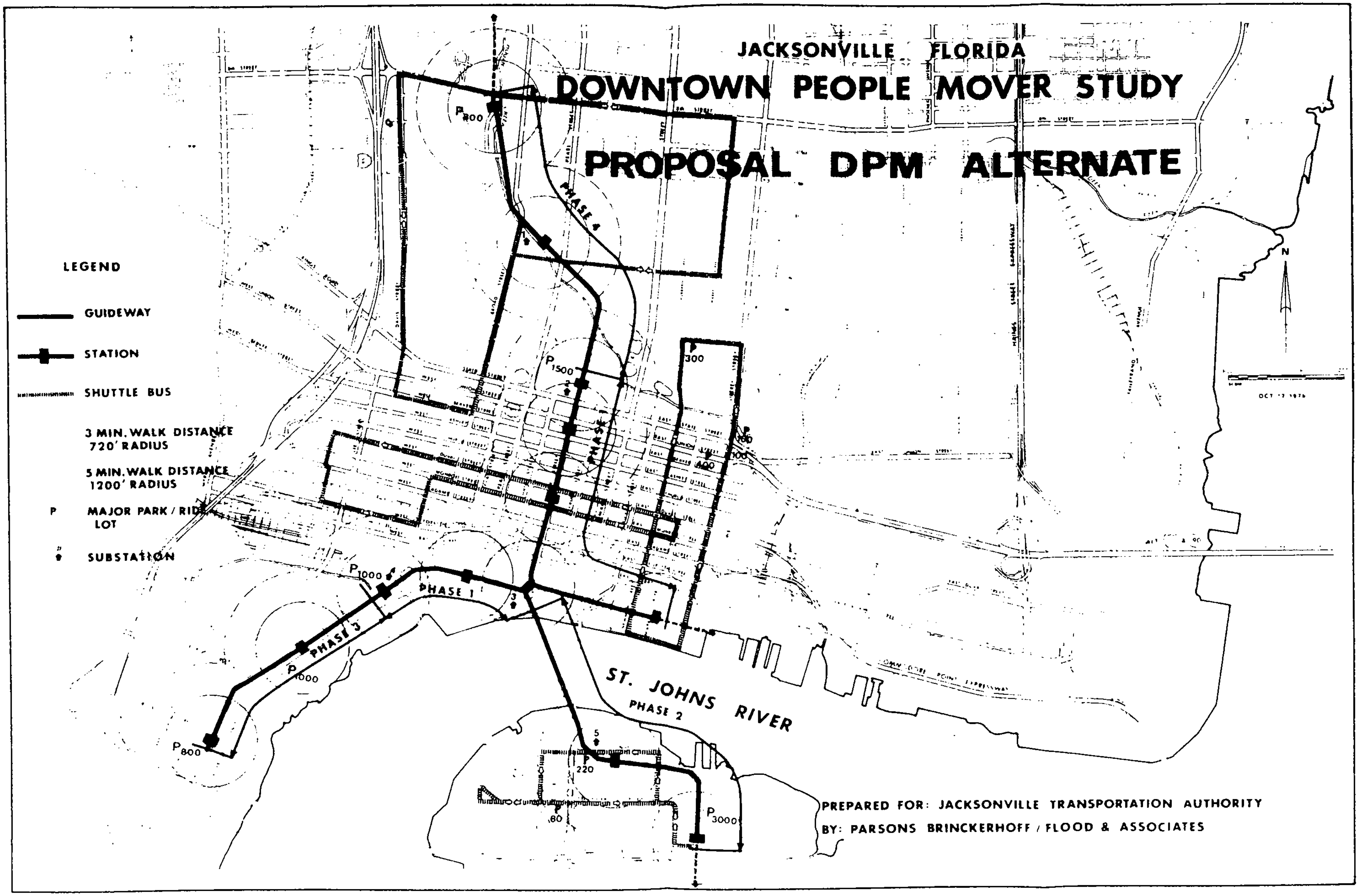
JACKSONVILLE FLORIDA
DOWNTOWN PEOPLE MOVER STUDY
PROPOSAL DPM ALTERNATE
LEGEND
GUIDEWAY
STATION
SHUTTLE BUS
3 MIN. WALK DISTANCE 720' RADIUS
5 MIN. WALK DISTANCE 1200' RADIUS
P MAJOR PARK / RIDE LOT
SUBSTATION
PHASE 1
PHASE 2
PHASE 3
PHASE 4
ST. JOHNS RIVER
P 800
P 1500
P 300
P 1000
P 1000
P 800
P 220
P 3000
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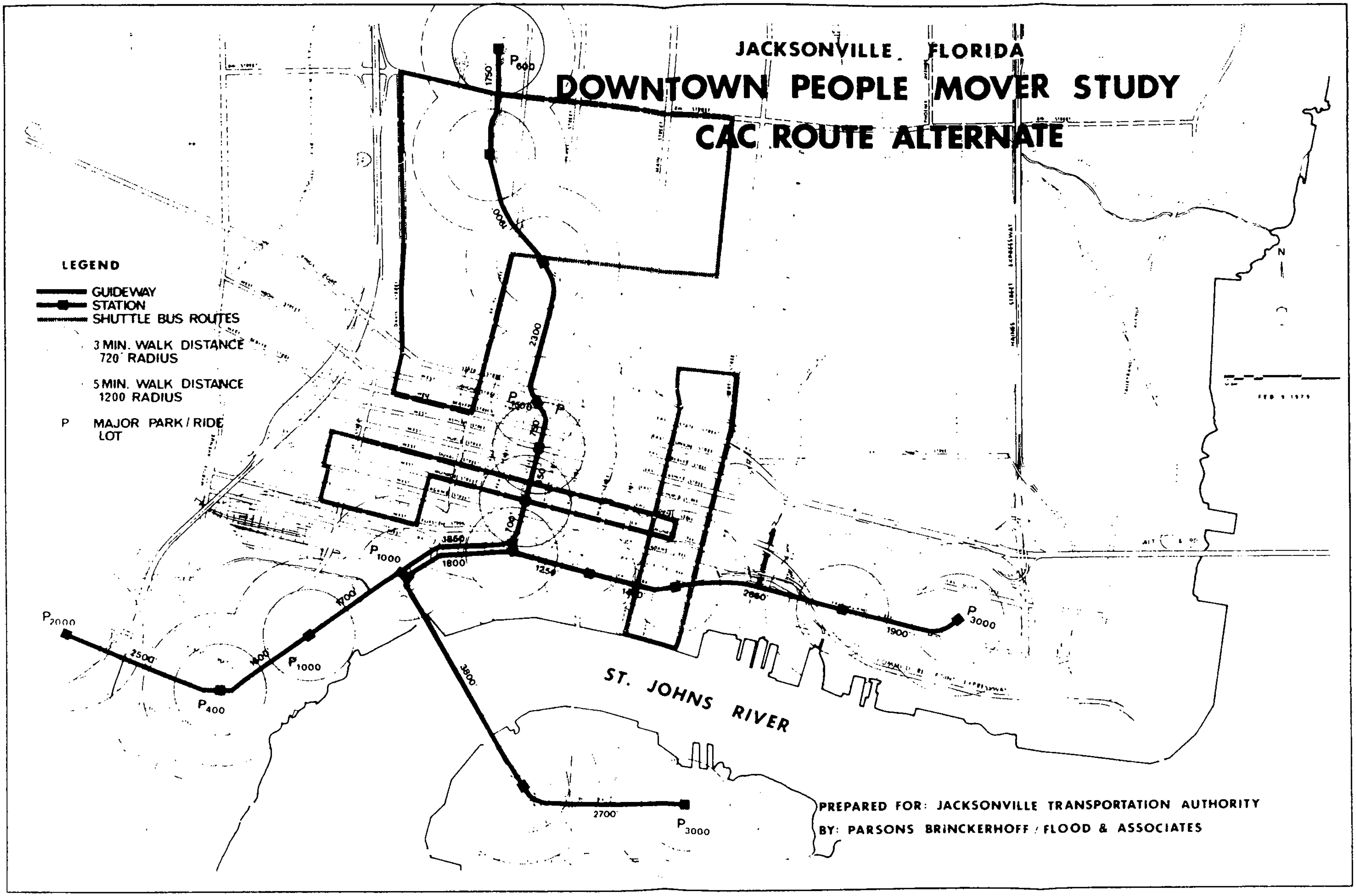

JACKSONVILLE, FLORIDA
DOWNTOWN PEOPLE MOVER STUDY
CAC ROUTE ALTERNATE
LEGEND
GUIDEWAY
STATION
SHUTTLE BUS ROUTES
3 MIN. WALK DISTANCE 720' RADIUS
5 MIN. WALK DISTANCE 1200 RADIUS
P MAJOR PARK / RIDE LOT
P600
1750'
1900'
2300
750
P1000
1850
1800
1254
2660
1900'
P3000
P2000
2500'
P400
1700'
P1000
3800
2700'
P3000
ST. JOHNS RIVER
N
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al parking facilities and closer headways. They also include all route changes made before 1978 and projected 1985 route improvements, which will be basically more equipment and closer headways. The new CBD redistribution is especially significant, including the new bus stop locations and bus circulation to be implemented in the near future. The basic radial and loop system of the JTA transit network will be kept. The Do-Nothing Alternative will not provide any CBD secondary distribution or circulation system other than the shuttle bus system now in existence. The Do-Nothing Alternative, in short, describes the 1985 transportation system with the current mix of transportation modes and system capacities. The Do-Nothing Alternative forms the baseline for this study against which all other project alternatives are contrasted.

Bus Only Alternative

The Bus Only Alternative basically provides a secondary distribution system in downtown Jacksonville using additional bus service on existing surface streets. For the purposes of comparison and analysis, the Bus Only Alternative replicates the Proposal DPM route alternative on nearly parallel routes with comparable headways and capacities. While it is not possible because of the differences in technology to exactly duplicate the DPM, the object of this route alternative is to determine if the required CBD secondary circulation system can be comparably served using only buses.

The Proposal DPM Alternative

The Proposal DPM Alternative as delineated for the UMTA competition is a rubber tired, electrically powered AGT on an elevated guideway. The guideway uses, as far as possible, existing right-of-way and streets in the Jacksonville downtown area. The Proposal DPM Alternative was to be built in three phases. Phase I is in the form of an "L" and begins at the University Hospital complex at Eighth and Jefferson Streets, proceeds southeast on an elevated guideway and at-grade sections along Hogan Creek Park corridor to the Jacksonville Junior College, where it turns due south. It then follows Hogan Street on an elevated guideway to Independent Drive and turns due east on new right-of-way to Market

Street at the Jacksonville City government center. On this initial phase, starting on the north, stations are to be located at Eighth Street, Fourth Street, in the Junior College campus, on Hogan Street between Beaver and Union Streets, on Hogan Street between Duval and Monroe Streets, on Independent Drive just as it turns from Hogan Street, and at Market and Water Streets in the government center. There are to be seven stations in all in Phase I.

Phase II of the Proposal DPM Alternative begins on the west at a station in the intersection of the Acosta Bridge and Riverside Avenue. It proceeds on the north side of Riverside Avenue across Broad Street to a station located near Pearl and Water Streets. It follows Water Street to the joint station on the Phase I line at Independent Drive and Hogan Street. This joint station is the transfer point for the two system phases. The Phase II line then crosses the St. Johns River in a southeasterly direction over the south approach of the Main Street Bridge to Gulf Life Drive and a station. Phase II turns east and then south to the vicinity of Prudential Drive and stops at a station which will have a lot to be used for remote parking for downtown.

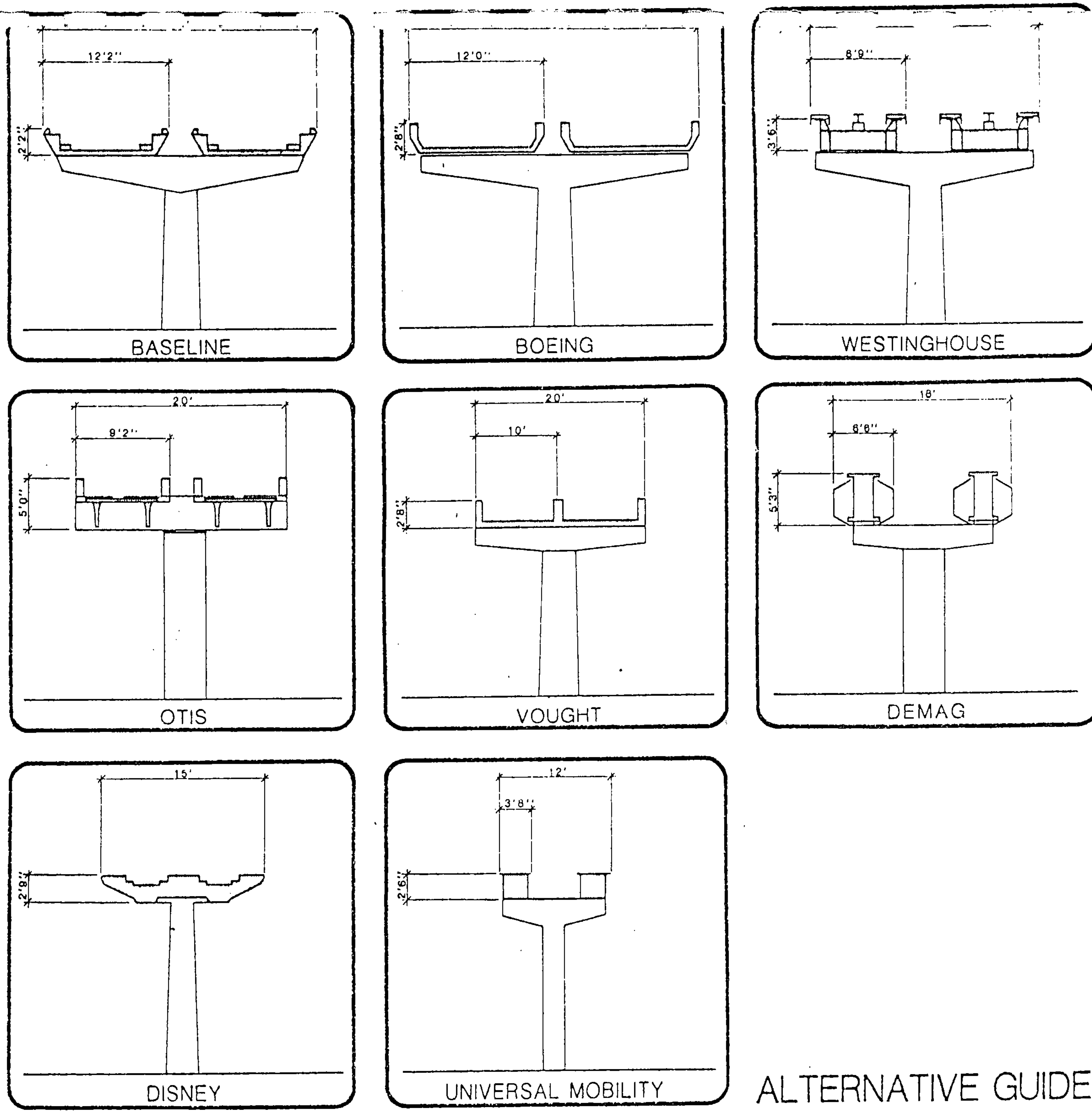
Phase III of the system consists of extensions on the west to the Blue Cross/Blue Shield Office Tower, on the east to the Gator Bowl and on the south to San Marco Square. A more detailed description of the route, its system, costs and benefits is described in the 1976 Proposal Application Plan. The Proposal DPM Alternative consists of 4.4 miles of guideway and 13 stations in its total configuration.

The CAC DPM Alternative

This alternative was developed by the Citizens Advisory Committee in mid-November, 1978 as their own route alternative to be tested equally with the other routes. Line I of the CAC route starts on the north with a station at Ninth Avenue and the west bank of Hogan Creek; it proceeds due south between Jefferson Street and Hogan Creek to a station at Eighth Street; then southeasterly along Hogan Creek crossing over Broad Street to a station opposite Third Street; then turns south again to the Pearl Street right-of-way to State Street where it turns 45° southeasterly to an intermodal station site bounded by Union, Pearl, State and Julia Streets; it then turns southward again and follows the Julia Street right-of-way to a station at Ashley Street; then south on Julia Street to a station at Monroe Street; then south again to Bay Street and the east transfer station. It then turns southwestward along Bay Street right-of-way to the west transfer station opposite the Acosta Bridge; then it proceeds southwesterly along May Street to a station west of Jackson Street; continuing to a station located at Magnolia and Edison Streets; it then turns westward down Edison Street, crosses over I-95 to a terminal station located near Lewis and Line Streets. Line II of the CAC DPM route begins in the central parking area between the Gator Bowl and the Coliseum with a terminal station; it proceeds west along East Adams Street right-of-way to a station located at Florida Street; it then spans the Commodore Point Expressway and turns slightly southwestward to a station bounded by Forsyth, Liberty, Bay and Market Streets; it follows Bay Street to a station at the intersection of Main and Bay Streets; it again proceeds west to the east transfer station at Julia Street; it then parallels Line I to the west transfer station opposite the Acosta Bridge; Line II then turns southeast on a new Acosta Bridge structure, spans the St. Johns River and continues on the east side of the bridge approach to a station located at Prudential Drive; it then turns due east following Prudential Drive to a terminal station just beyond Onyx Street. The system features major park/ride lots and bus interchanges at its extremities and four intermediate points. Line I has 11 stations, two of which are shared with Line II. Line I contains 15,900 feet of double track guideway of which all or nearly all is elevated. Line II contains 8 stations, of which two are transfer stations shared with Line I and 15,500 feet of elevated, double track guideway.

Guideway

Two distinct types of guideways have been chosen for consideration in the alternative analysis. The first is an elevated platform for rubber tired vehicles supported on columns above the ground with either a single or double track. The second alternative is a single elevated guideway beam for either a suspended or a straddle system vehicle. The guideways themselves are to be simple, maintenance-free and consistent with the operating goals of the DPM project. Both guideway types may be built directly on the ground in certain areas, but no underground guideway will be built.



ALTERNATIVE GUIDEWAYS

Stations and Sites

The stations for the DPM will consist basically of an elevated area divided into three parts; platform, fare collection and access area. The first area is a loading and waiting platform from which passengers would enter the DPM vehicle at floor level. The platform would be a minimum of 16 feet in width for a center platform and 10 feet for a side platform. It would be long enough to accommodate a four car train or four individual vehicles in the station at the same time. The second major station area will consist of a fare collection area which would include fare collection equipment, turnstiles and vending machines with sufficient queueing space on either side of the fare barrier to accommodate 15 minute peak patronage demand for the year 1995. The third area will provide access through one or more station entrances and consist of the vertical circulation elements necessary to connect the other two areas of the station. The vertical circulation elements will include stairs, escalators, and elevators in sufficient quantity to accommodate the estimated peak 15 minute patronage for the design year of 1995.

The stations themselves will basically be designed in two types. The first is an intermodal station which will be located outside the downtown core on its own property and will have, in addition to the station elements described above, intermodal facilities including: a bus loading and unloading facility with direct access to vertical circulation, a kiss/ride auto loading and unloading area, bike and pedestrian access and storage facilities, and within the station site itself a park/ride garage or lot located adjacent to the station.

The second station type is termed a CBD station and typically would be located in the intersection of major streets in the downtown area or within the circulation area of a structure as an integral part of the building design. This station type would include all of the standard elements first described above, but would not include any intermodal facilities. Specially designed pedestrian access would be a major feature of the CBD stations. The CBD stations would also be designed to tie directly to existing and especially future private development projects. All stations and sites would be owned or leased by the JTA. Public access from public streets and sidewalks will be available at all times the system is in revenue service.

Joint Development

The joint development and value capture parameters for the DPM alternatives analysis consist basically of two policy views. The first is called the cooperative value capture program. In this cooperative program, the DPM system would be designed basically to satisfy the CBD circulation and transportation needs, but would take opportunities to tie into existing and proposed development along the route. The other limit of value capture is called programatic value capture. Under the programatic value capture alternative, the DPM would emphasize to a high degree the redevelopment aspects and opportunities of the DPM. The programatic alternative would emphasize the linkage of existing and proposed major activity centers in the downtown area and would recognize the transit needs as an element of new development. The implementation phasing of the DPM would be timed to a program of redevelopment geared to maximize value capture. This implementation alternative under the programatic value capture alternative would be geared basically to expected redevelopment projects and not necessarily to maximize public patronage.

Transportation Interfaces

All person trips into the Jacksonville downtown area from the region can be divided into three phases. The first phase if the auto or bus trip from somewhere in the region to the boundary of the downtown area. The second phase is the continuation of the trip within the downtown to a parking lot for the auto or the bus to a convenient stop. The final phase of the person trip is the walk from the parking area or bus stop to the final destination in a store or office. This regional trip is repeated twice each day throughout the year by thousands of Jacksonville citizens and residents. The DPM is designed to take the place of the second phase of the trip and provide faster, more convenient, more dependable, cheaper service to this central travel portion of the trip within the downtown area. This phase is usually the slowest and most frustrating portion. The DPM will also shorten or speed up the last walking portion of the trip because of its superior access and closer proximity to the final destination. The DPM is classified as a secondary distribution system which ties the two end portions of the regional trip together in a more efficient way.

It is important to provide adequate interface between other transportation modes and the DPM. Buses may be rerouted to tie directly to the ends of the DPM system and make the interchange between bus transit from the region and the DPM as convenient as possible. On the Do-Nothing and Bus Only Alternatives, other buses will be used for this secondary circulation system and the normal interface will be a bus to bus transfer. On all DPM alternatives, an intermodal transfer facility between buses and the DPM will consist of, at least, a longitudinal curb loading area specifically reserved for buses with a covered shelter and direct access to stairs, escalators and elevators. The arrival and departure of both the DPM vehicles and the regional bus transit vehicles will be timed so the transfer time between these system elements is held to a minimum.

In addition, major auto interface will be necessary with the various DPM alternative systems. Under the Do-Nothing Alternative, the existing parking lot and street configurations will be used. Under the Bus Only Alternative, a series of remote park/ride facilities will be built and people will transfer from their automobiles to a shuttle bus system. Under DPM alternatives, auto parking areas will be built for long-term parking of commuters at nominal parking fees. These spaces will be in either surface lots or parking structures as the land use requirements demand. Special auto passenger loading and unloading facilities and short-term parking areas will be provided in all stations where it is practical.

The other end of the regional trip is the pedestrian walk from the transportation mode to the final destination. Under the Do-Nothing and Bus Only Alternatives, the trip end will be basically as existing today. However, under the various DPM alternatives, every effort will be made to tie the system directly to the buildings or the second level walkways that were established under the 1971 downtown development plan. In those DPM stations where the station is located within private facilities, the station will be an integral part of the general lobby and circulation space of the private structure. It will be much the same experience as riding an elevator. The pedestrian interface will be built in such a way as to create an all-weather and convenient access from the DPM to the final destination. The walkway system built for the DPM will also be designed so it can be used for all-weather pedestrian movements within the downtown core even when the DPM is not operating.

Maintenance of Facilities

There are four basic proposals for maintenance facilities under the various system alternatives. Under the Do-Nothing and Bus Only Alternatives, maintenance facilities will be located in the proposed JTA bus maintenance facility and additional facilities will not be required. For the DPM systems, there are two locational alternatives. The first location is adjacent to the existing Seaboard Coastline Railway yard, either in the old bus barn or on the western edge of the downtown area adjecent to I-95 and West Bay Street. The other shop and maintenance facility location would be the area east of Catherine Street underneath the Matthews and Hart Bridge viaducts in the abandoned railroad storage yard of the St. Johns River Terminal Company Railway.

The final alternative would be remote maintenance. In this concept, the DPM vehicle would be removed from the guideway, placed on a trailer and hauled to the maintenance facility located within a short distance of the main line for heavy or long-term maintenance. The disadvantages of this system are that departure tests, cleaning and trouble shooting would have to be done on the guideway itself. The vehicles returning from heavy maintenance would have to be readjusted or as it is termed—remarried to the system when they were returned; a time-consuming process.

The maintenance facilities for the Do-Nothing and Bus Only Alternatives would be the same as those for the regional bus transit system in the new bus maintenance facility west of I-95. For the DPM alternatives, there must be three important elements which would include shops, storage yards and day-time storage tracks. The shops and heavy maintenance facility would be an enclosed area where the DPM vehicles would be taken off-line, given routine maintenance, long-term overhauls or repairs to damaged vehicles. Adjacent to the shops would be located a main yard to store the vehicles overnight or when out of revenue service. This yard area would be sufficient in size to accommodate all the DPM vehicles projected by the year 2005. There must also be provided on the ends of the DPM routes daytime storage tracks where vehicles which are still in revenue service but not being used during the off-peak hours could be stored and quickly put back into revenue service. This combined capacity of these daytime storage tracks would be 50% of the current DPM vehicle fleet. These daytime storage tracks would have to be expanded or relocated as the DPM system itself is expanded.

VEHICLE/SYSTEM PARAMETERS

No single system or vehicle has been chosen at this stage of the DPM development. The needed parameters were formulated by the joint efforts of the consultant, JTA staff and the Technology, Planning and Design Subcommittee of the CAC. Parameters for elements of the AGT vehicles have been selected and include several, if not all, of the existing proprietary systems now approved by UMTA. It was decided during the formation of these parameters that the proven and existing deployed characteristics of the vehicle/system parameters would be used until more detailed investigation can be done. However, the final vehicle/system configurations may include not only these deployed capabilities, but also those design capabilities, such as higher speeds, acceptable to the JTA and to UMTA.

Vehicle Characteristics

The capacity of the vehicle will accommodate 50 passengers with a 40 standing and 10 seated configuration. The ultimate ratio between standing and seated passengers will be determined when the final alternative is selected. The vehicle will have a minimum average of 2.5 square feet per person standing and seated. The ceiling heigth will be a minimum of 78 inches. The nominal vehicle length will be 25 feet; 9 feet wide and 11 feet high. All of the exterior dimensions will be modified by the minimum clearance necessary for the vehicle in its most critical condition as determined by the final guideway configuration.

Suspension – The vehicle suspension system will be pneumatic rubber tires with a secondary air bag or coil spring suspension system. An air floatation vehicle will be considered for the primary suspension system.

Propulsion – The vehicle/system will be either a bi-directional DC traction electric motor for each truck or linear induction motors. If linear induction is used, it has not been determined if the vehicle will be an active or passive one.

Braking — The allowable braking rate for all DPM vehicles consistent with the safety and comfort of standing passengers. Either mechanical, pneumatic, dynamic braking systems or a combination are acceptable. The emergency braking rate shall not be less than 8 feet/second/second under the worst case conditions for maximum negative grade for the minimum turning radius for crush passenger load of maximum consist at speeds up to the maximum capable by the vehicle. The vehicle should have a spring loaded, positively applied mechanical braking system in a fail-safe configuration. The emergency brakes will only be released manually by an on-board maintenance operator or the AGT system computer controller.

Trainability — The vehicle must be able to be manually coupled into trains of two to four vehicles, each capable of independent operation.

Vehicle Performance

The vehicle performance described below is for general reference only and is not intended to be an absolute standard or measurement of vehicle performance.

Speed — The vehicle must be able to attain a maximum speed of 30 mph or greater, sustain it for a distance of at least two miles and accelerate at a minimum rate of three feet/second/second.

Grade Capability — The vehicle must be able to surmount a 5% constant grade over a minimum of 1,200 feet, fully crush loaded in operational service speeds.

Minimum Turning Radius — The vehicle must be able to turn a radius of less than 100 feet with a maximum of 10% superelevation and with a maximum lateral acceleration of 1.9 feet/second/second at a minimum of 10 mph.

System Characteristics

The system is highly automatic and centrally controlled using advanced communications systems and computers. The vehicles are driverless and respond to a central control facility. This facility is manned and operated on an exception basis with the aid of a computer and communications system.

Command and Control – The command and control systems will be fully automatic and will provide the following primary train control functions:

a) automatic train protection

b) automatic train operation

c) automatic train supervision

A fixed block system for collision avoidance is required. The system will operate only under scheduled service.

Vehicle Guidance and Steering – The vehicle guidance and steering will be capable of smooth and comfortable ride consistent with the general characteristics of the system selected.

Switching – On-board switching with mechanical entrapment is desirable for the vehicle's switching system. However, the vehicle may use an approved switching system which will operate within ten seconds, lock to lock, under operational requirements and which will provide smooth, dependable switching.

System Safety and Reliability

The DPM systems now in operation have exceptional safety records; traveling millions of passenger miles without a fatality or service accident. This is due to the carefully designed redundant, fail-safe system components and facilities design.

Guideways – The Jacksonville system will run on guideways entirely separated from traffic. An emergency walkway will be provided the full length of the revenue service guideway. Intrusion alarms will be provided for people and objects on the guideway. Emergency shut-down of power will be automatic and instantaneous in emergencies.

Vehicle Failure Recovery – The failure recovery system is a fail-safe system that would allow the disabled vehicle to proceed on command to the next station for non-propulsion failures. However, the vehicles must have the ability to be pushed by a following vehicle during equipment propulsion failures. The emergency evacuation procedures must consist of the passenger activated and independently operated emergency evacuation from the vehicle to the nearest station or ground level area in sufficient speed to minimize the potential for loss of life and serious injury. The vehicle must have both end and side emergency exits or knockout panels. A safety walkway system will be provided the full length of the guideway to evacuate passengers in extreme emergencies.

Reliability – An important goal of the overall system design will be a sufficiently high level of reliability to insure that the average person who rides the system twice per day will not experience a significant delay more than two to three times per year. To achieve such a high probability of successfully completing a trip, a system must be capable of satisfying all service requirements, i.e. service frequency, travel time and line capacity, for at least 98% of the scheduled operating hours. System availability in a non-degraded mode should exceed 99.7%. Degraded service may occur because of failure of a single vehicle in a two car train, blockage of a guideway segment necessitating rerouting vehicles, or operation of isolated vehicles under manual control.

Vehicle Comfort – All vehicles will have year-round climate controlled air and can alternately use heating elements, air conditioning, and forced air ventilation. The vehicle must be able to be naturally ventilated in case of power failure or mechanical malfunction. The vehicle will be equipped to accommodate wheelchairs with appropriate tie-downs and handrails. The vehicle will have handrails along each side of the car length for standing passengers and appropriately spaced vertical stanchions.

The vehicle will be constructed so the interior noise level unloaded, but running at maximum speeds will not exceed 75 dBA. The exterior noise created by the vehicle shall not exceed 75 dBA measured 50 feet from the track centerline. The vibration should not exceed vertical or horizontal peaks of 0.04 g at any frequency up to 60 Hz.

The vehicle lighting should be a combination of natural and artificial flourescent. The window area should be of maximum size and type consistent with good energy conservation, but able to give an unobstructed horizontal view for single passengers in any direction and an unobstructed vertical angle of 45° above and below the horizontal plane of a near side seated passenger.

Station Amenities – Any enclosed station will be heated and air-conditioned for year-round climate control. Coordinated doors between vehicle and station will be provided at CBD stations for more efficient climate control. The intermodal stations will have only forced air ventilation during slack wind conditions with all-weather protection and a maximum of natural ventilation. No restroom facilities will be provided in vehicles or stations. Vertical circulation will be provided in all stations equal to the maximum capacity for the estimated design year 15 minute peak patronage. The stations will be barrier-free for the elderly and handicapped. User information, two-way voice communications and emergency annunciation systems will be provided.

Passenger Security – Two-way voice communications and emergency annunciation systems will be provided in all vehicles and in the station areas. The vehicles will be sound-monitored. User information will be provided by carefully formulated signage and two-way intercoms. TV surveillance will be provided in all stations. Vehicles, elevators, stairwells and escalators will either be open or enclosed with glass. The stations' parking lots and vehicles will be lighted during all service hours. Roving security patrols may be provided for passenger assistance and security. Maintenance personnel will respond to rectify vehicle and system problems. Police and fire departments will be trained to give quick and proper response.

Operational Parameters

The system itself will be operated to reduce the number of personnel to a practical minimum. Therefore, the stations and vehicles themselves will be unmanned during all hours of operation, with the

VEHICLE/SYSTEM PARAMETERS SUMMARY

<u>Vehicle Characteristics</u>	
Size and Capacity	20 - 100 passengers
Propulsion	DC traction electric motor or linear induction motor
Suspension	Pneumatic rubber tired or solid rubber running wheel
Braking	Mechanical, pneumatic, or dynamic; emergency braking rate of not less than 8 feet/second/second
Trainability	Manually coupled; 2 - 4 cars
<u>Vehicle Performance</u>	
Speed	Maximum of 30 mph
Grade Capability	5% grade over 1,200 foot length
Turning Radius	Less than 100 feet
<u>System Characteristics</u>	
Command and Control	Fixed or moving block; full computer operation with mechanical backup
Vehicle Guidance and Steering	On-board power steering or positive entrapped passive steering
Switching	Mechanical entrapment or guideway displacement with a ten second lock to lock requirement
<u>System Safety and Reliability</u>	
Guideways	Emergency walkways; power cut-offs
Vehicle Failure Recovery	Central control recovery for non-propulsion failures; vehicles must be able to be pushed. Vehicle exits; non-electric recovery vehicle.
Reliability	In excess of 99%
Maintainability	Mean time before failure—not less than 500 hours; mean time to restore service—not greater than 30 min.
<u>Passenger Comfort and Security</u>	
Vehicle Comfort	Air conditioned; quiet; glass walls
Station Amenities	Naturally ventilated or air conditioned; no restrooms; escalators and elevators
Passenger Security	TV surveillance, roving patrols, intercoms

SUMMARY OF AGT SYSTEM CAPABILITIES

Manufacturer Electric	Vehicle Capacity	Max Consist.	Sustained Headway (1)	Maximum Line Capacity (One Direction) (2)	Maximum Cruise Speed (3)	Minimum Turn Radius	Maximum Grade
Westinghouse Eagle I	70-100(1)	4 Cars	100 Sec	10,080 to 14,400 (1)	t 55 mph # 70 * 45 (2)	90 ft	10%
Vought Corp	42 14/28	4 Cars	60 Sec	10,080	@ 17 * 30 (3)	100 ft	8%
Boeing (4) Aerospace	25 6/19	Single	60 Sec	1,500	@ 30 mph * 30	30 ft	10%
OTIS-TTD	44 4/18	2 Cars	60 Sec	5,280	# 30 mph * 30 (5)	60 ft	10%
Rohr (6)	64 32/32	Single Trains 4 Cars Each	60 Sec	3,840	@ 8 * 12	65 ft	44%
Universal (7) Mobility Inc.	44 8/36	4 CarTrains	60 Sec	10,560	@ 19 # 35 * 20	50 ft	10%
MBB/DEMAG (CABINLIFT KK 12 H.)(8)	12 12/0	2 Cars	60 Sec	1,440	# 22 * 22	66 ft	10%

t Demonstrated on test track
@ Demonstrated in passenger service
# Manufacturers Claim

exception of extreme peak hour periods. The stations will be fully equipped with TV surveillance and two-way intercom systems for passenger security and assistance. The roving patrols will provide passenger assistance during most revenue hours. The system will be fully automated and computerized for both the vehicles and the facilities. With the use of two-way communications system and TV surveillance, a central control area will control and monitor activities during all hours of service. Passenger emergencies, total power failures and mechanical failure recovery will be corrected by responses from the maintenance personnel and/or security forces.

Headways

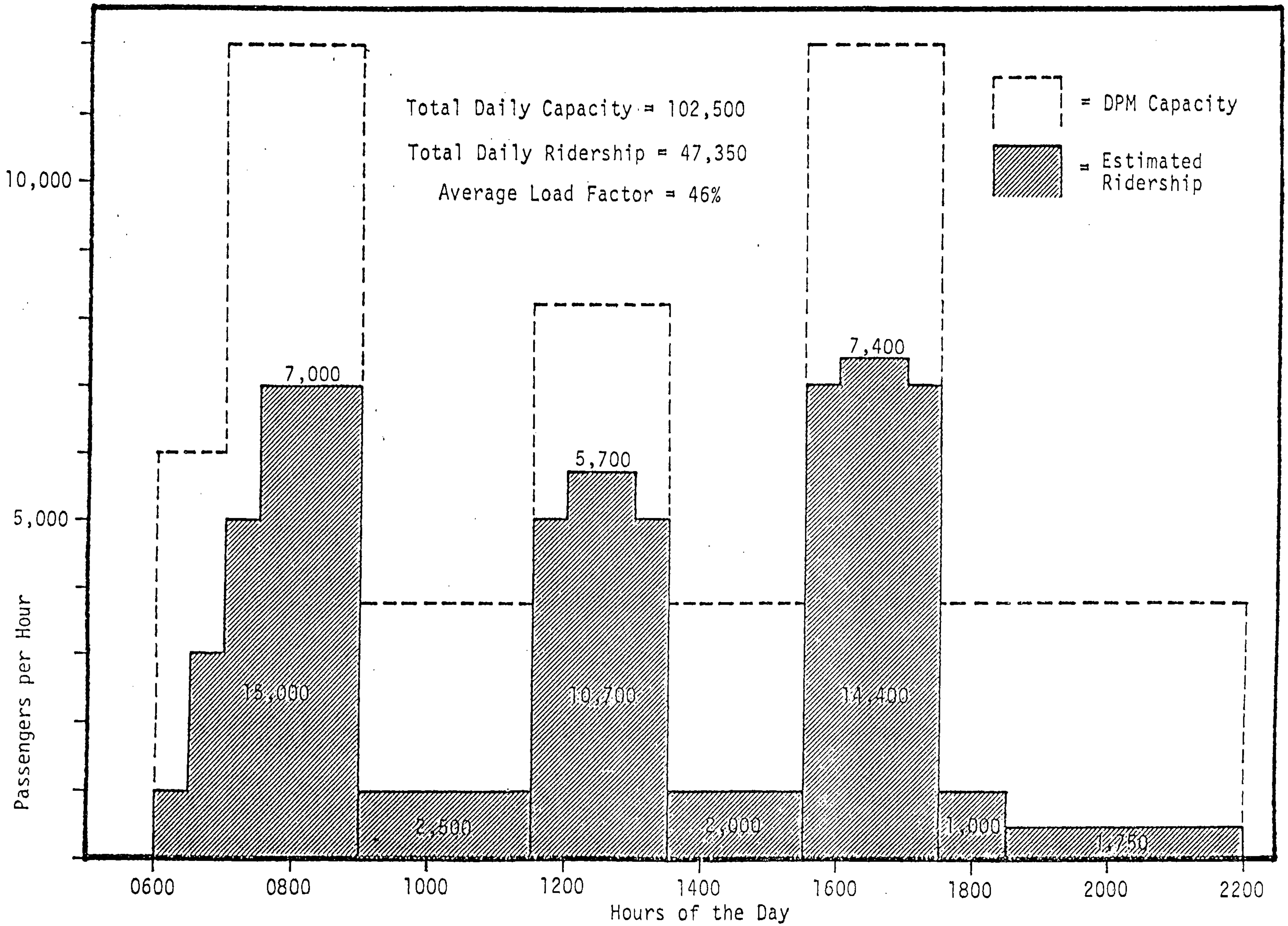
The peak hour headways will be a minimum of one minute and a maximum of five minutes. These headways will be used during the normal peak hour at noon and the commuter peak in the afternoon and morning. The off-peak hour service will be a minimum of five minutes and a maximum of ten minutes, including Sundays and holidays.

Revenue Service

The length of revenue service will be 16 hours daily, between 6 am and 10 pm. Special extensions to the length of service from 5 am to 1 am will be considered if the patronage to the hospital is sufficient to justify the extended service hours. The system may also operate after hours for special events.

Operational Schematics

The vehicles will operate on the system using a schedule of service which will respond to the ridership demands placed on it. The most frequent service will be during the PM peak hours, but the AM and noon peak periods are nearly as prominent. The chart shown here shows a probable distribution of riders during the day. It is generally accepted in transit marketing that the more frequent service provided the greater increase in transit ridership. Therefore, the operational plans try to balance ridership,



WEEKDAY DISTRIBUTION OF DPM RIDERSHIP AS RELATED TO SYSTEM CAPACITY
Proposal Alternate Scheme 2

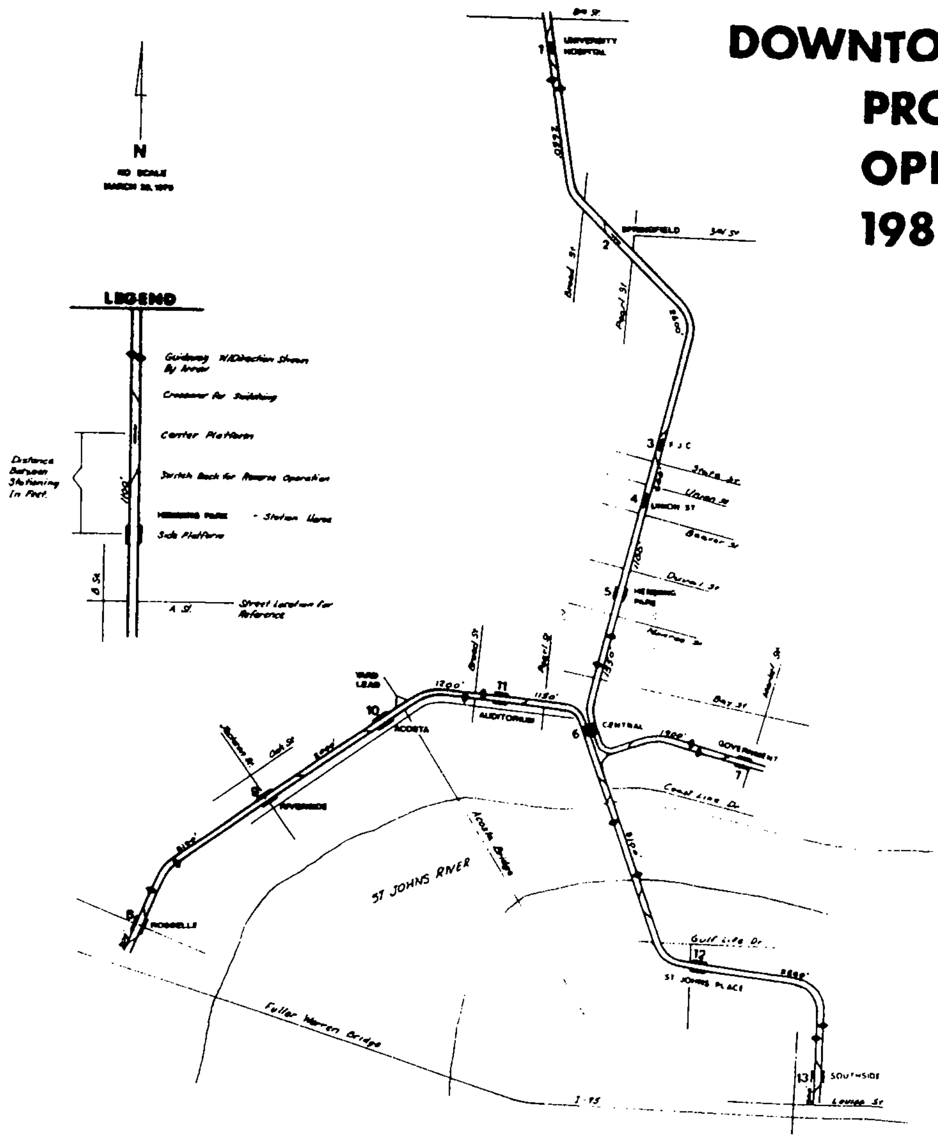
frequency of service (headways) and costs to give the optimum service levels. The following paragraphs describe two operational schematics of the 1976 Proposal route submitted to UMTA. The two follow the same basic route but differ in the length of guideway and the transfer station.

Parallel Scheme – This scheme follows the double "L" pattern of the 1976 Proposal Alternative route. Leg 1 of the route runs from University Hospital along Hogan Creek and Hogan Street to Water Street where it turns sharply east to the City Hall. Leg 2 starts at Blue Cross/Blue Shield Building and follows the river to Hogan Street where it turns southeast and crosses the river to Southside. The scheme takes its name from the fact that the two legs of the scheme must parallel each other at Hogan Street in order to provide a transfer station. The operational schematic shows these line sections side by side. This may be the physical arrangement chosen but they can also be placed one over the other for easier passenger transfer. The operational plan would be the same in either case. The scheme shows stations as either side or center platforms. The running distances of the double guideways are also shown and are measured from the center of the platforms. Leg 1 of this scheme is about 10,450 feet and requires a normal peak hour running time of about 8 minutes, including stops at stations (dwell time) and turn-arounds at the end. Leg 2 is about 11,750 feet long and takes about 8½ minutes to travel it during peak hour. Cross-over and turnback switches are provided to balance equipment for operational convenience and for safety. The system operates essentially as two separate shuttles. The only connection between the legs is an inter-line connector shown in the southeast corner of the transfer point which will be used to transfer equipment from one line to another but will not carry revenue passengers.

Cross-Over Scheme – This scheme is a variation of the previous scheme. It realigns the legs so that the north leg from University Hospital is attached to the river crossing. The leg from Blue Cross/Blue Shield Building now runs to the City Hall. This scheme provides a true north-south and east-west schematic. The transfer station now requires the north-south leg to pass over the east-west leg. Leg 1 (north-south) is 14,500 feet long and requires a one direction running time of about 10 minutes. Leg 2 is about 8,550 feet long and has a running time of about 6 minutes. This scheme also acts as two independent shuttles and has an inter-line connector. This scheme provides the easier transfer of passengers and the cleanest operational plan.

JACKSONVILLE, FLORIDA

DOWNTOWN PEOPLE MOVER STUDY
PROPOSAL ALTERNATE OPERATION SCHEMATIC
1985 PARALLEL SCHEME



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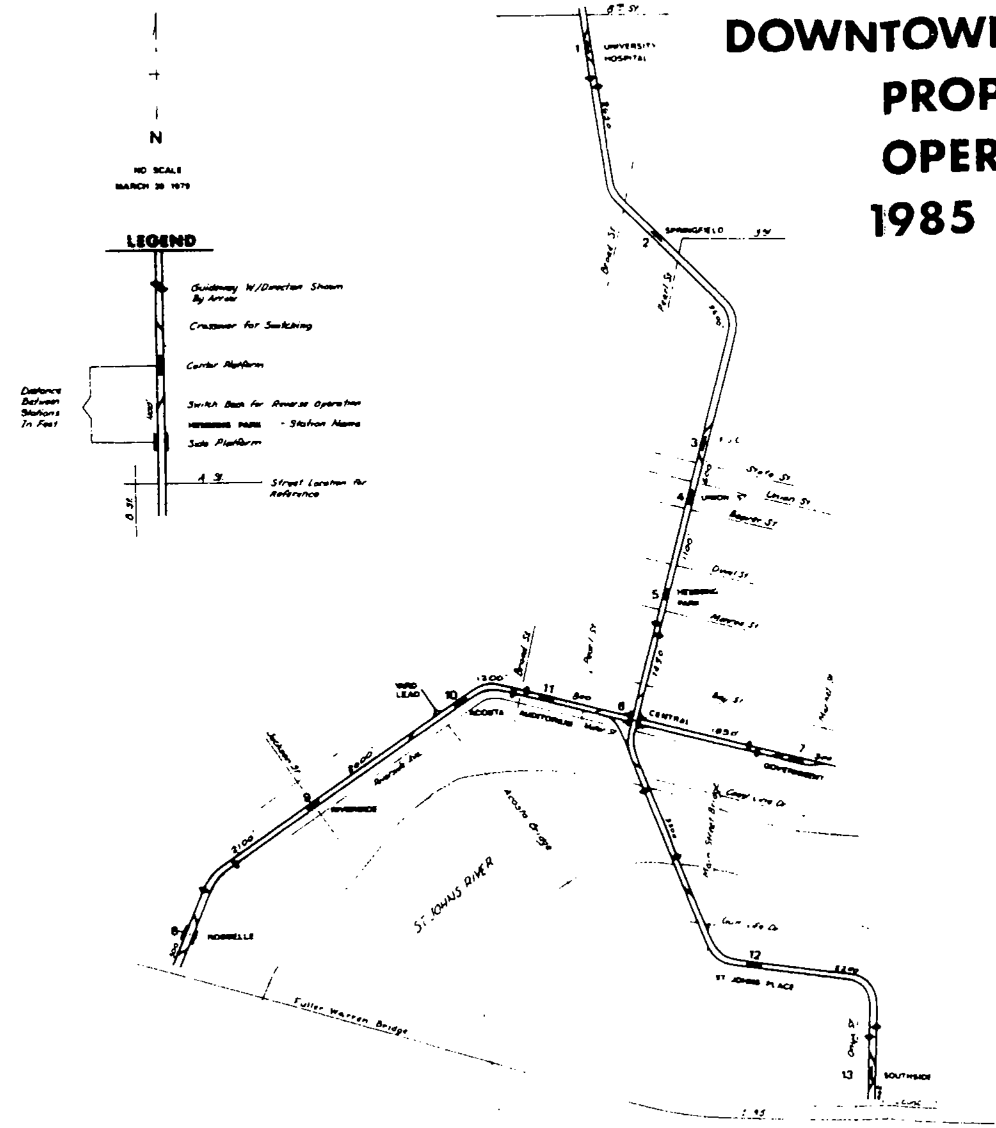
BY: PARSONS BRINCKERHOFF / FLOOD & ASSOCIATES

JACKSONVILLE FLORIDA

DOWNTOWN PEOPLE MOVER STUDY
PROPOSAL ALTERNATE
OPERATION SCHEMATIC
1985 CROSSOVER SCHEME



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BY: PARSONS BRINCKERHOFF / FLOOD & ASSOCIATES

Fare Alternatives

The parameters for the fare levels will be between a no-fare system to identify maximum patronage and a maximum fare of $0.25 in 1978 dollars. The fare structure shall be a flat fare for the entire system. Fare collection shall be semi-automated, accepting exact change, tokens and transfers, or a self-service system using machine validation or passes. Transfers will be free between modes only in one direction of travel. The fare matrix shown here summarizes the fare system. It should be read from left to right.

Financial Parameters

The financial parameters described here are used only for initial comparison of alternatives or for reference to the system, and a detailed financial plan will be done at the end of the study. This financial plan will require the complete detailing of costs and financial opportunities and the projected phasing of value capture in the selected alternative.

<u>System Support</u> – The alternatives for system support are: 1) full subsidy, no fare and no amortization of the system, 2) a partial self-operating, low fare and no system amortization, and 3) a fully self-operating, medium fare and partial capital amortization of the system. The revenue sources for the support of the system will include annual subsidies from federal, state and local sources, fare box revenue, concessions, and income from value capture and perhaps dedicated tax base or bonding programs for the system.

<u>Costs</u> – The parameters of system costs will range from an equilibrium to a capital emphasis. The equilibrium cost parameter would be a systematic one to determine when the capital amortization of a system feature equaled the labor costs which would be used to replace it. In other words, there must be a complete balance between the amortized cost of installing and maintaining a system element and the cost of substituting labor for the same element. The capital emphasis parameter of cost would be that which reduces the visible labor to an absolute minimum and would provide high automation and low maintenance consistent with prudent investments of capital cost.

MODE-TO-MODE FARE MATRIX FOR
1985 DPM 1 ALTERNATIVE

FROM MODE \ TO MODE	BUS	XPR	SHUT.	DPM
WALK	25	35	10	15
KISS 'N RIDE	25	35	10	15
PARK 'N RIDE	25	25	10	15
BUS	25	25	10	0
XPR	15	15	10	0
SHUT	25	25	10	15
DPM	10	20	10	0

Funding — The DPM program will be funded in a clearly defined program using all revenue sources and within the context of the regional transportation planning program and implementation programs.

SYSTEM IMPACTS

Any of the alternatives chosen, including the Do-Nothing Alternative, will have distinct impacts upon the environment of the downtown area of Jacksonville. If a true feasibility is to be determined, then both quantifiable and qualitative impacts of the various alternatives must be included in the total analysis of the systems. The impacts to be examined for all of the alternatives involve four basic areas of consideration:

1) The physical impacts caused by the construction and operation of any alternative, including changes in land use, transportation, housing and natural resources.

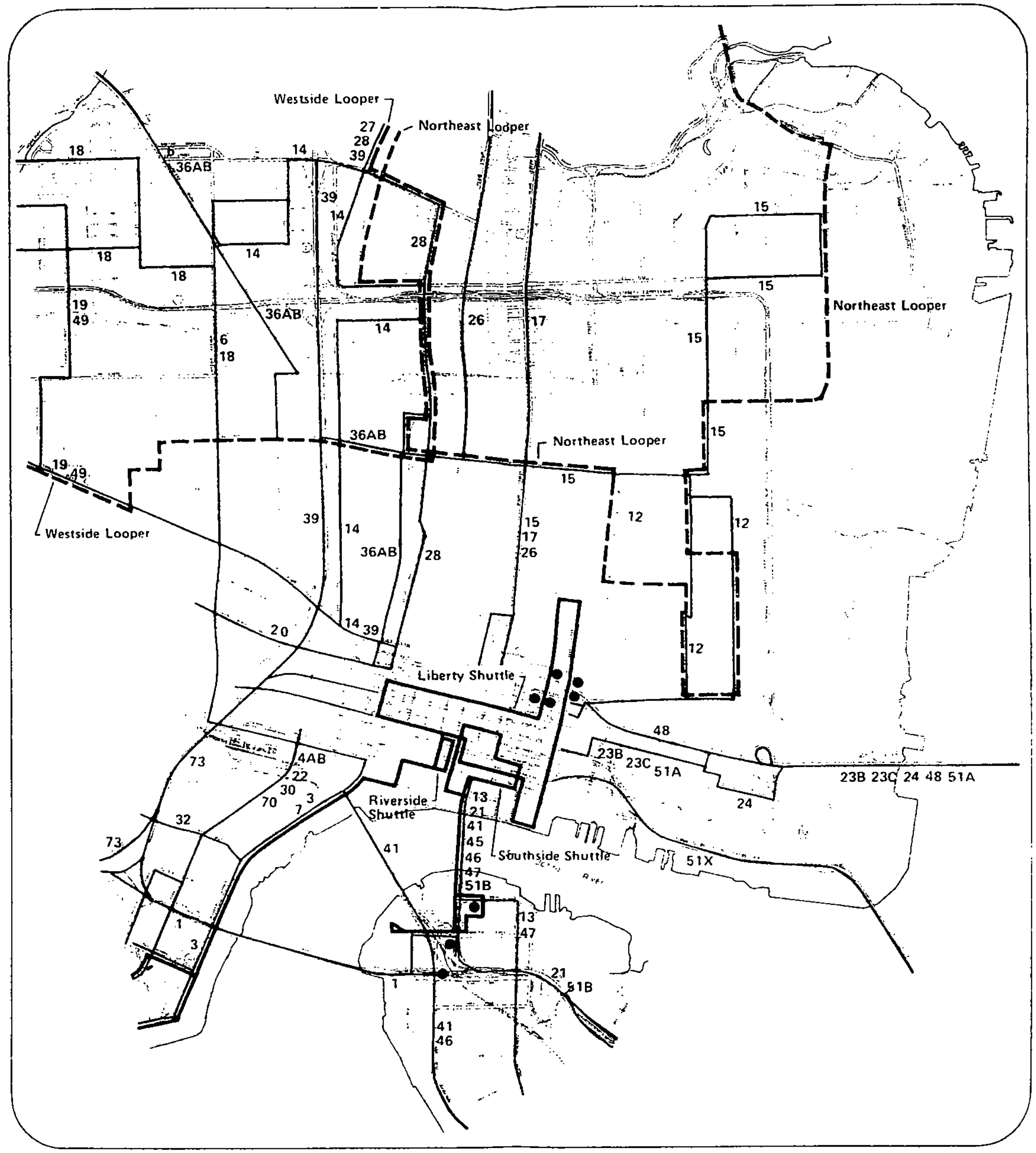
2) Social impacts including relocation, change in neighborhood demographics, the effect on community facilities and community accessibility.

3) Economic impacts—long-term positive impacts will be different and will vary with the type of development in the downtown created by the particular implementation effect of each alternative. There will also be negative long-term impacts from the use of resources and destruction of some existing facilities. There will be many short-range impacts, including the positive contribution of the local economy from DPM construction, the general disruption during construction, and the inconvenience to area residents and commuters.

4) Aesthetic and urban development impacts—the intrusion of a new transportation system into the environment can have both negative and positive impacts on the aesthetics. The DPM alternatives will concentrate new development into more compact commercial nodes and will impact the visual urbanscape. There are both historic and archeological resources in the area to be preserved and in some cases, enhanced by the use of the DPM.

Jacksonville DPM Study Area

Bus Routes



The following impacts are discussed in relative relationship to the various alternatives, but not as an absolute measure of the impact each alternative will produce. Rather, the general discussion will center on the importance of each type of impact produced by that alternative. In the feasibility study, an environmental impact profile will be drawn for each of the alternatives. The relative impact on each environmental category will be measured.

There is available through the JTA an existing Environmental Baseline Survey (EBS) which describes the existing environmental conditions in the Jacksonville downtown area. This EBS is used as the environmental standard against which all alternatives will be compared as to the relative environmental change they cause.

Downtown Access

A major basis for a downtown people mover is to provide increased access both to the central business district (CBD) of Jacksonville as well as circulation within the downtown core. The accessibility can be measured in three general areas: 1) transit, 2) pedestrian and 3) automotive.

Transit – The Jacksonville Transportation Authority (JTA) now provides bus service from outlying areas into the CBD and the JTA recorded a 1978 annual passenger volume of 15.4 million riders. The bus routes into the CBD generally carry between one and three thousand persons per day. Most of these are turn-around routes which come to the downtown area, discharge passengers and return along the same route. The practical impact of such a system is the great number of buses using the CBD streets already congested in the morning and evening peak periods. The DPM transit analysis will measure the varying number of buses and passengers entering the CBD area under each of the alternatives.

Pedestrian – Much of the land surface area devoted to traffic lanes could also be available for pedestrian movement in the CBD which would aid shopping. Many of the major activity centers in the downtown area are widely separated and scattered. This makes pedestrian movements inconvenient. The downtown people mover would aid in the pedestrian movement from one major activity center to another and would replace a long distance intra-CBD auto movement. The relative ability of each of the DPM alternatives to replace these auto and pedestrian movements will determine to a great extent the success of any of the alternatives.

Automobile – Another primary aim of the DPM analysis is the number of automobiles using the CBD. Measures of the relative congestion and concentrations of air pollution of suburban traffic intercepted and stored in locations other than downtown parking should be studied. The heaviest concentrations of air pollutants come from idling engines in congested traffic and parking areas. The removal of all parking from the CBD would neither be practical nor desirable, but the concentration that now exists in the CBD is one of the main contributions to Jacksonville's air pollution problems. Any relief from the existing situation would be welcome. Another important deterrent to future development is the large surface parking which subtracts large tracts of land for development. If properly planned, the DPM would return these parking areas for development.

Land Use

To a larger degree than any of the other urban transit types, the DPM has a direct relationship on the degree and location of new development. Because of the increased access available by the DPM, many new developments will locate with connections to the stations on the system. This will concentrate and rearrange much of the new CBD development. It will also attract from locations in the region, new office and commercial development to the downtown area. This concentration of new land use has definite advantages in the more efficient use of utilities and intra-structure within the city.

One of the impacts that the DPM will have on the area is the use of both public and private land for right-of-way. Everything else being equal, the least amount of land taken for the use of the DPM allows that much more land to be maintained on the tax rolls. All of the alternatives will be judged on a land use impact on dual considerations. First, the ability to generate and attract new concentrations of office and commercial space around the stations and second, the relative pre-emption of land to construct the DPM.

The DPM will have some small effect upon community facilities within the CBD. As presently configured, there is little likelihood that the DPM will cut off any community facility from its service area. It may, however, allow greater accessibility to such community facilities as the hospitals, libraries, and auditorium within the downtown area. The relative ability of each of the alternatives to improve the use of the community facilities will be an important factor.

Eco-Systems

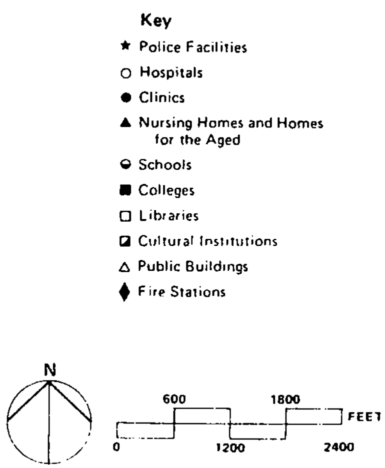
There is in any natural environment a complete balance between all elements of nature. Man's introduction into an environment always alters the balance of nature, usually irrevocably. In downtown Jacksonville as in all major developed areas, there is little left of the natural environment. Development over the course of the years has altered the environment to the point where the only growing plants are landscaping. In short, the natural eco-system of the CBD, for all practical purposes, is non-existent. Moreover, modern inventions for transportation and industry degrade the surrounding environment in which the natural eco-system once existed. There are in Jacksonville major concentrations of pollution of air, water and sound. One of the most appreciated features of the DPM is the potential reduction of pollutants in the CBD by using the non-polluting electric motors. The DPM reduces water pollution from oil and dirt drippings spread by automobiles and transit buses. There would be a decrease in noise and vibration by the quieter and smoother DPM systems. Just as significantly, the DPM, by intercepting automobile and bus traffic will reduce concentrations of air, water and noise pollution in the downtown area and relocate it to the edges of the CBD. This would be a major benefit since reducing the concentrations of pollution allows natural forces of wind and sun to disperse and treat these pollutants more easily. Therefore, the alternatives will be measured not only on the basic relative reduction of total pollution levels in Jacksonville, but also the reduction of concentrations of these pollutants in the CBD.

Human

Of special significance to those living in the downtown area is the impact any alternative will have upon their ability to live within the study area. A most important effect any DPM alternative will

Jacksonville DPM Study Area

Community Facilities



have is the relocation of families and businesses. For the vast majority who stay, the intrusion of the DPM into the already existing lifestyle may be negative. Those alternatives which reduce the relocations and negative intrusions will be more successful than others.

A largely unquantifiable, but very important aspect of DPM implementation is the effect it will have on neighborhood character. In the Jacksonville area, the major intown communities are Springfield and Riverside. Under present proposals, neither of these neighborhoods will be penetrated by a DPM and the impact will be only from shuttle buses. Both areas are now heavily served by bus transportation and may not be noticeably affected by the introduction of shuttles. However, the long-term effects of the DPM alternatives, both positively in terms of increased accessibility and negatively in terms of increased buses or the DPM itself, must be measured as it reflects in neighborhood character and aspirations of the people living in that neighborhood.

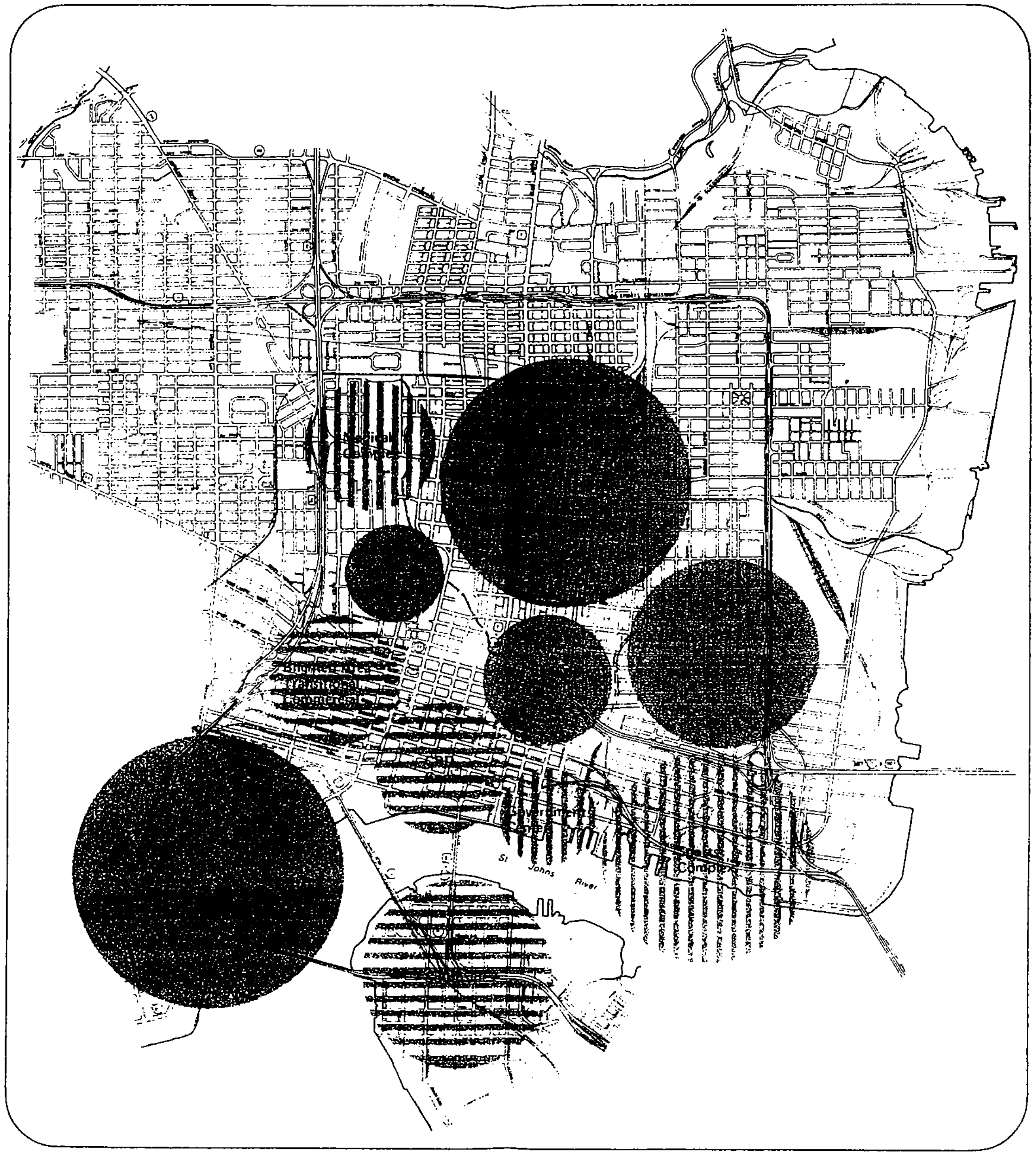
The federal government has mandated that all transit systems, including buses, must be readily accessible to the elderly, handicapped and disadvantaged populations of the United States if federal funds are to be used in the construction of these facilities. Beyond the federal requirements, many of the major activity centers located in the CBD and which presumably would be served by some DPM alternative, are facilities which must be reached by the handicapped and elderly. These major activity centers include the hospitals, the auditorium and government office buildings. Moreover, the handicapped and elderly feel that many structures are built with physical barriers that prevent their functioning as the average citizen. Each of the alternatives should be rated on its ability to serve the elderly, handicapped and disadvantaged in the region as a whole, but more specifically, in the downtown area being served.

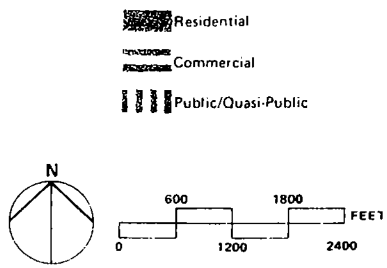
Economic

The implementation of a DPM alternative will have a lasting effect on the economics of the downtown area. There will be changes in retail and regional attractions in the downtown area, even under the Do-Nothing Alternative. The form these economic changes take are highly important to the relative

Jacksonville DPM Study Area

Neighborhood Image Map





success of each of the DPM alternatives. The most obvious is increased commercial development and increased accessibility for regional shoppers to the downtown area. The relative merits of each of the alternatives will be weighed against its ability to attract and concentrate new development. The economic changes made by one of the DPM alternatives cannot be measured without the actual implementation of the system. However, estimates can be made of the relative effect each of the alternatives will have on the economy. Then each of these alternatives should be weighed and judged on the basis of their estimated ability to increase economic development in the downtown area.

There are also construction impacts on the economy in the downtown area. The introduction of a large public works project introduces new external monies into the local economy. Nearly all labor and most materials are bought on the local economic scene. This has a rippling effect on the local economy due to the re-spending of needed wages and goods by the original recipients for goods and services they need and so on through several cycles. The relative effect of this increased money on the local economy will be estimated for each of the alternatives. There is also a negative impact caused by construction and is expressed in the loss of business and the disruption of service areas. These will be estimated for each of the DPM alternative selections.

ENERGY

Many citizens of the United States have begun to appreciate the idea that America lives within a finite world of resources. There is a definite need to conserve the use of all our resources, including energy. Any project which will both decrease the total use of fossil fuels and energy and also increase the efficiency of their use is a welcome idea. An electric motor generally consumes less fuel per passenger and also uses that fuel more efficiently than automobiles. The relative use of energy for each of the DPM alternatives will also be estimated.

The actual measurement of each of the impacts caused by the implementation of some DPM alternative will be done in Task 6, "Testing of Alternatives", of this project study. During this process, impact profiles will be drawn for each of the alternatives and some numerical weight will be assigned so that the relative comparison can be more easily made. In addition, each of the alternatives will go through analysis of their feasibility, including cost, ridership, effectiveness of transit service, the ability to create new development and importantly, the impacts the DPM has on the system.

ALTERNATIVES ANALYSIS

In order to fully evaluate the feasibility of a DPM system for Jacksonville, it would be necessary to objectively compare alternatives so as to be able to measure and evaluate any proposed decision. All decision-makers could measure in relative terms the cost, service levels, development potential, environmental impacts, cost effectiveness and other factors when deciding a course of action. The systematic process for considering these alternative factors in transit is called an Alternatives Analysis. The process is required by UMTA before funding any capital grant program. It is also valuable in local decision making for the CAC, the JTA, the City Council, Florida DOT, and others. The alternatives chosen to be tested and evaluated in the analysis include:

1. Null or Do-Nothing Alternative
2. Bus Only Alternative
3. Citizens Advisory Committee Alternative
4. Application Alternative

Since many of the factors to be considered during the alternatives evaluation are either unknown or variable, it is necessary to establish certain evaluation criteria which should include: project goals and objectives, evaluation procedures, project assumptions, project impacts and reference system assumptions. Establishing these criteria give measurable substance to the simple route alternatives. Moreover, on any given DPM route, there will be significant differences in patronage, revenues, environmental impacts, costs and nearly all factors directly affecting feasibility. What may appear to be desirable on one route may not be desirable on another. The same holds true with all variable factors on the same route. To some degree, these variables and routes are interchangeable and all are subject to modification. This presents, even on a short list of alternatives, a bewildering number of variations. It is necessary to use some method to compare these variations on a relatively equal and understandable basis. An alternatives analysis provides the frame for an equitable comparison and still allows relative freedom for flexibility and modification. The alternatives analysis to be used in this DPM feasibility study consists of five major elements:

1. Goals and Objectives
2. Priorities and Weights
3. Balance Sheet
4. Alternatives Analysis Process
5. Selected System

These five constitute the major processes required for an alternatives analysis. The flow diagram attached shows this process as the center work activity. The data and activities shown in the surrounding blocks are the simplified expression of work necessary to support the alternatives analysis process. The alternatives analysis requires the active participation of citizens to give a balanced perspective to the process that cannot be obtained in any other way. Sincere citizen participation requires an active and continuous involvement if it is to be credible and just as importantly – meaningful. The level of citizen participation has been more than expected in the Jacksonville DPM study. When the alternatives analysis is completed, it will represent not only the effort of the staff and consultant, but also nearly countless hours of dedicated citizen involvement.

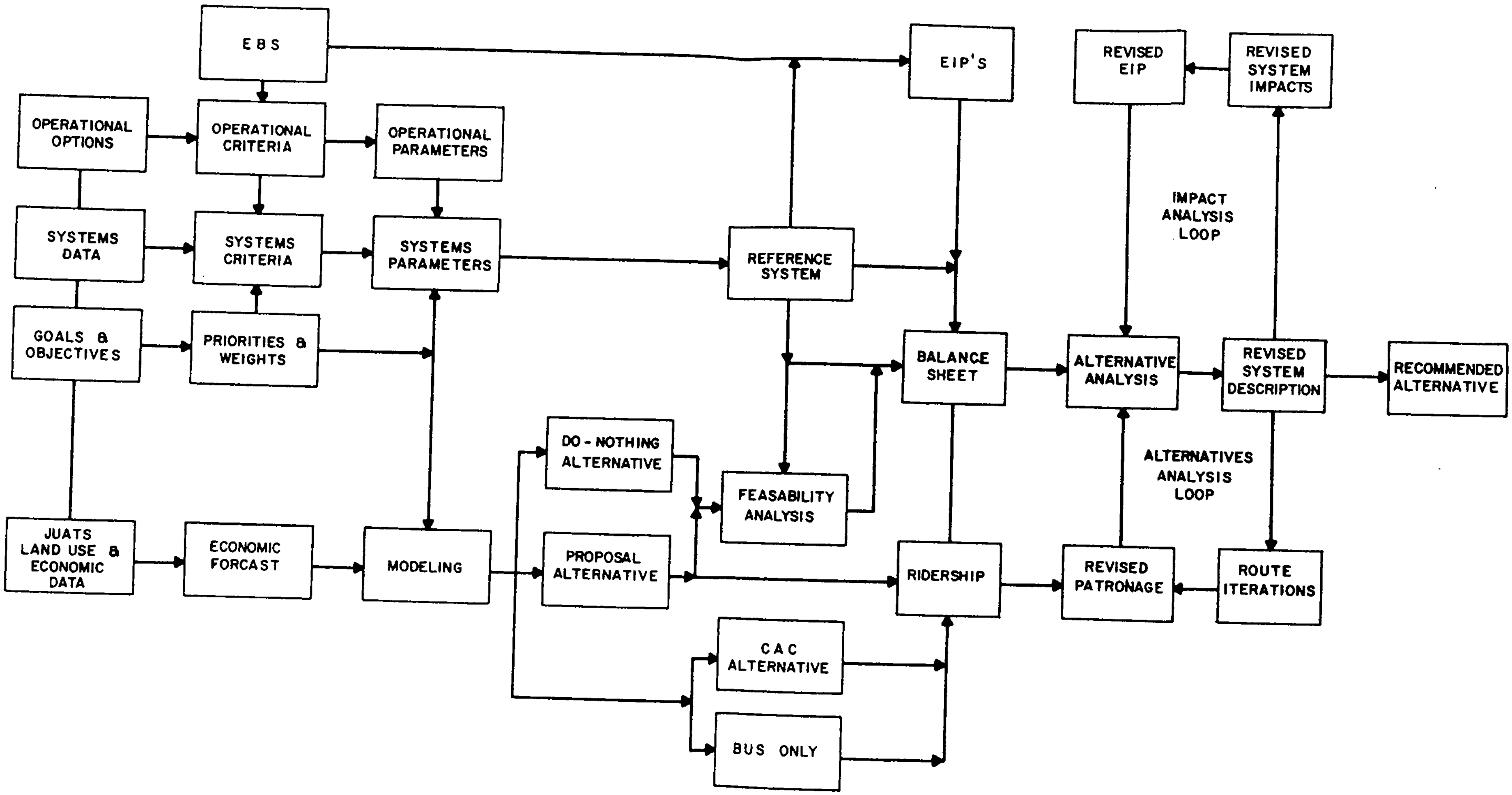
The following paragraphs describe the steps in the alternatives analysis process completed as of the date of this report.

Goals and Objectives

Early in the feasibility study for the downtown people mover, the Citizens Advisory Committee (CAC) was asked to form a series of goals and objectives by which this project would be guided and later on measured for feasibility. The goals and objectives were formulated and adopted on August 3, 1978. Goals are important to a project since they measure how well it adheres to local desires and aims. The process followed in establishing these goals and objectives is described in full detail in Technical Report No. 1 of this study; the final goals and objectives are included in the appendix for reference. Goals are general aims and measures of project feasibility, and these were further detailed in a longer series of objectives which had a more specific application. These goals and objectives were expanded still further to

FEASIBILITY AND ALTERNATIVE ANALYSIS PROCESS

JACKSONVILLE DPM STUDY



JACKSONVILLE TRANSPORTATION AUTHORITY.
PARSONS BRINCKERHOFF/FLOOD & ASSOCIATES

obtain criteria as factors that could be applied to specific measurements of detailed parts of the system. The criteria were also used in the process of determining the parameters as described earlier in this report. With the establishment of goals, objectives and criteria, the next step in the alternatives analysis process is to translate the goals into a quantifiable format so they may be objectively compared. This was accomplished by assigning a weight to each goal.

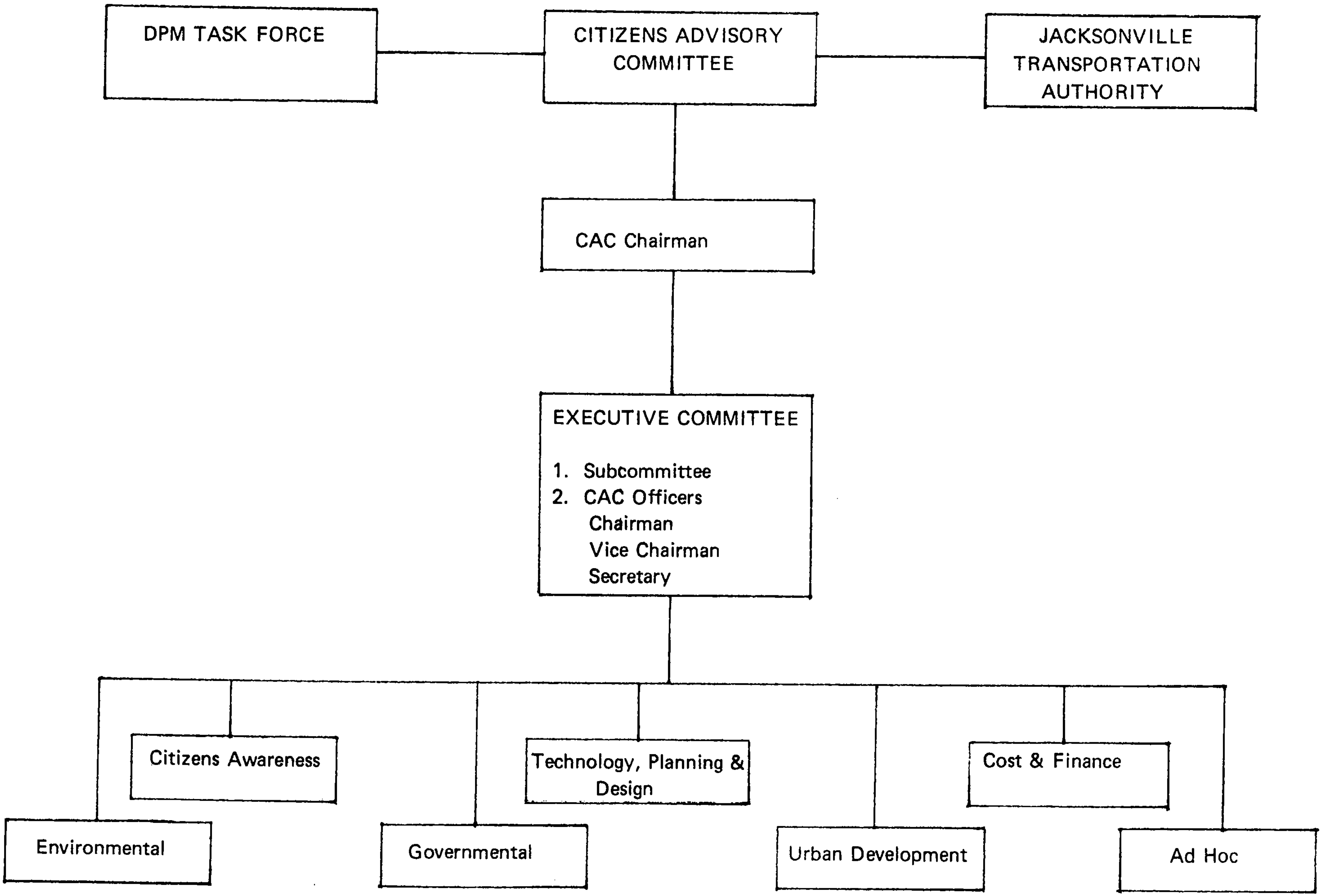
Priorities and Weights

Goals are a necessary statement of aims and principles to measure the effectiveness of the study. However, in order to be adequately used, these goals must also have numerical and quantitative measures. The difficulty of this process is that the goals themselves are subjective and non-definitive, and do not form an adequate basis for the measurement of the project status. Therefore, some definitive and quantitative measures should be added to these goals so the various proposals and alternatives can be compared objectively. One of the ways of doing this is to give each goal a numerical weight. The weight signifies that goal's relative importance in relationship to all the other goals within the study. It also establishes the priorities of the goals to be satisfied. These priorities and weights were determined from a number of sources, including the issues that surfaced during early interviews and meetings of CAC members. They became apparent through the development of ridership numbers, through the development of operational, system and fare alternatives and through the delineation of the environmental impact profiles. Certainly, costs are involved in decisions and there is a need to translate costs not only in actual dollars expended, but in the relative non-definitive costs, such as rider comfort. Finally, there are a number of definite effects on a given public project which influences its ability to be used by the public, but which does not lend itself very easily to relative measurement. As an example, it is easy to relatively compare the number of relocations for each alternative, but it is difficult to relatively measure the visual impact that a particular alternative will have vis-a-vis some other alternative for the facility both in the positive sense of attracting new riders and the negative impact on adjacent property.

It is necessary, therefore, to establish a quantitative and comparable measurement of each of the goals through the use of weights. These weights can be applied in several ways. One of the popular ways is to allow individual groups or individuals to assign an unlimited number of points to each goal which reflects their understanding of the importance of that particular goal. Another method is to have comparative ratios of one goal to the other; as an example, saying that relocations are five times as important as the visual impact of any DPM route. There is also a method of establishing a fixed number of points for all of the goals and the weight assignments must be made from within that limited number. In this particular application, the latter method was chosen to weight the goals. A fixed number of 100 points was assigned to the 12 goals to be weighted. In order to do this, the relative priority of each of the goals had to be decided first. Then the assignors had to distribute an equitable number of points to every goal which engendered discussion of the relative importance of these goals. This inter-active process and extensive discussion on goal importance perhaps would not have occured if an unlimited number of points were allowed for each goal.

It is important to weight the goals prior to their use, even prior to the definition of the various issues or alternatives. The measurement system must be established without being prejudiced by any particular alternate. Therefore, in the case of the Jacksonville DPM, the CAC and its various subcommittees established early in the study the goals and weights. This was prior to any alternate routes or operation or system alternatives being presented to them.

Of equal importance to the measurement process is the decision on who will do the goal weighting and who will do the evaluations of each of the alternatives. Once again, there are a number of methods to accomplish this process. In some studies, the individual citizens sit down and weigh the goals and also evaluate the alternatives as an individual effort. In other instances, special interest groups, neighborhood organizations, downtown businessmen, and other groups with special interest in the particular decision to be made weight the goals as a group, which presumably reflects the particular point of view of their organization. The difficulty with the use of either one of these types of reviewers in the Jacksonville DPM project is that the DPM has a limited geographical area where few individual residents or special interest groups are represented in the service area. Moreover, the DPM, while it does serve a limited service area, is the end transit trip for people who come from all areas of the region and therefore, the DPM


DPM TASK FORCE
CITIZENS ADVISORY COMMITTEE
JACKSONVILLE TRANSPORTATION AUTHORITY
CAC Chairman
EXECUTIVE COMMITTEE
1. Subcommittee
2. CAC Officers
Chairman
Vice Chairman
Secretary
Citizens Awareness
Technology, Planning & Design
Cost & Finance
Environmental
Governmental
Urban Development
Ad Hoc

is really a system that serves all segments of the regional population. It was decided, therefore, that the CAC being of a diverse and representative body of the Jacksonville regional area, would themselves weight the goals and be the reviewers during the alternatives analysis process. They had already organized themselves into a series of functional and topical subcommittees and it was decided that each subcommittee would present a goal recommendation to the full CAC in order to establish the final goal weights. The subcommittees were small enough to have meaningful discussions and allow an expression of the particular function interest of the regional population. The small subcommittee forum also allowed this diverse CAC to bring to bear a reasonably coordinated but representative perspective on the weighting of the goals. There was a third advantage of using the subcommittees that was quickly identified. The process of each subcommittee weighting the goals within a fixed number of points engendered lengthy and in-depth discussion of the value of the various goals. Therefore, the full meaning of the goals and their implications in the project was thoroughly hashed out not in just one subcommittee, but in all the subcommittees.

Once it was decided the method of weighting the goals and it was decided who was to weight the goals, some other details of the process had to be identified beforehand. It became apparent that if each one of the six subcommittees was going to recommend its own individual set of goals, some group had to sit down and reconcile the various recommendations before presentation to the full CAC. It was almost universally agreed among the CAC members that trying to reconcile all the various points of view in an open meeting of 60-80 members of the CAC would be non-productive and confusing. Therefore, it was decided that the Executive Committee of the CAC would study all of the recommendations of the various subcommittees and reconcile them into a single set of goal weights. This was indeed done. A distinct advantage of using the Executive Committee for such a purpose was that this committee is made up of the officers of the CAC and the individual chairpersons of each subcommittee who represented the interests of their subcommittee. After a long discussion of the various goals in the Executive Committee, a single set of goal weights, as shown on the attachment, were recommended to the full CAC on December 18, 1978. During the full CAC meeting, the members heard the recommendations from the various subcommittees by giving each subcommittee chairperson the opportunity to explain their goal weights to the full

CAC. The chairman of the CAC presented the Executive Committee's reconciliation of these goals and after discussion on the open floor on the goal weights, the goal weights now to be used in the process were decided upon by the full CAC.

So the evaluation process called alternatives analysis had reached the point where the goals, objectives and criteria by which the alternatives were to be measured had been established. In addition to that, the weights or the quantitative comparisons of those goals and criteria had been determined and accepted by the CAC representing the citizens at large. It was then necessary to put the goals and weights into a format that could easily be used and understood by the reviewers during the alternatives analysis. Parsons Brinckerhoff/Flood & Associates calls this format a planning balance sheet.

Planning Balance Sheet

The planning balance sheet to be used in the alternatives analysis process is simply a numerical tally sheet on which the various alternatives can be evaluated on how well they satisfy the local goals. There have been many evaluation matrices developed over the years for other planning projects. The one used here was developed for its directness and simplicity. Only each route alternative is to be evaluated on goal satisfaction. The other functional and topical alternatives are to be evaluated in a different manner. The planning balance sheet was discussed with each subcommittee and the full CAC and has been accepted by them.

The planning balance sheet consists of four major parts — 1) the goals used to judge the alternatives, 2) the weights applied to each of these goals quantifying their relative importance, 3) the value from one to ten on how well each alternative meets that individual goal and, 4) the list of alternatives that are to be evaluated.

The planning balance sheet was produced on September 20, 1978 in the form of a matrix which is included here. Along the horizontal matrix at the top are listed the various alternatives to be evaluated

PLANNING BALANCE SHEET

JACKSONVILLE DPM TECHNICAL STUDY

GOALS AND OBJECTIVES OF THE CAC	TPD	UDS	GOV	C&F	ENS	CASC	EXS COMM
1. Revitalize the downtown area as a retail and office center.	8	14	9	12	8	10	15
2. Promote increased use of the downtown area as the cultural, educational and recreational center of the region.	12	10	8	7	9	20	13
3. Encourage public-private joint development opportunities.	9	6	8	6	7	5	7
4. Minimize the public development costs.	5	7	2	9	8	5	5
5. Strengthen the opportunities for in-town residential development.	11	6	10	7	10	14	7
6. Improve downtown area access and mobility for all persons, especially low income, the elderly, and the handicapped.	10	12	10	8	10	9	6
7. Provide an efficient, reliable and pleasurable service.	6	8	10	4	5	6	6
8. Encourage the separation of pedestrian and vehicular traffic.	4	5	10	5	4	5	4
9. Promote increased transit ridership.	8	7	7	8	9	6	9
10. Reduce pollution and consumption of energy and minimize other environmental impacts.	9	8	5	10	17	8	10
11. Create a financially viable DPM system.	10	8	11	13	9	6	10
12. Create a functional and operationally workable DPM system.	8	9	10	11	4	6	8
*13. Provide an open and responsive planning process and inspire a high level of citizen participation.							
TOTALS	100	100	100	100	100	100	100

*Cannot be given a numerical value.

September 20, 1978 Citizens' Advisory Comm.

and analyzed. The vertical axis lists all the goals of the project. In the first column of the planning balance sheet is contained the weights to be applied to each of the goals. These weights total one hundred points for 12 goals. The 13th goal was considered to be equal for all alternatives. Under each of the alternatives, there are two columns, a "V" and an "S" column. The "V" column refers to the value between one and ten which rates how well each of the alternatives satisfies that goal. The "S" column represents the numerical multiplication of the weight with the value which produces a weighted score for each of the goals. The total weighted scores for each of the 12 goals would be added together and will produce a single numerical evaluation for that particular alternative. Each of the alternatives' numerical evaluations are then compared. The planning balance sheet would be used in such a manner as:

Name John Doe

Goal	Weights	Alternatives: Do-Nothing V=Value (1-10)	Do-Nothing S=Score WxV=S	Bus Only Value (1-10)	Bus Only Score WxV=S
1. Revitalize the downtown area, etc.	15	1	15	2	30
2.					
3.					
Total Score	100		405		672

Presumably, the alternative with the highest total points would be that which best satisfies the goals of the project. The method that is planned is for each subcommittee to score the goals as was done in the goal weighting process. The subcommittee members would hold discussions and arrive at a subcommittee consensus or each member would score individually and take an average used for the subcommittee recommendation. Both methods were used with success for the goal weights. The Executive Committee would then reconcile the various subcommittee scores and make their own recommendation to the CAC. The CAC would then adopt or modify the scores as was done in the goal weighting process.

Alternatives Analysis Process

Having assembled the necessary tools to evaluate the alternatives, the CAC will have to set ground rules for the process itself. The present assumption is that the CAC will work through its subcommittees in much the same way as was done in the goal weighting. It should be done through some interactive process to air all views. Only the satisfaction of the goals for the major route alternatives are to be evaluated. Many of the sub-alternates within each route alternative and alternatives functional areas such as fare structure are to be evaluated as a separate process by the appropriate subcommittee. The decision to restrict the evaluation to route and mode alternatives was based on several factors. One, the subcommittees felt the JTA staff and consultants were better trained to make decisions on technical aspects such as system reliability. Two, certain topics such as fare structure, are more dependent on decisions which affect all the alternatives nearly equally and would not be a valid subject of comparison. It was decided to examine the various fare levels on the route once it had been chosen. The other way would be to examine fare structure alternatives for each route alternate and variations on route alternate segments before determining any single fare level for one route alternate. The task of discussing and understanding the nearly endless combinations of route segments and fare structures as they change the patronage clearly seemed beyond the capabilities of the CAC. Three, many alternatives seem unique only to that particular route, such as station location. Four, many alternatives depended wholly on policy decisions which the CAC felt were not theirs to make or could better be made at the time the system required the decision. Five, the simplicity of evaluating only goals seemed to be more realistic given the past experience the CAC had in goal weighting. The objectives and criteria are to be used by the various subcommittees as a method of evaluating the goal scores, so a detailed discussion of the various system elements will be included.

As soon as all the alternatives are defined, they will be evaluated within the same time frame, possibly in the same meeting. This will insure the interactive discussion among the alternatives much as was accomplished in the goal weighting. As outlined before, each subcommittee will produce its own score recommendations. The Executive Committee of the CAC will reconcile these scores and present a

JACKSONVILLE DPM FEASIBILITY STUDY
GOALS AND WEIGHTS OF SUBCOMMITTEES

Goals	Subcommittee Weights						
	TPD	UDS	GOV	C&F	ENS	CASC	EX.C
1. Revitalize the downtown.	8	14	9	12	8	10	15
2. Promoted use of downtown.	12	10	8	7	9	20	13
3. Encourage joint development.	9	6	8	6	7	5	7
4. Minimize public costs.	5	7	2	9	8	5	5
5. Strengthen residential development.	11	6	10	7	10	14	7
6. Improve access for handicapped, elderly and low income people.	10	12	10	8	10	9	6
7. Provide good service.	6	8	10	4	5	6	6
8. Encourage separation of traffic and pedestrians.	4	5	10	5	4	5	4
9. Promote transit ridership.	8	7	7	8	9	6	9
10. Reduce environmental impacts.	9	8	5	10	17	8	10
11. Create financially viable system.	10	8	11	13	9	6	10
12. Create operationally workable system.	8	9	10	11	4	6	8

single recommendation to the whole Citizens Advisory Committee at one of their monthly meetings. The CAC will then review this recommendation and then submit to the JTA Board the final CAC recommendations on route and system configuration.

Selected System

The JTA Board has the final responsibility for deciding on the route and system alternative best suited to the needs of Jacksonville. The JTA Board presumably will do this on the basis of all factors they consider relevant, including the recommendations of the JTA staff, the project consultant, the CAC, the FDOT, other citizens and governmental agencies. Moreover, the JTA Board will wish to closely consult with the City of Jacksonville and the FDOT on the most appropriate implementation of the DPM project, since they are the sources of non-federal funding. This review by the JTA Board will probably require a detailed examination of recommendations made to them together with iterations for revisions to any given route, fare, operations, vehicle/systems or financial alternative. These iterations will be prepared by the consultant staff and reviewed by the JTA staff and the CAC on a continuing basis until the JTA Board makes its final decision. This final decision will then become the selected system on which the future design and the Environmental Impact Statement (EIS) proceeds. The selected system will be subject to further change as more detailed design is developed and more knowledge is gained.

APPENDIX

PRELIMINARY SYSTEM SPECIFICATIONS OUTLINE

September 1, 1978

VEHICLE CHARACTERISTICS

A. Size/Capacity

1. Small 8-20
2. Medium 21-50
3. Large 51-100

B. Performance

1. Speed
    a. Under 10 mph
    b. 10-20 mph
    c. 20 mph and over (current max is 30 mph)
2. Grade Capability
    a. 0-5% grade
    b. 5-10% grade
    c. Over 10% grade
3. Turning Radius
    a. Under 20'
    b. 20'-50'
    c. 50'-100'
    d. Over 100'

C. Propulsion

1. DC Traction Motor
    a. Uni-directional
    b. Bi-directional
    c. Single motor per vehicle
    d. Two motors per vehicle

2. Linear Motor Propulsion

   a. Active elements on board, passive guideway

   b. Active elements on guideway, passive vehicle

3. Allowable Acceleration Rate

   a. Standing

   b. Seated

D. Suspension

1. Primary

   a. Rubber tires

      1) Foam filled

      2) Pneumatic

      3) Solid rubber

   b. Air cushion

2. Air Cushion

E. Trainability/Consist

1. Vehicles can not be operated in trains or coupled

2. Manual Coupling of two or more vehicles with mechanical and electrical connections

   a. Each vehicle capable of independent operation

   b. Lead vehicles only capable of operating separately

3. Automatic or remote coupling possible

4. Vehicles configured as married pairs or trains, i.e. difficult to uncouple

F. Braking

1. Service Brakes

   a. Allowable braking rates

      1) Standing

      2) Seated

b. Mechanical

1) Hydraulic

2) Pneumatic

c. Dynamic

d. Blending of mechanical and dynamic

2. Emergency Brakes

a. Allowable braking rates - G's or ft/sec^2

b. Mechanical - spring loaded, air held off

c. Skids on guideway

d. Other

G. Vehicle Guidance and Steering

1. Lateral Guidance

a. Center guidebeam

b. Guidance surfaces on both sides of guideway

c. Guidance surfaces on one side of guideway only

d. Vehicle straddles guideway structure

2. Steering

a. Power steering actuated by feeler wheels rolling on guidance surfaces

b. Mechanical steering - axel driven by guidewheels

H. Switching

1. On-board switching with positive mechanical entrapment

2. On-board switching without mechanical entrapment

3. Guideway switching

a. Displacement or swiveling of center guidebeam, entrapment device engages switch on guidance wheel, causing vehicle to turn in desired direction

b. No service switching capability

c. Lateral displacement of entire turntable or guideway section on a transfer table or similar device necessary for infrequent access to maintenance/service area.

I. Degree of Sophistication/Automation

1. Simple shuttle or loop operation with little or no switching

2. Loop operation involving extensive use of switching, as in the case of switch backs at ends of a double shuttle or bi-directional travel on a single guideway with two lane by-pass section at mid-points between station pairs

3. Scheduled operation of vehicles on predetermined routes within a network of guideways with extensive switching and off-line rotation

4. Variable schedules involving changes in frequency and numbers of vehicles moving through the system depending upon predetermined estimates of passenger flow throughout the day

5. Network operation involving either schedule or on demand service between numerous stations

J. Command and Control

1. Vehicle Operation and Headway

   a. Fixed Block - guideway segmented into zones

   b. Moving Block - vehicle assigned to a moving "slot" which the center computer moves around the routes as required

   c. Point Follower - vehicle follows an imaginary point which moves synchromously around the system - within the computer

   d. Car Follower - car follows vehicle ahead

2. Level of Control

   a. Manual control by on board operator

   b. Remote manual control by operator at central control console

   c. Computer control - operator merely observes and available for ameneties

3. Service Characteristics

   a. Scheduled service - individual vehicles move in accordance with prearranged routes and schedules (Sea Tac)

   b. On demand service - vehicles respond to passengers' requests for service, as in the case of automatic elevators (Tampa)

   c. Demand service - off-line (Morgantown)

   d. Off-line scheduled (Dallas, Morgantown)

K. Failure Recovery and Emergency Evacuation

1. Disabled vehicle controlled remotely from control center and moved to next station where passengers may disembark before it is returned to maintenance area for service

2. Disabled vehicle is pushed by the following vehicle to the next station

3. Disabled vehicle is pushed or towed by a self-controlled service vehicle or "Tug Tractor" to the nearest station, then to the maintenance area

4. Maintenance employee is dispatched by other transportation means to the disabled vehicle where he boards it and either drives it manually to a convenient passenger discharge point or takes care of the problem himself

5. If the vehicle cannot be moved remotely or manually or pushed by another vehicle or "Tug Tractor", or in the event of fire or smoke, emergency evacuation is effected by:

   a. Exiting through emergency doors or push-out panels, at one or both ends of vehicle onto the guideway. They then walk to the nearest station.

   b. Exiting through vehicle service doors onto an emergency walkway provided or this purpose as an integral part of the guideway structure.

   c. Passengers are removed by means of emergency equipment such as motorized ladder trucks, cherry pickers, etc.

   d. The fire department's ladder equipment is called in in the event of failure by all other means.

L. Reliability/Maintainability

1. System Availability, ie. the ratio between the time the system is in full operation and the total time it is scheduled to be operational (up time plus the time it is shut down due to equipment failure) well in excess of 99% has been achieved by a number of mature operational system. For 10 systems assessed, the range was from 93.7% to 99.9%.

2. Both the maintainability of the equipment and the effectiveness of maintenance and trouble shooting procedures have a strong influence on the frequency of malfunction and the time required to restore service. Reliability of key components as expressed in terms of:

   a. Mean time between failure

   b. Mean time to restore

3. High system availability may also be achieved by the selective use of operational personnel on board vehicles to monitor vehicle functions and take over manual control as necessary in the event of equipment failures, thus avoiding significant down time.

M. Passenger Confort and Amenities

1. Climate Control

a. Vehicles are to have no windows and are open to the elements

b. Enclosed vehicles have forced air ventilation

c. Vehicles are equipped with heating and air conditioning equipment

2. Seating

a. All passengers ride seated

b. All passengers ride standing

c. Some passengers are seated, most are standing

3. Ride Comfort

a. Lateral, vertical and longitudinal accelerations and jerk rates vary considerably with the design and quality of construction/manufacture of guideways, as well as suspension, propulsion and braking systems. Maximum acceptable limits as well as frequencies may be specified and measured.

b. Interior noise levels due to propulsion motors, air handling equipment, brakes, interaction between the vehicle and guideway and miscellaneous on board equipment vary between systems. Allowable limits can be established and later measured readily for compliance.

c. Access by handicapped persons in wheelchairs:

1) Some modification will be required - mainly removal of seats in all seated vehicles to provide space for wheelchairs

2) Most vehicles are suitable for use by such persons

OPERATIONS

A. Facilities

1. Fully manned (platform, collectors)
2. Partially manned (collectors)
3. Periodically manned (rush hours, roving patrols)
4. Unmanned (TV surveillance, inter-com)

B. Train control

1. Manual
2. Semi-automated (operator)
3. Automated and computerized

C. Headways

1. Peak hour
   a. Low (10-15 min)
   b. Medium (3-7 min)
   c. High (60 sec to 2 min)
   d. Max (2-30 sec)
2. Commuter peak
   a. Low (10-15 min)
   b. Medium (5-10 min)
   c. High (1 min)
3. Off-peak hour
   a. None
   b. Low (60 min)
   c. Medium (30 min)
   d. High (5 min)

4. Week-end
    a. None
    b. Minimum (60 min)
    c. Maximum (10 min)
5. Length of Service
    a. Day only (7 a.m. to 6 p.m.)
    b. Evening (6 a.m. to 10 p.m.)
    c. Night (6 a.m. to midnight)
    d. 24 hour service

D. Capacity
1. Commuter (100 and over)
2. DPM (50 - 100)
3. GRT (10 - 40)
4. PRT (2-8 persons seated)

E. Guideway
1. One-way linear
2. Two-way linear
3. One-way loop
4. Two-way loop

F. Consist
1. Single vehicle only
2. One married pair only
3. Married pairs
4. Single car entrainments
5. random and/or demand

FARE ALTERNATIVES

A. Fare levels

1. No fare
2. Minimum fare (10¢)
3. Medium fare (25¢)
4. Maximum fare (40¢)

B. Fare structure

1. Flat fare
2. Zone fare

C. Fare collection

1. Self-service system (validation, passes)
2. Automated (magnetic tickets)
3. Semi-automated (exact change, tokens)
4. Manned (passes, fare change)

SECURITY

A. Facilities

1. Manned stations (ticket collectors)
2. Unmanned stations (TV surveillance)
3. Semi-manned (roving patrols)

B. Vehicles

1. Manned (car operator)
2. Unmanned (TV surveillance)
3. Semi-manned (roving patrols,uniformed riders)

C. Staff

1. Full staff with arrest powers
2. Partial staff for ROW only with apprehension powers
3. Police agreements
4. Self-patrolling, TV surveillance

FINANCIAL

A. System Support

1. Full subsidy (no fare, no amortization)
2. Partial Operating subsidy (mini-fare, no amortization)
3. Self-operating (med. fare, capital sharing)
4. Self-contained (high fare, full amortization)
5. Revenue producing (high fare, full amortization, system replacement, system expansion)

B. Revenue Sources

1. Subsidies (Federal, state, local)
2. Fare box, subsidies
3. Concessions, fare bos, subsidies
4. Value capture, concessions , fare box, subsidies
5. Tax base, max. value capture, concessions, fare box, subsidies

C. Cost

1. Labor intensive (manual operation, station manning, manual ticket sales, in-house maintenance)
2. Equilibrium (capital amortization and labor costs must be about equal)
3. Capital emphasis (low visible labor, high automation, high maintenance and low operating costs)
4. Capital intensive (full automation, contract maintenance, maximum mean time before failure MTBF)

D. Funding (local share) Sources

1. One-time full grants (FDOT,- 10% general fund 10%) for initial phase only
2. TIP commitment (partial system funding)
3. Capitalization of initial phase (bonds)

4. Pay as you go for system expansion
5. Capitalization plan for entire system
6. Tax base for system and expansion

E. Value Capture and Joint Development

1. Incidential (VC request only)
2. Cooperative (VC optimistic)
3. Programatic (VC program)
4. Primary (developemtn linkages only)

GOALS	WEIGHT	SCORE		RANK	
		A	B	A	B
1. Revitalize the downtown area as a retail and office center.					
2. Promote increased use of the downtown area as the cultural, educational and recreational center of the region.					
3. Encourage public-private joint development opportunities.					
4. Minimize the public development costs.					
5. Strengthen the opportunities for in-town residential development.					
6. Improve downtown area access and mobility for all persons, especially low income, the elderly, and the handicapped.					
7. Provide a high level of service.					
8. Encourage the separation of pedestrian and vehicular traffic.					
9. Promote increased transit ridership.					
10. Reduce pollution and consumption of energy and minimize other environmental impacts.					
11. Create a financially viable DPM system.					
12. Create a functional and operationally workable DPM system.					
13. Provide an open and responsive planning process and inspire a high level of citizen participation.					
TOTAL					

Revised July 26, 1978

JACKSONVILLE DOWNTOWN PEOPLE MOVER

TECHNICAL STUDY PHASE

GOALS AND OBJECTIVES

GOALS

1. Revitalize the Downtown Area as a multi-use activity center by:

   a. Encouraging new public-private joint development opportunities through a process of capturing private value added, thus

   b. Reducing the public development cost.

   c. Conserving energy, reducing pollution, and minimizing other environmental impacts.

   d. Promoting increased use of Downtown Area as the cultural, educational and recreational center of the region.

   e. Strengthening middle and upper-income residential development.

2. Improve Downtown Area access and mobility by:

   a. Providing safe, convenient, efficient, and pleasurable travel.

   b. Encouraging the separation of pedestrian and vehicular traffic.

   c. Promoting increased transit ridership.

   d. Providing a greater mobility for all persons, especially low income, the elderly, and handicapped.

3. Create a financially and operationally viable DPM System.

   a. Inspire a high level of citizens' participation, thereby promoting a response to changes in community goals and objectives.

OBJECTIVES

1. Create a DPM system that will help implement the Downtown Development Plan, including such elements as:

   a. Linking the Downtown Area major activity centers and promoting an interconnection among such centers.

   b. Providing a second-level walkway concept.

c. Stimulating the development of a system of peripheral parking centers and providing access to and from major Downtown Area facilities.

2. Encourage joint development and value capture opportunities to reduce public investment and integrate the DPM with new developments.

3. Provide a quiet, stable, clean and energy-efficient mode of DPM which will:

a. Provide support to the evenings, and week-end use of the Downtown Area by providing easy, safe, convenient and rapid transit.

b. Help promote hotel, restaurant and convention use of the Downtown Area.

c. Promote commercial activity by making shopping faster, all-weather controlled, more convenient and more fun.

4. Insure viable DPM system operation and capability of expansion with a minimum of disruption during construction which will:

a. Minimize traffic disruption and real estate relocations.

b. Control construction noise, air pollution and service disruption to an acceptable level.

5. Design contemporary and efficient DPM system that will:

a. Complement the present and future urban landscape.

b. Be designed with a minimum visual intrusion.

c. Use existing public right-of-way to the maximum extent possible.

d. Provide barrier-free access to the system for the elderly and handicapped at all major points.

e. Provide tested and simplified DPM systems to reduce capital investment and subsequent operations and maintenance costs.

6. Set up an effective Public Involvement Program.

a. Define the intergovernmental requirements, laws, regulations, and financial commitments needed to implement the DPM.

7. Provide complementary, rapid low-fare transit system which is safe, clean, reliable, convenient; which will result in easy movement throughout the Downtown Area including:

a. Provide complete inter-modal transportation facilities.

b. Concentrate bus transit to inter-modal facilities on the Downtown Area periphery.

c. Reduce quantity of buses in Downtown Area circulation so they might serve other areas in the region.