Beacon Street Parking Study

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Prepared for the City of Somerville

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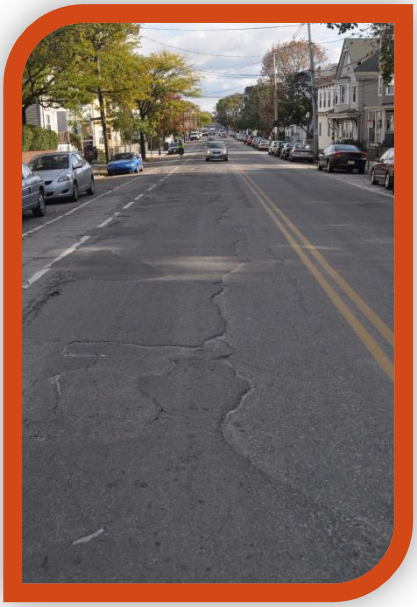
Executive Summary



Beacon Street in Somerville is an urban arterial with an average pavement width of 44 feet with parking located along both sides of the street. There are 346 MUTCD and City of Somerville Traffic Regulations compliant spaces along Beacon Street within the parking lanes (individual parking stalls are not demarcated). The maximum amount of parked cars along Beacon Street during any observation period was 218 vehicles.

Historically urban arterials have been designed focusing on accommodating motor vehicles. Current designs now incorporate multimodal accommodation so that all users (motor vehicle, bicycle, pedestrian and mass transit) are provided safe facilities. As part of the proposed Beacon Street Roadway and Streetscape Improvements project, there is a proposal to remove parking along one side of Beacon Street from Oxford Street to Washington Street, leaving parking only on the northbound side of the street. The proposed parking along this stretch of roadway will retain 92 spaces. Parking will be maintained on both sides of the roadway from Washington Street to the Somerville/Cambridge city line, providing 93 parking spaces along that stretch of Beacon Street.

The City of Somerville wants to ensure that any reduction of parking will not have an adverse impact to the residents or businesses located along the Beacon Street corridor. A parking study was undertaken to determine the current available parking spaces along Beacon Street, assess the occupancy rate of the spaces, the typical duration of cars parked along Beacon Street and the turnover of the parking spaces in order to compare the existing parking demand to the proposed parking in the Beacon Street Roadway and Streetscape Improvements Project.

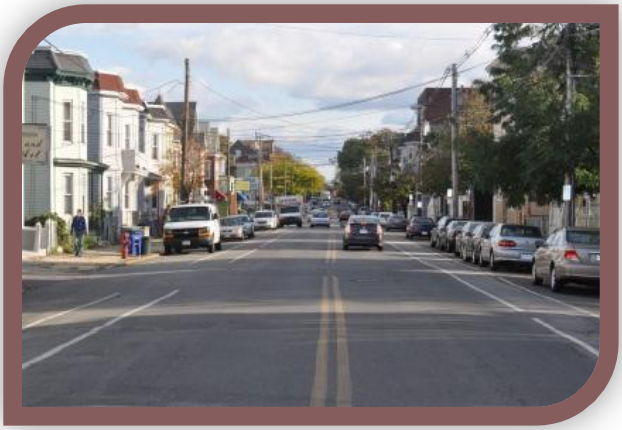
This study concludes that the overnight resident parking demand along Beacon Street will be accommodated by the proposed project.

This study concludes that much of the midday permit parking along Beacon Street is due to residents of other areas of Somerville that park along Beacon Street and then travel to their destination via mass transit or are students or staff attending nearby colleges.

This study concludes that weekday and weekend average and peak parking demand will be accommodated if the parking along Beacon Street is regulated such that non-Beacon Street residents are no longer allowed park along Beacon Street for extended periods during the day, effectively occupying half of the available parking along this roadway. If this is implemented some users may be inconvenienced and may need to park further from their destination than they currently do. The increased walking distance is below the tolerance threshold as cited in the TRCP Report 100, *The Transit Capacity and Quality of Service Manual*, 2nd Edition produced by the Transit Cooperative Research Program (TCRP).

Contents

Introduction



The Beacon Street Roadway and Streetscapes Improvements project began nearly 13 years ago. At that time, the vision for Beacon Street was a multi-modal corridor with improved accommodations planned mainly for vehicles and pedestrians. This design utilized a typical cross section which incorporated a 11' sidewalk, 10' shoulder, 12' travel lane, 12 travel lane, 10' shoulder and 11' sidewalk. No dedicated facilities for bicycles were included in the project.

This design was carried through to 75% Design in March 2004. The project was put on hold until late 2011 when the City made it a priority and re-activated the design process. Due to the time that has passed since the original 25% Submission, MassDOT requested that the 25% Submission be resubmitted. The City's vision for this corridor as well as the users of the roadway has changed since the original 25% Submission. The new 25% resubmission incorporates the City's vision for Beacon Street and also adjusts to the changed users of the roadway.

This new vision has led to a re-evaluation of this multimodal arterial. The community wanted a diverse arterial that would improve the quality of life for all stakeholders; residents, business owners, bicyclists, pedestrians, motorists and all others. The redesign will be a "complete street". The goals for this project are to:

- Improve the overall functionality and flow within the arterial for all users (vehicular, bicycle, pedestrian, bus, etc.).
- Provide new and/or upgraded traffic signal control at critical intersections to increase capacity, reduce delays and improve safety.
- Redesign curb cuts to appropriately meet ADA requirements, fit the use and provide additional space for pedestrians where required.
- Identify activity nodes and users so that amenities for the desired activities such as planters, shrubs, benches and trash receptacles, bus shelters and trees can be placed to enhance the users overall experience.
- Upgrade needed subsurface utilities to ensure that they are sufficient to meet the project's design life so the new surface will remain in good working condition.

In order to meet these goals, the typical cross has been revised to include where possible a cycle track. This is accomplished by eliminating on-street parking on the southbound side of Beacon Street from Oxford Street to Washington Street. This reduction allows for appropriate and safe pedestrian sidewalks, cycle tracks, on-street parking (one side only) and vehicular travel lanes. Public transit stops are incorporated into the proposed improvements, making the Beacon Street Roadway and Streetscape Improvements project a "Complete Street", where all users are afforded safe use of the corridor.

Definitions

The following terms are used within this parking study have the following definitions.

Bicycle Lane

A portion of roadway that has been designated for preferential or exclusive use by bicyclists by pavement markings and, if used, signs. It is intended for one-way travel, usually in the same direction as the adjacent traffic lanes, unless designated as a contra-flow lane[1].

Cycle Track

A cycle track is an exclusive bike facility that combines the user experience of a separated path with the on-street infrastructure of a conventional bike lane. A cycle track is physically separated from motor vehicle traffic and distinct from the sidewalk[2].

Duration

Duration is the length of time a given vehicle remains in a specific space[3]. Duration is not an indication of the total time that a vehicle is parked in the same parking space, only an indication of how long the vehicle was parked in the same parking space while being observed. Short duration parking is indicative of short trip purposes such as pick up or drop-off of goods or personal business. Long duration parking is indicative of longer trip purposes such as overnight parking or business permit parking.

MUTCD

Manual on Uniform Traffic Control for Streets and Highways, 2009 Edition, U.S. Department of Transportation, Federal Highway Administration.

Occupancy

Occupancy is the portion of time a vehicle is parked in a given space during the day[4]. The occupancy rate provides an understanding of how much of the current parking is used. High occupancy rates indicate that most of the available parking spaces are used. Low occupancy rates indicate that little of the available parking spaces are used.

Turnover

Turnover is the number of different vehicles that park in a given space during an average day[5]. High turnover indicates that the vehicles are only parked for a short period of time and then leave. Low turnover indicates that vehicles are parked for a longer period of time.

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[1] Guide for the Development of Bicycle Facilities, 2012, Fourth Edition, American Association of State Highway and Transportation Officials
[2] NACTO, Urban Bikeway Design Guide, April 2011 Edition, National Association of City Transportation Officials
[3] Transportation and Traffic Engineering Handbook, Institute of Traffic Engineers, 1976
[4] Transportation and Traffic Engineering Handbook, Institute of Traffic Engineers, 1976
[5] Transportation and Traffic Engineering Handbook, Institute of Traffic Engineers, 1976

Narrative

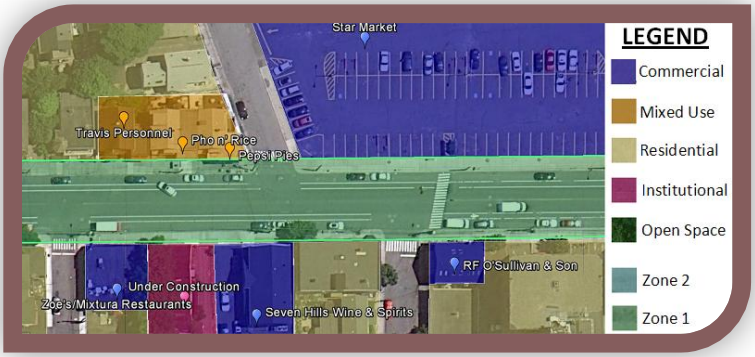
Purpose

The purpose of this parking study is to document the existing parking demand along Beacon Street during the morning, noon and evening time periods during weekday and weekend time periods in order to understand how parking is currently being utilized and to assess the adequacy of the quantity and location of on-street parking to be provided as part of the Beacon Street Roadway and Streetscape Improvements.

Existing Conditions

Beacon Street is an urban arterial located between Oxford Street and the Somerville/Cambridge City line in Somerville, MA (see Figure 1 in Appendix). Beacon Street is approximately 1.1 miles long and intersects 25 streets along it length with the major intersections being Park Street/Scott Street and Washington Street.

Beacon Street is mostly residential in use, with three main areas of commercial concentration at the Star Market area, the Washington Street intersection and the Foodmaster/Walgreens area. A few other commercial businesses are located within residential areas along Beacon Street. Of the 155 properties that abut Beacon Street between Oxford Street and the Somerville/Cambridge city line 118 are residential, 20 are commercial, 14 are mixed use, 2 are institutional and 1 is open space. See Figure 2 (in appendix) for a map showing the different uses along Beacon Street.



Parking along Beacon Street is used to accommodate overnight residential parking as well as short term and long term parking. Beacon Street currently is signed "2 Hour Parking Except by Permit 8:00am to 2:30 am, Permit Parking Only 2:30am to 8:00am" along most of its length, with parking meters located from Museum Street to Washington Street on the southbound side.

There are currently 374 "unofficial" parking spaces located along Beacon Street. Some of these spaces do not meet the setback requirements of the MUTCD, namely 20' from crosswalks and 30' from a signalized intersection or the City of Somerville Traffic Regulations. If the MUTCD and City Traffic Regulations were to be applied to the existing conditions along Beacon Street, there would be 346 parking spaces available along Beacon Street.

The City of Somerville provides parking permits to its residents for a nominal fee. There are eight parking zones in Somerville. Parking permits allow the holder to park anywhere in the city,

not just within the zone in which they reside. Most parking within Somerville allows vehicles with parking permits to remain in parking spaces for an unlimited period of time.

Methodology

Parking counts were taken during a typical non-holiday weekday and weekend day in May, 2012 as well as a non-holiday weekday in June. These specific time periods were chosen so that data was collected while students are still in school (May) and while students are not in school (June) so that any impact of college students or staff could be understood.

For the purpose of taking the parking counts, Beacon Street was divided into two loops, one loop being from Oxford Street to Park Street and the other loop being from Park Street to the Somerville/Cambridge city line. This break point is the approximate geographic midpoint between Oxford Street and the Somerville/Cambridge city line. Parking charts were developed on a block-by-block basis (a sample data sheet is included in Appendix A). Each block was assigned an approximate parking space total based on aerial imagery and verified in the field. Many of these spaces do not meet the current MUTCD and City Traffic Regulations relative to size and proximity to intersections or crosswalks. DCI personnel walked the loops recording the license plate numbers of the parked cars as well as noting parking stickers (resident, visitor and business) displayed in any vehicle windshields (the raw field data sheets are included in Appendix B).

Parking counts were taken throughout each day. Early morning counts were performed primarily to assess the overnight residential parking demand. Midday counts were used to assess commercial demand, observe turnover and duration characteristics, and to determine long term parking. Evening counts were used to assess parking demand for the different uses: residential and commercial.

Weekend parking counts were taken on Saturday, May 19, 2012 from 6am to 8am, 11:30am to 1:30pm and 5:00pm to 8:00pm. Weekday parking counts were taken on Wednesday May 23, 2012 from 7:30am to 9:30 am, 11:00am to 2:00pm and 4:00pm to 7:00pm and on Tuesday June 19, 2012 from 6:00am to 8:00am, 11:00am to 2:00pm and 5:00pm to 8:00pm. These time periods were chosen as they are representative of the parking demand along Beacon Street throughout a weekday and weekend day.

The recording of license plate numbers allowed DCI to record if a vehicle was parked along Beacon Street at periodic intervals during the observation times and was the basis for duration and turnover calculations.

Analysis

The data gathered was tabulated using Microsoft Excel. License plate numbers were entered by block. The plate numbers were then categorized by parking type (no permit, resident permit, visitor permit or business permit) to protect the privacy of the residents and sorted by block. This data was then used to calculate the occupancy rate (percent occupied), average duration of parking space occupation and parking space turnover. These values have been calculated for each of the time increments during the morning, afternoon and evening and for all three days.

Analyzing the data in this way gives us an understanding of the parking demand throughout the day for both the week day and weekend day.

Since the proposed typical roadway cross section from Oxford Street to Washington Street incorporates a cycle track where possible and the typical roadway cross section from Washington Street to the Somerville/Cambridge city line includes bicycle lanes, in this Beacon Street has been divided into two zones: Zone 1 to the North and Zone 2 to the South.

Zone 1

This zone includes 92 abutting properties which are comprised of 69 residential uses, 12 commercial uses, 9 mixed uses, 1 institutional uses and 1 open space use. There are currently 255 observed parking spaces located in Zone 1, 111 parking spaces located on the southbound side of the road and 144 spaces located on the northbound side of the road.

The metered parking spaces along Beacon Street in front of the American Academy of Arts and Sciences (from Museum Street extending to Washington Street) are periodically "bagged", prohibiting parking at these locations. These parking spaces are included in the existing parking space counts.

Zone 2

This zone includes 63 abutting properties which are comprised of 49 residential uses, 8 commercial uses, 5 mixed uses and 1 institutional use. There are currently 119 observed parking spaces located in Zone 2, 55 parking spaces located on the southbound side of the road and 64 spaces located on the northbound side of the road.

Resident Parking

As mentioned previously, the City of Somerville provides parking permits to its residents for a nominal fee. Parking permits allow the holder to park anywhere in the city, not just within the parking zone in which they reside, and for an unlimited period of time.

To ascertain the overnight resident parking demand, vehicles with permit parking stickers which were observed at the start of morning observations or at the end of the evening observations are assumed to be residents of Beacon Street. Of the morning and evening periods, the observation period that had maximum amount of vehicles with permit parking stickers was Wednesday morning.

Findings

Zone 1

Weekday

Zone 1 has an average weekday **occupancy** of 41%, with the maximum occupancy of 80% at the Oxford Street block and the minimum occupancy of 2% at the Museum Street block. On average, of the 255 parking spaces located in Zone 1, 84 are used during the am, 121 during the noon hours and 105 during the pm hours on weekdays.

Zone 1 has an average weekday **turnover** of 12%, with the maximum turnover of 22% at the Miller Street block and the minimum turnover of 2% at the Museum Street block.

Zone 1 has an average weekday **duration** of 1.8 hours, with the maximum duration of 2.6 hours at the Greenwood Terrace and Ivaloo Street blocks and the minimum duration of 0.7 hours at the Museum Street block. The average noon time duration was 1.7 hours, with 38% of the spaces having a duration of more than 2 hours and of these,

78% had a duration of more than 6 hours.

The average pm duration was 1.6 hours, with 23% of the spaces having a duration of more than 2 hours and of these, 58% had a duration of more than 6 hours.

Weekend

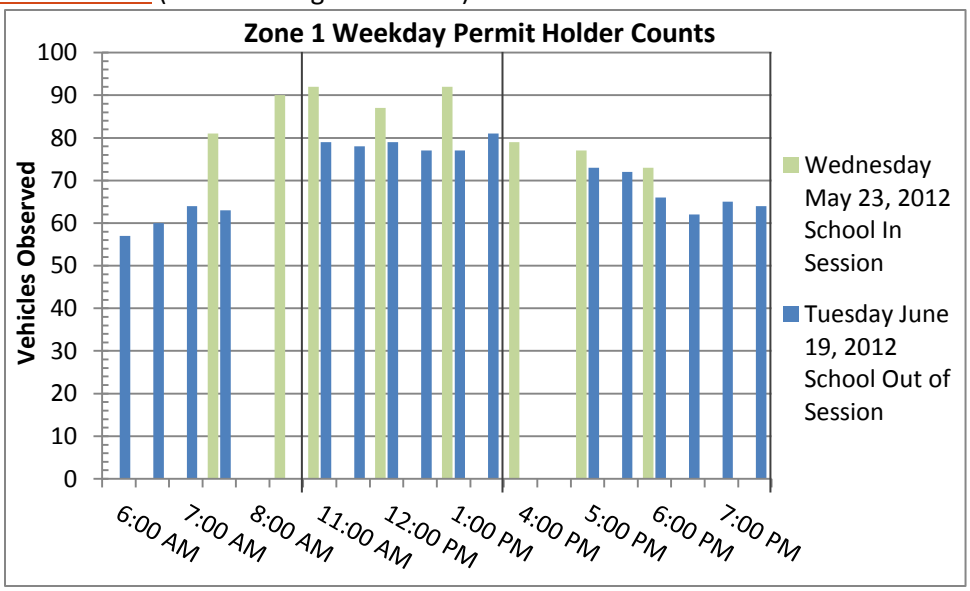
Zone 1 has an average weekend **occupancy** of 35%, with the maximum occupancy of 78% at the Miller Street block and the minimum occupancy of 6% at the Museum Street block. On average, of the 255 parking spaces located in Zone 1, 77 are used during the am, 87 during the noon hours and 110 during the pm hours on weekends.

Zone 1 has an average weekend **turnover** of 12%, with the maximum turnover of 26% at the Eustis Street block and the minimum turnover of 3% at the Museum Street block.

Zone 1 has an average weekend **duration** of 1.5 hours, with the maximum duration of 2.2 hours at the Greenwood Terrace block and the minimum duration of 0.6 hours at the Beckwith Circle block.

Resident Parking

In some areas of Zone 1, weekday midday permit parking sticker counts showed an increase over the morning counts. DCI's believes the reason why the permit sticker parking increases as the morning progresses on weekdays is that Somerville residents (who do not live along Beacon Street) park along Beacon Street and either take mass transit to work or to other appointments which are not necessarily in Somerville (i.e. Cambridge or Boston). As can be seen in this chart entitled "Zone 1 Weekday Permit Holder Counts" the data for both weekday morning observation periods supports this hypothesis as the number of vehicles with resident parking stickers increased as the morning progressed and then decreased in the afternoon.



Another trend that can be seen from the data is the impact of nearby colleges on the permit parking (see the same chart entitled "Zone 1 Weekday Permit Holder Counts"). The first parking counts taken were while college was in session (Wednesday, May 23). The second parking counts were taken when college was out of session (Tuesday, June 19). As can be seen, there is approximately 15% more permit parking during the midday and 5% more during the evening when college is in session. This increase is attributed to students or staff parking along Beacon Street and then walking to a nearby college.

Eighty-one (81) vehicles with permit parking stickers were counted during the first observation on Wednesday morning. This is taken as the number of residents that park overnight along Beacon Street in this zone because it is the greatest of the three counts.

As can be seen from reviewing the low turnover rates and long durations, many of the parking spaces in Zone 1 act as long term parking spaces for people with a permit parking sticker. Many of these spaces are occupied by the same vehicle for the majority of the day. When the average occupancy during the noon time and pm hours is compared to the Beacon Street resident parking number, it can be seen that the long term parking which is occurring in these time periods is not by the residents of Beacon Street, but by Somerville residents with parking permits that park along Beacon Street and travel to other destinations for the day (i.e. school or work).

Zone 2

Weekday

Zone 2 has an average weekday **occupancy** of 63%, with the maximum occupancy of 83% at the Beacon Place block and the minimum occupancy of 28% at the northbound Washington Street block. On average, of the 119 parking spaces located in Zone 2, 62 are used during the am, 89 during the noon hours and 68 during the pm hours on weekdays.

Zone 2 has an average weekday **turnover** of 22%, with the maximum turnover of 25% at the Cooney Street and Waldo Avenue blocks and the minimum turnover of 15% at the northbound Washington Street block.

Zone 2 has an average weekday **duration** of 1.4 hours, with the maximum duration of 2.5 hours at the Beacon Place block and the minimum duration of 0.9 hours at the eastern Washington Street block.

Weekend

Zone 2 has an average weekend **occupancy** of 48%, with the maximum occupancy of 67% at the Beacon Place block and the minimum occupancy of 33% at the eastern Waldo Avenue block. On average, of the 119 parking spaces located in Zone 2, 55 are used during the am, 54 during the noon hours and 62 during the pm hours on weekends.

Zone 2 has an average weekend **turnover** of 20% with the maximum turnover of 26% at the Cooney Street block and the minimum turnover of 13% at the Waldo Avenue block.

Zone 2 has an average weekend **duration** of 1.2 hours, with the maximum duration of 2.0 hours at the Buckingham Street block and the minimum duration of 1.0 hours at the Concord Street block.

Resident Parking

Forty-seven (47) vehicles with permit parking stickers were counted during the first observation on Wednesday morning. This is taken as the number of residents that park overnight along Beacon Street in this zone because it is the greatest of the three counts.

Potential Mitigation of Lost Parking

Many different strategies can be used to mitigate lost parking within an urban environment such as Beacon Street. Some of these strategies are discussed below. While many strategies are geometric changes which can be incorporated into proposed roadway designs, others require the cities and towns to have discussions with business owners to review design options, i.e. reducing very large curb cuts so that additional on-street parking is provided.

Narrowing Wide Curb Cuts

In many urban areas, curb cuts to businesses can be wider than necessary and can actually provide for worse site circulation as well as entrance/exit confusion. Roadway improvements projects in which all roadway elements from right-of-way line to right-of-way line are replaced are an ideal time for cities to assess such curb openings and make any adjustments that maintain appropriate access while maximizing public use of the sidewalk and curbline. Beacon Street contains several wide curb cuts that may be worth narrowing. The specific locations identified in this study are Century Tire, Dodakin's Auto Sales and Dial A Pizza. These locations have very large curb cuts that severely limit the availability of on-street parking. These locations are prime candidates for narrowing of the wide curb cuts while maintaining adequate site access and also providing additional on-street parking. Providing appropriate curb cuts can increase safety by reducing the driveway distance crossed by pedestrians as well a better direct drivers into and out of properties.

Additional Metered Parking Along Side Streets

Adding some metered spaced along side streets that revert to overnight resident parking after 8:00 pm is a way to provide short term parking for businesses and overnight parking for residents. This study has identified more practical solutions to provide the needed parking along Beacon Street, so side streets that could add metered parking have not been identified.

Parking Space Sharing with Local Businesses

Observations during the data collection phase of this study indicate that several businesses along Beacon Street have large off-street parking lots as well as on-street parking in front of the business. In many urban areas, abutters to large parking lots have agreements with business owners to allow overnight residential parking in a portion of the parking lot. Along Beacon Street, the potential exists for the City to secure an agreement with several business owners to allow overnight resident parking. The businesses that seem to have ample parking which might agree to overnight resident parking (after business hours) are Star Market, Wine and Cheese Cask, Walgreens and the Center for Addiction Studies. This study has identified more practical solutions to provide the needed parking along Beacon Street, so parking space sharing with local businesses is not recommended.

Revising the Permit Parking Regulations

The City of Somerville provides parking permits to its residents for a nominal fee. Parking permits allow the holder to park anywhere in the city, not just within the parking zone in which they reside and for an unlimited period of time. DCI believes that the increase in parking during

the midday times as well as the low turnover rates and high parking duration during all times of the day is directly attributable to this policy. As shown by the long average durations in Zone 1, many vehicles are parked for extended periods of time, occupying a parking space for hours at a time. Revising the permit parking policy to limit parking duration for non-Beacon Street residents to an hour would decrease duration, increase turnover and provide the ability for more vehicles to utilize a given parking space throughout the day.

Clustered Parking Meters

Metered spaces could also be installed in clusters around the commercial areas, particularly around the Oxford Street, Sacramento Street, and Washington Street businesses. Adding metered spaced in these areas that revert to overnight resident parking after 8:00 pm is a way to provide short term parking for businesses and overnight parking for residents.

Meter Locations

Location 1 - Oxford Street

Location 2 - Sacramento Street

Location 3 - Washington Street

Location 4 - Concord Street

Suggested Meter Cluster

Impact of Proposed Improvements

The preliminary parking space plan of Beacon Street was designed to be in compliance with the City of Somerville Traffic Regulations as well as the 2009 MUTCD. The constraints that were used in the design of the parking layout include: no parking closer than 2' to a driveway, no parking within 10' of a fire hydrant and no parking within 20' of an intersection (measured from the intersecting right-of-ways). For the purpose of attaining proposed parking space counts, parking stall dimensions utilized were 18' long for single spaces and end spaces without a curb bump out and 22' long for interior spaces and end spaces with a curb bump out. In keeping with the Somerville standards for parking along roadways, the proposed spaces will not be demarcated, but will be located within a parking lane.

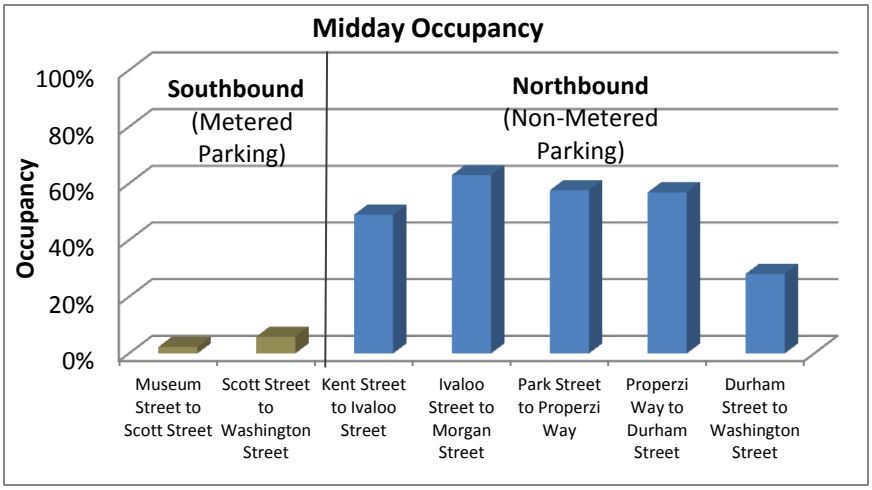
Zone 1

The proposed improvements will remove parking along the southbound side of Beacon Street from Oxford Street to Washington Street. The proposed condition will have 92 parking spaces. This amount of parking is adequate for the average morning use within Zone 1 and will accommodate the overnight residential parking.

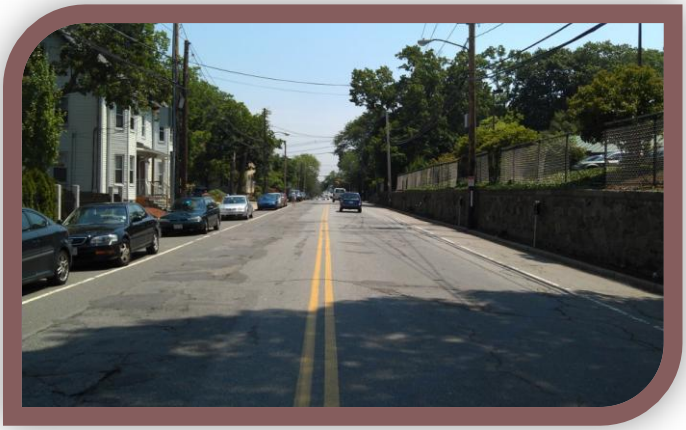
Midday Parking

As discussed previously, the data suggests that much of the midday parking in Zone 1 is used as long term parking by people with parking permits who are not residents of Beacon Street. These parking spaces are occupied for the majority of the day and cannot be utilized for short term parking. Of the 206 total vehicles observed during the noon time hours (11am to 2 pm), 78 of them were in the same parking space for the entire observation period of 3 hours. With the average occupancy of 121 spaces during the noon time hours, the 78 vehicles that park for more than 3 hours make up the majority of the parking along Zone 1.

Another observation which suggests that much of the midday parking is used as long term parking with final destinations somewhere other than Beacon Street is the very low occupancy of the metered parking spaces between Museum Street and Washington Street. Metered parking spaces allow for short term, high turnover parking and are particularly beneficial near business areas, such as the Washington Street area. There are 70 parking spaces located along the southbound side of Beacon Street along this stretch of roadway. As can be seen from this chart ("Midday Occupancy"), the parking spaces which are metered (tan color), have a very low occupancy rate during all periods of the day, while those



spaces located directly across the street (blue color) have a higher occupancy rate. DCI believes that the difference between the occupancy rates of these spaces is directly attributed to how the spaces are regulated, i.e. parking meter vs. signed parking. The metered spaces are short term (2 hour) spaces while the signed spaces are "2 Hour Parking Except by Permit 8:00am to 2:30 am, Permit Parking Only 2:30am to 8:00am". It appears that the signed spaces are being used to long term parking by permit parking holders while the metered parking is not being well utilized. This photo shows the disparity in parking occupancy.



The 92 proposed parking spaces within Zone 1 cannot accommodate the average midday occupancy if vehicles are allowed to park for long durations as they currently do. DCI recommends that the proposed improvements to Beacon Street include signage that limit the parking duration along Beacon Street to 1 hour parking, except for Beacon Street residents, and meters to increase the parking turnover. Beacon Street residents will continue to be able to park along Beacon Street as they currently do, with no time restrictions. This can be accomplished with revised signage and the addition of Beacon Street parking sticker issued by the Traffic and Parking Department along with the parking permits for residents of Beacon Street. One way to determine the number of meters that should be installed in each zone is to subtract the number of residents (81 in Zone 1 and 47 in Zone 2) from the number of proposed spaces (92 in Zone 1 and 93 in Zone 2), which ensures that the Beacon Street residents will not be affected by the new regulations. The meters (11 in Zone 1 and 46 in Zone 2) should be clustered around the commercial areas, where turnover is the highest. This change to the regulated parking along Beacon Street will allow for the accommodation of both Beacon Street resident overnight parking as well as morning, midday and evening business parking demand.

Evening Parking

Much like the midday parking, the data suggests that much of the evening parking in Zone 1 is used as long term parking by people with parking permits who are not residents of Beacon Street. These parking spaces are occupied for the majority of the evening and cannot be utilized for short term parking. Of the 187 vehicles observed during the evening hours (5pm to 8pm),

> ***53 were also observed at the end of the noon time hours, indicating that these vehicles were not Beacon Street residents returning home from work, but parking permit holders using Beacon Street for long term parking.***

With the average occupancy of 105 spaces during the evening hours, the 53 vehicles that utilize Beacon Street for long term parking account for over half of the parking along Zone 1. The 92 proposed parking spaces within Zone 1 cannot accommodate the average evening occupancy if vehicles are allowed to park for long durations as they currently do. DCI recommends that the proposed improvements to Beacon Street include signage that limit the parking duration along Beacon Street to 1 hour parking, except for Beacon Street residents. Beacon Street residents will continue to be able to park along Beacon Street as they currently do, with no time restrictions. This change to the regulated parking along Beacon Street will allow for the accommodation of both Beacon Street resident overnight parking as well as morning, midday and evening average and peak parking demand in Zone 1 efficiently.

Parking Space Location

Since parking is proposed to be removed within Zone 1, longitudinal displacement may occur. Residents of Beacon Street who park overnight on the street may have to walk farther from their car to their home.

TRCP Report 100, *The Transit Capacity and Quality of Service Manual*, 2nd Edition produced by the Transit Cooperative Research Program (TCRP) as sponsored by the Federal Transit Administration provides guidance on the maximum distance that people will walk to transit based on several studies in North America (Calgary, AB, Washington, DC, Edmonton, AB, and Bay Ridges, ON). The report concludes that in general 75%-80% of transit passengers walk one-quarter mile or less to bus stops. At an average walking speed of 3 mph, this distance is equivalent to a walking time of 5 minutes.

This same distance can be applied to the maximum distance that people will park their car from their final destination, whether a residence or business. Zone 1 is approximately 4,000 feet long, with proposed parking equally distributed along the entire length. Residential uses are also approximately equally distributed along this stretch of Beacon Street. Since both the parking and residential use are equally distributed along Beacon Street, DCI believes that it is very unlikely that the quarter mile threshold will be exceeded for residents walking to or from their cars to their homes.

Zone 2

The proposed improvements within Zone 2 remove minimal parking. The proposed condition will have 93 parking spaces. This amount of parking is adequate for the average and most peak use and will accommodate overnight residential parking.

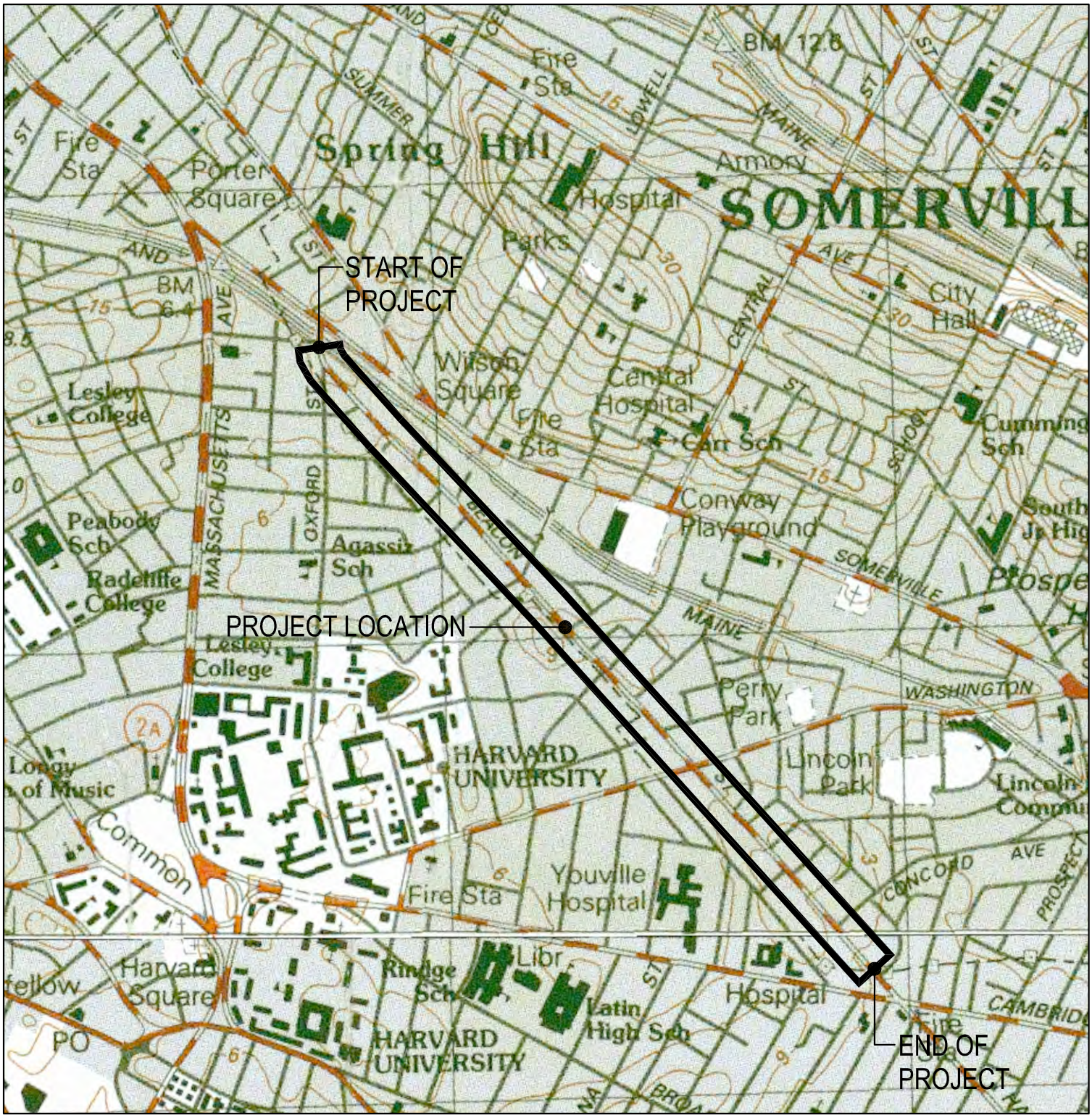
During peak parking demand (94 on a weekday afternoon), the proposed parking will be one (1) space short of

meeting the peak demand. Similar to the long term parking in Zone 1 by Somerville residents with permit parking stickers, of the 156 vehicles observed during the noon time hours (11am to 2pm), 48 of them were in the same parking space for the entire observation period of 3 hours. With the peak occupancy of 94 spaces during the noon time hours, the 48 vehicles that park for more than 3 hours account for over half of the parking along Zone 2. DCI recommends that the proposed improvements to Beacon Street include signage that limit the parking duration along Beacon Street to 1 hour parking, except for Beacon Street residents. Beacon Street residents will continue to be able to park along Beacon Street as they currently do, with no time restrictions. This change to the regulated parking along Beacon Street will allow for the accommodation of both Beacon Street resident overnight parking as well as morning, midday and evening average and peak parking demand in Zone 2.

Appendix

Figure 1

Locus Map



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BEACON STREET ROADWAY AND STREETSCAPE IMPROVEMENTS, SOMERVILLE, MA

Figure 1-1
LOCUS MAP

2012-027

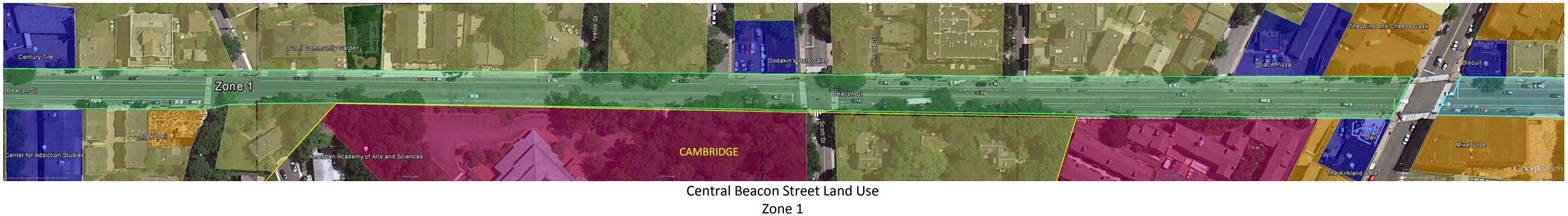
Figure 2

Land Use Map

Figure 2: Land Use Map of Beacon Street

Beacon Street, Somerville

Northern Beacon Street Land Use
Zone 1



Central Beacon Street Land Use
Zone 1

Southern Beacon Street Land Use
Zone 2

LEGEND

Commercial | Mixed Use | Residential | Institutional | Open Space | Zone 2 | Zone 1

Appendix A

Sample Data Sheet

License Plate Check Field Data

City: Somerville
Street: Beacon Street
Date: _____ Morning Afternoon Evening _____ Bold break: Driveway, Hydrant, or Crosswalk

Codes: 000000 license plate number: √ for repeat plate number from prior circuit: — for empty space
Note out-of-state licenses ® : Residential Parking Permit
V for Visitors and B for Business

Block		Time Circuit Begins						
From - To	Spot #	1	2	3	4	5	6	Notes
NORTH Loop [START @ Park St / Beacon St (East side)]								
Park St - Morgan St								
	Drwy							
Morgan St - Ivaloo St								
	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8							
Ivaloo St - Kent St								
	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8							
	9							
	10							
	11							
	12							
	13							
	14							
	15							
	16							
	17							

Block		Time Circuit Begins						
From - To	Spot #	1	2	3	4	5	6	Notes
Kent St - Sacramento St								
	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8							
	9							
	10							
	11							
	12							
	13							
	14							
	15							
	16							
	17							
	18							
Sacramento St - Miller St								
	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8							
	9							
	10							
	11							Reserved Handicapped Spot
	12							
	13							
Miller St - Stanford St								
	1							
	2							
	3							
	4							
	5							
Stanford St - Greenwood Tr								
	1							
	2							
	3							
	4							
	5							
	6							
	7							

Block		Time Circuit Begins						
From - To	Spot #	1	2	3	4	5	6	Notes
Greenwood Tr - across Roseland St								
	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8							
	9							
	10							
	11							
	12							
	13							
	14							
	15							
	16							
	17							
Roseland St - Oxford St (after turnaround)								
	LZ							
	1							
	2							
	3							
Oxford St - Forest St								
	1							
	2							
	3							
	4							
	5							
	6							
	7							
	LZ							
	8							
	9							
	10							
	11							
	12							
	13							
	14							
Forest St - Prentis St								
	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8							
	9							
	10							
	11							

Block		Time Circuit Begins						
From - To	Spot #	1	2	3	4	5	6	Notes
Prentis St - Eustis St								
	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8							
	9							
	10							
	11							
	12							
	13							
	14							
	15							
	16							
	17							
	18							
Eustis St - Sacramento St								
	1							
	2							
	3							
	4							
	LZ							
	5							In loading Zone
	6							
	7							
	8							
	9							Right on corner
Sacramento St - Beckwith Cir								
	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8							
	9							
	10							
	11							
	12							
Beckwith Cir - Museum St								
	1							
	2							
	3							
	4							
	LZ							

Block		Time Circuit Begins						
From - To	Spot #	1	2	3	4	5	6	Notes
Museum St - Scott St								
	Drwy							
	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8							
	9							
	10							
	11							
	12							
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							
	29							
	30							
	31							
	32							
	33							
	34							
	35							
	36							
STOP @ Scott St								

Block		Time Circuit Begins						
From - To	Spot #	1	2	3	4	5	6	Notes
SOUTH Loop [START @ Park St / Beacon St (East side)]								
Park St - Properzi Way								
	BUS							
	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8							
	9							
	10							
	11							
Properzi Way - Durham St								
	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8							
	9							
	10							
	11							
	12							
Durham St - Washington St								
	Drwy							
	1							
	2							
	BUS							
Washington St - Beacon Pl								
	LZ							
	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8							
	9							
	10							
	11							Fire
	12							Lane
Beacon Pl - Calvin St								
	FL							
	1							
	BUS							

Block		Time Circuit Begins						
From - To	Spot #	1	2	3	4	5	6	Notes
Calvin St - Waldo Ave								
	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8							
Waldo Ave - Buckingham St								
	LZ							
	1							
	2							
	3							
	4							
	5							
	6							
	7							
Buckingham St - Concord Ave								
	1							
	2							
	3							
	4							
	5							
	BUS							
	Drwys							
	6							
	7							
	8							
	9							
	10							
	11							
	12							
	13							
Concord Ave - Dickinson St								
	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8							
	9							
	10							
	11							
	12							
	BUS							

Block		Time Circuit Begins						
From - To	Spot #	1	2	3	4	5	6	Notes
Across Dickinson St - Cooney St								
	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8							
	9							
	10							
	11							
	12							
	13							
	BUS							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							
	29							
	30							
	31							
	32							
	33							
Cooney St - Smith Ave								
	BUS							
	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8							
	9							
	10							
	11							
	12							
	13							
	BUS							

Block		Time Circuit Begins						
From - To	Spot #	1	2	3	4	5	6	Notes
Smith Ave - Washington St								
	1							
	2							
	3							
	MZ							Medical Pick Up/Drop Off
	4							
	5							
	6							
	7							
	8							
	9							
	10							
	11							
	12							
	13							
	14							
	15							
	16							
Washington St - Scott St								
	BUS							
	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8							
	9							
	10							
	11							
	12							
	13							
	14							
	15							
	16							
	BUS							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							
	27							
	28							
	29							
	30							
	31							
	32							
	33							
STOP @ Scott St								

Appendix B

Field Data Sheets