

Investigating + Educating about Sustainable Places in Charlottesville

A Look at Sustainability in the Ridge Street, Johnson Village, and Fifeville Neighborhoods

Global Sustainability, Spring 2013

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ABSTRACT

For the PLACE Design Task Force project, we identified nodes within the south central sector of Charlottesville including Johnson Village, Fifeville, and Ridge Street neighborhoods in order to assess the sustainability of each place and its connection to the greater Charlottesville area. To define the level of sustainability in these neighborhoods, we explored themes of transportation, block density, block size, public spaces, and safety. With these themes, we developed a pattern language of metrics to measure the success of an area in regards to its sustainability. To capture a wide range of spaces within these neighborhoods, we categorized spaces into small streets, big streets, housing types, parks, and schools. Large streets defined the main corridor typology in terms of program in order to assess the sustainability of light distribution, modes of travel, and buffer zones. Small streets looked at density, block size, walkability, and perception of safety. Schools looked at neighborhood layout patterns and connectivity through walkability. Housing types looked at the type of housing that existed in each neighborhood such as single-family homes, duplexes, apartment, and townhomes. The organization of these housing types was crucial in evaluating the sustainability. Lastly, parks evaluated accessibility, program, and maintenance.

Using precedents of successful sustainable places, we determined a sustainable pattern language that we incorporated in diagramming techniques. Through research and diagramming, we were able to classify aspects of these neighborhoods that were sustainable and make conclusions about each neighborhoods' current and potential sustainability.

INTRODUCTION

The Place Design Task Force of Charlottesville consists of a body of members from a variety of fields committed to guiding the community in finding and making sustainable living places. Our own University Place Design Task Force wishes to aid the Charlottesville Task Force in finding and making sustainable places. With the help of Councilwoman Kathy Galvin, our goal is to identify what places in the Johnson Village, Fifeville and Ridge Street neighborhoods are sustainable but also identifying what makes them sustainable, and what we can do to make the places within these neighborhoods that do not meet our standards better.

Our first task is to define what makes a sustainable place. At a baseline, a sustainable place needs to support the quality of life of not only its existing members within a community but also its future members. This must encompass ecological, economic, and social forms of sustainability. We accomplished this by researching precedents of our overarching themes of transportation, block size, density, public spaces and safety. Next, we identified five different types of nodes in order to compare each neighborhood effectively. Our next task is to make this “sustainable” cause a quantifiable subject to find out how to measure these different forms of sustainability by diagramming each theme.

Another important action for making sustainable places is advocacy; advocacy for a better human environment where we live, work and place, and advocacy for environmental solutions to help foster all living. Labeling this as “sustainable” is not enough. Raising awareness through different methods of advertising why a place is sustainable is a better option--again showing that a pattern language for sustainability needs to be created. This not only encourages people to use designated places more, but also bring home the sustainability language to other places. The platform for promoting a sustainable language will be shared with the public at the UVA Earth Day sustainable poster competition.

The most important job for the Place Design Task Force is to identify which places in the Johnson Village, Fifeville and Ridge Street Neighborhoods are not sustainable and why with the new pattern language. This leaves room to improve those spaces so that the community on a whole can be more sustainable. This can influence other communities to implement a Design Task Force or any other solution to make that community more sustainable.

SCHEDULE

February

2/21 - First Group Meeting

2/24 - Site Visit

Monday's @6:00 PM - Weekly Meeting

March

3/14 - Choose Location

3/19 - Precedent Research Presentaiton

3/24-3/25 - Diagram Locations

3/ 31 - Comments on Metrics

Monday's @6:00 PM - Weekly Meeting

April

4/2 - Compile Date for Draft

4/10 - Poster Layout Workshop

4/22 - Compile Poster for Presentation

4/24 - Poster Competition

Monday's @6:00 PM - Weekly Meeting

May

5/2 - Final Report and Poster



FIFEVILLE NEIGHBORHOOD 1:100



JOHNSON VILLAGE NEIGHBORHOOD 1:100

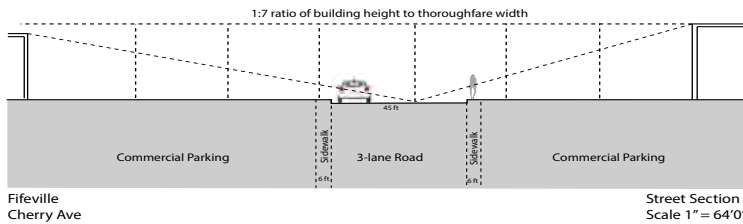


RIDGE STREET NEIGHBORHOOD 1:100

BIG STREETS

FIFEVILLE

Fifeville Neighborhood
Cherry Avenue and Roosevelt Brown Boulevard
Scale 1" = 32'0"



Cherry Avenue of Fifeville is a mixed used area with a strong interconnection of residential and commercial spaces. A speed limit of 35 mph on a three-lane road allows the street to have the potential to serve as a primary avenue for bicyclists, pedestrians, and public transit. There are no bike lanes, but other means of transportation are available through the public transit system, which provides two convenient bus stops near the commercial space, and six-foot sidewalks run along either side of Cherry Avenue for pedestrian travel. According to the Better Streets Plan, Cherry Ave. obtains proper street lighting alternating at an average distance of 150 feet apart. Cherry Avenue has a 1:7 ratio of building height to thoroughfare width. (see street section) According to the metrics established in chapter 4 of Designing Walkable Thoroughfares, as a mixed use sector, the street should have a 1:4 ratio in order for it to be perceived as a walkable street for pedestrians. An alternative to creating this ratio is to use street trees, which would be a simple intervention on Cherry Avenue in order to increase it's use as a primary mixed-use street, and as a walkable and livable corridor.

Above: Architectural design of commercial strip on Cherry Avenue, Fifeville Neighborhood; buildings are removed from the sidewalk, separated by a parking lot discouraging walkability.

Left: Pedestrian-scaled architectural design; buildings oriented towards pedestrian passing on the adjacent sidewalk to encourage walkability. Source: A framework for Walkable Thoroughfare Urban Design

RIDGE STREET

Ridge Street Neighborhood
Elliot Avenue and 1st Street
Scale 1" = 32'0"



The intersection of Elliot Avenue and 1st Street is surrounded by a variety of housing types, commercial building, and green nodes providing much opportunity to become a primary corridor between the three types of activities. As a two-lane road, the speed limit of Elliot Avenue is 35 mph and has bike lanes on both sides of the street for convenient traveling and a six-foot sidewalk on the residential edge for pedestrian access. Although neighborhoods are connected through a crosswalk over 1st Street, the commercial and residential areas that exist on opposite sides of Elliot Avenue are disconnected through a lack of crosswalks and a large vegetative buffer (see Figure 1 and Figure 2). According to the Better Streets Plan of San Francisco, CA, where these large blocks occur, "mid-block crosswalks" could be implemented for a more accessible link. An alternative to making the commercial space more visible and accessible is through development of the large buffer zone. The city of Charlotte uses a model for the design of "complete streets" (see Figure 3). This sector of Elliot Avenue, as a mixed use street, as it obtains the elements required to make it a safe living environment such as public transit stops, proper light distribution, bike lanes, and side walks. With improvements in connecting the residences with the surrounds of green space and commercial areas visually and physically through introduction of more crosswalks it could serve as an active corridor for the neighborhood.

Figure 1



Figure 2

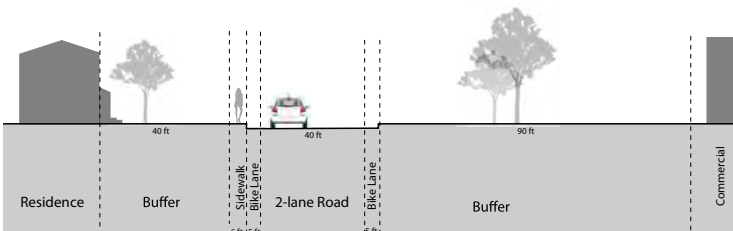


Figure 3

Sources for large streets:



- City of Charlotte, Complete Streets guide. <http://www.fhwa.dot.gov/publications/publicroads>
- http://www.sfbetterstreets.org/find-project-types/streetscape-elements/street-lighting/#design_guidelinesv
- Designing walkable urban thoroughfares. <http://www.ite.org/css/online/>

JOHNSON VILLAGE



Cherry Avenue is surrounded by dense residential neighborhoods and Johnson Village Elementary School, therefore serves as a primary transportation corridor for children and parents. As predominantly a two-lane road, excluding turning lanes, the speed limit of Cherry Avenue is 35 mph with a school zone speed limit of 25 mph. As a school zone, the two important elements in establishing a walkable thoroughfare include crosswalks and light distribution. Within this zone, two primary intersections occur, resulting in adequate crosswalks (see Figure 1) in allowance for residents to access the school facilities across the street by foot. For safety, streetlights occur about every four houses or an average of 150 feet apart, yet only on one side of the street (see Figure 2).



Figure 1



Figure 2

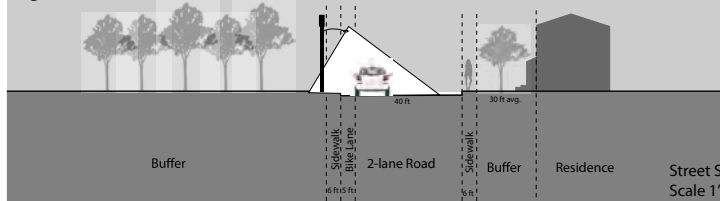
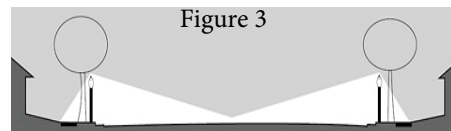


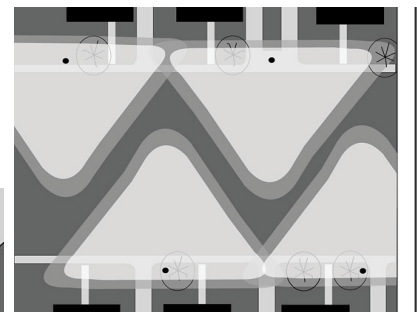
Figure 1: Crosswalks, although inconsistent in their pattern, occur at each intersection along this main corridor to promote pedestrian travel from residences to school ground.

Figure 2: Street light distribution section on Cherry Avenue; single row street lights producing inadequate safety for pedestrians.

Figure 3: Proper street light distribution diagram from the Better Streets Plan; an alternating pattern occurring in every other parcel.



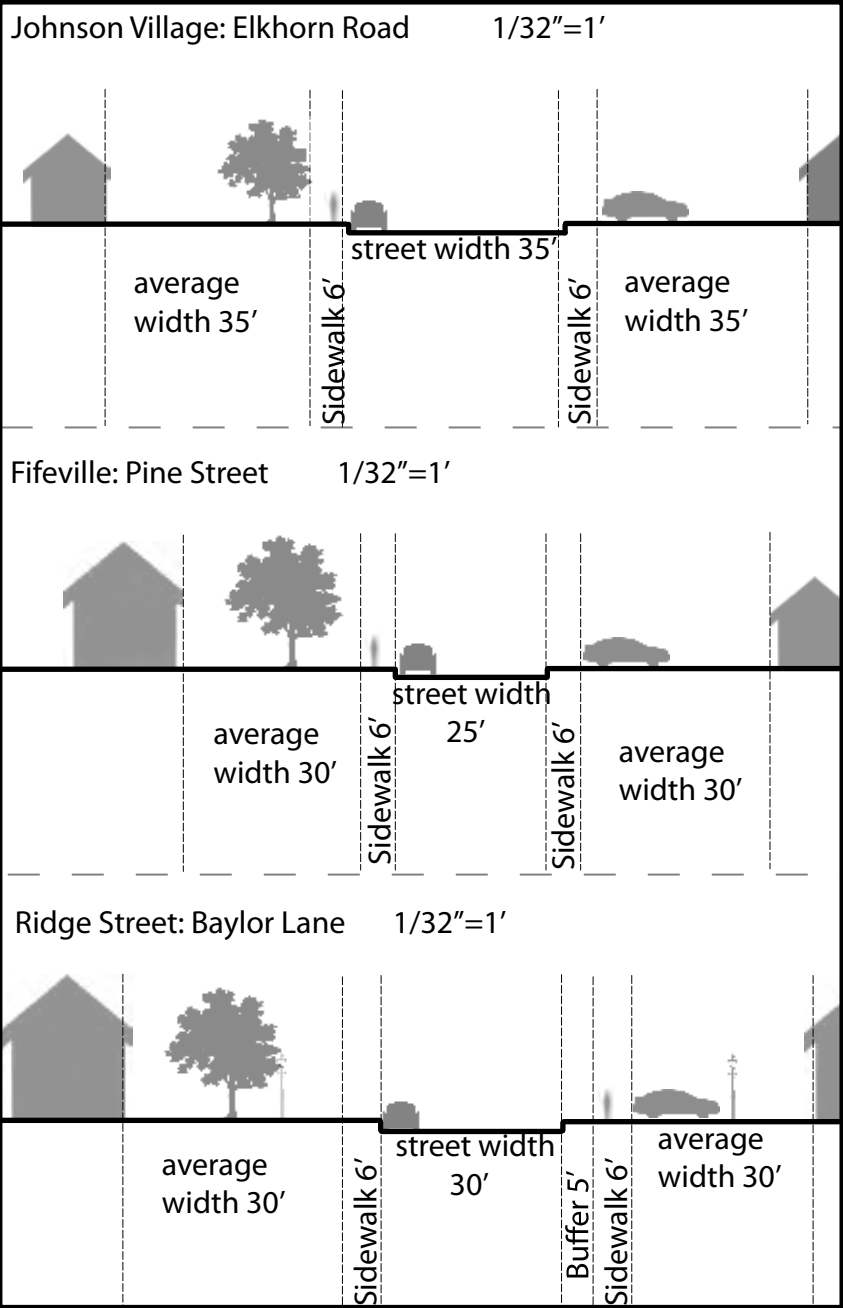
As the Better Streets Plan in San Francisco, CA states for sustainable places, pedestrian lighting should occur at equally spaced intervals on alternating sides of the road (see Figure 3) to provide proper distribution of lighting on a street of high pedestrian volume. This primary corridor of Cherry Avenue, along an important school facility obtains many characteristics that help to achieve a livable and desirable atmosphere, evoking a sense of community amongst its residents. Improvements on safety such as street lights, could enhance the walkability of the street bridging a residential neighborhood and school grounds.



SMALL STREETS

When looking at small streets, the metrics used to measure “sustainability” of the street pertained mostly to density and safety and ease of transportation. This means looking for the number of houses per block, house size, street size, sidewalk size, proximity to public transportation and number of street lights per house. Within each neighborhood, one street was chosen to best represent the neighborhood. Elkhorn Road, Pine Street and Baylor Lane were chosen from Johnson Village, Fifeville and Ridge Street respectively.

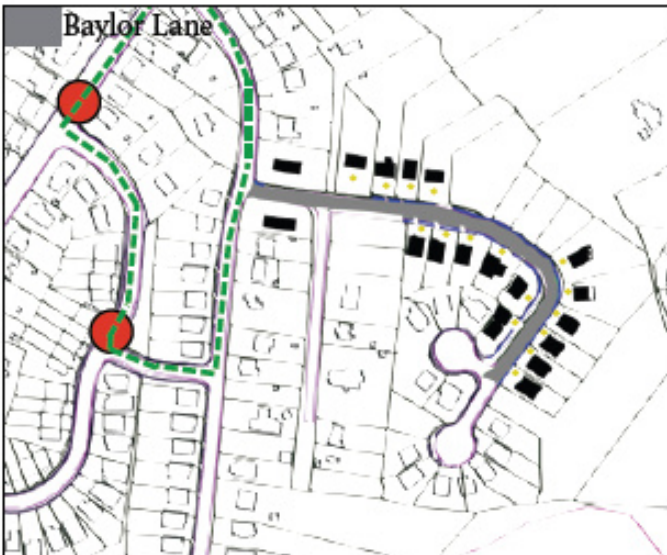
Looking at the streets' sections, they each show that each street is wide enough to fit several cars across. Side walk widths are also all regulation size. Though wider streets allow for easier flows of traffic, since there is very little traffic flow in these streets, the small size is a sustainable use of allotted land. Each street allows for street parking, which creates a safe buffer zone for the sidewalks. Even though the housing sizes for each street is also different, the buffer zone in between the houses and the street average about thirty



feet. This leaves ample room for safe activities in the front yard for the families that live on these streets. Something noteworthy that Baylor Lane in Ridge Street neighborhood has that could be implemented in the other streets is a buffer zone between the street and the sidewalks. This grassy area create space between motor traffic and pedestrians that gives the pedestrian a sense of safety. There are no bike lanes or crosswalks on the streets, common in many neighborhoods, since there is a very small flow of traffic through the area. These sections also show the different housing sizes that each street has to offer. The larger houses along Baylor Lane have less yard space than the smaller houses on Elkhorn Road. This shows that there is a variety of housing types and sizes that families of different income levels.

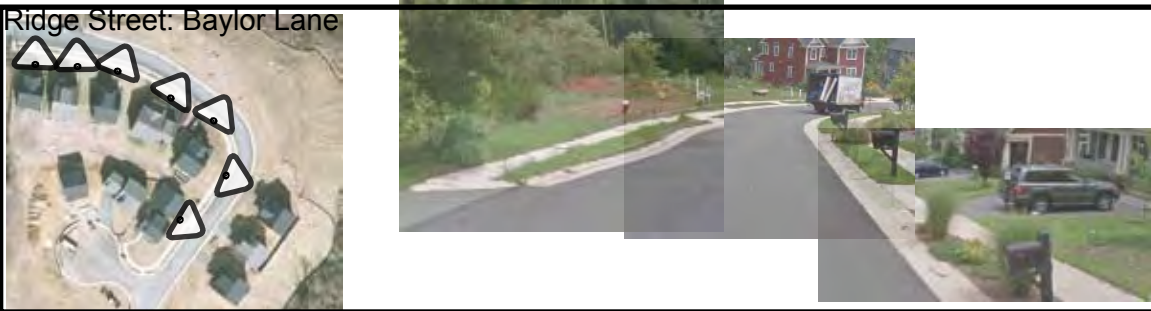
The plans of each street .

● Bus stop ■ Sidewalk - - - CAT Bus Route 4
 1/32"=1' ● Street Lamp - - - CAT Bus Route 6



shows that there are several options for public transportation within walking distance. Charlottesville's CAT bus system is very effective and far reaching, especially as an alternative to travel by car. There are little to no crosswalks or bike lanes on or around each street. This is due to the infrequent traffic that flows through each street with the exception of Pine Street, which has the Islamic Society of Central Virginia. Bike lanes and crosswalks may be necessary just for Pine Street around this public building because of the increase of traffic.

The density of each street is also important to note. Elkhorn Road consists of single family homes, mostly with one story above ground. There are sixteen homes along the 500 foot long street. The homes are not as dense as other streets. Perception of safety is also very important when talking about sustainability of a street. Ronald E. Wilson and Timothy H. Brown, with Beth Schuster, authors of "Preventing Neighborhood Crime: Geography Matters", state that "the layouts of low-crime neighborhoods often have more one-way, narrow and low-volume streets, which make entry more difficult." Elkhorn Road has one point of entry, creating this safe environment. Since the street is closed off, there is a perception of safety in the area. Though Pine street has more than one access point, visibility down the street, with few visual boundaries creates a ease of visibility that aids the perception of safety. On Baylor Lane, though the houses are bigger, they are more dense along the road, than the other two neighborhoods, having smaller lawns and areas in between the houses. Both Elkhorn and Pine Streets have only one street lamp to illuminate the street. Though this is adequate to light the streets, Baylor Lane illustrates a much

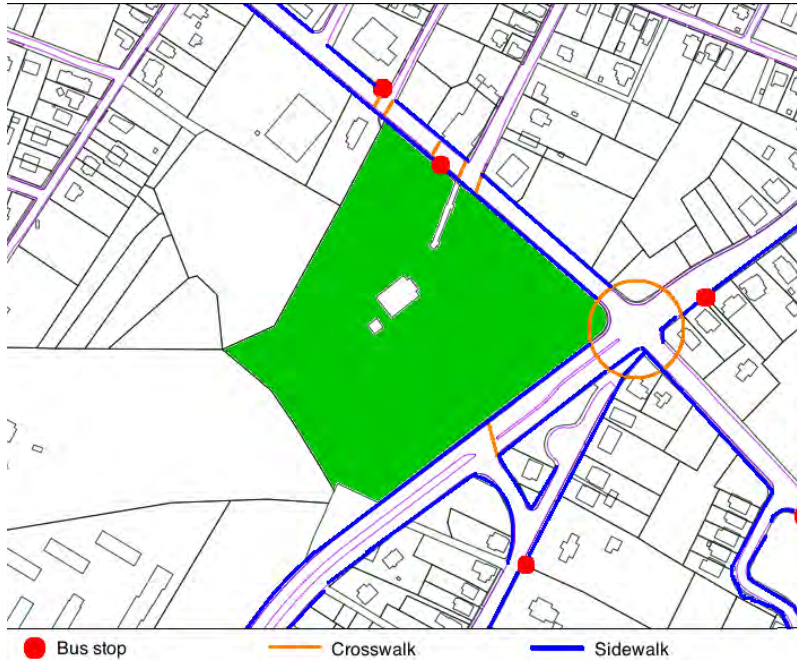


better distribution of light. Visibility at night is a major part of safety perception according to “Neighborhood Environmental Satisfaction, Victimization, and Social Participation as Determinants of Perceived Neighborhood Safety” by Yoko Baba and Martin Austin. If a street is perceived to not be safe, there is a higher rate of childhood obesity. To create a more visible environment, distribution of light like on Baylor Lane would be beneficial to many streets in Charlottesville.

Creating and improving streets that are well lit, and have good visibility in Charlottesville will no doubt encourage more families to move to the area. One of the main issues Councilwoman Kathy Galvin points out as a problem for the city is that not enough people who work in Charlottesville live in Charlottesville. By increasing this number, the average worker commute would be cut short, there would be less need for car travel, and it would bolster the local economy thus creating a more “sustainable” city.

PARKS & PUBLIC SPACES

The very existence of parks in a community contributes to overall public health and sustainability of a place; according to the U.S. Department of Health and Human Services (2001), the presence of a park in one's neighborhood increases the chance of residents meeting the recommended 30 minutes of daily physical activity. Each of the three neighborhoods that we have assessed includes at least one park (or an open, outdoor public space in the case of Johnson Village).



TONSLER PARK (FIFEVILLE)

Tonsler Park appears to be an easily accessible location for community members via several methods of transportation. The Environmental Protection Agency (EPA) cites number of bus stops as well as distance from that stop to one's intended destination as metrics for sustainability of transportation (10); with several CAT stops within walking distance of the park, three of which are on or directly across the street from Tonsler, transportation



to and from the park appears to be solid. The sidewalks that immediately surround the park are five feet wide, with plenty of space for pedestrian traffic to safely travel in both directions, even near a busy road. The existence of these wide sidewalks (pictured to the left) around the park contributes to sustainable transit (Brown, Lombard, Parker). Tonsler is located on the car-heavy intersection of Cherry Avenue and 5th Street SW. It is possible to use the crosswalks at this intersection, as well as numerous walkways along Cherry Avenue, to access the park.

Tonsler Park appears to have the potential to become a highly utilized public space in Fifeville, as it is surrounded by residential areas and is fairly easy to access. However, the commercial area on Cherry Avenue is relatively underutilized, and the Charlottesville community believed this park to be somewhat unsafe as of 2006 (charlottesville.org). If surrounding commercial areas were more heavily populated and attractive, the park may attract more visitors and attention (Klinkenberg). However, it is clear that the park remains a focal point for the Fifeville neighborhood, as there is a tangible and ongoing effort to renovate it. On March 26th, the Fifeville Neighborhood Association conducted a meeting to present and discuss the following renovation for Tonsler Park.



Most notably, this new design includes a water spray area. According to The American Planning Association, one characteristic of a “Great Sustainable Place” is uniqueness. Attractions like the one that may be built in Tonsler Park appear to draw surrounding community members into a space, allowing that area to flourish. The “Open Play Area” in place of the current baseball diamond may encourage different

kinds of people to utilize the space for diverse activities. Additionally, as indicated above, there is a possibility of the addition of new trails that would directly connect the park to nearby residential areas, increasing connectivity and making the park more quickly accessible to families in those homes.



JORDAN PARK (RIDGE STREET)

Jordan Park, located on the dead end of 6th Street, is the only park located in the Ridge Street neighborhood, although Tonsler Park is often utilized by Ridge Street residents (charlottesville.org).

Accessibility to Jordan Park may be limited by its location on a dead end. The closest bus stop to Jordan Park is an 8-minute walk, which may be less appealing than direct access to nearby Tonsler Park. Walking to and around Jordan Park is simple, with sidewalks on most surrounding streets; streets

without sidewalks do not appear to be busy enough to be dangerous to travel on foot. Compared to Tonsler

Park, however, “sustainability” in terms of the existence of sidewalks is lesser (Brown, Lombard, and Parker).

As of 2006, “the perception of safety [was] changing” at Jordan Park, according to the Ridge Street Neighborhood Plan. The small park, however, contains few attractions and does not appear to be very popular compared to the other parks in the area. With large, well-maintained Tonsler and Belmont Parks also within walking distance from many residents in the area, it is not surprising that those parks would be more heavily utilized and therefore more sustainable in Charlottesville.

JOHNSON ELEMENTARY SCHOOL PLAY AREA (JOHNSON VILLAGE)

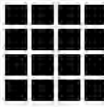




While there is no area identified as a park in Johnson Village, Johnson Elementary School is a prominent part of the neighborhood and there is a large outdoor public space behind the building. Surrounded by trees, it consists of an expansive field and fresh-looking playground equipment that appears to be utilized often by community members even when school is not in session. There are numerous CAT bus stops close by making the school easily accessible.



SCHOOLS

Over the years neighborhood patterns have evolved with changing technologies and preferences of the inhabitants. In the 1900s the grid system was the obvious and most efficient method of organizing a neighborhood. The introduction of the automobile however proved this layout to be easily congested, noisy, and even dangerous for residents. As a result new methods of organizing neighborhoods evolved (Figure 1).











Figure 1: Comparison of area used for streets, among five typical patterns .

					
	Square grid (Miletus, Houston, Portland, etc.)	Oblong grid (most cities with a grid)	Oblong grid 2 (some cities or in certain areas)	Loops (Subdivisions - 1950 to now)	Culs-de-sac (Radburn - 1932 to now)
Percentage of area for streets	36.0%	35.0%	31.4%	27.4%	23.7%
Percentage of buildable area	64.0%	65.0%	68.6%	72.6%	76.3%

1).
Gradually neighborhoods moved toward more isolated organic types of organization. While these new patterns

of organization allowed for more efficient use of space and eliminated the congestion, noise and danger of the grid system they came with their own set of problems (Figure 2). The newer cul-de-sac or typical “suburban” pattern of neighborhood organization creates a neighborhood dependent on cars that also limit residents to the people and space directly surrounding their street. The connectivity of places that work so well in the grid style neighborhood was traded for lower amounts of traffic more privacy and unfortunately more isolation. In some cases this isolation between two points becomes so absurd that distance which

Figure 2: Evolution of street patterns since 1900 showing gradual adaptation to the car (M. Southworth, 1997)

					
	Gridiron (c. 1900)	Fragmented parallel (c. 1950)	Warped parallel (c. 1960)	Loops and lollipops (c. 1970)	Lollipops on a stick (c. 1980)
Street patterns					

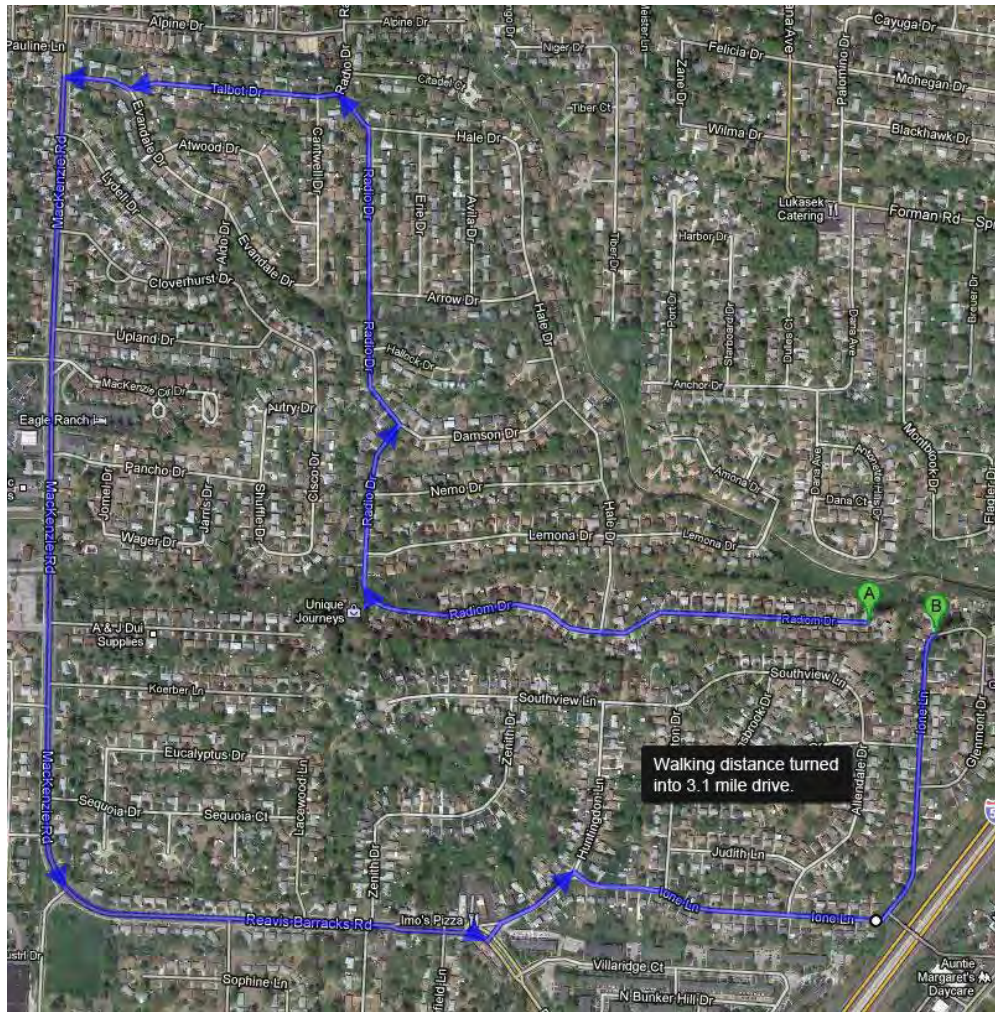
normally takes minutes to walk would become stretched out to huge distances because of the street layout.

This is the main problem and complaint with the suburb cul-de-sac layout. In order to travel anywhere, even places within walking distance (in extremely cases), one needs to get in a car and drive. This doesn't promote community, interaction between neighbors or even enjoyment of your neighborhood beyond your front yard and garage.

Problem with Connectivity

In Charlottesville our neighborhoods of study (Johnson Village, Fifeville, and Ridge Street) generally follow this cul-de-sac layout (Figure 3). The problem of connectivity isn't as extreme as the example above but it still affects pedestrians in the area, especially children walking to and from school. Buford Middle School and Johnson Elementary are affected especially by the neighborhood layout because they are blocked in by houses and back yards on most sides

Figure 3



The schools administration (or quite possibly frustrated students) has solved this problem by creating pathways cutting through backyards to reach the schools more quickly (Figure 4) These pathways are now paved over and used frequently. These pathways also allow for people living in the area to use public parts of the schools like the community pool and fitness center located at Buford Middle School.

This is good solution for students entering the school grounds, but many students don't live directly adjacent to the schools and still need to walk across the neighborhood. Pathways and shortcuts cutting through back yards have been put in place on the neighborhood scale to help bridge the distance between isolated cul-de-sacs and better connect the neighborhood streets as a whole (Figure 5)

Figure 4

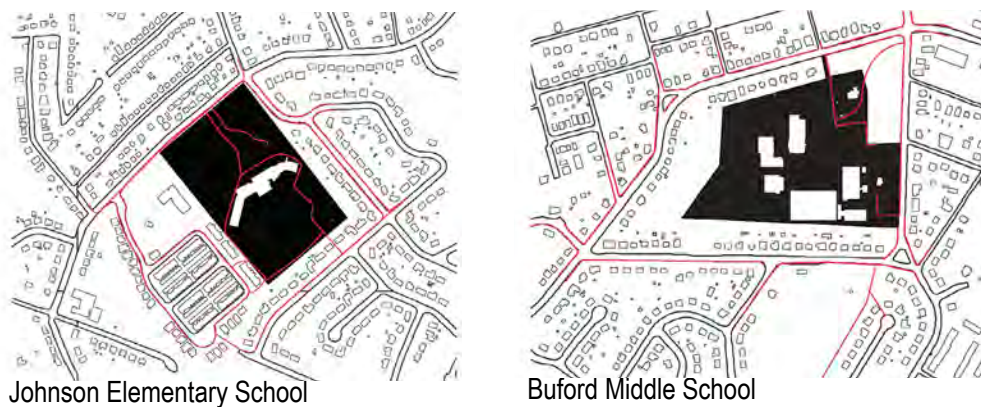
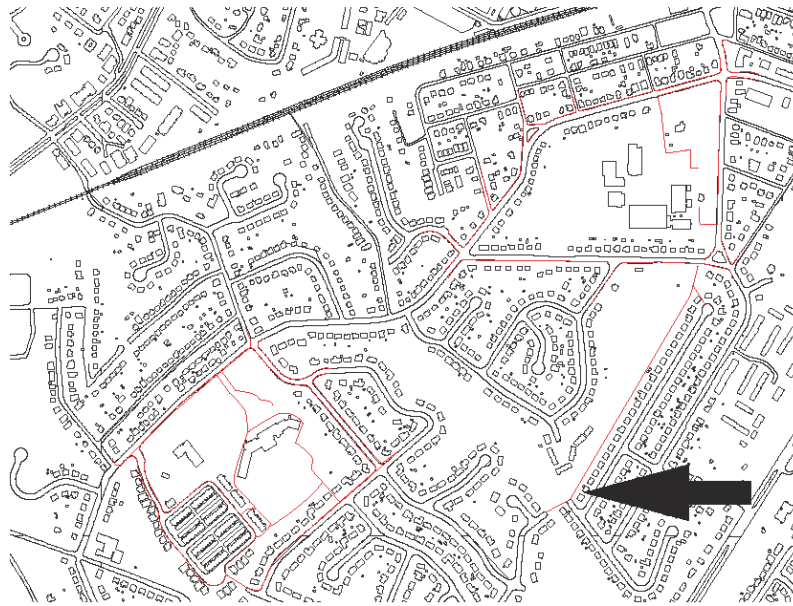


Figure 5



This method for connecting streets through paths and walkways works and successfully breaks cars monopoly on cul-de-sac neighborhoods. Schools are used by the younger demographic in Charlottesville as well as their parents and the faculty. In cases of Buford Middle School and Smith Aquatic and Fitness Center they are centers to the wider public as well. Pathways that emphasize walkability are critical in moving toward a more sustainable and more communal based neighborhood with a better sense of place and identity.



Plans to build more walkways like these in different parts of the neighborhoods to connect them to surrounding

parts of Charlottesville. According to the 2007 Comprehensive Plan, proposals to build bridges for cars and walkways over the railroad to better connect the neighborhoods to centers like UVA and the Downtown district and to improve and expand existing footbridges and sidewalks are already in place. Hopefully with this new infrastructure of walkability Johnson Village, Fifeville, and Ridge Street can move away from the isolation created by the cul-de-sac and move toward creating a place of community, interaction and sustainability through walking.

HOUSING TYPES



RIDGE STREET

The Ridge Street neighborhood, located south of the Downtown Mall, follows a grid pattern with a fairly consistent grid composition that homes follow. The common housing type is small single-family homes with a few townhome and apartment developments. The overall placement of homes is very compact considering the proximity of homes to one another. Much of the older construction within the neighborhood

consists of bungalow style homes with one to two levels. Throughout the neighborhood is sporadically placed new construction homes which are larger multi-story single family homes. A majority of the blocks contain alley ways as well as inlets for parking cars. Some of the blocks, but not all contain sidewalks which are indicative of older neighborhoods. A majority of homes appear to have been renovated along major roads such as Elliott Avenue and Avon Street. A small trailer park exists along the south western corridor of the neighborhood but a lot of the new developments are moving towards townhomes and denser living accommodations.



JOHNSON VILLAGE

The Johnson Village Neighborhood contains many homes that are large single-family homes with large lots. Newer construction homes however are more densely packed together and feature much smaller lots. It appears that the homes are becoming larger but the lot size is decreasing possibly to fit more homes in the area or to preserve the surrounding

forestry. Lot size is significantly smaller thus making a smaller impact for space required. There is also a newer townhouse development adjacent to the elementary school that follows a denser model of living mixed with single-family detached homes to potentially mix income groups within the neighborhood. The overall neighborhood does not follow a gridded layout but rather twist and turns. The new homes feature an American bungalow style but expanded to include more space. The style of the older construction homes are predominantly minimal traditional style as well as neo-eclectic. The older homes feature a distance of at least 20 feet from each other while the newer constructions are as close as 10 feet from each other. According to the land use plan of 2012, Ridge Street will remain a low density residential neighborhood.



FIFEVILLE

The Fifeville Neighborhood is home to a variety of different housing types. Duplexes are amongst the most popular with small apartments and townhomes as well. The layout feature several cul-de-sacs with long avenues. The duplex homes located along Prosperity are laid out on a grid pattern while many other homes are affixed upon blocks and winding streets. Many of the duplex homes are older and appear dilapidated

while some of the single-family and bungalow style homes in proximity to Buford Middle School have been renovated or rebuilt entirely most likely due to the Charlottesville neighborhood rehabilitation efforts of the 1980's and the 1990's. Most of the apartment complexes are located near the Amtrak station as well as main highways while single-family homes are more centrally located. Overall, this neighborhood has the greatest variation of housing types which helps promote diversity and mixed-income neighborhoods. According to the land use plan of 2012, Fifeville will be following a High density strategy for the future housing developments but will still maintain a predominately low density format.

CONCLUSION

LARGE STREETS

When examining large streets, an important factor used to gauge the level of sustainability included defining the street type through the programmatic structures that existed in the surroundings. By doing so, this made measuring the sustainability of the space related precisely to the neighborhood's needs, a strategy deemed successful by the Better Streets Plan of San Francisco, CA. The metrics used in this process included assessing buffer zones between structures and road, calculating the light distribution emitted through streetlights, as well as determining locations of bike lanes, sidewalks, transit stops, and crosswalks in order to assess walkability and livability. Each of the three primary corridors of each neighborhood when compared possessed a different atmosphere and program as either a mixed use or school-side street. Depending upon this characteristic, the streets encompassed site-specific sustainable elements to connect people to the various programs of the proximate space. The components exist to make these principal corridors a thriving sustainable place in Charlottesville, they simply need to be further developed and communicated to the residents of the area. According to the Better Streets Plan, developments as simple as sidewalk pavings to designate bus stops, sidewalk landscaping, or curb extensions to increase pedestrian visibility, along with elements such as proper distribution of streetlights and crosswalks for safety make a primary corridor the most sustainable and could be implemented in Charlottesville.

SMALL STREETS

When looking at small streets, the metrics used to measure "sustainability" of the street pertained mostly to density and safety and ease of transportation. This means looking for the number of houses per block, house size, street size, sidewalk size, proximity to public transportation and number of street lights per street. With respect to the Small streets that were examined, ease of transportation, measured by looking at proximity to bus stops, is highly acceptable in Charlottesville. Walkability is also acceptable, though some streets cut sidewalks off. Street lighting, on the other hand seems to be lacking. Though some streets have one light per house, some only have one per street. This inconsistency is seen mostly when comparing lower income level blocks with higher income level blocks. Density is also another factor to be considered. Higher income level blocks have more houses in relation to street length than older, lower income level blocks. The denser the house, the more visibility is allowed, thus giving the sense of safety according to the the "Preventing Neighborhood Crime: Geography Matters" article.

PARKS AND PUBLIC SPACES

With Tonsler Park and Johnson Elementary School easily accessible using a variety of different transportation methods, as well as large and occupied by attractions for the general public, we assess that these two areas are the most "sustainable" as they are well-maintained and create a sense of community. In particular, Tonsler Park is clearly a community focal point, as renovations to increase park use and functionality are planned. When compared to indoor community spaces (which are expected to be lighted at all times, and provide air conditioning and other amenities), parks such as these are inherently "sustainable" as relatively little energy is necessary to keep them open.

It is evident that the Charlottesville City Council and neighborhood organizations take great pride in their parks and are passionate about their improvement and upkeep. This effort is an excellent step towards a highly sustainable city.

SCHOOLS

Johnson Village, Fifeville, and Ridgestreet's strategy of connecting streets through paths and walkways works and successfully breaks the car dependency of cul-de-sac neighborhoods. Charlottesville plans to build more walkways similar to these in different parts of the neighborhoods to connect them to surrounding sections of the city. According to the 2007 Comprehensive Plan, proposals to build bridges for cars and walkways over the railroad to better connect the neighborhoods to centers like UVA and the Downtown district and to improve and expand existing sidewalks are already in place. Hopefully with this new infrastructure of walkability Johnson Village, Fifeville, and Ridgestreet can move away from the isolation created by the cul-de-sac and move toward building themselves into places of community, interaction and sustainability through walking.

HOUSING TYPES

Johnson Village appears to be increasing their building density by reducing lot sizes for new single-family homes. However, the homes are becoming larger with the exception of a newer townhome development adjacent to Johnson Elementary School. Fifeville contains the greater number of multi-family dwellings as well as different types of dwellings and appears to be following the goals of Charlottesville in producing a denser urban fabric to accommodate future home buyers and renters. Duplexes already in place are able to accommodate more people per square foot as well as more people per acre. According to the Charlottesville Land Use plan of 2012, a significant portion of land within Fifeville is moving towards denser housing developments. Today, there are many small apartments and townhome developments put in place and it appears as if these different housing models within this neighborhood are becoming pretty consistent. Ridge Street, compared to the other two neighborhoods, is beginning to explore other housing types unlike the single-family and bungalow-style homes that exist there now. A slew of new townhome developments are being built on the outskirts of the Ridge Street neighborhood while existing homes are either being renovated or rebuilt. The block definitions are clearly indicated so any expansion of these blocks seems unlikely. The placement of housing is also clearly defined with a consistent number of homes per block (typically 17-20). Overall, density in these particular neighborhoods is being implemented through the proximity of homes to one another more so than the amount of people one building can accommodate. According to the Land Use Plan however, low density developments are becoming the dominant development model.

Some suggestions for improving density while not having to build high-rise developments and potentially ruin the suburban aspect of these neighborhoods is trying to fit more people per acre. With this model, the space for an individual is reduced but only to the degree that is suitable to meet their needs. According to an article by Urban Land, mixed use developments are great methods for increasing this type of density (Brukhalter). Ideally, these new developments would thus take up a smaller footprint and therefore not have a significant impact on the environment and existing forestry. The idea of renovating instead of rebuilding is a great alternative and has been occurring within Charlottesville. It reduces the need for resources and helps maintain the look and feel of classic Charlottesville. Retrofitting is a great alternative to new construction and hopefully will become common place among any new construction projects. What has to be improved is the size of the single-family homes in Johnson Village. They are much larger than the older homes in the area and should maintain a size similar to those older homes. Lastly, a variety of housing types is crucial for income mixing. That in itself can improve deteriorating communities as well as influence better lifestyles. According to Real Change News, "Housing does not make people self sufficient...education, counseling, and relationships do that" (Kirk). In other words, housing helps but it's the relationships that are formed among different income levels that make a difference.

FINAL CONCLUSION

Through precedent studies, diagramming, and evaluation of metrics, we formed overall conclusions about the comparable sustainability between the neighborhoods. Of the three, the Fifeville Neighborhood in its entirety was found to be the most successful due to having the most diverse housing development, accessibility to mixed-use areas within and extending beyond the neighborhood limits, walkability of the streets, as well as the safety of Tonsler park. All of these characteristics combined, with minor improvements to the aesthetics of primary corridors and better promoting a sense of community among the people, allow Fifeville to exist as a model for the future development of adjacent neighborhoods of Ridge Street and Johnson Village.

LESSONS LEARNED

Our team faced a number of challenges during our project design and implementation. Due to the vague nature of the word “sustainability” itself, it was difficult for us to determine metrics of sustainability that we could measure concretely with the resources we had. While we first looked to the LEED criteria for ideas, we did not have access to building-specific energy information, nor did we have contact with individuals who knew more about it. We learned late in the semester that it would have been beneficial for our team to make contact with neighborhood associations or others that are in charge of public spaces in the neighborhoods to better understand the needs and desires of the community. Had we been able to communicate with community members, the depth of our research and knowledge would be greater.

Creating change in a community often requires individuals of many disciplines to come together for one cause. With a rather educationally homogenous project team, we sometimes felt that our group lacked some diverse expertise (for example, an engineering perspective, or a someone who better understands data collection and processing) that might have enhanced our research and results. Additionally, creating long-lasting and desired change requires consultation with as many stakeholders as possible, which is something that our group was unable to accomplish. If this project is to be continued, the strongest recommendation that we can make is to establish contact early on with members of the community and other groups and individuals who might be affected by the making of a more “sustainable” Charlottesville.

FUTURE WORK

We anticipate that this report will be passed on to Charlottesville Councilwoman Kathy Galvin and the rest of the Charlottesville City Council for their reference as they discuss and plan future sustainable projects in Charlottesville. This work could also be built upon by a future workshop group in a Global Sustainability course by contacting community leaders and members to compile more detailed presentation of the needs and desires of all stakeholders with the goal of creating a more sustainable city.

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