HULL STREET CORRIDOR REVITALIZATION PLAN:
APPENDICES

Prepared for
CITY OF RICHMOND AND CHESTERFIELD COUNTY, VIRGINIA

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CONTENTS

APPENDIX A

Community Engagement Strategies and Findings

Hull Street Revitalization Plan: Community Engagement Strategies and Findings

The Community Engagement Strategies and Findings appendix provides details on the information presented in the Hull Street Plan ***Chapter 2, Community and Stakeholder Outreach***.

1.0 Outreach Strategies

Key outreach strategies for the Hull Street Corridor Revitalization Plan included:

- Steering Committee of area residents and business owners
- Agency Coordination Group (ACG)
- Information booths at community events (English and Spanish)
- Key stakeholder interviews
- Focus groups (English and Spanish)
- Bilingual public meetings
- Bilingual project web site (with on-line survey)

1.1 Steering Committee

The Steering Committee for the Hull Street Plan represented a variety of interests on the corridor, including study area residents and business owners from Chesterfield and Richmond.

The Committee began meeting with City, County and LISC staff beginning in early 2012, and continued with monthly meeting when the consultant team began its work in June 2012. Key meeting dates and topics included:

June 12	Introductions and key corridor issues
August 14	Visioning workshop
September 11	Market, economic, and housing analyses
October 9	Draft land use concepts and presentation for October public meeting
November	Distribution of public meeting findings and request for feedback (no in-person meeting)
December 11	Pre-final plan and recommendations

Figure 1: Marked up land use map from Steering Committee Visioning Workshop

June Steering Committee Meeting

The June Steering Committee meeting was an opportunity for the consultants to meet committee members and present the scope of work to be completed between June 2012 and January 2013. The consultants also shared what they had learned to date, based on site visits and notes from previous Steering Committee meetings. Finally, participants discussed key questions about:

- Existing neighborhood centers
- Opportunity areas for change
- Visual and other cues that reflect poorly on the corridor
- Potential short term actions to change perceptions
- High priority sidewalk needs
- Key stakeholders for engagement during the project

The findings from this meeting are included in the summary in Section 2.0.

August Steering Committee Meeting

The August Steering Committee meeting and visioning workshop began with "browsing" of corridor analysis maps hanging on the walls around the room. Attendees then gathered for introductions and a brief presentation of issues and opportunities, including findings from initial land use, transportation, demographic, economic, and housing analyses. Next, Steering Committee members broke into two workshop groups. Each group gathered around a corridor analysis map and spent about 50 minutes responding to questions about:

- Key corridor issues,
- Changes needed to improve safety and attract new businesses,
- Actions that the City and County should prioritize in order to jumpstart change,
- The locations of current activity centers, and
- Their ideal vision for Hull Street ten years in the future.

In addition to discussing these topics, participants were asked to mark up the analysis maps with responses to the initial analyses and specific recommendations. A moderator at each table took notes and guided the group through the series of questions.

The findings from this meeting are included in the summary in Section 2.0.

September Steering Committee Meeting

The September Steering Committee meeting focused on the economic, market and housing analyses conducted as part of the Hull Street Plan. The consultant presented findings and led a discussion with participants. Several members asked about the ability of the corridor to attract new retail and other development, given its current condition. The economic lead explained that this will continue to be a problem if measures are not taken to improve physical conditions (streetscape and façade improvements, sidewalks, parks, etc.). Another important factor for new development is public school quality. If the City and County do not address these and other key issues, private investment in new development is unlikely. Another key topic of conversation was a steering committee member's recommendation to build on the sports tourism industry beginning to take hold in this area of the City/County. Key findings from this SC meeting are included in the outreach summary in Section 2.0.

October Steering Committee Meeting

The October Steering Committee meeting served as a dry run for the public meeting scheduled for October 23. The project team presented the public meeting PowerPoint and draft meeting agenda. This included a summary of the project process, proposed land use concepts, transportation improvements, economic and market analyses, and housing analysis. It also included the draft survey for use at the public meeting, and a list of the display boards planned for October 23.

Figure 2: Photos from the October 23 Public Workshop

Feedback from attendees was generally positive regarding the corridor concepts and recommendations, and proposed public meeting format. Steering Committee members stressed the importance of telling the public that this plan does not disturb existing residential communities, but is instead designed to enhance them. Attendees also noted stormwater management as an important topic and recommended that one of the information stations at the public meeting focus on low-impact practices that could be applied. Another recommendation was to include a station about existing City and County business improvement programs that are already available to business owners on the corridor. A final concern came from a couple individuals on the committee, but was not supported by most attendees. This concern centered on the naming of the Multi-Cultural Market Center, and whether the title "multicultural" will inappropriately predetermine the uses that come to that location on the corridor. In the end the project team decided to take the title to the public meeting and await response from a larger group at that time. There was no one at the public meeting who voiced this same concern.

December Steering Committee Meeting

The December Steering Committee meeting included a summary of the findings from the October Public Workshop and a presentation of the implementation action plan and matrix. Feedback was positive, with participants stressing the importance of identifying potential funding sources and discussion of how this project's implementation could lead to potential job opportunities for local low-income residents. Participants were urged to spread the word about the Public Open House on January 8.

1.2 Agency Coordination Group

The Agency Coordination Group (ACG) was designed to engage key agencies early in the Hull Street Planning process. In this way, the plan would develop through collaboration and ensure consistency with all agency goals and policies. Additionally, these meetings were an opportunity for the agencies to speak with each other (across department and City/County lines) and share concerns and ideas. ACG department participants included:

- Chesterfield Economic Development
- Chesterfield Multi-cultural Liaison
- Chesterfield Planning
- Chesterfield Transportation
- Federal Highway Administration
- Greater Richmond Transit Company (GRTC)
- Local Initiatives Support Corporation (LISC)
- Richmond Economic Development
- Richmond Office of Multicultural Affairs
- Richmond Pedestrian, Bicycle and Trails Coordinator
- Richmond Planning and Development Review
- Richmond Public Works
- Richmond Workforce Development
- Virginia Department of Transportation (VDOT)
- Virginia Supportive Housing

The City, County and LISC initiated the Agency Coordination Group in early 2012, and the group continued with monthly meetings in June 2012, when the consultant team began its work. Key meeting dates and topics included:

August 14 Introduction, findings from initial analyses, and corridor visioning
September 12 Market, economic, and housing analyses
October 10 Draft land use concepts and presentation for October public meeting
December 12 Pre-final plan and recommendations

August ACG Meeting
The August ACG meeting was an opportunity for the consultants and ACG members to meet each other, and for the consultants to share the project scope and initial analysis findings. It was also a chance for the consultant team to hear from the ACG about important issues for consideration during the planning process, and to understand what the agencies hope to see on the corridor over the short and long terms. Finally, the participants established a communications strategy to ensure that the project team received relevant data and insight from the agency representatives between ACG meetings. Key findings from this ACG meeting are included in the outreach summary in Section 2.0.

September ACG Meeting
The September ACG meeting focused on the economic, market and housing analysis findings. Richmond project staff presented a PowerPoint with the analyses to date and requested feedback and questions from attendees. Key findings from this ACG meeting are included in the outreach summary in Section 2.0.

October ACG Meeting
For the October ACG meeting, consultants presented the draft PowerPoint for the October 23 public meeting, and the proposed agenda, survey, and display boards. Agency representatives were encouraged to participate in the public meeting and invite potential stakeholders. Feedback on the draft meeting materials focused on the way they would be presented to the public. Several ACG members expressed concern that the public would think that the land use and transportation concepts were approved and ready for implementation. They

emphasized that the ideas need further review by technical staff, approval by elected officials, and funding allocations. It will be important for public meeting participants to understand that implementation will be a multi-step process over a potentially long period of time. The group agreed to label all drawings "conceptual" to communicate that they are not final. Also, the presentation would conclude with an explanation of projects already funded (e.g. Hull/Derwent intersection improvements), and potential short-term initiatives.

December ACG Meeting

The December ACG meeting included a summary of the findings from the October Public Workshop and a presentation of the implementation action plan and matrix. Feedback was positive, with participants stressing the importance of identifying potential funding sources, providing feedback on primary responsible parties, and requesting that the key actions to begin the process of change be highlighted at the beginning of the chapter. ACG members continued to review the matrix after the meeting and sent additional comments by e-mail.

1.3 Information Booths at Community Events

The diversity of Hull Street Plan stakeholders, and the project team's commitment to engaging all of these groups, lead to a variety of innovative outreach strategies. The team recognized that many people living and working on the corridor would not actively attend meetings, for many reasons such as limited time, a focus on immediate family needs instead of long-term planning, and uncertainly about government sponsored programs or events. As a result, the team took its messages out to the communities in an effort to engage area residents at family, school, recreation, social service and other likely destinations. Figure 4 lists the events and places that project team members set up information booths and reached out to potential stakeholders.

At each of the events/locations, project team members arranged an information booth with display boards about the project, study area, and corridor challenges. The boards posed questions about how stakeholders currently use the corridor and its services, and how they would like to see conditions change over time. Project team members staffed these booths and actively invited people to

Figure 3: Example of the English and Spanish display boards used at the project information booths

learn about the project. All those manning the booth received flyers for distribution and a list of key questions to ask event participants. The flyers highlighted the project goals and advertised the October 23 public meeting. All informational materials were presented in both English and Spanish, and bilingual speakers were actively manning the booths at all times.

Thousands of project flyers were distributed at the information booths. Additionally, project team members gained valuable insights from participants; these are summarized in the outreach discussion in Section 2.0.

Figure 4. Project Information Booths

Event	Location	Sponsor	Date
Feria de la Oportunidad	Richmond International Raceway	VA Hispanic Chamber	July 28 (Sat.)
National Night Out	St. Augustine Church & Warsham Trailer Park	National Association of Town Watch	August 7 (Tues.)
Pan Asian Career Connect Business Professional Mixer	Nanking Restaurant, Broad Street	Asian Chamber of Commerce	August 22 (Wed.)
Manchester Middle School Back to School Nights	Manchester Middle School	Manchester School	August 28 (Tues.) and August 30 (Thurs.)
Elkhardt Middle School Open House	Elkhardt Middle School	Elkhardt School	September 13 (Thurs.)
Hispanic American Sports Academy Festival	Elkhardt Middle School	Hispanic American Sports Academy	September 23 (Sun.)
Southside Community Service Center Booth	Southside Plaza	Southside Community Service Center	September 17, 20, 24, and 27 (Mon. and Thurs.)
Swaggavation Skate Party	Skateland	Youth Ministry Entertainment	October 14 (Sun.)
Imagine Festival	Broad Rock Park	Richmond Office of Multicultural Affairs	October 20 (Sat.)

1.4 Key Stakeholder Interviews and Focus Groups

Several key stakeholder interviews were scheduled in order to ask targeted questions of specific interest groups represented on the corridor. These included elected officials, homeowner association/civic association presidents, and representatives from various business groups/organizations. Figure 5 presents a list of interviews conducted. About half of the interviews were conducted in person and half over the phone.

Figures 5. Key Stakeholder Interviews

Name	Organization
Councilman Doug Conner	Richmond City Councilman, District 9 (Councilwoman Michelle Mosby will fill this position in 2013)
Supervisor Dan Gecker	Chesterfield Board of Supervisors, Midlothian District
Commissioners Russell J. Gulley and Reuben J. Waller, Jr.	Chesterfield Planning Commissioners (Clover Hill and Midlothian Districts)
Malik Khan	Asian American Society of Central Virginia
Rumy Mohta	Filipino American Association of Central Virginia
Beth Murphy	Director of Virginia Colleges, Bryant & Stratton College
Carol Murray	President, Greater Woodstock Home Owners Association
My Lan Tran	Executive Director, Virginia Asian Chamber of Commerce
Supervisor Art Warren and Dick White (Regional Metropolitan Area Representative)	Chesterfield Board of Supervisors, Clover Hill District
Michael Zajur	Virginia Hispanic Chamber of Commerce

Figure 6: Bilingual project information flyer distributed to businesses and churches on and near the Hull Street corridor

Focus groups can offer a comfortable small-group environment for stakeholders to share questions, ideas, and concerns about a project. For the Hull Street Plan, focus groups were held in both English and Spanish as a way to engage a broad spectrum of stakeholders from the study area. Small group discussions were held at churches, the YMCA, civic association meetings, the local police precinct and a business club meeting. Figure 7 provides a list of the focus and small discussion group meetings. Findings from the focus and small group discussions are noted in the key findings below and included in the outreach summary in Section 2.0.

Figures 7. Focus Groups and Small Discussion Groups

Organizer	Date	Type of Group
Merchants Club of Virginia (Hispanic)	September 4	Presentation and Discussion at monthly meeting
Manchester YMCA (Conversation with youth)	September 10	Focus Group
Richmond Police Department, Second Precinct	September 13	Focus Group
Ramsey Church (Spanish speaking congregation)	September 23	Focus Group (in Spanish)
Sacred Heart Church (Spanish speaking congregation)	September 30	Focus Group (in Spanish)
Southside Civic Association	October 9	Presentation and Discussion at monthly meeting
Richmond District 9 Monthly Meeting (Councilman Conner)	October 23	Presentation and Discussion at monthly meeting

Key findings from the stakeholder interviews and focus groups:

- Investment in the public schools is the best way to promote revitalization and reinvestment in the corridor. When the public sector invests in the school facilities, property values will increase, rental stock will decrease and retail will follow. When the Manchester Middle School is updated or rebuilt (a project not yet funded), the fields/athletic facilities could be designed for shared access by the community and Manchester Middle School students. This is one way to address the need for community facilities in these neighborhoods that are currently underserved.
- Bryant and Stratton College is committed to its location on the Hull Street corridor, however there are a few improvements that the school would like to see over time. For example, public transit/bus service would be extremely valuable for students. Right now it can be challenging for students to get to their required internships from the College campus. The College provides private bus shuttles from downtown Richmond, but this is not sufficient to meet the students' transportation needs. Additionally, the College does not plan to build student housing. As a result, there could be a market for a private developer to build housing within walking distance of the College buildings. Finally, students and staff would enjoy more retail (lunch places, pharmacy, dry cleaning, etc.) within walking distance of the school.
- Concern over the Virginia Department of Transportation (VDOT) dumping area adjacent to the Chippenham/Hull Street interchange. It is important that the Hull Street Plan's recommendations are consistent with the Chesterfield Comprehensive Plan for the area. Additionally, it's important to recognizing "the proffer issues" in Chesterfield. This is a topic that the Board will be discussing soon. Zoning recommendations should take these issues into account.

- The Hey/Derwent realignment project will soon be constructed and the details of this project should be shared at the October 23 public meeting. It's important that people know that things are already happening on the corridor. It's important to get kids off the streets and onto sidewalks and paths. There are open spaces in the area, but they are not easily accessible. Improved greenways and trails can connect the Hull Street residents to these parks and open spaces. There are plans for greenway improvements that are important to integrate with the Hull Street corridor plans. Senior housing on Richmond's south side needs to be improved. Seniors are increasingly not able to care for their homes, but don't want to leave their communities.
- The Hull Street corridor is a place to travel through rather than a destination in itself. It is "bleak and uninspired." The YMCA Youth Focus Group responses were strikingly similar to the feedback received at the adult focus group meetings. All of the kids noted that they would like to ride their bikes on the corridor, but it is not safe right now. Some of the participants cross the street between the Manchester Middle School and YMCA, but said that the crosswalk is too dangerous (too much turning traffic), so they cross mid-block at the median instead.

1.5 Bilingual Public Meetings

The project team organized two large, widely advertised public meetings between June 2012 and February 2013. The first was a public workshop held on October 23 in Richmond and the second was a public open house held on January 8 in Chesterfield.

October Bilingual Public Workshop

The first public meeting for the Hull Street project was held the evening of October 23 at Ramsey Memorial United Methodist Church on Hull Street Road in Richmond. The workshop was structured to most effectively share the project team draft recommendations and receive feedback from attendees. This involved several methods:

- Information stations around the meeting room, each covering a different topic of analysis and recommendations:
    - Enhancing Walking and Biking Conditions on Hull Street
    - Defining Housing and Market Opportunities
    - Improving Stormwater Conditions
    - Creating a Vision for Change (Land use concepts)
    - Business Assistance Information (Programs currently available)
- A PowerPoint presentation of the project process to date and draft recommendations
- A question and answer session
- A survey to be completed and returned before leaving the meeting (and before receiving a soccer ball giveaway)


Figure 8: Photos from the October 23 public meeting (backpack giveaway and dinner preparations)

The meeting was completely bilingual, including translations for all of the display materials, Spanish interpreters at the welcome/check in table and all of the information stations, two PowerPoints displayed alongside one another, simultaneous interpretation for Spanish speakers watching the presentation (using earphones), marked bilingual dinner tables, and surveys in English and Spanish.

The project team used a variety of advertising strategies designed for many different segments of the study area population. In addition to the typical methods for getting the word out, the team carefully selected ***methods to encourage those who would not normally attend*** such a meeting. These methods included:

- Advertisements (flyers, banners, newspaper and radio ads) in English and Spanish and clear notation that the program would be bilingual. Bilingual materials and simultaneous interpretation through earphones.
- Advertising in newspapers and on radio shows that generally cater to specific cultures: African American community, Latino groups, Asian populations, and Caucasian people.
- Outreach and individual invitations (phone and e-mail) for key leaders within the area's different cultural communities.
- Attendance at community events and in-person invitations to the meeting.
- Provision of transportation to the meeting.
- Provision of childcare at the meeting (advertised ahead of time).
- Dinner service (advertised ahead of time).

Figure 9 presents the full list of strategies employed to advertise and encourage attendance at the October public meeting.

Figure 9. Advertising Methods for the October Public Workshop

Paid Media	Target Audience
Richmond Free Press Ads	African-American community
Urban Views Ads	General
Chesterfield Observer Ads	Chesterfield residents in general
Metro Richmond Ads	Latino community
AdWords	Anyone with an IP address on the Hull Street corridor
WCLM Radio Spots	African-American community
Banner Signs (English and Spanish) in 7 locations on the corridor	All Hull Street corridor residents
Public Relations/Earned Media	
Media Alerts (English and Spanish)	All media in the region
PSA Opportunities	General
Hills & Heights Blog	Young adults in the Richmond region
Web Survey (on HullStreet360.com)	Anyone who visits the project web site
Latin Jazz Radio Show (Lou Hidalgo)- on air interview	Latino community
Richmond Mayor's Office Press Release	Richmond media outlets
Outreach	
Flyers (Two-sided: English and Spanish) given away at information booths and focus group meetings	General
Flyers (English and Spanish) with counter stands for corridor businesses to distribute	Patrons of corridor businesses
Notices in church bulletins and announcements from the pulpit (English and Spanish)	Members of churches on the corridor
Letters to Elected Officials (hard copy)	All Richmond Councilors and Chesterfield Board Members
E-Vite	Steering Committee and Agency Coordination Group Members; Anyone who has expressed interest in the project and provided contact information
Social Media (City of Richmond and Chesterfield County social media outlets, including Twitter and Facebook); Chesterfield School System's social media outlets	Social media followers (generally young adults)
On-line Community Calendar Posts (RTD, Richmond.com, RVA Mag, ABC 8, CBS 6, Style, Connect Richmond, Venture Richmond)	General
Giveaways at the Public Meeting(Soccer Balls and Backpacks)	General

Findings from the public workshop were generally very positive and supportive of the draft concepts and recommendations. The survey findings provide an overview of attendee feedback, and are summarized in Figure 10. More detailed meeting findings are presented in the report appendix.

Figure 10. Summary of Survey Findings from the October Public Workshop[1]

Question 1: Of the four Activity Center areas described at tonight's meeting, which do you think you would visit most often?	
Live and Learn	21
Multi-Cultural Market	40
Design/ Health & Wellness	23
Town and Family Entertainment	40
Question 2: Would you like to see more of any of the following uses on the Hull Street corridor?	
Housing	23
Shops	44
Restaurants	49
Community Facilities	45
Parks	42
Other	8
Question 3: If designated bicycle paths are installed along Hull Street, would you or your children likely use them?	
Yes	52
No	10
Question 4: Do you currently walk along Hull Street?	
Yes	20
No	64
Question 5: If sidewalks were installed on Hull Street, would you walk there more often?	
Yes	73
No	10
Maybe	3
Question 6: If bus service were extended into Chesterfield County along Hull Street, would you likely use it?	
Yes	62
No	23
Maybe	1

January Public Open House

The second Hull Street Corridor public meeting was held the evening of January 8 at Manchester Middle School on Hull Street Road in Chesterfield County. This meeting was designed as a public open house in order to give participants an opportunity to study the plans and recommendations at their own pace, and ask individual questions of staff and consultants. Several "stations" were set up in the lobby of the Middle School auditorium displaying findings from the market, economic, housing, and transpiration analyses. Additional "stations" described the overall vision for the corridor, the activity center concepts, and the multi-modal recommendations. A key element of each station was the implementation strategy boards, each of which highlighted several key actions for change.

About mid-way through the open house, the consultants presented a brief summary of the vision recommendations, and a more detailed presentation of the implementation strategies and recommendations. This presentation was followed by a question and answer session. All materials for the open house were in

[1] The PowerPoint for the public workshop was also presented by a project team member at the Richmond District 9 meeting on the same evening, October 23. These survey results include the findings from the public workshop and the District 9 meeting.

English and Spanish, and simultaneous interpretation services were provided during the presentation and question and answer session.

1.6 Bilingual Project Web Site

The project web site, www.hullstreet360.com, was an important element of the Hull Street Plan outreach strategy. Through a strong web presence, the project was able to present itself to a much wider audience. The team was cognizant that not all corridor residents would have access to the internet, but determined that a large percentage would be able to visit the site through use of a computer or mobile phone device.

Figure 11: Bilingual project web site

The project web address linked to an English version of the site; however with a single click the viewer could transition to a Spanish version as well. The Spanish version then functioned exactly like the English version. Background information, display materials, presentations, and upcoming events were continuously updated so that anyone interested in the project could access the latest project information. Contact information for Richmond and Chesterfield project managers was readily available for those with follow up questions or comments about the project. The Spanish version of the web site provided contact information for a Spanish speaking project team member.

A survey (in English and Spanish) was also readily available for completion and submittal on the web site. This survey offered an opportunity for stakeholder to provide feedback, even if unable to attend meetings or preferred to remain anonymous. Over the course of the project, seventeen surveys were submitted on-line. Most of these responses occurred immediately following the October public workshop and January public open house. Survey respondents supported the findings from other methods of outreach, emphasizing the need to beautify the corridor, add trees, improve pedestrian conditions with sidewalks and crosswalks, and improve restaurant and other retail options. Although many of these suggestions were echoes of those heard from the community at other venues, the web allowed people who were unable to attend the in-person sessions to participate in this planning process.

2.0 Summary of Outreach Findings

Through a wide range of outreach strategies, detailed in Section 1.0, the project team gathered the following key findings to guide the development of both a vision and recommendations for ways to implement change in the corridor:

Corridor Strengths

- 360 West Shopping Center
- Skateland
- Ramsey Memorial Church
- Bryant and Stratton College
- Library and Post Office
- Kroger and Don Jose's
- Multicultural population
- Adjacency to Chippenham Parkway

Corridor Challenges and Needs

1. Pedestrian and Bicycle Accommodations
    - Sidewalks: very few sidewalks exist, and where they do exist, they do not connect likely origins and destinations
    - Crosswalks and bike lanes/paths; crosswalks are unsafe where they currently exist
    - Better lighting, reductions in automobile speeds and continuous sidewalk; many people currently walk along the corridor and these improvements would make conditions safer
    - Greenway connection from Pocosham Creek Park, along the creek and across Hull Street
    - Safe pedestrian connection between the YMCA and Manchester Middle School
    - Access through the Chippenham Parkway interchange for pedestrians and bicyclists
    - Pedestrian and bicycle connectivity from the study area to existing or planned park spaces outside the study area. This will be important since this area is underserved by parks and recreation opportunities
    - Current pedestrian destinations:
        - Latin store or Family Dollar
        - Destinations that do not require crossing Hull Street
        - Social services at Southside Plaza
    - Proposed pedestrian destinations:
        - School for children
        - Grocery store
        - Work
        - Just for exercise (seniors like to walk)
    - Trees and shrubs for the planting strips that will not have root systems that lift up the sidewalk over time
    - Definition of maintenance responsibility for the sidewalks and cycle track/bikeway

2. Transit/Bus Service
    - Bus service extension into Chesterfield County, especially to Bryant & Stratton College
    - Redesign of the ditches along the corridor to safely accommodate access to bus stops, bus shelters and signage at the bus stops

- More frequent service to make the service more competitive with the automobile; Respondents only ride the bus if absolutely necessary

3. Roadway Conditions
    - Fewer curb cuts
    - Reduction of the intersection size at Warwick and Hull
    - Better maintenance of roads and shopping centers in order to improve the corridor's "bad neighborhood" image
    - Reconfiguration of signal timing and turning sequences
    - Improved stormwater management to address flooding problems
    - Improved access from side streets onto Hull Street; currently it is too difficult
    - Reconfiguration of the Hey/Derwent intersection
    - Repair potholes
    - Maintain visibility from roadways to businesses while beautifying and greening the corridor

4. Safety
    - Improved pedestrian safety through continuous sidewalks, better lighting, reductions in auto speeds, careful design of left turn lanes to prioritize pedestrian safety
    - Reductions in current crime rates (the Southwood area, in particular, has a reputation for high crime)
    - Pedestrian accommodations in Richmond's current safety improvement project at the Hey/Derwent intersection
    - Safety as the highest priority, with beautification as the second priority

5. Physical Appearance
    - Beautification and vibrancy; currently appears worn out and unattractive
    - More trees and less asphalt
    - Reduction in the number of signs; Improvements to signage uniformity and visibility
    - Elimination of billboards
    - Median landscaping
    - Removal of leftover VDOT debris at Chippenham
    - Improvements to building facades
    - A "Welcome to Chesterfield/Richmond" sign at the Chippenham bridge
    - Movement of power lines behind buildings

Figure 12: Photos from the October 23 public meeting (soccer ball giveaway and childcare offered during the meeting)

6. Housing
    - Rehabilitation of existing multi-family developments
    - Improvements to the large vacant parcel at Warwick; new housing or a park
    - Maintenance of housing affordability even as the area improves; make sure no one is "pushed out"; ensure a variety of housing price points

7. Land Uses
    - Diversification and integration of land uses
    - Mixed-use development allowing pedestrian access to daily services and shopping needs
    - More sit down restaurants (affordability is important)
    - More grocery stores with healthy foods, childcare, playgrounds/youth recreation, and banks
    - Family-oriented destinations (Skateland upgrades, movie theaters, parks)
    - Open space for outdoor recreation (soccer fields, volleyball court, swings and slides)
    - New assisted living, eldercare, and medical facilities
    - Uses reflecting the ethnically and racially diverse population in the study area
    - Attractions for the twenty something population (walkable, mixed-use development)
    - A store selling a little bit of everything (Walmart Garden Store, Wawa, Target, etc.).
    - Fewer auto-oriented shops and repair stations
    - More educational opportunities
    - Business incubator spaces
    - Improved government presence (more than Southside Service Center)
    - Sports tourism businesses/facilities, such as lacrosse or soccer fields. Many athletes are already coming to the area for access to the new Aquatic Center, River City Sportsplex and Cloverhill Sport Complex. Richmond also hosts a variety of races and fitness events each year.

Existing Plans for Reference

Interviews and meetings led to many recommendations regarding plans that the project team would need to reference in developing the Hull Street Plan. These included:

- Chesterfield's Route 360 Corridor Plan (adopted in 1995). County representatives explained that this document should be the foundation for Hull Street Plan land use recommendations. Recommendations should not conflict.
- Hey Road intersection realignment plan in Richmond. This design does not currently include pedestrian accommodations.
- Pocoshock Boulevard plan to extend the street south of Hull Street in Chesterfield. The funding is approved, but the extension is not yet built.
- A possible Technology Overlay Zone near Bryant and Stratton College is under discussion in Chesterfield County.
- Enterprise Zone designations in both Richmond and Chesterfield portions of the corridor.
- Strategic Multi-Modal Transportation Plan currently underway in Richmond.

Actions to Jumpstart Change

- Investment in beautification of the corridor

- Code enforcement to ensure maintenance of existing buildings
- Codes to reduce signage and make signs more uniform and visible
- Construction of sidewalks at key highly-traveled locations
- Better police presence
- Speed limit enforcement
- Improved lighting
- More trees
- Tax incentives and funding to invite private sector investment
- Financial assistance for existing businesses to improve building facades
- Purchase and resale of land by the City and County in order to better direct development patterns
- Rehabilitation of existing multi-family housing

Figure 13: Bilingual flyer for the January 8 public open house

APPENDIX B

Hull Street Road Revitalization: Transportation Background Materials and Alternatives Analyzed

HULL STREET CORRIDOR REVITALIZATION PLAN:

Transportation Background Materials and Alternatives Analyzed

November 2012

NELSON
NYGAARD

1 CONTENTS

Table of Figures

TASK OVERVIEW

Hull Street Road is an arterial and an address. It, like many suburban principal corridors, must serve dual, and somewhat competing, demands to function as a conduit in a regional system and at the same time support the vibrancy and health of the communities along it.

Today the corridor serves the first function – that of a traffic thoroughfare – fairly well, but fails significantly in its second function as the front door to and backbone of complete communities in Chesterfield County and the City of Richmond.

As a member of the Hull Street Road Revitalization Plan consultant team, Nelson\Nygaard Consulting Associates was tasked with the following activities:

1. Review and summarize existing and future conditions on the corridor and their associated opportunities and constraints;
2. Evaluate crash data for the corridor and recommend strategies to improve safety;
3. Develop alternatives for the corridor, and particularly the Chippenham Interchange, that support the revitalization vision for the corridor while respecting the functional demands of the larger transportation system;
4. Evaluate alternatives against revitalization priorities and functional performance; and
5. Select and refine preferred alternatives for advancement into 30% design.

This technical memo summarizes the findings and recommendations of the above.

SUMMARY OF FINDINGS AND RECOMMENDATIONS

Hull Street Road is a heavily auto-dominated corridor. This is not the single vision or identity for the corridor however. The local community and public leadership envision a vibrant corridor that offers more options in services, housing, commercial offerings and modes of travel.

Although the economy and real estate market is somewhat weak at present, changes in transportation on the corridor can positively change the overall image and perception of the corridor and enhance its competitiveness and attraction.

Key recommendations for the corridor are to:

- Provide continuous and complete bicycle and pedestrian accommodation along the corridor;
- Modify intersections and signals to improve pedestrian and local vehicle connections across the corridor;
- Line the medians and edges of the corridor with street trees to change the image and experience of the corridor and improve environmental performance;
- Modify the Chippenham interchange to reduce it as a barrier between Richmond and Chesterfield;
- Expand transit services into Chesterfield County; and
- Improve safety, security, and accessibility for travelers, but especially the most vulnerable – seniors, children and the disabled.

DOCUMENT REVIEW

Studies and plans that affect the Hull Street Road study area were reviewed, and their relevant findings and recommendations, are summarized below.

Hull Street Road Revitalization Plan, Virginia Commonwealth University (December 2008)

- Proposes the creation of specialized nodes along the corridor building off of existing assets and strengths
- Proposes redesign of infrastructure to employ low-impact design strategies

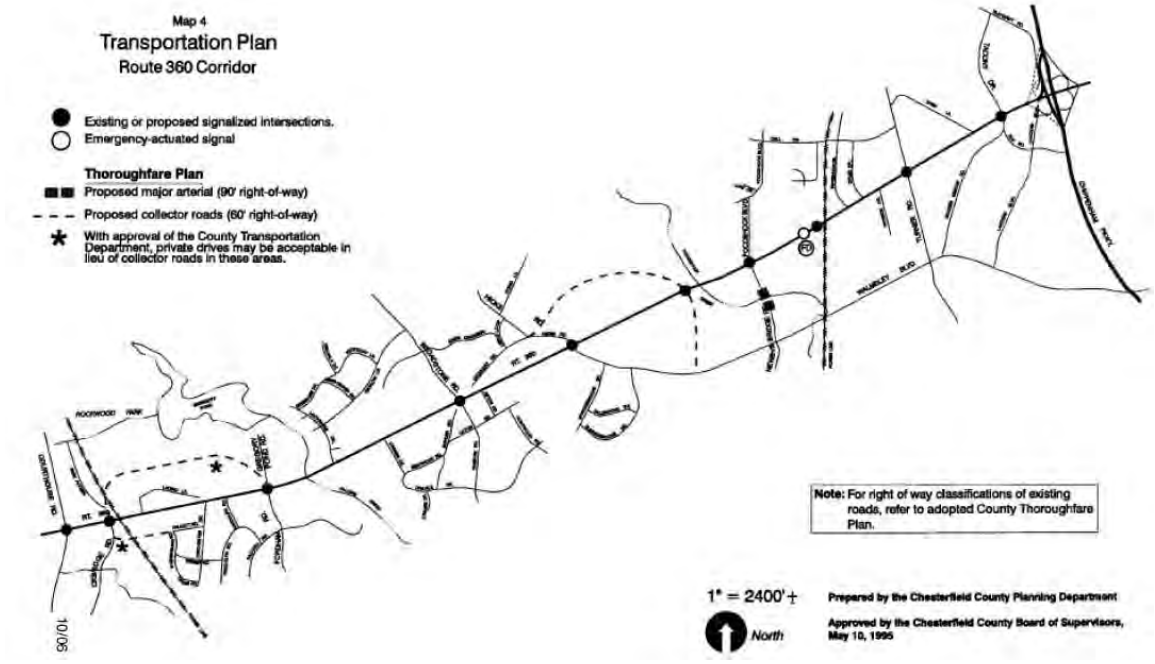
Broad Rock and *Midlothian Planning District Plan(s)*, City of Richmond

- Hull Street Road is the northern and southern boundary (respectively) of the planning districts. As such, planning for the corridor has been fractured between the areas. Both plans recommend focused study of the corridor.

Route 360 Corridor Plan, Chesterfield County (Adopted 1995, reformatted 2006)

- Objectives are for the arterial to: respond to future land use demands, minimize traffic congestion, improve access for all, and transform the physical character and image of the corridor and create central activity node at Hicks and Walmsley Roads.
- Recommended preservation of traffic capacity on Hull Street Road and construction of new collector roads and signals. Pedestrian facilities also proposed.
- Among the goals were to, "Ensure proposed land uses and densities along the Corridor are controlled so that the smooth flow of traffic on Route 360 is not disrupted." (RT 12)

Figure 1 Route 360 Corridor Transportation Plan



Source: Chesterfield County Planning Department 1995

Richmond Connects **(June 2011)**

- Outlines principles for complete streets, transit, and multimodal transportation

GRTC's Transit Development Plan 2012-2017, **Greater Richmond Transit Company (November 2011)**

- Route 62 (serves Chippenham Plaza) has very high ridership. The bulk of activity outside of Richmond occurs around Belt Boulevard; however, there is significant boarding and alighting activity west to Chippenham Plaza as well.

Strategically Targeted Affordable Roadway Solutions (STARS) Route 360 Chesterfield County, **Virginia Department of Transportation (March 2011)**

- Focused on safety and congestion Hot Spots at Tacony, Turner and Chippenham interchange intersections
- Recommended short, medium and long term improvements to address vehicular safety. No pedestrian improvements were recommended.

ALTERNATIVES CONSIDERED AND EVALUATED

Transportation can be the key to transformation of a corridor and community. The goal of this study is to use street design to revitalize Hull Street Road and create a beautiful, multimodal corridor. The corridor currently is dominated by auto space. The project team analyzed a series of different options for adding pedestrian, bicycle, and streetscaping facilities to Hull Street Road. These facilities can manifest themselves in many forms beyond just sidewalks and bike lanes, and may include shared paths, raised cycle tracks, bioswales, or tree buffers. The team created alternatives that could fit within different right-of-ways and still achieve project goals. The common thread in all alternatives is to make the corridor multimodal and make it safe. In no case, for instance, would an on-road bicycle lane be considered as the nature of the roadway makes this option unsafe. Even when right-of-way is constrained, in no case is the walking and cycling path to be cut out, as a multimodal corridor requires direct, continuous paths.

CITY OF RICHMOND

Existing Conditions

The typical midblock configuration of Hull Street Road in Richmond consists of four lanes separated by a narrow median (Figure 2). In some places a shoulder exists, and in other places, the road is tightly constrained to travel lanes only when the road goes over culverts. Figure 3 shows the layout of the largest intersection in the corridor, Warwick Road. Here the cross section nearly doubles due to three turn lanes plus sidewalks. Warwick Road is the only intersection in the study area with sidewalks on all four corners.

Figure 2 Richmond Typical Existing Cross Section

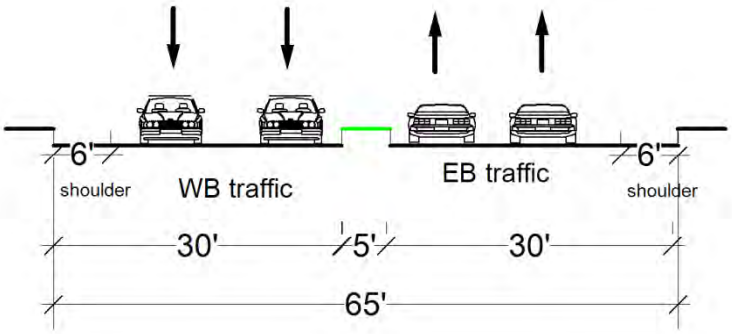
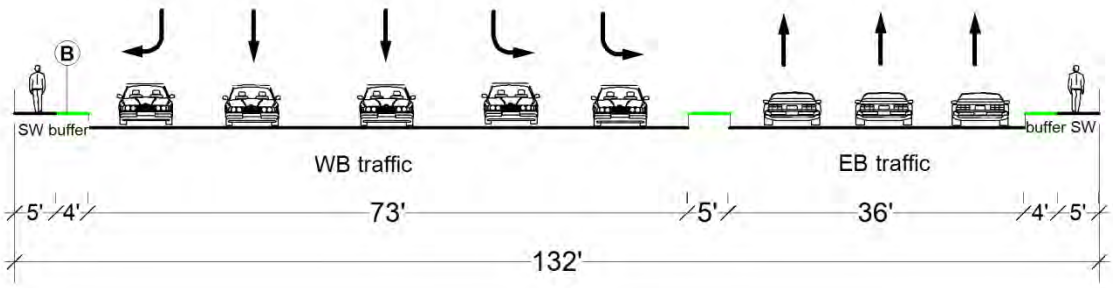


Figure 3 Richmond Sample Existing Intersection Cross Section



On the Richmond side, the existing right-of-way dimension varies significantly from 75 ft to over 130 ft. (Figure 4). On average, the right-of-way measures 80 feet.

Figure 4 Existing Right of Way excerpt

Alternatives Considered

The challenge within the Richmond portion of the corridor was to provide accommodation for bicycles, pedestrians, vehicles, and landscaping (as a character defining element) within a limited right of way. Design elements considered for Hull Street Road from Chippenham Mall Plaza to the railroad tracks included:

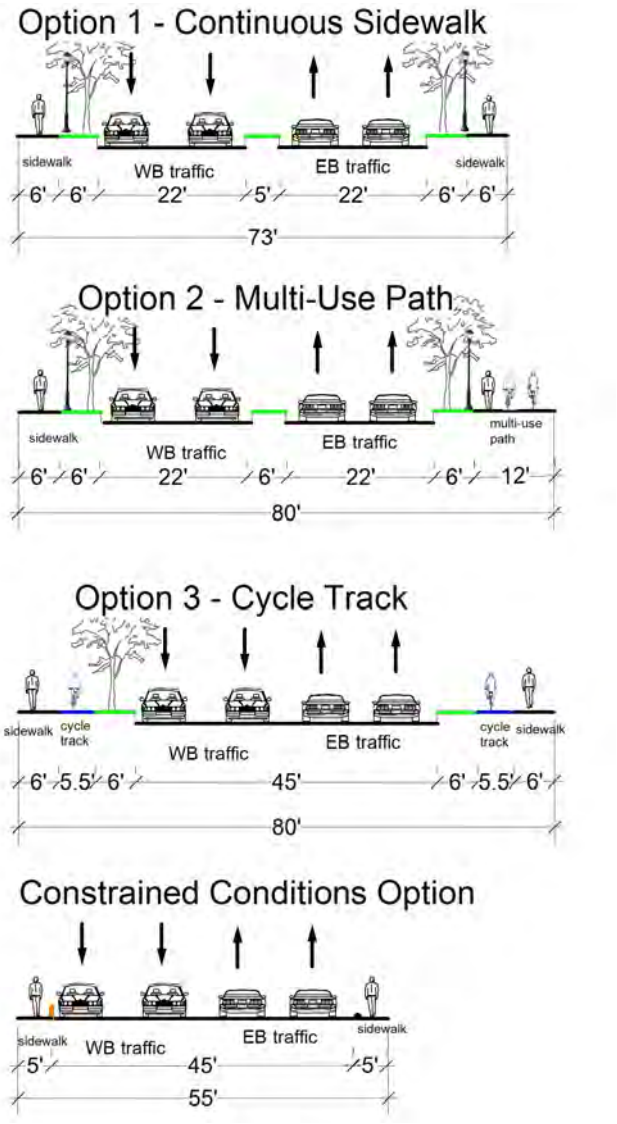
1. Sidewalk - A continuous sidewalk, 6 feet wide, buffered by a landscaped buffer 6 feet wide, with the potential for tree plantings.
2. Multi-Use Path - A 12' wide facility designed to accommodate the co-mingling of pedestrians and bicyclists (Figure 5).
3. Cycle Track - A 5' wide path at the sidewalk level protected from vehicles by the curb and landscape buffer and separated from pedestrians by pavement markings, change in pavement materials, curb, or additional landscaping (Figure 6).
4. Landscaped median – A minimum 10’ wide raised median provides opportunities for landscaping to improve the character of the street as well as turn pockets for left turning vehicles at intersections and a refuge for pedestrians (when widened further).

Figure 5 Multiuse Path

Figure 6 Cycle track

Various combinations of these elements were explored as alternative cross sections (Figure 7).

Figure 7 Richmond Cross Section Alternatives



CHESTERFIELD COUNTY

Existing Conditions

On the Chesterfield County side, the road becomes wider and the general cross section is much more generous than on the Richmond side (Figure 8 and Figure 9).

Figure 8 Chesterfield County Typical Existing Cross Section

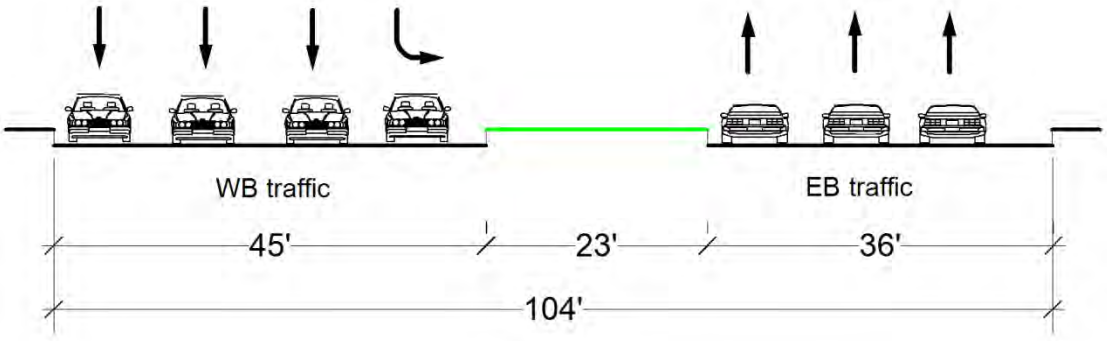
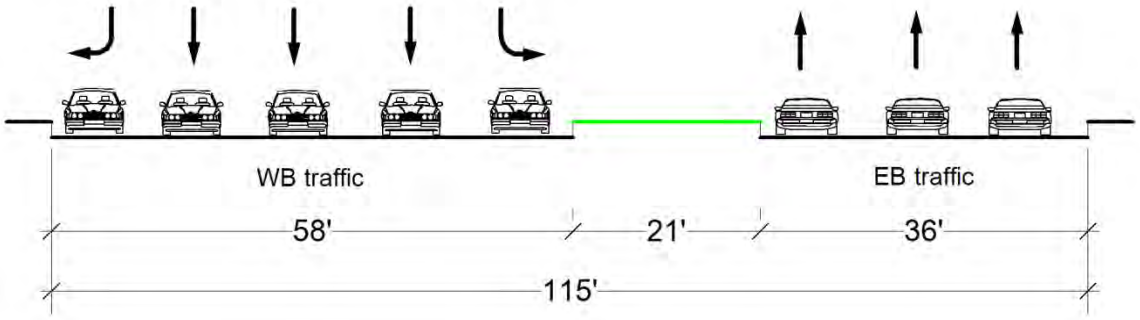


Figure 9 Chesterfield County example intersection



Right-of-way, as in Richmond, varies significantly in the County (Figure 10). However, given the less developed character of the County and the wide setbacks provided by existing developed parcels, physical constraints present less of a difficulty – however several areas of environmental constraint remain.

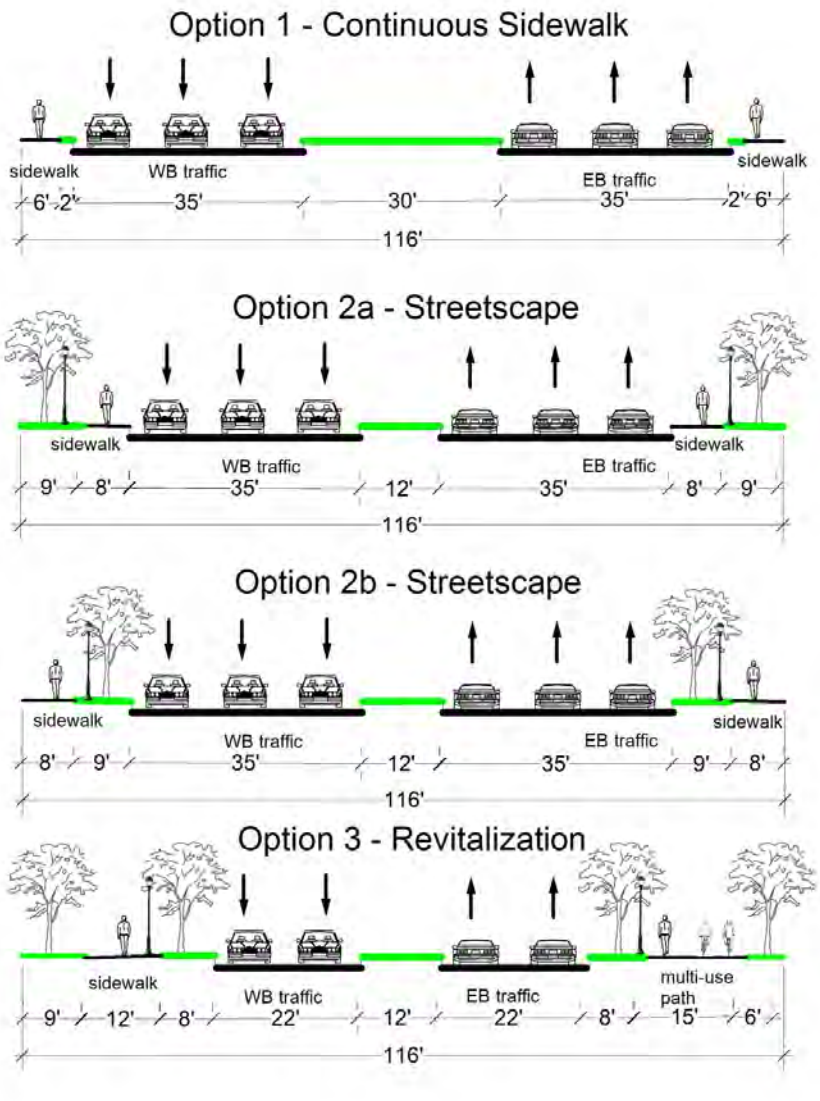
Figure 10 Chesterfield County Right of Way

Several design elements were considered for the Chesterfield portion of Hull Street Road from Chippenham Mall Plaza to Walmsley Boulevard, including:

1. Low intervention sidewalk – Utilizing the existing curb that exists for much of the street, provide a paved travel zone for pedestrians within the existing grassy area abutting the roadway, leaving a 2' buffer between cars and pedestrians
2. Multiuse trail – as with the Richmond portion, multiuse trail options were explored
3. Cycle track – again, as before, provision of cycle tracks were explored for bicycle accommodation
4. Narrowed median – the existing median in Chesterfield County can exceed 20' in some portions of the corridor which adds to the overall scale and vastness of the street (thus contributing to speeding behavior). A narrowed median provides visual consistency for the corridor while ensuring adequate space for landscaping, turn pockets, and pedestrian refuge at intersections
5. Landscape buffers – Two variations were explored for curbside landscaping.
    a. The existing curb is too low to meet VDOT clear zone standards for landscaping thus, without reconstruction of the curb, landscape strips must be located behind the pedestrian zone placing the pedestrians adjacent to the street)
    b. Alternatively, with a reconstructed curb to provide the required 6" curb reveal, treed landscaping could be provided at the curb edge between pedestrian zone and street.
4. Road diet – Evaluation of traffic volumes indicated that existing traffic volumes could be adequately accommodated in just two lanes per direction at most hours of the day. The reduction in lane numbers narrows the street width providing a more urban appearance that could catalyze similarly urbane development patterns.

Four alternatives were developed for consideration exploring minimal intervention treatments through to complete transformation alternatives (Figure 11).

Figure 11 Chesterfield County cross section alternatives



CHIPPENHAM INTERCHANGE

Existing Conditions

The Chippenham Parkway interchange is a major barrier to creating a unified Hull Street Road. Safely designing for pedestrians and cyclists to pass through the interchange was a major goal of the study.

In its existing configuration, the Chippenham Parkway interchange presents a major barrier for pedestrians, bicyclists and transit riders. Hull Street Road features 4 travel lanes in each direction between the parkway's on and off ramps, separated by a median. There are no sidewalks, crosswalks or bicycle facilities provided. As transit service stops at the City line at Chippenham Mall Plaza, bus passengers cross the interchange by walking on the shoulder of the road, and crossing multiple on- and off-ramps without pedestrian signals. Since Hull Street Road goes

under the parkway, available space for all modes is limited by the current retaining walls. Free right turn lanes, designed for unimpeded vehicular movement, are found at signalized intersection of Chippenham Parkway South and the unsignalized on- and off-ramps accessing Chippenham Parkway North (Figure 12).

Figure 12 Chippenham Interchange Existing Configuration

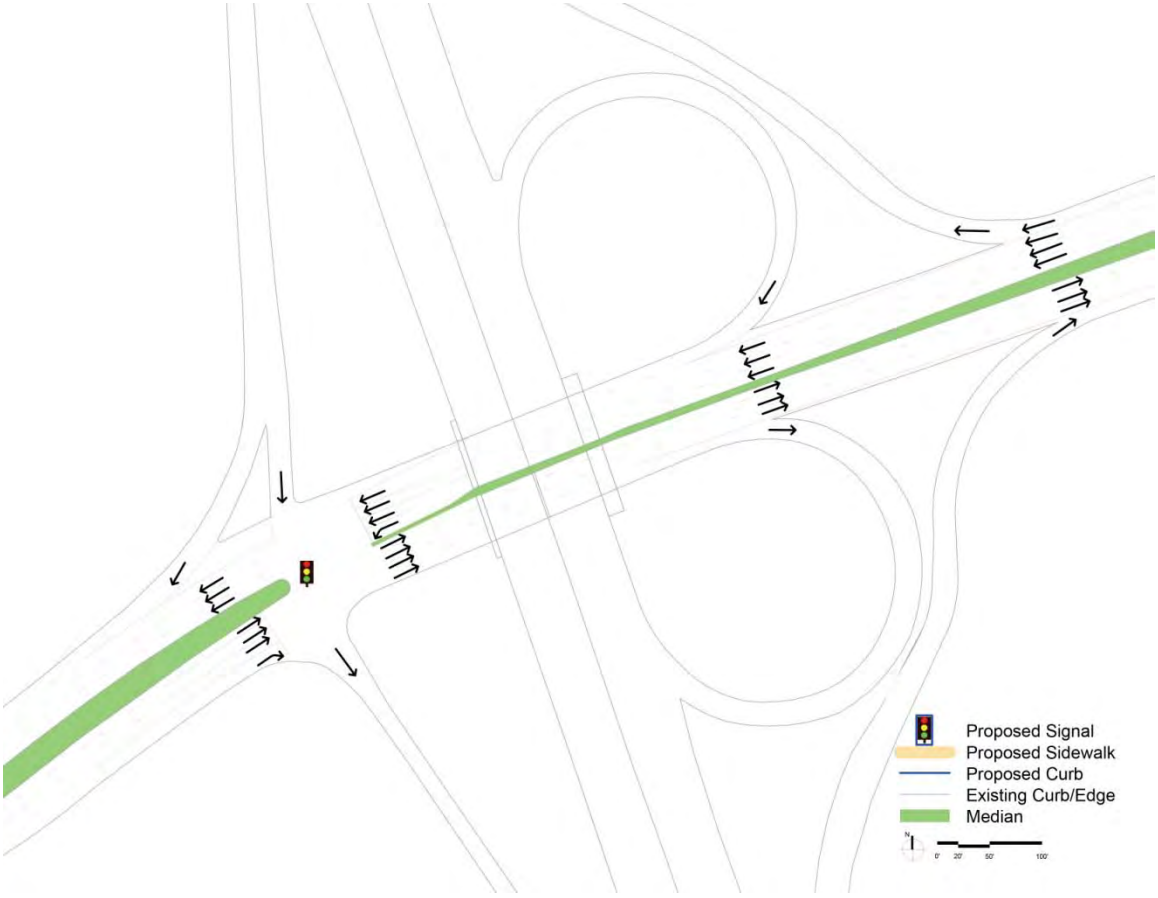
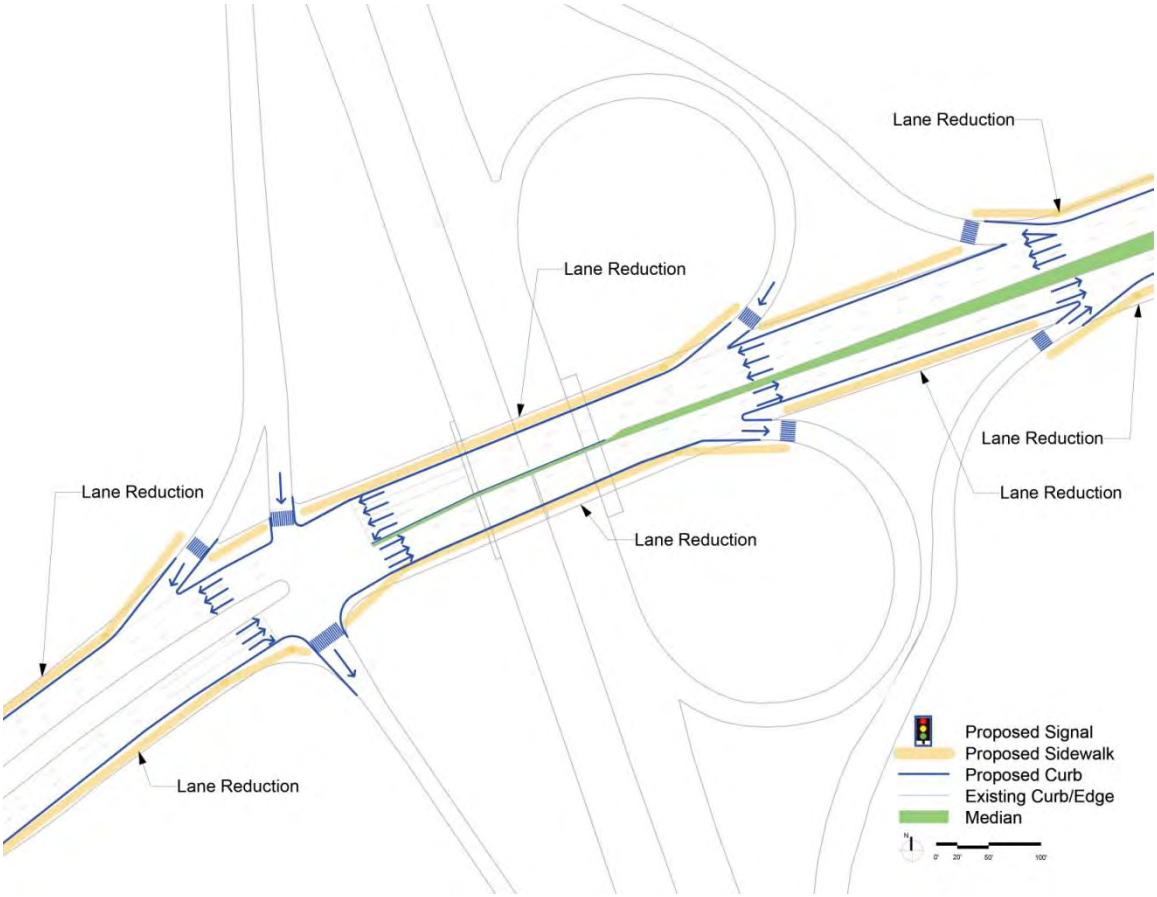
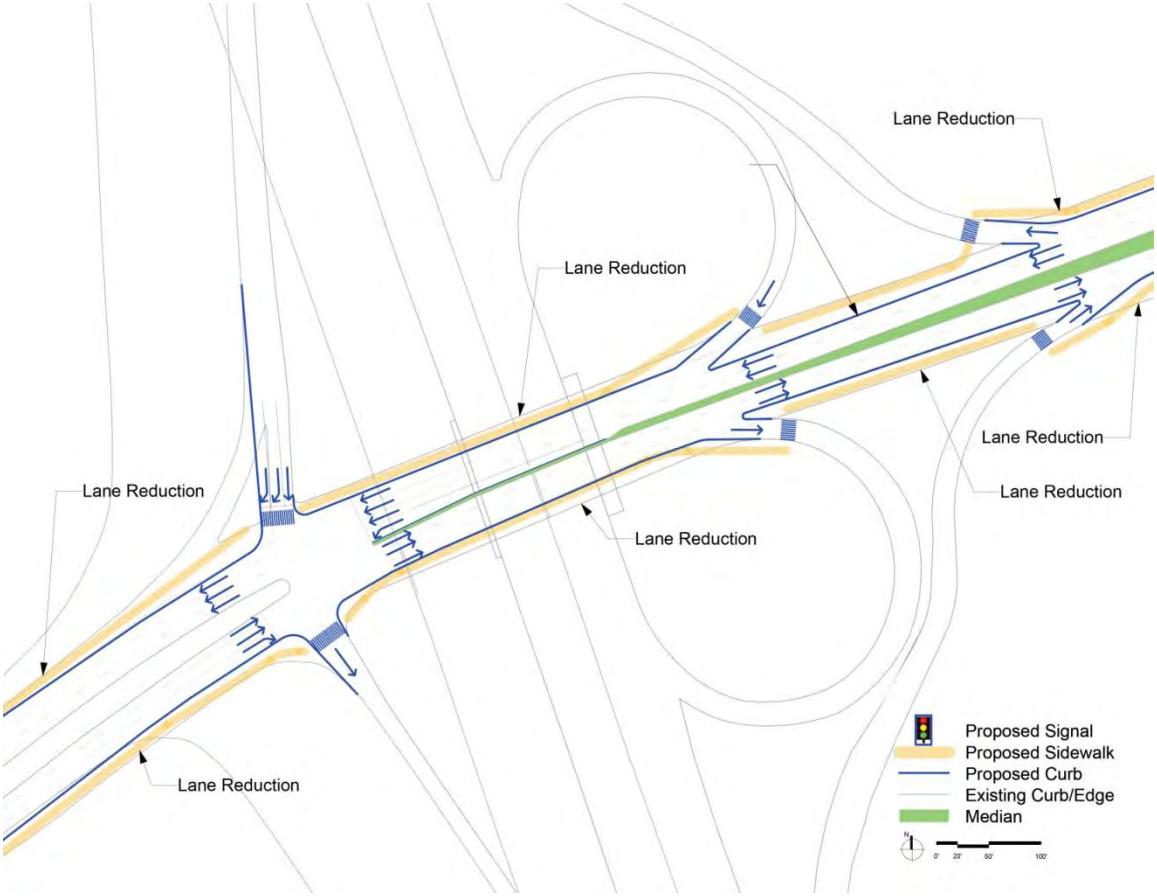


Figure 13 Chippenham Interchange Option 1



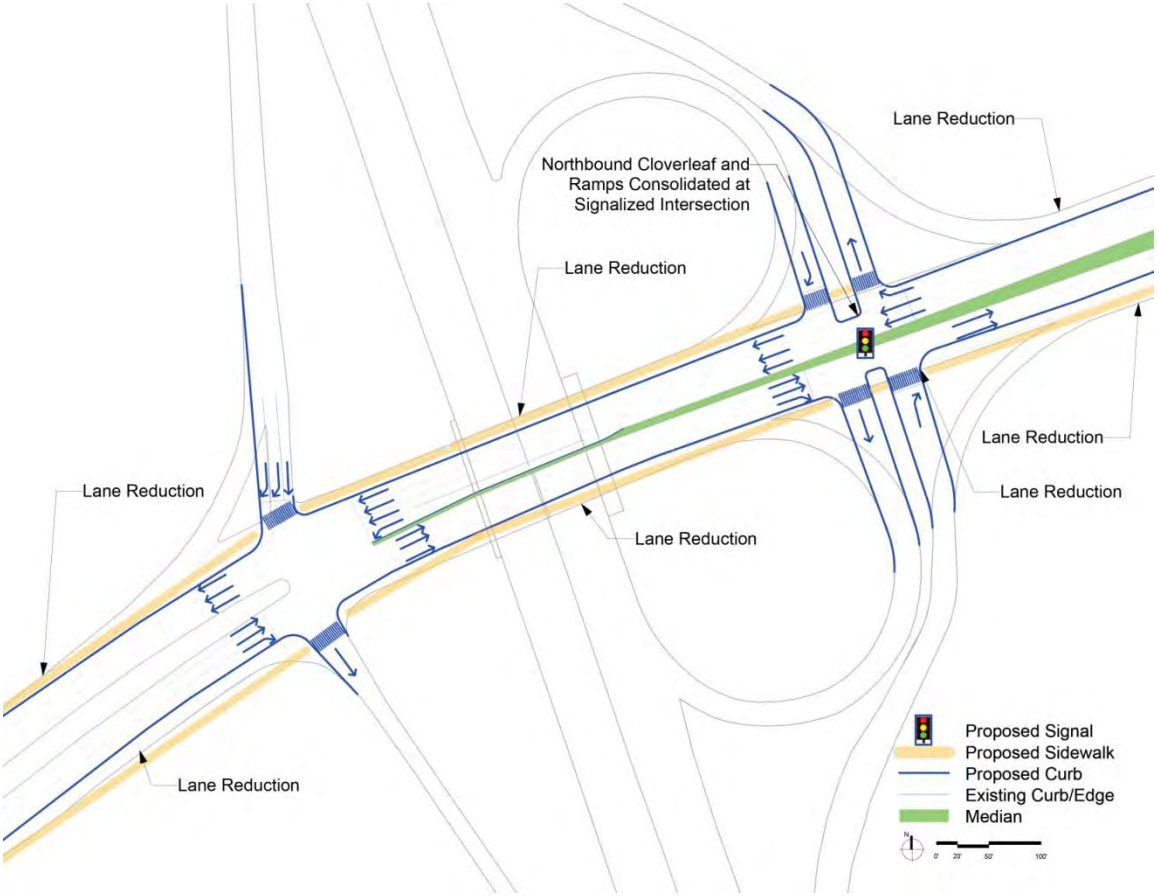
Chippenham interchange option 1 is the minimal intervention option (Figure 13). This alternative adds curbs and sidewalks along Hull Street Road with pedestrian crossings at all existing approaches. Ramps are not reconfigured and as such the high speed free ramp movements remain a major risk factor, especially for the high volume southbound Chippenham to westbound Hull Street Road and eastbound Hull to northbound Chippenham movements. Under this alternative, the fourth merging and existing lane is removed to provide space within the underpass for curb and sidewalk. In addition, the turn pocket for the left turn lane onto Chippenham Parkway South is extended back approximately 100 yards to accommodate greater vehicle storage, as this turn currently operates at LOS E during the afternoon peak.

Figure 14 Chippenham Interchange Option 2



Chippenham interchange option 2 adds curbs and sidewalks along Hull Street Road with pedestrian crossings at all existing approaches (Figure 14). This removes one through vehicle lane between the on and off ramps to/from northbound Chippenham Parkway. This lane is regained as a continuation of the exiting ramp from the northbound parkway thus removing the merge condition that exists today. Significantly, the free right movements to and from southbound Chippenham (the western portion of the interchange) are removed in favor of stop and turn movements. Due to the high volumes of the westbound exit ramp, the ramp is widened to provide for double right turns and lengthy storage space. It is recommended that, contrary to existing policy in the area, right on red be permitted at this location during the peak hours. As in Option 1, the left turn pocket to Chippenham Parkway South is extended.

Figure 15 Chippenham Interchange Option 3



Chippenham interchange option 3 represents a major reconstruction project in which the eastern side of the interchange is reconfigured to represent more of an urban diamond (Figure 15). Current ramps and cloverleafs are bent and reconstructed to meet Hull Street Road at a 90 degree angle. A new signal is added to complement the existing signal. This alternative removes all high speed movements onto and off of the Chippenham Parkway to provide protected pedestrian and bicycle crossings across all access points. This option would have significant operational impacts on both Chippenham and Hull Street and would require more detailed analysis in order to proceed further.

REVITALIZATION NODE INTERSECTIONS

Large portions of Hull Street Road function primarily – even exclusively – as a thoroughfare carrying traffic that has neither origin nor destination within the revitalization area. However, there are nodes of focused activity along the corridor that present a significant opportunity for revitalization that will bring more population and destinations to the area. These nodes tend to occur at major intersections which provide greater connectivity to the larger area and markets. At these nodes, Hull Street Road must accommodate the cross-movement of both pedestrians and traffic in order to support the land use regeneration and reinvestment that is desired. At these locations the thoroughfare function must balance with the activity center demands. Four activity nodes were identified as revitalization opportunities:

Walmsley Boulevard

This is the western edge of the study area and serves Bryant & Stratton College and a Kroger grocery store (Figure 16). The intersection is large, with multiple turn lanes and no crosswalks or pedestrian signals.

Figure 16 Walmsley Boulevard

Turner Road

Turner Road is located at the 360 West shopping center and is a north-south connector (Figure 17).

Figure 17 Turner Road

Warwick Road

Warwick Road is the largest intersection on the eastern side of the study area, with several shopping locations adjacent (Figure 18). The intersection is served by bus.

Figure 18 Warwick Road

OBJECTIVES AND PRIORITIES

As with any corridor revitalization process, there are multiple goals and objectives a jurisdiction wishes to achieve. These range from safety to placemaking to environmental restoration. While it is possible to meet all objectives to varying degrees, it is often impossible to achieve all at the same level. Virtually any change to a transportation system or facility requires trade-offs among these objectives. Determining a preferred alternative among the many options available requires the prioritization of objectives and the evaluation of how each alternative performs against these priorities. It is recognized that different stakeholders have different priorities given their diverse missions and perspectives.

Seven overarching objectives were identified for the revitalization of Hull Street Road and specifically for the transportation elements of that plan. These were:

1. Improve safety for all users

Across all stakeholders, safety is of paramount importance. Safety encompasses all modes – vehicular, pedestrian, bicyclists, and transit. Safety can be improved by designing a street environment that provides visual cues to drivers, pedestrians and others as to appropriate and protected behavior. Safety does, however, require the active participation of travelers as well. A street facility alone cannot ensure safety against reckless driving or careless pedestrian crossings.

2. Expand travel options

Residents and patrons of the corridor presently have few choices for travel. One of the key priorities in the revitalization effort were to provide greater transportation choices and options.

3. Maintain regional mobility

Hull Street Road is a designated state thoroughfare and as such is expected to serve a statewide and regional purpose. Long distance trucks and autos should be expected on this corridor and accommodated.

4. Enhance local community connectivity along, across, and adjacent to the corridor

In addition to being a regional conduit, Hull Street Road is also a local address. It has businesses and residents along its length. These establishments constitute a community and for a community to be whole, it must be able to unify even across a major arterial. The revitalization of the corridor will rely, in part, on the ability of patrons and residents to cross the corridor with comfort, ease and safety to access goods, services, friends, and transit facilities.

5. Develop positive corridor character, identity and sense of place

The public environment of a street often provides the most lasting memory of a place. As such, the urban design and landscaping along a corridor is, for many visitors or through travelers, conveys the dominant character and identity. The treatment of this public right of way can give cues to potential residents, patrons or investors to come and stay, or to stay away. Therefore it is a priority of the revitalization plan to provide adequate space within the street right of way to develop and enhance this public character.

6. Support and attract economic development

Streets have a profound impact on the economic strength and market viability of properties along their length. The character, as stated above, is vitally important, as is the ability to access the properties for patrons and goods suppliers. The operation of the street is important as well. Traffic must flow well enough on the street to make it easy enough to access the destinatinons along it, but not travel so swiftly that travelers are unable to notice the many offerings and attractions of the place.

7. Enrich the natural and human environment

Transportation agencies across the country are increasingly sensitive to the impacts of transportation facilities on both the human and natural environment. The impervious nature of streets can cause significant volumes of water runoff and can include substantial contamination from chemicals or deposited on the roadway surface. Landscaping provided, or denied, can impact local habitats and/or change temperatures in the local area.

APPENDIX A: CRASH DETAILS

The following figure (Figure 19) breaks down crashes by year for intersections where data was available. Details on the cause of crash are shown if available. The table is broken down by fatality, injury, or no injury/Property Damage Only.

Figure 19. Crash Data for the Hull Street Corridor

Cross Street	Crash Type	Total	2006	2007	2008	2009	2010	2011	Crash Cause (% of total), if available
Hicks/Wamsley	N/A								
Pocoshock Blvd	N/A								
Frontage	N/A								
Wayside	N/A								
Turner Road	Fatality	0				N/A			Right Angle 22%, Rear End 41%, Left Turn 14%, Right Turn 4%, Sideswipe 14%, Fixed Object 3%, Other 4%
	Injury	20	6	8	6	N/A			
	No Injury/PDO	59	23	18	18	N/A			
Dyer Lane	N/A								
Tacony Drive	Fatalities	0				N/A			Right Angle 19%, Rear End 54%, Left Turn 6%, Sideswipe 15%, Fixed Object 2%, Other 4%
	Total Injuries	14	4	1	8	1	0	0	
	No Injury/PDO	35	9	16	10	N/A			
Chippenham Pkwy	Fatalities	0							Rear End 35%, Left Turn 56%, Sideswipe 5%, Fixed Object 3%, Other 1%
	Total Injuries	34	11	10	12		1		
	No Injury/PDO	44	12	17	15	N/A			
Brookhaven Road			N/A			No Crashes			
Elkhardt Road	Fatalities	0	N/A						
	Total Injuries	8	N/A			2	3	3	Left Turn 12%, Rear End 63%, Ped Injury from hit and run 12%, Ped Injury from Left Turn 12%
	No Injury/PDO	31	N/A			12	7	12	
Derwent Road	Fatalities	0	N/A						
	Total Injuries	4	N/A			2	2	0	Rear End 50%, Head On 50%
	No Injury/PDO	2	N/A				1	1	
Hey Road	Fatalities	0	N/A						
	Total Injuries	3	N/A				3		Rear End 100%
	No Injury/PDO	26	N/A			9	8	9	
Orcutt Lane	Fatalities	1	N/A					1	Hit at angle while disregarding traffic signal as car with right-of-way made left turn
	Total Injuries	8	N/A			4	2	2	Hit at angle while making left turn 50%, Rear End 38%, Left Turn 12%
	No Injury/PDO	15	N/A			8	3	4	
Robertson Lane	N/A								
Berrywood Road	Fatalities	0	N/A						

Cross Street	Crash Type	Total	2006	2007	2008	2009	2010	2011	Crash Cause (% of total), if available
	Total Injuries	1	N/A				1		Rear End 100%
	No Injury/PDO	4	N/A				2	2	
Silverwood Drive	Fatalities	0	N/A						
	Total Injuries	4	N/A				1	3	Rear End 100%
	No Injury/PDO	7	N/A			2	4	1	
Bryce Lane	Fatalities	0	N/A						
	Total Injuries	10	N/A			2	5	3	Rear End 20%, U-Turn 30%, Unknown 50%
	No Injury/PDO	5	N/A			2	3		
Swanson Road	Fatalities	0	N/A						
	Total Injuries	7	N/A			2	0	5	Hit at Angle 43%, Sideswipe 14%, Sideswipe U-Turn 29%, Rear End 14%
	No Injury/PDO	10	N/A			4	1	5	
Linwood Ave	Fatalities		N/A						
	Total Injuries	4	N/A			2	1	1	Left Turn 50%, Sideswipe 25%, Ped Injury 25%
	No Injury/PDO		N/A			4	3	3	
Paul Way East	No Crashes								
Warwick Road	Fatalities	0	N/A						
	Total Injuries	9	N/A			2	2	5	Left Turn 33%, Rear End 11%, U-Turn 44%, Ped Injury driver changing lanes 11%
	No Injury/PDO	13	N/A			5	4	4	
Ridgecliff Drive	Fatalities	0	N/A						
	Total Injuries	0	N/A						
	No Injury/PDO	2	N/A			2			
Woodhaven Dr	Fatalities	0	N/A						
	Total Injuries	0	N/A						
	No Injury/PDO	2	N/A			1	1		

APPENDIX B: TRANSIT EXTENSION AND STOP DESIGN

Currently routes 62 and 67 terminate service at Chippenham Mall. Stakeholders have expressed interest in extended transit service west to Hicks Road/Walmsley Boulevard. This memo details bus stop placement and design.

1. STOP PLACEMENT

In suburban areas, generally bus stop spacing ranges from 1,000 to 2,500 feet. In cases where destinations are very close together, stops may be spaced as closely as 600 feet. On Hull Street Road, bus stops east of Chippenham Parkway are spaced anywhere between 850 to 2,000 feet apart. In urban areas, bus stops are generally placed a uniform distance apart to increase legibility. In suburban communities like those surrounding Hull Street Road, placing stops in front of major destinations is more important in attracting riders than equidistant stop spacing.

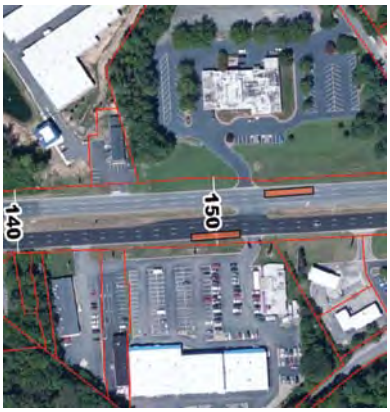
To minimize disruptions to traffic, buses will stop at pull-in/pull-outs. Stops may use existing turn lanes or driveway channels, similar to what buses already do on the Richmond side of Hull Street Road. Pull-ins can also be constructed as part of corridor reconstruction.

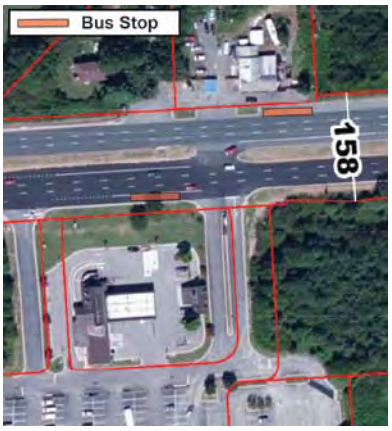
Figure 20 below shows the existing bus routes and stops and proposed stops.

Figure 20 Existing and proposed bus stops

Starting at Chippenham Parkway and heading west, proposed bus stop details are described in Figure 2.

Figure 21 Bus stop details

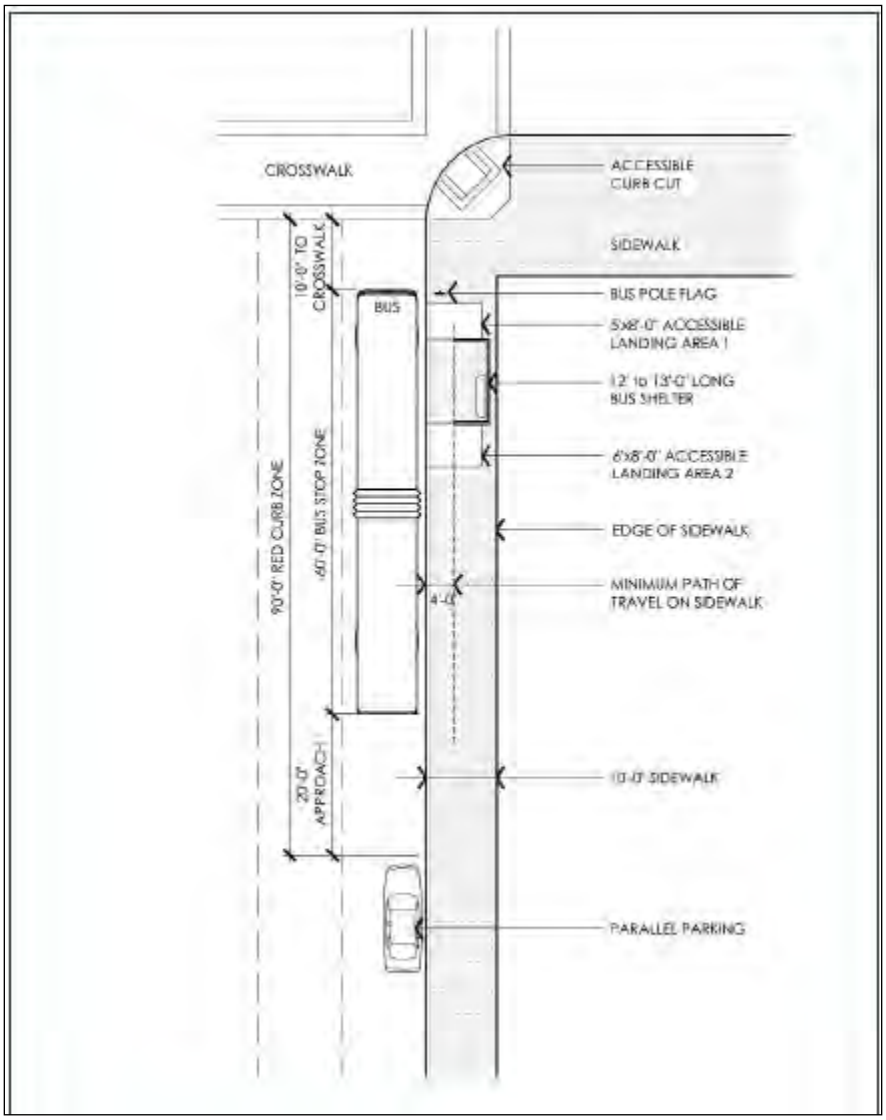
Stop Location	Destinations	Stop Placement	Image
Driveways accessing La Milpa and Bailey's Funeral Home	- La Milpa - Gas station - Wendy's	At this location, right-of-way measures 150'. Given the recommended cross section of 142', the landscaping segment between the cycle track and sidewalk will be narrowed by 14' to allow for an 11' pull-in on each side of the road. Pedestrian signal needed.	
Turner Road	- 360 West - Bank of America	Westbound and eastbound stops uses right turn lanes	
Wayside / McDonald's / Arby's driveways	- Wayside Drive apartments - Arby's - McDonald's - Rite Aid	Eastbound stop to utilize existing right turn lane. Construct pull-in at median separating access lane from westbound traffic. Pedestrian signal needed.	

Stop Location	Destinations	Stop Placement	Image
Manchester Middle School	- Manchester Middle School - YMCA	Eastbound stop to utilize existing right turn lane. Construct pull-in at median.	
Bryant Stratton	- Bryant Stratton - Food Lion	Eastbound stop to utilize existing right turn lane. Westbound stop to utilize shoulder. Pedestrian signal needed.	
Hicks/Walmsley	- Kroger	Bus layover and recovery stop	

2. BUS STOP DESIGN

Since many bus stops will use existing right turn channels, stops will be near-side in design. Figure 22 below shows the layout of a near-side stop on a street with on-street parking. The 20 foot approach zone is not needed on Hull Street Road. This example uses an articulated bus measuring 60'; when using a typical standard city bus, this dimension reduces to 45'.

Figure 22 Near-side bus stop design

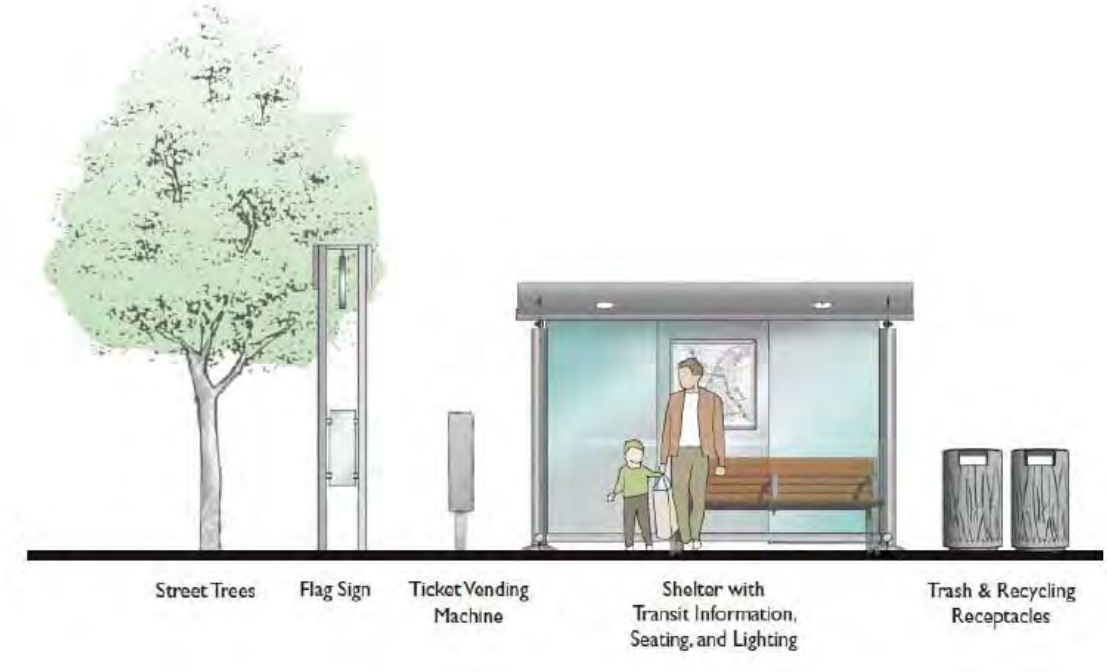


Source: AC Transit. "Designing with Transit."

3. STOP AMENITIES

Transit stops should be dignified, safe and comfortable for transit patrons. Some basic amenities and treatments are necessary to meet this requirement.

Figure 23 Bus Stop Amenities

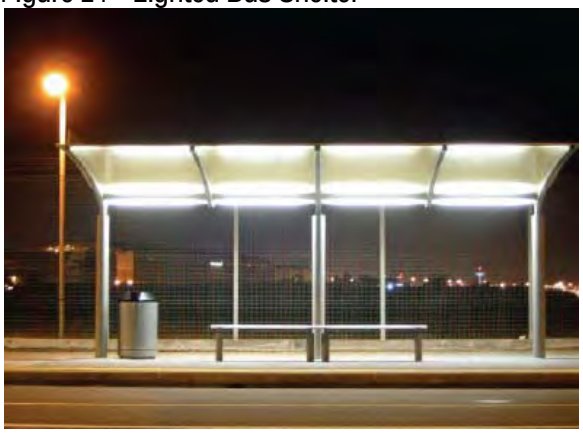


Source: CD+A for San Benito, CA

3.1 Lighting

Lighting is an important aspect of transit customer service. Pedestrian lighting getting to and from stops, as well as adequate lighting both at shelters and unsheltered locations improves security.

Figure 24 Lighted Bus Shelter



Source: Nelson\Nygaard

3.2 Shade

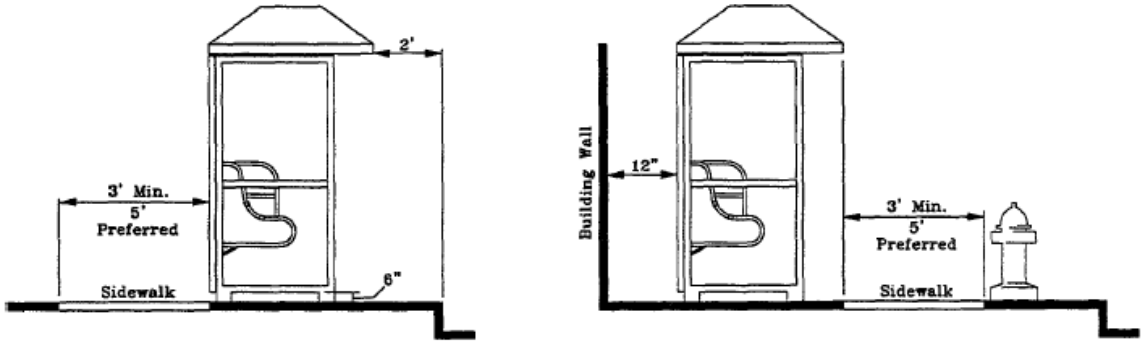
Shade is as important as lighting – particularly in southern cities such as the Richmond area. Shade can be provided either through natural landscaping, such as canopy trees, or through structures such as building awnings or shelters.

3.3 Shelter

Shelters provide protection from weather and may also be used for advertising. Many transit agencies sponsor an Adopt-a-Shelter program in which those who pledge to clean and maintain a bus shelter receive community acknowledgement or transit passes.

Some transit agencies adopt ridership thresholds for installation of shelters. For example, in rural locations the agency will install shelters at stops with 10 or more boardings per day; in suburban areas, as locations with 25 or more boardings. The number and type of shelters provided should be determined based on ridership as well as the ability to maintain them.

Figure 25 Shelter clearance zones



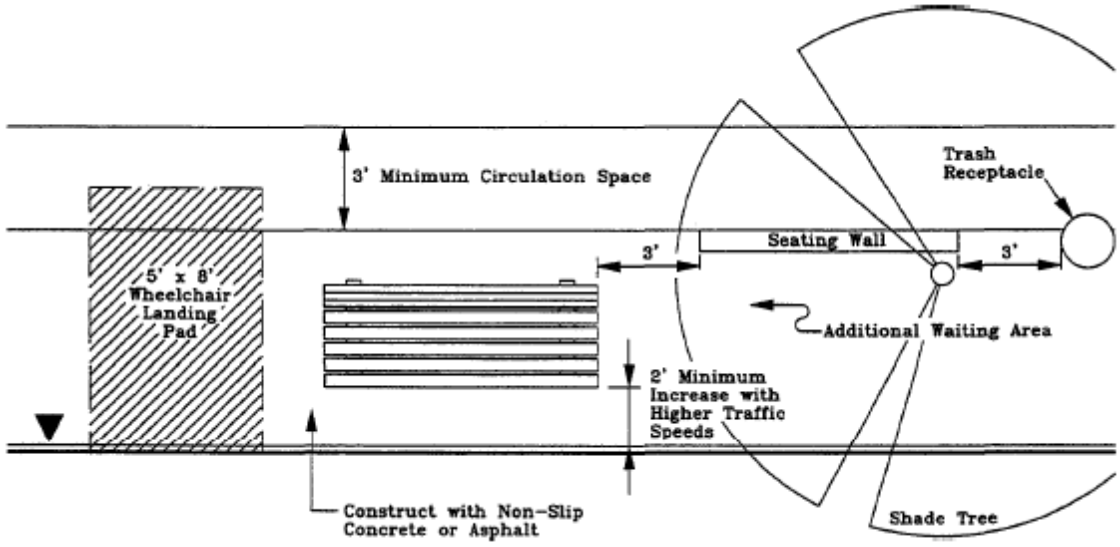
Source: TCRP 19: Guidelines for the Location and Design of Bus Stops.

3.4 Benches or seating

A bench provides convenience for waiting transit customers, especially older adults or persons with disabilities. Benches can be isntalled without shelters. Maintain a clear space behind the bench, as shown in the diagram.

Many communities raise concerns that benches may attract negative activity and loitering, however many bench and seating designs are available that communities can select options appropriate to their context while at the same time meeting the needs of their most vulnerable community members so that they too may comfortably utilize transit services.

Figure 26 Bench design



Source: TCRP 19: Guidelines for the Location and Design of Bus Stops.

3.5 Information

One of the most important features of transit service is patron information on where a route travels and how often buses service a particular station. Static route and time information should be mounted at each bus stop even if information is available on mobile devices. This again makes bus service accessible to all potential riders without the need for additional technology or advance knowledge.

Real time traveler information has provided tremendous advantages to both transit patrons and bus operators alike. If real time information is available, information on how and where to access this information should also be available on the static displays. At shelters, where possible, dynamic real time bus information signs should be utilized to provide riders with the highest level of customer information.

Figure 27 Route and time information

Source: www.commuterpage.com

APPENDIX C

Sites Potentially Suitable for Development or Redevelopment

HULL STREET CORRIDOR: POTENTIAL DEVELOPMENT AND REDEVELOPMENT SITES

The Hull Street corridor study area has 20 sites potentially suitable for both short and longer term development or redevelopment, ranging in size from 0.4 to 34 acres. The sites were defined based on:

- Hull Street access
- Visibility on Hull Street and other thoroughfares
- Vacant or underutilized land
- Parcel size
- Building condition
- Proximity to existing cluster or anchor businesses

These sites are described in the table below and located on the City and County maps that follow.

Potential Development and Redevelopment Sites
(As discussed in Chapter 4, Economic Development Analysis and Opportunities)

Parcel #	Parcel Description	In Study Area	Acreage	City or County	Distance to Chippen-ham Parkway (miles)	Nearest Anchor	Existing Building	Green-field
Development and Redevelopment Sites								
1	SE Corner of Hull and Warwick	No	34.16	City	2	Walgreen's	No	Yes
2	SE Corner of Hull and Briary	No	0.77	City	2	Walgreen's	No	Yes
3	Site at Hull and Ridgecliff, east of Walgreen's (out of study area)	Yes	~0.50	City	2	Walgreen's	No	Yes
4	Warwick Plaza Shopping Center	No	5.85	City	1.75	Food Lion	Yes	No
5	Site in Front of Worsham Mobile Home Park	No	~5.00	City	1.5	Food Lion	Yes	No
6	Property in Front of Meadowcrest Apartments (5310 Hull Street)	No	0.67	City	1.5	Food Lion	No	No
7	Property West of Meadowcrest Apartments and east of Worsham	No	2.52	City	1.5	Food Lion	Yes	Yes
8	5405 Hull Street and behind it at Paul Way	No	1.32	City	1.5	Food Lion	No	No
9	Property Behind Skateland on Swanson Road	Yes	2.40	City	1.25	Food Lion	No	Yes
10	Outparcels at Food Lion and Swanson Road	Yes	1.79	City	1.25	Food Lion	No	Yes
11	Property East of Happy Mart	Yes	0.74	City	1	Food Lion	No	No
12	Site West of Happy Mart	Yes	2.45	City	1	Food Lion	No	No
13	Old gas station at 5787 Hull at	Yes	0.41	City	1	Food Lion	Yes	No

Parcel #	Parcel Description	In Study Area	Acreage	City or County	Distance to Chippen-ham Parkway (miles)	Nearest Anchor	Existing Building	Green-field
Development and Redevelopment Sites								
	Berrywood Road							
14	Property west of Derwent Street houses, east of Elkhardt MS	No	17.15	City	0.5	RDC, Haynes	No	Yes
15	Property East of Richmond Decorating Center and Cycle Concepts	Yes	7.68	City	0.5	RDC, Haynes	No	Yes
16	Southwest Corner of Hull and Brookhaven across from Chippenham Parkway SC	Yes	0.79	City	0.1	Haynes	No	No
17	Goodes Bridge Shopping Center	Yes	4.70	County	0.5	La Milpa	Yes	No
18	Property immediately east of Bryant & Stratton	Yes	3.12	County	2	Food Lion	No	Yes
19	Property between Bryant & Stratton and Pocoshock Square	No	31.72	County	2	Food Lion	No	Yes
20	Mount Gilead Boulevard	No	17.71	County	2.5	Kroger	No	Yes
Available Space in Buildings Unlikely to be Redeveloped								
21	Pocoshock Square Office Park	No	10.97	County	1.5	Food Lion, Kroger	Yes	No
22	360 West Shopping Center	Yes	11.14	County	0.75	Rite Aid	Yes	No

Source: Rhodeside & Harwell, Inc.; Partners for Economic Solutions, 2012.

Figure 16 City of Richmond Parcels Most Suitable for Development or Redevelopment

Figure 17 Chesterfield County Parcels Most Suitable for Development or Redevelopment

APPENDIX D

Hull Street Road Revitalization Plan Study Area Demographics White Paper (Prepared by LISC)

Hull Street Road Revitalization Plan Study Area
Demographics White Paper

Prepared for the City of Richmond and
the County of Chesterfield, Virginia

Prepared by the Local Initiatives Support Corporation
January 2012

Note: This report was originally formatted in landscape and was rotated to a portrait layout for the Hull Street Corridor Revitalization Plan appendix.

Table of Contents

Executive Summary

The City of Richmond, in collaboration with the County of Chester field and in partnership with the Virginia Local Initiatives Support Corporation received a U.S. Department of Transportation TIGER II planning grant and a U.S. Housing and Urban Development Community Challenge planning grant to improve a 4-mile stretch of the Hull Street (Route 360) Business Corridor and nearby Walmsley Boulevard on the west Warwick Road and the CSX railroad line to the east.

Zoning in the area is mainly residential (low and high density) and retail. The population of the study area has increased 24 percent from 1990 to 2010. If this trend continues, the population will increase an additional two percent by the year 2015. The groups with the greatest increase in population were the 85 and over age group followed by 55 to 64 year olds. The biggest decline was the 25 to 34 year olds.

The two main races in the study area were African American and White. In 2010 the study area was 22 percent White, 52 percent African American, 3 percent Asian and 6 percent other race. The Hispanic population increased from 124 people to 3,449 people since 1990. This was almost a 3,000 percent increase in a 20-year span.

In 2010, 17 percent of the population in the study area did not have a high school diploma. This was a 36 percent decrease in those without a high school diploma from 1990. In 2010, thirty three percent had a high school diploma and 13 percent had a bachelor's degree.

The unemployment rate in the area went from four to five percent between 1990 and 2000. By 2010, the unemployment rate was at 15 percent. The employed population in the study area consists of 54 percent white-collar workers, 26 percent blue collar workers and 20 percent in service workers. The highest numbers of these workers are employed in Office and Administrative Support followed by Construction. In the study are, only slightly more worked in their county of residence than outside the county of residence. The majority of the workers in the study area took anywhere from 10 to 34 minutes of travel time to get to work and would most likely travel alone.

In 2010, the median household income for the area was $46,938. The per capita income was $20,204. This was a 35 percent rise in per capita income in 10 years. If the trend stays at this pace, the per capita income will be $22,290 by 2015.

The study area was not balanced in the industry sector. The larger surpluses were in Grocery Stores, Gas Stations and Furniture and Home Furnishing Stores. Some of the larger leakages were in Jewelry, Luggage and Leather goods stores, Lawn and Garden supply stores, and Sporting Goods/Hobby/Musical Instrument Stores. The businesses along the corridor provide an opportunity for employment as several in the area have employment of over 80 positions. There are also many opportunities in businesses with 0 to 6 employees.

The number of housing units for the study area has increased by five percent between 2000 and 2010. In 2010, 37 percent of those housing units were owner-occupied, 55 percent were renter-occupied and 9 percent were vacant. There was an increase in both owner-occupied and vacant and only a small decrease in renter-occupied. The majority of the units (30%) were built between 1970 and 1979. Based on the data from the ACS 2005-2009, the median value of the housing in the study area is $139,138. The median contract rent in the study area is $632. For those in owner-occupied housing in the study area, only a small percentage (6%) moved in the area since 2005. However, renters (32%) have moved

into the area since 2005. Of these housing units, less than one percent of the owner occupied housing units did not have a car compared to the 12 percent of renters that did not have a car.

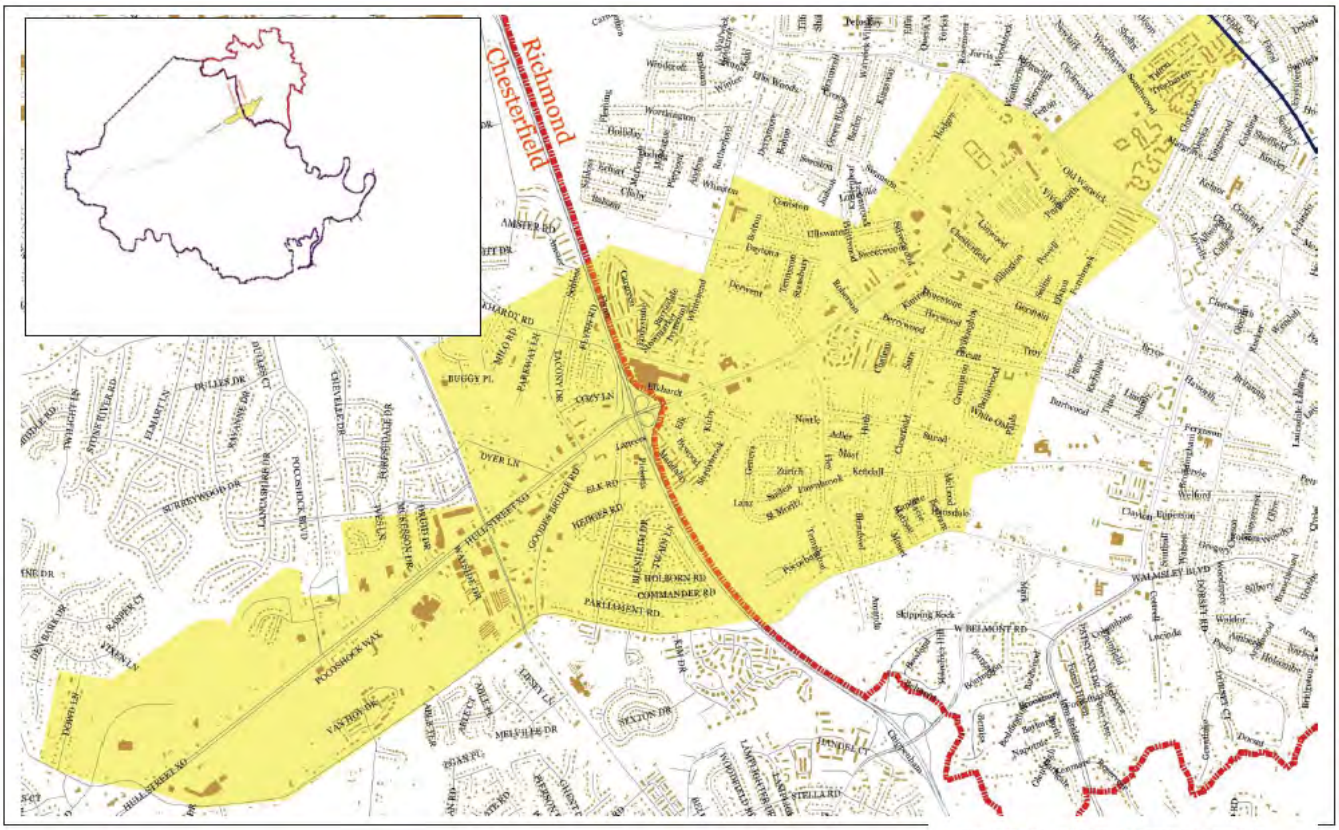
In the study area, family households are 64 percent of the housing composition and increased 10 percent from 1990 to 2000. Nonfamily households increased by 18 percent from 1990 to 2000. In 2010, the highest number of households was in the income range of $50,000 to $74,999 (26%). Twelve percent of households had incomes of less than $15,000. Eighteen percent of the households were below poverty level with females heading nine percent of those. The highest median household incomes are those of the 45 to 54 age range with those between 65 and 74 with the lowest median household income.

Study Area Boundaries and Description

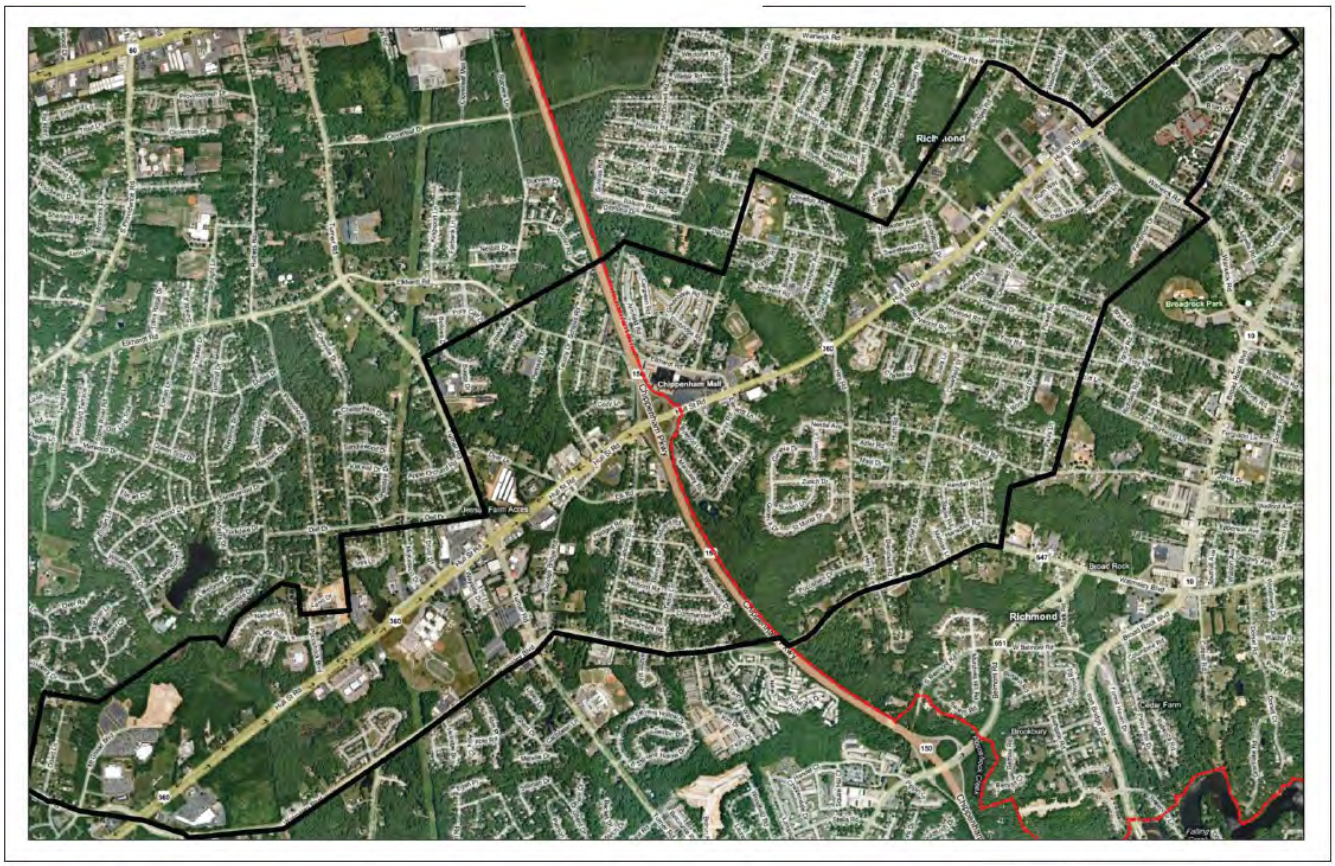
The City of Richmond, in collaboration with the County of Chesterfield and in partnership with Virginia Local Initiatives Support Corporation received a U. S. Department of Transportation TIGER II planning grant and a U.S. Housing and Urban Development Community Challenge planning grant to improve a 4-mile stretch of the Hull Street (Route 360) Business Corridor and the nearby community. The study area for the planning grant includes communities on both sides of Hull Street between Hicks Road and Walmsley Boulevard on the west and Warwick road and the CSX railroad line to the east.

Zoning in the study area is mainly residential (low and high density) and retail. The zoning designation is generally consistent with the existing land uses.

Study Area Boundaries

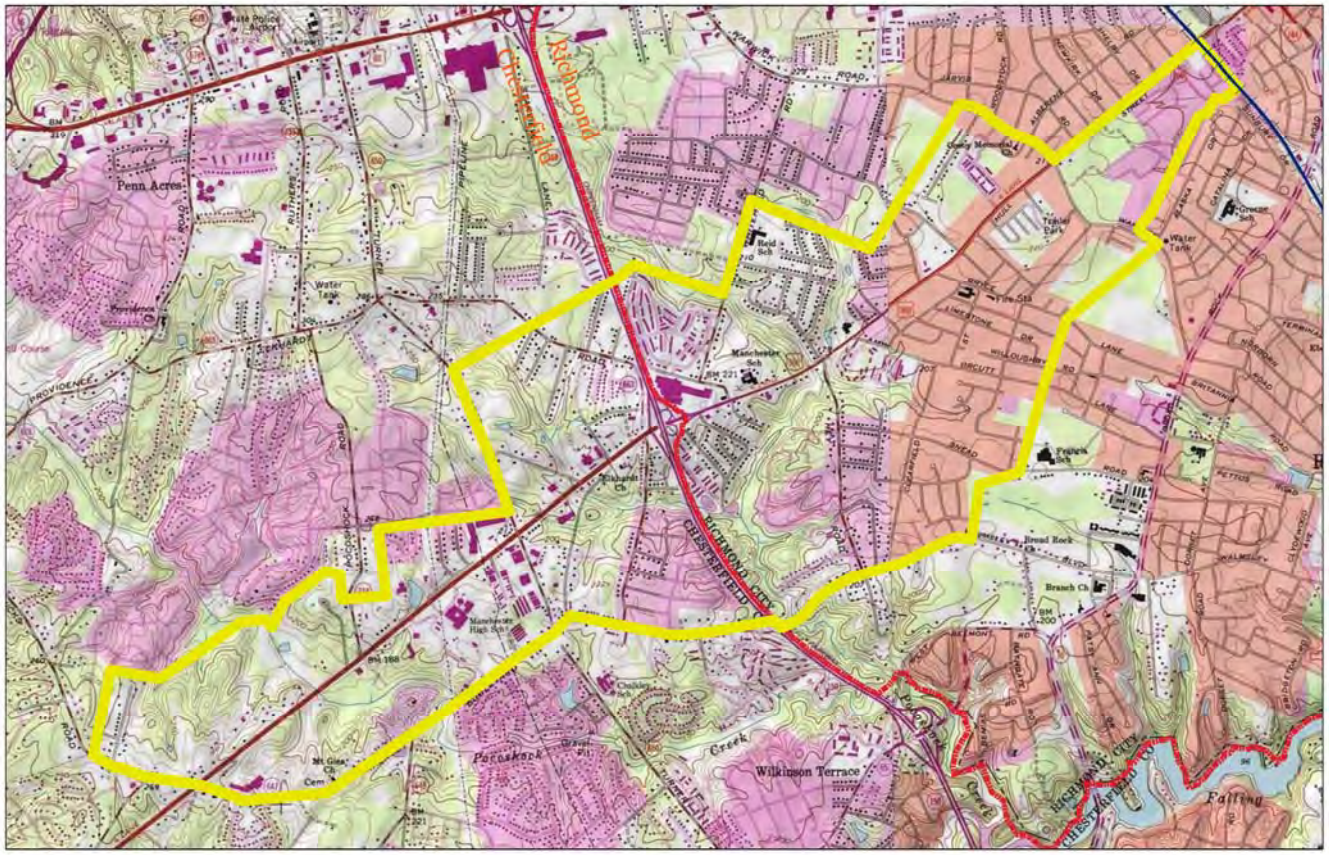


Aerial of Study Area



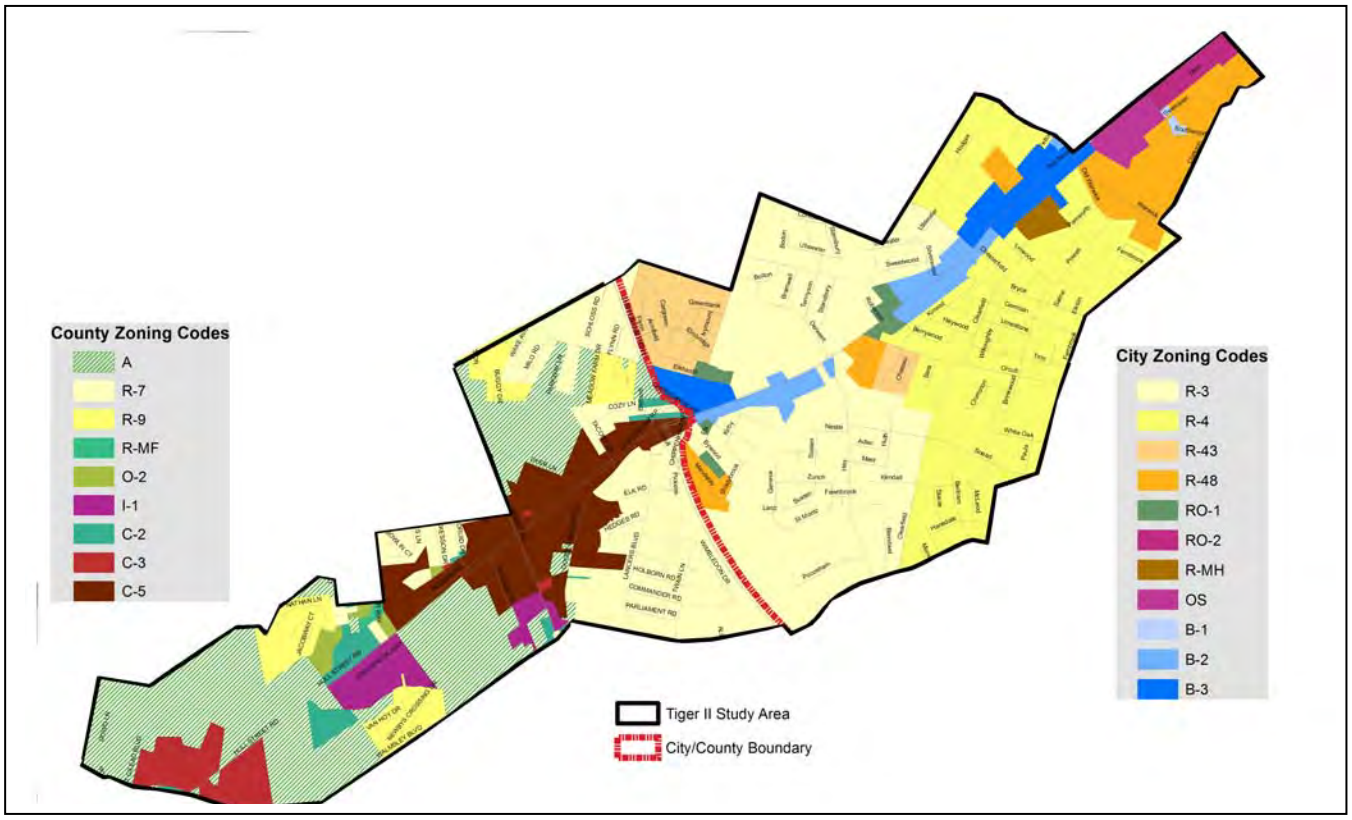
Source: ESRI Business Analyst Database

Topography of Study Area



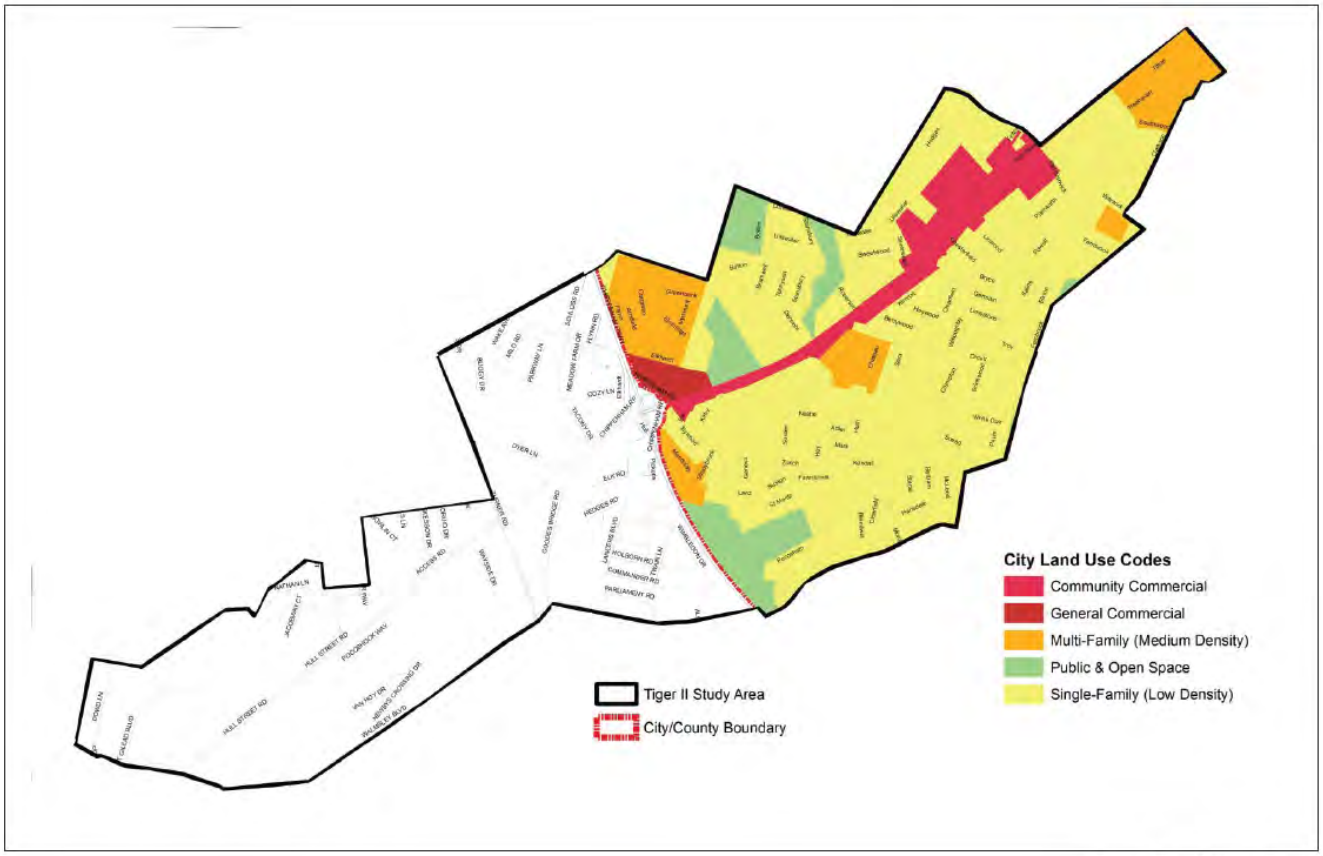
Source: ESRI Business Analyst Database

Study Area Zoning



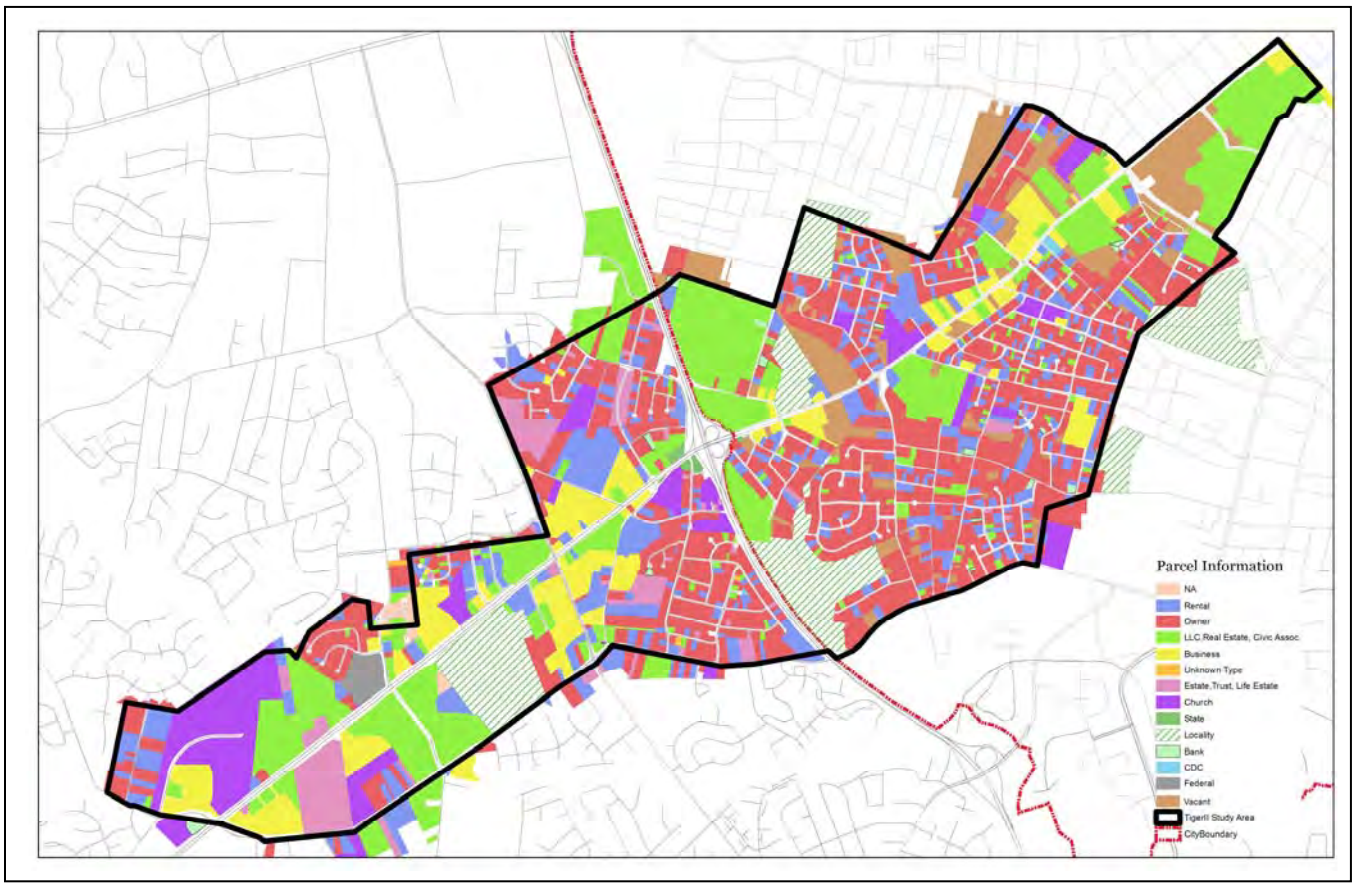
Source: City of Richmond, County of Chesterfield

Study Area Land Use



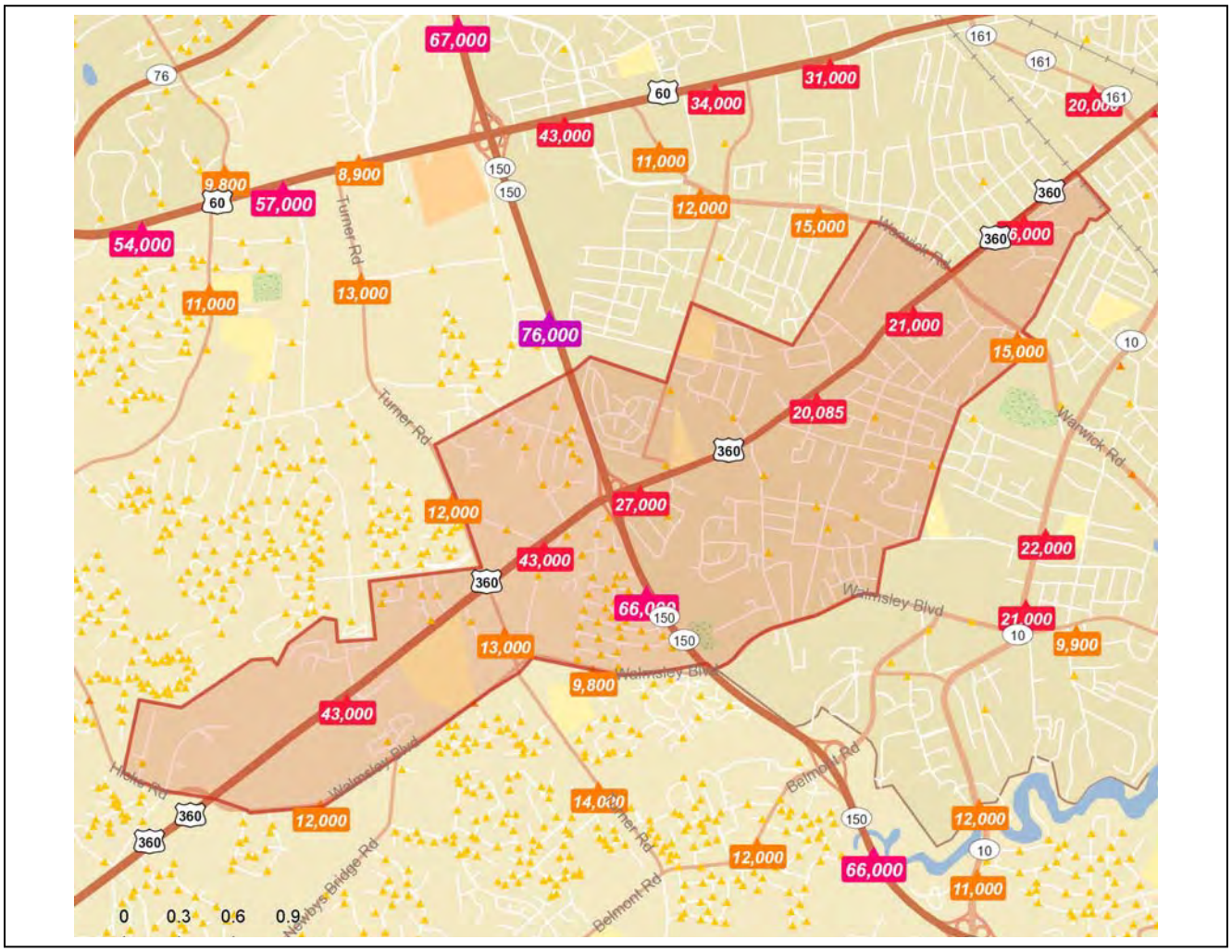
Source: City of Richmond

Study Area Parcel Information



Source: City of Richmond, County of Chesterfield

Traffic Counts

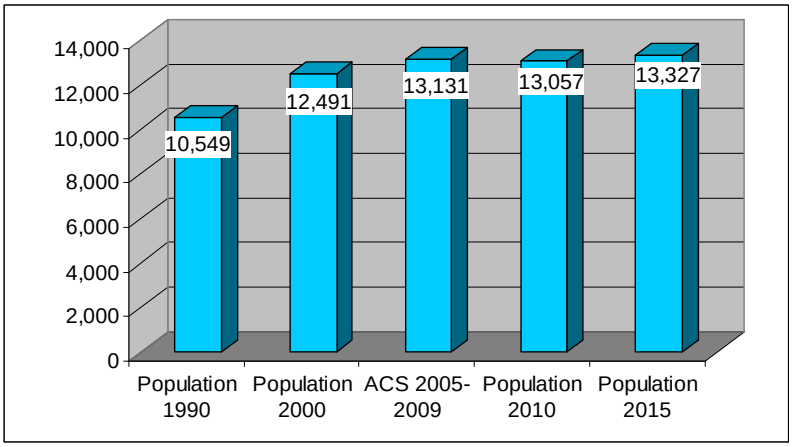


Source: ESRI Business analyst and Market Planning Solutions

Introduction

Any discussion of the future of transportation systems and corridor revitalization should begin with a discussion of the population that will use them. Questions, such as *how many people are in the area, what are their ages, what is their income* and others, are asked to determine the demographic composition of an area and the influence of those on transportation and the viability of the commercial corridor. The relationship between demographics, transportation and the market is a complex one and scholars continue debates on which variables have the most impact on each other. This *White Paper* is a descriptive analysis of the demographics of the Hull Street Road Revitalization Plan Study Area (study area), which includes the corridor and surrounding neighborhoods. This paper uses Environmental Services Research Institutes (ESRI) Business Analyst data and the American Community Survey as the primary sources for data. Census Block Groups and the Study area are the primary levels at which the data is captured. The data and findings from this paper will hopefully provide an understanding of the study area and inform the subsequent planning initiative.

Population

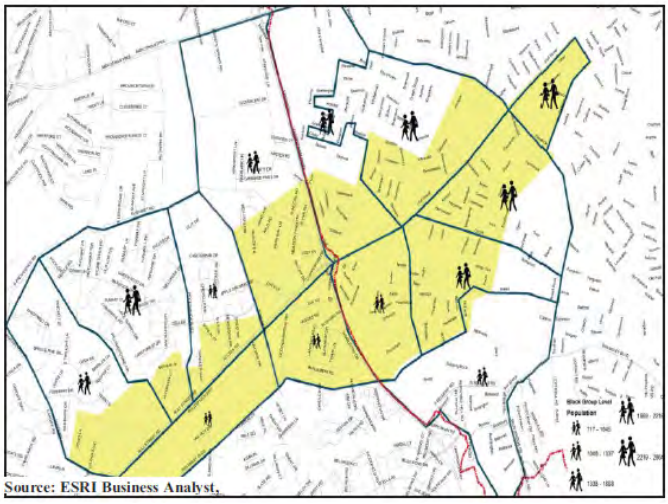


Source: ESRI Business Analyst, ACS 2005-2009

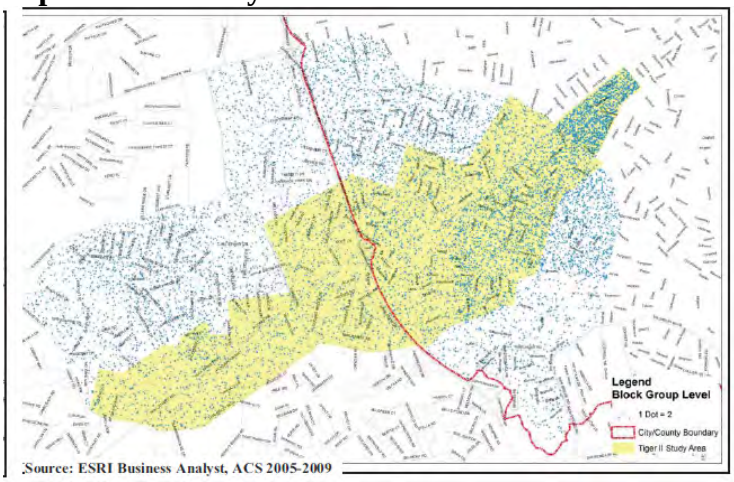
Population's impact on transportation, in the simplest terms, is that people travel and the more people living in an area, then the more people there are traveling. Within the study area, population increased 24 percent from 1990 to 2010. Chesterfield County's population grew 21 percent from 2000 to 2010 and in the same period, the City of Richmond's population grew approximately two percent. If the population trend continues in the study area, population will increase an additional two percent by 2015.

The map showing population distribution in the study area illustrates that the City has a higher portion of the study area's population (1:58). The City also has the highest population density. This stands to reason as the City's side of the study area is more urbanized.

Population Distribution



Population Density



According to the 2009 National Household Travel Survey by the U.S. Department of Transportation, people between the ages of 35 to 54 years of age are the most mobile, followed by those 20 to 34 years of age. In the study area, the 35 to 54 years of age increased just less than one percent between 2000 and 2010. However, those 20 to 34 years of age decreased slightly over two percent. In Richmond, those 35 to 54 years of age decreased almost three percent and those 20 to 34 years of age decreased three percent. In Chesterfield, however, those 35 to 54 years of age increased eight percent and those 20 to 34 years of age increased eighteen percent. The third age group highest in travel miles is those 55 to 64 years of age. All three areas saw an increase in the numbers in this age bracket. The study area saw a 68 percent increase, where as the city only increased by 49 percent and Chesterfield increased by 87 percent between 2000 and 2010.

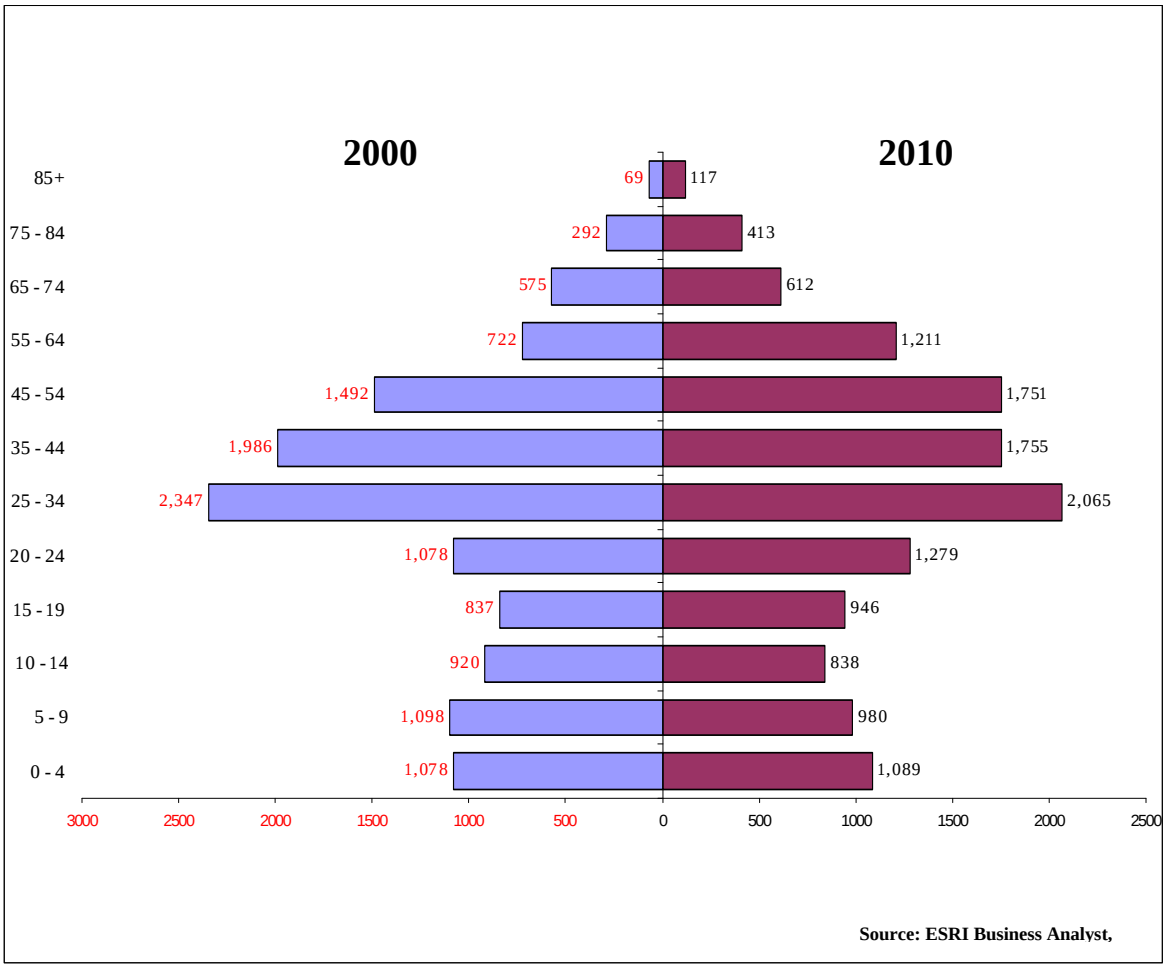
Total Population by Age

	Hull Street Study Area						Richmond						Chesterfield					
	2000		2010		2015		2000		2010		2015		2000		2010		2015	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Pop.	12,491	100%	13057	100%	13327	100%	197,790	100%	201,272	100%	204,365	100%	259,903	100%	314,259	100%	336,074	100%
Under 5 years	1,078	8.60%	1,089	8.30%	1,103	8.30%	12,376	6.30%	12,192	6.10%	12,224	6.00%	17,513	6.70%	20,484	6.50%	21,575	6.40%
5 - 9	1,098	8.80%	980	7.50%	990	7.40%	12,765	6.50%	11,513	5.70%	11,578	5.70%	20,637	7.90%	21,604	6.90%	22,938	6.80%
10 - 14	920	7.40%	838	6.40%	849	6.40%	11,713	5.90%	10,551	5.20%	10,733	5.30%	22,100	8.50%	22,647	7.20%	24,624	7.30%
15 - 19	837	6.70%	946	7.20%	815	6.10%	13,870	7.00%	15,486	7.70%	14,281	7.00%	20,365	7.80%	23,942	7.60%	23,622	7.00%
20 - 24	1,078	8.60%	1,279	9.80%	1,279	9.60%	18,386	9.30%	20,472	10.20%	20,632	10.10%	12,708	4.90%	17,990	5.70%	18,827	5.60%
25 - 34	2,347	18.80%	2,065	15.80%	2,361	17.70%	32,871	16.60%	29,185	14.50%	31,789	15.60%	33,702	13.00%	36,793	11.70%	42,058	12.50%
35 - 44	1,986	15.90%	1,755	13.40%	1,589	11.90%	29,841	15.10%	25,848	12.80%	23,634	11.60%	47,270	18.20%	44,271	14.10%	44,004	13.10%
45 - 54	1,492	11.90%	1,751	13.40%	1,604	12.00%	24,985	12.60%	27,479	13.70%	25,552	12.50%	42,597	16.40%	52,615	16.70%	50,352	15.00%
55 - 64	722	5.80%	1,211	9.30%	1,349	10.10%	14,854	7.50%	22,059	11.00%	24,185	11.80%	22,004	8.50%	41,121	13.10%	45,121	13.40%
65 - 74	575	4.60%	612	4.70%	843	6.30%	12,843	6.50%	12,366	6.10%	16,097	7.90%	12,525	4.80%	19,671	6.30%	28,121	8.40%
75 - 84	292	2.30%	413	3.20%	409	3.10%	9,764	4.90%	9,238	4.60%	8,708	4.30%	6,742	2.60%	9,727	3.10%	10,943	3.30%
85 years+	69	0.60%	117	0.90%	136	1.00%	3,522	1.80%	4,883	2.40%	4,952	2.40%	1,740	0.70%	3,394	1.10%	3,889	1.20%

Source: ESRI Business Analyst Database

The study area saw its greatest percent increase occur in the over 85 years of age group (69%) followed by the 55 to 64 year olds (68%). The greatest decline was in the 25 to 34 year olds (12%). If the population age trends continue with those over 55 years of age gaining in population and the younger age categories continue losing population, other modes of transportation in addition to personal vehicles will be needed to allow mobility. Travel generally declines with age, and those over 74 years of age tend to stop using personal vehicles.

Total Population Change by Age by Year



Research has shown that race and ethnicity are important in terms of travel choices, needs, and options. Many factors contribute to the differences in patterns of travel within population segments such as age and income. As the U.S. society becomes more diverse over the next few decades, a significant portion of growth in travel demand will come from minority populations. Minorities, on average, are more transit dependent, have higher automobile occupancies, and have lower levels of vehicle ownership. All are factors that should be considered in the development of policy and planning initiatives.

Race in Study Area	**2000**	
	#	%
White Alone	3,278	26.2
Black Alone	7,982	63.9
American Indian Alone	46	0.4
Asian Alone	164	1.3
Pacific Islander Alone	83	0.7
Some Other Race Alone	685	5.5
Two or More Races	253	2.0
	2010	
White Alone	2,782	22.2
Black Alone	6,532	52.1
American Indian Alone	82	0.7
Asian Alone	135	1.1
Pacific Islander Alone	23	0.2
Some Other Race Alone	2,636	21.0
Two or More Races	348	2.8

Source: ESRI, Census 2010 Redistricting Data (PL94-171).

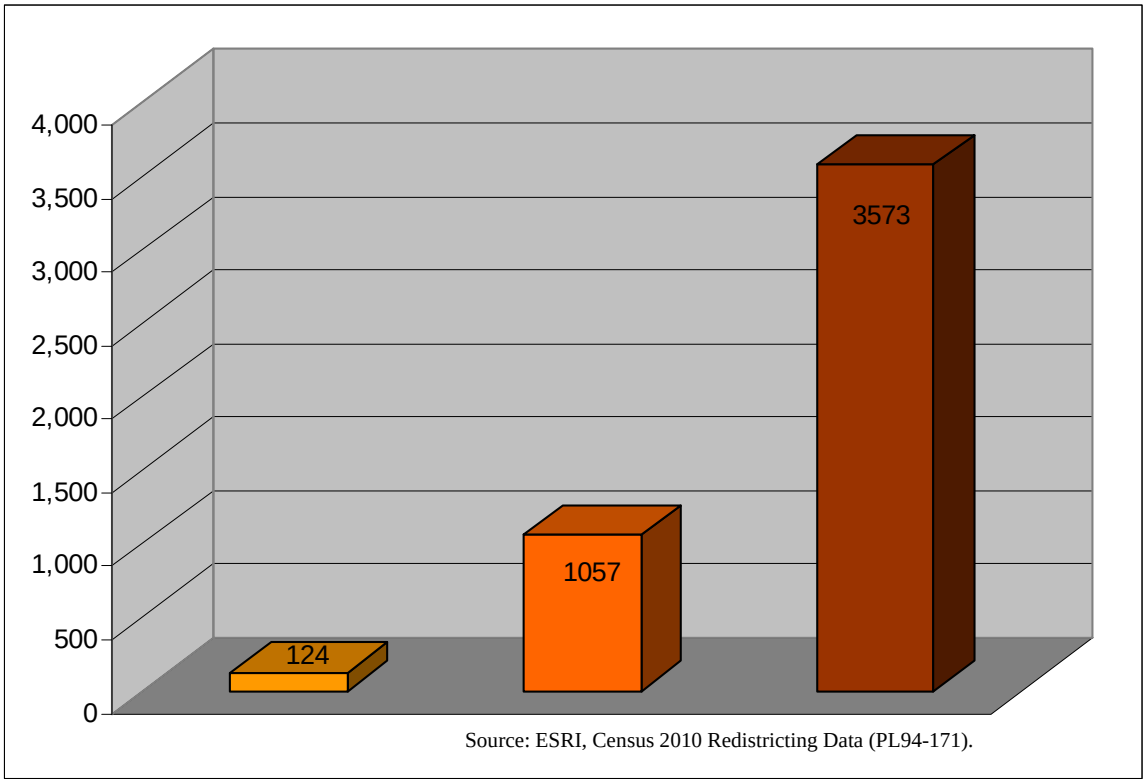
Change in Race from 2000 to 2010

White Alone	-15
Black Alone	-18
American Indian Alone	78
Asian Alone	-17
Pacific Islander Alone	-72
Some Other Race Alone	284
Two or More Races	37

Source: ESRI, Census 2010 Redistricting Data (PL94-171).

In 2000, the study area consisted of two main races, African American and White and although they remained the two main races in 2010, other numbers have increased in the study area although there has been a decrease in Asians and Pacific Islanders. In 2010, Richmond was 41 percent White, 51 percent African American, 2 percent Asian and 6 percent other race. In 2010, Chesterfield was 70 percent White, 21 percent African American, 3 percent Asian and 6 percent other race. The study area in 2010 was 22 percent White, 52 percent African American and 21 percent other.

Hispanic Population 1990 - 2010



The Hispanic population has increased by 3,449 people, up from the 124 people in the study area in 1990. This is almost a 3,000 percent increase in a 20-year span.

Of those between the ages of 5 and 17 years, 421 speak Spanish. Forty-four do not speak English at all. Between the ages of 18 to 64 years, 1,502 speak Spanish. Three hundred thirty-one do not speak English at all. For those over 65 years of age, 19 speak Spanish and all speak English.

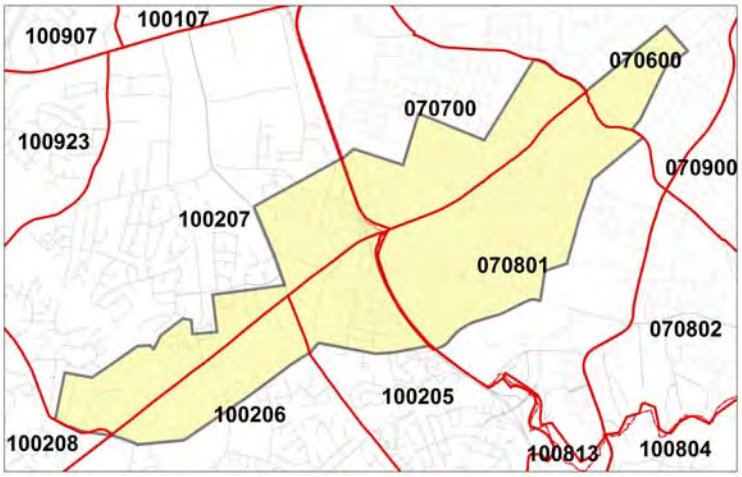
In 2010, Chesterfield's population was almost 7 percent Hispanic (20,588 Hispanic people). In Richmond in 2010, the population was 5 percent Hispanic (10,804 Hispanic people).

In Richmond, the study area is within census tracts 706, 707 and 708.01 and in Chesterfield; the study area is within 1002.05, 1002.06 and 1002.07 (*See map on page 16*). In 2010, these six census tracts were home to 5,999 Hispanics. Fifty-eight percent of the Hispanics were from Central American countries, with the highest percentage from Guatemala (36 percent). Those from Mexico (25 percent) followed this. The second highest percentage from Central America was those from Salvador (25 percent). Those from Puerto Rico (18 percent) were next.

Country of Origin	706	707	708.01	1002.05	1002.06	1002.07
Hispanic or Latino:	2,080	279	1,487	920	530	703
Mexican	629	0	658	36	111	74
Puerto Rican	30	**148**	0	0	0	**183**
Cuban	0	0	0	0	0	0
Dominican (Dominican Republic)	75	45	0	0	45	0
Central American:	1,256	75	797	759	284	307
Costa Rican	0	0	55	0	0	0
Guatemalan	**1,008**	57	**685**	284	31	92
Honduran	115	0	0	45	0	26
Nicaraguan	0	6	0	0	0	0
Panamanian	0	0	0	0	0	14
Salvadoran	133	12	57	**430**	**253**	175
Other Central American	0	0	0	0	0	0
South American:	25	0	0	68	90	63
Argentinean	0	0	0	0	0	0
Bolivian	0	0	0	0	0	31
Chilean	0	0	0	0	11	0
Colombian	0	0	0	68	79	0
Ecuadorian	0	0	0	0	0	0
Paraguayan	0	0	0	0	0	0
Peruvian	25	0	0	0	0	0
Uruguayan	0	0	0	0	0	0
Venezuelan	0	0	0	0	0	32
Other South American	0	0	0	0	0	0
Other Hispanic or Latino:	65	11	32	57	0	76
Spaniard	0	0	0	0	0	33
Spanish	0	0	0	0	0	0
Spanish American	0	0	0	0	0	0
All other Hispanic or Latino	65	11	32	57	0	43

Source: U.S. Census Bureau, 2005-2009 American Community Survey

Census Tracts



Source: ESRI Business Analyst

Population born outside of the United States is found at a higher percentage (60%) on the Richmond side of the study area. Forty-eight percent of the foreign-born population in the study area census tracts has entered the U.S. since 2000. Only about eight percent of the foreign-born population in the study area census tracts entered the U.S. before 1980.

YEAR OF ENTRY BY CITIZENSHIP
POPULATION BORN OUTSIDE THE UNITED STATES

Census Tract	706	707	708.01	1002.05	1002.06	1002.07
Total:	1,651	261	1,351	747	780	629
Entered 2000 or later:	1,044	98	908	229	156	140
Native	6	21	0	0	0	0
Foreign born:	1,038	77	908	229	156	140
Naturalized U.S. citizen	0	0	0	0	0	41
Not a U.S. citizen	1,038	77	908	229	156	99
Entered 1990 to 1999:	395	44	286	278	293	169
Native	15	10	0	28	0	31
Foreign born:	380	34	286	250	293	138
Naturalized U.S. citizen	58	0	46	12	84	35
Not a U.S. citizen	322	34	240	238	209	103
Entered 1980 to 1989:	152	49	144	193	192	223
Native	16	19	0	54	49	23
Foreign born:	136	30	144	139	143	200
Naturalized U.S. citizen	71	0	144	120	143	125
Not a U.S. citizen	65	30	0	19	0	75
Entered before 1980:	60	70	13	47	139	97
Native	34	25	3	32	63	11
Foreign born:	26	45	10	15	76	86
Naturalized U.S. citizen	26	0	10	0	44	57
Not a U.S. citizen	0	45	0	15	32	29

Source: U.S. Census Bureau, 2005-2009 American Community Survey

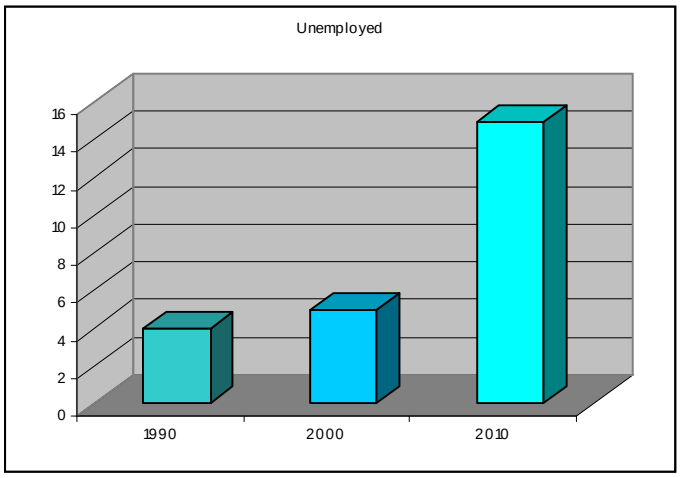
Economics

There is an indication in some transportation studies that more education leads to more driving alone. In addition, those with less than a high school diploma are more likely to use public transit or to walk. In 2010, 17 percent of the population in the study area did not have a high school diploma. This was a 36 percent decrease in those without a high school diploma from 1990. Thirty-three percent had a high school diploma and 13 percent had a bachelor's degree in 2010 in the study area. In 2010, 18 percent of the population had not earned a high school diploma in Richmond and 10 percent had not earned a high school diploma in Chesterfield. In Richmond and Chesterfield, 24 percent of the population had a high school diploma.

Population 25+ by Educational Attainment

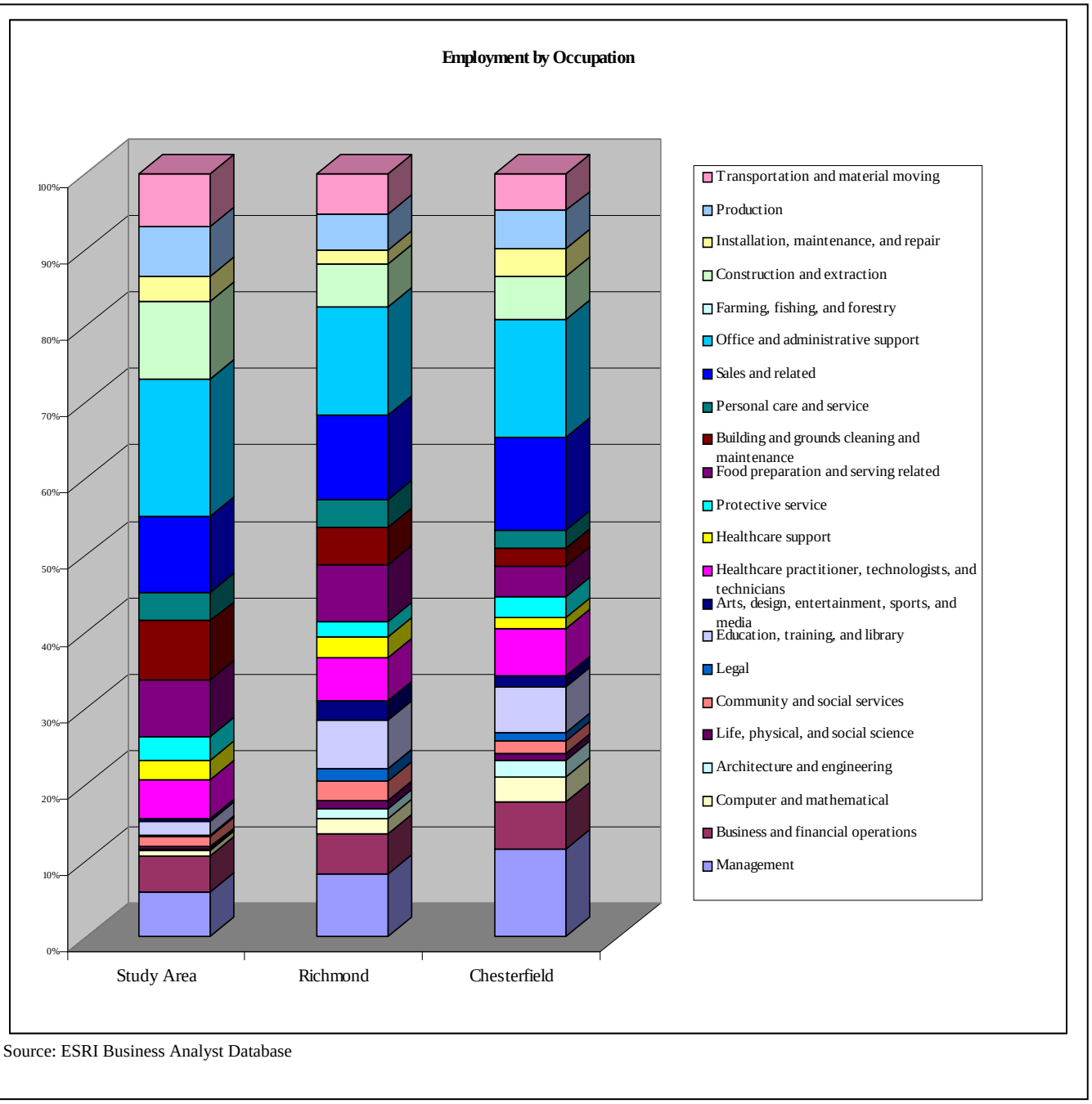
	1990		2000		2010	
	#	%	#	%	#	%
Total	6,550	100.00%	7,437	100.00%	7,926	100.00%
Less than 9th Grade	592	9.00%	492	6.60%	388	4.90%
9th - 12th Grade, No Diploma	1,493	22.80%	1,207	16.20%	935	11.80%
High School Graduate	1,942	29.60%	2,375	31.90%	2624	33.10%
Some College, No Degree	1,271	19.40%	1,896	25.50%	1989	25.10%
Associate Degree	348	5.30%	369	5.00%	507	6.40%
Bachelor's Degree	712	10.90%	770	10.40%	1030	13.00%
Master's/Professional/Doctorate Degree	192	2.90%	328	4.40%	460	5.80%

Source: ESRI Business Analyst Database



Source: ESRI Business Analyst Database

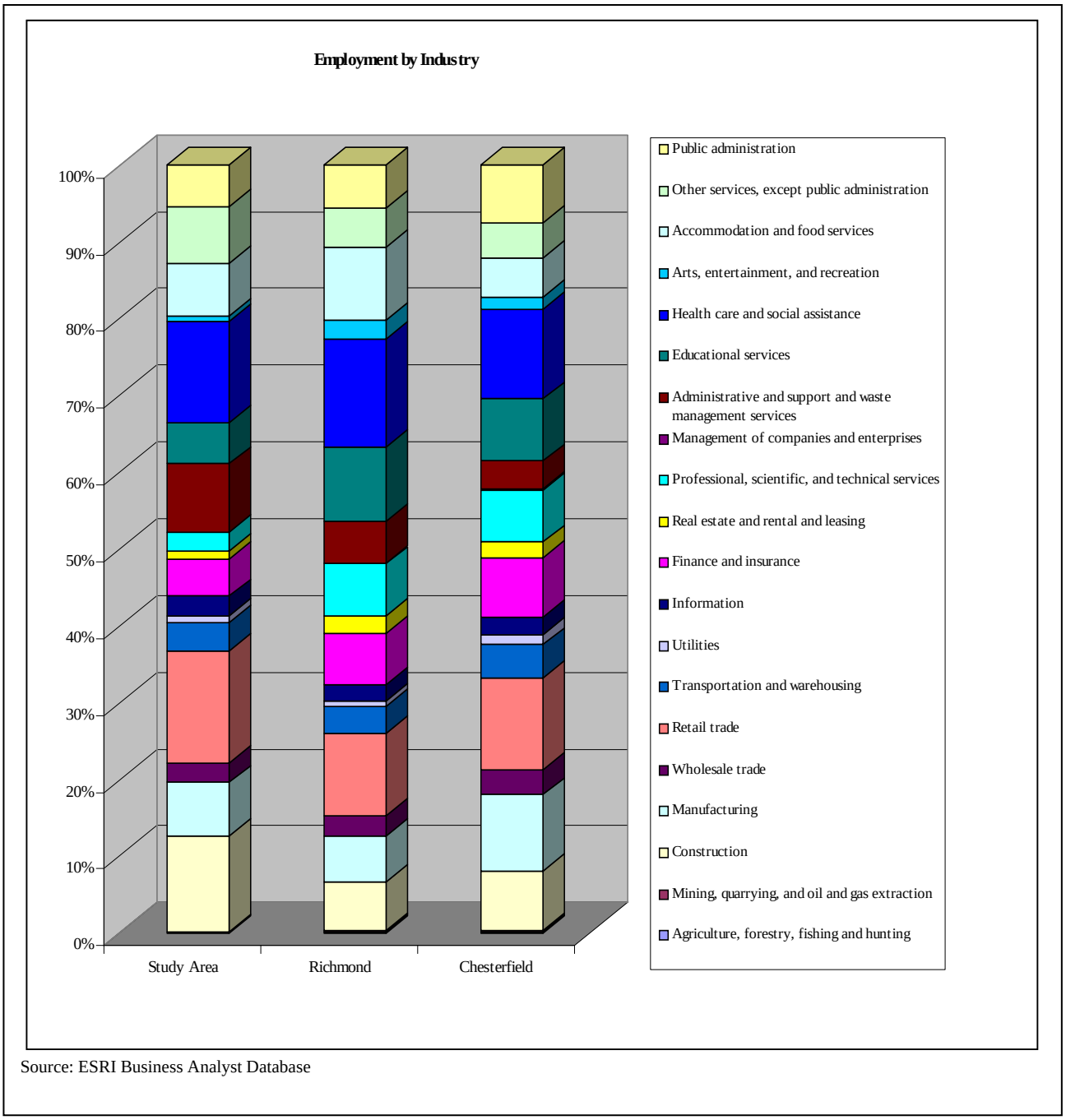
Typically, education levels are linked to employment levels. In 1990 and 2000, the study area's unemployment rate was 4 and 5 percent in that order. By 2010, the unemployment rate was 15 percent. In January 2010, Chesterfield's unemployment rate was 7.7 percent and Richmond's was 10.7 percent. By January 2011, Chesterfield's unemployment rate had decreased to 6.8 percent and Richmond's unemployment rate had decreased to 9.8 percent.



Source: ESRI Business Analyst Database

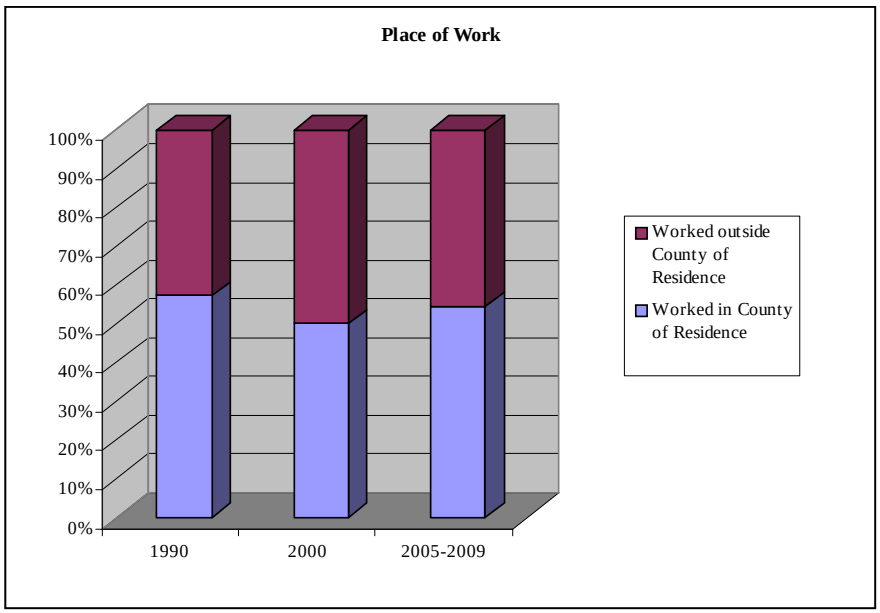
Blue-collar employees are more likely to carpool or walk than to use their own vehicles or public transit. In the current year, the occupational distribution of the employed population in the study area is 54 percent in white-collar jobs (63% in Richmond, 70% in Chesterfield), 20 percent in service jobs (21% in Richmond, 12% in Chesterfield) and 26 percent in blue-collar jobs (16% in Richmond, 18% in Chesterfield).

In the study area, Richmond and Chesterfield the highest number are employed in *Office and Administrative Support.* In the study area, this is followed by *Construction*. In both Richmond and Chesterfield, it is followed by *Sales and Related*.



Source: ESRI Business Analyst Database

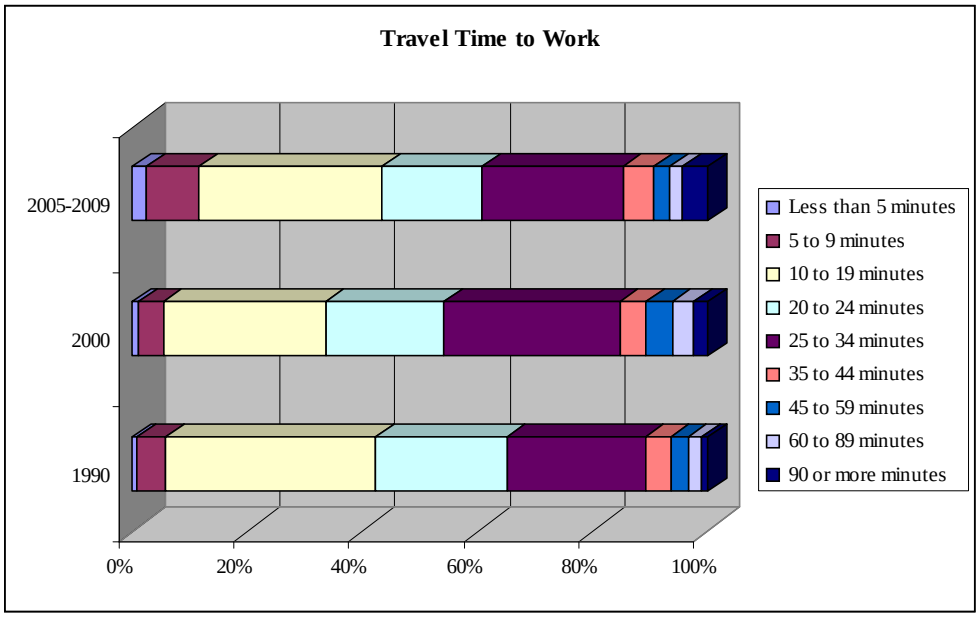
Employment by industry for the study area is highest in *Retail Trade*. Health care and social assistance was the highest industry in Richmond and in Chesterfield, it was Retail Trade.



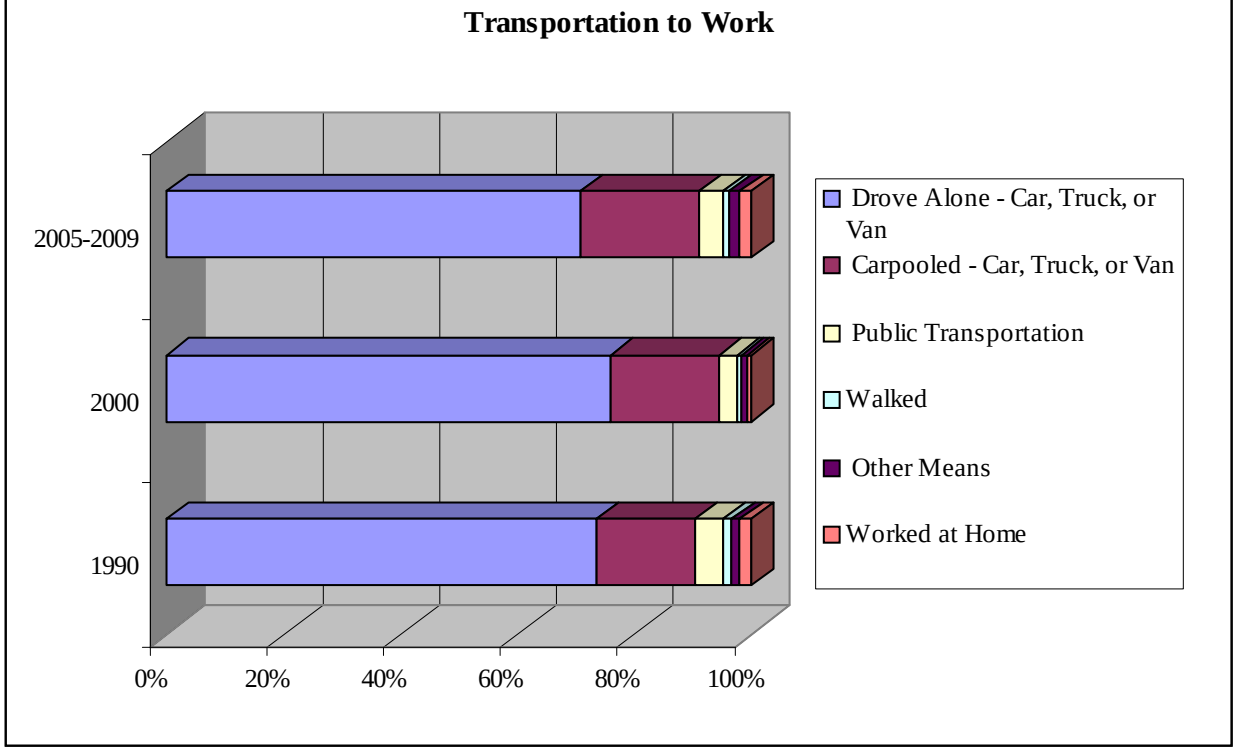
Source: ESRI Business Analyst Database and ACS 2005-2009

Where do people travel to work? In the study area, only slightly more worked in their county of residence than worked outside the county of residence. This was true for each of the three periods. In Chesterfield, more (53%) worked outside of the county. In Richmond, more (57%) worked in the city.

The majority of workers in the study area took anywhere from 10 to 34 minutes of travel time to get to work. In Richmond, the majority of workers took anywhere from 10 to 24 minutes to travel to work. In Chesterfield, the majority of workers took 5 to 34 minutes.



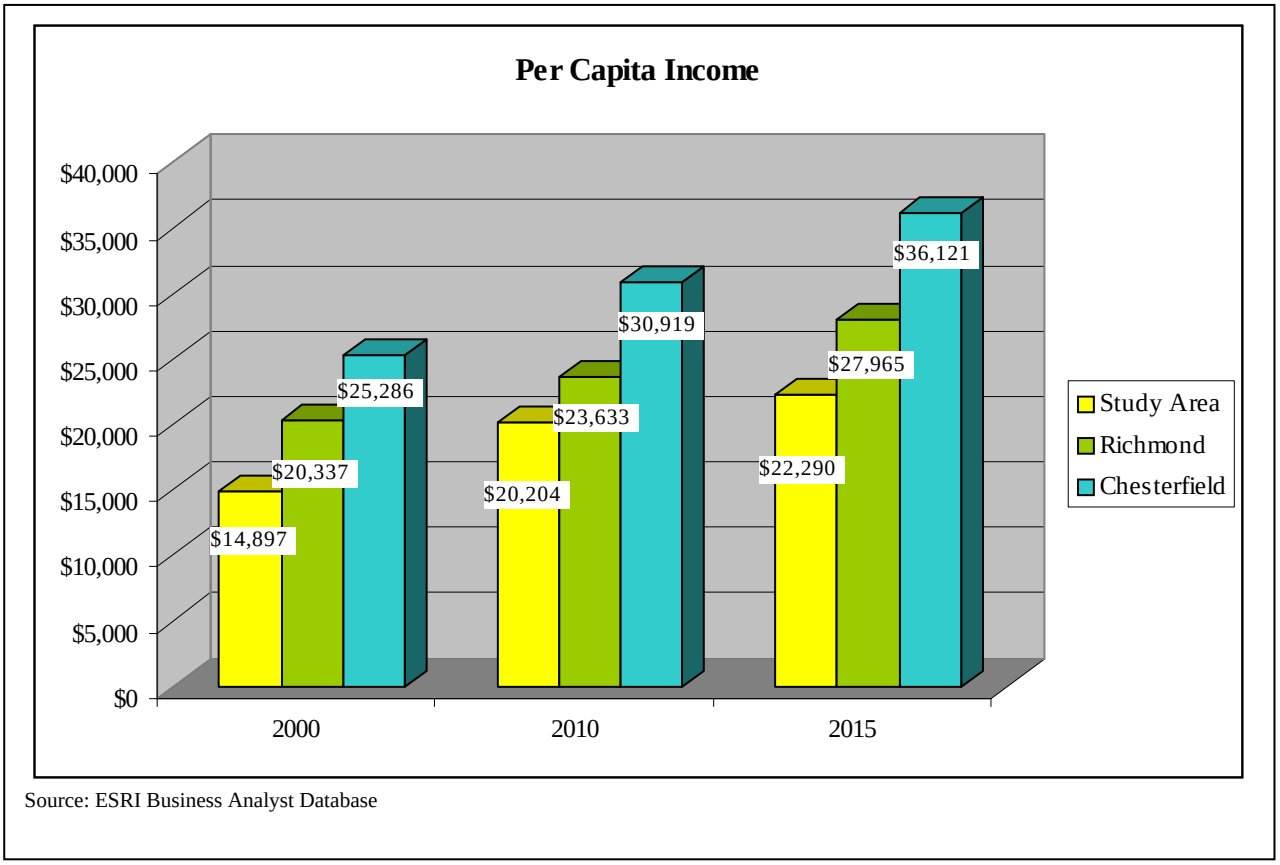
Source: ESRI Business Analyst Database and ACS 2005-2009



Source: ESRI Business Analyst and ACS 2005-2009

In the study area during all three years, drivers choose to drive alone. There was only a 41 percent chance in the current year that you would travel by some other mode other than by personal car alone.

In Richmond, 71 percent drove alone, 12 percent carpooled and 8 percent used public transit. In Chesterfield, 86 percent drove alone and 9 percent carpooled.

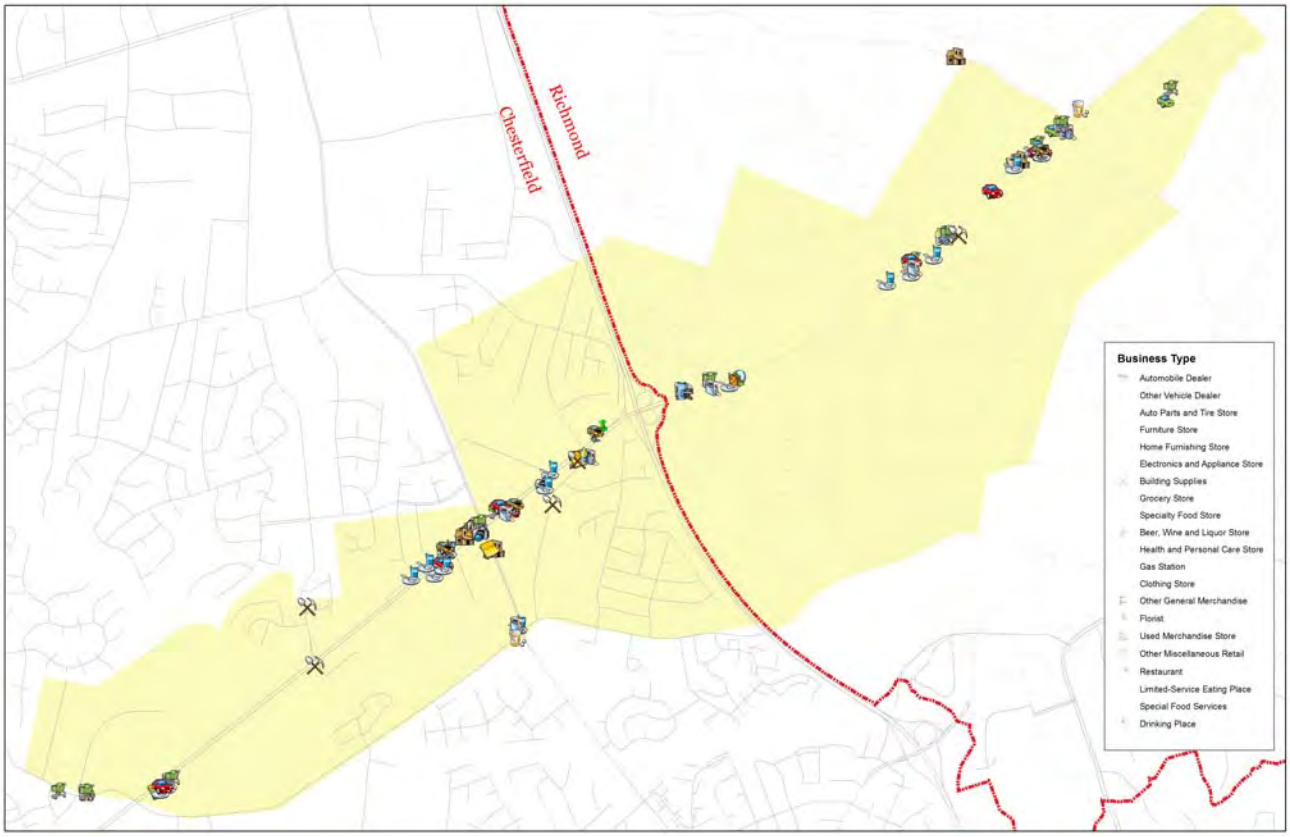


Source: ESRI Business Analyst Database

In 2010, the median household income for the study area was $46,938. In Richmond, it was $41,566 and in Chesterfield, it was $75,532.

As Americans, we love our car and as our incomes rise, we chose driving alone. In the study area, per capita income rose 35 percent between 2000 and 2010. However, per capita was lower in the study area than in Richmond or Chesterfield.

Types of Businesses



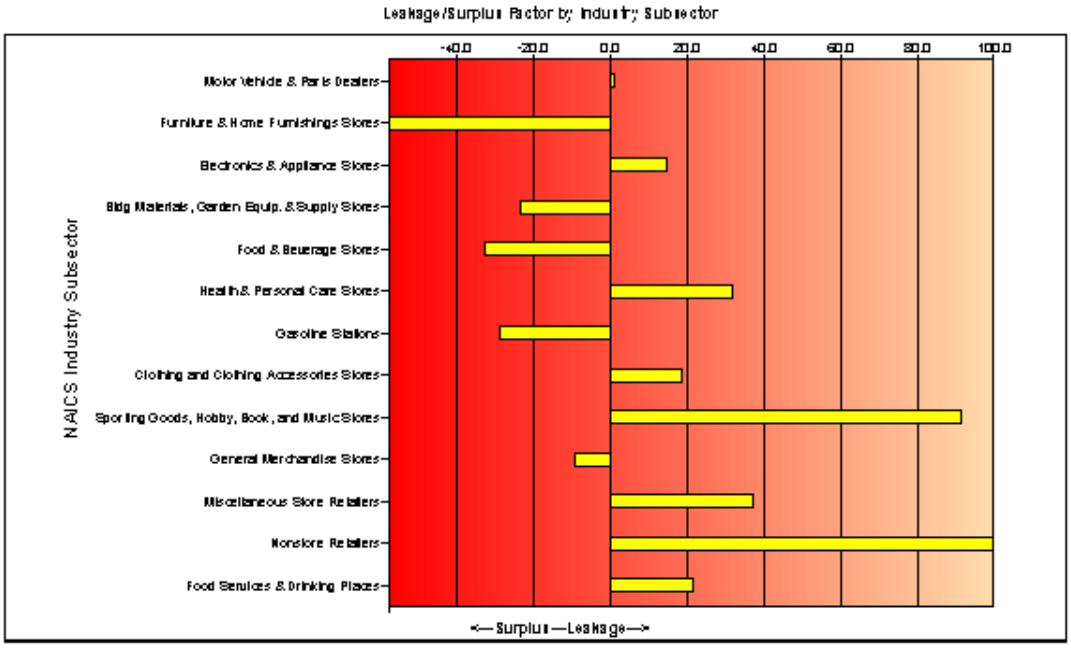
Source: LISC MetroEdge

Retail Profile – Study Area

Industry Summary	Demand (Retail Potential)	Supply (Retail Sales)	Retail Gap	Leakage/Surplus Factor	Number of Businesses
Total Retail Trade and Food & Drink (NAICS 44-45, 722)	$101,935,233	$128,866,948	($26,931,715)	-11.7	107
Total Retail Trade (NAICS 44-45)	$87,606,986	$119,611,553	($32,004,567)	-15.4	78
Total Food & Drink (NAICS 722)	$14,328,247	$9,255,395	$5,072,852	21.5	29
Industry Group					
Motor Vehicle & Parts Dealers (NAICS 441)	$20,366,824	$19,951,605	$415,219	1	16
Automobile Dealers (NAICS 4411)	$17,416,668	$14,574,425	$2,842,243	8.9	8
Other Motor Vehicle Dealers (NAICS 4412)	$1,197,841	$1,663,600	($465,759)	-16.3	3
Auto Parts, Accessories, and Tire Stores (NAICS 4413)	$1,752,315	$3,713,580	($1,961,265)	-35.9	5
Furniture & Home Furnishings Stores (NAICS 442)	$2,930,751	$10,900,182	($7,969,431)	-57.6	3
Furniture Stores (NAICS 4421)	$1,964,335	$7,070,663	($5,106,328)	-56.5	1
Home Furnishings Stores (NAICS 4422)	$966,416	$3,829,519	($2,863,103)	-59.7	2
Electronics & Appliance Stores (NAICS 443/NAICS 4431)	$2,171,454	$1,614,728	$556,726	14.7	6
Bldg Materials, Garden Equip. & Supply Stores (NAICS 444)	$2,837,898	$4,541,798	($1,703,900)	-23.1	8
Building Material and Supplies Dealers (NAICS 4441)	$2,724,186	$4,541,798	($1,817,612)	-25	8
Lawn and Garden Equipment and Supplies Stores (NAICS 4442)	$113,712	$0	$113,712	100	0
Food & Beverage Stores (NAICS 445)	$19,268,585	$37,885,790	($18,617,205)	-32.6	15
Grocery Stores (NAICS 4451)	$18,505,914	$37,528,000	($19,022,086)	-33.9	13
Specialty Food Stores (NAICS 4452)	$195,607	$32,606	$163,001	71.4	1
Beer, Wine, and Liquor Stores (NAICS 4453)	$567,064	$325,184	$241,880	27.1	1
Health & Personal Care Stores (NAICS 446/NAICS 4461)	$3,935,668	$2,036,572	$1,899,096	31.8	3
Gasoline Stations (NAICS 447/4471)	$15,616,408	$27,978,317	($12,361,909)	-28.4	8
Clothing and Clothing Accessories Stores (NAICS 448)	$4,513,660	$3,095,708	$1,417,952	18.6	4
Clothing Stores (NAICS 4481)	$3,543,334	$2,968,757	$574,577	8.8	4
Shoe Stores (NAICS 4482)	$457,653	$126,951	$330,702	56.6	1
Jewelry, Luggage, and Leather Goods Stores (NAICS 4483)	$512,673	$0	$512,673	100	0
Sporting Goods, Hobby, Book, and Music Stores (NAICS 451)	$1,834,021	$80,770	$1,753,251	91.6	1
Sporting Goods/Hobby/Musical Instrument Stores (NAICS 4511)	$966,869	$80,770	$886,099	84.6	1
Book, Periodical, and Music Stores (NAICS 4512)	$867,152	$0	$867,152	100	0
General Merchandise Stores (NAICS 452)	$8,900,882	$10,709,598	($1,808,716)	-9.2	5
Department Stores Excluding Leased Depts.(NAICS 4521)	$3,766,932	$811,010	$2,955,922	64.6	1
Other General Merchandise Stores (NAICS 4529)	$5,133,950	$9,898,588	($4,764,638)	-31.7	4
Miscellaneous Store Retailers (NAICS 453)	$1,782,688	$816,485	$966,203	37.2	9
Florists (NAICS 4531)	$282,247	$418,071	($135,824)	-19.4	2
Office Supplies, Stationery, and Gift Stores (NAICS 4532)	$565,319	$0	$565,319	100	0
Used Merchandise Stores (NAICS 4533)	$163,405	$65,573	$97,832	42.7	2
Other Miscellaneous Store Retailers (NAICS 4539)	$771,717	$332,841	$438,876	39.7	5
Nonstore Retailers (NAICS 454)	$3,448,147	$0	$3,448,147	100	0
Electronic Shopping and Mail-Order Houses (NAICS 4541)	$2,118,188	$0	$2,118,188	100	0
Vending Machine Operators (NAICS 4542)	$482,802	$0	$482,802	100	0
Direct Selling Establishments (NAICS 4543)	$847,157	$0	$847,157	100	0
Food Services & Drinking Places (NAICS 722)	$14,328,247	$9,255,395	$5,072,852	21.5	29
Full-Service Restaurants (NAICS 7221)	$6,995,187	$3,773,723	$3,221,464	29.9	19
Limited-Service Eating Places (NAICS 7222)	$5,313,779	$4,658,192	$655,587	6.6	6
Special Food Services (NAICS 7223)	$1,743,568	$622,507	$1,121,061	47.4	3
Drinking Places - Alcoholic Beverages (NAICS 7224)	$275,713	$200,973	$74,740	15.7	1

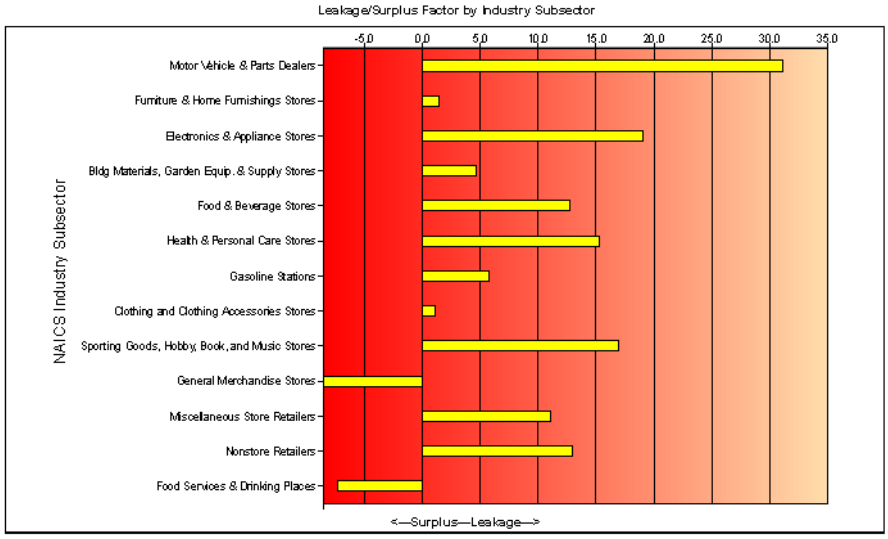
The study area has 107 businesses in Retail Trade and food and drink. Based on retail potential for the area and retail sales, there are gaps in grocery stores and gas stations. The businesses along the corridor provide an opportunity for employment as several in the area have employment of over 80 positions. There are also many employment opportunities in businesses with 0 to 6 employees.

Study Area



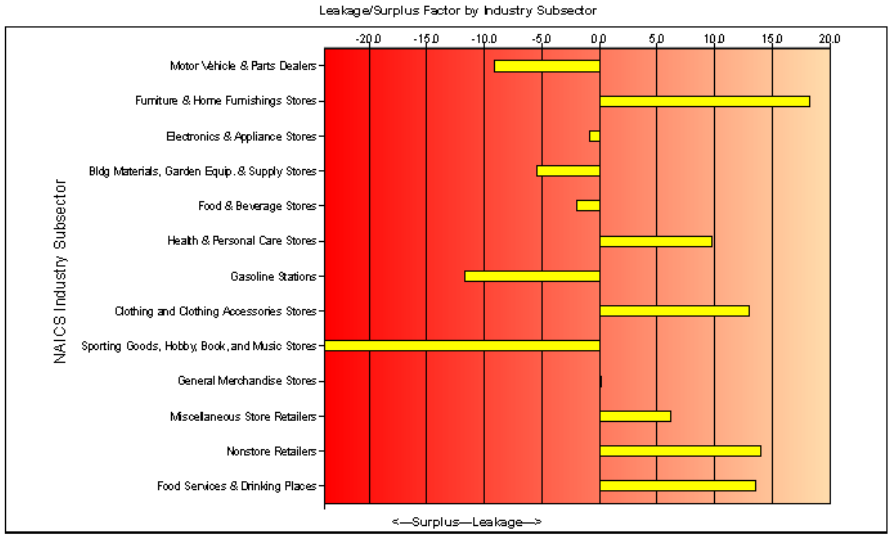
Source: Esri and Infogroup

Richmond



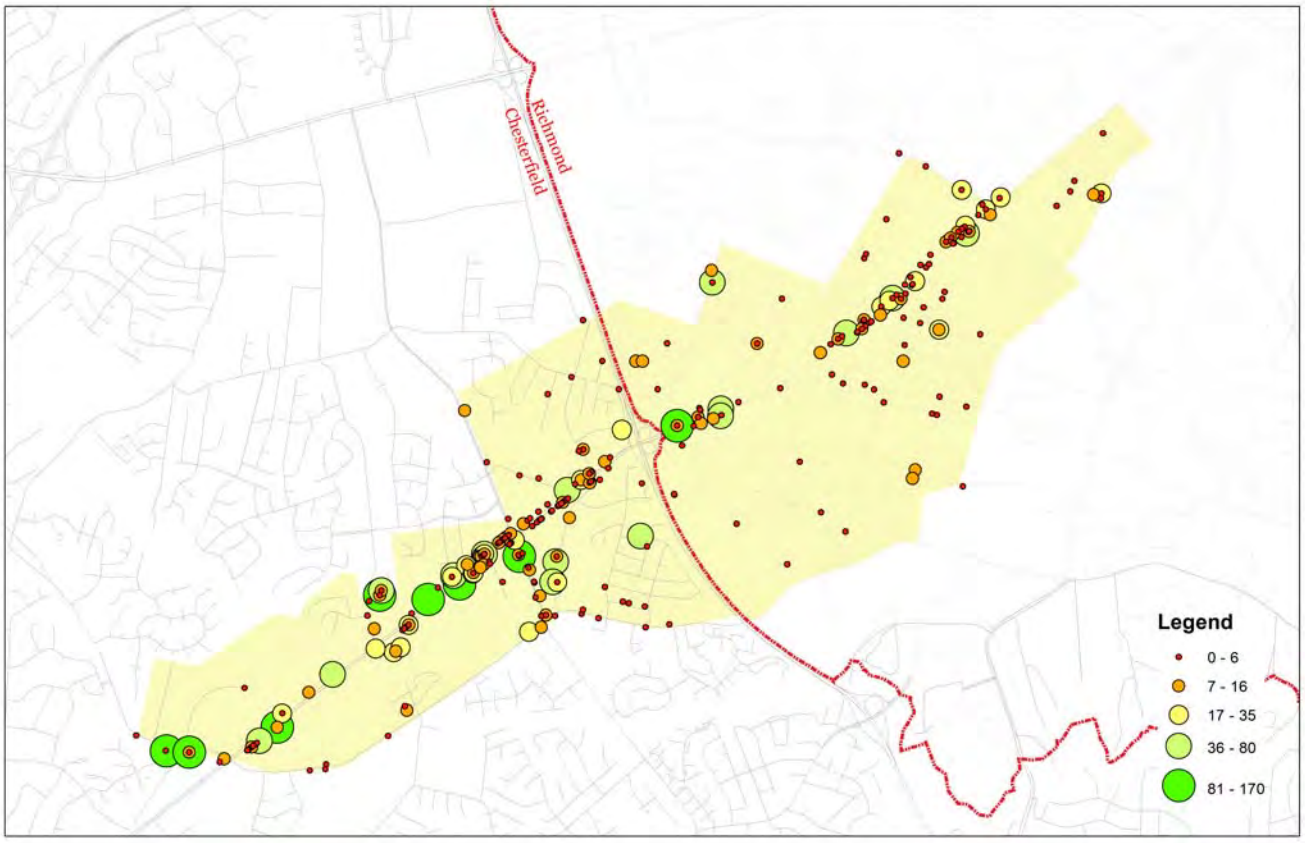
Sources: Esri and Infogroup

Chesterfield



Sources: Esri and Infogroup

Number of Employees



Source: LISC MetroEdge

Housing

The more occupied housing units, the more residents and therefore the more miles traveled. The number of housing units in the study area increased by 264 (5%) units between 2000 and 2010. Between 2000 and 2010, Richmond had a three percent increase in housing units and Chesterfield's housing units increased by 24 percent.

Total Housing Units	Study Area				Richmond				Chesterfield			
	2000		2010		2000		2010		2000		2010	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
	5,482	100.0%	5,746	100.0%	92,282	100.00%	95,375	100.00%	97,707	100.00%	121,566	100.00%
Occupied	5,125	93.5%	5,240	91.2%	84,549	91.60%	83,783	87.80%	93,772	96.00%	115,254	94.80%
Owner	1,992	36.3%	2,110	36.7%	39,008	42.30%	37,389	39.20%	75,874	77.70%	91,887	75.60%
Renter	3,133	57.2%	3,130	54.5%	45,541	49.30%	46,394	48.60%	17,898	18.30%	23,367	19.20%
Vacant	357	6.5%	506	8.8%	7,733	8.40%	11,592	12.20%	3,935	4.00%	6,312	5.20%

Source: ESRI Business Analyst Data

In 2010, 37 percent were owner-occupied in the study area and 9 percent were vacant. There was a slight decrease in the number of renter units from 2000 to 2010. In 2010, Chesterfield was 75 percent owner occupied and Richmond was 39 percent owner occupied.

UNITS IN STRUCTURE	Study Area		Richmond		Chesterfield	
	#	%	#	%	#	%
1, detached	2,528	49.90%	46,211	49.10%	92,591	79.90%
1, attached	151	3.00%	7,046	7.50%	4,630	4.00%
2	75	1.50%	5,546	5.90%	868	0.70%
3 or 4	257	5.10%	6,726	7.10%	2,306	2.00%
5 to 9	1,357	26.80%	9,727	10.30%	4,429	3.80%
10 to 19	368	7.30%	6,608	7.00%	6,301	5.40%
20 to 49	112	2.20%	3,354	3.60%	1,247	1.10%
50 or more	133	2.60%	8,144	8.70%	1,303	1.10%
Mobile home	89	1.80%	769	0.80%	2,249	1.90%

Source: ACS 2005-2009

The majority of the units (50%) are single detached units. This follows true for Richmond (49%) and Chesterfield (80%).

YEAR STRUCTURE BUILT

	Study Area		Richmond		Chesterfield	
	#	%	#	%	#	%
Built 2005 or later	12	0.20%	1,723	1.80%	5,571	4.80%
Built 2000 to 2004	407	8.00%	2,786	3.00%	14,577	12.60%
Built 1990 to 1999	495	9.80%	3,449	3.70%	23,258	20.10%
Built 1980 to 1989	605	11.90%	6,738	7.20%	30,256	26.10%
Built 1970 to 1979	1,535	30.30%	12,060	12.80%	24,170	20.80%
Built 1960 to 1969	699	13.80%	12,107	12.90%	9,849	8.50%
Built 1950 to 1959	751	14.80%	14,743	15.70%	4,571	3.90%
Built 1940 to 1949	324	6.40%	10,500	11.20%	1,902	1.60%
Built 1939 or earlier	242	4.80%	30,025	31.90%	1,770	1.50%
Median Year Structure Built	1973		1954		1985	

Source: ACS 2005-2009

The majority of the units (30%) were built between 1970 and 1979 in the study area. In Richmond, the highest percentage of housing units (32%) was built before 1939. In Chesterfield, the highest percentage (26%) was built between 1980 and 1989.

Based on data from the ACS 2005-2009, the median value of housing in the study area is $139,138. This is less than the housing values of Richmond ($192,400) and Chesterfield ($225, 400).

OWNER-OCCUPIED HOUSING UNITS BY VALUE

	Study Area		Richmond		Chesterfield	
	#	%	#	%	#	%
Total	2,031	100.00%	38,393	100.00%	86,675	100.00%
Less than $10,000	35	1.70%	361	0.90%	733	0.80%
$10,000 to $14,999	19	0.90%	67	0.20%	351	0.40%
$15,000 to $19,999	25	1.20%	119	0.30%	288	0.30%
$20,000 to $24,999	0	0.00%	69	0.20%	131	0.20%
$25,000 to $29,999	0	0.00%	102	0.30%	128	0.10%
$30,000 to $34,999	0	0.00%	144	0.40%	113	0.10%
$35,000 to $39,999	0	0.00%	86	0.20%	34	0.00%
$40,000 to $49,999	9	0.40%	301	0.80%	179	0.20%
$50,000 to $59,999	10	0.50%	705	1.80%	165	0.20%
$60,000 to $69,999	40	2.00%	1,203	3.10%	342	0.40%
$70,000 to $79,999	32	1.60%	1,112	2.90%	372	0.40%
$80,000 to $89,999	122	6.00%	1,742	4.50%	755	0.90%
$90,000 to $99,999	142	7.00%	1,611	4.20%	1,052	1.20%
$100,000 to $124,999	349	17.20%	3,130	8.20%	4,467	5.20%
$125,000 to $149,999	412	20.30%	3,376	8.80%	7,260	8.40%
$150,000 to $174,999	307	15.10%	3,332	8.70%	9,328	10.80%
$175,000 to $199,999	196	9.70%	2,490	6.50%	8,762	10.10%
$200,000 to $249,999	239	11.80%	4,558	11.90%	17,459	20.10%
$250,000 to $299,999	69	3.40%	3,600	9.40%	10,646	12.30%
$300,000 to $399,999	26	1.30%	4,124	10.70%	12,764	14.70%
$400,000 to $499,999	0	0.00%	2,259	5.90%	5,678	6.60%
$500,000 to $749,999	0	0.00%	2,253	5.90%	4,161	4.80%
$750,000 to $999,999	0	0.00%	839	2.20%	971	1.10%
$1,000,000 or more	0	0.00%	810	2.10%	536	0.60%
Median Home Value	$139,138		$192,400		$225,400	

Source: ACS 2005-2009

The median contract rent in the study area ($632) is only slightly less than that of the city of Richmond ($637) but almost 30 percent lower than that of Chesterfield ($820).

RENTER-OCCUPIED HOUSING UNITS BY CONTRACT RENT

	Study Area		Richmond		Chesterfield	
	#	%	#	%	#	%
Total	2,393	100.00%	42,837	100.00%	23,031	100.00%
With cash rent	2,319	96.90%	41,636	97.20%	22,307	96.90%
Less than $100	13	0.50%	1,356	3.20%	161	0.70%
$100 to $149	7	0.30%	810	1.90%	143	0.60%
$150 to $199	131	5.50%	1,997	4.70%	134	0.60%
$200 to $249	23	1.00%	875	2.00%	129	0.60%
$250 to $299	47	2.00%	805	1.90%	79	0.30%
$300 to $349	5	0.20%	847	2.00%	265	1.20%
$350 to $399	28	1.20%	1,036	2.40%	148	0.60%
$400 to $449	86	3.60%	1,435	3.30%	607	2.60%
$450 to $499	18	0.80%	2,569	6.00%	492	2.10%
$500 to $549	263	11.00%	3,013	7.00%	833	3.60%
$550 to $599	269	11.20%	3,310	7.70%	971	4.20%
$600 to $649	422	17.60%	3,733	8.70%	1,268	5.50%
$650 to $699	115	4.80%	3,300	7.70%	1,380	6.00%
$700 to $749	236	9.90%	3,304	7.70%	1,776	7.70%
$750 to $799	164	6.90%	2,457	5.70%	2,037	8.80%
$800 to $899	192	8.00%	3,328	7.80%	3,669	15.90%
$900 to $999	142	5.90%	2,265	5.30%	3,176	13.80%
$1,000 to $1,249	91	3.80%	2,575	6.00%	3,005	13.00%
$1,250 to $1,499	45	1.90%	1,287	3.00%	1,364	5.90%
$1,500 to $1,999	13	0.50%	847	2.00%	359	1.60%
$2,000 or more	10	0.40%	487	1.10%	311	1.40%
No cash rent	74	3.10%	1,201	2.80%	724	3.10%
Median Contract Rent	$632		$637		$820	

Source: ACS 2005-2009

YEAR HOUSEHOLDER MOVED IN

	Study Area		Richmond		Chesterfield	
Owner occupied	#	%	#	%	#	%
Moved in 2005 or later	267	6.00%	6,808	8.40%	16,164	14.70%
Moved in 2000 to 2004	516	11.70%	8,487	10.40%	25,276	23.00%
Moved in 1990 to 1999	574	13.00%	8,620	10.60%	24,779	22.60%
Moved in 1980 to 1989	272	6.10%	4,872	6.00%	12,923	11.80%
Moved in 1970 to 1979	168	3.80%	4,213	5.20%	5,144	4.70%
Moved in 1969 or earlier	235	5.30%	5,393	6.60%	2,389	2.20%
Renter occupied						
Moved in 2005 or later	1,429	32.30%	22,495	27.70%	13,906	12.70%
Moved in 2000 to 2004	620	14.00%	13,579	16.70%	6,541	6.00%
Moved in 1990 to 1999	258	5.80%	4,910	6.00%	2,000	1.80%
Moved in 1980 to 1989	75	1.70%	1,346	1.70%	366	0.30%
Moved in 1970 to 1979	0	0.00%	225	0.30%	139	0.10%
Moved in 1969 or earlier	11	0.20%	282	0.30%	79	0.10%
Median Year Householder Moved Into Unit	2003		2002		2001	

Source: ACS 2005-2009

Is there stability in the community? For those in owner occupied housing in the study area, only a small percentage (6%) moved into the area since 2005. However, renters (32%) have moved into the area since 2005.

Household structure has been shown to correlate with transportation. Increased household formation (affected by incomes, divorce rates and longevity) increases overall travel. In addition, increases in the number of nonfamily translate into increases in travel during peak hours. In addition, couples with kids more often than not, choose personal cars to transport their children. In the study area, family households are 64 percent of the housing composition and increased 10 percent from 1990 to 2000. Nonfamily households increased by 18 percent from 1990 to 2000.

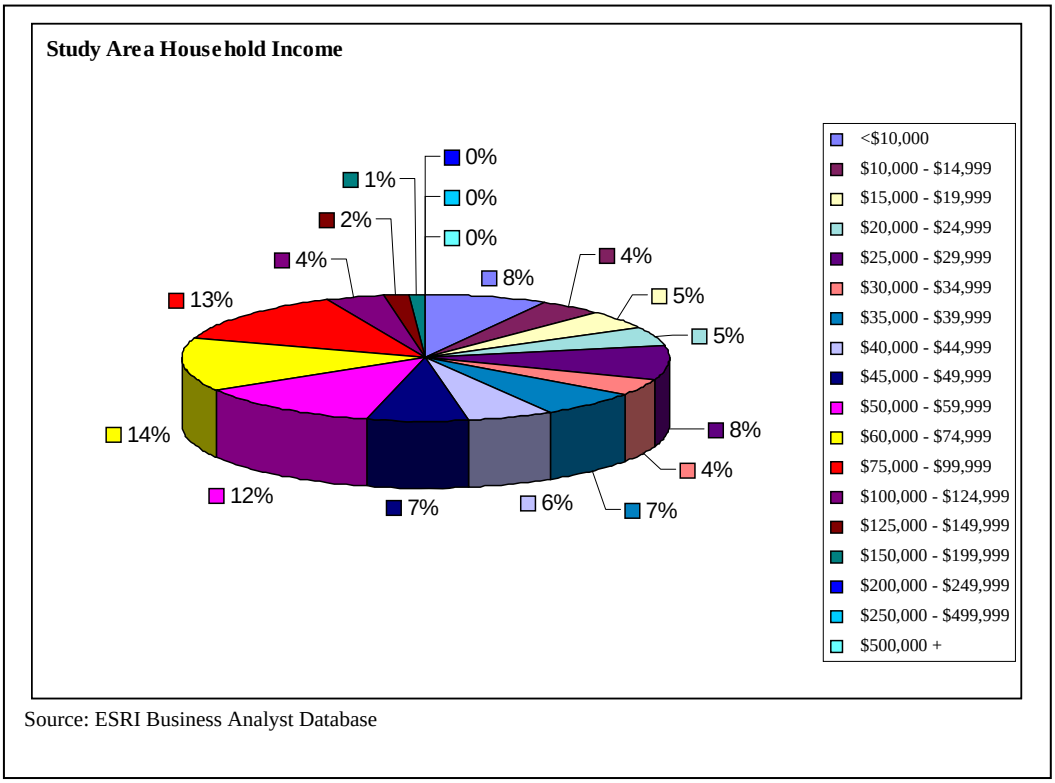
Households by Type	Study Area				Richmond				Chesterfield			
	1990		2000		1990		2000		1990		2000	
	#	%	#	%	#	%	#	%	#	%	#	%
Family Households	2,982	66%	3,273	64%	46,794	55%	43,649	52%	58,396	80%	72,139	77%
• Married-couple Families	1,905	42%	1,648	32%	27,060	32%	22,898	27%	49,327	67%	58,363	62%
• With Related Children	933	21%	843	16%	10,309	12%	9,004	11%	28,110	38%	30,808	33%
• Other Family (No Spouse Present)	1,077	24%	1,625	32%	19,734	23%	20,751	25%	9,069	12%	13,776	15%
• With Related Children	779	17%	1,225	24%	12,503	15%	13,960	17%	6,060	8%	9,631	10%
Nonfamily Households	1,515	34%	1,852	36%	38,542	45%	40,900	48%	15,046	21%	21,633	23%
• Householder Living Alone	1,216	27%	1,433	28%	30,601	36%	31,823	38%	12,062	16%	17,327	19%
• Householder not Living Alone	299	7%	419	8%	7,941	9%	9,077	11%	2,984	4%	4,306	5%

Source: ESRI Business Analyst Database

Households by Income

	Hull Street Study Area						Richmond						Chesterfield					
	2000		2010		2015		2000		2010		2015		2000		2010		2015	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
<$15,000	959	**19%**	647	12%	526	10%	20,406	**24%**	16,052	19%	13,444	16%	5,682	6%	4,657	4%	3,488	3%
$15,000 - $24,999	866	17%	510	10%	418	8%	13,688	16%	9,347	11%	7,733	9%	6,945	7%	4,667	4%	3,470	3%
$25,000 - $34,999	963	19%	670	13%	634	12%	12,197	14%	9,764	12%	8,083	10%	10,103	11%	6,190	5%	4,634	4%
$35,000 - $49,999	936	19%	996	19%	958	18%	13,317	16%	12,701	15%	14,676	17%	15,337	16%	13,434	12%	8,654	7%
$50,000 - $74,999	791	16%	1,363	**26%**	1,418	27%	12,482	15%	16,652	**20%**	14,964	18%	23,971	**26%**	27,650	24%	28,310	23%
$75,000 - $99,999	362	7%	700	13%	789	15%	5,465	7%	10,725	13%	12,158	14%	15,038	16%	30,126	**26%**	26,436	21%
$100,000 - $149,999	129	3%	304	6%	540	10%	3,999	5%	5,557	7%	8,861	10%	11,489	12%	19,903	17%	35,573	29%
$150,000 - $199,999	4	0%	46	1%	46	1%	1,253	2%	1,482	2%	2,492	3%	2,853	3%	5,226	5%	8,101	7%
$200,000+	2	0%	5	0%	9	0%	1,759	2%	1,503	2%	2,513	3%	2,389	3%	3,401	3%	5,171	4%

Source: ESRI Business Analyst Database



Source: ESRI Business Analyst Database

In 2010, the highest number of households was in the income rage of $50,000 to 74,999 (26%). Twelve percent of the households had incomes of less than $15,000.

HOUSEHOLDS BY POVERTY STATUS	Study Area		Richmond		Chesterfield	
	#	%	#	%	#	%
Total	4,424	100.00%	81,230	100.00%	109,706	100.00%
Income in the past 12 months below poverty level	815	18.40%	15,802	19.50%	6,006	5.50%
Married-couple family	100	2.30%	1,076	1.30%	1,152	1.10%
Other family - male householder (no wife present)	114	2.60%	550	0.70%	305	0.30%
Other family - female householder (no husband present)	390	8.80%	5,300	6.50%	2,149	2.00%
Nonfamily household - male householder	87	2.00%	3,139	3.90%	826	0.80%
Nonfamily household - female householder	125	2.80%	5,737	7.10%	1,574	1.40%
Income in the past 12 months at or above poverty level	3,609	81.60%	65,428	80.50%	103,700	94.50%
Married-couple family	1,256	28.40%	19,489	24.00%	63,477	57.90%
Other family - male householder (no wife present)	300	6.80%	2,665	3.30%	4,215	3.80%
Other family - female householder (no husband present)	846	19.10%	9,773	12.00%	11,467	10.50%
Nonfamily household - male householder	437	9.90%	14,599	18.00%	11,479	10.50%
Nonfamily household - female householder	770	17.40%	18,902	23.30%	13,062	11.90%

Source: U.S. Census Bureau, 2005-2009 American Community Survey

Eighteen percent of the households are below poverty level. Females head Nine percent of those. In Richmond, 19 percent of households are below poverty and 6 percent of households in Chesterfield are below poverty.

Those 45 to 54 years of age have the highest median household incomes in the study area. Those 75+ in 2000 had the lowest median household income but in 2010, those 65 to 74 years of age have the lowest median household incomes.

Households by Income and Age of Householder

2000	< 25	25 - 34	35 - 44	45 - 54	55 - 64	65 - 74	75+
HH Income Base	454	1,244	1,273	961	403	397	278
<$15,000	152	212	179	148	76	98	93
$15,000 - $24,999	115	283	195	66	68	66	73
$25,000 - $34,999	43	262	231	191	68	119	48
$35,000 - $49,999	75	323	224	185	52	45	30
$50,000 - $74,999	52	96	302	203	72	42	25
$75,000 - $99,999	17	61	92	105	52	26	8
$100,000 - $149,999	0	7	49	61	11	1	1
$150,000 - $199,999	0	0	0	2	3	0	0
$200,000+	0	0	1	0	1	0	0
Median HH Income	$21,784	$29,447	$36,521	$39,611	$33,546	$29,323	$19,357
Average HH Income	$26,374	$32,014	$41,800	$46,076	$41,015	$31,849	$25,592

2010	< 25	25 - 34	35 - 44	45 - 54	55 - 64	65 - 74	75+
HH Income Base	522	1,064	1,021	1,082	760	407	381
<$15,000	97	114	69	76	145	75	69
$15,000 - $24,999	82	143	80	26	70	51	58
$25,000 - $34,999	46	184	147	137	52	71	33
$35,000 - $49,999	102	321	173	197	76	60	66
$50,000 - $74,999	122	155	365	327	231	99	63
$75,000 - $99,999	48	117	121	190	147	37	40
$100,000 - $149,999	16	24	64	124	31	8	37
$150,000 - $199,999	8	6	2	5	7	6	13
$200,000+	1	0	0	0	1	0	2
Median HH Income	$39,052	$37,831	$51,485	$55,365	$52,389	$36,186	$40,637
Average HH Income	$44,420	$43,603	$54,168	$61,369	$52,090	$42,930	$51,891

Source: ESRI Business Analyst Database

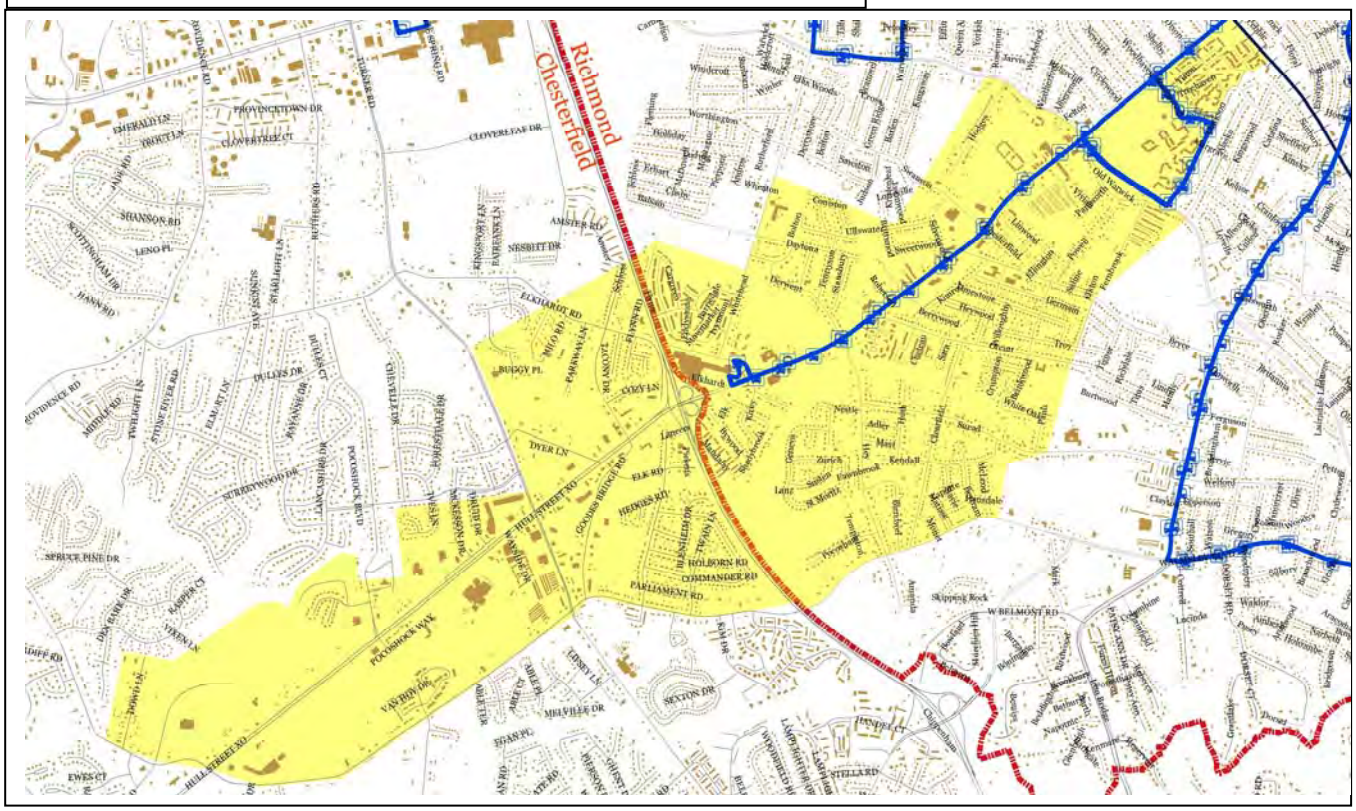
OCCUPIED HOUSING UNITS BY VEHICLES AVAILABLE		
Total	4,424	
	Owner occupied	**Renter occupied**
No vehicle available	19	557
1 vehicle available	591	1,313
2 vehicles available	743	423
3 vehicles available	486	68
4 vehicles available	158	32
5 or more vehicles available	34	0

Source: ACS 2005-2009

In the study area, less than one percent of the owner occupied units did not have a car. Twelve percent of the renters did not have a car. In Richmond, 16 percent of renters did not have a care and 3 percent of owners did not have a car. In Chesterfield, both renters and owners had less than two percent of housing units that did not have a car.

The 2008 GRTC Comprehensive Operations Analysis states that there are five key indicators of transit dependence are living below the poverty line, having a mobility limitation, being age 65 or older, having no vehicle, and having one vehicle.
Persons falling into these categories may have difficulty accessing major destinations, such as medical facilities, government offices, employment centers, and shopping areas without adequate transit service. Currently, the GRTC bus lines end at the city line and do not go into the county along the Hull Street Corridor.

Greater Richmond Transit Company's Route in Study Area



Appendix I:
Study Area Summary

2010 Population
Total Population 13,057
Male Population 46.7%
Female Population 53.3%
Median Age 31.2

2010 Income
Median HH Income $46,938
Per Capita Income $20,204
Average HH Income $51,158

2010 Households
Total Households 5,240
Average Household Size 2.49

2010 Housing
Owner Occupied Housing Units 36.7%
Renter Occupied Housing Units 54.5%
Vacant Housing Units 8.8%

Population
1990 Population 10,549
2000 Population 12,491
2010 Population 13,057
2015 Population 13,327
1990-2000 Annual Rate 1.7%
2000-2010 Annual Rate 0.43%
2010-2015 Annual Rate 0.41%

In the identified market area, the current year population is 13,057. In 2000, the Census count in the market area was 12,491. The rate of change since 2000 was 0.43 percent annually. The five-year projection for the population in the market area is 13,327, representing a change of 0.41 percent annually from 2010 to 2015. Currently, the population is 46.7 percent male and 53.3 percent female.

Households

1990 Households 4,496
2000 Households 5,125
2010 Households 5,240
2015 Households 5,337
1990-2000 Annual Rate 1.32%
2000-2010 Annual Rate 0.22%
2010-2015 Annual Rate 0.37%

The household count in this market area has changed from 5,125 in 2000 to 5,240 in the current year, a change of 0.22 percent annually. The five-year projection of households is 5,337, a change of 0.37 percent annually from the current year total. Average household size is currently 2.49, compared to 2.44 in the year 2000. The number of families in the current year is 3,267 in the market area.

Housing

Currently, 36.7 percent of the 5,746 housing units in the market area are owner occupied; 54.5 percent, renter occupied; and 8.8 percent are vacant. In 2000, there were 5,486 housing units - 36.3 percent owner occupied, 57.2 percent renter occupied and 6.5 percent vacant. The rate of change in housing units since 2000 is 0.45 percent. Median home value in the market area is $126,331, compared to a median home value of $157,913 for the U.S. In five years, median home value is projected to change by 5.06 percent annually to $161,725. From 2000 to the current year, median home value changed by 4.83 percent annually.

Source: U.S. Bureau of the Census, 2000 Census of Population and Housing. Esri forecasts for 2010 and 2015. Esri converted 1990 Census data into 2000 geography.

Median Household Income
1990 Median HH Income $26,381
2000 Median HH Income $31,894
2010 Median HH Income $46,938
2015 Median HH Income $51,359
1990-2000 Annual Rate 1.92%
2000-2010 Annual Rate 3.84%
2010-2015 Annual Rate 1.82%

Per Capita Income
1990 Per Capita Income $12,141
2000 Per Capita Income $14,898
2010 Per Capita Income $20,204
2015 Per Capita Income $22,290
1990-2000 Annual Rate 2.07%
2000-2010 Annual Rate 3.02%
2010-2015 Annual Rate 1.98%

Average Household Income
1990 Average Household Income $29,313
2000 Average Household Income $37,027
2010 Average HH Income $51,158
2015 Average HH Income $56,535
1990-2000 Annual Rate 2.36%
2000-2010 Annual Rate 3.2%
2010-2015 Annual Rate 2.02%

Households by Income

Current median household income is $46,938 in the market area, compared to $54,442 for all U.S. households. Median household income is projected to be $51,359 in five years. In 2000, median household income was $31,894, compared to $26,381 in 1990.

Current average household income is $51,158 in this market area, compared to $70,173 for all U.S. households. Average household income is projected to be $56,535 in five years. In 2000, average household income was $37,027, compared to $29,313 in 1990.

Current per capita income is $20,204 in the market area, compared to the U.S. per capita income of $26,739. The per capita income is projected to be $22,290 in five years. In 2000, the per capita income was $14,898, compared to $12,141 in 1990.

Population by Employment

Currently, 85.0 percent of the civilian labor force in the identified market area is employed and 15.0 percent are unemployed. In comparison, 89.2 percent of the U.S. civilian labor force is employed, and 10.8 percent are unemployed. In five years the rate of employment in the market area will be 88.4 percent of the civilian labor force, and unemployment will be 11.6 percent. The percentage of the U.S. civilian labor force that will be employed in five years is 91.2 percent, and 8.8 percent will be unemployed. In 2000, 68.8 percent of the population aged 16 years or older in the market area participated in the labor force, and 0.1 percent were in the Armed Forces. In the current year, the occupational distribution of the employed population is:

· 53.9 percent in white collar jobs (compared to 61.6 percent of U.S. employment)
· 20.4 percent in service jobs (compared to 17.3 percent of U.S. employment)
· 25.7 percent in blue collar jobs (compared to 21.1 percent of U.S. employment)

In 2000, 75.8 percent of the market area population drove alone to work, and 0.8 percent worked at home. The average travel time to work in 2000 was 27.0 minutes in the market area, compared to the U.S. average of 25.5 minutes.

Population by Education

In 2010, the educational attainment of the population aged 25 years or older in the market area was distributed as follows:

· 16.7 percent had not earned a high school diploma (14.8 percent in the U.S.)
· 33.1 percent were high school graduates only (29.6 percent in the U.S.)
· 6.4 percent had completed an Associate degree (7.7 percent in the U.S.)
· 13.0 percent had a Bachelor's degree (17.7 percent in the U.S.)
· 5.8 percent had earned a Master's/Professional/Doctorate Degree (10.4 percent in the U.S.)

Source: U.S. Bureau of the Census, 2000 Census of Population and Housing. Esri forecasts for 2010 and 2015. Esri converted 1990 Census data into 2000 geography.

APPENDIX E

Market Analysis

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Appendix E. Market Analysis

Potentials for new commercial development in the Hull Street corridor depend on market demand within the context of competitive developments.

Retail Market

The Hull Street corridor retail offerings include aging strip shopping centers and freestanding businesses that depend on drive-up customers. The corridor has relatively few national or regional stores, which have favored other nearby shopping centers and locations with better access to higher-income residents. The corridor has many small, locally-owned stores, many of which cater to the growing Hispanic population.

Existing shopping centers (shown on the following map) include:

- **Southside Plaza**, a 375,000 square-foot shopping center just beyond the eastern end of the study area at Belt Boulevard. Once anchored by Miller & Rhoads, the center is now anchored by Community Supermarket, Maxway and the City's Southside Community Service Center. Tenants include Rummage House, Citi Trends, Rainbow, Shoe City, Shoe Time and an MCV Hospital clinic. The center is relatively well leased with a number of small local businesses and two churches. Vacancies total less than 27,000 square feet or 7.2 percent. Additional land from a former drive-in movie theater is available to the rear.

- **Circle Plaza Shopping Center**, a newly renovated center on Belt Boulevard east of Southside Plaza. Anchors include Save-a-Lot, Family Dollar, It's Fashion Metro and Easy Home.

- **Chippenham Mall Shopping Center**, a shopping center at Chippenham Parkway anchored by Haynes Furniture and Family Dollar Store. Other tenants include Duron Paint, Colonial Downs OTB and a Virginia ABC store.

- **Warwick Plaza Shopping Center,** a small strip center at Warwick Boulevard whose anchor, Salvage Barn, has closed and is proposed for replacement by a Latino supermarket.

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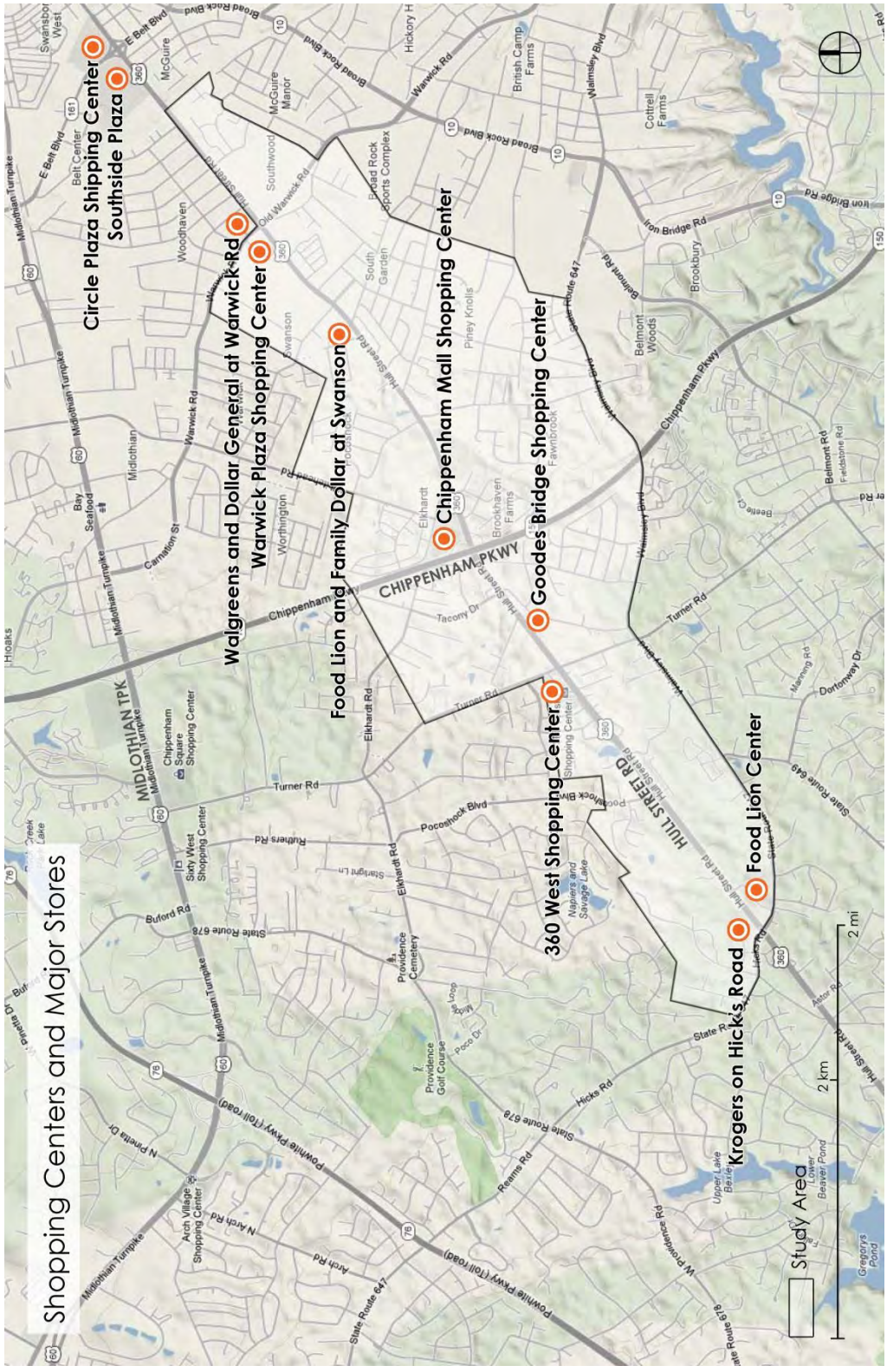

- **360 West Shopping Center**, an older strip center built in 1968 at Turner Road in Chesterfield County. The center has 154,000 square feet and is anchored by Rite Aid, AutoZone and Dollar General as well as several local restaurants.

- **Goodes Bridge Shopping Center,** an older strip center west of Turner Road and anchored by La Milpa restaurant and store.

- **Food Lion Center,** the newest of the corridor's shopping centers on the western end of the corridor at Walmsley Boulevard, anchored by Food Lion and Bryant & Stratton College.

Key freestanding stores include:

- Walgreen's and Dollar General at Warwick Road
- Food Lion and Family Dollar at Swanson
- Kroger's on Hicks Road

In addition to fast food outlets (e.g., McDonald's, Wendy's, Subway), the Hull Street corridor has 19 full-service restaurants with offerings including Latin, Chinese, Italian and barbecue, though several of these focus primarily on carry-out.

Entertainment options are relatively limited in the corridor. Skateland near Chesterfield Drive is a popular destination. Southside Bowl duckpin lanes closed recently.

Recent new construction has been limited to a small strip center at Bryce Lane.

Table 1 provides a count of stores in the Hull Street corridor by type and their estimated sales in 2011. Store sales were estimated by ESRI based on data from the 2002 and 2007 Census of Retail Trade updated with trends from the Bureau of the Census's Monthly Retail Trade reports, coupled with the Infogroup's database of businesses in the corridor.

Table 1. Hull Street Corridor Retail Businesses, 2011		
Store Type	Number of Businesses	Estimated Sales
Neighborhood Goods & Services		
Food & beverage	15	$37,885,790
Health & personal care	3	$2,036,572
Subtotal	**18**	**$39,922,362**
Eating & Drinking		
Full-service restaurants	19	$3,773,723
Limited-service eating places	6	$4,658,192
Special food services	3	$622,507
Drinking places	1	$200,973
Subtotal	**29**	**$9,255,395**
Shoppers Goods		
General merchandise	5	$10,709,598
Apparel & accessories	4	$3,095,708
Furniture & home furnishings	3	$10,900,182
Electronics & appliances	6	$1,614,728
Sporting goods, hobby, book and music	1	$80,770
Miscellaneous store retailers	9	$816,485
Subtotal	**28**	**$27,217,471**
Other Retail		
Motor vehicle & parts dealers	16	$19,951,605
Building materials, garden equipment & supplies	8	$4,541,798
Subtotal	**24**	**$24,493,403**
Total Retail	**99**	**$100,888,631**
Sources: ESRI, 2011; LISC, 2011; Partners for Economic Solutions, 2012.		

Competitive Shopping Centers

The Hull Street corridor competes with an extensive array of modern shopping facilities better located to capture the dollars of southwest Richmond residents.

The closest, most competitive centers (shown on the following map) are:

- **Chesterfield Towne Center**, a 1.0 million square-foot enclosed mall on Midlothian Turnpike at Huguenot and Courthouse Road remerchandised in 2008. Anchored by Macy's, Home Goods, Sears, JCPenney, Garden Ridge, Barnes & Noble and TJ Maxx, the center offers 140 shops and restaurants. Located six miles north and west of the corridor, this is Hull Street's key competition for department store-type merchandise.

- **Commonwealth Centre**, a big-box power center at the intersection of Hull Street Road and WWII Veterans Memorial Highway, State Route 288, six miles west of the corridor. Anchors along Commonwealth Centre Parkway include Target, Kohl's, Regal Commonwealth 20, Best Buy, Stein Mart, Barnes & Noble and Michael's. Opened in 2002, the open-air centers face major parking lots.
- **Chesterfield Crossing**, an 80,000 square-foot strip center attached to a Walmart Supercenter and Home Depot. Located on Hull Street Road at Warboro Road, the center is just east of State Route 288, five miles west of the corridor.

- **Stonebridge,** a new mixed-use development on the former site of Cloverleaf Mall at Chippenham Parkway and Midlothian Turnpike, two miles north of the corridor. The project's first phase will include Kroger's largest store in the Mid-Atlantic and 20,000 square feet of space for smaller retailers. The project's zoning allows a total of 400,000 square feet of retail, office and other commercial space as well as 520 housing units. Chesterfield County sold the property to Crosland in a major public/private partnership that includes financial support for new site infrastructure.

- **Spring Rock Green**, a redevelopment of the former Beaumont Center on Midlothian Turnpike at Chippenham Parkway in Chesterfield County just north of Stonebridge. The mixed-use development will expand the existing footprint to include 285,000 square feet of retail space and 160,000 square feet of office space. The project incorporates sustainable development practices into its design and construction.

- **Forest Hill Area**, a cluster of stores along Forest Hill Avenue at Chippenham Parkway five miles north of the corridor that includes Target, a Walmart Supercenter, Lowe's, Martin's Food Store and a number of restaurants. Though almost five miles from Hull Street, the easy vehicular access provided by Chippenham Parkway makes Forest Hill a retail destination for study area residents.

- **Rockwood Square Shopping Center**, a 38,600 square-foot strip center located at Hull Street Road at Courthouse Road almost three miles west of the corridor. This small center is anchored by Wolfgang's Gym and Bakers Kitchen.

Though further away at Chippenham Parkway and Stony Point Parkway, **Stony Point Fashion Park** also competes with offerings that emphasize high-end apparel.

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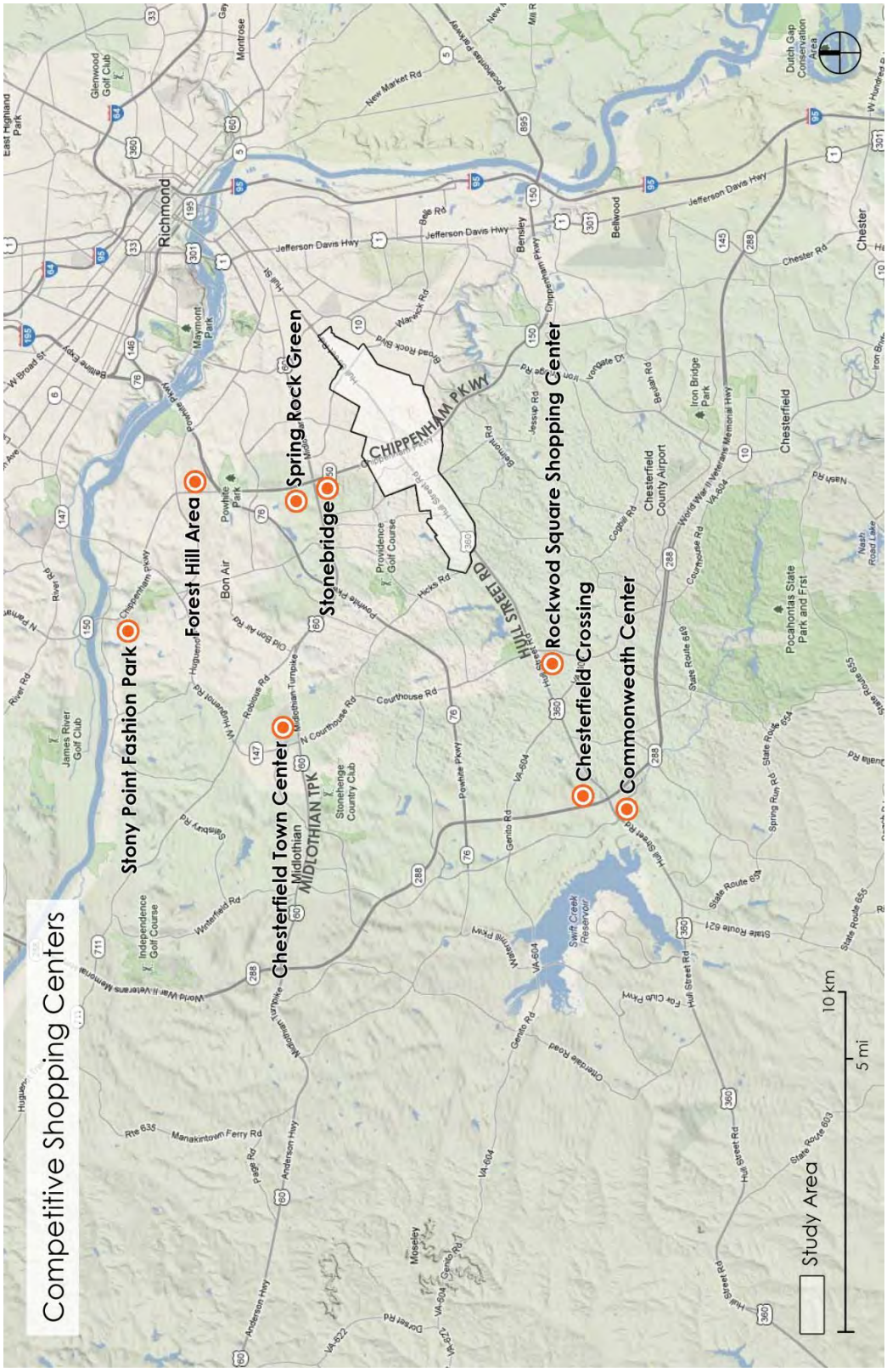

Retail Vacancies

CoStar, a national source of office and retail inventory data, reports that the Southwest Richmond market (west of I-95 and south of the James River and the Chesterfield/Henrico county line) has a total of 11.8 million square feet of retail space in 264 buildings. Over the last three years, 1.7 million square feet of space has been leased, but on a net basis the amount of occupied retail space declined by more than 194,000 square feet. Vacant spaces total 2.2 million square feet and represent 19 percent of the retail space in the Southwest market. This compares with a healthy vacancy rate of 5 to 8 percent. An additional 0.8 million square feet of space are available for lease as current leases expire in the next few months. These high vacancy rates demonstrate a serious oversupply of retail space in the market and a need to reduce that supply by demolishing or converting obsolete strip retail facilities to other uses.

Implications for Hull Street Corridor

The extensive and effective competition offered by Chesterfield Towne Center and other nearby shopping centers inhibits successful new retail development for **shoppers goods** in the Hull Street corridor. Shoppers goods include the types of goods sold in department stores – apparel and accessories, furniture and furnishings, and general merchandise – for which shoppers prefer to be able to comparison shop. The chance to compare offerings from a number of stores means that shoppers prefer large clusters of stores, typically in malls and shopping centers. The smaller shoppers goods retailers typically depend on the center's department stores and other anchor stores to bring in customers. This leads them to seek out organized shopping centers, often the newest centers located near new growth areas with middle- and upper-middle-income residents. As development of Chesterfield Towne Center and Stony Point Fashion Park killed Cloverleaf Mall, this extensive competition will discourage new shoppers goods retail development in the Hull Street corridor.

Market Demand

Hull Street corridor retail opportunities are focused on **neighborhood goods and services,** which include grocery stores, other food shops, drugstores, and **eating and drinking** establishments. The spending potential of market area residents will dictate the scale and type of supportable retail development.

The Hull Street corridor does not function as a single market. Its length means that residents at one end of the corridor are unlikely to shop at the other end. For this analysis, retail opportunities in the corridor are considered in three clusters:

- Southside Plaza and nearby properties on the eastern end of the corridor
- Chippenham Mall Shopping Center and nearby properties central to the corridor
- Properties on the western end of the corridor near Hicks Road.

Each of these clusters serves a **market area**, from which retailers will draw most of their shoppers. Market areas are determined based on access patterns – primarily road access but also transit access – and the locations of competitive retailers. The following map shows the market areas defined for the three retail clusters along Hull Street. The borders follow Census Tract boundaries for ease of analysis; in some cases, this includes an overly large area and overstates Hull Street retailers' reach.

Residents' spending potential is measured as **expenditure potential**, the total dollars they spend for different types of retail goods regardless of where they spend them. ESRI, a national demographic data provider, estimates resident spending based on their incomes and spending patterns reported for households with similar demographics. Comparing these expenditure potentials to actual sales in the corridor can show opportunities where residents are traveling out of the corridor to buy basic day-to-day goods and to eat out. To some extent, new retailers in the corridor could attract those dollars away from other areas and keep the spending closer to home. However, a certain amount of **outflow** of residents dollars is inevitable as those who reside in the study area eat lunch near their workplaces and while on vacation. Table 2 summarizes the expenditure potentials for each of the three corridor retail clusters focusing on neighborhood goods as well as eating and drinking. The three market areas overlap, so the results are not additive.

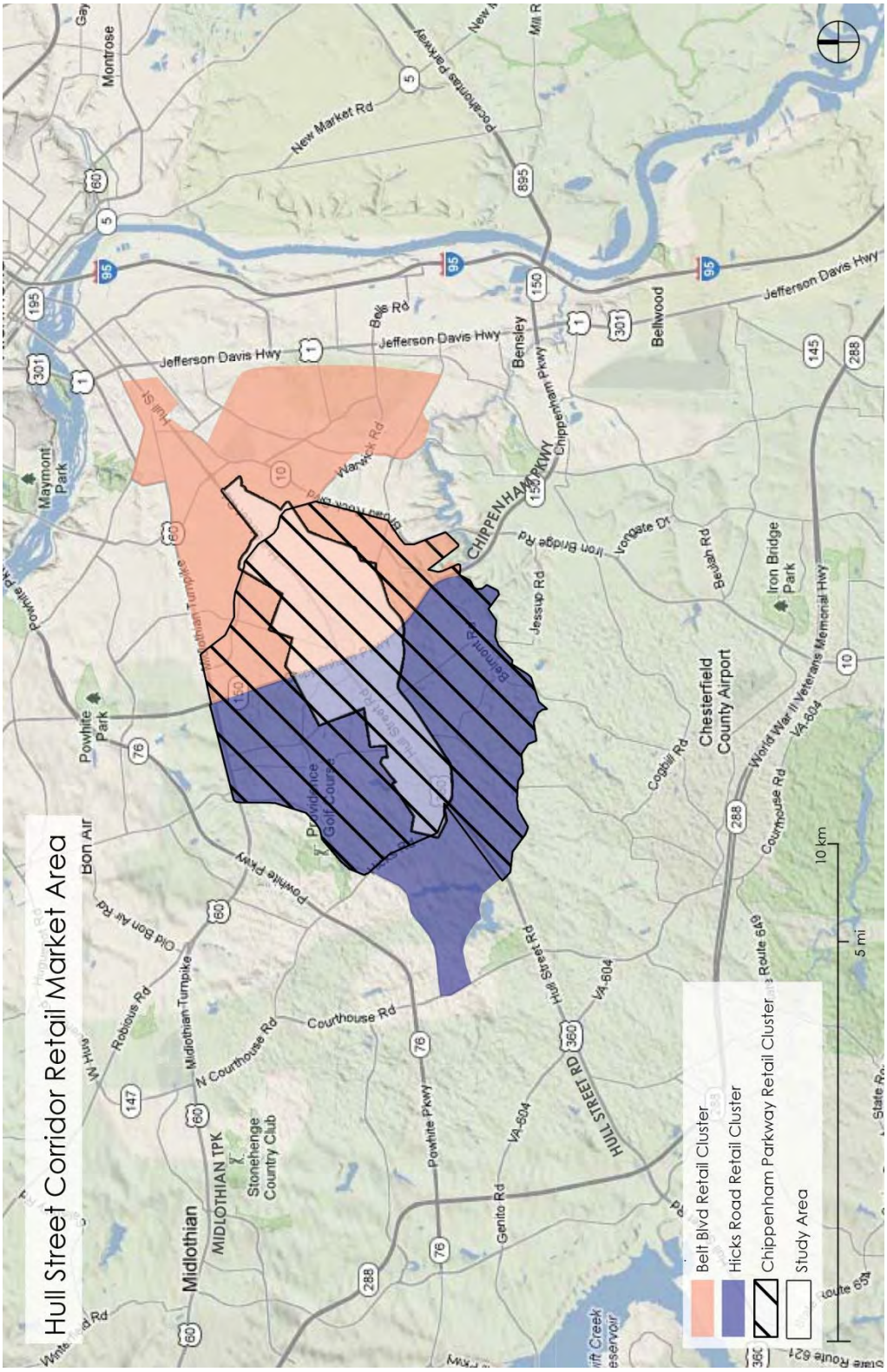
Hull Street Corridor Retail Market Area
Belt Blvd Retail Cluster
Hicks Road Retail Cluster
Chippenham Parkway Retail Cluster
Study Area
10 km
5 mi
Midlothian
Powhite Park
Maymont Park
Bensley
Bellwood
Iron Bridge Park
Chesterfield County Airport
Stonehenge Country Club
Providence Golf Course
CHIPPENHAM PKWY
HULL STREET RD
MIDLOTHIAN TPK
Jefferson Davis Hwy
New Market Rd
Courthouse Rd
N Courthouse Rd
Powhite Pkwy
Genito Rd
Robious Rd
Old Bon Air Rd
Iron Bridge Rd
Belmont Rd
Jessup Rd
Coghill Rd
Beulah Rd
Warwick Rd
Hull St
Midlothian Turnpike
Route 649
VA-604
World War II Veterans Memorial Hwy

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Table 2. Retail Areas' Residents' Neighborhood Goods and Eating and Drinking Expenditure Potential, Estimated Retail Sales and Leakage/Surplus, 2010				
Store Type	Demand (Retail Potential)	Per Capita Retail Expenditures	Supply (Retail Sales)	Retail Gap[1]
Belt Boulevard Retail Cluster[2]				
Food & Beverage Stores				
Grocery Stores	$42,305,966	$1,333.19	$32,190,634	$10,115,332
Specialty Food Stores	$494,419	$15.58	$310,411	$184,008
Beer, Wine & Liquor Stores	$1,332,246	$41.98	$349,272	$982,974
Health & Personal Care Stores	$9,626,630	$303.36	$2,978,274	$6,648,356
Food Services & Drinking Places				
Full-Service Restaurants	$17,052,825	$537.38	$7,210,526	$9,842,299
Limited-Service Eating Places	$9,830,445	$309.79	$6,494,916	$3,335,529
Chippenham Parkway Retail Cluster[3]				
Food & Beverage Stores				
Grocery Stores	$51,675,126	$1,527.45	$76,809,137	-$25,134,011
Specialty Food Stores	$464,660	$13.73	$157,795	$306,865
Beer, Wine & Liquor Stores	$1,483,361	$43.85	$349,272	$1,134,089
Health & Personal Care Stores	$10,584,976	$312.88	$5,654,984	$4,929,992
Food Services & Drinking Places				
Full-Service Restaurants	$17,712,865	$523.57	$5,698,846	$12,014,019
Limited-Service Eating Places	$18,608,229	$550.03	$11,086,303	$7,521,926
Hicks Road Retail Cluster[4]				
Food & Beverage Stores				
Grocery Stores	$41,169,659	$1,672.61	$78,667,757	-$37,498,098
Specialty Food Stores	$311,839	$12.67	$157,795	$154,044
Beer, Wine & Liquor Stores	$1,115,705	$45.33	$0	$1,115,705
Health & Personal Care Stores	$7,996,442	$324.87	$4,891,324	$3,105,118
Food Services & Drinking Places				
Full-Service Restaurants	$12,781,753	$519.29	$2,480,014	$10,301,739
Limited-Service Eating Places	$17,562,076	$713.50	$10,134,169	$7,427,907

Note: Retail market areas overlap, so the results are not additive.

[1]A positive amount indicates that residents' dollars are going to stores outside the market area. A negative amount indicates that the market area stores are drawing sales from shoppers who do not live in the market area.

[2]Belt Boulevard Retail Cluster includes Richmond Census tracts 604, 706, 707, 708.01 and 709.

[3]Chippenham Parkway Retail Cluster includes Richmond Census tracts 707 and 708.01 and Chesterfield County tracts 1002.05, 1002.06 and 1002.7.

[4]Hicks Road Retail Cluster includes Chesterfield County Census tracts 1002.05, 1002.06, 1002.07 and 1002.08.

Sources: ESRI, 2012; Partners for Economic Solutions, 2012.

The Belt Boulevard retail cluster serves residents in the eastern end of the study area and residents living in neighborhoods further east. On a per capita basis, market area residents spend an estimated $1,391 annually in food and beverage stores, $303 in drugstores and $847 in restaurants and fast food outlets. The data show "leakage" of:

- $10.1 million in grocery store expenditures;
- $6.6 million in drugstore, health and personal care expenditures;
- $9.8 million in full-service restaurant expenditures; and
- $3.3 million in limited-service eating place expenditures.

This means that residents are spending their dollars elsewhere outside the market area.

For Chippenham Parkway, the market area extends north to Midlothian Turnpike, incorporating shops in Chippenham Mall Shopping Center, 360 West Shopping Center and centers along Midlothian Turnpike. The analysis shows that the grocery stores are enjoying significant inflow from shoppers who live outside the market area. However, there is still unmet demand for drugstores ($4.9 million), full-service restaurants ($12.0 million) and limited-service eating places ($7.5 million).

The Hicks Road retail cluster with both Kroger's and Food Lion also is attracting dollars from residents beyond the market area. Table 2 indicates a leakage of $3.1 million in drugstore expenditures, $10.3 million in full-service restaurant expenditures and $7.4 million in limited-service eating place expenditures.

Again, the unmet demand or "leakage" from these three market areas is not additive, because their market areas overlap.

The fact that there is outflow of resident dollars to stores outside the market area does not necessarily indicate an opportunity for new retailers. In some cases there may be a drugstore just beyond the market area boundary that serves the needs of market area residents. Outflow of 30 to 40 percent of residents' eating and drinking expenditures is not unusual given vacation and work lunch spending away from home.

The business models and location criteria for most retail chains favor locations in new shopping centers. Most have a basic formulaic requirement of needing so many households within one to three miles with a minimum income. For example, Applebee's requires 20,000 to 50,000 middle-income residents within five miles with a traffic count of at least 20,000 vehicles per day. Outback Steakhouse requires 70,000 middle- to high-income residents within five miles with at least 25,000 vehicles per day. Meeting these criteria may be difficult within the Hull Street study corridor in the near term.

Development Opportunities

Successful development of new retail space to take advantage of local resident spending depends on creating a viable retail environment and attracting retailers to fill the space. The corridor's character as a mish-mash of aging shopping centers and service businesses does not provide either the amenities or the sense of place that would encourage residents and commuters to stop, shop and enjoy a meal in pleasant surroundings. Until the corridor's aesthetics are upgraded, new retail will gravitate toward the newer centers and greenfield sites along Midlothian Turnpike and further southwest on Hull Street Road. Major investments in Midlothian will attract retailers and shoppers for many years to Stonebridge and other centers. These new mixed-use centers plus the new streetscape along Midlothian Turnpike will create an invaluable "sense of place."

Concentrating retail activity at major intersections would improve the corridor's appearance and ability to compete for customers. Clustering allows shoppers to make one stop and conveniently patronize more than one store, encouraging cross-shopping. Going forward, redevelopment and new development activity should focus on four key nodes – Warwick Road, Chippenham Parkway, Turner Road and Hicks Road/Walmsley Boulevard. Over time, the City should encourage elimination of strip retail centers outside of these key activity nodes.

Chippenham Parkway offers the opportunity to draw shoppers from a larger area. With longer-term redevelopment of the Chippenham Mall Shopping Center, a unique use could attract from a broader market, particularly if it were not duplicated by similar facilities in Stonebridge, along Midlothian Turnpike or in the Forest Hill Avenue area.

The Richmond area is developing a base of sports-related tourism, attracting individuals and teams to compete in regional races and tournaments, particularly involving youth teams. Expansion of this tourism base was suggested in a community meeting as a key opportunity to build on the swim meets at the new Aquatic Center in Ukrop Park on Route 10 and tournaments at River City Sportsplex (formerly Sports Quest) sports and family entertainment campus and the Clover Hill Athletic Complex. Additional fields could be used for lacrosse or soccer.

Store performance for existing Hull Street retailers would benefit from pedestrian and transit access improvements, façade improvements and new streetscape. The City's façade loan program should be effectively and aggressively marketed to business owners along the corridor to encourage property upgrades.

The expenditure analysis suggests that the eastern half of corridor, on the Richmond side, could support:

- Another drugstore;
- Two to three full-service restaurants;
- A medium-sized grocery store;
- One to two limited-service food outlets; and
- Possibly one furniture/home improvement store.

That development should focus primarily on the Warwick Road development node.

The western portion of the corridor, in Chesterfield County, could support:

- Another drugstore;
- Two to three full-service restaurants; and
- Two to three limited-service food outlets.

The international diversity of corridor residents and businesses could be leveraged to create a unique image for the corridor and attract new patrons from beyond the corridor. The current farmers market organized by Latino merchants (La Plaza Latino Market) could be expanded and relocated to the Hull Street corridor for better visibility and access to its customers and other pass-by traffic. With enhanced transit accessibility and physical improvements, properties in the Goodes Bridge Shopping Center adjacent to La Milpa could be very appropriate for the farmers market's location. The market could help to anchor a larger cluster of internationally-themed businesses and service providers linking existing and new ethnic restaurants and stores in the 360 West Shopping Center and the Goodes Bridge Shopping Center.

The prospects for additional retail space could improve over the long run as the corridor begins to attract new residential development. For example, a 25 percent in the number of households in the corridor would bring 1,300 new households. Assuming that their average incomes were 20 percent higher than those of existing residents, their incremental new retail expenditures could support an additional 9,000 square feet of restaurant space, enough for four to six more restaurants.

Office and Industrial Markets

The market for new office and/or industrial facilities in the Hull Street corridor is quite limited due to the relatively stagnant nature of the regional market, competition from facilities with better locations and lot configurations outside of nodes. Office tenants have a range of location criteria. Headquarters offices and other major companies that serve a regional or national market prefer prestigious locations with good access to their employees and customers, nearby retail and support services, proximity to other businesses (e.g., customers, service providers, etc.) and visibility. Traditionally, these needs were met best in downtown locations. Now business parks offer some of the same advantages in locations that are less central but closer to employees' suburban homes. Free parking and lower rents help attract tenants.

Medical office buildings have expanded significantly in the Boulders area surrounding Chippenham Hospital at the Jahnke Road interchange with Chippenham Parkway. Locations close to hospitals appeal to physicians who practice in the hospital and seek to minimize their travel time from office to hospital. This is particularly true for specialists, who are not as tightly linked to a cluster of residents in the same way that a primary care physician is. As land and space become more constrained around the hospital, the market for medical office space may shift to other locations with easy access along Chippenham Parkway.

Professionals who provide service to local residents (e.g., doctors, dentists, accountants, insurance agents, etc.) prefer office locations close to their clients. Often they choose locations near shopping centers to take advantage of the area's access, visibility and drawing power. Most major thoroughfares also attract a small contingent of neighborhood-serving office tenants.

Manufacturers typically seek superior accessibility to highways, rail service, existing industrial buildings that can be adapted to their needs, access to workers, and few limits on their operations from nearby residential neighborhoods. Warehouse and distribution operations depend heavily on good road access to local highways and increasingly seek modern buildings on a single story with high ceilings that allow mechanized operations. Service and repair operations are more interested in inexpensive space in smaller buildings accessible to their customers, often along major thoroughfares. The Hull Street corridor has attracted many of these small service and repair businesses, taking advantage of the lower rents and visibility provided by locating on major traffic routes – both Hull Street and Chippenham Parkway.

Existing Conditions

The amount of occupied office and flex[1] space in the Richmond/Chesterfield metropolitan area has declined by 3.0 million square feet since 2007, a loss of 11 percent from 27.4 million square feet to 24.4 million square feet currently. Occupied space declined an average of 640,000 square feet per year. The total inventory of 33.0 million square feet grew by 1.4 million square feet from the fourth quarter of 2007.

Within the Hull Street corridor, there has been very little new construction for several years and the total inventory remains at 1,469,425 square feet. Occupied space has declined 7.2 percent or 97,285 square feet from 2009. Vacancies have grown to 14.8 percent from 8.2 percent in 2009.

The Richmond portion of the corridor has no branch banks. The nearest Richmond branch banks are along Belt Boulevard, serving Hunter Holmes McGuire VA Medical Center employees and area residents.

Chesterfield County

The corridor's largest concentration of office space is concentrated in Chesterfield County in Pocoshock Square Office Park developed in 1983, Pocoshock Center and other buildings on Pocoshock Boulevard. Office space in these locations leases for $11.50 to $12 per square foot, full service. Locations further west benefit from demand for office space in proximity to County Courts and government offices.

Office tenancy along the corridor emphasizes real estate and insurance (21 businesses), attorneys and accountants (10 businesses), and physicians and dentists (16 businesses). Most are concentrated in and near the Pocoshock Square Office Park. Other than two larger medical practices, these are small businesses averaging 4.6 employees.

The 360 West Shopping Center has an office building with 22,000 square feet of space as part of the strip center. It is experiencing a roughly 55-percent occupancy rate due in part to the impacts of the recession.

Bank of America at Turner Road is the only full-service bank in the study area. Wells Fargo and SunTrust have branches immediately west of the study area's western boundary at Hicks Road.

[1] Single-story office/warehouse space typically developed with office space in the front and warehouse space with truck docks in the back.

City of Richmond

Other than the City's Southside Community Service Center, there is limited office space within the Richmond portion of the corridor. The city end of the corridor is dominated by small- to medium-sized service and repair facilities as well as older manufacturing buildings.

The Richmond portion of the Hull Street corridor will find it very difficult to compete for private office development in the near- and mid-term until the corridor's aesthetics and market conditions improve and the residential base expands with higher-income households.

Industrial structures in the corridor serve primarily light industrial uses, focusing on a wide variety of construction-related contractors – 30 businesses employ a reported 417 workers. Twenty-one auto repair and service shops have 62 employees. The corridor has no significant inventory of industrial buildings or sites.

The I-95 and US 1 corridors in South Richmond and eastern Chesterfield County offer an extensive inventory of industrial sites and buildings. The superior access they offer to the regional market and the East Coast corridor eclipses the potential for significant industrial development in the Hull Street corridor.

Better opportunities exist for expansion of the base of industrial facilities oriented to repair and service operations.

Commercial and Industrial Opportunities

Under existing conditions, the Hull Street corridor is unlikely to attract major new businesses or office buildings, though the demand for small offices will continue to increase slowly. Most of the corridor's future opportunities are likely to be focused on entrepreneurial development and growth of existing businesses rather than on recruitment of new businesses. Several independent businesses operate along Hull Street, and other entrepreneurs may be contemplating starting new businesses. Pedestrian and transit accessibility improvements as well as streetscape investments would help to attract and keep these small businesses in the corridor. A more aesthetic environment would complement their business image, and improved accessibility would deliver more customers to their doors. Enterprise Zone incentives from the City and County and the City's Upper Hull Extra CARE program also will help them to compete, at least in those areas where the zone is applicable.

Attracting a branch bank to the Richmond portion of the corridor would benefit area residents. Banks' key location criteria relate to the extent and incomes of nearby

households, the volume of pass-by traffic, visibility from major thoroughfares, a quality environment with easy access and proximity to retail activity generators. Within the city, sites near Walmsley Boulevard and/or the Food Lion offer the best opportunities for new branch bank development.

The primary constraints on business development relate to the availability of capital for initial start-up and expansion costs, and the limited business experience of some area entrepreneurs. The existing supply of low-cost space acts as good start-up space for new businesses with limited capital. Outreach to provide existing businesses with technical assistance could enhance their ability to create new jobs. Even without a dedicated incubator facility, small business specialists could help area businesses to access services and resources.

Opportunities include better networking among existing businesses for mutual support, advice, referrals and cross-marketing. Such networking is often the most effective assistance available to an entrepreneur. One example of this is the Merchants' Club of Virginia, a locally-based, Latino-focused business organization. Efforts to organize Latino-owned businesses are helping to build a stronger network with mentoring, advice and referrals to attorneys, accountants and other service providers essential to business success. A similar effort could support other types of Hull Street businesses, but it will take a concerted outreach effort to help the corridor's wide variety of businesses to see the benefits of participating.

Under current conditions, the market will not support significant new private development without extensive public financial support. Physical and market conditions will need to change before project economics will improve to the point of attracting significant private investment.

Conclusion

The near-term redevelopment potentials for the Hull Street corridor have been constrained by:

- Over-reliance on automotive transport to the detriment of pedestrians and cyclists,
- The pattern of strip development with stand-alone businesses that do not benefit from cross-shopping by other businesses' customers,
- Poor pedestrian connections that limit residents' ability and interest in patronizing corridor businesses,
- A low population density that limits the number of nearby customers for corridor businesses,
- Decay and disinvestment among existing businesses, and
- Extensive competition that is continually improving its appeal to customers and businesses.

Its long-term revitalization should focus on creating a more attractive, pedestrian-friendly, walkable and sustainable corridor. Clusters of mixed uses will bring new residents to the corridor and create competitive environments for new businesses.

APPENDIX F

Housing Analysis (City of Richmond)

Appendix F. Housing Analysis (City of Richmond)

The *Hull Street Road Revitalization Plan Study Area Demographics White Paper*[1] prepared by the Local Initiatives Support Corporation (LISC) provides an in-depth demographic and economic profile of the Hull Street corridor (see Appendix D). This section builds on LISC's findings as they relate to households and housing. Currently, the Hull Street corridor is characterized by aging, low-density commercial uses in strip centers that front on the corridor, with a mixed collection of single-family neighborhoods and multi-family housing complexes behind these.

The corridor has a large reservoir of affordable housing, most of which is privately owned and does not receive public assistance. The corridor's affordability has in turn attracted low- and moderate-income households, particularly within the city. The housing remains inexpensive due to limited demand for ownership housing and higher-rent apartments. This limited demand results from a number of factors, most important of which are:

- The performance of the local public schools;
- Real and perceived crime; and
- The corridor's physical condition and appearance.

Demographics

The corridor's population grew 18 percent from 10,549 residents in 1990 to 12,491 residents in 2000. Growth slowed to 0.4 percent in the last decade, adding only 47 residents for a 2010 total of 12,538 residents. (Table 1)

Table 1. Population Trends, 1990-2010

	Study Area	Richmond	Chesterfield County
1990	10,549	203,052	209,278
2000	12,491	197,790	259,903
2010	12,538	201,272	314,259
1990-2000 Change			
Number	1,942	(5,262)	50,625
Percent	18.4%	-2.6%	24.2%
2000-2010 Change			
Number	47	3,482	54,356
Percent	0.4%	1.8%	20.9%

Source: ESRI, 2012; LISC, 2012; Partners for Economic Solutions, 2012.

[1] Local Initiatives Support Corporation. Hull Street Road Revitalization Plan Study Area Demographics White Paper. 2011.

From 2000 to 2010, the corridor's African-American population declined from 64 percent to 52 percent of the total population. At the same time, the corridor attracted a large Hispanic population, increasing from 124 Hispanic residents in 1990 to 3,573 or 28 percent of corridor residents in 2010. In the six census tracts that encompass the corridor, almost one-half of the Hispanic residents entered the U.S. since 2000 and three-quarters arrived since 1990. (Table 2)

Table 2. Study Area Population by Race and Ethnicity, 2010

	2000		2010		2000-2010 Change	
	Number	Percent	Nuumber	Percent	Number	Percent
White	3,278	26.2%	2,782	22.2%	(496)	-15.1%
Black	7,982	63.9%	6,532	52.1%	(1,450)	-18.2%
Asian	164	1.3%	135	1.1%	(29)	-17.7%
Other	1,067	8.5%	3,089	24.6%	2,022	189.5%
Total	12,491	100.0%	12,538	100.0%	47	0.4%
Hispanic, Any Race	1,057	8.5%	3,573	28.5%	2,516	238.0%

Source: ESRI, 2012; LISC, 2012; Partners for Economic Solutions, 2012.

The study area's population is relatively young with a median age of 30.5 years. Twenty-nine percent is below the age of 20, and less than 7 percent are 65 or over. The Hispanic population is markedly younger with a median age of 26.3 as compared with 38.9 years among white residents. (Table 3)

Table 3. Study Area Population by Age, 2010

	Number	Percent
Under 20 Years	3,646	29.1%
20 to 24 Years	1,205	9.6%
25 to 34 Years	2,461	19.6%
35 to 44 Years	1,665	13.3%
45 to 54 Years	1,560	12.4%
55 to 64 Years	1,160	9.3%
65 to 74 Years	494	3.9%
75 to 84 Years	273	2.2%
85 Years and Over	74	0.6%
Total Population	12,538	100.0%
Median Age	**30.5**	

Source: U.S. Census, 2010; Partners for Economic Solutions, 2012.

In 2009, one-third of the corridor's population aged 25 and above had graduated high school and had not pursued higher education. Another 16 percent had no high school diploma. That was an improvement over the 2000 situation when 32 percent had graduated high school, and 23 percent had no diploma. One-quarter had some college experience with an additional one-quarter having received an associate, bachelor or higher degree. (Table 4) As a result, the corridor's residents earn lower incomes and experience higher unemployment rates – 15 percent in 2010 as compared with 7.7 percent in Chesterfield County and 10.7 percent in the City of Richmond as a whole.

Table 4. Study Area Population Aged 25+ by Educational Attainment, 2000-2009

	2000		2009		2000-2009 Change	
Educational Attainment	Number	Percent	Nuumber	Percent	Number	Percent
Less Than 9th Grade	492	6.6%	388	4.9%	(104)	-21.1%
9th-12th Grade, No Diploma	1,207	16.2%	935	11.8%	(272)	-22.5%
High School Graduate	2,375	31.9%	2,624	33.1%	249	10.5%
Some College, No Degree	1,896	25.5%	1,989	25.1%	93	4.9%
Associate Degree	369	5.0%	507	6.4%	138	37.5%
Bachelor's Degree	770	10.4%	1,030	13.0%	260	33.8%
Master's/Professional/Doctoral	328	4.4%	460	5.8%	132	40.2%
Total	7,437	100.0%	7,934	100.0%	497	6.7%

Source: American Community Survey, 2012; LISC, 2012; Partners for Economic Solutions, 2012.

Among employed residents in 2011, 54 percent worked in white-collar occupations, 26 percent in blue-collar jobs and 20 percent in service jobs. The corridor has attracted fewer professionals, managers, health workers and educators than the city or the county as a whole. (Table 5)

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Table 5. Employed Population Aged 16 and Over by Occupation, 2010

	Study Area		Richmond		Chesterfield County	
Industry/ Occupation	Number	Percent	Number	Percent	Number	Percent
White Collar	3,053	48.5%	57,879	61.8%	106,887	68.0%
Management, Business, Financial	664	10.6%	12,685	13.5%	27,679	17.6%
Computer, Engineering, and Science	76	1.2%	4,030	4.3%	10,097	6.4%
Education, Legal, Community Service, Arts, and Media	233	3.7%	12,274	13.1%	16,053	10.2%
Healthcare Practitioner and Technical	317	5.0%	5,222	5.6%	9,545	6.1%
Sales	628	10.0%	10,399	11.1%	19,340	12.3%
Office and Administrative Support	1,135	18.0%	13,269	14.2%	24,173	15.4%
Services	1,541	24.5%	19,328	20.6%	20,205	12.9%
Blue Collar	1,695	27.0%	16,419	17.5%	30,021	19.1%
Farming, Forestry, Fishing	5	0.1%	48	0.1%	110	0.1%
Construction, Extraction	641	10.2%	5,190	5.5%	8,719	5.5%
Installation, Maintenance, Repair	197	3.1%	1,824	1.9%	5,769	3.7%
Production	414	6.6%	4,354	4.7%	7,776	4.9%
Transportation, Material Moving	438	7.0%	5,003	5.3%	7,647	4.9%
Total	**6,289**	**100.0%**	**93,626**	**100.0%**	**157,113**	**100.0%**

Source: ESRI, 2012; LISC, 2012; Partners for Economic Solutions, 2012.

Relative to the City and County, corridor residents were more likely to work in construction, retail, waste management and service jobs and less likely to be employed in finance/insurance and professional/scientific/ technical services. (Table 6)

Table 6. Employed Population Aged 16 and Over by Industry, 2010

	Study Area		Richmond		Chesterfield County	
Industry/ Occupation	Number	Percent	Number	Percent	Number	Percent
Agriculture, Mining	5	0.1%	283	0.3%	413	0.3%
Construction	785	12.5%	5,980	6.4%	12,323	7.8%
Manufacturing	441	7.0%	5,597	6.0%	15,533	9.9%
Wholesale Trade	163	2.6%	2,378	2.5%	5,176	3.3%
Retail Trade	919	14.6%	10,055	10.7%	18,828	12.0%
Transportation, Utilities	283	4.5%	4,011	4.3%	8,740	5.6%
Information	161	2.6%	1,973	2.1%	3,675	2.3%
Finance, Insurance, Real Estate	374	5.9%	8,438	9.0%	15,266	9.7%
Professional, Scientific and Technical Services	148	2.4%	6,295	6.7%	10,687	6.8%
Educational Services	336	5.3%	9,073	9.7%	12,668	8.1%
Health Care and Social Assistance	834	13.3%	13,111	14.0%	18,285	11.6%
Accommodation and Food Services	432	6.9%	8,993	9.6%	8,061	5.1%
Other Services	1,071	17.0%	12,267	13.1%	15,667	10.0%
Public Administration	337	5.4%	5,172	5.5%	11,791	7.5%
Total	**6,289**	**100.0%**	**93,626**	**100.0%**	**157,113**	**100.0%**

Source: ESRI, 2012; LISC, 2012; Partners for Economic Solutions, 2012.

These discrepancies are reflected in the median household incomes in the corridor in 2010. Households living in the eastern end had a median household income of $33,324, equivalent to 80 percent of the citywide median and 60 percent of the regional median. In the western end of the corridor in Chesterfield County, the median household income of $52,490 represented 93 percent of the regional median income and compared with the countywide median of $75,532. Corridor households included 18.4 percent with incomes below the poverty line. (Table 7)

Table 7. Study Area Households by Income, 2010

	Richmond Portion		Chesterfield County Portion		Total Study Area	
	Number	Percent	Number	Percent	Number	Percent
Household Incomes						
Less than $10,000	240	7.6%	63	4.9%	303	6.9%
$10,000 to $14,999	346	11.0%	10	0.8%	356	8.0%
$15,000 to $19,999	262	8.3%	17	1.3%	279	6.3%
$20,000 to $24,999	259	8.3%	48	3.7%	307	6.9%
$25,000 to $34,999	538	17.1%	217	16.9%	755	17.1%
$35,000 to $49,999	562	17.9%	270	21.0%	832	18.8%
$50,000 to $74,999	583	18.6%	351	27.3%	934	21.1%
$75,000 to $99,999	211	6.7%	177	13.8%	388	8.8%
$100,000 to $149,999	127	4.0%	118	9.2%	245	5.5%
$150,000 or More	10	0.3%	14	1.1%	24	0.5%
Total Households	**3,138**	**100.0%**	**1,285**	**100.0%**	**4,423**	**100.0%**
Median Household Income	**$33,324**		**$51,282**		**$39,953**	

Note: Market area includes Enfield town, East Windsor town, Somers town, Suffield

Source: U.S. Census Bureau, 2010 American Community Survey (ACS), 2008-2010 ACS, 2006-2010 ACS ; Partners for Economic Solutions, 2012.

Incomes were lower for households with younger householders – $38,000 for householders aged 25 to 34 as compared with a median of $55,000 for householders aged 45 to 54. Older householders, aged 65 to 74, showed the lowest incomes with a median of $36,000.

Existing Conditions

The corridor's housing inventory included 5,594 units in 2010, 112 more units than in 2000, representing a 2.0-percent growth. Though corridor's housing growth was outpaced by the City of Richmond's 3.7-percent growth and far outstripped by Chesterfield County's 22.4-percent growth. During the decade, the balance between owners and renters shifted somewhat from 39 percent of units occupied by homeowners in 2000 to 41 percent in 2010.

Housing by Type and Age

One-half of the corridor's housing stock comprises single-family detached units, with attached townhouses accounting for another 3 percent. This compares with 80 percent single-family detached units and 4 percent attached units in Chesterfield County. Richmond has a somewhat smaller share of detached units at 49 percent but more attached units (7.5 percent). Mobile homes account for another 1.8 percent of the corridor's housing stock. The multi-family housing stock is primarily garden apartments, in buildings of less than 20 units each. (Table 8)

Table 8. Housing Units by Number of Units in Structure, 2009

	Richmond Portion		Chesterfield County Portion		Study Area Total	
Units in Structure	Number	Percent	Number	Percent	Number	Percent
1, detached	1,650	45.1%	878	62.4%	2,528	49.9%
1, attached	82	2.2%	69	4.9%	151	3.0%
2	42	1.1%	33	2.3%	75	1.5%
3 or 4	221	6.0%	36	2.6%	257	5.1%
5 to 9	1,172	32.0%	185	13.1%	1,357	26.8%
10 to 19	201	5.5%	167	11.9%	368	7.3%
20 to 49	105	2.9%	7	0.5%	112	2.2%
50 or more	107	2.9%	26	1.8%	133	2.6%
Mobile home	82	2.2%	7	0.5%	89	1.8%
Total	**3,662**	**100.0%**	**1,408**	**100.0%**	**5,070**	**100.0%**

Source: American Community Survey, 2005-2009; LISC, 2012; Partners for Economic Solutions, 2012.

The corridor's housing has a median construction year of 1973 as compared with 1954 for the city and 1985 for the county. Almost 40 percent of units were built before 1970 with another 30 percent built during the 1970s. Only 18 percent of the units have been built since 1990 including 495 units from the 1990s and 419 units built since 2000. (Table 9)

Table 9. Housing Units by Year Built, 2009						
Year Structure Built	Richmond Portion		Chesterfield County Portion		Study Area Total	
	Number	Percent	Number	Percent	Number	Percent
Built 2005 or later	10	0.2%	2	0.1%	12	0.2%
Built 2000 to 2004	263	8.0%	144	10.2%	407	8.0%
Built 1990 to 1999	314	9.8%	181	12.8%	495	9.8%
Built 1980 to 1989	396	11.9%	209	14.8%	605	11.9%
Built 1970 to 1979	1,175	30.3%	360	25.6%	1,535	30.3%
Built 1960 to 1969	464	13.8%	235	16.7%	699	13.8%
Built 1950 to 1959	614	14.8%	137	9.7%	751	14.8%
Built 1940 to 1949	211	6.4%	113	8.0%	324	6.4%
Built 1939 or earlier	214	4.8%	28	2.0%	242	4.8%
Total	3,661	100.0%	1,409	100.0%	5,070	100.0%
Median Year Structure Built	1973		1975		1973	
Source: American Community Survey, 2005-2009;LISC, 2012; Partners for Economic Solutions, 2012.						

Vacancies

As a result of the number of occupied units growing more slowly than did the total study area housing inventory, housing vacancies increased from 6.5 percent in 2000 to 13.5 percent in 2010. This represents an increase from 357 to 742 vacant units. These trends reflect the impact of the national housing crisis that started in 2007 and peaked in 2008. . The 2010 vacancy rate compares with 20.9 percent in Manchester, 15.5 percent in Blackwell, 12.6 percent in Broad Rock, 11.8 percent in Midlothian, 7.0 percent in Huguenot and 8.6 percent in the Far West neighborhoods.[2] (Table 10)

[2] Census tracts in neighborhoods: Manchester - CT 610; Blackwell includes - CT 6 02; Broad Road - CTs 608, 609, 706.02, 708.01, 708.02 and 709; Midlothian - CTs 706.01, 707, 710.01, 710.02 and 711; Huguenot - CTs 701, 703 and 704; Far West - CTs 501, 502, 503, 504, 505 and 506.

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Table 10. Study Area Housing Vacancy Status, 2010						
	Richmond Portion		Chesterfield County Portion		Total Study Area	
Housing Units	Number	Percent	Number	Percent	Number	Percent
Occupied Housing Units	**3,437**	**85.2%**	**1,334**	**90.2%**	**4,771**	**86.5%**
Vacant Housing Units	**597**	**14.8%**	**145**	**9.8%**	**742**	**13.5%**
For Rent	435	10.8%	86	5.8%	521	9.5%
Rented, not occupied	7	0.2%	1	0.1%	8	0.1%
For sale only	48	1.2%	19	1.3%	67	1.2%
Sold, not occupied	4	0.1%	2	0.1%	6	0.1%
For seasonal, recreational, or occasional use	3	0.1%	3	0.2%	6	0.1%
For migrant workers	-	0.0%	-	0.0%	-	0.0%
Other vacant	100	2.5%	34	2.3%	134	2.4%
Total Housing Units	**4,034**	**100.0%**	**1,479**	**100.0%**	**5,513**	**100.0%**

Source: 2010 U.S. Census; LISC, 2012; Partners for Economic Solutions, 2012.

Foreclosure activity has affected, but not overwhelmed, the corridor. Currently, Realtytrac.com reports 60 foreclosed homes owned by banks and 144 being actively marketed for resale in the 23224 zip code.

Competitive Rental Housing Developments

Renters dominate in the corridor with 59 percent of all occupied units. While the majority are housed in multi-family buildings with five or more units, almost one-third rent single-family detached and attached houses. Single-family rentals are particularly plentiful in the neighborhoods between Warwick Road and East Belt Boulevard, where one-third of the single-family detached units are rentals.

Table A-11 on the following page summarizes the characteristics of key apartment complexes in the Hull Street corridor. These complexes offer one-bedroom, one-bath apartments for $550 to $697 per month – $0.82 to $1.08 per square foot. Two-bedroom apartments with one bathroom rent for $577 to $765 per month – $0.73 to $0.88 per square foot. The addition of a half bath increases rents to $625 to $825 per month.

The rental apartments were generally built between 1967 and 1979. Town and Country Apartments, located behind the Chippenham Mall Shopping Center, were built in 1981 with financial support from Low-Income Housing Tax Credits. The most recent multi-family development, Chippenham Place, was developed in 1988 with project-based Section 8 financing. (Table 11)

Table 11. Affordable Multi-Family Rental Properties, Hull Street Corridor

Project/Address	No. of Units	Floor Plans	Rental Rates	Square Feet	Rent per Sq. Ft.	Opening Date	Occupancy Rate	Comments
Timbercreek Apartments	160	2BR/1Bath	$577-$676	760-826	$0.76-$0.82	1968	87%	Short-term lease, unfurnished, single-family home. Playground, building
2200 Chateau Dr								has 2 floors, laundry facility. Air-conditioning, dishwasher, pets are
Richmond, VA 23224								allowed, and lease lengths are flexible.
Town & Country/FMR: Village	106	1BR/1Bath	$610	690	$0.88	1981	95%	Clubhouse, pool, laundry facility, playground, picnic area, off street
Green Townhouses *		2BR/1Bath	$680	855	$0.80			parking.
1402 Barriedale Rd		2BR/1.5 Baths	$700	975	$0.72			
Richmond, VA 23225		3BR/1.5 Baths	$830	1084	$0.77			
Manchester Lake Townhouse	188	2BR/1.5 Baths	$625	900	$0.69	1967	100%	Clubhouse, pool, laundry facility.
Apartments								
2206 Mandalay Dr								
Richmond, VA 23224								
Cloverleaf Lake Townhouse	210	1BR/1.5Baths	$725	842	$0.86	1971	90%	Deposit required: $88-$131. Pool, playground, tennis courts, assigned
Apartments		2BR/1.5 Baths	$800-$825	1065	$0.75-$0.77			parking, 2 parking spaces per household, the building has 2 floors.
6923 Starview Ct		3BR/2.5 Baths	$925	1282	$0.72			short-term lease, unfurnishd, condo/townhome/duplex, single-family home,
Richmond, VA 23225								pets allowed. 6 and 12 month leases. Air-conditioning, dishwasher,
								unfurnished available, sundeck(s), package receiving.
Woodbriar Apartments	214	1BR/1Bath	$579	560	$1.03	1974	89%	Short-term lease, condo/townhome/duplex, single-
621 Warwick Village Dr A		2BR/1.5 Baths	$689	822	$0.84			family home, pool, playground. Building has 2 floors, pets allowed,
Richmond, VA 23224								wheelchair access, package receiving. 6 and 12 month leases. AC,
								dishwasher, pool, sundeck(s).
Brookrun Townhomes/FMR	132	2BR/1.5Baths	$680	1256	$0.54	1968		AC, dishwasher, washer/dryer, unfurnished, pool, sundecks, playground.
Brookline								6,12 month lease, playground, permit parking, building has 2 floors, pets
3124 Sneed Ct								allowed. Condo/townhome/duplex, income qualifications apply.
Richmond, VA 23224								
Rock Creek Apartments	120	1BR/1Bath	$577-$697	705	$0.82-$0.99	1967	88%	Pool, off-street parking, laundry facility.
2830 Broad Rock Blvd		2BR/1Bath	$627-$747	855	$0.73-$0.87			
Richmond, VA 23224								
Rollingwood Apartments	278	1BR/1Bath	$550-$645	600	$0.92-$1.08	1978	96%	Short term lease, single family home, pool, playground, tennis courts, 3
6300 Pewter Ave		2BR/1Bath	$670-$765	872	$0.77-$0.88			floors in the building, pets allowed. Air-conditioning, dishwasher,
Chesterfield, VA 23224		3BR/1.5Baths	$730-$835	1030	$0.71-$0.81			sundecks, package receiving, flexible lease lengths.

Table 11. Affordable Multi-Family Rental Properties, Hull Street Corridor (Continued)

Project/Address	No. of Units	Floor Plans	Rental Rates	Square Feet	Rent per Sq. Ft.	Opening Date	Occupancy Rate	Comments
The Communities at Southwood	1257	1BR/1Bath	$575-$690	568-650	$1.01-$1.06	1974-79	94%	Apartments and townhouses, pool, soccer field, playgrounds, picnic areas,
4602 B Southwood Parkway		2BR/1Bath	$660-$775	794-900	$0.83-$0.86			walk-in closets, some washer/dryer connections, AC, Internet access,
Richmond, VA 23224		2BR/1.5Bath	$750-$825	1169	$0.64-$0.71			dishwasher, patio or balcony, pets allowed, dog park.
		3BR/1Bath	$750-$800					
		3BR/2Bath	$800-$850					
Town & Country/FMR: Village Green	378	1BR/1Bath	$610			1971		Pool, playground, no assigned parking, permit parking only.
		2BR/1Bath	$680					
6551 Elmbridge Rd		2Br/1.5Bath	$675-$700	972	$0.69-$0.72			
Richmond, VA 23225		3BR/1.5Bath	$800-$865	1084	$0.74-$0.80			
Chippenham Place Apartments*	144	1BR/1Bath	Income	644	N/A	1988	100%	Pool, laundry facility, community room, waiting list, always full.
5833 Orcutt Ln		2BR/1Bath	based	840				
Richmond, VA 23224		3BR		1060				

Note: *Low-Income Housing Tax Credit or Section 8 development
Sources: REIS; Apartments.com; Partners for Economic Solutions, 2012.

Owner-Occupied Housing

The corridor also offers affordable ownership housing with a median value of $139,200 in 2009. This compared with the city median of $192,400 and the county median price of $225,400. Owner-occupied housing within the Richmond portion of the study area had a median value of $127,800 as opposed to a median of $161,100 in the county portion. (Table 12)

Table 12. Study Area Owner-Occupied Housing by Value, 2009

	Richmond Portion		Chesterfield County Portion		Total Study Area	
Housing Value	Number	Percent	Number	Percent	Number	Percent
Less than $80,000	119	9.7%	51	6.3%	170	8.4%
$80,000 to $99,999	180	14.7%	84	10.4%	264	13.0%
$100,000 to $124,999	284	23.1%	65	8.1%	349	17.2%
$125,000 to $149,999	279	22.7%	133	16.5%	412	20.3%
$150,000 to $174,999	152	12.4%	155	19.3%	307	15.1%
$175,000 to $199,999	61	5.0%	135	16.8%	196	9.6%
$200,000 to $249,999	115	9.4%	124	15.4%	239	11.8%
$250,000 to $299,999	37	3.0%	32	4.0%	69	3.4%
$300,000 or more	-	0.0%	26	3.2%	26	1.3%
Total Housing Units	**1,227**	**100.0%**	**805**	**100.0%**	**2,032**	**100.0%**
Median Value	**$127,800**		**$161,100**		**$139,200**	

Source: American Community Survey, 2005-2009; LISC, 2012; Partners for Economic Solutions, 2012.

According to the American Community Survey, 21 percent of the corridor's owner-occupied housing was valued below $100,000 in 2009. Houses priced from $100,000 to $174,999 constituted 53 percent, and houses valued at $200,000 or more were 17 percent of the total.

Overcrowding

Using data for the six Census tracts that encompass the study area, 0.6 percent of owner households had more than one person per room, the generally accepted measure of overcrowding. Among renter households, overcrowding increased to 2.8 percent. It should be noted, however, that these estimates reflect only residents reported to the U.S. Census and probably underestimate the full extent of overcrowding in the corridor.

Cost Burden

The U.S. Department of Housing and Urban Development (HUD) defines housing affordability as households spending not more than 30 percent of their total household income on gross rent, including utilities. The American Community Survey reports that almost 48 percent of renters

spent 30 percent or more of their income for rent in 2009, including 24 percent who spent one-half or more of their income for rent.

Housing Needs

As Chesterfield County housing needs and policies are being addressed separately in the new Comprehensive Plan, this housing analysis focuses on the Richmond portion of the corridor. Among the 3,138 households in the Richmond portion of the study area, 1,622 households or 62.5 percent rented their homes in 2009. Just under one-half had incomes of $25,000 or less, and 71 percent made $35,000 or less. Among these renter households, 868 or 54 percent were cost-burdened, spending 30 percent or more of their incomes for gross rent. Twenty-seven percent or 462 renter households were severely cost-burdened, spending one-half or more of their income on rent. (Table 13)

Table 13. Renter Households in the Richmond Portion of Study Area, 2005-2009

Household Income	Total Renters	Burdened Renters >30%	Burdened Renters >35%
Less than $10,000	177	140	110
$10,000 to $19,999	470	356	265
$20,000 to $34,999	502	287	125
$35,000 to $49,999	188	61	20
$50,000 to $74,999	214	24	-
$75,000 to $99,999	44	-	-
$100,000 or more	27	-	-
Total	1,622	868	520

Source: American Community Survey, 2005-2009; Partners for Economic Solutions, 2012.

Cost-burdened renter households had the following breakdown by age:

- 16 percent had householders aged 15 to 24
- 26 percent had householders aged 25 to 34
- 52 percent had householders aged 35 to 64
- 6 percent had householders aged 65 or older

Housing the renter households who are cost-burdened and make less than $35,000 would require an additional 783 subsidized rental units with the following breakdown by rent level (Table 14). Traditionally, these subsidies have been provided through Low-Income Housing Tax Credits and City funding from Community Development Block Grant (CDBG) and HOME funding. However,

the City of Richmond has seen its CDBG and HOME funds cut by 32 percent over the last two fiscal years, significantly reducing funds available for new affordable housing.

Table 14. Assisted Rental Housing Needed for Cost-Burdened Renter Households in the Richmond Portion of the Study Area

	Households	
Monthly Rents	Number	Percent
Less than $250	140	17.9%
$250 to $499	356	45.5%
$500 to $874	287	36.7%
Total	**783**	**100.0%**

Note: Includes all renter households with incomes below $35,000 spending 30 percent or more of their income for gross rent.

Sources: American Community Survey, 2005-2009; Partners for Economic Solutions, 2012.

Persons aged 65 or older headed 367 households in the Richmond portion of the study area in 2009. Roughly three-quarters owned their own homes, and one-quarter rented. As they age, most of the homeowners will stay in their homes for many years, but a share will seek supportive housing they can afford on their retirement incomes. Assuming that one-tenth of the homeowners and one-half of the elderly renters would seek affordable housing and meet the income limits, this indicates a need for an additional 75 units of subsidized elderly housing.

Housing Opportunities

Improving housing conditions in the Richmond portion of the corridor will need to involve a variety of efforts to help residents achieve higher incomes and to improve the quality of life in the corridor.

Higher Resident Incomes

Helping residents to improve their economic situation through education and workforce development programs is critical to the corridor's long-term sustainability. A significant number of the area's housing problems are, in fact, problems of too little income. Many of the corridor's residents have educational limitations that may inhibit their ability to advance in their careers and earn higher incomes. A holistic strategy that includes improved educational opportunities and effective workforce development programs can help to improve their ability to achieve a living wage sufficient to support their families (see the Economic Development Analysis).

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Improved Quality of Life

Improving the quality of life in the corridor will be critical to retaining households as their incomes increase and attracting additional new households. This requires addressing the full range of residents' needs – housing, personal safety, schools, transit accessibility, recreation, churches, shopping, entertainment and services.

Public Schools

If the study area is to attract moderate- and middle-income families with enough income to choose among multiple neighborhoods, the performance of the corridor's public schools must improve. Resolving the challenges facing urban education – poverty, dysfunctional families, inadequate preparation for school, language issues, drugs and public safety concerns – is beyond the scope of this corridor plan. Rebuilding the public schools will require long-term sustained efforts by all segments of the society. One option – charter schools – has delivered mixed results based on the quality of the staff and the program. However, some charter school programs with high academic and discipline standards have made a profound difference in the education of their pupils.

Public Safety

Also essential to long-term revitalization will be reduction in criminal activity in the corridor. This often goes hand-in-hand with upgrading of the corridor's appearance and housing stock. The "broken windows" theory suggests that a run-down area with blighted buildings, litter and graffiti attracts criminals by communicating that no one values of takes care of the area. Fixing broken windows and other evidence of decline and neglect can set a new tone and communicate that criminal behavior will be tolerated no longer. Aggressive programs involving both the Police Department and the community can "weed" out gangs and other criminal behavior and "seed" better behavior through youth initiatives.

Richmond has a well-developed program of community policing and working with communities to fight crime. The Community Assisted Public Safety (CAPS) program works with community members to identify problem properties and other issues impacting a neighborhood. With a team that includes the Police Department, the Fire Department, the Health Department, Social Services, Planning and Development Review, Tax Enforcement, the City Attorney's Office, the IRS, the Commonwealth's Attorney's Office and Richmond Team Zero Tolerance, multi-pronged solutions can be developed.

One tool holds landlords responsible for their tenants' activities. When landlords don't fulfill their responsibilities for screening their tenants and maintaining their properties, the results impact the whole neighborhood. This program involves informing landlords when one of their tenants is arrested for drugs and warning them that if the activity continues, the property owner will be liable for prosecution. The property owner is counseled about how to be a better landlord. In some cases, small landlords may own only one, two or three houses and have no experience in

screening tenants and enforcing lease terms. This training can help these small landlords be more effective in assuring that their tenants are law abiding and responsible residents.

Some communities are improving public safety and residents' perceptions of safety by providing significant discounts to public safety employees – police officers, fire fighters and emergency medical technicians – who want to buy a house in a lower-income neighborhood.

Public Space Improvements

Better public and open spaces that are easily accessible to corridor residents can improve the corridor's appeal. Upgrades to Hull Street and its streetscape would help to reverse the visual blight and negative image created by the corridor's current conditions.

Improved Housing Upkeep

Strategies to encourage good upkeep of existing housing would help to preserve the quality of existing neighborhoods. Concentrated code enforcement can encourage owners to better maintain their properties, particularly when accompanied by funding assistance to help elderly and/or low-income households in making repairs. Partnerships with area churches could help elderly homeowners to bring their properties into compliance. Tool libraries can provide residents with access to the tools they need for specific repairs.

New Development

Given conditions in the private mortgage market, construction of new single-family houses will find limited private market support for at least the next two to four years. Conservative lending standards are disqualifying many of the moderate-income households that might find attractive the chance to buy a home in Richmond's portion of the corridor. The City's and non-profit organizations' efforts to support homeownership should focus on filling vacancies in the corridor's neighborhoods, converting rental properties to owner-occupied properties, preventing foreclosures and preparing prospective homeowners through financial counseling and training. A household at 80 percent of area median income ($51,200 for a family of four) could support a house purchase up to $213,000 with a five-percent downpayment in today's low-interest rate environment.

Without governmental subsidies, new private multi-family housing development in the Richmond portion of the corridor also is unlikely until conditions improve significantly. The corridor's relatively low rents and home values make near-term new construction financially difficult without outside financial support.

Longer-Term Development

In the longer term, a mixed-use, mixed-income development could provide a quality living environment that allows residents to carry out more of their trips by walking and biking with less dependence on single-occupant cars. **However, overall improvements to the corridor, as described**

elsewhere in the Economic Development Analysis, will be essential before such a development could move ahead. These improvements would include:

- Improved performance of local schools;
- Reduced reality and perception of crime
- Corridor beautification;
- Upgrading of corridor commercial buildings and sites;
- Focused quality development
    - Public open spaces – parks and/or plazas
    - Walkable environment.

With significant progress on schools, public safety and upgrading the corridor's appearance and environment, the Richmond portion of the corridor could support construction of an estimated 50 new ownership units annually after 2017. These should have the following mix:

- 60 percent single-family detached units priced from $175,000 to $190,000 (in 2012 dollars) for 1,800 to 1,900 square feet, three bedrooms and two and one-half bathrooms; and
- 40 percent townhouses priced from $130,000 to $150,000 for 1,400 to 1,500 square feet, three bedrooms and two bathrooms.

New market-rate apartment development could support 80 units annually with the following mix with rents expressed in 2012 dollars:

Unit Type	Percent	Square Feet	Monthly Rent	Rent per Sq. Ft.
1 Bedroom/1 Bath	40%	675	$745	$1.10
2 Bedrooms/1.5 Bath	50%	900	$855	$0.95
3 Bedrooms/2 Baths	10%	1,100	$935	$0.85

Affordable Housing

The Richmond portion of the Hull Street corridor provides a variety of affordable housing opportunities with several large private and assisted housing complexes with affordable rents. However, as noted above, almost half of Richmond households living in the corridor spent more than 30 percent of their income for housing in 2009, exceeding the accepted affordability standard. One-half of those households spent more than half of their income on housing. That suggests a continuing need for additional assisted housing.

Additional assisted housing to meet the housing needs quantified above could be achieved through selective acquisition and renovation of a poorly performing multi-family development by a non-

profit housing developer. That would have the salutary effects of improving residents' housing conditions and quality of life while improving the overall conditions in the corridor. Good property management and tenant screening by a skilled and experienced affordable housing provider also would reduce the impacts of tenants who cause problems for other residents and commit crimes.

Development of a new affordable senior housing development would allow aging homeowners to stay within the community once they are no longer able to maintain their own homes. When combined with Meals on Wheels and social services, such senior housing can help individuals to live independently for a longer time. Such housing should be sited within mixed-use nodes that allow residents to walk to retail, services and parks. Three nodes offer good opportunities for senior housing development – the Warwick Road node near Food Lion, the Turner Road node at 360 West Shopping Center, and the Walmsley Boulevard node near Food Lion and Bryant & Stratton College.

Providing affordable units with no maintenance responsibilities would help seniors to move out of single-family homes that then could be occupied by younger families that need the space and can handle the day-to-day maintenance and upkeep.

Below-market-rate loans and grants for energy efficiency improvements to local homes could help to improve residents' financial condition by reducing their energy costs. Partnerships with Virginia Dominion Power could help to finance such improvements. Additional low-interest loan and grant funds could help low- and moderate-income homeowners, particularly elderly homeowners, to repair their homes.

Federal Low-Income Housing Tax Credits (LIHTC) provide financial incentives to include affordable housing within mixed-income apartment developments. Typically, they serve households with incomes near 60 percent of the Area Median Income – $34,600 for a family of three and $38,400 for a family of four. One or two LIHTC developments should be accommodated in the corridor within larger mixed-use developments to minimize residents' need for private automobiles and to facilitate provision of transit services. Again, such mixed-use developments are most likely to evolve in the Walmsley Boulevard, Turner Road and Warwick Road nodes, building on the presence of existing retail facilities.

The Richmond portion of the corridor would be best served by a strategy to assist low-income households in purchasing existing homes. Section 203(k) Home Renovation Loans insured by the Federal Housing Administration help new homebuyers fund not only the house purchase but up to six months' worth of mortgage payments in repairs and upgrades as well. Any homeownership program would need to be backed by a program of intensive homeownership counseling to prepare buyers for the responsibility of homeownership.

Houses designed for multi-generational occupancy would answer a market need, particularly for certain ethnic groups where such housing arrangements are traditional. A rent-to-own program designed to allow prospective homeowners to build their savings while proving their ability to make monthly payments would help to fill vacant units.

APPENDIX G

VDOT Approval Processes

Appendix G: VDOT Approval Processes

There are a few recommendations in the Hull Street Revitalization Plan that differ from typical VDOT standards. The reason for recommending these alternative designs and strategies is to meet the livability and multi-modal goals of the Revitalization Plan. These alternative designs will, however, need to be approved by VDOT within the Chesterfield County portion of the corridor. For this reason, the following information offers guidance to Chesterfield County for making these requests to VDOT. Where deviations from typical Richmond transportation standards are recommended, these requests can be handled between the City departments.

1. **Speed reduction request (55 MPH to 45 MPH) for short section near Walmsley Blvd.**
    - This request falls under VDOT jurisdiction.
    - A formal request for a speed study would be filed by a representative from Chesterfield County with VDOT Richmond District Traffic Engineering.
    - VDOT would perform the speed study using in-house resources.
    - District Engineer will decide if a reduction in speed in warranted.
    - If approved, speed reduction will be presented to the Board of Supervisor for a resolution.

2. **Approval of 11' lane widths**
    - Location of the proposed width reduction will determine the reviewing agency
    - City of Richmond – City of Richmond Traffic Engineering Division
    - County – VDOT Traffic Engineering/Chesterfield County Staff
    - Similar process for both reviewing agencies
        - Identify existing lane widths and determine desired reductions.
        - Meet with reviewing agency to discuss intention/scope of project
        - Collect relevant data –
            - Existing traffic volumes (ADT and peak hour);
            - 85^{th} percentile speeds; and
            - Crash history for subject location(s).
        - Prepare traffic engineering study addressing benefits/impacts of proposed changes.
        - Submit traffic engineering study to reviewing agency for approval.

3. **Approval of pedestrian crossings (marked crosswalks w/ ped heads) of Hull Street at signalized intersections**
    - Location of proposed project will determine the reviewing agency
    - City of Richmond – City of Richmond Traffic Engineering Division
    - County – VDOT Traffic Engineering/Chesterfield Department of Transportation
    - Similar process for both reviewing agencies
        - Identify location(s) for proposed crosswalks
        - Meet with reviewing agency to discuss intention/scope of project
        - Collect relevant data –
            - Existing traffic volumes (ADT and peak hour);
            - Existing signal timing/phasing data; and
            - Existing pedestrian counts.
        - Prepare a traffic engineering study addressing the benefits/impacts of the proposed pedestrian amenities.
        - Submit traffic engineering study to reviewing agency for approval.

4. **Approval of pedestrian crossing through limited access interchange (under Chippenham Parkway)**
    - Falls under VDOT jurisdiction
    - Design team would identify potential crossing locations within the interchange.
    - Subsequent meeting would be held with VDOT to discuss proposed crossings.
    - Traffic engineering studies would be performed as necessary to –
        - Assess the safety of pedestrians within the interchange area; and
        - Determine the impacts to traffic operations at the ramp junctions.
    - Ultimate determination of acceptance is dependent upon approval from VDOT.

5. **Approval of Chippenham interchange improvements (IMR)**
    - Falls under VDOT jurisdiction with potential involvement of Federal Highway Administration (FHWA), dependent on extent of proposed improvements.
    - Scoping meeting required to determine parameters of study.
    - Work will be coordinated through VDOT Richmond District Traffic Engineer
    - General guidelines for an IMR are provided in IIM-LD-200.5.

6. **Approval of geometric improvements (adding, removing, and/or modifying turn lanes on 6 lanes in the County and 4 lanes in the City)**
    - Location of proposed project will determine the reviewing agency
    - City – City of Richmond Traffic Engineer, City Planning Department, Department of Public Utilities, Department of Public Works
    - County – VDOT Traffic Engineering and Location & Design Divisions, Chesterfield County (multiple departments)
    - Review agencies/departments will be determined based on the extent of the proposed modifications/improvements.
    - Degree of study/analysis will be determined based on the extent of the proposed modifications/improvements.
    - Coordination with jurisdiction of the project location will be the first step.
    - The respective jurisdiction(s)/agency will determine/contact the review agencies as necessary.

APPENDIX H

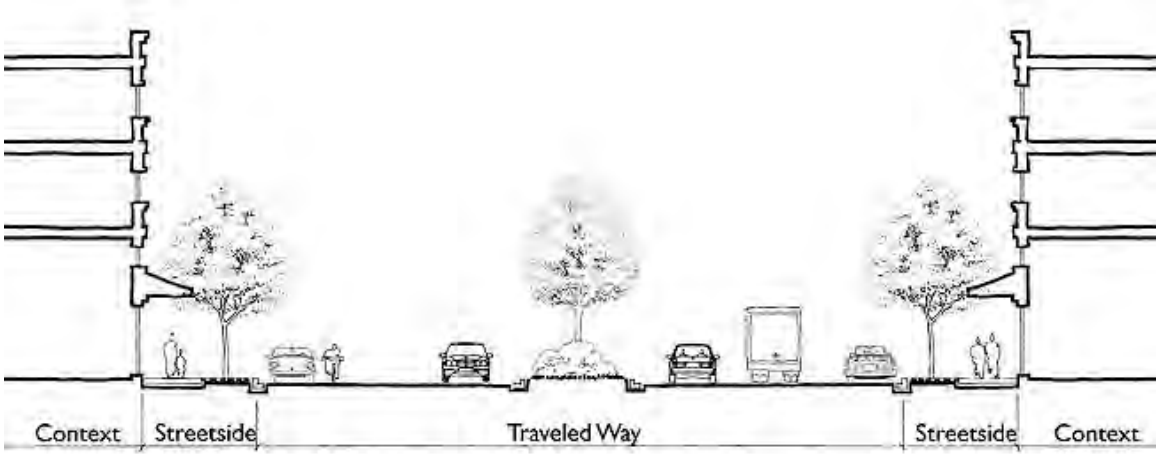
Transportation Design Standards and Guidelines

APPENDIX H: TRANSPORTATION DESIGN STANDARDS AND GUIDELINES

Design details in the 30% conceptual design play a vital role in the safety, operation, and attraction of these facilities. This memo is intended to provide guidance as the conceptual typical sections and intersections take form in the 30% design. These are guidelines and targets only that must be adjusted for the unique conditions and demands of individual intersections and segments.

Concept design recommendations are organized according to traveled way, streetside, intersections, curbcuts, signals and special areas.

Figure 1 Typical section components (Context, Streetside, and Traveled Way)



ITE Designing Walkable Urban Thoroughfares (2009)
Source: Community, Design + Architecture

Figure 2 Design Parameters for Walkable Urban Thoroughfares

Thoroughfare Design Parameters for Walkable Mixed–Use Areas									
	Suburban (C–3)						General Urban (C–4)		
	Residential			Commercial			Residential		
	Boulevard [1]	Avenue	Street	Boulevard [1]	Avenue	Street	Boulevard [1]	Avenue	Street
Context									
Building Orientation (entrance orientation)	front, side	front, side	front, side	front, side	front, side	front, side	front	front	front
Maximum Setback [2]	20 ft.	20 ft.	20 ft.	5 ft.	5 ft.	5 ft.	15 ft.	15 ft.	15 ft.
Off-Street Parking Access/Location	rear, side	rear, side	rear, side	rear, side	rear, side	rear, side	rear	rear, side	rear, side
Streetside									
Recommended Streetside Width [3]	14.5–16.5 ft.	14.5 ft.	11.5 ft.	16 ft.	16 ft.	15 ft.	16.5-18.5 ft.	14.5 ft.	11.5 ft.
Minimum sidewalk (throughway) width	6 ft.	6 ft.	6 ft.	6 ft.	6 ft.	6 ft.	8 ft.	6 ft.	6 ft.
Pedestrian Buffers (planting strip exclusive of travel way width) [3]	8 ft. planting strip	6–8 ft. planting strip	5 ft. planting strip	7 ft. tree well	6 ft. tree well	6 ft. tree well	8 ft. planting strip	8 ft. planting strip	6 ft. planting strip
Street Lighting	For all thoroughfares in all context zones, intersection safety lighting, basic street lighting, and pedestrian-scaled lighting is recommended. See Chapter 8 (Streetside Design Guidelines) and Chapter 10 (Intersection Design Guidelines).								
Traveled Way									
Target Speed (mph)	25–35	25–30	25	25–35	25–35	25	25–35	25–30	25
Number of Through Lanes [5]	4–6	2–4	2	4–6	2–4	2	4–6	2–4	2
Lane Width [6]	10–11 ft.	10–11 ft.	10–11 ft.	10–12 ft.	10–11 ft.	10–11 ft.	10–11 ft.	10–11 ft.	10–11 ft.
Parallel On-Street Parking Width [7]	7 ft.	7 ft.	7 ft.	8 ft.	7-8 ft.	7-8 ft.	7 ft.	7 ft.	7 ft.
Min. Combined Parking/Bike Lane Width	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.
Horizontal Radius (per AASHTO) [8]	200–510 ft.	200–330 ft.	200 ft.	200–510 ft.	200–510 ft.	200 ft.	200–510 ft.	200–330 ft.	200 ft.
Vertical Alignment	Use AASHTO minimums as a target, but consider combinations of horizontal and vertical per AASHTO Green Book.								
Medians [9]	4–18 ft.	Optional 4–16 ft.	None	4–18 ft.	Optional 4–18 ft.	None	4–18 ft.	Optional 4–16 ft.	None
Bike Lanes (min./preferred width)	5 ft./6 ft.	5 ft./6 ft.	5 ft./6 ft.	5 ft./6 ft.	5 ft./6 ft.	5 ft./6 ft.	5 ft./6 ft.	5 ft. / 6 ft.	5 ft. / 6 ft.
Access Management [10]	Moderate	Low	Low	High	Moderate	Low	Moderate	Low	Low
Typical Traffic Volume Range (ADT) [11]	20,000–35,000	1,500–25,000	500–5,000	20,000–50,000	1,500–35,000	1,000–10,000	10,000–35,000	1,500–20,000	500–5,000

Hull Street Road would be most aptly categorized as a suburban commercial boulevard
Source: ITE *Designing Walkable Urban Thoroughfares* (2010)

1. TRAVELED WAY

1.1 Travel lane width

Match lane width to the desired vehicle speed and the frequent design vehicle. Passenger vehicles operate safely at speeds of up to 35 mph on 10 foot lanes.[1] Vehicles such as buses or tractor-trailers require wider lanes. Buses can be 10.5 feet wide from mirror to mirror and require a minimum 11-foot-wide lane on roadways with 30 to 35 mph target speeds.

Recommendation: Travel lanes should be designed with an 11' width exclusive of curb and gutter.

Justification: While it is acknowledged that standard VDOT lane width is 12' a narrower 11' lane width is recommended to minimize pedestrian crossing distance and help manage speeds. This is justified by the fact that this segment of Hull Street Road is not a free flowing rural arterial, but is rather an interrupted-flow (e.g. signalized) suburban corridor. The AASHTO Green Book confirms that for signalized, lower speed (e.g. 45 MPH or less) arterials, narrower lane widths are sufficient and perhaps advantageous.[2]

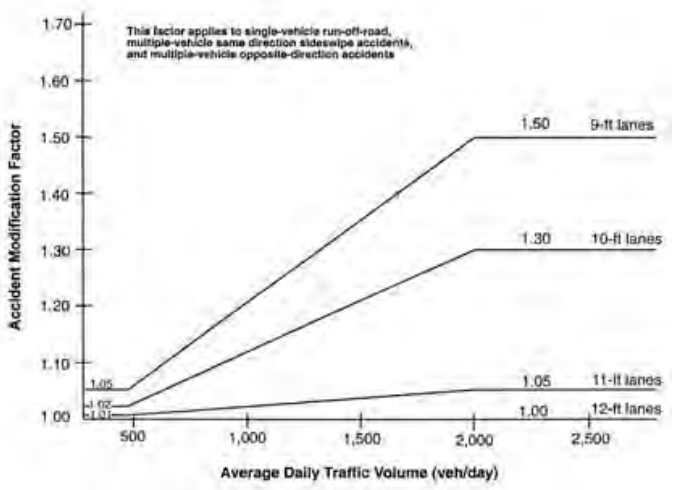
[1] Institute of Transportation Engineers. (2010). *Designing walkable urban thoroughfares: A context sensitive approach*. Washington, DC: Institute of Transportation Engineers.

[2] American Association of State Highway and Transportation Officials. (2004). *A policy on geometric design of highways and streets* (5th ed.). Washington, DC: AASHTO. Pp. 473

11 foot lanes retain or enhance the safety performance of the street as research has found that "lane width effects [on safety]…were generally either not statistically significant or indicated that narrower lanes were associated with lower rather than higher crash frequencies."[3] Speeding is an issue on Hull Street Road. Narrower lanes are a common traffic calming device used to slow driver speeds. FHWA advises that, "Narrower lane widths may be chosen to manage or reduce speed and shorten crossing distances for pedestrians…without a design exception."[4]

Capacity of the corridor too will be maintained. The Highway Capacity Manual (HCM) provides for a capacity reduction factor of 3.33 percent per foot for lane width less than 12 feet[5], however a 2007 literature review of research found that, "so long as all other geometric and traffic signalization conditions remain constant, there is no measurable decrease in urban street capacity when through lane widths are narrowed from 12 feet to 10 feet."[6] [7]

Figure 3 Modification factor for lane width



There is minimal difference in crash rates between 11' and 12' lanes
Source: FHWA Mitigation Strategies for Design Exceptions - July 2007

1.2 Turn pockets

Recommendation: Turn pockets should be designed with an 11' lane. Turn pockets should be of sufficient length to accommodate necessary vehicle storage without incommoding through travel lanes. Appropriate turn pocket length will vary by intersection depending on turn demand. Dedicated turn pockets will only be provided at major intersections (e.g. intersecting arterials). Additional turn lane warrant studies will be required during the final design process to determine required turn lane geometry, including minimum storage and taper lengths.

1.3 Medians

Recommendation: Medians shall be curbed along their length with the possible exception of slight breaks to allow for stormwater infiltration. Medians should be a minimum of 10 feet in width to enable planting areas and a maximum of 18 feet[8]. Breaks in the median are limited to intersections and the limited number of properties that have left turning vehicles of 100 or more during peak hours.

Medians are designed to accommodate trees and landscaping. Chesterfield County medians are to be designed to maintain a landscaped refuge area (min. 6' b/c – b/c) at left turn pockets. City of Richmond medians are to be designed to maintain a narrow 2' raised concrete median at left turn pockets.

- The preferred method of planting within the median shall be large trees. In instances where the median is less than 16 feet wide, smaller trees shall be planted.

[3] Potts, I.B., Harwood, D.W., & Richard, K.R. (2007). *Relationship of lane width to safety for urban and suburban arterials. Geometric design and the effects on traffic operations* 2007. Washington, DC: Transportation Research Board. Pp. 63-82

[4] FHWA *Mitigation Strategies for Design Exceptions* Chapter 3 "The 13 Controlling Criteria" (July 2007) http://safety.fhwa.dot.gov/geometric/pubs/mitigationstrategies/chapter3/3_lanewidth.htm

[5] Transportation Research Board. (2000). Highway Capacity *Manual*. Washington, DC: Transportation Research Board.

[6] Florida Department of Transportation (2007). Appendix A-P and Appendix Q. *Conserve By Bicycle Program Study Final Report.* Tallahassee, FL: FDOT. www.mpo-swfl.org/content/PR/Conserve_By_Bicycle_Program_Study.pdf Pp. A152

[7] "The Truth about Lane Widths." Pedestrian and Bicycle Information Center. http://www.walkinginfo.org/library/details.cfm?id=4348 (accessed October 26, 2012)

[8] The Institute of Traffic Engineers guide on *Designing Walkable Urban Thoroughfares* (2010) Chapter 9 advises, "On boulevards and wide avenues (more than 60 feet) where median dimensions need to remain continuous and left turn lanes are provided, medians should be 16—18 feet, to allow for a turn lane plus pedestrian refuge."

- Shrub masses are to be used in areas in which vehicular sightlines preclude the placement of trees within the medians. Visibility through the median should be a primary concern when selecting and maintaining plant material.
- Where medians are reduced below 6' – such as by left turn pockets – medians shall be solid surface (e.g. concrete).
- Medians should be explored as opportunities for bioswales or other low impact design applications to assist with supplemental retention and infiltration of stormwater.

2. STREETSIDE

2.1 Sidewalk through zone

A minimum 6' sidewalk shall be provided parallel to the street curb. Sidewalk should be both horizontally and vertically clear of obstacles. Path deviation should be minimal.

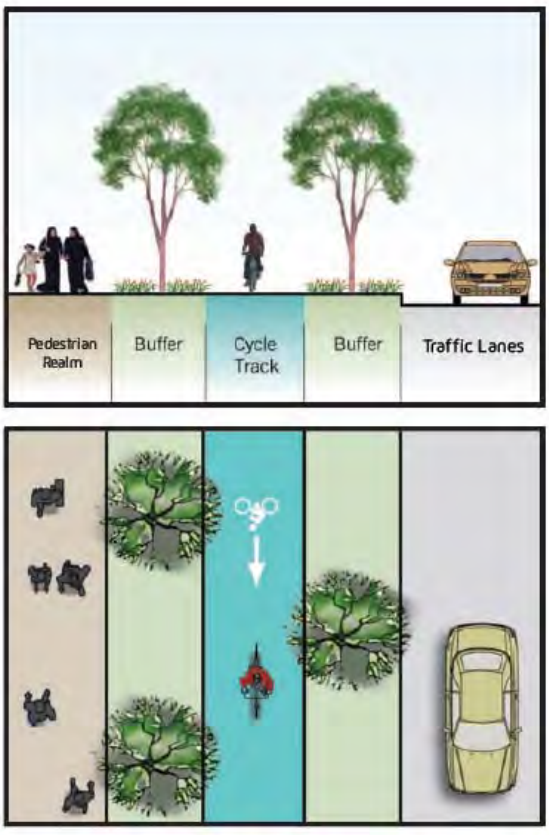
2.2 Planting Strip (buffer)

An 8' wide planting strip (6' within the City of Richmond) shall be provided adjacent to the sidewalk. This strip is designed to accommodate landscaping including canopy trees. It is intended to be a pervious surface and should be explored as an opportunity for stormwater infiltration via LID.

Within the VDOT right of way (Chesterfield County streetscape only) street trees are required be a minimum of 6 feet from the back of curb with no canopy overhang into the drive aisle. In the Chesterfield County section of the Hull Street tree placement and species will be subject to VDOT approval. An alternative method to meet offset requirements from the back of curb is to add a tree-pit indentation to accommodate tree placement. ADA passing area dimensions shall be maintained.

Landscaping within the planting strips should follow CPTED principles and establish a clear zone. All shrubs shall be pruned with a maximum height of 2.5 feet. All tree limbs shall be pruned above a 6 foot height.

Figure 4 Streetside distribution

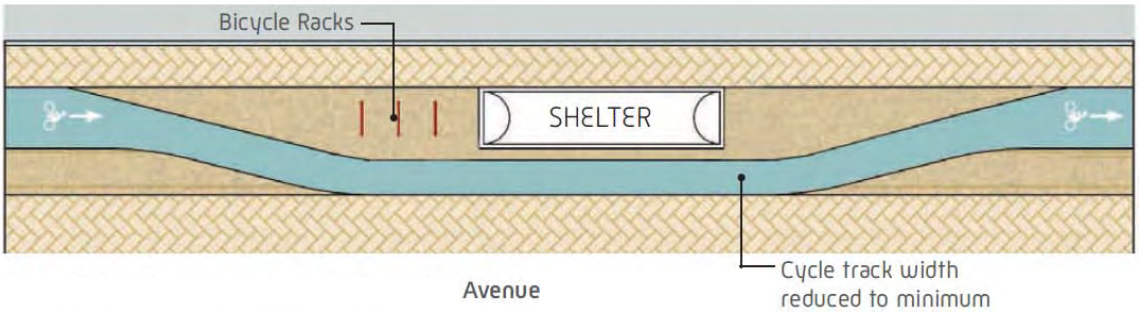


Source: Abu Dhabi Street Design Manual

2.3 Cycle Track

A cycle track shall be provided parallel to the street between street and sidewalk. Cycle tracks are designed primarily as a one-way facility. Facility shall be a minimum of 5' wide (6' desirable). To the extent possible, path should be straight. Where cycle tracks encounter bus stops, the cycle track shall be diverted around the stop location.

Figure 5 Cycle track in the vicinity of bus stops and shelters



2.4 Furnishing Zone/Edge Zone (buffer)

The furnishing zone or "edge" zone is located between the curb and cycle track. The edge zone may include street light and signal poles, signage, bus stops and shelters, and other necessary vertical infrastructure supporting the street operations. Trees shall be provided in the furnishing zone, but shall be of a vertical species whose branches do not break the vertical plane of the curb within Chesterfield County jurisdiction. Canopy trees shall be selected for the Richmond portion of the corridor. As possible, the furnishing zone should also be explored as an opportunity for low impact design to manage street stormwater.

2.5 Lighting

Install lighting at the pedestrian level. Roadway lighting for motorists is placed at a height of 15-20 feet, which does not illuminate the sidewalk. Pedestrian-scale lighting is 9-12 feet above the sidewalk. Use LED if possible as it casts off a warmer light.

Figure 6 Street and Pedestrian Lighting

Source: "University City Lighting Master Plan." University City District. March 2007

The implementation of the pedestrian-scale lighting will enhance the visibility and perceived safety along the corridor. The pedestrian scale lighting should be spaced approximately every 40 feet along the sidewalks at the mid-point between street trees to avoid conflicts. More closely spaced light posts create a stronger edge along the sidewalk, reinforcing the sidewalk itself as an exterior habitable space. In locations with existing light fixtures, the light poles can be placed at a greater distance provided that adequate lumen levels are consistently maintained along the length of the sidewalk. Photometric analysis will be necessary to determine appropriate wattage and spacing. The pedestrian scale lighting should be located in the planting area between the sidewalk and cycle track. Where the sidewalk and cycle track are combined into a multi-use path, the pedestrian scale lighting should be located behind the sidewalk.

2.6 Site Furnishings

Recommendation: Within the defined development nodes, site furnishings are recommended to be placed to encourage pedestrian activity and interaction. A cohesive palette of site furnishings will be selected to establish continuity along the streetscape. The distinctive character of each nodal development area will be acknowledged through minor variations, such as color or material. Each of the defined nodes will have seating, litter receptacles, bus shelters and lighting to enhance the user experience and establish a unique sense of place.

- Benches, litter receptacles, bus shelters and lighting should not be placed in the verge behind the curb.
- Placement of site furnishings should be avoided within all vehicular sight lines to maintain visibility.

3. CONSTRAINED RIGHTS-OF-WAY

Recommendation: Where rights of way are constrained and unable to accommodate all recommended elements, the typical section should be altered in the following ways (in order of priority until section can be accommodated:

1. Elimination of planting strip between cycle track and sidewalk (differentiate the cycle track and sidewalk by using different materials)
2. Consolidation of cycle track and sidewalk to combined multi-use trail with minimum width of 10 feet
3. Acquisition of additional right of way
4. Reduction and/or elimination of furnishing zone between the curb and multi-use trail
5. Reduction and/or elimination median between intersections (as can be accomplished through acceptable transition)

4. INTERSECTIONS

4.1 Street Turn Radii

Recommendation: Curb radii should be kept as tight as possible. Where two receiving lanes are available for a single turning lane, trucks and larger vehicle radii should be calculated allowing vehicles to track into the outer (second) lane.

Turning speeds vary. Auto turning speeds should not exceed 15 mph which may mean that truck turning speeds (on green) must be reduced even more. Channelized right turns with raised islands (e.g. pork chops) must be designed for larger vehicle templates (WB 5o to WB 60) where such vehicles are expected.

Figure 7 Truck v. car turning path and design radii

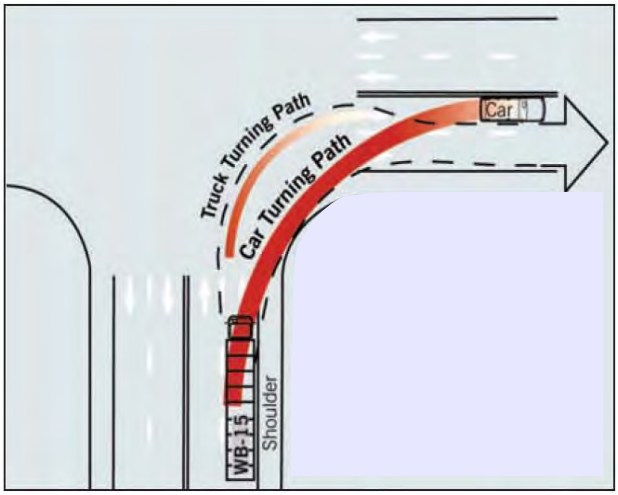
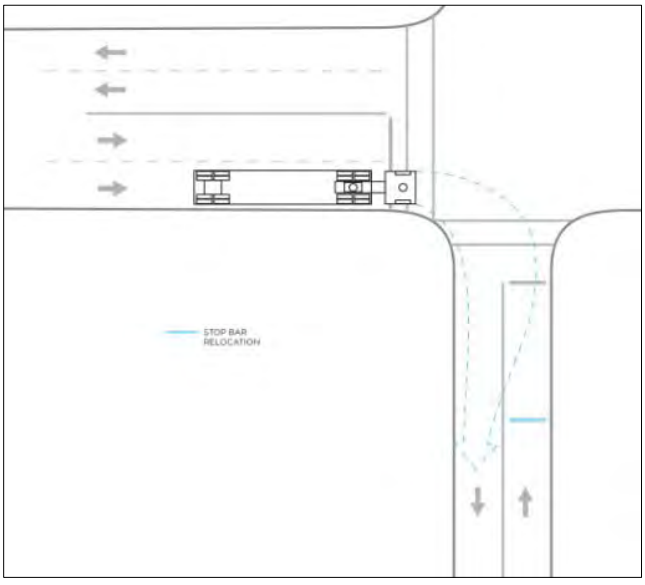


Figure 8 How a large vehicle can turn, paired with recessed stop



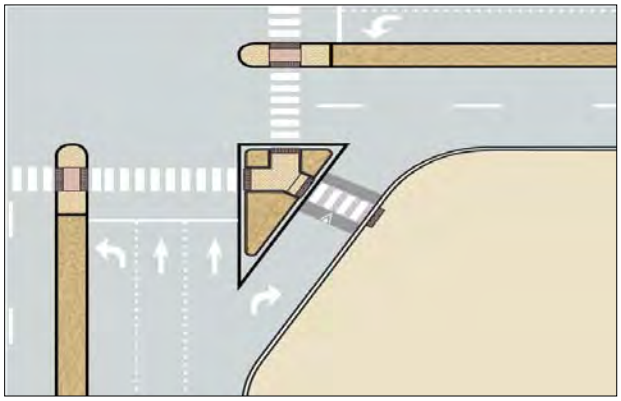
4.2 Pedestrian refuge islands (aka "pork chops")

Recommendation: At acute angle right turn locations, pedestrian refuge islands (aka "pork chops") should be provided to shorten the crossing distance and channelize the turning movement. Even in such channelized areas, right turn vehicles must stop at signals and a stop bar should be appropriately located.

4.3 Crosswalks

Designated crosswalks shall be provided across all legs of signalized intersections. Crosswalks should be aligned to minimize crossing distances

Figure 9 Crosswalks with right turn slip lanes



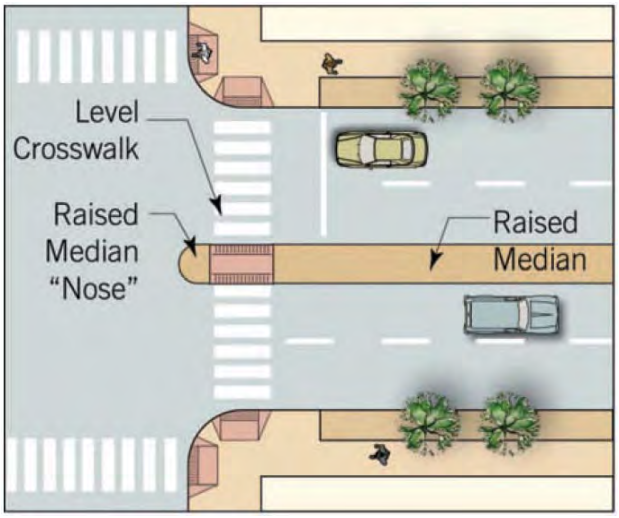
4.4 Crossing Design

Recommendation: Pedestrian crossings of Hull Street Road will be designated only at signalized intersections, with exceptions for a few unsignalized intersections within the City of Richmond. Crossings serving youth or senior facilities (such as the YMCA and senior housing developments) shall have high visibility markings.

Medians should extend beyond the pedestrian crossing zone to provide a protected "nose" between the intersection area and the crosswalk zone. Crossing should remain flush with the road while the curbed median is elevated to the left and right of it.

Justification: Research has found that pedestrians tend to be more alert and conservative in crossing a street at undesignated midblock locations rather than designated, but unsignalized, midblock sites.[9]

Figure 10 Crosswalk design with median

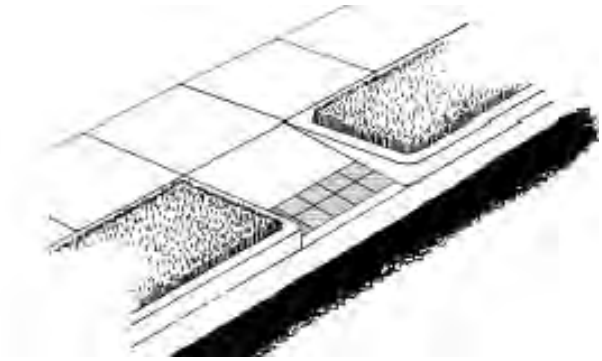


[9] *Safety Effects of Marked vs. Unmarked Crosswalks at Uncontrolled Locations*, FHWA, 2002

4.5 Curb Ramp

Recommendation: Two perpendicular curb ramps should be located on each corner at intersections with crosswalks across all approaches. Returned curb design is recommended to help channelize bicycles and pedestrians into the crosswalk and maintain planting area all the way to the curb at intersections.

Figure 11 Perpendicular ramp with returned curb



Source: FHWA *Sidewalks and Trails for Access Best Practices Design Guide*

5. CURB CUTS, DRIVEWAYS AND ACCESS DRIVES

5.1 Access Management

Wherever possible and practical, curb cuts should be consolidated and reduced. Single properties should have no more than two curb cuts on any frontage. Where a property has frontage on both Hull Street Road and a secondary street, access onto Hull Street Road should be limited to one two-way access point or two one-way driveways. Adjacent properties are encouraged to link parking and circulation areas behind buildings and away from Hull Street Road, thereby allowing circulation not dependent on Hull Street Road itself.

Curb cuts should be located a minimum of 35 feet from intersections as measured straight-line along the curb between the curved portions of the curb.

Access management for private property curb cuts must be distinguished from the introduction of new public street intersections. The introduction of regularly spaced public streets should be supported and encouraged as a means to provide multiple routes of access via auto and other modes to introduce redundancy and relieve the burden on the main line arterial.

Figure 12 Minimum spacing standards for commercial entrances, intersections, and crossovers

Highway Functional Classification	Legal Speed Limit (mph)①	Centerline to Centerline Spacing in Feet			
		Signalized Intersections/ Crossovers②	Unsignalized Intersections/ Crossovers③	Full Access Entrances④	Partial Access One or Two Way Entrances⑤
Principal Arterial	≤ 30 mph 35 to 45 mph ≥ 50 mph	1,050 1,320 2,640	880 1,050 1,320	440 565 750	250 305 495

Source: VDOT Road Design Manual

5.2 Driveway Curb Radii

To the maximum practical extent driveways shall be oriented at 90 degree right angels to Hull Street Road. Curb radii should be the minimum necessary to allow the dominant user vehicle to turn into the first travel lane on Hull Street Road. Larger design vehicles making right turns may be required to turn into or cross portion of the second travel lane.

Anticipated entry speed should be no more than 15 miles per hour for all vehicles. Exiting vehicles should be controlled via stop signs and associated stop bars protecting the sidewalk area.

5.3 Dividers

Cross streets where pedestrian crossings are in excess of 40 feet should be evaluated for means to introduce dividers between the inbound and outbound traffic flows. Dividers should be a minimum of 4 feet wide, and protected by curbs, to provide a sufficient pedestrian refuge when crossing intersections or wide curb cuts or access points.

5.4 Sidewalk/Cycle track design over driveways

Driveways are subordinate to pedestrian and bicycle through movements. Driveways must be designed so that the pedestrian path is kept at level, while vehicles must change grade to ramp up to the pedestrian way. Sidewalk and cycle track materials should carry across the driveway to reinforce the visual cues that pedestrians have the right of way.

6. SIGNALS

6.1 Timing and design

It is recommended that 3.3 feet per second be used in calculating required pedestrian signal time. While 4.0 feet per second is commonly used, the excessive width of the corridors, and therefore the excessive distance required for pedestrians to travel, coupled with the significant populations of young families and seniors, justifies a more conservative travel rate.

Furthermore, given the presence of non-English speaking populations and those with limited reading abilities, special care should be taken to ensure that actuated signals, and other operational features, are easily comprehensible via symbols or environmental design cues.

6.2 Actuation

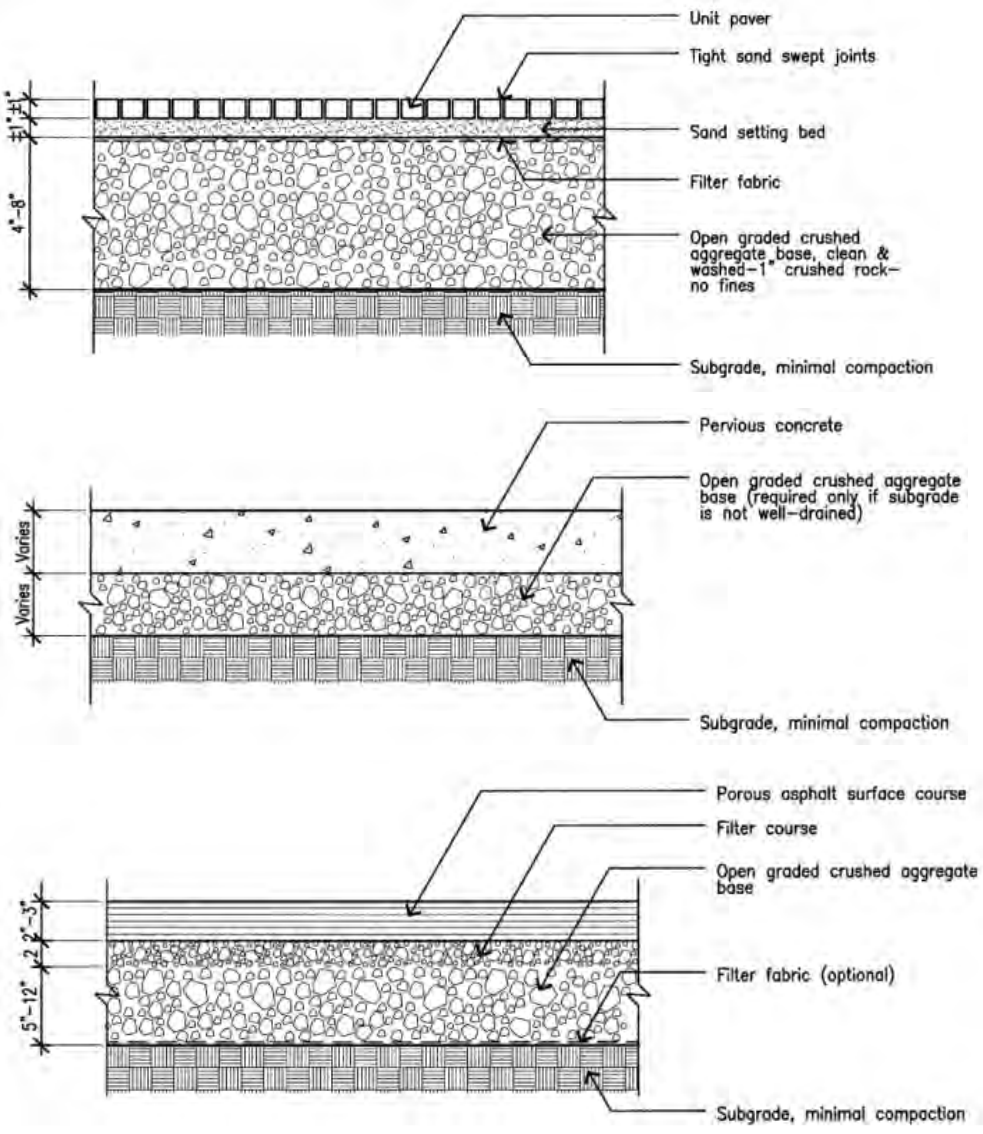
Recommendation: Where pedestrians are reasonably expected to be present during more than half of signal cycles, pedestrian actuation (e.g. pedestrian push buttons) should not be used. Signal cycles should be timed to accommodate required pedestrian crossing times. This is most likely to be the case near modest to higher density housing and commercial locations. Where pedestrians and bicyclists are more sporadic occurrences, pedestrian actuated signals are acceptable, but should be designed in such a way as to be convenient to and/or detect bicyclists as well.

7. LOW IMPACT DEVELOPMENT (LID)

7.1 Pervious Pavement

Recommendation: Pervious paving may be used as a LID technique in the sidewalk zone, cycle track, and bus stop area to provide stormwater infiltration. Unit pavers, pervious concrete, and porous asphalt decrease impervious surface area while maintaining a stable surface for pedestrians and cyclists. Pervious paving should infiltrate stormwater into a crushed rock layer capable of storing the 10 year, 24 hour storm less the designed infiltration. Stored water should infiltrate into the subgrade within 30 hours following the storm event. As pervious paving is most appropriate for areas with less than 5% slopes, under-pavement water retention should be addressed when slopes exceed 5%.[10]

Figure 13 Structures of Pervious Pavement



Unit pavers (top), pervious concrete (middle), and porous asphalt (bottom)
Source: Bay Area Stormwater Management Agencies Association *Design Guidance Manual for Stormwater Quality Protection*

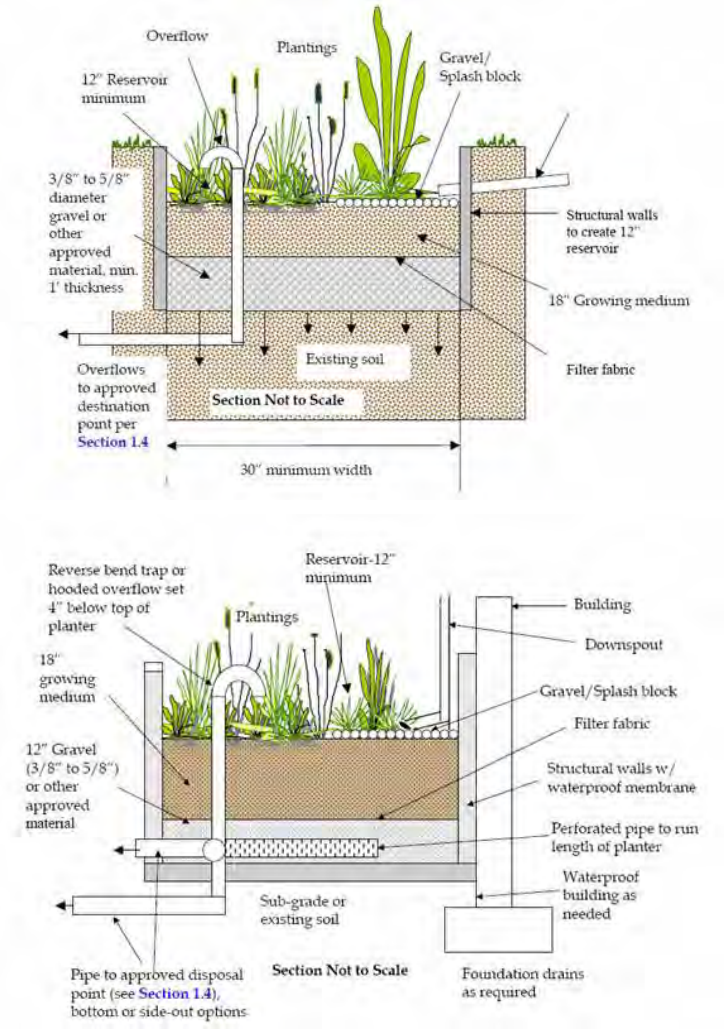
[10] Portland Bureau of Environmental Services. (2008) *Stormwater Management Manual.* Portland, OR: PBES. Pp. 2-40 – 2-42. http://www.portlandonline.com/bes/index.cfm?c=47952.

7.2 Bioretention Planters and Basins

Recommendation: Infiltration or flow-through bioretention planters can be integrated into the planting strip to collect, filter, and infiltrate stormwater. Infiltration planters require setbacks of 5 feet from property lines and 10 feet from building foundations, and should overflow to a subsurface infiltration facility when soil infiltration equals or exceeds 2 inches per hour. For slower infiltration rates or when setback requirements cannot be met, a lined flow-through facility is recommended. Bioretention planters should have a minimum width of 30" for infiltration and 18" for flow-through, as measured from the inside of the planter walls. [11]

Bioretention basins can be similarly used in the roadway median. To prevent seepage under the pavement and subsequent frost heave, bioretention facilities in the median should have a 2-foot buffer along the outside curb perimeter or a geotextile filter fabric curtain wall lining the inner perimeter. Both planters and basins should be located two feet above groundwater depth with an underdrain system discharging to an adjacent storm sewer system. Vegetation is required in both facilities, and sizing is based upon the contributing drainage area. [12]

Figure 14 Example Bioretention Planters



Infiltration planter (top) and Flow-through Planter
Source: Portland 2004 *Stormwater Management Manual*

7.3 Vegetated Swales

Recommendation: Vegetated swales can alternatively be used in the median for stormwater conveyance and infiltration, and will be most effective when located in superelevated portions of the roadway. Water quality swales constructed with an underlying soil mixture are recommended for higher development densities (16-37% impervious) and offer greater pollutant removal capability. Swales must be able to convey the 10-year storm at a non-erosive velocity. The bottom width of the swale must be 2 feet minimum and 6 feet maximum, with side slopes not exceeding a 3:1 ratio. A longitudinal slope of 1-3% is recommended. [13] When slopes exceed 5%, check dams are recommended to be located at 10 foot increments within the swale to slow flow rate and create ponding areas. [14]

[11] Portland Bureau of Environmental Services. (2008) *Stormwater Management Manual.* Portland, OR: PBES. Pp. 2-53 – 2-55.

[12] Prince George's County Department of Environmental Resources Environmental Services Division. (2009) *Bioretention Manual* . Largo, MD: DER. Pp. 19. http://www.princegeorgescountymd.gov/Government/AgencyIndex/DER/ESG/Bioretention/pdf/Bioretention%20Manual_2009%20Version.pdf.

[13] Virginia Department of Conservation and Recreation. (1999.) *Virginia Stormwater Management Handbook, First Edition, Volume 1.*Richmond, VA: VDCR. Pp 3.13-2 – 3.13-14. http://www.dcr.virginia.gov/stormwater_management/stormwat.shtml#vswmhnbk.

[14] Portland Bureau of Environmental Services. (2008) *Stormwater Management Manual.* Portland, OR: PBES. Pp. 2-63 – 2-64.

7.4 Plant Selection

Recommendation: The series of plantings along the streetscape will have a significant impact on the overall character of the Hull Street Corridor. All plant materials and installation shall comply with recommendations and requirements of the current version of The American Standard for Nursery Stock. Street trees for the Hull Street corridor shall be selected from the follow list or be an approved equal:

Large Maturing Trees

- Acer rubrum ‘October Glory’, ‘Red Sunset’
- Metasequoia glyptostroboides
- Platanus acerifolia ‘Bloodgood’, ‘Columbia’, ‘Yarwood’
- Quercus nigra
- Quercus nuttallii ‘Highpoint’
- Quercus phellos ‘Hightower’
- Ulmus parvifolia ‘Bosque’, ‘Athena, ‘Allee’

Medium Maturing Shade Trees

- Acer buergeranum ‘Streetwise’
- Betula nigra ‘Duraheat’, ‘Heritage’
- Pistacia chinensis

Columnar Trees

- Acer rubrum 'Armstrong', 'Bowhall'
- Carpinus betulus ‘Fastigiata’
- Ginkgo biloba 'Princeton Sentry'
- Ulmus Parvifolia ‘Everclear’
- Zelkova serrata ‘Musashino’

Evergreen Trees

- Magnolia grandiflora 'Little Gem'
- Ilex x ‘Emily Bruner’, ‘Mary Nell’, ‘Nellie R. Stevens’
- Juniperus virginiana ‘Burkii’
- Pinus Taeda
- Thuya x ‘Green Giant, ‘Steeplechase’

Small Maturing Trees

- Acer ginnala ‘Flame’
- Acer palmatum selections
- Carpinus caroliniana
- Cercis canadensis selections
- Lagerstroemia indica selections
- Magnolia stellata

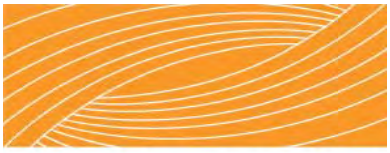
- Prunus cerasifera 'Thundercloud'
- Prunus yedoensis

Street tree selection is subject to Planning and Arborist Review in the City of Richmond and Planning and VDOT approval within Chesterfield County. Prior to planting within the City of Richmond, the City arborist shall be contacted to inspect the trees as required.

7.5 Plant Layout

Design and layout guidelines for plantings along the Hull Street Corridor:

- Due to the approximate location of utilities in the 30% documents, street trees have been placed in the preferred locations as shown in the typical sections. Potential utility conflicts are clearly identified.
- Billboard view sheds will be maintained according to the Code of Virginia § 33.1-371.1. No trees or shrubs that will restrict visibility of the billboard shall be planted within the 700 linear foot view shed.
- Vehicular sight lines are indicated and must be maintained along the Hull Street corridor for all non-signalized intersections and public access drives (private drives are exempt). Within the City of Richmond limits the ASHHTO guidelines will be implemented along the streetscape. Within Chesterfield County VDOT guidelines will be implemented along the streetscape.
- Within the City of Richmond, the City's Municipal Tree Ordinance will be followed.
- Street trees will be planted in staggered rows at approximately 40 feet on center to provide adequate shade for paved areas.
- Three rows of large street trees are preferred in locations where utility/easements, restricted Right of Way and sightlines do not prevent their placement.
- The preferred method of addressing the conflict with existing overhead power along the corridor is to bury the lines. This will allow a continuous row of large street trees along the corridor. If placement of the power lines underground is not possible or feasible, smaller trees should be planted in lieu of large trees. Currently Dominion Virginia allows plantings that reach a minimum of 10' to be planted underneath overhead power lines. The selection of plant materials for planting underneath power lines shall be selected from the Dominion Virginia approved plant list.
- Plants with aggressive root systems shall not be used adjacent to road and/or sidewalk infrastructure.
- Plant Palette sheets within the 30% documents provide guidance for species selection along the Hull Street corridor.



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