

Fargo Downtown Parking Study

Prepared for the
City of Fargo

**By Barton-Aschman Associates, Inc.
Ulteig Engineers, Inc.
LJR, Inc.**

Fargo Downtown Parking Study

Prepared for the
City of Fargo, North Dakota

The preparation of this document was funded in part by the United States Department of Transportation, with funding administered through the North Dakota and Minnesota Departments of Transportation, the Federal Highway Administration, and the Federal Transit Administration. Additional funding was provided by the Minnesota Department of Transportation and through local contributions from the governments of Fargo, West Fargo, and Cass County in North Dakota; and Moorhead, Dilworth, and Clay County in Minnesota. The United States Government and the States of North Dakota and Minnesota assume no liability for the contents or use thereof.

This document does not constitute a standard, specification, or regulation. The United States Government, the States of North Dakota and Minnesota, and the Metropolitan Council of Governments do not endorse products or manufacturers. Trade or manufacturers' names appear herein only because they are considered essential to the objective of this document.

The contents of this document reflect the views of the authors, who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the policies of the state and federal departments of transportation.

By Barton-Aschman Associates, Inc.
Ulteig Engineers, Inc.
LJR, Inc.

Chicago, Illinois
March 1999

Contents

List of Figures and Tables, iii

Summary and Recommendations, v

1. Introduction	1
2. Study Process	3
3. Existing Parking Conditions	4
Study Area	4
Existing Parking System	4
Parking Count Program	6
Discussion of Parking Count Results	6
Parking Turnover Survey Results	19
Parking System Revenue and Expenses	23
4. Parking Supply and Demand	26
Existing Conditions	26
Future Conditions	26
5. Parking Options	29
New Parking Ramps	29
Remote Lots with Shuttle Bus Service	34
Parking Shuttle/Downtown Trolley	42
6. Parking Management and Other Parking Issues	43
Parking Management and Operations in Other Cities	43
Management of On-Street Parking	49
Other Parking Issues	52
Appendix A: Summary of Parking Study Interviews	
Appendix B: Public Meeting Summary—July 22, 1998	
Appendix C: On- and Off-Street Parking Survey Data	
Appendix D: Parking Turnover Survey Data	
Appendix E: Parking Data from Selected Cities	

List of Figures and Tables

Figures

1. Parking Study Area	5
2. On-Street Parking Locations North of Main Avenue	7
3. On-Street Parking Locations South of Main Avenue	8
4. Off-Street Parking Locations North of Main Avenue	9
5. Off-Street Parking Locations South of Main Avenue	10
6. On-Street Parking Occupancy Locations with 85% or Greater Occupancy	20
7. Off-Street Parking Occupancy Locations with 85% or Greater Occupancy	21
8. Transportation Planning Zones	27
9. Potential Parking Ramp Sites	30
10. Potential Shuttle Bus Parking Lot Sites	35
11. Potential Shuttle Route 1	36
12. Potential Shuttle Route 2	37
13. Potential Shuttle Route 3	38
14. Potential Shuttle Route 4	39
15. Parking/Trailblazing Signs	54

Tables

1. On-Street Parking Occupancy in Primary Study Area	11
2. On-Street Parking Occupancy in Secondary Study Area	11
3. On-Street Parking Occupancy in Primary Study Area	12
4. On-Street Parking Occupancy in Secondary Study Area	12
5. Off-Street Parking Occupancy in Primary Study Area	13
6. Off-Street Parking Occupancy in Secondary Study Area	14
7. Off-Street Percentage Parking Occupancy in Primary Study Area	15
8. Off-Street Parking Occupancy in Secondary Study Area	16
9. Parking Occupancy Summary in Primary Study Area	17
10. Parking Occupancy Summary in Secondary Study Area	17
11. Parking Occupancy Summary in Primary Study Area	18

12. Parking Occupancy Summary in Secondary Study Area	18
13. Parking Turnover, Summary Results	22
14. Parking Ramp Revenue and Expenses 1996 through 1998	24
15. Parking Lot Revenue and Expenses 1996 through 1998	25
16. Summary of Downtown Employment by Transportation Zone, 1995 to 2005	28
17. Comparison of Potential Parking Ramp Sites	31
18. Annual Cost of Bond Repayment Level Annual Payment	34
19. Comparative Data and Information from Other Cities	44

1

Introduction

The City of Fargo currently provides on-street parking to serve the downtown area. The city parking system includes 1,220 off-street spaces in two parking ramps, one underground facility, and two surface lots. Parking in these facilities typically costs 50 cents per hour, with a maximum of \$5 per day. In addition, there are a number of private parking lots that allow public use on an hourly or monthly basis. On-street parking includes a mixture of parallel and diagonal parking, with a range of time limits between 10 minutes and 2 hours, between 8:00 A.M. and 6:00 P.M.

There is a perception that parking is poor in the downtown area. The *City of Fargo Downtown Area Plan*, prepared in June 1996, indicates that according to a survey of Fargo-Moorhead residents, 62 percent rated downtown parking as either poor or very poor. In addition, the survey found that 33 percent of the people have chosen another destination due to inadequate downtown parking. Yet others claim that there is parking space available.

The Downtown Fargo Parking Study addressed the parking perception issue as well as other major issues related to downtown parking and pricing. Following are some of the issues addressed in this study:

- Is there enough parking to meet current and future demand? If not, what are the viable options for adding more parking?
- Are there shortages of parking in some areas of the downtown and excess parking in other areas?
- What will be the effect of planned development on parking?
- How many parking spaces will be needed in the future?
- What are the options for meeting future demand?
- Should parking fees be restructured to better manage the parking system?

- What are the best methods for collecting fees, and what fee structure is appropriate for the City of Fargo? Should parking meters be installed?
- What management and enforcement structure is appropriate for the City of Fargo?
- What is the best location(s) for potential new parking facilities?
- What will the parking program cost and how will it be paid for?
- What improvements in guidance/informational signage can help direct motorists to parking facilities?
- What parking opportunities are available in locations that have limited development potential, such as the flood plain and land owned by the railroad?
- Is adequate parking a factor in limiting current or planned development or redevelopment?

This study provides the City of Fargo with the answer to these questions. The results of the study establish a program for implementing changes and adding new parking facilities.

2 Study Process

The study was conducted by Barton-Aschman Associates, Inc., in association with Ulteig Engineers, Inc., of Fargo and LJR, Inc., of St. Paul, Minnesota. The city established a steering committee to work with the consultants during the course of the study. The committee was composed of City of Fargo staff, elected officials, local business people, and others with knowledge of the downtown parking issues and concerns. Regular meetings were held with the steering committee to present preliminary results and findings and to receive feedback on the material. A total of four such meetings were held during the course of the study.

Interviews were held at the beginning of the study with a sample of individuals and businesses in the downtown and with others with knowledge of downtown parking, including city enforcement personnel. A summary of the results of those meetings is contained in Appendix A. One of the key findings from these interviews is that several downtown businesses indicated that the ability to find parking for their employees was critical for their businesses. These are growing computer-related firms that have chosen to be in downtown Fargo, but may in the future relocate outside the downtown if they cannot find convenient parking for their employees.

A public meeting was also held in conjunction with the study. The meeting was held on Wednesday July 22, 1998, from 4:00 to 7:00 P.M. in the Fargo City Commission Chambers. The purpose of the meeting was to provide public information about the study to interested groups and citizens. It also provided an opportunity for people to present their views and concerns about parking in downtown Fargo. Approximately 30 people attended the meeting. A summary of the comments from that meeting are contained in Appendix B.

This report constitutes the final study report for adoption by the Fargo City Commission.

3

Existing Parking Conditions

Study Area

The study area for this project, shown in Figure 1, is roughly bounded by 5th Avenue North on the north, the Red River on the east, 6th Avenue South on the south, and North University Drive on the west. Parking inventory data was collected throughout the entire study area.

The study area was subdivided into a primary area, which includes the core area of downtown Fargo, and a secondary area to the west. These areas are also shown in Figure 1. Hourly parking counts were conducted in the primary study area, and two peak-hour counts were conducted in the secondary area at 11:00 A.M. and 2:00 P.M.

Existing Parking System

The parking facilities in the downtown consist of a combination of public on-street curb space, city-owned lots and garages, and private garages. Some of the privately owned and operated parking facilities are available for public parking for a fee. Other private facilities are available only for use by an individual business or land use. There are 4,835 parking spaces in the primary study area and 1,265 spaces in the secondary area, as follows:

	Spaces	Percent
• Primary Study Area		
On-Street	986	20%
Off-Street	<u>3,849</u>	80
Total	4,835	
• Secondary Study Area		
On-Street	212	17
Off-Street	<u>1,053</u>	83
Total	1,265	

Figure 1 Study Area

On-street parking in the downtown is intended for short-term visitors and shoppers, with times limits as low as 10 minutes at the post office to a maximum of 2 hours. The location of the on-street parking is shown in Figures 2 and 3.

Off-street parking locations are shown in Figures 4 and 5. The City of Fargo operates several lots and garages in the downtown. The locations of these facilities (Figure 4) are listed below:

- City Parking Structures

GTC Ramp	200 spaces
Radisson Ramp	250
First Bank Ramp	<u>150</u>
Total	600 spaces
- City Parking Lots

Second Avenue Lot	113 spaces
Civic Center Lot	480
Lark Lot	30
Elm Tree Lot	<u>112</u>
Total	735 spaces

Parking Count Program

On-Street Parking Counts

Counts of the on-street parking spaces were conducted in the primary and secondary study area. The counts were conducted hourly in the primary study area and at 11:00 A.M. and 2:00 P.M. in the secondary area. The on-street counts are summarized in Tables 1 through 4. Detailed counts by block face are shown in Appendix Table 1. Appendix Table 2 shows the occupancy percentage by block face.

Off-Street Parking Counts

The results of the off-street parking counts are shown in Tables 5 through 8. Table 5 shows the occupancy count for the primary area, and Table 6 shows the counts for the secondary area. Table 7 shows the occupancy percentage for the primary area, and Table 8 shows the percentage for the secondary area.

Summary Results of On- and Off-Street Parking Counts

Tables 9 and 10 show the combined on- and off-street parking occupancy results for the primary and secondary areas, and Tables 11 and 12 show the occupancy percentages for the two areas.

Discussion of Parking Count Results

The overall peak parking occupancy in the primary study area of 70 percent occurred at 3:00 P.M., but there were only minor variations in occupancy between 10:00 A.M. and 4:00 P.M., from a low of 64 percent at 1:00 P.M. to a high of 70 percent at 3:00 P.M. The combined Figure 2 on-street parking north of Main

Figure 3 on-street parking south of Main

Figure 4 off-street parking north of Main

Figure 5 off-street parking south of Main

Table 1 on-street occupancy/primary
Table 2 on-street occupancy/secondary

Table 3 on-street occupancy/primary
Table 4 on-street occupancy/secondary

Table 5 off-street occupancy/primary

Table 6 off-street occupancy/secondary

Table 7 off-street occupancy percent/primary

Table 8 off-street occupancy percent/secondary

Table 9 occupancy summary/primary
Table 10 occupancy summary/secondary

Table 11 percent summary/primary
Table 12 percent summary/secondary

occupancy in the secondary area was less than 50 percent, 49 percent at 11:00 A.M. and 47 percent at 2:00 P.M. These numbers indicate a parking system with available capacity. A parking system is generally considered to be operating at capacity when the occupancy level reaches 85 to 90 percent. Individual facilities are considered to be operating at capacity when occupancy levels reach 90 percent. There needs to be sufficient capacity in a parking system so that drivers can find a parking space even during peak times.

As shown in Table 3, the on-street parking system operates well below capacity, with only 55 percent of the spaces occupied at peak times. No single block showed an occupancy higher than 77 percent. There were some isolated locations in the primary study area where usage was higher. Figure 6 shows the locations where occupancy was 85 percent or more for three hours or more. These areas are located primarily in the area bounded by 4th Avenue North on the north, 1st Avenue North on the south, 4th Street on the east, and Broadway on the west. Only one block on Broadway between 3rd Avenue and 4th Avenue was heavily used, but at isolated times.

As shown in Table 7, the overall peak off-street parking occupancy in the study area was 76 percent at 10:00 A.M. The data shows an off-street parking system with capacity in some locations. Some of the individual facilities did have occupancy levels of 85 percent or more, as shown in Figure 7. These facilities include the Radisson ramp, the First Bank ramp and lot, and the 2nd Avenue lots at Roberts.

Parking Turnover Survey Results

Parking turnover surveys of on-street parking were conducted at selected locations on Broadway, 1st Avenue North, and Main Avenue. Parking turnover is an indicator of the rate of use of a parking space and the average number of vehicles using a given space or group of spaces during a specified time period. The turnover rate also indicate the type of use. For example, a turnover rate of 1.0 over an eight-hour period would indicate that the space was used by a long-term parker, probably an employee. A turnover rate of 2.5 to 3.5 would be the expected range for short-term parking spaces with a time limit of one to two hours. Much higher turnover rates of 5 to 8 or more would be expected at high-use facilities, such as convenience stores and fast-food establishments.

The turnover rate is determined by dividing the total number of vehicles parked in a given location by the capacity. The information is collected by recording the license plate number of each vehicle parked at fixed time intervals. A summary of the results of the turnover survey is shown in Table 13. The complete turnover survey results are shown in the Appendix.

The turnover on Broadway was very high, an average of 7.30 vehicles parked in each space. However, some of the turnover is attributable to long-term parkers who moved their vehicles periodically to avoid receiving a parking citation for parking too long in the time zone. The turnover results on 1st Avenue North and Main Avenue are 1.8 and 2.7, respectively, about what would be expected in a downtown area such as Fargo's with some retail/commercial activity, but primarily an office/business center.

Figure 6 on-street occupancy more than 85%

Figure 7 off-street occupancy

Table 13 parking turnover results

Parking System Revenue and Expenses

The parking revenue and expenses for the three principal parking ramps are shown in Table 14 for the 1996, 1997, and 1998 budget. Comparable data for the municipal lots is shown in Table 15. The GTC ramp is currently operating at a loss when debt service is added to expenses. The First Bank ramp is operating at a surplus, and in 1998 the Radisson ramp is expected to generate a net surplus of \$22,954. There are outstanding bonds remaining on the Radisson ramp and the First Bank ramp. These bonds will be retired in the year 2004. The amount outstanding is \$244,930 for the Radisson ramp and \$567,718 for the First Bank ramp. The income for the parking lots exceeded expenses in 1996 and 1997, but in 1998 a loss of \$7,963 is projected.

Parking Fine Revenue

Revenue from parking tickets has been discussed as a possible revenue source in the downtown area. According to police department records, the parking fines levied in the 14th precinct (Main Avenue to 7th Avenue and University Drive to the Red River) was approximately \$123,000 in 1998. Approximately \$94,000 was actually collected in fines. These funds could be used as a revenue source for a downtown parking system. However, the cost of enforcement system (personnel and expenses) would need to be included in the overall operating cost of a downtown parking system.

Table 14 parking revenue/expenses

Table 15 parking revenue/expenses—lots

4

Parking Supply and Demand

Existing Conditions

The parking summary results indicate that there is adequate parking in the downtown area, especially on-street, where, overall, spaces are only half used. Some of the more convenient locations in the downtown are used to near capacity, including the Radisson ramp, the First Bank ramp, and the lot at 2nd and Roberts. The city does not maintain data on land use on a block-by-block basis that can be used to estimate parking demand by block to determine existing surpluses and shortages.

Future Conditions

There are no projects planned for the downtown at this time that will affect the parking supply. Some employers have indicated they may be increasing their work force in the near term, but there is no comprehensive source for this data. Employment information is available for the downtown for the transportation analysis zones (TAZs). Figure 8 shows the TAZs in the downtown. The TAZ boundaries do not coincide with the study area boundaries, so assessment by TAZ is not feasible. However, future employment data has been projected for the downtown TAZs, as shown in Table 16.

Employment in the five TAZs included in the downtown (TAZ Numbers 80, 81, 82, 83, and 85) is projected to increase by 21 percent between 1995 and 2005, or about two percent annually. For the purposes of this study, given the uncertainty of future employment growth in the downtown, it has been decided that a way to assess future parking demand is to project the parking needs for an increase in downtown employment in increments of increase—in this case, 100, 500, and 1,000 additional employees.

The parking demand generated by increased employment is dependent on the type of employees being added. Office employees in a typical daytime office situation would create the greatest need for parking. Other types of employment could have staggered shifts and evening

Figure 8

Table 16
SUMMARY OF DOWNTOWN EMPLOYMENT BY TRANSPORTATION ANALYSIS
ZONE (TAZ), 1995 TO 2005; FARGO, NORTH DAKOTA

TAZ	1995 Employment	2005 Employment	Increase	Percent Increase
80	2,772	3,502	730	26%
81	3,095	3,845	750	24
82	1,111	1,446	335	30
83	1,230	1,600	370	30
85	<u>2,239</u>	<u>2,239</u>	<u>0</u>	<u>0</u>
Subtotal	10,447	12,632	2,185	21%
98	829	929	100	6
97	<u>1,705</u>	<u>1,805</u>	<u>100</u>	<u>6</u>
Total	23,428	27,998	4,570	20%

activity. For example, a hotel or hospital would have employees on a 24-hour basis. Based on work by Barton-Aschman in other locations, it is estimated that the overall parking generation for downtown employees is about 0.50 parking spaces per daytime employee on an aggregate basis. Thus, if the projected increase in employment of 2,185 were to occur, an additional 1,093 parking spaces would be required. The increase would be higher if the added employment included only daytime employees. In that case, the demand could be as high as 0.8 spaces per employee.

Another way to look at the issue is to apply the percentage increase shown in Table 16 to the peak downtown parking occupancy. For example, the total peak downtown parking occupancy at 3:00 P.M. was 3,385 vehicles (see Table 9). A 20 percent increase in downtown employment would likely increase the peak accumulation by 20 percent to 4,062 ($3,385 \times 1.2 = 4,062$), an increase of about 677 vehicles, or 796 spaces at an occupancy level of 85 percent ($677 \div 0.85 = 796$).

5

Parking Options

Several options have been devised for increasing the parking capacity in downtown Fargo. The options considered include new parking ramps, remote parking lots served by shuttle bus service to the downtown, and increased efficiency in the use of existing parking.

New Parking Ramps

Nine sites have been considered for potential parking structures (see Figure 9). The sites considered for structures are in all cases currently occupied by surface parking lots or existing parking structures. From a planning perspective, it is important to preserve existing viable buildings and demolish existing buildings only in locations where buildings are deteriorated and vacant and redevelopment is warranted. Table 17 shows a comparison of the potential sites, including capacity, surface pavement displaced, net parking space gain, and a cost estimate (excluding acquisition and/or demolition of existing structures) in terms of the cost per parking space gained. Two of the sites (G-1 and G-2) were considered by Community First National Bank and Norwest Bank for a possible jointly sponsored parking structure. (It should be noted that since the start of this study, the city and the two banks have reached an agreement to proceed with a ramp at location G-2 to provide additional employee parking in this area. This ramp is expected to open up both on- and off-street parking spaces in its vicinity.)

The largest net capacity gain could be achieved at Sites C, D, E, and G-1 or G-2. The site at Roberts and 2nd Avenue is the most expensive for each net space gained because of the 210-space surface lot that would be displaced. The two sites considered by Community First National Bank and Norwest Bank would both have a cost per net space gained of more than \$15,000. Expanding the Radisson ramp by 75 spaces is the least expensive option, at \$10,780 per space.

One option that could also be considered is combining Sites A and B into a single parking structure by spanning 2nd Avenue. The bridge between the north and south sections would begin at Level 3 to provide sufficient vehicle clearance on 2nd Avenue. Only two levels would

Figure 9 new parking sites

Table 17 comparing parking sites

be added, with an estimated capacity of 120 spaces. Bridging the street is not recommended because of the need for two separate exit locations and the effect on the downtown of bridging the street.

Discussion of Proposed Parking Sites

Site A: Second Avenue and Roberts

This site is currently occupied by two heavily used surface parking lots. It is also next to the new Federal Courthouse, which might provide an opportunity to develop a joint federal/city facility. The primary disadvantages of this site are the high per-space cost and the elimination of the existing surface parking lot on the site.

Site B: 2nd Avenue Lot

This site is too small (140 feet by 140 feet) to effectively accommodate an efficient parking structure.

Sites A and B

This would combine Sites A and B via a bridge across 2nd Avenue.

Site C: NP Avenue West of Broadway

This site is currently a parking lot. The property is owned by the Burlington Northern Railroad, and a long-term lease would be needed to build a parking structure. This site also has the potential to be connected to the skywalk system with an extension to the south. A parking structure at this site could also be used to support development of the Northern School Supply Building, which is currently vacant and would require parking support to be developed.

Site D: NP Avenue at 4th Street

This site is occupied by two privately owned surface parking lots and two buildings. Acquisition of the property and demolition of the existing buildings would be required.

Site D-1: NP Avenue and 5th Street

This site is an existing surface lot from the old Dakota Bank Building. This site could be combined with Site D for a larger garage.

Site E: Civic Center Parking Lot

This site is occupied by a large surface parking lot that is heavily used when large events are taking place at the center. At other times, the lot is half full or less. Its location far to the east makes this site less desirable for ramp construction than other more conveniently located sites.

Site F: Radisson Ramp Addition

This addition would cause some disruption to the existing garage during construction, but it would be a cost-effective means for adding parking capacity at a well-used location in the downtown.

Site G-1: Community First National Bank/Norwest Bank

This site is occupied by an existing surface parking lot on property owned by Burlington Northern. The site serves adjacent buildings well, but is not well located to serve the downtown core.

Site G-2: Community First National Bank/Norwest Bank

This site is occupied by existing surface parking. A parking structure on this site would be an excellent location to serve the two banks, the YMCA, and Main Avenue businesses, but is not well located to serve other downtown businesses north of Main Avenue.

Some members of the steering committee expressed interest in the feasibility of expanding the GTC garage (Site D-2). However, this facility cannot easily be modified because the bus terminal building is over the garage and because the ramp and access system do not lend themselves to vertical expansion.

Financial Discussion

Table 18 shows the annual cost of bond repayment for a 388-space parking structure at Site D and expansion of the Radisson ramp. The annual debt service costs for the Site D garage would be \$370,988. This does not include the cost of property acquisition or structure demolition. The addition to the Radisson ramp would have an annual debt service cost of \$83,000.

Remote Lots with Shuttle Bus Service

Potential Shuttle Bus Lots

Four potential locations have been evaluated for outlying parking lots that could be served by shuttle bus service to and from the downtown. The sites (see Figure 10) are listed below:

- | | |
|-------------------|------------------|
| South Shuttle Lot | West Shuttle Lot |
| North Shuttle Lot | Shotwell Lot |

All except the Shotwell lots have been evaluated in terms of cost and suitability for serving the downtown. The Shotwell lots have been eliminated from consideration because of their location on the far east end of the downtown, beyond the major travel routes into and out of the city.

Potential Shuttle Bus Routes

Four shuttle bus routes were evaluated, as listed below:

- Route 1 (Figure 11) South shuttle lot with access to the downtown via 2nd Street, 1st Avenue, and NP Avenue.
 - Route 2 (Figure 12) West shuttle lot with access to the downtown via 2nd Avenue and 4th Avenue.
 - Route 3 (Figure 13) North shuttle lot and west shuttle lot with access to the downtown.
 - Route 4 (Figure 14) South/west shuttle lot service.
- Table 18

Figure 10

Figure 11

Figure 12

Figure 13

Figure 14

A summary of the operating characteristics and an estimate of the marginal operational cost for the bus routes is shown below.

Route 1: South Shuttle Lot Route

Round Trip Distance: 2.8 miles
Route Trip Estimated Time: 15 minutes
Service Days: Monday through Friday
Service Times: A. 7:00 to 10:00 A.M./10-minute headway
B. 10:00 A.M. to 3:00 P.M./20-minute headway
C. 3:00 to 7:00 P.M./10-minute headway
Number of Vehicles/: A = 2 vehicles/6 service hours
Service Hours Required: B = 1 vehicle/5 service hours
C = 2 vehicles/8 service hours
Total Daily Vehicle Service Hours: 19 service hours
Service Rate: \$15.07 per hour
Total Daily Cost for Route 1: \$286
Total Annual Cost for Route 1 (250 days): \$71,500

Route 2: West Side Loop Route

Round Trip Distance: 1.2 miles
Route Trip Estimated Time: 6 minutes
Service Days: Monday through Friday
Service Times: A. 7:00 to 10:00 A.M./10-minute headway
B. 10:00 A.M. to 3:00 P.M./20-minute headway
C. 3:00 to 7:00 P.M./10-minute headway
Number of Vehicles/: A = 1 vehicle/3 service hours
Service Hours Required: B = 1 vehicle/5 service hours
C = 1 vehicle/4 service hours
Total Daily Vehicle Service Hours: 12 service hours
Service Rate: \$15.07 per hour
Total Daily Cost for Route 2: \$181
Total Annual Cost for Route 2 (250 days): \$42,250

Route 3: West Lot/Merit Care Shuttle Route

Round Trip Distance: 1.5 miles
Route Trip Estimated Time: 8 minutes
Service Days: Monday through Friday
Service Times: A. 7:00 to 10:00 A.M./10-minute headway
B. 10:00 A.M. to 3:00 P.M./20-minute headway
C. 3:00 to 7:00 P.M./10-minute headway
Number of Vehicles/: A = 1 vehicle/3 service hours
Service Hours Required: B = 1 vehicle/5 service hours
C = 1 vehicle/4 service hours
Total Daily Vehicle Service Hours: 12 service hours

Service Rate: \$15.07 per hour
 Total Daily Cost for Route 3: \$181
 Total Annual Cost for Route 3 (250 days): \$45,250

Route 4: South and West Shuttle Lot Route

Round Trip Distance: 3.0 miles
 Route Trip Estimated Time: 13 minutes
 Service Days: Monday through Friday
 Service Times: A. 7:00 to 10:00 A.M./10-minute headway
 B. 10:00 A.M. to 3:00 P.M./20-minute headway
 C. 3:00 to 7:00 P.M./10-minute headway
 Number of Vehicles/: A = 2 vehicles/6 service hours
 Service Hours Required: B = 1 vehicle/5 service hours
 C = 2 vehicles/8 service hours
 Total Daily Vehicle Service Hours: 19 service hours
 Service Rate: \$15.07 per hour
 Total Daily Cost for Route 4: \$286
 Total Annual Cost for Route 4 (250 days): \$71,500

The service hours shown above do not include possible deadhead time. Any deadhead time should be minimal because of the proximity of the Metropolitan Area Transit facilities to the proposed new routes. It is assumed that vehicles are already being depreciated, so additional vehicle costs are not included in the estimated hourly rate of \$15.07, provided by the City of Fargo.

The marginal cost estimate is based on additional estimated costs that would be added to Fargo Metropolitan Area Transit as a result of the new shuttle service. It does not include administrative costs, garage facility costs, maintenance, vehicles, or any other costs that may be allocated to this new service from existing costs. The current serve rate charged by Laidlaw is effective until April 1999. Service rates after that date may change due to contract negotiations.

Adding the cost of new buses would increase the annual operating costs. A small vehicle with a seating capacity of 25 to 30 passengers will cost about \$80,000. For Route 1, for which two buses would be required, the annualized cost of the buses (assuming straight-line depreciation) and fuel is estimated to be \$41,000, as follows:

$$2 \text{ buses @ } \$80,000 = \$160,000 \div 5 = \$32,000$$

$$\begin{aligned} \text{Fuel cost (19 hours/day)} &= 11.2 \text{ miles per day} \times 250 \text{ days} \times 2 \text{ buses} = 106,400 \text{ miles per year} \\ 106,400 \text{ miles per year} &\div 18 \text{ miles per gallon} \times \$1.25 \text{ per gallon} = \$8,867 \text{ per year} \\ &(\text{say } \$9,000) \end{aligned}$$

Parking Shuttle/Downtown Trolley

The new transit system plan developed by LJR, Inc., and SRF (January 1999) shows that both new transit routes (No. 14 and No. 16) will provide approximately 30-minute frequency to the existing outlying lot now used by these employees (the old hospital site south of Norwest/ Community First). There would be no need to run a special shuttle route to transport employees from this lot. Instead, the route times during peak A.M. and P.M. hours could be adjusted (and overlapped) to provide 15-minute frequency in this area for what is essentially a four-block ride. Employees could pay a minimum fare (suggested at 25 cents) or could ride free with employee identification for that trip only. Based on the interview surveys, there does appear to be demand for inexpensive fringe parking served by shuttle buses.

The Fargo Transit Study did not show demand in the downtown area for a trolley. Areas within the city limits were identified where traditional transit markets could be targeted, and the main downtown area is already served by enough transit routes (three: Routes 1, 2, and 3) that existing coverage is convenient (any point downtown is within two to three blocks of regular route service) and adequate for circulation purposes. Therefore, expansion of a circulator or shuttle system was not recommended, except as created to serve parking shuttle lots.

The new fixed-route transit system will begin May 1, 1999. It would be difficult to provide off-peak access to outlying lots within the current time schedule. The use of separate "tripper" vehicles or shuttles are recommended to operate off-peak service as demand indicates.

6

Parking Management and Other Parking Issues

Parking Management and Operations in Other Cities

The City of Fargo is already well into the process of preparing a long-term parking strategy for its downtown area. By recording the parking inventory and understanding the existing conditions, the city's parking characteristics can be compared with those of communities of similar size and features. A survey of 11 comparison cities was conducted to obtain information on how other cities manage their downtown parking supply. A summary of these results is shown in Table 19. Appendix D includes more detailed information provided by the cities surveyed.

Overview

Many cities have achieved optimum results from public parking facilities through a formal management structure. While informal or split responsibility management of a parking system can work in limited situations, a formal management structure is generally needed when a system grows to the point where it contains several public parking facilities in the central business district and possibly other facilities in outlying activity centers. Currently, parking operations in the City of Fargo are shared by three city agencies: Engineering, Finance, and Police. One of the primary recommendations of this study is that the city establish a parking management organization to implement the options and alternatives outlined in this study.

Parking can be viewed as a utility needed to support those land uses that generate parking demand. Many cities, such as Fargo, have accepted responsibility for building and operating essential parking facilities. There are two important related responsibilities: formal management and monitoring of the parking system.

A dedicated parking management organization can focus on the many necessary and desirable activities with the following possible benefits:

Table 19 comparison cities

- Increased systemwide income
- Reduced systemwide operating costs
- Better parking enforcement (efficiency and income productivity)
- Improved public approval/satisfaction of parking facilities
- Better responsiveness to complaints and problems
- Optimum system usage (proper allocation and space use by employees, shoppers, etc.)
- An identified person/agency for retail, office, and other developers to discuss proposed new developments and associated parking

Authorization

The current municipal code, Article 18-07, establishes the Municipal Parking System, which includes all municipal off-street parking facilities in the city, excluding those at the airport, Hector Field. The board of city commissioners is designated as the municipal parking authority with the authority to finance municipal parking facilities. It would be desirable for the city commissioners to appoint a board of trustees to oversee the authority, so they are not involved in the day-to-day parking operations. The trustees could include the Mayor, the Director of Finance of the city, and three to five citizens appointed by the City Council upon nomination by the Mayor. A representative of the city commission would also be appropriate, as well as representatives of downtown businesses and private parking operators. The City Attorney could provide legal advice to the authority. The trustees would hire the Executive Director who would be responsible for hiring all other employees of the authority. The trustees would be responsible for approving contracts, major expenditures, and similar matters that require oversight.

Although a dedicated parking *division* or *department* need not be as tightly structured nor as formal as an authority, it must have legal and legislative authorization. Some form of oversight must be provided through a group that corresponds to the "trustees" noted above.

Clearly, there are many decisions that must be made in deciding what form and structure the new parking organization should have. A study group or task force may be the best way to proceed in this matter, with the assistance of an attorney and a knowledgeable consultant.

Form of Organization

The form of the parking management organization should be structured to match its objectives and financing capabilities. Also, the terms and limitations stated in the indentures of the outstanding bonds must be considered.

Several possible placements for the formal parking organization have been identified:

- As a new parking authority (such as existed in Fargo in the past)
- Within one city department (Engineering, Finance, or Planning)
- As a new city department (e.g. Department of Parking)

The location of the parking department is not as important as its structure. The new department should have essentially the same structure and mission regardless of its location. It should be expected to do the following:

- Monitor the financial performance of the system daily, weekly, monthly, and annually to identify any unusual situations and take appropriate action.
- Prepare an annual budget and track system variation month by month. (This is one of the most important functions of the department. See next section for more details.)
- Monitor the contract parking operators to assure compliance with contracts.
- Monitor enforcement activity (e.g. number of tickets written and paid).
- Monitor condition of facilities, schedule preventative maintenance, etc.
- Monitor other aspects of the system (e.g. Park and Shop, proper fee levels).
- Prepare an annual inventory of the system and its usage (public and private facilities) to detect changes and trends.
- Confer with Planning Department, business leaders, and developers to identify new developments that may require changes and/or expansion of the municipal system.
- Arrange for periodic (biennial or triennial) professional inspections of garages and lots to help extend the useful lives of facilities by identifying needed repairs early.
- Assist appropriate city departments to prepare bid packages for equipment.
- Assist city departments to prepare RFPs for such contracts and services as garage operating agreements, consultant services, system equipment, structural repairs, etc.
- Participate in professional parking organizations and meetings.

It is recommended that the initial organization be moderate in size with a low annual cost. It would be appropriate to start with a "low end" operation headed by an Executive Director, Parking Administrator, or Parking Manager, with one clerical assistant. The parking department could be located in its own offices or separate offices in one of the city departments.

Depending on office and office equipment arrangements, the low end operation could operate at an annual cost of between \$50,000 and \$100,000. It is possible that within the first few years, much of the cost of the parking organization can be recaptured through improved financial performance. The ideal situation would be to hire an experienced parking director with sound management and financial skills. An alternative would be to hire an experienced manager with limited parking experience, but with the potential to learn the profession. Under this situation, it would be essential to retain a specialized parking consultant on a retainer basis to assist the director in performing the necessary tasks.

The consultant retainer agreement should include responsibilities such as the following:

- Review financial results of the system each month and comment as appropriate.
- Visit the system to inspect it and meet with the manager and the governing body. In the first year, meetings should be scheduled every other month or so; in later years, as the manager becomes more experienced, meetings could be reduced to twice a year.
- Provide phone consultation as needed. If a special problem needs attention it would be handled on a supplemental basis.
- Approve the annual budget.
- Monitor for compliance of the bond indentures.

In later years, after the city and the administrator have gained more experience with the dedicated parking department, it may be appropriate to consider a full-service parking department in which all services are provided by the city. There are many things that need to be considered before making such a change. The questions that need to be addressed include legal, stipulations of the outstanding bond indentures, employee benefits and costs (for cashiers, maintenance workers, etc.), ability to use part-time workers, and the cost of liability insurance (a large operator may get lower rates because risk can be spread over more facilities and parking spaces).

Enforcement should remain under the police department control while maintaining close cooperation with the new parking department. In the future, it may be appropriate to place enforcement and ticket collections under the parking department. Some cities have found it advantageous to place enforcement under the parking department.

The Annual Budget

Preparation of the annual budget for the parking system, including expenses and income, is one of the most important activities of the parking administrator. If the budget accurately reflects operations during the ensuing year and identifies incremental results on a month-by-month basis, it provides a valuable tool for detecting problems of many types so that corrective measures can be taken before the problems become more serious. The general approach is to prepare the budget on an annual basis and, based on prior operating experience, subdivide it into anticipated monthly increments.

The usual budget includes the following operating revenue items (total system and facility basis):

- Monthly contract income.
- Validation/Park and Shop income.
- Special event income, if applicable.
- Transient income (from hourly parkers)
- Lease income (from retail or other facilities located in city garages).
- Overtime fine income (if appropriate).
- Miscellaneous or other income.

Operating expenses are usually divided into the following major headings, on a facility basis to the extent possible. Expenses should be allocated by month, as possible:

- General and administrative expenses. (Expenses that cannot be allocated to a specific facility, such as the cost of the administrator; may prorate by spaces or revenues.)
- Contract operator fees
- Maintenance and other expenses (utilities, insurance, supplies, etc.)
- Repairs, major maintenance, and equipment (Sometimes paid from special reserves.)

In addition to operating revenues and expenses, there may be non-operating income such as the interest earned on investments and reserves.

Non-operating expenses include debt service, representing the repayment of funds used to build the parking facilities, and possibly depreciation. Although there are different opinions on depreciation, normally it is not considered in a public operation where bonds have been used to build the facilities, since in effect that would represent counting the construction cost twice.

While the overall budget is essential, it becomes more useful when broken down facility by facility. Individual budgets for each facility will permit the administrator to monitor the operation of the system more precisely and detect changes that might be impossible to detect if only total income and expenses are reviewed each month. (The slippage in one facility might be hidden by improved performance in another facility if only the totals are compared.) Statistics, if properly developed, can provide a useful way of comparing the system performance, facility by facility each month with the budget amounts that were established at the beginning of the fiscal year. Whenever a variation occurs between budget amounts and actual performance in a given month, the administrator should investigate the cause. Variations in either direction—up or down with respect to the budget—should trigger this investigation.

Monitoring the Contract Operator

In most instances, contract operators do an excellent job. However, the best results can usually be attributed to three factors:

- A carefully drawn contract that spells out in detail what is expected of the operator and sets forth what penalties will be imposed for specific non-compliance
- Carefully developed reports (daily, weekly, monthly) to cover revenues, employee allocations, and other activities. Some of these reports should be submitted by the operator as specified by the administrator; some would be derived from computer monitoring of the system
- Continuing attention to the reports submitted by the operator supplemented by observations of the administrator

The parking department administrator can easily monitor the system if the proper set of forms and procedures are established. When the administration of a system is divided among several city departments, it is rare to find careful monitoring.

Management of On-Street Parking, Including Discussion of On-Street Parking Meters

The City of Fargo currently provides free on-street parking. Oftentimes, merchants believe that free parking is needed to draw customers to downtown shops. Free parking, however, is more time-consuming and costly to consistently enforce. With free, on-street parking, some employees are tempted to parking on-street and move their vehicles frequently to avoid detection, as was observed on Broadway during the turnover surveys. Paid, metered on-street parking is currently not permitted under state statute. However, meters are one way to regulate the use of curb spaces and one of the options that should be considered. Implementing a meter plan would require a change in state law. Free, on-street parking also eliminates a valuable source of funding for parking maintenance, enforcement, and promotion.

Parking meters are an alternative to free, on-street parking. Meters encourage vehicle turnover, regulate space use, and create parking space availability. A meter operation includes the functions of planning and administration, maintenance, collections, counting, security, and enforcement.

Parking Meter Options

Different parking meter options are available. Mechanical meters, electronic meters, in-vehicle parking meters, and multi-space meters are options currently used by various parking systems. Electronic meters, which offer the advantage of variable time and rates structures, are replacing mechanical meters. Electronic data capture can track collection and maintenance activity on each meter. Based on vendor comments, mechanical and electronic meters have similar costs, but because of the low demand for mechanical meters, the delivery date can be up to several months, compared to 30 to 45 days for electronic meters.

Approximately 1,000 parking meters would be required in the primary study area of downtown Fargo. General costs for establishing an on-street parking meter system of this size were estimated using 1,000 parking spaces as the basis.

Various types of mechanical meters are available. One type is the multi-space meter, which can serve four spaces or one block. This type of on-street application is not recommended in areas with extreme weather conditions because patrons are unwilling to walk extra distances to pay the meter. Either single-space or two-space meters would be more appropriate in downtown Fargo. A two-space electronic meter, with a zinc upper housing and a cast-iron lower housing, costs approximately \$330. A single-space electronic meter costs approximately \$350. To operate the meter using coins and/or debit cards increases the cost by an additional \$20 per meter. A debit system allows a person to purchase a credit card type card with a prepaid amount. Each time the card is placed into the meter, the parking fee is subtracted from the value of the card. Some municipalities offer the card to downtown patrons at a reduced rate and post a higher hourly rate on the meter for occasional users. Electronic meters operate on a 9-volt battery that lasts one to two years, depending on meter options, use, and weather. Routine replacement of batteries on a systemwide basis is recommended. An additional feature that is offered on some meters for an additional \$30 is a high-visibility expiration signal to aid enforcement personnel.

Electronic meters have the capability of tracking maintenance and revenue to find underutilized meter locations, compromises in system integrity, and areas where enforcement needs to be increased. Software to monitor the performance of each meter is available for \$1,800, plus \$500 for each handheld communicator. Two handheld communicators would be needed. Occasionally, the software program is provided free of charge when a large order is placed.

Meter Installation

Additional equipment is required to operate a metered parking system. Each meter must be placed on a metal post and installed in the ground, similar to a fence post. In cold climates, it is recommended that the meter be set on a double post, with a hole drilled into the post for drainage. Another option is to use a manufactured post-setting device that allows for easy replacement in areas where meter posts are at risk of being bent. Most meter distributors do not provide installation. Usually, meters are installed by city personnel or contracted to a local fence repair business.

Security and Personnel

Security for any revenue-generating operation is an issue that should be planned for and addressed in a direct manner. A meter has two components: the lower housing, which holds the coin can, and the upper housing, which encloses the mechanism and time/rate plate. Duties and keys should be separated as much as possible. The same person should not conduct meter collection, maintenance, and enforcement. A meter maintenance person should not have access to the meter vault, and the collection person should not have access to the meter mechanism. Meter locks with changeable combinations should be purchased, and collection routes should be established with no more than 200 meters per route. If theft is suspected or a key is lost, the meter combination for that route can be reset. Locked coin cans within the meter and closed-can collection canisters should be used to protect not only the revenue but also the collection personnel.

Additional security measures include providing collectors and maintenance personnel with walkie-talkies. Meter collections and counting can be conducted by in-house personnel or contracted out. Regardless of the option chosen, security measures need to be established and routinely conducted. Salting the meters is commonly done to ensure that all the money placed into the meter is deposited.

The 500 to 1,000 meters would likely need to be collected one to two days per week depending on hourly rates and usage. Collection would require one full-time person. In many cases, meter technicians double as collectors. Only one meter technician would be required. St. Cloud, Minnesota, has 500 meters and employs three meter collectors/technicians; however the city has mechanical meters that are more labor-intensive. A meter maintenance technician's responsibilities would include unjamming meters, performing rate and duration changes, battery replacement, and perhaps the installation and removal of meters. For security reasons, it is recommended that the collection and maintenance functions remain separate, but be conducted at the same time. Meters on one side of the street can be collected while maintenance is performed on the other side of the street. The International Parking Institute lists the median average hourly rate in the United States for a meter collector at \$10.25 and at \$12.00 for a meter maintenance technician. Meter maintenance, collection, and enforcement are sometimes contracted to private firms. These are specialized services that are not available in every city. When these services are contracted, it is still necessary for a city staffer to be designated to

oversee and monitor their performance.

Enforcement

Fargo currently has two parking enforcement officers to enforce downtown parking regulations. The officers are civil service officers employed in the Police Department. Replacing the free on-street parking with meters would create a more efficient enforcement operation and enable greater and more consistent coverage of the downtown. An effective parking system requires that parking regulations be enforced in a consistent and fair manner, and that the fines for all violations be collected.

With electronic ticket writing, parking violation patterns and ticketing procedures can be reviewed so that the enforcement program can be continually modified to best meet the needs of all potential users. Handheld wireless computers are recommended for parking enforcement officers. Some technologies allow access to on-line warrant information and have an emergency alarm system. Handheld ticket-writing units typically cost about \$3,000 each.

Estimated Cost

The estimated cost to provide 1,000 single-space electronic on-street meters in downtown Fargo is approximately \$350,000, exclusive of other miscellaneous equipment costs. The annual cost of the parking meters is estimated to be \$31,000, assuming a six percent interest rate and a 10-year amortization schedule.

Estimated Revenue

The parking revenue from implementing on-street parking meters would depend on the rates charged and the use patterns. The parking survey data shows an average of 495 vehicles parked each hour between 9:00 A.M. and 4:00 P.M. in the primary study area, which translates into 3,960 vehicle-hours, assuming continued occupancy of the spaces.

Another way to determine use is to estimate the turnover. The average turnover on Broadway was 1.82, and it was 2.72 on Main Avenue. The weighed average was 2.13. Assuming an average turnover of 2.0, the 986 vehicles parked on-street in the primary study area would generate 1,972 uses. The 2.0 turnover rate has been used as a conservative basis for estimating projected revenue. The annual revenue, assuming enforcement from 9:00 A.M. until 6:00 P.M., five days a week, is estimated to be \$125,715 with an hourly fee at 25 cents and \$251,430 with an hourly fee of 50 cents (1,972 uses x 25 cents per hour x 255 days per year = \$125,715; 1,972 uses x 50 cents per hour x 255 days per year = \$251,430).

Parking Meter Locations

If the parking meter plan is approved, it is recommended that parking meters be installed at all short-term (two hours or less) parking spaces in the primary and secondary study areas.

Reserved Parking Spaces

Several of the privately operated lots in the downtown have many parking spaces reserved for specific use by one person. Reserving parking spaces limits the number of vehicles that can be parked in a lot. If

the person for whom the space is reserved is not present, that space would be unoccupied, but technically not available. Typically, a surface lot without reserved parking can be oversold by 10 to 20 percent, thereby providing parking for more people than if the lot were sold on a reserved basis. It is recommended that the city discuss this matter with the lot operator(s) and with employers in the downtown who need parking to determine whether any additional capacity can be created, and if created, leased by employees.

Other Parking Issues

Curb Parking Time Limits

There are currently many different time limits at the curb spaces in downtown Fargo. These spaces are intended for short-term use by visitors and shoppers staying a short time, usually less than two hours, as shown by the parking turnover counts conducted for this study. The current time limits in the study area range from 10 minutes near the post office, to 30 minutes, to 2 hours at other locations. This is confusing for customers. Parking on one side of the street may have one time limit and parking on the other side of the street may have another time limit. The many time limits also make enforcement more difficult.

It is recommended that a single time limit be adopted for the short-term parking areas in the downtown. It is suggested that a two-hour time limit be used. This will satisfy all but the longest visitors who should be directed to a lot or a garage for longer stays. A one-hour time limit is too short. A 90-minute time limit would be acceptable for all but a small number of parkers, but the two-hour limit will cover almost all short-term users and is recommended to provide the broadest coverage for the widest group of parkers. A one-hour time limit is recommended at the 10-minute meters at the post office. These parking spaces will naturally have high turnover by post office patrons, but a one-hour time limit will provide sufficient time for the occasional parker needing some time to conduct business.

There are some areas in the downtown where parking usage is very low and/or there are no businesses along the block to generate the need for short-term parking. Such locations are potential candidates for long-term employee parking with a time limit of 8 to 10 hours rather than the 2-hour limit. Locations that were observed during the counts and at other site visits include the following:

- Blocks 35 and 36, west of 7th Street
- 5th Street between N.P. Avenue and 1st Avenue

Changing the time limits at these locations would require that parking counts be conducted at several times to confirm the low utilization. But if the counts confirm low utilization at these or other locations, it is recommended that the time limits be changed to long-term and that the results be publicized so employers and employees are aware of these locations.

Signage, Graphics, and Trailblazing

There are signs adjacent to the public parking lots along 2nd Avenue, but there is no coordinated parking or graphics program directing people to parking facilities. Strategically placed signs on

primary access routes into the city should direct drivers to key short-term parking facilities in the downtown. The signs should have a distinctive logo that is consistent throughout the downtown. For trailblazing, it is recommended that designations for primary downtown institutions, including City Hall, the Civic Center, the Federal Courthouse, and the Art Museum, as examples, be placed on signs with white lettering on a brown background. The signs would be placed on main access roads such as Main, N.P. Avenue, and 1st Avenue North. Major public parking facilities would also be designated with a symbol and arrows directing patrons to the facilities. Examples of such signs are shown in Figure 15. It is also recommended that the city work with the Downtown Community Partnership or others to develop a color brochure with a map showing downtown shopper/customer parking locations. The map could be distributed to customers by downtown businesses. A separate study should be funded by the city to develop the final signing scheme and the trailblazing program.

Parking Space Stripe Painting

The city currently paints the diagonal on-street parking spaces to help drivers align their vehicles in the space. this practice is not recommended for the parallel spaces because vehicle length varies more than width. Leaving the parallel spaces unpainted allows them to be used according to the mix of vehicles actually using the spaces on a given day. If meters are used, a white painted line at the meter will help drivers orient themselves in the space. Signs are an effective way to designate no-parking areas, especially during times when snow cover would obscure painted curbs.

Parking Tax

One potential source of revenue for the downtown parking system would be a tax on daily and monthly parking transactions in private lots or garages. This type of tax is used by some municipalities as a source of parking revenue and includes a tax on each hourly or daily parking transaction as well as on monthly parking permits.

Figure 15

Federal Building Parking

The Federal Building was recently completed by the U.S. General Services Administration (GSA). Only minimal parking has been provided with the building. During the course of this study, Barton-Aschman contacted the GSA in Denver to discuss the issue. The GSA does not as a rule provide substantial public parking with its facilities, but as part of its “Good Neigh willing to enter into long-term leases with municipalities or other local governmental entities who would construct a parking facility and finance it. This option should be explored, but it is likely that only surface parking would be financially viable with the prevailing parking rates in this location.

Appendix A

Summary of Parking Study Interviews

Appendix B

Public Meeting Summary, July 22, 1998

Appendix C

On- and Off-Street Parking Survey Data

Appendix D

Parking Turnover Survey Data

Appendix E

Parking Data from Selected Cities