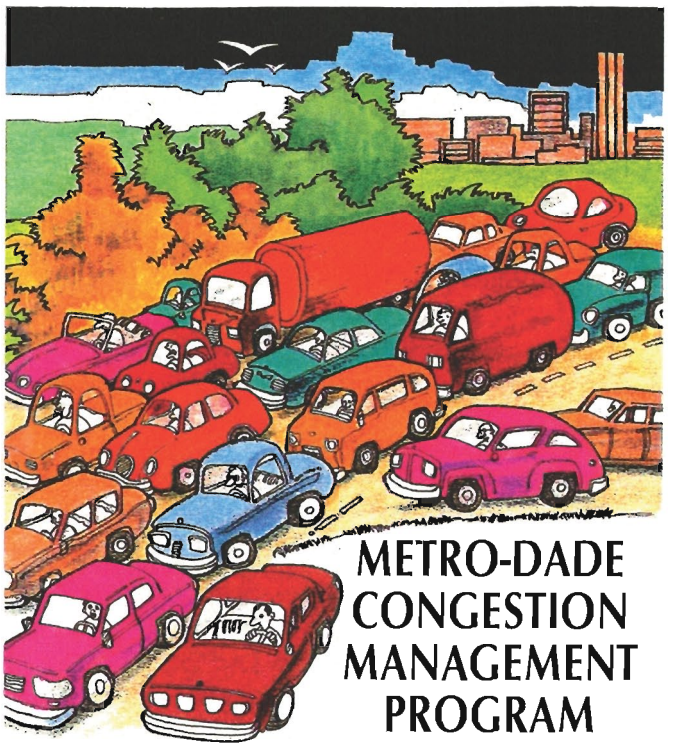
Metropolitan Dade County

Metropolitan Planning Organization

DADE COUNTY
CONTINUING DEVELOPMENT OF TMAs

CIVIC CENTER
PEDESTRIAN AMENITIES AND SAFETY STUDY



By:

Barton-Aschman Associates, Inc.

September 1994

CIVIC CENTER PEDESTRIAN AMENITIES AND SAFETY STUDY

Prepared For:

DADE COUNTY
METROPOLITAN PLANNING ORGANIZATION

Prepared By:

Barton-Aschman Associates, Inc.

September 1994

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PREFACE

Congestion Management has become the latest term to enter the transportation profession's lexicon. It connotes the realization by the field's professionals that it is no longer recommended to continue building all of the infrastructure necessary to meet the demands of the American motoring public of owning a private automobile, paying little for its operation, and having the ability to use it, unimpeded, whenever they choose. Because of this, curbing the demand for the limited transportation infrastructure is now being seriously considered by all levels of government, through the use of Transportation Management techniques. These are grouped into Transportation System Management (TSM), focusing on physical facilities, and Transportation Demand Management (TDM) focusing on people behavior.

Transportation Management is generally defined as a systematic process of modifying the demand placed on the roadway system by vehicles, to achieve the goal of reducing, alleviating or managing the number of automobiles using the system, particularly during the peak hours. Demand reduction is generally focused on the private, single-occupant automobile and achieved through a variety of methods whose goal is to increase vehicle occupancy and reschedule trips around the peak travel hours. Transportation Demand Management strategies are aimed at relieving vehicular congestion, enhancing air quality, and promoting energy conservation. These are important to the implementation of the concurrency component of Florida's Growth Management Act, the Federal Clean Air Act Amendments of 1990 and Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991.

To aid in the implementation of TDM Strategies in Dade County, in 1991, the Metro-Dade Metropolitan Planning Organization with the aid of Barton-Aschman Associates, Inc. developed the ***Transportation Demand Management and Congestion Mitigation Study***. The purpose of this study was to investigate a wide range of TDM alternatives available to the County, and to develop the best way in which the County could implement state-of-the-art TDM techniques. This study which was adopted by the MPO governing board identified specific actions for adoption and implementation by the Metropolitan Dade County. The Plan provided a program of short-range and long-range measures to reduce the need for single occupant vehicles on Dade County's roadways. The focus of this ***Civic Center Pedestrian Amenities and Safety Study*** is to inventory and identify low cost measures to improve the pedestrian facilities by which the transit usage can be encouraged in the Civic Center in Dade County.

EXECUTIVE SUMMARY

Study Objectives

To aid in the implementation of TDM Strategies in Dade County, in 1991, the Metro-Dade Metropolitan Planning Organization with the aid of Barton-Aschman Associates, Inc. developed the ***Transportation Demand Management and Congestion Mitigation Study***. The purpose of this study was to investigate a wide range of TDM alternatives available to the County, and to develop the best way in which the County could implement state-of-the-art TDM techniques. This study which was adopted by the MPO governing board identified specific actions for adoption and implementation by the Metropolitan Dade County. The Plan provided a program of short-range and long-range measures to reduce the need for single occupant vehicles on Dade County's roadways. The focus of this ***Civic Center Pedestrian Amenities and Safety Study*** is to inventory and identify low cost measures to improve the pedestrian facilities by which the transit usage can be encouraged in the Civic Center in Dade County.

Study Location

The Dade County MPO, in cooperation with other Dade County Agencies and the Regional Commuter Assistance Program of the Florida Department of Transportation, facilitated the creation of the Civic Center Transportation Management Organization (CCTMO). The CCTMO boundaries are defined by the Dolphin Expressway to the south, N.W. 20th Street to the north, N.W. 7th Avenue to the east and N.W. 17th Avenue to the west. Within this area, there are almost 35,000 employees, the CCTMO incorporated hospitals, colleges, and judicial facilities clustered around N.W. 12th Avenue and N.W. 16th Street in the City of Miami. Because of the high levels of transit usage generated by these institutions, improvements to the pedestrian facilities should increase transit usage.

Major Pedestrian Corridors

Through an initial field reconnaissance and data collection activity, sixteen major pedestrian corridors were identified within the Civic Center Study area. They are:

1) Fred Cowell Mall Corridor
2) N.W. 17th Street Corridor
3) N.W. 14th Terrace/NW 11th Avenue Corridor
4) N.W. 18th Street/N.W. 8th Avenue/N.W. 19th Street Corridor
5) N.W. 15th Street (U of M Hospital and Clinics) Corridor
6) N.W. 15th Street (JMH Towers) Corridor
7) N.W. 16th Street (JMH/U of M) Corridor
8) N.W. 16th Street (VA Hospital) Corridor
9) N.W. 14th Street Corridor
10) N.W. 13th Avenue Corridor
11) N.W. 13th Court Corridor
12) N.W. 13th Street Corridor
13) N.W. 12th Street Corridor
14) Bob Hope Road Corridor
15) N.W. 20th Street Corridor
16) N.W. 12th Avenue Corridor

Recommendations

a. Low Cost Short Term Improvements

Each of these sixteen pedestrian corridors were further evaluated in the field and pedestrian counts were taken at strategic locations to identify deficiencies that could be improved to encourage pedestrian usage. The deficiencies ranged from improper pavement markings to inadequate street lighting and lack of sidewalk space. The majority of the improvements could be implemented by local maintaining agencies. In addition to a detail corridor by corridor evaluation of deficiencies and possible solutions, a list of the deficiencies

was prepared identifying the local agency responsible for correcting the deficiency and where the deficiency exists.

Example: N.W. 16th Street (JMH/U of M) Corridor

This is a major pedestrian corridor in the Civic Center area. The existing pedestrian amenities, such as covered walkways, benches, and open walkways, are conducive to pedestrian circulation. There are a few deficiencies. In order of importance and ease of implementation, they are:

(i) Pedestrian/vehicular conflict at the parking garage entrance/exit:
- Install yield and stop signs to regulate vehicular movement.

(ii) Vehicles parked in front of tow-away signs:
- Enforce curb-side parking control.

(iii) Ramp not matching the crosswalk:
- Restripe the crosswalk.

(iv) Speeding vehicles:
- Currently controlled by speed bumps. An alternative would be to install pedestrian priority treatment, such as non-slip tiles at heavy pedestrian activity areas.

b. High Cost Long-Term Improvements

There are a number of high-cost, long-term improvements which should be implemented in the Civic Center Study area to make it more attractive to pedestrian usage. Following is a summary both general as well as specific improvements and the future needs for the Civic Center Study Area.

Pedestrian Amenities

- Covered walkways provide protection against inclement weather. From the limited data collected, following is a list of corridors identified as candidate for covered walkways:

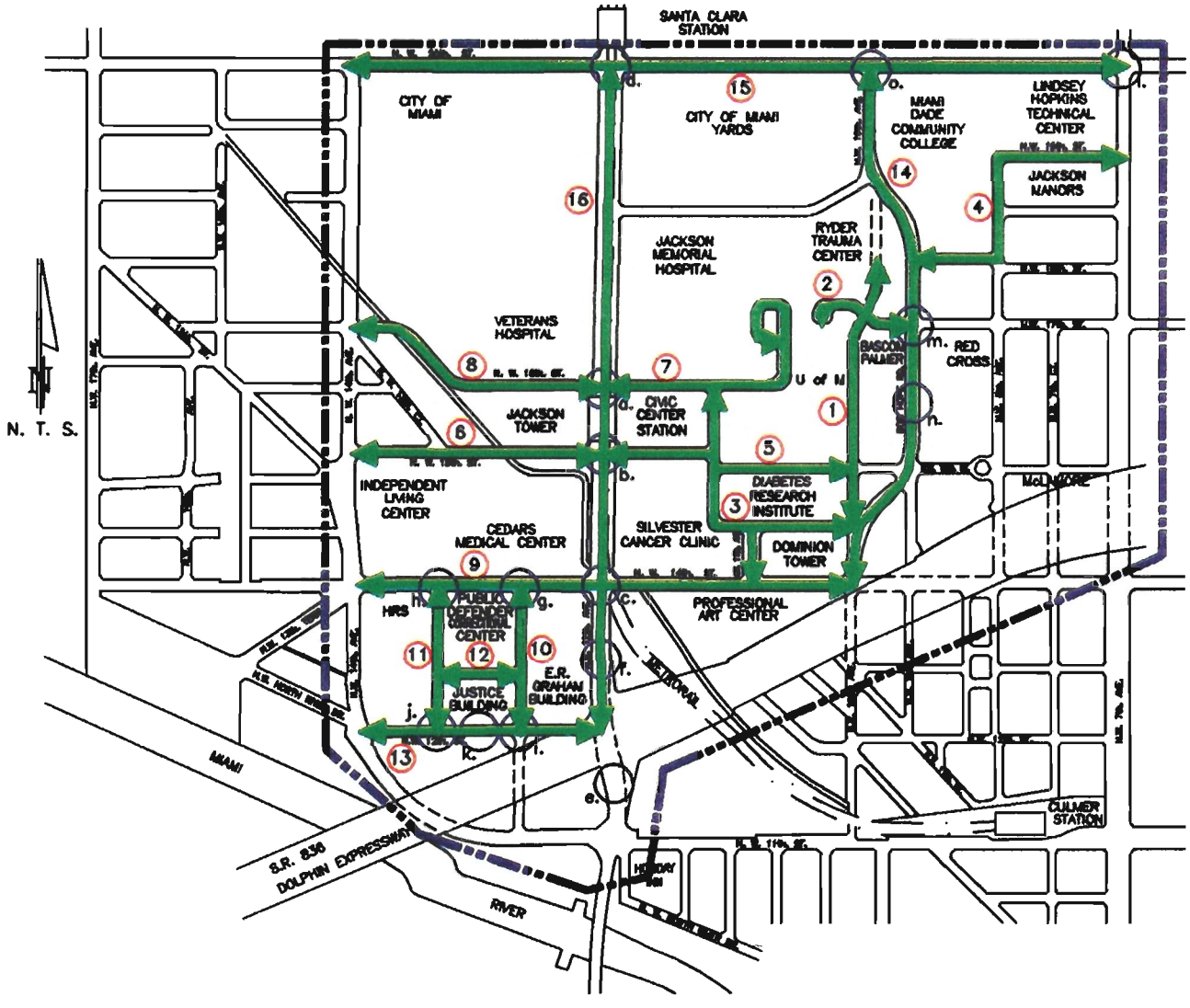
  a. N.W. 12th Avenue corridors (east and west sides) from N.W. 16th Street to N.W. 14th Street
  b. N.W. 16th Street corridors (east and west) on the north side
  c. Pedestrian corridors around the judicial facilities.

  Priorities for covering these walkways should be based on actual pedestrian counts.

- Due to the high volume of pedestrians certain corridors must provide priority treatment to pedestrians. Some of the locations and pedestrian corridors that are candidates for priority treatment are:

  a. N.W. 12th Avenue at N.W. 16th Street
  b. N.W. 12th Avenue at N.W. 15th Street
  c. N.W. 16th Street corridors - east and west
  d. N.W. 15th Street (West corridor)

- Due to the large number of buildings within the Civic Center Study Area, it is easy to become disoriented. Building directional signs to orient pedestrians should be located at strategic locations. These signs should be mounted at pedestrian eye-level, near the pedestrian corridors but clear from the walking areas.



PEDESTRIAN CORRIDORS

1. FRED COWEL MALL
2. NW 17tH ST. (LOUIS McCULLER WAY)
3. NW 14th TER./NW 11th AVE.
4. NW 18th ST./NW 8th AVE./NW 19th ST.
5. NW 15th ST. (U.M. HOSPITAL AND CLINICS)
6. NW 15th ST. (JACKSON MEDICAL TOWER)
7. NW 16th ST. (U.M./J.M.H.)
8. NW 16th ST. (VETERANS HOSPITAL)
9. NW 14th ST.
10. NW 13th AVE.
11. NW 13th CT.
12. NW 13th ST.
13. NW 12th ST.
14. BOB HOPE RD.
15. NW 20th ST.
16. NW 12th AVE.

PEDESTRIAN COUNT LOCATIONS

a. NW 12th AVE. @ NW 16th ST.
b. NW 12th AVE. @ NW 15th ST.
c. NW 12th AVE. @ NW 14th ST.
d. NW 12th AVE. @ NW 20th ST.
e. NW 12th AVE. @ S of S.R. 836
f. NW 12tH AVE. @ N of S.R. 836
g. NW 14th ST. @ NW 13th AVE.
h. NW 14th ST. @ NW 13th CT.
i. NW 12th ST. @ NW 13th AVE.
j. NW 12th ST. @ NW 13th CT.
k. NW 12th ST. @ COURT HOUSE MAIN ENTRANCE
l. NW 20th ST. @ NW 7th AVE.
m. BOB HOPE RD. @ NW 17th AVE.
n. BOB HOPE RD. @ CROSSWALK BETWEEN 15 & 17th ST.
o. BOB HOPE RD. @ NW 20th ST.

LEGEND:

- STUDY BOUNDARY
- (1) MAJOR PEDESTRIAN CORRIDOR
- (a.) PEDESTRIAN COUNT LOCATIONS

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CIVIC CENTER MAJOR PEDESTRIAN CORRIDORS AND COUNT LOCATIONS

DEFICIENCIES

1. RAMP DOES NOT MATCH CROSSWALK.
2. VEHICULAR/PEDESTRIAN CONFLICTS AT PARKING GARAGE ACCESS.
3. VEHICLES PARKED IN FRONT OF TOW-AWAY SIGN.
4. SPEED BUMPS TO SLOW VEHICLES.

IMPROVEMENTS

I. FIX ALL MINOR DEFICIENCIES.

II. REPAVE HEAVY PEDESTRIAN AREAS, SUCH AS THE CIRCLE AND IN FRONT OF THE GARAGE WITH NON-SLIP TILES.

III. INSTALL BUILDING IDENTIFICATION AND DIRECTIONAL SIGNS IN THE GRASS AREAS TO AID PEDESTRIANS.

NOTES

a). GOOD NIGHTTIME LIGHTING.

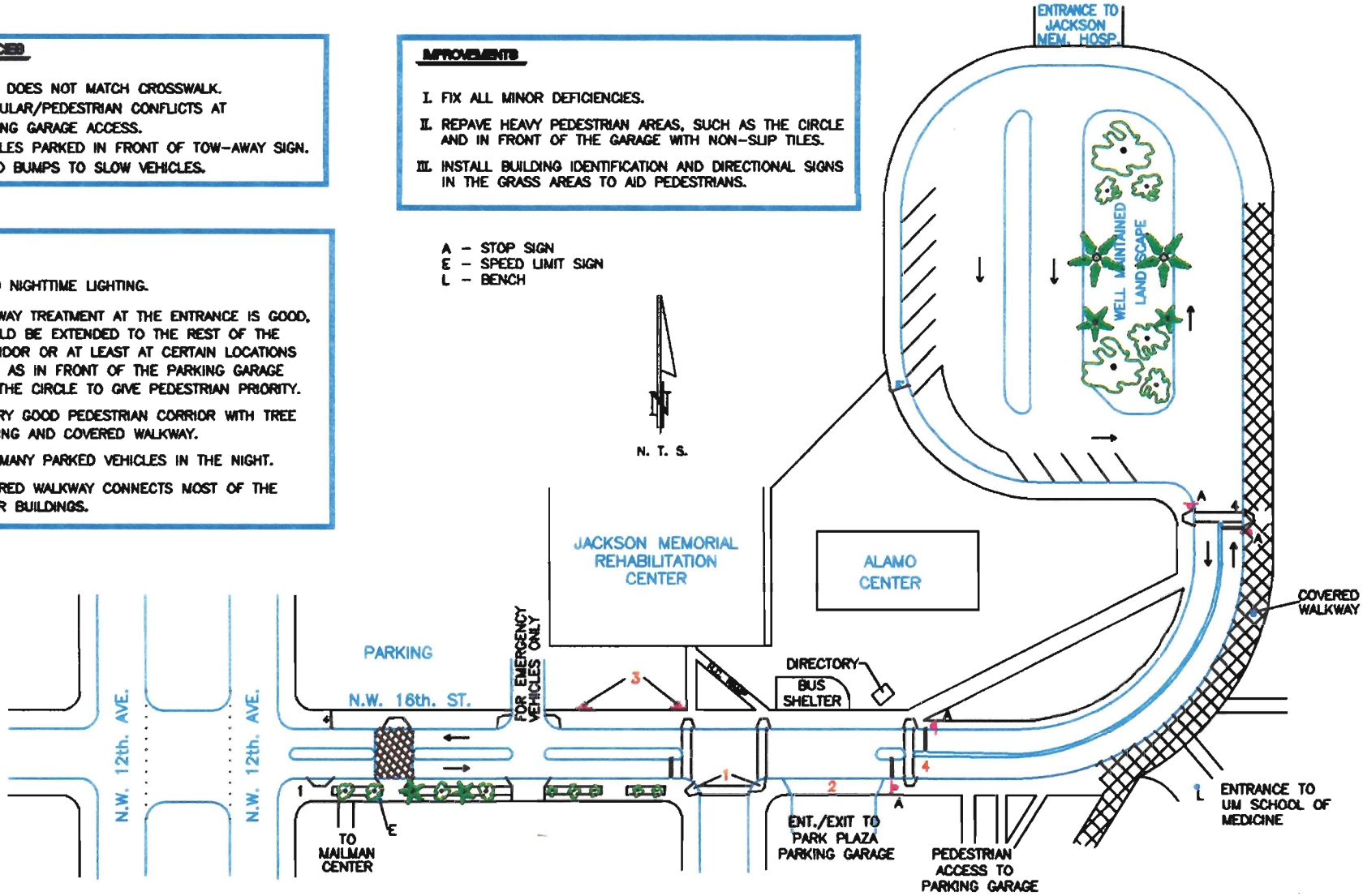
b). GATEWAY TREATMENT AT THE ENTRANCE IS GOOD, SHOULD BE EXTENDED TO THE REST OF THE CORRIDOR OR AT LEAST AT CERTAIN LOCATIONS SUCH AS IN FRONT OF THE PARKING GARAGE AND THE CIRCLE TO GIVE PEDESTRIAN PRIORITY.

c). A VERY GOOD PEDESTRIAN CORRIDOR WITH TREE SHADING AND COVERED WALKWAY.

d). TOO MANY PARKED VEHICLES IN THE NIGHT.

e). COVERED WALKWAY CONNECTS MOST OF THE MAJOR BUILDINGS.

A – STOP SIGN
E – SPEED LIMIT SIGN
L – BENCH



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7. NW 16th ST. (U.M. / J.M.H.) CORRIDOR

- The CCTMO could undertake many activities to promote pedestrian and transit usage in the Civic Center Area. Public participation is one such activity. Visitors and employees to the Civic Center Area could be encouraged to fill out suggestion cards and deposit them at properly-located suggestion boxes. Also, the CCTMO members could be influenced to encourage their employees to carpool, vanpool, and use flextime to reduce the single occupant vehicle trips in the Civic Center Area. The CCTMO could also discourage the construction of new and expansion of existing parking garages to discourage motor vehicle usage. They could also increase parking fees and provide subsidies to employees for using the transit.

- Pedestrian corridors will be utilized more frequently if they have meaningful beginning and ending points as well as traverses pedestrian origins and sinks. The Northwest 15th Street (west corridor) is a good candidate for such improvements. It should be further extended towards the west to connect to N.W. 14th Avenue where an additional pedestrian crossover corridor could be established between N.W. 12th Avenue and N.W. 14th Avenue. This corridor should be supplemented by pedestrian priority treatments.

- Improving pedestrian corridor attractiveness is a way to create the proper environment to encourage pedestrian usage. Soothing and non-threatening colors along pedestrian corridors is one way to achieve this. The area near the Civic Enter Metrorail Station should be landscaped and maintained regularly to create an attractive and safe environment. The corridor attractiveness can be improved by painting. Many walls (the Metrorail structure, for example) could be painted with colors that are attractive and which create a sense of a secure environment.

DEFICIENCY LIST BY ATTRIBUTES, CORRIDORS AND RESPONSIBLE ENTITY

Attribute	Deficiency	PEDESTRIAN CORRIDOR NO. & RESPONSIBLE ENTITY															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
		TMO	CITY	TMO	CITY	TMO	CITY	TMO	CTY	CTY	CITY	CITY	CITY	CTY	CTY	CTY	FDOT
Safety	• Vehicle/Pedestrian Conflict		X			X	X	X	X		X						X
	• Inadequate Sight Distance						X										
	• Wide open driveways														X		
	• Poles hit by vehicles															X	
Security	• Inadequate Lighting	X		X		X				X					X	X	
Traffic	• Disregard Traffic Signs		X					X						X			X
	• Conflicting Traffic Signs			X	X									X			
	• Improper/lack of pavement markings			X	X					X					X	X	X
	• Abandoned driveway/ramp				X					X		X					
	• Unmaintained traffic signs				X				X	X							X
	• Drop-curb at signalized intersection																X
Transit	• Inadequate Transit stop facilities						X								X		X
	• Bus Shelter Vandalized																X
Amenities	• Ped. features not functioning/missing		X		X					X				X	X	X	
	• Fixed objects within sidewalk			X	X	X					X	X			X	X	X
	• Undulating/Unmaintained sidewalk			X									X		X	X	X
	• Crosswalk not aligned with ramp			X				X	X	X	X	X	X	X		X	
	• Parked vehicles conflicting with peds.					X	X							X	X		
	• Inadequate sidewalk space						X										
	• Non-continuous sidewalk						X		X								
Other	• Tree/Bush Trimming			X	X	X					X				X	X	
	• Cleanliness				X					X				X	X	X	X
	• Landscaping						X								X	X	X
	• Vendors Blocking sidewalk										X	X		X		X	

Pedestrian Safety

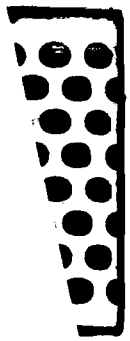
Pedestrian safety begins with facilitating motor vehicle traffic while integrating pedestrians and pedestrian facilities into the system. It is apparent from the crash data review that roadway improvements are needed at selected locations along N.W. 12th Avenue and N.W. 7th Avenue to improve motor vehicle access and to improve pedestrian safety. The following intersections should be further studied for engineering improvements as well as to improve safety and accessibility:

a. N.W. 12th Avenue @ N.W. 20th Street
b. N.W. 12th Avenue @ N.W. 16th Street
c. N.W. 12th Avenue @ N.W. 15th Street
d. N.W. 12th Avenue @ N.W. 14th Street
e. N.W. 7th Avenue @ N.W. 20th Street
f. N.W. 7th Avenue @ N.W. 17th Street

Pedestrian Security

In a pedestrian's mind, the perception of security plays a more decisive role in utilizing the facility than does the reality of security. The presence of security personal and ample lighting gives a pedestrian sense of security. The three Metrorail stations are prime targets for such improvements. The Culmer Station should be given special attention. In addition to improving security and lighting around the Culmer Station, proper maintenance of vegetation, cleanliness, and code enforcement could further improve the usage of this Metrorail station. Near the bus stops, there should always be street lighting. The bus stops should be free of any overgrown vegetation that could heighten the sense of insecurity among transit users.

tion to improving pedestrian amenities and safety, steps should be taken to
ransit usage. Specifically, the non standard peak times caused by the unique
shift times among the institutions should be taken into consideration for
ransit service to the Civic Center area. Metrobus and Metrorail peak time
hould be sensitive to these unique shift times. At locations where there is only
igns, bus shelters and benches should be added. All transit stops must be well lit
ay a sense of security to the users. All transit stops must be routinely maintained
liness. The Metrorail stations must always have security personnel present visible
public.



le Facilities

The Civic Center Area has little or no bicycle facilities. In addition to providing bike
ys and paths, secure bicycle lockers, stands and showering facilities should be provided
ncourage bicycle usage. The N.W. 12th Avenue/N.W. 16th Street intersection as well
s the three educational establishments in the Civic Center areas are ideal locations for
oviding bicycle facilities. Further studies are needed to identify a network of bikeways
and paths within the Civic Center Area.

ADA Compliance

The ADA does not require existing facilities to meet the standards set forth to accommodate handicapped users. The number of institutions in the Civic Center area shows the need to improve the existing conditions to accommodate handicapped users. The CCTMO should set up a systematic and prioritized program to upgrade the existing conditions to meet such needs.

1.0 INTRODUCTION

For many hundreds of years, walking was the predominant form of urban transportation. Planners of ancient cities made provisions for the separation of pedestrian and vehicular traffic, for vehicle-free spaces at focal points of activity, and for covered walkways that protected the walker from sun and rain. Although, the growth of cities and the decentralization of urban activities has diminished the importance of walking, it still persists as a principal means of getting about in urban areas. Despite its continuing importance, walking in the urban areas has become increasingly unattractive to pedestrians.

The literature on this subject (1, 2, 3, 4) identifies many reasons for this unattractiveness. Most of these reasons can be grouped under four categories:

- **Safety**

Traffic-control measures are typically designed with the primary purpose of facilitating motor vehicle flow and safety. However, approximately 15 to 20 percent of all U.S. highway fatalities are pedestrian oriented. (1). Furthermore, 83 percent of all pedestrian accidents and 74 percent of all pedestrian fatalities in the United States in 1985 occurred in urban areas (1). The earliest concerns of local officials about pedestrian movements were confined mainly to traffic safety, and the actions taken more often than not (in the eyes of the pedestrian) seemed to favor the movement of motor vehicles.

- **Attractiveness**

The degree to which a pedestrian route can be enjoyed is determined in large part by its convenience, length, landscaping, protection against inclement weather, buildings,

spaces that lay along the way, and amenities such as transit stop benches and shelters, wheelchair ramps, and a wide variety of street furniture and fittings designed for the comfort, convenience, and entertainment of sidewalk users. More often, in urban areas, the pedestrian facilities receive the least attention when it comes to maintenance.

- **Security**

The ever-increasing crime problem in the United States has targeted some sidewalks as prime areas for prey during nighttime. In some urban areas, the sidewalks have become unsafe not only at nighttimes, but also during the daytime. Very little importance is placed on improving security along pedestrian facilities. This could be due to the relatively lower level of severity of crimes committed on the sidewalks and the types of crimes committed, such as mugging and rape, that are seldom reported. Nevertheless, lack of security on sidewalks makes them unattractive.

- **Convenience**

Needless to say, the predominant form of transportation in the United States is the automobile. In urban areas, due to congestion and parking cost, the use of automobiles is becoming less desirable and more costly; nevertheless, the use of transit and pedestrian travel can be further encouraged by making the connection between the origin/destination and the transit stop safer, more attractive, and secure. A concise summary of potential solutions to various pedestrian problems and needs are included in Appendix A.

This study was undertaken as part of the Dade County's Continuing Congestion Mitigation Program. Under Part I of this program, the ***Transportation Demand Management and Congestion Mitigation Study*** for Dade County was completed in early 1993. This study was preceded by two other documents: ***Current Efforts in Transportation Demand***

Management (March 1992) and ***Congestion Management Plan: Background Report*** (September 1992).

In addition to these planning projects, the MPO, in cooperation with other Dade County Agencies and the Regional Commuter Assistance Program of the Florida Department of Transportation, facilitated the creation of the Civic Center Transportation Management Organization (CCTMO). Containing almost 35,000 employees, the CCTMO incorporates hospitals, colleges, and judicial facilities clustered around N.W. 12th Avenue and N.W. 16th Street in the City of Miami. The type, use and intensity of businesses in this area, however, is prime for improving pedestrian facilities and thereby encouraging transit usage.

This Pedestrian Amenities and Safety Study has identified 16 major pedestrian corridors in the Civic Center Area. These 16 corridors were inventoried to identify specific low-cost measures to improve safety, attractiveness, and security for pedestrians. These low-cost measures are described for each of the 16 corridors in their order of importance.

2.0 STUDY AREA - THE CIVIC CENTER

2.1 Land Use

The Civic Center area is bounded by Flagler Street on the south, N.W. 20th Street on the north, N.W. 7th Avenue on the east, and N.W. 17th Avenue on the west, as defined by Dade County Commission Resolution Number R-668-92. The Civic Center TMO, however, incorporates only the area zoned 'Institutional' by the Dade County Building and Zoning Department. Its boundaries are the same as the Civic Center boundaries, except that the southern boundary is defined by the Dolphin Expressway (SR 836).

The Civic Center area includes almost 35,000 workers employed by over 200 employers encompassing hospitals, colleges, and judicial facilities clustered around N.W. 12th Avenue and N.W. 16th Street. Table 1 lists the major employers in the Civic Center area. Some of them are located on Figure 1.

In addition to the employees, the student population at the three colleges: Miami Dade Community College Medical Center, Lindsey Hopkins Technical Education Center, and the University of Miami, add to the pedestrian density of this area. Further, there are many single family homes as well as residential towers within the Civic Center area.

The Civic Center area contains many parking facilities. They include on-street, off-street, public, private parking lots and garages. The number of parking spaces in the Civic Center area total over 15,000; of which over 7,000 spaces are public, and over 8,000 spaces are private. Figure 1 also shows the major parking facilities which have over 300 parking spaces within the Civic Center area.

TABLE 1
CIVIC CENTER TRANSPORTATION MANAGEMENT ORGANIZATION
PRELIMINARY LIST OF MAJOR EMPLOYERS AND SELECTED SERVICES

EMPLOYER	ADDRESS
AMERICAN RED CROSS	1675 N.W. 9th Avenue
BASCOM PALMER EYE INSTITUTE	900 N.W. 17th Street
CAPITAL BANK Civic Center Branch Personnel Office	 1000 N.W. 14th Street 1000 N.W. 14th Street
CEDARS MEDICAL CENTER	1400 N.W. 12th Avenue
CITIBANK Civic Center Branch	 1099 N.W. 14th Street
CLAUDE PEPPER TOWERS (Residential)	N.W. 5th Street
DADE COUNTY PUBLIC SCHOOLS Lindsey Hopkins Technical Ed. Ctr.	 750 N.W. 20th Street
DADE DIALYSIS CENTER	1601 N.W. 8th Avenue
DAYS INN-MIAMI MEDICAL CENTER	1050 N.W. 14th Street
DOMINION TOWER (Residential)	1521 N.W. 13th Court
EASTER SEALS SOCIETY OF DADE COUNTY	1475 N.W. 14th Avenue
HIGHPOINT PRE-SCHOOL CENTER (Day Care)	1550 N.W. 14th Street
HOLIDAY INN-CIVIC CENTER	1170 N.W. 11th Street
JACKSON MANOR NURSING HOME	1861 N.W. 8th Street
JACKSON MEDICAL TOWERS	1500 N.W. 12th Avenue
JACKSON MEMORIAL HOSPITAL	1611 N.W. 12th Avenue
KIDDIE KINGDOM (Day Car Center)	1521 N.W. 13th Court
LA CUBANA BUS COMPANY	N.W. 7th Avenue @ Miami River
MCLAMORE'S CHILDREN'S CENTER	800 N.W. 15th Street

TABLE 1 (Continued)
CIVIC CENTER TRANSPORTATION MANAGEMENT ORGANIZATION
PRELIMINARY LIST OF MAJOR EMPLOYERS AND SELECTED SERVICES

EMPLOYER	ADDRESS
METRO-DADE COUNTY	
Bureau of Vital Statistics	1350 N.W. 13th Street
Center of Survival & Ind. Living	1335 N.W. 14th Street
Corrections & Rehabilitation	1500 N.W. 12th Avenue
Health Department	1350 N.W. 14th Street
Housing & Urban Development	1401 N.W. 7th Street
Human Resources	1500 N.W. 12th Avenue
Office of Health Services	1611 N.W. 12th Avenue
Lindsey Hopkins Dental Res. Cl.	750 N.W. 20th Street
JESCA	801 N.W. 17th Street
Jackson Dade Child Care Center	801 N.W. 17th Street
Juvenile Outpatient Clinic	1515 N.W. 7th Street
Law Library	1351 N.W. 12th Street
Medical Examiner	Number One on Bob Hope Road
Public Defender's Office	1320 N.W. 14th Street
Dept. of Dev. and Facilities Management	1175 N.W. South River Drive
Rape Treatment Center	1611 N.W. 12th Avenue
Solid Waste	1061 N.W. 20th Street
E.R. Graham Building	1350 N.W. 12th Avenue
Water & Sewer Authority - Dist.	1001 N.W. 11th Street
Water & Sewer Authority Board	1515 N.W. 7th Street
Youth & Family Services	1515 N.W. 7th Street
MERRILL-STEVENS DRY DOCK CO.	1270 N.W. 11th Street
CITY OF MIAMI	
Civil Service Board	1147 N.W. 11th Street
Community Development Department	1147 N.W. 11th Street
City of Miami Federal Credit Union	1290 N.W. 20th Street
General Services & Solid Waste Management	1390 N.W. 20th Street
Communication Services Division	1080 N.W. 20th Street
Motor Pool	1901 N.W. 12th Avenue
Property Maintenance Division	1975 N.W. 12th Avenue
Solid Waste Division	1290 N.W. 20th Street
Personnel Management Department	1147 N.W. 11th Street
MIAMI DADE C.C.- MEDICAL CENTER	950 N.W. 20th Street
THE MIAMI PROJECT TO CURE PARALYSIS	1600 N.W. 10th Avenue
NATIONAL PARKINSON FOUNDATION	1501 N.W. 9th Avenue
RONALD McDONALD HOUSE	1145 N.W. 14th Terrace

TABLE 1 (Continued)
CIVIC CENTER TRANSPORTATION MANAGEMENT ORGANIZATION
PRELIMINARY LIST OF MAJOR EMPLOYERS AND SELECTED SERVICES

EMPLOYER	ADDRESS
FIRST UNION OPERATIONS	1001 N.W. South River Drive
SUNBANK Midtown Branch UM/JM Medical Center Branch	 1400 N.W. 20th Street 1611 N.W. 12th Avenue
UNITED CEREBRAL PALSY	1411 N.W. 14th Avenue
UNIVERSITY OF MIAMI	1600 N.W. 10th Avenue
VA MEDICAL CENTER	1201 N.W. 16th Street

SOURCE: GOLD COAST COMMUTER SERVICES

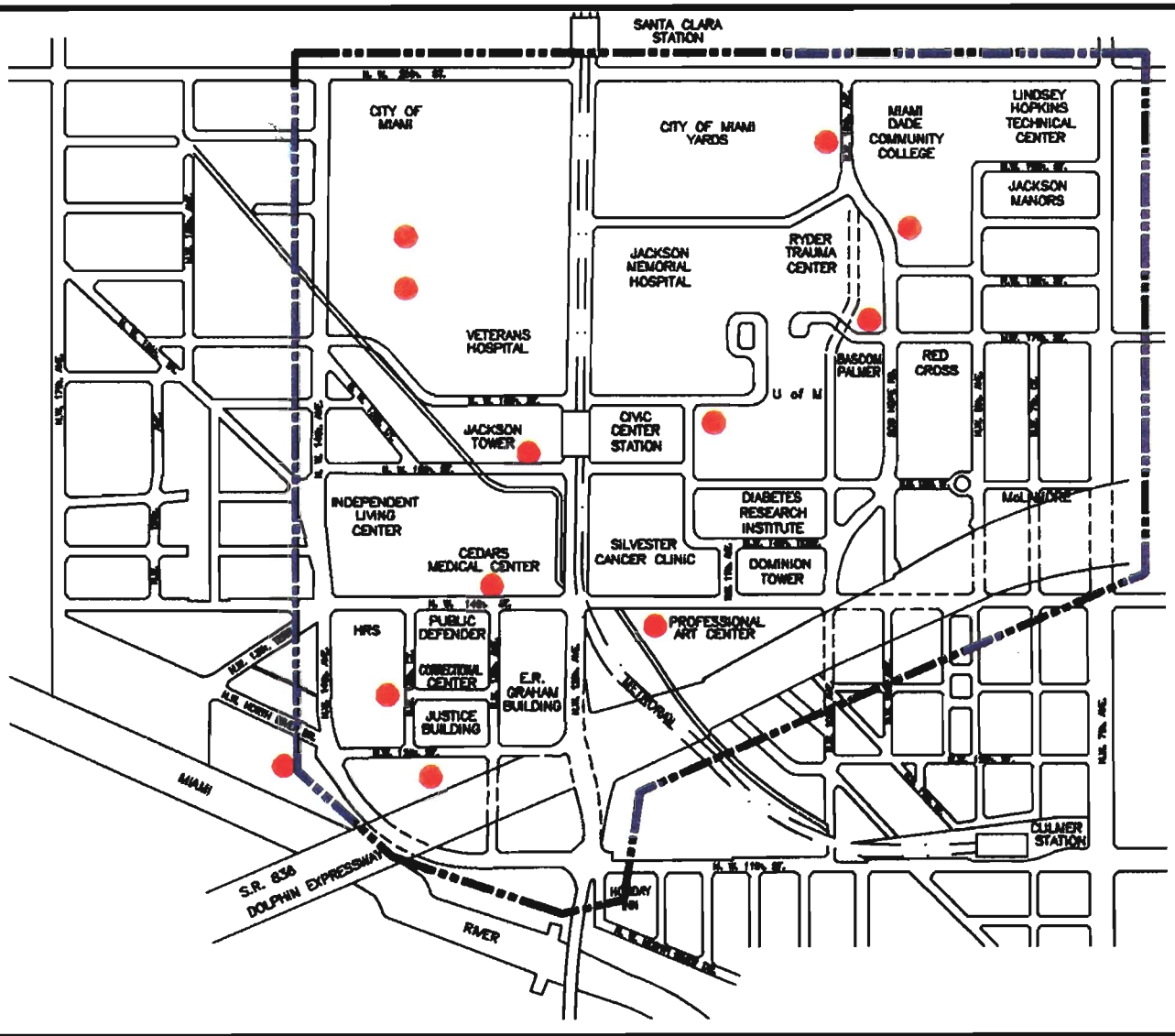


Figure 1

BARTON-ASCHMAN ASSOC., INC.
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DADE COUNTY / CONTINUING DEVELOPMENT OF TMA 8
CIVIC CENTER PEDESTRIAN AMENITIES AND SAFETY STUDY

CIVIC CENTER MAJOR EMPLOYERS AND PARKING FACILITIES

2.2 Study Boundary

The major concentration of employment and public facilities are clustered very closely around N.W. 12th Avenue north of the Dolphin Expressway (SR 836). The area west of N.W. 14th Avenue is predominantly residential. Comparatively, this area has much less pedestrian activity than the remainder of the Civic Center area. Therefore, the Civic Center boundary for the purposes of this study is defined by the Dolphin Expressway to the south, N.W. 20th Street to the north, N.W. 14th Avenue to the west, and N.W. 7th Avenue to the east, in order to concentrate only on the most heavily utilized pedestrian corridors in the Civic Center area. This does not, however, preclude the use of transit facilities immediately outside the study boundary, because the objective of this study is to encourage transit usage.

2.3 Roadway Network

Within the study boundary, an extensive network of city, county, and state roadways exist. Figure 2 shows the roadway network within the study boundary by its functional classification. The seven most important roadways within the study area are:

- The Dolphin Expressway (State Road 836) is an eight-lane east/west principal arterial within the study area. It carries over 81,000 vehicles per day.

- N.W. 12th Avenue (State Road 933) is a four-lane divided minor arterial passing north/south through the middle of the Civic Center area. It carries over 20,000 vehicles per day. N.W. 12th Avenue functions as the spine of the Civic Center area.

- N.W. 7th Avenue (State Road 7/US 441), within the study area, is a five-lane undivided north/south minor arterial passing along the eastern boundary of the Civic Center area. It carries over 18,000 vehicles per day.

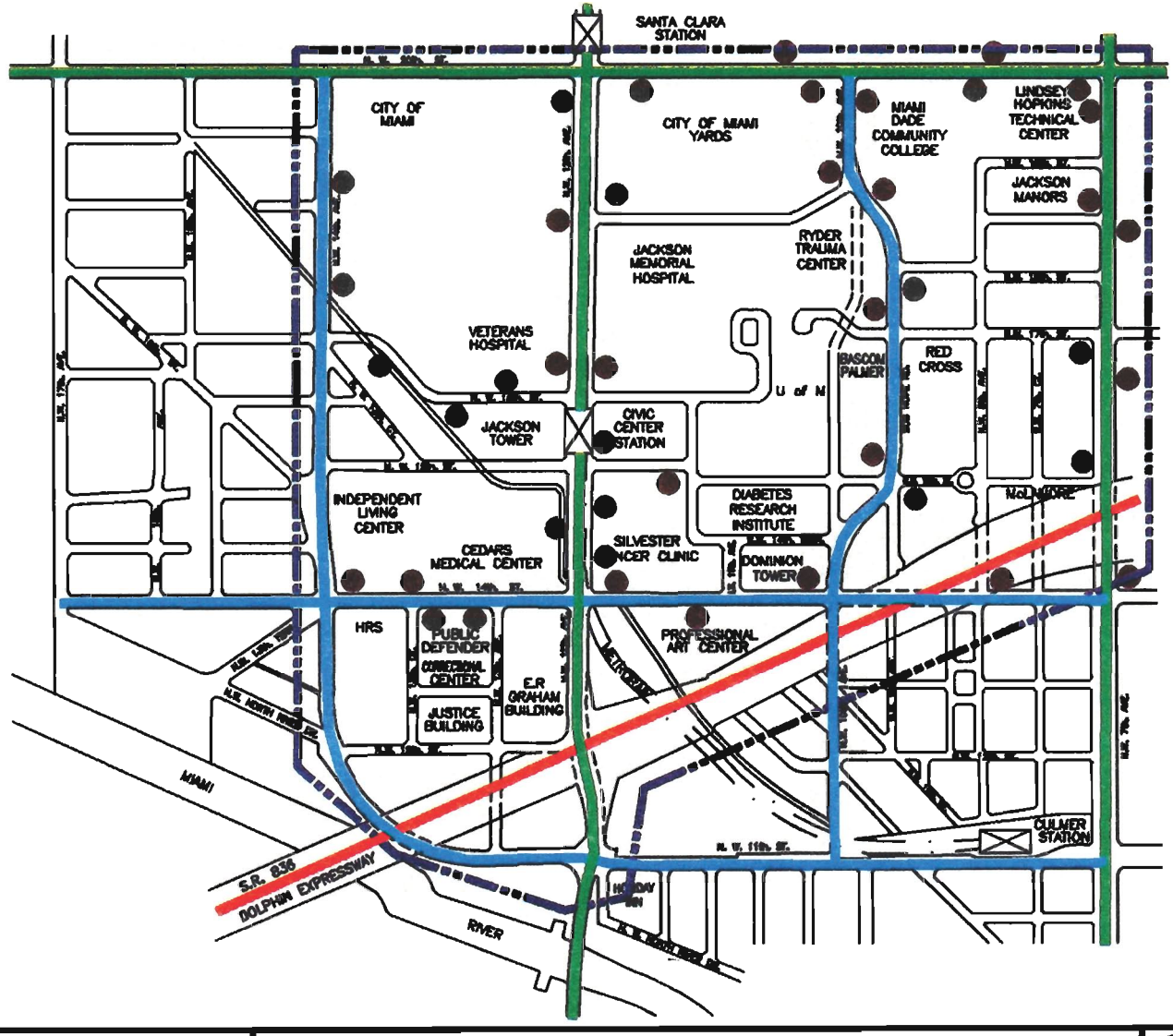

Figure 2

BARTON-ASCHMAN ASSOC., INC.
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CIVIC CENTER PEDESTRIAN AMENITIES AND SAFETY STUDY

CIVIC CENTER ROADWAYS AND TRANSIT FACILITIES

- N.W. 20th Street, within the study area, is a four-lane east/west minor arterial passing along the northern boundary of the Civic Center area. It carries over 23,000 vehicles per day on an average weekday.

- N.W. 14th Street, within the study area, is a four-lane undivided county collector passing along the southern part of the study area. It carries over 11,000 vehicles per day.

- N.W. 10th Avenue (Bob Hope Road), within the study area, is a two-lane undivided north/south collector. It carries over 8,000 vehicles per day.

- N.W. 14th Avenue, within the study area, is a four-lane undivided north/south county collector passing along the western boundary of the study area.

2.4 Transit Network

The Civic Center area is served by both the Metrobus and Metrorail systems. Figure 2 shows all Metrobus stops and Metrorail stations within the study area. The Civic Center Metrorail station, which is located at the N.W. 12th Avenue/N.W. 16th Street intersection is one of the busiest Metrorail stations in the county. Over 4,500 boardings on an average weekday occur at this station. The Metro Dade Transit Agency (MDTA) statistics for year 1993 indicate that boardings increased by 2.3% compared to the same time period during the previous year.

The Santa Clara Metrorail station, which is located just immediately north of the Civic Center area, has one of the lowest level of boardings in Dade County. The 1993 MDTA statistics show an average weekday boarding of 504 passengers, which is, in fact,

8.6% higher than the boardings for the same period of the previous year. It is worth noting that there exists a park and ride lot serving this Metrorail station.

The Culmer Metrorail Station is located in an economically disadvantaged neighborhood. The boarding survey by the MDTA shows an average weekend boarding of 1,488 passengers. This number has increased by 12% compared to the same period of the previous year.

2.5 Bicycle Facilities

Encouraging the use of bicycles is another way of reducing the number of single occupant trips to and from the Civic Center Area. The types of institutions, specifically the educational establishments, that exist within the Civic Center Area is prime for promoting bicycle usage. The field reconnaissance revealed little or no bicycle facilities and amenities exist within the Civic Center area.

2.6 Americans with Disability Act (ADA) Requirements and Importance

The ADA identifies specific design criteria for access to aid persons with disabilities. Although the specifications are required to be implemented (ADA 4.1) on all areas of newly designed, or newly constructed facilities, the Civic Center land use composition, and the intent of this Pedestrian Amenities and Safety Study provides a basis for the existing access conditions to be upgraded to accommodate disabled persons. Selected sections from the ADA Handbook that are directly related to pedestrian amenities are included in Appendix B.

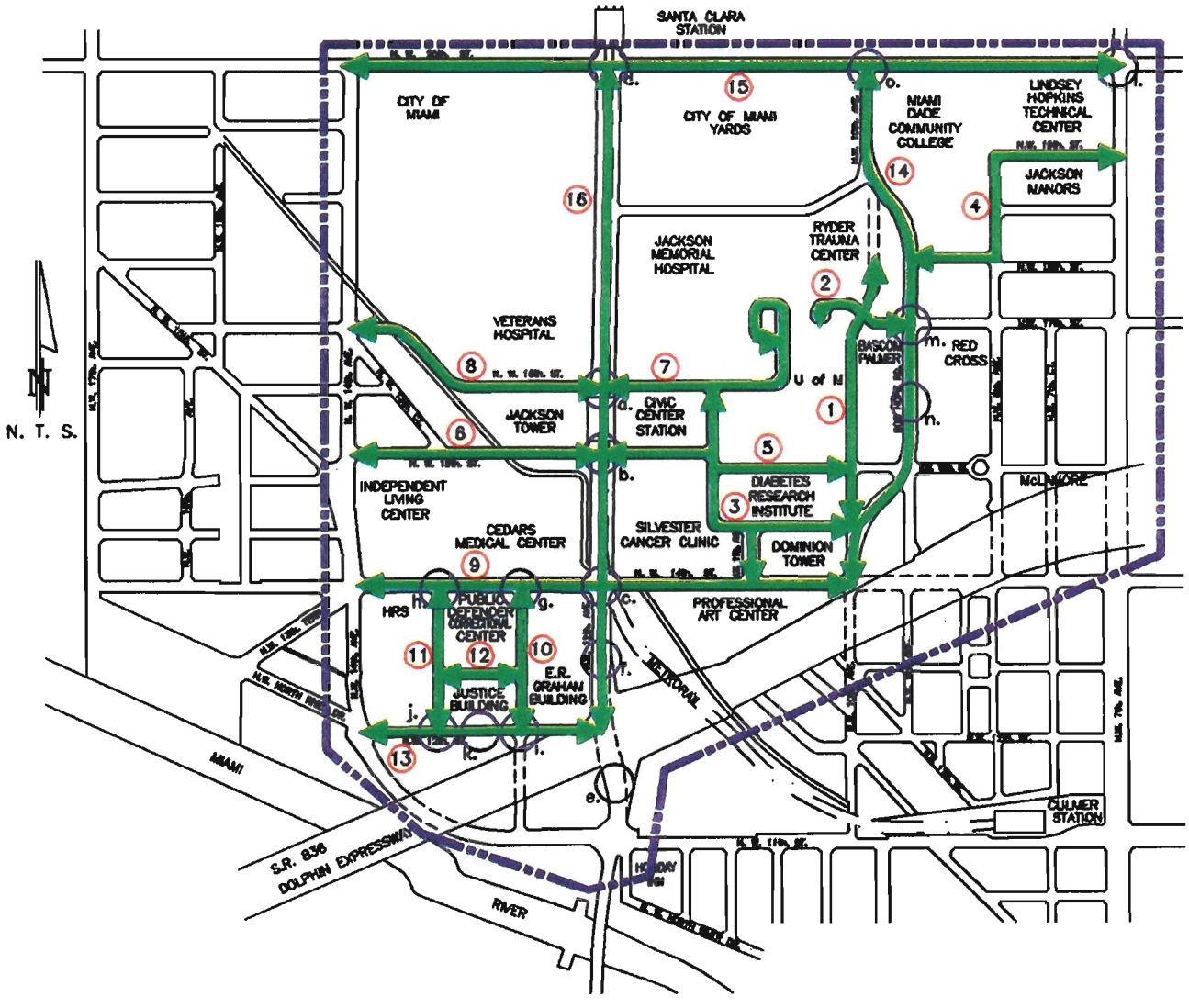
3.0 PEDESTRIAN CORRIDORS IDENTIFICATION AND DATA COLLECTION

The entire Civic Center area has an excellent supply of sidewalks which provide access among almost all of the buildings, parking facilities, and transit stops. Almost all of these sidewalks are direct, which negates the need for the pedestrians to walk across undesignated pedestrian areas. Due to the large number of pedestrian corridors that exist in the Civic Center area, a number of these corridors were discarded from detailed study to concentrate on corridors that comprise a meaningful network. The identification of major pedestrian corridors was conducted through a series of subjective steps.

3.1 Field Reconnaissance

The major buildings, parking facilities, and transit stops were first identified on an aerial map of the Civic Center. Through a field reconnaissance with the aid of the aerial map, the major pedestrian facilities that linked buildings, parking facilities, and transit stops were identified. By observing the pedestrian movements, a logical network of pedestrian corridors (as shown in Figure 3) was prepared. The major corridors are:

1) Fred Cowel Mall Corridor
2) N.W. 17th Street Corridor (J.M.H. East Wing)
3) N.W. 14th Terrace/N.W. 11th Avenue Corridor
4) N.W. 18th Street/N.W. 8th Avenue/N.W. 19th Street Corridor
5) N.W. 15th Street (U of M Hospital and Clinics) Corridor
6) N.W. 15th Street (Jackson Medical Towers) Corridor
7) N.W. 16th Street (U of M/J.M.H.) Corridor



PEDESTRIAN CORRIDORS

1. FRED COWEL MALL
2. NW 17th ST. (LOUIS McCULLER WAY)
3. NW 14th TER./NW 11th AVE.
4. NW 18th ST./NW 8th AVE./NW 19th ST.
5. NW 15th ST. (U.M. HOSPITAL AND CLINICS)
6. NW 15th ST. (JACKSON MEDICAL TOWER)
7. NW 16th ST. (U.M./J.M.H.)
8. NW 16th ST. (VETERANS HOSPITAL)
9. NW 14th ST.
10. NW 13th AVE.
11. NW 13th CT.
12. NW 13th ST.
13. NW 12th ST.
14. BOB HOPE RD.
15. NW 20th ST.
16. NW 12th AVE.

PEDESTRIAN COUNT LOCATIONS

a. NW 12th AVE. @ NW 16th ST.
b. NW 12th AVE. @ NW 15th ST.
c. NW 12th AVE. @ NW 14th ST.
d. NW 12th AVE. @ NW 20th ST.
e. NW 12th AVE. @ S of S.R. 836
f. NW 12th AVE. @ N of S.R. 836
g. NW 14th ST. @ NW 13th AVE.
h. NW 14th ST. @ NW 13th CT.
i. NW 12th ST. @ NW 13th AVE.
j. NW 12th ST. @ NW 13th CT.
k. NW 12th ST. @ COURT HOUSE MAIN ENTRANCE
l. NW 20th ST. @ NW 7th AVE.
m. BOB HOPE RD. @ NW 17th AVE.
n. BOB HOPE RD. @ CROSSWALK BETWEEN 15 & 17th ST.
o. BOB HOPE RD. @ NW 20th ST.

LEGEND:

STUDY BOUNDARY

1 MAJOR PEDESTRIAN CORRIDOR

a. PEDESTRIAN COUNT LOCATIONS

Figure 3

BARTON-ASCHMAN ASSOC., INC.
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CIVIC CENTER PEDESTRIAN AMENITIES AND SAFETY STUDY

CIVIC CENTER MAJOR PEDESTRIAN CORRIDORS AND COUNT LOCATIONS

8) N.W. 16th Street (Veterans Administration Hospital) Corridor
9) N.W. 14th Street Corridor
10) N.W. 13th Avenue Corridor
11) N.W. 13th Court Corridor
12) N.W. 13th Street Corridor
13) N.W. 12th Street Corridor
14) Bob Hope Road Corridor
15) N.W. 20th Street Corridor
16) N.W. 12th Avenue Corridor

3.2 Data Collection

Each of these sixteen corridors was thoroughly field-surveyed to identify all of the existing pedestrian amenities, as well as to identify deficiencies. Following is a list of the data collection items:

1) Signal locations and pedestrian features
2) Traffic and pedestrian control measures
3) Pedestrian/vehicular conflict points
4) Exposure to inclement weather
5) Deficiencies and potential hazards:

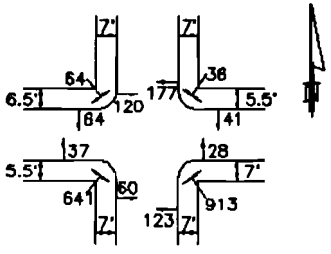
- Visual obstructions
- Signal and sign maintenance
- Walkway deficiencies
- Lighting
- Security

In addition to the above corridor condition surveys, pedestrian volume count surveys were conducted at strategic locations during specific time periods. These locations are also shown on Figure 3. The time periods were selected based on employee shift times and student class times. The survey locations and data collection times were as follows:

1)	N.W. 12th Avenue @ N.W. 16th Street	-	6:30-8:30 A.M.; 12-1 P.M.; 3-5 P.M.; 6:30-7:30 P.M.
2)	N.W. 12th Avenue @ N.W. 15th Street	-	6:30-8:30 A.M.; 12-1 P.M.; 3-5 P.M.; 6:30-7:30 P.M.
3)	N.W. 12th Avenue @ N.W. 14th Street	-	12-1 P.M.; 3-5 P.M.
4)	N.W. 12th Avenue @ N.W. 20th Street	-	8-9 A.M.; 5-6 P.M.
5)	N.W. 12th Avenue South of SR 836	-	8-8:30 A.M.
6)	N.W. 12th Avenue North of SR 836	-	8-8:30 A.M.
7)	N.W. 14th Street @ N.W. 13th Avenue	-	3-5 P.M.
8)	N.W. 14th Street @ N.W. 13th Court	-	3-5 P.M.
9)	N.W. 12th Street @ N.W. 13th Avenue	-	12-2 P.M.
10)	N.W. 12th Street @ N.W. 13th Court	-	12-2 P.M.
11)	N.W. 12th Street @ Main entrance to Courthouse	-	12-2 P.M.
12)	N.W. 20th Street @ N.W. 7th Avenue	-	8-9 A.M.; 5-6 P.M.
13)	Bob Hope Road @ N.W. 17th Street	-	6:30-7:30 A.M.; 12-1 P.M.; 3-4 P.M.
14)	Bob Hope Road @ Crosswalk between N.W. 17th Street and N.W. 15th Street	-	12-2 P.M..
15)	Bob Hope Road @ N.W. 20th Street	-	8-9 A.M.; 5-6 P.M.

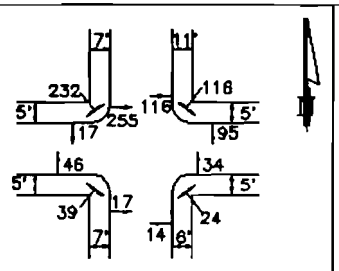
The pedestrian volume count surveys were conducted in November, 1993. Figure 4 summarizes the peak period pedestrian volume counts conducted at the fifteen locations identified above. On this figure the arrows indicate the direction of the pedestrian movement and the number represent the corresponding volume of pedestrians counted during the peak period that is identified at the bottom of each sketch.

a.



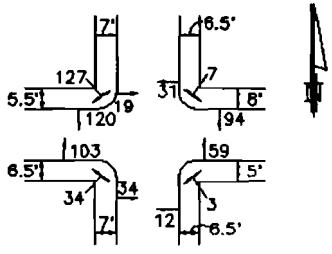
3:00 P.M. – 5:00 P.M.
N.W. 12th. AVE. ● N.W. 16th. ST.

b.



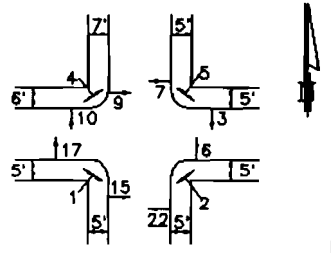
6:30 A.M. – 8:30 A.M.
N.W. 12th. AVE. ● N.W. 15th. ST.

c.



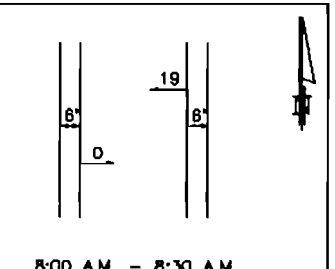
3:00 P.M. – 5:00 P.M.
N.W. 12th. AVE. ● N.W. 14th. ST.

d.



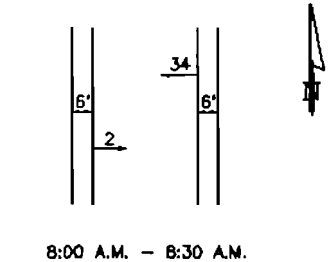
8:00 A.M. – 9:00 A.M.
N.W. 12th. AVE. ● N.W. 20th. ST.

e.



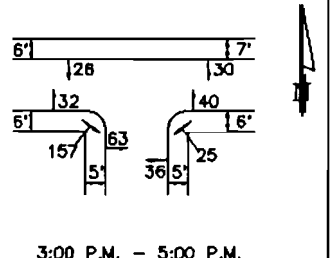
8:00 A.M. – 8:30 A.M.
N.W. 12th. AVE. ● S. of S.R. 836

f.



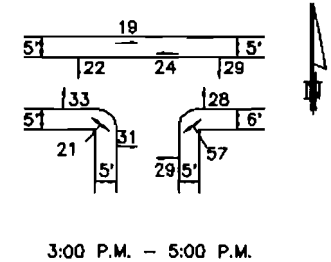
8:00 A.M. – 8:30 A.M.
N.W. 12th. AVE. ● N. of S.R. 836

g.



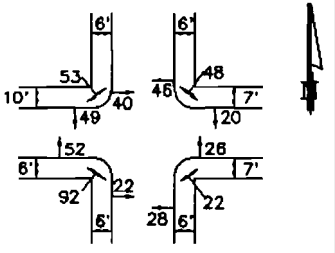
3:00 P.M. – 5:00 P.M.
N.W. 14th. ST. ● N.W. 13th. AVE.

h.



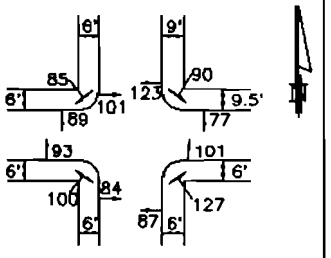
3:00 P.M. – 5:00 P.M.
N.W. 14th. ST. ● N.W. 13th. CT.

i.



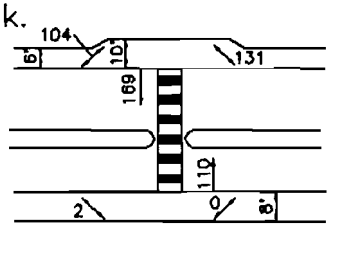
12:00 P.M. – 2:00 P.M.
N.W. 12th. ST. ● N.W. 13th. AVE.

j.



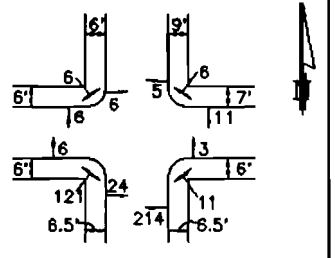
12:00 P.M. – 2:00 P.M.
N.W. 12th. ST. ● N.W. 13th. CT.

k.



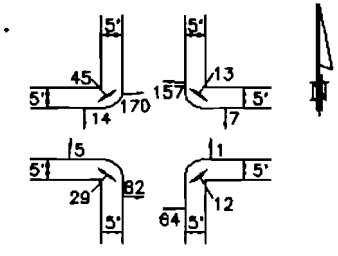
12:00 P.M. – 2:00 P.M.
N.W. 12th. ST. ● COURT HOUSE MAIN ENTRANCE

l.



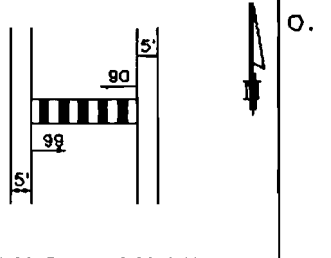
8:00 A.M. – 9:00 A.M.
N.W. 20th. ST. ● N.W. 7th. AVE.

m.



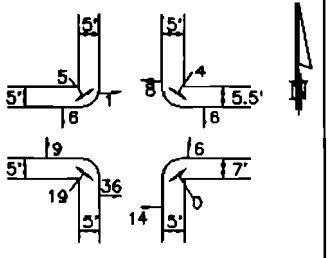
12:00 P.M. – 1:00 P.M.
BOB HOPE RD. ● N.W. 17th. ST.

n.



12:00 P.M. – 2:00 P.M.
BOB HOPE RD. ● CROSSWALK BETWEEN 15 & 17th ST.

o.



5:00 P.M. – 6:00 P.M.
BOB HOPE RD. ● N.W. 20th. ST.

Figure 4

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DADE COUNTY / CONTINUING DEVELOPMENT OF TMA s
CIVIC CENTER PEDESTRIAN AMENITIES AND SAFETY STUDY

PEDESTRIAN VOLUME COUNTS

4.0 PEDESTRIAN CORRIDORS EVALUATION

The crosswalk level of service was calculated using the Highway Capacity Software. The input data required to analyze a crosswalk consisted of: highest 15 minute pedestrian volume using the crosswalk, width of the street to be crossed, width of the crosswalk, and pedestrian green-time per cycle. Similarly, input data for analyzing street corners consisted of: highest 15 minute pedestrian volume that was outbound from corner, 15 minute sidewalk pedestrian flow, radius of the curb, sidewalk widths, and pedestrian green-time per cycle. It is important to note here that the analysis was conducted for signalized instructions, as Highway Capacity does not specify formulas for calculating crosswalks and sidewalks which are not controlled by signals. It is worth noting that the two midblock cross-walks, one located in front of the Justice Building entrance located on N.W. 12th Street and the other located on Bob Hope Road between N.W. 15th Street and N.W. 17th Streets are heavily utilized by pedestrians.

Table 2 summarizes the pedestrian levels of service for the selected locations. The definitions of LOS for pedestrians are shown on Appendix C. The LOS on this table for crosswalks reflects better levels of service than what were observed in the field. This is due to lack of conflicting traffic data that could have been included in the analysis. Even with lack of traffic data some locations showed poor pedestrian level of service. They are:

(i) N.W. corner of N.W. 12th Ave @ N.W. 15th Street, due to lack of space to accommodate pedestrians and people waiting for the bus.

(ii) N.W. and N.E. corners of Bob Hope Road @ N.W. 17th Street, due to lack of sidewalk space to accommodate pedestrian.

TABLE 2

PEDESTRIAN LEVEL OF SERVICE ANALYSIS

S. No.	Location	Time	Peds Green Time (sec)		Xwalk Width (ft)				Corner LOS				Xwalk LOS			
			N–S	E–W	N	E	S	W	NE	SE	SW	NW	N	E	S	W
1	NW 12th Ave. @ NW 16th St.	PM Peak	29	61	9.5	9.5	9.5	9.5	B	C	C	B	A	A	A	A
2	NW 12th Ave. @ NW 15th St.	AM Peak	14	41	7	7	7	7	B	B	B	F	C	A	A	A
3	NW 12th Ave. @ NW 14th St.	PM Peak	25	31	10	10	10	10	A	B	B	B	A	A	A	A
4	NW 12th Ave. @ NW 20th St.	AM Peak	43	30	9	9	9	9	A	B	B	A	A	A	A	A
5	NW 14th St. @ NW 13th Ct.	PM Peak	46	25	–	9	9	9	–	B	B	–	–	A	–	A
6	NW 20th St. @ NW 7th Ave.	AM Peak	19	26	10.5	10.5	10.5	10.5	A	C	C	A	A	A	B	A
7	Bob Hope @ NW 17th St.	MD Peak	20	22	9	9	9	9	E	C	D	E	B	A	A	A
8	Bob Hope @ Xwalk between 15 & 17th St.	MD Peak	21	–	9	–	9	–	–	–	–	–	A	–	A	–
9	Bob Hope @ NW 20th St.	PM Peak	42	42	9	9	9	9	A	A	B	A	A	A	A	A

Figures 5 through 20 shows schematically each of the sixteen corridors that were identified for detailed study. The primary intent of the sketches is to identify the pedestrian amenities along these corridors. All the deficiencies that were noted during the field reconnaissance are also indexed and listed on the figures. These figures also include a list of improvements to fix the deficiencies for each of these sixteen corridors.

4.1 Fred Cowel Mall Corridor

This pedestrian corridor contains all the pedestrian amenities that could be expected: space, directness, benches, and shading except a few non-functioning light fixtures (see Figure 5). No other deficiencies are noted along this corridor.

4.2 N.W. 17th Street Corridor

This is also a very good pedestrian corridor which contains amenities that are conducive for encouraging pedestrian usage (see Figure 6). There are few minor deficiencies, however, noted along this corridor. One of the most important and notable deficiencies is the pedestrian/vehicular conflict at the parking garage entrance/exit. This conflict could be reduced by installing stop signs and yield signs for vehicles entering and exiting the parking garage. Lack of curb-side parking enforcement is the second deficiency that was noted, and thirdly, the non-functioning pedestrian features at the Bob Hope Road intersection. These deficiencies could be reduced by proper enforcement and maintenance.

4.3 N.W. 14th Terrace/N.W. 11th Avenue Corridor

This corridor functions as a service facility in addition to providing pedestrian access (see Figure 7). There are some deficiencies along the corridor. In the order of importance and ease of implementation, the deficiencies and solutions are:

NOTES:

a). THERE ARE NO OBSTRUCTIONS ON THE WALKWAY BETWEEN 18th ST. AND 17th ST., THE AREA IS WELL SHADED AND COVERED BECAUSE OF THE ADJACENT BUILDINGS AND TREES.

b). THE ENTIRE MALL IS PAVED WITH BRICKS AND ROUGH TILES AND THERE ARE TREES ALL ALONG THE WAY GIVING AMPLE SHADE TO PEDESTRIANS. THE TILES COULD BE CONSIDERED AS AN INPEDIMENT TO ELDERLY AND HANDICAP, BUT THE FIELD RECONNASANCE DID NOT REVEAL AS SUCH.

c). THERE ARE TREES WITH BENCHES AROUND THEM FOR THE PEDESTRIANS. THERE IS VIRTUALLY NO OBSTRUCTION ON THE WALKWAY. THE WALKWAY IS APPROXIMATELY 20' WIDE AT MOST LOCATIONS.

IMPROVEMENTS:

FIX THE NON FUNCTIONING LOW LEVEL LIGHT FIXTURES

DEFICIENCIES:

1. NIGHT TIME LIGHTING IS GOOD EXCEPT SOME LOW LEVEL LIGHT FIXTURES ARE NOT WORKING.

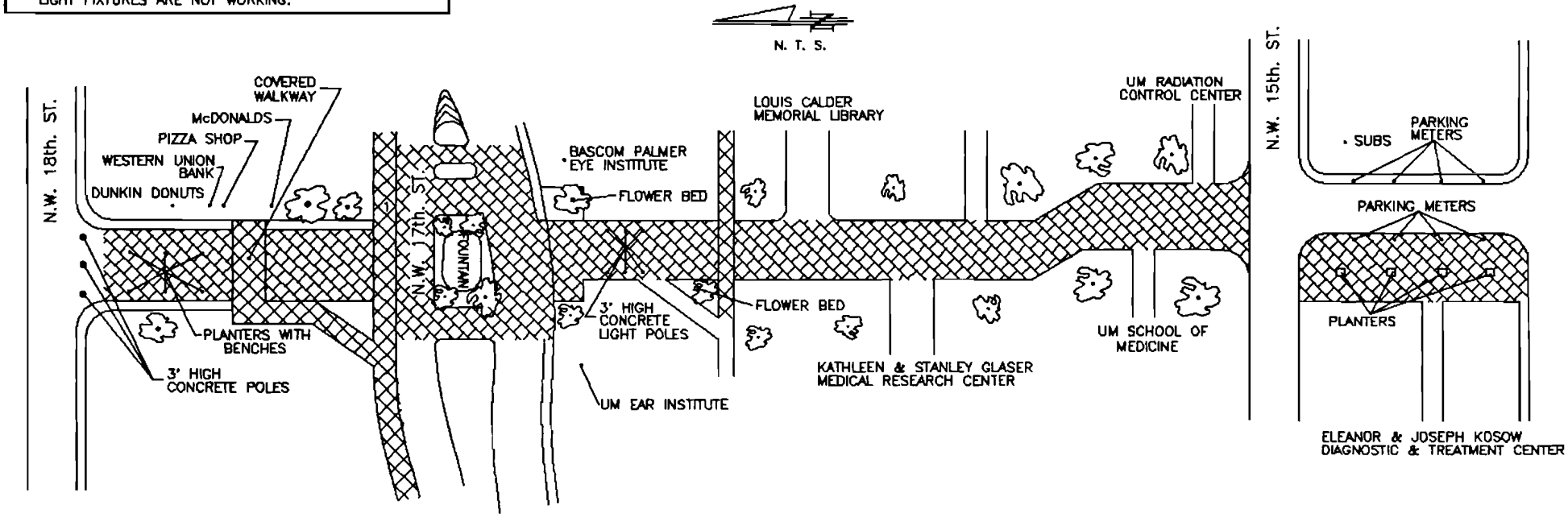

Figure 5

BARTON-ASCHMAN ASSOC., INC.
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DADE COUNTY / CONTINUING DEVELOPMENT OF TMA s
CIVIC CENTER PEDESTRIAN AMENITIES AND SAFETY STUDY

1. FRED COWEL MALL CORRIDOR

NOTES

a). VERY GOOD NIGHT LIGHTING.
b). COVERED WALKWAY CONNECTING PARKING GARAGE WITH MAJOR BUILDING.

DEFICIENCIES

1. SIGNALIZED INTERSECTION PED. FEATURES ARE NOT FUNCTIONING.
2. VEHICLES LOADING/UNLOADING AT TOW AWAY ZONE.
3. VEHICLE PARKED IN THE GORE AREA.
4. VEHICULAR/PEDESTRIAN CONFLICTS AT PARKING GARAGE ACCESS.

IMPROVEMENTS

- FIX ALL MINOR DEFICIENCIES.

A – STOP SIGN
F – GUIDE SIGN
S – " TOW AWAY ZONE " SIGN

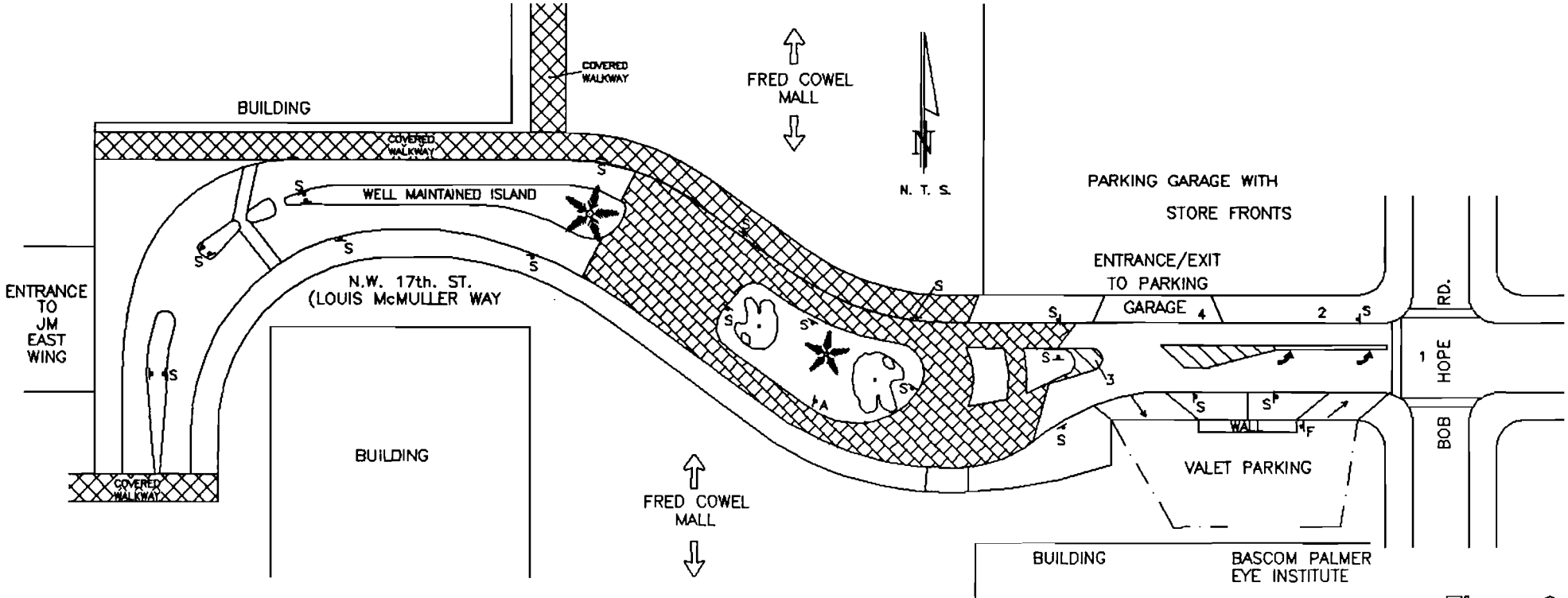


Figure 6

BARTON-ASCHMAN ASSOC., INC.
Ft. LAUDERDALE, FLORIDA
PARSONS TRANSPORTATION GROUP

DADE COUNTY / CONTINUING DEVELOPMENT OF TMA s
CIVIC CENTER PEDESTRIAN AMENITIES AND SAFETY STUDY

2. NW 17th ST. /LOUIS McCULLER WAY CORRIDOR (J.M.H. EAST WING)

NOTES

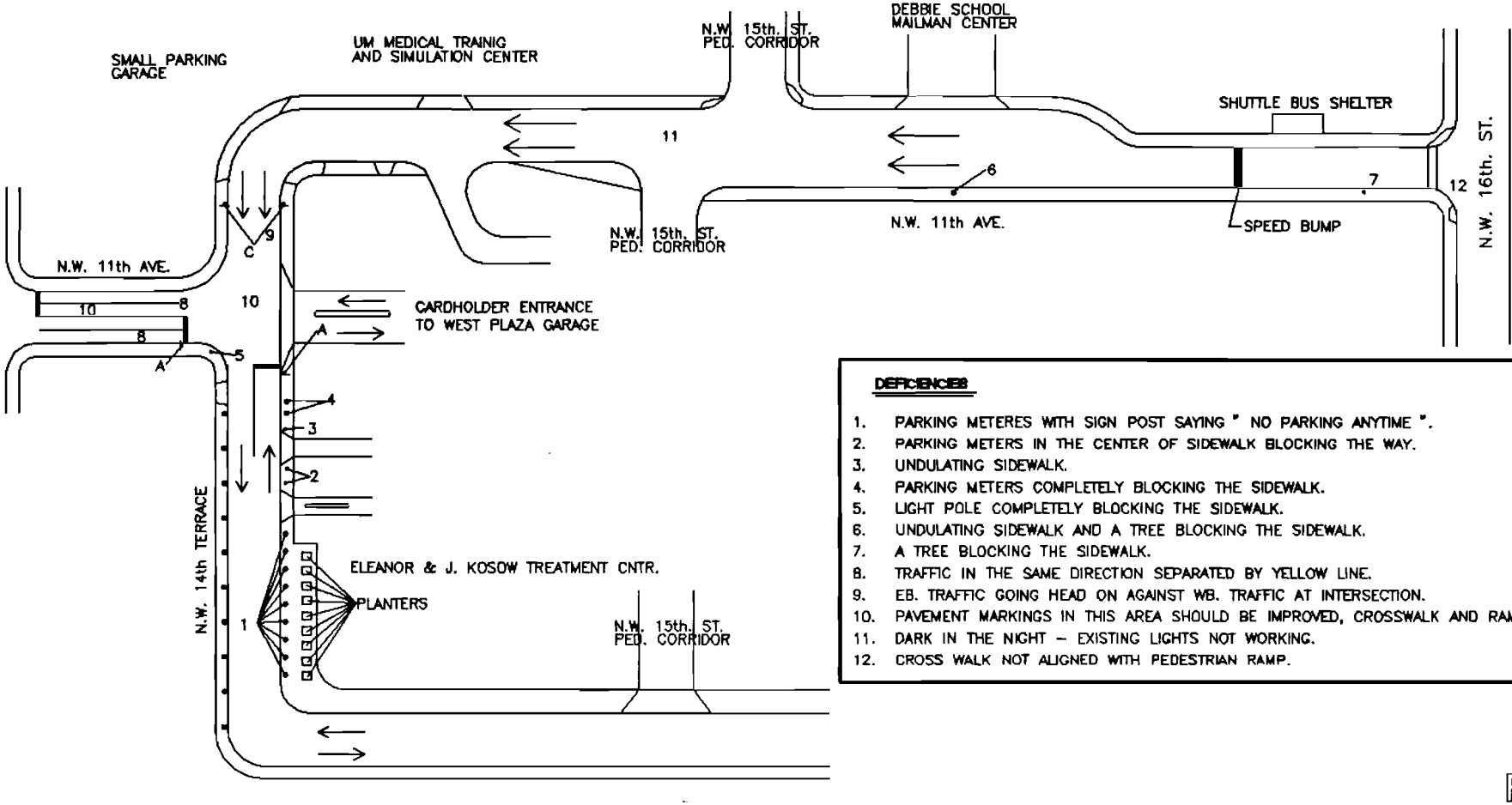
a.) NIGHT TIME LIGHTING IS GOOD IN GENERAL EXCEPT AT LOCATION 11.

IMPROVEMENTS

I FIX ALL MINOR DEFICIENCIES.

A – STOP SIGN
C – " DO NOT ENTER " SIGN

N. T. S.



DEFICIENCIES

1. PARKING METERES WITH SIGN POST SAYING " NO PARKING ANYTIME ".
2. PARKING METERS IN THE CENTER OF SIDEWALK BLOCKING THE WAY.
3. UNDULATING SIDEWALK.
4. PARKING METERS COMPLETELY BLOCKING THE SIDEWALK.
5. LIGHT POLE COMPLETELY BLOCKING THE SIDEWALK.
6. UNDULATING SIDEWALK AND A TREE BLOCKING THE SIDEWALK.
7. A TREE BLOCKING THE SIDEWALK.
8. TRAFFIC IN THE SAME DIRECTION SEPARATED BY YELLOW LINE.
9. EB. TRAFFIC GOING HEAD ON AGAINST WB. TRAFFIC AT INTERSECTION.
10. PAVEMENT MARKINGS IN THIS AREA SHOULD BE IMPROVED, CROSSWALK AND RAMPS NEEDED.
11. DARK IN THE NIGHT – EXISTING LIGHTS NOT WORKING.
12. CROSS WALK NOT ALIGNED WITH PEDESTRIAN RAMP.

Figure 7

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DADE COUNTY / CONTINUING DEVELOPMENT OF TMA s
CIVIC CENTER PEDESTRIAN AMENITIES AND SAFETY STUDY

3. NW 14th TER. /NW 11th AVE. CORRIDOR

(i) Poor night time lighting at the N.W. 15th Street pedestrian corridor intersection:

- Properly maintain the existing light fixtures.

(ii) Poor and incorrect pavement markings on N.W. 11th Avenue and at the intersection with N.W. 14th Terrace:

- Install new pavement markings.

(iii) Lack of pedestrian ramps:

- Install new pedestrian ramps.

(iv) Fixed obstructions within the sidewalk:

- Remove/relocate fixed obstructions.

4.4 N.W. 18th Street/N.W. 8th Avenue/N.W. 19th Street Corridor

This corridor provides access to Miami Dade Community College, Lindsey Hopkins Technical Center, and a couple of residential towers. There are some deficiencies along this corridor (see Figure 8). The deficiencies and solutions in order of importance and ease of implementation are:

(i) Pedestrian signal not working at Bob Hope Road intersection:

- Properly maintain the signal.

(ii) Trash and overgrown vegetation obstructing the sidewalks:

- Clean-up trash and vegetation.

(iii) Fixed obstruction within the sidewalk:

- Remove/relocate fixed obstruction.

DEFICIENCIES

1. PEDESTRIAN SIGNAL NOT WORKING AT BOB HOPE RD./N.W. 18TH CT.
2. POLES WITHOUT THE PARKING METERS ON THEM.
3. DRIVEWAY TO AN ABANDONED GATE.
4. BENT SIGN POST.
5. NO CROSSWALK STRIPES ON PAVEMENT.
6. OVERGROWN BUSHES HANGING ON THE SIDEWALK CREATING OBSTRUCTION.
7. SIGN POST AND A TREE OBSTRUCTING THE SIDEWALK.
8. ELECTRIC POLE AND PARKING METER POST BLOCKING THE SIDEWALK.
9. OVERGROWN BUSHES ON THE SIDEWALK.
10. PARKING METERS ALL ALONG IN THE CENTER OF THE SIDEWALK.
11. ELECTRIC POLE & PARKING METER BLOCKING THE SIDEWALK.
12. BROKEN GLASS AND GARBAGE ON THE SIDEWALK.
13. WAREHOUSE GOODS COMPLETELY BLOCKING THE SIDEWALK.
14. STREET SIGN INDICATING N.W. 7th ST. INSTEAD OF N.W. 7th AVE..

NOTES

a). CONSTRUCTION ACTIVITIES ALONG N.W. 18th. ST. MAKE THE VEHICLE AND PEDESTRIAN MOVEMENTS OBSOLETE.

b). LIGHTING IN GENERAL IS VERY GOOD.

c). LOTS OF VEHICLES PARKED ALL ALONG THE STREETS IN THE NIGHT.

IMPROVEMENTS

I. FIX ALL MINOR DEFICIENCIES.

A – STOP SIGN

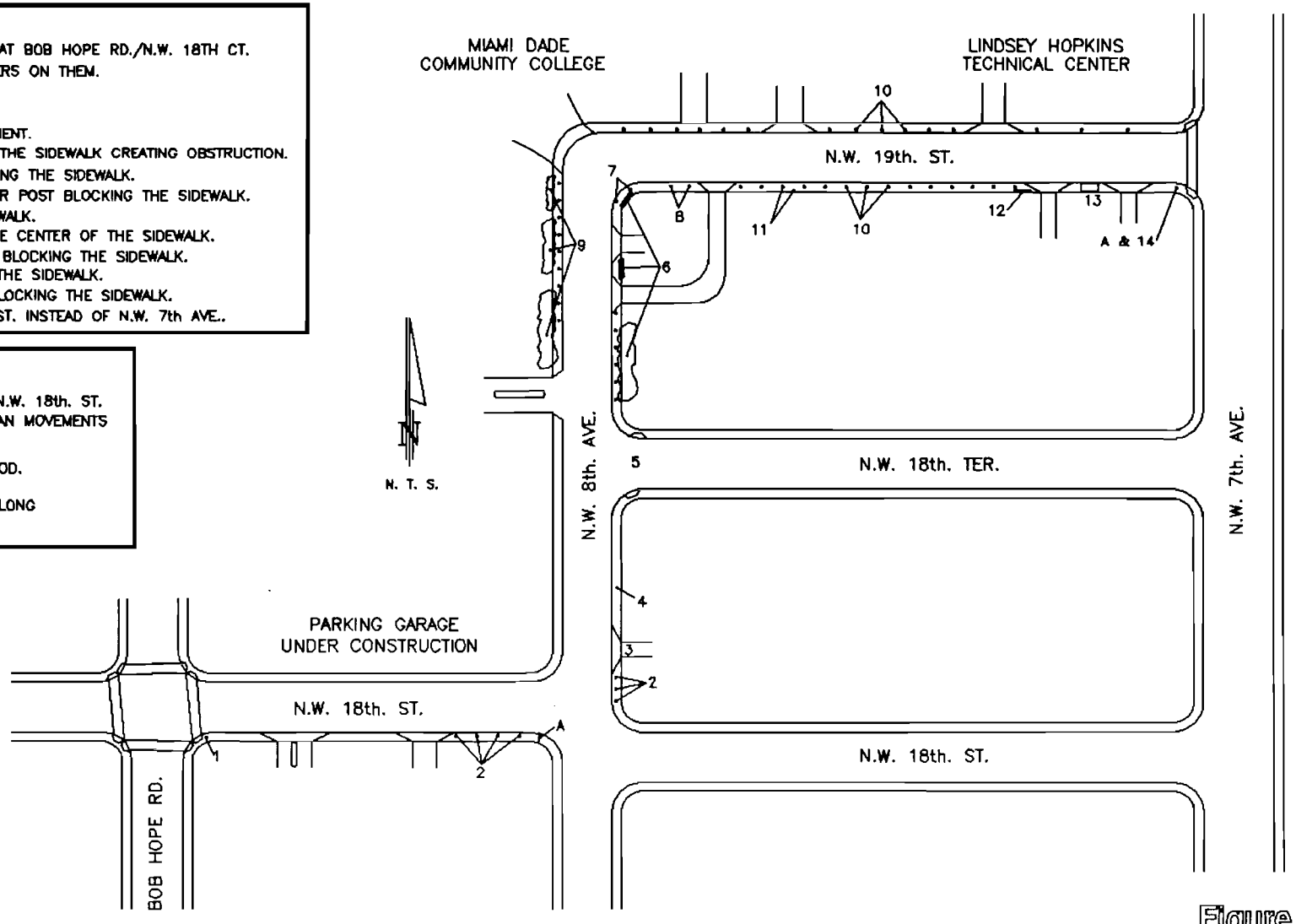

Figure 8

BARTON-ASCHMAN ASSOC., INC.
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DADE COUNTY / CONTINUING DEVELOPMENT OF TMA s
CIVIC CENTER PEDESTRIAN AMENITIES AND SAFETY STUDY

4. NW 18th ST./NW 8th AVE./ NW 19th ST. CORRIDOR

4.5 N.W. 15th Street (U of M Hospital and Clinics) Corridor

This is an important corridor because it connects the Fred Cowel Mall and N.W. 12th Avenue immediately south of the Civic Center Metrorail station. This is one of the priority corridors for improving pedestrian circulation with the Civic Center area (see Figures 9A and 9B). There are a few deficiencies along this corridor. In order of importance and ease of implementation, they are:

(i) Pedestrian/vehicular conflict at parking garage entrance/exit:
- Install stop and yield signs to regulate vehicle movements.

(ii) Parked vehicles hindering pedestrian movements and creating security concerns:
- Park the vehicles along the south side of the corridor.

(iii) Shrubs interfering with the handrail:
- Properly maintain the vegetation.

(iv) Unnecessary concrete structure reducing the effective sidewalk width:
- Remove/relocate the structure.

(v) Corridor is not prominent:
- Widen the sidewalk,
- install non-slippery tile surface,
- install building/service direction signs for pedestrians,
- improve landscaping.

4.6 N.W. 15th Street (JMH Towers) Corridor

This corridor mainly provides access to JMH Towers and the Cedars Medical Center. To the west, this corridor goes through a residential area and ends at N.W. 14th Avenue (see Figure 10). At the N.W. 14th Avenue terminus of this corridor, there is a parking

DEFICIENCIES

1. SHRUBS INTERFERING WITH HAND RAIL.
2. LIGHT POLE WITHIN THE SIDEWALK.
3. UNNECESSARY CONCRETE STRUCTURE PROTRUDES AND NARROWS THE SIDEWALK WIDTH TO 3'.
4. PARKED VEHICLES INTERFERE WITH PEDESTRIAN MOVEMENTS AND CREATES SECURITY CONCERN AT NIGHT.
5. DARK IN THE NIGHT – EXISTING LIGHTS NOT WORKING.
6. VEHICULAR/PEDESTRIAN CONFLICTS AT PARKING GARAGE ACCESS. (SEE FIGURE 9B)

IMPROVEMENTS

I. FIX ALL MINOR DEFICIENCIES.

NOTES

a). WELL MAINTAINED BUT NARROW SIDEWALK.

b). GOOD NIGHTTIME LIGHTING EXCEPT AT LOCATION 5.

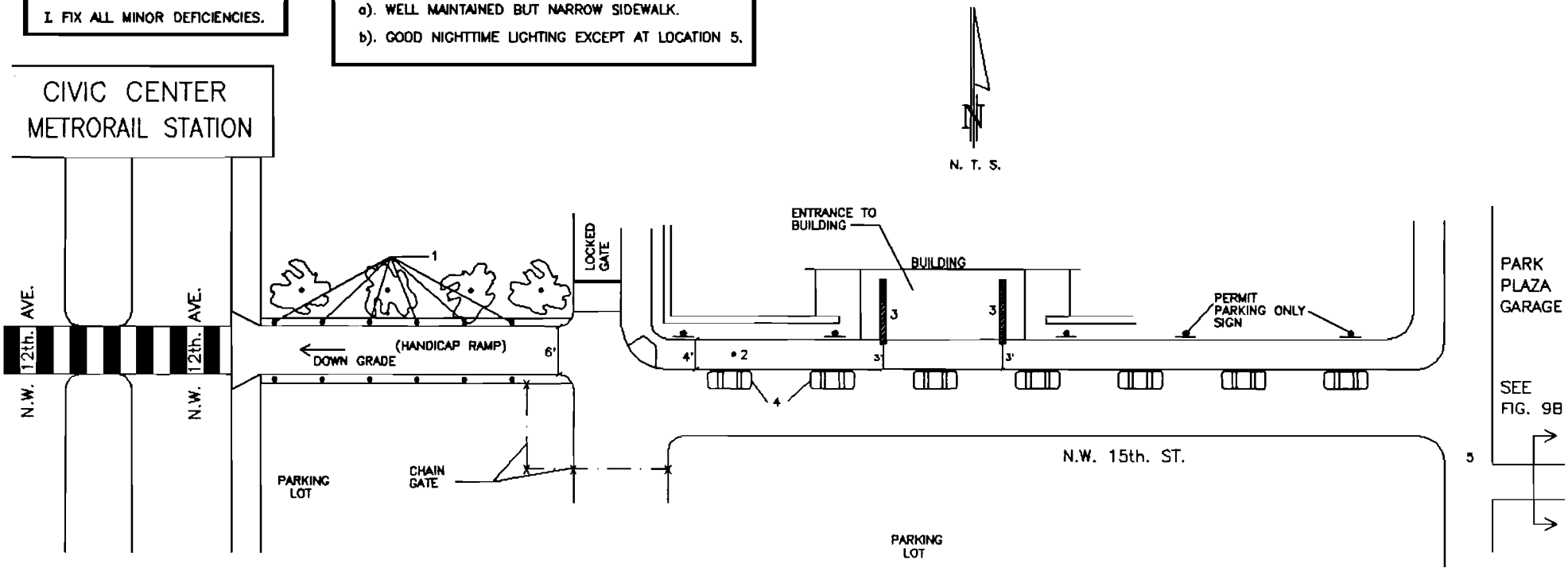

Figure 9 A

BARTON-ASCHMAN ASSOC., INC. Ft. LAUDERDALE, FLORIDA PARSONS TRANSPORTATION GROUP	DADE COUNTY / CONTINUING DEVELOPMENT OF TMA s CIVIC CENTER PEDESTRIAN AMENITIES AND SAFETY STUDY	5. NW 15th ST. (U.M. HOSPITAL AND CLINICS) CORRIDOR

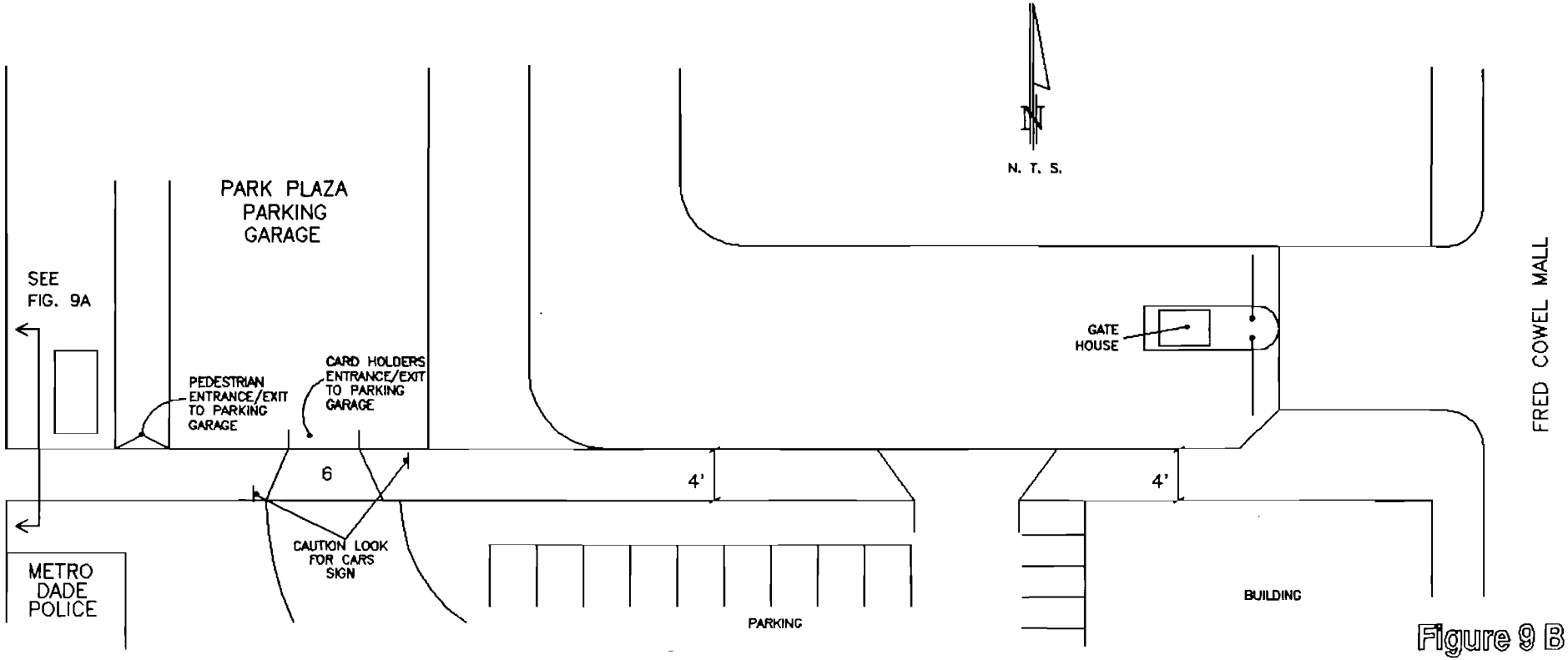

Figure 9 B

BARTON-ASCHMAN ASSOC., INC.
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PARSONS TRANSPORTATION GROUP

DADE COUNTY / CONTINUING DEVELOPMENT OF TMA s
CMC CENTER PEDESTRIAN AMENITIES AND SAFETY STUDY

5. NW 15th ST.
(U.M. HOSPITAL AND CLINICS)
CORRIDOR (CONT.)

DEFICIENCIES

1. CONFLICT BETWEEN PEDESTRIANS AND PASSENGERS WAITING FOR BUS – NOT ENOUGH SPACE.
2. SIGHT DISTANCE PROBLEM FOR EXITING VEHICLES.
3. UNCONTROLLED PEDESTRAIN CROSSING – PED/VEHICLE CONFLICTS RESULT.
4. PED XING SIGN NOT VISIBLE FOR R/T VEHICLES, PEDESTRIAN/VEHICULAR CONFLICT.
5. ISLAND INCORRECTLY DESIGNED FOR L/T-OUT
6. THIS AREA WILL HAVE TO BE REDONE FOR PROPER TRAFFIC MOVEMENT AND ENHANCE HANDICAPED FACILITIES.
7. VEHICLES PARKED ALONG THE SIDEWALK OBSTRUCT THE PEDESTRIAN AND TRAFFIC MOVEMENT.
8. SERVICE ENTRANCE USED BY CUT-THROUGH TRAFFIC AND PEDESTRIANS.
9. POOR LANDSCAPING.
10. SIDEWALK NOT CONTINUOUS.

IMPROVEMENTS

I. FIX ALL MINOR DEFICIENCIES.

II. REPAVE THE ENTIRE CORRIDOR WITH NON-SLIP TILES TO GIVE PEDESTRIAN PRIORITY.

III. CREATE NEW SIDEWALK AND EXTEND THE PEDESTRIAN CORRIDOR UP TO N.W. 14th. AVE.

NOTES

a). GOOD NIGHTTIME LIGHTING.

b). SHOULD BE A PEDESTRIAN PRIORITY CORRIDOR.

c). PEDESTRIAN CORRIDOR SHOULD BE EXTENDED WESTERLY THROUGH RESIDENTIAL NEIGHBORHOOD TO N.W. 14th. AVE.

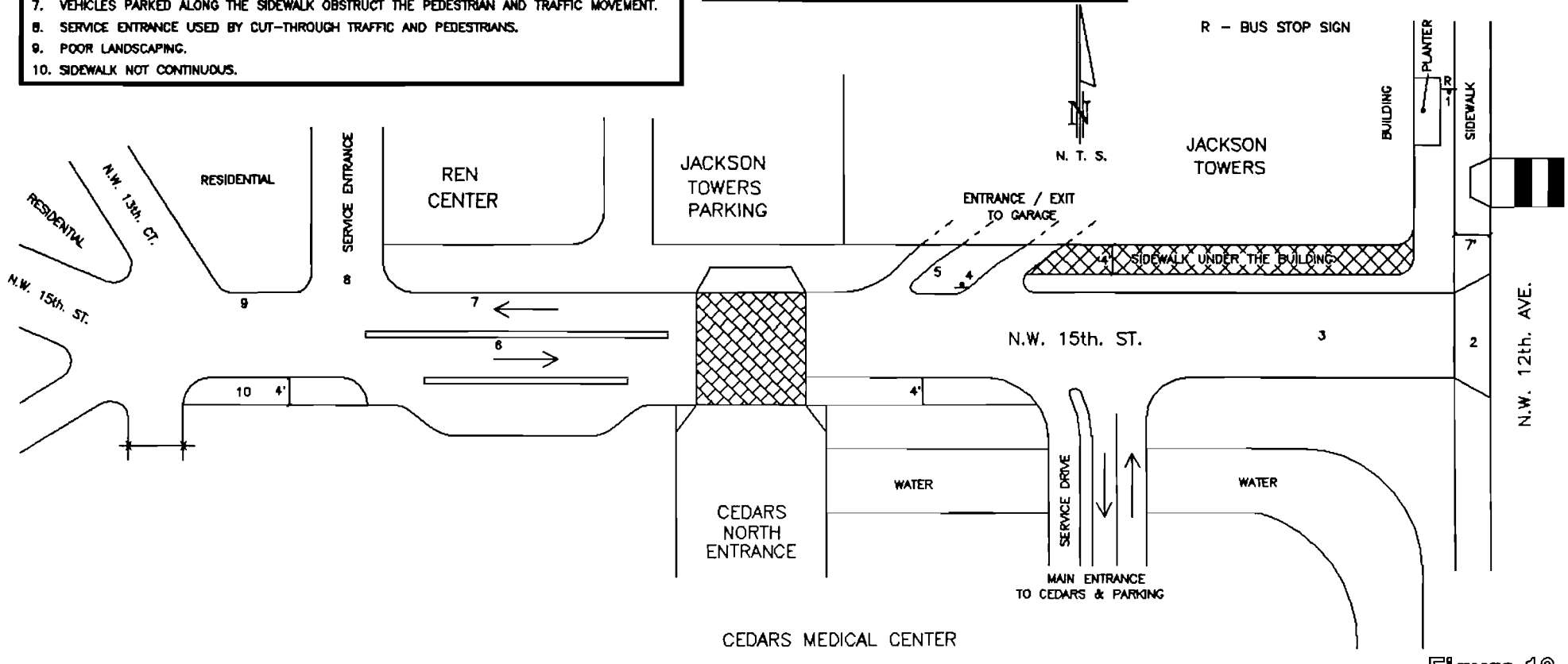

Figure 10

BARTON-ASCHMAN ASSOC., INC.
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PARSONS TRANSPORTATION GROUP

DADE COUNTY / CONTINUING DEVELOPMENT OF TMA s
CIVIC CENTER PEDESTRIAN AMENITIES AND SAFETY STUDY

6. NW 15th ST. (JACKSON MEDICAL TOWER) CORRIDOR

lot which is used by Cedars Medical Center as an employee satellite parking lot. By improving this corridor up to N.W. 14th Avenue, Cedars employees as well as visitors could be encouraged to utilize this corridor. This corridor is identified as one of the priority corridors for improving pedestrian circulation. Some major deficiencies were noted along this corridor. In order of importance and ease of implementation, they are:

(i) Major pedestrian vehicle conflicts:
- Provide pedestrian priority treatment such as install non-slip tiles, at least at near the intersections with N.W. 12th Avenue.

(ii) Confusing traffic movements:
- Reconstruct traffic separators and reapply the striping.

(iii) Pedestrian/vehicular conflict at the parking garage entrance/exit:
- install yield and stop signs to regulate vehicular movements, also, redo island to permit left-turn movements.

4.7 N.W. 16th Street (JMH/U of M) Corridor

This is a major pedestrian corridor in the Civic Center area. The existing pedestrian amenities, such as covered walkways, benches, and open walkways, are conducive to pedestrian circulation (see Figure 11). There are a few deficiencies. In order of importance and ease of implementation, they are:

(i) Pedestrian/vehicular conflict at the parking garage entrance/exit:
- Install yield and stop signs to regulate vehicular movement.

(ii) Vehicles parked in front of tow-away signs:
- Enforce curb-side parking control.

(iii) Ramp not matching the crosswalk:
- Restripe the crosswalk.

DEFICIENCIES

1. RAMP DOES NOT MATCH CROSSWALK.
2. VEHICULAR/PEDESTRIAN CONFLICTS AT PARKING GARAGE ACCESS.
3. VEHICLES PARKED IN FRONT OF TOW-AWAY SIGN.
4. SPEED BUMPS TO SLOW VEHICLES.

IMPROVEMENTS

I. FIX ALL MINOR DEFICIENCIES.

II. REPAVE HEAVY PEDESTRIAN AREAS, SUCH AS THE CIRCLE AND IN FRONT OF THE GARAGE WITH NON-SLIP TILES.

III. INSTALL BUILDING IDENTIFICATION AND DIRECTIONAL SIGNS IN THE GRASS AREAS TO AID PEDESTRIANS.

NOTES

a). GOOD NIGHTTIME LIGHTING.

b). GATEWAY TREATMENT AT THE ENTRANCE IS GOOD, SHOULD BE EXTENDED TO THE REST OF THE CORRIDOR OR AT LEAST AT CERTAIN LOCATIONS SUCH AS IN FRONT OF THE PARKING GARAGE AND THE CIRCLE TO GIVE PEDESTRIAN PRIORITY.

c). A VERY GOOD PEDESTRIAN CORRIOR WITH TREE SHADING AND COVERED WALKWAY.

d). TOO MANY PARKED VEHICLES IN THE NIGHT.

e). COVERED WALKWAY CONNECTS MOST OF THE MAJOR BUILDINGS.

A – STOP SIGN
E – SPEED LIMIT SIGN
L – BENCH

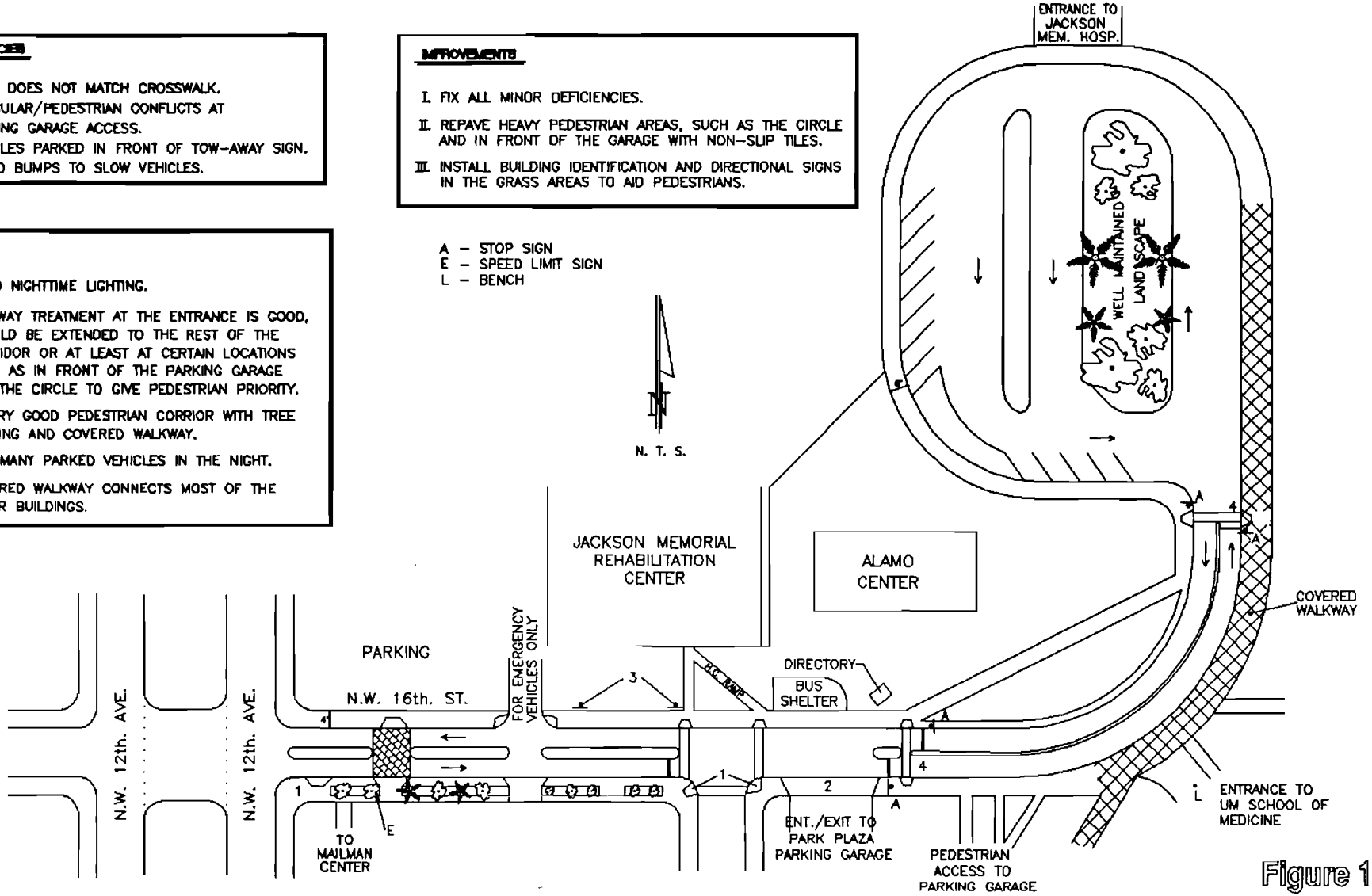

Figure 11

BARTON-ASCHMAN ASSOC., INC.
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PARSONS TRANSPORTATION GROUP

DADE COUNTY / CONTINUING DEVELOPMENT OF TMAs
CIVIC CENTER PEDESTRIAN AMENITIES AND SAFETY STUDY

7. NW 16th ST. (U.M. / J.M.H.) CORRIDOR

(iv) Speeding vehicles:

- Currently controlled by speed bumps. An alternative would be to install pedestrian priority treatment, such as non-slip tiles at heavy pedestrian activity areas.
- Improve Enforcement

4.8 N.W. 16th Street (VA Hospital) Corridor

This corridor primarily provides access to the Veterans Hospital to the north and the Ren Center to the south (see Figure 12). The Metrobus main station for the Civic Center area is located on this corridor near the N.W. 12th Avenue intersection. Because of its linkage to the Civic Center Metrorail station, this corridor has the most pedestrian usage in the Civic Center. This corridor also connects N.W. 14th Avenue with the N.W. 12th Avenue. Therefore, this corridor is a priority pedestrian corridor in the Civic Center area. There were few deficiencies noted along this corridor. In order of importance and ease of implementation, they are:

(i) Pedestrian/vehicular conflict near the N.W. 12th Avenue intersection:

- Install pedestrian priority treatment, such as non-slip tiles as far as 300 feet into the corridor from the N.W. 12th Avenue intersection.

(ii) Crosswalks and signs deteriorating:

- Properly maintain crosswalks and signs.

4.9 N.W. 14th Street Corridor

N.W. 14th Street is a county collector and is heavily traveled by motor vehicles. The pedestrian facilities west of the N.W. 12th Avenue intersection, however, are also heavily utilized by pedestrians due to the location county public facilities, such as HRS and the

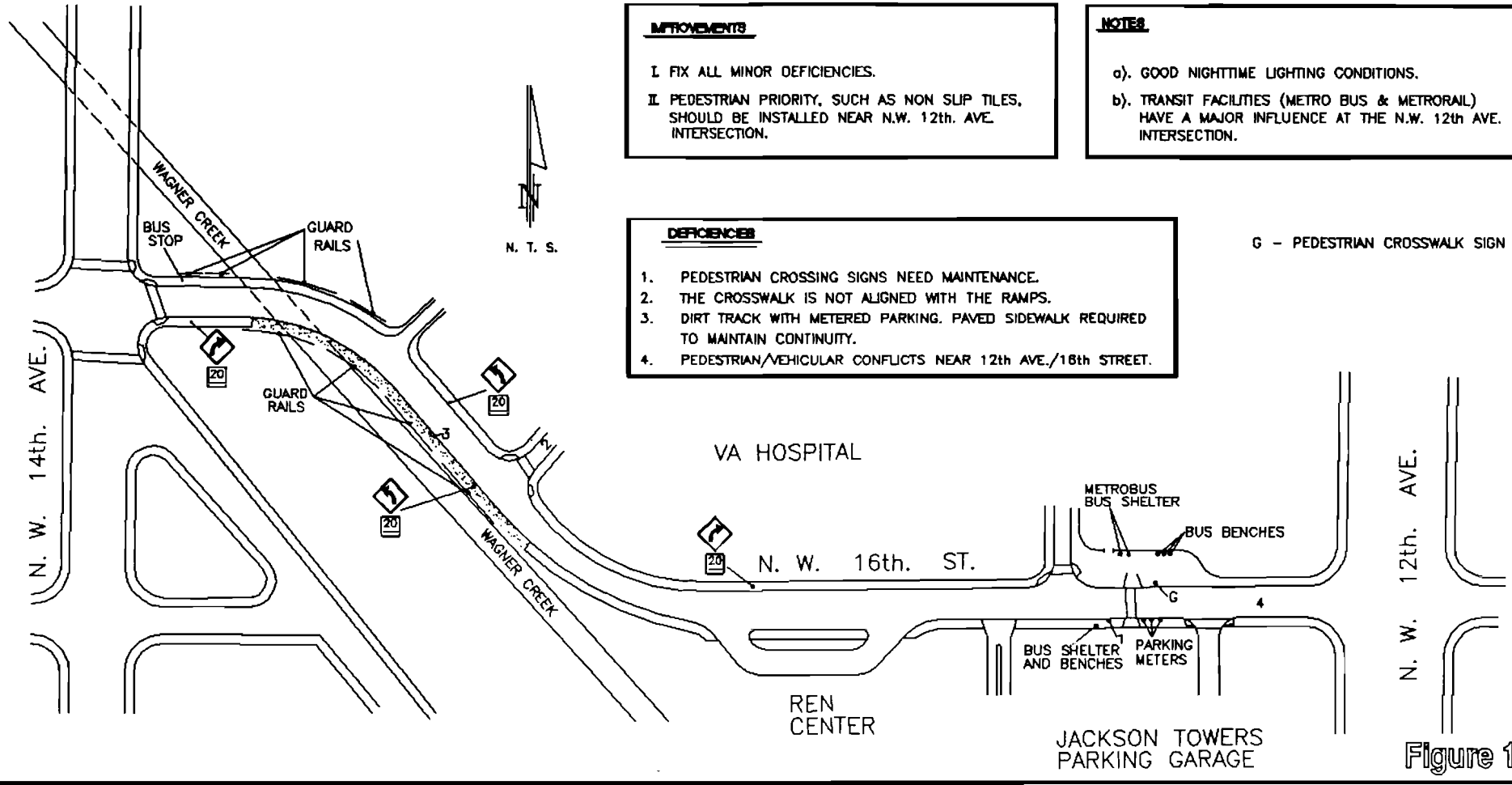

Figure 12

BARTON-ASCHMAN ASSOC., INC.
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PARSONS TRANSPORTATION GROUP

DADE COUNTY / CONTINUING DEVELOPMENT OF TMA s
CIVIC CENTER PEDESTRIAN AMENITIES AND SAFETY STUDY

8. NW 16th ST. (VETERANS HOSPITAL) CORRIDOR

Judicial Center that are located on the south side of this corridor (see Figure 13). Therefore, the portion of this corridor west of the N.W. 12th Avenue intersection is a priority corridor. There are many minor deficiencies along this corridor. In order of importance, the most significant deficiencies and their solutions can be grouped as follows:

(i) Poor lighting conditions at N.W. 13th Court and N.W. 14th Avenue intersections:
- Install or properly maintain the street lighting.

(ii) Signs and pavement markings deteriorating:
- Properly maintain signs and pavement markings.

(iii) Fixed obstructions within the sidewalks:
- Remove/relocate fixed obstructions.

4.10 N.W. 13th Avenue Corridor

Because of the location of judicial facilities which exist near this corridor, it is heavily used by pedestrians (see Figure 14). N.W. 13th Avenue is one-way northbound, however, the uncontrolled pedestrian movements along this corridor creates a significant number of pedestrian/vehicular conflicts. There are few other deficiencies also noted. In order of importance and ease of implementation, the deficiencies and solutions are:

(i) Vendors blocking and littering the sidewalks:
- Require vendors to operate outside the sidewalks and maintain cleanliness.

(ii) Pedestrian/vehicular conflict at the entrance/exit to parking garage:
- Install yield and stop signs to control vehicular movements.

(iii) Pedestrian/vehicular conflict due to uncontrolled pedestrian movements:

DEFICIENCIES

1. PEDESTRIAN SIGNAL NOT WORKING.
2. BENCH CREATING OBSTRUCTION TO PEDESTRIANS.
3. LIGHT POLE BLOCKING THE SIDEWALK.
4. A REDUNDANT RAMP.
5. SIGN BLOCKING THE SIDEWALK.
6. SIDEWALK POORLY MAINTAINED.
7. NO CROSSWALK.
8. POWER POLE AND FENCE BLOCKING THE SIDEWALK.
9. BUS STOP WITH SHELTER AND BENCHES AND GARBAGE BIN BLOCKING THE SIDEWALK.
10. SIGN POST BLOCKING THE SIDEWALK.
11. TRAFFIC CONTROL BOX BLOCKING THE SIDEWALK.
12. SIGNAL POLE BLOCKING THE SIDEWALK.
13. CROSSWALK AND RAMPS ARE NOT ALIGNED AT THIS INTERSECTION.
14. BUS STOP WITH SHELTER BLOCKING THE SIDEWALK.
15. BENT SIGN POST.
16. THE RAMP AND CROSSWALK ARE NOT ALIGNED.
17. SIGN NOT VISIBLE BECAUSE OF THE TREE BRANCHES.
18. LIGHT POLE BLOCKING THE SIDEWALK.
19. BUS STOP WITH SHELTER, BENCHES AND GARBAGE BIN BLOCKING THE SIDEWALK.
20. SIGNAL POLE BLOCKING THE SIDEWALK.
21. NO PEDESTRIAN SIGNAL AT THIS INTERSECTION.
22. PUBLIC TELEPHONE AND OTHERS POLES BLOCKING THE SIDEWALK.
23. TRAFFIC IN THE SAME DIRECTION SEPARATED BY YELLOW LINE.
24. POOR NIGHTIME LIGHTING AT LOCATIONS 16 AND 21.

NOTES

a). GOOD NIGHTTIME LIGHTING EXCEPT AT LOCATIONS 16 & 21.

IMPROVEMENTS

I. FIX ALL MINOR DEFICIENCIES.

A – STOP SIGN
F – GUIDE SIGN
G – PEDESTRIAN CROSSWALK SIGN
K – "PEDESTRIAN SIGNAL AHEAD" SIGN
L – BENCH
N – NEWSPAPER STAND

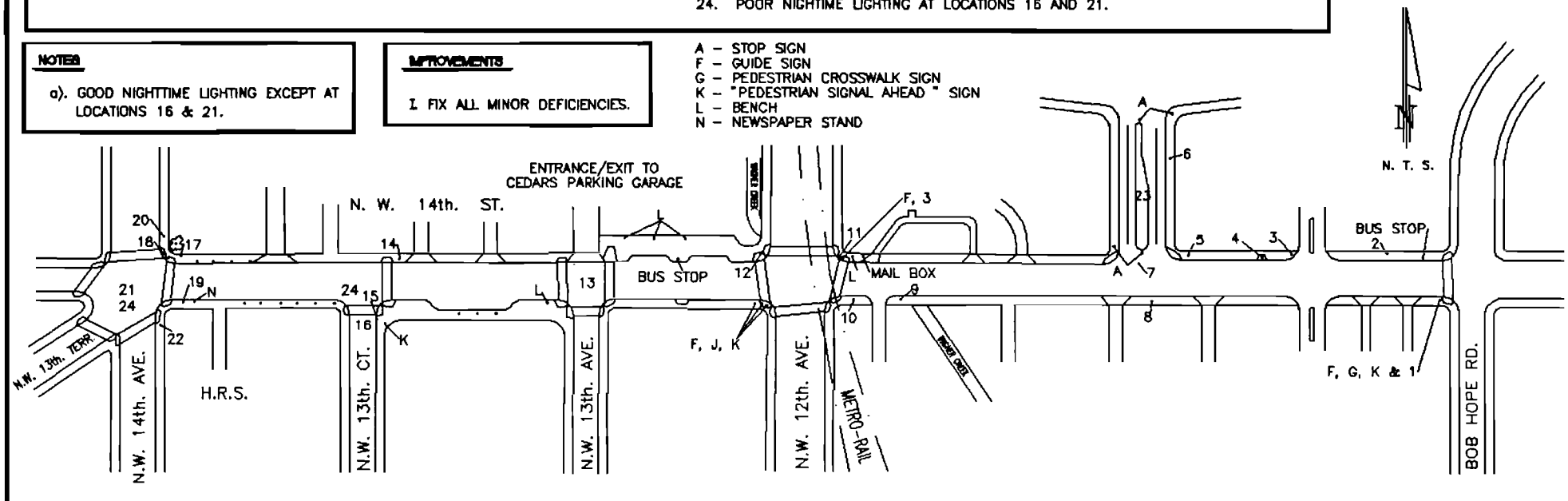

Figure 13

BARTON-ASCHMAN ASSOC., INC.
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DADE COUNTY / CONTINUING DEVELOPMENT OF TMA s CIVIC CENTER PEDESTRIAN AMENITIES AND SAFETY STUDY

9. NW 14th ST. CORRIDOR

DEFICIENCIES

1. VENDORS BLOCKING THE SIDEWALK WITH PEDESTRIANS MAKING DETOUR TO GET BACK TO THE SIDEWALK.
2. NO RAMP ON THE SIDEWALK CONNECTING THE CROSSWALK.
3. A LIGHT POLE AND TWO BENT SIGN POSTS WITH ONE HAVING NO SIGN ON IT BLOCKING THE SIDEWALK.
4. PEDESTRIAN/VEHICULAR CONFLICTS AT PARKING GARAGE ACCESS.

IMPROVEMENTS

I. FIX ALL MINOR DEFICIENCIES.

II. CHANNELIZE PEDESTRIAN MOVEMENTS BY WAY OF FENCING ALONG THE ROADWAY.

III. INSTALL YIELD AND STOP SIGN TO CONTROL VEHICULAR MOVEMENT.

NOTES

a). PARKING METERS ON THE SIDEWALK ALL ALONG THE EAST SIDE OF THE STREET.

b). PEDESTRIANS CROSSING THE CORRIDOR AT ALL POINTS. CROSSING POINTS NEED TO BE CONTROLLED.

c). GOOD NIGHTTIME LIGHTING.

A – STOP SIGN
C – "DO NOT ENTER" SIGN

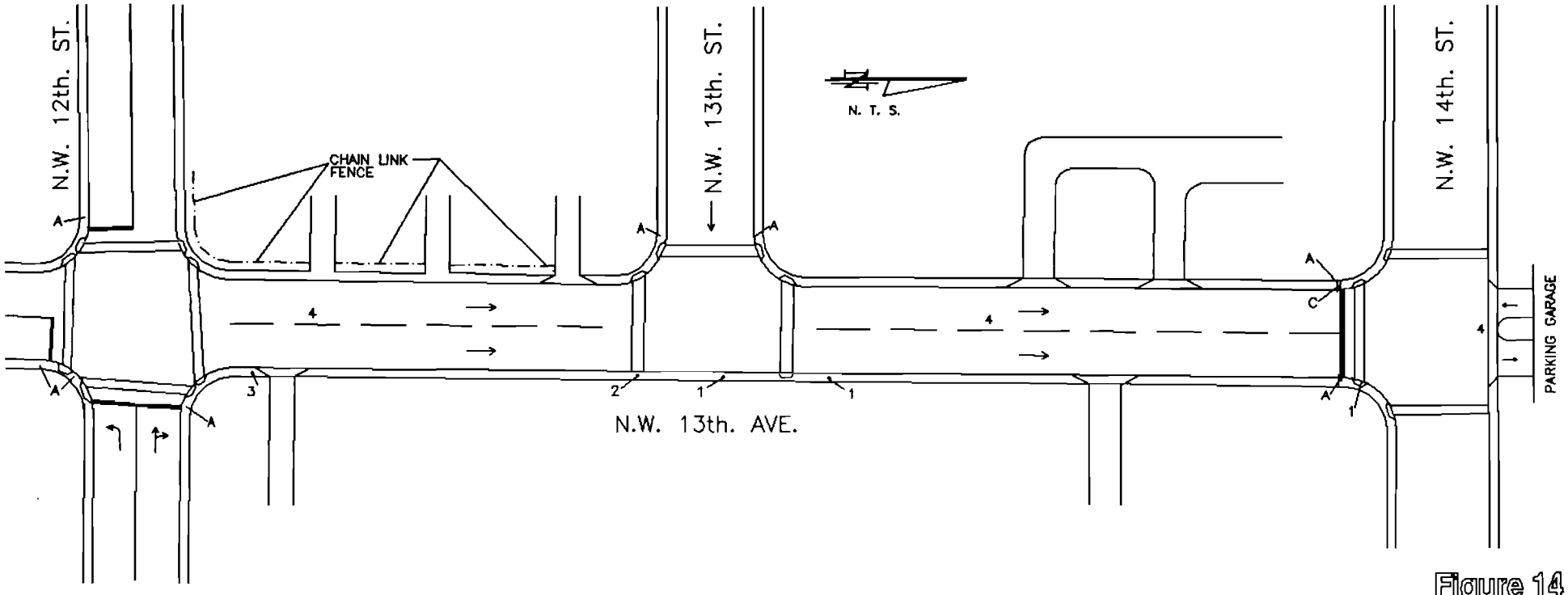

Figure 14

BARTON-ASCHMAN ASSOC., INC.
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DADE COUNTY / CONTINUING DEVELOPMENT OF TMA s
CIVIC CENTER PEDESTRIAN AMENITIES AND SAFETY STUDY

10. NW 13th AVE. CORRIDOR

- Regulate pedestrian crossing points by installing fence along the roadway.
- Reduce vehicle speeds by installing three-way stop sign at the N.W. 13th Street intersection.

(iv) Fixed obstructions within the sidewalk:

- Remove/relocate fixed obstructions.

4.11 N.W. 13th Court Corridor

This corridor is also heavily used by pedestrians. There are few deficiencies along this corridor (see Figure 15). In order of importance and ease of implementation, the deficiencies and solutions are:

(i) Vendors blocking and littering the sidewalks:

- Require vendors to operate outside the sidewalks and maintain cleanliness.

(ii) Fixed obstructions within the sidewalk:

- Remove/relocate fixed obstructions.

4.12 N.W. 13th Street Corridor

This is also a pedestrian-oriented corridor. N.W. 13th Street is one-way eastbound street which carries few motor vehicles. Only one deficiency was noted along this corridor (see Figure 16):

(i) The ramps and the crosswalks are not aligned:

- Restripe the crosswalk to align with the ramps.

DEFICIENCIES

1. VENDORS VERY CLOSE TO THE SIDEWALK, THE SURROUNDING AREA IS DIRTY.
2. THE SIDEWALK IS UNMAINTAINED AND DIRTY UP TO N.W. 12th ST.
3. VENDOR VERY CLOSE TO THE SIDEWALK AND A LIGHT POLE ON THE SIDEWALK, CREATING OBSTRUCTION TO THE FREE MOVEMENT OF PEDESTRIANS.
4. A LONG SHARP METAL OBJECT PROTRUDING OUT OF A STEEL SIGN, DANGEROUS FOR PEDESTRIANS.
5. NO RAMP ON THE SIDEWALK LEADING TO THE CROSSWALK.
6. VENDOR BLOCKING THE SIDEWALK.
7. DRIVEWAY TO A CLOSED H.R.S. PARKING LOT CREATES UNDULATION FOR PEDESTRIAN TRAVEL.

NOTES

a). ON THE WEST SIDE OF THIS CORRIDOR, THERE ARE PARKING METERS ALL ALONG THE SIDEWALK. ON THE EAST SIDE, THERE ARE SIGN POSTS ALL ALONG THE SIDEWALK. THE PARKING METERS AND SIGN POSTS EFFECTIVELY REDUCE THE SIDEWALK BY 1 FOOT.

b). GOOD NIGHTTIME LIGHTING CONDITIONS.

IMPROVEMENTS

I. FIX ALL MINOR DEFICIENCIES.

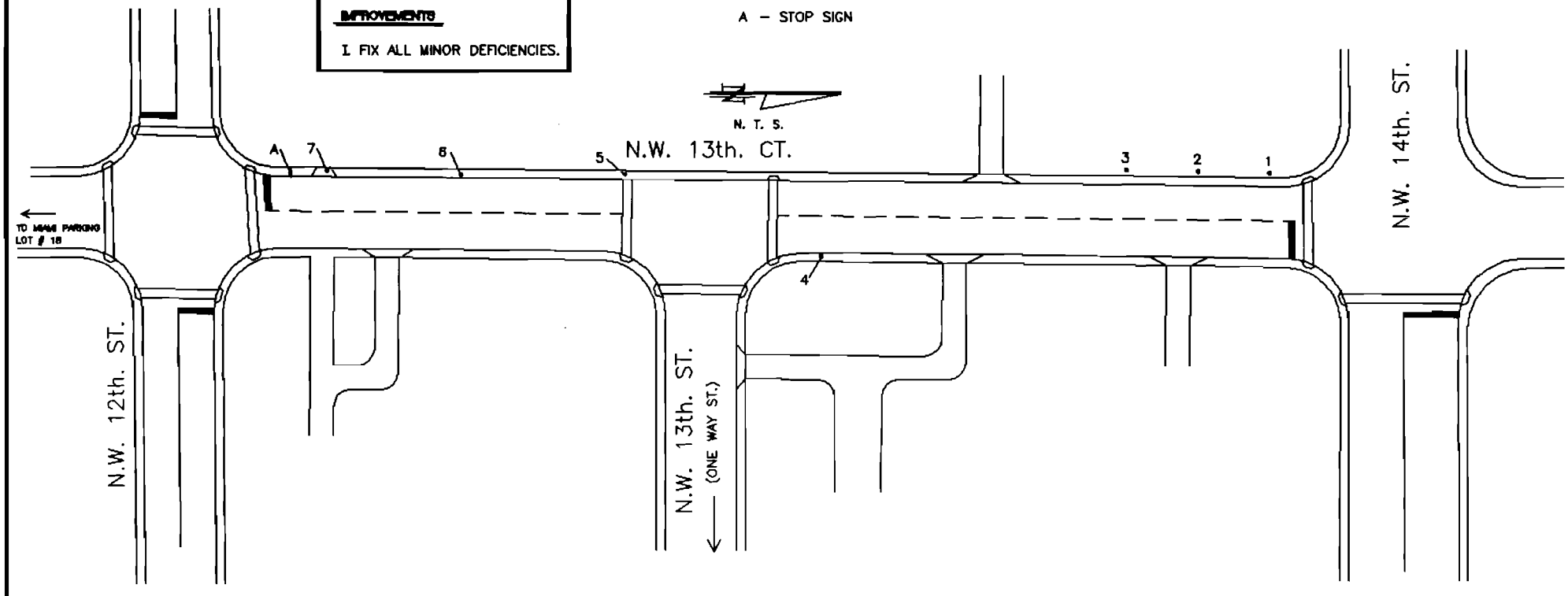

Figure 15

BARTON-ASCHMAN ASSOC., INC.
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DADE COUNTY / CONTINUING DEVELOPMENT OF TMA s
CIVIC CENTER PEDESTRIAN AMENITIES AND SAFETY STUDY

11. NW 13th CT. CORRIDOR

DEFICIENCIES

1. RAMPS TO THE SIDEWALK ARE NOT ALIGNED WITH THE CROSSWALK.

IMPROVEMENTS

I FIX ALL MINOR DEFICIENCIES.

NOTES

a). THERE ARE SIGN POSTS ON THE SIDEWALK ON BOTH SIDES OF THE STREET AND ALSO DECAL CURB PARKING.

b). GOOD NIGHTTIME LIGHTING.

c). VERY HEAVY PEDESTRIAN CORRIDOR DURING THE DAY.

A – STOP SIGN
H – ONE WAY SIGN

N. T. S.

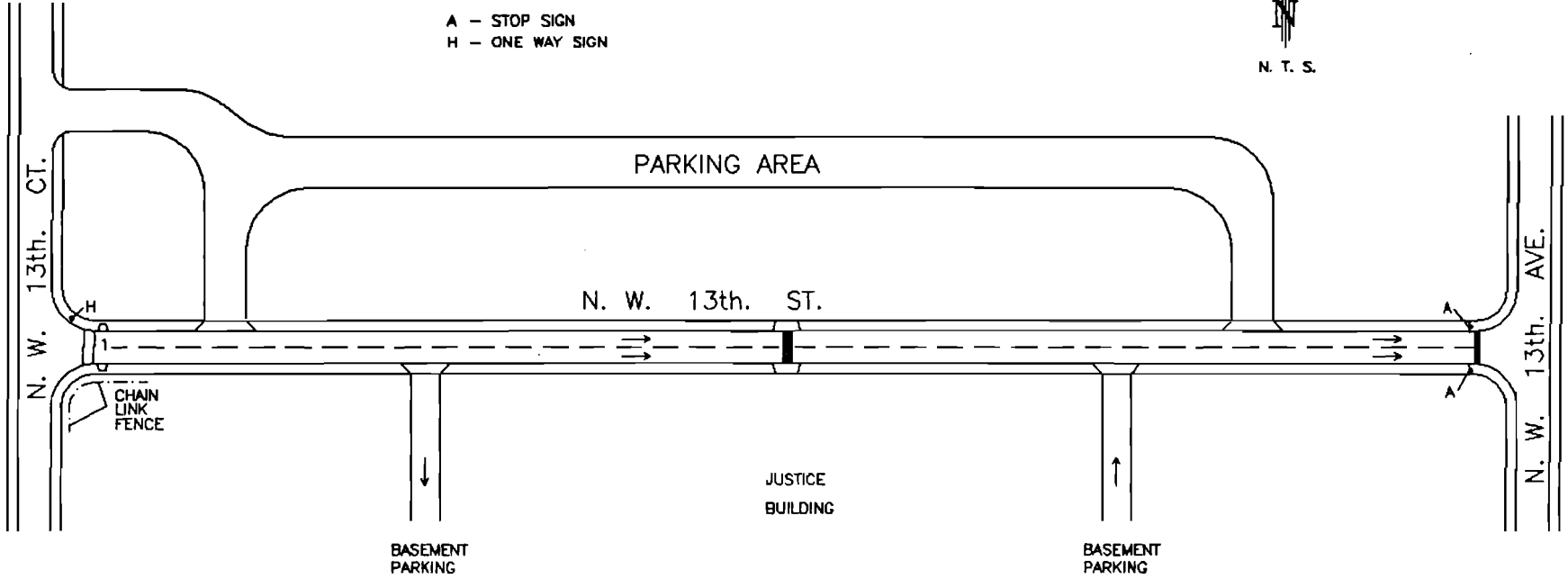

Figure 16

BARTON-ASCHMAN ASSOC., INC.
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DADE COUNTY / CONTINUING DEVELOPMENT OF TMA s
CIVIC CENTER PEDESTRIAN AMENITIES AND SAFETY STUDY

12. NW 13th ST. CORRIDOR

4.13 N.W. 12th Street Corridor

This is a very heavy pedestrian-oriented corridor. At the N.W. 12th Avenue intersection, signs are posted for vehicles to access westbound State Road 836 via N.W. 12th Street. This creates large volumes of through traffic on this corridor, increasing the number of pedestrian/vehicular conflicts along this corridor. This corridor is a priority corridor due to its heavy pedestrian usage. There were other deficiencies also noticed (see Figure 17). In order of importance and ease of implementation, the deficiencies and solutions are:

(i) Pedestrian/vehicular conflict:
- Reroute through traffic to N.W. 11th Street by proper signing on N.W. 12th Avenue.

(ii) Vendors blocking and littering the sidewalks:
- Require vendors to operate outside the sidewalks and maintain cleanliness.

(iii) Trash on sidewalks:
- Require the city clean-up crew to clean the sidewalks routinely.

(iv) Pedestrian signals are not working:
- Properly maintain pedestrian signals.

(v) Ramp/crosswalk deficiencies:
- Build new ramps and re-mark crosswalks.

(vi) Uncontrolled curb-side parking control:
- Enforce curb-side parking control.

4.14 Bob Hope Road Corridor

The portion of this corridor between N.W. 18th Street and N.W. 15th Street is a heavy pedestrian use corridor. The Metrobus stops on this corridor are frequently used.

DEFICIENCIES

1. PEDESTRIAN SIGNAL NOT WORKING.
2. VERY UNEVEN PAVEMENT.
3. VENDOR BLOCKING THE SIDEWALK
4. VEHICLES PARKED ALL ALONG THIS SIDE OF THE STREET DESPITE PARKING NOT ALLOWED.
5. BENCHES – AREA NEEDS CLEANING.
6. RAMP IS NOT ALIGNED WITH THE CROSSWALK.
7. CONTRADICTING PARKING CONTROL SIGNS.
8. VEHICLES PARKED DESPITE PARKING NOT ALLOWED.
9. CROSSWALKS EXIST BUT NO RAMPS AT THE SIDEWALK.
10. PEDESTRIAN SIGNAL NOT WORKING.
11. GARBAGE CAN WITH DIRT ALL AROUND IN THE MIDDLE OF THE SIDEWALK AND IN FRONT OF THE CROSS WALK.

NOTES

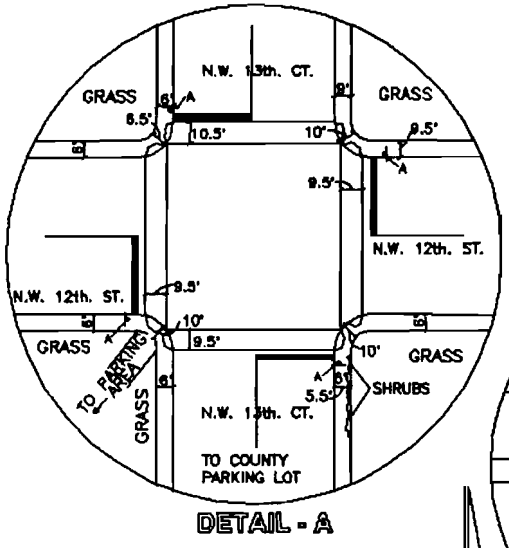
a). GOOD NIGHTTIME LIGHTING.

b). VERY HEAVY PEDESTRIAN CORRIDOR DURING THE DAY.

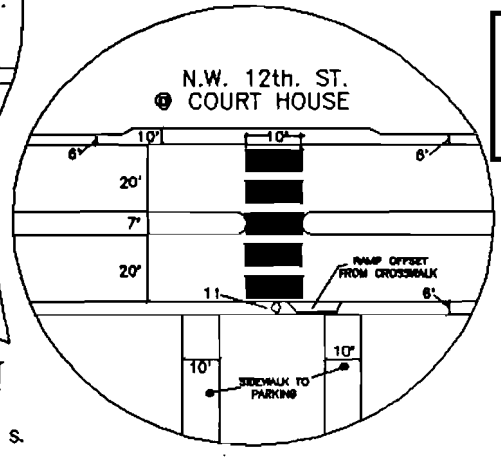
IMPROVEMENTS

1. FIX ALL MINOR DEFICIENCIES.

A – STOP SIGN
F – GUIDE SIGN
G – PEDESTRIAN CROSSWALK SIGN
L – BENCH
N – NEWSPAPER STAND



DETAIL - A



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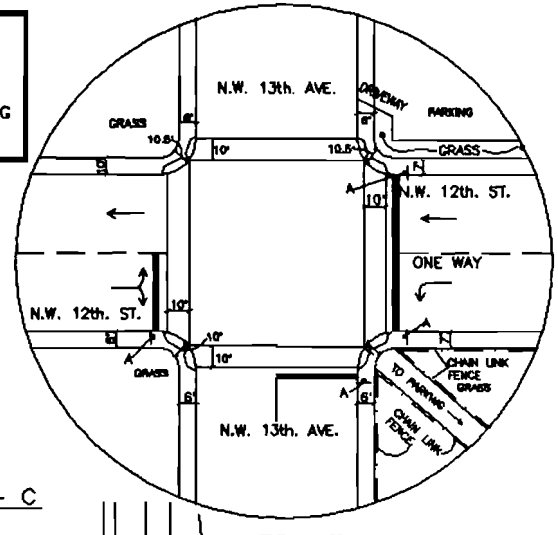

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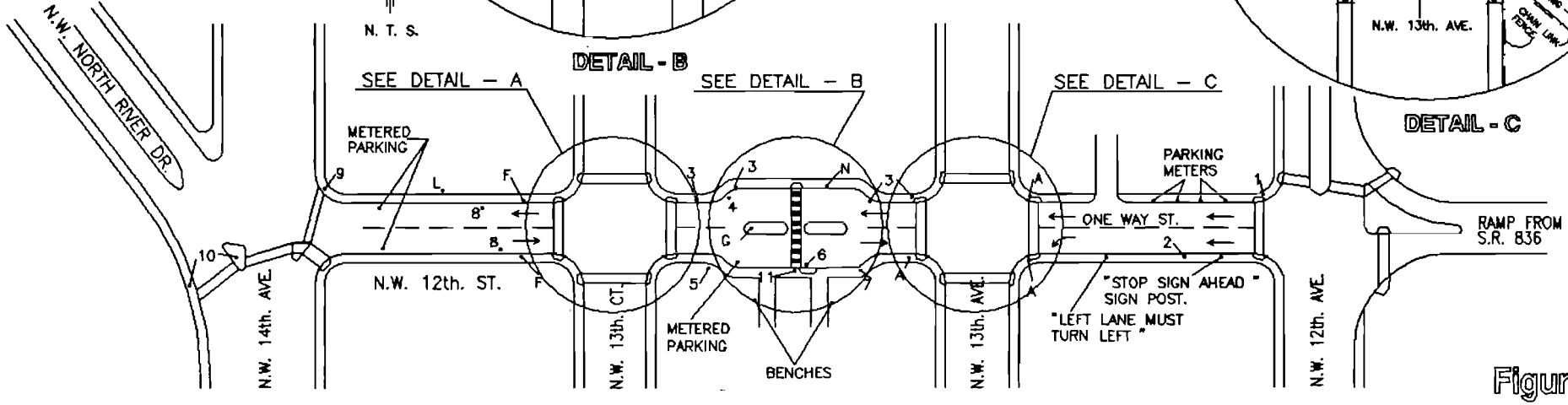

Figure 17

BARTON-ASCHMAN ASSOC., INC.
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PARSONS TRANSPORTATION GROUP

DADE COUNTY / CONTINUING DEVELOPMENT OF TMAs
CMC CENTER PEDESTRIAN AMENITIES AND SAFETY STUDY

13. NW 12th ST. CORRIDOR

Although this corridor is very conducive to pedestrian usage, there are many deficiencies that can be easily fixed (see Figure 18). In order of importance, the deficiencies and their solutions can be grouped as follows:

(i) Pedestrian signals are not working:
- Properly maintain pedestrian signals.

(ii) Ramps, signs, and markings are missing:
- Install as necessary.

(iii) Fixed obstructions in the sidewalks:
- Remove/relocate fixed obstructions.

(iv) Wide driveway to Ryder Trauma Center:
- Reconstruct to narrow the driveway.

4.15 N.W. 20th Street Corridor

N.W. 20th Street is a very heavily traveled roadway. The students from Miami Dade Community College and Lindsey Hopkins Technical Center utilize the pedestrian facilities of this corridor during the day and evening hours, between Bob Hope Road and N.W. 7th Avenue. Further east along this corridor, although it is outside the study boundaries, it was noted that residents utilize the sidewalks at all hours. There are many deficiencies along this corridor (see Figure 19). In order of importance and ease of implementation, the deficiencies and solutions can be grouped as follows:

(i) Pedestrian signals are not working at the intersections:
- Properly maintain pedestrian signals.

(ii) Poor lighting conditions:
- Properly maintain street lights.

DEFICIENCIES

1. SIGNAL POLE BLOCKING THE SIDEWALK.
2. NONE OF THE PEDESTRIAN SIGNALS ARE WORKING IN THIS INTRSECTION.
3. PARKED VEHICLES BLOCKING THE SIDEWALK.
4. AREA NEEDS LANDSCAPING.
5. BROKEN SIGN POST PROTRUDING OUT OF THE PAVEMENT.
6. BUS STOP WITHOUT BENCH OR SHELTER.
7. PEDESTRIAN SIGNAL NOT WORKING.
8. NO CROSSWALK MARKING OR PEDESTRIAN SIGNAL TO CROSS SOUTH SIDE OF THE INTERSECTION.
9. PEDESTRIAN SIGNAL NOT WORKING.
10. NEWSPAPER STAND BLOCKING THE SIDEWALK.
11. STEP RAMP TO THE CROSSWALK NOT DESIRABLE FOR WHEELCHAIRS.
12. " PEDESTRIAN CROSSING " SIGN NOT VISIBLE BECAUSE OF THE TREE BRANCHES.
13. TRAFFIC SIGNAL BOX BLOCKING THE SIDEWALK.
14. UNEVEN SIDEWALK NOT CONDUCIVE FOR WHEELCHAIRS.
15. SIGN POST BLOCKING THE SIDEWALK.
16. TREE BRANCHES OBSTRUCTING THE SIDEWALK.
17. PEDESTRIAN SIGNAL HEAD BROKEN AND NOT WORKING.
18. SIGNAL POLE BLOCKING THE SIDEWALK.
19. PEDESTRIAN SIGNAL HEAD NOT WORKING.
20. BUS STOP, A BENCH AND A GARBAGE BIN BLOCKING THE SIDEWALK.
21. AREA NEEDS LANDSCAPING.
22. BUILDING STRUCTURES AT THIS CORNER BLOCKING THE SIDEWALK.
23. NO PEDESTRIAN CROSSWALK, SIGNAGE, OR RAMPS ON THE SIDEWALK. DARK AT NIGHT.
24. VERY OPEN AREA FACILITATING FAST MOVEMENT OF VEHICLES IN AND OUT OF THE PARKING LOT. THIS DESIGN OVERLOOKS PEDESTRIAN SAFETY.
25. A CROSSWALK REQUIRED HERE AS STUDENTS CROSS TO THE PARKING LOT

IMPROVEMENTS

I. FIX ALL MINOR DEFICIENCIES.

NOTES

a). HEAVY PEDESTRIAN/TRANSIT INTERACTION BETWEEN N.W. 18th. ST. & N.W. 17th ST.

b). GOOD NIGHTTIME LIGHTING EXCEPT AT LOCATION 23, MAY BE IMPROVED AS PART OF NEW PARKING GARAGE CONSTRUCTION.

A – STOP SIGN
D – "RIGHT LANE MUST TURN RIGHT " SIGN
E – SPEED LIMIT SIGN
F – GUIDE SIGN
G – PEDESTRIAN CROSSWALK SIGN
J – "NO TURN ON RED WHEN PEDESTRIAN CROSSING " SIGN
K – "PEDESTRIAN SIGNAL AHEAD " SIGN
L – BENCH
H – ONE WAY SIGN
N – NEWSPAPER STAND
S – "TOW AWAY ZONE " SIGN

N. T. S.

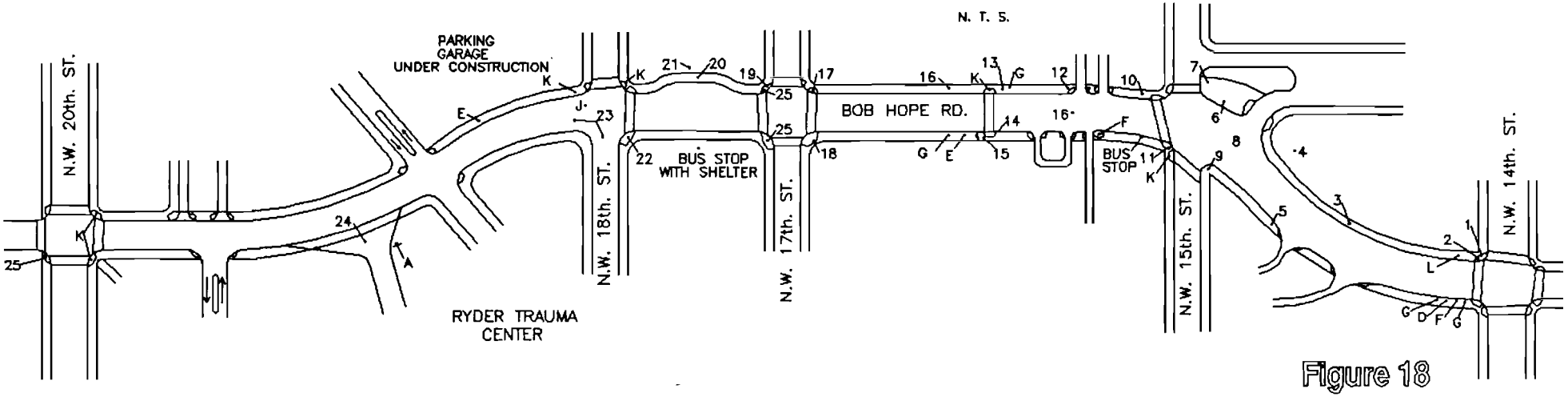

Figure 18

BARTON-ASCHMAN ASSOC., INC.
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PARSONS TRANSPORTATION GROUP

DADE COUNTY / CONTINUING DEVELOPMENT OF TMA s
CIVIC CENTER PEDESTRIAN AMENITIES AND SAFETY STUDY

14. BOB HOPE RD. CORRIDOR

DEFICIENCIES

1. NONE OF THE PEDESTRIAN SIGNALS ARE WORKING AT THIS INTERSECTION
2. SIGNAL POLE AND FIRE HYDRANT BLOCKING THE SIDEWALK
3. SIGNAL POLE VERY CLOSE TO THE CURVE. CLIPPED OFF CORNERS INDICATE THAT IT HAS BEEN HIT BY TRUCKS.
4. BUS STOP WITH SHELTER AND BENCH. SURROUNDING AREA NEEDS LANDSCAPING.
5. A SMALL TREE BLOCKING THE SIDEWALK
6. BROKEN CURB AND CUTTER, NEXT TO THE RAMP.
7. NO CROSSWALK.
8. UNEVEN AND BROKEN PAVEMENT BECAUSE OF A TREE ON THE SIDEWALK, UNDESIRABLE FOR WHEELCHAIRS.
9. FIRE HYDRANT AND TREE BLOCKING THE SIDEWALK.
10. UNEVEN AND BROKEN PAVEMENT BECAUSE OF A TREE ON THE SIDEWALK. TREE BLOCKING THE SIDEWALK. UNDESIRABLE FOR WHEELCHAIRS.
11. UNEVEN AND BROKEN PAVEMENT BECAUSE OF A TREE ON THE SIDEWALK. TREE BLOCKING THE SIDEWALK. UNDESIRABLE FOR WHEELCHAIRS.
12. BUS STOP WITH SHELTER AND BENCHES; VENDOR AND A GARBAGE BIN; SIDEWALK AREA UNMAINTAINED.
13. SIGNAL POLE AND PUBLIC TELEPHONE AT THIS CORNER, BLOCKING THE SIDEWALK.
14. OVERGROWN BUSHES OBSTRUCTING THE SIDEWALK.
15. SIGN POST AND OVERHANGING BUSHES BLOCKING THE SIDEWALK.
16. UNEVEN PAVEMENT BECAUSE OF A TREE ON THE SIDEWALK.
17. BUS STOP WITH A BENCH. AREA PARTIALY MAINTAINED AND GARBAGE AROUND IT.
18. CROSSWALK AND RAMP ARE NOT ALIGNED.
19. PEDESTRIAN SIGNAL NOT WORKING.
20. RAMP AND CROSSWALK ARE NOT ALIGNED.
21. NO CROSSWALK FOR PEDESTRIANS.
22. PEDESTRIAN SIGNAL NOT WORKING.
23. CROSSWALK NEEDS RESTRIPING.
24. PEDESTRIAN SIGNAL NOT WORKING.
25. SIDEWALK NEEDS MAINTENANCE.
26. PEDESTRIAN SIGNAL NOT WORKING. SURROUNDING AREA NEEDS PROPER MAINTENANCE.
27. TRAFFIC SIGNAL BASE AND POLE BLOCKING THE SIDEWALK.
28. ALL THE CROSSWALKS NEED REPAINTING.
29. NONE OF THE PEDESTRIAN SIGNALS AT THIS INTERSECTION ARE WORKING.

A – STOP SIGN
E – SPEED LIMIT SIGN
F – GUIDE SIGN
G – PEDESTRIAN CROSSWALK SIGN
J – "NO TURN ON RED WHEN PEDESTRIAN CROSSING " SIGN
K – "PEDESTRIAN SIGNAL AHEAD " SIGN
L – BENCH
N – NEWSPAPER STAND

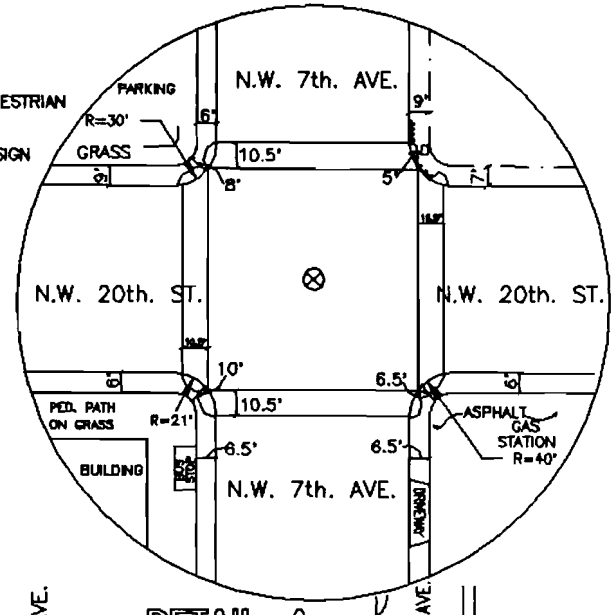
IMPROVEMENTS

I. FIX ALL MINOR DEFICINCIES.
II. FIX THE EXISTING LIGHTING FIXTURE TO IMPROVE LIGHTING CONDITIONS.

NOTES

a). RESIDENTIAL PEDESTRIAN TRAFFIC EAST OF THIS CORRIDOR, OUTSIDE THE STUDY BOUNDARY.

b). NIGHT TIME LIGHTING COULD BE IMPROVED.



DETAIL - A

N. T. S.

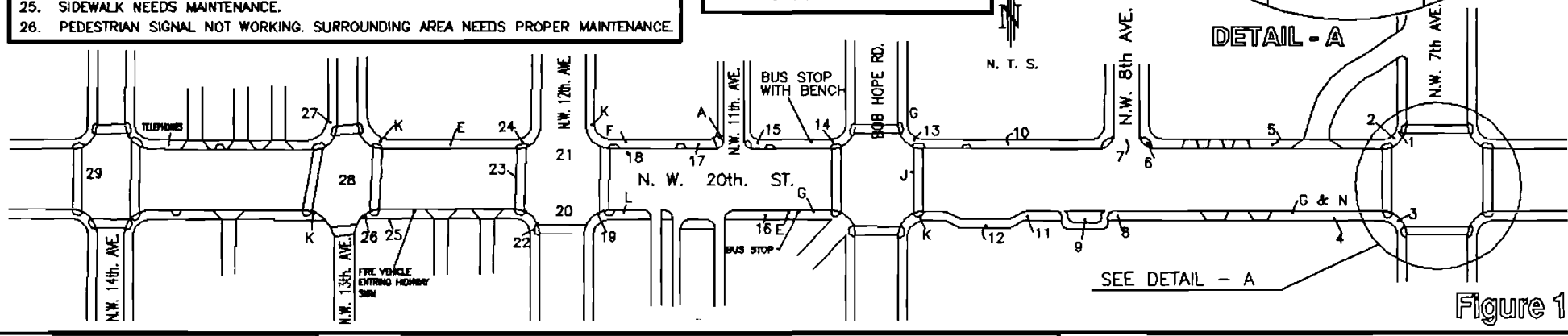


Figure 19

BARTON-ASCHMAN ASSOC., INC.
FT. LAUDERDALE, FLORIDA
PARSONS TRANSPORTATION GROUP

DADE COUNTY / CONTINUING DEVELOPMENT OF TMA s CIVIC CENTER PEDESTRIAN AMENITIES AND SAFETY STUDY

15. NW 20th ST. CORRIDOR

(iii) Poor pavement markings:

- Redo pavement markings.

(iv) Fixed obstructions within the sidewalk:

- Remove/relocate fixed obstructions.

4.16 N.W. 12th Avenue Corridor

This corridor is the north/south spine of the Civic Center area in terms of vehicular movement as well as pedestrian movement. The pedestrian movement is mainly concentrated on the southern portion of this corridor. Therefore, at critical locations such as the N.W. 16th Street, N.W. 15th Street, and N.W. 14th Street intersections, there are pedestrian/vehicular conflicts. There are many deficiencies along this corridor that were noted during the field reconnaissance (see Figures 20A and 20B). In order of importance and ease of implementation, the deficiencies and solutions can be grouped into:

(i) Pedestrian/vehicular conflict:

- Repave the entire intersection areas of N.W. 16th Street and N.W. 15th Street with pedestrian priority treatment, such as non-slip tiles.

(ii) Pedestrian signals are not working:

- Properly maintain pedestrian signals.

(iii) Lack of pedestrian space at street corners.

- Remove the plants behind the bus stop on the west side of the N.W. 15th Street intersection and replace with a bus shelter.
- Relocate signal boxes and poles and remove guardrails at the intersections of N.W. 16th Street and N.W. 14th Street.

(iv) Fixed obstructions within the sidewalks:

- Remove/relocate fixed obstructions.

DEFICIENCIES

1. SIGN WITHIN SIDEWALK.
2. SIDEWALK NEEDS MAINTENANCE.
3. CARS PARKED IN THE BUS BAY. BUSES NOT USING THE BUS BAY.
4. INADEQUATE SIDEWALK SPACE DUE TO JERSEY BARRIER.
5. SIGN POST WITHIN THE SIDEWALK.
6. SIGN POLE WITHIN THE SIDEWALK.
7. DROP CURB DRIVEWAY AT A SIGNALIZED INTERSECTION.
8. PEDESTRIAN SIGNALS NOT WORKING, UNCONTROLED PEDESTRIAN MOVEMENTS.
9. CONFLICT BETWEEN PASSENGERS WAITING FOR BUSES AND PEDESTRIANS.
10. LANDSCAPE NEEDS MAINTENANCE AND IMPROVEMENT.
11. CONFLICT BETWEEN LEFT TURN/RIGHT TURN VEHICLES AND PEDESTRIANS, UNCONTROLLED PEDESTRIAN MOVEMENTS.
12. SIGNAL BOX, SIGNAL POLE, GUARDRAIL AND SIGN POST INTERFERING WITH PEDESTRIAN MOVEMENTS.
13. BUS SHELTER VANDALIZED. (SEE FIGURE 20 B).
14. STREETS SIGN NEED MAINTENANCE. (SEE FIGURE 20 B).
15. SIGNAL POLE WITHIN THE SIDEWALK. (SEE FIGURE 20 B).
16. PAVEMENT MARKINGS AND SIGNAL NEED INPROVEMENT AT THIS INTERSECTION. (SEE FIGURE 20 B).
17. SIGNAL POLE WITHIN THE WALKWAY. (SEE FIGURE 20 B).
18. VERY SMALL AND NARROW RAMP. (SEE FIGURE 20 B).
19. SIGN POST IN THE MIDDLE OF THE WALKWAY. (SEE FIGURE 20 B).
20. SIGN POST WITHOUT SIGN IN THE WALKWAY.
21. TRAFFIC CONTROL BOX WITHIN THE SIDEWALK.
22. BUS BENCHES ON THE WALKWAY.
23. PEDESTRIAN SIGNALS NOT WORKING.
24. SIGNAL CONTROLLER, SIGNAL POLE, GUARDRAIL WITHIN THE SIDEWALK.
25. SIGN POST WITHIN THE SIDEWALK.
26. CRACKED WALKWAY.

NOTES

a). A VERY HEAVY PEDESTRIAN CORRIDOR BETWEEN N.W. 12th. ST. & N.W. 16th ST.

b). GOOD NIGHTTIME LIGHTING CONDITIONS, INCLUDING UNDER THE METRORAIL STATION.

c). METRORAIL STATION DID NOT HAVE SECURITY PERSONEL DURING THE NIGHT RECONNAISSANCE.

IMPROVEMENTS

I. FIX ALL MINOR DEFICIENCIES.

II. CHANNELIZE PEDESTRIAN MOVEMENT AT N.W. 16th. ST. & N.W. 15th. ST. INTERSECTIONS.

III. PAINT THE METRORAIL STRUCTURE TO IMPROVE AESTHETICS.

N. T. S.

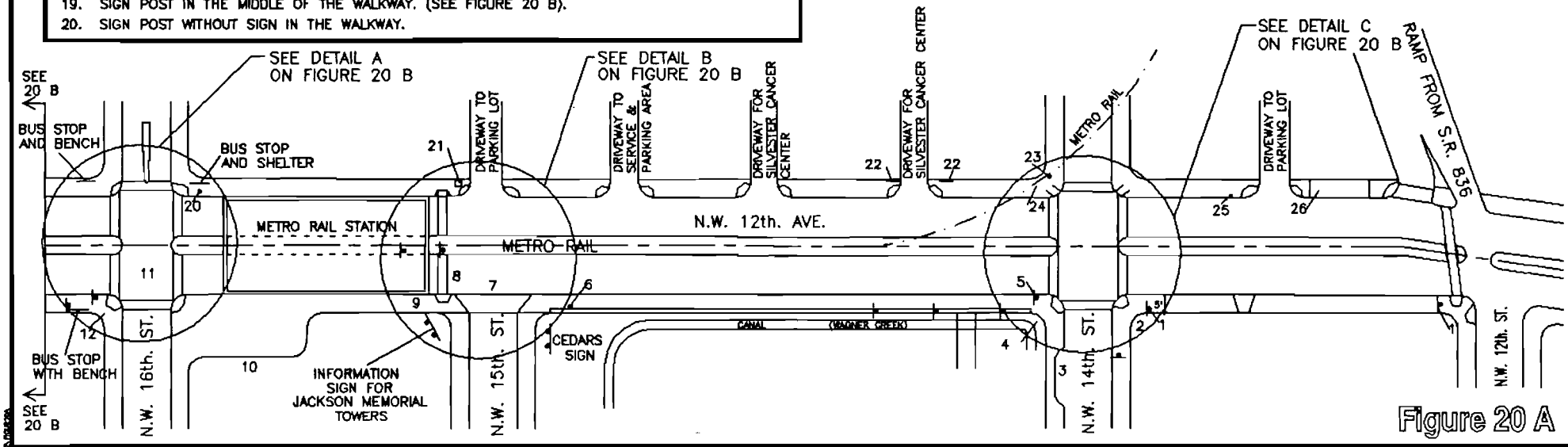


Figure 20 A

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DADE COUNTY / CONTINUING DEVELOPMENT OF TMA s
CMC CENTER PEDESTRIAN AMENITIES AND SAFETY STUDY

16. NW 12th AVE. CORRIDOR

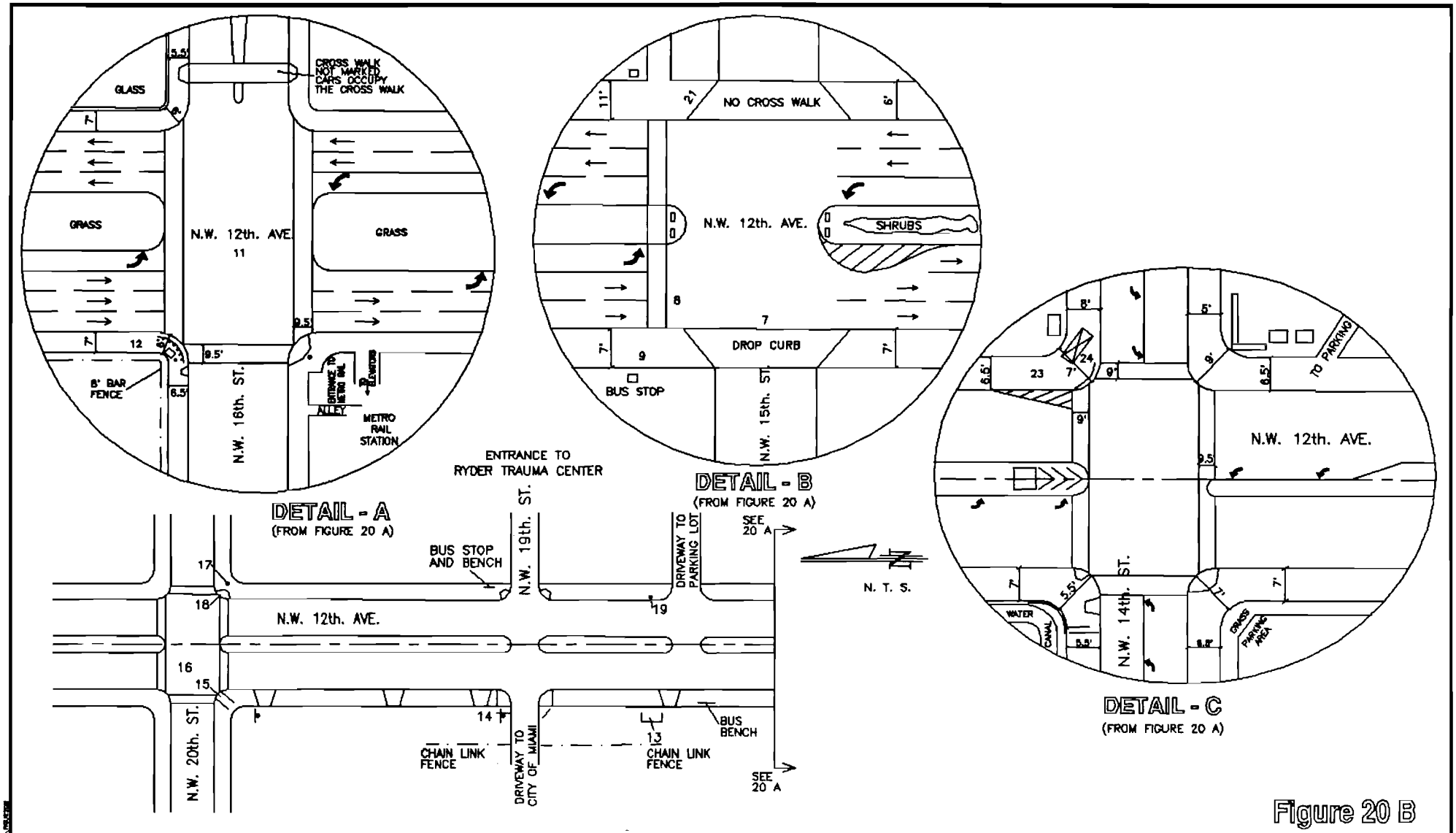

Figure 20 B

BARTON-ASCHMAN ASSOC., INC.
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DADE COUNTY / CONTINUING DEVELOPMENT OF TMA s
CIVIC CENTER PEDESTRIAN AMENITIES AND SAFETY STUDY

16. NW 12th AVE.
CORRIDOR (CONT.)

(v) Security concerns at Metrorail station:

- Have security personnel present all times.
- Brighten-up the Metrorail structure by applying a light colored coat of paint.

5.0 PEDESTRIAN CORRIDORS EVALUATION SUMMARY

The preceding section identified sixteen major pedestrian corridors within the Civic Center area, there are a wide range of improvements required to make these corridors attractive to pedestrians. Although it would be ideal to implement everyone of these improvements, the reality is that there are limited funds available to implement these improvements. Therefore, it is imperative to implement the improvements which will result in the greatest level of benefits.

For each of the sixteen corridors, improvements were identified in their order of importance and ease of implementation. It is necessary, however, to prioritize the corridors to identify which corridors should be given priority treatment. This prioritization was developed based on a review of the data, field reconnaissance, engineering judgement and input from the Civic Center TMO Steering Committee member. A copy of the corridor prioritization matrix filled out by the Steering Committee members is shown on Appendix D. The priority corridors and intersections are:

1.	N.W. 12th Avenue Corridor	- from N.W. 14th Street to N.W. 16th Street.
2.	N.W. 20th Street Corridor	- from Bob Hope Road to N.W. 7th Avenue.
3.	N.W. 15th Street (U. of M. Hospital and Clinic) Corridor	- from N.W. 12th Avenue to N.W. 14th Avenue.
4.	N.W. 15th Street (JMA Towers) Corridor	- from N.W. 12th Avenue to Fred Cowell Mall.
5.	N.W. 16th Street (VA Hospital) Corridor	- at the intersection with N.W. 12th Avenue.
6.	N.W. 16th Street (U of M/JMH) Corridor	- from N.W. 12th Avenue to JMH.
7.	N.W. 12th Street Corridor	- from N.W. 12th Avenue to N.W. 14th Avenue.

Table 3 lists all the deficiencies in the Civic Center study area in a priority order by attributes. The majority of the deficiencies which exist on these priority corridors can be corrected by routine maintenance of pavement markings, signs, street lighting, and pedestrian signals by the local maintaining agencies. Table 3 also lists all the deficiencies by agency responsibility and the corridors where these deficiencies were identified. These lists are intended to assist the local agencies and the MPO in taking corrective measures to improve the pedestrian amenities and safety in the Civic Center study area. The MPO should set-up an evaluation process to identify how efficiently these improvements are accomplished and how effective are these improvements in terms of encouraging pedestrian and transit usage.

TABLE 3
DEFICIENCY LIST BY ATTRIBUTES, CORRIDORS AND RESPONSIBLE ENTITY

		PEDESTRIAN CORRIDOR NO. & RESPONSIBLE ENTITY															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Attribute	**Deficiency**	TMO	CITY	TMO	CITY	TMO	CITY	TMO	CTY	CTY	CITY	CITY	CITY	CTY	CTY	CTY	FDOT
Safety	• Vehicle/Pedestrian Conflict		X			X	X	X	X		X						X
	• Inadequate Sight Distance						X										
	• Wide open driveways														X		
	• Poles hit by vehicles															X	
Security	• Inadequate Lighting	X		X		X				X					X	X	
Traffic	• Disregard Traffic Signs		X					X						X			X
	• Conflicting Traffic Signs			X	X									X			
	• Improper/lack of pavement markings			X	X					X					X	X	X
	• Abandoned driveway/ramp				X					X		X					
	• Unmaintained traffic signs				X				X	X							X
	• Drop-curb at signalized intersection																X
Transit	• Inadequate Transit stop facilities						X								X		X
	• Bus Shelter Vandalized																X
Amenities	• Ped. features not functioning/missing		X		X					X				X	X	X	
	• Fixed objects within sidewalk			X	X	X					X	X			X	X	X
	• Undulating/Unmaintained sidewalk			X									X		X	X	X
	• Crosswalk not aligned with ramp			X				X	X	X	X	X	X	X		X	
	• Parked vehicles conflicting with peds.					X	X							X	X		
	• Inadequate sidewalk space						X										
	• Non-continuous sidewalk						X		X								
Other	• Tree/Bush Trimming			X	X	X					X				X	X	
	• Cleanliness				X					X				X	X	X	X
	• Landscaping						X								X	X	X
	• Vendors Blocking sidewalk										X	X		X		X	

6.0 GENERAL RECOMMENDATIONS

In addition to the low-cost, quick fix improvements identified earlier, there are a number of high-cost, long-term improvements which should be implemented in the Civic Center Study area to make it more attractive to pedestrian usage. This chapter describes both general as well as specific improvements and the future needs for the Civic Center Study Area.

6.1 Pedestrian Amenities

- Where there are heavily used pedestrian walkways, they should be covered/sheltered to protect pedestrians against inclement weather. Although portions of some corridors within the study are covered, there are many other heavily used corridors that need to be covered. From the limited data collection done as part of this project, some of the corridors which were identified as candidates for covered walkways are:

  a. N.W. 12th Avenue corridors (east and west sides) from N.W. 16th Street to N.W. 14th Street
  b. N.W. 16th Street corridors (east and west) on the north side
  c. Pedestrian corridors around the judicial facilities.

  Priorities for covering these walkways should be based on actual pedestrian counts.

- Due to the high volume of pedestrians certain corridors must provide priority treatment to pedestrians. Some of the pedestrian priority treatment techniques are:

  - Eliminate or limit vehicular movements within the corridor
  - If motor vehicles are allowed, provide roadway surface treatments, such as gateway treatment and chokers to reduce vehicular speed.
  - At signalized intersections, provide all-red clearance intervals for pedestrians to cross freely in any direction.
  - Emphasize pedestrian use by installing pedestrian signs and improving crosswalk visibility (e.g: "zebra" crosswalk markings).

Some of the locations and pedestrian corridors that are candidates for priority treatment are:

a. N.W. 12th Avenue at N.W. 16th Street
b. N.W. 12th Avenue at N.W. 15th Street
c. N.W. 16th Street corridors - east and west
d. N.W. 15th Street (West corridor)

- Pedestrian corridors will be utilized more frequently if they have meaningful beginning and ending points as well as traverses pedestrian origins and sinks. The Northwest 15th Street (west corridor) is a good candidate for such improvements. It should be further extended towards the west to connect to N.W. 14th Avenue where an additional pedestrian crossover corridor could be established between N.W. 12th Avenue and N.W. 14th Avenue. This corridor should be supplemented by pedestrian priority treatments.

- Improving pedestrian corridor attractiveness is a way to create the proper environment to encourage pedestrian usage. Soothing and non-threatening colors along pedestrian corridors is one way to achieve this. Colors could be added to the corridors naturally or artificially; naturally, by improving the landscaping. Specific locations for landscape improvements are identified in previous sections of this report. Additionally, the area near the Civic Center Metrorail Station should be landscaped and maintained regularly to create an attractive and safe environment. Artificially, corridor attractiveness can be improved by painting. Many walls (the Metrorail structure, for example) could be painted with colors that are attractive and which create a sense of a secure environment.

- Due to the large number of buildings within the Civic Center Study Area, it is easy to become disoriented. Building directional signs to orient pedestrians should be located at strategic locations. These signs should be mounted at pedestrian eye-level, near the pedestrian corridors but clear from the walking areas.

- The CCTMO could undertake many activities to promote pedestrian and transit usage in the Civic Center Area. Public participation is one such activity. Visitors and employees to the Civic Center Area could be encouraged to fill out suggestion cards and deposit them at properly-located suggestion boxes. Also, the CCTMO members could be influenced to encourage their employees to carpool, vanpool, and use flextime to reduce the single occupant vehicle trips in the Civic Center Area. The CCTMO could also discourage the construction of new and expansion of existing parking

garages to discourage motor vehicle usage. They could also increase parking fees and provide subsidies to employees for using the transit.

6.2 Pedestrian Safety

Pedestrian safety begins with facilitating motor vehicle traffic while integrating pedestrians and pedestrian facilities into the system. In 1990, 1991 and 1992 there were 10 crashes involving pedestrians or bicycles on N.W. 12th Avenue, and 13 accidents involving pedestrians or bicycles on N.W. 7th Avenue. It is apparent that roadway improvements are needed at selected locations along these two roadways to improve motor vehicle access and to improve pedestrian safety. The following intersections should be further studied for engineering improvements as well as to improve safety and accessibility:

a. N.W. 12th Avenue @ N.W. 20th Street
b. N.W. 12th Avenue @ N.W. 16th Street
c. N.W. 12th Avenue @ N.W. 15th Street
d. N.W. 12th Avenue @ N.W. 14th Street
e. N.W. 7th Avenue @ N.W. 20th Street
f. N.W. 7th Avenue @ N.W. 17th Street

6.3 Pedestrian Security

In a pedestrian's mind, the perception of security plays a more decisive role in utilizing the facility than does the reality of security. The presence of security personal and ample lighting gives a pedestrian sense of security. The three Metrorail stations are prime targets for such improvements. The Culmer Station should be given special attention. In addition to improving security and lighting around the Culmer Station, proper maintenance of vegetation, cleanliness, and code enforcement could further improve the usage of this Metrorail station. Near the bus stops, there should always be street lighting. The bus stops

should be free of any overgrown vegetation that could heighten the sense of insecurity among transit users.

6.4 Transit Usage

In addition to improving pedestrian amenities safety steps should be taken to encourage transit usage. Specifically, the non standard peak times caused by the unique Civic Center shift times among the institutions should be taken into consideration for providing transit service to the Civic Center area. Metrobus and Metrorail peak time headways should be sensitive to these unique shift times. At locations where there is only bus stop, signs, bus shelters and benches should be added. All transit stops must be well lit and portray a sense of security to the users. All transit stops must be routinely maintained for cleanliness. The Metrorail stations must always have security personnel present visible to the public.

The bus stop on N.W. 12th Ave. at the N.W. 15th Street intersection needs immediate improvement. The field reconnaissance and the capacity analysis revealed that the lack of space for pedestrians and transit passengers who compete to utilize this busy corner of the intersection.

6.5 Bicycle Facilities

The Civic Center Area has little or no bicycle facilities. In addition to providing bike ways and paths, secure bicycle lockers, stands and showering facilities should be provided to encourage bicycle usage. The N.W. 12th Avenue/N.W. 16th Street intersection as well as the three educational establishments in the Civic Center areas are ideal locations for providing bicycle facilities. Further studies are needed to identify a network of bikeways and paths within the Civic Center Area.

6.6 ADA Compliance

The ADA does not require existing facilities to meet the standards set forth to accommodate handicapped users. The number of institutions in the Civic Center area shows the need to improve the existing conditions to accommodate handicapped users. The CCTMO should set up a systematic and prioritized program to upgrade the existing conditions to meet such needs.

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8) "Developing Student Safe Walking Routes: A Procedures Guide."; Federic R. Harris for FDOT, District IV; August 1989.

APPENDIX A

SUMMARY OF PEDESTRIAN FACILITY PROBLEMS AND POSSIBLE SOLUTIONS

(Source: "Planning and Implementing Pedestrian Facilities in Suburban and Developing Rural Areas": Research Report, NCHRP Report #294A)

Summary of pedestrian facility problems and possible solutions.

Description of Problem	Magnitude of Problem	Possible Solutions	Current Level of Use or Acceptance	Limitations in Applicability	Potential Effectiveness	Barriers to Implementation	Cost	Impact on Other Groups	Comment
Cross-section Design									
Difficulty of crossing wide arterial streets, especially undivided arterials	Major	1. Install medians on all new suburban highways of 4 or more lanes.	Moderate	Virtually no limitations for new highways. However, some limitations are currently perceived.	High	Moderate	Moderate	Positive	Potentially the most effective solution to street crossing problems.
		2. Install European style refuge islands in strategic locations on existing undivided hwys.	Low	Must usually narrow lanes on existing hwys. to accommodate refuge islands. Must be well lighted.	High	Moderate	Low to moderate	Minimal impact	This solution is greatly under-utilized in U.S.
		3. Design for reduced street width between signalized intersections (since capacity constraints are at signals).	Low	Could only be done where spacing between intersections is high.	Moderate	High	Low	Negative	Probably not feasible as a general practice.
		4. Introduce additional traffic signals to facilitate ped crossings.	Low	Could only be done in a few selected locations	Moderate	High	Moderate	Highly negative	More feasible were ped crossings are concentrated at a point.
		5. Provide midblock actuated flashing ped signal.	Low	Should only be installed in key locations	Moderate	Moderate	Low	Slightly negative	Designed to inform driver of presence of ped. Does not necessarily make crossing easier.
		6. Provide ped overpass.	Low	Only effective where at-grade crossing is blocked or is inconvenient.	Moderate - depends on no. peds.	Moderate	High	Positive	Lack of use of facility continues to be a problem.
Difficulty of crossing highways with two-way left turn lanes	Moderate to Major	1. Reduce use of this technique and provide medians to control access.	Low	Would need to design in frequent U-turn capability	High	High	Moderate to high	Negative	Merchants and drivers will object heavily.
		2. Install refuge islands in spots where no turning is necessary.	Low	Must have at least some "dead spots" where turning would not generally occur.	High	Moderate	Low	Minimal impact	Islands must be well lighted and marked.
No facilities provided for ped to walk along side of road	Major	1. Require sidewalk/pathway with all new hwy. construction. Paved or stabilized shoulder adequate in outlying areas.	Moderate	Only allowed exclusion should be low volume residential streets.	High	Moderate	Moderate	Minimal impact	Could be required by FHWA for Federal projects.
		2. Provide easier methods for obtaining easements, to address existing highways constrained by right-of-way.	Low	Probably would be viewed as giving excess authority to public agencies.	High	High	Low	Negative	Would put property owners at a disadvantage.
Narrow bridges with no pedestrian accommodations	Moderate	1. Design all new bridges with shoulder or raised walkway.	Moderate	None	Moderate to high	Moderate	Moderate to high	Positive	
		2. Design low-cost walkway system for attaching to outside of bridge.	Low	Feasibility and design dependent on structural nature of existing bridge.	Moderate to high	Moderate	Moderate	Positive	

Continued.

Description of Problem	Magnitude of Problem	Possible Solutions	Current Level of Use or Acceptance	Limitations in Applicability	Potential Effectiveness	Barriers to Implementation	Cost	Impact on Other Groups	Comment
Excessive traffic speeds in residential or commercial areas	Moderate to major	1. Design curvature and circuity into road system. Keep streets narrow.	Moderate	Limited mostly to local and collector streets. Not appropriate on major highways.	High	Moderate	Moderate	Slightly negative	Can create some waste or inefficiency in lot layout.
		2. Increased enforcement	Moderate	Cost is primary limitation.	Moderate	Moderate to high	High	Negative	Better to control speed thru geometric design.
		3. Provide speed control devices (e.g., speed bumps, traffic circles, intersection flares, etc.)	Low	Primarily used in residential areas. Not appropriate for major highways.	High	High	Low to moderate	Negative	Devices have been controversial and not yet widely accepted.
Safety/convenience of walking in commercial area with many poorly channelized driveways	Moderate to major	1. Consolidate driveway entrances - requires local regulation.	Low	Feasible in some newly developing strips. Generally infeasible in existing strips.	High	High	Moderate in new strips	Both pos. and neg. impacts	
		2. Provide service road in newly developing areas.	Low	Must have ample right-of-way.	Low to moderate	High	High	Both pos. and neg. impacts	Greatly amplifies problems at intersections.
		3. Improve driveway channelization. Would require local mandate.	Moderate	Particularly needed where parking areas open directly to street.	Moderate to high	High	Moderate	Positive	Public participation in financing would usually be needed.
Difficult and hazardous pedestrian movement thru interchange area	Major	1. Provide sidewalk and markings on all new interchanges accessible to peds	Moderate	Applies only to facilities not excluding ped traffic.	High	Moderate	Moderate	Positive	Should become routine practice, required in state/local guidelines.
		2. Provide barrier between traffic lanes and ped walkway.	Low	Not necessary for low speed facilities.	Moderate	High	Moderate	Minimal impact	Provides additional measure of safety for pedestrians.
		3. For existing interchanges w/o sidewalk or shoulders, consider routing peds onto median	Low	Primarily applicable to full or partial cloverleaf interchanges.	Moderate	Moderate	Low	Low	Removes peds from hazardous ramp crossings.
Missing sidewalk links	Major	1. Perform sidewalk inventory, priority improvement program, and master plan of walkways.	Moderate	None	High	Low	Low	Minimal impact	Must be followed with funding and construction.
		2. Provide public funds for sidewalk construction with provision for recovering costs from landowner when development occurs.	Low	Legal mechanism must be provided to recover costs.	High	Moderate	Low	Minimal impact	Allows sidewalk to be completed even if area is only partially developed.
		3. Obtain easements or take part of roadway lane to fill in missing links where barriers exist (e.g., retaining walls).	Low	Will be unusual to be able to take part of roadway lane.	Moderate	High	Moderate	Slightly negative	Practical only for limited set of conditions.

Continued.

Description of Problem	Magnitude of Problem	Possible Solutions	Current Level of Use or Acceptance	Limitations in Applicability	Potential Effectiveness	Barriers to Implementation	Cost	Impact on Other Groups	Comment
Obstructions in sidewalk	Moderate	1. Provide local guidelines limiting location of obstacles.	Low	None	Moderate	Moderate	Low to moderate	Minimal impact	Can easily be provided in local ordinances. Alternate locations not always possible.
		2. Obtain easements, where necessary, to locate objects out of ped path.	Low	Most common objects are controller cabinets, mail boxes and trash containers.	High	High	Moderate to high	Minimal impact	Easement process time consuming and sometimes costly.
Security problem on certain isolated pedestrian pathways	Major	1. Refrain from constructing pathways in secluded areas. Provide paths primarily along street frontages.	Moderate	Residents must be willing to accept pathways in front of homes.	High	Moderate	Low	Minimal impact	Rear yard walkways known to have security problems in some areas
		2. Provide clearview of pathways from residences and/or street.	Moderate	Difficult to maintain visibility on many recreational pathways.	High	Moderate	Low to moderate	Slightly negative	Residents can perceive visibility as invasion of privacy
		3. Provide more lighting, telephones, patrols or alarm systems.	Low	Primarily needed where visibility is a problem.	Moderate	Moderate	Moderate to high	Minimal impact	Security problem will still be perceived.
Signalization									
No accommodation for peds at some suburban signals, but ped volumes are low	Moderate to major	1. Provide ped actuated signal regardless of ped volume.	Moderate	Only needed where min. crossing time not provided each cycle.	High	Moderate	Moderate to high	Slightly to very negative	Represents the classic dilemma in facilitating ped. vs. vehicular flow.
		2. Inform ped that full crossing time may not be available in one phase.	Low	None	Moderate to high	Low	Low	Minimal impact	If adequate full crossing time not provided, ped should be informed of this.
Minimum ped clearance time inadequate to accommodate slow walking peds	Moderate to major	1. Lengthen ped clearance times where proportion of slower peds is higher than normal. Take time from WALK phase if WALK longer than minimum.	Low	Needed primarily near elderly housing, schools, etc.	High	Moderate	Low	Varies by circumstance	Impact depends on nature of traffic congestion.
Peds frequently do not obey signal indications	Moderate (see comment)	1. Upgrade ped enforcement efforts.	Low	If done, should be selective enforcement.	Low	High	High	Slightly positive	Although lack of compliance is rampant, impacts are not necessarily negative.

Continued.

Description of Problem	Magnitude of Problem	Possible Solutions	Current Level of Use or Acceptance	Limitations in Applicability	Potential Effectiveness	Barriers to Implementation	Cost	Impact on Other Groups	Comment
Lack of, improper application of of crosswalk markings	Moderate	1. Develop and implement reasonable crosswalk application guidelines.	Moderate	None, but acceptable guidelines need to be developed.	High	Moderate	Low	Positive	
		2. Develop symbol to identify preferred crossing location without marking crosswalk.	Low (some in Europe)	Needs to be more fully tested before widespread application.	Moderate	Moderate to high	Low	Uncertain	Primary purpose is to reduce false sense of security.
Open parking areas, not enforcing disciplined traffic flow and making pedestrian crossings hazardous	Moderate to high	1. For new parking lots, enact local parking lot landscaping standards, emphasizing landscaped islands.	Moderate	None	High	Moderate	Moderate	Positive	
		2. For existing parking lots, islands sufficient to discipline traffic flow.	Low	Parking lot must have ample spaces to accommodate users.	High	Moderate	Moderate	Positive	Owners often more concerned about having adequate space than having landscaping.
Overpass or underpass underutilized because at-grade route more convenient	High	1. Install barrier in median.	Low	Must have median available and no nearby intersections	High	Moderate	Moderate	Minimal impact	Limits accessibility but increases safety.
		2. Design over/underpass to minimize travel path (e.g., provide stairs in addition to ramps and grade approaches).	Low	Topography must be conducive.	High	Low	Moderate to high	Minimal impact	Handicapped requirements sometimes counterproductive in accessibility for others.
Inadequate street lighting at pedestrian crossing points	Moderate to major	1. Provide traditional street lighting.	Moderate	None	Moderate	Moderate	High	Positive	Should be more intense at intersections and key crossing points.
		2. Provide special pedestrian-oriented lighting.	Low	Provide only at primary crossing points with heavier ped volumes.	High	Moderate	Moderate		Contrast to normal lighting provides greater conspicuity at key points.
Institutional and Legal Problems									
General lack of respect of pedestrians by drivers	Major	1. Selective enforcement (preceded by publicity) of ped right-of-way.	Low	Should focus on situations where driver yielding is a problem.	High	High	High	Perceived negative	Affect on accident rates is uncertain.
		2. Increase fines for violations of ped right-of-way.	Low	None	Moderate	Moderate	Low	Perceived negative	Needs to be backed by increased enforcement.

Continued.

Description of Problem	Magnitude of Problem	Possible Solutions	Current Level of Use or Acceptance	Limitations in Applicability	Potential Effectiveness	Barriers to Implementation	Cost	Impact on Other Groups	Comment
Lack of coordination and continuity in pedestrian facilities	Major	1. Make master planning for pedestrian facilities mandatory in state law.	Moderate	None	High	Moderate	Low	Positive	Only way to ensure ped planning takes place is to require it by law.
		2. Increase public investment in completing sidewalks and pathways.	Moderate	None	High	Moderate to high	High	Positive	Consider specifying minimum funding levels by law.
Lack of communication in development process	Major	1. Develop more rigorous administrative procedures to force communication.	Moderate	None	Moderate	High	Low	Positive	Cannot make administration so elaborate that it slows down the development process.
		2. Designate person in public agency as the pedestrian advocate.	Low to moderate	None	High	Moderate	Low	Positive	One of the most effective low-cost actions.
Lack of vocal, organized advocacy group addressing ped needs	Major	1. Establish citizen task force on pedestrian needs.	Low	None	High	Moderate	Low	Positive	Relies on citizens taking an interest.
		2. Establish pedestrian facility "hot line".	Low	None	Moderate	Moderate	Low	Positive	Provides recognized avenue for input.
Inflexibility in zoning and subdivision regulations	Major	1. Build in flexibility to regulations (e.g., performance zoning).	Moderate	Usually depends on local perspective on development	High	High	Low	Depends on situation	Offers greater potential benefit but also greater risk.
		2. Provide special zones of development for pedestrian orientation.	Low to moderate	Subject to local and state law	High	Moderate	Low	Positive	Special ped-oriented design guidelines would be provided.
Suburban land use patterns discourage pedestrian travel	Major	1. Provide incentives for mixed-use and development clustering.	Low to moderate	Some areas not physically or politically suited to ped-oriented development.	Moderate	Low	Low	Possibly negative	Higher density development needed for ped-orientation sometimes opposed by community
		2. Employ "urban village" concept.	Moderate	Must be planned under right physical conditions	High	Moderate	Low	Positive	Applicable to original development or redevelopment.
		3. Provide for minimum F.A.R.'s as well as maximum.	Low	Only in areas planned for higher density development	Low	High	Low	Possibly negative	Developers usually incentive toward higher F.A.R.'s anyway.

APPENDIX B

ADA HANDBOOK (SELECTED COPIES)

(Source: ADA HANDBOOK)

1. PURPOSE.

This document sets guidelines for accessibility to places of public accommodation and commercial facilities by individuals with disabilities. These guidelines are to be applied during the design, construction, and alteration of such buildings and facilities to the extent required by regulations issued by Federal agencies, including the Department of Justice, under the Americans with Disabilities Act of 1990.

The technical specifications 4.2 through 4.35, of these guidelines are the same as those of the American National Standard Institute's document A117.1-1980, except as noted in this text by italics. However, sections 4.1.1 through 4.1.7 and sections 5 through 10 are different from ANSI A117.1 in their entirety and are printed in standard type.

The illustrations and text of ANSI A117.1 are reproduced with permission from the American National Standards Institute. Copies of the standard may be purchased from the American National Standards Institute at 1430 Broadway, New York, New York 10018.

2. GENERAL.

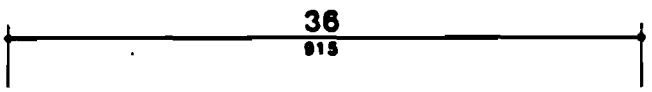
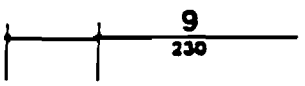
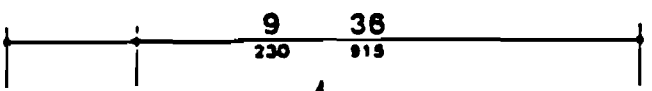
2.1 Provisions for Adults. *The specifications in these guidelines are based upon adult dimensions and anthropometrics.*

2.2* Equivalent Facilitation. *Departures from particular technical and scoping requirements of this guideline by the use of other designs and technologies are permitted where the alternative designs and technologies used will provide substantially equivalent or greater access to and usability of the facility.*

3. MISCELLANEOUS INSTRUCTIONS AND DEFINITIONS.

3.1 Graphic Conventions. Graphic conventions are shown in Table 1. Dimensions that are not marked minimum or maximum are absolute, unless otherwise indicated in the text or captions.

Table 1
Graphic Conventions

Convention	Description
	Typical dimension line showing U.S. customary units (in inches) above the line and SI units (in millimeters) below
	Dimensions for short distances indicated on extended line
	Dimension line showing alternate dimensions required
	Direction of approach
max	Maximum
min	Minimum
.....	Boundary of clear floor area
——— – ——— – ——— – ℄	Centerline

4. ACCESSIBLE ELEMENTS AND SPACES: SCOPE AND TECHNICAL REQUIREMENTS.

4.1 Minimum Requirements

4.1.1* Application.

(1) General. All areas of newly designed or newly constructed buildings and facilities required to be accessible by 4.1.2 and 4.1.3 and altered portions of existing buildings and facilities required to be accessible by 4.1.6 shall comply with these guidelines, 4.1 through 4.35, unless otherwise provided in this section or as modified in a special application section.

(2) Application Based on Building Use. Special application sections 5 through 10 provide additional requirements for restaurants and cafeterias, medical care facilities, business and mercantile, libraries, accessible transient lodging, and transportation facilities. When a building or facility contains more than one use covered by a special application section, each portion shall comply with the requirements for that use.

(3)* Areas Used Only by Employees as Work Areas. Areas that are used only as work areas shall be designed and constructed so that individuals with disabilities can approach, enter, and exit the areas. These guidelines do not require that any areas used only as work areas be constructed to permit maneuvering within the work area or be constructed or equipped (i.e., with racks or shelves) to be accessible.

(4) Temporary Structures. These guidelines cover temporary buildings or facilities as well as permanent facilities. Temporary buildings and facilities are not of permanent construction but are extensively used or are essential for public use for a period of time. Examples of temporary buildings or facilities covered by these guidelines include, but are not limited to: reviewing stands, temporary classrooms, bleacher areas, exhibit areas, temporary banking facilities, temporary health screening services, or temporary safe pedestrian passageways around a construction site. Structures, sites and equipment directly associated with the actual processes of construction, such as scaffolding, bridging, materials hoists, or construction trailers are not included.

(5) General Exceptions.

(a) In new construction, a person or entity is not required to meet fully the requirements of these guidelines where that person or entity can demonstrate that it is structurally impracticable to do so. Full compliance will be considered structurally impracticable only in those rare circumstances when the unique characteristics of terrain prevent the incorporation of accessibility features. If full compliance with the requirements of these guidelines is structurally impracticable, a person or entity shall comply with the requirements to the extent it is not structurally impracticable. Any portion of the building or facility which can be made accessible shall comply to the extent that it is not structurally impracticable.

(b) Accessibility is not required to (i) observation galleries used primarily for security purposes; or (ii) in non-occupiable spaces accessed only by ladders, catwalks, crawl spaces, very narrow passageways, or freight (non-passenger) elevators, and frequented only by service personnel for repair purposes; such spaces include, but are not limited to, elevator pits, elevator penthouses, piping or equipment catwalks.

4.1.2 Accessible Sites and Exterior Facilities: New Construction.

An accessible site shall meet the following minimum requirements:

(1) At least one accessible route complying with 4.3 shall be provided within the boundary of the site from public transportation stops, accessible parking spaces, passenger loading zones if provided, and public streets or sidewalks, to an accessible building entrance.

(2) At least one accessible route complying with 4.3 shall connect accessible buildings, accessible facilities, accessible elements, and accessible spaces that are on the same site.

(3) All objects that protrude from surfaces or posts into circulation paths shall comply with 4.4.

diameter (see Fig. 3(a)) or a T-shaped space (see Fig. 3(b)).

4.2.4* Clear Floor or Ground Space for Wheelchairs.

4.2.4.1 Size and Approach. The minimum clear floor or ground space required to accommodate a single, stationary wheelchair and occupant is 30 in by 48 in (760 mm by 1220 mm) (see Fig. 4(a)). The minimum clear floor or ground space for wheelchairs may be positioned for forward or parallel approach to an object (see Fig. 4(b) and (c)). Clear floor or ground space for wheelchairs may be part of the knee space required under some objects.

4.2.4.2 Relationship of Maneuvering Clearance to Wheelchair Spaces. One full unobstructed side of the clear floor or ground space for a wheelchair shall adjoin or overlap an accessible route or adjoin another wheelchair clear floor space. If a clear floor space is located in an alcove or otherwise confined on all or part of three sides, additional maneuvering clearances shall be provided as shown in Fig. 4(d) and (e).

4.2.4.3 Surfaces for Wheelchair Spaces. Clear floor or ground spaces for wheelchairs shall comply with 4.5.

4.2.5* Forward Reach. If the clear floor space only allows forward approach to an object, the maximum high forward reach allowed shall be 48 in (1220 mm) (see Fig. 5(a)). *The minimum low forward reach is 15 in (380 mm).* If the high forward reach is over an obstruction, reach and clearances shall be as shown in Fig. 5(b).

4.2.6* Side Reach. If the clear floor space allows parallel approach by a person in a wheelchair, the maximum high side reach allowed shall be 54 in (1370 mm) and the low side reach shall be no less than 9 in (230 mm) above the floor (Fig. 6(a) and (b)). If the side reach is over an obstruction, the reach and clearances shall be as shown in Fig 6(c).

4.3 Accessible Route.

4.3.1* General. All walks, halls, corridors, aisles, *skywalks, tunnels,* and other spaces

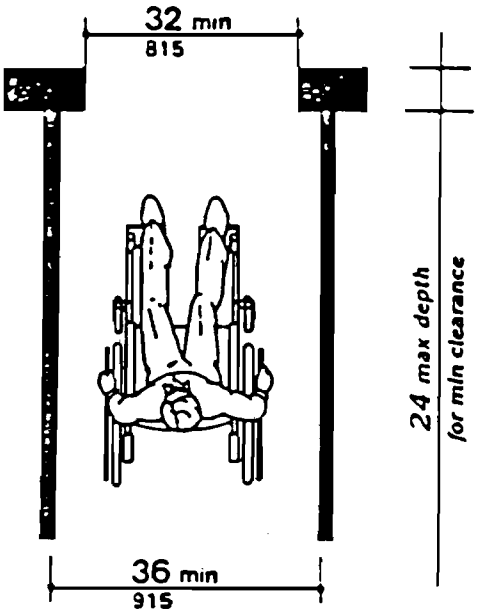


Fig. 1
Minimum Clear Width
for Single Wheelchair

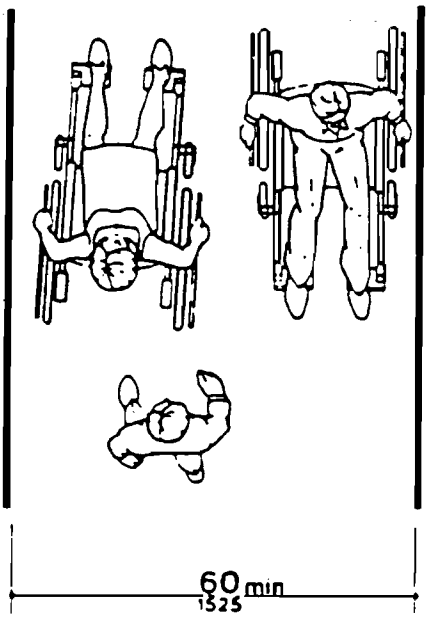


Fig. 2
Minimum Clear Width
for Two Wheelchairs

that are part of an accessible route shall comply with 4.3.

4.3.2 Location.

(1) At least one accessible route *within the boundary of the site* shall be provided from public transportation stops, accessible parking, and accessible passenger loading zones, and public streets or sidewalks to the accessible building entrance they serve. *The accessible route shall, to the maximum extent feasible, coincide with the route for the general public.*

(2) At least one accessible route shall connect accessible buildings, facilities, elements, and spaces that are on the same site.

(3) At least one accessible route shall connect accessible building or facility entrances with all accessible spaces and elements and with all accessible dwelling units within the building or facility.

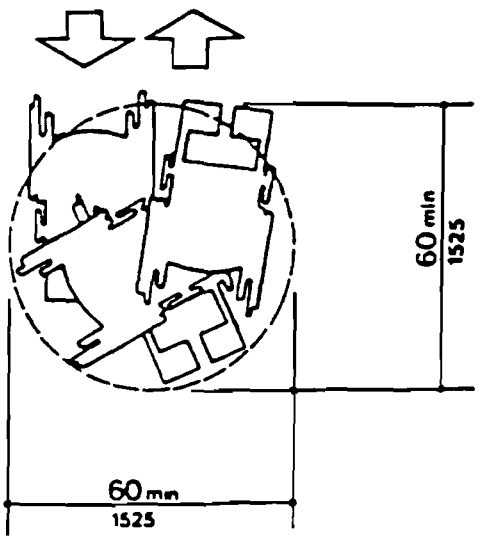
(4) An accessible route shall connect at least one accessible entrance of each accessible dwelling unit with those exterior and interior spaces and facilities that serve the accessible dwelling unit.

4.3.3 Width. The minimum clear width of an accessible route shall be 36 in (915 mm) except at doors (see 4.13.5 and 4.13.6). If a person in a wheelchair must make a turn around an obstruction, the minimum clear width of the accessible route shall be as shown in Fig. 7(a) and (b).

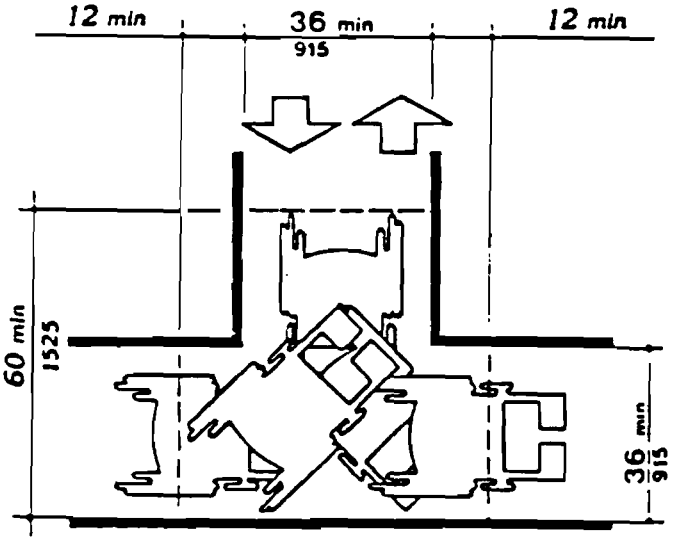
4.3.4 Passing Space. If an accessible route has less than 60 in (1525 mm) clear width, then passing spaces at least 60 in by 60 in (1525 mm by 1525 mm) shall be located at reasonable intervals not to exceed 200 ft (61 m). A T-intersection of two corridors or walks is an acceptable passing place.

4.3.5 Head Room. Accessible routes shall comply with 4.4.2.

4.3.6 Surface Textures. The surface of an accessible route shall comply with 4.5.

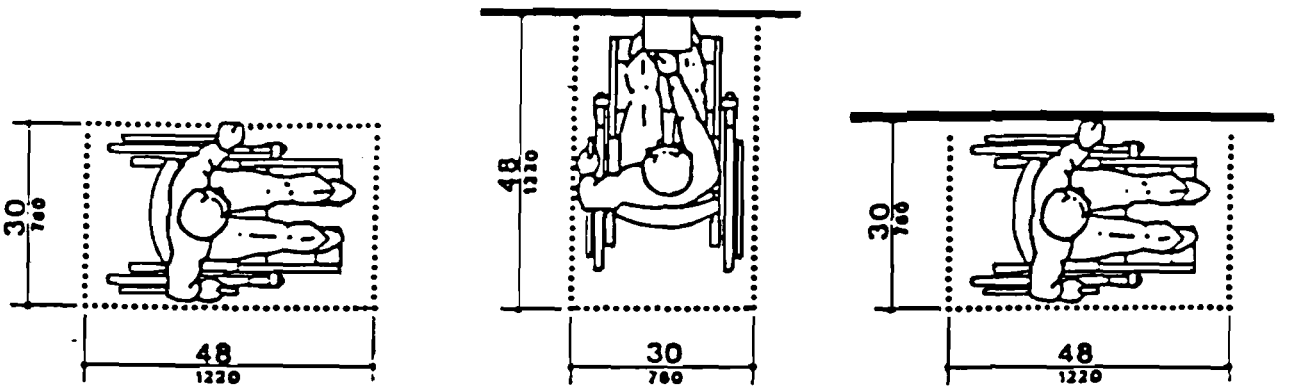


(a)
60-In (1525-mm)-Diameter Space



(b)
T-Shaped Space for 180° Turns

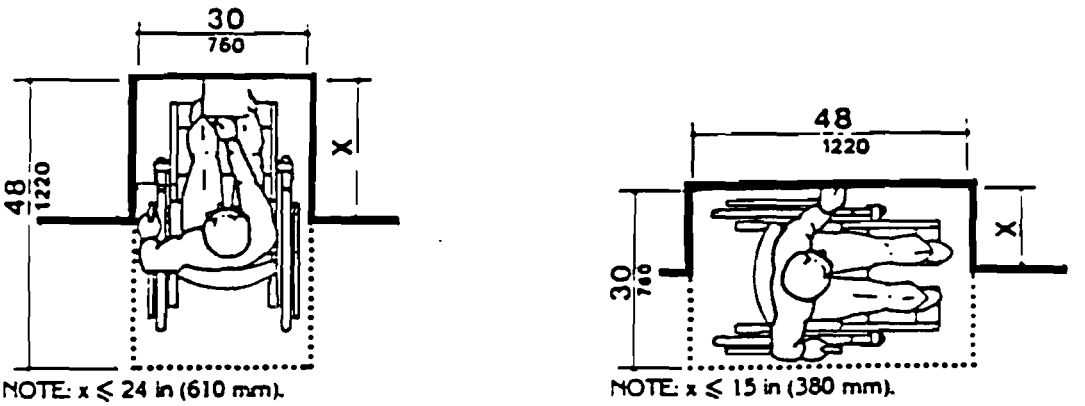
Fig. 3
Wheelchair Turning Space



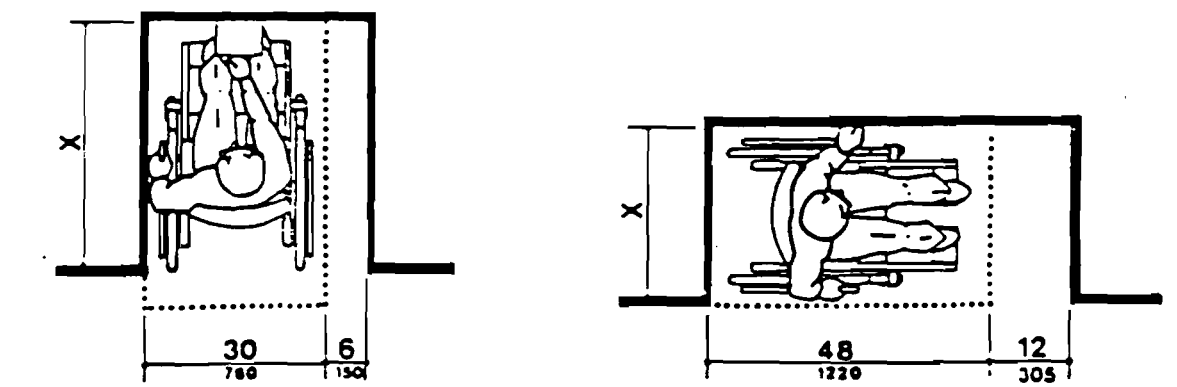
(a)
Clear Floor Space

(b)
Forward Approach

(c)
Parallel Approach

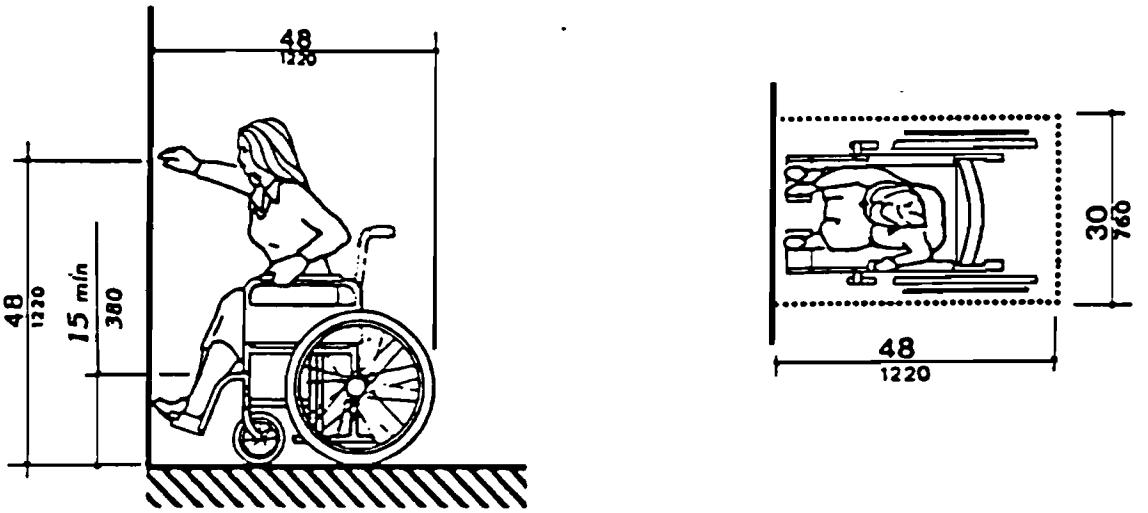


(d)
Clear Floor Space in Alcoves

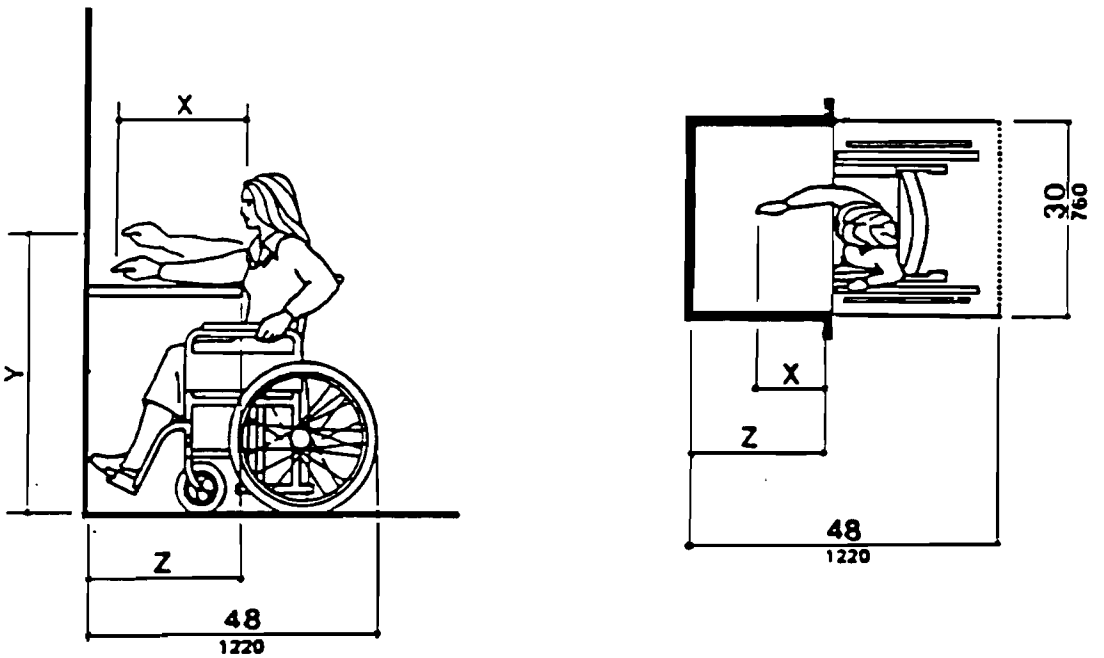


(e)
Additional Maneuvering Clearances for Alcoves

Fig. 4
Minimum Clear Floor Space for Wheelchairs



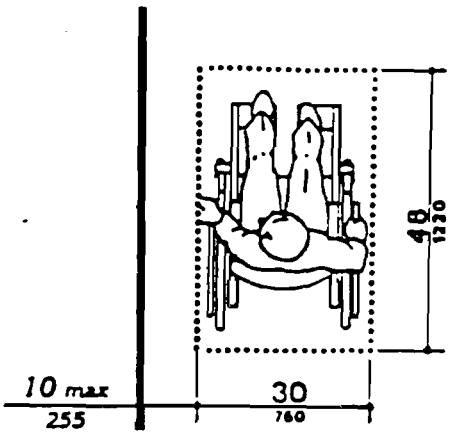
(a)
High Forward Reach Limit



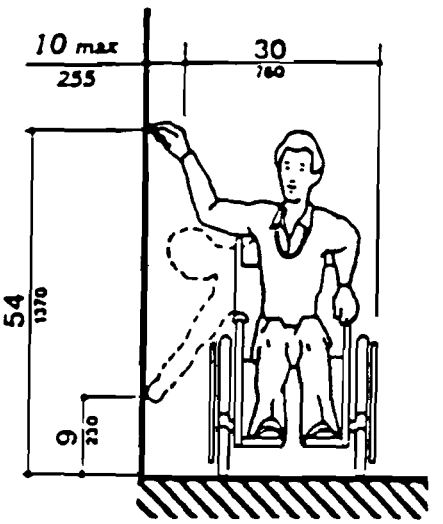
NOTE: x shall be ≤ 25 in (635 mm); z shall be ≥ x. When x < 20 in (510 mm), then y shall be 48 in (1220 mm) maximum. When x is 20 to 25 in (510 to 635 mm), then y shall be 44 in (1120 mm) maximum.

(b)
Maximum Forward Reach over an Obstruction

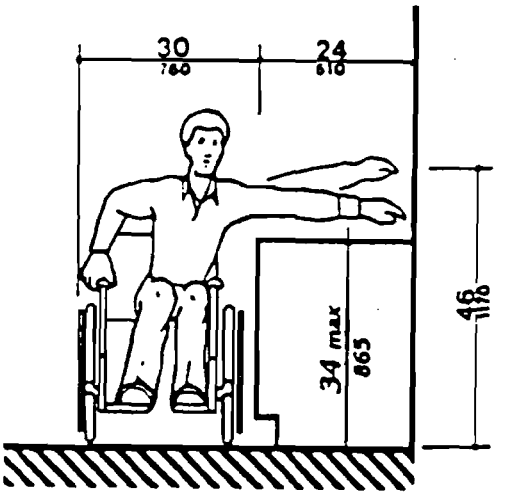
Fig. 5
Forward Reach



(a)
Clear Floor Space Parallel Approach



(b)
High and Low Side Reach Limits



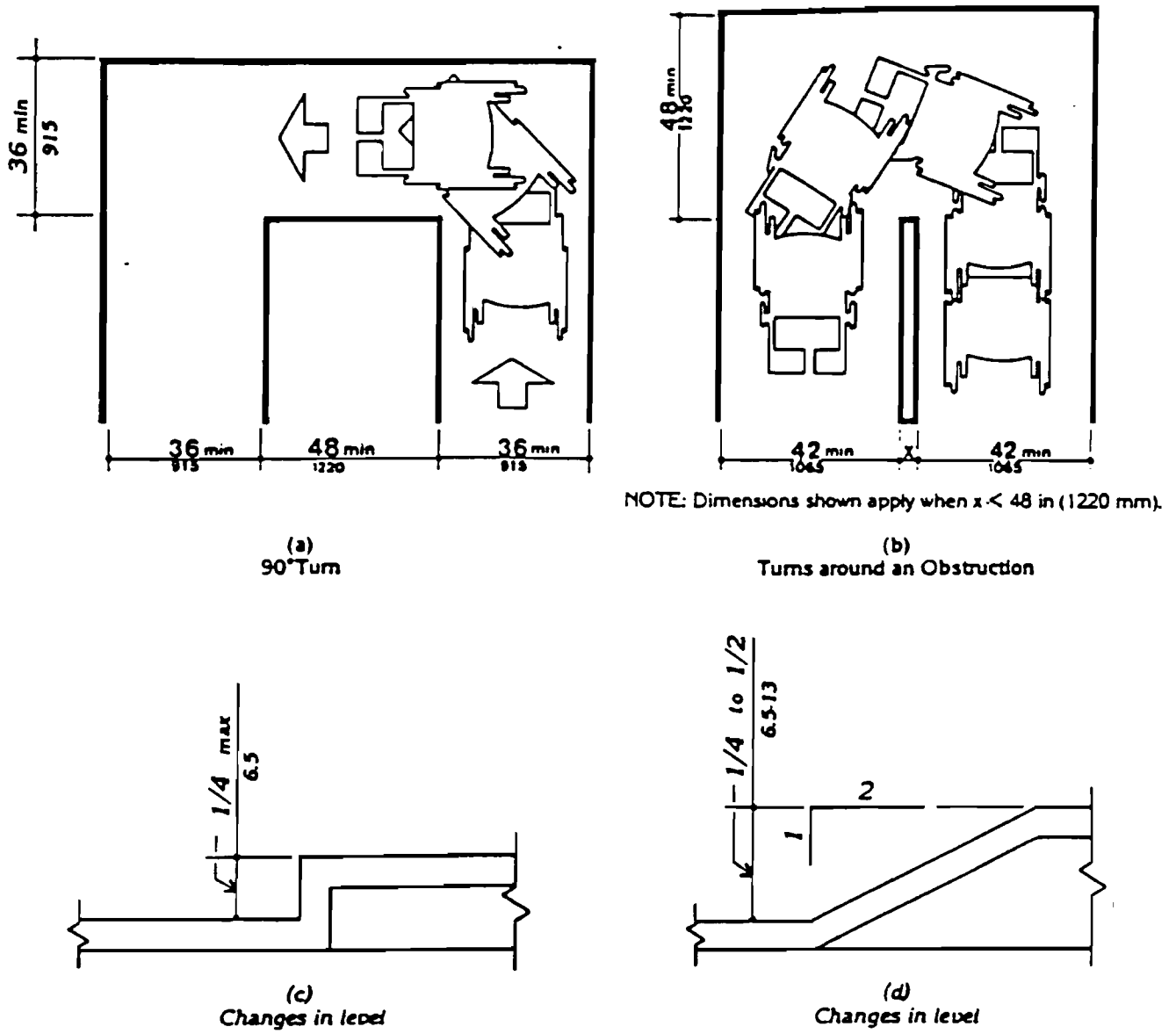
(c)
Maximum Side Reach over Obstruction

Fig. 6
Side Reach

4.3.7 Slope. An accessible route with a running slope greater than 1:20 is a ramp and shall comply with 4.8. Nowhere shall the cross slope of an accessible route exceed 1:50.

4.3.8 Changes in Levels. Changes in levels along an accessible route shall comply with 4.5.2. If an accessible route has changes in level greater than 1/2 in (13 mm), then a curb ramp, ramp, elevator, or platform lift *(as permitted in 4.1.3 and 4.1.6)* shall be provided that complies with 4.7, 4.8, 4.10, or 4.11, respectively. An accessible route does not include stairs, steps, or escalators. See definition of "egress, means of" in 3.5.

4.3.9 Doors. Doors along an accessible route shall comply with 4.13.



NOTE: Dimensions shown apply when x < 48 in (1220 mm).

(a)
90°Turn

(b)
Turns around an Obstruction

(c)
Changes in level

(d)
Changes in level

Fig. 7
Accessible Route

4.3.10* Egress. Accessible routes serving any accessible space or element shall also serve as a means of egress for emergencies or connect to an accessible area of *rescue assistance.*

4.3.11 Areas of Rescue Assistance.

4.3.11.1 Location and Construction. *An area of rescue assistance shall be one of the following:*

(1) A portion of a stairway landing within a smokeproof enclosure (complying with local requirements).

(2) A portion of an exterior exit balcony located immediately adjacent to an exit stairway when the balcony complies with local requirements for exterior exit balconies. Openings to the interior of the building located within 20 feet (6 m) of the

area of rescue assistance shall be protected with fire assemblies having a three-fourths hour fire protection rating.

(3) A portion of a one-hour fire-resistive corridor (complying with local requirements for fire-resistive construction and for openings) located immediately adjacent to an exit enclosure.

(4) A vestibule located immediately adjacent to an exit enclosure and constructed to the same fire-resistive standards as required for corridors and openings.

(5) A portion of a stairway landing within an exit enclosure which is vented to the exterior and is separated from the interior of the building with not less than one-hour fire-resistive doors.

(6) When approved by the appropriate local authority, an area or a room which is separated from other portions of the building by a smoke barrier. Smoke barriers shall have a fire-resistive rating of not less than one hour and shall completely enclose the area or room. Doors in the smoke barrier shall be tight-fitting smoke- and draft-control assemblies having a fire-protection rating of not less than 20 minutes and shall be self-closing or automatic closing. The area or room shall be provided with an exit directly to an exit enclosure. Where the room or area exits into an exit enclosure which is required to be of more than one-hour fire-resistive construction, the room or area shall have the same fire-resistive construction, including the same opening protection, as required for the adjacent exit enclosure.

(7) An elevator lobby when elevator shafts and adjacent lobbies are pressurized as required for smokeproof enclosures by local regulations and when complying with requirements herein for size, communication, and signage. Such pressurization system shall be activated by smoke detectors on each floor located in a manner approved by the appropriate local authority. Pressurization equipment and its duct work within the building shall be separated from other portions of the building by a minimum two-hour fire-resistive construction.

4.3.11.2 Size. *Each area of rescue assistance shall provide at least two accessible areas each being not less than 30 inches by 48 inches (760 mm by 1220 mm). The area of rescue assistance shall not encroach on any required exit width. The total number of such 30-inch by 48-inch (760 mm by 1220 mm) areas per story shall be not less than one for every 200 persons of calculated occupant load served by the area of rescue assistance.*

EXCEPTION: The appropriate local authority may reduce the minimum number of 30-inch by 48-inch (760 mm by 1220 mm) areas to one for each area of rescue assistance on floors where the occupant load is less than 200.

4.3.11.3* Stairway Width. *Each stairway adjacent to an area of rescue assistance shall have a minimum clear width of 48 inches between handrails.*

4.3.11.4* Two-way Communication. *A method of two-way communication, with both visible and audible signals, shall be provided between each area of rescue assistance and the primary entry. The fire department or appropriate local authority may approve a location other than the primary entry.*

4.3.11.5 Identification. *Each area of rescue assistance shall be identified by a sign which states "AREA OF RESCUE ASSISTANCE" and displays the international symbol of accessibility. The sign shall be illuminated when exit sign illumination is required. Signage shall also be installed at all inaccessible exits and where otherwise necessary to clearly indicate the direction to areas of rescue assistance. In each area of rescue assistance, instructions on the use of the area under emergency conditions shall be posted adjoining the two-way communication system.*

4.4 Protruding Objects.

4.4.1* General. Objects projecting from walls (for example, telephones) with their leading edges between 27 in and 80 in (685 mm and 2030 mm) above the finished floor shall protrude no more than 4 in (100 mm) into walks, halls, corridors, passageways, or aisles (see Fig. 8(a)). Objects mounted with their leading edges at or below 27 in (685 mm) above the finished floor may protrude any amount (see Fig. 8(a) and (b)). Free-standing objects mounted on posts or pylons may overhang 12 in (305 mm) maximum from 27 in to 80 in (685 mm to 2030 mm) above the ground or

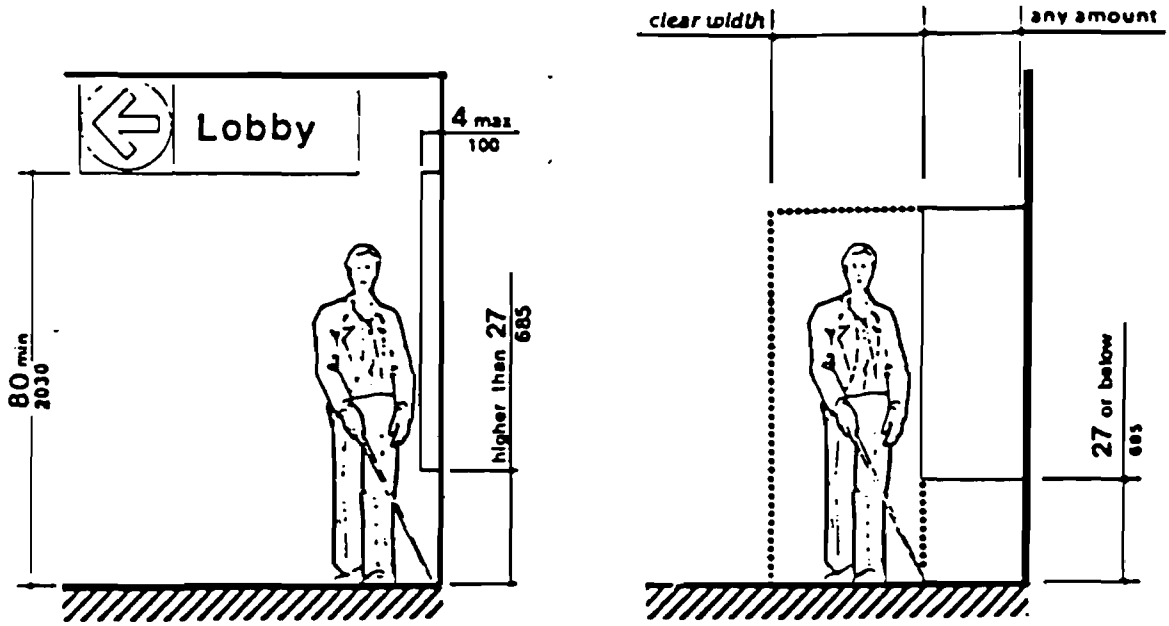


Fig. 8 (a)
Walking Parallel to a Wall

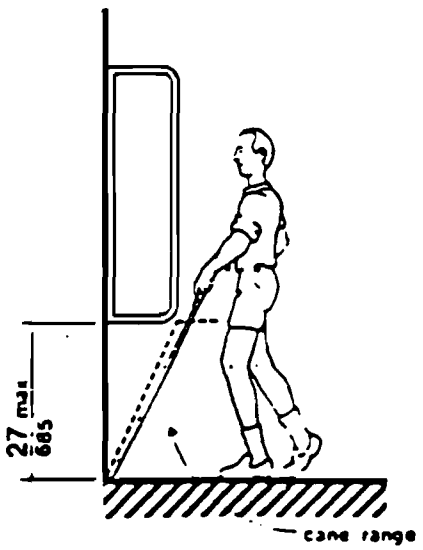


Fig. 8 (b)
Walking Perpendicular to a Wall

Fig. 8
Protruding Objects

finished floor (see Fig. 8(c) and (d)). Protruding objects shall not reduce the clear width of an accessible route or maneuvering space (see Fig. 8(e)).

4.4.2 Head Room. Walks, halls, corridors, passageways, aisles, or other circulation spaces shall have 80 in (2030 mm) minimum clear head room (see Fig. 8(a)). *If vertical clearance of an area adjoining an accessible route is reduced to less than 80 in (nominal dimension), a barrier to warn blind or visually-impaired persons shall be provided (see Fig. 8(c-1)).*

4.5 Ground and Floor Surfaces.

4.5.1* General. Ground and floor surfaces along accessible routes and in accessible rooms and spaces including floors, walks, ramps, stairs, and curb ramps, shall be stable, firm, slip-resistant, and shall comply with 4.5.

4.5.2 Changes in Level. Changes in level up to 1/4 in (6 mm) may be vertical and without edge treatment *(see Fig. 7(c))*. Changes in level between 1/4 in and 1/2 in (6 mm and 13 mm)

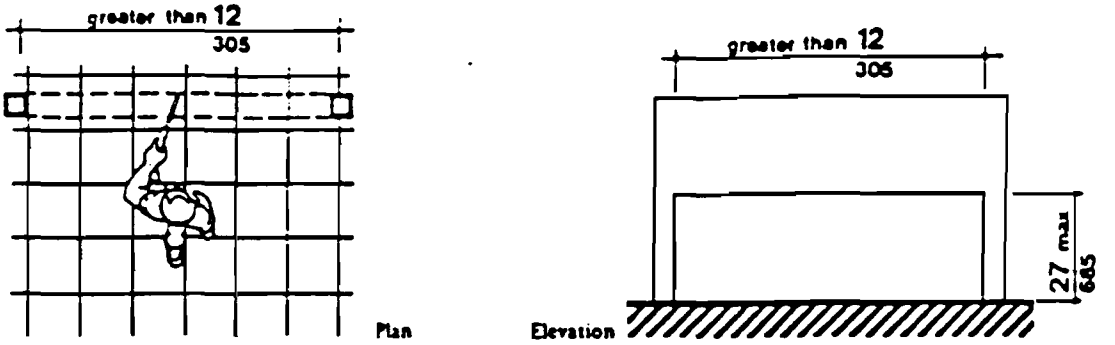


Fig. 8 (c) Free-Standing Overhanging Objects

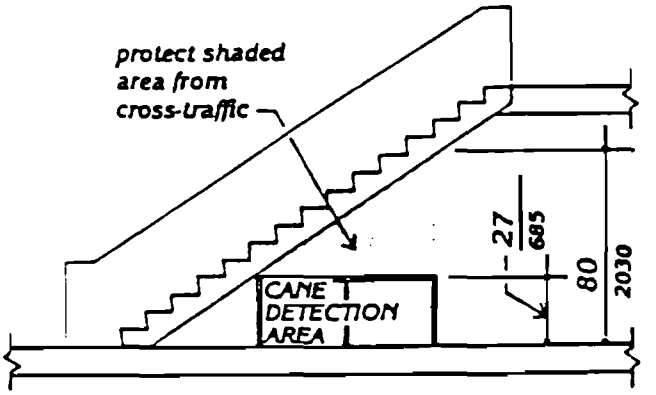


Fig. 8 (c-1) Overhead Hazards

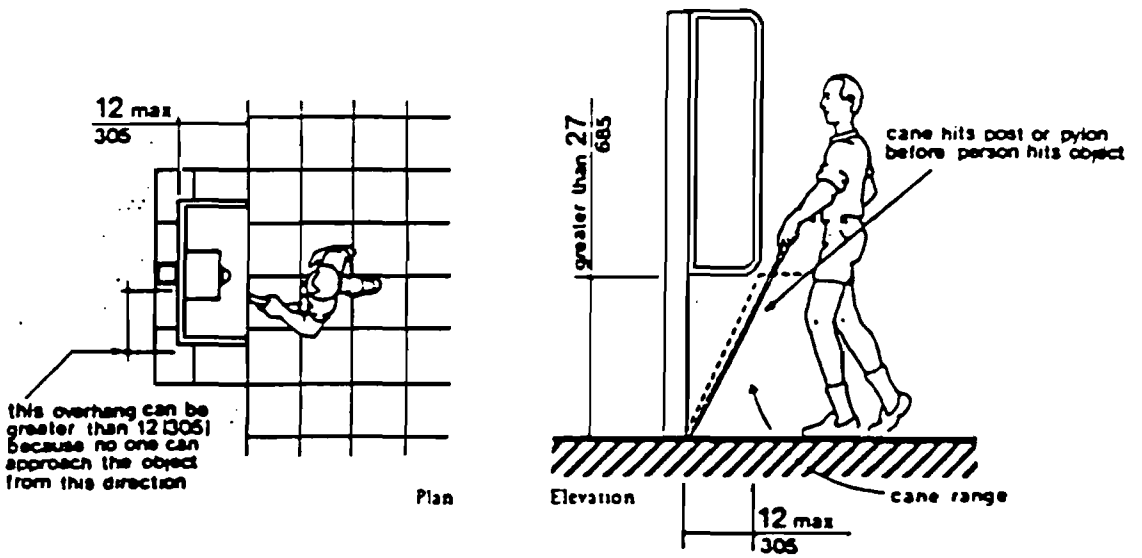


Fig. 8 (d)
Objects Mounted on Posts or Pylons

Fig. 8
Protruding Objects *(Continued)*

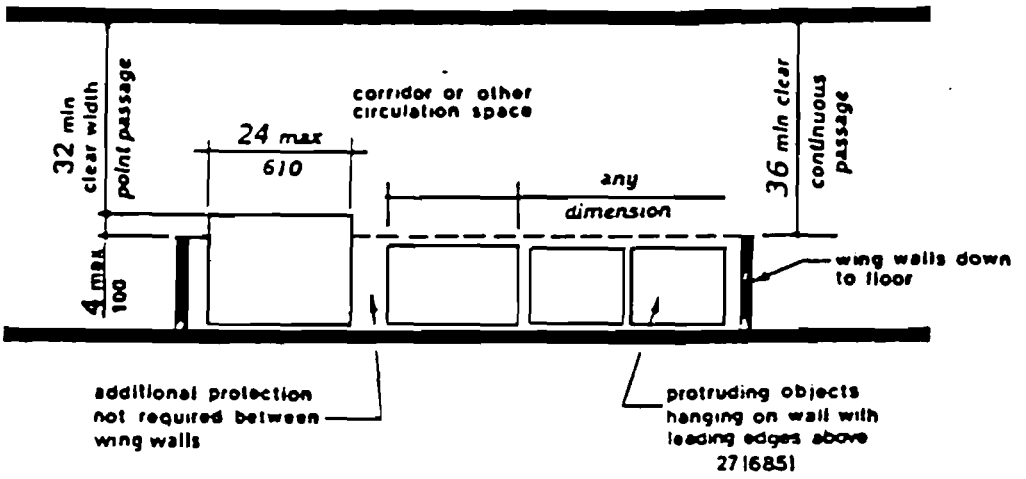


Fig. 8 (e)
Example of Protection around Wall-Mounted Objects and Measurements of Clear Widths

Fig. 8
Protruding Objects *(Continued)*

shall be beveled with a slope no greater than 1:2 *(see Fig. 7(d))*. Changes in level greater than 1/2 in (13 mm) shall be accomplished by means of a ramp that complies with 4.7 or 4.8.

4.5.3* Carpet. If carpet or carpet tile is used on a ground or floor surface, then it shall be securely attached; have a firm cushion, pad, or backing, or no cushion or pad; and have a level loop, textured loop, level cut pile, or level cut/uncut pile texture. The maximum pile *thickness* shall be 1/2 in (13 mm) (see Fig. 8(f)). Exposed edges of carpet shall be fastened to floor surfaces and have trim along the entire length of the exposed edge. Carpet edge trim shall comply with 4.5.2.

4.5.4 Gratings. If gratings are located in walking surfaces, then they shall have spaces no greater than 1/2 in (13 mm) wide in one direction *(see Fig. 8(g))*. If gratings have elongated openings, then they shall be placed so that the long dimension is perpendicular to the dominant direction of travel *(see Fig. 8(h))*.

4.6 Parking and Passenger Loading Zones.

4.6.1 Minimum Number. *Parking spaces required to be accessible by 4.1 shall comply with 4.6.2 through 4.6.5. Passenger loading zones required to be accessible by 4.1 shall comply with 4.6.5 and 4.6.6.*

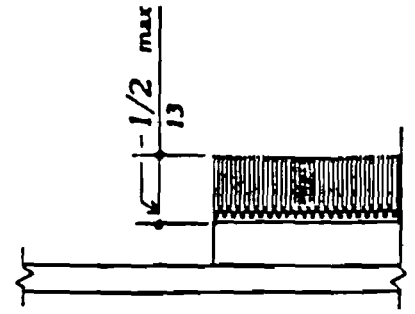


Fig. 8 (f)
Carpet Pile Thickness

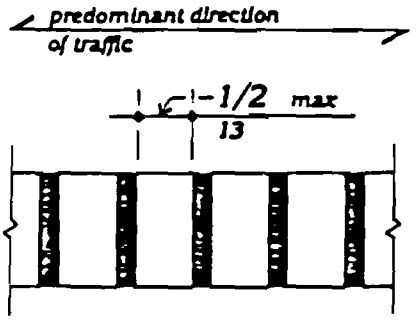


Fig. 8 (g)
Gratings

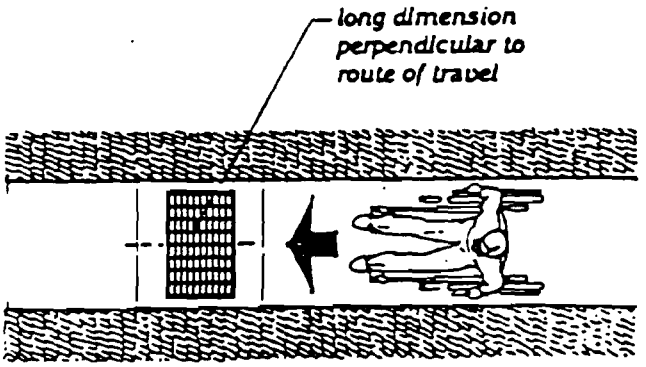


Fig. 8 (h)
Grating Orientation

4.6.2 Location. *Accessible parking spaces serving* a particular building shall be located on the shortest accessible route of travel *from adjacent parking* to an accessible entrance. *In parking facilities* that do not serve a particular building, *accessible parking* shall be located on the shortest accessible route *of travel* to an accessible pedestrian entrance of the parking facility. *In buildings with multiple accessible entrances with adjacent parking, accessible parking spaces shall be dispersed and located closest to the accessible entrances.*

4.6.3* Parking Spaces. *Accessible* parking spaces shall be at least 96 in (2440 mm) wide. Parking access aisles shall be part of an accessible route to the building or facility entrance and shall comply with 4.3. Two accessible parking spaces may share a common access aisle (see Fig. 9). Parked vehicle overhangs shall not reduce the clear width of an accessible route. *Parking spaces and access aisles shall be level with surface slopes not exceeding 1:50 (2%) in all directions.*

4.6.4* Signage. Accessible parking spaces shall be designated as reserved by a sign showing the symbol of accessibility (see 4.30.7). *Spaces complying with 4.1.2(5)(b) shall have an additional sign "Van-Accessible" mounted below the symbol of accessibility.* Such signs shall *be located so they cannot* be obscured by a vehicle parked in the space.

4.6.5* *Vertical Clearance.* *Provide minimum vertical clearance of 114 in (2895 mm) at accessible passenger loading zones and along at least one vehicle access route to such areas from site entrance(s) and exit(s). At parking spaces complying with 4.1.2(5)(b), provide minimum vertical clearance of 98 in (2490 mm) at the parking space and along at least one vehicle access route to such spaces from site entrance(s) and exit(s).*

4.6.6 Passenger Loading Zones. Passenger loading zones shall provide an access aisle at least 60 in *(1525 mm)* wide and 20 ft *(240 in) (6100 mm)* long adjacent and parallel to the vehicle pull-up space (see Fig. 10). If there are curbs between the access aisle and the vehicle pull-up space, then a curb ramp complying with 4.7 shall be provided. *Vehicle standing spaces and access aisles shall be level with*

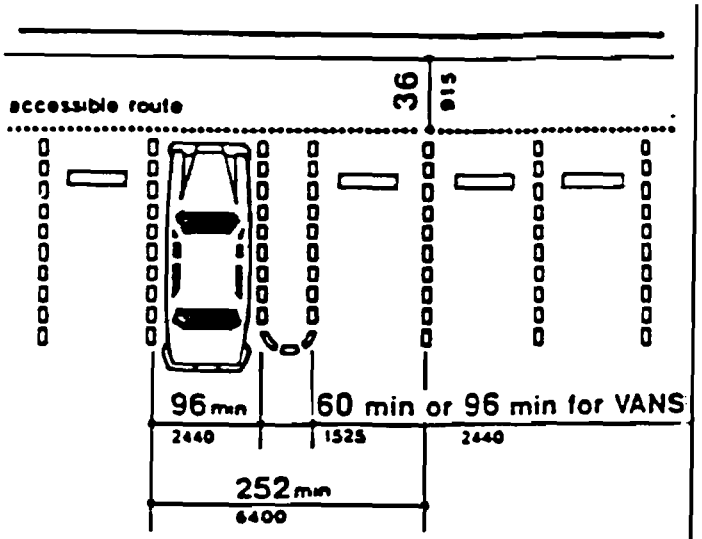


Fig. 9
Dimensions of Parking Spaces

surface slopes not exceeding 1:50 (2%) in all directions.

4.7 Curb Ramps.

4.7.1 Location. Curb ramps complying with 4.7 shall be provided wherever an accessible route crosses a curb.

4.7.2 Slope. Slopes of curb ramps shall comply with 4.8.2. The slope shall be measured as shown in Fig. 11. *Transitions from ramps to walks, gutters, or streets shall be flush and free of abrupt changes. Maximum slopes of adjoining gutters, road surface immediately adjacent to the curb ramp, or accessible route shall not exceed 1:20.*

4.7.3 Width. The minimum width of a curb ramp shall be 36 in (915 mm), exclusive of flared sides.

4.7.4 Surface. Surfaces of curb ramps shall comply with 4.5.

4.7.5 Sides of Curb Ramps. If a curb ramp is located where pedestrians must walk across the ramp, *or where it is not protected by handrails or guardrails,* it shall have flared sides: the maximum slope of the flare shall be 1:10 (see Fig. 12(a)). Curb ramps with returned curbs may be used where pedestrians would not normally walk across the ramp (see Fig. 12(b)).

4.7.6 Built-up Curb Ramps. Built-up curb ramps shall be located so that they do not project into vehicular traffic lanes (see Fig. 13).

4.7.7 *Detectable Warnings.* A curb ramp shall have a *detectable* warning complying with 4.29.2. *The detectable warning shall extend* the full width and depth of the curb ramp.

4.7.8 Obstructions. Curb ramps shall be located or protected to prevent their obstruction by parked vehicles.

4.7.9 Location at Marked Crossings. Curb ramps at marked crossings shall be wholly contained within the markings, excluding any flared sides (see Fig. 15).

4.7.10 Diagonal Curb Ramps. If diagonal (or corner type) curb ramps have returned curbs or other well-defined edges, such edges shall be parallel to the direction of pedestrian flow. The bottom of diagonal curb ramps shall have 48 in (1220 mm) minimum clear space as shown in Fig. 15(c) and (d). If diagonal curb ramps are provided at marked crossings, the 48 in (1220 mm) clear space shall be within the markings (see Fig. 15(c) and (d)). If diagonal curb ramps have flared sides, they shall also have at least a 24 in (610 mm) long segment of straight curb located on each side of the curb ramp and within the marked crossing (see Fig. 15(c)).

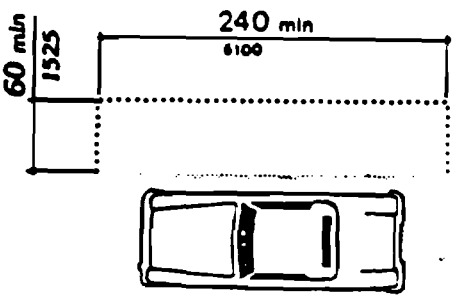


Fig. 10
Access Aisle at Passenger Loading Zones

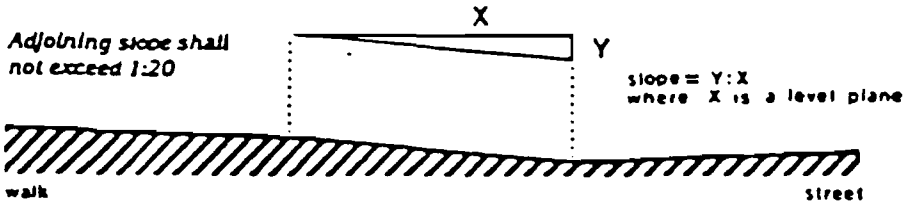
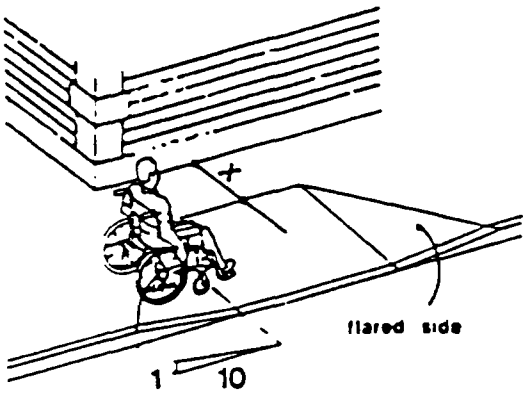
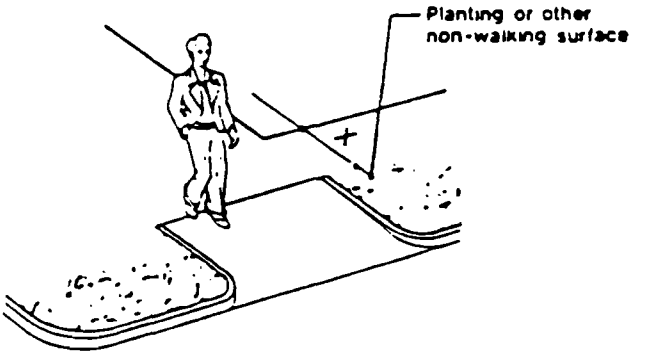


Fig. 11
Measurement of Curb Ramp Slopes



(a)
Flared Sides

If X is less than 48 in, then the slope of the flared side shall not exceed 1:12.



(b)
Returned Curb

Fig. 12
Sides of Curb Ramps

4.7.11 Islands. Any raised islands in crossings shall be cut through level with the street or have curb ramps at both sides and a level area at least 48 in (1220 mm) long between the curb ramps in the part of the island intersected by the crossings (see Fig. 15(a) and (b)).

4.8 Ramps.

4.8.1* General. Any part of an accessible route with a slope greater than 1:20 shall be considered a ramp and shall comply with 4.8.

4.8.2* Slope and Rise. The least possible slope shall be used for any ramp. The maximum slope of a ramp in new construction shall be 1:12. The maximum rise for any run shall be 30 in (760 mm) (see Fig. 16). Curb ramps

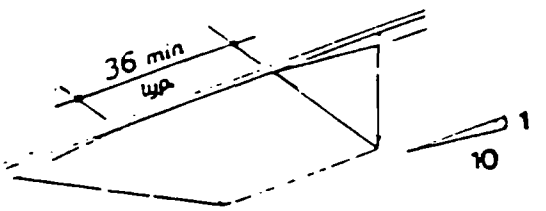


Fig. 13
Built-Up Curb Ramp

and ramps to be constructed on existing sites or in existing buildings or facilities may have slopes and rises as *allowed in 4.1.6(3)(a)* if space limitations prohibit the use of a 1:12 slope or less.

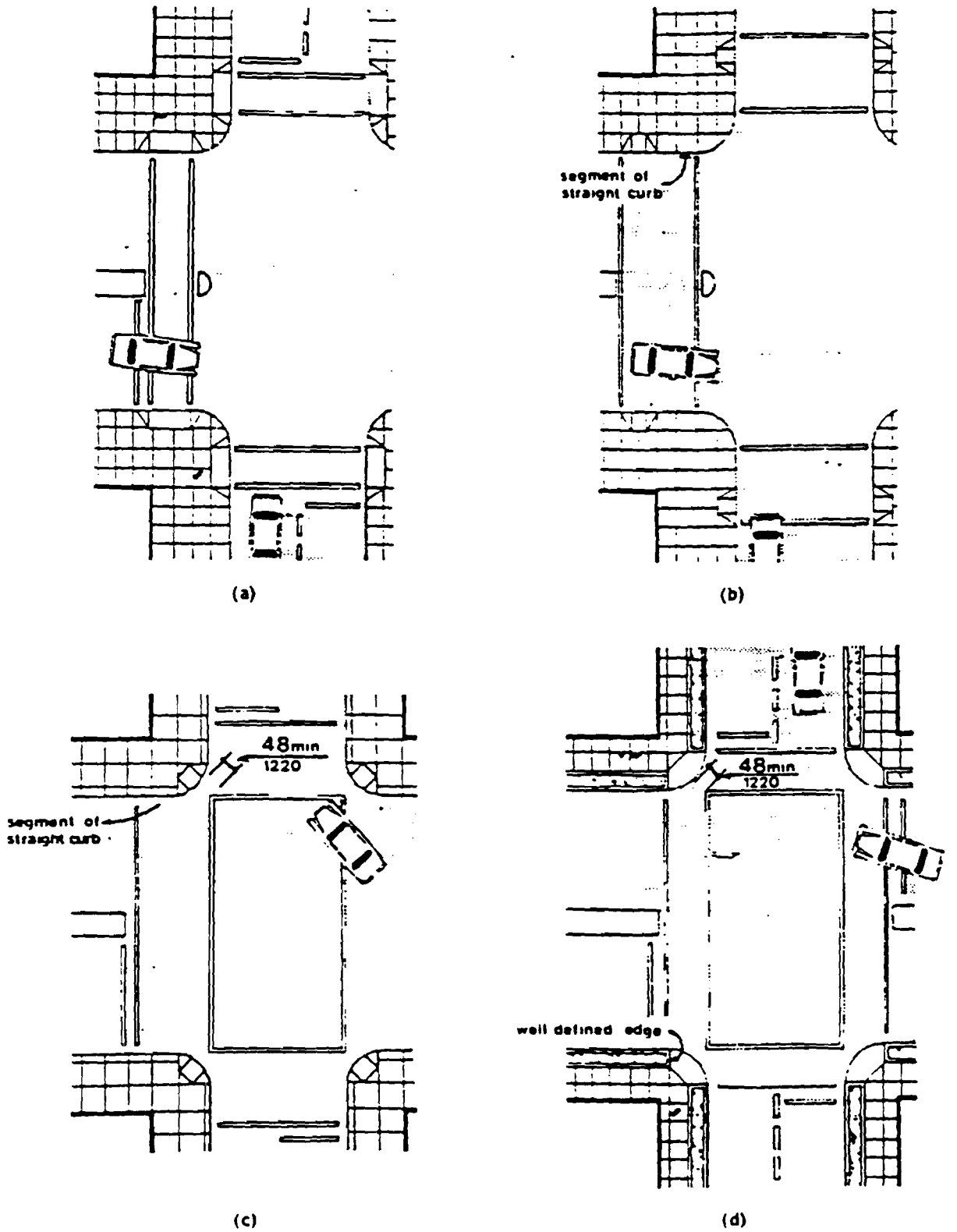
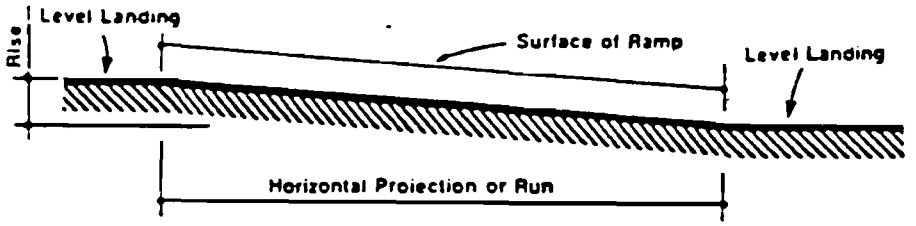


Fig. 15
Curb Ramps at Marked Crossings



	Maximum Rise		Maximum Horizontal Projection	
Slope	in	mm	ft	m
1:12 to < 1:16	30	760	30	9
1:16 to < 1:20	30	760	40	12

Fig. 16
Components of a Single Ramp Run and Sample Ramp Dimensions

4.8.3 Clear Width. The minimum clear width of a ramp shall be 36 in (915 mm).

4.8.4* Landings. Ramps shall have level landings at bottom and top of *each ramp and* each *ramp* run. Landings shall have the following features:

(1) The landing shall be at least as wide as the ramp run leading to it.

(2) The landing length shall be a minimum of 60 in (1525 mm) clear.

(3) If ramps change direction at landings, the minimum landing size shall be 60 in by 60 in (1525 mm by 1525 mm).

(4) If a doorway is located at a landing, then the area in front of the doorway shall comply with 4.13.6.

4.8.5* Handrails. If a ramp run has a rise greater than 6 in (150 mm) or a horizontal projection greater than 72 in (1830 mm), then it shall have handrails on both sides. Handrails are not required on curb ramps *or adjacent to seating in assembly areas.* Handrails shall comply with 4.26 and shall have the following features:

(1) Handrails shall be provided along both sides of ramp segments. The inside handrail on switchback or dogleg ramps shall always be continuous.

(2) If handrails are not continuous, they shall extend at least 12 in (305 mm) beyond the top and bottom of the ramp segment and shall be parallel with the floor or ground surface (see Fig. 17).

(3) The clear space between the handrail and the wall shall be 1 - 1/2 in (38 mm).

(4) Gripping surfaces shall be continuous.

(5) Top of handrail gripping surfaces shall be mounted between 34 in and 38 in (865 mm and 965 mm) above ramp surfaces.

(6) Ends of handrails shall be either rounded or returned smoothly to floor, wall, or post.

(7) Handrails shall not rotate within their fittings.

4.8.6 Cross Slope and Surfaces. The cross slope of ramp surfaces shall be no greater than 1:50. Ramp surfaces shall comply with 4.5.

4.8.7 Edge Protection. Ramps and landings with drop-offs shall have curbs, walls, railings, or projecting surfaces that prevent people from slipping off the ramp. Curbs shall be a minimum of 2 in (50 mm) high (see Fig. 17).

4.8.8 Outdoor Conditions. Outdoor ramps and their approaches shall be designed so that water will not accumulate on walking surfaces.

4.9 Stairs.

4.9.1* Minimum Number. *Stairs required to be accessible by 4.1 shall comply with 4.9.*

4.9.2 Treads and Risers. On any given flight of stairs, all steps shall have uniform riser heights and uniform tread widths. Stair treads shall be no less than 11 in (280 mm) wide, measured from riser to riser (see Fig. 18(a)). *Open risers are not permitted.*

4.9.3 Nosings. The undersides of nosings shall not be abrupt. The radius of curvature at the leading edge of the tread shall be no greater than 1/2 in (13 mm). Risers shall be sloped or the underside of the nosing shall have an angle not less than 60 degrees from the horizontal. Nosings shall project no more than 1-1/2 in (38 mm) (see Fig. 18).

4.9.4 Handrails. Stairways shall have handrails at both sides of all stairs. Handrails shall comply with 4.26 and shall have the following features:

(1) Handrails shall be continuous along both sides of stairs. The inside handrail on switchback or dogleg stairs shall always be continuous (see Fig. 19(a) and (b)).

(2) If handrails are not continuous, they shall extend at least 12 in (305 mm) beyond the top riser and at least 12 in (305 mm) plus the width of one tread beyond the bottom riser. At the top, the extension shall be parallel with the floor or ground surface. At the bottom, the handrail shall continue to slope for a distance of the width of one tread from the bottom riser; the remainder of the extension shall be horizontal (see Fig. 19(c) and (d)). Handrail extensions shall comply with 4.4.

(3) The clear space between handrails and wall shall be 1-1/2 in (38 mm).

(4) Gripping surfaces shall be uninterrupted by newel posts, other construction elements, or obstructions.

(5) Top of handrail gripping surface shall be mounted between 34 in and 38 in (865 mm and 965 mm) above stair nosings.

(6) Ends of handrails shall be either rounded or returned smoothly to floor, wall or post.

(7) Handrails shall not rotate within their fittings.

4.9.5 *Detectable* Warnings at Stairs. *(Reserved).*

4.9.6 Outdoor Conditions. Outdoor stairs and their approaches shall be designed so that water will not accumulate on walking surfaces.

4.10 Elevators.

4.10.1 General. *Accessible* elevators shall be on an accessible route and shall comply with 4.10 and with the *ASME A17.1-1990*, Safety Code for Elevators and Escalators. *Freight elevators shall not be considered as meeting the requirements of this section unless the only elevators provided are used as combination passenger and freight elevators for the public and employees.*

4.10.2 Automatic Operation. Elevator operation shall be automatic. Each car shall be equipped with a self-leveling feature that will automatically bring the car to floor landings within a tolerance of 1/2 in (13 mm) under rated loading to zero loading conditions. This self-leveling feature shall be automatic and independent of the operating device and shall correct the overtravel or undertravel.

4.10.3 Hall Call Buttons. Call buttons in elevator lobbies and halls shall be centered at 42 in (1065 mm) above the floor. Such call buttons shall have visual signals to indicate when each call is registered and when each call is answered. Call buttons shall be a minimum of 3/4 in (19 mm) in the smallest dimension. The button designating the up direction shall be on top. (See Fig. 20.) *Buttons shall be raised or flush. Objects mounted beneath hall call buttons shall not project into the elevator lobby more than 4 in (100 mm).*

APPENDIX C

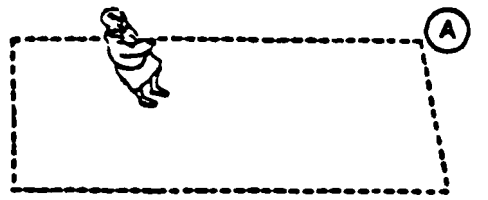
PEDESTRIAN LEVELS OF SERVICE DEFINITIONS

(Source: Highway Capacity Manual; TRB Special Report #209)

LEVEL OF SERVICE A

Pedestrian Space: ≥ 130 sq ft/ped Flow Rate: ≤ 2 ped/min/ft

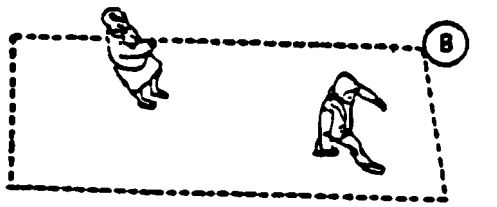
At walkway LOS A, pedestrians basically move in desired paths without altering their movements in response to other pedestrians. Walking speeds are freely selected, and conflicts between pedestrians are unlikely.



LEVEL OF SERVICE B

Pedestrian Space: ≥ 40 sq ft/ped Flow Rate: ≤ 7 ped/min/ft

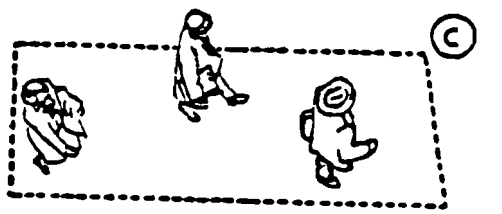
At LOS B, sufficient area is provided to allow pedestrians to freely select walking speeds, to bypass other pedestrians, and to avoid crossing conflicts with others. At this level, pedestrians begin to be aware of other pedestrians, and to respond to their presence in the selection of walking path.



LEVEL OF SERVICE C

Pedestrian Space: ≥ 24 sq ft/ped Flow Rate: ≤ 10 ped/min/ft

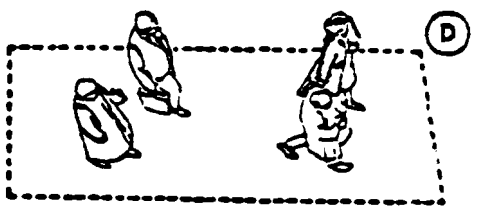
At LOS C, sufficient space is available to select normal walking speeds, and to bypass other pedestrians in primarily unidirectional streams. Where reverse-direction or crossing movements exist, minor conflicts will occur, and speeds and volume will be somewhat lower.



LEVEL OF SERVICE D

Pedestrian Space: ≥ 15 sq ft/ped Flow Rate: ≤ 15 ped/min/ft

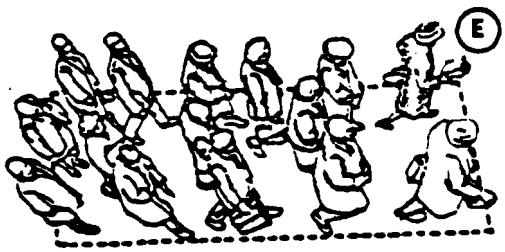
At LOS D, freedom to select individual walking speed and to bypass other pedestrians is restricted. Where crossing or reverse-flow movements exist, the probability of conflict is high, and its avoidance requires frequent changes in speed and position. The LOS provides reasonably fluid flow; however, considerable friction and interaction between pedestrians is likely to occur.



LEVEL OF SERVICE E

Pedestrian Space: ≥ 6 sq ft/ped Flow Rate: ≤ 25 ped/min/ft

At LOS E, virtually all pedestrians would have their normal walking speed restricted, requiring frequent adjustment of gait. At the lower range of this LOS, forward movement is possible only by "shuffling." Insufficient space is provided for passing of slower pedestrians. Cross- or reverse-flow movements are possible only with extreme difficulties. Design volumes approach the limit of walkway capacity, with resulting stoppages and interruptions to flow.



LEVEL OF SERVICE F

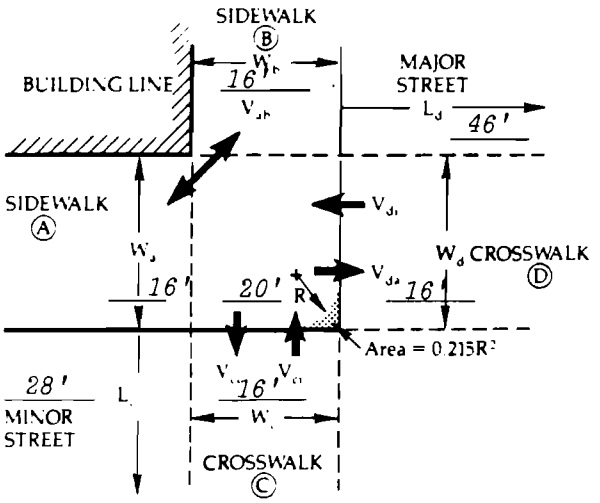
Pedestrian Space: ≤ 6 sq ft/ped Flow Rate: variable

At LOS F, all walking speeds are severely restricted, and forward progress is made only by "shuffling." There is frequent, unavoidable contact with other pedestrians. Cross- and reverse-flow movements are virtually impossible. Flow is sporadic and unstable. Space is more characteristic of queued pedestrians than of moving pedestrian streams.

CROSSWALK ANALYSIS WORKSHEET

Location: *Ralph Ave. & Crossway Blvd.*

City, State: *Townsville, KY*



SIGNAL TIMING (sec)

C = 80

G_{m1} = 48 R_{m1} = 32

G_{m1} = 32 R_{m1} = 48

PEDESTRIAN VOLUMES

Flow	Ped/Min	Ped/Cyc
v_{c1}	36	48
v_{c0}	20	27
v_{d1}	30	40
v_{d0}	16	21
v_{ab}	15	20
v_{tot}	117	156

CROSSWALK AREAS

$A_c = L_c W_c$ = 448 sq ft

$A_d = L_d W_d$ = 736 sq ft

CROSSWALK TIME-SPACE

$TS_c = A_c (G_{m1} - 3)/60$ = 336 sq ft-min

$TS_d = A_d (G_{m1} - 3)/60$ = 356 sq ft-min

CROSSING TIMES

$t_{wc} = L_c/4.5$ = 6.2 sec

$t_{wd} = L_d/4.5$ = 10.2 sec

CROSSWALK OCCUPANCY TIME (use ped/cycle)

$T_{wc} = (v_{c1} + v_{c0})(t_{wc}/60)$ = 7.8 ped-min

$T_{wd} = (v_{d1} + v_{d0})(t_{wd}/60)$ = 10.4 ped-min

AVERAGE PEDESTRIAN SPACE AND LOS

$M_c = TS_c/T_{wc}$ = 43 sq ft/ped; LOS = B (Table 13-3)

$M_d = TS_d/T_{wd}$ = 34 sq ft/ped; LOS = C (Table 13-3)

MAXIMUM SURGE (use ped/min)

$V_{mc} = (v_{c1} + v_{c0})(R_{m1} + 3 + t_{wc})/60$ = 38.5 ped

$V_{md} = (v_{d1} + v_{d0})(R_{m1} + 3 + t_{wd})/60$ = 46.9 ped

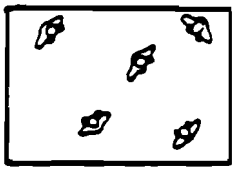
SURGE PEDESTRIAN SPACE AND SURGE LOS

M_c (Max) $= A_c/V_{mc}$ = 11.6 sq ft/ped; LOS = E (Table 13-3)

M_d (Max) $= A_d/V_{md}$ = 15.7 sq ft/ped; LOS = D (Table 13-3)

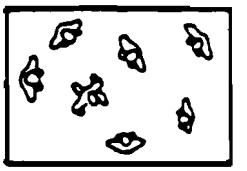
LEVEL OF SERVICE A

Average Pedestrian Area Occupancy: 13 sq ft/person or more
Average Inter-Person Spacing: 4 ft, or more
Description: Standing and free circulation through the queuing area is possible without disturbing others within the queue.



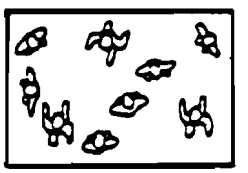
LEVEL OF SERVICE B

Average Pedestrian Area Occupancy: 10 to 13 sq ft/person
Average Inter-Person Spacing: 3.5 to 4.0 ft
Description: Standing and partially restricted circulation to avoid disturbing others within the queue is possible.



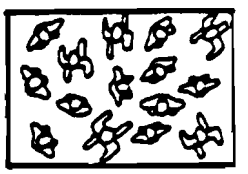
LEVEL OF SERVICE C

Average Pedestrian Area Occupancy: 7 to 10 sq ft/person
Average Inter-Person Spacing: 3.0 to 3.5 ft
Description: Standing and restricted circulation through the queuing area by disturbing others within the queue is possible; this density is within the range of personal comfort.



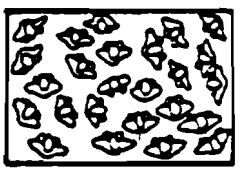
LEVEL OF SERVICE D

Average Pedestrian Area Occupancy: 3 to 7 sq ft/person
Average Inter-Person Spacing: 2 to 3 ft
Description: Standing without touching is possible; circulation is severely restricted within the queue and forward movement is only possible as a group; long term waiting at this density is discomforting.



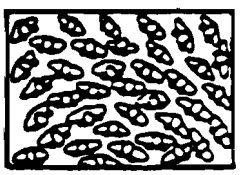
LEVEL OF SERVICE E

Average Pedestrian Area Occupancy: 2 to 3 sq ft/person
Average Inter-Person Spacing: 2 ft or less
Description: Standing in physical contact with others is unavoidable; circulation within the queue is not possible; queuing at this density can only be sustained for a short period without serious discomfort.



LEVEL OF SERVICE F

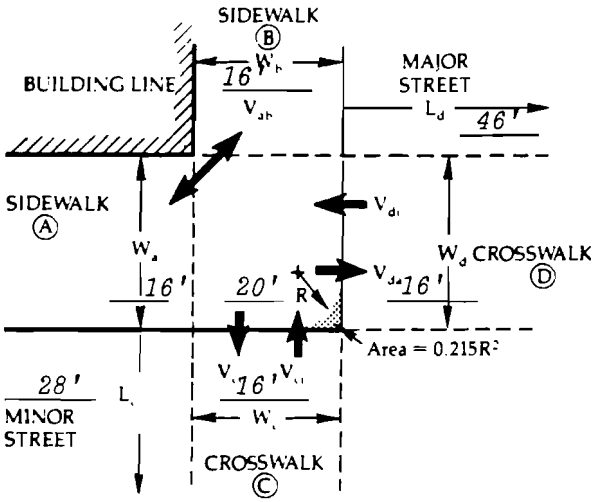
Average Pedestrian Area Occupancy: 2 sq ft/person or less
Average Inter-Person Spacing: Close contact with persons
Description: Virtually all persons within the queue are standing in direct physical contact with those surrounding them; this density is extremely discomforting; no movement is possible within the queue; the potential for panic exists in large crowds at this density.



STREET CORNER ANALYSIS WORKSHEET

Location: *Ralph Ave. & Crossway Blvd.*

City, State: *Townsville, KY*



SIGNAL TIMING (sec)

C = 80

G_{mi} = 48 R_{mi} = 32

G_{mi} = 32 R_{mi} = 48

PEDESTRIAN VOLUMES

Flow	Ped/Min	Ped/Cyc
v_{ci}	36	48
v_{co}	20	27
v_{di}	30	40
v_{do}	16	21
$v_{a,b}$	15	20
v_{tot}	117	156

NET CORNER AREA $A = W_a W_b - 0.215R^2 =$ 170 sq ft

AVAILABLE TIME-SPACE $TS = A \times C/60 =$ 227 sq ft-min

HOLD AREA WAITING TIMES
(use ped/cycle)

$Q_{tco} = [(v_{co})(R_{mi}/C)(R_{mi}/2)]/60 =$ 2.9 ped-min

$Q_{tdo} = [(v_{do})(R_{mi}/C)(R_{mi}/2)]/60 =$ 5.0 ped-min

HOLD AREA TIME-SPACE

$TS_h = 5(Q_{tco} + Q_{tdo}) =$ 39.5~40 sq ft-min

CIRCULATION TIME-SPACE

$TS_c = TS - TS_h =$ 187 sq ft-min

TOTAL CIRCULATION VOLUME

$v_c = v_{ci} + v_{co} + v_{do} + v_{di} + v_{a,b} =$ 156 ped

TOTAL CIRCULATION TIME

$t_c = v_c \times 4/60 =$ 10.4 ped-min

PEDESTRIAN SPACE AND LOS

$M = TS_c/t_c =$ 18.0 sq ft/ped; LOS = D

(Table 13-3)

APPENDIX D

PEDESTRIAN CORRIDOR PRIORITY SURVEY FORM

PEDESTRIAN AMENITIES AND SAFETY STUDY

PRIORITY TABLE

Entity: _____ **Date:** _____

Name: _____

Priority						
CORRIDOR	SAFETY	SECURITY	AMENITIES	TRANSIT	TRAFFIC	TOTAL
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
TOTAL						

Comments:

1. Rank each attribute by assigning a number from 1 to 5, where 1 is the highest priority. Two or more attributes may have the same priority.
2. Rank each corridor by attribute, where 1 is the highest priority. Two or more corridor may have the same priority.

APPENDIX E

CIVIC CENTER EXISTING TRANSPORTATION CONDITIONS:
Technical Memorandum

Dade County Continuing Development of TMAs

Technical Memorandum: Civic Center Existing Transportation Conditions

Prepared For

The Dade County Metropolitan Planning Organization
111 NW 1st Street, Suite 910
Miami, Florida

Prepared By

Barton-Aschman Associates, Inc.
5310 N.W. 33rd Avenue, Suite 206
Fort Lauderdale, Florida 33309

September 1994

TABLE OF CONTENTS

1.0 INTRODUCTION

This Technical Memorandum has been prepared as part of the Dade County ***Continuing Development of TMAs*** *study for the Dade County* Metropolitan Planning Organization. The purpose of this project is to assist Dade County with the implementation of TMAs. Transportation Management Associations (TMAs) are organizations which are formed by private organizations such as local businesses, corporate employers, and developers to address community transportation problems. These organizations are sometimes formed in partnership with local, regional, or state government agencies. The formation of TMAs is based on the principle that reducing congestion is a private as well as a public sector responsibility.

The objective of Task I is to accomplish the following sub-tasks in support of the Civic Center Transportation Management Organization (CCTMO) and the South Beach TMA:

1) Civic Center Pedestrian Study
2) Existing Transportation Conditions Analysis
3) South Beach Pedestrian & Bicycle Facility Study

This Memorandum documents the existing transportation conditions in the Civic Center study area and completes Task I, Subtask 2 of this study.

The Civic Center study area is bounded by the Miami River on the south, N.W. 20th Street on the north, N.W. 7th Avenue on the east, and N.W. 17th Avenue on the west. As shown on Map 1 (page 16), it includes major employers such as the University of Miami, Jackson Memorial Hospital, Cedars Medical Center, Veterans Administration

Medical Center, Federal Court House, Metro Dade Correctional Center, Miami-Dade Community College, Professional Art Center, Dominion Tower, and Lindsey Hopkins Technical Center. The Civic Center Area is served by Metrorail and Metrobus transit services. This area is predominantly pedestrian oriented as people walk between parking facilities/transit stations and their respective work places.

The following two sections compile the transportation data collected from different agencies. Chapter 2 identifies the agencies which were contacted to obtain this data. Chapter 3 presents the data by transportation category.

2.0 SOURCES FOR EXISTING TRANSPORTATION DATA

The following agencies were contacted in person or by telephone as part of the data collection effort:

(i) FDOT:

- Traffic Volumes on State Roadway Links (Table 1)
- Accident Data on State Roads (Tables 7, 8)
- Level of Service (LOS) on State Roads (Map 2)

(ii) Dade County:

- Average Weekday Daily Traffic (AWDT) (Table 1)
- 24-Hour Vehicle Counts on Roadway Links (Table 2)
- Metrorail-Boardings by Station (Table 3)
- Metrobus Routes and Schedules
- Locations of Signalized Intersections (Map 1)

(iii) City of Miami/Police Department:

- Accident Data (Table 7)

(iv) Civic Center TMO:

- Parking Demand and Supply Data (Table 4)

(v) APCOA Parking Services:

- 24-Hour Traffic Counts for Parking Garages in the JMH and UM Campus (Table 5)

(vi) Field Data:

- 24-Hour Traffic Counts at major Parking Facilities (Table 5)
- 2-Hour (AM Peak) vehicle occupancy counts (Table 6)

3.0 SUMMARY AND ANALYSIS OF EXISTING TRANSPORTATION DATA

3.1 Existing Traffic Volumes

The Florida Department of Transportation (FDOT) and Dade County have two permanent count stations each within the boundaries of the study area. The counts from these stations have been summarized in Table 1. The counts received from FDOT are AADT (Average Annual Daily Traffic) Volumes, and from Dade County are AWDT (Average Weekday Daily Traffic) Volumes.

Twenty-four hour approach counts for 1992 for some intersections within the study area were obtained from Dade County. The counts have been summarized in Table 2.

3.2 Existing Transit Service and Use

The Civic Center area is served by both the Metrorail and Metrobus systems. There are six bus routes (#12, 21, 22, 32, 95, F) that circulate around the periphery of major campuses and centers. Route #95 is a peak hour express bus service covering the major centers, such as the Justice Building, Cedars Medical Center, VA Hospital and Jackson Memorial Hospital. The average peak hour headway for Route #95 is approximately 15 minutes. All other bus routes have an average headway of approximately 30 minutes during the daytime (including peak and off peak periods) on a weekday and approximately one hour during the daytime on weekends. The major institutions in the Civic Center and the bus routes serving them are shown below:

TABLE 2
24-HOUR VEHICLE COUNT FOR CIVIC CENTER: YEAR 1992

S.N.	Link	Location	Direction	Volume	Total Daily Volume	Posted Link Speed (mph)	# of Lanes	Peak Hour Volume				PHF	
								AM	Total	PM	Total	AM	PM
1	N.W. 7th Avenue/SR 7	@ N.W. 20th Street	NB	9,568	18,386	--	2	512	1,395	813	1,328	0.90	0.83
			SB	8,818		--	2	883		515		0.95	0.93
2	N.W. 10th Avenue	@ N.W. 14th Street	NB	1,477	8,355	30	2	148	459	88	849	0.65	0.92
			SB	6,878		30	2	311		761		0.93	0.79
3	N.W. 14th Street	@ N.W. 10th Avenue	EB	8,606	11,283	30	2	799	2,801	508	728	0.91	0.95
			WB	2,677		30	2	2,002		220		0.89	0.79
4	N.W. 14th Street	@ N.W. 7th Avenue/ SR 7	EB	2,573	5,115	--	2	175	354	216	464	0.88	0.86
			WB	2,542		--	2	179		248		0.76	0.70
5	N.W. 20th Street	@ N.W. 12th Avenue	EB	12,235	23,150	40	2	1,097	1673	860	1,759	0.88	0.93
			WB	10,915		40	2	576		899		0.87	0.82

PHF: Peak Hour Factor - Ratio of peak hour volume to 4 times the highest 15-minute volume in the peak hour.

Source: Dade County

	Institution	Metro Bus Routes
1	University of Miami/ Jackson Memorial Hospital	12, 21, 22, 32, 95*, F
2	Cedars Medical Center	12, 22, 95*, F
3	VA Hospital	12, 22, 32, 95*, F
4	Justice Building	12, 22, 95* F
5	Metro-Dade Correctional Center	12, 22, 95*, F
6	Miami Dade Community College	12, 21, 22, 32, F
7	Lindsey Hopkins Technical Center	12, 21, 22, 32, F

* Peak Hour Only Bus Service

The operating hours of the bus routes serving the Civic Center area are given below:

Route #	Weekday Operating Hour		Weekend Operating Hour		Headways (Min)	
	Northbound	Southbound	Northbound	Southbound	Peak	Off-Peak
12	6:00 AM - 1:00 AM	5:30 AM - 1:30 AM	6:00 AM - 1:00 AM	6:30 AM - 12:30 AM	30	30
21	7:00 AM - 9:00 PM	5:00 AM - 9:00 PM	N/A	N/A	60	60
22	5:00 AM - 6:00 PM	5:00 AM - 7:00 PM	5:30 AM - 6:30 PM	5:30 AM - 6:00 PM	20	60
32	5:30 AM - 11:30 PM	6:00 AM - 11:00 PM	6:00 AM - 9:00 PM	6:30 AM - 9:00 PM	20	30
95*	4:00 PM - 6:00 PM	6:30 AM - 8:30 AM	N/A	N/A	10	N/A
	Eastbound	Westbound	Eastbound	Westbound	Peak	Off-Peak
F	5:30 AM - 8:00 PM	6:00 AM - 9:30 PM	5:30 AM - 6:30 PM	6:30 AM - 8:00 PM	30	40

* Peak Hour Only Bus Service
N/A: Does not operate during weekends

There are three Metrorail Stations serving the Civic Center Area: Santa Clara, Culmer, and Civic Center. Map 1 shows the location of these three stations. Metrorail operates between 5:30 AM and 12:45 AM, with peak period headways of 7.5 minutes in the morning, five minute headways during the afternoon peak, and 20 minute headways during the midday and evening hours. Headways during weekends and holidays are 20 minutes.

The Metrorail boardings by station for September 1993 is shown in Table 3. Average weekday and weekend boardings for Culmer, Civic Center, and Santa Clara station for the past six months (April to September) have been shown in parenthesis. The Civic Center Station ranks third in average weekday boardings and fifth in average weekend boardings. There is an increase in weekday boardings by 2.4% as compared with 1992. On the other hand the Santa Clara Station with a park and ride lot next to it has average boardings of only 474 during weekdays and 363 during weekends. These numbers reflect a 3.6% decrease from the previous year. It should be noted that the weekday and weekend boardings at the Culmer station have increased by over 12% between 1992 and 1993. The weekend boardings has increased by 27%. Since Civic Center Station has a weekday boarding of 4,592 it is obvious that Civic Center Institutions (with the exception of MDCC and Lindsey Hopkins) are being served predominantly by this station and Santa Clara's contribution is minimal.

3.3 Parking Supply and Demand

Based on a 1992 Miami Medical Center Parking Study conducted by Desman Associates, the peak hour parking supply and demand for the years 1991-1996 for University of Miami/Jackson Memorial Hospital, Cedars Medical Center, Veterans Administration Medical Center, Miami-Dade Community College, Professional Art Center, and Dominion Tower have been summarized on Table 4. Except for Dominion Tower, the parking

TABLE 3
METRORAIL BOARDINGS BY STATION: SEPTEMBER 1993

Stations	Average Weekday (1)	Average Weekend (2)	% CHANGE Previous Year Weekday	
Dadeland South	4,678	4,183	14.04%	−2.49%
Dadeland North	4,177	2,421	−3.27%	−13.94%
South Miami	2,664	1,457	−2.74%	−15.63%
University	1,705	1,707	21.44%	15.42%
Douglas Road	2,546	1,926	6.62%	1.10%
Coconut Grove	1,192	1,055	9.86%	10.01%
Vizcaya	980	745	11.49%	−1.32%
Brickell	1,880	1,129	6.03%	−13.69%
Government Center	9,644	7,533	0.24%	7.61%
Overtown/Arena	1,058	1,073	33.42%	−13.54%
Culmer	**(653)* 677**	**(865)* 1,488**	**(12.78%)* 12.65%**	**(27.02%)* 12.13%**
Civic Center	**(4592)* 4,532**	**(1644)* 1,917**	**(−2.44%)* 2.30%**	**(−8.57%)* −2.49%**
Santa Clara	**(474)* 504**	**(363)* 285**	**(3.46%)* 8.86%**	**(12.73%)* −5.63%**
Allapattah	1,467	1,316	12.85%	12.00%
Earlington Heights	1,037	933	14.84%	−2.81%
Brownsville	655	560	18.23%	−10.36%
Martin Luther King	1,167	1,118	23.23%	9.72%
Northside	1,795	1,865	−0.55%	−45.45%
Tri−Rail	1,699	943	68.38%	141.18%
Hialeah	1,237	1,141	8.03%	3.45%
Okeechobee	2,103	1,410	−0.61%	4.14%
TOTALS	41,684	32,515	6.76%	−2.43%

* Indicates average for the past six months (April to September)

(1) Based on all weekdays of the month except Labor Day. Ridership for that day was 17,560.
(2) Average Weekend represents the combined ridership for Saturday and Sunday.

Source: Metro−Dade Transit Agency

TABLE 4
PARKING SUPPLY AND DEMAND SUMMARY FOR CIVIC CENTER

Institution	Year	Peak Hour Demand (1)	Actual Parking Supply (2)	Recommended Parking Supply (3)	Deficiency as per Actual Supply (1) - (2)	Deficiency as per Recom. Supply (3) - (2)
University of Miami/Jackson Memorial Hospital	1991	7368	7281	7856	87	575
	1992	7616	7281	8116	335	835
	1993	8104	7281	8617	823	1336
	1994	8449	7281	8974	1168	1693
	1995	8689	7281*	9227	1408	1946
	1996	8775	7228*	9328	1547	2100
Cedars Medical Center	1991	1300	1277	1386	23	109
	1992	1311	1002[a]	1397	309	395
	1993	1340	1002	1428	338	426
	1994	1350	1002	1439	348	437
	1995	1361	1002	1451	359	449
	1996	1372	1002	1462	370	460
Veterans Administration Medical Center	1991	1392	1288	1472	104	184
	1992	1450	1288	1534	162	246
	1993	1509	1288	1595	221	307
	1994	1567	1288	1657	279	369
	1995	1625	1288	1719	337	431
	1996	1683	1288	1780	395	492
Miami-Dade Community College	1991	876	550	920	326	370
	1992	886	550	931	336	381
	1993	898	550	943	348	393
	1994	908	550	954	358	404
	1995	920	550	966	370	416
	1996	930	550	977	380	427
Professional Art Center	1991	311[b]	272	311	39	39
	1992	311	272	311	39	39
	1993	311	272	311	39	39
	1994	311	272	311	39	39
	1995	311	272	311	39	39
	1996	311	272	311	39	39
Dominion Tower	1991	219	219	219	0[c]	0[c]
	1992	219	219	219	0	0
	1993	219	219	219	0	0
	1994	219	219	219	0	0
	1995	219	219	219	0	0
	1996	219	219	219	0	0

Continued..

TABLE 4
PARKING SUPPLY AND DEMAND SUMMARY FOR CIVIC CENTER (Continued)

Institution	Year	Peak Hour Demand (1)	Actual Parking Supply (2)	Recommended Parking Supply (3)	Deficiency as per Actual Supply (1-2)	Deficiency as per Recom. Supply (3-2)
TOTAL	1991	11466	10887	12164	579	1277
	1992	11793	10612	12508	1181	1896
	1993	12381	10612	13113	1769	2501
	1994	12804	10612	13554	2192	2942
	1995	13125	10612	13893	2513	3281
	1996	13290	10559	14077	2731	3518

* Does not include the proposed expansion

(a) Anticipate loss of 275 space Metro 25 Lot in 1992.

(b) The building is virtually full and there are no plans for future expansions.

(c) The building is currently 30% vacant is the actual demand is 202. Hence the deficiency is 0. Also the building has plans of constructing a 100 space parking deck and so there will be no deficiency.

Source: "Miami Medical Center Parking Study" prepared by Desman Associates, 1992.

Note: As per APCOA, the new Highland Parking Pavilion will provide UM/JMH an additional 1264 spaces in 1994. Also, Dominion Tower has a plan of building a 924 space garage in lieu of the 219 spaces presently available.

demand for all other institutions was found to exceed the supply. University of Miami/Jackson Memorial Hospital needs 1336 more spaces to meet the demand in 1993 and it will need 2100 spaces by the Year 1996. Overall, the Civic Center, consisting of the institutions listed in Table 4, needs 2501 parking spaces in 1993, and will need 3518 parking spaces by 1996.

This parking study used 1988 data for future year projections based on patient projections, trends in employment, parking demand estimates for development projects, and parking lost to developments. The recommended supply as shown in Table 4 was estimated by providing 5% excess capacity for employees parking, and 10% excess capacity for visitors/patients parking.

3.4 24-Hour Machine Counts at Major Parking Facilities

Twenty-four hour machine counts were conducted at the entrance/exit to eight major parking garages. These counts have been summarized on Table 5. The peak hour for the majority of the garages occurs between 6:00 AM and 3:00 PM. The peak hour volumes (in/out) for AM and PM periods have also been summarized in Table 5 along with the AM and PM peak hour time for in-going and out-coming vehicles for each of the parking facilities. Table 5 also shows that Miami Lot 18 has the highest turnover of 3.32. The location of the machine counts have been depicted in Map 1.

Parking facilities with low turnover indicate either the vehicles parked in the facility for long hours or the facility is under utilized. In an area such as Civic Center approximately 50% of the occupancy can be attributed to long hours of parking by the employees. Therefore, an interpretation can be made that Mahi Temple parking lot, J.M. Towers, Park

TABLE 5
24-HOUR MACHINE COUNT SUMMARY FOR MAJOR PARKING FACILITIES IN CIVIC CENTER: YEAR 1993

Identification	No. of Spaces	Location	24 –Hour Count		Peak Hour Time				Peak Hour Volume				Peak Hour Factor				Parking Turnover (4)
					AM		PM		AM		PM		AM		PM		
			IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	
Lot–B/Lot C of VAMC (1)	1110	North of N.W. 16th St, E. of N.W. 14th Ave.	2334	1957	6:45 7:45	7:00 8:00	12:15 1.15	2:30 3:30	768	259	127	208	0.84	0.92	0.81	0.80	1.93
Miami–Dade Community College (Students Only)	464	S.W. quadrant of N.W. 20th St @ N.W. 10th Ave.	1379	1382	6:15 7:15	10:45 11:45	3:15 4:15	7:15 8:15	329	150	165	184	0.77	0.87	0.72	0.74	2.98
Park Plaza East Garage (2)	1717	W. of N.W. 9th Ave. between N.W. 17th St. and N.W. 18th St.	2641	2642	7:00 8:00	7:00 8:00	6:00 7:00	4:00 5:00	493	156	142	435	--	--	--	--	1.54
NW 11th Avenue Parking Garage(Park Plaza West) (2)	1880	N.W. quadrant of N.W. 11th Ave. @N.W. 14th Ter.	3062	3048	8:00 9:00	7:00 8:00	1:00 2:00	4:00 5:00	513	117	175	500	--	--	--	--	1.63
J.M. Towers Parking Garage (2)	792	N.W. quadrant of N.W. 15th St. @ N.W. 12th Ave.	881	880	8:00 9:00	11:00 12:00	2:00 3:00	4:00 5:00	189	46	52	187	--	--	--	--	1.21
Cedars Medical Center Parking Garage	780	N.W. quadrant of N.W. 12th Ave. @ N.W. 14th St.	1577	1715	7:30 8:30	11:00 12:00	2:00 3:00	2:15 3:15	196	158	175	182	0.83	0.84	0.58	0.77	2.11
Mahi Temple	404	South of River Dr., W. of N.W. 14th Ave.	403	438	6:45 7:45	11:00 12:00	12:00 1:00	3:45 4:45	112	48	37	138	0.64	0.75	0.66	0.84	1.04
Miami City Lot #18 (3)	625	South of N.W. 12th St. W. of N.W. 13th Ave.	2261	1893	8:30 9:30	9:30 10:30	12:30 1:30	12:00 1:00	670	449	197	138	0.86	0.94	0.78	0.77	3.32

(1) The parking lots have a common entrance and exit. Some vehicles try to avoid the count tubes on the pavement resulting in a difference between in and out vehicle counts.
(2) Counts received from APOCA does not specify peak hour factor.
(3) The parking lot possibly has other exit points and hence the difference in 24–hour in and out counts.
(4) Average number of vehicles using the garage divided by the number of spaces available.

Plaza East and West parking garages are under utilized contrary to the projections from the 1992 Parking Study. It should be reiterated this is only an interpretation and further parking studies should be conducted to validate the demand projections. If the supplies were indeed found to be less than the demand, than the CCTMO should take alternate action to encourage visitors as well as the employees to use the transit facilities.

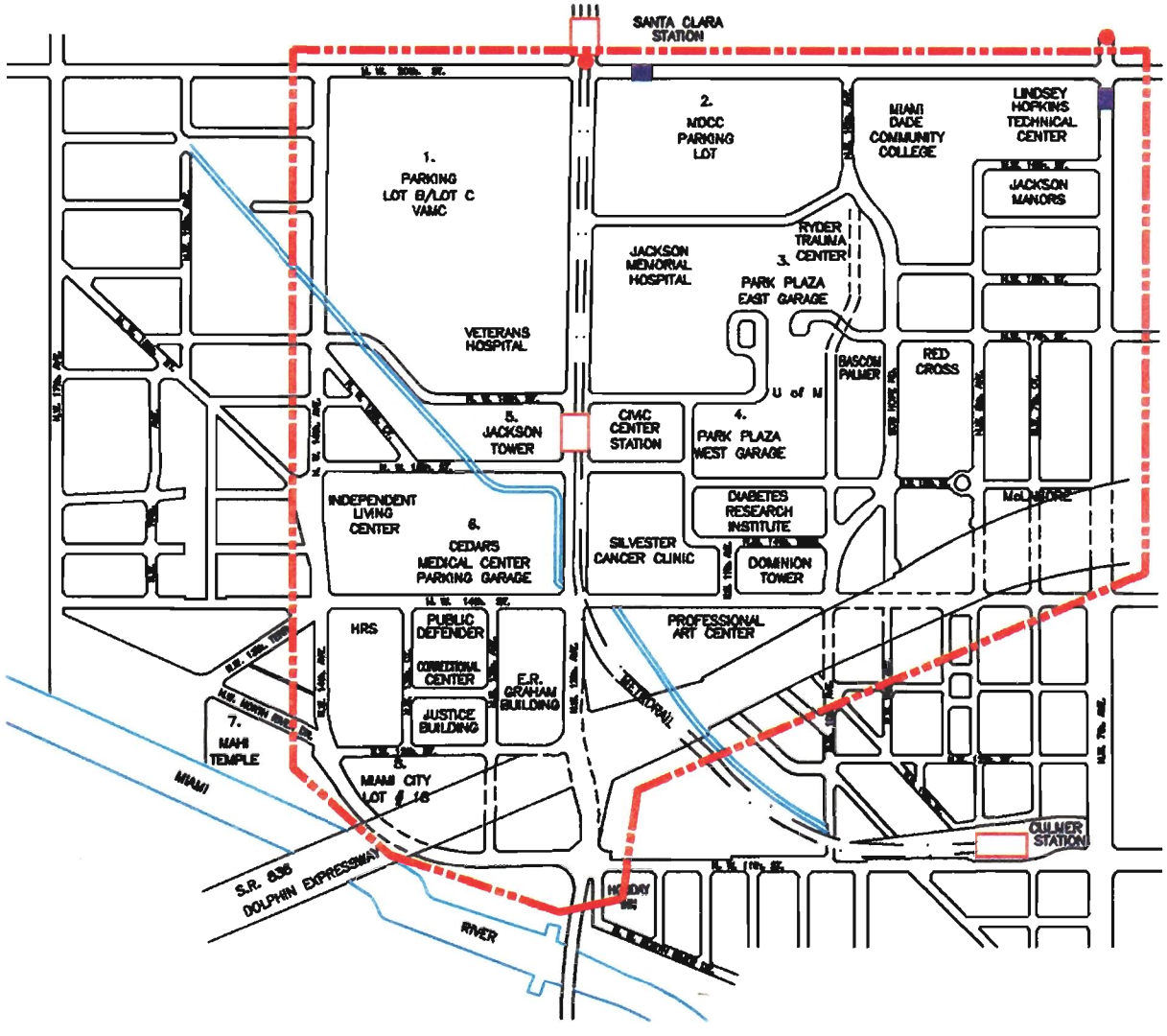
3.5 2-Hour (AM Peak Period) Vehicle Occupancy Counts

Two hour vehicle occupancy counts were conducted during the AM peak period at the entrances to eleven major parking facilities. These counts have been summarized on Table 6. The percentage of vehicles with only one occupant ranges from 72% (Miami Lot #18) to 96% (Miami Dade Community College). Average vehicle occupancy ranges from 1.05 (MDCC) to 1.37 (Miami Lot #18).

3.6 Accident Data Summary

Accident data for N.W. 12th Avenue (State Road 933) and N.W. 7th Avenue (State Road 7) have been summarized in Table 7 for the years 1990-1992. The 1993 data was not available at the time of this data compilation. The 1992 data should be ignored because of the effects of Hurricane Andrew on the Dade County Road System. Table 7 shows the accident ratio for S.R. 933 and S.R. 7. Accident ratio is the ratio of actual accident rate to critical accident rate. Critical accident rate is the average of accident rates for roadways in Florida having similar characteristics as that of the roadway under consideration. An accident ratio of greater than one indicates that the rate of accident is greater than the average rate. For 1990, S.R. 933 had an accident rate less than average but in 1991 it was almost 1.5 times the average. Accident rate for S.R. 7 is more than twice the average rate.

The 1993 accident data for all major intersections within the Civic Center study area has also been summarized in Table 7. As can be observed, more than 55% of the total



FDOT, DADE COUNTY AND STUDY 24-HOUR MACHINE COUNT LOCATIONS

N. T. S.

LEGEND:

- STUDY BOUNDARY
- FDOT PERMANENT COUNT LOCATION
- DADE COUNTY COUNT STATION

1. LOT B/LOT C VAMC
2. MIAMI DADE COMMUNITY COLLEGE
3. PARK PLAZA EAST GARAGE
4. PARK PLAZA WEST GARAGE
5. JACKSON TOWER PARKING GARAGE
6. CEDARS MEDICAL CENTER PARKING GARAGE
7. MAHI TEMPLE PARKING LOT
8. MIAMI CITY PARKNG LOT # 18

BARTON-ASCHMAN ASSOC., INC.
Ft. LAUDERDALE, FLORIDA

DADE COUNTY / CONTINUING DEVELOPMENT OF TMAS CIVIC CENTER PEDESTRIAN AMENITIES AND SAFETY STUDY

MAP 1

TABLE 6
AM PEAK PERIOD VEHICLE OCCUPANCY COUNT SUMMARY FOR MAJOR PARKING FACILITIES IN CIVIC CENTER: YEAR 199

Ref. No.	Identification	No. of Spaces	Time	# of Vehicles			# of Vehicles with One (1) Occupant			# of Vehicles with more than (1) occupant			% of vehicles with one (1) occupant			% of Vehicles with more than one (1) occupa			Number of Passengers			Average Vehicle Occupancy		
				In	Out	Total	In	Out	Total	In	Out	Total	In	out	Total	In	Out	Total	In	Out	Total	In	Out	Total
11/13	Lot-B/Lot C of VAMC	1110	7:00 – 9:00 AM	701	207	908	581	172	753	120	35	155	83	83	83	17	17	17	853	255	1108	1.22	1.23	1.22
24	Miami-Dade Community Colleg (Students Only)	464	7:00 – 9:00 AM	411	47	458	394	45	439	17	2	19	96	96	96	4	4	4	430	49	479	1.05	1.04	1.05
46	Park Plaza East Garage	1693	6:30 – 8:30 AM	643	143	786	598	131	729	45	12	57	93	92	93	7	8	7	700	155	855	1.09	1.08	1.09
83	NW 11th Ave. Parking Garage (Park Plaza West Garage)	1862	6:30 – 8:30 AM	477	15	492	445	12	457	32	3	35	93	80	93	7	20	7	512	18	530	1.07	1.20	1.08
88	J.M. Towers Parking Garage	692	6:30 – 8:30 AM	323	52	375	298	38	336	25	14	39	92	73	90	8	27	10	351	77	428	1.09	1.48	1.14
97	Cedars Medical Center Parking Garage	780	6:30 – 8:30 AM	217	28	245	198	27	225	19	1	20	91	96	92	9	4	8	238	29	267	1.10	1.04	1.09
106	City of Miami Lot #26	350	7:00 – 9:00 AM	202	32	234	171	26	197	31	6	37	85	81	84	15	19	16	239	39	278	1.18	1.22	1.19
112	Mahi Temple	404	7:00 – 9:00 AM	153	4	157	142	4	146	11	0	11	93	100	93	7	0	7	164	4	168	1.07	1.00	1.07
121	Miami City Lot #18	625	7:00 – 9:00 AM	367	37	404	259	32	291	108	5	113	71	86	72	29	14	28	505	43	548	1.38	1.16	1.37
122	Cedars Medical Center	290	6:30 – 8:30 AM	154	3	157	145	3	148	9	0	9	94	100	94	6	0	6	163	3	166	1.06	1.00	1.06
123	Arts Center	300	6:30 – 8:30 AM	132	16	148	121	14	135	11	2	13	92	88	91	8	12	9	146	18	164	1.11	1.13	1.11

TABLE 7
ACCIDENT DATA SUMMARY FOR CIVIC CENTER: YEAR 1990-1992

Roadway	BMP - EMP[1]	Segment Limits	Length of the Section (Miles)	Year	ADT[2]	Total # of Accidents	PDO[3]	Injuries[4]	Fatalities	Accident Ratio[5]
SR 933/ NW 12th Avenue NW 12th Avenue (SR 933)	2.360 - 3.014	N.W. 12th Street - N.W. 20th Street	0.654	1990 1991 1992	27,487 27,487 20,144	28 46 49	11 27 25	29 31 36	1 0 0	0.732 1.487 2.310
NW 7th Avenue (SR 7/US 441)	1.388 - 2.054	N.W. 12th Street - N.W. 20th Street	0.666	1990 1991 1992	14,413 14,508 12,538	40 37 32	13 17 12	41 24 36	0 0 0	2.333 2.303 2.310

(1) Begin Mile Post - End Mile Post.
(2) ADT: Average Daily Traffic.
(3) PDO: Property Damage Only.
(4) Some accidents resulted in multiple injuries.
(5) Ratio of Actual Rate to Critical Rate: Value greater than one indicates, accident rate greater than average.

Source: Florida Department of Transportation (FDOT) District Six.

ACCIDENT DATA SUMMARY FOR CIVIC CENTER: YEAR 1993

N-S Street	E - W CROSS STREET											
	N.W. 10th St.	N.W. 11th St.	N.W. 12th St.	N.W. 13th St.	N.W. 14th St.	N.W. 15th St.	N.W. 16th St.	N.W. 17th St.	N.W. 18th St.	N.W. 19th St.	N.W. 20th St.	TOTAL
N.W. 7th Ave. /S.R. 7	2,(1),[0]	3,(0),[0]	----	----	7,(0),[0]	1,(1),[0]	----	7,(0),[0]	2,(0),[0]	1,(0),[0]	19,(0),[0]	42,(2),[0]
Bob Hope Road	----	----	1,(0),[0]	----	----	2,(0),[0]	----	3,(0),[0]	----	----	----	6,(0),[0]
N.W. 12th Ave. /S.R. 933	----	20,(0),[1]	29,(1),[0]	----	24,(0),[0]	9,(0),[0]	15,(1),[0]	2,(1),[0]	----	5,(0),[0]	27,(0),[3]	131,(3),[4]
N.W. 13th Ave.	----	2,(0),[0]	----	2,(0),[0]	8,(1),[0]	----	----	----	----	----	2,(0),[0]	14,(1),[0]
N.W. 13th Ct.	----	----	----	----	12,(2),[0]	----	----	----	----	----	----	12,(2),[0]
N.W. 14th Ave.	----	----	4,(0),[0]	2,(0),[0]	10,(0),[0]	3,(0),[0]	----	5,(1),[0]	----	----	8,(0),[0]	32,(1),[0]
TOTAL	2,(1),[0]	25,(0),[1]	34,(1),[0]	4,(0),[0]	61,(3),[0]	15,(1),[0]	15,(1),[0]	17,(2),[0]	2,(0),[0]	6,(0),[0]	56,(0),[3]	237,(9),[4]

* Motor Vehicle, (Pedestrian), [Bicycle]

Source: City of Miami Police Department

accidents took place at the intersections along N.W. 12th Avenue corridor. Also, this corridor had the highest bicycle and pedestrian accidents in the Civic Center. The critical intersections along N.W. 12th Avenue corridor in the decreasing order of severity was found to be at N.W. 12th Street, N.W. 20th Street, N.W. 14th Street, and N.W. 16th Street. Jackson Memorial Hospital, VA Medical Center, Jackson Memorial Tower, Metrorail Station, and Cedars Medical Center are all located along N.W. 12th Avenue corridor.

Among the East-West corridors in the Civic Center, N.W. 14th Street had the highest number of motor vehicles and pedestrian accidents. Approximately 26% of the total accidents took place at the intersection along this corridor. It is important to note here that Cedars Medical Center, Court House, Professional Art Center, HRS, and Dominion Tower are all located along this corridor.

The intersections of N.W. 12th Avenue at N.W. 12th Street and at N.W. 20th Street had the highest number of accidents (30). The following three intersections along N.W. 12th Avenue corridor account for more than 33% of the total accidents in the Civic Center:

(i) N.W. 12th Avenue @ N.W. 12th Street
(ii) N.W. 12th Avenue @ N.W. 14th Street
(iii) N.W. 12th Avenue of N.W. 20th Street

On N.W. 12th Avenue, which is the most prominent road serving the Civic Center, the ADT has remained the same from 1990 to 1991, but there was a phenomenal rise of 64% in the total number of accidents from 1990 to 1991. On the other hand, the ADT for N.W. 7th Avenue decreased insignificantly from 1990 to 1991, while the number of accidents decreased by 7.5% from 1990 to 1991.

Pedestrian and bicycle accidents for N.W. 12th Avenue and N.W. 7th Avenue for the years 1990-1992 have been separately summarized on Table 8. The total number of pedestrian/bike accidents have steadily increased from 1990-1992 on both of these major roadways. Also, it can be observed that more than 56% of the accidents (13 out of 23) from 1990 - 1992 occurred at the intersections of N.W. 12th Avenue @ N.W. 14th Street and N.W. 7th Avenue @ N.W. 20th Street. The pedestrian signal at the intersection of N.W. 7th Avenue @ N.W. 20th Street should be repaired and maintained on a regular basis. Presently, none of the pedestrian signals are working at this intersection. At the intersection of N.W. 12th Avenue @ N.W. 14th Street, sufficient lighting should be provided at night. Some of the pedestrian signals that are not working at this intersection should be repaired. Also, the pedestrian signal green time should be increased to facilitate safe movement of the pedestrian. Other improvements are also necessary not only at the above intersections but in the entire Civic Center area. A comprehensive study should be undertaken to look into the cause of the accidents and remedial actions.

3.7 Existing Traffic Conditions

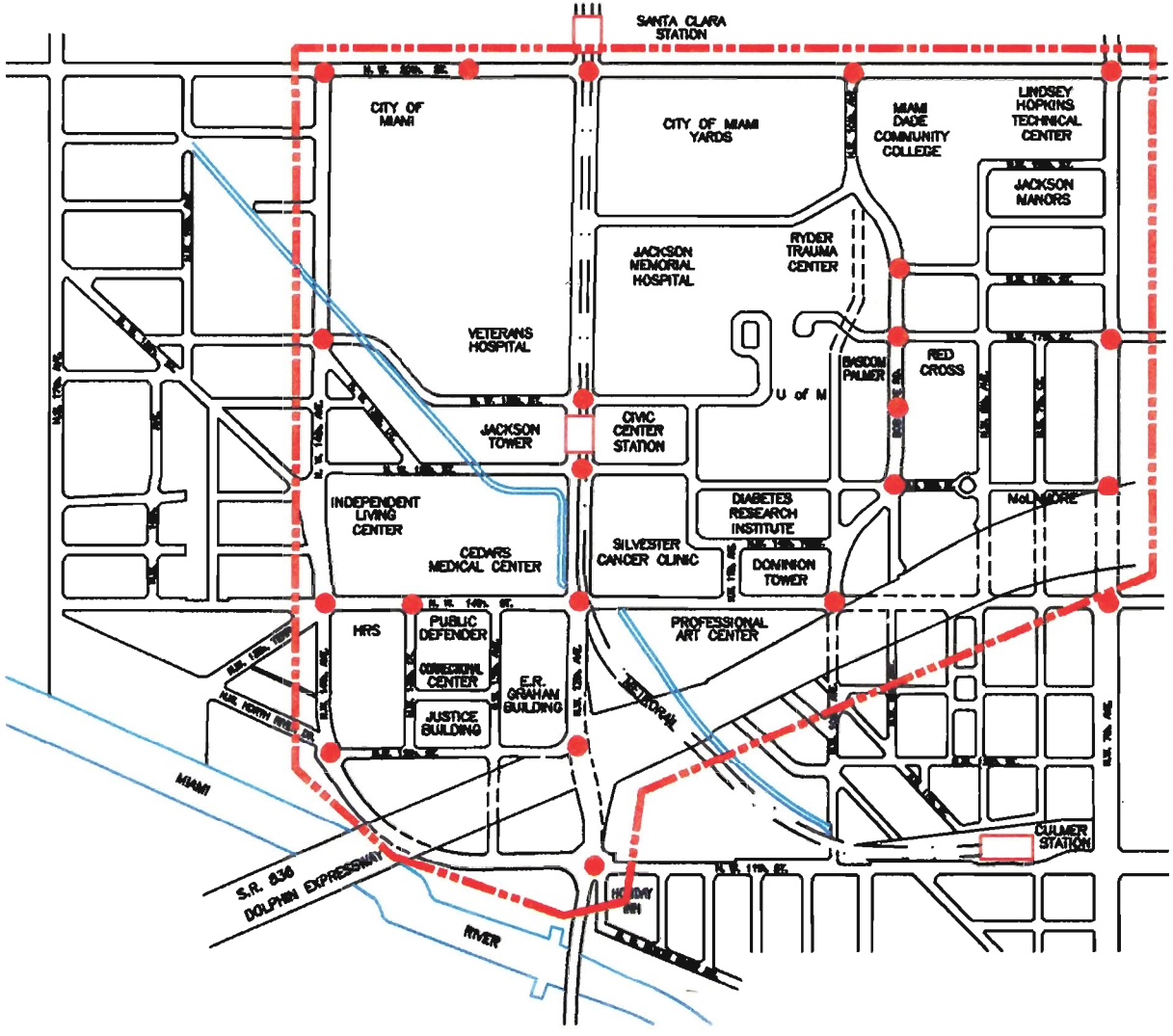
The study area consists of 22 signalized intersections which is depicted in Map 2. The Levels of Service (LOS) on N.W. 12th Avenue and N.W. 7th Avenue for Year 1991 are shown in Map 3. N.W. 12th Avenue was operating at LOS D and N.W. 7th Avenue at LOS C, as illustrated on the Florida Department of Transportation (FDOT) District Six, **Level of Service on State Highway System** map.

Level of Service indicates the operating condition of a roadway segment or an intersection. It has been categorized as A, B, C, D, E and F with A being the best and F the worst. As per FDOT standards, a minimum Level of Service D should be attained in order to achieve satisfactory operating conditions.

TABLE 8
PEDESTRIAN/BIKE ACCIDENT DATA SUMMARY FOR CIVIC CENTER: YEAR 1990-1992

	Crash Number	Year	Peds/Bike	Time of Accident	Lighting Condition	Weather Condition	Traffic Control Provision	Number of Injuries	Number of Fatalities
NW 12th Ave @ NW 14th St	130611577	1990	Pedestrian	8:00 AM	Daylight	Dry	Speed Zone	0	1
NW 12th Ave @ NW 14th St	130613847	1990	Pedestrian	11:00 AM	Daylight	Dry	Traffic Signal	1	0
NW 7th Ave @ NW 17th St	120638549	1990	Bike	10:00 AM	Daylight	Dry	Traffic Signal	1	0
NW 7th Ave @ NW 17th St	128584497	1990	Bike	10:00 PM	Dark (street light not working)	Dry	Traffic Signal	1	0
NW 7th Ave @ NW 20th St	120944871	1990	Pedestrian	10:00 AM	Daylight	Dry	No control	1	0
NW 7th Ave @ NW 20th St	120911896	1990	Bike	3:00 PM	Daylight	Dry	Traffic Signal	1	0
TOTAL	6 Crashes	1990						5	1
NW 12th Ave @ (SR 836)-12th St Overpass	148662360	1991	Pedestrian	10:00 PM	Dark (street light not working)	Dry	No control	0	0
NW 12th Ave @ NW 14th St	121060982	1991	Pedestrian	7:00 AM	Daylight	Dry	Traffic Signal	1	0
NW 12th Ave @ NW 14th St	148755820	1991	Bike	7:00 AM	Dark (street light not working)	Dry	Traffic Signal	1	0
NW 7th Ave @ NW 16th St	131550592	1991	Pedestrian	4:00 PM	Daylight	Rain	Traffic Signal	0	0
NW 7th Ave @ (SR 836) EB Overpass	130782436	1991	Bike	3:00 PM	Daylight	Dry	Undefined	1	0
NW 7th Ave @ NW 20th St	106667645	1991	Pedestrian	8:00 AM	Daylight	Dry	No control	1	0
NW 7th Ave @ NW 20th St	128562303	1991	Pedestrian	9:00 AM	Daylight	Dry	Traffic Signal	1	0
TOTAL	7 Crashes	1991						5	0
NW 12th Ave @ NW 14th St	120921986	1992	Pedestrian	6:00 PM	Daylight	Dry	Traffic Signal	2	1
NW 12th Ave @ NW 14th St	159200060	1992	Pedestrian	7:00 AM	Daylight	Dry	Traffic Signal	1	0
NW 12th Ave @ NW 16th St	121060321	1992	Pedestrian	12:00 Noon	Daylight	Dry	Stop Sign	1	0
NW 12th Ave @ NW 16th St	121092472	1992	Pedestrian	12:00 Noon	Daylight	Dry	Traffic Signal	1	0
NW 12th Ave @ NW 20th St	148751220	1992	Bike	3:00 PM	Daylight	Cloudy	Traffic Signal	0	0
NW 7th Ave @ NW 12th St	148778900	1992	Bike	10:00 PM	Dark (street light not working)	Dry	Stop Sign	1	0
NW 7th Ave @ NW 19th St	120250667	1992	Pedestrian	3:00 PM	Daylight	Dry	No control	1	0
NW 7th Ave @ NW 20th St	121093728	1992	Pedestrian	12:00 Noon	Daylight	Rain	Traffic Signal	1	0
NW 7th Ave @ NW 20th St	148699210	1992	Pedestrian	3:00 PM	Daylight	Dry	Traffic Signal	1	0
NW 7th Ave @ NW 20th St	155027880	1992	Pedestrian	9:00 AM	Daylight	Dry	Traffic Signal	1	0
TOTAL	10 Crashes	1992						10	1

Source: FDOT



22 SIGNALIZED INTERSECTIONS IN THE CIVIC CENTER

N. T. S.

LEGEND:

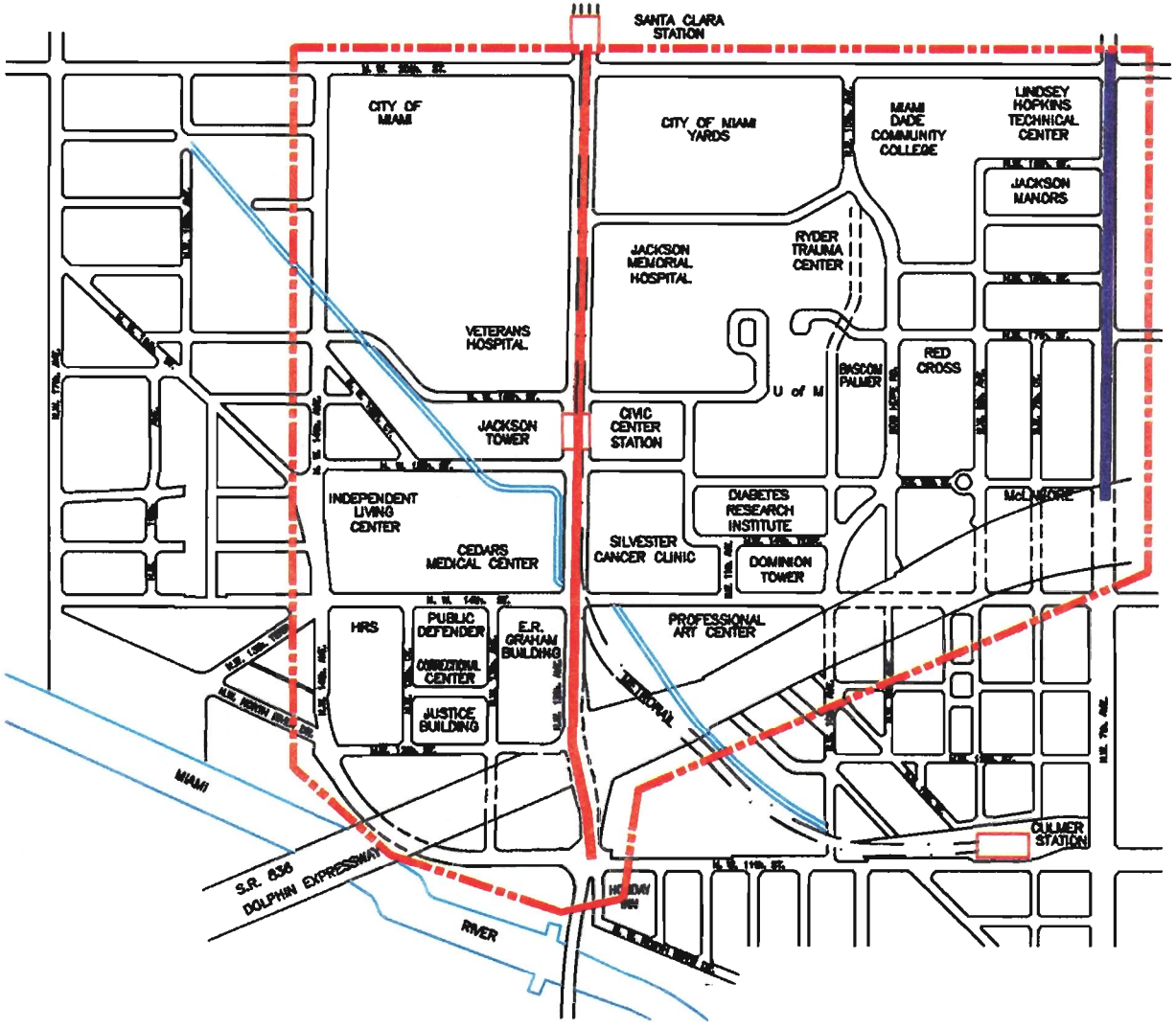
STUDY BOUNDARY

SIGNALIZED INTERSECTION

BARTON-ASCHMAN ASSOC., INC.
Ft. LAUDERDALE, FLORIDA

DADE COUNTY / CONTINUING DEVELOPMENT OF TMAS
CIVIC CENTER PEDESTRIAN AMENITIES AND SAFETY STUDY

MAP 2



LEVEL OF SERVICE ON STATE ROADS IN CIVIC CENTER

N. T. S.

LEGEND:

- D
- C
- STUDY BOUNDARY

BARTON-ASCHMAN ASSOC., INC.
Ft. LAUDERDALE, FLORIDA

DADE COUNTY / CONTINUING DEVELOPMENT OF TMAS
CIVIC CENTER PEDESTRIAN AMENITIES AND SAFETY STUDY

MAP 3

Barton-Aschman Associates, Inc.

5310 N.W. 33rd Avenue, Ste. 206 / Fort Lauderdale. Florida 33309 / (305) 733-4220 / FAX (305) 733-4665