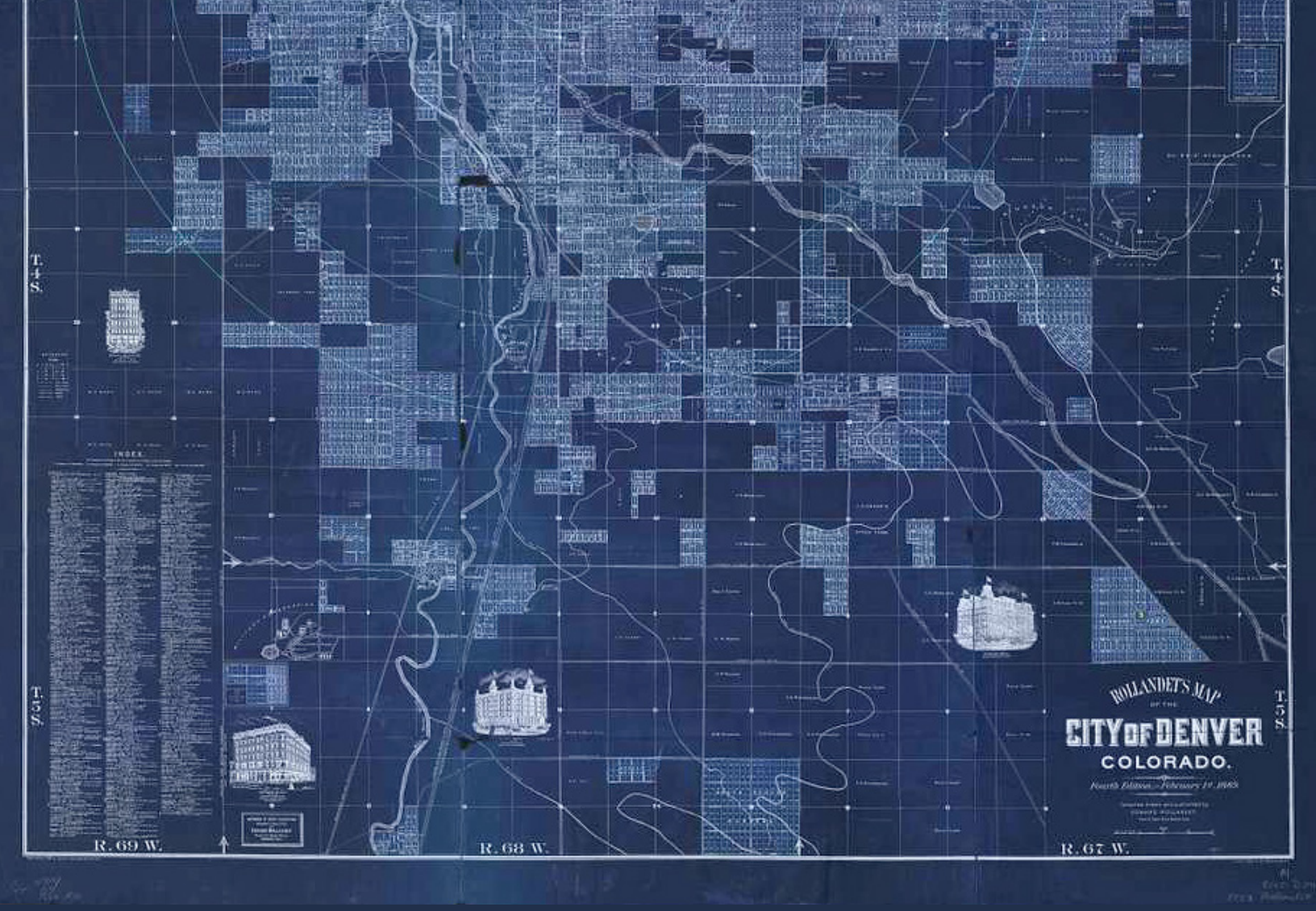

ADAPTIVE REUSE ASSESSMENT

Revising Redevelopment Policies in Denver, Colorado to Promote Sustainability.

Toria Lindenmuth
Program of Enviromental Design
Undergraduate Honors Thesis
Spring 2025

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Dedication

I want to express my appreciation and gratitude to my advisor, Azza, who has helped me so much throughout this project. She always pushes me above and beyond, and I wouldn't have finished the year without her. Our conversations have helped me understand our environment and my part in it. Her leadership has helped me branch out and reach points I never thought I would achieve.

I want to thank Brandon for supporting me in this project and introducing me to the concept of Adaptive Reuse during my sophomore year. After seeing examples of old spaces rejuvenated with new life and energy that unknowingly sparked the flame that led to this project.

I want to thank Nate and Sara for helping me find the right resources, especially any city engagements that were necessary to further my research. Without that nudge in the right direction, I would've been stuck with incomprehensible spreadsheets.

I want to thank the architects who participated in my interviews and provided me with so much knowledge on adaptive reuse outside of an academic level.

Finally, I want to dedicate this thesis to my parents. To my dad, who initially inspired me to study architecture and explore my passion for design. Thank you for showing me this field and listening to me talk about my research for a year. To my mom, who is my biggest cheerleader. Without her, I'm sure I would've been completely lost, and her never-ending support helped me reach this point.

1.1 Abstract

Adaptive reuse provides cities with environmental and economic sustainability benefits, preserving the existing building stock and its cultural and historical integrity. Published studies show that adaptive reuse releases less carbon emissions than demolition, thus reducing project costs compared to new construction. Despite these multifaceted benefits, adaptive reuse projects tend to have common variables that architects and developers consider during initial decisions in building redevelopment. These trends consequently limit the types of buildings for repurposing, resulting in the city demolishing the remaining structures for new construction.

This research examines whether building characteristics contributes to its fate for demolition or adaptive reuse. It also attempts to develop a workflow for the end of lifecycle of the building based on these characteristics and geographic location. We conducted literature review and an analysis of 94 case studies of nonresidential adaptive reuse buildings from across the U.S. Using our reviews, we developed the parameters defining attributes of adaptive reuse. The parameters include building size, use, age, characteristics, and location. Large factories and warehouses with a historic brick structure constructed in the early 20th century were more likely to be repurposed, while other typologies with more minimalistic and modern characteristics were more likely to be demolished. We examined these parameters on Denver to understand if they also align with the rationale for demolition activities. A total of 5,743 demolition permit records within Denver from 2014 to 2024 were attained. After cleaning up the data and removing duplicates, 187 permits were analyzed. This data was compared with neighborhood boundaries to find the area with the highest concentration of non-residential demolitions. Using the demolition records of the city, we developed a Demolition Tracking Tool [DTT] by adjoining the records to their respective parcels. To understand the rationale for demolition vs adaptive reuse, qualitative data using interviews with Denver-based adaptive reuse specialized architects. The DTT assessed whether the characteristics of the demolished buildings align with the parameters identified in the case studies and compared the area, height, and designated use of 190 buildings before and after demolition. Archived satellite street view data from Google Earth of the structures located in these parcels were analyzed using a timeline of pre-, during, and post-demolition to compare the changes in building characteristics.

DTT and street view comparisons revealed that office buildings were the most demolished typology at 21% (34 buildings) of the total demolition, followed by 17% (28 warehouses), and 15% (24 retail). Small office buildings built around

1955 within the Five Points neighborhood -the neighborhood with the highest concentration of demolished buildings- were most likely to be demolished. While Cherry Creek has the second highest concentration of demolished buildings, Lincoln Park and Highland share the third place. The DTT is an effective tool to re-direct policies for incentivizing adaptive use as our analysis showed that compared with pre-demolition, there is a 275% increase in larger buildings that are more than 50,000 sf, and 23% of post-demolition sites were vacant Land, which were likely turned into parking lot for the surrounding area.

Figure 1: Union Station in Downtown Denver in 1914 (Union Station, Jul 2024)

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1.2 Introduction

In the United States, more than 90% of demolition debris results in landfills (EPA, 2016), and only about 20-30% of debris is recycled and reused (Ellen MacArthur Foundation, 2013). Rather than demolishing a building, successful adaptive reuse projects reconstruct the existing structure and utilize the existing material from the site. These techniques emphasize a circular economy by valuing the reuse of construction materials instead of treating them as single-use objects. Many scholars, like Wu et al. and Cruz et al., have developed frameworks to assess the life span of a material and determine whether contractors can reinsert the material into a new project.

Adaptive reuse is a successful way of promoting sustainable techniques by reducing the commercial sector's carbon impact on the environment compared to the effects of new construction. Assefa and Ambler determined a 13% estimated savings in global warming potential, a 10% estimate in primary energy savings, and a 542% estimate in generated waste savings (Assefa and Ambler, 2017). A successful example of this is a case study performed by researchers Feng et al., where the adaptation of a warehouse facility in Philadelphia, PA, was turned into an equivalent-sized office building. Feng et al. determined that reusing the existing facility avoided around 75% of the greenhouse gas emissions compared to the emissions produced from new construction (Feng, et al., 2020).

Adaptive reuse supports a sustainable circular economy by reusing existing materials, but it also addresses cities' current demands for more housing to support growing populations. These new uses to support city populations are recognized efforts by local, state, and federal governments. New government policies incentivize the implementation of more adaptive reuse projects in their metropolitan cities. Some attempts include a hotel-to-housing conversion bill in New York City to allow the ability to include permanent housing in existing hotels (Bill #A06262B), and the Biden Administration proposed a program to reuse historic and culturally significant buildings to support housing and transportation goals (The White House, 2024).

Despite all of the sustainable benefits adaptive reuse presents and the incentives that developers have access to, an estimated 200,000 to 300,000 structures are demolished each year within the U.S. (Viner, 2020). This issue brings the following

into question: What parameters and decision-making practices determine whether buildings are feasible for adaptation or demolition? If a building meets all of the parameters within the architect's comfort zone, yet the developers still demolish the building, what decisions did the development team make to support that outcome? The characteristics of successful adaptive reuse projects compared with the decisions made by the designers and developers will highlight the aspects of adaptive reuse policy that affect the number of projects that could be feasible for adaptation.

Architects have become comfortable adapting a certain type of building and very rarely deviate from these typologies. These buildings can be categorized by narrowing down certain variables attributed to them. How can the process of evaluating large-scale commercial buildings within Denver, Colorado be improved to promote adaptation rather than demolition, leading to more sustainable outcomes?

The future of how metropolitan cities continue to develop relies on how we process our materials in the present. Successful adaptive reuse projects provide examples of mitigating our carbon impacts by reusing our existing materials. Material reuse promotes the cradle-to-cradle theory as long as they retain their structural integrity. James Hepburn, principal at BDP, states that the most sustainable building already exists.

Since the pandemic, the increased office vacancy exceeded 18% at the end of 2022, providing opportunities for many of our modern building stock to be reused into buildings that support the current city population and address the housing crisis (Cushman and Wakefield, 2023). Expanding the parameters to extend beyond the comfort zone of architects encompasses more buildings with contemporary buildings. Many factors outside of the designer's authority impact the outcomes of a redevelopment project. Developers are the individuals who influence the design process the most, as their goals differ from those of the architects (Baker, Moncaster, et al., 2023). Educating developers on material waste prevention techniques, such as adaptive reuse and, in other cases, deconstruction, and offering opportunities and incentives to encourage these practices will provide more interest in future projects.

Figure 2: Union Station in Denver CO in 2024 (Union Station, Apr 2024)

1.3 Literature Review

Current studies on adaptive reuse dive into many topics relevant to how current policies address adaptive reuse through redevelopment projects. Glumac, Brano, and Islam determined a generalized opinion on the population's perspective on living in an adapted building (Glumac and Islam, 2020), while Buller compiled an understanding of the professional perspective of working with adaptive reuse policy (P. A. Bullen, 2007). Many studies developed a decision-making framework in an attempt to streamline the process, like Aigwi et al. and Rockow, Ross, and Black, who determined where there are conflicts within the decision-making process (Rockow, Ross and Black, 2019). Finally, McDonough and Braungart address material reuse and introduce a theory to support implementing material sustainability during construction with the Cradle-to-Cradle theory (McDonough and Braungart, 2002).

Several studies, like Marique et al., have indicated many environmental and economic benefits by comparing adaptive reuse to traditional construction techniques like demolition. Scholars have proposed frameworks and potential solutions to help improve the flow of materials within the construction sector. McDonough and Braungart's cradle-to-cradle (C2C) theory proposes a solution to reuse and recycle the materials and further reintegrate them into future projects and new buildings (McDonough and Braungart, 2002) rather than keeping construction and demolition (C&D) waste in landfills.

Several authors have written about circular economies (and the challenges when CE is not employed). For example, Cruz et al. demonstrate that a Circular Economy (CE) promotes the reintegration of construction materials until such material is structurally unable to be reintegrated into further construction (Cruz Rios, Grau and Chong, 2019). However, a strong CE depends on a design that creates a durable building that can be remanufactured for future deconstruction (EEA, 2016). However, architects cannot implement waste reduction due to poor communication during the design process. (Osamani, Glass, and Price, 2007). Designing for deconstruction and reuse saves materials and reduces the number of embodied emissions released into the atmosphere. Introducing a circular economy into local markets and reintroducing durable materials into their new assemblies decreases the amount of carbon emissions released. Cruz

et al. demonstrate that continuing to reintroduce durable materials builds an efficient circular economy and continues to provide environmental benefits to the construction sector (Cruz Rios, Grau, and Chong, 2019).

Marique and Rossi identified other studies demonstrating that renovation and reconstruction have lower life cycle emissions than constructing a new building because of the high embodied emissions from material manufacturing (Marique and Rossi, 2018). These studies include Sanchez et al.'s analysis of adaptive reuse versus new construction of courthouses in Ontario, Canada, demonstrating a 70% construction cost savings from implementing adaptive reuse (Sanchez, Esfahani, and Haas, 2019). Adaptive reuse can improve environmental factors, reduce carbon emissions, reduce construction costs, and provide opportunities for affordable housing. With economic savings, adaptive reuse can be proposed as a strategy for housing in cities with surges in population growth since adaptive reuse projects eliminate costs associated with demolition and new construction (National Association of Realtors, 2021).

Analysis of case studies from multiple articles established five parameters that architects apply to our current building stock. Baker et al. showed that older buildings are preferred because they add value to the area, whether economic or historical and retaining these old buildings preserves the character and diversity of the surrounding areas (Baker, Moncaster, et al., 2023). These older buildings also have characteristics within the architectural style that are more feasible for adaptation, like shallow floor plates and exterior window placement. We see these trends within previous adaptation projects in New York City, which Aldana et al. analyzed (Aldana, Büchler and Rolheiser, 2024).

Architects and developers also consider the building's current use before constructing the new assembly since the typology impacts the exterior appearance and the interior layout. Glumac and Islam provided examples of buildings with larger layouts, like warehouses and industrial typologies, which are preferable as the wide spaces make the layout transition more flexible to fit new uses (Glumac and Islam, 2020).

Vecchio and Arku proved that location is also a target for developers in need areas or areas where the buildings no longer support the surrounding context, like the industrial sector and the surrounding cities within Ontario (Vecchio and Arku, 2020). This parameter ties into the current use of the buildings as some city planners organize city districts by building use, which leaves multiple buildings open for adaptation. Finally, architects and developers consider the size of the building to be high-rise buildings with different requirements than smaller, low-density structures.

There are multiple decision-making frameworks to cover many potential projects. Initially, one framework covers five aspects: economic sustainability, built heritage preservation, socio-cultural aspects, building usability, and regulatory aspects (Aigwi et al., 2019). However, there is a disparity between the decisions suggested within the frameworks and the decisions made (Baker, 2019). Many external factors impact the decisions made on-site (Rockow, Ross, and Black, 2019),

and these factors are often outside of the developer's control. Beyond on-site conditions, potential economic conditions impact a decision made within a project. There are inherent risks that coexist with the fragility of adaptive reuse. Older structures have the risk of uncovering additional problems, like latent defects, which can cause issues for developers and lead to last-minute decisions on the project (Bullen and Love, 2010). While designers and architects consider aspects of the project relating to the feasibility of adapting the buildings, developers mainly consider the economics behind the projects and how much they spend; the risk of the project and potential projects are all factors that can impact the feasibility of the project (Hanafi et al., 2018).

Developers and architects have different aspirations regarding adaptive reuse projects (Coiacetto, 2010). Carmona critiqued exclusively using frameworks and urban development processes through a singular theoretical model and has indicated a lack of reflection on the complexity involved in real adaptive reuse projects (Carmona, 2013). Understanding architects' perspectives on the existing frameworks and current adaptive reuse policy will highlight the weaknesses within the parameters derived from the collective literature. Bullen and Love have explored professional perspectives which have been impacted mainly by economic factors, resulting in many existing buildings being torn down prematurely (Bullen and Love, 2011). Now, there is a balance between the incentives and the barriers to adaptive reuse projects. Baker et al. have collected studies that indicate factors like maintenance costs, building regulations, the initial inertia of the project, and the inherent risk associated with older buildings are substantial barriers to adaptive reuse. Alternatively, lifecycle issues, the dynamic perceptions of existing buildings, and government incentives are significant drivers for adaptive reuse projects (Bullen and Love, 2011).

More literature needs to question the practice of adaptive reuse and the scope of the current adaptive reuse policy. To improve our understanding and promote sustainable construction techniques, I developed a methodology to analyze the areas where architects struggle. Most of the conflict during adaptive reuse projects lies between architects and developers, who each have different priorities. Improving their experiences and broadening the scope for feasible building typologies will open more opportunities for adaptive reuse projects and strengthen the circular economy and sustainable practices within cities. These projects will support communities and provide opportunities in struggling areas to provide affordable housing for a surging population.

1.4 Research Methods

My research methods follow a linear pattern to understand Danvers' adaptive reuse policy from multiple perspectives. Comprehending the reason for decisions during the initial steps of the design process discovers trends that show weaknesses in the policy.

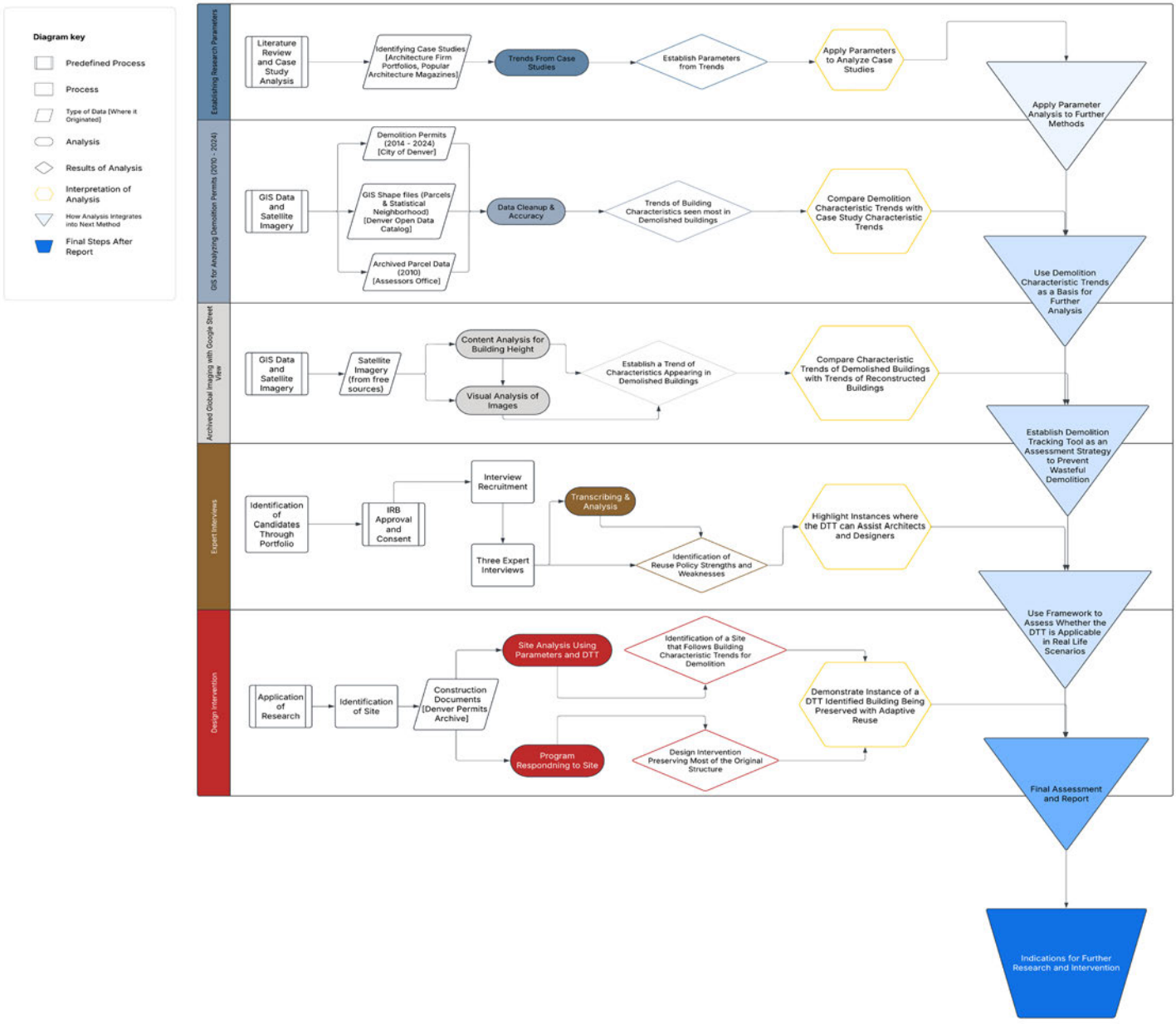


Figure 3: Linear Methods Flow Chart

1.4.1 Setting Up Research Parameters:

Based on literature and case study analyses, I formed a set of parameters that narrowed down existing structures to a particular building style that was more likely to be adapted. Most designers used a similar type of building in their adaptive reuse projects. After my literature research, I expanded these variables to a basic idea and then applied them to the rest of my analysis. The parameters of existing buildings include their age characteristics of architectural styles, location, size, and current use:

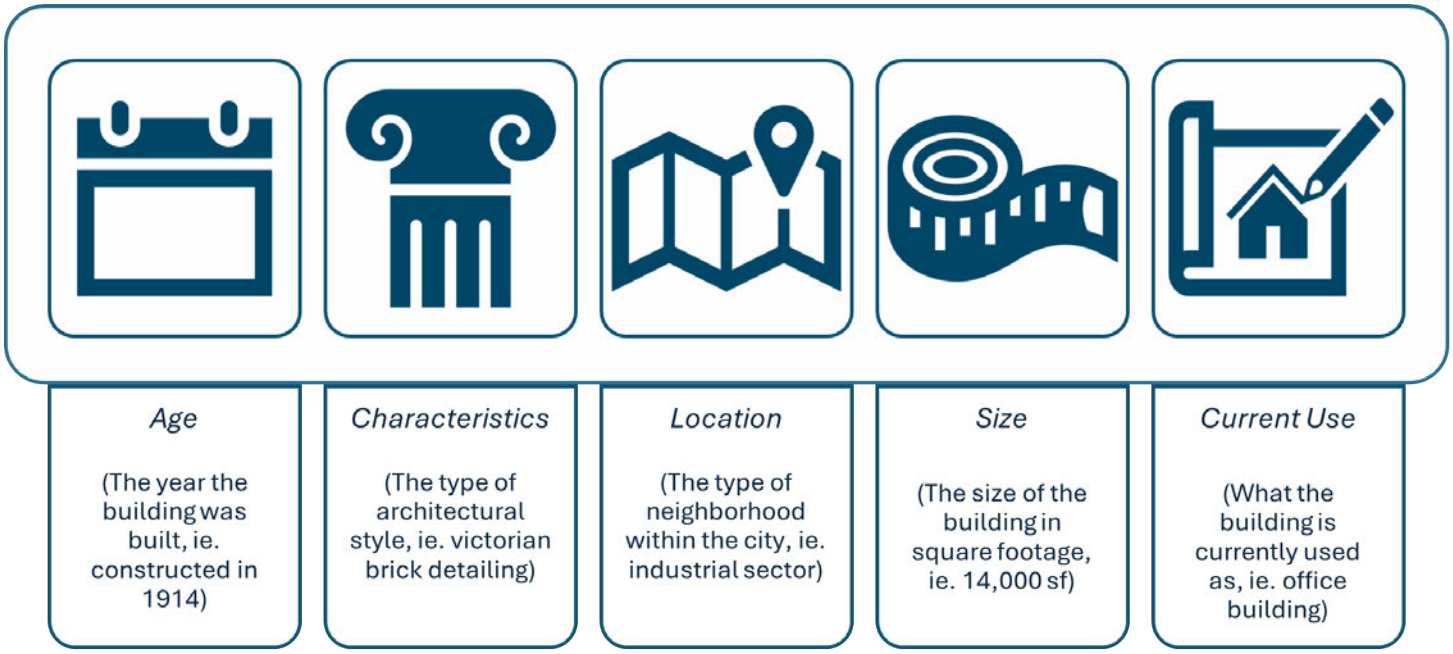


Figure 4: Explanations of Each Research Parameter

When creating my list of architectural firms to interview, I thoroughly combed through their portfolio to find adaptive reuse or historic preservation projects I could use as case studies. I also searched in architectural magazines for examples outside of Colorado for my case study analysis. My research resulted in 94 different successful adaptive reuse projects.

I analyzed the case studies by applying these variables to each project to find trends between each building. Using the information from those results, I refined my scope for each parameter to create a stronger definition of a preferable building for adaptive reuse.

A preferable building for adaptive reuse is the type of building that architects choose which holds a high success rate in projects. The current definition for successful buildings is a larger building with older characteristics that hold a lot of historical culture in the surrounding area, and its original use was something that provided a lot of space to encourage a new creative use.

1.4.2 GIS for Analyzing Building Permits:

I gathered demolition permits from the past ten years (2014 – 2024) to understand the scale of demolition within the city of Denver. By applying the research parameters to the addresses on the permits, I analyzed the building characteristics that were present in the buildings and found trends amongst the buildings that were demolished. Understanding the scale of demolition in the city and the associated characteristics allowed me to know more about why certain buildings were demolished and compared the trends between adapted and demolished buildings.

Each permit included information such as:

- The permit number (which identifies the individual permit within the cities licensing system)
- The address of the demolished buildings
- The value of the entire project
- The classification of the type of demolition (I.e., a partial demolition, interior demolition for a renovation, completely demolishing the building, etc.)
- The date the permit was issued.
- The contractors' name.
- and the permit log number (which tracks the permit to other phases of construction).

The initial scale of the permits I received was a total of 5,743 permits in Denver from 2014 to 2024. To refine the scope, I only included projects with a total value of more than $20,000. This limit only includes projects that are most likely commercial-scale buildings and removes projects that are likely to be single-family homes and other residential buildings. This limitation narrowed down the applicable permits to 636.

The second limit I applied to narrow the scope was filtering the permit classification to only include complete demolitions. Complete demolitions are defined when the city demolishes buildings with none of the original structure left. This limit eliminates projects with smaller demolitions usually associated with renovations or building additions. These limitations finalized the number of permits to 238.

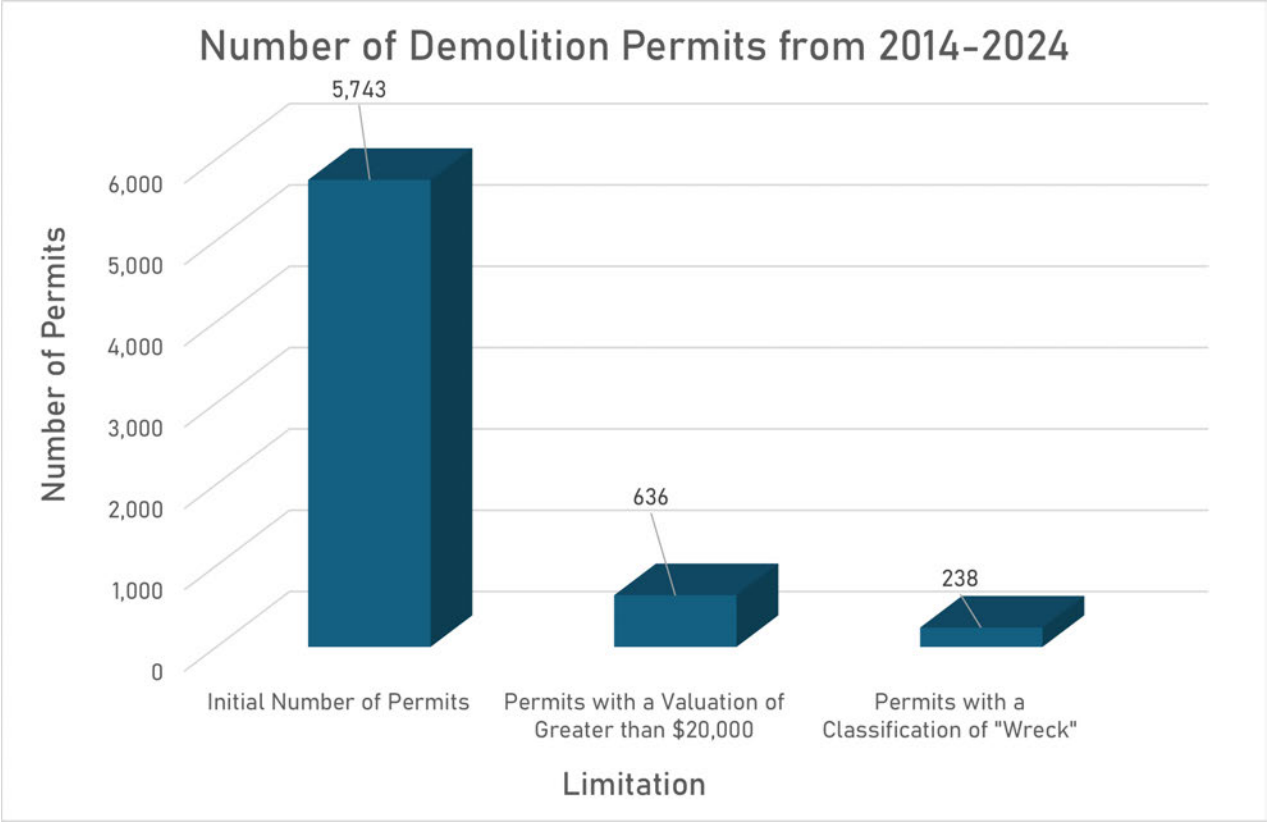


Figure 5: How the Amount of Permits Was Limited for a More Fesable Scope.

While researching each permit, I entered the address into Google Maps, went to Google Street View, and used the timeline to find images of the building before, during, and after the demolition. To increase my understanding of the history of the building before the demolition, I went to denvergov.org and found GIS data to apply to the permit data. The GIS data I applied was city parcels, which is how the city organizes land for development. Additionally, I applied building outline data, which is the shape of existing buildings, to the permit data to see the demolition permit data mapped in Denver.

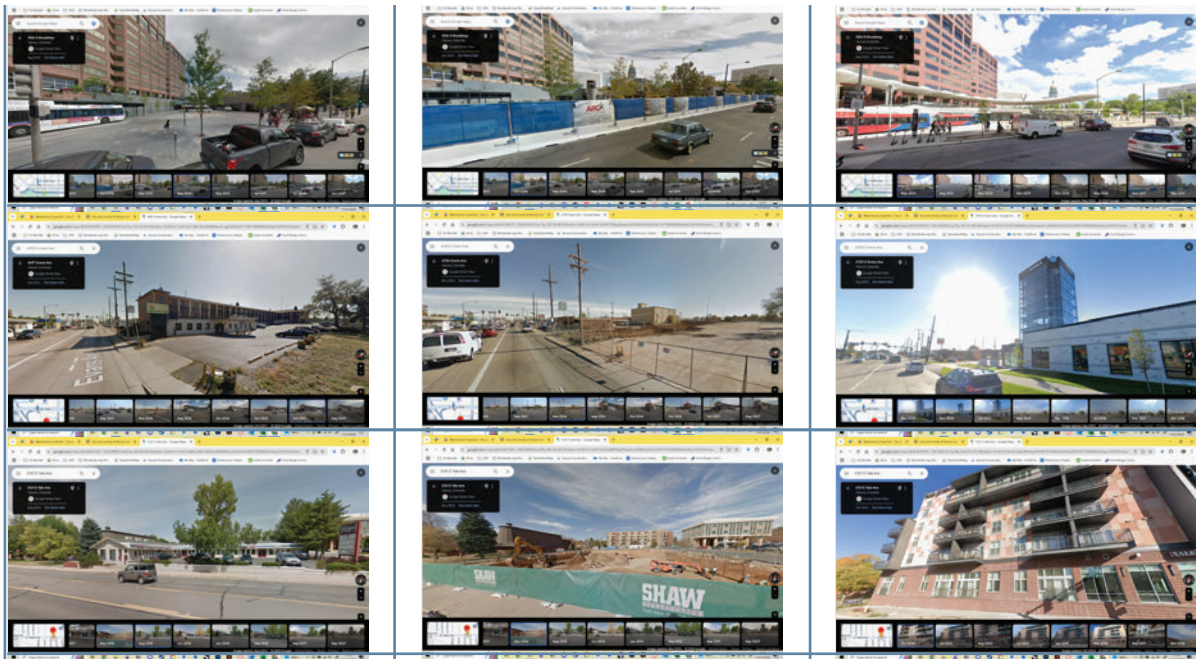


Figure 6: Small Section of the Google Street View Timeline of Each Demolition Permit Analyzed

The website data of the building outlines was from 2022, which outdates any of the buildings from the permit data. The city of Denver archives previous GIS data files, so by contacting the city, I received a data set of the building outlines from 2014. By analyzing the GIS data, I retrieved the zoning code associated with each address and the buildings age before the demolition. The zoning code is how the city organizes the use of the building on each city parcel. The zoning code will finalize my limitations and narrow my scope to only commercial buildings. I implemented the data (permit addresses, building ages, zoning code) into ArcGIS to visually represent the trends of demolition of commercial buildings within Denver.

1.4.3 Expert Interviews:

To gather a stronger understanding of designers' perspectives of the current adaptive reuse process in Denver, I conducted 30-minute Zoom interviews. These interviews allowed me to understand the process of an adaptive reuse project, and the issues architects have with policies and philosophies within the topic.

During the interview, I recorded it to transcribe what was said and took notes to accurately analyze our discussion. I interviewed four architects from firms based in Colorado that have finished adaptive reuse or historical preservation projects within Denver. I used a structured recruitment email (appendix, figure ii) and asked interview questions that were approved by the University of Colorados IRB (appendix, table 1).

These architects have design experience and have worked with clients on commercial adaptive reuse projects. These interviews furthered my understanding the design decisions that these firms undertook, and the areas of the adaptive reuse process the firms found challenging. This information highlighted the areas of the process that I should analyze for my design practice.

1.4.4 Design Implementation:

I tested my suggested revisions to the existing adaptive reuse policy by applying my analysis to a commercial building in Denver. With this design implementation I was able to understand the feasibility of my policy suggestions on a structure that fits the parameters found from my case study analysis. This design combines the analysis from each of my previous methods in conclusive understanding of each decision made in an adaptive reuse project.

I took my GIS map of demolitions from the permit analysis to find the area in Denver with complete demolitions and chose a neighborhood where I would then choose a building. After selecting the neighborhood, I re-explored the GIS data of the city parcels to find the zoning code associated with commercial buildings. Then, by applying the GIS data of the more recent building outlines, I chose a building that fits the parameters I determined from my case study analysis and interviews.

After identifying the building, I submitted a CORA (Colorado Open Rights Act) request to retrieve the building documents, including floor and structural plans. These documents were the basis for my design. I applied the rest of my adaptive reuse framework, which I developed from the feedback from my interviews, to further my design process. The final design determined whether changes to the current adaptive reuse process were feasible for future adaptive reuse projects.

Using a set of variables throughout the entire process demonstrated a trend in buildings that firms reuse. These variables highlighted a gap in building typology, which each method confirmed impacts certain buildings during the decision-making process. Including a larger range of buildings that developers initially eliminate allows for more opportunities for adaptive reuse and material sustainability. Individually, these research methods provide evidence to support an argument to push adaptive reuse in redevelopment projects.

Figure 7: Wazee Exchange Entrance off of Wazee St. (Thrope, 2023)

Figure 8: Wazee Exchange Entrance off of 19th St. (Roth Sheppard, 2023)

1.5 Discussion

Collective information from each of the observed methods established a Demolition Tracking Tool (DTT) which demonstrates that demolished buildings had characteristics that matched the trends from a case study analysis of successful adaptive reuse projects. The DTT also analyzes the reconstruction of these sites to find trends to support policy redirection with facts based on construction trends.

Interviewing expert architects who have experience with adaptive reuse demonstrated trends within a construction process to highlight areas that are limited by factors outside the control of the designer. The limitations within this process are points that can integrate the Demolition Tracking Tool to use as a framework to support adaptive reuse, which was explored in a design implementation exercise.

1.5.1 Case Study Analysis

From applying the parameters to collective case studies, I was able to find trends in the building characteristics that were most prevalent in adaptive reuse and historic preservation projects. From those trends, I argue that architects have a comfort zone that limits the number of existing structures that they adapt.

After analyzing 94 adaptive reuse case studies from multiple architectural firms, I established the comfortable range of usable buildings for each individual parameter. After using the parameters established from the literature review, most architectural firms adapt large commercial buildings, originally constructed around 1914, that fall between an industrial district and the downtown of the selected city.

These older buildings present a more ornamental architectural style and characteristics that are less present in modern construction. Architectural firms also commonly reuse buildings originally depots, warehouses, and factories because of their large-scale and initially open floor plan.

I took the information and images in each project webpage and applied objective criteria to find

information for each relevant parameter. For example, I took the building square footage and assigned a range between small (5,000 sf – 15,000 sf), medium (15,000 sf – 50,000 sf), and large (50,000+ sf) to comprehend which building sizes are more commonly adapted. Any other relevant information from the project description, such as building age and the original use of the building, was included.
The size of the building was almost evenly split between the three sizes. Out of 94 projects analyzed, 34% of the case studies were smaller buildings, 29% were medium sized, and 37% were larger than 50,000 square feet.

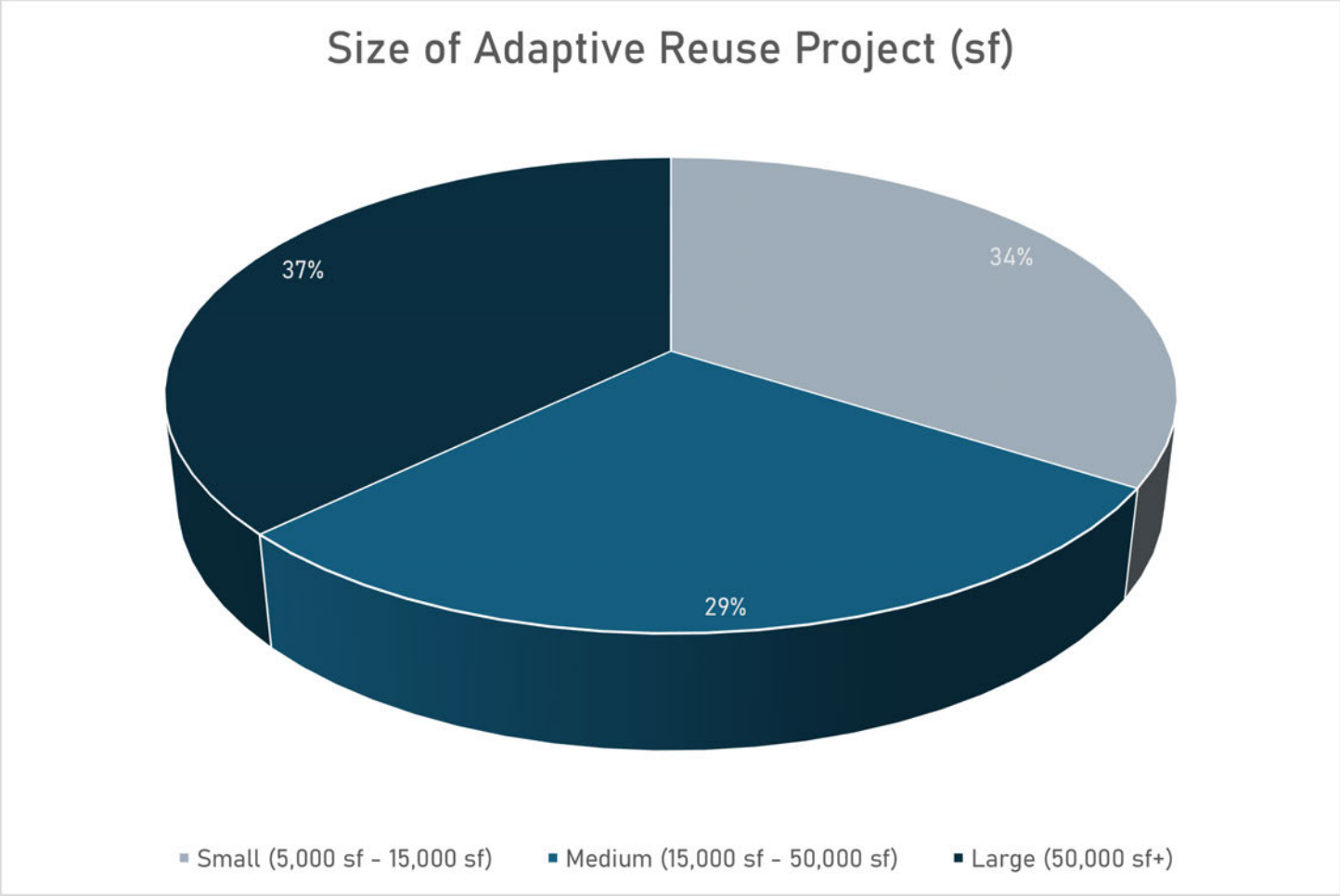


Figure 9: The Percentages of Building Sizes from the AdaptiveReuse Case Studies

The size of the building is mostly associated with the use of the building. Out of 86 projects that disclosed the existing use of the building, most of the building uses were split between warehouses, commercial office buildings, and educational buildings, each with 15%. These buildings are associated with the size they fall within the large building category. These buildings being larger gives more opportunities for a large variety of future uses. Alternatively, the smaller the building the less opportunity for redeveloped uses given the size constraint.

These building typologies appear more in adaptive reuse projects because of their generalized uses. Other buildings like restaurants and art and entertainment have designs and building characteristics that are specific to that use, making it harder to keep the existing building during redevelopment. More general building uses like a warehouse or a commercial office building act more like shell with furniture than a complicated floor plan, which are preferred for redevelopment with less necessary work to the floor plan.

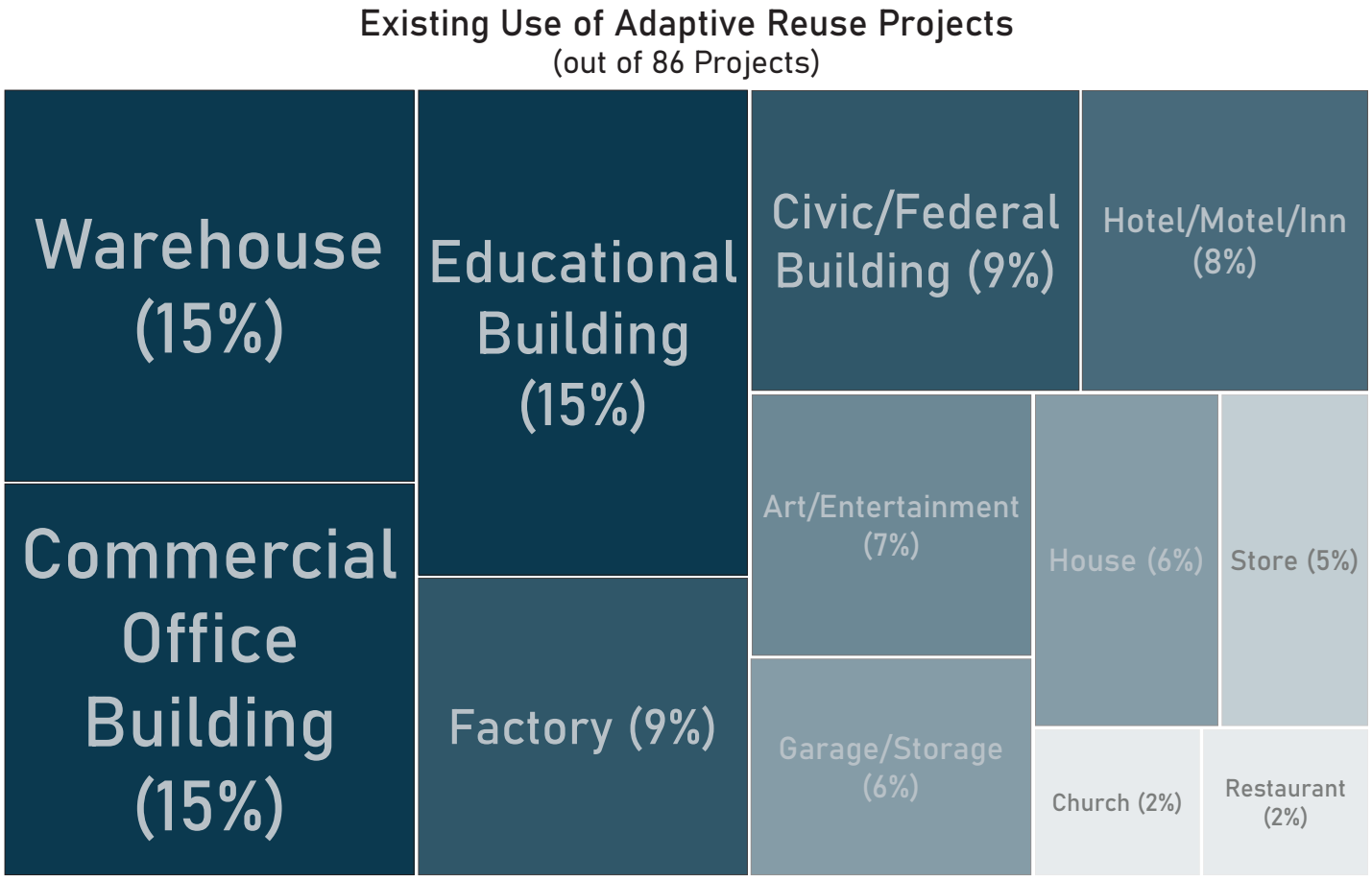


Figure 10: Existing Use from Adaptive Reuse Case Studies

Out of 32 projects in Denver, 50% were located in the same area of downtown. This is associated with the existing use of the buildings as there are different areas of the city that are organized by that typology. For example, commercial office buildings would be found in similar areas of the city because they are organized to be next to each other.

Similar to building ages, there are areas of a city that have older, more historical development. For redevelopment, architects tend to pick buildings from the early 20th century for their historic characteristics. Beyond the feasibility of a building, architects want a concrete reason for keeping a building, and usually that is because it adds cultural importance to the area.

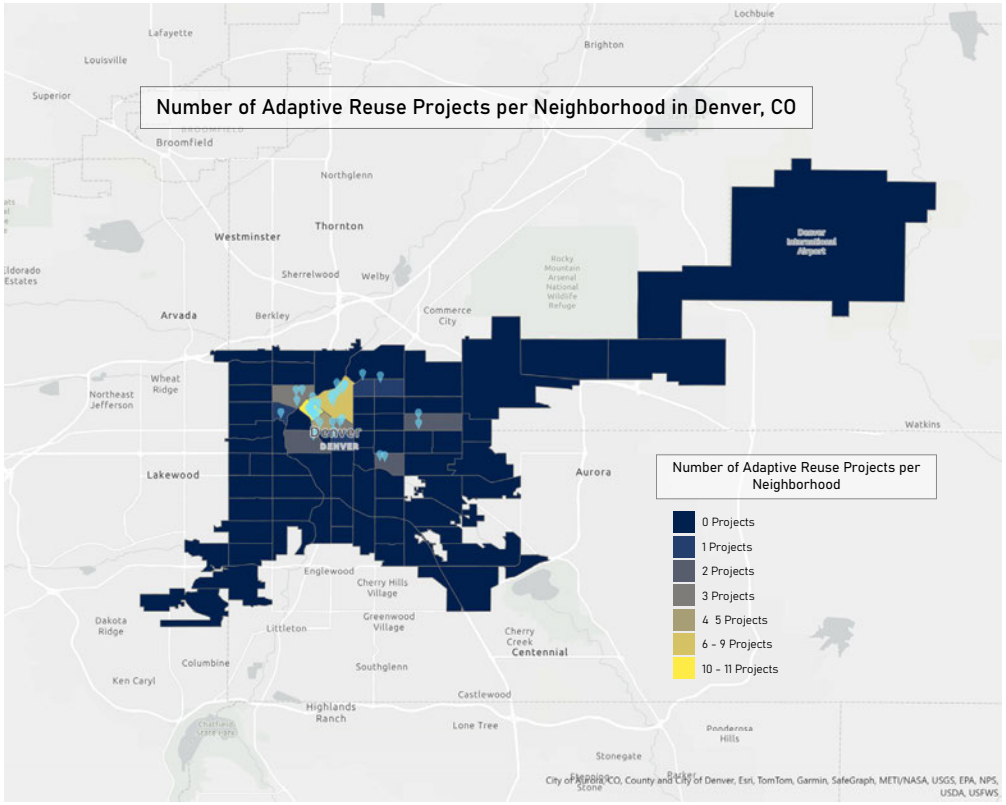


Figure 11: Neighborhood Map of Denver, CO with Each Adaptive Reuse Project

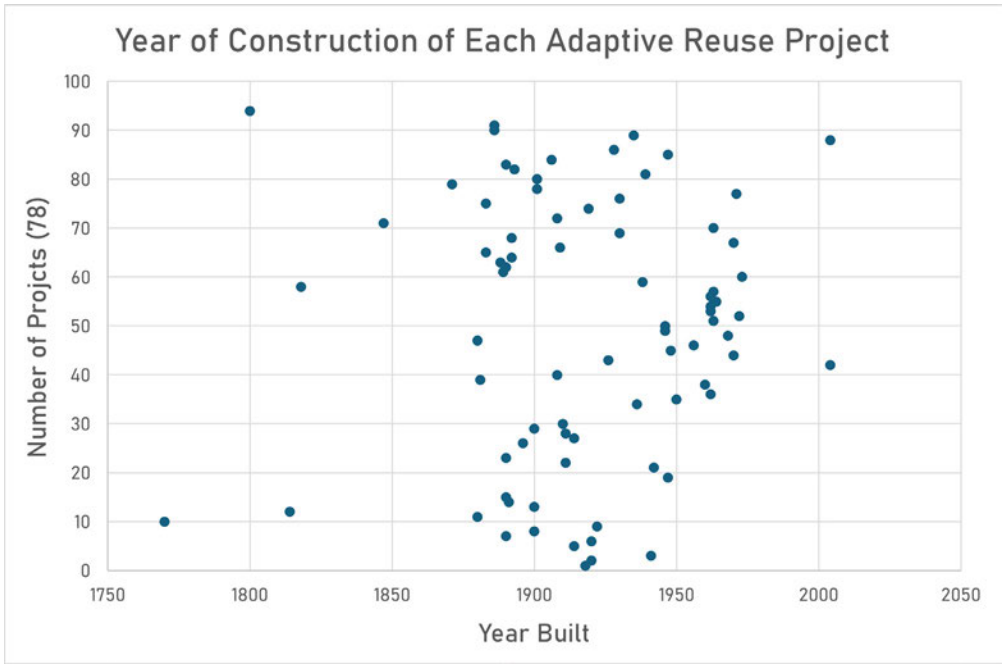


Figure 12: Scatterplot Graph of Each Year of Construction for Each Adaptive Reuse Project

Out of 67 adaptive reuse projects, 25% of the original buildings had a historic brick structure. Following the historic characteristics, the style that was chosen was industrial and warehouses, each with 10%. This is similar to the existing use of the building. In that instance, the use of the building was more favorable to the architect than the design characteristic.

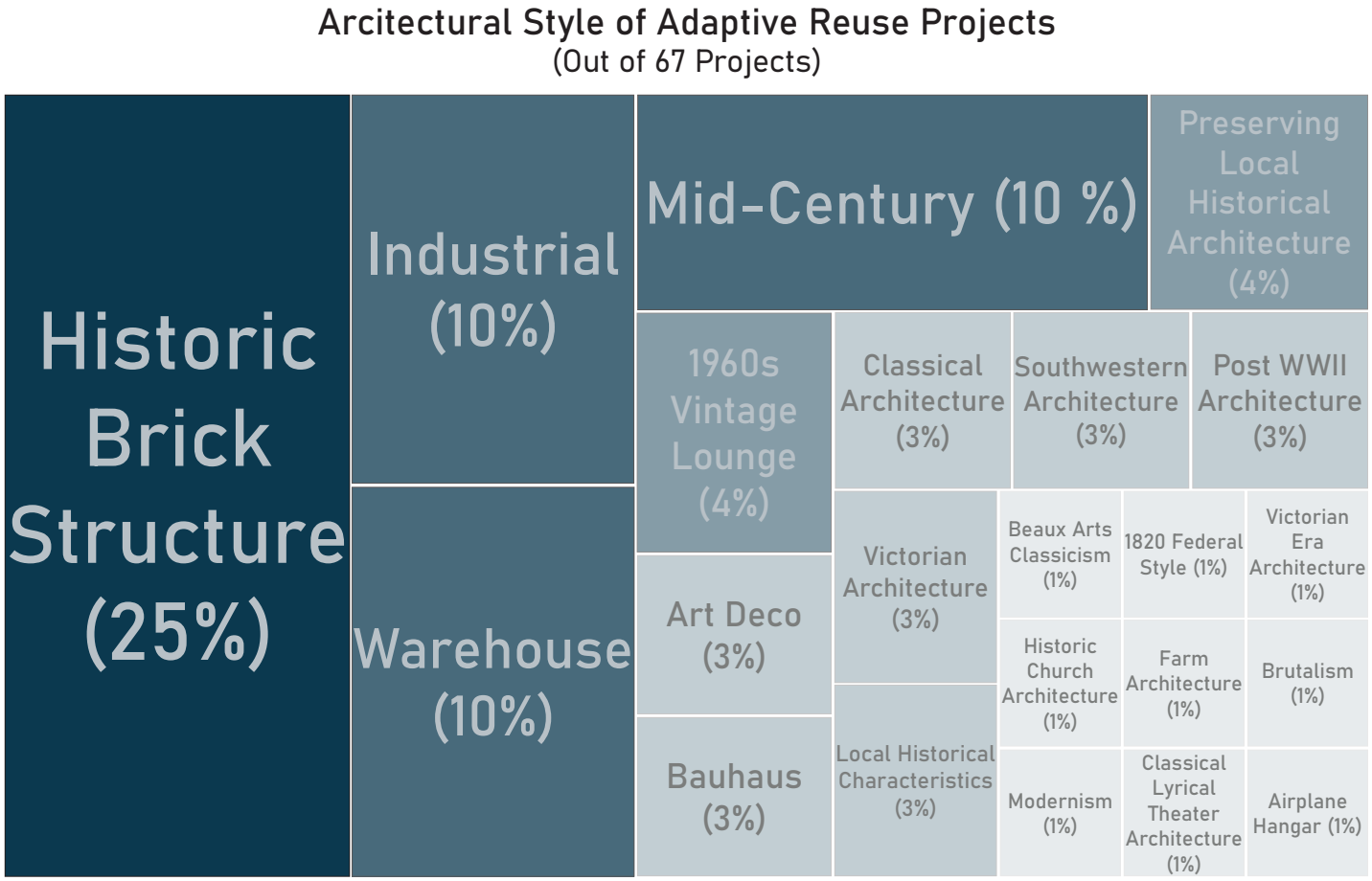


Figure 13: Architectural Style for Each Adaptive Reuse Project According to the Architect

1.5.2 Demolition Tracking Tool Analysis

Another argument could be made that other factors impact the outcome of a building set for redevelopment. Comparing demolition permit data (2014 – 2024) from Denver's public archives with the trends analyzed from the case studies demonstrated a match within multiple parameters. The location, age, and original use of many demolished buildings fit the trends observed from adaptive reuse projects, however, the permits were approved for demolition.

Analyzing archived satellite imaging from Google Earth provided information about the sites to find trends of the resulting buildings. These trends are then analyzed to determine if the new building supports the community. Both of these processes combine to create an assessment tool that can be used for redevelopment projects to support adaptive reuse rather than demolition.

1.5.2.1 Demolition Permit Data Comparison Analysis

By using the research parameters, I analyzed the demolition permits from the last decade received from the City of Denver. By comparing the trends from this analysis with the trends from the adaptive reuse case study analysis, there is an overlap between buildings that are demolished and the architects comfort zone that from most case studies.

A total of 171 permits were analyzed under the research parameters. To find the most accurate identification for the buildings on the demolition permit, the schedule number was recorded to cross reference on other data sets. A schedule number is a number associated with the exact parcel the building sits on according to Denver's building organization catalog. Some permits are associated with buildings that have multiple schedule numbers, so in total 190 schedule numbers were analyzed.

After analyzing the permits under the research parameters, the type of building that was most likely to be demolished are small, office buildings built around 1955 in the Five Points neighborhood within Denver. The area would be most likely reconstructed into a large office building, with a minimum height of 50+ ft (or at least 5 additional floors). If the original building wasn't planned for immediate redevelopment, the lot would have a heigh chance of remaining vacant or turning into parking for a nearby structure.

Using parcel data from two sources (the Denver assessors office, and Denver's open data catalog) from before and after (2010 Parcels data and 2024 Parcels data) the building associated with the permit was demolished, allowed for accurate identification of data per variable. Building area was identified through the impervious area (IMP_AREA) of the building in each data set. Between two different times, there was a 275% increase in Large (50,000+ sf) buildings, a 21% decrease in Medium (15,000 sf – 50,000 sf), and a 24% decrease in small (<15,000 sf) buildings.

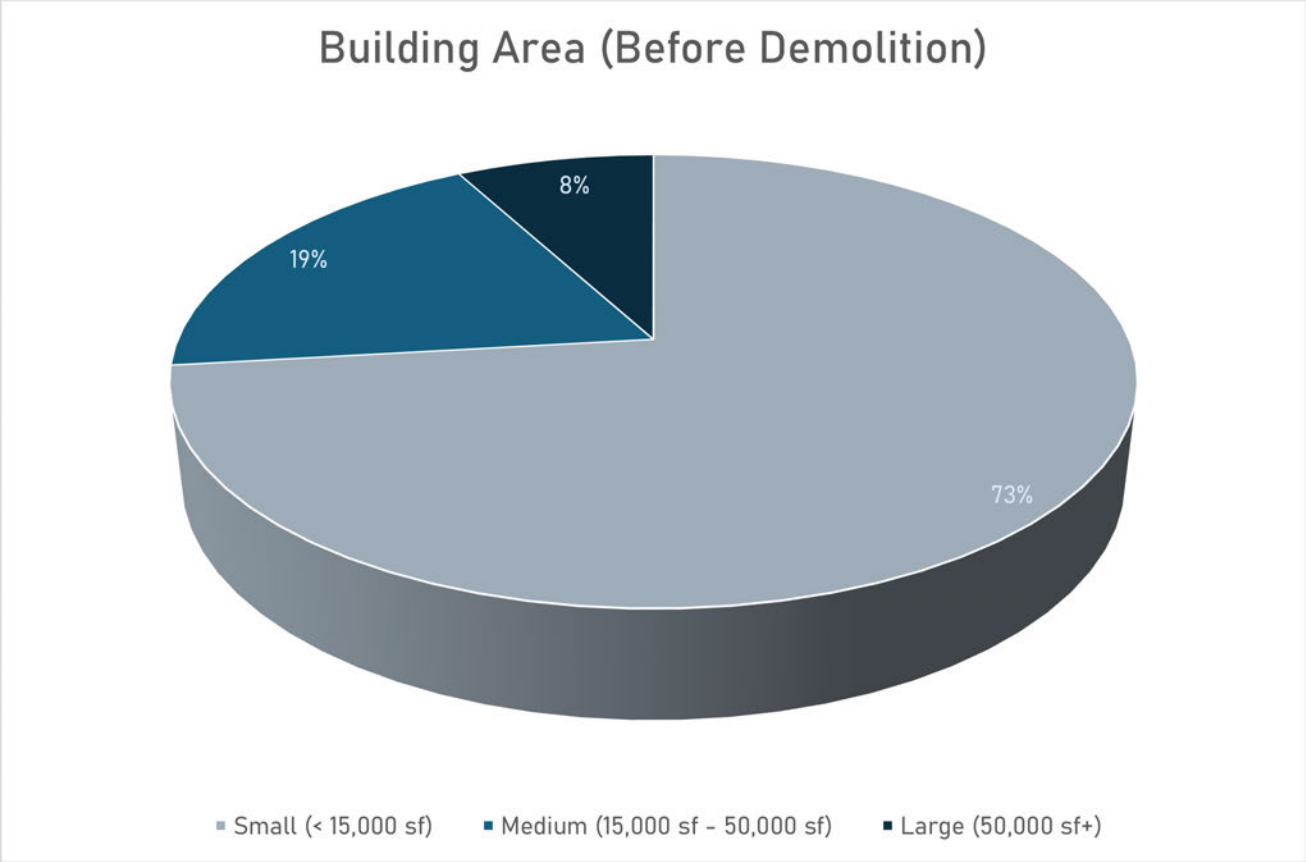


Figure 14: The Size of Each Permit Address Before Demolition

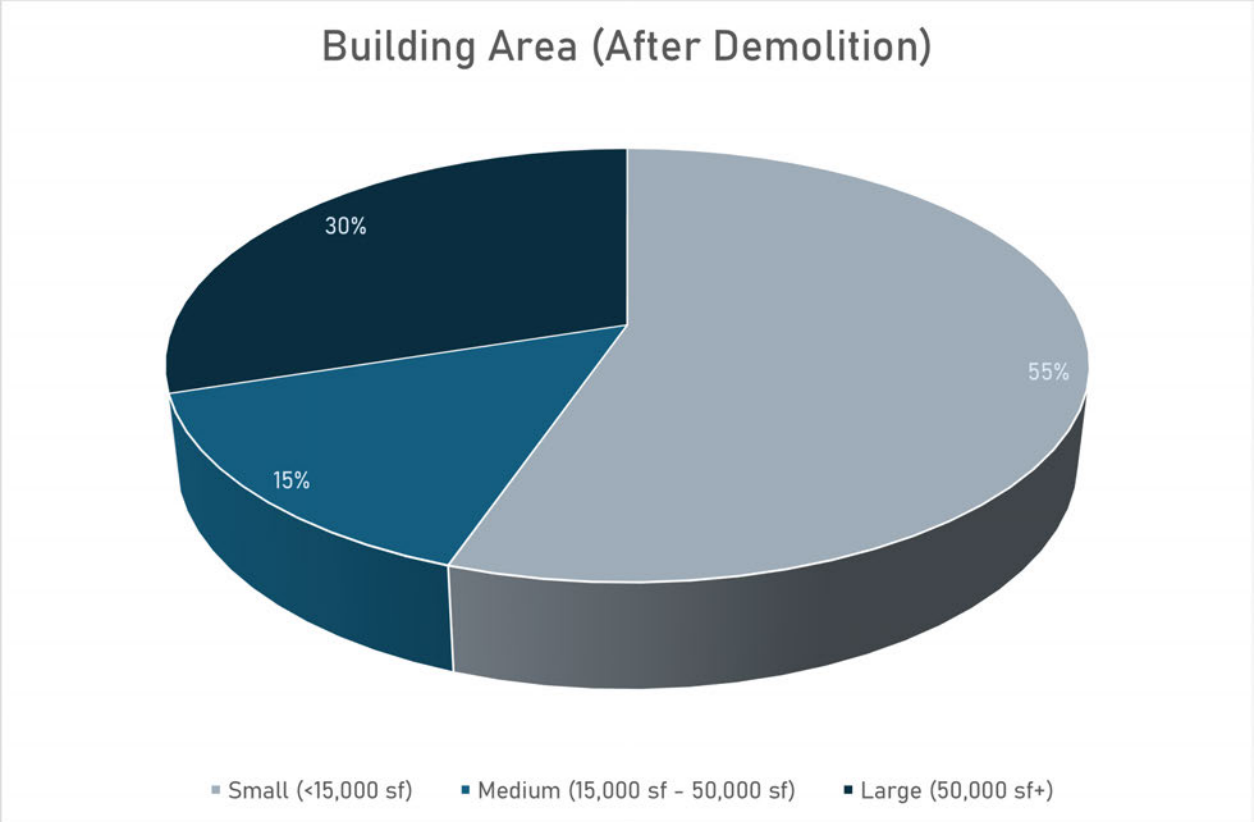


Figure 15: The Size of Each Permit Address After Reconstruction

This indecates that the buildings that were identified as either small or medium sized by square footage, was demolished or replaced with buildings that were larger than 50,000 square feet.

The use of the building use and its necessity to the community is one of the initial considerations during the redevelopment process. The building use was identified through the designated classification (D_CLASS_CN) to find the percentage of buildings under that building use. Office buildings were the type of building that was demolished the most at 21% (34 buildings) followed closely by warehouses at 17% (28 buildings) and retial at 15% (24 buildings). The high frequency of demolition of office buildings and warehouses contradicts the trends established from the case studies. Warehouses, office buildings, and educational buildings were most likely to be adapted because of their modular and veratile floor plate to suit its use.

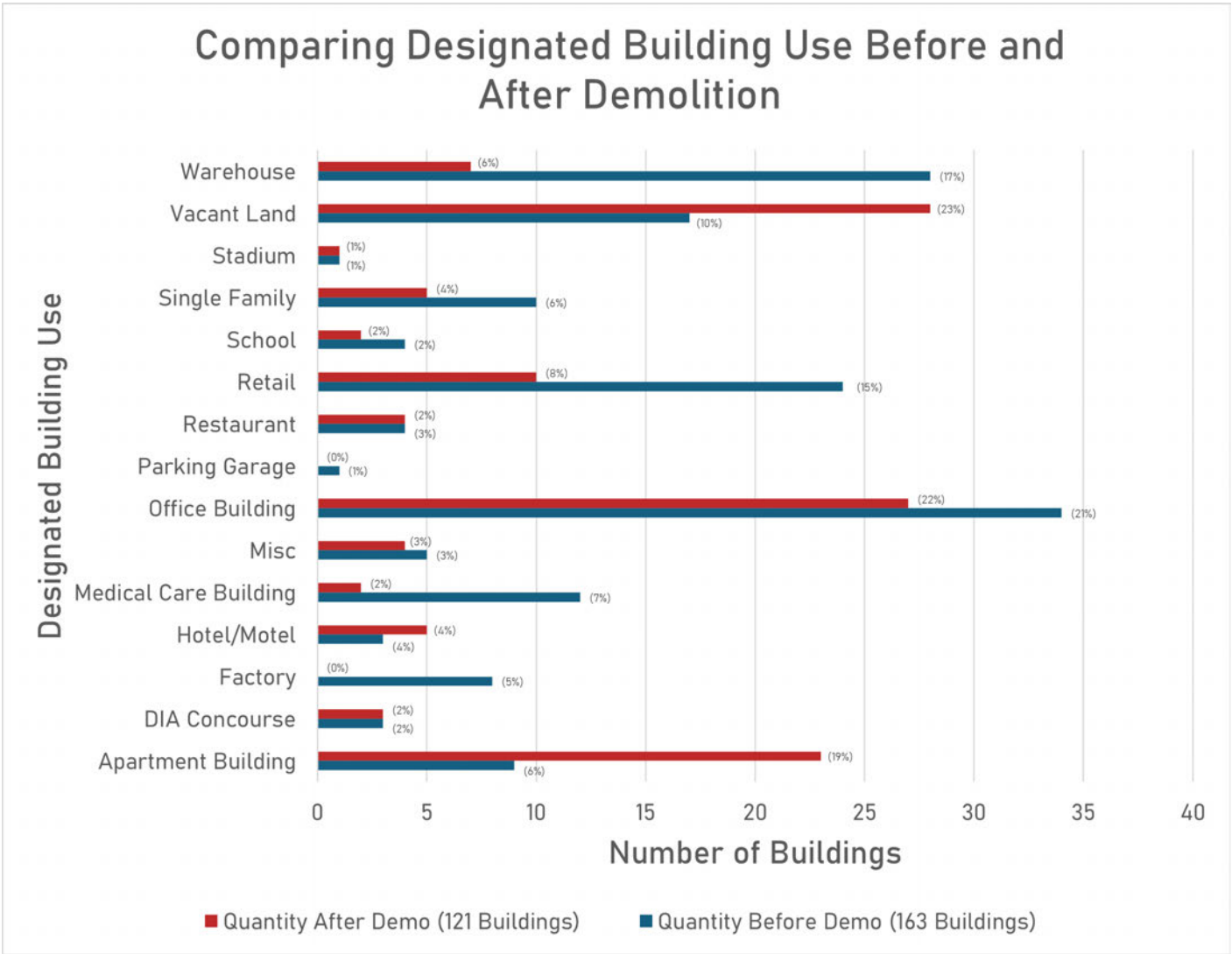


Figure 16: Comparing Each Designated Building Use Before Demolition and After Reconstruction

Alternatively, the building use after reconstruction conveys a compelty different trend. Vacant land was the highest occuring use for the parcel after demolition at 23% (28 buildings). Followed by office buildings at 22% (27 buildings) and apartment buildings at 19% (23 buildings). The initial building was never replaced after demoliton leaving either empty land or parking for a nearby development.

After reconstruction, 79% of the office buildings were replaced after demolition. These new office buildings are larger than their original structure, providing more room for larger companies. However, necessity of office buildings has been declinging in recent years and are likely to be considered for redevelopent if these spaces remain vacant.

Considering the housing crisis in larger cities across the U. S. new high density housing is a building use that strongly supports the surrounding communities. Increasing quantity of individual apartment buildings by 233% compared with the number before demolition improved opportunities for residents.

Compared with the adaptive reuse case studies, the locations of each of the demolions are more spread across the city. There are neighborhoods with higher concentrations of demolions, but they are not condensed in the same area. By quantity of demolitions by address within area boundaries, Five Points is the Denver neighborhood with the highest concentration of demolitions. Cherry Creek has the second highest amount of demolitons, and Lincoln Park and Highland are tied with third.

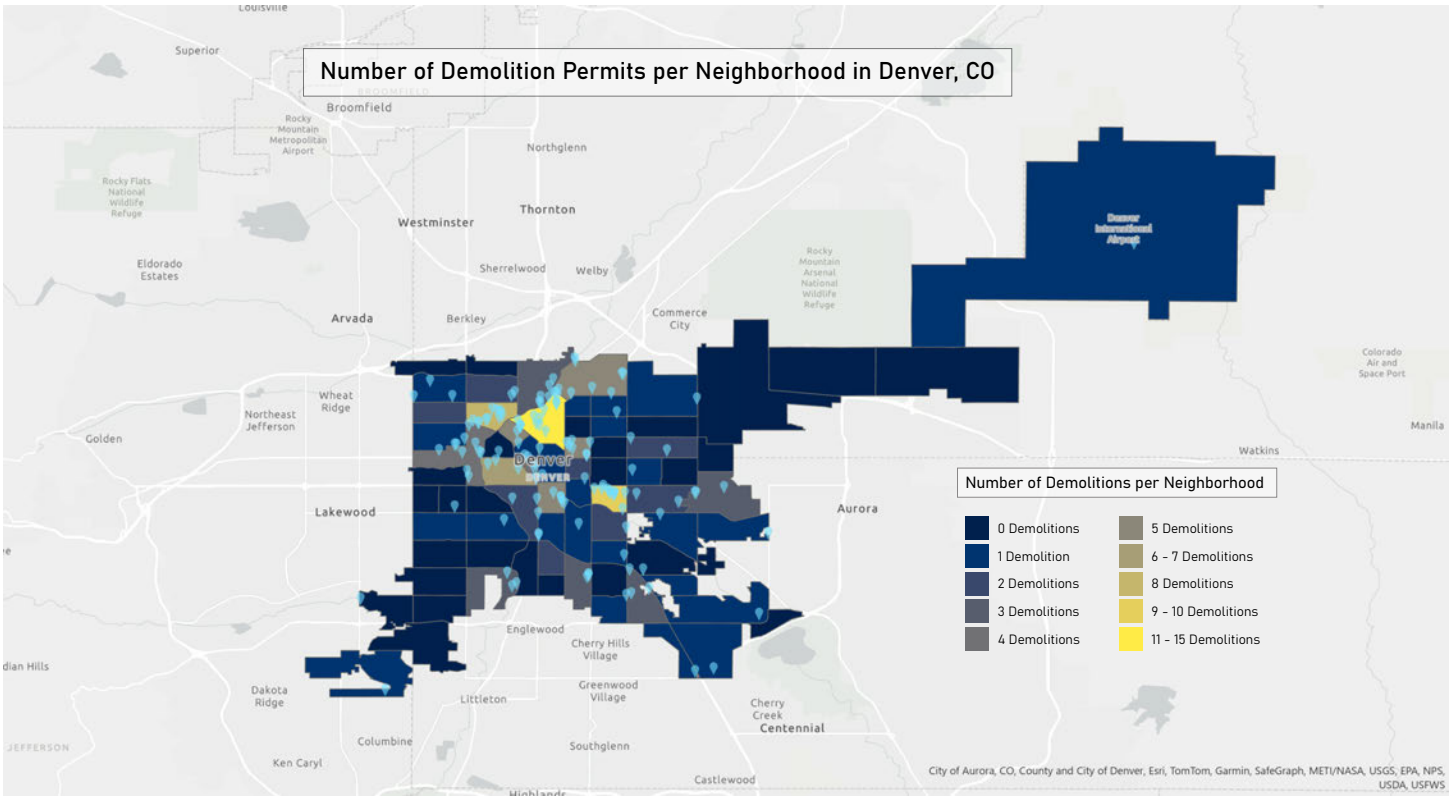


Figure 17: Neighborhood Map of Denver, CO and Each Permit Addrss Plotted

Compared with the map of neighborhoods with the nighest amount of case studies, the nieghborhoods that have the highest concentration of case studies are similar. Union Station has the most adaptive reuse projects followed by Five Points, which are located directly next to each other.

The building age and the year of construction are the defining variables that indicate if a building has reached the end of it prodicted lifecycle. The minimum age for a buildings lifecycle range is 30 years old. If it was demolished before it hit that milestone, then it is not optimizing the span of the materials. However, most buildings are designed to withstand at least 50 years with maintenance.

Using the year of construction (CCYRBLT) for the building against the year the demolition permit was issued indentifies the age of the building. By plotting each of those years and finding the average, determines that the average year of construction amongst the demolished buildings is 1955.

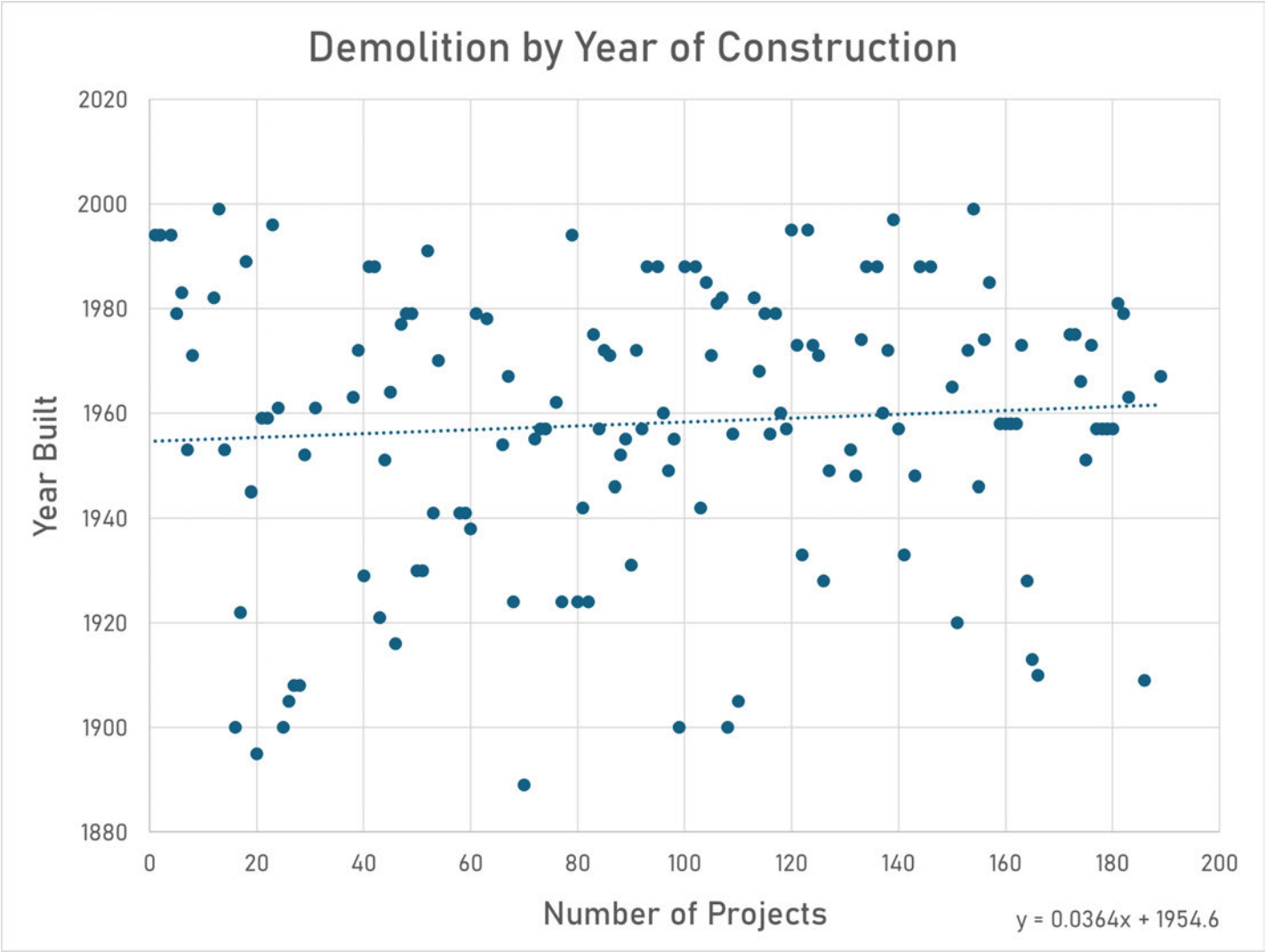


Figure 18: A Scatterplot With Each Year of Construction Associated With Each Permit Address Before Demolition

To analyze a more comprehensive scope, each building was categorized in by building age in ten year increments. This determinted the building age with the highest quantity of demolitions. Buildings that were between 60 and 69 years old were most likely to be demolished at 22% (32 buildings), followed by buildings between 50 and 59 years old and between 20 and 29 years old at 15% each (22 buildings per category).

Most of these buildings were beyond the minimum end of the lifespan range, but barely exceeded the intented minimum. It brings into question if these buildings were demolished because of structural or maintence issues.

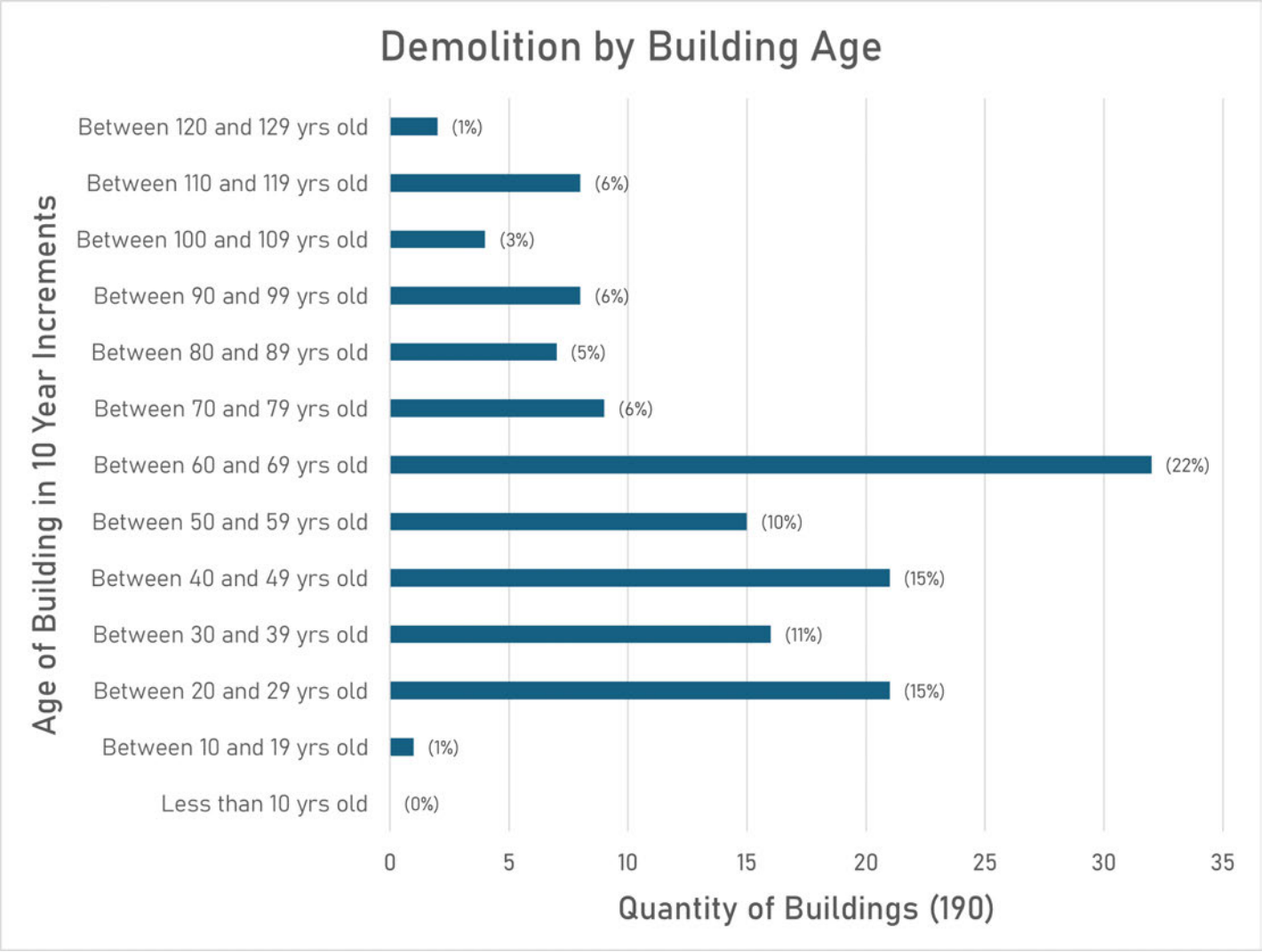


Figure 19: Each Permit Addresses Building Age Before Demolition Sorted Into 13 Decade Increments

To have a complete understanding of the demolition trends 22 buildings (15%) were demolished before they hit 30 years old and 14 buildings (10%) were at least 100 years old before they were demolished. Both statistics display concerning trends with material sustainability and historical preservation respectively.

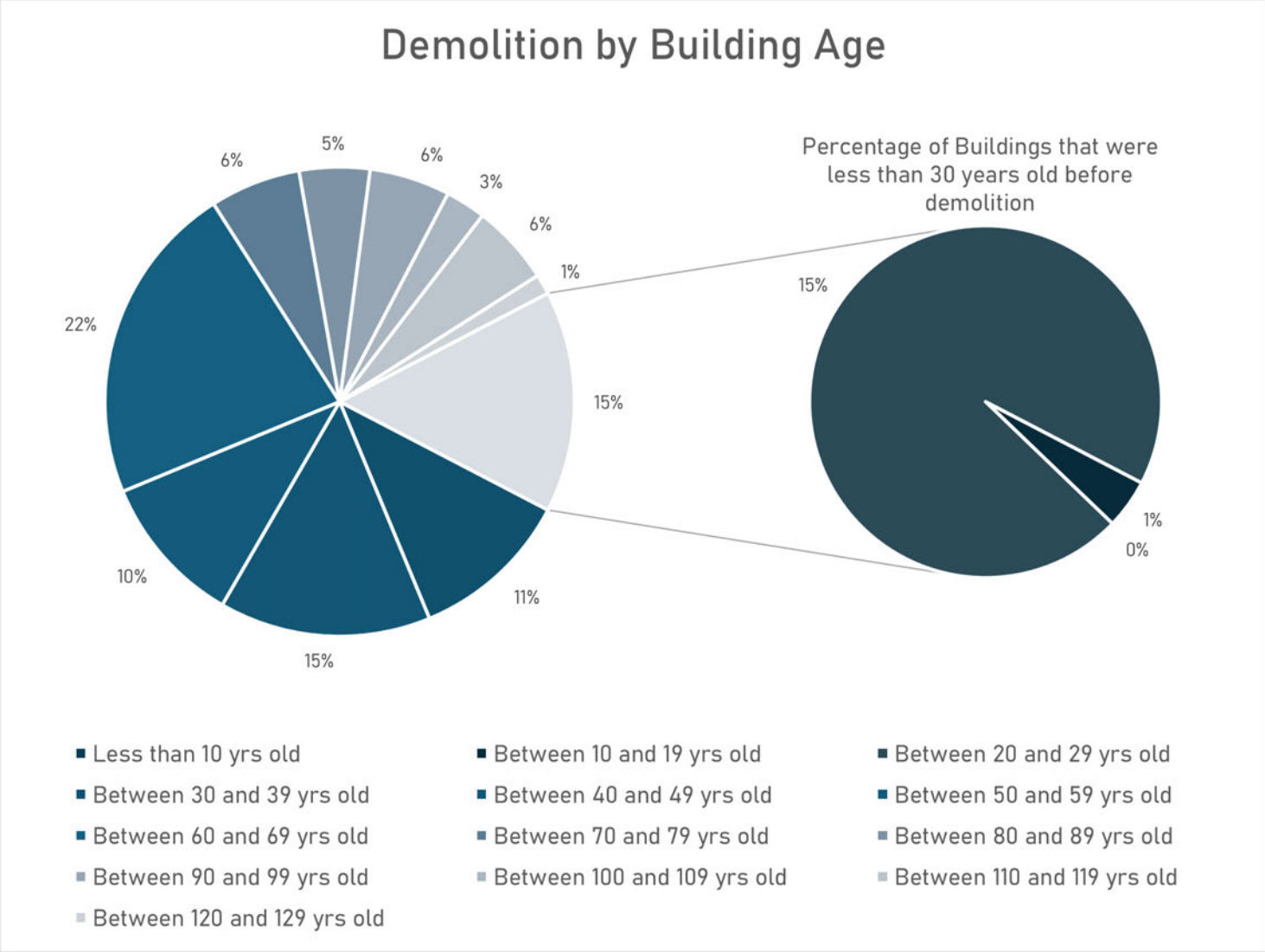


Figure 20: Comparing the Amounts Each Age Group Represents Out of The Total Permits Analyzed

1.5.2.2 Aerial "Images" Analyses

I analyzed the building's characteristics and height based on archival imagery taken from Google Maps from a date before the city removed the building. The address provided from the demolition permit data established the location of the building, the imagery established an understanding of the original building characteristics, and content analysis from each of the images and elevation calculations procured from Google Earth.

Building heights is another data component associated with building size, however comparing building height of the building before demolition with the building after demolition highlights the change in the urban landscape throughout the years. According to the elevation calculations, the height difference between before and after demolition shows that 23% (43 buildings) of reconstructed buildings increased in height by at least 51 feet.

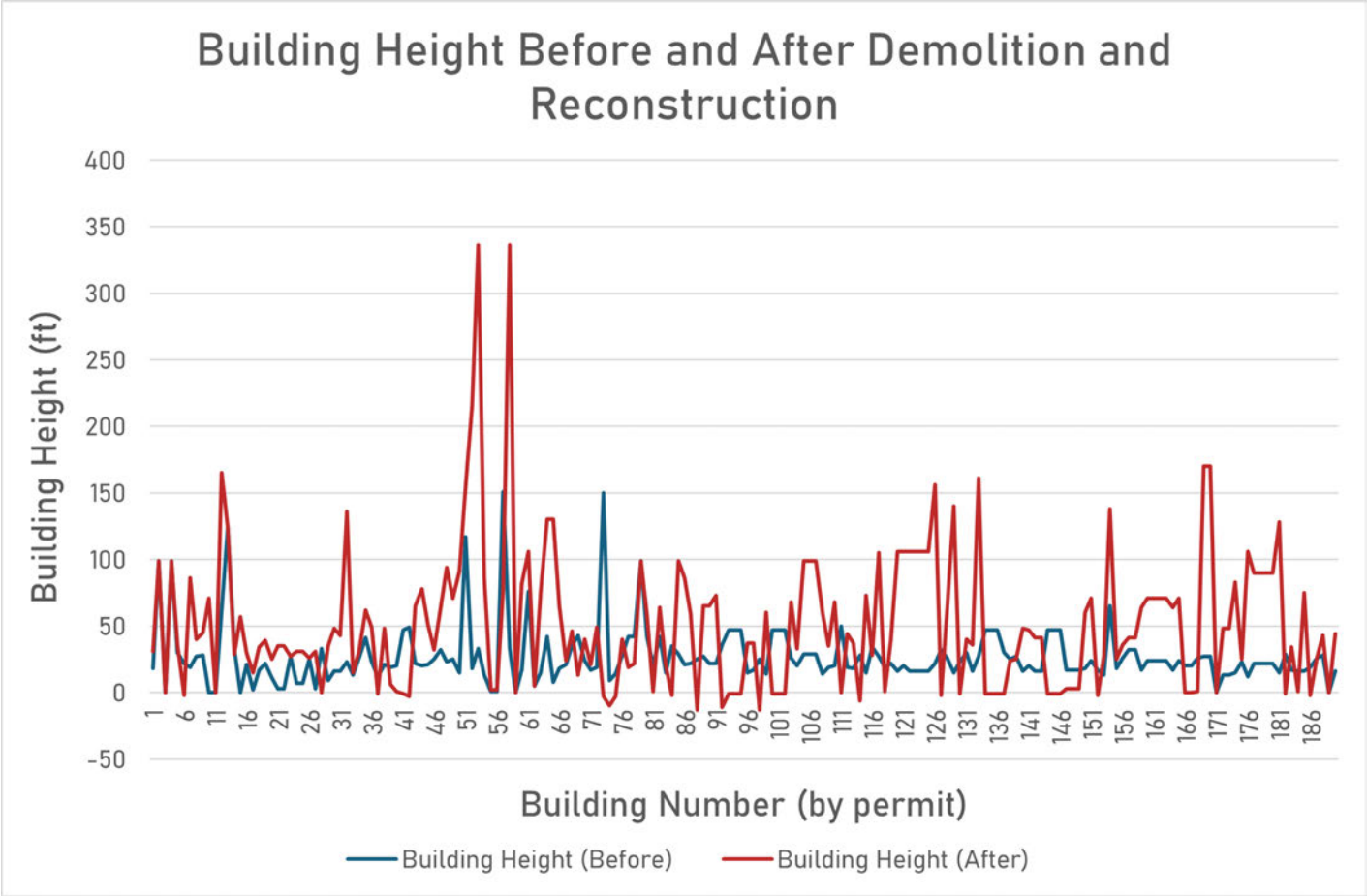


Figure 21: Comparing the Heights of Each Building Before Demolition and After Reconstruction

The height increase aligns with previous data of buildings increasing in square footage and building use changing to accommodate higher density uses like office buildings and apartments. However, 26% (50 buildings) of the reconstructed buildings decreased in height, which most often meant that the space on the parcel either became parking or remained as a vacant lot. The line graph above demonstrates the visual height change before and after demolition and the overall average of building height becoming more diverse after reconstruction.

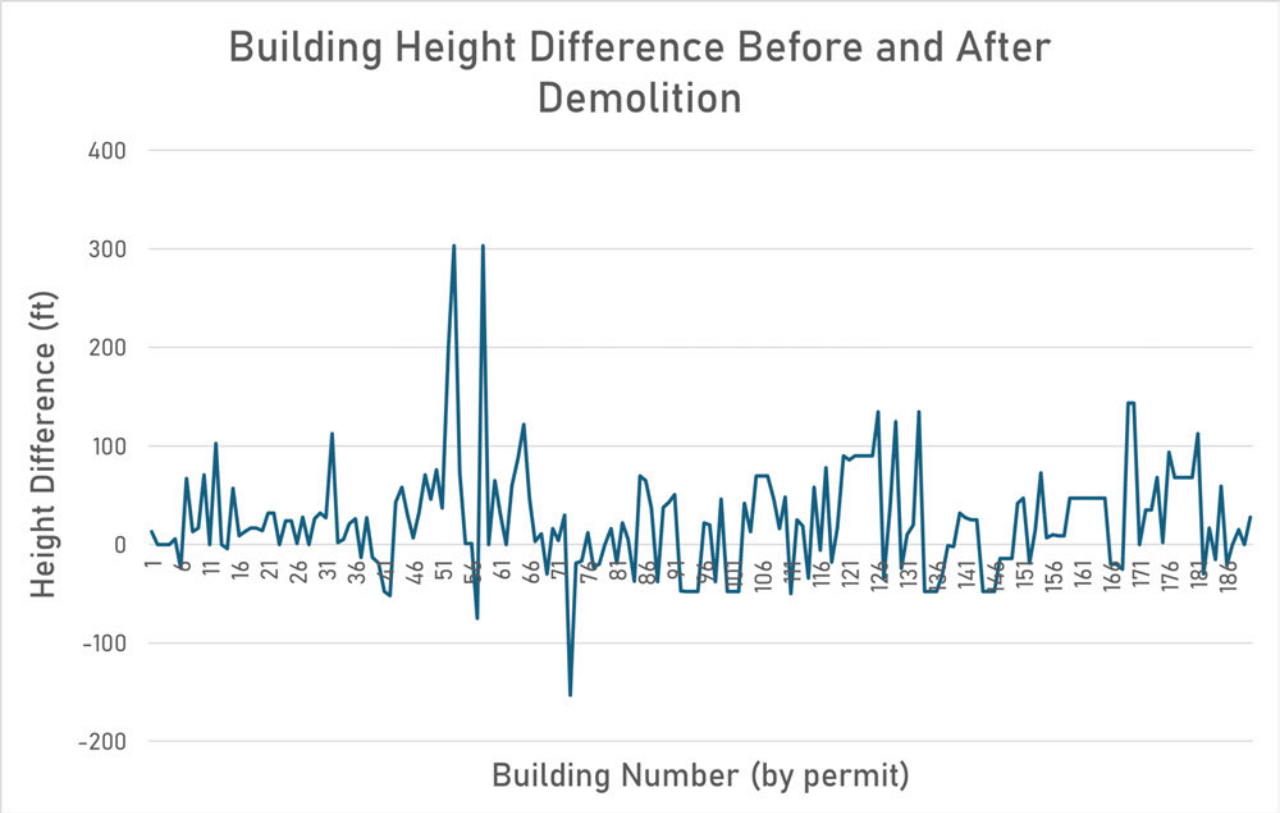


Figure 22: The Difference Between the Heights of the Building Before Demolition and After Reconstruction

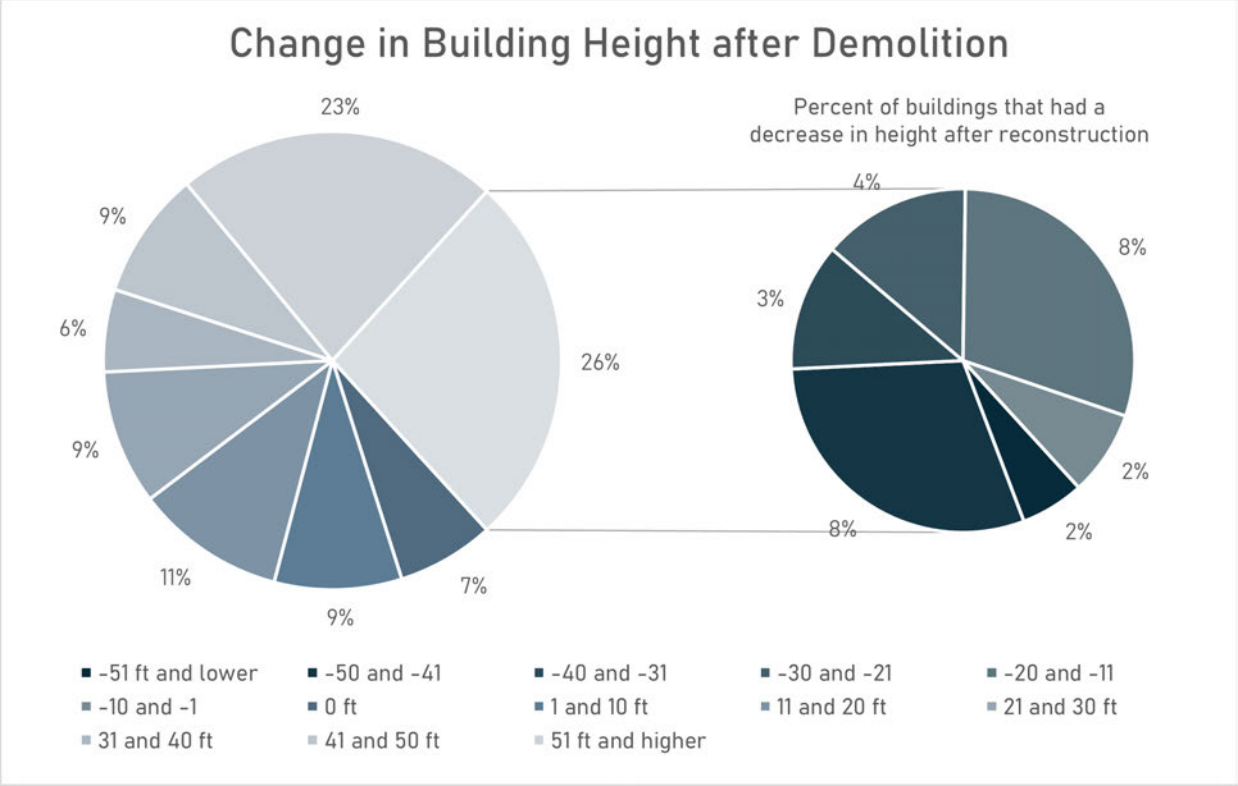


Figure 23: Comparing the Percentages of the Height Difference in 10ft Increments

Without input from the original developer and architect, we can only speculate on the reasoning behind the demolition. Prevalent issues and perspectives on adaptive reuse find that economics is the main challenge with reusing old buildings. Most complications stem from either sourcing materials for structural preservation or outside inputs weighing the cost factors between adaptive reuse and demolition. Historic buildings have a risk of complications due to the age and condition of the building. Maintenance is also a cost consideration that impacts the outcome of a building. High efficiency is a priority for sustainability, and historic buildings lack the mechanical systems necessary for low-cost maintenance. All of these variables influence the decisions made by developers and architects.

1.5.3 Interview Analysis:

After interviewing three architects from various firms across Denver, trends and ideologies were highlighted. Each architect stated similar responses to the questions with different examples to support their claims. Their collective responses answered many of the questions that relate to the adaptive reuse process. A summary of their responses is as follows:

- Keeping the structure and the character of the building is important in preserving the culture and for further decision making.
- Economics and maintenance of the existing building is a primary factor for demolishing a building.
- Working around the existing structure was the most common experience for adapting existing buildings.
- Issues with getting approval from the city for aspects like zoning, landmark preservation, and making changes to historic structures commonly occurred during adaptive reuse projects.
- Responsibly sourcing materials from local areas impact project costs and released carbon emissions.

Many of these points were emphasized by all of the architects, that these were day one decisions and major changes would continue to be made throughout the construction process. These responses and anecdotes of firsthand experiences demonstrate that each project has areas that cannot be addressed with a single guideline, but with assessments to be undergone along with the context of the project.

“Ultimately there’s never a black and white. You know there’s always gray areas with discourse and difference of opinions.”

These instances of external variables being simplified into policy frameworks inherently limit any adaptive reuse project.

1.6 Proposed Design

To truly understand the effect of the Demolition Tracking Tool, we test the process on a commercial building within Denver. This process would take the assessment of the DTT and the trends from the case study analysis to consider if the building is suitable for adaptation and avoids consideration for demolition.

The selected commercial building is the Wazee Exchange (1900 Wazee St, Denver, CO 80202) in the Union Station neighborhood. This is an old building that originated as a union depot and remained in the area changing uses. This building is currently being used as an office building. This three-story building keeps its original brick walls and foundations, but the structure has been compromised from alterations over the years.

The age of the building exceeds the trends for both the case studies and the DTT, however, the higher end of the age and the historic nature of the site lends more towards the preservation of the site. Its current use and location match the trends from the DTT and would most likely be demolished if the age wasn't such a considerable factor. The size of the building aligns with the case study trends; however, the height of the building would be a relevant factor considering the surrounding buildings.

The Wazee Exchange is 47 feet tall, and the height of the surrounding buildings are at least 40 feet taller. The tallest building in the surrounding intersection is 149 ft. Arguments can be made to demolish the building to construct a taller building with more square footage to maximize profitability in such a desirable area of Denver.

Research-Stemmed Parameter	Case Study Trends	Demolition Tracking Tool Trends	Selected Building Characteristics
Age	Built in 1914	Built in 1955	Built in 1871
Characteristics	Historic Brick Structure	N/A	Historic Brick Structure
Location	Union Station	Five Points	Union Station (one block from Five Points)
Size	Large (50,000+ sf)	Small (<15,000 sf)	Large (50,000+ sf)
Current Use	Warehouse, Office Building, or Educational Building	Office Building	Office Building (originally a warehouse)

Table 1: Comparing the Trends From the Adaptive Reuse Case Study, The Demolition Permits, and the Selected Building

Keeping the existing building, changing the use to be focused on hospitality, and designing around the century old historic charm of the building would better support the commerce of the area that is heavily impacted by tourism and preserves the character of the area.

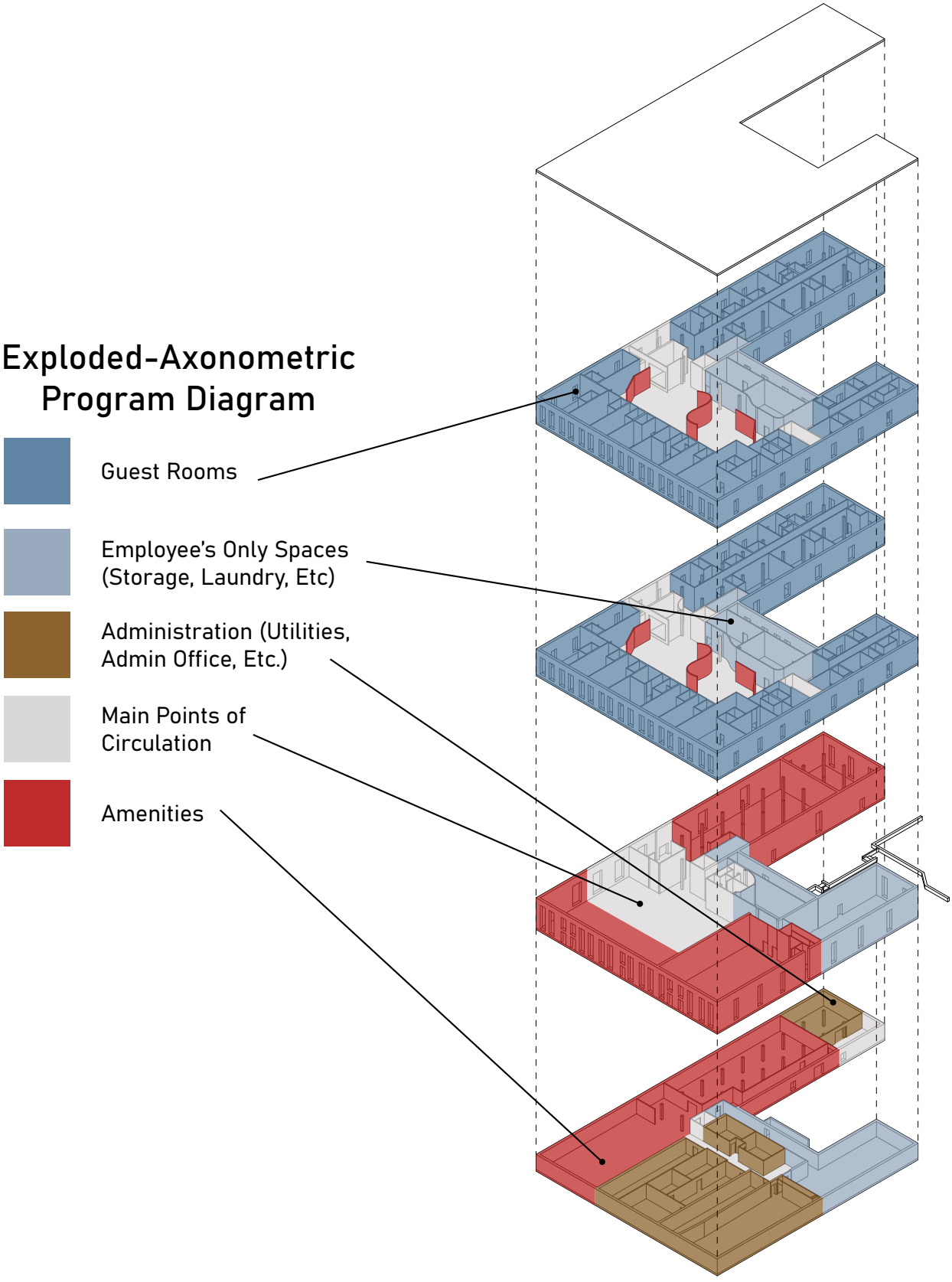
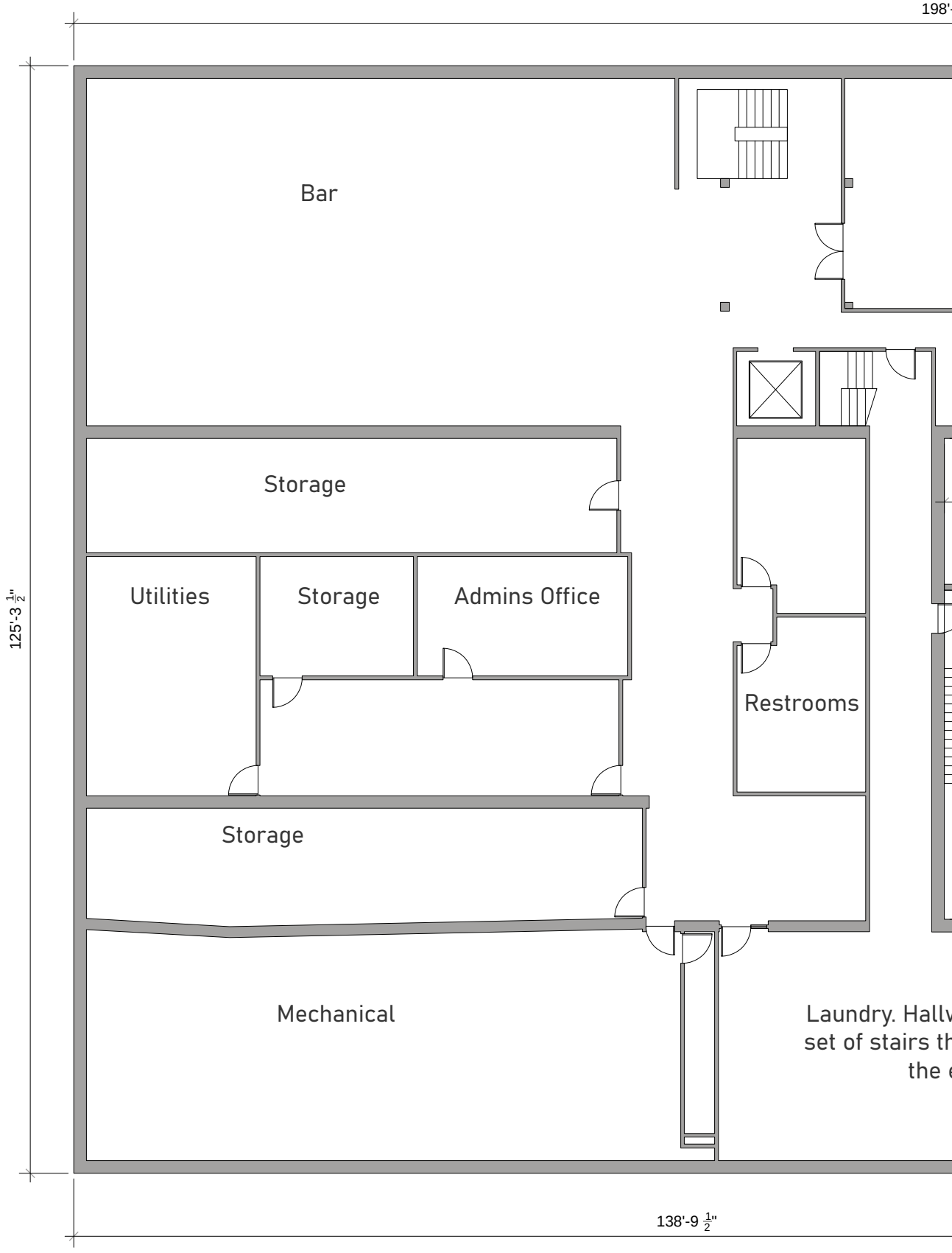


Figure 24: Exploded-Axonometric Program Diagram of the Proposed Building

The new use of the building would be a boutique hotel with a restaurant. The restaurant is on the first floor and has street access that allows other patrons beyond people residing in the hotel. There is outdoor seating in the back courtyard, using the structure that supports the brick walls as a center point to highlight the historic nature of the site.

Figure 25: Back Patio Space at Wazee Exchange (LoopNet, 2025)

The second and third levels host multiple different room options, retaining as much of the existing footprint as possible to avoid material waste. Finally, the basement includes a bar to establish a speakeasy aesthetic as an homage to Denver's prohibition history and with similar features in older buildings across the city.



Adapted Basement Design - Floor Plan

Scale: 1/16" = 1'

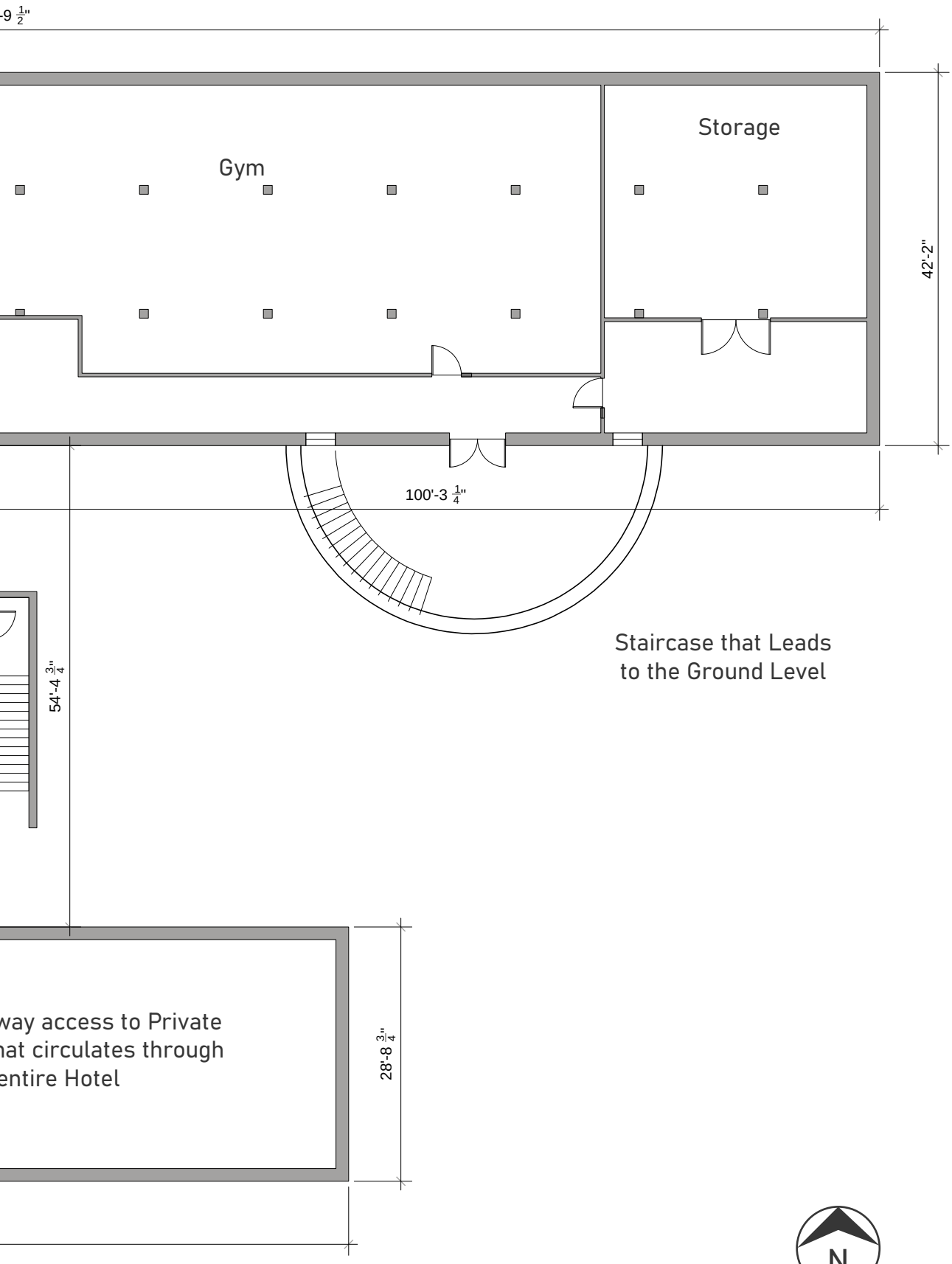
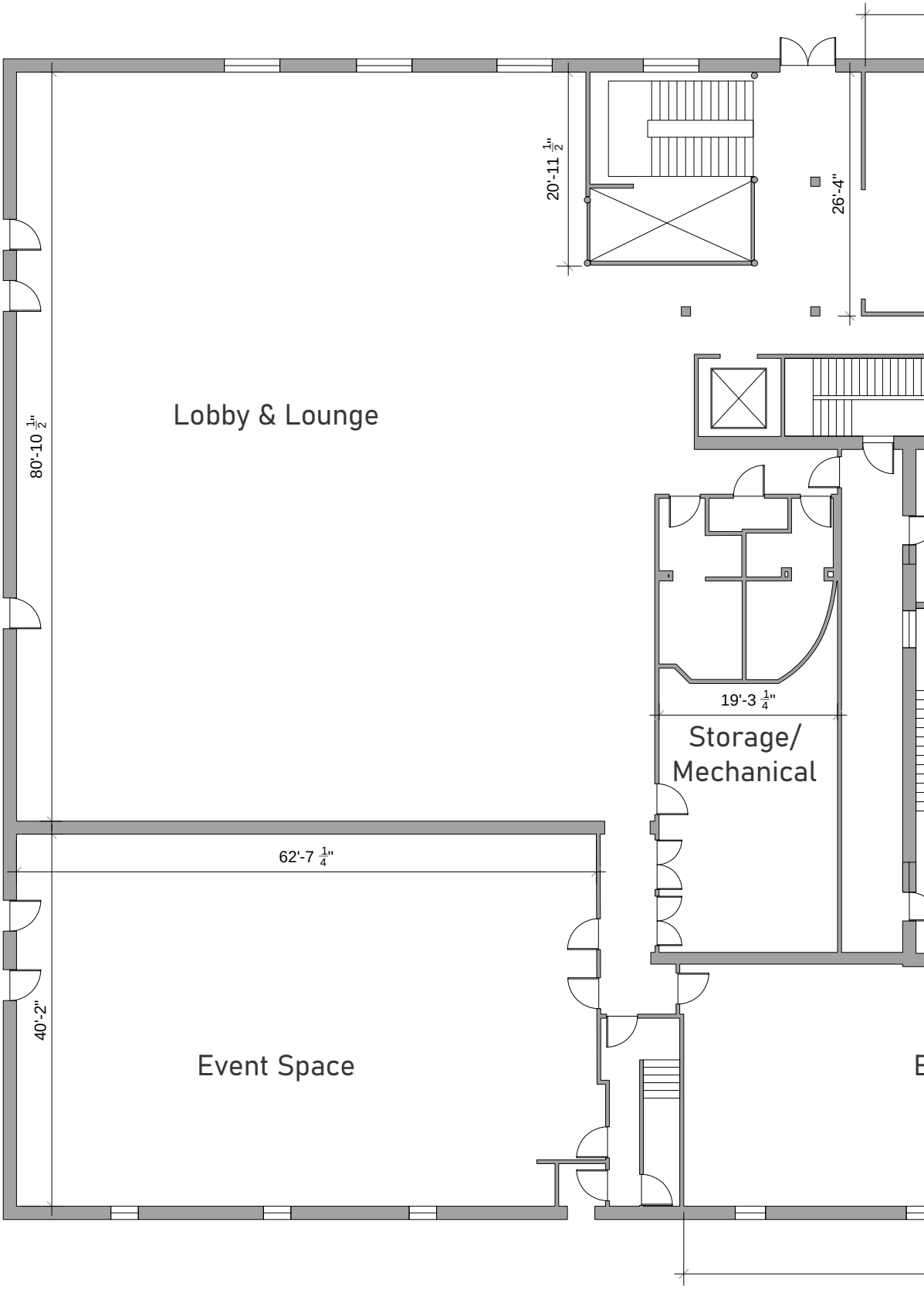


Figure 26: Proposed Adapted Basement Plan



Adapted First Floor Design - Floor Plan

Scale: 1/16" = 1'

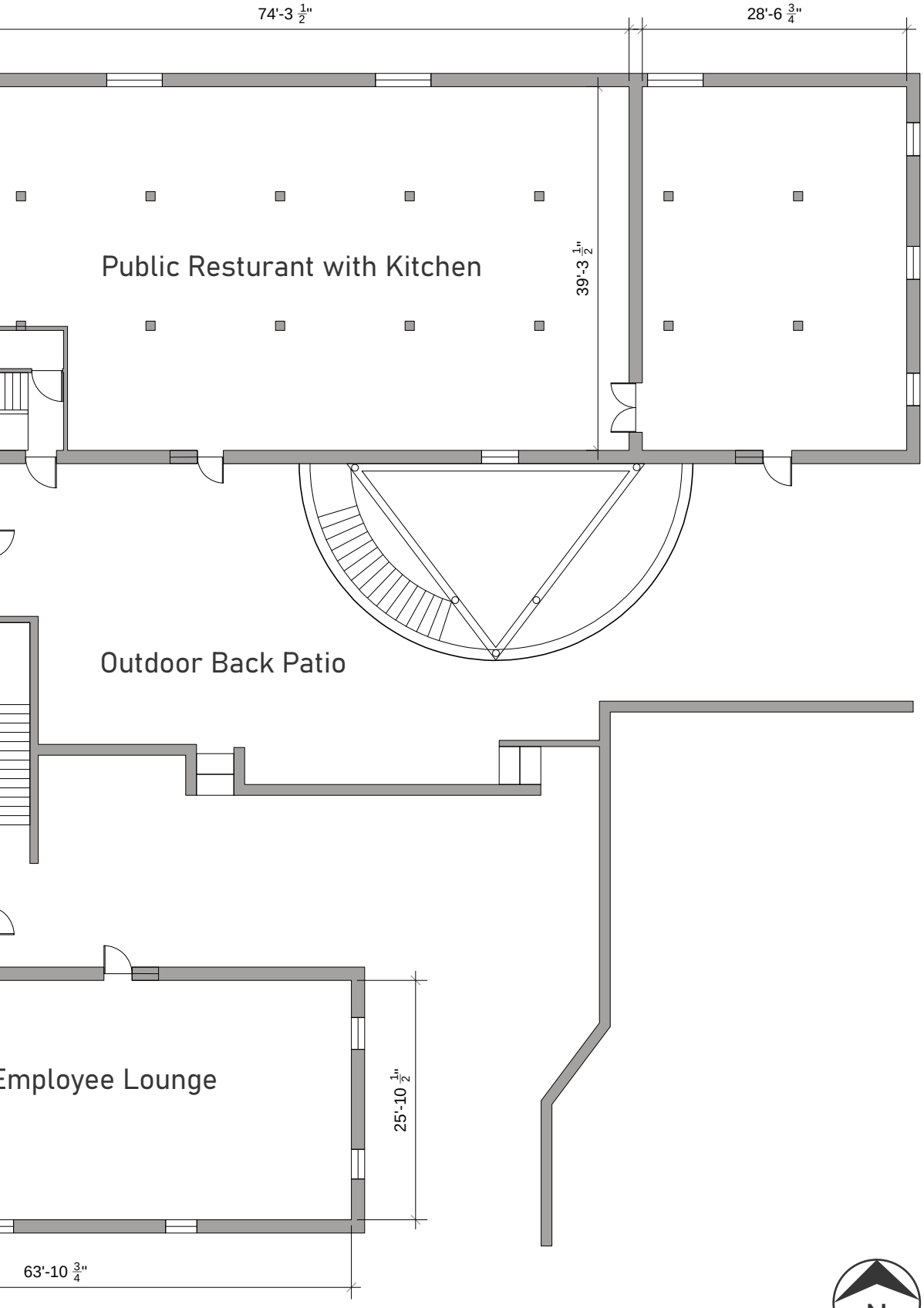
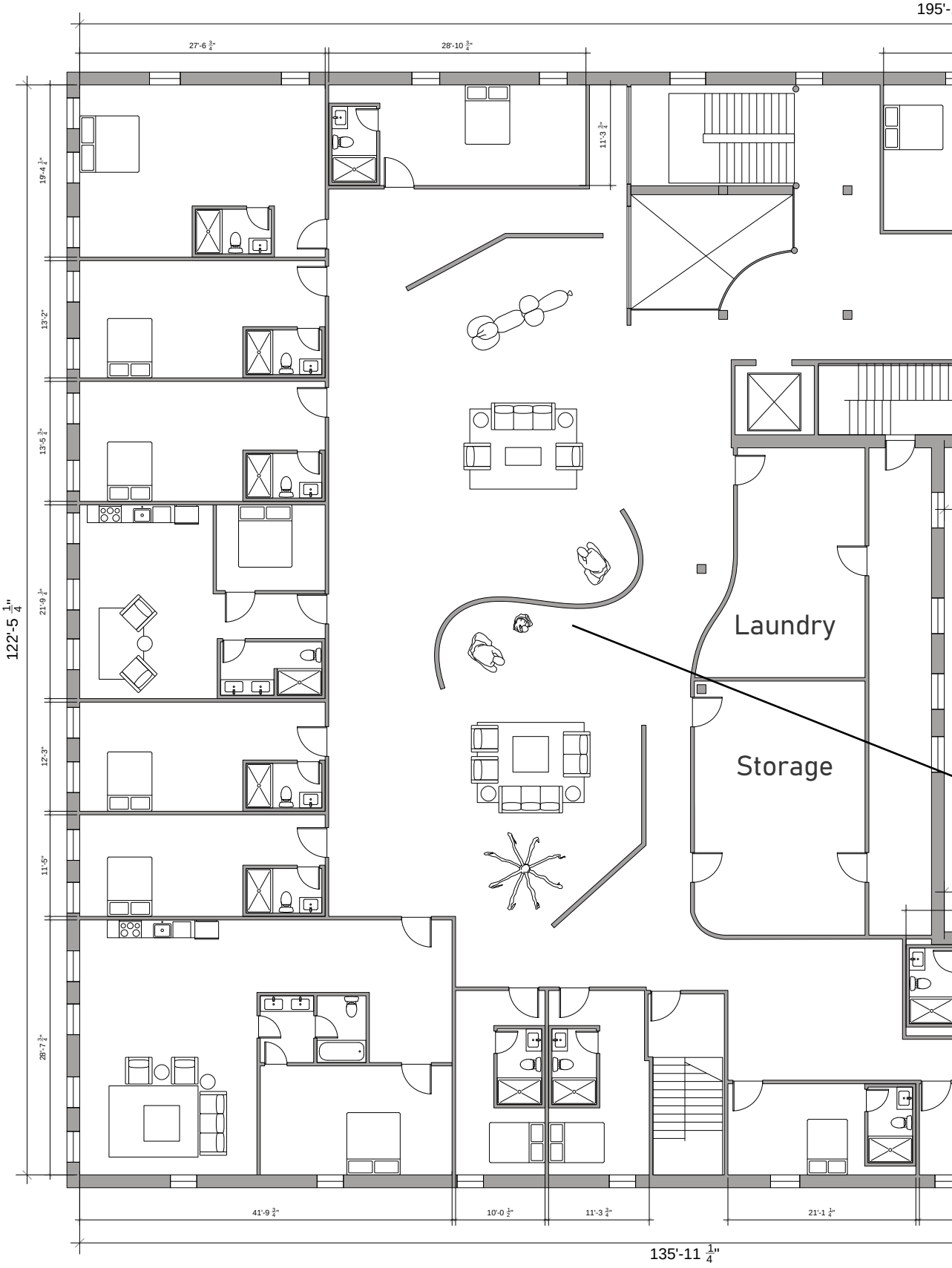
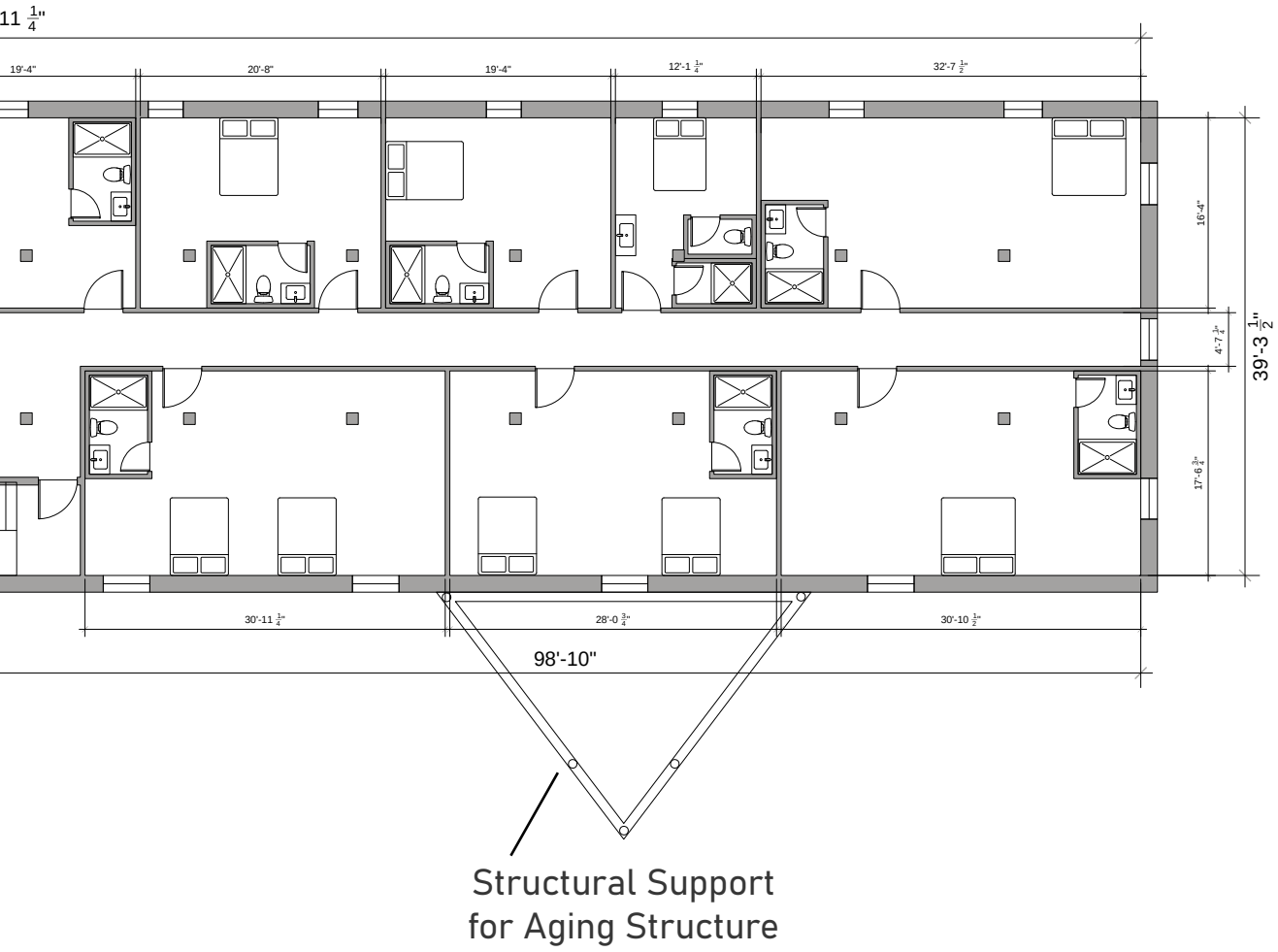


Figure 27: Proposed Adapted 1st Floor Plan



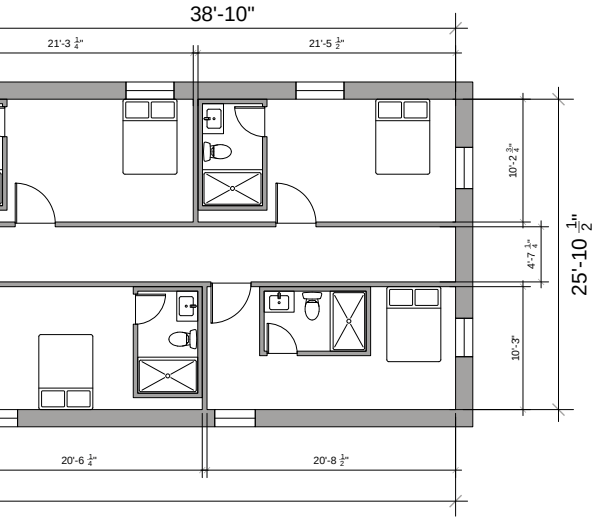
Adapted Second Floor Design - Floor Plan

Scale: 1/16" = 1'



Structural Support
for Aging Structure

Integrated Art Gallery and
Lounge Seating

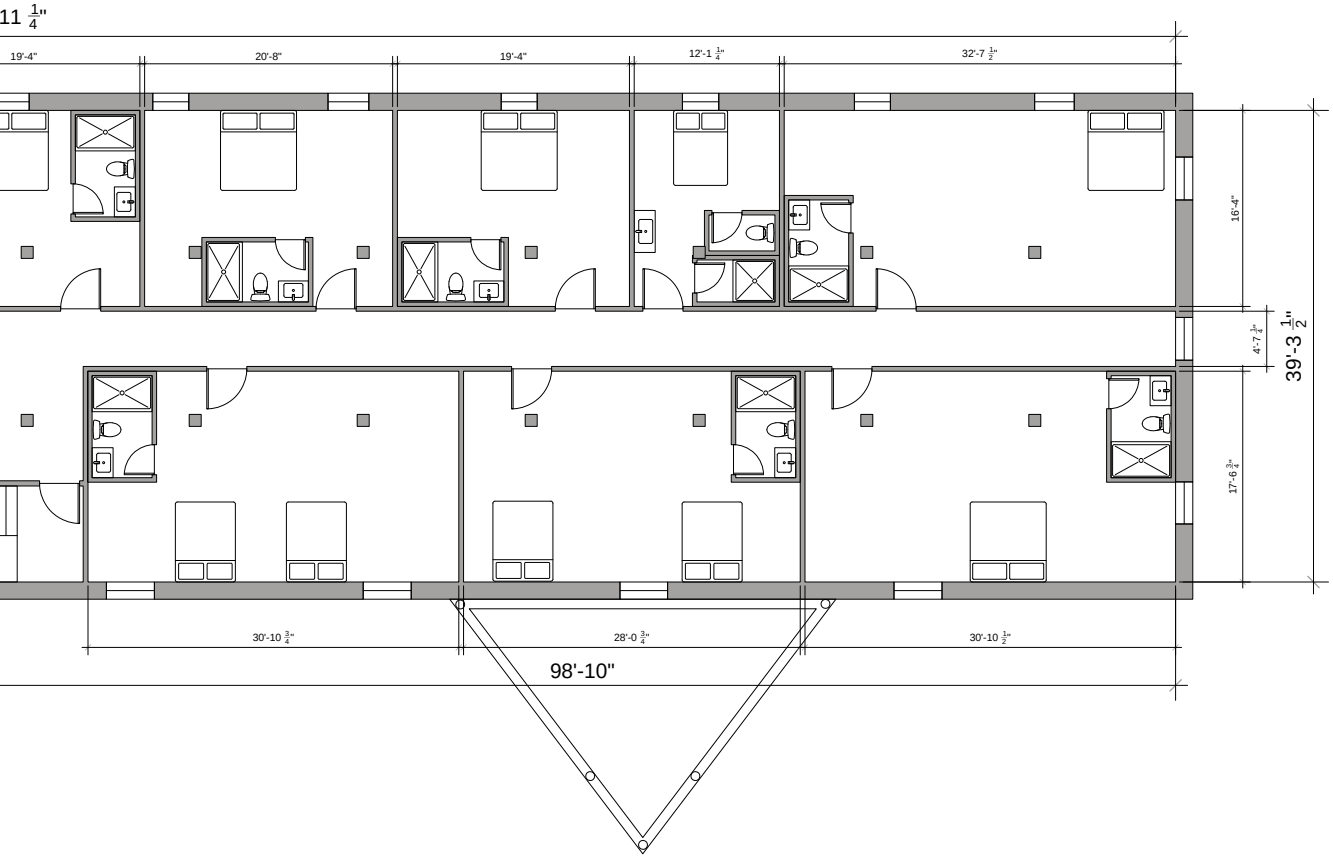


Guest Rooms All Along
Floor Permimeter

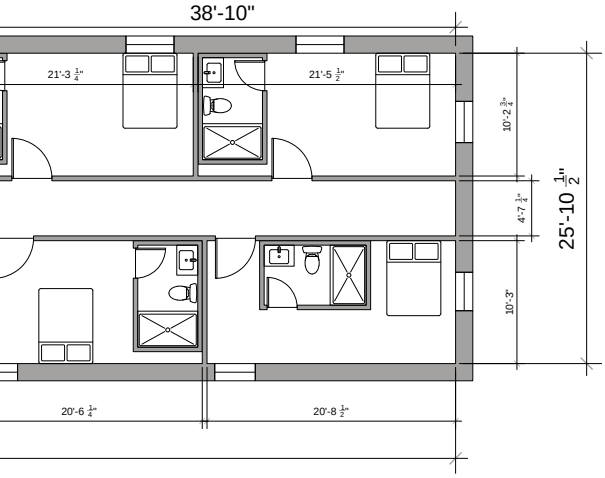
Figure 28: Proposed Adapted 2nd Floor Plan

Adapted Third Floor Design - Floor Plan

Scale: 1/16" = 1'

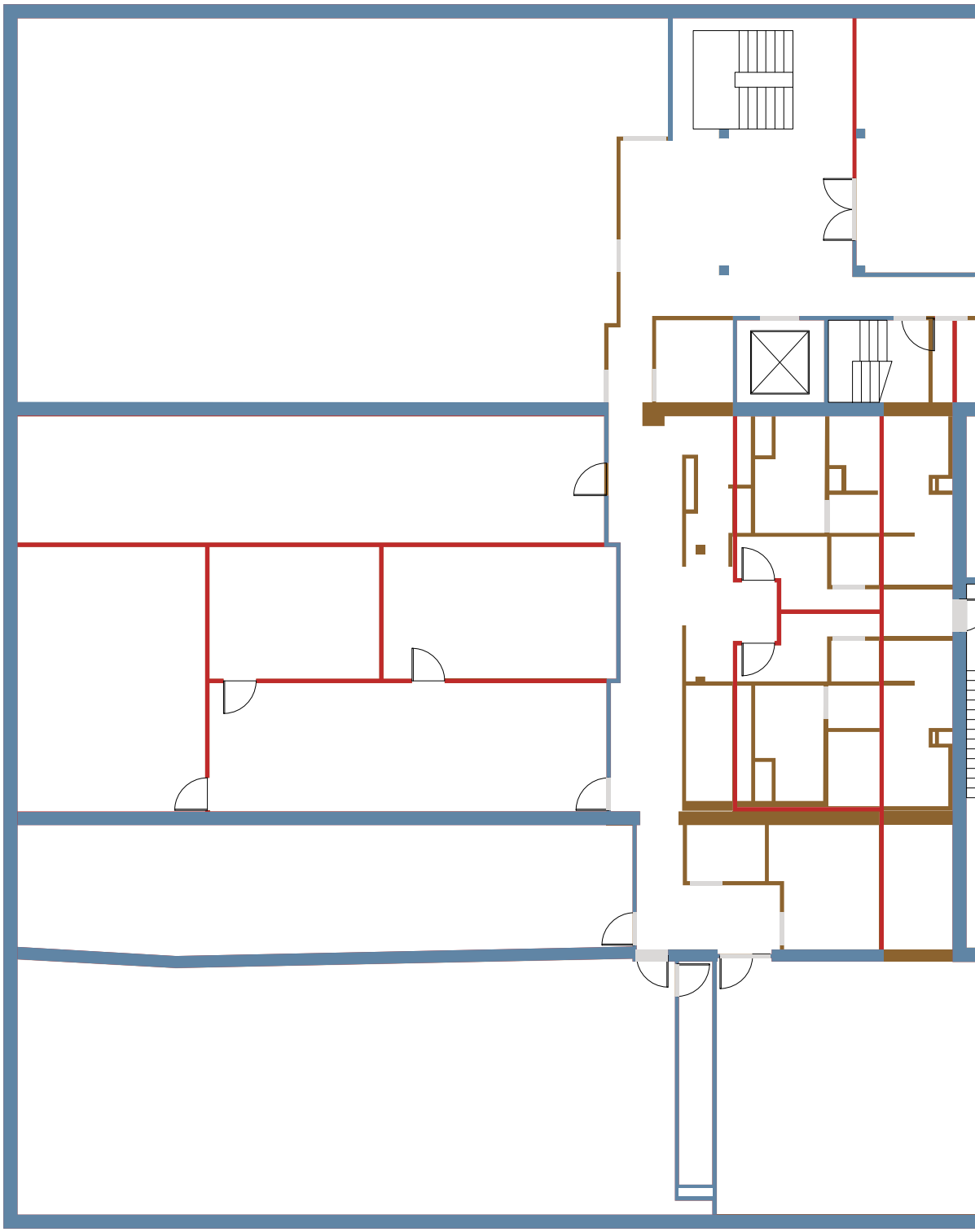


Integrated Art Gallery and Lounge Seating



Guest Rooms All Along Floor Perimeter

Figure 29: Proposed Adapted 3rd Floor Plan



Existing Basement - Floor Plan

Scale: 1/16" = 1'

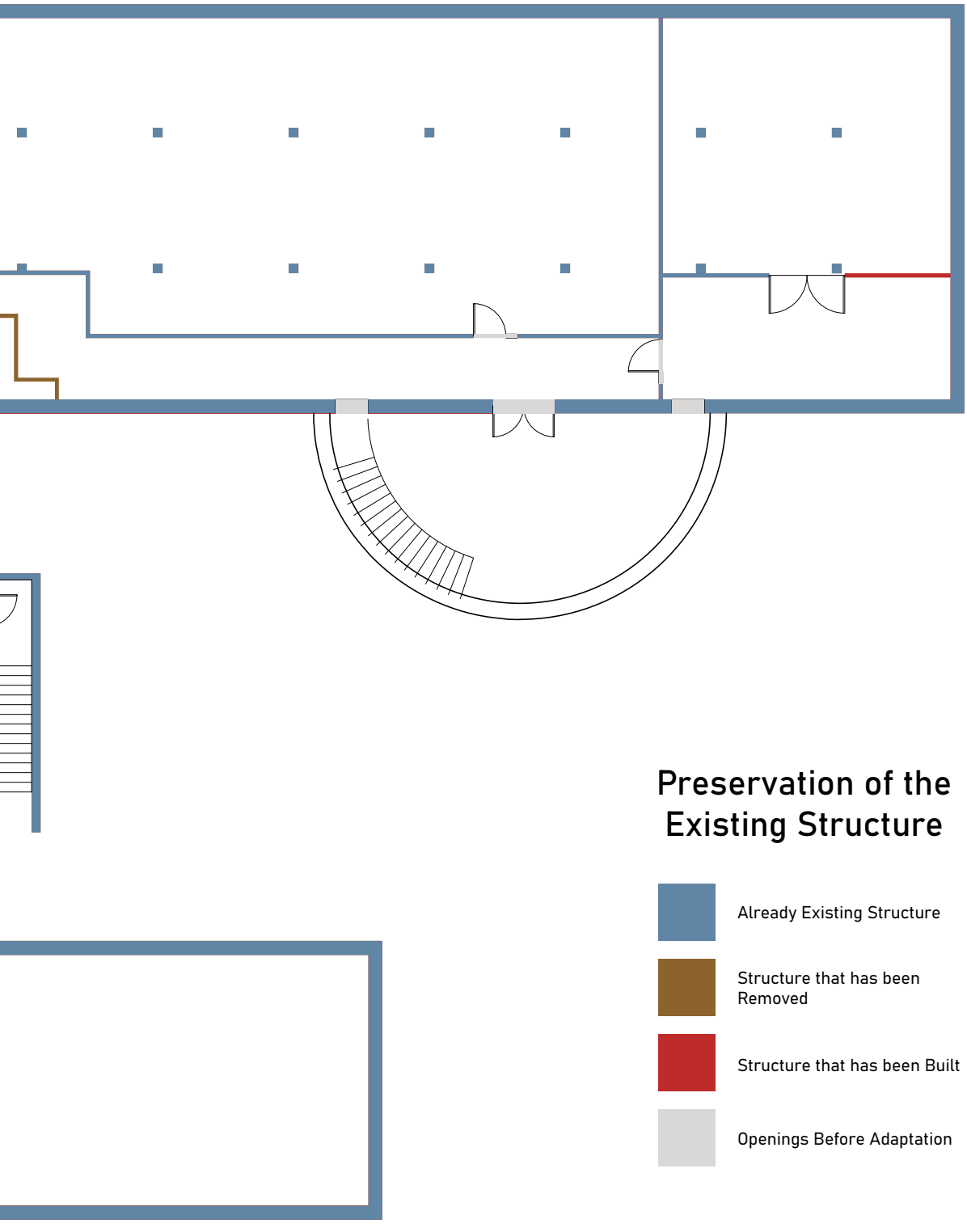
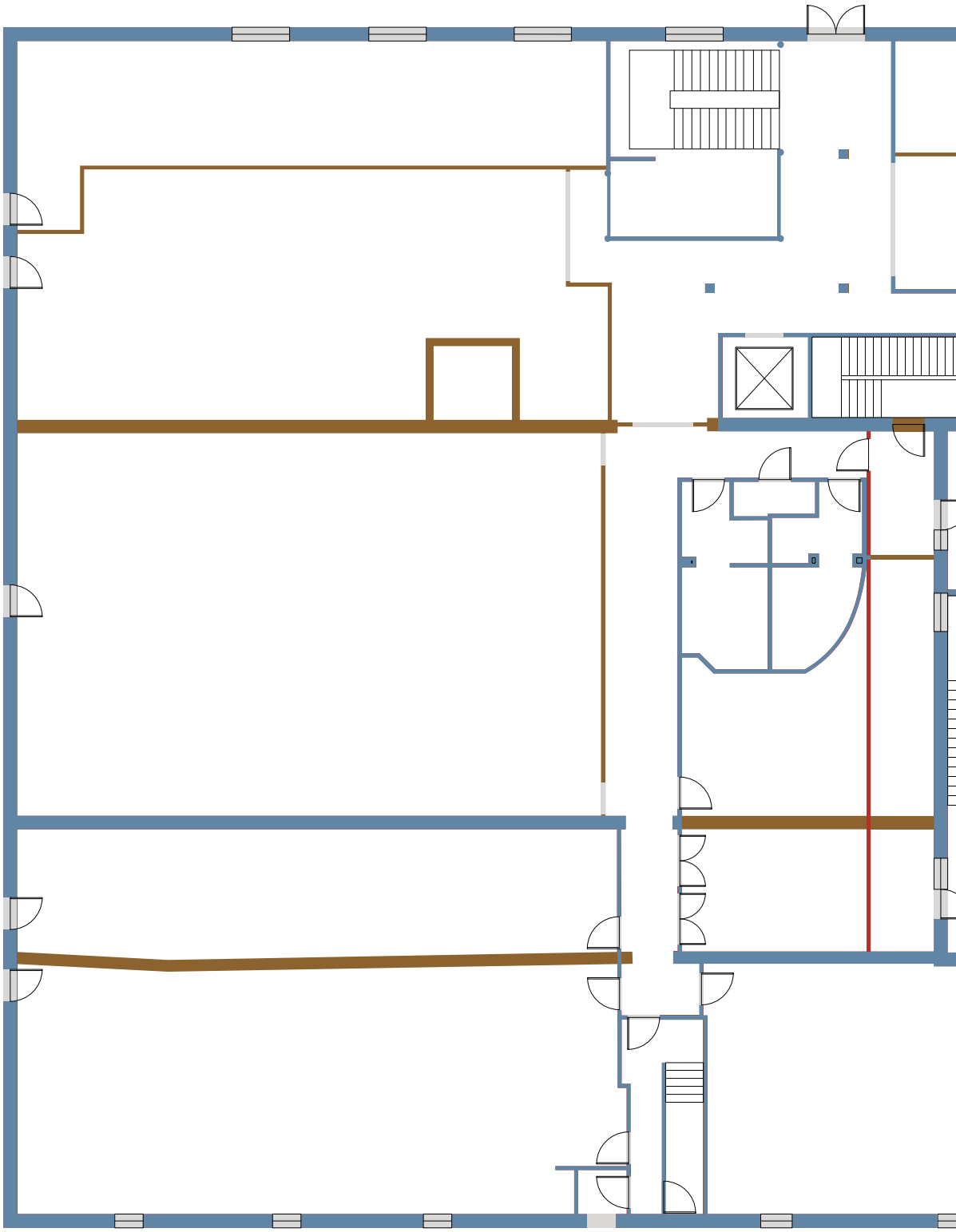


Figure 30: Existing Structure, New Structure, and Removed Structure Diagram of the Basement



Existing First Floor - Floor Plan

Scale: 1/16" = 1'

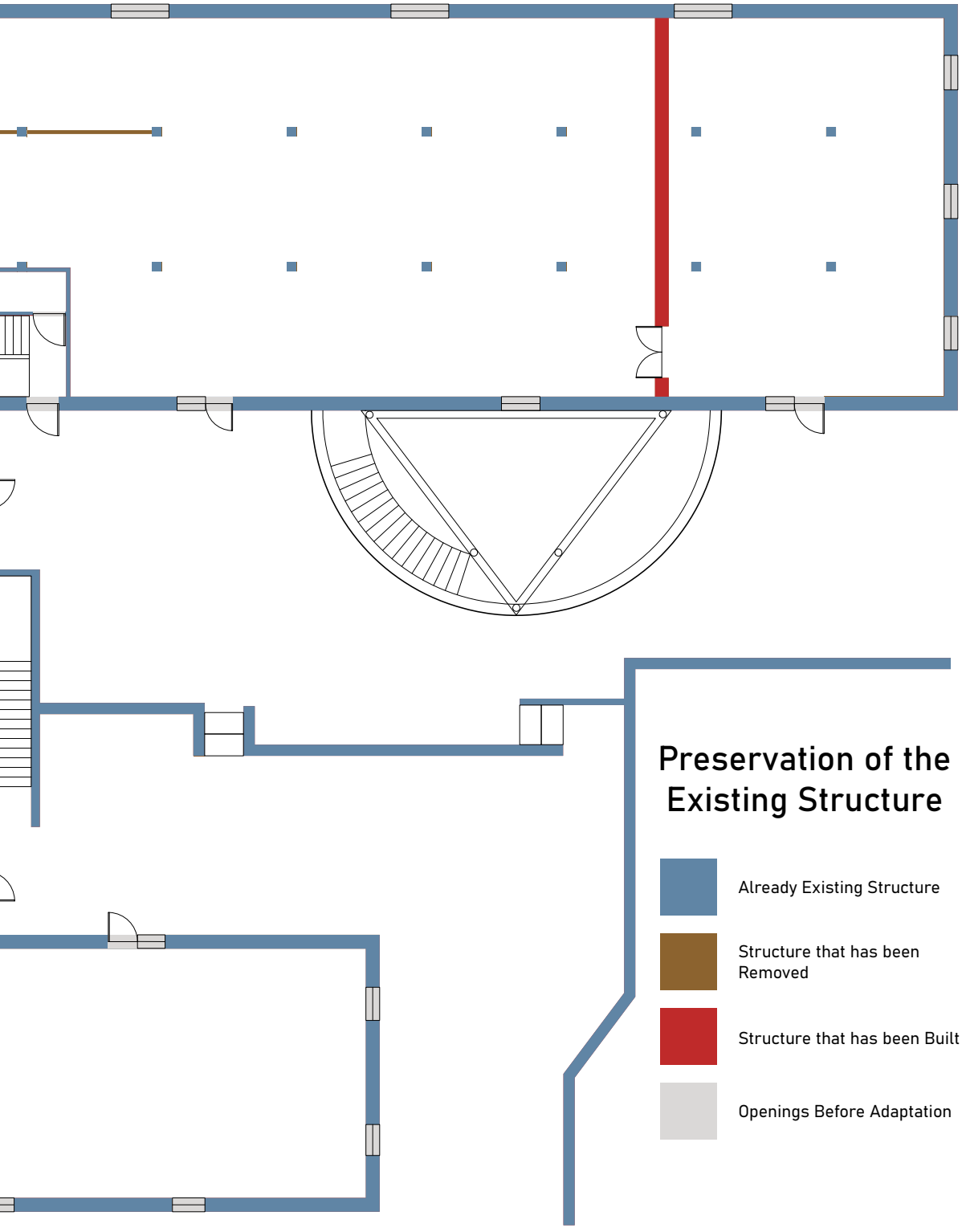
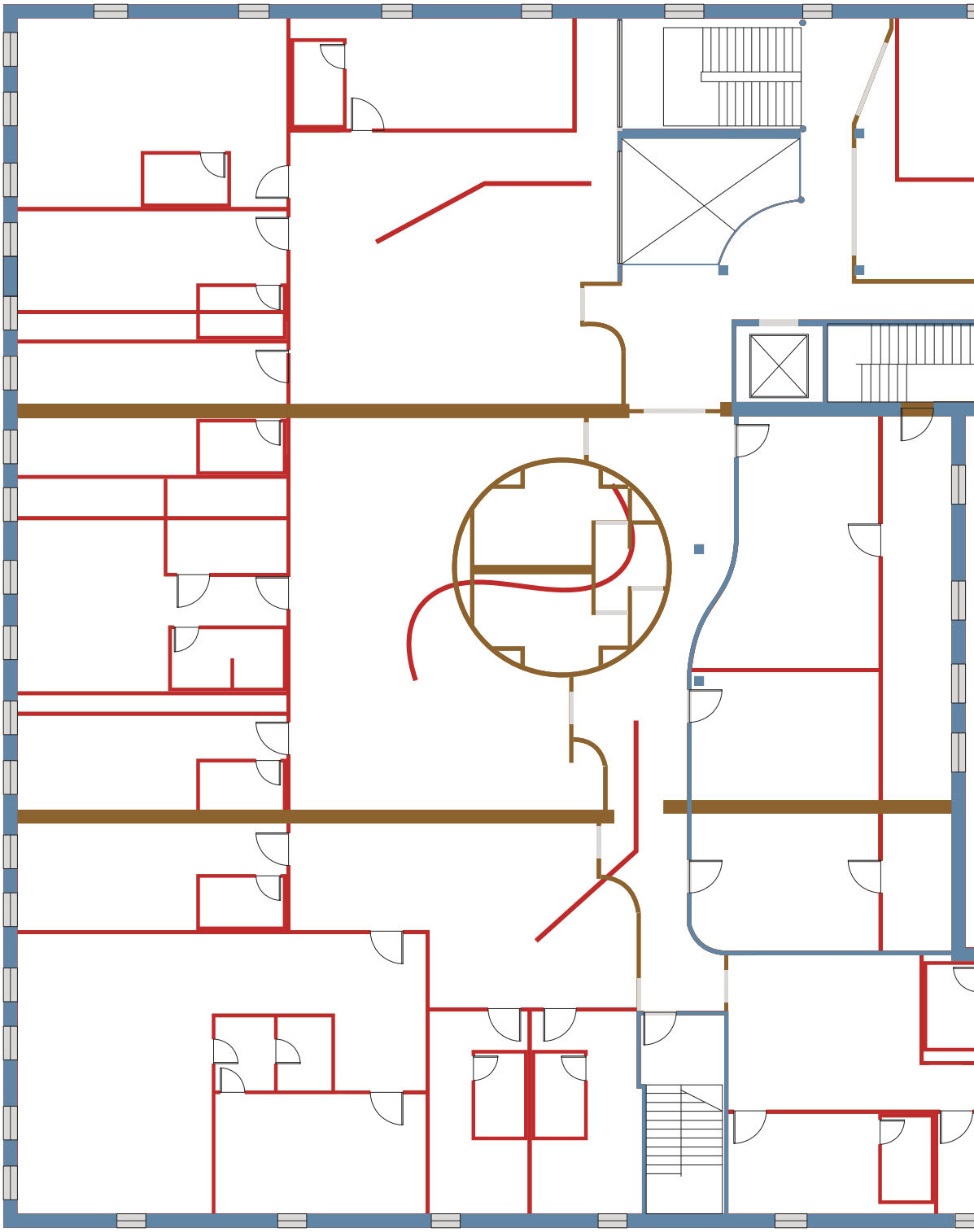
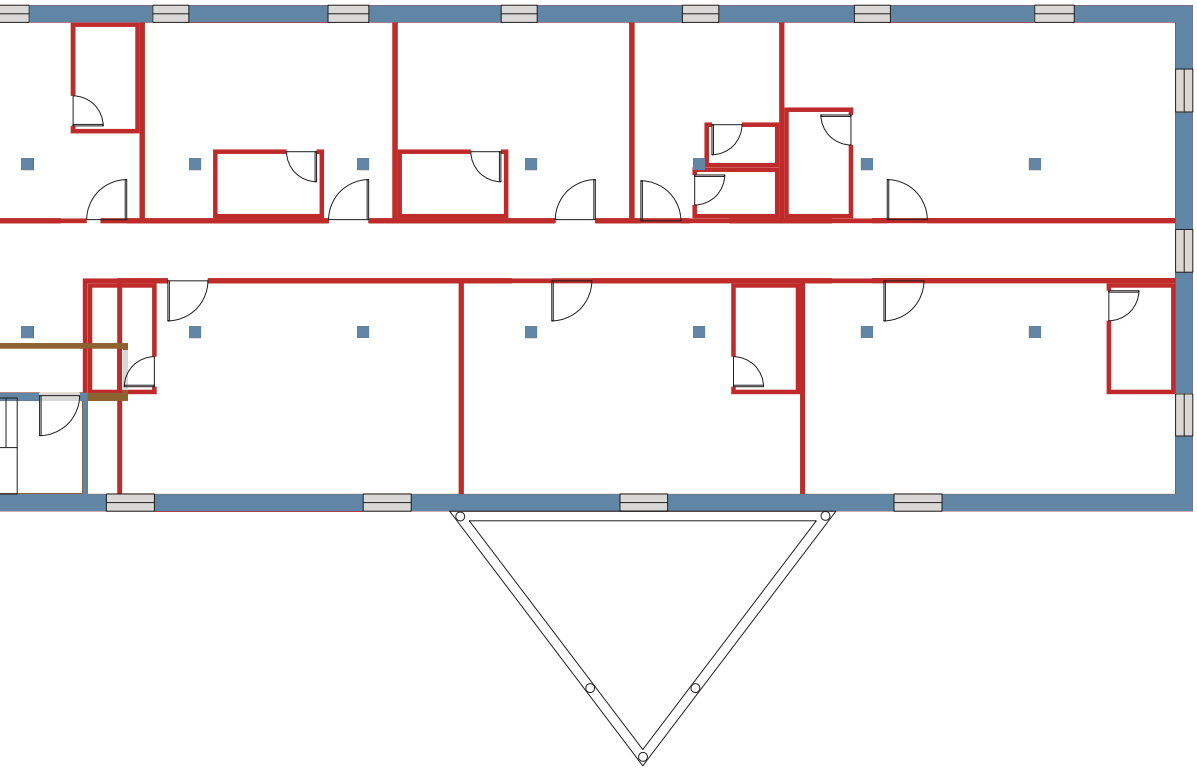


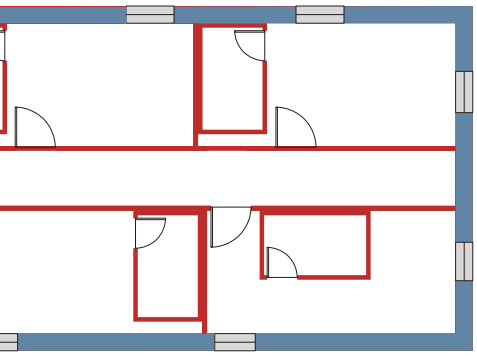
Figure 31: Existing Structure, New Structure, and Removed Structure Diagram of the 1st Floor



Existing Second Floor - Floor Plan

Scale: 1/16" = 1'



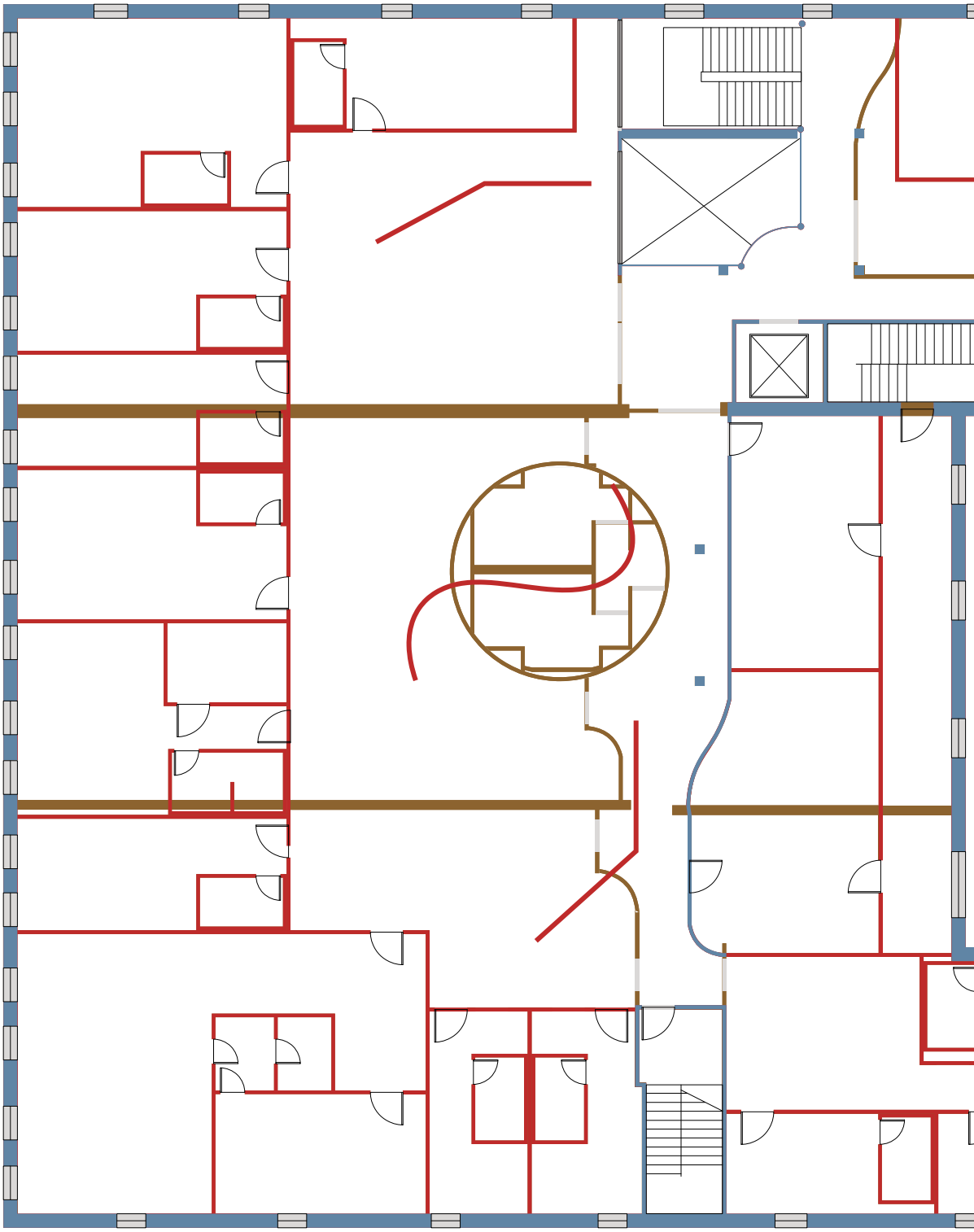


Preservation of the Existing Structure

- Already Existing Structure
- Structure that has been Removed
- Structure that has been Built
- Openings Before Adaptation

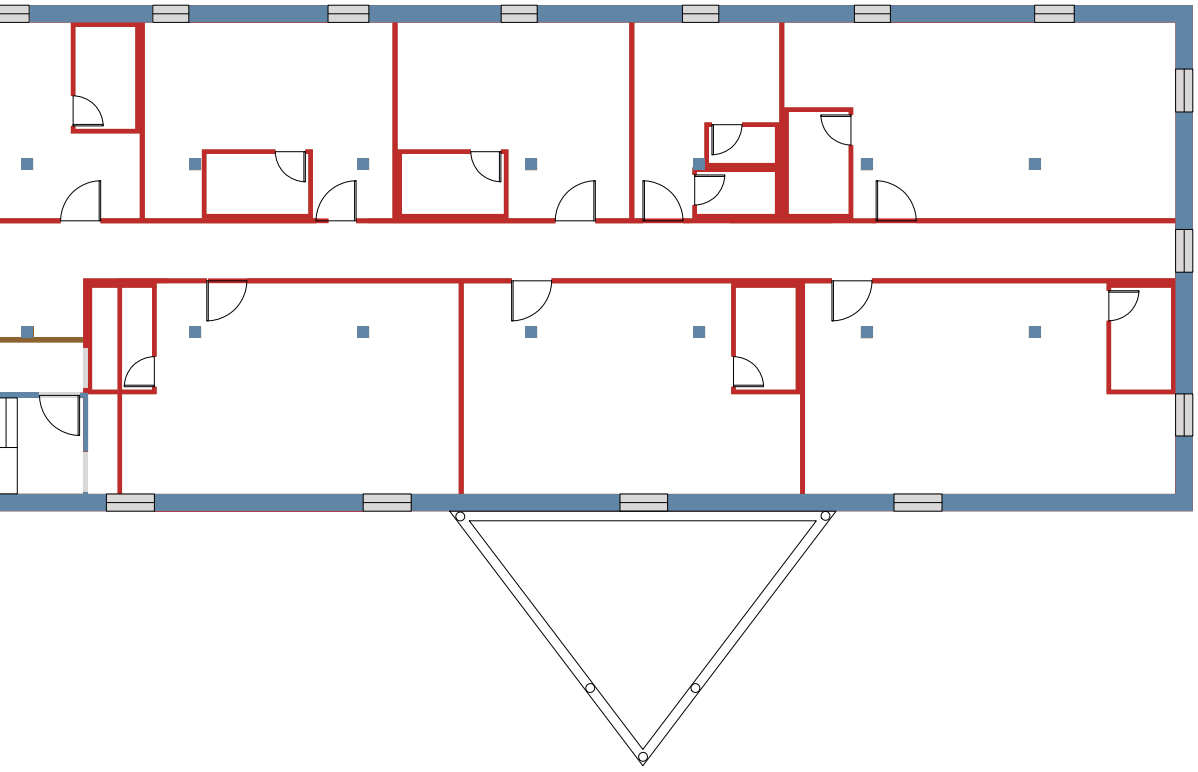
N

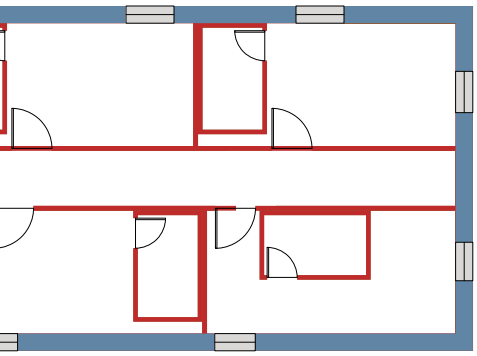
Figure 32: Existing Structure, New Structure, and Removed Structure Diagram of the 2nd Floor



Existing Third Floor - Floor Plan

Scale: 1/16" = 1'





Preservation of the Existing Structure

- Already Existing Structure
- Structure that has been Removed
- Structure that has been Built
- Openings Before Adaptation

N

Figure 33: Existing Structure, New Structure, and Removed Structure Diagram of the 3rd Floor

1.7 Conclusion

Under the current adaptive reuse policy in Denver, CO, no guidelines allow for the preservation of historical structures without Historical Landmark status. This policy leaves buildings open for unnecessary demolition. This entails demolishing buildings with no plan for reconstruction, which leaves parcels within the city vacant for an unknown time. In cities with a growing population, leaving parcels available, which could be housing unnecessarily, reinforces the housing crisis.

The creation of the Demolition Tracking Tool establishes a framework for analysis for professionals within the construction sector to use and promote more adaptive reuse projects. Policy makers, climate advocates, zero waste and climate adaptation professionals, and deconstruction professionals can all benefit from using a framework that establishes trends from previously demolished buildings.

By comparing the results from the DTT with adaptive reuse trends designers have shown are more comfortable with, an overlap of building characteristics and typologies that are “less desirable” is found in an attempt to reuse rather than demolish. The discrepancies found by comparing the trends from the two data sets and expert feedback will improve the process. Establishing frameworks to make assessments for alternate construction methods can promote adaptive reuse and increase the lifespan of a building while preserving the history and culture of a city. Using more preservation methods improves material sustainability by preventing debris from entering landfills.

The DTT can be used as a form of building assessment by examining buildings through multiple variables to understand the scope and feasibility of a project. Establishing facts and trends before determining a permanent course of action removes the risk of unnecessary demolition. The DTT will look into each building and preserve structures that align with the parameters and are preferable for adaptive reuse. Ensuring the existing building has been appropriately assessed can mitigate the unnecessary removal of buildings without continuing development and leaving the lot vacant.

1.8 Appendix

Research Questions	Interview Questions
What parameters and decision-making practices determine whether building typologies are feasible for adaptation or demolition?	Could you describe your thought process for any decisions made for adaptive reuse projects in Denver? Were there any limitations that impacted your decisions during your adaptive reuse projects?
	Can you explain any factors that decide which direction a project went? What factors helped decide adaptive reuse? What factors helped decide deconstruction? What factors helped decide on demolition? What factors contributed to one decision over the other?
How can the process of evaluating large-scale commercial buildings within Denver, Colorado, be improved to promote adaptation rather than demolition, leading to more sustainable outcomes?	Could you describe your experiences with adaptive reuse projects in Denver?
	Could you describe any issues or challenges you found with the current adaptive reuse policy in Denver? What do you suggest, could improve the current adaptive reuse policy?
	Could you describe any sustainability-related decisions you made regarding any adaptive reuse projects? Did you use deconstruction techniques or re-use any existing materials/objects in adaptive reuse projects?

Table 2: Approved IRB Interview Questions Relating to Research Questions

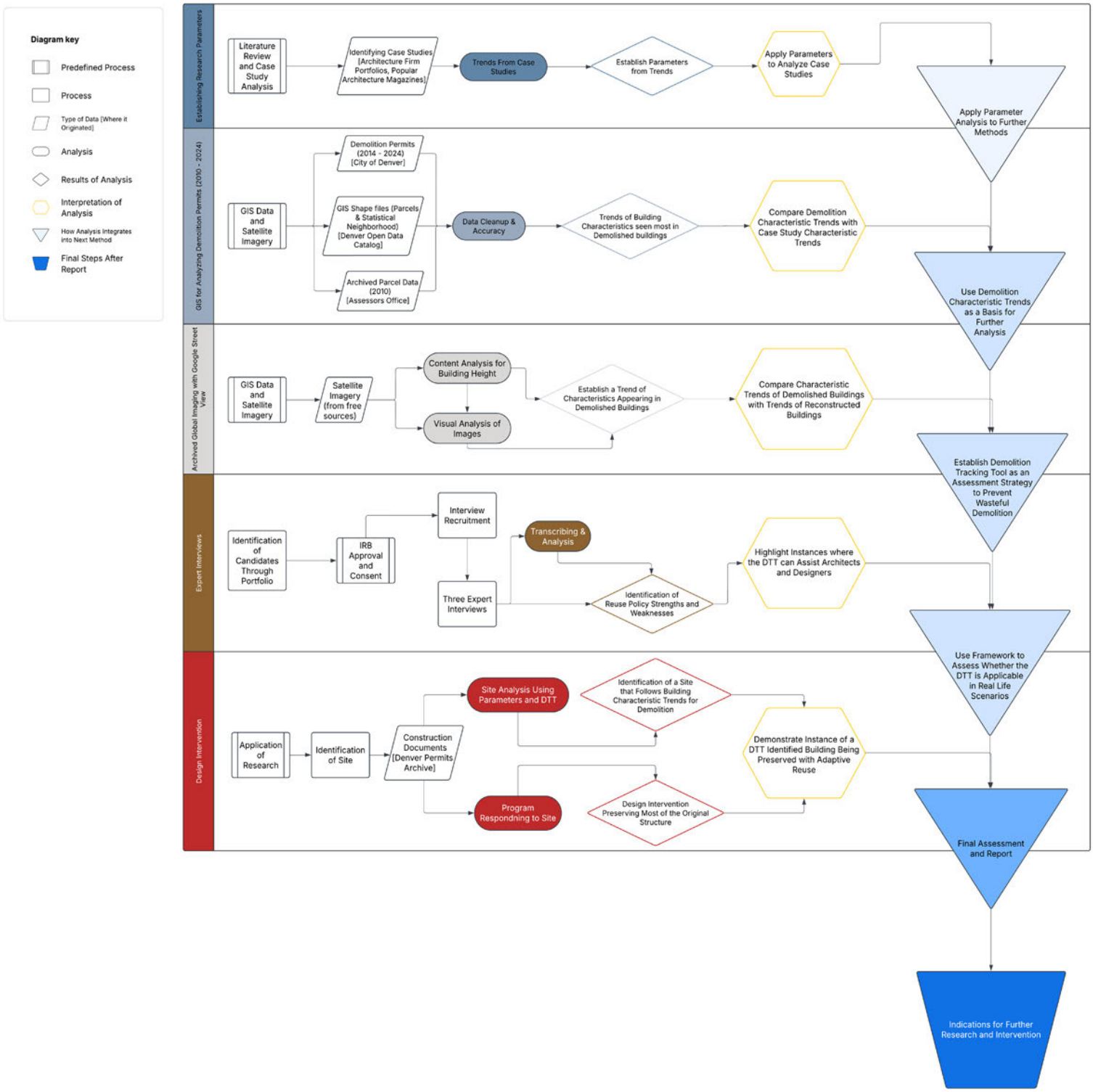


Figure 34: Enlarged Mathods Flowchart

Title of research study: Adaptive Reuse Assessment: Revising Redevelopment Policies in Denver, Colorado to Promote Sustainability.

IRB Protocol Number: 24-0767

Investigator: Dr. Azza Kamal
Co-Investigator: Victoria Lindenmuth

The purpose of the research is *to examine why developers and design professionals don't utilize an adaptive reuse strategy more often and how adaptive reuse can be applied to more of Denver's existing buildings to better understand sustainable reuse methods and material waste prevention techniques*. We expect that you will be in this research study for [30 minutes length of time for a remote interview that we will conduct on Zoom] and that a total of 5 to 10 people will participate in the study. Whether or not you take part in this research is your choice. You can leave the research at any time, and it will not be held against you.

Your participation will consist of answering a short 30-minute open-ended interview questions. I will ask you questions about adaptive reuse design approach and strategies. The interview will be audio-recorded and transcribed using Zoom AI tool, and you may skip any questions you do not want to answer.

I will start the interview questions after you have read this consent information and digitally signed "I agree to participate in this study."

Information obtained about you for this study will be kept confidential. The information from this research will be included in the Honors Thesis and may be published for scientific purposes; however, your identity will not be given out. Audio recordings will be transcribed using specific codes to replace names; any identifying information will be removed during transcription. The audio files will be kept and secured on the OneDrive accounts of PI and co-investigators.

I will not collect any personal information about you during the study. All study data will be stored securely and only accessed by study staff.

Questions
If you have questions about the research, you can contact the Principal Investigator at Azza.Kamal@colorado.edu or co-Investigator vili7444@colorado.edu

If you have concerns or complaints about the research you can contact the CU Boulder IRB at (303) 735-3702 or irbadmin@colorado.edu if:

I agree to participate in this study
Name:

Exempt Determination Date
IRB Document Revision Date: January 22, 2024
TEMPLATE – Exempt Remote Consent

Figure 35: Approved IRB Consent Form for Interview Participation

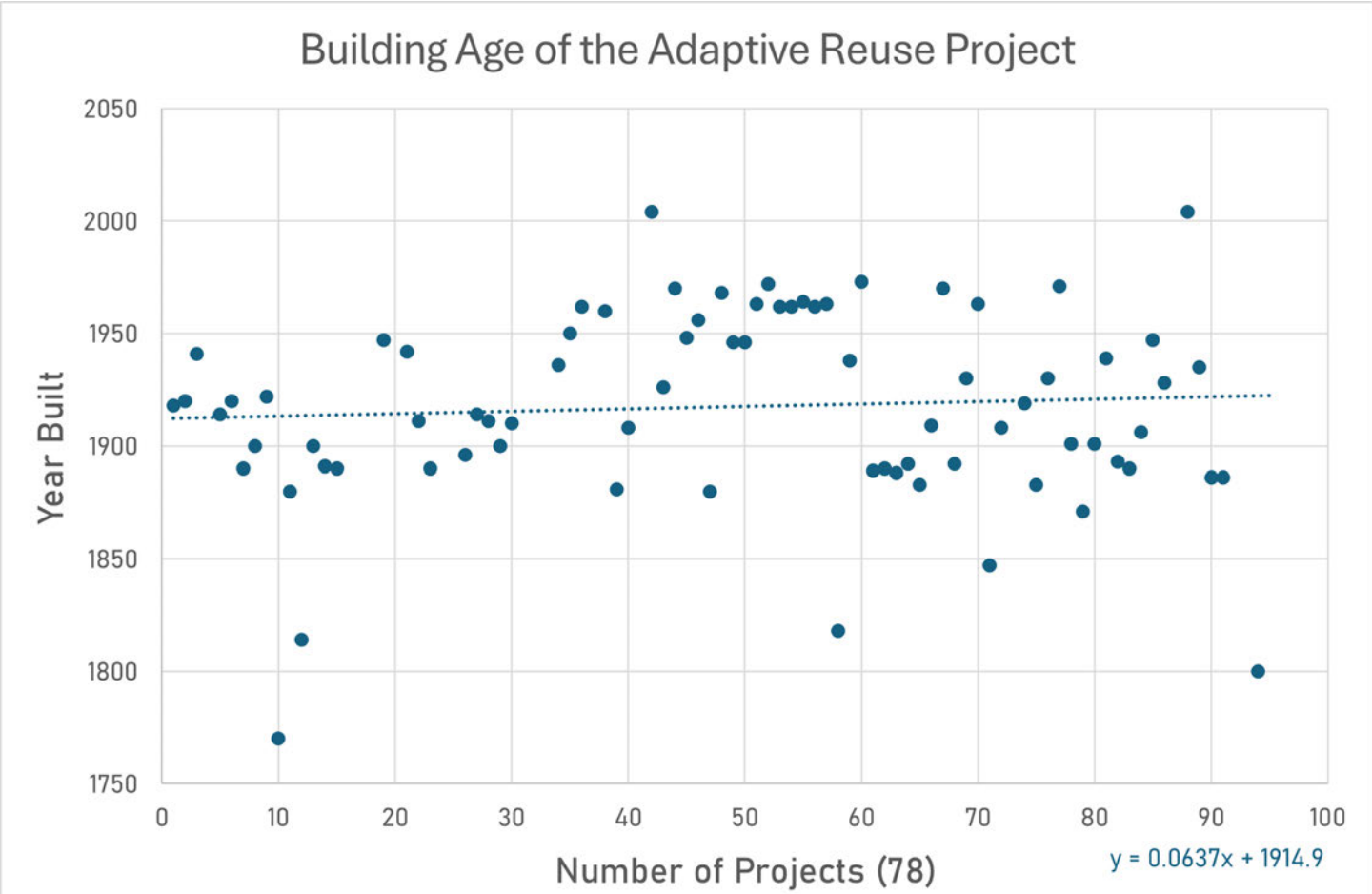


Figure 36: Alternative Building Age Scatterplot for Adaptive Reuse Case Studies

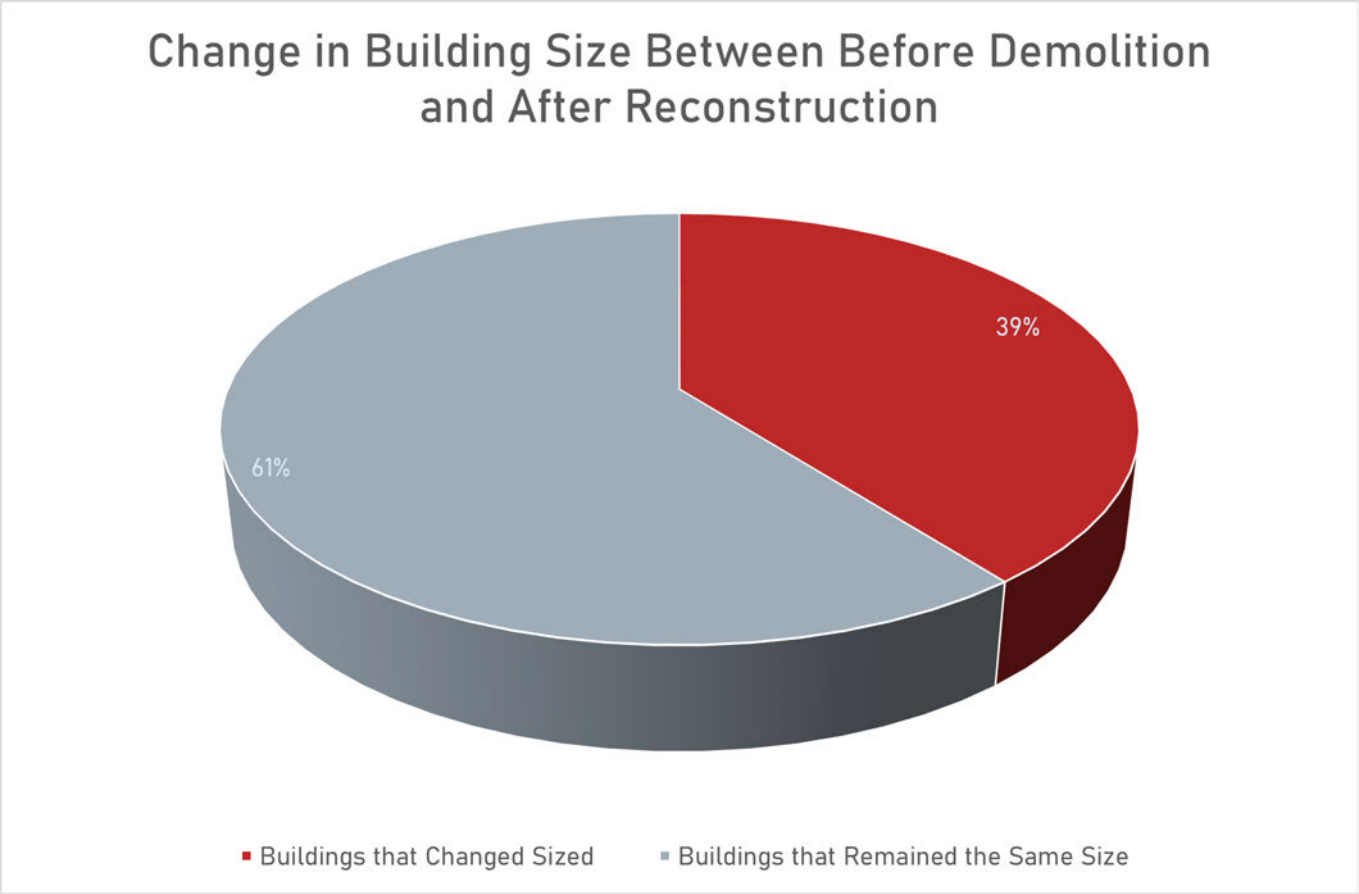


Figure 37: Comparing the Percentage of Building Parcels that had a Building with the Same Size After Reconstruction

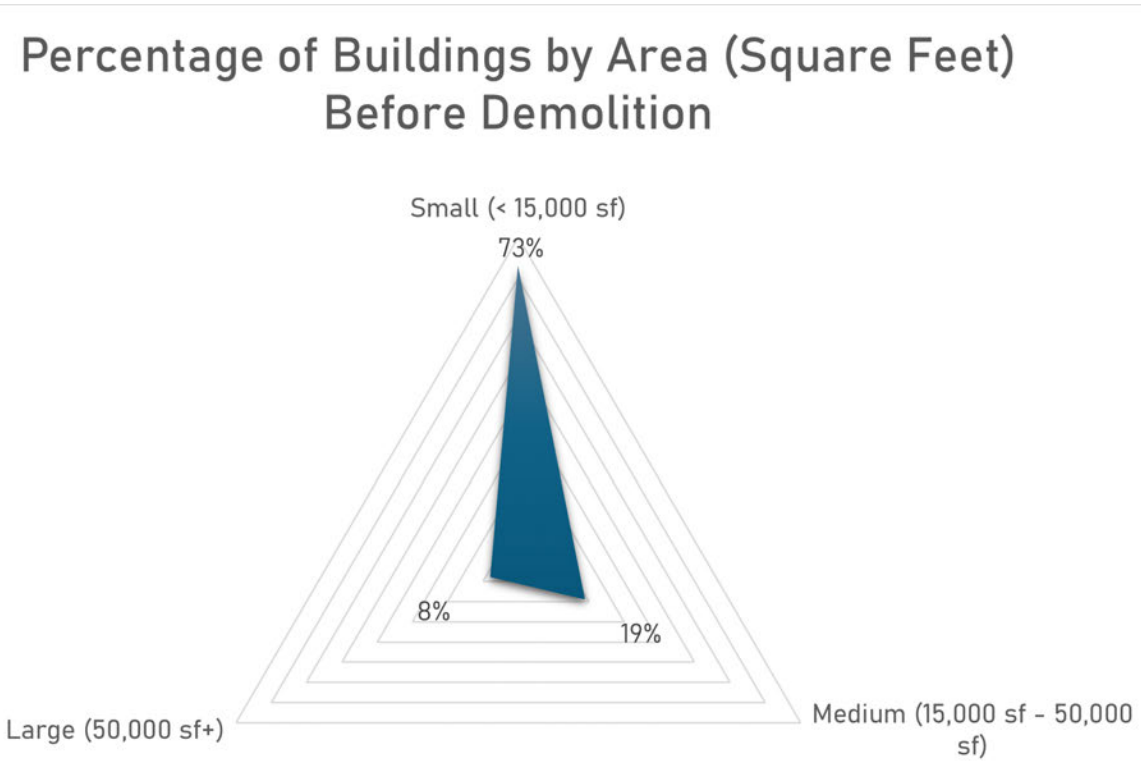


Figure 38: Building Area of Permit Addresses Before Demolition

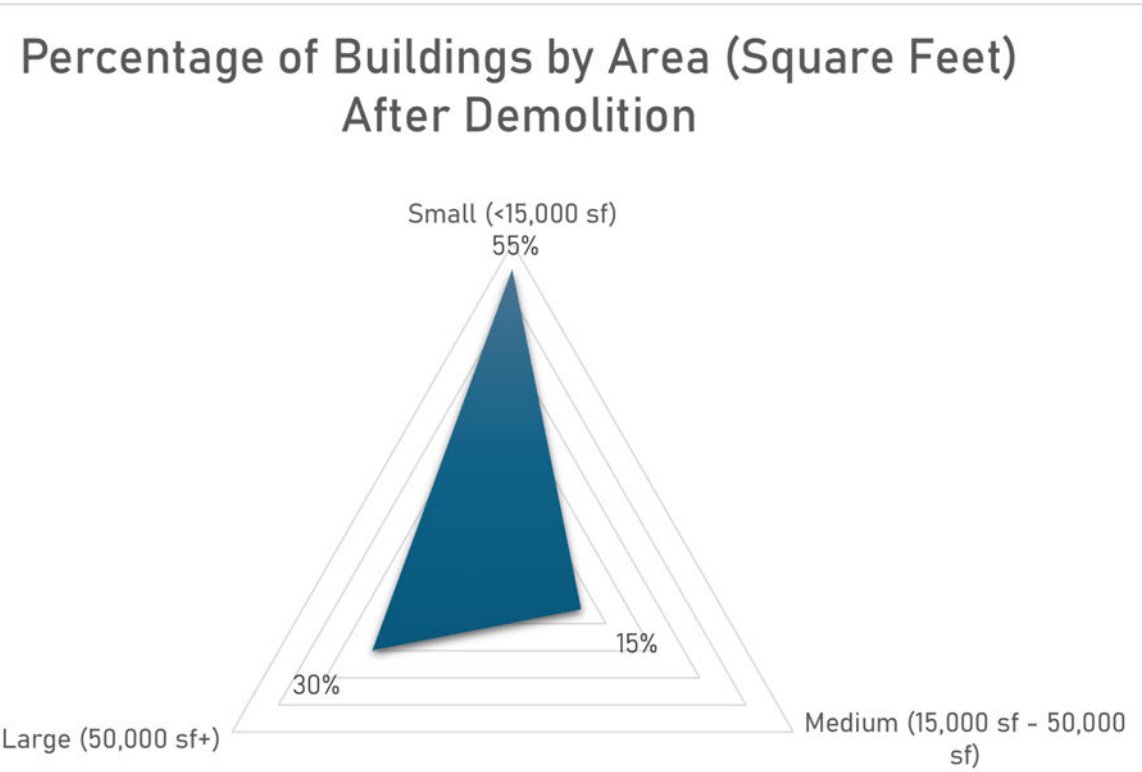
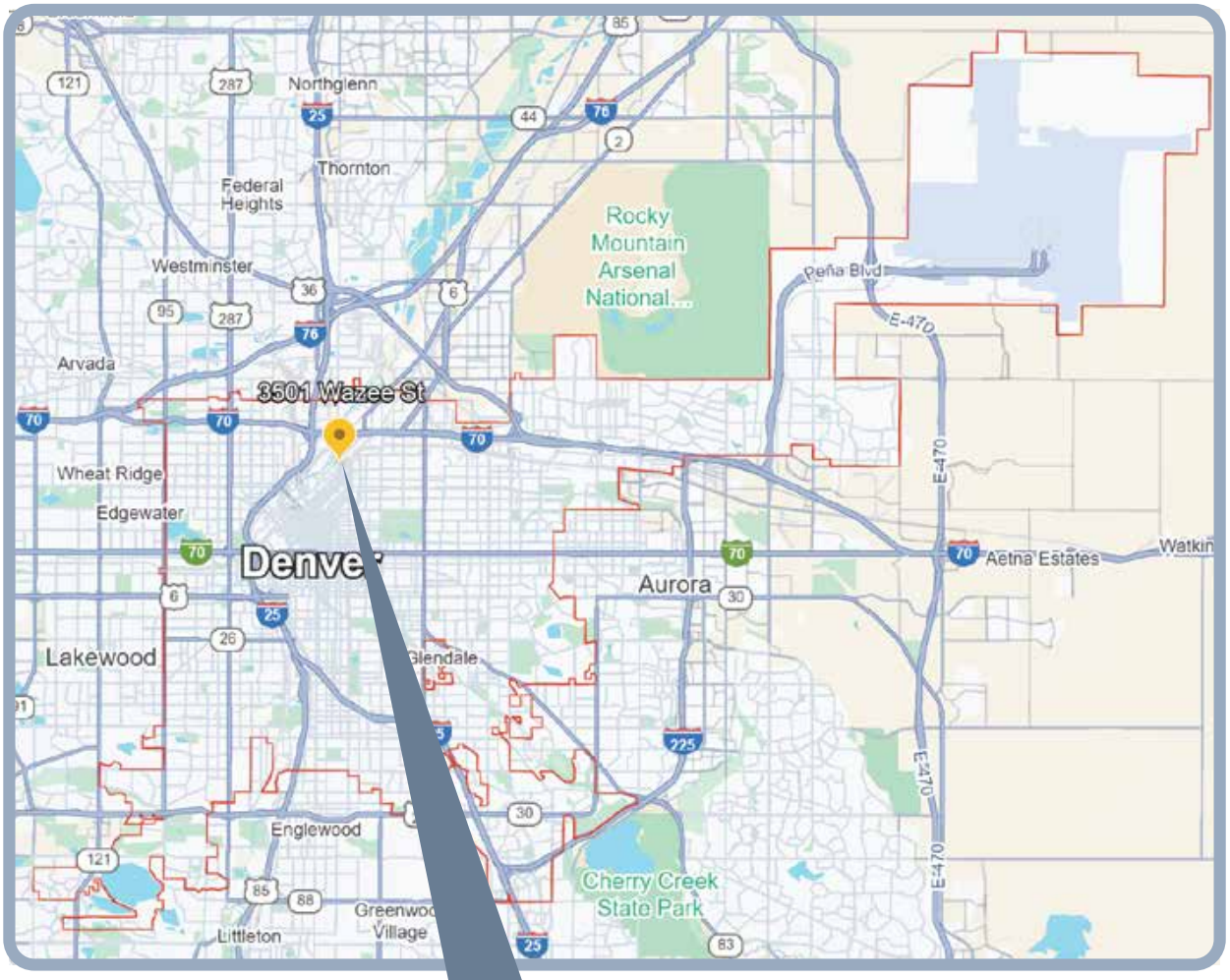


Figure 39: Building Area of Permit Addresses After Reconstruction



3501 Wazee St. Denver CO

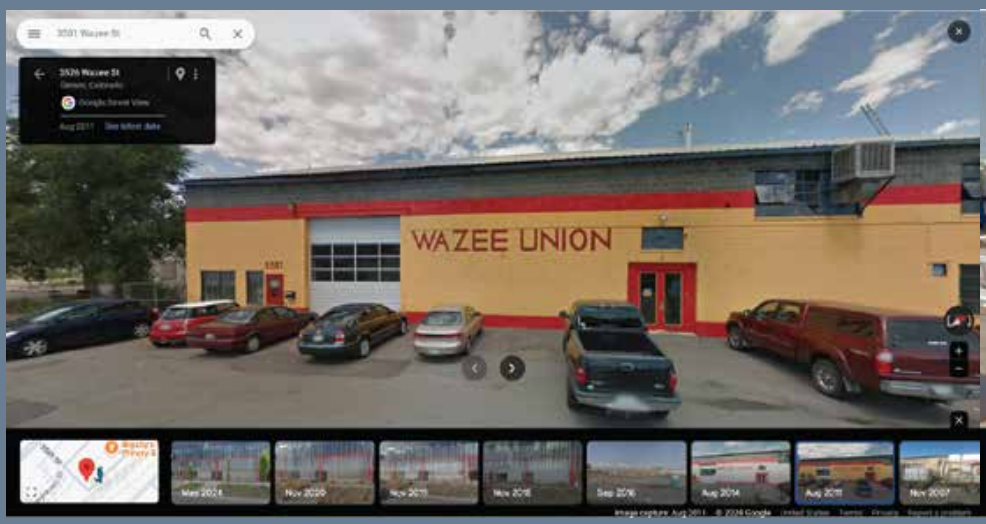


Image Capture: August 2011

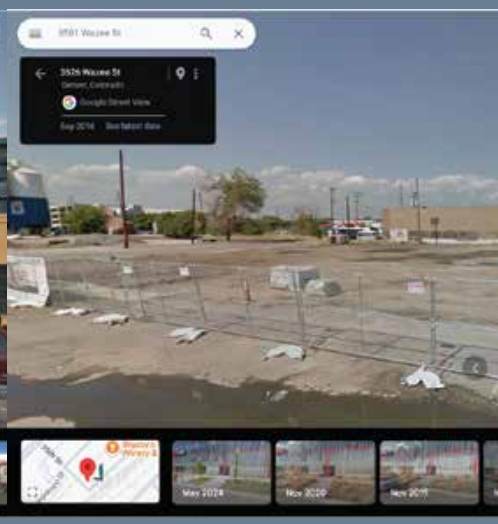


Image Capture: September 2016

Building Size

There was a **275%** increase in new **large** buildings (50,000+ sf) after demolishing the existing building.

After analyzing 190 parcels with area in square footage, the percentage of large buildings (50,000+ sf) increased from 8% (15 buildings) before demolition to 30% (57 buildings) after demolition.

This map includes data from: Google

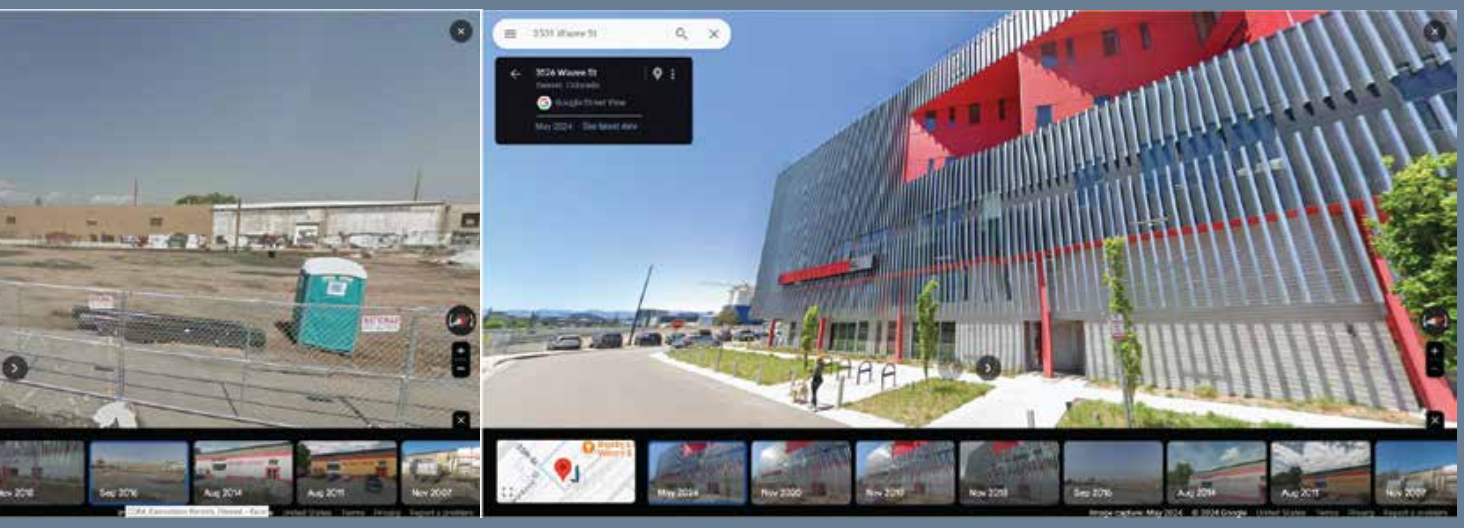
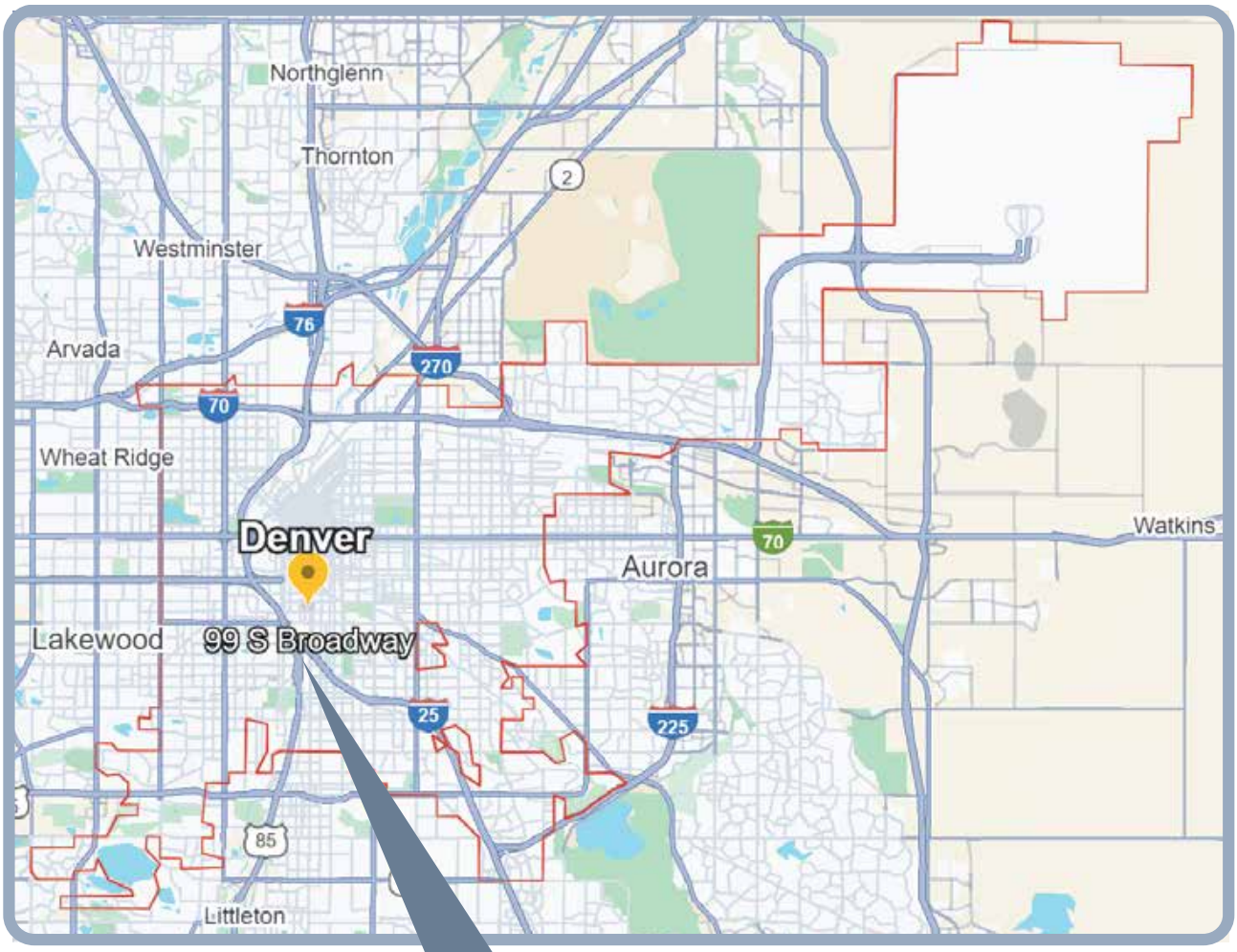


Image Capture: May 2024

Figure 40: Google Street View Timeline



99 S Broadway Denver, CO

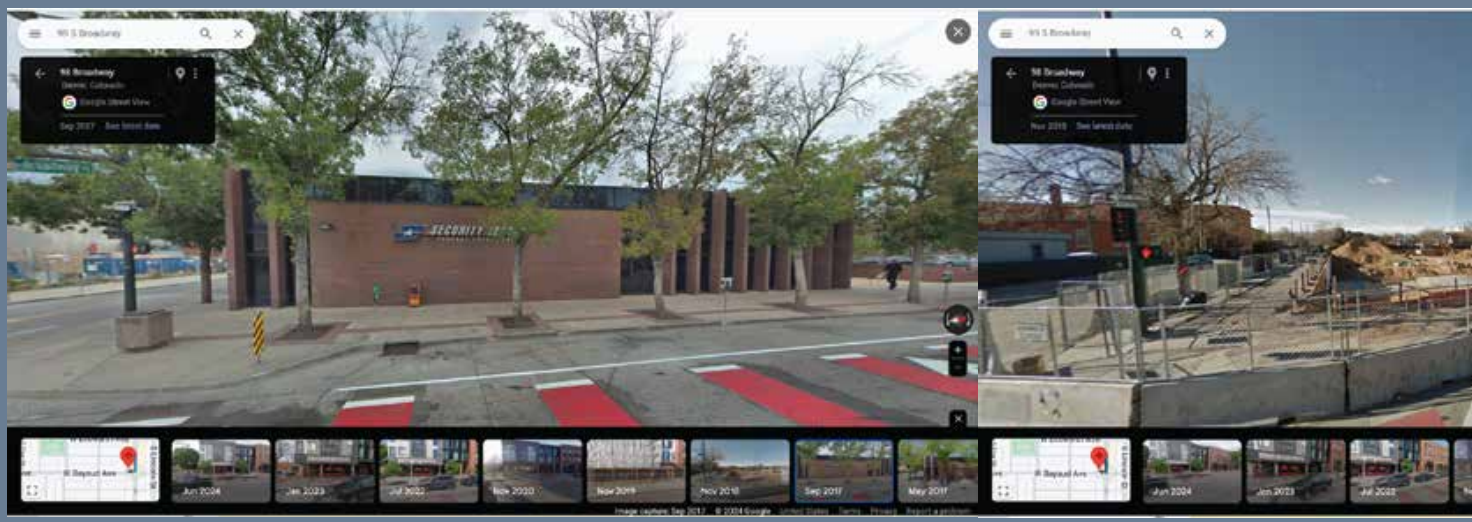


Image Capture: September 2017

Image Capture: November 2018

Building Size

There was a **21%** decrease in new **medium** buildings (15,000 sf - 50,000 sf) after demolishing the existing building.

After analyzing 190 parcels with area in square footage, the percentage of medium buildings (15,000 sf - 50,000 sf) decreased from 19% (36 buildings) before demolition to 15% (28 buildings) after demolition.

`This map includes data from: Google

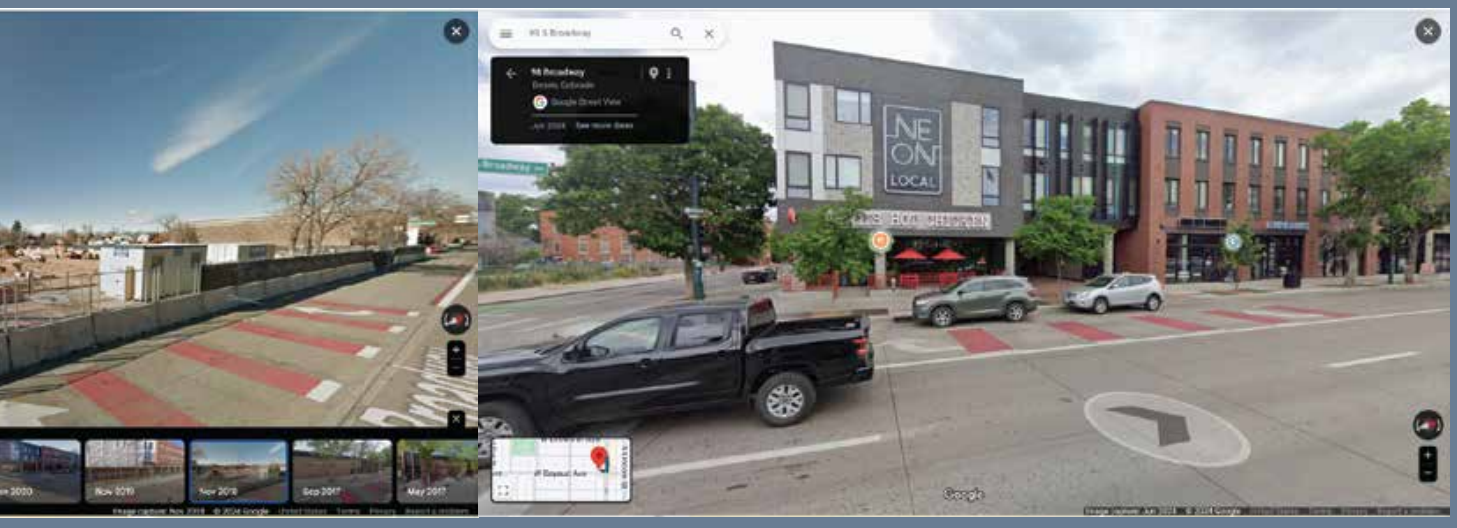
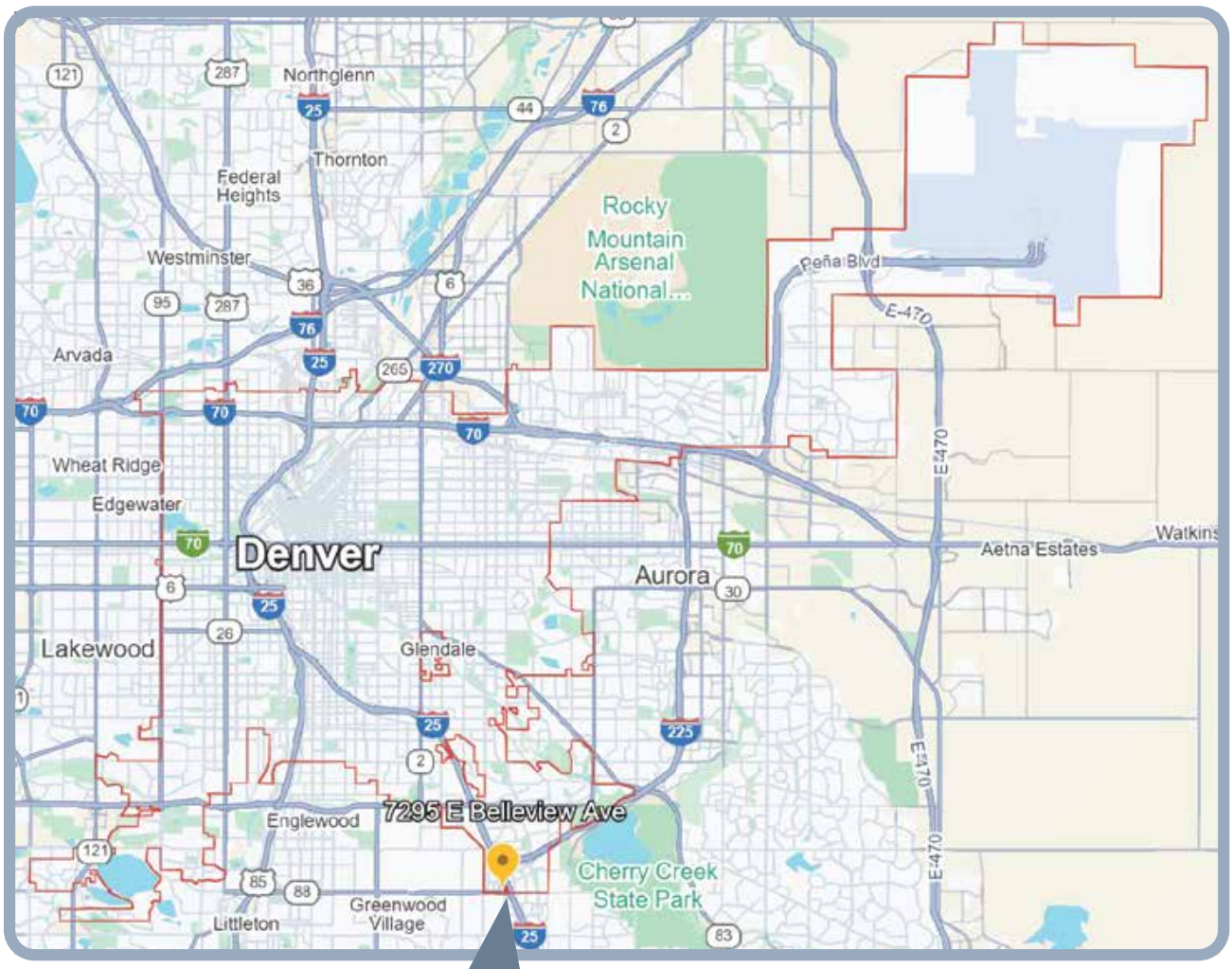


Image Capture: June 2024

Figure 41: Google Street View Timeline



7295 E Belleview Ave, Denver CO

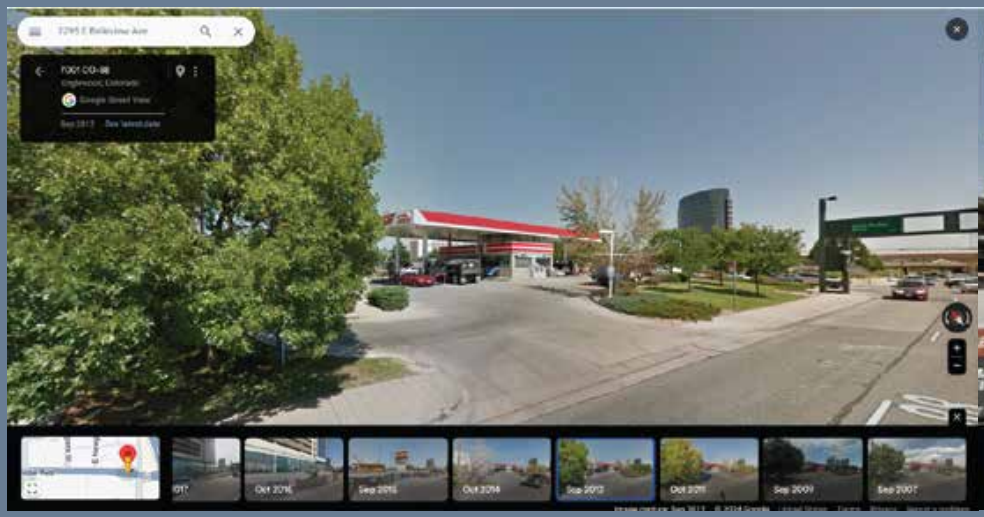


Image Capture: September 2012

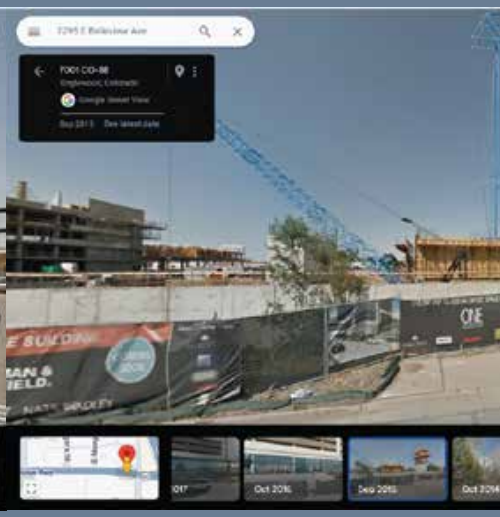


Image Capture: September 2015

Building Size

There was a **24%** decrease in new **small** buildings (<15,000 sf) after demolishing the existing building.

After analyzing 190 parcels with area in square footage, the percentage of small buildings (<15,000 sf) decreased from 73% (139 buildings) before demolition to 55% (105 buildings) after demolition.

This map includes data from: Google

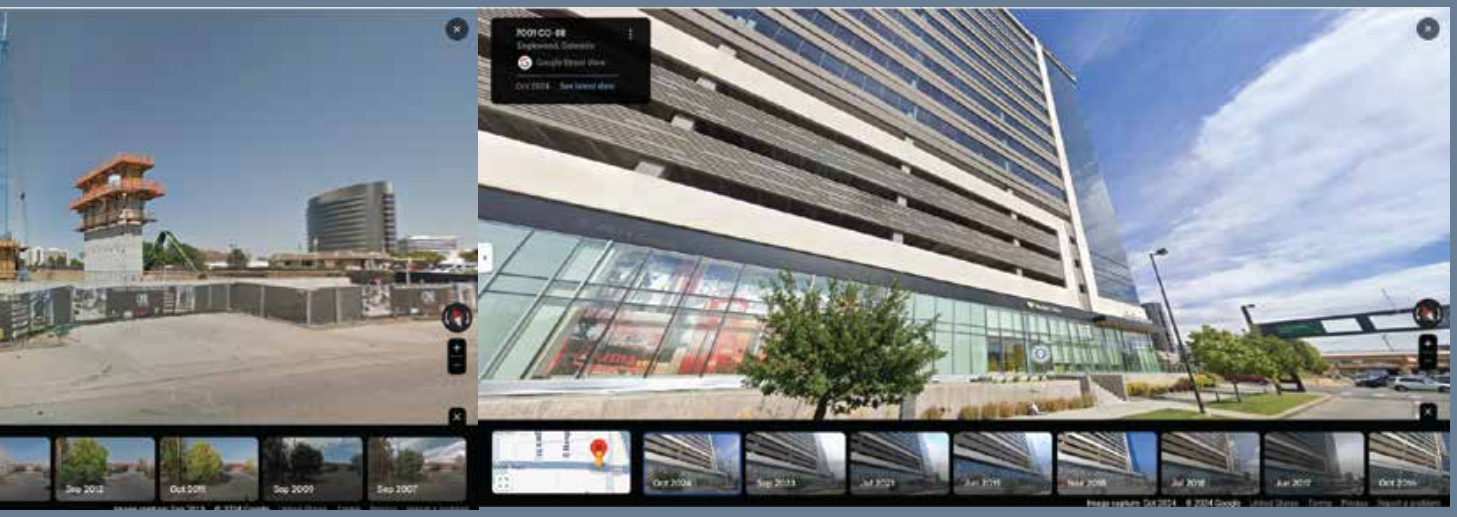
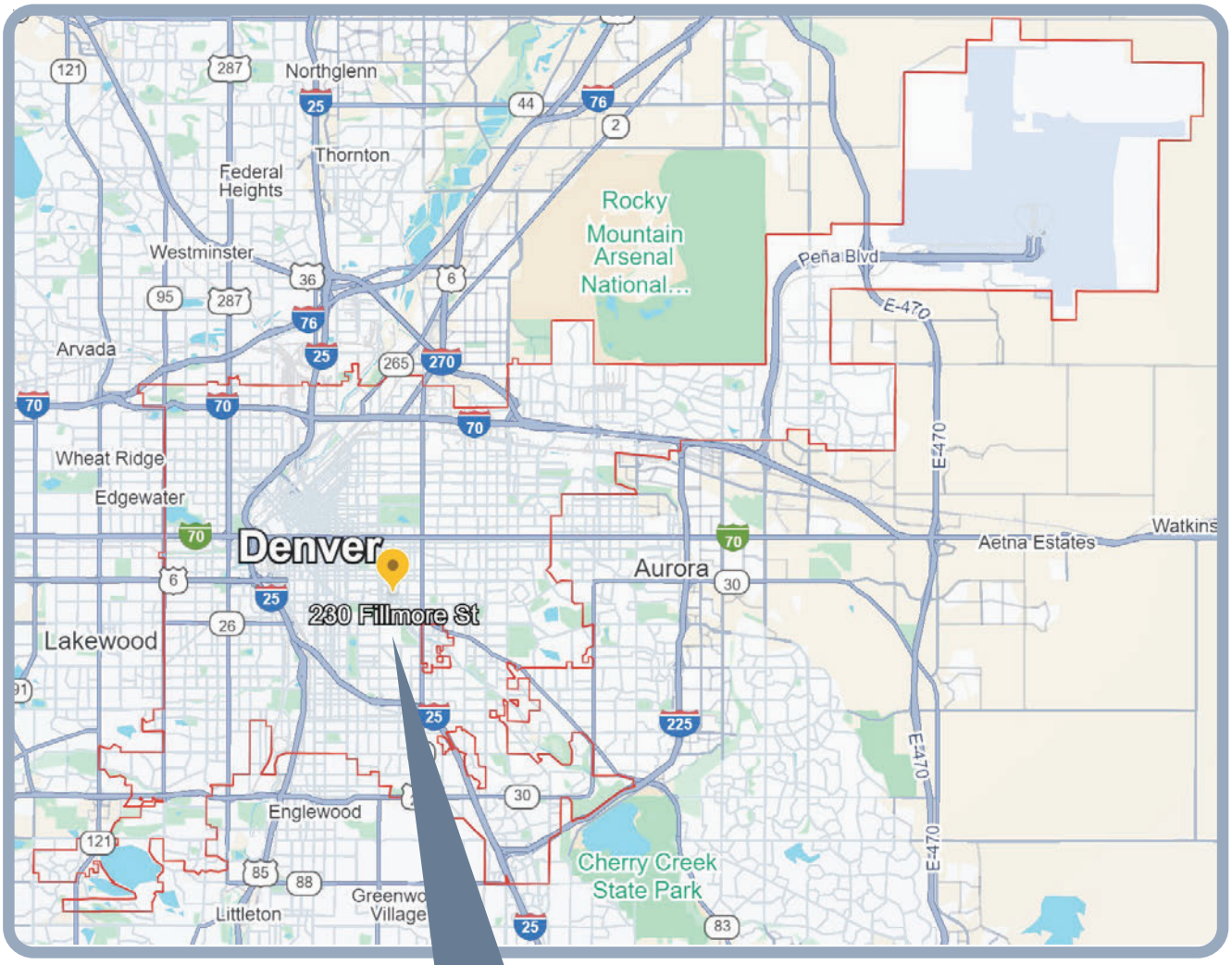


Image Capture: October 2024

Figure 42: Google Street View Timeline



230 Fillmore St. Denver CO

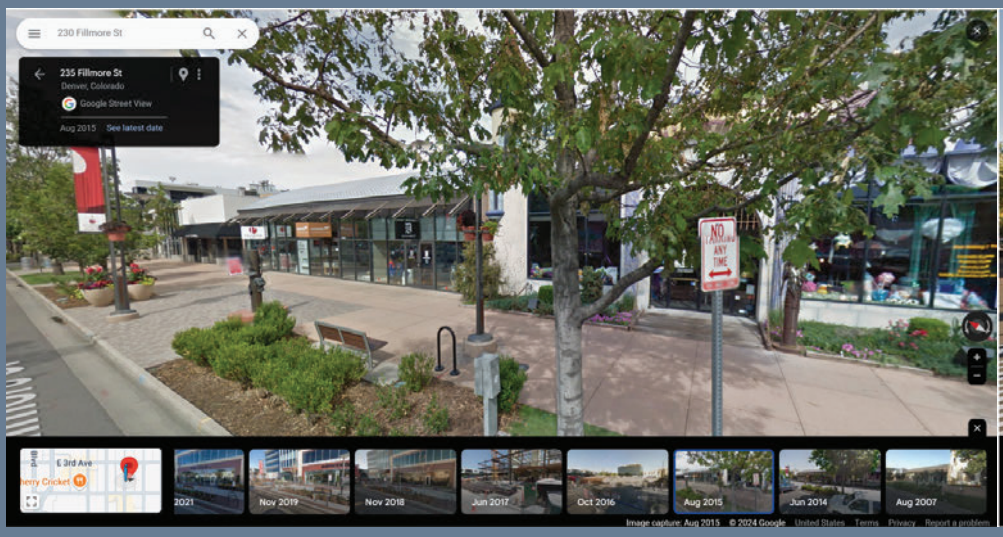


Image Capture: August 2016

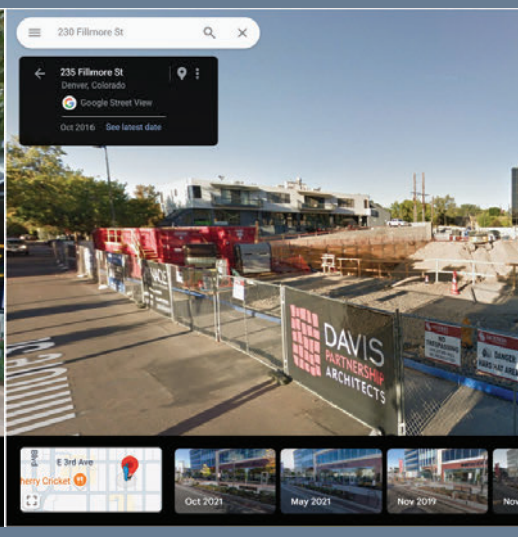


Image Capture: October 2016

Building Height

26% of buildings decreased in height after demolition

After analyzing 190 parcels with height in feet, a total of 26% of buildings means that 50 out of 190 parcels lost height after demolition. This usually means that the parcel became a parking lot for a surrounding building or remained vacant.

This map includes data from: Google

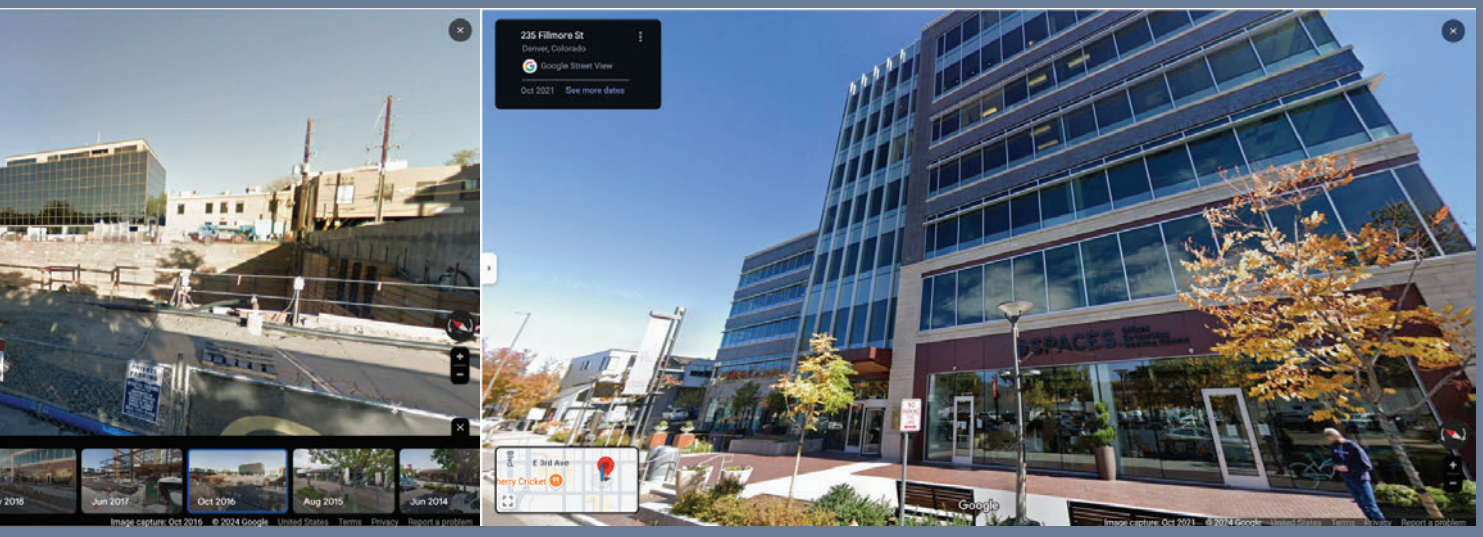
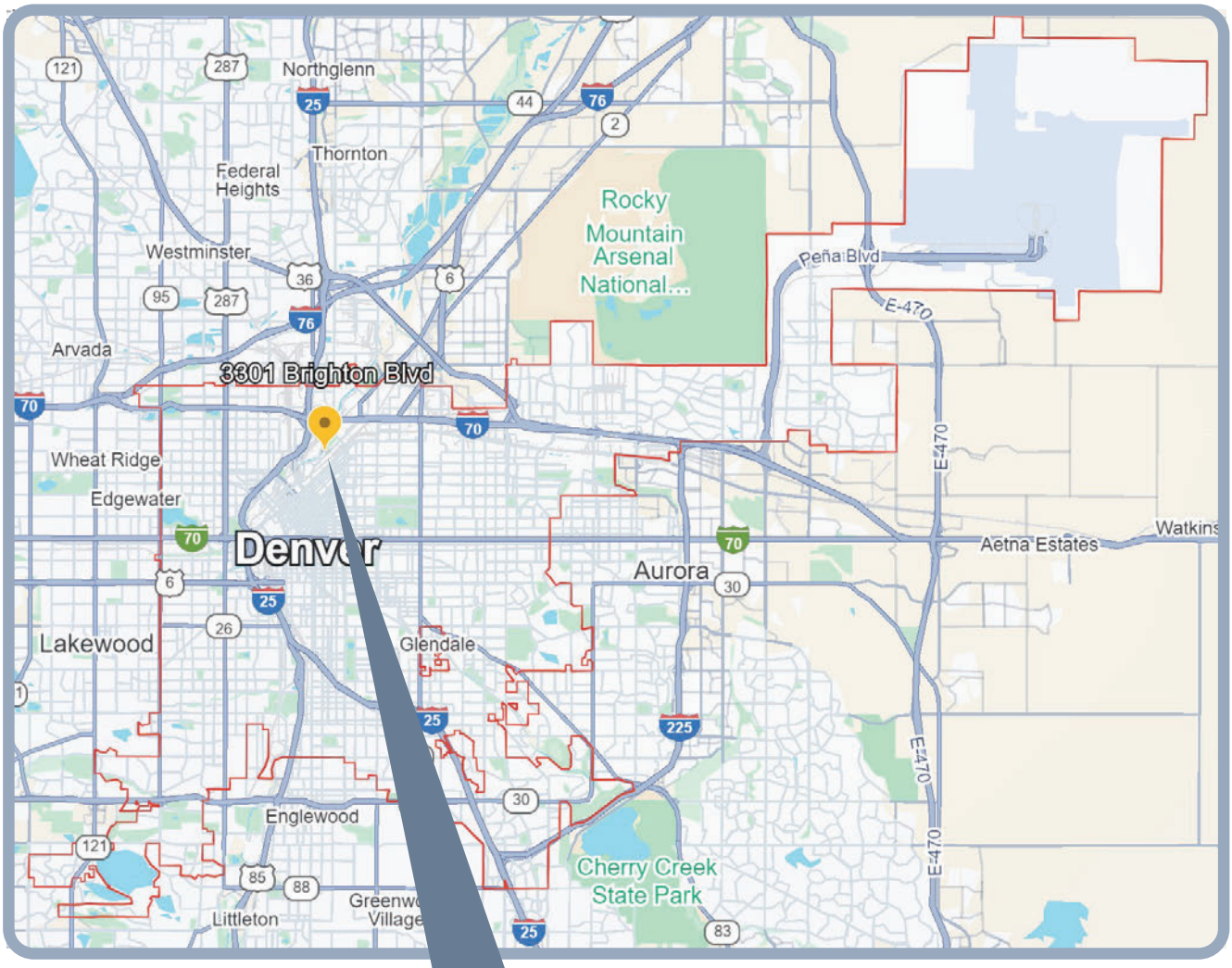


Image Capture: October 2021

Figure 43: Google Street View Timeline



3301 N Brighton Blvd, Denver CO

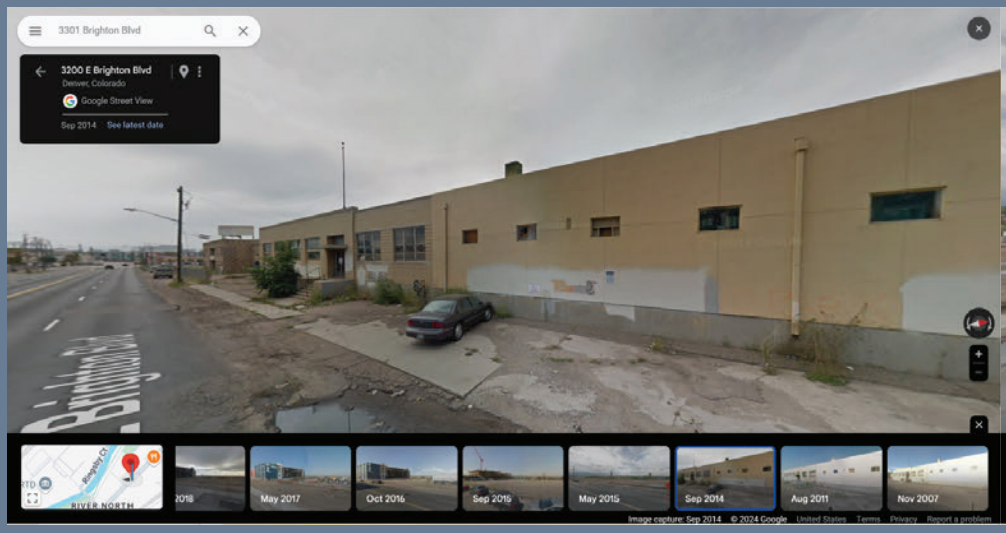


Image Capture: September 2014

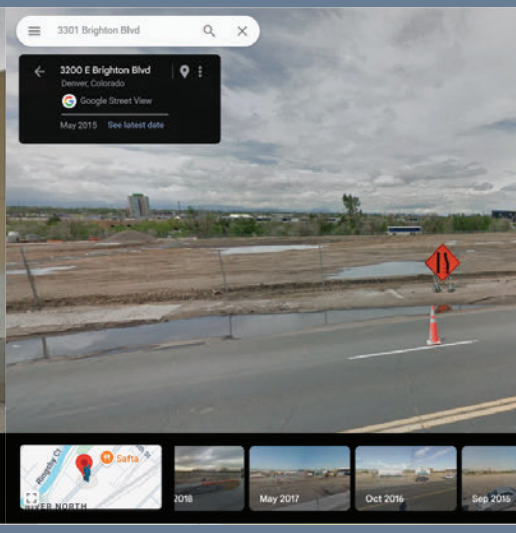


Image Capture: May 2015

Building Height

7% of the reconstructed buildings remained at the same height as demolished building

After analyzing 190 parcels with height in feet, 7% of buildings remaning at the same height means that 13 out of 190 never increased in height. This could represent a smaller demolition, or replacing a secondary building from a larger campus.

This map includes data from: Google

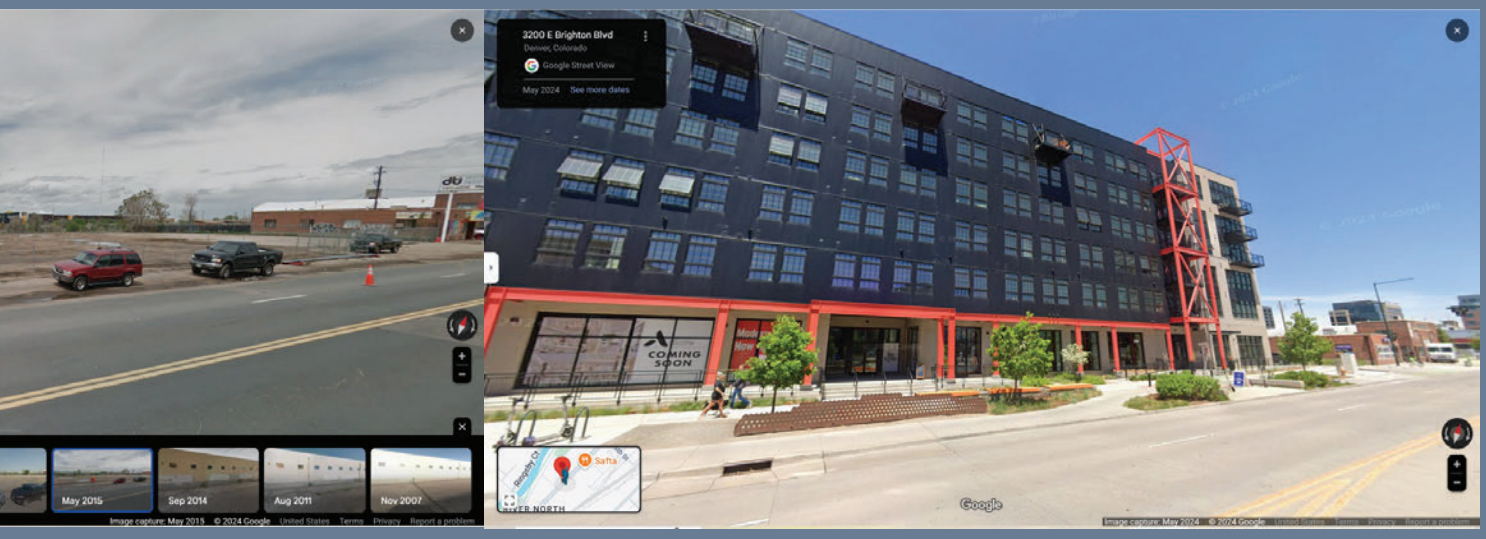
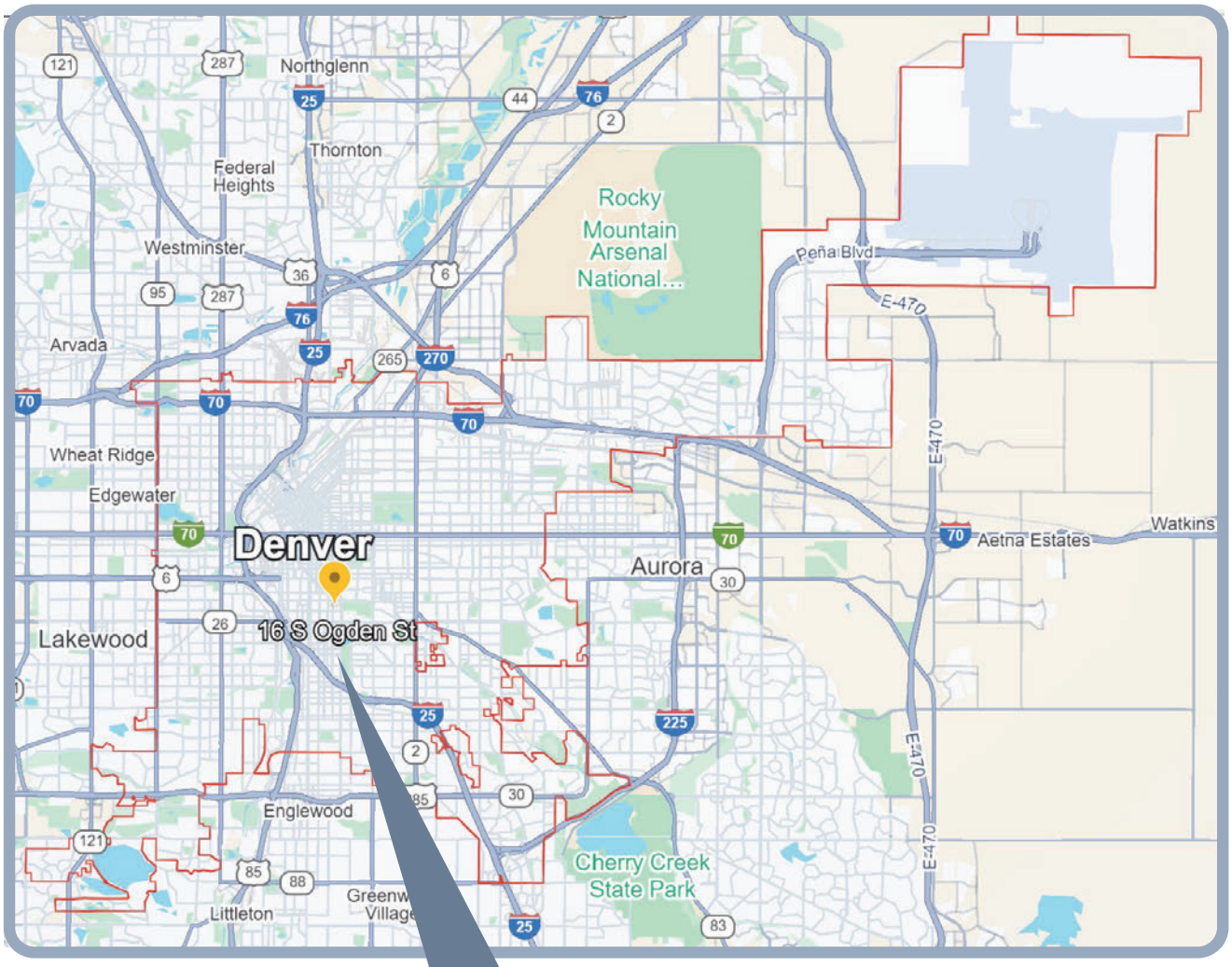


Image Capture: May 2024

Figure 44: Google Street View Timeline



16 S Ogden St, Denver CO

Image Capture: May 2014

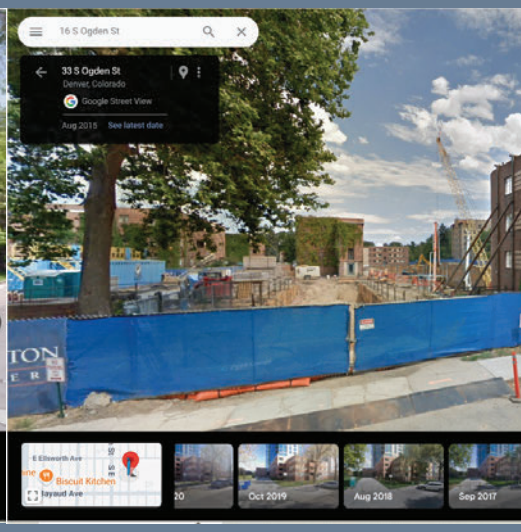


Image Capture: August 2015

Building Height

23% of reconstructed buildings increased in height by at least 51 ft

After analyzing 190 parcels with height in feet, 23% of buildings increasing in height by at least 51ft means that 43 out of 190 buildings gained at least 5 stories. These are usually office buildings or high density apartments replacing smaller underused buidlings.

This map includes data from: Google

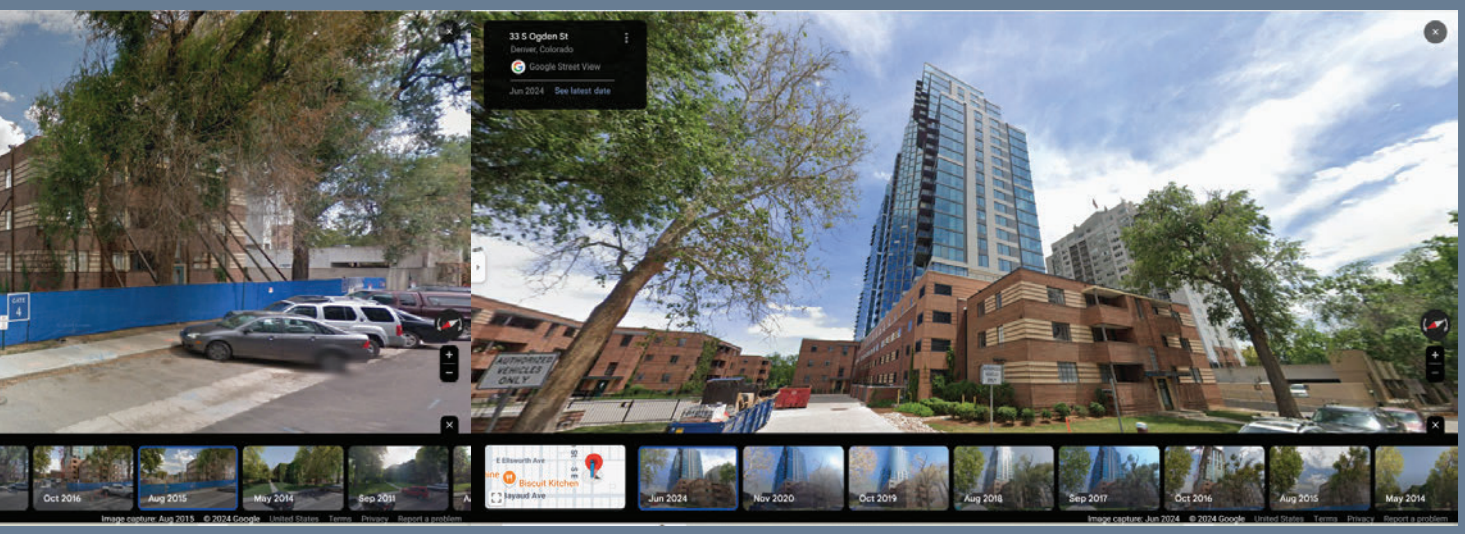
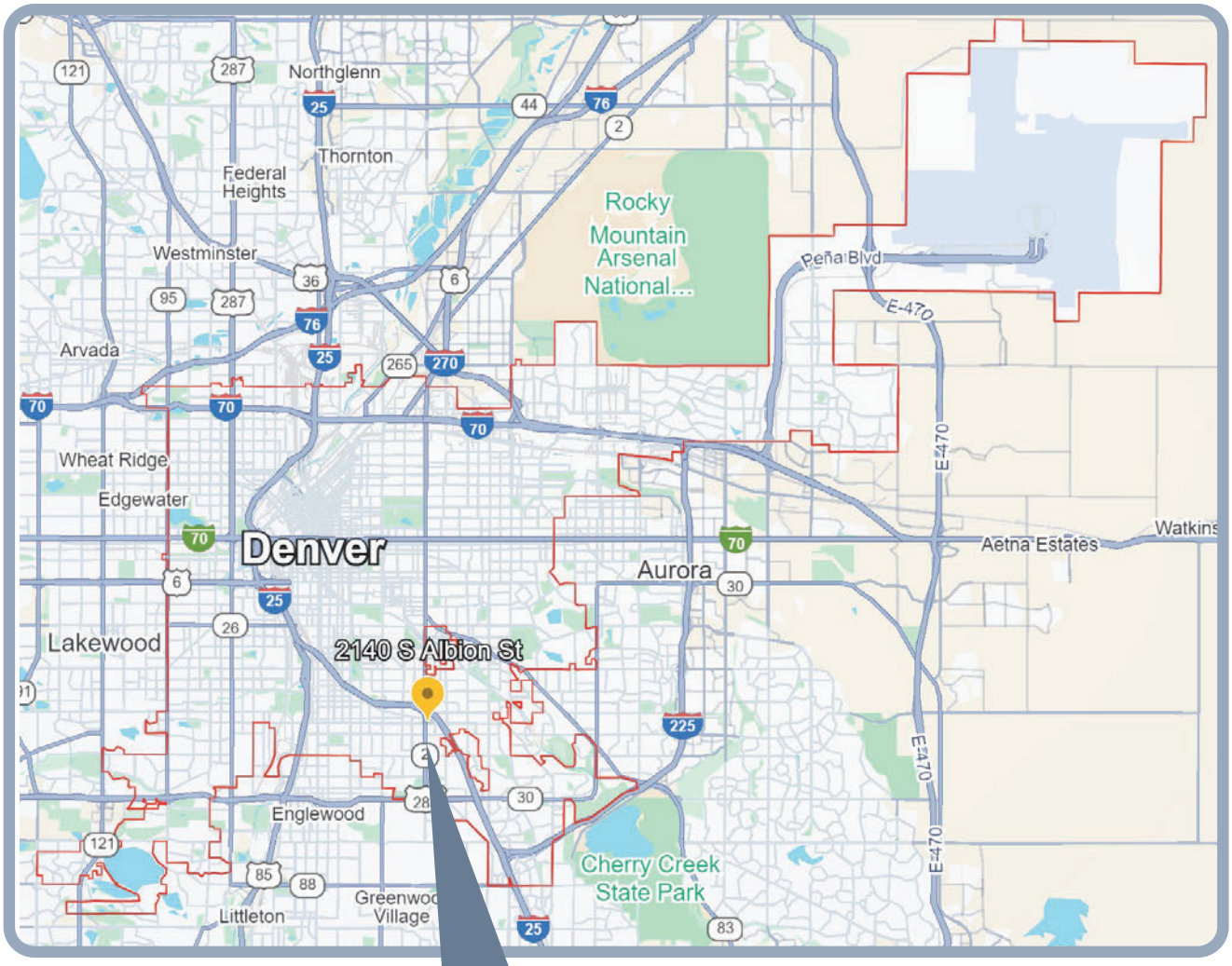


Image Capture: June 2024

Figure 45: Google Street View Timeline



2140 S Albion St, Denver CO

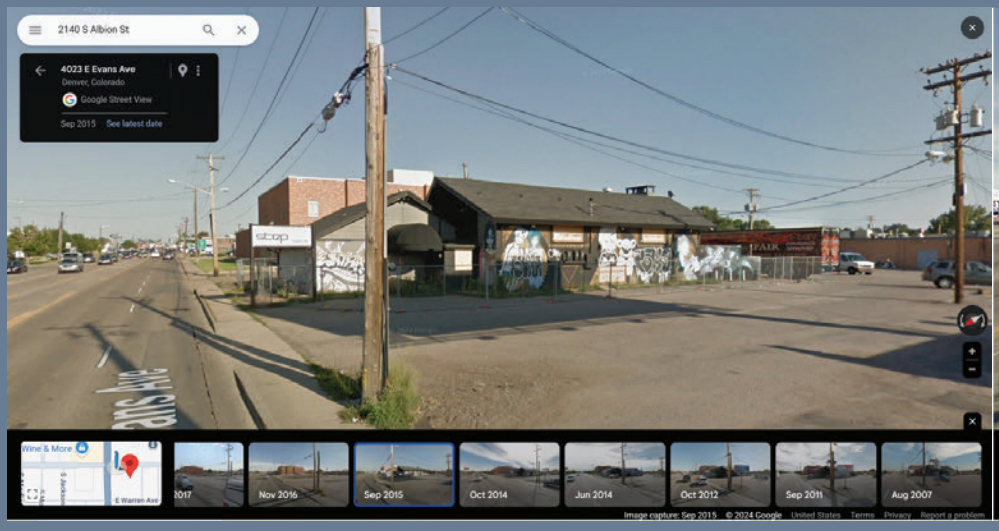


Image Capture: September 2015

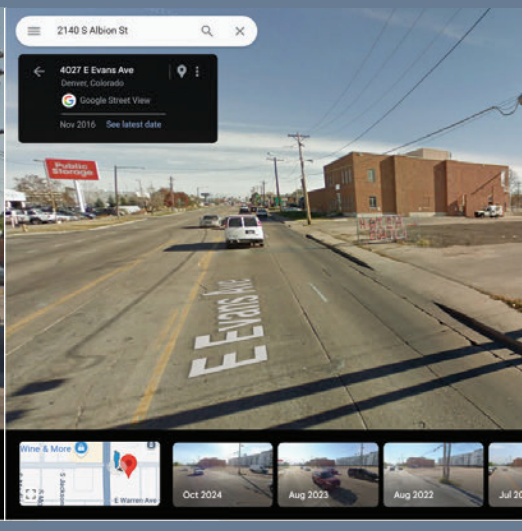


Image Capture: November 2016

Building Use

Office Buildings were the most demolished buildings at **21%**

After analyzing 163 demolished buildings with a designated use, 21% means that 34 buildings were office buildings before they were demolished. This tends to be highest because occupancy easily fluxuates and when they are no longer in use they become abandoned.

This map includes data from: Google

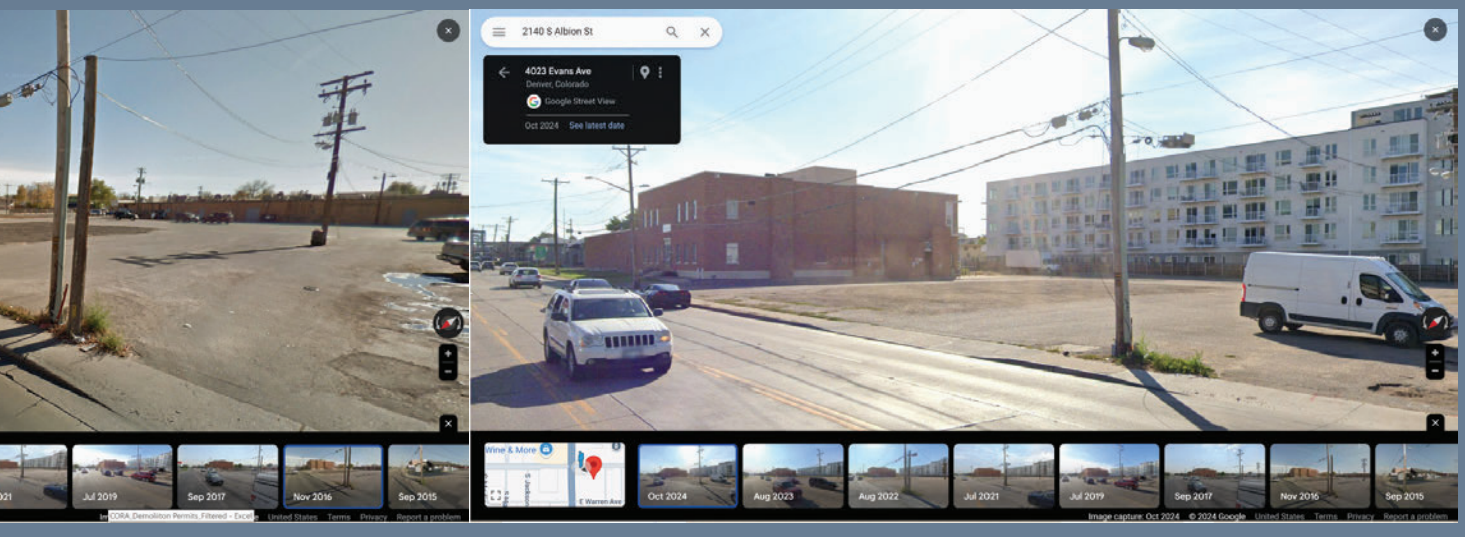
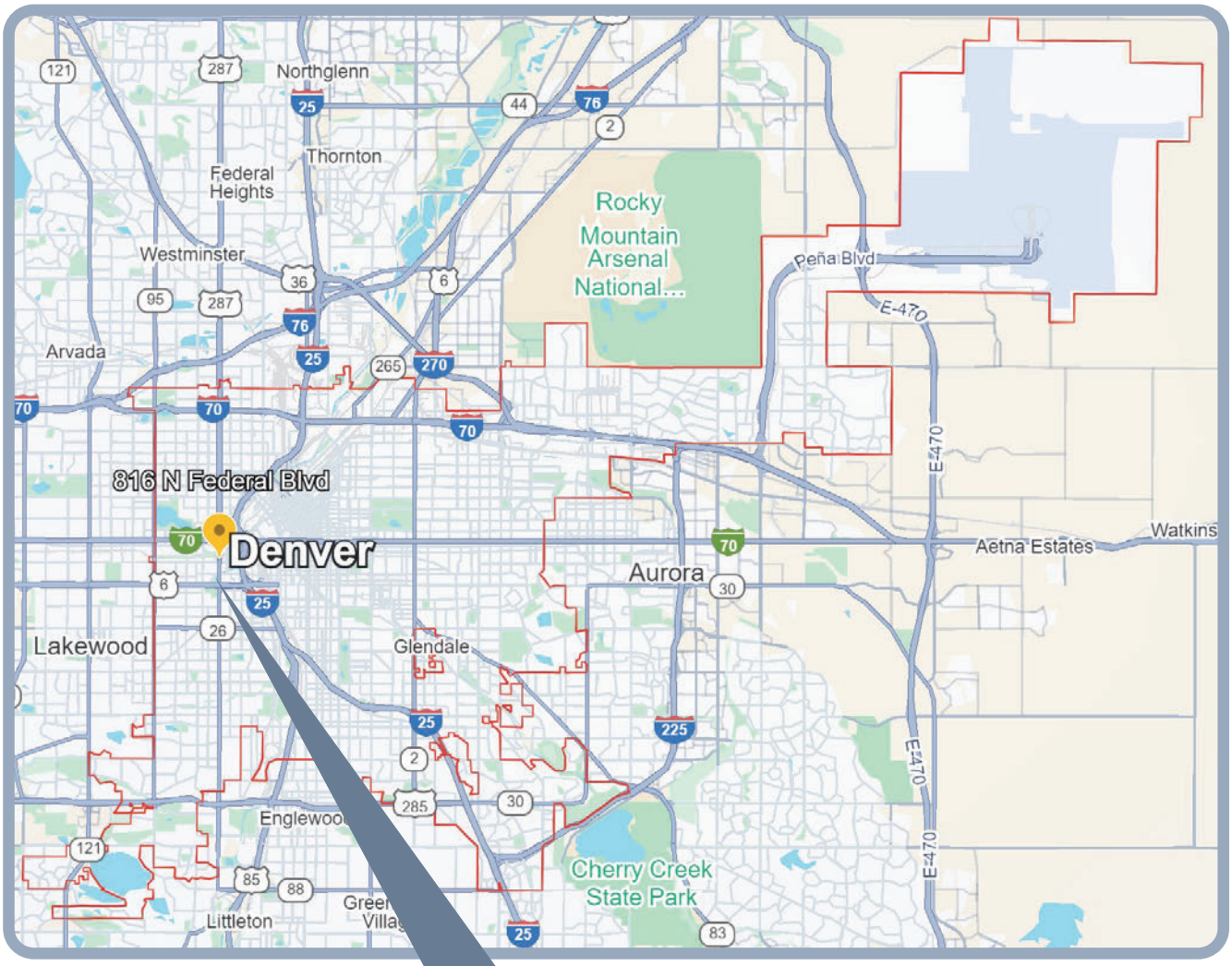


Image Capture: October 2024

Figure 46: Google Street View Timeline



816 N Federal Blvd, Denver CO

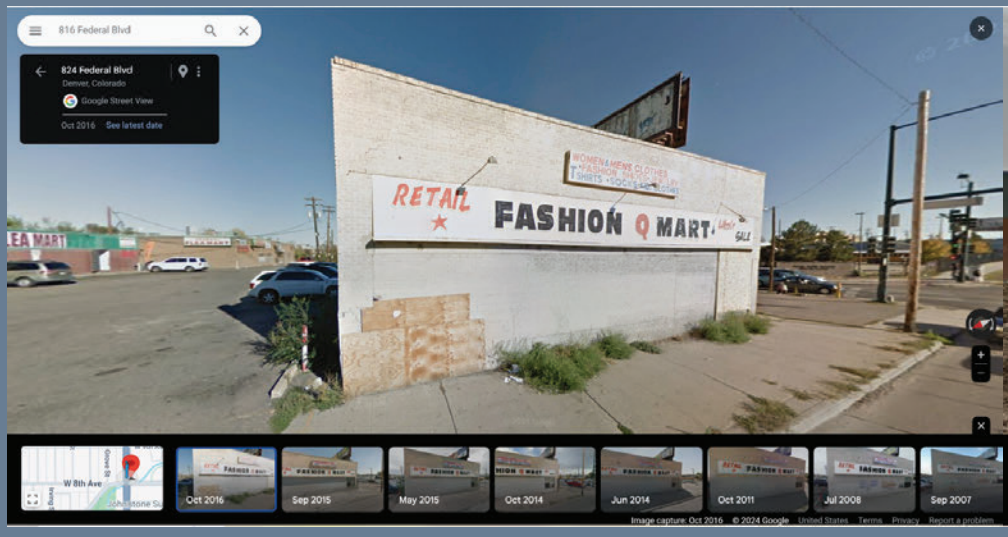


Image Capture: October 2016

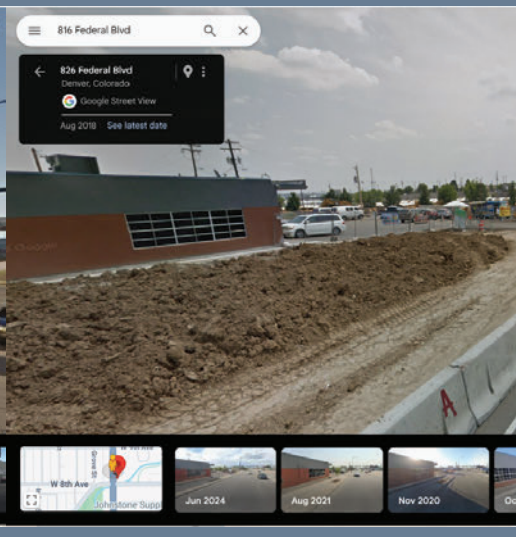


Image Capture: August 2018

Building Use

Vacant Land was the highest occuring use after demolition at **23%**

After analyzing 121 buildings from the same parcels as the buildings from demolition permits with a designated use, 23% means that 28 buildings remain vacant after demolition. These lots either reamin empty and fenced up based on street view observation, or they're used as impromptu parking for surrounding buildings.

This map includes data from: Google

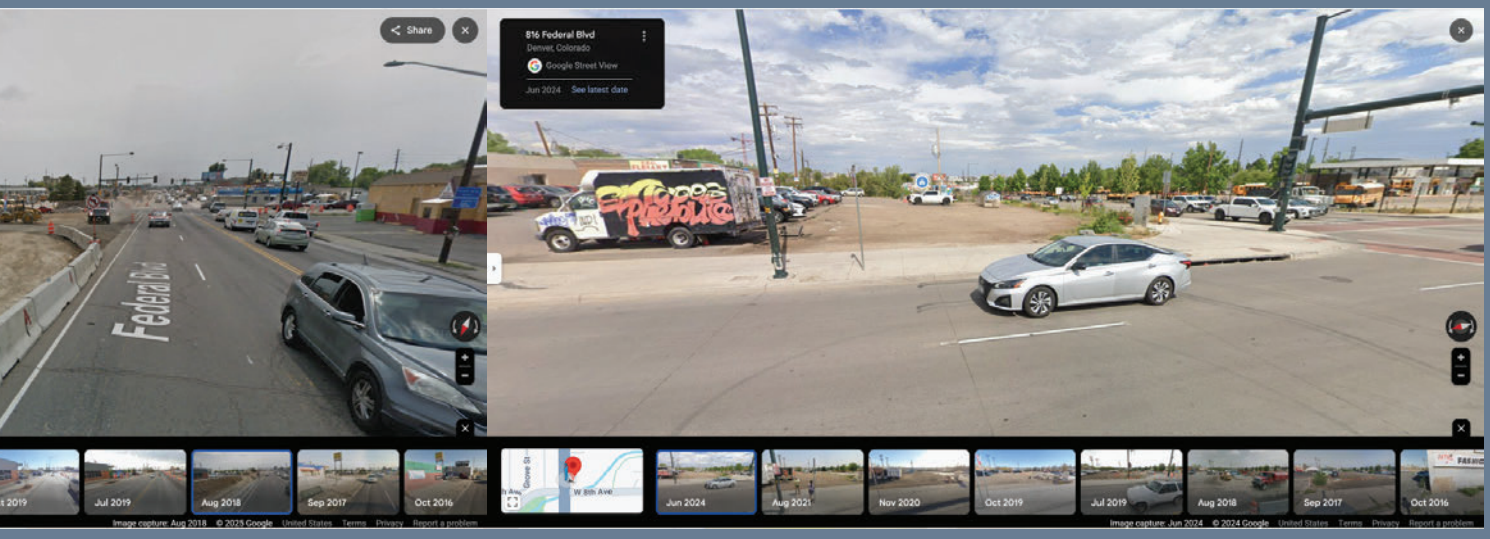
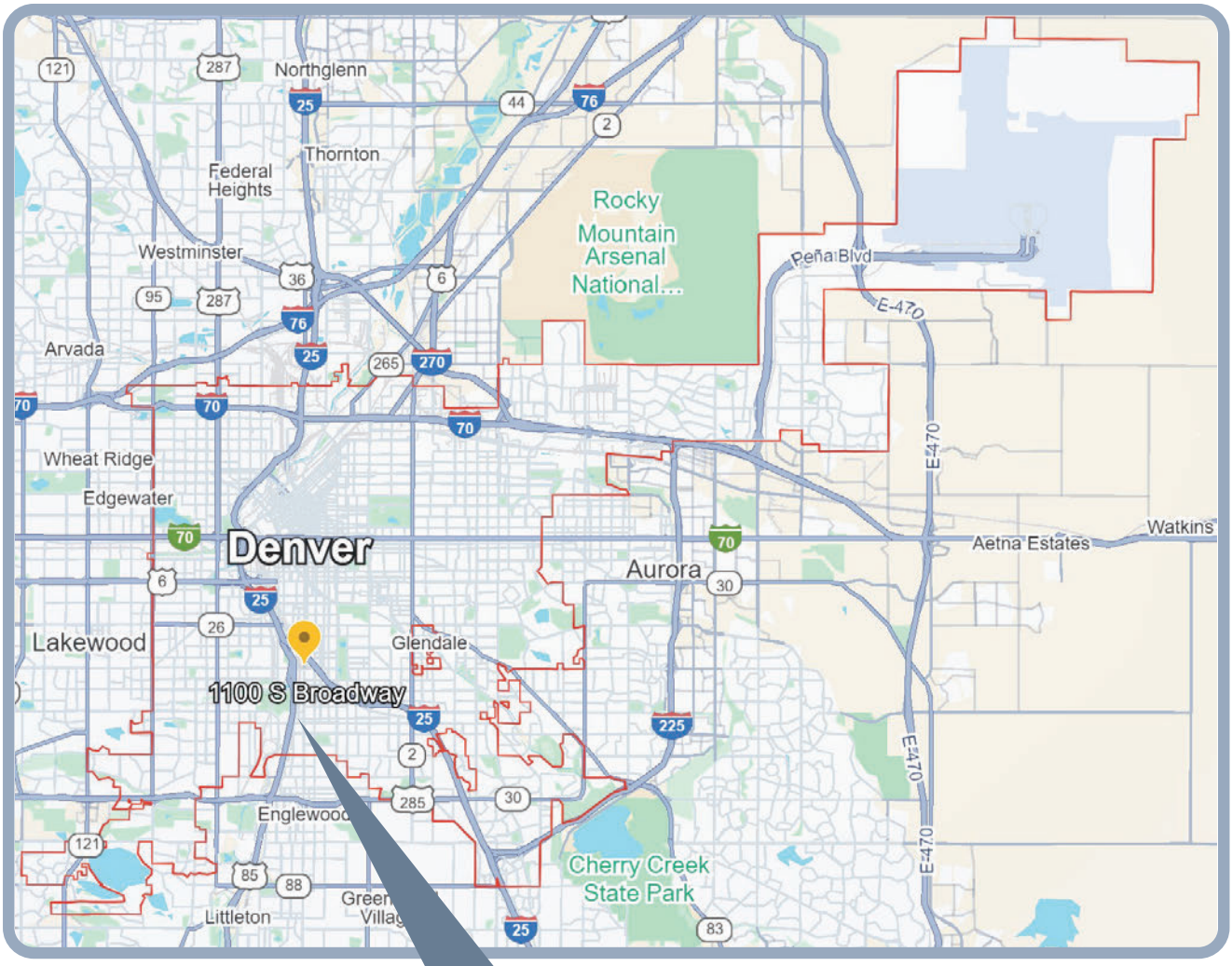


Image Capture: June 2024

Figure 47: Google Street View Timeline



1100 S Broadway, Denver CO

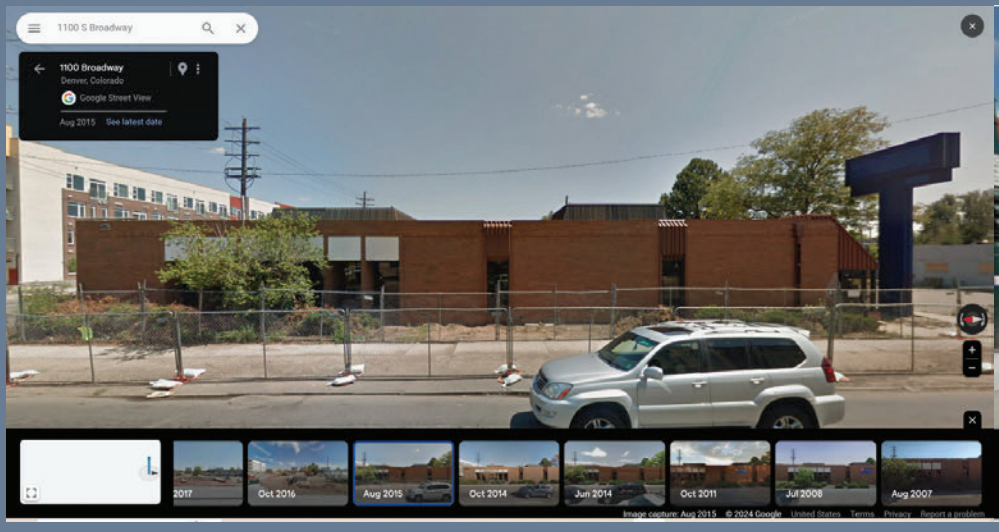


Image Capture: August 2015

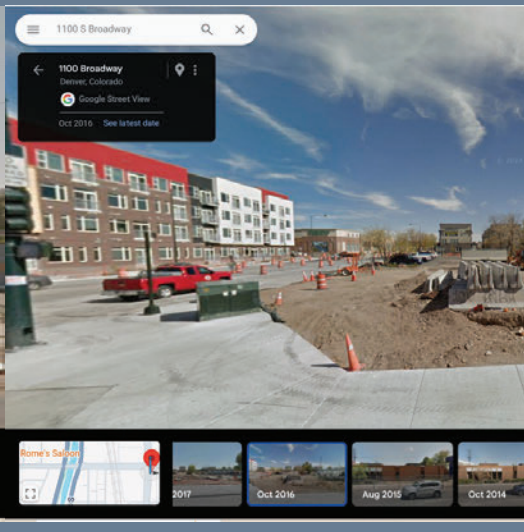


Image Capture: October 2016

Building Use

Warehouses and **Retail** were second and third most demolished, and **Office Buildings** and **Apartment Buildings** were second and third most built

Warehouses were at 17% demolition (28 out of 163 buildings) and Retail was at 15% (24 out of 163 buildings). Office Buildings were being built on these demolished parcels at 22% (27 out of 121 buildings) and apartment buildings were built at 19% (23 out of 121 buildings).

This map includes data from: Google

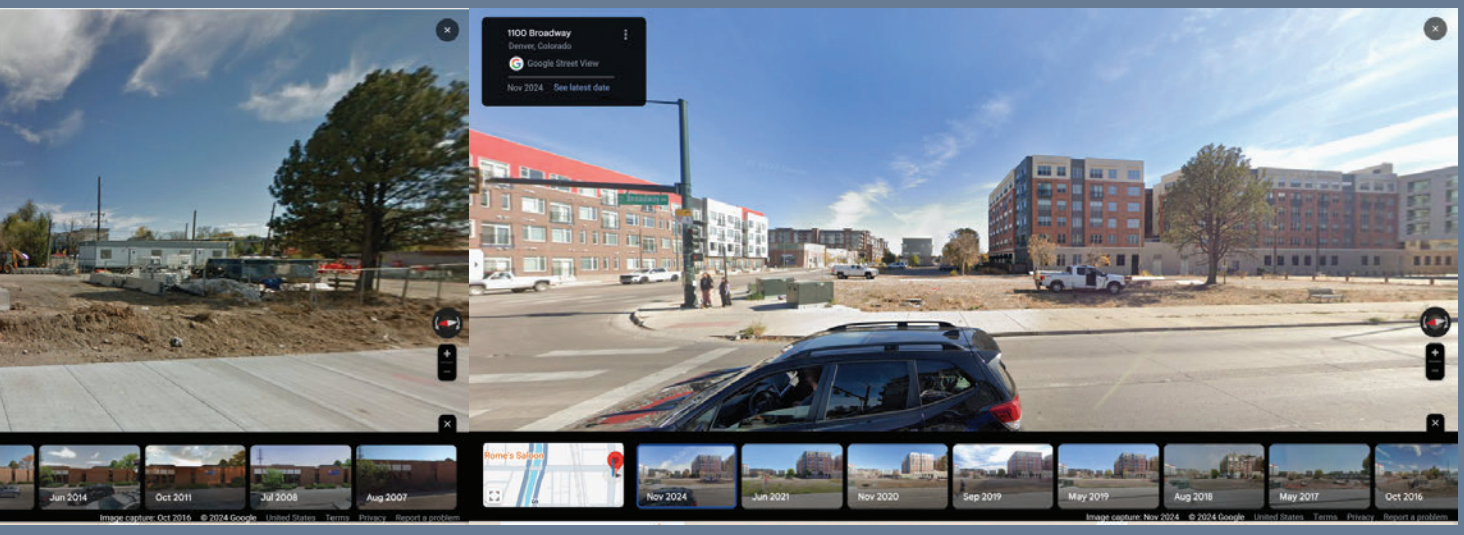
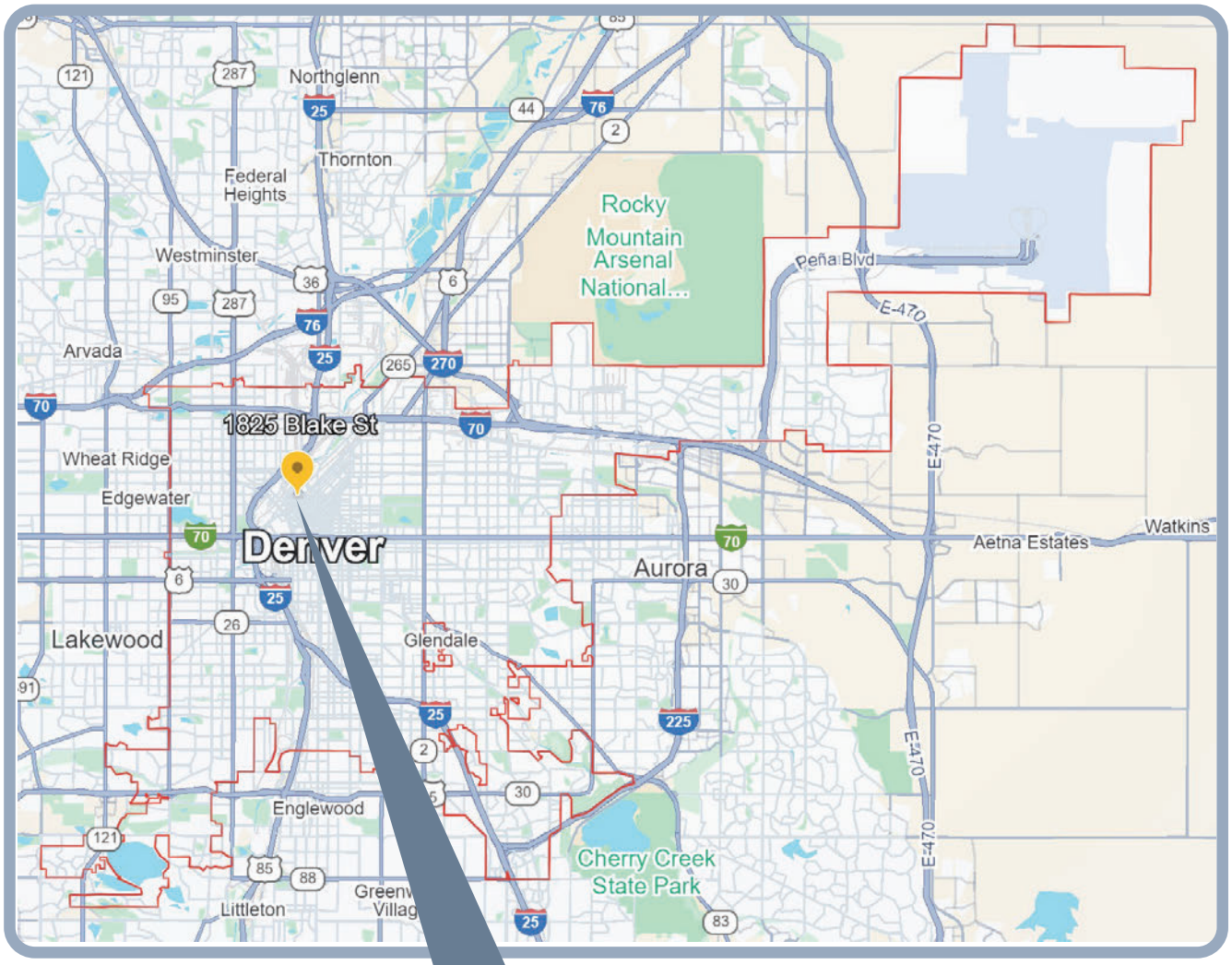


Image Capture: November 2024

Figure 48: Google Street View Timeline



1825 Blake St, Denver CO

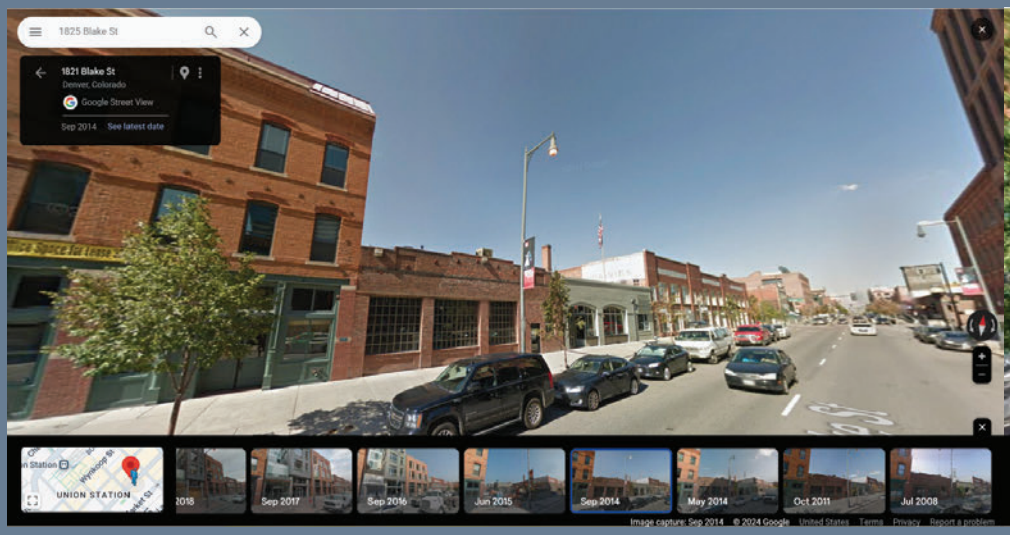


Image Capture: September 2014

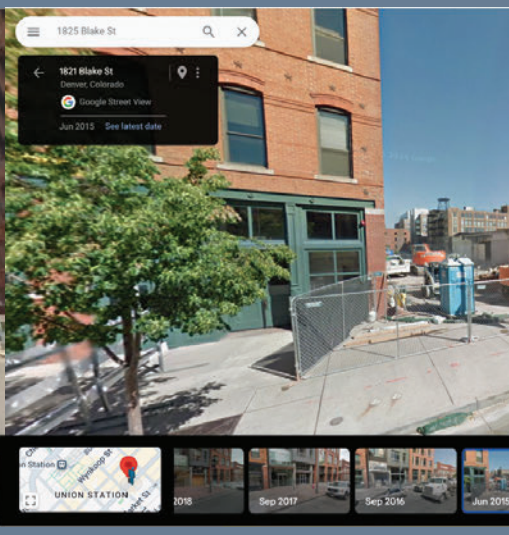


Image Capture: June 2015

Building Age

10% of buildings were older than **100**, before they were demolished

After analyzing 144 buildinngs that had a recorded year of construction and calculating the age with the year of demolition, 10% means 14 buildings were older than 100. 1% of these demolished buildings were older than 120 years old before demolition. Buildings that are over 50 years old can be considered for Colorado Historic Preservation Income Tax Credit.

This map includes data from: Google

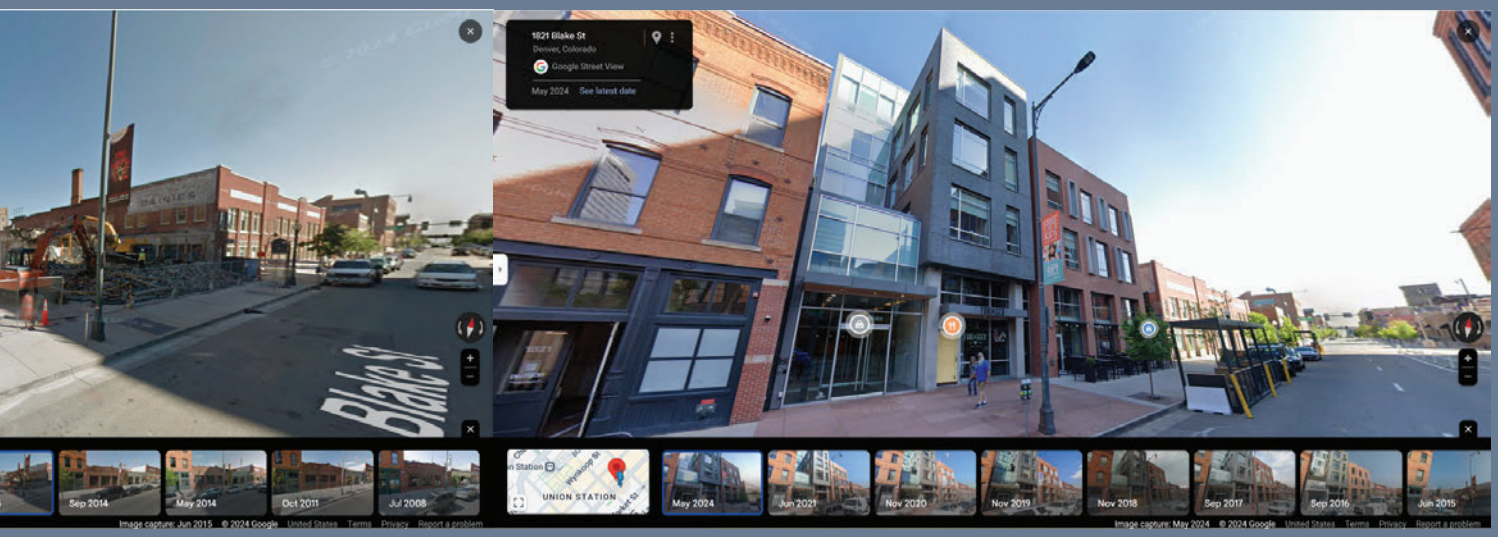
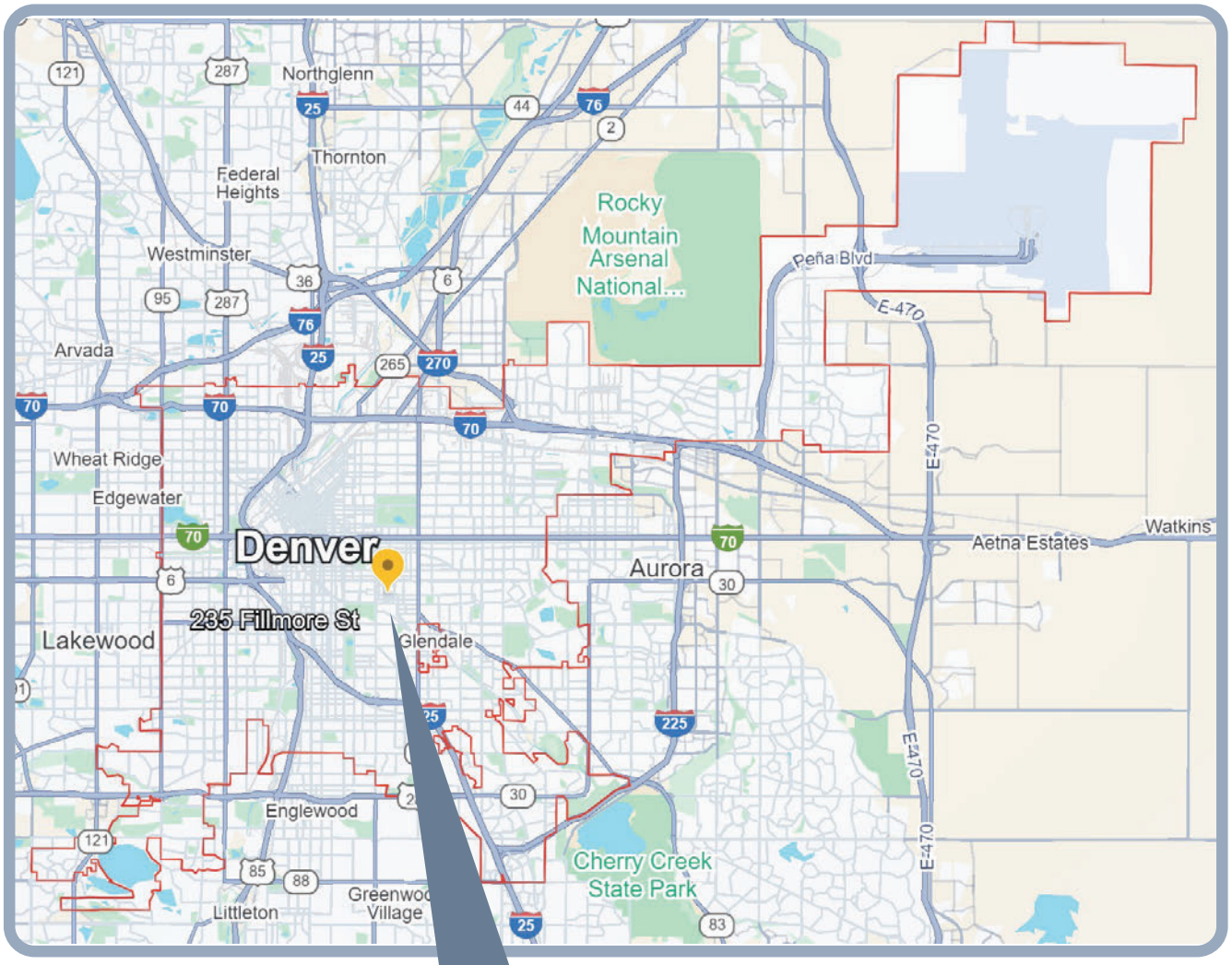


Image Capture: May 2024

Figure 49: Google Street View Timeline



235 Fillmore Ave, Denver CO

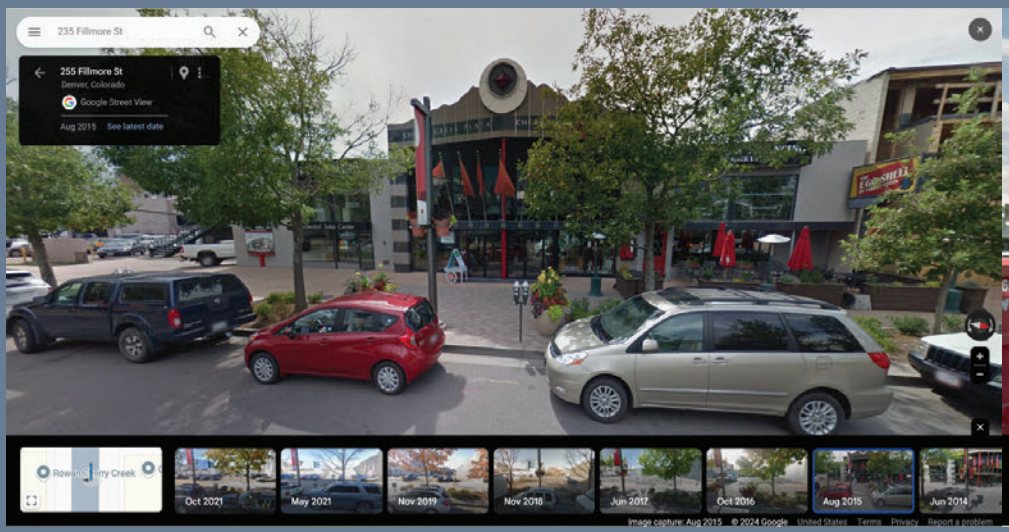


Image Capture: August 2015

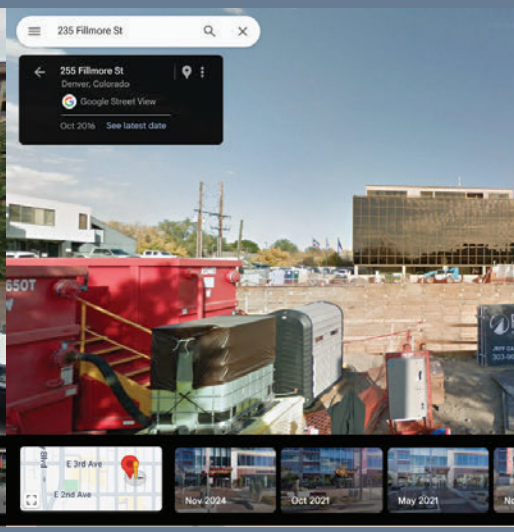


Image Capture: October 2016

Building Age

22% of the demolished buildings were between **60 and 69** years old before they were demolished

After analyzing 144 buildings that had a recorded year of construction, 22% of buildings means that 32 out of 144 were between 60 and 69 before they were demolished. Across all 144 buildings, the average year of construction was 1955.

This map includes data from: Google

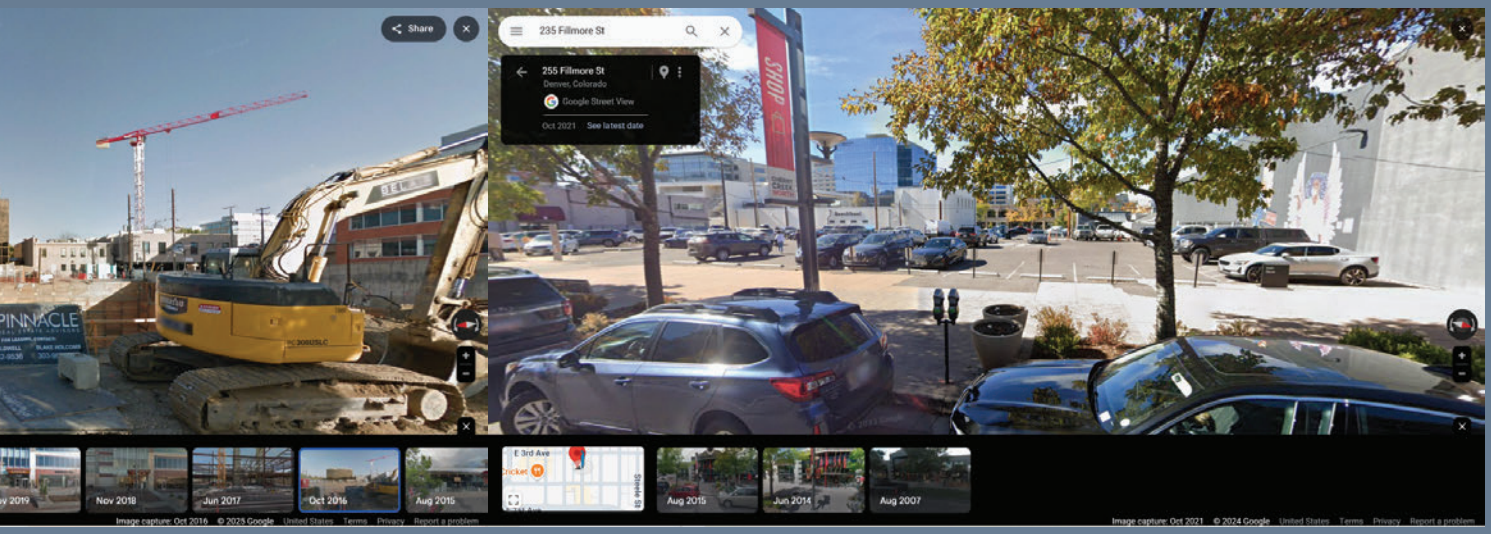
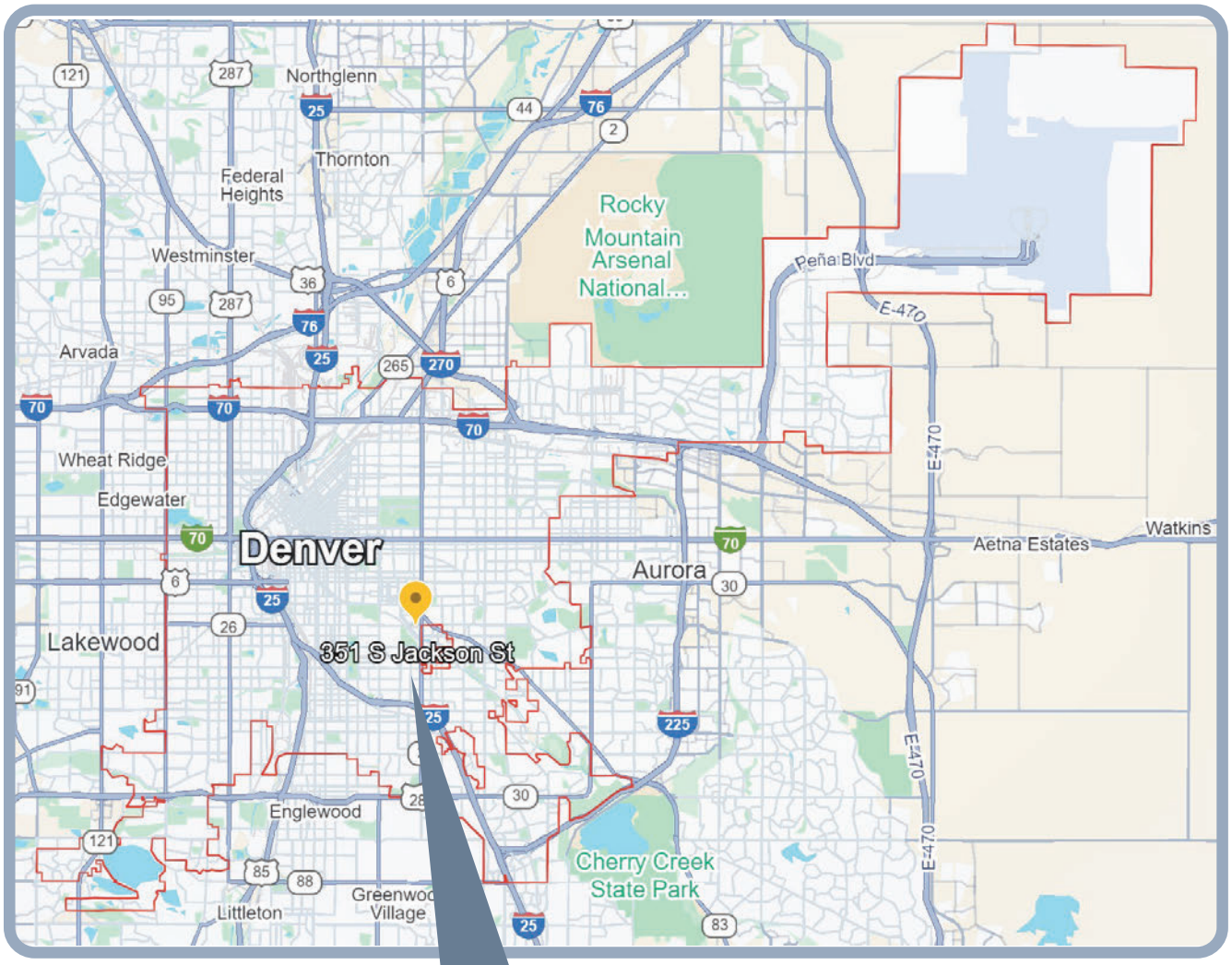


Image Capture: October 2021

Figure 50: Google Street View Timeline



351 S Jackson St, Denver CO

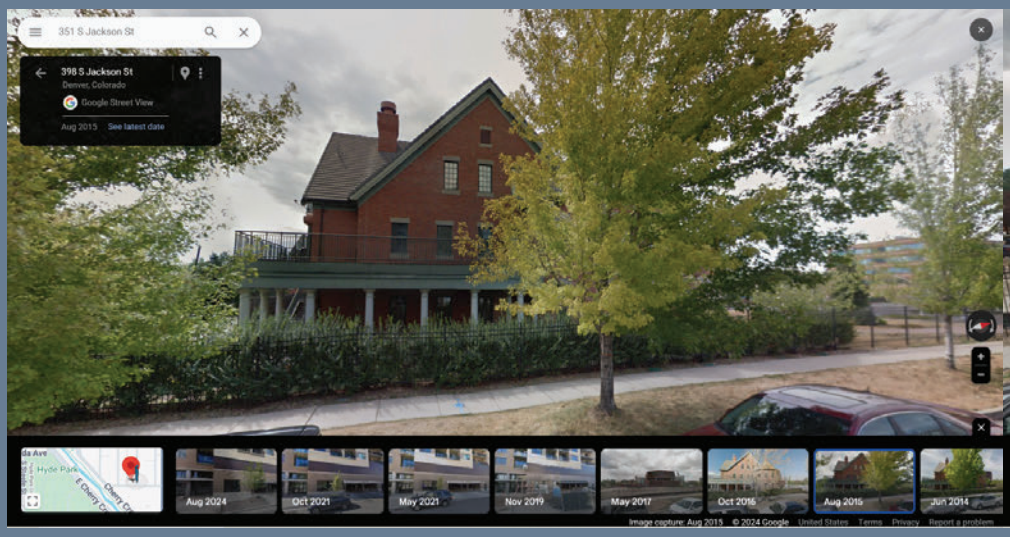


Image Capture: August 2015

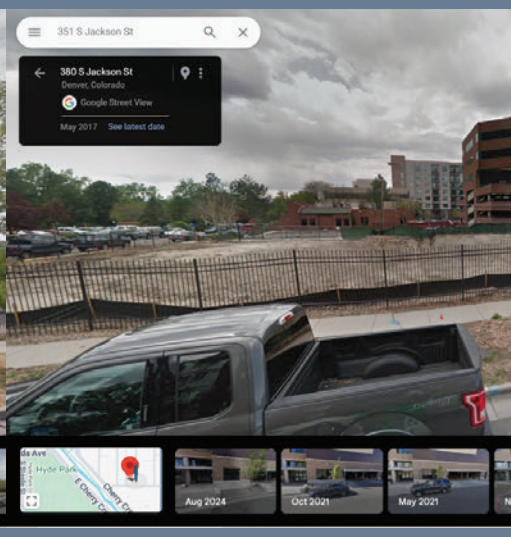


Image Capture: May 2017

Building Age

15% of buildings were demolished before they reached **30** years old

After analyzing 144 buildings that had a recorded year of construction, 15% means that 22 buildings had yet to reach 30 years old before being demolished. Most buildings are designed to withstand at least 50 years of use before it's considered at the end of its lifespan.

This map includes data from: Google

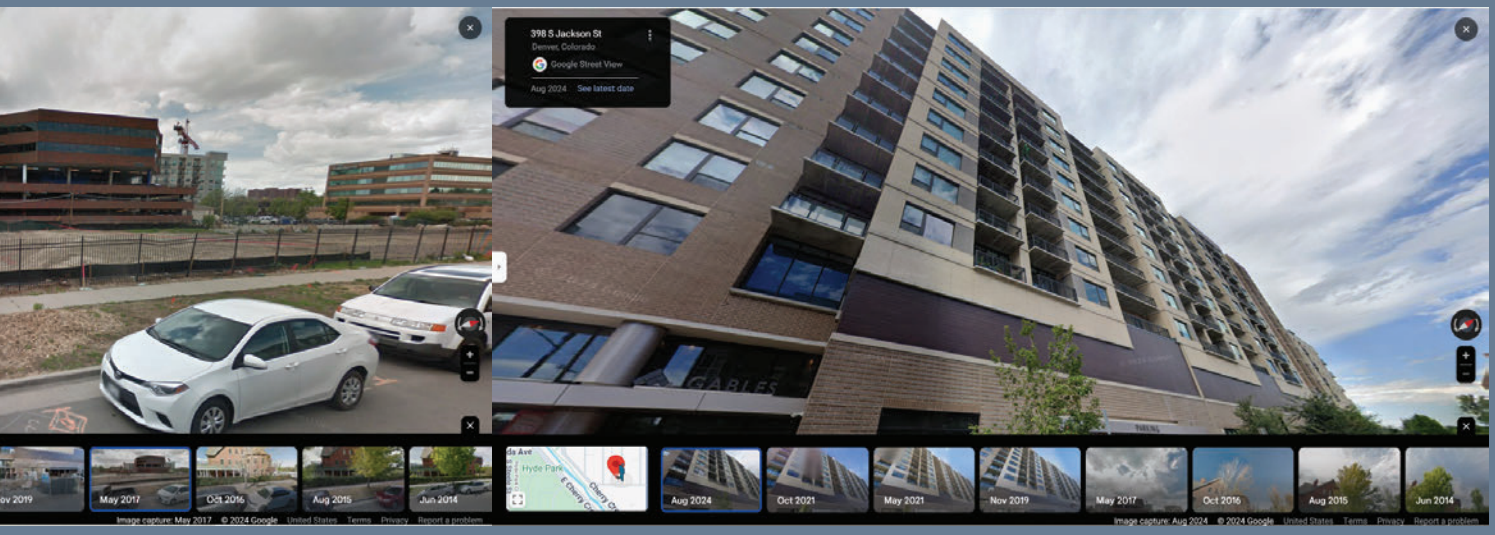


Image Capture: August 2024

Figure 51: Google Street View Timeline

Table 3: Adaptive Reuse Case Study Analysis Table

Case Study #	Project Name	Architect Firm	City	State	Year
1	Hughes Warehouse Adaptive Reuse / Overland Partners	Overland Partners	San Antonio	Texas	2012
2	Arts District Warehouse / Sheft Farrace	Sheft Farrace	Los Angeles	California	2024
3	Building 12 / Perkins&Will	Perkins & Will	San Francisco	California	2022
4	Office Building Transformation / Studio VARA	Studio VARA	Mill Valley	California	N/A
5	Westland Distillery / Urbanadd	Urbanadd	Seattle	Washington	2013
6	Division Street Residence / Emerick Architects	Emerick Architects	Portland	Oregon	2012
7	Firehouse Renovation / Meridian 105 Architecture	Meridian 105 Architecture	Denver	Colorado	2021
8	150 North Third Street Residential Complex / JBAD	JBAD	Columbus	Ohio	2021
9	Apple Store, Upper East Side / Bohlin Cywinksi Jackson	Bohlin Cywinksi Jackson	New York City	New York	2015
10	Historic Front Street / COOKFOX	COOKFOX	New York City	New York	2006
11	Tustin Street Adaptive Re-Use / studio d'ARC	Studio d'ARC	Pittsburgh	Pennsylvania	2019
12	The Residences at Prince / Marvel Architects	Marvel Architects	New York City	New York	2018
13	The Buntin Group Offices / HASTINGS Architecture	HASTINGS Architecture	Nashville	Tennessee	2019
14	Columbia City Abbey Apartments / Allied8	Allied8	Seattle	Washington	2021
15	MASS MoCA Building 6 / Bruner/Cott & Associates	Bruner/Cott & Associates	North Adams	Massachusetts	2017
16	Improper City	OZ Architecture	Denver	Colorado	N/A
17	2300 Central	OZ Architecture	Boulder	Colorado	N/A
18	VF Corp Lab	OZ Architecture	Denver	Colorado	N/A
19	Movement Climbing + Fitness RiNo	OZ Architecture	Denver	Colorado	N/A
20	2800 Walnut	OZ Architecture	Denver	Colorado	N/A
21	York Street Yards	Tryba Architects	Denver	Colorado	2022
22	Hotel Teatro	Tryba Architects	Denver	Colorado	1998
23	Mercantile Square	Tryba Architects	Denver	Colorado	1996
24	Denver Rock Drill	Tryba Architects	Denver	Colorado	Ongoing
25	Park Towne Place Museum District Residences	Tryba Architects	Philidalphia	Pennsylvania	2017
26	Tryba Architects Studio at Fisher Mansion	Tryba Architects	Denver	Colorado	1999
27	Denver Union Station and The Crawford Hotel	Tryba Architects	Denver	Colorado	2014
28	Daniels and Fisher Tower	Tryba Architects	Denver	Colorado	1995 – 2003 (5 phases)
29	Montview Boulevard Presbyterian Church	Tryba Architects	Denver	Colorado	2022
30	CoorsTek Corporate Headquarters	Tryba Architects	Golden	Colorado	Ongoing
31	Clayworks	Tryba Architects	Golden	Colorado	Ongoing

Case Study #	Keywords	Source	Notes
1		Archdaily	
2		Archdaily	
3		Archdaily	
4		Archdaily	
5		Archdaily	
6		Archdaily	
7		Archdaily	
8		Archdaily	
9		Archdaily	
10		Archdaily	
11		Archdaily	
12		Archdaily	
13		Archdaily	
14		Archdaily	
15		Archdaily	
16	Adaptive reuse	OZ Architecture	
17	Adaptive reuse	OZ Architecture	
18	Adaptive reuse	OZ Architecture	
19	Adaptive reuse	OZ Architecture	
20	Adaptive reuse	OZ Architecture	
21	Adaptive reuse	Tryba Architects	A flexible space that can be transformed for a variety of uses in the future
22	Historic Preservation, Adaptive reuse	Tryba Architects	
23	Historic Preservation, Adaptive reuse	Tryba Architects	
24	Historic Preservation, Adaptive reuse, New Construction	Tryba Architects	
25	Historic Preservation, adaptive reuse	Tryba Architects	
26	Historic Preservation, adaptive reuse	Tryba Architects	
27	Historical Preservation, Adaptive Reuse	Tryba Architects	They modernized some of the features of the station so it could benefit the current demand of Denver residents
28	Historical Preservation	Tryba Architects	
29	Historical Preservation	Tryba Architects	
30		Tryba Architects	
31		Tryba Architects	This and the project about are about the same project. Coors wants to create a mixed use developmental headquarters

Case Study #	Building Age	Characteristcs	Building Size	Location
1	Built in 1918		Medium (15,000 sf - 50,000 sf)	River North District in San Antonio
2	1920s	insdutrial	Small (5,000 sf - 15,000 sf)	LA's art district
3	1941	industrial	Large (50,000 sf+)	The port of San Francisco
4			Large (50,000 sf+)	Mill Valley
5	1914	timber warehouse	Small (5,000 sf - 15,000 sf)	Seattle
6	1920's	warehouse/industrial	Small (5,000 sf - 15,000 sf)	Portland
7	1890's	historic brick firehouse	Small (5,000 sf - 15,000 sf)	LoHi
8	1900's	industrial/warehouse	Large (50,000 sf+)	Columbus
9	1922	Beaux Arts classicism	Small (5,000 sf - 15,000 sf)	upper east side, NYC
10	18th century	historic brick structures that match the surrounding area	Large (50,000 sf+)	lower manhatten
11	19th century		Small (5,000 sf - 15,000 sf)	uptown, Pittsburg
12	1814	1820 Federal-style	Medium (15,000 sf - 50,000 sf)	Nolita, NYC
13	early 1900's	originally constructed using materials from the adjacent rail yard	Medium (15,000 sf - 50,000 sf)	Nashville
14	1891	historic brick structure	Medium (15,000 sf - 50,000 sf)	Seattle
15	late 1800's	brick industrial building	Large (50,000 sf+)	North Adams, Massachusetts
16			Medium (15,000 sf - 50,000 sf)	RiNo
17			Medium (15,000 sf - 50,000 sf)	Boulder's Office Park
18			Large (50,000 sf+)	RiNo
19	Built in 1947		Medium (15,000 sf - 50,000 sf)	RiNo
20			Small (5,000 sf - 15,000 sf)	RiNo
21	Built in 1942		Large (50,000 sf+)	North East Denver's Clayton Neighborhood
22	Built in 1911		Large (50,000 sf+)	LoDo
23	Built between the late 1800s and the turn of the century		Large (50,000 sf+)	LoDo
24			Large (50,000 sf+)	Cole and RiNo
25		Mid-century construction	Large (50,000 sf+)	Philadelphia's Center City
26	Built in 1896		Medium (15,000 sf - 50,000 sf)	
27	Built in 1914	Older promanent civic building with historical characteristices. Victorian era architectural style	Large (50,000 sf+)	LoDo
28	Built in 1911		Medium (15,000 sf - 50,000 sf)	Downtown Denver
29	Built around 1900	Historic Church architectural characteristics	Large (50,000 sf+)	Park Hill Neighborhood
30	buildings dating to around the early 1900s		Large (50,000 sf+)	Downtown Golden
31			Large (50,000 sf+)	Downtown Golden - within the mixed use district

Case Study #	Previous Use
1	Hughes Plumbing Warehouse
2	warehouse
3	cutting and forming of steel plates for ship hulls
4	office building
5	crane manufacture
6	warehouse
7	firestation/firehouse
8	warehouse
9	U.S. Mortgage & Trust building
10	brick warehouse buildings
11	commercial building
12	oldest parochial school
13	Tennessee Central Railway shed
14	Columbia Congregational Church
15	mill factory
16	HVAC fabrication factory
17	Warehouse
18	Manufacturing Building
19	Duct and Sheet Metal Factory
20	Warehouse
21	Denver Medical Depot
22	8-story tramway building
23	Masonry Buildings
24	Warehouses
25	Composed of four, 18-story towers arranged around a central courtyard
26	William G. Fisher Mansion and adjacent garden-level ballroom
27	Train Station,
28	flagship store for the Daniels and Fisher Department Store
29	Church
30	
31	

Case Study #	Project Name	Architect Firm	City	State	Year
32	The Draper	Tryba Architects	Loveland	Colorado	Ongoing
33	Civic Center Plaza	Tryba Architects	Denver	Colorado	2022
34	Colorado Springs Fine Arts Center at Colorado College	Tryba Architects	Colorado Springs	Colorado	2007
35	The Glass Lab	Tryba Architects	Portland	Oregon	2019
36	Art Studios	JNS Architecture	Denver	Colorado	2023
37	Hilton Garden Inn Union Station	JNS Architecture	Denver	Colorado	2019
38	Turntable Studios	JNS Architecture	Denver	Colorado	2015
39	The Crawford	JNS Architecture	Denver	Colorado	2014
40	Asher Adams	JNS Architecture	Salt Lake City	Utah	Ongoing
41	Motor Lodge at NanBop Farm	JNS Architecture	Cadillac	Michigan	Ongoing
42	Clayton Members Club & Hotel	4240 Architecture	Denver	Colorado	N/A
43	The Slate Hotel (Formerly Emily Griffith Opportunity School)	4240 Architecture	Denver	Colorado	N/A
44	Michael Smith Natural Resources Building Addition	4240 Architecture	Fort Collins	Colorado	N/A
45	11 W. Quincy	4240 Architecture	Chicago	Illinois	N/A
46	Garrett's Desert Inn	4240 Architecture	Santa Fe	New Mexico	Ongoing
47	3003 Larimer	4240 Architecture	Denver	Colorado	N/A
48	Durrell Dining and Student Center	4240 Architecture	Fort Collins	Colorado	N/A
49	Braiden Lounge	4240 Architecture	Fort Collins	Colorado	N/A
50	Braiden Hall	4240 Architecture	Fort Collins	Colorado	N/A
51	Kittredge West Residence Hall	4240 Architecture	Boulder	Colorado	N/A
52	Bank of America	4240 Architecture	Greenville	South Carolina	N/A
53	Parmelee Hall	4240 Architecture	Fort Collins	Colorado	N/A
54	Parmelee Lounge	4240 Architecture	Fort Collins	Colorado	N/A
55	Ingersoll Lounge	4240 Architecture	Fort Collins	Colorado	N/A
56	200 Fillmore	4240 Architecture	Denver	Colorado	N/A
57	Willard O. Eddy Hall	4240 Architecture	Fort Collins	Colorado	N/A
58	Illinois Supreme Court	4240 Architecture	Springfield	Illinois	N/A
59	Farm and Market	OZ Architecture	Denver	Colorado	2024
60	Boettcher Building	Rowland + Broughton	Aspen	Colorado	N/A
61	Hotel Jerome – Historic Architectural Design	Rowland + Broughton	Aspen	Colorado	N/A
62	Game On	Rowland + Broughton	Aspen	Colorado	N/A
63	Mesa Building	Rowland + Broughton	Aspen	Colorado	N/A
64	1830 Blake Street Studio + Salon	Rowland + Broughton	Denver	Colorado	N/A
65	White House Tavern	Rowland + Broughton	Aspen	Colorado	N/A
66	Hotel Boulderado	Rowland + Broughton	Boulder	Colorado	N/A
67	Crandall Building	Rowland + Broughton	Aspen	Colorado	N/A
68	Mining Modern	Rowland + Broughton	Aspen	Colorado	N/A
69	Concord Energy	Semple Brown	Denver	Colorado	N/A
70	Benzina	Semple Brown	Denver	Colorado	N/A
71	The Magnolia Hotel	Semple Brown	New Orleans	Louisiana	N/A
72	Ellie Caulkins Opera House	Semple Brown	Denver	Colorado	N/A

Case Study #	Keywords	Source	Notes
32	Historical Preservation, Adaptive Reuse	Tryba Architects	
33	Preservation	Tryba Architects	
34	Historical Preservation	Tryba Architects	
35		Tryba Architects	
36	adaptive reuse	JNS Architecture	office to residential conversion
37		JNS Architecture	
38	adaptive reuse	JNS Architecture	Hotel to micro housing
39	Historic Preservation, Adaptive Reuse	JNS Architecture	
40	historic preservation, addition	JNS Architecture	8-story hotel addition
41		JNS Architecture	existing garages into a boutique motel
42	Adaptive Reuse	4240 Architecture	
43	Adaptive Reuse	4240 Architecture	trade school into a boutique hotel
44	Revitalization, Addition	4240 Architecture	Colorado State University
45	Historic Preservation, Revitalization	4240 Architecture	
46	Revitalization	4240 Architecture	motel to an inn
47	Adaptive Reuse	4240 Architecture	
48	Revitalization	4240 Architecture	Colorado State University
49	Revitalization	4240 Architecture	Colorado State University
50	Revitalization	4240 Architecture	Colorado State University
51	Revitalization	4240 Architecture	University of Colorado at Boulder
52	Revitalization	4240 Architecture	
53	Revitalization	4240 Architecture	Colorado State University
54	Revitalization	4240 Architecture	Colorado State University
55	Revitalization	4240 Architecture	Colorado State University
56	Adaptive Reuse	4240 Architecture	
57	Revitalization	4240 Architecture	Colorado State University
58	Historic Preservation	4240 Architecture	
59	Adaptive Reuse	AIA Colorado	farm and grocery market
60	Historic Preservation, Revitalization	Rowland + Broughton	
61	Historic Preservation, Adaptive Reuse	Rowland + Broughton	
62	Historic Preservation, Revitalization	Rowland + Broughton	
63	Historic Preservation, Adaptive Reuse	Rowland + Broughton	
64	Historic Preservation, Adaptive Reuse	Rowland + Broughton	
65	Historic Preservation, Adaptive Reuse	Rowland + Broughton	
66	Historic Preservation, Revitalization	Rowland + Broughton	
67	Historic Preservation, Adaptive Reuse	Rowland + Broughton	
68	Historic Preservation, Revitalization	Rowland + Broughton	
69	Historic Preservation, Adaptive Reuse	Semple Brown	
70	Adaptive Reuse	Semple Brown	auto shop to resturant
71	Historic Preservation, Adaptive Reuse	Semple Brown	
72	Historic Preservation, Adaptive Reuse (?)	Semple Brown	

Case Study #	Building Age	Characteristcs	Building Size	Location
32			Large (50,000 sf+)	Historic Downtown Mainstreet
33			Small (5,000 sf - 15,000 sf)	Civic Center
34	Designed in 1936	Southwestern and Art Deco ornamentation	Large (50,000 sf+)	Colorado Springs
35	Built around the 1950s	wearhouse styled architecture	Medium (15,000 sf - 50,000 sf)	Portland Innovation Quadrant
36	Built in 1962	Modernist architecture and Bauhaus styles	Large (50,000 sf+)	Golden Triangle, LoDo
37			Large (50,000 sf+)	LoDo
38	Built in the 1960's	modernism	Large (50,000 sf+)	LoDo, Near Mile High Stadium
39	1881	classic civic space, decorated as an atrium	Medium (15,000 sf - 50,000 sf)	LoDo, Union Station
40	1908	historical references to the transcontinental railroad	Medium (15,000 sf - 50,000 sf)	downtown Salt Lake City
41		existing farm aesthetic	Large (50,000 sf+)	City of Cadillac
42	2004		Large (50,000 sf+)	Cherry Creek
43	1926-1956	preserving historic features	Large (50,000 sf+)	The Golden Triangle
44	1970's	brutalist architectural features	Medium (15,000 sf - 50,000 sf)	CSU
45	1948	historically sensitive building for the area, Art Deco, rennovated in the international style	Large (50,000 sf+)	South Loop, Chicago
46	1956	Route 66 motel with southern characteristics	Medium (15,000 sf - 50,000 sf)	Santa Fe
47	1880's	industrial and factory characteristics	Small (5,000 sf - 15,000 sf)	RiNo
48	1968	midcentury and brutalist	Medium (15,000 sf - 50,000 sf)	CSU
49	1946	midcentury	Small (5,000 sf - 15,000 sf)	CSU
50	1946	post WWII structures	Medium (15,000 sf - 50,000 sf)	CSU
51	1963	midcentury and brutalist	Large (50,000 sf+)	CU Boulder
52	1972		Large (50,000 sf+)	downtown Greenville
53	1962	post WWII structures	Medium (15,000 sf - 50,000 sf)	CSU
54	1962	aging 1960's-vintage student lounge	Small (5,000 sf - 15,000 sf)	CSU
55	1964	aging 1960's-vintage student lounge	Medium (15,000 sf - 50,000 sf)	CSU
56	1962	midcentury	Medium (15,000 sf - 50,000 sf)	Cheery Creek North
57	1963	aging 1960's-vintage student space	Large (50,000 sf+)	CSU
58	1818	classical architecture with ornamentation	Large (50,000 sf+)	springfeild, IL
59	1938		Small (5,000 sf - 15,000 sf)	LoDo Denver
60	1973	bauhaus	Small (5,000 sf - 15,000 sf)	Aspen
61	1889	Historical mountian hotel	Large (50,000 sf+)	Aspen
62	1890	victorian forms	Small (5,000 sf - 15,000 sf)	West End, Aspen
63	1888		Small (5,000 sf - 15,000 sf)	Main Street, Aspen
64	1892	historic brick storefront	Small (5,000 sf - 15,000 sf)	LoDo
65	1883		Small (5,000 sf - 15,000 sf)	Aspen
66	1909	victorian design	Medium (15,000 sf - 50,000 sf)	downtown Boulder
67	1970's	midcentury	Small (5,000 sf - 15,000 sf)	Aspen
68	1892		Small (5,000 sf - 15,000 sf)	Aspen
69	1930's	historical characteristcs for the area	Small (5,000 sf - 15,000 sf)	LoDo
70	1963	auto shop, industrial, midcentury	Small (5,000 sf - 15,000 sf)	Park Hill Neighborhood
71	1847	historic southern aesthetics	Medium (15,000 sf - 50,000 sf)	New Orleans
72	1908	auditorium, classical lyrical theater	Large (50,000 sf+)	LoDo

Case Study #	Previous Use
32	
33	Office Buildings
34	Colorado Springs Fine Arts Center
35	Glass Factory
36	Western Farm Bureau Life Building, Then the Art Institute of Colorado
37	
38	hotel
39	Great Hall atrium
40	Union Pacific Railroad station
41	farm storage and garages
42	formerly The Inn at Cherry Creek
43	Historic building that served as a trade school
44	university building
45	Bond Department Store, then office building, then federal building
46	motel
47	Raw industrial warehouse and RiNo Steel Foundry
48	university building
49	university building
50	university building
51	university building
52	parking and old plaza
53	university building
54	university building
55	university building
56	office/retail building
57	university building
58	federal building
59	office/retail building
60	Boettcher Seminar Building
61	Hotel
62	Home
63	Mesa store
64	E.B. Millar Coffee Company
65	miners cabin
66	hotel
67	House
68	miners cabin
69	
70	auto shop
71	hotel
72	auditorium, theater, ballet

Case Study #	Project Name	Architect Firm	City	State	Year
73	Colorado Ballet at Armstrong Center for Dance	Semple Brown	Denver	Colorado	N/A
74	Pueblo Memorial Hall	Semple Brown	Pueblo	Colorado	N/A
75	Euclid Hall Bar + Kitchen	Semple Brown	Denver	Colorado	N/A
76	Steuben's	Semple Brown	Denver	Colorado	N/A
77	RedLine Contemporary Arts Center	Semple Brown	Denver	Colorado	N/A
78	REI Denver Flagship	Semple Brown	Denver	Colorado	N/A
79	Wazee Exchange	Semple Brown	Denver	Colorado	N/A
80	Gates Family Foundation	Semple Brown	Denver	Colorado	N/A
81	Hangar 2	Semple Brown	Lowry	Colorado	N/A
82	Rock Island Building	Semple Brown	Denver	Colorado	N/A
83	Larimer Square Revitalization	Semple Brown	Denver	Colorado	N/A
84	Sugar Square	Semple Brown	Denver	Colorado	N/A
85	Semple Brown Design Offices	Semple Brown	Denver	Colorado	2000
86	Denver Central Market	LIV Studio	Denver	Colorado	N/A
87	Studio Como	LIV Studio	Denver	Colorado	N/A
88	The Edgewater Public Market	Meridian 105 Architecture	Edgewater	Colorado	N/A
89	Avanti Food and Beverage	Meridian 105 Architecture	Denver	Colorado	N/A
90	Minearal Resturant	Shape Architecture	Leadville	Colorado	N/A
91	Delaware Hotel	Shape Architecture	Leadville	Colorado	N/A
92	Littleton Brewery	Shape Architecture	Littleton	Colorado	N/A
93	Montessori School in Wash Park	Shape Architecture	Denver	Colorado	N/A
94	Leadville Mixed-Use Resturant	Shape Architecture	Leadville	Colorado	N/A

Case Study #	Keywords	Source	Notes
73	Historic Preservation (?), Revialization (?)	Semple Brown	
74	Historic Preservation, Revitalization	Semple Brown	
75	Historic Preservation, Adaptive Reuse	Semple Brown	
76	Adaptive Reuse	Semple Brown	auto garage to resutrant
77	Adaptive Reuse	Semple Brown	
78	Historic Preservation, Adaptive Reuse	Semple Brown	
79	Historic Preservation	Semple Brown	
80	Historic Preservation, Adaptive Reuse	Semple Brown	
81	Adaptive Reuse	Semple Brown	
82	Historic Preservation, Revitalization	Semple Brown	
83	Historic Preservation, Adaptive Reuse	Semple Brown	
84	Historic Preservation, Adaptive Reuse (?), Revitalization (?)	Semple Brown	
85	Historic Preservation, Adaptive Reuse	Denver Architecture Foundation	
86	Historic Preservation, Adaptive Reuse	LIV Studio	
87	Adaptive Reuse	LIV Studio	
88	Adaptive Reuse	Meridian 105 Architecture	
89	Adaptive Reuse	Meridian 105 Architecture	
90	Historic Preservation, Revitalization	Shape Architecture	
91	Historic Preservation, Revitalization	Shape Architecture	
92	Adaptive Reuse	Shape Architecture	
93	Adaptive Reuse	Shape Architecture	
94	Historic Preservation, Adaptive Reuse	Shape Architecture	

Case Study #	Building Age	Characteristcs	Building Size	Location
73		historic brick buildings down Santa Fe Dr	Medium (15,000 sf - 50,000 sf)	Lincoln Park
74	1919		Small (5,000 sf - 15,000 sf)	Pueblo
75	1883	historic brick buildings similar to the area	Small (5,000 sf - 15,000 sf)	LoDo, Larimer
76	1930	industrial	Small (5,000 sf - 15,000 sf)	North Capitol Hill
77	1971	industrial	Medium (15,000 sf - 50,000 sf)	RiNo
78	1901	industrial	Large (50,000 sf+)	Confluence Park, Denver
79	1871	historic brick buildings similar to the area	Large (50,000 sf+)	LoDo
80	1901	historic brick buildings similar to the area	Small (5,000 sf - 15,000 sf)	LoDo
81	1939	large warehouse/airplane hangar	Large (50,000 sf+)	Lowery
82	1893	historic brick buildings similar to the area	Medium (15,000 sf - 50,000 sf)	LoDo
83	late 1800's	historic victorian brick architecture	Large (50,000 sf+)	LoDo
84	1906	historic brick buildings similar to the area	Small (5,000 sf - 15,000 sf)	LoDo
85	1947	historic brick buildings similar to the area	Medium (15,000 sf - 50,000 sf)	Lincoln Park
86	1928	wearhouse/industrial	Small (5,000 sf - 15,000 sf)	RiNo
87		wearhouse/industrial	Medium (15,000 sf - 50,000 sf)	RiNo
88	2004	large warehouse	Large (50,000 sf+)	edgewater
89	1935	historical brick structure	Small (5,000 sf - 15,000 sf)	LoHi
90	1886	local historical characteristics that match the gold mine	Small (5,000 sf - 15,000 sf)	Leadville
91	1886	local historical characteristics that match the gold mine	Medium (15,000 sf - 50,000 sf)	leadville
92		industrial	Small (5,000 sf - 15,000 sf)	leadville
93			Small (5,000 sf - 15,000 sf)	Washington Park
94	1800s	historic brick structure	Small (5,000 sf - 15,000 sf)	leadville

Case Study #	Previous Use
73	
74	auditorium
75	resturant
76	auto garage
77	vacuum cleaner parts warehouse
78	Denver Tramway Power Company Building
79	Office Buildings
80	office and warehouse
81	airplane hangar
82	commercial structure. Most likely an office
83	resturants, retail, and office commercial buildings
84	addition to a different historical building
85	Us postal office
86	warehouse
87	warehouse
88	abandoned grocery store
89	Dodson's Variety Store
90	resturant
91	hotel
92	auto garage
93	
94	Famous Shoe Company

Table 4: Demolition Permit Analysis Table

Building #	Date Issued	Permit #	Address	Schedule #	Building Use (Before)
1	08/07/2015	2015-DEMO-0000160	55 N Clermont St	607305005000	SCHOOL
2	07/14/2016	2016-DEMO-0000558	8700 Pena Blvd	1228100072000	DIA CONCOURSE
3	11/23/2016	2016-DEMO-0000994	8400 Pena Blvd		
4	07/17/2017	2017-DEMO-0000585	9100 Pena Blvd		DIA CONCOURSE
5	07/24/2018	2018-DEMO-0000456	10020 E Girard Ave	634500042000	OFFICE BLDG
6	08/02/2018	2018-DEMO-0000717	5130 N Franklin St	214400110000	WAREHOUSE
7	08/17/2018	2018-DEMO-0000842	2950 Arkins Ct	227500032000	FACTORY
8	08/30/2018	2018-DEMO-0000873	99 S Broadway	510320062000	FINANCIAL BLDG
9	09/13/2018	2018-DEMO-0000837	925 N Inca St	503605065000	
10	09/14/2018	2018-DEMO-0000894	3400 W 38th Ave	229204074000	VCNT LAND BA-2 ZONE
11				229204039000	VCNT LAND BA-2 ZONE
12	02/01/2019	2018-DEMO-0000853	990 N Bannock St	503708048000	OFFICE BLDG
13	05/23/2019	2019-DEMO-0000431	1701 N Bryant St	232400022000	STADIUM
14	02/20/2014	2014-DEMO-0000352254	601 N VINE ST	502426012000	SINGLE FAMILY
15	02/11/2016	2016-DEMO-0000098	3390 W Alameda Ave	517204043000	
16	03/22/2016	2016-DEMO-0000228	350 N Fillmore St	512214005000	SINGLE FAMILY
17	02/01/2017	2017-DEMO-0000080	808 S Williams St	514409002000	SINGLE FAMILY
18	05/24/2017	2017-DEMO-0000421	1629 N Irving St	232321010000	SINGLE FAMILY
19	07/31/2017	2017-DEMO-0000588	3879 N Adams St	224435039000	WAREHOUSE
20	10/26/2017	2017-DEMO-0000862	165 S Corona St	511414022000	SINGLE FAMILY
21	11/17/2017	2017-DEMO-0000934	3027 W 19th Ave	232301016000	APT W/2 UNITS
22	11/17/2017	2017-DEMO-0000935	3031 W 19th Ave	232301017000	APT W/2 UNITS
23	12/19/2017	2017-DEMO-0001028	6420 W Sumac Ave	913207002000	SINGLE FAMILY
24	01/25/2018	2018-DEMO-0000061	4431 N Tennyson St	219217032000	RETAIL, MULTI
25	01/25/2018	2018-DEMO-0000062	4437 N Tennyson St	219217019000	SINGLE FAMILY
26	07/18/2018	2018-DEMO-0000665	93 N Washington St	510402051000	SINGLE FAMILY
27	08/01/2018	2018-DEMO-0000749	3935 N Jason St	221435014000	SINGLE FAMILY
28	07/30/2019	2019-DEMO-0000623	1980 N Albion St	131304019000	SINGLE FAMILY
29	07/15/2015	2015-DEMO-0000082	101 N Harrison St	512131060000	APT W/4 UNITS
30	12/09/2016	2016-DEMO-0001061	2551 W 26th Ave	229428036000	
31	03/16/2018	2018-DEMO-0000185	1648 N Julian St	232321022000	APT W/2 UNITS
32	01/27/2014	2014-DEMO-0000351777	128 N STEELE ST	512125003000	
33	01/29/2014	2014-DEMO-0000525085	3410 E 1ST AVE	512506051000	VCNT LAND BA-1 ZONE
34	02/24/2014	2014-DEMO-0000127207	1550 W COLFAX AVE	504200029000	VCNT LAND I-2 ZONE
35	03/03/2014	2014-DEMO-0000398487	2747 N WYANDOT ST	228328022000	VCNT LAND PRV ZONE
36	05/01/2014	2014-DEMO-0000222867	3001 N BRIGHTON BLVD	227500088000	VCNT LAND I-2 ZONE
37	05/05/2014	2014-DEMO-0000586422	1950 WEWATTA ST	N/A	
38	05/07/2014	2014-DEMO-0000247621	620 N FEDERAL BLVD	508100140000	MOTEL - CHAIN/CONF/REST
39	07/11/2014	2014-DEMO-0000321038	4155 E JEWELL AVE	619310001000	OFFICE BLDG
40	08/01/2014	2014-DEMO-0000057347	2232 LAWRENCE ST	234223017000	WAREHOUSE
41	08/04/2014	2014-DEMO-0000057831	2601 S PLATTE RIVER DR S	528400022000	OFFICE BLDG
42	08/04/2014	2014-DEMO-0000057832	2601 S PLATTE RIVER DR N	528400022000	OFFICE BLDG
43	08/21/2014	2014-DEMO-0000025005	2727 W 27TH AVE	229423026000	WAREHOUSE
44	11/13/2014	2014-DEMO-0000421040	3301 N BRIGHTON BLVD	227500057000	FACTORY
45	11/26/2014	2014-DEMO-0000425289	1800 BOULDER ST	228314043000	WAREHOUSE
46	12/08/2014	2014-DEMO-0000290197	1300 W EVANS AVE	528100052000	WAREHOUSE
47	12/11/2014	2014-DEMO-0000653949	2505 18TH ST	228314041000	OFFICE BLDG
48	01/21/2015	2015-DEMO-0000438562	1655 N LAFAYETTE ST	235417024000	MEDICAL BLDG
49	02/11/2015	2015-DEMO-0000630084	2222 W 28TH AVE	228327034000	SCHOOL
50	02/11/2015	2015-DEMO-0000630094	1812 WAZEE ST	233103029000	OFFICE BLDG
51	02/11/2015	2015-DEMO-0000630095	1523 18TH ST	233103029000	OFFICE BLDG
52	02/20/2015	2015-DEMO-0000657657	7295 E BELLEVIEW AVE	708408002000	GAS STATION
53	03/02/2015	2015-DEMO-0000579630	18 S OGDEN ST	511407083000	APT LOW-RISE>9UNT, WALK-UP
54	03/05/2015	2015-DEMO-0000608255	707 N SHERMAN ST	503903040000	OFFICE BLDG
55	03/06/2015	2015-DEMO-0000590656	4200 E 9TH AVE	606304006000	VCNT LAND R-3, R-3X ZONE
56	03/27/2015	2015-DEMO-0000674088	4200 E 9TH AVE	606304006000	VCNT LAND R-3, R-3X ZONE
57	04/13/2015	2015-DEMO-0000392483	4200 E 9TH AVE BLDG 10	606304006000	VCNT LAND R-3, R-3X ZONE
58	04/15/2015	2015-DEMO-0000610658	16 S OGDEN ST	511407083000	APT LOW-RISE>9UNT, WALK-UP
59	04/29/2015	2015-DEMO-0000407880	21 S DOWNING ST	511407084000	APT LOW-RISE>9UNT, WALK-UP
60	05/12/2015	2015-DEMO-0000303254	1825 BLAKE ST	233103026000	RETAIL, SINGLE

Building #	Building Use (After)	Year Built	Year Demolished	Building Age	Building Height (Before)
1	INDUSTRIAL-SCHOOL	1994	2015	21	18
2	COMMERCIAL	1994	2016	22	99
3		error	2018		0
4	COMMERCIAL	1994	2018	24	99
5	RESIDENTIAL-APARTMENT	1979	2018	39	30
6	STOCK SHOW	1983	2018	35	22
7	RESIDENTIAL-MULTI UNIT APTS	1953	2021	68	19
8	VACANT LAND /GENERAL COMMON ELEMENTS	1971	2019	48	27
9		error	2018		28
10	RETAIL W/MIXED USE	error	2019		0
11	VACANT LAND /GENERAL COMMON ELEMENTS	error	2019		0
12	RETAIL W/MIXED USE	1982	2019	37	62
13	STADIUM	1999	2019	20	124
14	SFR Grade A	1953	2015	62	33
15		error	2016		0
16	RESIDENTIAL-ROWHOUSE	1900	2016	116	21
17	SFR Grade B	1922	2017	95	2
18	RESIDENTIAL-ROWHOUSE	1989	2018	29	17
19	INDUSTRIAL-WAREHOUSE	1945	2018	73	22
20	SFR Grade B	1895	2017	122	11
21	RESIDENTIAL-ROWHOUSE	1959	2019	60	3
22	RESIDENTIAL-ROWHOUSE	1959	2019	60	3
23	SFR Grade B	1996	2019	23	27
24		1961	2019	58	7
25		1900	2019	119	7
26	RESIDENTIAL-ROWHOUSE	1905	2021	116	25
27	SFR Grade B	1908	2020	112	3
28		1908	2019	111	33
29	RESIDENTIAL-ROWHOUSE	1952	2015	63	9
30	HOTEL W/MIXED USE	error	2017		16
31	RESIDENTIAL-ROWHOUSE	1961	2020	59	16
32		error	2017		23
33	COMMERCIAL-FINANCIAL OFFICE	error	2014		13
34	VACANT LAND	error	2015		26
35	HOTEL W/MIXED USE	error	2015		41
36	VACANT LAND /GENERAL COMMON ELEMENTS	error	2015		23
37		error	2015		12
38	MOTEL W/MIXED USE	1963	2015	52	21
39	COMMERCIAL-OFFICE	1972	2017	45	19
40	VACANT LAND	1929	2014	85	20
41	COMMERCIAL-OFFICE	1988	2014	26	47
42	COMMERCIAL-OFFICE	1988	2014	26	49
43		1921	2014	93	22
44		1951	2014	63	20
45		1964	2017	53	21
46	INDUSTRIAL-WAREHOUSE	1916	2017	101	25
47		1977	2017	40	32
48		1979	2017	38	23
49	RESIDENTIAL-MULTI UNIT APTS	1979	2015	36	25
50		1930	2015	85	15
51		1930	2015	85	117
52		1991	2015	24	18
53		1941	2015	74	33
54		1970	2015	45	13
55	VACANT LAND /GENERAL COMMON ELEMENTS	error	2017		1
56	VACANT LAND /GENERAL COMMON ELEMENTS	error	2017		1
57	VACANT LAND /GENERAL COMMON ELEMENTS	error	2017		151
58		1941	2015	74	33
59		1941	2016	75	0
60		1938	2015	77	17

Building #	Building Height (After)	Height Difference	Building Area (Before)	Size
1	31	13	35742	Medium (15,000 sf - 50,000 sf)
2	99	0	1228642	Large (50,000 sf+)
3	0	0		Small (5,000 sf - 15,000 sf)
4	99	0	842354	Large (50,000 sf+)
5	36	6	21021	Medium (15,000 sf - 50,000 sf)
6	-2	-24	21422	Medium (15,000 sf - 50,000 sf)
7	86	67	31638	Medium (15,000 sf - 50,000 sf)
8	40	13	28259	Medium (15,000 sf - 50,000 sf)
9	45	17		Small (5,000 sf - 15,000 sf)
10	71	71		Small (5,000 sf - 15,000 sf)
11	0	0		Small (5,000 sf - 15,000 sf)
12	165	103	118915	Large (50,000 sf+)
13	124	0	1721086	Large (50,000 sf+)
14	29	-4	1204	Small (5,000 sf - 15,000 sf)
15	57	57		Small (5,000 sf - 15,000 sf)
16	30	9	1184	Small (5,000 sf - 15,000 sf)
17	15	13	1298	Small (5,000 sf - 15,000 sf)
18	34	17	1000	Small (5,000 sf - 15,000 sf)
19	39	17	2689	Small (5,000 sf - 15,000 sf)
20	25	14	859	Small (5,000 sf - 15,000 sf)
21	35	32		Small (5,000 sf - 15,000 sf)
22	35	32		Small (5,000 sf - 15,000 sf)
23	27	0	2588	Small (5,000 sf - 15,000 sf)
24	31	24	4896	Small (5,000 sf - 15,000 sf)
25	31	24	726	Small (5,000 sf - 15,000 sf)
26	26	1	955	Small (5,000 sf - 15,000 sf)
27	31	28	911	Small (5,000 sf - 15,000 sf)
28	-5305	-5338	5644	Small (5,000 sf - 15,000 sf)
29	35	26		Small (5,000 sf - 15,000 sf)
30	48	32		Small (5,000 sf - 15,000 sf)
31	43	27		Small (5,000 sf - 15,000 sf)
32	136	113		Small (5,000 sf - 15,000 sf)
33	15	2		Small (5,000 sf - 15,000 sf)
34	31	5		Small (5,000 sf - 15,000 sf)
35	62	21		Small (5,000 sf - 15,000 sf)
36	49	26		Small (5,000 sf - 15,000 sf)
37	-1	-13		Small (5,000 sf - 15,000 sf)
38	48	27	12328	Small (5,000 sf - 15,000 sf)
39	6	-13	133964	Large (50,000 sf+)
40	1	-19	17493	Medium (15,000 sf - 50,000 sf)
41	-1	-48	381	Small (5,000 sf - 15,000 sf)
42	-3	-52	381	Small (5,000 sf - 15,000 sf)
43	65	43	39397	Medium (15,000 sf - 50,000 sf)
44	78	58	79646	Large (50,000 sf+)
45	51	30	12364	Small (5,000 sf - 15,000 sf)
46	32	7	27999	Medium (15,000 sf - 50,000 sf)
47	64	32	45888	Medium (15,000 sf - 50,000 sf)
48	94	71	34836	Medium (15,000 sf - 50,000 sf)
49	71	46	44962	Medium (15,000 sf - 50,000 sf)
50	91	76	15080	Medium (15,000 sf - 50,000 sf)
51	154	37	15080	Medium (15,000 sf - 50,000 sf)
52	216	198	1433	Small (5,000 sf - 15,000 sf)
53	336	303		Small (5,000 sf - 15,000 sf)
54	86	73	5226	Small (5,000 sf - 15,000 sf)
55	2	1		Small (5,000 sf - 15,000 sf)
56	2	1		Small (5,000 sf - 15,000 sf)
57	76	-75		Small (5,000 sf - 15,000 sf)
58	336	303		Small (5,000 sf - 15,000 sf)
59	0	0		Small (5,000 sf - 15,000 sf)
60	82	65	12534	Small (5,000 sf - 15,000 sf)

Building #	Building Area (After)	Size
1	286838	Large (50,000 sf+)
2	7545503	Large (50,000 sf+)
3		Small (5,000 sf - 15,000 sf)
4	10325543	Large (50,000 sf+)
5	66875	Large (50,000 sf+)
6	59113	Large (50,000 sf+)
7	1848	Small (5,000 sf - 15,000 sf)
8	621	Small (5,000 sf - 15,000 sf)
9		Small (5,000 sf - 15,000 sf)
10	73772	Large (50,000 sf+)
11	135	Small (5,000 sf - 15,000 sf)
12	32064	Medium (15,000 sf - 50,000 sf)
13	929355	Large (50,000 sf+)
14	6240	Small (5,000 sf - 15,000 sf)
15		Small (5,000 sf - 15,000 sf)
16	3125	Small (5,000 sf - 15,000 sf)
17	6250	Small (5,000 sf - 15,000 sf)
18	3000	Small (5,000 sf - 15,000 sf)
19	25000	Medium (15,000 sf - 50,000 sf)
20	6340	Small (5,000 sf - 15,000 sf)
21	1122	Small (5,000 sf - 15,000 sf)
22	1625	Small (5,000 sf - 15,000 sf)
23	6432	Small (5,000 sf - 15,000 sf)
24		Small (5,000 sf - 15,000 sf)
25		Small (5,000 sf - 15,000 sf)
26	2751	Small (5,000 sf - 15,000 sf)
27	4690	Small (5,000 sf - 15,000 sf)
28		Small (5,000 sf - 15,000 sf)
29	12530	Small (5,000 sf - 15,000 sf)
30	111909	Large (50,000 sf+)
31	1400	Small (5,000 sf - 15,000 sf)
32		Small (5,000 sf - 15,000 sf)
33	20551	Medium (15,000 sf - 50,000 sf)
34	19200	Medium (15,000 sf - 50,000 sf)
35	17143	Medium (15,000 sf - 50,000 sf)
36	46	Small (5,000 sf - 15,000 sf)
37		Small (5,000 sf - 15,000 sf)
38	84348	Large (50,000 sf+)
39	98714	Large (50,000 sf+)
40	17225	Medium (15,000 sf - 50,000 sf)
41	2877133	Large (50,000 sf+)
42	2877133	Large (50,000 sf+)
43		Small (5,000 sf - 15,000 sf)
44		Small (5,000 sf - 15,000 sf)
45		Small (5,000 sf - 15,000 sf)
46	181781	Large (50,000 sf+)
47		Small (5,000 sf - 15,000 sf)
48		Small (5,000 sf - 15,000 sf)
49	43386	Medium (15,000 sf - 50,000 sf)
50		Small (5,000 sf - 15,000 sf)
51		Small (5,000 sf - 15,000 sf)
52		Small (5,000 sf - 15,000 sf)
53		Small (5,000 sf - 15,000 sf)
54		Small (5,000 sf - 15,000 sf)
55	200	Small (5,000 sf - 15,000 sf)
56	200	Small (5,000 sf - 15,000 sf)
57	200	Small (5,000 sf - 15,000 sf)
58		Small (5,000 sf - 15,000 sf)
59		Small (5,000 sf - 15,000 sf)
60		Small (5,000 sf - 15,000 sf)

Building #	Date Issued	Permit #	Address	Schedule #	Building Use (Before)
61	06/22/2015	2015-DEMO-0000031	55 N Cook St	512507031000	MISC IMPS-TIE BACK
62	07/28/2015	2015-DEMO-0000133	1701 N York St	235514030000	
63	07/30/2015	2015-DEMO-0000144	5031 S Ulster St	709300038000	OFFICE BLDG
64	07/31/2015	2015-DEMO-0000142	600 N Acoma St	503622041000	
65	07/31/2015	2015-DEMO-0000143	601 N Broadway	503622041000	
66	08/04/2015	2015-DEMO-0000148	2222 E 18th Ave	235514016000	OFFICE BLDG
67	08/06/2015	2015-DEMO-0000156	3601 N Quebec St	129117036000	RESTAURANT
68	08/20/2015	2015-DEMO-0000161	4200 E 9th Ave	606300010000	HOSPITALS
69				606304006000	VCNT LAND R-3, R-3X ZONE
70	08/26/2015	2015-DEMO-0000201	2511 N Eliot St	232107025000	APT W/5 UNITS
71	08/27/2015	2015-DEMO-0000198	4824 N Chambers Rd	17306023000	SHOPPING CENTER BLDG
72	08/27/2015	2015-DEMO-0000203	2101 31ST	222400098000	WAREHOUSE
73	08/31/2015	2015-DEMO-0000194	1835 N Franklin St	235327001000	HOSPITALS
74	08/31/2015	2015-DEMO-0000195	1835 N Franklin St	235327001000	HOSPITALS
75	10/06/2015	2015-DEMO-0000313	1148 S Broadway	522108035000	
76	10/09/2015	2015-DEMO-0000328	195 S Monaco Street Pkwy	608311005000	SCHOOL
77	10/27/2015	2015-DEMO-0000363	4200 E 9TH	606300010000	HOSPITALS
78	10/27/2015	2015-DEMO-0000364	4200 E 9th Ave, Bldg# 12	N/A	
79	01/07/2016	2015-DEMO-0000365	8700 Pena Blvd		DIA CONCOURSE
80	01/25/2016	2016-DEMO-0000055	4200 E 9TH	606300010000	HOSPITALS
81	01/25/2016	2016-DEMO-0000057	2301 S York St	526602015000	WAREHOUSE
82	02/05/2016	2016-DEMO-0000082	4200 E 9TH	606300010000	HOSPITALS
83	02/11/2016	2016-DEMO-0000097	1075 S Havana St	615404037000	OFFICE BLDG
84	02/18/2016	2016-DEMO-0000115	1835 N Franklin St	235327001000	HOSPITALS
85	03/03/2016	2016-DEMO-0000158	235 FILLMORE	512220016000	SHOPPETTE
86	03/15/2016	2016-DEMO-0000197	240 N Josephine St	512223040000	OFFICE BLDG
87	04/01/2016	2016-DEMO-0000250	2840 Blake St	227515027000	WAREHOUSE
88	04/21/2016	2016-DEMO-0000306	3801 E 46th Ave	224125001000	RESTAURANT
89	04/22/2016	2016-DEMO-0000308	1570 N Humboldt St	235430007000	MEDICAL BLDG
90	04/22/2016	2016-DEMO-0000309	1578 N Humboldt St	235430001000	MEDICAL BLDG
91	04/26/2016	2016-DEMO-0000321	1710 Platte St	228406016000	WAREHOUSE
92	05/03/2016	2016-DEMO-0000294	1835 N Franklin St	235327001000	HOSPITALS
93	05/13/2016	2016-DEMO-0000386	2601 S Platte River Dr	528400020000	OFFICE BLDG
94				528400021000	VCNT LAND I-2 ZONE
95				528400022000	OFFICE BLDG
96	05/23/2016	2016-DEMO-0000399	1360 N Vine St	502115036000	PRESCHOOLER NURSERY
97	05/23/2016	2016-DEMO-0000400	2114 E 14th Ave	502115001000	OFFICE BLDG
98	05/25/2016	2016-DEMO-0000417	4605 N Jackson St	224100032000	AUTO/TRUCK TERMINAL 2 STORY
99	05/26/2016	2016-DEMO-0000422	3217 N Tejon St	228233025000	RETAIL W/RESID
100	06/15/2016	2016-DEMO-0000475	2601 S Platte River Dr	528400020000	OFFICE BLDG
101				528400021000	VCNT LAND I-2 ZONE
102				528400022000	OFFICE BLDG
103	06/20/2016	2016-DEMO-0000485	3501 Wazee	227114008000	WAREHOUSE
104	07/01/2016	2016-DEMO-0000512	1335 N Elati St	503406059000	OFFICE BLDG
105	07/05/2016	2016-DEMO-0000517	230 N Fillmore St	512219004000	RETAIL, SINGLE
106	07/05/2016	2016-DEMO-0000518	250 FILLMORE	512219044000	RETAIL, SINGLE
107	07/05/2016	2016-DEMO-0000520	278 N Fillmore St	512219031000	RETAIL, MULTI
108	07/22/2016	2016-DEMO-0000592	3217 N Tejon St	228233025000	RETAIL W/RESID
109	07/28/2016	2016-DEMO-0000611	3540 E 31st Ave	225412017000	OTHER REC FACILITIES
110	07/29/2016	2016-DEMO-0000612	1611 PLATTE	228335036000	RETAIL, MULTI
111	08/12/2016	2016-DEMO-0000665	3755 RINGSBY	222400100000	
112	08/16/2016	2016-DEMO-0000637	2450 LARIMER	234208043000	
113	08/19/2016	2016-DEMO-0000696	1560 N Broadway	234940008000	OFFICE BLDG
114	08/31/2016	2016-DEMO-0000737	4760 E Evans Ave	630221021000	MIXED USE-MOTEL/RESD
115	09/09/2016	2016-DEMO-0000757	5101 E YALE	630401042000	SHOPPETTE
116	09/20/2016	2016-DEMO-0000795	915 S Colorado Blvd	513511012000	OFFICE BLDG
117	09/28/2016	2016-DEMO-0000818	210 N Saint Paul St	512217022000	RETAIL, MULTI
118	09/28/2016	2016-DEMO-0000824	2140 S Albion St	630217039000	RETAIL, MULTI
119	09/29/2016	2016-DEMO-0000830	5512 Leetsdale Dr	618100020000	FOOD PROCESS
120	09/29/2016	2016-DEMO-0000831	3519 N Brighton Blvd	227112030000	WAREHOUSE

Building #	Building Use (After)	Year Built	Year Demolished	Building Age	Building Height (Before)
61	RESIDENTIAL-MULTI UNIT APTS	1979	2018	39	76
62		error	2017		5
63	RESIDENTIAL-MULTI UNIT APTS	1978	2015	37	15
64	COMMERCIAL-MEDICAL OFFICE	error	2018		42
65	COMMERCIAL-MEDICAL OFFICE	error	2017		8
66		1954	2015	61	18
67	COMMERCIAL-RESTAURANT	1967	2017	50	21
68	VACANT LAND /GENERAL COMMON ELEMENTS	1924	2017	93	35
69	VACANT LAND /GENERAL COMMON ELEMENTS	error	2017		43
70		1889	2015	126	24
71	COMMERCIAL-SHOPPING CENTER	error	2015		17
72	VACANT LAND	1955	2015	60	19
73	COMMERCIAL-OFFICE	1957	2017	60	150
74	COMMERCIAL-OFFICE	1957	2017	60	9
75	COMMERCIAL-MISC IMPS	error	2017		14
76		1962	2017	55	28
77		1924	2017	93	42
78		error	2017		42
79	COMMERCIAL	1994	2016	22	99
80		1924	2017	93	42
81	VACANT LAND	1942	2016	74	20
82		1924	2017	93	42
83	COMMERCIAL-FINANCIAL OFFICE	1975	2016	41	15
84	COMMERCIAL-OFFICE	1957	2018	61	35
85		1972	2016	44	29
86	COMMERCIAL-HOTEL	1971	2016	45	21
87	RESIDENTIAL-MULTI UNIT APTS	1946	2017	71	22
88		1952	2016	64	25
89		1955	2016	61	27
90	RESIDENTIAL-MULTI UNIT APTS	1931	2016	85	22
91		1972	2018	46	22
92	COMMERCIAL-OFFICE	1957	2017	60	36
93	COMMERCIAL-OFFICE	1988	2017	29	47
94	VACANT LAND	error	2017		47
95	COMMERCIAL-OFFICE	1988	2017	29	47
96	RESIDENTIAL-ROWHOUSE	1960	2016	56	15
97		1949	2016	67	17
98	VACANT LAND /GENERAL COMMON ELEMENTS	1955	2017	62	25
99	RETAIL W/MIXED USE	1900	2016	116	14
100	COMMERCIAL-OFFICE	1988	2017	29	47
101	VACANT LAND	error	2017		47
102	COMMERCIAL-OFFICE	1988	2017	29	47
103	COMMERCIAL-OFFICE	1942	2016	74	26
104		1985	2017	32	20
105		1971	2016	45	29
106		1981	2017	36	29
107		1982	2016	34	29
108	RETAIL W/MIXED USE	1900	2016	116	14
109		1956	2016	60	19
110		1905	2016	111	20
111	COMMERCIAL-MISC IMPS	error	2016		50
112		error	2017		19
113	COMMERCIAL-OFFICE	1982	2017	35	18
114		1968	2017	49	28
115		1979	2016	37	15
116	COMMERCIAL-RETAIL	1956	2017	61	34
117	COMMERCIAL-RETAIL	1979	2016	37	27
118	VACANT LAND	1960	2016	56	19
119	RESIDENTIAL-MULTI UNIT APTS	1957	2017	60	22
120		1995	2018	23	16

Building #	Building Height (After)	Height Difference	Building Area (Before)	Size
61	106	30	29484	Medium (15,000 sf - 50,000 sf)
62	5	0		Small (5,000 sf - 15,000 sf)
63	75	60	9401	Small (5,000 sf - 15,000 sf)
64	130	88		Small (5,000 sf - 15,000 sf)
65	130	122		Small (5,000 sf - 15,000 sf)
66	65	47	12034	Small (5,000 sf - 15,000 sf)
67	24	3	8849	Small (5,000 sf - 15,000 sf)
68	46	11		Small (5,000 sf - 15,000 sf)
69	13	-30		Small (5,000 sf - 15,000 sf)
70	40	16		Small (5,000 sf - 15,000 sf)
71	21	4		Small (5,000 sf - 15,000 sf)
72	49	30	105770	Large (50,000 sf+)
73	-3	-153	601553	Large (50,000 sf+)
74	-10	-19	601553	Large (50,000 sf+)
75	-3	-17		Small (5,000 sf - 15,000 sf)
76	40	12	20276	Medium (15,000 sf - 50,000 sf)
77	19	-23		Small (5,000 sf - 15,000 sf)
78	22	-20		Small (5,000 sf - 15,000 sf)
79	99	0	1228642	Large (50,000 sf+)
80	58	16		Small (5,000 sf - 15,000 sf)
81	1	-19	13913	Small (5,000 sf - 15,000 sf)
82	64	22		Small (5,000 sf - 15,000 sf)
83	20	5	14520	Small (5,000 sf - 15,000 sf)
84	-2	-37	601553	Large (50,000 sf+)
85	99	70	24766	Medium (15,000 sf - 50,000 sf)
86	86	65	11991	Small (5,000 sf - 15,000 sf)
87	59	37	6072	Small (5,000 sf - 15,000 sf)
88	-13	-38	3929	Small (5,000 sf - 15,000 sf)
89	65	38	7421	Small (5,000 sf - 15,000 sf)
90	65	43	4999	Small (5,000 sf - 15,000 sf)
91	73	51	14765	Small (5,000 sf - 15,000 sf)
92	-11	-47	601553	Large (50,000 sf+)
93	-1	-48	381	Small (5,000 sf - 15,000 sf)
94	-1	-48		Small (5,000 sf - 15,000 sf)
95	-1	-48	381	Small (5,000 sf - 15,000 sf)
96	37	22	13196	Small (5,000 sf - 15,000 sf)
97	37	20	4026	Small (5,000 sf - 15,000 sf)
98	-13	-38	15022	Medium (15,000 sf - 50,000 sf)
99	60	46	10975	Small (5,000 sf - 15,000 sf)
100	-1	-48	381	Small (5,000 sf - 15,000 sf)
101	-1	-48		Small (5,000 sf - 15,000 sf)
102	-1	-48	381	Small (5,000 sf - 15,000 sf)
103	68	42	18419	Medium (15,000 sf - 50,000 sf)
104	33	13	7326	Small (5,000 sf - 15,000 sf)
105	99	70	8158	Small (5,000 sf - 15,000 sf)
106	99	70		Small (5,000 sf - 15,000 sf)
107	99	70	7130	Small (5,000 sf - 15,000 sf)
108	60	46	10975	Small (5,000 sf - 15,000 sf)
109	35	16	12892	Small (5,000 sf - 15,000 sf)
110	68	48	5670	Small (5,000 sf - 15,000 sf)
111	0	-50		Small (5,000 sf - 15,000 sf)
112	44	25		Small (5,000 sf - 15,000 sf)
113	37	19		Small (5,000 sf - 15,000 sf)
114	-6	-34		Small (5,000 sf - 15,000 sf)
115	73	58	11471	Small (5,000 sf - 15,000 sf)
116	28	-6	9395	Small (5,000 sf - 15,000 sf)
117	105	78	20654	Medium (15,000 sf - 50,000 sf)
118	1	-18	7200	Small (5,000 sf - 15,000 sf)
119	39	17	32890	Medium (15,000 sf - 50,000 sf)
120	106	90	908	Small (5,000 sf - 15,000 sf)

Building #	Building Area (After)	Size
61	31467	Medium (15,000 sf - 50,000 sf)
62		Small (5,000 sf - 15,000 sf)
63	130440	Large (50,000 sf+)
64	43137	Medium (15,000 sf - 50,000 sf)
65	43137	Medium (15,000 sf - 50,000 sf)
66		Small (5,000 sf - 15,000 sf)
67	40817	Medium (15,000 sf - 50,000 sf)
68	200	Small (5,000 sf - 15,000 sf)
69	200	Small (5,000 sf - 15,000 sf)
70		Small (5,000 sf - 15,000 sf)
71	10650	Small (5,000 sf - 15,000 sf)
72	92730	Large (50,000 sf+)
73	165116	Large (50,000 sf+)
74	165116	Large (50,000 sf+)
75	5250	Small (5,000 sf - 15,000 sf)
76		Small (5,000 sf - 15,000 sf)
77		Small (5,000 sf - 15,000 sf)
78		Small (5,000 sf - 15,000 sf)
79	7545503	Large (50,000 sf+)
80		Small (5,000 sf - 15,000 sf)
81	29990	Medium (15,000 sf - 50,000 sf)
82		Small (5,000 sf - 15,000 sf)
83	70000	Large (50,000 sf+)
84	165116	Large (50,000 sf+)
85		Small (5,000 sf - 15,000 sf)
86	12279	Small (5,000 sf - 15,000 sf)
87	53727	Large (50,000 sf+)
88		Small (5,000 sf - 15,000 sf)
89		Small (5,000 sf - 15,000 sf)
90	15690	Medium (15,000 sf - 50,000 sf)
91		Small (5,000 sf - 15,000 sf)
92	165116	Large (50,000 sf+)
93	2877133	Large (50,000 sf+)
94	75135	Large (50,000 sf+)
95	2877133	Large (50,000 sf+)
96	3625	Small (5,000 sf - 15,000 sf)
97		Small (5,000 sf - 15,000 sf)
98	169469	Large (50,000 sf+)
99	35492	Medium (15,000 sf - 50,000 sf)
100	2877133	Large (50,000 sf+)
101	75135	Large (50,000 sf+)
102	2877133	Large (50,000 sf+)
103	36851	Medium (15,000 sf - 50,000 sf)
104		Small (5,000 sf - 15,000 sf)
105		Small (5,000 sf - 15,000 sf)
106		Small (5,000 sf - 15,000 sf)
107		Small (5,000 sf - 15,000 sf)
108	35492	Medium (15,000 sf - 50,000 sf)
109		Small (5,000 sf - 15,000 sf)
110		Small (5,000 sf - 15,000 sf)
111	180863	Large (50,000 sf+)
112		Small (5,000 sf - 15,000 sf)
113	66638	Large (50,000 sf+)
114		Small (5,000 sf - 15,000 sf)
115		Small (5,000 sf - 15,000 sf)
116	23500	Medium (15,000 sf - 50,000 sf)
117	24800	Medium (15,000 sf - 50,000 sf)
118	11503	Small (5,000 sf - 15,000 sf)
119	179555	Large (50,000 sf+)
120		Small (5,000 sf - 15,000 sf)

Building #	Date Issued	Permit #	Address	Schedule #	Building Use (Before)
121				227112031000	WAREHOUSE
122	09/29/2016	2016-DEMO-0000832	1811 35th	227112011000	RESTAURANT
123				227112030000	WAREHOUSE
124				227112031000	WAREHOUSE
125	09/29/2016	2016-DEMO-0000833	3515 N Brighton Blvd	227112028000	FOOD PROCESS
126	09/29/2016	2016-DEMO-0000834	2224 WELTON	234115006000	AUTO SERVICE
127	10/03/2016	2016-DEMO-0000849	2295 E Iliff Ave	526100005000	GROUP/BOARDING HOME-1 KIT
128	10/05/2016	2016-DEMO-0000860	1511 PERRY	231425031000	
129	10/05/2016	2016-DEMO-0000864	149 N Steele St	512232040000	
130	10/18/2016	2016-DEMO-0000904	1001 W Bayaud Ave	509610003000	
131	10/28/2016	2016-DEMO-0000947	3501 E 46th Ave	224100028000	WAREHOUSE
132	10/31/2016	2016-DEMO-0000952	3655 N Brighton Blvd	227107045000	AUTO SERVICE
133	11/02/2016	2016-DEMO-0000959	3888 E Mexico Ave	524416020000	OFFICE BLDG
134	11/14/2016	2016-DEMO-0000987	2601 S Platte River Dr	528400020000	OFFICE BLDG
135				528400021000	VCNT LAND I-2 ZONE
136				528400022000	OFFICE BLDG
137	11/15/2016	2016-DEMO-0000995	2369 S Gaylord St	526603014000	APT LOW-RISE>9UNT, WALK-UP
138	11/23/2016	2016-DEMO-0001030	2865 S Colorado Blvd	536110028000	OFFICE BLDG
139	12/01/2016	2016-DEMO-0001043	3740 N Sheridan Blvd	230204037000	RETAIL, SINGLE
140	12/09/2016	2016-DEMO-0001063	2527 W 26th Ave	229428036000	RESTURANT
141	12/28/2016	2016-DEMO-0001102	1010 N Acoma St	503701012000	FACTORY
142	01/04/2017	2017-DEMO-0000011	601 E 45th Ave	222122029000	VCNT LAND B4 BA4 ZONE
143				222122034000	WAREHOUSE C&R
144	02/10/2017	2017-DEMO-0000099	2601 S Platte River Dr	528400020000	OFFICE BLDG
145				528400021000	VCNT LAND I-2 ZONE
146				528400022000	OFFICE BLDG
147	02/24/2017	2017-DEMO-0000143	1221 W 38th Ave	221445027000	
148				221445026000	
149				221445028000	
150	03/08/2017	2017-DEMO-0000175	3200 W Colfax Ave	505200022000	SHOPPING CENTER BLDG
151	03/17/2017	2017-DEMO-0000211	2401 BLAKE	227700013000	FACTORY
152	03/22/2017	2017-DEMO-0000205	816 N Federal Blvd	505423054000	
153	03/28/2017	2017-DEMO-0000237	2680 18th St	228313026000	OFFICE BLDG
154	04/06/2017	2017-DEMO-0000272	351 S Jackson St	513103052000	OFFICE CONVRSN
155	04/10/2017	2017-DEMO-0000282	500 S Broadway	515124031000	MINI-DISCOUNT
156	04/19/2017	2017-DEMO-0000309	3110 S Wadsworth Blvd	435116006000	OFFICE BLDG
157	05/11/2017	2017-DEMO-0000392	8505 E Lowry Blvd	609100026000	NURSING HOME
158				609100120000	
159	05/30/2017	2017-DEMO-0000429	3245 Larimer St	227501020000	FACTORY
160	05/30/2017	2017-DEMO-0000430	3244 Walnut St	227501020000	FACTORY
161	05/30/2017	2017-DEMO-0000431	3230 Walnut St	227501020000	FACTORY
162	05/30/2017	2017-DEMO-0000432	3220 Walnut St	227501020000	FACTORY
163	05/30/2017	2017-DEMO-0000433	3200 Walnut St	227501017000	WAREHOUSE
164	05/30/2017	2017-DEMO-0000434	3235 Larimer St	227501018000	WAREHOUSE
165	05/30/2017	2017-DEMO-0000435	3254 Walnut St	227501021000	WAREHOUSE
166	06/01/2017	2017-DEMO-0000447	2046 W Colfax Ave	504203017000	DRY CLEANING
167	06/01/2017	2017-DEMO-0000448	2046 W COLFAX	504203017000	
168	06/01/2017	2017-DEMO-0000449	7198 E 1st Ave	608416001000	VCNT LAND 0-1 ZONE
169	06/12/2017	2017-DEMO-0000496	336 W 13th Ave	503306053000	
170				503306054000	
171	06/23/2017	2017-DEMO-0000531	950 13th St	233612021000	SURFACING
172	07/26/2017	2017-DEMO-0000612	2257 Curtis St	234224026000	RETAIL, SINGLE
173				234224017000	RETAIL, SINGLE
174	08/22/2017	2017-DEMO-0000667	110 N Cook St	512127006000	OFFICE BLDG
175	08/25/2017	2017-DEMO-0000677	5901 E Colfax Ave	132327022000	RETAIL, SINGLE
176	10/06/2017	2017-DEMO-0000807	1160 E 18th Ave	235411036000	OFFICE BLDG
177	10/11/2017	2017-DEMO-0000814	1600 W 12th Ave, Bldg# 1	504300071000	WAREHOUSE
178	10/11/2017	2017-DEMO-0000815	1600 W 12th Ave, Bldg# 2	504300071000	WAREHOUSE
179	10/11/2017	2017-DEMO-0000816	1600 W 12th Ave, Bldg# 3	504300071000	WAREHOUSE
180	10/11/2017	2017-DEMO-0000817	1600 W 12th Ave, Bldg# 7	504300071000	WAREHOUSE

Building #	Building Use (After)	Year Built	Year Demolished	Building Age	Building Height (Before)
121		1973	2018	45	20
122		1933	2018	85	16
123		1995	2018	23	16
124		1973	2018	45	16
125		1971	2018	47	16
126		1928	2017	89	22
127	INDUSTRIAL-SCHOOL	1949	2017	68	32
128		error	2016		26
129		error	2017		15
130	VACANT LAND	error	2017		23
131	VACANT LAND /GENERAL COMMON ELEMENTS	1953	2017	64	30
132	COMMERCIAL-FINANCIAL OFFICE	1948	2017	69	16
133	INDUSTRIAL-WAREHOUSE	1974	2016	42	27
134	COMMERCIAL-OFFICE	1988	2017	29	47
135	VACANT LAND	error	2017		47
136	COMMERCIAL-OFFICE	1988	2017	29	47
137	VACANT LAND	1960	2018	58	30
138	COMMERCIAL-RETAIL	1972	2016	44	25
139	VACANT LAND /GENERAL COMMON ELEMENTS	1997	2017	20	27
140	HOTEL W/MIXED USE	1957	2017	60	16
141	RESIDENTIAL-ROWHOUSE	1933	2017	84	20
142	VACANT LAND /GENERAL COMMON ELEMENTS	error	2017		16
143		1948	2017	69	16
144	COMMERCIAL-OFFICE	1988	2017	29	47
145	VACANT LAND	error	2017		47
146	COMMERCIAL-OFFICE	1988	2017	29	47
147	VACANT LAND /GENERAL COMMON ELEMENTS	error	2017		17
148	COMMERCIAL-RESTAURANT	error	2017		17
149	VACANT LAND /GENERAL COMMON ELEMENTS	error	2017		17
150	RESIDENTIAL-MULTI UNIT APTS	1965	2018	53	18
151	RETAIL W/MIXED USE	1920	2017	97	24
152	COMMERCIAL-RETAIL	error	2018		17
153	RESIDENTIAL-MULTI UNIT APTS	1972	2018	46	13
154	RESIDENTIAL-MULTI UNIT APTS	1999	2017	18	65
155	COMMERCIAL-RESTAURANT	1946	2017	71	18
156	INDUSTRIAL-WAREHOUSE	1974	2017	43	26
157	RESIDENTIAL-MULTI UNIT APTS	1985	2018	33	32
158	DENVER PARK	error	2018		32
159		1958	2018	60	17
160		1958	2018	60	24
161		1958	2017	59	24
162		1958	2018	60	24
163		1973	2018	45	24
164	RESIDENTIAL-MULTI UNIT APTS	1928	2018	90	17
165		1913	2018	105	24
166		1910	2017	107	20
167		error	2017		20
168		error	2018		26
169		error	2018		27
170		error	2018		27
171	DENVER PARK	error	2017		0
172	COMMERCIAL-OFFICE	1975	2017	42	13
173		1975	2017	42	13
174		1966	2018	52	15
175	COMMERCIAL-RESTAURANT	1951	2018	67	23
176	RESIDENTIAL-MULTI UNIT APTS	1973	2018	45	12
177	COMMERCIAL-OFFICE	1957	2017	60	22
178	COMMERCIAL-OFFICE	1957	2017	60	22
179	COMMERCIAL-OFFICE	1957	2017	60	22
180	COMMERCIAL-OFFICE	1957	2017	60	22

Building #	Building Height (After)	Height Difference	Building Area (Before)	Size
121	106	86	9880	Small (5,000 sf - 15,000 sf)
122	106	90	3158	Small (5,000 sf - 15,000 sf)
123	106	90	908	Small (5,000 sf - 15,000 sf)
124	106	90	9880	Small (5,000 sf - 15,000 sf)
125	106	90	4752	Small (5,000 sf - 15,000 sf)
126	156	134	9337	Small (5,000 sf - 15,000 sf)
127	-2	-34		Small (5,000 sf - 15,000 sf)
128	63	37		Small (5,000 sf - 15,000 sf)
129	140	125		Small (5,000 sf - 15,000 sf)
130	-1	-24		Small (5,000 sf - 15,000 sf)
131	40	10	32917	Medium (15,000 sf - 50,000 sf)
132	36	20	3000	Small (5,000 sf - 15,000 sf)
133	161	134	44284	Medium (15,000 sf - 50,000 sf)
134	-1	-48	381	Small (5,000 sf - 15,000 sf)
135	-1	-48		Small (5,000 sf - 15,000 sf)
136	-1	-48	381	Small (5,000 sf - 15,000 sf)
137	-1	-31		Small (5,000 sf - 15,000 sf)
138	24	-1	17569	Medium (15,000 sf - 50,000 sf)
139	25	-2	17187	Medium (15,000 sf - 50,000 sf)
140	48	32	8714	Small (5,000 sf - 15,000 sf)
141	47	27	9380	Small (5,000 sf - 15,000 sf)
142	41	25		Small (5,000 sf - 15,000 sf)
143	41	25	3599	Small (5,000 sf - 15,000 sf)
144	-1	-48	381	Small (5,000 sf - 15,000 sf)
145	-1	-48		Small (5,000 sf - 15,000 sf)
146	-1	-48	381	Small (5,000 sf - 15,000 sf)
147	3	-14		Small (5,000 sf - 15,000 sf)
148	3	-14		Small (5,000 sf - 15,000 sf)
149	3	-14		Small (5,000 sf - 15,000 sf)
150	60	42	20686	Medium (15,000 sf - 50,000 sf)
151	71	47	55606	Large (50,000 sf+)
152	-2	-19		Small (5,000 sf - 15,000 sf)
153	27	14	19802	Medium (15,000 sf - 50,000 sf)
154	138	73	19662	Medium (15,000 sf - 50,000 sf)
155	25	7	19890	Medium (15,000 sf - 50,000 sf)
156	36	10	24669	Medium (15,000 sf - 50,000 sf)
157	41	9		Small (5,000 sf - 15,000 sf)
158	41	9		Small (5,000 sf - 15,000 sf)
159	64	47	6200	Small (5,000 sf - 15,000 sf)
160	71	47	6200	Small (5,000 sf - 15,000 sf)
161	71	47	6200	Small (5,000 sf - 15,000 sf)
162	71	47	6200	Small (5,000 sf - 15,000 sf)
163	71	47	11880	Small (5,000 sf - 15,000 sf)
164	64	47	8368	Small (5,000 sf - 15,000 sf)
165	71	47	11676	Small (5,000 sf - 15,000 sf)
166	0	-20	11802	Small (5,000 sf - 15,000 sf)
167	0	-20		Small (5,000 sf - 15,000 sf)
168	1	-25		Small (5,000 sf - 15,000 sf)
169	170	143		Small (5,000 sf - 15,000 sf)
170	170	143		Small (5,000 sf - 15,000 sf)
171	0	0		Small (5,000 sf - 15,000 sf)
172	48	35	2245	Small (5,000 sf - 15,000 sf)
173	48	35	2245	Small (5,000 sf - 15,000 sf)
174	83	68		Small (5,000 sf - 15,000 sf)
175	25	2	9072	Small (5,000 sf - 15,000 sf)
176	106	94	16054	Medium (15,000 sf - 50,000 sf)
177	90	68	27092	Medium (15,000 sf - 50,000 sf)
178	90	68	27092	Medium (15,000 sf - 50,000 sf)
179	90	68	27092	Medium (15,000 sf - 50,000 sf)
180	90	68	27092	Medium (15,000 sf - 50,000 sf)

Building #	Building Area (After)	Size
121		Small (5,000 sf - 15,000 sf)
122		Small (5,000 sf - 15,000 sf)
123		Small (5,000 sf - 15,000 sf)
124		Small (5,000 sf - 15,000 sf)
125		Small (5,000 sf - 15,000 sf)
126		Small (5,000 sf - 15,000 sf)
127	353000	Large (50,000 sf+)
128		Small (5,000 sf - 15,000 sf)
129		Small (5,000 sf - 15,000 sf)
130	32967	Medium (15,000 sf - 50,000 sf)
131	59868	Large (50,000 sf+)
132	13783	Small (5,000 sf - 15,000 sf)
133	33600	Medium (15,000 sf - 50,000 sf)
134	2877133	Large (50,000 sf+)
135	75135	Large (50,000 sf+)
136	2877133	Large (50,000 sf+)
137	20688	Medium (15,000 sf - 50,000 sf)
138	17751	Medium (15,000 sf - 50,000 sf)
139	849	Small (5,000 sf - 15,000 sf)
140	111909	Large (50,000 sf+)
141	1365	Small (5,000 sf - 15,000 sf)
142	35	Small (5,000 sf - 15,000 sf)
143		Small (5,000 sf - 15,000 sf)
144	2877133	Large (50,000 sf+)
145	75135	Large (50,000 sf+)
146	2877133	Large (50,000 sf+)
147	375	Small (5,000 sf - 15,000 sf)
148	18049	Medium (15,000 sf - 50,000 sf)
149	13	Small (5,000 sf - 15,000 sf)
150	177519	Large (50,000 sf+)
151	72304	Large (50,000 sf+)
152	26443	Medium (15,000 sf - 50,000 sf)
153	36625	Medium (15,000 sf - 50,000 sf)
154	55250	Large (50,000 sf+)
155	23933	Medium (15,000 sf - 50,000 sf)
156	77108	Large (50,000 sf+)
157	417719	Large (50,000 sf+)
158	714492	Large (50,000 sf+)
159		Small (5,000 sf - 15,000 sf)
160		Small (5,000 sf - 15,000 sf)
161		Small (5,000 sf - 15,000 sf)
162		Small (5,000 sf - 15,000 sf)
163		Small (5,000 sf - 15,000 sf)
164	104165	Large (50,000 sf+)
165		Small (5,000 sf - 15,000 sf)
166		Small (5,000 sf - 15,000 sf)
167		Small (5,000 sf - 15,000 sf)
168		Small (5,000 sf - 15,000 sf)
169		Small (5,000 sf - 15,000 sf)
170		Small (5,000 sf - 15,000 sf)
171	112489	Large (50,000 sf+)
172	6186	Small (5,000 sf - 15,000 sf)
173		Small (5,000 sf - 15,000 sf)
174		Small (5,000 sf - 15,000 sf)
175	23790	Medium (15,000 sf - 50,000 sf)
176	19905	Medium (15,000 sf - 50,000 sf)
177	1300000	Large (50,000 sf+)
178	1300000	Large (50,000 sf+)
179	1300000	Large (50,000 sf+)
180	1300000	Large (50,000 sf+)

Building #	Date Issued	Permit #	Address	Schedule #	Building Use (Before)
181	10/30/2017	2017-DEMO-0000871	1455 16th St	233110031000	PARKING GARAGE 1 STORY
182	11/01/2017	2017-DEMO-0000880	5135 N Race Ct	214400086000	WAREHOUSE
183	11/02/2017	2017-DEMO-0000892	4242 E Amherst Ave	631207036000	OFFICE BLDG
184	11/27/2017	2015-DEMO-0000184	1100 S Broadway	522108043000	
185				522108044000	
186	11/29/2017	2017-DEMO-0000955	2510 W Colfax Ave	505101040000	WAREHOUSE
187	12/08/2017	2017-DEMO-0000999	7290 E 1st Ave	608416001000	VCNT LAND 0-1 ZONE
188	12/14/2017	2017-DEMO-0001011	3849 N Lafayette St	223314076000	
189	01/05/2018	2018-DEMO-0000007	701 N Osage St	509200094000	WAREHOUSE
190	01/18/2018	2018-DEMO-0000029	2300 W 11th Ave	504300010000	WAREHOUSE

Building #	Building Use (After)	Year Built	Year Demolished	Building Age	Building Height (Before)
181		1981	2019	38	15
182	STOCK SHOW	1979	2018	39	29
183	OFFICE W/MIXED USE	1963	2017	54	17
184	VACANT LAND	error	2017		16
185	VACANT LAND /GENERAL COMMON ELEMENTS	error	2017		16
186		1909	2018	109	19
187		error	2019		26
188	COMMERCIAL-OFFICE	error	2018		28
189	INDUSTRIAL-WAREHOUSE	1967	2018	51	0
190	VACANT LAND	1960	2018	58	16

Building #	Building Height (After)	Height Difference	Building Area (Before)	Size
181	128	113	42500	Medium (15,000 sf - 50,000 sf)
182	-1	-30	76346	Large (50,000 sf+)
183	34	17	2080	Small (5,000 sf - 15,000 sf)
184	1	-15		Small (5,000 sf - 15,000 sf)
185	75	59		Small (5,000 sf - 15,000 sf)
186	-2	-21	25535	Medium (15,000 sf - 50,000 sf)
187	26	0		Small (5,000 sf - 15,000 sf)
188	43	15		Small (5,000 sf - 15,000 sf)
189	0	0	324531	Large (50,000 sf+)
190	44	28	4096	Small (5,000 sf - 15,000 sf)

Building #	Building Area (After)	Size
181		Small (5,000 sf - 15,000 sf)
182	210371	Large (50,000 sf+)
183	9375	Small (5,000 sf - 15,000 sf)
184	8073	Small (5,000 sf - 15,000 sf)
185	4371	Small (5,000 sf - 15,000 sf)
186		Small (5,000 sf - 15,000 sf)
187		Small (5,000 sf - 15,000 sf)
188	167614	Large (50,000 sf+)
189	651930	Large (50,000 sf+)
190	137000	Large (50,000 sf+)

Table 5: Timeline of the Demolition of Each Demolition Permit Analyzed (2014 -2024)

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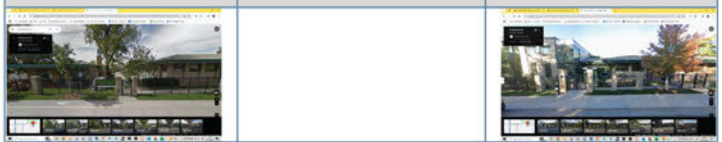
<tr><td colspan="3">  </td></tr>
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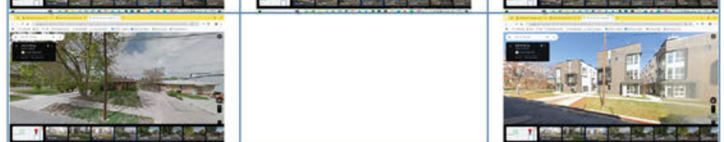
<tr><td colspan="3">  </td></tr>
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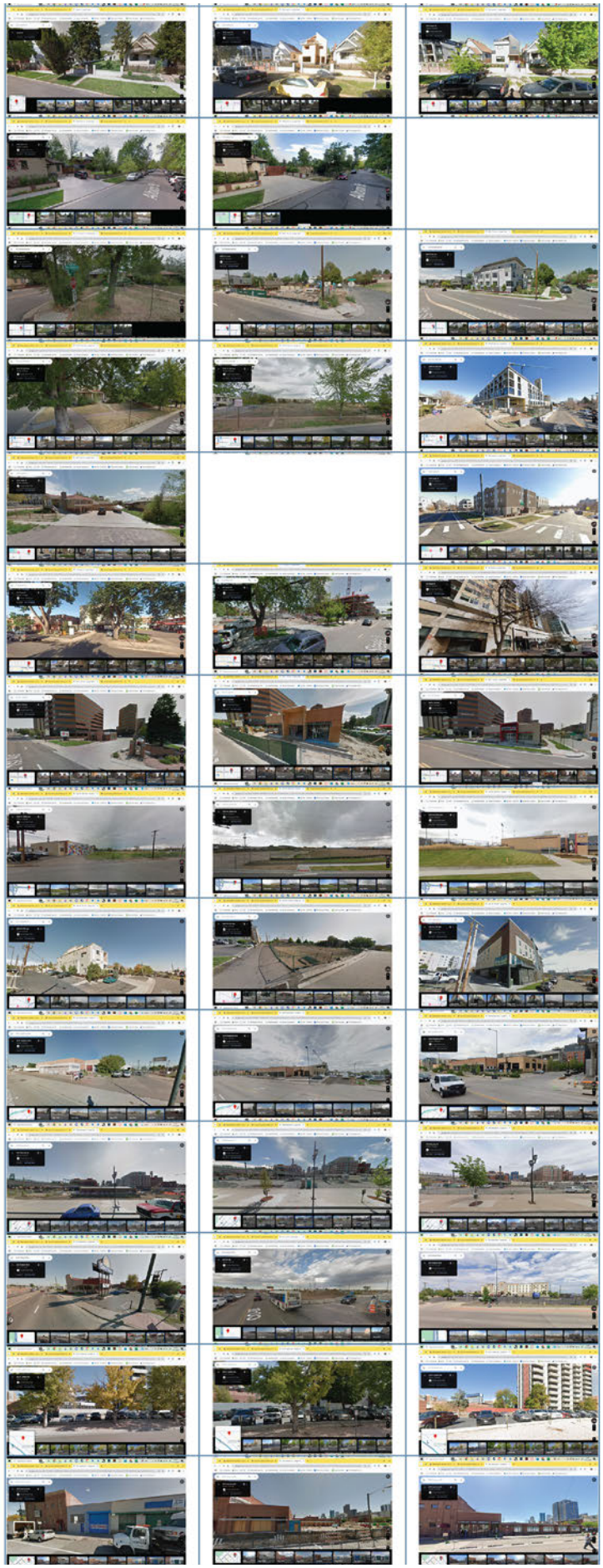

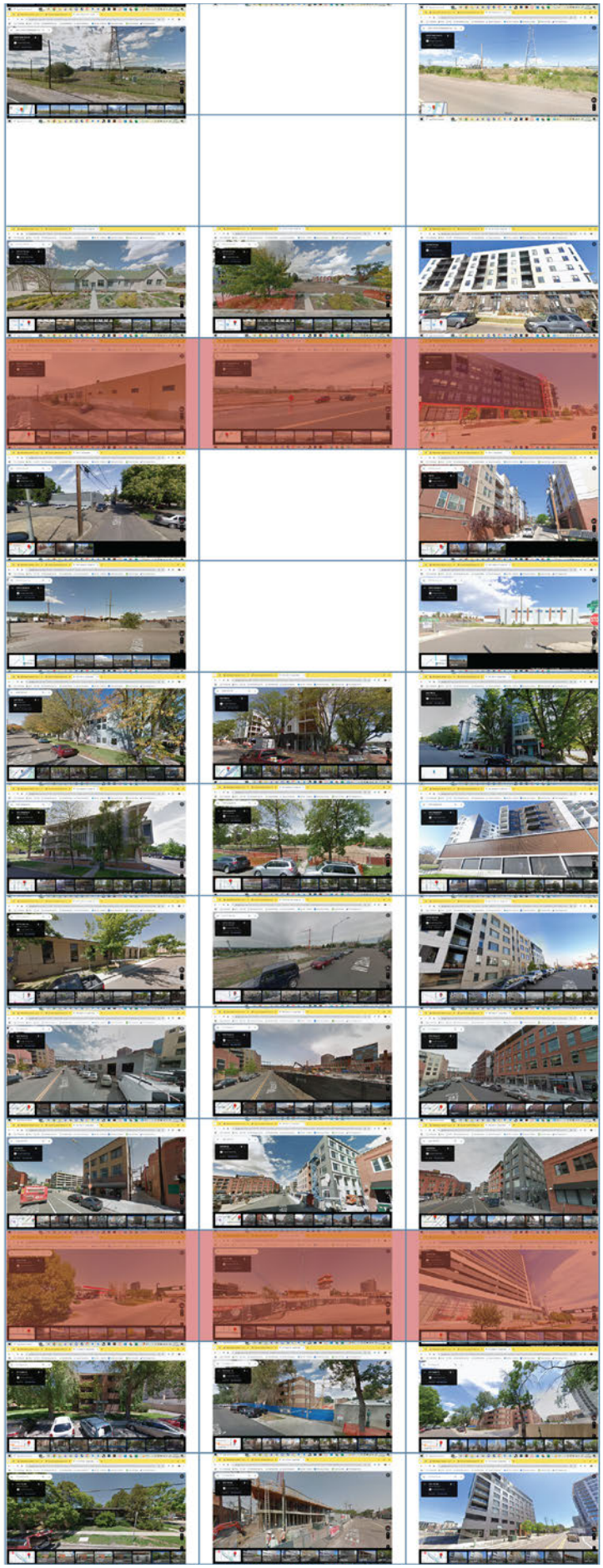

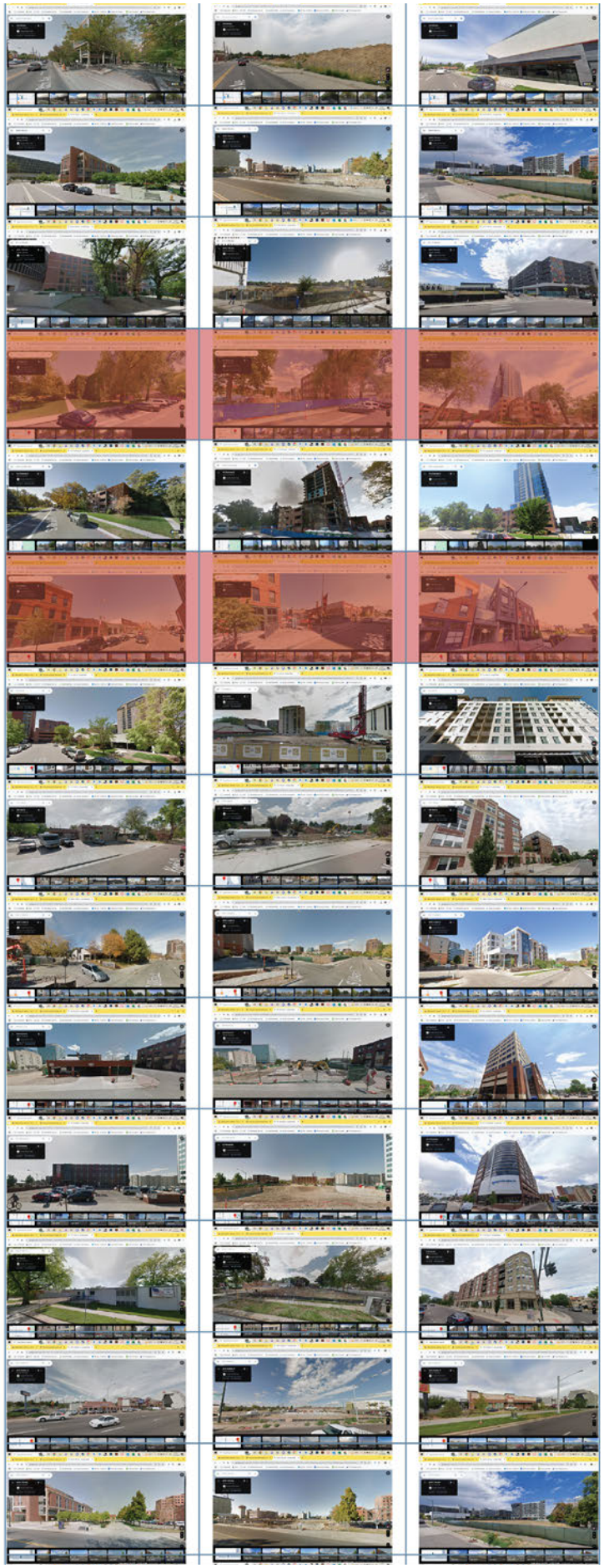

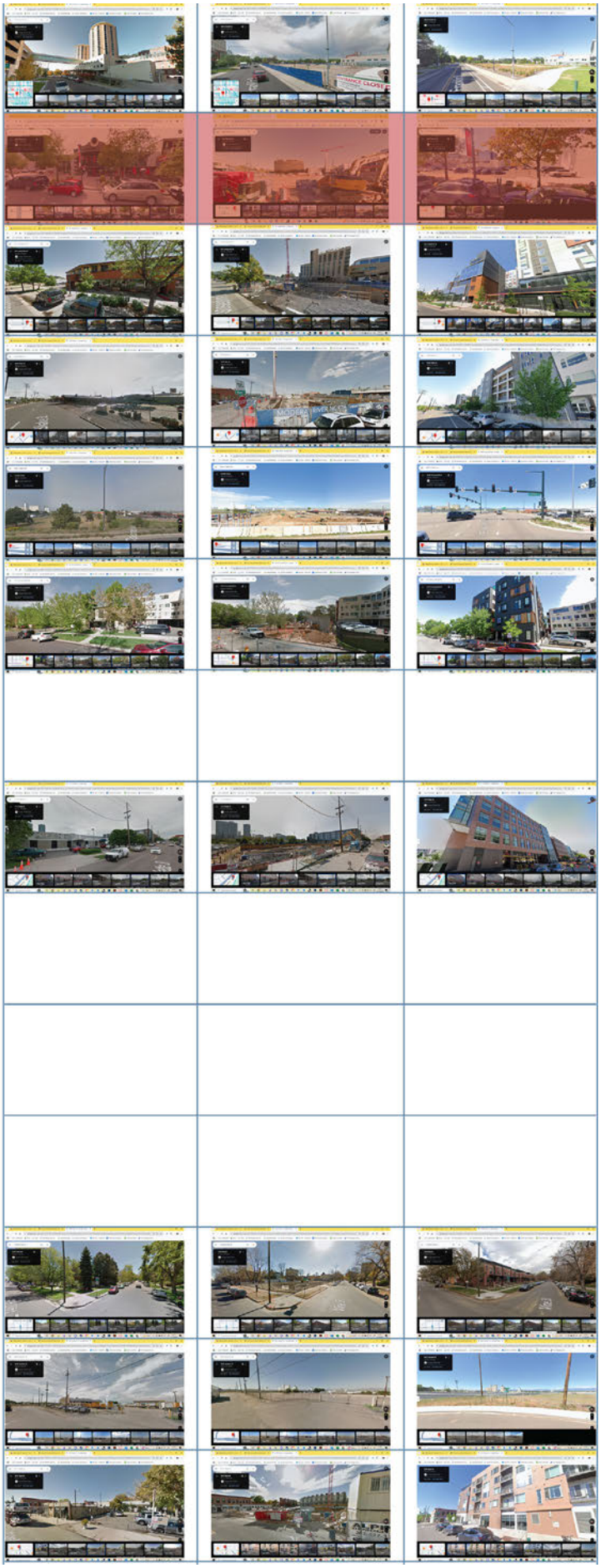

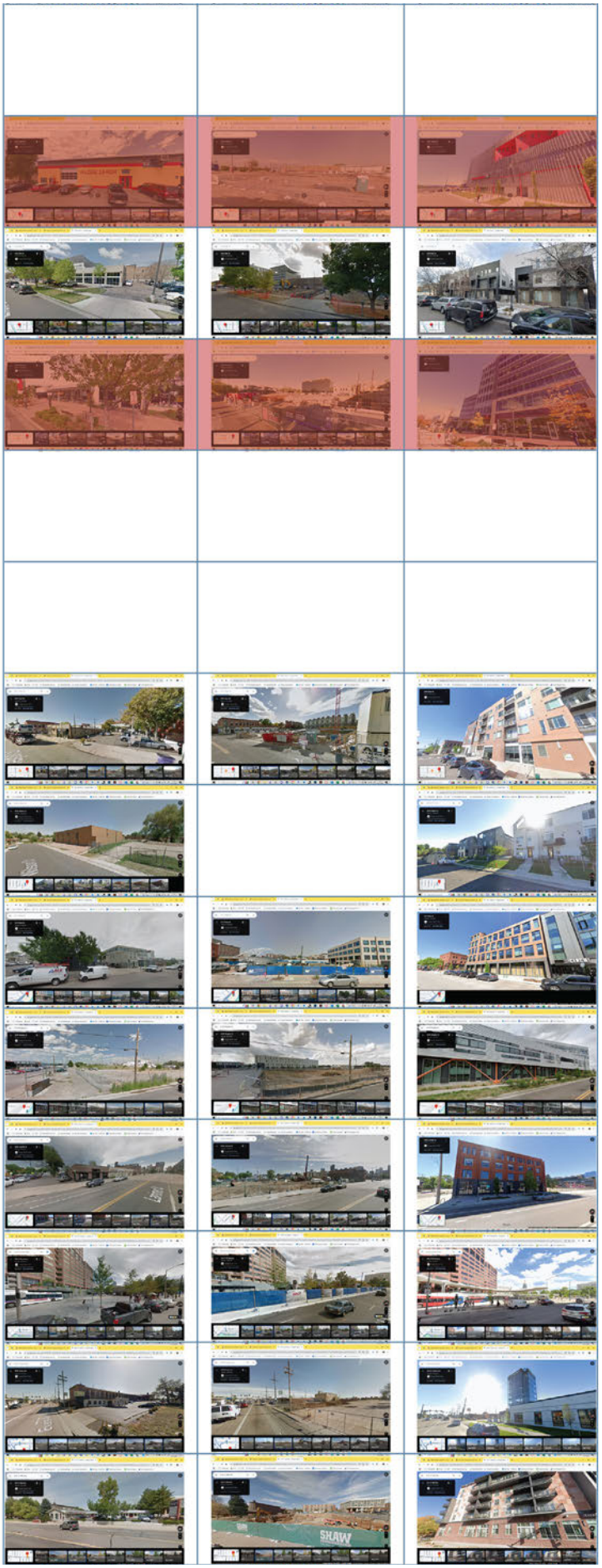

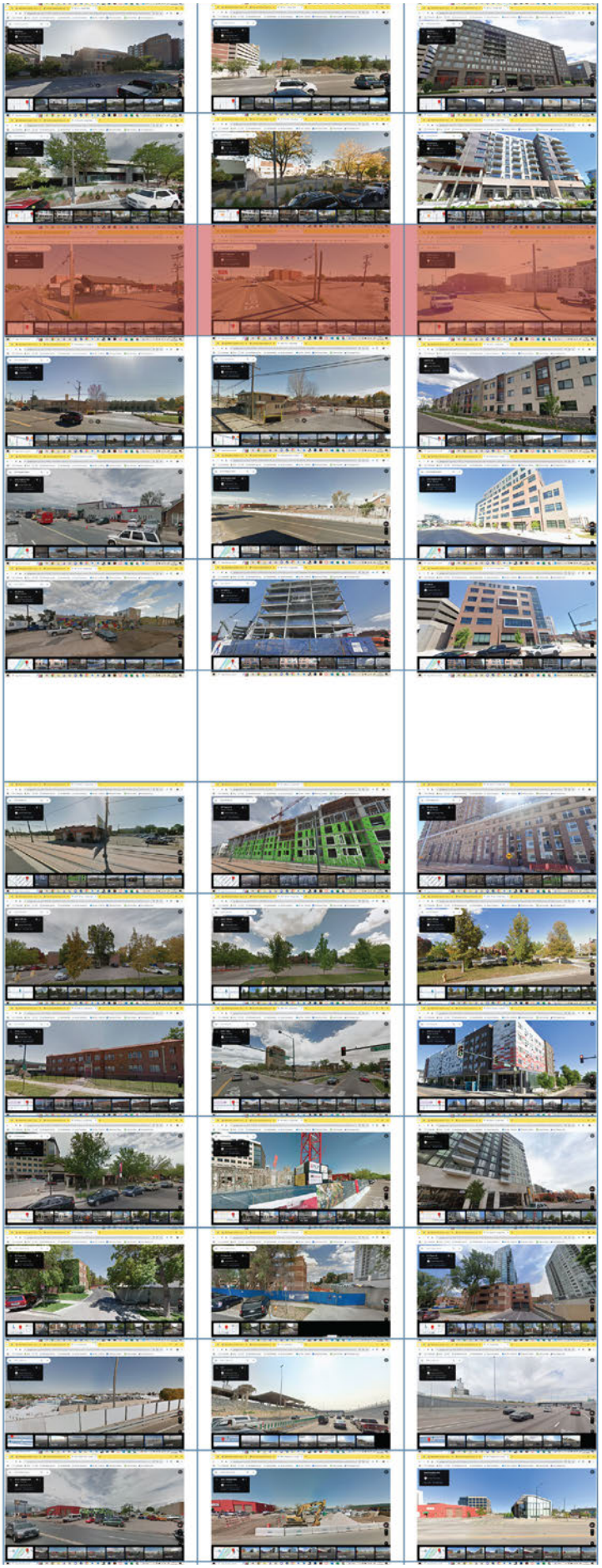

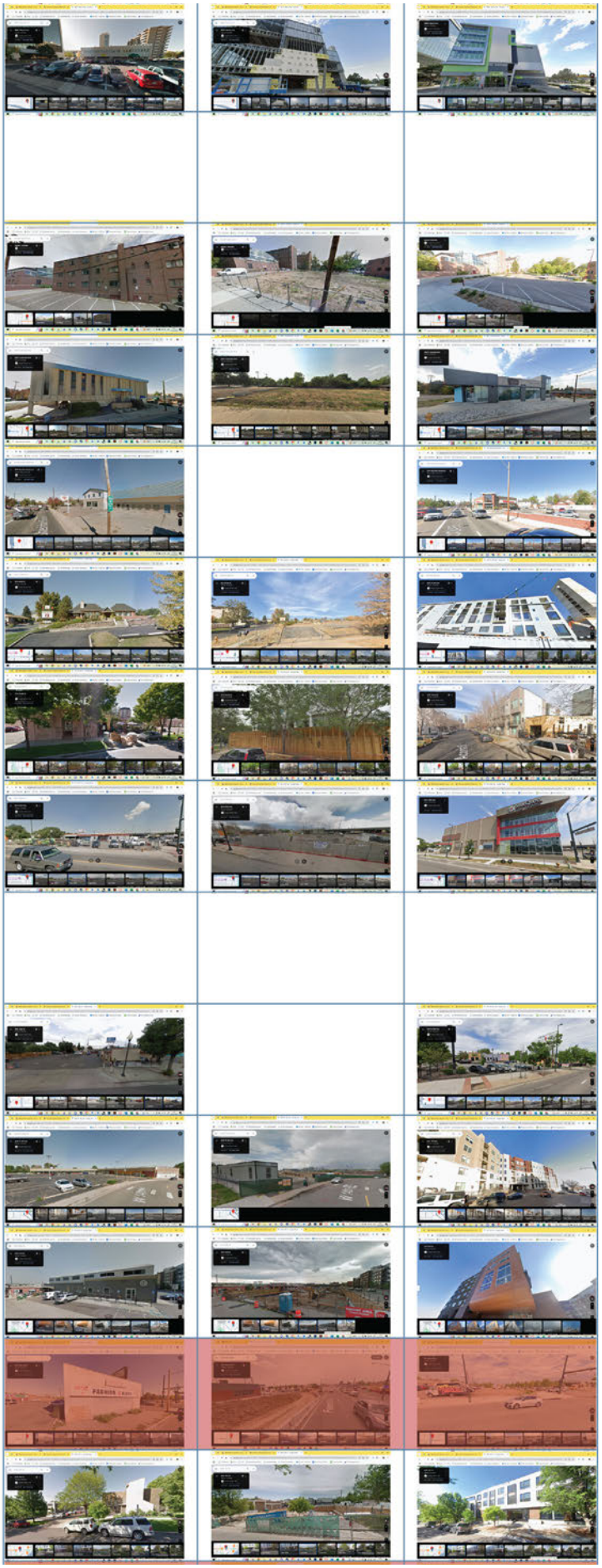

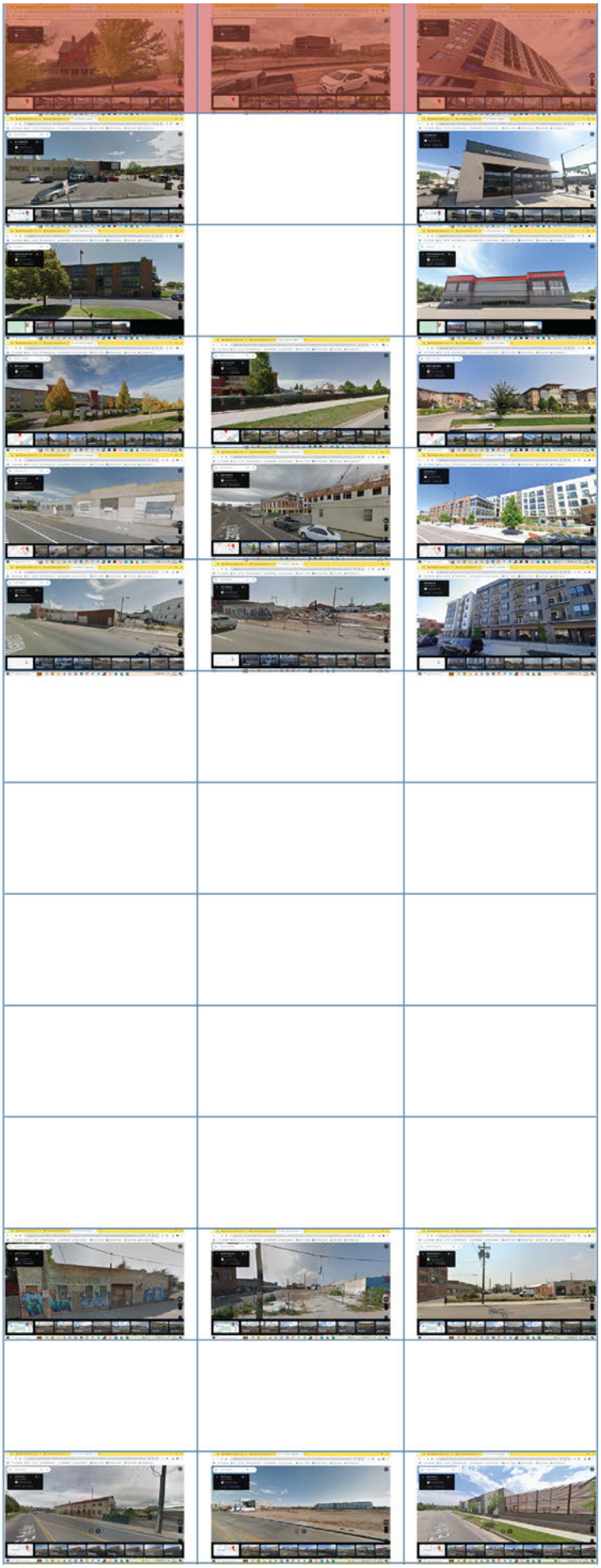

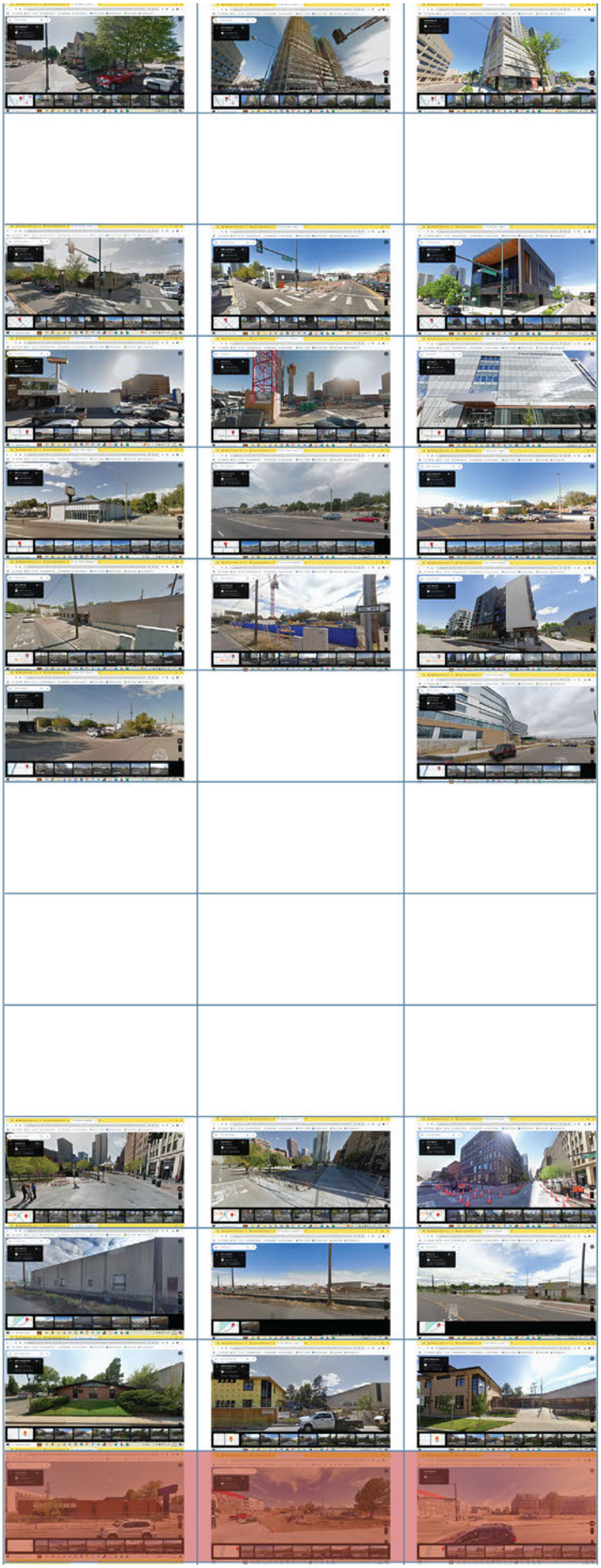

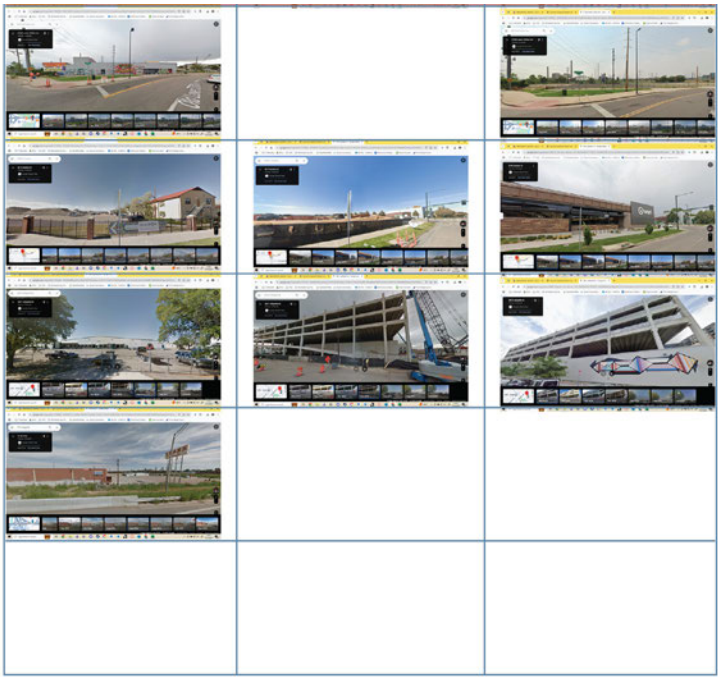

2.1 Bibliography

Ellen MacArthur Foundation. 2013. Towards the Circular Economy, vol. 1. Accessed August 17, 2024. https://www.ellenmacarthurfoundation.org/assets/downloads/publications/Ellen-MacArthur-Foundation-Towards-the-Circular-Economy-vol.1.pdf?.

Aigwi, Itohan Esther, Temitope Egbelakin, Jason Ingham, Robyn Phipps, James Rotimi, and Olga Filippova. 2019. "A performance-based framework to prioritise underutilised historical buildings for adaptive reuse interventions in New Zealand." Sustainable Cities and Society 48: 101547. doi:10.1016/j.scs.2019.101547.

Aldana, Ernesto, Simon Büchler, and Lyndsey Rolheiser. 2024. "The Past and Future of Non-Residential-to-Residential Conversions in New York City." Cities 152: 105157. doi:10.1016/j.cities.2024.105157.

Assefa, Getachew, and Chelsea Ambler. 2017. "To Demolish or Not to Demolish: Life Cycle Consideration of Repurposing Buildings." Sustainable Cities and Society 28: 146-153. doi:10.1016/j.scs.2016.09.011.

Baker, Hannah. 2019. "The Adaptation and Demolition of Existing Buildings on Masterplan Sites." Apollo - University of Cambridge Repository 1: 355. doi:10.17863/CAM.50098.

Baker, Hannah, Alice Moncaster, Sara J. Wilkinson, and Hilde Remøy. 2023. "Demolition or Retention of Buildings: Drivers at the Masterplan Scale." Buildings & Cities 4 (1): 488-506. doi:10.5334/bc.308.

Bullen, Peter A. 2007. "Adaptive Reuse and Sustainability of Commercial Buildings." Facilities 25 (1/2): 20-31. doi:10.1108/02632770710716911.

Bullen, Peter A., and Peter E.D. Love. 2010. "The rhetoric of adaptive reuse or reality of demolition: Views from the field." Cities 27 (4): 215-224. doi:10.1016/j.cities.2009.12.005.

Bullen, Peter, and Peter Love. 2011. "Factors influencing the adaptive re-use of buildings." Journal of Engineering, Design and Technology 9 (1): 32-46. doi:10.1108/17260531111121459.

Carmona, Matthew. 2013. "The Place-shaping Continuum: A Theory of Urban Design Process." Journal of Urban Design 19 (1): 2-36. doi:10.1080/13574809.2013.854695.

Coiacetto, E. J. 2010. "Places Shape Place Shapers? Real Estate Developers' Outlooks

Concerning Community, Planning and Development Differ between Places." Planning Practice & Research 15 (4): 353-374. doi:10.1080/02697450020018790.

Cruz Rios, Fernanda, David Grau, and Wai K. Chong. 2019. "Reusing Exterior Wall Framing Systems: A Cradle-to-Cradle Comparative Life Cycle Assessment." Waste Management 94: 120-135. doi:10.1016/j.wasman.2019.05.040.

Cushman and Wakefield. 2023. U.S. Office Marketbeat Report, Q2 2023. Accessed August 17, 2024. https://www.cushmanwakefield.com/en/united-states/insights/us-marketbeats/us-office-marketbeat-reports.

EEA. 2016. "Circular economy in Europe Developing the Knowledge Base." Publications Office 1-42. doi:10.2800/51444.

EPA. 2016. Sustainable Management of Construction and Demolition Materials. March 8. Accessed August 17, 2024. https://www.epa.gov/smm/sustainable-management-construction-and-demolition-materials.

Feng, Haibo, Don Rukmal Liyanage, Hirushie Karunathilake, Rehan Sadiq, and Kasun Hewage. 2020. "BIM-based life cycle environmental performance assessment of single-family houses: Renovation and reconstruction strategies for aging building stock in British Columbia." Journal of Cleaner Production 250: 119543. doi:10.1016/j.jclepro.2019.119543.

Gerfen, Katie. 2020. Renovation, Restoration, and Adaptive Reuse: The Understated Value of Existing Buildings. January 15. Accessed August 17, 2024. https://www.architectmagazine.com/design/renovation-restoration-and-adaptive-reuse-the-understated-value-of-existing-buildings_o.

Glumac, Brano, and Nizamul Islam. 2020. "Housing Preferences for Adaptive Re-Use of Office and Industrial Buildings: Demand Side." Sustainable Cities and Society 62: 102379. doi:10.1016/j.scs.2020.102379.

Gursel, Aysegul Petek, Arman Shehabi, and Arpad Horvath. 2023. "What Are the Energy and Greenhouse Gas Benefits of Repurposing Non-Residential Buildings into Apartments?" Resources, Conservation and Recycling 198: 107143. doi:10.1016/j.resconrec.2023.107143.

Hanafi, Mohd Hanizun, Arman Abdul Razak, Zul Zakiyudin Abdul Rashid, and Mohd Umzarulazijo Umar. 2018. "Essential Entities towards Developing an Adaptive Reuse Model for Organization Management in Conservation of Heritage Buildings in Malaysia ." Environment-Behaviour Proceedings 3 (7): 265-276. doi:10.21834/e-bpj.v3i7.1241.

Huaroc, Carla Bonilla. 2024. Transforming Vacant Offices into Dynamic Mixed-Use Hubs: Solutions for Unoccupied Buildings in U.S. Downtowns. February 11. Accessed August 17, 2024. https://www.archdaily.com/1013151/transforming-vacant-offices-into-dynamic-mixed-use-hubs-solutions-for-unoccupied-spaces-in-us-cities?ad_campaign=normal-tag.

Kahvecioğlu, Berkan, and Semra Arslan Selçuk. 2023. "Adaptive Reuse in the Realm of

Architecture: Global Research Trends and Gaps for the Future Studies." Sustainability 15 (13): 9971. doi:10.3390/su15139971.

Kirk, Mimi. 2019. The Rise of Adaptive Reuse in Las Vegas. May 1. Accessed August 17, 2024. https://www.architectmagazine.com/aia-architect/aiafeature/the-rise-of-adaptive-reuse-in-las-vegas_o.

Marique, Anne-Françoise, and Barbara Rossi. 2018. "Cradle-to-grave life-cycle assessment within the built environment: Comparison between the refurbishment and the complete reconstruction of an office building in Belgium." Journal of Environmental Management 224: 396-405. doi:10.1016/j.jenvman.2018.02.055.

McDonough, William, and Michael Braungart. 2002. Cradle to Cradle: Remaking the Way We Make Things. New York, New York: North Point Press.

National Association of Realtors. 2021. "Repurposed Buildings - Helping Solve America's Housing Crisis." On Common Ground. Fall. Accessed November 5, 2024. https://www.oncommonground-digital.org/oncommonground/fall_2021/MobilePagedReplica.action?tnqh_x0026;folio=26&pm=1&folio=51#pg51.

Osamani, M., J. Glass, and A.D.F. Price. 2007. "Architects' perspectives on construction waste reduction by design." Waste Management 28 (7): 1147-1158. doi:10.1016/j.wasman.2007.05.011.

Pintos, Paula. 2021. Apple Tower Theatre / Foster + Partners. July 15. Accessed August 17, 2024. https://www.archdaily.com/965106/apple-tower-theatre-foster-plus-partners?ad_source=search&ad_medium=projects_tab.

Rockow, Zoraya Roldán, Brandon Ross, and Anna K. Black. 2019. "Review of methods for evaluating adaptability of buildings." International Journal of Building Pathology and Adaptation 37 (3): 273-287. doi:10.1108/IJBPA-01-2018-0013.

Sanchez, Benjamin, Mansour Esnaashary Esfahani, and Carl Haas. 2019. "A methodology to analyze the net environmental impacts and building's cost performance of an adaptive reuse project: a case study of the Waterloo County Courthouse renovations." Environment Systems and Decisions 39: 419-438. doi:10.1007/s10669-019-09734-2.

Sission, Patrick. 2022. Sleeping Beauties: Chicago's Adaptive Reuse. June 3. Accessed August 17, 2024. https://www.architectmagazine.com/aia-architect/aiafeature/sleeping-beauties-chicagos-adaptive-reuse_o.

The White House Council on Environmental Quality. 2022. Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability. August. Accessed August 17, 2024. https://www.sustainability.gov/pdfs/EO_14057_Implementing_Instructions.pdf.

The White House. 2024. Proposed Program Comment on Accessible, Climate-Resilient, and Connected Communities. Accessed August 17, 2024. https://www.achp.gov/program_alternatives/program_comment/PCs_2024.

Up for Growth. 2022. Office to residential conversions: scalable opportunity or too unique to a city block? Accessed August 17, 2024. https://upforgrowth.org/wp-content/uploads/2022/12/policy-brief-december-22-v5.pdf.

Vecchio, Marcello, and Godwin Arku. 2020. "Promoting Adaptive Reuse in Ontario: A Planning Policy Tool for Making the Best of Manufacturing Decline." Urban Planning 5 (3): 338-350. doi:10.17645/up.v5i3.3188.

Viner, Sara. 2020. Deconstruction vs Demolition. March 24. Accessed October 25, 2024. https://resourcecentral.org/deconstruction-vs-demolition/#:~:text=An%20estimated%20200%2C000%2D300%2C000%20structures,annually%2C%20(Zaman%202018).

Wu, Bin, and Reza Maalek. 2023. "Renovation or Redevelopment: The Case of Smart Decision-Support in Aging Buildings." Smart Cities 6 (4): 1922-36. doi:10.3390/smartcities6040089

2.2 Images

LoopNet. "1900 Wazee St, Denver, CO 80202 - Wazee Exchange." LoopNet. Accessed March 17, 2025. https://www.loopnet.com/Listing/1900-Wazee-St-Denver-CO/34081806/.

MAVD."Projects."MAVD.Accessed March 17, 2025. http://www.mavd.com/projects/projects/wazee.html.

Roth Sheppard. "Roth Sheppard." Denver Architecture Foundation, May 2, 2023. https://denverarchitecture.org/site/roth-sheppard/.

Thorpe, Tina. "Roth Sheppard Is Moving." Roth Sheppard Architects, July 6, 2023. https://www.rothsheppard.com/journey/rothsheppardismoving.

Union Station. "Bus & Rail Transportation in Denver." Denver Union Station, April 18, 2024. https://www.denverunionstation.com/transportation/rail-and-bus/.

Union Station. "Learn More about Denver Union Station." Denver Union Station, July 29, 2024. https://www.denverunionstation.com/about/.