



Transforming Forest Avenue

Existing Land Use and Transportation Analysis

A Presentation to the Advisory Committee

May 4, 2011

PACTS
Portland Area Comprehensive Transportation Committee



GP *Gorrill-Palmer Consulting Engineers, Inc.*
Engineering Excellence Since 1998

BARTON & GINGOLD

Contents of Presentation

Introductions

Land Use

- Transit Supportive Development Principles
- Existing Land Use Assessment
- Existing Zoning Assessment

Transportation

- Complete Streets Principles
- Streetscape Analysis
- Existing Transportation Analysis

Next Steps



Project Introduction





Land Use Assessment



Transit Supportive Development

Principles

Develop principles for land use characteristics that support current and promote future transit demand. These principles should promote transit use as well as support the pedestrians and cyclists that will be using transit to access the land uses on the corridor, without excluding consideration of current or desired future automobile use.



Transit Supportive Development

Summary of TSD Principles



Land Uses

Encourage vibrant and diverse uses

Encourage compact land uses

Placemaking/Built Environment

Design for architectural quality

Provide quality public space

Provide high quality parking

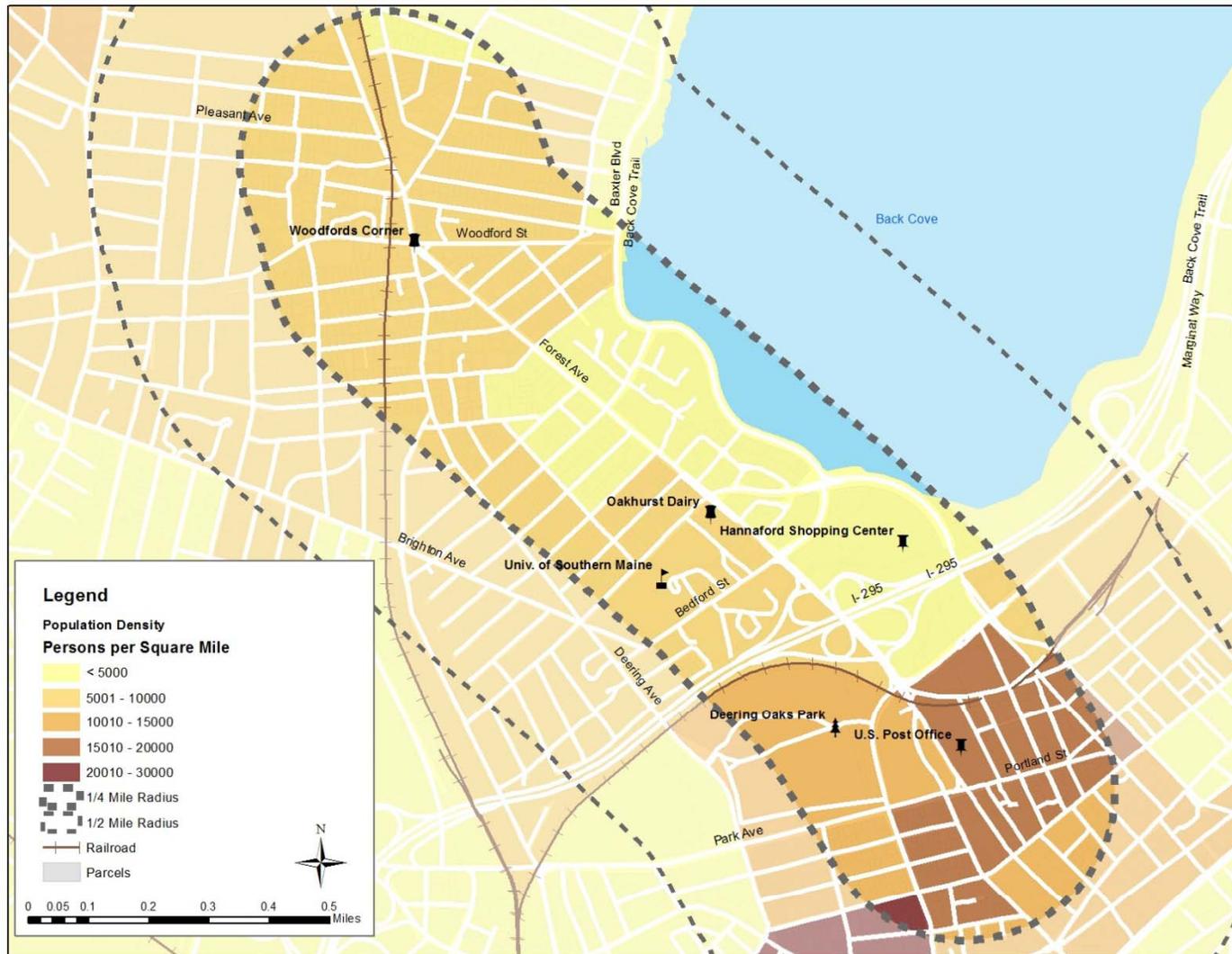
Land Use Assessment

Base Map



Land Use Assessment

Population Density (persons per square mile)



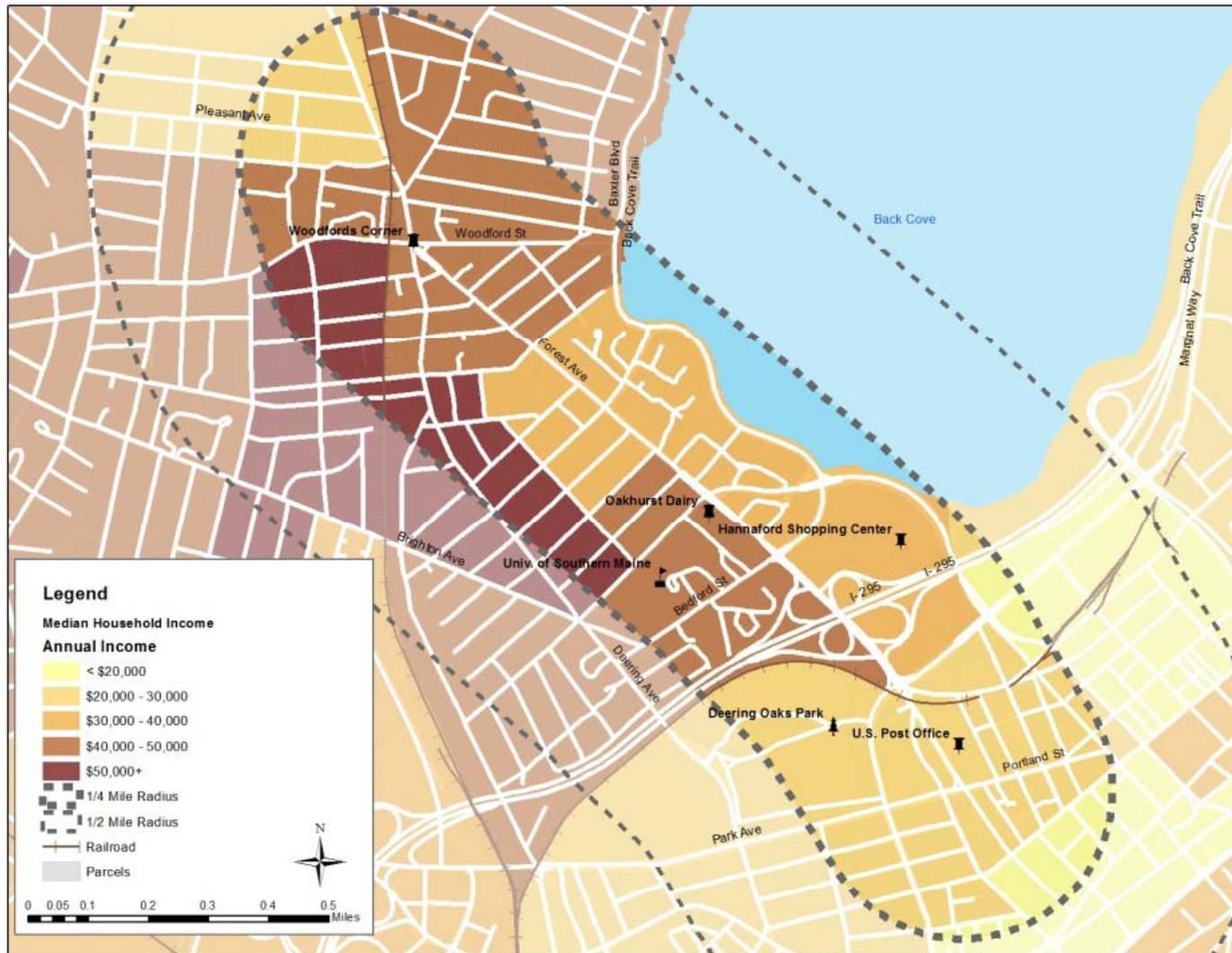
- Portland's average pop density approx 3,000 per square mile

Assessment:

- Generally above average

Land Use Assessment

Poverty Levels



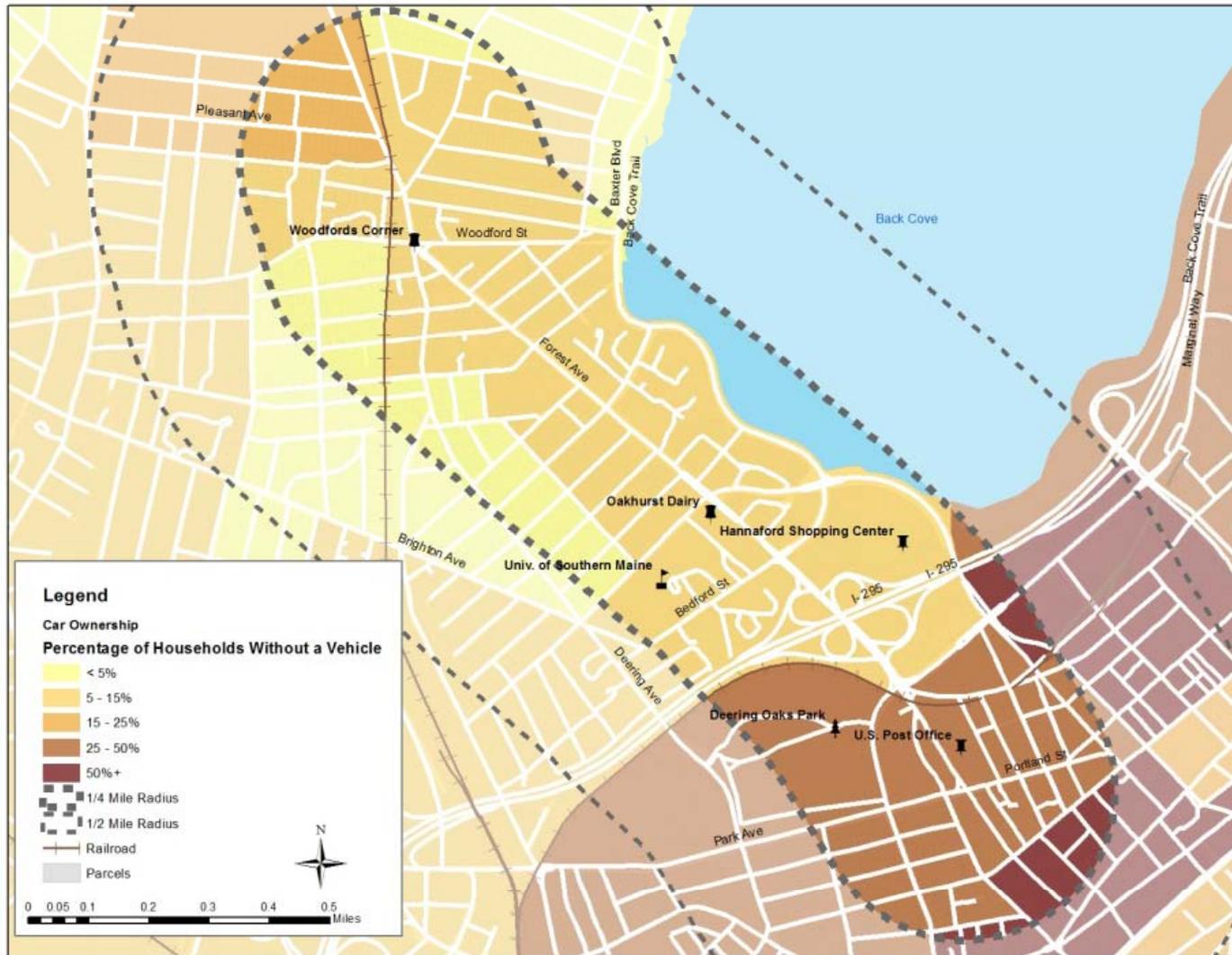
- City-wide median approx \$36,000

Assessment:

- Varies across corridor

Land Use Assessment

Car Ownership (Percentage of Households with No Vehicles)



- City-wide average approx 18%

Assessment:

- Slightly lower than average ownership compared to Portland, and much lower than the rest of the county, state, country

Land Use Assessment

Car Ownership (Number of Cars per Household)



- National/state average approx 1.7

Assessment:

- Segment A and much of Segment B are lower than national/state average

Land Use Assessment

Building Footprints



Assessment:

- Single- and two-family homes on small lots in a well-connected urban grid
- Larger institutional and commercial structures (Forest Ave Shopping Plaza, Oakhurst, USM etc.)

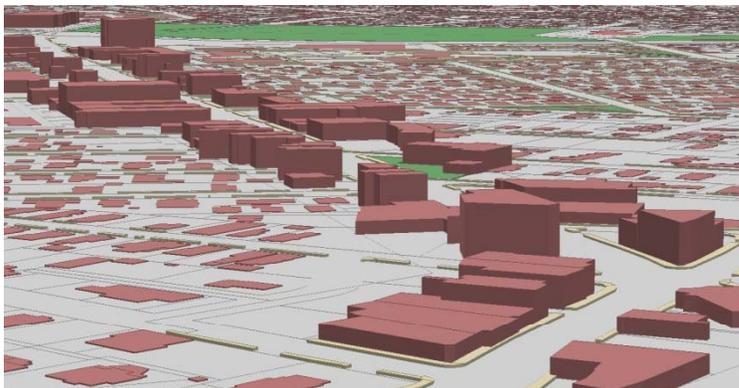
Land Use Assessment

Building Heights

View of Building Heights Looking Northwest from I-295



View of Building Heights Looking Southeast from North of Woodfords Corner



Assessment:

- Heights = 1-7 stories, typically 2 stories

Taller buildings:

- University of Southern Maine's Albert Brenner Glickman Family Library
- 333 Forest Avenue (Back Bay Bicycle)
- 637 Forest Avenue (at Woodfords Corner)



USM Library



333 Forest Ave



637 Forest Ave

Land Use Assessment

Land Uses



Assessment:

- Primarily commercial on corridor, adjacent residential
- Commercial and residential: 333



- Industrial: Oakhurst



Land Use Assessment

Land Area for Parking



Assessment:

- For commercial parcels: 35% of the land area (40% devoted to buildings)
- Residential requirement: 2 spaces per unit plus 1 additional parking space for every 6 units (north of I-295)
- No data available yet for most of Segment A

Land Use Assessment

Zoning



Assessment:

- Range of commercial and residential land uses at fairly high densities on corridor (B-2, B-2B)
- Medium density residential abutting (1 to 2-fam homes) (R-3, R-5)
- Small patches of high density residential (R-6)

Land Use Assessment

Parking requirements

Selected land uses	Parking requirement	Comments
Residential – north of I-295	2.17 spaces per unit	2 per unit plus 1 per six units
Residential – Peninsula	1 space per unit	
Office	1 space per 400 sq ft	
Retail	1 space per 200 sq ft	After first 2000 sq ft
Food & beverage	1 space per 150 sq ft	Of customer use area

- Typical parking space size = 160 sq ft
+ additional 160 sq ft required for access = 320 sq ft total
- Average car ownership in corridor: 1.17 cars / household
- Average household size in corridor: 1.99 people / household

Land Use Assessment - Conclusions

Forest Avenue is a commercial and mixed use corridor surrounded by residential on a relatively well-connected urban grid. It has potential as a transit-supportive corridor but still has certain challenges in achieving various principles of TSD.

Human scale

- B-2/B-2b zones allow for urban “Main Street”-style buildings of a human scale friendly to pedestrians
 - no minimum setbacks or maximum lot coverage
 - maximum structure height of 45 feet => enclosure
- Also allows less pedestrian-friendly, strip-style development
 - Minimum parking requirements
 - Exceptions to front parking
 - Side yard parking allowed

Land Use Assessment - Conclusions

Mixed use

- B-2/B-2b is a mixed use zone
 - Higher structure height allowed (50') for mixed commercial and residential uses
 - 335 Forest Ave
 - 509 Forest Ave
- R-3, R-5 and R-6 are essentially single-use residential zones
 - Conditional uses (group homes, bed and breakfasts, day care facilities, hospitals, schools, and very small offices) are rare



Land Use Assessment - Conclusions

Compact Development

- Residential R-6 zoning can be supportive of transit, allowing for higher densities
- Most residential zoning in the study area, R-3 and R-5, support existing density
- Parking requirements may be higher than necessary, and surface parking can restrict compact development



Questions?





Transportation Assessment



Complete Streets

Principles

Complete Streets are designed, operated and maintained to enable safe access for all users. Pedestrians, cyclists, transit riders and motorists of all ages and abilities must be able to safely move along the across a complete street.



Complete Streets

Summary of Complete Streets Principles



Health and Safety

- Promote physical activity*
- Enhance safety of vulnerable users*
- Manage vehicle speeds*

Accommodate all Modes

- Encourage multi-modality*
- Improve transit operations, facilities, and access*
- Manage parking*
- Increase comfort*

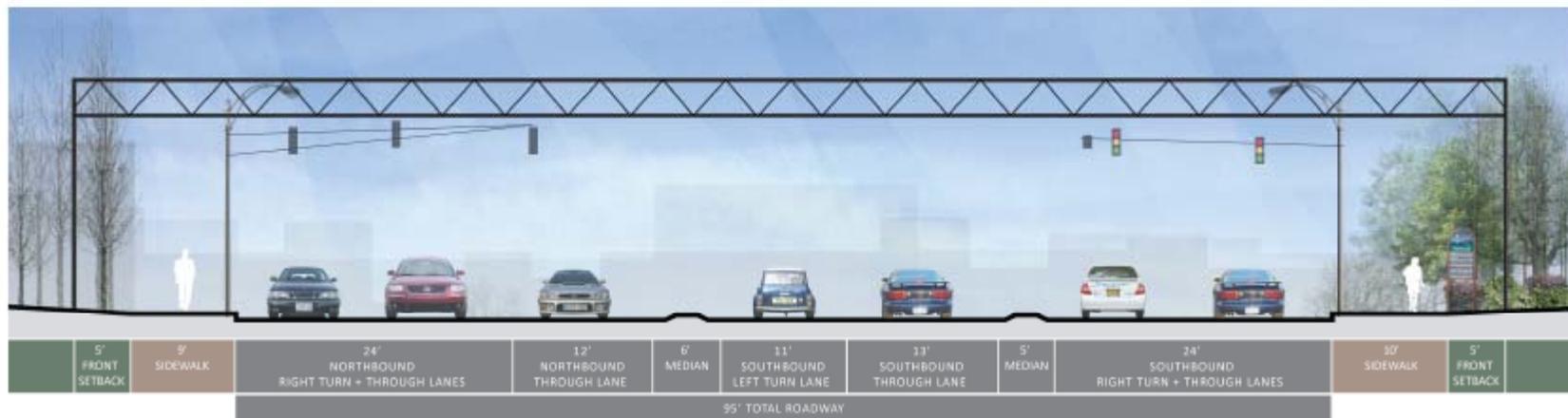
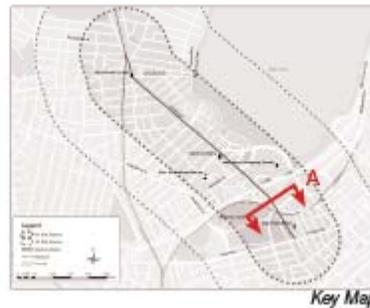
Connectivity/Accessibility

- Connect the street network*
- Provide wayfinding*

Environment

- Increase permeability*
- Reduce greenhouse gas (GHG) emissions*

Streetscape Analysis



Existing Street Section A

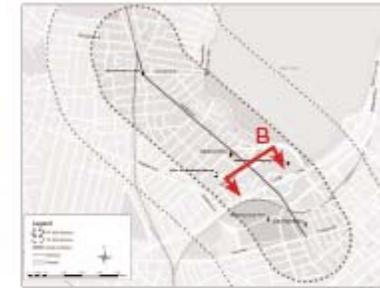
Corridor Segment A - I-295/Deering Oaks Park



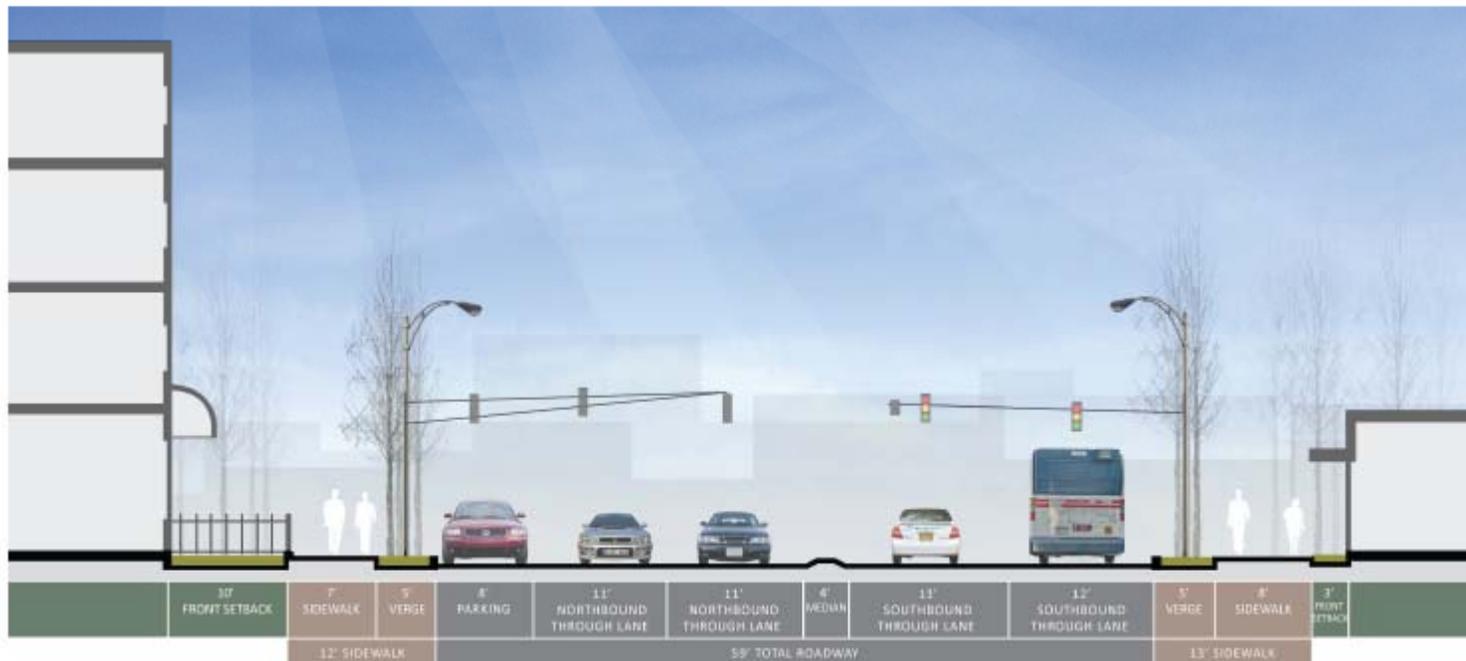
Streetscape Analysis



Panoramic view facing south

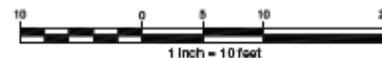


Key Map



Existing Street Section B

Corridor Segment B - Central Forest Avenue



Streetscape Analysis



Key Map



Panoramic view facing south



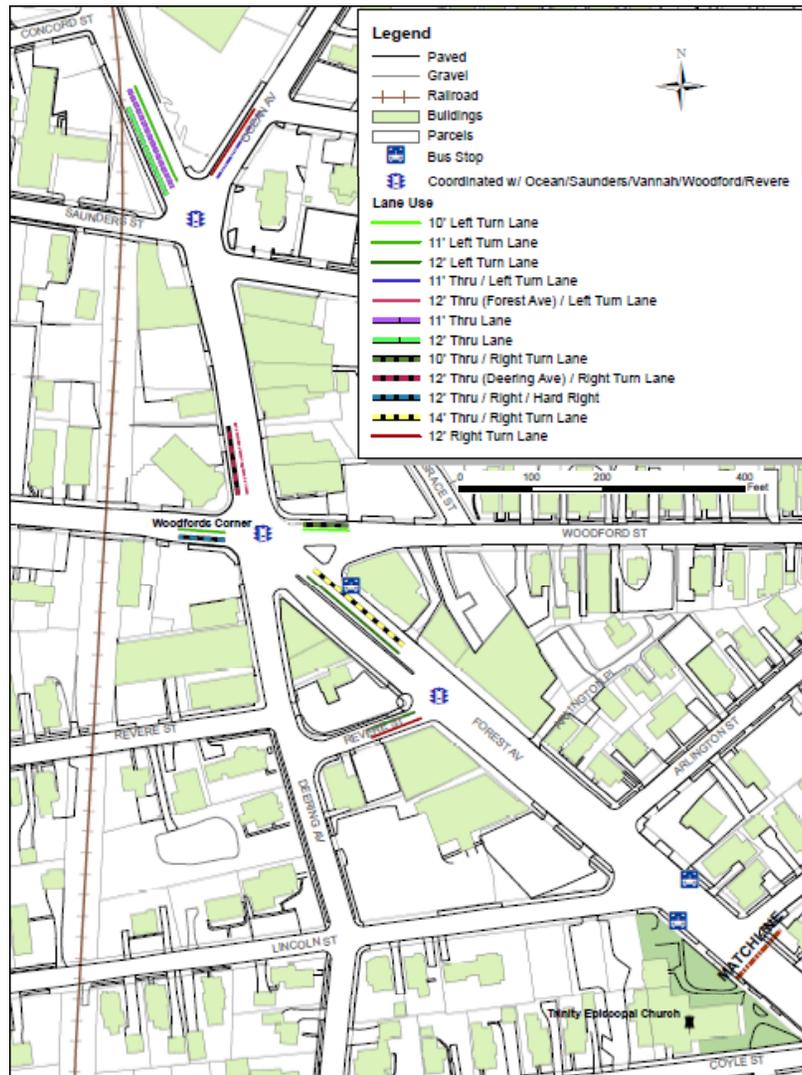
Existing Street Section C

Corridor Segment C - Woodfords Corner



Transportation Analysis

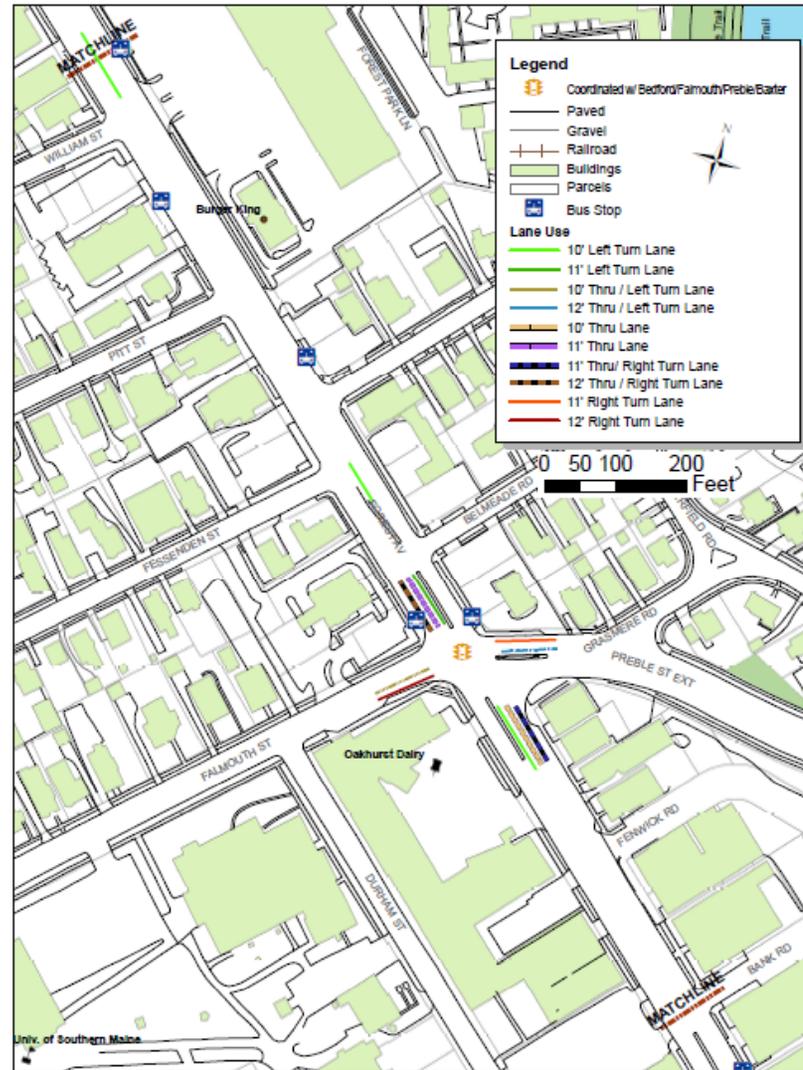
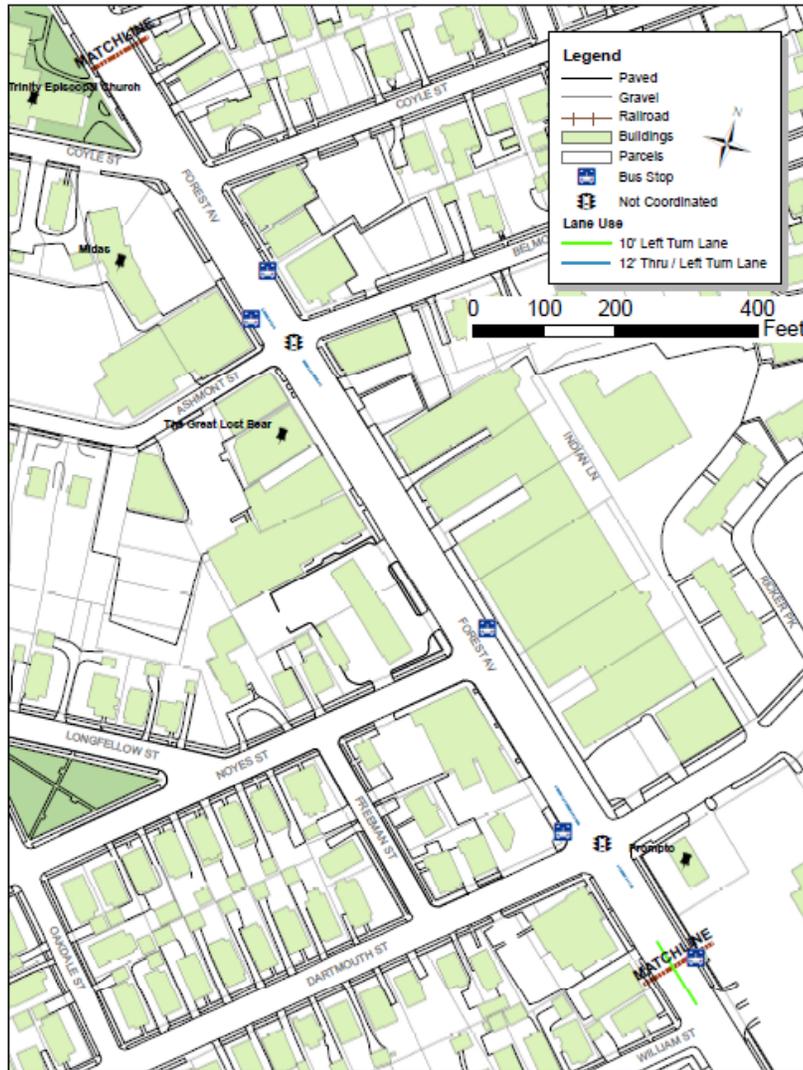
Roadway Characteristics



- 1.4-mile section
- Annual average daily traffic (AADT) = 18,724
- Predominantly 4-lane cross section (2 lanes in each direction)
- The innermost lanes = *de facto* left turn lanes in most cases
- 10 signalized intersections between Park Ave and Woodfords Corner
 - All but 3 are in coordinated signal systems

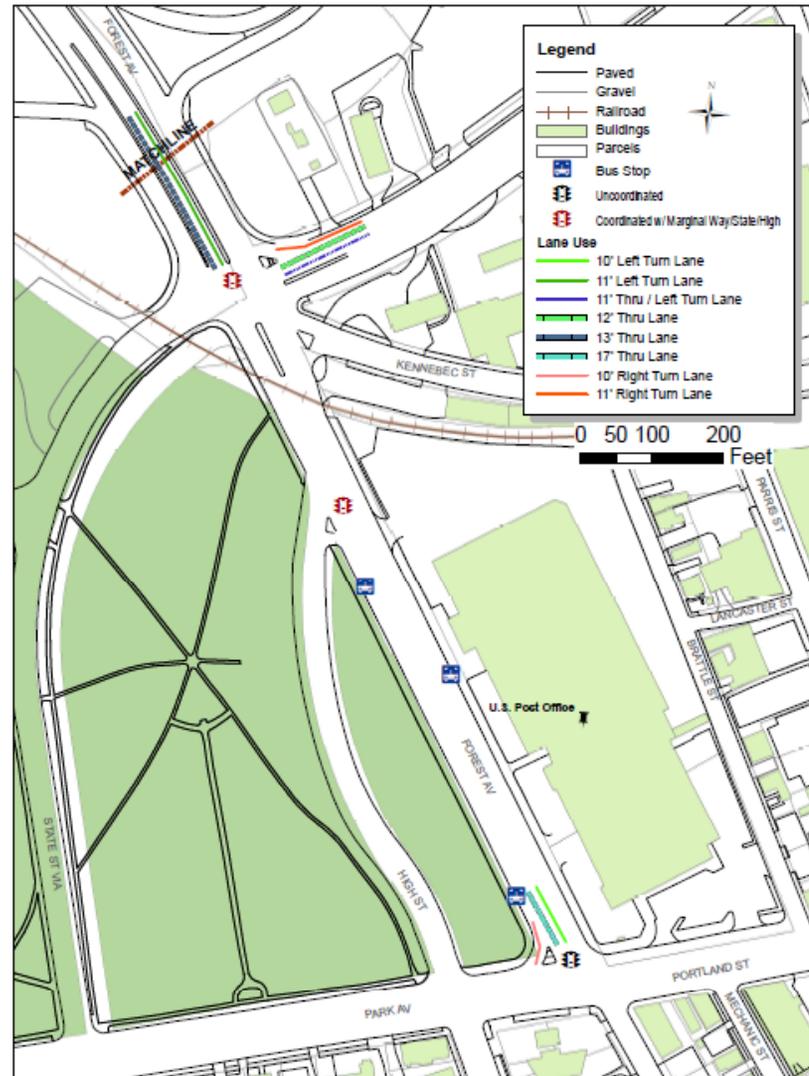
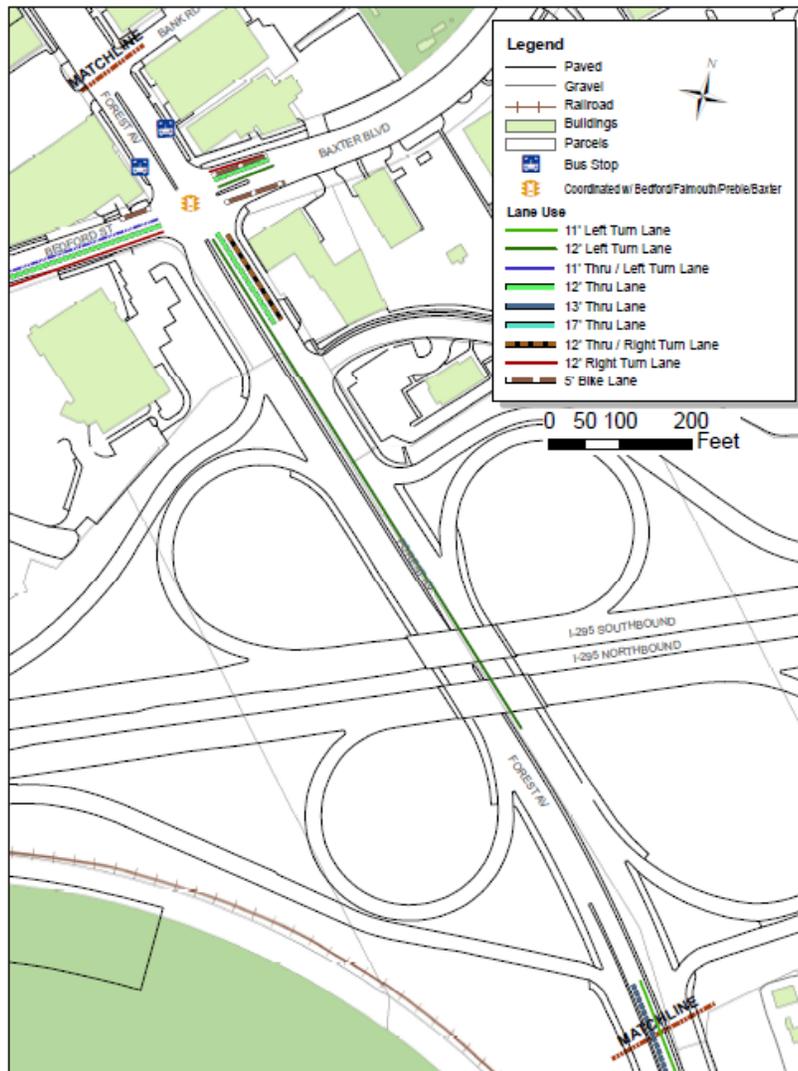
Transportation Analysis

Roadway Characteristics



Transportation Analysis

Roadway Characteristics



Transportation Analysis

Planned Maine DOT Project

- Redesign of I-295 off-ramps



Transportation Analysis

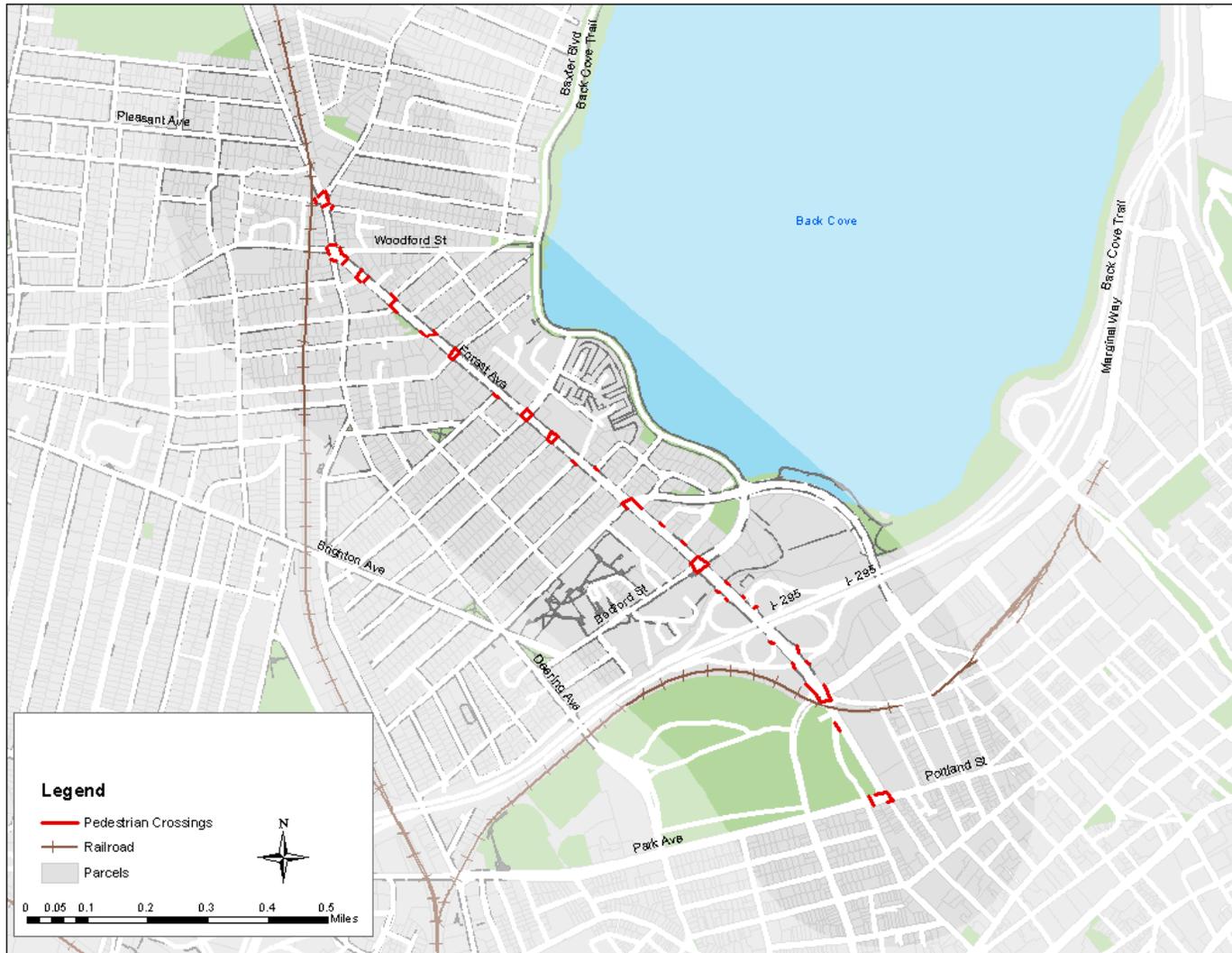
Pedestrian Assessment

Factors to Consider:

- Availability of sidewalks and accompanying amenities such as landscaping
 - Widths around 7' to 9'
- Street furniture (e.g. benches, shelters)
 - Minimal
- Quality and frequency of pedestrian crossings
 - Less frequent in Segment A, more frequent in Segments B and C
- Width of pedestrian crossings
 - Generally around 50 feet but some much wider
- Buffer or protection from traffic in travel lanes
 - On-street parking, minimal landscaping
- Access to destinations
 - Less connectivity in Segment A, more connectivity in Segments B and C

Transportation Analysis

Pedestrian Crossings



Assessment:

- Less frequent in Segment A, more frequent in Segments B and C



Transportation Analysis

Cyclist Assessment

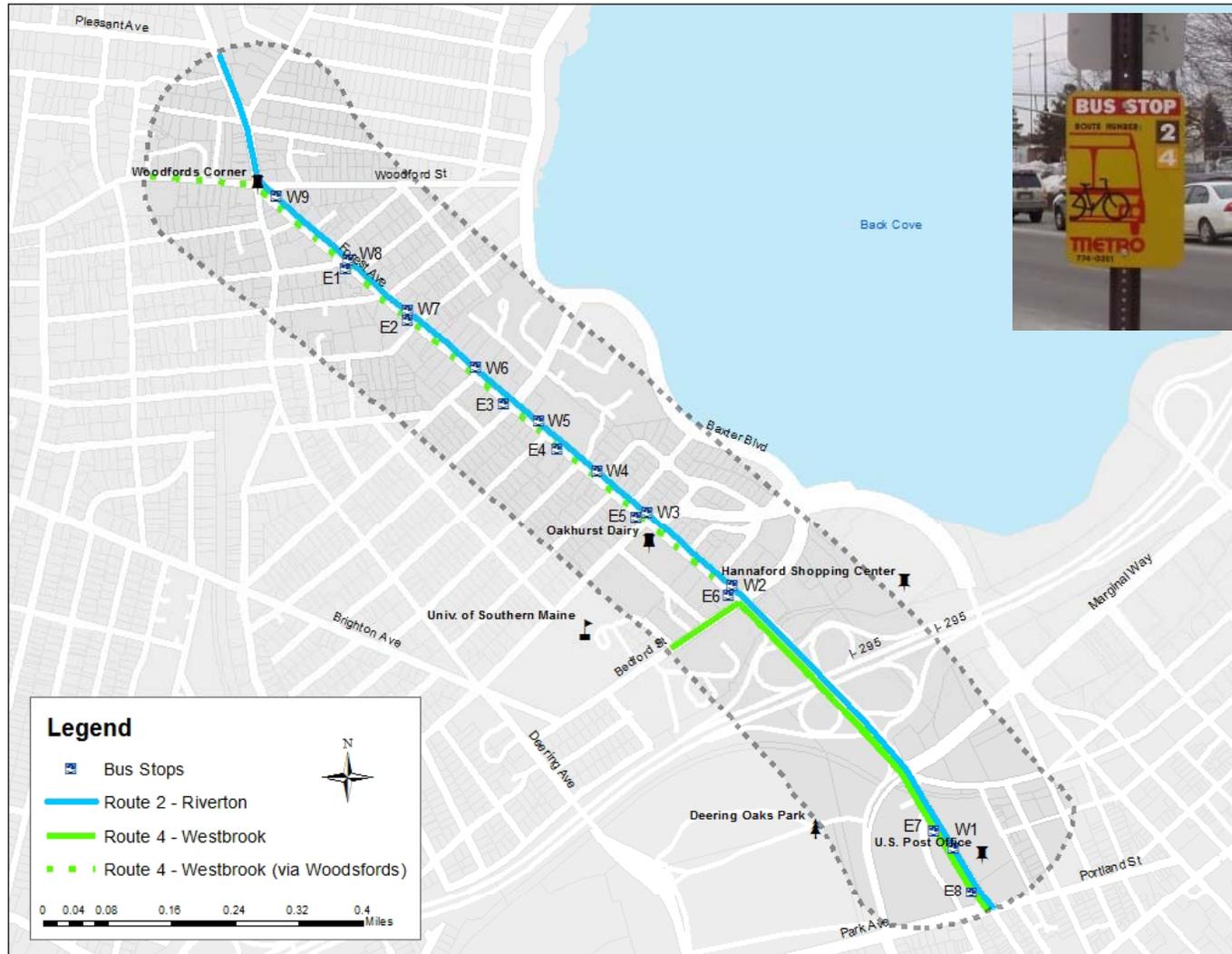
Factors to Consider:

- Traffic volumes
 - Significant volumes and congestion (LOS assessment)
- Vehicle speeds
 - 30mph limit (acceptable for shared lane)
- Bicycle infrastructure
 - No on-street infrastructure, except for few side streets
- Number of intersections
 - Low number in Deering Oaks Segment reducing connectivity but still risk of conflict (I-295)
 - Higher number in Central and Woodfords Corner Segments increasing connectivity and risk of conflict
- Width of travel lanes
 - Typically 12'
- Volumes of larger vehicles
 - Designated transit corridor for improvement



Transportation Analysis

Transit Routes and Stops



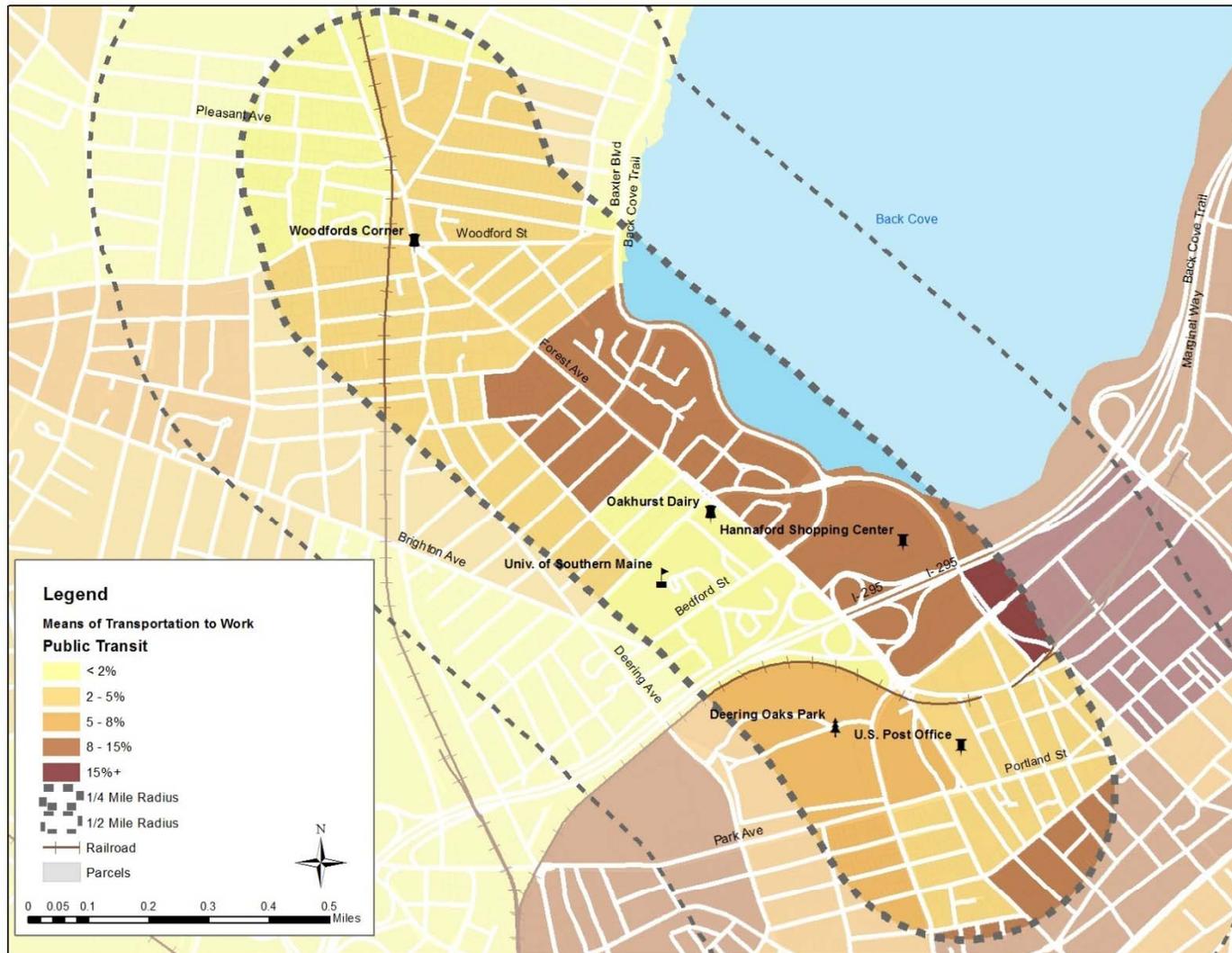
- Desirable frequency for 'choice' riders = 15 min
- Systemwide operating speed approx 12 mph

Assessment:

- 2 routes, 17 stops
- Best frequency = 20 min – one of best served areas in Portland
- Dense stop placement with few amenities (shelters)
- Operating speed approx 10 mph
- Speed and frequency not desirable for 'choice' riders

Transportation Analysis

Transit Ridership



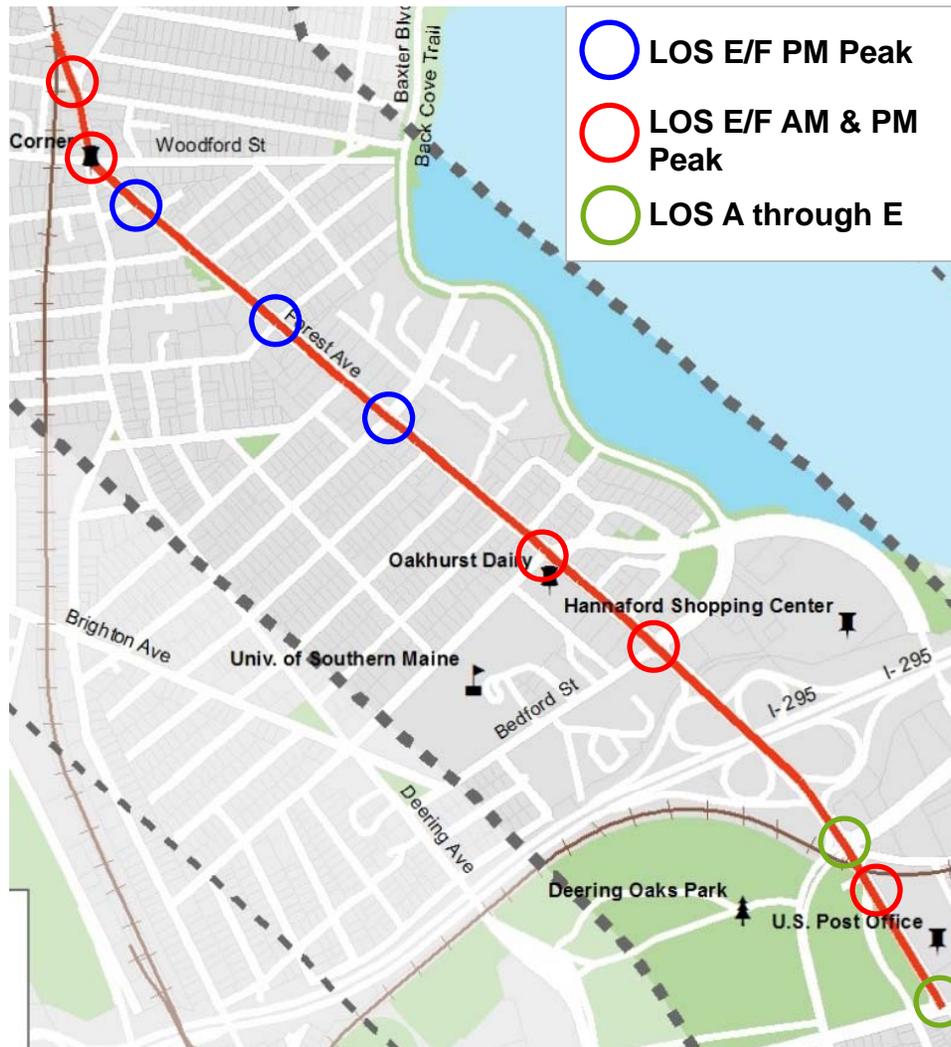
- Portland transit mode share approx 4%
- Drive alone mode share: 71% city-wide and 79% state-wide

Assessment:

- 6% transit mode share is above average
- 65% drive alone mode share is below average

Transportation Analysis

Level of Service (LOS)



Assessment

- LOS worse than D:
 - AM Peak – 5 of 10 signalized intersections
 - PM Peak – 8 of 10 signalized intersections
- Primarily southbound delays
- Most approaching streets have poor LOS in PM peak
- Ocean, Woodford, Baxter, and High have poor LOS in AM and PM peaks

Unsignalized (not included in image)

LOS for Forest Avenue at I-295 NB Ramp (Unsignalized)

Approach	2011 AM Peak Hour		2011 PM Peak Hour	
	Delay	LOS	Delay	LOS
NB Off-Ramp EB	43	E	41	E
NB Off-Ramp WB	3	A	11	B
Forest Ave NB	1	A	3	A
Forest Ave SB	2	A	2	A

LOS for Forest Avenue at I-295 SB Ramp (Unsignalized)

Approach	2011 AM Peak Hour		2011 PM Peak Hour	
	Delay	LOS	Delay	LOS
SB Off-Ramp EB	>50	F	7	A
SB Off-Ramp WB	7	A	12	B
Forest Ave NB	3	A	3	A
Forest Ave SB	5	A	2	A

Transportation Analysis

Crash Assessment

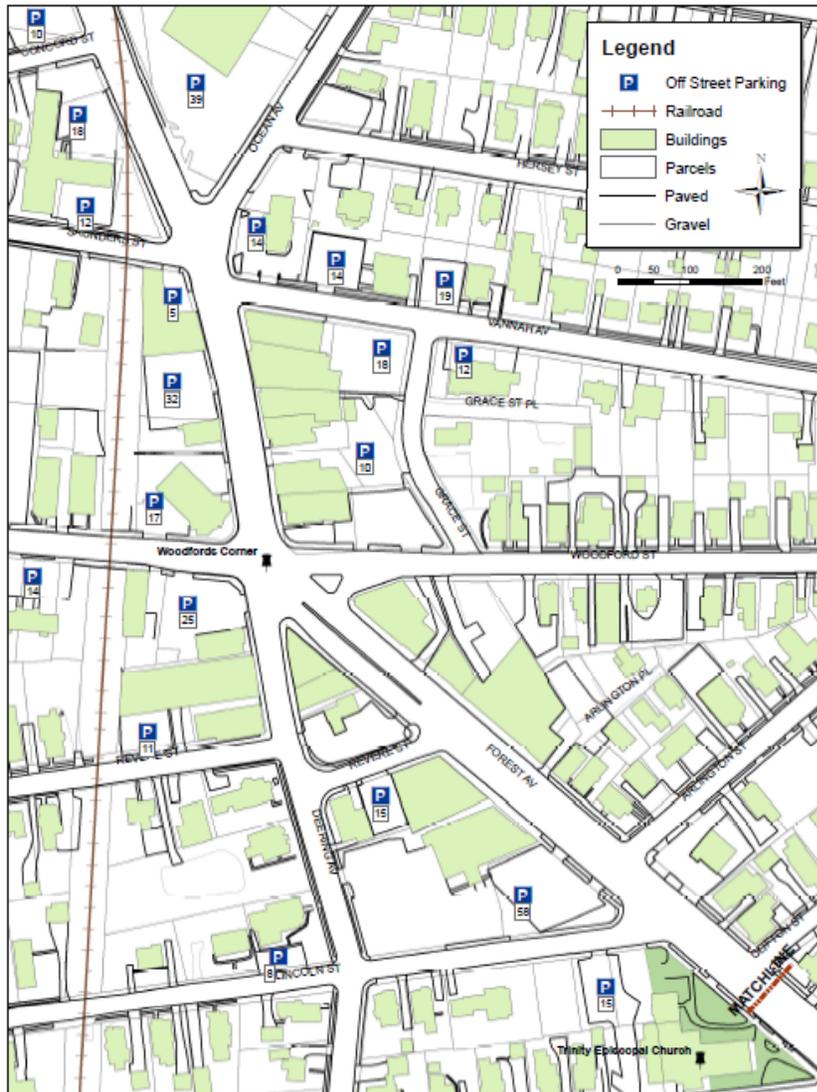
- Critical rate factor (CRF) = ratio of actual crashes to expected crashes

Assessment:

- Highest CRF near I-295 (rear-end)
- Typical crash patterns:
 - Left turns and through vehicles
 - Angles crashes out of side streets (Arlington, Clifton, Forest Ave Plaza)
 - Rear-end crashes
 - Some sideswiping parked cars
- Noteworthy crash pattern:
 - Crashes for SB vehicles on Forest Ave near Marginal Way

Transportation Analysis

Off-Street Parking Assessment



Assessment

- Total 3,617 spaces
- Additional USM parking garage: 1,149
- Forest Ave Shopping Plaza: 203

Transportation Analysis

On-Street Parking Assessment



Assessment

- Mostly 2-hour
- No parking near I-295 interchange
- Parking meters in Segment A between Portland Street and Marginal Way
- Estimated total = 210 spaces
- Estimated maximum spaces on all of Forest Ave = 508 spaces

Transportation Analysis

Rail-Highway Grade Crossings



Assessment

- Pan Am Railways operates six to eight freight trains per day
- By 2013, Amtrak expected to operate 3 daily Downeaster trains in each direction

Transportation Analysis

Conclusions

Forest Avenue, while multi-modal, is primarily an automobile-dominated corridor.

- Pedestrians
 - Consistent, adequate sidewalks, little additional amenities
 - Potential for conflicts at intersections, which are necessary to increase connectivity
 - Problem area around the I-295 interchange
- Cyclists
 - Little to no facilities provided, despite potential attractors and use as a connector
 - Potential for conflicts at intersections, which are necessary for connectivity
 - Problem area around the I-295 interchange
- Transit Riders
 - Well-served relative to other corridors in Portland area
 - Lacking frequency to draw “choice” riders
 - Few amenities provided at stops
- Motorists
 - Poor LOS SB
 - Poor LOS on Forest Ave in peak, particularly PM peak
 - Poor LOS on Ocean, Woodford, Baxter, and High Sts, particularly in PM peak



Questions?





Next Steps



Next Steps

Short schedule

Public meeting

Finalize principles and analysis memos

Develop and evaluate alternatives

- Land use
- Transportation
- Streetscape

Thank you!

PACTS
Portland Area Comprehensive Transportation Committee



GP *Gorrill-Palmer Consulting Engineers, Inc.*
Engineering Excellence Since 1998

BARTON & GINGOLD

