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Cleveland Street Connection: A Transit Oriented Development Plan

URSP 761 (Studio I)

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CLEVELAND STREET CONNECTION: A TRANSIT ORIENTED DEVELOPMENT PLAN

VIRGINIA COMMONWEALTH UNIVERSITY DEPT. OF URBAN AND REGIONAL PLANNING MAY 2016

ACKNOWLEDGEMENTS

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We would also like to thank the City of Richmond's Department of Public Works for the use of their conference room.

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EXECUTIVE SUMMARY



This document was produced for the City of Richmond as a Transit-Oriented Development Plan focused on the proposed Cleveland Street Pulse Station. It also fulfills the Studio I requirement in the Masters of Urban and Regional Planning Program at Virginia Commonwealth University.

The City of Richmond requested a plan that will inform the creatation of a vibrant walkable community within a quartermile of the Cleveland Street Pulse Station. The plan will focus on creating a cohesive, yet unique, station design that will draw together two neighborhoods: the Museum District and Scotts Addition, with Broad Street acting as the binding element.

The Cleveland Street Connection will provide a vision for future development and infill in the area. The goals of the plan are to develop a walkable environment, create a distinctive Broad Street corridor, and provide a clear set of standards to drive and direct development in a way the complements the nature of the surrounding neighborhoods. Additionally, the plan seeks to preserve the historically industrial character of the Scott's

Addition community while encouraging the organic growth currently occurring there, as well as enhance and preserve the Museum District through selective infill opportunities.

The existing conditions for land use examined 660 parcels located within a quarter-mile radius of the proposed Cleveland Street Station. The analysis found that the high number of special use permits in the Scott's Addition neighborhood converting industrial spaces into residential illustrated the current trend in the study area for a mix of uses among commercial, industrial and residential. In addition, the market analysis revealed a need for more affordable housing options within the study area, as housing and rental prices are out of reach for the median incomes for many the of individuals living in within the area. Over the last several years, wages have remained stagnant, while housing costs have continued to increase. Analysis of the current zoning found that the present zoning structure identified several challenges that may restrict development. The area's commercial zoning districts are open ended, allowing the development of multiple commercial uses that are unrelated and unconnected. The zoning ordinance enumerates multiple uses permitted by right that range in scale and are distinct from each other. Furthermore, the current arrangement of commercial uses and structures in the area are incompatible to each other and lack organization in scale and design leaving the area with little visual engagement to generate activities for potential BRT riders of the Cleveland Street Pulse Station.

We collected and analyzed a variety of demographic data, including the income, race, ethnicity, and age of residents in the area. While the study area had a higher median income and less residents in poverty than the City of Richmond as a whole, the dramatic spatial distribution highlighted the north/south divide on Broad Street. Race and ethnicity's spatial distribution was similar to median income as it also emphasized the north/south divide on Broad Streets. While median age demonstrated the varied geographical landscape of the study area, its divisions did not as strictly fall on the north/south division of Broad Street. With the arrival of the Cleveland Street Pulse Station, there may be opportunities to pull the wealth across the Broad Street divide to balance the stratification. Through analysis of Strengths, Weaknesses, and Opportunities we identified the wide variety of architectural diversity that creates interest to pedestrians and further establishes the sense of character in both Scott's Addition and the Museum District as a major strength. A key weakness is the crumbling, or lack of public infrastructure, which hinders the accessibility of the neighborhoods. Primary opportunities include plenty of space for infill development, public plazas and green space, as well as wide streets which present the opportunity to reimagine pedestrian and biking corridors.

The plan recommends creating a special use district which will allow for a safe, comfortable and interesting environment around the Cleveland Street Pulse Station. It will encourage higher-density residential development than what is currently on the site, adding to the amount of potential BRT riders in a quarter- mile radius, as well as commercial development which will also be a potential attraction among the ridership, further increasing potential ridership. There will be flexibility within the district allowing for multiple uses and building types within the different neighborhoods. This will allow developers to build more freely, working within guidelines that will dictate building form in order to achieve the primary objective of creating a vibrant mixed-use district along the Cleveland Street Pulse Station.



Intersection of Broad Street and Boulevard

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THE CLIENT

INTRODUCTION



The Cleveland Street Connection is a Transit-Oriented Development Plan for the proposed Cleveland Street Pulse Station requested by the City of Richmond Department of Planning Development Review. It fulfills the requirements of the Master of Urban and Regional Planning program at the L. Douglas Wilder School of Government and Public Affairs at Virginia Commonwealth University. The Department of Planning Development Review defines its mission statement as follows, "We act on the genuine belief that we care about creating and maintaining the best quality of life for Richmond's citizens, businesses, and visitors. To that end, we provide excellent planning and enforcement services to enhance our city's built and natural environments."

The participating Department staff in meetings and development of this plan included the Director, Mark A. Olinger, Kathleen Onufer, Executive Staff Assistant, Daniel Thompson, Planner II, Will Palmquist, Planner II, Jessie Revilla, Planner II. Participating from the Department of Economic and Community Development was Josh Son, Project Development Analyst. Participants from the Richmond Regional Planning District Commission included Will Sanford, Intern for the BRT Connectivity and Land-Use Analysis Plan, and Josh Mallow, Project Manager for the BRT Connectivity and Land-Use Analysis Plan. Stakeholders from the Museum District Association - Zoe Ann Green.

While this plan was prepared primarily for the City of Richmond, many of the recommendations presented will require the cooperation of the Scott's Addition and Museum District Neighborhood Associations. It will also necessitate recruitment of private developers for implementation and the cooperation of any developers with existing site plans in the study area.

HISTORIC OVERVIEW

INTRODUCTION



West of the Boulevard Historic District

The West of the Boulevard Historic District began as a Robert E. Lee Camp Soldier Home in the suburbs and grew rapidly during the economic and social growth from 1895 to 1940. Growing from the Main Street trolley car line, the district displays a variety of architectural styles, including but not limited to, the Queen Anne, Classical Revival, Tudor Revival, and Art Deco styles. Twenty-two of its buildings are on the National Register of Historic Places as individual buildings. The cohesive and consistent nature of the architecture of this neighborhood, largely developed through its historic nature, generated the creation of two design overlay districts, including the West of the Boulevard Design Overlay.

Source: National Register of Historic Places Nomination, January 11, 1994



Scott's Addition Historic District

The Scott's Addition neighborhoodwas and continues to be an industrial district that heavily relied on the railroad to the north. The extension of the Broad Street Trolley to Sheppard Street in 1909 allowed for inexpensive transportation for workers and residents. The oldest structures in the neighborhood are the single-family Colonial Revival brick houses, which historically housed the working-class. The second wave of development in the neighborhood occurred between the 1930s and 1950s. Several large industrial and commercial buildings were created in the Art Deco and Moderne styles, with the Moderne style rarely seen elsewhere in Richmond. In contrast to typical industrial parks, these industrial and commercial buildings directly abutted the sidewalk, allowing for more interaction with the street.

Source: National Register of Historic Places Nomination, June 28, 2005

PREVIOUS PLANS

INTRODUCTION

City of Richmond Master Plan

The study area is located in the Near West Planning District in the Richmond 2000-2010 Master Plan. The land use plan for the Near West District does not recommend any substantial changes to the distribution of land uses. The plan is meant to accommodate new and diverse development opportunities where appropriate, while preserving the urban character of an area almost entirely built out. Several areas in the Near West District are designated for uses other than those that currently exist.

The Plan recommends the eventual conversion or phasing out of several isolated pockets of uses that are inconsistent with their surroundings. The Plan also identifies areas appropriate for future residential development on either redevelopment sites or currently undeveloped land.

The Plan notes the Fan and West of the Boulevard Neighborhoods as the most desirable places to live, crediting its popularity with the intimate, pedestrian scale of residential and commercial uses, the presence of retail opportunities within the fabric of the neighborhood, and proximity to major institutions such as the Virginia Museum of Fine Arts.

Significant issues noted within the plan include the number of vacant industrial and commercial properties and their proximity to residential neighborhoods and the ability to ensure high standards for residential infill development when there exists, with few exceptions, no mechanisms to apply design standards for new development.



West of the Boulevard Design Overlay District & Design Guidelines

The Overlay District and Design Guidelines was adopted by the Planning Commission in 1996. The design guidelines seek to preserve the unique architectural fabric and character of the historic district by adopting a Design Overly District which establishes guiding principles for new construction in Residential Zoning Districts.

The guidelines aim to ensure that all new residential structures blend appropriately with the existing historic buildings while preserving the unique architectural fabric of the neighborhood. Additionally, the guidelines seek to encourage a sense of pride among property owners resulting in improved building and land maintenance while presenting a positive appearance that will appeal to new residents as a desirable place to live and work.

Each block within the Overly District has unique qualities which create a distinct urban fabric for the West of the Boulevard Historic District. Much of the recent construction has disregarded these qualities. These new contemporary buildings lack the appropriate scale, proportion, and detail which make new construction compatible with the historic structures. This diminishes the overall cohesiveness of the neighborhood.

The Design Overlay District Guidelines will guide the design of distinguishing architectural elements of new construction. By following these guidelines, new construction can fit harmoniously within the existing context, thus helping maintain the integrity of the entire District.



Source: West of the Boulevard Design Overlay District and Design Guidelines



The Pulse

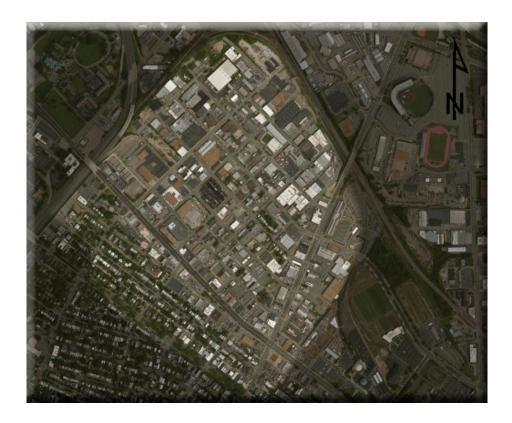
The Greater Richmond Transit Company's BRT, the Pulse, is a modern, high-quality, high-capacity rapid transit system that will serve a 7.6 mile route through the high-density and high-ridership areas along Broad Street to Main Street in the City of Richmond, terminating on the east at Rocketts Landing and on the west at Willow Lawn in Henrico County (GRTC, n.d).

The Pulse is projected to open in October 2017. There are 77,000 jobs within one half mile of the Pulse corridor. For the first year of operations, it is projected that 3,500 daily riders will use the Pulse (GRTC, 2015).

The total projected cost of the Pulse is \$53.8 million, with an annual operating cost of \$3.6 million. The Pulse is expected to increase property values up to 12% over a 20-year period. The resulting tax revenues is projected to be \$4.9 million for the City of Richmond and \$381,900 for Henrico County (GRTC, 2015).

APPROACHES & METHODS

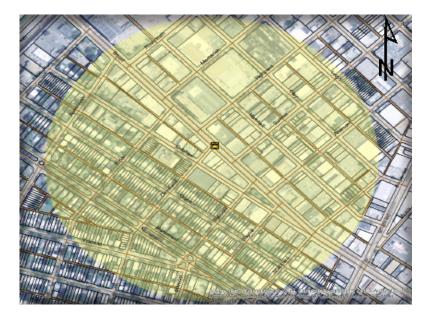
INTRODUCTION



The initial meeting for this project was held on January 26, 2016, at the City of Richmond's City Hall. In attendance were representatives from the City of Richmond's Planning and Development Review Department, led by Planning and Development Review Director Mark A. Olinger, the Museum District Association, and members of the Greater Richmond Transportation Commission. In this meeting, it was decided that a transit-oriented development plan would be developed to dictate design guidelines for a quarter-mile radius around the station. The evolving and unique nature of the neighborhood of Scott's Addition was mentioned as desirable, as was the Museum District's stable and historic character.

Background research on the neighborhoods included a demographic analysis, a market analysis and a zoning analysis. In addition to this, a large team worked with the program SketchUp to develop a three-dimension view of the existing buildings and structures. A more detailed Strengths, Weaknesses and Opportunities (SWO) analysis was conducted and built off of talking points generated at the initial meeting by the neighborhood stakeholders. SketchUp was used to highlight existing structures and the proposed vision for new structures. After several rounds of feedback from the client, the final framework plan was delivered to the client on May 10, 2016.

EXISTING CONDITIONS



The analysis focused on a quater-mile around the proposed Cleveland Street Pulse Station. By understanding the existing conditions of the study area, design policies can be tailored to the current and growing population and serve as a solution to the geographical division found between Broad Street and the neighborhoods of Scott's Addition to the North and Museum District to the South.

Existing conditions will cover demographics, existing land use, market analysis, current zoning, SWO analysis, figure ground, and precedent plans. This analysis will provide a background for the population residing in the area, the housing market, and trends occurring throughout the study area.

<u>Demographics</u> will use select block groups and census tracts located within the study area. Using 2014 American Community Survey 5-year estimates, this analysis highlighted the income, race, ethnicity, and age of residents in the study area.

Existing land uses will analyse the 660 parcels located within a quarter-mile of the proposed Cleveland Street Pulse Station. The land uses will be defined by the property class description within the 2015 tax assessment. There are nine land uses within the study area. Existing land uses show the trends that are occuring in the area and if they are inline with the zoning.

<u>Market Analysis</u> will use data from the 2015 Real Estate sales, tax assessment data, and current listed property. Both residential and commerical properties will be used within the anlysis as well as rental and lease information. The market analysis will identify areas within the market that are strong and weak and how they should apply to future development.

<u>*Current Zoning*</u> will analyze the intent of each district (Broad St., Scott's Addition, and Museum District) giving insight to the permitted uses and design structure, and also identify possible challenges to the zoning which may have an effect on future development.

<u>SWO Analysis</u> will look the the strenghts, weaknesses, and opportunities within the study area.

Figure Ground will look for potential infill opportunities by examining the current location of buildings and vacant parcels.

<u>Precedent Plans</u> will look at two case studies that examine Bus Rapid Transit systems in Pittsburgh,Pennsylvania and Cleveland, Ohio.

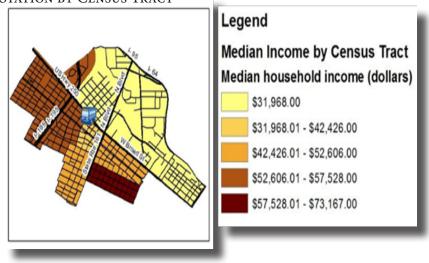
DEMOGRAPHICS

EXISTING CONDITIONS

By understanding the current demographics of the study area, design policies can be tailored to the current and growing population. Using 2014 American Community Survey 5-year estimates, this analysis highlighted the income, race, ethnicity, and age of residents in the study area. The overall population of the study area comprises only 6% of the City's population, totaling 13,264 people. The denser block groups are located immediately south of the Cleveland Street Pulse Station.

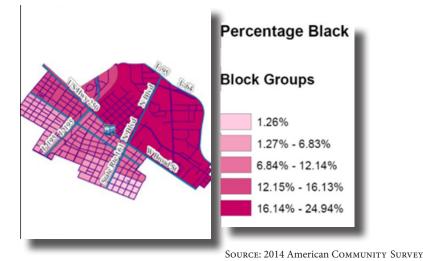
While households in the study area had a higher median income and less residents in poverty than the City of Richmond as a whole, the dramatic spatial distribution highlighted the north/south divide on Broad Street. As Map 1.1 shows, the census tract with the lowest median income was north of the Cleveland Street Pulse Station, with a median income of \$31,968. This census tract is almost \$10,000 under the city of Richmond's median income and in excess of \$40,000 under the wealthiest census tract's median income in the study area. The stark contrast found in median incomes was also reflected in the percentage of residents in poverty, with the block group north of the station at a rate comparable to the City of Richmond's overall rate of 25%.

Race and ethnicity's spatial distribution was similar to median income as it emphasized the north and south divide on Broad Street. With 90.2% of residents that identify as white, the study area stood in stark contrast to the City of Richmond's 45.0% of residents that identify as white. As demonstrated in Map 1.2, the block group to the north of the station was more closely resembled that of the City of Richmond's rate of 30.9% of residents that identify as African American. It is important to note that the lowest end of this percentage was 1.26% in the wealthiest block group in the study area. Additionally, the highest concentration of residents with Hispanic origins was at most 6%, which was identical to the City of Richmond's rate.



Map 1.1 Median Income of the Cleveland Street Pulse Station by Census Tract

Map 1.2 Percentage of Residents that Identify as African American at the Cleveland Street Pulse Station by Block Group

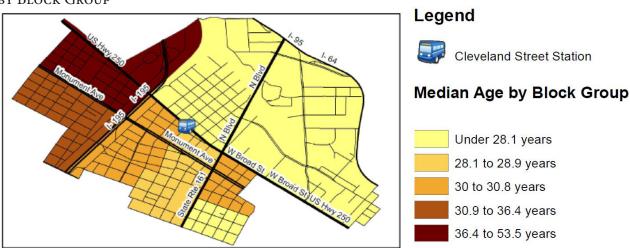


CLEVELAND STREET CONNECTION

While median age demonstrated the varied geographical landscape of the study area, its divisions did not as strictly align with the north and south division of Broad Street. As Map 1.3 demonstrates, it seems that Interstate 195 served as the dividing line between residents younger and older than 30.8 years old. The oldest block group, with a median age at 53.5 years, contrasted the block groups touching the Cleveland Street Pulse Station, which had median ages under 30.8 years. The concentrated block groups in the study area were younger than the City of Richmond's median age of 32.1 years.

The mixed demographics of the study area made it an interesting case for design policies and initiatives. With the arrival of the Cleveland Street Pulse Station, there may be opportunities to pull the wealth across the Broad Street divide to balance the stratification. Additionally, the young age may offer opportunities for choice ridership. With one block group already exceeding the City of Richmond's average for public transportation use, the design policies have a great potential to increase this number to greatly exceed this average.

In addition to the 2014 American Community Survey data, the block group to the north of Cleveland Street Pulse Station has been experiencing a growth in a specific kind of residential housing that has the capacity to further change the demographics of this area. As this cannot be captured in an analysis of the census data, it is beneficial to understand how the demographics of the area interact with current land use and the market.



MAP 1.3 MEDIAN AGE AT THE CLEVELAND STREET PULSE STATION BY BLOCK GROUP

LAND USE

EXISTING CONDITIONS

MAP 1.4 EXISTING LAND USE



Within the 1/4 mile of the proposed Cleveland Street Pulse Station, there are 660 parcels with a mix of nine land use designations. Broad Street acts as the center for commercial businesses and office locations. The majority of residential units are located in the Museum District except for a few, but growing portion of Scott's Addition. All the industrial parcels are located within Scott's Addition.

It is important to note that the recent residential units in Scott's Addition were added by Special Use Permit process that have converted former industrial spaces into new dwellings. This illustrates the current trend that is occurring in the study area which is creating a mix of uses among commercial, industrial, and residential.

There are only nine public/open space parcels. seven of which are located down the median strip of Monument Ave. The other two parcels are located within Scott's Addition; one is the Bingo Hall at 2900 W. Broad Street (recently under contract/rezoning) and the other is The American Postal Workers Union at 3114 W. Clay Street.

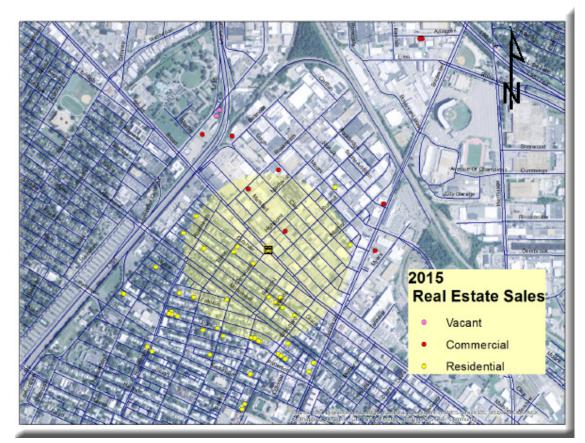
There is a clear lack of a public realm in the form of green space within Scott's Addition. The possible conversion of surface parking attached to industrial lots could provide an opportunity to create green space in this sea of industrial architecture.

MARKETING ANALYSIS

EXISTING CONDITIONS

This Market Analysis will look at the study area around the proposed Cleveland Street Station. It will include 2015 Real Estate Sales, current properties that are on the market, as well as residential and commercial rentals. Tax assessment information for all the 2015 real estate sales parcels will be aggregated based on square footage to show comparative tax assessments of both land and improvement values for 2011 and 2016 to designate small, medium, and large properties. 2011 and 2016 tax assessment information comparing land and improvement values will also be provided for anchor establishments, current properties on the market, and residential and commercial rentals. Lastly, this study will examine a shift-share analysis to determine which industries are being over-or-under served. The market analysis will provide a framework for development potential.

Map 1.5 2015 Real Estate Sales



In 2015, there were 97 real property transfers within the focus area or a few blocks away. The majority of residential sales occurred within the Museum District. All commercial sales occurred within Scott's Addition. Table 1 shows the average sale price and price per square footage are shown for residential, vacant land, and commercial property. Single-Family Detached ranged from 2-story to 3-story houses that averaged 1,657 sqft with an average sales price of \$318,518.

Residential	Average Sqft	Average Sales Price	Low-High	Price per sqft
Single Family Detached	1,657	318,518	135,000-545,000	192.23
Duplex	2,304	371,100	291,000-475,000	161.07
Multi Family Building	5,426	30,825,000	-	5,680.98
Multi Family - Units	2,061	422,000	291,000-460,000	204.75
Commercial	9,315	778,000	400,000-1,250,000	83.52
Vacant Land (.48 acres)	20,908	1,750,000		83.70

Table 1. Real Estate Sales 2015

Purchasing power within Scott's Addition and the Museum District are shown in Table 2. The Median Income for Scott's Addition was \$38,740. Assuming that an individual purchased a property that sold for \$135,000 with a 30 yr. mortgage at 4% interest, their monthly mortgage would be around \$780. However, the average sales price was \$318,518 and by following the same mortgage rate of 4% for 30 years, the monthly mortgage payment would be up to \$1,840.

According to The Department of Housing and Urban Development, affordable housing is defined as a single individual who allots 30% of their annual income towards adequate housing. A two person household would have greater potential to purchase an affordable property, assuming their combined income is over \$75,000. An combined income over \$75,000 would produce an affordable monthly payment around \$1,875, allowing them to potentially afford the average priced house at \$318,518.

	Medi	Median Income		Housing Price	Mo	onthly Payment	ffordable Housing Payment (30% of Income)
Scott's Addition	\$	38,740	\$	135,000	\$	780	\$ 968
			\$	291,000	\$	1,680	
Museum District	\$	47,542	\$	318,518	\$	1,840	\$ 1,188

Table 2. Adffordable Housing Cost/Payments

Although, homeownership may be out of reach for many single person households, turning them towards the rental market as a viable option. While rental prices appear to be on the high side considering the amount of square footage included in a unit as shown in Table 3, there are units that are affordable.

New apartments that have recently opened in Scott's Addition are The Preserve and 1 Scott's Addition. These prices are higher and offer less square footage. A two bedroom unit at The Preserve is offered at \$1,350 for 1,011 sq. ft. and 1 Scott's Additon offers a 2 bedroom for \$1,500 with 900 sq. ft.

**These prices were the lowest priced rental units available from The Preserve and 1 Scott's Addition. Larger unit prices and accurate square footage were unavailable.

Listings on Market (For Sale or Rent) Commercial Sale Commercial Lease **Residential Sale Reseidential Rent**

Address	Price		Sq. Ft.	Bedrooms	Ren	Rent Sq. Ft.	
1310 Roseneath St.	\$	870	507	1 bedroom	\$	1.72	
3406 Cutshaw Ave.	\$	1,095	1,026	2 bedroom	\$	1.07	
2920 W. Grace St.	\$	1,100	782	2 bedroom	\$	1.41	
33005 W. Grace St.	\$	1,250	1,000	2 bedroom	\$	1.25	
The Preserve							
New Apartment Building	\$	870	563	Studio	\$	1.55	
	\$	915	609	1 bedroom	\$	1.50	
	\$	1,350	1,011	2 bedroom	\$	1.34	
1 Scott's Addition							
New Apartment Building	\$	950	500	Studio	\$	1.90	
	\$	1,050	670	1 bedroom	\$	1.57	
	\$	1,500	900	2 bedroom	\$	1.67	

Table	3.	Rental	Units

MAP 1.6 REAL ESTATE LISTINGS AND RENTALS

Tax Assessed Values

Property values are generally increasing within the study area. Table 4 gives an example of three businesses that have experience increase property values between 2011 and 2016. The properties range from small to large square footage to provide an example of building size and how improvement along with land value increased over a 5-year period. This data can be helpful in showing

Table 4 Tax Assessed Values 2011 and 2016

	2011	2016
Black Heath Meadery:		
sqft 2,835	\$ 99,000	\$ 137,000
Ardent Brewery:		
sqft 25,875	\$ 410,000	\$ 864,000
Urban Farm House:		
sqft 60,151	\$ 2,700,000	\$ 9,060,000

the potential to future investment in the area to generate a tax base from businesses within a popular mixed-use community.

Table 5 shows that property values from small to large have experience increased values. The one downside to increased property values is that there is the potential to "pricing out" current businesses that are located in the study area because of increased taxes and rental rates. While stabilizing the tax base will be of value for the City of Richmond, displacement might occur by the new investment.

Table 5. Property Size Assessment Values

Property Type	Property Size	Mean Tax Assessment Values 2011	Mean Tax Assessment Values 2016
Small properties	1450 Sq. Feet or less	\$293,500	\$340,188
Medium properties	1451-2,000 Sq. Feet	\$289,813	\$302,813
Large properties	2,000 sq. feet or larger	\$249,357	\$273,357

Potential Businesses Based on Shift-Share and By Right Zoning

Looking at current zoning and businesses that are located within the study area, there appears to be an overabundance of Auto service centers – use code RS permitted with restrictions in B2 and B3. On the other hand, the area is underserved in art galleries, administrative offices, medical and dental offices which are permitted "by right" zoning which limits the accessibility that residents have to these types of uses. The Shift-Share was created using Richmond MSA data because the study area spans two or more census blocks. The Analysis will support the under/over served zoning and allow for an investor or potential business owner to see which industries are growing or declining. The data was obtained between the 2003 and 2013 using NAICS 2 digit codes.

NAICS 42 Wholesale Trade and 52 Finance and Insurance saw the greatest decline from 2003 to 2013 as shown in Table 6. However, there was a great increase in employment within NAICS 62 Healthcare with 17,000 jobs and NAICS 72 Accommodations and Food Service with approximately 11,000 jobs.

To further identify which industries are producing for the Richmond MSA, an industry mix effect analysis was performed which represents the share of regional industry growth explained by the growth of the specific industry at the national level. Table 7 shows that NAICS 62 Healthcare experienced the greatest growth with an increase of 9,932 jobs while NAICS 31-33 Manufacturing experienced the greatest loss with 7,934 jobs.

To finalize the shift-share, Regional Shares Effect was performed to identify which industries are more specialized. This explains how much change in a given industry is due to some unique competitive advantage that the region possesses, since the growth cannot be explained by national trends in that industry or the economy as whole. Table 8 shows that NAICS 72 Accommodations and Food Services is highly specialized to the MSA with 10,575 jobs while NAICS 52 Finance had the lowest specialization in the MSA with a loss of 11,593 jobs.

What does this mean??

Potential businesses that move into the area would benefit from being linked to Healthcare or Accommodations and Food Services. We can see that breweries are locating within Scott's Addition because they fit within the current zoning and are catering to industry growth in the region.

Table 6. Industries (Growth/Decline
-----------------------	----------------

Industry code	Emloyment 2003	Employment 2013
42 - Wholesale		
Trade	32,777	25,827
52 - Finance and		
Insurance	64,418	48,839
62- Healthcare and		
Social Assistance	61,279	78,277
72 - Accomadations		
and Food Services	32,777	49,493

Table 7. Industry Mix Effect

NAICS Industry Code	Total Jobs
23 - Construction	-6582
31-33 Manufacturing	-7934
56 - Administrative	
and Support	5,136
62- Healthcare and	
Social Assistance	9,932

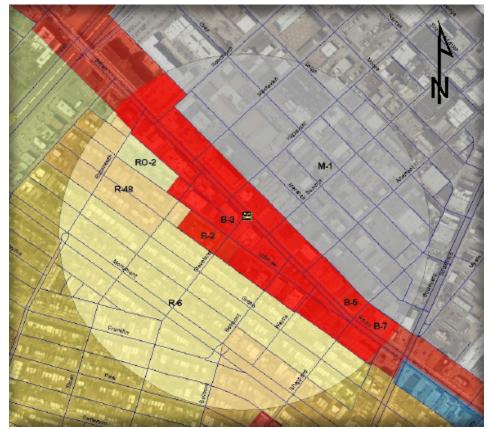
Table 8. Regional Shares Effect

NAICS Industry Code	Total Jobs
52 - Finance and	
Insurance	-11593
56 - Administrative	
and Support	-5524
62- Healthcare and	
Social Assistance	4,615
72 - Accomadations	
and Food Services	10,575

CURRENT ZONING

EXISTING CONDITIONS

The City of Richmond Zoning Ordinance is designed to govern and regulate the way land and property are used. The ordinance encompasses three methods to normalize land use practices; it defines the geographic location of specific land uses by applying zoning districts, it enumerates permitted land uses within each zoning district, and it defines the structural bulk and design standards within a given zoning district. The proposed Cleveland Street Pulse Station is uniquely situated between two emerging Richmond City neighborhoods, which provides a mix of residential, business and industrial uses within immediate vicinity of one another. The Cleveland Street Pulse Station study area incorporates a mix of business, industrial and several residential zoned districts that varies in density.



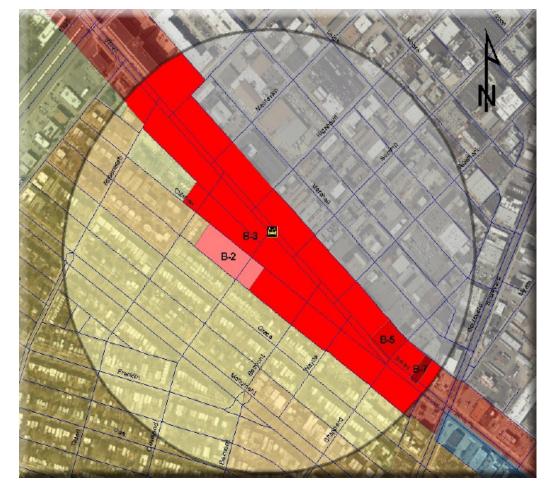
MAP 1.7 EXISTING ZONING

<u>Community Business District (B-2)</u> provides light commercial business that are incidental to the need of a dense residential community. The zoning ordinance enumerates 43 permitted by right uses in the zoning category which support daily consumer transactions that provide various services and amenities. The zoning category serves as a transitional district that bounds and connect more intense commercial activities with residential uses, essentially serving as a medium in screening and separating the opposing uses.

<u>General Business District (B-3)</u> provides more intense commercial uses that are consistent with those that are generally provided in most commercial corridors. The B-3 zoning district enumerates 60 permitted uses by right, such as auto oriented, which incorporates some uses provided in the B-2 district and others uses that are not customary to the intent of transitional development with residential uses. Uses in this category provides a variety of services for customer transactions that extends beyond the boundaries of the immediate community. Permitted uses also includes the development of light industrial structures with restrictions such as warehouses facilities and truck and freight transfer stations.

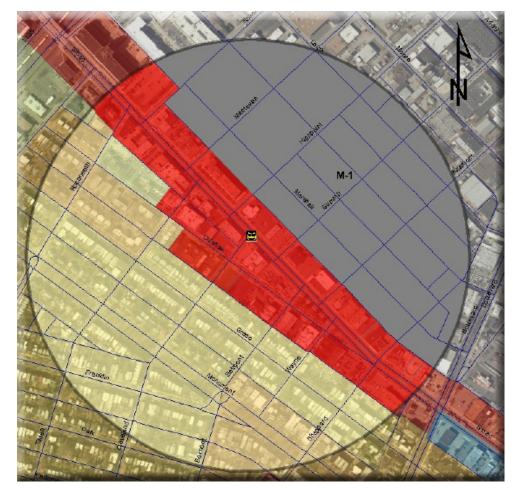
Both Business districts allow the mix of residential and permitted commercial uses, providing the opportunity of mixed-use development.

*B-5 and B-7 were incorporated through Special Use Permit and only effect 2 parcels, both of which have been rezoned.

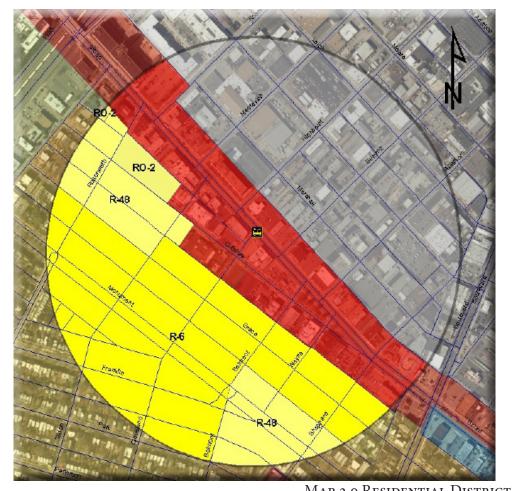


MAP 1.8 BUSINESS DISTRICT

<u>Light Industrial District (M-1)</u> provides light manufacturing uses that are not likely to create an offensive noise and smell, smog, smoke and odor. Uses permitted in this district are intended to be transitional and situated near more intense commercial districts such as the B-3 zoning district where high volume of consumers may be positioned. In addition to light manufacturing activity, the zoning district provides "unclassified" uses that includes contractor storage facilities, entertainment uses, animal keep and raising facilities and other such uses alike.



MAP 1.9 LIGHT INDUSTRIAL DISTRICT



The residential zoning districts are strategically situated in the study area to regulate density and control capability with varying uses. The less dense residential districts are concentrated in the center while the more intense residential uses are aligned along the perimeter near more intense commercial uses.

<u>Single-Family Attached Residential District (R-6)</u> permits single-family attached dwellings but also incorporates twostory single-family detached dwellings as well. Accessory structures permitted in this catorgory must be incidental and customary to single-family dwellings.

<u>Residential-Office District (RO-2)</u> permits the mix of single and two-family attached dwellings with office uses that are customary with the design of residential dwellings. Office uses in this category includes, but are not limited to adult homes, tourist homes, parking lots, offices, banks, funeral homes. Office uses under this category are permitted under certain conditions, and the designation serve as a transitional district between commercial districts and the less intense R-6 residential district.

Multifamily Residential Districts(R-48) intend to permit high density multi-family residential development that allow residential office and single-family residential uses with restrictions. The multi-family categories vary by design MAP 2.0 RESIDENTIAL DISTRICT standards and each may require additional zoning conditions

that are incidental to the scale of the structure permitted in the category.





The zoning districts are guided by design standards intended to promote health and safety and to conform to the City of Richmond's quality of life standards. Design requirements include bulk standards for appropriate development in each of the referenced zoning districts.

These requirements include setback measurements, height standards and screening requirements. The bulk requirements for business and industrial districts allow density by providing minimum to no setback measurements, and also promote compatibility in the way buildings are designed and orientated. The M-1 and B-1 districts provide standards to increase building height and to further regulate compatibility between structures adjacent to each other.

High density is encouraged in each residential district by requiring small minimum lot sizes, and restricted lot coverage. The bulk requirements for residential districts also encourage connectivity and pedestrian access by allowing large minimum front yard setbacks and restricting direct access from the street to residential lots.

The present zoning structure identifies several challenges that may restrict future development. The area's commercial zoning districts are open-ended, allowing the development of multiple commercial uses that are unrelated and unconnected. The zoning ordinance enumerates multiple uses permitted by right that range in scale and are distinct from each other.

The current arrangement of commercial uses and structures in the area are incompatible to each other and lack organization in scale and design. Simply, the restrictions applied to permitted uses don't address congruity and compatibility.

Source: City of Richmond Zoning Ordinnace

SWO ANALYSIS

EXISTING CONDITIONS

Strengths

Scott's Addition is benefiting from an emerging center of residential, commerce, niche businesses, and restaurant scene, generating places to visit and walk. The existing industrial landscape creates a distinct sense of character that is unique to the neighborhood.

In both Scott's Addition and the Museum District, there is a wide variety of architectural diversity that creates interest to pedestrians and further establishes the sense of character. The emerging public art murals sets a strong precedence for future development to incorporate public art for public engagement. Finally, the accessibility to the interstates further strengthens the neighborhoods.





Weaknesses

The crumbling public infrastructure, such as sidewalks and potholes, are a large weakness that hinders the accessibility of the neighborhoods. In addition to the failing infrastructure, there are places where little or no infrastructure exists. This includes a lack of sidewalks and difficult pedestrian crossings along the Broad Street Corridor.

Within Scott's Addition, the large parking lots and vacancies are underutilized space. The throwaway landscape, chain link fences and above ground utilities are major weaknesses. Finally, there is little public green space outside of the Monument Avenue median and Redskins Park to support the growing residential and employment base

Opportunities

While the vacancies and large parking lots of Scott's Addition and the Broad Street Corridor do detract from the neighborhood's value, they present places for improvement that are more reflective of the stable Museum District. There is plenty of space for infill development, increased street furniture, public plazas, and green space.

The wide streets also present an opportunity to re-imagine pedestrian and biking corridors. The bend of Broad Street and the terminated vistas north and south of Broad Street present opportunities for stunning architecture and a more interesting walk and bus ride.



PRECEDENT PLANS

EXISTING CONDITIONS

Pittsburgh's Bus Rapid Transit System



Source: Cleveland City Planning Commission

Pittsburgh's busway system operates three lines in the metro area, with twenty-one combined miles of busway. The transit system is operated by the Port Authority of Allegheny County and includes twenty-six stations throughout the county. Using light rail and two inclines, in addition to BRT, the comprehensive transit system connects residents to 300,000 jobs. Of the 50,000 BRT riders, more than 30% percent are choice riders who own their vehicles.

Pittsburgh's south busway opened in 1977, six years after the closing of Pittsburgh's last trolley lines in 1971. The busway cost \$27 million to construct, which adjusted for inflation would be \$106 million today. The line is 4.3 Miles long, with eight stations between downtown Pittsburgh and the Overbrook neighborhood to the south. The busway accommodates 13,000 riders daily, saving them between six and eleven minutes commuting by BRT during peak hours.

The east busway opened in 1983. The busway cost \$186 million to construct. The line was originally 6.8 miles long and extended to 9.1 miles in 2003. The line has ten stations between Pittsburgh's Penn station, Downtown and the Swissvale neighborhood to the east. The busway accommodates 18,000 riders daily, saving them between twenty-one and twenty-four minutes commuting by BRT during peak hours. The Martin Luther King JR. East busway ("east busway") was built in two stages--6.8 miles in 1983 and another 2.3 miles in 2003. Since its construction, the east busway has stimulated development and increased property values near its stations. A 2003 study found that \$302 million dollars in new development had occurred along the east busway line.

By 2009, property values within one-half mile of the east busway stations had risen between \$1,000 and \$2,300 compared to those farther from the stations. Within 100 feet of stations, property values rose by up to \$9,745. According to the Allegheny Port Authority, four dollars have been generated by transit-oriented development for every public dollar spent constructing and operating the east busway.

The west busway opened in 2000. The busway cost \$275 million to construct. The higher costs of the west Busway line is owed primarily to the rehabilitation of a former rail tunnel for busway use. The line is 5.6 miles long, with six stations between Pittsburgh's Penn station, Downtown, and the Carnegie neighborhood to the west. The busway accommodates 7,000 riders daily, saving them around twenty-five minutes commuting by BRT during peak hours.



Source: Pittsburgh Beauty Blog

CLEVELAND STREET CONNECTION

Cleveland's Bus Rapid Transit System

Cleveland's BRT system, the Healthline, opened in 2008. The 9.8 mile route, operating along Euclid Avenue, connects the area's two major employment hubs; Downtown and University Circle, and extends to the Louis Stokes Station at Windermere in East Cleveland (RTA, 2012). The total project cost was \$200 million, with \$168.4 million used for transit-related costs and \$31.6 million used for non-transit improvements, including sidewalks, utilities, and public art. Of the \$168.4 million, \$50 million was allocated for buses and stations while the remainder helped fund other corridor improvements, such as roadway development, utility replacement, and sidewalk installation (Chumra, 2014).

The Healthline operates at 12.5 miles per hour, compared to pre-BRT speeds of 9.3 miles per hour. Travel time between the two major employment centers was reduced from forty minutes to twenty-eight minutes, with a reduced number of stops along the corridor from 100+ to thirty-six. Multiple bus routes use the BRT corridor, and mixed traffic is forbidden from turning across the busway at most intersections (Hook, et. al., 2013).

The Heathline offers services twenty-four hours a day, seven days a week. It arrives every five minutes during the morning and afternoon weekday rush hours. In the six years since opening, the Healthline has served more than twenty-nine million customers. Ridership has increased by sixty percent since BRT implementation. The Healthline BRT offers exclusive travel lanes, traffic signal prioritization, off-board fare collection, and bike lanes. The stations include level boarding and precise docking, enhanced lighting, real time update of bus arrivals, emergency phones and cameras and standalone public art.



Source: Midtown Cleveland.org

Positive Impacts

Pittsburgh BRT

- Stimulated development along transit corridors
- Rehabilitation of the East Liberty Station was encouraged with the help of a \$15 million dollar Transportation Investment Generating Economic Recovery grant ("TIGER"). The City more than matched these funds to provide a total of \$150 million toward the station rehab and related infrastructural improvements (Source: Alleghangy County Port Authority)
- Aesthetic improvements have accompanied development, such as improved intersections, better lighting, landscaping, linear parks and repair of older structures. Images from page 29 shows a rendering of the design plans for the intersections at a BRT stop as well as improvements made to a pedestrian walkway connecting the East Busway station. It connects the East Liberty neighborhood on the north, and the Shady Side neighborhood on the south

Cleveland Healthline BRT

- Highest return on investment of any public transit project in the nation, leveraging \$114 for every transit dollar invested
- The Euclid corridor has experienced an increase in property values as a result of the Healthline BRT. From 2005-2011, the Euclid corridor property values increased by 40.4%, while the city's property values only increased by 8.2%. Commercial property values increased by 45.2% in the Euclid corridor, while the city's commercial property values only increased by 26.9%. Residential property values increased by 9.1% in the Euclid corridor while the cities residential property values only increased by 0.6% (Chmura, 2014)
- BRT can act as a catalyst for new development initiatives and increase the pace of development along its corridor. The MidTown district along the BRT corridor, an area not expected to see an increase in redevelopment, attracted development despite an economic downturn. The total value of construction in the MidTown district increased after the Healthline opened. Pre-BRT operations in the MidTown neighborhood had \$50 million in ongoing construction These projects increased to \$69 million post BRT projects. development. One of the most visible ventures along Euclid is the \$28 million MidTown Tech Park. The MidTown Tech Park consists of 128,000 of state of the art incubator space located on the former site of a used car dealership in Midtown, once one of the most downtrodden neighborhoods along Euclid. It's become a hub for entrepreneurship, particularly for biomedical companies, as shown in (Hellendrung, 2012)

See Appendix for Sources

VISION STATEMENT



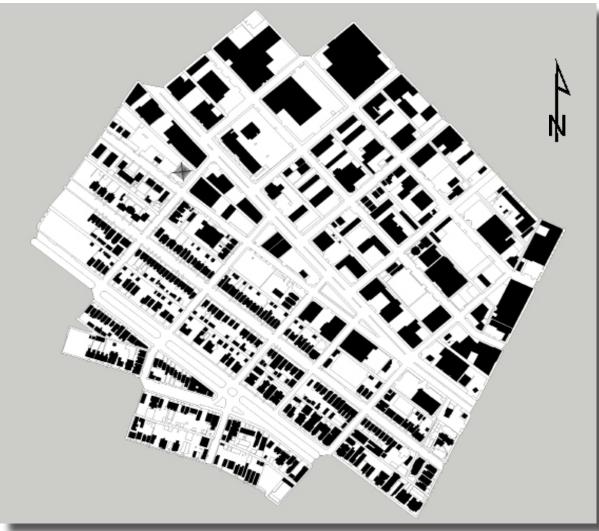
Intersection of Broad Street and Boulevard

Shape a vibrant, walkable, mixed-use neighborhood centered at the Cleveland Street Pulse Station that generates a strong sense of place on Broad Street, increases bus ridership, and facilitates strong connections between Scott's Addition and the Museum District.



FIGURE GROUND

MAP 2.1 EXISTING CONDITIONS



The figure ground shows the existing building layout for potential infill. The black represents the existing buildings within the study area. There is a clear distinction between the residential areas within the Museum District and the industrial large buildings of Scott's Addition. The potential infill could provide more commercial and residential mixed uses while generating a large tax base from the vacant parcels. The potential infill could produce a higher density within the study area. As the proposed figure ground shows, there would be less vacant parcels used for surface parking lots and a greater use of land.

Scott's Addition would benefit greatly from additional infill. There would be a greater use of land, new buildings would attract a mix of businesses and residents to the neighborhood.

The Museum District would also benefit from infill of vacant parcels. Currently, vacant parcels are being under utilized. Infill of these vacant parcels could act as a buffer, as high density moves from the Broad Street Corridor into the single-family residential area.

The intersection of Broad and Boulevard have allowed for a larger mix of single-story buildings. Infill would complement the existing buildings and character of the area but allow for growth to occur in areas that could support the need.

MAP 2.2 PROPOSED FIGURE GROUND WITH SIGNIFICANT INFILL



GOALS & OBJECTIVES

Goal 1: Create a Distinctive Broad Street Corridor

Objective 1.1: Have a distinct focal point on the bend of Broad Street

Objective 1.2: Generate a hub for neighborhood activity centered around the Cleveland Street Pulse station

Objective 1.3: Maintain visual interest and variety by encouraging buildings that emphasize vertical proportions

Objective 1.4: Preserve significant existing structures

Objective 1.5: Leverage the Cleveland Street Pulse Station to facilitate a north/south connection between the neighborhoods



 $CONCEPT \ PLAN \qquad \text{Broad Street, facing west, looking at the intersection of Sheppard Street}$



EXISTING CONDITIONS

35

Objective 1.1: Have a distinct focal point on the bend of Broad Street



CONCEPT PLAN Broad Street, facing north-west, with Altamont Street to the north and Wayne Street to the south

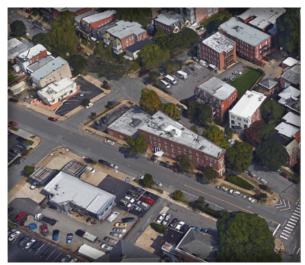
Placemaking has a critical role in defining Broad Street as a corridor, and the triangle parcel presents a unique opportunity as it sits on a bendin the street.

By placing a distinct, fantastic building on this parcel with public art and space in the narrow area, bus riders and pedestrians will be able to identify this spot as the Cleveland Street Pulse Station on the Broad Street Corridor.

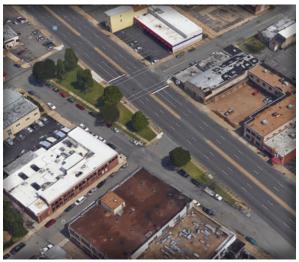


EXISTING CONDITIONS

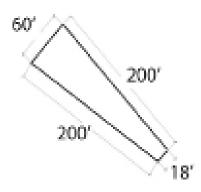
Objective 1.1: Have a distinct focal point on the bend of Broad Street



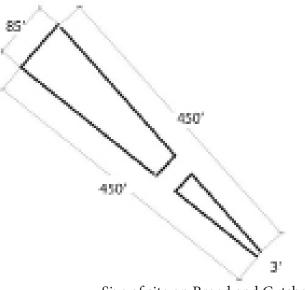
Park Place at Park Avenue and Boulevard



Triangle Parcel at Cutshaw Ave and Broad St



Size of building at Park Place



Size of site on Broad and Cutshaw

CLEVELAND STREET CONNECTION

Objective 1.2: Generate a hub for neighborhood activity centered around the Cleveland Street Pulse Station





EXISTING CONDITIONS

Broad Street, facing south-east, at the terminated vista of Cleveland Street CONCEPT PLAN

Placemaking is a pivotal part of creating a distinctive Broad Street Corridor, and generating a hub of neighborhood activity will further this goal. A rider gets off the bus to see a distinct 24-hour coffee shop, clearly designating the arrival at the Broad Street Corridor and Cleveland Street Station. With businesses that peak at different times of the day, the Cleveland Street Station will be active and become a destination.

Objective 1.3: Maintain visual interest and variety by encouraging buildings that emphasize vertical proportions



CONCEPT PLAN Broad Street and Boulevard, facing north-west

In defining the space as distinctly the Broad Street Corridor, the buildings will need to reflect this sense of space. At the pedestrian scale, it is important to incorporate visual breaks every 20 to 40 feet.

While buildings may extend longer than this, a change in texture, color, or structure should occur to break the space up and signify a sense of place. These vertical proportions should extend the height of the building so that they can be visible from a distance.



EXISTING CONDITIONS

Objective 1.4: Protect significant exisiting structures



CONCEPT PLAN Broad Street, facing east, at the terminated vista of MacTavish Avenue

There are elements of the Broad Street Corridor that currently denote a sense of place, such as the WTVR-TV station and antenna. These significant existing features, represented as tan in this photo, will be preserved. This can be either through new development on the buildings by vertically integrating a distinct shift in architectural styles. Protecting these significant existing structures will further strengthen the sense of place experienced on the Broad Street Corridor.



EXISTING CONDITIONS

Objective 1.5: Leverage the Cleveland Street Pulse Station to facilitate north/south connections between the neighborhoods



CONCEPT PLAN Altamont Avenue, facing south, at the terminated vista of Cutshaw Avenue

The redevelopment of the Broad Street Corridor presents an opportunity to break the historical north/south divide along Broad Street. The Cleveland Street Pulse Station can serve as a natural transition between the two neighborhoods, with open air buildings making a natural path for bikers and pedestrians to use.

In addition, the improved street crossings around the Cleveland Street Pulse Station will ensure that the transition from one neighborhood to the other happens smoothly.



EXISTING CONDITIONS

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Goal 2: Create a Walkable Environment

Objective 2.1: Make a reason to walk by incorporating a variety of vertical uses that transition with the season

Objective 2.2: Make a comfortable and safe walk by providing a sense of enclosure and encouraging interaction between the public and private realm

Objective 2.3: Make an interesting walk by encouraging interaction with public art, landscape improvements, and business activity



CONCEPT PLAN Intersection of Cutshaw Avenue and Broad Street, facing west

Through the use of public art, landscape improvements and business activity residents and customers of the Cleveland Street Pulse Station will engage in economic activity along the Broad Street Corridor.

The area will evoke character and place making where people are drawn towards the activity.



EXISTING CONDITIONS

Objective 2.1: Make a reason to walk by incorporating a variety of vertical uses that transition with the season



Broad Street, facing east, at the terminated vista of Cleveland Street CONCEPT PLAN



EXISTING CONDITIONS

To create a walkable environment, there needs to be reasons to walk. Generating trips to and from locations through the seasons is critical to achieving this. The Broad Street Corridor achieves this by mixing uses vertically.

With commercial uses on the first floor and residential uses above, walking trips are generated for different reasons and at different times of the day. A winter garden and rain gardens allow this variety throughout the year.

43

Objective 2.2: Make a comfortable and safe walk by providing a sense of enclosure and encouraging interaction between the public and private realm



CONCEPT PLAN Broad Street, facing east, at the terminated vista of Tilden Street

The increased building height, buildings flush to the sidewalk, and street trees along the Broad Street Corridor will create a feeling of enclosure. This makes the walk more comfortable. In the neighborhoods, new buildings projects should incorporate sidewalk and street trees to encourage safe, walkable environment.

To make the walk safer, interaction between the public and private realm provides a sense of natural surveillance. Street cafes and transparency on the first floor are ways to increase this interaction.



EXISTING CONDITIONS

Objective 2.3: Make an interesting walk by encouraging interaction with **public art**, landscape improvements, and business activity



Broad Street, facing south-west, at the intersection of Cutshaw Avenue CONCEPT PLAN



EXISTING CONDITIONS

Public art will be an important component of making the area an interesting place to walk and to encourage a sense of place. The triangle parcel serves as a unique opportunity to showcase pieces of public art, such as a chalkboard instillation or sculpture, that define the space as distinct to the Cleveland Street Pulse Station and highlights the bend in W. Broad Street.

The emphasis on interactive public art develops an active public realm, allowing people to watch other people as well.

45

Objective 2.3: Make an interesting walk by encouraging interaction with public art, **landscape improvements**, and business activity



CONCEPT PLAN MacTavish Street, facing north-west, between W Marshall and W Clay Streets

Landscape improvements, from street trees to individual pocket parks, serve a dual purpose by providing neighborhood amenities and by promoting the public realm. Street trees provide visual breaks and variety in the landscape.

Pocket parks, such as the one pictured above, provide an opportunity to generate walking trips, interact with others, watch others, or simply to walk past an interesting and dynamic space.



EXISTING CONDITIONS

Objective 2.3: Make an interesting walk by encouraging interaction with public art, landscape improvements, and **business activity**



Broad Street, facing east, at the terminated vista of Cleveland Street CONCEPT PLAN



Finally, in order to make it an interesting walk, business activity will sustain the private realm and engage the public realm. The transparency in the windows of first floor businesses break down the barrier between the public and private realm, allowing pedestrians to view products on their walk.

Sidewalk cafes provide an inviting and friendly environment for potential diners and allow them to watch pedestrians while they dine.

EXISTING CONDITIONS

Goal 3: Preserve the historically industrial character of the Scott's Addition community while encouraging the organic growth currently occuring there



CONCEPT PLAN Intersection of MacTavish Avenue and Clay Street, facing south-west

Developing Scott's Addition will require a deft touch in order to maintain its current industrial structure and utilize its strength of large parcels.

The large lots allow for vertical growth that can incorporate the unique industrial architecture while allowing for a modern edge.

The vertical growth can incorporate a variety of uses from retail businesses on ground level and office spaces and residential units as the building extends upward.



EXISTING CONDITIONS

Goal 4: Enhance and preserve the Museum District through selective infill opportunities



Cutshaw Avenue, facing south-west, between Sheppard Street and Wayne Street to the south CONCEPT PLAN



The Museum District will preserve the majority of its established homes, duplexes, and apartment buildings, as they are historically and architecturally significant. On some of these lots, in the back, the extra story added to a garage could provide affordable housing and income opportunities for homeowners.

The addition of carefully selected 3-story to 4-story mixed-use buildings with retail spaces provided on first floor can increase neighborhood amenities along Cutshaw Avenue and provide appropriate transition from the denser Broad Street Corridor.

EXISTING CONDITIONS

Goal 5: Provide a clear set of standards to drive and direct development in a way that complements the nature of each neighborhood

Objective 5.1: Create a set of recommendations to supplement the zoning

Objective 5.2: Reflect the unique and established characteristics of the Museum District and Scott's Addition and reinforce their current sense of place



Concept Plan

Intersection of Marshall Street and Sheppard Street, facing south-west

A clear set of standards will establish a heirarchy of commercial cores in the region, making the Cleveland Street Pulse Station one of the most important cores in the Richmond area. It will act as the gateway from the the West End to Richmond's business centers.

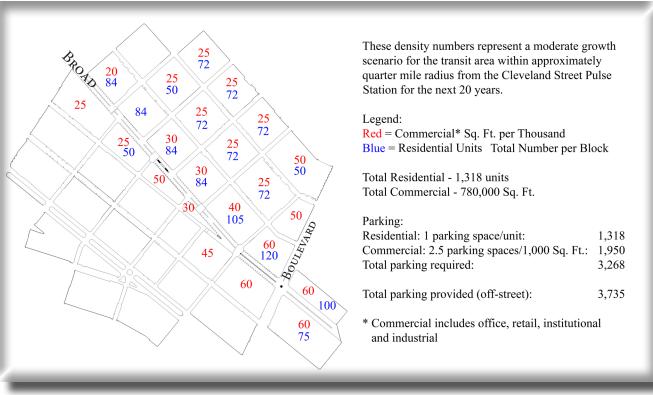
The standards will ensure there is a central meeting place by the Station and the creation of more public space and enclosure to serve areas residents.



EXISTING CONDITIONS

PARKING REQUIREMENTS

MAP 2.3 PARKING REQUIREMENTS



Parking requirements are reduced because the land is adjacent to the BRT line which is expected to accommodate an increasing share of trips over the next 20 years as the Richmond Regional Transit System matures and the ridership preferences shift.

TOD.ORG recommends setting maximum parking restrictions not minimums and to let the market place determine the actual amount of parking provided.

PARKING REQUIREMENT SOURCE: Ming Zhang, Katie Mulholland, Jane Zhang, and Ana J. Gomez-Sanchez. "Getting the Parking Right for Transit-Oriented Development", Center for Transportation Research University of Texas at Austin, Austin, TX, 2012.

CLEVELAND STREET CONNECTION

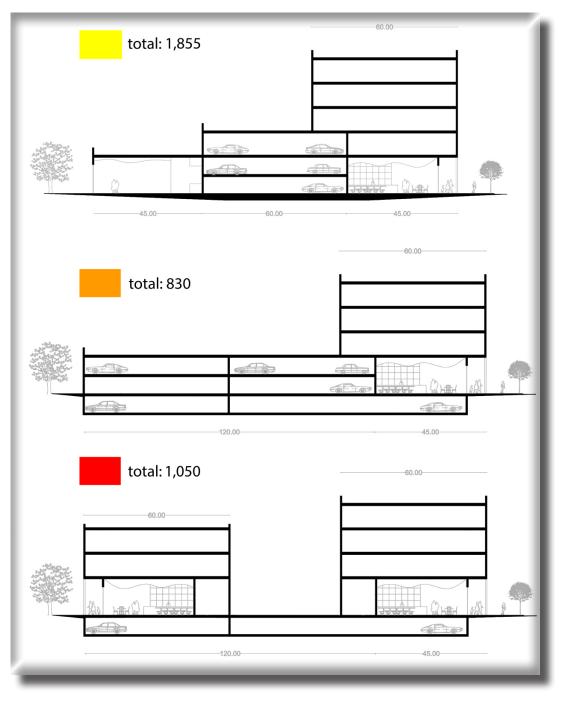
Parking Plan

The image above demonstrates a parking plan for planned parking garages which utilize both above ground and under ground garage space. Parking is spread out evenly across the neighborhood.

Yellow indicates a three-story parking deck with 1,855 above ground spots. This configuration allows for retail on both sides of the block with the entrance to the garage on the smaller side streets.

Orange indicates a one level underground, and two-story above ground, parking deck for a total of 830 spots. This configuration only allows for retail on one side of the block, but it incorporates more parking underground. The entrances for this garage would be on either the side streets or back of the block.

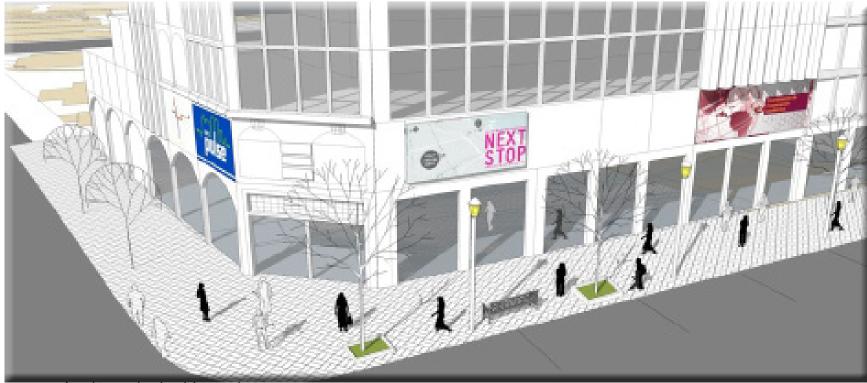
Red indicates a one level underground parking deck with 1,050 spots. This configuration allows for retail on both sides and no above ground parking. Entrances for this garage are located off of the side streets.





Map 2.4 Parking Plan

ZONING REEVALUATION



Intersection of Broad Street and Boulevard, facing south-west

<u>The purpose of this reevaluation</u> is to allow a safe, comfortable and interesting environment around the Cleveland Street Pulse Station. It will encourage higher density residential development than what is currently in the area, adding to the amount of potential BRT riders in a quarter-mile radius, as well as commercial development which will be a potential attraction for BRT riders and residents of the surrounding neighborhoods. There will be flexibility within this district allowing for multiple uses and building types within the different neighborhoods. This will allow developers to build more freely, working only within guidelines that will dictate building form in order to achieve the primary objective of creating a vibrant mixed use district along the Cleveland Street Pulse Station. <u>Permitted Building Types</u> describes specific forms, heights, setbacks, and designs of buildings. They are specific to neighborhoods in the study area, and each type of building has strengths that it brings to the goals of each neighborhood. Examples of each are provided.

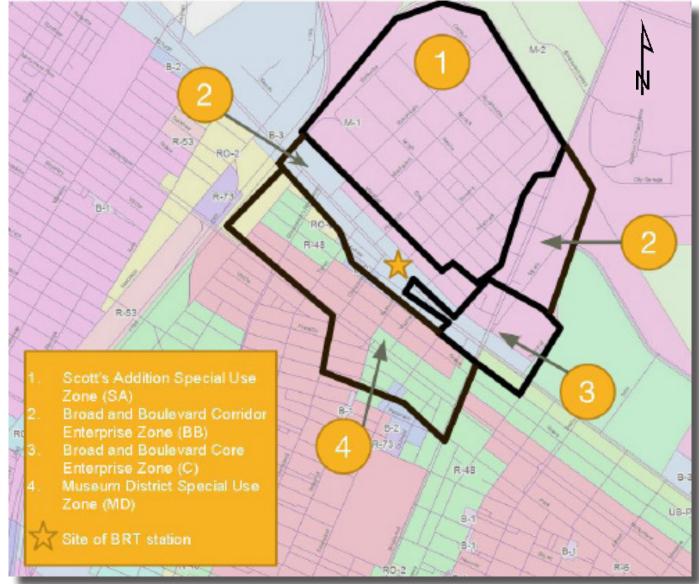
<u>Proposed Zoning Regulations</u> details four zones for the study area, their permitted building types, and their permitted zoning.

<u>Permitted Zoning</u> highlights the current City zoning codes that will be permitted in this area. They include permitted auxillary uses and structures, setbacks, heights, and other specifications unique to each kind of land use. The Appendix has specifics on zoning.

PROPOSED ZONES

ZONING REEVALUATION





This map shows the areas for the proposed zoning. The star represents the site of the Cleveland Street Pulse Station. The following section outlines both permitted building types and permitted underlying zoning for each zone.

Zone 1: Scott's Addition Special Use Zone

The Scott's Addition Special Use Zone allows for industrial uses to be incorporated throughout residential, mixed-use, commercial, and single-family uses. Additionally, the Zone permits a variety of zoning codes. The flexibility in the Zone will allow the organic growth that is currently occuring in Scott's Addition to continue, while ensuring that the unique mix of industrial and other uses is permitted by right. It also seeks to create unique buildings to allow aesthetic value to the neighborhood.



Permitted Building Types	Permitt
Scott's Addition Industrial	M-1
Scott's Addition Residential	B-2
Museum District Mixed-Use	B-4
Museum District Multi-Family	B-6
Museum District Single Family	C-4
Roseneath Residential	R-2
Roseneath Commercial	R-6
Roseneath Industrial	

ted Zoning

See Appedix for description of zoning categories

SCOTT'S ADDITION BUILDING FORM

One of the most important values identified while completing this project was keeping the streetscape interesting to pedestrians. An obstacles to this area is buildings take up the whole block, eliminating any chance for variance along the road. These buildings maximize surface area which can be lucrative to developers in the short term. However, these mundane buildings tend to lead to humdrum areas which are less vibrant and have lower property values.

To prevent these types of buildings and encourage construction of a unique and diverse urban landscape, the proposed building restrictions throughout Scott's Addition. The restrictions are as follows.

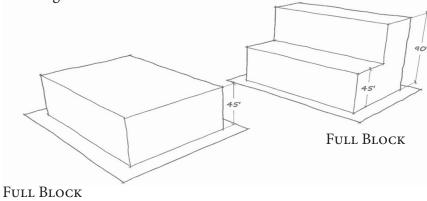
1. When developing a building on a full block parcel, there will be varying height limits.

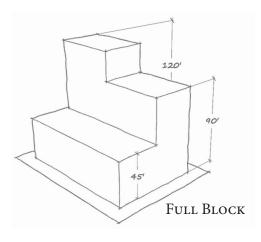
25% of the building may be up to 120' 25% of the building may be up to 90' 50% of the building may be up to 45'

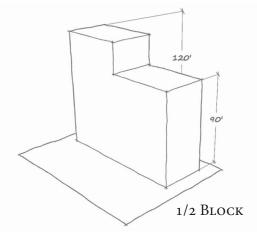
2. When developing a building on a quarter block to half block parcel there will be varying height limits.

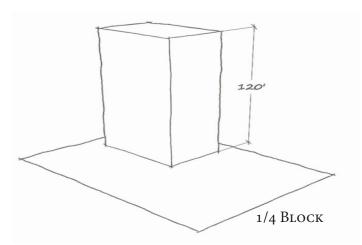
50% of the building may be up to 90' 50% of the building may be up to 120'

3.When developing a building on a quarter block parcel or less there will be a 120' height limit.









CLEVELAND STREET CONNECTION

Zone 2: Broad and Boulevard Corridor Zone

Located to include the proposed Cleveland Street Pulse Station, this district is much more like the core except it does not have as much vertical emphasis as its neighbor, and it will focus more on public spaces, such as the proposed winter garden. With a maximum height of 60' feet, the new buildings built along Broad and Boulevard will provide a welcomed sense of safety and enclosure to the two streets. Similar to the core, any developer that grants public use in that of outside art or ground floor use will be granted a 20% density bonus.



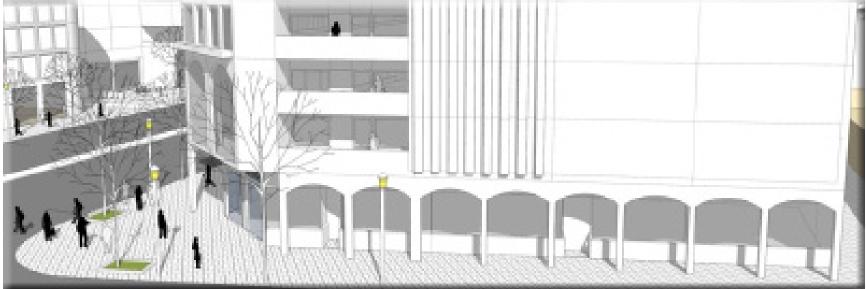
Intersection of Cutshaw Avenue and Wayne Street, facing south-west

Permitted Building Types	Permitted Zoning
Corridor Apartment	B-5
Corridor Office	B-6
Corridor Mixed-Use	
Chamfered Corridor	
Roseneath Commercial	

Roseneath Residential

Zone 3: Broad and Boulevard Core Zone

The core will be located on the intersections of W. Broad Street and N. Boulevard. Buildings up to 80 feet tall with chamfered corners will be permitted to be built in this core district. There will also be encouraged public use on the ground floor of these buildings and developers who do so will be compensated with a 20% density bonus on their structures. This district will act as the "downtown" district of the city west of Boulevard.



Intersection of Broad Street and Boulevard, facing north-west

Permitted Building Types	Permitted Zoning
Core Apartment	B-5
Core Mixed-Use	B-6
Core Office	
Chamfered Core	
All Permitted Corridor Buildings	

Zone 4: Museum District Special Use Zone

The zoning of the Museum District is done with the intention of keeping the neighborhood the same with 2 exceptions: to encourage the construction and adaptive reuse of current structures into Granny Flats and to encourage infill structures. Granny flats will benefit this neighborhood by increasing affordable housing in the city as well as giving property owners opportunities to create additional sources of income for themselves.



Intersection of Cutshaw Avenue and North Belmont Avenue, facing south-west

Museum District Single Family

Permitted Building Types	Permitted Zoning
Scott's Addition Residential	R-2
Museum District Mixed-Use	R-6
Museum District Multi-Family	

KEY TO USES AND TERMS

ZONING REEVALUATION

The following permitted building types highlight the types of buildings that may exist in the area. They are named by the neighborhood that their character is closely identified with, but the structures may be allowed in other sections of the study area. This is indicated by the "Permitted In" section of each chart.

There is a key for the districts that each building would be permitted to be in and a key for each of the characteristics that would be regulated in the Special Use Zone.

SPECIAL USE ZONE ABBREVIATIONS

Scott's Addition	SA
Broad-Boulevard Corridor	BB
Commercial Core	С
Museum District	MD

CHARACTERISTICS TO BE REGULATED IN EACH SPECIAL USE ZONE

Maximum Permitted Height	Highest height permitted on building
Ground floor max height	Highest floor to ceiling height on the ground floor
Above ground floor max height	Height floor to ceiling height on floors above the ground floor
Min. ground transparency	The minimum ratio of building facade that is dedicated to window space on the ground floor
Min. non-ground transparency	The minimum ratio of building facade that is dedicated to window space on the upper levels of the structure
Max. Setback	The furthest away from the curb the building foundation can be located
Facade	Recommended types of items to build the structure's visible facade out of
Required parking spaces	Number of parking spaces that the building requires
Permitted in	The overlay districts where the building is allowed to be constructed

PERMITTED BUILDING TYPES

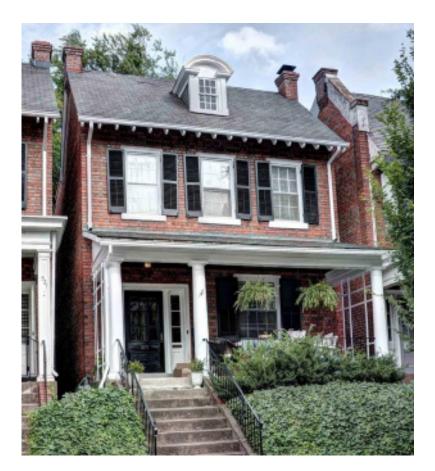
ZONING REEVALUATION

MUSEUM DISTRICT SINGLE FAMILY RESIDENTIAL

Preserve and enhance existing neighborhood structure and value



Maximum Permitted Height	40' (2.5 story)
Ground floor max height	16'
Above ground floor max height	12'
Min. ground transparency	50%
Min. non-ground transparency	30%
Max. Setback	10'
Facade	Brick
Required parking spaces	2 behind
Permitted in	MD, SA



MUSEUM DISTRICT GRANNY FLAT

Economic opportunity for homeowner, affordability for tenant, and added density appropriate for community.



Maximum Permitted Height	25' (1.5 story)
Ground floor max height	15'
Above ground floor max height	12'
Min. ground transparency	10%
Min. non-ground transparency	25%
Max. Rear Setback	5'
Facade	Brick
Required parking spaces	1 side, 1 back
Permitted in	MD



MUSEUM DISTRICT MULTI-FAMILY RESIDENTIAL

Highest and best use of property near the Cleveland Street Pulse station, with the appropriate height for the neighborhood.



Maximum Permitted Height	50' (3 story)
Ground floor max height	20'
Above ground floor max height	15'
Min. ground transparency	60%
Min. non-ground transparency	40 %
Max. Setback	10'
Facade	Brick, Stucco
Required parking spaces	1.5 / unit behind or street
Permitted in	MD, SA



MUSEUM DISTRICT CORNER STORE

Create transition between Museum District and the Broad Street Corridor. Create a reason and an interesting walk.



Maximum Permitted Height	30' (2 story)
Ground floor max height	15'
Above ground floor max height	15'
Min. ground transparency	60%
Min. non-ground transparency	30%
Max. Setback	10' setback
Facade	Brick
Required parking spaces	1 street
Permitted in	MD, SA



CORRIDOR MIXED-USE APARTMENT BUILDING

Create sense of enclosure on the corridor, provide commercial uses on the first floor, and allow for higher residential population to use the Cleveland Street Pulse Station.



Maximum Permitted Height	60' (4 story)
Ground floor max height	20'
Above ground floor max height	14'
Min. ground transparency	70%
Min. non-ground transparency	50%
Max. Setback	10'
Facade	Brick, Stucco
Required parking spaces	1 / unit in garage or behind building
Permitted in	BB, C



CORRIDOR OFFICE BUILDING

Create sense of enclosure on the corridor, and allow for a higher percentage of working population to use the Cleveland Street Pulse Station.



Maximum Permitted Height	60' (4 story)
Ground floor max height	20'
Above ground floor max height	14'
Min. ground transparency	80%
Min. non-ground transparency	60%
Max. Setback	15'
Facade	Brick
Required parking spaces	2.5 / 1000 sg ft in garage or behind building
Permitted in	BB, C
Ground floor public use*	Required



CORRIDOR MIXED-USE BUILDING

CREATE SENSE OF ENCLOSURE ON THE CORRIDOR, CREATE PEDESTRIAN FRIENDLY FEATURES, AND ALLOW FOR HIGHER RESIDENTIAL POPULATION TO USE THE CLEVELAND STREET PULSE STATION.



Maximum Permitted Height	60' (4 stoгy)
Ground floor max height	20'
Above ground floor max height	14'
Min. ground transparency	80%
Min. non-ground transparency	60%
Max. Setback	15'
Facade	Brick
Required parking spaces	2.5 p/ 1000 sq. ft in garage, underground or behind building
Permitted in	BB, C
Ground floor public use*	Required



CHAMFERED CORRIDOR BUILDING

Create a space at intersections. Enhance commercial activity.



Maximum Permitted Height	60' (4 story)
Ground floor max height	20'
Above ground floor max height	14'
Min. ground transparency	80%
Min. non-ground transparency	60%
Max. Setback	15'
Facade	Chamfered
Required parking spaces	2.5 / 1000 sq ft in garage, underground or behind building
Permitted in	BB, C
Ground floor public use*	Required

CORE APARTMENT BUILDING

Create a focal point in the neighborhood and strong sense of place at the intersection of Broad and Boulevard.



Maximum Permitted Height	80' (6-8 story)
Ground floor max height	20'
Above ground floor max height	14'
Min. ground transparency	70 %
Min. non-ground transparency	50%
Max. Setback	10'
Facade	Brick
Required parking spaces	1.5 / unit in garage, underground or behind building
Permitted in	С

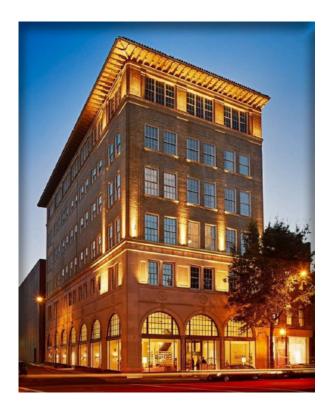


CORE MIXED-USE BUILDING

Create a focal point in the neighborhood and strong sense of place at the intersection of Broad and Boulevard.

Maximum Permitted Height	80' (6-8 story)
Ground floor max height	20'
Above ground floor max height	14'
Min. ground transparency	80%
Min. non-ground transparency	60%
Max. Setback	10'
Facade	Brick
Required parking spaces	1 / 1000 sq ft in garage, underground or behind building
Permitted in	С
Ground floor public use	Required





CHAMFERED CORE BUILDING

Create a focal point in the neighborhood and strong sense of place at the intersection of Broad and Boulevard.



Maximum Permitted Height	80' (6-8 story)
Ground floor max height	20'
Above ground floor max height	14'
Min. ground transparency	80%
Min. non-ground transparency	60%
Max. Setback	10'
Facade	Chamfered
Required parking spaces	2.5 / 1000 sq ft in garage, underground or behind building
Permitted in	С
Ground floor public use	Required



SCOTT'S ADDITION INDUSTRIAL BUILDING

PRESERVE AVAILABLE INDUSTRIAL LAND FOR INDUSTRIAL USES THAT ARE COMPATIBLE WITH THE RESIDENTIAL AND MIXED-USE ENVIRONMENT.



Maximum Permitted Height	30' (2.5 story)
Ground floor max height	25'
Maximum Storeys	1 (2 if split)
Min. ground transparency	60%
Min. non-ground transparency	30%
Max. Setback	10'
Facade	Brick
Required parking spaces	2.5 / 1000 sq ft in garage or behind building
Permitted in	SA



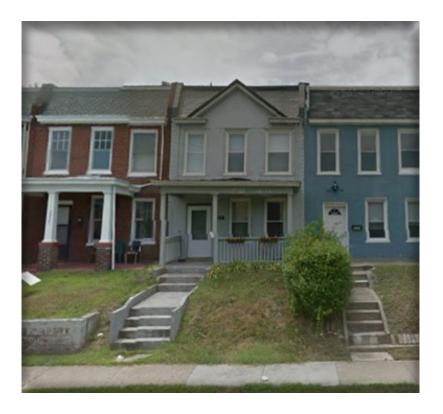
SCOTT'S ADDITION RESIDENTIAL

Allow ongoing adaptive reuse of existing industrial structures to preserve the strong sense of place in Scott's Addition.



Maximum Permitted Height	120'* (8 story)
Ground floor max height	25'
Min. ground transparency	60%
Min. non-ground transparency	30%
Max. Setback	10'
Facade	Brick
Required parking spaces	1.5 / unit in garage, underground or behind building
Permitted in	SA

*Depending on the amount of space taken up on the block; see p. 56 for details



SCOTT'S ADDITION ROSENEATH RESIDENTIAL

Allow for organic residential development to continue along the Roseneath corridor in Scott's Addition. Creates a "main street" in Scott's Addition.



Maximum Permitted Height	120'* (8 story)
Ground floor max height	25'
Min. ground transparency	60%
Min. non-ground transparency	30%
Max. Setback	10'
Facade	Brick
Required parking spaces	1.5 / unit in garage, underground or behind building
Permitted in	SA



*Depending on the amount of space taken up on the block; see p. 56 for details

SCOTT'S ADDITION ROSENEATH COMMERCIAL

Allows for ground floor public use/transparency, while replicating the industrial character of Scott's Addition.



Maximum Permitted Height	120'* (8 story)
Ground floor max height	25'
Min. ground transparency	60%
Min. non-ground transparency	30%
Max. Setback	10'
Facade	Brick
Required parking spaces	2.5 / 1000 sq ft in garage, underground or behind building
Permitted in	SA
Ground floor public use	Required

*Depending on the amount of space taken up on the block; see p. 56 for details



SCOTT'S ADDITION ROSENEATH INDUSTRIAL

Allow existing industrial buildings located along Roseneath Street to continue their industrial use.



Maximum Permitted Height	120'*
Ground floor max height	25'
Min. ground transparency	60%
Min. non-ground transparency	30%
Max. Setback	10'
Facade	Brick
Required parking spaces	2.5 / 1000 sq ft in garage, underground or behind building
Permitted in	SA

*Depending on the amount of space taken up on the block; see p. 56 for details



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Implementation Table

Goals	Objectives	Rationale	General Steps	Timeline
	Objective 1.1: Make a	To create a walkable environment, there needs to be reasons to walk. Generating trips to and from locations through the seasons is critical to	1. Amend zoning to allow for commercial, mixed us a development	0-2 years
	reason to walk by in corporating a variety of vertical uses that transition	achieving this. The Broad Street Corridor achieves this by mixing us as vertically. With commercial us as on the first floor and residential us as above, walking trips are generated for different reasons	2. Encourage the development of uses that would attract pedestrian traffic	0-20 years
	with the sees on	and at different times of the day. A wintergarden and rain gardens allow this variety throughout the year.	3. Allo care Capital Improvements program to fund streets cape Improvements	1.5-3 years
		The increased building height, buildings flush to the sidewalk, and street trees along the Broad Street Corridor will create a feeling of enclosure. This makes the walk more comfortable. In the neighborhoods, buildings flush to the sidewalk	1. Amend zoning to ellow for increased building height and recommended setbacks and design guidelines	0-2 years
	Interaction between the public and private real m	and street trees will also encourage this feeling. To make the walks afer, interaction between the public and private realm provides as ense of	2. Solicit potenti al street vendors to increase walking destinations	0-2 years
Goal 1: Create a Walkable Environment		Public art will be an important component of making the area an interesting place to welk and to an courage as ense of place. The triangle parcel serves as a unique opportunity to show cas e pieces of public art, such as a chelkboard instillation or sculpture, that define the space as distinct to the Cleveland Street Station. The emphasis on interactive public art develops an active public realm, allowing people to watch other people as well.	1. Encourage City Public Art Commission to prioritize and selects ites within the Clevel and Station are a and along the BRT route	0-2 усал
	Dbjective 1.3: Make an interesting walk by encouraging	Lands cape improvements, from street trees to individual pocket parks, serve as a dual purpose by providing neighborhood amenities and by promoting the public realm. Street trees provide	1. Allocate Capital Improvements program to fund streets cape Improvements	0-2 years
	Interaction with public arr, lands cape improvements, and business activity	visual breaks and variety in the landscape. Packet parks, such as the one pictured above, provide an opport unity to generate walking trips, interact with others, watch others, or simply to walk pest		0-2 years
		Finally, in order to make it an interesting walk, business activity will be ster the private realm. The transparency in the windows of first floor businesses break down the barrier between the	 Evaluate and amend zoning ordinance, where applicable, to encourage and support commercial and retail development 	0-2 усал
		public and private realm, all awing pedestrians to view products on their walk Sidewalk cafes provide an inviting and friendly environment for potential diners and allow them to watch pedestrians while they dine.	 Consider implementing an overlay district for the Broad St. Corridonto maintain and enhance the architectural integrity of the corridor 	0-2 years

	neighborhood a crivity centered around the Clevel and Street Pulsestation	hour coffee shop, clearly designating the arrival at the Broad Street Corridor and Clevel and Street Station. With business as that peak at different times of the day, the Clevel and Street Station will be active and become a destination.	Enterprise Zone 3. Am end zoning to allow for increased building density from the intersection of Broad and	D-2 years
	Objective 2.2: Maintain visual interest and variety	In defining the space as distinctly the Broad Street Corridor, the buildings will need to reflect this sense of space. At the pedestrian scale, it is important to incorporate visual breaks every 20	Boulevard to the Cleveland Street Station 1. Amend zoning to encourage recommended zoning vertical proportions and scale	D-2 years
Goal 2: Create a Distinctive Broad Street Corridor	by an couraging buildings that emphasize vertical proportions	to 40 feet. While buildings may extend longer than this, a change in texture, color, or structure should occur to break the space up and connotate a sense of place. These vertical proportions should extend the height of the buildings othat	2. Consider implementing an architectural design overlay to support recommended design guidelines	D-2 yeara
	Objective 2.3: Preservesignificant existing structures	There are elements of the Broad Street Corridor that currently denote a sense of place, such as the WTVR-TV station and antenna. These significant existing Figures, represented in tan in the photos, will be preserved. This can be either through no new development on the buildings or by vertically developing on the building with a distinct shift in architectural style. Protecting these significant existing structures will further strengthen the sense of place experienced on the Broad Street Corridor.	3. Promote tax abatement incentive program within historic districts	0-2 ye ars
	Objective 2.4: Leverage the Clevel and Street	S Ded Street Lorrigor.	3. Identifysites on Broad St. that are appropriate for terminated vistas	D-2 years
	Station to facilitate a north/south connection between the neighborhoods		2. Adopt an overlay district that encourages recommended design guidelines	0-2 ye ara
Goal 3: Preserve the historically industrial character of the Scott's Addition community while encouraging the organic growth currently		Developing the neighborhood of Scott's Addition to maintain its current industrial structure and utilize its strength of large parcels will require a mix of new development and preserving existing structures and uses.	 Am end coning to allow for a mix of industrial, commercial, and residential development 	D-2 ye ara

CLEVELAND STREET CONNECTION

		To create a walkable environment, there needs to	1. Amend zoning to allow for a mα of industrial, commercial, and residential development	0-2 years
Goal 4: Enhance and preserve the Museum District through selective infili opportunities		be reasions to wolk. Generating trips to and from locations through the seasons is official to a chieving this. The Broad Street Corridor achieves this by mixing uses vertically. With commercial uses on the first floor and residential uses above, walking trips are generated for different reasons	2. Encourage infill development through offering incent ives such as accelerated development processing, tax abotements, and design assistance grants	0-2 years
0054		and at different times of the day. A wintergarden and rain gardens allow this variety throughout the year.	3. Specify incentive eligibility to those developments and uses that comply with recommended design standards and uses	0-2 усага
	Objective 5.1: Endify regulations that create an urban lands cape around the BRT station.	Create an appealing pedestrian friendly aesthetic	1. Create and publish design and development overlay standards, creating four overlay districts for Musieum District, Scott's Addition the Broad/Blvd corridor and the Core intervection	0-2 years
	Objective 5.2: Increase residential		1. Amend zoning to allow forgranny flats to be built stop of auxiliary buildings	0-2 years
Goal 5: Provide a clear	dersity in Museum District community while preserving integrity of the	Increased density that is appropriate for the community. Allows for mixed-income development and owner income increase	2. All owfor cornerstores et intersections to ellow transistion between corridor and Museum District	0-2 years
set of standards to drive and direct development	community		3. All ow for appropriate Infill development	0-2 years
in a way that complements the nature of each neighborhoods	Dbj ective 5.3: Allow For organic development in Scottic Addition while	Increase population to justify BRT station and increase Pulse riders hip. Denser residential and	1. All ownfor R-2, R-6, B-4, B- 5 zoning in the district to minimize special us e permits	0-2 years
	protecting industrial heritage of community	fliexible residential buildings support BRT use.	2. Retain M-1 zoning to allow industrial uses in the neighborhood to opexist with new development	0-2 years
	Dbjective 5.4: Create a centrelshopping care by the station that enabled a holescolu of	Create a central shopping, commerce and retail core without disrupting the main Downtown CBD and nations about an CBDr	Retain the same buildings in core that can be slightly taller to create an interesting environment at the Broed/Blvd intersection.	0-2 years
	commercial districts in the region.			0-2 years

ZONING REEVALUATION

B-4 (Central Business District Commercial)

Maximum Height	N/A
Setback	N/A
Floor area ratio max	6.0
Retail	No
Rear/UG parking	Yes
Office	Yes
Cafe space	Yes



B-5 (Central Business District)

Maximum Height	60'
Setback	N/A
Floor area ratio max	6.0
Retail	No
Rear/UG parking	Yes
Office	Yes
Cafe space	No



B-6 (MIXED-USE BUSINESS DISTRICT)

Maximum Height	N/A
Setback	N/A
Floor area ratio max	6.0
Retail	Yes
Rear/UG parking	Yes
Office	Yes
Cafe space	Yes



M-1 (LIGHT INDUSTRIAL)

Maximum Height	45'
Setback	N/A
Floor area ratio max	6.0
Retail	No
Rear/UG parking	Yes
Office	Yes*
Residential	Yes*
Cafe space	Yes*



*By conditional use or special use permit

R-2 (SINGLE-FAMILY RESIDENTIAL)

Maximum Height (Main)	35'
Maximum Height (Aux)	25'
Setback	30'
Side/Rear Yard	9'
Parking	Alley/street
Floor area ratio	0.25



R-6(RESIDENTIALSINGLE-FAMILYATTACHED)

Maximum Height (Main)	35'
Maximum Height (Aux)	20'
Setback	15'
Side/Rear Yard	5'
Parking	Alley/street
Floor area ratio	0.55



PRECENDENT PLANS SOURCES

Chmura Economics and Analytics. (2014) Broad Street Rapid Transit Study Economic Impacts. Greater Richmond Transit Company. Retreived from: http://www.ridegrtc.com/media/news/BRT_Econ_Impacts_FINAL_2014_May.pdf.

Greater Cleveland Transit Authority - RTA. (2012). RTA's HealthLine -- The World-Class Standard for BRT Service. Retreived from: http://www.riderta.com/healthline/about.

Greater Richmond Transit Company. (2015). Application for Design Committee Final Review: GRTC Bus Rapid Transit (BRT) Project Narrative.

Hellendrung, Jason. (2012) Healthline Drives Growth in Cleveland. UrbanLand Magazine. Hook, Walter., et. al. (2013). More Development for Your Transit Dollar. An Analysis of 21st Century North American Transit Corridors.

Port Authority of Allegheny County. (2016). Get There PBH. Accessed January, 2016. http://gettherepgh.org.

US Census. 2010-2014 American Community Survey 5-Year Estimates (Richmond, Virginia; Pittsburgh, Pennsylvania. Accessed January 2016. http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml#.

US Census. 2014 American Community Survey 1-Year Estimates. (Cleveland, Ohio; Cleveland-Elyria MSA). Accessed February 14, 2016. http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml#.