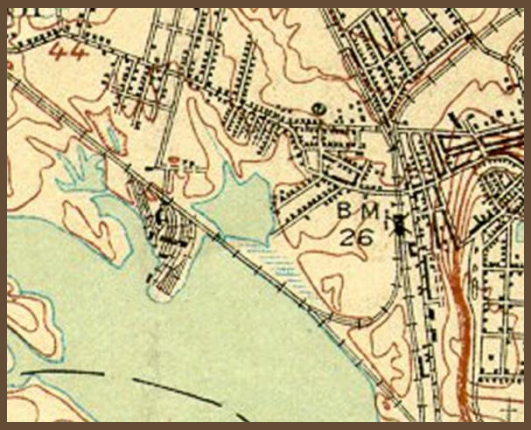
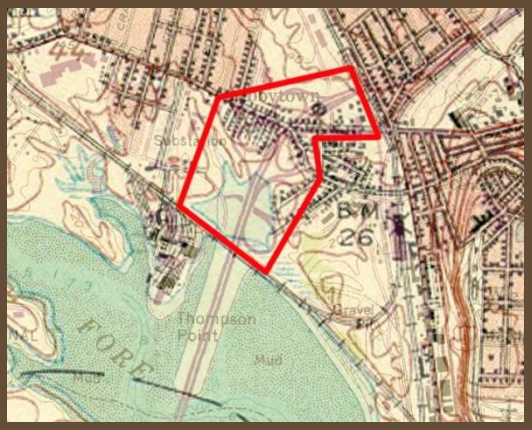
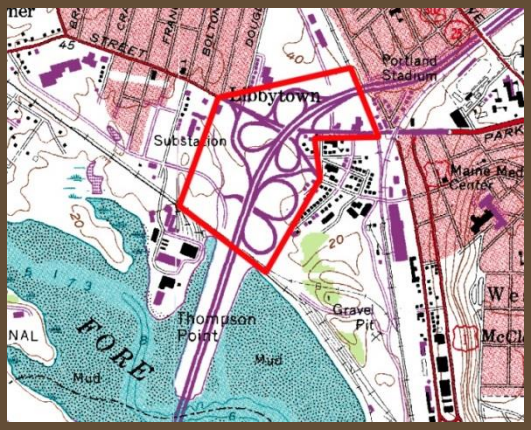
# Libbytown Traffic Circulation and Streetscape Study

## Final Report

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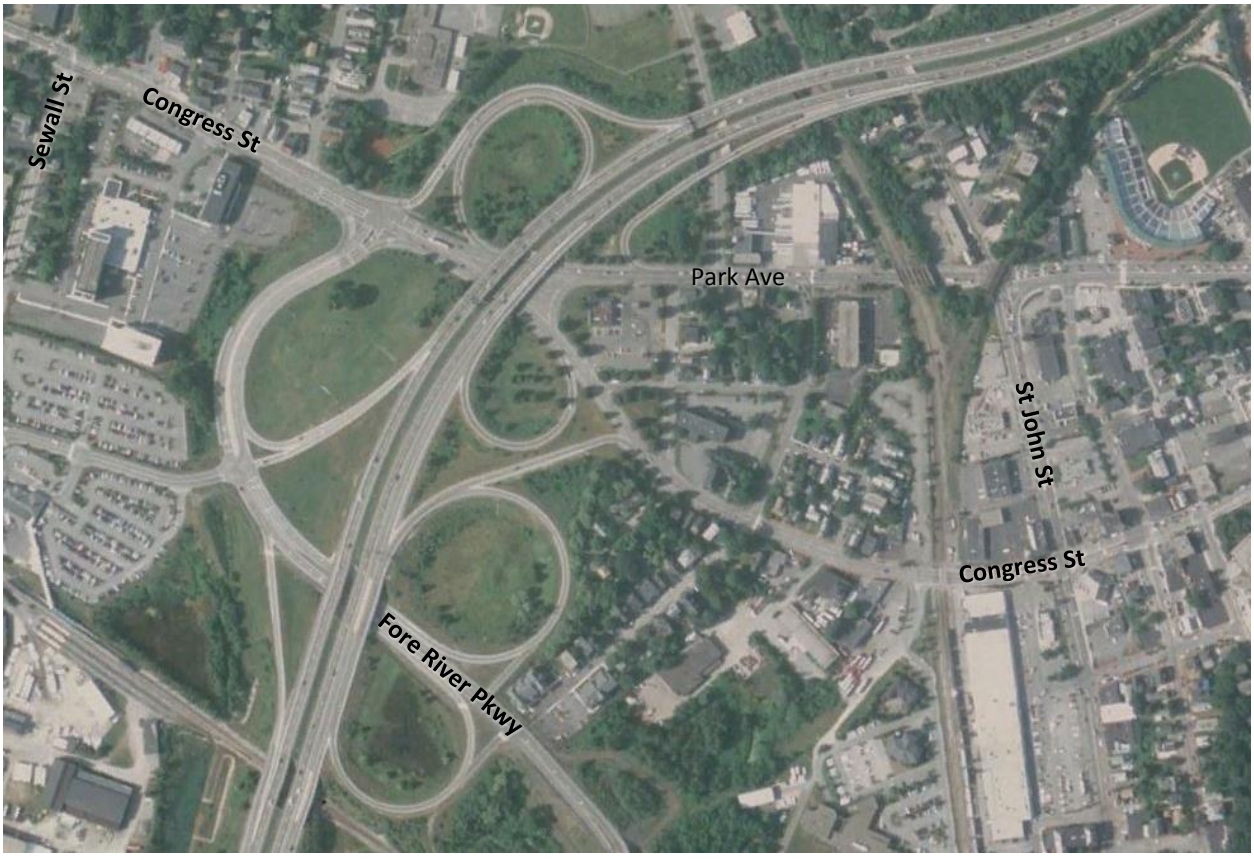
## Tables and Figures

# Executive Summary

The Portland Area Comprehensive Transportation System (PACTS) and the City of Portland recognize the need to address the numerous safety, transportation and community challenges and opportunities related to the poorly functioning I-295 Congress Street interchange (exit 5), and the surrounding street network in the eastern Libbytown neighborhood. The *Libbytown Traffic Circulation and Streetscape Study* was initiated to address these concerns in a comprehensive and holistic manner, considering all modes of transportation and the economic vitality of this important part of the City. The primary area of focus for this study is shown below.




Among the specific issues that have been identified:

- Numerous motor vehicle high crash locations, as reported by Maine Department of Transportation (MaineDOT).

- A challenging environment for pedestrians, including inadequate pedestrian crossings, infrastructure gaps in the pedestrian network, and high speeds in the vicinity of the I-295 ramps.
- A challenging environment for bicyclists, including lack of bicycle lanes or paths, high speeds, and one-way streets requiring in inefficient travel routes.
- A challenging environment for transit users due to the one-way street network that prevent important transit stops and transfer locations to be located on opposite sides of the street.
- A history of disinvestment and underutilization of land in the study area, despite its highly accessible and important location in the City.

An important consideration is the history of the interchange 5 development. The aerial photographs below show the interchange with Congress Street as originally constructed on the left, and after the new Fore River Parkway interchange was completed on the right. It is typically very undesirable to allow essentially two interchanges in such close proximity, as it introduces additional conflict point on a high speed highway. It is also evident that the older interchange loop ramps are much smaller than those on the Fore River Parkway, which meet modern engineering standards. These smaller ramps on the old Congress Street interchange do not provide for adequate acceleration for traffic entering the freeway lanes, nor a good interface with the local street network on Park Avenue and Congress Street.

## Study Process

The City of Portland appointed a project advisory committee of neighborhood residents, businesses and other stakeholders, and hired a team of consultants to explore alternatives and make recommendations for addressing these needs. From the outset, the intent was to develop a plan for improvements that would benefit all modes of transportation, and result in a street network that would be more conducive to investment and attractive for appropriate development. The following summarizes the study process, conducted from July 2012 through July 2013.

1) Review existing conditions in the study area.
2) Define goals for the area.
3) Explore alternatives, including reconfiguration and removal of the redundant I-295 exit 5 ramps and converting Park Avenue and Congress Street to two-way operation. The alternatives were developed and tested as follows:
    a. Potential traffic to be generated by full build-out of the development proposal at the time for Thompson's Point was included in all analysis.
    b. The regional travel demand model was used to determine potential changes or increases in travel time.
    c. Multimodal level of service analysis was conducted for each alternative to allow understanding of the trade-offs between vehicular traffic conditions and those of other modes.
4) Develop recommendations on design and implementation strategy for a preferred alternative.

The project advisory committee met four times, to review each of the above milestones. At several points during the study process, meetings were held with key stakeholders, including MaineDOT, FHWA, and H.P. Hood, which operates a bottling plant in the study area. All businesses in and near the study area were invited to a meeting to review the alternatives and get input.

## Goals

The following are among the primary goals that were developed with input from the Project Advisory Committee and other stakeholders:

- Provide safe, comfortable, and convenient transportation for all modes between the Portland Transportation Center and the St. John/Congress Street/Park Avenue area.
- Address the delays resulting from more frequent trains at the Congress Street crossing, particularly for emergency response vehicles.
- Reduce the impact of high speed interstate traffic entering the Libbytown and St John-Valley neighborhoods by reinforcing transitions to neighborhood streets.
- Support local businesses and the economic vitality of the study area through street design changes that provide greater visibility and accessibility for all modes of transportation.

## Findings

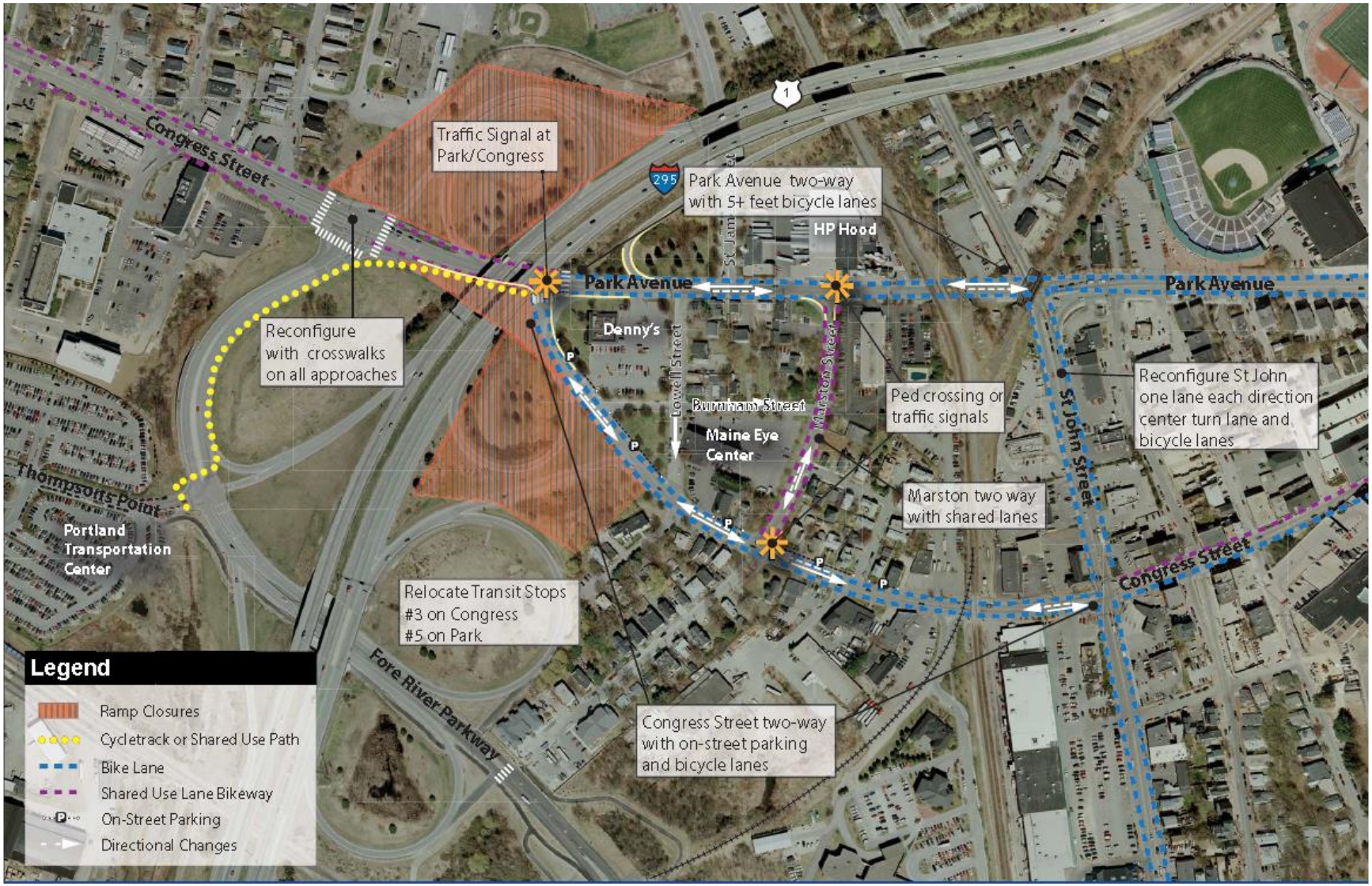
The Project Advisory Committee and team considered a wide range of alternatives, including ramp closures and two-way conversions, to achieve the goals of the project. Modeling using the PACTS regional travel demand model was used to assess the traffic redistribution. The key findings of the analysis are:

- Closing four of the redundant exit 5 ramps will have great benefit to safety in the study area for all modes of transportation with very limited effect on the regional transportation network.
- Converting Congress Street and Park Avenue to two-way operation will significantly benefit accessibility to the area and bicycle travel and reduce trip lengths.
- The area's road network will be able to absorb the redistribution of traffic that would result from the closure of the redundant interstate ramps and still maintain acceptable conditions for traffic with some improvements of modest cost.
- Detailed traffic operations analyses were conducted to determine changes to intersection design and operations to accommodate the redistribution of traffic with the ramp closures for both near term (2015) and long term (2035) scenarios.
- There will be substantial improvements to the safety, appearance, and functionality of the study area street network and will be of great benefit to pedestrians, bicyclists and local businesses.
- Most high crash locations in the study area will have conflicts eliminated, reduced volumes or lower speeds (see below). High crash segments on Park Avenue east of St. John, and on St. John south of Congress Street are currently the subjects of construction projects that should reduce crash frequencies.
- Some of the ramp closures will result in a modest increase in traffic volumes at the Forest Avenue interchange, which has high crash rates and several high crash locations. There are ongoing efforts to address safety at the Forest Avenue interchange, and it is recommended that improvements be implemented before or concurrently with the permanent exit 5 ramp closures.

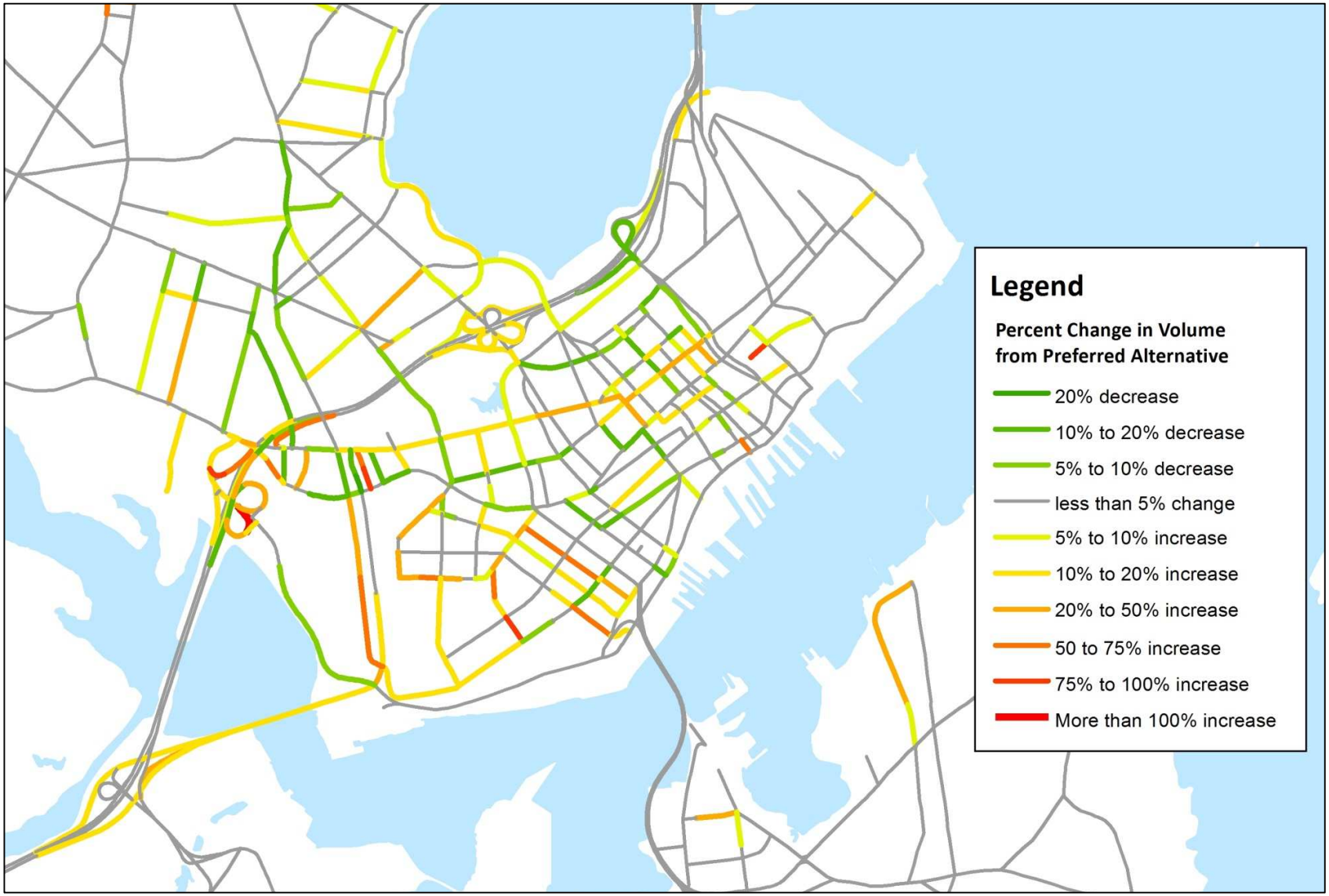
## Recommendations

This study's recommendations, shown in the figure on the next page, were developed after a careful process of evaluation, testing and analysis for safety and quality for all modes of transportation. The closure of the interstate ramps was tested with the regional travel demand model, and found to have minimal effects in regional travel times. Tradeoffs of lower, but still acceptable, automobile levels of service are offset by dramatic improvements in the safety and quality of the bicycle and pedestrian network.

## Recommendations



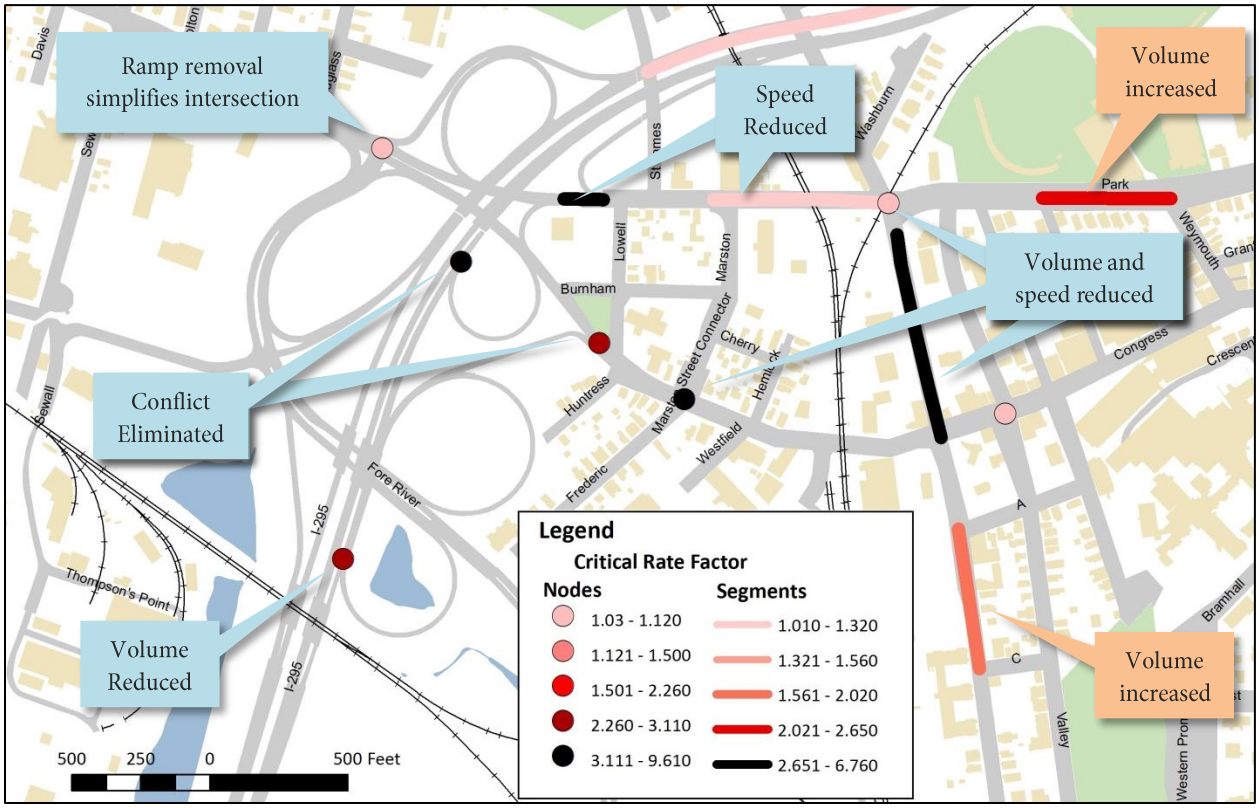
## Modeled Traffic Changes from Recommended Plan



## Safety

The recommendations in this report have been particularly focused on improving safety in the study area. The current street network has numerous motor vehicle high crash locations, which have a significantly higher crash rate than average. The figure below shows the high crash locations in the study area, and also indicates the crash rate by percentile. The Preferred Alternative will address the great majority of these locations be reducing the volumes, reducing speeds, removing conflicts, or simplifying intersections.

### Effect of Recommendations on Motor Vehicle High Crash Locations in the Study Area




There are several safety-related issues that require further consideration:

- The preferred alternative will increase traffic volumes on some legs of the Forest Avenue/I-295 interchange. This interchange has well-documented safety issues, and each ramp terminal is a high crash location. The City of Portland has been coordinating with the MaineDOT to address these issues, and several reconfiguration options are under discussion. Implementation of improvements at Forest Avenue should be underway before the Libbytown area ramp closures are implemented.
- Park Avenue has a high crash location east of St. John that will see increased traffic. The City of Portland is currently in the process of reconfiguration of this segment to have three lanes and a center left turn lane, which should significantly reduce speeds and the crash rate in this location.

- St. John Street has a high crash location south of Congress Street that will also see an increase in traffic volume. The City of Portland is undertaking streetscape improvements in this area which should reduce crash rates.

## Implementation Plan

The improvements described in this report can be implemented incrementally over many years, as funding and local priorities indicate. The following is suggested as an initial phasing order:

- Conversion of Park Avenue to 2-way operation (has great benefits for emergency response to Maine Medical Center) and accompanying streetscape enhancements.
- Convert Congress Street to 2-way operation with streetscape enhancements and temporary changes to northbound off-ramp terminal to reduce speeds and clarify yield condition.
- Coordination with MaineDOT to conduct temporary ramp closures and traffic monitoring to determine any additional impacts or concerns with ramp closures.
- Closure of the I-295 northbound off- and on- ramps at Congress Street (ramps A and C).
- Closure of the I-295 southbound off- and on-ramp to Congress Street (ramps B and D).

The information generated with the PACTS regional travel demand model on the effects of the ramp closures can be verified by experimental, temporary closures with traffic volume monitoring before closures are made permanent.

Construction costs for these improvements have been estimated as follows at a conceptual level, and are summarized in the table below. Details for each phase of implementation are provided later in this report.

| Item | Phase | Component | Cost |
|---|---|---|---|
| **1** | Phase I: Conversion of Park Avenue to Two-way | | $414,000 |
| **2** | Phase II: Restripe Outer Congress Street | | $111,000 |
| **3** | Phase III: Conversion of Congress Street to Two-Way | | $1,132,000 |
| **4** | Phase IV: Ramp Closures | Ramp A | $57,000 |
| **5** | | Ramps B & D | $230,000 |
| **6** | | Ramp C | $35,000 |
| **7** | Ongoing: Streetscape Improvements | Park Avenue | $399,000 |
| **8** | | Congress Street | $1,832,000 |
| | | **Total:** | **$4,210,000** |

Additional improvements may be required to accommodate possible future traffic growth, including roundabouts at the intersections of Fore River Parkway/Congress Street and Fore River Parkway/ Thompson's Point/I-295 SB Ramp. Costs for these are estimated to be on the order of $6,000,000.

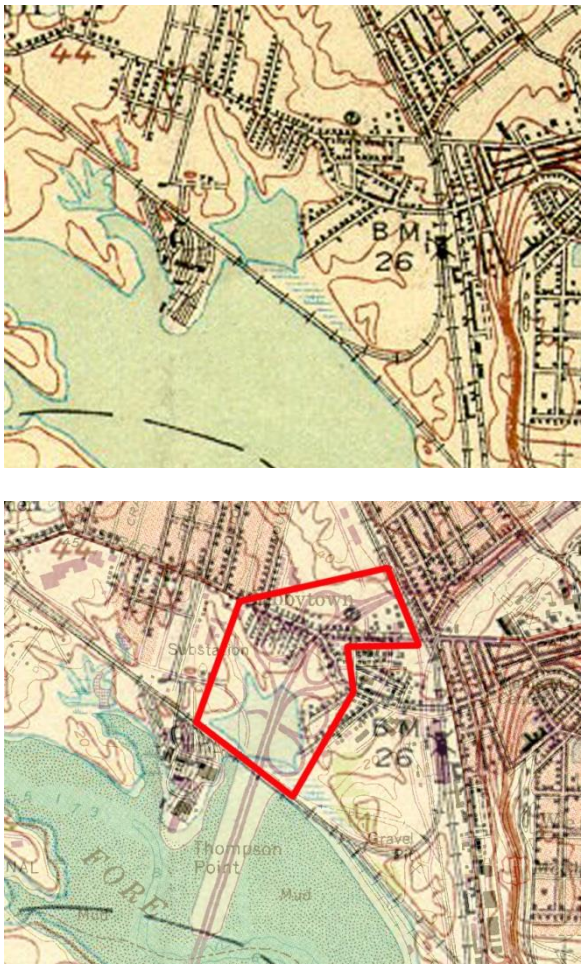
# 1 Introduction

Libbytown is at a crossroads of several important corridors: I-295, the PanAm railroad, Congress Street, Park Avenue and the Fore River Parkway. The Libbytown neighborhood has been fragmented by these facilities, which make travel through the area on foot or bicycle challenging. The one-way operations of Congress Street and Park Avenue between St. John Street and Park Avenue further contribute to difficult travel by bicyclists and transit services.

> *"Libbytown is currently one of the most difficult areas in Portland to navigate as a pedestrian or bicyclist. Though there have been recent improvements, and more are in the works, the city would do well to invest in significant improvements in the area to re-connect Libbytown to its surroundings."*
> ***Connecting Libbytown-2009***

Libbytown has seen tremendous change in the past 50 years, largely related to the construction of I-295. The historic center of Libbytown is coincident with the center of the Congress Street-I-295 interchange.

*Libbytown in Transition*




## 1.1 Goals of the Study

> *"The goal of the study is to comprehensively assess and make recommendations regarding the multi-modal transportation network, circulation pattern and supporting streetscape within the eastern portion of the Libbytown Neighborhood."*
> ***Libbytown Streetscape and Traffic Circulation Study RFP-2012***

The following are additional considerations for this study.

- Build on the work in *Connecting Libbytown*,

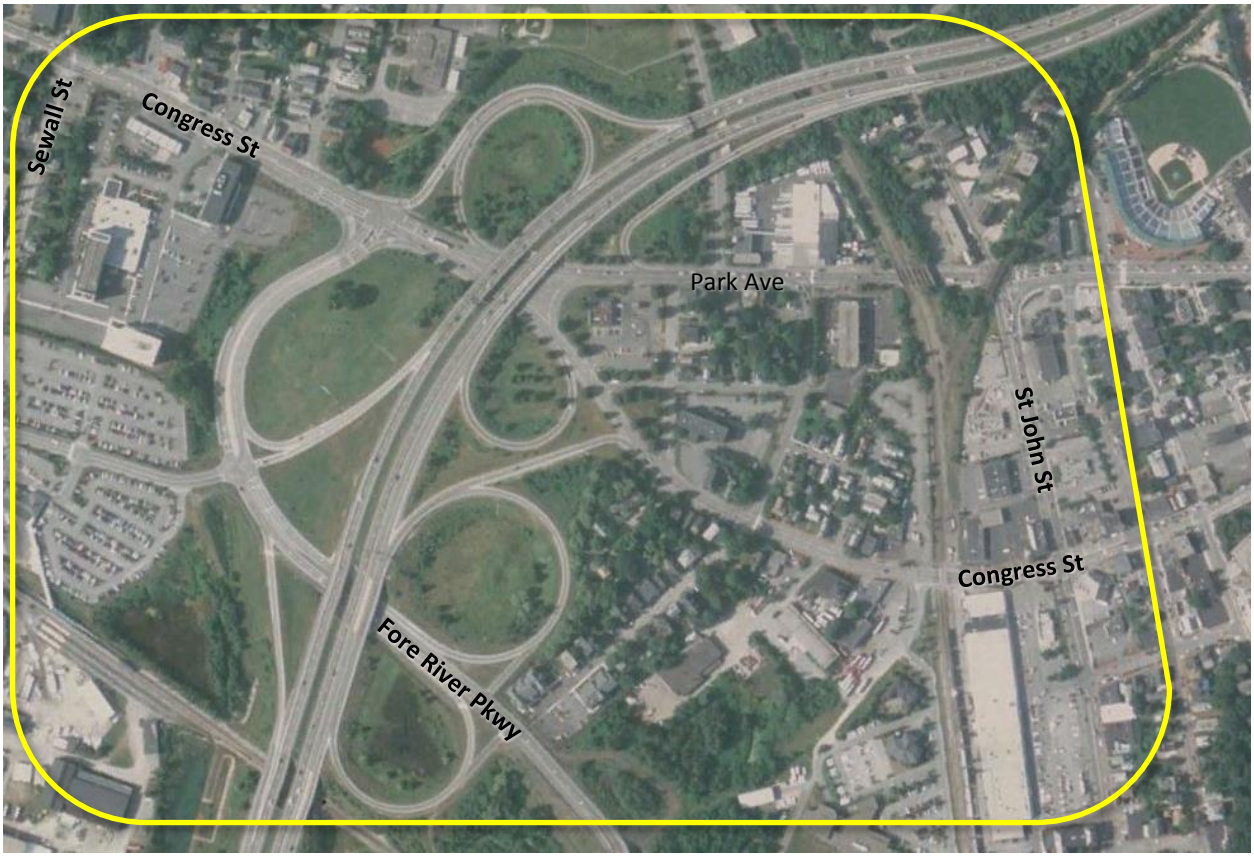
to improve neighborhood connectivity, safety and function for all modes and users.

- Consider the opportunities to re-think traffic circulation arising from the completion of the Fore River Parkway.
- Create a more attractive, inviting and accessible streetscape.
- Identify investments that support economic development and growth that is compatible with the community's vision and viable

## 1.2 Study Area

The primary study area for the traffic circulation component is shown in Figure 1.1, which is the area of focus for the traffic design recommendations. However, the entire Portland region is considered in the transportation modeling. The community and stakeholder involvement also included numerous residents, businesses and institutions from both inside and outside the study area below who may be affected by the proposed changes.

**Figure 1.1: Project Study Area**



## 1.3 Study Approach

This study utilizes current transportation planning practices that encourage more choices and options to meet the demand for travel, and takes into account recent trends in travel behavior. The following approaches have guided this effort.

- **Plan for success, not failure**. The City has goals of increasing use of non-auto transportation and reducing the rates of driving per capita. Transportation projects should not presume failure to achieve these goals, but rather should seek to advance them.
- **Plan for all modes and all users of the street**. A *Complete Streets* approach considers all modes of travel and all users of the street network. Multimodal level-of-service analysis is used to evaluate conditions across all applicable modes to compare alternative design scenarios.
- **Context Sensitive Solutions**. Neighborhoods are profoundly affected by their surrounding street network and its roadway and intersection design. The recommendations in this report should seek to create the environment envisioned by the City of Portland and neighborhood residents through appropriate investments in the public right-of-way.
- **Consider the risks and benefits of changes**. There are risks of maintaining status quo, which include high frequency of crashes, a poor economic climate resulting from limited accessibility, and challenging conditions for many modes of transportation. There are also risks inherent in any changes in the transportation system, but appropriate use of transportation modeling techniques can inform us about these risks and identify possible solutions. The risks and rewards of change should be weighed against those of doing nothing.
- **Public and stakeholder involvement** is essential for effective transportation planning and design. Public involvement can help inform the planners and designers about local conditions, and contribute valid ideas for design solutions. Stakeholder involvement also provides valuable information, and their support will be necessary for implementation. Those who will be highly affected by the project outcomes should have a prominent role in the planning process.
- **Consider observed trends in travel behavior.** Traffic volumes and auto ownership in Portland have been declining, even as population and economic activity increases. As we plan for the future, high rates of vehicular traffic growth are both unlikely and undesirable. Further, the City of Portland has aspirations to increase the share of non-auto modes and to reduce the need for vehicular travel by implementing more compact, mixed use types of development.

# 2 Process and Participants

The project was guided by a project management team including staff from the City of Portland Departments of Public Services and Planning, the PACTS MPO, and the consultant team led by DuBois & King with Ransom Consulting Engineers, Terence DeWan & Associates, Morris Communications, and Smart Mobility.

A Project Advisory Committee (PAC) was established by the Portland City Council, and included the following members and organizations. Minutes of the PAC meetings can be found in Attachment 1.

**Table 2.1: Libbytown Project Advisory Committee Members**

| Name | Constituency |
|---|---|
| Maria Macdougal | Libbytown Resident |
| Harlan Baker | Libbytown Resident |
| Jackie Thompson | Libbytown Resident |
| Ed Suslovic | Libbytown Resident/City Councilor |
| Zachary Barowitz | Libbytown Resident/Business owner |
| Fred Dillon | Libbytown Resident/Former LNA |
| Skip Woods | HP Hood |
| Ruth Mlotek | IRIS Network |
| Richard Buchanan | Logan Place |
| Mary Didonato | Maine Eye Center |
| Dan Doughty | Maine Medical Center |
| Karen Perry | Norway Savings Bank |
| Christian MilNeil | Portland Bicycle-Pedestrian Committee |
| Jaime Parker | Portland Trails |
| Chaning Capuchino | SJVNA Representative |

There were two public meetings held for the project: an alternatives presentation and workshop on May 8, 2013, and a final presentation on June 10, 2013. Meeting notes and handouts are also included in Attachment 1. In addition, all local businesses and institutions were invited to a separate meeting on March 22, 2013 to allow for an opportunity to learn about the project, and provide the team with input and concerns.

Additional meetings were held with officials from the Maine Department of Transportation (MaineDOT), Federal Highway Administration (FHWA), the Portland Public Safety Departments and H.P Hood to obtain further input and guidance.

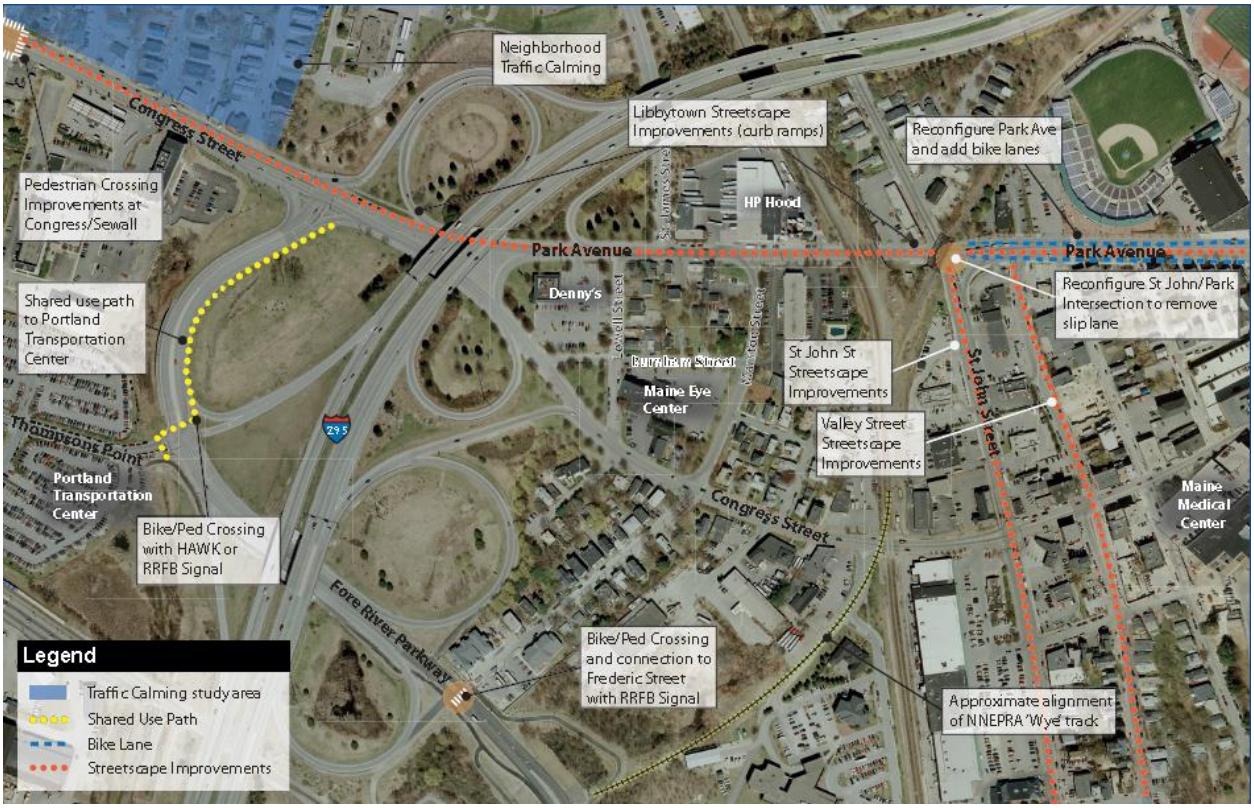
# 3 Existing Conditions

An inventory and analysis of existing conditions for all modes of transportation was conducted at the outset of this study, and can be found in Attachment 2.

## 3.1 Ongoing Projects

As transportation and streetscape needs are considered for Libbytown, it is important to recognize a large number of ongoing initiatives and projects that are currently underway by the City of Portland and MaineDOT, which are shown on Figure 3.1.

**Figure 3.1: Planned Transportation Projects in the Libbytown Area**



## 3.2 Ramp Geometry

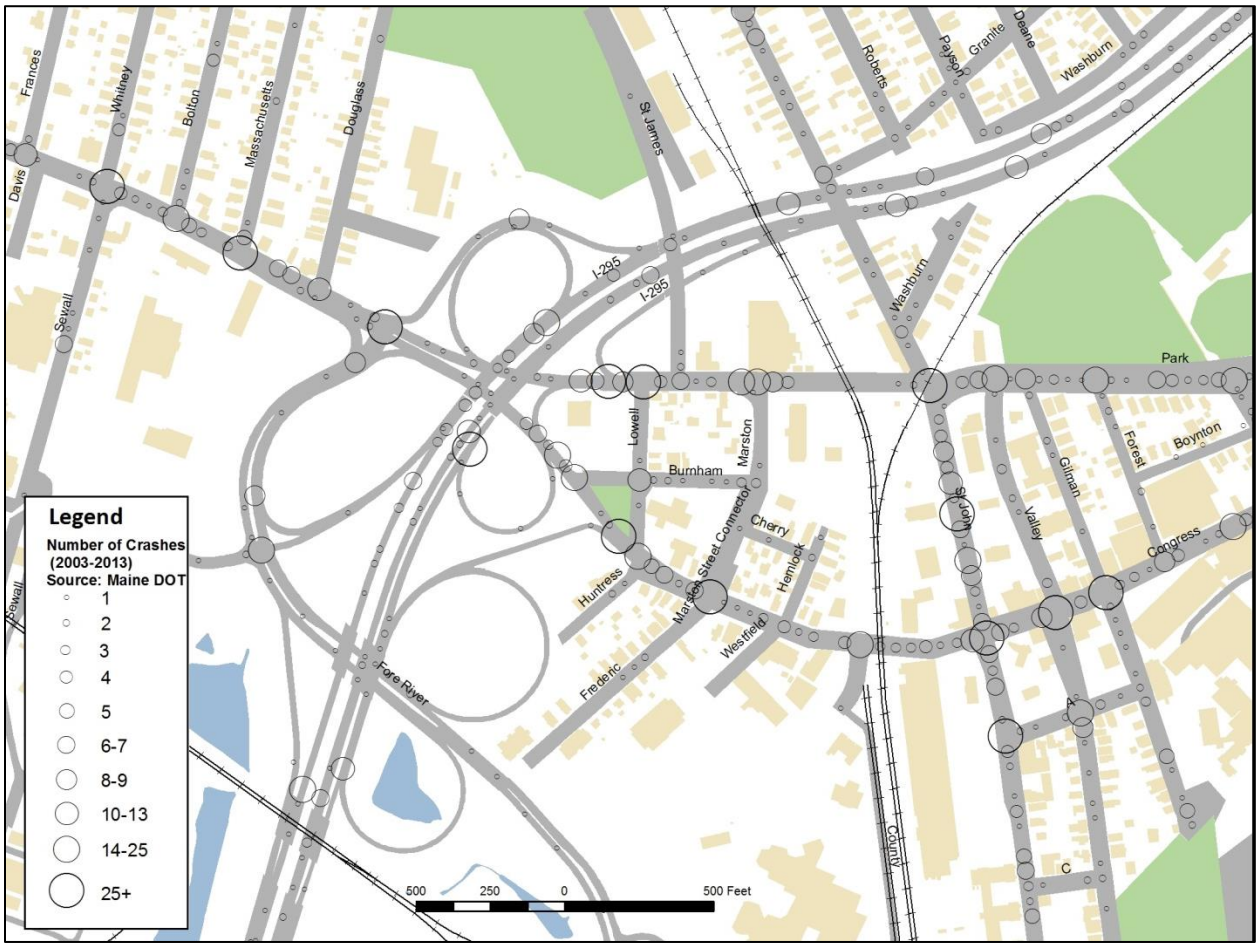
The I-295 Exit 5 interchange is very complex, reflecting a history of changes and adaptations. When the interstate was first constructed, there was a three-quarters cloverleaf interchange with Congress Street and Park Avenue that provided uncontrolled, high speed access to the city street network, shown below on the left. By around 2000, a new interchange was constructed to serve the Thompson's Point area and the future Fore River Parkway. These newer ramps have much larger radii and provide adequate length for acceleration and deceleration. The original Congress Street interchange ramps, despite their antiquated geometry, were retained even after the Thompson's Point/Fore River Parkway interchange was completed. Typically such close spacing of interstate ramps is not desirable and does not meet modern design guidelines. The current safety record in the area is evidence of poor interchange design.

**Figure 3.2: Aerial Views of Libbytown Study Area Ramps- 1997 (left) and 2008 (right)**

## 3.3 Vehicular Safety

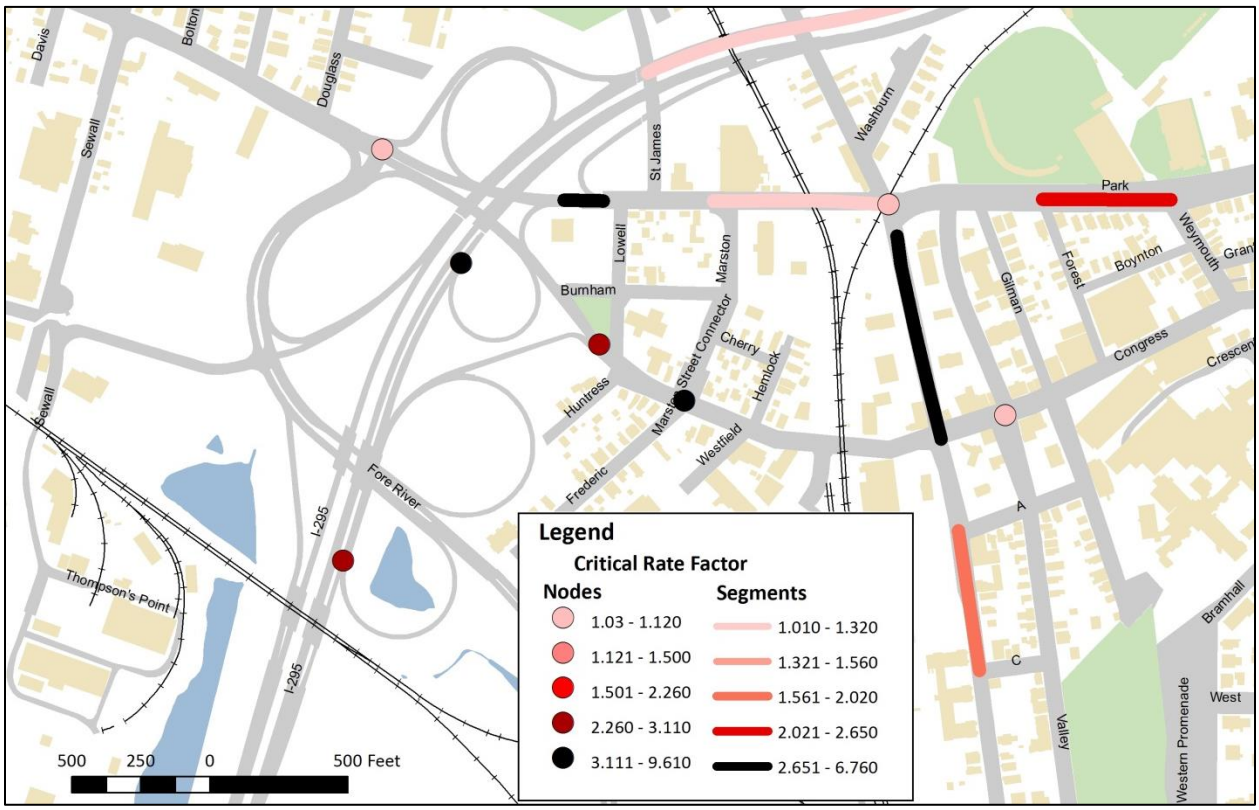
The study area has many safety deficiencies as indicated by a review of vehicular crash data. Figure 3.3 shows the crash frequency in the study area, which provides insights on the safety of the study area street network. More information on safety of the project area is provided in Attachment 2.

**Figure 3.3: Crash Frequency in the Libbytown Study Area (MaineDOT)**




The Maine Department of Transportation (MaineDOT) indicates that there are numerous "high crash locations" in the study area, shown in Figure 3.4. The Crash Rate Factor provides the rate of crashes relative to the traffic volumes using that intersection or segment. Ramps A, C and D all have high crash locations at their termini. Currently, the City of Portland and MaineDOT are undertaking several improvement projects that will address several of the locations with high crash frequencies.

**Figure 3.4: MaineDOT High Crash Locations in the Libbytown Area (as of August, 2013)**




## 3.4 Traffic Volumes

Recent traffic counts in the study area were adjusted to the year 2012. The resulting a.m. and p.m. peak hour volumes are shown in Figure 3.5 and Figure 3.6.

More information on traffic volumes for the study area included in Attachment 2.

**Figure 3.5: 2012 A.M. Peak hour turning movement volumes**

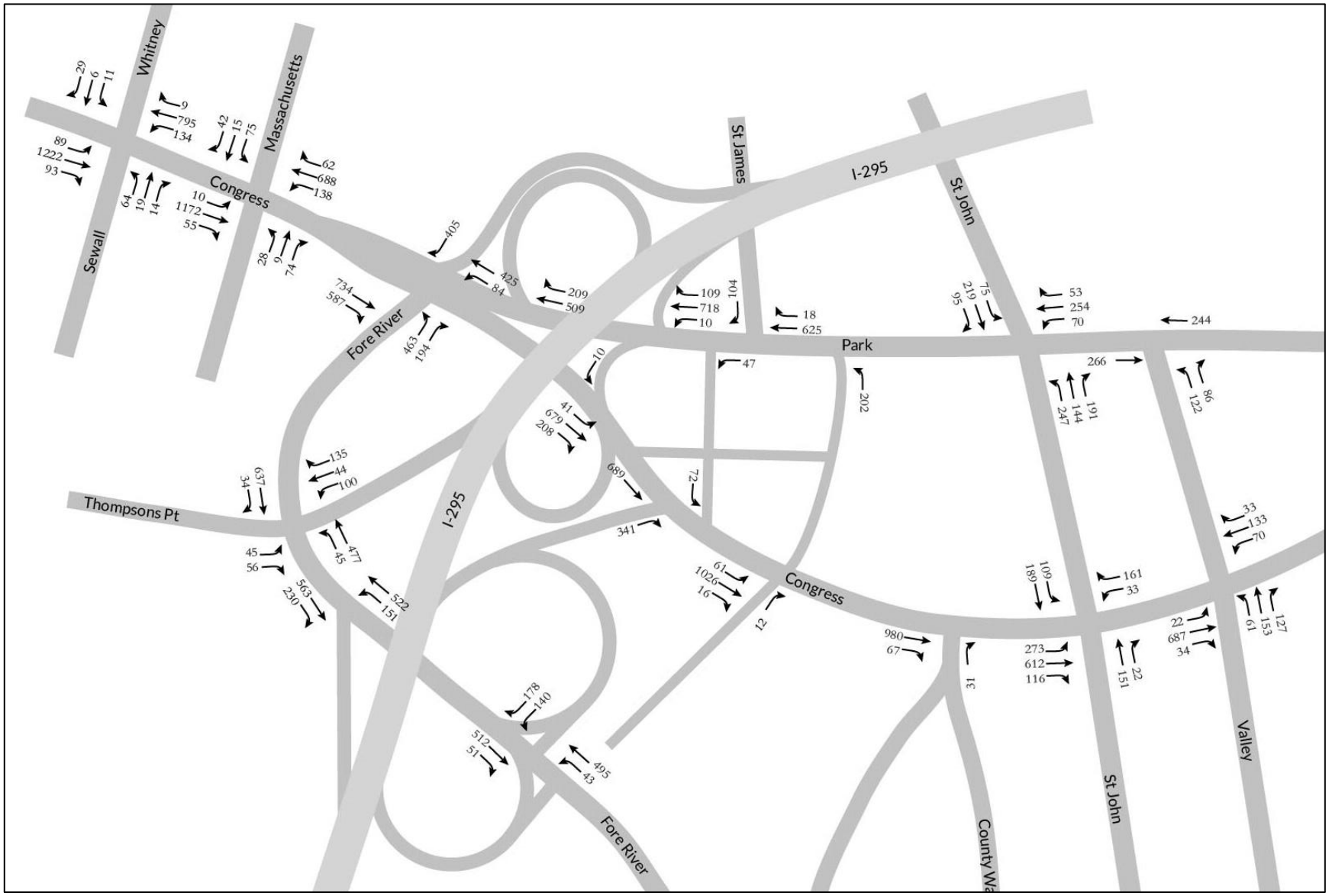
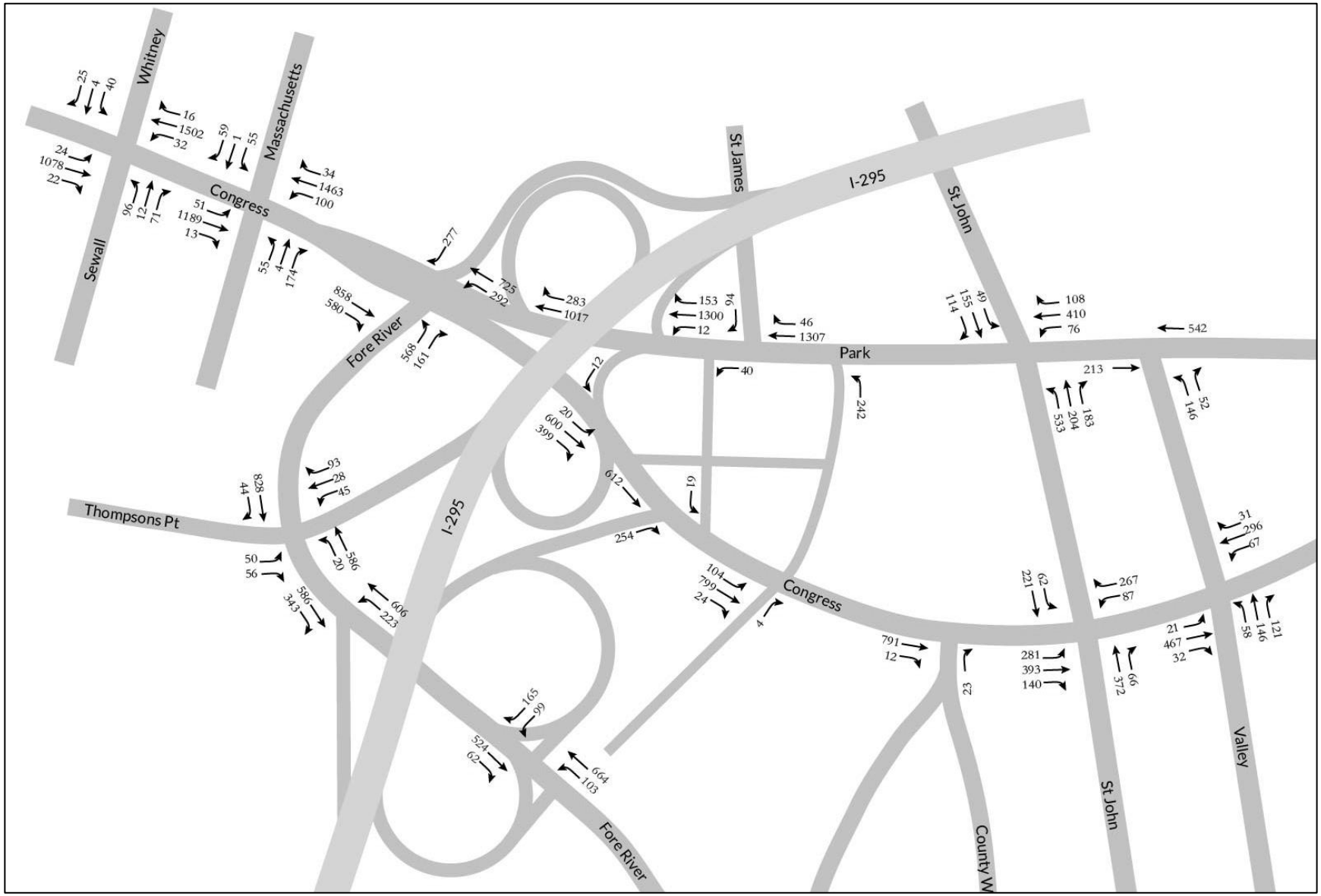
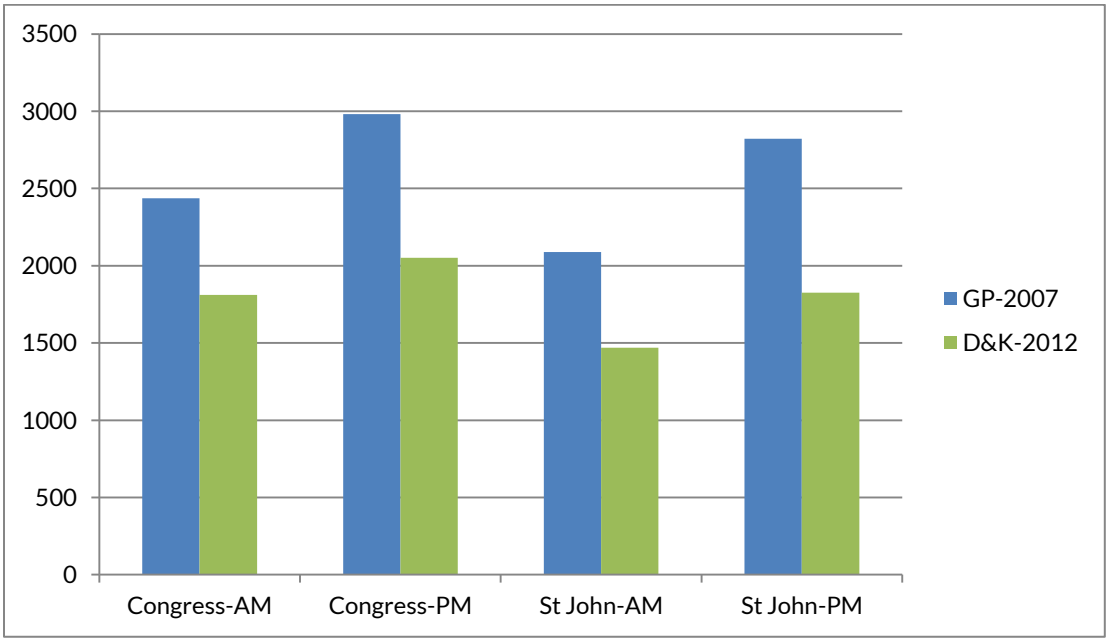


**Figure 3.6: 2012 P.M. Peak hour turning movement volumes**



Traffic circulation patterns in the study area have changed considerably since 2008, when the Fore River Parkway (FRP) was completed. This is particularly notable on St. John Street, which has lower volumes on each of its legs of the intersection now than it did in 2007. Figure 3.7 shows the p.m. peak hour volumes at Park Avenue/St. John and Congress Street/St. John intersections before and after the completion of FRP in 2008. Other recent counts by MaineDOT were reviewed and verify this change, which provides an opportunity to reconsider the intersections' design and layout to be more responsive to current users.

**Figure 3.7: Traffic Volume History at Congress Street/St John and Park Avenue/St John**




## 3.5 Bicycle and Pedestrian Conditions

Travel through Libbytown on foot or bicycle can be challenging and intimidating. High vehicular traffic speeds are prevalent, as there are no stops or yields at the termini of several of the I-295 ramps to reinforce a transition to a lower speed environment. There are few crosswalks on Park Avenue or Congress Street, and often vehicles do not yield to pedestrians for fear of being rear-ended by approaching high speed traffic. The one-way, two-lane configuration puts pedestrians at risk once there is a car yielding to them, as the stopped vehicle blocks visibility from oncoming traffic in the next lane. There are also numerous deficiencies in lighting, sidewalk condition and curb ramps in the study area, many of which are being addressed in current City projects.

Bicycle travel is particularly challenging with the one-way street network, which requires very circuitous routes to ride safely through the area. The high speeds near the interchange make bicyclists feel highly exposed and at risk while riding across Libbytown.

Attachment 2 provides a detailed assessment of the infrastructure and conditions for bicyclists and pedestrians.

### 3.6 Project Purpose and Need

The following statement of Purpose and Need has been developed in consideration of the existing conditions and community and stakeholder input:

This purpose is the transformation of Libbytown into a cohesive and livable neighborhood by:

- improving safety and connectivity for all users of the area's transportation network;
- improving the business and economic environment with
  - better traffic circulation,
  - a more coherent street network,
  - easier access and
  - higher visibility; and
- creating a more attractive and inviting streetscape.

The needs exist due to high crash rates on the street network, and unsafe and unwelcoming environment on many streets for pedestrians, bicyclists and transit users, and an inconvenient one-way traffic circulation system that does not provide a high level of accessibility for local businesses.

> The primary issue facing the study area is modernizing the safety and function of the streets and the circulation pattern to meet important regional traffic needs while simultaneously designing the transportation infrastructure and streetscapes of the area to serve the neighborhood.
>
> *Libbytown Traffic Circulation and Streetscape Study RFP*

## 4 Goals and Objectives

Goals and objectives were established after a review of the existing conditions and through discussion with the PAC, City staff and other stakeholders. The goals for this study are:

- Provide safe, comfortable, and convenient transportation for all modes between the Portland Transportation Center and the St. John/Congress Street/Park Avenue area.
- Address the increasingly frequent railroad crossings of Congress Street, particularly for emergency response vehicles.
- Reduce the impact of high speed interstate traffic entering the Libbytown and St John-Valley neighborhoods by reinforcing transitions to neighborhood streets.
- Support local businesses and the economic vitality of the study area through street design changes that provide greater visibility and accessibility for all modes of transportation.

The following design objectives were considered in the development of alternatives:

- Avoid exacerbating operational problems on I-295 (i.e. weaving and merging).
- Reinforce the transition from freeway to urban street environment by providing positive traffic control (traffic signal, stop sign, or yield) at every ramp terminal on Park Avenue and Congress Street.
- Provide increased opportunities for pedestrians to safely cross Park Avenue and Congress Street.
- Provide a bicycle route between the Peninsula and the Portland Transportation Center along Park Avenue that is accessible to the average bicyclist.
- Improve the street environment for public transit services, including more attractive waiting areas and a more coherent and "legible" network.

# 5 Regional Traffic Analysis

From the outset, this study was charged with evaluating the possibility of closing of redundant ramps and converting Park Avenue and/or Congress Street to 2-way operation as a means to meet the above goals and objectives. The closure of the ramps will, for some users, increase their travel time for trips using I-295. Table 5.1 summarizes the increase of travel time and distance that would be incurred by diverting to the Fore River Parkway interchange. The travel time change at 25 mph represents an estimate of off-peak conditions, and at 15 mph represents peak hour conditions. Because most interstate travelers are making long distance trips, these increases are small relative to the total travel time of an interstate trip.

**Table 5.1: Increased Travel Time from diverting to the Fore River Park Avenue interchange**

| Ramp | | Change in distance (Miles) | Change in travel time (Min:Sec) at 25 mph | Change in travel time (Min:Sec) at 15 mph |
|---|---|---|---|---|
| **A** | NB Exit to EB Congress St | 0.62 | 1:29 | 2:28 |
| **B** | SB Entry from WB Park Ave | -0.14 | -0:20 | -0:34 |
| **C** | NB Entry from EB Congress | 0.49 | 1:11 | 1:57 |
| **D** | SB Exit to WB Congress St | 0.27 | 0:39 | 1:05 |
| **F** | NB Entry from Park Ave | 0.97 | 2:20 | 3:53 |

The PACTS Travel Demand Model can simulate how changes in road capacity or configuration would likely affect regional traffic patterns, and was used to test the ramp closures and one-way to two-way conversions. The model provides p.m. peak hour volumes for all of the region's roads and major streets. It also provides regional measures such as Vehicle-Miles Traveled (VMT) and Vehicle Hours Traveled (VHT), which are useful to provide measures of overall network performance for different

scenarios. A set of model runs was conducted where each ramp was removed individually so that it could be determined the effects of the traffic circulation changes under consideration. Conversion of Park Avenue and Congress Street to two-way operation was also evaluated. The results of these runs are provided in Table 5.2, and show that these changes in traffic circulation have very small changes in regional VMT or VHT, within the accuracy level of the model.

**Table 5.2: Regional Traffic Model results for Ramp Closures and Two-way Conversions**

| Reconfiguration | % Change in Vehicle-Miles Traveled (VMT) | % Change in Vehicle-Hours Traveled (VHT) |
|---|---|---|
| Close Ramp A NB Exit to EB Congress St | 0.0279% | 0.0006% |
| Close Ramp B SB Entry from WB Park Ave | 0.0003% | -0.0146% |
| Close Ramp C NB Entry from EB Congress St | 0.0211% | -0.0030% |
| Close Ramp D SB Exit to WB Congress St | 0.0053% | -0.0162% |
| Close Ramp F NB Entry from Park Ave | 0.0175% | 0.0270% |
| Convert Park Ave to 2-Way | 0.0074% | 0.0003% |
| Convert Park Ave and Congress St to 2-Way | -0.0076% | -0.0033% |

The results above show that none of the proposed changes would lead to noticeable increases in congestion and travel time, as the changes are not significant and within the model error range. Therefore, these possible changes in traffic circulation were considered among the alternatives, as described in the following section.

# 6 Alternatives

The following steps were followed in the process of developing, evaluating and refining alternatives.

a. Brainstorm alternatives with input from PAC.
b. Screen through preliminary modeling, review with FHWA/MaineDOT.
c. Refine into four alternatives, analyze with PACTS model and Synchro
d. Select preferred alternative, refine design through SimTraffic modeling

Table 6.1 summarizes the four refined/screened alternatives, which are illustrated in the attached maps.

**Table 6.1: Alternatives Summary**

| | Interchange Configuration | a) Park Avenue-2 way Congress Street 1-way | b) Park Avenue-2 way Congress Street 2-way |
|---|---|---|---|
| **Alternative 1** | • Close 5 ramps: A,B,C,D,F<br>• Directs all interstate traffic to Fore River Parkway Interchange | • Park Avenue is major route into downtown<br>• Congress Street is major bicycle route | • Both routes serve traffic<br>• Park Avenue is major bicycle route<br>• Congress Street provides on-street parking |
| **Alternative 2** | • Close 4 ramps: A,B,C,D<br>• Eastbound access to Ramp F is provided<br>• Less traffic on Fore River Parkway Interchange than Alternative 1. | • Congress Street 2-way between Marston and St. John, and provides on-street parking<br>• Park Avenue is traffic and bicycle route | • Equal emphasis for traffic, bicycles and parking on Congress Street and Park Avenue<br>• Larger signal at Congress Street/Park Avenue/I-295 NB |

Figure 6.1 through Figure 6.4 show the alternative concepts. Additional illustrations, including proposed street cross sections, are available in **Attachment 3**.

**Figure 6.1: Alternative 1a**

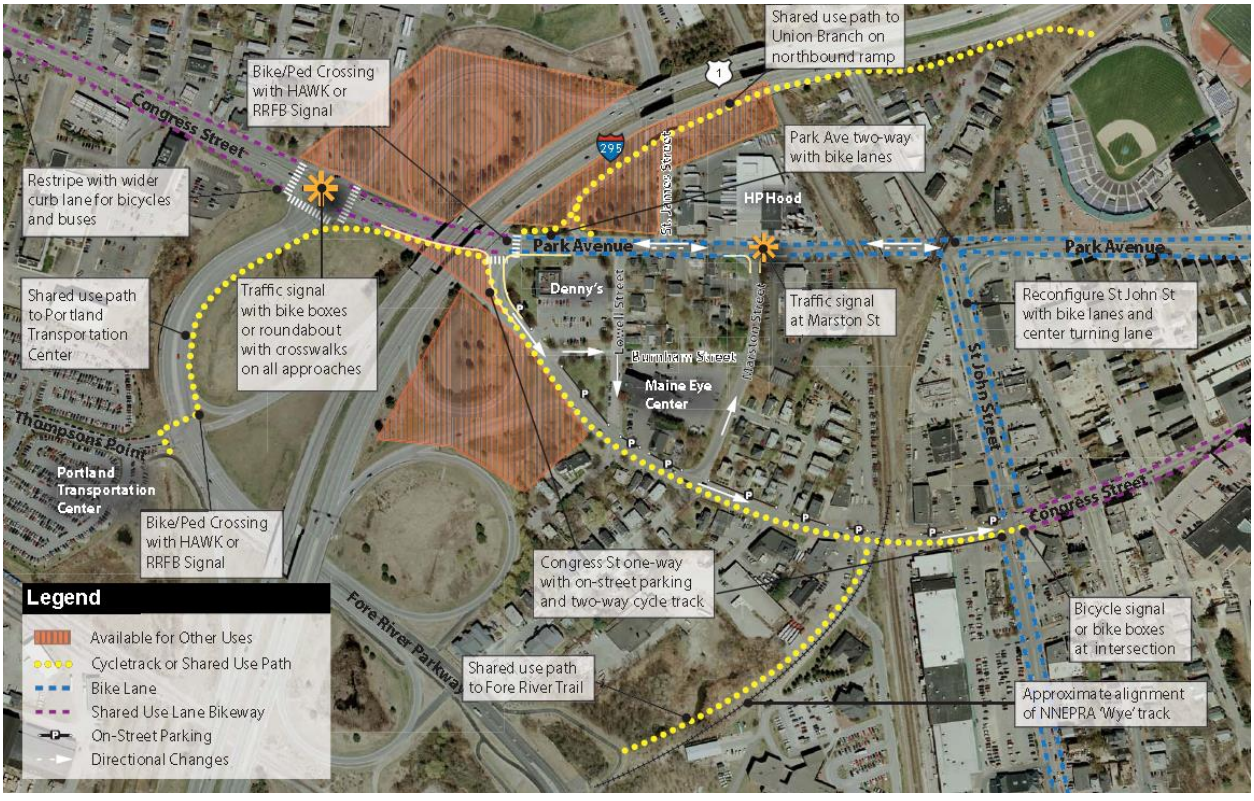


**Figure 6.2: Alternative 1b**

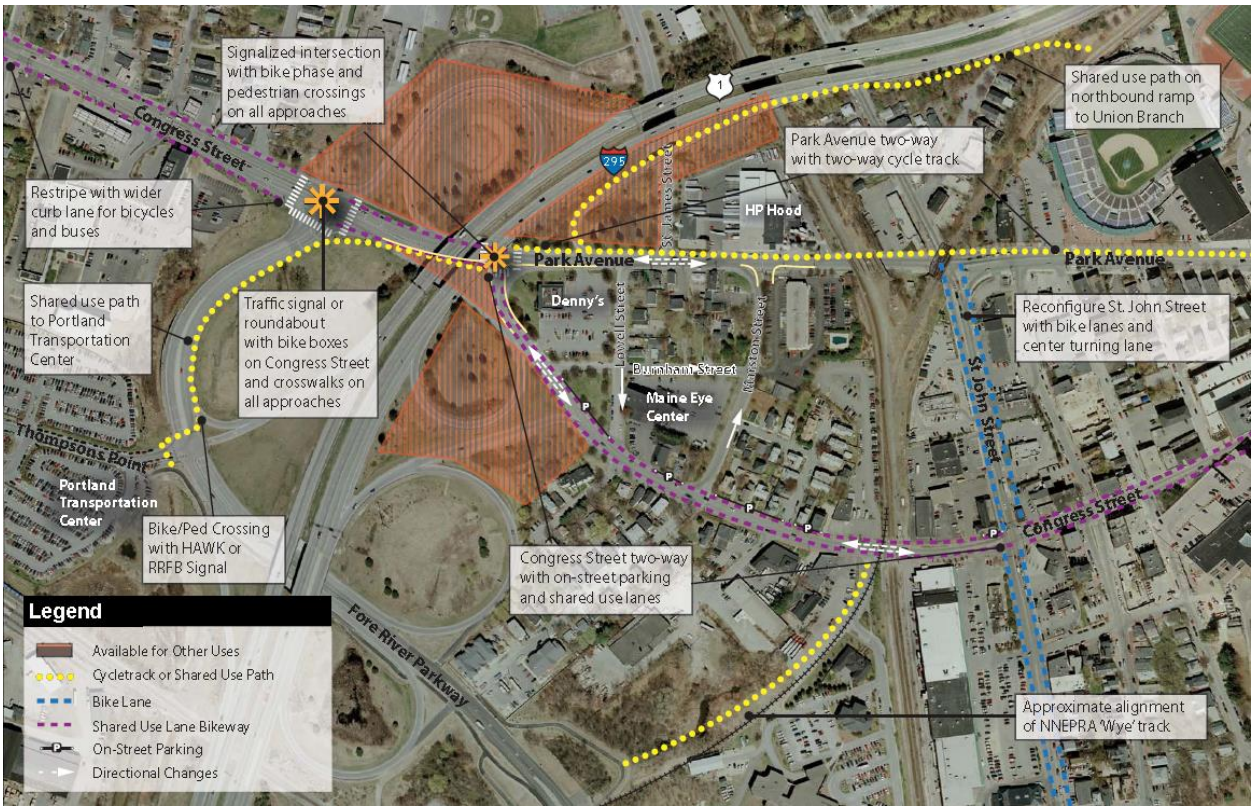



**Figure 6.3: Alternative 2a**

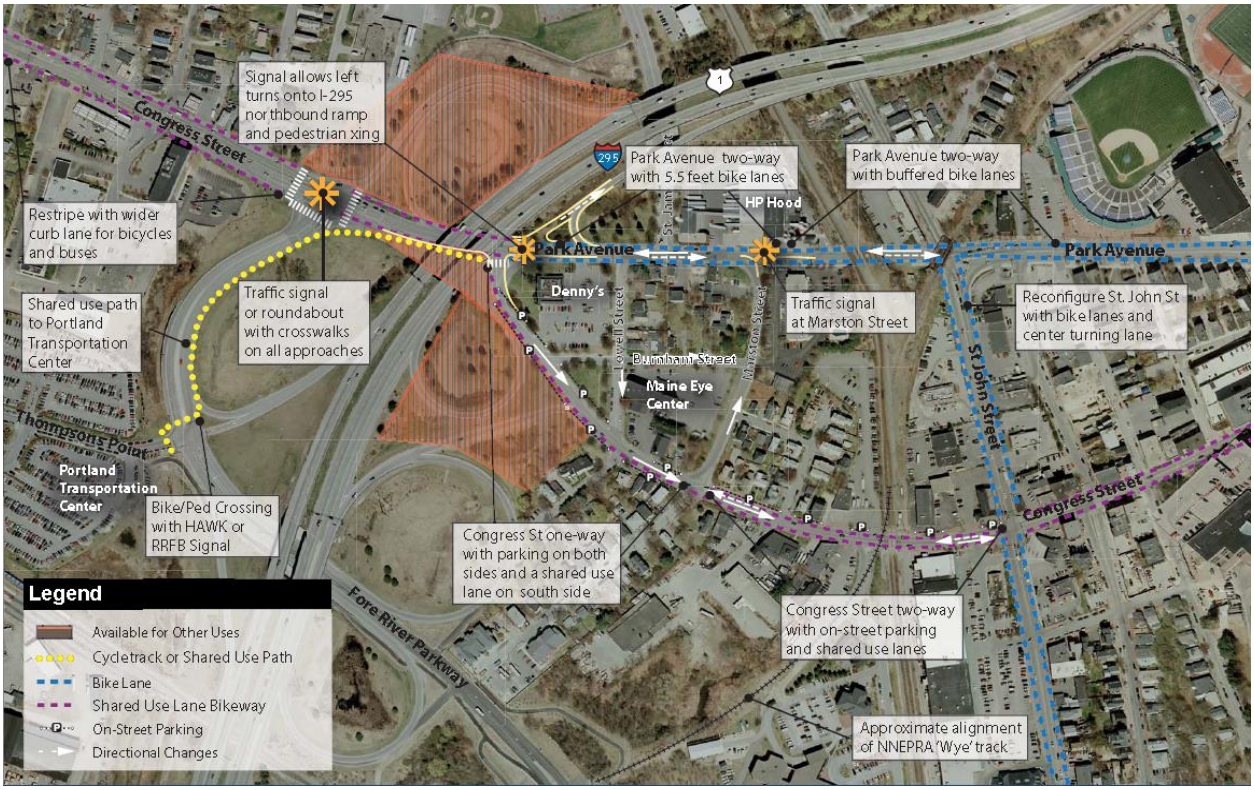
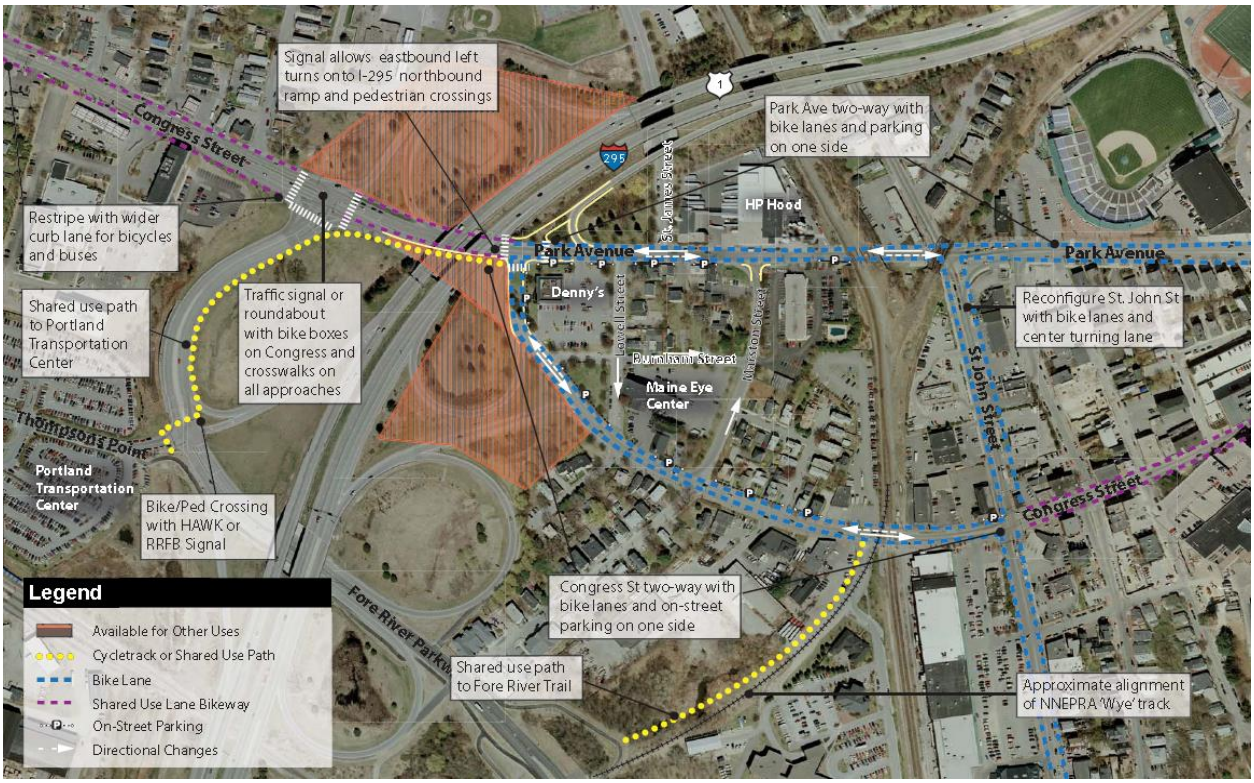
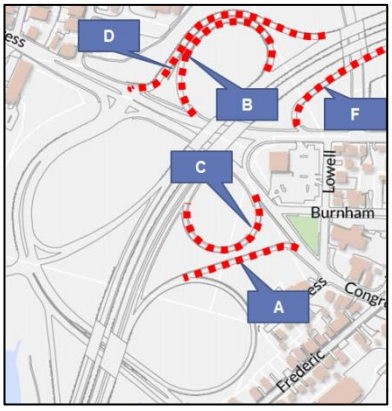


**Figure 6.4: Alternative 2b**




## 6.1 Rationale for Interchange Ramp Closures




Ramps A through D each have either vehicular safety deficiencies and/or create problems for other users of the street network. The following summarize the key considerations for each ramp:

A. High crash location at junction with Congress Street; and design encourages high speeds for traffic entering Congress Street.
B. High crash frequency at the junction with I-295 SB, and problematic weaves on I-295 due to inadequate radius for acceleration.
C. High crash location at junction with I-295 NB and inadequate radius for acceleration.
D. High crash location at the junction with Congress Street; and results in frequent U-turns along outer Congress Street for drivers seeking to get towards downtown Portland.
F. High incidence of crashes at ramp's junction with northbound lanes of I-295. Relatively low volume of use indicates that closure would inconvenience relatively few travelers.

The closure of ramps A, B, C and D was included in all alternatives. Ramps A and C have the greatest negative impact to the safety and character of the Congress Street neighborhood, although their closure will result in some delay and potentially slower emergency vehicle response times. The closure of

ramps B and D have only a minor effect on travel times and distance. Ramp D's closure will significantly improve the function of the Congress Street/Fore River Parkway intersection by simplifying the geometry and signal phasing. Ramp B traffic can easily be accommodated at the Fore River Parkway southbound on-ramp.

## 6.2 Rationale for Two Way Street Conversion

In all scenarios, Park Avenue is proposed to be converted to 2-way operation, due to the following significant benefits:

- Emergency response time reliability by avoiding the at-grade railroad crossing.
- Providing an important link in the City's bicycle network by allowing westbound bicycle lanes on Park Avenue.
- Greater visibility and accessibility for local businesses, such as HP Hood and La Quinta.

Congress Street is proposed to have two-way operation in two of the scenarios. There are significant benefits in local accessibility and in the operations of Park Avenue if Congress Street is two-way.

## 6.3 Regional Model Results

The regional model was used to test the alternatives for their potential effects on the regional transportation network, with the in Table 6.2. A set of maps showing the regional redistribution of traffic are provided in Attachment 4.

**Table 6.2: Regional Model Results for Alternatives**

| Scenario | Regional VMT | Change in VMT |
|---|---|---|
| **2009 Base** | 1,075,928 | |
| **Alternative 1a** | 1,076,292 | 0.0339% |
| **Alternative 1b** | 1,076,127 | 0.0186% |
| **Alternative 2a** | 1,076,197 | 0.0251% |
| **Alternative 2b** | 1,075,921 | -0.0006% |

All of the alternatives had only very small effects on VMT. The alternatives with both Park Avenue and Congress Street operating as two-way streets had lower VMT than those with just Park Avenue operating as one-way. Alternatives 2a and 2b were each lower than 1a and 1b due to the shorter travel distances afforded by the northbound on-ramp being used by eastbound traffic. Overall, it can be concluded that the regional transportation network will see only minor effects from the ramp closures, and that the street network can absorb the redistribution of traffic.

## 6.4 Multimodal Analysis

A multimodal level-of-service evaluation was conducted to determine how well each alternative meets the project goals to improve conditions for all modes and users. The primary factors for each mode are as follows:

- **Vehicles**: Considers peak hour level of service (LOS) and vehicle delay at intersections.
- **Pedestrians**: Considers streetscape comfort (i.e. trees, buildings or on-street parking), distance between protected crosswalk, delays at crosswalks, and exposure to travel lanes when crossing.
- **Bicycles**: Considers traffic volumes, traffic speed and facility types: shared lane, bicycle lane, or separated facility (cycle track or shared use path).

The types of bicycle facilities that were incorporated into the alternatives are shown in Figure 6.5. A shared lane is most suitable on a low volume/low speed street. On higher speed streets, facilities with more protection are needed to accommodate less confident and skilled riders, such as a bicycle lane or cycletrack.

**Figure 6.5: Bicycle Facility Types**


Multimodal level of service (LOS) is reported on a scale of A through F, with A representing ideal conditions, and F representing challenging, unsafe, inconvenient or uncomfortable environment. Table 6.3 summarizes the results of the pedestrian and bicycle analysis for key street segments within the study area, which follow current methodology published in *Sustainable Transportation Planning*, by JeffreyTumlin in 2012. The Fore River Parkway is not included, as no significant changes are proposed among the alternatives. It should be noted that a multiuse path is planned to connect Congress Street with the Portland Transportation Center. More detail on the analysis is provided in Attachment 4.

**Table 6.3: Pedestrian and Bicycle Level of Service for Libbytown Alternatives**

| | Pedestrian LOS | | | | | Bicycle LOS | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Segment | Existing | 1A | 1B | 2A | 2B | Existing | 1A | 1B | 2A | 2B |
| Outer Congress Street | E | C | C | C | C | F | E | E | E | E |
| Congress Street | E | B | C | B | C | F | B | C | D | C |
| Park Avenue | D | C | B | C | B | E | C | B | C | C |

Transit level of service was not analyzed as no significant changes to transit services are proposed. However, alternatives 1b and 2b would best support transit due to both Park Avenue and Congress Street being two-way streets, which allow bi-directional routes and for stops to be located across the street from each other.

Vehicular LOS was conducted for key study area intersections that would see significant changes in traffic volume. Vehicular LOS is a measure of peak hour intersection delay on a scale of A through F. Typically D is considered a target for the peak traffic hour, but lower levels are typically acceptable in urban areas, upon consideration of the cost, socio-economic and environmental impacts, conditions desired for other modes, and willingness of the community to tolerate congestion. Vehicular LOS analysis was conducted for the study area's major intersections for the 2015 PM peak hour, with results shown in Table 6.4. The analysis assumed the full build-out of the Thompson's Point development as currently permitted by the City of Portland and MaineDOT.

**Table 6.4: 2015 PM Peak Vehicular Level of Service for Libbytown Alternatives**

| | Vehicular LOS | | | | |
|---|---|---|---|---|---|
| Intersection | Existing | 1A | 1B | 2A | 2B |
| Fore River Parkway/ Thompsons Point | D | D | D | D | D |
| Congress Street/ Fore River Parkway | C | D | D | D | D |
| Congress Street/St John | C | C | D | C | D |
| Park Avenue/St John | C | D | D | D | D |

The LOS at Fore River Parkway/ Congress Street is reduced from C to D due to significantly higher volumes turning onto Fore River Parkway with the ramp closures. The intersections of St. John/Park Avenue and St John/Congress Street would have lower volumes, and accordingly have fewer travel lanes, resulting in little change in level of service. These results indicate that all of the alternatives meet the target of LOS D or better during the PM peak hour.

The multimodal analysis of alternatives allows the following conclusions:

- Bicycle and Pedestrian level of service improves significantly for all alternatives.
- Intersection (vehicular) level of service is lower at some locations due to higher traffic volumes with the ramp closures, but remains at acceptable levels.
- Transit operations will improve most under Alternatives 1B and 2B.

## 6.5 Vehicular Traffic Design Considerations

The alternatives were reviewed with MaineDOT, and several issues emerged with the proposed design of alternatives 2a and 2b. There were concerns about increasing northbound traffic increasing the incidence of crashes at the ramp's junction with the mainline of I-295. For Alternative 2B, the design of the Congress Street/Park Avenue/Northbound Ramp intersection was awkward, and could require

substantial right-of-way impacts to properly align Congress Street with the northbound on-ramp. These concerns resulted in alternatives 2a and 2b being eliminated from further consideration.

# 7 Recommendations: The Preferred Alternative

After consideration of the public input and a review the modeling and analysis results against the goals and objectives, a refined alternative is recommended, as shown in Figure 7.1. This preferred alternative is based on Alternative 1b, but keeps Ramp F open due to public and stakeholder support. It is recommended that the need for Ramp F be re-evaluated in the future, as it may not prove to be essential for traffic, and it could be converted to a useful trail connection as described in Alternative 1b.

This preferred alternative scenario was also tested in the PACTS regional travel demand model. Figure 7.2 shows the projected changes in volume on City streets and highways in terms of percent increase or decrease. There are projected traffic increases on the Fore River Parkway interchange, on St John Street south of Congress Street, Veteran's Bridge, and Park Avenue east of St. John. Volumes on Park Avenue, Congress Street and St. John within study area have lower traffic volumes.

The following sections describe the proposed changes to each major street segment in the study area, and then provide more details on proposed intersection design.

**Figure 7.1: Recommended Alternative**

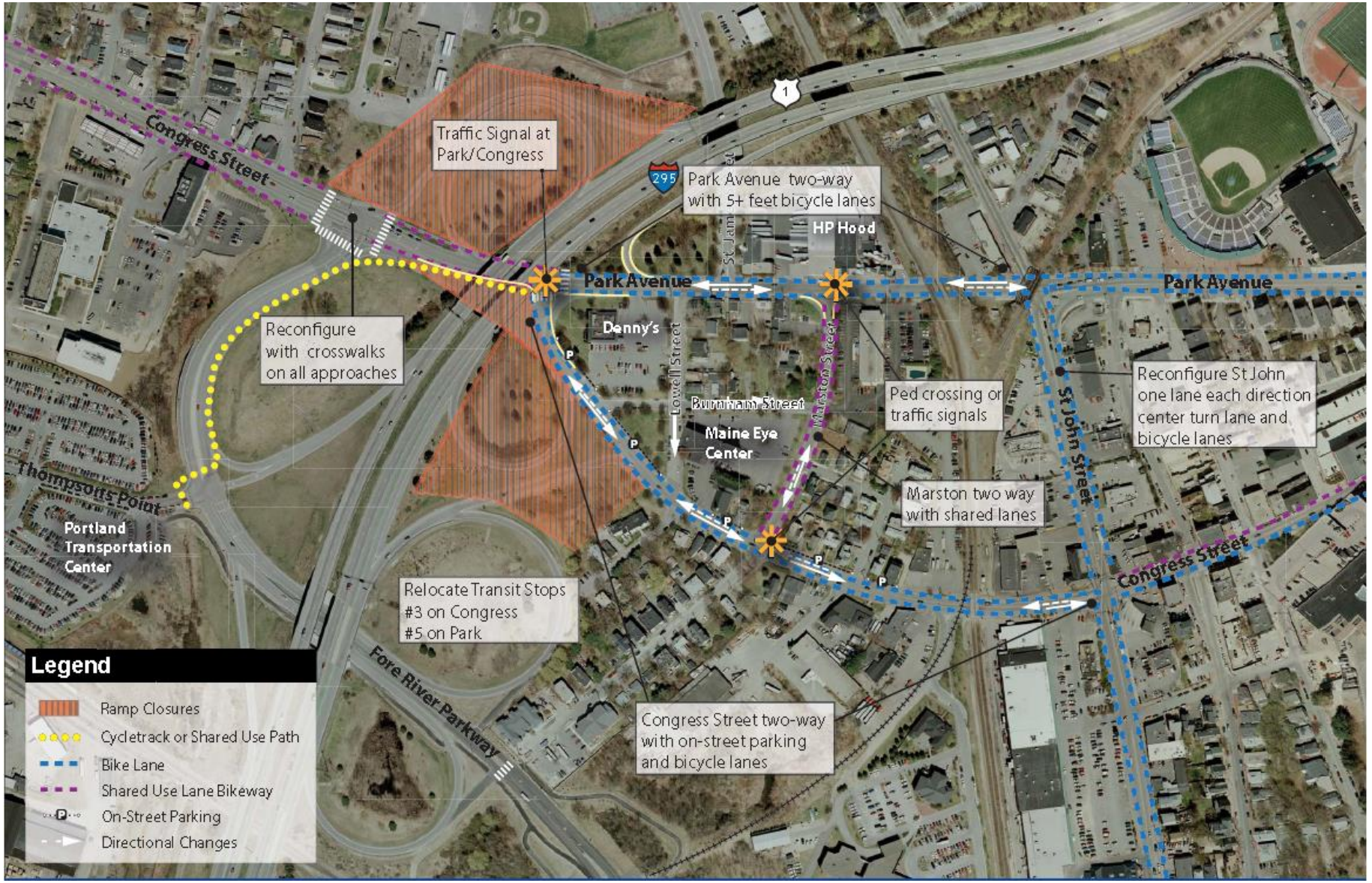
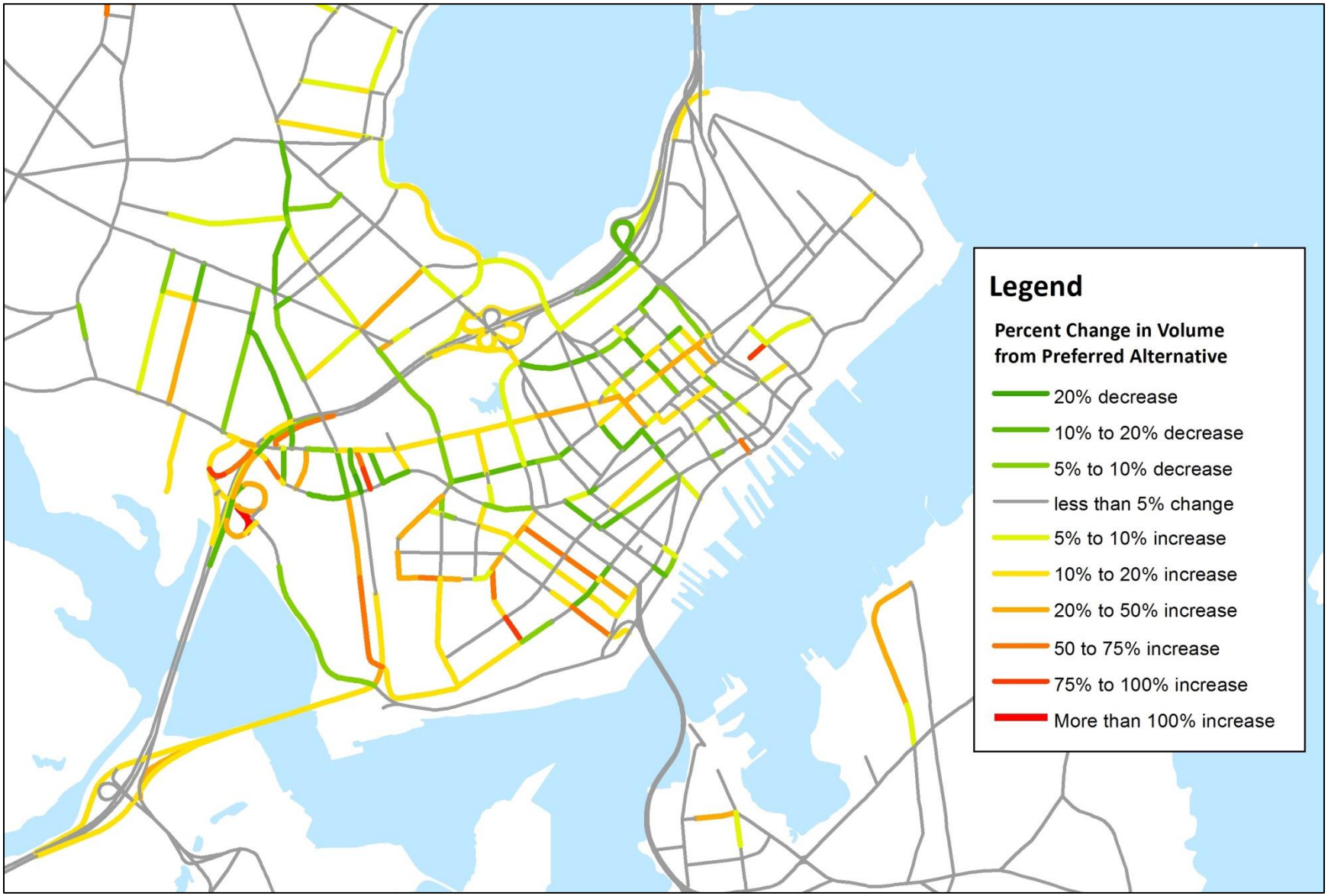


**Figure 7.2: Regional Model Results for the Preferred Alternative (2015 PM Peak Hour)**



## 7.1 Park Avenue: Two-Way with Bicycle Lanes

Among the most significant reasons for converting Park Avenue to 2-way operation is to provide a major route onto the Peninsula that does not have an at-grade railroad crossing. Freight and passenger trains crossing Congress Street creates significant congestion, and this will become more frequent. The railroad crossing congestion is particularly a problem for emergency responders accessing the Maine Medical Center emergency room.

The proposed cross section for Park Avenue has bicycle lanes in both directions, although the configuration and dimensions will vary between I-295 and St John Street. As Park Avenue approaches Congress Street and I-295, there will be two eastbound lanes and one westbound. Figure 7.3 shows the existing and proposed conditions in front of HP Hood on Park Avenue, at Marston Street. A curb extension and improved pedestrian crossing will be provided.

**Figure 7.3: Park Avenue Cross Section – Existing and Proposed**

*Existing*


*Proposed*

## 7.2 Congress Street: Two-Way with Bicycle Lanes and On-Street Parking

There are a number of benefits for Congress Street to have 2-way operation. The traffic evaluation with Park Avenue 2-way and Congress Street 1-way indicated the potential for long queues and delays on St. John Street, which currently receives most of the westbound traffic on Congress Street, in addition to increased traffic from the ramp closures. This situation is alleviated with Congress Street operating as a 2-way street, which also creates a more favorable environment for local businesses due to the greater accessibility and visibility. Traffic speeds are generally lower on 2-way streets, which make them safer for pedestrians. Transit service will be improved, as stops on Congress Street can serve transit routes in both directions.

Figure 7.4 shows the changes that are proposed for Congress Street at Marston. Congress Street will have bicycle lanes in both directions and parallel parking on the north side. Curb extensions are provided for shorter pedestrian crossing distances, and to narrow the appearance of the road. This proposed configuration fits within the existing right-of-way. Street trees and a green buffer will create a more attractive speed and shelter pedestrians. Traffic speeds should be significantly reduced from current levels due to the two-way operation.

**Figure 7.4: Inner Congress Street between Marston and Lowell Streets: Existing and Proposed Conditions**

*Existing*

*Proposed*

## 7.3 Saint John Street: Reconfiguration and Bicycle Lanes

Reconfiguration of St. John St. is recommended after Park Avenue and Congress Street are converted to two-way operation, as traffic volumes on St. John St. between Congress Street and Park Avenue. will be significantly lower. Because of the very high incidence of crashes on St. John St., it is recommended that it be reconfigured as shown in Figure 7.5, with one travel lane in each direction, a center left turn lane, and bicycle lanes. This will provide ample vehicular capacity after the two-way conversions of Park Avenue and Congress Street, and will function much more safely for all users, particularly bicyclists. If desired, mid-block crosswalks can be established where needed with a raised median to protect pedestrians. These changes can be implemented through re-striping of the pavement at the time of the next resurfacing of the street.

**Figure 7.5: Proposed Reconfiguration of St. John Street**

*Existing Four Lane Configuration*

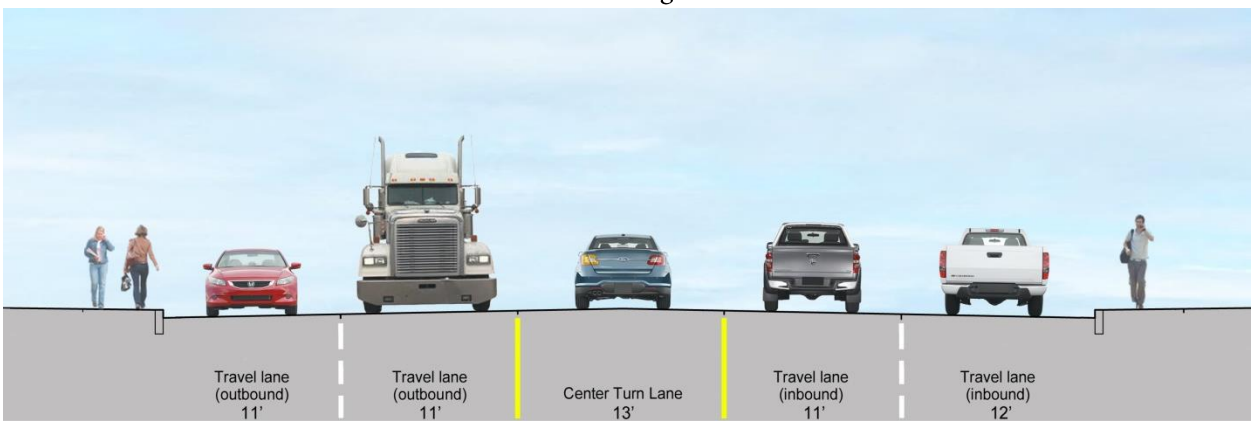
*Proposed Three Lane Configuration*

## 7.4 Outer Congress Street

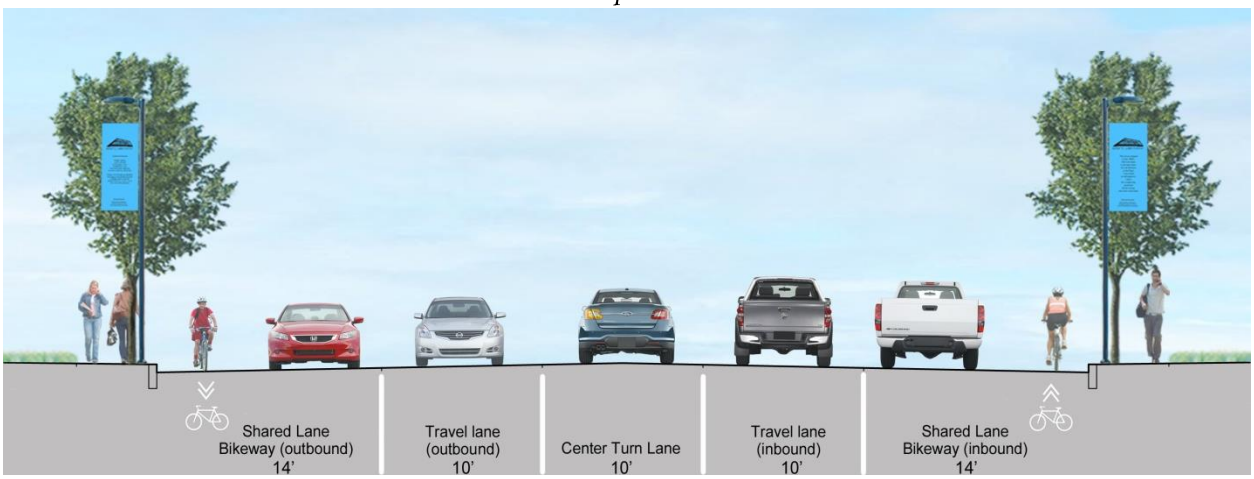
Because of high traffic volumes and limited right-of-way, there are few options for significant improvements to Outer Congress Street. It is proposed to be re-striped with narrower inside travel lanes that will allow for a wider curb lane for shared use with bicycles. The curb lane width will also be beneficial for buses. Proposed cross sections are shown in Figure 7.6.

**Figure 7.6: Outer Congress Street Cross Section**

*Existing*




*Proposed*



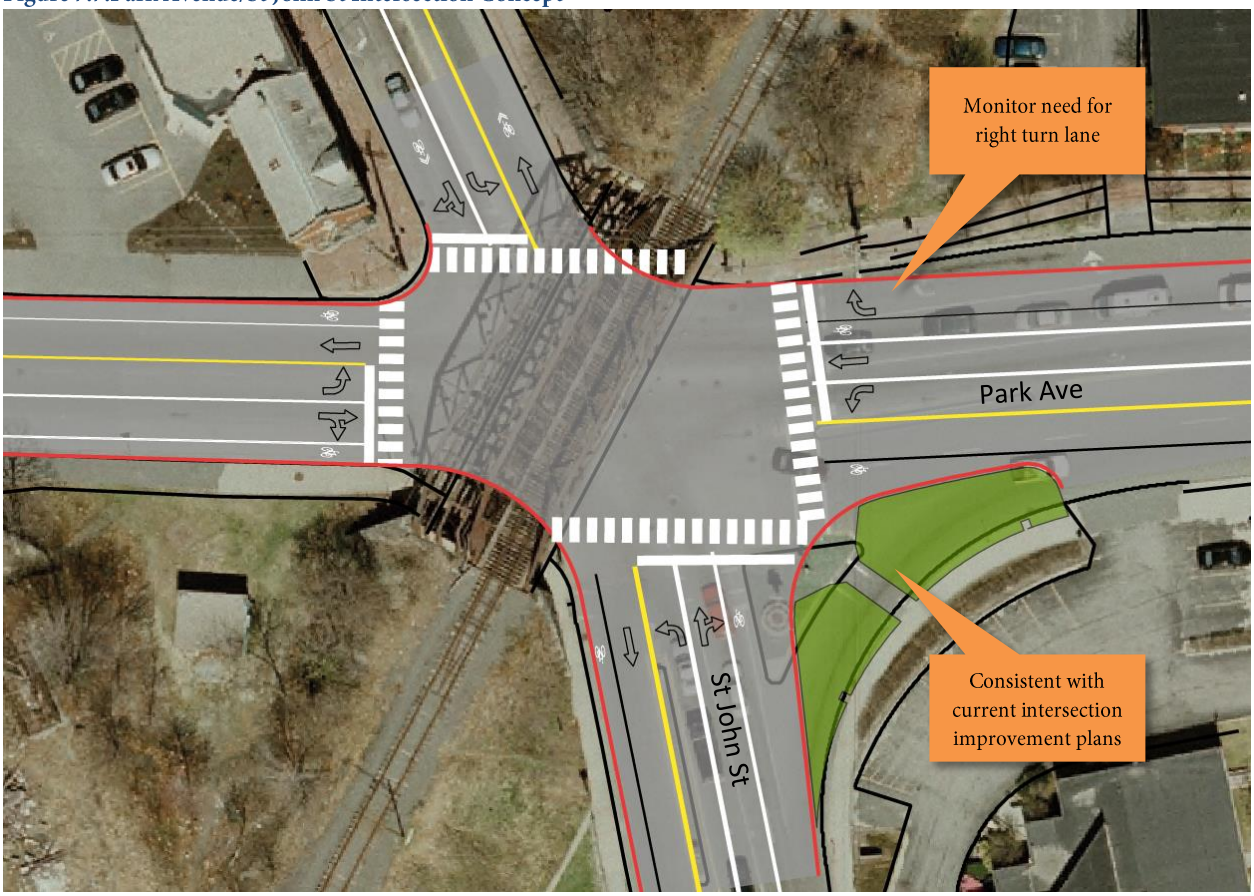
## 7.5 Intersection Improvements

The alternative requires changes at many of the study area intersection, which were considered in the vehicular LOS analysis. The following sections show the proposed concepts for the main study area intersections, and identify some of the features and opportunities created.

### 7.5.1 Park Avenue/St John

This intersection will be substantially reconfigured with two way operation of Park Avenue. There are planned improvements that will result in changes to the southeast quadrant of the intersection, which are shown below and compatible with these changes.

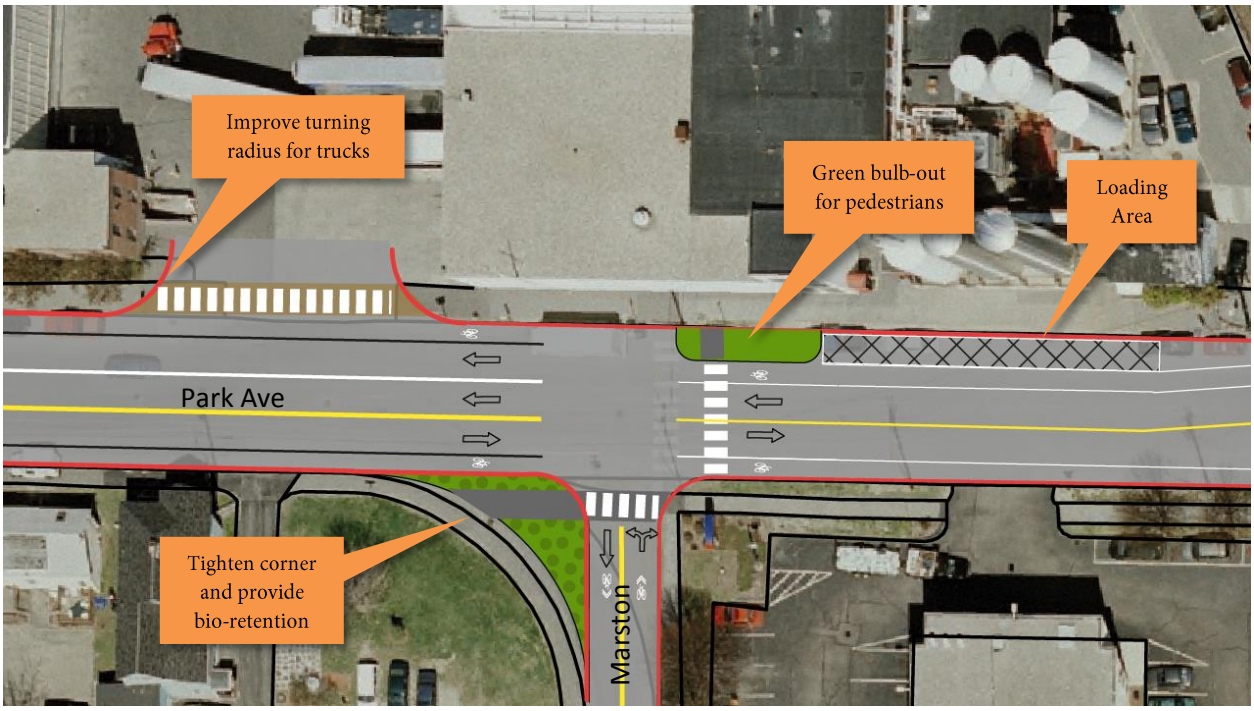
**Figure 7.7:Park Avenue/St John St Intersection Concept**



### 7.5.2 Park Avenue/Marston

This intersection is at a transition point along Park Avenue. East of this point, Park Avenue will have one lane in each direction. West of this point, Park Avenue will transition to have two westbound lanes approaching the Congress Street intersection. Marston Street may become a two-way street, and the wide corner will be tightened to reduce the pedestrian crossing distance. The corner may require a mountable surface as HP Hood trucks may need to use the corner as they access their site.

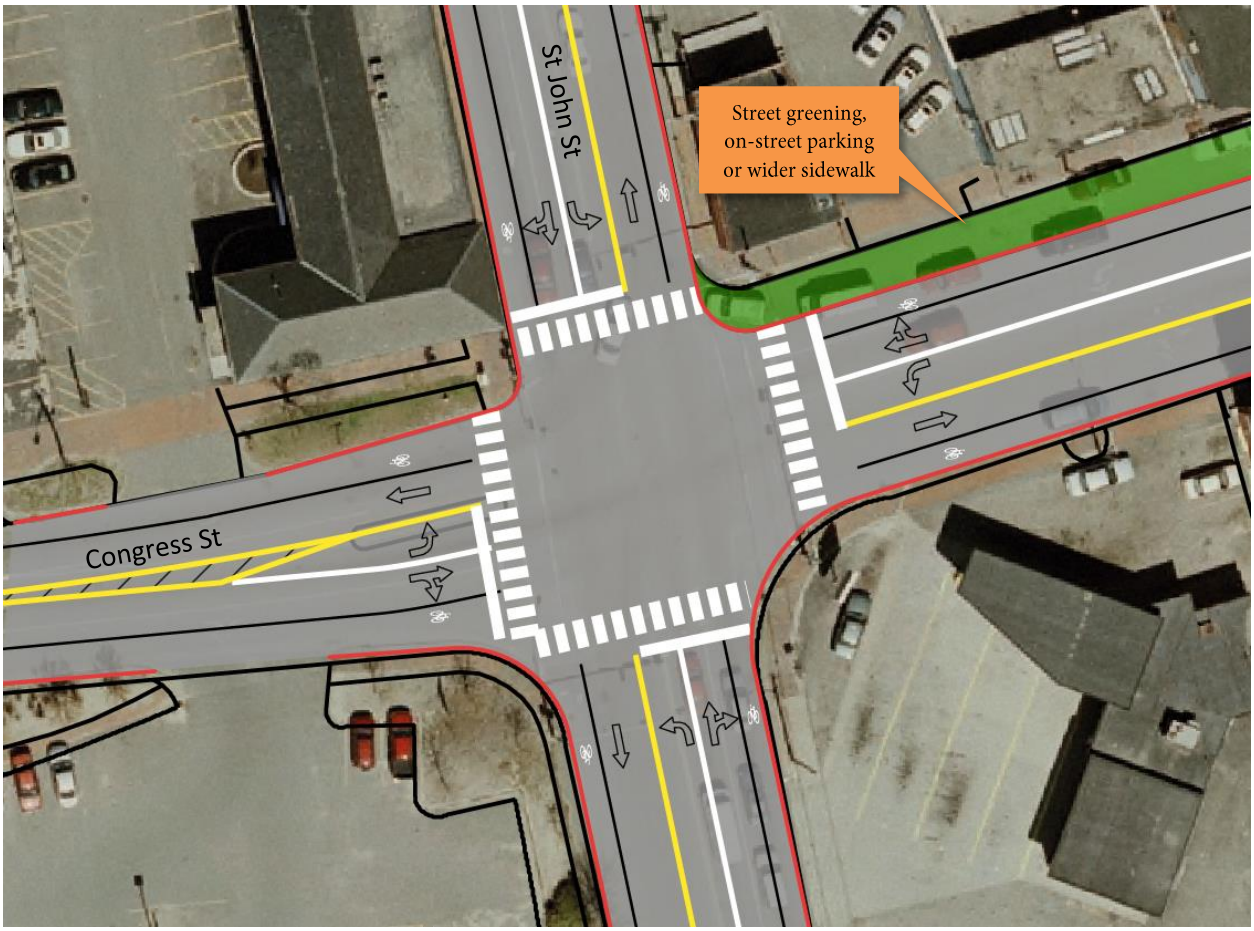
**Figure 7.8: Park Avenue/Marston St Intersection Concept**



### 7.5.3 Congress Street/St. John

This intersection will be substantially reconfigured with Congress Street having two-way operations. Each leg of the intersection will have no more than one through lane. There is room for a wider sidewalk, parallel parking or street greening along Congress Street between Valley and St. John.

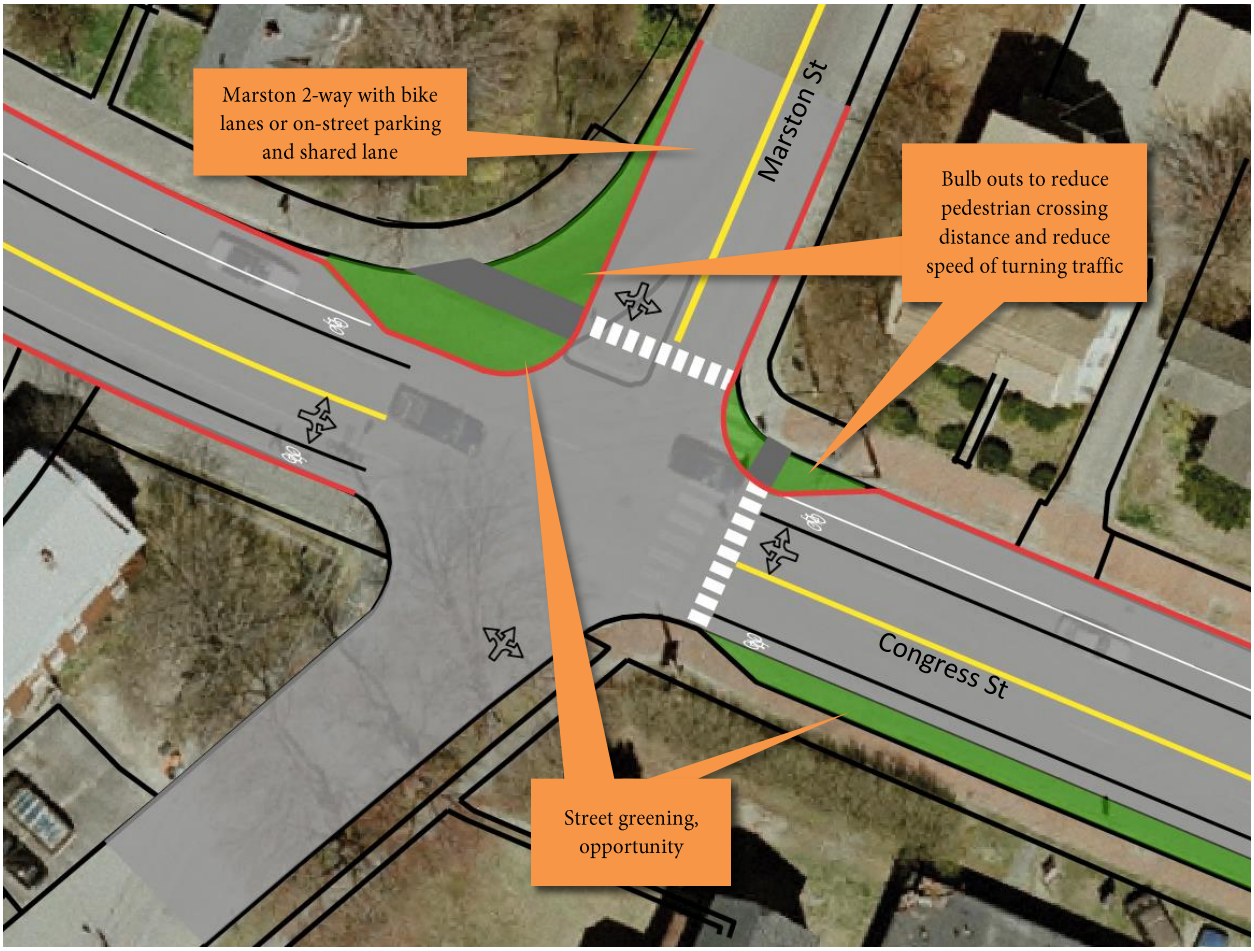
**Figure 7.9: Congress Street/St John St Intersection Concept**



### 7.5.4 Congress Street-Marston Street-Frederic Street

Congress Street will have one lane in each direction plus bicycle lanes, and parallel parking on the north side. Marston is proposed to be two-way, with a tighter radius for reduced pedestrian exposure while crossing. There is also room to establish a planting strip on the south side of Congress Street, east of this intersection.

**Figure 7.10: Congress Street/Marston Street/Frederic Street Intersection Concept**

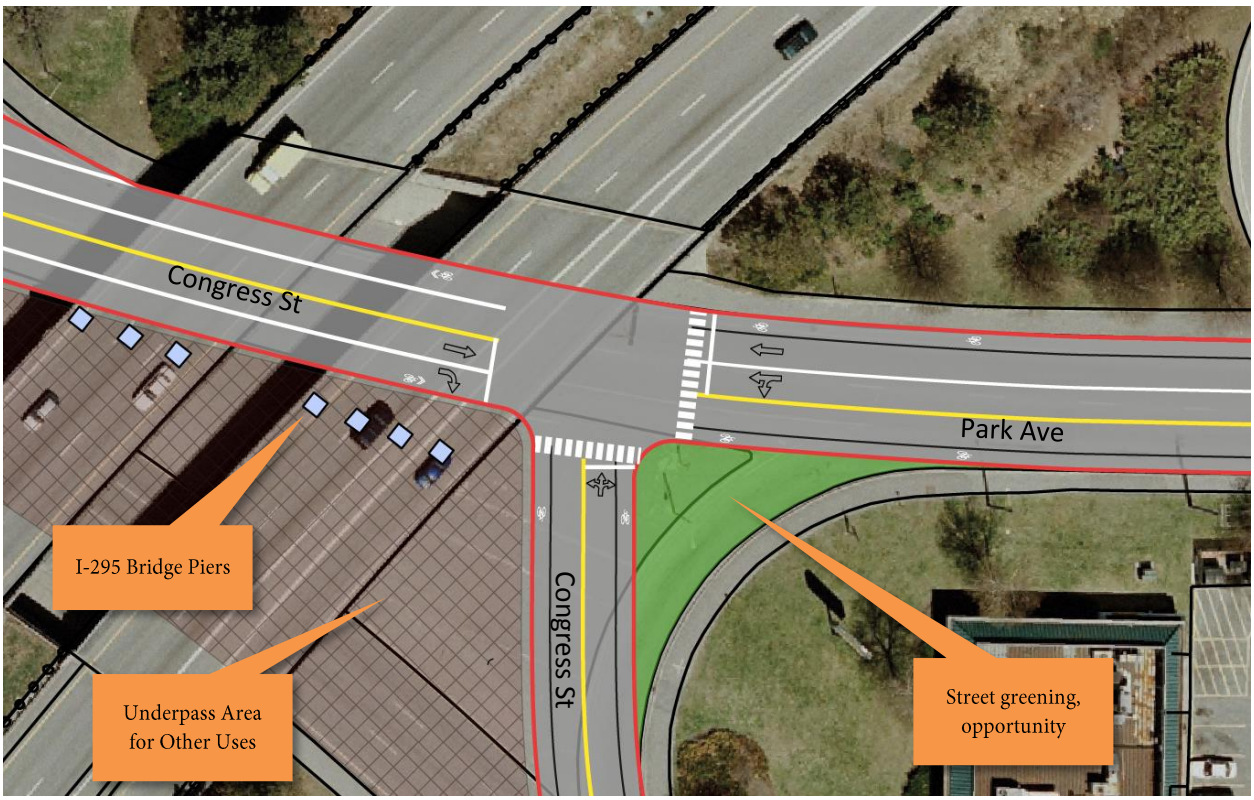


### 7.5.5 Congress Street/Park Avenue

This intersection has substantial changes in this plan:

- The intersection is proposed to be signalized.
- Park Avenue is designed as the primary travel corridor, and has the straight through movements at the signal.
- Outer Congress Street is realigned to be north of the interstate bridge piers, which creates a better designed intersection that emphasizes Park Avenue.
- There are numerous opportunities to consider other uses of the area under I-295, including a multi-use path connection to Fore River Parkway, and public space designs.

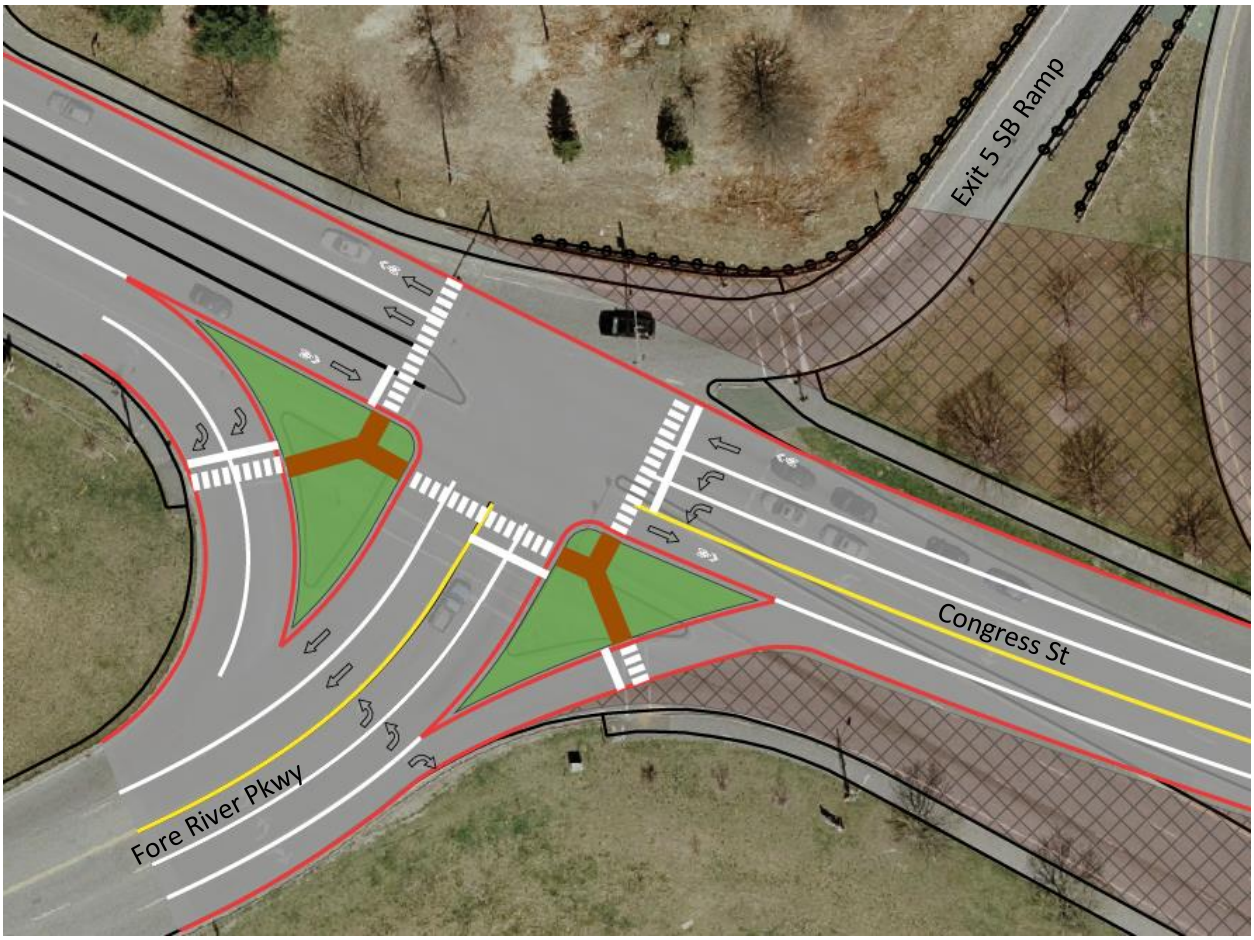
**Figure 7.11: Congress Street/Park Avenue Intersection Concept**



### 7.5.6 Congress Street/Fore River Parkway

This intersection would be reconfigured generally within its current footprint as shown below. There would be two westbound left turn lanes and two eastbound right turn lanes to address the growth in these turning movements resulting from the ramp closures. The eastbound approach is realigned to allow Congress Street to be north of the bridge piers. There would be ample spaces for other uses both north and south of Congress Street.

**Figure 7.12: Congress Street/Fore River Parkway Intersection Concept**




The above configuration provides adequate levels of service through the year 2015. The analysis of 2035 traffic volumes suggests that additional improvements to the Congress Street-Fore River Parkway and Thompsons Point-Fore River Parkway intersections may be needed if traffic volumes grow as indicated in the regional model. However, this is far from certain, as traffic has been declining in this area for years. The traffic volumes and operations at this should be monitored. If congestion increases to levels that are not tolerable, additional improvements can be implemented at that time, which could include a

modern roundabout, or additional through-traffic lanes. More analysis and design discussion is included in Attachment 4.

### 7.5.7 Fore River Parkway/Thompson's Point Rd

This intersection is currently planned for significant improvements associated with the Thompsons Point development. The vehicular LOS analysis found that the planned improvements will adequately serve the redistributed traffic from the Preferred Alternative through the year 2015, including all the traffic projected from a full build-out of Thompsons Point. The future volumes are highly uncertain with the variety of development proposals under consideration, but if additional capacity is required, a two-lane modern roundabout could be constructed, which would provide ample traffic capacity. More information is provided in Attachment 4.

## 7.6 Streetscape Improvements

Streetscape improvements are key components for creating a Complete Streets network in Libbytown, and to improving the environmental, economic, and social well-being of the neighborhood. These can be implemented gradually, as overall implementation proceeds through the Libbytown network. Some streetscape recommendations from the *Connecting Libbytown* (2009) have been carried over and used in this report, modified and improved upon where necessary. More discussion on the relationship between these recommendations and *Connecting Libbytown* is available in Attachment 5. Some overarching elements from the *Connecting Libbytown* include:

- Provide pedestrian scale lighting under the highway and Pan Am Railroad overpasses.
- Add signage and other visual clues, such as colored or grooved pavement, narrower roadways, on street parking, curb extensions, street furniture . . . to alert autos that they are in an urban setting and should expect the presence of bicyclists and pedestrians
- Extend some of the thematic elements of Park Avenue east of St. John such as esplanades and wider sidewalks to the length of Park Avenue
- Provide more opportunities for public art along the corridor

*The following sections address the various streetscape elements in more detail, as they pertain to the various locations within the study area.* Many if not all of the streetscape elements, size, color, type, locations, etc. will need to be coordinated with numerous stakeholders to decide what facilities are most appropriate. There is also a future transit study which will likely address the issues in much greater detail.

*Lighting- Currently, the pedestrian scale lighting being used in Libbytown comes from a 2007 committee recommendation. These are lights that are provided and installed by Central Maine*

*Power (CMP) under a leased lights agreement with the City, whereas the City pays a monthly fee that covers the costs of the lights, the electricity, and the maintenance. The current specification for the Libbytown pedestrian light is the CMP Radial Wave Fixture on a Hallbrook Pole.*

Within the last several years, the City has been trying to reduce street and pedestrian lighting power consumption and associated costs by incorporating LED light fixtures, some of which could be supplied by CMP, some purchased and installed under separate contracts. Solar-powered LED streetlights *have seen significant technological advancement in the last few years and are another option the City could consider for the Libbytown Streetscape.*

A short term, immediate improvement to the pedestrian lighting environment will be the installation of sidewalk light bollards underneath the Pan Am overpass. This location was noted early on in the Libbytown Study as the most at need location for lighting. *Similar bollard lighting should be considered on Congress Street Avenue* and Saint James Street *under the highway bridges of I-295.*

**Greening the Streets** – Street trees can be effective in providing shade, color, scale, texture, contrast, defining spaces, separating land uses, and giving individual character to special places in the urban environment. Wherever possible, the use of raised planting beds should be used. Raised planter beds serve multiple functions for the streetscape and pedestrian environment. Raised planting beds protect trees and shrubs from compaction, accidental damage, and winter salting; and have proven to significantly increase the health, longevity, and size of street trees in Portland. Where there is sufficient width, placing the plantings three to five feet inside the curb can help define different zones within the pedestrian realm. The curbside zone outside of the planters allows people to open car doors and access the sidewalk, and provides a clear "pedestrian only" realm. The use of hardy native perennials and grasses should be incorporated in the tree planters to provide color and seasonal interest. The inner sidewalk, separated physically and visually from the street, can function in many ways, including outdoor seating for restaurants and cafés, space for food carts or other vendors, or bikes, if space allows. Spaces between planters can be used for street furniture, i.e., benches, bike racks, recycling/trash receptacles; keeping it in-line with the planters helps maintain clear paths for pedestrians on either side of the streetscape elements.

Replacing trees that die because of insufficient soil is costly. Structural soils have been proven to solve this common problem. Structural Soil is a mix of aggregate and soil, with a small amount of polymer gel to hold the mix together. This mix can be compacted to 95% of dry density to support paving while still allowing for tree root growth. Studies have shown that trees growing in structural soils vastly outperform trees growing in typical urban conditions, live much longer, become larger, and provide many more environmental benefits. Structural soils can facilitate the growth of much larger trees, providing increased shade and visually reducing the scale of large monotonous buildings.

**Raingardens and Bioretention cells** -A combination of rain gardens or bioretention cells can help to decrease peak stormwater flows during storm events, which can in turn help mitigate combined sewer overflows (CSO's). They also improve water quality and beautify the streetscape. Typically a rain garden or a bioretention cell is a small planted area located at a low point that has been designed with a specific engineered soil mixture and plants that are capable of withstanding the extremes of moisture and concentrations of nutrients, particularly Nitrogen and Phosphorus.

Urban rain gardens and/or bioretention design can come in many shapes, sizes, and forms; typically they may include stormwater planters, stormwater tree pits and stormwater curb extensions. In an urban environment, rain gardens or bioretention cells are designed to fit into containers, and typically located within the median or edges of a street right-of-way, planting beds, tree pits, and plazas. Rain gardens are usually open-bottomed to allow some infiltration of stormwater, but are more often designed with an underdrain that connects to a closed stormwater system.


**Benches**-A well-built bench in the right location can help to encourage pedestrian activity along a sidewalk or in a Park Avenue. In Libbytown, there should be benches at every bus stop and within the public Park Avenues, or where people watch other people, i.e., the future public space under the highway overpass. Benches should be constructed of durable materials that are resistant to weather, vandalism, and rusting. Installation should be inexpensive, time efficient, and as durable as possible. Installation plans should allow for experimentation with location, and bench arrangement. Sometimes benches are vandalized. One way of preventing vandalism in a downtown area is locating benches where adjacent businesses can see them and assume some responsibility for their use and maintenance.

**Bus Shelters**-It is important that bus stops are easily identifiable, safe, accessible, and a comfortable place to wait for the bus. Well-designed bus stops encourage ridership, making the transit system more profitable, while also decreasing vehicular traffic on the local roads. The City should seek to make bus stops a positive contribution to the community streetscape and a place where riders can obtain transit related information and are encouraged to use the provided services. Guidelines should identify

and encourage partnerships with transit riders, METRO, the City, local businesses, residents, and property owners. The City may need to work with abutters to improve access to bus stops, including sidewalks, safe street crossings, accessible curb ramps and bicycle lanes. The quality of the streetscape is critical to the success of the bus stop development program.

While bus shelters should have low maintenance requirements and be vandal-resistant, other perspectives are also important. From the rider's point of view, an ideal shelter is one that allows visibility and easy access to the bus, is comfortable and convenient, provides clear information, and is safe. Both viewpoints are equally important to consider, because an unused shelter is a waste of money and an unnecessary maintenance problem. A well-designed, comfortable shelter can make waiting for a bus a pleasant — and even interesting — experience. Based on the existing conditions evaluation, the recommended shelter locations within the Libbytown Study area include: Park Avenue & St. John by the old Fire House (easements may be required for proper siting), at St. John & A Street in front of D'Angelo sandwich shop, and at Congress Street & Massachusetts Avenue in front of the Mobil Gas Station.

**Lowell Street Park Avenue**-The existing City park at Lowell Street is very underutilized, mostly due to lack of safe access. Several members of the Public Advisory Committee expressed a strong desire to make the Park Avenue more accessible and install elements that will attract neighbors, i.e., benches and a small playground. The Park Avenue is small but is large enough for small children to run, jump, swing, and play, and has a location that can act as a neighborhood social hub/meeting spot. Its location also provides some safety challenges with traffic circulation on all sides. A short perimeter fence should be considered to keep children contained and engaged within the Park Avenue. The more complex the playground, the greater the choice and the more enriched the learning experience. Mounds, peaks, climbing poles, a network of tunnels, ladders, slides, climbing surfaces, and multiple ways of ascending, descending, and getting from here to there can be part of the playground. Increased use at the Park Avenue, as well as a highly visible play structure, can act as another visual cue or a "gateway" into the Congress Street residential neighborhood.

**Public Art** is integral to a community's fabric by recognizing the potential of art to create livable cities, enhance neighborhood identity, strengthen economic development and tourism, educate children and adults and enrich the spirit and pride of its citizens. Streets represent an exciting opportunity to incorporate art throughout their length. Artworks can take many forms: whimsical re-use of cast-off industrial pieces; benches, drinking fountains, and railings that capture and express a design aesthetic while also serving a defined function; landforms that ripple and excite the eye; sculptural pieces that are animated by the wind; paving patterns that reflect the patterns of the city; water features that help cleanse runoff. The list is only limited by the imagination of the arts community.


*Bicycle parking on the sidewalks will be challenging in the Libbytown Study area due to their narrow width. Bike parking on sidewalks should be parallel to the street, with the sidewalk width of at least 8 feet to allow 5 feet for the pedestrian route. The City should work with* business owners to augment bike parking required by ordinance, and avoid redundancy.

**Recycling and Trash Receptacles**- The Department of Public Services is working to deploy "Big Belly Solar Powered Trash and Recycling Compactors" where appropriate throughout the City. These units have advantages over traditional trash cans, including:


- Larger capacity.
- They send a text when they are full, so City crews only empty when needed, reducing unnecessary visits.
- Mounted to sidewalk for security.
- Built to withstand vandalism.
- Restrict the use of graphic panels for fund raising or advertising.
- Specify blue to match "Libbytown" streetscape amenities.

In addition to the general streetscape guidelines, several specific opportunity areas are described below.

- **I-295 Underpass Future**-The eventual removal of the ramps and the conversion of Park Avenue and Congress Street to two-way traffic will open up a significant amount of land around and under the 295 overpass. Several members of the Public Advisory Committee expressed a strong desire to convert the area under 295 to a public space, i.e., a public market, weekend craft fairs, small playgrounds, or athletic courts.


- **Bolton Street at Congress Street**: Sidewalks are in poor condition, utilities create obstacles and there is no clear delineation between pedestrian and vehicular space. This is the location of Tony's Donut Shop, a social hub for the Libbytown neighborhood. Improved sidewalks and a better delineation of pedestrian space could create more of a neighborhood experience for residents and visitors alike and potentially spur economic development.
- **Saint James Street, East Side**: Traveling from Park Avenue, this sidewalk becomes progressively narrower and then just ends under the I-295 overpass. This sidewalk could be continued north to a crosswalk, which would be installed to create a connection to the Dougherty Field Trail.
- **Granite Street**. Although Granite Street has the potential to connect the Oakdale and USM Neighborhoods to Libbytown by way of Saint John Street, there are no sidewalks on Granite Street between Roberts and Saint John. The absence of this sidewalk would encourage those traveling towards Libbytown, Hadlock Field, downtown or other locations to drive rather than walk.

- **Saint John Street**: While there are streetscape improvements planned for the area, the plans do not include the sidewalk on the east and west side of St John, in front of the Greyhound bus station and Union Station Plaza. These should be improved.

## 7.7 Implementation Strategy

This study sets out a long range strategy to achieve the goals set forth earlier. Elements of this plan can be implemented incrementally in stages, and the design proposals can be adapted as needed to fit any changes in design constraints, traffic volumes, multimodal use patterns and new or emerging goals. The plan does not require every element to be complete. The following implementation priority is recommended:

1) Convert Park Avenue to 2-way, which will require signal changes at Park Avenue/St. John, and modifications at the intersection of Congress Street and Park Avenue (see attached sketch). This will have immediate benefits of accessibility to the City and address the increasingly frequent railroad crossings. The cost for this is estimated to be $414,000.
2) Restripe Outer Congress Street to have narrower inside travel lanes and wider outside lanes for shared use and transit. The cost for this is estimated to be $111,000.
3) Convert Congress Street to 2-way. This will be easier after Ramps A and C are closed, but could be done earlier with adjustments to the terminus of Ramp C (I-295 NB off-ramp). The cost for this is estimated to be $1,132,000. St. John St. should be reconfigured with the implementation of this phase.
4) Coordinate with MaineDOT and FHWA on testing and monitoring of ramp closures. While MaineDOT does not currently support ramp closures, the City and PACTS may continue to advance this concept due to their substantial benefits. Permanent closures will likely require interchange modification studies, and should also be subsequent to improvements at the Forest Avenue interchange. A possible ramp elimination order is proposed below, based on which closures would provide the greatest benefit and have the least impact on traffic operations:
    1. Close Ramp A - I-295 northbound to Congress Street eastbound off- ramp
    2. Close Ramp D - I-295 southbound to Congress Street westbound off- ramp
    3. Close Ramp C - Congress Street eastbound to I-295 northbound on- ramp
    4. Close Ramp B - Congress Street westbound to I-295 southbound on- ramp

    Costs for ramp closures are estimated to be $322,000.
5) When ramp closures have been tested and implemented, consider long term redevelopment of interchange area lands. Revenue from the redevelopment could fund any additional improvements that are needed, including the following.
6) Monitor traffic volumes and operations at the Fore River Parkway/Congress Street intersection, and consider improvements as indicated. Improvement alternatives include a roundabout or additional through lanes on Congress Street.

## 7.8 Cost estimate

A conceptual cost estimate based on suggested construction phasing has been prepared, and can be found in Attachment 6. Table 7.1 shows a summary of the costs, based on proposed project phasing.

**Table 7.1: Cost Summary**

| Item | Phase | Component | Cost |
|---|---|---|---|
| 1 | Phase I: Conversion of Park Avenue to Two-way | | $414,000 |
| 2 | Phase II: Restripe Outer Congress Street | | $111,000 |
| 3 | Phase III: Conversion of Congress Street to Two-Way | | $1,132,000 |
| 4 | Phase IV: Ramp Closures | Ramp A | $57,000 |
| 5 | | Ramps B & D | $230,000 |
| 6 | | Ramp C | $35,000 |
| 7 | Ongoing: Streetscape Improvements | Park Avenue | $399,000 |
| 8 | | Congress Street | $1,832,000 |
| | | | |
| | | **Total:** | **$4,210,000** |

* Note: Costs above do not include changes to the Congress Street. railroad crossing associated with the City's quiet zone work.

Below is an overview of how the cost estimate has been organized and the assumptions on construction phasing. It is assumed that streetscape improvements would be incorporated into each project phase as appropriate.

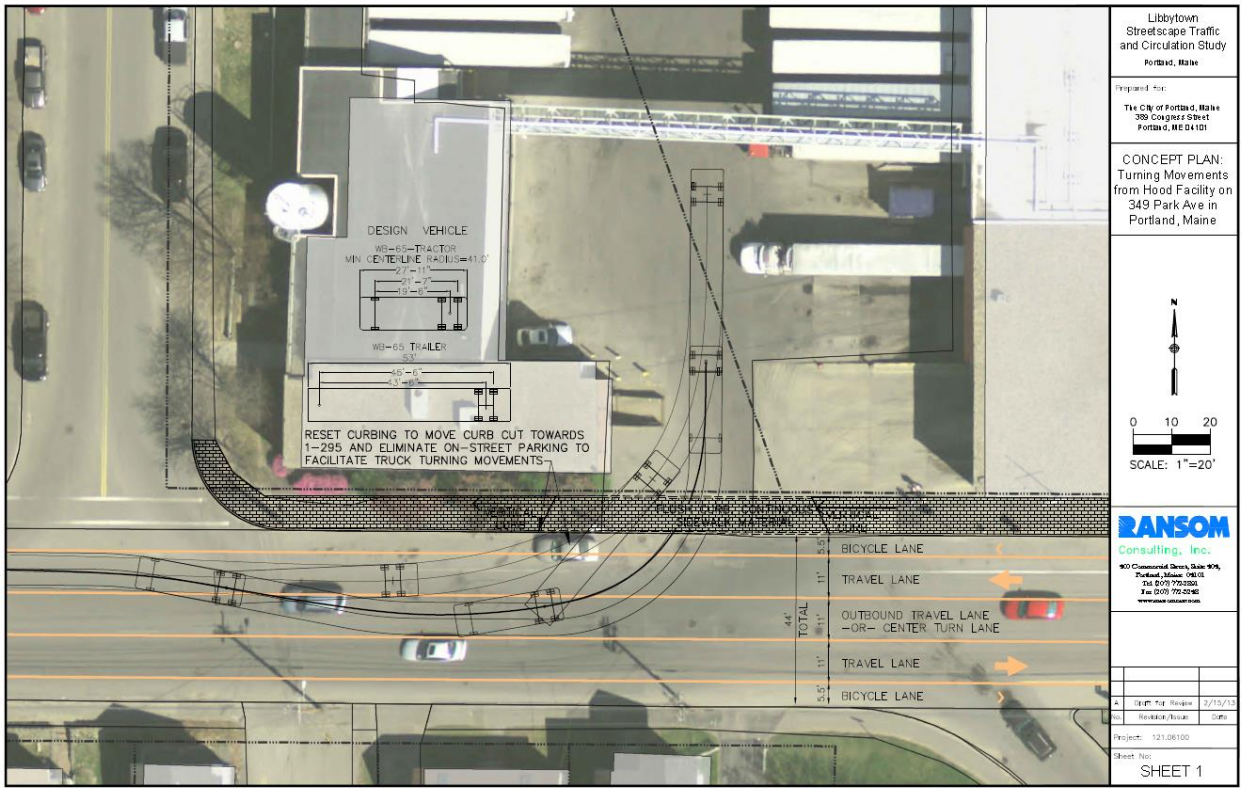
### 7.8.1 Phase I: Conversion of Park Avenue to Two-Way

Based on our analysis, it appears that Park Avenue could be converted to two-way traffic in the near term with minimal adjustments to existing infrastructure based on the following assumptions.

- Two outbound Park Avenue lanes would be retained from Saint John Street to Congress Street.
- From Marston to Saint John Street, the Park Avenue section would consist of 3 travel lanes. The two outer lanes would be wider and striped with shared roadway stencils. This is a temporary solution which would be replaced with the configuration described on page 21 when Congress Street is converted to two-way and traffic demands on Park Avenue decrease. On-street parking would not be provided in this section.
- From Marston Street to Congress Street, the Park Avenue section would consist of 3 travel lanes and two bike lanes. On-street parking would not be provided in this section, resulting in a loss of approximately 10 parking spaces.
- Signal adjustments at Park Avenue/St John would be required.
- Reconfiguration of the intersection of Marston and Park Avenue would be included.

- Adjustments to Hood's access from Park Avenue, including improving the drainage and reconstructing sidewalk in this area. (See Figure 7.13)
- Reconfiguration of the Park Avenue/Congress Street intersection as shown in the *Near Term Transition of Park Avenue to Two-Way Traffic* sketch would be included.

**Figure 7.13: Improvements to HP Hood Entrance**




A pavement overlay of Park Avenue is not proposed for the following reasons.

- Underground conduit may need to be installed for street lighting. This should be done before paving.
- The pavement in this area is in reasonable condition
- The stormdrain/sewer in this area appears to be combined and it may make sense to assess opportunities for separation first.

### 7.8.2 Phase II: Restriping of Outer Congress Street

This phase includes restriping Outer Congress Street (between the FRP and Sewall Street) to provide wider curbside travel lanes along with improvements to existing sidewalks and the intersection of Congress Street and Massachusetts Avenue. This phase is not sequentially dependent on other phases and could be done as funding and other ongoing projects allow.

### 7.8.3 Phase III: Conversion of Congress Street to two-way

Converting Congress Street to two-way will require adjustments to the Congress Street/St John, Congress Street/Park Avenue and Congress Street/FRP intersections as well as curb extensions, curb adjustments and restriping along Congress Street as outlined in the preferred alternative. During this phase, the remaining improvements that are proposed for Park Avenue would be completed.

### 7.8.4 Phase IV: Ramp Closures

While the MaineDOT does not support implementation of ramp closures at this time, the City and PACTS will continue to evaluate this option due to its substantial benefits to safety in Libbytown. For cost estimating purposes, it is assumed that ramp closures would be achieved by installing guardrail where the ramps intersect I-295 and by installing sidewalk where the ramps intersect Congress Street. Restriping, signage and other factors are also considered. Costs for permanently removing ramp infrastructure have not been estimated. We suggest that these costs could be part of the future land use discussion if it is decided to make the ramp closures permanent.

Each of the ramps A through D could potentially be closed on a trial basis by using methods for temporary traffic diversions such as jersey barriers and appropriate warnings for a very minimal cost. Impacts on traffic flow at other locations could be monitored, and provide information to determine if a longer term or permanent closure is warranted.

Ramps A and C on Inner Congress Street: The curbline on the south side of Congress Street in this area is irregular due to the ramp merging. Also, the existing curbing is sloped granite. As such, it may make sense to reconstruct the entire curb line from Park Avenue to Huntress Street when Congress Street is converted to two-way traffic. This should be carefully considered when designing sidewalk segments to close these ramps.

Ramps B and D on Outer Congress Street: I-295 southbound is 3 lanes north of Ramp D and 3 lanes south of ramp B but the interstate currently has only 2 lanes between these two ramps. Therefore, in order to maintain capacity, closing ramps B and D will likely require installing a third interstate travel lane between these ramps. For this reason, we have provided a single cost for closing Ramps B and D. Separate costs are provide for Closing Ramps A and C.

### 7.8.5 Phase V: Construction of Modern Roundabouts on Fore River Parkway intersections

Traffic monitoring should be conducted to determine the possible future need for conversion of Congress Street/Fore River Parkway and Thompsons Point/Fore River Parkway to two-lane modern roundabouts. The total cost for this has not been estimated in detail, but could easily exceed $5 million. The analysis shows that these intersections would have ample capacity to serve high rates of future traffic growth.

# Attachment 1:

## Public Participation and Project Advisory Committee

Public Participation Documentation

- PAC meeting notes and powerpoints
- Public Meeting documentation and powerpoints

# Libbytown Traffic and Circulation Study
## Citizen Advisory Committee Meeting

**Dec, 5th 2012**
**Portland Expo Center**

**Committee:** Maria MacDougal, Zachary Barowitz, Ruth Mlotek, Christian Milneil, Fred Dillon, Daniel Doughty, Channing Capuchino, Jackie Thompson, Harlan Baker, Jamie Parker, Karen Perry.

**Staff:** Carl Eppich, GPCOG; Jeremiah Bartlett, Kathi Earley, Bill Needelman, Mike Bobinsky, and Bruce Hyman, City of Portland; Lucy Gibson, DuBoiss & King; John Mahoney, Ransom Consultants; Tom Farmer, T.d. Dewan & Associates; Carol Morris and Scott Hastings, Morris Communications.

Councilor Ed Suslovic?

*Meeting started at 4:06pm.*

Councilor Ed Suslovic opened the meeting. Introductions were made. Ed Suslovic provided the context for the study. There has been a lot of activity in the Libbytown area in recent years and it has not always been well coordinated. He charged the committee to think of the larger picture and to consider the future in their work on this project.

Carl Eppic reviewed the background of this particular study and presented the agenda for the meeting.

Lucy Gibson presented further background on the project. The Libbytown neighborhood has dealt with dramatic change in the past, most notably the construction of I295. This study will build off of the previous study, Connecting Libbytown. The current study will be much larger in scope however. It will also consider traffic circulation issues, the redundant ramps in the I295/Congress St. interchange, safety issues, bike/ped issues, and streetscape improvements.

Carol Morris reviewed the role of the Advisory Committee. It is there to provide honest opinions to the study team and to make sure that all views are represented. She asked if the committee felt that there were any gaps in its membership.

Ed Suslovic mentioned the Thompsons Point Development.

Carol said that they had been asked but they could not make that meeting.

The committee mentioned the Metro bus service.

Ed Suslovic announced that he is a member of Metro's board. He also mentioned that the Downeaster might need to be represented. The Transportation center is an important part of the area and the Thompsons Point development has TIF funding associated with it to aid transit.

The Committee also mentioned sports teams, mercy hospital, West School, and a general desire for more socio-economic diversity.

Staff mentioned that Logan's Place was on the committee but could not attend the meeting and that Hood could not be contacted. Emergency services providers while not on the committee will be involved throughout the process.

Carol mentioned that there will be a separate meeting for businesses in the area so as to actively seek their input.

Carol discussed future meetings of the committee. Currently it will be meeting the weeks of January 21st, April 1st, and May 20th. It was determined that Wednesdays and Mondays from 4-6pm were the best times for those present. Carol went over that minutes of all meetings would be taken and that information would be posted on the City's website.

Lucy presented the baseline condition findings. The team conducted a detailed traffic analysis with turning movements at each intersection. All intersections rated between A and C, which was declared very good for an urban area. MaineDOT crash data from 2009-2011 was examined. The study area contains multiple high crash areas, some ranked among the highest crash areas in the state. They will be trying to identify the reasons behind the crashes and try to mitigate them.

John Mahoney presented information on bike and pedestrian issues. The area does contain much bike/ped infrastructure though it is not well interconnected. An inventory of sidewalk conditions, crosswalks, and lighting found the area to have some underserved locations with poor sidewalks, dangerous crossings, and little to no lighting.

The Committee expressed concern over the conditions at the intersection of Massachusetts Ave and Congress St. It was felt that while the maps showed it to be bad it was even worse than depicted. A lot of different traffic/pedestrian conflicts were described particularly conflicts between left turns out of Mass. Ave. which are signaled at the same time as pedestrians crossing Congress. The Norway Savings Bank parking lot is apparently used frequently by people wishing to make U-turns, a dangerous situation. The surrounding area was described as confusing, overly busy with too many curb cuts, and that it is seen as a "no rules zone".

Two members voiced concern over the proposal to maybe make the one way sections of Congress St. and Park Ave into two way streets. They felt that congress in particular would be too busy with that configuration and would like it to be one lane of one way traffic so as to slow down cars through the neighborhood.

It was pointed out that the sidewalk conditions were rated solely on physical condition and that it would also be useful to have a rating based on the pleasantness of using the stretch of sidewalk. Would you send a child or elderly person to walk it alone? The portion of Congress under the highway was particularly singled out as unfriendly and unpleasant to walk on.

Mike Bobinsky brought up that the city was currently preparing to improve the conditions under the overpass by doing sidewalk repair and installing lighting.

The issue of snow removal on St. John St. was raised. The number and size of curb cuts there leads to the sidewalk becoming impassible due to snow in the winter.

The committee expressed concern that the bike lanes on Park Street stop abruptly at the intersection with congress, making an already unfriendly to bike area even worse.

Bruce Hyman announced that the city has plans for next year to put in an at grade crossing of the Fore River Parkway at the end of Frederick St. which would give cyclists an alternate way to the transportation center. He also noted plans to put in a path from congress to the transportation center along the Fore River parkway.

The committee felt that the blinking, on demand warning lights at pedestrian crossings are not effective at stopping cars.

Tom Farmer presented information on streetscape improvements. This included information on the conditions of sidewalk ramps for ADA compliance. It was found that many areas did not have ramps at all. They also looked at bus routes and stops with an evaluation of each stop. Bus stops in the area are not equipped with any amenities such as benches or shelters, except for one located at the transportation center. He showed a rendering of what a bus stop shelter could look like and the Park St. and St. John intersection.

The committee pointed out that the sensible ramp plates were not installed correctly and that this is dangerous for those with disabilities. Bruce Hyman was already aware of and working on this issue.

The committee noted that the city is not consistent with its siting of bus stops with some being midblock, some after an intersection and some before. This makes it hard to know where a stop will be.

Tom said that this was already something they were planning on addressing in their recommendations. He presented information on placemaking aspects of the study. This included creation of pocket parks, improvements to existing parks, improved sidewalks, aesthetic improvements, and increasing uses along the empty corridor through the highway interchange.

The committee noted that some of the less appealing elements such as chain link fencing were put in by the city to deter transients from using the area. The need for this is also a part of the less than good reputation the area has.

Lucy Gibson presented the draft purpose and needs statement and asked for input from the committee on refining it.

The committee raised a number of suggestions:

- There should be mention of the need to consider the financial needs involved in implementation. This could include mention of improved transit and bike/ped conditions as being part of a larger fiscally responsible transportation network.
- It should be more explicitly clear that there is a commitment to bike/ped needs.
- A mention of safety commitments including lighting. Direct push back at the city to show that lighting is needed and wanted.
- A commitment to the entire area. Particularly in regards to developing a bike/ped network. Smaller streets need to be part of this system or people will not make it to the larger streets. Sidewalks should be built on every street.

Lucy thanked the committee and made it clear that if they had further thoughts they could submit it after the meeting through email or by phone.

Carol Morris opened the floor to the committee to raise additional concerns and comments.

The committee mentioned that while it is outside the direct study area the bus stops for the Westgate shopping plaza are inconveniently located.

There was some discussion of the Thompson's Point development and its impact, particularly in terms of increased traffic.

Similarly concerns were raised that models may rely too heavily on assumptions of increased car traffic. Some say that environmental, health and finical concerns are working to push more people to use their car less.

Lucy responded that the models will cover a range of potential scenarios and that they are already working on the numbers for one that includes a decrease in car traffic.

Bill Needleman brought up that the study did have some small land use components in addition to the transportation aspects and asked for the committees input on that.

The committee responded that the location would be good for smaller apartments for elderly retires since it is close to medical facilities. Also it could work for younger carless families with its proximity to downtown. A desire for little or no parking to accompany any development was expressed.

The committee expressed some concern over the need for the Fore River Parkway and a general desire for lower speed limits to make the area friendlier. Coupled with that was a desire for aesthetic improvements, particularly around the off ramps and the transportation center, so as to give a better first impression to visitors to the city.

The committee felt that the empty areas within the I295 interchange presented an opportunity to address a number of the problems mentioned. Developing the land would increase density, fill the gap between St. James St. and Douglas Cir., and add life to the area. Talks with DOT need to happen to feel out this opportunity.

Mike Bobinsky noted that the city has already broached the topic of removing the ramps with DOT so they will not be surprised by that.

There was general agreement that anything that was done needed to be aesthetically pleasing and that the area needed to visually establish itself as a gateway to the city.

The committee pointed out that there is a significant amount of wetlands in the area that cannot be developed and that making them parks could make for an opportunity to have parkland without using developable land.

The committee expressed a desire for more local business in the area. A particular desire for non-chain cafes, restaurants, and other such semi-private social spaces was vocalized. Tied in with this was a desire to make the multi-use path more popular and in doing so into a place where you could run into people socially.

Carol thanked everyone for their time and their participation. She announced that more detailed information on the next meeting would be emailed out to committee members as would the minutes of the meeting.

*Meeting ended at 6:07.*

# Libbytown Traffic and Circulation Study
# Public Advisory Committee Meeting

**Jan, 28th 2013**
**Portland Expo Center**

**In attendance:**
**Committee Members:** Maria MacDougal, Zachary Barowitz, Christian Milneil, Fred Dillon, Channing Capuchino, Jackie Thompson, Harlan Baker, Jamie Parker, Richard Buchanan, Caroline Partlow, Mary Didonato, Skip Woods

**Staff:** Carl Eppich, PACTS; Jeremiah Bartlett, Kathi Earley, Bill Needelman, and Bruce Hyman, City of Portland; Lucy Gibson, DuBoiss & King; John Mahoney, Ransom Consultants; Tom Farmer, and Terry DeWan ,T.J. DeWan & Associates; Carol Morris and Scott Hastings, Morris Communications.

*Meeting started 4:05pm*

Carl Eppich opened the meeting and all the participants introduced themselves.

John Mahoney reviewed a meeting with representatives from Hood. Hood's property on Park Ave is very busy and has some serious space constraints. They have operated from that site since 1918 and have recently invested in improvements to the facility. Making Park Ave a two way street would constrain their ability to get trucks out of the facility in a timely fashion as it would reduce traffic openings and possibly require them to turn into oncoming traffic.

Skip Woods, a representative from Hood, reiterated the space constraints. They currently need almost the entire width of Park Ave to allow one of their trucks to take a right turn out of the facility. There was a brief discussion about how to address this issue. The possibility of opening the Hood property up to St. James St. was mentioned but the fact that the Hood parking lot is below the level of St. James St. could complicate that.

Carol Morris presented a revised Purpose and Needs Statement based on feedback from the committee. The following changes had been made:

- Language was added to address the fact that the study area includes portions of other neighborhoods
- The goal of creating a more financially sustainable transportation network was added
- The goal of creating and improving public spaces was added
- Language was added addressing the need to recreate connections lost to highway development

Carol asked for input on the purpose and needs statement.

A committee member asked that St. John Valley be spelled out rather than abbreviated as SJV.

There were no other comments.

**Follow-up NOTE:** The Consultant Team and the City staff suggest that the last bullet be rephrased to: "Libbytown, as well as its adjacent areas, has tremendous potential that can be harnessed by maximizing its relationship with a revitalized, multi-modal transportation network." The purpose of this revision is to provide a proactive statement that can be more clearly used to help assess and rank the range of alternatives being developed.

Lucy Gibson presented a map of the high accident locations in the study area. Safety is the foremost concern of the project. She also mentioned that there are already some projects in the pipeline to address some of these issues.

Lucy reviewed some of the components of what goes into making a good street for all users. She presented a matrix of the design tools that have been discussed so far and their impact on different transportation modes.

- Pedestrian friendly streets: Pedestrian friendly streets have slow traffic speeds, high connectivity, are safe, and have numerous destinations. High traffic speeds are not actually very useful to car traffic in an urban environment. Wide roads encourage high traffic speeds but we do have to take into account the additional narrowing effects of snow in the winter. Having taller buildings, close to the street provides a sense of enclosure that helps to make even wider streets seem more manageable to the pedestrian. Lucy presented a map of the area in which the consulting team had devised a pedestrian comfort rating to evaluate conditions in the study area. It was based on a combination of traffic speed, street scape amenities, buildings with windows facing the street, and the existence of buffers between pedestrians and road traffic.

- Bicycle friendly streets: She noted that there is a small portion of the population that is already comfortable with biking in traffic and that there is a group of people that will never bike. Bike amenities are aimed at the remaining group of people that would like to bike but are not comfortable with being out in traffic.

- Transit friendly streets: The area has a good start in that it already has bus service and the transportation center. As transit users are pedestrians before and after they board transit any pedestrian improvements are transit improvements. Similarly increased density provides more potential users and destinations and so encourages transit. Having more frequent and regular stops improves transit usability. Two way streets also reduce confusion by allowing return trips to stop at the same place.

- Automobile safety requires clear sight lines and easy transitions from high speed highways to low speed local streets. Reliable streets are betting than fast streets. They are more fuel efficient and can transport a higher volume of cars.

- Development friendly streets require high visibility and traffic from all modes. One street parking and easy accessibility both help encourage development. One way streets hinder this.

There was some discussion over whether two ways streets should be considered good for cars. Lucy pointed out that they are less efficient but acknowledged that they have some benefits such as increasing access.

A committee member asked about why the intersection at Congress St. and the Fore River Parkway was such a high accident area. Lucy did not know the exact reason but theorized that it was because of the large amount of different traffic movements and the high speed of traffic through the intersection.

Lucy presented the preliminary ideas put together by the consulting team.

**Option A:** This option has two roundabouts; one at the Congress St./Fore River Parkway Intersection and one at the Congress St./Park Ave intersection. The two highway ramps that connect Congress St. and the northbound side of I-295 would be removed. A new off ramp from the northbound side of I-295 would connect to the Congress St./Park Ave roundabout. Variations on this option would allow for Congress St. and/or Park Ave to be two way roads.

Lucy reviewed that roundabouts are on average safer than traffic signals and that they can handle larger volumes of traffic with fewer approach lanes. They reduce speeds and handle high left turn volumes better than signals. They do require more land at the node and require signalized pedestrian crossings. A committee member mentioned that they are frequently used outside of Boston and that she found them easier to use than she expected.

A committee member asked why the plan called for two roundabouts instead of just one. Lucy answered that having a signal at the other intersection risks having it back up into the roundabout. If one intersection were to have neither a signal nor a roundabout than you could have one roundabout at the other intersection.

**Option B:** This option would signalize both the intersection of Congress St./Fore River Parkway and the intersection of Congress St./Park Ave. The northbound ramps to and from Congress St. would be brought together and their intersection with Congress St. signalized. This scenario would make Congress St. two way and the primary road into downtown Portland. Park Ave could be either one or two way.

**Option C:** This option is the same as option B but makes Park Ave the primary road into the city. Congress St. would be a smaller, two way road.

**Option D:** This option would emphasize Park Ave as the primary way into the city. The Congress St./Park Ave intersection would be reoriented to de-emphasize Congress St., which would remain one way. The northbound on and off ramps would meet congress at the Congress St./Park Ave intersection.

A committee member asked if DOT has been approached about the possibility of removing ramps and developing the land. Lucy answered that they had had a preliminary meeting with DOT and that they were open to the idea of removing ramps provided that it improved the safety of the interchange. They are less enthusiastic about the idea of selling the land freed up by removing the ramps. This would be a next step discussion.

At this point the meeting broke into three work groups to evaluate the different options and propose new ideas. At the end of the meeting the groups presented their findings.

**Group A:** This group's biggest theme was making the section of Congress St. between Park Ave and St. John St. into a neighborhood residential street. In turn Park Ave would be emphasized as a high traffic, more business oriented road. They liked the roundabout at the Congress St./Fore River Parkway intersection but were divided about the one at the Congress St/Park Ave intersection with some favoring the idea of this intersection not being signalized either. Those opposed to the roundabout felt that it would only encourage traffic to use Congress St. and that two roundabouts would be a barrier to pedestrians. They were concerned that any roundabouts created would have to be as bike and pedestrian friendly as possible. The group was interested in seeing mixed use neighborhood development near the highway to expand and strengthen the existing neighborhood. It was mentioned that if Congress St. from Park Ave to St. John St. was made one lane that there could be a two way bike route on the street. They would like to see more development along the Fore River Parkway so as to create more of a gateway to the city. Also mentioned was putting a treed median on outer Congress St as it approaches town so as to slow traffic.

**Group B:** This group liked Option A but had some worries about the feasibility of roundabouts, particularly at the Fore River Parkway intersection because of the potential for traffic to back up from the Mass. Ave light. They liked the idea of having no signal or roundabout at the Congress St./Park Ave intersection. It was felt that Park Ave being the two way main road was a good idea due to the train crossing on Park Ave being above grade. In turn Congress would stay one way and be made into a more local road. The group felt that bike and pedestrian connectivity should be improved throughout the area. The southbound on ramp from Congress St. was felt to be ripe for removal. The northbound ramps currently connecting to inner Congress St. could be moved to align with the Congress St./Park Ave intersection though the intersection would then require a signal. It was also felt that if congress was made one lane there would be room for a multi-use path that could connect to the transportation center. Finally they expressed a desire that any plan not make the cut through problem on the outer Congress St. side streets any worse.

**Group C:** This group favored making Congress St. the two way primary road into the city because of the issues with the Hood trucks turning onto Park Ave. They liked Option A and the land it freed up for development. It was felt that even with making Congress St. the major road it should still be pedestrianized and efforts taken to slow traffic. Making Park Ave between Congress St. and St. John St. into a one lane road would allow for a two way bike lanes. The group also felt that improving bike and pedestrian connectivity throughout the area is import particularly with the bike/ped issues inherent in roundabouts. They agreed with the other groups that the intersection at Congress St. and Park Ave would work without a signal or a roundabout and also shared group B's concern with the Mass. Ave light backing into the roundabout at the Fore River Parkway. There was some talk about reconnecting Sewall St. to the Transportation center and Thompsons Point.

Lucy presented the next steps for the project. First they will look at the ramps and make sure any proposals will work with DOT and the FHWA. They will then do traffic analysis of the various alternatives. The results of this analysis will be presented first to the Advisory Committee and then to the general public. A meeting of local business will be held in March.

*Meeting ends at 6:13pm.*

# Libbytown Traffic and Circulation Study
# Public Advisory Committee Meeting

**April, 22th 2013**
**Portland Expo Center**

**In attendance:**
**Committee Members:** Maria MacDougal, Zachary Barowitz, Christian Milneil, Fred Dillon, Channing Capuchino, Jackie Thompson, Ruth Mlotek, Harlan Baker, Jamie Parker, Richard Buchanan, Caroline Partlow, Mary Didonato, Skip Woods

**Staff:** Carl Eppich, PACTS; Jeremiah Bartlett, Mike, Bobinsky, Kathi Earley, Bill Needelman, Caitlin Cameron, and Bruce Hyman, City of Portland; Lucy Gibson, DuBois & King; John Mahoney, Ransom Consultants; Tom Farmer, T.J. DeWan & Associates; Carol Morris and Scott Hastings, Morris Communications.

Councilor Ed Suslovic

*Meeting started 4:06pm*

Carol Morris opened the meeting and introductions were done. Carol gave an update on what has happened recently. The public meeting was moved to May 8th because of conflicts on the city's schedule but it is a good thing as it gives the project a little more time to complete more modeling before the meeting. Part of this move is due to a meeting that Councilor Suslovic would like to tell you about.

Councilor Suslovic announced a meeting on April 30th that will cover in one evening the variety of projects that are currently underway in Libbytown. It will be at the Italian Heritage center. Included in it will be this study, a traffic calming study, an update on the Thompsons Point development, and an update on St. Patrick's Church.

A question was asked about whether the city is concerned about the short notice.

Councilor Suslovic responded that people should have a week's notice and they are hoping that will be enough.

Lucy Gibson took over at this point to present the four alternatives that were worked out. These alternatives were informed by the PAC's input and the input from two meetings help more recently. The first was a business meeting with local businesses from the Libbytown area which had a decent turnout and garnered some good feedback. The second was a very productive meeting MDOT about how the alternatives will effect I-295 and if anything was a no-go with them.

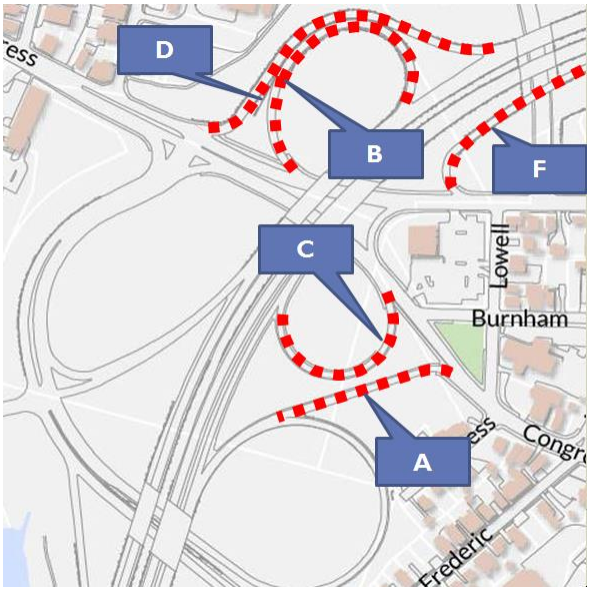



**Figure 1:** Ramp labels

The original eight alternatives were screened through traffic prediction models and the input from the meetings. MDOT was concerned about the costs of constructing new ramps so all alternatives including new ramps were removed. Ramp D (see Figure 1) was determined to have safety concerns and to be easily replaced by diverting traffic to Fore River Parkway exit so all alternatives that kept Ramp D were removed.

Lucy then reviewed the changes in travel distance and time caused by the removal of each ramp. See Table 1:

| Ramp | | Miles Existing | Miles Proposed | Min-Sec at 15 mph | Min-Sec at 25 mph |
|---|---|---|---|---|---|
| A | NB Exit to EB Congress | 0.12 | 0.74 | 2:28 | 1:29 |
| B | SB Entry from WB Park | 0.61 | 0.47 | -0:34 | -0:20 |
| C | NB Entry from EB Congress | 0.28 | 0.77 | 1:57 | 1:11 |
| D | SB Exit to WB Congress | 0.25 | 0.52 | 1:05 | 0:39 |
| F | NB Entry from Park | 0.23 | 1.2 | 3:53 | 2:20 |
| | | | | | |

**Table 1:** Travel distance and time changes due to removal of ramps.

The current four alternatives were derived after taking all of this into consideration and are based on two different ramp configurations and whether inner congress is one way or two way. They were presented as follows in Table 2:

| | Interchange Configuration | a) Park-2 way Congress 1-way | b) Park-2 way Congress 2-way |
|---|---|---|---|
| Alternative 1 | • Close 5 ramps: A,B,C,D,F<br>• Directs all interstate traffic to Fore River Parkway Interchange | • Park is major route into downtown<br>• Congress is major bicycle route | • Both routes serve traffic<br>• Park is major bicycle route<br>• Congress provides on-street parking |
| Alternative 2 | • Close 4 ramps: A,B,C,D<br>• Eastbound access to Ramp F<br>• Less traffic on Fore River Parkway Interchange | • Congress 2-way between Marston and St. John<br>• Congress provides on-street parking<br>• Park is traffic and bicycle route | • Equal emphasis for traffic, bicycles and parking on Congress and Park<br>• Larger signal at Congress/Park/I-295 NB |

**Table 2:** The four alternatives

Figures 2-5 show the components of each of the four alternatives as they were presented.

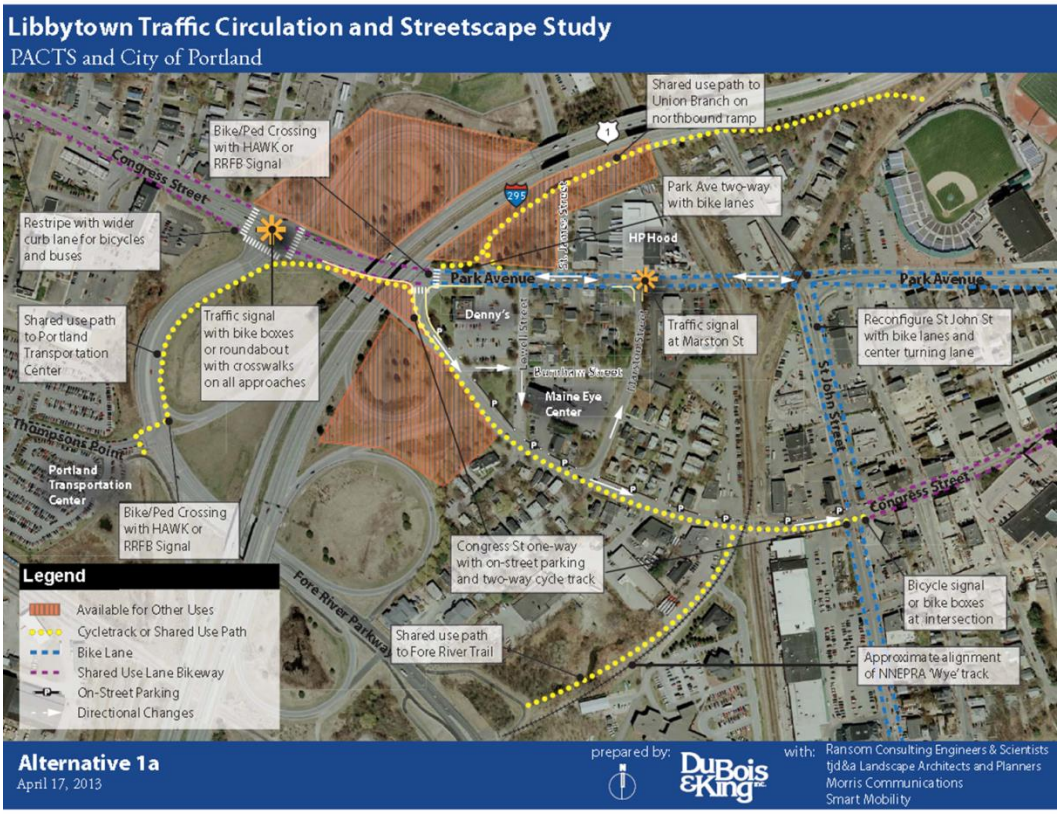



**Figure 2:** Alternative 1A

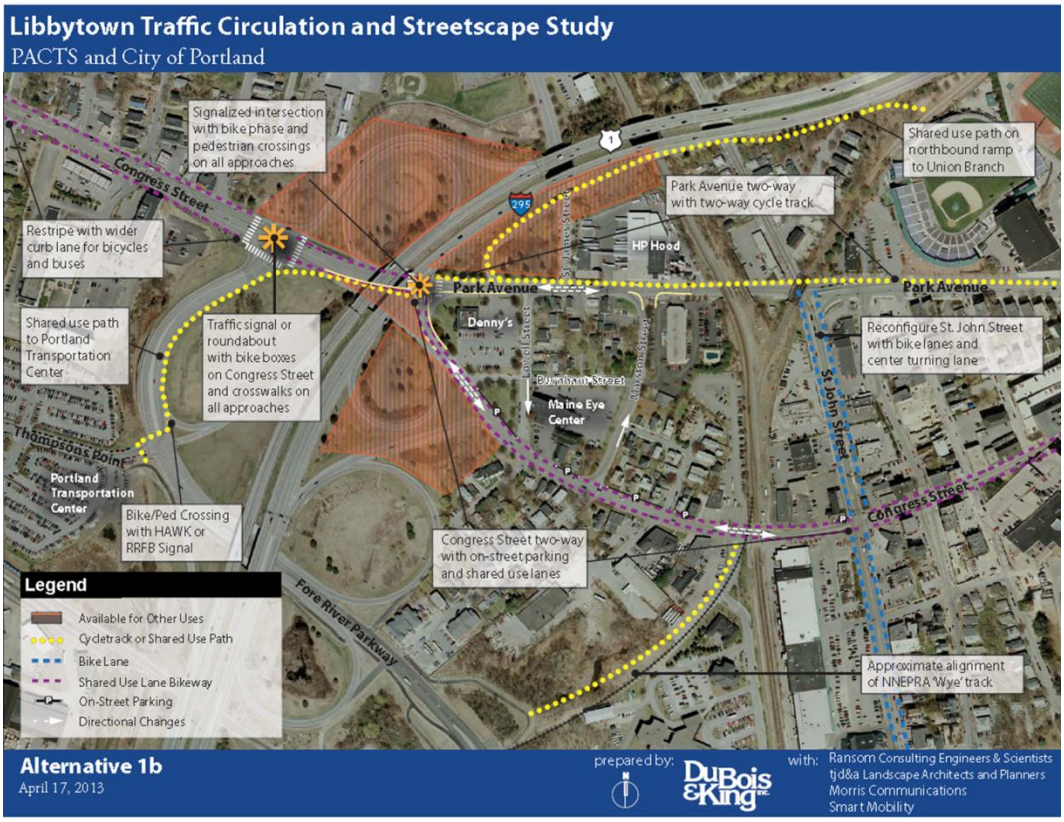



**Figure 3:** Alternative 1B

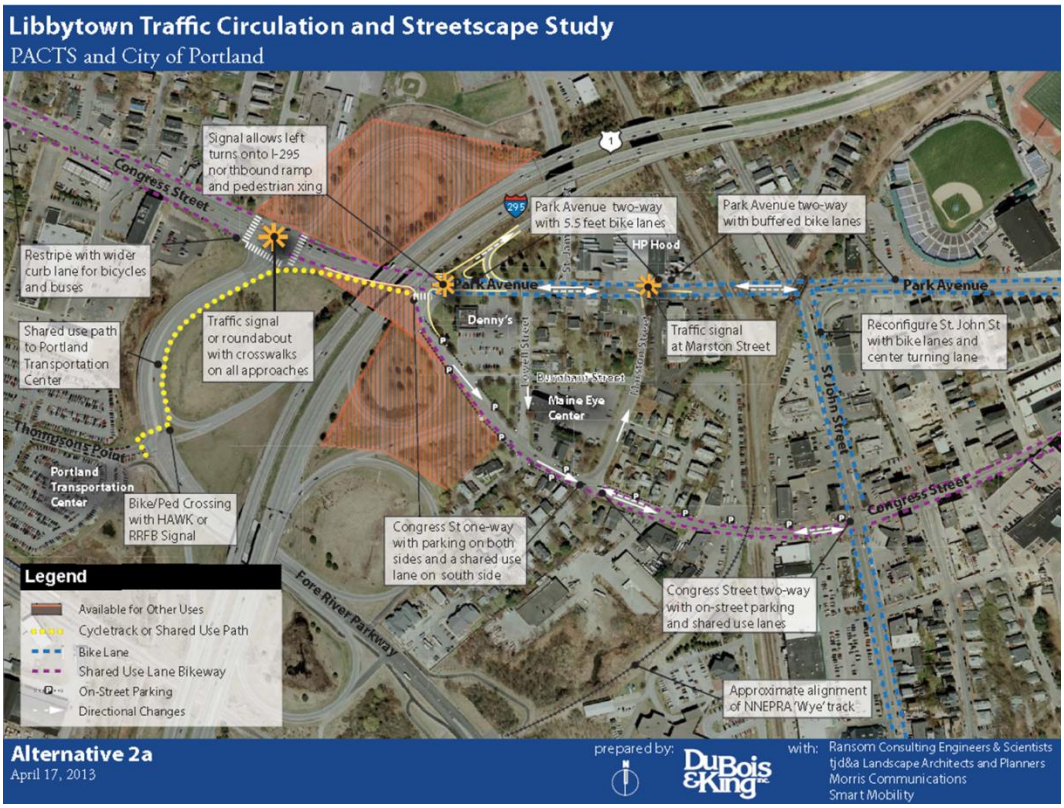



**Figure 4:** Alternative 2A

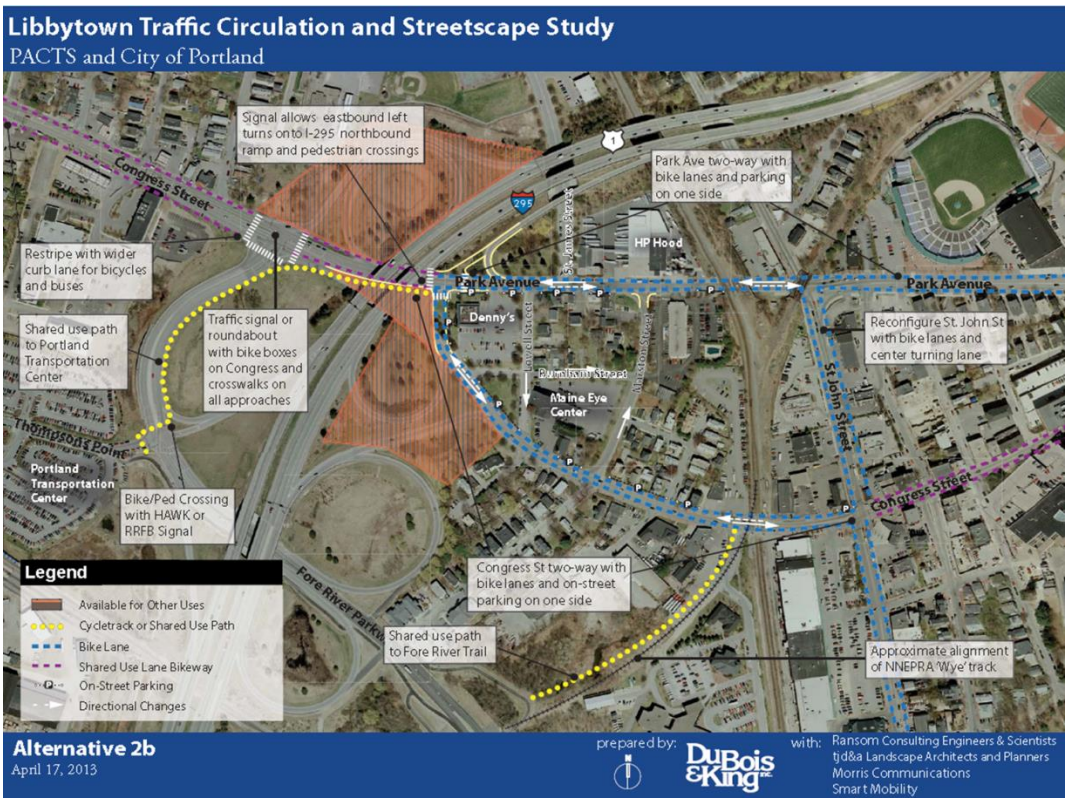



**Figure 5:** Alternative 2B

A committee member asked whether the cycle track buffer was paint or a physical barrier.

Lucy responded that it is a painted portion of the road.

A committee member asked if the buffers for the cycle tracks and for the bike lanes were required.

Lucy responded that they were not required but were recommended for safety.

A committee member asked if any of the alternatives would improve the pedestrian experience on outer Congress.

Lucy noted that it was mostly outside of the study area and a discussion ensued about the section of road. Councilor Suslovic noted the road diet down even farther out on Congress and its success. The hope has been to try and divert traffic from outer congress to the highway.

A committee member asked if the bike lanes and on street parking on inner congress (in all applicable alternatives) would just be from Lowell Road in to St. John Street or would it be from Park Ave. to St. John Street.

Lucy responded that it would be the whole length of Inner Congress, from Park Ave. to St. John Street.

Lucy presented the study teams findings on using roundabouts in the area. In terms of traffic load they were found to be able to adequately handle the projected traffic volumes for both the Congress Street / Fore River Parkway intersection and the Congress Street / Park Ave intersection (provided Park Ave and Congress Street were both two way). They would significantly increase the costs of improving the area. The Congress Street / Fore River Parkway roundabout would need to be two lanes which would be less friendly to bikes and pedestrians. If roundabouts are desirable they could be implemented as a phase two for an improvement plan and thus separate the costs slightly from the rest of the project.

A committee member asked how roundabouts would effect traffic on outer Congress Street.

Lucy responded that they would have a calming effect on the immediate area as people slow to navigate the roundabout. This would help to change the nature of traffic flow through the area.

A committee member asked if the signalized options were used would the plan be slowing traffic.

Lucy responded that yes the plans would slow traffic regardless. Lanes would be removed and narrowed which would force people to travel slower. Further the addition of on street parking and bike lanes would create more activity on the roads making it harder and less appealing to drive fast. The effects would mostly be on the intown side of I-295, with Outer Congress not being changed all that much.

There was some discussion about this and it was felt that between this and the road diet farther out on congress the overall experience of congress would be changed. By "bookending" the road with traffic calming measures it was felt the middle section would be somewhat improved as well.

There was concern about roundabouts being hard to navigate for pedestrians, particularly visually impaired pedestrians. Lucy noted that roundabouts can be made safe for pedestrians it just takes some work and some engineering.

A committee member noted that this area, with the highway exit ramps, will always be an area that has an influx of people that are not familiar with the roads. Roundabouts don't give people a chance to get their bearings and so might not be good for Libbytown.

Councilor Suslovic asked if any of the presented, signalized alternatives would not allow for roundabouts in the future if it was later determined that they would be desirable.

Lucy confirmed that yes all of the alternatives could have roundabouts as a second phase.

Bill Needleman from the City of Portland's planning department, noted that if roundabouts can be seen as a second phase that sound be mentioned in the study's final report so that the city could look at them and see what steps it could take to make that second step easier.

A committee member noted that they liked the roundabout at the Fore River Parkway intersection but wondered if it could be done as a one lane roundabout instead of a two lane. This would make it much better for bicycles.

Lucy felt that with the current traffic predictions one lane would not be sufficient to handle the traffic flows.

Lucy presented the study's findings on the impacts of the four alternates on levels of service for all modes of transportation. Levels of service are ratings from A-F that reflect how good a road or intersection is at meeting the needs of the mode of transportation in question. Tables 3-5 show the existing levels of service for Pedestrians, Bicycles and Cars and the predicted levels of service for 2015 levels of traffic with the four alternatives implemented

**Table 3:** Existing and Predicted Pedestrian Levels of Service

| | Existing | 1A | 1B | 2A | 2B |
|---|---|---|---|---|---|
| Outer Congress | E | C | C | C | C |
| Congress | E | B | C | B | C |
| Park | D | C | B | C | B |

Pedestrian levels of service primarily reflect; exposure to traffic, crosswalk frequency and the pleasantness of the environment.

**Table 4:** Existing and Predicted Bicycle Levels of Service

| | Existing | 1A | 1B | 2A | 2B |
|---|---|---|---|---|---|
| Outer Congress | F | E | E | E | E |
| Congress | F | B | C | D | C |
| Park | E | C | B | C | C |

Bicycle levels of service reflect traffic speed and amount of separation between bikes and vehicular traffic.

**Table 5:** Existing and Predicted Vehicular Levels of Service

| | Existing | 1A | 1B | 2A | 2B |
|---|---|---|---|---|---|
| FRP/Thompsons Point | B | D | D | C | C |
| Congress/FRP | C | C | C | C | C |
| Congress/ St John | A | B | B | B | B |
| Park/St John | A | C | B | C | B |

Vehicular levels of service at intersections reflect time required to travel through the intersection at peak traffic times.

Lucy noted that bicycle and pedestrian levels of service went up across the board in all alternatives, though Outer Congress only sees a little improvement for bicycles. Vehicular levels of service went down in all cases but are still at or above MDOT's target level of service of "D". A vehicular level of service of "A", while technically best for vehicles, is typically overdesigned and not the best use of space or resources.

A committee member asked if the traffic projections are taking into account recent trends shoeing the decline of vehicular traffic.

Lucy and Carl Eppich, from PACTS, explained that the traffic projects are mostly flat growth with the addition of the Thompsons point project. They are likely conservative in that they are predicting slightly more traffic then might happen. Bill Needleman pointed out that the location of this study area means that the trends leading to lower overall vehicular use could actually keep traffic in this area comparatively high as more of downtown Portland experiences infill development.

Lucy summarized the level of service findings saying that the bicycle and pedestrian improvements are largely due to design features that can be mixed and matched between alternatives. There was however a tradeoff between on street parking and bicycle level of service as less parking results in more space for bicycles.

A question was asked why there was such an emphasis on creating on street parking and the issue was discussed. It was felt on street parking would act as a traffic calming measure and support future retail and residential development. At the business meeting the team had heard from representatives of the Maine Eye Center that the current parking in the area is barely sufficient for current needs.

A committee member voiced the opinion that while increased parking is important too much would be a bad thing as we should be encouraging people to walk and bike. To that end they felt

that angled parking would be too much and take up a lot of space. When the spaces were not in use the road would seem very wide and the traffic calming effect would be lost. Parallel parking is better and does allow for some parking to support local businesses.

Another committee member agrees and adds that parallel parking provides a both a buffer between traffic and pedestrians and a buffer between bicycles and the road side debris field.

Lucy summed up her presentation and added that all the alternatives fit within current roads with possible small exceptions at the Fore River parkway / Congress Street intersection in the two "1" alternatives.

At this point Lucy opened up the floor for general comment.

A number of people voiced that they did not like the angled parking, particularly if it was back in angled parking.

A committee member voiced that they were against Congress being two way part of the way and that it should be entirely two way if it is at all. Similarly they felt that no portion of Park Ave should have a median. They also voiced skepticism about the two way cycle tracks and were concerned about how they would work.

Another person asked if making Park Ave. two way would adversely affect Hood and that if it did then it should not be done as Hood is a long standing and respected business in the area.

Skip Woods, a representative of Hood, responded that he appreciated their concern. Hood was working with the city and the study team on making sure that they could live with whatever was done. They are looking at changing some curb cuts to make turning out of the plant easier. He also mentioned that they liked the idea of a traffic light at Marston and Park Ave.

Councilor Suslovic noted that to him the biggest difference between the "1" and "2" alternatives was the "2" alternatives kept the northbound on ramp from Park Ave. He had originally thought that we should get rid of all the unnecessary ramps but after what he had heard that night felt it might be better to keep that ramp. He felt that there was little to gain in removing it and possibly some negative consequences. He also felt that changing Inner Congress to a two way road for its whole length would best serve the neighborhood.

Another committee member mentioned that the point about two way streets being better for busses by making routes into and out of the city consistent really struck home with them. That point tipped the scales in favor of a two way Inner Congress.

A committee member countered that they felt a one way Inner Congress would be more suitable for the primarily residential neighborhood. It would be safer and slower. They also felt that a two congress would run into issues with traffic backing up from the rail crossing in to the St. John Street intersection and beyond.

A committee member asked if MDOT was on board with these proposals.

Lucy and Jeremiah Bartlett from the City of Portland's Public Works department explained that while nothing was guaranteed at this point they had had some very productive meetings with MDOT. They felt that as long as the changes showed significant benefits in terms of safety and were seen to be able to handle the projected traffic flows MDOT would be willing to entertain the changes.

Another committee member noted some skepticism about the two way cycle tracks. They were uncertain how people traveling on the opposing side of the road would merge back into or out of traffic at the ends of the track. They also felt strongly that both Park Ave. and Inner Congress should be two way streets.

A committee member voiced the opinion that they liked both Park Ave. and Inner Congress as two way streets. They did not like the idea of keeping the Northbound on ramp for Park Ave. They felt that it was unnecessary with Park Ave. being a two way road and that it is bad for pedestrians.

It was asked if Lowell and Marston streets would be changed from one way to two way in any of the alternatives.

Lucy responded that they are not proposing any changes to them but that it could be done easily if people wanted to in the future.

A committee member noted that they liked alternative 1A but would like to see parking on both sides of Inner Congress instead of just on one. They also liked the two way cycle tracks having used them in other places. Cycle tracks would be particularly good on Inner Congress if it were one way to allow counter flow bike traffic. They felt that keeping the Ramp F would be unnecessary if Congress was two way.

It was pointed out that all the alternatives, including those that made Inner Congress two way, would be trying to make Inner Congress a neighborhood street and deemphasize it to through traffic.

A committee member agreed that two way cycle tracks were a good thing and pointed out that the Eastern Prom trail was a local example of one. If one was created on Park Ave they would like to see it extend to Deering Oaks Park. They also expressed concern that none of the "2" alternatives had separated bike facilities on the east side of the highway, something more substantial than a bike lane would be nice. They were also skeptical about keeping ramp F and felt that its maintenance costs outweighed any benefits it brought. Finally they said they would like to see sidewalks on both sides of the Fore River Parkway.

Lucy noted that Ramp F would see more use with Park being two way so the benefits might be there to keep it. She also agreed that sidewalks should be on both sides of the Fore River Parkway.

A committee member thanked the study team for their hard work.

Lucy wrapped up the meeting, reminding everyone about the public meeting and asking the committee members to pass on word of it to their friends and neighbors. After the meeting the study team will refine the alternatives and try and reduce them to one recommend approach. A final presentation will be given in late June. The next advisory committee meeting will be held in early June, possibly on the 10th.

Lucy thanked everyone for their work and the meeting was closed.

# Libbytown Traffic and Circulation Study
# Public Advisory Committee Meeting

**June, 10th 2013, 4-5:30 pm**
**Clarion Hotel**

**In attendance:**
**Committee Members:** Zachary Barowitz, Christian MilNeil, Bike/Ped Committee; Channing Capuchino, St. John Valley Neighborhood representative; Jackie Thompson, neighborhood; Harlan Baker, neighborhood; Skip Woods, Hood; Christopher Pare, Maine Medical Center, Maria MacDougal, neighborhood.

**Staff:** Carl Eppich, PACTS; Jeremiah Bartlett, Kathi Earley, Bill Needelman, Alex Jeagerman, Caitlin Cameron, and Bruce Hyman, City of Portland; Lucy Gibson, DuBois & King; John Mahoney, Ransom Consultants; Tom Farmer, T.J. DeWan & Associates; Carol Morris and Scott Hastings, Morris Communications.

*Meeting started 4:10 pm*

Carol Morris opened the meeting and introductions were made all around.

Lucy Gibson reviewed the agenda for the meeting and presented the study team's recommendation. The recommendations were based on input from the PAC and from the first public meeting, as well as input from meetings the team had with MaineDOT and Portland police, fire, and emergency responder representatives, along with other study data.

The recommendations were to remove ramps A, B, C, and D but to keep ramp F. Park Ave and Congress Street were recommended to become two-way streets with bike lanes. Congress Street would have on-street parking but Park Ave would not. (See Figure 1 on the next page)

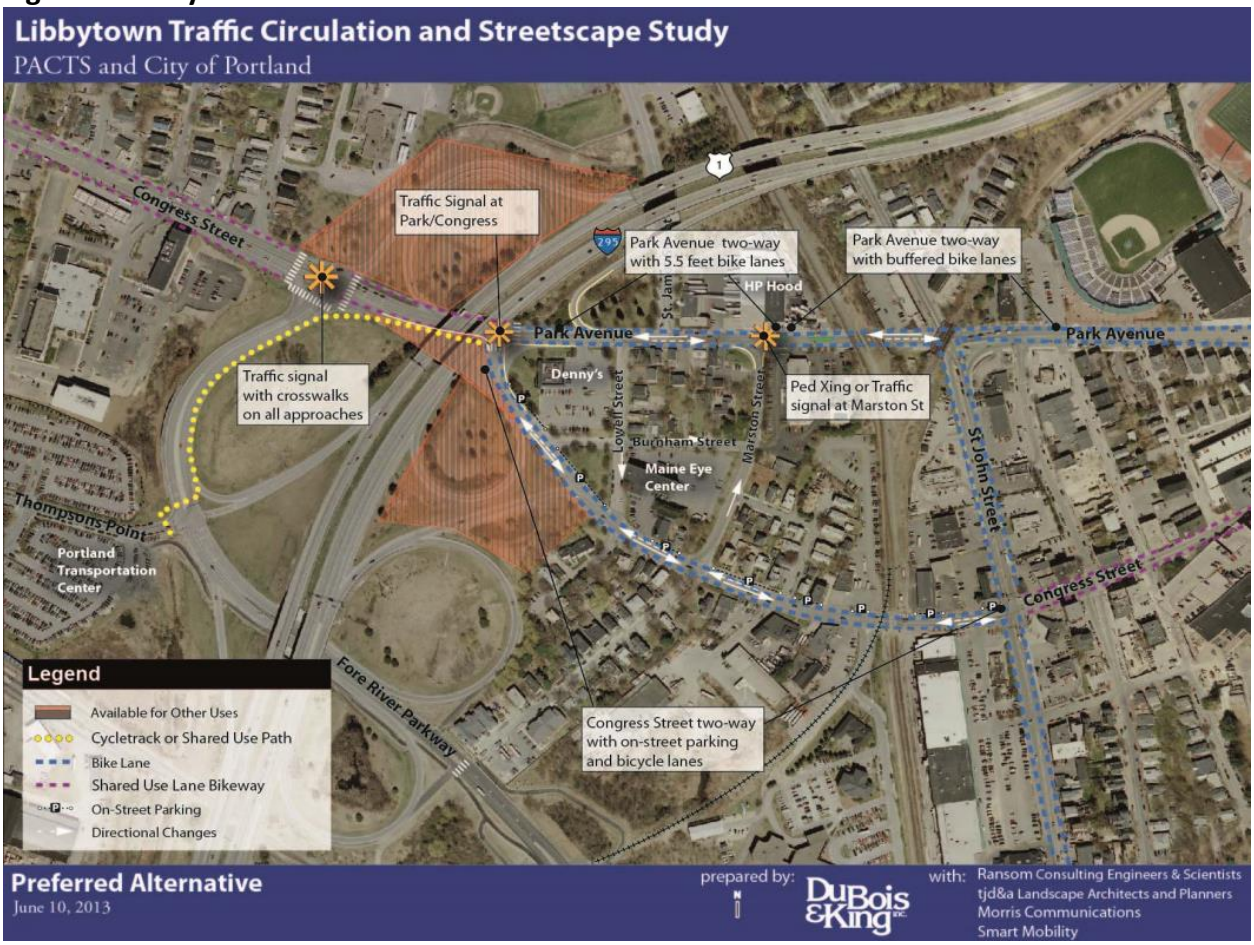
The rationale behind the removal of the ramps was primarily that all four have high crash locations either where they meet the highway or where they meet surface streets. In some cases high crash locations exist on both ends. Traffic from all of them can be accommodated existing routes. Ramp F was kept because removing it would divert significant traffic to the Forest Ave interchange, which is already heavily used and has its own high crash locations. Further there was strong public support for keeping it.

Park was recommended to become two way because this would provide a route into the city that did not have an at-grade rail crossing. Also two-way streets are better for transit and allow for bike lanes in both directions. Finally the idea also had good public support.

Congress St. was recommended to become two way because the closing of the ramps diverts traffic to St. John St. and a one-way Congress would create added congestion. A two-way road

would also improve the situation for transit and bikes. Public opinion on this option was mixed with a similar numbers of people in favor of a one way and two way Congress St., but the data favors a two-way option.

**Figure 1: Study Team Recommendations**




*Above is a map of all the study team's recommendations.*

A committee member noted that she is the representative of the St. John Valley neighborhood organization, which includes the properties that front on the section of Congress St. that is currently one way. She noted that this organization has shown strong opposition to making this stretch of Congress two way.

Another committee member asked why the neighborhood organization was opposed to this.

The response was that the neighborhood wants less traffic on this section of Congress St. Their opinion was that if it becomes a two-way road, they would lose what they gain by closing the ramps and still have a high traffic, neighborhood-dividing road. Right now they feel that in the evening when traffic is primarily headed out of town, they get a break in traffic.

Lucy responded that they had tried very hard to make a one-way Congress option work, without success. She noted that with proper design elements, a two-way Congress St. could still be a neighborhood street and that she hoped people would keep an open mind. She said that traffic would be slower and it would be easier to cross, noting that she would be showing more detail on that later in the meeting.

Jeremiah Bartlett added that a two-way Congress St. fits in better with the city's larger stated goal of increased permeability. The city is working on converting a number of one-way streets throughout the city to two-way streets. The city council has been very much in favor of this. This city is also committed to bike and pedestrian friendliness and if traffic issues are a problem with a two-way Congress, they will work hard to find mitigation techniques.

A participant also mentioned that they were concerned about traffic backing up from the rail crossing into town.

There was some discussion about this and Lucy said they she would look into this in more detail with the traffic model.

Lucy presented a map of predicted traffic volume changes (Figure 2).

**Figure 2: Predicted Traffic Volume Changes**

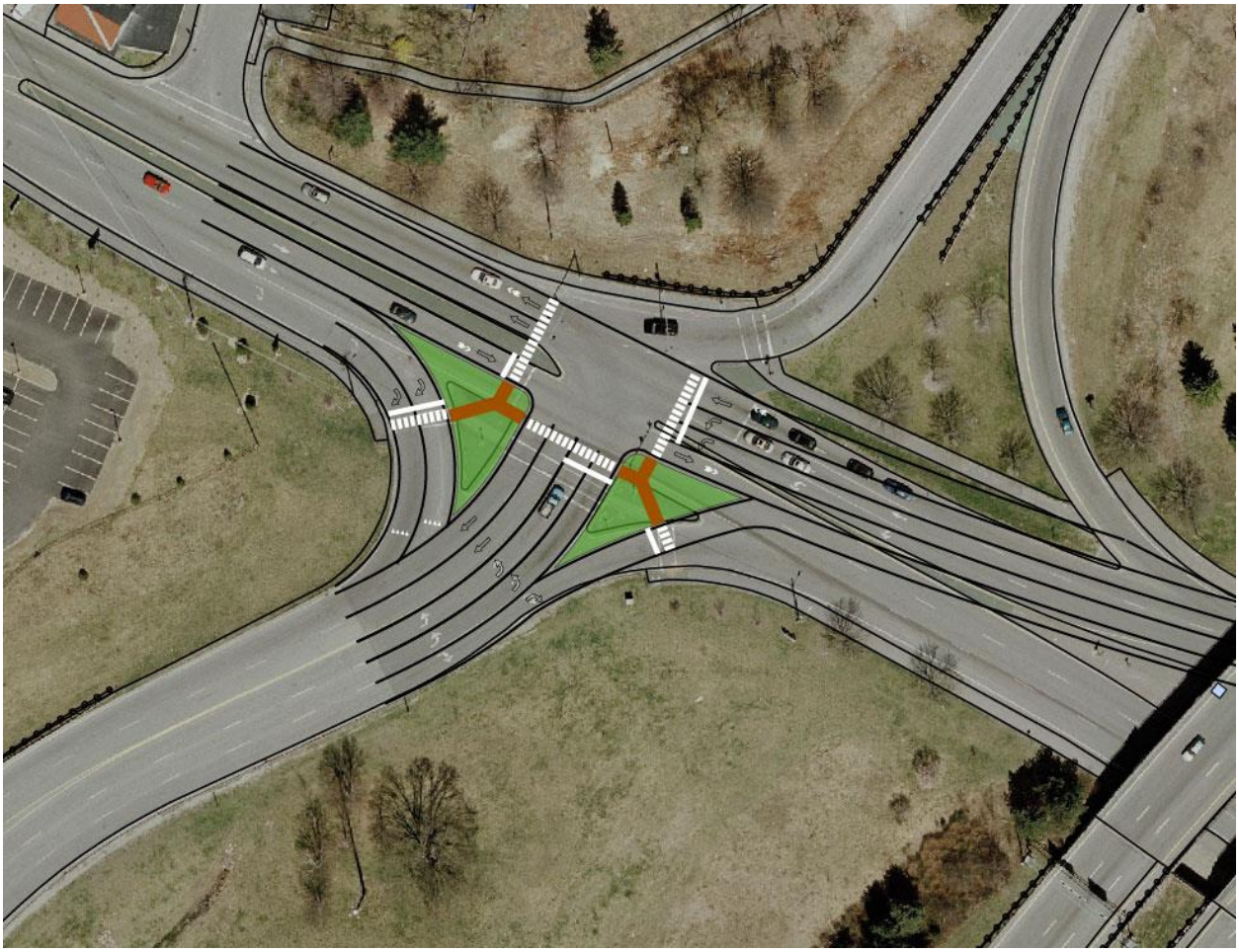

Lucy pointed out a decrease in traffic on I-295 that was due to short, in-town trips using surface streets instead of the highway, which is generally a desirable thing. This assumption is supported by an increase in traffic on Park Ave from St. John St. to Preble St. There is actually a reduction in overall traffic on Park and Congress from that intersection to St. John St., with an overall reduction of 20%. The model shows 40% of traffic using Congress St. and 60% using Park Ave.

A committee member felt that this was misleading and that overall a two-way Congress would have more traffic because of the traffic running all day rather than primarily in the morning. They also felt that traffic from downtown going to Outer Congress would use Congress St. rather than Park Ave.

This prompted some discussion over whether traffic would use Park Ave. or not.

Lucy then began presenting the close ups of each major intersection, showing recommendations for how they could be configured.

**Figure 3: Intersection of Congress St. and the Fore River Parkway**



There was some discussion about the ramps and orienting people to which ones are pictured here.

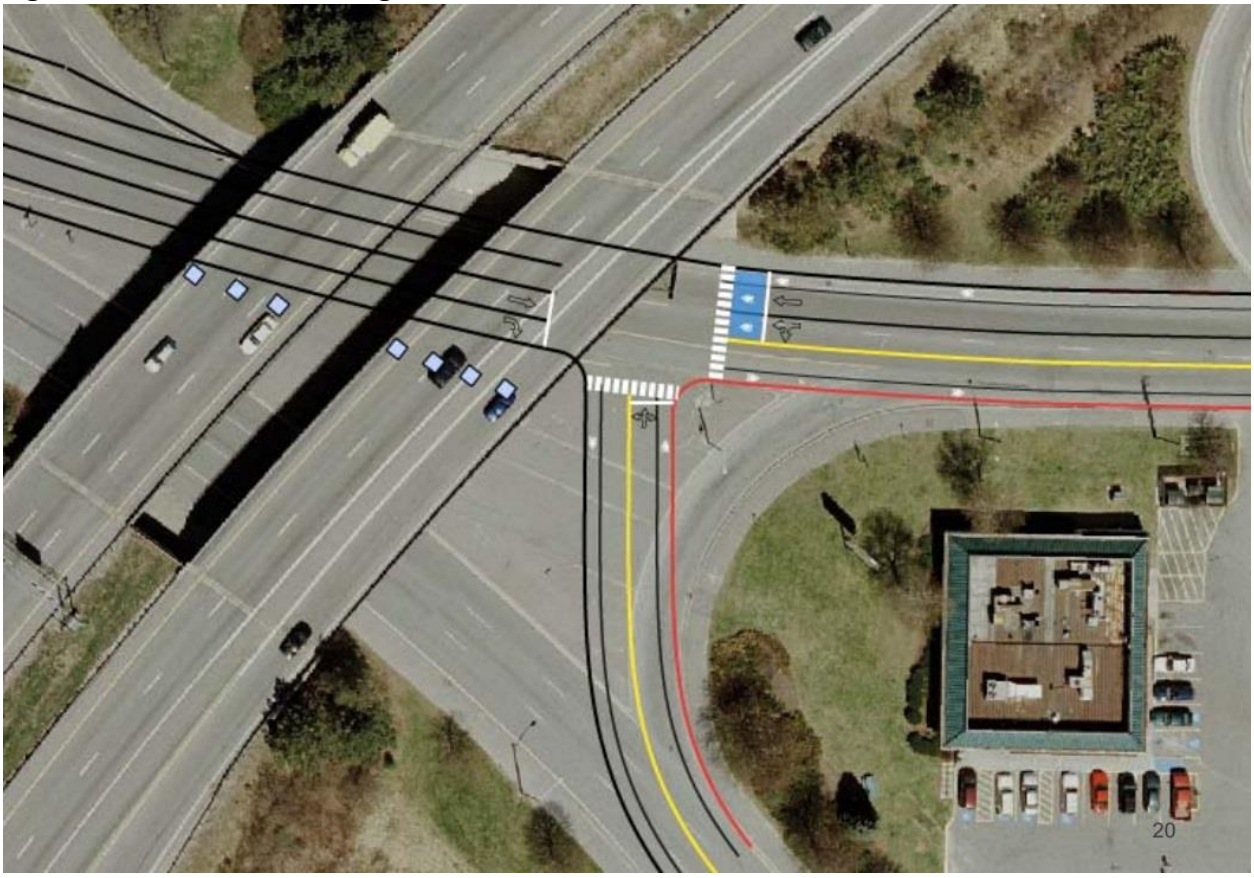
The representative from Hood voiced the opinion that closing these two ramps was a good thing.

Carl Eppich asked if the right turn off Congress St onto the Fore River Parkway would be signalized.

Lucy said that it would have to be to allow the two left turn lanes from Congress to operate smoothly.

There was a discussion about sidewalks on the Fore River Parkway. The city is already planning on building on the Eastern side. People felt that having one on the western side would be desirable and make sense to connect to the trails on that side of the road. Lucy noted it would be expensive due to a major retaining wall along part of that section. It was noted that Sewall St. provides pedestrian access to the transportation center.

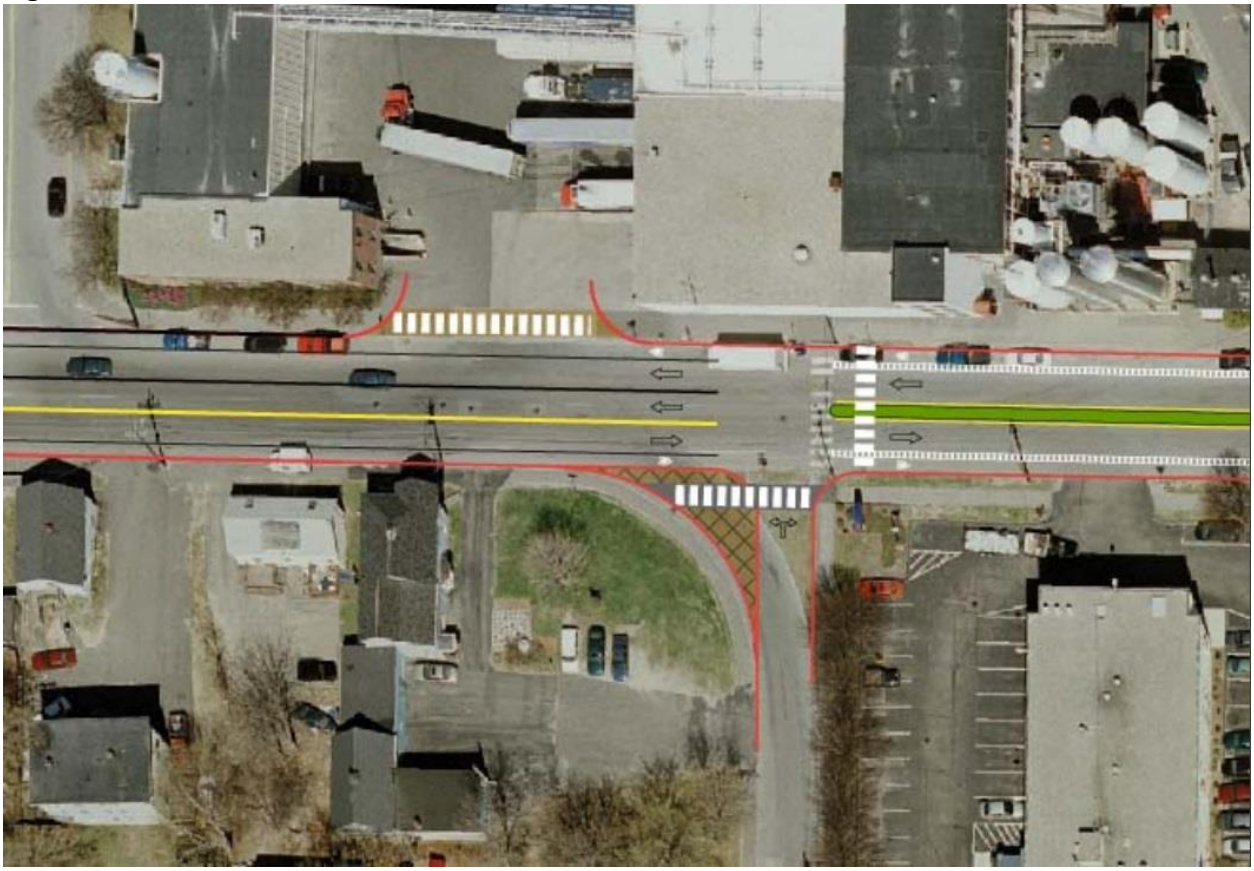
**Figure 4: Intersection of Congress St. and Park Ave**




Lucy pointed out that this configuration is very tight to the north of the piers, but that the road as shown should fit. Design refinement will be needed.

There was some discussion about the layout of the road and Lucy clarified that the large triangular space south of the new lanes would all be opened up for new uses.

**Figure 5: Intersection of Park Ave and Marston St.**



Lucy pointed out that Marston St. is one way in this recommendation and would allow both left and right turns out onto Park Ave. No traffic signal is shown, but if traffic volumes warrant it the city could pursue one. The curb to the left of Marston St. would be mountable to make sure that Hood trucks can make it from Marston St. into Hood's lot.

The Hood representative mentioned that people already take left turns onto Marston going the wrong way, even with the current alignment of the road. If the road were T'd up, he believes that problem – a serious one - would increase.

There was some discussion about how a separate bike connection study had identified Marston St. (if made two way) as a bike connection through the area. It was determined that this study should address either making Marston two way or identifying a different bike route.

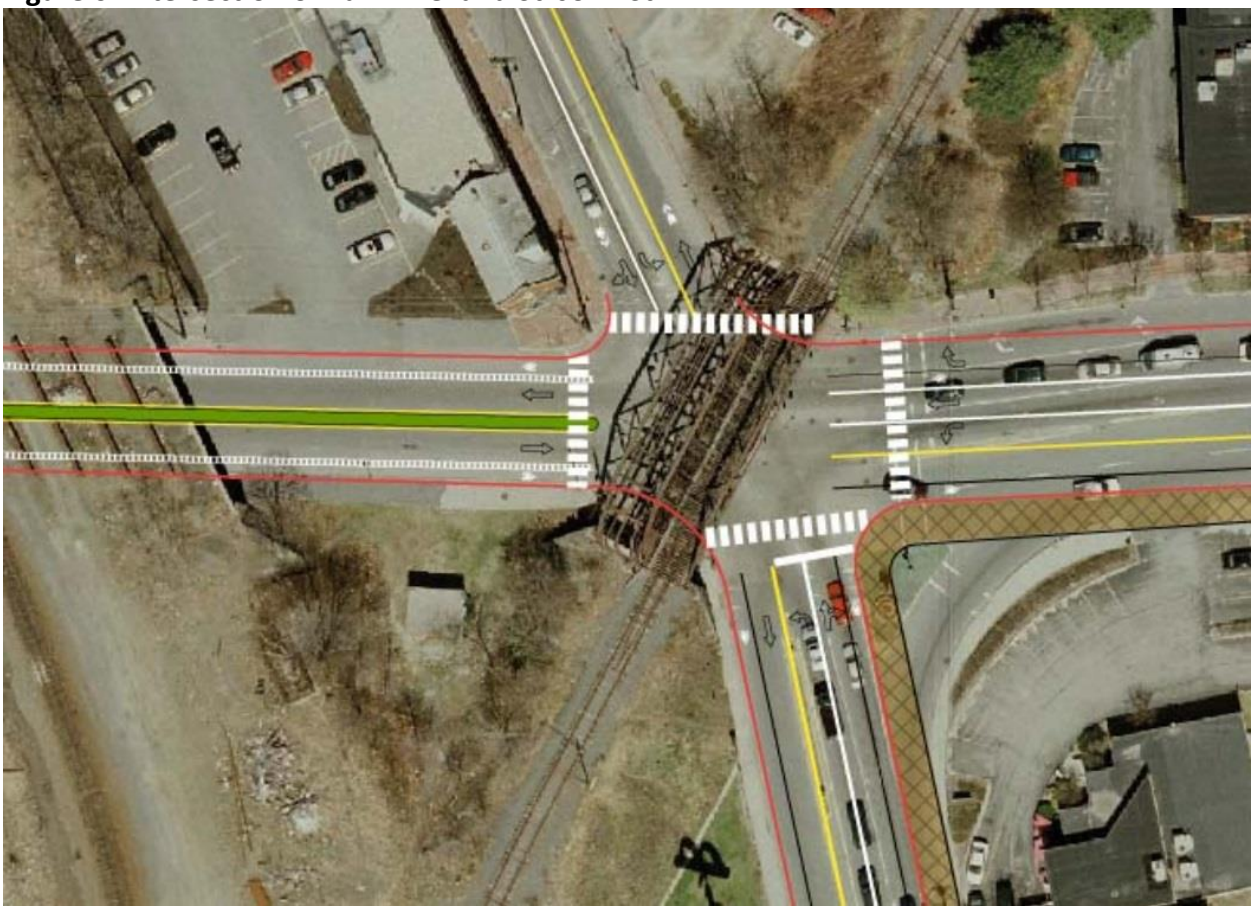
It was pointed out that with the creation of on-street parking on Congress St., the need for parking on Marston St. would be lessened and so perhaps it could be made two way. Lucy agreed to look into this and will be tabulating the parking gained on Congress St and lost on Marston St.

One committee member felt that it would not be worth the money to change Marston St. to two way.

The Hood representative countered that making Park Ave. two way and leaving Marston St. one way a dangerous situation is created re-emphasized that it should be made two way to anticipate this.

Lucy agreed and said they would look into it and based on the result, add it to the recommendations. She also noted that a two-way Marston St would make it more likely that a traffic signal at Park Ave. and Marston St. would be necessary.

**Figure 6: Intersection of Park Ave. and St. John St.**



Lucy noted that a project is already underway to remove the protected right turn lane at this intersection as it is a high crash location.

Caitlin Cameron asked if there was space in the intersection as shown for the Bus number 5 bus to stop there like it currently does going outbound.

Lucy responded that they had not yet specifically modeled it, but there is a lot of available pavement there so it shouldn't be a problem. She also mentioned that they would be talking with METRO about how the two-way streets would affect bus routing.

**Figure 7: Intersection of Congress St. and Marston St.**

A committee member pointed out that people crossing the street would have to worry about traffic coming from both directions.

Lucy replied that while that was true, they were also significantly reducing the distance the pedestrian would have to cross so that makes it safer.

A committee member noted that this section of Congress St. curves significantly and people accelerate from the ramps. Having a traffic signal here, even a pedestrian signal, would help remind them that things are happening here.

Another committee member noted that cars do not stop for the existing pedestrian flasher.

Alex Jeagerman pointed out that the plan as presented was to remove the ramps and that that alone should help to slow traffic.

Bill Needleman agreed and felt that the removing the direct highway access from the road would do a lot toward making it feel more like a local street.

There was some discussion at this point of exactly what part of the road has the worst speed problem and the reasons that people speed in the area.

Alex pointed out that Congress would be T'd up at its intersection with Park Ave. This would make people have to think about staying on Congress St. and make them slow down to do so.

A committee member noted that they would like to see a signal that stopped traffic on Congress St. at Marston St., even if it was just a pedestrian one.

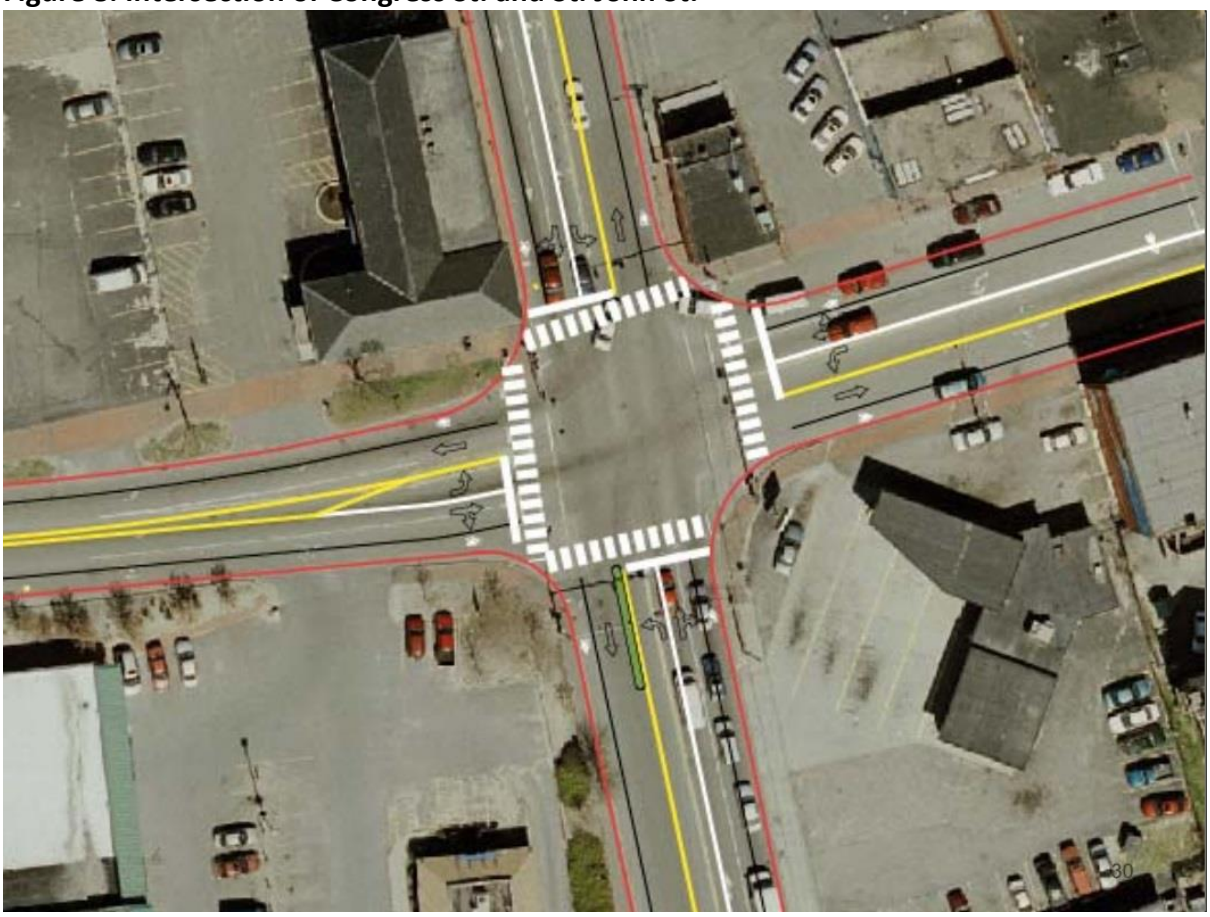
Lucy responded that a traffic signal is possible, especially if Marston is two-way. It was noted, however, that MaineDOT does not allow pedestrian-activated red lights.

A committee member asked if the on-street parking would extend to be in front of the triangle of city-owned open space near Denny's.

Lucy responded that there could definitely be parking there if the city wanted there to be.

At this point there was some discussion about how some people would like to see a playground there, and questions about how this could happen. It was suggested that private funding would be necessary, but sponsors might help out.

**Figure 8: Intersection of Congress St. and St. John St.**



Lucy pointed out that the on-street parking on Congress St. would stop between the railroad tracks and St. John St. Also the existing median in Congress St. on the West side of the intersection would be removed.

It was pointed out that there is a separate streetscape improvement project planned for St. John St., with construction starting this year

At this point Lucy presented the team's recommended implementation strategy. The first step would be making Park Ave. a two-way street. It could be done without a new signal at its intersection with Congress St. and does not rely on the removal of the ramps. The next step would be working with MaineDOT to define the process and ultimately close the four highway ramps. MaineDOT seems to be open to this conversation with particular interest in improving the safety of the interchange.

A representative of the emergency services personal in the city noted that while they are supportive of the whole plan, at the point where ramps start being closed they would need to do serious outreach to all the ambulance drivers in region. Many of them use ramp A currently and would need to be made aware of new routes. He envisioned that most would go up the newly two-way Park Ave, thus avoiding the at-grade rail crossing.

Lucy continued, saying that the third step would be making Congress a two-way street. This can only be done after the removal of the ramps. Following this, streetscape improvements can be considered, followed by looking into new uses for the land freed up by the removal of ramps. Also at this point, the city can look into whether they would rather have roundabouts at the Congress St/Park Ave and Congress/Fore River Parkway intersections.

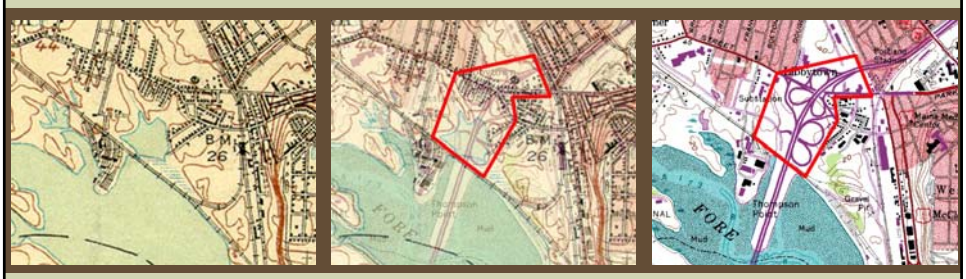
A committee member asked that lighting under the various bridges and overpasses be a priority.

Alex agreed that it definitely is a priority.

Lucy reviewed the next steps. A public meeting is taking place the same night, and a meeting with the city's Transportation, Sustainability, and Energy committee the next week. She said that a final report would be released in two to three months.

*The meeting closed at 5:35 pm.*

# Libbytown Traffic Circulation and Streetscape Study



Public Meeting
May 8, 2013

1

## Project Team

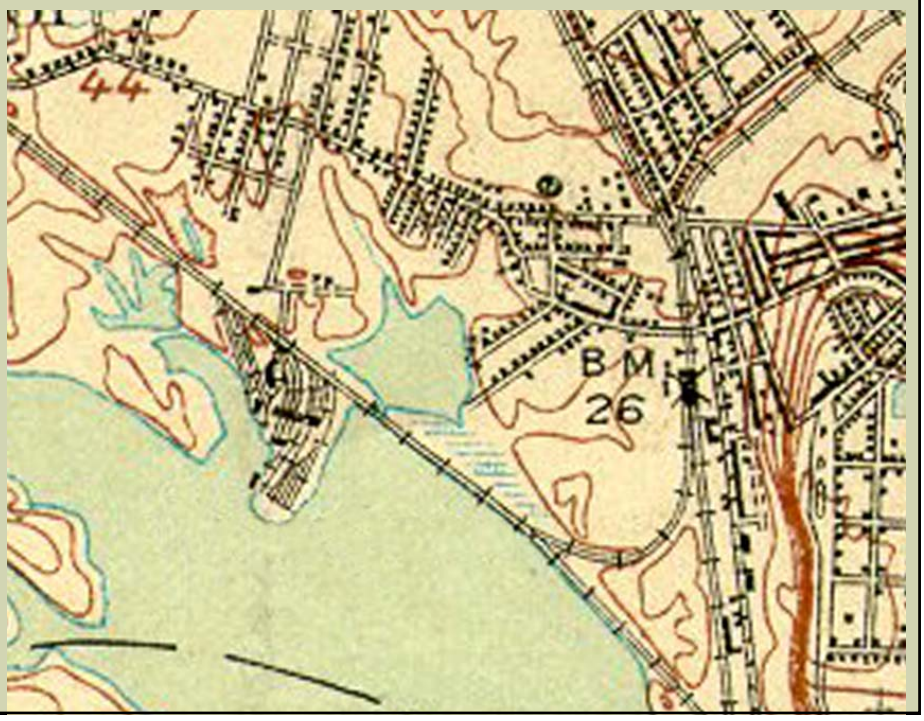
- City of Portland – Department of Public Services
- PACTS – Portland Regional Planning Organization
- Consultants
  - DuBois & King
  - Ransom Consulting
  - TJD&A
  - Morris Communications

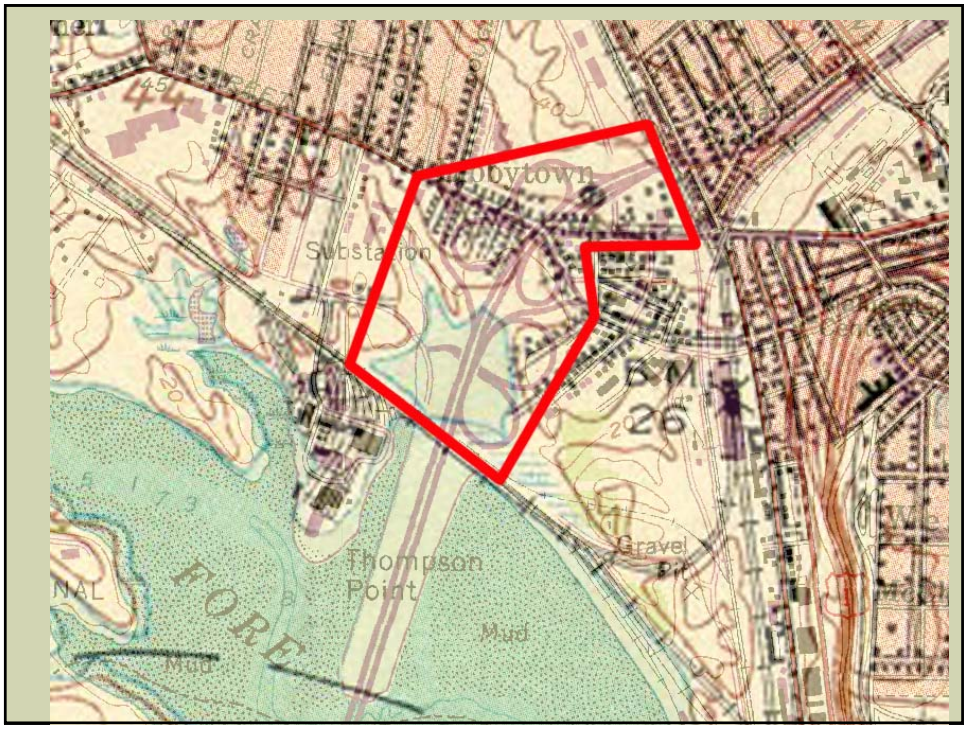
2

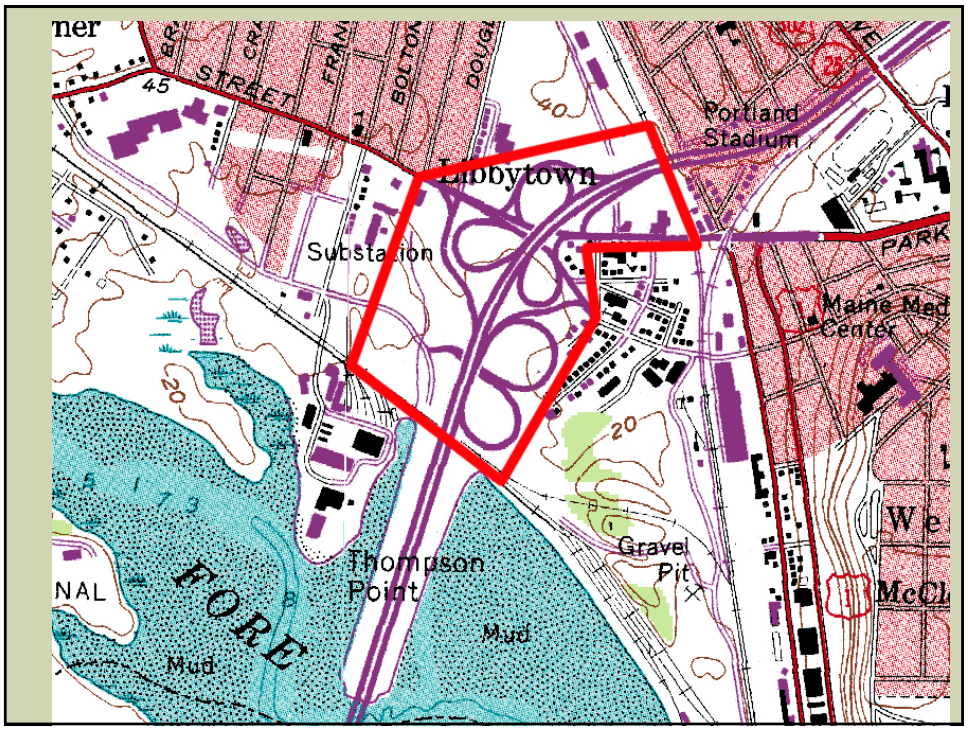
# Project Schedule

- PAC Meetings
  - November: Introductory
  - January: Alternatives Brainstorm
  - April-May: Evaluate Alternatives
  - June: Present Preferred Alternative
- Complete by June 2013 due to funding constraints

3




Substation
BM
26
Thompson
Point
Gravel
Pit
Mud
Mud
FORE


STREET
45
40
Portland
Stadium
Substation
PARK
Maine Med
Center
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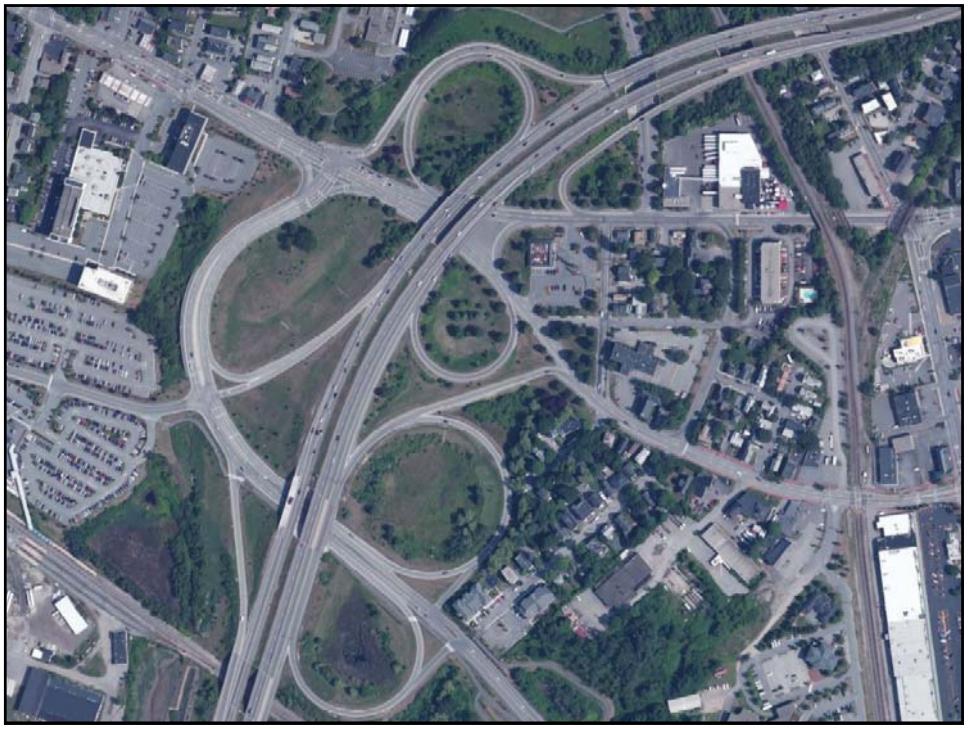
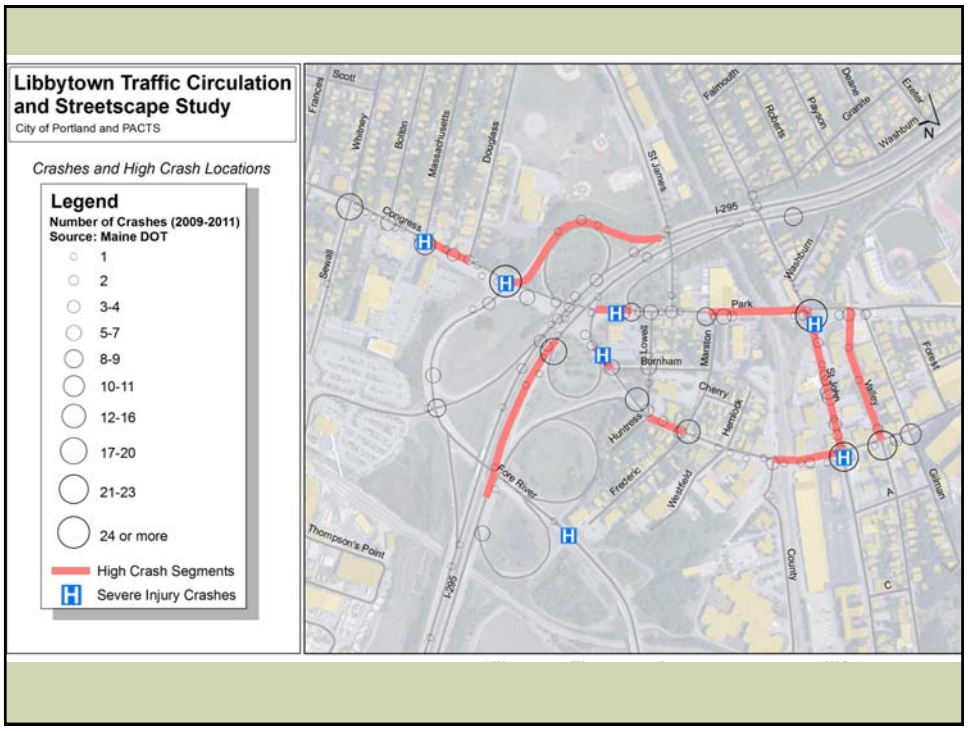
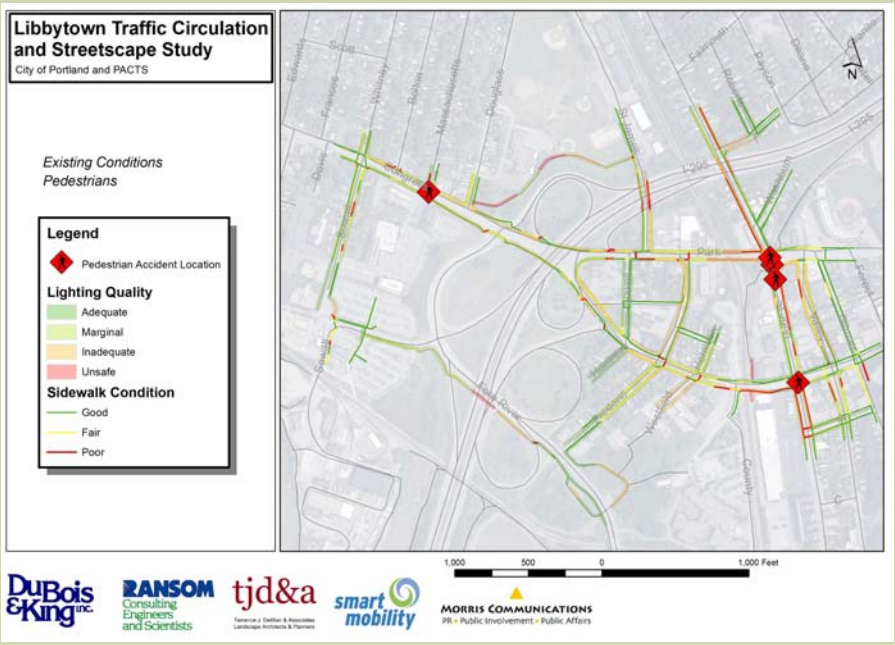
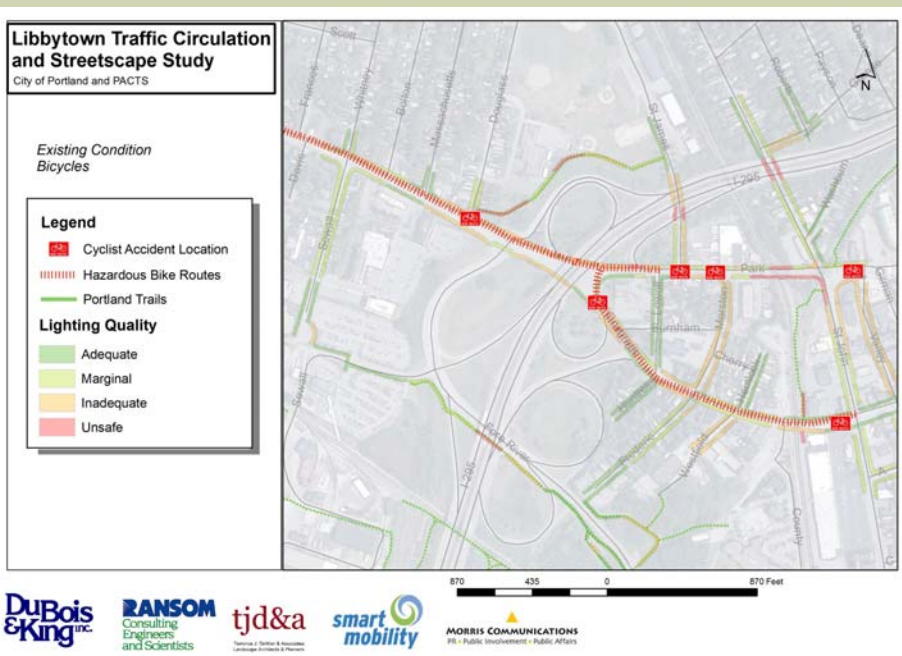
Thompson
Point
Gravel
Pit
Mud
Mud
FORE




Libbytown Traffic Circulation and Streetscape Study
City of Portland and PACTS
Crashes and High Crash Locations
Legend
Number of Crashes (2009-2011)
Source: Maine DOT
1
2
3-4
5-7
8-9
10-11
12-16
17-20
21-23
24 or more
High Crash Segments
Severe Injury Crashes
Scott
Francis
Whitney
Bolton
Massachusetts
Douglas
St James
Falmouth
Roberts
Payson
Deake Granite
Exeter
Washburn
N
Congress
I-295
Sewall
Park
Lowell
Bonham
Marston
Cherry
Hemlock
Huntress
St John
Valley
Forest
Fore River
Frederic
Westfield
Thompson's Point
County
Gilman


Libbytown Traffic Circulation and Streetscape Study
City of Portland and PACTS
Existing Conditions
Pedestrians
Legend
Pedestrian Accident Location
Lighting Quality
Adequate
Marginal
Inadequate
Unsafe
Sidewalk Condition
Good
Fair
Poor
1,000 500 0 1,000 Feet
DuBois & King inc.
RANSOM Consulting Engineers and Scientists
tjd&a
smart mobility
MORRIS COMMUNICATIONS
PR • Public Involvement • Public Affairs


Libbytown Traffic Circulation and Streetscape Study
City of Portland and PACTS
Existing Condition
Bicycles
Legend
Cyclist Accident Location
Hazardous Bike Routes
Portland Trails
Lighting Quality
Adequate
Marginal
Inadequate
Unsafe
870 435 0 870 Feet
DuBois & King inc.
RANSOM Consulting Engineers and Scientists
tjd&a
smart mobility
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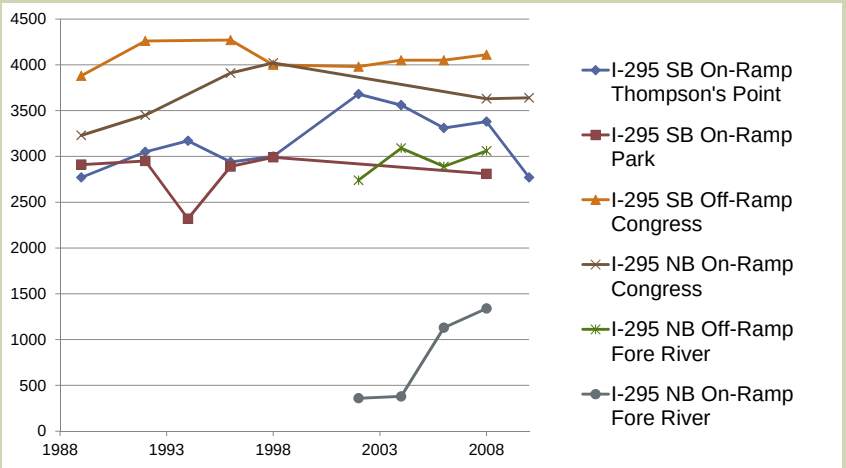
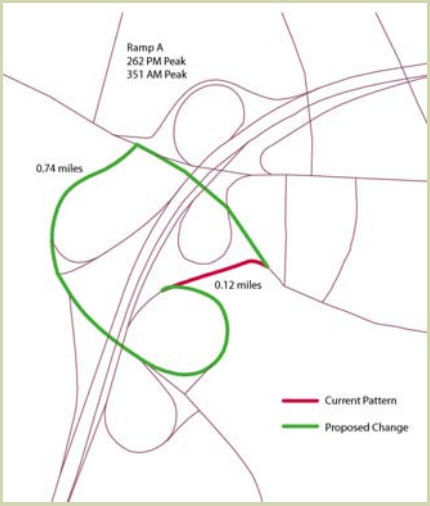
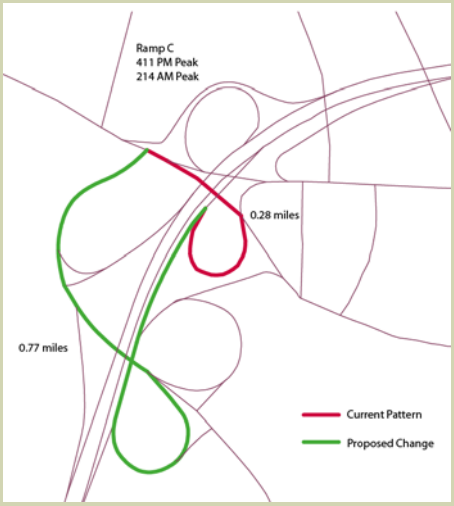
# Consider Changes in Traffic Circulation


# Consider Recent Traffic Trends




## Traffic Diversion from Ramp Closures

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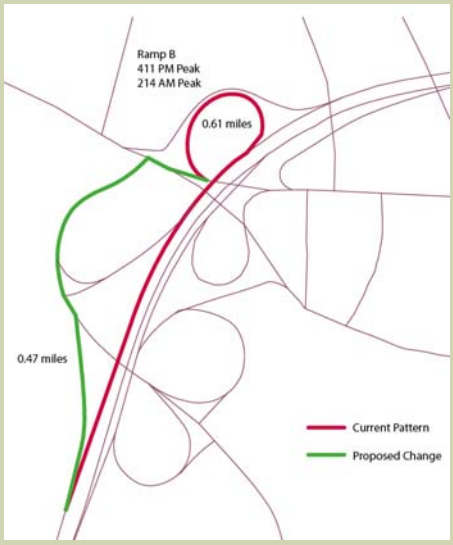
16

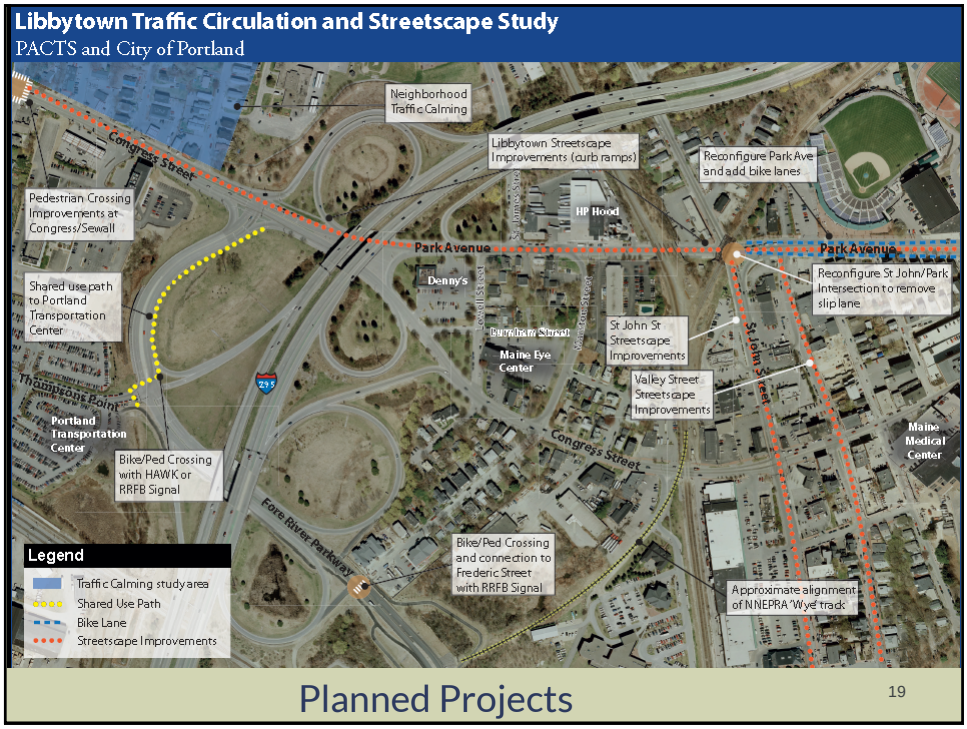
# Traffic Diversion from Ramp Closures





# Traffic Diversion from Ramp Closures


18



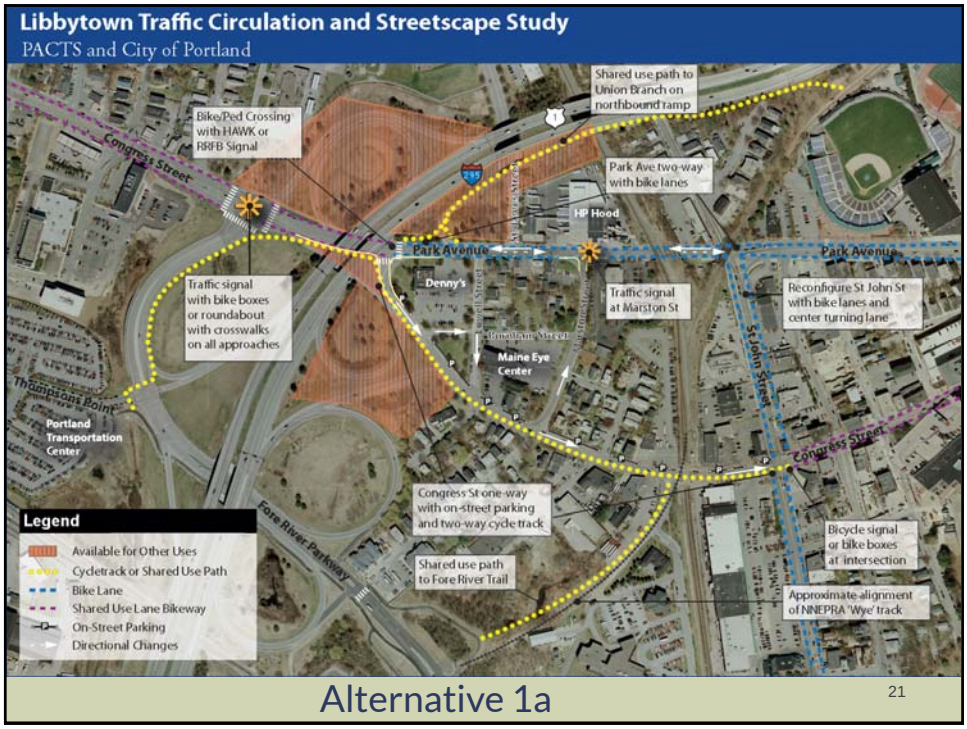

Planned Projects

19

# Alternatives

| | Interchange Configuration | a) Park-2 way Congress 1-way | b) Park-2 way Congress 2-way |
|---|---|---|---|
| Alternative 1 | • Close 5 ramps: A,B,C,D,F<br>• Directs all interstate traffic to Fore River Parkway Interchange | • Park is major route into downtown<br>• Congress is major bicycle route | • Both routes serve traffic<br>• Park is major bicycle route<br>• Congress provides on-street parking |
| Alternative 2 | • Close 4 ramps: A,B,C,D<br>• Eastbound access to Ramp F<br>• Less traffic on Fore River Parkway Interchange | • Congress 2-way between Marston and St. John<br>• Congress provides on-street parking<br>• Park is traffic and bicycle route | • Equal emphasis for traffic, bicycles and parking on Congress and Park<br>• Larger signal at Congress/Park/I-295 NB |

20


Libbytown Traffic Circulation and Streetscape Study
PACTS and City of Portland
Shared use path to Union Branch on northbound ramp
Bike/Ped Crossing with HAWK or RRFB Signal
Park Ave two-way with bike lanes
HP Hood
Park Avenue
Park Avenue
Traffic signal with bike boxes or roundabout with crosswalks on all approaches
Denny's
Traffic signal at Marston St
Reconfigure St John St with bike lanes and center turning lane
Maine Eye Center
St John Street
Thompsons Point
Portland Transportation Center
Congress Street
Congress St one-way with on-street parking and two-way cycle track
Fore River Parkway
Shared use path to Fore River Trail
Bicycle signal or bike boxes at intersection
Approximate alignment of NNEPRA 'Wye' track
Legend
Available for Other Uses
Cycletrack or Shared Use Path
Bike Lane
Shared Use Lane Bikeway
On-Street Parking
Directional Changes
Alternative 1a
21

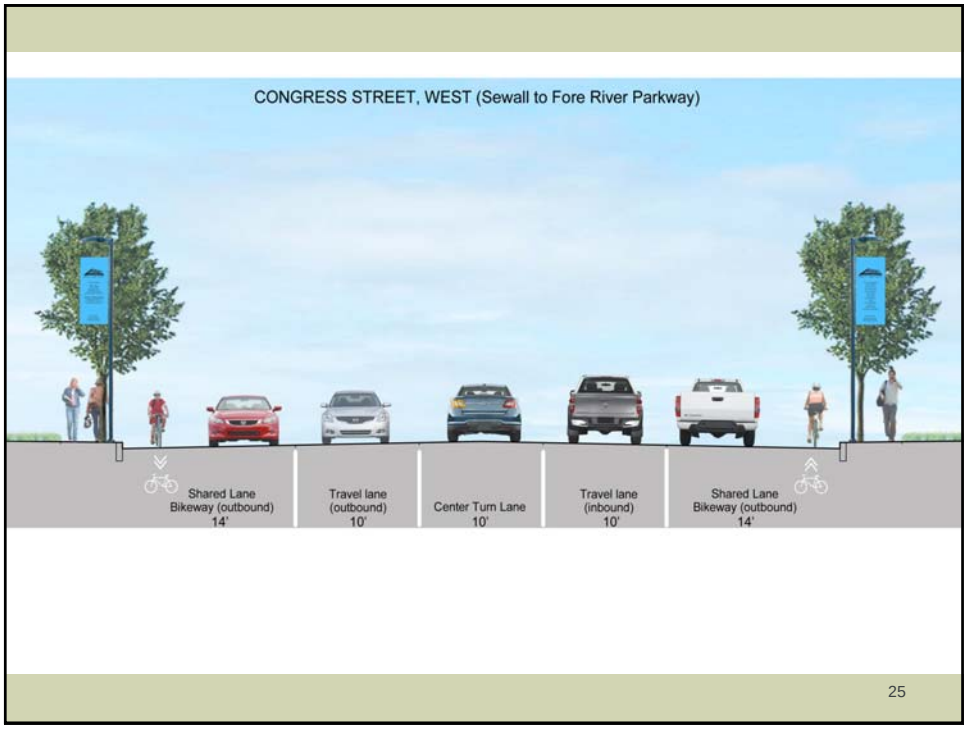

Libbytown Traffic Circulation and Streetscape Study
PACTS and City of Portland
Alternative 1a
April 17, 2013
prepared by:
DuBois & King
with:
Ransom Consulting Engineers & Scientists
Fjdda Landscape Architects and Planners
Moore Communications
Smart Mobility
22

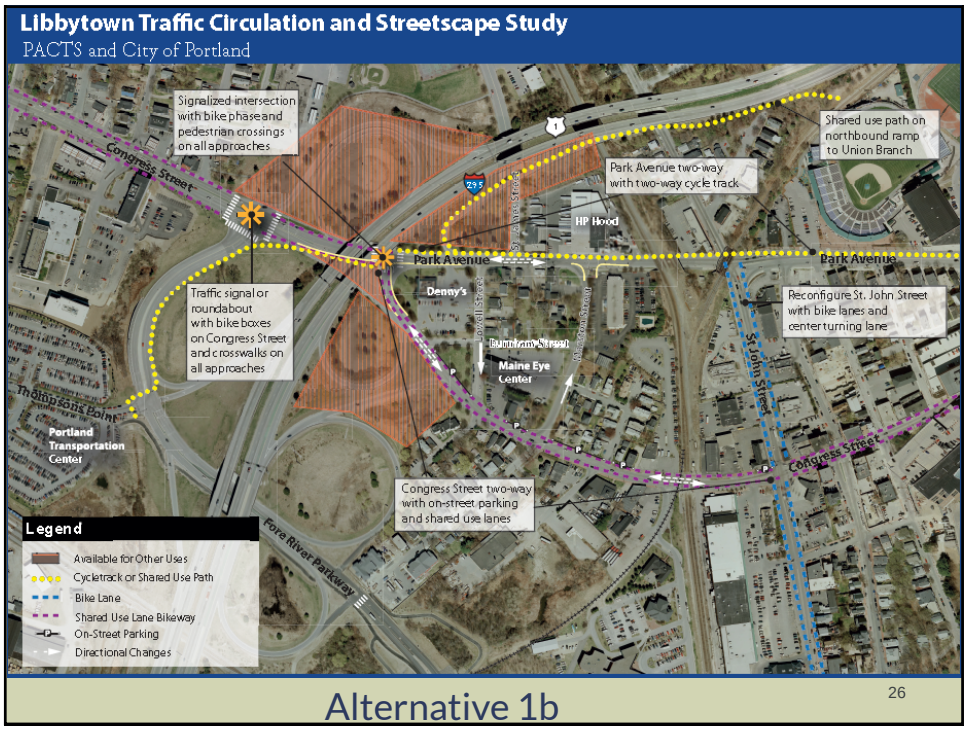

SECTION 1A: CONGRESS STREET, LOOKING EAST (Lowell St. to St. John St.)
On-street Parking 8'
Travel Lane (inbound) 12'
Buffer 4'
Two-Way Cycle Track 16'

23


SECTION 1A: PARK AVENUE, LOOKING EAST (Lowell St. to St. John St.)
Bike lane (outbound) 5.5'
Travel Lane (outbound) 11'
Turning Lane 11'
Travel Lane (inbound) 11'
Bike lane (inbound) 5.5'

24

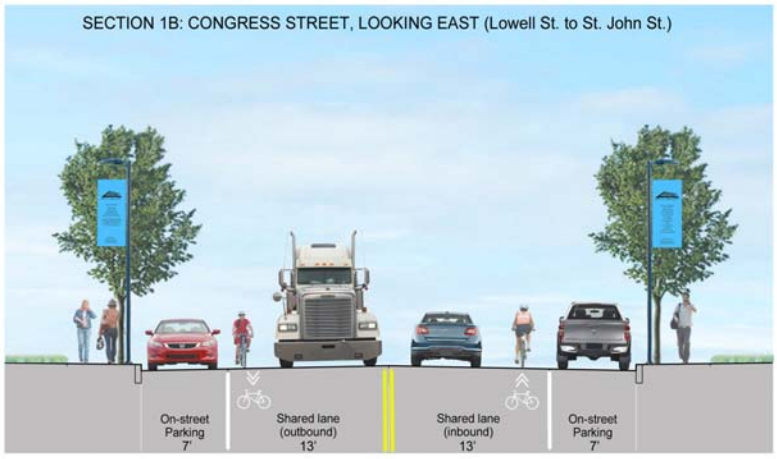


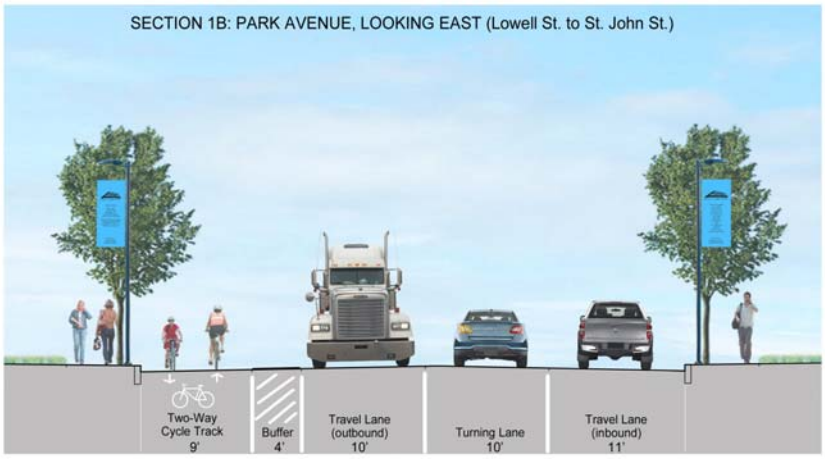

Alternative 1b


Libbytown Traffic Circulation and Streetscape Study
PACTS and City of Portland
Alternative 1b
April 17, 2013
prepared by:
DuBois & King
with:
Ransom Consulting Engineers & Scientists
Sebago Technics
Morris Communications
Smart Mobility

27


SECTION 1B: CONGRESS STREET, LOOKING EAST (Lowell St. to St. John St.)
On-street Parking 7'
Shared lane (outbound) 13'
Shared lane (inbound) 13'
On-street Parking 7'

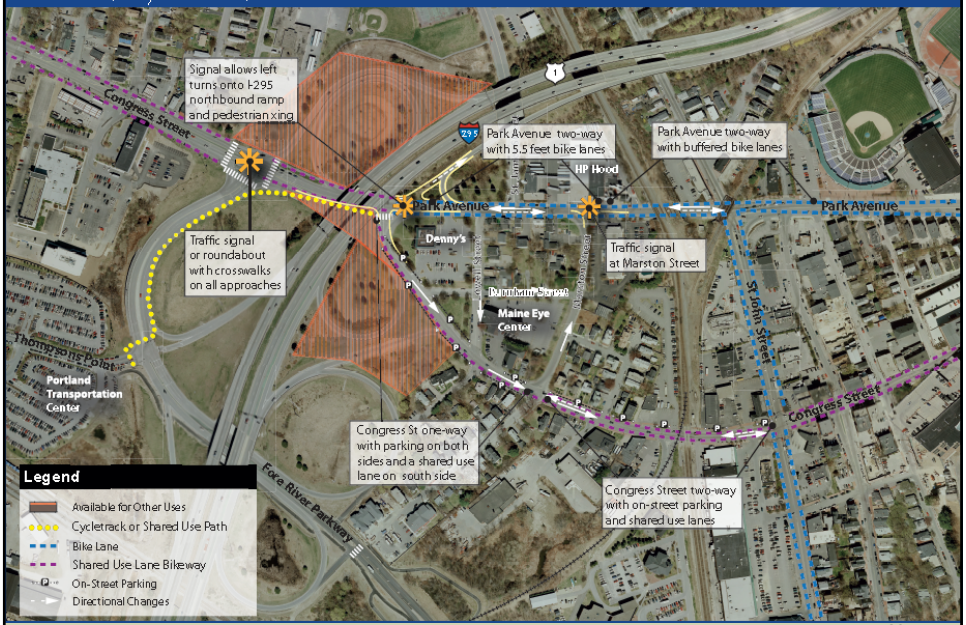
28




29

**Libbytown Traffic Circulation and Streetscape Study**

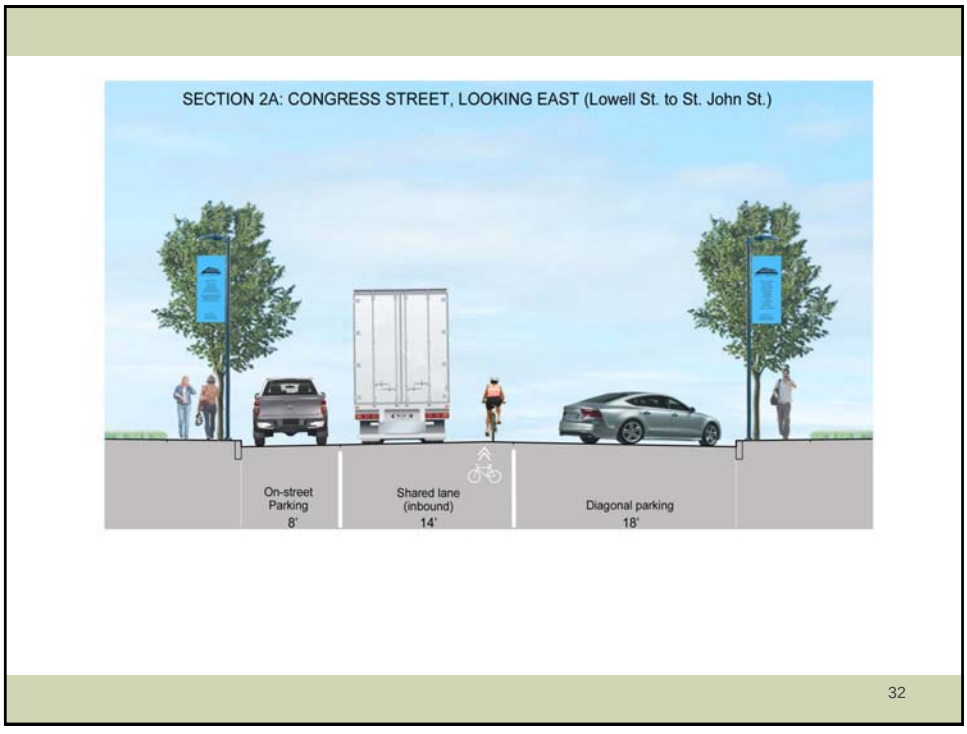
PACTS and City of Portland




Alternative 2a

30

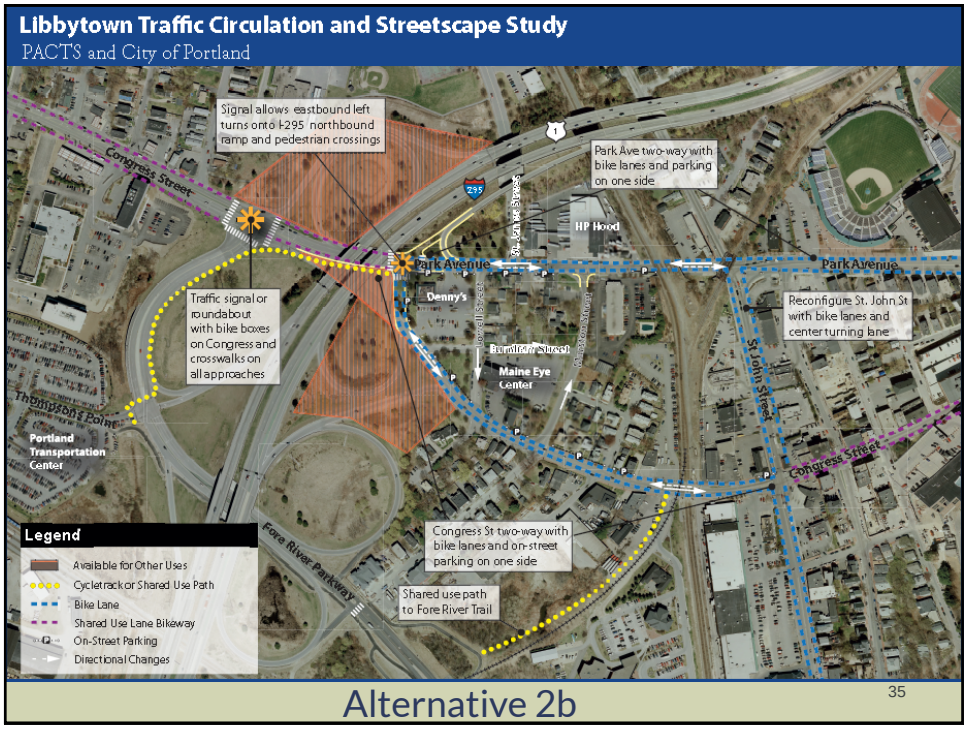

Libbytown Traffic Circulation and Streetscape Study
PACTS and City of Portland
Alternative 2a
April 17, 2013
prepared by:
DuBois & King
with:
Ransom Consulting Engineers & Scientists
tyBSa Landscape Architects and Planners
Morris Communications
Smart Mobility
31


SECTION 2A: CONGRESS STREET, LOOKING EAST (Lowell St. to St. John St.)
On-street Parking 8'
Shared lane (inbound) 14'
Diagonal parking 18'
32

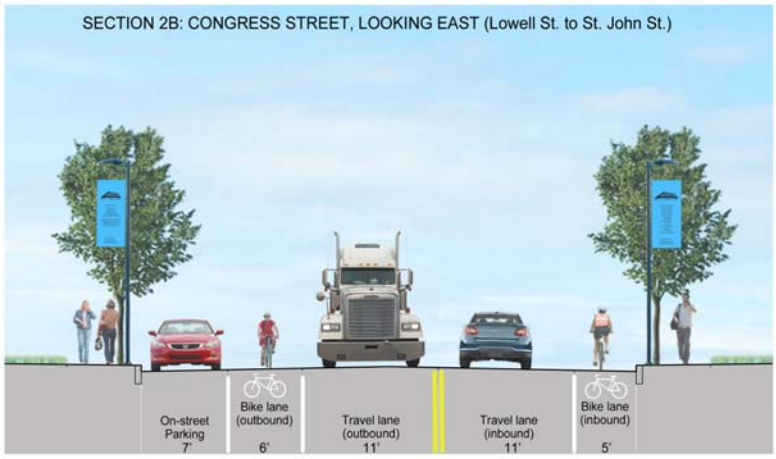

SECTION 2A: PARK AVENUE, LOOKING EAST (Lowell St. to St. John St.)
Bike lane (outbound) 5'
Buffer 3'
Travel Lane (outbound) 11'
Median 6'
Travel Lane (inbound) 11'
Buffer 3'
Bike lane (inbound) 5'

33

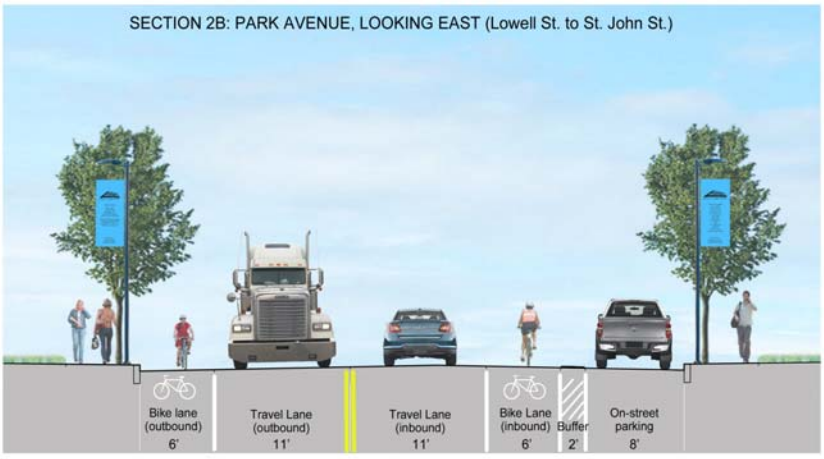
34


Libbytown Traffic Circulation and Streetscape Study
PACTS and City of Portland
Signal allows eastbound left turns onto I-295 northbound ramp and pedestrian crossings
Park Ave two-way with bike lanes and parking on one side
Traffic signal or roundabout with bike boxes on Congress and crosswalks on all approaches
Reconfigure St. John St with bike lanes and center turning lane
Congress St two-way with bike lanes and on-street parking on one side
Shared use path to Fore River Trail
Legend
Available for Other Uses
Cycletrack or Shared Use Path
Bike Lane
Shared Use Lane Bikeway
On-Street Parking
Directional Changes
Alternative 2b
35


Libbytown Traffic Circulation and Streetscape Study
PACTS and City of Portland
Alternative 2b
36


SECTION 2B: CONGRESS STREET, LOOKING EAST (Lowell St. to St. John St.)
On-street Parking 7'
Bike lane (outbound) 6'
Travel lane (outbound) 11'
Travel lane (inbound) 11'
Bike lane (inbound) 5'

37


SECTION 2B: PARK AVENUE, LOOKING EAST (Lowell St. to St. John St.)
Bike lane (outbound) 6'
Travel Lane (outbound) 11'
Travel Lane (inbound) 11'
Bike Lane (inbound) 6'
Buffer 2'
On-street parking 8'

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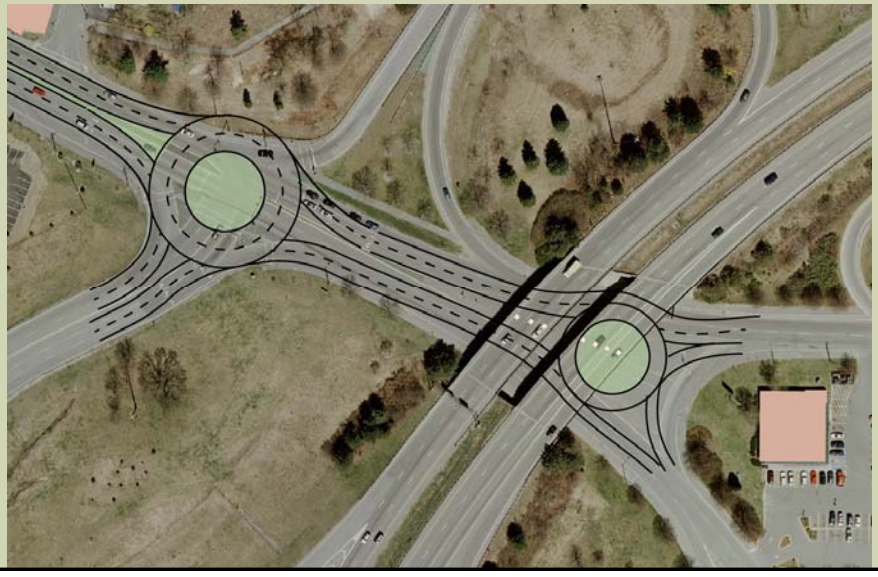
# Roundabouts

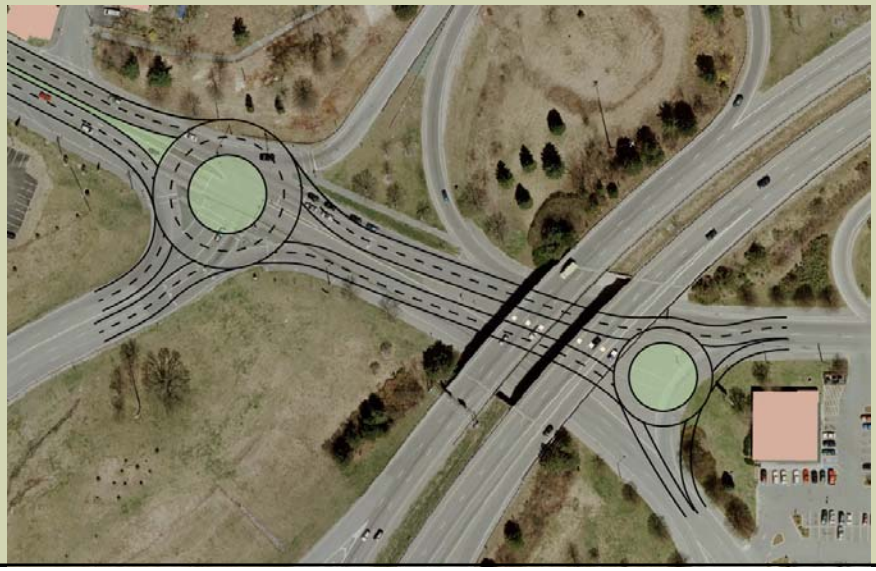
- Roundabouts could replace signals, but would:
  - substantially increase the costs
  - require right-of-way acquisition
  - need to address pedestrian and bicycle concerns
- Short term: close ramps, install/adapt signals
- Long term: consider redevelopment of available land, and roundabouts as a higher capacity and more attractive alternative, funded by development.

39

# Roundabout Alternatives



## Roundabout Alternatives



## Multimodal Level of Service

- Pedestrians: Considers streetscape comfort (i.e. trees, buildings or parking), crosswalk frequency, delays at crosswalks, exposure to travel lanes
- Bicycles: Considers traffic volumes, traffic speed and facility types: shared lane, bicycle lane, or separated facility (cycle track or shared use path)
- Vehicles: Considers vehicle delay at intersections
- Transit: Considers pedestrian score, and two-way versus one-way streets

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## Pedestrian LOS

| | Existing | 1A | 1B | 2A | 2B |
|---|---|---|---|---|---|
| Outer Congress | E | C | C | C | C |
| Congress | E | B | C | B | C |
| Park | D | C | B | C | B |

## Bicycle LOS

| | Existing | 1A | 1B | 2A | 2B |
|---|---|---|---|---|---|
| Outer Congress | F | E | E | E | E |
| Congress | F | B | C | D | C |
| Park | E | C | B | C | C |

43

## Vehicle LOS

2015 PM Peak

| | Existing | 1A | 1B | 2A | 2B |
|---|---|---|---|---|---|
| FRP/Thompsons Point | B | D | D | C | C |
| Congress/FRP | C | C | C | C | C |
| Congress/ St John | A | B | B | B | B |
| Park/St John | A | C | B | C | B |

44

# Summary

- Bicycle and Pedestrian LOS improve in all alternatives
- Numerous safety issues are addressed in all alternatives
- Traffic volumes can be accommodated with minor improvements for all alternatives

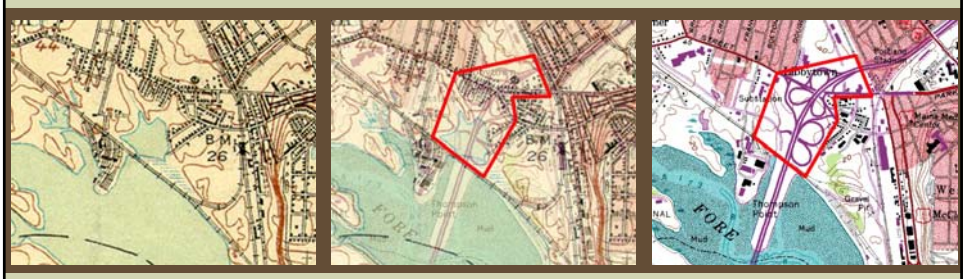
45

# *Thank You*

Questions?

46

# Libbytown Traffic Circulation and Streetscape Study



Public Meeting
June 10, 2013

1

## Project Goals

- **Safety** for all users
- **Reconnect** the Libbytown Neighborhood
- Improve **mobility** for **all modes** of transportation
- Improve the **economic** climate of Libbytown

2

# Project Team

- City of Portland – Department of Public Services
- PACTS – Portland's Regional Planning Organization
- Consultants
  - DuBois & King
  - Ransom Consulting
  - TJD&A
  - Morris Communications
  - Smart Mobility

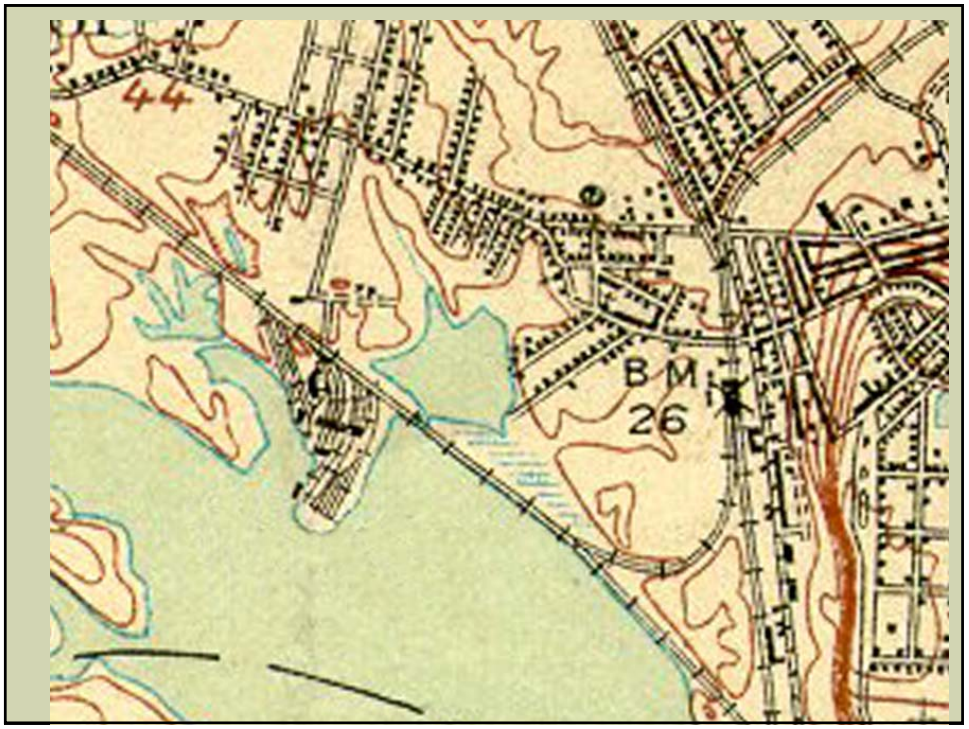
3

# Project Schedule

- Fall 2012: Define Issues and Needs
- Winter 2013: Develop Alternatives
- Spring 2013: Analyze and Refine Alternatives

- Tonight: Present Preferred Alternative
- Complete final report: July 2013

4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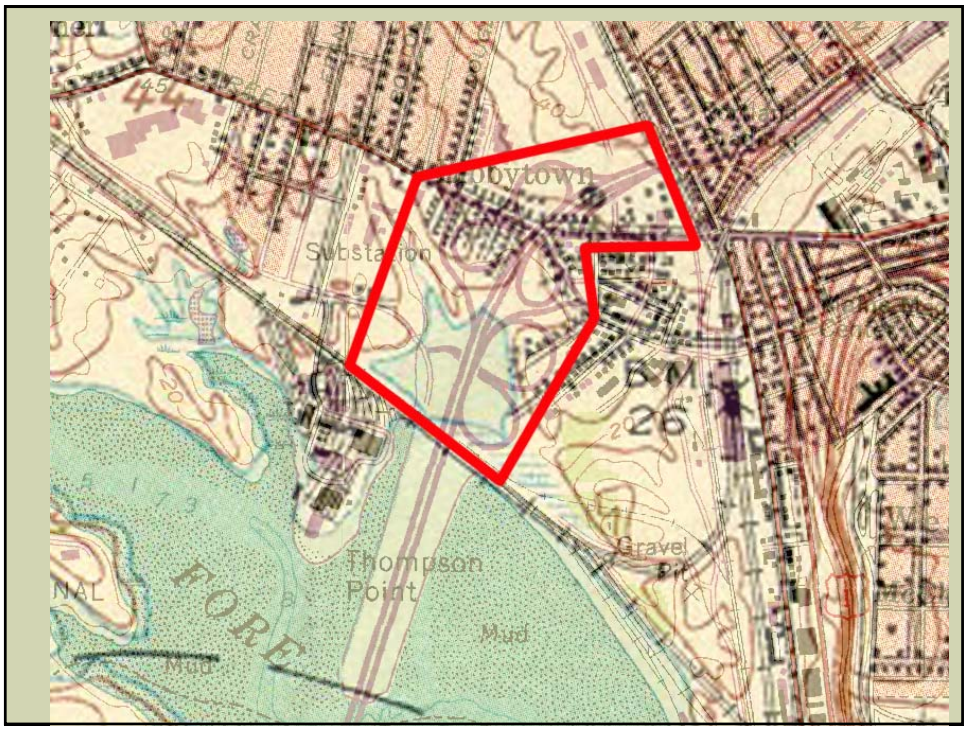
Substation
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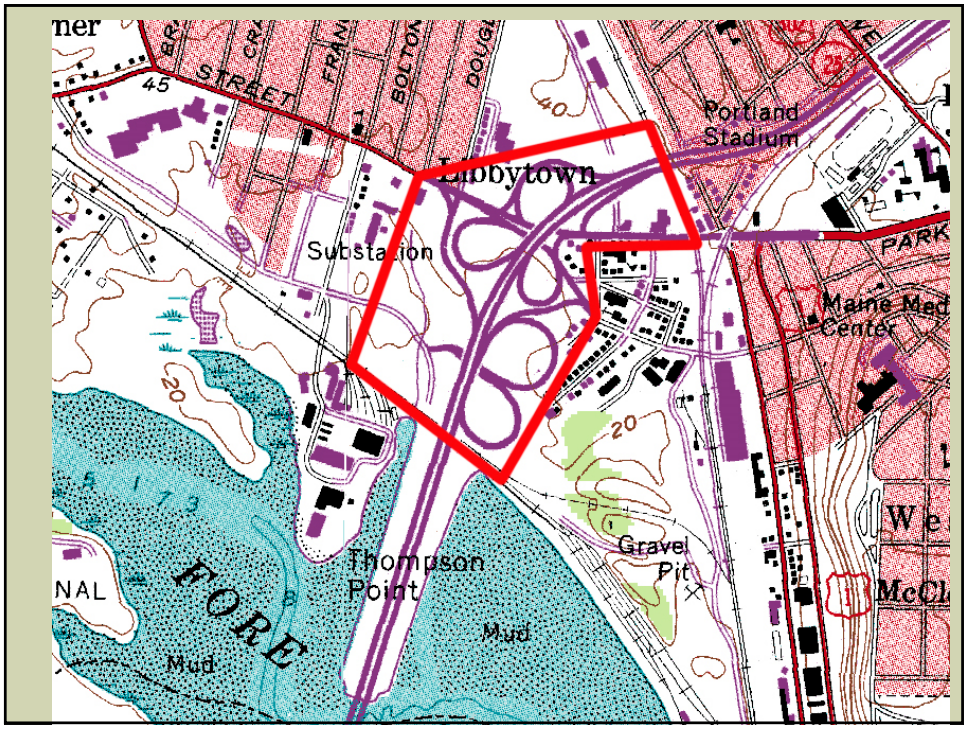
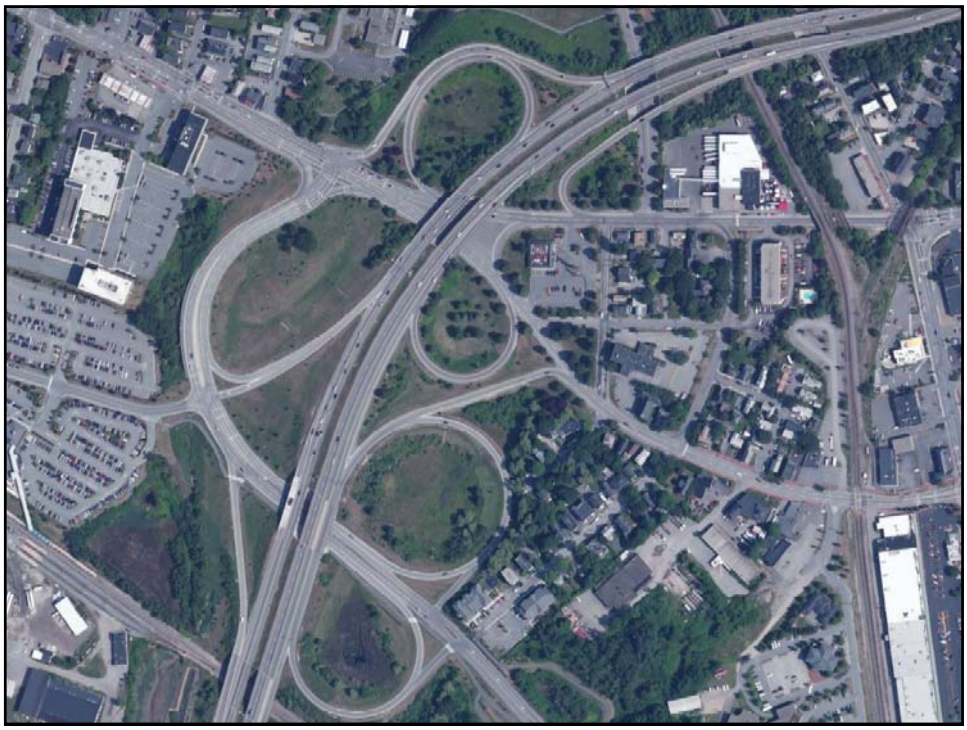
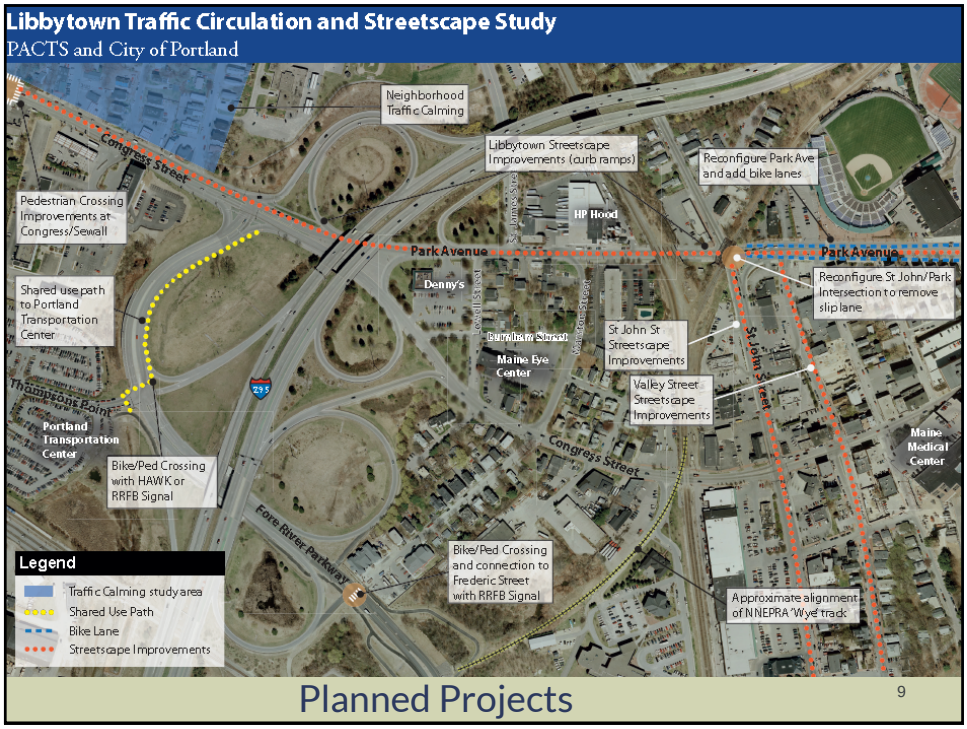
Thompson
Point
Gravel
Pit
Mud
Mud
NAL
SHORE


STREET
45
40
Portland
Stadium
Libbytown
Substation
PARK
Maine Med
Center
20
Thompson
Point
Gravel
Pit
Mud
Mud
NAL





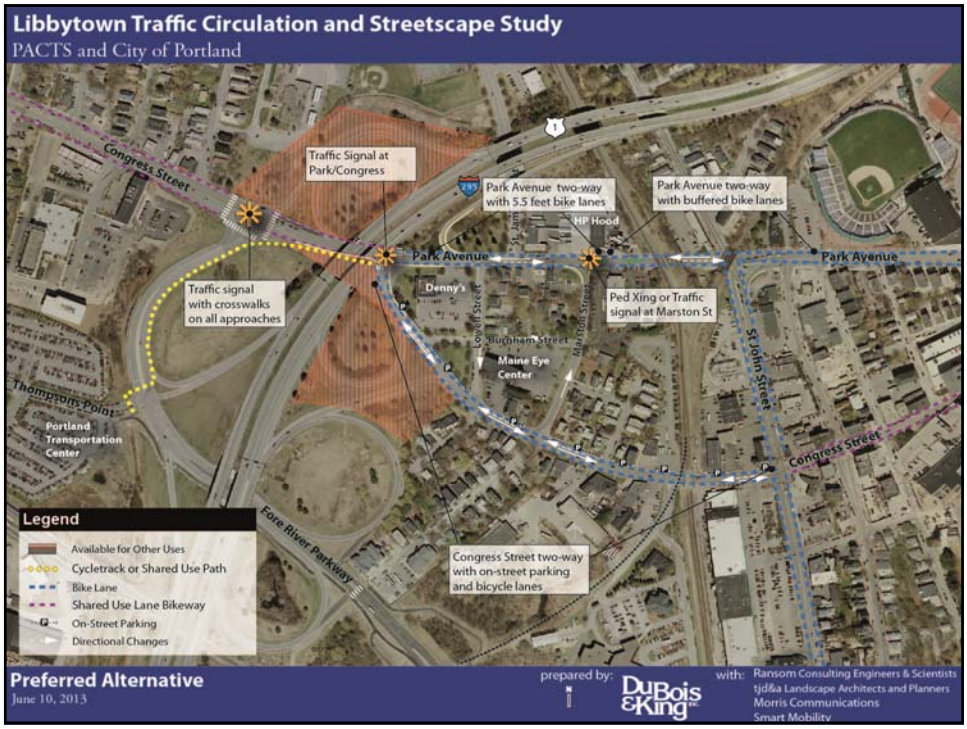

Planned Projects

9

# Alternatives

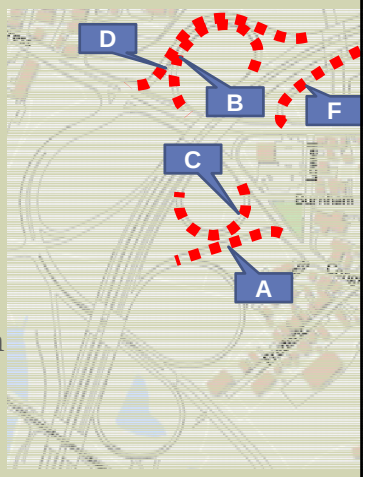
| | Interchange Configuration | a) Park-2 way Congress 1-way | b) Park-2 way Congress 2-way |
|---|---|---|---|
| Alternative 1 | • Close 5 ramps: A,B,C,D,F<br>• Directs all interstate traffic to Fore River Parkway Interchange | • Park is major route into downtown<br>• Congress is major bicycle route | • Both routes serve traffic<br>• Park is major bicycle route<br>• Congress provides on-street parking |
| Alternative 2 | • Close 4 ramps: A,B,C,D<br>• Eastbound access to Ramp F<br>• Less traffic on Fore River Parkway Interchange | • Congress 2-way between Marston and St. John<br>• Congress provides on-street parking<br>• Park is traffic and bicycle route | • Equal emphasis for traffic, bicycles and parking on Congress and Park<br>• Larger signal at Congress/Park/I-295 NB |

10




# Project Recommendations

- Interstate Ramps:
  - Remove four ramps A-B-C-D
  - Ramp F remains
- Park:
  - 2 way
  - Buffered bike lanes with median
- Congress:
  - 2 way
  - Bike lanes and parallel parking in selected locations

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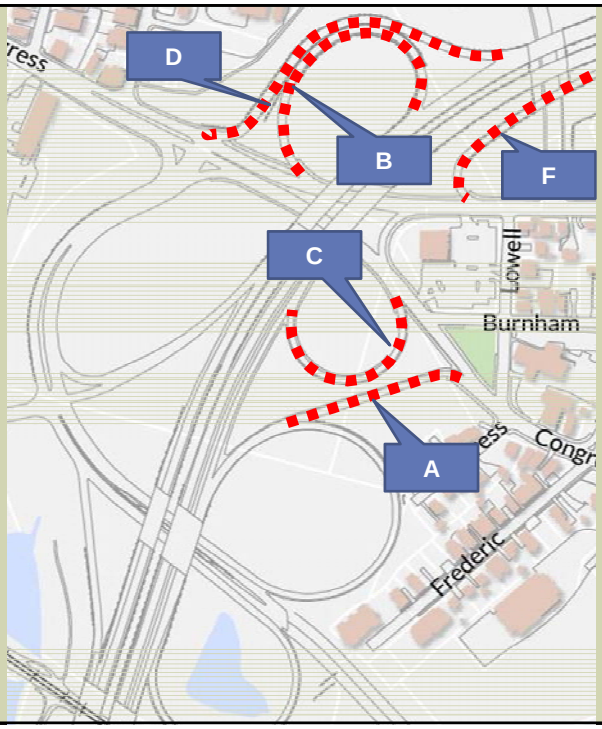



13

*Project Recommendations:*

# Rationale for Ramp Removals

- Ramps A, B, C and D have high crash rates and impede safe pedestrian and bicycle transportation
- Street network can accommodate diversions to Veterans Bridge and Park Avenue.
- Closing ramp F diverts traffic to Forest Avenue interchange which is high crash location
- Public support for keeping Ramp F

14

*Project Recommendations:*

## Rationale for Park - 2 way

- Provides access without at-grade railroad crossing
- Provides opportunity for bicycle lanes in both directions
- Public support

15

*Project Recommendations:*

## Rationale for Congress- 2 way

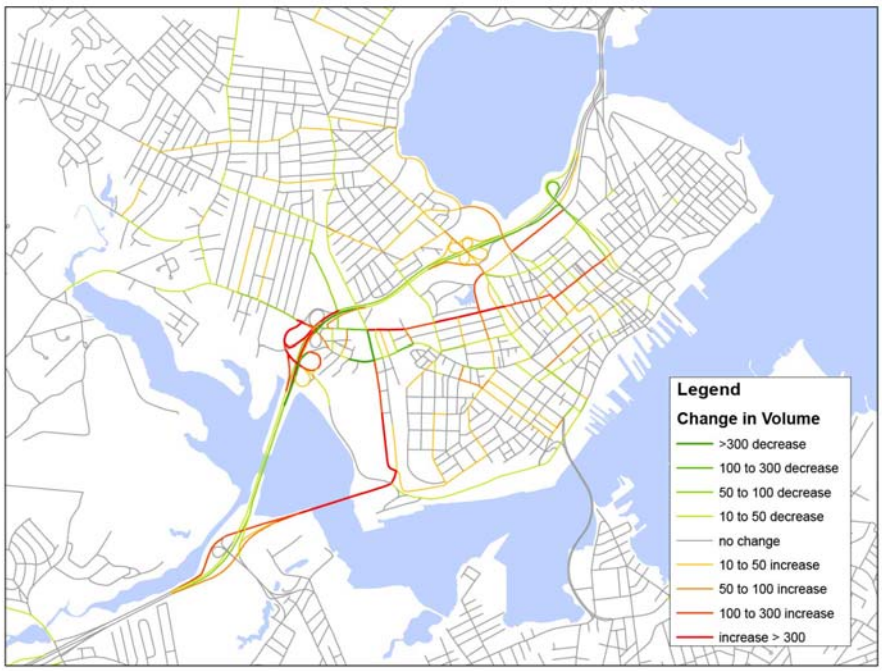
- Closing interstate ramps diverts traffic to St. John north and southbound.
- Creates challenging traffic situation when combined with northbound traffic accessing Park.
- Public opinion mixed on Congress

16

# Modeling

- Model was upgraded to account for current behavior and trends in walking, bicycling and transit use.
- Changes in traffic patterns resulting from Preferred alternative

17



# Ramp Traffic

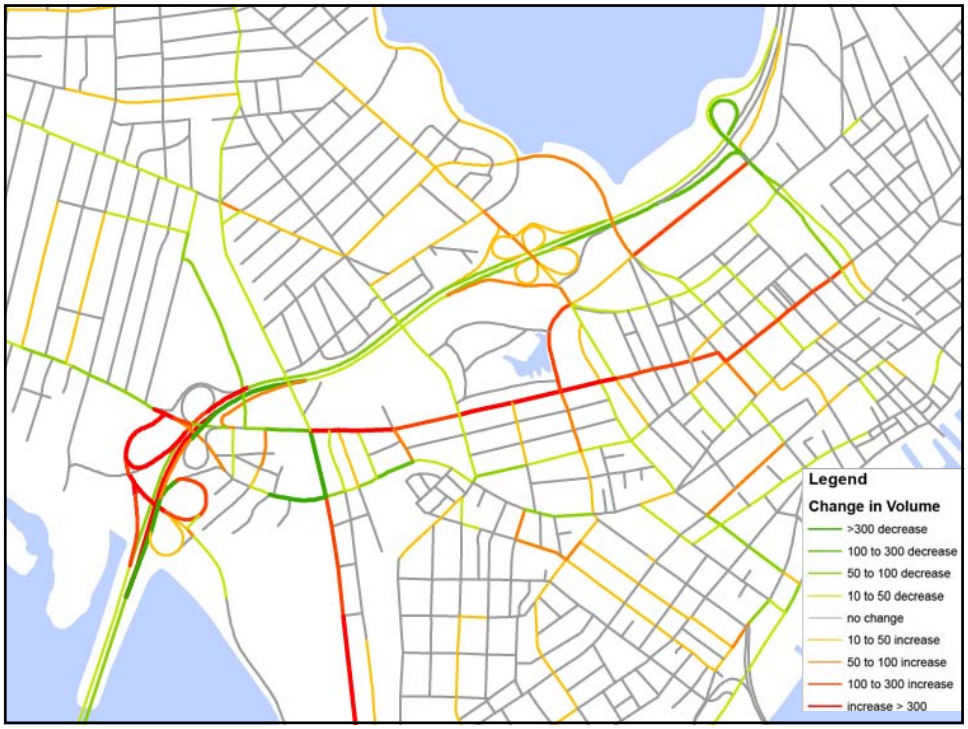
| Ramp | Direction | Diverted to FRP | Other Routes |
|---|---|---|---|
| A | NB off | 29% | Diverted to St.John /Veterans bridge |
| B | SB on | 86% | Diverted to St.John /Veterans bridge |
| C | NB on | 39% | Diverted to Park Ave, others |
| D | SB off | 72% | Diverted to Park Ave, others |

19

# Park/Congress Traffic

- Overall reduction in volume on both streets in the study area
- Of Remaining Traffic:
  - 60% uses Park Ave
  - 40% uses Congress

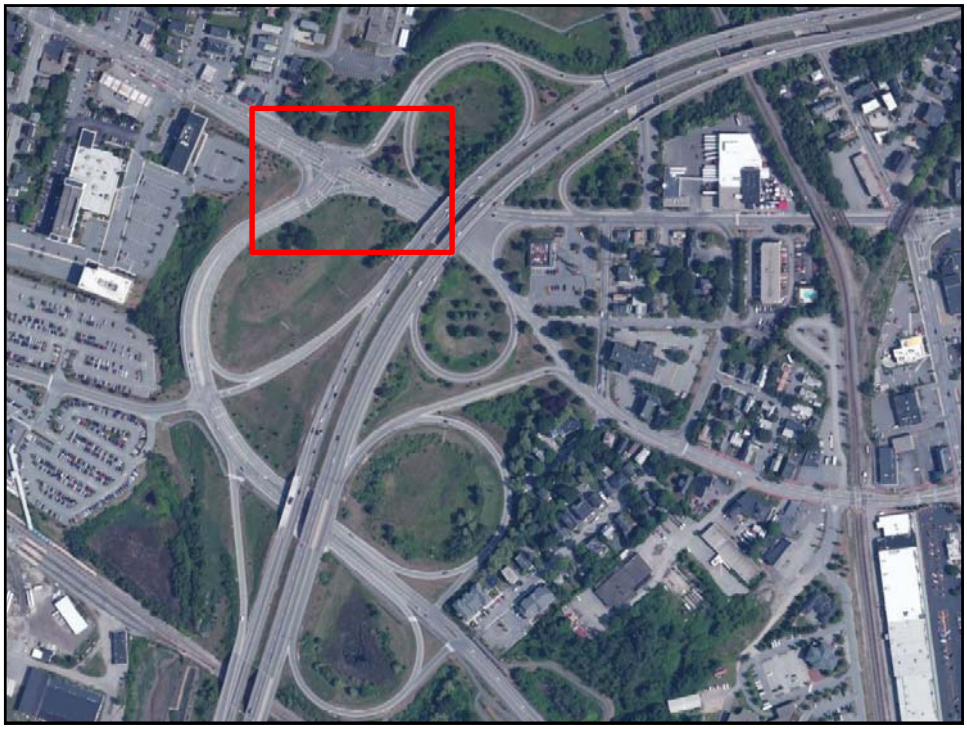
20

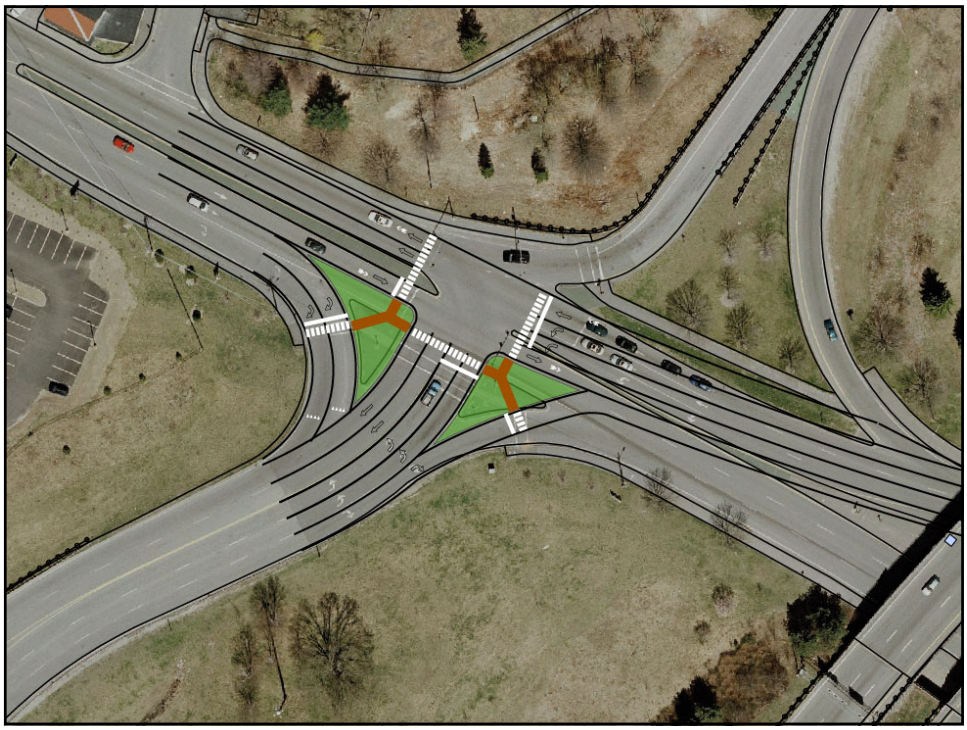


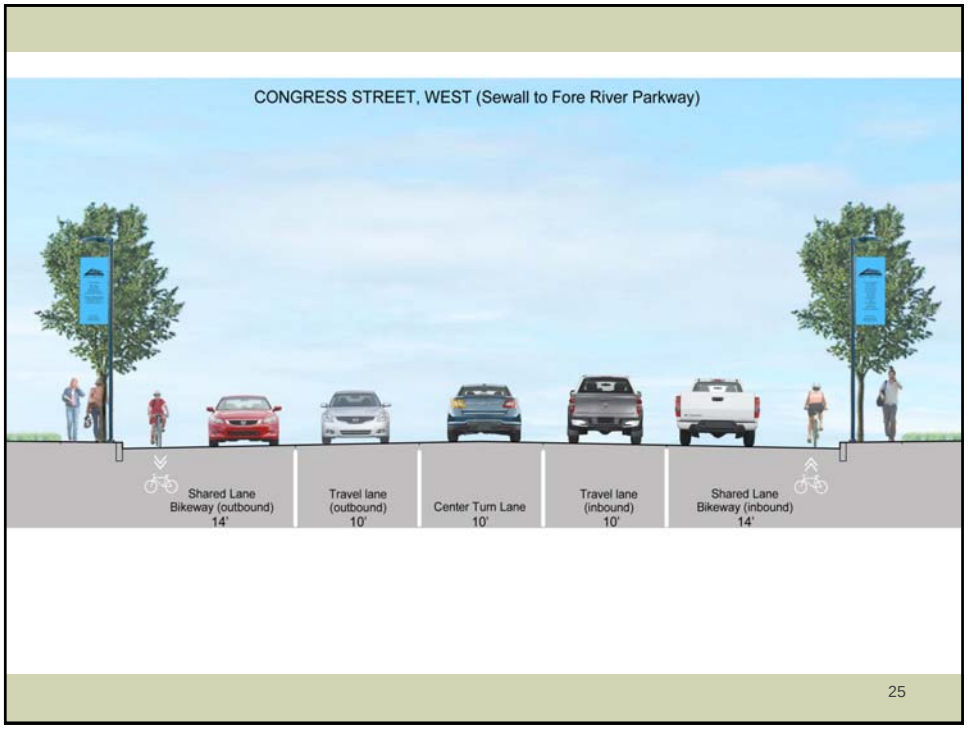

Design

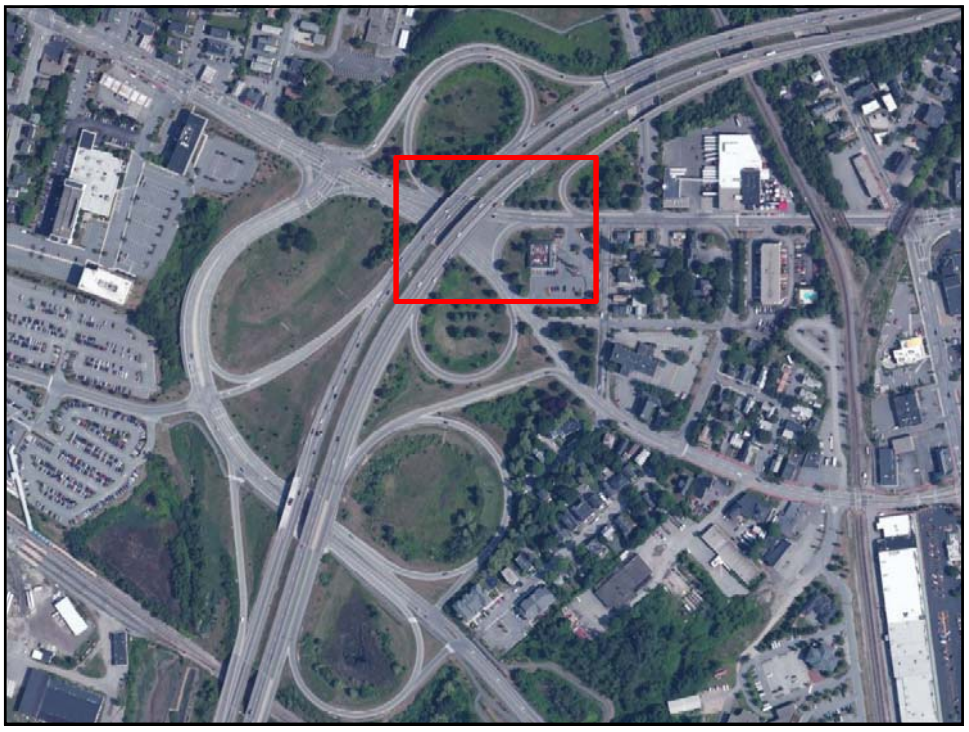
# DESIGN RECOMMENDATIONS

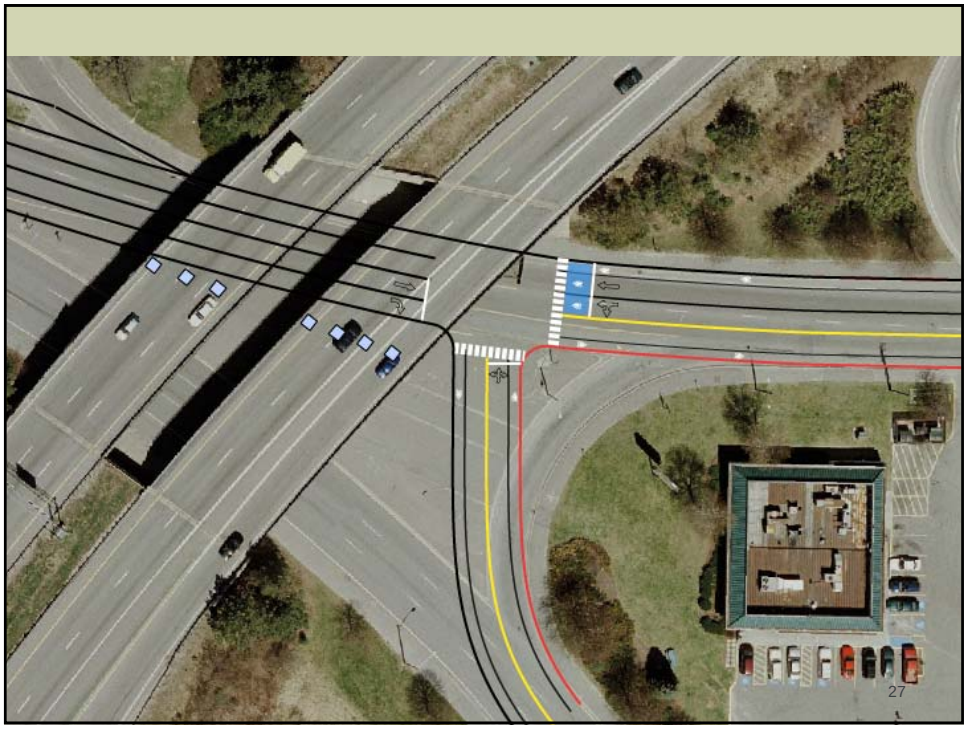
22






CONGRESS STREET, WEST (Sewall to Fore River Parkway)
Shared Lane Bikeway (outbound) 14'
Travel lane (outbound) 10'
Center Turn Lane 10'
Travel lane (inbound) 10'
Shared Lane Bikeway (inbound) 14'
25

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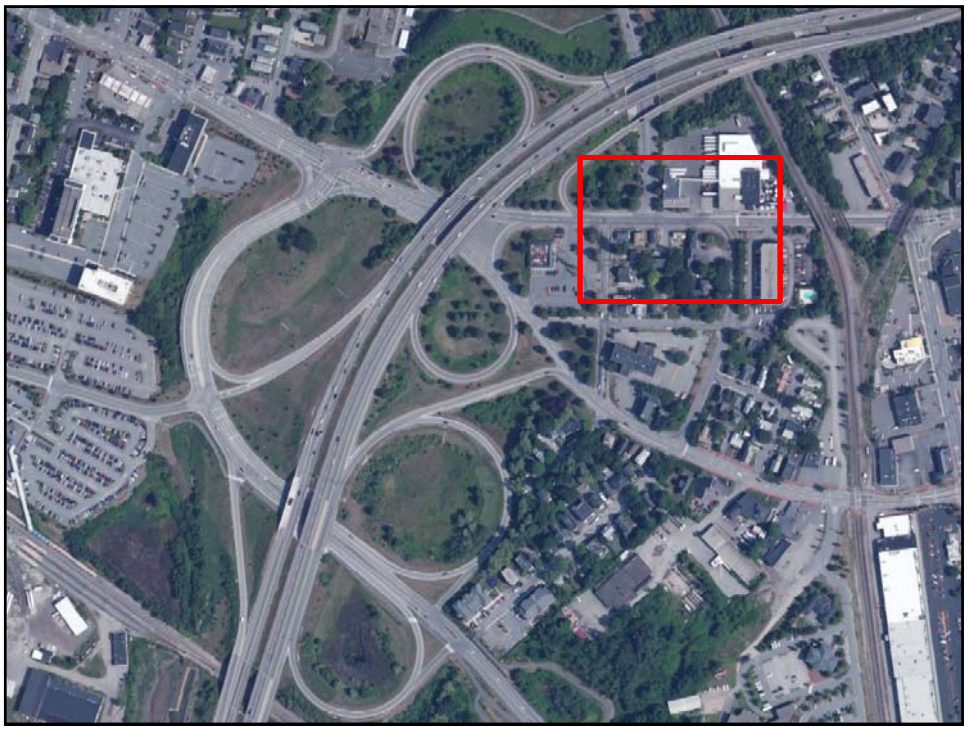

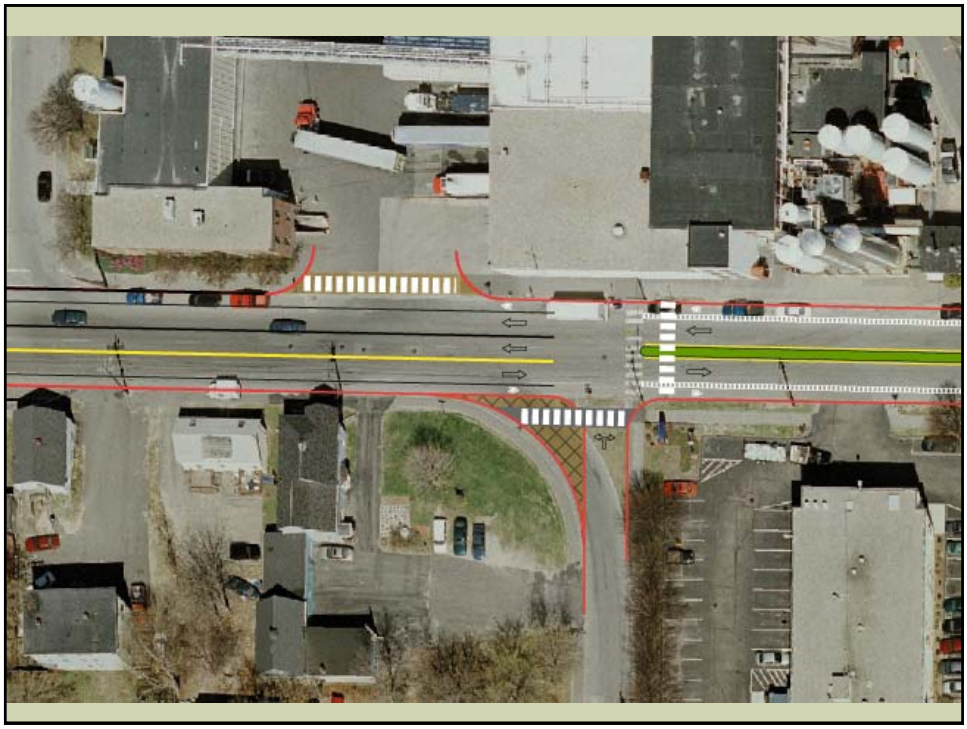

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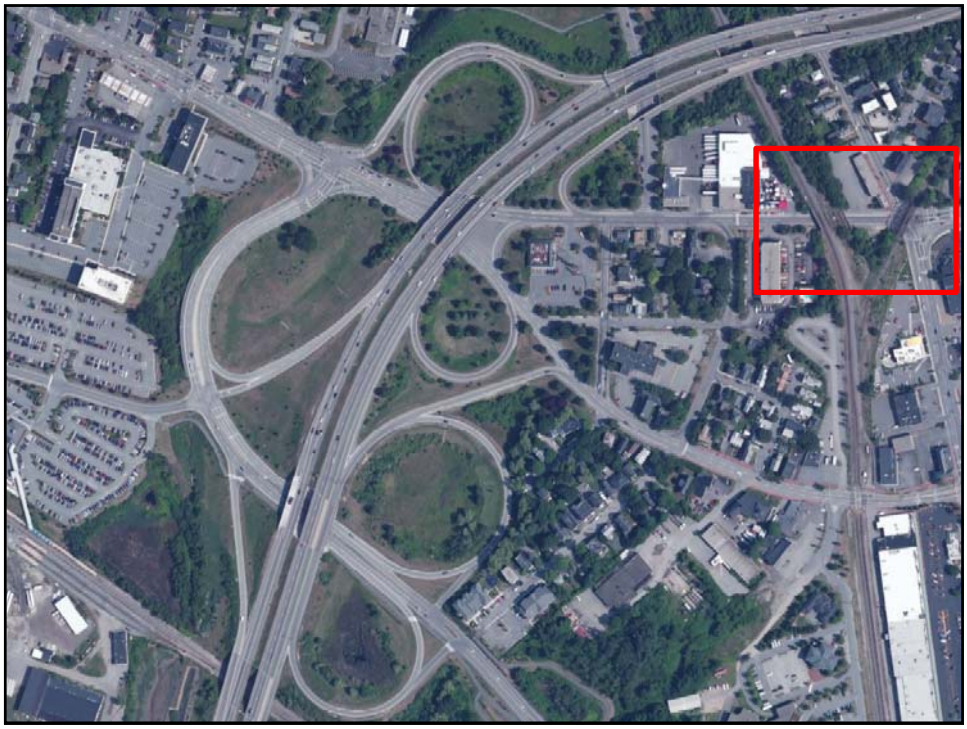

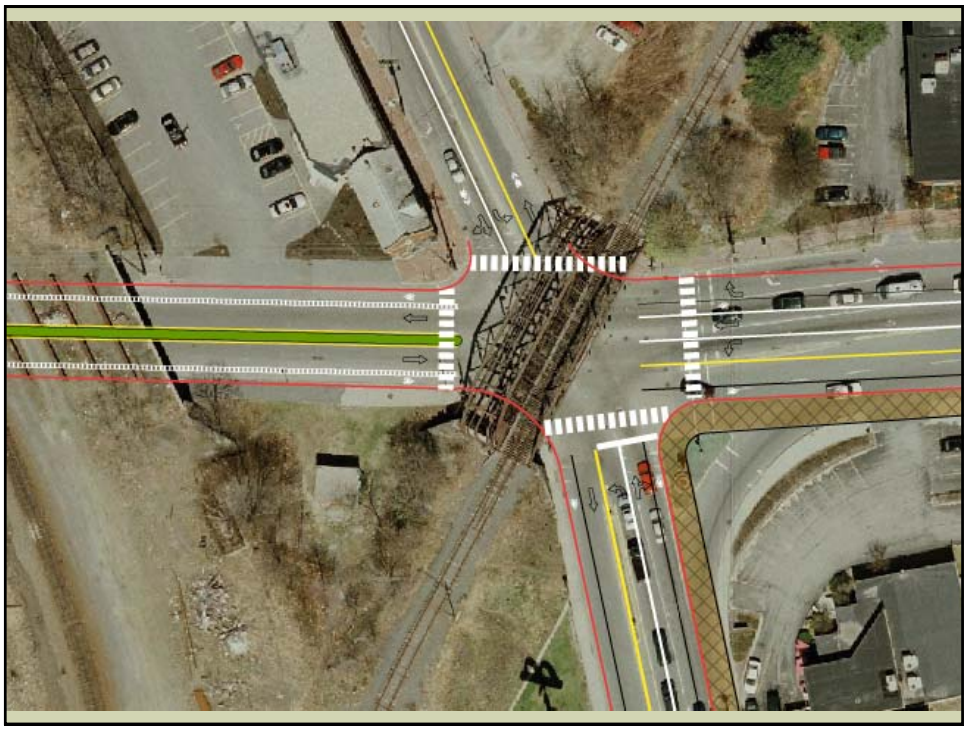

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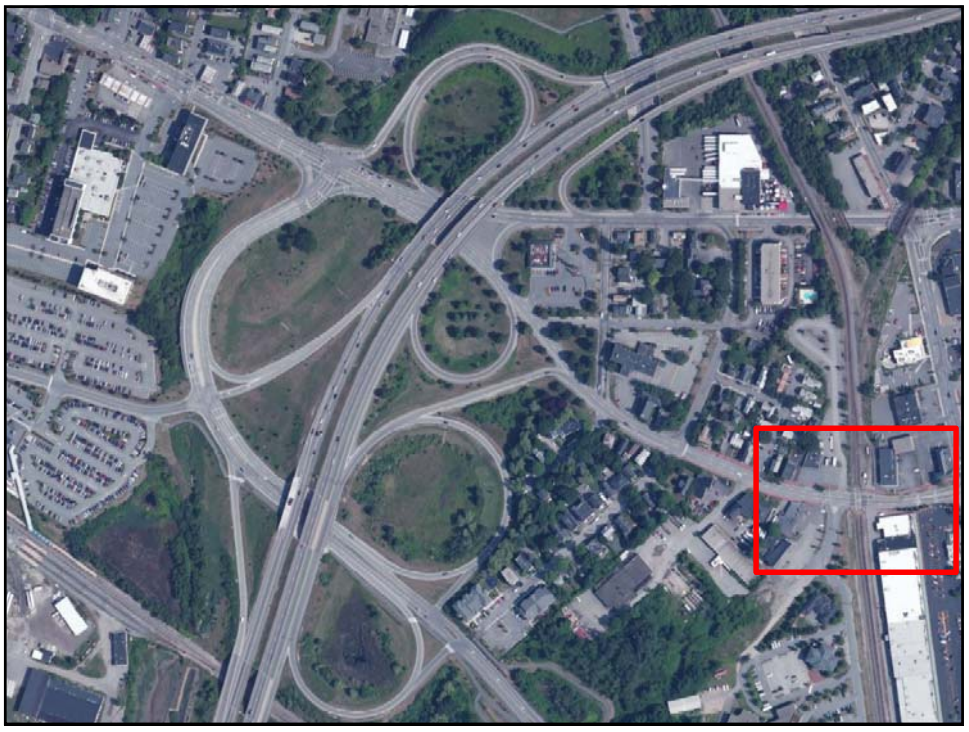

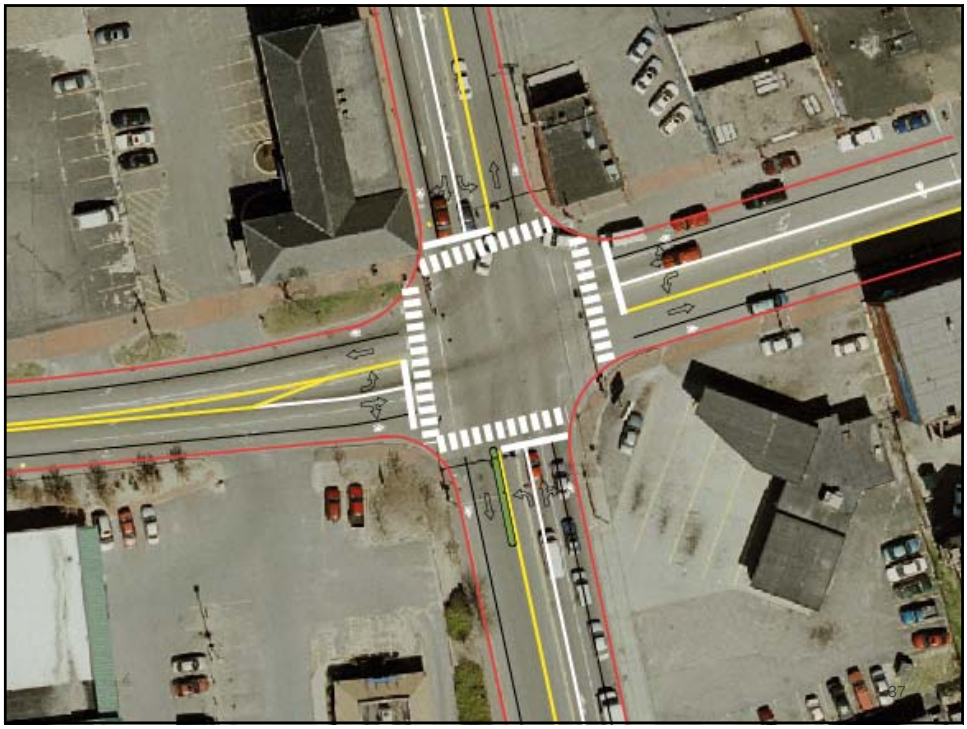


# Implementation Strategy:

*Short Term: Parallel Tracks*

1) 2 Way Conversion of Park
   a) Does not require signal at Congress
   b) Does not require ramp closure
2) Ramp Closures: Work with MDOT to define process and additional study required
3) 2 Way Conversion of Congress
   a) Requires ramp closures
   b) Requires signal at Congress/Park

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# Implementation Strategy:

*Long Term*

4) Install Streetscape Amenities
   a) Trees
   b) Lighting
   c) Amenities
5) Consider other uses of interchange lands
6) Consider roundabouts at major intersections

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# Next Steps

- Public Meeting
- Final Refinements and Analysis
- Present to City Traffic Committee
- Submit Final Report to City and PACTS

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# *Thank You*

Discussion

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# Attachment 2

## Existing Conditions

Existing Conditions Report

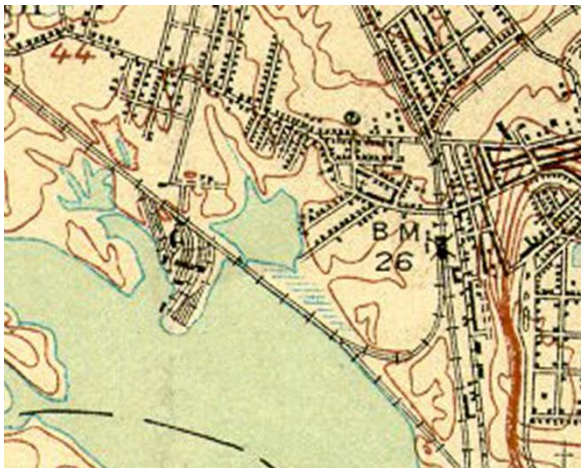
# Libbytown Traffic Circulation and Streetscape Study

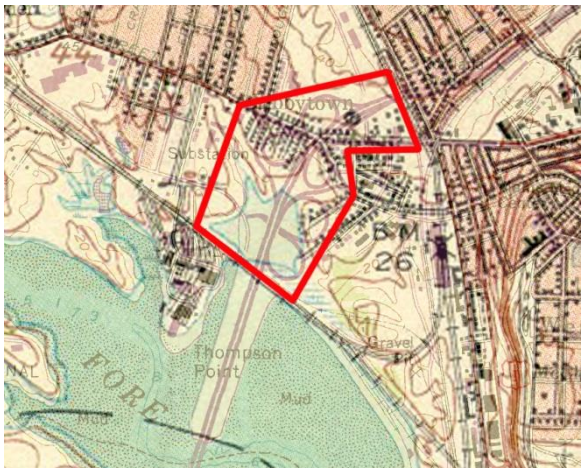
## Documentation of Existing Conditions

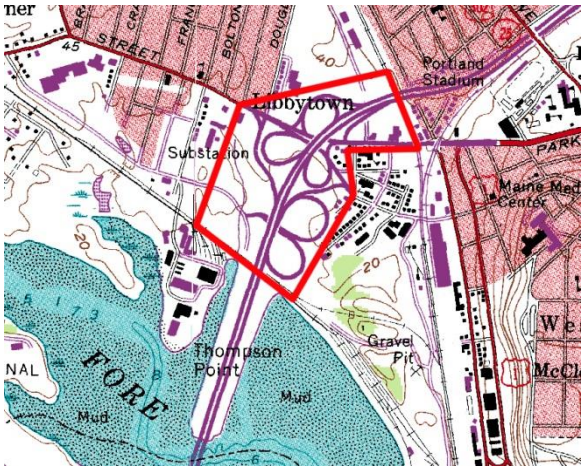
> *"Libbytown is currently one of the most difficult areas in Portland to navigate as a pedestrian or bicyclist. Though there have been recent improvements, and more are in the works, the city would do well to invest in significant improvements in the area to re-connect Libbytown to its surroundings."*
> ***Connecting Libbytown-2009***

Libbytown has seen tremendous change in the past 50 years, largely related to the construction of I-295. The historic center of Libbytown is coincident with the center of the Congress Street-I-295 interchange.

*Libbytown in Transition*




## Goals and Purpose of the Study

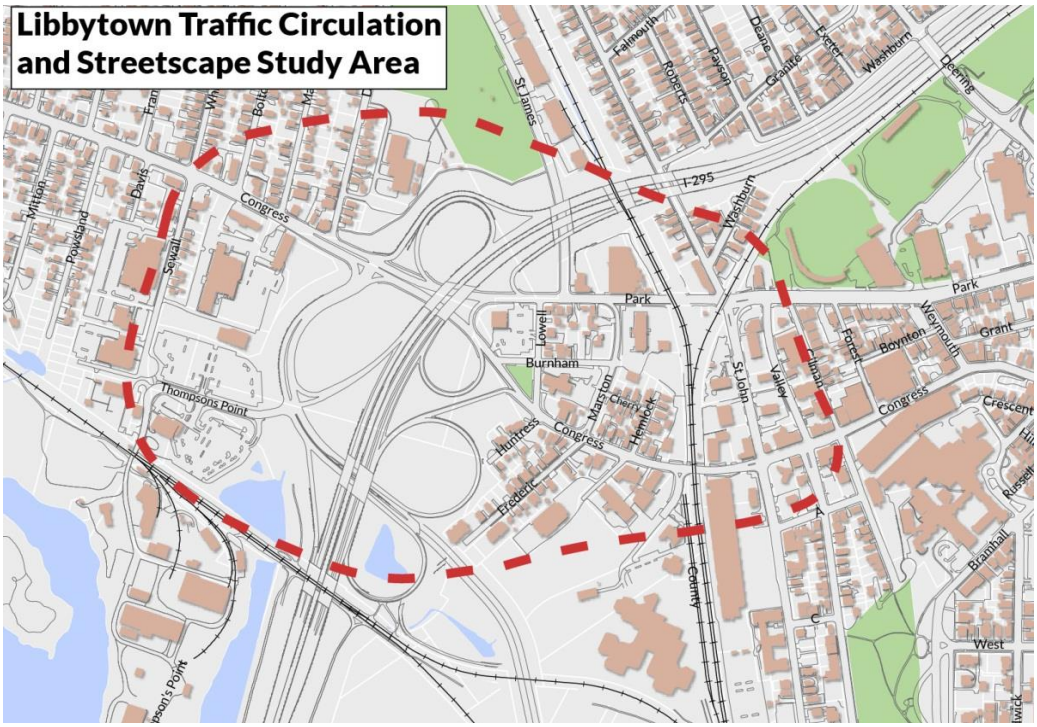
> *"The goal of the study is to comprehensively assess and make recommendations regarding the multi-modal transportation network, circulation pattern and supporting streetscape within the eastern portion of the Libbytown Neighborhood."*
> ***Libbytown Streetscape and Traffic Circulation Study RFP-2012***

The following are priorities for this study.

- Build on the work in *Connecting Libbytown*, to improve neighborhood connectivity and function for all modes and users.
- Consider the opportunities to re-think traffic circulation arising from the completion of the Fore River Parkway.
- Create a more attractive, inviting and accessible streetscape.
- Identify investments that will support economic development and growth that is compatible with the community's vision and viable (with Portland Planning Department staff).

## Libbytown Study Area

The primary study area for the traffic circulation and transportation components is shown in the map below. However, considerations of stakeholders and traffic impacts from a broader impact area will be included in the study.




## Baseline Conditions Assessment

The Libbytown study area was evaluated for its transportation, safety and streetscape features and conditions. The following sections provide a summary of the key findings of this inventory.

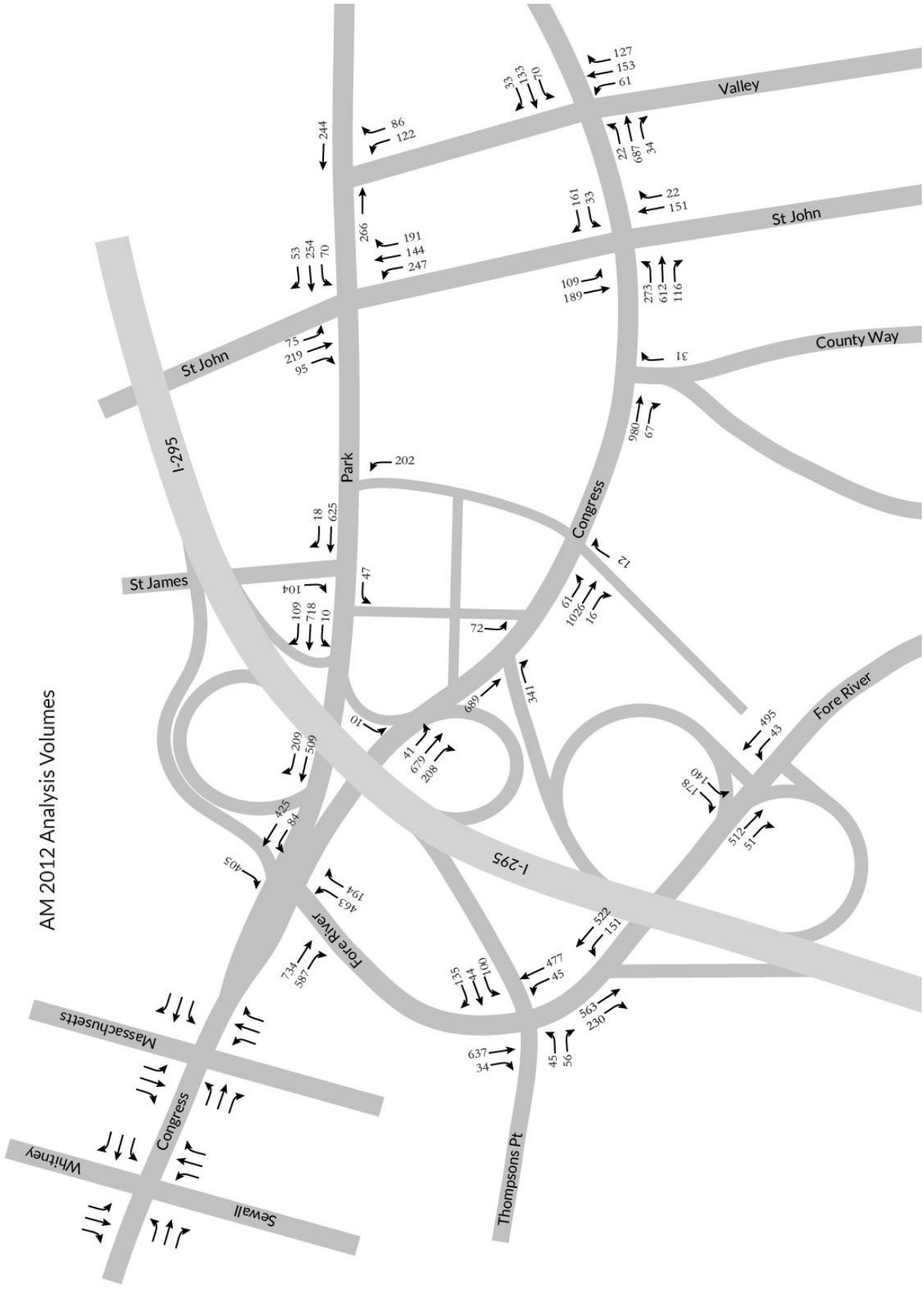
### Traffic Circulation and Safety

The traffic analysis began with a review of available data and observations by the consulting team and included volumes, operations and safety.

#### *Traffic Volumes*

Traffic volumes were obtained through a variety of sources, including Maine DOT, recent traffic studies and reports, and collection of new data where required. Pages 3 and 4 show the morning and afternoon peak hour traffic movements in the study area. (Morning peak volumes from Massachusetts and Sewall intersections with Congress Street is forthcoming).

In addition to determining current traffic volumes, the changes in traffic volumes since the completion of the Fore River Parkway in 2008 was evaluated. The charts on page 5 compare volumes on each leg of the Congress/St. John and Park/St John intersections from 2007 (before construction of Fore River) with recent MDOT data (2010) and the most recent counts conducted by DuBois & King in October, 2012. These charts show general consistency between 2010 and the present, but a significant reduction in the volume on St. John, Park and Congress Streets since 2007.


AM 2012 Analysis Volumes
Valley
St John
St John
County Way
I-295
Park
Congress
St James
Fore River
I-295
Fore River
Thompsons Pt
Massachusetts
Congress
Whitney
Sewall
127
153
61
33
133
70
244
86
122
22
687
34
266
161
33
22
151
191
144
247
53
254
70
109
189
273
612
116
75
219
95
31
980
67
202
18
625
47
104
109
718
10
72
12
61
1026
16
689
141
10
41
679
208
209
509
425
84
405
463
194
734
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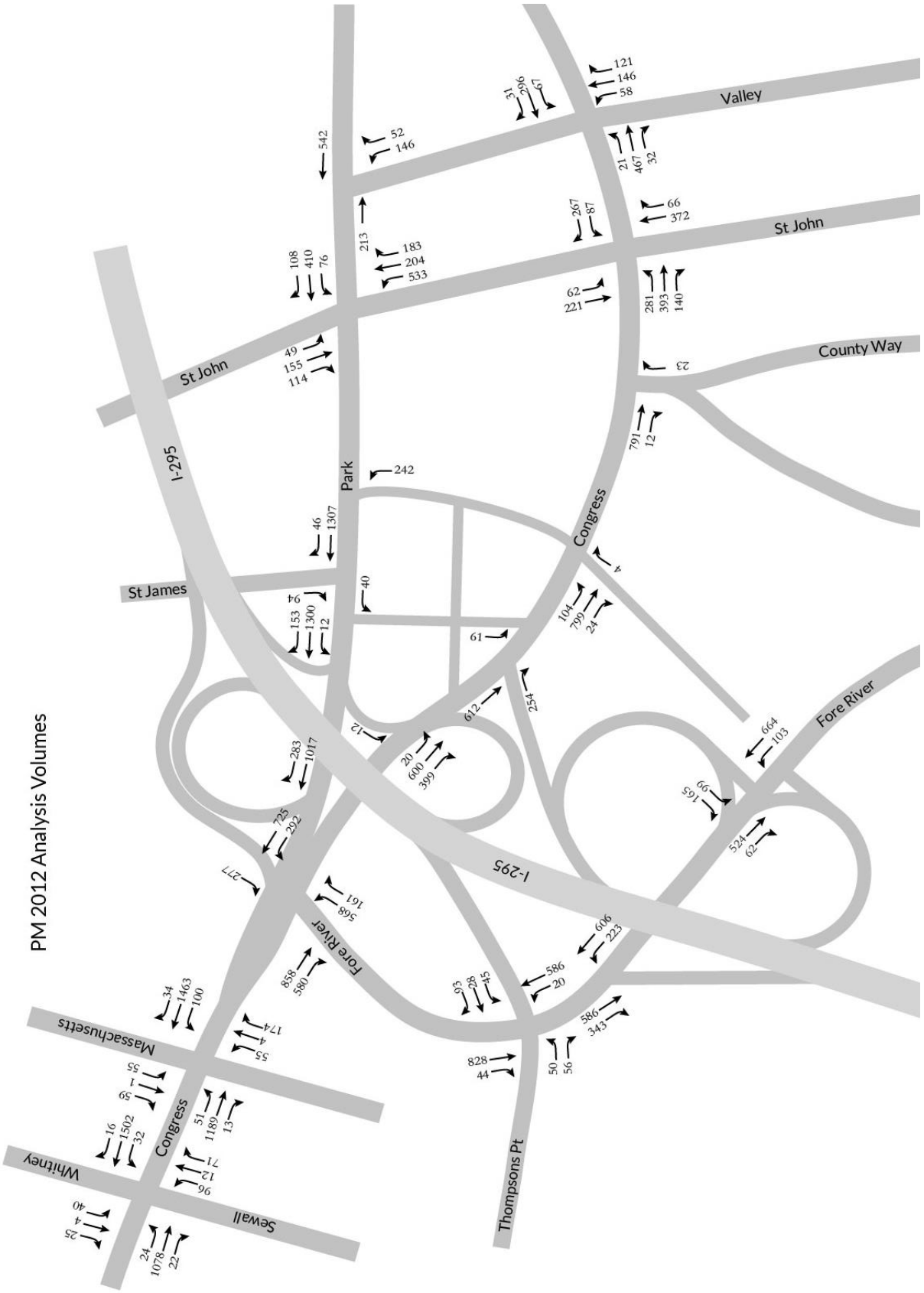
637
34
45
56
495
43
178
140
512
51


PM 2012 Analysis Volumes
Valley
St John
St John
County Way
I-295
Park
Congress
St James
Fore River
I-295
Fore River
Massachusetts
Congress
Whitney
Sewall
Thompsons Pt
121
146
58
31
296
67
542
52
146
21
467
32
213
183
204
533
267
87
66
372
108
410
76
62
221
281
393
140
49
155
114
23
791
12
242
46
1307
4
40
94
153
1300
12
104
799
24
61
254
612
12
20
600
399
283
1017
725
292
277
664
103
165
99
524
62
161
568
606
223
858
580
586
20
93
28
45
586
343
828
44
50
56
34
1463
100
174
4
55
55
1
59
16
1502
32
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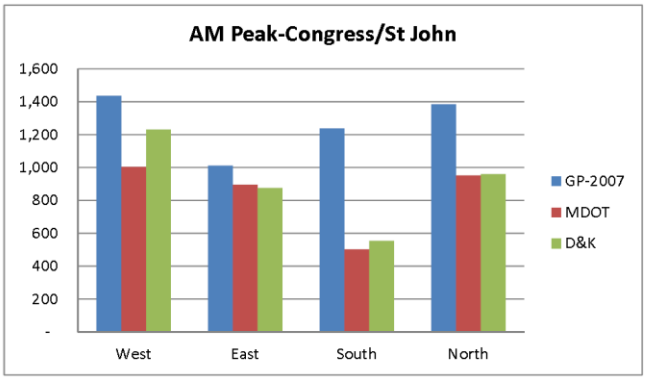
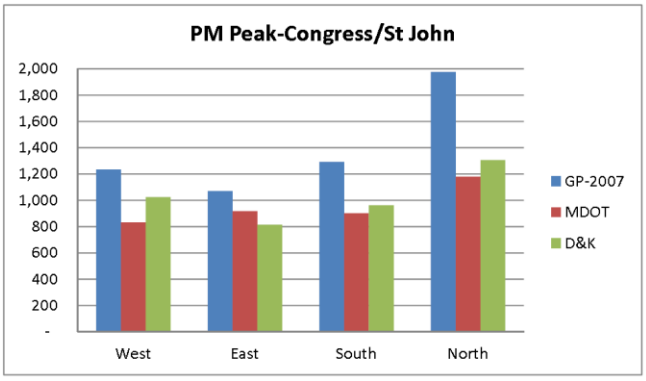
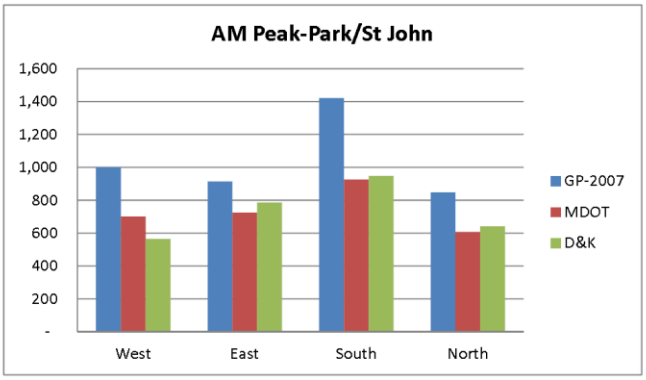
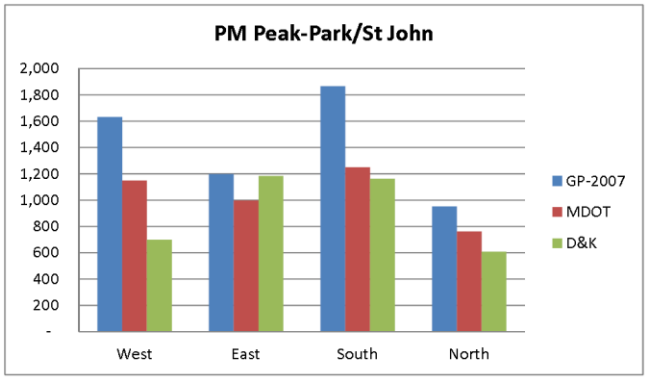
71
12
96
40
4
25
24
1078
22




The October 2012 traffic counts included bicycles and pedestrians, and the data is summarized in the table below.

| | Pedestrians | | Bicycles | |
|---|---|---|---|---|
| **Intersection** | AM (7 to 9 a.m.) | PM (3 to 6 p.m.) | AM (7 to 9 a.m.) | PM (3 to 6 p.m.) |
| **Congress/St John** | 47 | 150 | 4 | 16 |
| **Park/St John** | 54 | 161 | 12 | 44 |

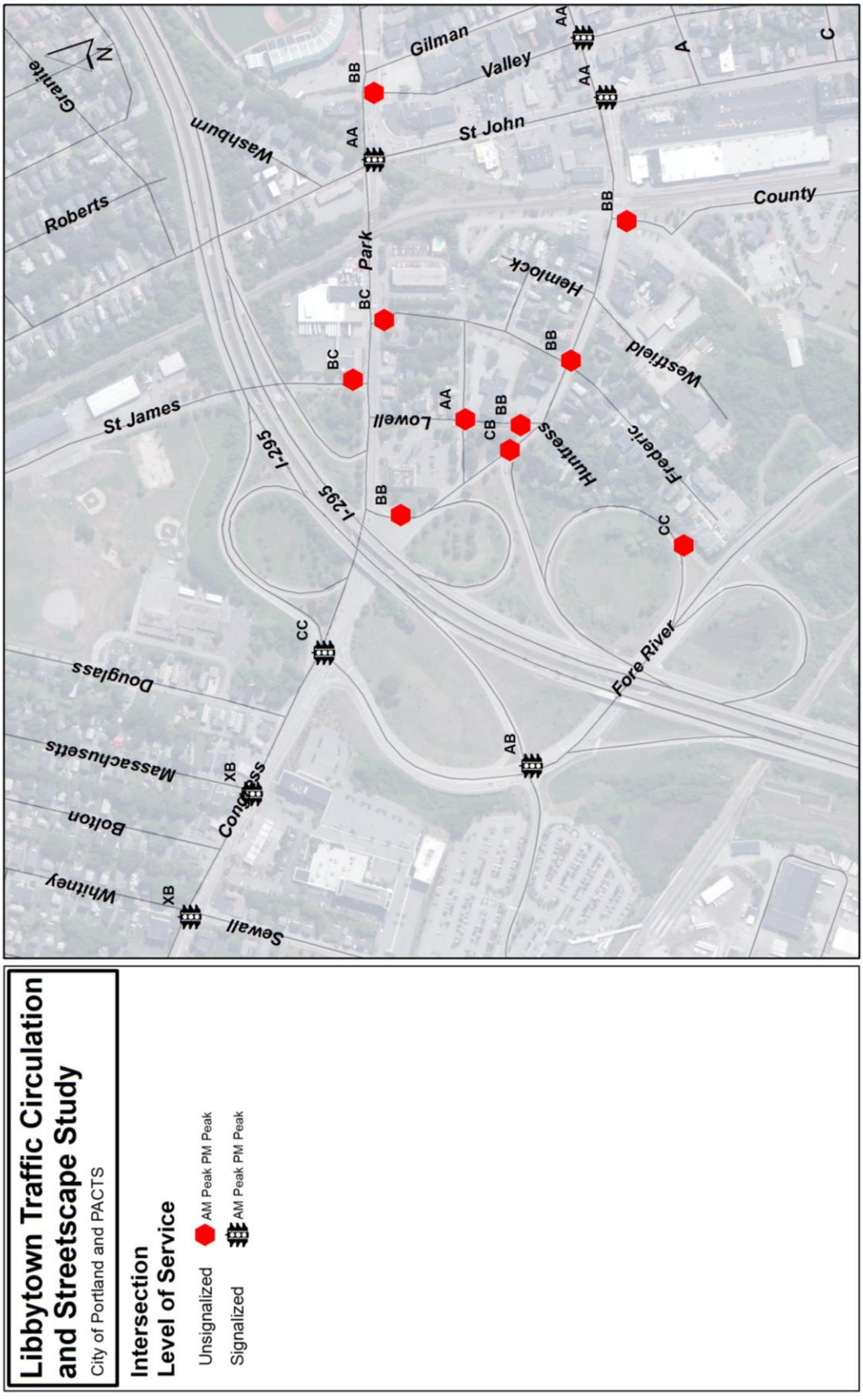
During the counts, numerous instances of wrong way bicycle travel on Park Street was observed, which may indicate that is viewed as preferable to right-way travel on Congress Street. Rainy weather during the morning peak hour may have contributed to lower bicycling during the count.

### *Traffic Operations*

Using the above turning movement traffic counts, an analysis of intersection level of service was conducted for the morning and afternoon peak hour. Level of service is a grade rating of A through F to indicate the level of congestion for an intersection or roadway. In an urban downtown area, peak hour levels of service of D or E are generally considered acceptable.

In the Libbytown study area, traffic levels of service (LOS) in the study area range from A through C during the peak hour, as shown on page 6. These are high for a central urban area, and indicate that traffic congestion is not a significant problem for transportation in the study area.

The analysis also indicates that the intersection of Fore River Parkway and Congress is the most critical in terms of Volume/Capacity ratio. This situation is exacerbated due to the lack of street connectivity and alternate routes in the area, which has the effect of concentrating traffic at this location.


Libbytown Traffic Circulation and Streetscape Study
City of Portland and PACTS
Intersection Level of Service
Unsignalized AM Peak PM Peak
Signalized AM Peak PM Peak
Granite
Roberts
Washburn
Gilman
Valley
St John
Park
Hemlock
County
Westfield
Federic
Hunress
Lowell
St James
I-295
Douglass
Massachusetts
Bolton
Whitney
Congress
Sewall
Fore River
1,000
0
500
1,000 Feet
DuBois & King inc.
RANSOM Consulting Engineers and Scientists
tjd&a Terrence J. DeWan & Associates Landscape Architects & Planners
smart mobility
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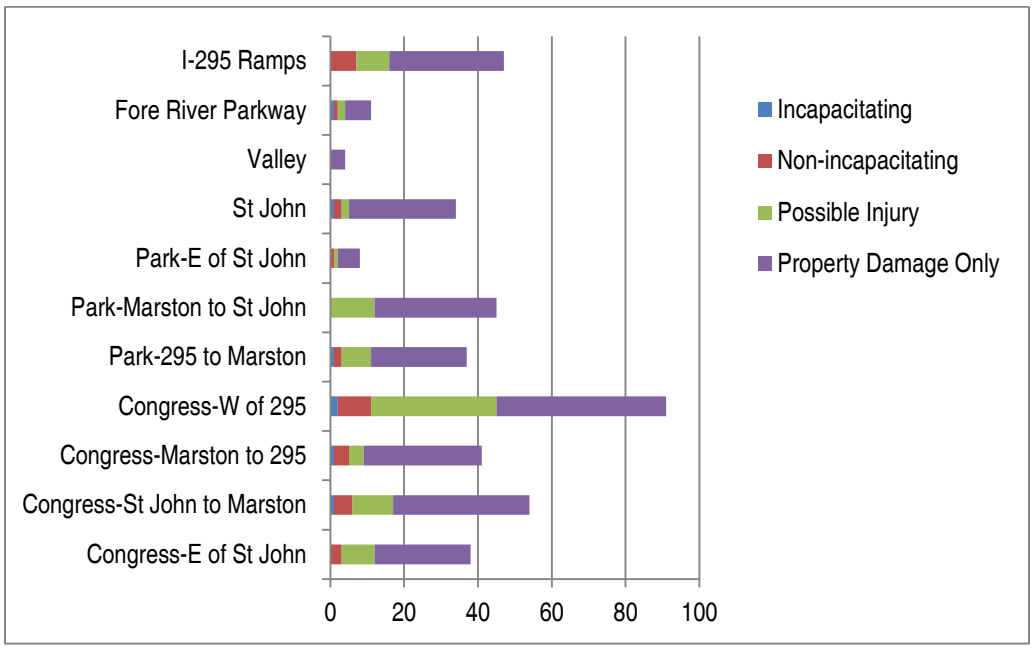
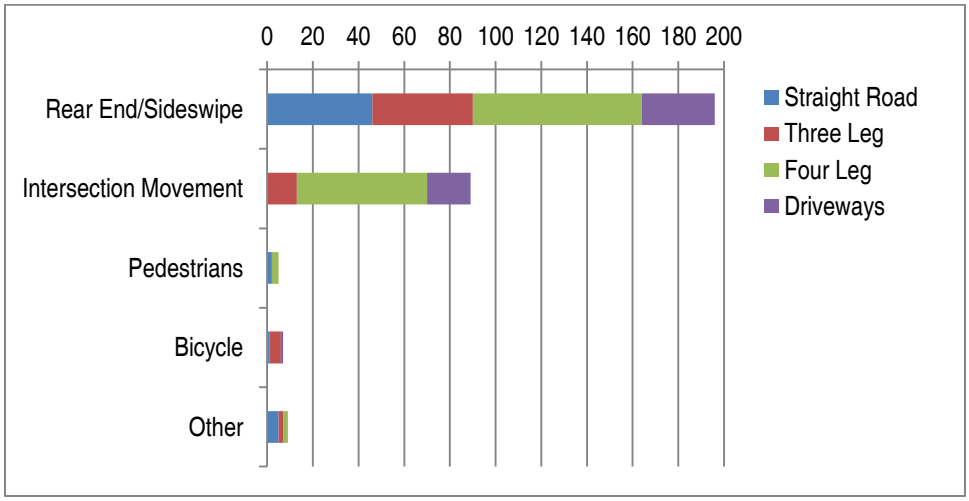
### *Safety*

The Maine DOT maintains records of vehicular crashes, and has provided this data for the years 2009 through 2011. An analysis of this data indicates that there are numerous street segments in the study are that are "High Crash Locations" shown on the map on page 8. The following table summarizes the total crashes in the study area.




This data indicates that Libbytown's street network is not functioning in a safe manner for vehicular traffic. Of particular concern for this study are the segments of Congress, Park and St John Street east of I-295, as the *Outer Congress Street Study* addressed the safety concerns of Congress west of 295. The chart below types of crashes on Congress, Park and St. John Streets.




The crashes are predominantly associated with intersections. The prevalence of rear-end crashes indicates that high speeds and "stop and go" movements are typical, rather than a slower but steady traffic flow.


Libbytown Traffic Circulation and Streetscape Study
City of Portland and PACTS
Crashes and High Crash Locations
Legend
Number of Crashes (2009-2011)
Source: Maine DOT
1
2
3-4
5-7
8-9
10-11
12-16
17-20
21-23
24 or more
High Crash Segments
Severe Injury Crashes
N
Exeter
Washburn
Deane
Granite
Payson
Roberts
Falmouth
I-295
St James
Forest
Gilman
Valley
St John
Washburn
Park
Marston
Cherry
Hemlock
Burnham
Lowell
Huntress
Frederic
Westfield
County
A
C
Fore River
I-295
Thompson's Point
Douglass
Massachusetts
Bolton
Whitney
Scott
Frances
Congress
Sewall
1,000
500
0
1,000 Feet
DuBois & King inc.
RANSOM Consulting Engineers and Scientists
tjd&a Terrence J. DeWan & Associates Landscape Architects & Planners
smart mobility
MORRIS COMMUNICATIONS PR • Public Involvement • Public Affairs

## Pedestrians

The pedestrian network was assessed for the coverage and condition of sidewalks, curb ramps, crosswalks, and street lighting. The key findings are reviewed in the following sections.

### *Sidewalks*

Sidewalk conditions in Libbytown are highly variable, as indicated in the map on page 11. The sidewalks were classified as follows:

- **adequate** (good condition, minor cracks, provide adequate separation from vehicles),
- **marginal** (moderately deteriorated, difficult for mobility impaired people to travel comfortably)
- **inadequate** (deteriorated, uneven or discontinuous, not protective of pedestrians, not accessible)
- **nonexistent** (gaps in sidewalks were noted where they end abruptly)


*Deteriorated Sidewalks and Lack of Connectivity on Fredric Street.*

The following list highlights areas that impede the function of the pedestrian network as a whole:

1. ***Sewall Street:*** Although substantial improvements have recently been made, the sidewalks along Sewall Street are circuitous and discontinuous.

2. ***Bolton Street at Congress:*** Sidewalks are in poor condition, utilities create obstacles and there is no clear delineation between pedestrian and vehicular space.

3. ***Saint James Street, East Side:*** Traveling from Park Avenue, this sidewalk becomes progressively narrower before terminating under the I-295 overpass.

4. ***Granite Street:*** Granite Street has the potential to connect the Oakdale and USM Neighborhoods to Libbytown by way of Saint John Street, but it has no sidewalks between Roberts and Saint John Streets.

5. ***Saint John Street:*** The western sidewalk is in very poor condition from the I-295 overpass to Park Avenue. The eastern sidewalk from Park Avenue to Congress Street has excessively large curb cuts and pinch points created by utility poles.

6. ***Congress Street:*** The southern sidewalk between Westfield and Saint John is deteriorated and discontinuous.

7. ***Saint John Street:*** The eastern sidewalk from Congress to A Street is very deteriorated which makes it difficult for mobility challenged persons to get to the adjacent Greyhound bus station.

### *Pedestrian Crossings*

Pedestrian crossings were given one of the following 3 overall safety ratings, also shown on page 11:

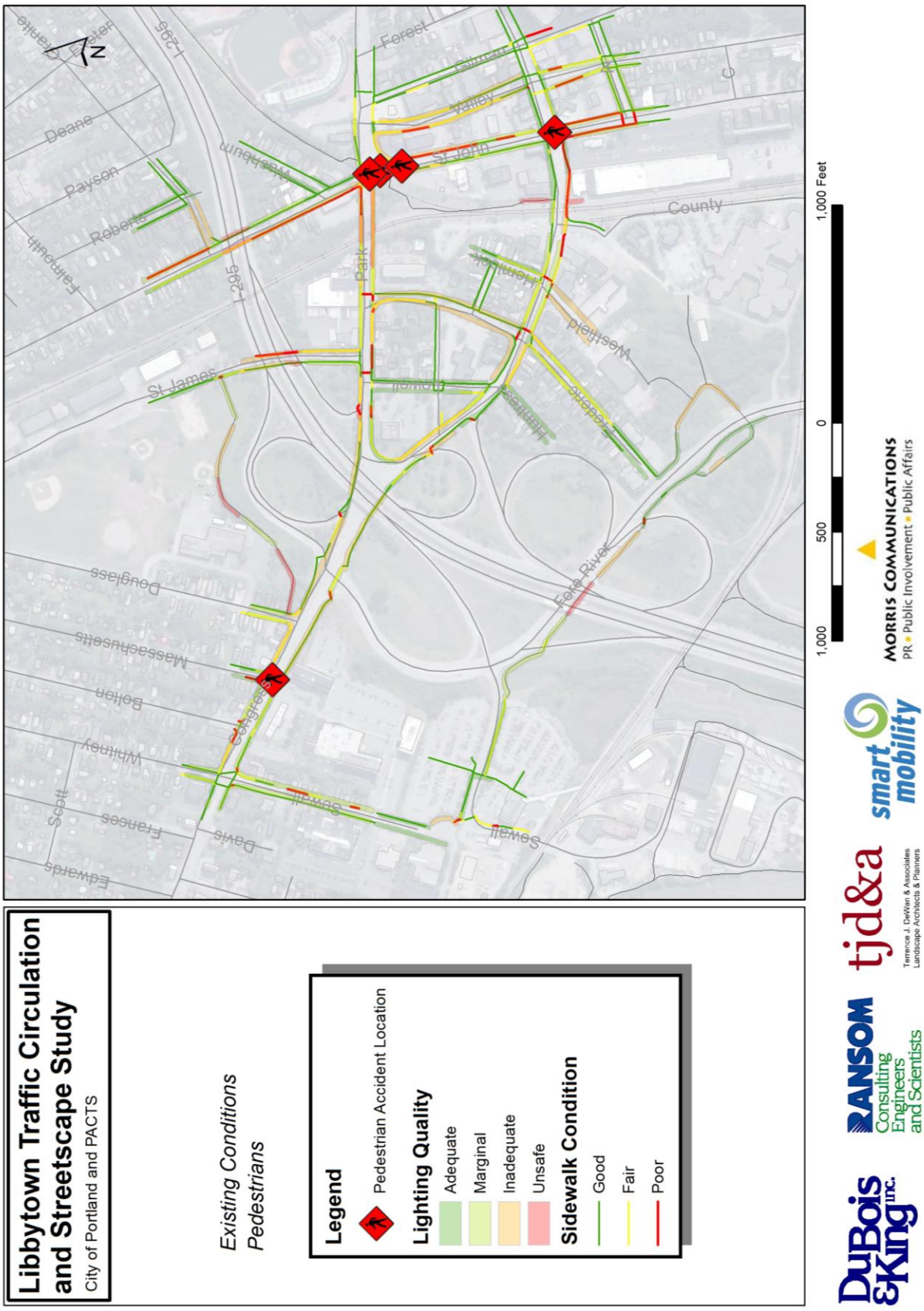
1. ***Adequate:*** Signalized or unsignalized crossings that give pedestrians a sense of safety and protection, where pedestrians are not likely to be discouraged from continuing on to their destination. Road geometry discourages high speed turns and vehicle speeds allow eye contact between drivers and pedestrians.

2. ***Marginal:*** Crossings that leave pedestrians more exposed to faster vehicles, where more timid or less mobile pedestrians may go out of their way to a safer crossing. Road geometry allows higher speed and does not require a vehicle to slow down when turning. While concurrent pedestrian signalization has great potential to provide safe and convenient pedestrian crossings, most of the concurrent phase pedestrian crossings observed fell into this category due to conflicts with turning traffic.

3. ***Unsafe:*** These crossings discourage pedestrians from walking to their destination. Road geometry encourages high speeds and high speed turns, and the design suggests that vehicles have the right-of-way. Multiple and/or high speed travel lanes may create a situation where drivers feel they are putting *themselves* in danger by stopping for a pedestrian in a crosswalk. The majority of unsafe crossings are clustered around the one-way sections of Park Avenue and Congress Street. This one-way pair and the uncontrolled on and off ramps associated with I-295-Exit 5 create a substantial barrier for pedestrian travel between Outer Congress Street and the Portland Peninsula.

The curb ramps were also rated for their adequacy and accessibility, and are shown on page 11.

*The slip Lane from Congress onto Marston Street allows vehicles to maintain high speeds when turning. Note the lack of pedestrian facilities for this person to proceed inbound on Congress Street.*


Libbytown Traffic Circulation and Streetscape Study
City of Portland and PACTS
Existing Conditions
Pedestrians
Legend
Pedestrian Accident Location
Lighting Quality
Adequate
Marginal
Inadequate
Unsafe
Sidewalk Condition
Good
Fair
Poor
N
1,000 Feet
1,000
500
0
DuBois & King inc.
RANSOM Consulting Engineers and Scientists
tjd&a Terrence J. DeWan & Associates Landscape Architects & Planners
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## Bicycles

The study area was assessed for the environment provided for bicycle transportation. There are a variety of types of bicycle facilities which appeal to different levels of skill and confidence, so this review includes both trails for riders of all ages and abilities, and on-street lanes, which are more appealing to highly skilled and confident bicyclists. The map on page 13 shows the locations of bike routes, hazardous areas, and vehicular crashes involving bicycles.

### *Trails*

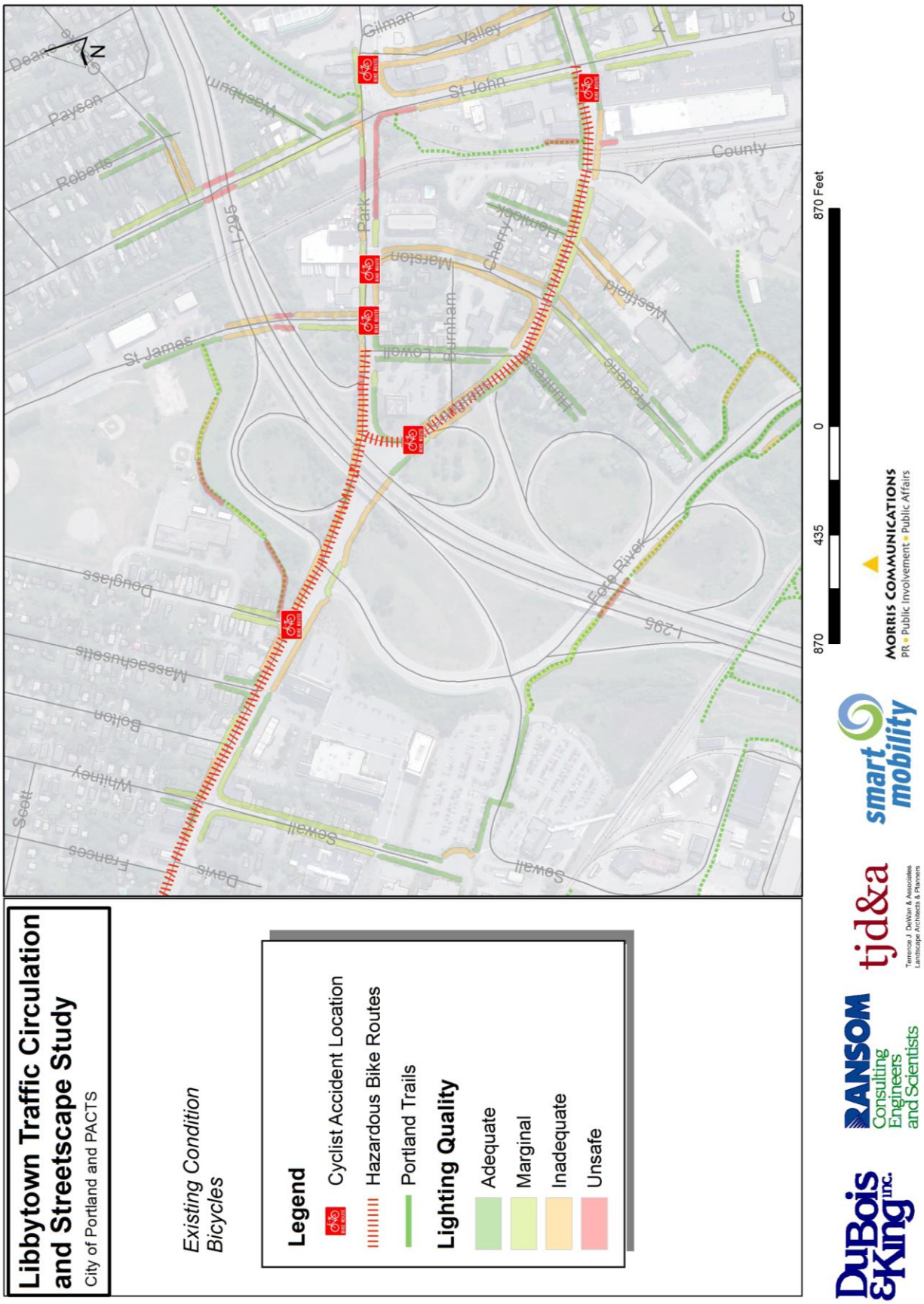
There are two paved multi-use trails in the study area. The first runs from Saint James Street, along Dougherty Field to Douglas Street. The surface is deteriorated, the trail is poorly lit and is lined by a chain link fence which blocks access to Congress Street. The Fore River Parkway Trail runs from the Portland Transportation Center to Veterans Bridge. This trail in good condition, well lit and will greatly benefit from improved connectivity provided by the proposed at-grade crossing of the Fore River Parkway at Fredric Street. At the limits of the study area, formal trail systems are maintained on Thompson's Point and in the Mercy Hospital area.

The study area also contains a number of informal trails. These include a path between Thompson's Point and the Fore River Trail along the Mountain Division railroad corridor, a path along the Union Branch railroad corridor from Congress Street to Hadlock Field (and eventually Deering Oaks) as well as a path along the alignment of the future railroad wye from The Fore River Parkway Trail to County Way. Informal trails, often called "desire lines," provide clues as to where people are currently traveling and may be helpful in determining the transportation needs of the community.

### *Roadway Bicycle Conditions*

The only dedicated bicycle facility in the study area is an isolated bike lane along Park Avenue, beginning at Saint John Street and ending just before the I-295 overpass. There is no parallel bike lane on inbound Congress Street. Conditions east of Saint John Street are more inviting to cyclists due to lower vehicular speeds within the intact street grid on the Portland Peninsula. Sewall Street, the PTC campus and the Fore River Parkway Trail provide a reasonable route but it does not connect well with Congress Street. The Fore River Parkway itself provides fairly good biking although conditions deteriorate significantly as one approaches the Congress Street intersection.

The biking conditions on Congress Street and Park Avenue between the Fore River Parkway and Saint John Street are inadequate and unsafe. The one-way sections of these roads were designed as an extension of the I-295 Exit 5 interchange, and function poorly for other modes of transportation. The multiple lanes, road geometry, and lack of traffic control where Congress and Park intersect highway ramping encourage vehicles to maintain high speeds and weave through the area creating hazardous conditions for cyclists. The most hazardous area appeared to be on Congress Street in the vicinity of Lowell Street due to vehicles entering from the I-295 off ramp and the addition of a third travel lane on Congress Street. Although biking conditions on the side streets were considerably better, they do not provide a complete alternate route, and are offset by the poor conditions on Park and Congress.


Libbytown Traffic Circulation and Streetscape Study
City of Portland and PACTS
Existing Condition
Bicycles
Legend
Cyclist Accident Location
Hazardous Bike Routes
Portland Trails
Lighting Quality
Adequate
Marginal
Inadequate
Unsafe
N
Gilman
Valley
St John
Paysen
Roberts
Washburn
I-295
Park
Marston
Cherry
Hemlock
Burnham
Lowell
St James
County
Westfield
Fessenden
Fessenden
Douglass
Massachusetts
Bolton
Whitney
Scott
Frances
Davis
Sewall
Fore River
I-295
870
435
0
870 Feet
DuBois & King inc.
RANSOM Consulting Engineers and Scientists
tjd&a Terrence J. DeWan & Associates Landscape Architects & Planners
smart mobility
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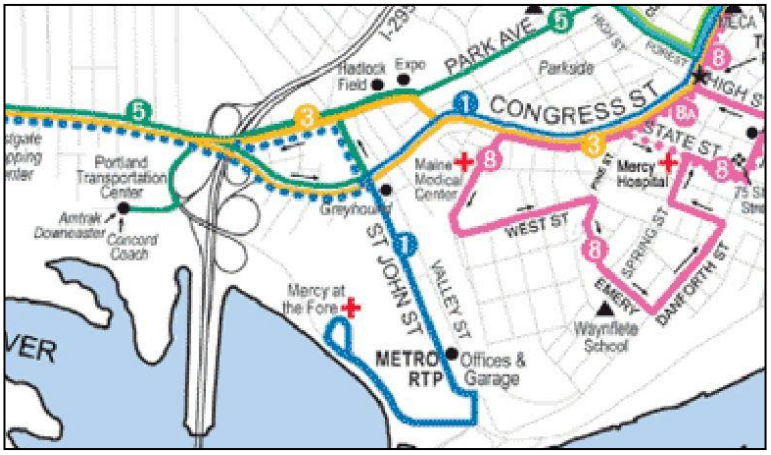
*The Fore River Trail makes an important connection to the Portland Transportation Center*

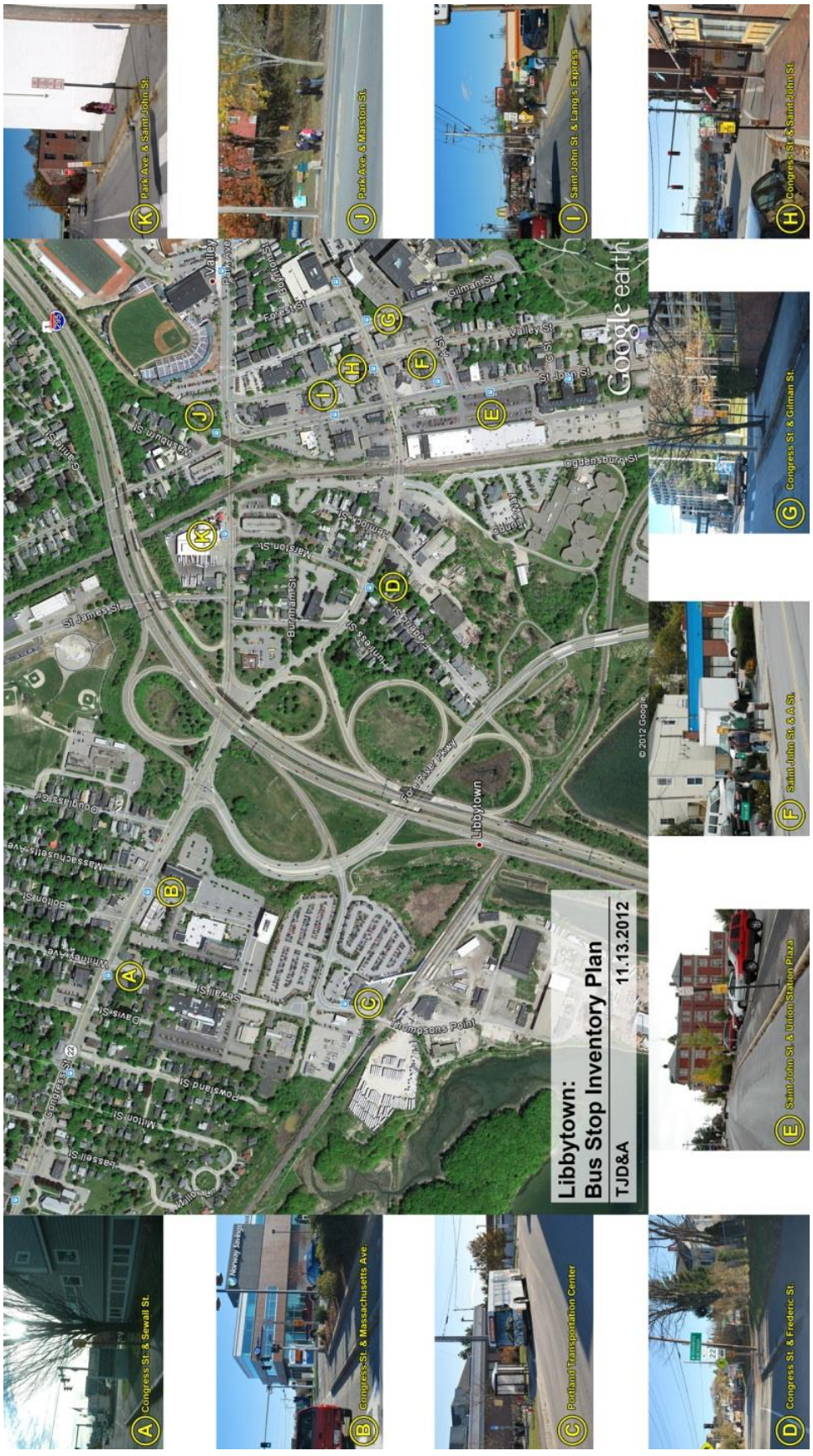
*Inbound Congress Street Traffic is dangerous and intimidating to cyclists and pedestrians.*

## Transit

The location of the Portland Transit Center results in transit routes that are concentrated on the Congress/Park corridors, as shown on the excerpt from the system map, to the right. There are several stops in the study area where transfers and connections to the Greyhound system occur, making them especially busy.




The transit stops are shown in the map on page 15, along with photos of each stop. Even though some of the stops are quite busy with passengers waiting to board, there are no shelters, benches, or other amenities. As indicated above in the discussion of pedestrian conditions, street lighting and pedestrian accessibility to the transit system is poor in many locations in the study area. Crossing and accessible curb ramps are not present at each transit stop. The figure below is a photosimulation of a shelter provided at one of the busier transit stops.


Libbytown:
Bus Stop Inventory Plan
11.13.2012
TJD&A
Google earth
© 2012 Google
A Congress St. & Sewall St.
B Congress St. & Massachusetts Ave.
C Portland Transportation Center
D Congress St. & Frederic St.
E Saint John St. & Union Station Plaza
F Saint John St. & A St.
G Congress St. & Gilman St.
H Congress St. & Saint John St.
I Saint John St. & Lang's Express
J Park Ave. & Marston St.
K Park Ave. & Saint John St.

### Placemaking

> *There is an incredible richness of opportunity for community interaction. What is missing is the sense of community identity and the accompanying infrastructure to tie these assets into a strong neighborhood center.* ***Libbytown Streetscape and Traffic Circulation Study RFP***

Libbytown is a unique and diverse area, with a great deal of economic importance and activity. There is even greater potential, due to its convenient and accessible location. Among the key features of Libbytown's development environment include:

- Great variety of businesses, a vibrant business district
- Scattered residential neighborhoods on quiet side streets
- Parks and trails "hidden in plain sight" or nearby (with connection between Frederic St and Fore River Trail)
- Highly accessible location for cars, less so for other users, but lack of an identifiable "center"
- Inconsistent development patterns and eclectic architecture has not resulted in a coherent look and feel or identity.

Development opportunities in light of the possible reduction of the I-295 Interchange footprint, as well as reconfiguration and potential narrowing of Congress and Park Streets, should be considered as alternatives are developed.

## Draft Purpose and Need Statement

The purpose of this project is to support the creation of a cohesive and livable neighborhood in Libbytown by:

- improving safety and connectivity for all users of the area's transportation network,
- improving the business and economic environment with better traffic circulation, easier access, and higher visibility, and
- creating a more attractive and inviting streetscape and neighborhood.

The needs exist due to high crash rates on the street network, and unsafe and unwelcoming environment on many streets for pedestrians, bicyclists and transit users, and an inconvenient one-way traffic circulation system that does not support local business accessibility.

# Attachment 3

## Multimodal Level of Service Analysis

DuBois & King inc.

# Multi-modal Level of Service

One of the primary goals of this study is to improve the study area streets for non-motorized and transit users to create a modally balanced and complete network. A multimodal analysis provides a basis to compare scenarios for their effectiveness in meeting the goals of improved conditions for all users.

## Measuring Pedestrian LOS

There are a variety of methods that are used to assess pedestrian infrastructure. Some methods relate to capacity and potential pedestrian crowding, and are typically used when high volumes of pedestrians are expected, such as a large special events center or subway station. Others assess the pedestrian environment for the convenience, safety and comfort of pedestrian travel. For purposes of creating a safer and more inviting street network, methods that evaluate the physical conditions are more appropriate. Pedestrian LOS (PLOS) was measured for existing conditions and alternative scenarios based on the scoring system published in *Sustainable Transportation Planning-Tools for Creating Vibrant, Healthy and Resilient Communities*, which considers the following elements:

- Distance between Crossings
- Comfort and Security (presence of trees, lighting, buildings/windows facing the street)
- Crossing Exposure (number of lanes to cross)

The scores for each element above are assigned 1 through 5, and averaged to determine the resulting Pedestrian LOS as shown below.

| Average Score | PLOS |
|---|---|
| 4.1 - 5 | A |
| 3.1 - 4 | B |
| 2.1 - 3 | C |
| 1.1 - 2 | D |
| 0.1 - 1 | E |
| 0 | F |

Scores were calculated at 3 representative locations.

A. Outer Congress St at Fore River Parkway
B. Congress St and Marston
C. Park Ave at Marston

### *Distance to Crossings.*

Each location was assigned a zone, and the distance between designated pedestrian crossings over Park Ave or Congress St was measured and aggregated to generate the score. Where an intersection currently has, or is planned to have multiple crossings, the distance from the center of the intersection to the next crossing was measured, (i.e. one crossing per intersection).

The locations of crossings are the same for each alternative, so each alternative scores the same in this category. There is currently no crosswalk over Congress St in the FRP zone, so the distance to the nearest crosswalk at each end of the zone was measured.

| Average Distance to adjacent designated crossing (Meters) | Score |
|---|---|
| <30 | 5 |
| 31-60 | 4 |
| 61-90 | 3 |
| 91-120 | 2 |
| 121-150 | 1 |
| >150 | 0 |

| | Outer Congress St | | Inner Congress St | | Park Ave | |
|---|---|---|---|---|---|---|
| Alternative | Average Distance (m) | Score | Average Distance (m) | Score | Average Distance (m) | Score |
| Existing | 176 | 0 | 154 | 0 | 100 | 2 |
| 1a | 96 | 2 | 105 | 2 | 88 | 3 |
| 1b | 96 | 2 | 105 | 2 | 88 | 3 |
| 2a | 96 | 2 | 105 | 2 | 88 | 3 |
| 2b | 96 | 2 | 105 | 2 | 88 | 3 |

### *Comfort*

A pedestrian comfort score was applied to sidewalk segments in the study area. Scores range from 5- a comfortable environment that encourages walking, to 1-an environment where walking does not feel safe or comfortable. The following table provides some of the characteristics for high, medium and low pedestrian comfort.

| **Pedestrian Comfort** | **Characteristics and Features** | Score |
|---|---|---|
| High | High frequency of doorways that open onto the street and windows that face the street.<br>Pedestrian facilities continue through driveways.<br>Street trees and pedestrian-scale street lights.<br>Seating areas.<br>Blocks < 300'<br>Vehicular speeds <30mph | 5 |
| | | 4 |
| Medium | More exposed sidewalks with buildings set back and facing away from the street.<br>Greater distance to building entrances.<br>More designed for automobile access<br>Higher speeds (35 mph +/-)<br>Some streetscape features present (trees, lighting) | 3 |
| | | 2 |
| Low | Exposed sidewalks on higher speed (40+ mph) streets.<br>Sidewalks that are edged with parking lots, vacant lands or highway infrastructure.<br>Lack of trees and/or lighting | 1 |
| | | 0 |

The average sidewalk score for each zone was calculated by multiplying the score for each segment by its length, and then taking a weighted average. The following table provides the scores for the existing network.

Table #:

| Score | Outer Congress | Inner Congress | Park Ave |
|---|---|---|---|
| 1 | 164 | 343 | 310 |
| 2 | 151 | 371 | 347 |
| 3 | 55 | 332 | 148 |
| 4 | 0 | 165 | 88 |
| 5 | 0 | 106 | 125 |
| Total Length | 370 | 1,317 | 708 |
| Weighted by Score | 631 | 3,276 | 2,115 |
| Average Score | 1.7 | 2.49 | 2.99 |

For this measure, all of the alternatives scored equally, as the streetscape features such as seating, lighting are proposed in each alternative, and the potential for street-fronting development could further improve this measure.

| Score | Outer Congress | Inner Congress | Park Ave |
|---|---|---|---|
| 1 | 0 | 167 | 250 |
| 2 | 175 | 371 | 260 |
| 3 | 150 | 332 | 148 |
| 4 | 45 | 341 | 235 |
| 5 | 0 | 106 | 125 |
| Total Length | 370 | 1,317 | 708 |
| Weighted by Score | 980 | 3,799 | 2,775 |
| Average Score | 2.6 | 2.88 | 3.93 |

### *Crossing Exposure*

Crossing exposure measures the number of travels pedestrians must cross, and the presence of a pedestrian refuge median.

| Number of lanes to cross and presence of pedestrian refuge median | Score |
|---|---|
| 1 lane (one way) | 5 |
| 1+1 lanes | 4 |
| 2+2 lanes with refuge | 3 |
| 3 lanes (one-way) | 2 |
| 3+3 lanes with refuge | 1 |
| Any crossing more than 10 meters without refuge or any street with more than 3+3 lanes | 0 |

In cases where crossings did not match this score matrix exactly, but engineering judgment was used to assign scores.

| Scenario | Outer Congress | Inner Congress | Park Ave |
|---|---|---|---|
| Existing | 0 | 0 | 0 |
| Alt 1a | 3 | 5 | 2 |
| Alt 1b | 3 | 4 | 4 |
| Alt 2a | 3 | 5 | 2 |
| Alt 2b | 3 | 4 | 4 |

### PLOS Results

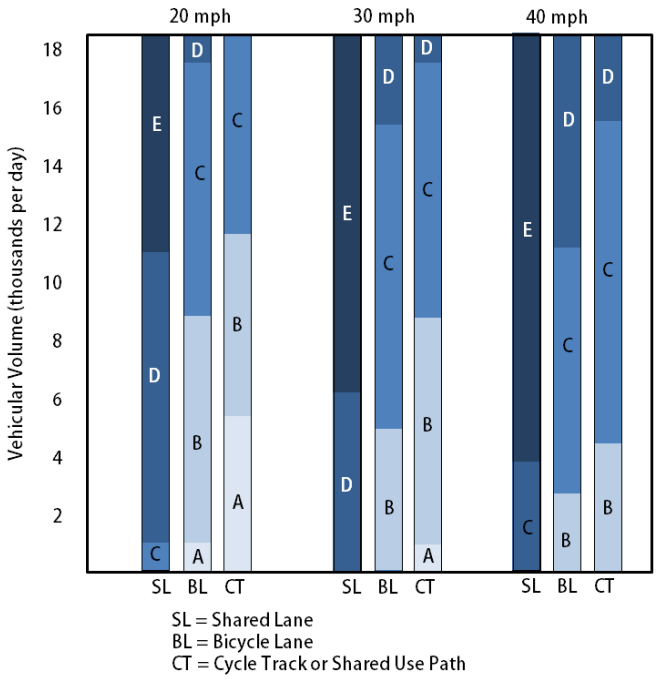
The table below provides the pedestrian measures of each type for each segment and alternative.

| | Measure | Existing | 1A | 1B | 2A | 2B |
|---|---|---|---|---|---|---|
| Outer Congress | Distance | 0 | 2 | 2 | 2 | 2 |
| | Comfort | 1.7 | 2.6 | 2.6 | 2.6 | 2.6 |
| | Exposure | 0 | 3 | 3 | 3 | 3 |
| | Average | 0.6 | 2.5 | 2.5 | 2.5 | 2.5 |
| | LOS | E | C | C | C | C |
| Congress | Distance | 0 | 2 | 2 | 2 | 2 |
| | Comfort | 2.5 | 2.9 | 2.9 | 2.9 | 2.9 |
| | Exposure | 0 | 5 | 4 | 5 | 4 |
| | Average | 0.8 | 3.3 | 2.9 | 3.3 | 2.9 |
| | LOS | E | B | C | B | C |
| Park | Distance | 2 | 3 | 3 | 3 | 3 |
| | Comfort | 3.0 | 3.3 | 3.3 | 3.3 | 3.3 |
| | Exposure | 0 | 2 | 4 | 2 | 4 |
| | Average | 1.7 | 2.8 | 3.4 | 2.8 | 3.4 |
| | LOS | D | C | B | C | B |

The results show the tremendous potential that any of the alternatives have to improve pedestrian conditions in the study area.

## Bicycle LOS

Bicycle LOS was measured using the FHWA's Bicycle Compatibility Index, which considers three major factors: speed of vehicular traffic, volume of vehicular traffic, and type of bicycle facility. The figure below shows the relationship between these three factors and bicycle level of service.




The following table provides the input variables for each of the alternatives, and the resulting bicycle levels of service.

Speed

| | Existing | 1A | 1B | 2A | 2B |
|---|---|---|---|---|---|
| FRP | 40 | 30 | 30 | 30 | 30 |
| Congress | 30 | 20 | 20 | 20 | 20 |
| Park | 30 | 20 | 20 | 20 | 20 |

AADT

| | Existing | 1A | 1B | 2A | 2B |
|---|---|---|---|---|---|
| FRP | 16,000 | 16,000 | 16,000 | 16,000 | 16,000 |
| Congress | 12,000 | 6,000 | 12,000 | 6,000 | 12,000 |
| Park | 11,000 | 17,000 | 11,000 | 17,000 | 11,000 |

Facility

| | Existing | 1A | 1B | 2A | 2B |
|---|---|---|---|---|---|
| FRP | NONE | SL | SL | SL | SL |
| Congress | NONE | CT | SL | BL | BL |
| Park | NONE | CT | BL | CT | BL |

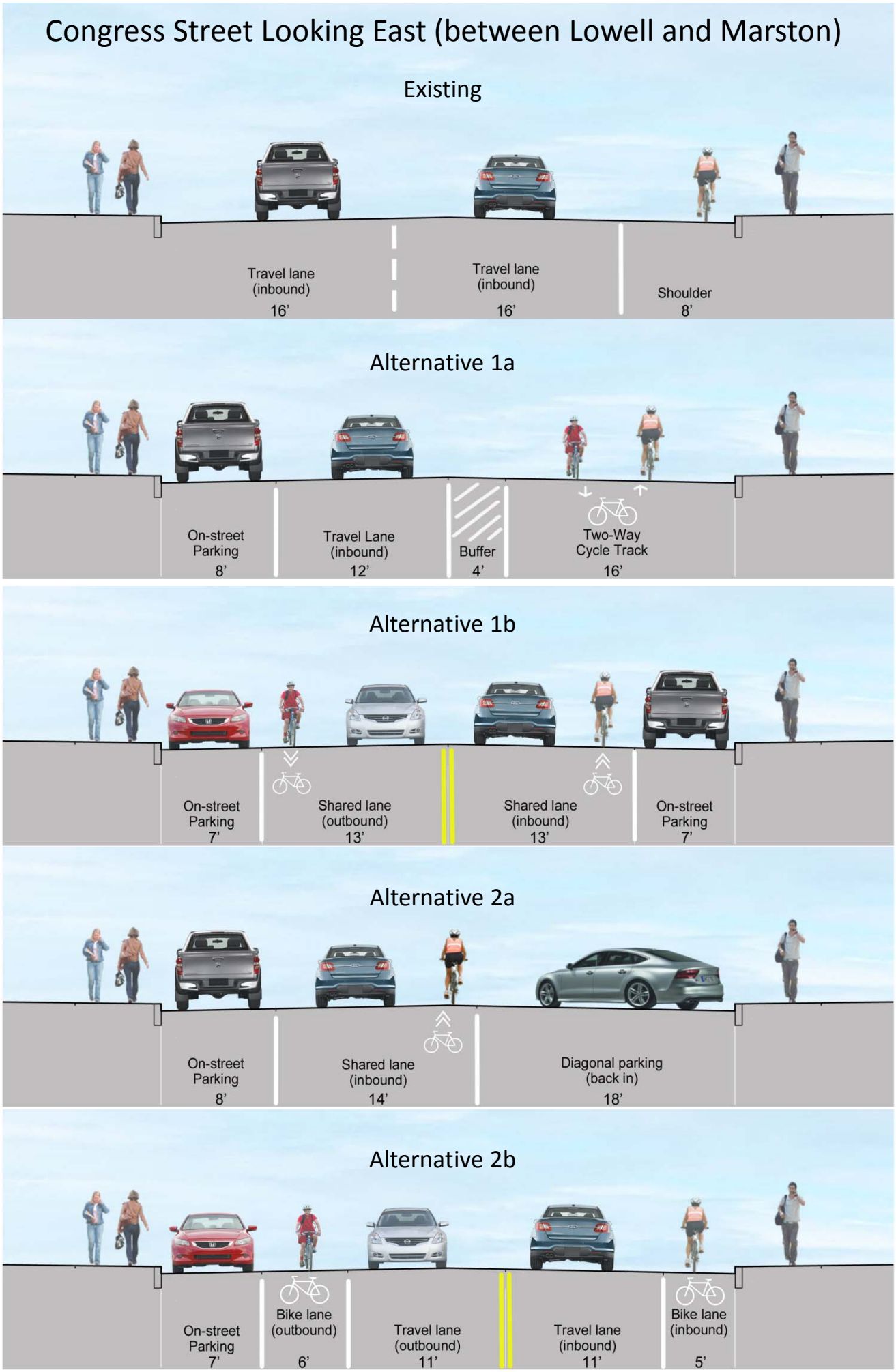
Score

| | Existing | 1A | 1B | 2A | 2B |
|---|---|---|---|---|---|
| FRP | F | F | F | F | F |
| Congress | F | B | E | B | C |
| Park | F | C | C | C | C |

## Transit

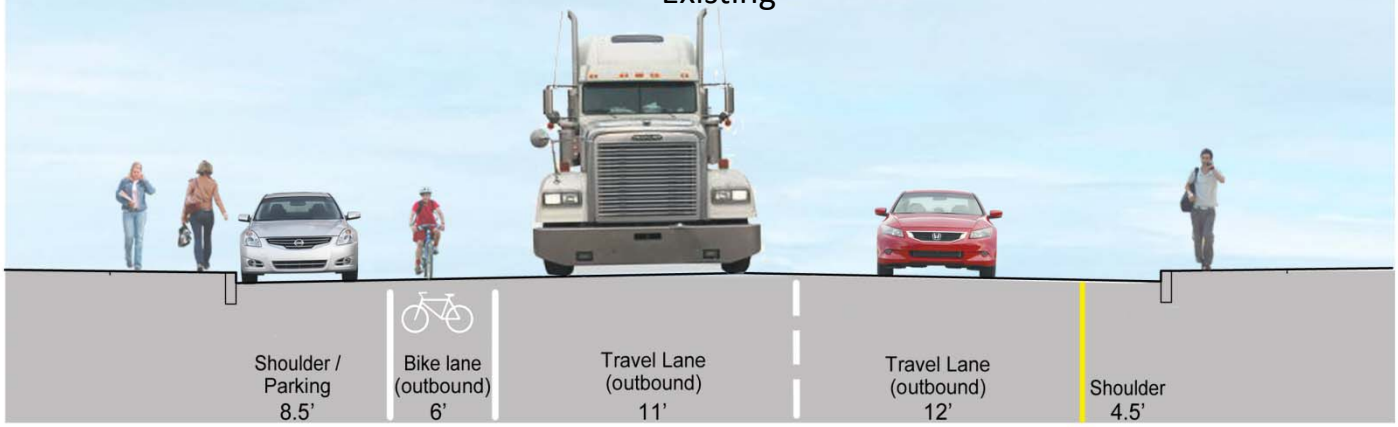
Transit levels of service were not assessed, as at this time none of the alternatives include significant changes in transit service. The conversion of Park and Congress to 2-way streets will allow for inbound and outbound bus stops to be located across the street from either other, which simplifies the experience for passengers. The streetscape and pedestrian improvements will further improve the transit experience, as will the provision of enhanced transit stops, as shown below.

# Congress Street Looking East (between Lowell and Marston)

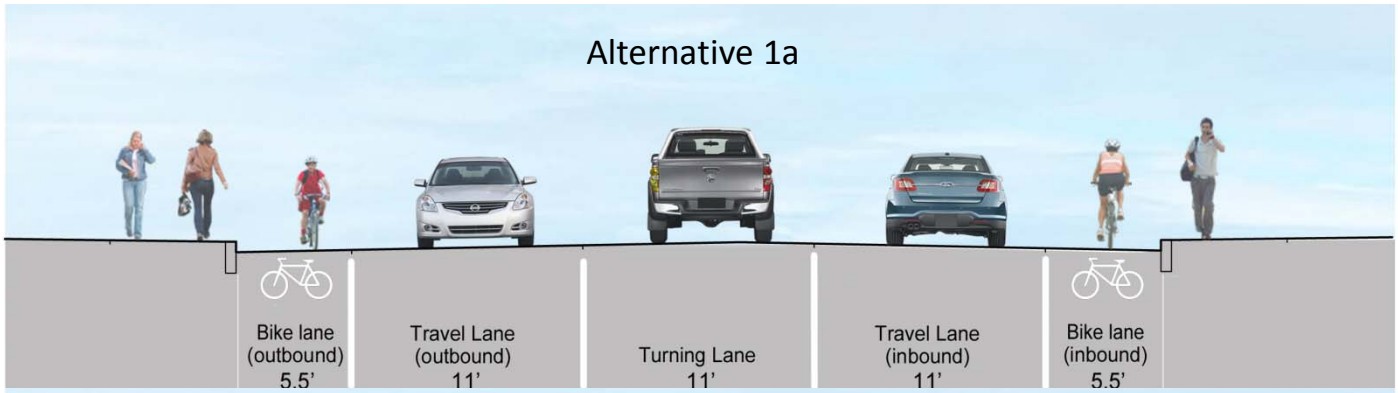


# Park Street Looking East (between Marston and St. John)

## Existing



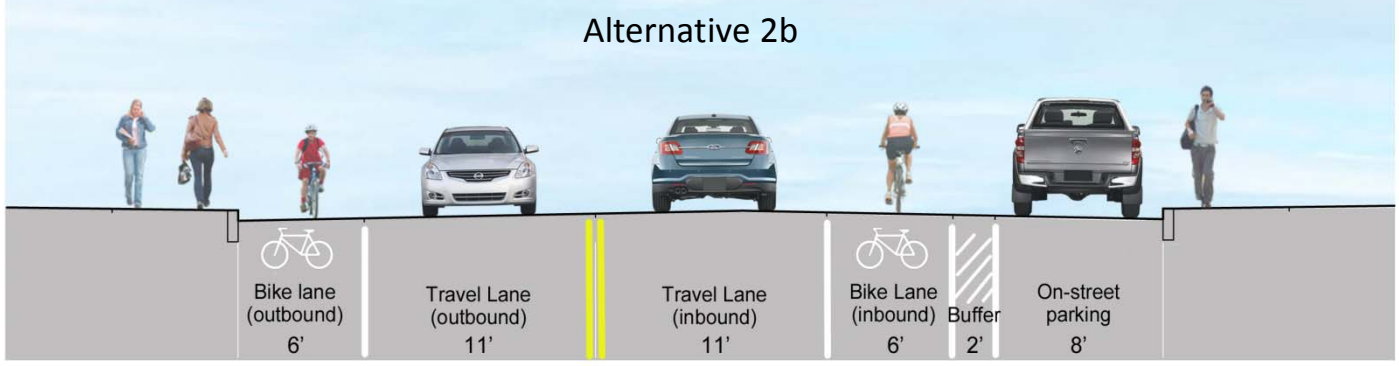

## Alternative 1a



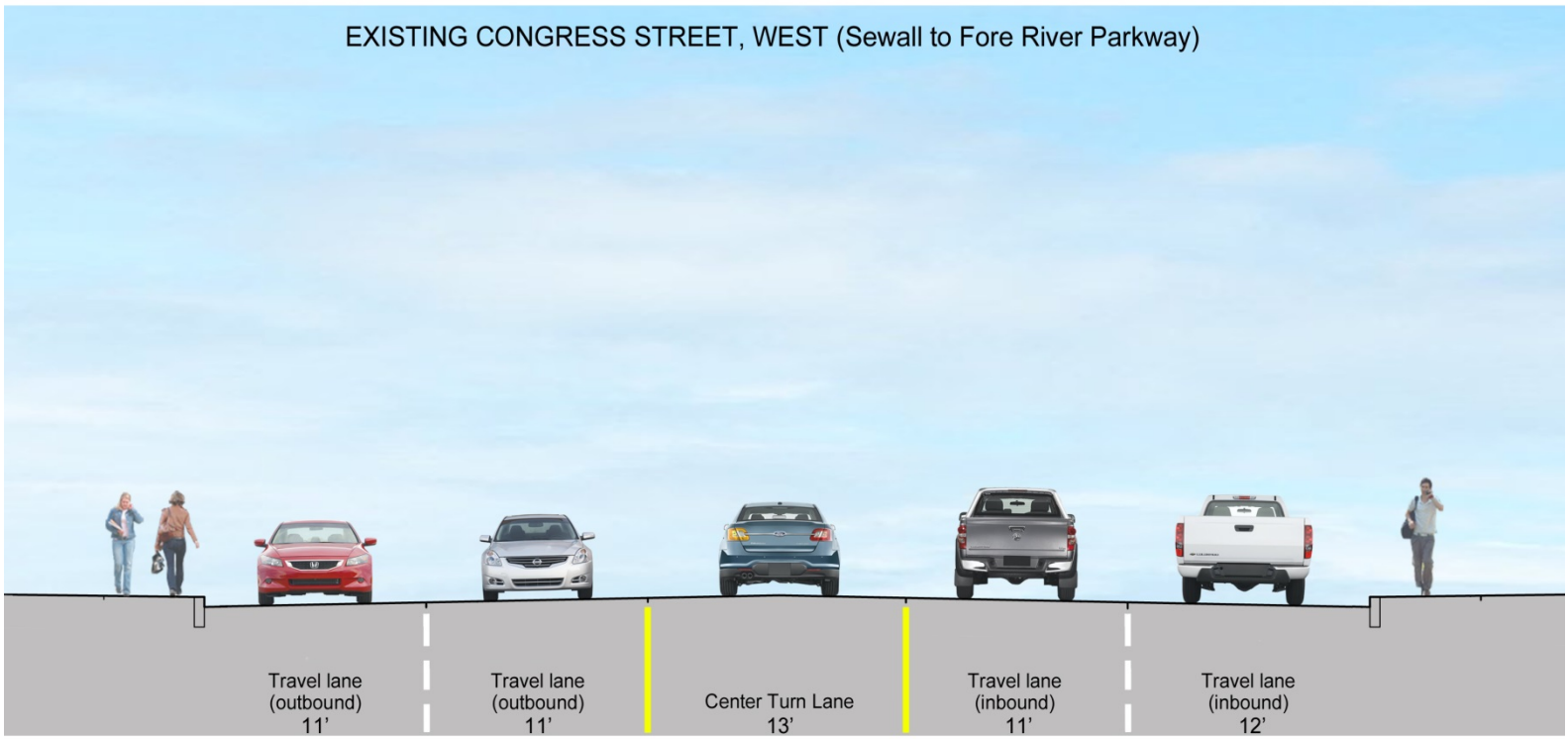

## Alternative 1b


## Alternative 2a

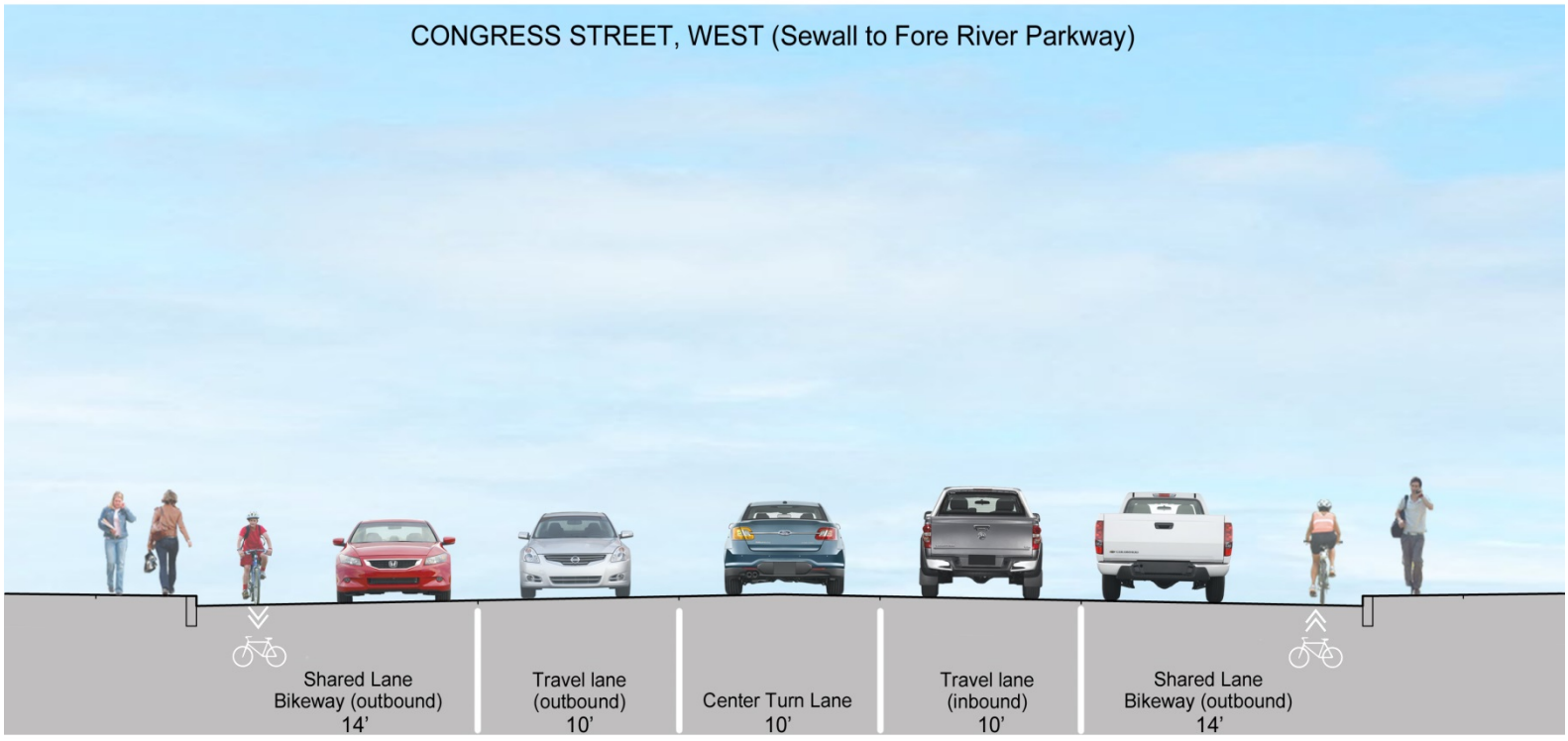

## Alternative 2b



## EXISTING CONGRESS STREET, WEST (Sewall to Fore River Parkway)




## CONGRESS STREET, WEST (Sewall to Fore River Parkway)



# Attachment 4

## Traffic Report

Documentation of the traffic analysis

DuBois & King inc.

# Libbytown Traffic Circulation and Streetscape Study

## *Traffic Analysis Documentation*

This report describes the traffic analysis procedures for the Libbytown Traffic Circulation and Streetscape Study (LTCSS). The analysis involved a number of steps, each of which are described in more detail in the following sections:

1) Develop a baseline turning movement data for 2015 No Build, to include planned development at Thompsons Point.
2) Screening analysis to forecast changes resulting from components of the LTCSS, including I-295 ramp removals and conversion to 2-way operations of Park and Congress, including changes in regional VMT and volume changes on the study area street network.
3) Forecast "build" turning movement counts using the PACTS model for the screened alternative scenarios.
4) Conduct Synchro and SimTraffic analyses of the recommended alternative.

## 1 Baseline Turning Movement Data

Turning movement data was obtained from several previous studies, including:

- *Outer Congress Street Corridor Study* for the intersections of Congress/Massachusetts and Congress Sewall,
- Maine Medical Center traffic impact study for the intersection of Congress and Valley Streets, and
- Thompsons Point Traffic Impact Study for the intersections of Fore River Parkway with Thompsons Point Road and Congress Street.

DuBois & King conducted a.m. and p.m. turning movement counts at the intersections of St. John/Park and St. John/Congress Streets in October, 2012, and a.m. peak hour counts of Congress/ Massachusetts and Congress/Sewall.

The Maine DOT conducts ATR data at numerous locations throughout the study area, including Congress, Park and the interstate ramps. Hourly recordings of the data were obtained to determine morning and afternoon peak hour volumes at each location available in the study area. In general, there is good agreement between the MaineDOT ATR data and the turning recent turning movement counts.

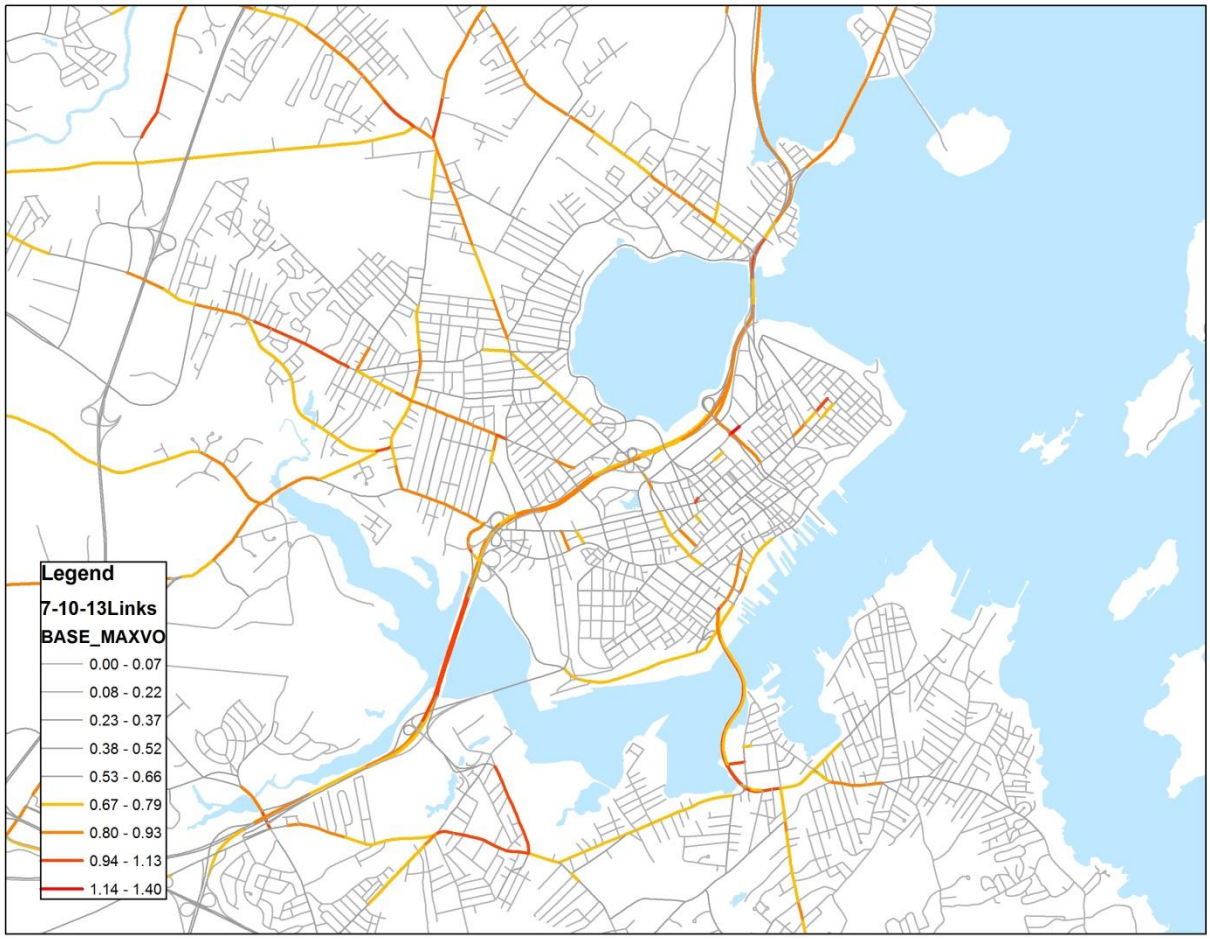
The baseline analysis scenario was established to be a.m. and p.m. peak hours for 2015, includes the Thompson's Point projected traffic. The source turning movement counts for the a.m. and p.m. peak

hour were adjusted to 2015 using an assumed growth rate of 0.5% per year, and the traffic projected from the Thompsons Point development was added to derive baseline 2015 scenarios. These volumes were used to develop "no build" Synchro analyses in the study area, and are shown in Attachment 1.

# 2 Regional Modeling

The PACTS regional travel demand model was updated with demographic data to reflect the year 2012 p.m. peak hour. Figure 2.1shows the baseline V/C ratios of the study area roadway network, which should be a consideration as alternatives and traffic volume changes are considered.

**Figure 2.1: Volume to Capacity ratios for the PACTS 2012 Base Model**



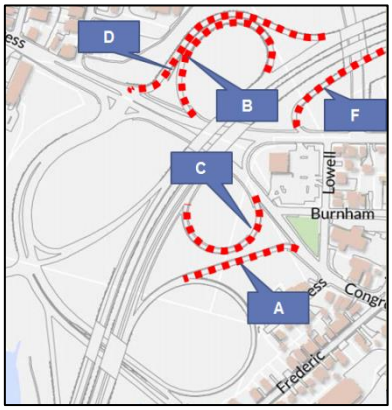

Among the most critical links on I-295 are the northbound and southbound lanes between Exits 4 and 5.

## 2.1 Testing Components of Alternatives

The PACTS model was run with each individual component being considered among the alternatives (removing the redundant ramps and the two-way conversions of Park and Congress). The VMT for each of these runs is shown in Table 2.1, along with changes from the base model.

**Table 2.1: VMT for PACTS model runs with alternative components**

| Scenario | VMT | Change from Base | |
|---|---|---|---|
| 2012 Base | 1,075,928 | | |
| Close Ramp A | 1,076,228 | 301 | 0.0279% |
| Close Ramp B | 1,075,931 | 4 | 0.0003% |
| Close Ramp C | 1,076,154 | 227 | 0.0211% |
| Close Ramp D | 1,075,985 | 57 | 0.0053% |
| Close Ramp F | 1,076,115 | 188 | 0.0175% |
| Park Ave 2 way | 1,076,007 | 79 | 0.0074% |
| Park & Cong 2 way | 1,075,845 | -82 | -0.0076% |




The regional VMT changes by very small amounts in all cases. Closing ramps A and C see the greatest change, and B and D closures have almost no effect. Converting both streets to two-way decreased the regional VMT. Figure 2.2 through Figure 2.8 show the volume changes in the vicinity of the study area for each of these model runs.

**Figure 2.2: PACTS model volume changes with Ramp A closed**

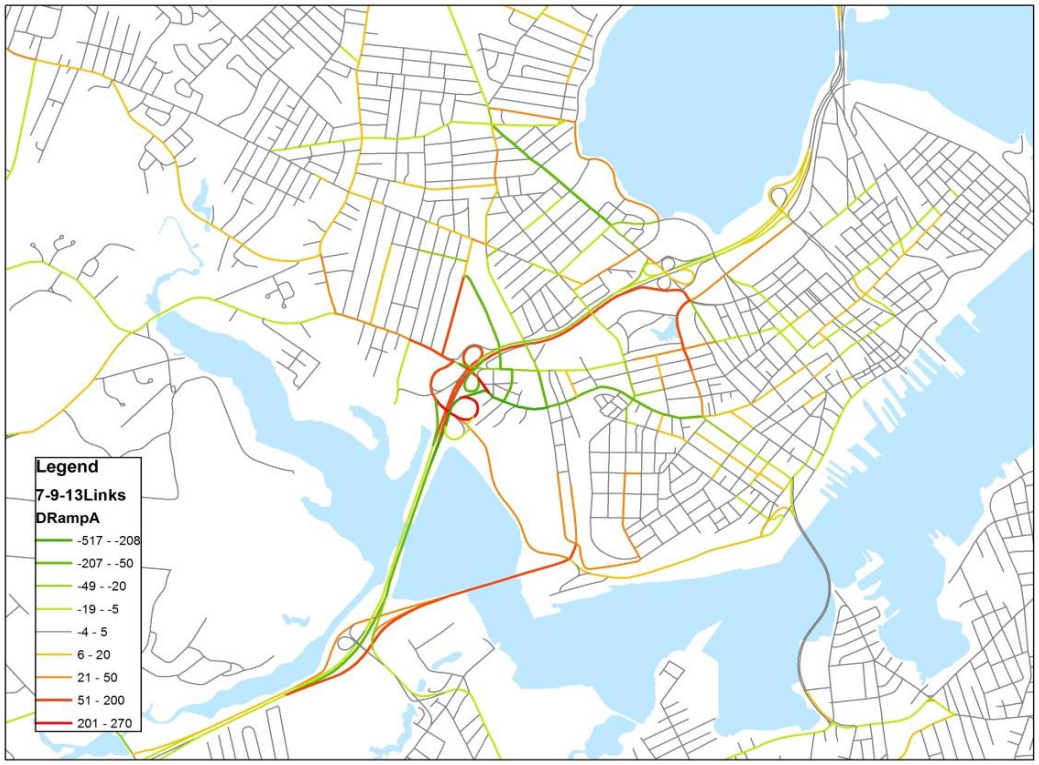


**Figure 2.3 PACTS model volume changes with Ramp B closed**


**Figure 2.4 PACTS model volume changes with Ramp C closed**

Figure 2.5: PACTS model volume changes with Ramp D closed


Figure 2.6: PACTS model volume changes with Ramp F closed

Figure 2.7: PACTS model volume changes with Park converted to 2-way operation

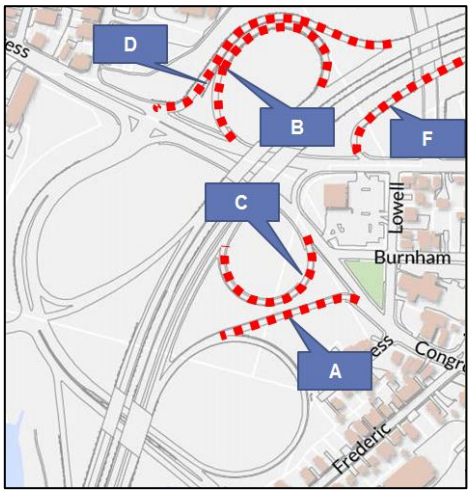

Figure 2.8: PACTS model volume changes with Park and Congress converted to 2-way operation

The modeling shows that the removal of Ramps B and D resulted in diversion from I-95 to I-295. Upon further inquiry, this appears to be a cascading effect of the ramp closures diverting traffic off from I-295 and onto Park Avenue, St. John, or other corridors. Because I-295 models as congested between exits 4 and 5 (see Figure 2.1) in the base model, the diversion from the ramp closures reduces congestion and travel times on I-295, which in turn draws some traffic from I-95. In reality, travel behavior and choices of routes will be heavily influenced by toll levels, the "value of time" of the drivers, and directional signage for out of town travelers.

Vehicle Hours of travel was also evaluated by project element, with the results shown below. The changes in VHT are very modest for all scenarios, with closing ramp F resulting in the greatest increase and closing ramp D resulting in the greatest decrease.

**Figure 2.9: PACTS Regional Model VHT for alternative components**

| Scenario | VHT | % Change from Base | |
|---|---|---|---|
| PM Peak Base | 38,092 | | |
| X Ramp A | 38,092 | 0.23 | 0.0006% |
| X Ramp B | 38,086 | -5.57 | -0.0146% |
| X Ramp C | 38,091 | -1.16 | -0.0030% |
| X Ramp D | 38,086 | -6.16 | -0.0162% |
| X Ramp F | 38,102 | 10.29 | 0.0270% |
| Park 2-Way | 38,092 | 0.13 | 0.0003% |
| Park-Cong 2-Way | 38,091 | -1.25 | -0.0033% |




Overall, the PACTS modeling results indicate that each of the ramp closures and two-way conversions that were tested will have very minor effects on the regional transportation system, with some increasing travel times overall and others decreasing them. Many of the ramp closures reduce volumes on I-295 through Portland and shift shorter trips onto other streets. This is a positive effect as it restores the functional classification system where interstates are designed for longer trips, and the local arterial and collector network serves shorter trips.

## 2.2 Alternatives Analysis

Four alternatives for the Libbytown study area were developed and presented at the April 22 PAC meeting. More information on how these alternatives were developed is included in the main report. These alternatives originated from a PAC workshop in January, and were refined and screened based on input from the Maine DOT, PACTS and the City of Portland. Several alternatives were eliminated due to safety or operational concerns. Table 2.2 summarizes the alternatives.

**Table 2.2: Libbytown Traffic Circulation Alternatives**

| | Interchange Configuration | a) Park-2 way Congress 1-way | b) Park-2 way Congress 2-way |
|---|---|---|---|
| **Alternative 1** | • Close 5 ramps: A,B,C,D,F<br>• Directs most interstate traffic to Fore River Parkway Interchange | • Park is major route into downtown<br>• Congress is major bicycle route | • Both routes serve traffic<br>• Park is major bicycle route<br>• Congress provides on-street parking |
| **Alternative 2** | • Close 4 ramps: A,B,C,D<br>• Eastbound access to Ramp F is provided<br>• Less traffic diverted to Fore River Parkway Interchange than Alternative 1. | • Congress 2-way between Marston and St. John, and provides on-street parking<br>• Park is traffic and bicycle route | • Equal emphasis for traffic, bicycles and parking on Congress and Park<br>• Larger signal at Congress/Park/I-295 NB |

### 2.2.1 PACTS Model Runs

The alternatives were tested in the PACTS model. Alternative 2b was refined so that Congress was 2 way only between Marston and St. John Street, so it was not modeled separately from Alternative 2a.

**Table 2.3: PACTS Results for Vehicle-Miles Traveled (VMT) of Model Alternatives**

| Scenario | VMT | Change from Base | |
|---|---|---|---|
| **2012 Base** | 1,075,928 | - | |
| **Alternative 1a** | 1,076,292 | 364 | 0.0339% |
| **Alternative 1b** | 1,076,127 | 200 | 0.0186% |
| **Alternative 2a/b** | 1,076,197 | 270 | 0.0251% |
| **Alternative 2a/b** | 1,075,921 | (6) | -0.0006% |

The PACTS model results show decreases in regional VMT for all alternatives, which is consistent with the modeling of the individual components. **Error! Reference source not found.** shows the model results for regional VHT for each alternative.

**Table 2.4: VHT Regional Model Results**

| Scenario | VMT | Change from Base | |
|---|---|---|---|
| PM Peak Base | 38,092 | | |
| Alt 1a | 38,090 | -1.67784 | -0.0044% |
| Alt 1b | 38,092 | -0.00003 | 0.0000% |
| Alt 2a | 38,091 | -0.52878 | -0.0014% |

| | | | |
|---|---|---|---|
| Alt 2b | 38,089 | -3.14179 | -0.0082% |

# 3 Refinement of the Recommended Alternative

The considerations in developing a final recommended alternative are described in the main report, and summarized here:

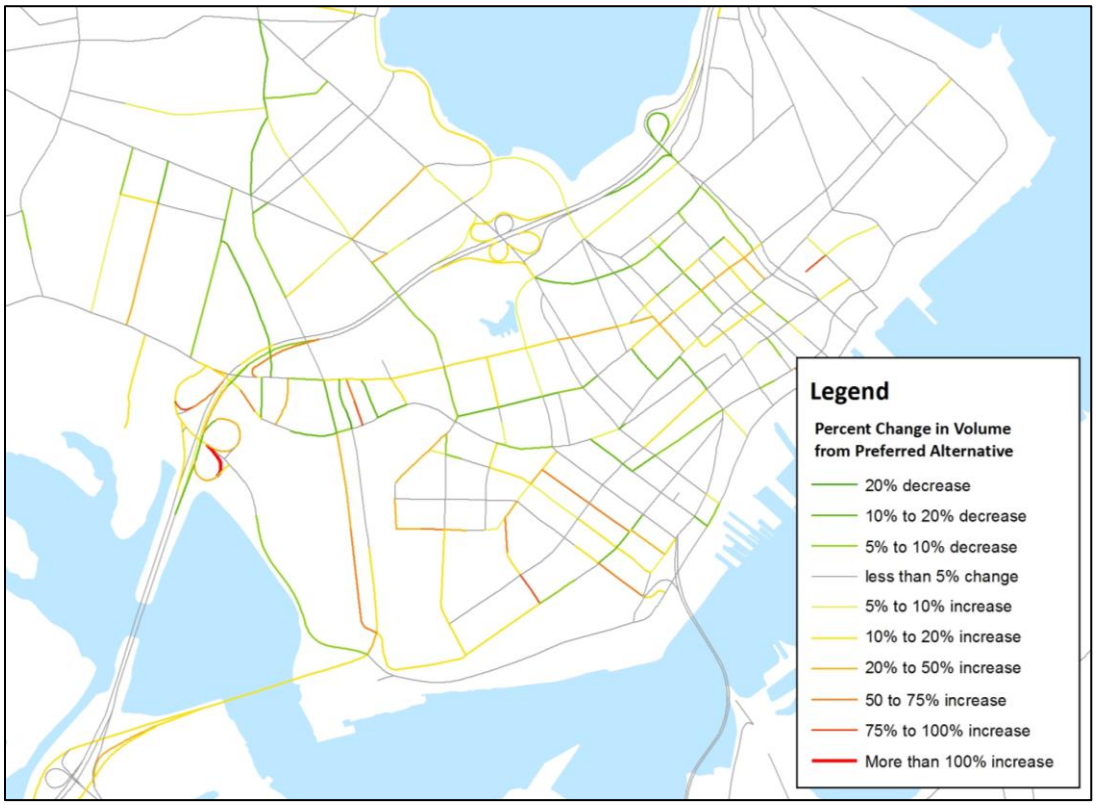
- The removal of Ramps A through D will have significant safety benefits for other users of the Park/Congress corridor, and will not noticeably effect VMT or VHT for the region.
- The conversion of Park and Congress to 2-way operations will have accessibility benefits for the neighborhood, as well as for bicyclists and the transit system.
- The primary traffic circulation effect of these ramp closures is the diversion of shorter trips to use alternate, non-interstate routes, including Park Avenue for trips to and from the north, and St John/Veterans Bridge to and from the south. These changes reinforce the functional classification system where the limited access freeways should serve longer trips and the urban arterial and collector network serves shorter trips.
- Public and stakeholder input supported the removals of Ramps A-D and two-way conversions.

The traffic analysis for the preferred alternative was conducted as follows:

- Run the PACTS model with the preferred alternative
- Export turning movement volumes from the base run and preferred alternative from TransCAD
- Apply the changes in turning movement volumes to the base turning movement volumes (pivoting).

Figure 3.1 shows the volume changes for the preferred alternative. The analysis turning movement volumes are included in Attachment 1 and Attachment 2. The turning movement volumes were pivoted by volume for the PM, and by percent change for the AM (the PACTS model is a PM peak hour model).

**Figure 3.1: Volume changes for recommended alternative**




TransCAD software can provide turning movement volumes, so this feature was used to develop turning movement volumes for the traffic analysis of the preferred alternative. Figure 3.2 shows the total turning movement volumes at each study area intersection for the no build and build scenarios.

**Figure 3.2: PM Peak Turning Movement Volumes at Study Area Intersections**

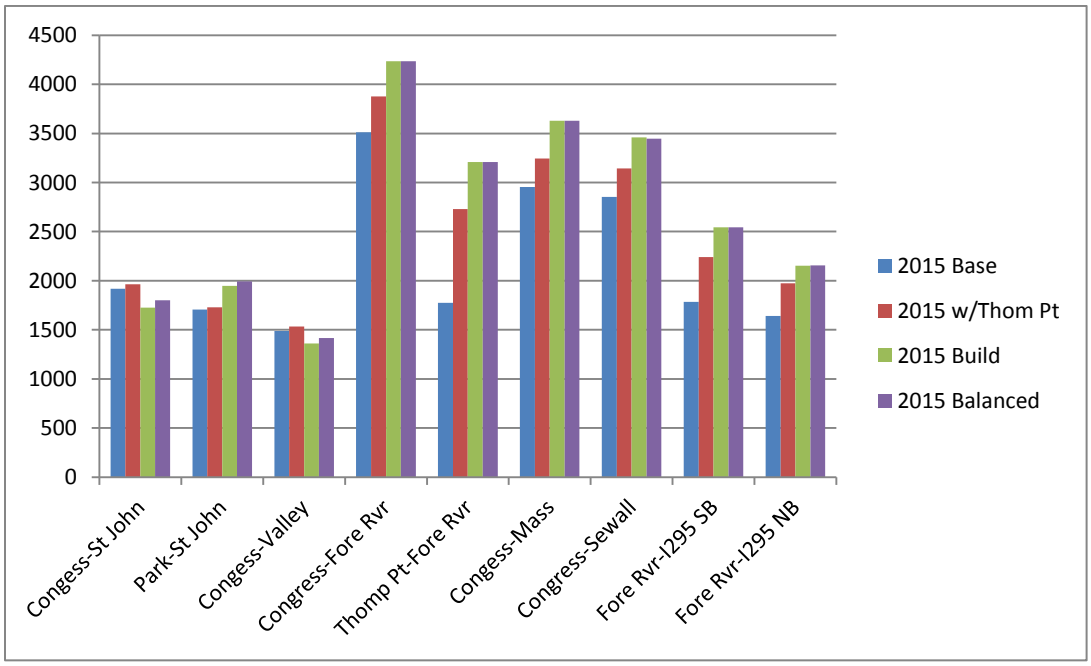
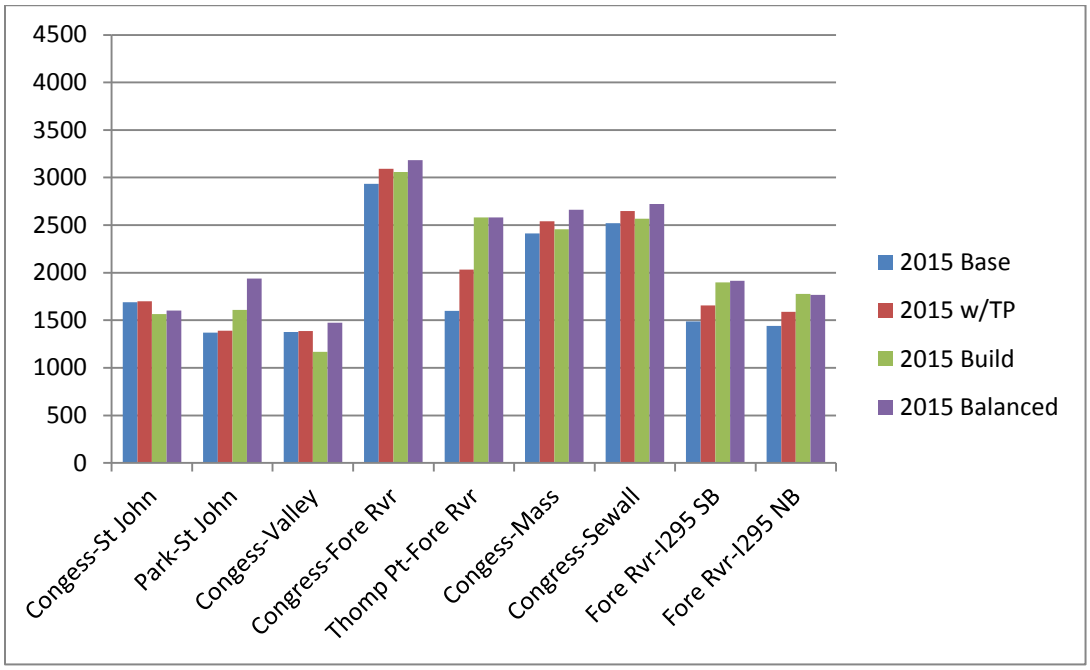


**Figure 3.3: AM Peak Hour Turning Movement Volumes at Study Area Intersections**




The scenario "2015 Build" includes the changes of the preferred alternative, and "2015 Balanced" includes some upward adjustments the volumes on inner Park and Congress for purposes of balancing the traffic within the Synchro network, particularly for the AM peak hour analysis. These volumes were entered into the study area Synchro model, along with the geometry as shown in the main report, and modeled with SimTraffic to determine the optimal design and signal operations. The SimTraffic results are the average of 5 runs. Complete documentation and results are available upon request.

This analysis indicates that the PM peak hour is the critical time period, and the intersection of Congress/Fore River Parkway is the critical node in the network. The SimTraffic model results indicate that while there will be delays at the intersection, there are generally not queues extending into the adjacent intersections, and the overall operations are reasonable for an urban afternoon peak hour.

**Table 3.1:** ***Congress/Fore River Parkway PM Peak***

| **2015 PM** | **Synchro** | | **Approach** | | **SimTraffic** | |
|---|---|---|---|---|---|---|
| | Delay (sec) | LOS | Delay (sec) | LOS | Delay (sec) | Appr Delay (sec) |
| **EB th** | 55.2 | E | 39.5 | D | 72.7 | 39.8 |
| **EB rt** | 3.0 | A | | | 14.2 | |
| **WB lf** | 52.4 | A | 35.9 | D | 51.2 | 22.8 |
| **WB th** | 26.8 | C | | | 14.2 | |
| **NB lf** | 78.1 | E | 64.7 | E | 122.2 | 85.9 |
| **NB rt** | 13.9 | B | | | 12.1 | |
| **Overall** | 46.1 | D | | | 48.5 | |

Queuing is of particular concern for the intersection of I-295 SB/Fore River Parkway/Thompsons Point, and results were tabulated in the SimTraffic reports (attached). This ramp is currently in the design phase, and the exact lane lengths were estimated from preliminary plans. Table 3.2 provides the queuing results, which show that queues were well below the available storage on the exit ramp for both the a.m. and p.m. peak periods.

**Table 3.2: SimTraffic Queuing Results for I-295 SB Ramp to Fore River Parkway**

| Approach Lane | AM Peak 95th Q | PM Peak 95th Q | Available Stacking |
|---|---|---|---|
| **WB left** | 108 | 60 | 200 (est) |
| **WB through** | 257 | 142 | 624 |
| **WB right** | 269 | 137 | 250 (est) |

While the left lane stacking may exceed the length of the turn lane occaisionally during the a.m. peak hour, there is ample stacking capacity in the center lane to accommodate any additional queued vehicles.

# 4 2035 Analysis

Several options were considered for developing future year volumes. The PACTS regional model was run for the year 2035, and produced volumes that show growth rates well in excess of current trends in the region and along the interstate. These are due in part to very ambitious growth rates, as well as the model's lack of sensitivity to demographic changes that are significantly changing driving behavior, such as the aging baby boomers driving significantly less, and younger adults driving much less than their predecessors. Figure 4.1 and Figure 4.2 show the traffic count trends on I-295 and study area streets and ramps. Overall, these show a pattern of no growth. The counts on I-295 between 2008 and 2012 is the one location that shows a slight recent growth trend at the rate of 0.424% per year. Therefore, this rate was used in the future year analyses. The traffic growth on the study area ramps and streets is essentially flat or declining, so this rate of growth provides a conservative margin.

Figure 4.1: MDOT Traffic count history for I-295 between exits 3 and 4

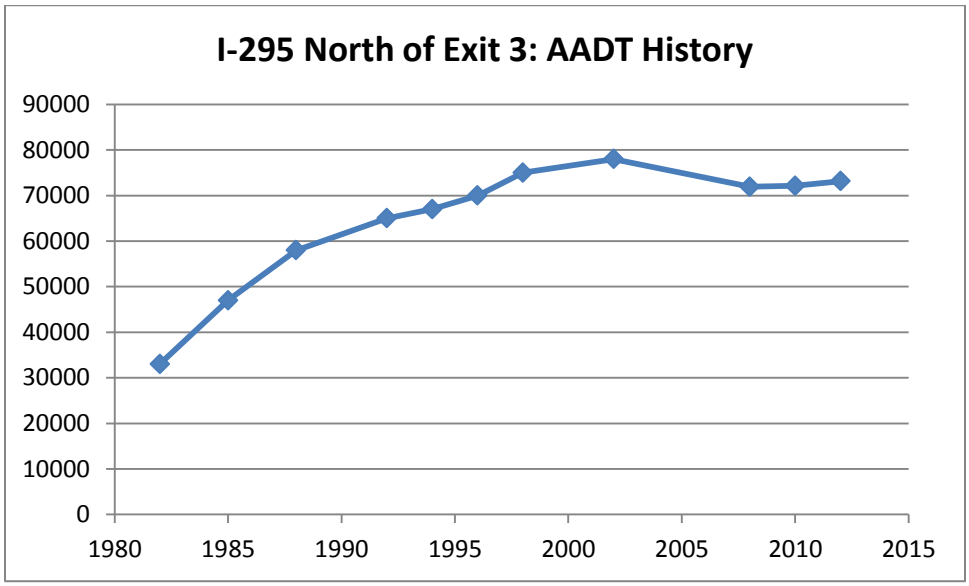
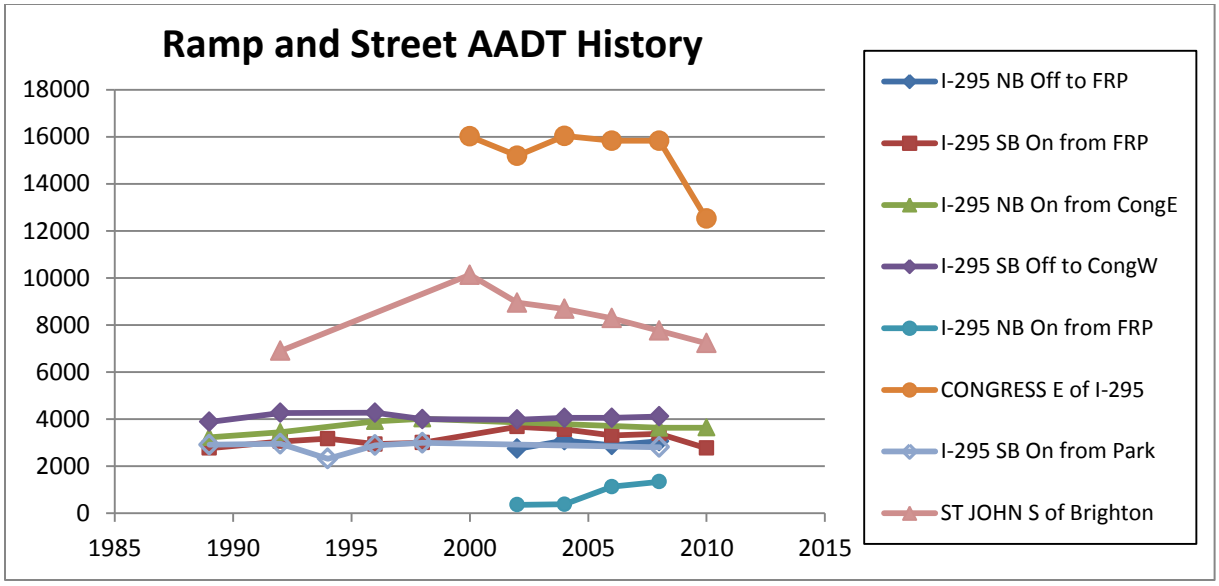



Figure 4.2: MDOT Traffic count history for study area ramps and streets



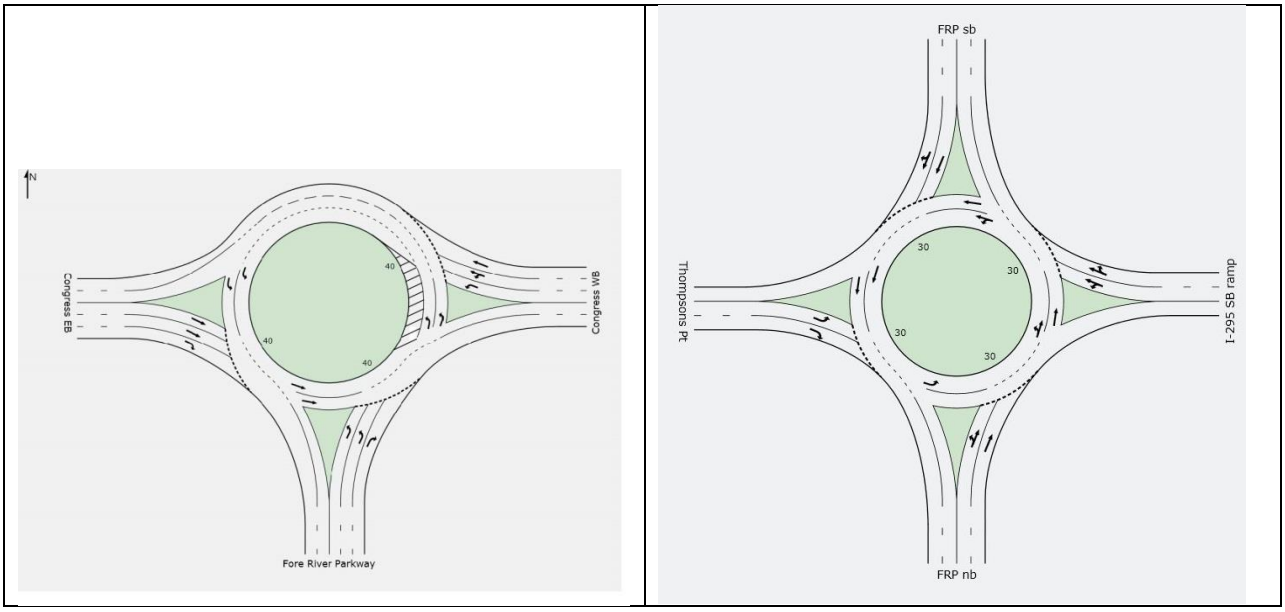

A Synchro analysis of the network was conducted using the 2035 volumes as shown in Attachment 1 and Attachment 2, which produced the following results for level of service. The intersections of Congress/Fore River Parkway and Fore River Parkway/Thompsons Point were found to have poor level of service for some approaches in the 2035 p.m. peak hour scenario, and roundabouts were evaluated as an improvement. The LOS of the roundabout has been conducted with aaSIDRA, and are included in the results that follow.

Table 4.1: 2035 Level of Service for primary study area intersections (Synchro/aaSIDRA)

| Period | PM | | AM | |
|---|---|---|---|---|
| Intersection (Synchro except where noted) | LOS | Delay (sec) | LOS | Delay (sec) |
| Congress-Fore River Parkway (aaSIDRA) | B | 12.6 | A | 6.6 |
| Fore River Parkway-Thompsons Point (aaSIDRA) | A | 8.9 | A | 7.7 |
| Congress-St John | D | 39.0 | C | 23.2 |
| Park-St John | D | 42.0 | C | 33.4 |
| Congress-Park | B | 16.9 | A | 8.1 |

The roundabout layouts are shown in Figure 4.3 in concept. The feasibility, environmental, and right-of-way impacts have not been assessed at this time.

Figure 4.3: Geometric Layout Schematic for Fore River Parkway Roundabouts




# Attachments

Attachment 1: Turning Movement Volumes

Attachment 2: Synchro/SimTraffic Analyses Results

# Attachment 5

## Building on Connecting Libbytown

Review of Connecting Libbytown recommendations

DuBois & King inc.

# Libbytown Traffic Circulation and Streetscape Study

## *Relationship to Connecting Libbytown*

Building the preferred alternative will complete the infrastructure necessary to establish an effective, safe and attractive bicycle and pedestrian connection between the Portland Transportation Center and Deering Oaks, which is the primary goal of the *Connecting Libbytown* report.

Beginning at the PTC, the route outlined in Connecting Libbytown would:

1) Travel the existing Fore River Parkway Trail to Fredric Street
2) Cross the Fore River Parkway at-grade to access Fredric Street: Construction of an at grade crossing with a pedestrian refuge is planned for this season.
3) Travel Fredric Street to Congress Street
4) Cross Congress Street at grade: The adjustments proposed in the preferred alternative will dramatically improve safety at this crossing.
5) Travel Marston Street to Park Avenue: Converting Marston to two-way was recommended will facilitate bicycle travel
6) Travel Park Avenue to Saint John Street: Converting Park Avenue to two way and adding bike lanes will facilitate bicycle travel and sidewalk and lighting improvements are planned for this area. Connecting Libbytown recommended a contra-flow bike lane here and looking at converting Park to two-way as a longer term solution so we are ahead of the game here!
7) Travel Park Avenue to Deering Oaks: The proposed conversion to three lanes will allow for bike lanes and improvements to the existing sidewalks are planned.

The following reviews the primary recommendations of Connecting Libbytown to "improve the connectivity, vitality, and quality of life for Libbytown residents and visitors." Also provided is discussion on how the recommendations of the Libbytown Traffic Circulation and Streetscape Study will effect these recommendations.

| *Transform Congress Street into a Complete Street, serving all users* | |
|---|---|
| Implement the Portland Bike Network recommendations | |
| Re-configure Congress Street between Park Ave. and St. John's Street as a two-way street: | Part of preferred alternative |
| Re-configure Congress Street west of Park Ave. | The three lane conversion was not seen as |

| | |
|---|---|
| from 4-lanes to 3-lanes (with a center turn lane / raised median) where possible: | compatible with existing traffic volumes. On the other hand, Bill Needleman did suggest that the three lane conversion (with expansion/enhancement of the urban street grid) could be tucked into the back of the report as a potential long term improvement. Love to keep the idea of Outer Congress as a Great Street alive |
| Prioritize repairing /adding ADA ramps at all intersections: | While I agree that our focus on traffic circulation was necessary, and our achievement in staying within existing curb-to-curb widths will result in profound cost savings, the report should highlight the need for sidewalk/ramp improvements. |
| Expand sidewalk widths to 10' wherever possible | Should we suggest that the City consider increasing sidewalk width when reconstructing existing sidewalks? I see 10' as appropriate for Park and Congress |
| Provide and maintain bus shelters for transit users: | I understand we are working on locations for these |
| Provide more crossing points on Congress Street: | We are suggesting two crossings at the Congress/FRP int and two at the Congress/Park int. |
| Provide more street trees along the corridor: | Streetscape Phase |
| Provide better pedestrian amenities, such as benches and pedestrian scale lighting | Streetscape Phase |
| Encourage mixed-use, pedestrian scale development | |
| Move parking to the back of buildings where possible | |
| Implement design standards for prominent corners (such as Libby's Corner) and other locations which can become visual and functional neighborhood focal points | |
| *Expand Upon Existing Great Streets elements of Park Avenue* | |
| Extend some of the thematic elements of Park Street east of St. John's to the length of Park Avenue | Streetscape Phase |
| Extend the pedestrian realm and Great Streets | Streetscape Phase |

| | |
|---|---|
| features through the Sports Complex | |
| Provide more opportunities for public art along the corridor | Streetscape Phase |
| Expand sidewalk widths wherever possible: | Should we suggest that the City consider increasing sidewalk width when reconstructing existing sidewalks? |
| Provide and maintain bus shelters for transit users | |
| Provide more crossing points | Should we suggest a crossing of Park between Saint James and Lowell to connect these two streets? |
| Provide more street trees along the corridor | Streetscape Phase |
| Provide better pedestrian amenities, such as benches and pedestrian scale lighting | Streetscape Phase |
| Encourage mixed-use pedestrian scale development | |
| Move parking to the back of buildings where possible | |
| *Calm traffic on Congress and Park* | |
| Narrow travel lanes where possible | |
| Provide on-street parking where possible | |
| Install curb extensions (bump-outs) at crossings | |
| Use Zebra Stripe crosswalk markings | |
| Reduce posted speed limits to 25 mph | Not sure what the current speed limits are but I think this would be a good recommendation to include. |
| *Reduce the impact of the I-295 interchange* | |
| Reconfigure or use signage on off-ramps to force entering autos to stop or slow down | |
| Remove on-or off ramps found to have redundant functions | |
| Reconfigure neighborhood streets such as Marston and Lowell as two-way streets | How about Lowell Street?? Based on Google Earth, Lowell Street is 31' to 32' wide. I live on Atlantic Street in the East End, which has the same width, parking on both sides and two-way traffic. The same setup exists on many local streets in Portland. Depending on the size of vehicles and how they are parked, one vehicle will often need to yield by pulling part way into a driveway or no parking area for oncoming traffic to pass. This is particularly true with winter snow and the METRO bus. Note that Atlantic Street is on a bus route and the width is not a problem. Also, the yielding |

| | |
|---|---|
| | requirement has a traffic calming effect, which is most pronounced when traffic volumes are highest. Considering that traffic on Lowell Street will likely decrease when Congress and Park are converted to two-way traffic, Is the existing curb-to-curb with on Lowell Street adequate for parking on both sides *and* two-way traffic. Perhaps this is a concept we should recommend for further study….. |
| Provide pedestrian scale lighting under the highway overpass | We may want to address this in the streetscape section |
| Add landscaping under the overpass | We may want to address this in the streetscape section |
| Add signage and other visual clues, such as colored or grooved pavement, to alert autos that they are in an urban setting and should expect the presence of bicyclists and pedestrians: | Converting Park and Congress to two-way streets and removing four ramps will do much more to reduce the highway impacts. |
| Work with MaineDOT to investigate the potential for a diamond interchange | Not necessary with ramp removal |
| Work with MaineDOT to allow access to edge of ROW for trails | |
| *Provide better connectivity to the Portland Transportation Center* | |
| Construct a sidewalk on the western edge of the Fore River Parkway between Congress Street and Thompson's Point Road | There have been multiple requests for this and it could be done by narrowing the existing travel lanes on the FRP (see the email I sent on 5-6-13). This would be an important link for a pedestrian traveling to the PTC from the Dougherty Field Trail. I suggest that we include. |
| Implement planned improvements on Sewall Street between the PTC and Congress Street | |
| Expand the trail network on Thompson's Point in the vicinity of the PTC | |
| Encourage Transit Oriented Development at Thompson's Point | By better accommodating all modes the preferred alternative will facilitate this |
| *Utilize Creative, low-cost, and temporary methods to achieve short term goals* | |
| • Experiment with traffic calming measures and other street improvements. Large planters at key locations can add beauty and slow traffic, and they can be re-used.<br>• Capitalize on in-house resources. The Department of Public Services has many examples of successful projects done "in-house" with limited funding, including the | These are all good principals that we have used and should continue to be used as design development moves forward. |

| | |
|---|---|
| "road diet" on Westbrook Street in Stroudwater Village<br>• Capitalize on public/private partnerships such as adopt-a-block, Friends of the Ballpark district, or trail-building with Portland Trails<br>• Continue to work with neighborhood groups and other constituents to identify priority improvements and remove barriers to connectivity | |
| *Construct a temporary trail along the publicly owned sections of the Union Branch rail corridor* | |
| Work with MDOT and Portland Trails to allow this connection in the near term | This is somewhat out of our scope but it would be a good recommendation to carry over from Connecting Libbytown. I will draw in GIS |
| Work with Portland Sports Complex management to located connection points to the corridor to enhance safety and access | |
| Limit financial and resource investments to minimum required to establish safe passage until rail/trail co-location can be permanently established. | |
| *Construct a temporary trail along the wye intersection and County Way to Congress Street* | |
| Work with Cumberland County and Jail officials to locate and construct a safe and accessible trail<br>Limit financial and resource investments to minimum required to establish safe passage until rail/trail co-location can be permanently established. | This is more within our scope and it would be a good recommendation to carry over from Connecting Libbytown. I will draw in GIS. |
| *Improve Connections to Dougherty Field and future skatepark* | |
| Improve existing paved path along perimeter of City property | Our existing conditions survey noted the Dougherty Field path to be in poor condition with inadequate lighting. |
| Provide a link to paved path from Congress Street | This is included in the Libbytown Streetscape Improvements project that Bruce is managing |
| Provide a crossing of Congress Street at Fore River Parkway | This is included in the Libbytown Streetscape Improvements project that Bruce is managing. |
| Investigate possibility of rail crossing, allowing access from St. James Street to St. John's Street | This is intended to mean provide a trail that crosses the main line railroad (overpass) along the northern edge of I-295. This concept was shown in the Connecting Libbytown Opportunities and Challenges map and I will draw in GIS |
| Improve pedestrian environment at Brighton/Dartmouth/St. John's intersection | This is somewhat out of our scope but it would be a good recommendation to carry over from Connecting Libbytown |

**Recommendation for Further Study**

*Rail Corridor Option*
As described above
Sufficient funding should be allocated for planning, so that when and if rail expansion moves forward, the trail option is cued up to be constructed concurrently. PACTS and the City should work with rail interests to develop the Union Branch Corridor. This is somewhat out of our scope but it would be a good recommendation to carry over from Connecting Libbytown. I will draw in GIS

*One-way streets*
The one-way configuration of Park and Congress Streets, as well as Marston and Lowell Streets, are not conducive to a neighborhood setting. One-way streets encourage higher-speed auto traffic, and make crossing these streets a dangerous and intimidating prospect. City planners, elected officials and residents have all indicated a desire to study the potential for re-designing theses streets as traditional two-way streets. PACTS and the City should begin to study the feasibility of two-way Park Avenue and Congress Street. With the exception of Lowell, the preferred alternative address this.

*I-295*
Several of the on and off-ramps connecting I-295 to the Fore River Parkway and Congress Street perform the same function. City planners, elected officials and residents have all indicated a desire to study the potential for reducing the number of ramps if they are proven to be "redundant". Removing one or more ramps has the potential to significantly improve bicycle and pedestrian safety, create economic opportunities by opening up land for development, and to minimize the impact of the highway on the neighborhood. The City should begin discussions with the MaineDOT to determine whether removal of one or more ramps is feasible. This has been addressed!!

# Attachment 6

## Cost Estimate

Details of Conceptual Cost Estimate

RANSOM
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# Libbytown Traffic Circulation and Streetscape Study
# DRAFT Opinion of Probable Cost

Date: July 18, 2013
Project No: 121-06100
By: J. Mahoney
Checked By: Steve Bradstreet

## Total Costs by Phase

| Item | | | Cost |
|---|---|---|---|
| 1 | Phase I: Conversion of Park Avenue to Two-way | | $467,905 |
| 2 | Phase II: Restripe Outer Congress | | $125,281 * |
| 3 | Phase III: Ramp Closures | Ramp A | $57,223 |
| 4 | | Ramps B & D | $229,816 |
| 5 | | Ramp C | $35,076 |
| 6 | Phase VI: Conversion of Congress Street to Two-Way | | $1,240,282 |
| 7 | Phase V: Streetscape Improvements | Park Avenue | $399,163 |
| 8 | | Congress Street | $1,832,188 |
| | | | |
| | | | |
| | | | |
| | | **Grand Total:** | **$4,386,934** |

* Includes improvements to sidewalks and Massachusetts Avenue/Congress Street Intersection

RANSOM
Consulting
Engineers
and Scientists

# Libbytown Traffic Circulation and Streetscape Study
# DRAFT Opinion of Probable Cost

Date: July 18, 2013
Project No: 121-06100
By: J. Mahoney
Checked By: Steve Bradstreet

## Phase I: Conversion of Park Avenue to Two-way

| Item | Description | Quantity | Unit | Unit Price | Cost | |
|---|---|---|---|---|---|---|
| 1 | Signal Adjustments: Park/Saint John Intersection | 1 | Allowance | $75,000.00 | $75,000.00 | |
| 2 | White or Yellow Pavement Marking | 9,600 | LF | $0.75 | $7,200.00 | Includes removal of existing striping as necessary |
| 3 | Shared Lane/Bike Lane Stencil | 33 | EA | $100.00 | $3,300.00 | |
| 4 | Directional Arrow Stencil | 30 | EA | $125.00 | $3,750.00 | Includes removal of existing striping as necessary |
| 5 | Crosswalk (Block Style 10' Wide) | 5 | EA | $500.00 | $2,500.00 | |
| 6 | New Concrete Sidewalk | 350 | SY | $80.00 | $28,000.00 | |
| 7 | Reset Existing Granite Curbing | 120 | LF | $22.00 | $2,640.00 | Includes chinking in pavement |
| 8 | New Vertical Granite Curb | 500 | LF | $35.00 | $17,500.00 | Includes chinking in pavement |
| 9 | ADA Ramp | 9 | EA | $3,000.00 | $27,000.00 | |
| 10 | Roadway Construction | 650 | SY | $60.00 | $39,000.00 | Excavation, pavement removal, pavement & gravel |
| 11 | Textured Hardscape | 110 | SY | $120.00 | $13,200.00 | At Marston/Park Intersection |
| 12 | Signage and Wayfinding | 1 | Allowance | $20,000.00 | $20,000.00 | |
| 13 | Utility Adjustments | 1 | Allowance | $8,000.00 | $8,000.00 | |
| 14 | Drainage Improvements at Hood | 1 | Allowance | $15,000.00 | $15,000.00 | The drainage system appears to be combined |
| 15 | Repair/Improve Existing Sidewalks | 1 | Allowance | $20,000.00 | $20,000.00 | Intended to supplement ongoing streetscape projects |
| 16 | Repair Existing Roadway Pavement | 1 | Allowance | $10,000.00 | $10,000.00 | |
| 17 | Erosion Control | 1 | LS | $2,000.00 | $2,000.00 | |
| 18 | Traffic Control | 1 | LS | $30,000.00 | $30,000.00 | |
| 19 | Mobilization 5% | | | $16,204.50 | $16,204.50 | |
| | | | | | | |
| | | | Project Total: | | $340,294.50 | |
| | | | 25% Contingency: | | $85,073.63 | |
| | | | Design: | | $42,536.81 | 10% of construction cost with contingency |
| | | | **Grand Total:** | | **$467,904.94** | |

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and Scientists

# Libbytown Traffic Circulation and Streetscape Study
# DRAFT Opinion of Probable Cost

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By: J. Mahoney
Checked By: Steve Bradstreet

## Phase II: Restripe Outer Congress

| Item | Description | Quantity | Unit | Unit Price | Cost | |
|---|---|---|---|---|---|---|
| 1 | Adjustments to Congress/Mass Ave Signal | 1 | Allowance | $50,000.00 | $50,000.00 | |
| 2 | White or Yellow Pavement Marking | 7,000 | LF | $0.75 | $5,250.00 | Includes removal of existing striping as necessary |
| 3 | Shared Lane/Bike Lane Stencil | 14 | EA | $100.00 | $1,400.00 | |
| 4 | Directional Arrow Stencil | 25 | EA | $125.00 | $3,125.00 | Includes removal of existing striping as necessary |
| 5 | Crosswalk (Block Style 10' Wide) | 4 | EA | $500.00 | $2,000.00 | |
| 6 | Repair/Improve Existing Sidewalks | 1 | Allowance | $15,000.00 | $15,000.00 | Intended to supplement ongoing streetscape projects |
| 6 | Traffic Control | 1 | LS | $10.00 | $10,000.00 | |
| 7 | Mobilization 5% | | | $4,338.75 | $4,338.75 | |
| | | | | | | |
| | | | Project Total: | | $91,113.75 | |
| | | | 25% Contingency: | | $22,778.44 | |
| | | | Design: | | $11,389.22 | 10% of construction cost with contingency |
| | | | **Grand Total:** | | **$125,281.41** | |

RANSOM Consulting Engineers and Scientists

# Libbytown Traffic Circulation and Streetscape Study
# DRAFT Opinion of Probable Cost

Date: July 18, 2013
Project No: 121-06100
By: J. Mahoney
Checked By: Steve Bradstreet

## Phase III: Ramp Closures

### Ramp A: I-295 Northbound to Congress Street East

| Item | Description | Quantity | Unit | Unit Price | Cost | |
|---|---|---|---|---|---|---|
| 1 | Guardrail | 270 | LF | $28.00 | $7,560.00 | |
| 2 | Breakaway Terminal Guardrail End | 1 | EA | $1,200.00 | $1,200.00 | |
| 3 | New Concrete Sidewalk | 190 | SY | $80.00 | $15,200.00 | |
| 4 | New Vertical Granite Curb | 180 | LF | $35.00 | $6,300.00 | |
| 5 | White or Yellow Pavement Marking | 500 | LF | $0.75 | $375.00 | Includes removal of existing striping as necessary |
| 6 | Signage and Wayfinding | 1 | LS | $4,000.00 | $4,000.00 | |
| 7 | Erosion Control | 1 | LS | $1,000.00 | $1,000.00 | |
| 8 | Traffic Control | 1 | LS | $4,000.00 | $4,000.00 | |
| 9 | Mobilization 5% | | | $1,981.75 | $1,981.75 | |
| | | | | | | |
| | | | Project Total: | | $41,616.75 | |
| | | | 25% Contingency: | | $10,404.19 | |
| | | | Design: | | $5,202.09 | 10% of construction cost with contingency |
| | | | **Grand Total:** | | **$57,223.03** | |

### Ramps D: I-295 South to Congress Street West & B: Congress Street West to I-295 South

| Item | Description | Quantity | Unit | Unit Price | Cost | |
|---|---|---|---|---|---|---|
| 1 | Guardrail | 500 | LF | $28.00 | $14,000.00 | |
| 2 | Interstate Construction | 700 | SY | $110.00 | $77,000.00 | Third interstate lane between ramp terminations |
| 3 | New Concrete Sidewalk | 500 | SY | $80.00 | $40,000.00 | |
| 4 | Reset Existing Curbing | 440 | LF | $22.00 | $9,680.00 | |
| 5 | White or Yellow Pavement Marking | 2,000 | LF | $0.75 | $1,500.00 | Includes removal of existing striping as necessary |
| 6 | Signage and Wayfinding | 1 | LS | $5,000.00 | $8,000.00 | |
| 7 | Erosion Control | 1 | LS | $1,000.00 | $1,000.00 | |
| 8 | Traffic Control | 1 | LS | $8,000.00 | $8,000.00 | |
| 9 | Mobilization 5% | | | $7,959.00 | $7,959.00 | |
| | | | | | | |
| | | | Project Total: | | $167,139.00 | |
| | | | 25% Contingency: | | $41,784.75 | |
| | | | Design: | | $20,892.38 | 10% of construction cost with contingency |
| | | | **Grand Total:** | | **$229,816.13** | |

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## Phase III: Ramp Closures

### Ramp C: Congress Street East to I-295 North

| Item | Description | Quantity | Unit | Unit Price | Cost | |
|---|---|---|---|---|---|---|
| 1 | Guardrail | | LF | $28.00 | $0.00 | |
| 2 | Breakaway Terminal Guardrail End | | EA | $1,200.00 | $0.00 | |
| 3 | New Concrete Sidewalk | 144 | SY | $80.00 | $11,520.00 | |
| 4 | New Vertical Granite Curb | 130 | LF | $35.00 | $4,550.00 | |
| 5 | White or Yellow Pavement Marking | 300 | LF | $0.75 | $225.00 | Includes removal of existing striping as necessary |
| 6 | Signage and Wayfinding | 1 | LS | $2,000.00 | $4,000.00 | |
| 7 | Erosion Control | 1 | LS | $1,000.00 | $1,000.00 | |
| 8 | Traffic Control | 1 | LS | $3,000.00 | $3,000.00 | |
| 9 | Mobilization 5% | | | $1,214.75 | $1,214.75 | |
| | | | | | | |
| | | | Project Total: | | $25,509.75 | |
| | | | 25% Contingency: | | $6,377.44 | |
| | | | Design: | | $3,188.72 | 10% of construction cost with contingency |
| | | | **Grand Total:** | | **$35,075.91** | |

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## Phase IV: Conversion of Congress Street to Two-way

| Item | Description | Quantity | Unit | Unit Price | Cost | |
|---|---|---|---|---|---|---|
| 1a | Signalization of Park/Congress Intersection | 1 | Allowance | $100,000.00 | $100,000.00 | |
| 1b | Signal Adjustments: FRP/Congress Intersection | 1 | Allowance | $100,000.00 | $100,000.00 | |
| 1c | Signal Adjustments: Park/Saint John Intersection | 1 | Allowance | $75,000.00 | $75,000.00 | |
| 2 | White or Yellow Pavement Marking | 15,000 | LF | $0.75 | $11,250.00 | Includes removal of existing striping as necessary |
| 3 | Shared Lane/Bike Lane Stencil | 45 | EA | $100.00 | $4,500.00 | |
| 4 | Directional Arrow Stencil | 80 | EA | $125.00 | $10,000.00 | Includes removal of existing striping as necessary |
| 5 | Crosswalk (Block Style 10' Wide) | 17 | EA | $500.00 | $8,500.00 | |
| 6 | New Concrete Sidewalk | 1,300 | SY | $80.00 | $104,000.00 | |
| 7 | Bituminous Shared Use Path | 880 | SY | $40.00 | $35,200.00 | From proposed path along the FRP to Park Ave |
| 8 | Reset Existing Granite Curbing | 210 | LF | $22.00 | $4,620.00 | Includes chinking in pavement |
| 9 | New Vertical Granite Curb | 1,300 | LF | $35.00 | $45,500.00 | Includes chinking in pavement |
| 10 | Curb Extension | 9 | EA | $7,000.00 | $63,000.00 | |
| 11 | Roadway Construction | 1,900 | SY | $60.00 | $114,000.00 | Excavation, pavement removal, pavement & gravel |
| 12 | Repair/Improve Existing Sidewalks | 1 | Allowance | $50,000.00 | $50,000.00 | |
| 13 | Utility Adjustments | 1 | Allowance | $25,000.00 | $25,000.00 | |
| 14 | Signage and Wayfinding | 1 | Allowance | $20,000.00 | $20,000.00 | |
| 15 | New Catch Basin | 5 | EA | $3,500.00 | $17,500.00 | |
| 16 | 15 Inch Stormdrain | 270 | LF | $100.00 | $27,000.00 | Includes excavation, backfill and trench paving |
| 17 | Erosion Control | 1 | LS | $4,000.00 | $4,000.00 | |
| 18 | Traffic Control | 1 | LS | $40,000.00 | $40,000.00 | |
| 19 | Mobilization 5% | | | $42,953.50 | $42,953.50 | |
| | | | | | | |
| | | | Project Total: | | $902,023.50 | |
| | | | 25% Contingency: | | $225,505.88 | |
| | | | Design: | | $112,752.94 | 10% of construction cost with contingency |
| | | | **Grand Total:** | | **$1,240,282.31** | |

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# Libbytown Traffic Circulation and Streetscape Study
# DRAFT Opinion of Probable Cost

Date: July 18, 2013
Project No: 121-06100

## Phase V A: Park Avenue Streetscape

| Item | Description | Quantity | Unit | Unit Price | Cost | |
|---|---|---|---|---|---|---|
| 1 | Lighting | 26 | each | $7,500 | $195,000 | |
| 2 | Benches | 3 | each | $1,500 | $4,500 | |
| 3 | Bicycle Racks | 4 | each | $800 | $3,200 | |
| 4 | Bus Shelters | 1 | each | $10,000 | $10,000 | |
| 5 | Street Trees | 27 | each | $800 | $21,600 | |
| 6 | Rain Gardens | 4 | each | $5,500 | $22,000 | |
| 7 | Public Art | 2 | lump sum | $10,000 | $20,000 | |
| 8 | Recycling and Trash Receptacle Combo | 2 | each | $7,000 | $14,000 | |
| | | | | | | |
| | | | Project Total: | | $290,300 | |
| | | | 25% Contingency: | | $72,575 | |
| | | | Design: | | $36,288 | 10% of construction cost with contingency |
| | | | **Grand Total:** | | **$399,163** | |

## Phase V B: Congress Street Streetscape

| Item | Description | Quantity | Unit | Unit Price | Cost | |
|---|---|---|---|---|---|---|
| 1 | Lighting | 81 | each | $7,500 | $607,500 | |
| 2 | Benches | 6 | each | $1,500 | $9,000 | |
| 3 | Bus Shelters | 2 | each | $10,000 | $20,000 | |
| 4 | Bicycle Racks | 5 | each | $800 | $4,000 | |
| 5 | Street Trees | 58 | each | $8,000 | $464,000 | |
| 6 | Rain Gardens | 8 | each | $5,500 | $44,000 | |
| 7 | Public Art | 2 | lump sum | $10,000 | $20,000 | |
| 8 | Recycling and Trash Receptacle Combo | 2 | each | $7,000 | $14,000 | |
| 9 | Playground at Lowell St Park | 1 | lump sum | $50,000 | $50,000 | |
| 10 | Reuse of Underpass Area | 1 | lump sum | $100,000 | $100,000 | |
| | | | | | | |
| | | | Project Total: | | $1,332,500 | |
| | | | 25% Contingency: | | $333,125 | |
| | | | Design: | | $166,563 | 10% of construction cost with contingency |
| | | | **Grand Total:** | | **$1,832,188** | |