Downtown Frederick

Parking & Circulator Plan

Final Report – January 2021

Prepared for:
The City of Frederick, Maryland

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Executive Summary

INTRODUCTION

The City of Frederick, Maryland is a thriving and growing small city located about 40 miles northwest of Washington, D.C. and 50 miles west of Baltimore. The city's population is approximately 73,000 people, which is an increase from the 2010 Census population of just over 65,000 people. Downtown Frederick is an award-winning historic area that is comprised of approximately 40 blocks and is home to about 850 businesses and 4,500 residents. About 6,750 people work in the downtown area. Founded in 1745, Frederick has become an eclectic mix of old and new, earning the moniker "hip and historic."

The vibrancy of Downtown Frederick attracts people to use a number of different transportation modes to get around, including walking, biking, taking the bus or commuter train, and driving. Parking is accommodated both on-street and through five parking garages and five off-street surface lots.

Frederick's Parking Department manages the parking infrastructure in the City and the City owns the Downtown Transportation Center, which is the transfer hub for Frederick County TransIT buses. The Transportation Center is also served by the MARC commuter rail, Maryland Department of Transportation Maryland Transit Administration (MDOT MTA) commuter buses, taxis/Uber/Lyft, Greyhound, and BayRunner.

Within the context of aging parking infrastructure and continued growth and demand for additional parking capacity and multi-modal options, the City hired the consulting team of KFH Group, Inc. and DESMAN to develop a comprehensive public parking and circulator implementation plan for Downtown Frederick. The stated goals for the plan are to:

- Support and sustain a vibrant Downtown Frederick;

- Provide for friendly, reliable, efficient, sustainable, and affordable parking and multimodal transportation options in Downtown Frederick for residents, workers, and visitors; and

- Support economic development, redevelopment, historic renovation, and adaptive reuse.

Work on the plan began in the Fall of 2019 and was completed in the Fall of 2020. It should be noted that this study has been prepared using data and information available prior to the COVID-19 pandemic. The plan assumes that Downtown Frederick will resume pre-pandemic activity and growth levels within a 24 to 36-month time frame.

STUDY TASKS

Several tasks were completed to help the study team arrive at a reasonable set of recommendations for the City. These tasks included the following:

- A series of stakeholder discussions were held to learn the views of a variety of Downtown Frederick constituencies.

- Surveys of businesses and residents were conducted. The results included 258 surveys from the business community and 409 surveys from residents.

- A review and discussion of the history of transit and circulator programs in the City of Frederick and an analysis of peer circulator programs were developed.

- An overview of the current condition of the parking program, including inventory, usage, and condition assessments of the five garages was prepared.

- Estimates with regard to the need for future parking in Downtown Frederick were prepared.

- An analysis of parking fees, fines, and policies from neighboring jurisdictions was provided.

- A financial review of the parking program was prepared, including the development of both a base case proforma and a growth proforma. Two versions of the growth proforma were prepared – one with the assumption that the Church Street Garage would be the first major construction project and the second assuming Deck Six would be the first major project.

- Shuttle and circulator options were developed.

- A review of alternative transportation options that could be considered for Downtown Frederick was provided.

- These tasks led to the development of a set of recommendations addressing parking, circulation, and mobility in Downtown Frederick.

The full report is organized in the following manner:

- Chapter 1: Introduction, History, and Circulator Examples
- Chapter 2: Existing Conditions and Future Needs for Parking
- Chapter 3: Stakeholder Outreach
- Chapter 4: Feasibility and Circulator Options
- Chapter 5: Public Infrastructure to Support Alternative Transportation
- Chapter 6: Recommendations

There are also six appendices that provide supporting documentation concerning the various study tasks. The remainder of this Executive Summary focuses on the study recommendations.

RECOMMENDATIONS

The recommendations focus on a multi-modal approach, including the following:

- **Implementation of a real-time parking availability program** that would provide users with information regarding how many parking spaces are available in each garage in Downtown Frederick. It is anticipated that this program would include three means of providing this information: 1) through a smart phone and computer application; 2) via electronic signage along major corridors entering Downtown Frederick (South Market; East Street; and West Patrick Street); and 3) via electronic signage on each garage. A pilot program targeting one garage is recommended at the outset. The cost estimate for the initial pilot program is $45,000. This technology can be built into new garages.

- **Incremental increases in parking fees and the introduction of dynamic pricing**, which would set rates higher for on-street parking versus garage parking and higher for the more in-demand garages as compared to the garages with more available capacity. The rate increases are needed to keep up with inflation and fund necessary projects. To provide conservative financial projections, these increases are not currently included in the financial proforma prepared for the project. No rate increases are suggested until the City's economy has largely recovered from the COVID-19 pandemic.

- **Demolition and reconstruction of the Church Street Garage**, including the development of a second exit and modern amenities. As part of the reconstruction effort, increasing the parking capacity by adding below ground or above ground parking tiers should be explored. Demolition is expected to cost about $2 million. Construction is estimated to cost about $13.5 million for a similarly sized garage. Additional tiers are estimated to cost $2 million for an above ground additional tier and $5 million for a below ground tier.

- **Construction of Deck Six** at the appropriate time to ensure adequate parking supply to support future developments on the east side of Downtown Frederick. The discussion of Deck Six includes two possible location options:

  - The Frederick County Public Schools (FCPS)/Visitor Center parking lot, which is currently owned by the City; and/or
  - The United States Postal Service (USPS) employee surface parking lot, which is owned by the USPS and would require an exchange agreement between the City and USPS.

  The Deck Six cost estimate is $16.2 million.

- **Implementation of a parking shuttle program**, including the development of a remote parking location. It is proposed that the implementation of a shuttle program coincides with parking deck construction. Phase 1 of the shuttle program would focus on serving people displaced by the Church Street Garage demolition and re-construction. Phase 1 costs are estimated to be $724,880 annually.

- **Expansion of the role of the parking garages** to serve as mobility hubs by making investments in alternative transportation infrastructure to promote walking, biking, electric cars, and car-sharing. The provision of electric charging stations is built into the costs associated with new garage construction. Implementation of a modest bike share program is estimated to cost $60,000 in capital and $52,500 annually in operating expenses. Bike corrals are estimated to cost about $1,000 each.

- **Exploration of partnerships to include public parking**. The Carmack-Jay's site on North Market Street is discussed.

- **Future circulator program**. For the near-term, a parking shuttle, rather than circulator is recommended. A future circulator is discussed and is estimated to cost $724,880 annually for a two-vehicle system.

- **Marketing and communications – public awareness campaign.** The final section of the recommendations provides some ideas to help keep the public informed before and during parking garage construction.

FINANCING

The recommendations will require significant initial capital outlay and incur ongoing operating expenses as well. The financing section focuses on the two primary mechanisms used to help fund parking infrastructure in the City. These are parking revenues and borrowing. Additional mechanisms are briefly discussed including: partnerships; a transportation fund; tax increment financing; a parking benefit district; and a business improvement district.

The study team prepared a base case proforma, which assumed no changes other than inflation and natural growth, and a "system growth" proforma, which includes the parking availability program; the demolition and construction of the Church Street Garage; the parking shuttle; and the construction of Deck Six.

Table ES-1 presents the "system growth" proforma, which incorporates the anticipated schedule for improvements. This version of the proforma assumes that the Church Street Garage will be the first major construction project. A second proforma assuming that Deck Six will be the first major project has also been prepared and is presented in the full report.

Table ES-1: System Growth Scenario Conceptual Proforma Operating Statement, FY2020-FY2029, Church Street Garage as First Major Project – Notes on Following Page

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
REVENUE											
Investment Activity [1]	548,841	439,073	493,957	521,399	537,041	553,152	569,747	586,839	604,444	622,578	641,255
On-Street Parking [2]	1,791,515	895,758	1,200,315	1,717,049	1,745,346	1,849,444	1,871,943	1,795,029	1,902,888	1,926,203	1,949,897
Church Street Deck [3]	995,814	328,619	667,195	953,699	992,337	-	-	909,154	931,613	947,036	954,901
Court Street Deck [4]	960,276	316,891	643,385	920,133	931,392	1,041,997	1,070,773	942,835	954,906	962,928	971,029
Carroll Street Deck [4]	980,936	323,709	657,227	936,793	953,568	1,069,840	1,078,496	970,677	988,129	1,005,930	1,024,087
West Patrick Street Deck [1]	880,249	290,482	589,767	855,498	864,903	873,084	877,963	880,010	881,466	882,937	884,422
East All Saints Street Deck [5]	366,713	121,015	245,698	353,140	358,297	591,158	593,836	536,191	538,432	540,180	540,780
Deck 6 [6]	-	-	-	-	-	-	-	-	-	601,587	610,265
Gross Annual Revenues	**$ 6,524,344**	**$ 2,715,547**	**$ 4,497,544**	**$ 6,257,712**	**$ 6,382,884**	**$ 5,978,675**	**$ 6,062,757**	**$ 6,620,736**	**$ 6,801,880**	**$ 7,489,378**	**$ 7,576,637**
EXPENSES											
On-Street Parking [7]	1,005,172	1,035,327	1,066,387	1,035,327	1,066,387	1,098,379	1,066,387	1,098,379	1,131,330	1,098,379	1,131,330
Church Street Deck [7]	236,187	243,273	250,571	258,088	265,831	273,806	282,020	290,481	299,195	308,171	317,416
Court Street Deck [7]	220,470	227,084	233,897	240,914	248,141	255,585	263,253	271,151	279,286	287,665	296,295
Carroll Creek Deck [7]	220,675	227,295	234,114	241,137	248,371	255,822	263,497	271,402	279,544	287,930	296,568
West Patrick Street Deck [7]	169,594	174,682	179,922	185,320	190,880	196,606	202,504	208,579	214,836	221,281	227,919
East All Saints Street Deck [7]	154,616	159,254	164,032	168,953	174,022	179,243	184,620	190,159	195,864	201,740	207,792
Capital Improvement Projects [8]	9,000	9,270	9,548	18,000	31,500	55,125	82,688	124,032	155,040	193,800	242,250
Deck 6 [9]	-	-	-	-	-	-	-	-	-	398,157	410,102
Parking Shuttle Service [10]	-	-	-	-	-	724,880	724,880	260,100	260,100	260,100	260,100
Gross Annual Operating Expenses	**$ 2,015,714**	**$ 2,076,185**	**$ 2,138,471**	**$ 2,147,739**	**$ 2,225,132**	**$ 3,039,446**	**$ 3,069,849**	**$ 2,714,283**	**$ 2,815,195**	**$ 3,257,223**	**$ 3,389,772**
EBITDA	**$ 4,508,630**	**$ 639,362**	**$ 2,359,073**	**$ 4,109,973**	**$ 4,157,752**	**$ 2,939,229**	**$ 2,992,908**	**$ 3,906,453**	**$ 3,986,685**	**$ 4,232,155**	**$ 4,186,865**
Depreciation Expense [11]	$ 1,542,641	$ 1,558,067	$ 1,573,648	$ 1,589,384	$ 1,605,278	$ 1,621,331	$ 1,637,544	$ 1,653,919	$ 1,670,458	$ 1,687,163	$ 1,704,035
Debt Service [11]	$ 619,519	$ 557,567	$ 501,810	$ 451,629	$ 406,466	$ 365,819	$ 329,237	$ 296,313	$ 266,682	$ 240,014	$ 216,013
Deck 6 Debt Service [12]	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,172,072	$ 1,172,072	$ 1,172,072
New Church Street Debt Service [13]	$ -	$ -	$ -	$ -	$ -	$ 984,915	$ 984,915	$ 984,915	$ 984,915	$ 984,915	$ 984,915
NET INCOME	**$ 2,346,470**	**$ (1,476,272)**	**$ 283,615**	**$ 2,068,960**	**$ 2,146,008**	**$ (32,836)**	**$ 41,213**	**$ 971,306**	**$ (107,442)**	**$ 147,991**	**$ 109,830**

Table ES-1, Continued

Notes/Assumptions:

1. This item is unchanged from the Base Case projections.

2. Meter revenues will increase by 5% in 2024 and 2025 and revenues from parking citations will increase by 10% in 2024 and 2025 over the Base Case projections when the Church Street Garage is closed for replacement.

3. Church Street Garage will close 2024-2025 for demolition and reconstruction, during which time monthly lease holders will be reassigned to Court Street, Carroll Street or East All Saints, resulting in short-term increases in revenues from monthly leases in these facilities. Displaced Church Street transients are likely to seek parking at curbside meters, Court Street, Carroll Street, illegally or at off-site facilities supported by shuttle service.

4. Temporary increases in monthly and transient revenues in these facilities driven by displaced Church Street parkers.

5. East All Saints gains 196 parkers from Church Street replacement in 2024-2025, before reverting back. The Shaefer Building occupancy in 2026 will add another 146 permit parkers over baseline. Opening of One Commerce in 2027 and Galleria in 2028 will inflate transient revenues by 3% over the prior year each time.

6. Deck Six gains monthly parkers from displaced parkers on existing site, East All Saints, the Galleria residents, and One Commerce office workers in 2028. Facility will also capture overflow from Downtown Marriott/Convention Center and transient traffic from the Galleria and/or One Commerce projects.

7. Projected operating expenses do not deviate from Base Case projections unless otherwise noted.

8. Replacement of the Church Street Garage will free up some of this allocation for investment in service improvements such as new parking guidance and space location technology beginning in 2023.

9. Deck Six operating expenses based on estimated allocation of $633/space annually over the capacity (629 spaces) of the proposed facility.

10. Parking Shuttle service assumes provision of a two-vehicle route supporting 10-minute headways during the disruption of Church Street Garage, and a lower level of service thereafter.

11. Existing debt service as detailed in Base Case projections.

12. Based on estimated total project cost of ~ $16.2M, amortized over 20 years at 4.0% APR commencing 1/1/2027.

13. Based on estimated total project cost of ~ $13.5M, amortized over 20 years at 4.0% APR commencing 1/1/2024.

Chapter 1
Introduction, History and Circulator Examples

INTRODUCTION AND BACKGROUND

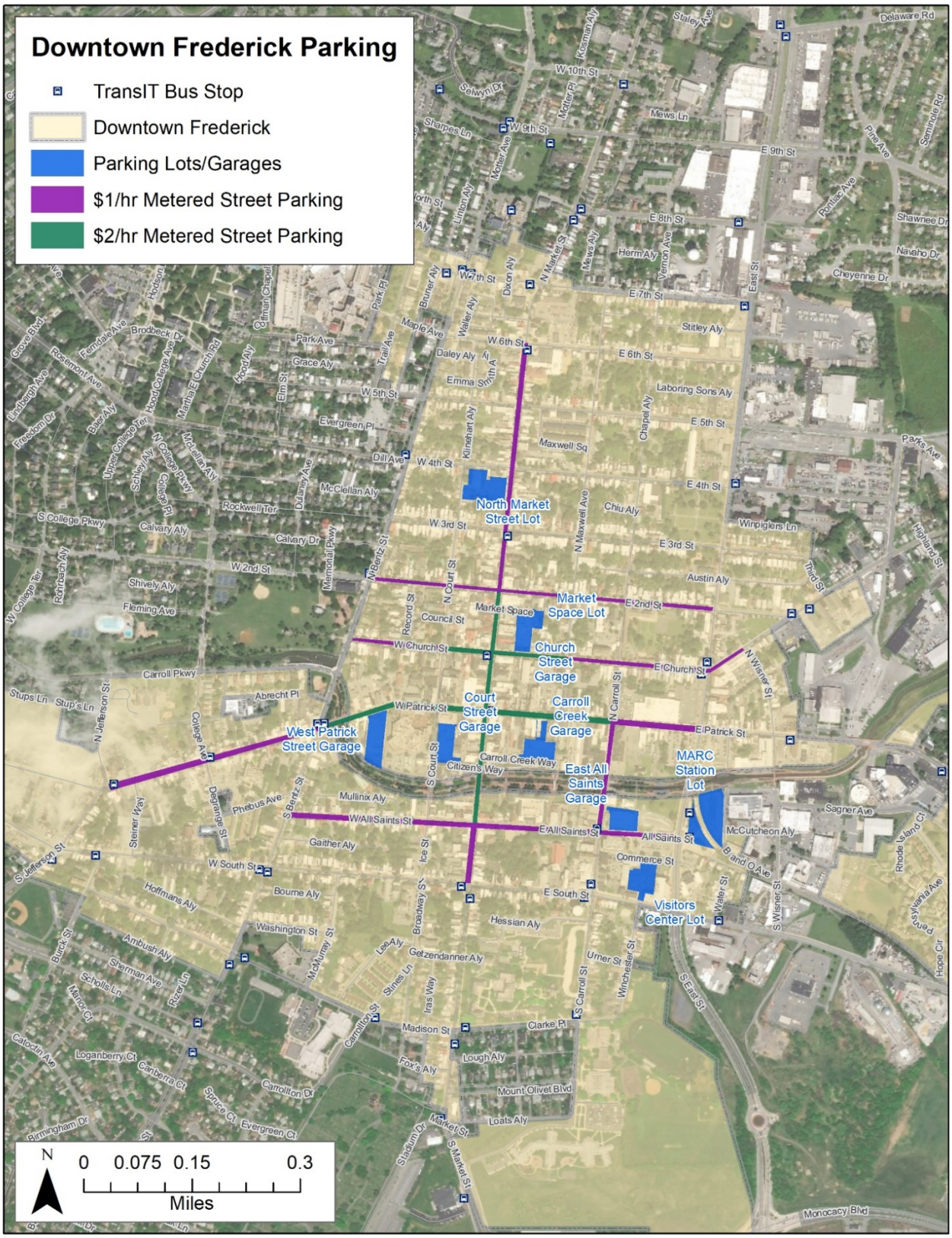
The City of Frederick, Maryland, is a thriving and growing small city located about 40 miles northwest of Washington, D.C. and 50 miles west of Baltimore. The city's population is approximately 73,000 people, which is an increase from the 2010 Census population of just over 65,000 people.

In addition to serving as the county seat for Frederick County, the city is also home to Fort Detrick, Frederick National Labs, AstraZeneca biopharmaceutical manufacturing, and close to 3,500 additional businesses that employ nearly 50,000 people. Downtown Frederick is an award-winning historic area that is comprised of approximately 40 blocks and is home to about 850 businesses and 4,500 residents. About 6,750 people work in the downtown area. Founded in 1745, Frederick has become an eclectic mix of old and new, earning the moniker "hip and historic."

The vibrancy of Downtown Frederick attracts people to use a number of different transportation modes to get around, including walking, biking, taking the bus or commuter train, and driving. Parking is accommodated both on-street and through five parking garages and four off-street surface lots. A map of public parking options that are part of the city's parking program in Downtown Frederick is provided as Figure 1-1. Free on-street parking is also available on most of the other city streets that are not highlighted on this map.

Frederick's Parking Department manages the parking infrastructure in the city and the city owns the Downtown Transportation Center, which is the transfer hub for Frederick County TransIT buses. The Transportation Center is also served by the MARC commuter rail, Maryland Department of Transportation Maryland Transit Administration (MDOT MTA) commuter buses, taxis/Uber/Lyft, Greyhound, and BayRunner.

Figure 1-1: Public Parking Availability in Downtown Frederick – Fee Based



The City of Frederick has been proactive in its transportation planning and has completed several plans that address various modes of transportation that affect downtown parking and circulation, including:

- An adopted downtown parking plan (2004)
- Complete streets policy
- Electric vehicle infrastructure plan
- Bike share feasibility study
- Shared use path plan
- Rails to trails report

The Parking Department has conducted parking and circulator studies in the past, most recently in 2015. The 2015 study had a focus on accommodating the impacts of the proposed downtown hotel and conference center.

On a typical day, it is generally easy to find a place to park in Downtown Frederick; however, during peak periods and special events, parking can be difficult and traffic congested. As development continues and the number of special events increases, there are likely to be more and more days when the city experiences parking shortages and traffic congestion. In addition, three of the city's five parking garages are aging and will need to be either replaced or repaired. Losing parking spaces during these efforts will be difficult to manage without a comprehensive plan in place.

There are some areas of the city where tensions over parking occur between residents, workers, and visitors. Frederick has used metering and residential parking permits to mitigate some of these tensions in the past, but as the city grows there are likely to be more areas of conflict. In addition, after a long period without much development, the north end of downtown (north of Third Street) and the east side of downtown (along the East Street Corridor) are now seeing development. There is not a surface lot or structure in the downtown area north of the city lot on North Market Street between Third and Fourth Streets. New housing has recently been constructed on North Market Street between Fifth and Sixth Streets and a brewery has opened in this same block.

Not only is there limited public parking north of the city lot on North Market, there currently is not a regularly scheduled transit circulator that could help connect Downtown Frederick areas, though trolley services are provided for special events, such as the monthly First Saturday events sponsored by the Downtown Frederick Partnership. The implementation of a circulator service has been a goal of the Downtown Frederick Partnership for several years.

A circulator/shuttle was in operation from April 2004 to early 2006. The route used a park and ride model that permitted drivers to park for free at Harry Grove Stadium on the south side of downtown, and ride the shuttle to key locations in Downtown Frederick. Using this model, downtown employees did not have to pay to park in the city's garages, saving them money and freeing up space for visitors.

Service was provided by Frederick County TransIT through an intergovernmental agreement. The service was discontinued due to cost and lack of leadership support. Additional information about this service is provided on page 1-9 of this report.

Downtown Parking and Circulator Study

Within the context of aging parking infrastructure and continued growth, the City hired the consulting team of KFH Group, Inc. and DESMAN to develop a comprehensive public parking and circulator implementation plan for Downtown Frederick. The stated goals for the plan that results from this effort are to:

- Support and sustain a vibrant Downtown Frederick;
- Provide for friendly, reliable, efficient, sustainable, and affordable parking and multimodal transportation options in Downtown Frederick for residents, workers, and visitors; and
- Support economic development, redevelopment, historic renovation, and adaptive reuse.

It should be noted that this study has been prepared using data and information available prior to the COVID-19 pandemic. The plan assumes that Downtown Frederick will resume pre-pandemic activity and growth levels within a 24 to 36-month time frame.

Downtown Circulator History

Hagerstown and Frederick Railway – Downtown Loop

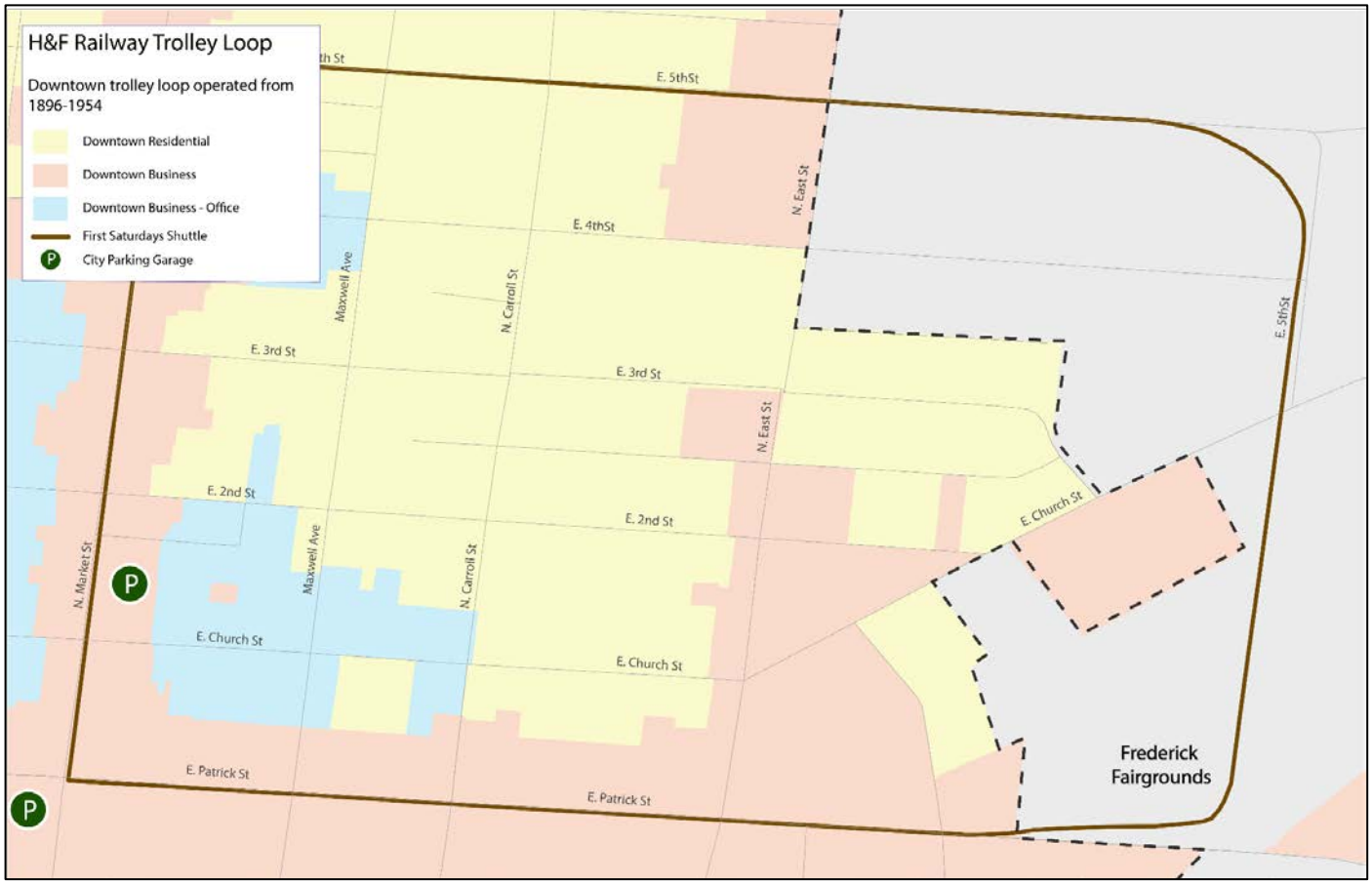
The Hagerstown and Frederick (H & F) Railway was an electric railway that operated a number of routes in Frederick and Washington counties, beginning service in the 1890s.[1] After a long decline in ridership, the H & F Trolley between Frederick and Thurmont was the last passenger service to operate within the system, with the last trip provided in 1954. The H & F Trolley included a Downtown Frederick Loop as part of the system. This loop originated at the Carroll Street Terminal at the corner of Carroll and Patrick Streets. The terminal building (currently vacant and for sale) still stands on the site and was most recently used by the Frederick News-Post as its operations facility. This site is currently under consideration for a downtown hotel and conference center.

After leaving the Carroll Street Terminal, the Loop route traveled east on Patrick Street and through the fairgrounds to Fifth Street. The route headed west on Fifth Street and then south

[1] Hagerstown and Frederick Railway Historical Society web page

on North Market Street to Patrick Street, and back to the terminal building.[2] A map of this historic route is shown in Figure 1-2.

Figure 1-2: H & F Trolley Downtown Loop



[2] Hagerstown and Frederick – Then and Now. Tracing project by Reuben Moss Photography, updated 2015.

Photo Credit: Moss Photography

The photo to the left shows an H & F Trolley car traveling through the Hood College Campus. Hood was not served by the Downtown Loop, but rather by a line that headed west to Braddock Heights, Middletown, and Hagerstown.

East Street Trolley Project (Planning Effort)

In the late 1980s there was a planning effort conducted to look at the feasibility of restoring two of the trolleys that were used for the H & F service and investigating the possibility of bringing back an active trolley line in the City of Frederick.[3] The planning effort went as far as negotiating with "state rail administration to permit access to East Street rail line property."[4]

There were two routes included in the study briefing. These were:

- The East Street Trolley, which was a proposed route between Worman's Mill and downtown. A map from the project briefing is provided as Exhibit 1-1.

- The Downtown Loop Line, which was a similar route to the historic H & F Downtown Loop, without the trip to the fairgrounds (Exhibit 1-2).

The study team has not been able to find out definitively what ended this effort, but it was likely financial concerns and competing pressure to build structured parking facilities.

[3] The Frederick Trolley – A Key to Downtown Renaissance, briefing presented by Edward G. Metka, P.E., Chairman, Frederick Trolley Committee.
[4] Ibid.

Exhibit 1-1: Proposed East Street Trolley from 1980's Planning Effort

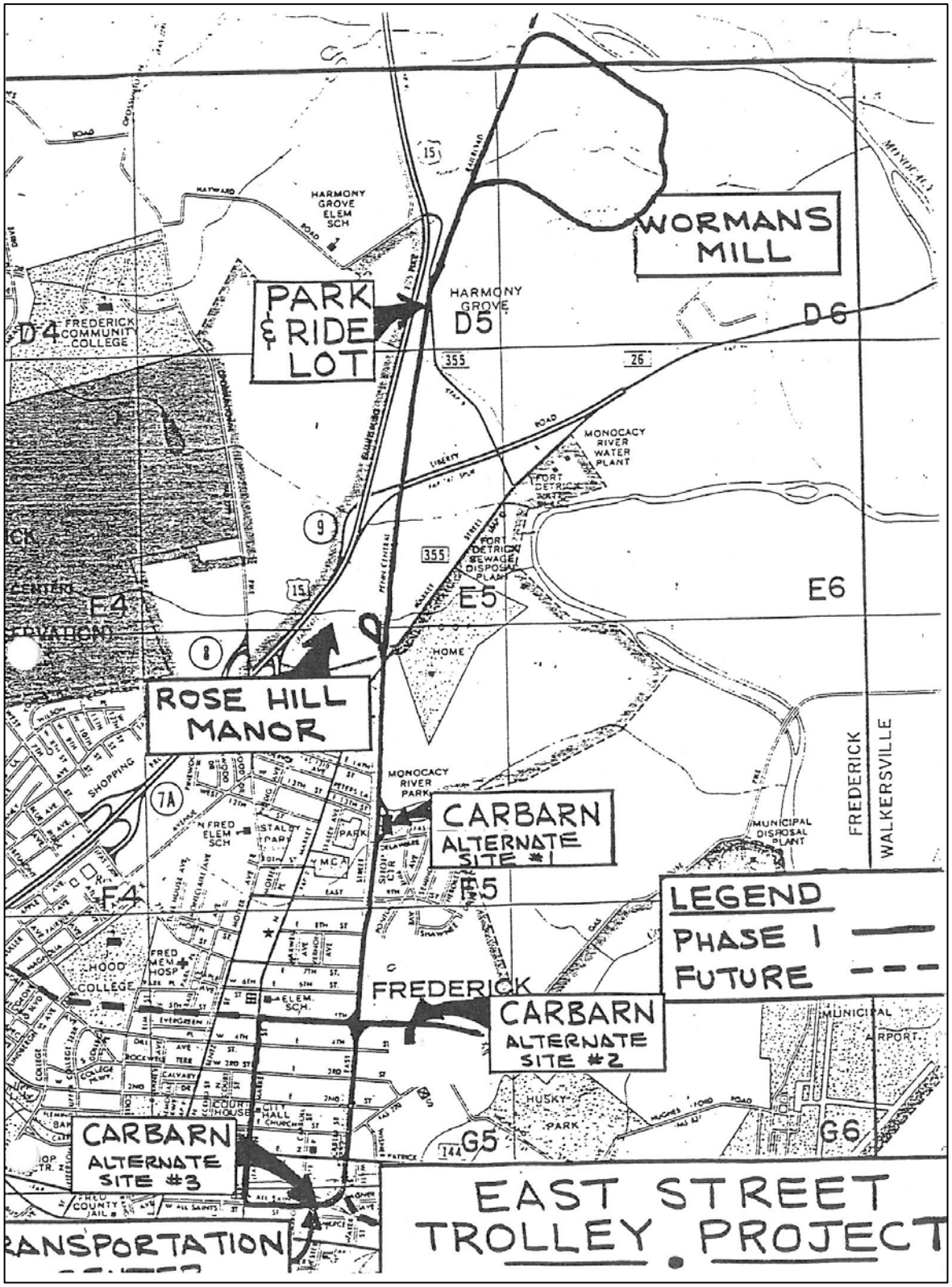
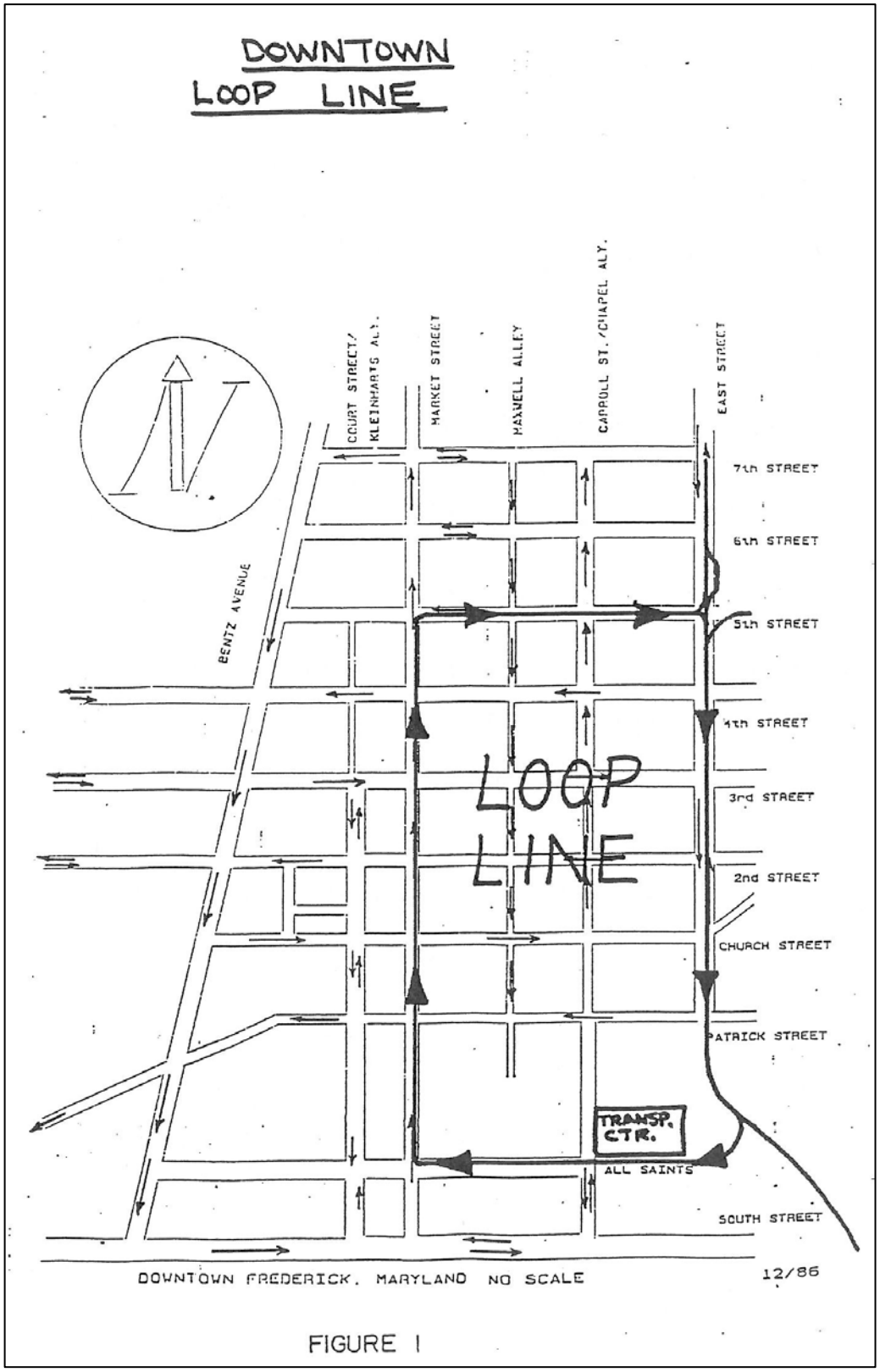


Exhibit 1-2: Proposed Downtown Loop Line from 1980's Planning Effort



Downtown Frederick Express (2004-2006)

The Downtown Frederick Express park and ride shuttle was initiated in 2004 as an effort to mitigate the effects of increasing parking meter rates and restricting parking to two hours in a number of downtown locations, including some of the areas adjacent to Baker Park.[5] When the service was initiated, the City operated three garages and the subscription parking spaces were full. The West Patrick Street Garage was under construction at the time.

The purpose of the shuttle was to provide a park and ride option for employees to use, thus freeing up valuable parking spaces in the downtown core. The service operated Monday through Friday from 6:30 a.m. to 6:30 p.m. Free parking was provided at Harry Grove Stadium for users of the Downtown Express and the shuttle was free. A map of the route is shown in Figure 1-3.

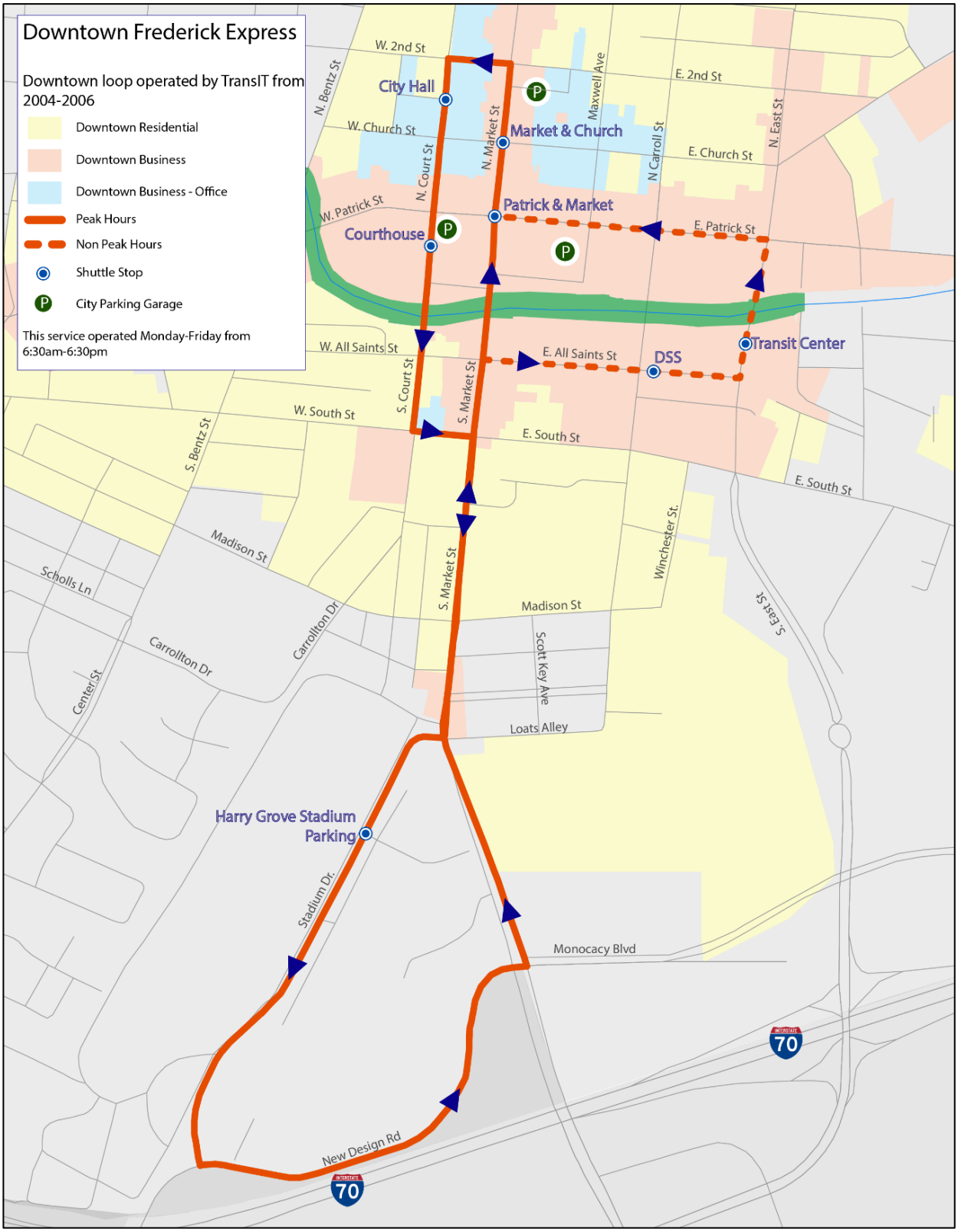
TransIT Services of Frederick County operated the shuttle for the city under an inter-governmental agreement. The vehicles (body-on-chassis style) were purchased by TransIT, with significant assistance from federal and state funds. The operating expenses were paid out of the city's Parking Fund.

Ridership data for the route for the period of April 2004 through May 2005 were received from the City of Frederick. These data showed that there were 15,950 passenger trips provided during that 13-month period, with productivity of about 4.5 passenger trips per revenue hour.

The route was ended in early 2006 due to concern about costs, the completion of the West Patrick Street Garage, as well as a change in city leadership that did not support the project.

[5] Frederick News Post, "Downtown Parking Roils City Workers," July 12, 2004.

Figure 1-3: Downtown Frederick Express Route



Parking and Circulator Study (Planning Effort - 2015)

In 2015, a City of Frederick Parking and Circulator Analysis was conducted by Walker Parking Consultants for the City of Frederick and Jones Lang LaSalle Americas, Inc. The analysis focused on the projected future parking needs in Downtown Frederick; the ability for the existing parking supply to accommodate that demand; a preliminary financial analysis for the construction of Deck Six; and a circulator system for operation in Downtown Frederick.[6]

An important component of the study was to develop a plan to accommodate the parking demand that would likely be generated by a new downtown hotel, as well as other developments that are likely to become active in the mid-term and longer-term horizon. The study concluded that building Deck Six will be required if the hotel is constructed and will also be required once additional future development is constructed (with or without the hotel). The study authors did not see a need to build Deck Six if the hotel is not built and there is no additional development.

A circulator system of two routes was also proposed. One of the routes was considered a "circulator," i.e., serving several downtown areas using a loop. The second route proposed was a park and ride shuttle, which used the Harry Grove Stadium lot for parking, similar to the 2004 shuttle.

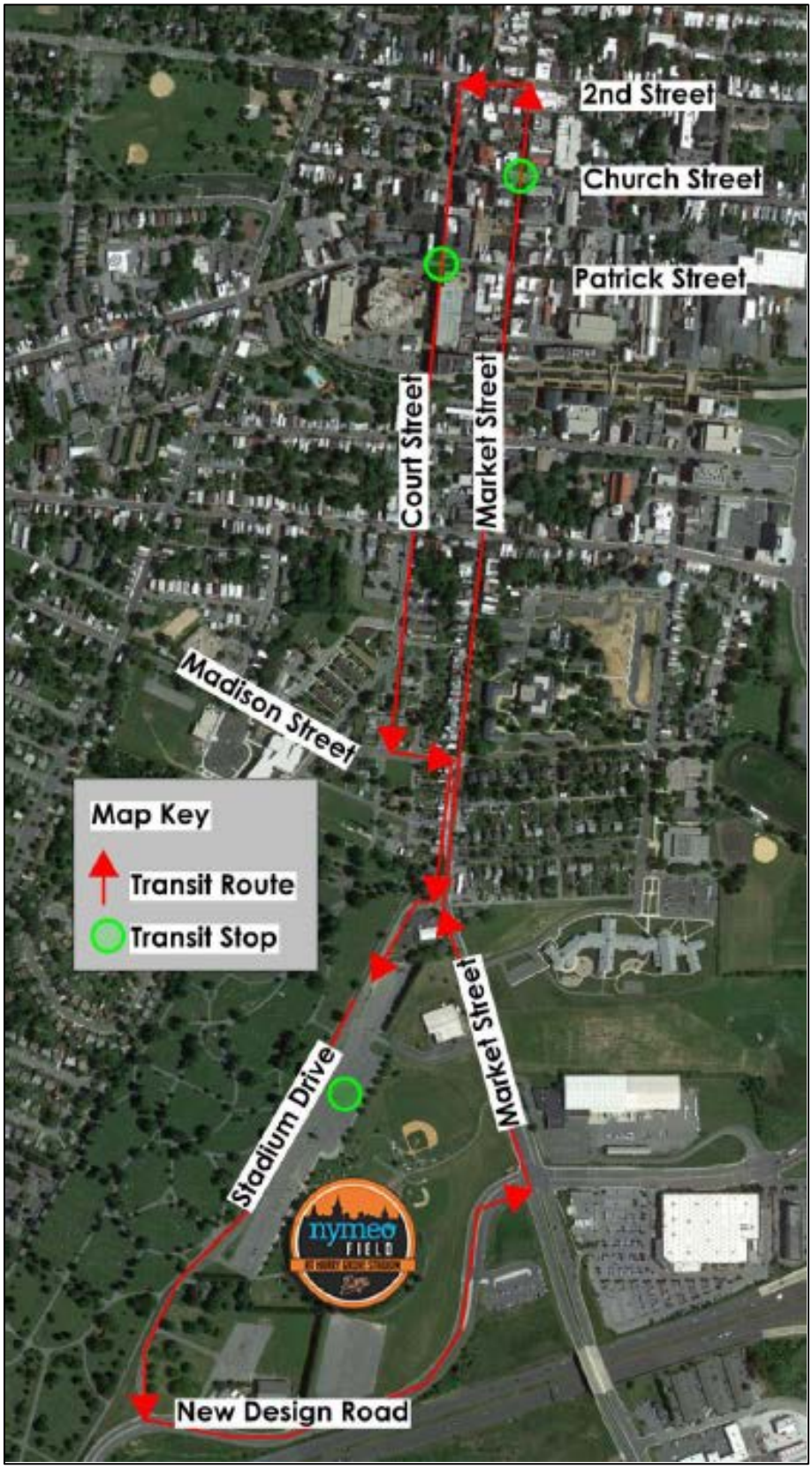
The proposed circulator route was 3.8 miles in length and an image of the route taken from the study is shown as Exhibit 1-3. The proposed park and ride shuttle route is shown in Exhibit 1-4.

The package of both proposed routes formed a rather robust system, with annual operating cost estimates of just over $1 million. The study authors appeared to have worked with Frederick County TransIT on the routing options, but the circulator research did not include analyses of the existing transit program in Frederick, peer circulators, stakeholder opinion, or the historical context. There was a discussion of the 2004 shuttle program.

[6] Walker Parking Consultants, City of Frederick, MD Parking and Circulator Analysis, May, 2015.

Exhibit 1-3: Proposed Circulator Route from 2015 Study

Exhibit 1-4: Proposed Park and Ride Route from 2015 Study



PUBLIC TRANSIT SERVICE IN DOWNTOWN FREDERICK

Frederick City Transit System

Public involvement in the operation of transit in the City of Frederick began with the purchase of a private service in 1977, as a result of the private operator's intent to terminate service.[7] The Frederick City Transit System (FCTS) was administered through the Department of Public Works, with assistance from the Mayor's Office. FCTS provided fixed route service on three loops through the City and one route to Francis Scott Key Mall in the County. These routes were the Red, White, and Blue routes.

FCTS was consolidated with Frederick County's TRANSERV to form TransIT Services of Frederick County in 1994. The decision to consolidate services stemmed from a number of factors, including growth in the County and City that resulted in the development of an urbanized area; the passage of the Americans with Disabilities Act, which required complementary paratransit to be provided; a request from the Maryland Department of Transportation – Maryland Transit Administration (MDOT-MTA) for a joint application for funding; and the advice of the Transportation Services Advisory Council (TSAC), which adopted a goal of consolidation.

TransIT Services of Frederick County

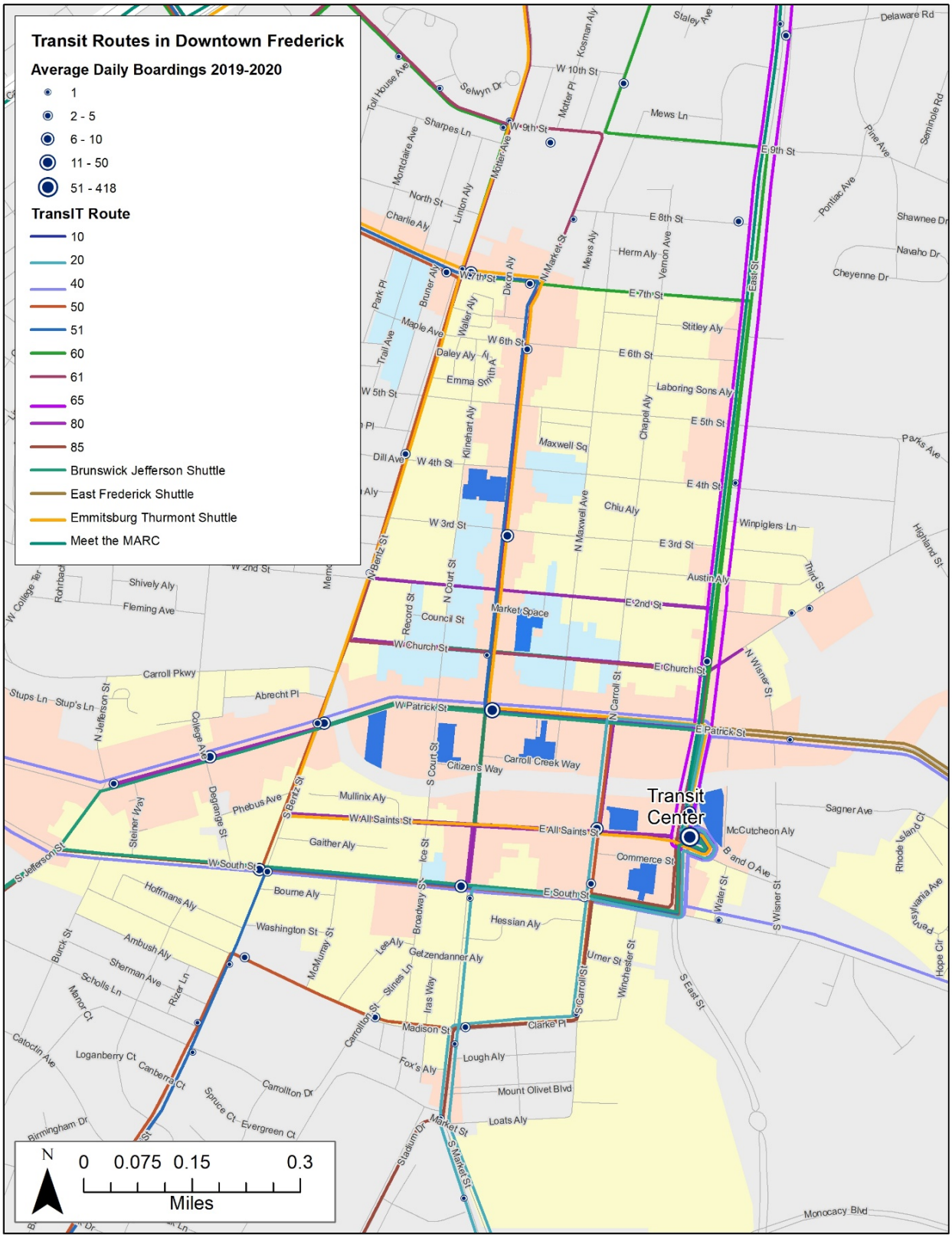
Since the 1994 consolidation, public transportation services in the City of Frederick have been provided by TransIT Services of Frederick County. The following services are offered through TransIT:

- Ten Connector routes that operate in the City of Frederick and the urbanized areas of Frederick County;
- Commuter and Meet-the-MARC shuttles;
- Demand response paratransit services for senior citizens and people with disabilities;
- A Taxi Access Program for senior citizens and people with disabilities;
- Commuter information and referral via membership with Commuter Connections; and
- Employer outreach programs.

TransIT's hub for its connector routes is in Downtown Frederick at the Frederick Transportation Center, which is also the MARC Commuter Rail Station, an intercity bus station (Greyhound, BayRunner), and a commuter bus stop (MDOT MTA Route 515). The TransIT routes that serve Downtown Frederick are shown in Figure 1-4. The average daily boardings by stop for calendar year 2019 are also portrayed on this map.

[7] Transportation Development Plan Phase 1: Consolidation Implementation Plan. Prepared by Ecosometrics for Frederick County, Maryland, January 1993, page 10.

Figure 1-4: TransIT Routes in Downtown Frederick and Average Daily Boardings



In FY2019, TransIT provided 593,853 annual passenger trips across all its services, with an annual operating budget of just over $6.3 million.[8] The annual revenue hours were 85,715. This total includes the connector routes, the shuttles, and the paratransit program. TransIT's fully-allocated cost per hour in FY2019 was $73.54.

TransIT's ten Connector routes, which serve the City of Frederick and the urbanized area of Frederick County, provide the majority of the passenger trips within the system, with 505,421 passenger trips provided in FY2019. The Connector routes operated 60,713 revenue hours in FY2019, resulting in an average productivity of 8.3 passenger trips per revenue hour.

TransIT Ridership in Downtown Frederick

Data on TransIT ridership in Downtown Frederick for calendar year 2019 were provided by TransIT for this analysis. These data show that an average of 644 daily boardings occur in Downtown Frederick. It should be noted that the TransIT definition of downtown is slightly larger than the core, extending northward to 14th Street and west to Fairview Avenue. The highest number of boardings occur at the Transit Center, followed by the "Square Corner," (Patrick Street at Market Street). The boarding data from 2019 for the top 25 stops in Downtown Frederick are provided in Table 1-1.

Frederick Transportation Center

[8] TransIT Services of Frederick County, 2019 Annual Report.

Table 1-1: TransIT Ridership in Downtown Frederick – Calendar Year 2019

Bus Stop	Total Boardings	Avg. Daily Boardings	% of Downtown Activity
Transit Center (downtown Frederick MARC Train Station)	129,699	418	65%
Square Corner (E. Patrick Street @ N. Market Street)	13,516	44	6.8%
West Patrick Street @ College Avenue	3,239	10	1.6%
North Market Street @ 3rd Street	2,533	8	1.3%
South Carroll Street @ East All Saints Street	2,501	8	1.3%
South Street @ South Market Street	2,364	8	1.2%
West South Street @ Center Street	2,357	8	1.2%
West 7th Street @ Tollhouse Avenue (FMH)	2,342	8	1.2%
Fairview Avenue @ College Park Plaza (Safeway)	2,325	8	1.2%
East Street @ Transit Center	2,254	7	1.1%
West Patrick Street @ Bentz Street	2,200	7	1.1%
West 7th Street @ Motter Ave./Bentz St.	2,110	7	1.1%
South Carroll Street @ South Street	1,598	5	0.8%
North Market Street @ 6th Street	1,454	5	0.7%
East Street @ Delaware Road (Monocacy Village Shopping Center)	1,436	5	0.7%
Clarke Place @ South Market Street	1,433	5	0.7%
West Patrick Street @ Jefferson Street	1,231	4	0.6%
Motter Avenue @ 14th Street (shelter)	1,100	4	0.6%
West Patrick Street @ College Terrace	1,093	4	0.5%
Center Street @ Madison Street	1,090	4	0.5%
Bentz Street @ Dill Avenue/4th Street	999	3	0.5%
East 8th Street @ East Street (after left turn)	964	3	0.5%
Center Street @ West South Street	947	3	0.5%
Madison Street @ Stine's Lane	920	3	0.5%
East 8th Street @ North Market Street	893	3	0.4%
7th Street @ Frederick Memorial Hospital	828	3	0.4%

Source: TransIT Services of Frederick County

Commuter and Intercity Services

The following commuter and intercity transportation services are available from the Downtown Frederick Transportation Center.[9]

- **MARC Brunswick Line** – commuter train service to/from Monocacy; Dickerson; Barnesville; Boyds; Germantown; Metropolitan Grove; Gaithersburg; Washington Grove; Rockville; Garrett Park; Kensington; Silver Spring; and Washington D.C. Three weekday eastbound trips are offered (5:00 a.m.; 6:05 a.m.; and 7:10 a.m.) and three weekday westbound trips are offered (leaving Washington Union Station at 3:45 p.m.; 5:20 p.m.; and 6:40 p.m.). Not all of the interim stations are served on each trip.

- **MDOT MTA Route 515** – commuter bus service to/from the Shady Grove Metrorail Station, with interim stops at the Monocacy Station and the Urbana Park and Ride. Six southbound morning trips are offered between 4:30 a.m. and 7:10 a.m. and seven return trips depart from Shady Grove Station between 3:45 p.m. and 7:10 p.m.

- **Greyhound Schedules 4407, 1607, and 4440**- intercity bus service between Downtown Frederick Transportation Center and Washington, D.C., Baltimore, MD, and points west.

- **BayRunner** – provides shuttle service to and from BWI Airport with select trips to Greyhound in Baltimore.

[9] These are pre-pandemic schedules. It is assumed that these schedules will resume when the pandemic has eased.

First Saturday Trolley

The Downtown Frederick Partnership sponsors the operation of a downtown trolley during its First Saturday events; each Saturday in December; on Frosty Friday; and occasionally for other special events.[10] The trolley follows a 1.8-mile loop route that operates on 15-minute headways, stopping at five different downtown locations. For most of the First Saturday events, the trolley operates from 3:00 p.m. to 9:00 p.m. There were three events in FY2019 that provided an 11- or 12-hour span of service.

The route begins at the Little Pottery Shop on East Street, continuing south before turning onto E. All Saints Street for a block. The shuttle then makes a right onto Carroll Street and stops at the Delaplaine Visual Arts Center. From Carroll Street, the shuttle makes a left onto E. Patrick Street and stops at 33 E. Patrick Street. The shuttle then turns onto N. Market Street and makes its final two stops, at Brewer's Alley and Bravura Arts and Framing. This route is similar to the one proposed in the late 1980's planning effort, as well as the historic "Downtown Loop," without the trip through the fairgrounds. Three of the Downtown Frederick parking garages are directly served via the route (All Saints; Carroll Creek; and Church Street). A map of the route is provided in Figure 1-5.

Data provided by the Downtown Frederick Partnership for the previous four full fiscal years show that, with the exception of FY2018, ridership for the First Saturday Trolley is rising, along with productivity. The FY2019 productivity of 47.8 passenger trips per revenue hour is considered to be successful according to the urban fixed route performance guidelines provided in the MDOT Maryland Transit Administration's Locally Operated Transit System Manual.[11] The urban guidelines consider anything over 30 trips per revenue hour to be successful and the small urban guidelines, which are more applicable to Frederick, consider anything over 16 trips per revenue hour to be successful. Anecdotal reports indicate that much of the ridership on the First Saturday Trolley is for recreation, rather than transportation.

The Downtown Frederick Partnership has also added service in recent years, with the addition of service for all four holiday Saturdays (beginning in FY2018) and a new "Date Night," beginning in FY2019. The trend data by year is shown in Table 1-2.

[10] First Saturday events are currently occurring virtually and outside. The First Saturday Trolley is not currently in operation due to the COVID-19 pandemic.
[11] MDOT – MTA 2017 LOTS Manual, Attachment 3.F

Figure 1-5: First Saturday Trolley Route

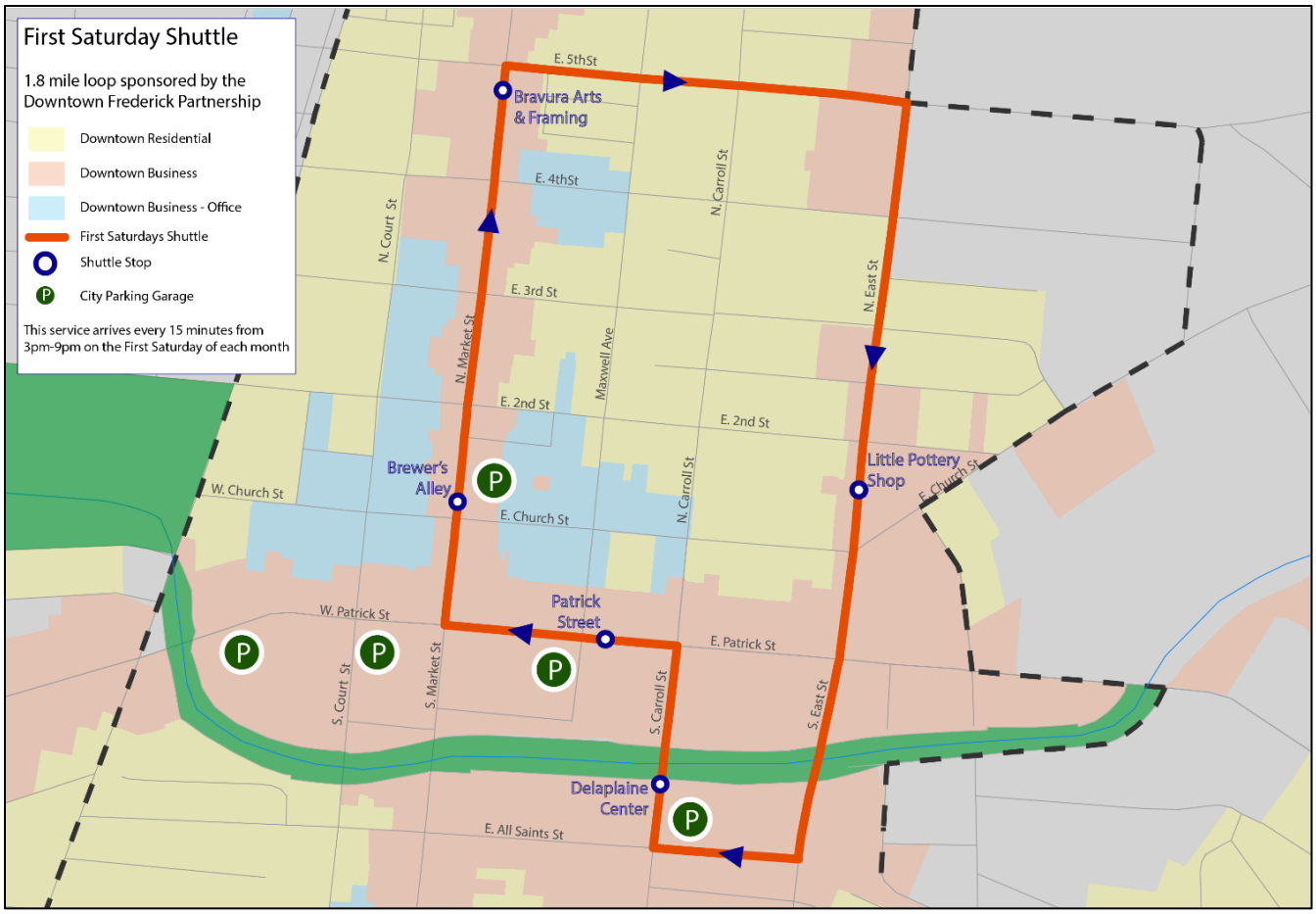


Table 1-2: First Saturday Trolley Data – FY2016 – FY2019

Year	Passenger Trips	Revenue Hours	Trips/ Hour
FY16	839	64	13.1
FY17	1,482	70	21.2
FY18	1,073	100	10.7
FY19	5,358	112	47.8

Source: Downtown Frederick Partnership

The FY2019 cost for the service was $20,800, which equates to a cost per trip of $3.88. The cost per hour ($186) appears high as compared to public transportation services, but is low for "charter" and special services that operate on a periodic basis. This rate also includes the capital, whereas most public transit cost per hour rates do not.

EXAMPLES OF DOWNTOWN CIRCULATORS IN OTHER COMMUNITIES

There are numerous examples of downtown circulators that operate in cities of various sizes. In order to learn more about how cities use circulators and what other communities find to be feasible, the study team gathered basic information on 13 circulator services that provide service to communities ranging in size from about 11,567 residents up to 160,530 residents. As previously noted, these data were collected prior to the COVID-19 pandemic. The following information was collected for all 13 services:

- Days and hours of service
- Frequency of service
- Operator type
- Whether or not the service uses a bus tracker
- Fare

These data are provided in Table 1-3.

Basic Operating Parameters

Days and Hours of Service

The days of and hours of service for each of the circulators vary according to the primary purpose of each service. Most of the services offer weekday service (except the off-season Branson service and the Greenville Downtown Trolley); eleven of the services offer Saturday service; and eight of the services offer Sunday service. A common theme among the circulators is a relatively long span of service. With the exception of Branson, Missouri and Staunton, Virginia, each of the communities offers at least a 12-hour span of service at least one day per week.

Frequency of Service

Frequency of service for the circulator programs ranges from 10 minutes to 30 minutes, reflecting the various operating environments and service purposes.

Operator Type

Nine of the 13 circulators are directly operated by the local transit system. Three are operated by contractors, with oversight by either a parking entity or a downtown advocacy group. One of the circulators (Savannah) is operated by the public transit system via a contractual arrangement with a public/private partnership created for mobility purposes.

Bus Tracker

All but one of the circulator services uses a bus tracker to provide real-time schedule information to customers.

Table 1-3: Downtown Circulator Sample – Basic Operating Parameters

City/Community	Name of Service	Population [1] [2]	Days and Hours of Service	Frequency	Operated by Public Transportation Provider	Bus Tracker?	Fare
Alexandria, VA	King Street Trolley	160,530	Sun.- Wed.: 10:30 a.m. - 10:30 p.m.; Th.-Sat.: 10:30 a.m. - 12:00 a.m.	10-15 minutes	Yes	Yes	Free
Annapolis, MD	Annapolis Circulator	39,174	Mon-Sat: 7:30 a.m. to 11:00 p.m.; Sunday: 8:00 a.m. to 8:00 p.m.	20 minutes	No	Yes	Free
Bethesda, MD	Bethesda Circulator	63,168	Mon-Th.: 7:00 a.m. -11:00 p.m.; Fri: 7:00 a.m. - 12:00 a.m.; Sat.: 10:00 a.m. to 12:00 a.m.	15 minutes	No	Yes	Free
Branson, MO	Sparky	11,567	March-Dec: 7 days, 9:00 a.m. - 6:00 p.m. Jan-Feb: Weekends only, 10:00 a.m. - 5:00 p.m.	20-30 minutes	No	Yes	Free
Charleston, SC	DASH Downtown Shuttle	136,208	M-F: 6:20 a.m.- 10:15 p.m; SS: 8:15 a.m. - 8:15 p.m. Hours vary by route.	10-30 minutes	Yes	No	Free
Charlottesville, VA	Free Trolley	48,117	M-Sat: 6:40 a.m. -11:37 p.m.; Sun: 8:00 a.m.- 5:47 p.m.	15 minutes	Yes	Yes	Free
Greenville, SC	Downtown Trolley	58,409	Th-F: 6:00 - 11:00 p.m.; Sat: 10:00 a.m. - 11:00 p.m.; Sun: 1:00 p.m. to 8:00 p.m.	20-30 minutes	Yes	Yes	Free
Lancaster, PA	Downtown Lancaster Loop	59,420	M-F: 5:20 a.m. - 6:10 p.m.	20 minutes	Yes	Yes	$1.70
Roanoke, VA	The Star Line	99,920	M-F: 7:00 a.m. - 7:00 p.m.	15 minutes	Yes	Yes	Free
Savannah, GA	DOT	145,862	M-F: 7:00 a.m. - 12:00 a.m.; Sat: 10:00 a.m. - 12:00 a.m.; Sun: 10 a.m. - 9:00 p.m.	10 minutes	Under a contractual relationship	Yes	Free
Staunton, VA	Downtown Trolley	24,922	M-F: 10:00 a.m. to 9:00 p.m. Sat: 10:00 a.m. to 9:00 p.m.	30 minutes	Yes	No	$0.25
Silver Spring, MD	VANGo Route 28	79,483	M-Th: 7:00 a.m. -12:00 a.m.; Fr.: 7:00 a.m. -2:00 a.m.; Sat.: 7:00 a.m. -2:00 a.m.	15-20 minutes	Yes	Yes	Free
Williamsburg, VA	Trolley	14,896	M-Th: 9:00 a.m. - 9:00 p.m.; Fr-Sat: 9:00 a.m.- 11:00 p.m.; Sun: 9:00 a.m. - 6:00 p.m.	30 minutes	Yes	Yes	$1.50

(1) 2018 Census Estimate, except Bethesda and Silver Spring, which are 2013-2017 American Community Survey estimates

(2) Population is of entire municipality or Census-designated place, not of the service area for the circulator

Fares

Ten of the 13 sample circulator programs operate fare-free.

Detailed Operating Data

The study team was able to collect more detailed operating data from eight of the 13 sample circulator programs. The following additional data points were collected:

- Number of vehicles in service at one time
- Annual ridership
- Annual revenue hours
- Annual operating cost
- Operating cost per hour
- Operating cost per trip
- Passengers per revenue hour
- Funding sources

These data are provided in Table 1-4 and show that there are significant variances among the programs, with the Bethesda Circulator providing the highest level of service, along with the highest ridership and productivity. This is to be expected, given the high-density area served and the connection to Washington Metropolitan Area Transit Authority's (WMATA) Red Line. The smallest of these programs is found in Staunton, Virginia and operates just over 2,800 annual revenue hours, providing 25,915 annual passenger trips. The mean number of revenue hours provided by these sample programs is 7,199, which is a little less than the equivalent of two vehicles operating 12 hours per day, six days per week.

The mean operating cost per hour was $75.31 and the mean cost per trip was $3.63. System productivity averaged 20.8 passenger trips per revenue hour.

Funding Sources

The eight communities use a variety of sources to fund downtown circulators, including the following:

- Public transportation funding through federal state, and local sources (similar to how Frederick County TransIT is funded);
- City general fund revenue;
- City transportation and/or parking fund revenue;
- County transit funds (Montgomery County, Bethesda Circulator);
- Hotel room fees (Savannah, GA) and hospitality taxes (Greenville, SC);
- Major institutions (Roanoke, VA); and
- Downtown development groups (Roanoke, VA).

Table 1-4: Downtown Circulator Sample – Detailed Operating Data

City/Community	Number of Vehicles in Service at One Time	Annual Ridership	Annual Revenue Hours	Annual Operating Cost	Operating Cost Per Hour	Operating Cost per Passenger Trip	Passenger Trips per Hour	Funding Sources
Annapolis, MD	1	35,713	5,395	$469,171	$86.96	$13.14	6.6	Transportation fund and general fund
Bethesda, MD	3	440,663	14,820	$1,107,647	$74.74	$2.51	29.7	Currently funded by Montgomery County's Transit Fund. Has had financial support from
Greenville, SC	2-4	94,829	4,044	$298,209	$73.74	$3.14	23.4	City hospitality tax
Roanoke, VA	2	106,818	7,672	$552,384	$72.00	$5.17	13.9	City of Roanoke, Carilion Clinic, Downtown Roanoke Inc.
Savannah, GA	2	174,399	7,200	$489,600	$68.00	$2.81	24.2	Per occupied room fee of either $1.00 or $1.75 and the City. Vehicles are federally-funded at 80%.
Staunton, VA	1	25,915	2,827	$136,035	$48.12	$5.25	9.2	Federal, state, and local
Silver Spring, MD	2	271,423	11,298	$952,992	$84.35	$3.51	24.0	Parking fund
Williamsburg, VA	1	45,743	4,332	$330,800	$76.36	$7.23	10.6	Federal, state, and local
Mean Values	**1.9**	**149,438**	**7,199**	**$542,105**	**$75.31**	**$3.63**	**20.8**	
Mean Values when Discarding Highest and Lowest Ridership Systems	**1.8**	**121,488**	**6,656**	**$515,526**	**$77.45**	**$4.24**	**18.3**	

Summary of Sample Circulators

The research conducted concerning circulator services in other communities reveals that these types of mobility services are available in small communities as well as larger cities. The programs provide mobility to connect tourist attractions, as well as to connect major employment centers to downtown core areas. Communities also use circulators to manage parking supply and reduce traffic congestion in core areas.

Greenville, South Carolina, which is often used in peer comparisons to Frederick, operates a trolley program that focuses on providing access to tourist destinations. The program operates Thursdays through Sundays, though the system planner indicated they may eliminate Thursdays due to low ridership.

Most of the circulators have strong connections to the public transportation programs operating within their cities, but not all are administered by public transportation providers. Communities fund these programs through a myriad of ways, including federal, state, and local transit funds; parking revenue; special fees/taxes; and major institutions. Most of the programs do not charge a fare. Trolley replica vehicles are popular vehicle types for these services; however, some communities have found that other vehicle types are more reliable and comfortable for passengers.

The research conducted regarding circulators in other cities shows that there is a large variance with regard to what other communities find to be feasible, with the cost per trip data ranging from $2.51 to $13.14.

Chapter 2
Existing Conditions and Future Needs for Parking

INTRODUCTION

The City of Frederick currently has a very robust public parking system serving its downtown that consists of five (5) parking garages, four (4) surface lots, 829 on-street metered parking spaces, and 1,408 on-street unmetered spaces, totalling more than 4,700 spaces. In order to ensure that Downtown Frederick continues to grow and thrive in the future, it is the City's desire to have a clear plan for how parking should change and adapt. Given the age of several of the City's garages – the Church Street Garage chief among them – the City is seeking physical solutions to either repair the existing facilities to keep them operational for the long-term, or solutions to replace and expand upon the existing parking capacity.

As the basis for the parking plan, DESMAN began with a review and analysis of the following:

- Downtown Frederick's existing parking infrastrucure;
- The current demand for parking in Downtown Frederick;
- The historical financial performance of the parking system;
- Conversations with Downtown Frederick stakeholders; and
- An online survey related to downtown parking and circulation.

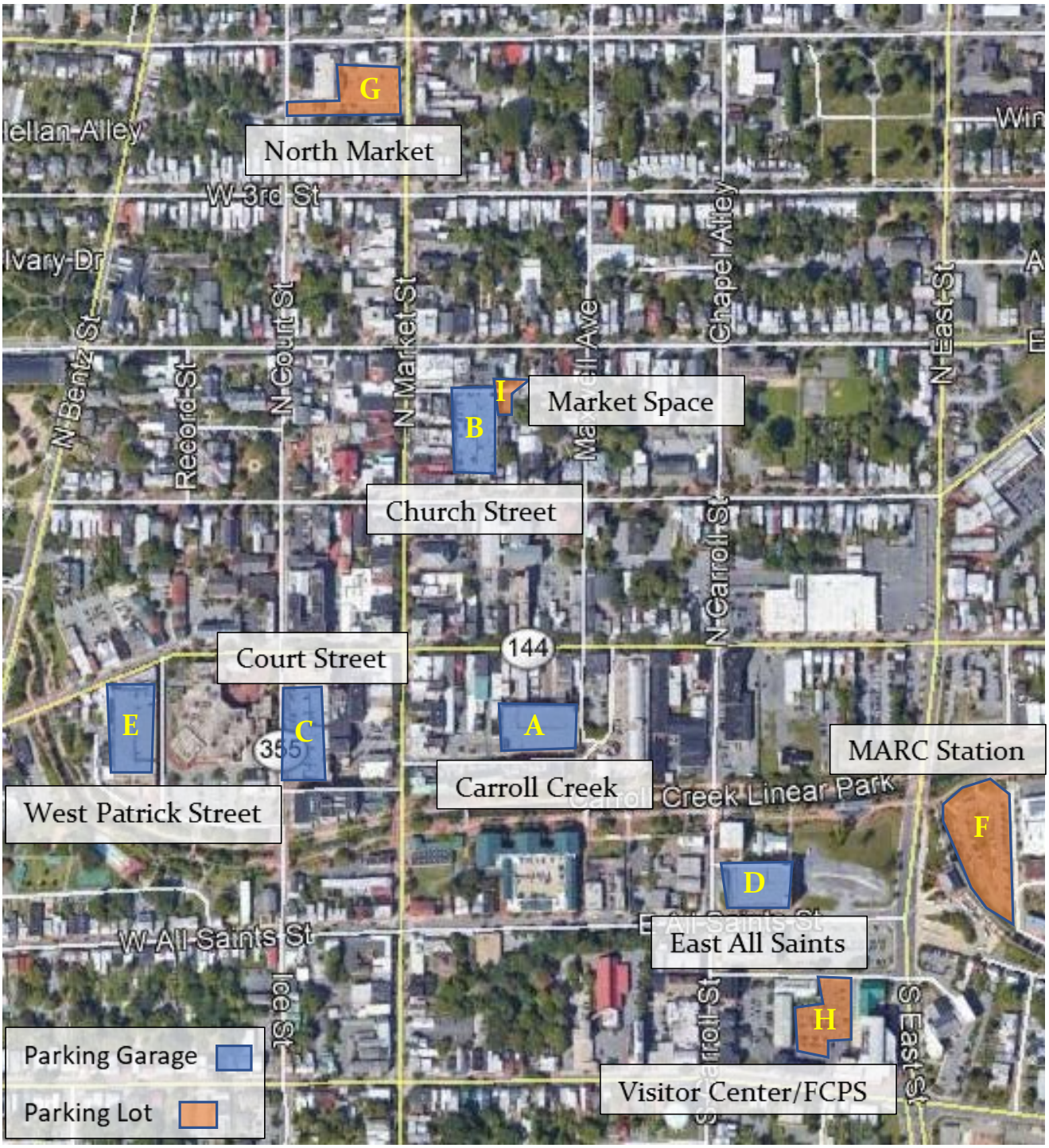
This chapter presents a summary of the key elements of the City's parking system that were reviewed as part of this project, aside from the results of the stakeholder interviews and online survey results, which are presented in Chapter 3.

DOWNTOWN PARKING SYSTEM

The City of Frederick's downtown parking system is comprised of several parking garages and surface lots, metered on-street spaces, and unmetered on-street spaces. Figure 2-1 shows the locations of the City's main downtown off-street parking assets including five garages and four surface lots. Table 2-1 provides a detailed breakdown of the City's existing downtown parking inventory by type of parking facility.

DESMAN considered all of the City's parking assets when analyzing demand for parking in downtown as well as devising the future analysis and recommendations.

Figure 2-1: City of Frederick Downtown Parking System



Source: DESMAN

Table 2-1: City of Frederick Downtown Parking System

	Facility Name and Type	Location	Inventory	Peak Utilization [3]
A	Carroll Creek Garage	44 E. Patrick Street	545	75%
B	Church Street Garage	17 E. Church Street	393	92%
C	Court Street Garage	2 S. Court Street	531	85%
D	East All Saints Street Garage	125 E. All Saints Street	383	59%
E	West Patrick Street Garage	138 W. Patrick Street	622	97%
	Sub-Total Garage Spaces		**2,474**	
F	MARC Station Surface Lot	Water Street & McCutcheon Alley	86	75%
G	North Market Street Surface Lot [1]	300 Block of N. Market Street	55	40%
H	Visitor Center/FCPS Lot [2]	151 S. East Street	91	80%
I	Market Space Lot (12 meters)	Behind Church St. Garage	12	95%
	Sub-Total Surface Lot Spaces		**244**	
	On-Street Metered Spaces	Throughout Downtown	829	100%
	On-Street Unmetered Spaces	Throughout Downtown	1,408	100%
	Sub-Total On-Street Spaces		**2,237**	
	Total Downtown Publicly-Owned Parking		**4,711**	

(1) 16 of these spaces are metered; the remainder are leased.
(2) 78 of these are used by the Board of Education; 7 are used by NPS, and 6 are used by the Visitor Center
(3) Peak utilization for garages and lot derived from operating reports provided by the Parking Department for the period 5/7/19-5/9/19 and 10/15/19-10/17/19. Utilization for on-street parking based on anecdotal accounts.

Existing Utilization of Downtown Public Parking

In order to determine if Downtown Frederick is equipped with an adequate supply of public parking, it was necessary to examine existing parking utilization patterns. The existing utilization data was also used in the analysis of projected future demand and parking adequacy. This data informed conclusions and recommendations related to the need for additional parking capacity in the future.

Using a combination of vehicle counts and historical data provided by the City of Frederick's Parking Department, typical and peak utilization patterns for each of the City's off-street facilities were identified. On-street utilization was factored into the parking analysis; however, these on-street spaces were assumed to be operating at 100% utilization to identify the additional impact of having vehicles repositioned from the street spaces into the parking facilities.

Hourly Utilization Surveys

As shown in Table 2-2, during the observation day in January, utilization of the City's off-street parking facilities peaked in the morning at 10:00 a.m. In the table below, only the peak utilization is shown. At the peak hour, an average of 75% of all of the City's off-street parking capacity was occupied, with three of the five garages reaching 80% or greater utilization. In general, the facilities that are more centrally located downtown were the most heavily utilized and those on the periphery of the downtown experienced lower levels of parking demand.

Table 2-2: Off-Street Parking Utilization, Tuesday, January 14, 2020

Facility Name	Inventory	Cars - 10 a.m. peak	Utilization	Spaces Available	Leases Available
Carroll Creek Garage	545	373	68%	172	70
Church Street Garage	393	323	82%	70	0
Court Street Garage	531	423	80%	108	28
East All Saints Street Garage	383	202	53%	181	140*
West Patrick Street Garage	622	561	90%	61	5
Sub-Total Garages	***2,474***	***1,882***	***76%***	***592***	***243***
MARC Station Lot	86	60	70%	26	0
North Market Street	55	20	36%	35	0
Visitor Center/FCPS	91	70	77%	21	0
Market Space	12	11	92%	1	0
Sub-Total Surface Lots	***244***	***161***	***66%***	***83***	***0***
Total Off-Street	**2,718**	**2,043**	**75%**	**675**	**243**

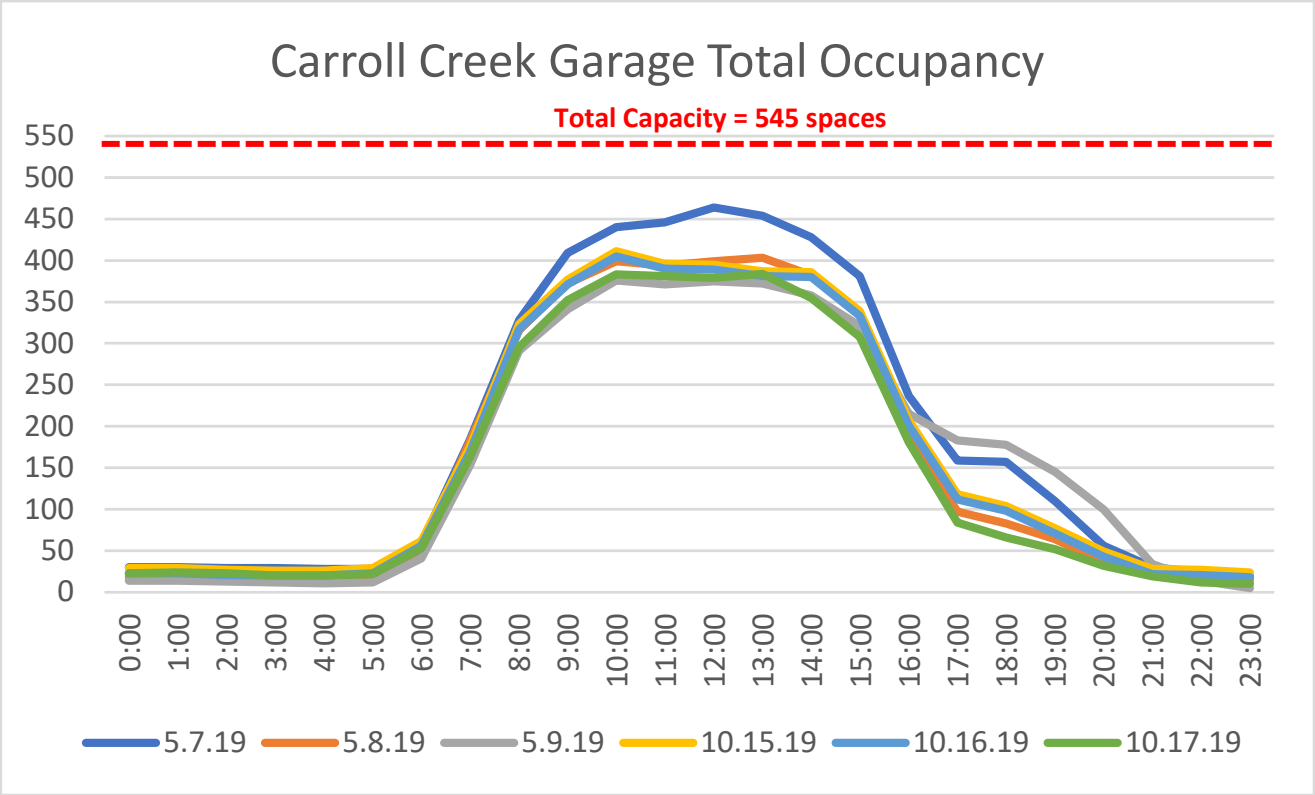
Source: DESMAN

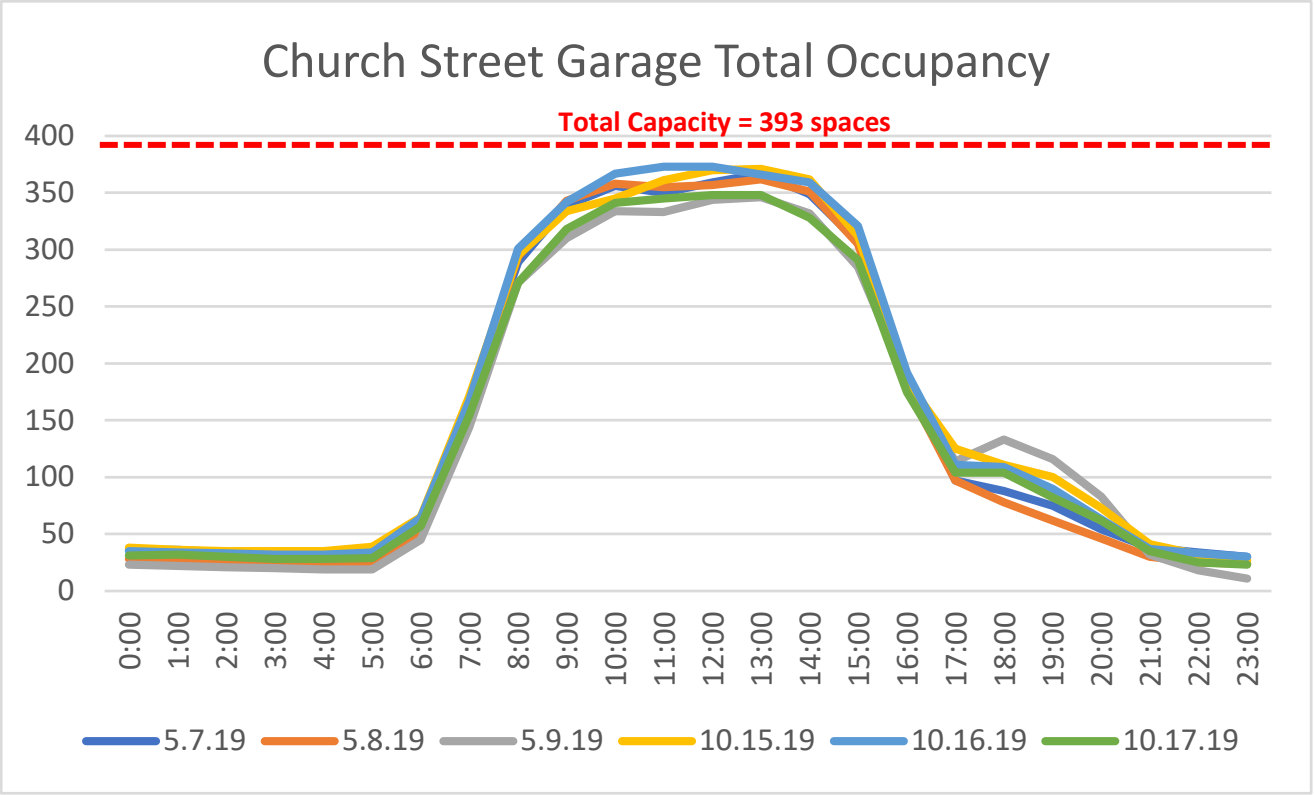
* Technically there were 140 leases available as of 9/13/2019, but this availability was created by the vacancy of an adjacent building which may be reoccupied at some point in the future, claiming rights to these spaces.

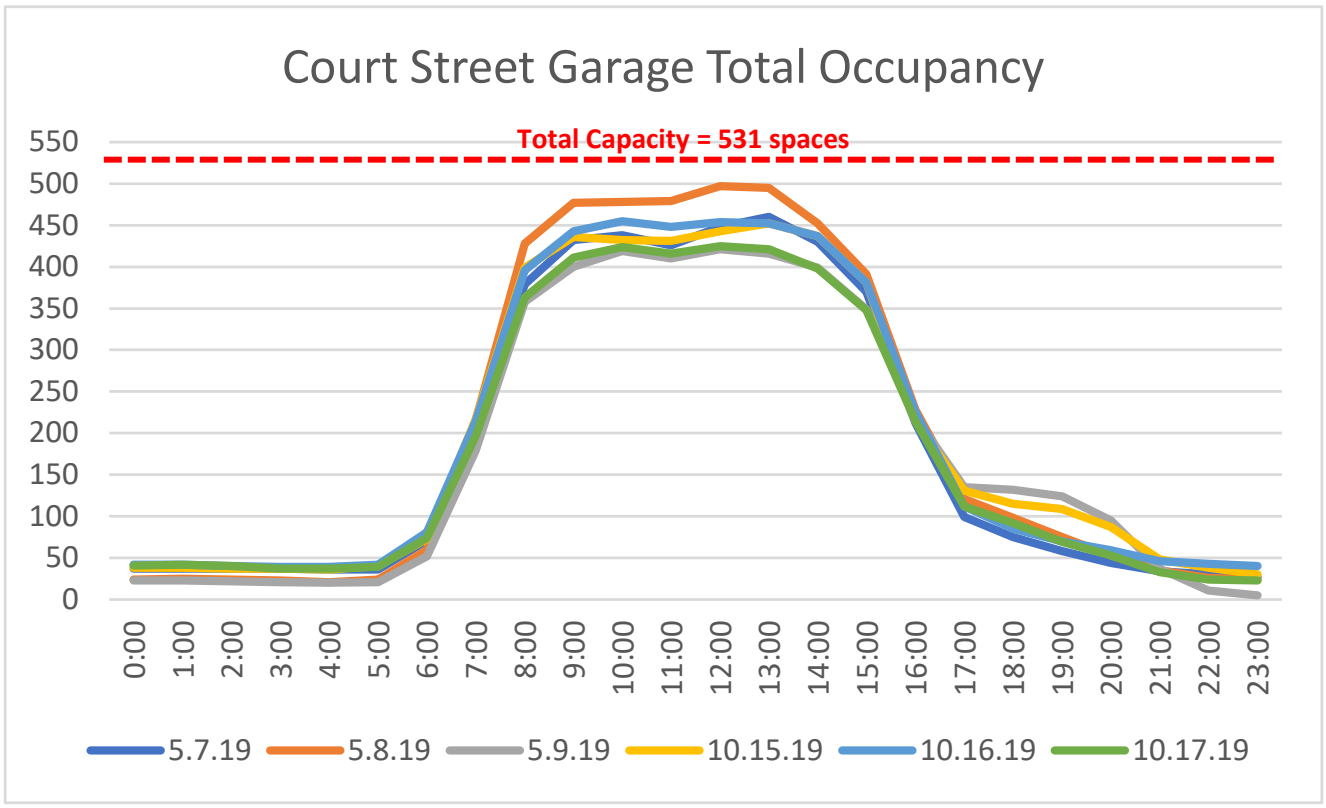
City Utilization Data and Stakeholders

The study team collaborated with the Parking Department to compile representative utilization data. DESMAN analyzed parking system reports from the five parking stuctures during two periods of stabilized activity: Tuesday, May 7th through Thursday, May 9th, 2019 and Tuesday, October 15th through Thursday, October 17th, 2019. DESMAN acknowledges these statistics may not be representative of current conditions during the on-going pandemic, but we would anticipate that operations would revert to these conditions or a close approximation within 24 to 36 months of the end of COVID-19 restrictions and the resumption of normal activity patterns.

Figure 2-2: City of Frederick Downtown Parking Garage Utilization (Stabilized)






Court Street Garage Total Occupancy
Total Capacity = 531 spaces
550
500
450
400
350
300
250
200
150
100
50
0
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
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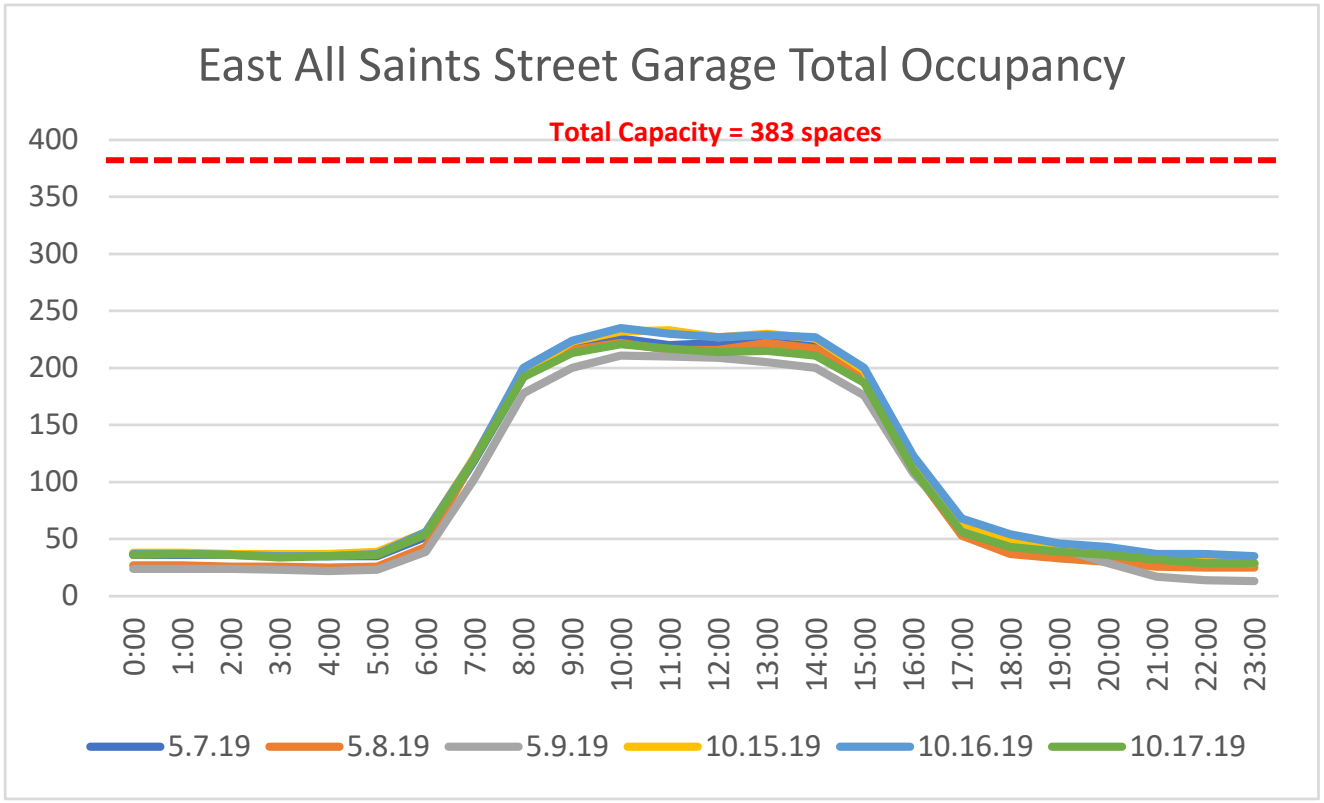
10.16.19
10.17.19


East All Saints Street Garage Total Occupancy
Total Capacity = 383 spaces
400
350
300
250
200
150
100
50
0
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
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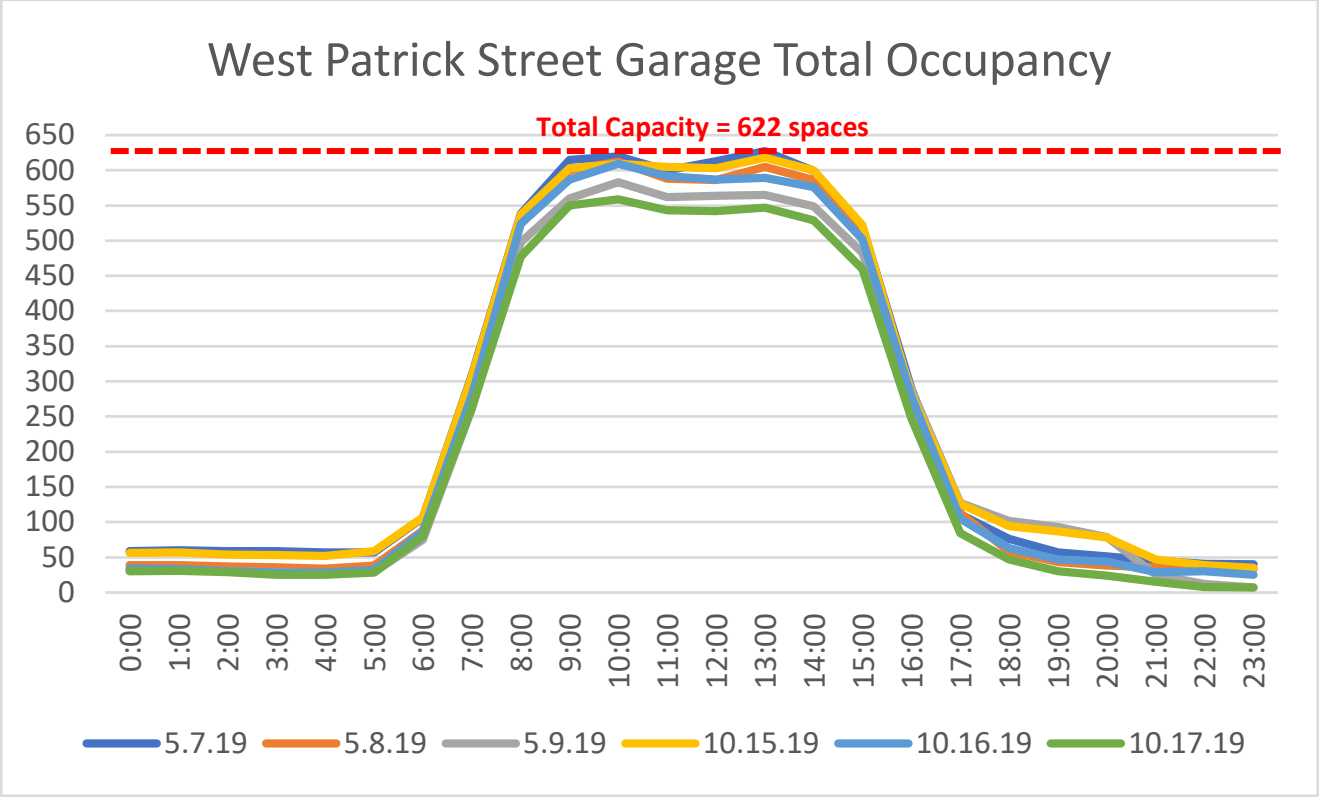
10.15.19
10.16.19
10.17.19



It should be noted that these were gross measures of total vehicles parked – transient and monthly – through out the representative days. In many cases what vacancies existed were largely for transient (i.e. hourly) parkers only, as the most of the permits allocated for each facility were sold out as shown in Table 2-2. These statistics affirmed conversations with Parking Department personnel as well as downtown stakeholders stating that the City's garages are often parked to capacity, especially around the lunch hour on weekdays. These conversations also revealed that certain garages – Church Street and Carroll Creek in particular –often reach capacity on Friday and Saturday evenings when downtown restaurant activity is at its peak.

Projected Parking Needs

Parking needs in Downtown Frederick will vary over time based on increases in demand, and reductions or additions in supply. In order to estimate future demand, DESMAN analyzed the potential changes in parking demand from both a macro and a micro point of view. The macro components are population, employment, GDP, and mode choice. The micro components are specific development projects that are planned for Downtown Frederick. A list of projects that are known to be under consideration in the short to mid-term horizon was obtained from the City to focus on specific project-based demands. These are discussed below.

Population

Changes in population in an area or city directly impact its financial viability and overall vitality. The prospect of long-term population growth in the City of Frederick and in Frederick County as a whole is important in determining the future financial performance of the area as well as need for parking.

The City of Frederick population statistics were sourced from the U.S. Census Bureau's Decennial Census, as well as from the Census Bureau's American Community Survey. The historical population data for the City and County are presented in Table 2-3 below. As of 2018, Frederick County had the 6th largest population among counties in the state.

Table 2-3: City of Frederick, Maryland and Frederick County Population Trends

	City of Frederick		Frederick County		State of Maryland	
Year	#	% Growth	#	% Growth	#	% Growth
2000	52,914		195,277		5,296,486	
2010	65,239	23%	233,385	16%	5,773,552	9%
2018	72,146	11%	255,648	10%	6,042,718	5%

Source: U.S. Census

As shown in the table, the population of the City of Frederick increased by 23% between 2000 and 2010, significantly more than the growth seen in the County (16%). Both of these rates were well above the State of Maryland's growth rate during the same period (9%). The 2018 population estimate indicates that growth in the City and the County continue to outpace that of the State of Maryland as whole, with an 11% growth estimate for the City and an 10% growth estimate for the County. The consistent historical growth in population in both the City of Frederick and the County are indicators that the City will continue to be a center of economic activity well into the future.

Employment

Employment trends are another important factor to consider when determining the demand for parking, especially for parking facilities in large downtowns that rely heavily on long-term employee parking.

According to data from the Bureau of Labor Statistics, both The City of Frederick and Frederick County have had consistently lower unemployment rates than the State of Maryland over the past 19 years. In 2019 the unemployment rate in the City of Frederick was 3.6%; the unemployment rate in Frederick County was 3.8%; and the unemployment rate for the State of Maryland was 4.3%.[1]

Major Employers

The City of Frederick is home to higher-education institutions, healthcare providers and government entities that constitute some of the largest employers in the City. These businesses and institutions are a critical aspect of Frederick's economy. Table 2-4 lists the 20 largest employers in The City of Frederick.

Table 2-4 Major Employers in the City of Frederick

Business	Number of Employees	Industry Sector
Fort Detrick (1)	9,657	Military, Bioscience, Communications
Frederick County Public Schools (2)	5,856	Public Education
Frederick Memorial Healthcare	2,618	Comprehensive Health Care
Leidos Biomedical Research	2,277	Medical Research
Frederick County Government (2)	2,175	County Government
Wells Fargo	1,400	Mortgage Loans and Service Center
Frederick Community College	1,115	2-Year College
City of Frederick Government	880	Municipal Government
AstraZeneca	700	Biotech Manufacturing
United Health Care	613	Health Insurance
Stulz ATS	440	Manufacturer of Precision Air Conditioner Equipment
YMCA of Frederick County	419	Non-Profit, Full-Service Fitness and Health Facility
Wegman's	370	Retail Supermarket
Way Station	360	Healthcare Services
Aldi	350	Retail Supermarket/Distribution Center
Fountain Rock Management	320	Restaurant Management
Maryland School for the Deaf	320	Educational Institute for the Hearing Impaired

[1] Bureau of Labor Statistics

Business	Number of Employees	Industry Sector
Homewood Retirement Community	310	Retirement Community
Morgan Keller	270	General Contractor
Hood College	260	4 Year College

Notes:

(1) This number includes Military, Civilian, and National Cancer Institute.

(2) These are Full-Time Equivalent Positions that are in the City of Frederick as well as Frederick County.

Source: City of Frederick Department of Economic Development

Gross Domestic Product

The historical Gross Domestic Product (GDP) of Frederick County is an indicator of the economic health and standard of living in the county. GDP is a measurement of the total output of goods and services within a given area, as calculated by the U.S. Bureau of Economic Analysis. The key drivers of the GDP are total consumer spending, investment, and government spending, as well as the value of exports less the value of imports. It is important to examine historical GDP to gain a perspective on the historical productivity of the county and the potential for GDP growth in the future.

The GDP for Frederick County for the most recent four years that data are available are provided in Table 2-5. Frederick County's GDP ranks 7th in the state.[2] The most recent rate of growth (2017 to 2018) for the County (2.4%) is slightly lower than the statewide mean of 2.5%.

Table 2-5: Real Gross Domestic Product for Frederick County, 2015-2018

Year	Thousands of Chained (2012) Dollars	% change
2015	$11,761,902	--
2016	$12,069,333	2.6
2017	$12,184,210	1
2018	$12,479,134	2.4

Source: U.S. Bureau of Economic Analysis

Journey to Work

The greater proportion of employees that commute to work via personal vehicles, the greater the demand for parking near the major employment centers in a geographic area. The U.S Census Bureau, through the American Community Survey, provides estimated data on the

[2] U.S. Bureau of Economic Analysis, Real Gross Domestic Product by County, 2015-2018.

preferred method of transportation that residents (over the age of 16) use when commuting to work, known as Journey to Work data. Table 2-6 presents the estimated Journey to Work characteristics of residents of the City of Frederick based on empirical information collected from the previous five years. The information for the state of Maryland is also presented to provide detail on commuting patterns in the state during the same period.

According to the U.S. Census Bureau, in 2018, more than 86% of the residents of Frederick drove alone to work or carpooled to work on a daily basis. The percentage of those primarily using a vehicle for transportation shows reflects the fact that a large majority of employees rely on a personal vehicle to travel. The major difference between the mode choices made by Frederick City commuters as compared to the state of Maryland as a whole is that a higher portion of the workforce in Frederick use a vehicle for transportation as opposed to public transportation.

Table 2-6 Frederick City, Maryland Journey to Work Data (2018)

	Frederick Residents		State of Maryland Residents	
Travel Class	#	%	#	%
Drove Alone	28,177	76%	2,233,034	74%
Carpooled	3,864	10%	273,373	9%
Public Transportation	1,447	4%	258,397	9%
Other *	1,973	5%	114,738	4%
Worked at Home	1,718	5%	142,425	5%
Total	**37,179**	**100%**	**3,021,967**	**100%**

*Includes those who walked, rode a bicycle or motorcycle, took a taxi, or traveled by some other means.

Source: U.S. Census Bureau

Tourism

As Frederick continues to develop and evolve as a destination in Maryland, the county has experienced a surging number of visitors. Since 2010, visitor spending has continued to grow each year. Visitor spending bolsters local tax receipts and contributes significantly to local businesses in Frederick County by supporting 6,791 jobs directly and indirectly.[3]

According to 2017 data from Visit Frederick, there were 1,984,400 visitors to Frederick County, which represented a growth rate of 4.9%. These visitors spent over $410 million in 2017, which is a 14% increase in visitor spending from 2013-2017. Table 2-7 presents visitation data for the five-year period from 2013-2017.

[3] Visit Frederick

Table 2-7 Frederick County Tourism Data 2013-2017

Visitors (thousands)				
Year	Overnight	Day	Total	Growth Rate
2017	905.7	1078.7	1984.4	4.9%
2016	849.1	1041.8	1890.9	4.2%
2015	817.6	996.9	1814.5	3.3%
2014	788.2	968.6	1756.8	1.6%
2013	746.9	981.6	1728.5	4.6%

Source: Visit Frederick

Conclusion – Economic Growth Factors

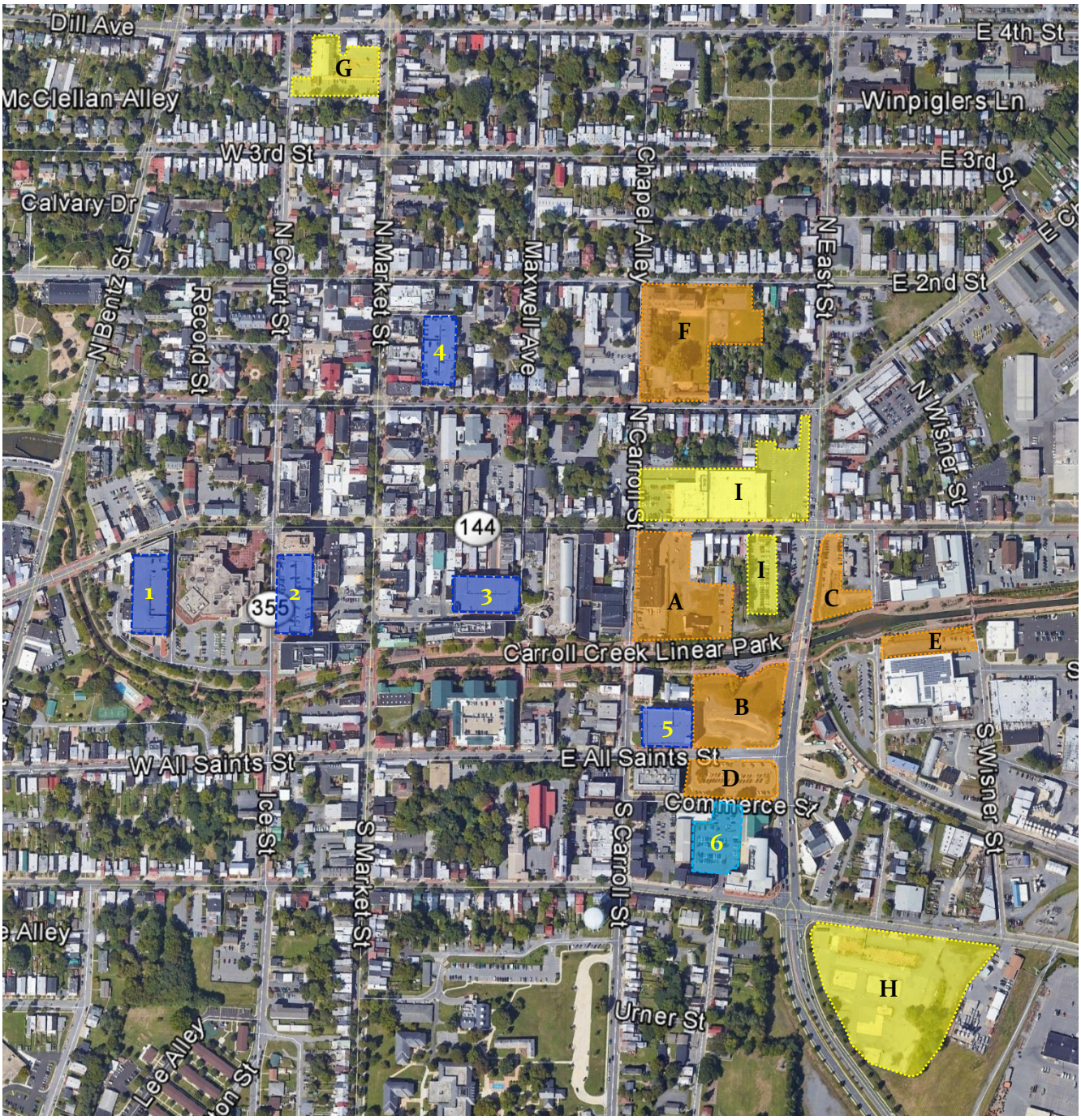
The economic growth factors in Frederick point to above average historical growth and continued growth in activity. With all of these factors taken together, there can be an expected increase in parking demand downtown. The magnitude of this demand can be projected more specifically based on the impact brought by certain projects.

Project Specific Growth

Discussions with City staff revealed a number of potential developments that will likely influence parking demand in Downtown Frederick. A list of projects is provided in Table 2-8 and a corresponding map is provided in Figure 2-3. These projects include a mix of residential, commercial, office, and the proposed downtown hotel. This list includes the Downtown Marriott on Carroll Creak, four projects that received prior development approvals that have since expired, and the development at the Visitation Academy site on East Second Street.

In addition to the projects on this list, it is likely that the former Carmack Jay's site on North Market Street will be developed, as will the Brickworks site at the corner of East Street and South Street, and the U.S. Post Office Site at 201 E. Patrick Street. Details for those projects are not yet available, so DESMAN cannot provide a projection of future demand associated with those projects. However, each project does present a conceptual opportunity for the City. The redevelopment of the Carmack Jay's site may afford the City the chance to enter into a public/ private partnership to replace the lost surface parking associated with the North Market Lot and possibly expand the public off-street parking supply. Similarly, redevelopment of the Post Office site may present an opportunity to introduce structured parking on the site of the current USPS employee lot. A structure here could help support development of the four adjacent parcels that have gone dormant. Finally, the redevelopment of the Brickworks site may provide opportunities for public/private collaboration as well.

Figure 2-3: Anticipated Development Sites in Downtown Frederick



LEGEND:

	=	Planned Development		=	Potential Development		
1	=	West Patrick St. Garage	2	=	Court Street Garage	3	= Carroll Creek Garage
4	=	Church Street Garage	5	=	East All Saints Garage	6	= Visitor Center/FCPS Lot

Table 2-8: Anticipated Near-Term Future Development in Downtown Frederick

ID	Project Name	Developer	General Office (sf GFA)	Commercial (sf GFA)	Meeting Space (sf GFA)	Hotel (rooms)	Residential (units)	Planned Parking (spaces)
A	Downtown Marriott at Carroll Creek	Plamondon/City			20,000	200-230		130
B	The Galleria - Site D [1]	Wormald		30,000			127	150
C	McHenry - Site I [1]	Douglas Development	78,394	21,968				48
D	One Commerce Plaza - Site F [1]	Information Not Available	60,000	20,000				
E	McCutcheons Mill	McCutcheon's Apple Products		34,000				25
F	Visitation Hotel	Harris, Smariga & Associates				62	33	110
G	Carmack Jays Site	TBD	No plans are available at this time.					0 [2]
H	Brickworks Site	TBD	No plans are available at this time.					0
I	U.S Post Office Site	TBD	No plans are available at this time.					0 [3]
Totals			**138,394**	**105,968**	**20,000**	**262-292**	**160**	**463**

(1) Based on prior development approvals, which have expired.

(2) Development of this site may offer the City a chance to enter into a public/private partnership to replace the 55-space North Market Lot with public structured parking.

(3) There is potentially an opportunity to do a public parking structure on the site of the current USPS Employee Lot.

Source: City of Frederick Economic Development Department

To project parking demand associated with these developments and estimate impact to the area, DESMAN developed a parking demand model based upon information from the Urban Land Institute's Shared Parking: 3rd Edition. This model applied base parking demand ratios, developed from empirical observations of existing land uses in stand-alone settings (i.e. no transportation alternatives other than single-occupant vehicle and no abutting land uses except that which is being studied).

The ratios were modified to reflect conditions specific to downtown Frederick, including the impact of the use of other modes of transportation besides single-occupant personal vehicles, the percentage of patrons to a particular land use which may be coming from other land uses in the immediate area, and the amount of demand anticipated from each land use when the downtown as a whole is at its peak annual level of activity. For the latter, DESMAN assumed, based on system information provided by the Frederick Parking Department, that peak annual activity was likely to occur around mid-day on a weekday in the spring.

According to DESMAN's calculations, the proposed developments that are not providing all of their parking onsite, at completion, will require a net of 1,410 spaces to accommodate all of the different land uses coming into the downtown, as shown in Table 2-9.

Table 2-9: Future Parking Demand

Project Name	Land Use/Component		Base Demand Ratio		Modal Adjstmt [5]	Internal Capture [6]	Presence Variation [7]	Projected Demand [8]
Downtown Marriott at	200-230	hotel rooms	1.15	spaces/room	0.90	1.00	0.65	155
Carroll Creek	20,000	sf of meeting space	13.74	spaces/ksf GFA [1]	0.90	0.75	0.60	111
	30,000	sf of commercial space	10.50	spaces/ksf GFA [2]	0.90	0.90	0.75	191
The Galleria - Site D	127	residential unts	1.50	spaces/unit [3]	0.95	1.00	0.70	127
	78,394	sf of office space	3.52	spaces/ksf GFA [4]	0.85	1.00	0.85	199
McHenry - Site I	21,968	sf of commercial space	10.50	spaces/ksf GFA [2]	0.90	0.90	0.75	140
One Commerce Plaza -	60,000	sf of office space	3.61	spaces/ksf GFA [4]	0.85	1.00	0.85	156
Site F	20,000	sf of commercial space	10.50	spaces/ksf GFA [2]	0.90	0.90	0.75	128
McCutcheon's Mill	20,000	sf of commercial space	10.50	spaces/ksf GFA [2]	0.90	0.90	0.75	128
	62	hotel rooms	1.15	spaces/room	0.90	1.00	0.65	42
Visitation Hotel	33	residential unts	1.50	spaces/unit [3]	0.95	1.00	0.70	33
TOTAL								**1,410**

1. Demand ratio based on ULI Shared Parking 3rd Edition recommended ratio calculated as ~ 85-100 sf of meeting space/rom
2. Averaged demand ratio between standard retail (@ 3.60 spaces/KSF) and Fast Casual Dining (@ 17.40 spaces/KSF)
3. Assumes a 60/40 mix of 1- and 2-bedroom units
4. Based on ULI's calculated sliding scale per total GFA
5. Based on US Census Bureau 2018 American Community Survey specific to the City of Frederick, MD Journey to Work and # of Vehicles per Household responses
6. A measure of the estimated demand specific to a particular land use. For example, all parking demand associated with hotel guests is directly attributable to the hotel, but 25% of event attendees in the meeting space are likely to be hotel guests as well. By allocating just 75% of potential demand associated with the meeting space, DESMAN avoids 'double counting' those event attendees which are also hotel guests.
7. Variations in demand according to time of day and time of year as recommended in ULI's Shared Parking: 3rd Edition. Based on an assumed mid-day weekday peak across the study area in the spring months.
8. Projected demand factors in the base demand ratio and program data, adjusted by model factors, internal capture, and presence variations to project parking needs under peak annual conditions across the downtown area.

As best practice, planners evaluate the adequacy of any parking system according to projected peak demand relative to 'effective supply'. The concept of effective supply is used to account for those spaces that may be unavailable due to misparked vehicles or snow cover reducing the actual number of parking spaces. For this analysis 90% of the total City's off-street supply was used as a baseline, which adjusts the parking supply from 2,718 spaces to a total of 2,446 usable parking spaces.

After the effective supply of the City's parking was calculated, the observed peak parking utilization from DESMAN's January 14, 2020 observations (2,043 cars) across the City's off-street parking facilities was applied to determine how many available spaces can be used to accommodate parking demand systemwide. The results show that at the that time there are only 403 spaces available to satisfy existing parking demand downtown during the weekday peak. This figure is likely overstated under current pandemic conditions, but was judged to be a reasonable approximation of utilization under stabilized, post-COVID conditions.

Once the new development's impacts were factored into the demand analysis (1,410 vehicles), including parking supply planned to support each development (436 spaces), the future conditions resulted in a projected shortfall of 544 spaces. The detailed impact of the future parking demand on the public parking system is shown in Table 2-10 on the following page.

Table 2-10: Future Parking Adequacy

Existing Total Off-Street Inventory [1]	2,718	spaces
Effective Parking Supply @ 90%	2,446	spaces
Peak Observed Occupancy (1/14/20 @ 10 AM)	2,043	cars
Existing Peak Availability	403	spaces
Projected Peak Demand for New Development	(1,410)	spaces
Planned Parking Supply for New Development	463	spaces
Net Surplus/ (Deficit)	(544)	spaces

1. Excludes all on-street parking which is assumed to be filled to capacity.

Source: DESMAN

Given the location of the planned emerging developments, this shortfall is most likely to impact the All Saints Garage and the Visitor Center/FCPS Lot, which may be converted to a new parking structure (Deck Six) to accommodate some of these shortfalls.

Parking Commitments for All Saints Street Garage and Planned Deck Six

In addition to considering the needs of new developments, the City will need to adhere to a number of pre-existing commitments that have been made over the years for customers of the parking system that use the All Saints Street Garage and potentially the planned Deck Six.

These commitments were made during a period of strong economic growth when the City was planning to build Deck Six on the city surface lot that is currently used for parking by the Board of Education, the National Park Service Historic Preservation Center, and the Visitor's Center. Once the Great Recession occurred, many of the development projects stalled, and the City could meet its commitments within the East All Saints Garage and did not need to build Deck Six at the time.

These commitments are outlined in Table 2-11. Note that the parking commitments for some developments are not clear, given that development approvals have expired. As outlined in the table, the capacity of the East All Saints Garage will not be sufficient to accommodate the demand for parking once the Governor Shaefer Building is fully occupied. This scenario worked in prior years, as parkers for the Governor Shaefer Building used the privately-owned One Commerce Square lot (as does FCPS currently).

However, One Commerce Plaza is one of the emerging developments assumed in the projection of future needs, so that project will eliminate that facility and force those parkers back into the East All Saints Garage. As a result, this facility could be overcommitted by as many as 158 spaces, exclusive of any commitments negotiated with the developers of the Galleria site once that project is resurrected.

Table 2-11: Capacity Analysis for East All Saints Garage

Customer	City Parking Commitment (spaces)	Active Leases All-Saints Garage	Active Leases Visitor Center/ FCPS Lot [6]	All Saints Garage Commitment
Board of Education [1]	300	222	78	(300)
Gov. Shaefer Building [2]	146	0	0	(146)
Galleria [3]	Unknown	0	0	TBD
Monthly Contracts [4]	38	184	0	(38)
Transient Parkers [5]	57	0	0	(57)
TOTAL	**541**	**406**	**78**	**(541)**
All Saints Garage Capacity (spaces)				383
All Saints Surplus/(Deficit)				**(158)**

1. Commitment is for up to 300 spaces in All Saints Garage, but currently 78 leases are assigned to the Visitor Center/FCPS Lot
2. This building is currently vacant but has rights to 146 spaces. This capacity is currently open to the general public for lease.
3. Prior to permit expiraton, City was to provide 370-450 parking spaces. Since the permit expired, there has been no requirement.
4. Parking Department indicated they were selling general public leases on the portion of the garage committed to the currently vacant Gov. Shaefer building. When that commitment is called upon, these leases will not be renewed so this displacement is not included in our calculations, only those current contracts (38) sold outside this set aside.
5. The City of Frederick sets aside 15% of capacity in each parking structure for transient parking only.
6. Should Deck 6 advance, these 78 leases would be relocated back into the All-Saints Garage.

The proposed structure (Deck Six) on the Visitor Center/FCPS Lot is designed to provide about 600 spaces, of which 15% (90 spaces) will be set aside for transient parkers. The structure will displace the 91-space lot, but maximum user displacement will only equal 13 spaces, as 78 of the existing spaces are committed to leases with the Board of Education that are supposed to be accommodated within the East All Saints Garage. This leaves up to 497 spaces available to accommodate unmet area parking demand.

If the 158-space shortfall from the East All Saints Garage is applied to this capacity, that still leaves 339 spaces available. This will not completely service the projected peak hour shortfall (544 spaces), but it will reduce it to just 205 spaces as shown in Table 2-12.

This net shortfall could be accommodated through several initiatives that may include, but are not limited to:

- Introducing additional parking supply as part of a public/private partnership to build parking on the current site of the USPS Employee Lot.
- Introducing additional parking supply as part of a public/private partnership to build parking on the current site of the Carmack Jays.
- Mitigating future parking demand through the promotion of alternative modes of transportation.

- Development of a remote parking facility, outside the defined study area, with circulator shuttle service to transport parkers to various destinations around downtown Frederick.

Table 2-12: Capacity Analysis for Deck Six

Deck Six Capacity (spaces)	600
Deck Six Transient Parkers Reserve	(90)
Visitor Center/FCPS Lot Displacement	(13)
Deck Six Availability (spaces)	497
All Saints Deficit	(158)
Deck Six Net Availability	339
Projected Area Deficit	(544)
Remaining Deficit	(205)

Existing Condition of the City's Parking Garages

DESMAN's engineers, performed visual inspections of the City's parking garages with specific attention focused on the older garages in downtown – the 44 year-old Church Street Garage, the 34 year-old Court Street Garage, and the 27 year-old Carroll Creek Garage.

Based on these observations, and repair history provided by the City, estimates of the probable cost to repair and maintain the structures for the next 10 years were developed. The repairs are divided into Immediate Repairs, Near Term Repairs and Long Term Maintenance. A total of almost $7 million of repairs are anticipated over the next ten years.

With the investment of the nearly $7 million into the maintenance of the existing parking structures, the city can plan to keep these parking garages in operation while a descision is made on future parking strategies and facility planning. If the scheduled repairs of the parking garages are completed as detailed, especially the immediate and near-term repairs, the useable lifecycle of the existing parking strucures can be prolonged. In the City's oldest garage, the Church Street Garage, the repairs can increase the lifecycle by more than 15 years, but comes with the cost of almost half of the total projected maintenance costs among these three garages due to the necessary repairs and future needs.

The Court Street Garage and Carroll Creek Garage are newer structures and the detailed condition assessments point to less extensive restoration efforts, such as standard replacement of the double-T joints as well as supplemental waterproofing. The lifecycle assessments, pending more thorough review, can be longer than 20 to 30 years for these parking structures. The repair costs through the full 10 year projection are summarized in Table 2-13. The reports for each individual garage are provided in Appendix A.

Table 2-13: City of Frederick Garage System- Projected Maintenance Costs

Repairs and Preventive Maintenance
Engineer's Estimated Construction Cost

	Immediate	Near Term	Programmed Maintenance									
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	TOTAL
Facility	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Repairs
Court Street Garage	$ 58,600	$ 855,208	$ -	$ -	$ -	$ 538,316	$ -	$ -	$ -	$ -	$ 883,300	$ 2,335,424
Church Street Garage	$ 42,320	$ 1,390,678	$ -	$ -	$ -	$ 708,863	$ -	$ 82,110	$ -	$ -	$ 992,410	$ 3,245,891
Carroll Creek Garage	$ 39,388	$ 533,801	$ -	$ -	$ -	$ -	$ 316,066	$ 39,215	$ -	$ -	$ 470,931	$ 1,399,401
Grand Total	**$ 142,328**	**$ 2,781,708**	**$ 2,022**	**$ 2,023**	**$ 2,024**	**$ 1,249,204**	**$ 318,092**	**$ 123,352**	**$ 2,028**	**$ 2,029**	**$ 2,348,670**	**$ 6,980,715**

Historical Financial Performance of the City's Parking System

The City's parking system has historically been a self-supporting operation and there is a strong desire within the City to keep the system self-supporting in the future. For this reason, when it comes time to determine which of the potential recommendations can and should be implemented, the financial impacts of those recommendations are an important piece of the evaluation process. In order to determine how any recommended parking facility repairs or the construction of new parking facilities might impact the system's financial performance, it is first necessary to undertand how the system has performed historically.

Table 2-14 presents a summary of the financial performance of City of Frederick's parking system for fiscal years 2016 – 2019. The revenue detailed in the table reflects growth in both transient and monthly contract sales for each of the existing lots and garages, as well as on-street parking meter revenue. It is DESMAN's understanding that the City has not changed their parking rates since 2016, so much of the growth is driven by volume. In point of fact, the total volume of transactions and parking activity in the off-street parking facilities has increased by more than 5% year over year.

Expenses include labor specific to each facility and the system as a whole, benefits, payroll taxes, insurance, utilities, day-to-day maintenance, major repair and replacement projects, materials and supplies, and bank and credit card transaction fees among other costs. Operating expenses have grown roughly 3% year over year for the last three calendar years, while capital improvement expenditures were down substantially over the last two calendar years relative to spending in 2016 and 2017.

As shown in the table, over the past four fiscal years, the City's parking system has generated EBITDA in excess of $3.6 million and Net Income in excess of $1.1 million each year. Net Income grew 9% in 2018 when compared to the prior year and 20% in the 2019 when compared to 2018.

Table 2-14: City of Frederick Parking System Financial Performance, Fiscal 2016-2019

	2016	2017	2018	2019
REVENUE				
Parking Fund Activity	$163,135	$145,402	$189,254	$548,840 [2]
On-Street Parking	$1,588,834	$1,726,088	$1,840,988	$1,791,515 [3]
Carroll Creek Garage	$758,112	$807,347	$966,860[4]	$980,936
Church Street Garage	$734,801	$703,401	$997,545[5]	$995,814
Court Street Garage	$1,061,351	$1,252,729	$811,827[6]	$960,276
East All Saints Garage	$422,556	$691,344	$458,285[7]	$366,713[7]
West Patrick Street Garage	$835,325	$907,092	$776,040	$880,249
Total Revenue	**$5,564,114**	**$6,233,402**	**$6,040,799**	**$6,524,344**
EXPENSES				
Parking Fund Activity	$989,828	$915,938	$1,061,301[8]	$1,005,172
Carroll Creek Garage	$171,380	$156,375	$163,326	$220,675
Church Street Garage	$159,272	$131,341	$170,525	$236,187
Court Street Garage	$202,369	$212,545	$179,316	$220,470
East All Saints Garage	$157,232	$148,174	$122,018	$154,616
West Patrick Street Garage	$150,164	$126,427	$141,124	$169,594
Capital Improvement Projects	$76,055	$76,080	$7,423	$9,000
Total Operating Expenses	**$1,906,300**	**$1,766,880**	**$1,845,032**	**$2,015,714**
EBITDA [1]	**$3,657,814**	**$4,466,522**	**$4,195,748**	**$4,508,630**
Depreciation Expense	$1,469,841	$1,903,359	$1,542,641	$1,542,641
Debt Service	$1,064,597	$760,533[9]	$692,369	$619,519
NET INCOME	**$1,123,376**	**$1,802,630**	**$1,960,738**	**$2,346,469**

(1) EBITDA: Earnings before interest, taxes, depreciation, and amortization.
(2) Variance due to Transfer from Parking Capital Improvement Projects (CIP)
(3) Reduction in Public Works Parking Violations Revenue offset highest Parking Meter Revenue
(4) Higher parking volumes at the Carroll Creek Garage, reduced volume at Court Street Garage
(5) Higher parking volumes at the Church Street Garage, reduced volume at Court Street Garage
(6) Lower parking volumes at the Court Street Garage, reallocated demand to other garages
(7) Reduced volumes at East All Saints Garage, verified through transactions and occupancy information.
(8) Increase in Postemployment Benefits (OPEB)
(9) Payoff of bond interest payments and reduction in professional services.

Chapter 3
Stakeholder Input

An important initial step for the Downtown Frederick Parking and Circulator Study was to launch an outreach effort to learn what a variety of stakeholders think about parking and circulation issues in Downtown Frederick.

Three primary stakeholder outreach efforts were conducted:

- In-person meetings were held with 48 individuals that represent Downtown Frederick businesses, residents, and advocacy groups, as well as City and County political leaders and key staff.
- A business-oriented electronic survey was developed and distributed with 258 responses received; and
- A resident-oriented electronic survey was developed and distributed with 409 responses received.

This chapter presents the stakeholder input received through these efforts.

STAKEHOLDER DISCUSSIONS

The City of Frederick's Department of Economic Development took the lead on setting up a series of stakeholder discussions with a wide variety of Downtown Frederick constituencies. These meetings were held in October, November, and December of 2019. A list of meetings and attendees is provided in Appendix B.

Project staff from KFH Group and DESMAN, together with the City of Frederick's Parking Superintendent and Transportation Planner, led these meetings using the following structure:

- A background discussion of the issues and overview of Frederick's current parking program was provided;
- The study team was introduced;
- A facilitated question- and-answer session was held that included:
    - Key parking facility questions.
    - Questions regarding a potential circulator service.

The detailed feedback provided through these stakeholder discussions is presented in Appendix C. A summary of the information learned from the discussion is provided below.

Stakeholder Discussion Summary

While a variety of opinions were provided with regard to parking and circulation in Downtown Frederick, the following common themes were found among participants:

- Prior to closing the Church Street Garage for repairs, replacement, or reuse, a similar number of spaces that are currently available in the Church Street Garage need to be provided elsewhere in Downtown Frederick. Stakeholders were open to the construction of a new garage nearby, or more remote parking with a shuttle.

- The plan developed for the closure of the Church Street Garage will need to be well-publicized.

- The location of the Church Street Garage is ideal for visitors.

- Most stakeholders support the concept of a parking garage at the former Carmack-Jay's lot on North Market Street, between 3rd and 4th Streets. There are some strong opinions that a garage at that location needs to be wrapped in retail and should also have a residential component.

- Several stakeholders discussed the concept of providing a parking availability app, so that people who are driving downtown could consult the app to see which garages have availability.

- There is some sentiment that there is not enough parking downtown and this will get worse with proposed development. Some residents without off-street parking reported that it can be challenging to find a spot near their homes.

- Stakeholders had mixed opinions about the need for a circulator. Common among the in-person opinions was the thought that a circulator will be needed: 1) if the Church Street Garage is closed; 2) is needed for special events; and 3) would likely be needed with additional growth. There was some sentiment that Frederick is walkable and the downtown is not yet large enough to support a circulator on a daily basis.

- One target market for a circulator is downtown service employees who would be attracted to cheaper or free parking. This would also free up parking spaces in the core for customers and residents.

- A successful circulator will need to:
    - Use an alternative-fueled vehicle, preferably one that looks like a trolley.
    - Provide frequent service.
    - Provide real-time schedule information (i.e. a bus tracker app).
    - Employ a driver that serves as an ambassador.

- Be free.
- Be well publicized.

STAKEHOLDER SURVEYS

In order to reach out to a broader audience of stakeholders, two electronic surveys were developed:

- A survey targeting business owners in the City; and
- A survey targeting Downtown Frederick residents.

The surveys were constructed in Survey Monkey and advertised by the City and the Downtown Frederick Partnership. The Frederick Chamber also advertised the business-oriented survey. The survey questions are provided in Appendix D.

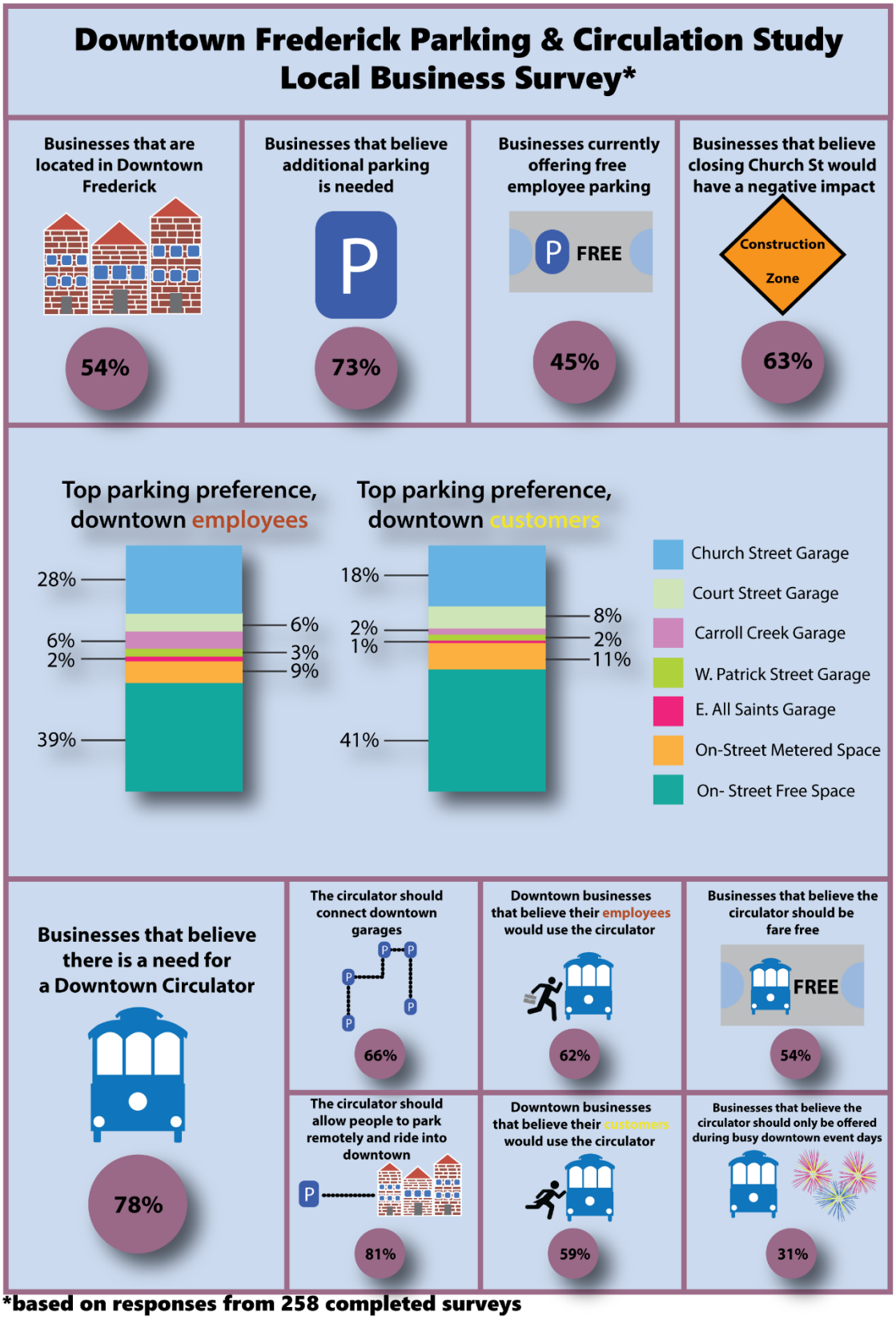
Business Survey Results

The effort to solicit input from Frederick businesses resulted in 258 completed surveys. A synopsis of the survey results is provided graphically in Figure 3-1. These results indicate that the majority of the business survey participants believe that additional parking is needed in Downtown Frederick and that there is a need for a downtown circulator. It is also interesting to note that the parking preferences are for free, on-street parking, followed by the Church Street Garage. The circulator preferences were for a service that connects the downtown garages, as well as providing remote parking with a shuttle to downtown. The majority of the survey participants felt that the circulator should be free (54%). The open-ended responses to the business-oriented survey are provided in Appendix E.

Resident Survey Results

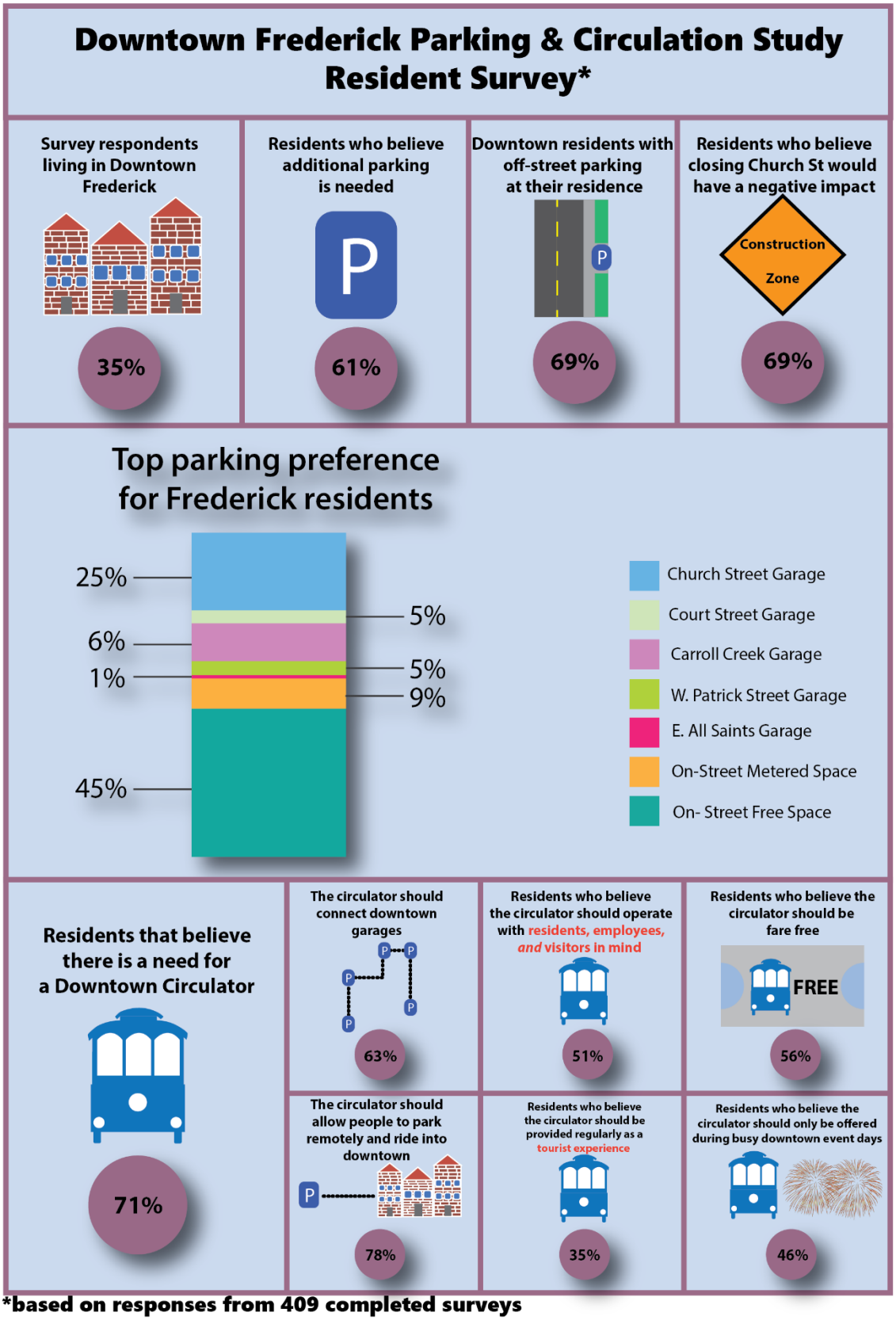
The residential survey effort resulted in the completion of 409 surveys. The survey results are summarized graphically in Figure 3-2. While a minority (35%) of respondents reported that they live in Downtown Frederick, 96% reported that they routinely shop or dine in Downtown Frederick. Residents indicated that on-street free spaces were the most preferred parking spaces when venturing downtown. The most preferred parking garage was the Church Street Garage. Like the business survey, a majority (71%) of respondents believed that there is a need for a downtown circulator. Additionally, a majority (56%) of respondents believed the circulator should be fare free and 78 percent of respondents believed that the circulator should connect residents to downtown from a remote parking location along the edge of downtown. Appendix F displays the open-ended responses to the residential survey.

Figure 3-1: Overview of Business Survey Results



***based on responses from 258 completed surveys**

Figure 3-2: Overview of Resident Survey Results



***based on responses from 409 completed surveys**

Chapter 4
Feasibility and Circulator Options

Is a Circulator Feasible?

The definition of feasible is "capable of being done or carried out."[1] In the business and planning environments, feasibility revolves around whether the benefit gained from a particular project is worth the cost to implement the project, as well as if there is an ability to fund the project. The stakeholder input provided mixed opinions regarding the feasibility of a circulator, while both of the electronic surveys showed a majority positive opinion regarding the feasibility of a circulator.

Research into other circulators indicate that there is significant variability regarding the performance metrics that other communities find "feasible" in terms of costs and benefits. There may also be benefits such as convenience, the ability to disperse parking demand, as well as providing a tourist experience for visitors.

The vitality of Downtown Frederick, compared to its peer programs and coupled with the success of the current First Saturday Trolley, suggests that a phased-in parking shuttle/circulator is feasible for Downtown Frederick if the City chooses to fund such a service. A phased-in approach would allow for the service to be successful as development intensifies and the added mobility provided by a circulator service is in higher demand.

The remainder of this chapter presents a series of options for the city to consider, along with estimates of expenses, funding possibilities, and oversight options. The route options are scored using an unweighted approach, which can be adjusted based on feedback from the City.

Remote Parking

An important component to operating a shuttle/circulator service that aims to balance parking demand is the development of a remote parking location. Two specific options are discussed below.

Harry Grove Stadium

The 2004-2006 Downtown Express parking shuttle used Harry Grove Stadium for remote parking. This was a good choice in many ways, as the city owned the lot, and it provided users with a parking option that didn't require driving into downtown. The Harry Grove Stadium

[1] Merriam-Webster

lot is still an option for the future; however, there are significant negatives to using the Harry Grove Stadium lot. These are:

1. A shuttle needs to travel all the way around the stadium complex via New Design Road to access a controlled intersection to turn left onto South Market Street. This adds just over a mile of zero passenger activity to the route.

2. South Market Street is often congested traveling north into Downtown Frederick, which adds uncertainty to the travel time for the shuttle.

3. The lot is slightly less than a mile from the Square Corner, but feels farther given the hill in between. This makes the lot less accessible for people who may want to walk, rather than take the shuttle.

Corner of Brickworks Site

During the stakeholder discussions, a community member suggested that a portion of the Brickworks site, located at the corner of S. East Street and E. South Street would be a convenient location for a park and ride lot. The location of this lot is shown in Figure 4-1. While the Brickworks site is slated for development, the actual development has not yet been scheduled. The following positive attributes are associated with this site:

1. It is relatively close to the downtown core and adjacent to the Frederick County Public Schools administrative building and the Frederick Visitor's Center.

2. The site is flat.

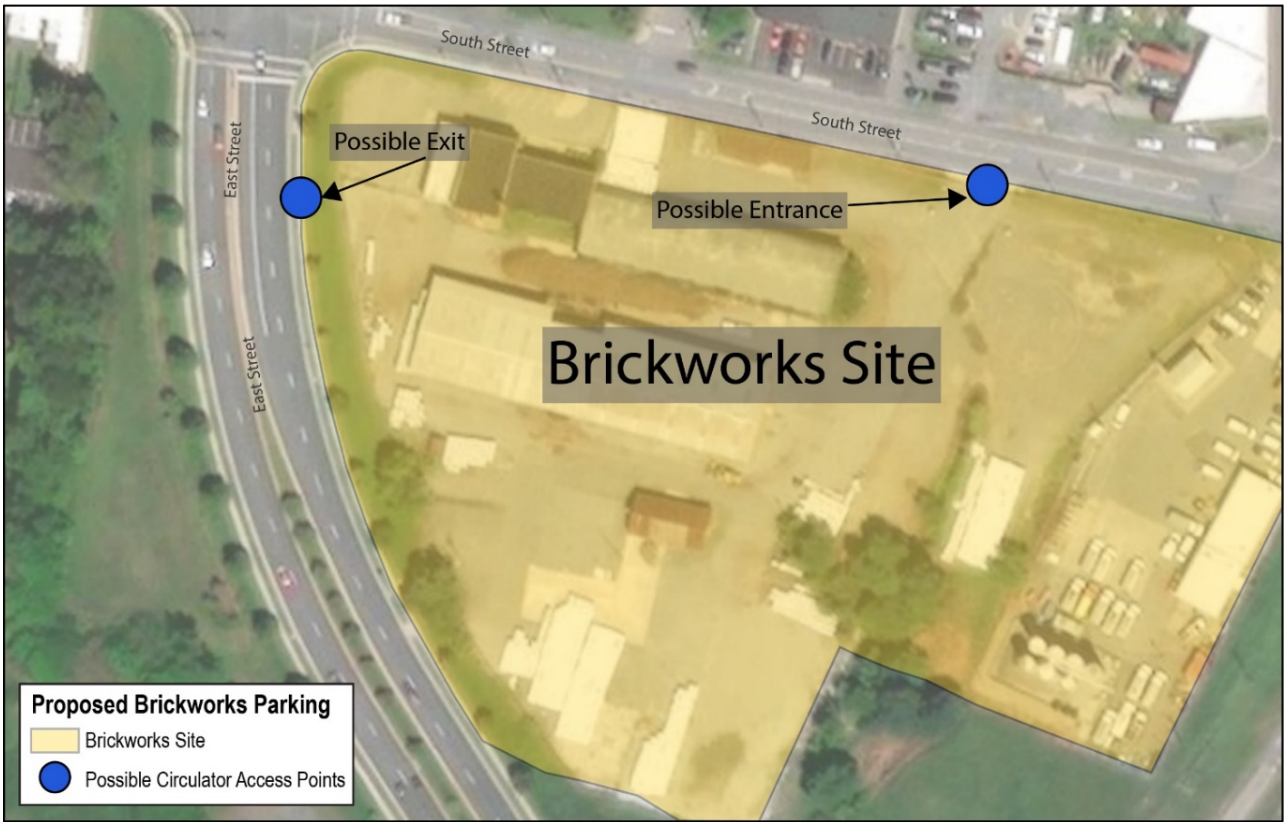
3. Access could potentially be provided via both East Street and South Street, which would be key for a circulator to enter and exit the property.

For this site to be feasible, the following would need to occur:

1. An agreement to lease the site from the Brickworks would be needed.

2. Some site improvements would be needed, most notably ingress and egress for vehicles off of East Street and South Street. Whether or not paving would be needed will need to be investigated.

Figure 4-1: Proposed Park and Ride Site Location



Other Site Options

Other options for a park and ride site could include:

- The Fairgrounds, located east of Downtown Frederick along E. Patrick Street
- Under-utilized properties along East Street

A site east of Downtown Frederick is preferred, given the proximity to I-70 and the Frederick Transportation Center.

ROUTE OPTIONS

Route options have been developed in two primary categories:

1. East-West Parking Shuttle, focusing on connecting remote parking and garages to the downtown core.

2. Circulators, each of which provides parking garage connections in addition to service along the edges of Downtown Frederick. Two of these focus on serving the Hood College and Frederick Health neighborhoods and three focus on serving the N. Market Street and East Street neighborhoods.

For consistency, the routes each originate at the proposed Brickworks site, but the study team acknowledges that the City does not own this site and it is currently a proposed site, rather than a final choice. The route maps for each proposed option show the underlying population density by Census block group, as well as the number of jobs within each of the Census block groups that are traversed by each route. The jobs numbers are inflated to a certain degree because the Census data includes the total employment of some major employers that are based downtown, but have employees at many locations. These employers include the County, the City, Frederick County Public Schools, and possibly others.

East-West Parking Shuttle

East Street – Patrick Street – Bentz Street – All Saints Street

Two potential East-West Parking Shuttle routes were developed for consideration. The first one, shown in Figure 4-2, is the shortest of the proposed routes and travels from the proposed remote lot at South and East Streets north on East Street, stopping on-street at the Transit Center. Then the route travels north, and makes a left onto E. Patrick Street. Once on E. Patrick Street, the route could serve a potential new garage across from the Post Office, the proposed downtown hotel, the Carroll Creek Garage, the Square Corner, W. Patrick and Court Streets, and the West Patrick Street Garage. The route would then turn left onto Bentz Street and left onto All Saints Street to return to the proposed park and ride lot. Alternatively, the shuttle could return via South Street, which would serve the proposed new senior development at the site that is currently the Gary Rollins Funeral Home. This route is 1.7 miles long, with an estimated travel time of 12.75 minutes. This would allow for 15-minute frequencies using one vehicle and 7.5-minute frequencies using two vehicles.

Advantages

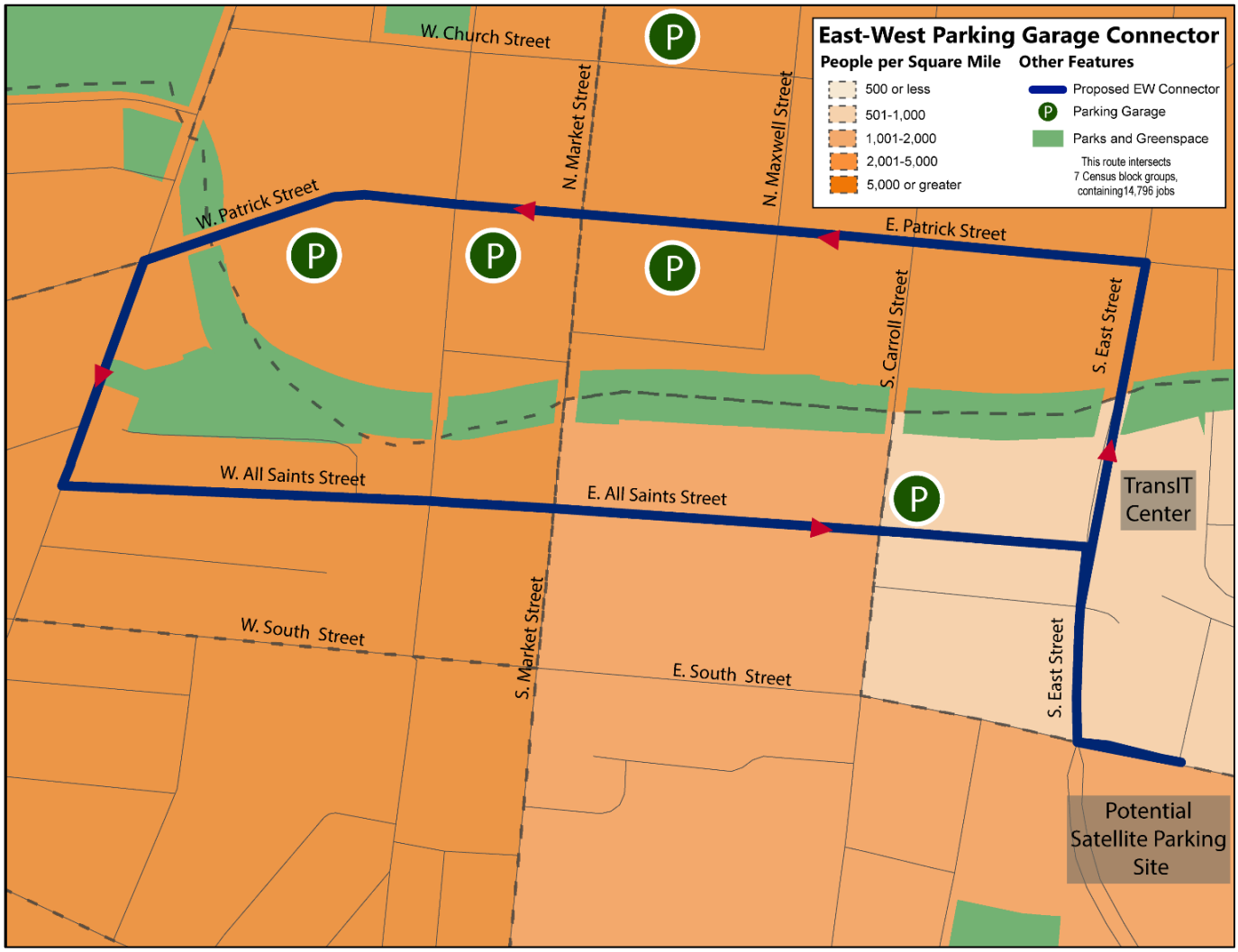
- This is a short route that would allow for the highest frequency service.
- This route serves 4 of the 5 Downtown Frederick Garages, as well as the proposed downtown hotel, the Post Office area, and the transit center.
- The simple design would be easy for people to use.

Disadvantages

- Does not connect to other Downtown Frederick neighborhoods.

- Does not serve the Church Street Garage.
- Only serves Shab Row at the periphery.
- Does not serve Market Street north of Patrick Street.

Figure 4-2: East-West Parking Shuttle – Short Version



East Street – Patrick Street – Baker Park – Church Street – East Street

The second parking shuttle route option travels from the proposed remote lot at South and East Streets north on East Street, stopping on-street at the Transit Center. Then the route travels north, and makes a left onto E. Patrick Street. Once on E. Patrick Street, the route could serve a potential new garage across from the Post Office, the proposed downtown hotel, the Carroll Creek Garage, the Square Corner, W. Patrick and Court Streets, and the West Patrick Street Garage. From this point, the route would continue on W. Patrick Street and make a right onto College Avenue to serve Baker Park. It would then make a right onto Second Street, a right onto Bentz Street, and a left onto Church Street. The route would return to the downtown core, and then make a right onto East Street, returning to the proposed park and ride lot. A map of the proposed route is provided in Figure 4-3.

This route is longer than the first one (2.5 miles), with an estimated travel time of 18.75 minutes.

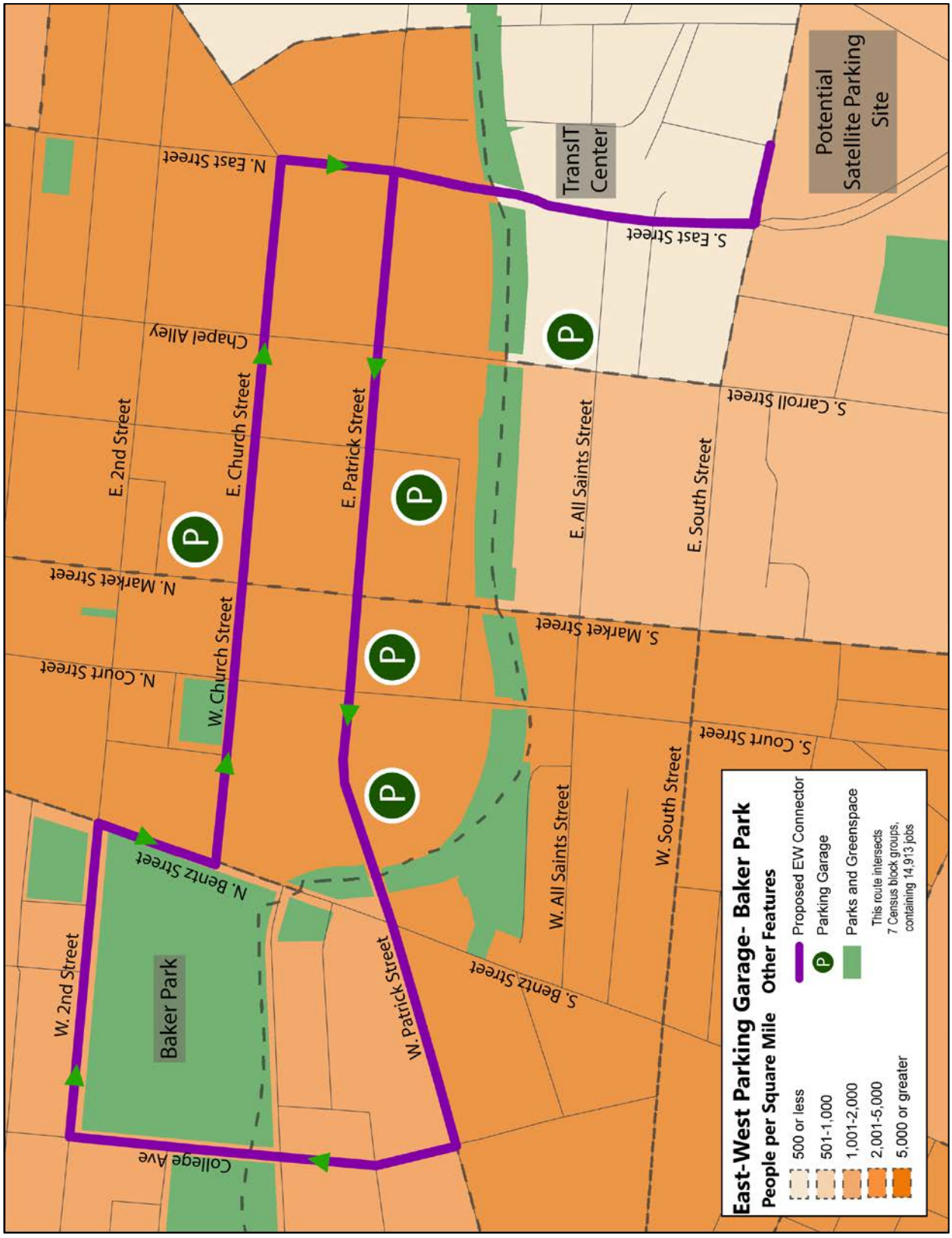
Advantages

- Serves all five garages (within 1 block), as well as the proposed downtown hotel, the Post Office area, and the Transit Center.
- Provides a direct connection to Baker Park, which was desired by stakeholders.
- Serves City Hall.
- Serves Shab Row by serving the corner of East Church Street and East Street.
- The simple design would be easy for people to use.

Disadvantages

- Is longer than the first option, but still relatively short.
- Does not serve North Market Street, north of Patrick Street.

Figure 4-3: East-West Parking Shuttle – Baker Park Version



Circulator Options

The second set of route options provides connectivity between three of the existing garages and the downtown core, and then serve areas on the edge of downtown. These routes were developed with the thought of diverting automobile trips for people who live or work on the edge of Downtown Frederick and come downtown to shop, work, dine, etc. Two options were developed for service to the Hood College and Frederick Health neighborhoods and three options were developed for service to the North Market and East Street neighborhoods.

Hood and Hospital, Loop 1

The Hood and Hospital Loop 1 route option travels from the proposed remote lot at South and East Streets north on East Street, stopping on-street at the Transit Center. Then the route travels north, and makes a left onto E. Patrick Street. Once on E. Patrick Street, the route could serve a potential new garage across from the Post Office, the proposed downtown hotel, the Carroll Creek Garage, and the Square Corner. The route then makes a right onto North Market and then makes a left onto Fourth Street. The route then serves the front of Hood College, traveling to either Fairview or Magnolia and making a right. The route then makes a right onto Seventh Street to serve Frederick Health. From Seventh Street the route travels to East Street and makes a right, returning to the park and ride lot via East Street. A map of the proposed route is provided in Figure 4-4.

This route is 4 miles in length, with an estimated travel time of 26.7 minutes.

Advantages

- Serves three garages (within 1 block), as well as the proposed downtown hotel, the Post Office area, and the Transit Center.
- Serves North Market Street up to 4th Street.
- Serves Hood College and Frederick Health.
- Serves all of Shab Row.
- The simple design would be easy for people to use.
- Opens up the possibility of institutional investment in the program.

Disadvantages

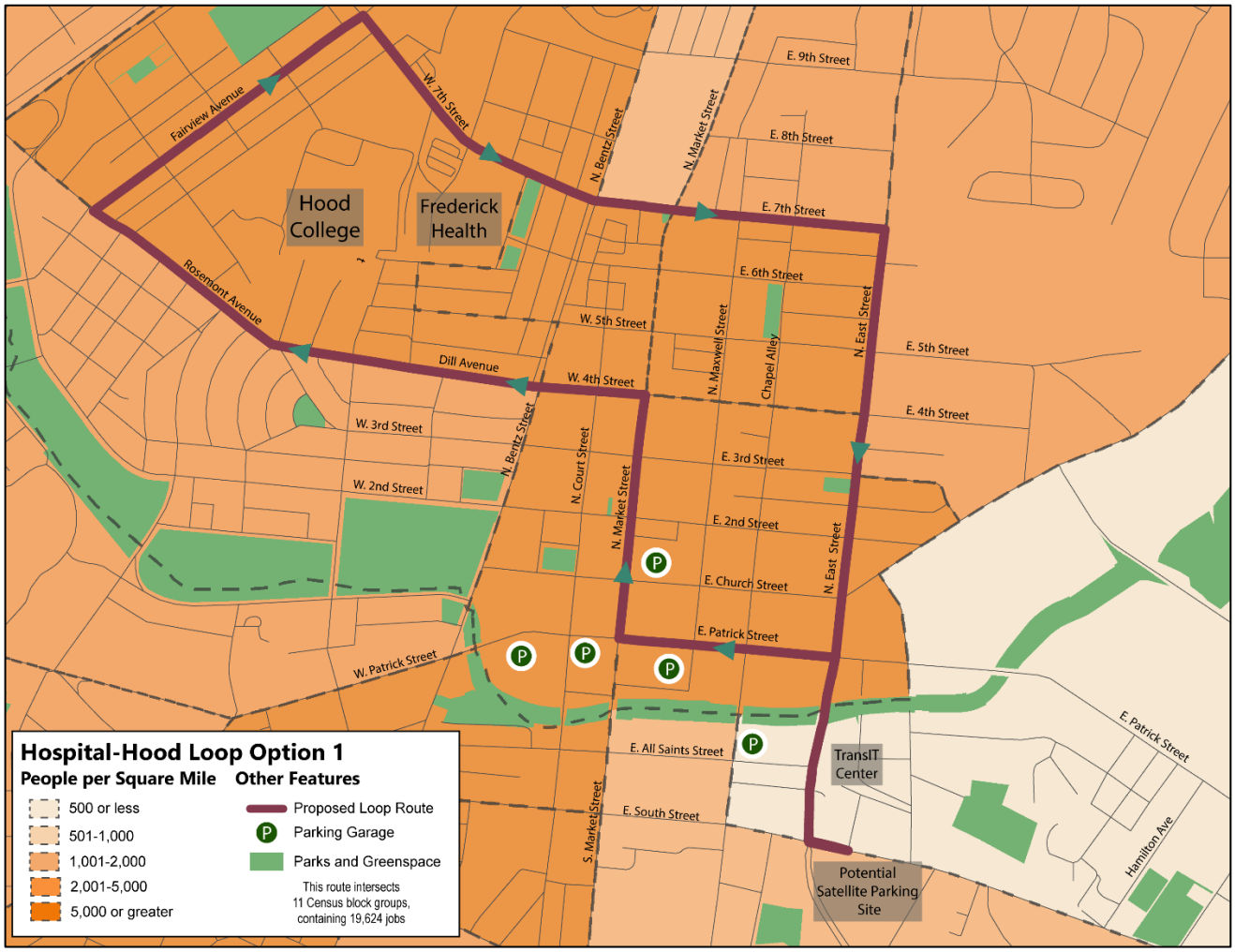
- Is longer than the "shuttle" options, which means that two vehicles would be needed to offer 15-minute headways.

- Longer, one-way loops are not as convenient for riders to use, as there is typically a longer travel time for one leg of the trip, unless you are at the farthest point out (Hood/Hospital).

- Does not serve the Court Street Garage or the West Patrick Street Garage.

- Does not serve Baker Park or City Hall.

Figure 4-4: Hood-Hospital, Loop 1



Hood and Hospital, Loop 2

The East-West Hood and Hospital Loop 2 route option travels from the proposed remote lot at South and East Streets north on East Street, stopping on-street at the Transit Center. Then the route travels north, and makes a left onto E. Patrick Street. Once on E. Patrick Street, the route could serve a potential new garage across from the Post Office, the proposed downtown hotel, the Carroll Creek Garage, and the Square Corner. The route then makes a right onto North Market and then makes a left onto Fourth Street. The route then serves the front of Hood College, traveling to either Fairview or Magnolia and making a right. The route then makes a right onto Seventh Street to serve Frederick Health. From Seventh Street the route makes a right onto N. Bentz Street, serves Baker Park, and then makes a left onto Church Street, then a right onto East Street to serve Shab Row and return to the lot. A map of the proposed route is provided in Figure 4-5.

This route is 4.1 miles in length, with an estimated travel time of 27.3 minutes.

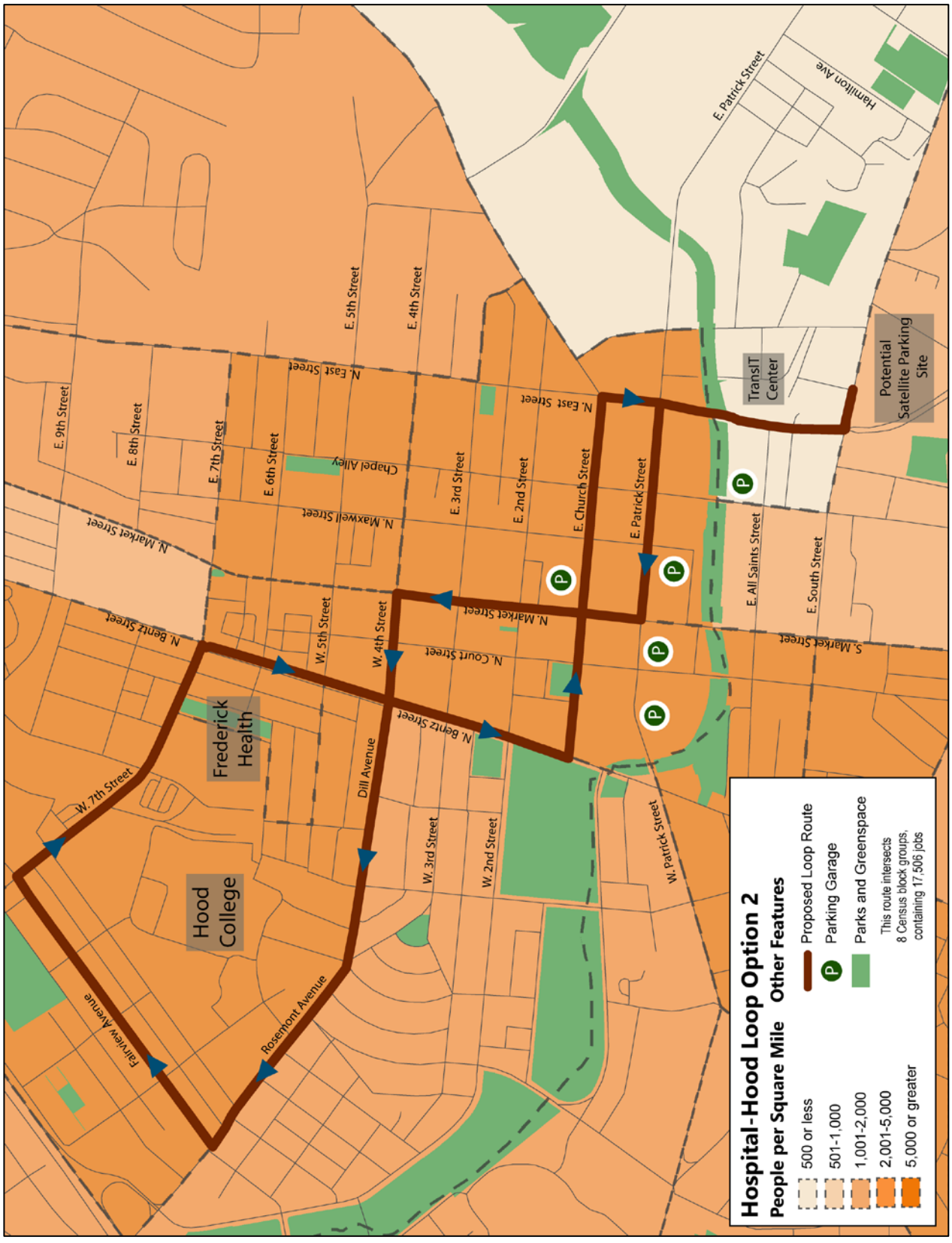
Advantages

- Serves three garages (within 1 block), as well as the proposed downtown hotel, the Post Office area, and the Transit Center.
- Serves North Market Street up to 4th Street.
- Serves Hood College and Frederick Health.
- Serves Baker Park and City Hall.
- Serves Shab Row by serving the corner of East Church Street and East Street.
- Opens up the possibility of institutional investment in the program.

Disadvantages

- Is longer than the "shuttle" options, which means that two vehicles would be needed to offer 15-minute headways.
- Longer, one-way loops are not as convenient for riders to use, as there is typically a longer travel time for one leg of the trip, unless you are at the farthest point out (Hood/Hospital).
- Does not serve the Court Street Garage or the West Patrick Street Garage.
- Has more turning movements than the other options, which can confuse riders.

Figure 4-5: Hood-Hospital, Loop 2



N. Market/East Street Short Turn

The proposed N. Market/East Street Short Turn route option is similar to the historic "Downtown Loop" and the current First Saturday Trolley Route. This route originates at the proposed park and ride lot at E. South and S. East Streets, travels north on East Street, serving the Transit Center on-street. The route then continues north, and makes a left onto E. Patrick Street. Once on E. Patrick Street, the route could serve a potential new garage across from the Post Office, the proposed downtown hotel, the Carroll Creek Garage, and the Square Corner. The route then makes a right onto North Market serving the downtown core and makes a right onto Fifth Street. The route then makes a right onto East Street, serving Shab Row and returning to the park and ride lot. A map of the route is provided in Figure 4-6.

This route is 2.1 miles in length, with a travel time of 15.75 minutes.

Advantages

- Serves three garages (within 1 block), as well as the proposed downtown hotel, the Post Office area, and the Transit Center.
- Serves North Market Street up to 5th Street.
- Serves all of Shab Row.
- The simple design would be easy for people to use.
- A similar route is already in place for the First Saturday Trolley, with strong ridership (though some have anecdotally reported that people ride for fun, rather than transportation).

Disadvantages

- Does not serve the Court Street Garage or the West Patrick Street Garage.
- Does not extend to reach other additional neighborhoods or major institutions.

Figure 4-6: N. Market/East Street, Short-Turn

N. Market/East Street Mid Distance

The proposed N. Market/East Street Mid-Distance route option is similar to the historic "Downtown Loop" and the current First Saturday Trolley Route, but it extends two blocks farther north to 7th Street. This route originates at the proposed park and ride lot at E. South and S. East Streets and travels north on East Street, serving the Transit Center on-street. Then the route travels north, and makes a left onto E. Patrick Street. Once on E. Patrick Street, the route could serve a potential new garage across from the Post Office, the proposed downtown hotel, the Carroll Creek Garage, and the Square Corner. The route then makes a right onto North Market serving the downtown core up to Seventh Street. The route then makes a right onto Seventh Street and a right onto East Street, serving Shab Row and returning to the park and ride lot. A map of the route is provided in Figure 4-7.

This route is 2.8 miles in length, with a travel time of 21 minutes.

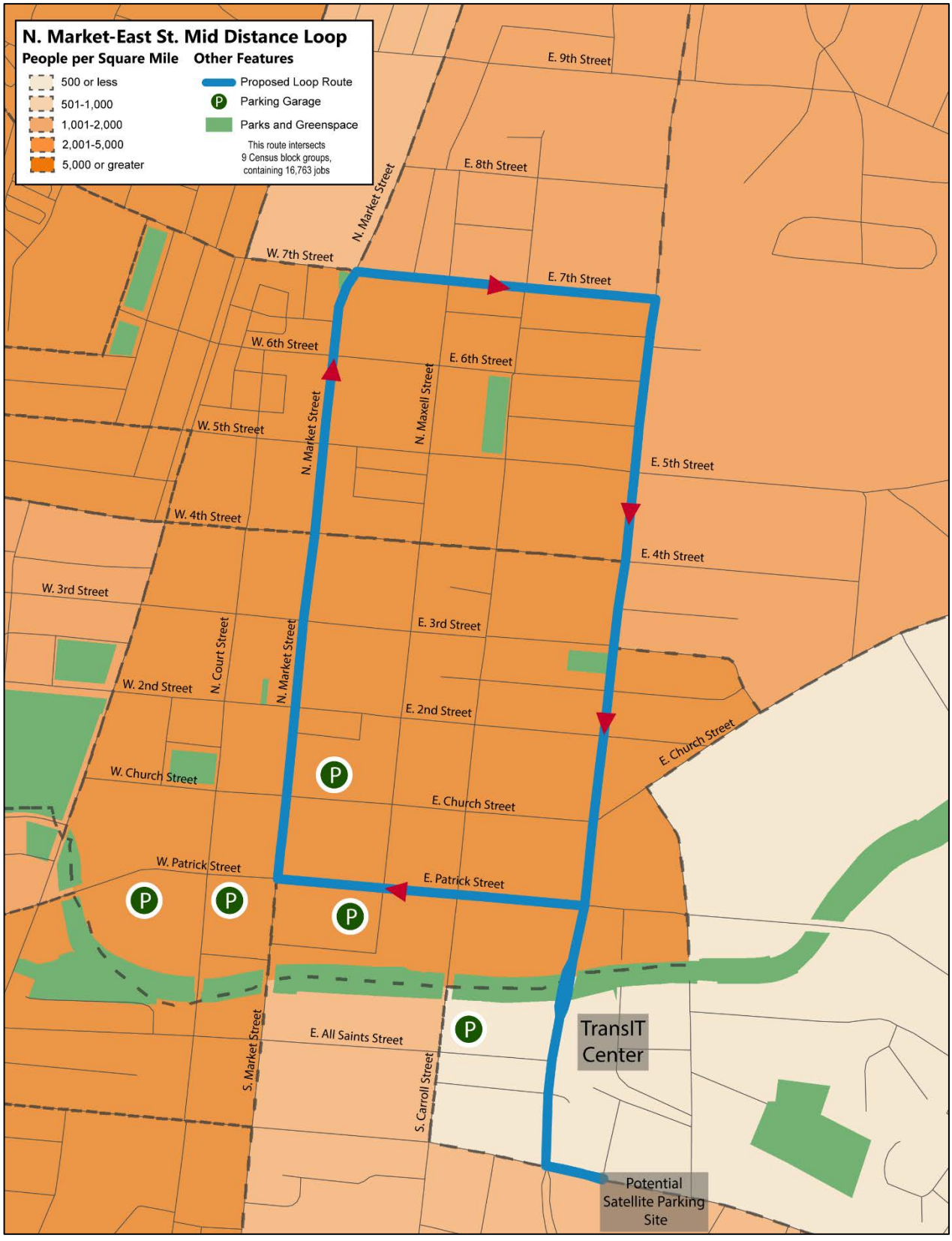
Advantages

- Serves three garages (within 1 block), as well as the proposed downtown hotel, the Post Office area, and the Transit Center.
- Serves North Market Street up to 7th Street.
- Serves all of Shab Row.
- The simple design would be easy for people to use.
- A similar route is already in place for the First Saturday Trolley, with strong ridership (thought anecdotal reports are that people ride for fun, rather than transportation).

Disadvantages

- Does not serve the Court Street Garage or the West Patrick Street Garage.
- Does not extend to reach other additional neighborhoods or major institutions.
- Is longer than the short-turn option without serving additional major origins or destinations.

Figure 4-7: N. Market/East Street Mid-Distance



N. Market/East Street - Long

The proposed N. Market/East Street Long route option is like the historic "Downtown Loop" and the current First Saturday Trolley Route, but it extends all the way up North Market Street to East Street. This route originates at the proposed park and ride lot at E. South and S. East Streets, travels north on East Street, serving the Transit Center on-street. Then the route travels north, and makes a left onto E. Patrick Street. Once on E. Patrick Street, the route could serve a potential new garage across from the Post Office, the proposed downtown hotel, the Carroll Creek Garage, and the Square Corner. The route then makes a right onto North Market serving the downtown core, all the way up past Thomas Johnson High School and makes a right onto East Street. The route then serves the entire East Street corridor (and across from Coca Cola Bottling development), across from East of East Apartments, across from Monocacy Village, then continuing on East Street to serve Shab Row and returning to the park and ride lot. A map of the route is provided in Figure 4-8.

This route is 3.9 miles in length, with a travel time of 29.25 minutes.

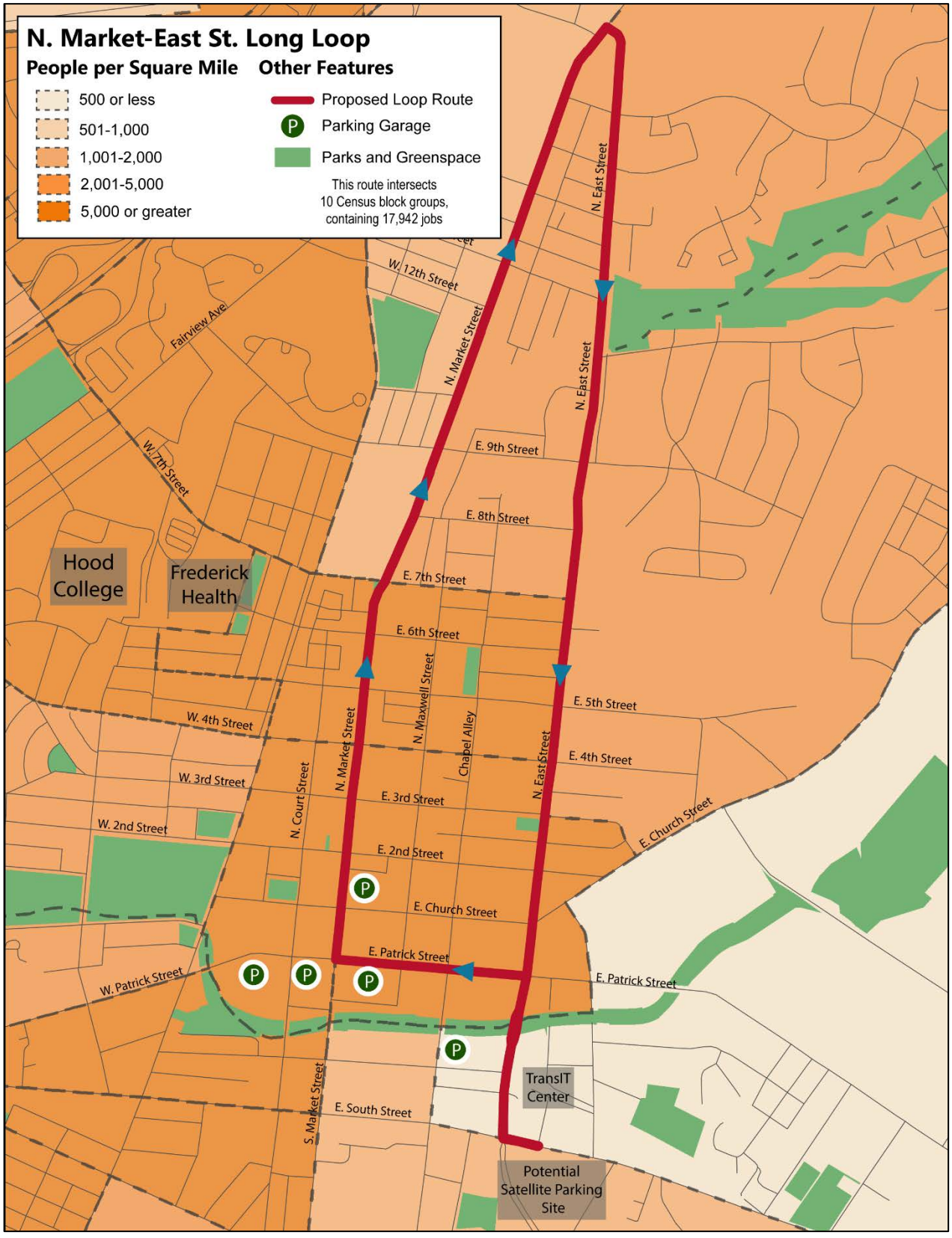
Advantages

- Serves three garages (within 1 block), as well as the proposed downtown hotel, the Post Office area, and the Transit Center.
- Serves North Market Street up to East Street.
- Serves the entire East Street corridor, including the Coca-Cola Bottling development, East of East Apartments, and Monocacy Village.
- Serves all of Shab Row.
- The simple design would be easy for people to use.

Disadvantages

- Does not serve the Court Street Garage or the West Patrick Street Garage.
- Longer, one-way loops are not as convenient for riders to use, as there is typically a longer travel time for one leg of the trip, unless you are at the farthest point out (Coca-Cola Bottling development).

Figure 4-8: N. Market/East Street Long



Summary of Route Options and Preliminary Scoring Criteria

The seven options provided show the range of what could be implemented, including simple connections from parking lots/garages to the core of Downtown Frederick and Baker Park, as well as longer options that have the potential to provide passenger trips to riders who may otherwise drive downtown and park.

In order to begin the process of deciding which option(s) would be the most viable, the options have been compared using the following factors:

- The number of times one bus can travel the route in one hour;
- The number of parking garages served on the route;
- A jobs score, which represents whether the number of jobs accessed via the route is above (score of 2) or below (score of 1) the mean. This was derived from Census data at the block group level, so it is a relative score. The jobs numbers are inflated to a certain degree because the Census data includes the total employment of some major employers that are based downtown, but have employees at many locations. These employers include the County, the City, Frederick County Public Schools, and possibly others.
- A population density score. If the route stays in Census block groups with a population density between 2,000 and 5,000 per square mile (after leaving East Street), the route was assigned a 2. If the route traverses through Census block groups with lower population densities, the route was scored a 1.

The higher the score, the more favorable the route scores relative to these factors. None of the factors have been weighted, but they can be if the City finds a particular factor to be more important than others.

Table 4-1 presents the operating details for each proposed route along with the proposed scoring factors.

Service for People with Disabilities

Public entities that provide transportation services are required to comply with Part 37 of the Americans with Disabilities Act (ADA). Among the criteria is a requirement to provide ADA complementary paratransit for people whose disabilities prevent them from using the fixed route service. Industry research indicates that most parking shuttle programs use the underlying transit system's ADA complementary paratransit service to meet this requirement. The only issue with this would be the fare, as ADA complementary paratransit cannot be more than twice the fixed fare.

Table 4-1: Routing Options, Characteristics, and Scoring Factors

	Route Characteristics					Scoring Factors				
Route	Route Length (miles)	Estimated Travel Time (1)	Frequency Using 1 vehicle	Frequency Using 2 vehicles	# Hourly Vehicle Trips Using 1 vehicle	Public Garages within 1 block of route	Jobs Score (2)	Population Density of Block Groups Touched (3)	Score without weighting any factors
Category 1: East-West Parking Shuttle									
Patrick St. - South St. - Parking Garage Connections	1.7	12.75 mins	15 mins	7.5 mins	4	4	1	2	11
Patrick St. - Baker Park - Church Street - Parking Plus Baker Park	2.5	18.75 mins	20 mins	10 mins	3	5	1	1	10
Category 2: Circulator Focus									
East-West serving Hood and Hospital - Loop 1	4	26.7 mins	30 mins	15 mins	2	3	2	2	9
East-West serving Hood and Hospital - Loop 2	4.1	27.3 mins	30 mins	15 mins	2	3	2	2	9
N. Market/East Street Short Turn	2.1	15.75 mins	20 mins	10 mins	3	3	1	2	9
N. Market/East Street Mid Distance	2.8	21 mins	25 mins	12.5 mins	2	3	2	2	9
N. Market/East Street Long	3.9	29.25 mins	30 mins	15 mins	2	3	2	1	8

(1) Based on 8 miles per hour for routes under 4 miles in length and 9 miles per hour for routes 4 miles in length or more

(2) Assigned a (2) if the number of jobs was above the mean and a (1) if the number of jobs was below the mean

(3) Assigned a (2) if route stayed in 2,000-5,000 density areas after leaving East Street; Assigned a (1) if also crossed into 1,000-2,000 density areas.

EXPENSES AND FUNDING SCENARIOS

To estimate the operating cost to provide circulator service, the study team is using $85.00 per vehicle revenue hour (i.e., one vehicle operating one hour). This estimate is based on the peer circulator expenses and TransIT's current operating expenses, with some inflation built in and an allowance for the inclusion of the vehicle in the hourly cost. It should be noted that for some of the peer examples (i.e. the Bethesda Circulator and the Staunton Trolley), the hourly rate includes the provision of vehicles by the contractor, while in others it does not.

Level of Service

To help understand how $85 per revenue hour translates into cost estimates for a circulator, the study team prepared several scenarios to consider. These estimates are provided in Table 4-2. These scenarios show that the low end of service (Friday – Saturday, 14-hour span of service; Sunday 10-hour span of service) using one vehicle, would total about $167,960 annually. The same span of service using two vehicles would total $335,920. Daily service options range from a low of $362,440 to a high of over $1.2 million.

Table 4-2: Estimated Circulator Operating Expenses for Various Scenarios

	1 vehicle		2 vehicles		3 vehicles	
Operating Schedule	# Annual Revenue Hours	Estimated Annual Cost	# Annual Revenue Hours	Estimated Annual Cost	# Annual Revenue Hours	Estimated Annual Cost
Fridays and Saturdays, 14-hour span of service, Sundays, 10-hour span of service	1,976	$167,960	3,952	$335,920	5,928	$503,880
M-S, 12 hours; Sun, 10 hours	4,264	$362,440	8,528	$724,880	12,792	$1,087,320
M-S, 14 hours; Sun, 10 hours	4,888	$415,480	9,776	$830,960	14,664	$1,246,440

Capital Expenses

There are three primary ways that the capital costs are managed for downtown shuttle and circulator programs. These are:

- Purchasing the vehicles;
- Leasing the vehicles; and

- Contracting for service and asking the contractor to provide the vehicles. As previously noted, this scenario is in place for at least two of the peer examples.

Purchasing the vehicles is the common method when the provider of the service is also a public transportation operator that can access federal and state grant assistance for the purchase of vehicles. This assistance is typically 80% federal, 10% state, and 10% local. Leasing vehicles is sometimes used for demonstration periods to see if a service is viable, prior to making large capital investments. Leasing is also used when an operator desires to start a service quickly, prior to the time it takes to purchase a vehicle through a state contract.

For contracted service, the request for proposals can ask that the contractor include the provision of the vehicles within the proposal. This option usually requires a five-year contract term so that the contractor can depreciate the cost of the vehicles. Asking the contractor to provide the vehicles typically adds between $5.00 and $10.00 per hour to the operating price per hour.

Funding Scenarios

The peer examples are funded through a mix of the following funding scenarios:

- Traditional transit funding sources (i.e., Federal Transit Administration grants, matched with state and local funds);
- Parking revenue;
- Special taxes or fees (hotel/hospitality);
- Major institutions that are served by the route;
- Downtown development groups; and
- General fund revenue

Fare revenue is not a major funding source for any of the peers and most operate fare-free.

For the City of Frederick, it is not likely that the traditional transit funding sources will be a viable option, as TransIT Services of Frederick County does not currently have expansion funds available. Federal and state transit funding has been level for several years.

Once a route and level of service is established, the study team will work with the City to develop an appropriate funding strategy.

VEHICLE TYPES

A number of different vehicle types could be used for a Downtown Frederick circulator. Stakeholder outreach indicated that the vehicle should be distinctive from the Frederick County TransIT buses that currently operate in the city, with several indicating that a trolley-style vehicle should be used. Stakeholders also indicated that the vehicle should be either electric or alternatively-fueled. Under any scenario the vehicle will need to accessible to people with disabilities. The following types of vehicles are commonly used by circulator services:

- Trolley replicas
- Body-on-chassis vehicles
- Low-floor transit vehicles

Vehicle costs range from a low of about $68,000 for a body-on-chassis vehicle to a high of about $600,000 for a low-floor transit vehicle. Trolley replicas range from about $200,000 to $600,000, depending upon whether they are built on a truck chassis or purpose-built. Electric vehicles are higher in cost ($750,000 or so for a full-size vehicle), but are less costly to operate.

Examples of vehicles currently in use as circulators in the region are provided in Figure 4-9 through 4-11

Figure 4-9: Bethesda Circulator Vehicle

Figure 4-10: Greenville, SC, Trolley

Figure 4-11: Annapolis Circulator Vehicle

OVERSIGHT ARRANGEMENTS

There are three primary mechanisms that could be used to oversee the operation of a circulator service. These are:

- Inter-Governmental Agreement with TransIT
- City of Frederick Oversight – Contracted Service
- Downtown Frederick Partnership Oversight – Contracted Service

Each of these is discussed below.

Inter-Governmental Agreement with TransIT

TransIT Services of Frederick County is the designated public transportation provider in Frederick County, providing a number of services within the City that were discussed within Chapter 1. The parking shuttle that operated in 2004-2006 was operated by TransIT through an intergovernmental agreement with the City.

Under this option, the City would work collaboratively with TransIT to develop the route, schedule, and operating details. An agreement would be drawn up that outlined the details of the service to be provided by TransIT and the cost to the City as well as payment details and reporting requirements.

Of the 13 peer circulators, 10 are operated by the local public transportation program.

Advantages

- Maximizes the coordination of a circulator service with existing public transportation services.
- Taps into local transit service expertise.
- May help TransIT to balance its services in Downtown Frederick and boost its ridership.
- Does not require that the city go through a procurement process to hire a contractor.
- Reduces the level of oversight required by the City, as TransIT is already required to adhere to a multitude of regulatory requirements as a public transportation provider.

Disadvantages

- May not be perceived by the public as a unique and different service (though a specialty vehicle may help diffuse this perception).
- The City may not have as much control over the service as they would with a contractual provider.
- May be more expensive than a private contractor. It would be difficult to find this out without going through an RFP process.

City of Frederick Oversight – Contracted Service

Another option for oversight of a circulator program is for the City to hire and manage a contractor to provide the service. Under this scenario, the City would have to decide which department is best suited for this oversight and then develop a request for proposals (RFP) to hire a contractor. This may be the Parking Department, as the two services are inter-related. The City can ask that the contractor also provide vehicles so that the City would not have to purchase or lease vehicles.

In order to ensure that the shuttle route(s) are coordinated with TransIT services, the City would need to consult with TransIT on a regular basis. It may also be possible that TransIT would bid on the RFP, in which case the City would need to be mindful of how it involves TransIT in the planning stages.

Advantages

- Separate and distinct from current public transportation program.
- Conducting an RFP process would allow a true cost comparison among potential providers.
- The City would have direct control over the service via the contract provisions.

Disadvantages

- The City would have to conduct an RFP process, which is time-consuming.
- The City would have more oversight responsibilities, without the oversight provided via the County's TransIT program.
- May cut into TransIT's Downtown Frederick ridership, without the ability of TransIT to count these trips toward their ridership.

Downtown Frederick Partnership Oversight – Contracted Service

Another option for circulator administration and oversight would be for the Downtown Frederick Partnership to perform these duties, much like they currently do for the First Saturday Trolley. Under this scenario the Downtown Frederick Partnership would develop the RFP in collaboration with the City.

This model is used for the Bethesda Circulator. The Bethesda Urban Partnership (BUP) provides administration and oversight of the circulator, with the service provided by a contractor. It should be noted that Bethesda is not a city and therefore does not have a city government in place that could fill this role and BUP is a much larger organization than the Downtown Frederick Partnership.

In order to ensure that the shuttle route(s) are coordinated with TransIT services, the Downtown Frederick Partnership would need to consult with TransIT on a regular basis. It may also be possible that TransIT would bid on the RFP, in which case the Downtown Frederick Partnership would need to be mindful of how it involves TransIT in the planning stages.

Advantages

- Separate and distinct from current public transportation program.
- Conducting an RFP process would allow a true cost comparison among potential providers.
- The Downtown Frederick Partnership would have direct control over the service via the contract provisions.
- Allows for an organization that has a focus on Downtown Frederick to provide direct oversight over the circulator.

Disadvantages

- The Downtown Frederick Partnership is a small organization and may not have the capacity to take on this role.
- The Downtown Frederick Partnership would have to conduct an RFP process, which is time-consuming.
- The Downtown Frederick Partnership would have more oversight responsibilities, without the oversight provided via the County's TransIT program.
- May cut into TransIT's Downtown Frederick ridership, without the ability of TransIT to count these trips toward their ridership.

Chapter 5
Public Infrastructure to Support Alternative Transportation

INTRODUCTION

Alternative transportation is a broad term used to define all modes of travel other than the private motor vehicle. It is literally all "alternatives" to single-occupant vehicle use. These modes include:

- Walking
- Bicycling
- Scooters and similar wheeled devices
- Public transportation
- Taxis/Transportation Network Companies
- Car sharing

As part of the Downtown Frederick Parking and Circulator Plan, the study team was asked to include examples of ways in which other communities have integrated these mobility options into their infrastructure. Looking at ways to accommodate and prepare for electric and potentially autonomous vehicles are also of interest to the city, though these modes are often single-occupant vehicles.

Initiatives already underway in the City of Frederick for each mobility option are highlighted, followed by examples from other communities or industry research. Public transportation is not addressed in this chapter, as it is the focus of Chapters 1 and 4.

WALKING

Many of the stakeholders interviewed for the Downtown Frederick Parking and Circulator Plan indicated that Downtown Frederick is walkable, both in terms of distances traveled and aesthetics. Most felt that walking in Downtown Frederick is enjoyable. Stakeholders also discussed that sidewalk improvements are needed throughout Downtown Frederick to reduce tripping hazards, increase capacity, and improve accessibility for all pedestrians. Walking is a vital component to all mobility strategies, as people typically start and end their trips as pedestrians.

Pedestrian Initiatives Currently Underway in the City of Frederick

The City has been working on a number of pedestrian initiatives over the last several years. These are highlighted below.

- Implementation of a Bicycle and Pedestrian Advisory Committee (BPAC). BPAC has advocated for a number of pedestrian projects since its inception in 2013.

- Intersection improvements to improve pedestrian safety and comfort by adding pedestrian signals, installing compliant curb ramps, and improving crosswalks. Recent work in Downtown Frederick has included improvements at West Second Street and Rosemont Avenue; at Fairview Avenue and Seventh Street; and at Market Street and Ninth Street.

- Sidewalk improvements. The City has been actively addressing deteriorating sidewalks by enforcing the law mandating that property owners maintain sidewalks that front their properties. The City has a contractor in place to make needed repairs and the bill is sent to the property owner. Alternatively, the property owner can choose to make the repairs independently.

- The adoption of a Complete Streets Policy (2017).

- Alley striping (Maxwell Alley) to delineate a pedestrian walkway.

- Continued work on shared-use paths and wayfinding. The City has widened existing paths and constructed new paths, most notably the path that connects Baker Park and Waterford Park traveling under the U.S. 15 ramps to avoid busy road crossings. Current initiatives include:
    - East Street Rails with Trails (East Street Corridor to Clemson Corner)
    - Carroll Creek North Branch/H & F Trolley Trail (Waterford Park to Whittier)
    - Widening the existing Rock Creek Trail
    - Extending the Rock Creek Path to Rock Creek Drive

Potential Additional Initiatives

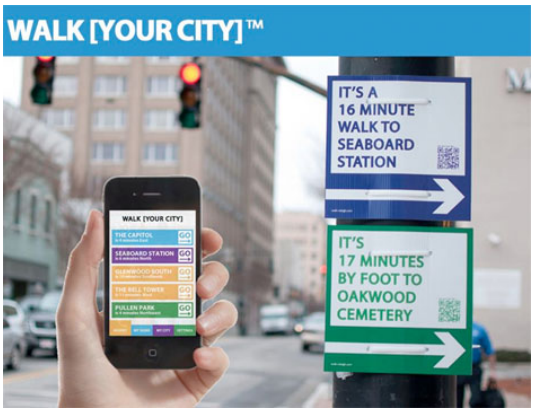
Other communities have promoted walking in a number of ways, including using both temporary and permanent signage, as shown in the following examples.

Walk Your City Signage

Walk Your City is a service that creates temporary signs that show walking distances and provide a Q/R code to get directions to various points of interest in cities. The service originated in Raleigh and the website for the service provides case studies for initiatives in

Mount Hope, West Virginia; Wayne State University (Detroit, Michigan); Atlantic Beach, North Carolina; and Durham, North Carolina. It is not clear if the service is still active, but the concept could be replicated locally. An example of the Walk Your City signs and directions is provided as Exhibit 5-1.

Exhibit 5-1: Walk Your City Signage



Source: Walk Your City website

Walking Maps

In response to overcrowding on transit routes and a need to reduce the number of riders during the COVID-19 pandemic, the transit agency in Gothenburg, Sweden re-created their bus and tram map to include the number of steps between stops. This was done to encourage walking and reduce the number of transit riders. While the scale and purpose of this example is different than the promotion of walking in Downtown Frederick, the concept of developing a map with the number of steps in between attractions is interesting. Many people currently track their steps with wearable devices and this type of map would serve to promote walking in Downtown Frederick. This type of map could be mounted at the pedestrian exit for each of Downtown Frederick's parking garages. An excerpt from the Vasttravik transit map in Gothenburg, Sweden is provided as Exhibit 5-2.

Exhibit 5-2: Gothenburg, Sweden Transit Map Excerpt with Steps between Stops

Source: Vasttravik, Gothenburg, Sweden.

BICYCLING

Bicycle Initiatives Currently Underway in the City of Frederick

As discussed within the context of walking, the City has an active BPAC that advocates for improvements to bicycle and pedestrian infrastructure. Bicycle infrastructure improvements in recent years have included the following:

- Continued expansion and investments in shared use paths (described within the "walking" section).
- Adoption of a Complete Streets Policy (2017).
- Development of a bike lane on a portion of Seventh Street.
- Installation of sharrow markings on several downtown roadways.
- Development of a bike lane on a portion of North Market Street, including the federally approved green pavement treatment, door zone markings, and a bike box at the traffic light at N. Market and Ninth Streets.
- Installation of a number of bicycle racks.
- Installation of the Frederick Pump track and associated amenities.
- Development of the Frederick History Bicycle Loop.

Current initiatives include the shared-use trails described under "walking," as well as the development of additional on-street bicycle routes, including the extension of the protected bike lane along North Market Street from Ninth Street to East Street.

Potential Additional Bicycle Initiatives

There are additional initiatives that could be implemented to further the City of Frederick's bicycle infrastructure. Some examples are discussed below.

Increase Bike Parking

The need for additional and more visible bicycle parking was articulated by stakeholders. One particular model has been used in other communities and is highlighted in Exhibit 5-3. This model is similar to the parklets currently in operation in Downtown Frederick, which are being used by restaurants to help increase their outside seating in response to the COVID-19 pandemic.

The concept is to use on-street vehicle parking spaces to provide protected bicycle parking. These bicycle parklets/corrals can accommodate about 10 bicycles per vehicle parking space.

Exhibit 5-3: On-Street Bicycle Parking

Source: Google Images

There are other creative options to add bicycle parking in park areas, similar to the one recently installed along Carroll Creek (Exhibit 5-4)

Exhibit 5-4: ASL Bicycle Rack, Carroll Creek Linear Park, Frederick

Source: KFH Group staff photo

Some additional examples from other communities are provided in Exhibit 5-5

Exhibit 5-5: Creative Bicycle Rack Examples

Source: Google Images

Bike Share

The City conducted a bike share feasibility study in 2013, which provided the following recommendations:

- The City has the potential to support a bike share system of between 250 and 300 bicycles and 25 to 30 bike stations.
- A bike share program could be implemented in phases, starting in Downtown Frederick, followed by the Patrick Street Corridor, and the northeast and southwest areas of the City.
- The City should consider subscribing to the Capital Bikeshare system through existing agreements the City has as a member of the Metropolitan Washington Council of Governments. [1]

The recommendations also acknowledged that there were some challenges with regard to implementing a bike share program. These were:

- Existing organizational capacity and staffing; and
- Funding.

Suggested ways to overcome these challenges included searching for grant opportunities that may provide funding for staffing capacity, as well as allowing advertising revenue as part of the program.

[1] Frederick Bike Share Feasibility Analysis, prepared by Toole Design Group for the City of Frederick and the Maryland Department of Transportation, November 2013.

While a bike share program has not been implemented to date, it is another option for the City to consider when contemplating alternative transportation solutions. If implemented, it would be logical to place bike share stations within the City's parking garages.

Scooters and Other Wheeled Devices

Scooters and other wheeled devices have become increasingly popular mobility options in recent years. Dockless shared electric scooters, equipped with digital trackers and credit card swipe technology, are owned by private companies and dispersed throughout cities. Users can locate an available scooter using a smartphone application, swipe their card, and ride to their destination. The scooter is then left for someone else to use. A photo of dockless scooters is provided as Exhibit 5-6.

Exhibit 5-6: Dockless Scooters

Source: Google Images

These micromobility devices have the potential to provide first-mile, last-mile trips and reduce traffic congestion and air pollution. These scooters can also be dangerous, as reported by a 2018 study conducted by the City of Austin and the Centers for Disease Control (CDC) in Austin, Texas. The study looked at a three-month period of scooter use and reported 14 injuries per 100,000 trips.[2] Forty-five percent of these injuries were head injuries.

[2] Car and Driver, "The First Ever E-Scooter Safety Study Results are In, and They're Terrible," Alexander Stoklosa, May 6, 2019.

As dockless scooter companies have multiplied and launched their products, cities have struggled with how to manage these mobility devices to keep riders and the public safe. Some of the companies have launched their programs in cities without asking permission or obtaining guidance from local officials. This has led to a number of safety concerns, as well as "littering" of equipment.

In response to these concerns, the City of Frederick adopted a six-month moratorium on the commercially available devices in March of 2019 to give staff time to formulate appropriate regulations. The moratorium expired on October 1, 2019, at which time the City decided to continue the ban on commercially-available shared electric scooters. While currently banned, the city may wish to allow them in the future with appropriate regulations. An example of a set of regulations from Montgomery County is outlined below.

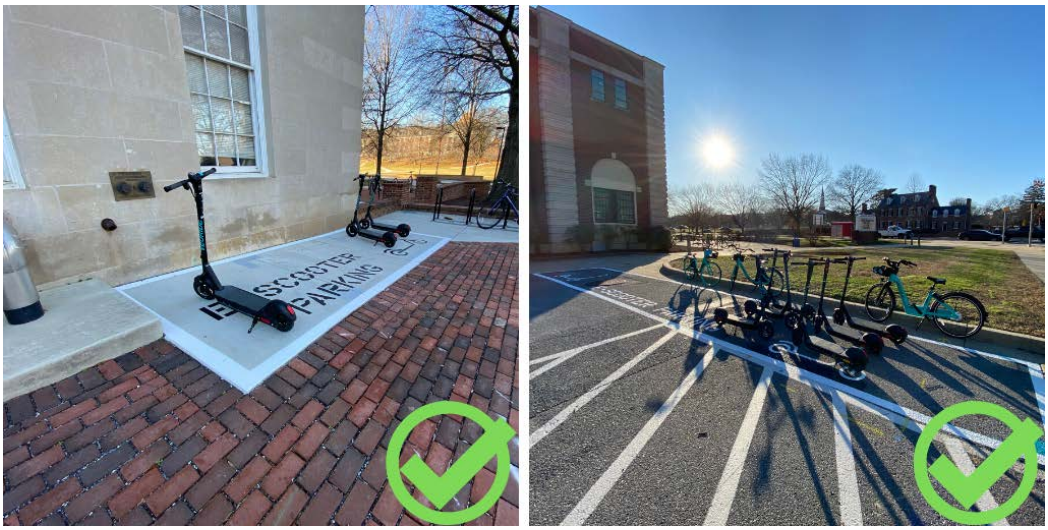
Montgomery County, Maryland is currently conducting a scooter pilot project in two zones of the county. The rules for their program are as follows:

- Must be 18 or older to rent a e-bike or e-scooter.
- Must show a valid driver's license.
- E-Scooters can only be parked within the east and west geographic specified areas.
- Riders will not be able to end their trip outside the service area.
- Speed limit for e-scooters is 15 mph.
- E-Scooters are prohibited from riding on the sidewalk or on streets where the speed limit is 50 mph or higher.
- E-Scooters must be parked in the public right of way and cannot interfere with traffic operations, block driveway access, crosswalks, ADA ramps, pedestrian access, bus stop, fire hydrants or impede access to private property or businesses.
- E-Scooter companies require that riders where a helmet when riding.[3]

If the City of Frederick chooses to allow electric scooters, it will be important to develop similar rules as well as designated scooter parking areas. Examples of designated scooter parking areas at the University of Maryland, College Park, are shown in Exhibit 5-7.

[3] Montgomery County Department of Transportation Website, viewed July, 2020.

Exhibit 5-7: Scooter Parking on the Campus of the University of Maryland, College Park



Source: University of Maryland, Department of Transportation Services

TAXIS AND TRANSPORTATION NETWORK COMPANIES

Taxis and transportation network companies (TNCs) are an integral part of the mobility landscape in Downtown Frederick. These services provide mobility options for people don't have a personal automobile available, as well as for people who are unable or choose not to drive. The City of Frederick regulates taxicabs, requiring operators to obtain a taxicab permit, with annual renewals. A taxicab driver's license is also required.

Transportation network companies (TNCs) are not as strictly regulated by the city, but are required to pay a fee of $0.25 per trip for each trip that originates in the city. The fees collected go to the city's general transportation fund.

In term of infrastructure, both of these types of vehicles for hire require vehicle stands so that customers can get picked up and dropped off safely. The city has five vehicle stands currently in Downtown Frederick to accommodate for-hire vehicles. For special events, the Frederick Downtown Partnership has on occasion added additional vehicle stands to accommodate the increased demand.

In terms of Downtown Frederick parking infrastructure, it is important to keep in mind the need to accommodate for-hire vehicles as additional development occurs in Downtown Frederick. These areas could include: East Patrick Street, adjacent to the proposed hotel; East Church Street and East Second Street, adjacent to the Visitation development; North Market Street, north of Third Street; and East All Saints Street between Carroll Street and East Street, adjacent to the development sites to the north and south.

CARSHARING

Carsharing refers to the practice of renting a vehicle for a short period of time, rather than for a full day or longer. Providing the mobility offered by a car without the expense of car ownership, carsharing is well-established in large cities and university settings where walking and public transportation can meet most day-to-day trip needs.

The Montgomery County Department of Transportation's Commuter Services program indicates a number of benefits from carsharing including: the potential to reduce car ownership; encourage more transit trips; reduce the number of vehicle miles traveled and the associated pollution and fuel consumption; and allow for more efficient use of parking spaces.[4]

Additional benefits are cited specifically for employers including: reducing employee business travel costs; providing convenient transportation for offsite meetings; eliminating complicated travel reimbursements; and providing an alternative commute option.

Montgomery County has made 52 parking spaces available for carsharing companies to use at public parking garages in Bethesda, Silver Spring, North Bethesda, Wheaton and Montgomery Hills. The carsharing companies pay market rate for these spaces. Carsharing vehicles are also available at the following Metrorail stations in Montgomery County: Bethesda, Grosvenor-Strathmore, Silver Spring, Shady Grove, and White Flint.

In Washington, D.C., the DC Department of Transportation (DDOT) manages an on-street carsharing program. The goals of the DDOT program are:

- Decrease parking demand by more efficiently using the District's curb space
- Ensure equitable access to shared mobility services for all District residents
- Reduce greenhouse gas emissions, in line with the District's sustainability goals
- Increase availability of shared mobility services in the District
- Collect program data for evaluation and transportation improvement[5]

Carsharing companies that wish to operate on-street are required to obtain a parking space permit from DDOT. These permits allow the vehicles to be parked in residential zones for 24 hours and in metered spots for longer than the posted time limit. There are currently three companies that are permitted to operate carsharing services in the District's public right of way. These are: Zipcar; Free2Move; and Penske Dash.

Carsharing can also be offered as an amenity in new building developments or as a tenant convenience and sustainability initiative. For the City of Frederick, carsharing could be incorporated into the City's sustainability plan as a way to potentially reduce the number of

[4] Montgomery County, Maryland, Department of Transportation, Commuter Services website. Viewed July, 2020.
[5] DDOT website, viewed July, 2020.

privately-owned vehicles, reduce emissions, and improve mobility for residents who do not own cars.

ELECTRIC AND AUTONOMOUS VEHICLES

Electric Vehicles

The City of Frederick has been preparing for an increase in the number of electric vehicles in the community and has adopted a "Plug-in Electric Vehicle Charging Implementation Plan (2018)." The plan estimates that by 2025, the City will need between 80 and 123 public charging stations to be available within its public parking garages and lots.[6] The plan included 13 specific recommendations to help prepare the City for plug-in electric vehicle (PEV) infrastructure deployment success. In addition the public PEV installations, there were a series of recommendations for the City to pursue in support of the development of PEV infrastructure for private installations.

In the context of public parking and circulation it will be important to incorporate PEV infrastructure into the city's existing garages, as well as any new garages that are built.

Connected and Autonomous Vehicles

The development of connected and autonomous vehicles has been advancing for several years. Connected vehicles (CV) refer to those that can communicate with other vehicles, infrastructure, and devices through wireless technology. The technology is used to alert drivers to nearby obstacles, diversions or heavy traffic. This same technology is also used for traffic signal control, traffic monitoring, automatic toll collection, and emergency or transit vehicle signal preemption of traffic lights.[7]

Autonomous vehicles, also known as driverless cars, are equipped with technology that allows them to operate and navigate without human assistance. A variety of technologies are used, including cameras, radar, lidar, global positioning systems (GPS) and computer vision.[8] There are currently no fully autonomous vehicles on the market.

The challenge for the City of Frederick involves adequately preparing for this technology when it does become mainstream. The National League of Cities has published a policy guide to prepare cities for the debut of connected and autonomous vehicles. The guide includes several policy recommendations, in addition to the following infrastructure recommendation:

[6] Plug-In Electric Vehicle Charging Infrastructure Implementation Plan for the City of Frederick." Prepared by Energetics and Vision Engineering & Planning, February, 2018.
[7] National Association of Counties, "Connected and Autonomous Vehicles Toolkit: A Primer for Counties." Web toolkit, created 9/3/19.
[8] National Association of Counties, "Connected and Autonomous Vehicles Toolkit: A Primer for Counties." Web toolkit, created 9/3/19.

"Municipal leaders should consider their short and long-term infrastructure needs, and ensure that any new investments better position their cities to support and integrate autonomous vehicle technology. This will include efforts to invest in data storage and processing capacity, investing in sensor networks and broadband, and ensuring that streetscapes and right of ways can best accommodate AVs. As new patterns of transit evolve, cities should preserve flexibility in planning. Smart planning and collaboration now across all sectors for infrastructure needs will help ensure the safe, effective, and efficient deployment of AVs in ways that enhance the benefits for residents."[9]

[9] National League of Cities, Center for City Solutions, "Autonomous Vehicles: A Policy Preparation Guide," 2017.

Chapter 6
Recommendations

INTRODUCTION

The data and information compiled and analyzed in Chapters 1 through 5 have provided sufficient background and detail to develop a series of recommendations to help ensure that Downtown Frederick's mobility infrastructure fully supports the downtown's continued growth and vitality. Some of the recommendations have several sub-options that will still need to be sorted out by the City. The recommendations focus on a multi-modal approach, including the following:

- **Implementation of a real-time parking availability program** to provide users with information regarding how many parking spaces are available in each garage in Downtown Frederick. It is anticipated that this program would include three means of providing this information: 1) through a smart phone and computer application; 2) via electronic signage along major corridors entering Downtown Frederick (South Market; East Street; and West Patrick Street); and 3) via electronic signage on each garage. A pilot program targeting one garage is recommended at the outset.

- **Demolition and reconstruction of the Church Street Garage**, including the development of a second exit and modern amenities. As part of the reconstruction effort, increasing the parking capacity by adding below ground or above ground parking tiers should be explored.

- **Construction of Deck Six** at the appropriate time to ensure adequate parking supply to support future developments on the east side of Downtown Frederick. The discussion of Deck Six includes two possible location options:

    - The Frederick County Public Schools (FCPS)/Visitor Center parking lot, which is currently owned by the City; and/or
    - The United States Postal Service (USPS) employee surface parking lot, which is owned by the USPS and would require an exchange agreement between the City and USPS.

- **Exploration of partnerships to include public parking**. The Carmack-Jay's site on North Market Street is discussed.

- **Incremental increases in parking fees and the introduction of dynamic pricing**, which would set rates higher for on-street parking versus garage parking and higher for the more in-demand garages as compared to the garages with more available capacity. No rate increases are suggested until the City's economy has largely recovered from the COVID-19 pandemic. The rate increases would help the City to keep up with inflation and fund

necessary projects. The discussion of this recommendation is included within the financing section of this chapter.

- **Implementation of a parking shuttle program**, including the development of a remote parking location. It is proposed that the implementation of a shuttle program coincides with parking deck construction. While Downtown Frederick is generally compact and walkable, a shuttle will ensure accessibility for people with disabilities, as well as providing a means to balance parking supply with demand and give employees an option to park remotely for low or no-cost.

- **Expansion of the role of the parking garages** to serve as mobility hubs by making investments in alternative transportation infrastructure to promote walking, biking, electric cars, and car-sharing.

- **Future circulator program**. A more robust circulator could help to reduce the number of vehicle trips in and out of Downtown Frederick from areas just outside of the downtown.

- **Marketing and communication.** It will be important to provide ongoing information to the Downtown Frederick community concerning parking and mobility options during the parking garage construction projects.

Each of these projects is discussed in more detail in this chapter, followed by an assessment of the City's parking structure options, and an analysis of funding these investments. The timing for these recommendations is largely dependent upon the economy returning to the pre-COVID 19 period of growth, which is expected to take 24 to 36 months.

REAL TIME PARKING AVAILABILITY PROGRAM

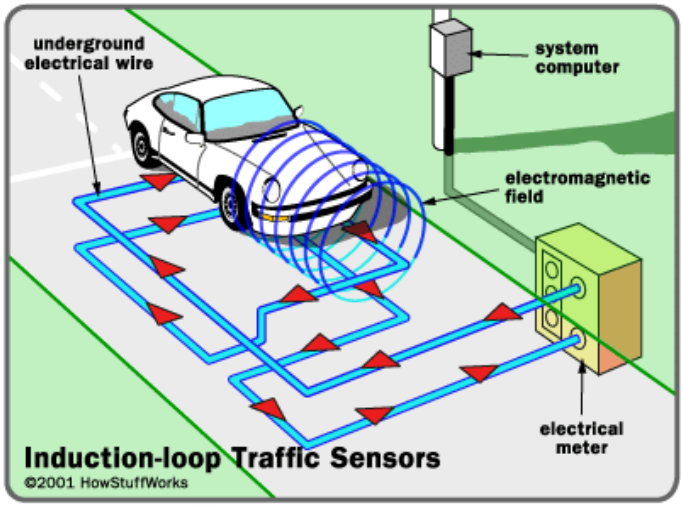
Several stakeholders discussed a desire to be able to access a mobile phone application (app) and view signage that would provide the user with real-time information regarding the availability of parking spaces at each of the Downtown Frederick garages. People could plan their trip into Downtown Frederick based on the information provided via the application, as well as through signage. Implementation of this type of program would help reduce downtown congestion caused by drivers attempting to park at a garage that is full, and would also give downtown visitors information they can use to plan their trip.

These applications are typically part of a larger Automated Parking Guidance System (APGS) that monitors and reports the availability of a particular parking space, zone in a parking facility, and/or the number of open parking spaces in an entire facility. These systems are commonly comprised of detector elements that report to controllers, which in turn communicate to a server that compiles and analyzes the data to determine where open spaces lie and how many there might be in a particular area, zone, or facility. This server

pushes this analysis out to dynamic signs, websites, and mobile phone applications to inform end users.

The oldest and simplest APGS use induction technology to determine whether a vehicle is present. Induction loops are large loops of heavy copper cable that are energized to create a magnetic field above the loop. When this magnetic field is interrupted, typically by the frame of a vehicle passing overhead, the loop detects the interruption and sends a signal to a controller indicating an activation. The controller separates the loop signals into counts of inbound or outbound vehicles, depending on where the loop is installed, and relays this information to the server. The server keeps a running count of vehicles entering or exiting a particular space, zone or facility and, as appropriate, adds (with an entry) or subtracts (with an exit) a vehicle from the original car count for the space, zone or facility at the start of operation to keep a running count of the number of vehicles present in that particular space, zone or facility. This figure is then subtracted for the capacity for the space, zone or facility and the result is transmitted to the output outlet as the number of open spaces.

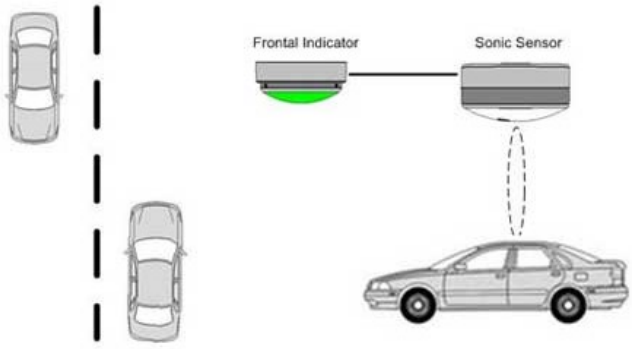
Induction loops are also commonly used to activate parking access control equipment in facilities such as ticket dispensers, gates, and in-lane pay stations so that these components can only operate when a vehicle is present. Some of the oldest APGS in the United States were simply these loops, located in every entry and exit lane for a particular facility, reporting back to the same server that ran the parking access control equipment, which in turn sent a signal to a dynamic sign located near the entrance of the facility providing a running count of the number of spaces available. In locations where the owners wanted to monitor occupancy by floor or zone, loops were installed in the entry and exit lanes for each floor or zone to provide information in that format.



Recently, many companies have started using a smaller version of the induction loop; a module containing a small but powerful induction loop, a battery, and the mechanisms to communicate wirelessly to a controller and relay station. These modules look similar to a hockey puck and are buried in each individual parking stall to provide real-time occupancy information to the system server on a space-by-space basis. The most sophisticated of these new systems are linked to a series of lights mounted over or next to each space that indicate whether the space is available and may also be tied into a signage system that guides the driver from the point they enter to the facility directly to an open parking space. These systems may also feed the data to website or smart phone application that displays which spaces are open on a map of the facility.

Induction technology, while simple, is time-tested and reliable. However, depending on the sensitivity of the unit, the field may require a significant mass of metal to disrupt the field.

Induction systems tuned to detect disruptions by passenger vehicles with metal frames may not detect the passage of a vehicle with a carbon fiber frame as there is not enough metal content to disrupt the field. Similarly, there are challenges with detecting the presence of motorcycles. Many systems employ sonic or infrared sensors that work off the same principal as induction-based systems. Sonic sensors emit a steady stream of ultrasonic sound into a parking space or across a threshold and listen to the return. When an object enters the parking space or passes over the threshold, the signal is interrupted and the return changes, indicating an event. For the systems that use infrared technology, the sensor issues a beam of light that is refracted back to the unit; when an object passes through the beam, the refraction in interrupted and an event is indicated.



All of these systems suffer from the same challenges. When used to monitor occupancy of a facility or zone, they are only as accurate as the starting count (i.e. number of vehicles parked in the facility) at the outset of operations and/or the accuracy of reported events. For example, if there are 15 vehicles parked in a zone or facility at the start of the day, but the system assumes the facility empty, the rolling count will always be off. Similarly, if the facility's capacity changes but that change is not entered into the system, the count will also be off.

Alternately, if a driver backs up crossing a threshold, the system may interpret that as two events if it is not designed with directional logic. Similarly, the vehicle exiting a particular zone, floor, or facility through the entry lane or the inverse can also throw the rolling count off. These examples appear minor, but if compounded over the course of a day, a week or even longer between calibrations, the errors can grow exponentially. [Note: systems in which one sensor is dedicated to each space are not subject to these issues as the count is based on activation or deactivation only and does not require a running count.]

The newest advance in APGS are camera-based systems which use either spatial-recognition software or License Plate Recognition (LPR) software to detect the presence of a vehicle. With spatial-recognition systems, video images are analyzed looking for objects of particular shape, mass, dimension, and/or color that correspond with the typical measures of an automobile. When a match between the image and the metrics is identified, the presence of a vehicle in a particular space or entering and/or exiting a particular zone, floor, or facility via a monitored threshold is recorded and reported. LPR based systems work much like spatial-recognition systems, but with these systems the camera captures images of the license plate of each vehicle entering its target zone and converts it to an alpha numeric sequence which is recorded as a parked vehicle.

These systems have an advantage over the systems previously described as the software tracks the number of vehicles parked or passing through a count area independently, rather than calculating occupancy based on activation signals, starting car count, and facility/zone/floor capacity. In addition, these systems can automatically detect direction of movement and interpret it, which cuts down on miscounting caused by unusual actions of individual drivers.

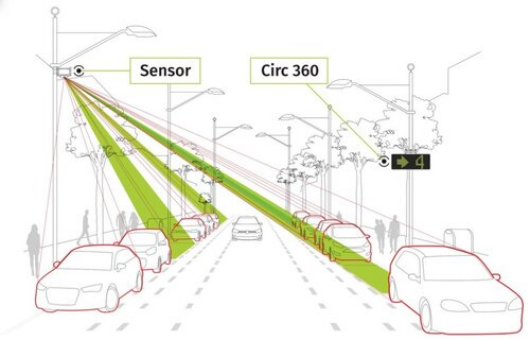
Camera-based systems are generally considered more accurate and dynamic. Manufacturers of spatial-recognition based systems claim they can track an individual vehicle in real time as it passes in, out and/or through a facility based on the vehicle's shape, mass and color; LPR-based system manufacturers can make the same claim. Depending on the particular system and facility, many manufacturers offer a feature where a driver can enter their vehicle's color, make and model or license plate number into a database via a kiosk and the system will pinpoint where the vehicle is parked. If these systems are used by public entities in conjunction with local law enforcement, they can also be effective in detecting stolen vehicles, BOLOs, Amber Alerts, and the like.

Read accuracy and reliability with these systems when first introduced was lower than the simpler technologies, but has improved substantially in recent years. However, these systems are only as good as the images they can capture and the software interpreting those images. Dirty cameras, low and dramatically changing light conditions, and unique vehicle designs can all impact accuracy in spatial-recognition systems. LPR systems can also be impacted by vehicles with dirty plates, obscured plates, or plates with certain characters and/or backgrounds.

For Frederick, it would be best to start with a simple system using induction loops at each facility's entry and exit lanes reporting to controllers and a server that sends availability information to a basic dynamic sign mounted near the entrance to each facility and to a smartphone application. Such a system is likely to run between $3,500 and $7,000 per lane for loops, controllers, servers and software, dynamic signage at each entry, and the application. We would recommend using one facility as pilot location to test the system first and validate its accuracy, utility and popularity before committing to a large-scale installation.

As part of this initiative, the City should also consider investing in 'trailblazing' dynamic signs along major arterials approaching downtown as well as the traditional monument signs outside the facility indicating the number of available spaces within. These variable message signs can direct drivers as they are coming into downtown to the nearest facility with capacity and can also be programmed to provide other information regarding traffic conditions, special events, and public notices. These signs can cost as little as $1,000 per unit up to several thousand dollars for the most sophisticated units.

Should the initiative prove popular, the City should consider one or more pilots for on-street parking. These systems would report on a space-by-space basis across a specific block face and generally use induction pucks or cameras with spatial-recognition software mounted on the poles of street lamps. Depending on the technology and manufacturer and the dynamics of the particular area to be monitored, the City should plan on spending between $3,000 and $5,500 per block face for hardware installation and system set-up and then a monthly subscription fee of between $450 and $1,700 per block.



While APGS should be integrated into the design for Deck Six and the new Church Street Garage, we would recommend the City consider piloting testing one or more off-street facilities and several block faces with on-street spaces in advance of the demolition of the existing Church Street Garage. This type of technology could be critical to helping displaced parkers find available spaces when the old garage comes down.

DEMOLITION AND RECONSTRUCTION OF THE CHURCH STREET GARAGE

There were mixed opinions among stakeholders concerning the future of the Church Street Garage. Some felt that the site is better suited for a mixed-use development, while others were emphatic that it is vital to provide some parking in the core of Downtown Frederick, particularly for visitors. While the addition of mixed uses to the site would have value, it should be noted that additional uses would add parking demand and reduce the number of available public parking spaces.

There are also concerns about demolition and reconstruction at the site, as it is a relatively small site surrounded by historic structures. The Church Street Garage is also a significant source of revenue for the City of Frederick's Parking Fund, generating close to $ 1 million in revenue in FY2019. It was also noted that any disruption in parking supply at the Church Street site will require some mitigation measures, such as a parking shuttle and a robust marketing and communications effort.

The stated need for parking supply in the core, coupled with the revenue generated by the site suggest that the Church Street Garage should be demolished and reconstructed with a second exit and additional alternative transportation infrastructure amenities. It should be noted that the 2004 Downtown Parking Plan also recommended the demolition and reconstruction of the Church Street Garage.

The site itself is quite constrained. The optimal site dimensions for a parking structure are at least 120' x 260'. The current structure is roughly 116' x 257' as shown in Figure 6-1. With this footprint, the structure has a total area of roughly 119,248 square feet, supporting a total of 393 spaces, or roughly 303 square feet per space. This is a fairly efficient design for this footprint. The parking space count could be increased by adding another vertical tier on top of or below the current design. Given the scale of the adjacent buildings and the known sub-surface conditions in Downtown Frederick, increasing the number of levels may not be feasible but should be explored to determine if additional spaces are possible on the site.

The City could potentially increase the length of the current structure by pushing the face of the structure out to the sidewalk fronting East Church Street, but this would only be a partial extension without demolishing the City-owned building currently housing the Downtown Frederick Partnership as well as the small amount of green space adjacent to the structure's entry and exit lanes. As DESMAN understands it, both this structure and that area are currently protected by existing regulations that would prevent the displacement of either to advance the footprint of a replacement parking structure. Furthermore, extending the face of the structure closer to East Church Street without including activated grade level uses would run against the City's codes and standards for the district.

Figure 6-1: Church Street Garage Site

Should the City move forward with demolition of the existing structure and replacement with a newer facility, they would be better served acquiring the defunct bank drive thru located due north of the existing structure, fronting on East 2nd Street. This 54' x 80' parcel could offer multiple benefits to a replacement facility. First, it potentially opens up a new point of access

and/or egress for the facility; this could be in addition to the existing access and egress to and from East Church Street.

Alternately, access and egress could potentially be shifted completely to this site, allowing for redevelopment of the 88' x 34' apron on the face of East Church Street to a higher and better use. However, were the City to elect to go this route, the designer would need to find a way to alter the design of the entry and exit points for the new facility to occur within this parcel, connect to the new structure, but do so in a manner that retained all the current accessibility along Market Space for abutting buildings. A hybrid design could preserve facility access off East Church Street and allow for partial redevelopment of the apron within the remaining space and push all facility egress to East 2nd Street. Regardless of the grade level design of the structure, the supported levels could conceivably extend laterally over Market Space towards East 2nd Street and expanded each supported floor of parking by roughly 5,400' square feet, providing an additional 14-17 spaces per floor.

The variations in the design aside, the City should move to demolish and replace the existing structure. Built in the 1970's, the facility has more than exceeded its initial lifecycle. This lifecycle can be extended through significant reinvestment in major repair and replacement, but not indefinitely. The City contemplated this kind of effort in the late 1990's and early 2000's, but such a project would have forced an extended closure of the facility to execute, at the risk of displacing patrons from one of the busiest and most sought-after facilities in the public parking system. It was feared this closure could potentially stall redevelopment efforts and a rising momentum in the surrounding area and would assuredly divert funds to be used to expand the City's parking system.

As a result, it is DESMAN's understanding that the decision was made to undertake a less aggressive program of perpetual major repair and replacement, which has slowed deterioration of the existing facility significantly, but not necessarily extended its lifespan. Even a major investment in restoration now would not address some of the obsolescence inherit in the original design. The current structure does not meet current standards for ventilation, energy use or accessibility.

A replacement facility would not only reset the lifecycle of the structure, allow for some of the design options already described, and bring the facility into alignment with current standards, it would also present the opportunity to make the facility a mobility hub within the downtown core. Inclusion of elements like secure and protected bicycle storage, and/or bicycle repair facilities could be built into the new design; should the City wish to bear the expense, the new facility could even include public lockers, changing facilities, or even showers. The facility or the newly expanded apron on East Church Street could offer an opportunity to install a bicycle share station and/or designated storage for rental scooters.

State of the art lighting and ventilation systems could reduce carbon emissions and installation of solar panels on the top floor of the facility could serve to partially power these systems. Presumably, electric vehicle charging stations would be part of this new facility, along with a robust electrical infrastructure that could support additional stations as the market expands. New

parking access control technology could provide the City with better data regarding the facility's operation and availability, which would enhance decision making and policy setting. Similarly, the data on current levels of occupancy could be sent to dynamic signage indicating the status of the facility to approaching drivers and directing entering drivers to the floor with the greatest concentration of open spaces. This data feed could also be communicated in real-time via the City's website or any number of applications for web-enabled devices.

The facility could also provide support to transit riders, bicyclists, and walkers by including a car sharing service location, providing informational kiosks in elevator lobbies regarding transit and rideshare services, and potentially designating open curb adjacent to the access and egress lanes for TNC pick-up and drop-off. It is also conceivable that a design could incorporate new office space that would allow the Parking Department to relocate from their current location in the Court Street Garage or offer a second service center.

Replacement of the existing facility will not be inexpensive. DESMAN estimates demolition and removal of the existing structure alone with cost roughly $2 million. The newer facility is likely to cost upwards of $23,500 per space in hard costs, inclusive of façade treatments congruent with the surrounding buildings, state-of-the-art technology, and many of the features previously described. With added soft costs, this would increase the cost per space to roughly $29,375; for a structure that replaces the existing capacity (393 spaces) and enhances it with the extension over the bank drive thru property (+45 spaces) the project cost could be as high as $12.9 million, exclusive of the cost to acquire the bank drive thru property, dedicated public lockers and/or showers, and/or fit out for new office space for the Parking Department. There may also be an opportunity to add a level, as well as going underground to provide additional spaces. Should these options be feasible, we estimate an additional above-ground level would cost an additional $2 million. A below-grade level is estimated to cost an additional $5 million.

Total project time would be roughly 24 months, with 9-12 of those months dedicated to demolition of the existing facility, site work, and construction of the new facility. During this period, it is recommended that the City implement a parking shuttle to convey displaced parkers to and from other parking facilities. This shuttle service is discussed in greater detail further on in the report.

CONSTRUCTION OF DECK SIX

One of the questions posed to the study team asked if a shuttle or circulator could be implemented in order to avoid the construction of Deck Six. The review of development data, development agreements, and stakeholder opinion revealed that Deck Six will be needed to accommodate existing planned development, even with a shuttle/circulator in operation. In point of fact, even with the provision of the 629 spaces associated with Deck Six, the area could still be subject to a potential parking supply shortfall should all planned and speculative developments in the area come to fruition.

The timing of Deck Six should coincide with signed, legal agreements with developers of projects on the East side of Downtown Frederick for the provision of parking by the City. This will assure that sufficient parking is available without over-building the supply of parking ahead of demand. There are two potential locations for the construction of Deck Six: the FCPS/Visitor Center parking lot and the USPS Employee parking lot on East Patrick Street. Both of these locations are within ½ mile of the Frederick Transportation Center, which would allow either site to be designated a Transit Oriented Development (TOD). The City of Frederick has applied for TOD designation for the area within ½ mile the Frederick Transportation Center. A TOD designation could allow the City to access technical assistance and alternative funding mechanisms, including garage financing through the Maryland Economic Development Corporation (MEDCO).

According to the Maryland Department of Transportation (MDOT), "TODs are to be automatically included in the interagency Sustainable Community designation, which implies eligibility/prioritization for several state discretionary programs and expanded scope for local use of Tax Increment Finance (TIF) for related projects."[1]

FCPS/Visitor Center Lot

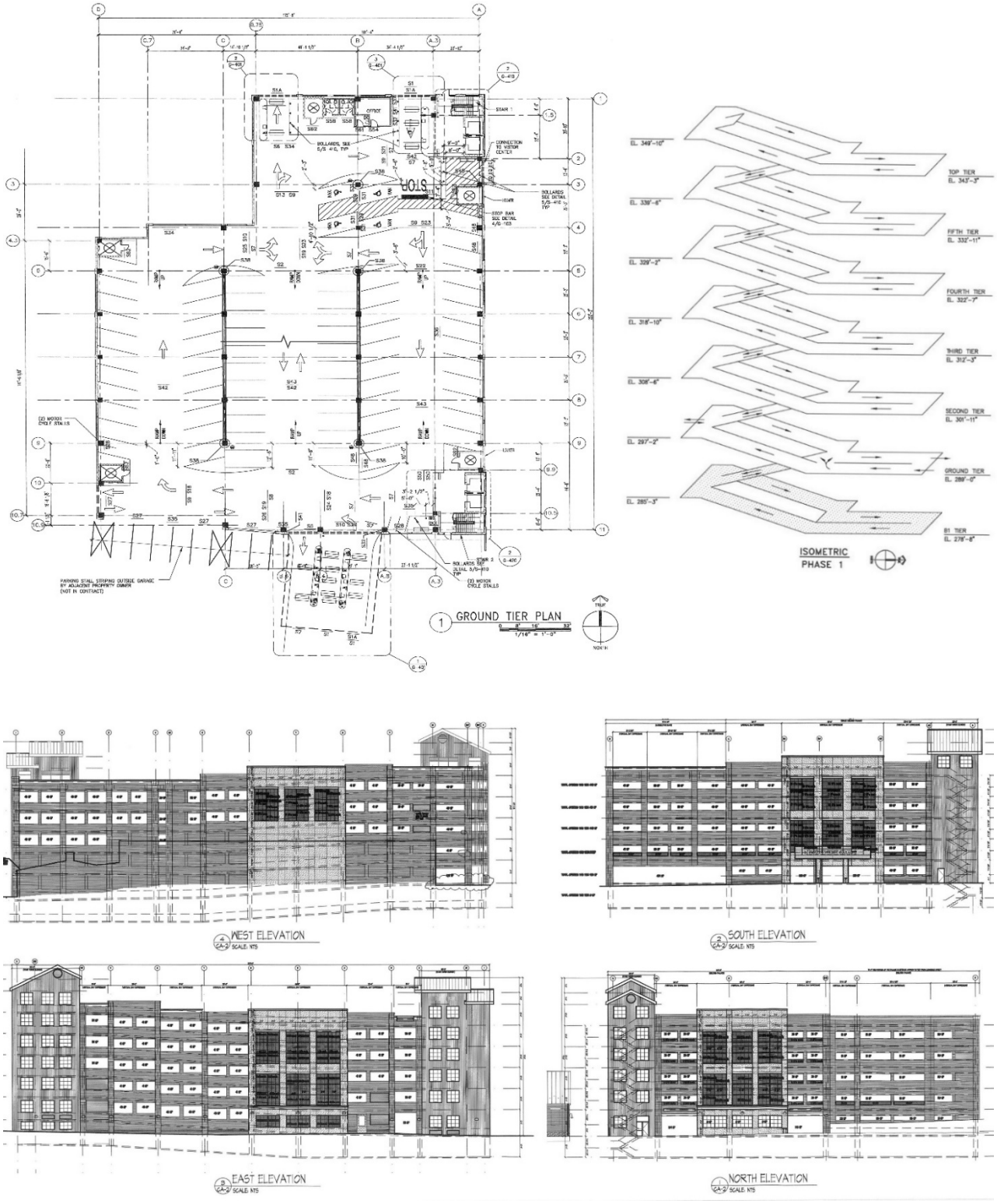
Deck Six was previously planned to be located over the public surface parking lot located between the National Park Service Historical Preservation Training Center, the Frederick Visitor Center, and the Frederick County Public Schools Building. The site lies between Commerce Street, South East Street, and East South Street, roughly one block southeast of the East All Saints Garage.

The structure for this site has already been designed and will feature one level below grade, one level at grade, and five supported levels. The facility will have three bays aligned south to north. Vertical flow will be via side-by-side helix, with upbound traffic climbing through the western most bay and half the center bay, and down bound traffic travelling along the eastern most bay and eastern half of the center bay. There will be three access lanes at the grade level off East South Street; one inbound,

[1] MDOT, "Transit-Oriented Development in Maryland," website, viewed December, 2020. https://data-maryland.opendata.arcgis.com/pages/tod

one outbound, and one reversible. In addition, there will be single inbound and single outbound lane off and onto Commerce Street. Design drawings are provided for reference in Figure 6-2.

Figure 6-2: Deck Six Design Drawings for FCPS/Visitor Center Location



Assuming a current market cost of $20,500 per space for labor and materials and 25% factor for soft costs, DESMAN estimates the total cost for the project to roughly $16.2 million. The project will displace some existing public parking, but as DESMAN understands it from discussions with the City, the majority of the individuals currently parking there will be accommodated in the East All Saints Garage, so the lost capacity at this location will be nominal. The estimated efficiency of the design is approximately 372 sf/space, based on an assumed total area of 234,474 square feet and a design capacity of 629 spaces.

The project is uniquely located to support redevelopment of the Galleria and One Commerce Plaza sites, as well as a future project at the Brickworks site, but is more than two blocks away from the planned Downtown Marriott at Carroll Creek and the proposed developments at the McHenry and McCutcheon's Mill sites and could not support the Visitation Academy redevelopment project or anything to be done at the U.S. Post Office site, should the latter come to fruition.

In terms of construction complexity, the site is challenging, given it is surrounded on all sides with active buildings. Staging and material laydown for the site is planned along Commerce Street and it is reasonable to assume that the construction process will be highly disruptive to the institutions and businesses immediate abutting the project site.

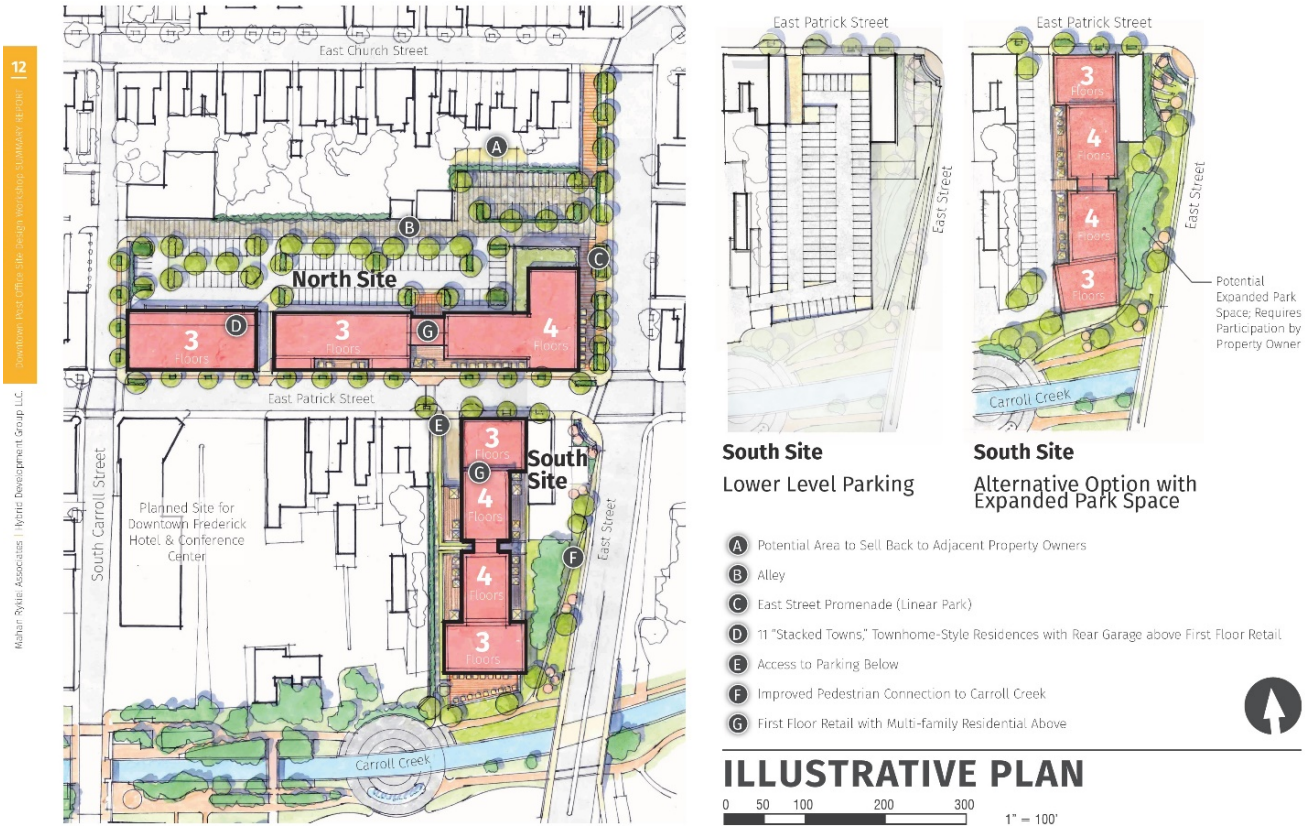
U.S. Post Office Site Options

During the study process the consulting team was asked to examine the potential for the Deck Six site to be re-located to the Postal Service employee lot on East Patrick Street. The study team indicated that this second site may more suitable for the construction of a parking garage, with fewer adjacent buildings to work around and likely a lower construction cost.

The site is an existing surface parking lot located on East Patrick Street, mid-block between South Carroll Street and South East Street. The lot contains roughly 120 parking spaces and is currently used by U.S. Postal Service employees. Presumably, the lot would no longer be needed if a redevelopment project advances on the Post Office site, allowing for redevelopment into structured parking. The lot measures roughly 119' in width by 292' in length (from the edge if the sidewalk to the rearmost fence line) and slopes downward from East Patrick Street toward Carroll Creek with a total drop of roughly 10', north to south.

This site has been identified in prior studies as a potential location for the next public parking structure (i.e. Deck Six) in Downtown Frederick. As recently as September 2016, a design concept was advanced via the *Downtown Frederick Post Office Site Design Workshop Summary Report* that proposed creation of a 105 to 110 space subgrade parking structure wrapped with 22,000 square feet of grade-level retail and 51,000 square feet of top-floor residential as shown in Exhibit 6-1.

Exhibit 6-1: Frederick Post Office Site Design Workshop Garage Concepts



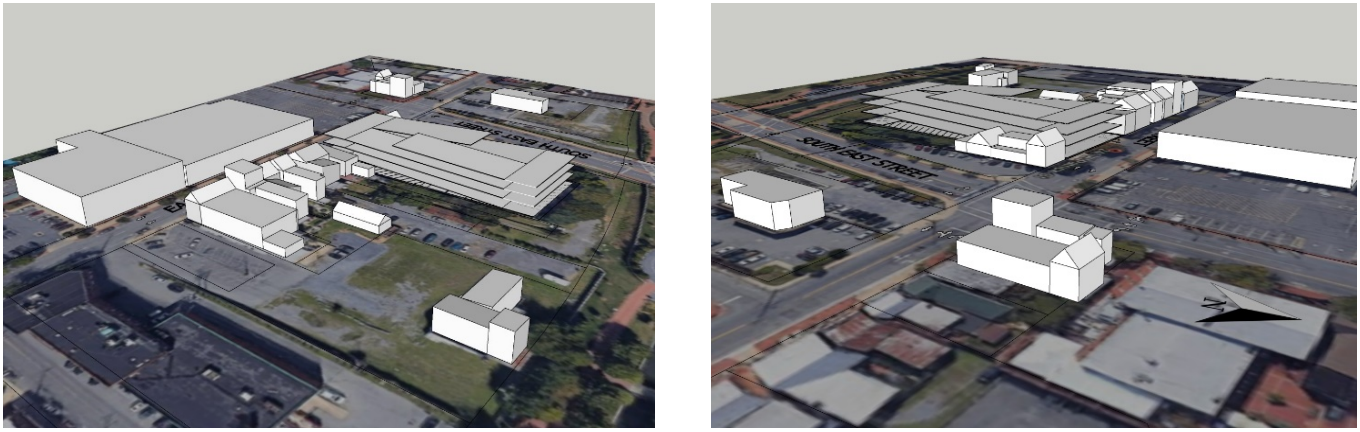
This site appears to be located within Frederick's Historic District. Historic Preservation Commission (HPC) Guidelines do offer a definition of vertical measure for buildings, but defer to Section 405 of the City Land Management Code on the subject of maximum building heights. The site appears to fall within the Downtown Business (DB) Zoning District, so the City's code would allow a building up to 75' in height. As the lowest level of the garage would actually be at grade with Carroll Creek, this ceiling could allow development of up to an eight-story parking structure on site.

As a general rule, parking facilities are most efficient when the site allows a facility width of 120' or more and a facility length of at least 260'. These geometrics allow for the design of facility that relies on sloped floor plates for vertical circulation, but with slopes shallow enough to allow individuals to park on them and navigate them on foot easily and safely. Floorplates shorter than the indicated length often rely on the use of 'speed ramps' to create vertical circulation, which are generally too steep to safely or comfortably park a vehicle upon.

Similarly, structure width determines whether drive aisles will support one- or two-way traffic flow and the angle of the parking stalls relative to the drive aisle. A facility with 120' or more in width will allow for two bays of parking, with each bay 60' in width and making up one half of the total floor plate. Within each bay there will be string of parking stalls along each wall of the bay, perpendicular to the two center drive aisles. A 60' bay will support two strings of 9' wide x 18' long, ninety-degree parking stalls with two 12' wide drive aisles between, one for travelling in each direction. This design is prized because it maximizes the amount of floor place which can be used for parking vehicles and is generally considered the easiest design to navigate for drivers.

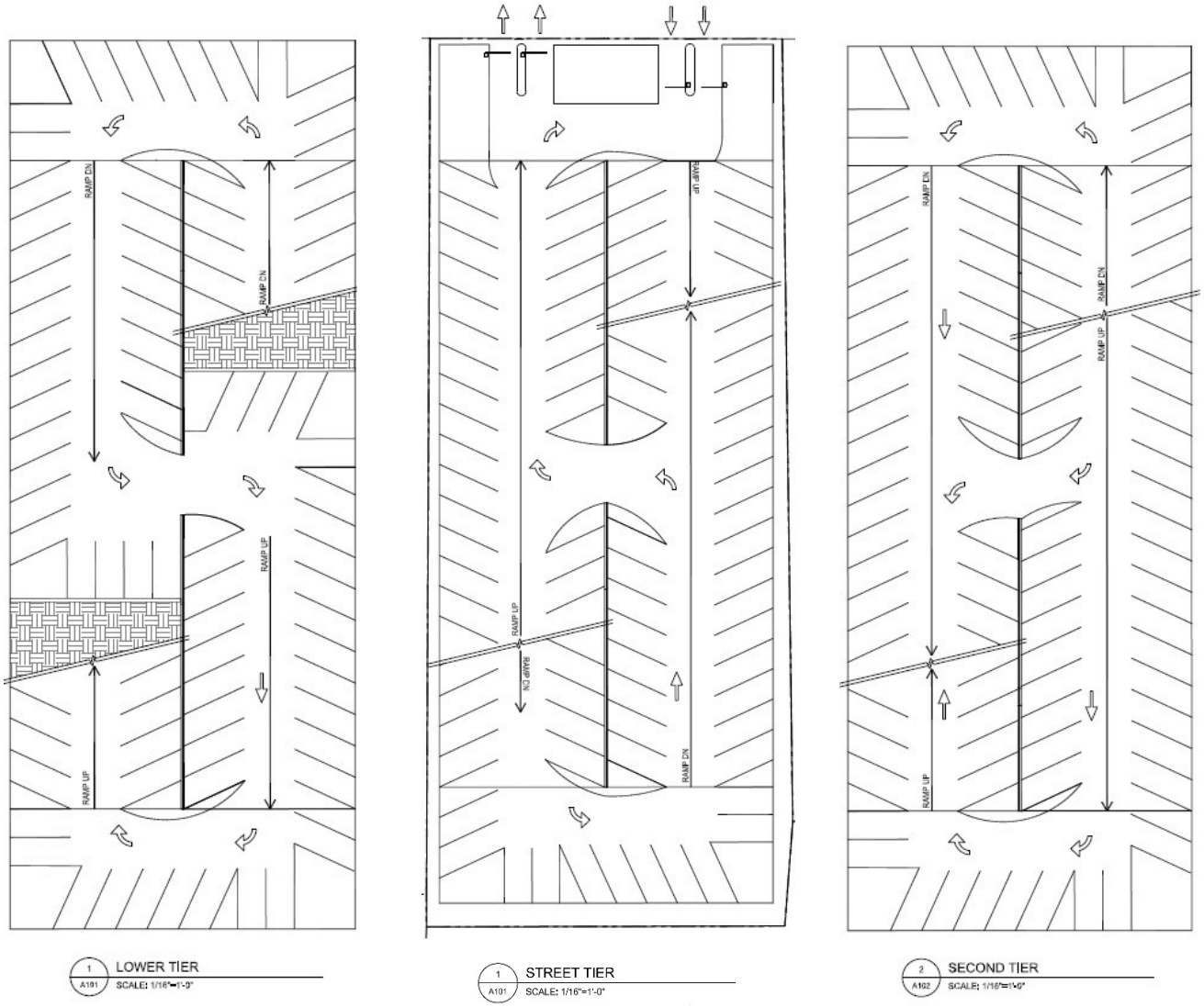
Access and egress would be on and off East Patrick Street at roughly the same locations as seen with the existing surface parking lot. If the whole of the site was dedicated exclusively to a parking structure, DESMAN estimates the resulting structure could carry 85-88 spaces per full floor plate. Building out to the maximum ceiling height would result in a parking facility of slightly more than 700 spaces, but the structure would tower over surrounding buildings. A smaller structure of just three supported levels would result in massing closer in scale to the surrounding area and result in a structure of up to 340 spaces. The massing examples are shown in Figure 6-2.

Figure 6-3: Post Office Deck Massing Examples



The site dimensions provide for adequate length (~ 292') for a parking structure, but slightly less than optimal width (~ 119'). As a result, the narrower footprint would mandate the use of angled parking with a one-way center drive aisle, but provide a reasonably gentle slope to achieve vertical circulation as shown in Figure 6-4. Assuming a total square footage of 104,244 for the structure and a 300-space capacity, the efficiency of the design would be roughly 348 square feet per space.

Figure 6-4: Post Office Deck Conceptual Floor Plates



Efficiency and functionality of the design could be impeded by the addition of additional land uses on the site. Conceptually, a structure of roughly 119' wide by 40' deep could be located at far northern end of the site, fronting East Patrick Street. The grade level of this structure would be truncated by the necessity of maintaining access aisles on and off East Patrick Street, but each supported floor roughly 4,760 square feet of gross area. However, the effect of this design change would be two-fold. First, it would eliminate roughly 15 spaces from each floor of the structure. Second, it would shorten the length of the structure from ~ 292' to ~ 252', just below the desired minimum run of 260'. As a result, ramps would need to increase in slope to achieve minimum necessary elevation between floors and potentially some of the parking spaces along these ramps could become unusable due to the increase in slope.

Assuming the core design of 300 spaces on a 119' x 292' floorplate, DESMAN estimates base construction costs at roughly $19,750 per space plus a 25% soft costs factor for a total project cost of approximately $7.4 million. However, this does not include the cost of land acquisition, which could be considerable.

The project is well located to support the planned Downtown Marriott at Carroll Creek and could support the Visitation Academy redevelopment project. The structure would be less than a block from the McHenry site and just across Carroll Creek from the Galleria site. Potential employees, patrons, residents, or visitors to the projects that will eventually occupy the McCutcheon's Mill or One Commerce Plaza sites would likely find the facility inconvenient relative to other options.

In terms of construction complexity, the site is challenging, given it is surrounded on two sides with active buildings. However, staging and material laydown could occur at far south end of the site, on a parcel abutting Carroll Creek, which would be only moderately disruptive to existing residents and area businesses.

One of the critical factors for the City to consider when evaluating this opportunity is the challenge of acquiring the land from the USPS. If the development planned for the Post Office site north of East Patrick Street is largely self-contained and self-supporting, the USPS may be inclined to transfer the land at fair market cost to the City as it will no longer have critical value as either an employee parking facility once the redevelopment project initiates.

Inversely, if the developer requires the site for parking, but in a limited amount, it may make sense for the City to execute the project as a public/private venture. The terms of these partnerships can vary widely, but often the private entity who owns the land is willing to waive lease fees in exchange for some benefit and/or contribution from the City such as tax abatements, access to tax-exempt financing vehicles, contributions to the capital and/or operating costs of the project, revenue sharing, etc. In such instances, it is not uncommon for the City to accept the role of primary owner and operator of the completed parking structure.

In instances where the developer requires the majority of the site for their own parking or other uses, but is willing to entertain partnership proposals, it is common for the municipal body to essentially purchase a portion of the project for public use. Often these transactions are a simple purchase arrangement, governed by easements and covenants which assure access by the general public to the City's portion of the facility.

It is DESMAN's understanding that the U.S. Post Office site is being actively promoted to developers, but has not be awarded to date. The City should take this opportunity to vet out potential uses and deal structures for the proposed site with each prospective developer to gain an understanding of what may or may not be possible at this location.

EXPLORATION OF PARTNERSHIPS

During the stakeholder interviews there was a significant level of interest in pursuing the development of a public parking garage that could serve North Market Street. Currently the most northern garage in Downtown Frederick is the Church Street Garage. The site of the former Carmack Jay's store on North Market Street, between Third and Fourth Streets, was identified as a potential location. This site is owned by a private developer and is adjacent to a city-owned parking lot.

Given the need to include some uses other than parking on the site, the City approached the developer to see if they would be interested in a joint development using the City-owned parking lot and the developer-owned lot, to include a garage, along with other uses. The developer is interested and is working with the City on design possibilities. In order to make it worthwhile for the City to participate, there will need to be a sufficient number of public parking spaces provided.

As the City continues to grow, there may be additional mixed-use partnership opportunities that would allow the City to provide additional public parking options.

When evaluating potential public/private ventures, there are a number of partnership models. These generally fall into one of three general agreements:

1. **Municipally Led Partnerships** where the municipality acts as the principal Owner and developer, with the Private entity contributing capital or some other fiscal benefit to facilitate development and operation of a structure.

2. **Privately Led Partnerships** where the Private entity acts as the principal Owner and developer, with the municipality contributing capital or some other fiscal benefit to facilitate development and operation of a structure.

3. **Creation of a Special Purpose Entity** (**"SPE"**), an independent agency formed specifically for the purpose of executing a project. With an SPE, both parties are equal partners in the venture with clearly defined roles and responsibilities.

Municipally Led Partnerships

It is common for the municipality to take the lead in developing and/or operating a parking structure for several reasons. First and foremost, municipalities traditionally have been able to access tax-exempt financing at better interest rates and terms than a private developer could negotiate with a lender. In addition, most communities perceive parking as a public utility – and therefore under the jurisdiction of the municipality – rather than a development or business asset. Finally, outside a select number of major cities, operating a parking structure rarely returns enough gross revenue to make it a profitable enterprise. Without a profit motive, the only other common incentive for developing a structure is support community development and commerce, which is commonly considered the province of local government. Scenarios where the municipality takes lead include the following:

1. The Municipality as Owner, with the Private entity contributing capital towards the project to pay for a portion of the development cost. In the case of Carmack Jay's this payment would correlate to the Private entity buying "X" number of spaces in the finished garage to address whatever parking demand that new development will create when completed.

2. The City as Owner, with the Developer agreeing to waive lease rights (in lieu of capital contribution) for consideration of "X" number of spaces. This may or may not include an agreement to also share in revenue.

3. The City as Owner, with the Developer agreeing to a long-term lease of "X" number of spaces. These leases may or may not be at reduced cost due to a waiver of their lease rights.

<u>Benefits</u>

- The City would maintain their ownership interest in the property on which the garage is built, which could be a fair exchange for the loss of the land occupied by the North Market Street Lot.
- The City may have access to tax-exempt financing for the portion of construction that will be debt-financed, resulting in lower borrowing costs.
- The Developer will be guaranteed a certain number of spaces in the garage for the term of the agreement.
- The Developer's contribution provides for either a) a reduction in total capital cost for the project, b) a reduce in operating expenses by waiving lease rights, or c) a guaranteed revenue stream to offset the cost of financing and operations.

<u>Liabilities</u>

- The majority cost of development would fall on the City.
- The City will not have complete control of the parking garage.
- The Developer may not have a direct interest in properly operating and maintaining their portion of the garage due to the fact that they do not have an ownership interest.

- The spaces dedicated to the development would not be available for use by the general public, unless permitted by the Developer.
- Responsibility for the operation and maintenance of the garage would fall largely to the City, including any shortfall between the revenues generated and expenses incurred.
- The spaces controlled by the Developer may not provide any ongoing revenue stream to the City that can be used toward the payment of debt service on the garage, depending on the arrangement made between the two parties.
- Depending on the terms of revenue sharing, gross revenues needed to cover the cost of operation and debt service could be reduced.
- Depending on tax law, revenues received by the Developer from the garage under a sharing agreement may be taxable income.

Privately Led Partnerships

Parking structures are expensive to develop, so there needs to be a strong incentive for a Private entity to take the lead on a public-private project. Most often, the Private entity has already committed to building a structure to meet the parking requirement of a new development and invites the municipality into the project in exchange for some consideration in permitting or easements. Occasionally, the Private entity will seek a public partner if building the facility larger results in greater scales of economy, thereby reducing the Private entity's net cost. Occasionally, the Private entity will agree to lead the process to control the design and/or construction process in hopes of controlling costs or expediting the development schedule. Scenarios where the Private entity takes the lead include the following:

1. The Private Entity as Owner, with the City agreeing to a fixed capital contribution for "X" spaces in the finished facility.

2. The Private entity as the Owner, with the City agreeing to lease a fixed number of spaces from them to offer to the general public.

3. The Private Entity as the Owner under a revenue sharing agreement that recognizes the City's waiver of property rights on the site.

<u>Benefits</u>

- The full cost of development would fall largely on the Developer.
- The City would not be responsible for the ongoing costs of operating or maintaining the garage.
- Under the first two options, the City would not contribute any upfront capital to the cost of development.
- Under the third option, the City will be guaranteed an ongoing revenue stream.
- Actual construction of the garage may be less expensive and take less time than if a public entity controlled the process.

Liabilities

- The City would relinquish their ownership rights to the public portion of the property.
- The City will not have control of who uses the parking garage; there is no guarantee that a certain number of spaces will be made available to the general public beyond those dedicated according to the agreement.
- The City will not control the setting of rates for the parking spaces in the garage.
- The ongoing revenue stream to the City will vary depending on the performance of the garage.
- The City will need to ensure that the overall garage is maintained properly over the long-term in order to best serve the public, but with no actual ownership interest in the garage.

Public-Private Partnerships and Special Purpose Entities

A public–private partnership (PPP) is a government service or private business venture that is funded and operated through a partnership of a public entity and one or more private sector companies. PPP involves a contract between a public entity and a private party, in which the private party provides a public service or project and assumes substantial financial, technical and operational risk in the project. In some types of PPP, like parking garages in major municipalities or on closed campuses, the cost of using the service is born exclusively by the end users of the facility and not by the taxpayer. In other types (notably the private finance initiative), capital investment is made by the private sector on the basis of a contract with a public entity to provide agreed services and the cost of providing the service is born wholly or in part by the public entity. Public contributions to a PPP may also be in-kind (notably the transfer of existing assets). In projects that are aimed at creating public goods, like a parking structure, the public entity may provide a capital subsidy in the form of a one-time grant, so as to make it more attractive to the private investors. In some other cases, the public entity may support the project by providing revenue subsidies, including tax breaks or guaranteed annual revenues for a fixed time period.

There are usually two fundamental drivers for PPPs. First, PPPs are claimed to enable the public sector to harness the expertise and efficiencies that the private sector can bring to the delivery of facilities and services traditionally procured and delivered by the public sector. Second, a PPP is structured so that the public sector body seeking to make a capital investment does not incur any borrowing. Rather, the PPP borrowing is incurred by the private sector vehicle implementing the project. On PPP projects where the cost of using the service is intended to be born exclusively by the end user, the PPP is, from the public sector's perspective, an "off-balance sheet" method of financing the delivery of new public assets. On PPP projects where the public sector intends to compensate the private sector through availability payments once the facility is established, the financing is, from the public sector's perspective, "on-balance sheet", however the public sector will regularly benefit from significantly subsidized cash flows.

Examples of PPP's and SPE's include the following:

1. The City acquires the financing for the garage and manages the design and construction. Upon completion, the Developer agrees to purchase or lease and operate the garage long-

term. The City retains first right of refusal to purchase the garage at fair market value once the debt service on the structure has been retired.

2. The Developer builds the garage out of their own pocket and then leases/sells/deeds a portion to the City. This is often done in conjunction with creation of a Business Improvement District ("BID") or Tax Incremental Financing ("TIF") District where the City pays for the annual lease or loan payment on their portion of the garage through the funds generated by the assessment.

3. The Developer builds the garage and guarantees rights of access to the majority of the facility for the general public in exchange for capital contributions, tax abatements, or other incentives offered by the City. The City is contracted to manage and maintain the facility. Debt services, gross revenues and operating expenses are split between the two parties according to the terms of the agreement. When the debt service of the property is retired, either party may buy the other out of their portion of the project at fair market value.

Other options beyond these have been negotiated between municipalities and private developers on a project-by-project basis; there is no fixed format for structuring a PPP. For example, a Developer could build the structure under a Design/Build/Own/Operate contract with the City agreeing to provide fixed revenues from parking meter/ garage/ permit revenues and parking citation fines to the project. The Developer would need to pledge that a certain number of spaces in the facility would be maintained for public access at rates set by the City in return for a waiver on lease rights to the portion of the site owned by the City.

Alternately, the City could take on the role of Owner and Operator, but require the Developer execute the Design/Build contract and pledge to guarantee a fixed revenue stream from the private project tenants each year. In exchange for a waiver on lease rights for the private property absorbed by the new facility, the City would guarantee a fixed number of spaces for the Developer's exclusive use.

The benefits of this type of structure are broadly the ability to access tax-exempt financing by private developers, the ability to share risk in the venture between parties, and the flexibility to structure an agreement customized to the needs of both the Developer and the City.

ASSESSMENT OF PARKING STRUCTURE OPTIONS

To summarize, the City of Frederick has four options for introducing more structured parking supply into downtown. These are:

Church Street Garage

Replacement of the existing Church Street Garage with a newer facility of at least the same capacity has been recommended for almost 20 years. Demolition of the existing structure will be costly, complicated, and inconvenient and development of a new facility is likely to be an

expensive and lengthy process. During the period of demolition and reconstruction, hundreds of monthly lease holders and thousands of transients will need to be directed to alternate facilities. Finally, loss of the existing facility stands to cost the City upwards of $1 million per year in lost gross income.

Despite this, we recommend the City move forward with this initiative as soon as arrangements have been made to support the community during the demolition and reconstruction process. The new facility will enjoy the benefits of over 40 years of evolution in parking facility and urban design that will result in a facility that is more durable, aesthetically pleasing, environmentally sustainable, and welcoming than its predecessor. There may also be an opportunity to expand the structure vertically and so increase the parking capacity and ability to incorporate additional amenities. The design process will afford multiple opportunities for the City to support and promote other, more environmentally modes of transportation and operation and the newer facility will save the City tens of thousands of dollars per year in major repair and replacement to simply maintain the use, but not improve the appearance or operation, of the existing structure. Finally, replacing the existing structure will offer the City the opportunity to test out the latest advancements in parking guidance and reporting technology before committing to its installation across the rest of the assets within the system.

Deck Six at FCPS/Visitor's Center Lot

Construction of the 629-space Deck Six has previously been planned to occur over the public surface parking lot located between the National Park Service Historical Preservation Training Center, the Frederick Visitor Center, and the Frederick County Public Schools Building. This location is best suited for supporting proposed development projects at the Galleria and One Commerce Plaza sites and is within reasonable walking distance of the McCutcheon's Mill project site. This project could also support efforts to lease up the vacant office space in the Shaefer Building as it would allow transfer of some monthly contract parkers out of the nearby East All Saints Garage, creating capacity to support the City's commitment to provide up to 146 spaces for new tenants.

The site is constrained by existing buildings on three sides and would displace roughly 91 existing public parking spaces. Execution of this project is likely to disrupt traffic flow around the area as there is no room to laydown materials or equipment on the actual site during construction. However, the City already owns the site and design is largely complete.

Some disadvantages of this site are that it does not directly support existing and proposed developments in the Patrick Street corridor, including Shab Row, the proposed downtown hotel and any re-development that occurs at the Post Office site. A parking garage at the FCPS/Visitor Center lot site would also likely not have as much overall usage as one on East Patrick Street, as the surrounding land uses are not active in the evenings.

Deck Six at USPS

The USPS employee lot on East Patrick Street could potentially support the development of a parking structure of somewhere between roughly 300 and 700 spaces, depending upon the size permitted and to what extent other uses are included on the site. This location would be well-suited to supporting the existing development along Shab Row, the proposed Downtown Marriott and Conference Center development, the redevelopment of the McHenry site, and of course, the existing USPS site. A structure here could potentially also serve the Galleria, One Commerce, and McCutcheon's Mill sites, but this could require a structure that would dwarf the surrounding buildings to meet target capacity.

It should also be noted that the site is currently owned by the U.S. Postal Service, and the City will need to negotiate with them for the rights to build on the site, as well as to accommodate the employees who currently park there. In addition, several prior planning processes have indicated the community would prefer to see other land uses such as grade-level commercial space and upper story residential units included in the design for any structured parking on this site. The inclusion of mixed uses would add parking demand and reduce the number of public parking spaces available.

However, the analysis of future conditions presented earlier in this report indicated that, should all the potential developments considered advance, there could be demand for both Deck Six at the FCPS/Visitor Center lot and at a second facility on the Post Office site. Should the development plans advance for the USPS site, we would recommend the City consider entering into a public/private partnership with the site developer. Conceptually, this could be privately-led partnership wherein the City would purchase a fixed number of finished spaces within the facility for use by the general public in a one-time transfer of capital.

Finally, we would recommend the City (and their private partner) consider a facility design conducive to future conversion as needed. Prior to the current pandemic, use of alternative modes of transportation such as bike share, TNCs, and local and regional transit were eroding the demand for parking in urban centers and the introduction of fully autonomous vehicles promised to further this trend. While it will take some time for these trends to recover their prior momentum, it is almost assured that traffic congestion, the rising cost of gasoline, intense competition for open space for higher and better land uses, and climate change will eventually begin to push individuals away from driving and parking in urban cores. When this occurs, a facility design with the structure framework conducive to the higher live loads associated with office, commercial and/or residential uses and shorter-span construction will help with repurposing parking structures to other uses when they are no longer needed.

Carmack Jay's

Depending on the timing of the redevelopment on the site, this project could present the City with an opportunity to work through the specifics of establishing a mutually agreeable public/private partnership with a private developer on a smaller scale before pursuing potential opportunities around the USPS site. As with that project, we would recommend this project

advance a privately-led effort with the City negotiating rights to a portion of the project under an agreement that recognizes the City's loss of the 55-space North Market lot and the underlying land. Additional participation by the City would be appropriate if a sufficient number of public parking spaces were to be constructed.

PARKING SHUTTLE AND REMOTE LOT

The implementation of a parking shuttle and the development of a remote parking lot is recommended to coincide with disruption to the parking garage system. The introductory shuttle program will focus on providing service for parkers displaced by the demolition and reconstruction of the Church Street Garage. The initial purpose of this shuttle will be to balance parking demand and supply, substituting spaces at other Downtown Frederick parking garages and a remote lot for the spaces lost at the Church Street Garage during construction. While it is recognized that Downtown Frederick is compact and walkable, there are people who are unable to walk more than a short distance and would need to use the services of a shuttle.

In addition, the development of a remote lot and shuttle program would introduce the possibility of employees parking remotely for free and taking a shuttle to their Downtown Frederick work location. This could potentially save them, or their employers, the cost of a monthly parking garage pass while at the same time freeing up space for transient parkers. Employers who currently subsidize employee parking in Downtown Frederick (including the City and the County) could, at their discretion, provide a choice for employees in Downtown Frederick to either have a garage parking pass, or the equivalent (currently $97 a month) as a payment. This concept is called "parking cash-out" and is well-documented in Donald Shoup's ***Parking Cash Out*** report, prepared for the American Planning Association's Planning Advisory Service. This report is a companion to Shoup's ***The High Cost of Free Parking***. The premise of parking cash-out policies is that there are a number of benefits realized by subsidizing people, not parking, such as:

- Giving commuters a new choice;
- Rewarding the alternatives to solo driving;
- Reducing vehicle trips;
- Relatively low cost;
- Treating all commuters equally.[2]

This type of benefit should apply to all employees who choose a mode of transportation other than the single occupant vehicle, including transit, cycling, and walking. This type of program is also commonly used to provide transit passes in lieu of parking passes, particularly in the Washington, DC area. This program could be implemented with or without the shuttle to further encourage the use of alternative modes of transportation.

For Downtown Frederick, it is likely that there would need to be some sort of caveat or enforcement to ensure that employees who take advantage of this program are not replacing garage parking with free, on-street parking that displaces residents.

[2] Shoup, Donald. *Parking Cash Out.* Planners Advisory Service (PAS), American Planning Association, 2005.

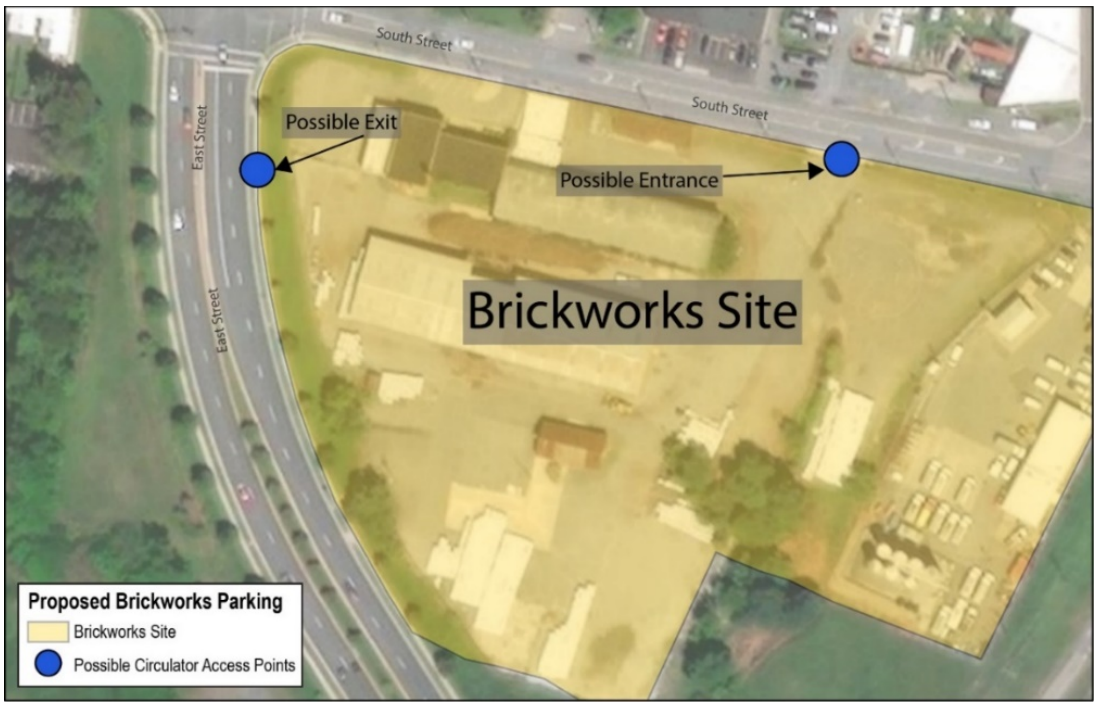
Remote Lot

The preferred location for a remote lot is at the Brickworks site, at the corner of East and South Streets, as discussed within Chapter 4. This location is shown in Figure 6-5. If the Brickworks site is not available for the City to lease, the City could choose to run the parking shuttle without having a remote lot and use the shuttle to balance the demand, or the City could look to alternate sites and adjust the shuttle route. It should be noted that parking options that are farther away from the core of Downtown Frederick will result in increased operating expenses for the shuttle, as well as increased travel time for users. Other options for a park and ride site could include:

- The Great Frederick Fairgrounds, located east of Downtown Frederick along E. Patrick St.
- Under-utilized properties along East St.

A site east of Downtown Frederick is preferred, given the proximity to I-70 and the Frederick Transportation Center.

Figure 6-5: Brickworks Site – Potential Remote Parking Location

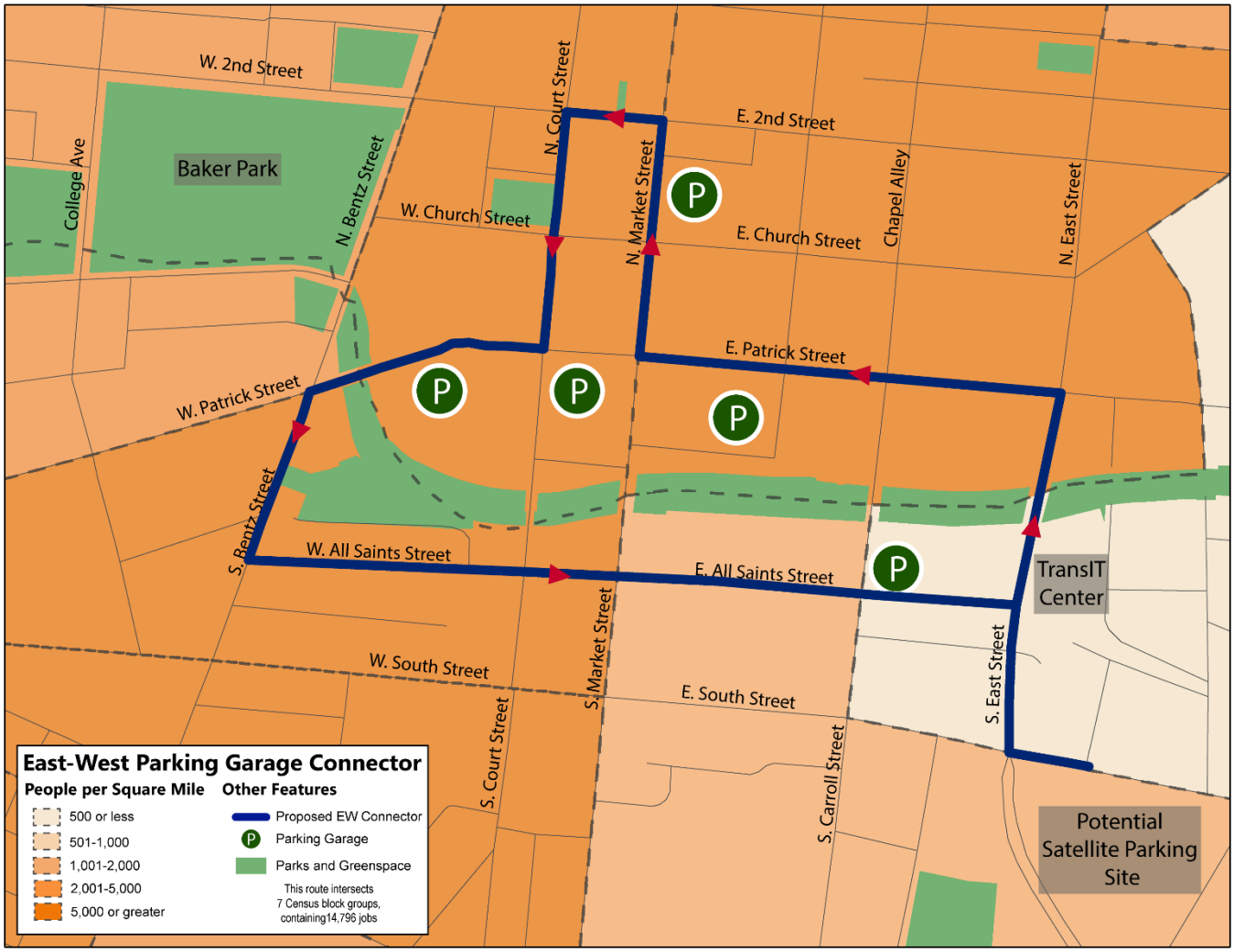


Preferred Route

The preferred route for a parking shuttle is provided in Figure 6-6. This route serves all of the garages, either directly or within one block, as well as the Transit Center, Market Street, and City Hall. It provides East-West connections through Downtown Frederick on a short loop. If the Brickworks site is not a viable option, the route could operate without a park and ride option, balancing parking demand among the existing parking infrastructure. If additional parking

options are needed, a site east of downtown is preferred, given its easy access to I-70 and its proximity to the transit center, the Visitor Center, and major planned developments.

Figure 6-6: Proposed Introductory Parking Shuttle Route



Cost

The first phase of the shuttle service will be needed when the Church Street Garage is taken out of service for demolition and reconstruction. It is anticipated that the service will need to operate daily on the following schedule: M-S, 14-hour span of service; Sunday, 10- hour span of service. The cost estimate for providing this level of service with 2 vehicles (7.5-10- minute headways) is $724,880 annually. These prices include the cost of the vehicle, assuming it is operated by a contractor.

Oversight

The City will need to determine whether to partner with TransIT Services of Frederick County to implement a shuttle, or to publish a request for proposals (RFP) to hire a private contractor to operate the shuttle. Under either scenario, the City should specify the type of vehicle desired and that the contractor needs to provide the vehicle(s).

Key Features

Outreach to stakeholders determined that the following characteristics will be necessary for a parking shuttle to be successful:

- Use of an alternative-fueled vehicle, preferably one that looks like a trolley.
- Frequent service.
- Real-time schedule information (i.e. a bus tracker application).
- Driver serves as a Downtown Frederick ambassador.
- Fare-free.
- Accessible for people with disabilities.
- Well publicized.

EXPANDED ALTERNATIVE TRANSPORTATION OPTIONS

Parking Garages as Mobility Hubs

As the study team conducted research for the alternative transportation options portion of the plan, the concept of adding mobility amenities within the garages emerged. These structures provide opportunities not just for storing cars, but for charging electric vehicles; parking and staging shared bicycles and potentially scooters; staging ride-hailing vehicles; storing car sharing vehicles; and perhaps in the future serving as holding areas for autonomous vehicles.

Promotion of Walking

As documented in Chapter 5, the City has made considerable efforts to improve the pedestrian experience. Additional efforts could include the installation of walking maps at the exits of the downtown parking garages to show the number of steps to various points of interest. The cost to implement these types of maps would include the development of the map, as well as the signs themselves. A planning estimate of $10,000 has been assigned for this initiative.

Potential Additional Bicycle Initiatives

Increase Bike Parking

The need for additional and more visible bicycle parking was articulated by stakeholders. One particular model has been used in other communities and is highlighted in Exhibit 6-2. This

model is similar to the parklets currently in operation in Downtown Frederick, which are being used by restaurants to help increase their outside seating in response to the COVID-19 pandemic. The concept is to use on-street vehicle parking spaces to provide protected bicycle parking. These bicycle parklets or corrals can accommodate about 10 bicycles per vehicle parking space. The cost for these corrals is about $1,000 each.

Exhibit 6-2: On-Street Bicycle Parking Corral

Source: Google Images

There are other creative options to add bicycle parking in park areas, similar to the one recently installed along Carroll Creek. These are highlighted in Exhibit 6-3.

Exhibit 6-3: Creative Bicycle Rack Examples

Source: Google Images

Bike Share

During the stakeholder outreach, the need for a bike share program was brought up in more than one of the sessions. The City conducted a bike share feasibility study in 2013, which provided the following recommendations:

- The City has the potential to support a bike share system of between 250 and 300 bicycles and 25 to 30 bike stations.
- A bike share program could be implemented in phases, starting in Downtown Frederick, followed by the Patrick Street Corridor, and the northeast and southwest areas of the City.
- The City should consider subscribing to the Capital Bikeshare system through existing agreements, since the City is a member of the Metropolitan Washington Council of Governments. [3]

The recommendations also acknowledged that there were some challenges with regard to implementing a bike share program. These were:

- Existing organizational capacity and staffing; and
- Funding.

Suggested ways to overcome these challenges included searching for grant opportunities that may provide funding for staffing capacity, as well as allowing advertising revenue as part of the program.

Since the conclusion of the 2013 bike share feasibility study, the bike share arena has matured and there are additional options for the City to consider. There is at least one company ("Onbikeshare") that sells complete "turn-key" bike share systems to corporate campuses, colleges, and municipalities. The system includes the bikes, the racks, the locks, and the software to run the system. Purchasers of the system can also include a maintenance program so that a third-party contractor maintains the bikes. Under this type of arrangement, the city would own the infrastructure.

Photo from Onbikeshare site

The City could start with a small pilot program based in Downtown Frederick with 10 bikes based at each of the city's garages, for a total of 50 bikes. A planning estimate based on the cost

[3] Frederick Bike Share Feasibility Analysis, prepared by Toole Design Group for the City of Frederick and the Maryland Department of Transportation, November 2013.

estimates from "Onbikeshare" indicated that the capital cost to start such a program would be about $60,000 and the annual maintenance costs would be about $20,000. A part-time coordinator would likely be required to manage the program.

Scooters and Other Wheeled Devices

Scooters and other wheeled devices have become increasingly popular mobility options in recent years. Dockless shared electric scooters, equipped with digital trackers and credit card swipe technology, are owned by private companies and dispersed throughout cities. Users can locate an available scooter using a smartphone application, swipe their card, and ride to their destination. The scooter is then left for someone else to use.

As dockless scooter companies have multiplied and launched their products, cities have struggled with how to manage these mobility devices to keep riders and the public safe. Some of the companies have launched their programs in cities without asking permission or obtaining guidance from local officials. This has led to a number of safety concerns, as well as "littering" of equipment.

In response to these concerns, the City of Frederick adopted a six-month moratorium on the commercially available devices in March of 2019 to give staff time to formulate appropriate regulations. The moratorium expired on October 1, 2019, at which time the City decided to continue the ban on commercially-available shared electric scooters. While currently banned, the city may wish to allow them in the future with appropriate regulations. An example of a set of regulations from Montgomery County is outlined in Chapter 5, as are examples of designated scooter parking areas from the University of Maryland, College Park. Downtown Frederick's parking garages would be natural locations for the storage of these devices, if permitted.

Taxis and Transportation Network Companies

Taxis and transportation network companies (TNCs) are an integral part of the mobility landscape in Downtown Frederick. These services provide mobility options for people who don't have a personal automobile available, as well as for people who are unable or choose not to drive.

The City of Frederick regulates taxicabs, requiring operators to obtain a taxicab permit, with annual renewals. A taxicab driver's license is also required. Transportation network companies (TNCs) are not as strictly regulated by the city, but are required to pay a fee of $0.25 per trip for each trip that originates in the city. The fees collected go to the city's general transportation fund.

In term of infrastructure, both of these types of vehicles for hire require vehicle stands so that customers can get picked up and dropped off safely. The city has five vehicle stands currently in Downtown Frederick to accommodate for-hire vehicles. For special events, the Frederick Downtown Partnership has on occasion added additional vehicle stands to accommodate the increased demand. In terms of Downtown Frederick parking infrastructure, it will be important to accommodate for-hire vehicles as additional development occurs in Downtown Frederick.

Carsharing

Carsharing refers to the practice of renting a vehicle for a short period of time, rather than for a full day or longer. Providing the mobility offered by a car without the expense of car ownership, carsharing is well-established in large cities and university settings where walking and public transportation can meet most day-to-day trip needs. The expenses associated with carsharing are covered through carsharing companies that operate the programs and lease public parking spaces to store the vehicles. Specific examples from Washington, DC, and Montgomery County are provided in Chapter 5.

Carsharing could be incorporated into Downtown Frederick public parking garages and could also be offered as an amenity in new building developments as a tenant convenience and sustainability initiative. Carsharing could be incorporated into the City's sustainability plan as a way to potentially reduce the number of privately-owned vehicles, reduce emissions, and improve mobility for residents who do not own cars.

Electric and Autonomous Vehicles

Electric Vehicles

The City of Frederick has been preparing for an increase in the number of electric vehicles in the community and has adopted a "Plug-in Electric Vehicle Charging Implementation Plan (2018)." The plan estimates that by 2025, the City will need between 80 and 123 public charging stations to be available within its public parking garages and lots.[4] The plan included 13 specific recommendations to help prepare the City for plug-in electric vehicle (PEV) infrastructure deployment success. In addition to the public PEV installations, there were a series of recommendations for the City to pursue in support of the development of PEV infrastructure for private installations. In the context of public parking and circulation it will be important to incorporate PEV infrastructure into the city's existing garages, as well as any new garages that are built.

Connected and Autonomous Vehicles

The development of connected and autonomous vehicles has been advancing for several years. Connected vehicles (CV) refer to those that can communicate with other vehicles, infrastructure, and devices through wireless technology. The technology is used to alert drivers to nearby obstacles, diversions or heavy traffic. This same technology is also used for traffic signal control, traffic monitoring, automatic toll collection, and emergency or transit vehicle signal preemption of traffic lights.[5]

[4] Plug-In Electric Vehicle Charging Infrastructure Implementation Plan for the City of Frederick." Prepared by Energetics and Vision Engineering & Planning, February, 2018.
[5] National Association of Counties, "Connected and Autonomous Vehicles Toolkit: A Primer for Counties." Web toolkit, created 9/3/19.

Autonomous vehicles, also known as driverless cars, are equipped with technology that allows them to operate and navigate without human assistance. A variety of technologies are used, including cameras, radar, lidar, global positioning systems (GPS) and computer vision.[6] There are currently no fully autonomous vehicles on the market. Once these vehicles are part of the transportation landscape, it is anticipated that there will be a need to store them within the city's parking garages.

FUTURE CIRCULATOR

The survey information showed that residents and businesses are interested in the development of a circulator, while the stakeholder opinion indicated that it should be considered as a future amenity. For the purposes of our study, we define a circulator as a short transit route that connects origins and destinations in and near Downtown Frederick. This is slightly different than the parking shuttle, the purpose of which is to balance parking supply in the downtown.

The purpose of a circulator is to provide a convenient transit option so that people do not need to bring their cars into Downtown Frederick. Target origin areas are major institutions on the fringe of Downtown Frederick, such as Hood College and Frederick Health Hospital, as well as housing areas that border Downtown Frederick. The target areas would be one to 1.5 miles from the Square Corner (the intersection of Patrick and Market Streets). People who work or live in these border areas sometimes walk and sometimes drive to Downtown Frederick. The implementation of a circulator would likely promote additional walking, as potential users could walk to Downtown Frederick and take the circulator home or vice versa, making the walk more manageable in terms of time and distance. This type of circulator would be part of the broader alternative transportation effort, aimed at reducing the number of cars in Downtown Frederick. Several routing options for a circulator are outlined in Chapter 4 and focus on east-west connections, as well as north-south connections.

The cost estimates for a circulator are similar to the costs for a parking shuttle, assuming two vehicles per route, each route would cost about $724,880 annually, including capital. We have not included this project for the near-term.

FINANCING

The recommended actions will require significant initial capital outlay and incur ongoing operating expenses as well. The following is an overview of strategies to be considered in either augmenting current operating revenues, reducing project cost, or acquiring supplemental financing to advance the various initiatives.

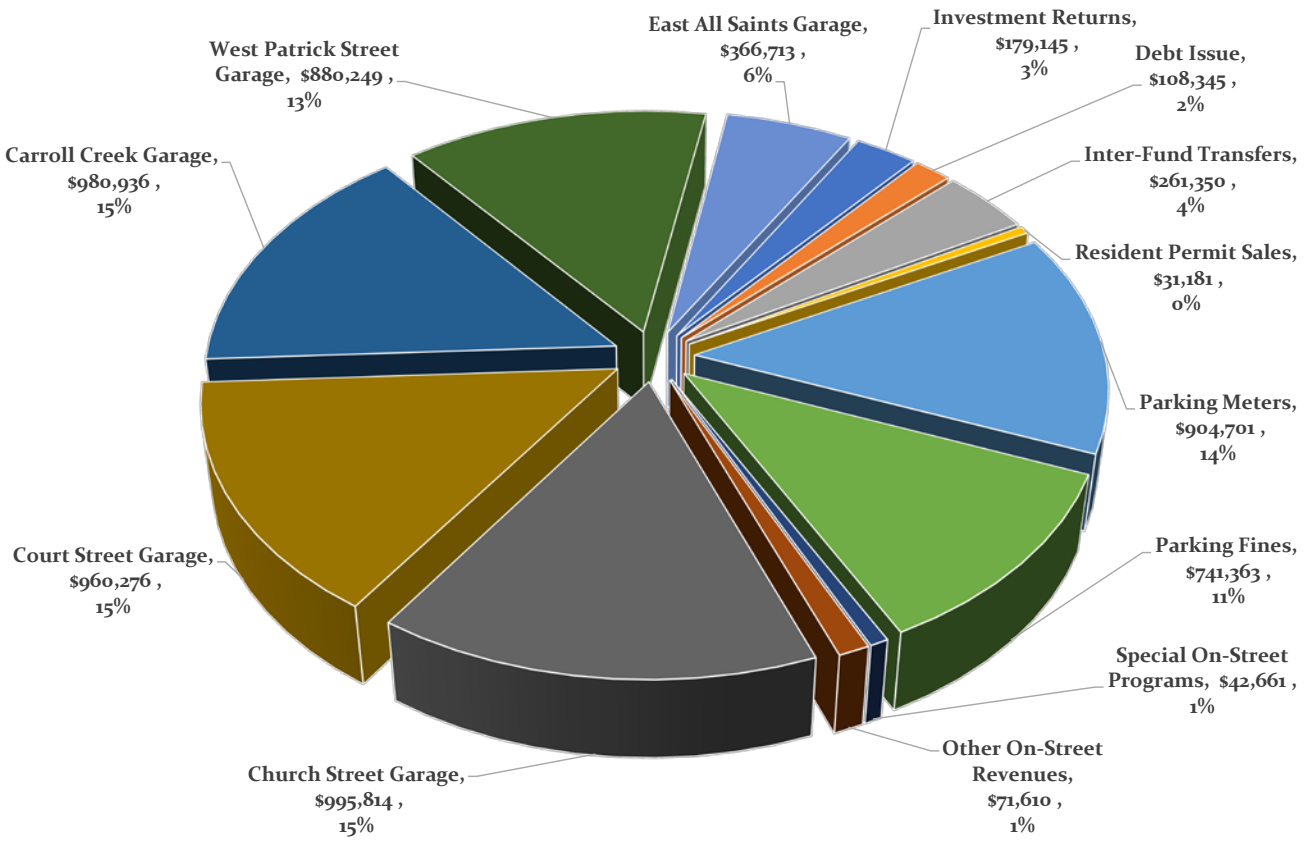
[6] National Association of Counties, "Connected and Autonomous Vehicles Toolkit: A Primer for Counties." Web toolkit, created 9/3/19.

Parking Revenue

According to the FY2016-2019 financials provided, overall parking revenues have been growing by an average of 6% year-over-year over the prior four fiscal years. As public parking rates have not been adjusted since 2016, this growth in revenues is driven solely by increasing user volumes. On-street parking revenues, which include Residential Parking Permit sales, meter income, and parking citation fines, have grown annually by an average of 4% while parking revenues from off-street assets have increased on average 6% year-over-year. The Church Street Garage has shown the most aggressive average annual growth (12%), followed by the Carroll Creek Garage (9%) and the West Patrick Street and East All Saints Garages (3%). Despite some considerable year-to-year variances, average growth over the last four years in the Court Street Garage has been less than 1%.

The parking system generated gross annual revenues of slightly more than $6.5 million in FY2019. A little bit less than $550,000 of these funds came from investment returns and internal transfers, while the remaining 92% of revenues were derived from the transient and monthly parking income, permit sales, special program fees, and parking citation fines. A breakdown of FY2019 revenues by source is provided in Figure 6-7.

Figure 6-7 : FY2019 Parking Revenues by Source



Parking Expenses

The current public parking system appears to generate roughly $3.00 in gross income for every $1.00 in incurred direct expense, based on a review of financial records from the period FY2016 to FY2019. Expenses associated with On-Street Parking operations accounted for roughly 50% of the FY2019 expenses, while the remaining 50% was associated with off-street assets. The Church Street Garage accounted for 12% of all operating expenses for FY2019, followed closely by the Court Street and Carroll Creek Garages (11%) and the West Patrick Street and East All Saints Garages (8%). Spending on Capital Improvement Programs in FY2019 accounted for less than 1% of total expenses.

Operating expenses have increased by an average of 2% annually over the prior four fiscal years. On-Street Parking operations have only grown an average of 1% annually over the prior four fiscal years, while operating expenses for the Church Street Garage have increased an average of 17% year-to-year during the same time period.

Debt Obligations

Debt service payments from the Parking Fund have been decreasing by an average of 10% annually since FY2017. As shown in Table 6-1 total debt payment for FY2019 was just over $600,000 and down by almost $400,000 from FY2016.

Table 6-1: Parking Fund Debt Service History, FY2016-FY2019

Acct #	Acct Description	2016 Actual	2017 Actual	2018 Actual	2019 Actual
5820500	Interest/05 Issue	$ 2,813	$ -	$ -	$ -
5820900	Interest/09 Issue	$ 494,793	$ 73,999	$ 47,440	$ 19,416
5821100	Interest/11 Taxable Issue	$ 28,263	$ 24,701	$ 21,011	$ 17,201
5821300	Interest/13 Refunding Bond	$ 313,410	$ 285,910	$ 251,993	$ 216,768
5821601	Interest 2016A Issue	$ 59,417	$ 231,167	$ 227,267	$ 223,533
5410000	Other Charges/Professional Services	$ 97,058	$ 2,703	$ 2,605	$ 548
5831100	2011 Issue Series A Taxable	$ (1,006)	$ (1,006)	$ (1,006)	$ (1,006)
5831300	Amortization Issuance/2013 Issue	$ 45,446	$ 45,446	$ 45,446	$ 45,446
5831600	Amortization/2016A Issue	$ 24,403	$ 97,613	$ 97,613	$ 97,613
Sub-Total	Bonded Debt Payments	**$ 1,064,597**	**$ 760,533**	**$ 692,369**	**$ 619,519**

In FY2019, the Parking Fund reported Net Income of over $2.34 million after debt service and depreciation. Using a standard amortization model, we estimated the amount of financing that 80% of the net income could support, assuming that the remaining 20% would be held aside as a reserve against any new debt acquired. At 4.0% APR over 20 years, the Fund could borrow as much as $24 million with an annual debt obligation of roughly $1.75 million, which supports the 20% set aside for reserves. According to our calculations, for every 0.5% change in APR, the amount the Fund could borrow changed by roughly $1.0 million, so an APR of 4.5% would restrict the City to borrowing just $23 million, 5.0% would limit the City to $22 million, etc.

Parking Rates

It is our understanding that the rates, fees and fines currently in effect have not been changed since 2016, despite steady growth in user volumes across the whole of downtown. An increase in rates, fees, and fines could generate significant additional income depending on the magnitude of the change.

In private commercial parking operations, the general rule of thumb is that rates should increase roughly 2.5-3.0% annually to keep pace with inflation. However, very few owners or managers revise their rate structure annually; rather they tend to adjust the rates every three to four years in increments of 10%, typically planning the rate increases to offset the inflation in operating expenses from the prior year or two and generate additional revenues against anticipated inflation for that year and the 1-2 years to follow[7]. This periodic rate adjustment strategy tends to mitigate customer loss that invariably comes about as the result of rate escalation in comparison to annual or bi-annual adjustments and also allows changes in the rate bands to occur in round figures[8], maintaining the core logic and predictability of the original rate structure.

Experienced parking operators, owners and administrators often stagger these adjustments across different segments of the rate structure as well. For example, a parking manager may introduce rate adjustments to the transient rates one-year, flat rates the next year, and monthly rates the year following. The logic behind this graduated introduction is two-fold: 1) a smaller portion of the total population patronizing the facility is impacted each year; and 2) some patrons may shift their parking pattern, rather than leave for another facility[9]. This strategy may be useful to the City as a way to mitigate the inevitable political backlash that comes as a result of any fee increase by limiting its impact to smaller portions of its current constituency and spreading these disruptions out over a longer period.

Current economic conditions caused by the COVID-19 pandemic prohibit any imminent adjustment of rates and it would be neither socially responsible nor political expedient to introduce any increases until the economy has largely recovered. However, once conditions have stabilized to pre-pandemic levels, the City should be able to advance these changes without more than the common discontent among the citizenry.

Dynamic Pricing

Frederick may also want to consider modifying their rate structures. Currently, the City applies the same rates to all of its garages, regardless of their location or rate of utilization and most of its

[7] For example, if the original rates is $2.00/hour, and the owner is instituting a flat 3.0% annual adjustment, they could collect respectively, $2.06, $2.12, $2.19, and $2.25 over the following four years.

[8] Using the same example, the original structure was $2.00/hour, so 2 hours would cost $4.00, 3 hours would cost $6.00, etc. After the adjustment, the first hour is $2.25, two hours is $4.50, three hours costs $6.75, etc.

[9] For example, the individual parking each day for a flat rate of $10.00 a day may decide to go elsewhere when the rate increases to $12.50 per day or they may determine it is more cost effective to convert to a $200.00 per month contract parker. The following year when the contract rate increases to $250.00, they may revert back to the daily rate if they are parking for less than 20 days per month to achieve a cost savings.

meters. In addition, the majority of on-street meters are priced per hour at the same cost for an hour's worth of parking in a public off-street facility. Both of these practices assure predictability for patrons, but are counter to parking industry best practices as well as basic economic principles.

Both parking management best practices and economic principle argue that the cost of the service provided should be commiserate with the value of that service as determined by the market. In the case of parking, this value can be interpreted by how highly utilized a parking space or facility is and how consistent that utilization is during the course of a typical day. As mentioned, currently an hour of parking at the on-street meters across the study area costs the same as an hour in one of the City's off-street facilities. However, curbside parking offers 'front door' service whereas the same person parking in an off-street facility may have to walk some distance to get their final destination; therefore, curbside parking is more valued. Observed utilization rates of curbside parking across the downtown appear to support this conclusion.

Parking management best practice argues that on-street parking should always be priced higher than off-street parking to recognize this value. Similarly, parking facilities that are consistently more utilized should command a higher rate than those that are less utilized. The intent of this strategy is not to increase income, but rather to create incentives for end users to balance parking demand with supply. By increasing the cost to park in a more popular facility, which is presumably closer to a destination or district many people want to visit, and maintaining a lower cost at a more distant and less utilized facility, the City has created an incentive for end users who are price sensitive to consider the more distant, but less utilized facility.

This strategy for rate setting to influence user behavior has been termed "demand responsive" or "dynamic" pricing and has been piloted and adopted in many major municipalities to date most notably San Francisco, Chicago, New York, Seattle, Boston, Washington DC and Baltimore. Smaller municipalities such as Burlington, VT; Salem, MA; New Haven, CT; Aspen, CO; Ventura, CA; and Asbury Park, NJ have all conducted initial pilots or are developing them.

In each case, the intent of the program was to strategically increase the cost of hourly parking along block faces or streets where utilization was in excess of 85% consistently during the course of a typical day and hold or reduce the cost of parking in areas where utilization was lower. The intended effect was to create availability in those highly congested areas by incenting individuals comfortable and familiar with the area like employees and residents to park in the more distant, but cheaper location, leaving those spaces open to discretionary users such as shoppers or diners who may not be familiar with the area and may need to park in sight of their final destination. In addition to balancing parking supply and demand, many of the programs have also reported ancillary benefits such as increased transit ridership, increased TNC traffic, reduced incidences of double parking and illegal parking, and reduced citation issuance.

A dynamic parking pilot could be part of a larger rate change initiative within the City of Frederick and provide a vehicle to test the impact of any increase in on-street parking rates on parking behaviors. Critical steps to executing this pilot should include the following:

1. **Clearly define and communicate pilot objectives for conversion to constituents well before hand.** The most successful pilots tie the initiative to a bigger, universally embraced community objective. For example, the Brockton (MA) Parking Authority is piloting a dynamic pricing program in an area where the community would like to see increased (re)activation of vacant retail storefronts. The objective of the metering initiative is to compel turnover and availability to support the new retailers.
2. **Design a program to evaluate impacts and performance.** As a general rule, constituents tolerate pilot programs with a defined timeline and limited geography far better than large-scale, permanent conversions. The best pilots are those that have clearly defined performance metrics that can be easily measured and reported, such as maintaining an 85% or lower occupancy rate during peak hours.
3. **Identify alternatives for individuals who may be displaced by the pilot**. Increasing fees in a particular area is likely to impact regular, long-term parkers the most dramatically. Smart municipalities develop multiple alternatives to accommodate these long-term parkers such as subsidized transit passes, ride-matching services, low- or no-cost satellite parking facilities supported by shuttle service, etc., proactively to capture these users when their current parking accommodations become less attractive.
4. **Establish structures to prevent unintended consequences.** There will always be some individuals who will seek to avoid paying fees wherever possible, and be unwilling to consider alternatives. Care should be taken to consider institution of new policies or programs in advance of the pilot to ensure that users seeking to avoid fees do not migrate into adjacent areas and overwhelm that supply. Establishment of permit zones around the pilot area or time limits supported by enhanced enforcement efforts will prevent migration and displacement of parkers in adjacent areas. As a general rule, these measures should be instituted across an area of 2-3 blocks to any side of the pilot area and at least 30 days prior to commencement of the pilot.
5. **Make it easy for users to participate.** One of the errors often made by municipalities piloting fee-for-use parking is relying on a single mechanism for collecting fees, such as relying exclusively on pay-by-cell applications or coin-operated meters. Successful municipalities provide multiple options, allowing for payment of fees by cash, credit card, debit card, smartphone applications, etc., to make paying as easy and convenient as possible.
6. **Communicate frequently and maintain transparency.** Pro-active and aggressive communication before, during, and after the pilot is critical to maintaining goodwill with the community. Alerting residents, business owners, and other constituents of objectives, metrics, meetings, events, and changes as well as pilot results ensures trust and continuing goodwill during the course of the pilot. Care should be taken to report on the performance of the pilot on a regular basis during its term, even when the metrics indicate the pilot may be failing to meet objectives. Information should be communicated through multiple media platforms.

7. **Report results back to the community.** At some mid-point of the pilot and at the conclusion of the pilot, the municipality should be prepared to provide a report on how the pilot is performing, whether it is meeting its objectives, and if there were any collateral impacts. This requirement is based on the principle of informed consent and is non-negotiable.
8. **Create a mechanism for investing back into the community where possible**. The municipalities that have most successfully transitioned from free to fee-for-use parking have done so, in part, by committing a portion of the funds generated from paid parking into benefits for the community. These reinvestments can be in the form of supporting expansions of the parking system or improvements, but have also taken the form of streetscape improvements, transit subsidies, and beautification projects.

Parking Pricing in Comparable Maryland Municipalities

A survey of comparable Maryland municipalities indicates that Frederick is aligned, although at times slightly below, the median for rates and fees collected for the same services as shown in Table 6-2. More critically, the survey indicates that only one of the other municipalities surveyed subscribes to a universal rate structure across the entire parking system. Bethesda, Silver Spring and Annapolis all have rate structures unique to each facility according to the constituency it serves and the level of typical utilization it experiences.

Similarly, a survey of the same communities with a focus on parking violation fines, shown in Table 6-3, suggests that Frederick's parking fine structure is, with the exception of Hagerstown, priced largely below its peer cities. Of particular note are the fines for time limit, meter, and parking permit/assignment violations, which typically constitute the bulk of tickets issued.

Table 6-2: Survey of Parking Rates and Fees in Comparable Maryland Municipalities

		Off-Street						On-Street			
		Transient			Monthly Permit		Meters	Residential Permits		Visitor Permits	
Municipality	State	Hourly	Daily Maximum	Nights	Weekends	Garage	Lot	Hourly	Metered	Unmetered	Metered	Unmetered
Frederick	MD	$1.00 [1]	$12.00 [2]	$5.00 [3]	$5.00 [3]	$97.00	$75.00 [4]	$1.00 [5]	$50.00 [6]	$0.00 [7]	$8.00 [8]	$1.00 [9]
Bethesda [10]	MD	$1.00-$1.50 [11]	$15.00-$22.50 [12]	n/a [13]	$0.00 [14]	$150.00 [15]	$150.00 [15]	$2.25	n/a [13]	$20.00	n/a [13]	$0.00 [16, 17]
Silver Spring [10]	MD	$0.50-$1.00 [11]	$4.50-$24.00 [12]	n/a [13]	n/a [13]	$90.00-$123.00 [18]	$113.00 [19]	$1.00	n/a [13]	$20.00	n/a [13]	$0.00 [16, 17]
Hagerstown	MD	$1.00	$8.00 [20]	$2.00 [21]	$2.00 [22]	$68.00	$54.00	$0.50 [23]	n/a [13]	n/a [13]	n/a [13]	n/a [13]
Annapolis	MD	$1.00-$3.00 [24]	$10.00-$20.00 [25]	n/a [13]	n/a [13]	$80.00-$250.00 [26]	$65.00-$225.00 [27, 28]	$2.00	n/a [13]	$55.00-$100.00 [29]	n/a [13]	$3.50 [30]

Notes:

1. Hourly rates escalate up to 12 hours, after which the Daily Maximum is met up to 24 hours.
2. Rate effective starting the 12th hour until the end of the 24th hour.
3. Standard hourly rates are in effect up to the end of the 4th hour, after which the maximum rate ($5.00) is in effect until 12.00 AM on weeknights and for 5-24 hours on weekends.
4. This is the North Market Street Lot rate.
5. There are five blocks which has $2.00/hour meters installed.
6. The first permit is $50.00, the second permit is $100.00
7. The first permit is free, the second permit is $100.00
8. Maximum daily rate after 7 hours; stays shorter than 8 hours are priced at $1.00/hour.
9. Flat daily rate
10. This is a PLD (Parking Lot District) within Montgomery County
11. Cost per hour varies by facility.
12. These is no stated daily maximum, so rates are quoted are for 24 hours at the hourly rate in effect. Parkers may also puchase a daily permit for $12.00
13. Program and/or special rate not offered in this community.
14. Parking is free on weekends in off-street facilities
15. Permits for carpool drivers are discounted according to the number of participants as follows: 2 participants = $107.00, 3-4 participants = $58.00, 5 or more participants = $15.01
16. There is no charge for infrequent visitors, but the resident must request suspension of enforcement at least 24 hours in advance.
17. Contractors my purchase a $10.00 permit which authorizes parking within a permit district for up to 6 months.
18. Rates vary from facility to facility
19. This is the monthly rate for a Parking Convenience Sticker (PCS) which allows the holder to park in a variety of designated off- and on-street areas within the PLD.
20. Maximum rate reached after 7 hours @ $1.00/hour
21. Flat rate from 4.00 PM until 6.00 AM the following day
22. Flat rate from 4.00 PM Friday until 6.00 AM the following Monday
23. On-street and surface parking lot meters are only enforced from 8.00 AM until 5.00 PM, Monday through Friday. Parking is effectively free on nights and weekends
24. Four garages and one lot offer a graduated hourly rate structure with the first hour cost ranging from as low as $1.00 to as high as $5.00. Four lots are metered at rates of $2.00-$3.00/hour with a maximum stay of 2 hours.
25. Each garage and the one lot have a unique hourly rate structure that reaches the daily maximum after between 4 and 10 hours.
26. Many facilities offer both restricted and unrestricted rates, and each facility has its own unqiue rate structure.
27. The lowest monthly rate ($65.00) is exclusive to the employees of one particular building. Lowest public rate is $90.00/month.
28. There are a number of lots which offer flat daily rates in lieu of hourly (metered) rates or monthly leases.
29. Rates are set according to district and whether the residence has off-street parking. Rates escalate by $20.00-$25.00 for each additional permit after the first one. Rates can be pro-rated by month.
30. Residents can purchase up to ten 1-day visitor permits annually.

Table 6-3: Survey of Parking Fines in Comparable Maryland Municipalities

Municipality	State	Time Limit Violations [1]	Meter Violations [2]	Improper Parking Violations [3]	Permit/ Assignment Violations [4]	Minor Lifesafety Violations [5]	Major Lifesafety Violations [6]	Handicapped Parking Violations	Loading Zone Violations	Vehicle Removal Charges [7]	Vehicle Storage Charges [8]	Late Payment Charge
Frederick	MD	$20.00-$30.00	$20.00	$20.00-$30.00	$25.00-$50.00	$20.00-$35.00	$100.00	$250.00	$75.00	$105.00-$215.00	$12.00-$20.00	$15.00-$25.00 [9]
Montgomery County	MD	$60.00	$45.00-$50.00	$60.00	$50.00-$60.00	$60.00	$85.00-$250.00	$250.00	$60.00	$115.00	n/a	$25.00-$50.00 [10]
Hagerstown	MD	$15.00	$10.00	$15.00	$10.00-$15.00	$15.00	$100.00	$100.00	$15.00	$100.00-$135.00 [11]	$40.00-$80.00 [12]	$10.00-$25.00 [13]
Annapolis	MD	$50.00	$50.00	$50.00-$100.00	$50.00-$140.00 [14]	$100.00	$300.00-$500.00	$500.00	$100.00	$175.00 [15]	$25.00 [16]	$10.00-$25.00 [17,18]

Notes:

1. Violations where the parker has exceeded the posted time limit. This includes staying over the posted time limit on a meter.
2. Includes expired meter and non-payment violations.
3. Includes misparking in a stall, blocking cross walks, parking too close to an intersection, parking in front a driveway, etc.
4. Includes parking without a permit in a permit zone, parking in a space assigned for special use, parking in a bus stop/ taxi stand, parking to obstruct snow removal/ garbage collection/ street sweeping, etc.
5. Includes parking to obstruct the free flow of traffic, parking on a bridge where prohibited, parking too close to road construction activities, parking in an area less than 18' in width, double parking, etc.
6. Includes parking in fire lane, violating snow emergency regulations, parking too close to a fire hydrant, etc.
7. Includes initial hook-up, standard and special two, and administrative costs
8. Costs assessed per day unless otherwise noted.
9. If a ticket is paid within 10 days of issue, the fine doubles. After 25 days an additional $15.00 surcharge is added and after 30 days the surcharge is increase by $10.00 to $25.00.
10. A penalty of $25.00 in addition to the original fine is assessed if not paid within 15 days, and an additional $25.00 fee is assessed if not paid within 45 days.
11. Tow fees are established by the Washington County Division of Emergency Services, which sets fee according to vehicle weight. Fee ranges shown are for passenger vehicles only. Basic tow charges are $100.00-$125.00 plus a $35.00 surcharge if the vehicle's steering is locked.
12. Storage is free if the vehicle is recovered by the owner within four hours of impound. Thereafter it is $40.00/day of storage plus a $40.00 surcharge if the owner comes to claim the vehicle on a weeknight, weekend, or holiday.
13. A surcharge of $10.00 is assessed to most parking violations if not paid within 10 days, and an additional surcharge of $10.00 is assessed after 30 days. For meter and permit/assignment offenses, it is $15.00 after the first 10 days and an additional $10.00 after 30 days
14. $50.00 for a 1st offense, $70.00 for a 2nd offense, $105.00 for a 3rd offense, $140.00 for the 4th or 5th offense, automatic impoundment thereafter.
15. Tow fees are established by the Anne Arundel County Department of Inspections and Permits. Towing fees shown for vehicles of 10,000 lbs. or less. Owners may also be charged mileage at a rate of $3.00/mile for tows longer than 5 miles.
16. Base fee is $25.00/day for every 25' of vehicle length is assessed beginning the day after the vehicle is delivered to impound.
17. A $15.00 surcharge is added if a ticket is not paid within 15 days of issue and an additional surcharge of $15.00 is added after 23 days.
18. Original fines for some violations double if not paid within 15 days of issue.

As the last rate and fine increase in the City was over four years ago and observed utilization across all assets (on- and off-street) was observed and reported to be quite strong, **it is our suggestion that the City consider raising their rates to achieve the following objectives**:

1. Increase availability on congested streets by creating an incentive for longer term parkers to seek alternate parking in low- or no-cost areas, thereby freeing those spaces up for discretionary parkers. This approach is especially effective when trying to motivate employees or residents to consider an off-street option and keep the curb open for patrons, visitors, and guests.
2. Adjust rates to reflect the relative demand for each facility or block face to create a market mechanism for better distributing demand across the parking supply. While these strategies are unlikely to dramatically influence the decision making of irregular or infrequent parkers such as diners or shoppers, it can influence where an employee elects to park on a given day.
3. Adjust fines commiserate with contemplated rate changes to deter scofflaws from parking improperly or illegally. This is critical to achieving the desired compliance with public policy.
4. Create an incentive for individuals, especially those coming in and out of the City each day, to consider use of more sustainable modes of transportation than a single-occupant personal vehicle. This incentive may be the cost savings from taking transit, carpooling, biking, walking or taking a shuttle from a free remote lot into the downtown core.
5. Generate additional revenues to offset the projected expenses of the recommendations arising from this analysis.

Rate Sensitivity Analysis

As noted in previous sections, Frederick has not changed their rates in four years, currently uses a 'one-size fits all' structure for off-street parking facilities, and is priced at or below comparable Maryland communities with the exception of Hagerstown. City of Frederick leaders have made it very clear that these conditions exist by choice and it is their preference to keep parking affordable, predictable, and accessible to their constituents. It was also emphatically stated that no rate adjustment is currently be contemplated, nor would be considered, until the area has recovered from the lingering social, physical and economic impacts of the current pandemic.

We understand and fully support the City's position, but wanted it noted that setting parking rates is not solely a fiscal consideration. Classic economics teaches us that adjusting the cost of any good or service influences demand for that good or service, and more effectively than blanket prohibitions, educational campaigns, or the provision of alternatives. A prime example of this is tobacco consumption.

Scientists have been publishing research on the dangers of tobacco use since the 1950's and tobacco products have carried required warnings regarding the health impacts of use since the

1970's, yet consumption grew annually until the government began taxing tobacco sales, thereby increasing the cost per unit. As these costs rose, sales and consumption dropped precipitously.

While it is unfair to liken parking or driving to smoking, both do have in impact on human health and welfare. Frederick has affirmed a commitment to promoting more sustainable modes of transportation, reducing greenhouse gas emissions, and promoting the general health and welfare of its citizens. By adjusting rates, the City can influence its constituents to support these initiatives by walking farther between parking and destination or simply not driving and parking for each trip made.

As shown in Table 6-4, we would propose freezing all rates in place until the start of FY2023 to allow for the end of the current pandemic and the following recovery to gain momentum. The proposed schedule uses the staggered structure described earlier to introduce rate changes in a phased approach to limit impact on the city's constituents to smaller groups of users, introduced at different times. The intent of this structure is to minimize user loss as well as political fallout.

Table 6-4: Proposed Schedule of Rate Adjustments

Rate	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Hourly (Garage) [1]	$1.00	$1.00	$1.00	$1.00	$1.00	$1.25	$1.25	$1.25	$1.50	$1.50
Daily Max (Garage) [2]	$12.00	$12.00	$12.00	$12.00	$12.00	$15.00	$15.00	$15.00	$20.00	$20.00
Nights [3]	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00
Weekends [4]	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00	$5.00
Lease: High Value [5]	n/a	n/a	n/a	$107.00	$107.00	$107.00	$107.00	$120.00	$120.00	$120.00
Lease: Base [6]	$97.00	$97.00	$97.00	$97.00	$97.00	$97.00	$97.00	$109.00	$109.00	$109.00
Lease: Discount [7]	n/a	n/a	n/a	$75.00	$75.00	$75.00	$75.00	$84.00	$84.00	$84.00
Meters: Off-Street [8]	$2.00	$2.00	$2.00	$2.25	$2.25	$2.25	$2.50	$2.50	$2.50	$2.75
Meters: Base [9]	$1.00	$1.00	$1.00	$1.25	$1.25	$1.25	$1.50	$1.50	$1.50	$1.75
Meters: High [10]	$2.00	$2.00	$2.00	$2.25	$2.25	$2.25	$2.50	$2.50	$2.50	$2.75
Metered Permits [11]	$50.00	$50.00	$50.00	$55.00	$55.00	$55.00	$60.00	$60.00	$60.00	$70.00
Unmetered Permits [12]	$0.00	$0.00	$0.00	$5.00	$5.00	$5.00	$6.00	$6.00	$6.00	$7.00
RPZ Visitor Permits [13]	$8.00/$1.00	$8.00/$1.00	$8.00/$1.00	$10.00/$1.50	$10.00/$1.50	$10.00/$1.50	$12.00/$2.00	$12.00/$2.00	$12.00/$2.00	$13.00/$2.50

* *Blue text denotes a rate change.*

Notes:

1. Transient rate structure remains stable until 2025 when it converts to $1.25/hour up to 10 hours. Rate structure adjusts again in 2028 to $1.50/hour up to 10 hours.
2. Daily max converts to $15.00 for stays longer than 10 hours in 2025 and $20.00 for stays of longer than 10 hours in 2028.
3. Evening rate converts to $5.00 after the 3rd hour in 2024 and $5.00 after the 2nd hour in 2028.
4. Weekend rate converts to $5.00 after the 2nd hour for up to the next 24 hours in 2024 and a simple flat rate in 2028.
5. After 2022, garages where the contract parker allocation is 95% or more leased convert to a higher rate, adjusting by +12% in 2027.
6. After 2022, garages where the contract parker allocation is 81%-94% lease assumes "base" rate, adjusting by +12% in 2027.
7. After 2022, garages where the contract parker allocation is 80% or less leased and any lots assumes "discount" rate, adjusting by +12% in 2027.
8. Off-street meters adjust in tandem with meters on block faces with utilization rates of 85% or greater for four or more hours on two or more consecutive days.
9. Blockfaces with observed utilization rates that do not qualify as "highly utilized" will adopt this rate, subject to review every 12 months.
10. Blockfaces qualifying as "highly utilized" (i.e. 85% utilized for 4 or more hours on two or more consecutive observation days) will adopt this rate, subject to review every 12 mos.
11. Metered permits will increase the cost of first permit by $5.00 in 2023 and $10.00 in 2026 and 2029. Each additional permit will be double the cost of the prior permit.
12. City will begin to charge a nominal annual cost for 1st permits to offset the cost of program administration, which shall adjust by $1.00 periodically to match inflation.
13. Metered and Unmetered Residential Permit Zone (RPZ) visitor rates will adjust in tandem and proportionately to residential permit rates.

Proposed rate changes are shown in blue text in the table above and would be introduced as follows:

2023

- Rates at current meters would be increased by $0.25/hour to create the desired imbalance between the cost of parking on-street for one hour versus off-street, with the objective of causing some long-term parkers currently feeding meters to consider parking in off-street facilities, thereby freeing up space.
- We are also proposing raising the cost of residential parking permit slightly and charging a nominal fee for the first permit issued in Unmetered residential parking permit areas to help offset the cost of administering the program and improving enforcement in these districts, which will be needed to prevent scofflaws fleeing the higher meter rates from attempting to park in these areas.
- Finally, given the level of utilization observed in the portions of the City's garages set aside for monthly parkers, we are proposing a revision to the basic rate structure which will create three rate categories: a High rate for those facilities leased to 95% or greater of capacity for contract parkers, a Base rate for those facilities leased 81% to 94% of allocated capacity, and a Discount Rate for those facilities leased at 80% or lower of allocated capacity for contract parkers.

2024

- Currently, transient parkers can park in the City's garages at the standard hourly rates on weeknights and weekends for up to four hours. If these transients stay more than four hours, the rate automatically converts to flat $5.00 rate that is good until midnight on weeknights or for the next 19 hours (i.e. up to 24 hours from the time of entry) on weekends. We would recommend retaining this structure, but moving the rules so that flat rate conversion occurs after three hours of parking. This rate adjustment will create a small increase in annual revenues.
- We would also recommend extending enforcement past the current 5:00 p.m. to 8:00 p.m. in areas with a substantial concentration of retail stores, restaurants, and/or entertainment venues. This will reduce the number of employees parking curbside into the evening and provide an incentive for them to park in one of the City's garages, creating capacity on-street for shoppers, diners, patrons and visitors.

2025

- With increased enforcement, additional pressure will be placed on the garages and lots to accommodate longer term parkers seeking to avoid being ticketed and/or paying the higher meter fees. We would propose adjusting the transient parking rate structure by $0.25/hour for the first hour and adopting a rate program of $1.25/hour up to 10 hours,

after which the fee will convert to a flat rate of $15.00 for the next 14 hours (i.e. 24 hours after the parker entered the facility). This rate will generate additional revenues from the parkers who are not price sensitive or put a higher premium on travel by single-occupant vehicle and create an incentive for parkers who are price sensitive to consider use of alternate modes of transportation or use of the recommended remote parking facility and circulator shuttle.

- At this time, we would also recommend the City pass an across the board $5.00 increase to all parking fines to keep pace with the inflation of the parking rates. This is necessary to maintain the intended impact of these fines as, should the cost of parking legally get too close to the cost of parking illegally, the penalties will no longer be effective.

2026

- This is the second proposed rate increase for meter and residential parking permit rates. The incremental increase of $0.25/hour for the meters (raising the base hourly rate to $1.50) is intended to maintain the variance between the cost of parking off-street versus on-street. The adjustment to residential permit rates is meant to keep pace with inflation of the costs of administration and maintenance.

2027

- This is the second proposed rate adjustment for monthly leases and represents a roughly 12% increase over the last rate adjustment in 2024 to offset inflation in operating expenses over the prior three years plus that fiscal year.

2028

- This is the second proposed rate adjustment for transient rates which would convert to a base rate of $1.50/hour for up to 10 hours and then a flat rate of $20.00 for stays of 16-24 hours. We would also propose to roll back the conversion deadlines for the nights and weekends rates to that parkers went to the flat $5.00 rate after two hours.

2029

- Should any additional rate adjustments be required according to the City's due diligence from the prior fiscal year, the most appropriate rate adjustments would be to on-street meters and residential permits, to maintain disincentives for individuals to abuse these areas in attempt to flee the increased transients rate (see 2028) in off-street facilities. At this point, it will be three full fiscal years since the last adjustment.

Fiscal Outlook

To model out the potential impact of adoption of the proposed improvements, we developed a revenue model based on historical operating statements provided by the Parking Department for FY2019. Once the basic metrics of the number of leases sold, transient tickets collected, parking tickets paid, etc. and the average value of each item was established and calibrated to the FY2019 result, we then applied the current rates and assumed growth factors developed from studying the FY2016-FY2019 operating records. These revenues were then incorporated into a conceptual proforma operating statement, included as Table 6-5. This is referred to as the "Base Case" scenario as it assumes no changes to the current system beyond natural growth or other trends as indicated through study of the existing financial records for the prior four fiscal years. The proforma assumes significant (50%-67%) losses in revenue for FY2020 relative to FY2019 but no reductions in operating expenses due to the current pandemic. Operating costs are inflated 3.0% annually throughout the projections to reflect inflationary factors. We assumed some recovery in revenues (roughly 67% of FY2019) in FY2021 and return to 95% of FY2019 user volumes in FY2022. Thereafter, any growth in projected revenues were based on assumptions of natural growth in user volumes out to FY2029.

For the operating expenses, DESMAN assumed that expenses will increase 3.0% year-over-year with the exception of spending on Capital Improvement projects. In this area, we assumed that costs would increase by a factor of 25% up to 100% year-over-year to reflect deferred and necessary major repair and replacement to existing, aging assets.

We also assumed Depreciation would increase at fixed 1.0% year over year, based on past records, and Debt Service would decrease by 10% annually to reflect the progressive retirement of existing debt. This debt does NOT include any of the recommendations made in this report.

With the "Base Case" established, we then estimated the impact of our proposed recommendations onto the system. This was based on a development scenario developed in collaboration with City of Frederick officials that included assumed timing of emerging developments, execution of the Church Street Garage and Deck Six projects, and provision of goods and services necessary to support the proposed recommendations such as shuttle services. The applied timeline of development is included for reference in Table 6-6.

This new "System Growth" scenario included the natural growth presented in the Base Case scenario but then inserted associated impacts from the planned and recommended developments. These impacts included the establishment of a shuttle service to connect displaced parkers with remote parking facilities and the downtown core, the design and construction of Deck Six, and the demolition and replacement of the Church Street Garage. Two versions of the "System Growth" proforma have been prepared. The first on (Table 6-7) assumes the Church Street Garage will be the first major garage project in the coming years and the second (Table 6-8) assumes Deck Six will be the first major garage project.

Table 6-5: Base Case Conceptual Proforma Operating Statement, FY2020- FY2029

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
REVENUE											
Investment Activity [1]	548,841	439,073	493,957	521,399	537,041	553,152	569,747	586,839	604,444	622,578	641,255
On-Street Parking [2]	1,791,515	895,758	1,200,315	1,717,049	1,745,346	1,774,209	1,795,445	1,817,024	1,838,951	1,861,233	1,883,877
Church Street Deck [3, 4]	995,814	328,619	667,195	953,699	992,337	1,008,973	1,023,145	1,032,622	1,042,289	1,052,149	1,062,206
Court Street Deck [3,5]	960,276	316,891	643,385	920,133	931,392	942,835	954,466	966,287	974,422	982,639	990,938
Carroll Street Deck [3,6]	980,936	323,709	657,227	936,793	953,568	970,677	988,129	1,005,930	1,024,087	1,042,608	1,061,498
West Patrick Street Deck [3,7]	880,249	290,482	589,767	855,498	864,903	873,084	877,963	880,010	881,466	882,937	884,422
East All Saints Street Deck [3,8]	366,713	121,015	245,698	353,140	358,297	363,014	365,692	366,247	366,807	367,373	367,944
Gross Annual Revenues	**$6,524,344**	**$ 2,715,547**	**$ 4,497,544**	**$ 6,257,712**	**$ 6,382,884**	**$ 6,485,945**	**$ 6,574,587**	**$ 6,654,960**	**$ 6,732,468**	**$ 6,811,516**	**$ 6,892,140**
EXPENSES											
On-Street Parking [9]	1,005,172	1,035,327	1,066,387	1,035,327	1,066,387	1,098,379	1,066,387	1,098,379	1,131,330	1,098,379	1,131,330
Church Street Deck [9]	236,187	243,273	250,571	258,088	265,831	273,806	282,020	290,481	299,195	308,171	317,416
Court Street Deck [9]	220,470	227,084	233,897	240,914	248,141	255,585	263,253	271,151	279,286	287,665	296,295
Carroll Creek Deck [9]	220,675	227,295	234,114	241,137	248,371	255,822	263,497	271,402	279,544	287,930	296,568
West Patrick Street Deck [9]	169,594	174,682	179,922	185,320	190,880	196,606	202,504	208,579	214,836	221,281	227,919
East All Saints Street Deck [9]	154,616	159,254	164,032	168,953	174,022	179,243	184,620	190,159	195,864	201,740	207,792
Capital Improvement Projects [10]	9,000	9,270	9,548	18,000	31,500	55,125	82,688	124,032	155,040	193,800	242,250
Gross Annual Operating Expenses	**$2,015,714**	**$ 2,076,185**	**$ 2,138,471**	**$ 2,147,739**	**$ 2,225,132**	**$ 2,314,566**	**$ 2,344,969**	**$ 2,454,183**	**$ 2,555,095**	**$ 2,598,966**	**$ 2,719,570**
EBITDA	**$4,508,630**	**$ 639,362**	**$ 2,359,073**	**$ 4,109,973**	**$ 4,157,752**	**$ 4,171,379**	**$ 4,229,618**	**$ 4,200,777**	**$ 4,177,373**	**$ 4,212,550**	**$ 4,172,570**
Depreciation Expense [11]	$1,542,641	$ 1,558,067	$ 1,573,648	$ 1,589,384	$ 1,605,278	$ 1,621,331	$ 1,637,544	$ 1,653,919	$ 1,670,458	$ 1,687,163	$ 1,704,035
Debt Service [12]	**$ 619,519**	**$ 557,567**	**$ 501,810**	**$ 451,629**	**$ 406,466**	**$ 365,819**	**$ 329,237**	**$ 296,313**	**$ 266,682**	**$ 240,014**	**$ 216,013**
NET INCOME	**$2,346,470**	**$ (1,476,272)**	**$ 283,615**	**$ 2,068,960**	**$ 2,146,008**	**$ 2,184,229**	**$ 2,262,837**	**$ 2,250,545**	**$ 2,240,233**	**$ 2,285,373**	**$ 2,252,522**

Table 6-5, Continued

Notes/Assumptions

1. Income from Investment Activities will be 80% of 2019 levels in 2020, 95% of 2019 levels in 2021, and 95% of 2019 levels in 2022. Thereafter it is assumed to grow by 3% annually.

2. 2020 On-Street Parking Revenues are projected to be just 50% of 2019 levels. 2021 revenues are projected to be just 67% of 2019 levels. Parking meter sales and citation volumes are anticipated to recover to within 5% of 2019 levels in 2022. Based on historical records, Parking Meter sales are projected to increase by 2% annually in 2023 and 2024 and 1% annually in 2025 through 2029. Parking citation volumes are projected to increase 2% annually starting in 2023 through 2029. All other On-Street Revenue lines items are expected to remain fixed.

3. 2020 gross revenues are projected to be just 33% of 2019 levels. 2021 revenues are projected to be just 67% of 2019 levels. 2022 user volumes are projected to be roughly 95% of 2019 levels for monthly leaseholders and daily transients

4. Monthly leaseholder volumes are projected to grow 2% annually in 2023 and 2024 before returning to 2019 levels, after which the allocation for monthly permits will be maxed out. Transient user volumes are projected to grow by 2% annually from 2023 through 2029. All other revenues are expected to remain flat from 2022 through 2029.

5. Monthly leaseholder volumes are projected to grow 2% annually from 2023 to 2026 and 1% annually from 2027 through 2029. Transient user volumes are projected to grow by 1% annually from 2023 through 2029. All other revenues are expected to remain flat from 2022 through 2029.

6. Monthly leaseholder volumes are projected to grow 2% annually from 2023 through 2029. Transient user volumes are projected to grow by 2% annually from 2023 through 2029. All other revenues are expected to remain flat from 2022 through 2029.

7. Monthly leaseholder volumes are projected to grow 2% annually in 2023 and 2024 and 1% in 2025 and 2026 before returning to 2019 levels, after which the allocation for monthly permits will be maxed out. Transient user volumes are projected to grow by 2% annually in 2023 and 1% annually from 2024 through 2029. All other revenues are expected to remain flat from 2022 through 2029.

8. Monthly leaseholder volumes are projected to grow 2% annually in 2023 and 2024 and 1% in 2025 before returning to 2019 levels, after which the allocation for monthly permits will be maxed out. Transient user volumes are projected to grow by 2% annually in 2023 and 1% annually from 2024 through 2029. All other revenues are expected to remain flat from 2022 through 2029.

9. All operating expenses were assumed to inflate by 3% annually from 2020 through 2029, with the exception of CIP.

10. Capital Improvement Project (CIP) expenditures were assumed to increase by 3% over the prior year in 2020 and 2021, 100% in 2022, 75% in 2023 and 2024, 50% in 2025 and 2026, and 25% in 2027 through 2029. These expenditures will be largely major repair and replacement to keep parking facilities and their internal systems functional and up-to-date.

11. DESMAN assumed depreciation would increase at a rate of 1% annually from 2020 through 2029, based on historical operating records

12. DESMAN assumed the City would retire existing (as of 2019) debt and reduce debt service payments at a rate of 10% year-over-year from 2020 through 2029 based on historical operating records.

Table 6-6: Timeline for Development in Downtown Frederick

PROJECTS	DESCRIPTION	DESIGN	CONSTRUCTION	COMPLETION	Notes
Visitation Hotel	Boutique Hotel and Condominiums	Q3 - 2021	Q2 - 2022	Q3 - 2023	Plans indicate all parking needs met on-site. No fiscal impact assumed.
100 East All Saints (Shaefer Building)	Re-Tenant Existing 65,000 SF Office Building	Q3-2025	Q1 - 2026	Q4-2026	Occupancy of the Shaefer Building will trigger a commitment for 146 spaces in the East All Saints Garage, which may displace current parkers.
The Galleria	Senior Independent Living - Continuing Care with Retail	Q1 - 2025	Q1 - 2026	Q2 - 2027	The former site plan, which has expired, indicated a commitment to provide 120 spaces in the East All Saints Garage in addition to 150 spaces on-site.
Downtown Hotel & Conf Center	200 Room, Full Service, Upper Upscale Hotel with 24,000 SF Conf Center	Q1 - 2022	Q1-2023	Q3 - 2024	The City has committed 130 spaces to supplement the 130 spaces planned for the project. This commitment could be made through spaces at East All Saints Garage or Deck Six.
One Commerce Plaza	TBD	Q1 - 2025	Q1 - 2026	Q3 - 2027	The former site plan, which has expired, did not include a commitment by the city to provide parking. Demand may be met by available capacity in the City's garages.
McCutcheon's Mill	35,000 SF Commercial Retail	Q1 - 2023	Q1 - 2024	Q3 - 2025	The former site plan, which has expired, included a commitment to provide up to 30 spaces in a public facility, in addition to on-site supply.
331 N. Market (Carmack Jays)	Multi-Family & Mixed-use/Public Parking	Q3 - 2022	Q3 - 2023	Q4 - 2024	The City has no commitment to provide parking to support this development, but could elect to pursue a partnership to recover lost capacity (55 spaces) displaced by development.
USPS Redevelopment	Mixed Use / Multi-Family	Q1 - 2024	Q1 - 2025	Q4 - 2026	No details regarding this development are currently available, but it presents an opportunity to explore a public/private partnership for a shared-use parking facility on the current USPS employee parking lot.
Garage 6	New East Side Garage 400 - 650 spaces	Q1 - 2026	Q1 - 2027	Q3 - 2028	Assumes development of a 629 space parking garage
Garage 1 Rebuild (Church St Garage)	Public Parking Demolition and Reconstruction	Q1 - 2023	Q1 - 2024	Q3 - 2025	Assumes replacement of existing 393 space garage, at a minimum.
Shuttle Service		Q1 - 2023		Q1 - 2024	Shuttle service will be introduced during the demolition of the Church Street Garage.

Table 6-7: System Growth Scenario Conceptual Proforma Operating Statement, FY2020-FY2029 – Church Street Garage as First Major Project

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
REVENUE											
Investment Activity [1]	548,841	439,073	493,957	521,399	537,041	553,152	569,747	586,839	604,444	622,578	641,255
On-Street Parking [2]	1,791,515	895,758	1,200,315	1,717,049	1,745,346	1,849,444	1,871,943	1,795,029	1,902,888	1,926,203	1,949,897
Church Street Deck [3]	995,814	328,619	667,195	953,699	992,337	-	-	909,154	931,613	947,036	954,901
Court Street Deck [4]	960,276	316,891	643,385	920,133	931,392	1,041,997	1,070,773	942,835	954,906	962,928	971,029
Carroll Street Deck [4]	980,936	323,709	657,227	936,793	953,568	1,069,840	1,078,496	970,677	988,129	1,005,930	1,024,087
West Patrick Street Deck [1]	880,249	290,482	589,767	855,498	864,903	873,084	877,963	880,010	881,466	882,937	884,422
East All Saints Street Deck [5]	366,713	121,015	245,698	353,140	358,297	591,158	593,836	536,191	538,432	540,180	540,780
Deck 6 [6]	-	-	-	-	-	-	-	-	-	601,587	610,265
Gross Annual Revenues	**$ 6,524,344**	**$ 2,715,547**	**$ 4,497,544**	**$ 6,257,712**	**$ 6,382,884**	**$ 5,978,675**	**$ 6,062,757**	**$ 6,620,736**	**$ 6,801,880**	**$ 7,489,378**	**$ 7,576,637**
EXPENSES											
On-Street Parking [7]	1,005,172	1,035,327	1,066,387	1,035,327	1,066,387	1,098,379	1,066,387	1,098,379	1,131,330	1,098,379	1,131,330
Church Street Deck [7]	236,187	243,273	250,571	258,088	265,831	273,806	282,020	290,481	299,195	308,171	317,416
Court Street Deck [7]	220,470	227,084	233,897	240,914	248,141	255,585	263,253	271,151	279,286	287,665	296,295
Carroll Creek Deck [7]	220,675	227,295	234,114	241,137	248,371	255,822	263,497	271,402	279,544	287,930	296,568
West Patrick Street Deck [7]	169,594	174,682	179,922	185,320	190,880	196,606	202,504	208,579	214,836	221,281	227,919
East All Saints Street Deck [7]	154,616	159,254	164,032	168,953	174,022	179,243	184,620	190,159	195,864	201,740	207,792
Capital Improvement Projects [8]	9,000	9,270	9,548	18,000	31,500	55,125	82,688	124,032	155,040	193,800	242,250
Deck 6 [9]	-	-	-	-	-	-	-	-	-	398,157	410,102
Parking Shuttle Service [10]	-	-	-	-	-	724,880	724,880	260,100	260,100	260,100	260,100
Gross Annual Operating Expenses	**$ 2,015,714**	**$ 2,076,185**	**$ 2,138,471**	**$ 2,147,739**	**$ 2,225,132**	**$ 3,039,446**	**$ 3,069,849**	**$ 2,714,283**	**$ 2,815,195**	**$ 3,257,223**	**$ 3,389,772**
EBITDA	**$ 4,508,630**	**$ 639,362**	**$ 2,359,073**	**$ 4,109,973**	**$ 4,157,752**	**$ 2,939,229**	**$ 2,992,908**	**$ 3,906,453**	**$ 3,986,685**	**$ 4,232,155**	**$ 4,186,865**
Depreciation Expense [11]	$ 1,542,641	$ 1,558,067	$ 1,573,648	$ 1,589,384	$ 1,605,278	$ 1,621,331	$ 1,637,544	$ 1,653,919	$ 1,670,458	$ 1,687,163	$ 1,704,035
Debt Service [11]	$ 619,519	$ 557,567	$ 501,810	$ 451,629	$ 406,466	$ 365,819	$ 329,237	$ 296,313	$ 266,682	$ 240,014	$ 216,013
Deck 6 Debt Service [12]	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,172,072	$ 1,172,072	$ 1,172,072
New Church Street Debt Service [13]	$ -	$ -	$ -	$ -	$ -	$ 984,915	$ 984,915	$ 984,915	$ 984,915	$ 984,915	$ 984,915
NET INCOME	**$ 2,346,470**	**$ (1,476,272)**	**$ 283,615**	**$ 2,068,960**	**$ 2,146,008**	**$ (32,836)**	**$ 41,213**	**$ 971,306**	**$ (107,442)**	**$ 147,991**	**$ 109,830**

Table 6-7, Continued

Notes/Assumptions:

1. This item is unchanged from the Base Case projections.

2. Meter revenues will increase by 5% in 2024 and 2025 and revenues from parking citations will increase by 10% in 2024 and 2025 over the Base Case projections when the Church Street Garage is closed for replacement.

3. Church Street Garage will close 2024-2025 for demolition and reconstruction, during which time monthly lease holders will be reassigned to Court Street, Carroll Street or East All Saints, resulting in short-term increases in revenues from monthly leases in these facilities. Displaced Church Street transients are likely to seek parking at curbside meters, Court Street, Carroll Street, illegally or at off-site facilities supported by shuttle service.

4. Temporary increases in monthly and transient revenues in these facilities driven by displaced Church Street parkers.

5. East All Saints gains 196 parkers from Church Street replacement in 2024-2025, before reverting back. The Shaefer Building occupancy in 2026 will add another 146 permit parkers over baseline. Opening of One Commerce in 2027 and Galleria in 2028 will inflate transient revenues by 3% over the prior year each time.

6. Deck Six gains monthly parkers from displaced parkers on existing site, East All Saints, the Galleria residents, and One Commerce office workers in 2028. Facility will also capture overflow from Downtown Marriott/Convention Center and transient traffic from the Galleria and/or One Commerce projects.

7. Projected operating expenses do not deviate from Base Case projections unless otherwise noted.

8. Replacement of the Church Street Garage will free up some of this allocation for investment in service improvements such as new parking guidance and space location technology beginning in 2023.

9. Deck Six operating expenses based on estimated allocation of $633/space annually over the capacity (629 spaces) of the proposed facility.

10. Parking Shuttle service assumes provision of a two-vehicle route supporting 10-minute headways during the disruption of Church Street Garage, and a lower level of service thereafter.

11. Existing debt service as detailed in Base Case projections.

12. Based on estimated total project cost of ~ $16.2M, amortized over 20 years at 4.0% APR commencing 1/1/2027.

13. Based on estimated total project cost of ~ $13.5M, amortized over 20 years at 4.0% APR commencing 1/1/2024.

Table 6-8: System Growth Scenario Conceptual Proforma Operating Statement, FY2020-FY2029 – Deck Six as First Major Project

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
REVENUE											
Investment Activity [1]	548,841	439,073	493,957	521,399	537,041	553,152	569,747	586,839	604,444	622,578	641,255
On-Street Parking [2]	1,791,515	895,758	1,200,315	1,717,049	1,745,346	1,774,209	1,880,389	1,903,338	1,824,885	1,846,889	1,869,247
Church Street Deck [3]	995,814	328,619	667,195	953,699	992,337	1,008,973	-	-	924,127	942,854	962,060
Court Street Deck [4]	960,276	316,891	643,385	920,133	931,392	942,835	1,053,792	1,057,808	970,844	979,025	987,288
Carroll Street Deck [4]	980,936	323,709	657,227	936,793	953,568	970,677	1,078,496	1,087,326	1,006,611	1,024,782	1,043,316
West Patrick Street Deck [1]	880,249	290,482	589,767	855,498	864,903	873,084	877,963	880,010	881,466	882,937	884,422
East All Saints Street Deck [5]	366,713	121,015	245,698	395,626	529,841	535,134	538,975	540,151	540,751	540,751	541,357
Deck 6 [6]	-	-	-	-	-	317,571	875,931	881,253	720,664	730,201	739,924
Gross Annual Revenues	**$ 6,524,344**	**$ 2,715,547**	**$ 4,497,544**	**$ 6,300,198**	**$ 6,554,428**	**$ 6,975,635**	**$ 6,875,293**	**$ 6,936,726**	**$ 7,473,794**	**$ 7,570,017**	**$ 7,668,869**
EXPENSES											
On-Street Parking [7]	1,005,172	1,035,327	1,066,387	1,035,327	1,066,387	1,098,379	1,066,387	1,098,379	1,131,330	1,098,379	1,131,330
Church Street Deck [7]	236,187	243,273	250,571	258,088	265,831	273,806	-	-	282,020	290,481	299,195
Court Street Deck [7]	220,470	227,084	233,897	240,914	248,141	255,585	263,253	271,151	279,286	287,665	296,295
Carroll Creek Deck [7]	220,675	227,295	234,114	241,137	248,371	255,822	263,497	271,402	279,544	287,930	296,568
West Patrick Street Deck [7]	169,594	174,682	179,922	185,320	190,880	196,606	202,504	208,579	214,836	221,281	227,919
East All Saints Street Deck [7]	154,616	159,254	164,032	168,953	174,022	179,243	184,620	190,159	195,864	201,740	207,792
Capital Improvement Projects [8]	9,000	9,270	9,548	18,000	31,500	55,125	82,688	124,032	155,040	193,800	242,250
Deck 6 [9]	-	-	-	-	-	78,625	314,500	323,935	333,653	343,663	353,973
Parking Shuttle Service [10]	-	-	-	-	520,200	520,200	724,880	724,880	260,100	260,100	260,100
Gross Annual Operating Expenses	**$ 2,015,714**	**$ 2,076,185**	**$ 2,138,471**	**$ 2,147,739**	**$ 2,745,332**	**$ 2,913,391**	**$ 3,102,329**	**$ 3,212,517**	**$ 3,131,673**	**$ 3,185,039**	**$ 3,315,422**
EBITDA	**$ 4,508,630**	**$ 639,362**	**$ 2,359,073**	**$ 4,152,459**	**$ 3,809,096**	**$ 4,062,244**	**$ 3,772,964**	**$ 3,724,209**	**$ 4,342,121**	**$ 4,384,978**	**$ 4,353,447**
Depreciation Expense [11]	$ 1,542,641	$ 1,558,067	$ 1,573,648	$ 1,589,384	$ 1,605,278	$ 1,621,331	$ 1,637,544	$ 1,653,919	$ 1,670,458	$ 1,687,163	$ 1,704,035
Debt Service [11]	$ 619,519	$ 557,567	$ 501,810	$ 451,629	$ 406,466	$ 365,819	$ 329,237	$ 296,313	$ 266,682	$ 240,014	$ 216,013
Deck 6 Debt Service [12]	$ -	$ -	$ -	$ 1,172,072	$ 1,172,072	$ 1,172,072	$ 1,172,072	$ 1,172,072	$ 1,172,072	$ 1,172,072	$ 1,172,072
New Church Street Debt Service [13]	$ -	$ -	$ -	$ -	$ -	$ -	$ 984,915	$ 984,915	$ 984,915	$ 984,915	$ 984,915
NET INCOME	**$ 2,346,470**	**$ (1,476,272)**	**$ 283,615**	**$ 939,374**	**$ 625,280**	**$ 903,022**	**$ (350,804)**	**$ (383,010)**	**$ 247,994**	**$ 300,814**	**$ 276,412**

Table 6-8, Continued

Notes/Assumptions:

1. This item is unchanged from the Base Case projections.

2. Meter revenues will increase by 5% in 2025 and 2026 and revenues from parking citations will increase by 10% in 2025 and 2026 over the Base Case projections when the Church Street Garage is closed for replacement.

3. Church Street Garage will close 2025-2026 for demolition and reconstruction, during which monthly lease holders will be reassigned to Court Street, Carroll Street or Deck 6, resulting in short-term increases in revenues from monthly leases in these facilities. Displaced Church Street transients are likely to seek parking at curbside meters, Court Street, Carroll Street, illegally or at off-site facilities supported by shuttle service.

4. Temporary increases in monthly and transient revenues in these facilities driven by displaced Church Street parkers.

5. East All Saints gains 146 parkers from Shaefer Building occupancy in 3Q2022. Facility will also capture some transient parkers from Galleria starting in 2Q2023 and One Commerce in 3Q2025.

6. Deck 6 gains monthly parkers from displaced parkers on existing site, the Galleria residents, One Commerce office workers and will also absorb a significant portion of the displaced Church Street Garage monthlies during demolition and reconstruction. Facility will also capture overflow from Downtown Marriott/Convention Center and transient traffic from the Galleria and/or One Commerce projects.

7. Projected operating expenses due not deviate from Base Case projections unless otherwise noted.

8. Replacement of the Church Street Garage will free up some of this allocation for investment in service improvements such as new parking guidance and space location technology beginning in 2023.

9. Deck 6 operating expenses based on estimated allocation of $500/space annually over the capacity (629 spaces) of the proposed facility.

10. Parking Shuttle service assumes provision of a two-vehicle route supporting 7.5 minute headways during construction of Deck 6 operating Monday through Friday from 7:30 AM to 7:30 PM. Shuttle service during the Church Street Garage replacement project will consist of two-vehicles maintaining 7.5 minute headways and operating from 7:30 AM to 7:30 PM, Monday through Saturday, and 9:30 AM to 7:30 PM Sundays. After 2026 shuttle service will be reduced to one vehicle maintaining 15 minute headways and operating 7:30 AM to 7:30 PM, Monday through Friday as amenity for commuters seeking free remote parking.

11. Existing debt service as detailed in Base Case projections.

12. Based on estimated total project cost of ~ $16.2M, amortized over 20 years at 4.0% APR commencing 1/1/2022.

13. Based on estimated total project cost of ~ $13.5M, amortized over 20 years at 4.0% APR commencing 1/1/2025.

Other Financing Mechanisms

In addition to parking revenue and bonds, which have been traditionally used by the City and are included in both the base proforma and the system growth pro-forma calculations, there are additional financing mechanisms that could be considered, both to assist with the alternative transportation options and with future parking needs.

Partners

The concept of generating revenue through partnerships is a familiar concept for the City with regard to its current garage operations, which are supported in part by Frederick County, as a significant user of the parking system. Additional partnerships could develop within the context of the Carmack Jay's property (previously described), as well as through the proposed alternative transportation initiatives and the future circulator. For example, if a bike share program is initiated, a major sponsor could be sought and that sponsor would likely be identified on the bicycles.

While a community circulator is not recommended for the short term, it is a possibility for the future. Partnership arrangements with major institutions served by the route could be developed to help defray the operating costs of the service. These institutions could potentially include Hood College and Frederick Health Hospital.

Transportation Fund

The City of Frederick currently receives user fees from transportation network companies (TNCs). These fees are currently deposited in the City's General Fund, though they are to be used for transportation purposes. This option proposes that these fees be deposited into a specific transportation fund. If additional alternative transportation options are initiated within the City, user fees from those activities could also be deposited in the fund. These fees could include those associated with a bike share program or vehicle charging fees. The fund could then be used to help support these initiatives.

Tax Increment Financing

A commonly-used financing vehicle is Tax Increment Financing, which captures the increased property value generated by development in an area to create a pool of money that can be used for area improvements. When a TIF district is established, the current property taxes are defined as the "base" amount. In the succeeding years, for a set period of time, any additional property tax (over and above the base amount) generated within the district is set aside in a special fund. That money can then be used to fund further improvements within the district, including public parking facilities. TIF money can be used as it is generated or the municipality can issue bonds backed by the future revenues from the increment collected in the district. Depending on where a parking facility is being built, this may be a desirable financing mechanism.

Parking Benefit District

A variation on the TIF and Parking Fund, is the creation of a Parking Benefit District (PBD). This is a program through which a city or town agrees to return all or some parking revenue (generated through parking meters, assessments, and/or taxes) to a specific, defined area for improvements. Returning parking money directly to the community is often necessary when converting from free to fee-for-use parking to gain the general public's acceptance of the idea. Unlike a TIF or a Parking Fund that are administered by municipal government officials, with PBDs the key stakeholders such as business owners, developers, property owners, residents and government representatives work together to develop goals and objectives for a PBD. These stakeholders also decide where and how funds should be spent. One example of a successful PBD is in Old Pasadena, where on-street pricing was raised to keep vacancy rates around 15% and all parking revenue was used to purchase street furniture, trees, light fixtures, and to do street cleaning and maintenance. In Boulder, the PBD uses revenues to provide free universal transit passes, bicycle parking, other services that encourage the use of alternative travel modes.

Business Improvement District

Business Improvement Districts (BIDs) levy a special assessment on commercial properties within a defined area. This is often an ad valorem assessment based on the value of each property within the district, annual gross sales, or total payroll. The money is used to fund improvements in the district – including a parking facility if the area businesses choose to construct one. These assessments are commonly uniform within the district and do not provide any discount or reduction for property owners, businesses, or institutions within the district that provide their own parking. The City of Burlington established an ad hoc BID in the late 1990's to assure that any member of the general public can park for free for up to two (2) hours in at least one of the City's three downtown parking garages.

In Montgomery County, MD, commercial space within designated Transportation Management Districts is assessed at a rate of $0.10 per square foot of Gross Floor Area that goes to pay for parking and transportation programs within each defined district. While not precisely a BID, the basic structure and mechanisms are identical.

MARKETING AND COMMUNICATION – PUBLIC AWARENESS CAMPAIGN

A public awareness campaign will be essential for keeping the public informed about the parking and mobility improvements planned for Downtown Frederick, some of which will involve considerable short-term disruption for residents, merchants, employers, employees, and visitors to downtown. The following elements should be considered for inclusion in the plan:

- An information brief detailing why the project(s) is/are necessary, including expected results;
- Project Branding;
- The development of a "Survival Guide"
- Ongoing dissemination of information to the public

Each of these elements is described below.

Information Brief

An important first element for the public awareness campaign should be the development of an information brief that provides the key messages concerning the need for the project and expected outcomes. This information included will provide the "**why**", which will be important for the public to understand during the disruptive construction period.

Using the Church Street Garage as an example, the brief could include the following "why" information:

- Built in the 1970's, the facility has more than exceeded its initial lifecycle. This lifecycle can be extended through significant reinvestment in major repair and replacement, but not indefinitely. A recent assessment provided a list of repairs that are needed in the short-term. These repairs total $1.4 million.

- Even a major investment in restoration now would not address some of the obsolescence inherit in the original design. The current structure does not meet current standards for ventilation, energy use or accessibility.

- The new Church Street Garage will a mobility hub within the downtown core. It could include secure and protected bicycle storage; public lockers, changing facilities, or even showers. The facility or the newly expanded apron on East Church Street could offer an opportunity to install a bicycle share station and/or designated storage for rental scooters.[10]

- The facility could also provide support to transit riders, bicyclists, and walkers by including a car sharing service location, providing informational kiosks in elevator lobbies regarding transit and rideshare services, and potentially designating open curb adjacent to the access and egress lanes for TNC pick-up and drop-off. It is also conceivable that a design could incorporate new office space which would allow the Parking Department to relocate from their current location in the Court Street Garage or offer a second service center.

[10] This section of the information brief can be developed once the final plans have been submitted and decisions have been made regarding the specific amenities that will be included in the garage.

- State of the art lighting and ventilation systems could reduce carbon emissions and installation of solar panels on the top floor of the facility could serve to partially power these systems. Electric vehicle charging stations will be part of this new facility, as will real-time parking availability information.

- Once the facility has been designed, the renderings of the new Church Street Garage can be included as part of the information brief, along with information about the expected costs and how the City is going to finance the project.

- The anticipated project schedule should also be included.

A similar information brief can be developed for the construction of Deck Six, highlighting the specific "whys" for that project.

Project Branding

The City, in collaboration with the Downtown Frederick Partnership, may wish to develop a brand for each of the major projects. Branding can help the public easily identify the project and make it easier for people to find out relevant information. It could be something as simple as "Church Street Garage 2.0." Whatever brand is ultimately chosen should be included on all of the public information media prepared for the project.

An example of a successful public works branding project, albeit on a much larger scale, was Metro Denver's Transportation Expansion Project, which they branded T-REX. The name corresponded to the massive nature of the project, which was a $1.67 billion combined freeway construction and light-rail extension.

"Survival Guide"

It will also be important to develop a communications piece that outlines all of the steps the City will be taking to show that they care about the people who will be impacted and are working to mitigate the disruption caused by the project. This piece could be termed a "survival guide," and should highlight the mitigation measures, which could include:

Parking Availability Application

- What are the parking options in Downtown Frederick?
- Where are there available spaces in Downtown Frederick?
- How can the parking availability application be downloaded and used?

Parking Shuttle

- Where and when it will operate
- What it looks like

- How to use it
- Information about the real-time schedule feature
- Where the stops will be located
- The frequency of service
- How to find out more information about it if there are questions

Information on Alternative Transportation Options

- Links to TransIT
- Information on bicycle and pedestrian routes, paths, initiatives

What Else is the City Doing to Help?

- Moving monthly parkers to other garages
- Encouraging parking cash-out for employees to free up spaces within the system

Timeline

- How long will the disruption last?

Ongoing Dissemination of Public Information

In order to maintain public trust and confidence in the project it is very important to keep the public informed about the project as it progresses. Public information can be provided as a joint effort among the City, the Downtown Frederick Partnership, and Visit Frederick using a number of mechanisms. These are highlighted below.

Webpage

A project webpage should be developed that includes all of the relevant information concerning the project(s). The webpage should be updated regularly and made available via the City's existing parking website, as well as the Downtown Frederick Partnership's website, Visit Frederick's website, and potentially others that provide information about parking and visiting Downtown Frederick.

Social Media Presence

Project information should also be shared on a regular basis via the social media sites operated by the City, the Downtown Frederick Partnership, and Visit Frederick.

Signage Prior to Closure

Well in advance of the closure of the Church Street Garage, signs should be put up in the garage providing the basic closure information, as well as providing alternative parking information.

Media Releases

The preparation and distribution of media releases including relevant public information will be helpful for reaching a broader audience such as readers of the Frederick News-Post and local radio listeners.

Cards to Local Area Businesses

Another more personal initiative would be for the City to prepare information cards with the basic project information and hand-deliver them to the businesses that will be most affected by the closure of the Church Street Garage.

Appendix A
Parking Garage Condition Assessments

COURT STREET GARAGE

OBSERVATIONS AND FINDINGS

DESMAN conducted visual observations to identify structural and protection maintenance issues as well as necessary repair items and repair item quantities. Our field survey consisted of limited visual observations of floor surfaces, overhead surfaces and interior and exterior vertical surfaces to ascertain present existing conditions of the garage structure.

Moisture protection is another important concern that was assessed. Moisture protection consists of joint sealants, caulking, slab sealers and traffic bearing membranes. These items are designed to prevent water from penetrating to the levels below and reaching the depths of slab reinforcing or other embedded metal components. Inadequate or failed waterproofing measures not only lead to corrosion, staining and deterioration, but also allow water to spoil the convenience of parking in the facility.

FLOORS SLABS

The structurally elevated slabs appear to be in generally fair condition, given its precast construction and age of the garage. Concrete spalling and cracking along the double-tees appear to be minimal. There is some select spalling found throughout the elevated slabs. *See photos #1 to #2.* A few shear connectors are showing signs of failure, either by water penetration, worn sealant, or spalling around the connection. *See photos #3 to #4.* Water and chloride penetration through existing joints are causing corrosion at the embedded shear connectors due to lack of appropriate waterproofing of the embedded connections prior to placement in the precast elements. These connections are important structural elements and should be protected.

Photo 1- Spalled concrete

Photo 2- Spalled Concrete


Photo 3- Spall concrete at shear connector


Photo 4- Spall concrete at shear connector

The on-grade floor surfaces on level 1 appeared in good condition. The visual observations found minor isolated areas with concrete delamination.

Floor joints were sealed including tee-to-tee joints, tee-to-girder joints, tee-to-column/wall joints and cove joints at floor interfaces with vertical surfaces.

The sealant appeared to be in poor condition with several visible sealant failures. Typically, urethane joint sealants have a life expectancy of approximately 5-7 years. The failure of these joints allow water to permeate between the double tees and spandrels or walls, and have started the corrosion process of several steel components around the garage. If this corrosion is allowed to continue, it also could eventually result in a reduced load carrying capacity of the structure. During any future sealant replacements, the concealed precast connections should be cleaned, inspected and repaired as required.

SOFFITS AND VERTICAL SURFACES

DESMAN's site visit correlated with a rainy day and areas which require maintenance repair were visually evident by the water leaks observed. In general, the concrete soffit and vertical surfaces appeared in fair conditions. Several leaking tee joints were observed throughout the garage elevated floors corroding steel connections including shear and precast clip connections. *See photos #5 to #6.* Corrosion of these connections are causing concrete around it to spall. A few locations with cracked or spalled concrete were found, some which exposed the reinforcement within. *See photos #7 to #8.* All deteriorated concrete should be removed and replaced throughout the garage soffit.


Photo 5- Leaking joint


Photo 6- Spalled Concrete & leaking cove joint

Photo 7- Rusting reinforcement & spalling corbel

Photo 8- Spalled Concrete and exposed reinforcement

Concrete cracking and spalls were noted at beams and columns. *See photos #9 and #10*. Many spalls are recommended to be repaired such that the concrete does not fall and damage any vehicles or injure any pedestrians in the garage. It is recommended that any vertical cracks and deteriorated sealants be routed and sealed to prevent any further water infiltration to the precast elements.

Photo 9- Spalled/cracked beam

Photo 10- Cracking Column & Spalling corbel

Additionally, to the cracking and spalling shown above, several double tee stems and curb spalling were observed around the garage. *See photos #11 to #12*. In addition to repair double tee stems, bearing pads should be replace at these locations as well as the releasing and reestablishing the clip and shear connections.


Photo 11- Spall curb


Photo 12- Spall double tee stem

WATERPROOFING

A waterproofing membrane had been installed over the roof level of the garage, supported ramps, partially on the second level and partially on the fifth level. During our inspection several areas of the membrane were worn, cracked and other areas of the membrane were de-bonded from the structural slab. *See photos #13 to #14*. In some locations the membrane was failed and the concrete surface was exposed. *See photo #15*. Deteriorated areas of traffic bearing membrane allow for the infiltration of moisture and leakage of contaminants between cracks. Furthermore, several failed cove joints were observed throughout the garage allowing water to reach the vertical surfaces below. *See photo #16.*


Photo 13- Worn membrane


Photo 14- Cracking waterproofing membrane

Photo 15- Failed waterproofing membrane

Photo 16- Open cove joint

Any applied waterproofing measures should be periodically inspected and as conditions warrant, they should be repaired/replaced to maintain the system effectiveness. These waterproofing measures should be maintained for the life of the facility to avoid future moisture infiltration and contamination penetration to the level of the reinforcing. Inadequate or failed waterproofing measures not only lead to corrosion, staining and deterioration, but also allow water to spoil the convenience of parking in the facility.

DRAINAGE

Most of the area drains appear to be in good condition. Positive drainage is noted throughout the garage as there were minor signs of ponding water at the roof level. It appears that the vertical stacks throughout the garage are PVC and most of them were observed without a pipe guard. *See photos #17 to #18.*

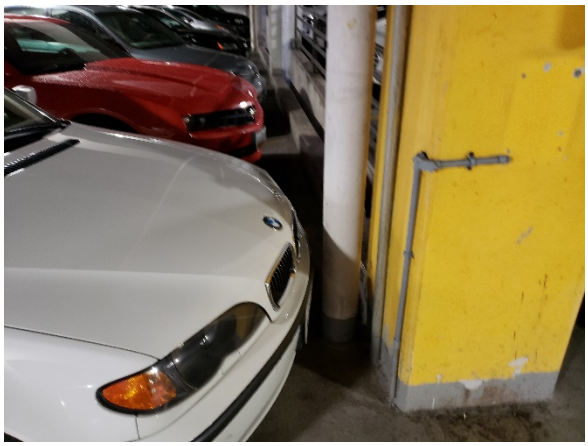


Photo 17- No pipe guard

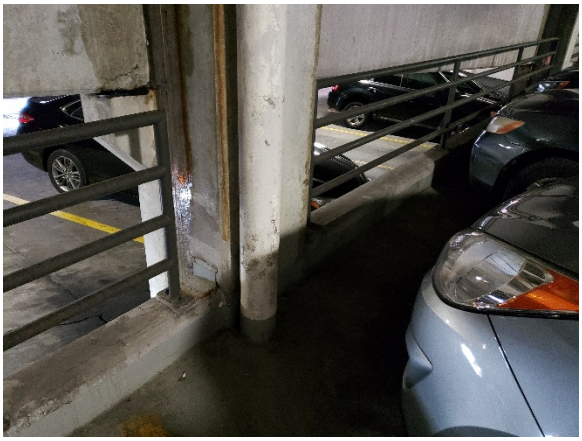


Photo 18- No pipe guard

EXTERIOR AND STAIR TOWERS

The sealant between the cap concrete stones throughout the roof level and between the bricks over the parapets are aged, failed and in some cases no longer exists. *See photos #19 and #20*.

Photo 19- Failed caulk

Photo 20- Failed caulk

Miscellaneous metal items were noted throughout the garage that would require periodic cleaning and painting to protect them from deterioration and to improve the facilities aesthetics. Some of these items include exposed precast connections, stair framing, and metal railings. *See photos #21, #22 and #23*.

Photo 21- Rusted connection & spalled concrete

Photo 24- Slight rust on stair framing

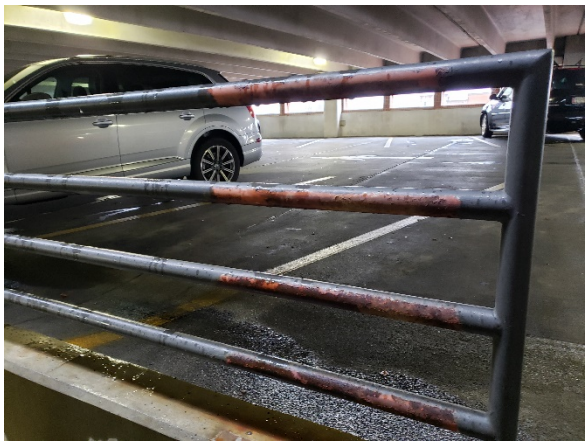


Photo 23- Rusted metal railings

Window sealant was observed to have deteriorated and miscellaneous open mortar joints were noted throughout the façades. *See photos #24 and #25*.


Photo 24- Failed window sealant


Photo 25- Deteriorated mortar joints

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of this visual condition survey, it can be said that at this time the Court Street Garage is generally in fair condition. However, several structural and waterproofing repairs are recommended to provide the longest possible service life for the garage. Based on field observation, the facility age and our experience in similar restoration projects, a comprehensive repair program has been developed for the repair and preventive maintenance of the facility. Detailed description of the program is provided and accompanied by an engineer's construction cost estimate. These costs are based on current prices for labor, equipment, and materials. See *Appendix A*.

The immediate repairs include safety-related items such as fall hazard, items which directly affect load capacity of a structural component and constitute a threat to public safety. Immediate repairs should take precedence over all others and be the first to complete. These include the concrete beams, corbel and some vertical and overhead concrete repairs throughout the garage elevated levels that have spalled or are delaminated. The priority repair program includes restoring the structural integrity of these members to their original condition by removing and replacing the cracked and deteriorated concrete. In the interim it is recommended that the loose concrete around the garage be removed until repairs can be made to restore the design strength of these structural members.

"Near-term Repairs" are intended to extend the serviceable life of the garage. Near-term repairs include: patching concrete topping; patching full depth concrete double tee flange; vertical surfaces and overhead concrete repairs; stem repairs; bearing pad replacement; beam repairs; concrete repairs at slab on grade; shear connector repairs, shear connector replacement; clip connection repairs; lift pocket repairs; tuck-pointing masonry joints; double tee joint replacement; perimeter cove joint replacement; parapet caulk joint replacement; waterproofing patch repairs; waterproofing membrane recoating; replacing existing drain; installing new floor drain piping; new vertical stack guards; stripping; cleaning and painting miscellaneous metals and exposed precast connections; replacing windows exterior joints; tuckpointing exterior masonry joints.

"Programmed Repairs" are to be implemented after year 2 through year 10, after issuance of our report. Recommended program consists of preventive maintenance items to provide the longest possible service life for the garage. The maintenance work has been projected taking into account the current age of the structure and life expectancies of materials and products utilized. The costs presented herein are higher

in some years due to periodic restoration repairs and/or re-applications of waterproofing items at the end of their useful lives occurring simultaneously with preventive maintenance work.

As spalling and loose concrete may continue to occur in the near future, periodic monitoring should be established on a regular basis until appropriate repairs are implemented. Any additional concrete that becomes loose prior to implementing necessary repairs should also be removed as conditions warrant and included in the periodic monitoring. The monitoring personnel should evaluate the extent of deterioration and report for change in conditions. Long term repairs consider all repair items from previous years and applies a percentage of current conditions and some cases may increase slightly in quantity.

COSTS

Enclosed you will find engineer's opinion of estimated probable construction costs for budgeting purposes only. A detailed outline cost has been provided for the Priority Repairs, Short-term Repairs, Intermediate-Term and Long-Term repair years.

The maintenance costs are summarized for a 10-year period. The actual costs would be higher or lower in certain years and these values would be average maintenance costs over a long period. The projection assumes proactive comprehensive maintenance of the facility. In general, if maintenance work gets deferred, long-term maintenance costs would likely go up and the probability of unanticipated repairs may become higher.

The miscellaneous costs and general condition costs that have been included in all of the cost estimates are for contractor's mobilization costs, protection of existing utilities during construction, permits, bonds, etc.

The figures are expressed in today's value of money and exclude costs for engineering, construction administration or material testing fees, lost revenue, inflation and utility costs, disruption in garage operations and patron inconvenience during maintenance work.

All estimates are based on a limited condition survey and the final quantities will vary.

EXCLUSIONS AND LIMITATIONS

The following services and responsibilities are specifically excluded from this report:

- DESMAN shall have no responsibility for the discovery, presence, handling, removal and disposal of, or exposure of persons to, hazardous materials in any form at the project site, including but not limited to, asbestos, asbestos products, lead, lead paint, mold, polychlorinated biphenyl (PCB) or other toxic substances.

- This evaluation report did not include services for the assessment and maintenance of elevator, MEP components, fire protection systems, lighting and control equipment.

- Code Analysis/ADA/Code Compliance Survey were not included as part of our assignment.

- The condition evaluation did not include any buildings, site structures/feature or areas outside of the garage footprint. This includes, but is not limited to sidewalks, approach slabs, or occupied spaces.

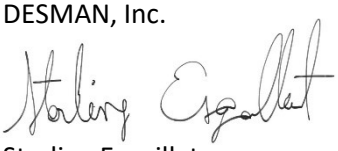
- No structural calculations or analysis have been made to determine the adequacy of the existing structural system(s)/components or its compliance with accepted building code requirements.

- This report does not imply any warranty of the structure, but only addresses the condition of the areas that were readily accessible and observable at the time of the field survey. The opinions stated in this report are based on visual observations only.

The purpose of the information presented from the visual survey is to report on the present condition of the facilities and is not to be used for construction. The opinions stated in this report are based visual observations only.

Please contact us if you have any questions regarding these findings. It is a pleasure to be of service to you on this facility.

Sincerely,
DESMAN, Inc.



Starling Espaillat

COST ESTIMATES – COURT STREET GARAGE

50-19165 Court Street Garage, Frederick, MD - Cost Estimate
Repairs and Preventive Maintenance
Engineer's Estimated Construction Cost

Printed: 12/31/2019

Item No.	Description	Repair Quantity		2019 Unit Price	Repair Total	Immediate Year 0 2020	Near Term Year 1 2021	Programmed Maintenance Year 2 2022	Year 3 2023	Year 4 2024	Year 5 2025	Year 6 2026	Year 7 2027	Year 8 2028	Year 9 2029	Year 10 2030	TOTAL Repairs
1.	**Structural Work**																
a.	Patch Full Depth Concrete Repairs (Topping)	195	sf	$65.00	$ 12,675		$ 12,675				$ 6,338					$ 12,675	$ 31,688
b.	Patch Full Depth Concrete DT Flange Repairs	210	sf	$80.00	$ 16,800		$ 16,800				$ 8,400					$ 16,800	$ 42,000
c.	Vertical Surfaces and Overhead Concrete Repairs	165	sf	$90.00	$ 14,850	$ 3,600	$ 11,250				$ 7,425					$ 14,850	$ 37,125
d.	Stem Repairs	10	sf	$550.00	$ 5,500		$ 5,500				$ 5,500					$ 16,500	$ 27,500
e.	Corbel Repairs	12	sf	$450.00	$ 5,400	$ 5,400					$ 2,700					$ 5,400	$ 13,500
f.	Bearing Pad Replacement	2	ea	$250.00	$ 500		$ 500				$ 2,500					$ 500	$ 3,500
g.	Beam Repairs	113	sf	$450.00	$ 50,625	$ 18,000	$ 32,850				$ 9,000					$ 50,625	$ 110,475
h.	Concrete Repairs (Slab on Grade)	60	sf	$85.00	$ 5,100		$ 5,100				$ 2,550					$ 5,100	$ 12,750
i.	Shear Connector Repair	32	ea	$150.00	$ 4,800		$ 4,800				$ 1,500					$ 4,800	$ 11,100
j.	Shear Connector Replacement	32	ea	$255.00	$ 8,160		$ 8,160				$ 2,550					$ 8,160	$ 18,870
k.	Clip Connection Repairs	10	ea	$180.00	$ 1,800		$ 1,800				$ 1,800					$ 1,800	$ 5,400
l.	Lift Pocket Repairs (double tees & girders)	31	ea	$60.00	$ 1,860		$ 1,860				$ 1,200					$ 1,860	$ 4,920
m.	Tuck-point Masonry Joints	806	lf	$10.00	$ 8,060		$ 8,060				$ 5,000					$ 8,060	$ 21,120
n.	Masonry Repairs (CMU)	60	ea	$60.00	$ 3,600						$ 3,600					$ 3,600	$ 7,200
o.	Masonry Repairs (Brick)	60	ea	$85.00	$ 5,100						$ 5,100					$ 5,100	$ 10,200
	Subtotal				**$ 144,830**	**$ 27,000**	**$ 109,355**	$ -	$ -	$ -	**$ 65,163**	$ -	$ -	$ -	$ -	**$ 155,830**	**$ 357,348**
2.	**Waterproofing Work**																
a.	Double Tee Joint Replacement	19,440	lf	$6.00	$ 116,640		$ 116,640				$ 116,640					$ 116,640	$ 349,920
b.	Perimeter Cove Joint Replacement	6,720	lf	$6.00	$ 40,320		$ 40,320				$ 20,160					$ 40,320	$ 100,800
c.	Parapet Caulk Joint Replacement	1,020	lf	$6.00	$ 6,120		$ 6,120				$ 6,120					$ 6,120	$ 18,360
d.	Waterproofing Patch Repairs	6,721	sf	$6.00	$ 40,326		$ 40,326				$ 20,163					$ 40,326	$ 100,815
e.	Waterproofing Recoat	47,709	sf	$3.00	$ 143,128		$ 152,484				$ 71,564					$ 143,128	$ 367,175
f.	Rout and Seal Cracks	300	lf	$5.00	$ 1,500						$ 1,500					$ 1,500	$ 3,000
	Subtotal				**$ 348,034**	$ -	**$ 355,890**	$ -	$ -	$ -	**$ 236,147**	$ -	$ -	$ -	$ -	**$ 348,034**	**$ 940,070**
3.	**Drainage**																
a.	Replace Existing Drain	1	ea	$1,500.00	$ 1,500		$ 1,500									$ 1,500	$ 3,000
b.	Installation New Floor Drain Piping	30	lf	$55.00	$ 1,650		$ 1,650									$ 1,650	$ 3,300
	Subtotal				**$ 3,150**	$ -	**$ 3,150**	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 3,150**	**$ 6,300**
4.	**Guards**																
a.	New Vertical Stack Guard	24	ea	$1,000.00	$ 24,000		$ 24,000										$ 24,000
	Subtotal				**$ 24,000**	$ -	**$ 24,000**	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 24,000**
5.	**Paint**																
a.	Striping	1	ls	$17,500.00	$ 17,500		$ 17,500				$ 17,500					$ 17,500	$ 52,500
b.	Clean and Paint Miscellaneous Metal	1	ls	$15,000.00	$ 15,000		$ 15,000				$ 15,000					$ 15,000	$ 45,000
c.	Clean and Paint Exposed Precast Connections	1	ls	$15,000.00	$ 15,000		$ 15,000				$ 15,000					$ 15,000	$ 45,000
	Subtotal				**$ 47,500**	$ -	**$ 47,500**	$ -	$ -	$ -	**$ 47,500**	$ -	$ -	$ -	$ -	**$ 47,500**	**$ 142,500**
6.	**Exterior**																
a.	Replace Windows Exterior Joints	1,320	lf	$10.00	$ 13,200		$ 13,200										$ 13,200
b.	Tuck-point Masonry Joints	130	lf	$12.00	$ 1,560		$ 1,560									$ 1,560	$ 3,120
c.	Masonry Brick Replacement	200	ea	$85.00	$ 17,000											$ 17,000	$ 17,000
	Subtotal				**$ 31,760**	$ -	**$ 14,760**	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 18,560**	**$ 33,320**
	Total Above				$ 599,274	$ 27,000	$ 554,655	$ -	$ -	$ -	$ 348,809	$ -	$ -	$ -	$ -	$ 573,074	$ 1,503,538
7.	**Miscellaneous Items**																
a.	General conditions	1	ls	$59,930.00	$ 59,930	$ 7,000	$ 55,000	$ -	$ -	$ -	$ 35,000	$ -	$ -	$ -	$ -	$ 57,000	$ 154,000
b.	Miscellaneous items	1	ls	$59,930.00	$ 59,930	$ 10,000	$ 42,700	$ -	$ -	$ -	$ 26,900	$ -	$ -	$ -	$ -	$ 44,100	$ 123,700
	Subtotal				**$ 119,860**	**$ 17,000**	**$ 97,700**	$ -	$ -	$ -	**$ 61,900**	$ -	$ -	$ -	$ -	**$ 101,100**	**$ 277,700**
	Total Above				$ 719,134	$ 44,000	$ 652,355	$ -	$ -	$ -	$ 410,709	$ -	$ -	$ -	$ -	$ 674,174	$ 1,781,238
	Estimated Contingency	15%			$ 107,870	$ 6,600	$ 97,853	$ -	$ -	$ -	$ 61,606	$ -	$ -	$ -	$ -	$ 101,126	$ 267,186
	Estimated Engineering Budget				$ 116,000	$ 8,000	$ 105,000	$ -	$ -	$ -	$ 66,000	$ -	$ -	$ -	$ -	$ 108,000	$ 287,000
	Grand Total				**$ 943,004**	**$ 58,600**	**$ 855,208**	$ -	$ -	$ -	**$ 538,316**	$ -	$ -	$ -	$ -	**$ 883,300**	**$ 2,335,424**

1. Costs are in 2019 dollars.
2. Lost revenues are not included.
3. Utility costs are not included.
4. Contingency for project conditions beyond Owner's control such as variation in quantities, bidding climate and regulatory costs are not included.
5. Estimated costs are based on utilizing non-union labor.
6. Costs do not include inflation.
7. Costs do not include upgrades in structural, mechanical, fire protection or electrical systems.
8. Costs do not include further investigations, investigation costs or upgrades/modifications associated with possible investigation findings.
9. Costs are based on visual survey only.

CHURCH STREET GARAGE

OBSERVATIONS AND FINDINGS

DESMAN conducted visual observations to identify structural and protection maintenance issues as well as necessary repair items and repair item quantities. Our field survey consisted of limited visual observations of floor surfaces, overhead surfaces, interior and exterior vertical surfaces to ascertain present existing conditions of the garage structure. Photographs were also taken to document typical existing conditions, defects and other deficiencies noted at the time of the survey.

Moisture protection is another important concern that was assessed. Moisture protection consists of joint sealants, caulking, slab sealers and traffic bearing membranes. These items are designed to prevent water from penetrating to the levels below and reaching the depths of slab reinforcing or other embedded metal components. Inadequate or failed waterproofing measures not only lead to corrosion, staining and deterioration, but also allow water to spoil the convenience of parking in the facility.

SAFETY ITEMS

During our observations, numerous areas have been identified that require immediate attention.

Loose concrete was found at a multiple location throughout the garage soffits that may pose as fall hazards. At several locations, loose concrete was related to water infiltrating through floor slab cracks. *See photos #1 to #2*. To limit the danger of falling concrete hazards, maintenance personnel should remove any loose concrete with hammers or breaker bars when the garage is at low capacity. Any areas identified that are not easily removed with hammers or breaker bars should be left in place and monitored for any changes in the existing condition. Additional concrete that becomes loose prior to implementing a repair program should also be removed.

#1 – Loose concrete at beam bearing
Level 4 Soffit grid Bx12

#2 – Loose concrete at DT flange
Level 4 Soffit grid Dx12

Visual observations revealed numerous cracked beam ledges supporting adjacent slab. *See photos #3 to #6*. This was a typical condition found on several levels. Cracked ledges should be repair as they pose a serious problem that can negatively affect the durability and, most importantly, the structural characteristics of the garage.

#3 – Cracked beam ledge
Level 4 Soffit grid Ex9

#4 – Cracked beam ledge
Level 4 Soffit grid Ex12

#5 – Cracked beam ledge at sliding bearing
Level 3 Soffit grid Bx13

#6 – Cracked beam ledge at sliding bearing
Level 4 Soffit grid Bx13

Severe spalls with loose and cracked concrete were noted on the exterior side of the beams over the sidewalk. *See photos #7 and #8.* The loose concrete constitutes a threat to public safety and should be removed and repaired.

#7 – Cracked beam ledge
Level 3 exterior grid Ax3

#8 – Cracked beam ledge
Level 3 exterior grid Ax8

Some deficiencies noted appeared unusual and should be evaluated further during a comprehensive assessment prior to developing repair solutions. Items include: Cracked beam at top connection, crack at exterior column full height, large gap at beam bearing and cracked corbel. *See photos #9 to #12.*

#9 – Cracked beam at top connection
Level 2 Soffit grid Cx13

#10 – Crack at corbel
Level 3 Soffit grid Ex14

#11 – Crack at exterior column full height
All Levels Exterior grid Cx14

#12 –Large gap at beam bearing
Level 4 Soffit grid Ex8

FLOORS SLABS

The structurally elevated slabs appear to be in generally fair condition, given its precast construction and age of the garage.

Signs of concrete spalling and cracking along the double-tees is evident as select spalling are found throughout the elevated slabs. *See photos #13 to #14.* The major items of concern are the infiltration of water and chlorides through unsealed cracks, joints and spalls in the structural slabs that permit water and chlorides to penetrate to the level of the reinforcing. The concrete deterioration appears to be a direct result of the volume of rust created during corrosion, which exerted pressure on the surrounding concrete. If these issues are not addressed, the continued seepage of salt laden moisture will only accelerate the deterioration of the supported levels, which may result in more structural problems in the future.


Photo 13- Spalling concrete slab


Photo 14- Spalled Concrete

In general, the concrete slabs-on-grade appeared to be in good condition. The visual observations found small isolated areas with concrete delamination. Minor concrete curb spalling was observed throughout the garage.

Floor joints were sealed including tee-to-tee joints, tee-to-girder joints, tee-to-column/wall joints and cove joints at floor interfaces with vertical surfaces.

The sealant appeared to be in poor condition with several visible sealant failures. Typically, urethane joint sealants have a life expectancy of approximately 5-7 years. The failure of these joints allow water to permeate between the double tees and spandrels or walls, and have started the corrosion process of several steel components around the garage. If this corrosion is allowed to continue, it also could eventually result in a reduced load carrying capacity of the structure. During any future sealant replacements, the concealed precast connections should be cleaned, inspected and repaired as required.

The topping on the third level shows signs of surficial scaling. *See photos #15 to #16* Scaling will continue to be an issue as the slab is exposed to moisture and freezing. It is evident that to extend the service life of the garage a waterproofing membrane should be applied all throughout the third level.

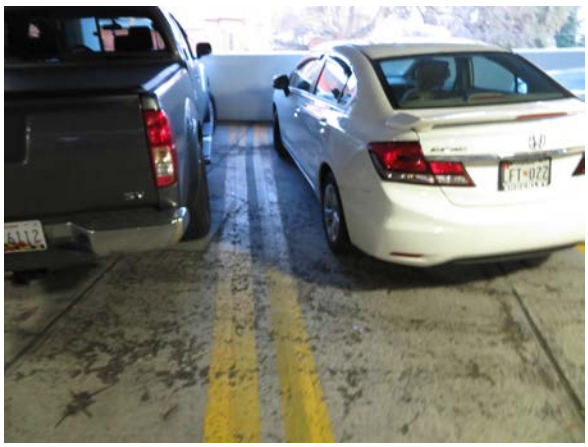


Photo 15- Scaling concrete slab


Photo 16- Scaling concrete slab

SOFFITS AND VERTICAL SURFACES

Aside from the safety concerns, our visual observations of the soffit and vertical surfaces revealed several more areas of extensive concrete and connection deterioration.

There are some connections including shear and precast clip connections showing heavy corrosion signs due to water infiltration. *See photos #17 to #18.* Corrosion of these connections are causing concrete around it to spall. A few locations with cracked or spalled concrete were found, some which exposed the reinforcement within. *See photos #19 to #20.* All deteriorated concrete should be removed and replaced throughout the garage soffit.

Photo 17- Rusting shear connector

Photo 18- Spalled Concrete

Photo 19- spalled beam at bearing

Photo 20- Spalled Concrete

Shear connectors are a vital part of the structural system of any precast concrete garage. The connectors are located along the flanges of each double tee and are used to connect one double tee to another, making the individual members an integral floor slab system. Similar to the shear connectors located throughout the length of the double tee flange, an embedded clip connection is located at each end of the double tee. It is difficult and many times impossible to visually observe the condition of any embedded connection. Corrosion and spalling may occur at shear connectors as a result of failed moisture protection measures at the double tee joints which is an indication of a failed connection in addition to any observed movement in the joints as vehicles pass over. Failed connections could eventually affect the load carrying capacity of the structure.

There are select double-tee bearing pads around the garage soffits that have failed or need to be replaced. *See photos #21 to #22*. It is difficult and many times impossible to observe the condition of the existing bearing pads from the ground level. Inadequate bearing conditions can cause future deterioration of the tee stems. Bearing pads are comprised of a neoprene-like material that sit between the precast double-tees and the haunches or inverted-tee girders they rest on. They function to allow proper expansion and movement between the precast elements to prevent cracking or spalling. Replacing bearing pads involve removing a number of other structural elements of the garage, including precast connections, shear connectors, and sealant.

Photo 21- Failed bearing pad

Photo 22- Failed bearing pad

Concrete cracking and spalls were noted at beams and columns. *See photos #23 and #24*. Many spalls are recommended to be repaired such that the concrete does not fall and damage any vehicles or injure any pedestrians in the garage. It is recommended that any vertical cracks and deteriorated sealants be routed and sealed to prevent any further water infiltration to the precast elements.

Photo 23- Spalled beam

Photo 24- Cracking Column

WATERPROOFING

A waterproofing membrane has been installed at the roof level, the fourth level and over storage spaces on the second level of the garage. The membrane appeared to be in poor condition. Areas of worn and degraded membrane were found at high traffic areas and areas where membrane was completely absent. *See photos #25 to #26*.

Photo 25- Exposed concrete at membrane

Photo 26- Exposed concrete at membrane

It is recommended that as a precautionary measure, all areas of existing waterproofing membrane be removed and replace with a new waterproofing membrane.

DRAINAGE

Most of the area drains appear to be in satisfactory condition with positive drainage noted throughout the elevated levels of the garage. Signs alerting pedestrians of flooding during heavy rain were observed at the grade level. A drainage study should also be included during the comprehensive assessment to identify the cause(s) of the flooding being experienced so that a proper long-term solution can be proposed. *See photo #27.* Spalling concrete was observed around several drain bodies. *See photo #28*. Drains should be replaced with the replacement of spalling concrete. It also appears that the vertical stacks throughout the garage are metal with steel pipe guards around them. Multiple vertical stacks were noted to be heavily corroding. *See photos #29 and #30.*

Photo 27- Warning signage

Photo 28- Spalling concrete around drain

Photo 29- Corroded pipe

Photo 30- Corroded pipe

EXTERIOR AND STAIR TOWERS

The garage façade is experiencing cracking and spalling of its concrete components. Spalls with loose concrete were noted on the exterior side of the parapet walls over the sidewalk. It seems that the embedded steel is corroding and spalling the concrete around it. The loose concrete may pose as falling hazard. *See photos #31 and #32*. As part of maintenance repair, all exposed and accessible concrete parapet walls should be cleaned and coated. Loose mortar was also observed at areas with brick facia that requires attention. *See photos #33 and #34.* Another cycle of freeze and thaw may dramatically increase the spalling at the concrete parapet edges which exponentially increases the potential of endangering the public.

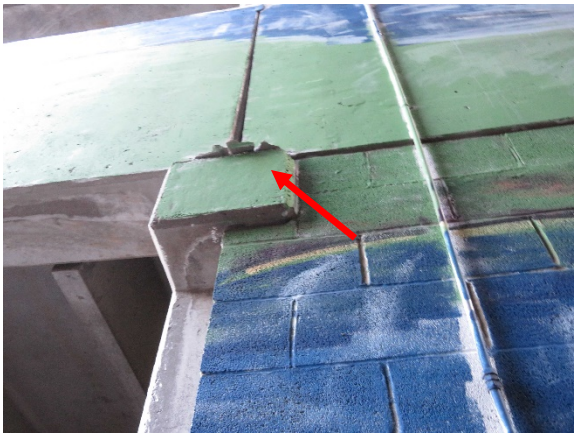


Photo 31- Spalling concrete

Photo 32- Spalling concrete

Photo 33- Loose mortar

Photo 34- Loose mortar

Miscellaneous metal items were noted throughout the garage that would require periodic cleaning and painting to protect them from deterioration and to improve the facilities aesthetics. Some of these items include exposed precast connections, stairs, metal doors and metal pipe guards.

Several metal stairs' risers and treads were observed exhibiting corrosion and rust. *See photos #35 and #36*.

Photo 23- Rusted pipe guard

Photo 24- No pipe guard

No vertical expansion joint was observed at stair tower parapet walls as well as failed horizontal expansion joints at all stair towers.

Several cracked and spalled concrete coping stones were observed over the parapets.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of this visual condition survey, it can be said that at this time the Church Street Garage is generally in fair condition, but requires immediate attention and a near-term comprehensive repair and preventive maintenance program. Several structural and waterproofing repairs are recommended to provide the longest possible service life for the garage. Based on field observation, the facility age and our experience in similar restoration projects, a comprehensive repair program has been developed for the repair and preventive maintenance of the facility. Detailed description of the program is provided and accompanied by an engineer's construction cost estimate. These costs are based on current prices for labor, equipment, and materials. See *Appendix A*.

The “immediate repairs” include safety-related items such as fall hazard, items which directly affect load capacity of a structural component and constitute a threat to public safety. Immediate repairs should take precedence over all others and be the first to complete. These include the concrete beams throughout the garage elevated levels and façade that have spalled or are delaminated and are not performing as designed as well as loose concrete overhead and shear connectors that may correspond with the repair. The priority repair program includes restoring the structural integrity of the beams and floor slabs to their original condition by removing and replacing the cracked and deteriorated concrete. In the interim it is recommended that the loose concrete around the garage be removed until repairs can be made to restore the design strength of these structural members.

“Near-term Repairs” are intended to extend the serviceable life of the garage. Near-term repairs include patching concrete topping; patching full depth concrete double tee flange; vertical surfaces and overhead concrete repairs; double tee stem repairs; beam ledge repairs; bearing pad replacement; concrete repairs at slab on grade; shear connector replacement; shear connector repairs; precast clip connection repairs at double tee; precast clip connection repairs at parapet walls; concrete scaling repairs; CMU masonry repairs; concrete curb repairs; rout and seal cracks, double tee joint replacement; perimeter cove joint replacement; epoxy injection; waterproofing replacement; installing new waterproofing membrane; replacing and installing new vertical and horizontal expansion joints; replacing existing floor drains; installing new floor drain piping; stripping; cleaning and painting miscellaneous metals and exposed precast connections; replacing door lintel; replacing damaged coping stone; replacing windows exterior joints; tuckpointing exterior masonry joints; masonry brick replacement; exterior concrete repairs; exterior masonry CMU repairs; exterior epoxy injection; concrete spandrel coating; cleaning and painting stairs; replace metal stairs steps.

“Programmed Maintenance Repairs” are to be implemented after year 2 through year 10, after issuance of our report. Recommended program consists of preventive maintenance items to provide the longest possible service life for the garage. The maintenance work has been projected taking into account the current age of the structure and life expectancies of materials and products utilized. The costs presented herein are higher in some years due to periodic restoration repairs and/or re-applications of waterproofing items at the end of their useful lives occurring simultaneously with preventive maintenance work.

As spalling and loose concrete may continue to occur in the near future, periodic monitoring should be established on a regular basis until appropriate repairs are implemented. Any additional concrete that becomes loose prior to implementing necessary repairs should also be removed as conditions warrant and included in the periodic monitoring. The monitoring personnel should evaluate the extent of deterioration and report for change in conditions. Long term repairs consider all repair items from previous years and applies a percentage of current conditions and some cases may increase slightly in quantity.

COSTS

Enclosed you will find engineer’s opinion of estimated probable construction costs for budgeting purposes only. A detailed outline cost has been provided for the Priority Repairs, Short-term Repairs, Intermediate-Term and Long-Term repair years.

The maintenance costs are summarized for a 10-year period. The actual costs would be higher or lower in certain years and these values would be average maintenance costs over a long period. The projection assumes proactive comprehensive maintenance of the facility. In general, if maintenance work gets

deferred, long-term maintenance costs would likely go up and the probability of unanticipated repairs may become higher.

The miscellaneous costs and general condition costs that have been included in all of the cost estimates are for contractor's mobilization costs, protection of existing utilities during construction, permits, bonds, etc.

The figures are expressed in today's value of money and exclude costs for engineering, construction administration or material testing fees, lost revenue, inflation and utility costs, disruption in garage operations and patron inconvenience during maintenance work.

All estimates are based on a limited condition survey and the final quantities will vary.

EXCLUSIONS AND LIMITATIONS

The following services and responsibilities are specifically excluded from this report:

- DESMAN shall have no responsibility for the discovery, presence, handling, removal and disposal of, or exposure of persons to, hazardous materials in any form at the project site, including but not limited to, asbestos, asbestos products, lead, lead paint, mold, polychlorinated biphenyl (PCB) or other toxic substances.
- This evaluation report did not include services for the assessment and maintenance of elevator, MEP components, fire protection systems, lighting and control equipment.
- Code Analysis/ADA/Code Compliance Survey were not included as part of our assignment.
- The condition evaluation did not include any buildings, site structures/feature or areas outside of the garage footprint. This includes, but is not limited to sidewalks, approach slabs, or occupied spaces.
- No structural calculations or analysis have been made to determine the adequacy of the existing structural system(s)/components or its compliance with accepted building code requirements.
- This report does not imply any warranty of the structure, but only addresses the condition of the areas that were readily accessible and observable at the time of the field survey. The opinions stated in this report are based on visual observations only.

The purpose of the information presented from the visual survey is to report on the present condition of the facilities and is not to be used for construction. The opinions stated in this report are based visual observations only. Please contact us if you have any questions regarding these findings. It is a pleasure to be of service to you on this facility.

Sincerely,
DESMAN, Inc.
Starling Espaillat

COST ESTIMATES – CHURCH STREET GARAGE

50-19165 Church Street Garage, Frederick, MD - Cost Estimate
Repairs and Preventive Maintenance
Engineer's Estimated Construction Cost

Printed: 12/31/2019

Item No.	Description	Repair Quantity		2019 Unit Price	Repair Total	Immediate Year 0 2020	Near Term Year 1 2021	Programmed Maintenance Year 2 2022	Year 3 2023	Year 4 2024	Year 5 2025	Year 6 2026	Year 7 2027	Year 8 2028	Year 9 2029	Year 10 2030	TOTAL Repairs
1.	**Structural Work**																
a.	Patch Full Depth Concrete Repairs (Topping)	336	sf	$65.00	$ 21,840		$ 21,840				$ 10,920					$ 21,840	$ 54,600
b.	Patch Full Depth Concrete DT Flange Repairs	957	sf	$80.00	$ 76,560	$ 8,250	$ 71,280				$ 32,000					$ 76,560	$ 188,090
c.	Vertical Surfaces and Overhead Concrete Repairs	173	sf	$90.00	$ 15,525		$ 15,525				$ 7,763					$ 15,525	$ 38,813
d.	Stem Repairs	6	lf	$550.00	$ 3,300		$ 3,300				$ 1,650					$ 3,300	$ 8,250
e.	Beam Ledge Repairs	42	lf	$450.00	$ 18,900	$ 5,265	$ 14,850				$ 9,450					$ 18,900	$ 48,465
f.	Beam Repairs	72	lf	$450.00	$ 32,400	$ 2,340	$30,600.00				$ 16,200					$ 32,400	$ 81,540
g.	Bearing Pad Replacement	50	ea	$250.00	$ 12,500		$ 12,500				$ 6,250					$ 12,500	$ 31,250
h.	Concrete Repairs (Slab on Grade)	60	sf	$85.00	$ 5,100		$ 5,100				$ 2,550					$ 5,100	$ 12,750
i.	Shear Connector Repairs	100	ea	$150.00	$ 15,000		$ 15,000				$ 7,500					$ 15,000	$ 37,500
j.	Shear Connector Replacement	76	ea	$255.00	$ 19,380	$ 2,295	$ 17,850				$ 9,690					$ 19,380	$ 49,215
k.	Precast Clip Connection Repairs (double-tee)	25	ea	$180.00	$ 4,500		$ 4,500				$ 2,250					$ 4,500	$ 11,250
l.	Parapet Clip Connection Repairs	30	ea	$130.00	$ 3,900		$ 3,900				$ 1,950					$ 3,900	$ 9,750
m.	Scaling Repairs	1,080	sf	$30.00	$ 32,400		$ 32,400				$ 16,200					$ 32,400	$ 81,000
n.	Masonry Repairs (CMU)	74	ea	$130.00	$ 9,620		$ 9,620				$ 4,810					$ 9,620	$ 24,050
o.	Concrete Curb Repairs	60	lf	$60.00	$ 3,600		$ 3,600				$ 1,800					$ 3,600	$ 9,000
	Subtotal				**$ 274,525**	**$ 18,150**	**$ 261,865**	$ -	$ -	$ -	**$ 129,183**	$ -	$ -	$ -	$ -	**$ 274,525**	**$ 685,523**
2.	**Waterproofing Work**																
a.	Rout And Seal Cracks	1,520	lf	$5.00	$ 7,600		$ 7,600				$ 7,600					$ 7,600	$ 22,800
b.	Double Tee Joint Replacement	11,960	lf	$8.00	$ 95,680		$ 95,680				$ 95,680					$ 95,680	$ 287,040
c.	Perimeter Cove Joint Replacement	4,400	lf	$6.00	$ 26,400		$ 26,400				$ 26,400					$ 26,400	$ 79,200
d.	Epoxy Injection	273	lf	$50.00	$ 13,650		$ 13,650				$ 13,650					$ 13,650	$ 40,950
e.	Replacement of Waterproofing Mem. (4th Lvl) (Recoat Year 7)	36,916	sf	$6.00	$ 221,496		$ 221,496				$ 110,748					$ 110,748	$ 442,992
f.	New Waterproofing Membrane (3rd Lvl) (Recoat Year 7)	32,164	sf	$6.00	$ 192,984		$ 192,984				$ 96,492					$ 96,492	$ 385,968
g.	Install New Expansion Joint (Stairs)	100	lf	$120.00	$ 12,000		$ 12,000				$ 12,000					$ 12,000	$ 36,000
h.	Install New Vertical Expansion Joint (Stairs)	15	lf	$120.00	$ 1,800		$ 1,800				$ 1,800					$ 1,800	$ 5,400
	Subtotal				**$ 571,610**	$ -	**$ 571,610**	$ -	$ -	$ -	**$ 350,570**	$ -	$ -	$ -	$ -	**$ 350,570**	**$ 1,300,350**
3.	**Drainage**																
a.	Replace Existing Floor Drains	6	ea	$1,500.00	$ 9,000		$ 9,000										$ 9,000
b.	Installation of New Floor Drain Piping	210	lf	$55.00	$ 11,550		$ 11,550				$ 11,550						$ 23,100
	Subtotal				**$ 20,550**	$ -	**$ 20,550**	$ -	$ -	$ -	**$ 11,550**	$ -	$ -	$ -	$ -	$ -	**$ 32,100**
4.	**Paint**																
a.	Striping	1	ls	$12,800.00	$ 12,800		$ 12,800				$ 12,800					$ 12,800	$ 38,400
b.	Clean and Paint Miscellaneous Metal	1	ls	$10,000.00	$ 10,000		$ 10,000				$ 10,000					$ 10,000	$ 30,000
c.	Clean and Paint Exposed Precast Connections	1	ls	$10,000.00	$ 10,000		$ 10,000				$ 10,000					$ 10,000	$ 30,000
	Subtotal				**$ 32,800**	$ -	**$ 32,800**	$ -	$ -	$ -	**$ 32,800**	$ -	$ -	$ -	$ -	**$ 32,800**	**$ 98,400**
5.	**Exterior**																
a.	Door Lintel	5	lf	$200.00	$ 1,000		$ 1,000										$ 1,000
b.	Coping Stones	10	ea	$200.00	$ 2,000		$ 2,000						$ 2,000				$ 4,000
c.	Replace Windows Caulk Joints	384	lf	$10.00	$ 3,840		$ 3,840										$ 3,840
d.	Tuckpointing Masonry Repairs	2,000	lf	$10.00	$ 20,000		$ 20,000						$ 10,000				$ 30,000
e.	Masonry Brick Replacement	100	ea	$85.00	$ 8,500		$ 8,500						$ 8,500				$ 17,000
f.	Exterior Concrete Repairs	155	sf	$110.00	$ 16,995	$ 1,650	$ 15,950										$ 17,600
g.	Masonry CMU Replacement	30	ea	$130.00	$ 3,900		$ 3,900						$ 3,900				$ 7,800
h.	Epoxy Injection	30	lf	$50.00	$ 1,500		$ 1,500									$ 1,500	$ 3,000
i.	Concrete Spandrel Coating (Accesable walls)	7,345	sf	$6.00	$ 44,070		$ 44,070									$ 44,070	$ 88,140
	Subtotal				**$ 101,805**	**$ 1,650**	**$ 100,760**	$ -	$ -	$ -	$ -	$ -	**$ 24,400**	$ -	$ -	**$ 45,570**	**$ 172,491**
6.	**Stair**																
a.	Clean and Paint Stairs	1	ls	$30,000.00	$ 30,000		$ 30,000						$30,000.00			$ 30,000	$ 90,000
b.	Replace Metal Stair Step (Tread and Riser)	24	ea	$400.00	$ 9,600		$ 9,600										$ 9,600
	Subtotal				**$ 39,600**	$ -	**$ 39,600**	$ -	$ -	$ -	$ -	$ -	**$ 30,000**	$ -	$ -	**$ 30,000**	**$ 99,600**
	Total Above				$ 1,040,890	$ 19,800	$ 1,027,185	$ -	$ -	$ -	$ 524,103	$ -	$ 54,400	$ -	$ -	$ 733,465	$ 2,388,463
7.	**Miscellaneous Items**																
a.	General conditions	1	ls	$104,000.00	$ 104,000	$ 7,000	$ 103,000	$ -	$ -	$ -	$ 52,000	$ -	$ 7,000	$ -	$ -	$ 73,000	$ 242,000
b.	Miscellaneous items	1	ls	$80,100.00	$ 80,100	$ 10,000	$ 79,100	$ -	$ -	$ -	$ 40,300	$ -	$ 10,000	$ -	$ -	$ 56,500	$ 195,900
	Subtotal				**$ 184,100**	**$ 17,000**	**$ 182,100**	$ -	$ -	$ -	**$ 92,300**	$ -	**$ 17,000**	$ -	$ -	**$ 129,500**	**$ 437,900**
	Total Above				$ 1,224,990	$ 36,800	$ 1,209,285	$ -	$ -	$ -	$ 616,403	$ -	$ 71,400	$ -	$ -	$ 862,965	$ 2,826,363
	Estimated Contingency	15%			$ 183,749	$ 5,520	$ 181,393	$ -	$ -	$ -	$ 92,460	$ -	$ 10,710	$ -	$ -	$ 129,445	$ 419,528
	Grand Total				**$ 1,408,739**	**$ 42,320**	**$ 1,390,678**	$ -	$ -	$ -	**$ 708,863**	$ -	**$ 82,110**	$ -	$ -	**$ 992,410**	**$ 3,245,891**

1. Costs are in 2019 dollars.
2. Lost revenues are not included.
3. Utility costs are not included.
4. Contingency for project conditions beyond Owner's control such as variation in quantities, bidding climate and regulatory costs are not included.
5. Estimated costs are based on utilizing non-union labor.
6. Costs do not include inflation.
7. Costs do not include upgrades in structural, mechanical, fire protection or electrical systems.
8. Costs do not include comprehensive elvaluations, investigation costs or upgrades/modifications associated with possible investigation findings.
9. Cost does not include drainage study.
10. Costs are based on visual survey only.

CARROLL CREEK GARAGE

OBSERVATIONS AND FINDINGS

DESMAN conducted visual observations to identify structural and protection maintenance issues as well as necessary repair items and repair item quantities. Our field survey consisted of limited visual observations of floor surfaces, overhead surfaces and interior and exterior vertical surfaces to ascertain present existing conditions of the garage structure.

Moisture protection is another important concern that was assessed. Moisture protection consists of joint sealants, caulking, slab sealers and traffic bearing membranes. These items are designed to prevent water from penetrating to the levels below and reaching the depths of slab reinforcing or other embedded metal components. Inadequate or failed waterproofing measures not only lead to corrosion, staining and deterioration, but also allow water to spoil the convenience of parking in the facility.

FLOORS SLABS

The structurally elevated slabs appear to be in generally fair condition, given its precast construction and age of the garage. Concrete spalling and cracking along the double-tees appear to be minimal. There is some select spalling found throughout the elevated slabs. *See photos #1 to #2.* A few shear connectors are showing signs of failure, either by water penetration, worn sealant, or spalling around the connection. *See photos #3 to #4.* Heavy movement between two double tees were observed on the second level due to failed shear connectors. Spalled or cracked concrete can be an indicator of outside water infiltration to the connection, which can corrode the steel connection and cause it to fail.

Photo 1- Rusting reinforcement

Photo 2- Spalled Concrete

Photo 3- Rusting reinforcement

Photo 4- Spalled Concrete

The on-grade floor surfaces on level 1 appeared in good condition. The visual observations found minor isolated areas with concrete delamination.

Floor joints were sealed including tee-to-tee joints, tee-to-girder joints, tee-to-column/wall joints and cove joints at floor interfaces with vertical surfaces.

The sealant appeared to be in fair condition with several visible sealant failures. Typically, urethane joint sealants have a life expectancy of approximately 5-7 years. The failure of these joints allow water to permeate between the double tees and spandrels or walls, and have started the corrosion process of several steel components around the garage. If this corrosion is allowed to continue, it also could eventually result in a reduced load carrying capacity of the structure. During any future sealant replacements, the concealed precast connections should be cleaned, inspected and repaired as required.

SOFFITS AND VERTICAL SURFACES

In general, the concrete soffit and vertical surfaces appeared in fair conditions. The soffit of the slabs were checked to reinforce, confirm, and supplement results found during the survey of the elevated slabs, as well as provide structural information about the garage. There are some connections including shear and precast clip connections showing heavy corrosion signs due to water infiltration. *See photos #5 to #6.* Corrosion of these connections are causing concrete around it to spall. A few locations with cracked or spalled concrete were found, some which exposed the reinforcement within. *See photos #7 to #8* All deteriorated concrete should be removed and replaced throughout the garage soffit.


Photo 5- Rusting reinforcement


Photo 6- Spalled Concrete


Photo 7- Rusting reinforcement


Photo 8- Spalled Concrete

Shear connectors are a vital part of the structural system of any precast concrete garage. The connectors are located along the flanges of each double tee and are used to connect one double tee to another, making the individual members an integral floor slab system. Similar to the shear connectors located throughout the length of the double tee flange, an embedded clip connection is located at each end of the double tee. It is difficult and many times impossible to visually observe the condition of any embedded connection. Corrosion and spalling may occur at shear connectors as a result of failed moisture protection measures at the double tee joints which is an indication of a failed connection in addition to any observed movement in the joints as vehicles pass over. Failed connections could eventually affect the load carrying capacity of the structure.

There are select double-tee bearing pads on the roof level soffit that have failed or need to be replaced. *See photos #9 to #10*. It is difficult and many times impossible to observe the condition of the existing bearing pads from the ground level. Inadequate bearing conditions can cause future deterioration of the tee stems. Bearing pads are comprised of a neoprene-like material that sit between the precast double-tees and the haunches or inverted-tee girders they rest on. They function to allow proper expansion and movement between the precast elements to prevent cracking or spalling. Replacing bearing pads involve removing a number of other structural elements of the garage, including precast connections, shear connectors, and sealant.

Photo 9- Failed bearing pad

Photo 10- Failed bearing pad

Concrete cracking and spalls were noted at beams and columns. *See photos #11 and #12*. Many spalls are recommended to be repaired such that the concrete does not fall and damage any vehicles or injure any pedestrians in the garage. It is recommended that any vertical cracks and deteriorated sealants be routed and sealed to prevent any further water infiltration to the precast elements. In some cases these cracks will need to be treated as spalled concrete which is the case in the pictures shown below.

Photo 11- Spalled beam

Photo 12- Cracking Column

WATERPROOFING

A waterproofing membrane had been installed over the cross-over girders between levels and adjacent square patches throughout the garage. The membrane appeared to be in poor condition. Areas of worn and degraded membrane were found at all locations where membrane was applied. *See photos #13 to #14*.


Photo 13- Cracking waterproofing membrane


Photo 14- Failed waterproofing membrane

DRAINAGE

Most of the area drains appear to be in good condition and recently replaced. Positive drainage is noted throughout the garage as there were no signs of ponding water. However, spalling concrete was observed round drain bodies, possibly caused during drain replacement. *See photos #15 to #16*. It also appears that the vertical stacks throughout the garage are PVC and most of them were protected with a small steel bollard. *See photo #17.* Multiple vertical stacks were observed without a pipe guard. *See photo #18.*


Photo 15- Spalling concrete around drain


Photo 16- Spalling concrete around drain


Photo 17- Rusted pipe guard

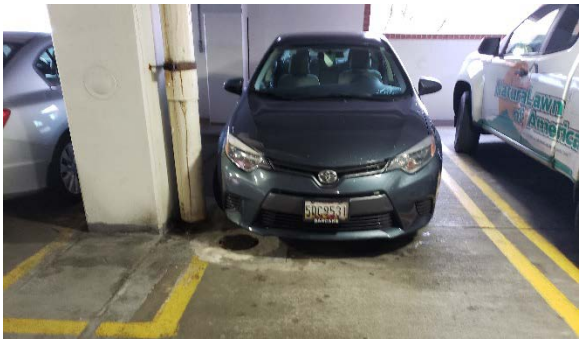


Photo 18- No pipe guard

EXTERIOR AND STAIR TOWERS

The sealant between the cap concrete stones throughout the roof level and between the bricks over the parapets are aged, failed and in some cases no longer exists. *See photos #19 and #20*.

Photo 19- Rusted pipe guard

Photo 20- No pipe guard

Miscellaneous metal items were noted throughout the garage that would require periodic cleaning and painting to protect them from deterioration and to improve the facilities aesthetics. Some of these items include exposed precast connections, stair framing, metal doors, metal railings, stairs and metal pipe guards.

The vertical surfaces of the stair towers have been painted. The paint appears to be in good condition except at leaking areas where the paint was peeling, bubbled and stained. *See photos #21 and #22*.

Photo 23- Rusted pipe guard

Photo 24- No pipe guard

Heavily corroded metal decking was observed at the stairs landings as well as metal pans exhibiting corrosion and rust. *See photos #23 and #24*.

Photo 23- Rusted pipe guard

Photo 24- No pipe guard

Crack bricks were observed on the garage facades. *See photos #25 and #26*. Cracking concrete stones and minor spalled bricks were also noted. *See photo #27*.

Photo 25- Rusted pipe guard

Photo 26- No pipe guard

Photo 27- Cracked stone and spalled brick

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of this visual condition survey, it can be said that at this time the Carroll Creek Garage is generally in fair condition. However, several structural and waterproofing repairs are recommended to provide the longest possible service life for the garage. Based on field observation, the facility age and our experience in similar restoration projects, a comprehensive repair program has been developed for the repair and preventive maintenance of the facility. Detailed description of the program is provided and accompanied by an engineer's construction cost estimate. These costs are based on current prices for labor, equipment, and materials. See *Appendix A*.

The "immediate repairs" include safety-related items such as fall hazard, items which directly affect load capacity of a structural component and constitute a threat to public safety. Immediate repairs should take precedence over all others and be the first to complete. These include the concrete beams throughout the garage elevated levels that have spalled or are delaminated and are not performing as designed as well as loose concrete overhead. The priority repair program includes restoring the structural integrity of the beams and floor slabs to their original condition by removing and replacing the cracked and deteriorated concrete. In the interim it is recommended that the loose concrete around the garage be removed until repairs can be made to restore the design strength of these structural members.

"Near-term" repairs are intended to extend the serviceable life of the garage. Near-term repairs include patching concrete topping; patching full depth concrete double tee flange; vertical surfaces and overhead concrete repairs; concrete repairs at slab on grade; clip connection repairs; stem repairs; shear connector replacement; shear connector repairs; lift pocket repairs; CMU masonry repairs; brick masonry repairs; tuck-pointing masonry joints; bearing pad replacement; beam repairs; double tee stem repairs; rout and seal cracks, double tee joint replacement; perimeter cove joint replacement; epoxy injection; parapet caulk joint replacement; waterproofing replacement; new vertical stack guard; replacing; stripping; cleaning and painting miscellaneous metals and exposed precast connections; replacing windows exterior joints; tuckpointing exterior masonry joints; masonry brick replacement; stair landing repairs; clean and paint stairs; replace metal stairs steps.

"Programmed Maintenance" are to be implemented after year 2 through year 10, after issuance of our report. Recommended program consists of preventive maintenance items to provide the longest possible service life for the garage. The maintenance work has been projected taking into account the current age of the structure and life expectancies of materials and products utilized. The costs presented herein are higher in some years due to periodic restoration repairs and/or re-applications of waterproofing items at the end of their useful lives occurring simultaneously with preventive maintenance work.

As spalling and loose concrete may continue to occur in the near future, periodic monitoring should be established on a regular basis until appropriate repairs are implemented. Any additional concrete that becomes loose prior to implementing necessary repairs should also be removed as conditions warrant and included in the periodic monitoring. The monitoring personnel should evaluate the extent of deterioration and report for change in conditions. Long term repairs consider all repair items from previous years and applies a percentage of current conditions and some cases may increase slightly in quantity.

COSTS

Enclosed you will find engineer's opinion of estimated probable construction costs for budgeting purposes only. A detailed outline cost has been provided for the Priority Repairs, Short-term Repairs, Intermediate-Term and Long-Term repair years.

The maintenance costs are summarized for a 10-year period. The actual costs would be higher or lower in certain years and these values would be average maintenance costs over a long period. The projection assumes proactive comprehensive maintenance of the facility. In general, if maintenance work gets deferred, long-term maintenance costs would likely go up and the probability of unanticipated repairs may become higher.

The miscellaneous costs and general condition costs that have been included in all of the cost estimates are for contractor's mobilization costs, protection of existing utilities during construction, permits, bonds, etc.

The figures are expressed in today's value of money and exclude costs for engineering, construction administration or material testing fees, lost revenue, inflation and utility costs, disruption in garage operations and patron inconvenience during maintenance work.

All estimates are based on a limited condition survey and the final quantities will vary.

EXCLUSIONS AND LIMITATIONS

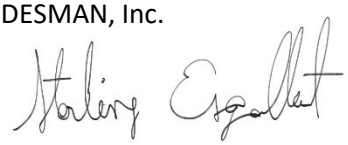
The following services and responsibilities are specifically excluded from this report:

- DESMAN shall have no responsibility for the discovery, presence, handling, removal and disposal of, or exposure of persons to, hazardous materials in any form at the project site, including but not limited to, asbestos, asbestos products, lead, lead paint, mold, polychlorinated biphenyl (PCB) or other toxic substances.
- This evaluation report did not include services for the assessment and maintenance of elevator, MEP components, fire protection systems, lighting and control equipment.
- Code Analysis/ADA/Code Compliance Survey were not included as part of our assignment.
- The condition evaluation did not include any buildings, site structures/feature or areas outside of the garage footprint. This includes, but is not limited to sidewalks, approach slabs, or occupied spaces.
- No structural calculations or analysis have been made to determine the adequacy of the existing structural system(s)/components or its compliance with accepted building code requirements.
- This report does not imply any warranty of the structure, but only addresses the condition of the areas that were readily accessible and observable at the time of the field survey. The opinions stated in this report are based on visual observations only.

The purpose of the information presented from the visual survey is to report on the present condition of the facilities and is not to be used for construction. The opinions stated in this report are based visual observations only.

Please contact us if you have any questions regarding these findings. It is a pleasure to be of service to you on this facility.

Sincerely,
DESMAN, Inc.



Starling Espaillat

COST ESTIMATES – CARROLL CREEK GARAGE

50-19165 Carroll Creek Garage, Frederick, MD - Cost Estimate
Repairs and Preventive Maintenance
Engineer's Estimated Construction Cost

Printed: 12/31/2019

Item No.	Description	Repair Quantity		2019 Unit Price	Repair Total	Immediate Year 0 2020	Near Term Year 1 2021	Programmed Maintenance Year 2 2022	Year 3 2023	Year 4 2024	Year 5 2025	Year 6 2026	Year 7 2027	Year 8 2028	Year 9 2029	Year 10 2030	TOTAL Repairs
1.	**Structural Work**																
a.	Patch Full Depth Concrete Repairs (Topping)	93	sf	$65.00	$ 6,045		$ 6,045					$ 6,045				$ 6,045	$ 18,135
b.	Patch Full Depth Concrete DT Flange Repairs	387	sf	$80.00	$ 30,960		$ 30,960					$ 15,480				$ 30,960	$ 77,400
c.	Vertical Surfaces and Overhead Concrete Repairs	125	sf	$90.00	$ 11,205	$ 3,750	$ 8,550					$ 5,603				$ 11,205	$ 29,108
d.	Concrete Repairs (Slab on Grade)	45	sf	$85.00	$ 3,825		$ 3,825					$ 1,913				$ 3,825	$ 9,563
e.	Precast Clip Connection Repairs	14	ea	$180.00	$ 2,520		$ 2,520					$ 1,260				$ 2,520	$ 6,300
f.	Shear Connector Replacement	16	ea	$255.00	$ 4,080		$ 4,080					$ 4,080				$ 4,080	$ 12,240
g.	Shear Connector Repairs	76	ea	$150.00	$ 11,400		$ 11,400					$ 5,700				$ 11,400	$ 28,500
h.	Lift Pocket Repairs (double tees & girders)	15	ea	$60.00	$ 900		$ 900					$ 900				$ 900	$ 2,700
i.	Masonry Repairs (CMU)	10	ea	$60.00	$ 600		$ 600					$ 600				$ 600	$ 1,800
j.	Masonry Repairs (Brick)	50	ea	$85.00	$ 4,250		$ 4,250					$ 4,250				$ 4,250	$ 12,750
k.	Tuck-point Masonry Joints	100	lf	$10.00	$ 1,000		$ 1,000					$ 1,000				$ 1,000	$ 3,000
l.	Bearing Pad Replacement	20	ea	$250.00	$ 5,000		$ 5,000					$ 5,000				$ 5,000	$ 15,000
m.	Beam Repairs	30	sf	$450.00	$ 13,500	$ 13,500						$ 6,750				$ 13,500	$ 33,750
n.	Double-Tee Stem Repairs	30	lf	$550.00	$ 16,500		$ 16,500					$ 8,250				$ 16,500	$ 41,250
	Subtotal				**$ 111,785**	**$ 17,250**	**$ 95,630**	$ -	$ -	$ -	$ -	**$ 66,830**	$ -	$ -	$ -	**$ 111,785**	**$ 291,495**
2.	**Waterproofing Work**																
a.	Rout And Seal Cracks	60	lf	$5.00	$ 900		$ 900					$ 900				$ 900	$ 2,700
b.	Double Tee Joint Replacement	15,150	lf	$6.00	$ 90,900		$ 90,900					$ 45,450				$ 90,900	$ 227,250
c.	Perimeter Cove Joint Replacement	5,000	lf	$6.00	$ 30,000		$ 30,000					$ 15,000				$ 30,000	$ 75,000
d.	Epoxy Injection	10	lf	$50.00	$ 500		$ 500					$ 500				$ 500	$ 1,500
e.	Parapet Caulk Joint Replacement	700	lf	$6.00	$ 4,200		$ 4,200					$ 4,200				$ 4,200	$ 12,600
f.	Waterproofing Replacement (Levels With membrane)	2,820	sf	$6.00	$ 16,920		$ 16,920					$ 8,460				$ 16,920	$ 42,300
	Subtotal				**$ 143,420**	$ -	**$ 143,420**	$ -	$ -	$ -	$ -	**$ 74,510**	$ -	$ -	$ -	**$ 143,420**	**$ 361,350**
3.	**Guards**																
a.	New Vertical Stack Guard	5	ea	$1,000.00	$ 5,000		$ 5,000										$ 5,000
	Subtotal				**$ 5,000**	$ -	**$ 5,000**	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 5,000**
4.	**Paint**																
a.	Striping	1	ls	$17,500.00	$ 17,500		$ 17,500					$ 17,500				$ 17,500	$ 52,500
b.	Clean and Paint Miscellaneous Metal	1	ls	$20,000.00	$ 20,000		$ 20,000					$ 20,000				$ 20,000	$ 60,000
c.	Clean and Paint Exposed Precast Connections	1	ls	$15,000.00	$ 15,000		$ 15,000					$ 15,000				$ 15,000	$ 45,000
	Subtotal				**$ 52,500**	$ -	**$ 52,500**	$ -	$ -	$ -	$ -	**$ 52,500**	$ -	$ -	$ -	**$ 52,500**	**$ 157,500**
5.	**Exterior**																
a.	Replace Windows Exterior Joints	620	lf	$10.00	$ 6,200		$ 6,200						$ 6,200				$ 12,400
b.	Tuckpoint Masonry Joint	100	lf	$12.00	$ 1,200		$ 1,200						$ 2,400				$ 3,600
c.	Masonry Brick Replacement	45	ea	$85.00	$ 3,825		$ 3,825						$ 8,500				$ 12,325
	Subtotal				**$ 11,225**	$ -	**$ 11,225**	$ -	$ -	$ -	$ -	$ -	**$ 17,100**	$ -	$ -	$ -	**$ 28,325**
6.	**Stair**																
a.	Stair Landing (Metal Deck)	250	sf	$140.00	$ 35,000		$ 35,000										$ 35,000
b.	Clean and Paint Stairs	1	ls	$40,000.00	$ 40,000		$ 40,000					$ 40,000				$ 40,000	$ 120,000
c.	Replace Metal Stair Step (Tread and Riser)	30	ea	$400.00	$ 12,000		$ 12,000										$ 12,000
	Subtotal				**$ 87,000**	$ -	**$ 87,000**	$ -	$ -	$ -	$ -	**$ 40,000**	$ -	$ -	$ -	**$ 40,000**	**$ 167,000**
	Total Above				$ 410,930	$ 17,250	$ 394,775	$ -	$ -	$ -	$ -	$ 233,840	$ 17,100	$ -	$ -	$ 347,705	$ 1,010,670
7.	**Miscellaneous Items**																
a.	General conditions	1	ls	$41,000.00	$ 41,000	$ 7,000	$ 39,000	$ -	$ -	$ -	$ -	$ 23,000	$ 7,000	$ -	$ -	$ 35,000	$ 111,000
b.	Miscellaneous items	1	ls	$31,600.00	$ 31,600	$ 10,000	$ 30,400	$ -	$ -	$ -	$ -	$ 18,000	$ 10,000	$ -	$ -	$ 26,800	$ 95,200
	Subtotal				**$ 72,600**	**$ 17,000**	**$ 69,400**	$ -	$ -	$ -	$ -	**$ 41,000**	**$ 17,000**	$ -	$ -	**$ 61,800**	**$ 206,200**
	Total Above				$ 483,530	$ 34,250	$ 464,175	$ -	$ -	$ -	$ -	$ 274,840	$ 34,100	$ -	$ -	$ 409,505	$ 1,216,870
	Estimated Contingency	15%			$ 72,530	$ 5,138	$ 69,626	$ -	$ -	$ -	$ -	$ 41,226	$ 5,115	$ -	$ -	$ 61,426	$ 182,531
	Grand Total				**$ 556,060**	**$ 39,388**	**$ 533,801**	$ -	$ -	$ -	$ -	**$ 316,066**	**$ 39,215**	$ -	$ -	**$ 470,931**	**$ 1,399,401**

1. Costs are in 2019 dollars.
2. Lost revenues are not included.
3. Utility costs are not included.
4. Contingency for project conditions beyond Owner's control such as variation in quantities, bidding climate and regulatory costs are not included.
5. Estimated costs are based on utilizing non-union labor.
6. Costs do not include inflation.
7. Costs do not include upgrades in structural, mechanical, fire protection or electrical systems.
8. Costs do not include further investigations, investigation costs or upgrades/modifications associated with possible investigation findings.
9. Costs are based on visual survey only.

Appendix B
Stakeholder Meeting Attendance

Stakeholder Meeting Attendance

City of Frederick Planning and Leadership 10/28/19 10:00 a.m.

Joe Adkins, Deputy Director for Planning, City of Frederick
David Edmondson, Transportation Planner, City of Frederick
Steve Johnson, Parking Superintendent, City of Frederick
Rob LeBaron, Parking Department, City of Frederick
Donna Kuzemchak, Alderwoman, City of Frederick
Kelly Russell, Alderwoman, City of Frederick

City of Frederick Parking Advisory Committee 10/28/19 11:00 a.m.

Bruce Albaugh, Resident, City of Frederick
Carrie Anderson-Watters, Frederick County TransIT
Becky Bickerton, Tourism Council of Frederick County
Phil Bowers, Brewers Alley
David Edmondson, Transportation Planner, City of Frederick
Clyde Hicks, The Trail House
Steve Johnson, Parking Superintendent, City of Frederick
Rob LeBaron, Parking Department, City of Frederick
Elin Ross, Federated Charities

City of Frederick Leadership 10/28/19 2:30 p.m.

David Edmondson, Transportation Planner, City of Frederick
Steve Johnson, Parking Superintendent, City of Frederick
Rob LeBaron, Parking Department, City of Frederick
Derek Shackleford, Alderman, City of Frederick

City of Frederick Leadership 10/28/19 3:30 p.m.

David Edmondson, Transportation Planner, City of Frederick
Steve Johnson, Parking Superintendent, City of Frederick
Rob LeBaron, Parking Department, City of Frederick
Ben McShane, Alderman, City of Frederick
Roger Wilson, Alderman, City of Frederick

City of Frederick NAC Leaders 10/28/19 5:30 p.m.

Bruce Albaugh, NAC 11
Cindy Castle, NAC 11
Don Dean, NAC 7
Steve Johnson, Parking Superintendent, City of Frederick
Randy Jones, NAC 11
Rob LeBaron, Parking Department, City of Frederick
Isaac Perkins, NAC 11
Darcy Richards, NAC 11
Peter Samuel, Resident

City of Frederick Bicycle and Pedestrian Advisory Committee 10/28/19 6:00 p.m.

Alyssa Boxhill, BPAC, City of Frederick
Marien Hornyak, BPAC, City of Frederick
Steve Johnson, Parking Superintendent, City of Frederick
Rob LeBaron, Parking Department, City of Frederick

Downtown Businesses 10/29/19 8:30 a.m.

Marshall Brown, Planning Department, City of Frederick
Joanna Button, JoJo's Restaurant, Downtown Frederick Partnership
Matt Edens, Downtown Frederick Partnership
Marlene England, Curious Iguana and Dancing Bear Toys, Downtown Frederick Partnership
Alan Feinberg, FeinDesign Team
Steve Johnson, Parking Superintendent, City of Frederick
Rob LeBaron, Parking Department, City of Frederick
Louanne Welgoss, LTD Creative, Downtown Frederick Partnership

City of Frederick Leadership 10/29/19 3:00 p.m.

Marc DeOcampo, Mayor's Office, City of Frederick
David Edmondson, Transportation Planner, City of Frederick
Richard Griffin, Director of Economic Development, City of Frederick
Steve Johnson, Parking Superintendent, City of Frederick
Rob LeBaron, Parking Department, City of Frederick
Michael O'Connor, Mayor, City of Frederick

Frederick County Representatives 10/30/19 9:00 a.m.

Carrie Anderson-Watters, Frederick County TransIT
David Edmondson, Transportation Planner, City of Frederick
Rick Harcum, Chief Administrative Officer, Frederick County
Steve Johnson, Parking Superintendent, City of Frederick
Rob LeBaron, Parking Department, City of Frederick
Roman Steichen, Frederick County TransIT

Downtown Businesses 10/30/19 2:00 p.m.

Gillian Berluti, Firestone's Market
Richard Griffin, Director of Economic Development, City of Frederick
Steve Johnson, Parking Superintendent, City of Frederick
Rob LeBaron, Parking Department, City of Frederick
Keith Marcoux, Olde Mother Brewing
Tim McShea, McShea Properties
Scott Ryser, Yakabod
Frank Sherman, TMS
Rick Weldon, Frederick County Chamber of Commerce

FCPS 11/13/19 11:00 a.m.

David Edmondson, Transportation Planner, City of Frederick
Richard Griffin, Director of Economic Development, City of Frederick
Steve Johnson, Parking Superintendent, City of Frederick
Rob LeBaron, Parking Department, City of Frederick
Beth Pasierb, Supervisor of Facilities Planning, Frederick County Public Schools

Frederick County Public Libraries 11/13/19 1:00 p.m.

David Edmondson, Transportation Planner, City of Frederick
Richard Griffin, Director of Economic Development, City of Frederick
Steve Johnson, Parking Superintendent, City of Frederick
James Kelly, Director, Frederick County Public Libraries
Rob LeBaron, Parking Department, City of Frederick

East Frederick Rising 11/13/19 2:00 p.m.

David Edmondson, Transportation Planner, City of Frederick
Richard Griffin, Director of Economic Development, City of Frederick
Steve Johnson, Parking Superintendent, City of Frederick
Chris Kline, Jr, East Frederick Rising
Rob LeBaron, Parking Department, City of Frederick

Downtown Frederick Partnership 11/14/2019 10:00 a.m.

David Edmondson, Transportation Planner, City of Frederick
Richard Griffin, Director of Economic Development, City of Frederick
Steve Johnson, Parking Superintendent, City of Frederick
Rob LeBaron, Parking Department, City of Frederick
Kara Norman, Executive Director, Downtown Frederick Partnership

Sean Moore, Moore Wealth 12/17/2019 8:00 a.m.

Appendix C
Detailed Stakeholder Meeting Notes

DETAILED STAKEHOLDER DISCUSSION NOTES

City of Frederick Leadership- Alderwomen Kelly Russell and Donna Kuzemchak and Joe Adkins, Deputy Director for Planning

Church Street Garage

- The garage has reached the end of its useful life and the City should not spend money to rehabilitate it. Should the City:
  - Replace it at the current location?
  - Put a garage elsewhere and reuse the land for another purpose?
    - Taxable development?
  - Which option would be the most effective?

- The Church Street garage is very busy and brings in a significant amount of revenue for the parking fund. When it is closed for demolition or rehabilitation, the Parking Fund will lose a lot of revenue.

- Downtown businesses will likely have issues with whatever parking solution is developed.
  - Some will think that any site that is not Church Street is too far away.
  - Others will be upset with any time that Church Street is out of commission.

- The evaluation of options should include how the potential increase to the tax base from a non-parking development at the Church Street site impacts the financial implications of those scenarios.

- Is there the potential to use an automated/robotic parking system to increase the capacity of the Church Street Garage within the same footprint?

- Demolishing the Church Street Garage would dissolve the current agreement with the County which provides them with 100 free monthly parking passes, in exchange for the County paying 25% of the operating and maintenance costs for that garage.
  - A significant rehab would not eliminate this agreement.

Other Garages in Downtown Frederick

- What about building Deck 6 and using a circulator to bring people to the downtown core?

- While there will be pushback to a more remote parking facility, the additional spaces that can be provided will be a huge benefit to downtown.

  - Everyone would agree that there is a need for more parking.

- Many people believe that a parking facility in the north end of downtown – specifically at the Carmack Jay's (North Market Street Lot) site – would add vibrancy to that part of downtown.
  - This would also make use of a parcel that has been vacant for 20+ years.
  - This could jumpstart development north of the 200 block of North Market Street.

- Attitudes toward walking are improving in Frederick.
  - A 2 to 3 block walk is probably the maximum that most people are willing to do.

- Some people are convinced that the impending rise of autonomous vehicles will eliminate the need for future parking garages and that our planning should account for that fact.

Remote Parking and Shuttle

- What about a garage at Harry Grove Stadium and a parking shuttle from the stadium?

Circulator

- Is there a need for a Downtown Frederick Circulator?
  - Currently = no
  - Future = yes
  - Event days = yes
  - If move Church Street Garage = yes

- Not sure if there is enough demand for a circulator.
  - Would people use it?
  - Downtown is walkable.
  - Trolley would be a novelty, not necessarily a vital service.

- Walking is part of the Downtown Frederick visitor experience.
  - Sidewalk improvements are needed in Downtown Frederick.

- Restaurant/retail employees might use it if it was free so they would not have to pay to park.

- It would need to have eight- to ten-minute frequencies and real-time transit information.

- Vehicle type is important.

  - Least polluting vehicle – electric or propane.
  - Could the shuttle be an autonomous vehicle?

- Funding for a shuttle.
  - Not sure if general fund is appropriate – only serves downtown.
  - What about county support and corporate partners?

City of Frederick Parking Advisory Committee

Church Street Garage

- Even a temporary loss of most or all of the spaces in the Church Street Garage would "wreak havoc" downtown.
  - Any replacement facility should be built before the Church Street Garage is taken offline, whether temporarily or permanently.

- The Church Street Garage is currently the best parking option for visitors to downtown.
  - How would visitor perception of parking availability and convenience be impacted by the loss of the Church Street Garage?

- Removing the Church Street Garage would put pressure on the Carroll Creek Garage.

- Removing the Church Street Garage would also negatively impact the residential streets surrounding downtown.

- The Church Street Garage is currently the farthest north of any of the garages.

- Would a new use at the Church Street Garage site require onsite parking?

- It may not be money well spent to renovate the Church Street Garage because it is not very functional currently.

- There needs to be a public relations rollout if the Church Street Garage is taken offline, even if it will eventually come back.
  - This will prepare people for the change.

General Parking Garage Issues

- Employees of restaurants in downtown are generally not using the parking garages because they are too expensive.
  - Some employees will use meters if they are available.
  - These service sector employees need an affordable option for parking.

- A garage on N. Market Street would bring needed parking capacity to that area of downtown.
    - Additional spaces in a new facility (i.e. replacing more than the existing 393 spaces in the Church Street Garage) would "soften the blow" of removing that facility from the system.
    - Would be a mixed-use project – first floor retail fronting North Market Street.

- Members of the Parking Advisory Committee currently hear good things about parking in Downtown Frederick from visitors.

- Remote parking for visitors does not seem like a viable option, especially for infrequent visitors. Visitors like to park close and walk to destinations nearby.

- A garage on N. Market Street would be a benefit to an area that is currently struggling to develop.
    - Could spur further development.
    - Site has been vacant for over 20 years.

- Ideally, there would be a new garage at Carmack Jay's and a replacement garage on the Church Street Garage site.

- County employees will likely think that a replacement facility at Carmack Jay's is too far to walk. Would the County invest in a lot this far away?

- Additional off-street parking seems like the only viable option for increasing parking capacity in downtown.

On-Street Parking

- On-street residential parking is limited at most times and becomes more limited two nights per week when street cleaning happens.

- Restaurant employees use on-street meter parking after the hours of parking enforcement (5:00 p.m.)
- Residents complain about the cost of on-street parking, but visitors do not mention this as an issue.

- The whole system needs to be examined (i.e., on-street/garage/pricing).

Circulator

- Downtown employees may use a circulator if it connected to free/low-cost parking.

  - Any charge to ride the circulator would have to be balanced with the cost to park in downtown.

- A circulator could help accommodate parking demand for events by using a remote parking model.

- Circulator ridership would take time to build – the City would need to have patience and give the service time to grow.

- The look of the vehicle is very important. A trolley-style vehicle was seen favorably.

- Vehicle should be alternative-fuel – electric.

- Partnership with TransIT viewed as a good model.

- Will need to look at a variety of options to fund service.

City of Frederick Leadership – Alderman Shackelford

Church Street Garage

- Concerned about the space obligations related to current tenants and if/how they would be negatively impacted by any loss of spaces at the Church Street Garage location.

- What is the economic benefit of any new development in the Church Street Garage location?

Other Garage Issues

- The cost of the parking solution is the biggest question.
  - If money was not an issue, the preference would be for a garage on N. Market Street and the replacement of the Church Street Garage.

- A garage on N. Market Street should be done either way.

- People would be more willing to walk if there were improvements to sidewalks and other pedestrian amenities.

- Could the City build a garage at Harry Grove Stadium, integrating other uses as well?

Circulator

- A circulator could work in conjunction with remote parking, particularly during events.
    - Would like to know about the potential to close streets and only allow trolley access during events.

- Any solution(s) that can be offered to improve non-car options in downtown would be welcomed.

- Is there the potential for the shuttle to reduce the need for additional parking?
    - A circulator could help with parking dynamics – balance demand among garages.
    - Suggest starting it on a trial basis for events.
    - A trolley-style vehicle is favored.

City of Frederick Leadership – Aldermen Ben McShane and Roger Wilson

Church Street Garage

- The existing Church Street Garage is not ADA compliant, but was grandfathered into the requirements given its age.
    - Difficulty navigating this facility does put a strain on people with mobility issues.
    - Per the Parking Superintendent, updating the garage to be compliant with existing ADA requirements would be impossible.

- Pedestrian routes from the Church Street Garage to the Winchester Hall are dangerous.

- Not having the Church Street Garage in the inventory would be a challenge for the County.

- There is no appetite for demolishing the Church Street Garage before a replacement facility is built.

Other Garage Issues

- Could other amenities be added in a new N. Market Street garage or a replacement Church Street Garage?
    - Vehicle charging stations, bike racks, space availability signs, ground-floor retail, etc.

  - Compatible with the City's sustainability goals.

- Carmack-Jay's site has potential.
  - Need to include mixed-use component.
  - Would spur development on N. Market Street.

Circulator

- Mixed opinions;

  - A circulator service is not needed - Frederick is not big enough for a circulator.
  - Trolley is a "fun" thing. Current transit market is transit-dependent.
  - Remote parking shuttle needed so that service workers can park for free and ride the shuttle into downtown.
  - Senior citizens might like to ride a circulator to get around town, rather than the current TransIT routes. There should be connections to other nearby locations also.
  - Would it be worth it to pay for a circulator?

Neighborhood Advisory Councils

Church Street Garage

- Church Street is the primary garage that people think about when they come to downtown.

- There may be potential to move the existing Church Street Garage monthly parkers to more remote parking with a circulator via discounted/free parking or by restricting how many permits are sold in the downtown garages.

Other Garage Issues

- NAC leaders have heard of issues with the availability of parking, so additional capacity in any new garage would be welcome.

- Would like to see real-time data on parking availability in the existing garages made available on a smartphone app and/or the City's website.
  - This would promote better use of the more remote garages.
  - Per the Parking Superintendent, tracking this information is possible and they will investigate the potential to provide the information via app or online.

- It is the general feeling that most people coming to downtown for dinner would not mind walking a few blocks from parking to their destinations

- Most attendees thought the Carmack Jay's site was a good one for a garage.

- There would be more support from the citizens of Frederick for a new garage on N. Market Street if there is retail on the ground floor of the garage or if other land uses are included in the development.

- Could a garage be built that could be retrofitted in the future for reuse?

Circulator

- Remote parking and a circulator would be good for visitors. It works in Annapolis.

- Other opinion is that it is not needed.

- Other opinion – a circulator will be needed in the future as density increases.

- During busy event nights, the current First Saturday Trolley is slower than walking because of traffic congestion.

- Circulator could be a tool to expand the footprint of the vibrant area of downtown.

- What about using an autonomous vehicle for circulator?

Additional Input

- The NACs want our analysis to include considerations of the impact of future development on parking, including the planned downtown hotel.

- Some people have health considerations that require them to park close to their destinations.
    - We should look at the potential to add on-street capacity as well.

- Olde Mother Brewing sometimes causes issues with parking near 6th & 7th and N. Market Street.
    - The residents in the surrounding neighborhoods would welcome additional parking in the north end of downtown.

- Large events in downtown cause issues for residential parking since most residents do not have and/or do not use off-street parking spaces.

- Several people mentioned the potential for additional residential parking off of alleys and in existing residential garages that many people use for non-vehicle storage.

City of Frederick Bicycle and Pedestrian Advisory Committee

Church Street Garage

- Most visitors use the Church Street Garage.

- There would likely be pushback from downtown business owners and users if the Church Street Garage were to be taken out of service and replaced with a garage on N. Market Street, but people would eventually get used to it.

Other Parking Issues

- 1.5 to 2 blocks seems like the maximum distance people in Frederick are willing to walk from parking to their destinations.

- People who are familiar with downtown will park farther away from their destinations, particularly if they can find free parking options on residential streets.

- Downtown business owners would welcome a garage farther north on N. Market Street. The Carmack Jays site was viewed favorably.
- Is there any potential to reduce the number of on-street parking spaces on Market Street in order to increase sidewalk widths, bike parking, bike lanes, etc.? Do we need Market Street on-street parking if we build another garage?

Circulator

- Do not think circulator is currently needed.

- Maybe if new parking garage is outside of walkable area, then a shuttle would be needed.

- Event shuttle = yes. For remote parking and shuttle to Downtown.

- Day-to-day = no.

- A specialty vehicle would be important.

Downtown Businesses

Church Street Garage

- Some in the group think that the Church Street Garage should be demolished and redeveloped into residential workforce housing.

- Any change that is made at Church Street Garage will get pushback from downtown business owners, specifically those who rely on that facility as their primary parking location.

- Can some public parking be required for any new development done at the Church Street site?

- A temporary or permanent shutdown of the Church Street Garage with no replacement spaces is not a viable option.

- Messaging/public relations is key for any proposed rollout of a new parking facility and changes to the Church Street Garage.
    - People will be more accepting of the changes if they are informed about: the costs/issues associated with retaining parking at the Church Street Garage site; the potential benefits of a brand-new facility; and the benefits of another use at the Church Street site aside from parking.

Other Garage Issues

- There is strong support among this group for a new garage on the Carmack Jay's site, with wrap around retail.

- Could a new garage be built in such a way that it could be repurposed to housing in the future?

- Occasional downtown visitors will have more of an issue with parking being moved farther from the core of downtown.

- Is there potential for a parking garage at the Post Office site?

- Have we looked at the Frederick Brickworks site as a potential location for remote employee parking?
    - This site is not currently owned by the City.
    - This location is easier to serve via a shuttle and is not perceived to be as long a distance to downtown as the Harry Grove Stadium lot.

Circulator

- The schedule will be critical for the success of this type of service – needs to be every 15 minutes. Hours would need to be at least 7:30 a.m. to 8:00 p.m. and 10:00 p.m. on weekends.

- A circulator is needed for employees to use so that they could park at a lower cost than is currently available via the downtown garages and street parking. Maybe a monthly parking pass for $30, rather than $97.

- An employee-oriented circulator would help preserve on-street parking for customers.
- The driver needs to be an ambassador/tour guide.

- Needs to have real-time schedule information.

- A circulator may be a viable way to improve public transportation in Downtown Frederick. Good option for short trips downtown.

Bike Share

- What about incorporating bike sharing into the garages? What was the City's conclusion after the Bike Share Study?

City Leadership – Mayor and Staff

Church Street Garage

- The Church Street Garage site is a prime development site.
    - If public parking can be included, that would be ideal.

- Current County employees who park in the Church Street Garage may be the loudest objectors to demolition of that facility.

- There must be new capacity before the Church Street Garage is taken offline for repair or demolition.

Other Garage Issues

- If a new garage is built on N. Market Street or in any location, the facility should incorporate ground-floor retail, residential, or other land uses.

- A garage on N. Market Street could service more than the north side of downtown.
    - Connection via a circulator would make the facility useful for the rest of the downtown businesses as well.

  - This would give people confidence that they can park farther away and still easily get to the core of downtown.
  - The concept of changing Fourth Street to two-way to access a potential N. Market Street Lot from 15/Rosemont/Dill/Fourth should be explored.

- The MARC Station Lot could provide interim surface parking if the Church Street Garage is offline and no new capacity has been constructed.

- What about a lot along the East Street corridor?

- The Mayor indicated that City employees could be required to park outside of the core of downtown or that this benefit could no longer be subsidized by the City in order to inspire people to seek alternate parking locations.
  - The city currently pays the Parking Enterprise $97/month for employee parking in the garages.

- The core garages (Church Street, Carroll Creek, Court Street) are the prime garages for visitors. All Saints and West Patrick Street garages are more for employees.

- A question was asked about the need for additional parking decks given the impending rise of autonomous vehicles, changes in driving patterns, etc.
  - DESMAN's professional opinion is that any radical shifts in the demand for parking due to these technologies, etc. are not likely to occur in Frederick for several decades.

- Should public and private employers in Downtown Frederick offer employees a choice of cashing out parking? (i.e., pay the employee $97/month, rather than giving them a parking pass).

- Dynamic pricing was discussed. The Parking Department does not want to manipulate pricing or raise rates if expenses and revenues are in balance.

Circulator

- Needs to be reliable, predictable, affordable. Will need to be grown over time.

- The vehicle needs to look different than regular public transportation, but could be part of the network.

- Should the Seventh Street Corridor be included? New Common Market, medical buildings, hospital.

- Maybe a Figure-8 configuration for the route? Serve between East and Bentz Streets and between South to Seventh Streets.

Frederick County Leadership and Frederick County TransIT

Church Street Garage

- If the Church Street Garage is going to be demolished or even significantly overhauled, the County would prefer as much advance warning as possible in order to prepare its employees and customers for the change.

- The County has a waiting list of employees who want to park at the Church Street Garage.
- If the County's employees do not have the Church Street Garage as a parking option, they will find a space wherever they need to.
    - It is unlikely that a significant number of County employees – or any – would choose to find another job versus parking farther away.
    - Approximately 200 County employees currently park at the W. Patrick Street Garage and walk to Winchester Hall and other county offices downtown.

- The County has started to think about moving outside of downtown, so the loss of Church Street Garage may accelerate this process. There are space issues at Winchester Hall.
    - Could the County redevelop the Church Street Garage site to satisfy their needs in downtown?

- Loss of the Church Street Garage in itself would not make the decision for the county to move. There is strong sentiment to keep County government downtown.
    - Employees won't "revolt" if the garage is no longer available.

Other Garage Issues

- Is it possible to build a new garage on the Carmack Jay's site and to rebuild the Church Street Garage?

- The County would like to build additional capacity on the parking lots next to Winchester Hall but there are currently three different owners of those parcels.

- The County is willing to continue being a capital contributor to future parking garages in downtown, much like the historical arrangement at the Church Street Garage.

Circulator

- Travel time is critical for people using a circulator.

- TransIT does see a need for a circulator to better serve transit needs in Downtown Frederick. Current service does not focus on Downtown, but does travel through to and from the Transit Center. The Square Corner is the sixth most-used stop in the TransIT network.

- TransIT would like to see a two-vehicle operation – one focused on North-South and the other on East-West. Short headways, and connections to all the garages.

- Trolley is the right vehicle choice.

- Like the idea of fare-free, but there is concern about people riding around all day with no transportation purpose.

- If operated by TransIT – would still need to be funded locally. Federal and state transit funds are already programmed and increases are unlikely, at least for the near-term.
- The parking shuttle that operated from 2004-2006 (Downtown Express) was operated by TransIT and the vehicles were federally-funded.

- TransIT felt that the Downtown Express had good ridership.

Downtown Businesses Owners

Church Street Garage

- Several business owners would advocate for the Church Street Garage site to remain parking.
    - During the most recent renovation of the Church Street Garage, proximate businesses (at least one) saw declines in sales.
    - It is unclear if this was due to a loss in garage spaces or foot traffic from locals.

- The business owners would potentially support a garage on N. Market Street if there was still public parking at the Church Street Garage site as well.

- Losing the Church Street Garage could support a notion among community members that there is a lack of parking in the center of downtown.

- If the Church Street Garage is demolished, there was a question as to whether or not all of that existing demand would be captured at a new garage on N. Market Street.
    - Would there be any negative impacts on parking revenue?

- One business owner who used to be located on Market Street near the Church Street Garage did not choose to locate there in order to be close to parking.
    - Most employees never used Church Street Garage.

  - However, other types of businesses may prefer the convenience of that location.
- The Chamber of Commerce is concerned that some businesses would choose to relocate outside of downtown if the Church Street Garage were taken offline.

- The Church Street Garage needs a second exit.

Other Garages/Parking

- There is a direct relationship between the availability of parking and tenanted buildings.
- The Downtown competes with office space elsewhere in the Frederick area. Downtown rents are higher than those in more suburban locations – need parking to compete.

Circulator

- It is not needed yet.

- A robust circulator will be needed if the Church Street Garage is taken offline.

- The hours of service for a circulator would need to be too long to make it viable financially.

Other

- One business owner indicated that he has purchased bicycles for his employees to use to travel through Downtown Frederick.

Frederick County Public Schools – Facilities Planner

Parking for the Board of Education Facility

- Currently 315 employees work the FCPS building located at the corner of East and South Streets.
  - Employees park in the City lot next to the building (Board of Education Lot), as well as in leased spaces in the All Saints Street Garage, and leased spaces on a private lot on E. All Saints Street (lot next to Schaefer Building – owned separately from the building).

- Many staff people come and go throughout the day, but seniority determines how close to the building specific employees are able to park.

- Off-site staff and visitors to the FCPS building
  - Particularly high volume of visitors in August.
  - These people have to find their own parking in downtown.

- School employees get reimbursed for parking costs when they come to Downtown Frederick.

- Share space in the lot with the Frederick Visitor's Center.

- Parking was a big issue for Frederick County Public Schools (FCPS) employees when they moved the offices to Downtown Frederick.
    - City was going to build Deck 6 to help with FCPS parking, then did not need to as recession halted development and the DSS moved from the nearby Schaefer Building, leaving it empty.
    - These concerns have been allayed, but will reemerge if/when the Schaefer Building is leased.

- Sees more activity moving south of Carroll Creek with accompanying parking demand.

- Moving additional FCPS employees into the garage may be an issue for some people who do not like parking in the garage.

- Issues with homeless people hanging out in the basement of the E. All Saints Street Garage.
    - Creates feeling of safety issues.

- FCPS buys parking passes for employees.

- There are some days of extraordinary demand, such as Board meetings, community meetings, etc.

- Employees going to lunch in Downtown Frederick typically walk from their building, they do not repark.

- Employees and visitors coming to their building from peripheral areas of the County are still skittish about parking in E. All Saints Street, even though it is only one block away.
    - Their lack of familiarity/comfort with being in the City makes them unsure about the parking situation.

- The City could do a better job of communicating where parking is available, especially to infrequent visitors on event days.
    - Would like to see signage on the facilities that shows the number of spaces available and alternate parking locations if a facility is full.

- There is capacity in the building to bring additional employees on-site.
    - Would increase the need for parking.

- Parking will become an issue when the Schaefer building is reoccupied.

Other

- Is cash in lieu of parking an option? Probably not – there are three unions within FCPS and parking is part of benefit package.

- A parking app would be helpful to find available parking.

Circulator

- The concept of a circulator and remote parking is not acceptable for employees. They like to have their vehicles nearby.

- Visitors may use a circulator – visitors should be the market.

- A circulator that served the fringe areas of downtown targeted to residents would also be useful.

City of Frederick Economic Development

Update on Parking to Support Potential Downtown Hotel

- Below grade option under the hotel may not be financially feasible.

- City may have to build Deck 6 earlier than anticipated to accommodate a number of developments on the east side.

- There may be an option to build a garage across Patrick Street from the Post Office. It is currently a gravel lot used by Post Office workers.

- This area is within ½ mile of the MARC, which could allow for State Transit Oriented Development (TOD) designation. There is the potential for funding assistance through the Maryland Economic Development Office for projects within TODs.

Frederick County Public Libraries – Director

C. Burr Artz Library Parking

- Library has an agreement for 80 spaces in the Carroll Creek Parking Garage, which are signed for "Library Only."
    - Customers like the convenience.

    - We only hear positive things about parking; except during event times that coincide with Library hours.
    - There is some abuse of these spaces by non-Library people, but it has not created significant issues with patrons.
- Library employees park in a number of City facilities.
    - Employees receive a subsidy for a portion of their parking permits.
    - Employees don't mind walking.

- Library patrons would be negatively impacted if Carroll Creek Garage were to fill as a result of Church Street Garage going offline.
    - This could/would also negatively impact the number of volunteers that the Library could attract.

- Like the idea of solar on top of the Carroll Creek Garage, both for protection from the elements and for the power that can be generated/rainwater that can be collected. The library is now 100% green via new solar panels.

Circulator

- Customers are not likely to ride a circulator. There are a number of programs for parents with small children and the associated strollers, bags, etc. These customers need to have access to nearby parking.

- Employees would ride it if remote parking and shuttle was the only available option.

- Volunteers would not likely use remote parking and a shuttle. They would instead choose to volunteer at other branches.

- Customers would also likely use other branches instead of C. Burr Artz if remote parking/shuttle the only alternative.

East Frederick Rising – Represented by Chris Kline, Jr.

Church Street Garage

- Need to replace capacity from Church Street Garage before it is demolished/rehabbed.
    - Would be disastrous not to replace the capacity first.
    - The Church Street Garage site should be kept parking, in addition to a new facility elsewhere.
        - Site does not need to be another land use.

Downtown Parking

- New public parking capacity would have to be built between Market Street and East Street in order to make it beneficial to businesses on East Street.

- Availability and convenience of parking is crucial to people's impressions of downtown.
    - Wants more parking in downtown.
    - Any solution needs to be convenient for people to get in and out of downtown.
    - Downtown Frederick is competing with a number of other locations for people's retail/restaurant/commerce dollars. Americans are tied to our cars.

- Does not like the Carmack Jay's site as parking.
    - Wants it to be multi-family residential or something else.
    - A grocery store would not be ideal on-site, due to a lack of density to support a walk-up market.

- Potential for a garage on the Post Office site.

Greatest Issues in East Frederick

- Mix of tractor-trailer traffic and passenger vehicles (Food Pro, Dairymaid Dairy, etc.).

- Industrial uses looking to expand, adding to traffic on East Street.

- New housing developments creating residential traffic - ~1,500 existing or planned residential units.
    - Additional units under construction at East of East apartments.
    - Brickworks – "best & final" offer stage.
    - Coca-Cola Bottling Plant – 84 luxury residential units will be completed in 2020.

- Most development happening north of Patrick Street.

- All development that is currently underway and planned will provide its own parking on-site.

- People living in this area will still likely drive to the rest of downtown, absent another option.
- Some people would still choose to drive regardless of the shuttle options.

Circulator

- Needs to be a "cool" vehicle.
- Frequent service on a short route might make it an appealing option.
- Real-time schedule information needs to be included.
- Would need to run in the evenings also.
- Could be used to connect the garages to the downtown core.

Downtown Frederick Partnership – Executive Director

Parking and Circulation Issues

- This study is not about parking, it is about how parking can support the continued development and densification of Downtown Frederick.
- Likes the idea of parking cash-outs for downtown employees.
    - Coupled with a downtown circulator – need other options.
- Any solutions need to be a package of parking, circulator, etc. considerations including the costs and benefits of the various alternatives.
    - Not just a cost per space comparison.
    - Solutions need to work together.
- Number 1 issue about parking is the cost of employee parking.
    - Downtown employees would be the primary target group for this service.
- The perceptions of distance from parking to destinations vary from person-to-person.
    - Some will think that Carmack Jay's is too far from the core, others will not mind the walk.

Garage Discussion

- That there are no parking facilities on the northside of Downtown.
    - Historically, parking garages in Frederick have "led the way" for development.
    - Use as an economic development incentive.
    - Supports a garage at the Carmack Jay's site only if part of a mixed-use project.
- Retail on the N. Market Street side and residential on top.

- Parking wrapped by other uses, so it does not look like a garage.

- Does not support a 600-space garage if the entire N. Market Street side isn't retail or non-parking.

- Unsure about the need to keep/replace the Church Street Garage.
- Need to address the parking and circulation issues associated with the proposed downtown hotel.

- Potential for a garage at the Visitor's Center Lot or the Post Office site.

- Advocate that aesthetic parts of the garage should not be funded out of parking, because they are downtown development-related, not parking related.
    - Only parking-specific costs should be paid out of parking.
    - People who do not live in, work in, or visit Downtown Frederick but live in the City of Frederick, will take issue with more general fund dollars being used to support solutions for downtown.

- Many people already think that Downtown Frederick gets an outsized portion of general fund dollars.

Circulator

- Need a solid, reliable service that you can trust.

- Need a strong and well-funded marketing program.

- 10-minute frequencies.

- Remote parking and shuttle.

- Should focus on employees, both professional and retail:
    - Employee incentives.

- Visitors not as interested.

- Partnership supports general fund support for parking and circulator.

- Vehicle should be a trolley.

- Fare-free.

- Will free up on-street residential spaces.

Appendix D
Business and Resident Survey Questions

Downtown Frederick Parking & Circulation Study

The City of Frederick is currently working with a consulting team to develop a Downtown Parking and Circulation Plan. The study is examining Downtown Frederick's parking needs as well as exploring the need for a trolley-style circulator to help move people through Downtown Frederick. An important part of the study effort is reaching out to a number of stakeholders to understand the full range of opinions regarding parking and circulation in Downtown Frederick. Please share your opinions with us by completing this brief survey regarding parking and circulation in Downtown Frederick.

1. Is your business located in Downtown Frederick?

- ◯ Yes
- ◯ No

Downtown Frederick Parking & Circulation Study

2. If your business is not located in Downtown Frederick do you or your employees conduct business in or routinely patronize downtown for business reasons?

- ◯ Yes
- ◯ No

Downtown Frederick Parking & Circulation Study

3. Based on discussions with your **employees**, please rank your employees' preferred parking location in Downtown Frederick, with 1 being the most desirable location and 7 being the least desirable. *(Select N/A if your business is not downtown)*

Church Street Garage

☐ N/A

Court Street Garage

☐ N/A

Carroll Creek Garage

☐ N/A

W. Patrick Street Garage

☐ N/A

E. All Saints Street Garage

☐ N/A

On-Street Metered Space

☐ N/A

On-Street Free Space

☐ N/A

4. Based on discussions with **customers**, please rank your customers' preferred parking location in Downtown Frederick, with 1 being the most desirable location and 7 being the least desirable. *(Select N/A if your business is not downtown)*

Church Street Garage

☐ N/A

Court Street Garage

☐ N/A

Carroll Creek Garage

☐ N/A

W. Patrick Street Garage

☐ N/A

E. All Saints Street Garage

☐ N/A

On-Street Metered Space

☐ N/A

On-Street Free Space

☐ N/A

5. Does additional parking capacity need to be constructed in Downtown Frederick in order to satisfy the needs of downtown employees, customers, residents, and visitors?

- ◯ Yes
- ◯ No

6. If the Church Street Parking Garage were to be taken offline for repairs or reconstruction for 12 months or more, how significant would the impact be on your business?

- ◯ Significant negative impact
- ◯ Moderate negative impact
- ◯ No impact - does not affect my business
- ◯ Moderate positive impact
- ◯ Significant positive impact

7. Do you currently provide parking spaces at your location or parking passes for your employees to park at no cost to them?

- ◯ Yes
- ◯ No

Downtown Frederick Parking & Circulation Study

8. Would you be willing to offer cash in lieu of parking passes to your employees?

- Yes
- No

9. Why/Why not?

Downtown Frederick Parking & Circulation Study

10. Should a trolley-style circulator be implemented to balance parking demand by providing a route that connects the downtown parking garages?

- Yes
- No

11. Should a trolley-style circulator be implemented so that employees, customers, and/or visitors could park more remotely for a lower cost and use the circulator to access downtown locations?

- Yes
- No

12. Would your **customers** use a trolley-style circulator service to access downtown locations within a mile of the intersection of Market and Patrick Streets?

- Yes
- No
- Not applicable, my business is not located downtown

13. Would your **employees** use a trolley-style circulator service to access downtown locations within a mile of the intersection of Market and Patrick Streets?

- Yes
- No
- Not applicable, my business is not located downtown

14. If implemented, should a Downtown Frederick circulator be offered? *(check all that apply)*

- [ ] Only for busy event days to manage parking demand
- [ ] On a regular basis as a tourist experience
- [ ] On a regular basis to help residents, employees, and visitors move around downtown
- [ ] On a regular basis with the goal of allowing employees to park remotely, freeing up downtown garage and street parking for visitors
- [ ] Fare-free
- [ ] Other ideas/opinons

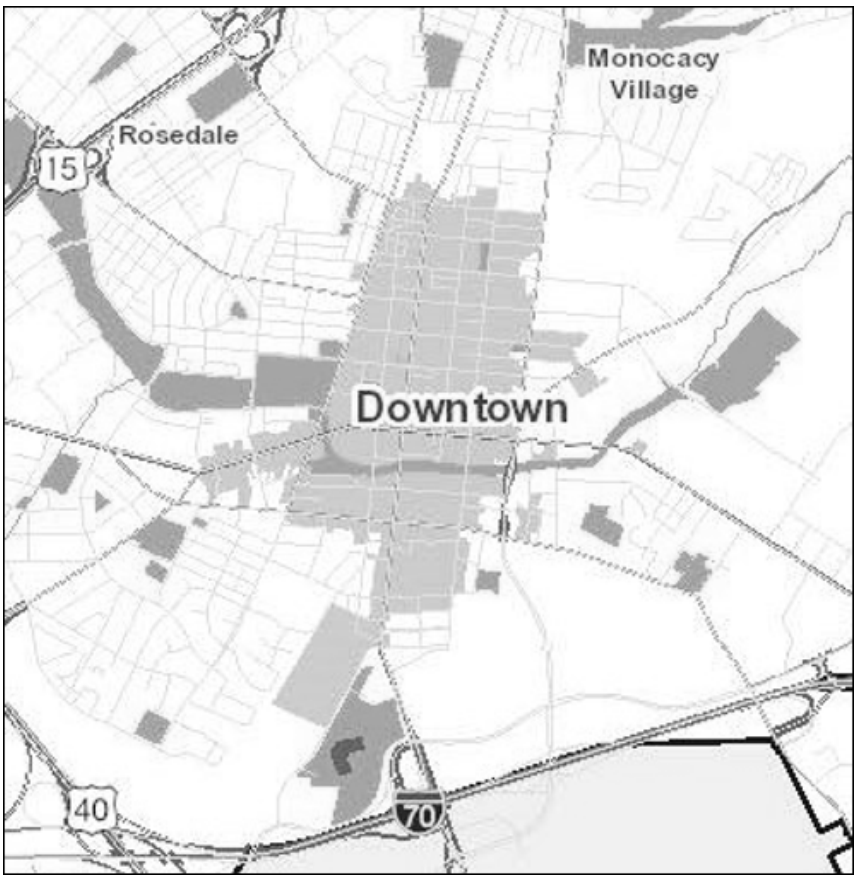
15. Is there a need for a Downtown Frederick circulator?

- ( ) Yes
- ( ) No

Downtown Frederick Parking & Circulation Study - Survey of Residents

The City of Frederick is currently working with a consulting team to develop a Downtown Parking and Circulation Plan. The study is examining Downtown Frederick's parking needs as well as exploring the need for a trolley-style circulator to help move people through Downtown Frederick. An important part of the study effort is reaching out to a number of stakeholders to understand the full range of opinions regarding parking and circulation in Downtown Frederick. Please share your opinions with us by completing this brief survey regarding parking and circulation in Downtown Frederick.

Downtown Frederick



1. Do you live in Downtown Frederick?

- Yes
- No

Downtown Frederick Parking & Circulation Study - Survey of Residents

2. If you do not live in Downtown Frederick do you routinely shop or dine downtown?

- ◯ Yes
- ◯ No

Downtown Frederick Parking & Circulation Study - Survey of Residents

3. Please rank your preferred parking location in Downtown Frederick, with 1 being the most desirable location and 7 being the least desirable.

Church Street Garage

Court Street Garage

Carroll Creek Garage

W. Patrick Street Garage

E. All Saints Street Garage

On-Street Metered Space

On-Street Free Space

4. Does additional parking capacity need to be constructed in Downtown Frederick in order to satisfy the needs of downtown residents, employees, customers, and visitors?

- ◯ Yes
- ◯ No

5. If the Church Street Parking Garage were to be taken offline for repairs or reconstruction for 12 months or more, how significant would the impact be for you?

- ◯ Significant negative impact
- ◯ Moderate negative impact
- ◯ No impact
- ◯ Moderate positive impact
- ◯ Significant positive impact

6. Do you have off-street parking at your residence?

- ◯ Yes
- ◯ No

Downtown Frederick Parking & Circulation Study - Survey of Residents

7. Should a trolley-style circulator be implemented to balance parking demand by providing a route that connects the downtown parking garages?

- ◯ Yes
- ◯ No

8. Should a trolley-style circulator be implemented so that employees, customers, and/or visitors could park more remotely for a lower cost and use the circulator to access downtown locations?

- ◯ Yes
- ◯ No

9. If implemented, should a Downtown Frederick circulator be offered? *(check all that apply)*

- ☐ Only for busy event days to manage parking demand
- ☐ On a regular basis as a tourist experience
- ☐ On a regular basis to help residents, employees, and visitors move around downtown
- ☐ On a regular basis with the goal of allowing employees to park remotely, freeing up downtown garage and street parking for visitors
- ☐ Fare-free
- ☐ Other ideas/opinons

10. Is there a need for a Downtown Frederick circulator?

- ◯ Yes
- ◯ No

Appendix E
Business Survey Comments

Other Ideas and Comments- Business Survey
Fares should be low, but not zero; have an actual rail, not a bus that looks like a trolley; ensure that routes and stops are chosen wisely, and allow room or future growth/expansion; view this project as a way to connect Downtown with the outer portions of the City, allowing for dramatically reduced traffic during peak and non-peak times.
Construct large garages/parking facilities OUTSIDE the city limits and remove/repurpose the existing parking garages that take up precious space in town that could be put to better and more diverse uses.
I've used a trolley system in Chicago and it was very inexpensive though not free. Made me go back many times because it's so easy to get around the City!
Before shutting down the E. Church Street Parking Garage consider repurchasing the previously City-owned Carmack Jay property currently owned by Douglas Development & build a multi-story garage to better serve the North-End of Downtown. Also, charge $1 per hour for parking & extend it beyond 5 pm & charge on Sunday's. This should help fund additional, creative parking improvements
We are located in the new business offices on S East Street so selected not downtown, but we are technically downtown, by the Marc Station. Seems like the city is forgetting this area in their planning. If you're at the MARC station or office buildings surrounding, you have to walk way out of your way to cross the street to access the E All Saints parking deck. If you use the MARC parking lot, people leaving the buildings in the winter months have to walk a long way, pass the Marc station, pass lots of homeless people (who cat call), this is a scary situation. As city builds up this area, some thought needs to be taken into consideration for convenient parking that are close to a number of crosswalks, not just the crosswalk on the creek. Ideally, there should be a cross walk directly across from the Marc Station to the E All Saints parking deck

On a regular basis trolleys from parking garage so all the people in St. Johns Church (church and all activities associated) will stop parking illegally and taking all the resident parking. They need to have another solution as all of us residing, have annual parking passes and paying higher tax downtown can actually park. They can use a parking garage not our neighborhood parking. It interferes with deliveries and creates an impossible situation especially on Sunday evenings & Weds evening when street cleaning occurs. We can never have family visit on the weekends and have parking because of the church goers that refuse to use the parking garages. The church should have to insist on garage parking, subsidize a trolley or buy passes. They actually will come to the service 45 min in advance to get a space - then stay in the space until another church goers comes. If I as a resident try to park in the space - they won't move. In response to all these questions - I think these are great ideas - but the church people won't use it - they feel they are entitled to take all the spaces; park in the street to pick up their kids in the evening because they are too lazy to park in a parking garage and walk to pick up their kids. They literally will block both lanes creating a 100% traffic jam (as 2nd street is a one way). If you ask them to move - they ignore you. I've seen people get into yelling matches and physical fights. Because it is after 5 pm - there is nothing we as residents can do. So I like all your ideas - I think they would be helpful but until you make the church people act responsibly and maturely - they will continue to create a negative situation by taking all the parking in the 200 E block. I have no idea how the new build on 200 East 2nd will impact also.
Ideally it should be daily, but I don't know if you can start there. I would like to see the circulator take visitors to the outer perimeters of the downtown district so they can see other businesses that are not in the "heart" of the downtown district. A nominal fee should be charged: an idea, if visitors park in an outer lot for free and use the circulator, they pay a small fee ($1.00?) and receive a card, allowing them get on and off throughout the day with no additional fees. If a visitor has parked in a garage, they can use their parking garage ticket to get on and off the circulator throughout the day with no additional fees.
This survey should include option "I don't know", since most of us wouldn't have had conversations w/ customers or employees about something that we didn't know was under consideration. Another option could be a downtown employee only parking lot/deck.
FRIDAY THRU SUNDAY
Combining a trolley with further parking locations would be needed if market street was closed to traffic.
NA
limited runs during the week. more runs during busy event days and end of week/weekends.
also to historic sites as a Tourism advantage

Fare-free if and only if the city can afford it otherwise enough to cover operating cost.
Depending on wait times it will likely be faster to walk than to take a parking circulator.
During huge events like in the street
I do believe that people would park and move their cars more often from metered spaces if it were cheaper per hour. You could extend the metered parking hours past five pm to make up the difference in money made- MANY people come downtown after 5pm and would pay cheaper parking to park on the street. Also, residents snag all of the parking spaces after 5pm (because it's free)which is detrimental to our customers stopping in.
Put a giant parking lot where the post office is.
PLEASE discontinue parking of county vehicles on Market in the morning. It makes it impossible for store owners to load/unload before 9AM
My opinion is that a circulator would be a large investment, and will not be utilized to make it feasible.
Don't allow parking on the main streets to reduce congestion
If it becomes a requirement for employees, they should not have to pay the fare. Some employees would still like to park close by so they can head home immediately after work.
Close Market street from All Saints to 3rd but keep the cross streets open (as in Boulder CO)
Free fare would be good or a donation. Could sell advertising space on the trolley to cover costs, and depending on drop off areas those businesses could see influxes of business.
Lengthen the time limit at meters!
To make this viable for court (jurors) and downtown workers, the schedule would need to be predictable.
Sustainability of mass transit
Going to Delaplaine and up N and S Market and well as E and W Patrick St, and Church St.
Parking should be free downtown for employees of downtown Frederick stores
All weekend

Included in price of parking at remote location
Good idea if the trolley runs on a 10-15-minute schedule for employees.
Tourist/business competition with residents for on-street parking in residential neighborhoods is a MAJOR concern.
Regular basis, with increased/extended service on weekends.
$1.00 per every time you hop on

Appendix F
Resident Survey Comments

Other Ideas and Opinions – Resident Survey
Get rid of on street parking at least on one side of Market. Foot traffic and outdoor dining would both have more room. And sacrifices minimal parking locations. Or if kept-make all of one side handicapped only
I'm not opposed to a small fee to help offset the costs of a trolley.
What about changing the street parking to angled spots on one side only. I think you could safely add more spaces.
I think a circulator making stops downtown would just create more traffic, and I don't think employees will be willing to park remotely.
If a fare is required for tourists, provide a low-cost pass for employees/locals
It needs to be easy and fast. Otherwise, people won't use it. Frederick isn't that big, so waiting more than 5 minutes for a trolley wouldn't be worth it because you can walk downtown from any deck in less than 10 minutes.
City should look at adding additional parking structures up N Market and N East St. These areas could benefit from urban infill mixed use. This would also boost the need and efficiency of a circulator in downtown.
Can be rented or used by groups/schools for weekday field trips downtown
Yeah start in Baker Park
Zero-emission, short headways
Weekend circulator
Road Diets, protected bike lanes, closing part of streets for pedestrian mall (a la Charlottesville)
Only on weekends and during events
To start during events and on busy weekends
Reasonably priced
Like Denver
Move people downtown from Monocacy Village which has lots of parking

It shouldn't be implemented.
Bad question. It should NOT be implemented!
I believe downtown parking should be for residents and employees with a few short-term spots. Many visitors are unfamiliar and uncomfortable with downtown streets which leads to major issues (such as traveling the wrong way down one-ways). A remote parking situation would be great for visitors
Create zones for Uber and Lyft driver for use during high traffic times. They are clogging up traffic
Offered on a regular basis but likely needed more frequently during events, weekends, summer more frequent than winter.
A downtown circulator that allows individuals in town for the day, for whatever reason, would free up street parking for residents who don't have off street parking, particularly on the weekends. We don't even like to leave our home on the weekends because we often don't find parking when we return.
Employees should get access close to their work for security, remote garages get circulator for tourists/ overnight parking. Works as a way to show visitors a tour of downtown and have sponsorship/stops from local businesses and restaurants.
As a downtown resident a circulator to help downtown employees will cause further parking problems for residents who Do not have off street parking attached to their residence. This is an ongoing problem already that would only get worse.
Keep all garage exits open on Sat and busy event days
The circulator would be best utilized with a route that goes down East, Market, Patrick, and Bentz streets (and to include Baker Park)
I would visit more if the parking situation was better.
Fare free only on holidays
Downtown businesses will not like being expected to park far away and commute. This will be seen as a reason to NOT locate one's business in downtown. If the circulator is offered, it should not be seen as a substitute for downtown parking. I like the idea of trying to buy Carmack Jay back and putting another parking structure there
Salt Lake City has free circulators and it works. And there is room for bicycles also.

The library gets too many spaces allocated to them.
Like Old Town Trolley - connecting main bus and train stations to Downtown Frederick.
In order to connect the walkability of downtown to the restaurants and breweries on the outskirts
People prefer to park - not park and ride a trolley.
Start planning NOW for a parking garage at the North end of downtown, using the trolley to encourage parking there.
This must be done cautiously or the drug addicts and homeless will take over and no one will want to ride
On weekends and during events
During busy times only? Weekends, holidays, etc.
How do you make outer parking garages safe so people will want to use a trolley to and fro?
Not sure what you mean by a trolley?
While I think a circulator only makes sense from a load perspective on days with events, like First Saturdays and Festival of the Arts, I think it needs a regular schedule or people won't have awareness of it.
Consider expanding service in the future - perhaps in cooperation with the developers - to better connect the new Renn Farm and East Church developments to downtown.
I'm a small 21 y/o woman and I hate parking downtown and having to walk to my car blocks away in the dark. Having a trolley or something that stops at the parking locations would make it easier for me
The only way I see it making sense is 1. really busy days where it is heavily marketed and it feels festive -- I could see people feeling happy on fire and ice about having an assured ride in from like the Keys stadium 2. if you made specific arrangements with specific employers experiencing trouble with parking so that their workers got into a routine of thinking it was normal - i.e. have county employees bus in from the remote on to free up Church Street. I don't think the casual visitor or employee is remotely interested in the bus system in Frederick. our public transportation options feel a little ghetto at the moment
Would be nice if it circulated between the West End and downtown