

Spring 5-2014

# Visual Analysis and Design Proposal for the Bridges Organization Day Facility in Rockledge, Florida

Lesa N. Lorusso

University of Nebraska-Lincoln, leelouu@gmail.com

Follow this and additional works at: <http://digitalcommons.unl.edu/archthesis>



Part of the [Interior Architecture Commons](#), [Other Architecture Commons](#), and the [Social and Behavioral Sciences Commons](#)

---

Lorusso, Lesa N., "Visual Analysis and Design Proposal for the Bridges Organization Day Facility in Rockledge, Florida" (2014). *Theses from the Architecture Program*. 150.

<http://digitalcommons.unl.edu/archthesis/150>

This Article is brought to you for free and open access by the Architecture Program at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Theses from the Architecture Program by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

**VISUAL ANALYSIS AND DESIGN PROPOSAL FOR THE BRIDGES  
ORGANIZATION DAY FACILITY IN ROCKLEDGE, FLORIDA**

By

Lesa N. Lorusso

A THESIS

Presented to the Faculty of

The Graduate College at the University of Nebraska

In Partial Fulfillment of Requirements

For the Degree of Master of Science

Major: Architecture

Under the Supervision of Professor Betsy Gabb

Lincoln, Nebraska

May, 2014

VISUAL ANALYSIS AND DESIGN PROPOSAL FOR THE BRIDGES  
ORGANIZATION DAY FACILITY IN ROCKLEDGE, FLORIDA

Lesa N. Lorusso, M.S.

University of Nebraska, 2014

Adviser: Betsy Gabb

The population by age of the client and staff at the Bridges Facility in Rockledge, Florida represent a microcosm of the population of Brevard County, Florida. The shared history of two non-profit organizations that began in Brevard County, FL in the mid twentieth century is remarkable. NASA began in 1958, and the Bridges organization began in 1956. The historically significant American community of Brevard County, FL now faces the challenges of a new focus without the NASA space shuttle program and accommodating an increasingly aging population, while the similarly aged Bridges organization faces similar organizational and population challenges as well.

This study first provides a historical background of Brevard County, FL and the Bridges organization. As the Bridges facility in Rockledge, Florida undergoes a renovation the administration seeks to close the gap between new construction and the renovation of the existing structure. The renovation and addition to the Bridges facility is analyzed with a focus on the application of Inclusive Design, Universal Design and Eden Alternative® principles along with combined qualitative and quantitative methodologies.

Copyright 2014, Lesa Lorusso

## Table of Contents

1. Introduction.....	1
1.1. The Aging Population in Brevard County, Florida.....	2
1.2. The Bridges Organization, Rockledge, Florida.....	5
2. Review of Literature.....	7
2.1. The Effect of Interior Design on Health, Safety, and Welfare.....	8
2.2. The Effects of Design Elements on Healthcare Interior Environments.....	8
2.3. Visual Analysis as a Means To Acquire Objective Knowledge.....	14
2.4. Designing for Inclusivity: A Background of Designing for Social Responsibility.....	15
2.5. The Eden Alternative: A Design Tool for Culture Change in Healthcare.....	18
3. Explanation of Methodologies.....	23
3.1. Qualitative vs Quantitative Ways of Knowing.....	23
3.2. Qualitative Reasoning Methods.....	24
3.2.1. Programming Interviews.....	24
3.2.1.1. Bridges Organization Interview.....	24
3.2.1.2. Interview with Terri McNally, RN, MSN.....	27
3.2.1.3. Interview with Rosemary Laird, MD.....	29
3.2.2. Design Thinking: A Background on the Process of Ideation.....	32
3.2.2.1. Design Thinking Workshop: The Bridges Organization.....	36
3.3. Quantitative Reasoning Methods.....	51
3.3.1. Behavior Mapping.....	51
3.3.2. Results from the Staff Survey and Statistical Analysis.....	57
4. Explanation of Design Related Theories and Principles.....	61
4.1. Explanation of the Link between Inclusive Design Principles, the Eden Alternative Philosophy and Evidence Based Design.....	65
4.2. Explanation of the Relevance of Design Thinking Within the Context of This Study.....	65
5. Statement of the Current Problem.....	66
5.1. Description of the Elder Population within the Area of Focus.....	67
6. Visual Analysis of the 1694 Cedar Street Facility.....	68
6.1. Explanation of the Interior Design Process.....	68
6.2. Assessment of existing Conditions of the Facility.....	69
6.2.1. Assessment of Existing Conditions of the Facility: Common Areas-Public.....	71

6.2.1.1. Analysis of Users, Needs and Preferences.....	73
6.2.2. Assessment of Existing Conditions of the Facility: Common Areas Private.....	78
6.2.2.1. Analysis of Users, Needs and Preferences.....	82
6.2.3. Assessment of Existing Conditions of the Facility: Administrative Areas.....	87
6.2.3.1. Analysis of Users, Needs and Preferences.....	89
7. Conclusion.....	92
7.1. Restatement of the problem.....	92
7.2. Explanation of the Design Analysis Related to Methodologies and Theories.....	93
7.3. Summary of Findings.....	94
7.4. Limitations of the Study.....	96
7.5. Conclusions.....	96
References.....	99
Appendix 1: Survey Questionnaire	
Appendix 2: The Bridges Organization Background Document	
Appendix 3: The Bridges Organization, Programs and Services Document	
List of Multimedia Objects	
Figure 1: Total Brevard County Florida Population By Year.....	1
Figure 2: Percentage of Brevard County Florida Residents Aged 65 and Older By Year..	1
Figure 3: Brevard County's Silver Tsunami.....	5
Figure 4: Design Thinking Workshop Introduction Photo.....	36
Figure 5: Design Thinking Workshop Finding Common Themes Exercise.....	38
Figure 6: Design Thinking Workshop Finding Common Themes Exercise: Results.....	38
Figure 7: Design Thinking Workshop The Five Whys/Whats Exercise.....	39
Figure 8: Design Thinking Workshop The Five Whys/Whats Exercise: Privacy.....	39
Figure 9: Design Thinking Workshop Stakeholder Mapping Exercise Results.....	46

Figure 10: Design Thinking Workshop Stakeholder Mapping Exercise.....	46
Figure 11: Activity: Thorns, Buds & Roses.....	50
Figure 12: Activity: Thorns, Buds & Roses Exercise Results.....	50
Figure 13: Activity: Thorns, Buds & Roses Exercise .....	50
Figure 14: Behavior Map Data.....	54
Figure 15: Behavior Map: Bridges Facility, 9:30 AM Wed Feb 19, 2014.....	55
Figure 16: Behavior Map: Bridges Facility, 2:00 PM Fri Feb 21, 2014.....	56
Figure 17: Five Principles of Inclusive Design.....	62
Figure 18: Ten Principles of the Eden Alternative.....	63
Figure 19: Twelve Principles of Evidence-Based Design.....	62
Figure 20: Annotated Floor Plan of the Existing 1694 Cedar Street Facility and Area of Planned Expansion.....	70
Figure 21: Street View of 1694 Cedar Street, Rockledge, Florida.....	70
Figure 22: Satellite View of 1694 Cedar Street, Rockledge, Florida.....	71
Figure 23: Existing Lobby/ Reception Area.....	72
Figure 24: Existing Lobby/ Reception Area Floor Plan.....	72
Figure 25: Existing Lobby/ Reception Area .....	73
Figure 26: Existing Lobby/ Reception Area Bathroom .....	73
Figure 27: Rendered Floor Plan of design concept for 1694 Cedar Street, Rockledge, FL, Drawn by J. Reed, Eastern Florida State College 2013 .....	74
Figure 28: Perspective view design concept of the reception area and lobby, 1694 Cedar Street, Rockledge, FL, Drawn by J. Reed and B. Mozo Eastern Florida State College 2013 .....	75

Figure 29: Floor Plan Depicting the Kitchen, Enrich Classroom and Laundry/Changing Room.....	79
Figure 30: Interior View of the Enrich classroom looking towards the back wall.....	79
Figures 31, 32 & 33: Interior photos of the Enrich Room.....	80
Figures 34, 35 & 36: Interior photos of the iForce Classroom.....	81
Figure 37: Perspective view of design concept of the Enrich Classroom, 1694 Cedar Street, Rockledge, FL, Drawn by J. Reed and B. Mozo Eastern Florida State College...85	
Figure 38: Perspective view of a proposed sensory area in the Enrich Classroom, Drawn by S. Bethoney, Eastern Florida State College 2013.....	87
Figure 39: Interior photos of a staff office.....	88
Figure 40: Interior photo of existing conference Room.....	88



## **1. Introduction:**

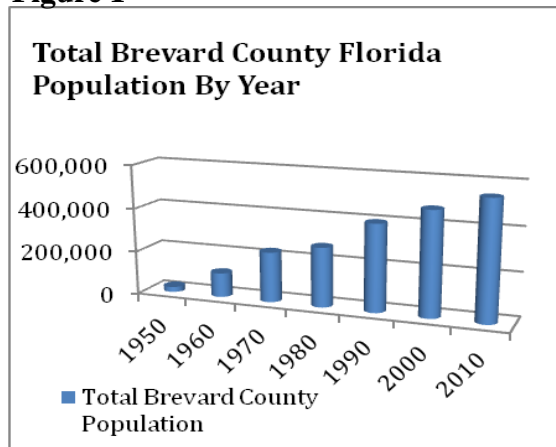
Human factors play a major role in the effectiveness of the interior environment. The unique requirements of the human body must be considered by designers in an effort to support the public's health, safety and welfare within the built environment. According to the National Council for Interior Design Qualification (NCIDQ), NCIDQ certificate holders and licensed interior designers are "trained to create spaces that meet local, state and provincial building codes and the requirements of the Americans with Disabilities Act, as well as the needs of the intended user. (NCIDQ, 2014) The Definition of health, safety and welfare can be expanded to include an emphasis on long-term issues of health maintenance, psychological well-being, and personal growth. (Danko, Eshelman & Hedge, 1990)

As the Bridges Organization in Rockledge, Florida renovates its 1694 Cedar Street location, the administration seeks to close the gap between new construction and the renovation of the existing structure. The Bridges Organization is a community based not for profit entity that has supported children and adults with disabilities in Brevard County, Florida for more than fifty years. (Appendix 2) The President/CEO of the Bridges Organization, David Cooke stated that approximately 37% of clients are over the age of 50. (Cooke, 2013) Due to the age and disabilities of the clientele, Inclusive Design and Eden Alternative® principles along with combined qualitative and quantitative methodologies are used to provide a thorough analysis of the renovation of the facility.

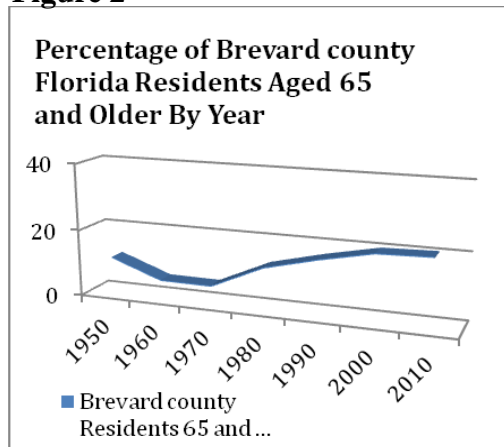
## 1.1 The Aging Population in Brevard County, Florida

Brevard County resides on the eastern coast of Florida and has played an integral role in the history of the United States. The county was created in 1854 and comprises of approximately 1,200 square miles. The county is uniquely long and narrow at 72 miles long and 20 miles wide and consists of 200 square miles of waterways. (Tipton, December 7, 2012) Originally a haven for fishing and sporting enthusiasts, Brevard County has long been the home for the National Aeronautics and Space Administration (NASA) located in Cape Canaveral, FL. NASA was created in 1958 and was preceded by the National Advisory Committee for Aeronautics (NACA). NACA was created as an advisory committee to coordinate research in the field of aeronautics and missiles, and quickly became the leading research organization in aeronautics and the new field of astronautics contributing to the first supersonic flights and the genesis of the human space program. NACA passed the torch to NASA and the organization's move to Brevard County, FL in the mid twentieth century created a boom in Brevard County's population that continued through 2010. (Lorusso, 2012)

**Figure 1**



**Figure 2**



**Data Shown in Figure 1 and Figure 2 from US Census Bureau**

Significant economic changes have occurred since NASA opened its doors in Brevard County over seventy years ago. Figure 1 shows the biggest population burst in Brevard County occurred between the years of 1960 and 1970 at 206%, which correlates with the creation of the US space program. Since 1990, however, the percent increase in growth of the population of the county known by residents as the “Space Coast” has slowly declined from 46% in 1990 to 14% in 2010. The age of the Space Coast has changed as well over the last seventy years. Brevard County had one of the youngest average ages in the nation in the 1960’s and by 2012 is the 9<sup>th</sup> oldest county in Florida and 24<sup>th</sup> oldest in the nation. Figure 2 illustrates the rise of residents aged 65 and older in Brevard County, Florida since 1950. Brevard County Manager Howard Tipton echoed BCOA findings in his presentation “Navigating the New Normal” when he stated that for the first time in Brevard’s history, “we have more people over 65 than under age 15.” Tipton reported that current projections predict the average age in Brevard County will be 50 by the year 2020. (Tipton, December 7, 2012)

Many attribute the increase in the aging population in Brevard County to the historic changes that have recently occurred at NASA. The Space industry has long been the core of Brevard County’s economy. In fact, at the peak of the shuttle program in 1991 when NASA built the Endeavour, nearly 32,000 people worked at the Kennedy Space Center in Cape Canaveral, FL. By 2006 the total number of jobs had dropped to 16,000. A 2008 economic impact study conducted by NASA found the agency accounted for \$4.1 billion in economic output for the state of Florida, 40,802 jobs and \$2.1 billion in income mainly focused within Central Florida. (Leinwand Leger, 2011) The space program is now in transition following the iconic end of the shuttle program and a

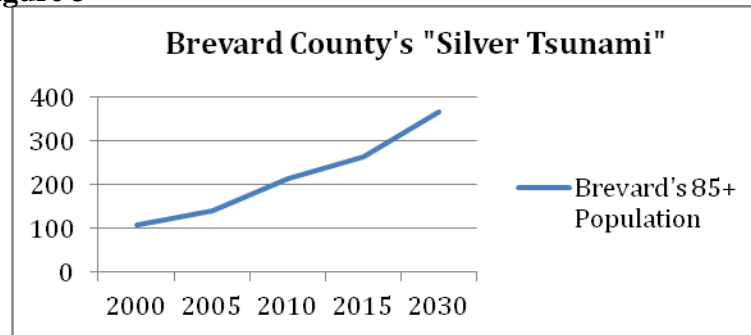
shift in focus for the organization as a whole. In May 2011 the Space Coast reported the steepest employment decline in the state, with a total of 6,800 jobs lost.

Although the outcome from the changes at NASA at first seemed undeniably bleak to many Brevard County residents, the area remains a major location for tourism. Neighboring Orange County has 55 million visitors annually and Port Canaveral draws nearly 4 million annual visitors with the Kennedy Space Center Visitor Complex and new Atlantis exhibit bringing in 1.7 million visitors annually. (Tipton, December 7, 2012)

While the shuttle program has ended and the average age of residents within Brevard County has aged significantly, it seems that the engineers and scientists and people previously employed by the space program have chosen to retire on the Space Coast. The population projections for Brevard County show that residents 65 and older will grow significantly over the next twenty years. The Brevard County Commission on Aging (BCOA) dubbed the growing number of residents aged 85+ “Brevard’s Silver Tsunami,” as shown in figure 3. Brevard County is currently home to more than 160,000 Baby Boomers, Americans aged over 65, which makes up ten percent of the county’s total population.

Figure 3 illustrates the aging of Brevard's Boomer population that is expected to increase 104% in the 85 and older population between 2015 and 2030. (Koechlein, 2012)

**Figure 3**



**Source: Brevard County Commission on Aging**

## **1.2 The Bridges Organization, Rockledge, Florida**

The Bridges Organization began in Brevard County, Florida in 1956 as the Brevard Training Center (BTC). The founders of the organization were parents seeking educational services for their children with disabilities other than the large publically funded institutions for the “retarded and feeble minded.” At that time, the prevailing medical advice regarding people with disabilities was institutionalization and the founders of BTC collaborated to create a groundbreaking alternative for their loved ones. The Brevard Training Center joined the Association for Retarded Citizens (ARC) and was eventually renamed “The ARC of Brevard.” (Bridges, 2013)

The disabled community garnered support with the advent of the American civil rights movement of the 1960's. New legislation was created after an historic national acknowledgement in 1971 of inhumane conditions at the Willowbrook Institution for mentally ill or delayed children in Staten Island, New York. By the mid 1960's,

Willowbrook was filled to more than double its capacity and residents of the state run institution were inhumanely used as test cases for hepatitis studies. Residents lived in abhorrent conditions that were described by Robert F. Kennedy in 1965 as a “snake pit.” (DeBello, 2008)

After the unethical practices of the Willowbrook Institution were made public, advocates, families and industry leaders raised a collaborative outcry for reform and the US federal government responded with legislative funding known as the “Home and Community Based Waiver.” This offered federal funding to states that wrote their own waivers to deliver community based services specifically to children and adults with developmental disabilities. This federal funding enabled the ARC of Brevard to expand services to include group homes, day programs, transportation and supported living services. (Bridges, 2013) Funding sources have increased over the years to include the United Way, the Brevard County School Board, the Division of Rehabilitation Services, Housing and Urban Development, etc. Many clients also rely on Medicaid to pay for services. (Matchett & Cooke, 2013)

The ARC of Brevard was renamed Bridges during the organization’s fiftieth year anniversary. Today, Bridges provides over 20 different programs ranging from therapy centered day programs, to job development, respite, transformational, veteran’s rehabilitation services, etc. Upcoming projects include the Cedar Academy Charter School, Senior Care of Brevard, Work-Site Evaluations, Comprehensive Vocational Evaluations and Pre-Placement Training. See Appendix 2 for a comprehensive statement provided by Bridges that outlines the organization’s goals and services. See Appendix 3 for a list provided by Bridges that details a list of existing and upcoming

services provided. (Bridges, 2013)

As Brevard County's population continues to age, so does that of the Bridges organization. Bridges President and CEO stated that key issues facing the community-based service provider today include the evolution of services geared toward an aging population with developmental disabilities, assisting the needs of parents of clients who are now themselves aged 80-90, the clinical link between Downs Syndrome and onset of Alzheimer's in the late 40's and reductions in Medicaid and Medicare which now comprise a majority of the company's income. (Cooke, 2013)

## **2. Review of Literature**

The review of the literature indicated the effectiveness of interior design as a means to support the long-term issues of health maintenance, psychological well-being, and personal growth within a healthcare facility. After an extensive search on research on the effects of evidence-based design, and the interior healthcare environment, the literature provided represents the most recent publications found on the subjects within this study. Some of the data is published in the literature provided a positive correlation between Inclusive Design principles, Evidence Based Design and the Eden Alternative® Philosophy in the healthcare environment. Based on the age demographic data collected from interviews with staff from the Bridges Organization, it was found that the age of the clientele was consistent with a healthcare facility serving a population predominantly over fifty years of age (Cooke 2013). This correlation between the principles and philosophies stated above established this study's framework for visual analysis of the Bridges Organization facility located at 1694 Cedar Street, Rockledge, Florida.

## **2.1 The Effect of Interior Design on Health, Safety, and Welfare**

Danko, Eshelman and Hedge stated that health is more than the absence of sickness. Their work identifies the expansion of the definition of health safety, and welfare to include a greater emphasis on long-term issues of health maintenance, psychological well-being, and personal growth (Danko, Eshelman & Hedge, 1990). The authors state the relevance of the changing nature of illness from acute infectious diseases to lifestyle related disorders, combined with a growing awareness among the general public about hidden environmental risks.

Rising health care costs have caused the health insurance industry to focus on policies geared toward long-term physical and emotional well-being (Danko, Eshelman & Hedge, 1990). Research demonstrates that elements of the physical environment correlate directly with health-related outcomes which has led to the development of Evidence Based Design (EBD) (Bosch & Nanda 2011). The term Evidence Based Design is defined by the Center for Health Design as “the process of basing decisions about the built environment on credible research to achieve the best possible outcomes (Center for Health Design 2008).”

## **2.2 The Effects of Design Elements on Healthcare Interior Environments**

Research has shown that elements of interior design within healthcare environments directly affect medical outcomes. Conditions or experiences shown by medical researchers to be healthful including social support and pleasant distraction or entertainment are becoming more important considerations in the creation of new healthcare facilities (Ulrich, 2001). The traditional perspective in healthcare design was that the main requirement of healthcare facilities should be the reduction of infection or



disease risk exposure. However, such a narrow focus has created healthcare facilities with environments that are institutional, stressful and actually detrimental to care the quality of care (Ulrich, 1991, 1992, 2001; Horsburgh, 1995). Over time, the emphasis has shifted towards a perspective of designing healthcare environments that are 'psychologically supportive' (Ruga 1989) and referred to as healing environments (Stichler, 2001, Sloan Devlin & Arneill, 2003, Schweitzer et al 2004). A broader perspective, as approached in studies conducted by Dr. Roger Ulrich for the Centre for Health Systems and Design insists that the psychological and social needs of patients should be strongly emphasized along with the traditional economic and biomedical concerns that include disease risk exposure and functional efficiency (Ulrich, 2001).

Research indicates that there are environmental characteristics that have been found to influence health outcomes. These characteristics include: noise, windows vs. no windows, flooring materials, and other environmental factors including music, art, and nature (Ulrich, 2001).

- The Effects of Noise and acoustic Quality within a healthcare environment
  - Research indicates that noise levels in healthcare settings are often high and are reported to range from sixty five to eighty five decibels. This level of noise has been shown to produce levels of annoyance among patients as well as stress in staff (Bayo, Garcia, and Garcia, 1995, Ulrich, 2001) Studies suggest that unsatisfactory noise levels within healthcare settings can detrimentally affect outcomes including sleeplessness and elevated heart rate (Yinnon et al, 1992, Ulrich, 2001)
  - Studies have shown positive effects within an interior environment relative to

patient health and wellbeing when measures were taken to prevent negative effects of noise. Hagerman *et al.* (2005) conducted trials that focused on preventing negative effects of sounds. They studied the effect of noise-absorbing ceiling tiles on patients admitted to an intensive coronary care unit. Interestingly, the rehospitalization rate was significantly higher in the group experiencing negative acoustics. Further analysis showed significant effects favoring the use of noise-absorbing techniques within the interior for pulse amplitude in patients. Good acoustics were also shown to positively affect the perceived quality of care (Dijkstra, 2006).

- In addition to being an unwanted distraction within an environment, sound can also be included within an interior as a positive distractor. Williamson (1992) studied the effects of ocean sounds during the night on postoperative coronary artery bypass graft patients after transfer from an intensive care unit. The patients hearing ocean sounds were observed to score higher on a self-reported scale measuring sleep which indicated better sleep with the ocean sounds (Williamson, 1992, Dijkstra, 2006).
- Studies have also used music as a part of the ambient environment. Thorgaard *et al* (2004) studied the effects of music on the perceived pleasantness of the sound in a cardiac laboratory. The study indicated that in the music group, 91% of patients undergoing coronary procedures described the sound environment as pleasant or very pleasant compared with 56% in the non-music environment group.
- The Effect of Windows vs No windows Within an Interior Space

- Research has shown notable evidence of negative effects of windowless healthcare environments on outcomes. Studies have linked the absence of windows in critical or intensive care with high rates of anxiety, depression and delirium relative to rates for similar units with windows (Keep et al, 1980; Parker & Hodge, 1976; Ulrich, 2001) Studies indicate that the lack of windows within healthcare environments may worsen outcomes by reducing positive stimulation and aggravating the negative effects of sensory deprivation (Ulrich 2001).
- Employees with window views of nature reported less stress, better health status and higher job satisfaction in a variety of workplaces than other comparable groups with view of built environments, and especially when compared to employees lacking windows all together. (Leather et al, 1997)
- Boyce, Hunter and Howlett found that windows are strongly favored in work places for the daylight they deliver and the view they provide, as long as they do not cause visual or thermal discomfort or a loss of privacy. Their study found that windows that provide a view out as well as daylight can reduce stress in the workplace (Boyce et al 2003). The use of windows is critical because research shows that poorly designed daylighting will deliver either inadequate amounts of light or copious amounts of light leading to discomfort and glare. One aspect of daylight delivered through windows that consistently separates it from electric lighting is the greater amount of light delivered to vertical surfaces, and high illuminances on vertical surfaces are associated with increased preference and a reduced sense of gloom (Shepherd et al, 1992; Boyce et al 2003)
- The Effect of Flooring Materials Within a Healthcare Environment

- Research has shown that the type of flooring materials specified within a healthcare interior can affect perceived comfort and safety of patients, their families as well as employees. There are indications that carpet is superior from the standpoint of certain patient-centered considerations (Ulrich, 2000b).
- Elderly patients are reported to walk more efficiently, meaning longer steps at greater speed, and feel more secure on carpet compared to vinyl surfaces (Wilmott, 1986). Also, friends and family were observed to make longer visits to rehabilitation patients when patient rooms were carpeted rather than covered with vinyl composition flooring. Patients are reported to prefer carpet to vinyl flooring for reasons including slip resistance and perceived comfort. Interestingly, however, employees are reported to prefer vinyl flooring by eighty three percent mainly because of greater ease in cleaning (Harris, 2000; Schweitzer et al, 2004).
- The Effect of Environmental Factors Including Music, Art, and Nature
  - In addition to the environmental factors previously discussed, there are other factors that have been the focus of studies related to the interior environment of healthcare interiors including music, art, nature and indoor air quality (Ulrich, 2000a, 2000b) Studies have shown, across a variety of patient groups that pleasant music, especially controllable by patients, can often reduce anxiety or stress and help patients cope with pain (Standley, 1986; Menegazzi et al, 1991)
  - Studies have measured patient emotional reactions to different types of art in interior healthcare environments (Ulrich 2001). The majority of patients are shown to prefer realistic art depicting serene natural environments with

scattered trees and or non-turbulent water features (Carpman & Grant, 1993; Ulrich 2001) interestingly, abstract art and emotionally challenging or provocative art is consistently shown to be disliked by patients. Although some healthcare staff have been observed to react positively to abstract or challenging images, evidence suggests that this type of content can increase stress and worsen outcomes in patients (Ulrich 2001). Therefore, caution should be used before displaying ambiguous, challenging art in patient spaces or high-stress waiting and treatment areas (Ulrich 2001)

- Diette *et al* (2003) compared the effects of natural murals and nature sounds on patients undergoing flexible bronchoscopy with a control group without either. Pain control during the procedure was shown to be better in the intervention group, but no differences were found in patient-reported anxiety (Diette et al 2003)
- Studies have shown that the use of nature in the form of gardens in healthcare facilities will alleviate stress if it contains green or relatively verdant foliage, flowers, non-turbulent water, and compatible nature sounds including birds, water and breezes (Marcus & Barnes, 1999; Ulrich, 1999)
- Other ways to bring nature into the healthcare environment that have been studied include providing nature window views for patient rooms, waiting areas and staff spaces, an aquarium in a high-stress waiting area, an atrium with greenery and a fountain and calming nature art mounted where immobile patients can readily see it (Ulrich 2001)

## 2.3 Visual Analysis as a Means To Acquire Objective Knowledge

A key challenge in architectural research is that studies often focus on efficiency and reliability of design rather than the social, cultural and psychological factors contributing to the sense of place (Ragheb 2009). Aroztegui *et al* argue that representation is central to architects and designers as they use it to establish dialogues during the design process. Sometimes these dialogues are intimate wanderings through one's thoughts and at other times they are a way of communicating design features to team members and clients. These representations can be diverse and versatile, but Aroztegui *et al* argue that they rely on architectural educational and professional practices, which are rooted in the Cartesian paradigm (Aroztegui *et al.* 2010)

The Cartesian paradigm includes the assumption that things in the world and in the mind have a prior existence to processes, whether they are in the world or in the mind. Within the Cartesian paradigm, "things" exist, and interactions are secondary. Within this paradigm, things come first, and only then can they enter into either material or logical relations (Toomela *et al* 2010) It presents physical elements in space, independent from one another, in an exterior world that can be observed and represented objectively. Aroztegui *et al* used this reference to the Cartesian Paradigm as a means to explain how vision becomes the way to acquire objective knowledge, predominant over the other senses. (Aroztegui *et al.* 2010)

Historically, the architectural discipline began using vision as a means to acquire objective knowledge during the Renaissance with the use of the perspective method. This method of description utilized monocular vision and mathematical structure of depth to represent an understanding of space (Perez-Gomez & Pelletier, 1997).

In 2005, Nanda and Solovyova argued for the need of a systematic language to depict the experiential knowledge in architectural representation. They asserted that there is an established graphic language to represent design elements, but no conventions for expressing “sequences of concurrent actions, feelings, and thoughts associated with given behavior patterns and given users, and the real-time sequential description of multisensory physical environments as experienced in movement” (Thiel 1997, 4) Their paper further explored the use of storyboarding and animatics as a visual way to represent a sense of place. They note that storyboard and animatics provide a translation of the sense of place to architects and designers by using the account of life stories of residents of the site and converting them into a visual representation. The key difference in their method of study from traditional representation is capturing and communicating emotional experience related to the remembrance of space (Aroztegui et al. 2010). In this study the use of visual analysis in the form of photography, drawing and quantitative and qualitative ways of knowing will be used to convey the emotional experience.

## **2.4 Designing for Inclusivity: A Background of Designing for Social Responsibility**

Dong, Cassim, Coleman and Clarkson have studied designing for inclusivity from a broad perspective. Working as a collaborative team from the University of Cambridge and the Royal College of Art in London, England along with an extensive network of designers, engineers and researchers, they published work that identifies the history of the term “inclusive design” and provide a wide range of examples of practical application of the theory (Dong et al 2012). Their team discusses the ethical qualities of inclusive design within their research as well.

Historically, designers and craftworkers were closely aligned. John Ruskin and William Morris are examples of the combination of design and arts and crafts in the twentieth century. These two men actively pursued design and production in the material world while choosing to maintain a consistent focus on moral and ethical values for the benefit of society as a whole. During the twentieth century, however, the design profession grew and began to separate from art and crafts and production (Dong et al 2012).. Professions emerged that include the commercial designer, product designer, interior designer etc with architecture remaining an independent profession outside the broader realms of design. Dong *et al* (2012) cite in their research that during the twentieth century the economies of the Western World (predominantly America, Europe and the United Kingdom) created a rapid rate of consumption of material, environmental and physical products that led to depletion of resources worldwide (Dong et al 2012).

A social reawakening regarding design began in the 1960's when designers began to actively consider the wider implications of design for society. By the 1990s profit and ethical issues were no longer considered mutually exclusive and more market-oriented approaches emerged including the "green consumer" and ethical investment (Dong et al 2012). The authors cited retail entrepreneurs like Anita Roddick of The Body Shop and the creation of corporate social responsibility (CSR) agendas. The World Business Council for Sustainable Development proposes, that "CSR is the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large" (Moir 2001).

Dong *et al* (2012) state in their research that inclusive design grew out of and



builds upon earlier approaches to designing for primarily disabled people. Focus began on designing access to the built environment in coordination with barrier free, universal design and the precepts of the Americans with Disabilities Act (ADA). The authors note that in the United Kingdom (UK) the Disability Discrimination Act (DDA) was established and in Europe the “Design for All” movement has endured to promote objectives similar to barrier free design in terms of universal access (Dong et al 2012).

Within the review of the history of the inclusive design movement, a case study is noted that was conducted by Patricia Moore between 1979 and 1982. Moore was a young industrial designer aged in her twenties who conducted an experiment disguised as an old woman. She travelled throughout North America and through her disguise was able to radically age her appearance. In addition to dressing as a much older woman, Moore operated with artificial restrictions to her joints, hearing, vision, etc (Moore 1985). During her experiment, Moore was abused and subjected to discrimination. She was attacked in the street and a flight attendant poured coffee on her without apology. The discoveries that Moore made during her experiment had a major impact on the universal design movement in the United States (US). Her work emphasized the need for an empathetic approach to user needs. Her prolific work influenced the use of “age suits” or costumes that inhibit the movement of an able bodied person to simulate an elder person, by designers in the UK, Europe and the US in the product and architectural realms (Moore 1985).

Victor Papanek also played a major role in America’s universal design movement when he published *Design for the Real World*, which challenged the dominant market-led approach to industrial design and called for more social responsibility from

designers (Papanek 1971). Papanek's assertions in his publication were supported by Patricia Moore's role-playing experiment and inspired European designers like Veryday (formerly Ergonomi Design Gruppen in Sweden) to combine functionality, performance and aesthetic appeal within the mainstream of consumer products instead of as disability aids or equipment (Veryday 2014).

## **2.5 The Eden Alternative®: A Design Tool for Culture Change in Healthcare**

Research has indicated the implementation of new organizational models within the healthcare environment known as culture change (CC) in the United States (Grant & Norton 2003). Culture change within the elder care sector or healthcare refers to an effort to radically change nursing homes by delivering resident directed care and empowering staff. The term was first coined in 1997 following the first meeting of the Pioneer Network. It is a process that examines attitudes and behavior and aims to create caring communities where empowered staff and clients can flourish within a healthcare setting. Culture change is used broadly and research has shown that it can vary in scope and scale. Examples include training initiatives for staff, organizational changes within the facility, to architectural and environmental changing that influence how staff and clients use the facility (Rahman & Schnelle 2008)

Under the umbrella of culture change within the nursing home environment, two distinct models emerged: The Eden Alternative® and the Wellspring model. The Eden Alternative® began in 1994 and advocated that residents interact with children, pets and plants, among other changes, to help combat feelings of boredom, loneliness and helplessness (Eden Alternative 2009). It is a set of principles overlaid on existing nursing homes to flatten hierarchies, invest decision-making in residents and frontline

staff, and normalize nursing home life, addressed psychosocial problems of residents, such as loneliness, boredom, helplessness, and lack of meaning in life (Thomas 1999; Kane et al 2007). The Wellspring model also began in 1994 and focused on clinical quality improvement and environmental culture change within a consortium of nursing homes that shared ideas and resources (Rahman & Schnelle 2008).

Bolstered by the prevalence of chronic conditions projected to increase dramatically with the aging of the population, Dr. Joseph cites that by the year 2030 nearly 150 million Americans will have a chronic condition (Joseph, 2006). Thus, the need for quality long-term care is expected to increase. The physical environment was cited as an integral component of the care provided in long-term care settings and the reason for Dr. Joseph's research in the design of healthcare environments to promote health and well-being (Shi & Singh, 2001). Research by Dr. Joseph indicates that the design of the physical environment impacts resident and staff outcomes in long-term care settings and contributes to a better quality of life for people who live, work and visit these facilities (Joseph 2006). Long-term care is defined as any personal care or assistance that a person might receive on a long-term basis because of a disability or chronic illness that limits his or her ability to function (Kane, 2001). Long-term care can be provided in a residential setting, assisted living, nursing home or rehabilitation facility.

Joseph studied the effectiveness of the Eden Alternative as a way to improve the quality of life of residents of long-term care facilities and to provide care in a homelike residential environment where the patterns of living would more closely resemble those of a home than an institution (Joseph, 2006). Two of the design-influenced initiatives studied including supporting orientation and way-finding and promoting physical activity,

discussed below (Joseph, 2006).

- Orientation and Way-finding: Research indicates that spatial skills decline with age, and the average institutional resident has difficulty maintaining spatial orientation within typically designed (institutional) healthcare facility (Rule, Milke & Dobbs 1992) Characteristics of institutionally designed facilities that contribute to confusion and disorientation are listed below:
  - Monotony of architectural composition and lack of reference points (Passini et al 2000)
  - Long corridors with many doors (Rule et al 1992)
  - Lack of windows or lack of access to windows (Rule et al 1992)
  - Ad hoc signage (designed for a specific use without thought to the overall application) (Rule et al 1992)
- Design solutions shown to effectively support orientation and way-finding
  - Create quiet environments
  - Use room numbers and distinguishing colors to designate different areas
  - Large signs or location maps supported by orientation training for residents (McGilton, Rivera & Dawson, 2003)
  - Change the building configuration. Residents experienced greater spatial orientation in facilities designed with L, H or square corridors instead of long corridors.
- Promoting Physical Activity: Research indicates that the benefits of physical activity, especially for the elderly, include prevention and treatment of chronic illnesses, a longer disability free life expectancy, and better physiological and psychological

health. (Leveille, 1999; Miller, 2000; Shephard, 1997; United States Department of Health and Human Services, 1996).

- A survey of 800 nonprofit continuing care retirement communities (CCRC) studied the relationship between building and site-level features on CCRC campuses and participation in different types of physical activity among residents. The findings of this study show that communities with more indoor and outdoor physical activity facilities and amenities tend to have more residents participating in physical activity (Joseph et al 2006).
- Associations were found between the presence of outdoor features such as courtyard gardens and covered outdoor paths and resident participation in walking clubs and outdoor activities (Joseph et al 2006)

Within Joseph's research of design as a way to promote physical activity is a study of The Green House Project. This initiative is discussed as a result of the Eden Alternative. According to William Thomas, the founder of the Eden Alternative, it "is an attempt to design, build and test a radically new approach to residential long-term care for the elderly" (Thomas & Johansson, 2003). The Green House is designed to be a home for eight to ten elders, which blends architecturally with its surroundings, is aesthetically appealing, and includes many outdoor spaces. Therefore this method defers from the traditional facility size as it is much smaller than the typical nursing facility, veers away from the institutional interior design by creating a more residential and homelike setting, staffing patterns and methods of delivering skilled professional services. The residents of a Green House facility are not dictated by an institutional

schedule and instead perform daily activities as they choose (Joseph, 2006). Where the Eden Alternative is a set of principles and guidelines for nursing home administrations to follow, the Green House is a practical approach using the Eden Alternative principles in actively designing a facility.

Studies have measured the resident outcomes in small house nursing home settings using the Eden Alternative and Green House model (Kane et al 2007). Kane, Lum, Cutler, Degenholz and Yu studied three long-term care facilities: Green House (GH), Cedars and Trinity to measure the relative quality of life, health and functioning, satisfaction and emotional well-being of the residents. The GH residents reported better quality of life than Cedars on seven of the eleven quality of life subscales (privacy, dignity, meaningful activity, relationship, autonomy, food enjoyment and individuality). GH residents also reported higher quality of life than Trinity residents on four of the eleven measures (privacy, dignity, autonomy and food enjoyment) (Kane et al 2007). The GH residents did not report lower quality of life on any of the eleven measures than the residents in Cedars or Trinity.

GH residents reported significantly higher satisfaction with the nursing home as a place to live than residents of the other two facilities and significantly higher satisfaction as a place to get care than the other two facilities. The GH residents were more likely to recommend the facility to others and had significantly better emotional well-being scores than the Cedars residents. Interestingly, the GH had a lower prevalence of residents on bed rest, fewer residents with little or no activity and a lower prevalence of depression than the other two facilities (Kane et al 2007). The results of this study indicate that the Green House healthcare facility achieved its goals.

### **3. Explanation of Methodologies:**

Both qualitative and quantitative methodologies will be used in this study. The qualitative methods of data gathering included programming interviews and a Design Thinking workshop conducted with the staff of the Bridges Organization. Quantitative methods used in this study include behavior mapping, statistical analysis of staff surveys, demographic data for Brevard County, FL as well as a review of evidence based research related to health, safety and welfare within the interior environment. The principles of Inclusive Design and the Eden Alternative Philosophy were also used to analyze the existing conditions of the facility and support recommendations related to the needs of the users of the facility related to the Americans with Disabilities Act, as well as the needs of the elderly clientele.

#### **3.1 Qualitative vs Quantitative Ways of Knowing**

Jill Pable (2009) states that “within the design academy, most agree that objective knowledge is made most useful when accompanied by subjective ways of knowing that inject generative, creative, and sometimes intuitive decision making to the decision-making process (Pable 2009).” She insists that the pairing of objective knowledge with intuitive knowledge enables designers to deal with complex and sometimes “ill-defined” situations, allowing them to “make sense of a situation that initially makes no sense” (Schon, 1983 p. 40, Pable, 2009) Dr. Pable discusses the connections between qualitative and quantitative methodologies within the Interior Design profession and remarks that she has sensed a tension between the creative/subjective and the rational/objective sides of design. She states, “There are two separate and independent schools of thought vying for dominance, rather than two

complimentary dimensions of the same process seeking balance.” (Pable, 2009) In order to achieve a sense of balance within this study, both qualitative and quantitative methodologies will be utilized as described below.

### **3.2 Qualitative Reasoning Methods**

Subjective (qualitative) ways of knowing are inherent components within the artistic realm. They are evident in imaginative expression and other unquantifiable methods including aesthetic analysis, interviews and philosophical study. (Pable, 2009) This study will utilize data gathered from programming interviews, staff surveys and a Design Thinking workshop in the analysis of the Bridges Facility in Rockledge, Florida.

#### **3.2.1 Programming Interviews**

A key component to this study was to gather data on the existing conditions of the site. Programming is defined as the first step in the process of design and provides designers with the opportunity to research, explore and investigate numerous facets of a project in order to gain insight into the work to come (Botti-Salitsky2009).

Programming, when committed to existing or original research, can help make informed and intelligent decisions. It is used as a tool during the preliminary phase of a project and was utilized at the beginning of the research process. Several interviews were conducted during the programming phase of this study, which included staff from the Bridges Organization, a nurse specializing in gerontology and a local Doctor who considers herself a “geriatrician.”

##### **3.2.1.1 Bridges Organization Interview**

The first programming interview was conducted on April 5, 2013 with Nikki Matchett and David Cooke. Both individuals are staff at the Bridges Organization; Nikki



Matchett works within the job development program and David Cooke is the President/CEO. This initial meeting was conducted at the Cedar Street location and involved a tour of the facility. Nikki and David explained the organization, the purpose of the building and the scope for the upcoming architectural renovations (Cooke & Matchett 2013). The existing approximately 3,000 sq foot facility was planned to have an approximately 3,000 sq foot addition to the north of the existing structure. There was not to be a separation between the new and the existing facility, rather the two buildings were planned to appear a seamless whole. It was noted that the staff hoped to renovate the existing facility once the addition is complete to help facilitate the cohesive relationship between the two structures (Cooke & Matchett 2013).

The 1694 Cedar Street location is oriented to the west of the Indian River, south of Barton Boulevard in Rockledge, Florida. It is the oldest non-profit organization in Brevard County to receive funds from the United Way, and is a 501c3 organization that has served children and adults with disabilities for more than fifty years in central Florida. The Bridges Organization states that it is a “community based organization dedicated to preserving and enhancing informed choices for children and adults with disabilities. We are uniquely qualified to offer a flexible range of cost sensitive, practical solutions to the challenges in life through our employment, residential, advocacy, therapeutic and educational programs” (Dischler 2014).

The Bridges Organization participates in the Agency for Persons with Disabilities (APD) Home and Community based Waiver, receives a Quality Assurance Discovery Review conducted by Delmarva under contract with the Florida Agency for Health Care Administration (AHCA). Delmarva Foundation is contracted by the State of Florida’s

Agency for Health Care Administration (AHCA) to provide quality assurance for the State's Developmental Disabilities Services system. Delmarva works in partnership with the Agency for Persons with Disabilities (APD) at the central Florida office as well as with each local area office within the state (Delmarva 2014; Bridges 2013). The organization hopes to provide a charter school for autistic children called "Cedar Academy" in the future and in the meantime plans to create an interactive developmental toy store and community support space for local families and children with autism (Cooke & Matchett 2013).

The Bridges Organization refers to the people they serve as "clients" and not as "patients." It was discerned that many of the programs and services offered through the Bridges Organization are community based meaning that the staff works out in the community and only comes in to the physical building occasionally, if at all, throughout the week. The programs that use the Cedar Street building on a regular basis serve clients that range from a high level of social and mental function to others who are immobile and are severely mentally disabled (Cooke & Matchett 2013).

The programs within the Cedar Street facility include the iForce program, Enrich program, Adult Basic Education (ABE), Job Development, Quick Prints and administrative support staff. The iForce program is a therapeutic full day work program for thirteen individuals that contracts with local businesses to offer paid work opportunities in work areas such as packaging, assembly and yard work. The clients assemble mice, keyboard, pharites for computers and assemble the boxes with instructions for the equipment. The clients are paid a rate per the amount of pieces they assemble and are supervised by one supervisor (Cooke & Matchett 2013).

The Enrich Program encompasses the largest room, centered in the facility. It is an intensive, therapeutic full day program for thirteen individuals and several care providers. The Enrich program is unique in Brevard County because it is the only day program where the clients are not required to be continent, and adult sized changing rooms are a necessity for this program (Cooke & Matchett 2013).. The Adult Basic Education program is a full day activity program that focuses on basic education and motor skills development for up to forty five individuals. A kitchen is located next to the Enrich room and is used by staff to provide cooking demonstrations to the clients to support self sufficiency and nutritional awareness.

Job Development services are provided for people within the community who have received federal or state funding for job rehabilitation. Mock interviews are conducted on site as well as information seminars and interview attire is available. The Quick Prints program is open to the public and provides live scan background screening services to the community. The remaining people utilizing the Cedar Street facility are staff that support the administrative needs of the Bridges Organization (Cooke & Matchett 2013).

#### **3.2.1.2 Interview with Terri McNally RN, MSN**

The second interview conducted was with Ms. Terri McNally RN, MSN at 10:00 AM on Wednesday May 22, 2013 at the Melbourne, Florida Campus of Eastern Florida State College. Terri is a registered nurse with a masters of science in nursing and a considerable amount of practical experience in the gerontology field. Currently, Terri is an assistant professor within the nursing department at Eastern Florida State College in Palm Bay, Florida. Terri identified major issues, based on her experience, related to

designing interior spaces for disabled and or elderly clients.

The major issues identified were falls, sensory deprivation, over stimulation and incontinence. Regarding falls, Terri cited that designers often use strong color changes in flooring that make is dangerous for disabled or elderly people because of difficulties they often have with depth perception. She recommended reducing the contrast between flooring changes to alleviate this problem. The colors, textures and “shininess” of flooring materials were cited as a major factor to consider when trying to prevent falls. Terri insisted that carpet textures that are too thick or varied and flooring that provides a strong glare can be very dangerous to patients who have mobility and problems with depth perception.

Other suggestions included the use of an aquarium and soothing music to calm patients. She stressed the importance of providing a way for patients to connect with nature in healthcare settings as well. She recommended the use of a plant wall with air plants that would allow patients to garden without the messiness of dirt. She also mentioned the usefulness of a hydroponic garden to enable patients the ability to garden and provided a source in Vero Beach and Christmas, Florida to help facilitate the process.

The remaining suggestions that Terri McNally provided were regarding the elderly in residential applications. She stated that the height and stability of furniture is important from proper accessibility. Kitchen design was another major concern that she discussed relative to the disabled and elderly in residential settings. She urged that the stove and countertops should be at the user’s height, based on their individual need. Smaller refrigerators and induction stoves were two major suggestions related to safety

concerns. Terri cited that large refrigerators can be difficult for seniors to reach certain items which can lead to falls. Induction heat stoves provide increased safety because the cooktop only heats when a magnetic pan is placed on top of the cooking unit. This will help prevent burns if someone mistakenly leaves a burner on.

In closing, Terri suggested several places to visit within Brevard County, Florida related to designing for the disabled or elderly. One place was a recently renovated assisted living facility (ALF) called Buena Vida located off of US highway 192 in Melbourne, Florida. The next was an occupational and physical therapy facility called Sea Pines off of Babcock Road in Melbourne, Florida. Terri noted that Sea Pines has a kitchen that students can tour and experience as though they themselves were geriatric clients. She noted that there is an Institute of Aging next door to Sea Pines.

### **3.2.1.3 Interview with Rosemary Laird, MD**

The third interview for this study was conducted with Dr. Rosemary Laird on Wednesday May 22, 2013 at 1:00PM at her 220 South Courtenay Parkway office in Merritt Island, Florida. Dr. Laird has nineteen years of experience, specializes in Geriatric medicine and was honored as the 2013 geriatric clinician of the year from the American Geriatric Society (AGS). This national award recognizes a practitioners' valuable contributions to quality healthcare for older people and the importance of the geriatrics clinician in our healthcare delivery system. Through her efforts, Dr. Laird has contributed to scientific advances that are integrated into the practice of geriatric medicine, resulting in improved health, well-being, and quality of life for older adults (Palermo, 2013)

Similar to the interview with Terri McNally RN, MSN, Dr. Laird was asked to

provide her opinion of the largest issues facing older adults in the interior environment and was encouraged to discuss possible solutions to the issues. The main issues identified by Dr. Laird were: falls, sound, lighting, over stimulation, incontinence, furniture and cognitive impairments.

The first issue within the interior environment for seniors discussed by Dr. Laird was falls. She insisted, as did Terri McNally, that abrupt changes in contrast in the flooring whether due to material or color change were very dangerous. Dr. Laird suggested that chair rails are important as well as the availability of assistive devices including wheelchairs and walkers.

The next issues discussed were sound, lighting and overstimulation. Dr. Laird commented that proper acoustical control is vital for seniors within an interior environment. Providing acoustical control to the seniors was discussed as something that is important. This can be accomplished by providing controls that allow a senior to turn the volume of music or audible material up or down. This provides the senior with a level of control within their environment and allows for flexibility of acoustical needs. Dr. Laird discussed the importance of materials within the environment that reduce sound, whether from white noise generators, waterfalls or flooring and wall materials. Dr. Laird mentioned that wall mounted fabrics or fabrics on furniture can help with acoustical control but that they should be easy to clean as well as aesthetically pleasing. In reference to lighting, Dr. Laird discussed the importance of reducing glare and providing a soft, bright light within the interior.

Over stimulation for seniors within interior environments was another major concern for Dr. Laird. She mentioned that if the older adult is out of his or her home,

they are essentially out of their comfort zone and are apt to become over stimulated which can lead to anxiety and stress. Possible solutions discussed were books and images with large photos. Dr. Laird uses a book series called “Florida’s Fabulous” by World Publications that provides large picture books of local Florida wildlife. The walls should have simple, relatable images and not abstract art. Abstract art was noted by Dr. Laird to contribute to a sense of anxiety and overstimulation within the interior environment. Another suggestion was the use of a sensory room, or a room separate from the main part of an interior space that has low light, soothing sounds and provides seniors with a place to experience a sense of calm.

The issues of furniture and incontinence were discussed as related issues within the interior. Dr. Laird stated that incontinence is a common issue and so materials that aide in odor control within an interior environment are very important, as well as regular trips to an easily accessible bathroom. She mentioned that a senior is in the safest position when he or she is seated, so it is important to provide sturdy seating with arm rests, high backs and comfortable, washable fabric.

Lastly cognitive impairments were discussed as a common issue for seniors. Dr. Laird cited the importance of a lack of clutter and clear and direct communication within the interior space. This can be done with proper organization and adequate signage. Orienting materials were also noted to be helpful to help the older adult maintain a clear understanding of where he or she is and where he or she needs to go. Seated gardening was another suggestion that Dr. Laird made as a way to soothe cognitive impairments of seniors. She commented that window box gardening and the use of artificial grow lights are useful elements that help provide older adults with the

opportunity to connect with nature and work on motor skills.

Dr. Laird also teaches as a clinical associate professor of geriatrics at the Florida State University College of Medicine and is the past president of the Florida Geriatrics Society (Palermo, 2013). She shared a technique that she uses in the classroom called “aging games.” These games recall the experiment discussed earlier by Patricia Moore as Dr. Laird requires that her students use various props that inhibit movement, vision and hearing to simulate the experience of an older adult. Students are asked to wear heavy vinyl gloves and try to open pill boxes to simulate the limitations of arthritis, wear glasses smeared with petroleum jelly to simulate vision problems and wear ear plugs to simulate hearing loss.

### **3.2.2 Design Thinking: A Background on the Process of Ideation**

“Design Thinking” is a methodology that uses the full spectrum of innovation activities with a human-centered focus (Brown 2008). It is the application of the design process to solve difficult challenges and complex problems (Design Thinking for Educators n.d.). It is an application of the understanding that innovation is powered by thorough understanding garnered through direct observation of what people want and need in their lives and what they like or dislike about something (Brown 2008). This strategy uses the designer’ sensibility and methods to match people’s needs with what is technologically, or architecturally, feasible and develop it into a viable strategy (Brown 2008).

Design Thinking is a method of data gathering used by corporations like IDEO and the Luma Institute to assist clients from a range of backgrounds solve complex problems ranging from corporate organization to product design (Design Thinking for



Educators n.d.). IDEO is an award winning global design firm that takes a human-centered, design-based approach to helping organizations in the public and private sectors innovate and grow (IDEO 2014). The company identifies new ways to serve their customers by uncovering latent need, behaviors and desires. In doing so, IDEO envisions new companies and brands, designs the products, services, spaces and interactive experiences. Tim Brown, President and CEO of IDEO states that “Design Thinking is a human-centered approach to innovation that draws from the designer’s toolkit to integrate the needs of people, the possibilities of technology, and the requirements for business success (IDEO 2014).” IDEO lists the design thinking process as a system of overlapping spaces rather than a sequence of orderly steps. The three key spaces to keep in mind are: inspiration, ideation, and implementation. Inspiration is cited as the problem or opportunity that motivates the search for solutions. Ideation is the process of generating, developing, and testing ideas. Lastly, Implementation is the path that leads from the project stage into people’s lives (IDEO 2014).

The Luma Institute, based in Pittsburgh, PA states “We believe that innovation is a growing social and economic imperative. It calls for more people to be more innovative more often (LUMA 2014).” They cite that their educational offerings help businesses, non-profits, schools and governments multiply their ability to innovate and list Honeywell, Cisco, McDonalds, Google, the White House and the Knight Foundation as sample client organizations (LUMA 2014).. The LUMA system is based on the belief that “Human-Centered Design is vital to innovation. It is a versatile way to learn and apply the key practices of design: Looking, or observing human experience, Understanding and analyzing problems and opportunities and making or envisioning

future possibilities. The LUMA system includes a collection of thirty-six design methods organized by nine essential skill sets (LUMA 2014).

Inspired by the work of IDEO and the LUMA Institute, a collaborative team from the Radford University (RU) Department of Interior Design and Fashion, The College of Education and Human Development, members of the Radford University Interior Design and Fashion advisory board and design professionals from KSA Commercial Interiors have begun to use Design Thinking within the realm of educational environments (Design Thinking for Educators n.d.). The goal of this collaborative effort is to find ways to empower teachers to individually improve the way students are taught. The team believes that every teacher has a unique role in impacting the lives of their students and that that role includes shaping the learning environment (Design Thinking for Educators n.d.).

Lori Anthony, Holly Cline and Christopher Good conducted a Design Thinking workshop to identify issues and brainstorm solutions within special education classroom environments in Virginia (KSA Interiors 2014). Anthony, Cline, and Good cited the fact that between the 1988–89 and 1997– 98 school years, the number of special needs children in their area of research spending 80 to 100 percent of their instructional time in the general education classroom grew from 30 to 46 percent (Design Thinking for Educators n.d.). This statistic foretells the growing issue of integration and sharing of classrooms for special education students and students without disabilities. This problem inspired the RU team to collaborate with Virginia educators to learn more about the problem and creatively identify possible solutions (Design Thinking for Educators n.d.).

Bolstered by the belief that “no outside advisor can provide insight into the needs of a student quite like that of a student’s teacher,” (Design Thinking for Educators n.d) the RU team sought to make the special education teachers the center of their data gathering exercises. The team felt strongly that “Design Thinking is the confidence that everyone can be part of creating a more desirable future, and a process to take action when faced with a difficult challenge” (Design Thinking for Educators n.d). The team stated that the collaborative nature of design thinking and its ability to generate creative thought while fostering exploration of thought in a positive environment enabled a unique understanding of the many issues facing the twenty middle school special education teachers they worked with in Virginia for the project (KSA Interiors 2014).

The RU team facilitated five workshops that utilized the Design Thinking methodology to enable the teachers to be the active participants in developing creative solutions to the problems identified (KSA Interiors 2014). The common themes related to the classroom that emerged as issues from initial interviews were: distraction/focus and space limitations/conflicts. The design thinking exercises utilized in the workshops, described in the *Design Thinking for Educators Toolkit* included: User Interviews, Finding Common Themes, The five Whys/Whats, Stakeholder Mapping, Thorns, Buds and Roses (Design Thinking for Educators n.d.). The information gathered through the workshops enabled the RU team to identify ten viable solutions and strategies to address the identified issues regarding the learning environments for special needs children, which the team expects to research further in the future (KSA Interiors 2014).

### 3.2.2.1 Design Thinking Workshop: The Bridges Organization

In addition to the programming interviews conducted for this study, a Design Thinking workshop was conducted on March seventeenth, 2014 at the 1694 Cedar Street location. In addition to the facilitator, Lesa Lorusso, the participants of the workshop were staff members from the Bridges Organization as listed below and in figure 4.

- Marcy Ladell, Career Readiness Coordinator
- Kelly Gilford, Direct Support Staff for the Enrich Day Program
- Marjorie Williams, Administrative Assistant
- Kate Dilulio, Senior Manager of Community Programs



**Figure 4**  
**Design Thinking Workshop Introduction**  
**Clockwise from top left: Lesa Lorusso, Kate DiIulio, Kelly Gilford, Marcy Ladell and Marjorie Williams**

The workshop was conducted in Marcy Ladell's office and began with an introduction and description of the Design Thinking process. It was explained to the participants that Design Thinking is human-centered, collaborative, optimistic, and non-judgmental. The participants were informed that the intent of the workshop was to gather information on the issues regarding the aesthetics and function of the interior of the 1694 Cedar Street facility and to foster collaborative discussion to ideate possible solutions to the identified issues. The four twenty minute exercises conducted within the Design Thinking workshop were: Finding Common Themes, The Five Whys/Whats, Stakeholder Mapping, and the Thorns, Buds and Roses Exercise.

- Finding Common Themes (20 minutes)::
  - The over-arching “problem” was identified as the inadequate physical interior environment of the 1694 Cedar Street facility.
  - This exercise is an active group session intended to build initial group self-purpose and camaraderie, while generating broad topics for discussion (Design Thinking for Educators n.d.)
  - Because group discussions can lead to fears of criticism, desire for acceptance, etc. the group was encouraged to participate without judgment of each other. They were encouraged to feel free to share any and all ideas they thought of, and were assured that, at this stage, every idea should be considered important and viable
  - Each participant was given large post-it notes and were asked to write down as many issues related to the problem as possible, within the ten minutes allowed.
  - After ten minutes, each participant was asked to share each of the issues that

they personally identified. No external critique or comments were allowed from the facilitator or other team members

- After all of the participants shared their perception of the major issues related to the problem, the group worked together with the facilitator to consolidate the issues into common themes
- The post-it notes were placed on a white board, and the participants grouped the issues according to common themes. After this was complete, each theme was labeled on the white board.
- The participants identified the following common themes, listed with the number of issues the group associated with each theme, as seen in figure 5 and 6: Privacy (10), Aesthetics (10), Function (9), Bathrooms (7), Organization (6), Ergonomics (4), Equipment (4)



**Figure 5**  
**Design Thinking Workshop Finding**  
**Common Themes Exercise**

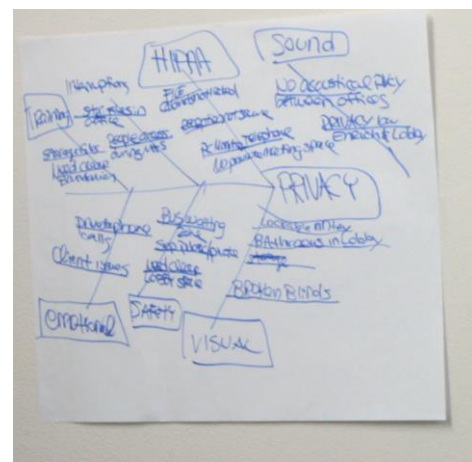


**Figure 6**  
**Design Thinking Workshop Finding**  
**Common Themes Exercise: Results**

- The Five Whys/Whats (20 minutes):
  - After the participants identified the major issues related to the problem they were asked to explore the causes of the problem
  - The participants decided to focus on the two issues of privacy and function for this exercise
  - The facilitator drew a fishbone diagram for each of the main themes selected by the group. A horizontal line was drawn and labeled for each theme, one for Function and one for Privacy. Then, five diagonal lines were drawn stemming off of the main horizontal line to represent various causes of the main theme.
  - The facilitator asked the participants to work as a whole and identify various causes of the main problem. Next, the facilitator asked “why” or “what” causes contributed to the main problem, consecutively up to five times for each cause. The participants’ responses were recorded by hand on the diagram as seen in figure 7 and 8.



**Figure 7**  
Design Thinking Workshop The Five Whys/Whats Exercise



**Figure 8**  
Design Thinking Workshop The Five Whys/Whats Exercise: Privacy

- The main causes for the theme of Privacy were: Training, HIPPA, Sound, Visual, Safety and Emotional. Ex: The participants were asked “Why is Privacy a concern? What Causes a privacy issue?”
- The participants identified the following causes for privacy issues:
  - Training:
    - File Storage, Need to establish clear boundaries between clients, staff and visitors, Interruptions, People accessing files during meetings
    - During times when active training is in session with clients, (Ex: Marcy Ladell is the Career Readiness Coordinator and trains clients for job placement) the training will be interrupted by staff entering her office to access files that are stored in her office.
    - Marcy’s office has a large window that faces the corridor and clients or visitors in the hallway will look into the office window and cause interruptions
  - HIPPA:
    - File Cabinets need to be relocated, receptionist station needs to be secure for files and phone conversations that involve sensitive information, Receptionist computer monitor and telephone should not be visible and audible from the lobby, Staff needs private meeting spaces.
  - Sound:
    - There is very little acoustical privacy in the walls between staff



offices, The main doors to the Enrich room which houses the day program for individuals with severe disabilities open into the front lobby and the sound from the clients creates an unsettling acoustic atmosphere in the lobby. (Ex: some clients in the Enrich program are unable to communicate verbally and make loud, unintelligible sounds throughout the day.)

- Visual:

- The existing bathrooms in the lobby open into the lobby space. Sometimes clients use these bathrooms and forget to close the door while they are using the bathroom which creates a visual privacy issue in the lobby. Many of the vertical window blinds are broken throughout the facility.

- Safety:

- There is no clearly designated separation from public and private areas in the building. This can be an issue when people enter the building from the street and walk throughout the hallways looking for a telephone to use, a bathroom or looking for the Quick Prints finger printing office. The bus waiting zone at the front of the building was cited by the participants as a safety issue because there are not seats clearly designated between the lobby and the bus waiting area. This can cause anxiety for both clients and visitors.

- Emotional:

- Currently there is no location for staff to help clients privately calm down in the event of an emotional crisis. The participants also noted that the staff needs the capability to make private phone calls of sensitive nature without being interrupted or overheard.
- The main causes for the theme of Function were: Over Stimulation, Kitchen, No Staff Lounge, iForce Room Not Functional and No Outside Space. Ex: The participants were asked “Why is Function a concern? What Causes a Functional issue?”
- The participants identified the following causes for function issues:
  - Over Stimulation:
    - The rooms are too small for the size of the adults enrolled as clients which results in too many clients too close together in the spaces.
    - Privacy barriers are needed within the classrooms like the Enrich room and Adult Basic Education (ABE) rooms. These programs use the spaces as multi-function, multipurpose rooms and separation is needed to create a sensible separation of activities and to promote effective therapy and learning.
    - Safe wandering zones are needed. Some clients are actively mobile and need space to walk and exert energy and to escape from the sometimes over-stimulating environment of the Enrich Room.
    - A calming, sensory area is needed for clients who are over

stimulated and need help regaining composure and a sense of self.

▪ Inefficient Kitchen

- Currently there is only one usable door to the kitchen because the second door opens into the Enrich room which is often closed.
- The space within the kitchen is too small and not ADAAG compliant
- The kitchen needs to be separate from the Enrich classroom so that classes and activities can occur within the kitchen and not disturb or be disturbed by the activities in the Enrich, ABA or iForce rooms.
- The doors and drawers containing sharp utensils need safety locks to prevent clients from accessing the tools at inappropriate times.
- The stove needs to have a safety control to prevent burn hazards.

▪ No Staff Lounge

- The staff does not currently have a place to decompress from the relative stresses of their daily occupation.
- There could be Department of Labor Issues resulting from a lack of clear breaks for staff who are often interrupted during breaks.
- The staff needs a place to keep their own food safe from clients accessing the refrigerator and eating their food.
- The lack of staff lounge necessitates that staff have lunch and breaks in their offices which can be disruptive to others if they share an office space or if there is poor acoustical privacy separating the staff.

- iForce area not functioning properly
  - There is not efficient access to the loading area. The iForce workroom is a place where clients work in assembly fashion to build equipment for local businesses. The current location is not located conveniently near where the boxes are delivered.
  - There is not adequate storage in the iForce room for tools and equipment
  - The existing furniture is not adaptive to the variety of client ergonomic needs.
- No Outside Space
  - Currently there is not a way to encourage physical activity for clients due to a lack of outside space
  - The Advocacy Council (made up of clients within the day programs) have asked for outside space for gardening
- Stakeholder Mapping (20 minutes):
  - The next step in the process was to empathetically understand who is impacted by the problem
  - This step helped the participants to visualize and understand the relationship, hierarchies and interactions between all of the people who have an interest (or stake) in the problem being discussed (Design Thinking for Educators n.d.)
  - The intention of this exercise is to demonstrate to the participants that there are a lot more people involved as stakeholders in the problem than

the obvious staff member and clientele.

- The facilitator asked one of the participants from the group to draw simple representations of the people and groups. The facilitator demonstrated a simple way to draw people and discussed that the group should consider all the people and groups who are impacted by the problem.
- The participant drew clusters of icons to represent groups of people and labeled each cluster. Lines were drawn between clusters to demonstrate relationships and connections between the groups. Last, dialog bubbles were used to capture thoughts and feelings the participants imagined each stakeholder would have.
- Throughout the process the participants worked together to identify the various stakeholders, the program they are associated with at the Bridges Organization, and who they are related to within the community as a whole as seen in figures 9 and 10.
- The exercise of drawing dialog bubbles for each group was interesting because it revealed perceptions and wants/needs of the identified stakeholders not previously identified by the participant group as a whole.



**Figure 9**  
**Design Thinking Workshop**  
**Stakeholder Mapping Exercise**  
**Results**



**Figure 10**  
**Design Thinking Workshop**  
**Stakeholder Mapping Exercise**

- The stakeholders identified by this exercise and their thought bubbles were:
  - Staff (Identified as community staff and in house staff that operate at the 1694 Cedar Street Facility, and the President/CEO David Cooke.
    - “Darn these doorways” (Relaying the fact that the large wheelchairs used by the Enrich clients require openings larger than 36” and maneuvering in and out of rooms can be very challenging)
    - “Where are we meeting?” (Relaying a lack of available private meeting spaces for staff, and lack of easily identifiable signage)

- “I need a time out” (Relaying the staff’s need for a private break room to have lunch, relax and recharge at various times of the day)
- Clients and the classroom pet hamster that the clients interact with
  - “Its noisy in here!” (Referring to the loud acoustics)
  - “When is break, is it time to go home?” (Lack of windows in the Enrich room and lack of outside views throughout the client rooms leads to a feeling of anxiety regarding the time of day)
  - “I want to go outside” (Referring to the lack of outside venue)
  - “What are they talking about?” (Referring to the clients’ tendency to eavesdrop and interrupt staff communications)
- Family members of clients
  - “Can I visit my person?” “How can I check my family member out?” (Referring to the lack of clear signage to demonstrate where the various classrooms are and lack of clear system to communicate when clients can be visited)
  - “Where is the classroom?” “Where is the meeting?” (Referring to lack of easily identifiable signage)
- Government agencies including the federal, state and local agencies, the local school board, the Vocational Rehab agency
  - “How do I transition my loved one from public school to Bridges?” (School Board)
  - “Where is the file, chart? How do you work with them? What is the

difference between the classes?” (Refer to the government agency’s typical questions to Bridges regarding the type of care and how to obtain information on the client)

- The General Public
  - “Where am I?” (Referring to lack of easily identifiable signage)
  - “What do you do here?” (Referring to lack of easily identifiable signage and easily visible information in the lobby to help explain the organization)
  - “Who is screaming?” (Referring to the sounds heard in the lobby from the clients making loud sounds in the adjacent Enrich room)
  - “Where is the bathroom?” (Referring to lack of easily identifiable signage)
- Patrons of the Quick Prints services, which is a finger printing service offered at the 1694 Cedar Street facility for the general public.
  - “Where is it?” (Referring to lack of easily identifiable signage and lack of separation from the public and private spaces within the facility. People looking for the Quick Prints fingerprinting services will wander through the hallways, looking into staff offices as they try to find where they should go)
- Thorns, Buds and Roses (20 minutes):
  - This activity was the last of the four exercises completed during the Design Thinking seminar. The purpose of this exercise is to process and prioritize the participants’ ideas.

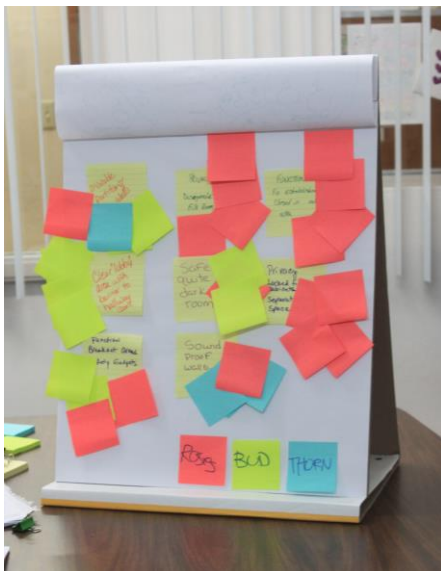


- The two large pieces of paper with the fishbone diagram for the issues of Privacy and Function were placed on the wall for the participants to view the issues and causes identified. The participants were asked to consider the stakeholders identified in the previous exercise and reference the issues and causes to think of potential solutions to the problems.
- Each participant was asked to ideate two possible solutions to the issues identified and write their solutions on a large post-it note.
- Once the participants completed ideating their solutions the facilitator placed the solutions on a board in front of the participants.
- The facilitator then placed three different colored post-it notes at the bottom of the board, underneath the participants' solutions. This was to serve as a key for the participants to rate the solutions provided.
- The facilitator explained that each color in the key represented a rating system: Pink stood for a "rose" or great idea, the green stood for a "bud" or a promising idea and the blue stood for a "thorn" or a problematic or unlikely achievable idea.
- The board was turned around so that the solutions did not face the group and each participant was asked to approach the board and rate each of the eight solutions according to what they felt was a "rose, bud or thorn."
- At the end of the exercise the board was turned back around so that the group could view the results. The colored post-it notes provided a stunning visual that made it easy to quickly discern which ideas the group felt were the best ideas.

- The solutions and their rating by the participants are listed below in figures 11, 12 and 13.

**Figure 11**

Activity: Thorns, Buds & Roses			
	Rating		
Solution	Thorn	Bud	Rose
Movable Walls	1	2	1
Designated File Room	0	0	4
Fix Existing Outside	0	0	4
Clearly Defined Lobby	0	4	0
Safe, Quiet Calm Room	0	2	1
Locked File Cabinets	0	0	4
Breakout Areas for Staff	0	2	2
Sound Proof the Walls	3	0	1



**Figure 12**  
**Design Thinking Workshop**  
**Thorns, Buds & Roses Exercise**  
**Results**



**Figure 13**  
**Design Thinking Workshop**  
**Thorns, Buds & Roses Exercise**

### **3.3 Quantitative Reasoning Methods**

Objective (quantitative) ways of knowing are a traditional, scientific research method characterized by gathering observable, measurable evidence to test hypotheses and make conclusions. (Pable, 2009) This study will utilize evidence-based research, behavior mapping techniques and statistical analysis and in the study of the Bridges Facility in Rockledge, Florida.

#### **3.3.1 Behavior Mapping**

Behavior mapping is an objective method of observing behavior and associated built environment components and attributes. It provides researchers with an innovative method of assessing behavior linked to detailed physical characteristics of the built environment. It is an unobtrusive, direct observational method for recording the location of subjects and measuring their activity levels and or locations simultaneously. Results have been influential in helping researchers understand the behavioral dynamics of the built environment (Moore & Cosco, in press; Cosco, Moore, Islam 2010). Early examples of behavior mapping used pencil and paper as a method to gather data as well as hand-drawn graphics to represent special relationships regarding the built environment (Cosco, Moore, Islam 2010) Behavior mapping is now created digitally by some researchers through the use of Geographical Information Systems and hand held digital devices. (ESRI 2008) Now, behavior mapping provides environment-behavior researchers an efficient method for gathering, processing, analyzing and representing data (Cosco, Moore, Islam 2010).

Place-centered behavior mapping techniques were used in this study. This

type of behavior mapping technique focuses on how people use the physical space. Individuals in the observations are identified as “staff, client or other.” A floor plan of the existing 1694 Cedar Street facility (see figures 15 and 16) was created and the plan was duplicated for use each time an observation was conducted. (Berg, 1989) The 1694 Cedar Street location was observed for the purpose of mapping behaviors on two separate dates and times (morning and afternoon). The maps were used during the observation process to indicate the people using the spaces, their activities and the location of the activities. Although two dates are illustrated in the behavior map diagrams provided, the site was visited multiple times throughout the year. The two maps provided in this study were a typical representation of the average occupancy observations.

The first observation was conducted at 9:30 AM on Wed Feb 19, 2014. There was a total of one staff member at the receptionist station (room two), twelve clients and three supportive staff in the Enrich Room (room twenty eight), nine clients and one supportive staff from the Adult Basic Education (ABE) program in the current conference room (room nineteen), two clients and one staff member in the Career Readiness office (room twenty), nine clients and one staff member in the iForce classroom (room twenty two), one client in the hallway looking into the window of room twenty, one client and one supportive staff member in the changing room (room twenty five), and one staff and one person designated as “other” in the ABE classroom (room twenty seven). The “other” person in room twenty-seven on this day was the son of the ABE teacher.

The second observation was conducted at 2:00 PM on Friday February

21, 2014. There was one staff member in the Community Programs office (room four), seven clients and one supportive staff member in the conference room from the ABE program (room nineteen), one staff member in the Career Readiness office (room twenty), two clients in the hallway looking into the window of room twenty, six clients and one supportive staff member in the iForce classroom (room twenty-two), and eleven clients and four supportive staff members in the Enrich classroom (room twenty-eight).

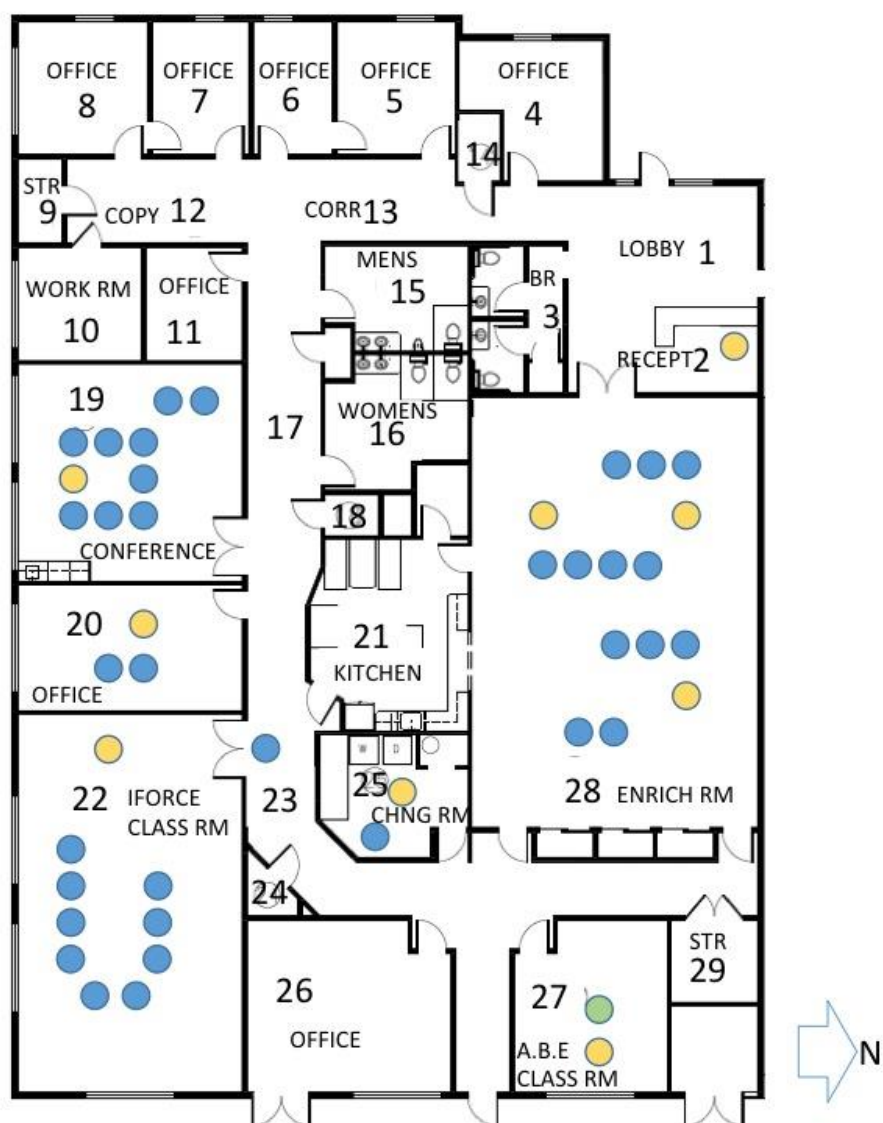
Many of the administrative offices are typically observed to be empty, which is possibly explained by the community outreach aspect of the Bridges Organization. It is evident that many of the administrative staff are often required to be outside of the building and in the community to implement their services throughout the county. The most heavily used rooms observed were the Enrich room, Adult Basic Education classroom and the iForce classroom. The workroom (room ten) has been designated to be a “drop in” office for community staff in the job placement program and appears to be very rarely used. It is noted that the due to the construction currently underway at the site, the ABE program is operating in the conference room. Data gathered from the behavior maps can be found in figure 14, while illustrations of the behavior map data can be found in figures 15 and 16.

Figure 14

<b>Behavior Map Data</b>				
<b>Information Gathered 9:30 AM 2/19/2014 and at 2:00 PM 2/21/2014</b>				
<b>Respectively</b>				
<b>Room Name</b>	<b>Room Num</b>	<b>Client</b>	<b>Staff</b>	<b>Other</b>
Lobby/Waiting	1	0/0	0/0	0/0
Reception	2	0/0	1/0	0/0
Public BR	3	0/0	0/0	0/0
Office	4	0/0	0/1	0/0
Office	5	0/0	0/0	0/0
File Room	6	0/0	0/0	0/0
Office	7	0/0	0/0	0/0
Office	8/0	0/0	0/0	0/0
Storage	9	0/0	0/0	0/0
Workroom	10	0/0	0/0	0/0
Office	11	0/0	0/0	0/0
Copy Area	12	0/0	0/0	0/0
Corridor	13	0/0	0/0	0/0
LAN Rm	14	0/0	0/0	0/0
Men's BR	15	0/0	0/0	0/0
Women's BR	16	0/0	0/0	0/0
Corridor	17	0/2	0/0	0/0
Utility Rm	18	0/0	0/0	0/0
Conference Rm	19	9/7	1/1	0/0
Office	20	2/0	1/1	0/0
Kitchen	21	0/0	0/0	0/0
iForce Class	22	9/6	1/1	0/0
Corridor	23	1/0	0/0	0/0
Storage	24	0/0	0/0	0/0
Changing/Laundry	25	1/0	1/0	0/0
Office	26	0/0	0/0	0/0
A.B.E Class Rm	27	0/0	1/0	1/0
Enrich Rm	28	12/11	3/4	0/0
Storage	29	0/0	0/0	0/0

Figure 15

Behavior Map: Bridges Facility, 9:30 AM Wed Feb 19, 2014

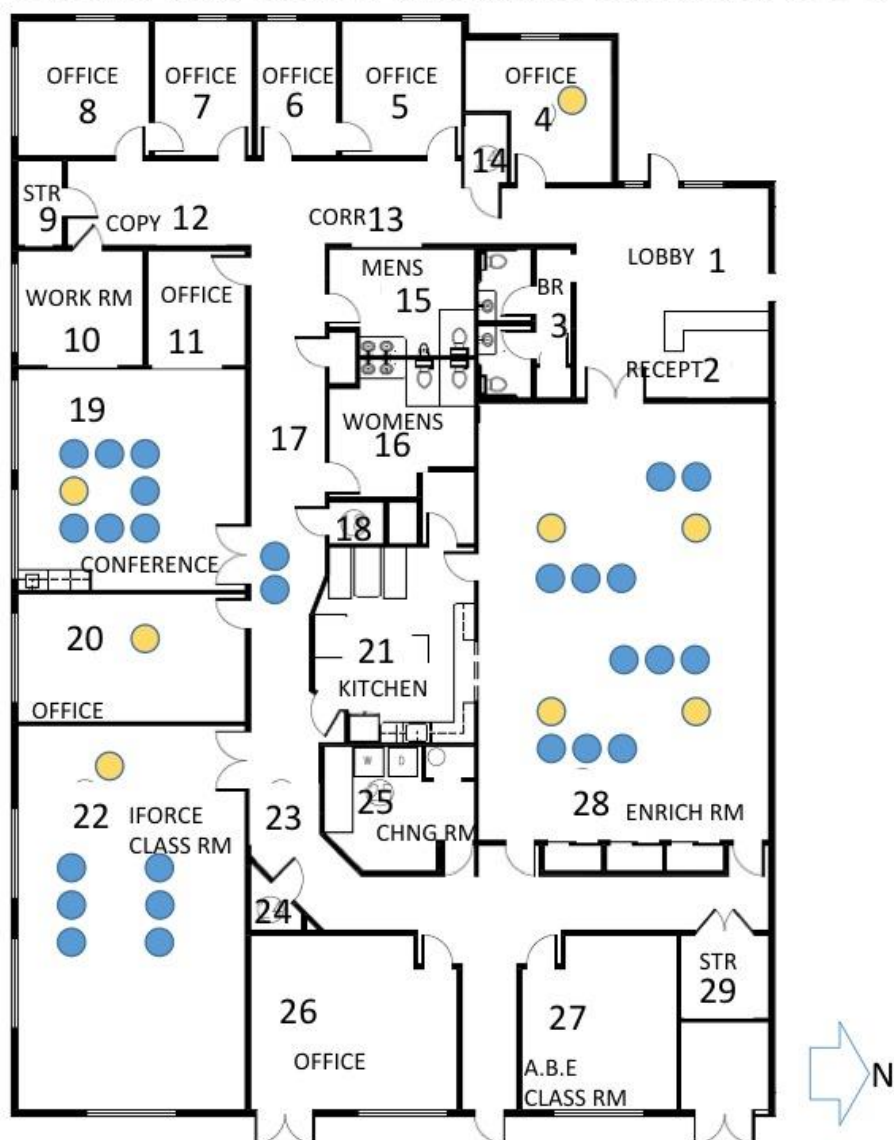
**Behavior Map Legend:**

The dots below are used in this map to indicate the presence of clients (blue), staff (yellow) and other people present in the Cedar Street Building (green) at the date and time of the observation.

● Client      ● Staff      ● Other

Figure 16

Behavior Map: Bridges Facility, 2:00 PM Fri Feb 21, 2014

**Behavior Map Legend:**

The dots below are used in this map to indicate the presence of clients (blue), staff (yellow) and other people present in the Cedar Street Building (green) at the date and time of the observation.

● Client      ● Staff      ● Other



### **3.3.2 Results from the Staff Survey and Statistical Analysis**

A survey of forty questions was given to the staff at the Bridges Organization via the online survey tool Survey Monkey. The questions focused on the physical facility of the 1694 Cedar Street facility. The Likert Scale was used as a system to rate answers and comment spaces were provided for individual input below every question. The format of the staff questionnaire from the Bridges Organization President and CEO David Cooke is provided with this document in appendix 1.

Based on the survey results it is apparent that the staff does not feel that the existing facility adequately accommodates the elderly clientele. One survey participant noted that the facility needs wider doorways, a more accessible changing room and softer lighting. Seventy-eight percent of respondents felt that the current facility does not properly accommodate seniors. This information is consistent with the staff interviews and discussions within the Design Thinking workshop.

The two areas designated by staff to be in most need of improvement are the conference room and kitchen. The Enrich room and lobby restrooms were the next areas perceived by staff to need improvement, followed by the Laundry/changing rooms and the iForce classroom. Based on visual aesthetics, the conference room was ranked lowest at sixty seven percent, followed closely by the Lobby/restrooms at fifty six percent, iForce classroom forty four percent and the Enrich room thirty three percent.

The response was overwhelmingly negative regarding the lobby and

waiting area. Seventy-eight percent of respondents said that the existing reception and lobby/ waiting area is not a space that staff enjoys working in. Understandably, a similar seventy-eight percent felt that the lobby area is not a calming space for clients and staff. Too much noise and traffic was noted by one respondent and another noted that the receptionist is required to block out many distractions while attempting to retrieve notes from a recorded device. These results are consistent with the staff discussions during the Design Thinking workshop. Privacy was noted as a major issue by the participants of the Design Thinking exercise, especially in regards to acoustic privacy.

The office spaces are another space that the majority of the staff does not enjoy working in. Regarding ergonomics and space planning efficiency, seventy eight percent of staff members surveyed stated that they did not like working in the existing offices. Improved organizational management was cited by most respondents as a strong need throughout the administrative areas. The major items listed by staff that require closed closet storage include accounting, employee, client and payroll records and office supplies. Clothing was also listed, as the employment services program offers free business attire to clients. The only storage items that need to be accessed by clients include the clothing closet and personal items including diapers and training materials.

The conference room is currently being used as a classroom during construction, but once the addition is complete it will resume its original function. This is an area that most staff feels needs improvement. The conference room is reported to be used at least four times a week for pre placement training, at least

one day per week for management meetings which last two to three hours and occasionally for staff meetings. According to the staff the conference room is in strong need of laptop access to power and internet as well as a ceiling projector, screen and a storage cabinet for equipment. The projector and screen were a priority for one hundred percent of the participants, as well as internet access, acoustical privacy and speakers for multimedia presentations. Comfortable, washable chairs were cited as a major design consideration as well as acoustical control and a calming atmosphere with task specific lighting.

Most staff noted that the existing kitchen does not currently function well and is not adequately ADAAG compliant. During the Design Thinking exercise one of the concerns mentioned by the participants was that the second door to the kitchen is often inaccessible because it opens into the Enrich room. However, when surveyed, sixty seven percent of respondents said that it is very important that the kitchen have direct access to the Enrich room. Currently the kitchen is used by clients as well as staff, which was also noted in the Design Thinking workshop as an issue. The staff desired a separate space to keep their food safe from clients who might help themselves to the contents of the refrigerator. The major modifications needed in the kitchen according to the survey are ventilation, organizational storage, non-slip flooring and task specific lighting.

The iForce classroom fared better than most spaces reviewed in the survey with forty-five percent of staff reporting it as a space that is efficient for staff and clients to complete required tasks. Height adjustable workstations,

comfortable and washable seating, non-slip flooring and lockable organizational storage were the major design considerations listed by staff within this space.

The Enrich classroom surprisingly had seventy-two percent of respondents say that they enjoyed working in the room. Comfortable and washable seating, organizational storage, visually stimulating items for clients were cited as important within this space. Direct access to the kitchen was also a major desire as well as natural lighting and a calming environment.

Regarding aesthetics, the facility did not fare well at all. Eighty-six percent of survey participants said that the current visual appeal of the facility does not align with the mission of the organization. When asked to elaborate, participants said that walking towards an attractive, inviting space upon arrival would make a much better impression and would contribute to a better overall feeling for staff, clients and visitors. One staff member felt that the low visual appeal of the facility actually turns away potential clients and that the building needs to be upgraded and modernized. Seventy-one percent of respondents felt that the existing building does not foster and encourage collaborative working environments because some staff offices are in another building and that there is a need for more small meeting and training areas. This information is consistent with the staff interviews and Design Thinking discussions.

In response to the importance of natural lighting, survey respondents cited the areas most in need of natural light are the lobby, administrative offices, conference room, iForce classroom and the Enrich room. Lighting is noted as a concern in the Enrich room, lobby restrooms and the kitchen. These are the three

areas that do not have any source of natural light whatsoever, and are inadequately lit by fluorescent fixtures. Acoustical control was reported to be very important in the lobby, administrative offices, conference room, iForce classroom, Enrich room and the changing rooms. This data is consistent with the staff interviews and Design Thinking discussions as these are the areas where the most privacy seems to be required.

#### **4. Explanation of Design Related Theories and Principles**

The term *Inclusive Design* is defined by as “similar to universal design” in that it seeks to design for all targets, products, environments and services that can be used by many people without the need for adaptation. The term originated in the United Kingdom where it was first used to refer to providing quality of life and independent living for the aging population. It was further defined by the British Standard Institute as “the design of mainstream products and/ or services that are accessible and usable by people with the widest range of abilities within the widest range of situation without the need for special adaptation for specialized design” (Nussbaumer 2012).

Inclusive design moves past the Americans with Disabilities Act Accessibility Guidelines (ADAAG) which provides standards that regulate the construction and alteration of places of “public accommodation, commercial facilities, and state and local government facilities.” (United States Access Board) Often used in conjunction with ADAAG standards, Inclusive Design seeks a wider range of solutions that do not require specific adaptations for use. Figure 17 illustrates the five principles of Inclusive Design.

**Figure 17**

## Five Principles of Inclusive Design

**People:** Place people at the heart of the design process

**Diversity:** Acknowledge diversity and difference

**Choice:** Offer choices where a single design solution cannot accommodate all users

**Flexibility:** Provides for flexibility in use

**Convenience:** Design buildings and environments that are convenient and enjoyable to use for everyone

**Source: Inclusive Design A Universal Need, Linda L. Nussbaumer**

The Eden Alternative® is an international non-profit organization founded by geriatrician Dr. William Thomas. It is a company dedicated to culture change in the senior living community and works to “eliminate loneliness, helplessness and boredom that make life intolerable in most of today’s care facilities.” The organization champions a principle-based philosophy and implements ongoing education initiatives that work towards de-institutionalizing the culture and environment of senior facilities in the US, Canada, Europe and Australia. The Eden Alternative® corporations is comprised of office staff, 50 educators, 60 mentors and 15,000 associates that work with senior facilities to facilitate movement “away from the top-down bureaucratic approach to management and moving decision making closer to the elders.” (The Eden Alternative, 2009)

The ten Eden Alternative® Principles can be applied to interior design projects to create facilities that include a variety of activities, provide green spaces and include opportunities for various ages to interact. Because of the multigenerational spread of ages among clients and staff at the Bridges facility in

Rockledge, Florida identified by president and CEO David Cooke, this philosophical approach is ideal for the renovations to the facility. (Figure 18) illustrates the ten Eden Alternative® Principles.

**Figure 18**

<b>Ten Principles of The Eden Alternative</b>	1. The 3 plagues of loneliness, helplessness, and boredom account for the bulk of suffering among our elders
	2. An elder-centered community commits to creating a human habitat where life revolves around close and continuing contact with plants, animals and children.
	3. Loving companionship is the antidote to loneliness. Elders deserve easy access to human and animal companionship.
	4. An elder-centered community creates opportunity to give as well as receive care. This is the antidote to helplessness.
	5. An elder-centered community imbues daily life with variety and spontaneity by creating an environment in which unexpected and unpredictable interactions and happenings can take place. This is the antidote to boredom.
	6. Meaningless activity corrodes the human spirit. The opportunity to do things that we find meaningful is essential to human health.
	7. Medical treatment should be the servant of genuine human caring, never its master
	8. An elder-centered community honors its elders by de-emphasizing top-down bureaucratic authority, seeking instead to place the maximum possible decision-making authority into the hands of the elders or into the hands of those closest to them
	9. Creating an elder-centred community is a never-ending process. Human growth must never be separated from human life.
	10. Wise leadership is the lifeblood of any struggle against the three plagues. For it, there can be no substitute.

**Source: Inclusive Design A Universal Need, Linda L. Nussbaumer**

The term *Evidence-Based Design* is a research approach used by interior designers to collect evidence from research and practice in making design decisions. P4 (Nussbaumer, Evidence Based Design for Interior Designers, 2009) Although it can include both quantitative and qualitative methods to gather information, evidence-based design in this study will be used to describe objective methods including the impact of science on design in the area of healthcare. The use of evidence based design methodologies within this study support the assertion that the “pairing of objective knowledge with intuitive knowledge enables designers to deal with complex situations.” (Pable, 2009) Sources for evidence within this study include academic journals, trade publications, statistical analysis, behavior observation and various research summaries. Figure 19 details the characteristics of Evidence-Based Design

**Figure 19**

**Twelve  
Principles  
of  
Evidence-  
Based  
Design**

1. User Needs and Characteristics
2. Structural and Contextual needs
3. Sustainability Needs
4. Human Factors
5. Economic Needs
6. Functional Needs
7. Appropriate Furniture Fixtures and Equipment (FF&E)
8. Specific Design Types
9. Diversity Aspects of Design
10. Precedents in Historical Design
11. Develop Program Requirements
12. Use of Design Theory to Analyze and Provide Feedback

**Source: Evidence Based Design for Interior Designers, Linda L. Nussbaumer**



#### **4.1 Explanation of the link between Inclusive Design, The Eden**

##### **Alternative Philosophy and Evidence-Based Design**

Inclusive Design, the Eden Alternative and Evidence-based design carry similar importance in the realm of healthcare interiors. All three theories seek to advance past the status quo into a new era of design. Inclusive design attempts to move past the precepts of ADAAG and design in such a way that is universally inclusive for the most broad spectrum of society. Instead of altering an existing interior with ADAAG compliant solutions that can be purchased from a catalogue, Inclusive design seeks a holistic approach to design. It is almost radical in its assertion to design for accessibility from the very beginning and in such a way that is aesthetically beautiful as well as universally accessible. The Eden Alternative also challenges the typical way of doing things within an elder-focused interior. Both inclusive design and the Eden Alternative reject institutionalized solutions rife with hierarchy and are aesthetically sterile and mundane. Evidence Based design is the data fueled engine that thrusts both inclusive design and the Eden Alternative into orbit. Through careful analysis of published research, interior designers can put the principles of inclusive design and the Eden Alternative into action.

#### **4.2 Explanation of the Relevance of Design Thinking within the context of this study**

Design Thinking is an innovative method of gathering information and generating

creative solutions to complex problems. The theories behind this technique aim to place the client at the center of the problem solving experience and this is very relevant to this study. The designer's typical approach to a project is to interview the client, which is often the upper administration of an organization, tour the site and use his or her own knowledge of space planning and materials to come up with a solution for the interior. Because of the unique nature of the facility in this study, it is very relevant to follow the Design Thinking's guidelines and put the staff at the center of the problem solving exercise. Unlike a typical office building or traditional healthcare facility, the 1694 Cedar Street facility is unique in its services, programs and clientele. The diversity of the services and range of client's abilities and ages make direct input from staff imperative. Design Thinking enabled the staff to discuss openly and honestly about the most important issues, and fostered a sense of empathy and collaboration between the designer and the users of the space.

## **5. Statement of the Current Problem**

Bridges is a community-based organization in Brevard County, FL that has supported children and adults with disabilities for more than fifty years. (Bridges, 2013) As the Bridges facility located at 1694 Cedar Street in Rockledge, Florida undergoes a renovation in 2013 the administration seeks to span the gap between the construction of a new northern wing and the renovation of the existing structure. The qualitative and quantitative research methodologies and design analyses within this report seek to support design recommendations for the creation of a cohesive, inclusive interior environment within the Bridges day

facility. A focus should be made on making the facility an environment that is accessible for people with a range of physical and mental disabilities as well as for the elder population of the clientele.

Evidence Based Design (EBD) principles employed in this analysis reveal many changes desired by the staff regarding the function and aesthetics of the current Bridges facility. Seventy five percent of the staff do not feel that the design of the existing Bridges facility adequately accommodates the senior clientele.

The major areas within the facility that were identified as needing improvement are the conference room, kitchen, iForce classroom, Enrich room, lobby area, laundry areas and administrative offices, respectively. A majority of the staff in the survey stated that they do not enjoy working in the lobby/ waiting area and cited ergonomics and space planning efficiency as areas of high concern. Natural lighting, ergonomics, adequate acoustics and washability of furniture were consistently listed as needs within the interior space. Compatibility with Americans with Disabilities Act Accessibility Guidelines (ADAAG) is also listed as a strong concern by the staff.

### **5.1 Description of the Elder Population within the area of focus**

The population by age of the clientele and staff at the Bridges Facility in Rockledge, Florida represents a microcosm of the current population of Brevard County, Florida, located on the eastern coast of central Florida. According to David Cooke, the President and CEO of the Bridges organization, the percentage of ages for Bridges' clientele and staff mirror each other and range from ten

percent for ages eighteen to twenty-five, seventy five percent for ages twenty-five to sixty-five and fifteen percent for those aged over sixty-five. (Cooke, 2013) The 2010 US Census reports for Brevard County, Florida. The Brevard County Commission on Aging (BCOA) reported a similar statistical spread at a commissioner workshop on August 16, 2012. Philip Koechlein of the BCOA reported “in 2011, for the first time in [Brevard County] history the senior population surpassed that of children. Brevard County has more people over the age of sixty-five (115,080) than under the age of fifteen (85,993).” (Koechlein, 2012)

The population of Brevard County over the last seventy years has been greatly influenced by those employed by the US space industry. The shared history of NASA and Bridges, two non-profit organizations that began in in Brevard County, FL in the mid twentieth century is remarkable. NASA began in 1958, and Bridges began in 1956. The historically significant American community of Brevard County, FL faces the challenges of a new focus without the NASA shuttle program and accommodating an increasingly aging population, while the similarly aged Bridges organization faces similar challenges.

## **6. Visual Analysis of the 1694 Cedar Street Facility**

### **6.1 Explanation of the Interior Design Process**

Interior Design is defined by the National Council for Interior Design Qualification (NCIDQ) as a multi-faceted profession in which creative and technical solutions are applied within a structure to achieve a built interior environment. Interior Designers seek to create solutions that are not only

aesthetically attractive, but functional and enhance the quality of life and culture of the occupants. The process of interior design follows a systematic and coordinated methodology including research, analysis and integration of knowledge into the overall creative process. (National Council for Interior Design Qualification, 2012)

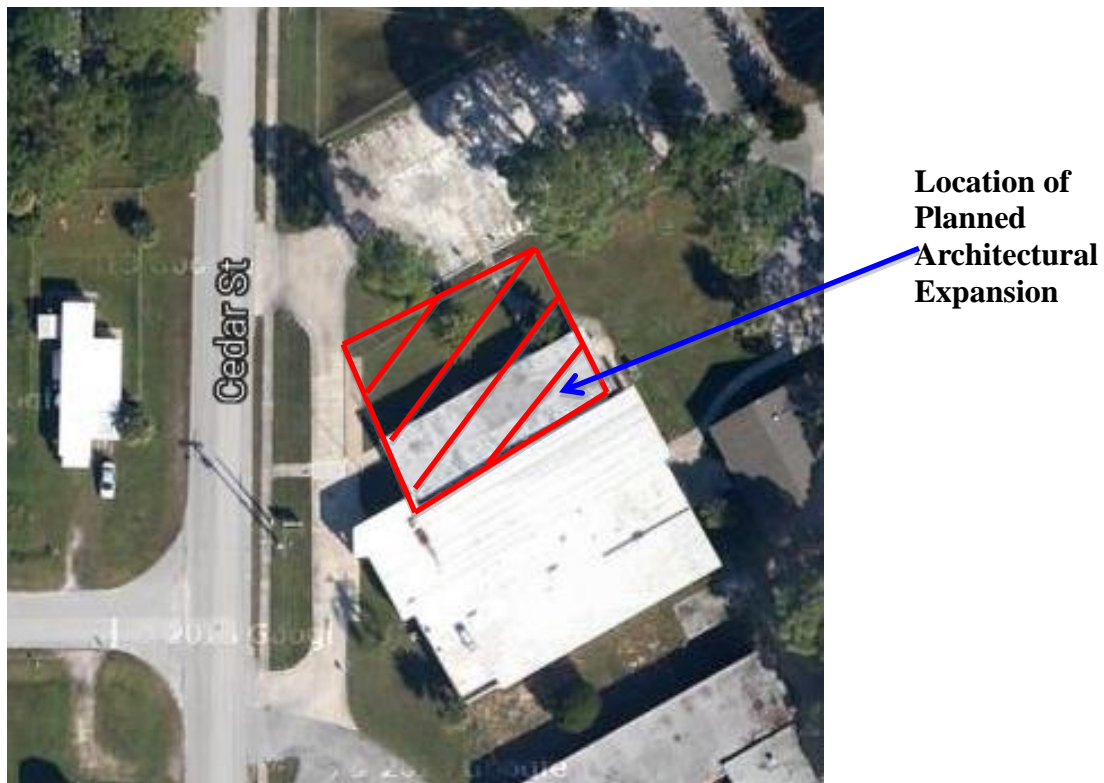
Professional interior design services encompass a systematic process that is integrated into projects in a variety of ways, depending on the size and complexity of the project. The general steps within the interior design process are as follows: research, programming, construction documents, construction procurement, contract administration, and post occupancy documentation. (Addi & Lytle, 2000) The focus of this report is centered within the research and programming phases described above.

## **6.2 Assessment of Existing Conditions of the Facility**

The interior spaces discussed within the design analysis are separated into three sections: Common Areas-Public, Common Areas-Private, and Administrative Areas. Within this document, public areas are defined as interior spaces that are open to the general public visiting the facility. Private areas are defined as interior spaces that are open only to clients and staff, and Administrative areas are defined as interior spaces available to the administrative staff within the organization. See figures 20, 21 and 22 for an annotated floor plan, street view and satellite view of the existing facility.

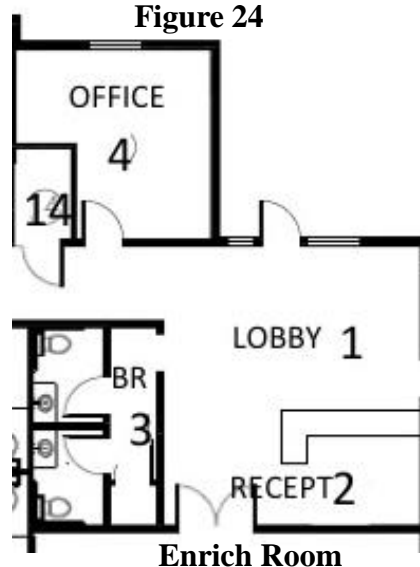


**Satellite View of 1694 Cedar Street, Rockledge, Florida, Source: Google Maps  
Figure 22**



### **6.2.1 Assessment of Existing Conditions of the Facility: Common Areas- Public**

The current reception area is accessed from the main public entryway to the building. The existing materials are a combination of dark and medium browns in the approximately six inches squared flooring tile installed on a diagonal, white walls, pink accent wall behind the reception desk and purple carpeting leading into the administrative offices to the south, refer to figure 23.

**Figure 23****Figure 24**

The 2'x2' ceiling tiles are discolored and the grid is installed parallel to the entryway exterior wall visually competes with the diagonal floor grid. The wood trim around the doors and wall base is a medium oak stain. The reception desk is visually (Figure 23) cluttered with paperwork and brochures, and items stacked behind the desk along the east wall. The main entrance doors to the Enrich Room is accessed directly behind the reception desk as seen in figure 24.

The existing waiting area consists of a few small arm chairs as seen in figure 25, located along the north wall and glass entry wall. The public restrooms are currently located adjacent to the reception area and do not presently meet ADA guidelines for several reasons. The entrance doors leading to the bathroom vestibule and bathrooms do not meet the minimum width requirements of 32", and neither bathroom allows for adequate turning radii for a wheelchair, refer to figure 26. The materials within the bathrooms are consistent with those in the reception area. The reception, waiting areas and bathrooms are currently lit with harsh fluorescent lighting.



**Figure 25****Figure 26**

#### **6.2.1.1 Analysis of Users, Needs and Preferences**

- Common Areas-Public: Users
  - The users of the reception area, waiting room and public restroom are a combination of the staff, clients and client families and the general public.
- Common Areas-Public: User Needs
  - Acoustical privacy is needed between the reception area and the Enrich Room
  - Acoustical privacy, for HIPPA purposes is also needed for the receptionist, as stated in the Design Thinking exercise and staff comments from the online survey.
  - Acoustical privacy is needed between the reception area and the Enrich Room. Currently, the existing materials within the space are hard: ceramic tile, glass wall at entryway, gypsum wallboard and wood trim which contribute to a noisy atmosphere and any loud sounds from the

Enrich room adjacent to the receptionist area are heard in the lobby.

- A cohesive color palette is needed throughout the materials within this space, see figure 27. Flooring, ceiling materials, paint, trim and furnishings to work towards an interior space that is welcoming to visitors and comfortable for staff and clients.



**Figure 27**  
**Rendered Floor Plan of design concept for 1694 Cedar Street, Rockledge, FL**  
**Drawn by J. Reed and B. Mozo Eastern Florida State College 2013**

- Furniture that contributes to efficient organization and privacy within the reception station is needed
- A display area is needed to help reduce clutter on the transaction counter
- Need larger, more comfortable seating options
- Existing public bathrooms are not ADA compliant and should be made compliant
- Need solution for current Fluorescent inefficient and abrasive lighting

- Common Areas-Public: Design Recommendations
  - Inclusive design maintains that people should be at the heart of the design process (Dong et al 2012).
  - Inclusive Design criteria require that the interior should be responsive, adaptable, accessible and secure, relating to the health safety and welfare of the users (Nussbaumer 2012)
  - Within the reception area, the people to be considered are not only visitors to the facility, but also staff using the space and the clientele using the waiting room or utilizing the adjacent Enrich room and classrooms. The reception area, figure 28, offers the first impression to visitors and must aesthetically and functionally represent the values of the Bridges Organization.



**Figure 28**

**Perspective view design concept of the reception area and lobby, 1694 Cedar Street, Rockledge, FL, Drawn by J. Reed and B.Mozo Eastern Florida State College 2013**

- Several design changes to the interior space will address the need identified above for acoustical privacy. Sealed cork flooring installed with a cork underlay to absorb sound will help create a welcoming atmosphere

and will also help quiet the noisy entryway. Cork flooring is a nice alternative to ceramic tile or vinyl composition tile because it has the warmth and softness attributed to carpet, but maintains washability when sealed properly.

- White-noise generators located above the ceiling grid out of view can help the issue of acoustical privacy by adding a constant background sound, similar to the sound of running water. This sound becomes integrated into the environment while drowning out unwanted sounds from adjacent rooms like the bathrooms and the Enrich room.
- New acoustic ceiling tiles with an adequate sound transmission class rating (STC) that provide a greater sound buffer within the space will help in several ways. The whiteness of the new tiles will reflect the natural light from outside and help to brighten up the interior space, while also absorbing sound from the interior.
- A water feature and plants may also provide greater acoustic privacy and is aligned with the Eden Alternative® Principles.
- To accommodate the diversity in ages documented in this study, changes can be made within the interior to make the space adaptable and streamline the experience making it flexible and easy to use.
- Ergonomics may be addressed by adjusting the reception station to include more storage options, ergonomic task seating and an adjustable height work surface.
- Replace the cluttered bulletin board outside of the restrooms with a better-

organized communication system that may be digitally accessed to cut down on visual clutter. A large screen television can be mounted to the wall to advertise services and highlight upcoming events in lieu of a bulletin board.

- The existing public restrooms to meet ADA guidelines and specifications. The best solution would be to demolish the existing two bathrooms and create one ADA accessible restroom that is accessible to the public. The existing space is not large enough to create two bathrooms large enough for the clearances required by the ADAAG without taking up valuable space within the reception room.
- Safety was cited by staff as a major concern in the lobby area. Lockable doorways that separate the lobby area from the rest of the facility would be a strong suggestion.
- Adequate signage is also recommended. There should be a logo behind or near the receptionist station that greets visitors and provides a sense of orientation, and signs designating the public access bathroom and the location of public services including the Quick Prints fingerprinting services. These were major privacy concerns raised by the staff in surveys and interviews. See section 3.2.2.1 and 3.3.2.
- Following the second principle within the Eden Alternative within the reception, which discusses the importance of providing clients contact with plants, animals and children as a successful pathway to “a life worth living,” A water feature would be helpful in achieving a calming

atmosphere while providing acoustical privacy within the space.

- Plants that are easy to maintain should be placed near the water feature to accentuate the calm within the space
- An aquarium located within the reception area would be an excellent way to provide the clients and staff with a connection to animals while also creating pleasant background noise within the space, to address the cited issue of a need for sound masking from the adjacent bathrooms and Enrich room.

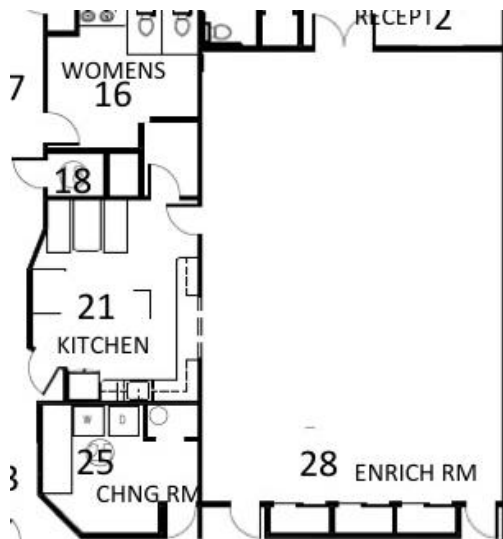
- **6.2.2 Assessment of Existing Conditions of the Facility: Common Areas-Private**

The Enrich and iForce programs are two unique services that Bridges provides to clientele. The Enrich program is an intensive, therapeutic full day program that currently serves thirteen individuals of varying disabilities. Clients spend six hours a day on site at the Rockledge facility, mainly within the Enrich Room. The room must remain easy to clean because Bridges accepts clients within this program that may need toilet help. The current room has blue paint on the walls, brown vinyl composition tile and the same 2'x2' discolored ceiling tiles used in the reception area. There is a pass through to the current kitchen area and three supervisor stations within the room.

The Enrich room is accessible through a set of double doors that lead into the reception area as well as a door leading into the kitchen and two single doors along the east wall. Access to the bathroom for clients is through the double doors into the public restrooms, seen on the plan in figure 29 and a new door to

provide access to the new restrooms to be created with the addition this year.

Currently there is access to the changing room through the door adjacent to the wall closets, as seen in figure 29 and figure 30.



**Figure 29**  
**Floor plan depicting the Kitchen,**  
**Enrich classroom and**  
**Laundry/Changing room**



**Figure 30**  
**Interior view of the Enrich classroom looking**  
**towards the back wall. The door on the right**  
**leads to the hallway adjacent to the**  
**Laundry/Changing room.**



The Enrich Room is a multi-purpose room and currently includes a piano, television, Wii, computers, craft stations, and workout and physical therapy equipment as seen in figures 31, 32 and 33 (Matchett & Cooke, 2013).

**Figure 31**



**Figure 32**



**Figure 33**





The iForce program is a therapeutic, full day work program that serves thirteen individuals. iForce participants are paid to perform assembly work for items used with computers like mice, keyboards, pharites, boxes and paper instructions for equipment. Participants within this program learn valuable employment skills that can lead to employment within the community. There is one supervisor located within this area and accommodations are needed for individual workstations as well as a class setting, refer to figures 34, 35 and 36 below.

**Figure 34**



**Figure 35**



**Figure 36**



### **6.2.2.1 Analysis of Users, Needs and Preferences**

- Common Areas-Private: Users
  - The users of the common private areas including the Enrich classroom and the iForce classroom are clients and supportive staff members. These areas are not open to the general public and are locations of the two main therapeutic day programs housed within the facility.
- Common Areas-Private: User Needs
  - Need for more efficient storage for equipment in both the Enrich and iForce classrooms to reduce clutter and contribute to a sense of calm.
  - A partition is needed within the Enrich classroom space to provide separation between the various activities within the room.
  - Better task lighting is needed in both the Enrich classroom and the iForce classroom. Currently there is fluorescent ambient lighting in both rooms. The Enrich classroom has no source of natural light and the iForce classroom has a clerestory window with vertical blinds that are difficult to operate.
  - Both the Enrich and iForce classrooms are supervised internally by supportive staff members. The Enrich classroom typically has three to four supportive staff members who need flexible, ergonomic workstations equally spaced throughout the large room that allow full visual of the entire classroom. The supportive staff station within the iForce classroom needs to be centrally located within the classroom and requires adequate storage to allow for a well-organized and secure work surface.

- The clients within the Enrich classroom need collaborative, ergonomic workspaces visible by the supervisor that allow for successful completion of various fine motor skill exercises. The workstations for the clients need to be adjustable to accommodate varying heights of wheelchairs and mobility aides.
- The iForce participants work independently and need work stations that provide individual, well lit and well organized spaces for their assembly work
- Common Areas-Private: Design Recommendations
  - A key component within diversity and flexibility within both the Enrich and iForce classrooms is lighting. Currently fluorescent fixtures mounted on the ceiling provide the lighting, and these should be replaced with dimmable direct-indirect fixtures that will not project a glare downward onto the clients working at stations.
  - A track system of lighting fixtures that is adjustable to satisfy the changing needs of the Enrich clients as well as the iForce clients would be beneficial. The iForce members should have lighting available on their individual workstations as well as better ambient lighting, as discussed above.
  - To take full advantage of a layered lighting solution (using a combination of both natural and artificial light) within the iForce room, easily adjustable window shades should be installed at the clerestory windows. If the supervisor is able to adjust the level of light filtration on the windows

throughout the day, the environment will benefit from natural lighting when available in addition to the task lighting as mentioned above.

- The workstations within both the Enrich and iForce classrooms should be able to accommodate a range of sizes of the individuals and perhaps change from a sitting to a standing position, and adjust to varying collaborative clusters as required. Adjustable workstations will coincide with the overall concept of placing the users at the center of the design changes, as addressed in both Inclusive design and Eden Alternative principles.
- The first, second and ninth Eden Alternative® Principles can be applied to the Enrich Room to create a better functioning, efficient space for clients and staff. The first principle seeks to eliminate loneliness, helplessness and boredom and this is a key element to be considered for the clients that can spend up to six hours a day within this space. Some clients are ambulatory while others are confined to a wheelchair, so care should be taken in the design of the ceiling, walls and flooring to create an environment that is stimulating from a variety of vantage points. This can be done with soffits and design elements in the ceiling that provide visual interest.
- The Enrich classroom does not currently have a source for natural light and so a skylight, light well and or clerestory windows may be considered. This would provide a welcome design change in the ceiling, which is currently a sea of discolored ceiling tiles and fluorescent light

fixtures.

- The second principle encourages contact with plants, animals and children that can be fostered by adding a hydroponic garden or green wall within the Enrich classroom. This addition of plants will help the indoor air quality of the Enrich classroom and will also comply with the Eden Alternative principles. Acoustic considerations should be taken into account within this space to provide privacy for clients as well as people in the reception and waiting room.
- The ninth principle focuses on human growth, which directly aligns with the mission of the Enrich classroom. Growth can be mental or physical. Movement can be encouraged both cognitively and physically through visual movement in the ceiling, walls and flooring. Sealed cork flooring that coordinates with the flooring recommended for the reception room can be installed in varying colors to provide an interesting pattern in the floor, mirrored in elements of design used in the ceiling. The use of cork flooring will also help improve the indoor air quality of the space, see figure 37.



**Figure 37**

**Perspective view of design concept of Enrich Classroom, 1694 Cedar Street, Rockledge, FL, Drawn by J. Reed, B. Mozo Eastern Florida State College 2013**

- A sensory area will be extremely helpful within the Enrich classroom space to accommodate clients with autism and other sensory disabilities. People with autism “have difficulty with or do not respond to simultaneous, multiple sensory cues. “(Nussbaumer, Human Factors in the Built Environment) Loud noises, fluorescent lighting, and continuous noise can be difficult for people living with autism, and it was evident through observations of the clientele at the Bridges facility that many mentally disabled clients struggled with the lack of ability to control sensory stimuli. Dr. Rosemary Laird also stated in her interview for this project that seniors can also become over stimulated and would benefit from a sensory area or calming space.
- Interior environments striving to accommodate people with sensory needs should contain a quiet place for concentration as well as escaping over stimulating spaces, and visual stimulation that does not compete with the teacher or staff member.(Nussbaumer, Human Factors in the Built Environment) Currently there is no quiet place within the Enrich room for clients to concentrate or escape from an over stimulating environment., see figure 38.



**Figure 38**

**Perspective view of a proposed sensory area in the Enrich Classroom, Drawn by S. Bethoney, Eastern Florida State College 2013**

### **6.2.3 Assessment of Existing Conditions of the Facility: Administrative Areas**

Bridges offers a wide variety of community services and only a small percentage of the administrative staff is housed in the Cedar Street facility. Based on observation, staff supporting five out of the twenty-three programs and services listed in appendix 2 and 3 are located at the Bridges facility. Many of the services and programs are community based which accounts for the small number of administrative offices at the Cedar Street site. Based on onsite observations, the staff are typically in their offices on a regular basis are those working with clients in the day programs in the iForce, Adult Basic Education and Enrich Room. The other administrative staff were observed to be regularly out of

the office, working with clients in the community. Referring to Figures 15, 16 and 20, the rooms that are used as offices (excluding the iForce and Enrich rooms) are: 1, 4, 5, 7, 10, 20, 26, 27.

All of the offices appear cluttered and utilize miss-matched furniture and equipment as seen in figure 39. The color palette in the administrative areas is white and grey in all of the offices except for the conference room, which has been painted teal with purple molding, see figure 40. While this was likely an attempt to bring color into the conference room, the overall effect contributes to the visual clutter.

It is apparent by observation that ergonomics and organization are two major needs in the offices. When asked in a survey, these were two major concerns of the staff (Appendix 1). Staff collaboration is difficult in the current facility because the offices are enclosed and do not offer flexibility or casual collaborative spaces.

**Figure 39**



**Figure 40**





### **6.2.3.1 Analysis of Users, Needs and Preferences**

- Administrative Areas: Users
  - The users of the administrative areas are the staff, clients, client families, potential clients and members of outside government agencies including the school board, vocational rehabilitation and the federal and state government.
- Common Areas-Private: User Needs
  - Need for ergonomic task chairs
  - Need for unifying color scheme on walls instead of the monochromatic color palette existing.
  - Acoustical sound control between offices
  - Need lighting that does not provide glare on work surfaces and computer monitors
  - Organizational storage and desks with returns are needed within the offices
  - Task specific lighting is needed at each desk, beneath overhead bins to provide proper lighting at the desktop.
  - Washable fabric on the chairs within the offices and conference rooms
- Common Areas-Private: Design Recommendations
  - The furniture within the offices needs to be ergonomic and well suited for the task required to be accomplished by the staff member
  - Because of the transient nature of some of the clients, the furniture needs

to be washable in case of accident or soil.

- The conference room is used by staff and also clients. The space is used for multiple purposes and can be a meeting place for staff and also can be used as a classroom for clients.
- Color can be used for way finding within the circular corridor, and can help foster a feeling of collaborative efficiency within the offices and conference room.
- The offices and conference room should follow ADAAG guidelines to accommodate all users with adequate space for a wheelchair to navigate within the space and work surfaces with adjustable heights to accommodate the various needs of clients and staff.
- The lights in the conference room should be dimmable to accommodate presentations.
- When windows are present, adjustable window shades can help the staff utilize natural light effectively.
- The survey revealed a need for more technology compatibility in the conference room including a projector and screen, laptop access to power and projector and adequate storage. If addressed, this will greatly accommodate diversity and flexibility within the conference room by allowing a variety of presentation and instruction styles to be utilized.
- Adjustable work surfaces and task chairs would be an effective addition to the offices to assist in the overall ergonomic use of the spaces. The conference room would benefit from this as well because of its use as a

multi-purpose space with staff and clients.

- The office and conference room furniture should accommodate a range of physical sizes of staff and clients.
- Acoustical controls are another need identified upon observation. Privacy is a major need as staff meets with clients to discuss their allocated funding and services plans. The staff needs the ability to shut their doors and lock their offices to prevent clients from accessing the rooms while unattended.
- The fifth Eden Alternative® Principle can be applied to the administrative offices and conference room. The fifth principle states that an elder-centered community imbues daily life with variety and spontaneity by creating an environment in which unexpected and unpredictable interactions and happenings can take place. This is noted by the Eden Alternative® as being the anecdote to boredom, but undoubtedly it can also create challenges for administrative staff. Upon observation the fifth principle was seen to be in action within the Bridges facility.
- The client-based programs were well structured and supervised, however spontaneity was allowed. This was evident when clients in the iForce room were seen working collectively on projects in assembly line fashion and a client who needed a break or a different stimulus would be allowed to get up from the table and talk with staff in the hall. While this created a happy and relaxed atmosphere for the client, the need for acoustical controls and privacy for staff in the administrative offices became

apparent. If a staff member is working in their office, there are times when a wandering client will be welcome and other times when an unexpected visitor is not appropriate. Acoustical privacy can be added with white noise generators in the ceiling of the offices that would help to drown out loud noises from the hallway or classrooms. Use of sound absorbing materials like sealed cork flooring, recycled carpeting and wall panels can also be used to help provide acoustical privacy when needed.

## **7. Conclusion**

### **7.1 Restatement of the Problem**

As the Bridges facility located at 1694 Cedar Street in Rockledge, Florida undergoes a renovation the administration seeks to span the gap between the construction of a new northern wing and the renovation of the existing structure accommodating the aging clientele. Bridges is a not for profit organization that has served clients with physical and mental disabilities in Brevard County, Florida for over 55 years. (Appendix 2) The population by age of the clientele and staff at the Bridges Facility represents a microcosm of the current population of Brevard County, Florida, located on the eastern coast of central Florida. The age statistics within the Bridges Organization and those of Brevard County mirror each other in current status and future projections, supported by the statistics provided by Bridges President and CEO/ President David Cooke and Brevard County Manager Howard Tipton. Both have more people over the age of 65 than under 15.

## **7.2 Explanation of the Design Analysis Related to Methodologies and Theories**

Because of the age demographics of the clientele, an analysis of public and private common areas and administrative areas within the building was conducted using programming interviews, a Design Thinking Workshop, staff surveys and behavior mapping techniques. Inclusive design principles, Eden Alternative Principles, and Evidence Based Design principles were applied to the visual analysis of the existing structure and influenced the design recommendations provided. The programming interviews provided the initial background information on the Bridges Organization, the existing status of the structure and an outline for the planned construction changes. The staff surveys and Design Thinking workshop were useful in gathering information directly from the staff to learn about their unique needs. The behavior mapping techniques allowed for careful observation of the site and for an opportunity to visually discern any discrepancies between what the staff identified as a need and how the space was actually utilized.

Once the data was collected a visual analysis of the interior of the facility was conducted. The spaces were broken up into three main categories: public common areas, private common areas and administrative areas. The existing conditions were recorded for each space and then each of the three categories was analyzed according to the users of the space, the needs of the users within each space and finally design recommendations were made. While developing the design recommendations, Inclusive design principles and Eden Alternative

principles were considered.

Inclusive design principles were useful in analyzing this space because the facility serves the community and is a public, commercial space. These principles related to this project because they relate to taking universal design and ADAAG guidelines to a holistic level within the interior. Because of the physical and mental disabilities of the clients of this facility, these principles were very helpful in informing the recommended design initiatives. The use of Eden Alternative® Principles were also useful in this project because of the advanced age of many of the clients, as identified in interviews with the President and CEO of the Bridges Organization. The main objective of the Eden Alternative principles are to move away from institutionalized interior spaces and move towards a space that improves the well-being of the user and care-givers. The guidelines set forth by Eden Alternative® Dr. William Thomas are aligned with the concept of the founders of the Brevard Training Center, now known as Bridges. The founding group of parents sought an alternative to the predominant institutionalized solutions available in the 1950's and the interior of the main facility in Rockledge, Florida should visually reflect this.

### **7.3 Summary of Findings**

Although a variety of qualitative and quantitative methods were used to gather data throughout this study, there were many common themes that continued to arise. The staff is consistently dissatisfied with the existing facility not only because of aesthetic reasons but also because of a lack of proper functionality. Several of the major issues with the existing facility discovered were

a lack of privacy, poor acoustical control, inadequate lighting and lack of ADAAG compliance.

Based on observations, in addition to existing design problems, the facility is also not efficiently utilized by the staff. The majority of exterior windows are dedicated to cluttered private offices that often appear to go unused. Throughout many visits over a period of a year, it was observed that many of the staff members are consistently out in the community and not actually in their dedicated office space. This is an unfortunate misuse of natural light because the people that are most often in the building have very little, if any, access to natural light. The Enrich classroom is the largest room in the facility and houses the largest on-site therapeutic program. The clients and supportive staff within this room do not have access to any natural light and work within a space that reverberates with uncontrolled noise due to hard flooring and wall surfaces.

A major need that was observed throughout this space is adequate boundaries. This is a need for staff, clients and the general public entering this facility. Staff feels anxious about the general public entering the building and wandering through the halls and are frustrated by constant interruptions from clients and their fellow staff members. The clients will benefit from more clearly established boundaries because it will contribute to a sense of calm and understanding within the environment. Instead of wandering the halls when they are over stimulated, the clients will benefit greatly from a private, calm-room which will then reduce the incidence of clients interrupting staff in their offices. The general public will benefit from more clearly established boundaries most

specifically in the reception and lobby area. If the first area seen upon entering the building made clear the purpose of the building and the areas that the public is allowed to go, there would be much less confusion and possibly more clients for the organization.

#### **7.4 Limitations of the Study**

Limitations and assumptions of the study are relative to the sources selected. The first part of this study involves interviews with staff and medical professionals associated with the field of gerontology. The views of the interviewees may be skewed, thus skewing the information gathered. The online survey was completed by nine of the staff members of the Bridges Organization. These nine were staff members whose programs are conducted mostly on site. The opinions of these staff members are relative to their own experiences and opinions. The observations conducted were documented within the same week at two different times of the day. A more detailed series of observations may relate a different set of users within the space which could alter the information gathered.

#### **7.5 Conclusions**

The Bridges organization provides excellent quality care to its clients and much needed services to disabled people and their families within Brevard County, Florida. The goal of this analysis was to provide the Bridges organization with suggestions that will enable changes to the main facility that will aesthetically align with the mission and vision of the non-profit. The correlation between the quantitative and qualitative research methodologies within this study



are striking. The results of the interviews, staff surveys, behavior mapping observations, Design Thinking seminar, etc provided similar results that, in turn, informed the design decisions provided below.

A clear design concept for the interior space of the entire facility should be established. This will aide in unifying the architectural changes and material specifications made within the space. The concept should be abstract and encompass the inclusive design and Eden Alternative® Principles. An example would be to investigate the abstract characteristics of a bridge that the organization, as a whole, identifies with. The functionality of a bridge is important as well as the gently curved shape that spans a gap with strong supportive materials including cables and concrete. The linear organization of a bridge resembles the actual collaborative and linear structure of the staff and would relate well to the mission and vision of the organization.

Once established, the concept statement can be used to unify the interior environment into a cohesive whole. The image of a bridge would be on the wall behind the receptionist station and metal details would be used on the receptionist desk as well as in the floor as a channel separating flooring changes. The calming, subdued colors of blue and charcoal along with the the energetic hues of autumn orange would pair well with medium oak wood and stainless steel metallic accents throughout the space. Coordinating signage with the Bridges logo would be used throughout the space and changes of material in the floor will be paired with curves in the ceiling to direct clients and staff to major places of public gathering. The inevitable inclusion of a calming room and

staff collaborative workspace would anchor the functional effectiveness of the revised interior. The walls of the rarely used administrative offices will be demolished to allow for natural light to flood the interior of the space. The actual needs of the administrative staff will be analyzed to determine the need for lockable private offices which can be created with temporary partitions for future flexibility. Lastly a large window will be placed behind the receptionist desk and skylights in the Enrich classroom will be imperative to allow natural light into the large central classroom. The glass behind the reception desk will be frosted so as to allow light into the Enrich room but still allow the receptionist privacy from the clients and staff within the Enrich classroom. The materials used throughout the facility will include cork flooring, acoustical wall and ceiling treatments and natural water features to alleviate the acoustical problems within the space.

Changes made to the existing space to ensure an overall greater sense of calm include considerations to the indoor air quality, and perception of serenity within the interior mentioned above. The population of both clients and staff within the Bridges organization are aging and the trend must be assessed when the facility is renovated. This study is significant and applicable to the aging population across Florida and the United States. All of the design changes made within this space should work together to provide a cohesive environment that encourages growth for the clients as well as the staff.

## References

- Addi, G., & Lytle, J. (2000). Interior Design. In A. I. Architects, *The Architect's Handbook of Professional Practice* (13th Edition ed., pp. 1-7). American Institute of Architects.
- Joseph, A. (2006). *Health promotion by design in long-term care settings*. Center for Health Design.
- Ankerson, K & Gabb, B. (2005) Aging in Place: Breaking the Barriers. Implications Newsletter, InformeDesign. (Vol 7 Issue 4. pp 1-7)
- Aroztegui, C., Solovyova, I., Nanda, U. (2010). *Architectural Research and Representation: Expressing Sense of Place Through Storyboarding and Animatics*. Online: American Institute of Architects.
- Bayo, M. V., Garcia, A. M. and A. Garcia (1995). Noise levels in an urban hospital and workers' subjective responses. *Archives of Environmental Health*, 50: 247-251.
- Berg, B.L. (1989). *Qualitative Research Methods for the Social Sciences*. Needham, MA: Allyn & Bacon.
- Bosch, S. and Nanda, U. (2011), Outside the Ivory Tower: The Role of Healthcare Design Researchers in Practice. *Journal of Interior Design*, 36: v–xii. doi: 10.1111/j.1939-1668.2010.01055.x
- Botti-Salitsky, R. M. (2009). *Programming and Research: Skills and Techniques for Interior Designers*. Fairchild Books.
- Boyce, P., Hunter, C., & Howlett, O. (2003). The benefits of daylight through windows. *Troy, New York: Rensselaer Polytechnic Institute*.
- Bridges (2013) Bridges, Building Bridges to Better Lives [Brochure]. Rockledge, FL: Bridges.

Bridges. (2013, April 14). *My Bridges: A community based organization in Florida supporting children and adults with disabilities for more than fifty years.*

Retrieved April 14, 2013, from [www.mybridges.org](http://www.mybridges.org)

Brown, T. (2008). Design thinking. *Harvard business review*, 86(6), 84.

Center for Health Design (2008). EDAC Study Guide 1: An Introduction to Evidence-based

Design, p. 3. Retrieved from

[http://edac.healthdesign.org/EDAC\\_StudyGuide1.pdf](http://edac.healthdesign.org/EDAC_StudyGuide1.pdf) on January 2, 2011.

Cooke, D & Matchett, N. (2013, April 5). Interior Design Programming Interview for Bridges Day Facility. (L. Lorusso, Interviewer) Rockledge, FL, USA.

Cooke, D. (2013, April 12). Bridges Aging Statistics: Email. Rockledge, FL, USA.

Cosco, N. G., Moore, R. C., & Islam, M. Z. (2010). Behavior mapping: a method for linking preschool physical activity and outdoor design. *Med Sci Sports Exerc*, 42(3), 513-519.

Danko, S., Eshelman, P. and Hedge, A. (1990). A Taxonomy of Health, Safety, and Welfare Implications of Interior Design Decisions. *Journal of Interior Design*, 16: 19–30. doi: 10.1111/j.1939-1668.1990.tb00051.x

Dischler, D. (2014) About Us. [www.mybridges.org](http://www.mybridges.org). Retrieved April 5, 2014, from [www.mybridges.org/about-us/](http://www.mybridges.org/about-us/)

Diette G.B., Lechtzin N., Haponik E., Devrotes A. & Rubin H.R. (2003) Distraction therapy with nature sights and sounds reduces pain during flexible bronchoscopy. *Chest* 123, 941–948.

DeBello, V. L. (2008, March 7). Remembering an Infamous New York Institution. (A.

Stewart, Interviewer) National Public Radio.

Delmarva Foundation Florida Statewide Quality Assurance Program (2014)

<https://www.dfmc-florida.org>. Retrieved April 5, 2014 from <https://www.dfmc-florida.org/index.html>.

Design Thinking for Educators. (n.d.). Retrieved on April 6, 2014 from

<http://designthinkingforeducators.com/design-thinking/>

Dijkstra, K., Pieterse, M., & Pruyn, A. (2006). Physical environmental stimuli that turn healthcare facilities into healing environments through psychologically mediated effects: systematic review. *Journal of advanced nursing*, 56(2), 166-181.

Dong, H., Cassim, J., Coleman, R., & Clarkson, J. (2012). *Design for inclusivity: a practical guide to accessible, innovative and user-centred design*. Gower Publishing, Ltd.

ESRI. GIS and Mapping Software Web Site [Internet]. Redlands

(CA): ESRI; [cited 2008 Oct 15]. Available from: <http://www.esri.com>.

Grant, L. A., & Norton, L. (2003, November). A stage model of culture change in nursing facilities. In *Symposium: Culture Change II: Theory and Practice, Vision and Reality, The 56th Annual Scientific Meeting of the Gerontological Society of America*.

Harris, D. (2000). *Environmental Quality and Healing Environments: A Study of Flooring Materials in a Healthcare Telemetry Unit*. Unpublished doctoral dissertation, Department of Architecture, Texas A&M University, College Station, TX.

Horsburgh, C. R. (1995). Healing by design. *New England Journal of Medicine*, 333 (11): 735-740.

IDEO (2014) Retrieved from [www.ideo.com](http://www.ideo.com)

Joseph, A. (2006). *Health promotion by design in long-term care settings*. Center for Health Design.

Joseph, A., Zimring, C., Harris-Kojetin, L., & Kiefer, K. (2006 (in press)). Presence and visibility of outdoor and indoor physical activity features and participation in physical activity among older adults in retirement communities. *Journal of Housing for the Elderly*, 19(3-4).

Kane, R. A. (2001). Long term care and a good quality of life: Bringing them closer together. *The Gerontologist*, 41(3), 293-304.

Kane, R. A., Lum, T. Y., Cutler, L. J., Degenholtz, H. B., & Tzy-Chyi, Y. (2007). Resident Outcomes in Small-House Nursing Homes: A Longitudinal Evaluation of the Initial Green House Program. *Journal Of The American Geriatrics Society*, 55(6), 832-839. doi:10.1111/j.1532-5415.2007.01169.x

Keep P., James J. & Inman M. (1980) Windows in the intensive therapy unit. *Anaesthesia* 35, 257-262.

Koechlein, P. (2012). Brevard County Commission on Aging Commissioner Workshop. (pp. 1-140). Brevard County Commission on Aging.

KSA Interiors (2014) Latest News: KSA Presents Design Thinking at National Conferences [Blog Post]. Retrieved from [www.ksainteriors.com/news-and-updates](http://www.ksainteriors.com/news-and-updates)

- Leather, P., Pyrgas, M., Beale, D. and C. Lawrence (1997). Windows in the workplace: sunlight, view, and occupational stress. *Environment and Behavior*, 30: 739-762.
- Leinwand Leger, D. (2011, July 5). End of Shuttle Program Slams Space Coast Economy. *USA Today Economy* .
- Leveille, S. (1999). Aging successfully until death in old age: Opportunities for increasing active life expectancy. *American Journal of Epidemiology*, 149, 654–664.
- Lorusso, L. N. (2012, August 8). Florida Pecky Cyprus and the Bartlett Boathouse: Florida Historical Society Blog. Melbourne, Florida, USA.
- Luma Institute (2014) Retrieved from [www.luma-institute.com](http://www.luma-institute.com)
- Marcus, C. C. and M. Barnes (1999). Acute care hospitals: case studies and design guidelines. Chapter in C. C. Marcus and M. Barnes (Eds.), *Healing Gardens: Therapeutic Benefits and Design Recommendations*. New York: John Wiley, 157-234.
- McGilton, K. S., Rivera, T. M., & Dawson, P. (2003). Can we help persons with dementia find their way in a new environment? *Aging & Mental Health*, 7(5), 363–371.
- Menegazzi, J. J., Paris, P., Kersteen, C., et al. (1991). A randomized controlled trial of the use of music during laceration repair. *Annals of Emergency Medicine*, 20: 348-350
- Miller, M. (2000). Physical activity, functional limitations and disability in older adults. *Journal of the American Geriatric Society*, 48, 1264–1272.

- Moir, L. (2001). What do we mean by corporate social responsibility?. *Corporate governance*, 1(2), 16-22.
- Moore R, Cosco N. Using behaviour mapping to investigate healthy outdoor environments for children and families: conceptual framework, procedures, and applications. In: Ward Thompson C, Bell S, Aspinall P, editors. *Innovative Approaches to Research Excellence in Landscape and Health*. London (UK): Taylor and Francis; (in press).
- Moore, P., & Conn, C. P. (1985). *Disguised: A true story*. W Publishing Group.
- National Council for Interior Design Qualification. (2014). *Definition of Interior Design*. Retrieved March 31, 2014, from NCIDQ: [www.ncidq.org](http://www.ncidq.org)
- Nolan, B. A., Mathews, R. M., & Harrison, M. (2001). Using external memory aids to increase room finding by older adults with dementia. *American Journal of Alzheimer's Disease and Other Dementias*, 16(4), 251–254.
- Nussbaumer, L. L. (2009). *Evidence Based Design for Interior Designers*. New York, New York: Fairchild Publishers.
- Nussbaumer, L. L. (2014). *Human factors in the built environment*. London: Bloomsbury Academic.
- Nussbaumer, L. L. (2012). *Inclusive Design A Universal Need*. New York, New York: Fairchild Publishers.
- Office of Special Education Programs, U.S. Department of Education (2000). *Annual report to congress*. Retrieved from <http://www.ed.gov/offices/OSERS/OSEP/OSEP2000AnlRpt>



- Papanek, V. (1971). Design for the Real World (New York. *Pantheon*, 244-245.
- Pable, J. (2009). Interior Design Identity in the Crossfire: A Call for Renewed Balance in Subjective and Objective Ways of Knowing. *Journal of Interior Design* , 34 (2), v-xix.
- Palermo, James. (June 21, 2013) Dr. Rosemary Laird Geriatric Clinician of the Year. Spacecoastdaily.com. Retrieved April 5, 2014, from <http://spacecoastdaily.com/2013/06/dr-rosemary-laird-2013-geriatric-clinician-of-the-year/>
- Parker, D. L. and Hodge, J. R. (1976). Delirium in a coronary unit. *JAMA*, 201: 132-133.
- Passini, R., Pigot, H., Rainville, C., & Tetreault, M. (2000). Wayfinding in a nursing home for advanced dementia of the Alzheimer's type. *Environment & Behavior*, 32(5), 684–710.
- Pérez-Gómez, A. 1994. "Chora: The space of Architectural Representation. " In Chora 1, pp1-43. Quebec : McGill-Queens University Press.
- Pérez-Gómez, A and Pelletier L. 1997. Architectural Representation and the Perspective Hinge. Cambridge, Massachusetts: MIT Press.
- Rahman, A. N., & Schnelle, J. F. (2008). The nursing home culture-change movement: Recent past, present, and future directions for research. *The Gerontologist*, 48(2), 142-148.
- Ragheb A. 2009. Closing the implementation gap: a critical model for architectural research. Presentation at ARCC 2009, San Antonio, Texas.
- Ruga W. (1989) Designing for the sixth senses. *Journal of Health Care Interior Design* 1, 29–34.

- Rule, B. G., Milke, D. L., & Dobbs, A. R. (1992). Design of institutions: Cognitive functioning and social interactions of the aged resident. *Journal of Applied Gerontology, 11*(4), 475–488.
- Schon, D. (1983). *The Reflective Practitioner: How Professionals Think in Action*. New York: Basic Books.
- Schweitzer M., Gilpin L. & Frampton S. (2004) Healing spaces: elements of environmental design that make an impact on health. *The Journal of Alternative and Complementary Medicine 10*(Suppl. 1), S71–S83.
- Shepherd, A.J., Julian, W.G., and Purcell, A.T. (1992) Measuring appearance: Parameters indicated from gloom studies, *Lighting Research and Technology, 24*, 203-214.
- Shephard, R. J. (1997). *Aging, physical activity, and health*. Champaign, IL: Human Kinetics.
- Shi, L., & Singh, D. (2001). *Delivering health care in America: A systems approach* (2nd ed.). Gaithersburg, MD: Aspen Publishers.
- Sloan Devlin A. & Arneill A.B. (2003) Healthcare environments and patient outcomes. A review of the literature. *Environment and Behavior 35*(5), 665–694.
- Standley, J. M. (1986). Music research in medical/dental treatment: meta-analysis and clinical applications. *Journal of Music Therapy, XXII*: 56-122.
- Stichler J.F. (2001) Creating healing environments in critical care units. *Critical Care Nursing Quarterly 24*(3), 1–20.
- The Eden Alternative. (2009). *Eden Alternative Homepage*. Retrieved April 14, 2013, from [www.edenalt.org](http://www.edenalt.org)

- Theil P. 1997. People, paths and purposes. Seattle: University of Washington Press.
- Thomas WH. The Eden Alternative Handbook. The Art of Building Human Habitats. Sherburne, NY: Summer Hill Company, Inc., 1999.
- Thomas, W.H., & Johansson, C. (2003). Elderhood in Eden. *Topics in Geriatric Rehabilitation*, 19(4), 282-290.
- Thorgaard B., Henriksen B.B., Pedersbaek G. & Thomsen I. (2004) Specially selected music in the cardiac laboratory – an important tool for improvement of wellbeing of patients. *European Journal of Cardiovascular Nursing* 3, 21–26.
- Tipton, H. (December 7, 2012). Brevard County Manager. *Community Stakeholder Summit, "Navigating the New Normal"*, (pp. 1-24).
- Toomela, Aaro, and Jaan Valsiner. *Methodological Thinking in Psychology: 60 Years Gone Astray?* Charlotte, NC: Information Age Pub., 2010. Print.
- Ulrich, R. S. (1991). Effects of health facility interior design on wellness: theory and scientific research. *Journal of Health Care Design*, 3: 97-109. [Reprinted in S. O. Marberry (Ed.), *Innovations in Healthcare Design* (pp. 88-104). New York: Van Nostrand Reinhold, 1995]
- Ulrich, R. S. (1992). How design impacts wellness. *Healthcare Forum Journal*, 20: 20-25.
- Ulrich, R. S. (1999). Effects of gardens on health outcomes: theory and research. Chapter in C. C. Marcus and M. Barnes (Eds.), *Healing Gardens: Therapeutic Benefits and Design Recommendations*. New York: John Wiley, 27-86.

- Ulrich, R. S. (2000a). Environmental research and critical care. In D. K. Hamilton (Ed.), *ICU 2010: Design for the Future*. Houston: Center for Innovation in Health Facilities, 195-207.
- Ulrich, R. S. (2000b). Evidence based environmental design for improving medical outcomes. Proceedings of the conference, *Healing By Design: Building for Health Care in the 21st Century*. Montreal: McGill University Health Centre, 3.1-3.10.
- Ulrich, R. S. (2001). Effects of healthcare environmental design on medical outcomes. In *Design and Health: Proceedings of the Second International Conference on Health and Design*. Stockholm, Sweden: Svensk Byggtjänst (pp. 49-59).
- United States Department of Health and Human Services. (1996). *Physical activity and health: A report of the Surgeon General*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion.
- United States Access Board. (n.d.). *ADA Standards Homepage*. Retrieved April 14, 2013, from United States Access Board: A Federal Agency Committed to Accessible Design: [www.access-board.gov/ada](http://www.access-board.gov/ada)
- Veryday (2014) *About Us, History*. Veryday.com. Retrieved April 5, 2014, from [veryday.com/history/](http://veryday.com/history/).
- Williamson J.W. (1992) The effects of ocean sounds on sleep after coronary artery bypass graft surgery. *American Journal of Critical Care* 1, 91–97.
- Wilmott, M. (1986). The effect of a vinyl floor surface and carpeted floor surface upon walking in elderly hospital inpatients. *Age and Aging*, 15: 119-120.

Yinnon, A. M., Ilan, Y., Tadmor, B., Altarescu, G., and C. Hershko (1992). Quality of sleep in the medical department. *BJCP*, 46 (2): 88-91.

Appendix 1, pg 1 of 14

## Bridges Facility Survey

### Interior Design Questionnaire for existing Bridges Facility located at 1694...

To Whom it May Concern;

I am conducting an architectural study on your current building located at 1694 Cedar Street in Rockledge, Florida. If you are 19 years of age or older and a staff member of the Bridges Organization, you may participate in this research.

Participation in this study will require approximately twenty minutes. You will be asked to answer questions regarding the existing conditions and function of the interior spaces within the 1694 Cedar Street building. Participation will take place online via an online survey which will be accessed by a web link provided to you.

There are no known risks or discomforts associated with this research. The results of this study will benefit the proposed interior renovation of the building.

Your responses to this survey will be kept confidential. No names will be recorded during this process. You may ask any questions concerning this research at any time by contacting me at the email address below. You may also contact Dr. Betsy Gabb at the contact information provided below. If you would like to speak to someone else, please call the Research Compliance Services Office at 402-472-6965 or [irb@unl.edu](mailto:irb@unl.edu).

Participation in this study is voluntary. You can refuse to participate or withdraw at any time without harming your relationship with the researchers or the University of Nebraska-Lincoln or in any other way receive a penalty or loss of benefits to which you are otherwise entitled.

You are voluntarily making a decision whether or not to participate in this research study. By completing and submitting your survey responses, you have given your consent to participate in this research. You should print a copy of this page for your records.

Thank you for your time in completing an online survey for use in my graduate thesis project.

Sincerely,

Lesia Lorusso  
Graduate Student  
University of Nebraska Lincoln  
[leelouu@gmail.com](mailto:leelouu@gmail.com)

Dr. Betsy Gabb  
Advisor  
University of Nebraska Lincoln  
[bgabb1@unl.edu](mailto:bgabb1@unl.edu)

#### 1. Do you feel that the existing Bridges facility design adequately accommodates your senior clientele?

☐ Yes

☐ No

Comments:

## Bridges Facility Survey

### 2. Please rate the following areas within the existing facility you think need improvement.

	Not At All Important	Not Very Important	Neutral	Somewhat Important	Very Important
Lobby/ Reception Area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lobby/ Restrooms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administrative Offices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Copy Area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Storage Rooms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conference Room	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kitchen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
IForce Classroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Laundry area, changing room	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enrich room	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments

### 3. Please rate your aesthetic (visual appeal) impression of the existing condition of the following areas.

	Not At All Good	Not Very Good	Neutral	Somewhat Good	Very Good
Lobby/ Reception Area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lobby/ Restrooms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administrative Offices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Copy Area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Storage Rooms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conference Room	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kitchen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
IForce Classroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Laundry area, changing room	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enrich room	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reading Skills Classroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments:

## Bridges Facility Survey

**4. Is the existing waiting reception and lobby/waiting area a space that staff enjoy working in?**

☐ Yes

☐ No

Comments:

**5. Do you feel that the existing lobby area is a calming space for the clients and staff?  
Please use the comment box below to explain your answer.**

☐ Yes

☐ No

Comments:

**6. Please rate the following characteristics in terms of importance for the flooring, materials and lighting in the lobby/waiting area.**

	Not At All Important	Not Very Important	Neutral	Somewhat Important	Very Important
Non Slip Flooring	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Calming environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Acoustical sound control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Task specific lighting at reception desk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comfortable and washable seating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Natural lighting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Visually stimulating items for clients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Organizational storage solutions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments:



## Appendix 1, pg 4 of 14

**Bridges Facility Survey****7. Are the existing lobby restroom accessible according to ADAAG? (Americans with Disabilities Act Accessibility Guidelines)**

- ☐ Yes
- ☐ No
- ☐ I Don't Know

Comments:

**8. Please rate the following characteristics in terms of importance for the lobby restrooms area.**

	Not At All Important	Not Very Important	Neutral	Somewhat Important	Very Important
Non Slip Flooring	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Calming environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Acoustical sound control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Task specific lighting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comfortable and washable seating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Natural lighting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Visually stimulating items for clients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Organizational storage solutions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**9. Are the existing offices spaces that staff enjoys working in, in terms of ergonomics and space planning efficiency?**

- ☐ Yes
- ☐ No

Comments:

## Appendix 1, pg 5 of 14

**Bridges Facility Survey****10. Please rate the following characteristics in terms of importance for the office areas.**

	Not At All Important	Not Very Important	Neutral	Somewhat Important	Very Important
Ergonomic task chair	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Calming atmosphere	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Acoustical sound control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Task specific lighting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comfortable and washable seating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Natural lighting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Organizational storage solutions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desk with a return	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments:

**11. Is the existing copy area in the corridor an efficient place for staff to work? Please use the comment box below to explain your answer.**☐ Yes☐ No

Comments:

**12. Please rate the following characteristics in terms of importance for the copy area.**

	Not At All Important	Not Very Important	Neutral	Somewhat Important	Very Important
Organizational management solutions for paper and supplies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Privacy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Acoustical sound control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to close off the copy area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Horizontal surface to collate and staple papers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trash and recycle bins	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments:

## Appendix 1, pg 6 of 14

**Bridges Facility Survey**

**13. Do the existing storage solutions in the hallway work well for the staff? Please use the comment box below to explain your answer.**

☐ Yes

☐ No

Comments:

**14. What are the major items and quantities for this facility that require closed closet storage?**

**15. Please list the items in closed closet storage that need to be accessed by clients.**

**16. Please list the items in closed storage that need to be accessed by staff.**

**\*17. Is the existing conference room a space that is used often by staff? How many days a week? For how long?**

**18. Please select the technology requirements for the conference room.**

☐ Laptop access to power and Internet

☐ Ceiling projector with Internet access

☐ Projector Screen

☐ Laptop access to projector

☐ Storage cabinet for equipment

☐ Kitchenette

Other (please specify)

Appendix 1, pg 7 of 14

## Bridges Facility Survey

### 19. What are the audio visual requirements for the conference room?

- ☐ Speakers for presentations
- ☐ Acoustical privacy
- ☐ Projector with screen
- ☐ Internet access to projector

### 20. Please list any special requirements for the conference room.

### 21. Please rate the following characteristics in terms of importance for the conference room.

	Not At All Important	Not Very Important	Neutral	Somewhat Important	Very Important
Ergonomic task chairs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conference table with power and Internet capabilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Calm atmosphere	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Acoustical sound control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Task specific lighting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comfortable and washable seating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Natural lighting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Organizational storage solutions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non slip-Washable flooring	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sink and food prep area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments:

### 22. Is the current kitchen a space that staff enjoys working in? Please use the comment box below to explain your answer.

- ☐ Yes
- ☐ No

Comments:

## Appendix 1, pg 8 of 14

**Bridges Facility Survey**

**23. Is the current kitchen accessible according to ADAAG? (Americans with Disabilities Act Accessibility Guidelines)**

☐ Yes

☐ No

Other (please specify)

**24. Please rate the importance of the kitchen having direct access to the enrich room.**

Not At All Important

Not Very Important

Neutral

Somewhat Important

Very Important



Comments:

**25. Is the kitchen used by clients as well as staff? If yes please explain in the comment box below.**

☐ Yes

☐ No

Other (please specify)

## Appendix 1, pg 9 of 14

**Bridges Facility Survey****26. Please rate the following characteristics in terms of importance for the kitchen area.**

	Not At All Important	Not Very Important	Neutral	Somewhat Important	Very Important
Non slip flooring	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Calm atmosphere	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Acoustical sound control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Task specific lighting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comfortable and washable seating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Natural lighting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Visually stimulating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Organizational storage solutions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adequate ventilation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mirrors or flat screen TV mounted at ceiling to use when providing cooking classes to clients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments:

**27. Is the existing iForce area a space that is efficient for staff and clients to complete required tasks? Please use the comment box below to explain your answer.**☐ Yes☐ No

Comments:

## Appendix 1, pg 10 of 14

**Bridges Facility Survey****28. Please rate the following characteristics in terms of importance for the iForce area.**

	Not At All Important	Not Very Important	Neutral	Somewhat Important	Very Important
Non Slip Flooring	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lockable storage solutions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Height adjustable work surfaces	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
L-Shaped Instructor/supervisor station	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Calming environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Acoustical sound control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Task specific lighting at reception desk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comfortable and washable seating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Natural lighting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Visually stimulating items for clients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Organizational storage solutions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments:

**29. Are the existing laundry and changing areas efficient for their purpose?**☐ Yes☐ No

Comments:

**30. Do the existing changing areas provide adequate privacy for clients?**☐ Yes☐ No

Comments:



Appendix 1, pg 11 of 14

## Bridges Facility Survey

**31. Is the existing enrich area a space that staff enjoys working in? Please use the comment box below to explain your answer.**

☐ Yes

☐ No

Please Explain

**32. Please rate the following characteristics in terms of importance for the enrich area.**

	Not At All Important	Not Very Important	Neutral	Somewhat Important	Very Important
Non Slip Flooring	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Snuzzle Area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adjustable height work surfaces	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lockable Storage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Direct access to kitchen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Calming environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Acoustical sound control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Task specific lighting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comfortable and washable seating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Natural lighting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Visually stimulating items for clients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Organizational storage solutions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments:

**33. Overall, do you feel that the interior design and organizational layout of the walls and offices in the existing Bridges facility on Cedar street aligns with the goals of the organization? Please use the comment box below to explain your answer.**

☐ Yes

☐ No

Please Explain

## Appendix 1, pg 12 of 14

**Bridges Facility Survey**

**34. Does the current aesthetic (visual appeal) of the existing Bridges main facility on Cedar street visually align with the mission of the Bridges organization? Please use the comment box below to explain your answer.**

☐ Yes

☐ No

Please Explain

**35. Does the existing interior design of the Bridges main building on Cedar Street foster and encourage collaborative working environments? Please explain your answer in the comment box below.**

☐ Yes

☐ No

Please Explain

**36. How important is natural lighting within the facility?**

	Not At All Important	Not Very Important	Neutral	Somewhat Important	Very Important
Lobby/ Reception Area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lobby Restrooms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administrative Offices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Copy Area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Storage Rooms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conference Room	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kitchen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
IForce Classroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Laundry area/ changing room	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enrich Room	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please Explain

## Appendix 1, pg 13 of 14

**Bridges Facility Survey****37. Please rate the importance of natural lighting for each space listed.**

	Not At All Important	Not Very Important	Neutral	Somewhat Important	Very Important
Lobby/ Reception Area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lobby Restrooms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administrative Offices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Copy Area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Storage Rooms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conference Room	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kitchen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
IForce Classroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Laundry area/ changing room	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enrich Room	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments:

**38. Please rate the importance of noise control for each area listed below.**

	Not At All Important	Not Very Important	Neutral	Somewhat Important	Very Important
Lobby/ Reception Area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lobby Restrooms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administrative Offices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Copy Area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Storage Rooms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conference Room	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kitchen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
IForce Classroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Laundry area/ changing room	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enrich Room	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Appendix 1, pg 14 of 14

**Bridges Facility Survey****39. How effective is the current lighting in the following areas?**

	Not At All Effective	Not Very Effective	Neutral	Somewhat Effective	Very Effective
Lobby/ Reception Area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lobby Restrooms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administrative Offices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Copy Area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Storage Rooms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conference Room	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kitchen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
IForce Classroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Laundry area/ changing room	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enrich Room	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please Explain

**40. How effective is the current noise control in the following areas?**

	Not At All Effective	Not Very Effective	Neutral	Somewhat Effective	Very Effective
Lobby/ Reception Area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lobby Restrooms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administrative Offices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Copy Area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Storage Rooms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conference Room	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kitchen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
IForce Classroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Laundry area/ changing room	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enrich Room	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Appendix 2



Bridges has served individuals with disabilities in Brevard County for over 55 years. Bridges, formerly ARC of Brevard, was started by a group of families who wanted to have quality services for their loved ones with disabilities. Today, we have grown to include over 20 different programs. Our commitment to give our individuals quality services and the independence to make their own choices shows that we care about our individuals, their futures, and the community as a whole.

Our goal is to tailor our services according to the needs and desires of our individuals and their families. We offer services for those individuals who want independence including: Supported Living, Personal and Family Support Services and Employment Services.

Our Supported Living Services provide assistance to our individuals who want to live on their own. The Supported Living Coaches train our individuals on how to clean their households, shop for groceries, ride the bus, pay their bills, manage their money, pay taxes, balance their checkbooks and even assist with finding an apartment, negotiating rent amounts, packing and moving. This is a 24/7 service which is offered 365 days a year.

Personal and Family Support Services include Respite Care, which offers our families time for themselves while we care for their loved ones. Personal Care Assistance and In-Home Supports offer our individuals assistance with their daily basic needs in their own home. Companion Services provide individuals with the opportunity to go out in the community to do activities of their choosing. Our qualified professionals are matched according to the specific needs of the individuals, and the services can be arranged based on our individuals and/or families' schedules.

The Employment Services Department was created over 5 years ago to meet the high demand for quality employment training and assistance. Unlike traditional job placement agencies, we take the time to explore the career goals of our individuals in order to match them with the best possible employment opportunities. We believe in networking with our community and business partners to open the doors to better paying and more fulfilling jobs. We offer a variety of Employment Services including: Job Shadows, Employability Skills Training, On-the-Job Training, Supported Employment Services, Self-Employment, Job Development, Job Placement and Job Coaching. Currently, we are serving over 160 individuals in these programs.

Our Employment Services Department also has a high school transition program for

young adults with disabilities called Project SEARCH. This is an unpaid internship program where our students receive hands-on training opportunities in a variety of departments within The City of Palm Bay. The students get to choose what skills/jobs  
Appendix 2 cont.

they want to learn and upon completion of the program they are provided with Job Placement Services to help them gain employment. This program is a collaborative effort between Vocational Rehabilitation, Brevard Public Schools, Agency for Persons with Disabilities, The City of Palm Bay and Bridges.  
Appendix 2 Continued

Bridges also supports individuals who need more extensive services through a variety of programs. ENRICH is a daily living skills program for individuals with significant disabilities. We currently have 13 individuals in this program. Our Adult Day Training Program hosts over 60 individuals who receive training in Adult Basic Education by a Board Certified Adult Basic Education teacher. These individuals also have the opportunity to work in I-FORCE, a work group mostly run by our individuals. I-FORCE participants not only get paid to perform assembly type jobs, but they also learning valuable employment skills that can lead to employment in the community.

Other employment opportunities include our NISH Recycling Facilities at Patrick Air Force Base and Kennedy Space Center. NISH is a government contract that allows people with disabilities access to jobs on military bases. Individuals at our Recycling Facilities collect, sort and ship out recycled materials. They can also participate in Adult Basic Education classes which we hold on base.

Bridges also operates 4 Group Homes throughout Brevard County. These homes offer our individuals 24-hour supervision, medication administration, transportation, all meals, social gatherings, and most importantly- independence. We have 45 individuals residing in our homes at this time.

In 2012, we opened a home for disabled and homeless Veterans called The Patriot House. This home is located in Melbourne and can house up to 6 Veterans at a time. This is a 2-year transitional program that provides room and board, evaluations, transportation and daily living skills training to our Veterans. We also provide employment assistance and housing needs upon completion of the program.

If you would like to know more about Bridges and our services you can call us to set up a tour of our facility. Our number is 321-690-3464 or check out our website at [www.mybridges.org](http://www.mybridges.org).

## Appendix 3

### **OUR PROGRAMS AND SERVICES**

1. ENRICH: Intensive, therapeutic full day program (13 individuals)
2. SUPPORTED LIVING: 24/7 supports to clients living independently (21 individuals)
3. JOB DEVELOPMENT: Job skills training and development of competitive employment (125 individuals)
4. ON-THE-JOB TRAINING: Paid internships at businesses throughout Brevard (25 individuals)
5. SELF-EMPLOYMENT: Assistance with business concept dev/business start-up (2 individuals)
6. PROJECT SEARCH: Unpaid internships for BPS students at the City of Palm Bay (9 individuals)
7. PERSONAL FAMILY SUPPORT SERVICES (PFSS): 24/7 in home supports (40 individuals)
8. COMMUNITY PARTICIPATION (PFSS): Volunteer programs (15 individuals)
9. RESPITE (PFSS): In home respite for families (30 individuals)
10. TRANSPORTATION: Door to door van service to all our programs (55 individuals)
11. RESIDENTIAL: Four group homes (45 individuals)
12. DAY HABILITATION (ADT): Full day activity program (2 sessions) (60 individuals)
13. ADULT BASIC EDUCATION (ABE): Full day classes in functional skills training (45 individuals)
14. ABILITY ONE (NISH) RECYCLING OPERATION AT PAFB: Full day program (25 individuals)
15. ABILITY ONE (NISH) RECYCLING OPERATION AT KSC/CCAFS: Full day program (5 individuals)
16. I-FORCE THERAPEUTIC WORK PROGRAM: Full day work program (13 individuals)
17. QUICK PRINTS ELECTRONIC (LIVE SCAN) BACKGROUND SCREENING: (open to public)
18. PATRIOT HOUSE: 2-yr transitional home for disabled Vets (6 individuals)

### **NEW PROJECTS ON THE HORIZON**

19. CEDAR ACADEMY CHARTER SCHOOL: BPS Approved K-2 grade school (projected 30 individuals)
20. SENIOR CARE OF BREVARD: In process of acquiring this program
21. WORK-SITE EVALUATIONS: Short-term, work-readiness assessments
22. COMPREHENSIVE VOCATIONAL EVALUATIONS: Testing to determine work-readiness
23. PRE-PLACEMENT TRAINING: 40-hour, curriculum based Career Readiness Classes