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Adaptive Reuse: Repurposing a Vacant College Campus for New Occupancy

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ADAPTIVE REUSE: REPURPOSING A VACANT COLLEGE CAMPUS FOR NEW OCCUPANCY

A Thesis
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ABSTRACT

Adaptive reuse has been a design strategy in buildings existing for centuries. The adaptation of a building, also known as recycling or conversion, is the process of reusing an existing building other than what it was originally built or designed for. This element of design has enabled generations to derive a sense of continuity and stability from their physical surroundings. This paper examines the context of adaptive reuse through extensive research: its history and evolution, the importance of cultural memory and historical preservation, the question of value in design, sustainability, and the overarching idea of designing through time. The information gathered regarding reuse in buildings aims at developing a strategy that has commonly progressed over the last few years since the COVID-19 pandemic: college campuses closing down and leaving a vacant campus filled with unused buildings in its stead.

Since 2016, over 91 colleges have closed, merged with other schools, or announced plans of a closure or merger. This number roughly reflects the response to the pandemic, with students moving from in person to online and colleges not generating enough revenue to stay open. Before the pandemic, though, closures and mergers began rising due to smaller numbers of enrollment and in turn a lack of funding. One college in particular, a private, non-profit institution called Presentation College in Aberdeen, SD, is examined in this paper. Research of adaptive and vacancies incorporating academic books, articles, and studies are examined in order to find a solution for this now vacant campus. The Buildings Construction Report of 2022, the Aberdeen Comprehensive Plan, and conducted interviews aim at discerning how adaptive reuse can be beneficial for a vacant campus to help solve a question for college campuses around the country: What can be done with this green space and large stock of unused buildings?

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1. INTRODUCTION

Over time, a building's function often no longer serves the purpose of its occupants. When this happens, the structure is left vacant while it sits and deteriorates before being scheduled for demolition. Quick deterioration is the result of lack of maintenance on the vacant property that leads to leaks or damages in the ceilings and floors, temperatures dropping above or below human comfort standards that promotes organic growth (mold), and external factors such as animals and ambient weather conditions that wear and tear down the existing structure. Even if demolition is considered early on, a process must be followed that produces high costs and hazards for the environment.

Strategies exist to avoid vacancies and demolition of a building or site location that fit the purpose of the structure and its use. Remodeling, which may refer to new occupancy, often focuses on the building itself in an act to change the structure, style, or form of the building. This often occurs for the purpose of creating a new image for the building or adjusting the space to accommodate evolving user needs. Retrofitting is the modification of something after it has been manufactured in the form of changing a building's systems or structures after initial construction and occupation. This is an economic friendly approach that extends the lifespan of a building without redeveloping. Another strategy, the conservation of an immovable cultural property, describes a process through which the integrity of a building's materials, history, and design are prolonged through planned interventions and updates. The building will stay in its original state of repair while making adjustments to keep it sound and safe. A similar strategy, reconstruction, is a more intrusive process of building something again after it has been damaged or destroyed. The acts of renovation, restoration, repair, renewal, and refurbishment generally refer to updating existing elements and structures of a building to accommodate for contemporary needs.

Another strategy for vacant and/or deteriorating structures is the process of adaptive reuse. This method refers to a change of function to a building whose previous use has become obsolete. The process incorporates elements of the previously stated methods to modify the existing structure in a way that preserves the overall integrity of the building while adapting the space to accommodate a new function with different occupants that require different needs and priorities. Adaptation in building construction focuses on redevelopment or renewal strategies that improve existing building conditions and add to the building in order to extend the lives of these structures. This technique will be studied and administered regarding a growing problem throughout the United States: colleges shutting down and leaving vacant properties in its stead. 91 private colleges have closed, merged, or announced plans of closure or merger since 2016 (*Higher Ed Dive,* 2018). Specifically, this paper will analyze the closure and strategies for a college campus located in Aberdeen, South Dakota that recently shut down after the spring and summer terms finished in 2023 to develop a new prospect for the city while still catering to the cultural and historic aspects of the campus.

1.1. Increase in Defunct Colleges

Since 2016, 91 private colleges in the United States have closed, merged, or announced plans to close according to an analysis provided by *Higher Education Dive* (*Higher Ed Dive*, 2018). Reasons for these closures include pressures to lower tuition, stagnating state funding, and a shrinking pool of high school graduates that has strained these institutions' bottom line and challenged their long-term viability. The corona virus pandemic and its economic impact have added uncertainties and challenges to already tight operations. The map provided in Figure 2.1 depicts college closings and mergers by state provided by *Higher Education Dive.*

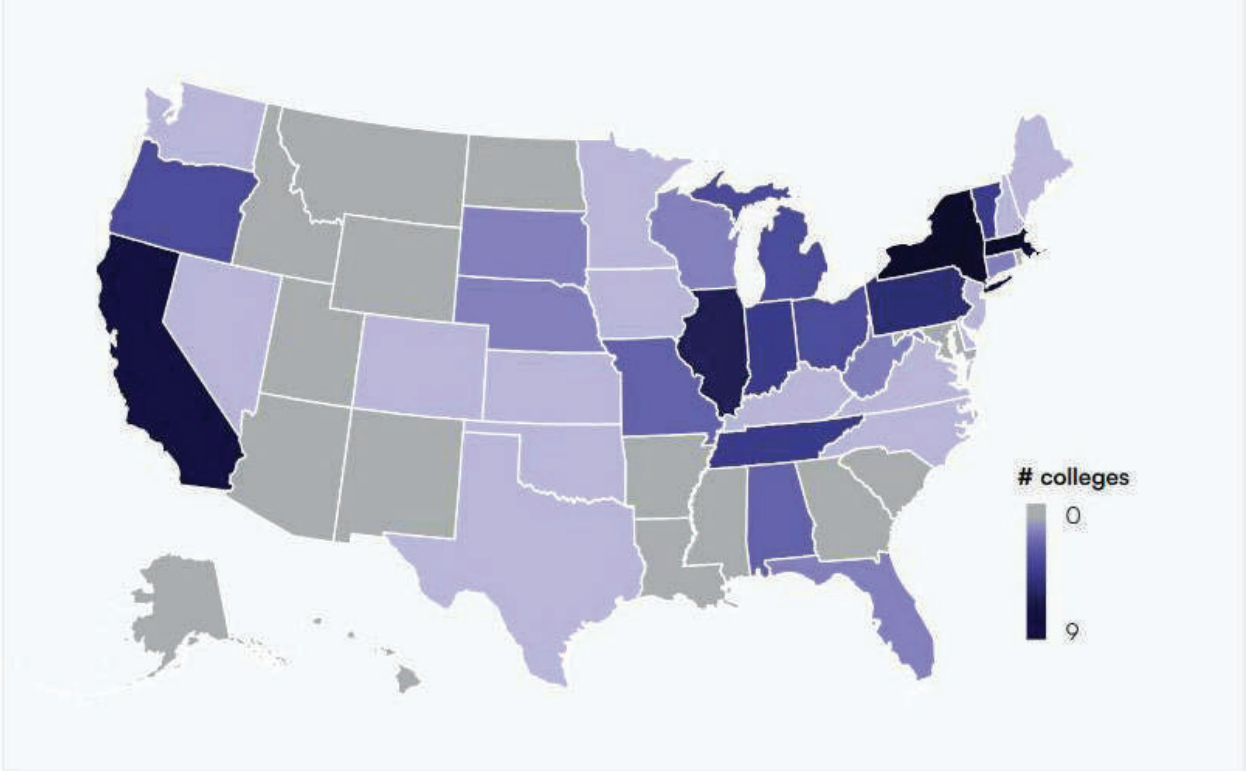

Figure 1 A map showing public and private non-profit college closures or mergers by state. This map was created in 2018 with continuing updates, the creators looking back as far as 2016. For-profit colleges were removed from the list due to differences in scale and the nature of their closings. Some public colleges that remained largely unaffected have been omitted from this map
Source: Higher Education Dive, 2018, updated 2023

There have been two major themes throughout closure of these institutions across the country: finances and enrollment. The admission cliff, or the decline in prospective students, has resulted in the graduation of the lowest high school classes by population in 2025, though many schools have already seen enrollment declines according to editor-in-chief of *The Princeton Review* Robert Franek (Burris, 2023). Fraenk states that about 95% of colleges rely on tuition, and with dwindling enrollment numbers, fewer student offerings and tuition result in a shuttering institution (Burris, 2023).

Although the pandemic introduced new risks to higher education institutions, many U.S.-based colleges and universities were already struggling to enroll enough students and financially support campus operations. A study from the National Student Clearinghouse Research Center

showed that post-secondary enrollment numbers decreased by 1.3 percent in the fall of 2019, dropping more than 231,000 from the year prior (National Student Clearinghouse Research Center, 2019). This marked a first-time dip in student enrollment below 18 million over the course of a decade. The number of enrolled students peaked in 2011 (Toczauer, 2023). Once COVID hit, 1.3 billion students globally were affected as schools were forced to close in response to the virus (UNESCO, 2020). By that summer, about 98 percent of U.S. higher education systems have moved most of their courses online to accommodate for more than 22 million students nationwide during the stay-at-home orders (Toczauer, 2023). By Fall of 2020, professors and students had to adjust quickly to continue a connection for education, while adapting to the challenges of institutions offering a mix of in-person, online, and hybrid methods of classroom meetings. The hit and global recession caused by the covid pandemic has "further exacerbated weakness in new student enrollment and cut prompts in state funding," a larger hit to already existing higher education problems such as a "relatively flat net tuition revenue, weak projected growth in student enrollment, and a decrease in international student enrollment over recent years" (Toczauer, 2023).

An article provided by *Online Education* discussing what happens to "brick-and-mortar campuses" after closure included a statement from Dr. Lynn Priddy, the Provost and Chief Academic Officer at National American University and someone with a great deal of experience in closed institutions. Dr. Priddy "anticipated that there will be a significant number of college buildings, infrastructure, and other physical properties that are no longer needed by schools" (Toczauer, 2023). There has been an increase in college campuses closing since the pandemic broke out, but many low- and mid-tier institutions were already facing struggles financially and the risk of closure pre COVID-19.

The number of colleges that have closed, merged, or announced its merging or closure since March of 2020 is 44, with 27 of those public or private non-profit organizations closing or announcing plans to close and 17 of those institutions merging with other universities (Castillo et al., 2023). From July of 2004 to June of 2020, the State of Higher Education Executive Office (SHEEO) and the National Student Clearinghouse Research Center (NSCRC) analyzed a sample of 467 schools out of the roughly 12,000 schools that closed in those years (SHEEO, 2023). They found that 78% of those closed colleges were for-profit institutions, which have a higher rate of closure than non-profit and public schools. 21% of these schools were private non-profit, less than 1% were public, and overall, 53% of these closures were two-year institutions while 47% were four-year (SHEEO, 2023).

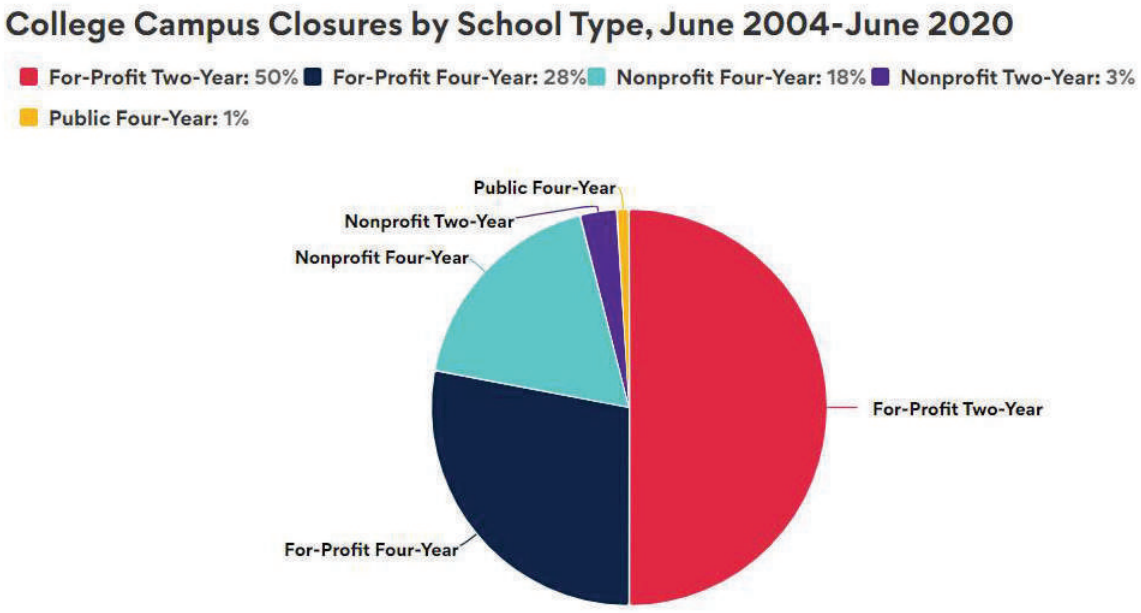

Figure 2 A graph provided by Best Colleges shows the closures by school type from 2004 to 2020. For-profit colleges tend to close at a much faster rate than non-profit or public colleges. Because of this, only the larger for-profit colleges that sparked controversy were included in these studies.
Source: Castillo et al., 2023

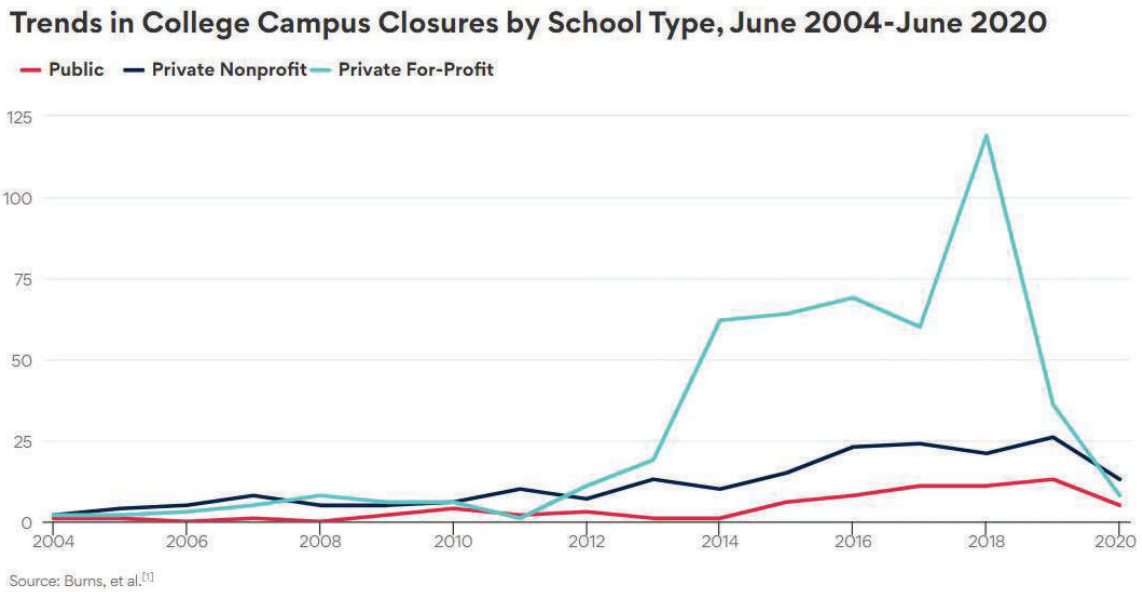

Figure 3 The graph above shows trends in college campus closures from 2004 to 2020. The number of college closures peaked leading up to the pandemic, largely led by the private for-profit organizations that have a higher rate of closures.
Source: Castillo et al., 2023

As enrollment continues to dip and building functionality on these campuses becomes more and more obsolete, a rising need to reinvent these vacant spaces and provide new occupancy must be met in order to avoid deconstruction and demolition of numerous properties across the U.S. Another reason to reuse these campus properties and buildings is the desire to keep the cultural memory of the school alive. In Poultney, Vermont, Green Mountain College closed after the spring semester of 2019 due to a drop in enrollment and financial stability. After 185 years of running, the city of Poultney, with a population of 3,300, lost an important part of its community. In an article from *The Journal Record,* locals from the community commented that the closure of Green Mountain College changed the "entire town of Poultney," the difference in the atmosphere evident with the students no longer present (Press, 2019).

1.2. Closure and History of Presentation College

Presentation College, a non-profit, private Roman Catholic school and one of two institutions of higher education located in Aberdeen, South Dakota, held its main campus in the northwest region of the city located at 1500 North Main Street. A branch campus was located in Fairmount, Minnesota. The college was founded in 1951 by its Presentation Sisters and became co-educational in 1966 with an average enrollment of 800 students a year. The college set out to fulfill its mission of rural health care and nursing through education, later expanding to include academic programs in Health and Natural Sciences and Social Science and Humanities to support its mission of development of the whole person in the Catholic tradition. The Presentation Sisters continuously sponsored the College and retained ownership of the campus land with the College as a separate nonprofit (Presentation Sisters, 2023).

In 2000, distant learning programs were added to the institution under the umbrella known as PC Virtual, offering distant-based programs in a variety of areas. Classroom work for these areas was offered completely online for students who reside in states where Presentation College received state approval to operate. Presentation College-Fairmount Campus opened in 2003 in the community of Fairmount, Minnesota, later closing its doors in May of 2021 after a full teach-out of all degrees. Presentation College offered courses on the Kilian College campus in the Sioux Falls, South Dakota area in 2006, later moving to an independent location in May of 2013 (Presentation Sisters, 2020).

Before the COVID pandemic, the College, Board of Trustees, and Corporate Board of the Presentation Sisters examined data and market impacts in hopes of better understanding the financial health of the College and its potential for growing enrollment to achieve sustainability (Presentation Sisters, 2023). With its rural location and dependency on tuition revenue and gifts,

the College already struggled economically, and COVID propelled those challenges. During this time, the College explored numerous partnership options, which resulted in the selection of St. Ambrose University for the continuation of Online BSN programs for current students when the College shut down. The University now serves as one of several Teach-Out Partners, an arrangement by which an educational institution provides its current students with the opportunity to complete their course of study when the institution closes, for other majors. Presentation College also has Teach-Out Agreements in place with the University of Mary in Bismarck, North Dakota and Olivet College located in Olivet, Michigan as they continue to pursue adding agreements with other regional and online institutions (Presentation Sisters, 2023).

Now that the spring and summer 2023 courses have come to an end, Presentation College has officially closed its campus. In January of 2023, Sister Mary Thomas, the president of the Presentation Sisters Corporate Board shared that "after careful evaluation of the sustainability of the College's academic programs, and a thorough review of alternatives, the Board of Trustees and Presentation Sisters reluctantly decided to close the physical campus" (Presentation Sisters, 2023). The campus now sits vacated.

Before Presentation College closed, it was privately owned by the Presentation Sisters, though they originally started out as a few sisters from Dublin, Ireland asked to travel to the Dakota Territories by Bishop Martin Marty in 1880 to teach the children of the Lakota people and the French settlers (Presentation Sisters, 2020). The Presentation Congregation, founded in Cork, Ireland in 1775 by Nano Nagle, began establishing convents abroad in 1829 (Presentation Sisters, 2020). The sisters reached New York in March of 1880 and moved into a "sod house" in Charles Mix County near the old Fort Randall in September of that same year (Presentation

Sisters, 2020). This first settlement was called St. Anne's Mission where Mother Agnes taught catechism to the Indian adults and children through song until April of 1881. The sisters travelled to Deadwood but quickly returned to St. Anne's Mission when they couldn't hold mass on Sundays and holy days of obligation. In July of 1881, Bishop Marty agreed to send the sisters back to Ireland, but Mother Agnes pleaded to stay in the Dakotas, and they were sent to Yankton to minister with the sisters of Mercy who operated a large boarding school.

In August of 1882, Father Stephens of Fargo asked for a convent of sisters, and the Presentation Sisters headed for Fargo to start a foundation. In October of 1886, Bishop Marty sent three sisters, Mother John Hughes, Mother Aloysius Chriswell, and Sister Josheph Butler, to Aberdeen to start a school in the town, who's at the time population was roughly 2,000 people (Presentation Sisters, 2020). Father Robert Haire gave his home up to the sisters for the development of a convent where they taught children for two years before a more permanent school was developed. Aberdeen was founded in 1880 and named after Aberdeen, Scotland by a Scotchman that travelled from the area. In November of 1886, five lots were purchased by the Catholic Society to begin work on the convent, and in August of 1887 an official seal for the Presentation Academy of the Sacred Heart of Jesus was received by Father Haire (Presentation Sisters, 2020). The convent opened in October of 1888 and had a total enrollment of 100 students, offering "kindergarten through eighth grade, teacher training, fine arts of music, piano, organ, and plain and fancy needlework, typing, shorthand, and bookkeeping" (Presentation Sisters, 2020).

The division of the states, diocese, and motherhouses split in 1889 and later in 1892 the novitiate house that was held in Aberdeen for both Aberdeen and Fargo split.

The Presentation Sisters of Aberdeen borrowed funds to pay Mother John Hughes, the superior whose term was expiring and would be replaced by Mother Aloysius Chriswell, and the Fargo Presentation Sisters $2,600 for the convent title in Aberdeen (Presentation Sisters, 2020). The community began to grow when four postulants arrived from Ireland in 1894 to help with the school. This community was poor at this time, earning a small income from music lessons. The Presentation Sisters travelled to Mitchell, South Dakota in August of 1898 to teach at a school the Sisters of St. Agnes started in 1886. A high school and junior college were established in Mitchell, though the high school closed in 1970 and the junior college was moved to Aberdeen in 1951 that became the Presentation Academy and the start of Presentation College (Presentation Sisters, 2020). The sisters did continue elementary education in Mitchell until 1988 (Presentation Sisters, 2020). In 1900, a diphtheria epidemic struck Aberdeen and the sisters were asked to care for the sick. This instigated the origin of the first healthcare ministry and hospital in Aberdeen in 1901, now called Avera St. Lukes Hospital. The St. Lukes Hospital began when the sisters began taking care of a family of eight that fell ill when no other person would go near their household. When doctors heard that the sisters were taking care of the ill, they pleaded with Bishop Marty that the sisters be allowed to begin hospital work (Presentation Sisters, 2020). The ministry began at the Presentation Academy (now known as Presentation College) and the school and ministry was moved to the old Sacred Heart Church, purchased by the sisters from the parish (Presentation Sisters, 2020). When the construction of the hospital was completed in October of 1901, it contained 15 hospital beds.

Figure 4 Above is a picture of the first St. Lukes nurses who took care of the sick during the epidemic that spread in the Aberdeen area in the early 1900's.
Source: Presentation Sisters, 2020

The Presentation Health System became formally organized in 1978. In 1988 the St. Luke's Hospital and another hospital located in Aberdeen, the Midland Hospital, merged to form the St. Lukes Midland Regional Medical Center (Presentation Sisters, 2020). Later in 1998 the Presentation Health System became the Avera Health System when the Presentation Sisters began a "co-sponsorship of this new health system with the Benedictine Sisters from Yankton, SD" (Presentation Sisters, 2020). The Presentation Sisters still co-sponsor Avera Health to this day.

Candidates were recruited from Ireland in 1889, 1903, 1906, 1909, and 1913 and many postulants, a person taking the first step in religious life before entering the novitiate and becoming a brother or sister, around the area and in Ireland joined the convent starting in 1894 and continuing over the following years as the convent and community grew. The first women

graduated from the School of Nursing at St. Lukes in April of 1904 (Presentation Sisters, 2020). The sisters continued to open schools and hospitals throughout South Dakota and answered calls for missionaries, travelling to Mexico, Bolivia, Guatemala, and Zambia, Africa. In 2002, the sisters began another missionary with Hispanic immigrants (Presentation Sisters, 2020). The Sacred Heart School was built in 1914 and later became the elementary school for Roncalli. The sisters opened and began teaching at the Roncalli High School in 1963 until 1991. In 1980 the Aberdeen Catholic School System was consolidated, and the Sacred Heart and St. Mary's Schools started by the Presentation Sisters were renamed Roncalli (Presentation Sisters, 2020). The school is named after Angelino Roncalli, or Pope John XXIII.

The four hospitals the Presentation Sisters started in South Dakota (Aberdeen, Mitchell, Sioux Falls, and Miles City) formed the Presentation School of Nursing based in Aberdeen in 1942, and 100 acres was purchased and labelled the Presentation Heights for the growing convent in 1945 (Presentation Sisters, 2020). The Junior College in Mitchell moved onto this land in 1951 and was named the Presentation Junior College in 1951, later becoming Presentation College with the development of a nursing degree in 1958 (Presentation Sisters, 2020). The school became co-educational in 1968 and became accredited in 1970 and established a four-year nursing degree in 1990.

1.3. Objective

This paper will examine the history and performance of adaptive reuse in buildings along with its environmental, economic, and communal impact on the world. The objective of this research is to understand the importance of adaptive reuse as a construction method and its significance through the environment and through time. In order to do so, various academic

articles, books, and studies will be reviewed in the next chapter to support adaptive reuse in the growing problem of defunct colleges the country faces today. Throughout this process, the characteristics of adaptive reuse will be assessed along with a comparative analysis of building construction costs, energy consumption, and CO2 emissions amongst construction trends to argue for the strategy of adaptation in buildings instead of new construction or demolition.

In the Methodology chapter, the location of Presentation College's campus along with the city of Aberdeen will be included and studied through the 2019 Aberdeen Comprehensive Plan to understand what the city needs for future growth. A look at four different case studies exemplifying successful adaptive reuse projects will also be incorporated, along with an analysis and implementation of the data found in the book *Building Evaluation for Adaptive Reuse and Preservation* by Rabun and Kelso to learn how to perform a structural analysis on existing structures and administer a pro forma for projected construction costs. Two interviews, one with city employees and one with the Presentation Sisters' Laudato Si Directors and Ecology Specialists, will be conducted to determine what use will best fit the vacant campus in Aberdeen and how to implement existing elements into the project. A study of the existing documentation of Presentation College provided by Presentation's archivist will further advance this research and perform this adaptive reuse project. In the end, adaptive reuse will have proven to be the best solution for the vacant campus and a strategy that will benefit the city of Aberdeen and the cultural memory of the Presentation Sisters will result.

2. LITERATURE REVIEW

2.1. Background

College campus closures and vacant properties have begun to increase over the last few years, especially as a result of the pandemic in 2019. While a more recent, progressive issue, adaptive reuse has been around for centuries. A building's "structure tends to outlive their function," therefore resulting in the continuation of building reuse that has enabled "generation after generation to derive a sense of continuity and stability from their physical surroundings" (Stone, p. xv, 2020). This chapter will look at the historical use and evolution of adaptive reuse up until what is administered today. Comparatively, the work of scholars will discuss the purpose of buildings and design through time, the importance of preservation of history and culture in a building, the idea of value and sustainability itself, and the overall purpose of adaptation. Examined studies will distinguish the life cycle and probability of a building being reused along with construction trends and usage of the building stock for 2022.

2.1.1. The Evolution of Adaptive Reuse

The prefix *re-* has two distinguishing definitions according to the Oxford Dictionary. The first definition means in return; mutually, as in to react to something. The second, more pertinent to this paper means once more; afresh; anew, as in to reaccustom to something. In the book *UnDoing Buildings: Adaptive Reuse and Cultural Memory* published in 2020 by Routledge and written by Sally Stone, the author introduces the topic of adaptive reuse by first breaking down the concepts of different strategies relating to vacant or decaying buildings. An overview of some techniques discussed in the "Introduction" of her book displays an emphasis on terms involving the prefix *re-* (remodel, renovation, restoration, repair, renewal, refurbishment, retrofitting). These strategies all incorporate the idea of developing something new or re-

constructing an existing structure to bring it to life again, whether it be through updating elements of a building's structure or establishing new occupancy and functions to the building. Each strategy follows a simple concept taught in early education: to re-duce, re-use, and re-cycle. Stone argues that the conversion and adaptation of a building or landscape have similar connotations to the prefix *re-*, the premise taught to children to minimize the amount of waste produced, reusing products when possible, and recycling materials that can be used for another purpose (Stone, 2020).

Stone talks about the history of adaptation in design in a subsection of her "Introduction" chapter of *UnDoing Buildings: Adaptive Reuse and Cultural Memory.* As design evolved, the reuse of a building changed from:

> One of simply constructing the new elements in the prevailing style of the day, through direct replication or even pastiche, deliberate contrast, careful revelation of narrative, to the highly contemporary need for a sense of completeness or wholeness within the reused building (Stone, 2020, p. 5).

The history of remodeling occurred throughout five stages: to add to, to rebuild, to contrast, to construct narrative, and to create wholeness (Stone, 2020). With many historic buildings, evolution is tracked when a building's use changed or its occupancy was adjusted because up until the late eighteenth century, Stone claims that any reused building was modified or added onto within the style and most modern techniques of the time (Stone, 2020). The first example of this is Buckland Abbey house on the south coast of England. The abbey was first a church that was abandoned in the sixteenth century after the Reformation and later changed into a dwelling by the great explorer Francis Drake and was overseen by the original owner Sir Richard Grenville. Stone states that the "reworking of religious buildings into dwellings" was not

uncommon in that time due to the “collection of administrative and legal procedures that set into effect the dissolution of the monasteries” from 1536-1541 (Stone, 2020, p. 6). This concept is illustrated in the “unsympathetic” conversion of the original church through the “invasion of the secular into sacred space,” seen with the alteration of the presbytery into a serving area for the dwelling (Stone, 2020, p. 6).

Figure 5 The Buckland Abbey House was transformed from a church into a dwelling by Francis Drake.
Source: Stone, p. 6, 2020

Many buildings were being restored to their original construction style in the nineteenth century that brought into question authenticity (Stone, 2020). The act of “reproduction was felt to devalue both the original structure and the craftsmanship of the new elements” (Stone, 2020, p. 7). This argument was seen to the public between the writings and work of Viollet-le-Duc against John Ruskin and William Morris, the former believing as an architect he was positioned to “fill-in-the-gaps” to reconstruct and remodel existing structures while the latter fighting to

preserve the building in its found condition (Stone, 2020, p. 7). The dispute led to the development of the Athens Charters of 1931 and 1933 to advocate for the use of modern technologies and materials in construction with a "definite contrast between the existing and the new" (Stone, 2020, p. 7).

The Maison de Verre by Pierre Chareau and Bernard Bijvoet in 1931 was a "milestone" in early Modern architectural design and building reuse (Stone, 2020, p 7). It was originally a Parisian courtyard house, but the façade was replaced with a glass block wall and the interior remodeled into light and open plan, following the contemporary ideas of "clean space and healthy light" at the time (Stone, 2020, p. 7). The glazing reaches just halfway up the façade of the building with "dense and solid" upper stories sitting above the "translucent plane" (Stone, 2020, p. 7). There is an obvious contrast between the old and new with the reconstructed materials being highly Modern. The approach to easily decipher between old and new was a common theme throughout the twentieth century. Carlo Scarpa, an Italian architect, was credited for moving these ideas forward to create adaptation with narrative, i.e., a "sense of the chronicled history and exposed context of the situation" (Stone, 2020, p. 7). The approach to his work followed a building "being appreciated as a canvas" influenced by the culture of the location of the structure, a method referenced regarding a "careful, selective, and storytelling approach to reuse" (Stone, 2020, pp. 7-8). This is seen through Scapa's belief that the story of a building could be exposed through scrapping away subjectively incorrect additions and then adding to the structure with justifiably placed interventions. The Castelvecchio Museum in Verona, Italy, a project he worked on from 1957 to 1974, an original fourteenth century fortified palace for the della Scala family was thought to be Scala's masterpiece (Stone, 2020). Before Scala adapted the structure, it contained existing pieces from the eighth and twelfth centuries, additions to the

"courtyard-shape collection of buildings," and was later converted into a Gothic style museum in the 1920's (Stone, 2020, pp. 8-9). Scarpa used his modernist techniques to instill a sense of movement in the otherwise static structures. His interventions encourage "the visitor to move, to turn around, to always deviate from the obvious route and travel in a more circular manner," to essentially go through a "journey of discovery" (Stone, 2020, p. 9). Exposing the narrative of a place became an influence in building adaptation and reuse.

Figure 6 The Maison de Verre by Pierre Chareau and Bernard Bijvot was built in 1931.
Source: Stone, p. 6 2020
Picture: https://untappedcities.com/wp-content/uploads/2013/02/Maison-de-Verre-Paris-Exterior.jpg

Figure 7 The Castelvecchio Museum in Verona, Italy, as shown above, was worked on by Carlo Sarpa from 1957 to 1974.
Source: Stone, p. 9, 2020
Picture: https://www.veronatours.com/file/tours/47/castelvecchio-museum-in-verona_388_1_small.jpeg

According to Stone, by the twenty-first century, a new approach to building adaptation and reuse began to develop, to complete the building and once again make it whole. Narration of a building or structure became one of the many contributing factors of building reuse in the grand scheme (Stone, 2020). Stone defines wholeness as the "fusion of new and old into a distinct and single entity" (Stone, 2020, p. 9). This method does not focus on a distinction between old and new or the evolution of the building, but rather the relationship with its context, the contribution and influence of the urban environment, and the importance of the "composite whole" (Stone, 2020, p. 9). An architect named Kleihues successfully combined contemporary with historical to create a dialogue between place, materials, and form in his work of the

Museum of Pre-History in Frankfurt, Germany (Stone, 2020). He reused the Carmelite Church by constructing new three-story structures at the front of the site and reinstating the damaged roof of the church in a manner of an open, trussed structured system made of laser-cut steel, a difference from the original stone vaults (Stone, 2020). Kleihues described his process as "containing a sense of recompense or restoration" to restore a structure to its original state while using contemporary materials that could not exist in that period to complete the buildings once more (Stone, 2020, p. 11). The museum references the place and time of adaptation through carefully selected design implements, such as the red and white banded sandstone and the slight displacement of one new structure in the museum, which references the Stock Exchange that was destroyed during the Second World War and the break from "Post-modern irony" (Stone, 2020, p. 10-11).

As reuse evolved over the years, a connection between the construction and alteration of a building was developed with the society performing on it. Stone states that the "evolving attitudes of a culture are present within the organization and programmatic use of a building," thus displaying the concerns of the people and surrounding environment through alterations (Stone, 2020, p. 11). Because of this, Stone argues that each act of remodeling showcases the existing culture of the place and country at the time of adaptive reuse (Stone, 2020). The characteristics of reuse in a building are shown through evolution, time, and place, and the next chapter will uncover the characteristics that make a building adaptable for reuse and its place in time.

Figure 8 The Museum of Pre-History in Frankfurt, Germany is an adaptive reuse and addition project completed by Kleihues that focuses on cultural and societal context within its structure.
Source: Stone, p. 10, 2022
Picture: https://media-cdn.sygictraveldata.com/media/800x600/612664395a40232133447d33247d38353836323531333 7

2.1.2. Buildings and Reuse

In another article, "Evaluating the Weighted-Sum Approach for Measuring Buildings' Adaptability" published in the *Journal of Green Building* and written by authors Anna K. Brecker, Brandon E. Ross, and Dustin Albright, the work compares a weighted-sum measurement (physical characteristic assessment like floor layout, materials, mechanical space, separation of building components, etc.) against simulated adaptation projects (example-based approach) for measuring a building's adaptability in reuse. The authors began their article by stating that a building is not designed for immediate needs, but rather it is designed "with the ability to adapt to new needs" (Brecker et al., p. 37, 2020). This statement is derived from Stewart Brand's thesis of his seminal work on buildings, stating that "a building is not something you finish. A building is something you start" (Brand, p. 383, 1995). "With 68 percent of the

world's population projected to be urban by 2050," sustainable urbanization is the key factor to successful development (United Nations, 2018). Brecker, Ross, and Albright discuss that an urban building stock with the ability to adapt to rapidly changing demands, technology, and populations "is one strategy for sustainable urbanization" and can lead to a lower environmental footprint than demolition and new construction establishes (Brecker et al., p. 38, 2020). In this study, participants evaluated four university campus buildings to:

> Judge the buildings' adaptability on the basis of three approaches: an example-based approach (asking about buildings' suitability for various hypothetical adaptation projects), a weighted-sum approach (asking about the presence of four adaptability dimensions in the buildings), and an intuition-based approach (asking directly about buildings' adaptability with no guidance) (Brecker et al. p. 51, 2020).

The results of this experiment found that a weighted-sum approach for building adaptability compared to the expert opinions in "real-world" situations through similar scores of adaptabilities. This study also provides use to designers who want to incorporate building designs that are more adaptable for future use (Brecker et al. p. 52). The study showed that designs featuring the four characteristics of adaptable design (loose fit, long life, simplicity, and layer separation) were found in the buildings of this study and are found suitable for different adaptation situations (Brecker et al. p. 52). The overall conclusions from participants of the study when asked what features contribute most to adaptability in buildings are:

> The experts frequently mentioned openness of the floor plan, regular column/wall spacing, high floor-to-floor heights, flexible HVAC systems, and multi-use spaces to be important to adaptability. There was general agreement about what features are important

> to adaptability, with some scatter in how experts judged the presence of these features in the case study buildings. Interestingly, when given no framework, the experts tended to identify their own criteria and judge buildings based on these, evoking an unstructured version of a weighted-sum model (Brecker et al. p. 52).

The four characteristics of adaptable design (loose fit, long life, simplicity, and layer separation) were discussed more in depth in Anna Brecker's own paper, "Measuring the Adaptability of University Campus Buildings Using the Analytic Hierarchy Process" published in 2019. **Loose fit** refers to "openness in the floor plan and building section, and the ability of space to perform multiple functions with minimal adaptation" (Brecker, p. 56, 2019). **Long life** means that "the usable lifetime of a building can be extended through overdesigning the structure, using durable and high-quality materials, and making other choices that slow the physical aging of a building" (Brecker, p. 56, 2019). **Simplicity** "indicates the use of regular, repetitive, easily used parts or spaces with minimized unique conditions" in both individual systems and whole buildings (Brecker, p. 56, 2019). Lastly, **layer separation** indicates "the physical and functional separation of building layers (i.e., space plan, envelope, structure, services) such that one can be modified or removed with minimized effect on other layers (Brecker, p. 56, 2019). Also found in Brecker's paper was a figure of a building's life cycle, originally obtained from the article "Review of Methods for Evaluating Adaptability of Buildings" by Zoraya Roldán Rockow, Brandon Ross, and Anna K. Black.

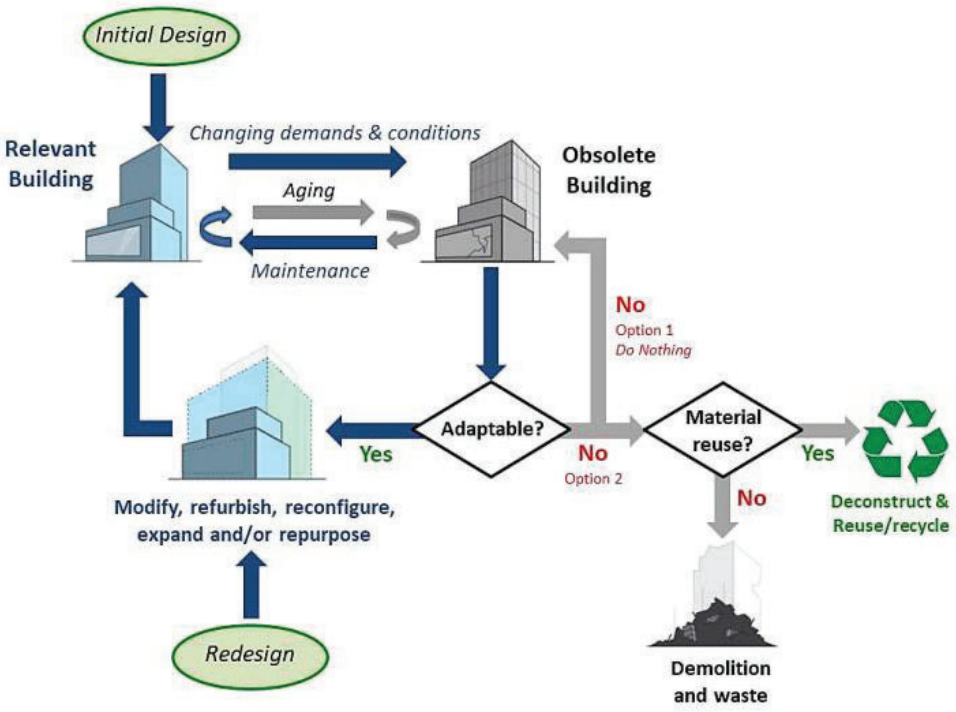

Figure 9 A building's life cycle is illustrated in the figure above. The figure was retrieved from Anna Brecker's "Measuring the Adaptability of University Campus Buildings Using the Analytic Hierarchy Process" but originally found in "Review of Methods for Evaluating Adaptability of Buildings."
Source: Rockow et al, 2018

Referring back to Brand's thesis on seminal building work, Brand talks about the idea of evolutionary design in his thesis, sometimes called continuous, evolutive, or incremental design. He states that it may come off as "contradictory, though it needn't be" (Brand, p. 383, 1995). He proves this by writing about the "quiet revolution" that both ecology and economics underwent in the 1980's when the two realized that natural and market systems were "variance-driven" as opposed to "equilibrium-based" (Brand, p. 383, 1995). This means to say that there is no climax or end in the ecological communities, but rather an "irregular oscillation" that drives the "continued self-tuning of the system" (Brand, p. 383, 1995). He is comparing this oscillation to buildings, proving his idea that buildings are not something to be finished but rather started and will continue to oscillate based on the needs of the community and the building's occupants.

After all, “adaptivity was said to thrive on the edge of chaos,” much like economics (Brand, p. 383, 1995).

The “vary-and-effect” of the Darwinian mechanism is compared to the process of design in Brand’s thesis, though Brand makes one distinction between the two: vary-and-effect operates by hindsight rather than foresight (Brand, p. 384, 1995). Evolution itself moves away from known problems rather than toward imagined goals, meaning that it “doesn’t seek to maximize theoretical fitness; it minimizes experienced unfitness” (Brand, p. 384, 1995). Brand states that this is why evolutionary forms like the “vernacular building types” look better than the envisioned designs like the “geodesic domes” because they grow from experience rather than someone’s head (Brand, p. 384, 1995). This circles back to Brand’s idea of evolutionary design, when perhaps the designer does not have the time to test certain things out that are often learned over the years. He suggests that a building should be responsive to future hindsight for later reappraisal and adjustment (Brand, 1995). If a designer focuses on the structure rather than the details, “leave parts of the building uncooked,” and uses materials that are relatively inexpensive to move or replace, it allows for a continuation, a future for the building (Brand, p. 384, 1995).

Brand’s idea of a building and of the general politics of a society or economy is trademarked through “wholesome chaos” (Brand, p. 384, 1995). He believes that one way to propel this chaos is to give power to the users of a building. A building can only “learn” or evolve through a user learning (Brand, p. 384, 1995). As a use outgrows its purpose, new occupancy takes over, or the simple uses evolve through human use, the building can evolve. This suggests a “bottom-up” approach to a building rather than a “top-down” approach, otherwise known as reuse and renovation vs. a demolition or new construction (Brand, p. 384,

1995). Brand states that this approach is known to researchers as "subsumption architecture – pushing the power to respond to the bottom of the organization" (Brand, p. 384, 1995). A user-based approach allows for learning in a building. Letting people try things allows for the users to learn from their mistakes and find what they want in a building. Brand believes that once people are comfortable enough to do their own maintenance and repair, reshaping will come naturally because users have a "hands-on" relationship with their space and know what it is they want or what will work (Brand, p. 385, 1995). Brand believes that architecture has "emasculated" itself enough and shall evolve from being just "artists of space" to "artists of time" (Brand, p. 385, 1995). Brand includes a quote from artist and musician Brian Eno, stating that:

> It seems to me that the best designs are those which accommodate the most contradictions. Looking at the other way, the most boring design is that which is directed at a simple, well-defined future. A lot of New Age music exemplifies this, as does, for me, Le Corbusier. They are both addressed to simple world pictures, and to simple ideas about how humans behave and what they want (Brian Eno) (Brand, pp. 385-386, 1995).

Brand's idea that designing for time is the epitome of adaptive reuse in buildings. To create structures that not only withstand time, but also have an ability to adapt to future use and programming establishes a continued use for buildings. It allows for Brand's belief that buildings are designed as a means of a start rather than a finish to stand true. Letting the building and the users learn and evolve with use prevents rapid development and vacancies and allows for reuse to take place. Brand included his thoughts on architects designing for time, stating:

> It wouldn't take much adjustment to unleash the full ingenuity of architects on the juicy problems of designing for time. They could supplement the dutiful process of

programming with the enjoyable practice of scenario planning. They could do more post-occupancy evaluation, particularly of their own buildings, but also of existing buildings that relate to new projects. They could seek the stability of ongoing relationships with clients instead of the all-at-once, do-or-die, design-crisis approach now employed. They could seek new ways to employ time as a tool in building design and use. “Time,” wrote Francis Bacon in 1625, “is the greatest innovator” (Brand, p. 386, 1995).

2.1.3. History, Preservation, and Culture

In Stone’s book *UnDoing Buildings: Adaptive Reuse and Cultural Memory* she argues that “the reuse of an architectural site creates a direct connection with the past” (Stone, 2020, p. 19). Her book contends that reuse creates a relationship with history between the building, its surroundings, and the society that constructed it that illustrates a narrative. The “qualities” and “conditions” of a building allows the designer to understand what can be made of it, and with this understanding of existing conditions of a vacant or underutilized building an architect can “uncover the meaning within a place. This knowledge can be used to activate, liberate, or instigate a new future for the building.” (Stone, 2020, p. 19). Stone believes that it is the architect’s duty to not only adhere to the new users’ needs, but also to the “intentions of the original building” (Stone, 2020, p. 19).

Another book written by Kathryn Rogers Merlino and published in 2018 has a similar stance on vacancies and building reuse. Merlino’s book, *Building Reuse: Sustainability, Preservation, and the Value of Design,* takes the stance that demolition should be a last resort for existing buildings. She states that “once a building is gone, it is gone forever, and with it goes its history, culture, and material value” (Merlino, 2018, p. 4). Merlino includes a quote from Winston Churchill about the effect of buildings, who stated that “we shape our buildings, and

afterwards our buildings shape us" (Merlino, 2018, p. 4). Both Merlino and Stone share the belief that existing buildings deserve to be preserved for their cultural and historical importance to humanity and place in time. As a "sense of perspective in our shared time in the world," Merlino maintains that while age within a building can often make it more valuable, a building "as young as 25 years can be considered 'historic'" in contrast with the typical 50 years that qualifies a building as 'historic,' and whether a building is designated as 'historic' or not, each are still a valuable resource in a community (Merlino, 20118, p. 4). This point is brought up to prove that a building has significance without the term 'historic' to provide its value, bringing up the argument of value itself that will be discussed in the next subsection. This is not to say that all buildings are qualified for reuse, but an evolved way of considering buildings for their environmental value as opposed to the "traditional ideal of historic importance" (Merlino, 2018, p. 7).

In her book, Merlino writes the opposing side as the growing population in larger cities that institutes rapidly changing neighborhoods and mass construction to accommodate for commercial and residential needs, but that often results in the demolition of older, 'historic' buildings and neighborhoods. She includes author Jane Jacobs stance on building construction and reuse, a belief that new, large-scale development that replaced richly textured blocks of small, mixed-age buildings with blocks of much larger, new structures drained life from neighborhoods spatially, socially, and aesthetically" (Merlino, 2018, p. 5). Jacobs argues that older buildings provide a mix of healthy income levels, something that has become widely accepted in the world today.

2.1.4. The Question of Value

Another aspect highlighted in both Stone's and Merlino's books was the question of value. Stone starts chapter two of her book off with the fable 'Red Riding Hood' to both introduce a basic concept and shed light on how fairy tales differ based on the time and culture they are found in or passed along, similarly to buildings. Aside from the variables between stories or time and place, the vision remains the same. "The important point that emerges for a modern sympathetic understanding of an activity with such ancient roots is the mixture of stability and variations both in stores and in the circumstances of their telling" (Stone, 2020, p. 18). Stone calls this a mnemonic, a device to aid in memory. A basic story is "set in stone," and no matter how many variations rise from it, "the narration is always guided by the original version (Stone, 2020, p. 18). Stone compares this to buildings to show that buildings provide a link to the past they were created in, even after modifications or adaptations were made to them. These historic buildings are argued to be important texts themselves during times when documents were not always available (Stone, 2020).

In a different sense, Merlino talks about the value of buildings starting with the recognition of historical structures to be preserved as they "play an important part of the story of creating our nation" (Merlino, 2018, p. 7). Historical designation is set within specific boundaries: a building must be proven to be associated with an important moment in local or national history, with a historical individual or group, or must represent an exceptional architectural style or tradition (Merlino, 2018). Merlino argues that value is lost in a building because it can often be subjective, and an older building may not be able to meet every requirement to be labeled 'historic.' This can lead to any person wanting to demolish a building to label it as "old" or "existing" in order to get what they want when it can still have historical

significance to a time or culture (Merlino, 2018, p. 8). Merlino believes that attaching value to buildings only for their architectural, cultural, or historical significance is problematic for three reasons:

- "Only buildings with the highest historic status are considered valuable enough to be protected from demolition" (Merlino, 2018, p. 8).
- "The historic designation process is piecemeal and irregular – and therefore complicated, time-consuming, and discouraging" (Merlino, 2018, p. 8).
- Attaching value to buildings exclusively because of their notarized historical significance ignores the fact that all buildings inherently hold value as environmental artifacts" (Merlino, 2018, p. 8).

Merlino argues that the definition of value must be broadened to "maintain cultural and environmental sustainability" as the "non-historic" buildings make up most of the existing buildings (Merlino, 2018, p. 8). To advance any "agenda of sustainability," existing buildings need to be regarded as an environmental resource (Merlino, 2018, p. 8). In each case, both authors show that value is important in a building, but whether it gets changed over time or the basis of value must change for the future, a building has inherent value that holds onto history and can become a solution to better the economy and world. Merlino further introduces "environmental sustainability" and "agenda of sustainability" within the environment, but what all encompasses sustainability?

2.1.5. Sustainability and Sustainable Design

A strong section in Merlino's book *Building Reuse: Sustainability, Preservation, and the Value of Design* is the impact the people and their lifestyles have on the environment. Chapter four's "Environment: Green Existing Buildings" introduces the topic of awareness against global

changes based on lifestyles and habits of humans. While aware and making efforts to recycle materials, purchase reusable objects or reuse what a person already has, and compost yard waste and food waste all "in the name of sustainability," humans rarely consider "recycling our largest artifacts – buildings" (Merlino, 2018, p. 49). The author describes this act as pervasive, which means to spread widely throughout an area or a group of people but has an overall unwelcome influence or physical effect. Why is the concept of reduce, reuse, recycle pervasive? Perhaps because, while beneficial to the environment, humans do not consider the larger, more influential pieces of their actions. Merlino states that it is more common in the U.S. to demolish buildings and replace them with new, green buildings rather than adapt the ones already in existence (Merlino, 2018). Green buildings offer many benefits in the progression of sustainability, like "on-site power generation, rainwater-harvesting systems, energy-efficient building components, sustainably harvested materials," etc., but the act of first demolishing the existing structure to produce a newer, greener building produces a large amount of waste and a huge carbon footprint (Merlino, 2018, p. 50). Merlino argues that this process defeats the "quest for sustainability" before the project has even been developed and urges designers and builders to change their view of existing and historic structures as an obstacle toward a more opportunistic challenge of applying new technologies and new purposes (Merlino, 2018, p. 50).

In 1983, the United Nations General Assembly put together the Brundtland Commission to establish a discussion on the topic of environmental degradation and its associated problems, resulting in a report named *Our Common Future* that outlined a definition of sustainability and fought to persuade sustainable development (Merlino, 2018). This report, with a global audience, pinpointed three aspects of sustainability – "social, economic, and environmental sustainability – that are inherently connected to each other in development" (Merlino, 2018, pp. 51-52).

Environmental impacts were not widely accepted at the time, and not until the 1990's did sustainable building practices emerge in the U.S. An article written by Ed Mazria in 2003 called "It's the Architecture, Stupid!" highlighted the contribution buildings have on the environment and climate change, instigating a generation of architects to develop "methodologies for aggressive modifications in building sustainability" (Merlino, 2018, p. 52). What followed consisted of a build-up of energy-consuming technologies during and after the Industrial Revolution that resulted in energy consumption in buildings to climb and a period in which the "most resource-consuming buildings in history were constructed," heavily reliant on energy-consumptive heating, cooling, and lighting systems (Merlino, 2018, p. 52). At the turn of the twentieth century, builders began using inventions from the Industrial Revolution and working toward sustainability in their design methods.

"Buildings have a massive negative impact on the environment through greenhouse emissions and the depletion of natural resources" (Merlino, 2018, p. 53). They are responsible for negative impacts throughout every phase of their existence, from extraction of materials to construction, operation, maintenance, and demolition (Merlino, 2018) Merlino addresses those buildings in the U.S., during their construction and operation, are:

> "Responsible for 71-76 percent of all electricity consumption, 41 percent of all primary energy use, 17 percent of freshwater flows, and three billion tons of raw material consumption (40 percent of raw stone, gravel, sand, and steel; 25 percent of virgin wood) (Merlino, 2018, p. 53).

The building sector is the leading contributor to human-influenced climate change as the building sector consumes more energy than any other sector, building construction contributes half of all carbon emissions nationally, and produces this energy primarily through the burning

of fossil fuels (Merlino, 2018). While sustainable strategies are now fully accepted and administered in new and renovative construction, Merlino believes this design is still in "adolescence at best," with several reasons for this belief (Merlino, 2018, p. 53).

- "Building products are still evolving, and there is yet no consistent understanding of the actual impacts they have on the environment" (Merlino, 2018, p. 53).
- "Clients and owners have yet to understand the larger impact or find financial motive to embrace sustainable design" (Merlino, 2018, p. 53).
- "A generation of practicing architects have little to no training in sustainability" (Merlino, 2018, p. 53).
- "Educational models do not require extensive training in green building (schools vary widely)" (Merlino, 2018, p. 53).
- There are many levels of green buildings. Some buildings labelled "green" feature no more than "low-flow plumbing fixtures, more efficient mechanical systems, somewhat more than the usual amount of insulation, and few recycled products," while on the opposite end of the spectrum are the "net-zero-energy buildings" that produce their own energy and water on-site (Merlino, 2018, p. 53).
- The "greenwashing" practice that constitutes the false promotion of green strategies exists in the industry that leads to the misunderstanding of sustainability, the misrepresentation and mislabeling of buildings as green, and the growing field of green products that may or may not be harmful to the environment (Merlino, 2018, p. 53).

The term sustainability is still surrounded by confusion, though it has become "ubiquitous" in the last decade according to Merlino (Merlino, 2018, p. 53). While many terms

are used to describe sustainability, like ecological design, green architecture, sustainable architecture, environmentally friendly buildings, etc., Merlino argues that the word *sustainable* only has one definition that is best described by architect Jason McLennan: "Sustainable Design is a design philosophy that seeks to maximize the quality of the built environment, while minimizing or eliminating the negative impact of the natural environment" (Merlino, 2018, p. 54). The question of social, economic, and environmental sustainability and their connection remains. Written by William R. Blackburn and published in 2007, the book *The Sustainability Handbook: The Complete Management Guide to Achieving Social, Economic, and Environmental Responsibility* spoke on the rise of environmentally friendly advances throughout the world, and how it would grow more pertinent in the years to come (Blackburn, 2007). According to this book, the concept of sustainability first arose in 1972 in Stockholm during the United Nations Conference on the Human Environment. "Industrialized and developing nations debated what was more important: environmental protection or economic development" (Blackburn, 2007, p. 2). This propelled the discussion that environmental protection and economic development were indistinguishably linked to one another. In the years to follow, environmental impacts were not the only concern for people around the world. Blackburn's book speaks on the other issues that created a cause for concern in the passage below:

> The Apartheid racial segregation policies of South Africa were coming under attack from Rev. Dr. Leon Sullivan, a Philadelphia clergyman and civil rights leader, and from other religious and student activists as well. The movement gained momentum in 1976 when South African police fired on student demonstrators at Soweto. A burgeoning number of universities, pension funds, and local governments in Europe and the United States began dropping their investments in companies that refused to recognize human rights and equal

> opportunity in their South African operations. The seeds of Apartheid's demise were being sown, and "socially responsible investing" was finding new meaning. Meanwhile, a new disease, acquired immune deficiency syndrome (AIDS), was beginning its devastating rampage (Blackburn, 2007, p. 3).

The issues in the passage above became the setting for the Brundtland Commission of 1983, as mentioned earlier in this section. This gathering of nations discussed how to "improve human well-being without threatening the environment" that concluded with the most widely definition of sustainable development used today: "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Blackburn, 2007, p. 3). After five years, that definition that focused on economic and environmental concerns expanded to incorporate social topics like "peace, poverty, and the role of women and indigenous people" (Blackburn, 2007, p. 4). In 1997 the entrepreneur and referred 'godfather of sustainability' Briton John Elkington coined the term "triple bottom line," meaning to reach sustainability, "one must achieve not only economic 'bottom-line' performance but environmental and social performance as well" (Blackburn, 2007, p. 4).

Blackburn established a common theme in the vast definitions of sustainability that establishes a meaning for sustainability in his book, declaring this meaning to be called the "2R's" that stand for "Resources" and "Respect" (Blackburn, 2007, p. 4-5). Resources refers to "the wise use and management of economic and natural resources," while Respect refers to "respect for people and other living things" (Blackburn, 2007, p. 5). The confusion of sustainability and the definitions that surround it continue to grow when other terms like "corporate social responsibility (CSR), organized social responsibility (OSR), corporate responsibility, corporate social investment, corporate citizenship, global corporate citizenship,

and sustainable growth" are referred to while also describing what sustainability is (Blackburn, 2007, p. 5). While people argue that these words take on the same or different focused meanings, Blackburn argues that these words take on similar responsibilities in reports or definitions, whether it be "to take responsibility for the impacts on society and the environment…." (Blackburn, 2007, p. 5), "a concept where companies integrate social and environmental concerns in their business operation and in their interaction with their stakeholders" (Blackburn, 2007, p. 6), or using the term "sustainable growth" to mean corporate responsibility to show sustainability is not in stagnation while others avoid the term "growth" because it suggests the need to increase size or consumption (Blackburn, 2007, p. 6). Overall, the confusion and assortment of definitions following sustainability and sustainable design all refer to the idea that designers and builders shall be wise in their management of economic and natural resources while providing respect for all living things, fully adhering to the economic, social, and environmental aspects of sustainability. With a clearer understanding of what sustainability is in the built environment, the next section will reveal sustainable strategies for buildings and construction.

2.1.6. Sustainable Building Strategies

In Merlino's book of *Building Reuse: Sustainability, Preservation, and the Value of Design*, the author dives into sustainable building strategies. She states that "heating, ventilation, and cooling systems are responsible for 39 percent of residential and 32 percent of commercial building energy end use" (Merlino, 2018, p. 59). Energy end use refers to a category of energy use within a building. In her book, Merlino states that space heating takes the largest amount of energy consumption, nearly 20 percent (Merlino, 2018). To combat this, a low- or no-cost strategy can be applied to most types of buildings. This includes diagnosing the building

envelope and adding insulation where necessary while maintaining proper seals around doors and windows results in "better performance from heating and cooling systems" (Merlino, 2018, p. 59). Passive responses like natural ventilation from operable windows, window shading, and seasonal additions (shutters and storm windows) can boost mechanical systems' performance (Merlino, 2018). In warmer climates, energy consumption can be reduced by minimizing heat and humidity gains from lights and appliances with upgrades to newer technologies that have higher efficiency (Merlino, 2018). Energy consumption through lighting systems can be reduced by minimizing the amount of artificial light needed and by choosing more efficient technology where artificial lighting is used (Merlino 2018). Energy efficient lightbulbs and automatic sensors, like "fluorescent or LED options," can cut energy bills for lighting in half, with some studies showing that "if every building had energy-efficient lighting tomorrow, national energy use would be reduced by 10 percent" (Merlino, 2018, p. 59).

Materials are an important aspect in sustainability and adaptive reuse of buildings. Merlino states that building materials regarded as "green include lumber from forests that have been certified from a third-party forest standard, rapidly renewable plant materials like bamboo and straw, dimension stone, recycled stone, recycled metal, and other products that are nontoxic, reusable, renewable, or recyclable (grass, linoleum, sheep's wool, panels made from paper flakes, compressed-earth blocks, adobe, baked earth, rammed earth," etc. (Merlino, 2018, pp. 59-60). Recycled industrial goods are suggested in construction projects as well, which includes coal combustion products, foundry sand, and demolition debris (Merlino, 2018). These building materials to be used for a project, whether new construction or reuse, are to be extracted and manufactured in the region where the project or building is located when possible, to minimize energy use through transportation. Building components are also suggested to be "manufactured

off-site and delivered to the site to maximize the benefits of off-site manufacture, including minimizing waste, maximizing recycling, high-quality elements, and less noise and dust" (Merlino, 2018, p. 60).

In development projects, water conservation and on-site management of rainwater are one of the most important aspects in any development project, which can be incorporated into existing buildings and new construction (Merlino, 2018). It has been agreed upon by experts that "water will be the most sought-after resource in the future, and that managing its use and reuse will therefore be critical" (Merlino, 2018, p. 60). Building occupants use 13 percent of the water consumed in the United States in one day, and of that number, 25.6 percent of it is used by commercial-building occupants, with 74.4 percent used in residences (Merlino, 2018). The ability to manage storm water and wastewater on-site and in buildings is integral to sustainable development, which includes existing properties (Merlino, 2018). Some of these methods include the reduction of storm-water runoff and wastewater runoff into local water bodies, or choosing natural systems instead of mechanical systems for managing storm water that can result in many other benefits (Merlino, 2018). Strategies to maintain this natural preservation of water include:

- Porous pavement allows water to infiltrate the ground and slow down runoff, recharges the water table, and can decrease or eliminate the need for water basins (Merlino, 2018).
- "Vegetated swales and rain gardens allow water to infiltrate the ground, preventing runoff during heavy rains by catching the water in depressed, vegetated basins and slowing in down." This also removes many pollutants from polluted storm water through natural filtration processes (biofiltration or bioretention) (Merlino, 2018, p. 63).

- Green roofs reduce runoff by absorbing the rainwater on the surface of a roof. According to the Center for Neighborhood Technology in Chicago, “15 to 90 percent of runoff can be absorbed this way” (Merlino, 2018, p. 63).
- Green walls or living walls can “dispose of captured storm water through evapotranspiration when designed in conjunction with a larger water catchment and harvesting system” (Merlino, 2018, p. 63).
- Rain barrels and cisterns slow down peak water flow by catching and storing rainwater during heavy rains or storms, which can then be harvested and used on-site for irrigation (Merlino, 2018).
- Rainwater harvesting on-site reduces overall water consumption in buildings and can prevent potable rainwater from becoming waste (Merlino, 2018).

Sustainable strategies in buildings and construction are also an important factor in the overall costs of construction and building maintenance, as well as the maintenance of energy consumption and CO2 emissions in the buildings sector that will be addressed in the next section.

2.1.7. Global Status Report for Buildings and Construction

The Global Status Report for Buildings and Construction, or the Buildings GSR, is a publication of the UNEP-hosted Global Alliance for Building and Construction (UN Environment). The Buildings GSR provides an annual snapshot of the progress of buildings and construction on a global scale and reviews the status of policies, finances, technologies, and solutions to monitor whether the sector is aligned with the Paris Agreement goals (UN Environment, 2022). The Paris Agreement has a central goal to strengthen the global response to climate change by keeping a global temperature rise this century below two-degrees Celsius

above pre-industrial levels. The agreement is also pursuing efforts to limit the temperature increase further to 1.5-degrees Celsius (UN Environment, 2022).

The 2022 Buildings-GSR found that there was a "substantial increase in investment and success at a global level lowering the energy intensity of buildings, though the sector's total energy consumption and CO2 emissions increased in 2021 above pre-pandemic levels" (UN Environment, 2022). Building energy demands increased by four percent since 2020 with the reopening of workplaces and hybrid strategies remaining, the largest increase in 10 years, and the CO2 emissions from building operations are at an all-time high (UN Environment, 2022). The rise in CO2 emissions shows that few structural changes have occurred in the building sector to reduce energy demands and cut emissions (UN Environment, p. xvi, 2022). When this report was finalized, the world was just entering the year 2022, with concerns for the risk of the decarbonization trajectory due to the Russian invasion in Ukraine and the "ensuing energy crisis in Europe" (UN Environment, p. xvi, 2022). This will only be accelerated with the current conflict between Israel and Pakistan.

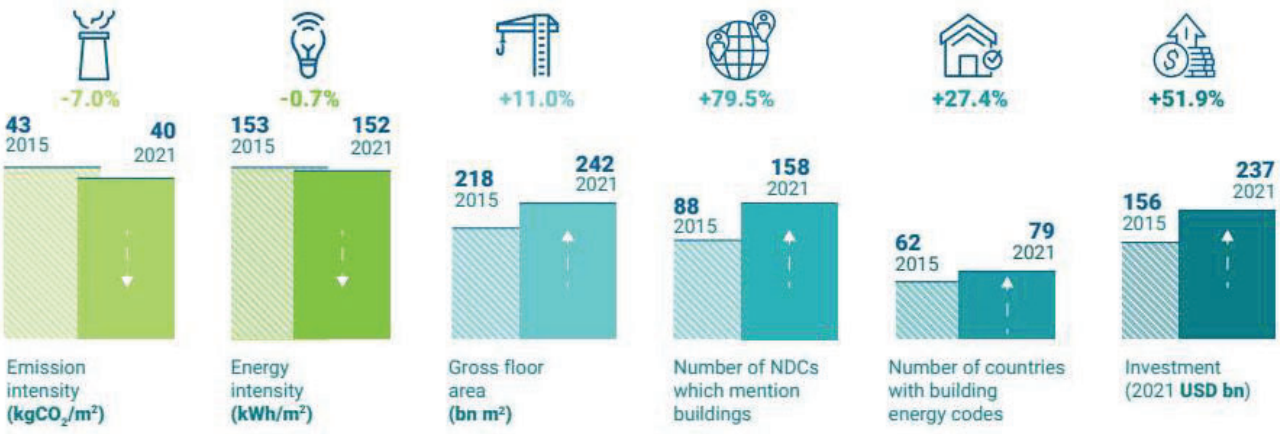

Figure 10 The graphic above is a depiction of the global buildings and construction key trends between the years 2015 to 2021.
Source: UN Environment, 2022

The Intergovernmental Panel on Climate Change (IPCC) provided the most recent assessment report found in the 2022 GSR Buildings Report, stating that:

> The buildings and construction industry offer significant global mitigation potential for reaching the Paris Agreement. Opportunities include improving existing buildings efficiency and use, high-performance new buildings, efficient lighting appliances and equipment in buildings, integrating renewables in buildings, and decarbonizing production of building materials (UN Environment, p. xvii, 2022).

The IPCC report concluded that buildings' operational emissions must decrease by 95% to be cost-effective and beneficial to building occupants and energy security (UN Environment, 2022). The Global Buildings Climate Tracker, "a seven-part composite index created to track the progress toward decarbonization," in the report shows that the buildings and construction sector remains off track in achieving decarbonization by 2050, and this gap between actual climate performance of the sector and the decarbonization pathway is growing (UN Environment, pp. xvii, 33, 2022). The tracker provided in Figure 2.7 below shows that building decarbonization has reverted to its original "speed of change" (UN Environment, p. xvii, 2022).

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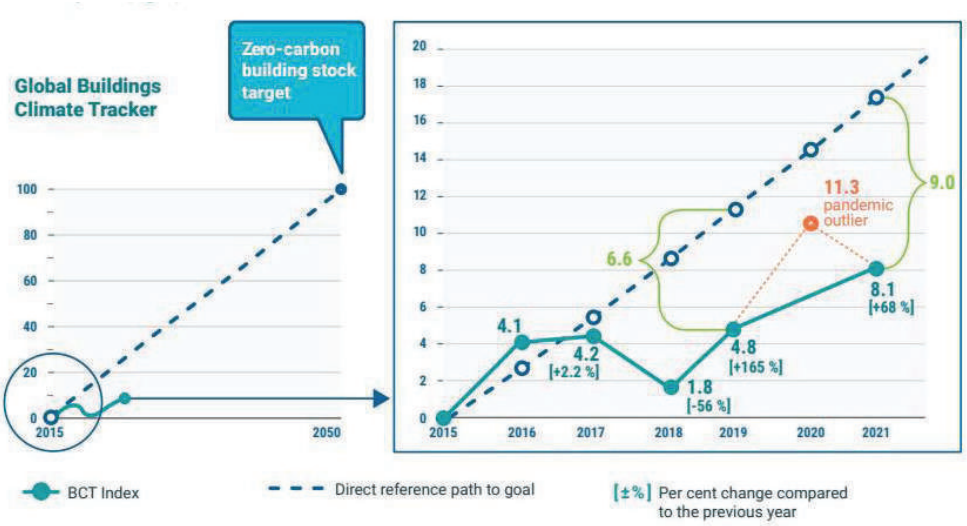

Figure 11 The graph above, provided by the 2022 GSR Buildings Report of the years 2015 through 2021, shows the Global Buildings Climate Tracker. The left graph above shows the direct reference path to a zero-carbon building stock target in 2050. The right graph zooms in on the years 2015 to 2021 and compares the Global Buildings Climate Tracker to the reference path. **Source**: Adapted for the 2022 GSR Buildings Report by the Buildings Performance Institute Europe. UN Environment, 2022

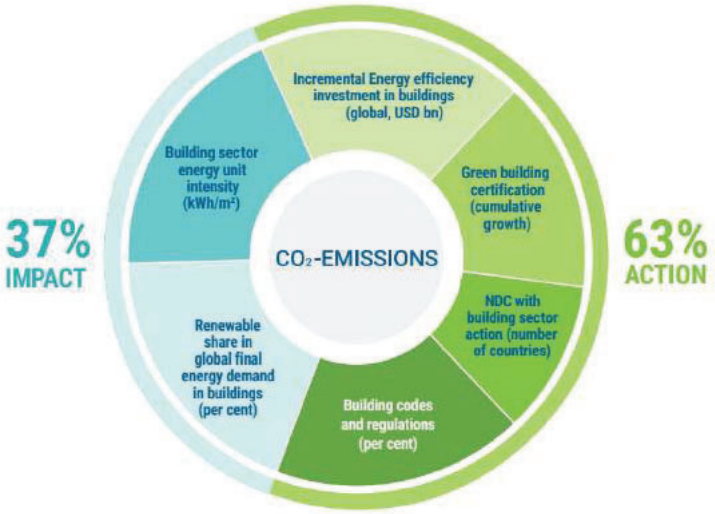

Figure 12 The graph above depicts the seven-part composition for the Global Buildings Climate Tracker and their weight in the index. “The weighting of individual indicators in the decarbonization index, and their data sources, are as follows: energy intensity 19 percent (IEA 2022f); renewable share 19 percent (IEA 2022f); building regulations 18 percent (author analysis); energy efficiency investments 19 percent (IEA 2022f); green building certifications 15 percent (author analysis); building measures in NDCs 11 percent (author analysis). Instead of a weighted share, CO2 emissions are used as a factor because they are the main measurement for decarbonization (IEA 2022f) (UN Environment, p. 33, 2022).
Source: This graphic was adapted by Buildings Performance Institute Europe (BPIE) 2022.

Operational demands in buildings (space heating and cooling, water heating, lighting, cooking, etc.) has grown to 135 EJ (exajoule, 1EJ = 10^18 J), a roughly four percent increase since 2020 and exceeding the previous peak in 2019 by over three precent (UN Environment, 2022). “The global buildings sector CO2 operational emissions have also rebounded from 2020 by about five percent to a level of around 10 GtCO2” (Gt = gigatons of equivalent carbon dioxide) (UN Environment, p. xviii, 2022). The increase in energy consumption and CO2 emissions refers to the reopening of businesses and workplaces while many still used the hybrid method of work and communication, as well as an increase in the use of gas for heating. The energy intensity of buildings, which represents the total final energy consumption per square meter, has remained constant for the last three years at 150 kWh/m^2 (watt hour per square meter) (UN Environment, 2022). The International Energy Agency estimated that intensity needs to drop to around 95 kWH/m^2 to achieve the needed pathway toward net zero carbon (UN Environment, 2022).

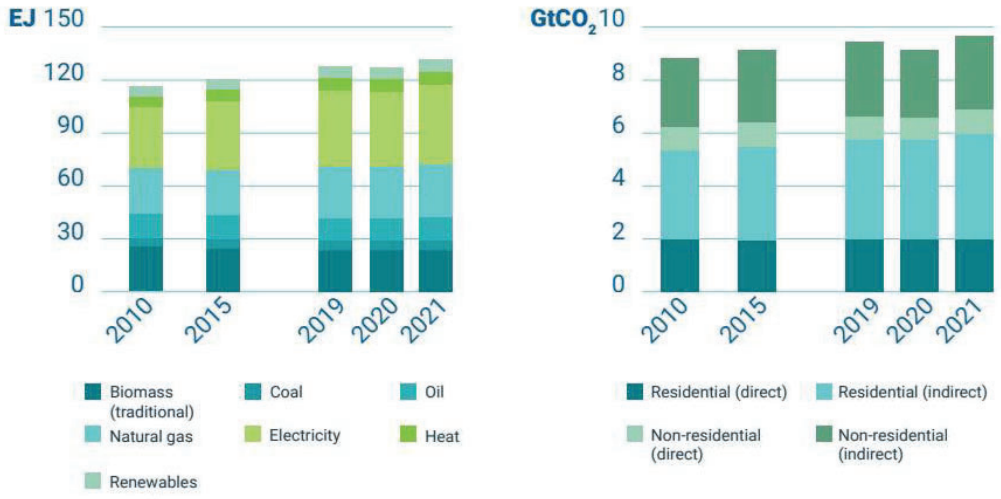

Figure 13 Above are two graphs that illustrate the energy consumption in buildings by fuel (left) and CO2 emissions in buildings (right) from the years 2010 to 2021 provided in the 2022 GSR Buildings Report.
Source: International Energy Agency, (2022). Tracking Clean Energy Progress. Paris.

The report stated that buildings and construction policies saw progress in 2022 "with 23 countries revising and updating their Nationally Determined Contributions (NDC) with a greater level of commitment to building efficiency and adaptation, and a greater level of detail" (UN Environment, p. xviii, 2022). 80 percent of countries now refer to buildings as part of their NDC, and increase from 69 percent in 2020, a positive sign that countries are now considering the role buildings and construction play in decarbonization (UN Environment, 2022).

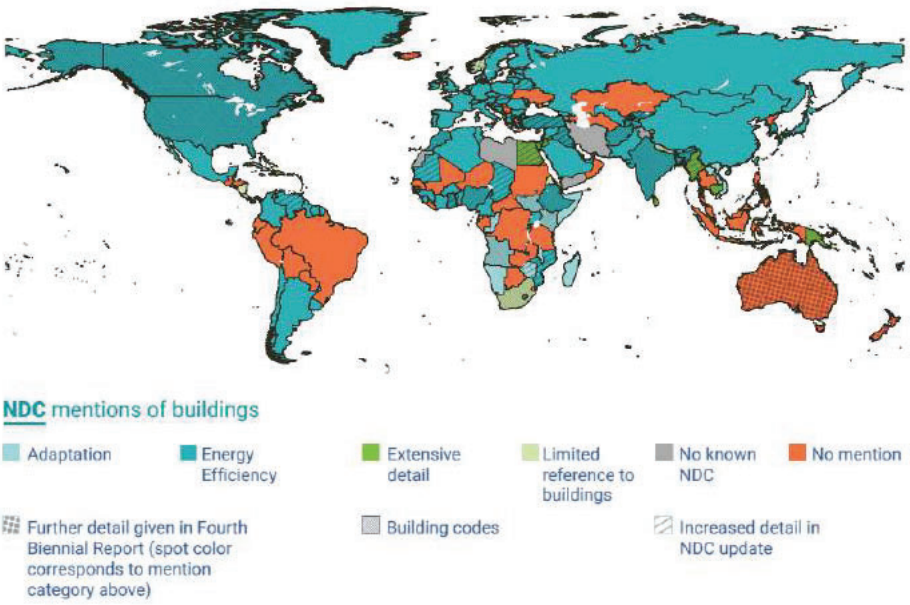

Figure 14 The map above illustrates the mention of buildings in the latest NDCs across all countries. The 2022 GSR Buildings Report noted that "this map is without prejudice to the status or the sovereignty over any territory, to the delimitation of international frontiers and boundaries, and the name of any territory, city, or area" (UN Environment, p. xix). Regions with fine left-hatching give specific details to building codes, while regions with dotted hatching have reported actions through the Biennial Report. The Biennial Report provides updates on actions undertaken by a Party to implement the Convention, including the status of its greenhouse gas emissions and removals by sinks, as well as on the actions to reduce emissions or enhance sinks.
Source: United Nations Framework Convention on Climate Change [UNFCCC].

The global consumption of raw materials is stated to almost double by 2060 as the world economy continues to grow and living standards continue rising, (Organization for Economic Co-operation and Development [OECD] 2019). Material efficiency, specifically the recycling of

materials, can reduce greenhouse gas emissions in the material cycle of buildings by over 80 percent leading up to 2050 in only seven countries alone (UN Environment, 2022). To be able to transition to a future of low-carbon buildings and decarbonize the buildings materials sector, a design that takes a whole building's lifecycle and system-thinking approach, as well as involving stakeholders to take greater responsibility of the environmental impact of their decisions regarding material selection across the building's lifecycle, is required to accomplish this feat (UN Environment, 2022).

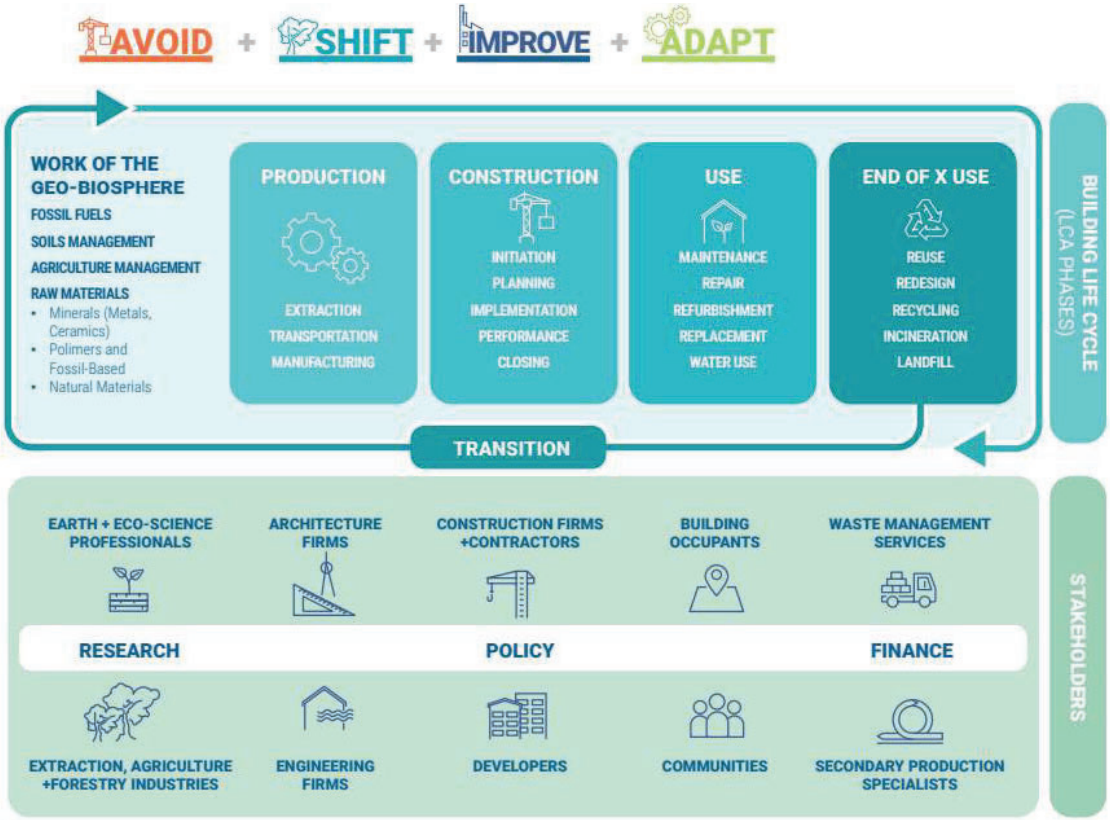

Figure 15 The figure above shows the complete lifecycle of a building, informing the reader how to get the right information to stakeholders at the right phase of the building construction and overall lifecycle of the building. This enables maximum decarbonization through systems-thinking. This illustration was provided by the 2022 GSR Buildings Report.
Source: UN Environment, 2022

Since the pandemic, building construction activities have bounced back to their original trends, becoming a "driver behind both the growing investment in more energy efficient buildings and the increased energy demand and related emissions" (UN Environment, p. 38, 2022). The International Energy Agency (IEA) estimated that building floor space increased by around one percent from 2021. (UN Environment, 2022). More building construction occurred in countries with a higher income, which also reflected strong investment through 2021 (UN Environment, 2022). While building construction activity has grown since the pandemic occurred, an increase in inflation put a negative pressure on construction through increased labor and material costs and further increased borrowing costs for building purchases and construction companies (Royal Institution of Chartered Surveyors [RICS] 2022). Housing unaffordability, when this report was written, had risen by more than 10 percent compared to the first quarter of 2021, adding to an already existing housing affordability crisis (UN Environment, 2022).

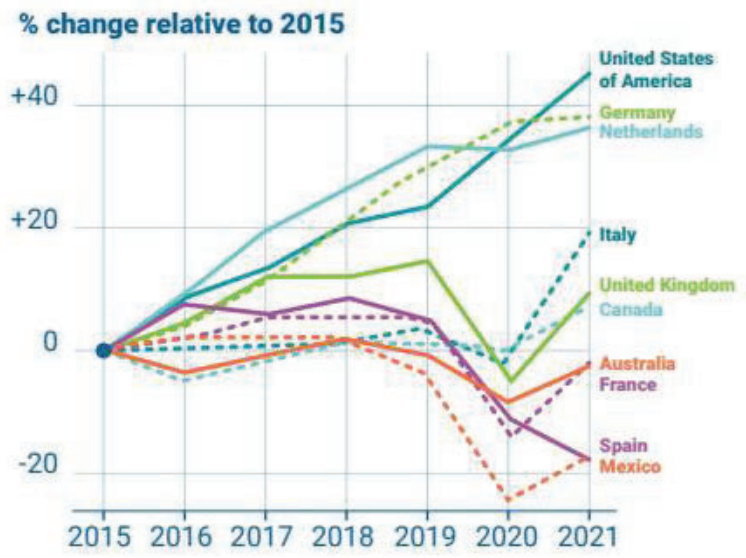

Figure 16 The graph above illustrates the change in construction activities according to the selected G20 countries from 2015 to 2021. This graphic was obtained in the 2022 GSR Buildings Report.
Source: OECD 2022.

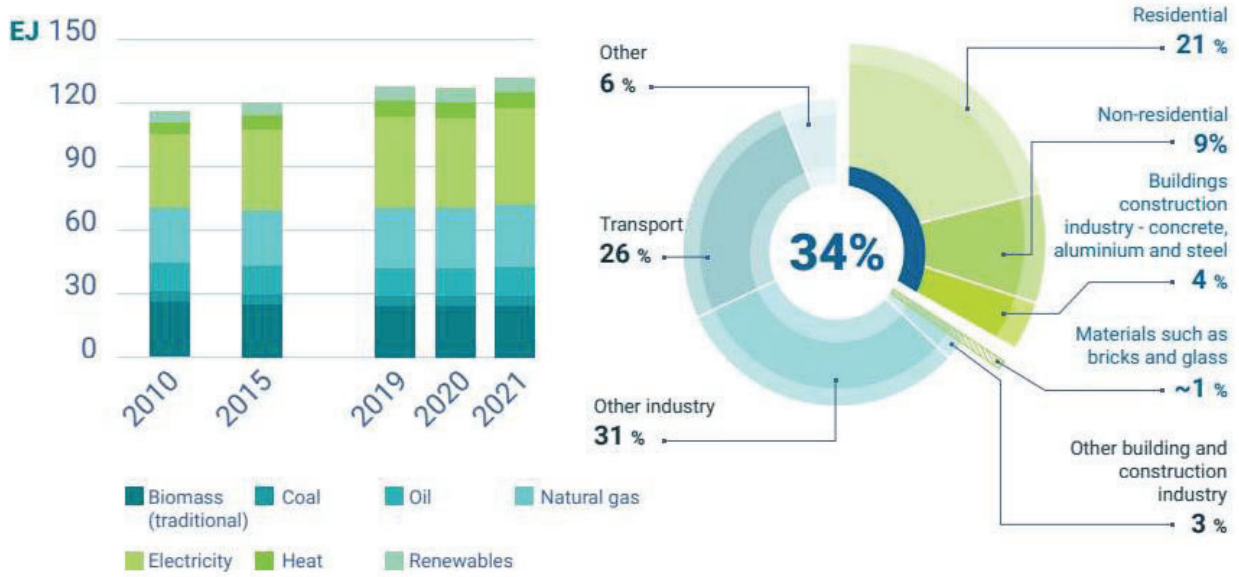

Figure 17 The energy consumption in buildings by fuel from 2010 to 2021 (left) and the share of buildings in total final energy consumption in 2021 (right) are depicted above. These graphics were taken from the 2022 GSR Buildings Report, who reserve the right to the International Energy Agency.
Source: IEA 2022. Adapted from "Tracking Clean Energy Progress" (IEA 2022f)

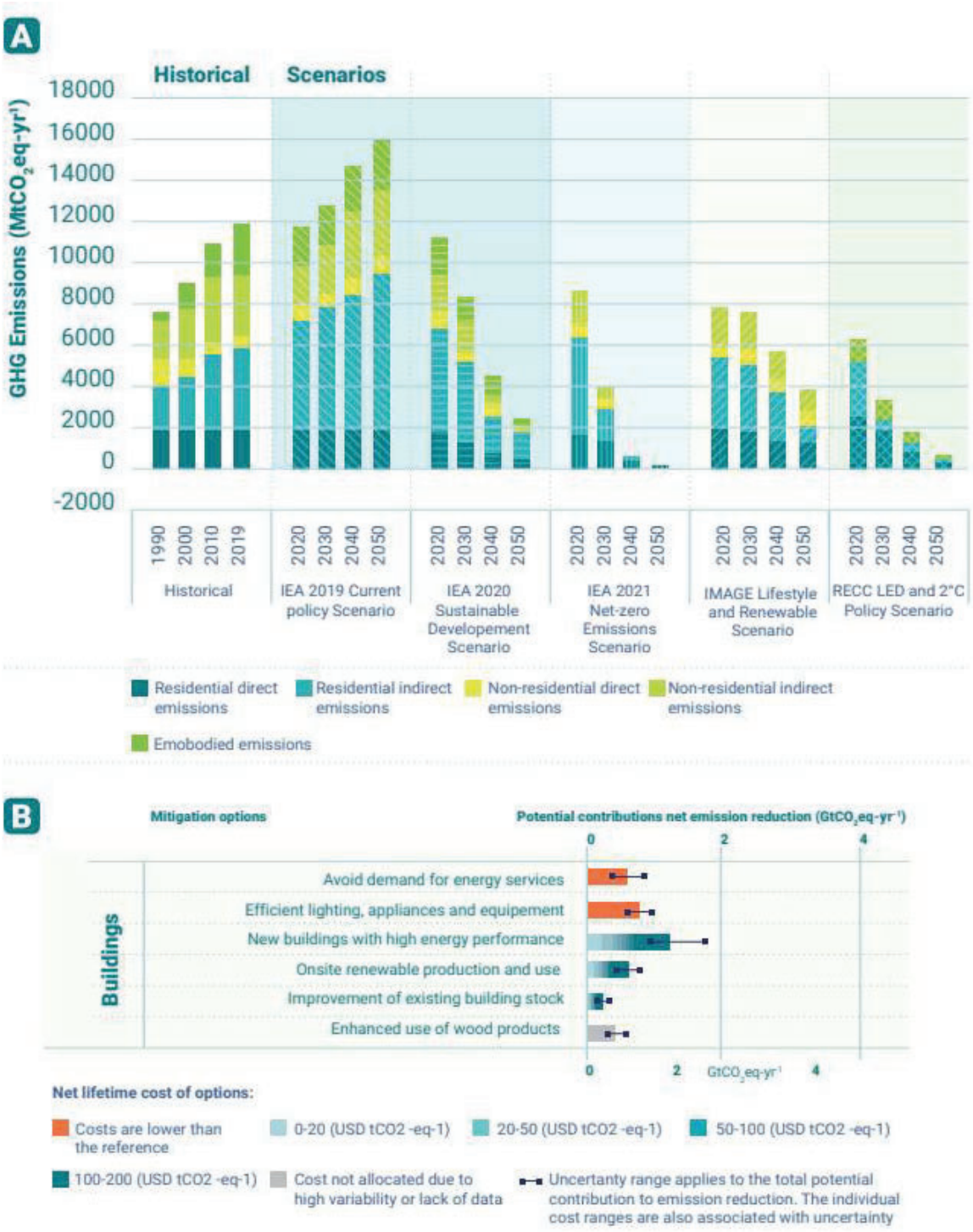

Figure 18 The above graphic is an overview of A) global building emission reduction scenarios and B) mitigation options and their estimated ranges of costs and potentials in 2030.
Source: Adapted from IPCC (Intergovernmental Panel on Climate Change) AR6 Working Group III – Mitigation, Chapter 9: Buildings, Figure 9.3, page 168 and SPM.7, page 63 (IPCC 2022)

2.1.7.1. 2022 GSR Buildings Report and Construction Costs

The 2022 GSR Buildings Report provides a statistical analysis of energy consumption and CO2 emissions in buildings and construction and how these trends affect global climate change and the world's path to a zero-carbon building stock target for 2050. While the sector remains off in reaching decarbonization by 2050, this report provides ways to get back on track and become more energy efficient. An important aspect of this is to focus on the improvement, rehabilitation, and recycling of the existing building stock. Materials for construction "represent an estimated 9 per cent of overall energy-related CO2 emissions," something that can be minimized through the recycling of materials or the reuse of existing vacant buildings (UN Environment, p. 72, 2022). The report claims that tracking the global use of construction materials is challenging, and while these numbers are not confirmed it is generally believed that "annual brick production globally is around 1.5 trillion, or 1.9 trillion including concrete blocks" (Global Industry Analysts, Inc 2021). Studies show that China produced around 800 billion bricks in 1994, Indian production of bricks was 260 billion in 2017, 82.5 billion in Pakistan and 5.14 billion in Nepal in 2018, and 330 billion bricks in South Asia in 2014 (UN Environment, p. 43, 2022). "The CO2 emissions varied between 48 and 113 tonnes of CO2 per million bricks depending on the production process" (UN Environment, p. 43, 2022). Similar numbers result for clay production, with an average of 2.2 billion tonnes produced a year, resulting in around 0.48 kg CO2eq/kg of global emissions (UN Environment, 2022). By recycling buildings and materials, these productions and emissions will greatly decrease.

Adaptive reuse is often used to reposition a significant historic building, though this method has been extended to any vacant and underused building. Because the shell of a building already exists, adaptive reuse projects often save on the costs of construction and materials as

well as construction time. An article by MBH Architects states that “buildings account for approximately 40% of the world’s carbon emissions, while the construction industry is responsible for extracting over 30% of the world’s natural resources and producing 25% of the world’s solid waste” (Mbarch, 2023). An adaptive reuse project not only expands the lifetime of a building to limit resource and energy consumption, but also reduces construction costs by as much as 16 percent (Mbarch, 2023). This method also avoids the demolition time and costs of a building, which can account for 5 to 10 percent of construction expenses for new builds (Mbarch, 2023). Unlike a new construction project, the renovation of an existing building can be completed in a quicker manner, and when a section of that renovated building is completed, business can move in while the rest of the property is still being adapted. This method “helps to minimize potential economic losses” (Mbarch, 2023). An article from JANOVER Industrial Property Loan states that the cost of demolition is around $4 to $8 per square foot, depending on the size of the property, location, debris disposal, and environment (JANOVER, 2023). Environmental factors require significant investment. If a property were to contain asbestos, something that would need to be taken care of right away, that alone can cost two to three dollars per square foot (JANOVER, 2023).

2.2. Gap Identification

The previous section of the Literature Review incorporates extensive research regarding the importance and purpose of adaptive reuse in the context of history and preservation, the evolution of adaptive reuse, community importance, cultural memory and significance throughout time, and the impacts the building stock has on the environment. Much time was dedicated to researching the costs and quantity of energy consumption and CO2 emissions resulting from building construction. The comparative cost of new construction, demolition, and

reuse along with other attributes of adaptation were further investigated to illustrate the importance and potential that adaptive reuse can have for future urbanization and construction methods. A section dedicated to a study regarding the traits of buildings suitable for adaptive reuse named "Evaluating the Weighted-Sum Approach for Measuring Buildings' Adaptability" found that buildings suitable for adaptive reuse share four characteristics: loose fit, long life, simplicity, and layer separation. The importance of designing for time and giving power to the users found in Stuart Brand's "thesis How Buildings Learn: What Happens After They're Built" further provided for the argue that buildings still have use after they are built and no longer serve the use of their previous occupancy. This research provides both reason and need for adaptive reuse in the continuing and increasing urbanized world for many reasons, all shown extensively through existing studies and the literary books and articles informed on the topic.

While long, the research above does not dive into details regarding the overall life cycle of a building or how to determine the stage a building is at. Performing a structural analysis of a building will be talked about further in the Methodology section of this paper with the help of J. Stanley Rabun and Richard Kelso's book *Building Evaluation for Adaptive Reuse and Preservation.* Little current information was available on the cost of new construction and demolition, most sources showing costs before the COVID-19 pandemic took place. Because of that, it was harder to compare the cost of new construction, demolition, and adaptive reuse strategies because the impact of the pandemic on construction costs was not specifically provided for each, and this will make it difficult to conduct a pro forma for the reuse of Presentation College's vacant campus. There are also little academic sources referring to the adaptive reuse of vacant college campuses because this increasing issue is newer in the sense that many colleges shut down and merged after the COVID-19 pandemic. Case studies will be looked

at in the next section. Lastly, this literature review may be strengthened by further investigating current new construction and adaptation trends in buildings throughout the country to aid in the research of adaptive reuse in buildings.

2.3. Project Type

Presentation College, a private, non-profit college with its main campus location in Aberdeen, SD, closed after the 2023 spring and summer semesters, leaving a vacant campus in its stead. With its recent closure, the city of Aberdeen and its community members are discussing what to do with the remaining property. Presently, the city worked out an agreement to purchase the Strode Activity and Wellness Center, Winter Dome, the soccer fields, and an undeveloped parcel of land in hopes of getting programming and recreational opportunities into the facilities, especially for winter training. The other properties on the campus are still up in the air and the city hopes of repurposing some of the buildings in the future. This includes the nurse's academic buildings, administrative building, chapel, and both the northwest and southeast student housing suites. While the campus was founded in 1951, many renovations and additions have occurred in the last few years.

Over the years, Presentation College has renovated and added to their campus structures to accommodate the growing institution. The athletics program at Presentation College began in 1955, offering male and female students the opportunity to participate in basketball, soccer, softball, baseball, volleyball, and football (Presentation Sisters, 2020). In 1998, the Strode Activity Center, which holds 1,200 seats, was dedicated as the home of the Presentation Saints Athletics. A student housing complex opened in 1999 that offers suites on a space-available basis consisting of private bedrooms, semi-private bathrooms, living rooms, and kitchen areas. A renovation of the school's chemistry, biology, anatomy, physiology, and

training lab facilities occurred during the 2011-2012 academic year (Presentation Sisters, 2020). During that time period, the College also invested in infrastructure and programming by constructing a practice football field with artificial turf and expanding the Strode athletic facility. In 2013, a multi-million-dollar student suites housing facility and a new athletic and training center with expanded space and high-tech exercising equipment. During that time, a plan to reconfigure campus parking lots and open areas begun and later finished in 2014 with sidewalks, paths, and trees. Presentation College broke ground in 2014 for a new, 108,000 square foot and 70-foot-high winter dome that opened in 2015 (Vilhauer, 2023). Construction on the Avera Simulation Center, a high-tech, hands-on learning center for students in Ailed Health Fields, began in 2017. The facility contains six distinct simulation areas built to simulate hospital rooms. Later that year, a welcome center for students, alumni, visitors and families was constructed at the entrance of the main building (Presentation Sisters, 2020). A full list of the amenities and facilities Presentation College offer includes:

- Multi-winged complex (located in the center of campus). The main building offers:
- Administrative offices
    - Student lounge
    - College library
    - Chapel
    - Café
    - Java City coffee shop
    - Videoconferencing IT rooms and classrooms
    - IT help desk
    - Academic divisions

- The Wien Gallery (located in the southeast building and renovated in 2017)
- A second educational building southeast of the main building
    - Division of Nurse's learning laboratory
    - Lecture hall
    - Classrooms
    - Four videoconferencing classrooms
- Natural grass field for men's and women's soccer north of the Strode Center
- Artificial practice field north of the east suites for football, softball, and baseball
- The Strode Center and Wellness Center (home of the Athletic Training Program)
- The Winter Dome (used for practice, games, recreational events, and community and regional sporting events)
- Three residence units and a student center located at the northwest corner of campus (houses 140 students)
- Housing suites completed in 2013 (capacity of 158 students) located south of the football practice field
    - Apartment-style suites each include four bedrooms, two bathrooms, a common living area, and kitchenette
    - Each floor includes a full kitchen, a common living area space, multiple study rooms, and other amenities

(Presentation Sisters, 2020).

In other reuse projects for defunct college campuses, the properties and facilities are often repurposed for housing, outreach or branches for educational purposes, or community use depending on its size and need of the surrounding community. Dr. Priddy from *Online Education*

says that the type of campus a school has often impacts what happens to the "shell" of the campus in terms of repurposing or work (Toczauer, 2023). In Priddy's experience with a recent campus closure, she states that "you suddenly have green space plus buildings. The first thing you have to figure out is who owns them? Does the school? How do they align with the local municipality, the state laws, and all of those places?" (Toczauer, 2023). Dr. Priddy provides examples of what happens to a defunct college once it closes, stating that the space may be repurposed into senior community living, reform schools for kids, casinos, or immersion experiences by foundations or schools, depending on the campus's size. An example of a repurposed college campus is Aspire; an organization turned into residential dorms to support adults often living together in communities (Toczauer, 2023).

2.4. Project Issue

This theoretical project focuses on a growing problem throughout the United States: what happens to college campuses after they shut their doors? Is there a way to repurpose these vacant properties to bring life back into them once again and prevent demolition and a loss of culture and history in the campus's city and community? How can adaptive reuse solve these issues and in turn develop a sustainable project in the construction and design field? What possible programming or occupants can be brought back into these vacant properties?

The chosen closed institution and location provide many opportunities and elements of difficulty to conduct an adaptive reuse project. The campus has many different existing facilities on its site, allowing for both ample opportunities and struggles to fill with new occupants. These existing properties must further be investigated to see their state of being and determine what renovations are needed to allow for the building to be functioning again. The past occupancy and use of each building often influences what its new use might be. The overall site, 125 acres in all,

provides and abundancy of space to both reuse its existing properties and add to it. But a part of the existing land was set aside for Native Prairieland Restoration, which will be discussed in the following Methodology chapter. In a project such as this, that land should be preserved and extended throughout the site, so how much of the site is dedicated to nature and how much is available for new-builds and building restoration?

In this reuse project, a large focus of research is dedicated to sustainability and methods that attempt to limit the carbon footprint of buildings and construction practices. Another focus is the preservation of historical, cultural, and collective community significance placed on existing properties. In other adaptive reuse examples of closed college campuses, included in the precedents section of the next chapter, many vacant buildings were renovated into housing (apartments, townhomes, senior living), recovered by other institutions or athletic teams for educational purposes and programming, adapted into offices or businesses, and other commercial or entertainment uses. Overall, vacant campuses are often parceled off, meaning multiple owners exist on the campus, and the prior college campus is adapted into a mixed-use residential and commercial area. Because of this, another issue for the adaptive reuse project of Presentation College is ownership and funding for its deliverables. Based on information provided by city employees and precedents, the campus will need to have multiple ownerships and private funding to carry out this project.

3. METHODOLOGY

3.1. Project Approach

In this section of the paper, research and strategies will be analyzed to determine the best solution for programming and design of the vacant buildings on the previous Presentation College Campus. Information on the city of Aberdeen and its Comprehensive Plan will be provided to understand what addition will help the city prosper economically and culturally. This section will also evaluate the latest trends regarding the costs of adaptive reuse versus other strategies like demolition, new construction, and so on. Looking at precedents and the structural integrity of Presentation College will help determine how the buildings can be adapted for the future use of Aberdeen. With the existing documentation and plans provided by the Presentation Sisters Archivist Kathleen Daly, the existing layout will provide the foundation for the adaptive reuse of the campus of Presentation College. The Comprehensive Plan of Aberdeen conducted interviews with related groups, and precedents of other closed campuses that were adapted will provide direction for what the vacant buildings and existing land will be adapted into.

3.2. Project Location (larger scale)

The vacant campus, Presentation College, is in Aberdeen, South Dakota, in the northeastern area of the state of South Dakota and the seat of Brown County. Aberdeen is the third most populated city in South Dakota (following behind Sioux Falls and Rapid City) with a population of 28,495 as of the 2020 consensus. As of 2019, there has been an 8.7 percent population growth since the 2010 consensus in Aberdeen, comparing to 6.8 percent for the overall state (Aberdeen Comprehensive Plan, 2019). The median age of Aberdeen is 35 years old, with 16 percent of the population being over the age of 65 (Aberdeen Comprehensive Plan,

2019). The largest age group (at the time) of Aberdeen was 20-24 years old, or college-aged students.

BENCHMARKING ABERDEEN						
	Aberdeen SD	Rapid City SD	Brookings SD	Sturgis SD	Jamestown ND	Mandan ND
Population						
(2017 est.	28,388	67,956	23,938	6,908	15,405	20,613
Land Uses – Acres per 100 Persons						
Residential	10.6	15.7	7.5	12.2	8.0	8.1
Commercial	3.3	3.7	1.6	2.46	2.0	1.4
Industrial	4.7	3.0	4.2	3.2	3.4	1.8
Parks and Recreation	1.9 to 2.5[1]	2.4	3.5	2.0	3.2	2.5

Figure 19 The graphic above was provided by the Aberdeen Comprehensive Plan as a tool to compare Aberdeen with other surrounding cities in terms of population.
Source: Aberdeen Comprehensive Plan, 2019

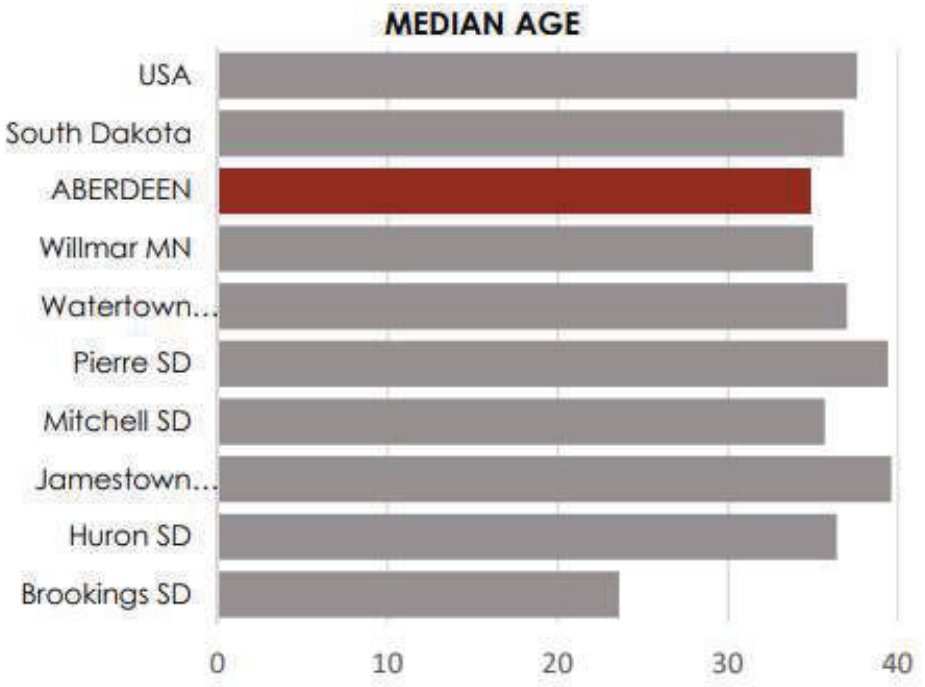

Figure 20 The graph above illustrates the median age of Aberdeen compared to the United States, South Dakota, and other surrounding cities.
Source: Aberdeen Comprehensive Plan, 2019

Aberdeen's population is comprised of nearly 90 percent White, 4% American Indian, 3 percent Asian, 2.5 percent Hispanic, and 2 percent black (Aberdeen Comprehensive Plan, 2019). The Aberdeen Comprehensive Plan found that about 7.6 percent of the residents of Aberdeen speak a language other than English at home (Aberdeen Comprehensive Plan, 2019). When talking about households and household sizes, the Aberdeen Growth Plan stated the following:

> There are an estimated 11,769 households in Aberdeen: about 77% of the population live in the same house as they did a year ago. While the U.S. average household size is 2.58 people, in Aberdeen the average is 2.24. Average household size for the county and the state falls between Aberdeen and national averages (Aberdeen Comprehensive Plan, p. 25, 2019).

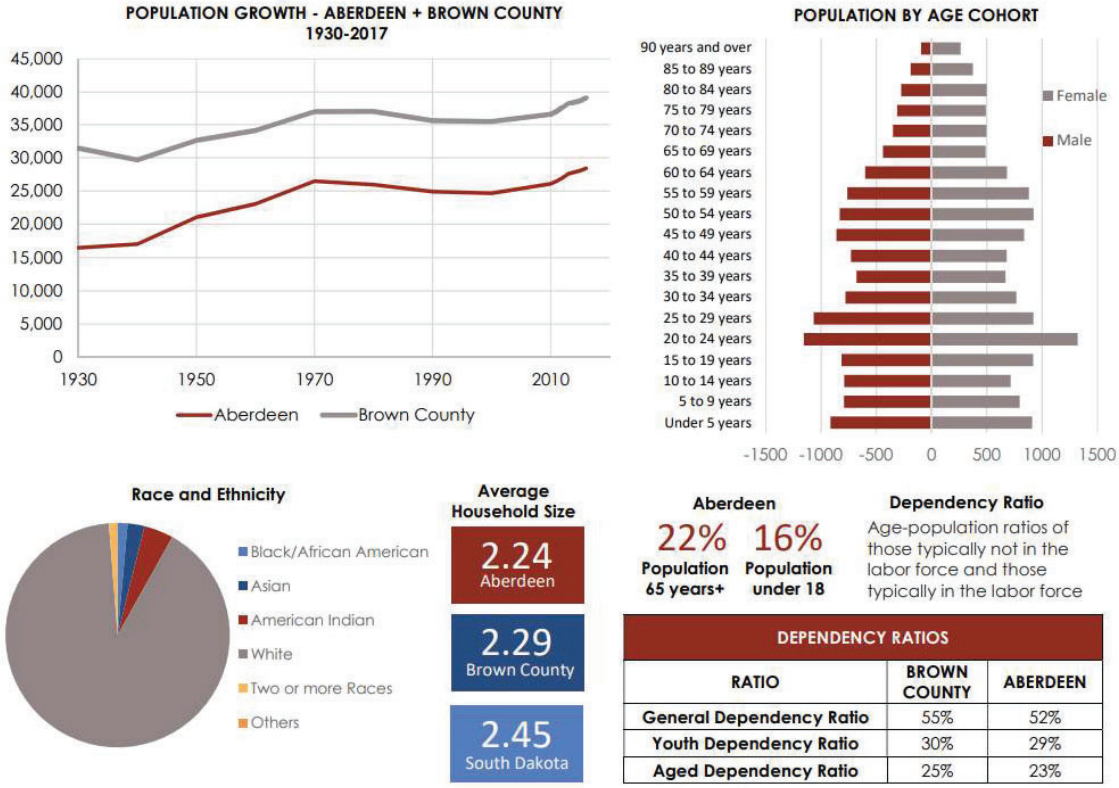

Figure 21 Above is a compilation of graphs that illustrate different aspects of the demographics of the city of Aberdeen. The (top left) graph is an illustration of the population growth of Aberdeen compared to Brown County from the years 1930-2017. The (top right) graph provides a visual representation of the population of Aberdeen by age cohort and gender. As stated above, the cohort 20-24 years has the largest population in Aberdeen. The (bottom left) graph is a pie graph of the race and ethnicity of the population in Aberdeen. In the (bottom middle) graphic, the three boxes compare the average household size of Aberdeen, Brown County, and South Dakota, the number representing the average amount of people in a house. Finally, the (bottom right) table represents the dependency ratios of the population of both Brown County and Aberdeen. 22 percent of the population of Aberdeen are dependents over the age of 65 years, while 16 percent of the population are dependents under the age of 18 years.
Source: Aberdeen Comprehensive Plan, p. 25, 2019

In Aberdeen, the climate varies widely depending on the time of year. The summers are often warm or hot while the winters are freezing, snowy, and windy while it is partly cloudy year-round (*Weatherspark*, 2023). “Over the course of the year, the temperature typically varies from 5 degrees Fahrenheit to 85 degrees Fahrenheit and is rarely below -16 degrees Fahrenheit or above 94 degrees Fahrenheit” (*Weatherspark*, 2023). The average warm season lasts for 3.8

months (May 25-September 18) with an average temperature above 73 degrees Fahrenheit (*Weatherspark*, 2023). The hottest month of the year in Aberdeen is July (average high of 84 degrees Fahrenheit and low of 61 degrees Fahrenheit) (*Weatherspark*, 2023). The cold season lasts for 3.4 months (November 25-March 5) with an average daily temperature below 36 degrees Fahrenheit (*Weatherspark*, 2023). The coldest month of the year is January with an average low of 6 degrees Fahrenheit and high of 24 degrees Fahrenheit (*Weatherspark*, 2023).

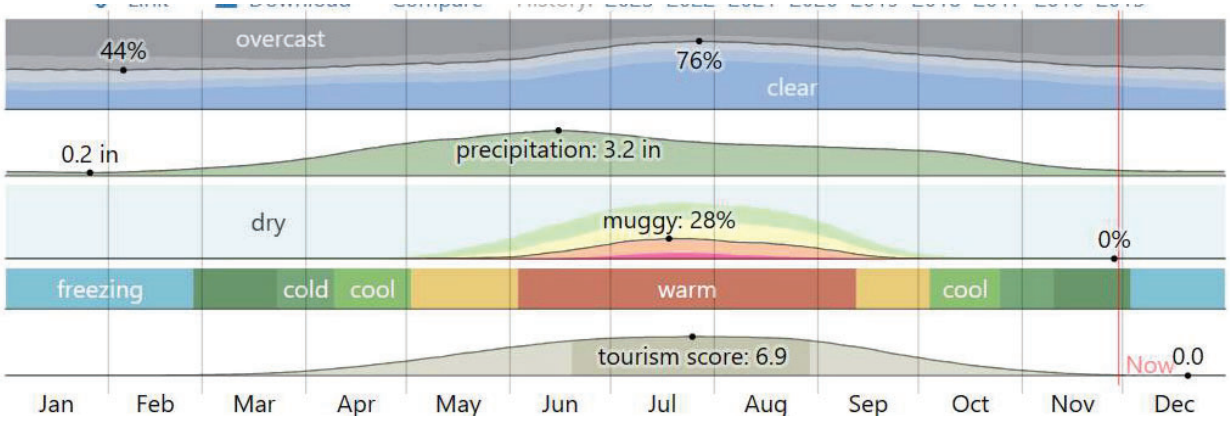

Figure 22 Above is a graph of the overall climate patterns in Aberdeen throughout the year.
Source: *Weatherspark*, 2023

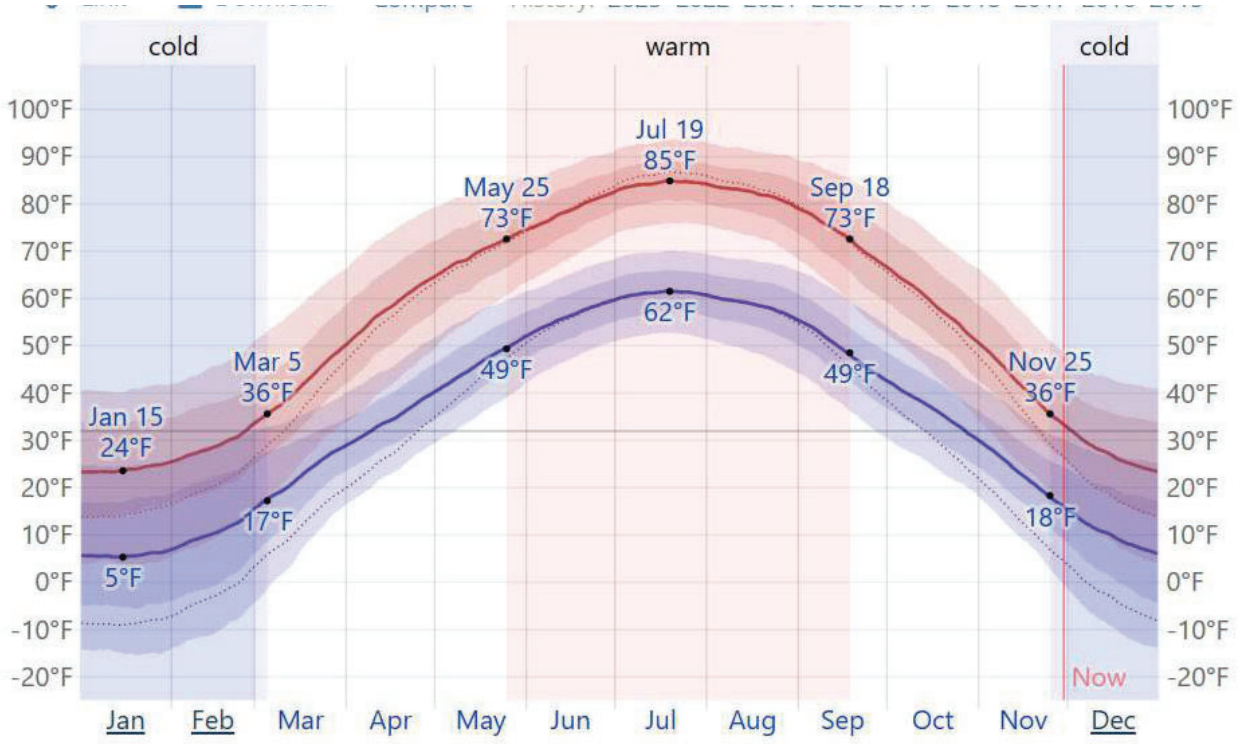

Figure 23 The graph above depicts the average high and low temperatures in Aberdeen throughout the year. The red line represents the average high temperatures while the blue line depicts the average low temperatures throughout the year. The dotted lines following the average high and lows are the perceived average temperatures.
Source: *Weatherspark*, 2023

Average	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
High	24°F	29°F	42°F	59°F	70°F	79°F	84°F	82°F	73°F	58°F	41°F	27°F
Temp.	14°F	18°F	30°F	45°F	58°F	67°F	72°F	70°F	60°F	46°F	31°F	17°F
Low	6°F	11°F	23°F	35°F	47°F	57°F	61°F	58°F	49°F	36°F	22°F	10°F

Figure 24 The table above represents a numerical display of the high, low, and average temperatures each month of the year in Aberdeen.
Source: *Weatherspark*, 2023

Precipitation in Aberdeen varies significantly throughout the year. A wet day is defined as "one with at least 0.04 inches of liquid or liquid-equivalent precipitation" (*Weatherspark*, 2023). In Aberdeen, the wet season lasts 5 months (April 22-September 23) with a greater than 20% of a given day being wet (*Weatherspark*, 2023). The drier season lasts 7 months (September

23-April 22). The month with the most wet days in Aberdeen is June (10.8 wet days), while the month with the least number of wet days is January (1.6 wet days) (*Weatherspark*, 2023).

Figure 25 The graph above shows the daily chance of precipitation in Aberdeen. "The percentage of days in which various types of precipitation are observed, excluding trace quantities: rain alone, snow alone, and mixed (both rain and snow fell in the same day) (*Weatherspark*, 2023).
Source: *Weatherspark*, 2023

Days of	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rain	0.1d	0.5d	2.1d	4.9d	8.7d	10.8d	10.5d	8.7d	6.6d	4.0d	1.1d	0.3d
Mixed	0.2d	0.2d	0.5d	0.4d	0.0d	0.0d	0.0d	0.0d	0.0d	0.1d	0.3d	0.1d
Snow	1.3d	1.3d	1.0d	0.4d	0.0d	0.0d	0.0d	0.0d	0.0d	0.1d	1.0d	1.4d
Any	1.6d	1.9d	3.6d	5.7d	8.8d	10.8d	10.5d	8.7d	6.6d	4.2d	2.4d	1.8d

Figure 26 The table above provides a numerical display of the daily chances of a given day being a wet day throughout the year in Aberdeen.
Source: *Weatherspark*, 2023

3.3. Project Location (smaller scale)

Presentation College is located in the northwestern area of Aberdeen, SD. Before its closure, Presentation was one of two higher education institutions in the city, the other being Northern State University founded in 1901.

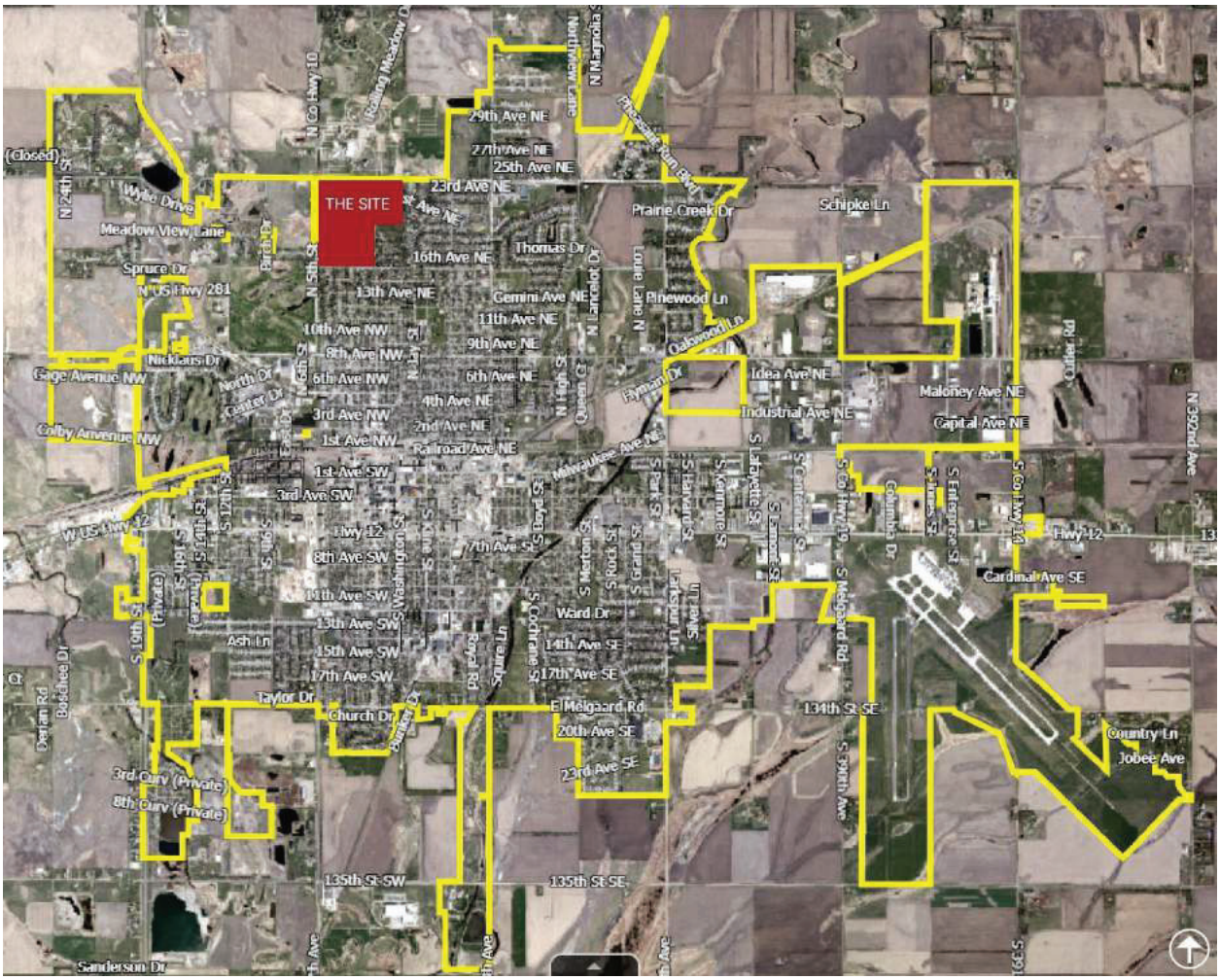

Figure 27 Map of Aberdeen and highlighted vacant campus location.
Source: Adapted from ArcGIS

Aberdeen was established in 1881 as a junction point for several railroads and later labeled as the "Hub City" for its connections to markets and driving the success of local businesses and farms (BNSF Railway).The first train came to the area that year carrying lumber and other supplies to start the town, thus followed by trains carrying settlers and many other

railroad companies building tracks to the town (Aberdeen Comprehensive Plan, 2019). These railroad tracks met like “spokes on a wheel with Aberdeen as the center, the hub of the wheel” (Aberdeen Comprehensive Plan, p. 19, 2019).

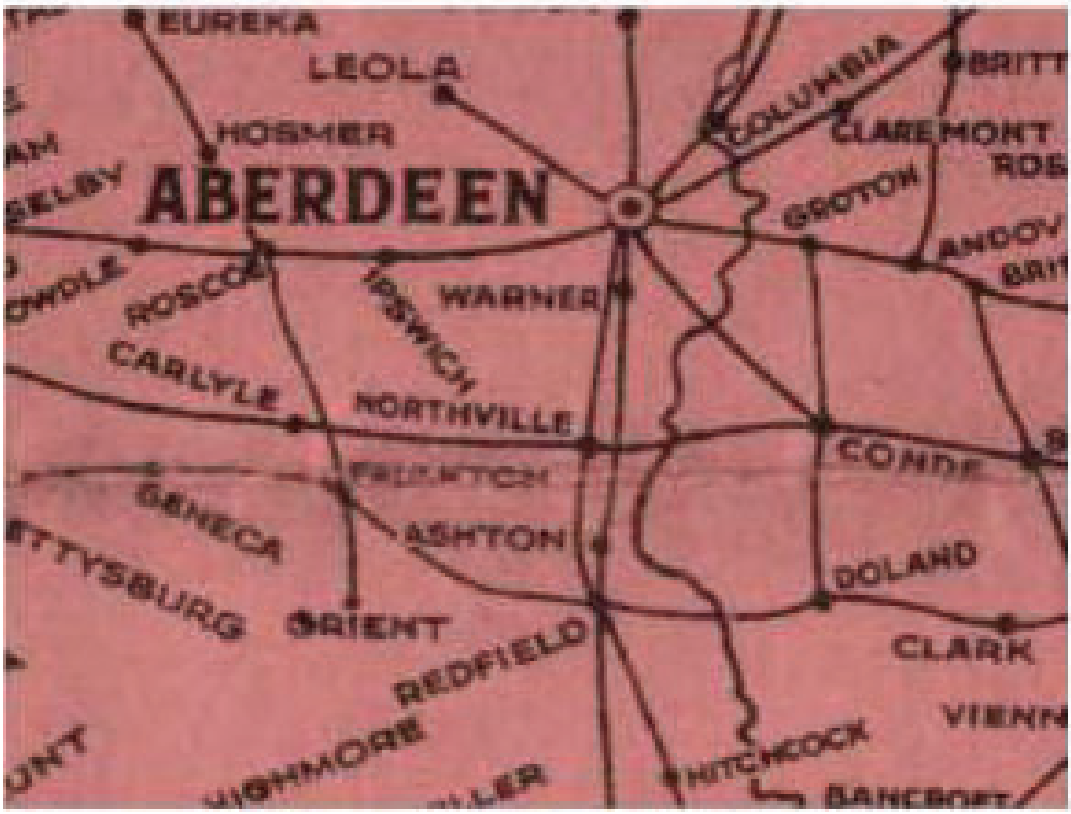

Figure 28 Above is a picture of the railroad tracks throughout part of the state of South Dakota that travel toward the city of Aberdeen, creating a central hub where trains met and gave the city the nickname “Hub City.” The map also shows smaller towns surrounding Aberdeen.
Source: Aberdeen Comprehensive Plan, p. 19, 2019

Much of the architecture in the city reflects its history with railroads as many businesses have refurbished and moved into old depots. The city is known for being the most productive agricultural region in the state, producing cattle, hogs, sheep, soybeans, corn (maize), wheat, barley, rye, hay, and sunflowers (Aberdeen Comprehensive Plan, 2019). The city’s economy also includes manufacturing (medical supplies, power transmission equipment, machine tools, and

missile components) and services (travel services, agricultural marketing, and financial collection) (Aberdeen Comprehensive Plan, 2019).

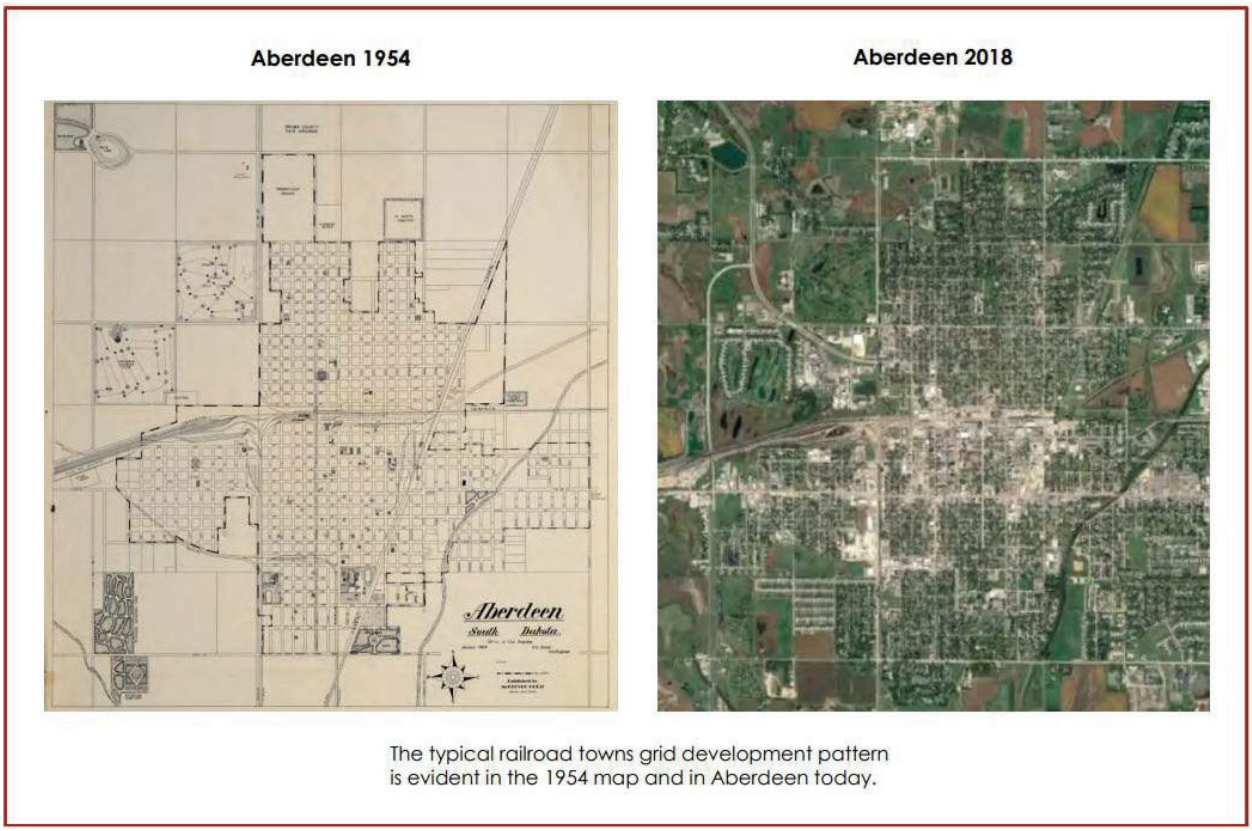

Figure 29 The figure above compares two maps, one of Aberdeen in 1954 (left) and one of Aberdeen in 2018 (right). Aberdeen was developed through its railroad systems, which are still evident today in the comparison of the two maps.
Source: Aberdeen Comprehensive Plan, p. 21, 2019

The ”Hub City” nickname still applies today as Aberdeen is a regional hub for the surrounding towns including Chelsea, Groton, Ipswich, Leola, Mellette, Redfield, Warner, and Webster as well as Edgeley, Ellendale, and Oakes in North Dakota that rely on Aberdeen for employment, financial and medical services, shopping, and entertainment (Aberdeen Comprehensive Plan, 2019). With its convenient access for commuters, Aberdeen also benefits from being roughly 200 miles from three large cities: Fargo, ND, Bismarck, ND, and Sioux Falls, SD. The presence of the Aberdeen Municipal Airport with its SkyWest and Delta services.

Figure 30 Above is a map of the city of Aberdeen in South Dakota and its correlation to surrounding significant cities throughout a portion of the Midwestern area.
Source: Aberdeen Comprehensive Plan, p. 19, 2019

3.4. Specific Site

Presentation College is located at1500 North Main Street in Aberdeen, SD. The site is surrounded by residential houses to the south, east, and partially to the west. To the west of the campus are open fields in the Municipal/County/State Use Zone and to the north are the Brown County Fairgrounds and Campgrounds. The major streets surrounding Presentation College are 15th Avenue SW to the south, 24th Avenue NW to the north, and 387th Avenue to the west. The campus is located in an R-1 Low Density Residential zone. The overall site, including the grassy area to the north of the facilities, is roughly 125 acres in total, though the building footprint is (NEED EXISTING DOCUMENTATION).

Figure 31 Outline of Presentation College campus site.
Source: Adapted from ArcGIS

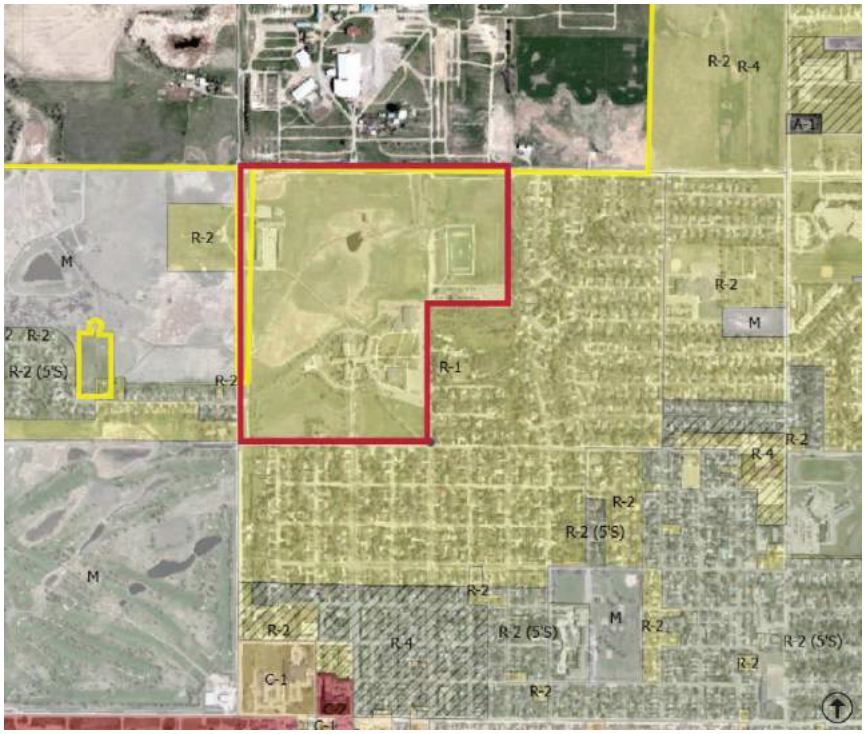

Figure 32 Map of zoning district surrounding Presentation College. The campus is located in an R-1 Low Density Residential Zone.
Source: Adapted from ArcGIS

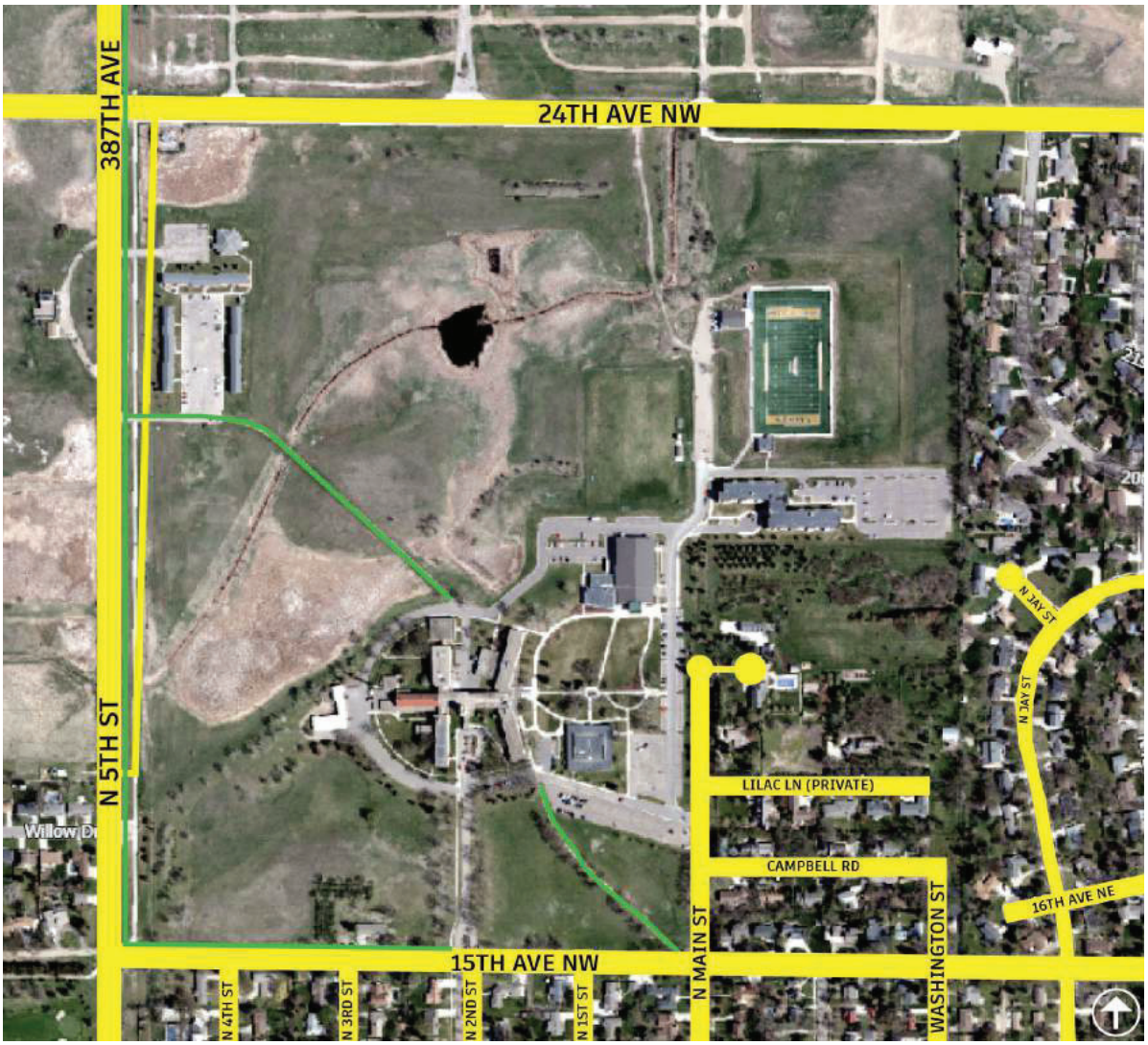

Figure 33 Map of streets surrounding Presentation College and bike/walking trails. The streets are highlighted in yellow and trails in green.
Source: Adapted from ArcGIS

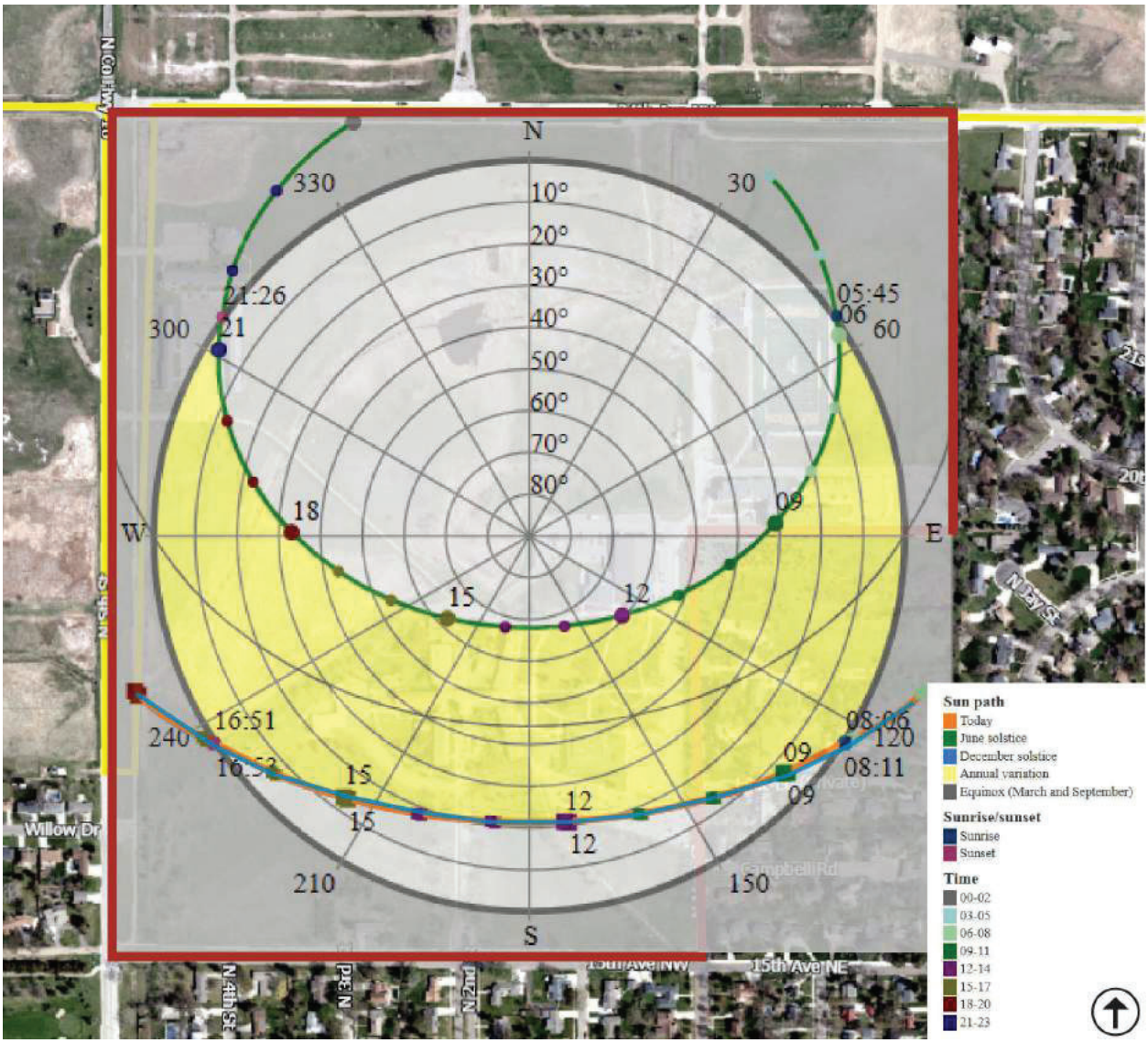

Figure 34 Sun path diagram of Aberdeen, SD overlaying a map of Presentation College campus site. The sun rises at 5:45 AM and sets at 9:26 PM during the June Solstice and rises at 8:11 AM and sets at 4:52 PM during the December Solstice.
Source: Adapted from GASIMA and Google Earth

The wind direction in Aberdeen is primarily from the north for 4.1 months from January to May, for 1.9 weeks in October, and for 1.1 weeks in November (specifically during the cooler months) (*Weatherspark*, 2023). The wind direction is primarily from the south for 4.8 months from May to October and for one month from October to November (specifically during the warm months) (*Weatherspark*, 2023). The wind travels from the west for 1.4 months from

November to January (specifically during the cooler months) (*Weatherspark*, 2023). The windier part of the year lasts for six months (December 7th to June 5th) with an average hourly speed of 10.7 miles per hour (mph) (*Weatherspark*, 2023). The calmer part of the year lasts for six months (June 5th to December 7th) with an average hourly speed of 9.5 mph during July, the calmest month (*Weatherspark*, 2023).

Figure 35 Wind path map surrounding the Presentation College campus in Aberdeen, SD.
Source: Adapted from ArchGis

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Wind Speed (mph)	11.1	11.3	12.0	12.1	11.6	10.4	9.5	9.7	10.8	11.2	10.9	10.8

Figure 36 Average wind speed in Aberdeen, SD per month.
Source: *Weatherspark*, 2023

The vegetation found on Presentation's campus is in the process of being adapted. Invasive brome grasses and thistles exist in certain areas throughout the campus, but some of the grasses have been reduced during the native prairieland restoration process. The native seeds planted since 2021 during the restoration process are listed below.

- Glycyrrhiza lepidota (American Licorice/Wild Licorice)
- Mimulus ringens (Monkey Flower)
- Symphyotrichum novae-angliae (New England Aster)
- Carex vulpinoidea (Brown Fox Sedge)
- Juncus torreyi (Torrey's Rush)
- Rudbeckia hirta (Black Eyed Susan)
- Verbena hastata (Blue Vervain)
- Oenothera biennis (Evening Primrose)
- Zizia aurea (Golden Alexanders)
- Desmanthus illinoensis (Illinois Bundleflower)
- Helianthus maximiliani (Maximilian Sunflower)
- Solidago missouriensis (Missouri Goldenrod)
- Chamaecrista fasciculata (Partridge Pea)
- Coreopsis tinctoria (Plains Coreopsis)
- Dalea purpurea (Purple Prairie Clover)
- Helianthus pauciflorus (Stiff Sunflower/Showy Sunflower)
- Asclepias incarnata (Swamp Milkweed)
- Achillea millefolium var. occidentalis (Western Yarrow)

- Monarda fistulosa (Wild Bergamot/Bee Balm)
- Nassella viridula (Green Needlegrass)
- Elymus trachycaulus (Slender Wheatgrass)
- Pascopyrum smithii (Western Wheatgrass)
- Amorpha canescens (Lead Plant)
- Anemone canadensis (Canada Anemone/Meadow Anemone)
- Astragalus canadensis (Canada Milkvetch)
- Dalea candida (White Prairie Clover)
- Desmodium canadense (Showy Tick Trefoil)
- Echinacea pallida (Pale Purple Coneflower)
- Eupatorium perfoliatum (Boneset)
- Gaillardia aristata (Blanket Flower)
- Lobelia siphilitica (Great Blue Lobelia)
- Penstemon grandiflorus (Shell Leaf Penstemon/Large-Flowered Beardtongue)
- Ratibida columnifera (Prairie Coneflower/Longheaded Coneflower)
- Rosa arkansana (Prairie Wild Rose)
- Solidago nemoralis (Gray Goldenrod/Dwarf Goldenrod/Old Field Goldenrod)
- Solidago rigida (Stiff Goldenrod)
- Tradescantia bracteata (Prairie Spiderwort)
- Verbena stricta (Hoary Vervain)
- Bouteloua curtipendula (Sideoats Grama)
- Bouteloua gracilis (Blue Grama)

- Schizachyrium scoparium (Little Bluestem)
- Sporobolus heterolepis (Prairie Dropseed)

Figure 37 White Aster
Source: (J. Hohn & J. Risse, personal communication, December 6, 2023)

Figure 38 Lead Plant
Source: (J. Hohn & J. Risse, personal communication, December 6, 2023)

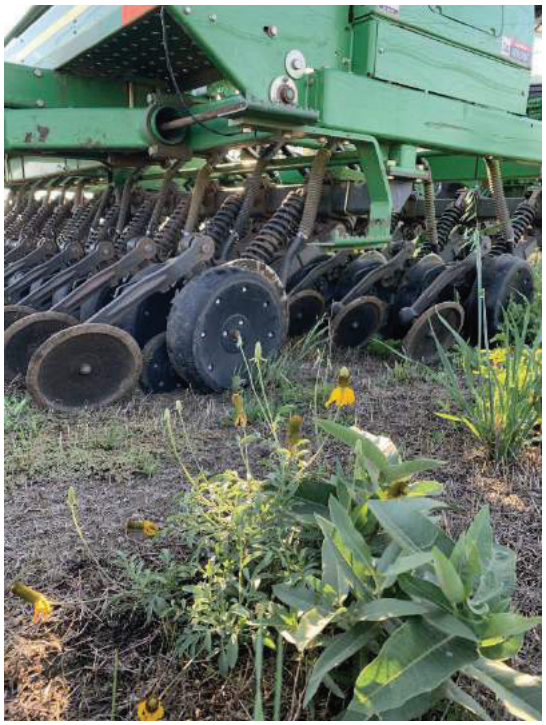

Figure 39 Prairie Coneflower
Source: (J. Hohn & J. Risse, personal communication, December 6, 2023)

Figure 40 Milkweed and Prairie
Source: (J. Hohn & J. Risse, personal communication, December 6, 2023)

Figure 41 Native Prairieland Grasses (Winter Dome in background)

Figure 42 Native Prairieland Grasses

Figure 43 East entrance of administration building (built 1993)

Figure 44 North end of administration building and convents (right) with parking lot

Figure 45 South entrance of administration buildng

Figure 46 South entrance of administration building with drive up area

Figure 47 North end of convent (left), chapel (center), priest quarters and mechanical and boiler area (right)

Figure 48 North end of convent (left) and chapel (right)

Figure 49 North convent and storage shed (left)

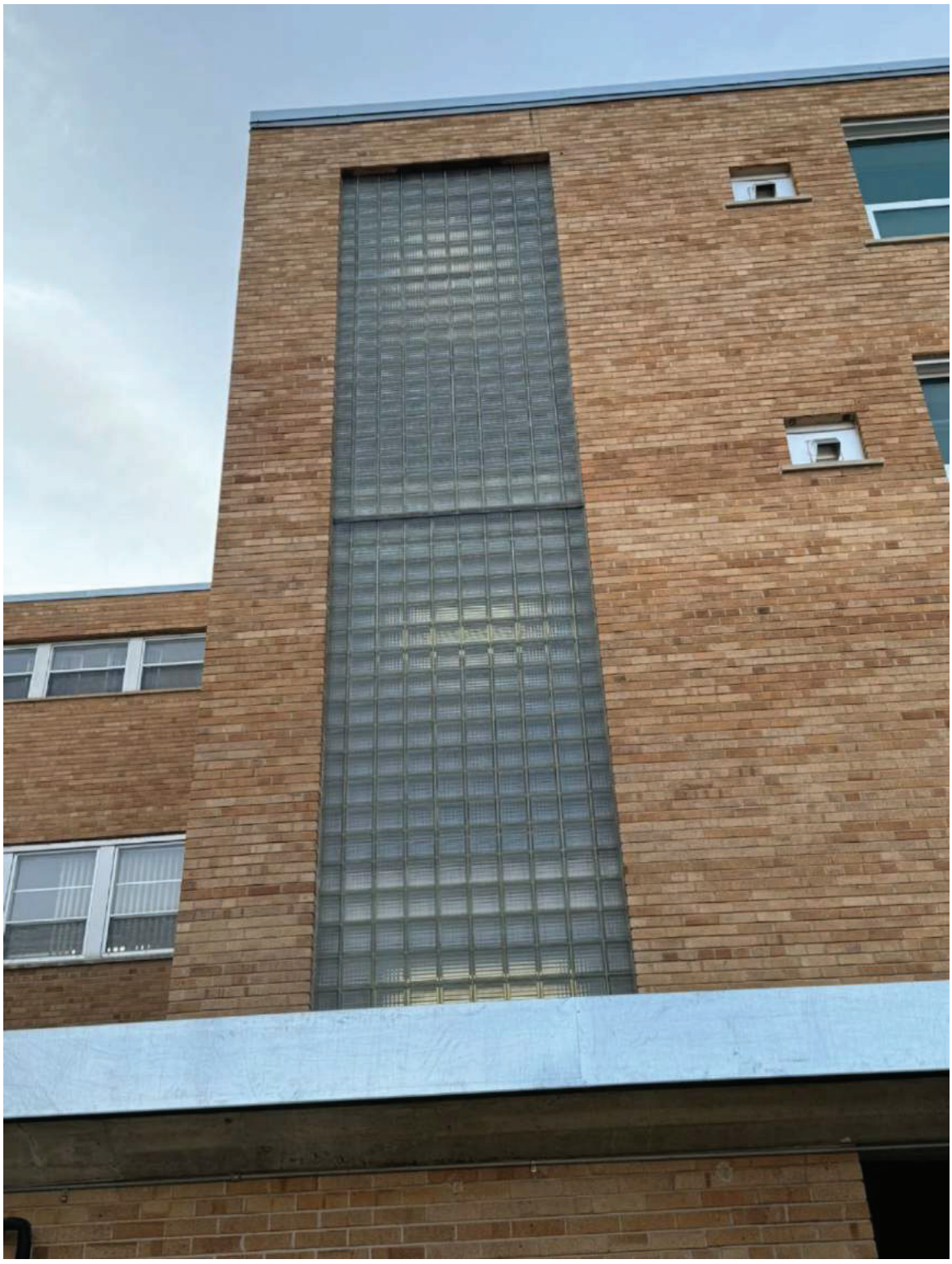

Figure 50 Northwest convent window

Figure 51 Northwest exterior of Nurse's Education Building

Figure 52 West exterior of Nurse's Education Building

Figure 53 East student housing suites (built 2013)

Figure 54 West entrance of east student housing suites

Figure 55 Student community center (built 2017) located on northwest end of campus

Figure 56 North student housing complex (built 1999)

Figure 57 West façade of north student housing complex building

Figure 58 Strode Activity's Center (built) 1998)

Figure 59 Southern façade of Strode Activity Center and fitness center addition on left (built 2013)

Figure 60 Picture of soccer field from east with Strode Activity Center in background

Figure 61 Picture of soccer field from south

Figure 62 Southwestern facade of Winter Dome

Figure 63 Campus picture

3.5. Other Pertinent Research

3.5.1. Aberdeen Comprehensive Plan

The most recent Comprehensive Plan for the city of Aberdeen was adopted in March of 2019 and became effective on April 9th, 2019. The City of Aberdeen Growth Plan is a Comprehensive Plan for 2045. A comprehensive plan is a long-range vision for the future of a city and the steps to accomplish that vision. This includes a policy framework to guide zoning ordinances, site and subdivision regulations, capital improvement plans, and annual budgets. It also supports elected officials and board members to evacuate development applications, amend ordinances, and plan future expenditures (Aberdeen Comprehensive Plan, 2019). This plan and its implementation tools ensure future decision-making with development that is consistent among the community's vision and its residents' expectations for a "higher quality of life" (Aberdeen Comprehensive Plan, p. 1, 2019). In the original 2004 Comprehensive Plan, the vision statement read:

> By the Year 2025, Aberdeen will have strengthened its position as a regional "Hub City," providing citizens with ample economic opportunities, quality health care services, exemplary educational opportunities for life-long learning, plentiful cultural and entertainment activities, retail diversity and a lifestyle second to none (Aberdeen Comprehensive Plan, p. 1, 2019).

The previous plan was updated because it was over ten years old at the time and did not anticipate the city's demographic and lifestyle changes, the impact of online shopping trends on local retail space, or the economic recession (Aberdeen Comprehensive Plan, 2019). The plan was adopted at a time when the economy was recovering as a guiding element for "a community ready to embrace the promise of its future" (Aberdeen Comprehensive Plan, p. 1, 2019). The

Aberdeen Community Guide provided a statement regarding the city of Aberdeen in the updated Aberdeen Growth Plan.

> As the third largest city in the State of South Dakota, Aberdeen offers the charm of a small town with the amenities of a larger city. Aberdeen's strong community spirit, high-performing schools and colleges, family friendly recreation, and vibrant economy continue to attract visitors, residents, and business to our city (Aberdeen Comprehensive Plan, 2019).

The most recent Comprehensive Plan Update consults past updates, including the 2014 update to the Aberdeen Master Transportation Plan, the 2010 Housing Study Update, the Brown County Comprehensive Plan, the City of Aberdeen and Brown County Zoning, the Brown County Rural Development Site Analysis, and the Knight Soul of the Community 2010 study (Aberdeen Comprehensive Plan, 2019).

Figure 64 The above map is the Aberdeen Comprehensive Plan's study area, which includes the city of Aberdeen and its three-mile extraterritorial planning jurisdiction.
Source: Aberdeen Comprehensive Plan, 2019

The updated Aberdeen Growth Plan of 2019 referred to the original 2004 Comprehensive Plan's fundamental principles which include the support of local preferences on developmental patterns and character, encouraging compatible land uses, promoting orderly growth, and encouraging a variety of housing options (Aberdeen Comprehensive Plan, 2019). Recent growth trends, projections, and the various land uses of the time were studied by the planning team to support anticipated growth for the city. The basis for the land use framework was established

with the help of the Steering Committee and the public so that the planning committee could prepare alternative future land use scenarios reflecting an understanding of land suitability for development, real estate market forces, community preferences and backbone City infrastructure networks. This Aberdeen Growth Plan draft reflects the Steering Committee's consensus on the land use concept for the year 2045 (Aberdeen Comprehensive Plan, p. 3, 2019).

During its development, the Steering Committee and community engagement helped direct the progress of the Aberdeen Growth Plan. The Steering Committee is a committee made up of leaders within and outside the government described as a "sounding board" for various different items of the plan and helped guide the Growth Plan's recommendations by providing "rigorous feedback" (Aberdeen Comprehensive Plan, p. 4, 2019). To incorporate community encouragement, the project website, www.AberdeenGrowthPlan.com, was live from the start of the project to allow interested parties to review project materials and draft documents, submit comments or questions, and sign up for project updates (Aberdeen Comprehensive Plan, 2019). Surveys were another large part of community involvement that were available online and at community meetings and at the City Hall. The survey helped determine significant priorities for the city of Aberdeen and to gauge the population's aspirations for the future. Through this community involvement, the committee discerned that the city of Aberdeen enjoyed or wanted the following:

- Parks
- Lack of big city traffic ("everything is five minutes away" [Aberdeen Comprehensive Plan, p. 4, 2019]).
- Activity and involvement surrounding music, art, and theatre
- Sense of community

- Assortment of things to do outside of work
- Close to nature with the parks, Storybook Land, bike and walking trails

(Aberdeen Comprehensive Plan, 2019)

Stakeholder meetings and community meetings provided further guidance to the completion of the updated Aberdeen Growth Plan. For stakeholders' meetings, this group included key personnel from the city departments and representatives of the area's 20 largest employers (Aberdeen Comprehensive Plan, 2019). These meetings were conducted to verify the information gathered, to explain the conditions observed, and to further understand the issues and opportunities affecting the planning (Aberdeen Comprehensive Plan, 2019). For recruiting and retaining employees, the stakeholders' meetings found that challenges include the following.

- It is difficult to connect and find activities for the younger professionals (ages 20-30) and unmarried
- Millennials prefer larger cities with more activities, shopping, etc.
- It is less expensive to live outside Aberdeen
- Public transportation needs to be addressed
- More daycare and more affordable housing for production-type worker employees
- Few people know about Aberdeen and the opportunities the city provides outside of the city

(Aberdeen Comprehensive Plan, 2019)

The project team received important input for the Growth Plan through three community meetings designed in a workshop format with interactive displays and presentations with opportunities for participation. These workshops allowed property owners, business owners,

residents, and other stakeholders to work together to develop the 2045 Land Use Map and other components of the Growth Plan.

> In the Comprehensive Plan, a new vision statement was established for the year 2045.
>
> By the Year 2045, Aberdeen will have strengthened its position as a regional "Hub City," providing citizens with ample economic opportunities, quality health care services, exemplary educational opportunities for life-long learning, plentiful cultural and entertainment activities, retail diversity and a lifestyle second to none (Aberdeen Comprehensive Plan, p. 8, 2019).

3.5.1.1. Principles, Goals, and Policies

In the Comprehensive Plan, the guiding principles, goals, and policies were incorporated in Chapter 2 of the Aberdeen Growth Plan. Many of the goals and policies of the original Comprehensive Plan were incorporated into the Growth Plan without modification, while some would be deleted and others modified, and new ones would be required for the new Growth Plan. Below is a revisited list of the goals for Aberdeen.

- Land Use Goals
    - Compatible future land use planning to prevent undesirable encroachment of neighborhoods and sensitive areas
    - Stabilization of "tired" neighborhoods, rehabilitation and revitalization, and provision of quality, affordable housing
    - Downtown as a vibrant center of business and community activity
    - An attractive, highly livable community with a preserved small-town character and unique identity

    - Policies, regulations, incentives, and processes that consistently represent the vision and desired character of the community
    - Growth Management
- Economic Goals
    - An economic development program that facilitates business start-ups, fosters expansion of existing businesses, and attracts new employers that contribute positively to the tax base
    - A highly qualified, skilled and educated labor force that meets the employment needs of local businesses
    - Aberdeen as a tourism destination
    - Provision of information and effective marketing of Aberdeen
- Housing Community Appearance Goals
    - A variety of affordable (at all income levels) housing options that is available to new and current residents
    - Enhanced streetscape environs and developments
    - Attractive gateways to the community and portals of special areas and districts
    - Public buildings, spaces, and infrastructure that contribute to community form and appeal
- Livability and Quality of Life Goals
    - An enhanced quality of life that adds to the attractiveness of Aberdeen as a place to live and work
- Transportation Goals
    - Provide a safe and secure transportation system

    - Maintain the existing transportation system in a state of good repair
    - Maintain and improve regional mobility and connections
    - Provide a Transportation System that Effectively moves Goods & Enhances the Local Economy
    - Enhance Regional Alternatives to Automobile Travel
    - Coordinate Transportation Planning with the Natural & Built Environment
    - Identify Transportation Supportive Funding & Policy Opportunities
- Municipal Service Goals
    - Compact development that may be efficiently served by public facilities and services
    - A well -managed pattern of development that is fiscally responsible
    - Logical sequencing and timely provision of adequate public facilities and services
    - Continuous improvement and delivery of high-quality and reliable municipal services
    - Logical sequencing and timely provision of adequate public facilities and services that is fiscally responsible

(Aberdeen Comprehensive Plan, 2019)

Land Use

- Provide sufficient land area and densities to meet Aberdeen's projected needs for housing, employment and public facilities
- Minimize adverse impacts on lower-intensity uses, such as residential uses

Economic Vitality

- Champion a diverse economy that supports existing businesses, encourages entrepreneurs and attracts new employers
- Continue to prioritize Aberdeen's fiscal health and economic strength
- Encourage a healthy and sustainable business environment that continues to invest in infrastructure and build a community that is attractive to employers and their workers
- Continue to support Aberdeen's downtown revitalization efforts
- Continue to support the City's existing wide range of tourist attractions
- Continue to recognize the City's hospitals and healthcare as a regional economic engine

Housing

- Encourage a variety of housing types for a range of incomes and age groups

Livability and Quality of Life

- Support efforts to retain the City's young people and recent graduates
- Continue to support strong and sustainable neighborhoods protected from negative impacts
- Support efforts to preserve historic places and cultural resources
- Continue to encourage arts and cultural opportunities
- Continue to be a safe City in which to live, work, study and visit
- Encourage development at the City's gateways and along key transportation corridors that provides a positive image to City visitors and residents
- Support Aberdeen's educational institutions including the City's K-12 schools, Presentation College and Northern State University
- Require that land use decisions be informed by the Aberdeen Growth Plan
- Encourage residents and business owners to support the Aberdeen Growth Plan

Transportation and Infrastructure

- Support an efficient and well-designed transportation system that enhances safety and mobility
- Support a well-connected pedestrian and bicycle network
- Systematically investment City infrastructure that supports current and future population and businesses
- Support improvements to water development, distribution, and treatment

Figure 65 The graphic above is a visual list displaying the guiding principles that outlined the 2019 Aberdeen Comprehensive Plan Update, which includes existing goals from the past Comprehensive Plan as well as modifications and new goals and policies from the original plan. **Source**: Aberdeen Comprehensive Plan, p. 8, 2019

3.5.1.2. Land Use Patterns and Zoning

In the updated plan, land use patterns and zones were examined to determine opportunities and limitations for the future of Aberdeen. A significant portion of the city is

reserved for residential areas, consisting mostly of Low Density zones, Medium Density Residential zones, and Planned Development. Other Residential zones are already "developed or committed to development" (Aberdeen Comprehensive Plan, p. 22, 2019). The original, older residential areas are marked with tree-lined streets and a lower density grid development that follows the original 1954 map and railroad network in Figure ???. Over the past few decades, larger blocks of residential neighborhoods were developed north and south of the downtown area and further out, with higher density residential uses located around the core of the city extending from Eighth Avenue on the north to Nineth Avenue on the south and from Roosevelt Street on the east to Second Street on the west (Aberdeen Comprehensive Plan, 2019).

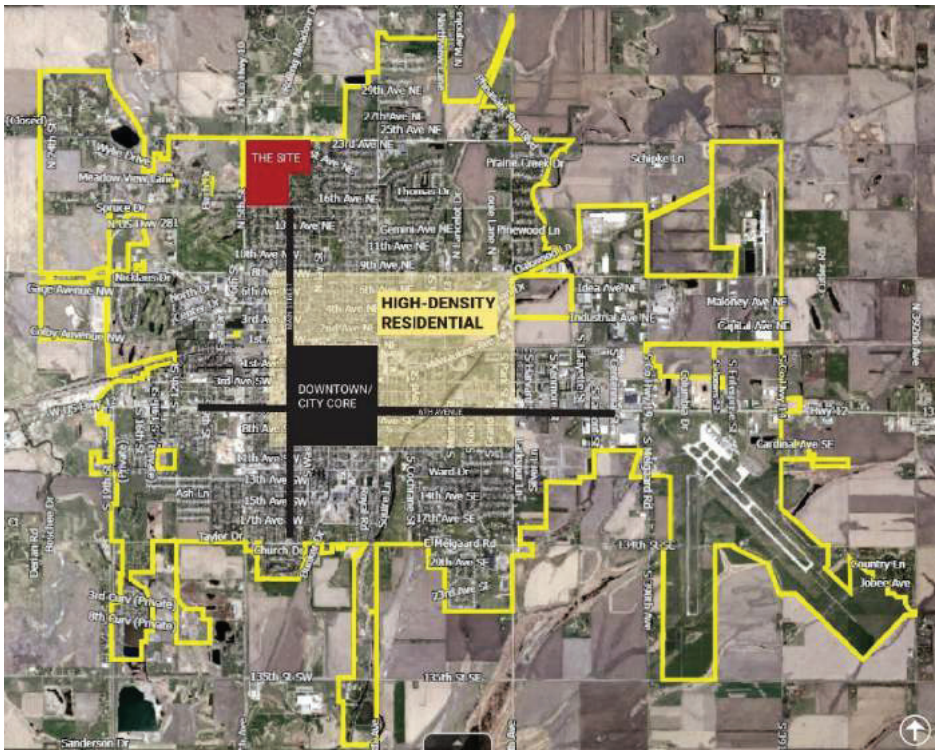

Figure 66 The above figure is an outlined map of the city of Aberdeen. In the northwest red highlighted area sits the vacated campus site. The opaque yellow color highlights the high-density residential area, and the black illustrates the downtown core of the city with the intersection of Main Street and Sixth Avenue (also referred to as Highway 12). The background of the map was taken from the Aberdeen GIS system and personally altered to highlight the areas of interest based off of information provided by the Aberdeen Comprehensive Plan.
Source: Aberdeen Comprehensive Plan, 2019
ArcGIS

Aberdeen's commercial development was historically focused in the city's downtown Main Street area and eventually extended along the city's core to other major streets. The Aberdeen Comprehensive Plan states that there are three distinct commercial districts in the city: the North Commercial, Downtown Commercial, and East-West Commercial (Aberdeen Comprehensive Plan, 2019). The North Commercial district follows Fifth Avenue NW as it enters Aberdeen that includes hotels/motels, restaurants, tourist-related uses, and car dealerships. The Downtown Commercial district focuses on Main Street with retail, restaurants, offices, governmental offices, businesses, multi-family buildings, and medical facilities (Aberdeen Comprehensive Plan). The East-West Commercial district is located along Sixth Avenue that extends from the western edge of the city to the airport and beyond. Along this avenue can be found big box commercial uses, hotels, service stations, restaurants, etc. (Aberdeen Comprehensive Plan). "This district is more intensely developed closer to the heart of the city; there are large, underdeveloped parcels" (Aberdeen Comprehensive Plan, p. 22, 2019).

There are many parks and recreational areas in Aberdeen. These facilities are seen as a signature of the city and were highly rated in half of the participants in the community surveys for the updated Aberdeen Growth Plan (Aberdeen Comprehensive Plan, 2019).

- Storybook Land and the Land of Oz (established in 1967)
- Wylie Park
- Lee Park golf course
- Moccasin Creek golf course,
- Multitude of softball, baseball, and soccer field complexes
- Community and playlots (parks)

(Aberdeen Comprehensive Plan, 2019)

Industrial development in Aberdeen is focused around the railroads and toward the northeast of the city, with many vacant industrial parcels available (Aberdeen Comprehensive Plan, 2019). The Aberdeen Regional Airport is located on the eastern part of the city, surrounded by many industrial and tourist-related areas. There is also a significant acreage designated as floodplains by the Federal Emergency Management Agency (Aberdeen Comprehensive Plan). Floodplains are adjacent to the creeks, rivers, and lakes that are subject to periodical flooding in an area. In Aberdeen, "The 100-year floodplain area is considered one that has a one percent chance of occurring in any given year" (Aberdeen Comprehensive Plan, p. 23, 2019). The floodplains in Aberdeen follow the Moccasin and Foot Creeks. These areas define the limits of the city's current development pattern, and the Aberdeen Growth Plan states that Aberdeen will have the same limitations for future development (Aberdeen Comprehensive Plan, 2019).

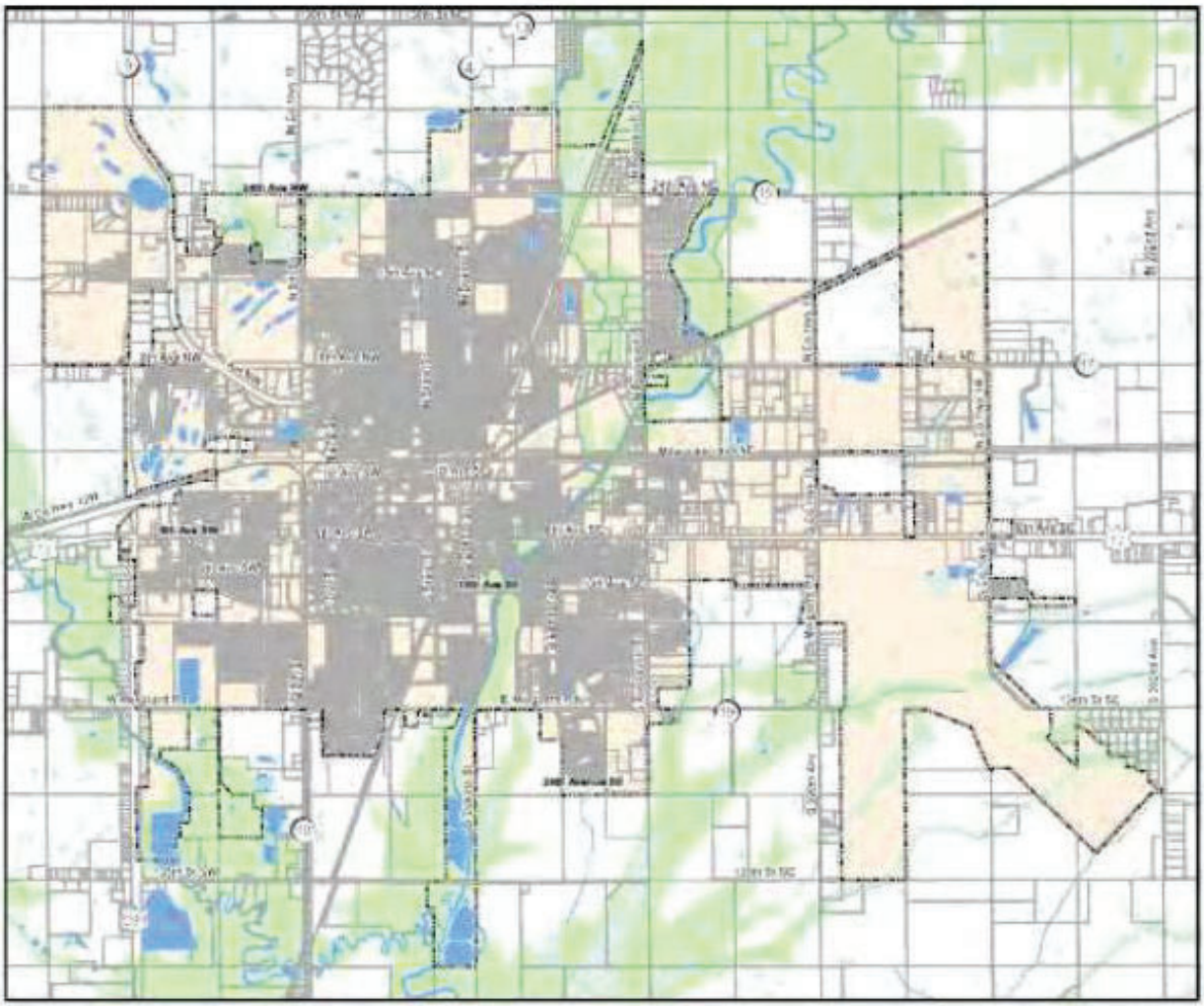

Figure 67 The map above illustrates the floodplains in the city of Aberdeen highlighted in green. Blue areas represent wetlands, creeks, rivers, and lakes. The grey areas show the more focused development areas in the city while the lighter tan color represents areas of industrial uses, underdeveloped areas, and the regional airport on the eastern part of the city. This map was taken from the Aberdeen Comprehensive Plan.
Source: Aberdeen Comprehensive Plan, p. 23, 2019

3.5.1.3. Housing and Historic Districts

The 2019 Comprehensive Plan discusses the housing issues at the time, mainly consisting of the lack of affordable housing and the city's "aging house stock" (Aberdeen Comprehensive Plan, p. 29, 2019). Housing affordability was a recognized challenge in the previous 2004 Comprehensive Plan and continues today. In 2019, 43 percent of renters and 15 percent of homeowners were considered cost-burdened as they paid more than 30 percent of household

income on housing (Aberdeen Comprehensive Plan, 2019). There are many housing assistant programs available in Aberdeen, including the Hub Area Habitat for Humanity, South Dakota Housing Development Authority, GROW South Dakota, and the Homes are Possible program. The Homes are Possible program is a non-profit group of citizens that are committed to "empowering individuals, stabilizing families, and revitalizing neighborhoods in northeast South Dakota through a variety of economic and social initiatives" (Aberdeen Comprehensive Plan, p. 29, 2019). Their purpose is to facilitate very low-, low-, and moderate-income households in securing and refurbishing good quality affordable housing (Aberdeen Comprehensive Plan, 2019).

The other housing challenge, the aged house stock, shows a desperate need for new construction according to the National Association of Home Builders (Aberdeen Comprehensive Plan, 2019). In the community survey, many voiced their concerns of substandard housing units while others called for apartment inspections (Aberdeen Comprehensive Plan, 2019). The Comprehensive Plan included the current housing stock statistics, both nationally and locally, stating that:

> Nationally, about 38% of the current housing stock was built before 1970; Aberdeen's rate is even higher with 54% of the housing constructed in 1969 or before. There are many fine older homes in Aberdeen but there are also many older homes in need of repair (Aberdeen Comprehensive Plan, p. 29, 2019).

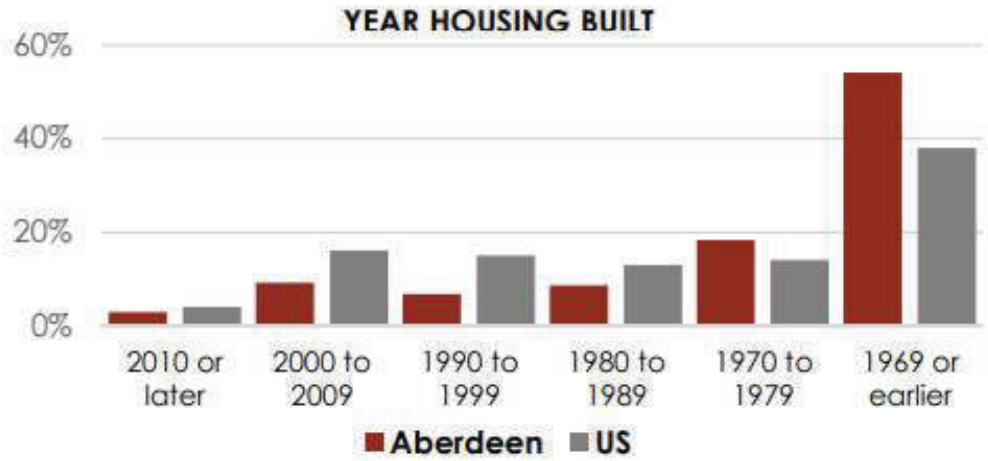

Figure 68 The graph illustrates the year and quantity of housing built in the United States and Aberdeen, comparatively.
Source: Aberdeen Comprehensive Plan, p. 29, 2019

Aberdeen is largely made up of neighborhoods, two of which have been designated as historic. The Highlands Historic District is a three-block rectangular area north of the Milwaukee Road tracks and the main commercial district, extending from Twelfth to Fifteenth avenue on North Main Street and made up of six partial blocks (Aberdeen Comprehensive Plan, 2019). There are many "unifying characteristics" of this district, mainly the low ratio of houses per block (Aberdeen Comprehensive Plan, p. 32, 2019). Each block has two or three house in its limits with large lawns surrounding them. Each house commonly shares the Neo-Colonial Style of architecture in the Eclectic Revival Period with variations of this style throughout the area built between 1907 and 1929 (Aberdeen Comprehensive Plan, 2019).

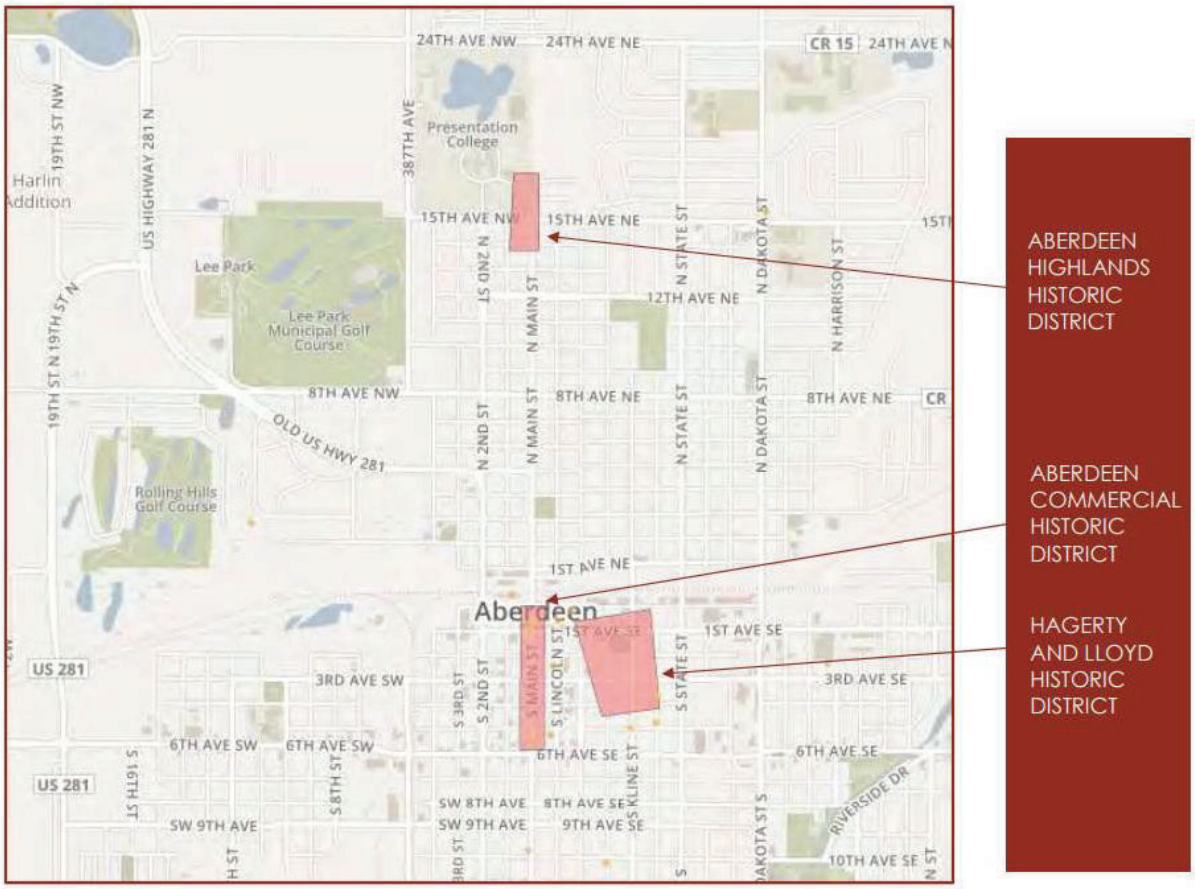

Figure 69 The historic districts of Aberdeen, South Dakota.
Source: Aberdeen Comprehensive Plan, p. 31, 2019

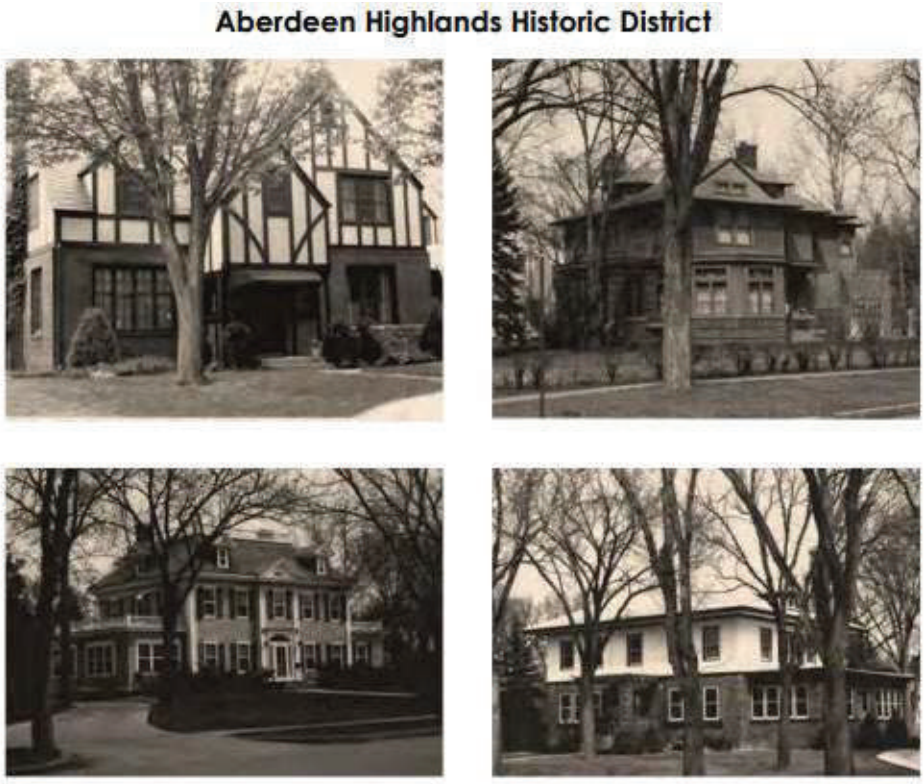

Figure 70 The Aberdeen Highlands Historic District, all commonly sharing the Neo-Colonial Style of architecture of the Eclectic Revival Period around 1907 to 1929.
Source: Aberdeen Comprehensive Plan, p. 32, 2019

The second historic neighborhood, the Hagerty and Lloyd Historic District, consists of 13 partial and three whole blocks east of Main Street (Aberdeen Comprehensive Plan, 2019). There are a total of 69 buildings in this district, with 19 of those buildings having "exceptional period designs" and 20 graded as "good period examples" (Aberdeen Comprehensive Plan, p. 32, 2019).

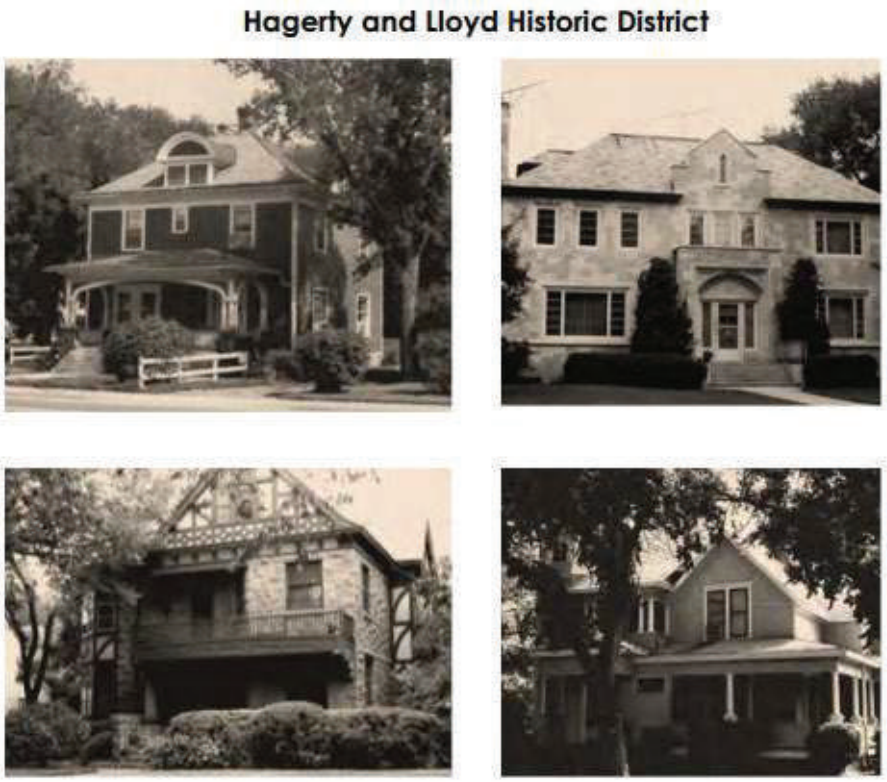

Figure 71 The Hagerty and Lloyd Historic District neighborhood consists of many period design houses in Aberdeen east of Main Street.
Source: Aberdeen Comprehensive Plan, p. 32, 2019

The last historic district of Aberdeen is the Downtown Neighborhood consisting of six blocks in the downtown area. This downtown area has the potential to become denser with infill development that incorporates a mixed-use of the residential upper floors and is illustrated in the Future Land Use Map found later on in this section. (Aberdeen Comprehensive Plan, 2019). Across the country, cities have found the "residential component" of downtown areas to be critical in the sense that it contributes to property values and to the local customer base for commercial and retail areas as these residents are more likely to "patronize these establishments" (Aberdeen Comprehensive Plan, p. 33, 2019). Other neighborhoods in Aberdeen, while less defined, still exuberate distinct areas within the city, with many of the neighborhoods focusing on parks or schools (Aberdeen Comprehensive Plan, 2019). Some of these neighborhoods

include older, traditional single-family dwellings like those surrounding Northern State University with an increasing number of multi-family dwellings (Aberdeen Comprehensive Plan, 2019). Other neighborhoods are dominated by townhomes and duplex units, like the neighborhoods west of Sanford Health (Aberdeen Comprehensive Plan, 2019). Other newer suburban houses, like the Rolling Hills Golf Club Development, are found further out from the city's center (Aberdeen Comprehensive Plan, 2019).

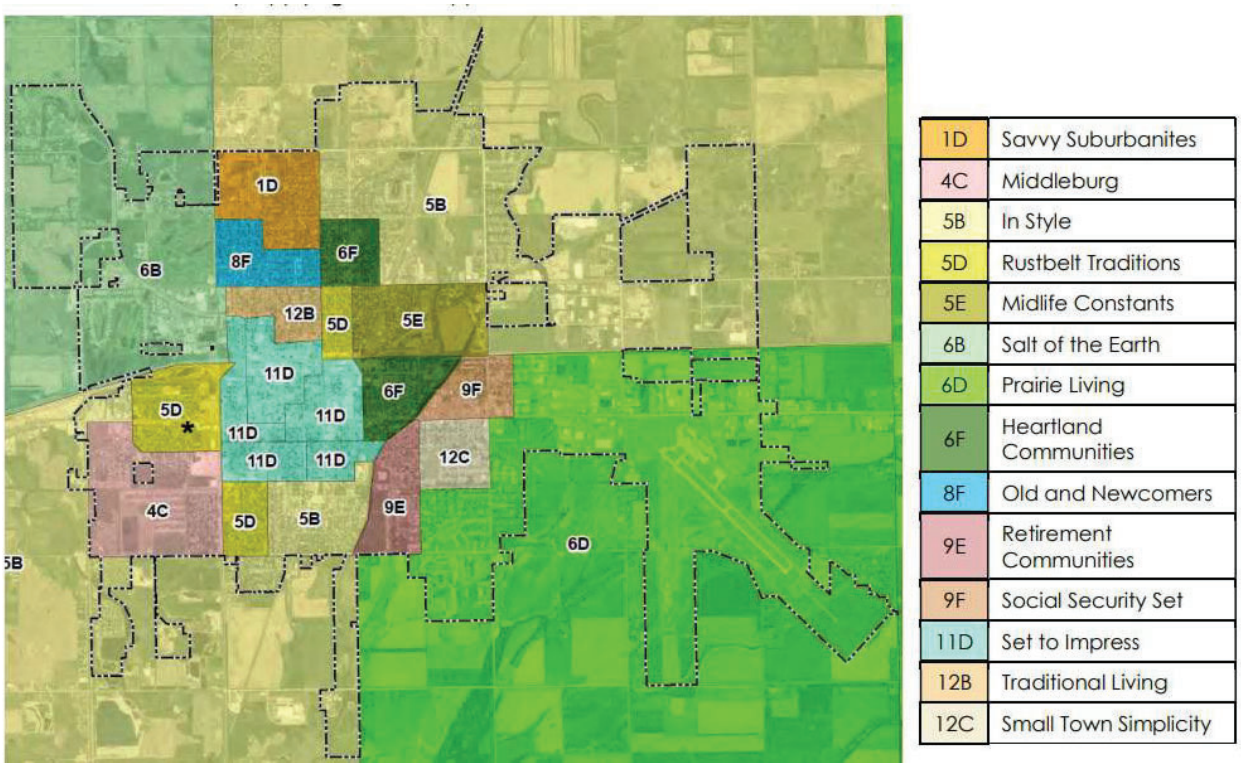

Figure 72 The Housing Neighborhood Segmentation map of Aberdeen, shown above, was created by the Environmental Systems Research Institute's, or the ESRI, Tapestry Segmentation for the housing and neighborhood study.
Source: Aberdeen Comprehensive Plan, p. 34, 2019

Characteristics of Aberdeen's Segment Areas						
Tapestry Segment		Average Household Size	Median Age	Median Household Income	Own Home	Rent Home
Aberdeen City-Wide		2.24	34.9	$47,290	62%	38%
1D	Savvy Suburbanites	2.85	45.1	$108,700	90%	10%
4C	Middleburg	2.75	36.1	$59,800	73%	27%
5B	In Style	2.35	42.0	$73,000	68%	32%
5D	Rustbelt Traditions	2.47	39.0	$51,800	71%	29%
5E	Midlife Constants	2.31	47.0	$53,200	73%	27%
6B	Salt of the Earth	2.59	44.1	$56,300	83%	17%
6D	Prairie Living	2.51	44.4	$54,300	80%	20%
6F	Heartland Communities	2.39	42.3	$42,400	69%	31%
8F	Old and Newcomers	2.12	39.4	$44,900	45%	55%
9E	Retirement Communities	1.88	53.9	$40,800	45%	55%
9F	Social Security Set	1.73	45.6	$17,900	14%	86%
11D	Set to Impress	2.12	33.9	$32,800	28%	72%
12B	Traditional Living	2.51	35.5	$39,300	59%	41%
12C	Small Town Simplicity	2.26	40.8	$31,500	50%	50%

Figure 73 The characteristics of Aberdeen's segmented neighborhoods is shown in the figure above. Each segmented neighborhood shows the average household size, median age of its residents, the median household income, and the percentage of homeowners to renters in the neighborhoods.
Source: Aberdeen Comprehensive Plan, p. 35, 2019

3.5.1.4. Business Climate

Aberdeen houses approximately 2,601 businesses with around 14,900 civilian employees as of 2017 (Aberdeen Comprehensive Plan, 2019). The "positive business climate" results from high-quality public services, good infrastructure and quality schools and colleges (Aberdeen Comprehensive Plan, p. 36, 2019). The top three industries where people work in Aberdeen, Brown County, and South Dakota are education services and health care services, retail trade, and manufacturing.

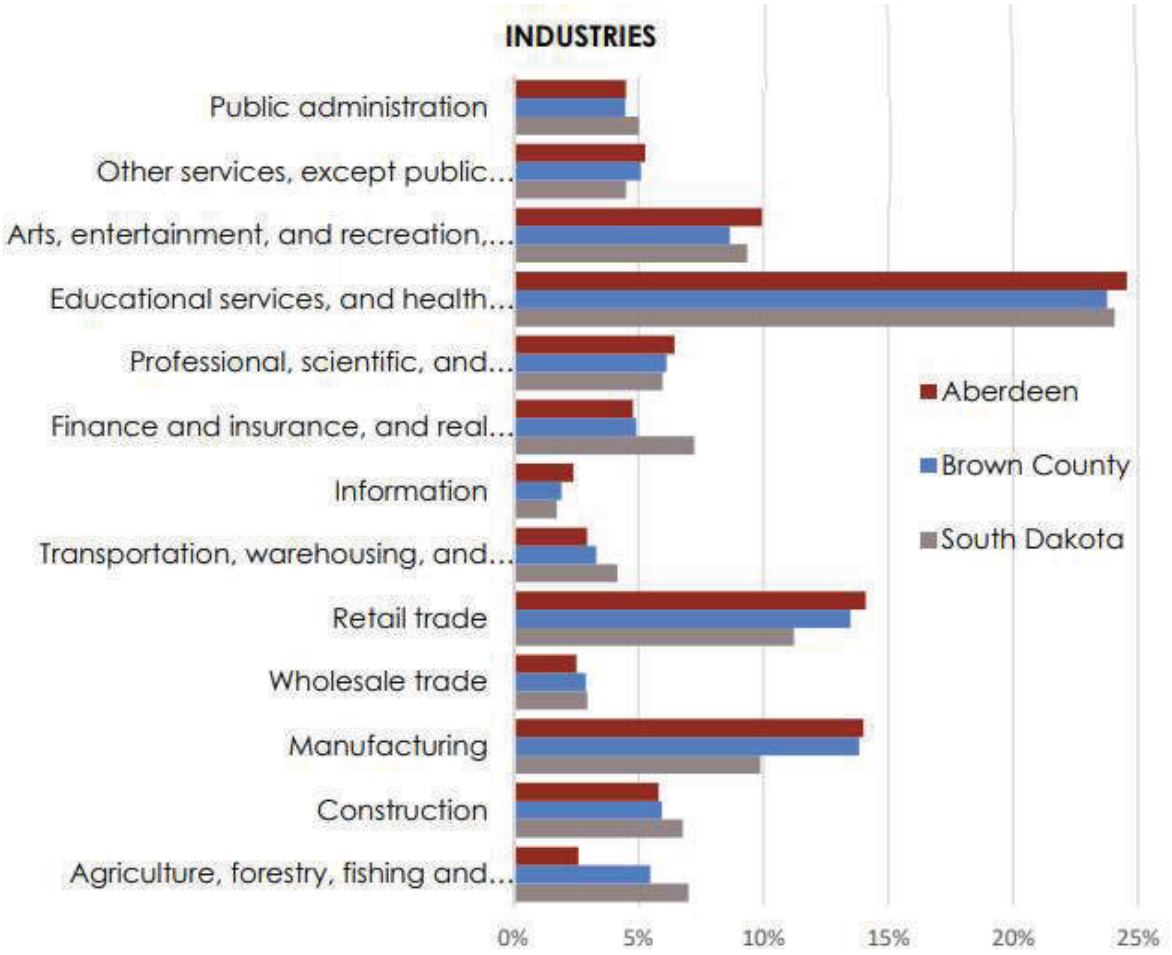

Figure 74 Aberdeen's business industries are compared to the industries found in Brown County and South Dakota in the graph above.
Source: Aberdeen Comprehensive Plan, p. 36, 2019

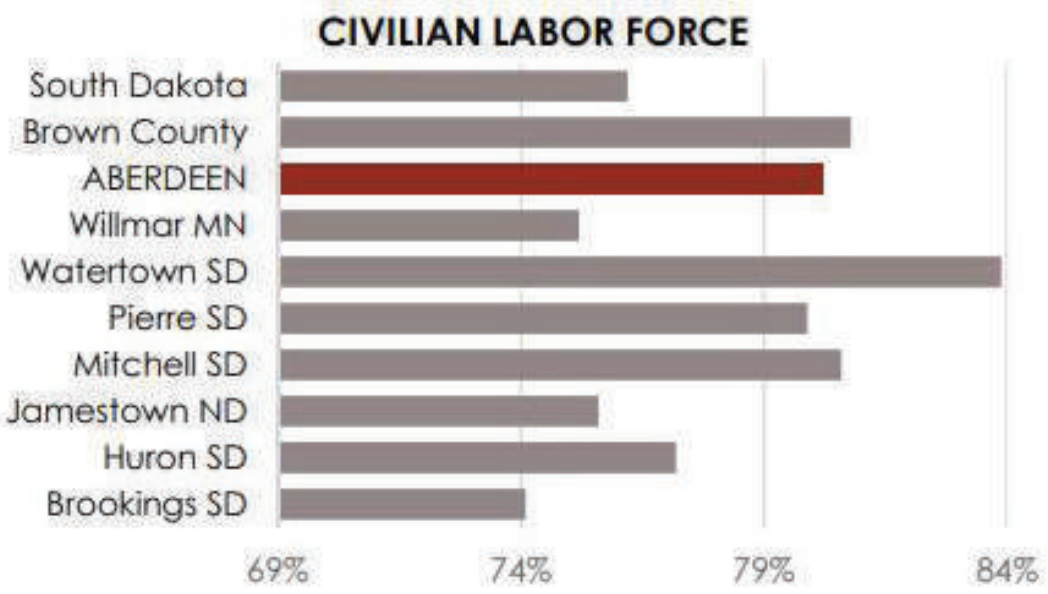

Figure 75 The civilian labor force of Aberdeen is compared to other cities and towns, Brown County, and South Dakota as a whole in the bar graph above. About 80 percent of Aberdeen's population is in the labor force.
Source: Aberdeen Comprehensive Plan, p. 37, 2019

Working Age Population			
	Age	Total	% of Total
Aberdeen	25 to 34 years	4,188	15.00%
	35 to 44 years	2,997	10.80%
	45 to 54 years	3,095	11.1%
		10,280	**36.90%**
Brown County	25 to 34 years	5,210	13.60%
	35 to 44 years	4,286	11.20%
	45 to 54 years	4,848	12.60%
		14,344	**37.40%**
South Dakota	25 to 34 years	111,742	13.10%
	35 to 44 years	96,916	11.40%
	45 to 54 years	106,922	12.60%
		315,580	**37.10%**

Figure 76 The working age population of Aberdeen is shown in the table above, compared to the population of Brown County and South Dakota.
Source: Aberdeen Comprehensive Plan, p. 37, 2019

3.5.1.5. Parks and Recreation Facilities

The numerous parks and recreational facilities are a valuable community asset to Aberdeen. The community showed appreciation and support for the park system in the comprehensive planning process (Aberdeen Comprehensive Plan, 2019). The parks and recreation facilities total over 800 acres, divided into categories including 10 neighborhood parks, five community parks, two community playfields, and three special use facilities (golf courses, aquatic centers, etc.) (Aberdeen Comprehensive Plan, 2019). Below is a list of the facilities and a map of the overall park system.

ABERDEEN PARKS AND RECREATION FACILITIES					
Park	**Acres**	**Type**	**Park**	**Acres**	**Type**
Aberdeen Aquatic Center	11.44	Special Use	Kuhnert Arboretum	99.9	Open Space
Aberdeen Nature Area	110.0	Regional Park	Lee Park Golf Course	148.7	Special Use
Aberdeen Sports Complex	55.27	Special Use	Lincoln Recreation Area	3.54	Neighborhood
Aldrich Park	2	Gazebo/Band Shell	Manor Park	13.68	Community
Anderson Park	7.08	Community	Melgaard Park	24.04	Community
Baird Park	32.49	Natural Area	Moccasin Creek Complex	81.39	Community
Browne Park	2.07	Neighborhood	Nicollet Park	0.31	Playlot
Central Park	1.99	Urban Park	Players Field	47	Softball Fields
Easton Park	2.06	Neighborhood	Roosevelt Park	0.57	Neighborhood
Easton Park	2.05	Neighborhood	Storybook Land		Special Use
Fossum Park	15	Baseball Field	Sunshine Park	13.96	Neighborhood
Frontier Park	2.06	Neighborhood	Wylie Park	194.8	Regional
Garfield Park	0.57	Neighborhood			

Figure 77 The list of parks and recreational facilities in Aberdeen is shown in the table above, indicating the name of the park, how many acres it makes up, and the type of park.
Source: Aberdeen Comprehensive Plan, p. 46, 2019

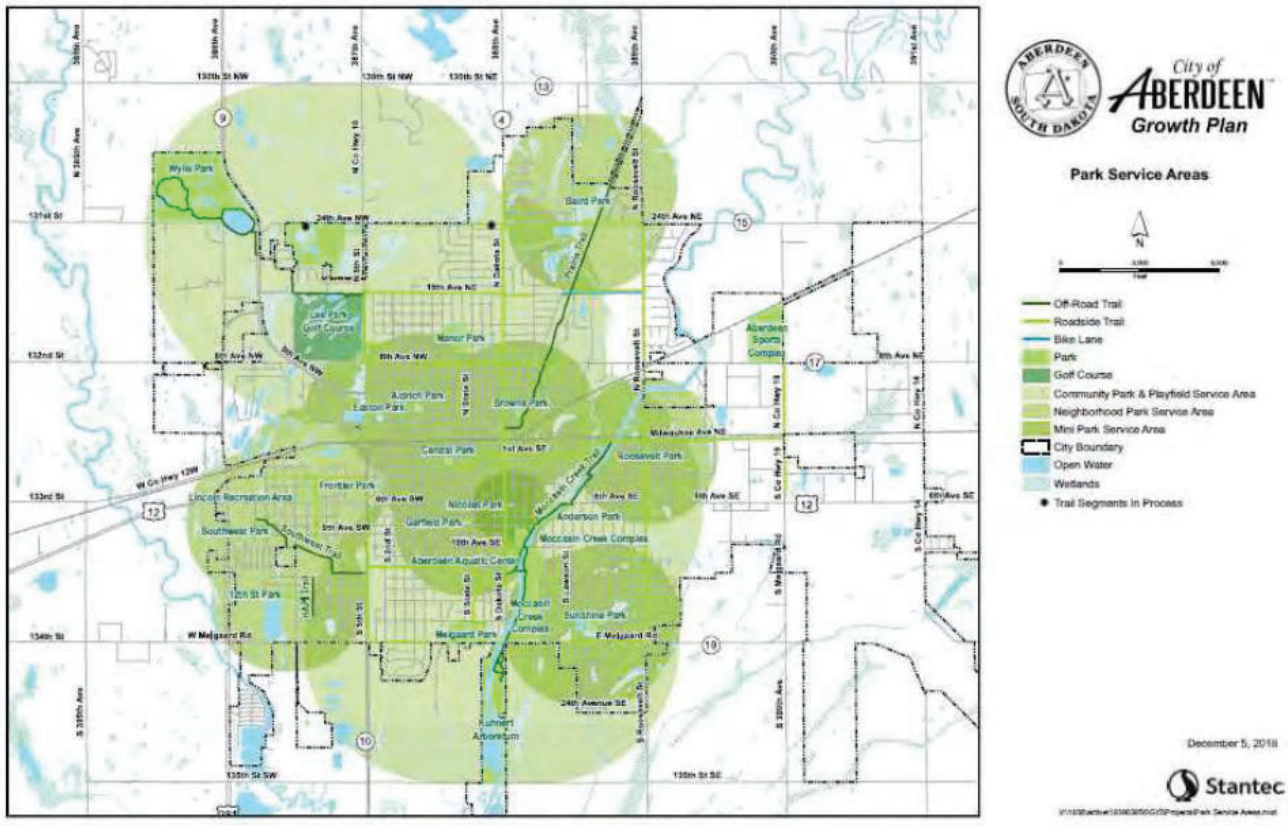

Figure 78 The park service areas map of Aberdeen is illustrated in the figure above. The map indicates trails, bike lanes, golf courses, parks and play service areas, open water, and wetlands. The city boundary is highlighted in the dashed black line and the black dots highlight trail segments in progress at the time of the Growth Plan.
Source: Aberdeen Comprehensive Plan, p. 48, 2019

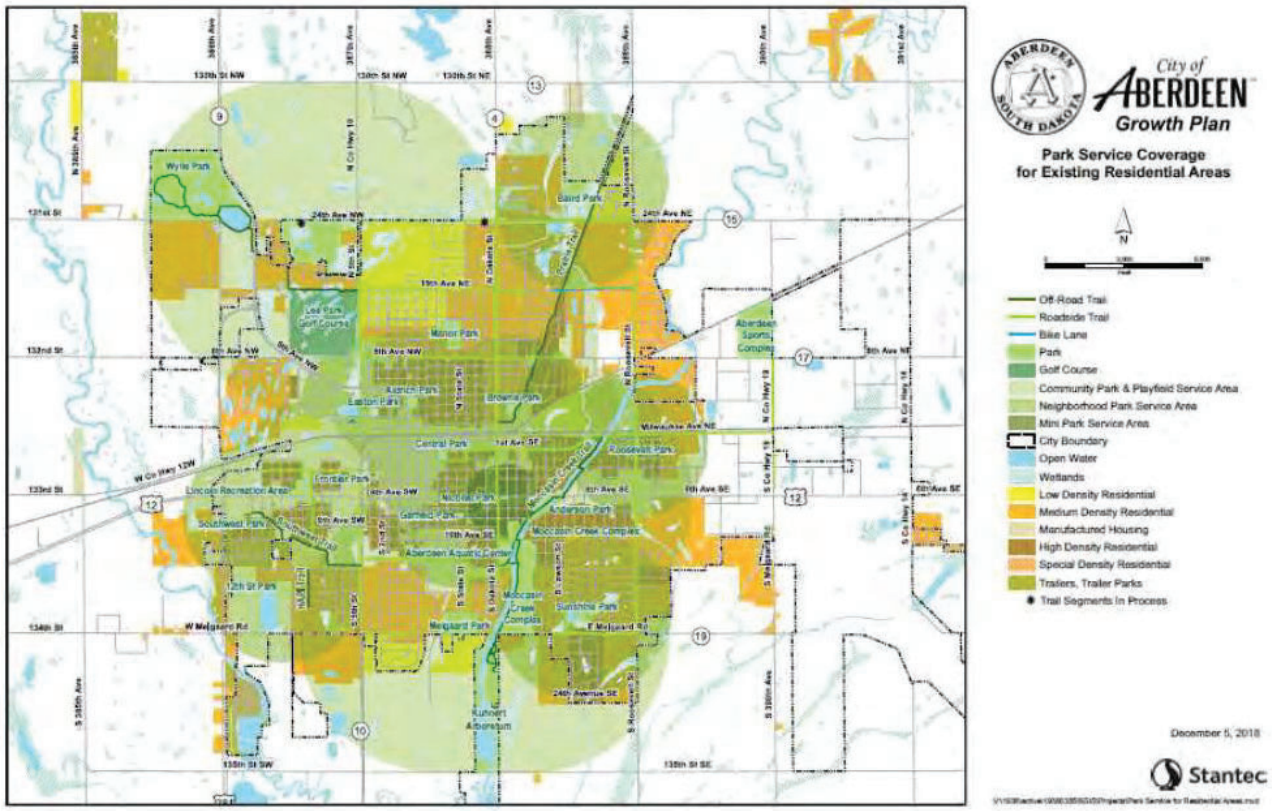

Figure 79 The map above is an alteration of the previous park service map with the inclusion of existing residential areas to illustrate the connection between residential areas and parks and recreational areas. The list of residential areas includes low-density, medium-density, manufactured housing, high-density, special-density residential, and trailers and trailer parks. **Source**: Aberdeen Comprehensive Plan, p. 49, 2019

3.5.1.6. Future Land Use

The Aberdeen Comprehensive Plan of 2019 consists of a chapter labelled "Aberdeen Tomorrow" that focuses on what Aberdeen will potentially grow into by 2045. Included is a generalized Land Use Zoning map and a table for the future land uses for Aberdeen by 2045. Each category in the Land Use map is talked about in the Comprehensive Plan with the specification that each description does not propose a change to existing development but rather a suggestion for the direction moving forward (Aberdeen Comprehensive Plan, 2019).

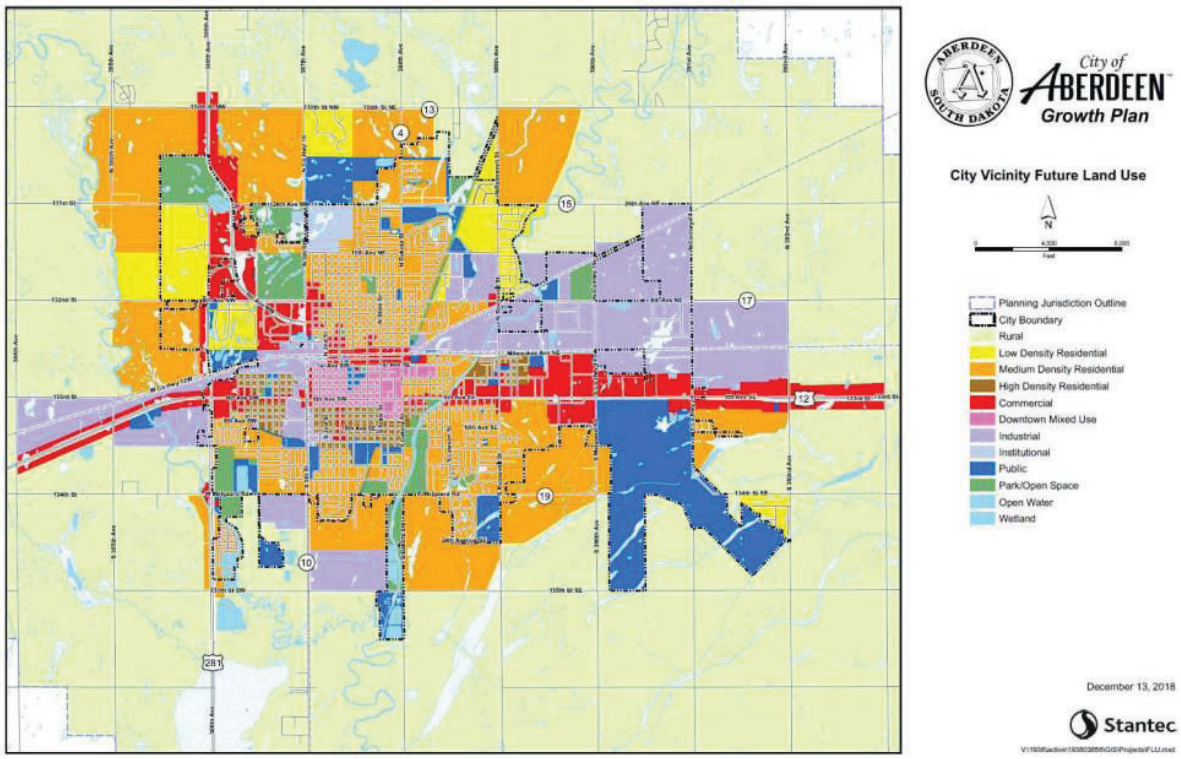

Figure 80 The city vicinity future land use map highlights the projected zoning for Aberdeen by 2045.
Source: Aberdeen Comprehensive Plan, p. 61, 2019

FUTURE LAND USES - ABERDEEN 2045			
	Future Land Use Category	**Acres Within City Limits**	**Acres Outside City Limits**
	Rural	24	39,824
	Low Density Residential	705	424
	Medium Density Residential	2,340	3,783
	High Density Residential	291	0
	Commercial	1,069	597
	Downtown Mixed Use	190	0
	Industrial	1,487	1,763
	Institutional	149	0
	Park/Open Space	868	0
	Public	1,642	244
	Right-of-Way	1,541	1,265
	Open Water	289	969
	Total	**10,595**	**48,867**

Figure 81 The future land uses table for Aberdeen illustrates the projected zoning of Aberdeen by 2045 with an estimated acreage within and outside the city limits.
Source: Aberdeen Comprehensive Plan, p. 62, 2019

The Comprehensive Plan divulges primary growth areas for the future of Aberdeen. These include the following.

1. South of Wylie Park
2. North and West of HAPI (Homes are Possible Inc.) First North Division (North of the Brown County Fairgrounds and the vacant campus location)
3. South of Target
4. East of Fossum Field (baseball field)
5. North of Prairies Edge Subdivision
6. West of the Intersection of US 281 and US 12 (Sixth Avenue)
7. South of Eisenhower Circle

(Aberdeen Comprehensive Plan, pp. 68-69, 2019)

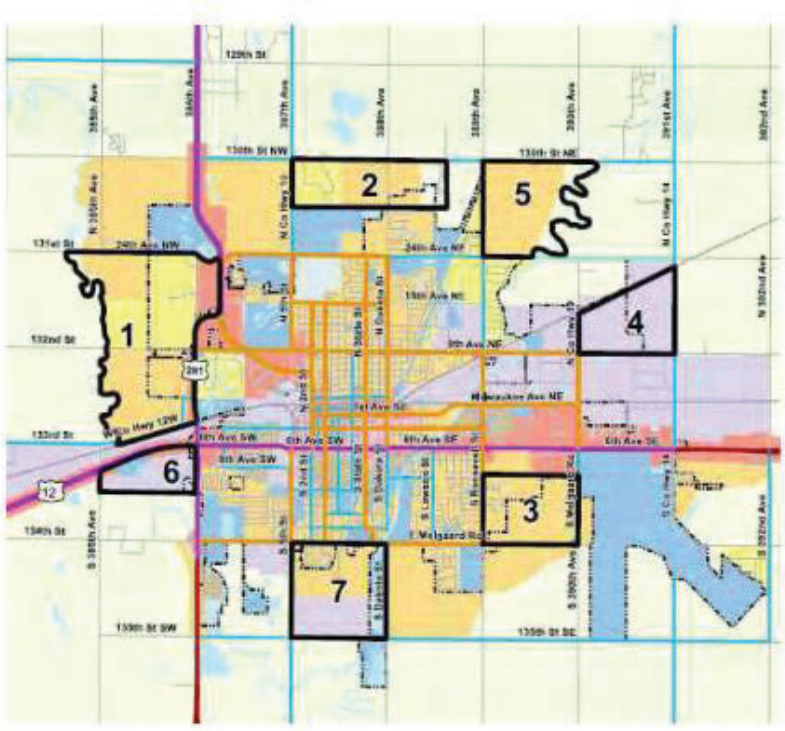

Figure 82 Aberdeen's primary growth areas by 2045 are illustrated above and correlate to the numbered list preceding this map.
Source: Aberdeen Comprehensive Plan, p. 68

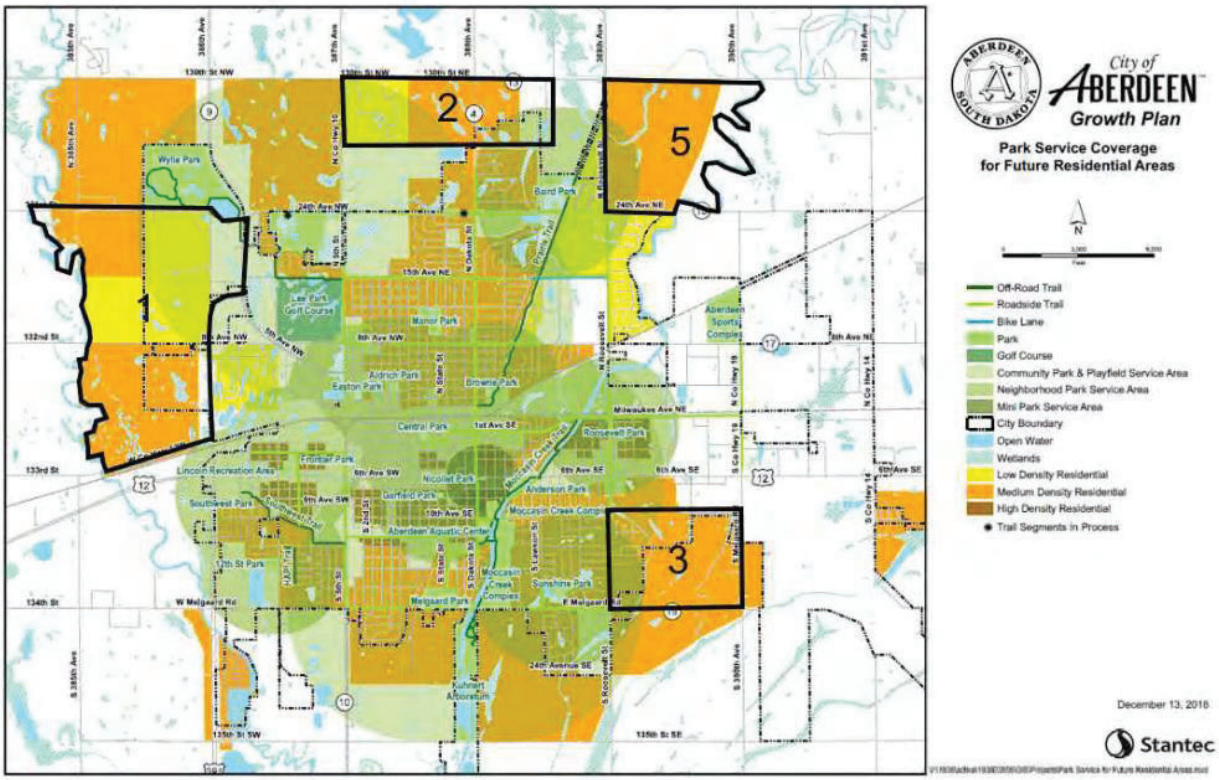

Figure 83 The park service coverage for future residential growth areas for the city of Aberdeen is illustrated in the map above.
Source: Aberdeen Comprehensive Plan, p. 70, 2019

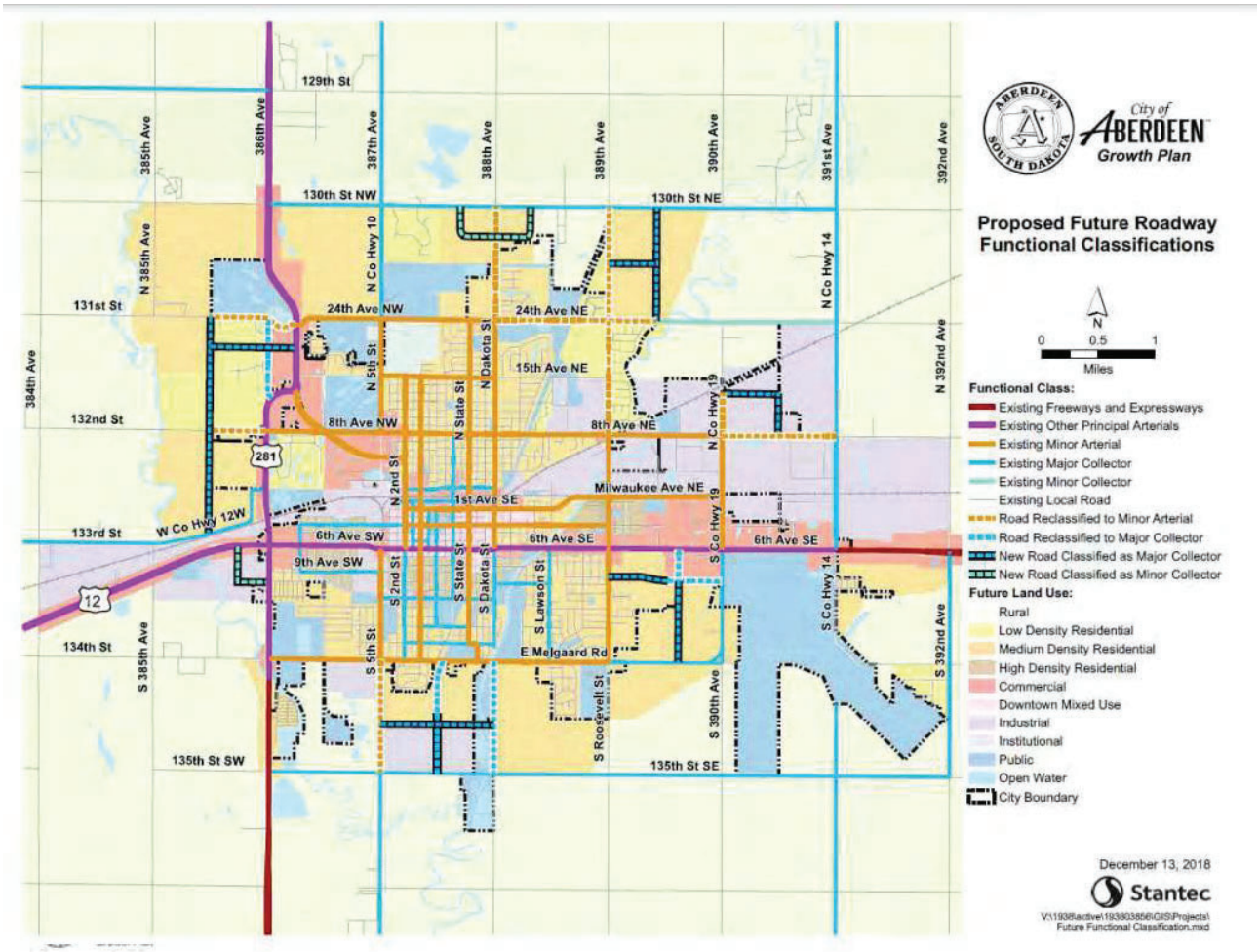

Figure 84 The map above shows the future land use zoning districts along with the existing, new, and reclassified proposed roads throughout the city of Aberdeen. The location of the vacant campus site is labelled as medium-density residential district in this proposed map.
Source: Aberdeen Comprehensive Plan, p. 86, 2019

3.5.2. Interviews

3.5.2.1. Aberdeen City Manager and Engineer

The first interview conducted for research regarding the campus of Presentation College and information on the city of Aberdeen was held on Wednesday, October 25th of 2023 with city manager Robin Bobzien and City Engineer Stu Nelson. This interview aimed to understand more about the vacant campus, its current utilization, potential needs for the city of Aberdeen, potential funding opportunities, and other pertinent information regarding an adaptation project.

During the interview, Bobzien and Nelson were asked several questions aimed at answering the above concerns.

Q1: Is there anything missing in Aberdeen?

A1: Most communities in Aberdeen are in need of "affordable, market-rate housing."

Q2: Do you have any knowledge on the maintenance and upkeep of the buildings on campus?

A2: A couple employees are still working in the building, though the spaces in the building are not being used as anything other than a work area at the time. The Strode Activity Center is not being used, but the city is currently trying to get everything in the facility operational and ready for programming as they figure out the logistics for how that space will be used. The city plans to provide more programming for sports and recreational use during the winter and spring months.

(Note* The city of Aberdeen has purchased the Strode Activity and Wellness Center, the Winter Dome, the soccer field, and an underdeveloped parcel of land from the Presentation Sisters)

Q3: Would an adaptive reuse project on Presentation's campus qualify for any local tax credits? Does the city have any plans to turn the property into a TIF District or similar tax incentives?

A3: There is potential to gain tax advantages against the project, though it would rely on the inclusion of a private owner for portions of the campus and buildings. Private ownership, or partially private ownership, adds value to the property. Because Presentation College was a religious organization, portions of the campus, including the chapel and convent, will generate zero in taxes but if those properties were sold to

someone privately and adapted in some way, those buildings could potentially generate tax credits in the future. As for the city's involvement, any property staying within the city's control will stay off the tax rule. If multiple sources of funding were to occur, the inclusion of a private owner and funder can qualify for residential tax incentives. For residential development, roughly 30 percent of development could apply for funding that will help with the cost of a building's infrastructure.

Q4: What do you envision happening on the campus for future use?

A4: The city plans on using the Strode Center and Winter dome for programming and recreational uses for the city of Aberdeen, especially during the winter and spring months. Aside from that, Bobzien and Nelson stated that the student suites were up in the air. The two buildings would most likely be adaptively reused for some sort of housing. They also stated that the office spaces on the campus could end up being reasonably sized apartment spaces, especially with an existing elevator already in the building. As for the administrative building, convent, and chapel, they suggested maybe a gutting and re-do of the buildings might be needed depending on what the overall campus space programming calls for. Furthermore, the land to the east and north of the Winter Dome is available for development. This area is conducive for housing, especially with the availability of water and sewer on the fairgrounds road (34th Ave NW). Another idea for this space was to create a county jail, though it would not qualify for any tax incentives and provide little income other than what the county can provide. On the other hand, a regional jail would provide a source of revenue.

The interview above provides ideas brought forth by the city employees of the current conditions of Presentation's campus and upkeep, along with their plans for its future. Plans to

turn the Strode Activity Center, Winter Dome, and soccer fields into facilities for programming and recreational activities has been discussed as city employees work with the Presentation Sisters to adapt the campus. The other buildings on campus (the residential suites, educational facilities, administrative building, chapel, and convent) are still owned by the Presentation Sisters and go unutilized aside from a few in-house office workers. Bobzien and Nelson provided ideas for their future use: residential units, retirement living, office spaces, educational purposes, etc. and suggested affordable housing for the northern part of the undeveloped campus. This interview will be consulted when developing programming for the existing buildings on campus and undeveloped spaces of the campus to determine a solution for its vacancy.
(R. Bobzien & S. Nelson, personal communication, October 25, 2023).

3.5.2.2. The Laudato Si Ministry Directors – Native Grassland Restoration Project

The Presentation Sisters were among the first to take up residence in Aberdeen after its founding, purchasing the nearly 100-acre land that became known as Presentation Heights and housing Presentation College. In 2021 when the Sisters moved to a new location off campus, they committed to restoring the land on Presentation's campus to what it was before they moved there, focusing on soil challenges both ancient and new today (Gallagher, 2022). Sister Mary stated that the group "wants to use our little part of land to bring awareness to social issues," to preserve what already exists in the land (Gallagher, p. 30, 2022). The Sisters hired Jared Hohn and Jaime Risse as Integral Ecology Specialists to help reclaim the growth and regeneration of the natural lands. The group, including volunteers and farmers from the community, have undergone a long process of restorative and soil conservation practices to bring the natural prairielands back to the campus.

An interview with Jared Hohn and Jaime Risse, the Laudato Si Ministry Directors for the Presentation Sisters and specialists in Integral Ecology, was conducted on December 6th, 2023 where the interviewees were consulted to better understand the process of restoration they began and continue to go through on Presentation's campus today. The meaning of this interview is to obtain first-hand insight of the process, goals, and future vision for the land. Below is a list of the questions sent to Hohn and Risse while awaiting their responses.

Q1: When did you start the prairieland restoration process?

A1: "May 2021 was our first planting, but we began prep for the work in January of that year."

Q2: How long do you envision the restoration process to take?

A2: "At this time, we expect to manage the project indefinitely. We know that the seedbank will continue to show us new plants each year. Some of what we initially planted may not show up for 7 years."

Q3: What inspired you to take on this project?

A3: "We got hired to the work! On a deeper note, the Presentation Sisters were inspired by Pope Francis' Book Laudato Si which talked about Care for our Common Home. Laudato Si, talks about how we have abandoned caring for our earth. The Sisters wanted to make a statement by showing that two people, without prior training, can learn new practices and make a difference." Jared and Jaime are not residents of Aberdeen. Jaime is from Lake Madison, SD and Jared is from Dell Rapids, SD and both have mission background and experience in project work. Jared came from Avera and has experience in radiation and oncology. They relied heavily on the environment, farmers, and

specialists around them to learn about the native land and the restoration process, a testament to the Sisters' message of relying on the land and taking care of our home.

Q4: Where exactly on the campus have you begun the restoration process?

A4: "We planted and have worked to manage areas 1-4 on the map. We do have a sign that is located on Fairgrounds Road highlighting the project."

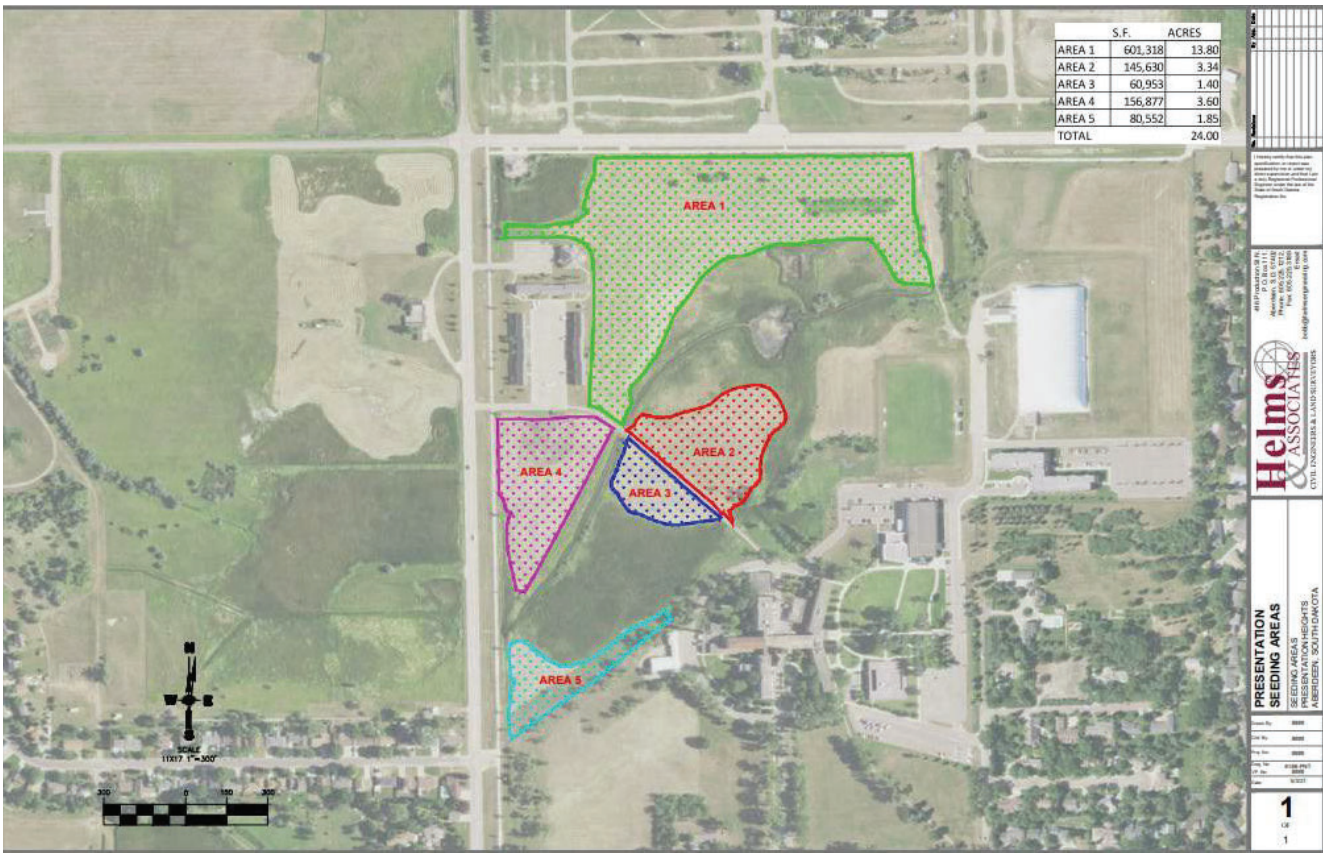

Figure 85 Map of the locations of prairieland restoration on Presentation's campus. As of now, there are five separate locations for restoration, and Jared Hohn and Jaime Risse have worked on all locations except Area 5. The pair would like to see the prairieland restored throughout the entire campus in the future. Provided by Jared Hohn and Jaime Risse.
Source: (J. Hohn & J. Risse, personal communication, December 6, 2023)

Q5: Do you plan on extending these native prairielands throughout other parts of the campus?

A5: "Hopefully!"

Q6: How long do you expect this process to take?

A6: “Again, we aren’t really focusing on an end date. We hope to manage the land and create sustainability for the project long into the future!”

Q7: What do you envision the grasslands to look like in the future?

A7: “Our goal is to help build these grounds so that they are a true representation of the prairie in South Dakota before it was settled. With some of the forbs (flowers) that were planted, we hope to see the color and depth that most people aren’t used to seeing in the grasslands that currently cover the state.”

Q8: What types of grassland existed prior to restoration, and why types of grassland are you planting?

A8: Invasive brome grasses existed prior to restoration. The pair reluctantly used chemical herbicides to remove the invasive species before planting native grassland species and wildflowers. The planting takes place in the top quarter inch of the soil. Mowing is done, if necessary, but the goal of the restoration process is to provide as little agitation as possible. At the beginning of planting in 2021, a drought occurred, and the pair had to drag 600 feet of hose from the Presentation Sisters’ artesian well to water the plants. Jaime Risse even purchases a rain gauge and prayed for rain, and then it finally came and almost went from drought to flood. In 2022, the invasive brome and thistle had reduced significantly, and the native plant species had grown and allowed native dormant flora to return like asparagus and salt grasses. The pair stated that native grasses and forbs grow in their own timeline, not predictably like a tulip or tomato plant. The return of dormant native flowers sparked hope and progress, as some of the native species can lie dormant and exist for over 100 years. During the process, paths were mowed throughout

the restorative area for the population to walk through and see. Below is a list of the native seed species Jared and Jaime placed during three different plantings.

Figure 86 Mowed paths for public use during restoration process.
Source: (J. Hohn & J. Risse, personal communication, December 6, 2023).

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- Prairie Renovation

Scientific Name	Common Name	Origin	PLS/Acre	Oz/Acre
Amorpha canescens	Lead Plant	Kittson Co, MN		3.000
Anemone canadensis	Canada Anemone/Meadow Anemone	Grant Co, SD		0.150
Astragalus canadensis	Canada Milkvetch	Lac Qui Parle Co, MN		3.000
Chamaecrista fasciculata	Partridge Pea	Madison Co, IA		5.000
Dalea purpurea	Purple Prairie Clover	Kossuth Co, IA		2.000
Dalea candida	White Prairie Clover	Kossuth Co, IA		2.000
Desmanthus illinoensis	Illinois Bundleflower	Union Co, IA		4.000
Desmodium canadense	Showy Tick Trefoil	Kossuth Co, IA		1.500
Echinacea pallida	Pale Purple Coneflower	Clay Co, IA		1.500
Eupatorium perfoliatum	Boneset	Allamakee Co, IA		0.250
Gaillardia aristata	Blanket Flower	IA		2.500
Glycyrrhiza lepidota	American Licorice/Wild Licorice	Grant Co, SD		0.500
Helianthus pauciflorus	Stiff Sunflower/Showy Sunflower	Kossuth Co, IA		0.250
Lobelia siphilitica	Great Blue Lobelia	Z1, IA		0.250
Monarda fistulosa	Wild Bergamot/Bee Balm	Kossuth Co, IA		2.000
Oenothera biennis	Evening Primrose	Madison Co, IA		3.000
Penstemon grandiflorus	Shell Leaf Penstemon/Large-Flowered Beardtongue	Z1, IA		2.000
Ratibida columnifera	Prairie Coneflower/Longheaded Coneflower	Clay Co, IA		3.000
Rosa arkansana	Prairie Wild Rose	Grant Co, SD		1.000
Rudbeckia hirta	Black-Eyed Susan	Madison Co, IA		4.500
Solidago nemoralis	Gray Goldenrod/Dwarf Goldenrod/Old Field Goldenrod	Allamakee Co, IA		1.000
Solidago rigida	Stiff Goldenrod	Faribault Co, MN		1.000
Tradescantia bracteata	Prairie Spiderwort	Madison Co, IA		0.100
Verbena stricta	Hoary Vervain	Grant Co, SD		2.500
Zizia aurea	Golden Alexanders	Z1, IA		2.000
Bouteloua curtipendula	Sideoats Grama	Pope Co, MN	2.000	
Bouteloua gracilis	Blue Grama	Kittson Co, MN	0.750	
Schizachyrium scoparium	Little Bluestem	Wabasha Co, MN	2.000	
Sporobolus heterolepis	Prairie Dropseed	Polk Co, MN	0.250	

Figure 87 List of native seeds planted on Presentation's campus on May 24th, 2021. Provided by Jared Hohn and Jaime Risse.
Source: (J. Hohn & J. Risse, personal communication, December 6, 2023)

Saline - Wet Meadow Mix - 24 Acres

Scientific Name	Common Name	PLS LB/Acre	PLS Oz/Acre	Total PLS LB
Glycyrrhiza lepidota	American Licorice		0.250	0.375
Rudbeckia hirta	Black Eyed Susan		2.000	3.000
Gaillardia aristata	Blanketflower		1.000	1.500
Verbena hastata	Blue Vervain		0.500	0.750
Oenothera biennis	Evening Primrose		1.000	1.500
Zizia aurea	Golden Alexanders		1.000	1.500
Desmanthus illinoensis	Illinois Bundleflower		4.000	6.000
Helianthus maximiliani	Maximilian Sunflower		2.000	3.000
Solidago missouriensis	Missouri Goldenrod		0.050	0.075
Symphyotrichum novae-angliae	New England Aster		0.100	0.150
Chamaecrista fasciculata	Partridge Pea		4.000	6.000
Coreopsis tinctoria	Plains Coreopsis		1.000	1.500
Dalea purpurea	Purple Prairie Clover		2.000	3.000
Helianthus pauciflorus	Stiff Sunflower		0.150	0.225
Asclepias incarnata	Swamp Milkweed		0.250	0.375
Achillea millefolium var. occidentalis	Western Yarrow		1.000	1.500
Monarda fistulosa	Wild Bergamot		1.000	1.500
Nassella viridula	Green Needlegrass	2.500		60.000
Elymus trachycaulus	Slender Wheatgrass	3.500		84.000
Pascopyrum smithii	Western Wheatgrass	3.000		72.000
Price/Acre	Total	9.000	21.300	247.950
$125.00	Total Seeding Rate (PLS LB/Acre)	10.331		*Rev Date* *08/02/21*

Figure 88 List of native seeds planted on Presentation's campus on September 16th, 2021. Provided by Jared Hohn and Jaime Risse.
Source: (J. Hohn & J. Risse, personal communication, December 6, 2023)

Wet Seed Mix - 3 Acres

Scientific Name	Common Name	PLS LB/Acre	PLS Oz/Acre	Total PLS LB
Glycyrrhiza lepidota	American Licorice	0.500		1.500
Mimulus ringens	Monkey Flower	0.100		0.300
Symphyotrichum novae-angliae	New England Aster	0.300		0.900
Carex vulpinoidea	Brown Fox Sedge	0.500		1.500
Juncus torreyi	Torrey's Rush	0.100		0.300
Price/Acre	Total	1.500	0.000	4.500
$400.00	Total Seeding Rate (PLS LB/Acre)	1.500		*Rev Date* *02/14/22*

Figure 89 List of native seeds planted on Presentation's campus on February 14th, 2022. Provided by Jared Hohn and Jaime Risse.
Source: (J. Hohn & J. Risse, personal communication, December 6, 202

The above interview with Hohn and Risse revealed that the campus is undergoing a restoration of the native prairielands since 2021, and is envisioned to continue endlessly. Hohn and Risse provided a list of the native seeds planted that have been growing for the last three years that established a list of vegetation and pictures for the site analysis of Presentation College. The paths mowed into the land were developed with the idea that the public may visit this area and potentially establish a protected park for the community. Prior to the restoration process, brome grasses invaded the land and still exist today despite the utilization of chemical herbicides to reduce the grasses and thistle. The restoration process has only been planned in five separate sections on the site, but Hohn and Risse hope these native species will be extended throughout the entirety of the site in the future. This interview provided information regarding the vegetation on the site as well as the history, process, and importance of the restoration process to the Presentation Sisters and surrounding community that will be incorporated and potentially extended throughout the site for this adaptive reuse project.

(J. Hohn & J. Risse, personal communication, December 6, 2023)

3.6. Precedents/Case Studies

Four separate campuses that closed in recent years have been studied to see how adaptive reuse can be administered throughout a college campus. Each campus is compared to one another based on location, size, school type, date founded, date closed, and what the campuses are being redeveloped into/used for. Because college closures are a more recent issue in the United States, or based on when the college closed, either adaptive reuse projects are presently undergoing, and documentation of its progress is unavailable. On the other hand, not many site plans or floor plans of the existing campuses and buildings are available due to college websites being shut down. Because of these restrictions, any floorplans, site plans, and information

available was included in this section with the understanding that a complete comparison of the before and after of each campus cannot be discerned. This chapter exists to provide an understanding of the process of adaptive reuse for closed college campuses as well as ideas for the reuse of Presentation College's vacant buildings. Building stock of each campus is listed below when available.

	Location	Size	School Type	Date Founded	Closure Date	Use
AIB College of Business	Des Moine, IA	14.5 acres	Private, non-profit	1921	2018	Mixed
Nasson College	Springvale ME	280 acres	Private, non-profit	1912	1983	Mixed
Baker College Flint	Flint, MI	40 acres	Private, non-profit	1911	2020	Mixed
University of Western States	Portland, OR	20 acres	Private, non-profit	1904	2019	Education

Table 1 The table above compares the four case studies' location, size, school type, date founded, closure date, and the repurposed use of the campus.

3.6.1. AIB College of Business

The AIB College of Business in Des Moine, Iowa was founded in 1921 and later moved its location to its current property at the intersection of Fleur Drive and Bell Avenue in 1972. It was a private, non-profit baccalaureate college of business in Iowa. The college merged with the University of Iowa, who took possession of the campus in August of 2016 and turned it into the Iowa Center for Higher Education. The campus remained in operation for two more years before closing in 2018 when university officials determined the cost to "operate and maintain the property outpaced revenue from tuition and leases by nearly $1.2 million" (Norvell, 2019). The 14.5-acre campus was purchased in 2019 by Tina Smothers and Jason Grove (Norvell, 2019).

Figure 90 The AIB College of Business in Des Moines, Iowa before merger and closure. **Source**: https://www.desmoinesregister.com/gcdn/-mm-/b94af1a8b5feed92aedd46bb087c7cc7e68438ba/c=246-0-2682-1376/local/-/media/2015/01/26/IAGroup/DesMoines/635578882123954289-Aerial-Shot.jpg?width=700&height=396&fit=crop&format=pjpg&auto=webp

Plans were immediately called to turn the former Fenton Hall into 93 apartment units and leased commercial and office space in the former Wells Hall (Norvell, 2019). Smothers and Grove parceled off the remaining buildings and vacant lands for future development in hopes that the campus would become a mixed-use commercial and residential area. Roughly $1.8 million was invested into the renovation of the Fenton Hall west and east buildings into one- and two-bedroom apartments (Norvell, 2019). Each unit received new cabinets, flooring, and appliances. These apartments lease for $999 a month for the one-bedroom, 700 square-foot units and $1,250 a month for the 800 square-foot two-bedroom units (Norvell, 2019). The renovated halls also include a fitness center and lounge, bike storage, and co-working space for tenants.

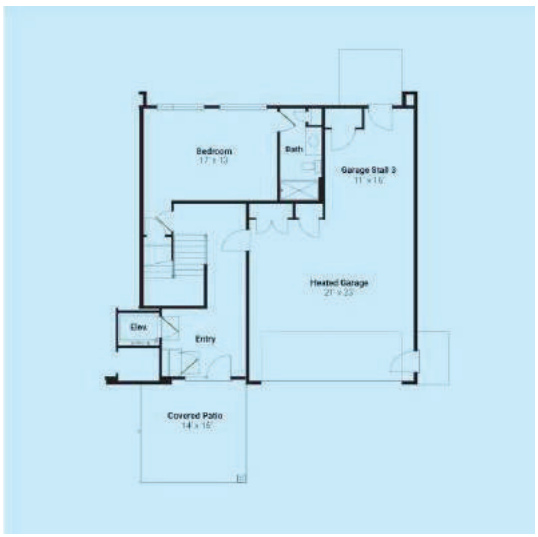
Other remaining elements of the campus include Keith Fenton Administration Building, the AIB Activities Center, and a three-acre vacant parcel of land. The Activities Center was

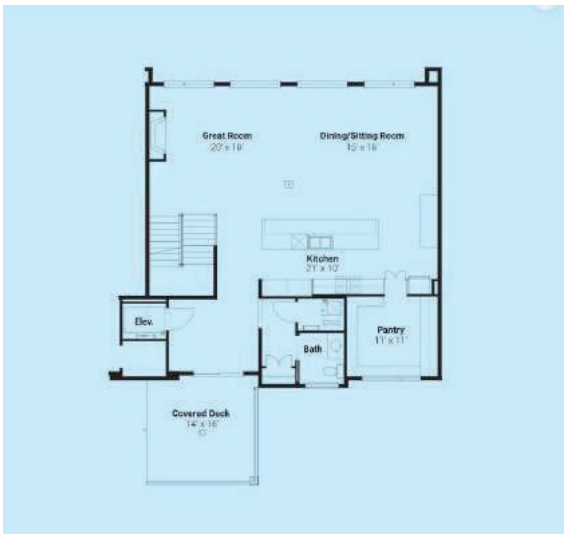
purchased by a group including the owner of Competitive Edge Advertising Specialty Manufacturing Co. for $2.4 million in 2020 (Norvell, 2019). The facility allowed the Iowa Wolves, an NBA G League team, to practice in for seven months of the year, while residents of the nearby apartment complexes could utilize the facility for the remaining five months. The Activities Center was built in 1999 and consists of 25,000 square-feet (Norvell, 2019). The 35,000 square-foot administration building was offered $2.5 million with plans to move a business into the building and lease out the remaining space for offices (Norvell, 2019). What remains of the campus is now five parcels with separate owners (Norvell, 2019).

Figure 91 The AIB Activities Center on the College of Business campus. Little work was done to the facility as it was in good shape, not even needing a fresh paint job according to the buyers. **Source**: https://www.businessrecord.com/wp-content/uploads/2022/10/11a42bd60206c376681f81866f18ca64.jpg

The roughly three-acre vacant property was purchased by developer Bill Kimberly for $700,000 at around the same time as the Activities Center and administration building, and that area has now been transformed into high-end town homes (Axios, 2022). It is a 23-unit development into four buildings with existing, underdeveloped garages for students and staff prior (Axios, 2022). 15 of the townhomes are roughly 2,500 square-feet and priced between $500-600 thousand, while the others nearly doubling in size are priced at $1.4 million (Axios, 2022).

Figure 92 The high-end town homes built on the empty three acre land of the former AIB College of Business.
Source: Picture retrieved from https://images-listings.coldwellbanker.com/IA_DMAAR/67/50/76/_P/675076_P05.jpg?width=1024

1) 

2) 

3) 

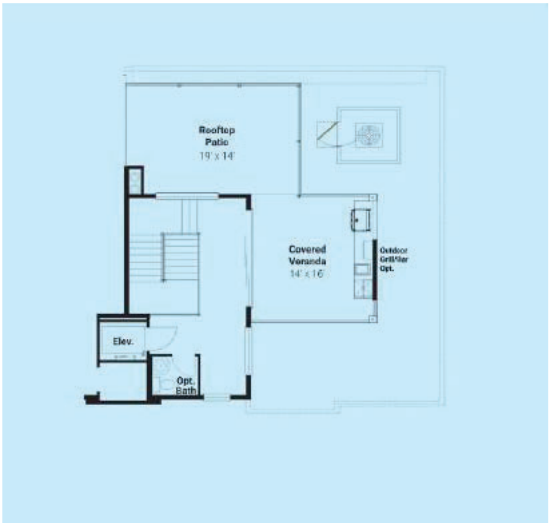
4) 

Figure 93 The floor plans for the high-end townhomes on the previous AIB College of Business campus (Scale not available).

1) Level 1
2) Level 2
3) Level 3
4) Rooftop Floor Plans

Source: Pinnacle on Fleur, 2021

Figure 94 Site of previous AIB College of Business
Source: AIB Campus - Google My Maps

3.6.2. Nasson College

Nasson College was a four-year accredited liberal arts college located in Springvale, Maine. The private college began in 1912 as Nasson Institute, a two-year program for women, and later became a four-year in 1935 and admitted men in 1952 (Nasson College Alumni Association). At one point the campus had over 1,000 students on its property (Nasson College Alumni Association). The 280-acre campus consisted of a learning resource center housing the library and audio-visual services, a science center with a rooftop greenhouse, radiation laboratory and other laboratories for the sciences, a gymnasium, a theatre, dinning commons, classroom buildings, health clinic, and a student center (Nasson College Alumni Association). There was a

total of 11 residential units and a close connection to the Holdsworth Park that housed an outdoor skating rank and courts for volleyball, basketball, and tennis.

The school went through many phases of closures and re-openings, but Nasson never regained its accreditation and lost enrollment as it faded from existence (Nasson College Alumni Association). In the last few years before the school's final closure in 1983, maintenance took place on the campus that was long overlooked and provided a long-term benefit for the campus. In the following years, some of the vacant buildings were again utilized when the University of Maine System – Sanford Center rehabilitated the old library, but by 1990 the buildings were ready for redevelopment (Nasson College Alumni Association). Many buildings were put to new use and others had emerging plans. The Nasson Memorial Student Activity Center was acquired by an alumni group and repurposed as a community center in 2002, while a community health center opened in the former Nasson science building in 2012 (Nasson College Alumni Association).

Figure 95 The Nasson Memorial Student Activity Center was repurposed into the Nasson Community Center and Little Theatre by four alumni students who did not want to see the building turned into a parking lot.
Source: About – NASSON COMMUNITY CENTER & LITTLE THEATRE

Figure 96 The original science building was repurposed into a community health center in 2012 with tenants Nasson Health Care, a division of the York County Community Action Corporation, and NorDx Maine Health.
Source: https://www.nassonhealthcare.org/wp-content/uploads/2023/04/location_header_sun2-scaled.jpg

One of the original residential dorms, Maryland Hall, was turned into senior housing in 2018. Developer Rob Reinken repurposed the 1956 four-story dormitory into 18 units of 55-plus housing (Mainebiz). The hall is 22,000 square-feet and houses 10 one-bedroom (620 square-feet) and eight two-bedroom (780 square-feet) senior apartments (Mainebiz). The building was gutted, windows and infrastructure replaced, and thick insulation was added for energy efficiency and noise reduction (Mainebiz). Reinken restored the glass block window that lights the main stairwell in the building, added a fitness center and seating areas, and redeveloped the existing Lion's Den coffee shop in the basement into a community room (Mainebiz). Reinken owns six other buildings on the campus, including the following:

- Alumni Hall, redeveloped into 12 apartment buildings in 1988
- 12,000 square-foot Brown Hall, redeveloped into office spaces in 1998
- Folsom I and II, two-story dorm buildings redeveloped into one- and two-bedroom apartments in 1997 and 1998
- The one-story York County Career Center was built by Reinken in 2003
- The 40,000 square-foot science center, built in 1968, redeveloped into medical and professional office space

(Mainebiz)

Figure 97 Former Maryland Hall for Nasson College redeveloped into senior housing.
Source: Mainebiz

Most of the other existing buildings were demolished over the years, aside from three former college dormitories that are being redeveloped into 83 market-rate apartments as of 2022. The three dorms, Pryor-Hussey Hall, Fobes Hall, and Hanscom Hall, were relatively new compared to the rest of the buildings on campus, having been built between 1964 and 1970 (Mainebiz). These upper-campus buildings are located away from the former main campus area and were bought by Nate Green and Chris Marshall who run the Portland-based Green Mars Real Estate Services after the buildings had been on and off the market over the years (Mainebiz). The dorms were in various stages of decay: Pryor-Hussey was vandalized over the years and many of the windows were missing; Fobes Hall had to be cleared of asbestos; more than 100 mattresses were taken to the dump (Mainebiz). Green and Marshall expect to invest $11 million for the refurbishment of these original dormitories.

Hanscom Hall will include 28 units along with the preservation of the common areas and fireplaces, Fobes Hall will have 32 units, and Pryor-Hussey Hall will have 32 units (Mainebiz). The buildings are located in the Sanford village of Springvale and within the Sanford tax increment financing district, which will help offset costs of redevelopment. The dorms will keep their original "mid-century modern" look with low-angled roofs and large fireplaces in the common areas, along with a plan to incorporate a Nasson College trophy case and mementoes from the college to keep the original memory of the college alive (Mainebiz). The dorms sit on 27 acres of land, and the developers may add additional housing in the future (Mainebiz).

Figure 98 Fobes Hall, one of the last three remaining dorms of Nasson College to be redeveloped.
Source: Last vacancies on former Nasson College campus to become market-rate apartments | Mainebiz.biz

Figure 99 Pryor-Hussey Hall, one of the last three remaining dorms of Nasson College to be redeveloped.
Source: Last vacancies on former Nasson College campus to become market-rate apartments | Mainebiz.biz

3.6.3. Baker College Flint Campus

The Baker College campus in Flint, Michigan closed down in 2020 and moved its operations to its Owosso, MI campus. The private college founded in 1911 closed this location as a consolidation effort to strengthen its future educational offerings (Mott Foundation). In July of 2022, the Charles Stewart Mott Foundation granted $4 million to Communities First, Inc. to purchase and redevelop the vacant property. Communities First will transform the campus into a mixed-use property to provide space for social service organizations, businesses, vocational and technical training, and single- and multi-family apartments (Mott Foundation).

The campus sits on over 40 acres of land with over 400,000 square-feet of building space that includes two dormitories, multiple classroom and office buildings, and a library (Mott

Foundation). Communities First plans on partnering with other groups interested in purchasing or leasing parts of the campus.

Figure 100 Baker College in Flint, MI is currently under redevelopment for mixed-use purposes. **Source**: Mott Foundation

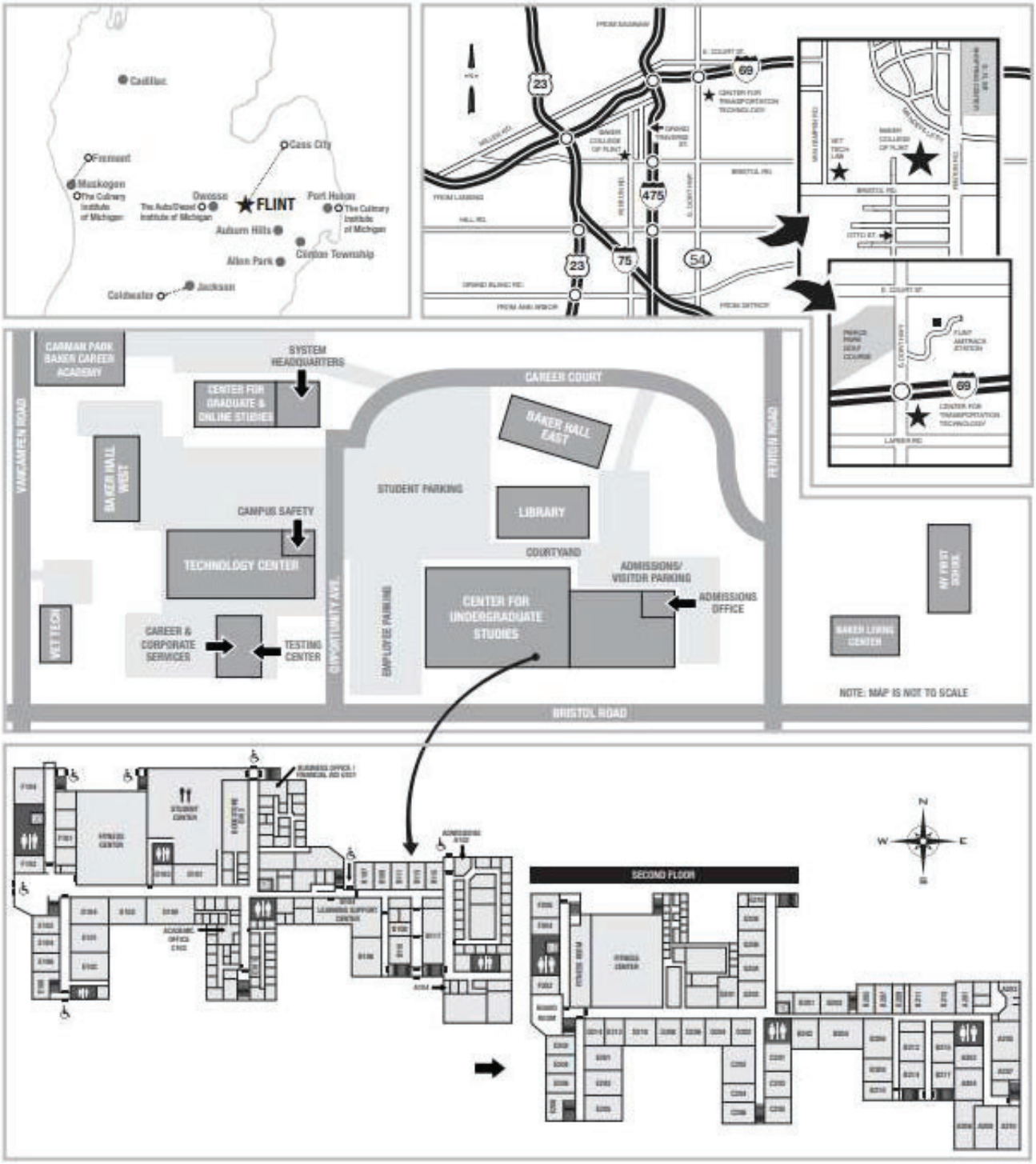


Figure 101 Map location and site plan of the Baker College Flint campus (Scale not available).

List of building stock:

1) Carman Park Baker Career Academy
2) Center for Graduate and Online Studies
3) Technology Center/Campus Safety
4) Vet Tech

5) Career & Corporate Services/Testing Center
6) Library
7) Center for Undergraduate Studies
    a. Fitness Center
    b. Student Center
    c. Learning Support Center
    d. Admissions Office
    e. Offices
    f. Classrooms
8) Baker Living Center
9) My First School
10) Baker Hall (East and West)

Source: Flint-Campus-Map-4-11-14.pdf (baker.edu)

3.6.4. University of Western States

The University of Western States in Portland, Oregon was founded in 1904 and offers health science and health care professions education to its students. In 2018, the school's Board of Trustees announced their search for additional campus space to support the university's growth and diversity and later moved to a five-acre property that includes a 150,000 square-foot building originating as the headquarters of Banfield Pet Hospital (Rushall, 2018). UWS decided to relocate to this new location for its proximity to the Portland Community. The original 20-acre, 10-building campus was put on the real estate market and purchased by the Linfield College School of Nursing, a private, four-year institution that was originally located in McMinnville, Oregon. The campus sold for $14.5 million and was leased to Linfield College until April of 2020 while the college relocated its entire institution and operations to the new campus (Rushall, 2018).

The move made Linfield more "amenable" as their original location was too small to accommodate for the college (Rushall, 2018). At the time, Linfield had students enrolled on waitlists, full classrooms, and not enough space for its operations (Rushall, 2018). In July of 2020, Linfield changed its name to Linfield University with a College of Arts and Sciences and

School of Business in the original McMinnville location along with the addition of the School of Nursing on UWS's old campus in Portland (Linfield University). The university has expanded its graduate offerings to include nursing, business, education, and sports science (Linfield University).

Figure 102 The Linfield University Portland, OR location site plan (Scale not available).

1) Offices/Conference Room
2) Classrooms/Conference Rooms
3) Experienced Learning Center (ECL) E-F/Conference Room
4) Classrooms
5) Classrooms/Student Life
6) Library/Classroom/Computer Lab
7) ECL A-D
8) Storage
9) Storage
10) Anatomy Lab
11) Storage

Source: https://www.linfield.edu/assets/images/general/academics/Nursing/ne-portland-campus-map.jpg

Figure 103 Picture of the University of Western States campus in Portland, OR after the property was sold to Linfield College.
Source: https://news.linfield.edu/wp-content/uploads/2018/11/westernstates.jpg

3.7. Detailed Space Program

3.7.1. Existing Documentation

The section below includes imagery of the campus's existing building documentation obtained from the Presentation Sisters' archivist Kathleen Daly. This documentation was referenced when developing and reusing the vacant campus.

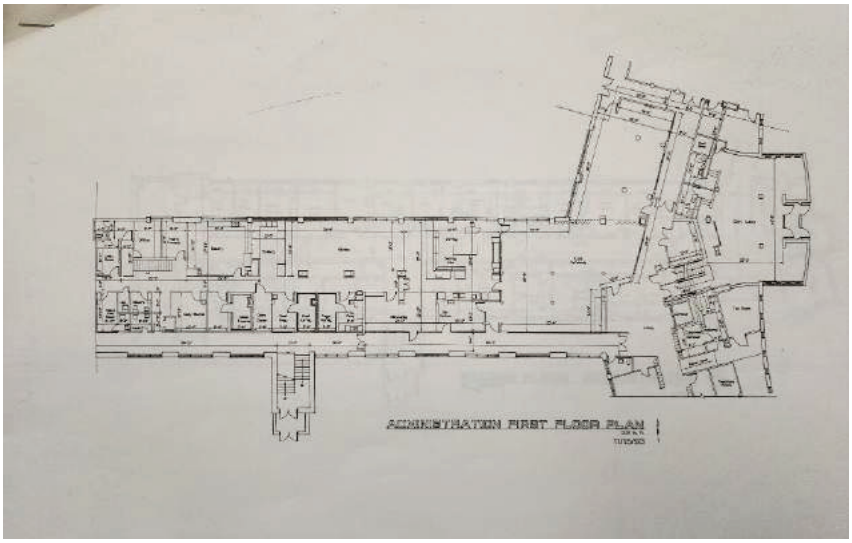


Figure 104 Administration Building first floor plan
Source: (K. Daly, personal communication, January 24, 2024)

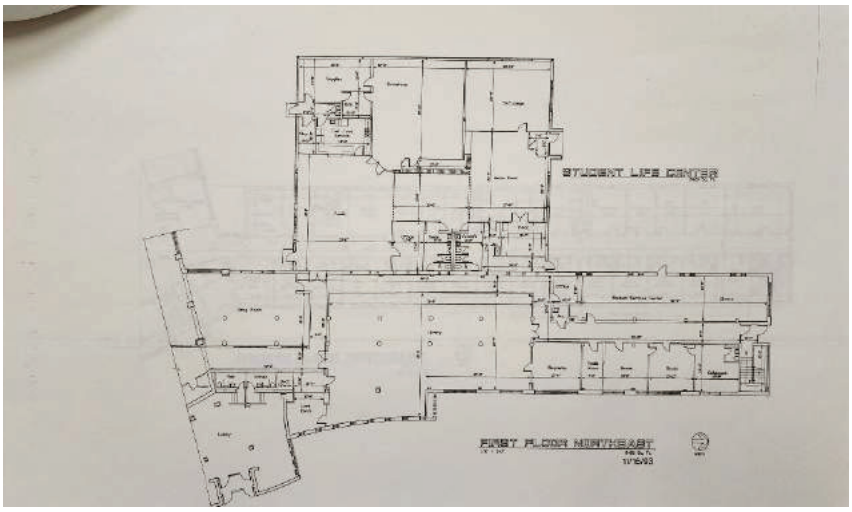


Figure 105 Administration Building first floor northeast plan and Student Life Center
Source: (K. Daly, personal communication, January 24, 2024)

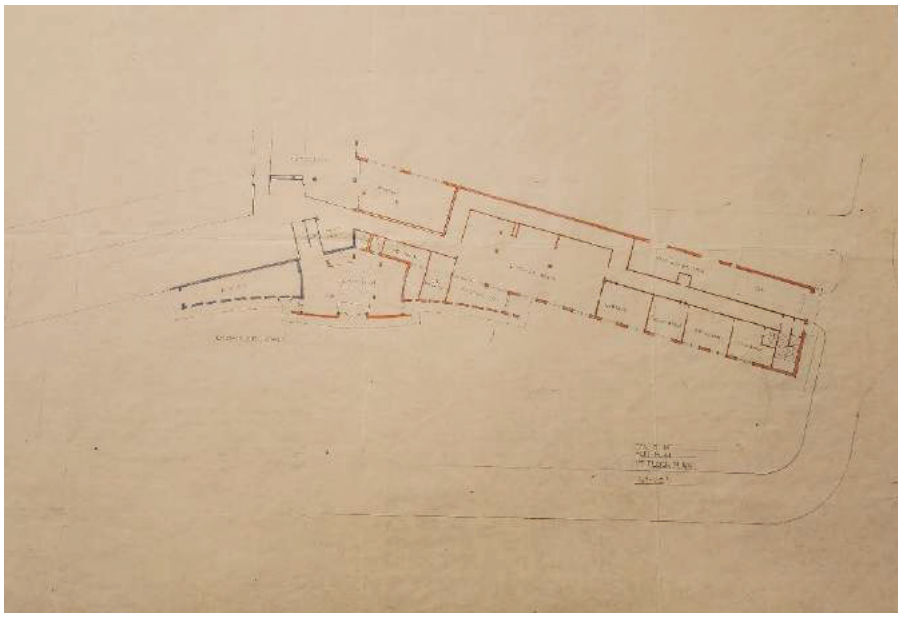


Figure 106 Administration Building first floor northeast drawing plan
Source: (K. Daly, personal communication, January 24, 2024)

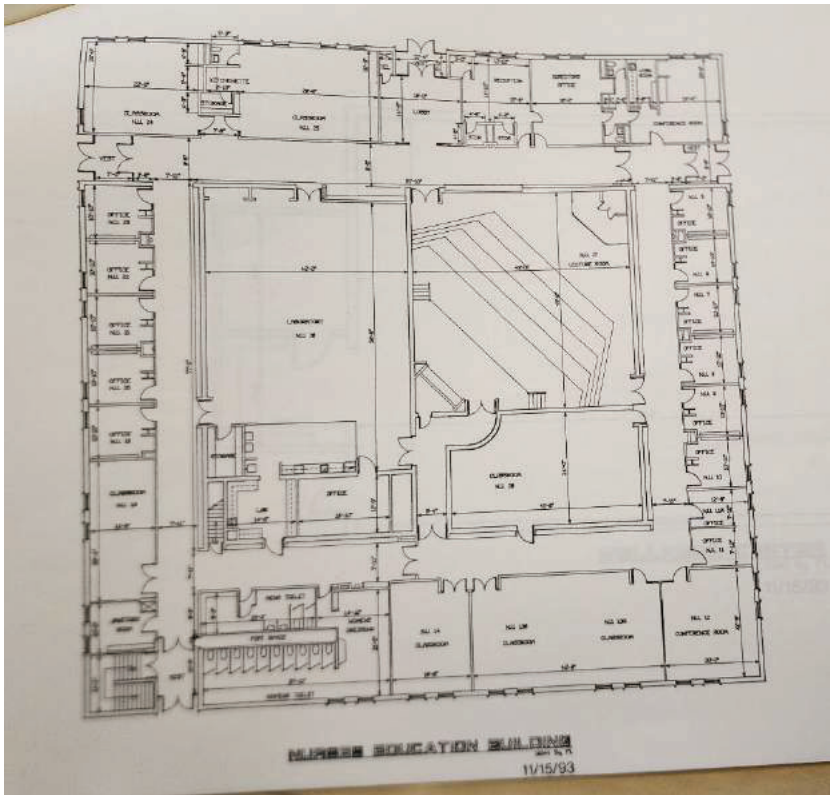


Figure 107 Nurse's Education Building floor plan
Source: (K. Daly, personal communication, January 24, 2024)

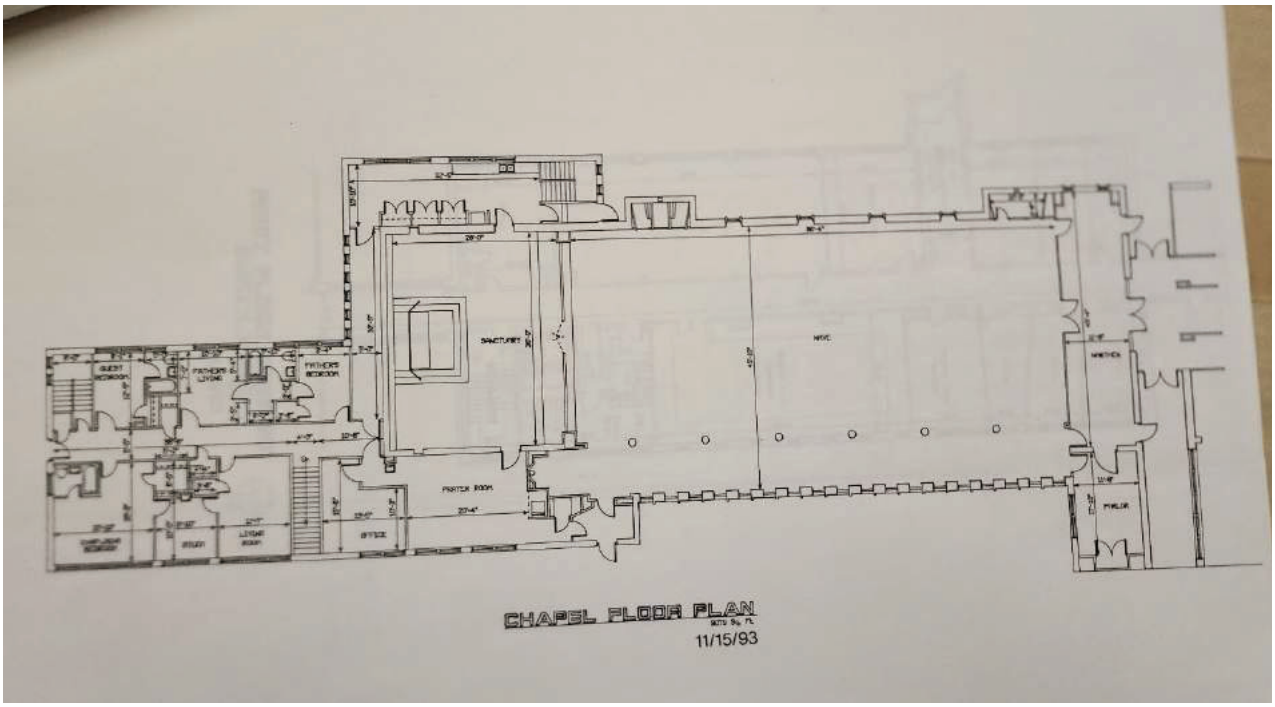


Figure 108 Chapel Floor Plan
Source: (K. Daly, personal communication, January 24, 2024)

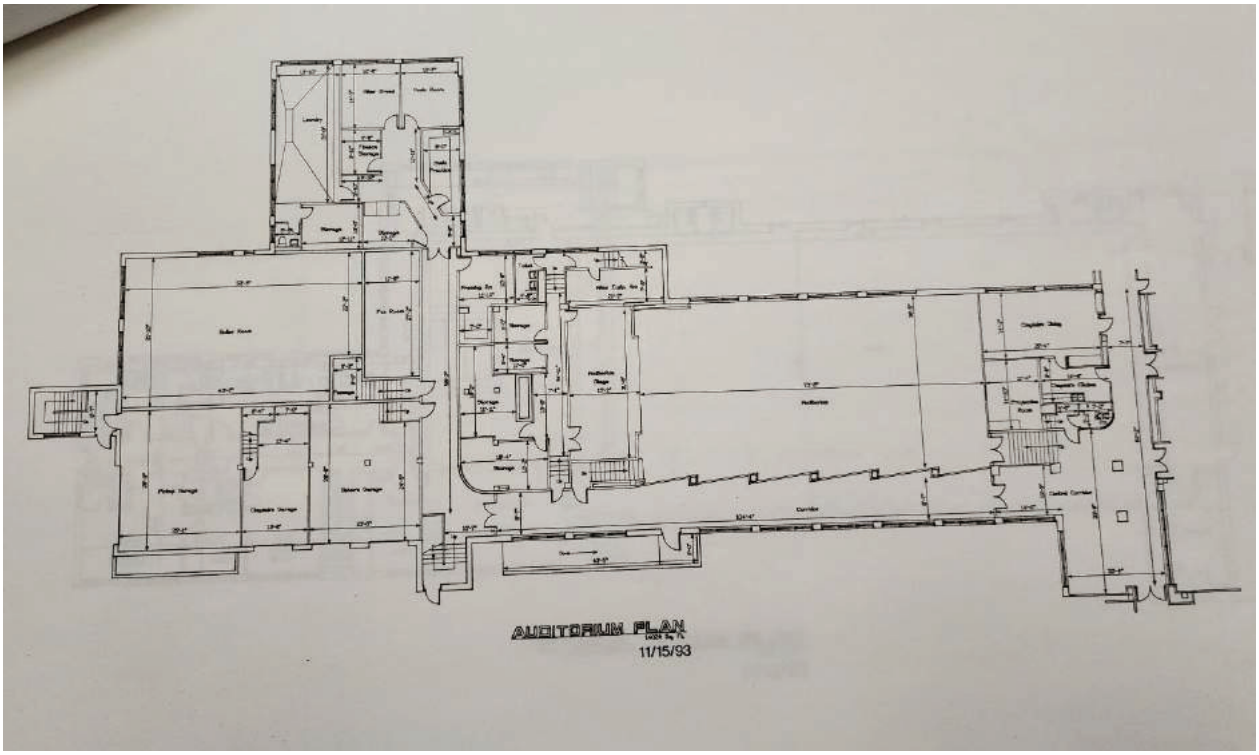


Figure 109 Auditorium and Boiler plan
Source: (K. Daly, personal communication, January 24, 2024)

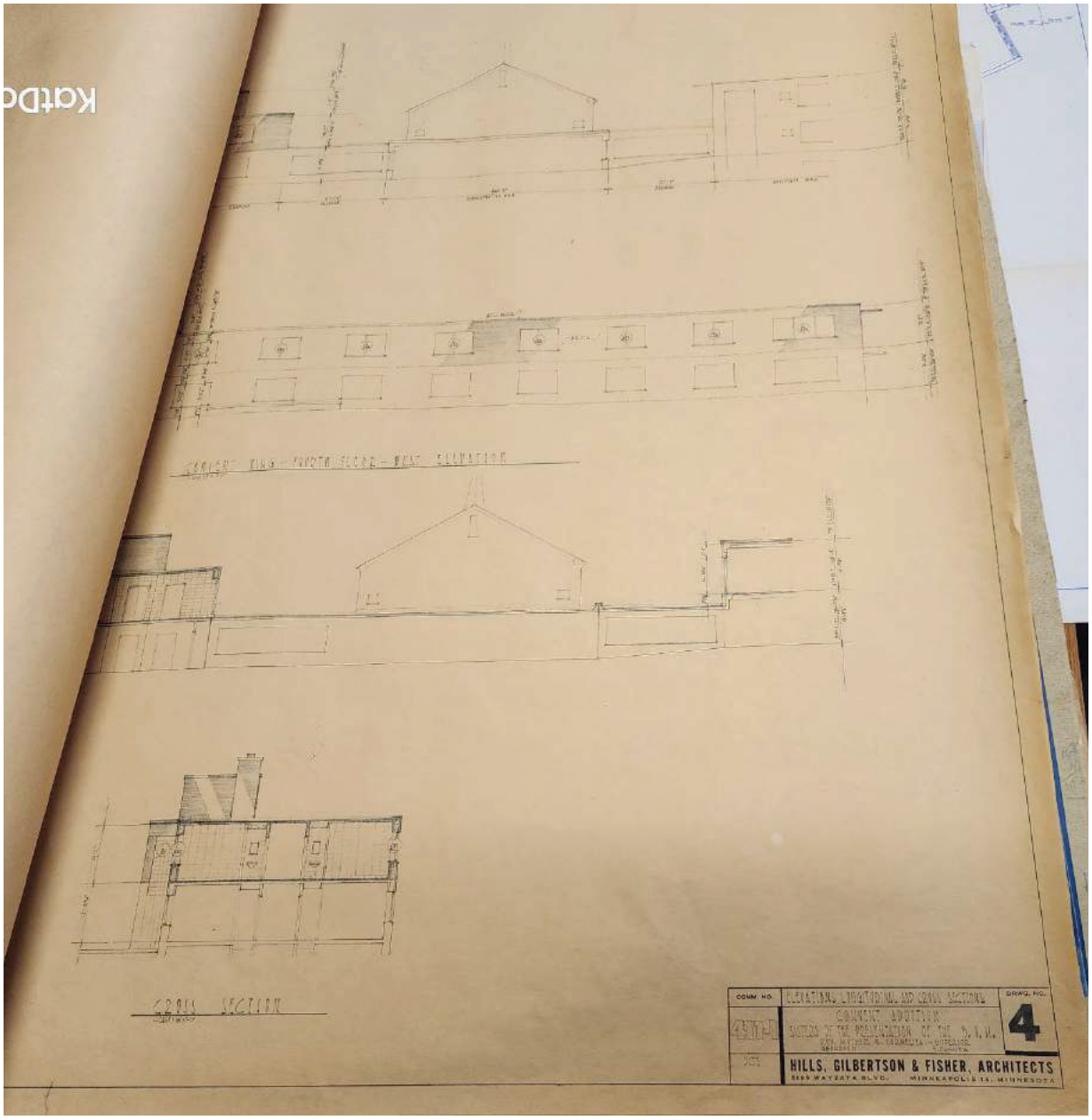


Figure 110 Convent Addition Elevations, Longitudinal, and Cross Sections
Source: (K. Daly, personal communication, January 24, 2024)

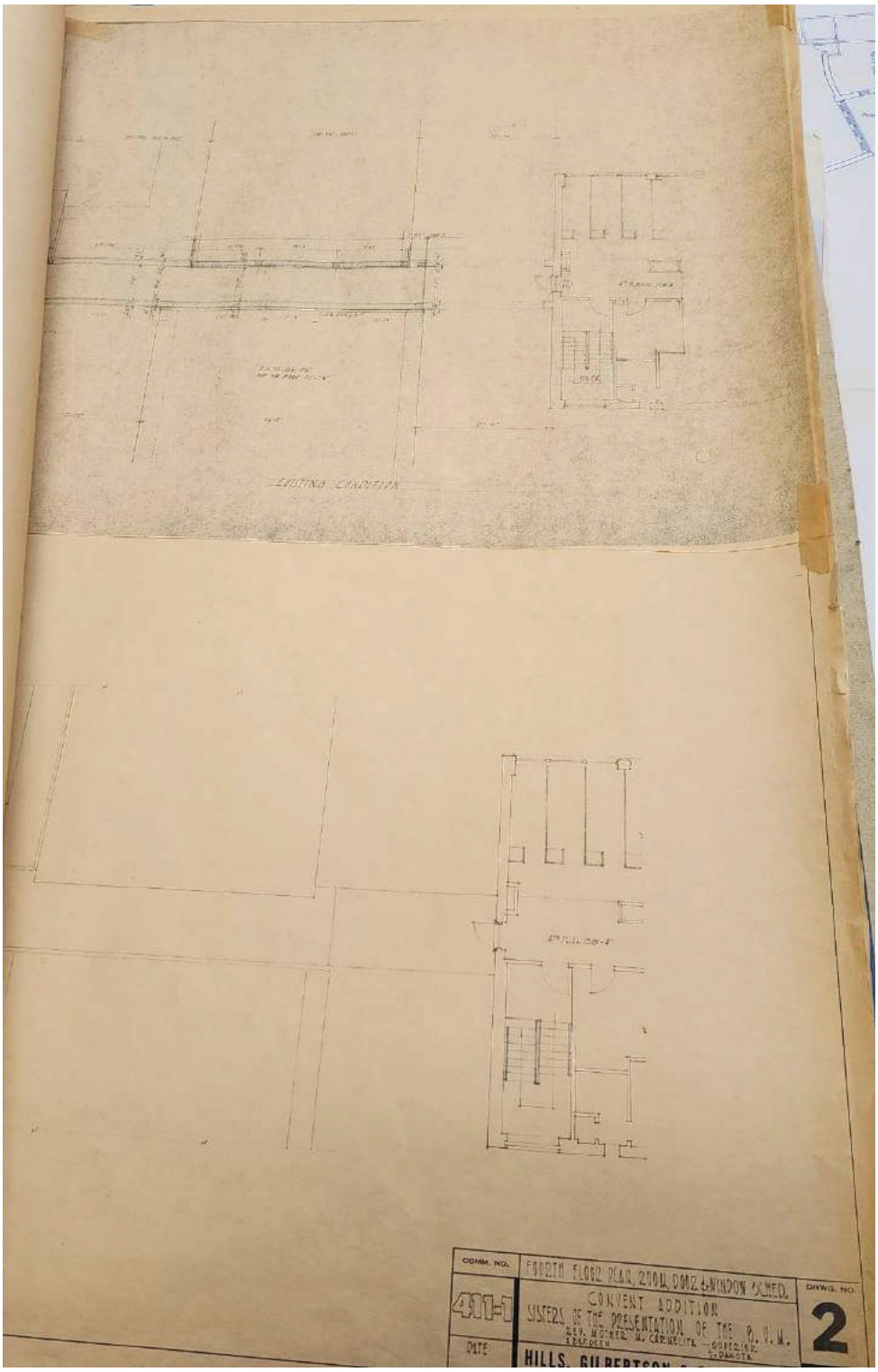


Figure 111 Convent Addition Fourth Floor Plan, Room, Door and Window Schedule
Source: (K. Daly, personal communication, January 24, 2024)

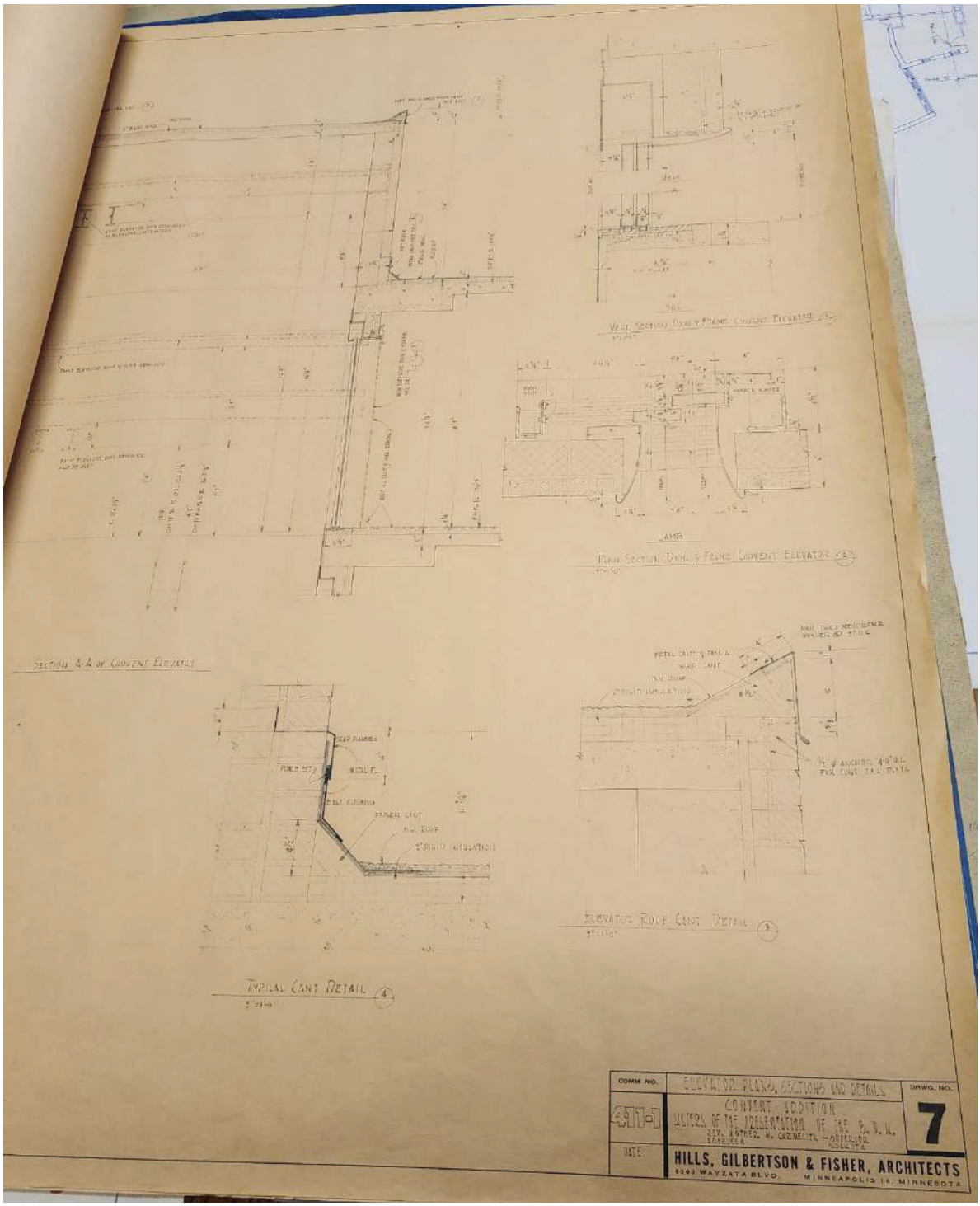


Figure 112 Convent Addition Elevator Plans, Section, and Details
Source: (K. Daly, personal communication, January 24, 2024)

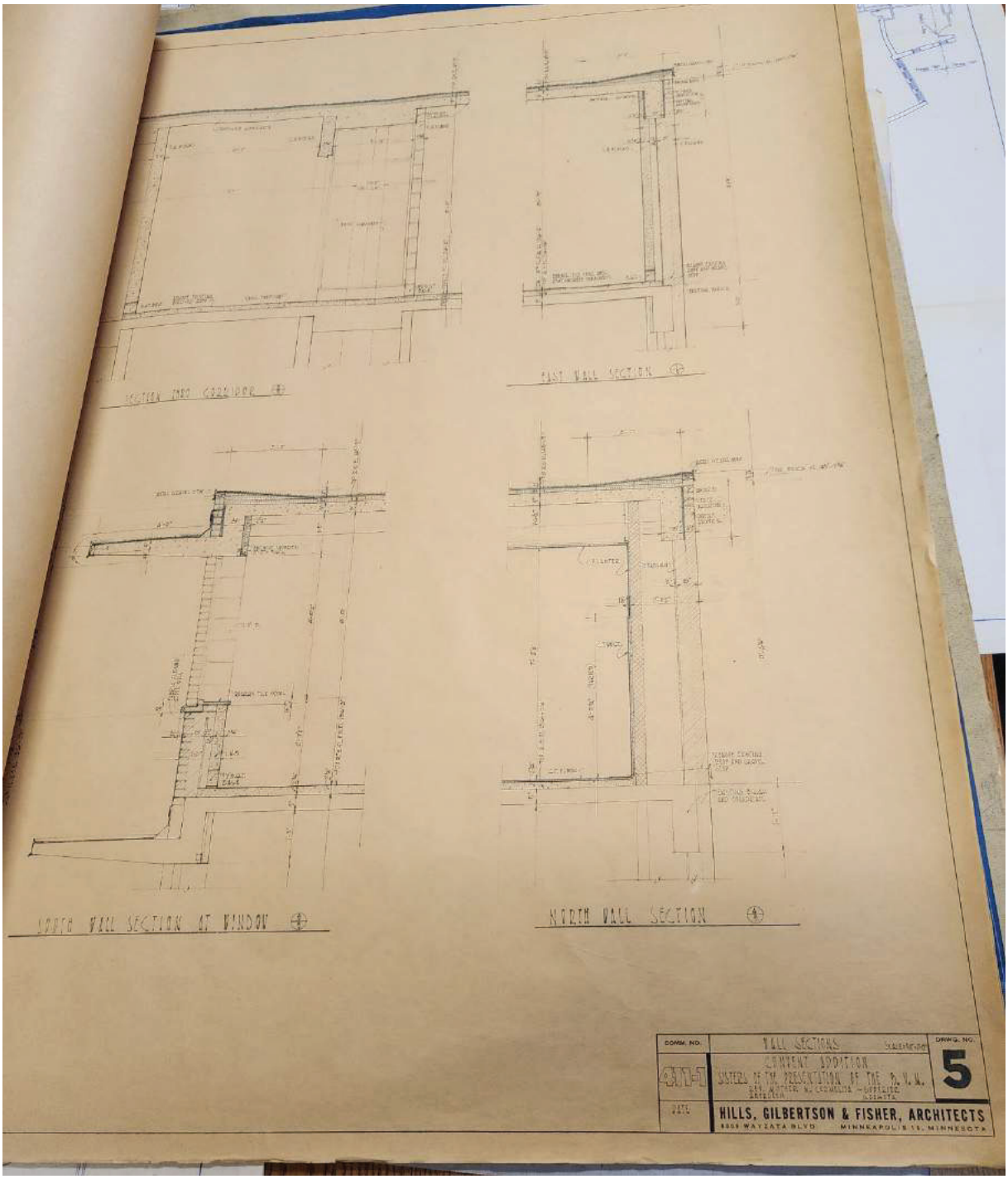


Figure 113 Convent Addition Wall Sections
Source: (K. Daly, personal communication, January 24, 2024)

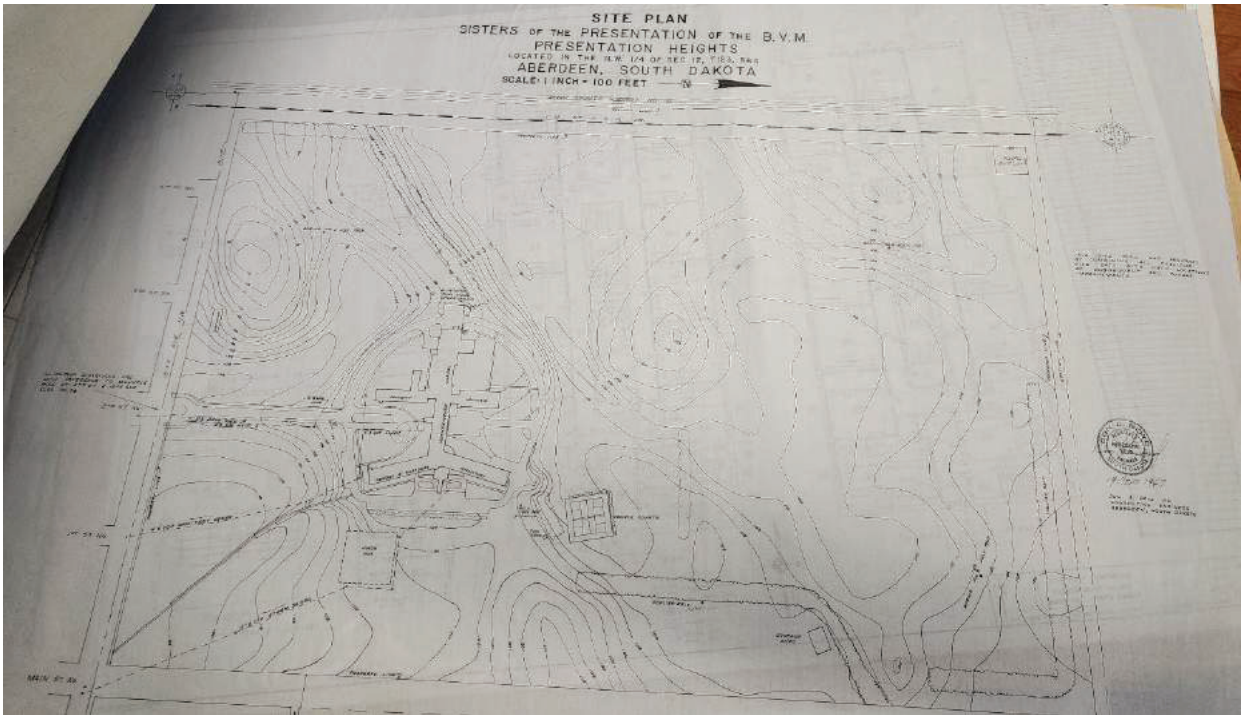


Figure 114 Presentation College Site Plan and topography lines
Source: (K. Daly, personal communication, January 24, 2024)

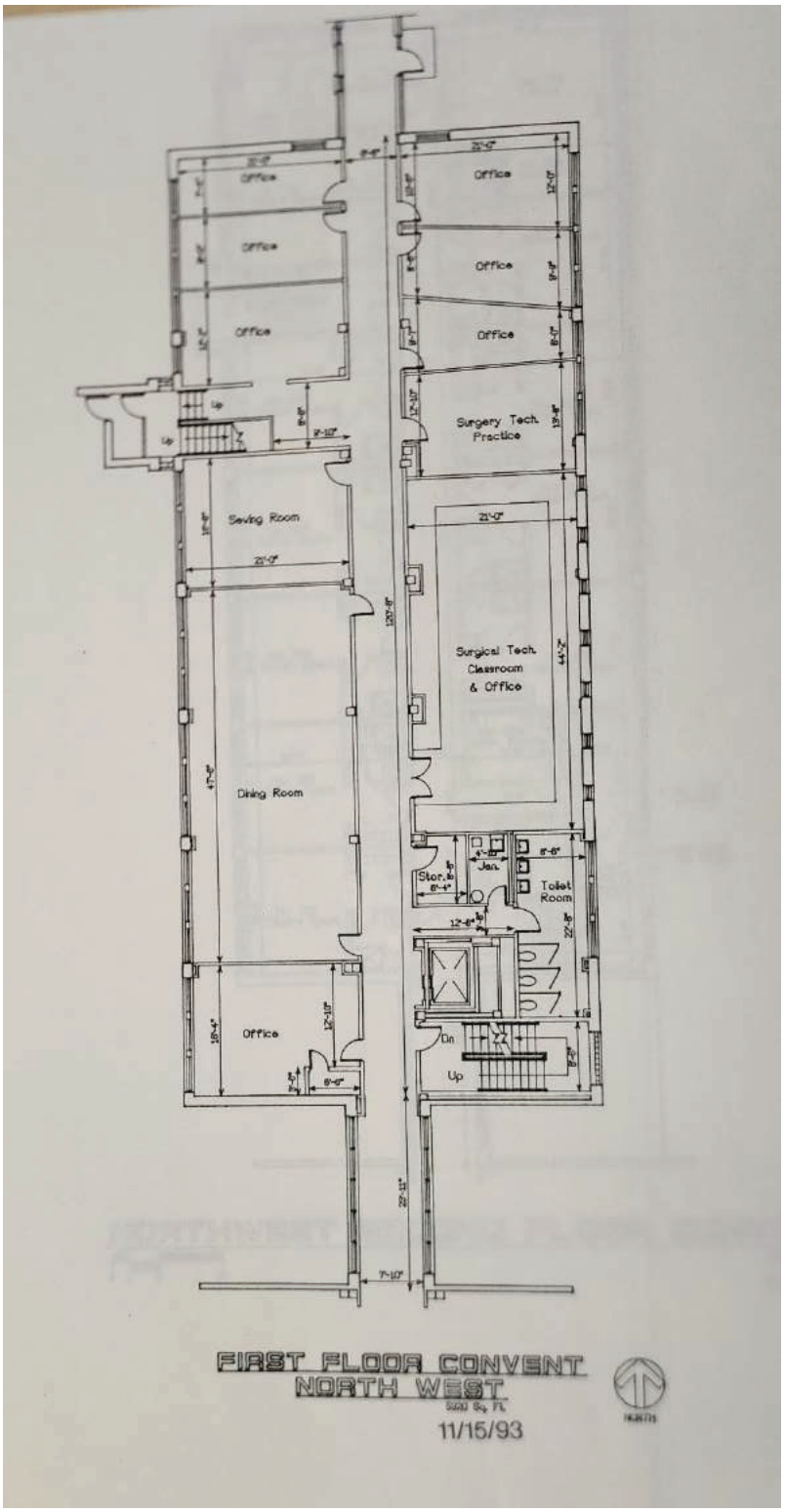


Figure 115 Convent first floor plan
Source: (K. Daly, personal communication, January 24, 2024)

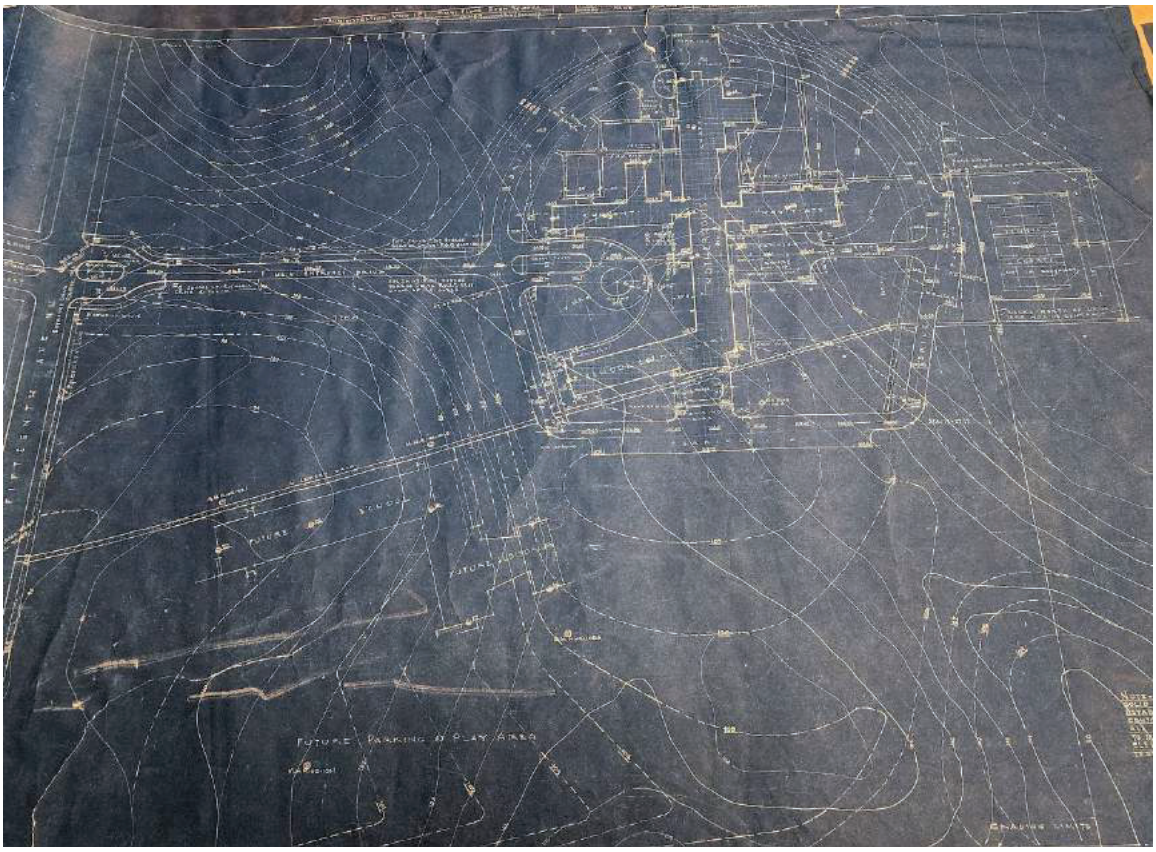


Figure 116 Presentation College detailed site plan
Source: (K. Daly, personal communication, January 24, 2024)

Figure 117 Auditorium, garage, boiler room, and laundry room floor plan
Source: (K. Daly, personal communication, January 24, 2024)

Figure 118 Presentation College historic image
Source: (K. Daly, personal communication, January 24, 2024)

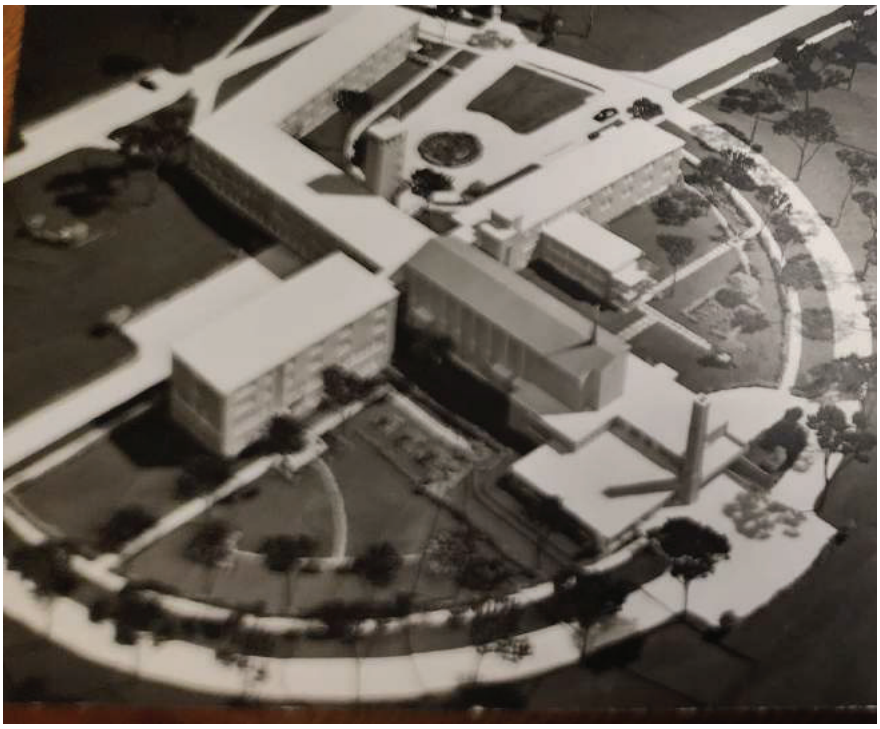


Figure 119 Presentation College historic aerial image
Source: (K. Daly, personal communication, January 24, 2024)

4. RESULTS AND CONCLUSIONS

4.1. Final Project Description

Located in the northwest corner of Aberdeen, South Dakota, the original campus of Presentation College owned by the Presentation Sisters is adaptively reused for new functions and occupancy that adheres to the needs of the city of Aberdeen. In this campus master plan, the space is sectioned off into different categories to develop multi-purpose spaces for community and public use. This plan focuses on five different aspects existing on the campus: a technical school for the city of Aberdeen, affordable housing, preservation of the Native Prairieland for a natural park, leasable office space, and buildings/spaces purchased by the city of Aberdeen for recreational use and function.

In this design, the original structures and natural existing areas are maintained to preserve the cultural heritage of the previous college and the Presentation Sisters while establishing new functionality and use for the city. These prospects create new spaces for public and personal use that will in turn generate income and a destination aspect to the city while overall developing a solution that will prevent vacancies and eventual demolition to closed college campuses.

4.2. Project Objective

This proposal focuses on four major goals for the campus and for the city of Abeerdeen:

1. Reduce CO2 emissions and building energy consumption
2. Bring new occupancy back into vacant buildings on closed college campuses
3. Develop strategies that adhere to Aberdeen’s Comprehensive Plan
4. Keep cultural memory of the city intact

As stated above, this master plan incorporates five different aspects on the campus: a technical school, affordable housing, naturally preserved Native Prairieland areas, leasable office

space, and buildings purchased by the city for recreational use. When determining programming for these existing spaces, research of the Aberdeen Comprehensive Plan for 2050 as well as the interviews conducted were referenced to determine what will most benefit Aberdeen. Between the interviews and study of the Comprehensive Plan, it was determined that affordable housing and the rehabilitation and revitalization of tired neighborhoods was a major focus for the future of Aberdeen. Because of this, the masterplan proposes the reuse of the existing northwest student housing suites for apartments and the addition of townhomes on the southwest portion of the campus. This proposal adheres to the city's needs for affordable housing and revitalization of tired neighborhoods. The current campus and surrounding areas fall into an R-1 Low Density Residential Zoning area, but the 2050 Comprehensive Plan proposes land use to incorporate Institutional Use on the campus and Medium Density Residential Zoning surrounding the campus. Furthermore, the Comprehensive Plan asks for a highly qualified, skilled, and educated labor force that meets the employment needs of existing businesses as well as an economic development program that facilitates business start-ups, fosters expansion of existing businesses, and attracts new employees.

During the interview conducted with city manager Robin Bobzien and City Engineer Stu Nelson, the pair talked about different facility uses for the vacant spaces, including residential units, retirement living, office spaces, educational purposes, and affordable housing for the northern part of the undeveloped campus. A higher education technical school does not exist in Aberdeen, specifically aiming at the trades (electrical, mechanical, plumbing, building, etc.). Presentation College was an institution that specialized in Health and Sciences, Nursing, and Social Sciences and Humanities, but after closure, the public higher education institution in Aberdeen, Northern State University, added a four-year nursing degree to their programming.

For this reason, redeveloping a space that incorporates nursing and health sciences would not be feasible for the city. On the other hand, the public high school in Aberdeen, Central High School, offers vocational technical classes to their students. With the incorporation of a higher education technical school in Aberdeen in the existing Administration Building and Nurse's Education Building of Presentation College, this will establish a higher education institution in Aberdeen aimed at offering courses in the trades that does not currently exist in the city and allow for the opportunity for students at Central High School and surrounding areas in South Dakota to continue their education. The existing east student housing suites will serve as an on-campus apartment for students of the technical school.

Furthermore, the existing convent for the Presentation Sisters offers two separate buildings of four levels (7,800 square feet per floor) that is proposed for redevelopment for leasable office space, another prospect that will follow the needs for the city of Aberdeen and benefit its economy. The Native Prairieland areas (five areas for a total of 24 acres) were left untouched to preserve the original species that existed on the campus and adhere to the cultural memory of the Presentation Sisters and their Laudato Si movement to start taking care of our environment and bringing it back to its roots. This restoration process was inspired by Pope Francis's book, Laudato Si, that focuses on caring for our common home. While left untouched, pedestrian pathways were added surrounding parts of the native prairieland to allow for the community to participate and experience these areas in an environmentally friendly way. Parking, too, was added to hold the multi-functioning technical school and office space. The Strode Activity Center, Winter Dome, soccer field, and undeveloped parcel of land to the north was left untouched as it was purchased by the city and allows for a multi-functioning and parceled off reused campus.

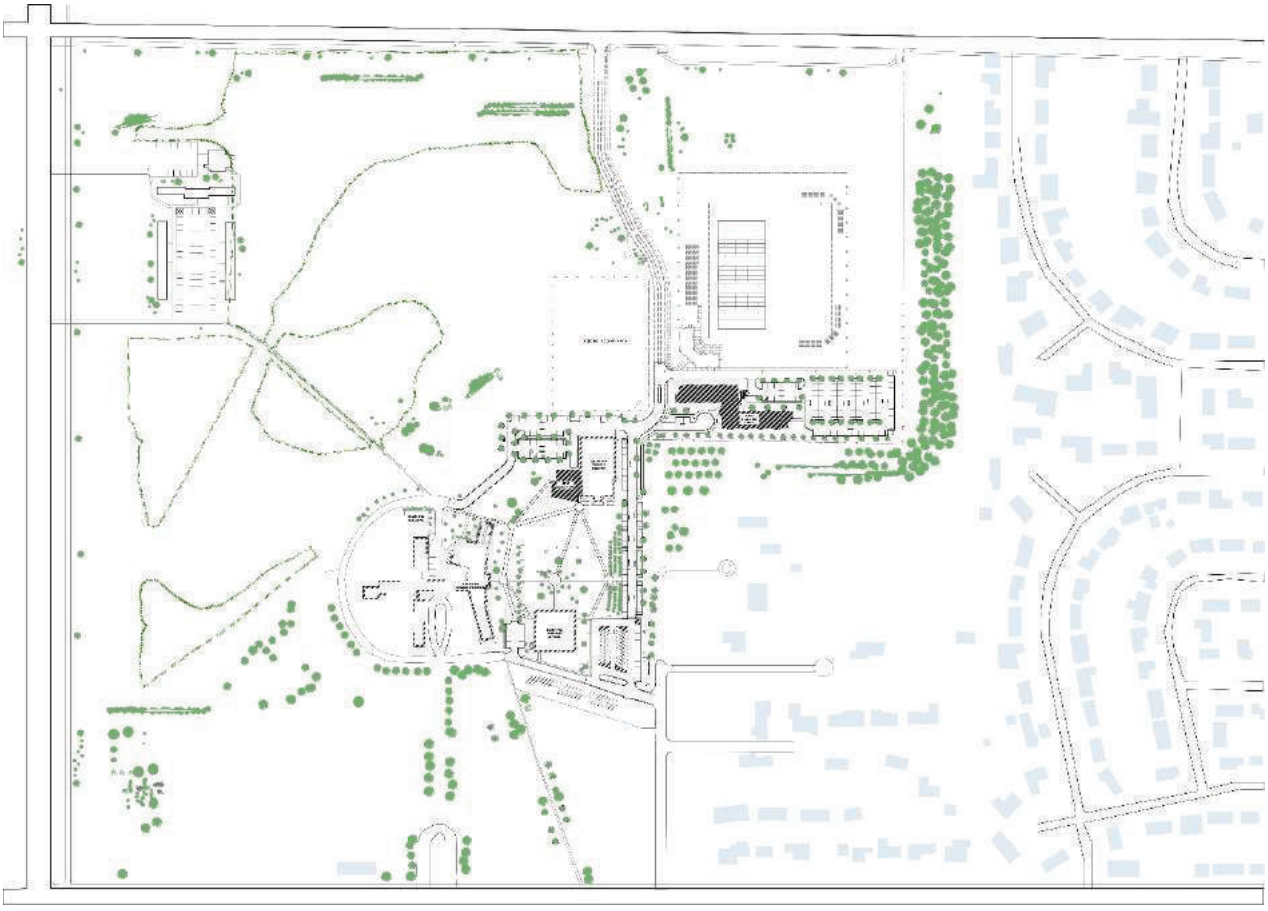


Figure 120 Vegetation site plan

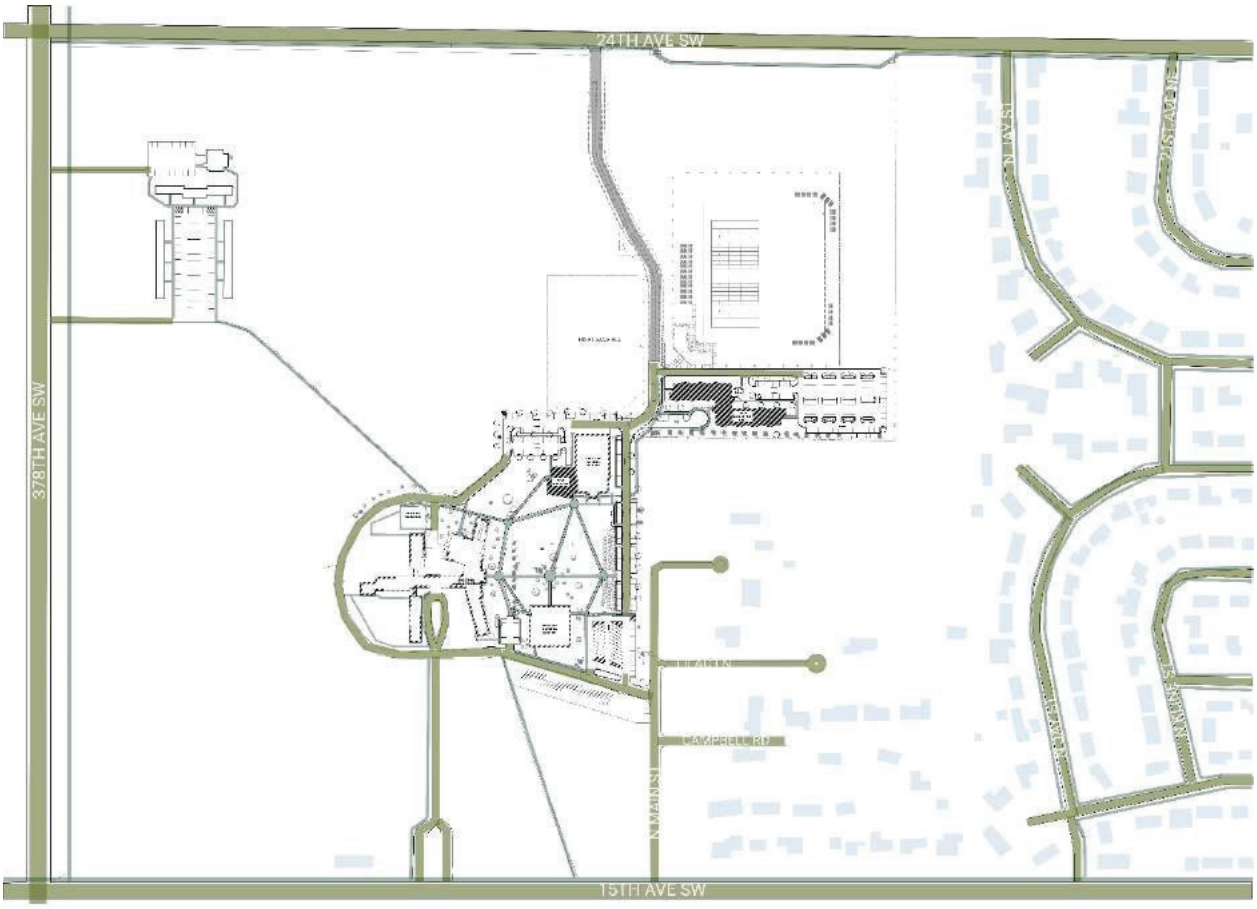


Figure 121 Circulation site plan

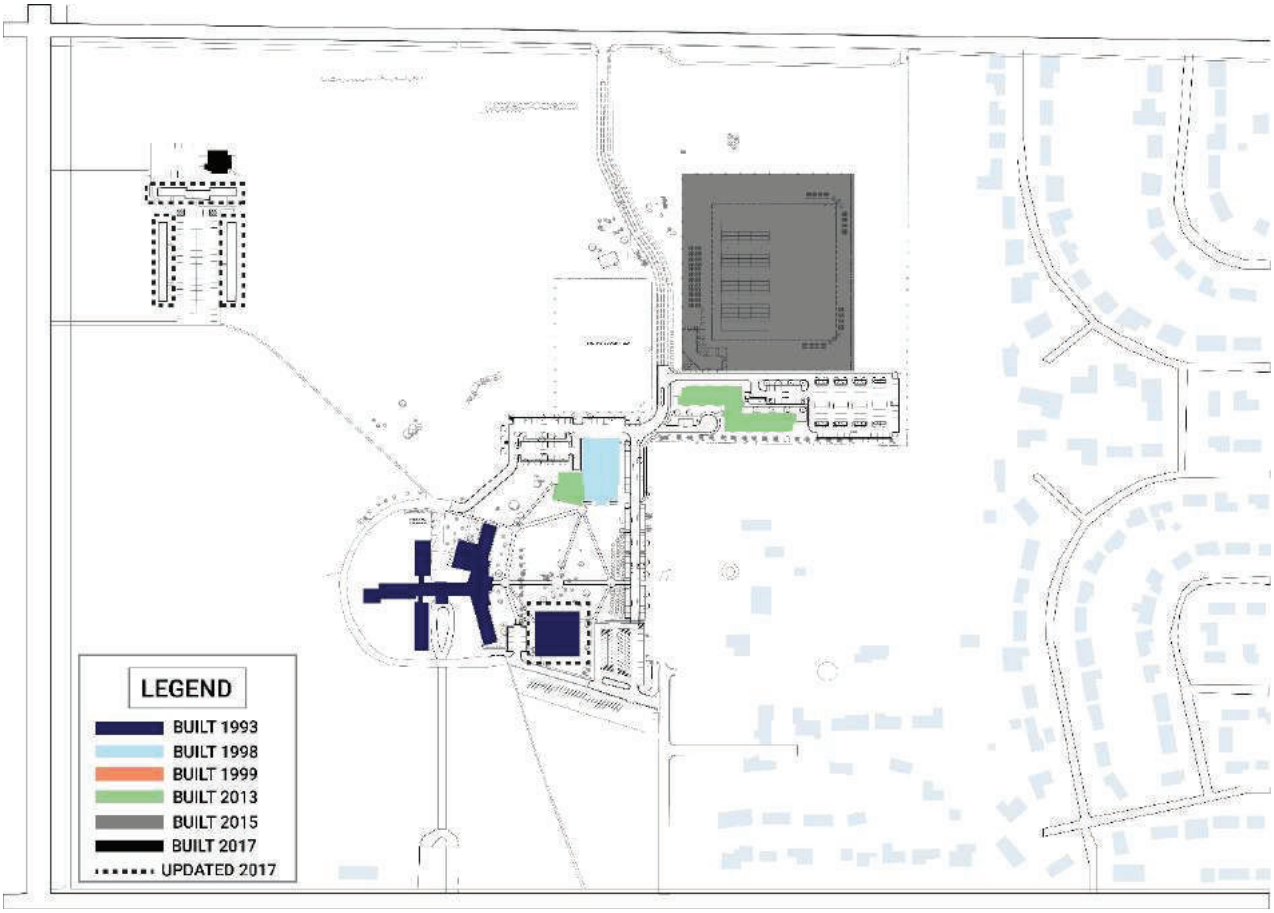


Figure 122 Existing campus buildings years built map

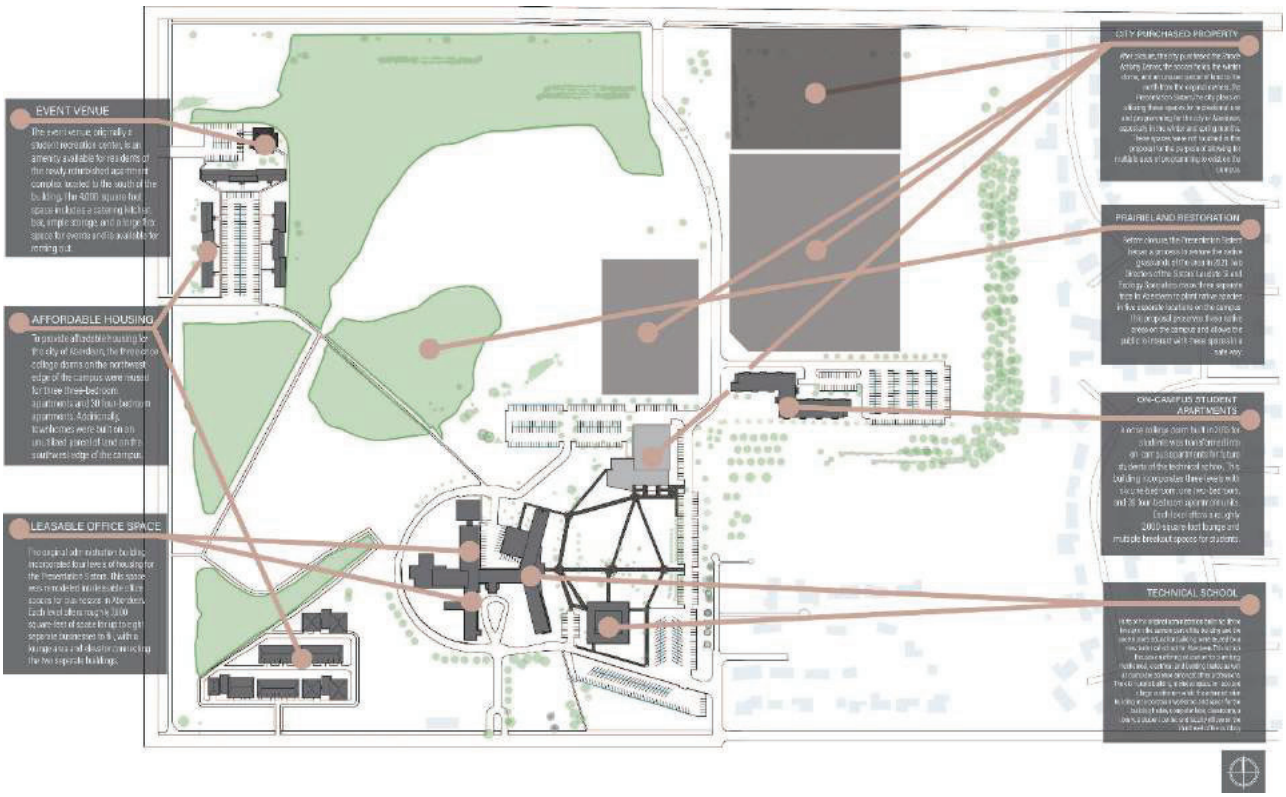


Figure 123 Proposed Site Plan

4.3.1. Northeast Technical School

This proposal focuses on adaptively reusing the Administration Building and Nurse's Education building to incorporate functioning for a higher education technical school that specializes in the building and construction trades, computer science, mechanical, electrical, and plumbing. These spaces incorporate classrooms, breakout spaces, computer labs, a project workshop, instructional and research labs, a student community center and café, and faculty offices on the third level of the original Administration Building. This building centers around programming for computer science and the building and construction trades and houses room for student interaction and the library on the second level. In the original Nurse's Education Building, now renamed the Northeast Technical Learning Center, centers around an auditorium for larger classes, training rooms, process labs, and labs for mechanical, electrical, and engineering programming. Furthermore, the original east student housing suites were renovated into six one-bedroom apartments, one two-bedroom apartments, and 39 four-bedroom apartments with a community lounge (roughly 2,000 square feet) on each (three) level.

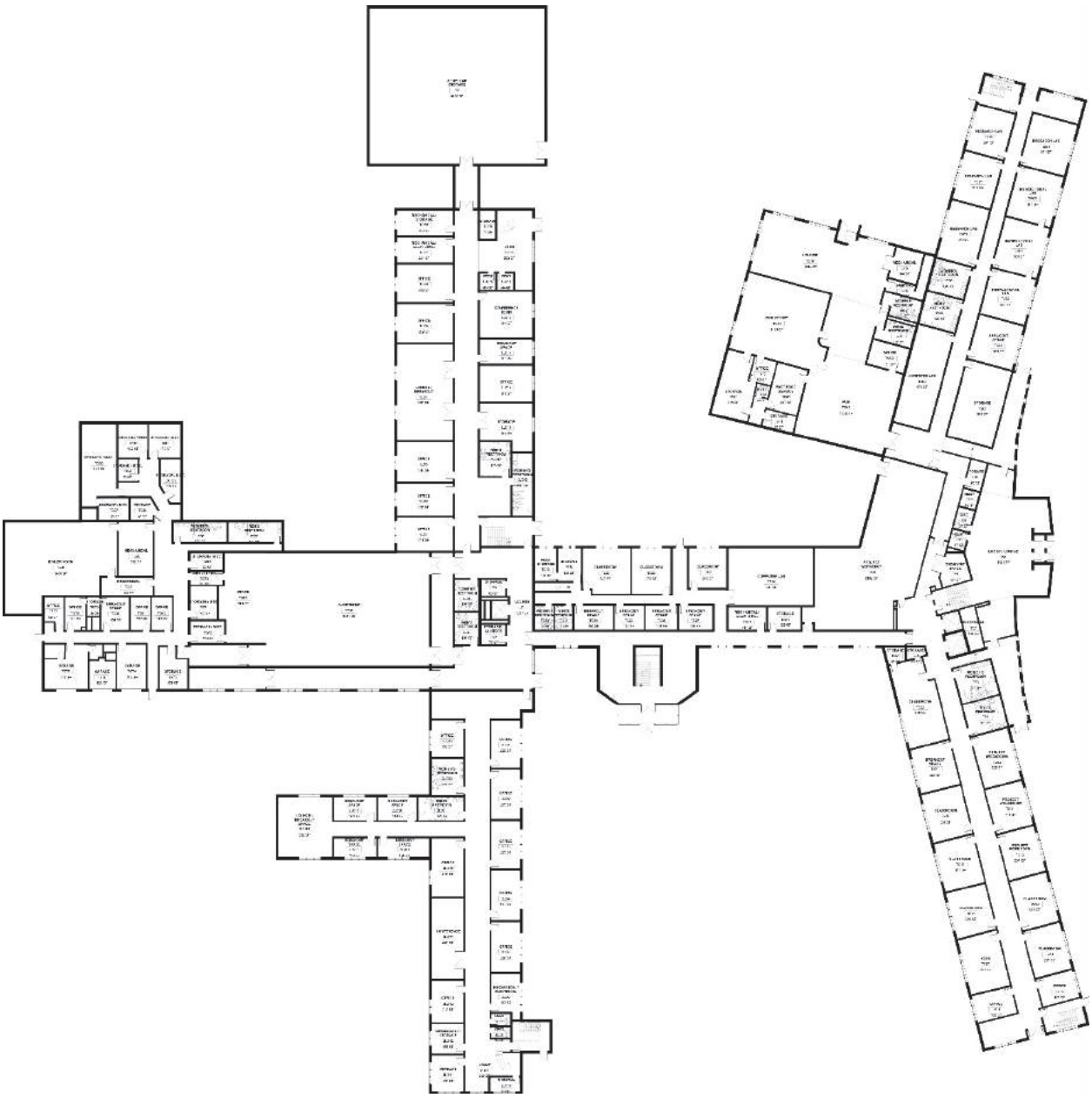


Figure 124 First level floor plan of overall Northeast Technical Building (right), leasable office spaces (central north and west), auditorium/existing chapel and mechanical/boiler room (left)

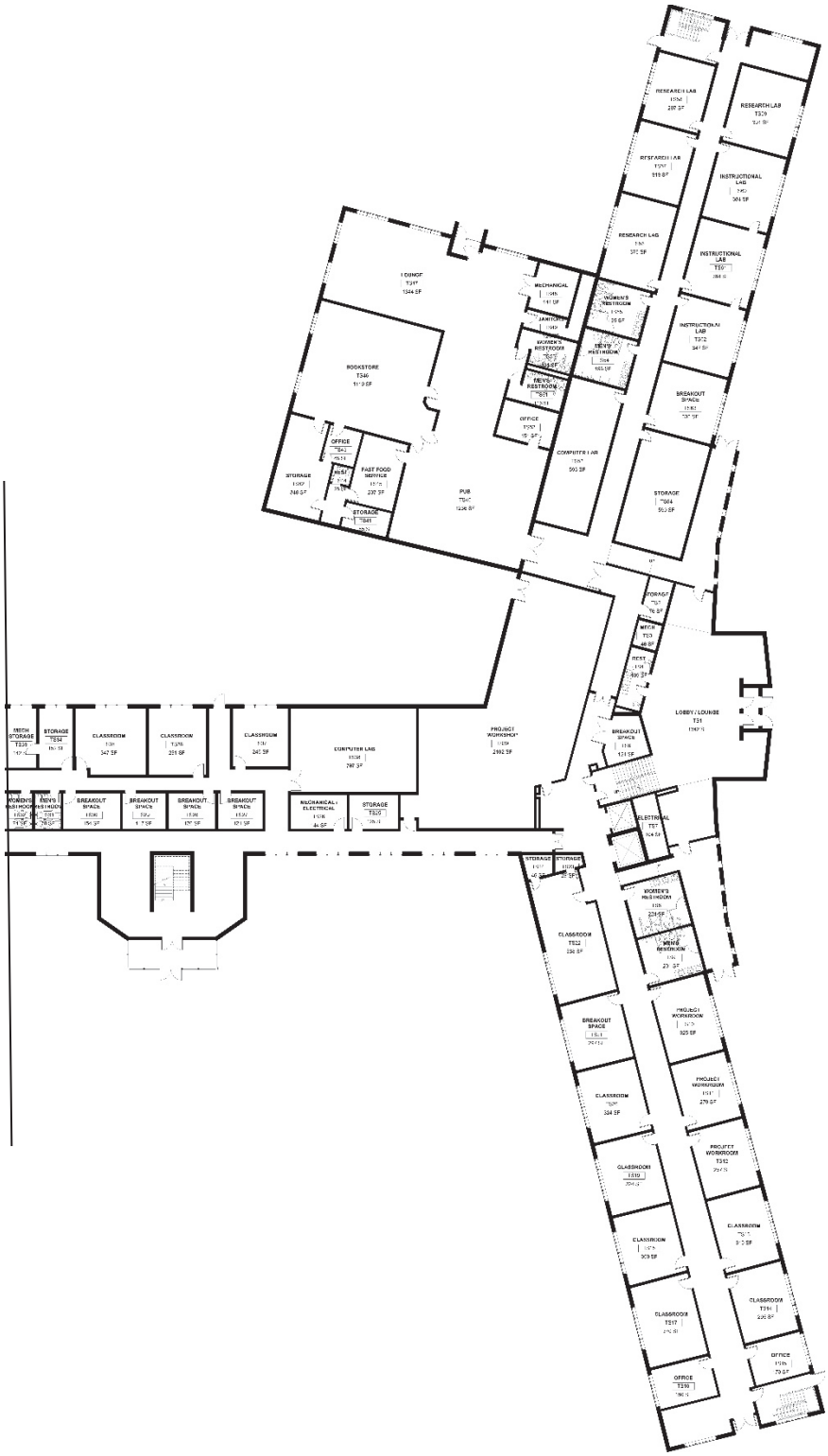


Figure 125 Northeast Technical School Level 1 Floor Plan

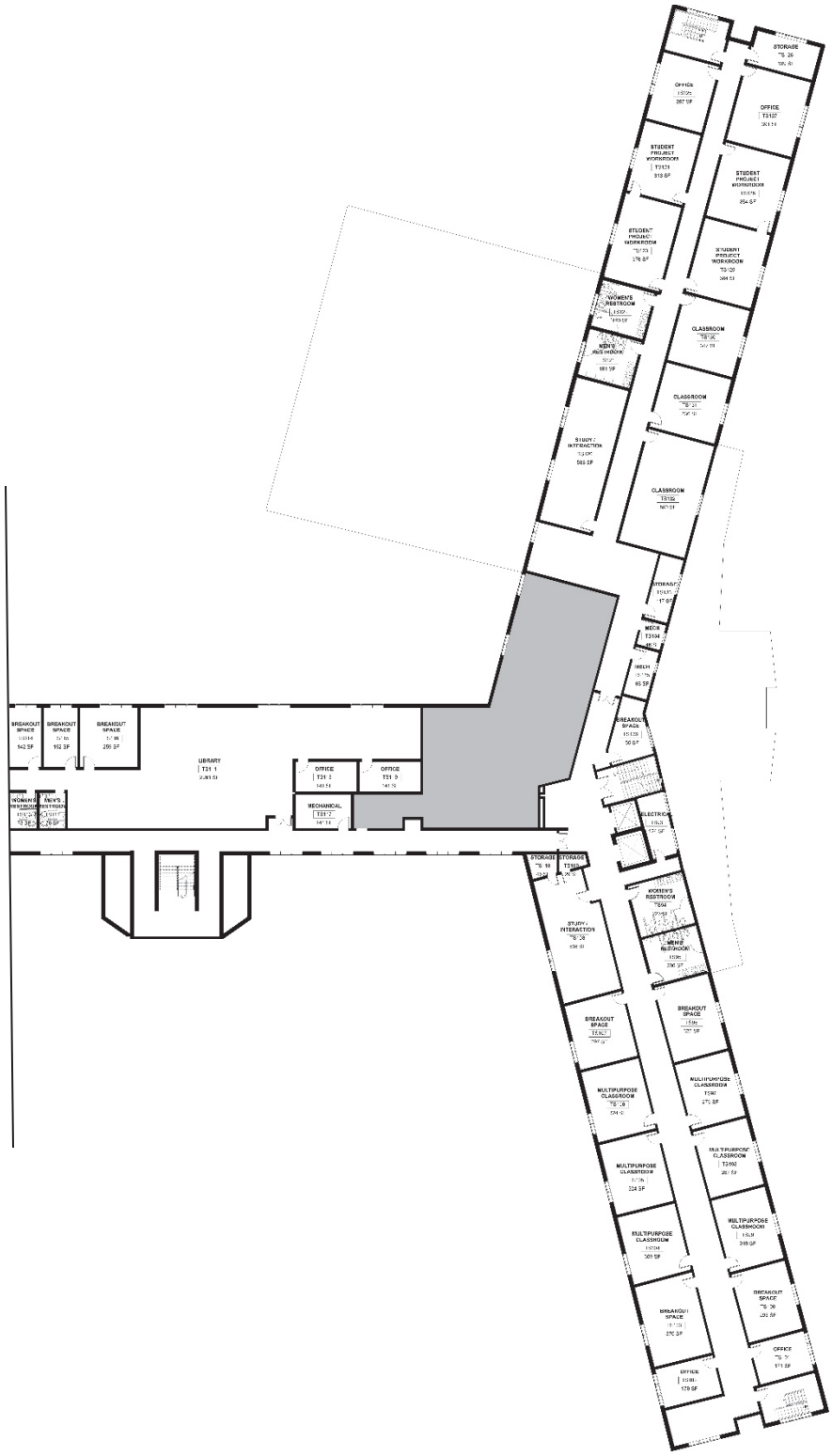


Figure 126 Northeast Technical School Level 2 Floor Plan

SCALE: 1/8" = 1' 0"

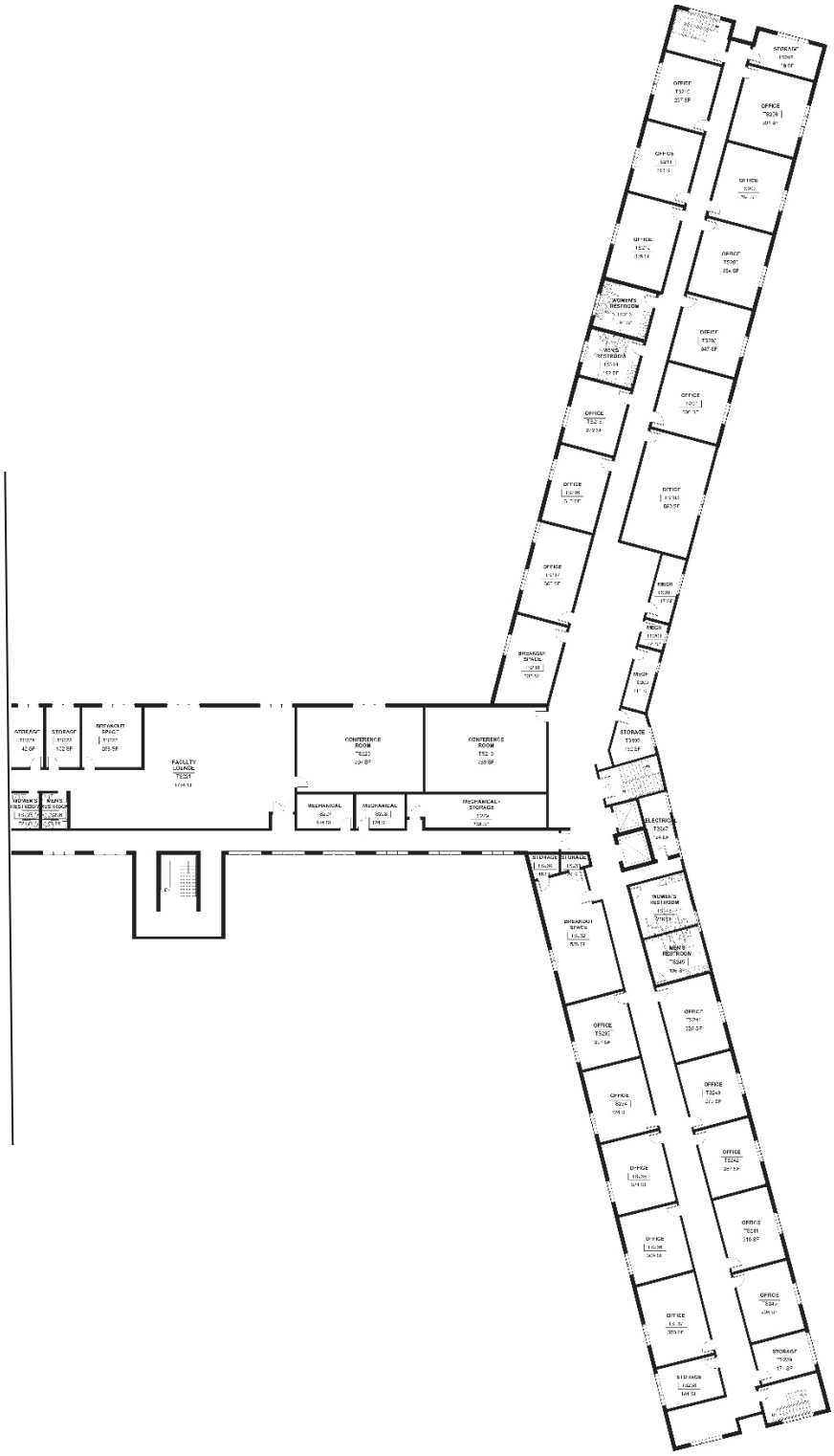


Figure 127 Northeast Technical School Level 3 Floor Plan

Figure 128 Northeast Technical School South Elevation

SCALE: 1/8" = 1' 0"

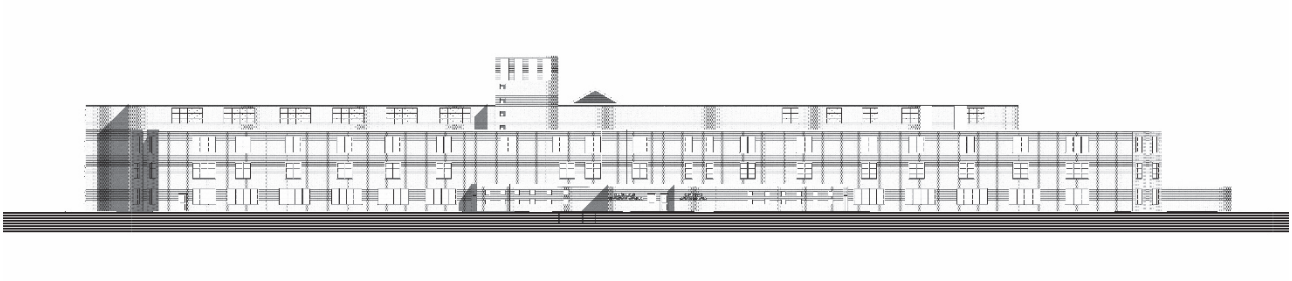


Figure 129 Northeast Technical School West Elevation

SCALE: 1/8" = 1' 0"

Figure 130 Northeast Technical School North Section

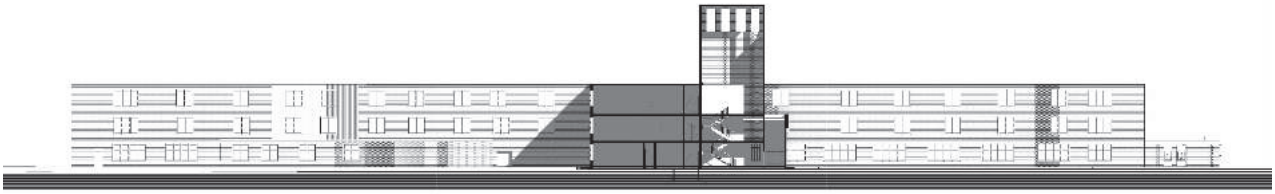


Figure 131 Northeast Technical School West Section

Figure 132 Northeast Technical Learning Center Floor Plan

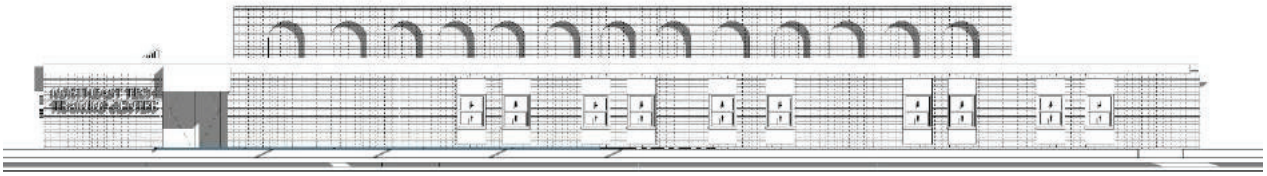


Figure 133 Northeast Technical Learning Center South Elevation

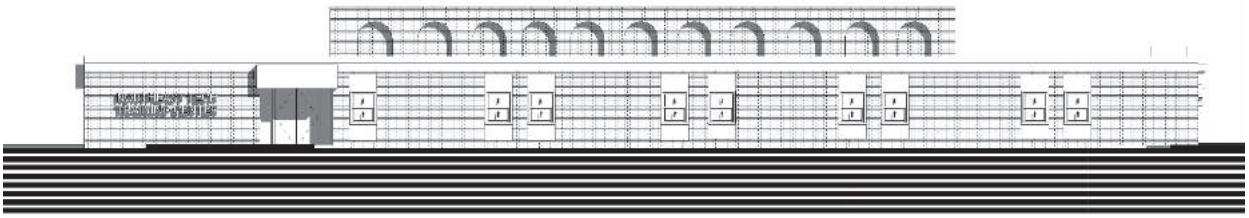


Figure 134 Northeast Technical Learning Center West Elevation

Figure 135 Exterior Northeast Technical School Campus Render

Figure 136 Northeast Technical School Interior Project Workshop Render

Figure 137 Northeast Technical School Interior Computer Lab Render

Figure 138 Level 1 On-Campus Student Apartments

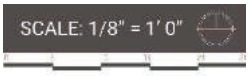
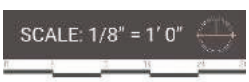


Figure 139 Levels 2 and 3 On-Campus Student Apartments



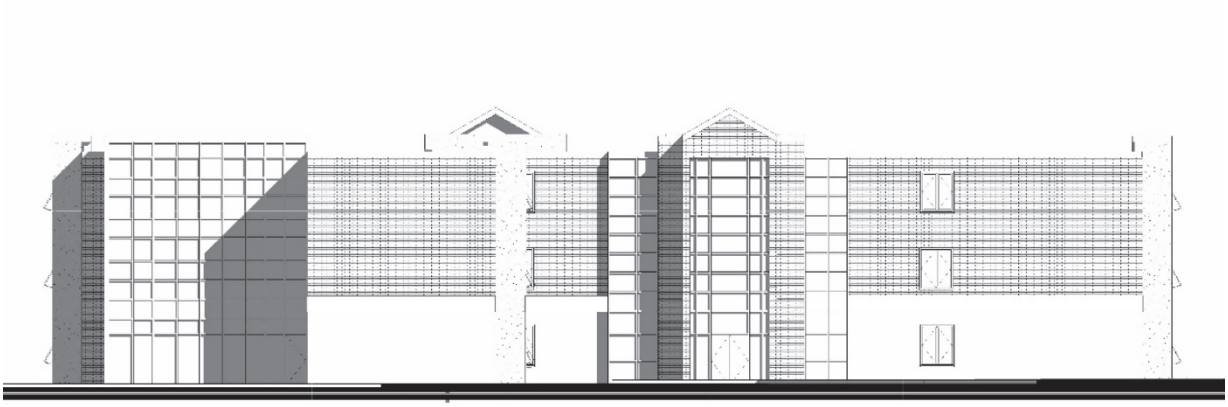


Figure 140 On-Campus Student Apartments West Elevation

SCALE: 1/8" = 1' 0"

Figure 141 On-Campus Student Apartments South Elevation

SCALE: 1/8" = 1' 0"

4.3.2. Leasable Office Space

The leasable office space renovation is located in the original convent space of the Administration Building. This includes two separate buildings of four levels each with roughly 7,800 square feet of office space on each floor. Connecting the two buildings is a lounge area with an elevator and communal bathrooms.

Figure 142 Leasable Office Space and Communal Lounge Level 1 Floor Plan

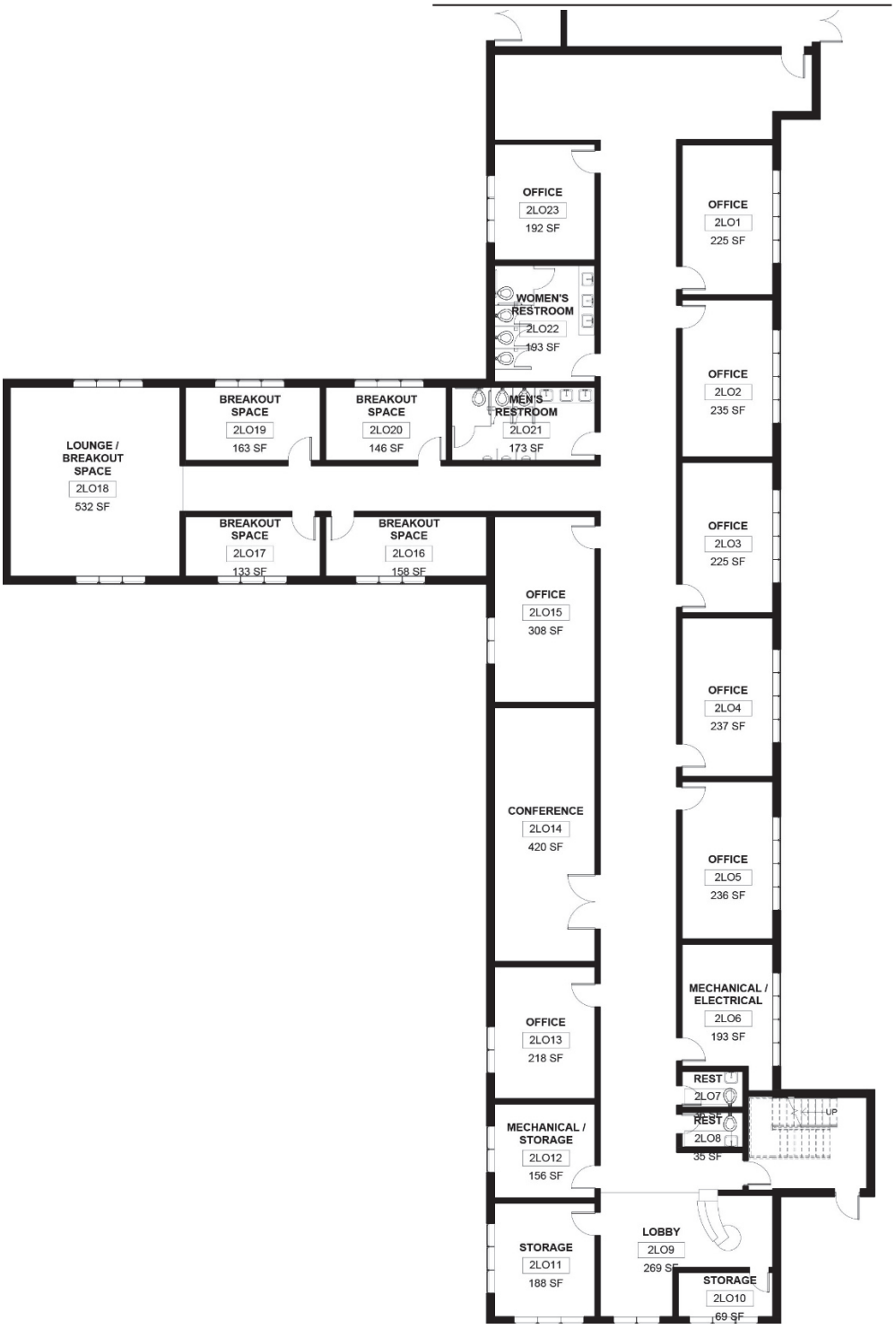


Figure 143 Leasable Office Space Southern Building Level 1 Floor Plan Close Up

Figures 144 Leasable Office Space Northern Building Level 1 Floor Plan Close-Up

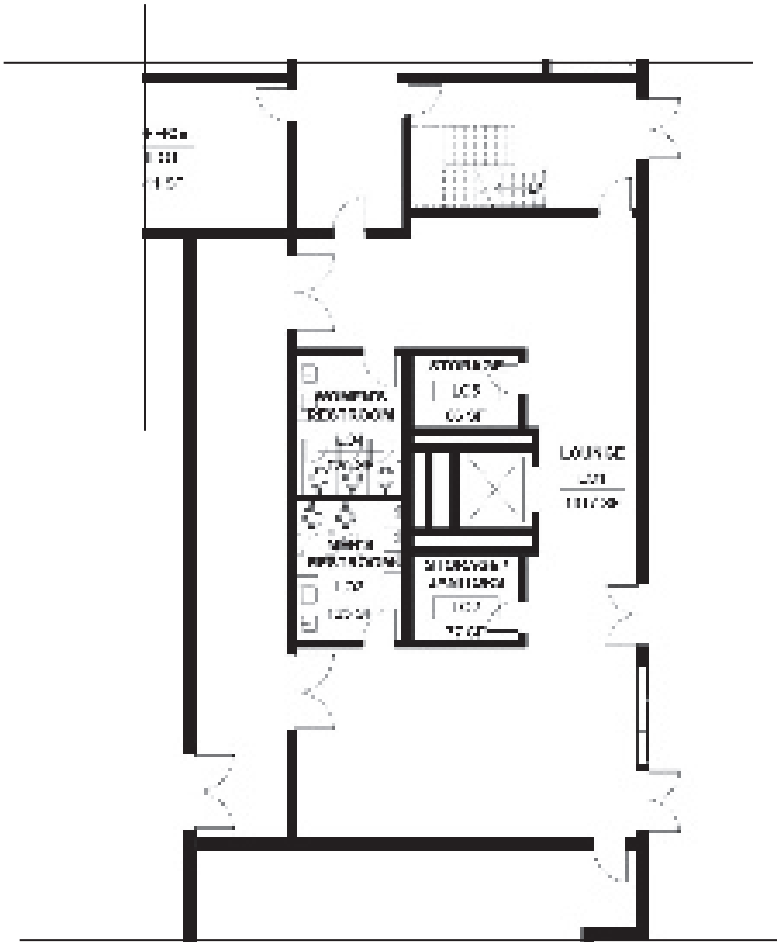
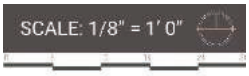


Figure 145 Leasable Office Space Level 1 Community Lounge



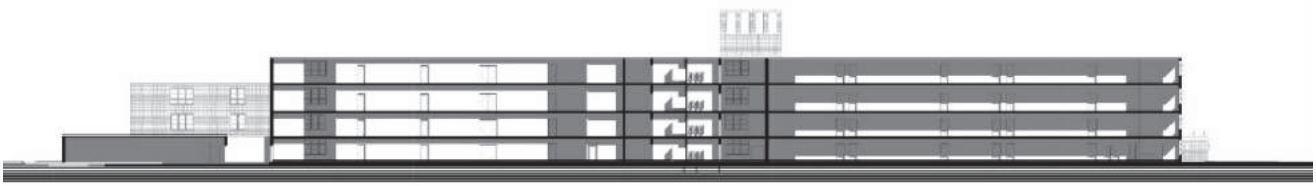


Figure 146 Leasable Office Space West Section

4.3.3. Affordable Housing

Located in the northwest student housing suites, this project proposes the reuse of these three buildings into affordable apartments. The spaces incorporate the original structure and materials to establish affordable apartments for rent: three three-bedroom apartments and 33 four-bedroom apartments for a total of 36 rental units. This complex also incorporates the original student community lounge to the north renovated into a leasable event space for residents and members of the community. Furthermore, located on the southwestern section of the campus are proposed new construction townhomes.

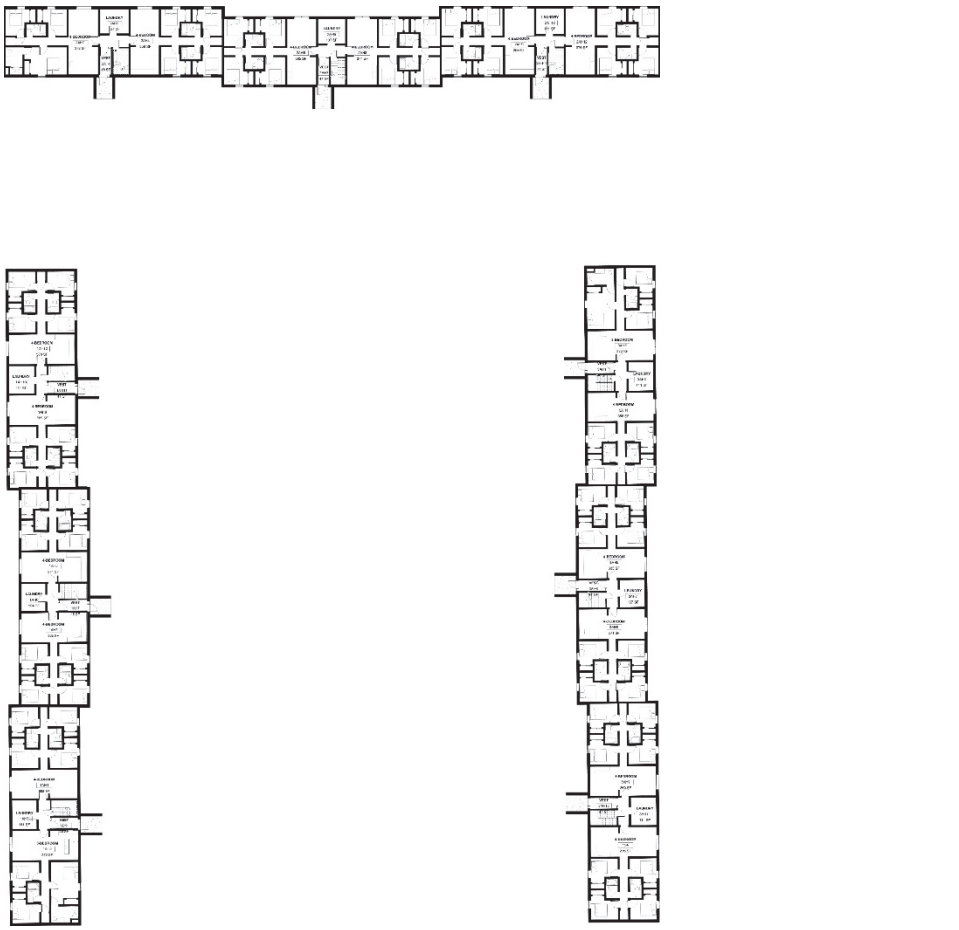


Figure 147 Affordable Housing Apartment Complex Level 1 Floor Plans

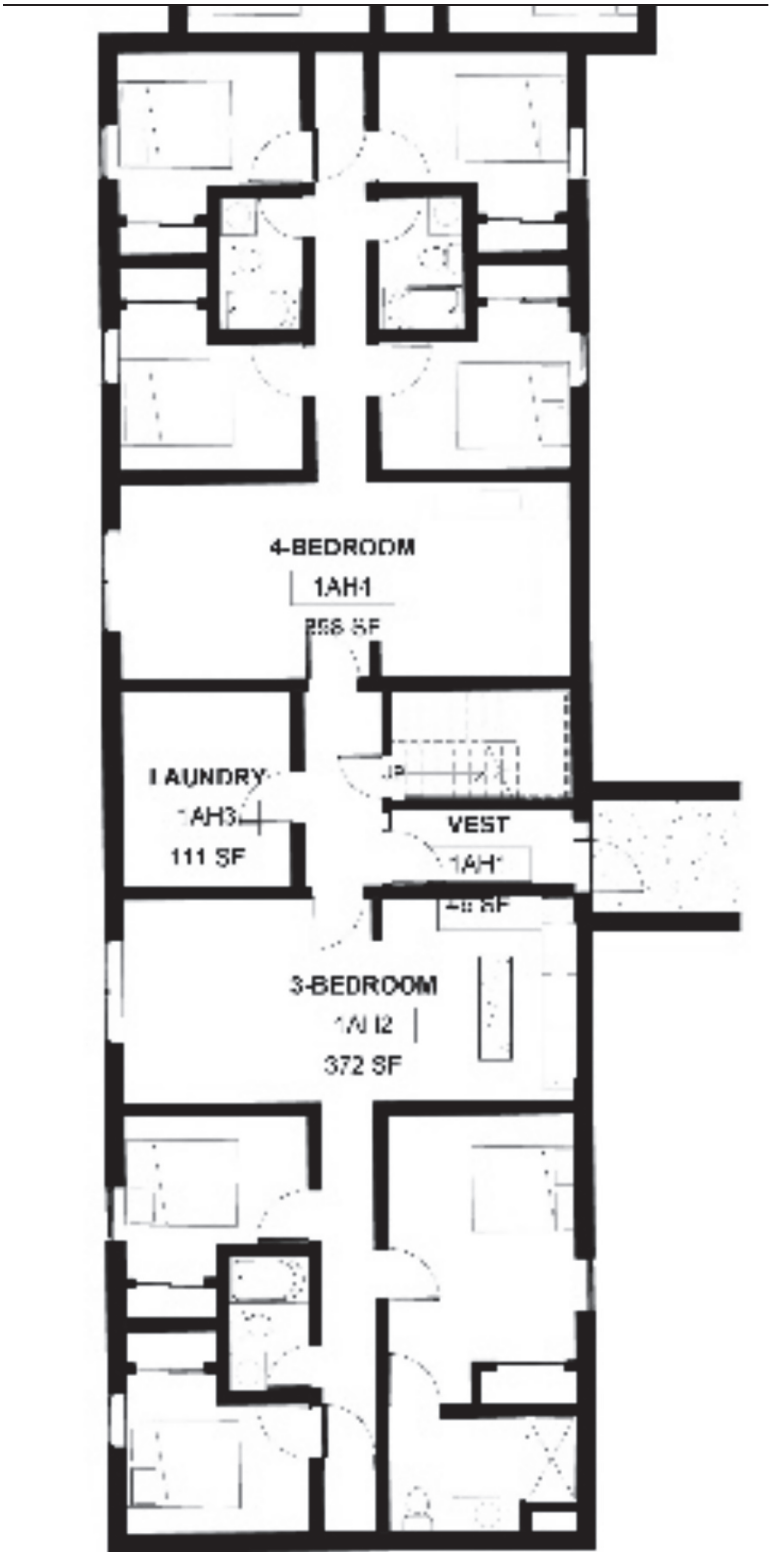


Figure 148 Affordable Housing Apartment Units Level 1 Floor Plan

Figure 149 Affordable Housing Apartment Units Level 2 Floor Plan

Figure 150 Affortable Housing Apartments South Elevation

SCALE: 1/8" = 1' 0"

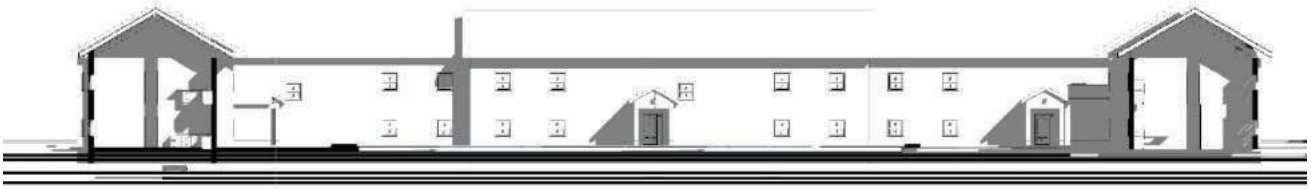


Figure 151 Affordable Housing Apartments South Section

SCALE: 1/8" = 1' 0"

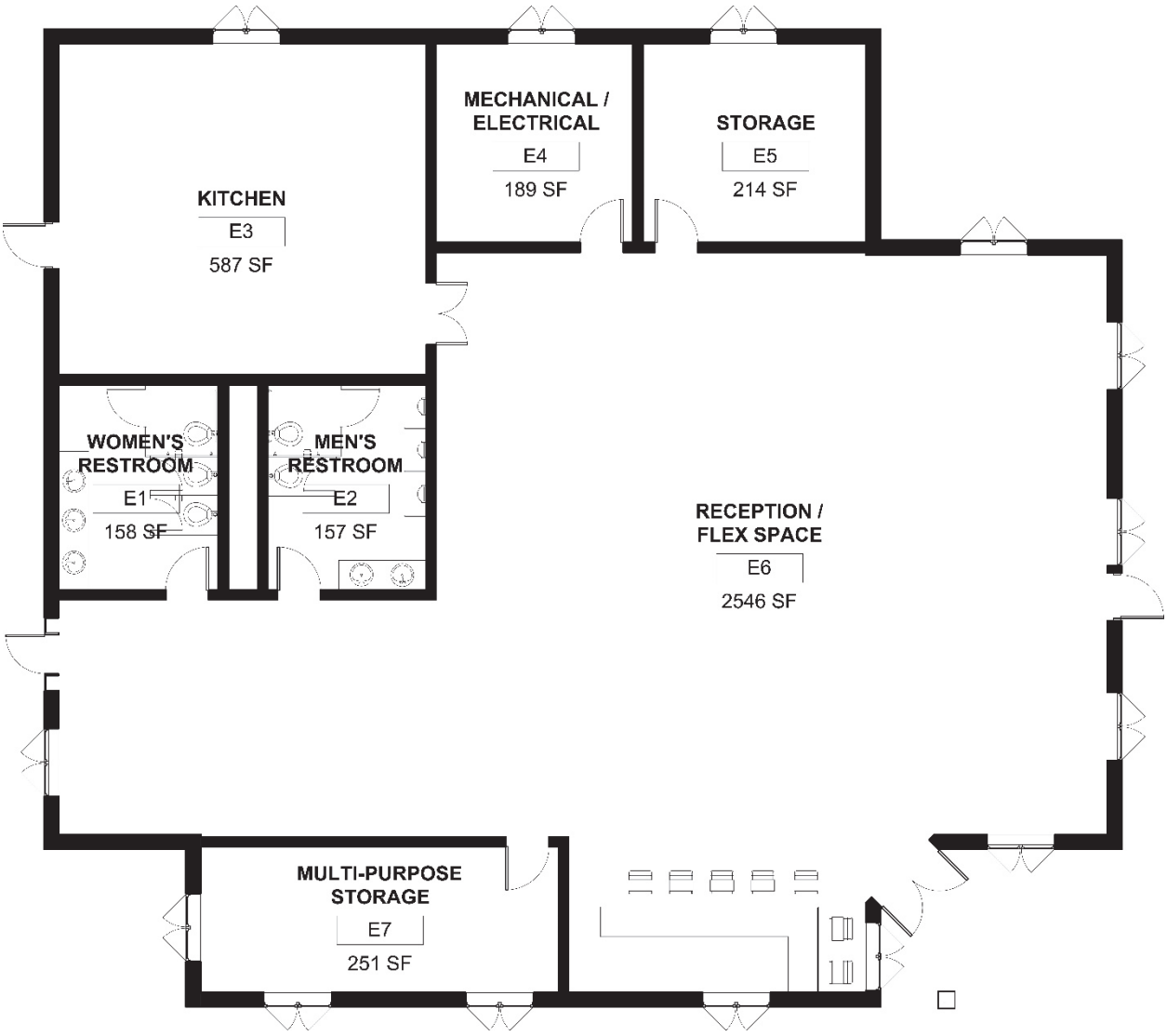


Figure 152 Affordable Housing Event Space Floor Plan

Figure 153 Affordable Housing Townhomes Exterior Render

Figure 15 Exterior Adaptive Reuse Campus Render

4.1. Conclusions

Overall, this project successfully implements adaptive reuse as a strategy for vacant college campuses after the spike in institutional closures and mergers following the COVID-19 pandemic and other factors such as pressures to lower tuition costs, stagnating state funding, and a shrinking number of high school graduates that has in turn lowered college enrollment and challenged these institutions' long-term viability. This strategy to parcel off and reuse campus buildings and green spaces allows for new functioning and occupancy to fill these vacancies based on city and community needs while still keeping the structural integrity and cultural core of the college intact. The solution for Aberdeen's Presentation College was to bring in higher level institutional functioning, affordable housing, and leasable office spaces that adhere to the 2050 Aberdeen Comprehensive Plan that calls for revitalized and inclusive housing and neighborhoods and establishes a highly qualified, skilled, and educated labor force that meets the employment needs of existing businesses as well as an economic development program that facilitates business start-ups, fosters expansion of existing businesses, and attracts new employees.

Adaptive reuse allows for the development of programming in existing buildings that does not exist or needs strengthening to better improve the city's economy and community as a whole. To be able to bring new occupancy into a space while still preserving the natural lands and cultural memory of a place to dually answer the demands of a community is a proposed strategy for the surplus of vacant college campuses throughout the United States following its recent closures.

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