CROSS-COUNTY MetroLink Extension

Segment 1
Conceptual Design

Cross-County
MetroLink
Extension

Forest Park Circulator Concepts
Final Technical Report

Prepared for the
East-West Gateway Coordinating Council
in association with the
Bi-State Development Agency
Missouri Department of Transportation

By Parsons Transportation Group
and Associated Consultants

August 1999

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Contents

1	Purpose	1
2	Planning Framework	2
	Land Use Organization	3
	Existing Shuttle Services	5
3	Transportation Principles and Goals	8
	Principles	8
	Goals	9
4	Alternative Circulator Concepts	11
	Previous Concepts	11
	New Alternative Concepts	15
	Design Concepts	16

List of Figures

1.	Study Area	4
2.	Existing Transit Services	6
3.	Circulator Plan - 1995 Study	12
4	Circulator Plan - 1997 Study	14
5.	Circulator Concept No. 1—Single Route (access)	18
6.	Circulator Concept No. 2—Single Route (tour)	19
7.	Circulator Concept No. 3—Multi-Route (internal/external loops)	20
8.	Circulator Concept No. 4—Multi-Route (north-south, east-west corridors)	21
9.	Circulator Concept No. 5—Multi-Route (daytime, evening loops)	22

1
Purpose

As part of the Cross-County MetroLink Extension Segment I concept design study, a plan for a transit circulator serving Forest Park is also being developed. This technical paper discusses possible alternative concepts for this circulator in terms of general location and function. This document is intended to promote discussion about these concepts, with the purpose of selecting a small number for detailed examination. The details of Operations will be discussed in a subsequent document to be prepared later in the study.

Considerations for the circulator are based on the Forest Park Master Plan recently completed by the St. Louis Development Commission. Concepts have also been guided by two prior studies:

- Forest Park Alternative Transportation Plan, prepared for the East-West Gateway Coordinating Council, 1995 by Claybour Architects, prime consultant.

- Proposal for a Transit System for Forest Park, prepared for the Missouri Historical Society, 1997, by Sverdrup Civil, Inc..

2
Planning Framework

Forest Park is a major park within the City of St. Louis. The park contains a number of major institutions, that attract visitors and patrons from the region and other states, and a substantial open space with a major reserve of natural resources. As the site of the 1904 St. Louis World's Fair, Forest Park is an important historic place.

All of these activities generate significant transportation demand. The park is served by regional highways and arterial streets. There are more than 5,000 parking spaces in the park. MetroLink serves the park with two stations: at DeBaliviere/Forest Park and the Central West End (CWE) station at Euclid Avenue in the Washington University/Barnes-Jewish Hospital Medical Center. Bi-State bus route No. 90 travels through the park along the Hampton DeBaliviere corridor. Bi-State bus route No. 2, the Forest Park shuttle bug, provides local service through the park between the Forest Park MetroLink station and the Central West End station.

While these transportation services are substantial, the vision contained in the Forest Park Master Plan features improvements, including a better transit circulator. Both the quality and the form of the service would be changed to achieve more value as both an attractive and efficient form of transportation.

Land Use Organization

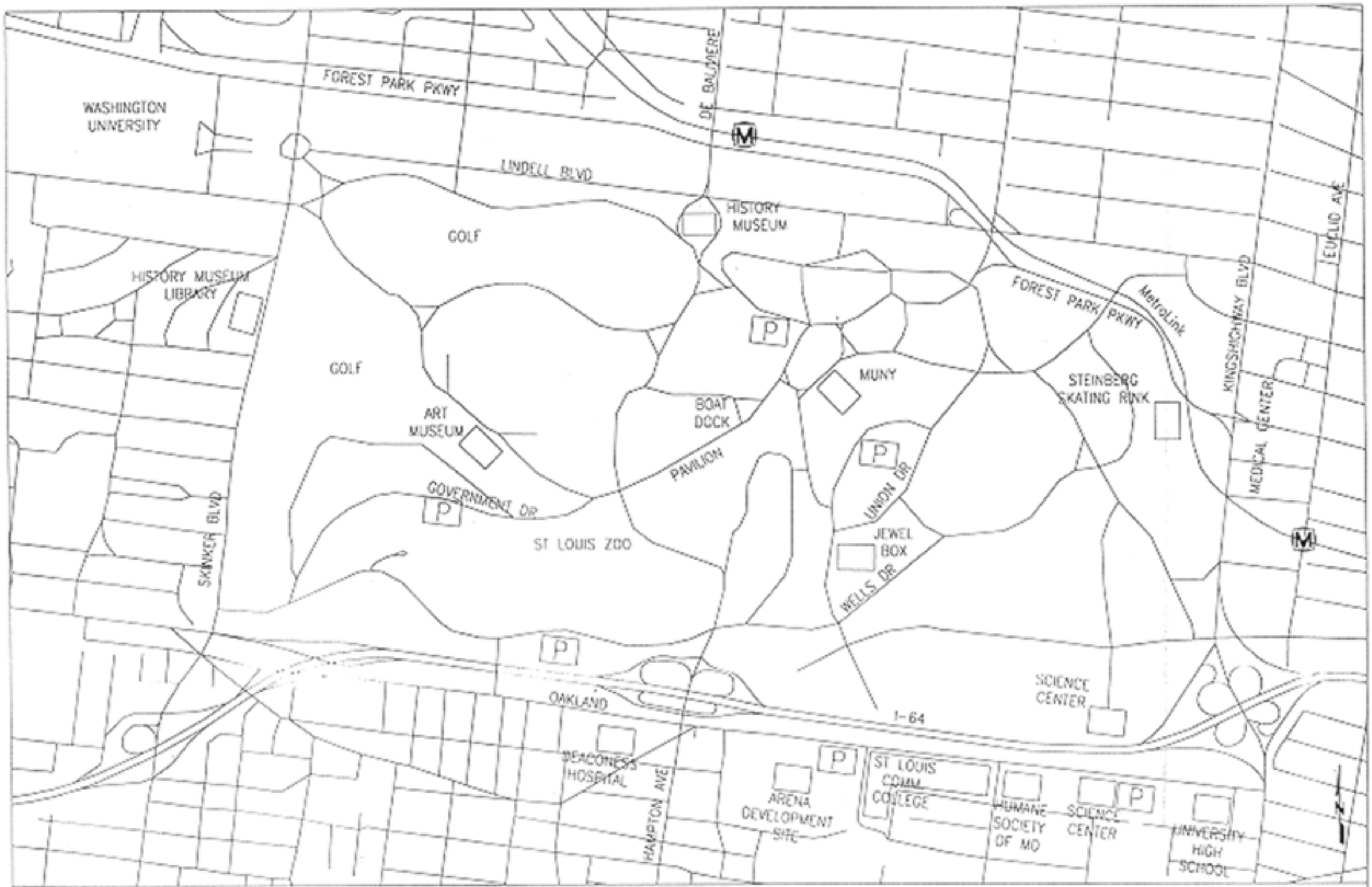
Figure 1 illustrates the overall layout of Forest Park. The land uses represent several categories:

1. Institutions (cultural, natural, scientific) that attract visitors on a daily basis throughout the year:
   - History Museum
   - Art Museum
   - St. Louis Zoo
   - Jewel Box (horticultural)
   - Science Center
2. Institutions (cultural, entertainment) that attract patrons on a seasonal basis, with evening/ weekend venues:
   - Muny (Municipal Theater/Opera)
3. Active athletic facilities attracting users on a seasonal basis:
   - Three golf courses
   - Davis Tennis Center
   - Aviation Field
   - Baseball/Soccer Fields
   - Steinberg Skating Rink
   - Post Dispatch Lake Boathouse
   - Central Field
4. Other open space, bike paths, trails, and pedestrian paths.

As shown in Figure 1, the major institutions are generally located in the southern areas and north-central sections of the park. It is to these locations that a circulator needs to be oriented.

Beyond the park boundaries, other significant land uses include:

- Washington University (WU) (Hilltop Campus) at the northwest corner of the park (west of Skinker Boulevard).
- Missouri Historical Society Collections Center on Skinker north of Fauquier.
- WU/Barnes-Jewish Hospital Medical Center along the east edge or the block (east of Kings highway).
- Central West End commercial district along the Euclid Avenue corridor from Forest Park Parkway to McPherson (restaurants and specialty shops).
- St. Louis Cathedral east on Lindell at Newstead.
- Missouri Botanical Gardens southeast at Shaw Boulevard and Tower Grove Avenue.
- The Loop commercial area along Delmar Boulevard in University City.



FOREST PARK
STUDY AREA

STUDY AREA
FIGURE 1

- Forest Park Community College on Oakland Avenue.

Existing Shuttle Services

As noted above, there are existing transit shuttle services operating in and around Forest Park. These are operated by WU and Bi-State. Figure 2 illustrates route locations.

WU provides service[1] along the north edge of Forest Park that is principally oriented to link the campus to the medical center, MetroLink, nearby neighborhoods (student and faculty housing), and the Central West End. WU transit does not serve the park institutions.

Bi-State route No. 2 (Forest Park shuttle bug) travels through the park from the Forest Park MetroLink station to the CWE MetroLink station, Central West End commercial district, and St. Louis Cathedral. It accesses the History Museum, Art Museum, Zoo, Muny, Jewel Box, and the Science Center.

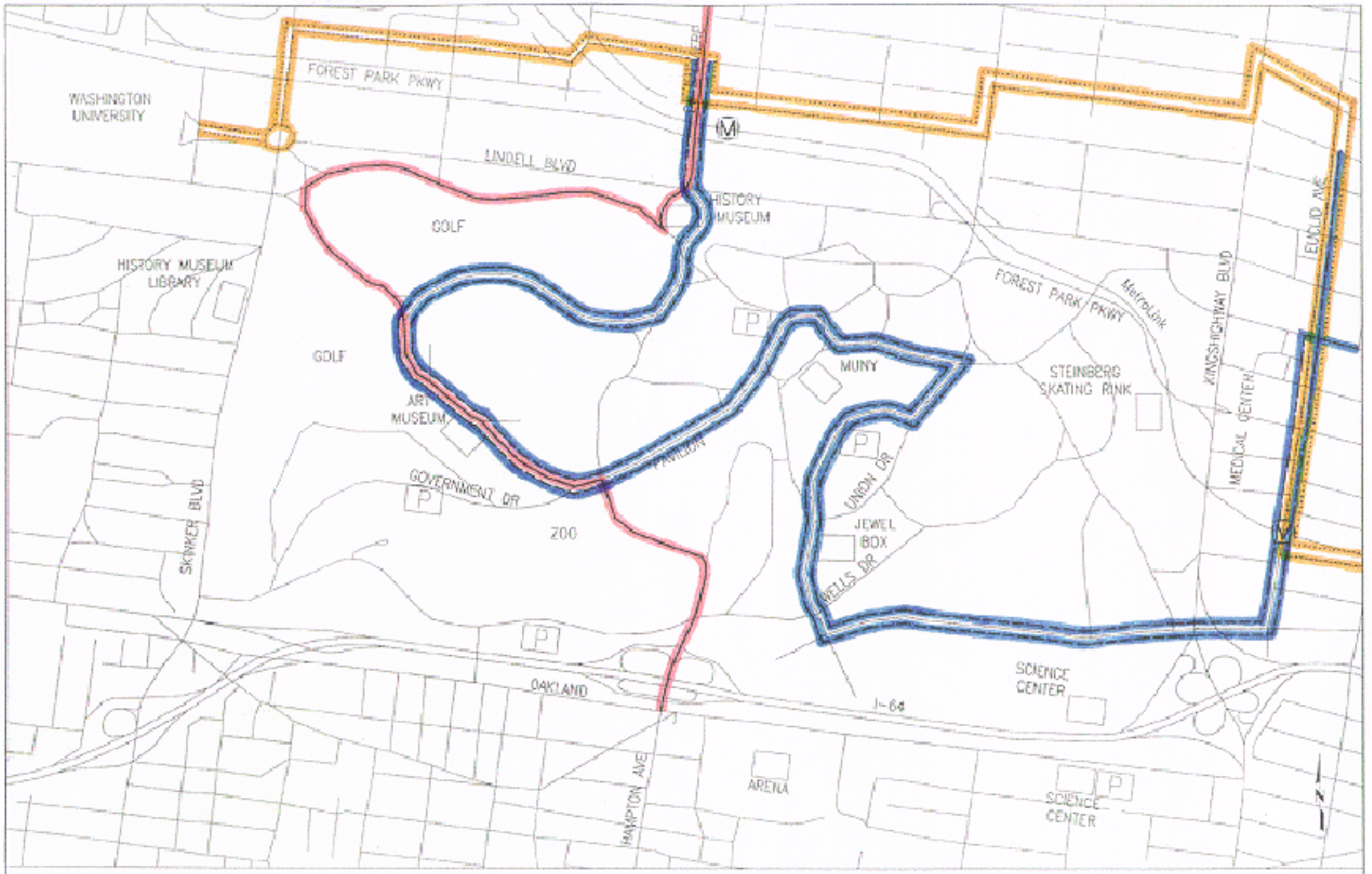
The combination of the above would seem to create excellent coverage/accessibility. Concerns associated with the situation seem to be focused more on how the service is operated than where it is located. These operational concerns center on:

- Continued availability of bus operators trained to be park tour guides.
- Reliability of the equipment, i.e., breakdown of special vehicles and frequent use of regular Bi-states buses which are larger and do not look like the shuttle bug vehicle.
- Quality of the ride experience.
- Appearance of vehicles, i.e., desire to have a “vintage trolley” look.

From a locational perspective, the master plan calls for some closure of existing streets and a variety of rehabilitation projects for streets, waterways, and other infrastructure. Existing transit does not serve all locations that could be included in the coverage, such as the:

- Science Center (at Oakland Avenue).
- Science Center (Observatory)—bus stops on Clayton Road, not at the building.
- Steinberg Skating Rink—building includes various personal services that are available all year (not just during the winter).

[1]Not a public transit service



FOREST PARK
STUDY AREA

FIGURE 2

- Arena—possible new development and/or major parking resource.
- Historical Society-Library and Collections Center on Skinker Boulevard.

3
Transportation Principles and Goals

Consideration of the planning framework for the development of alternative concepts for a Forest Park circulator has been guided by a set of principles and service goals. These define the qualities and functions to be achieved via the service plan, which, at this time, is described only in terms of location. Operational aspects will be developed later in the project.

Principles

There is a set of planning principles that have been identified via a review of the master plan. These will be significant in understanding the role of the circulator and how it should be planned.

1. The intent is to promote multimodal travel to and from Forest Park. The linkage to MetroLink is to be high quality and highly convenient. Further, circulator service should be coordinated with Bi-States bus service to maximize patron convenience and avoid service duplication.

2. The transportation system internal to the park should be used by park visitors, patrons, and users. Use by commuters to other land uses should be minimized.

3. The relationship of the parking system to the circulator is an essential consideration. Three principles, concerning parking management will be considered in this regard:

    a. Each institution will have an appropriate parking supply within reasonable walking distance. The quantity of parking should be capable of serving individual institutional parking demands 90 percent of the time.

b. Some institutions may generate peak parking demand that will exceed the parking supply; other parking should be available as a reserve via shuttle service.

c. Because of the occurrence of multi-institution trips (and these would be encouraged) by visitors and patrons, motorists should park in one location and be transported to other sites rather than creating the need for multiple parking spaces for the same vehicle.

4. The technology used for a circulator must be park-, environment-, and user-friendly. It should also be flexible to respond to changing conditions in terms of the volume of travel demand or the pattern of trip-making. For these reasons, rubber-tired equipment will be used. The circulator should be comfortable during all seasons and have performance characteristics consistent with the park. Desirable characteristics include maneuverability, quiet operation, little negative air quality impact, and efficient operation.

Goals

The overall purpose for the circulator has a dual nature. It should provide the desired transportation function, but at the same time it should be an attractive ride. The latter represents an experiential quality in which patrons would use the circulator as a form of recreation.

For the purposes of this report, the focus will be on the service function. As such, the following goals will be used to guide planning and design:

1. Function as a distributor mode that would connect to regional transit to bring park visitors to specific institutional destinations; this function needs to be reasonably direct and swift.

2. Function as a circulator mode that would link intrapark destinations as well as provide a tour of the park; this function needs to be comprehensive and understandable, with speed being secondary.

3. Function as a distributor that would link major parking facilities, allowing them to be operated as a system to serve high-attendance activities in the park.

To achieve the above goals, the circulator should be planned with a market orientation. This means developing transit service to fit specific trip purposes and origin-destination patterns. This entails identifying the land use linkages that would be important to serve. The significant market groups existing within the Forest Park area are:

- Institutions attracting daily visitors with full day schedules
- Institutions attracting visitors for events with only evening/weekend sessions
- University (primarily Washington University) generating daily staff and student trips

- Medical center generating daily patient, visitor and staff trips
- Central West End restaurants and shops attracting park visitors and staff

The following matrix identifies which land-use linkages would be important for circulator planning for the above market groups.

	Destinations					
Origins	Daily Institutions	Event Institutions	Washington University	Medical Center	Central West End	MetroLink
Daily Institutions	Yes	Yes			Yes	Yes
Event Institutions					Yes	Yes
Washington University		Yes		Yes	Yes	Yes
Medical Center			Yes		Yes	Yes
Central West End	Yes	Yes	Yes	Yes		Yes
MetroLink	Yes	Yes	Yes	Yes	Yes	

4
Alternative Circulator Concepts

Considering the goals and the identified market groups, a small set of alternative circulator concepts have been developed. These include proposals developed in previous studies and new alternatives.

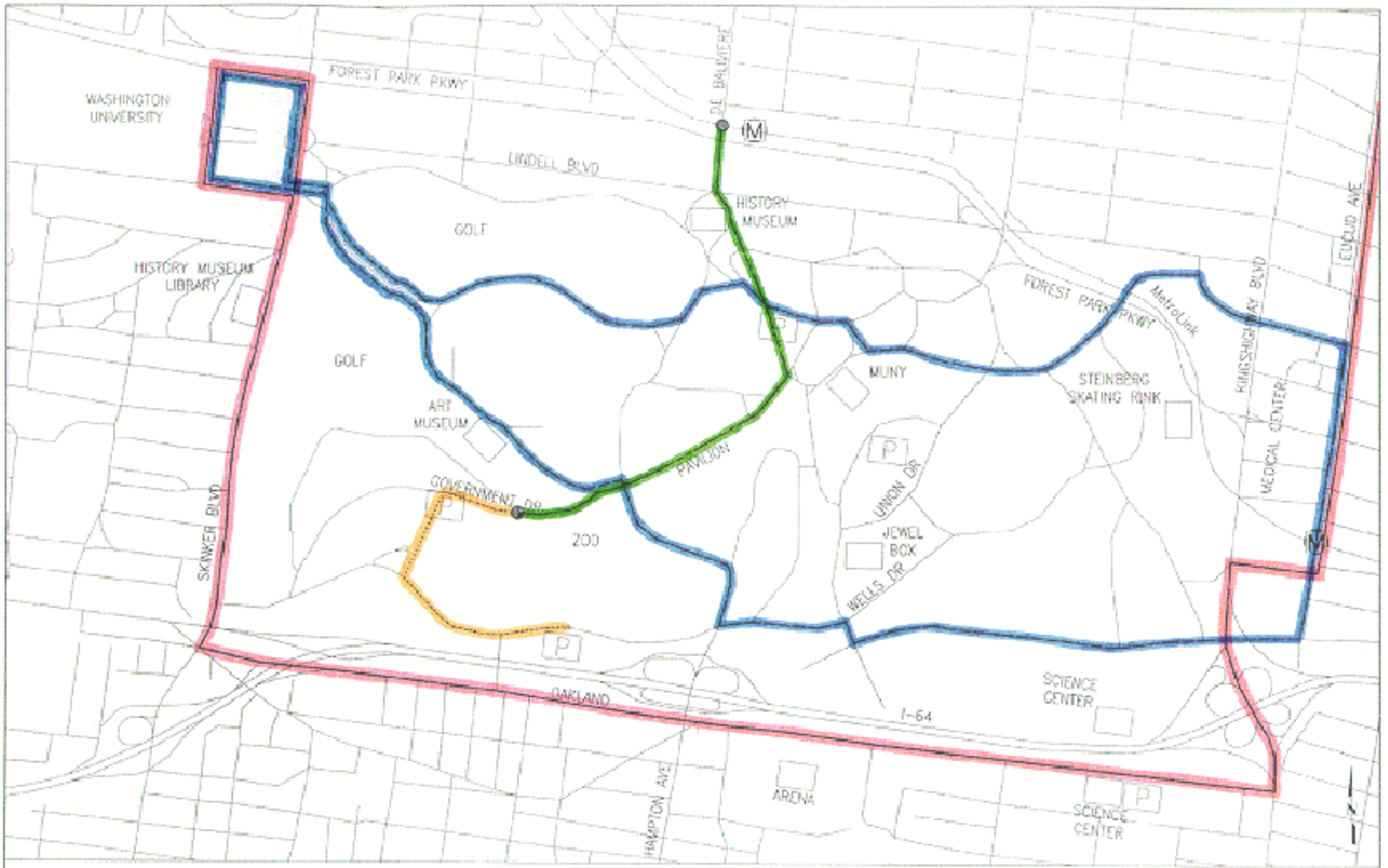
Previous Concepts

Figure 3 identifies two prior proposals for a circulator. One was proposed in the 1995 study for EWGCC and entailed construction of a single-track trolley line between the Forest Park MetroLink station and the Zoo, with a possible extension to the new MetroLink station[2] in the Oakland Avenue corridor. The trolley would directly access the History Museum, Muny, and the Zoo. Along with the trolley, bus shuttle service would provided to achieve a broad area of transit coverage in the park.

The bus shuttle service would be operated in two routes. One route would be located at the edge of Forest Park along Skinker, Oakland, and Euclid Avenues. It would link the Washington University Campus, the Arena site, the Science center, the medical center and the Central West district. The second route would be more of an intra-park shuttle connecting all park institutions.

The shuttle bus routes would be immediate improvements. The trolley, as a more capital intensive, would a longer range project.

[2] No longer possible, given the decision to locate the Segment I line north of Forest Park.

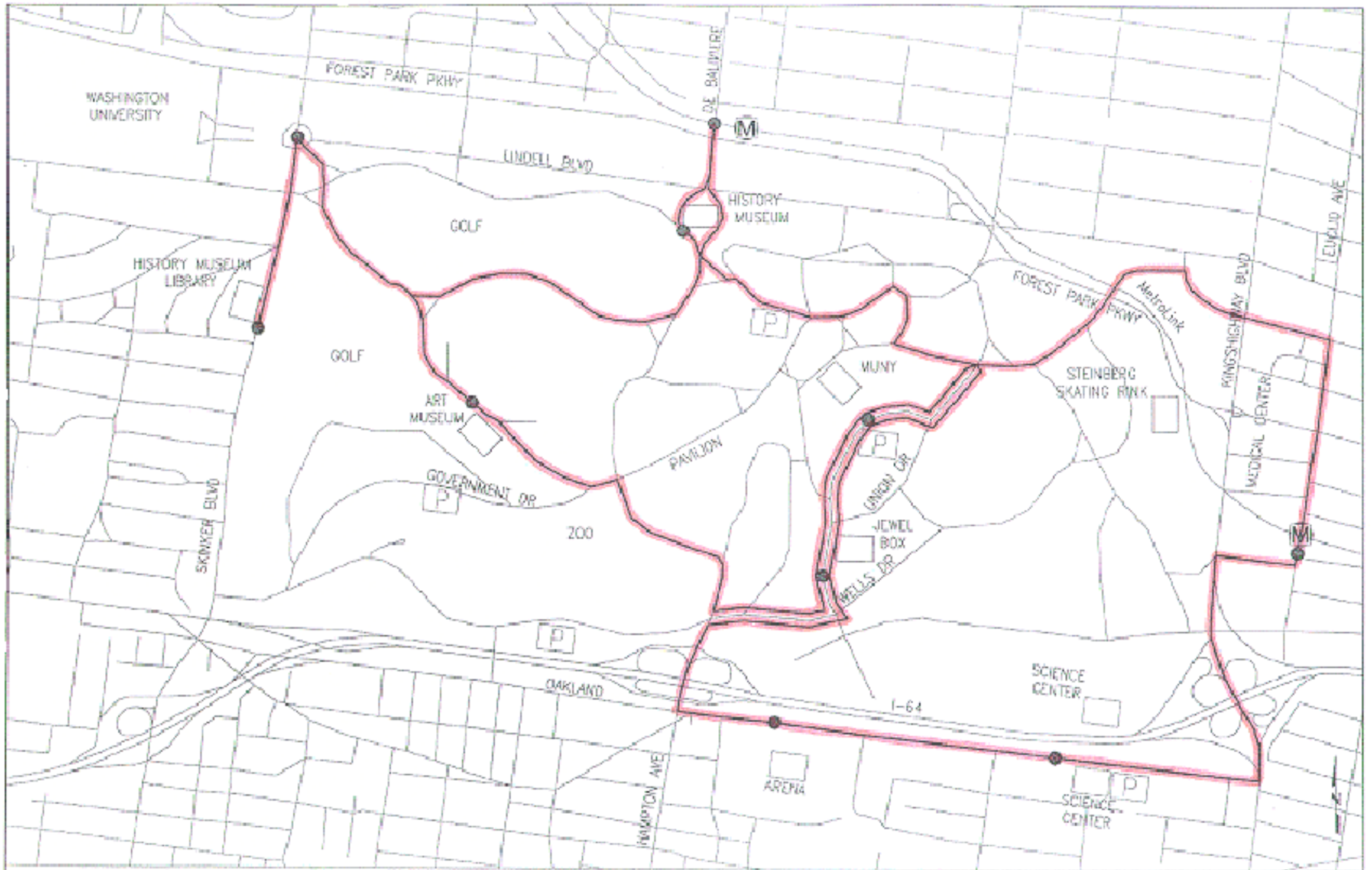


CIRCULATOR PLAN
1995 STUDY

FIGURE 3

The other proposal was developed in the 1997 study for the Missouri Historic Society (See Figure 4). This plan featured rubber-tired vintage trolleys. The route plan would have the shape of a figure 8. One loop would link the MetroLink at Forest Park, Washingon University/History Museum Library, History Museum, Art Museum, Zoo, and Muny. The other loop would link Muny, Zoo, Science Center, CWE MetroLink station, and the Central West End. The common point would be Government Drive between the Muny and the Zoo. As shown in Figure 4, this would be a single route on which riders could access all destinations without changing vehicles.

Each of these previous concepts (1995 and 1997 plans) would be included as alternatives to be examined in this project.



CIRCULATOR PLAN
1997 STUDY

FIGURE 4

New Alternative Concepts

From a broad conceptual perspective, alternatives could consider a single-route or a multiple-route circulator. The latter could be viewed as a means to serve the different markets during the normal day (i.e., multiple routes operating simultaneously) or to serve different markets at different times of the day or week (i.e., routes change from daytime to evening periods but do not maintain simultaneous operation).

With the above choices in mind, the possible alternative concepts could be as follows:

No. 1	Single route with maximum direct access to all major institutions	(Figure 5)
No. 2	Single route as a comprehensive tour of the park with institution access	(Figure 6)
No. 3	Multiple route system as an internal loop and external loop	(Figure 7)
No. 4	Multiple route system as an internal north-south corridor route and east-west corridor route intersecting at a transit visitor center	(Figure 8)
No. 5	Multiple route system as a daytime internal loop route to all institutions, but with a different evening route for event and external land use access	(Figure 9)

For each basic route configuration, service could be extended to include the St. Louis Cathedral the Missouri Botanical Gardens, and, possibly, the Loop in University City. The extension to the Cathedral could simply be an extension of the routes for new alternatives 1, 2 and 4. This extension is already shown for new alternatives 3 and 5.

Access to the Missouri Botanical Garden is currently provided by Bi-State via Route #14, Garden Express. This service operates with 20 minute headways seven days per week (9:30 A.M. to 7:30 P.M., weekdays and 7:30 A.M. to 5:00 P.M. on weekends). This route loops through the medical center via Euclid Avenue, Forest Park Boulevard, and Kingshighway and connects to the Missouri Botanical Garden via Clayton Avenue, Taylor Avenue, Chouteau Avenue and Tower Grove Avenue. The route extends to the east along Tower Grove Park via Magnolia Avenue to Thurman Avenue. Overall travel time from Botanical Garden to the CWE MetroLink station is 10 minutes.

The presence of the existing service would suggest that the Circulator routes should not be extended to the Botanical Garden. There should be facilities to provide excellent mode transfer in the CWE, probably at the MetroLink station. This could also include coordination of operating schedules.

Access to the Loop would entail a route extension north along Skinker Boulevard to Delmar Boulevard. This route could be linked to a vintage trolley on Delmar Boulevard, as envisioned by

the loop trolley study[3]. Bi-State bus route #62 is located on Skinker Boulevard from Forsyth to Delmar (and beyond). This could duplicate circulator service.

Thus, each of these extensions to areas outside of Forest Park may entail duplication with service provided or being planned by BSDA. For the Botannical Garden, the Garden Express service would be a specific case. It is possible, however, that the Forest Park circulator concepts would focus on different markets (or customers) and/or provide service at different times. Such comparisons would be made in the design development tasks to make sure that service duplication would not occur.

Design Concepts

In all concepts, the circulator would operate at grade. No elevated or below-ground alignments are anticipated.

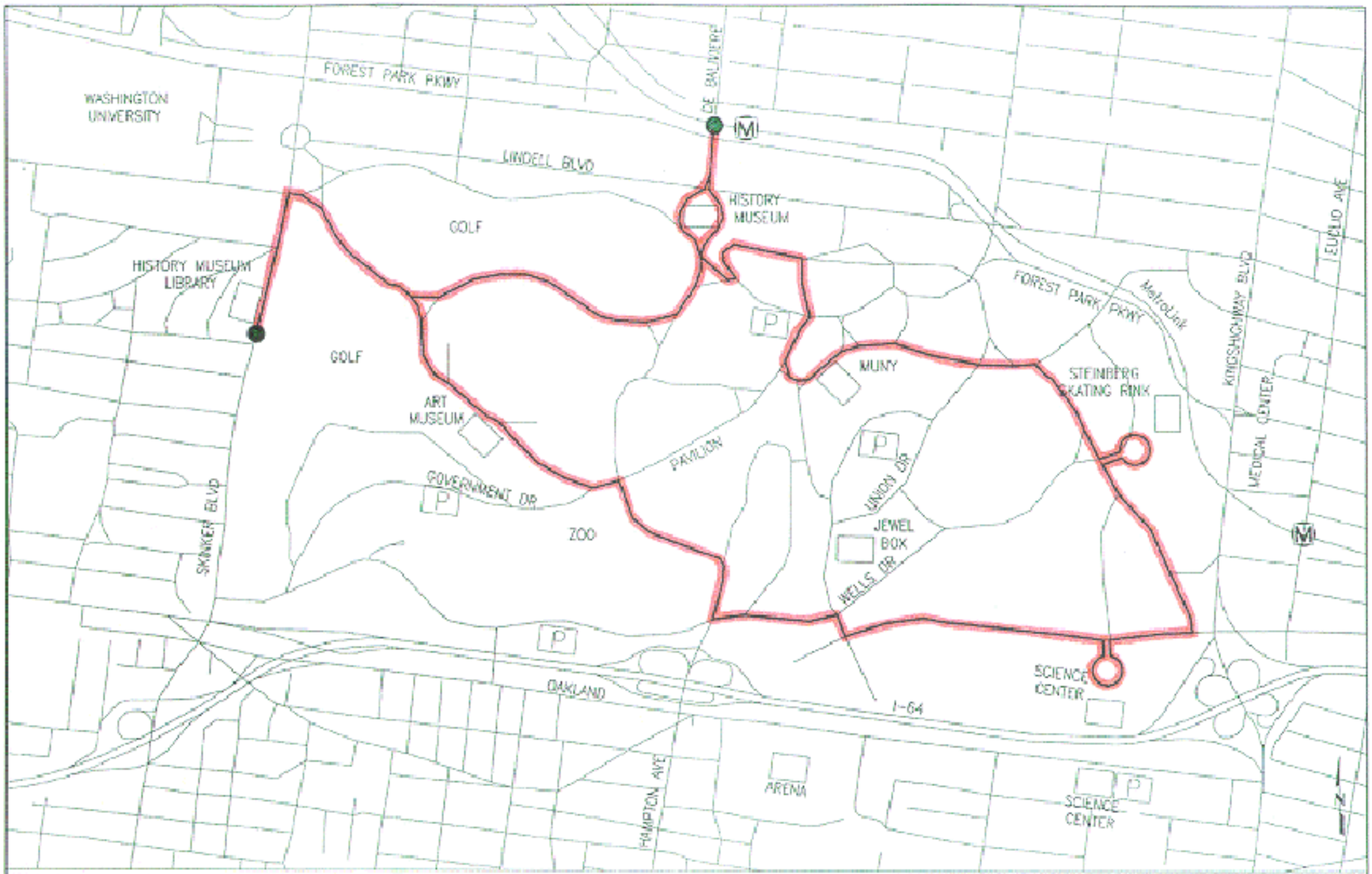
The alignments, discussed above, are all located on public streets or public drives within Forest Park or areas adjacent to the park. Within Forest Park, the circulator could be designed to operate in mixed-traffic (shared use of roadways) or could operate in reserved or separate lanes. Because of the current width of most park drives, and the need to maintain on-street parking, it is likely that mixed traffic operation would prevail. There may be some drives that will be closed to general vehicle traffic (per the Master Plan). The circulator could still be permitted in some of these locations. Further, for major events, the circulator could have preferential use of some drives to maintain efficient travel time in the presence of high event-generated traffic.

At stop locations, the circulator would have reserved curbside facilities or even stop access designed as special access drives or off-street stopping berths.

The exception to the above design/operating concepts would be the location of a vintage trolley. The tracks would be separated from other traffic. The track location would generally follow the path of existing drives, but with tracks set just outside the pavement.

[3]Concept Paper, Delmar Wabash Trolley Restoration Project, 12/97 - Bi-State Development Agency and Arts in Transit.

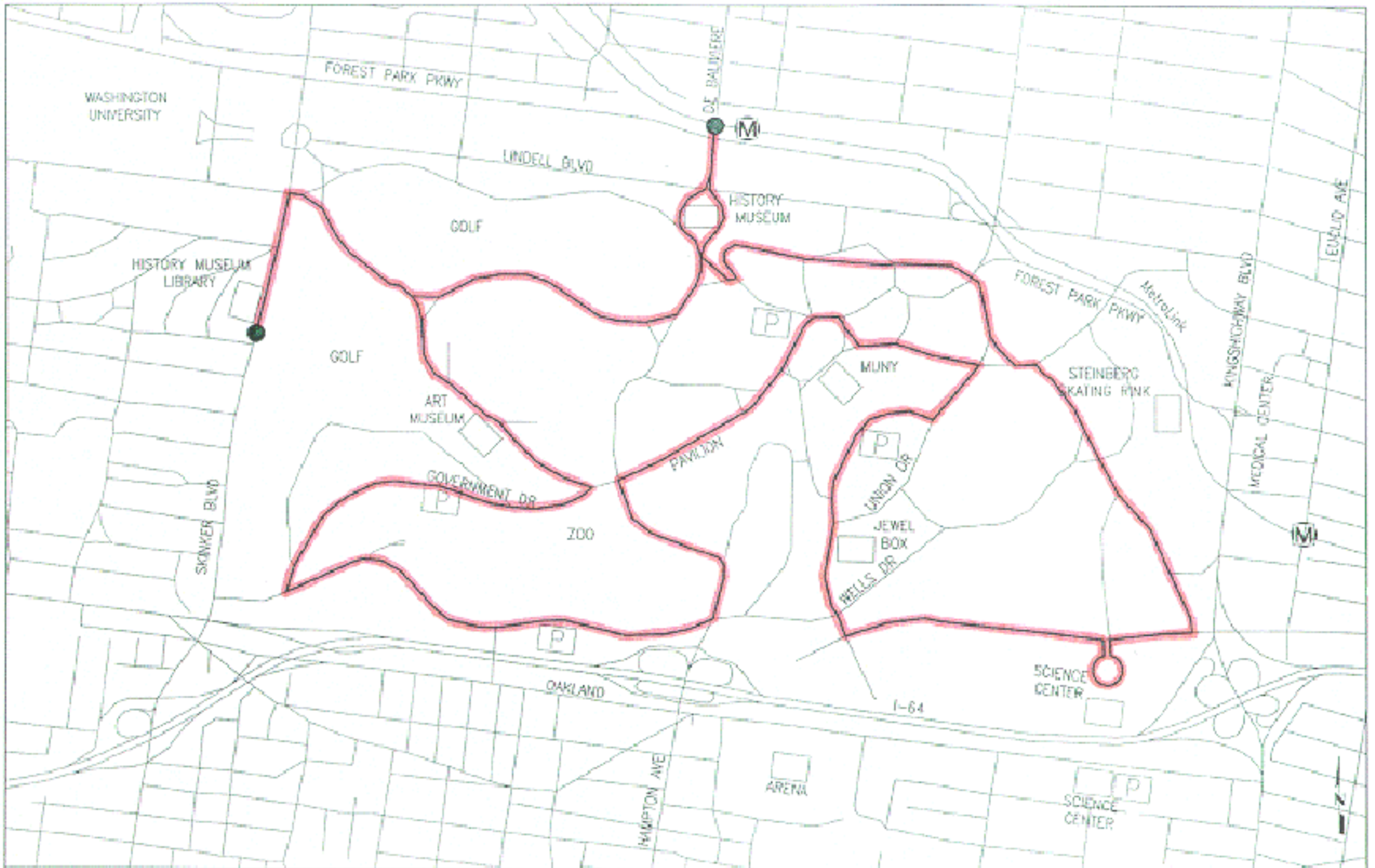
For alternative circulator routes outside of Forest Park, the circulator would operate generally in a mixed traffic mode. This would primarily affect Skinker Boulevard, Oakland Avenue, Clayton Avenue, Euclid Avenue, McPherson Avenue, and Lindell Boulevard. Along these streets, curb space would be reserved for shuttle bus stops.



ALTERNATIVE #1 - SINGLE ROUTE
FIGURE 5

FOREST PARK
STUDY AREA

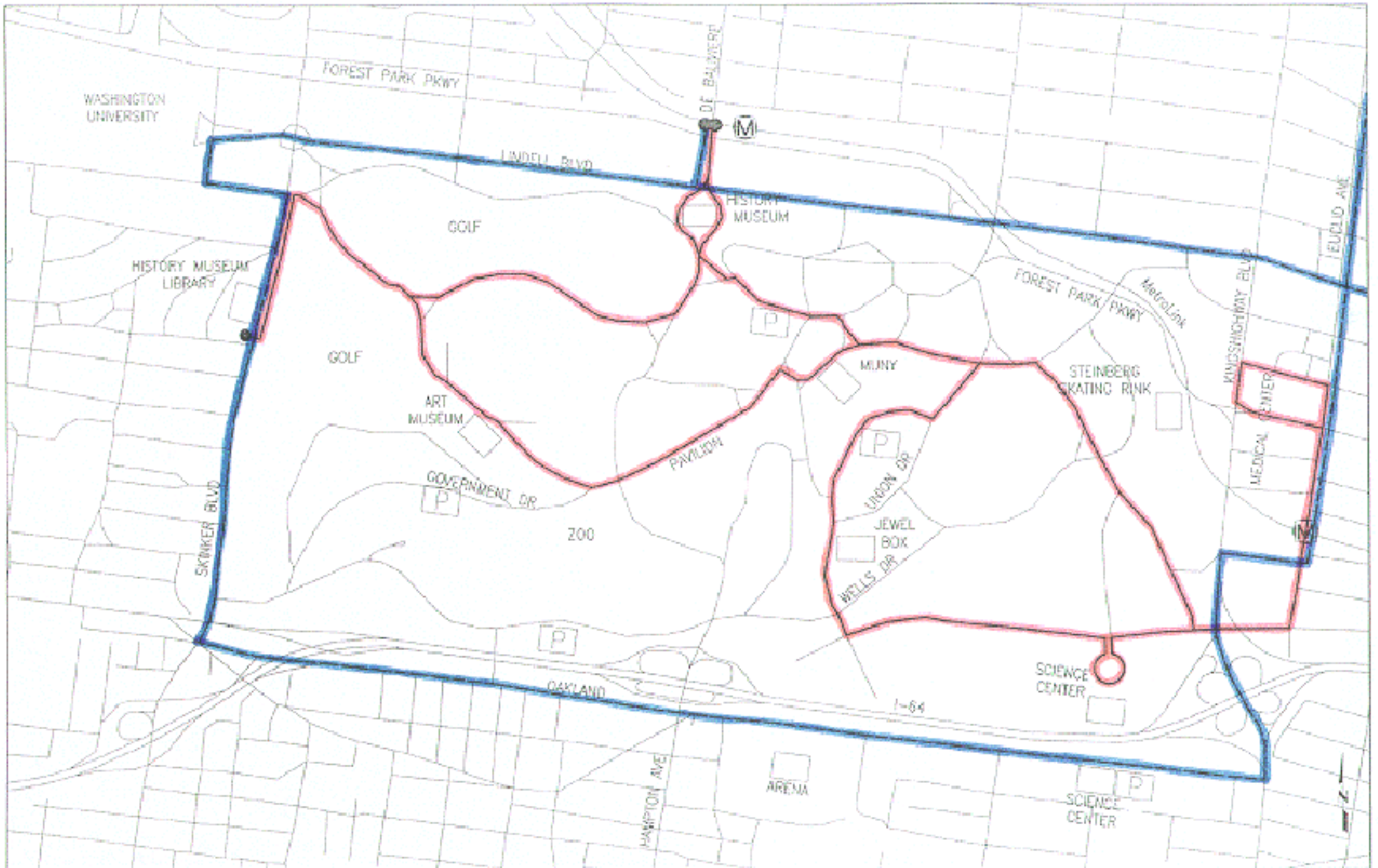
FIGURE 5



ALTERNATIVE #2- SINGLE ROUTE (TOUR) **FIGURE 6**

FOREST PARK STUDY AREA

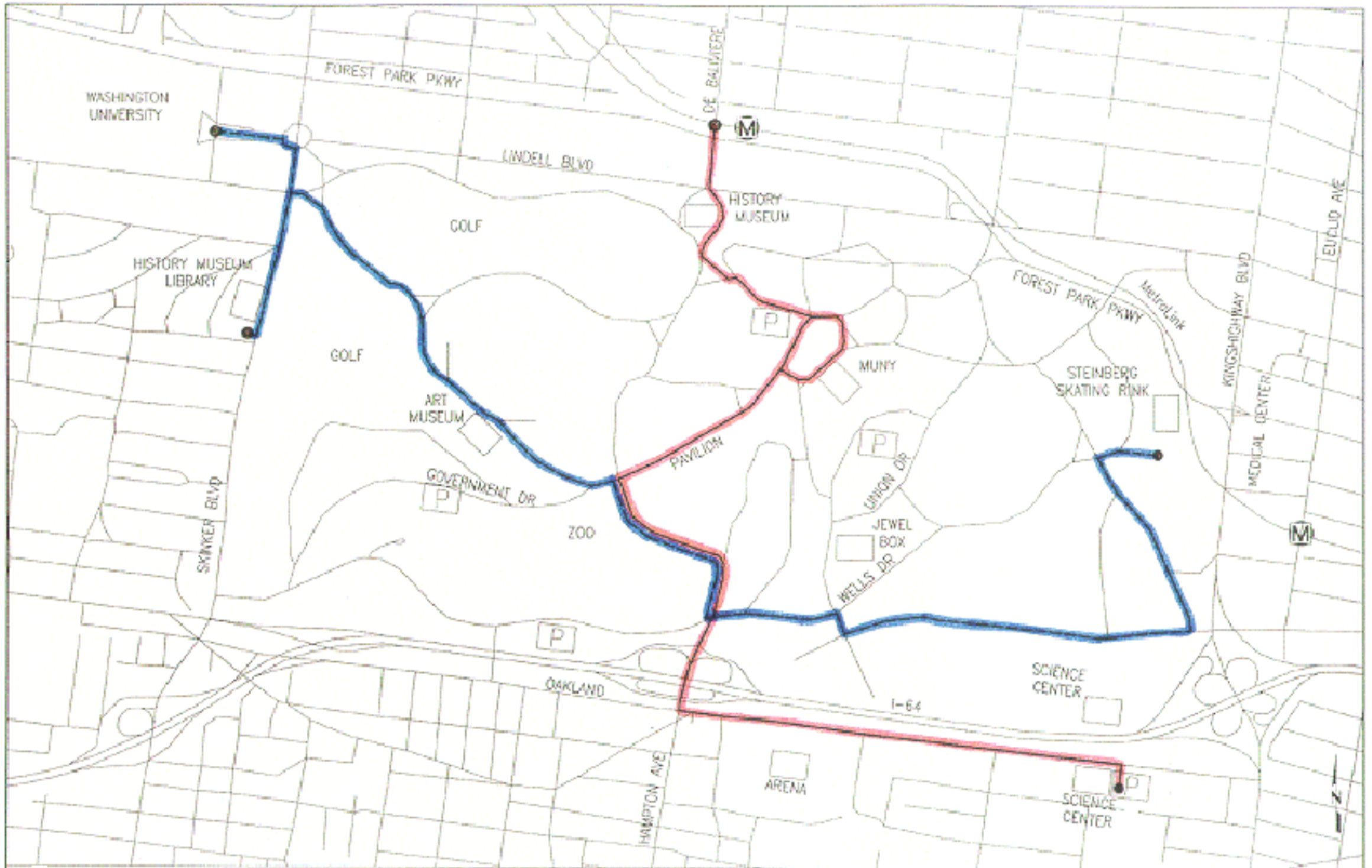
FIGURE 6



ALTERNATIVE #3 - MULTIPLE ROUTE
FIGURE 7

FOREST PARK
STUDY AREA

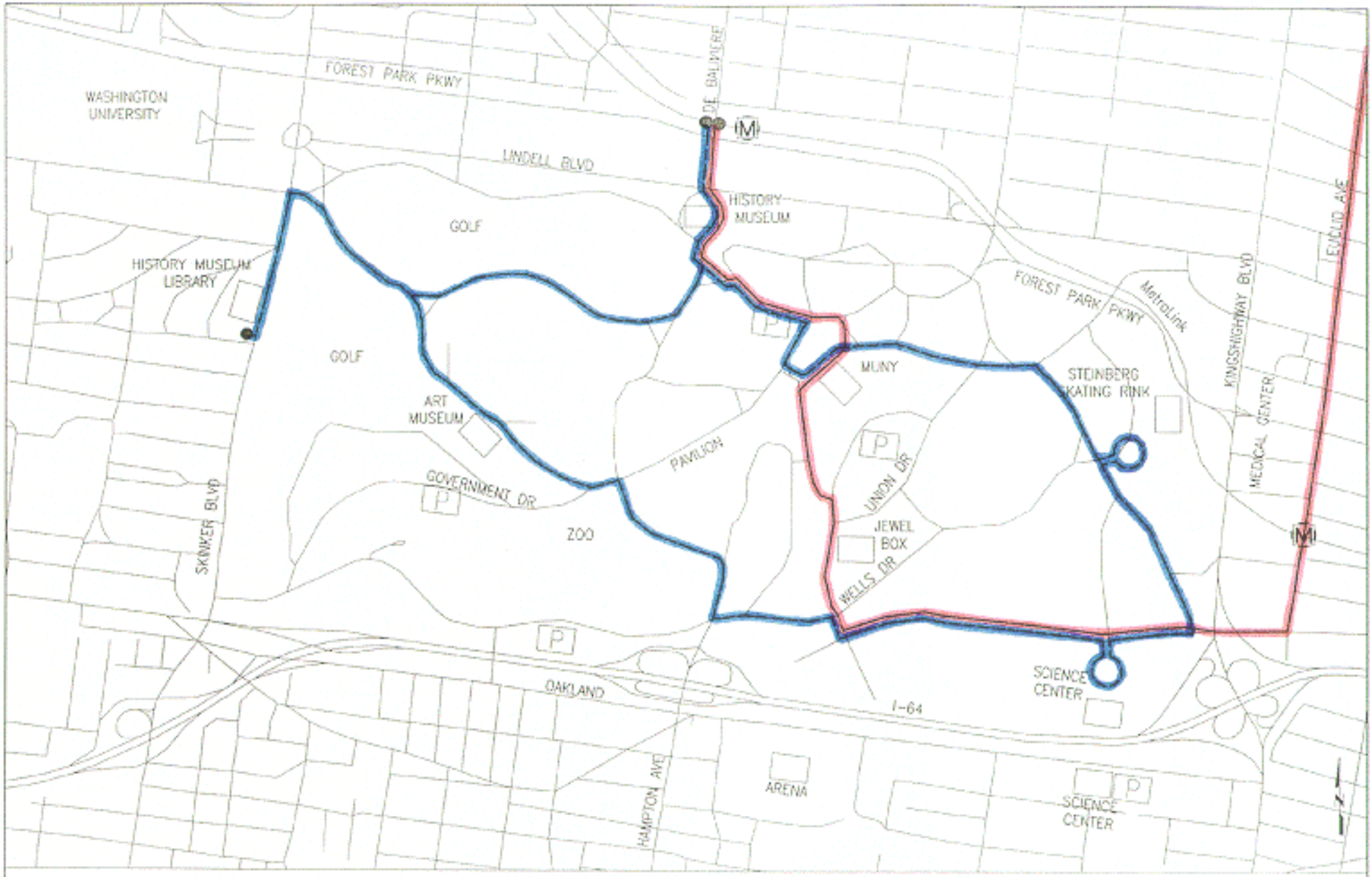
FIGURE 7



ALTERNATIVE #4 - MULTIPLE ROUTE (CORRIDOR) **FIGURE 8**

FOREST PARK STUDY AREA

FIGURE 8



ALTERNATIVE #5 - MULTIPLE ROUTE (EVENT)

FIGURE 9

FIGURE 9