Getting on Board with BRT

An Urban Design Plan that Supports Rapid Transit on West Broad Street

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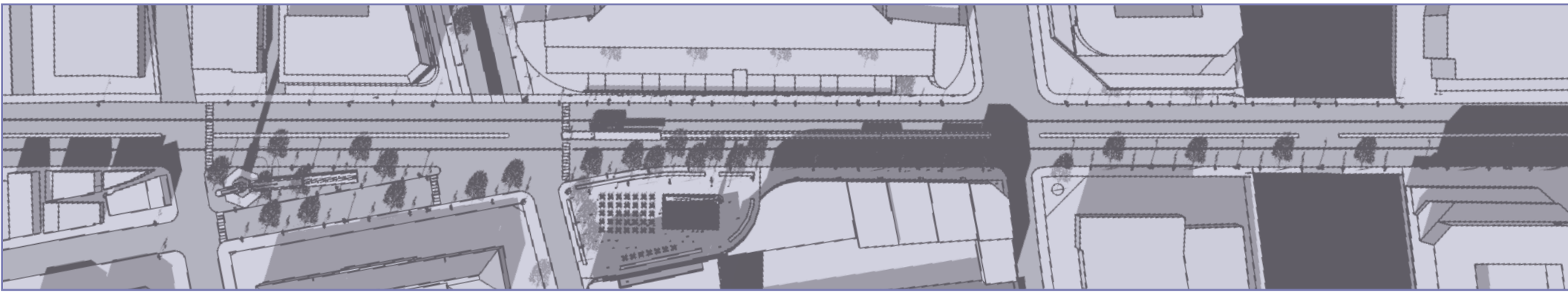
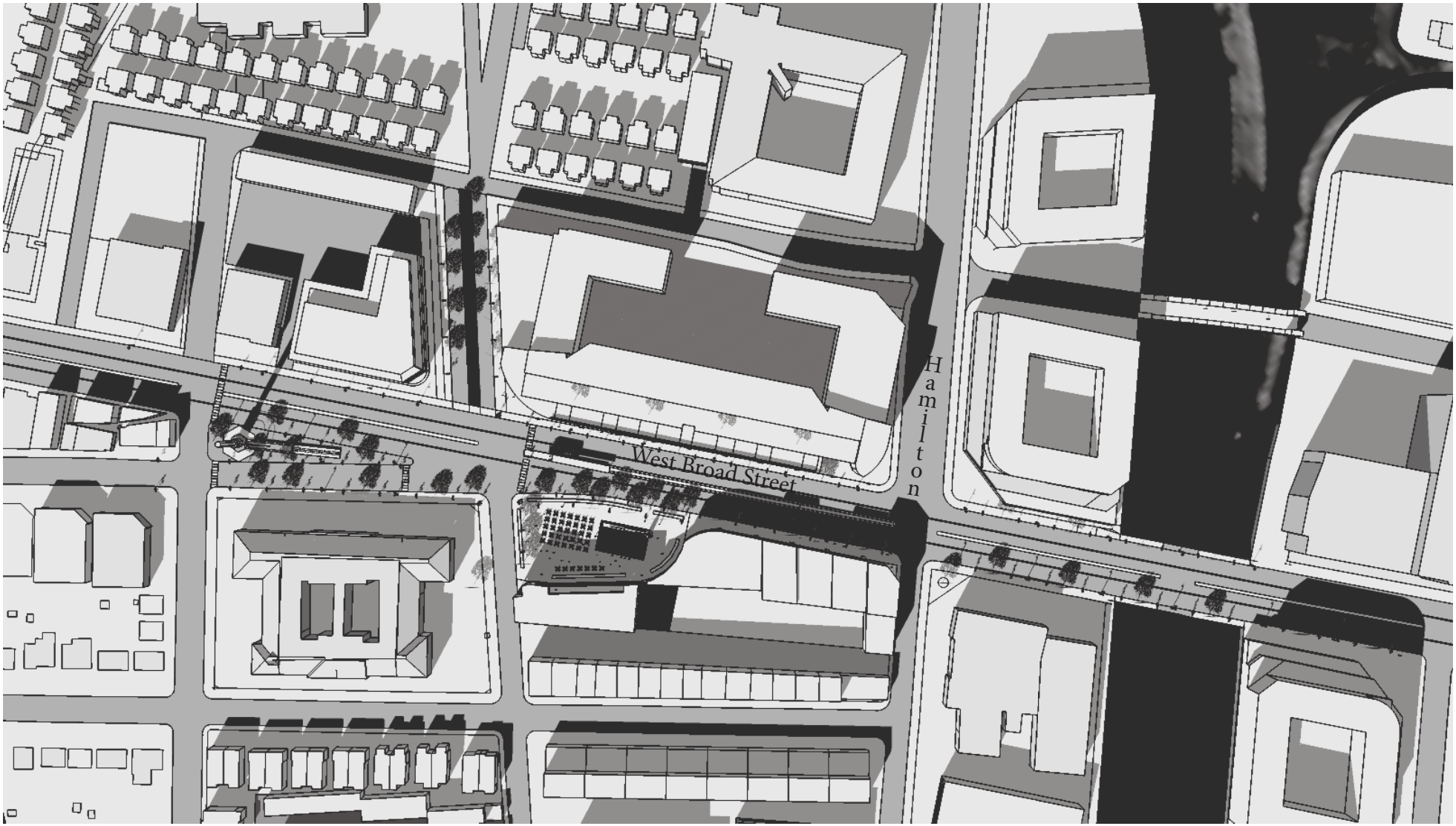
Spring 2014





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Prepared For:
The City of Richmond Department of Planning and Development Review
And
Storefront for Community Design

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This project would not have been possible if not for the generous assistance from all who chose to help me pursue this subject. The time and energy devoted to this project by my panel members is a true reflection of their character and passion. Special thanks to Mark Olinger, Ryan Rinn, Jim Smither, and Keith Ready for their continued support and patience. Without them, this study would not have been possible. I would also like to thank all of my friends in the program for inspiration and companionship. In particular, Josh Son, Shawn Winter, and Naomi Siodmok. You were always there for inspiration and support. Finally, I would like to thank the late great T. Tyler Potterfield for being an early mentor who showed me that enthusiasm for history and culture guide the best planners.

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Plan Purpose

This plan provides a strong urban design vision for the West Broad Street Bus Rapid Transit (BRT) Corridor (the Corridor) that will not only support the transit system but also its riders and neighbors by creating a vibrant and unique series of multi-modal development nodes which improve the quality of life in Richmond. The plan aims to reinvigorate established areas and promote suitable new development.

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Executive Summary

This document was produced for the City of Richmond's Department of Planning and Development Review (PDR) and Storefront for Community Design as an Urban Design Plan. It fulfills the 'Professional Plan' requirement in the Master of Urban and Regional Planning program at Virginia Commonwealth University.

The City of Richmond's PDR requested an Urban Design Plan with a baseline study of the West Broad Street BRT Corridor between Willow Lawn and Belvedere that would compare the current conditions to minimum standards for successful BRT. Recommendations and strategies to meet those standards are be included as part of this plan. The purpose of this plan is to create a corridor that supports BRT and its riders while creating a unique and vibrant stretch of Richmond. West Broad Street demands special treatment due to its elevated status. Broad Street is both a US Route (250) and a major arterial road. Additionally, parts of Broad are experiencing a renaissance which calls back to its history as the commercial center for the entire region. Other parts of West Broad Street, particularly in Henrico County, are seeing a boom in new development as well. Finally, this Corridor connects several major commercial, employment, residential, and institutional centers in the region. The completion of this BRT, with smart and attractive design, could change the culture of the city in a way that would catapult Richmond into the future. With this in mind, the recommendations and designs shown in this plan are not bound by current limitations. Instead, this plan shows West Broad Street at its full potential as a multi-nodal, multi-modal corridor.

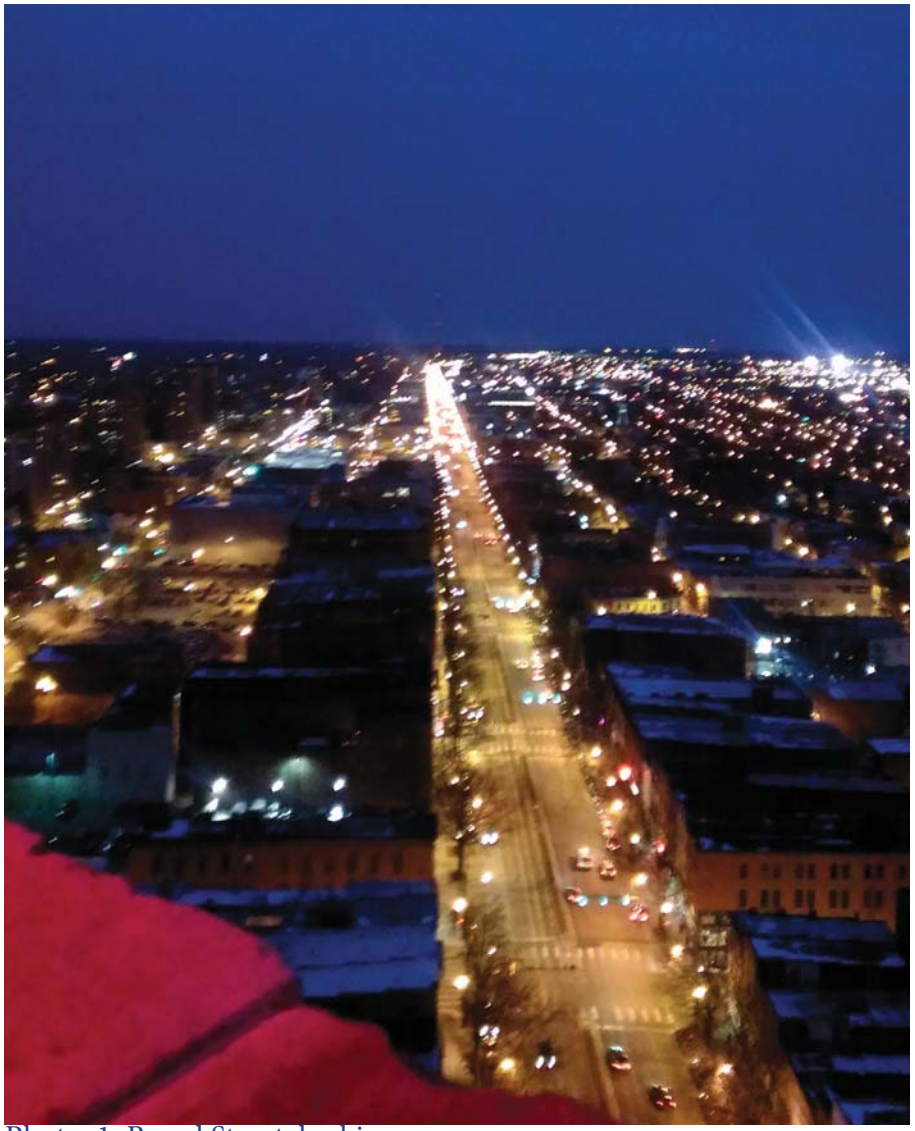

Photo 1: Broad Street, looking West from CNB building at 3rd

Using principles of New Urbanism, Transit-Oriented Design, and design guidelines practiced by Jan Gehl (Figure 3), this provides a blueprint to transform the Corridor to meet the growing needs of Richmond and to support the new BRT line.

An analysis of the existing conditions reveals disparities between the eastern and western parts of the Corridor. West Broad Street from Robinson Street east meets many, if not all, of the standard conditions that support BRT. West of Robinson, many of the conditions are not met. This is true for the logistical/ functional aspects (density and infrastructure) and the aesthetic components standard for a strong multi-modal corridor.

This plan recommends that the two sections of the corridor receive a treatment that creates a cohesive, and pleasant multi-modal experience that is easy and safe to navigate. New infill development and the continued reuse of currently vacant and underutilized buildings will bring a similar number of people to all stops. The experience should be consistent from one node to the other, including similar streetscapes and stop designs elements. While each stop should contain consistent elements, the aesthetics of those elements should differ to make unique places along the Corridor. In order to attract and encourage public transit use, the area should be less auto-centric, and focus more on enhancing the pedestrian infrastructure. Higher-quality pedestrian infrastructure encourages walking, leisure, general use, and safety in the Corridor.

Increasing density and creating a sense of enclosure and place around the western stops are crucial to support for the BRT. More people within a quick walk or bike to the stops mean more riders. More commercial space and retail spaces brings more jobs, and therefore more destinations. By encouraging dense infill and adaptive reuse development large swaths of underutilized land could become productive parts of the community and supportive of the BRT.

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Figure 3: Re-imagined street from LifeBetweenBuildings.tumblr

The BRT will be the new transit attraction along West Broad, and this development should be seen as an important opportunity to restructure the relationship between various modes of transportation and the land uses upon which they rely. While the car should no longer occupy the highest priority, it should not be left out of the renegotiation of space. Providing opportunities for people to choose among many forms of transportation to reach their destination accommodates all types of potential riders, shoppers, commuters, and residents. Furthermore, providing options to bike and walk to and from the stop helps drive the benefits of the transit stop deeper into the neighborhood. A store a few blocks from the transit stop could see increases in business if there is a clear, clean, well-lit and safe path to and from the new BRT stop.

A cohesive design along the Corridor is important, but this is not to say that each stop should contain the same style of amenities. At each stop there exists a culture supported by its existing design. This culture should be promoted and enhanced at a higher density to create unique and complex places along the Corridor that serve different purposes and support one another. For example, Willow Lawn and Staples Mill are centers of employment and shopping, Hamilton is a center for residential, and the downtown stops have high densities of business, institutional, residential, and mixed-use areas. These zones are different, yet support the proximity and enhanced connection to one another. Key destinations near the stops should be highlighted as attractions. Implementing these recommendations will create a vibrant and unique Corridor which would support and be supported by the introduction of high-speed public transit.

Photo 2: East Broad and Second street's lush public realm

Client Organizations

This Urban Design Plan for the West Broad Street Bus Rapid Transit Corridor was requested by The City of Richmond's Department of Planning and Development Review and Storefront for Community Design and it also fulfills the requirements of the Master of Urban & Regional Planning program in the L. Douglas Wilder School of Government and Public Affairs at VCU.

The City of Richmond's Department of Planning and Development Review (PDR) directs the development of private lands through regulation and the development of public lands and infrastructure. They are primarily responsible for reviewing and recommending proposed adjustments and with communicating with the City's Department of Public Works, VDOT and GRTC.

PDR's realm of implementation will be in two separate fields, as suggested above: first they will be wholly responsible for reviewing and approving land improvements; second they will use existing and new policy to direct private development. Both of these spheres of influence can be leveraged to support the BRT, which will require certain ridership levels to remain successful.

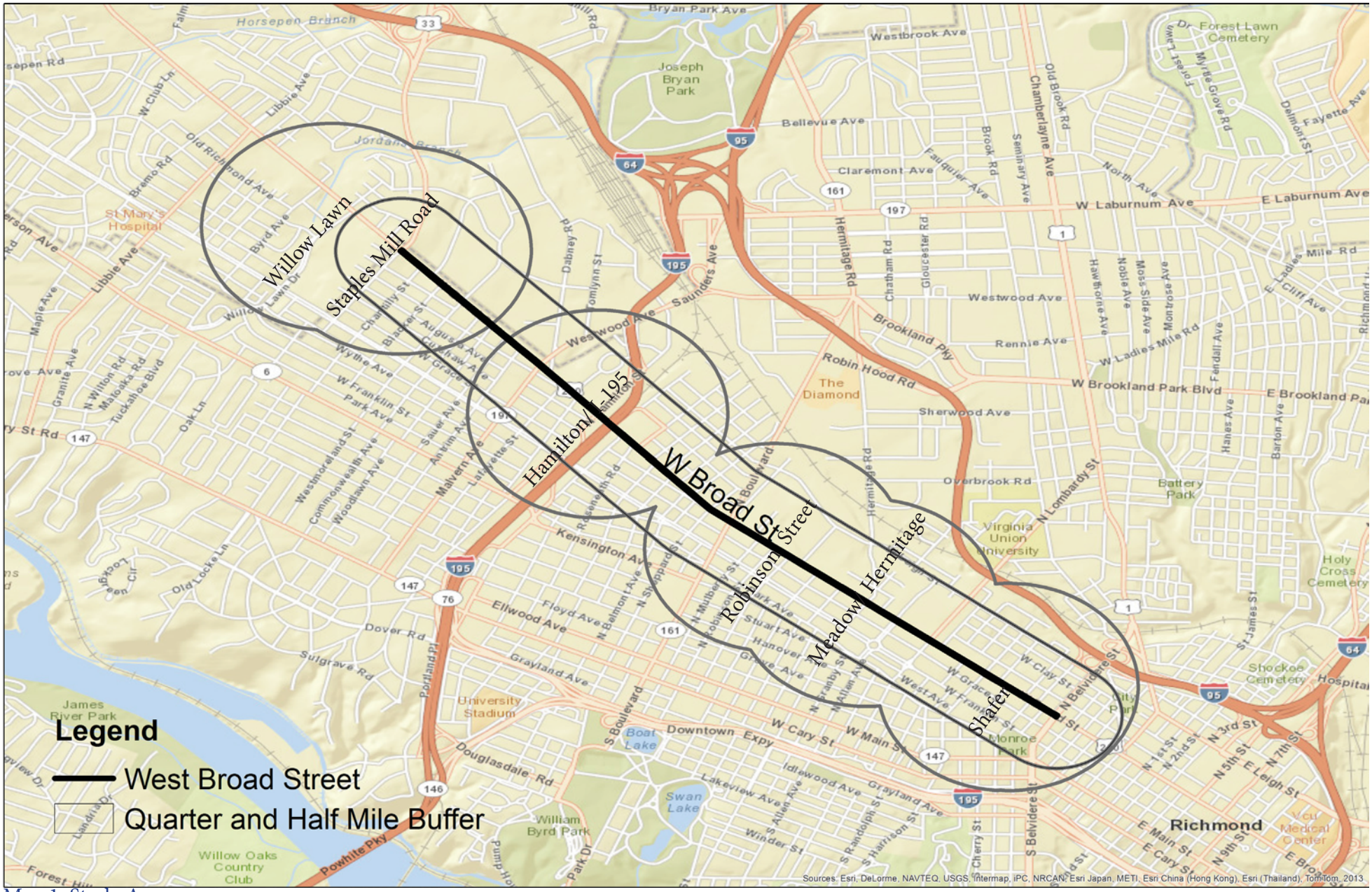
Storefront for Community Design is a non-profit planning organization that helps neighborhood organizations, businesses, and individuals resolve planning and design issues. They are included as a client because of their connection to the community stakeholders of this project, and are responsible for any community organization efforts to implement plan recommendations. Furthermore, if private landowners or individuals need planning or design assistance, Storefront can be sought as a client to help develop land. Storefront also will provide a meeting/workspace for citizens or business participation efforts in the future.

Section 1:Introduction and Context

The clients have requested this Urban Design plan to create a framework for development along the BRT corridor that fosters desirable and livable communities. The momentum created by recent re-development and increased cultural activity downtown, around VCU, and around the Redskins complex, should be matched by improvements further West of Belvedere to Staples Mill Road that not only meet current needs, but align with projected developments. Broad Street has one of the widest public right-of-ways in the city, and has some of the widest sidewalks, too. The quality of that public realm, however, disintegrates along with the urban fabric the further west one goes (photo 4).

Photo 3: View down Grace Street looking east from Robinson

Photo 4: View down W Broad Street looking west from Robinson W/ BRT



Map 1: Study Area

There is plenty of room for aesthetic and functional improvements to enhance safety and experience within corridor. In addition to the already present stores and events, Broad is expected to have a new Bus Rapid Transit (BRT) line that will have 6 stops in the study area: Shafer, Hermitage/Meadow, Robinson, Hamilton/I-195, Staples Mill, and Willow Lawn. The new route will help connect Richmond's West End (and parts of Henrico) to Downtown and eventually Rocketts Landing; the BRT will also connect residents living downtown to the West End shopping areas and new developments. The building potential for this area (specifically west of I-195) is significant. This area is dominated by surface parking lots, decaying pedestrian infrastructure, and suburban/ strip mall commercial development. This is especially noticeable when compared to the sense of comfort and enclosure that the VCU and downtown building footprints and arrangement provide to pedestrians (photo 5). Individuals traveling to this part of West Broad Street on a new high-tech bus line should be met with equally impressive urban design. A study of the whole area had been completed, focusing not just on West Broad Street, but also on the areas a half- mile from the stops, where most riders and pedestrians will be.

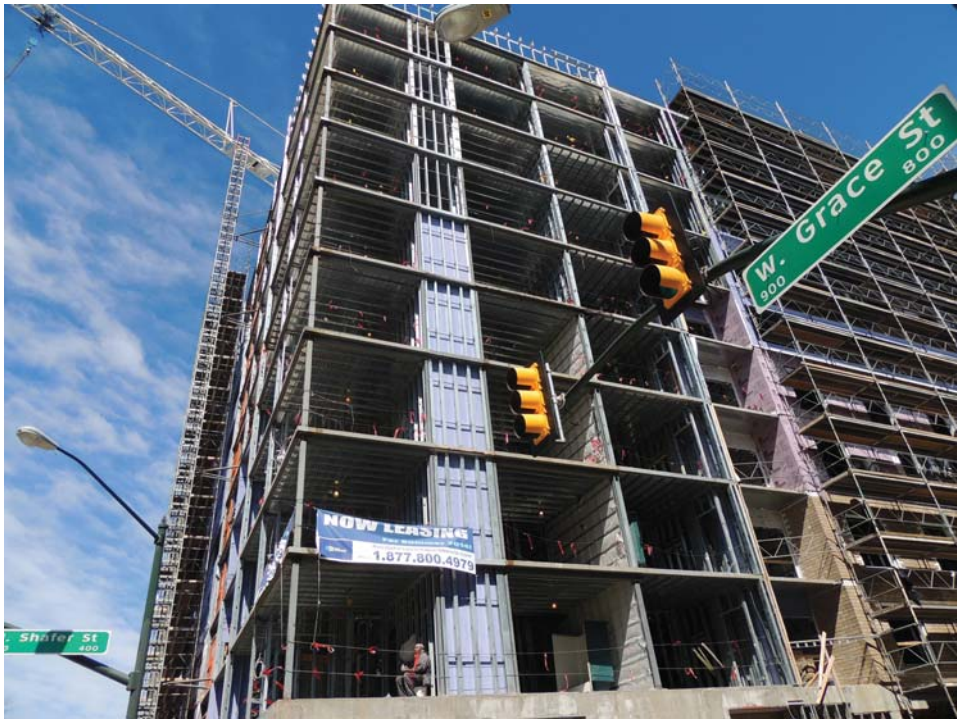


Photo 5: BRT supportive infill at Shafer and Grace

Photo 6: BRT Supportive adaptive reuse at 3600 W Broad

This plan also includes two alternative design plans focusing within a quarter-mile of the stop(figure 4,5). Additionally, overarching recommendations are made to be applied to all stations and developments.

Another purpose to this plan is to create new and diverse live/work/play opportunities in transit-connected communities for the growing demographic of individuals rejecting suburban lifestyles, whether by choice or for reasons associated with loss of physical abilities. As Jeff Speck noted in his talk at VCU's Gulak lecture in 2013, this is a large emerging market that will help to shape our society's future[1]. Successfully capturing this market is a complex process, but doing so ensures a greater city. The role of this plan is to show designs and policies that could meet the needs of new markets in a desirable way within reasonable distances of new BRT stops.

This conceptual part of the plan relies on recent precedent projects in similar cities and Urban Design best practices.

A few plans affect the majority of this area (Map 1) of Broad Street. Official plans include the Richmond Comprehensive Plan, the Richmond Downtown Plan, City Old and Historic Districts, the VCU Master Plan, and the Arts and Cultural District Plan. These plans primarily focus on the far east end of this study area. Recently, Baker, a consulting firm hired by The City Of Richmond, released the Richmond Strategic Multi-modal Transportation Plan. This plan focuses on a city-wide network of multi-modal transit options to help connect the region, including the BRT. These plans, aim to affect growth and investment in this area. The Richmond Comprehensive Plan recognized Broad Street as a critical transit corridor. There is little room for change around the Shafer stop because of current design and overlay districts. Additionally, VCU's influence is strongest in this area, and the current landscape is already rich and dense (photo5).

Figure 4: Birds eye looking east down W Broad Street at Staples Mill Stop redesign

W/ BRT

Figure 5 Above: Hamilton Stop Plaza and redesign

Figure 6: Opposite Top: Proposed BRT route

Photo 7 opposite bottom: SFCD and MOB Studios' 'Street enhancement barrels'

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State of the Art

Urban Design and Transportation Design are often addressed in the field of planning in two ways. First, Urban Design is addressed in a 'new urbanist' or 'life between buildings' sort of way. Transportation Design today is most often successfully addressed by implementing the ideas of 'transit oriented development', or TOD.

New Urbanism, Life Between Buildings, and Focus on Pedestrian Detail

New Urbanism and 'life between buildings' are contemporary ideas used to elevate urban design and quality of development. Within the nodes of developments, New Urbanism will guide the developments to meet the above expectations. New Urbanism, although often based in aesthetics, is at its core a manifesto for mixed-use, medium/high density, and walkable communities.[3] This meshes well with Urban Design theorist Gehl's principles rooted in environmental social/psychology. Gehl suggests that good urban design can create more than half of all trips taken in public.[4] Not all trips and public encounters are aided by urban design (for example, everyone goes to work), but there are a number of trips that only occur if conditions are optimal. These conditions include sidewalks, lighting, interesting scenes, beauty, variety, and weather. Outside of these two well-founded theories for design, Jeff Speck's ideas on the connections between walkability, economics, public health, and environmental sustainability are all be used to suggest that new, dense, walkable communities along this BRT route are the best way to develop.[1]

Transit-Oriented Development

In Transit-Oriented Development (TOD) new transit lines and development policies along routes spur new development to systematically grow cities in a sustainable manner.[10] A new transit system's success depends upon how well it has met a defined set of requirements. We will compare Richmond to BRT standards and identify components Richmond will need to consider in the BRT Corridor to support the new system.

To address issues of density and quality of urban fabric to support transit, contemporary planners focus on the following issues:

Population Density:

According to Cervero at the Institute for Transportation Studies, successful BRT stations need to have a population density of approximately 30 people per acre within a ½ mile of the stop.[5]

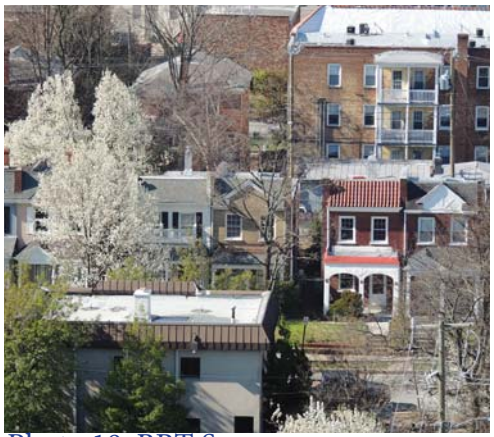

Photo 18: BRT Supportive Museum District housing, as seen from 3600's rooftop

Job Density:

Research suggests that a Jobs Density of 20-30 employees per acre is enough to sustain a viable TOD system. The Center for Transit-Oriented Development points out that nearly 50% of all trips are taken because of employment, and connecting people's homes to these places with a BRT could significantly decrease the amount of driving within this study area.[6]

Photo 9: Anthem office building with high job density

Streetscape:

A safe, attractive, and consistent streetscape adds to peoples' desire to walk to other destinations within reach of each stop.[8]

Photo 10: Typical streetscape on W Broad west of I-195

Various Modes of Transportation Connectivity:

Being able to walk, bike, drive, or take regular buses to these destinations makes it accessible to everybody regardless of their other choices for transportation.[8]

Photo 11: Existing multi-modal connections at Willow Lawn

Pedestrian Activity/ Safety:

If people are encouraged to walk more, they must feel safe. Using street calming measures in and around these transit nodes will discourage people from driving though them for no reason without hurting traffic to businesses.[8]

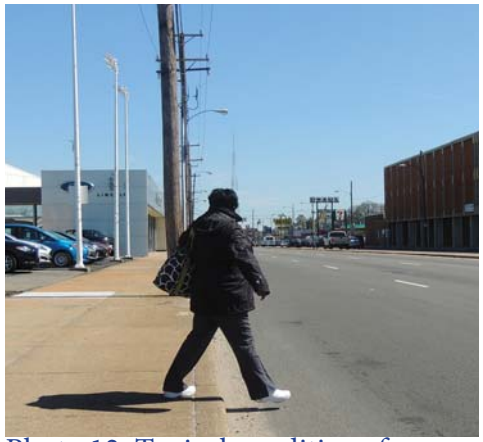

Photo 12: Typical conditions for pedestrian safety on We Broad near Hamilton and Staples Mill

Increases in Property Value:

Increasing property values are necessary for the public to accept growth of this type, for initial investment to occur, and for taxes to help support the full array of municipal services.[8]

Photo 13: A property whos value will increase if BRT is implement-

Parking:

Appropriately designed and placed parking allows people outside of the ¼- ½ mile radius access to this system, which helps overcome any density issues within the radius to increase ridership.[8]

Single-use office complex near Hamilton with far too much parking

Approach and Methods

To address the issues above to inform this plan, primary data was collected from public sources. The questions addressed are:

1. What conditions listed above need to be met in order to meet a base standard for successful BRT?
2. How can the experience of the pedestrian and BRT rider be improved?
3. What are the significant threats to the success of the BRT?
4. Where are the greatest opportunities for improvement to support the BRT?
5. Are current destinations along the route enough to sustain significant ridership?

Information to answer these questions was gathered from public data and sources within the City of Richmond. Additional information comes from other plans and designs for BRT and TOD for best practices. The Census provides fairly recent and accurate information about the population living in these areas. Finally, a sufficient amount of qualitative data was collected from pictures, but future planning efforts should include significant input from the community. Often, images of the current situation juxtaposed with precedent images from similar cities can have a resounding effect on those who see the plan.

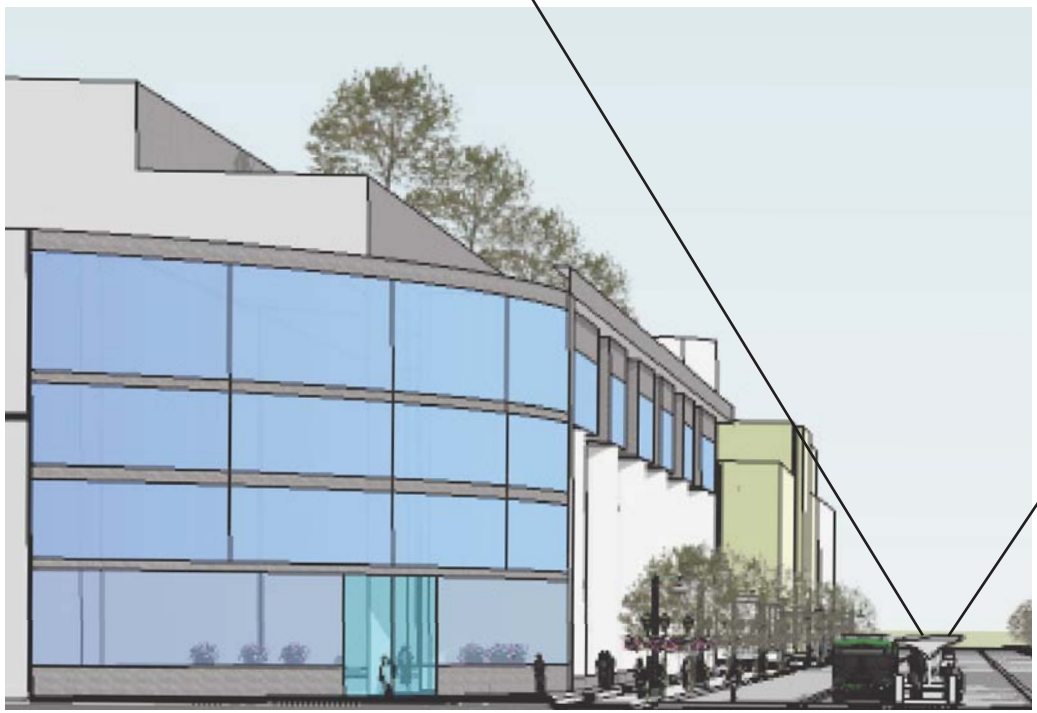

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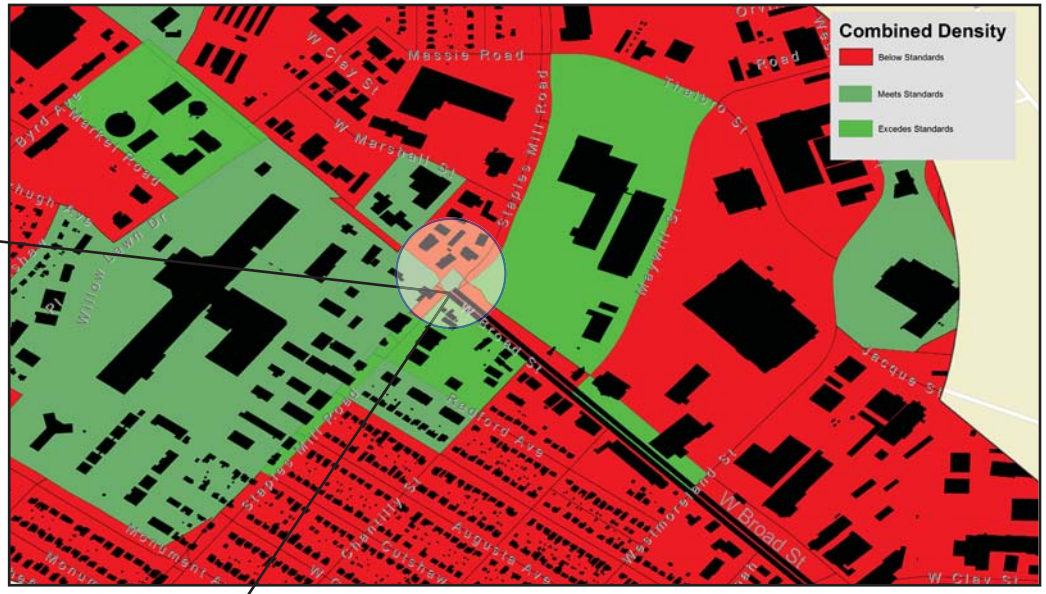
Figure 7: Approach and Methods chart. **The transparent white circle will always represent the proposed stop location**



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GIS was used to perform statistical analysis. This plan provides density maps that show jobs, housing, and population density. This map was then cross- checked with underutilized properties, which can identify significant opportunities to increase density when needed.

SketchUp is used to show potential design plans and future images of the area. "Opportunities" to improve the development of an area to meet the TOD criteria are refined to show what new development could look like. One key issue, which will not be easy to address, is how to suggest higher density that is acceptable to the current residents. Future efforts should be made to reach out to neighborhood organizations to open the discussion about density in a way that will alleviate some potential anxieties. The appendix provides a template for strategies to address this issue through community input. After all, Richmond's densest neighborhood (the Fan) is also among its most attractive.

Answers to the previously posted questions will guide the recommendations, which will be presented as goals, objectives, and strategies. These will be expressed also in an implementation table.

Document Roadmap

This document is presented in three major sections: Introduction and Context, Research and Analysis, Recommendations and Implementation. The introduction and context introduce the study area, history, and current conditions. The Research and Analysis component will include a detailed description of the current conditions. The questions asked in section one (e.g. are the current densities in this area sufficient) will be clearly answered with data and analysis. In this section, Strengths and Opportunities will be brought to light through data collection and analysis. The final section, Recommendations and Implementation, offers solutions to the issues and opportunities presented in the second section. This section also brings to light aspirations of the plan to support the BRT. Finally, based on the recommendations, an implementation plan is presented. This plan creates a base study and provides goals for this area to support a BRT and future development in and around Richmond to support BRT. The density and destinations around the current BRT stops appear to be below average for comparable successful systems. Policies currently hindering development are identified and suggestions made for land-use and development that would help meet the need for the BRT. Likewise, a vision of the type of density and development needed to sustain a BRT along Broad Street, and, by extension, ultimately along other high-capacity transit corridors in the city, will be provided.

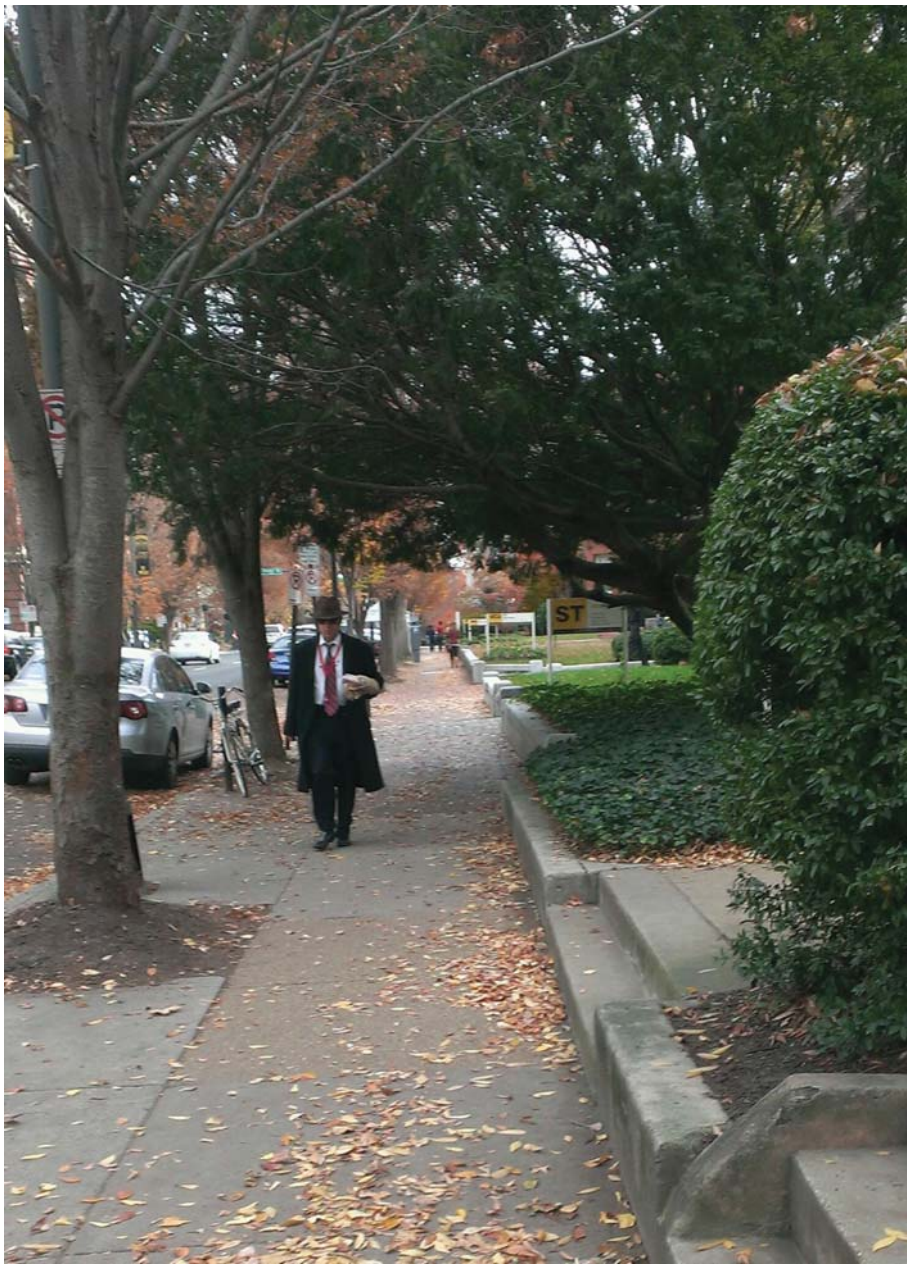


Photo 15: Defined pedestrian space near Shafer on Franklin

Section 2: Research and Analysis

The research of this plan is presented in three sections. The first section compares the current conditions of the study area to conditions necessary to support BRT. The second focus on conditions that enhance the overall experience in the Corridor. The final section concludes with a brief Strengths, Opportunities, Aspirations, Recommendations (SOAR) analysis to provide guidance for the plan section of the document.

Supportive Conditions

The following is an analysis of indicators suggested by Transit-Oriented Development studies from the University of Berkeley's Institute for Transportation Studies and the Center for Transit-Oriented Development.

Photo: Current experience waiting for bus near Staples Mill

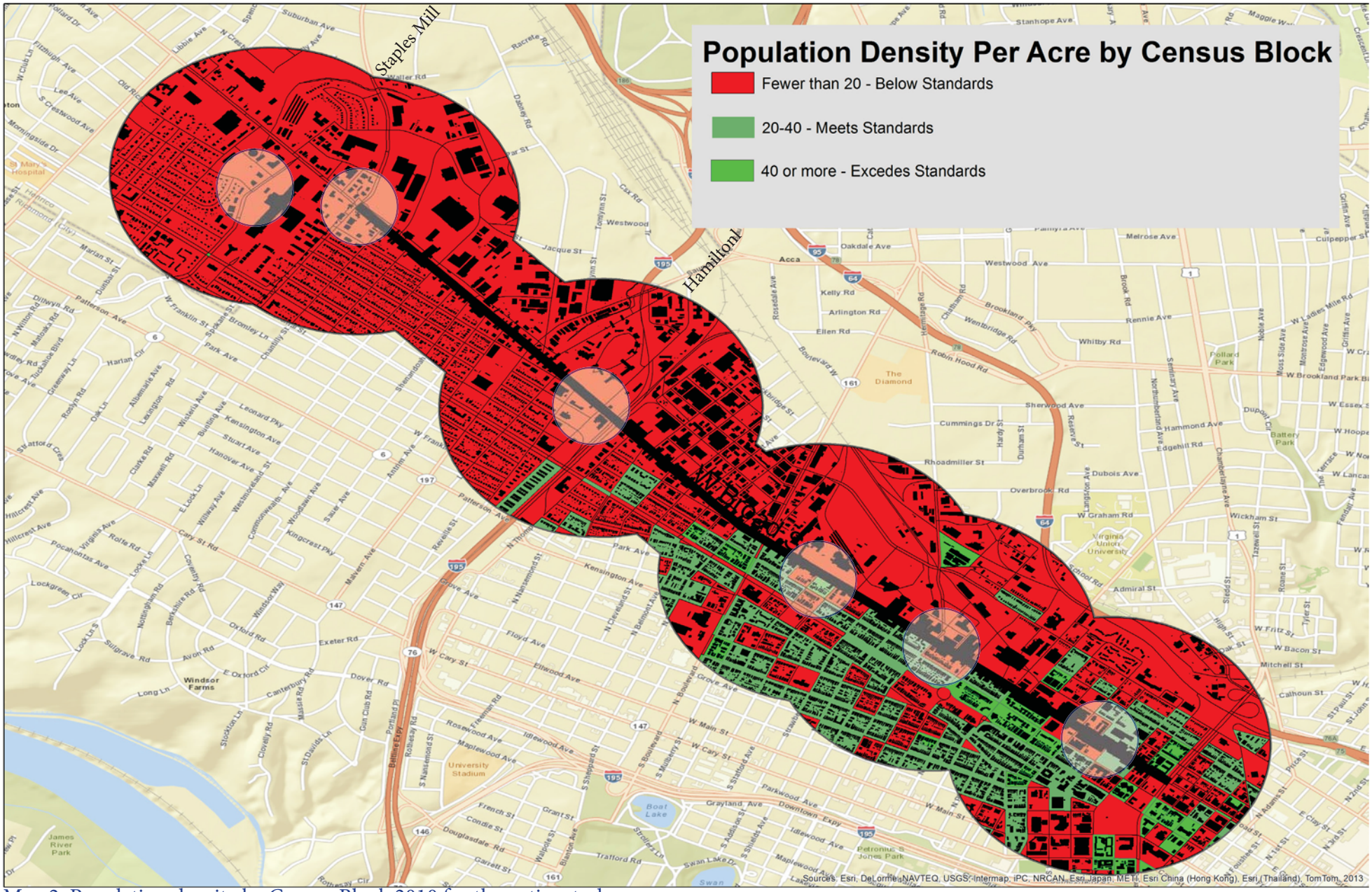
Population Density

Overall population density of the corridor should be at 30 residents per acre to support a BRT system.[5] According to the 2010 census, only Census Blocks south of West Broad Street and East of Robinson Street meet this density threshold.9 Although Density is a three part issue (jobs, housing, and residents), stops west of Meadow Street fall well short of the recommended 30 person per acre. North of Broad Street has two large new developments which have gone online since the 2010 census, but they are in areas that are especially low in density. The average density of this study area is 9 residents per acre, and in the two key locations of Hamilton and Willow Lawn, the population densities are 4 and 2 residents per acre, respectively.9 These two areas could see development that would more efficiently use the land available. Large swaths of land in these areas are dedicated to unstructured parking, which could easily be redeveloped. Below are four maps that show population density by block for the whole study area, Hamilton, Staples Mill, and the eastern stops. Also, images of some of Richmond's most popular neighborhoods which meet the desired density are included below that for reference.

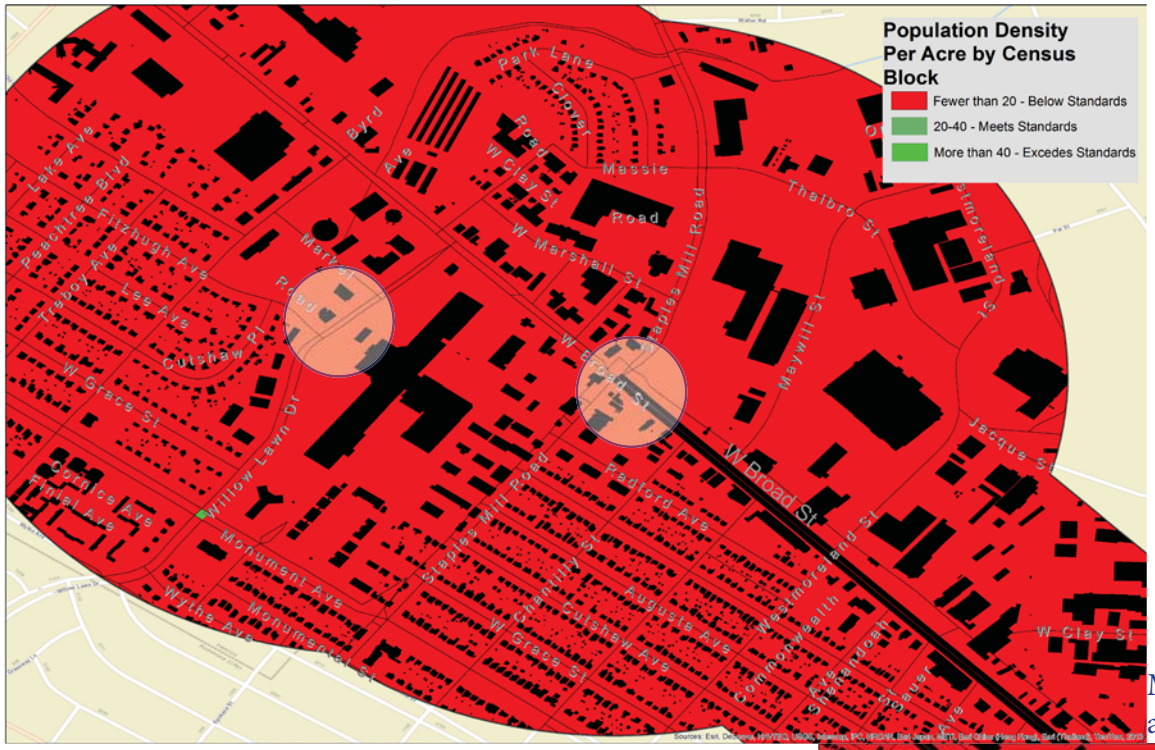
Photo 16: BRT Supportive Density in Jackson Ward

Photo 17: The Museum District W/ BRT

Photo 18: The Fan



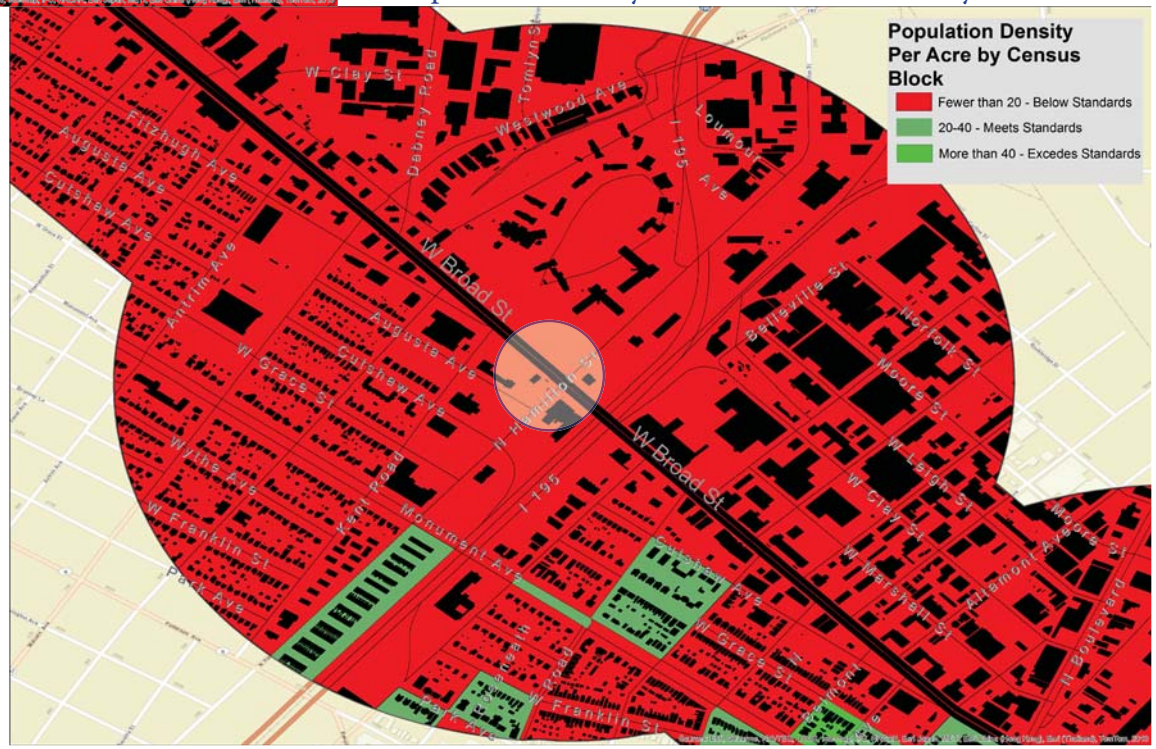
Map 2: Population density by Census Block 2010 for the entire study area.
Places in red are below standards for population density



Map 3: Staples Mill focus area Population Density

Map 4:Hamilton focus area Population Density

Map 5 opposite: Job Density for whole study area



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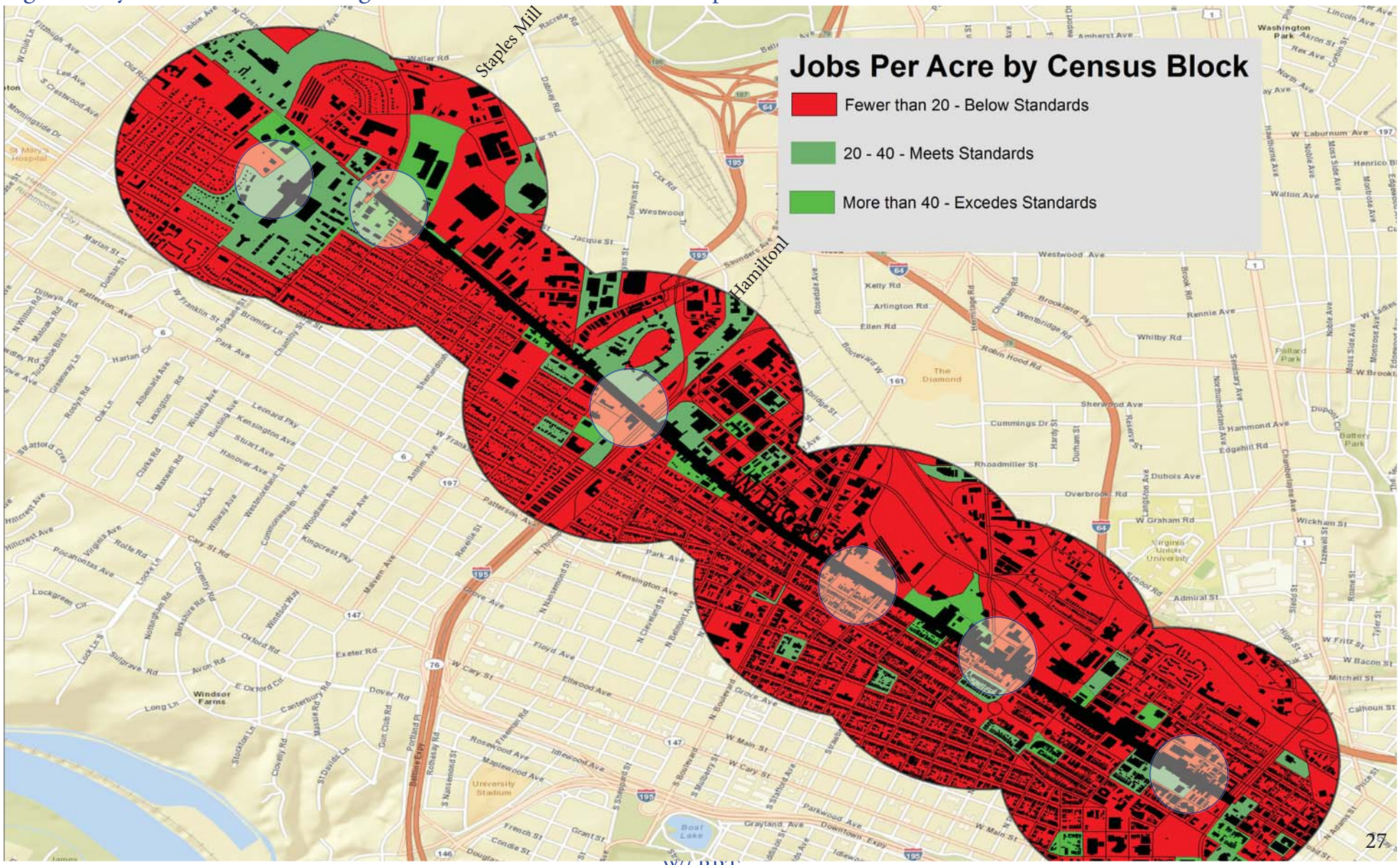
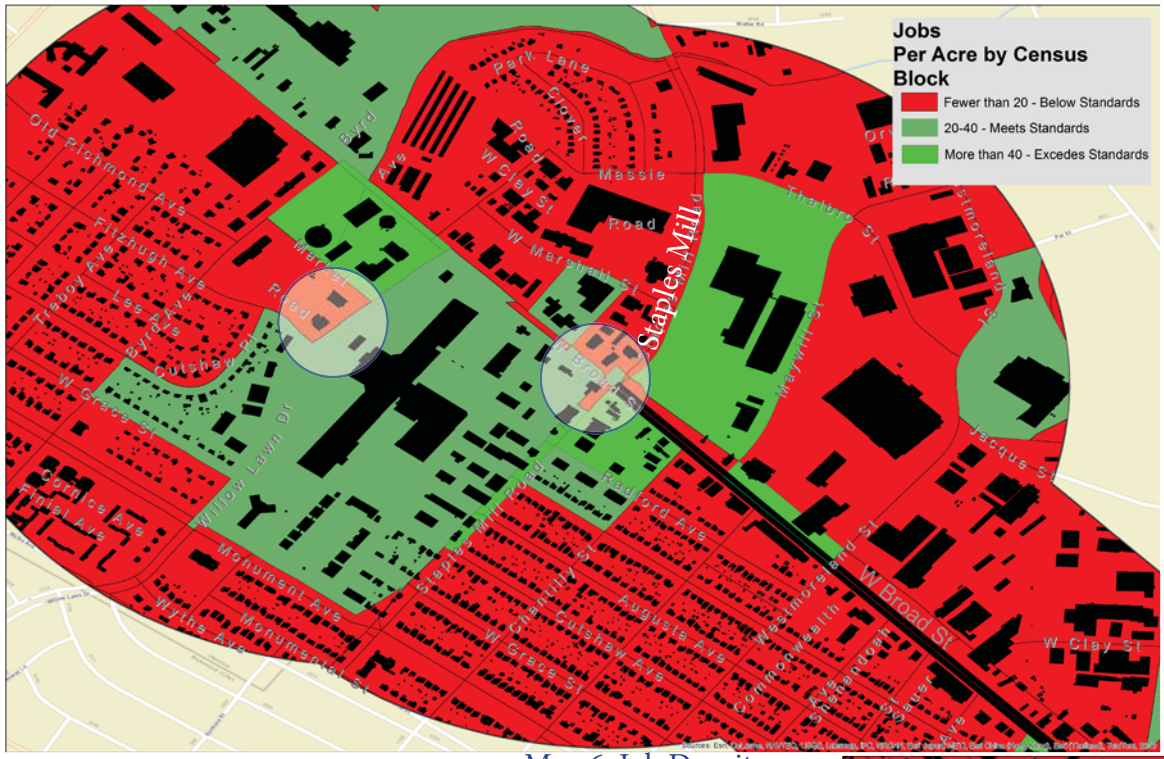
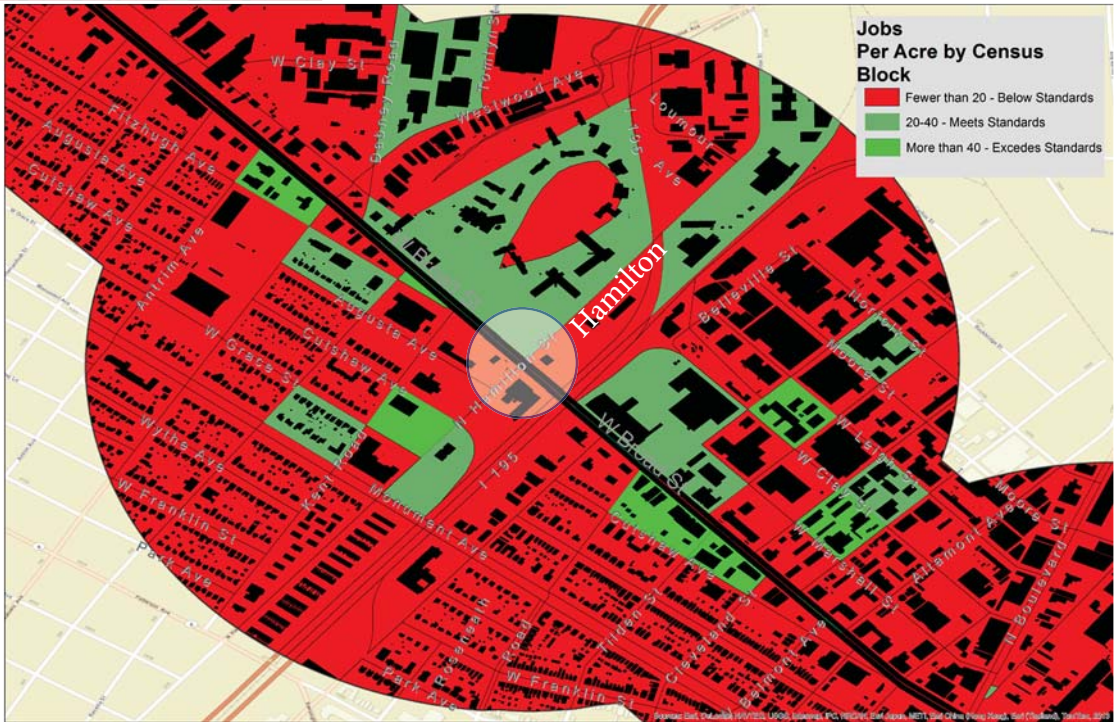
Job Density

The Job Density suggested to support a BRT system is 20 jobs per acre.[6] The Census Blocks around the Hamilton stop have between 10-20 jobs per acre, while the Staples Mill stop has between 5-10 jobs per acre.[9] While these numbers are not as low as some areas of the city, there is room for improvement through efficient use of land along West Broad Street. Below is a map showing the number of jobs per Census Block. Clearly, much of West Broad Street east of I-195 meets this supportive density. West of I-195 has several very high density destinations, including Willow Lawn and Anthem's campus.





Map 6: Job Density,
Staples Mill focus area



Map 7: Job Density,
Hamilton focus area

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Streetscape

The streetscape along the eastern part of the study area includes such amenities as benches, street trees, shallow or no setback, and permeable building fronts. These are very desireable conditions for transit and pedestrians.[7] West of Robinson, however, these conditions fade away to suburban-style developments with bare sidewalks, deep setbacks, parking between the public right-of-way and buildings, and none of the pedestrian amenities associated with walk-friendly environments. The immediate area around the Hamilton stop is a mix of 1930s-tradition developments and post-WWII automobile-oriented development. The stop will, without careful consideration, be dominated by the highway's noise and scale. West Broad Street west of I-195, besides a few bare pedestrian accommodations, distinguishes itself as an automobile environment (Photos 12,13).

Photo 19: Pedestrian supportive streetscape near W Broad and Harrison

Photo 20, 21: Streetscape at Staples Mill and W Broad which is barely recognizable as pedestrian

W/ BRT

Mixed-Use

Much of this Corridor is zoned B-3, B-4, M-1, or UB (See Appendix) The Residential areas are zoned RO-2, R-5, R-6, R-48, R-76. Of Richmond's current zoning districts, the UB-2, R-63, R-7 and the new B-6/B-7 districts best promote transit-oriented design because they allow higher density, mixed-use, and conditions that enhance the pedestrian experience. A major issue with the surrounding communities is that they are exclusively one use. North of West Broad Street is all industrial, large commercial, and institutional. South of West Broad is all residential. Broad Street itself, west of the highway, has no housing on it. It should be noted that extending the redevelopment patterns of the eastern part of this study area (photo 22), would help provide jobs and housing directly along the new transit line.

Photo 22: Adaptive reuse mixed use building at 3600 W Broad near Hamilton

Photo 23: Single-use office complex near Hamilton

Mixed-use environments are created by the market and by the flexibility of the zoning codes. Land Use, in zoning and in reality, can support pedestrian and transit activity. Several jurisdictions adopted pedestrian and transit-friendly regulations in the early '90s, and they are now paying-off in increased choice: walking, biking, and transit ridership. Chiefly among these locations are Portland and its neighbor, Vancouver (Washington).

Vancouver, Washington, designates mixed-use zones to ensure that the uses and designs are complementary and sensitive to the surrounding development. Their expressed goals in these districts include reducing the number of automobile trips and creating safe and attractive walking environments.

Portland, Oregon, has a zone for small, neighborhood businesses, which is restricted to small commercial and service businesses, and is meant to be nestled in dense residential neighborhoods.[12] This promotes a local market, has low impact on the neighborhoods, and creates a scenario where walking is preferred.

Portland also recognizes the need for zoning that promotes mixed-use in scales between the central business district and neighborhood. This type of development will be particularly apt for the study area along West Broad Street. Their language reads:

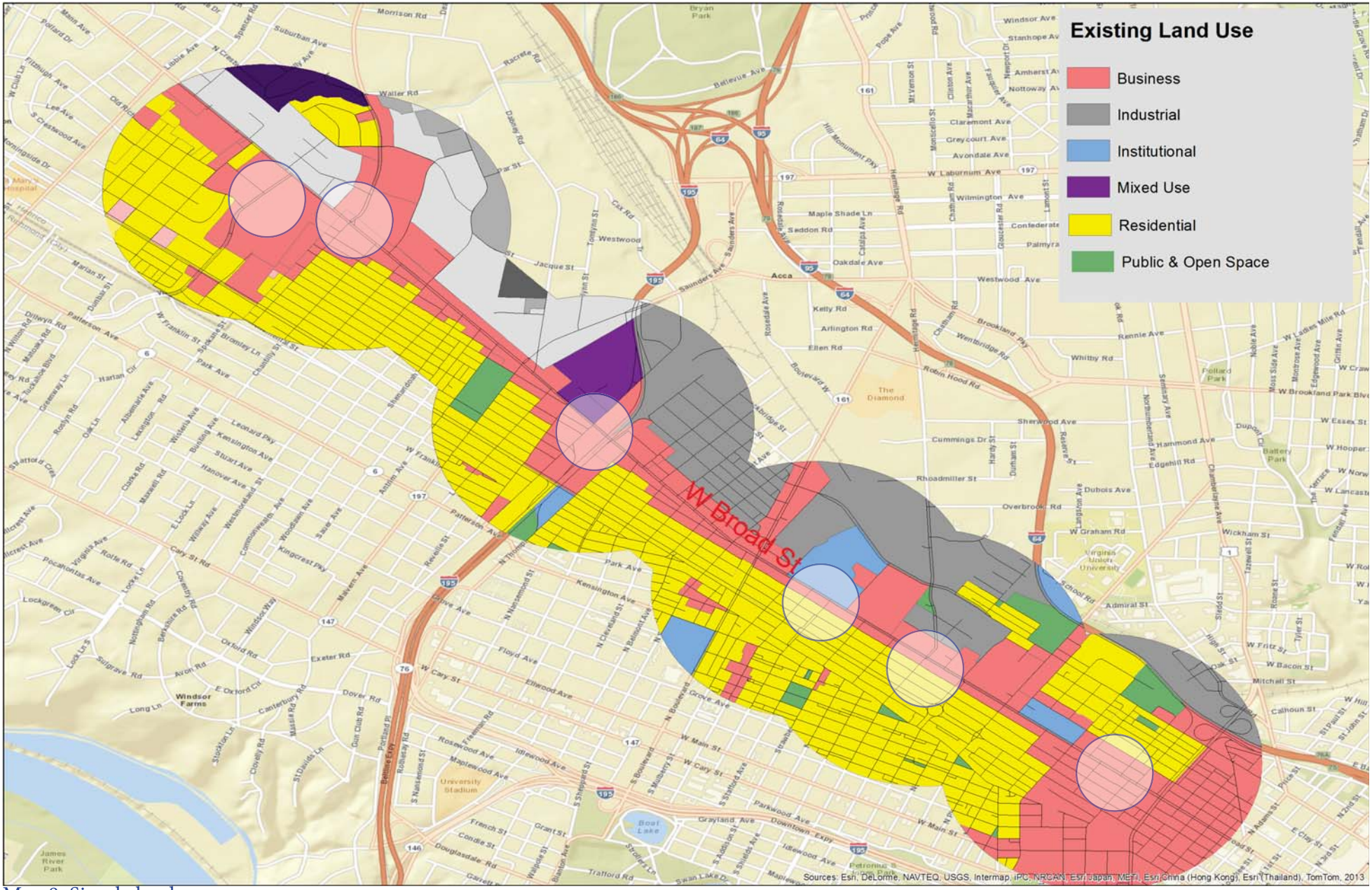
"The purpose of the community business zone (cb) is to:

1. Provide for limited, small-scale offices as well as a wider range of retail, professional, governmental, and personal services than are found in the neighborhood business area;
2. Allow for mixed-use residential and retail/office; and
3. Exclude commercial uses with extensive outdoor storage or auto-related industrial uses."

B-3, the primary non-residential zone in this study area, allows for a wide range of uses, and accommodates the car too well to be appropriate for a transit corridor. Large setbacks, big-box development, and auto-sales are all accommodated in this zone, all while keeping the maximum height at 35 feet (conditional on setback to up to 60 ft).

Richmond's Urban Business District promotes dense, mixed-use, and enclosure-inducing structures. It is primarily implemented on W. Broad, East of North Boulevard. The primary purpose listed is to promote a continuous storefront and pedestrian atmosphere which avoids conflict between cars and people. UB-1 and UB-2 are both appropriate zones for this district.

Richmond's B-6 and B-7 zone are also appropriate for this district. They are mixed-use business zones designed to create infill opportunities in order to continue and enhance the character of the neighborhoods. They have height restrictions of 50 and 75 feet, respectively, and could be used in some areas, particularly around I-195, to provide enclosure and density while increasing the number of potential riders living near the stops. Using these zones, or creating a new one to deal specifically with BRT corridors, could be a solution to many of the shortcomings in parts of the Corridor.



Map 8: Simple land-use map of study area

Pedestrian Safety and Activity

Shafer and Robinson Street stop locations have high levels of pedestrian safety (from traffic) and activity due to the density, infrastructure, and number of destinations in the areas. VCU, at the Shafer Street stop, brings thousands of people to campus every day. Many of them live along the corridor and walk to campus. The Robinson Street stop is surrounded by the Science Museum of Virginia, the Children's Museum of Richmond, and high-density residential on West Broad Street. The Fan and Museum District neighborhoods are dense low-rise mixed-use neighborhoods. These areas need some maintenance, but few major infrastructural improvements are necessary. In the western part of the study area, infrastructure for pedestrian safety and activity differs dramatically between the north and south sides of West Broad. The gridded streets south of West Broad Street provide convenient walking paths within the neighborhoods and to West Broad Street. South of West Broad besides social or leisure strolls, there is almost nowhere to walk that is not residential. North of West Broad, large blocks and few cross streets mean that pedestrians have few opportunities to enter the area. For those neighborhoods behind the institutional and industrial development, only two streets over a full mile of road cut through the landscape.

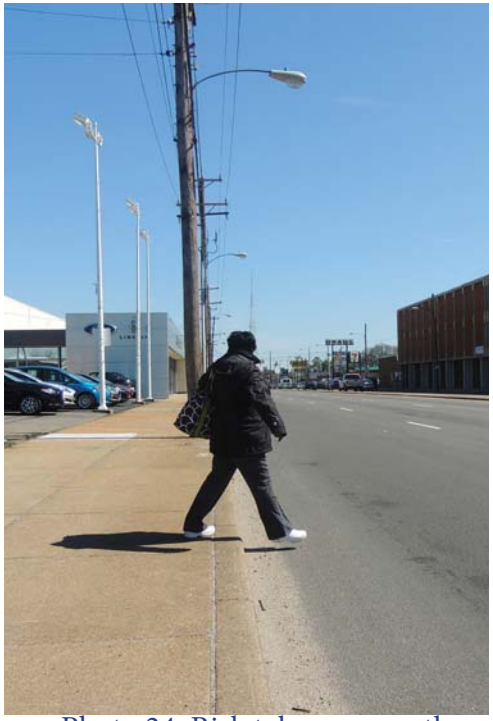


Photo 24: Risk taker crosses the street mid block near Staples Mill

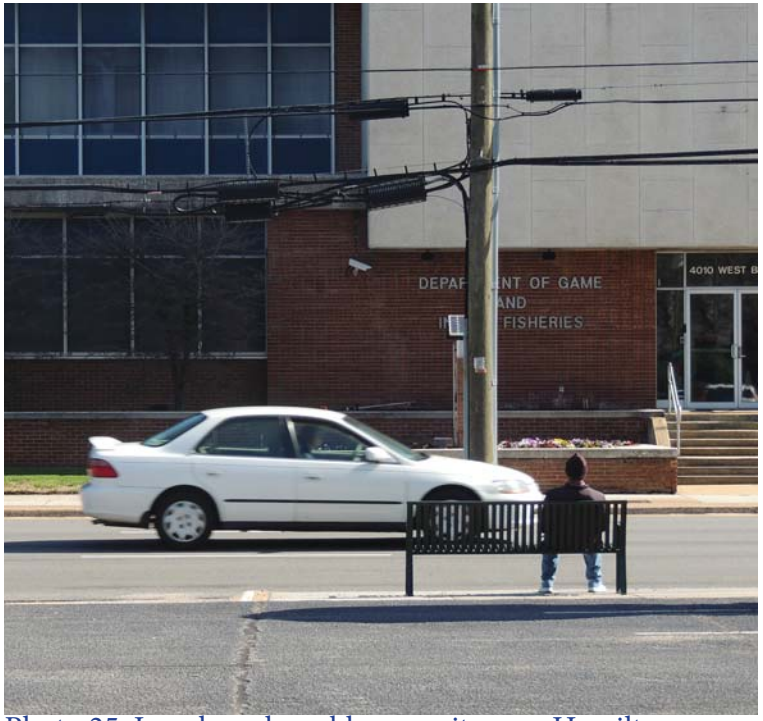
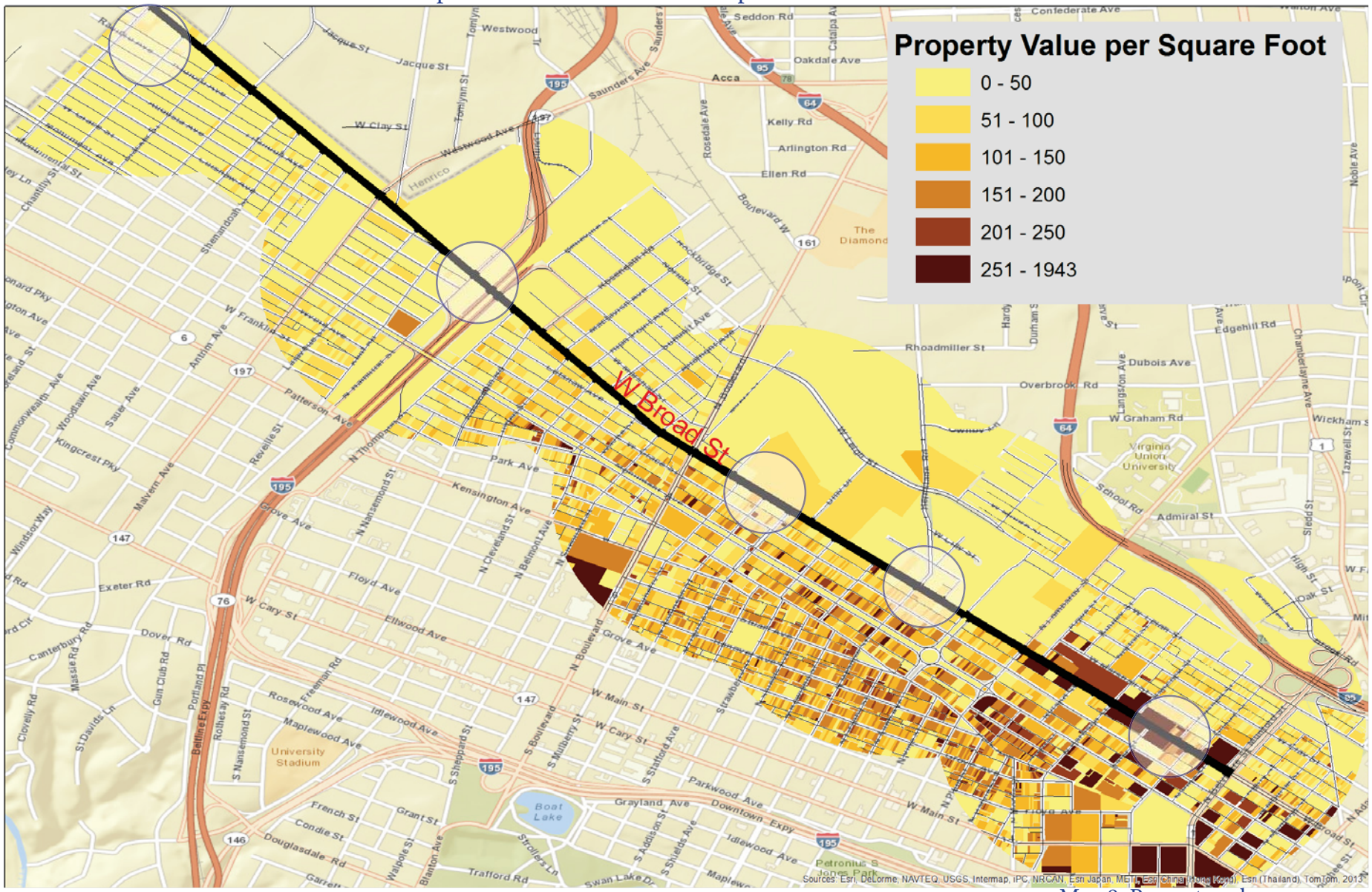


Photo 25: Lonely, vulnerable man sits near Hamilton W/ BRT

Photo 26: Typical pedestrian activity and condition at Shafer and Broad

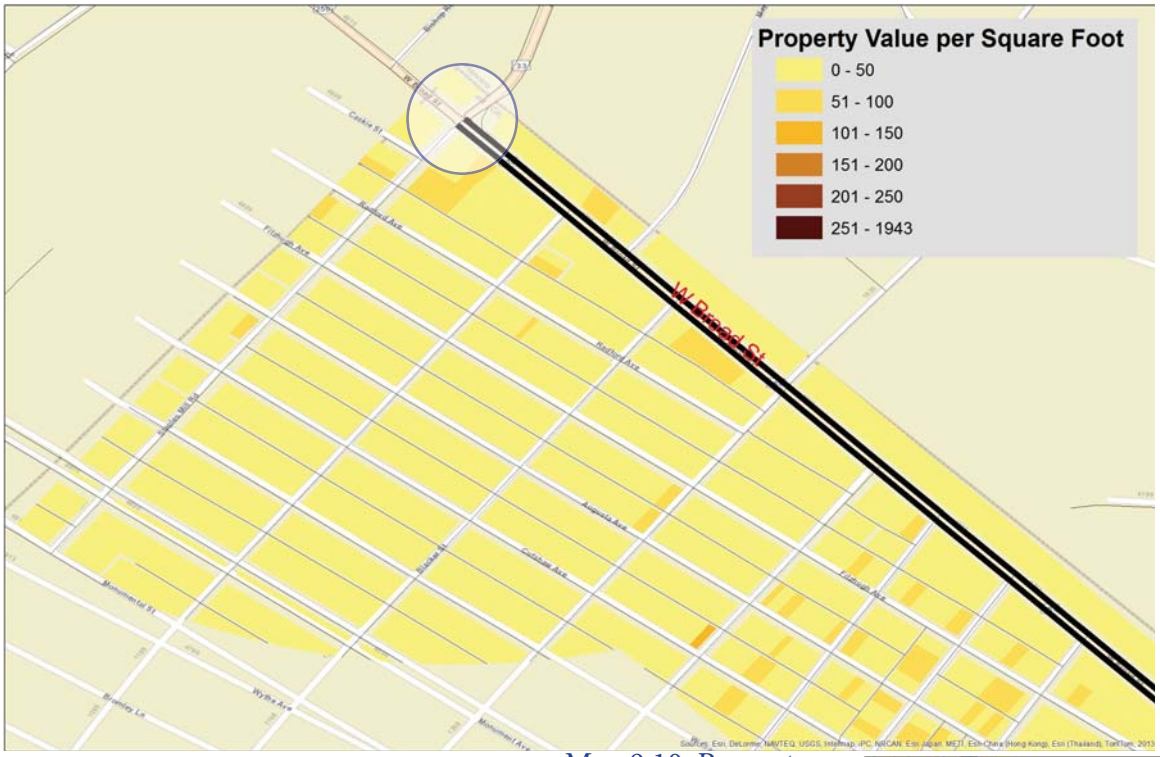
Property Value

Property values per sq. ft. are lower in the two main study areas compared to the rest of the corridor. This implies that public investment in infrastructure should lead to private investment in development.

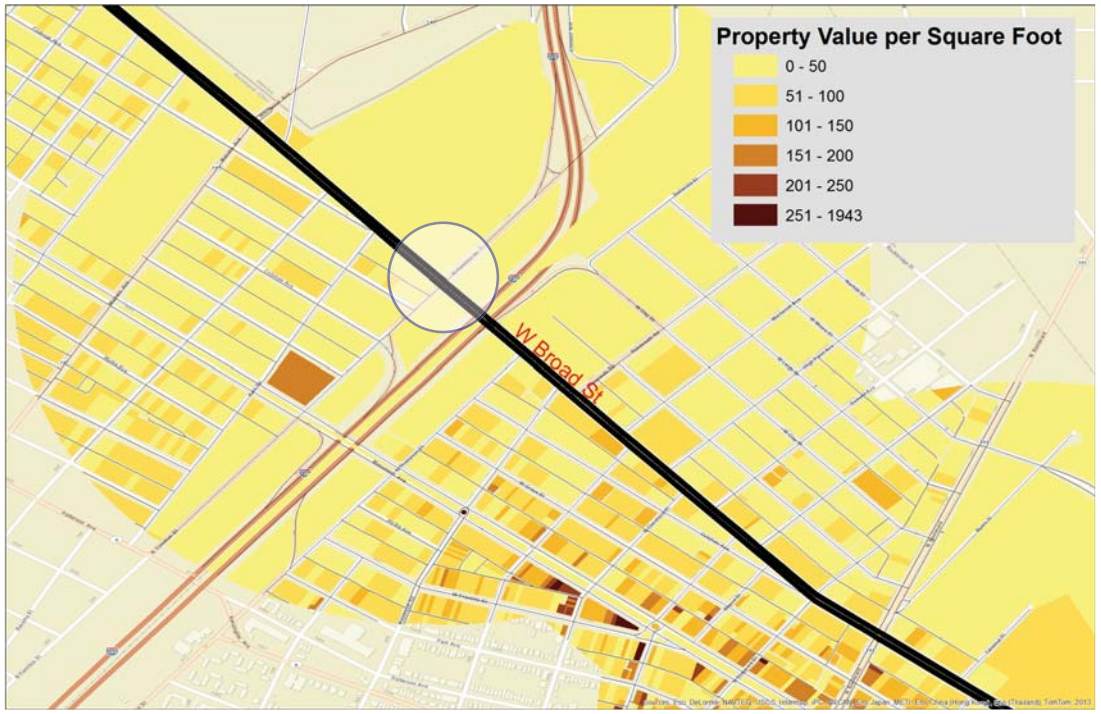


Map 9: Property values in $ per sq foot

W/ BRT



Map 9,10: Property values in $ per sq foot for Staples Mill and Hamilton focus areas



W/ BRT

Multi-Modal Connectivity

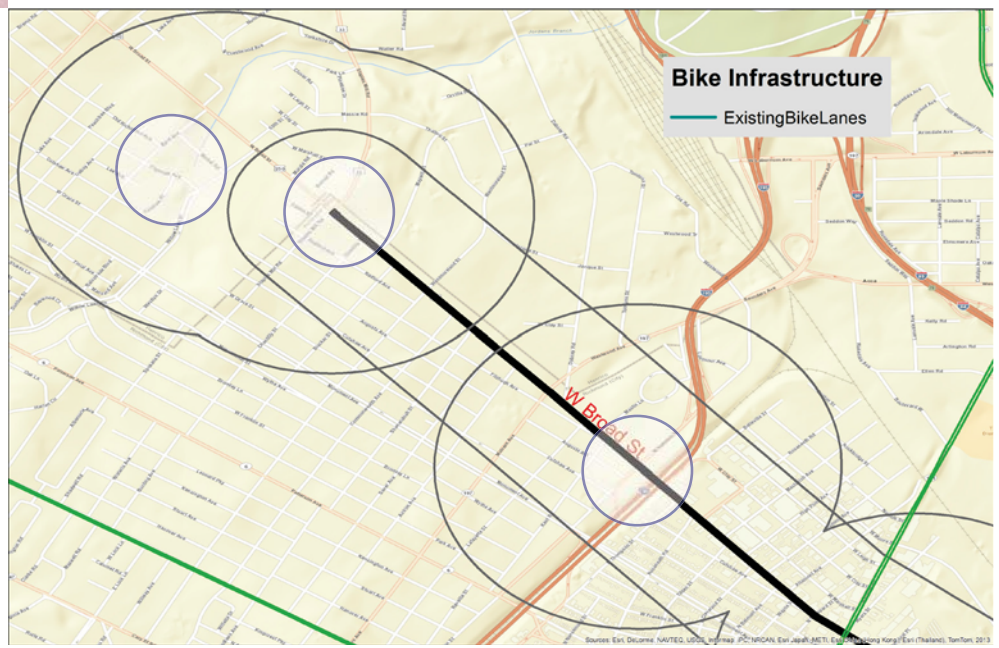
West Broad Street has no designated space for bikes, but the right- of-way, between 80 and 110 feet, is s wide enough to accommodate two 12- foot dedicated bus lanes, 4 lanes of traffic, and marked bike lanes on both sides of the street. If Broad Street is deemed unsafe for cyclists for other reasons (traffic and speed), then an alternative should be provided. Marked bicycle lanes in the study area exist only at Laburnum Avenue between the Robinson and Shafer stops. Marked shared lanes exist on Boulevard, Leigh, and Meadow. Facilities for parking bikes are limited to street signs and other non-bike rack installations.

Photo 27: Typical decision made by bike rider near Staples Mill

Photo 28: W Broad at Staples Mill is wide enough to support more multi-modal infrastructure

Photo 29: This large block on VCU's campus has a pedestrian passageway to encourage walking

Map 12: Existing bike infrastructure



W/ BRT

Parking

Parking around the Shafer Street stop is almost exclusively restricted and/or metered. VCU's community includes a great number of commuters, even though students densely populate the immediate neighborhoods. Beyond VCU's structured and unstructured parking lots, there is little in the way of off-street parking facilities. Kroger and Lowe's each have large customer parking lots. Kroger's parking lot is tastefully blocked from West Broad Street's view by a row of commercial buildings. Lowe's extends their parking right up to West Broad Street. The same can be said about the Children's Museum at the Robinson Street stop. In the neighborhoods, street parking spaces are inadequate because the neighborhood was developed before the car was in every household. When the Fan was built at the turn of the 20th century, the trolley lines serviced this area well and many people still owned horses. Today, many single family homes have several cars, and multi-unit structures demand more parking spaces than those in front of the buildings.(photo 30).

Parking west of I-195 is less of a problem. West Broad Street is dominated by street side parking lots (photo 31) and easy access to secondary lots behind buildings. Similarly, the lot width of the single-family homes allows for the parking of two to three cars on the street in front of a home.

Photo 30: Typical parking situation in the Fan

Photo 31: Typical parking situation near Hamilton

Photo 32: Another large parking lot at Hamilton

Photo 33: Appropriate parking structure on Franklin near Shafer stop is almost indistinguishable from its neighbors

Quality Public Space

Quality of the Public Space is a factor in 50 percent of trips.[4] People will venture into the public realm regardless of the quality of public space for work and to purchase necessities. But leisure, social, and optional trips are heavily influenced by the quality of the public space.[4] The Robinson Street and Shafer Street stops have high-quality public space that encourages walking and public transit use. VCU's campus, in particular, has very nice sidewalks, sitting walls, benches, bike racks, and pedestrian-scale lighting. The bus stops mostly have a sheltered sitting area, and trash cans help keep the area free from debris. Beginning just west of Robinson Street, the quality of public space changes dramatically. The relationship between the buildings and the street is inconsistent the further west on Broad St one travels. Newer buildings are largely to blame for this inconsistency. The Children's Museum, gas stations, surface parking lots (Broad and Boulevard), and vacant land dot the north side of West Broad are a few of the bad example. There are several great example along the Corridor too: 2501 West Broad Street and 3600 West Broad Street specifically support the type of development that this plan suggests.

Photo 34: high quality public space in the Fan

Photo 35: Low quality public space near Staples Mill

Improving the Experience

Provide a Distinct and Cohesive Design

Each stop should have an individual design that complements a larger concept (photo 36, 27) for the corridor (eg LiveWorkPlay: RideBRT; Get on BRT). Careful considerations should be made in both the public and private realm to create a unique experience within the corridor. Stops, benches, lights, sidewalks, crosswalks, etc., should all be carefully selected to help create an experience.[4,8] The urban design and architecture should be interesting enough to promote leisure and also improve the experience for all who enter the corridor. This condition should expand at least one block into the neighborhoods to create a transitional experience between Broad Street and the surrounding communities. This detail is often forgotten in large streetscape improvement initiatives.

Photo 36, 37: Savannah, GA, created distinct and cohesive design throughout its historic district. The trolley is one of the ways it does this. Trolley tracks are visible in many areas, and trolleys are used on historic tours

Enhanced Stops and Destinations

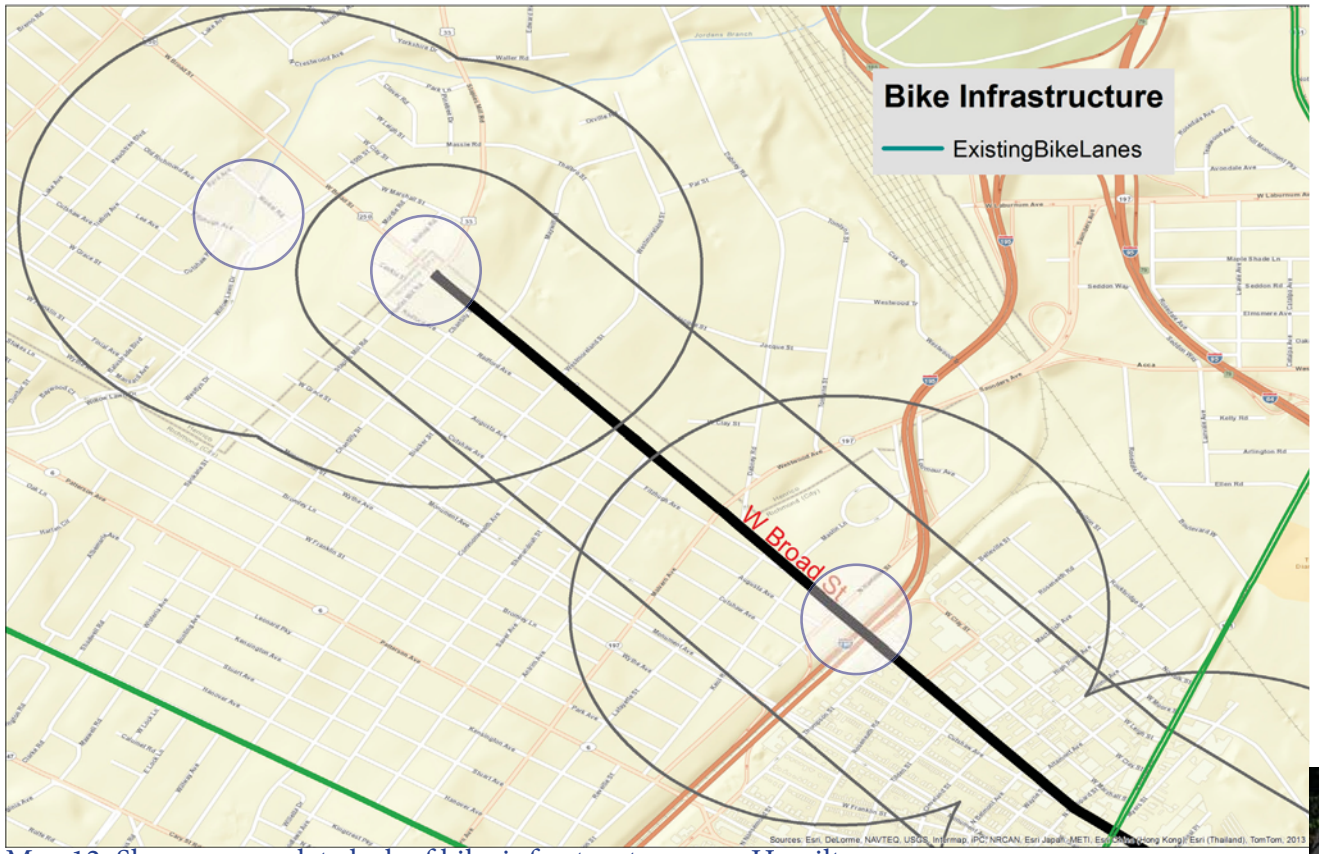
Along the corridor, many neighborhoods, commercials strips, major employers, and institutions provide opportunities for leisure and other activities. Existing destinations should be enhanced by the design of the corridor, and opportunities for new destinations should be captured to increase ridership. (See Appendix) This Corridor directly connects 17 neighborhoods with nearly 20 thousand units of housing and over 47 thousand residents. There are 73 businesses with over 50 employees in the corridor, and they employ a combined 35 thousand people.[13] Furthermore, large event and institutional areas draw an annual attendance of nearly 2 million people.

Photo 38: the VMFA attracts nearly 500 thousand visitors annually

Photo 39: Savannah is sure to place transit stops near public areas, like this open pedestrian mall

Bike and Pedestrian Accommodations

Providing space for, and access to, bicycle infrastructure is critical to extend the effect of the BRT beyond standard walking range of a ¼ of a mile. The on road sharrow markings within the Corridor are minimal, and the western portion of the Corridor completely lacks any bike infrastructure. Currently, the eastern portion of the Corridor provides on-street options for parking bikes. VCU has hundreds, if not thousands, of locations to park bikes easily. Hamilton and Staples Mill stops have no bike facilities at all.



Map 12: Shows a complete lack of bike infrastructure near Hamilton or Staples Mill

Photo 40: VCU's campus has many places for bikes and people to park

Enclosure and Scale

In addition to accommodations, design considerations make people comfortable. Enclosure is the feeling that you are in a contained space. Building heights, building setbacks and general scale of the environment can improve the experience of a place for the pedestrian.8 Besides the human density which was discussed before, there is also a way to measure building density. Floor Area Ratios (FARs) are total land area to floor area of a building. For example, if a building is one story and takes up the entire lot, it has a ratio of 1.0. This concept is useful when discussing enclosure because it measures built versus usable space. An FAR of greater than 1 is recommended both for feelings of enclosure and to support the human density needed for public transit. In the block groups affected by this study, only the Shafer Street and Robinson Street stops have a FAR of 1 or higher.[5] The western stops incorporate large, street-side parking lots, and do not make up for this by increasing building height. The few buildings around the Hamilton stop which are more than 1 story have so much open space between the building and the road that they are undetectable by the pedestrian passerby. Again, the highway is the dividing line between acceptable enclosure and unacceptable openness. The FAR of these areas is less than .5, and it is recommended that the FAR be between 1 and 2 to support high-speed public transit.[5]

Appropriate scale means having both the enclosure to provide a sense of place and providing pedestrian scale accommodations to create a safe and pleasant environment that promotes lingering and regular use.

When speaking of building scale, buildings should be both large and approachable. New Urbanism suggests that the first floor should be permeable. Whether the buildings are open or have large glass windows for display of goods or people, the passerby should be able to glance at and wander in and out of the spaces that surround them. Direct human contact from the ground to windows or balconies is possible for up to six stories above the ground floor.

Architecture is half of the issue of scale. The streetscape too must be of an appropriate scale. West Broad Street is wide and heavily trafficked, so careful considerations should be taken to protect the pedestrian from the automobile while providing the pedestrian with a sense of place – not just a passageway.

Photo 41: A complete lack of enclosure exists at Staples Mill and W Broad

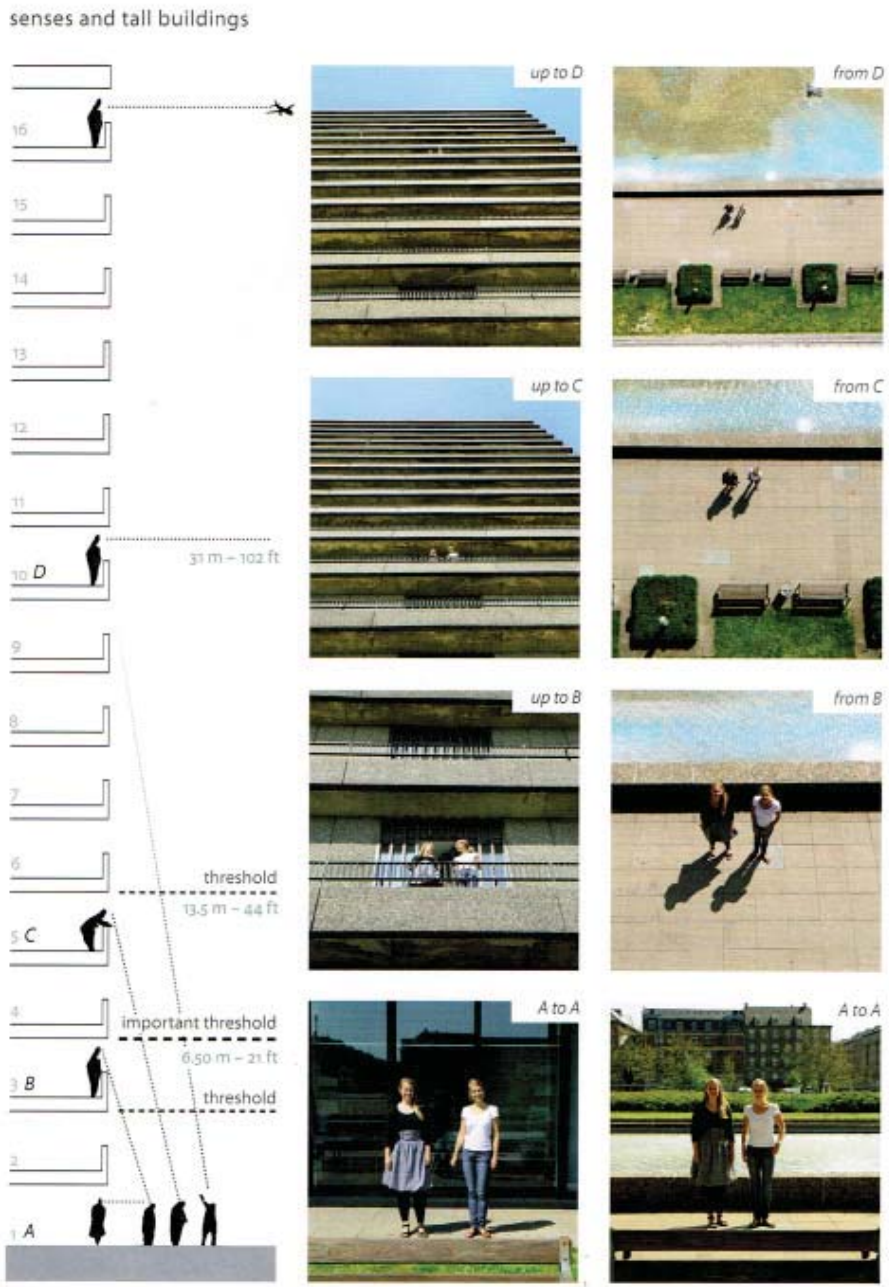


Figure 8: Jan Gehl explains the connection between building height and human interaction- from his book "Life Between Buildings"

Photo 42: buildings and landscape create enclosure at Shafer and Franklin, 2 blocks from a proposed stop

Transparency

Transparency of the streetscape encourages the eyes, mind, and body to wander across the entire environment. Many of the spaces on Broad and Grace Street downtown have high levels of transparency. Window shopping, or the potential to window shop, is a critical and often overlooked pastime which improves the pedestrian experience by taking one's mind off of the task at hand: walking

Regulating transparency is relatively new because, in traditional commercial corridors, the market demanded the ability to window-shop. As these corridors changed, so did their storefronts. Specialty department stores became offices, apartments, generic corner stores, or vacant, and the owners had neither the desire nor need to maintain a large window. Similarly, new commercial developments aim their transparent edges toward the automobile. New stores have more windows facing parking lots than they do the public realm, and this only reinforces our auto-centric tendencies.

This is not to suggest that successful regulation of transparency cannot be accomplished. San Francisco, for example, has ordinances that require windows to be more than 50% transparent. Furthermore, if a shelf is to be placed inside against the window, it must allow pedestrians to clearly see beyond that shelf at least 4 feet.[12]

High levels of transparency elevate the pedestrian experience and promote leisure shopping as a prized activity. This, in turn, benefits those stores that allow pedestrians to peer inside at the goods being sold and the activities taking place within the space.

Photo 43: lack of transparency taken to its most extreme

Photo 44: Transparency helps few businesses near Staples Mill sell their goods

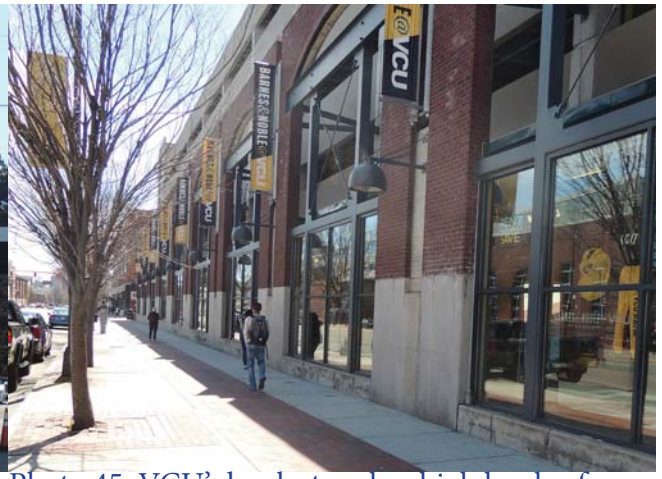


Photo 45: VCU's book store has high levels of transparency to improve the pedestrian and customer experience

Legibility

Creating a corridor that is legible provides direction and subtle cues to pedestrians that improve safety and successful traveling. Legibility is not street signage and way finding alone. Using interesting paving surfaces for pedestrians, marking street corners with yellow ramps and crosswalks all helps direct the flow of pedestrians safely towards their destination.[8]

Currently, VCU uses special brick designs to distinguish parts of West Broad Street that are heavily influenced by their proximity. The rest of the study area lacks the previously mentioned amenities, and the result is an environment which barely designates even the sidewalks as pedestrian. In these areas, around Hamilton and Staples Mill, it is common to see people darting across the street mid-block to reach the other side.

Photo 46: Willow Lawn has redeveloped with a highly legible pedestrian landscape

Photo 47: Staples Mill has no pedestrian accommodations beyond a simple sidewalk to provide people with direction

Photo 48: VCU uses special bricks, lighting, and streets to create a legible space around their campus

SOAR Analysis

This Strengths, Opportunities, Aspirations, Results (SOAR) analysis is intended to synthesis the research and help guide the goals section of this plan. The SOAR analysis below is based on the research presented and the assumption that the BRT system will be implemented in the near future to the benefit this city.

Strengths

- Travel times will be faster on BRT
- New system will attract new riders
- Increased interest in development of transit friendly sites
- Better connectivity between large concentrations of employment, housing, commerce and leisure
- New funding for public infrastructure

Opportunities

- Promote infill development and reuse of space currently reserved for automobiles
- Turn stops into major neighborhood hubs
- Attract new riders seeking an experience superior to driving
- Development of Corridor wide standards for the public realm

Aspirations

- The creation of a cohesive corridor
- Attraction of many more people and businesses to Richmond City
- Increased opportunities for alternative transit
- Creation of unique places

Results

- Development of a Transit Corridor Design Overlay
- Investment in public infrastructure to create new and high quality public spaces
- Increase use of public and alternative transit

Section 3: Recommendations

Goals, Objectives, Strategies

This section of the plan provides implementation direction to support BRT. Each goal is supported by objectives and a strategy to help reach it. The vision of this plan is to create a vibrant transit overlay district that supports BRT. The overlay district will provide a unique design which fosters dense pedestrian and transit- oriented development around the new BRT stations. Through increased development and multi-modal activity, the Corridor will become a vibrant series of development nodes that support new and future transit options.

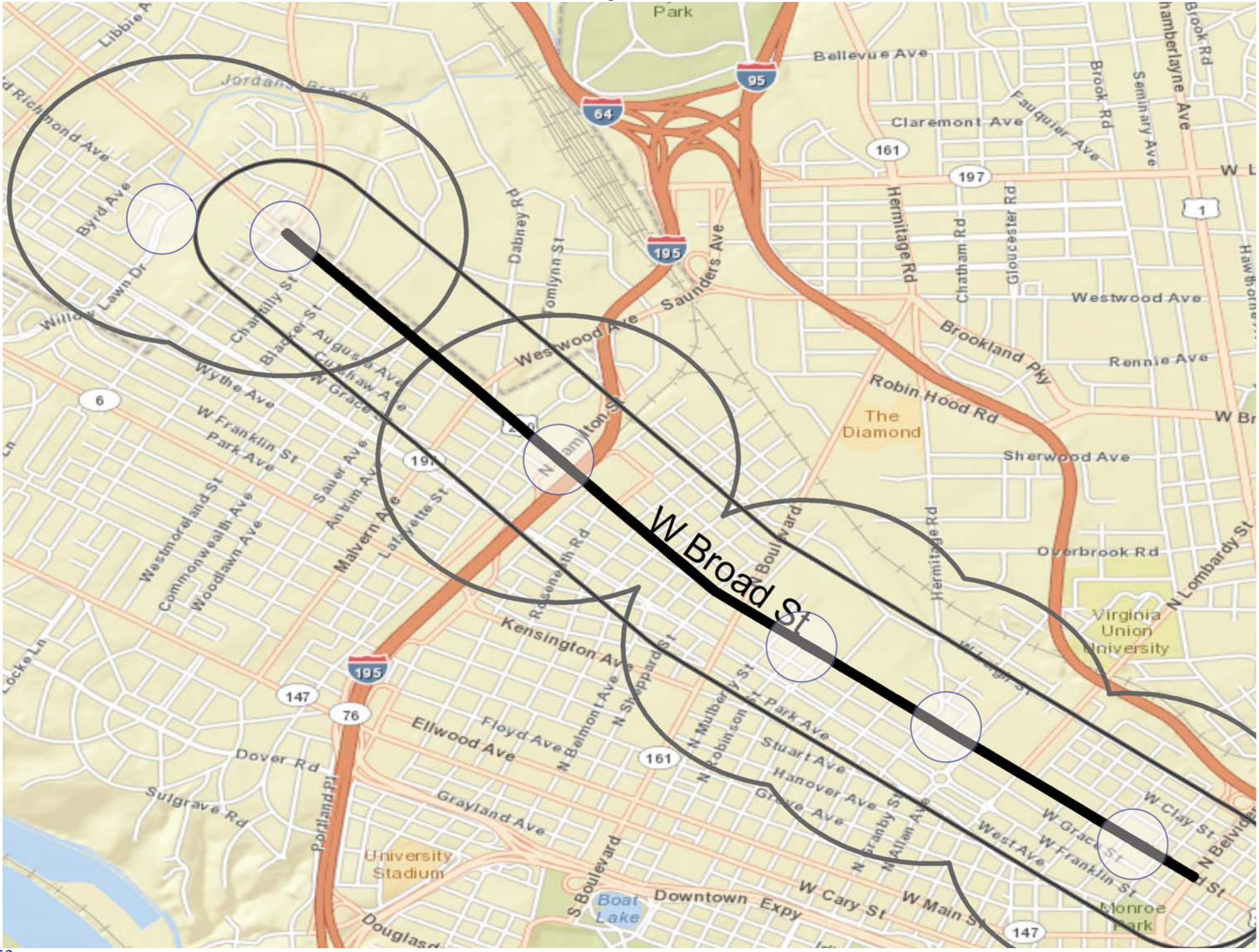
Figure 9: Overlay of proposed and existing conditions at Staples Mill and W Broad

Goal 1: Create a BRT Overlay District

The creation of an overlay district allows the city to designate the Corridor as a location where special opportunities and guidelines are in place to promote the development of a certain type of place. This overlay district will explicitly aim to strengthen the nexus of land use, design, and economics in order to support the BRT. The overlay district will provide guidance to the City for the development of public space and lands, while also demanding a certain quality from private development. Currently, Richmond has several design overlay districts to help maintain character. This particular district would help create character in a part of the city that is mostly faceless, or lacking a meaningful pedestrian experience.

Goal 1 Objectives and Strategies

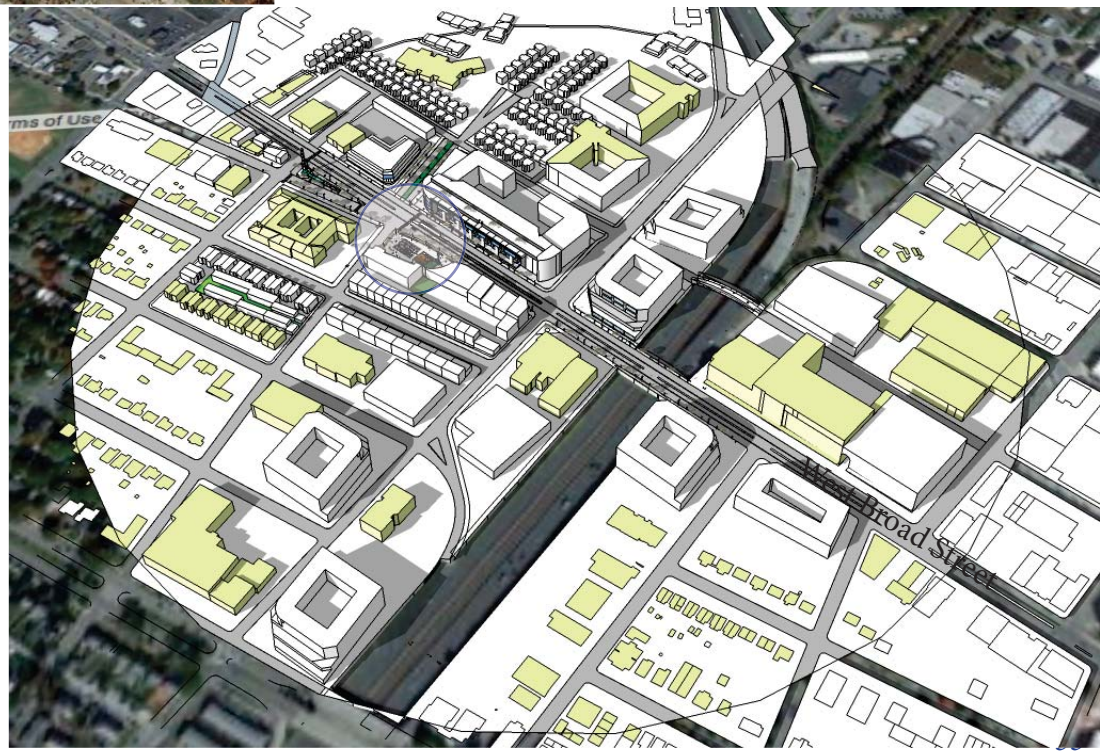
Objective 1: Define Transit Corridor – Storefront and PDR (map 13)	**1-3 years**
Strategy: PDR will create an overlay district of ¼ mile from entire route, and ½ mile around each BRT stop	<1
Strategy: Storefront will conduct community engagement meetings to define stakeholders for future strategies	<1
Objective 2: Define Overlay Parameters – Storefront and PDR (Figures 10, 11, 12, 13)	
Strategy: Storefront will discuss design guidelines with stakeholders to determine desired aesthetics	1
Strategy: The City and State will increase economic incentives to encourage new development	1
Objective 3: Create regulations to help corridor meet standards for density and land-use – PDR (Map 16, 17)	**1-5**
Strategy: The overlay will require FAR of 1 across entire corridor, 1.5 within a quarter mile of entire route, and 2 or more within ¼ mile of stops	1-2
Strategy: The overlay will allow vertically mixed uses in entire corridor, and horizontal mixed uses around stops. Use R-63, R-7, UB1 and 2, B-6, and B-7 where possible. Maintain M-1 where land is fully utilized	1-2
Objective 4: Create regulations to and help provide pedestrian and bike friendly environments – PDR, GRTC, VDOT (Figures 16-19)	**1-3**
Strategy: PDR will decrease parking requirements by either changing the zones or applying a parking overlay in the Corridor	1
Strategy: PDR will Restrict the construction of any new unstructured parking lots	1
Strategy: PDR will provide guidelines for structured parking that should have attractive and functional fronts: stores, apartments, offices, and workspaces should be the only use allowed to front a street.	1
Strategy: The overlay will implement design guidelines that require appropriate scale and level of transparency.	1
Strategy: PDR will continue to encourage al fresco dining and shopping on outdoor private space by encouraging reasonable setbacks to accommodate such uses.	1


W Broad St
Park
Bellevue Ave
Claremont Ave
Westwood Ave
Brookland Pky
Rennie Ave
Robin Hood Rd
The Diamond
Sherwood Ave
Overbrook Rd
Virginia Union University
Hermitage Rd
Chatham Rd
Gloucester Rd
Brook Rd
Seminary Ave
Fauquier Ave
Chamberlayne Ave
Brook Rd
Saunders Ave
Dabney Rd
Tomlynn St
Byrd Ave
Richmond Ave
Willow Lawn Dr
Chatsilly St
Blaker St
Augusta Ave
Cutshaw Ave
W Grace St
Wythe Ave
W Franklin St
Park Ave
Sauer Ave
Antrim Ave
Malvern Ave
Lafayette St
Westmoreland St
Commonwealth Ave
Woodlawn Ave
Kensington Ave
Rosenneath Rd
N Belmont Ave
N Sheppard St
N Mulberry St
N Robinson St
N Boulevard
Floyd Ave
Ellwood Ave
Dover Rd
Sulgrave Rd
Portland Pl
Grayland Ave
University Stadium
Boat Lake
S Boulevard
Downtown Expy
W Cary St
W Main St
Monroe Park
Park Ave
Stuart Ave
Hanover Ave
Grove Ave
West Ave
N Franklin St
N Allen Ave
W Clay St
W Grace St
W Franklin St
N Lombardy St
N Belvidere St
Locke Ln
6
64
95
195
197
161
147
76
1

W/ BRT

Photo 49: Current conditions at Hamilton and Broad

Figure 10: Future conditions at Hamilton and Broad



W/ BRT

Map 13: Proposed Overlay District

Photo 50: Current conditions at Staples Mill and Broad

Figure 11: Future conditions at Staples Mill and Broad

W/ BRT

Figures 12, 13: Street level perspectives of future conditions. Top: Hamilton and Broad, below, Staples Mill and Broad

W/ BRT

Goal 2: Offer a Unique and Superior Experience Within the Overlay District

To attract investors, residents, businesses, and commuters to the area, the experience must be unique and superior to that of the current conditions and nearby places outside of the Corridor.

Goal 2: Objectives and Strategies

Objective 1: Create a pedestrian friendly public realm – PDR, Public Works, Private Developers, GRTC, VDOT (figure 17-19, 20, 21)	**1- 5 years**
Strategy: PDR and Public Works will provide sidewalks throughout the entire overlay district. North-South sidewalks are currently not present in many areas	2
Strategy: VDOT, Public Works, and Developers will extend street-grid North of West Broad street where possible to create new neighborhood and development opportunities	5
Strategy: Street trees, pedestrian lighting, and benches will be installed at regular intervals with ¼ mile of Broad Street and on all streets leading to Broad within a ½ mile of all stops.	3
Strategy: The City of Richmond will convert underutilized parking lots and parcels adjacent to stops into plazas, particularly around Meadow, Robinson, Hamilton, and Staples Mill stops where underutilized land is available.	2
Strategy: The City will create at least one new green space within walking distance of each stop	3
Strategy: The City will offer public institutions near stops to promote civic pride. A library at the Hamilton Plaza is ideal	2
Strategy: Create unique signage to distinguish the Corridor and enhance way-finding	1
Strategy: Parks and Recreation and private groups will regularly program public space with events to attract regional residents	4
Objective 2: Ensure that BRT is a superior and unique experience to the regular bus system – GRTC, PDR, Public Works, Private Developers (figure 20, 21)	**1-5 years**
Strategy: GRTC, VDOT, and Public Works will build separated bus lanes across as much of the Corridor as space will allow	1
Strategy: GRTC will require tickets be purchased prior to entering the bus	1
Strategy: GRTC and Storefront will hold a competition to design all BRT stops and pedestrian amenities	1-2 years
Objective 3: Create multi-modal connections between and beyond the stops and overlay district- City of Richmond, Henrico, Private Developers (Figure 16, map 14, 15)	**1-3 years**
Strategy: PDR and Public Works will provide separate bike lanes on a street parallel to Broad Street, North and South of Broad where possible, for the entire length of the corridor (map 20, 21)	2
Strategy: Public Works will provide 'sharrow' or full bike lanes on major streets leading to stops	2
Strategy: The City will work with Henrico to connect stops to nearby major residential and office developments with bike infrastructure	3
Strategy: Parks and Rec, PDR, and Public Works will connect stops to greenways and recreation centers	3
Strategy: Improve connection to Staples Mill Amtrak Station	3

Figure 14: Al fresco dining adjacent to the BRT stop at Hamilton and Broad

Figure 15: Pedestrian level view of the Plaza near Hamilton and Broad. This porposed space provides the riders with both a place to wait and a place to go.

Figure 16: The 'Lawn' at Willow Lawn- one of the proposed new green spaces near Staples Mill. This place would both serve a local need and provide a destination for riders.

Figure 17: The plaza at Staples Mill

Figure 18: Birds eye of the plaza at Staples Mill

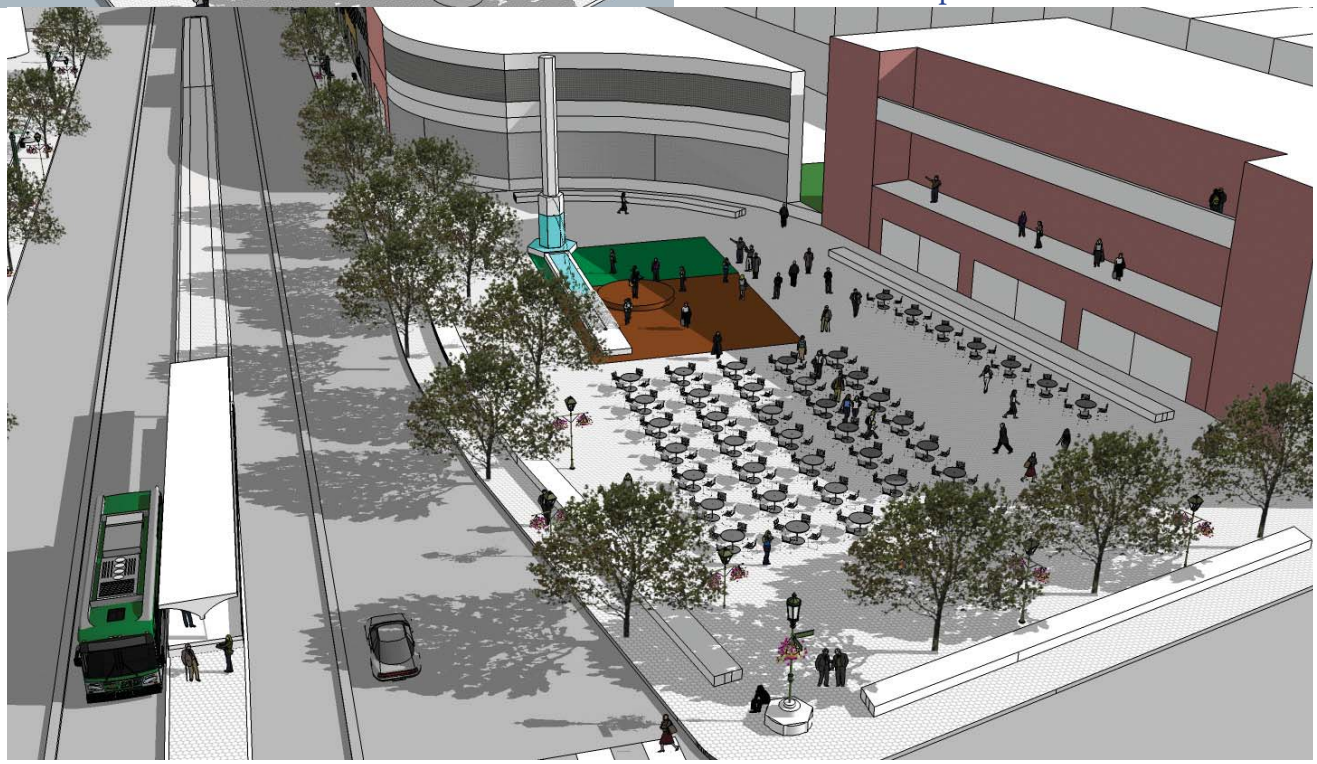


Figure 19: Birds eye of the plaza near Hamilton W/ BRT

Figure 20: Streetscape
at Hamilton and Broad

Figure 21: Streetscape
at Kent and Broad

Proposed Streetscape
Elements:
1. Pedestrian Lighting
2. Street Trees
3. Regular Benches
4. Street Lighting

W/ BRT

Goal 3: Maximize Transit Use by Promoting Multi-modal Activities

Successful transit system must attract riders. Many cities promote public transit use through employee incentives offered to those who walk, bike, or ride transit for their commute. Taking the BRT should be more convenient, more pleasant, and more financially viable than any other form of transit in the area. If the BRT is these things, then providing additional multi-modal options to the riders even further frees them from their car. Also, using mixed-use and higher-density zoning, the land uses within the Corridor can support one another and create opportunities for multi-stop trips.

Goal 3 Objectives and Strategies

Objective 1: Encourage use of transit for commuting- The City of Richmond, The State of Virginia, Private Companies	**1-3 years**
Strategy: The City and State will provide incentives to locate housing and businesses in the Corridor	1
Strategy: Employers will provide incentives for employees to commute via BRT	1
Strategy: Bike groups and Public Works will provide high quality bike service stations and shelters at stops	3
Strategy: The City will offer a bike share program at each stop	
Objective 2: Create unique nodes around stops with supportive land uses and activities (Maps 16, 17)	**1-5**
Strategy: GRTC will create a stop by the baseball diamond	5
Strategy: Develop unique identities for each stop:	3
Willow Lawn/Staples Mill: Large Shopping and Office Center	
Hamilton: Medium density residential and general purpose shops and services	
Robinson: Urban Shopping and Family Cultural Institutions	
Shafer: VCU	
Adams: Richmond Arts District, Boutique Shopping, medium/high density housing	
Government and Institutional centers: City Hall and State Capital stop	
Strategy: Public Works will use special materials and paving to promote legibility of public space	2-5 continuous

Figure 22: Dense mixed-use development around the stops, with the addition and maintenence of existing pedestrian ammennities

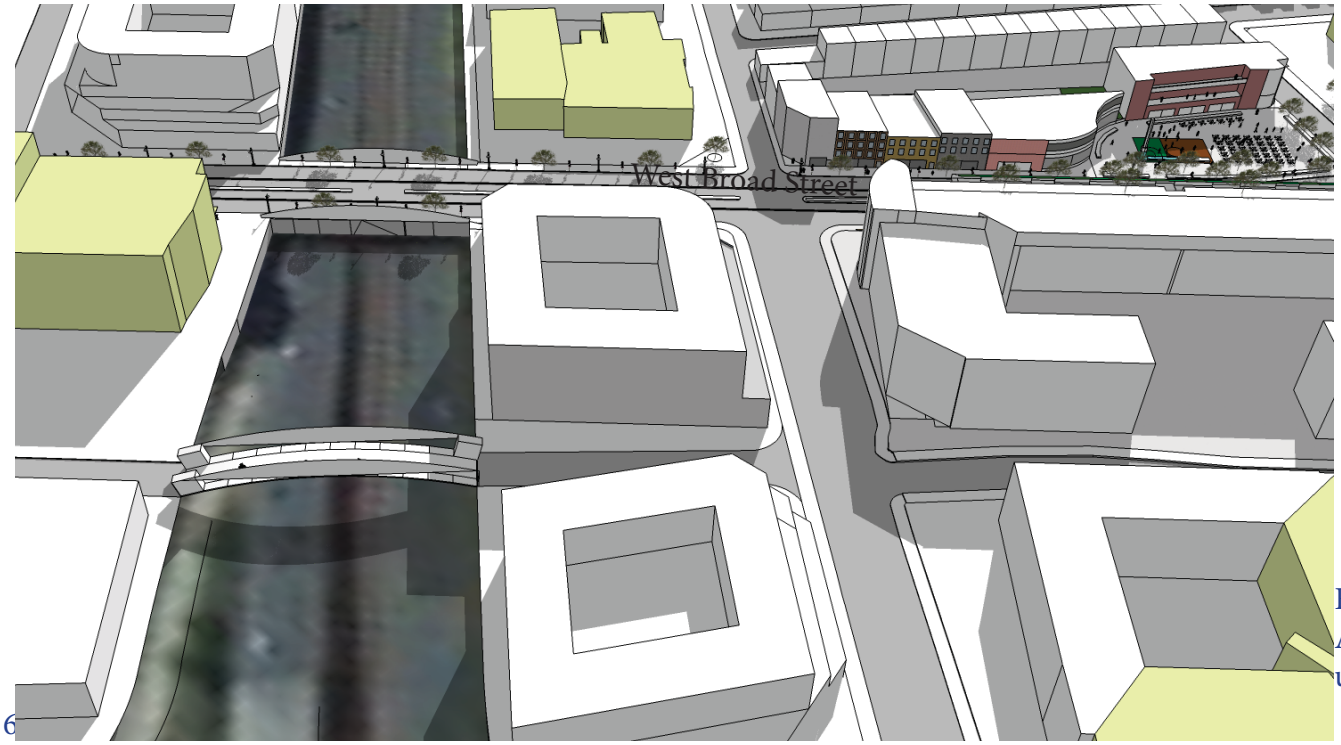
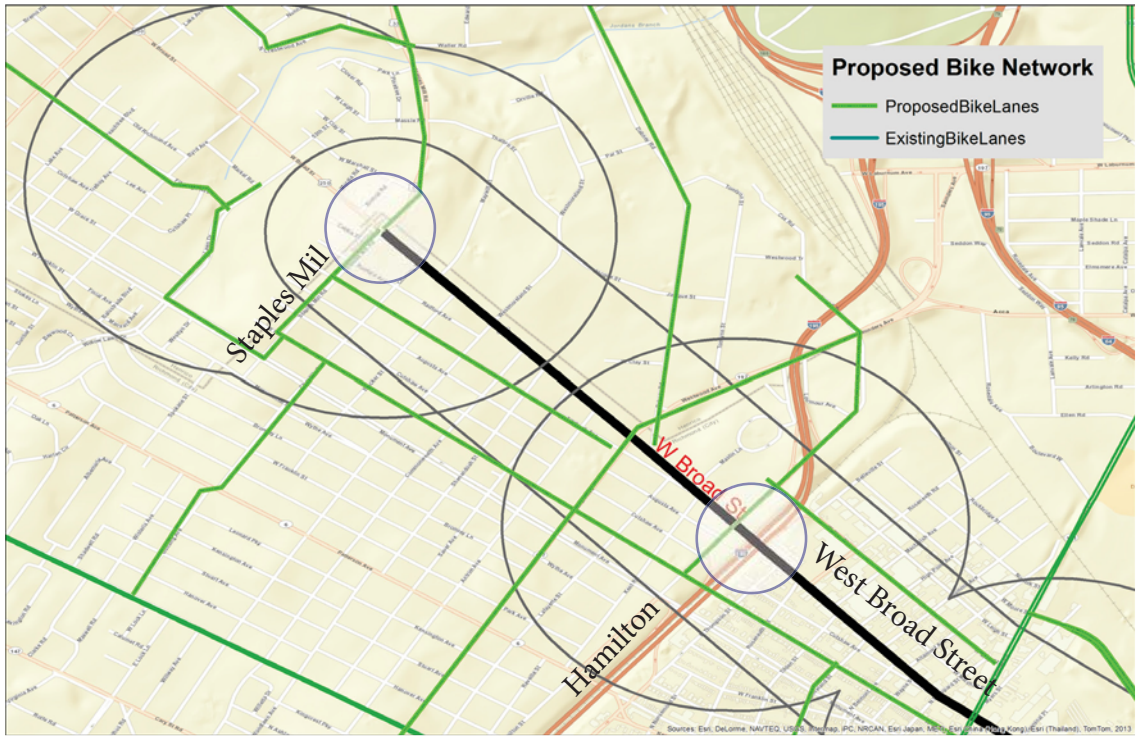
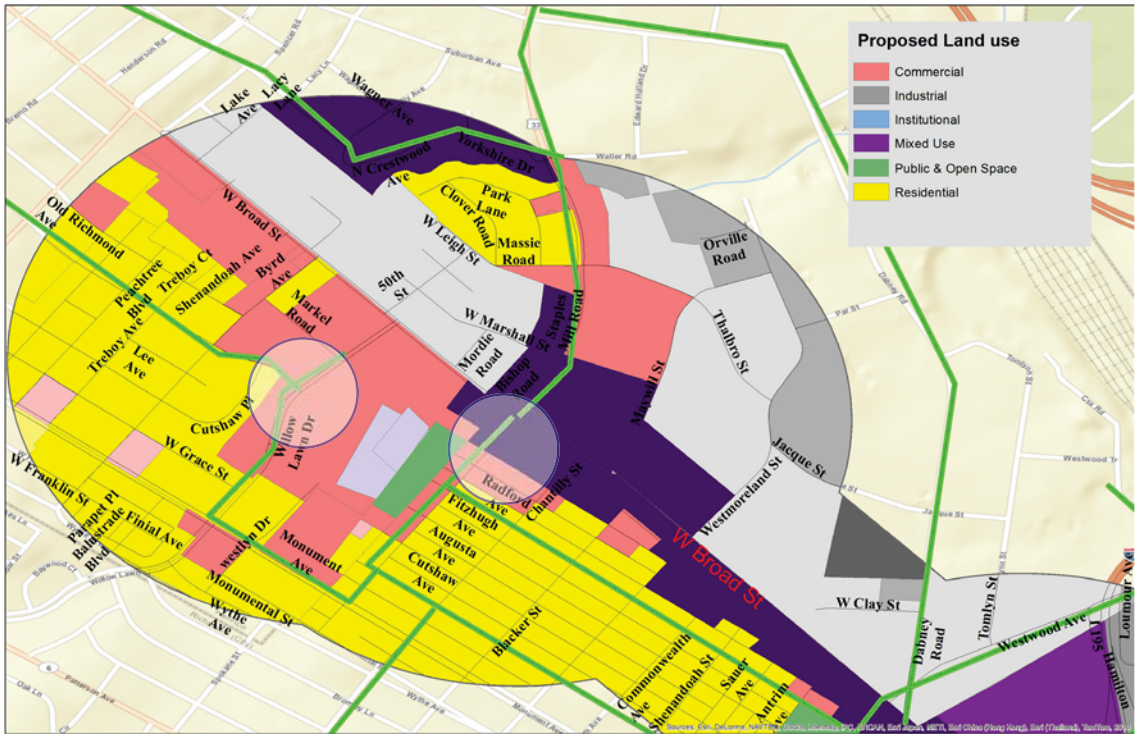


Figure 23: Bike/Ped bridge connecting Scott's Addition to Hamilton connects an otherwise unaffected neighborhood

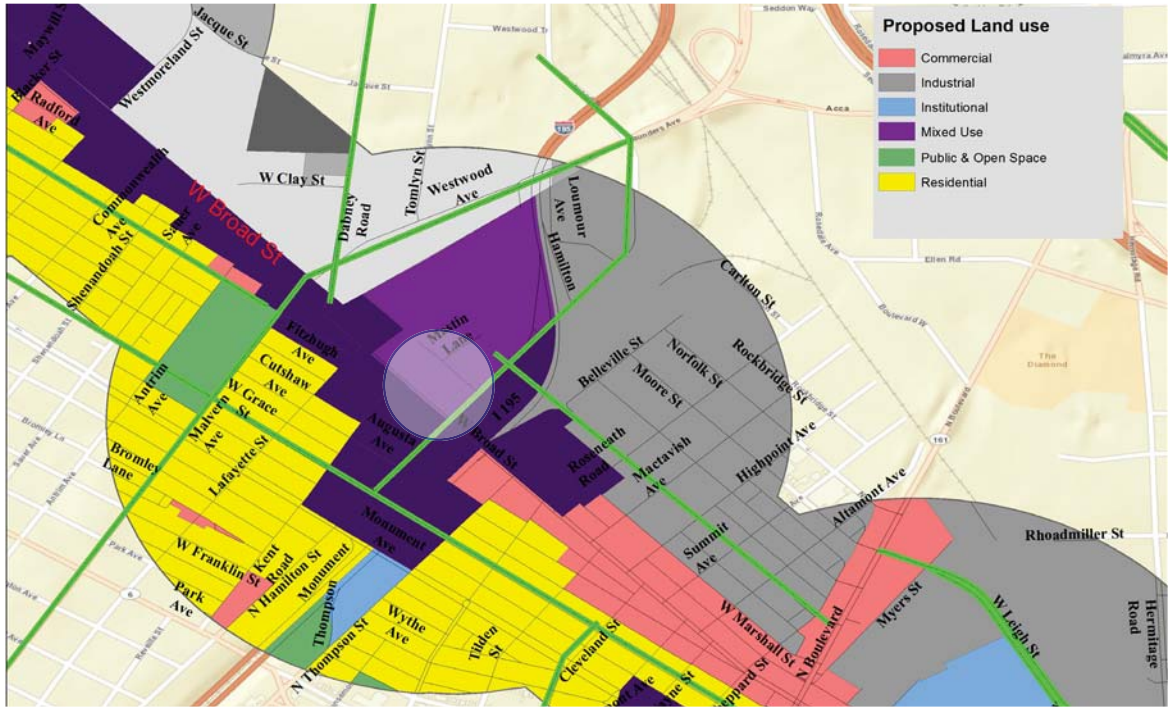


Map 14: Proposed bike infrastructure for western stops

Map 15: Proposed bike infrastructure for eastern stops



Map 16: Proposed Land-use near Staples Mill



Map 17: Proposed Land-use near Hamilton

Conclusion, List of Images, Sources Appendix

Conclusion

The City of Richmond is primed to step out of the shadows from larger neighbors nearby. Establishing a high quality transit corridor is one small step that is necessary to become a better city. Assuming that the funding is secured, careful consideration must be made to provide a distinct and superior experience to attract new riders on GRTC transit.

This BRT can sustain itself by serving captive riders alone, so in order to capitalize on this situation the BRT must attract new riders to an experience that is truly superior to driving. The system must overcome the 'bus' stigma. To do this, the amenities that GRTC provides must be high quality, but also the areas around each stop should provide the riders with a vibrant environment that is inviting. As they stand, the proposed stops are not providing this environment. Nobody is going to walk to Hamilton and W. Broad from the Museum District to ride the BRT unless a new standard is set.

This plan provides that new standard-- High quality, dense, multi-modal pedestrian environments that invite new riders to get on board.

Sources

Citations and Sources

1. Speck, Jeff, "The Walkable City." Lecture, Morton B. Gulak Lecture Series from VCU's L. Douglas Wilder School, Richmond, October 24, 2013

2. Niraj Virma, "Theoretical Perspectives," *Companion to Urban Design*, ed. Tridib Banerjee and Anastasia Loukaitou-Siders (New York: Routledge, 2011), 57-69.

3. Congress for New Urbanism, "Charter of the New Urbanism." Cnu.org/charter Last modified 2001. Accessed November 7, 2013.

4. Jan Gehl, *Life between Buildings: Using Public Space*. New York: Van Nostrand Reinhold, 1987.

5. Robert Cerverp, Erick Guerra, "Urban Densities and Transit: A Multi-dimensional Perspective." *Institute of Transportation Studies* (2011)

6. Belzer, Dena, Sujata Srivastava, Jeff Wood, and Ellen Greensberg. "Transit Oriented Development (TOD) and Employment." *Center for Transit Oriented Development* (2011)

7. Jacobson, Justin, and Ann Forsyth. "Seven American TODs: Good practices for urban design in Transit-Oriented Development projects." *Journal of Transportation and Land Use*. no. 2 (2008): 51-88. jtlu.org/index.php/jtlu/article/download/67/34steeped (accessed February 10, 2014).

8. Ewing, Reid. Urban Land Institute, "Urban Land: the Magazine for ULI." Last modified March 07, 2013. Accessed March 10, 2014. urbanland.uli.org/capital-markets/eight-qualities-of-pedestrian-and-transit-oriented-design/.

9. 2010 US Census Blocks; accessed by Alex Beatty; using Tiger files with GIS

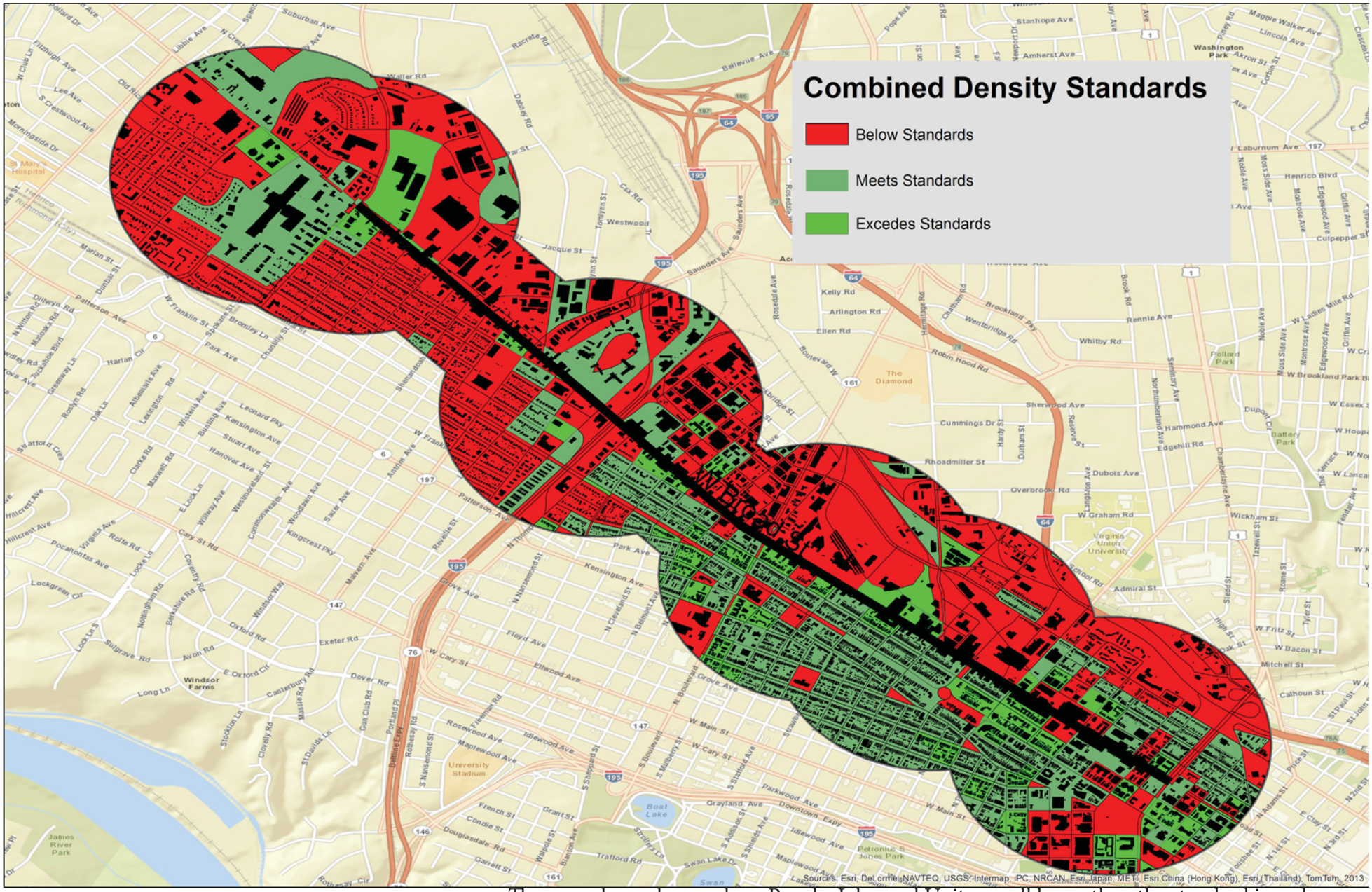
10. *Charter of the New Urbanism*. New York, New York: McGraw-Hill, 1999.

11. City of Richmond GIS data, http://www.richmondgov.com/content/GIS/index.aspx

12. Creating Transit Supportive Land-use Regulations Edited by Marya Morris. Chicago: APA Publications. 1996

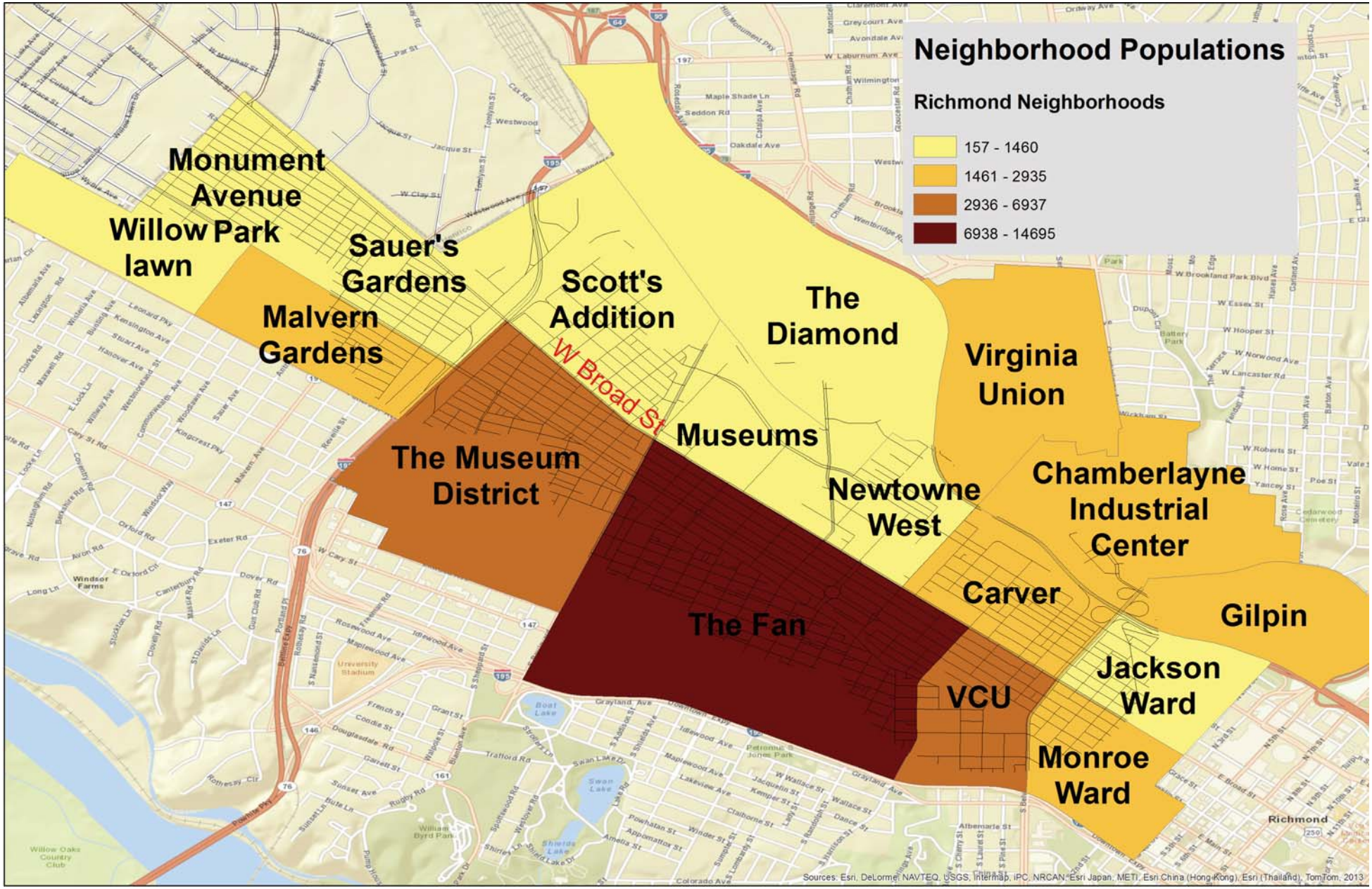
13. On the Map census tool, onthemap.ces.census.gov

Appendix

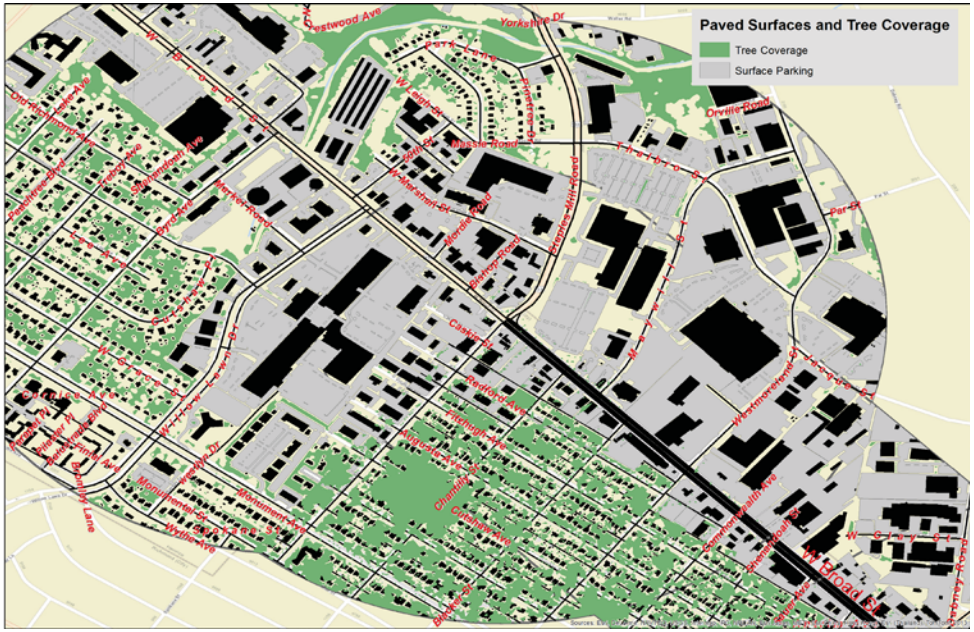


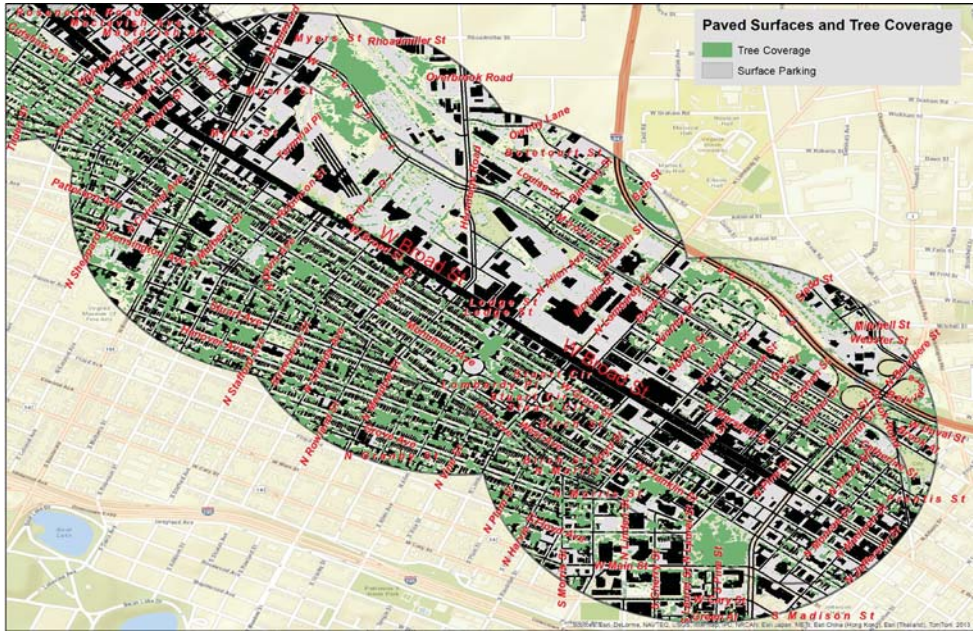
The map above shows where People, Jobs, and Units are all lower than the standard in red

W/ BRT


Neighborhood Populations
Richmond Neighborhoods
157 - 1460
1461 - 2935
2936 - 6937
6938 - 14695
Monument Avenue
Willow Park
lawn
Sauer's Gardens
Malvern Gardens
Scott's Addition
W Broad St
The Diamond
Virginia Union
Museums
The Museum District
Newtowne West
Chamberlayne Industrial Center
Carver
Gilpin
The Fan
VCU
Jackson Ward
Monroe Ward
Richmond
Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013

W/ BRT





Maps of tree coverage and pavement in the study area

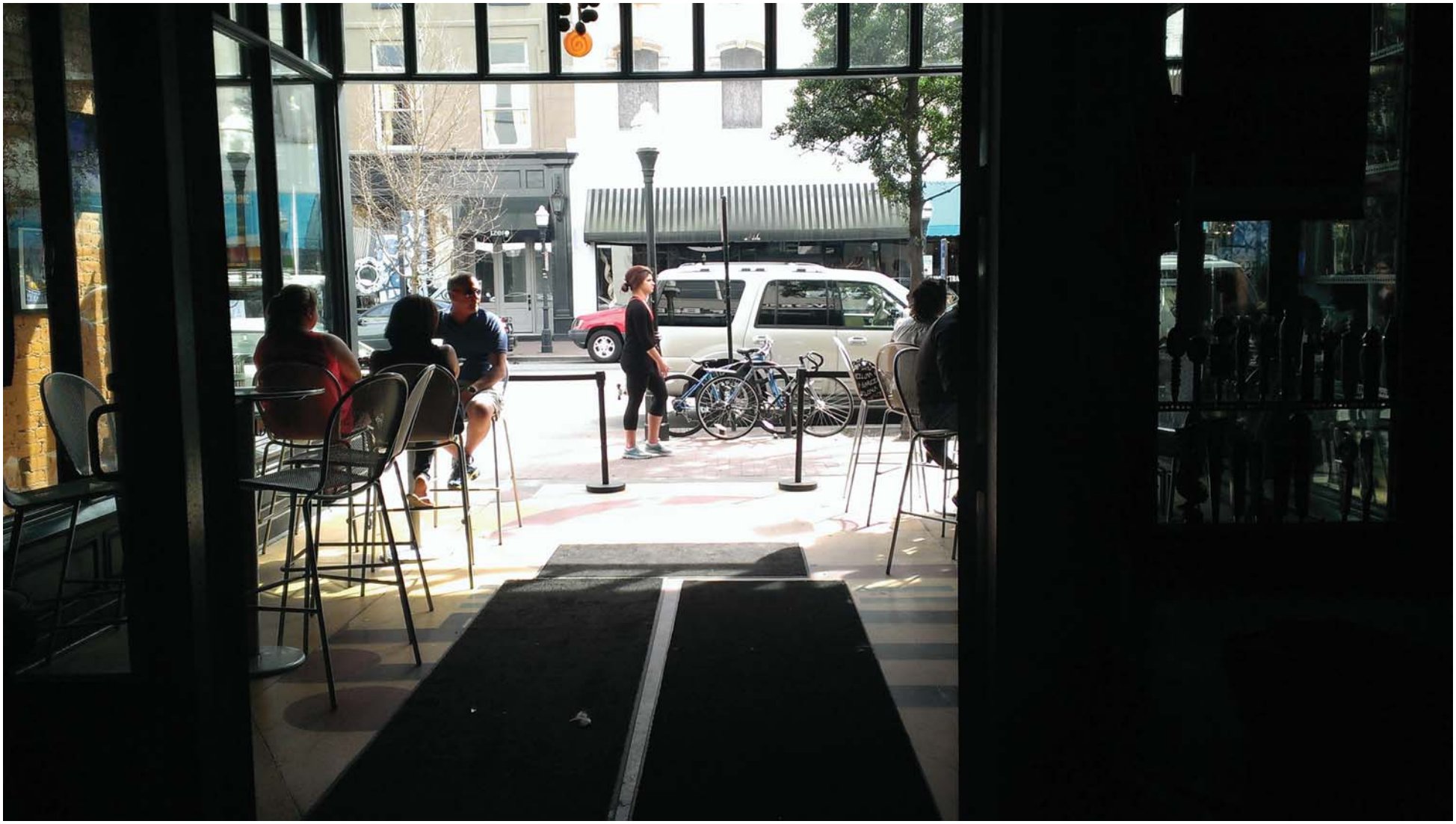
Proposed parking decks would be behind street facing buildings, especially at Staples Mill, where the park and ride is proposed for the BRT

Street festivals and other events should be regularly planned throughout the Corridor

Savannah, GA, proved to be an inspiration for the supportive conditions of this plan

W/ BRT

High quality public spaces are all over Savannah's downtown



Many of the stores and restaurants have incredibly high levels of transparency

Destination numbers from Census, City, and cold-calling

Places to Live: (Units and Population)

Neighborhood	Housing Units	Residents
Carver	1140	2885
Chamberlayne Industrial	578	1756
Gilpin	1235	2935
Jackson Ward	949	1460
Malvern Gardens	842	1670
Monroe Ward	1629	2873
Monument Avenue Park	420	720
Museums	101	157
Newtowne West	175	402
Saur's Garden	797	1286
Scott's Addition	178	280
The Diamond	349	598
The Fan	8214	14695
The Museum District	4397	6937
VCU	1339	5603
VUU	561	1754
Willow Lawn	558	1053

Major Employer Centers: (50+ Employees)

Company Name	Number of Employees
ESTES EXPRESS LINES, INC.	13000
UKROP'S PHARMACY	5600
Virginia Commonwealth University	5500
ANTHEM	3112
VIRGINIA DEPARTMENT OF TAXATION	841
GAME AND INLAND FISHERIES DEPT	480
PLEASANTS HARDWARE, INC.	357
SERVICEMASTER	300
CAR POOL LLC	275
ASG INVESTIGATIONS	250
FRISCHKORN CONTROLS DIV	240
RICHMOND AMBULANCE AUTHORITY	235
HANDCRAFT SERVICES	225
WORKERS COMPENSATION COMMISSION VIRGINIA	217
ADVANCE TECHNOLOGIES IN HOME INC	200
CAROLINA COLD STORAGE	185
IVNA HOME HEALTH CARE	180
MCDONALD'S	170
JAMES RIVER AIR CONDITIONING COMPANY	168
CARTER PRINTING CO	125
COMMONWEALTH CATHOLIC CHARITIES	122
NBS	121
HEALTHSOUTH	120
ALLEN & ALLEN	120
VIRGINIA PAINT COMPANY INC	113
KJELLSTROM AND LEE, INCORPORATED	110
CENTER FOR VIRGINIA HISTORY	104

FAMILY & CHILDREN'S SERVICE	100
THE CONCORDIA GROUP INC	100
BOCOCK STROUD SPORTING GOODS	94
PURITAN CLEANERS	90
ROYAL CHEVROLET COMPANY	88
ROYAL ISUZU	80
VIE DE FRANCE	75
CARE BY PROFESSIONALS	70
UNITED WAY PROGRAM	70
METROLINA PLASTICS INC.	69
STAPLES MILL CHAPEL	65
THE GOVERNOR'S SCHOOL FOR GOVERNMENT & INTERNATIONAL STUDIES FOUNDATION	65
ARBY'S	64
SIECK WHOLESALE FLORISTS OF VIRGINIA INC. CLAYMORE	63
UNITED WAY OF GREATER RICHMOND & PETERSBURG	63
SCIENCE MUSEUM OF VIRGINIA FOUNDATION INCORPORATED	61
DAILY PLANET INC	60
SANGER'S QUALITY ROOFING	60
EAST COAST ENTERTAINMENT GROUP	60
ELIZABETH ANN SETON CENTER AT CATHOLIC CHARITIES	60
BARKSDALE THEATRE	60
ALLEN TIRE INC	60
SHADES OF LIGHT	60
RDIC INCORPORATED	60
HELLO INC.	59
EMROCH WALTER H	56

EAHEART INDUSTRIAL SERVICE INC.	55
FLOWER MARKET THE	55
COMFORT INN CNFRNCE CTR MDTOWN	55
A&R WATERPROOFING	55
LYN JO SERVICES INC	53
AMERICAS FIRST HOME MORTGAGE CO	52
N CHASEN	52
MORGAN BROTHERS BAG CO INC	52
JOYCE ENGINEERING INC.	50
AUTOMATED AIR SYSTEMS INC.	50
A & E SUPPLY CO	50
THE FLOWER MARKET & GARDEN CENTER	50
FIRST BAPTIST CHURCH	50
BUILDING SERVICES UNLIMITED	50
POWERTEC INC.	50
NATIONAL COUNSELING GROUP INC	50
HOLIDAY INN	50
BURGER KING	50

Shopping, Leisure, Other:

Greater Richmond Convention Center	354291
Shockoe Bus Stops	30000
VMFA	500000
Baseball	435309
2 Street	40000
Richmond Restaurant Week	26,600
First Friday	150000

Coliseum

VCU Siegel Center

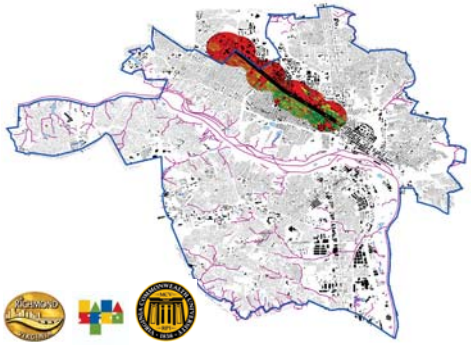
Getting on Board with BRT

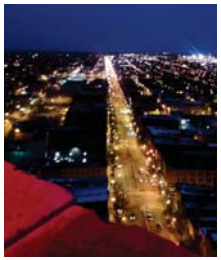
Poster for Presentation

An Urban Design Plan that Supports Rapid Transit on West Broad Street

Alexander "Chuck" D. Beatty

L. Douglas WIlder School, VCU
Master of Urban and Regional Planning
Spring, 2014





This plan provides a strong Urban Design vision for the West Broad Street Bus Rapid Transit Corridor that will not only support the transit system but also its riders and neighbors by creating a vibrant and unique series of multi-modal development nodes which improve the quality of life in Richmond. The plan aims to reinvigorate established areas and promote suitable new development.

Standards of Successful BRT

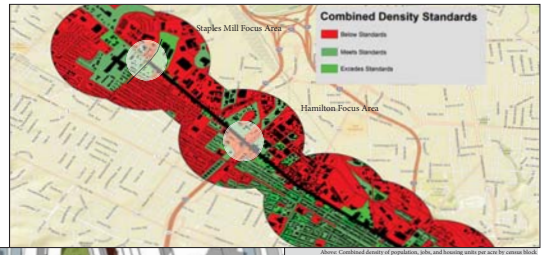
- Population Density: Successful BRT stations need to have a population density of approximately 50 people per acre within a ½ mile of the stop. Job Density: Jobs Density of 20-30 employees per acre is enough to sustain a viable TOD system.
- Walkways: A safe, attractive, and consistent streetscape adds to peoples' desire to walk to other destinations within reach of each stop. Mixed-Used: Each center of development needs to have a variety of uses to suggest that one trip is all that is necessary to accomplish several tasks.
- Pedestrian Activity/Safety: If people are encouraged to walk more, they must feel safe. Using street calming measures in and around these transit nodes will discourage people from driving though them for no reason without barring traffic to businesses.
- Increase in Property Value: Increasing property values are necessary for for initial investment to occur, and for taxes to help support the full array of municipal services.
- Various Modes of Transportation Connectivity: Being able to walk, bike, drive, or take regular buses to these destinations makes it accessible to everybody regardless of their other choices for transportation. ssome any density issues within the radius to increase ridership.

Goals

Goal 1: Create a BRT Overlay District- The creation of an overlay district allows the city to designate the Corridor as a location where special opportunities and guidelines are in place to promote the development of a certain type of place. This overlay district will explicitly aim to strengthen the nexus of land use, design, and economics in order to support the BRT.

Goal 2: Offer a Unique and Superior Experience in the Overlay District- To attract investors, residents, businesses, and commuters to the area, the experience must be unique and superior to that of the current conditions and nearby places outside of the Corridor.

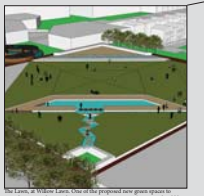
Goal 3: Maximize Transit Use by Promoting Multi-modal Activities- Successful transit system must attract riders. Many cities promote public transit use through employee incentives offered to those who walk, bike, or ride transit for their commute.



Above: Combined density of population, jobs, and housing units per acre by census block. Areas in red are below standard density in all three categories

Bird's eye looking east, down West Broad Street, over Staples Mill. A sense of enclosure is provided by the buildings' masses, and the plaza provides a place to organize before or after riding

Pedestrian only connections link a large mixed-use campus where Anthem currently has parking lot



The Lawn, at Willow Lawn. One of the proposed new green spaces to provide new residents with opportunities to increase. This space should be regularly programmed with events to attract people from outside of the Corridor in

The plaza at Staples Mill, shown above, has the same accomodations as the plaza at Hamilton. While the designs are very different, the amenities package creates constancy between these two stops

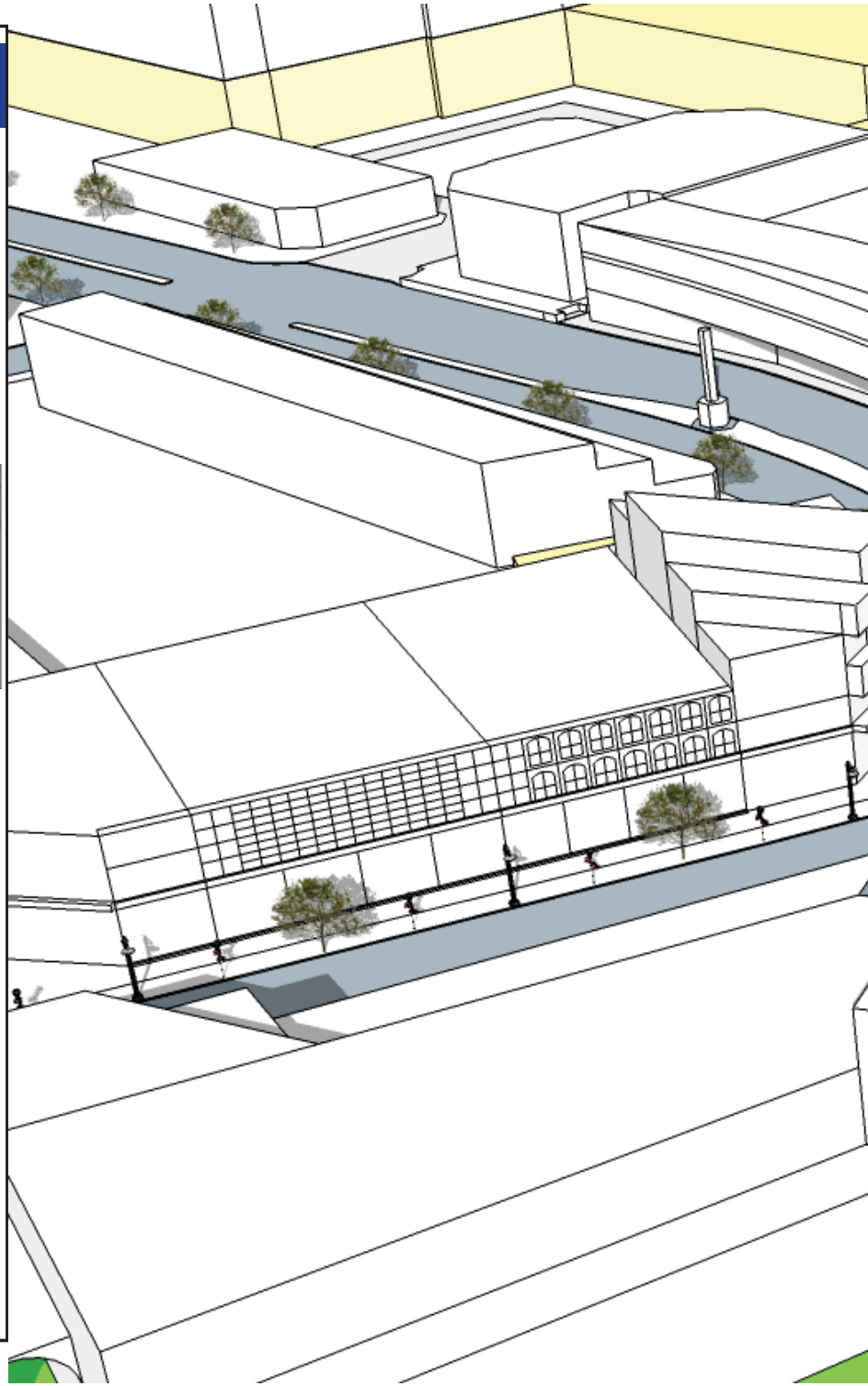
This functional piece of public art, with its smaller sibling located in the plaza, helps to identify Hamilton as a special place that is friendly to people and bike. Each monument has over 50 bike spaces in the bike rack

The plaza is designed with the pedestrian and BRT in mind. Opportunities to sit, eat, read, wait, and meet are plentiful in a space designed with these considerations

Within a skip from the BRT stops should be a wide variety of activities- shops, residences, offices, yoga studies, etc... can all be just a crosswalk away from the station

Activity visible from the street increases street activity. Transparent windows and al fresco dining invite pedestrians to to enjoy a more robust atmosphere

A proposed pedestrian and bike only bridge connects Scott's Addition to Hamilton so that residents of the nearby neighborhood can avoid the auto-centric Brad Street



W/ BRT

W/ BRT