

## Abstract

Title of Document:                   TRANSITIONING EDUCATION: BUILDING  
  OPPORTUNITIES FOR INDIVIDUALS  
  WITH INTELLECTUAL DISABILITIES

Caitlin Claire Latini, Master of Architecture,  
2012

Directed By:                         Associate Professor Brian Kelly, A.I.A.,  
  Chair  
  Assistant Professor Isaac S. Williams  
  Professor Emeritus Ralph D. Bennett, A.I.A.

In 1975, the U.S Federal government enacted legislation, Education for All Handicapped Children Act (amended in 1990 to be called the Individuals with Disabilities Education Act), that granted free and equal access to education for all children regardless of any cognitive or physical disabilities. As a result of this legislation, many students with intellectual disabilities benefited from early intervention and integration into the regular classroom which enabled them to attain greater levels of achievement. As these students are now reaching the post-secondary education level, colleges and universities are creating programs to further advance the level of education available to individuals with disabilities. In order to meet the growing demand, post-secondary schools will need to build facilities that accommodate this increasingly diverse population of students. This thesis imagines an integrated learning environment that will be able to meet the growing, varying needs of those with intellectual disabilities, and in turn, discover an environment that fosters learning for all students, intellectually disabled or not.

TRANSITIONING EDUCATION: BUILDING OPPORTUNITIES FOR  
INDIVIDUALS WITH INTELLECTUAL DISABILITIES

By

Caitlin Claire Latini

Thesis submitted to the Faculty of the Graduate School of the  
University of Maryland, College Park, in partial fulfillment  
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2012

Advisory Committee:

Associate Professor, Brian Kelly, A.I.A., Chair  
Assistant Professor, Isaac S. Williams  
Professor Emeritus, Ralph D. Bennett, A.I.A.

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## Dedication

This thesis research and presentation is dedicated to a specific person in my life whom I look up to and whom has taught me a great deal about life and myself, my little sister Meghan.



## Acknowledgements

Many thanks to the Professors who have inspired, the peers who have guided, and my friends and family who have supported.

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## Introduction

According to the U.S. Department of Education, between 2000 and 2011, the number of students who attended American colleges and universities increased by 4.4 million students. This means that in 2011 a total of 19.7 million students were enrolled in a post-secondary degree program (Figure 1). Graduating from high school and passing into college is seen by many as a defining moment in life, marking the passage into adulthood and independence. Unfortunately, this does not hold true for all levels of students. For students with intellectual disabilities, the current trend is for their education to end after high school. With the right education, guidance and support people with intellectual disabilities are fully capable of living independent, productive lives within the community. The importance of higher education for students with intellectual disabilities is equally important as the need for higher education for the typical student.

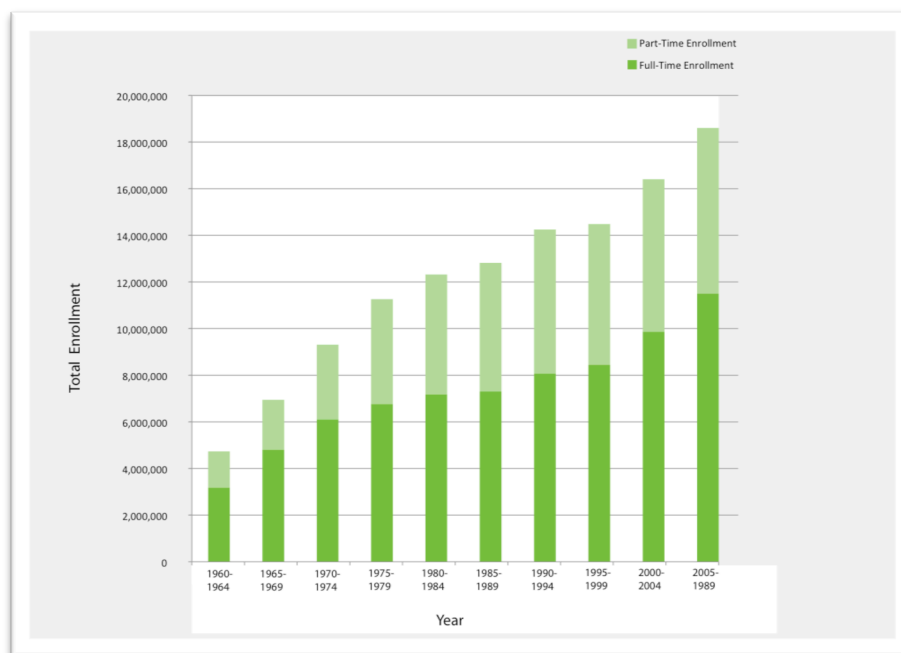


Figure 1: Post Secondary Enrollment Growth (image by author, data compiled from National Center for Education Statistics [www.nces.ed.gov](http://www.nces.ed.gov))

The Rehabilitation Act of 1973 was the result of the realization that we live in a world where millions of Americans have one or more physical or mental disability and this number is only increasing (Rehabilitation Act of 1973, §2(a)). The Act states that individuals with disabilities constitute one of the most disadvantaged groups in society and this legislation attempts to provide protection of the rights of those with disabilities. Although legal action has been taken to protect this population, social stigmas still exist regarding their ability to live independently, their right to self-determination and the ability to be a contributing member of society.

The disability movement has helped to prove that individuals with intellectual disabilities challenge stigmatizing views and social norms. However, while

people with intellectual disabilities have legally been given the right to an equal education, their education path is still lacking. The education path of these students is at an impasse and slowly developing to allow young adults with intellectual disabilities to participate in higher education as a means of furthering their ability to achieve self-determination. In 1990, the Education for All Handicapped Children Act (EHCA) of 1975, was amended, revamped and renamed as the Individuals with Disabilities Education Act (IDEA). IDEA coupled with the 2008 Higher Education Opportunity Act which specifically addresses financial aid opportunities for students with intellectual disabilities, have directly resulted in students with intellectual disabilities progressing beyond high school and into adapted post-secondary education programs. As growing numbers of young adults with intellectual disabilities advance into the realm of higher education there will be an increased need for appropriate accommodations among post-secondary facilities.

This thesis attempts to break down social stigmas and injustices by using architectural principles to create an education facility that embodies integration, equality and a new learning system for people with intellectual disabilities. Such a facility will need to take into consideration accommodations for the five main areas affected in someone with an intellectual disability. These affected areas are: 1) physical skills, 2) social skills, 3) motor skills, 4) sensory perception, and 5) cognitive skills. The research will provide an analysis of post-secondary education facilities, campus planning, and appropriate residential accommodations for people



with disabilities that will enhance their abilities; making them more able, not less disabled. Emphasis is placed on achieving an education facility that is fully integrated with an existing college or university setting. The practice of integration for people with intellectual disabilities begins at a young age and is an integral aspect of the success of education for these students.

It is the job of the designer to take the needs of the user and interpret them into thoughtful architecture by balancing technology, functionality and aesthetics. This thesis will employ a number of architectural principles that will inherently provide an environment that encourages and fosters learning, promotes integration and re-evaluates the campus lifestyle through the lens of someone with an intellectual disability. This will be accomplished through the study of varying scales of place and identity at both the residential and educational settings.

The objective of this thesis is to create a facility for George Mason University's Mason LIFE program, an existing adapted post-secondary education for students with intellectual disabilities. The program provides equal opportunities and experiences similar to that of a typical students college experience with adjustments made to fix the specific needs and programmatic requirements of someone with an intellectual disability. This proposal is not only intended for students to be physically included within the campus but to foster full integration into the campus community and the social aspects that corerelate.

## Background

### *Defining the user*

It is important to determine the type of student that this facility is servicing as a means of understanding the specific accommodations and requirements of the user. An intellectual disability (used as a replacement to the more commonly used, yet, less politically correct term mentally retarded) is used to describe someone with limitations in intellectual functioning and adaptive behavior (Introduction to Intellectual Disabilities, 1). As previously mentioned the affected abilities include physical, cognitive, sensory, social and motor (Figure 2).



Figure 2: Affected Capabilities of Individuals with Intellectual Disabilities

(image by author)

People with intellectual disabilities are most easily categorized by their level of Intelligence Quotient's (IQ). Someone with an intellectual disability falls

into one of three categories; mild (IQ of 50-70), moderate (IQ of 35-50), or severe (IQ below 35). Most young adults with an intellectual disability who are capable of attending a post-secondary education program, are in the category of mild IQ. Intellectual disabilities include Down Syndrome, Autism, William's Syndrome, Asperger Syndrome and more.

According to The Arc, an association devoted to helping people with intellectual and developmental disabilities, in 2000 there were 4.6 million Americans with intellectual disabilities (Introduction to Intellectual Disabilities, 1). The number of people with intellectual disabilities is only growing. As we learn how to better identify, care for, guide and support those with intellectual disabilities their life expectancy is growing as is their ability to act as contributing members of society. For instance, in 1983, individuals with Down Syndrome lived an average life span of 25 years. Now, in 2012, this same group of people are living an average life span of 60 years (Figure 3: Average Life Expectancy for Individuals with Down Syndrome and Typical Person (image by author, data compiled from Center for Disease Control & Prevention ([www.cdc.gov](http://www.cdc.gov)) and the National Down Syndrome Society ([www.ndss.org](http://www.ndss.org))). That's an increase of 35 years of life in just under 20 years of improvement. Furthermore, now that we are able to better diagnose intellectual disabilities such as Autism, there has been a drastic increase in the number of people diagnosed with Autism (Figure 4).

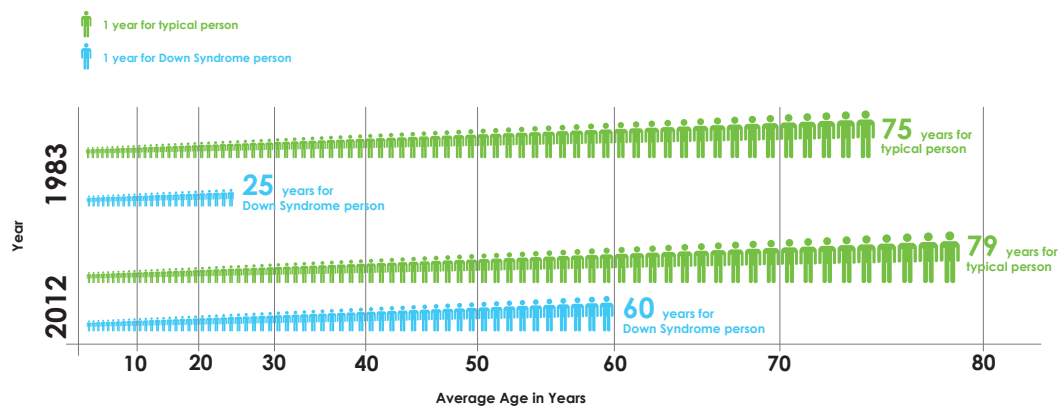


Figure 3: Average Life Expectancy for Individuals with Down Syndrome and Typical Person (image by author, data compiled from Center for Disease Control & Prevention ([www.cdc.gov](http://www.cdc.gov)) and the National Down Syndrome Society ([www.ndss.org](http://www.ndss.org)))

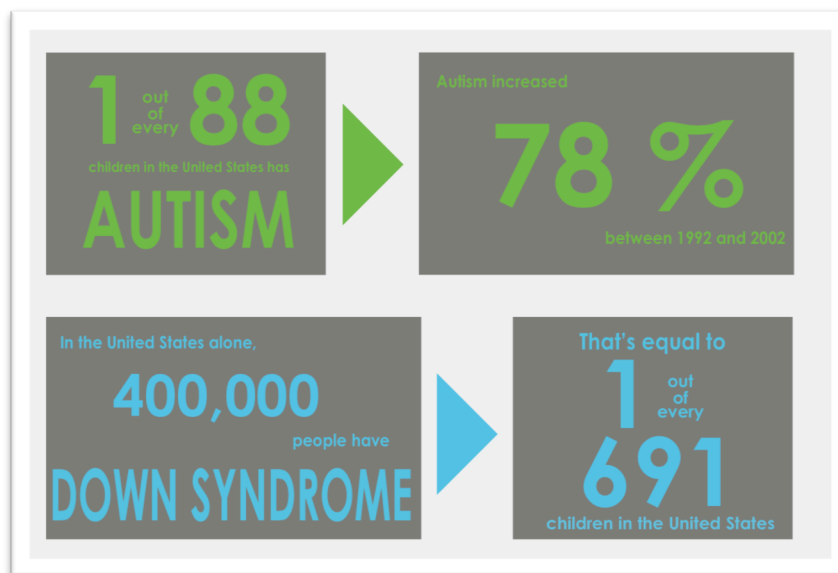


Figure 4: Growth of Autism and Down Syndrome (image by author)

### *History of Education for the Intellectually Disabled*

Even though legislation grants equal rights to all students, students with intellectual disabilities are not yet afforded the same innumerable

opportunities and choices for post-secondary education as the typical student. As a result, post-secondary programs are on the brink of upsurge with accommodating this new group of students by creating programs and facilities for students with intellectual disabilities. Allen C. Bend of National Institute of Building Sciences states, “the influx of children with moderate, severe, and profound disabilities into general education schools is having a positive impact, by addressing the needs of students with disabilities and raising the bar for school design, all students benefit from higher quality educational facilities” (Bend, 5). Therefore accommodating students with Intellectual Disabilities is truly a benefit to all students. Complimenting the Rehabilitation Act of 1973 (RA) was the 1975 Equal Education Rights for Children with Special needs legislation was of great influence on the education of children with disabilities. This Act, which was amended in 1990 to be entitled, Individuals with Disabilities Education Act (IDEA), helps to further ensure that services are granted to children with disabilities at an early age to guarantee success in future endeavors.

Prior to these extremely influential legislations, individuals with intellectual disabilities were put in mental institutions. While this idea is no longer in practice, the stigma that people with intellectual disabilities cannot be contributing members of society still haunts this group of people as they continue to fight for equal education rights. Another piece of legislation that had a great impact on the lives of people with ID was the Americans with

Disabilities Act, also set in place in 1990. Although not specifically related to Educational needs, this Act grants civil rights and prohibits discrimination against those with disabilities. ADA legislation is the most widely known and understood piece of legislation set in place for people with disabilities. Furthermore, it is the piece of legislation that most obviously drives architectural principles to incorporate physical methods of accommodation.

In 1994, an international standard for equal rights to those with disabilities was set in place by the United Nations. This piece of legislation entitled, Standard Rules on Equalization of Opportunities for Persons with Disabilities. This set of rules shows the commitment by not only U.S. officials to guarantee equal rights to those with disabilities but a global interest in fairness.

As influential and ground-breaking as RA and IDEA were toward equal opportunity for those with disabilities, equal rights had still not fully been reached. However, with more recent amendments in 1997 and 2004, great achievements in the education for the intellectually disabled have been made. The 1997 amendment granted the right to students with disabilities to be educated with their non-disabled peers. Thus, students with disabilities were integrated into the regular classroom as opposed to having a designated “special education” class. This legislation spurred the idea of early intervention, set in place to provide accommodations for those who have or are at risk of developing a disability and exists a variety of realms and levels.

Research reveals that early intervention has led to great success in increases of developmental and educational gains for all children with disabilities.

As the first-generation of early intervention children began to pass into young adulthood, they watched their non-disabled peers head off to college and realize their desire to continue on an education path similar to the peers they have attended classes with since a young age. We are at a crucial moment in time for the development of appropriate educational systems for people with intellectual disabilities at the post-secondary level. Higher education programs that aim to guide these young adults and help them transition from academia into the work world are growing by the day.

### *Post-Secondary Education for the Intellectually Disabled*

The first post secondary programs from individuals with intellectual disabilities started to appear in the late 1990's and early 2000's. In 2002, only 15 programs of this type and level had been established. However, as of 2012, a mere ten years later, the United States is now home to over 170 programs that accommodate young adults with intellectual disabilities and guide them to achieve independence and self-determination and this number is still growing. Mason was one of the first university's to have a program such as this. Today the program is well-established and highly regarded within the field.

George Mason University (Mason) is home to many different areas of study including educational studies which are housed within the College of Education and Human Development. Within this college lies the Keller Institute of Human disAbilities (KIHD) whose mission focuses on “improving the lives and productivity of persons with disabilities” [Helen A. Keller Institute for Human disAbilities, np]. One of the KIHD programs is Mason LIFE, a program developed as a post-secondary education program for young adults with intellectual disabilities. The program serves as a transitioning program for students who have graduated high school and are moving into adulthood. The program works to help people with intellectual disabilities achieve the goals of the Rehabilitation Act of 1973 that include the ability to:

- Live independently
- Enjoy self-determination
- Make choices
- Contribute to society
- Pursue meaningful careers
- Enjoy full inclusion and integration in the economic, political, social, cultural, and educational mainstream of American society

Ultimately the intent of the MasonLIFE program and others like it, is to teach students how to transition into the work world and live independently.

The classes set forth for the Mason LIFE students are modified from those of the typical college classes. Additionally, the daily activities of the Mason LIFE student also differs from those of the typical Mason student (Figure 5, 6). The typical college level campus building separate residential life and educational life both by building and by district within the campus. In general, one area of campus is the daytime, educational life of a college



student, and another area is the nighttime, residential life of a college student. The students involved in the Mason LIFE program benefit from learning throughout the entire day. During the day they are learning the math, reading writing and at night delve into learning about living independently by learning to prepare meals and deal with daily hygiene.



Figure 5: Typical College Student Daily Activities

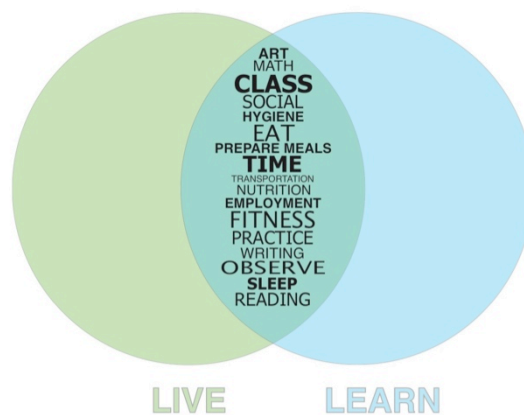


Figure 6: Mason LIFE Student Daily Activities

While the facility is focused on the use by the Mason LIFE students, the program set forth would hope to encourage others to use the building as well bringing others to the Mason LIFE students. The various users of

the building can be understood through the following figure, Figure 7: Who and how the facility will be used (image by user).

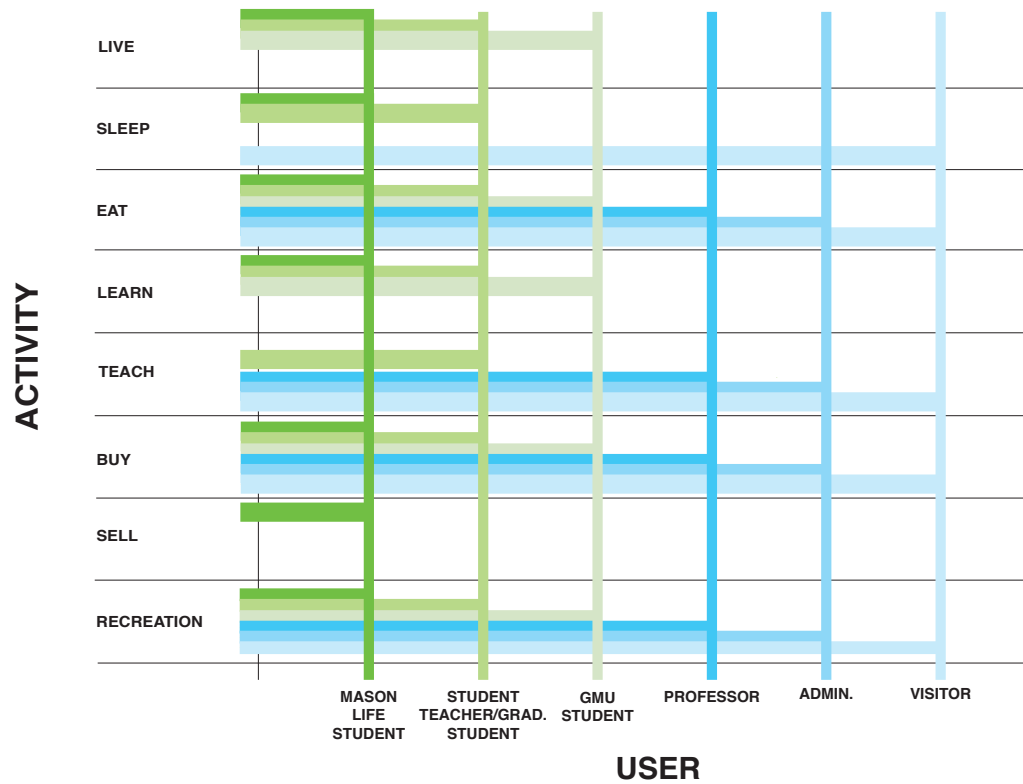


Figure 7: Who and how the facility will be used (image by user)

## Campus as Site

### *Site Selection Criteria*

The process of site selection considered a variety of criteria in order to select a feasible site. A set of standards was implemented and used as a means to judge the potential of each site considered. These criteria were chosen because they would have direct impacts on the design and architectural implications of the design of a campus facility and the way in which it is shaped. These standards included, a number of locational criteria, university programmatic requirements, type of college/university, accessibility and land availability on campus.

The first locational requirement considered was the need for a post-secondary level education campus that has an established program for intellectually disabled students. The site wanted to be located in an area that lies between a small urban and suburban area in order to best serve the population of student attending this program. A setting that was too rural would not provide the proximity of appropriate community necessities and a setting too dense or largely urban would be overwhelming for the student users.

The decision to choose a university that has an existing transitional program for students with intellectual disabilities would serve as a platform for the specific needs of the program. Additionally, it was important to

choose a program that had interrelationships between the program and a graduate level education program, more specifically special education program. By having this upper level program it would serve as a means of bringing the larger campus community into the school as well as provide first hand experience for potential teachers. Furthermore, the students would benefit from the interaction of people that are in close proximity to their age.

Using the aforementioned criteria narrowed the sites to five feasible locations. At this point the site search was judged based on the potential of the site. Upon thoroughly researching each of the sites the decision was made to select George Mason University (Figure 8, 10, 11,12) as the appropriate site in which to explore and develop this thesis. Much of this decision was determined by the openness and willingness of the university as a whole to be welcoming to innovative ideas. As the institution is still fairly young and searching for a more concrete identity, they are open to a variety of new ideas and changes. When visiting the campus this lack of identity is outwardly apparent. The campus is segregated into a realm of academia and a realm of residential, a direct result of the origins of the campus as a commuter college. As the university works to transform into a residential campus, the campus plan is undergoing a great deal of change and growth (Figure 12, 14) and the opportunity of the campus as a whole has a great deal of potenti



Figure 8: Aerial of George Mason University campus ([www.google.com](http://www.google.com))



Figure 9: Aerial of George Mason University Campus (image by author)





Figure 10: Aerial highlighting Mason's campus boundaries ([www.google.com](http://www.google.com))



Figure 11: Aerial highlighting Mason's campus boundaries (image by author)





Figure 12: Campus Aerial in 2002 ([www.google.com](http://www.google.com))



Figure 13: Campus Aerial in 2011 indicating campus growth from 2002 ([www.google.com](http://www.google.com))

As the identity of Mason is transforming and the university is looking for new, innovative ways to keep students on campus as part of their makeover to a residential campus the Mason LIFE program is also looking for a more established identity on campus. While the Mason LIFE program itself is a well established and highly regarded program in the realm of higher education for those with intellectual disabilities, it currently is housed in the “leftover” campus space. In the 2011-2012 school year, the program was housed on-campus in, Aquia (built 2010) an area viewed as “swing space” by the university. For the 2012-2013, this space was taken over by another campus entity and Mason LIFE was transferred to remaining space within Finley, one of the original campus buildings. Thus it’s understandable that Mason LIFE wants to gain a more permanent location on campus making the need for an architecture that supports its mission even more necessary.

Housing accommodations for the students are currently within on-campus and off-campus housing. Those that live off-campus are merely off-campus due to lack of beds on-campus for the students and not by choice. On campus housing is located at Liberty Square. The lack of housing accommodations on campus are a problem for all Mason students. Thus, it is currently the goal of the university to expand the number of beds on campus as the university continuously transforms from its initial status as a commuter to its desired status as a residential campus (Figure 14.



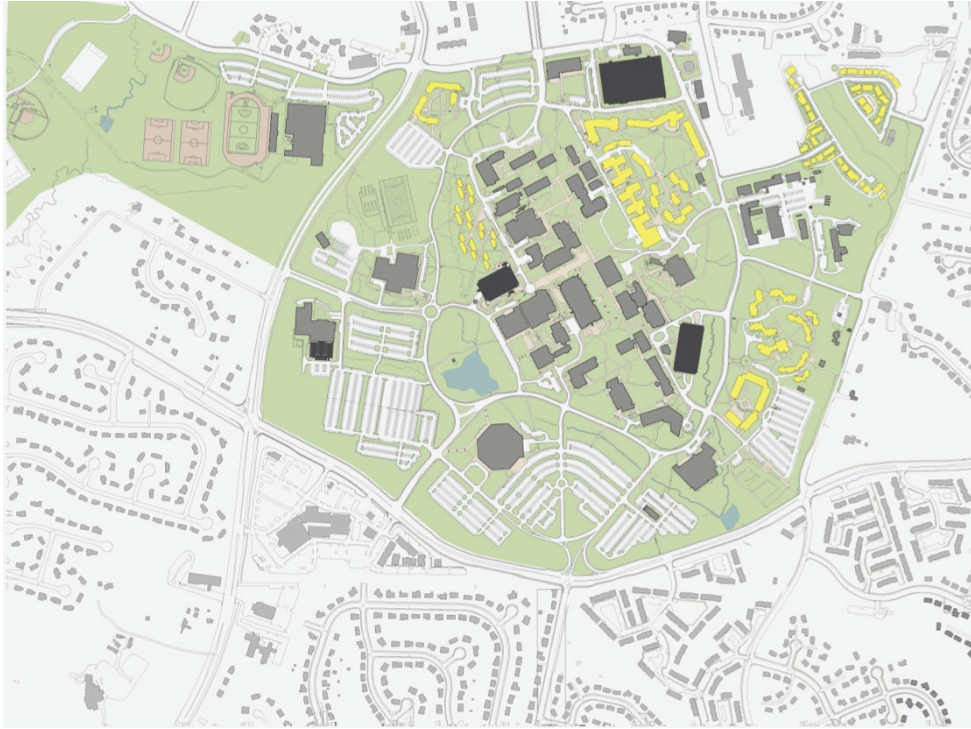


Figure 14: Residential Buildings at Mason (image by author)

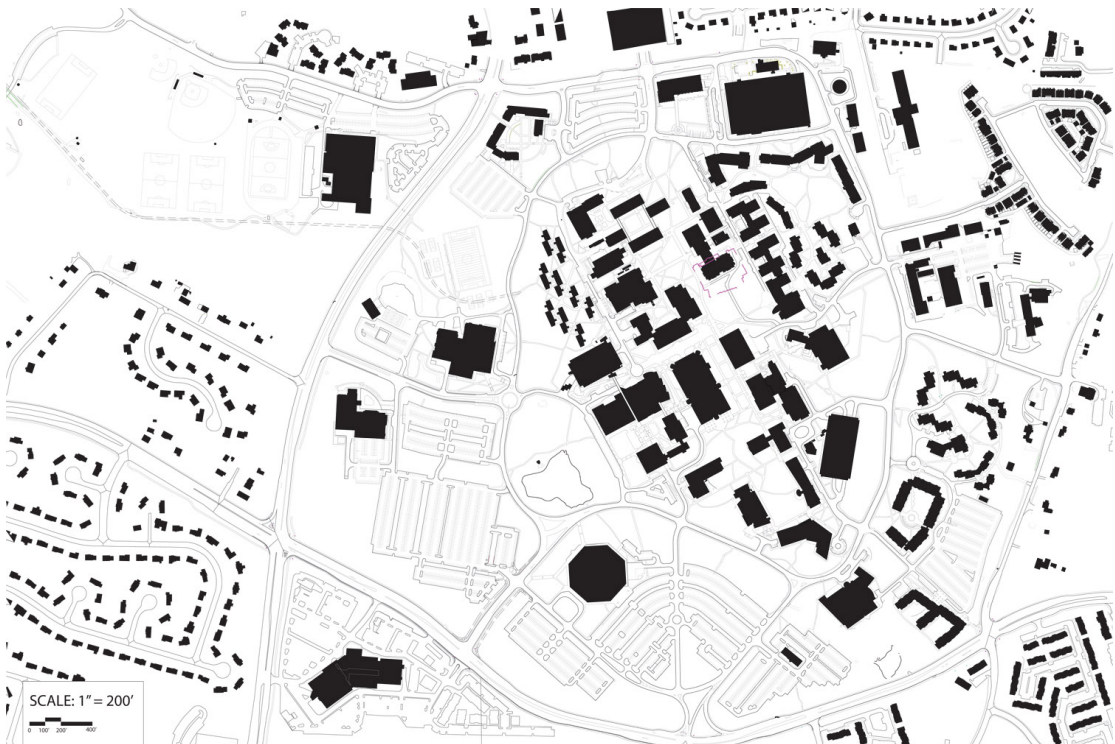


Figure 15: Figure Ground of campus and surrounding area (image by author)

### *Campus History*

George Mason University, was founded in 1957 in Fairfax, VA as a public university, George Mason College, the Northern Virginia branch of the University of Virginia. Mason is situated approximately one mile south of the City of Fairfax along Route 123. Since its founding it has developed into an independent university and has been a four year, degree-granting institution since 1972. Today, the university consists of three campuses located in Fairfax, VA, Arlington, VA (founded 1979) and Prince William, VA (founded 1997). The original acquisition of land, 150 acres, was completed by the City of Fairfax and donated to the university to build the campus. Today the campus is a total of 677 acres with all the property donated by the city . The campus is comprised of two sites that span the east and west side of Route 123. The east campus is home to the core of this campus with most of the university's academic, residential and support facilities located here. The west campus, comprised of 202-acres mostly contains Mason's field house and sports fields. The area around campus is largely comprised of low-density, suburban, residential subdivisions with a small commercial center located just north of campus in the City of Fairfax.

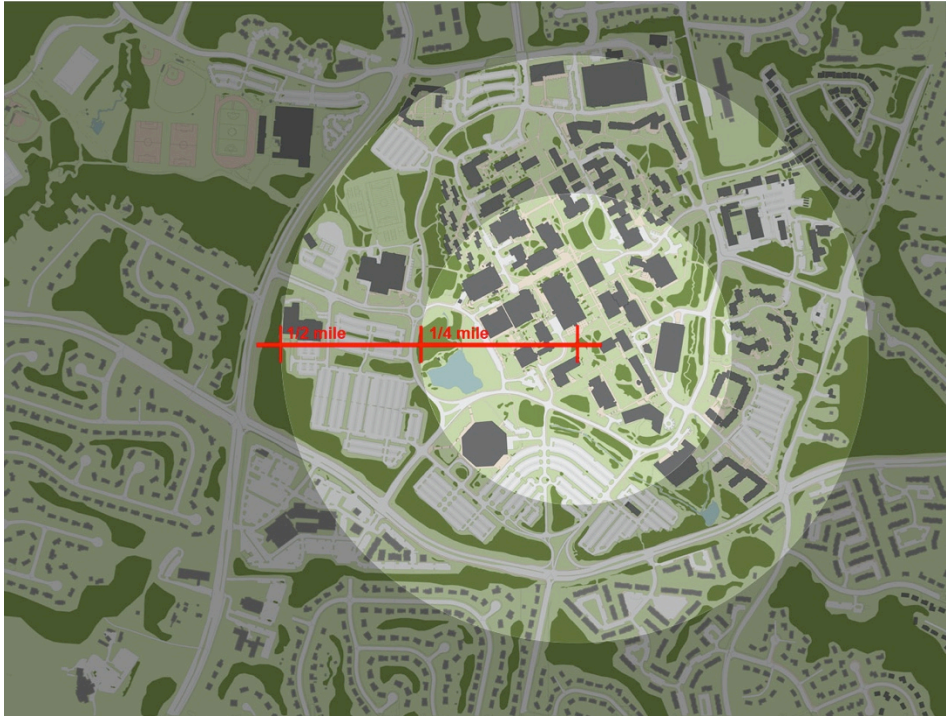


Figure 16: Walkability Diagram from Student Center (image by author)

The makeup of the campus is one that lacks a large overarching organization other than groups of buildings by programmatic definition. Since its founding, the campus has been influenced by 7 master plans, the most recent two prepared by Sasaki Associates in 2002 and Ehrenkrantz Eckstut & Kuhn in 2007. All of the aforementioned site plans have left an impression, whether small or large, on the campus, leaving it chaotic and need of clarification.



## Site Analysis

### *Campus Districts*

Due to the university's origin as a commuter campus, a clear divide exists between the academic and residential areas of campus (Figure 17). Very distinct districts are formed that show academia at the core with residential communities built up around this core (Figure 18).

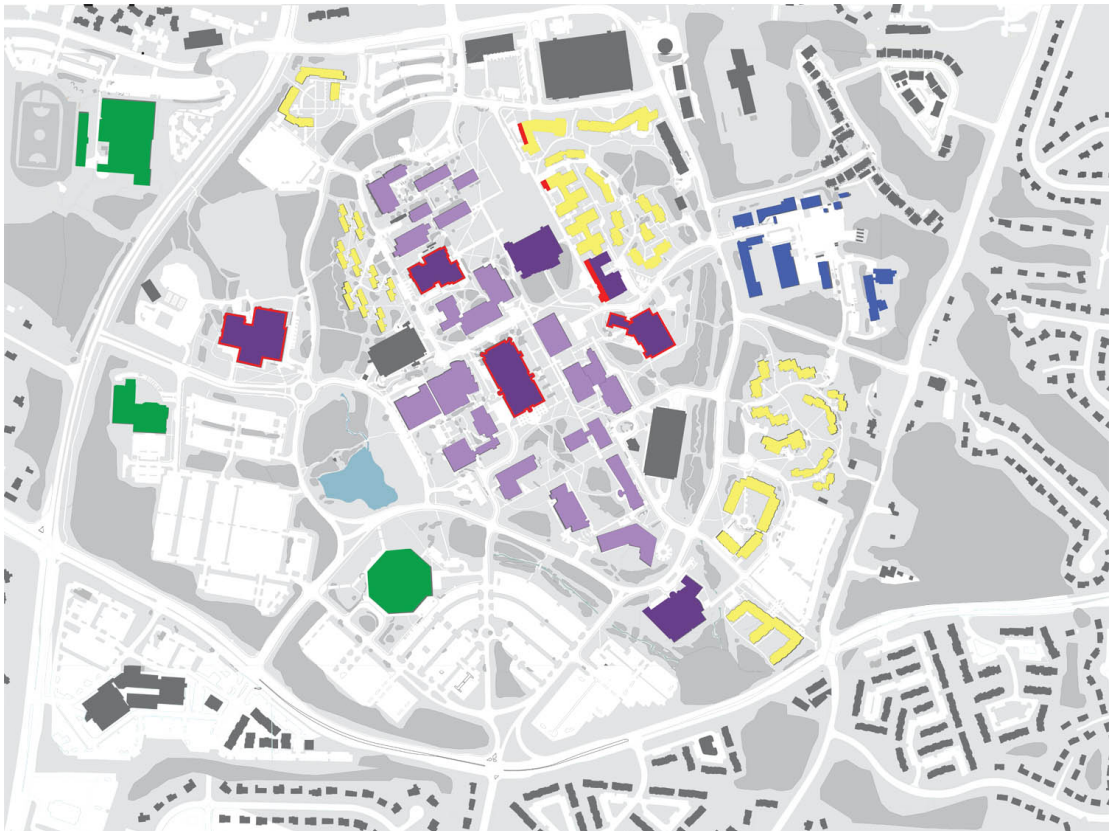


Figure 17: Land Use Diagram of George Mason University (image by author)



Figure 18: Diagram of Campus Districts (image by author)

The campus deals with a great differentiation of topography from the northern to the southern part of campus (Figure 19). Currently, the majority of the campus is congregated in the northern area of campus that deals with a more shallow gradient. However, there is an increased want and need to develop the southern part of campus as the university grows in size and as the university tries to increase the number of students they can house on campus. A large pond within the campus limits as well as a few small streams (Figure 20).

The campus is surrounded by a well-distinguished road, Patriot Circle that, as indicated by its name, circumambulates around the core of the campus

(Figure 21, 23). Patriot Circle originally served as the boundary of the campus. As the campus grew there was a desire and need to go outside the boundary. Unfortunately, the defined road still remains a clear divide for the campus as the university struggles to grow beyond.

Within Patriot Circle one finds a rather extensive system of paths for pedestrian use. While the system seems thorough, a more apt description would be chaotic and haphazard. Traveling through campus, one's sense of wayfinding is limited and easily distracted.

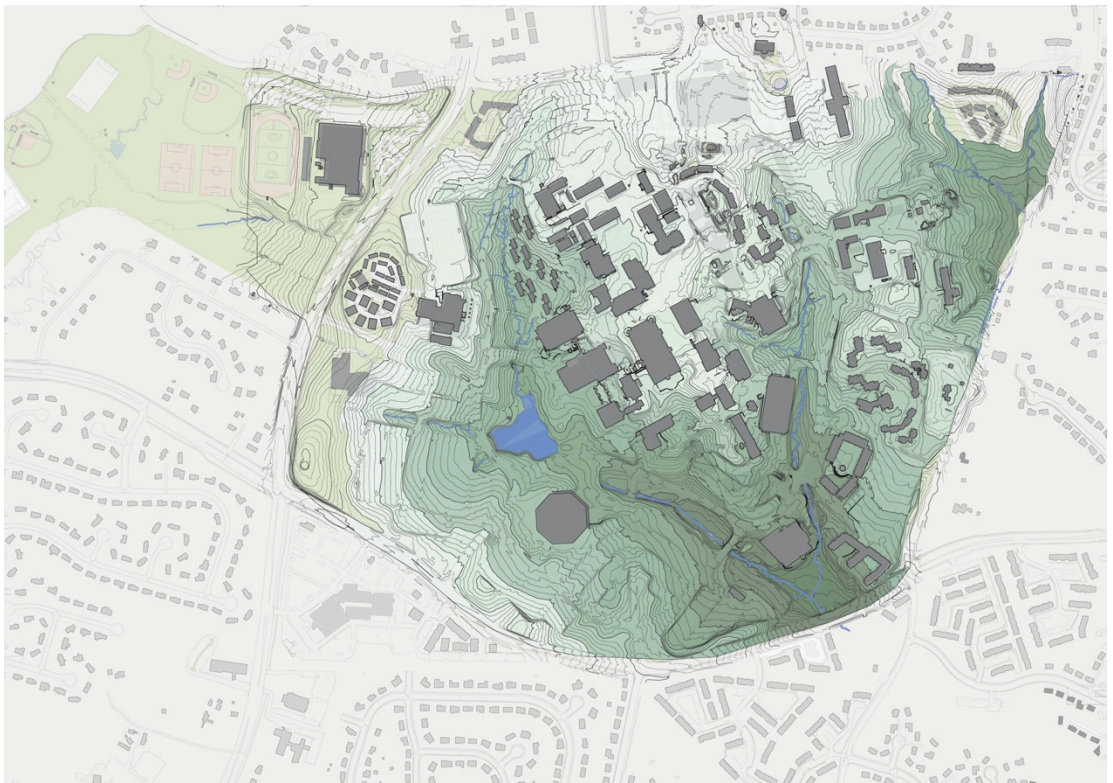


Figure 19: Campus Topography (image by author)





Figure 20: Waterways on Campus (image by author)

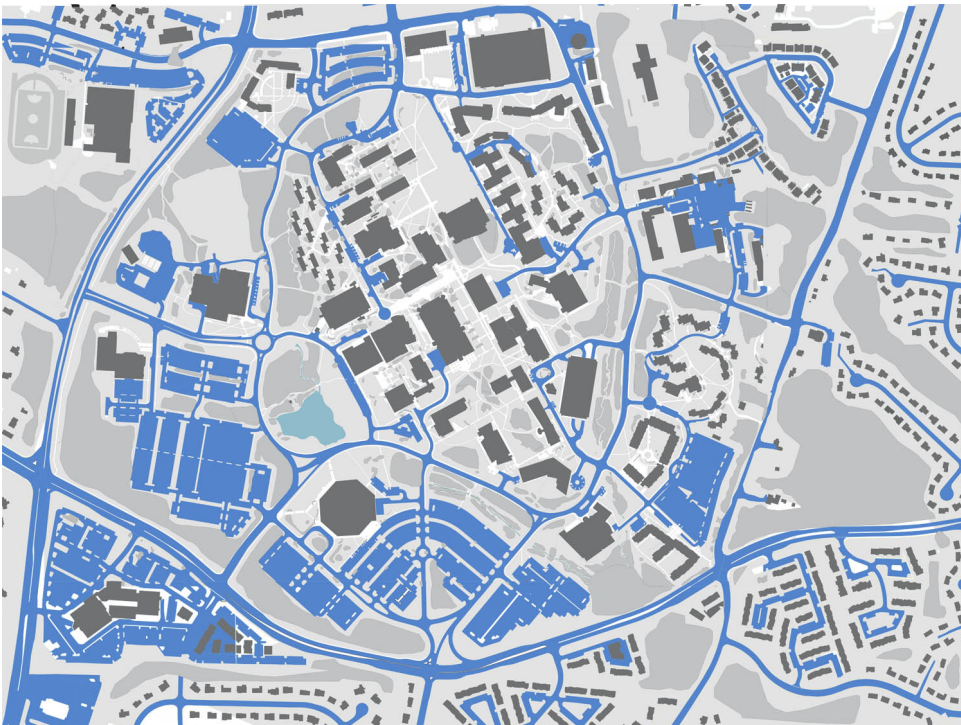


Figure 21: Diagram of Vehicular movement on George Mason University's campus (image by author)



Figure 22: Campus Entries and Patriot Circle (image by author)

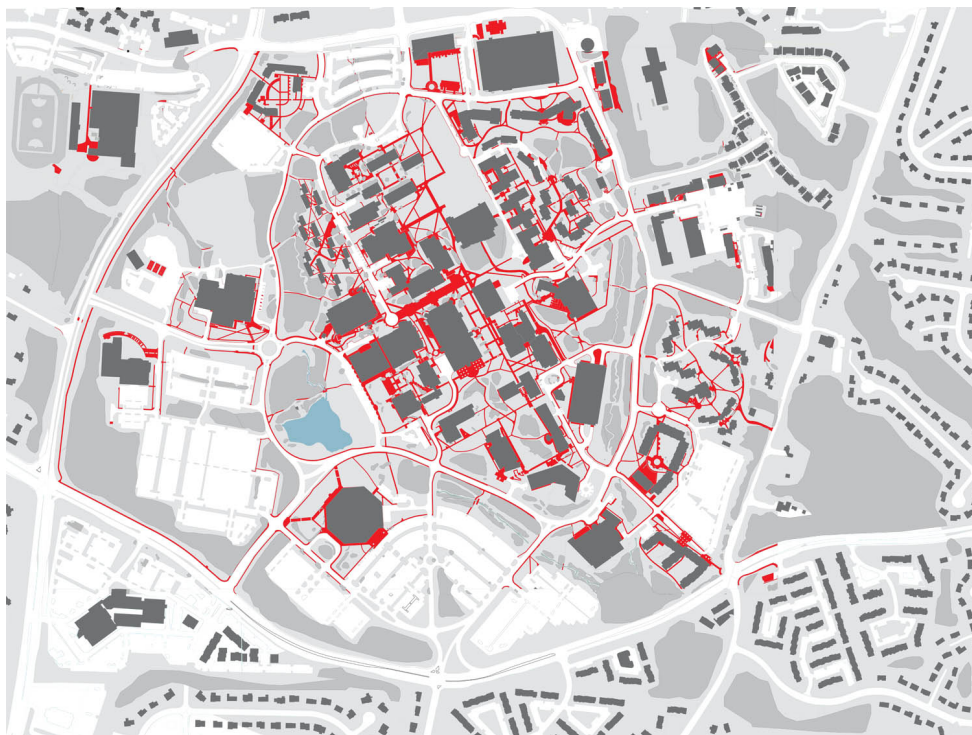


Figure 23: Pedestrian Paths on George Mason University's campus (image by author)



### *Notable Campus Buildings and Campus Context*

Patriot Center - A campus of this size is destined to have a variety of large, defining buildings and Mason is no exception. One of the most notable buildings on Mason's campus is their 10,000 seat, 188,842 gsf, arena, Patriot Center built in 1985. The Patriot Center is host to approximately 100 concerts and events yearly and is home to the Mason Men and Women's basketball teams.



Figure 24: Patriot Center ([www.gmu.edu](http://www.gmu.edu))

Johnson Center-A newer addition to the campus is the Johnson Center which is currently located at the heart of the campus today and serves as the student center. The Johnson Center, a 320,000 sf facility, opened in 1995 and is home to a number of services including dining, academic classrooms, and library



Figure 25: Johnson Center (image by author)

Fenwick Library – Fenwick library as it currently stands was built in 1967 serves as Mason’s main academic library with several smaller branches stationed throughout the campus (Figure 26). As of Fall 2012, the university has started construction on renovations and reconstruction of the library which will help to give the core of the university a new, more exciting presence on campus (Figure 27). The new library was designed by Shepley Bulfinch Architects.



Figure 26: Existing Fenwick Library (image by author)



Figure 27: Design for New Fenwick Library ([www.shepleybulfinch.com](http://www.shepleybulfinch.com))



Collegiate Way – Mason has a major path that runs North-South and services the academic core buildings and district (Figure 28). The walk, which this thesis aptly refers to as Collegiate Way is highly trafficked (Figure 30, 32) and helps to directly link the Johnson Center (Figure 29), to the Arts building, to the Theater, to the library, to the original four campus buildings and everything in between.



Figure 28: Collegiate Way, N-S connection to edges of Patriot Circle (image by author)

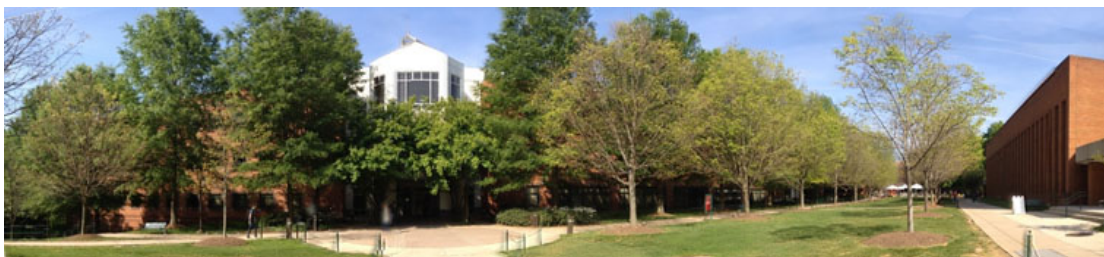


Figure 29: View of Johnson Center along main academic walk (image by author)



Figure 30: Main Campus walk during class (image by author)



Figure 31: Main campus walk between class (image by author)

### *Potential Sites on Campus*

Within the campus, there are a number of sites with potential to be studied.

The first site is located on the southeast border of campus currently exists as surface parking. The second site is located at the heart of the campus and



just west of the “Original Four” sitting on the border of the academic and residential districts of the campus.



Figure 32: Potential Sites for Building Proposal (image by author)

### *Campus Site Option 01*

This rather vast campus presented numerous potential sites within the campus setting. The first site considered for development was a large, 109 acre site to be developed as a new community of buildings located in the southwestern region of campus (Figure 31). A campus master plan was developed for this “Southwest Sector” by Ehrenkrantz Eckstut & Kuhn Architects (EE&K) in 2007 as a campus “village” (Ehrenkrantz, 2). The intent for this project was to develop a new, sub-community within the

larger campus community through the implementation and design of a number of mixed-use facilities.



Figure 33: Site Proposal for SW Sector (as proposed by EEK Architects) (image by author)



Figure 34: Proposed Site Plan for the Southwest Sector of GMU campus as completed by EE&K (image by EEK, Architects)

This site is in close proximity to a number of large campus amenities including the Patriot Center, the Mason Pond, the Recreation and Athletic Complex (the RAC), Center for the Arts, Mason Hall, campus art gallery, and the new Mason Inn Conference Center and Hotel. Currently, the site is home to vast areas of surface parking and is located just off Patriot Circle and along major thoroughfares, Route 123, the main connection to downtown Fairfax, and Braddock Road (Figure 35).





Figure 35: Main street connections to downtown Fairfax, VA (image by author)

The mission of campus facilities at Mason states the desire of the campus for a move to diminish ecological impacts on the campus by improving pedestrian access and striving for a “park once” concept (Ehrenkrantz, 1). The Southwest Sector provides the opportunity to replace the unsustainable surface parking with environmentally conscious buildings while simultaneously helping to foster the growth of the campus from its origins as a commuter campus to a residential college through the use of mixed-use academic, residential, and retail buildings. Its adjacencies to the Convention Center and Hotel, the RAC and the Patriot Center provides

an ideal location for campus development as it would become the center of recreation on the campus. Furthermore, development at this location would help to break down the boundary of Patriot Circle even further and serve as a means of better defining the campus entry as determined by the university (Figure 22).

The programmatic requirements as described for the Southwest sector development by EE&K's master plan is to include the following:

- Student Housing: minimum of 2,400 beds
- Dining Facilities
- Research Facilities: 300,000 sf
- Campus-Related Retail: 30,000 sf
- Parking: minimum of 7,000 spaces
- Academic Classrooms

### *Campus Site Option 02*

While the Southwest Sector has the potential to be developed as a sub-center to campus, the northern site, has the potential to become a campus gateway spanning between the historic academic core and the grouping of new residential buildings to the east all a response to transition from a commuter to a residential campus. Thus, this site literally spans between old university ideals and the future of Mason.

Mason's campus facilities plans to deconstruct the northern, one-story portion of the library and construct an addition to the south (Figure 36, 37 & 38). Additionally, as of Fall 2012 the university has deconstructed the

North and South Chesapeake Modules located east of the existing library. With the removal of these buildings, a large open site remains between the academic and residential districts of campus (Figure 37). The placement of a mixed-use facility in this location would serve as a way to connect between these two areas of campus and integrate a live-learn community as proposed in this thesis.

The northern site option is located adjacent to the original four buildings built on campus, Krug Hall, East Building, West Building and Finley Building which are centered around a small interior courtyard (Figure 36). The organization of these original buildings was based on the principles of The Lawn at the University of Virginia in Charlottesville, Virginia, an appropriate choice due to Mason's connection to UVA at its founding. Additionally, the style of building was meant to reflect the influence of Jeffersonian architecture with a modern interpretation when built through its use of red brick, white vertical columns and sloped, shingled roofs.



Figure 36\_ "Original Four" and courtyard between and area of library to be removed (image by author)



Figure 37\_ Site Option 02 (image by author)





Figure 38: Aerial of Site Option 02 ([www.bing.com](http://www.bing.com)) (edited by author)

## Conceptual Framework

As previously stated, individuals with intellectual disabilities are affected in 5 main areas (Figure 2). However, these categories can be broken down further into a variety of impacted capabilities (Figure 40). As a response to these impacted capabilities a number of architectural principles such as wayfinding and versatility, will be employed in the design process (Figure 39).

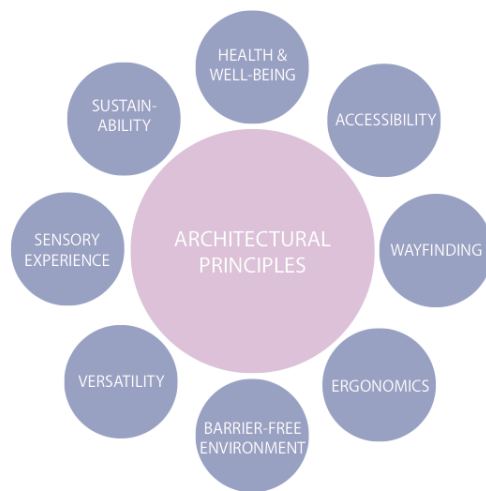


Figure 39\_Architectural Principles employed (image by author)

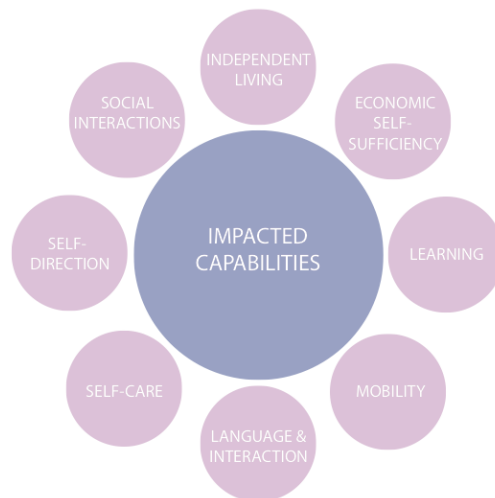


Figure 40\_Impacted Capabilities (image by author)

## Program

The intent of this thesis is to create a mixed-use building that will be home to a myriad of programs such as academic classrooms, performances or gathering spaces, residential life, and retail. This facility would be broken down into the following components:

### L Program Use

Residential	# of rooms	SF/room	Total SF
128 Beds (1, 3 & 4 per room)	48		
1 Bed - Apt Style	8	420	3,360
4 Bedroom - Type A	16	700	11,200
4 Bedroom - Type B	8	830	6,640
3 Bedroom	8	580	4,640
Communal Space	8	1,850	14,800
			40,640
<b>Academic</b>			
Classrooms	12	468	5,610
Type A	2	300	600
Type B	4	350	1,400
Type C	2	400	800
Type D	2	575	1,150
Type E	2	830	1,660
Computer Lab	1	0	850
Education Commons	1	0	650
Training Rooms	2	0	625
Teaching Kitchen	1	0	850
Dance Studio	1	0	2,000
Art Studio	1	0	2,000
			12,585
<b>Administration</b>			
Offices	7	175	1,225
Desks	6	65	390
Reception	1	300	300
Sm. Conference Room	1	310	310
Lg. Conference Room	1	830	830
			3,055
<b>Other</b>			
Multi-Purpose Space	1	2,400	2,400
Multi-Purpose Entry & Desk	1	2,400	2,400
Gallery	1	2,200	2,200
Bowling Alley	1	0	3,000
Bike Storage	1	500	500
Lobby	1	2,300	2,300
			12,800
<b>Commercial</b>			
Café	1	2,700	
Back of House/Storage	1	500	500
Serving	1	500	500
Seating	1	1,700	1,700
			2,700

Figure 41: Program Breakdown

The organization of the program would best serve its occupants if it is versatile, not flexible. Flexible space implies that it can transform, that walls and furniture can be manipulated to form a variety of spaces. However, most individuals with intellectual disabilities, do their best when there is a sense of structure and stability. Many students with intellectual disabilities become disoriented and distracted when having to deal with new situations, changed environments or shifts in routine. Therefore, having a space that is not flexible but versatile in use is critical to the functional success of such a facility.

A catalog of the existing buildings on campus (Appendix I) helped to give this thesis an understanding of the size of existing residential, academic and recreational facilities on campus. From this, it was deduced that from the newest two residential buildings on campus, Northern Neck (2007) and Rogers (2012) the campus would best be served by a residential building housing between 150-250 beds. Furthermore, this catalog of information determined that the height of the building should be between four and six floors.



Residential ROGERS (2012)	SF	# of room	Total SF	# of		Total #		Total Bldg SF	Total # of Beds
				rooms	# of floor:	rooms	Total SF		
Room Type									
<b>3-Bedroom</b>									
Bedroom 01	100	2	200						
Bedroom 02	189	1	189						
Common & Kitchen	373	1	373						
Bath	18	1	18						
Closets	7	3	21						
<b>TOTAL</b>			<b>801</b>	11	2	22	17622		
				15	4	60	48060		
								<b>65682</b>	<b>127,049</b>
									<b>246</b>
<b>Northern Neck (2007)</b>									
Room Type									
<b>4-Bedroom</b>									
Bedroom 01	190	2	380						
Bedroom 02	134	2	268						
Common & Kitchen	273	1	273						
Bath	65	2	130						
Closets	7	7	49						
<b>TOTAL</b>			<b>1100</b>	3	1	3	3300		
				8	4	32	35200		
<b>3-Bedroom</b>									
Bedroom 01	229	1	178						
Bedroom 02	202	1	127						
Bedroom 03			117						
Common & Kitchen	331	1	337						
Bath	55	1	93						
Closets	7	5	35						
<b>TOTAL</b>			<b>887</b>	1	1	1	887		
				2	4	8	7096		
<b>2-Bedroom</b>									
Bedroom 01	229	1	229						
Bedroom 02	202	1	202						
Common & Kitchen	331	1	331						
Bath	55	1	55						
Closets	7	5	35						
<b>TOTAL</b>			<b>852</b>	3	1	3	2556		
				4	4	16	13632		
				<b>21</b>	<b>15</b>	<b>63</b>	<b>59371</b>	<b>123,137</b>	<b>182</b>

Figure 42: Study of GMU Existing Residential Buildings

### *Education Facilities*

The evolution of education facilities has grown over the years. Following the design principles of that of the Henry Ford factories, the 20<sup>th</sup> c. model for learning was the “Cells & Bells” which assumes that information passes along a linear path from teach to student (Figure 43). This process of learning is implied through the design principles of a linear corridor with classrooms organized along its edge.

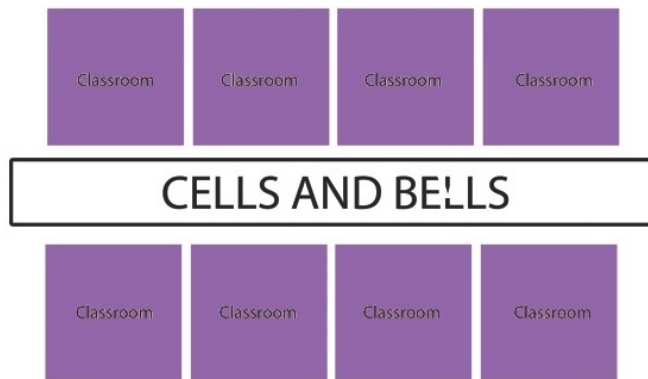


Figure 43: "Cells & Bells" model (image by author)

As architecture transitioned from the Cells & Bells model into the 21<sup>st</sup> century education facilities began to transform. No longer was the linear connector simply a hallway but instead a community gathering area, or “Learning Street” (Figure 44). The communal areas serve as versatile spaces that can be altered and used for various programs. This model allowed for changes and variety in educational practices and experiences.



Figure 44: Learning Street Model (image by author)

Traditionally sectional design of mixed-use educational facilities have taken on a “pancake” quality of stacking layers of program per floor. Whether the

building is single use, academic or residential, or multi-use, residential and academic, the traditional building model separates program by floor (Figure 45).

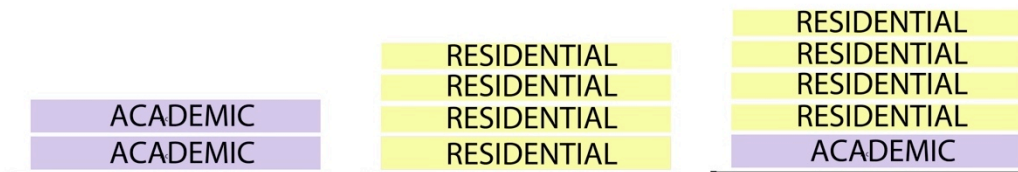


Figure 45: Section Diagram of typical mixed-use campus facility (image by author)

### *Residential Facilities*

Typically campus residential facilities are laid out in two ways. The first, more widely implemented, is to have multiple dormitory rooms that have a communal bathroom per 15-25 students and a communal space shared by either an entire floor of students, approximately 50 students or an entire building of student residents (Figure 46). The other campus residential model uses a suite model where the students live in small groups, 3-4 students, and share a common space and a bathroom within the suite (Figure 47).

The new trend in campus housing is to house students in a residential college type setting. This setting serves as an organizational pattern for a university to group students by academic interests and thus integrate academic activities into the community residential setting. This “new”

system is actually an age-old system first employed by the University of Oxford and University of Cambridge.

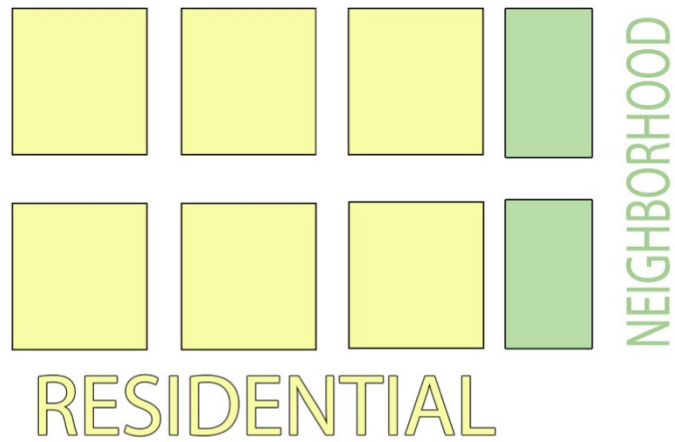


Figure 46: Campus Residential Life as Dorm

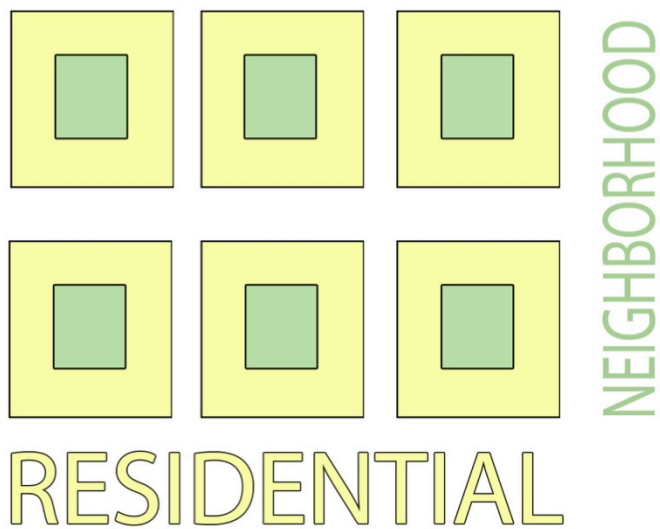


Figure 47: Campus Residential Life as Suite

### *Universal Design Principles & The Sensory Experience*

Strategies of Universal Design are becoming increasingly popular in architectural design. This design process and development took a great deal of inspiration from the Rehabilitation Act of 1973 and the Americans Disabilities Act. The Universal Design principles will be studied and applied to the architectural response.

Universal Design is a set of design guidelines that helps to ensure participation by all. The most appealing element of Universal Design is the idea that it benefits not just those with disabilities but benefits all. This way, those with disabilities are not singled out for their disability but used as a model for creating an environment built not for the archetypal man but for everyone. Universal Design is broken into a series of seven critical as described by the National Center on Accessible Instructional Materials:

- Equitable Use
- Flexibility in Use
- Simple and Intuitive Use
- Perceptible Information
- Tolerance for Error
- Low Physical Effort
- Size and Space for Approach and Use

elements

This thesis focuses on wayfinding as a main entity and importance of the universal design principles.

## Architectural Response

### *Design Approach*

The design process is best described metaphorically as a system of spaces rather than a predefined series of orderly steps. The spaces demarcate different sorts of related activities that together form the continuum of innovation. (Tim Brown, CEO of Ideo, “Design Thinking”)

As the history of people with intellectual disabilities reveals, most often these people were placed in mental institutions from a very early age. Since this practice continued up through the 1950’s, this memory is still fresh in many minds and therefore, a sensitive topic to most. Therefore, this thesis has taken a great sensitivity to think about the design of a mental institution and purposely integrate aesthetic properties that juxtapose the typical characteristics of such a building type.

### *Campus Site*

After extensive research, Site Option 02 was chosen as the site to pursue a design for this thesis (Figure 48). This site, located near Fenwick Library and the original four first considered all opportunities and constraints presented. One of the largest opportunities that this site presents is that it is at the core of campus and located directly along Collegiate Way. Furthermore, the location serves as a physical means of integrating academic and residential life that is currently divided on the campus.





Figure 48: Existing Site Plan (image by author)



Figure 49: Building Entrances

### *Initial Site Response*

#### Parti 01

The first option looked at creating a literal and physical connection between the academic building to the west of the site and the residential buildings to the east of the site. By taking the opportunity to stretch outwards along the site towards the adjacent buildings, the proposed structure acts as a gateway between the academic village and the residential village (Figure 50, 51). The wings of the buildings reach out and create small gathering spaces. The building study, in both plan and section, began to think about correlation of spaces and integration of all entities (Figure 52, 53).



Figure 50\_Parti Option 01 branching out to academic and residential districts (image by author)



Figure 51\_Diagram of Parti 01 (image by author)

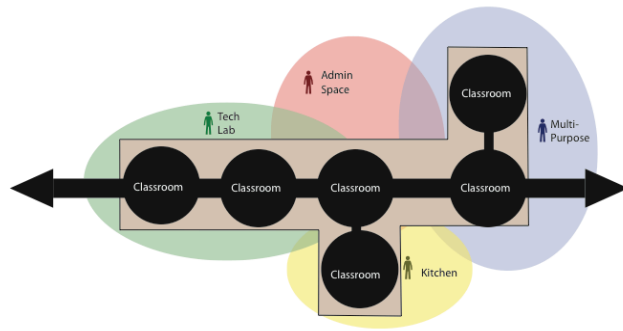


Figure 52\_Part01 plan diagram (image by author)

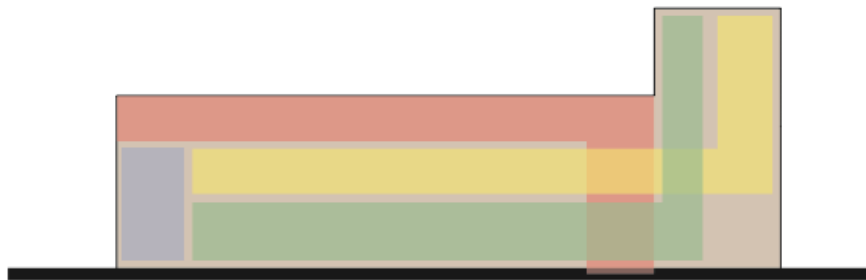


Figure 53\_Part01 section diagram (image by author)

## Parti 02

The second parti looked at creating a series of multiple buildings that would help to better define the existing green space heading towards Student Union I. Many existing campus buildings use an underpass between buildings to help to join the buildings together and to create a more insular feeling among the various green spaces on campus. By creating more than one building, there would be potential to create a greater variety of spaces. The plan study explores how the multi-purpose room could be separate from the rest of the educational facility but still relate back. The sectional study again looks overlapping spaces and integration of a variety of spaces between various levels and sections of the building.





Figure 54\_Parti Option 02 Two separate buildings creating formal spaces(image by author)



Figure 55\_Diagram of Parti 02 (image by author)

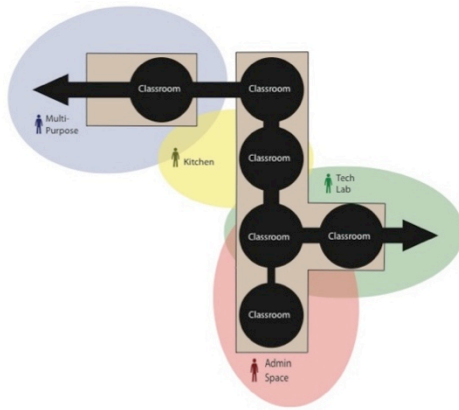


Figure 56\_Parti 02 plan diagram (image by author)



Figure 57\_Parti 02 section diagram (image by author)

### Parti 03

The third parti option studies the elongation of the site through the proposed building. Instead of extending outward, east to west, this proposal looks at how the building can span to the north and south along the site. This site affords the opportunity to create an extension of the existing green space in front of Student Union I. The campus is in need of a large outdoor identifying space.





Figure 58\_Part 03 showing the elongation of the proposed building (image by author)



Figure 59\_Part 03 indicating the large open space created by the elongated parti (image by author)

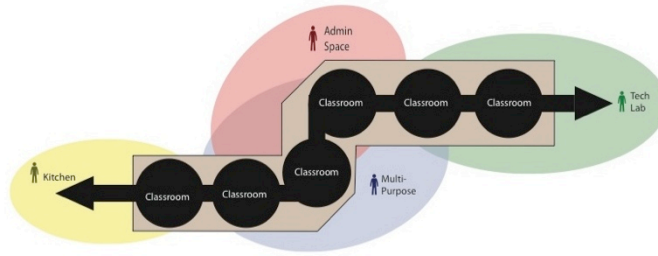


Figure 60\_Parti 03 Plan diagram (image by author)

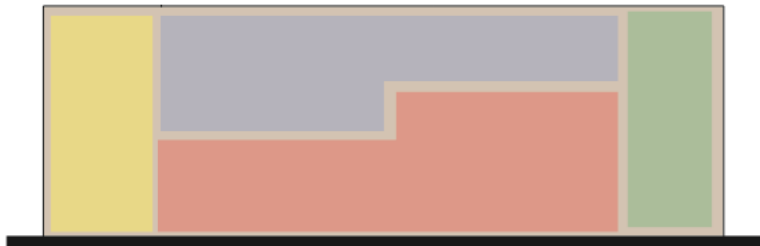


Figure 61\_Parti 03 section diagram (image by author)

### *Site Design Response*

After exploring these initial design options it became further apparent that there was a need for site intervention and the thesis evolved into first looking at a design for the site as a whole. Not only would this site design help to better inform the innate design of this proposed mixed-use facility but it would also be an opportunity to bring clarity to the university's overall sense of wayfinding in this area of the campus. The design reacted to the need for the campus to have a more well defined entry onto campus and took this as an opportunity to develop a northern campus entry. As Fairfax town center is located just 1 mile north of the site and with much traffic heading toward the site coming from the north, a northern entry seems appropriate. The site design worked through a number of iterations and concluded at a solution that helps to satisfy a number of areas. The new

site design (Figure 64) helps to 1) define a new north entry into campus, 2) create a large open space, “The Lawn,” for students to use for recreational activity, 3) intentionally works to bridge over Patriot Circle in a more purposeful manner, 4) helps to maintain all of the “Original Four” buildings on campus (something not attempted by former campus master plans), 5) creating a clear path for Collegiate way to continue through the northern portion of campus and across Patriot Circle, and 6) defining a more solidified location for a new mixed-use building on campus. The site design was developed by creating a physical model that could be reshaped to test certain site studies (Figure 63). The site development of the Northwest corridor of campus also helps to resolve a number of design principles as set forth by the most recent master plan for the university as described by EE&K. These design principles include:

- Identify areas for university growth
- Improve the university image as one arrives on campus
- Upgrade circulation to resolve existing issues and accommodate future growth
- Create signature places on campus
- Conserve resources and habitats using sustainable design principles
- Enhance the pedestrian environment



Figure 62: Physical Model of Existing Site Conditions

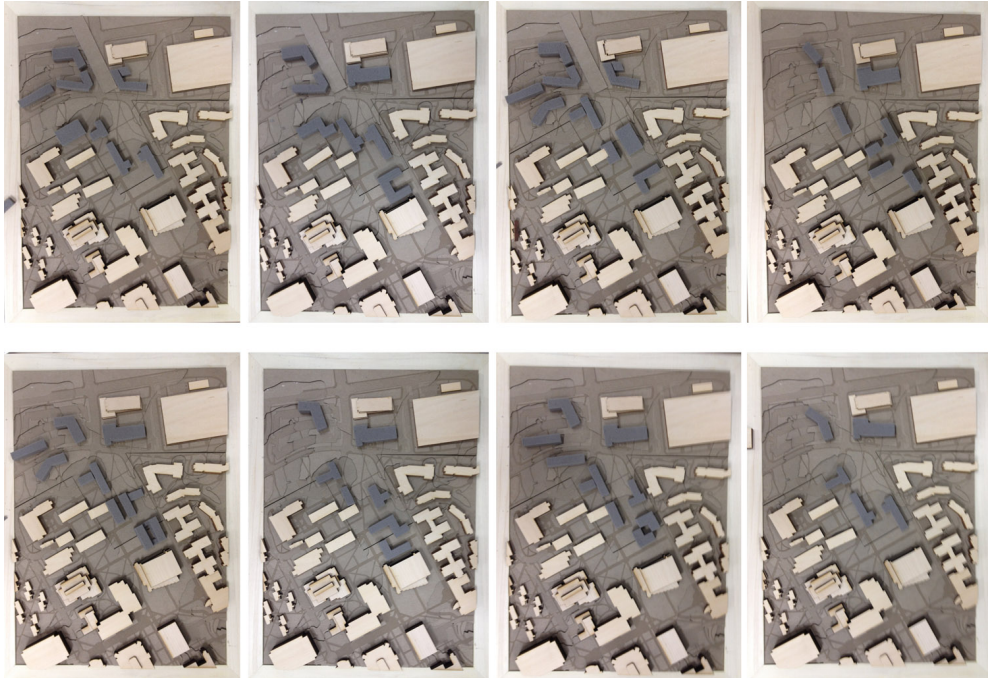


Figure 63: Physical Model Site Design Trials





Figure 64: Physical model of new site design



Figure 65: Campus Amenities near site (image by author)

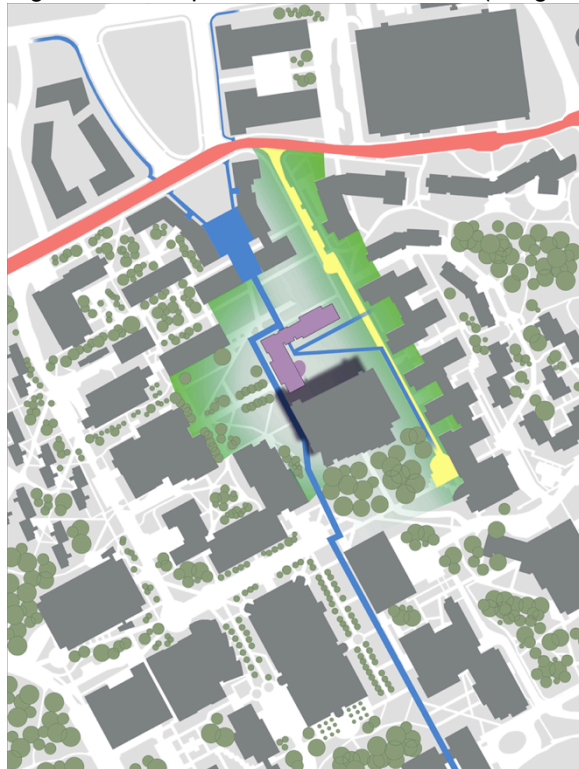


Figure 66: Opportunities and constraints of physical site





Figure 67: Three Dimensional rendering of site intervention

### *Building Design Response*

The initial building design was a reaction to the developed site design. As a result of the research and opportunities presented by this location (Figure 66) it was apparent that the design wanted to create a terminus for the newly developed scheme, to help better define the small turn off axis of Collegiate Way and create a more defined path for those heading towards the residential area on the eastern portion of campus. By intentionally leaving an underpass at the ground level of the building, the design helps to not cut off Collegiate Way to the courtyard at the center of this new, mixed-use building. The underpass serves to act as an indicator of the entry to

the building and relates back to a trend on campus to use underpasses as a means of creating smaller, intimate spaces while leaving it open for pedestrian movement.

Furthermore, the design of this building wanted to help better define small open spaces for gathering on campus. This idea has a direct correlation back to the intent of the Original Four buildings centered around a courtyard. So by creating more open spaces of this scale and nature, the design would bring the university back to its original design intent. The initial shape of the building, an L-shape, was the first aspect to be determined. This shape would help to define the corner of Collegiate Way creating a sense of wayfinding at the campus scale and creating better defined, small open spaces for gathering.

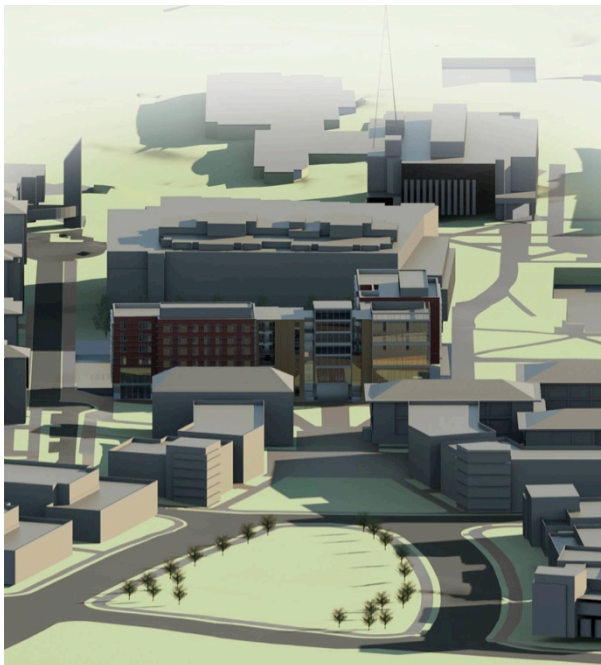


Figure 68: Aerial view of North Entry to building



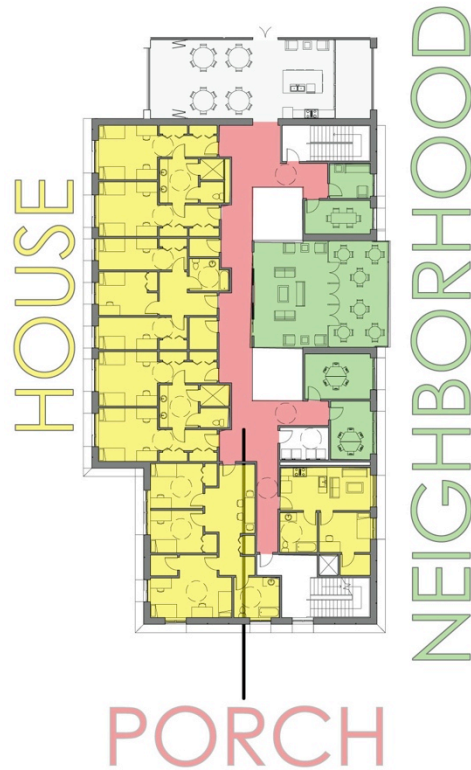
Figure 69: Underpass at building with Entry to lobby at left



Figure 70: Wayfinding at campus level

The second phase of the design was devoted to the organization of the residential life. The design of the residences took an approach that varied from the typical, aforementioned, campus residential design. Instead, the idea of the dorm is that based around the form of a

house. The rooms each have a “porch” or area for entry into the bedroom that allows for a small area of personal display. At the other end of the porch lies the “neighborhood,” an area mainly for recreational community gathering but also with smaller closed-in rooms that act as



study spaces or private gathering spaces (

Figure 71). These spaces help to bring the educational components of the building, vertically through the building and are a direct reaction to the needs of students with intellectual disabilities and their daily activities (Figure 72).

This space serves as a reaction to the affected social skills of some individuals with intellectual disabilities. Furthermore, a large, community kitchen services the students in this “house” and serves as an entry buffer between the rest of the building and this home.

The bedrooms provided in this “house” are of varying types and range from 1-4 beds per semi-suite and vary between 1 or 2 persons per room. This design is a reaction to the various needs of those with intellectual disabilities.

For instance, someone with Autism may have a tendency to be very private and not outright social. Therefore, by providing them with a single bedroom in a 3 or 4 person room, they are able to have their personal space. However, by still having to use a shared bathroom, this style of living becomes a learning process for someone with this social impairment. This attitude was also the approach created to the design intent of the “house” as a whole. By having the large, open, community space at the center of the house, flanked by study spaces, the design places emphasis on the need for social interactions and learning.

With the corridor of the house being single loaded with residences but having this be countered by the community spaces along the edge, the central, straight corridor serves as a means of servicing all the spaces but additionally aids in a clear sense of wayfinding at the house scale. Furthermore, having a large open corridor with light-wells entering the space from above, the corridors feel light, airy and open and help give better visual cues as to where the visitor or resident’s destination is located.

The intent of students to be housed in these facilities would not simply be Mason LIFE students. Instead, the housing is designed so as to be able to be used by all types and levels of students within the Mason community.

Depending on enrollment numbers in both the Mason LIFE program and the typical Mason college student, the type of student housed here could be

interchangeable. Instead of specific rooms being designated as meeting ADA requirements, all rooms generously fulfill requirements and then some.

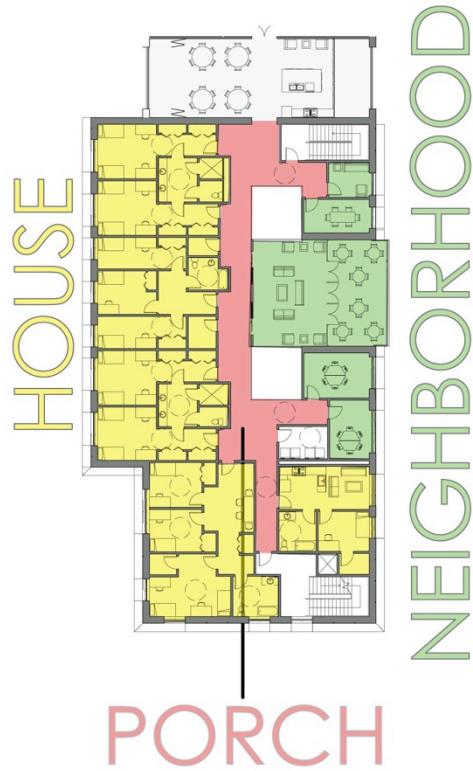


Figure 71: Design of House





Figure 72: Neighborhood portion of the "house"

The design evolved by placing two “houses” in an L-shape formation and having them connected via educational spaces that can be shared both by the education department on the lower floors and the residents of the upper floors. This connection helps to create a section rich in meaning and design intent and allows for larger, multi-use, educational spaces that can be used at all times of day. These spaces can include, traditional classrooms, a dance studio, and an art studio, all with large, double-height ceilings that feel light, airy and open and encourage learning and creativity among it’s inhabitants (Figure 73). Additionally the design works to keep a clear sense travel through the various levels of the building by maintaining the central corridor and aiding wayfinding again at the building scale.

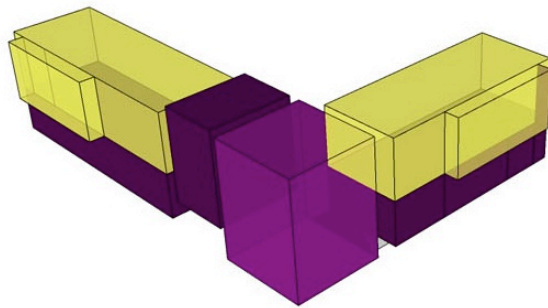


Figure 73: Vertical Connection of Education space from the ground floor up

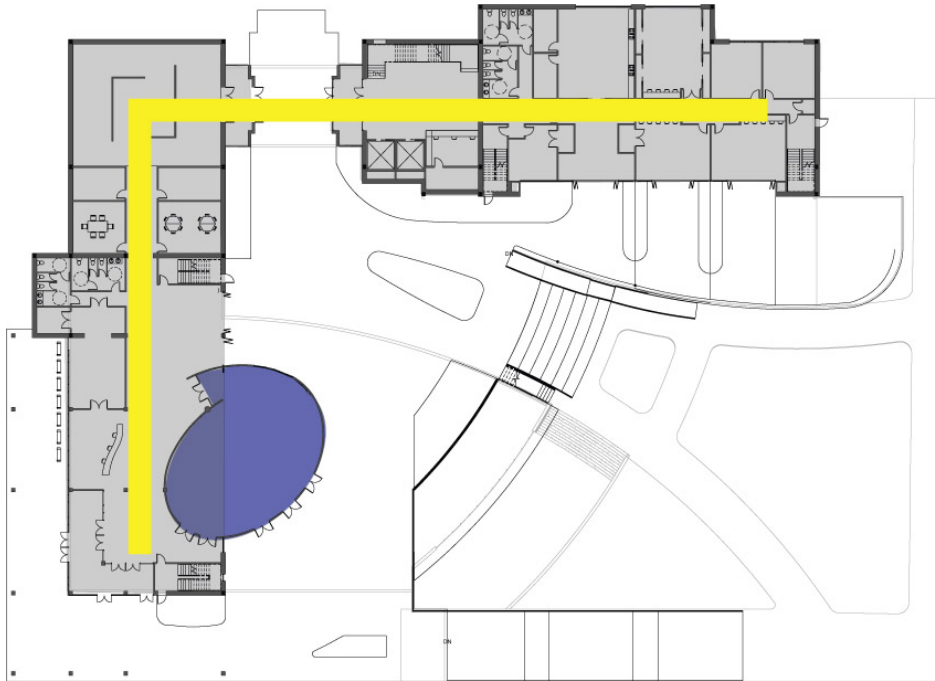


Figure 74: Central corridor promoting wayfinding

At the ground level, one can enter the building at 2 main entries. The first entry is from the north and into the main lobby. This entry is seen as the main entrance to the building for educational or residential purposes. However, at the southern tip of the building, an entry near Fenwick library can also be used as an access, more likely for the large, egg-shaped, multi-purpose space. This space is intended to be used by all, but is made large enough to include all of the current 50 students in the Mason LIFE program, all 100 mentors in the Graduate education program and any faculty or administrators (Figure 76). The choice of location and shape of this space help to define it as a unique moment in the building. The light structure of the building around the multi-purpose space is intended to allow the multi-purpose space to feel as if it is an object floating within the building.

At the northern wing of the building are the first set of educational spaces. These educational spaces are intentionally varied in shape and size as a reaction to the need for a variety of learning spaces. As previously mentioned, students with intellectual disabilities require a great deal of versatility, not flexibility, in their learning. By creating spaces that vary in size but remain the same from day to day (as in they do not have moveable/removable walls) the spaces can service a large variety of students and learning types. Additionally, the juxtaposition to the open courtyard spaces can serve as a way to open up the classrooms to the outdoors as well as create outdoor classrooms, unique spaces on campus. The intent is for

these education facilities to be used by not just Mason LIFE students, but by all campus students. Thus, by creating unique indoor/outdoor learning spaces, the typical Mason population of students and teachers will be drawn into this predominantly Mason LIFE building (Figure 75). To join the educational use of the northern wing with the recreational use of the western wing, a large student gallery helps to join the two. This juncture serves as a way to display student art and other educational learning displays as well as act as a recreational correlation to the multi-purpose space.

The second floor of the building has repeated educational spaces in the northern wing and in the western wing is a large café that can again be used by not simply the Mason LIFE students but by the faculty and all Mason students alike. This café, located adjacent to the library and in close proximity to the residence halls will help to bring the entire Mason community into this building. Additionally, the café can be used as teaching experience for the Mason LIFE students. The educators can help to guide the Mason LIFE students through daily activities in a food service and use this as an in-house way to learn about serving the public, cleaning, cooking and money skills.

The upper four floors (floors 3-6) are the residential areas that consist of the two “houses” joined by a vertical, educational core. Each of the various spaces serves as a reaction to the needs of the Mason LIFE students. For

instance the community space (Figure 72) is intended to have an orange hue as orange serves to foster socialization, energy and optimism. The teaching kitchen would have a yellow hue, as yellow is intended to foster creativity (Figure 82). Lastly, the typical classrooms would have a light blue hue as blue is a color that fosters a calming sense and learning (Figure 83).

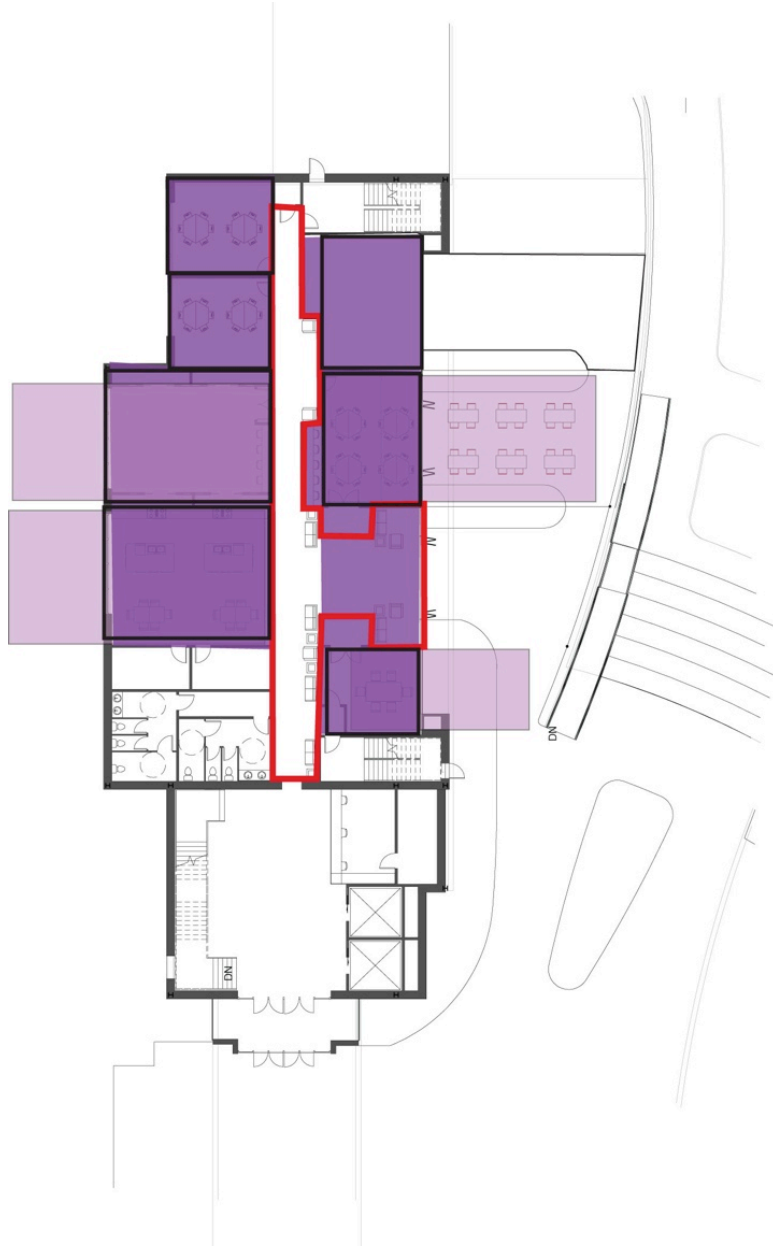


Figure 75: Variety in education spaces and creation of outdoor classrooms





Figure 76: First Floor Plan



Figure 77: Second Floor Plan



Figure 78: Third Floor Plan





Figure 79: Courtyard spanning between academic and residential districts of campus



Figure 80: View from cafe into multi-purpose space and beyond



Figure 81: Dance studio at vertical education core



Figure 82: Teaching Kitchen





Figure 83: Classroom and outdoor classroom



Figure 84: North Elevation



Figure 85: East Elevation and Section through Northern wing



Figure 86: South elevation and section through western wing

## Conclusions

During the thesis defence presentation, the jurors commended the thesis for its desire to study and react to the existing collegiate level buildings, both academic and residential. The jury also praised the idea of the thesis as a whole and stated that it had been clearly and thoroughly researched.

Emphasis was placed on the need for a better study of the facades and how they may become less clearly residential and more amorphous as the program of the building suggests. Furthermore, it was suggested that a more determined study be undertaken to help define the appropriate material use of the building. The jury understood the intent of the terracotta exterior as a means of relating to the campus context but having a modern twist, but additionally wanted the terracotta to have a more formal meaning for the design.

In further research, beyond this thesis study, it was suggested that a more detailed look be taken to react to the finer needs of those with intellectual disabilities. While all of the reactions within this thesis were applauded, the next level of this process would be to think about the overall quality of interior spaces and materials used that can help to aid one's learning experience.

This thesis experience as a whole has been gratifying and self-satisfying. The university has hopes to use some of the research completed for this thesis in their campus endeavor's to create a home for Mason LIFE. The process has been exciting, interesting and needless to say, exhaustive.

## Appendix

Table 1: Catalog of campus buildings

Building Name	Use	# of Stories	Year Built
Northeast Module I	Administrative	1	200
Northeast Module II	Administrative	1	200
VA Archives & Shops	Administrative	1	200
Central Heating/Cooling Plant	Administrative	1	197
Central Warehouse	Administrative	1	199
Row Hall	Administrative	1	196
Aquatic Center	Recreational	1	199
Senhowe Hall	Residential	1	199
Wild Development Center		1	200
Thompson Hall	Academic	2	197
Nley Building	Academic	2	196
West Building	Academic	2	196
East Building	Academic	2	196
Structure Hall	Academic	2	196
College Hall	Academic	2	198
Ne Arts Building	Academic	2	198
Ug Hall	Academic	2	196
Police & Safety Quarters	Administrative	2	200
Maintenance	Administrative	2	197
Facilities Administration	Administrative	2	199
Snow Building	Administrative	2	199
Eld House	Recreational	2	198
Maris Theater	Recreational	2	197
Art & Design Building	Academic	3	200
Outside Dining	Dining	3	200
Recreation/Athletic Complex	Recreational	3	197
Berty Square	Residential	3	200
Shover Hall	Residential	3	198
Franklin Hall	Residential	3	198
Jams Hall	Residential	3	199
McNoll Hall	Residential	3	199
Building I	Residential	3	197
Building I	Residential	3	197
Building I	Residential	3	197
Building I	Residential	3	197
Building I	Residential	3	197
Building I	Residential	3	197
Building I	Residential	3	197
Building I	Residential	3	197
Building I	Residential	3	197
Building I	Residential	3	197
David King Jr. Hall	Academic	4	198
Quia Building	Academic	4	201
Student Union I	Academic	4	197
Robinson Hall	Academic	4	197
Enterprise Hall	Academic	4	199
Concert Hall	Recreational	4	199
Triot Center	Recreational	4	198
McKinson Hall	Residential	4	198
Merest Hall	Residential	4	198
Madison Hall	Residential	4	198
Monroe Hall	Residential	4	198
Kennedy Hall	Residential	4	199
Roosevelt Hall	Residential	4	199
Marshall Hall	Residential	4	198
Johnson Center	Student Center	4	199
Lib II - The HUB	Student Center	4	198
Science Technology I	Academic	5	198
Science Technology II	Academic	5	199
Innovation Hall	Academic	5	200

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