Urban Infill – Revitalize Downtown Almaty, Kazakhstan

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Many thanks to my grandmother Suleimenova Nesibeli, who nurtured me from the birth day, although no longer with us, continue to help me grow through memories of her.
ABSTRACT

This design proposal would provide a solution for a specific area of downtown Almaty, Kazakhstan and is based on research and analysis of city information, as well as on the author’s own experiences that were gathered onsite.

Almaty is very car-dependent; the city contains 1.8 million people and sprawls across an area of 263 square miles. Low-height structures to accommodate seismic activity, long travelling distances, wide roads, and vehicular parking chaos can be observed within the city center of Almaty. Having similar population – Munich, Germany and Philadelphia, Pennsylvania, USA were compared to Almaty, where Floor Area Ratio (FAR) showed a value of 1.97 in Almaty, lowest value with a slight lead at Munich and more than twice as high in Philadelphia.

The Panfilov Street project is a recent reconstruction of an existing street into a pedestrian-friendly street, with limited single-lane access for cars. It took both good and bad critics from public, overall being a progressive move in history of Almaty city planning, which had a positive effect on the city center life. As such, the rest of the central city could be improved to enhance the quality of life for residents and visitors.

The Death and Life of Great American Cities by Jane Jacobs and the New Urbanism movement could have a positive impact on Almaty’s city center, improving the environment from a pedestrian point of view while also maintaining vehicular access by “densifying” the area; clearly defining private and public spaces; rethinking parking; and providing adequate access routes for people, bicycles and vehicles. Floor area ratio (FAR) of selected site was increased by 30% to 2.63, additionally, 20% rise in area of private and semi-private spaces to approximately 120,000 square feet was observed. Length of pedestrian sidewalk value rose from an existing 7,582 to 9,015 linear feet, along with 5,300 linear feet of bicycle network proposed with this design proposal. As for vehicular issue, with reorganization of the blocks layout and streets, parking capacity was increased from 308 to 410 cars along on-street, surface lot, garage and privately owned automobile storage types.
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“Traffic congestion is caused by vehicles, not by people in themselves” – Jane Jacobs, *The Death and Life of Great American Cities*

1. INTRODUCTION

![Kazakhstan and Almaty Map](image1.png)

Figure 1: Kazakhstan and Almaty Map. Source: (Google Maps n.d.), Montage by Author.

The largest city in Kazakhstan—Almaty—is located in the southeastern part of the country in the foothills of the Tian Shan mountain range. While Almaty is no longer the capital city of Kazakhstan, it remains the country’s financial, economic and cultural hub. The city’s central, historical district exhibits its own unique character—an abundance of greenery, low-height buildings and a panoramic view of the mountains that is mostly unblocked by high-rise structures. All of which creates an idyllic and human-scale atmosphere when walking along those streets, however, the city is a huge and complex organism, having various complications and having changed over time as society has evolved; thus, the area requires attention. As such, car-dependence is one of the main issues affecting the city nowadays, making movement on foot not convenient and not safe.

Interest has fallen on the central, historic district as that is where Almaty began and developed, adding layers to its history over time. This project proposes a solution for a selected portion of the downtown area of Almaty that is intended to revitalize the city core and enhance the standards of living for dwellers.
The project relies on observational analysis and research, the inspirational words of Jane Jacobs and the city planning movement New Urbanism, with the goal being a compact and convenient neighborhood that is friendly to walking.

This thesis would discuss the history and relevant statistics of Almaty, specifically downtown area of the city. Existing condition of the central part of Almaty was studied towards a site selection, which was based on characteristics of a least active location or lower people density area. Site was analyzed for location specific problems, upon which program to revitalization relied on.

Theory review chapter considers the history of the Potsdamer Platz reconstruction, the square in Berlin, Germany which was fully redeveloped after bombings during Second World War. Furthermore, *The Death and Life of Great American Cities* by Jane Jacobs was referenced as of a discussion on diverse and mixed-use spaces. Moreover, ideas of New Urbanism along with the SmartCode, transect based planning document, were included, for intentions towards a compact and convenient to walk area.

Methods for revitalization would be outlined in the chapter 9, followed by the resolution of the proposed design, including two sub-chapters explaining the design at the area scale and the block scale. The proposed design was evaluated and summarized by comparing relevant metrics of proposed scheme to the existing condition of the site.

2. BACKGROUND | KAZAKHSTAN

Kazakhstan is presently the largest landlocked country in the world and is the ninth largest by area. The country has roots in both Eastern and Western cultures, with a history of a nomadic lifestyle going back to ancient times. Kazakhstan has an Islamic legacy as well, examples of which can be found in southern areas, and the country also has a post-Soviet psychology that dates back to the 1900s. Geographically, Kazakhstan is located at the very heart of the Eurasian continent, and people identify themselves as being evenly located in Europe and Asia, while the country is historically considered to be in Central Asia.

Kazakhs are people from the steppes in their origin as the nomadic lifestyle and the steppe itself has played a substantial role in the history of the country, and both have affected ways of living, language and manners. Over two millennia, a number of events took place, including: the domestication of horses,
changing from an agrarian to a nomadic way of life, and the introduction of iron and wrought weaponry and terror that came from other empires such as China or Rome. From the 16th to the 19th centuries, classical Kazakh society developed on the basis of the nomadic way of life, customary laws and Islamic legislation; the major occupation was livestock farming (Laumulin and Laumulin 2009).

For most of Kazakhstan’s early history, architecture was limited to domestic dwelling structures, i.e., the yurt, which is a round, portable house that suited the nomadic lifestyle. It is a prefabricated structure that can be assembled or disassembled very easily. The yurt is a single space, and therefore, it was common to have separate yurts for bedrooms, kitchens and so on as long as doing so was affordable. Walls are typically furnished with felt on the exterior and decorated carpets on the inside (Kazakh Yurt n.d.). Due to the nomadic lifestyle, no permanent housing developments were seen, but Islamic structures such as Babadzhi Khatun and Aisha Bibi mausoleums did appear, with some of the earliest dating back to the 1000s (Baitanayev and Yolgin 2007).

3. ALMATY’S STORY

Almaty has a population of 1.8 million people and 263 square miles of territory according to the Statistics Committee of Ministry of National Economy of Republic of Kazakhstan (Changes in Population in Republic of Kazakhstan beginning 2018 until January 1, 2019 2019). The city shares borders with Kyrgyzstan, which is on the southeastern border of Kazakhstan. Once the capital city of the country, Almaty is now often viewed as the southern capital by the public. It is famous for its green-lined streets, its cozy atmosphere and its appealing views that come from being at the base of a mountain. Most of these advantages are a legacy of the past, i.e., the way early settlement was planned and a seismic tragedy that changed development, both of which were the reasons for selecting this historical area for study.

3.1. PRE-VERNYI PERIOD (UP TO 1850)

In the case of Almaty, the historic district is fully bound by the modern city, and the past earthquake tragedy makes it problematic to retrieve the exact border and planning of the settlement. Ruins can only be observed in northern and southern parts of the city. However, written sources state that Zhetyсу—a geographical region in Central Asia that is named after seven rivers in the area—was an important
location for medieval urbanization. Almaty was on one of the segments of the Great Silk Way (Ordabayev 2018), i.e., the trade routes connecting the East and West and was mainly used to export silk from China, where they developed numerous crafts, plumbing and coin minting. Sun-dried, adobe bricks served as the most common material for residential structures in Central Asia, and people from wealthy or poorer economic backgrounds lived in these types of structures (Truspekova 2018). Archeological findings, ceramics, water lines and non-ferrous metal products are all signs that Almaty’s history dates back at least a millennium.

3.2. VERNYI PERIOD (1850-1920)

On the place of the settlement, fortifications Vernoe, Big and Small Stanica and Tatarskaya Slaboda were established between 1854-1855, which, in 1867 was renamed to Vernyi city—capital of the newborn Zhetsysu region (Baipakov and Proskurin n.d.). In the next year, the first general plan of the city was composed, which extended the city’s border by taking surrounding lands and creating 3.5–5-acre blocks and a street grid that was 115 feet wide (Ordabayev 2018).

Figure 2: “Tradesman Shahvorostov’s House” by A. P. Zenkov 1890s, Tian Shan wood. Source: (Picture of "Tradesman Shahvorostov's House" 2019).
However, being far from another metropolis and railroads made the city provincial and that was reflected in the buildings. Before the 1887 earthquake, some brick structures included a gymnasium, a major’s house and a church. From photo illustrations, those buildings were perceived as typical examples of eclecticism, or historicism, which was quite popular during that time (Baipakov and Proskurin n.d.), meaning architecture that includes fusion or mixture of styles from different ages and cultures to develop something new (eclecticism. 2018). Mass residential construction was typically adobe or wood, with limited brick development; that tended to be named “national housing”—meaning neither following any style nor architectural context per se (Ordabayev 2018).

The tragedy of 1887 resulted in certain corrections to development. During the earthquake, wooden buildings showed their advantages, which led to increased wooden construction with wood being sourced locally from the foothills of the Tian Shan mountain range (Ordabayev 2018). As such, in contrast to locally built structures that were not bound by an architectural context, simplified and provincial wooden architecture started to dominate.

### 3.3. SOVIET ERA | STALINIST ARCHITECTURE (1920-1950)

Vernyi city became Alma-Ata in 1921, and the city remained provincial until 1929 when the capital of Kazakhstan moved to Alma-Ata, triggering the active development of the city. The administrative center was situated within the boundaries of modern Kabanbai Batyr, Abylai Khan, Kazybek Bi and Furmanov Streets, which included governmental and academic buildings, a theater and a cinema. Constructivism was the prevailing style for major buildings (Kapanov and Baimagambetov 1998). The transition to the next style period was extended over time; it is believed that post-constructivism replaced the stylistic era that was leading, although certain authors have attributed the Soviet architecture of the 1930-1950s to the neoclassical era; that period is also known as having Stalinist architecture and typically features solid bases and pointy crown tops.

The Soviet architectural formula, “national in form, and socialist in content,” emerged in Kazakhstan architecture in the late 1930s. The pilot project was the national theater, where the structure was based on the Saint Petersburg Alexandrinsky Theater and included pointed arches and an abundance of Kazakh ornamental decorations to provide a “national” flavor (Ordabayev 2018). Moreover, city planning
was another important aspect of the Stalinist architectural influence, where wide and linear streets were
designed to hold military parades on special occasions (Mwaniki 2017).

The early 1940s was the end of the neoclassical, Stalinist architecture era. This period can be noted for
its attempts at the “national style,” which mostly led to ornamentation in the Kazakh style and was often
not the best use of decoration due to the absence of theory regarding architectural ornaments. By
decision of the USSR party and government of the USSR dated 1955 and followed orders of
industrialization of construction, manufacture of precast concrete products, “campaign against excesses”
and other reasons indicated the fall of the monumental classicism and return to functional architecture
(Truspekova 2018). Essentially, it was the recovery of modernism, the evolution of which was disrupted in
1930s.

Figure 3: Former Kazakh (USSR) Consumer Union Building(right) by B. Stesin 1957 on Panfilov Street, G.
Bobovich, typical 50s administrative building – Stalinist Architecture(neoclassicism). Source: Author.
The difference with the second half of the 20th-century’s Soviet architecture was that it relied on a limited number of typical projects; anticipated mass development; and used precast, standard blocks and constructions. This approach for typifying projects led to fully rethinking the way to planning and construction, resulting in simplifying projects and lowering architectural qualities and restrictions from an artistic point of view that arose before architects. Social residential buildings were constructed according to the typical standards of all Soviet Union projects and were adapted for seismic zone activities (Kapanov and Baimagambetov 1998). Moreover, not only brick adaptations were employed but large-panel construction was also used for mass development in both residential and civic projects. During the late 1950s, the large block system was not satisfying the needs of the rapidly growing city; new principles of urban planning were necessary, and after the 1960s, new territories developed within a system of micro-districts, i.e., a complex of residential buildings with community services that were connected to a motorway (Ordabayev 2018).
In USSR-mass-construction, large quantities ruled the need for industrialization, construction and standardization, and finding the most optimum and economical solutions allowed for further replication (Lim and Glaudinova 2018). This approach created an aesthetic issue as the repetitive use of typical projects resulted in monotonous and inexpressive visual appearances and also failed to consider local cultural and natural features. The method of typifying individual segments of the building, i.e., the block-sections, had a better outcome but did not give character to mass construction projects; thus, Soviet architects returned back to ornamentation. Adverse to standardized projects, seismical factor played a role, as most typical projects developed by central design institutes of USSR did not take into account earthquakes, where for majority of municipal buildings individual proposals were developed (Ordabayev 2018).

Figure 5: Commercial Building 1986, former regional authority (USSR) building – Soviet Modernism Legacy. Source: Author.
Architecture between 1960 and the mid-1980s stylistically represented a local branch of post-war modernism, which had traces of brutalism and postmodernism. The latter has two sources: the pursuit of a regional and national framework (i.e., a Kazakh framework) and outside influences as perceived by young architects in foreign models. Since the 1980s, some young practitioners have actively looked for ways of diversifying the expressiveness of architecture that is driven by postmodern ideologies by rejecting symmetrical plans, rectangular schemes and planar facades (Truspekova 2018).

In the current architectural landscape, it is hard to trace any sort of style cohesion, various approaches coexist together, that are followed upon clients’ needs and designed by discrete architects, whereas the Soviet modernist legacy should be noted, examples of which could be found through the city. Regarding urban planning, the city layout fabric provides a rectangular street network with approximately 330-by-460-foot blocks; at certain locations, the block size doubled, and a courtyard structure exists.

3.5. HISTORIC AREA | THE ALMALY DISTRICT

The majority of the historical city area is in the central district of Almaly, which was a Stalin district between 1936 and 1961 and then a Soviet district up to 1995. The area consists of 7.1 square miles and has a population of 215,885 population, according to the district passport dated January 1, 2019 (Almaly District Passport 2019).
Figure ground plan, plan view drawing illustrating built environment on a street level, clearly shows that historic district exhibits rectangular street grid with blocks being developed along the perimeter and a courtyard in the inner portion. It can also be noted how wide the streets are in comparison to blocks and buildings. Typically, residential use allows access from the courtyard via an arch in the building or a passage between buildings, which is also a recreation and vehicular storage area. Other blocks with monuments or special buildings demonstrate the modernist view of a tower and a surrounding green field that sit in the middle of the block and have a grand entrance.

![Figure 7: Almaly District Figure Ground Plan. Source: Author.](image)

Research for historical preservation codes was unsuccessful as no specific information or guidelines were found, except for a map with marked architectural landmarks that was retrieved from an interactive map tool on the Almaty Department of Urban Planning website (Almaty Interactive Map Tool 2018). Those landmarks are buildings designated by the government as having a historic-cultural heritage, meaning they cannot be moved, changed or demolished (depending on structural condition) (Historic-Cultural Heritage Use and Protection Ordinance of Republic of Kazakhstan Laws and Regulations Chapter 7 1992).
Figure 8 Almaly District Map. Source (Almaty Interactive Map Tool 2018).

Figure 9 Map of Historically Significant Buildings, marked in red. Source (Map of 100 Most Significant Buildings of Almaty n.d.).
Moreover, an organization called ArchCode, which consists of a group of architects, is working on a research project to preserve the city’s architectural identity and has developed a list of the 100 most significant buildings of Almaty (Map of 100 Most Significant Buildings of Almaty n.d.) The inventory includes structures that were identified as having a historical legacy based on the group’s research and were thus plotted on the map. In addition, a design code dated November 30, 2017, was obtained from the Joint Stock Company (JSC) “Almaty Development Agency” and provides recommendations for color schemes for facades, restrictions for changes to building exterior, and signage usage. The code also has examples of typical designs for common Soviet, multi-family residential building rehabilitations (Almaty Design Code 2017).

Figure 10 Design Code dated November 30, 2017. Source (Almaty Design Code 2017).
Representatives from city hall, the public, architects and former general developers met to discuss the future of the historic center as reported by Sputniknews. The head of the Urban Planning Union, Lyubov Nysanbayeva, believes that the historical center should be preserved and the history of development should dictate certain parameters of the structures that are built. The city should grow and develop but should not only be based on architecture and should get the public more involved. The city border is not slated to expand, but the population is expected to grow as reported by Nurlan Uranhayev, head of Department of Architecture and Urban Planning of Almaty. As for the senior architect at KazGor Design Academy—the largest international design company in Kazakhstan, which was founded in 1930—Tahtar Eraliev thinks that the city center should be developed, preserving only significant historical inventory as the city presently has a countryside atmosphere and the downtown is empty (Build or Not to Build: Almaty Historical Center Discussion 2018).

3.6. RELEVANT STATISTICS

<table>
<thead>
<tr>
<th>CITY</th>
<th>AREA (SQUARE MILES)</th>
<th>POPULATION (MILLION PEOPLE)</th>
<th>DENSITY (/ SQUARE MILES)</th>
<th>PARKING LOT LOCATIONS (UNITS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALMATY</td>
<td>263</td>
<td>1.8</td>
<td>6,844</td>
<td>40</td>
</tr>
<tr>
<td>MUNICH</td>
<td>120</td>
<td>1.4</td>
<td>11,667</td>
<td>100</td>
</tr>
<tr>
<td>PHILADELPHIA</td>
<td>140</td>
<td>1.58</td>
<td>11,286</td>
<td>200</td>
</tr>
</tbody>
</table>

Table 1: Summarized Table of Areas, Population, Density and Parking Lots for Central Areas of Almaty, Munich and Philadelphia Cities. Source: (Facts and Figures of Munich 2017), (Quick Facts Philadelphia County, Pennsylvania Population Estimates 2017), (Google Maps n.d.)

Contrasting Almaty’s statistics to other cities in the world gives us a different perspective, and numbers can be compared and conclusions drawn. It should be noted that each city has limits in its own development history, including territory shortages, politics or economics, but the comparison still provides a base to start. Munich, Germany and Philadelphia, Pennsylvania, U.S. were selected for comparison as both are major cities without being national capitals and have similar population numbers. Munich has 1.45 million people in 120 square miles of land, while the 1.58 million people living in Philadelphia reside in 140 square miles of territory (Facts and Figures of Munich 2017) (Quick Facts Philadelphia County,
Pennsylvania Population Estimates 2017). As a result, it can be said that Almaty is more spread out and has approximately double the amount of area that Munich or Philadelphia does.

Figure 11: Figure Ground Plans of Downtown Almaty, Munich and Philadelphia. Source: Munich: (Site and Figure Ground Plans of the World n.d.) and Almaty, Philadelphia: Author.
Overall, Philadelphia exhibits a rectangular street grid, with a typical block in the central area of the city being around 400-by-500 feet, and in most cases, blocks are fragmented by smaller streets, which leads to an increase in segmentation toward the edge of the city. In Munich, blocks display a mixture of different shapes and sizes, with a minority being a rectangular-shaped grid that have a courtyard in the inner part of the block.

Figure ground plans illustrate the central areas of the cities that are being compared at the same scale. Visually, the plans demonstrate how typical blocks, not considering the open spaces comprising whole blocks, are more solid in Munich and Philadelphia in contrast to Almaty, meaning more ground-level areas are being developed in each block. Larger and fully developed blocks at the city’s core can be noted in the Philadelphia figure ground plan, with a decrease in the size and development along the perimeter of the blocks occurring closer toward the edges of the city. As for Almaty and Munich, both exhibit courtyard structures, with the former showing a rectangular grid and the latter containing an asymmetrically shaped street network; overall, Munich shows a denser ground-level built environment.

The Munich figure ground plan was retrieved from a European based Internet source, schwarzplan.eu, which offers site and figure ground plans as scalable vector graphics for cities globally (Site and Figure Ground Plans of the World n.d.). However, for Almaty and Philadelphia, no reference for figure ground plans was found; therefore, property information from the interactive map was used for both cities in combination with Google Maps to fill in data gaps, and the maps were then drawn by the author (Almaty Interactive Map Tool 2018) (Interactive Map of Philadelphia n.d.) (Google Maps n.d.).

Maps of parking locations were investigated, and Google Maps were used to get an idea of the vehicular storage situation in each city. Same 2,000 feet above ground mark was used for all maps, centered at the downtown of the city, searching for parking lots available within the Google Maps search window. Parking lot locations in Munich and Philadelphia drastically outnumbered those in Almaty, with Munich showing roughly 100, Philadelphia showing slightly more than 200 and Almaty showing around 40. As not every parking location is registered with Google Maps, there would be some errors in the values for every city.
4. PANFILOV STREET RECONSTRUCTION PROJECT

Recently, Almaty started to improve city infrastructure, eight secondary and nine local streets are planned to be restructured into more pedestrian friendly environments as reported by Kazinform, an international information agency, on December 9, 2017 (Akhmetov 2017). The Panfilov Street project is a finished transition project that transformed a two lane street, with angled curbside parking on each side, to a pedestrian friendly street with limited single lane, one-way traffic and reduced parking along the road, which at intersections meet with a pedestrian-operated traffic light.

The project incorporated pedestrian, bicycle, active and passive recreation, and dining accommodations. Active recreation zones include free outdoor sports facilities, while passive zones consist of wooden benches and tables, sunbeds, allocated zones for the younger population, and various water features. For pedestrian convenience, pop-up, box-like pavilions dedicated to food have been introduced along the length of the street. On the other hand, personally visiting the street at different times confirmed that the area never got full or crowded; the numerous block-sized parks along Panfilov Street and the generously wide street gave an unusual feeling after reconstruction, offering plenty of air to breathe.

The project was developed based on the recommendations of Gehl Architects, which is an urban research and design consulting organization in Copenhagen, Denmark that is famous for pedestrian and bicycle-oriented works; the firm noted that Almaty’s center needed densifying. The reconstruction segment took place between Zhibek Zholy and Kabanbai Batyr Streets for a total of 4,500 feet in length (Atoyanc 2017). When asphalt was torn up during the renovation, cobblestone pavement from the 1930s was discovered. Since the location was on historic grounds, the architects retained fragments of the pavement from Vurnyi times, which could serve as a walking surface and as an element of décor (Romashkina 2017).

In general, Panfilov Street visit experience showed successful southern and northern ends of the street, accompanied by Abay Kazakh State Academic Opera and Ballet Theater built in 1934, modernist Almaty hotel, numerous dining options and street artists, attracting pedestrian attention. In contrast, the middle segment of the street was perceived as lacking activity, and the low density of people was noticed right away as were the lack of ground-level storefronts and large areas of asphalt-paved open space.
Overall, the reconstruction project was successful as the public and tourists visited the updated area, and business owners on Panfilov Street experienced an increase in profits, which could be seen in news articles or discussion forums on the Internet. Concept author Riccardo Marini believes that the main goal was achieved as the priority of convenience was meant for people and not for cars, not mentioning certain deficiencies related to quality of bicycle network created and layout of certain street furniture and decoration elements, as provided were only instructions and architects of Almaty had own vision (Gareeva 2017). As such, the rest of downtown Almaty can have improvements regarding quality of life.
Figure 12: Panfilov Street Plan View. Source (Google Maps n.d.) Montage by Author.
5. SELECTED PROJECT SITE

A “downtown” is a large area and has diverse life throughout the neighborhood, where each street and each block require an individual approach. Therefore, for this design project, the site boundary would be limited to an intersection bound by four blocks; site selection was decided upon after the experience gathered from the Panfilov Street in which the middle fragment of the street was identified as lacking in people density and a range of activities. Three blocks around the Panfilov and Aiteke Bi intersections were explored and analyzed regarding the concerns and intentions of providing a specific solution for this location, which would consider improving the well-being of city residents and visitors.

Figure 13: Site Map View Montage. Source: (Google Maps n.d.) Montage by Author.
Most people’s first impression when visiting the central part of Almaty during a warm time of the year would be of how much greenery is near the streets, hiding low-height buildings behind tree leaves and providing shade and cooling for pedestrians on a sunny day. At certain intersections, four and six lane-wide street crossings disrupt the pleasant walk with a 150-feet journey through a noisy and hot car queue. Overall, the streets felt considerably wide throughout the explored area. At peak times of the day, collector routes—those pathways connected to an arterial street—were congested, with slow-moving traffic. Rushing bus drivers and horn sounds could be observed. A large portion of this huge number of cars would need parking, and the effect was clearly seen: curbsides full of parked cars and cars being parked partially or fully on the sidewalks—parking chaos. Residential private yards were populated with parked cars, making pedestrian travel unsafe. People tended to walk closer to the middle of access routes, and many of those routes did not have sidewalks. As such, people and cars shared the road. On the whole, numerous situations on every block around the Panfilov and Aiteke Bi intersection showed that car transportation is favored over pedestrian traffic.

To begin the analysis of the site metrics should be applied, that can be further compared with values of the prosed design, area of parking in square feet, length of sidewalks in linear feet along the centerline, and length of bicycle lanes in linear feet along the centerline would be used to capture sites’ existing state.

To start the baseline, the existing area of available parking and the length of the sidewalks were recorded to be evaluated to determine whether proposed design have improved conditions. For sidewalk measurement, area in square feet would not be a fair choice as certain sidewalks had a span of 60 feet; therefore, linear feet along the centerline of the sidewalk will be used.

The selected site boundary includes several parking types, including on-street, surface lots, inner courtyards and privately-owned garages, with the majority of the area having on-street parking. All affected values as a result of the new proposal for parking values would be subtracted from the proposed area allocated for parking, and existing privately-owned spaces would stay constant in the proposed value as part of the demand for vehicular storage.
In addition, two bicycle lanes, with a total of 630 linear feet from the centerline, were spotted on site. A two-way bicycle path ran along Panfilov Street on the park side and Kazybek Bi Street, where the latter is joined with the on-street parking available but is usually blocked by parked vehicles, thus not allowing bicycles to use the feature.

| SIDEWALK LENGTH ON SELECTED SITE (EXISTING) (LINEAR FEET) |
|-----------------|-----------------|-----------------|-----------------|-----------------|
| NW BLOCK        | NE BLOCK        | SE BLOCK        | TOTAL           |
| 3,450           | 2,200           | 1,920           | 7,570           |

*Table 2: Available Sidewalk Length in Linear Feet in Each Selected Block. Source: Author.*

<table>
<thead>
<tr>
<th>PARKING SPACE AREA ON SELECTED SITE (EXISTING) (SQUARE FEET)</th>
<th>NO OF CARS (270 FT2 PER CAR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TYPE</td>
<td>NW BLOCK</td>
</tr>
<tr>
<td>ON-STREET</td>
<td>26,600</td>
</tr>
<tr>
<td>SURFACE LOT</td>
<td>2,000</td>
</tr>
<tr>
<td>COURTYARD</td>
<td>10,400</td>
</tr>
<tr>
<td>PRIVATE OWNED</td>
<td>5,600</td>
</tr>
<tr>
<td>TOTAL</td>
<td>44,600</td>
</tr>
</tbody>
</table>

*Table 3: Available Parking Space Area in Square Feet in Each Selected Block. Source: Author.*

<table>
<thead>
<tr>
<th>LENGTH OF BICYCLE LANES ON SELECTED SITE (EXISTING) (LINEAR FEET)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PANFILOV STREET</td>
</tr>
<tr>
<td>480</td>
</tr>
</tbody>
</table>

*Table 4: Available Length of Bicycle Lanes on Selected Site in Linear Feet. Source: Author.*
The Panfilov Street area has a great network of public transportation that utilizes busses as well as 2 out of 10 subway stations that are located at 2 ends of the street. A tram line used to run across certain streets of the city’s center, but after an incident where a train car dislodged from the rail track and drove into cars on the road, the transport was dismissed due to its age and safety concerns. In the recent past, the media reported on a new Light Rail Transit proposal connecting eastern and western parts of the city and that will run north to south along Panfilov Street, entering on Makataev Street from the east and turning west on Tole Bi street (Asylbek 2018). However, nothing has started yet, and no more information has been published, except for initial release with a map of the route and some 3D perspective renderings.

*Figure 14: Site Photo – Residential Entrance/Courtyard (NE Block). Source: Author.*
Figure 15: Site Photos – Cars Occupying the Sidewalk and Electronic Gates (NW Block). Source: Author.

Figure 16: Site Photo – Office Entrance (SE Block). Source: Author.
Plenty of space was experienced in most locations. Buildings were considerable distances from the road, and there were wide sidewalks with strips of greenery that separated pedestrians and cars. Planted trees were a regularity in the old town area, which is a legacy of the Soviet planning ideal that has benefits and drawbacks in this setting. The advantages are that the sidewalks are far from the road and far from buildings; in addition, the tree canopy creates a quality environment, blocking noise and adding camouflage to the grey concrete texture behind it. The disadvantages are that buildings are far from sidewalks and that few business can be located on the ground floor because cars occupy the buffer zone between sidewalks and buildings, leaving large plots of asphalt and pedestrians walking between parked vehicles. Examples of commercial additions that extend to match the sidewalk were observed in every block in the site, bigger concentration of people made it evident how lively those particular spots are.

The figure ground plan is a great tool to begin the comparison but is limited by not taking into account the height of the built area; the floor area ratio (FAR) can be used as a metric to assess the built density within a certain area, being a ration of built environment area over available land area. For comparison purposes, three blocks with similar characteristics in each city—close to a square or a junction and having a courtyard structure—were selected. The average value for the built floor area and the land area of the three blocks would be implemented toward the FAR value. The average FAR values in Table 5 illustrate that Almaty had lowest value of 1.97 compared to 2.61 and 4.86 in Munich and Philadelphia respectively.

| EXISTING FLOOR AREA RATIO (FAR) FOR SELECTED BLOCKS IN SELECTED CITIES |
|-----------------------------------------------|-----------------|------------------|-----------------|-----------------|
| CITY | FLOOR AREA (SQ. FT.) | LAND AREA (SQ. FT.) | AVERAGE FAR |
|      | BLOCK           | BLOCK           |                  |                  |                  |
|      | 1  | 2  | 3  | AVERAGE (SQ. FT.) | 1  | 2  | 3  | AVERAGE (SQ. FT.) |
| ALMATY | 630K | 365K | 580K | 525K | 432K | 183K | 183K | 266K | 1.97 |
| MUNICH | 325K | 245K | 790K | 450K | 110K | 61K | 345K | 172K | 2.61 |
| PHILADELPHIA | 392K | 364K | 344K | 467K | 96K | 96K | 96K | 96K | 4.86 |

Table 5: Existing Floor Area, Land Area and Floor Area Ratio Values for Selected Blocks in Central Area of Almaty, Munich and Philadelphia. Source: Author.
Philadelphia exhibited taller buildings at its core in the downtown areas, and structure height gradually decreased toward the edge of the city. In contrast, Almaty and Munich generally had limited variations in height, with taller exceptions only in certain neighborhoods. This pattern can explain the much higher value for Philadelphia, which was approximately double the average FAR of Munich and Almaty. Of the three cities, Almaty contained the least dense downtown blocks.

Another interesting finding was examples of how natural features were used as insulation for people. These features acted as another security level in addition to the different types of fences that are typically used for every project property line. Numerous electronic gates were also observed, and it was noted they did not allow access to the block. Furthermore, sketchy – bad quality, and repelling access roads to certain buildings created that confusion whether is that the entryway or backstreet alley, conceiving public and private space disorientation. Regarding poor quality, a majority of the facilities allocated for pedestrians—benches, sports areas and playgrounds—can be added to observed on site.

| PRIVATE AND SEMI-PRIVATE SPACE AREA ON SELECTED SITE (EXISTING) (SQUARE FEET) |
|--------------------------------------------------|----------------|----------------|----------------|----------------|
| TYPE     | NW BLOCK | NE BLOCK | SE BLOCK | TOTAL          |
| PRIVATE  | 15,600   | 24,000   | 16,400   | 56,000         |
| SEMI-PRIVATE | 39,600 | 13,200   | 9,900    | 62,700         |
| TOTAL    | 55,200   | 37,200   | 26,300   | 118,700        |

*Table 6: Available Private and Semi-private Space Area in Square Feet in Each Selected Block. Source: Author.*

Due to restricted access at certain private locations, some areas could not be approached, and maps from Google and Yandex were compared to address gaps in information. Particular buildings in every block did not adequately meet current needs and required attention in regard to issues such as quality, use, size or the historical significance of the structure. One- and two-story garage structures in the northwestern block, including a car wash, food places and storage areas, occupied a large portion of the block. These buildings had aged exteriors and blank solid walls, which were characteristic of this development. The southeastern block contained an old, rectangular structure of offices, while segments the middle of the block were unusually formed and generated conflicts regarding access to an adjacent office building.
To summarize, all three blocks had common observations, where trees accommodated the walkability on streets, but automobiles and confusing access put safety in question. Furthermore, most residential private yards were in poor condition as was the car-pedestrian zone arrangement, with a larger fraction belonging to vehicles.
Figure 17: Existing Building Function Site Plan. Source: Author.
Figure 18: Existing Elevations A-A, B-B, C-C. Source: Author.
Figure 19: Existing Elevations D-D, E-E. Source: Author.
Figure 20: Existing Elevations F-F, G-G, H-H. Source: Author.
Figure 21: Existing Streets A-A, B-B, C-C, D-D. Source: Author.
Figure 22: Existing Streets E-E, F-F, G-G, H-H. Source: Author.
Figure 23: Existing Streets J-J, K-K, M-M. Source: Author.
6. LAYOUT AND LOGISTICAL PROBLEMS IN DOWNTOWN ALMATY

Taking into account the study’s background, the author’s personal experiences and relevant statistics, the issues for this particular site can be categorized into three groups: Urban sprawl in Almaty, access and vehicular chaos, which is illustrated on the site map analysis sheet, produced during Author’s site visit, on the following page.

6.1. URBAN SPRAWL IN ALMATY

By comparing Almaty’s areas and population with those of the other cities, we were able to see how spread out Almaty is. The city had roughly twice the area in comparison to Munich and Philadelphia, as well as figure ground plans illustrated that, in comparison, Almaty downtown block had considerably less building area covered on street level within block. In addition, the FAR values show Almaty contained the least dense urban blocks. The author’s own experience confirmed that finding as the entire city center felt uncomfortably absent of people at different times during the day. With the low-height structures and wide roads existing due to its history, the area seemed more like a typical street than a downtown space.

6.2. ACCESS

Relationship issues between public and private spaces were experienced at the site, where numerous electronic gates created confusion and the impression that one should not be there. However, on most occasions, the barriers came from cars parking in unassigned spaces behind the gates and drivers trying to avoid traffic jams via the block’s back streets—often without a separated sidewalk, though pedestrian access was allowed. The sudden disruption of a sidewalk or a bike lane created inconveniences when entering certain areas of the site.

6.3. VEHICULAR CHAOS

Most local streets were wide; some were up to four lanes and usually crowded during the day. It was stressful to cross the streets, with horn and engine noises coming from automobiles. Parking difficulty was visible everywhere, and on multiple occasions, cars blocked sidewalks fully or partially. Both office and residential courtyards were utilized for vehicular storage, leaving little space for pedestrians.
Figure 24: Site Analysis Site Map Diagram. Source: Author.
7. REVITALIZATION PROGRAM

To improve the neighborhood's environment for residents and visitors and to make the areas less car dependent and more attractive for walking, more people should be allowed to live, play and work within the downtown area. People should be allowed to safely and comfortably access all uses within the area on foot, vehicular storage space should be organized and provided for visitors using automobiles, and bike lanes should be introduced for a greater range of transportation modes. Therefore, the program of the project includes:

1. Increased FAR value for selected blocks – towards a denser settlement, allowing more people to dwell within tighter area,

2. Improved street connectivity in the area – towards a convenient and comfortable movement on foot, and

3. Reconfigured streets – towards an organized storage of personal automobiles and inclusion of a bicycle lane network.
8. THEORY REVIEW

Reviewed sources include the reconstruction of the Potsdamer Platz in Berlin, Germany, Part II of *The Death and Life of Great American Cities* by Jane Jacobs, the urban planning movement New Urbanism and relevant local codes for the selected site. The German square reconstruction showed successful implementation of a more traditional layout – narrower, rectangular streets with certain height restriction for buildings. As for Jane Jacobs, Part II of the book opens up a discussion on importance of mixed-use areas. Turning to New Urbanism, movement working to make environments compact, walking-friendly and directed towards pedestrians, transect-based planning and zoning documents are referenced. As well as local codes related to street and road space organization, residential, and public building construction would be used in the study.

8.1. POTSDAMER PLATZ, BERLIN, GERMANY

Berlin, Germany has certain, significant examples for urban redevelopment such as Potsdamer Platz, which has a rich history of being one of the liveliest places in Berlin. First, the Berlin train was dispatched from this location to Potsdam as part of the Berlin-Brandenburg Metropolitan Region, for which the name was given. That makes the square an important transit junction, with bus, subway and train lines intersecting. Moreover, the space’s draw as a political, social and cultural venue should be noted. Throughout its history, Potsdamer Platz has undergone several reconstructions, which have shaped the existing environment that attracts city residents and visitors.

The location began as 1 of 14 city gates, and then in 1838, the Berlin Potsdam Railway Station opened and shaped the area as a main freight distribution site. Development of large structures and commercial spaces began at the time of German Empire in 1871 and was followed by the migration of people with higher incomes to the city border as Berlin experienced a prosperous financial situation. Migration of people eventually formed a busy locale with trains, subways, and 26 tram and 5 bus routes. Twenty thousand vehicles passed the intersection, and 83,000 pedestrians used the railway station (Kruger and Berlin n.d.).
The square, historically consisting of adjacent Potsdamer Platz and Leipziger Platz, was practically destroyed as a result of the Second World War. With Berlin being at the center of the Cold War, the rise of the Berlin Wall split the square and made it an unused space. When the Berlin Wall fell in 1989, reconstruction for Potsdamer Platz was planned, regaining its position as the main square and becoming an image for a united Germany (Turan and Dincer 2018).

*Figure 25: Potsdamer Platz Historical Site Plans. Source: (Nowabliska and Zaman 2014).*

*The Urban Masterplanning Handbook* by Erik Firley and Katharina Gron states that a competition was arranged for conceptual ideas for the square in summer 1991. Sixteen crews developed proposals for the 51-hectare plot. At a slight leadership, the Berlin branch of the Bavarian office Hilmer and Sattler convinced the jury with a high-density mixed-use concept, that drew insight from a standard European city - enclosed block edges and restricted structure heights – 35 m, referral to the historical urban block, coupled with some taller buildings symbolizing the revival of the city as an important global location (Nowabliska and Zaman 2014), where, “a skyscraper in today’s society gained a similar meaning to the one that gothic cathedral towers had for their periods—to underline its power over its surrounding”
The large-scale vision received many critiques from designers, officials and the public, who all debated whether it was wise to rush such a massive project. In contrast, investors’ minds were on how to transform the scheme into a legal document. Not long after, all stakeholders settled the discussion, and the accepted zoning plan became marginally different from Hilmer and Sattler’s competition proposal (Firley and Gron 2013).

Figure 26: Potsdamer Platz Recent Urban Plan. Source: (Firley and Gron 2013).
Architects Renzo Piano and Christoph Kolbecher proposed the masterplan for a 70,000 m² Potsdamer Platz assembly of 19 structures and the 27,000 m² Sony Center in the northwest. Another assembly of seven buildings, including a movie theater, a film museum, offices and residences, were created by American architect Helmut Jahn (Kruger and Berlin n.d.). All the structures should be seen as part of the larger plan that was presented by Hilmer and Sattler rather than as competition (Firley and Gron 2013).

Redevelopment affected not only the square itself but the surrounding area, with one good example of New York architect Peter Eisenman’s *Memorial to the Murdered Jews of Europe*, which is an allotment of 2,711 concrete blocks of different heights, sitting on 19,000 m² of space as reported the official Berlin city website. Moreover, the memorial site can be accessed 24 hours a day and can be approached from any side, leaving visitors with disoriented feelings that are influenced by a grey concrete texture that encloses a person from every side (Memorial to the Murdered Jews of Europe n.d.).
8.2. JANE JACOBS

For a built environment to be successful, it requires the participation of more than just the direct stakeholders—architects, engineers, urban planners, numerous contractors or authorities—but also for the public who use it, where Jane Jacobs, who is an American-Canadian self-taught urbanologist without an academic urban planning background; changed the way cities are built and still inspires many professionals today.

“There must be a sufficiently dense concentration of people, for whatever purposes they may be there, as well as people related to residents.” – Jane Jacobs, The Death and Life of Great American Cities

Living in Scranton, Pennsylvania and finishing high school during the Great Depression, she chose to work. In 1934, she began work as a secretary in Green Village in New York, where she also managed to sell her papers regarding issues that required attention in various parts of the city. During her off-hours, she commuted to classes on geology, zoology, law, political science and economics at Columbia University’s School of General Studies. The Architecture Forum hired Jacobs in 1952 as an editor, and
she stayed in that position for 10 years, which is where her ideas about the city environment were noticed (Drier 2012).

As stated by Peter Drier in the *100 Greatest Americans of the 20th Century*, a majority of planners, architects and officials in the 1950s believed that bigger projects would revive central business areas, prevent migration of families with middle-class incomes to the suburbs and bring a higher standard of public spaces (Drier 2012). In 1958, *Fortune* magazine editor William Whyte proposed that Jacobs produce a paper on city centers. “Downtown is for People” was the article’s name, and it became the basis for her published work in 1961: *The Death and Life of Great American Cities* (Lagasee 2018). Her book begins with Jacobs mentioning that this work is striking on present urban planning and reconstruction condition. She thought good urban areas should support people and communication; preference walking, cycling and public transport over personal vehicles; and employ mixed-use developments, low-rise residential structures and seating areas on sidewalks and parks (Drier 2012).

Part 2 of *The Death and Life of Great American Cities* discusses the idea of city diversity and examines the advantages and disadvantages of the topic. Taking side of spaces with various uses, Jacobs believed that the complex fusion of numerous functions did not mean disorder, rather advanced structure of a system. Successful diversity would include a mixture of essential uses, streets with regular intersections, the combination of old and new structures with different heights and a higher number of people using the space.

Mixed, primary uses are an essential characteristic in a neighborhood for having pedestrians at different times of the day. Single-use oriented areas such as those for work or residence, regardless of how successful, are meant to have declines in dwellers throughout the day and the less possibility to create variation. These neighborhoods are not able to provide all the essentials as they are designed to serve one specific use and everything related to that function. A “downtown” is a city core that impacts all surrounding areas, and a city lacking in a strong nucleus is usually perceived as an assembly of separate events, which fail to portray a more complex story (Jacobs 1992).

Jane Jacobs believed in blocks that are short and have frequent, intersecting streets and that their physical structures allow complex cross-use for pedestrians in the area. Distinct and separated streets
are prone to be socially lacking. In contrast, frequent streets allow for greater and diverse choices regarding routes, increasing the chance for different people to walk different streets. Interesting and people-attracting neighborhoods are made with never-ending interesting streets, moreover it expands where possible, as in the Rittenhouse Square district of Philadelphia former backstreet along the middle of the block was transformed into a public friendly street with overlooking buildings fronts including commerce. In contrast, areas in Philadelphia between the city center and public housing were left abandoned by the owners, having many reasons, where its own physical characteristic drowned the area, with typical 400 feet square block and at thriving parts of the city is split converting back alleys into streets (Jacobs 1992).

Another aspect of a prosperous urban neighborhood is old buildings, which can provide the economic importance embodied within them. Building prices change over time; high-priced spaces become affordable in the future, making the location outdated for certain businesses but providing room for others to occupy. In addition, the constantly increasing expenses for new construction supplement the need for old structures (Jacobs 1992).

As to whether congestion on roads is caused by diversity, Jacobs states that “traffic congestion is caused by vehicles, not by people in themselves.” In less compact developed areas, destinations such as medical facilities, commercial centers and movie theaters focus traffic on their location, and the path leading into and out of these spaces generally promoting the use of automobile, leading to a wider problem where residents use private vehicles for all essential demands, and the land required for cars to move and park causes the city to expand outward from the center, resulting in even greater use of cars (Jacobs 1992).

8.3. NEW URBANISM

Being “walkable,” i.e., people-directed and socioeconomically diverse, is the mission of the multidisciplinary urban planning movement of New Urbanism. This movement suggests planning for a small, compact “pedestrian” city or district in contrast to “vehicular” suburbs. Projects that are built by following the principles of New Urbanism are thus small and compact. Services to meet residents’ needs are in “walkable” distance from housing as the preference falls to biking and walking rather than driving, with best fit at all levels of development ranging from a single building to a region.
“The Right of Way details also matter greatly. Sidewalk width, curbs, corner curb radii, lane width, on-street parking, trees, and lighting should encourage the pedestrian’s confident movement.” – Congress for the New Urbanism, Charter for the New Urbanism, 2000

New Urbanism is motivated by the historical urban landscape and tends to work with the environment, which is accomplished by pursuing a public environment that is semi-private, readable, and linked to places used by residents rather than being nebulous, obscure and detached (Ellin 1996). Nan Ellin has also mentioned that the main goal was to bypass the dissolution of functions, or urban sprawl, in modern urbanism along with the social and environmental damage that came along with it. In 1992, the Congress for the New Urbanism was founded, and the annual assemblies have since gathered a broad range of parties, including urban planners, developers, authorities, architects and the public. Participants from all the groups helped write the charter of New Urbanism during the initial four congresses, in which the movement’s goals were reported (Bodzin 2018).

The following are some of the principles of New Urbanism and come from the charter of New Urbanism that was written by the Congress for the New Urbanism (The Charter of the New Urbanism n.d.):

1. Walkability

In a contemporary metropolitan area, there is the possibility to reach all important and interesting locations within a 10-minute walk from a residence or work location. Friendly streets for pedestrians and cyclist - tight streets with low-speed traffic, close proximity of building fronts to the street, and secluded from view parking areas - with convenient intersections, bridges and tunnels.

2. Connectivity

The stillness, comfort and security of the area relies on the ease of movement through the courtyards, streets, alleys, squares and boulevards. Throughout the space, the order and structure of joint streets allow for the adequate distribution of transportation, convenient pedestrian zones and peace in the courtyards.
3. Mixed-Use and Diversity

Multi-functionality through district, through block and through stand-alone building, locating both residential and nonresidential facilities. The creation of conditions for different income levels and the emergence of alluring, suitable living habitats are provided by mixing various types of buildings such as low-rise apartment buildings, townhouses or public buildings. That type of development pattern is the most effective for the territory; broad choices for housing and a variety of nonresidential services constitute the preferred condition for self-sustaining, local neighborhoods.

4. Quality Architecture and Urban Design

An integrated approach to residential and public areas, transit, technology and social infrastructure is an adequate way to develop efficient land use. High-quality building and landscape designs incorporate human scale architecture, streets and pedestrian walkways, vegetation, well maintained yards and underground parking.

5. Traditional Neighborhood Structure

Transect planning is based on an urban-to-rural hierarchy, with the densest development being at the city center and then gradually decreasing toward the edge. It is an analytical scheme that illustrates a set of specific natural environments and urban lifestyle contexts via the inclusion of an “environmental methodology for habitat assessment with zoning methodology for community design” as stated in the principles of New Urbanism. Aspects include a distinct center, squares, public spaces, venues for cultural events, commercial space variety and a network of streets that allow users to reach everything needed for a comfortable life within a 10-minute walk (e.g. educational, medical and sport facilities).

![Typical Rural-Urban Transect](image)

*Figure 29: Typical Rural-Urban Transect, with Transect Zones. Source: (SmartCode Version 9.2 n.d.).*
6. Increased Density

A high number of buildings, homes, businesses and services located closer together for comfortable movement is an effective way to provide for service utilization and a high-quality environment.

7. Smart Transportation

Communication between neighborhoods should be accomplished with fast and environmentally friendly public transport and advanced technology rail communication. Within the area, human friendly designs incorporate safe and comfortable commutes for walking, bicycling, roller skating, scootering and so on.

8. Sustainability

Contemporary urban process features include the development of green spaces, historical preservation and regeneration, the monitoring of water purity and eco-friendly technologies. Construction should consider nature and environmental protection; minimize consumption of finite fuel sources; and increase the use of local produce, environmentally friendly materials, underground parking lots, roof landscape systems and energy saving structures.

9. Quality of Life

Adding up all its principles, New Urbanism brings a high quality of life and creates environments that enhance and motivate local residents. Comfortable, dynamic living areas can be achieved with appropriate planning of public and private spaces in regard to a specific environment.
“The New Urbanism is not anti-car. It is about rewarding the typical trip—which is a short trip—by offering choices of getting around.” – Congress for the New Urbanism, Charter for the New Urbanism, 2000

8.3.1. Advantages

There are multiple parties who benefit from New Urbanism as stated in the “Making the Case” chapter (Congress for the New Urbanism. Making the Case n.d.). Advantages for residents would be an enhanced environment in which to live—one that is less car dependent as everything needed for a comfortable life is within a “walkable” distance, leading to a healthier life. Businesses would benefit from increased profits by virtue of greater numbers of pedestrians, who spend less on their vehicle maintenance and gas. There is also the possibility of higher financial gains for developers with compact, mixed-use projects because of more space to rent and greater asset value. Municipalities would also have lower expenditures on infrastructure and utilities than do suburban locations; these municipal areas would also have an increased tax base due to the higher density of a built environment.

8.3.2. Implementation

The tools section from the website for the Congress for the New Urbanism references the latest open-source SmartCode (SmartCode Version 9.2 n.d.), which is a planning and zoning document based on transect planning and is grounded in environmental research. The Center for Applied Transect Studies, a nonprofit organization that believes the natural and built environments are part of one another, distributes SmartCode and is thus far the most complete, transect-based exemplar (Center for Applied Transect Studies n.d.). SmartCode has numerous additional modules that focus on specific subjects, including the Sprawl Repair SmartCode module that has recommendations primarily for car-oriented areas (Sprawl Repair SmartCode Module (Draft) Prepared by Duany Plater-Zyberk & Co. n.d.). Moreover, the Center for Applied Transect Studies offers other transect-based codes, in particular the Neighborhood Conservation Code, which focuses mainly on infill projects (Neighbourhood Conservation Code Prepared by Sandy Sorlien n.d.). Recommendations are meant to be adjusted and adopted for a project’s location, keeping urban areas compact and countryside areas exposed.
1. SmartCode Version 9.2

Figure 30: Table 4B: Public Frontages – Specific (left), Table 3B: Vehicular Lane and Parking Assemblies (middle), Table: 3A Vehicular Lane Dimensions (right). Source: (Center for Applied Transect Studies n.d.).

2. Neighborhood Conservation Code prepared by Sandy Sorlien

Figure 31: Table 4D: Lot and Buildings Retrofit. Source: (Center for Applied Transect Studies n.d.).

Figure 32: Table SR3: Sprawl Types Repaired. Source: (Center for Applied Transect Studies n.d.).

Figure 33: Table SR4: Thoroughfare Types Repaired. Source: (Center for Applied Transect Studies n.d.).
8.4. ALMATY LOCAL CODES

1. Street-Road Space organization in Almaty city

<table>
<thead>
<tr>
<th>LANE</th>
<th>SPEED (KM/HOUR)</th>
<th>WIDTH (METERS)</th>
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<tbody>
<tr>
<td>PASSANGER</td>
<td>60</td>
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<td></td>
<td>40</td>
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</tr>
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<td>30</td>
<td>2.7</td>
</tr>
<tr>
<td>PARKING</td>
<td></td>
<td>2.1 – 2.7</td>
</tr>
</tbody>
</table>

*Table 7: Estimated Minimum Road Lane Width in Meters. Source: (Preliminary National Standard of Republic of Kazakhstan PST RK 65 - 2017 “Street-Road Space organization in Almaty city” by Standardization Technical Committee No 65 “Automobile Transport” 2017) Table 1.*

<table>
<thead>
<tr>
<th>BICYCLE LANE</th>
<th>INTENSITY (UNITS/HOUR)</th>
<th>WIDTH (METERS)</th>
</tr>
</thead>
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<tr>
<td>ONE-WAY</td>
<td>0 – 150</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>75 – 375</td>
<td>2.5 – 3.0</td>
</tr>
<tr>
<td></td>
<td>&gt; 375</td>
<td>3.5 – 4.0</td>
</tr>
<tr>
<td>TWO-WAY</td>
<td>0 – 150</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>75 – 375</td>
<td>2.5 – 3.0</td>
</tr>
<tr>
<td></td>
<td>&gt; 375</td>
<td>3.5 – 4.0</td>
</tr>
</tbody>
</table>

*Table 8: Main Parameters of Bicycle Path. Source: (Preliminary National Standard of Republic of Kazakhstan PST RK 65 - 2017 “Street-Road Space organization in Almaty city” by Standardization Technical Committee No 65 “Automobile Transport” 2017) Table 3.*

<table>
<thead>
<tr>
<th>BICYCLE LANE</th>
<th>WIDTH (METERS)</th>
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<tbody>
<tr>
<td>ALONG CURB</td>
<td>1.8 – 2.1</td>
</tr>
<tr>
<td>ALONG STREET EDGE</td>
<td>1.2 – 2.1</td>
</tr>
<tr>
<td>ALONG WALL</td>
<td>.9</td>
</tr>
<tr>
<td>BUFFER</td>
<td>0.45 – 4.0</td>
</tr>
</tbody>
</table>

*Table 9: Main Parameters of Bicycle Path Continued. Source: (Preliminary National Standard of Republic of Kazakhstan PST RK 65 - 2017 “Street-Road Space organization in Almaty city” by Standardization Technical Committee No 65 “Automobile Transport” 2017) Table 4.*
2. Design Norms of Streets, Roads and Populated Areas

<table>
<thead>
<tr>
<th>STREETS</th>
<th>ROADS</th>
<th>LANE WIDTH (METERS)</th>
<th>MIN. LANE NUMBER</th>
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<tbody>
<tr>
<td>COLLECTOR (CITY)</td>
<td>3.5 – 3.75</td>
<td>4</td>
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</tr>
<tr>
<td>COLLECTOR (DISTRICT)</td>
<td>3.5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>RESIDENTIAL</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>PASSAGE</td>
<td>3.5 – 2.75</td>
<td>1 – 2</td>
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</tr>
<tr>
<td>SQUARE, PLAZA</td>
<td>3.5</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

*Table 10: Roadway Width and Minimum Number of Lanes. Source: (Building Regulation SNiP II-K.3-62 “Design Norms of Streets, Roads and Populated Areas” 1962) Table 4.*

<table>
<thead>
<tr>
<th>STREET</th>
<th>ROAD TYPE</th>
<th>MIN. SIDEWALK WIDTH (METERS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>COLLECTOR (CITY)</td>
<td>4.5</td>
<td></td>
</tr>
<tr>
<td>COLLECTOR (DISTRICT)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>RESIDENTIAL</td>
<td>2.25</td>
<td></td>
</tr>
<tr>
<td>PASSAGE</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>SQUARE, PLAZA</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

*Table 11: Minimum Sidewalk Width According to Street Type. Source: (Building Regulation SNiP II-K.3-62 “Design Norms of Streets, Roads and Populated Areas” 1962) Table 20.*

<table>
<thead>
<tr>
<th>BICYCLE LANE</th>
<th>MIN. WIDTH (METERS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ONE-WAY</td>
<td>1.5</td>
</tr>
<tr>
<td>TWO-WAY</td>
<td>2.5</td>
</tr>
</tbody>
</table>

*Table 12: Minimum Bicycle Lane Width. Source: (Building Regulation SNiP II-K.3-62 “Design Norms of Streets, Roads and Populated Areas” 1962) Chapter 4.3.*

<table>
<thead>
<tr>
<th>PARKING VEHICLE TYPE</th>
<th>AREA (METERS SQUARED/UNIT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PASSENGER</td>
<td>25</td>
</tr>
<tr>
<td>MOTORBIKE</td>
<td>3</td>
</tr>
<tr>
<td>BICYCLE</td>
<td>0.6 (ONE WHEEL, 0.9 (TWO WHEEL)</td>
</tr>
</tbody>
</table>

*Table 13: Minimum Area for Parked Unit Type. Source: (Building Regulation SNiP II-K.3-62 “Design Norms of Streets, Roads and Populated Areas” 1962) Chapter 6.2.*
### Table 14: Minimum Residential Unit Area According to Number of Rooms

<table>
<thead>
<tr>
<th>Number of Rooms</th>
<th>Recommended Area (Meters Squared)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>32 – 45</td>
</tr>
<tr>
<td>2</td>
<td>44 – 56</td>
</tr>
<tr>
<td>3</td>
<td>56 – 70</td>
</tr>
<tr>
<td>4</td>
<td>70 – 84</td>
</tr>
<tr>
<td>5</td>
<td>84 – 100</td>
</tr>
<tr>
<td>6</td>
<td>100 – 110</td>
</tr>
<tr>
<td>7</td>
<td>110 - 125</td>
</tr>
</tbody>
</table>

*Source: Building Regulation SNiP RK 3.02-43-2007 “Residential Buildings” 2007 Table 2.*

### Table 15: Minimum Stair Flight Width and Maximum Slope

<table>
<thead>
<tr>
<th>Stair Flight Type</th>
<th>Min. Width (Meters Squared)</th>
<th>Max. Slope</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two-story</td>
<td>1.05</td>
<td>1:1.5</td>
</tr>
<tr>
<td>Three-story and above</td>
<td>1.05</td>
<td>1:1.75</td>
</tr>
<tr>
<td>Corridor</td>
<td>1.2</td>
<td>1:1.75</td>
</tr>
</tbody>
</table>

*Source: Building Regulation SNiP RK 3.02-43-2007 “Residential Buildings” 2007 Table 4.*

### Table 16: Minimum Corridor Width According to Length

<table>
<thead>
<tr>
<th>Corridor Length (Meters)</th>
<th>Min. Corridor Width (Meters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 40</td>
<td>1.4</td>
</tr>
<tr>
<td>&gt; 40</td>
<td>1.6</td>
</tr>
</tbody>
</table>

*Source: Building Regulation SNiP RK 3.02-43-2007 “Residential Buildings” 2007 Chapter 4.4.1.*
### Office Space by Position

<table>
<thead>
<tr>
<th>OFFICE SPACE BY POSITION</th>
<th>AREA (SQUARE METERS), ACCORDING TO OCCUPANCY (NUMBER OF PEOPLE)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt; 300</td>
</tr>
<tr>
<td>CEO</td>
<td>27 – 36</td>
</tr>
<tr>
<td>DEPUTY</td>
<td>18 – 24</td>
</tr>
<tr>
<td>CEO ASSISTANT</td>
<td>12</td>
</tr>
<tr>
<td>CEO RECEPTION</td>
<td>12</td>
</tr>
<tr>
<td>DEPUTY RECEPTION</td>
<td>12</td>
</tr>
</tbody>
</table>

*Table 17: Office Space Area According to Position and Occupancy. Source: (Set of Rules SP 118.13330.2012* “Public Buildings and Facilities” updated version of Building Regulation SNiP 31-06-2009 (with amendments N 1, 2) 2012) Table 5.3.*

### Minimum Area in Square Meters According to Position

<table>
<thead>
<tr>
<th>POSITION</th>
<th>MIN. AREA (METERS SQUARED/POSITION)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEAD OF DEPARTMENT, HEAD ACCOUNTANT, HEAD SPECIALIST</td>
<td>9</td>
</tr>
<tr>
<td>DEPUTY, VICE-PRESIDENT</td>
<td>7.5</td>
</tr>
<tr>
<td>ENGINEER, ACCOUNTANT, INSPECTOR</td>
<td>6.5</td>
</tr>
<tr>
<td>IT PERSONEL, MAINTENANCE</td>
<td>6</td>
</tr>
<tr>
<td>WITH INDIVIDUAL APPOINTMENTS</td>
<td>12</td>
</tr>
</tbody>
</table>

*Table 18: Minimum Area in Square Meters According to Position. Source: (Set of Rules SP 118.13330.2012* “Public Buildings and Facilities” updated version of Building Regulation SNiP 31-06-2009 (with amendments N 1, 2) 2012) Chapter 5.16.*
“By its nature, the metropolis provides what otherwise could be given only by travelling; namely, the strange.” – Jane Jacobs, The Death and Life of Great American Cities

9. METHODS FOR REVITALIZATION

As the background research has shown, mass construction during the Soviet period dictated the city planning of Almaty and led to the city’s borders extending outward. Presently, as Almaty authorities have noted that the city population is growing, extending the city away from its center would increase the need for car use; therefore, infilling with smaller projects is being considered. The era of Stalinist architecture added wide street planning, eventually producing car dependence and leading to an environment that favors vehicular transportation over pedestrians and where safety can be questioned. In regard to the seismic history of the area and the Soviet design preference of modernism, low-density urban blocks were the outcome. In addition, the edges between private and public spaces were not clear, which occasionally made walking and connectivity confusing.

By using influential beliefs from city planning movement New Urbanism and codes it references, the takeouts from the German example of Potsdamer Platz’s reconstruction – denser area planning, and the insights on diversity of Jane Jacobs, this design proposal is intended to enhance and revitalize Almaty’s city center and create a safer, more accessible environment for pedestrians and cyclists and also provide adequate access and storage space for vehicles.

Numerous buildings with historical significance around the site were identified during the background research, and this proposal is intended to coexist with the surrounding environment while appreciating the area’s history. Therefore, all new construction projects are recommended to be no taller than existing structures.

As per revitalization program proposed, approach for this project includes 3 sections: increase the FAR value of blocks, improve street connectivity and reconfigure streets.

9.1. INCREASE FAR VALUE OF BLOCKS

By looking at theories studied, areas that are more compact and have diverse uses are more appealing for walking as everything is closer together and a range of services is available. In contrast, Almaty was
rather spread out as a city, and the density comparison showed how low the FAR was for Almaty's downtown blocks.

Therefore, to increase the FAR of blocks, the demolition of poor quality and small-floor-area structures should be considered, which could allow for the introduction of higher floor areas and mixed-use residential and commercial buildings that can service people visiting, working or living in the neighborhood. To assess the success of the suggested scheme, a FAR comparison of existing structures and proposed changes in the selected three-block area would be used.

Ways of densifying the area are referred to in the Potsdamer Platz reconstruction, Neighborhood Conservation Code and Sprawl Repair SmartCode module, illustrating numerous means of infilling parking lots and gaps in urban fabric.

9.2. IMPROVE STREET CONNECTIVITY

To make walking more attractive, connectivity and safe access routes (meaning there are frequent chances to turn and also pedestrian sidewalks) should be provided for convenient movement on foot. An approach to this issue would be to rethink existing blocks within the site and to restructure the characteristics of the block, resulting in an enhanced network of shorter streets with clearly defined public and private spaces. Linear feet along the center line of the sidewalk was used to capture the length of existing available pedestrian paths for the selected site, which could be used to quantitively evaluate the connectivity of the values of proposed design. Areas of private and semi-private spaces in square feet were noted to evaluate the trend change of the existing and proposed settings. Plan view and street section drawings would display the connected network of pedestrian, bicycle and vehicular paths.

The Potsdamer Platz precedent, the Neighborhood Conservation Code and the Sprawl Repair SmartCode module would be used to help shape the network of shorter, interconnected streets by fragmenting blocks.

9.3. RECONFIGURE STREETS

Research has illustrated the lack of public parking areas within the downtown area, as well as the chaotic storage of private automobiles that occupy pedestrian paths. Wide streets result in a long journey for
pedestrians to cross the road, and the absence of sidewalks contribute negatively to the space’s walkability.

Public parking garages will be investigated to fulfill parking needs. Moreover, street redesigns are proposed to offer narrower car lanes, curb extensions at intersections and crossings, and a bicycle lane network. These improvements will decrease the distance traveled when crossing the road and organize the chaotic parking that is close to junctions, thus improving the safety of people on foot and providing other transportation methods. Trends of parking space area in square feet of existing and proposed would be compared along different types of vehicular storage area available and planned by this work. In regard to street restructuring, street sections and conceptual drawings would be implemented to illustrate the proposed idea.

For lane dimensions and street reconfiguration, SmartCode v9.2 and the Sprawl Repair SmartCode module are referenced for recommended width and street layout and to ensure compliance with local zoning codes.

10. RESOLUTION OF PROPOSED DESIGN

Design for this proposal began with exploration of an area plan at a scale of 1:1000, in conjunction with a site plan of buildings functions, sections and elevations at a scale of 1:500. In addition, to take the proposal to a more detailed level, 1 block was selected for site, floor plans, elevations and sections development at a scale of 1:200. As such, resolution includes two main subchapters: area scale and block scale, former explaining the proposed design to all three selected blocks and later looking specifically at NW block within selected site at a detailed level.
Figure 34: Schematic Perspective Montage of Proposed Site Design. Source: Author.
10.1. PROPOSAL | AREA SCALE

Suggested revitalization plan has several categories, including changing characteristics of the chosen blocks, the removal of poor quality structures without historical importance, the development of cleared land to form a more compact settlement and a reassessment of streets to provide safe and equal access for various types of transportation.

10.1.1. Rethinking the blocks on selected site

NW Block: Split the block to allow frequent streets and better connectivity, however, with respect to residential and nonresidential private spaces. Increase building floor-area density within the block to allow for safe and accessible access routes for various types of transportation modes. Solidify with development block edge perimeter to bring building fronts closer to the sidewalk when applicable.

NE Block: The alley already fragments the block in its existing condition. Infill the perimeter of each block fragment to create a readable street with enclosures on each side. Clearly define the private spaces of adjacent residential and office structures, which are currently separated by a metal fence.

SE Block: Reconfigure the block to allow multiple means of more accessible and safer paths. Introduce new construction at the block boundary when necessary.

10.1.2. Buildings Demolished on selected site

NW Block: A one-story garage structure (built in 1994) and a one-story, stand-alone garage (built in 1961) are proposed for demolition. The structures have no historical or architectural significance and are not an effective use of downtown land. They take up significant space, and the one-story garage structure segments the inner part of the block so that each access point leads to a dead end for pedestrians.

NE Block: A separate, one-story dining facility and a one-story storage facility (built in 1985) are located on the northern and southern sides respectively and would be planned for demolition. They are not structurally worth redeveloping or adding extensions to and do not carry historical importance.

SE Block: Built in 1974, a two-story commercial building allotment makes it hard to access the uses within block, as well as making the path riskier for walking, as lacks of a pedestrian sidewalk, with only a single entrance from Kazybek Bi Street, thus intended for demolition.
10.1.3. Infill identified areas on selected site

NW Block: On cleared land, two new five-story residential and partially underground parking structures are proposed, where the roof of the parking building would serve as a private space for residential buildings on the block. Two new office buildings are suggested, with ground-floor commercial spaces to be established on former parking lots at the park’s border on the south. In addition, a one-story rectangular, commercial addition is proposed on the northern edge and would line up with the existing one-story development of shops and dining places. The back part of the commercial building that was constructed in 1988 and borders with the park on the south is planned to be turned into a five-floor office building.

NE Block: Infill the perimeter of both fragments of the block, which is separated by the alley. Introduce residential buildings on the northern segment and office buildings with ground-floor commercial storefronts on the southern segment.

SE Block: On cleared territory, a nine-story, mixed-use structure containing only nonresidential space is proposed for development. A one-story addition is planned to extend toward the sidewalk on the northern, eastern and southern borders of the block.
Figure 36: Building Infill Site Plan. Source: Author.
Figure 37: Proposed Site Plan Axonometric. Source: Author.
Figure 38: Proposed Site Plan. Source: Author.
Figure 39: Proposed Building Functions Site Plan. Source: Author.
Figure 4b: Proposed Private and Semi-private Space Site Plan. Source: Author.
Figure 41: Proposed Sidewalk Site Plan. Source: Author.
Figure 42: Proposed Bicycle Network Site Plan. Source: Author.
Figure 43: Proposed Green Area Site Plan. Source: Author.
Figure 44: Proposed Elevations A-A, B-B, C-C. Source: Author.
Figure 45: Proposed Elevations D-D, E-E. Source: Author.
Figure 46: Proposed Elevations F-F, G-G, H-H. Source: Author.
10.1.4. STREET RECONFIGURATION

The majority of streets and car lanes were wide, which would allow for bicycle network accommodations without compromising on other modes; the same number of lanes is proposed for each street but with shorter lane widths that allowed the introduction of a two-way bicycle path. Streets where the road was shared between cars and people would have sidewalks and bike paths when not limited by existing conditions. Space for on-street parking has been designed to allow for more organized parking conditions for drivers, with corner curbs being extended at intersections to decrease the travel distance across the road for pedestrians, in addition to all on-street parking having certain distance restrictions near corners.

Car lane width would be decreased, with lowest being 3 meters wide for the 60-kilometers-per-hour streets and 2.7 meters for inner block streets. An on-street parking space would occupy a minimum width of 2.2 meters. Bike lanes with a minimum of a 2.5-meters-wide path for two-way movement would be separated by a 1.2-meters buffer strip and vegetated with low-height plants for visibility from vehicular roads and an existing plant strip from pedestrian sidewalk where applicable. A minimum of a 2-meters-wide sidewalk would be introduced at locations where not presently available and in spaces where a bike network needs space. At intersections and crossings, corner curbs would be extended for the width of on-street parking in addition to the decrease in car-lane width for a shorter pedestrian trip across the road.
Figure 47: Proposed Street Sections A-A, B-B. Source: Author.

| TABLE OF PROPOSED AND EXISTING ROAD LANE WIDTH DIMENSIONS ON SELECTED SITE (METERS) |
|---------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|
|                                 | SIDEWALK | VEHICULAR ROAD | VEGETATED STRIP | BICYCLE LANE | ON-STREET PARKING | ROW (RIGHT-OF-WAY) |
| A-A: NAZARBAYEV STREET          | PROPOSED  | 6              | 12             | 7.1           | 2.5             | 4.4            | 32             |
|                                 | EXISTING  | 10             | 16             | 6             | 0               | 0              | 32             |
| B-B: AITEKE BI STREET           | PROPOSED  | 5              | 6              | 3.3           | 2.5             | 2.2            | 19             |
|                                 | EXISTING  | 4              | 8              | 7             | 0               | 0              | 19             |

Table 19: Proposed and Existing Road Lane Width Dimensions of Streets A-A, B-B. Source: Author.
TABLE OF PROPOSED AND EXISTING ROAD LANE WIDTH DIMENSIONS ON SELECTED SITE (METERS)

<table>
<thead>
<tr>
<th></th>
<th>SIDEWALK</th>
<th>VEHICULAR ROAD</th>
<th>VEGETATED STRIP</th>
<th>BICYCLE LANE</th>
<th>ON-STREET PARKING</th>
<th>ROW (RIGHT-OF-WAY)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>C-C: GOGOL STREET</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROPOSED</td>
<td>9</td>
<td>12</td>
<td>6.1</td>
<td>2.5</td>
<td>4.4</td>
<td>34</td>
</tr>
<tr>
<td>EXISTING</td>
<td>14</td>
<td>15</td>
<td>8</td>
<td>0</td>
<td>9</td>
<td>46</td>
</tr>
<tr>
<td><strong>D-D: ALLEY IN NW BLOCK</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROPOSED</td>
<td>6</td>
<td>6</td>
<td>1.2</td>
<td>2.3</td>
<td>2.5</td>
<td>18</td>
</tr>
<tr>
<td>EXISTING</td>
<td>1</td>
<td>7</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>11</td>
</tr>
</tbody>
</table>

Table 20: Proposed and Existing Road Lane Width Dimensions of Streets C-C, D-D. Source: Author.
Figure 49: Proposed Street Sections E-E, F-F. Source: Author.

<table>
<thead>
<tr>
<th></th>
<th>SIDEWALK</th>
<th>VEHICULAR ROAD</th>
<th>VEGETATED STRIP</th>
<th>BICYCLE LANE</th>
<th>ON-STREET PARKING</th>
<th>ROW (RIGHT-OF-WAY)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>E-E: KAZYBEK BI STREET</strong></td>
<td>PROPOSED</td>
<td>10</td>
<td>9</td>
<td>8.2</td>
<td>2.8</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>EXISTING</td>
<td>10</td>
<td>13</td>
<td>7</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td><strong>F-F: ALLEY IN NE BLOCK</strong></td>
<td>PROPOSED</td>
<td>6</td>
<td>0</td>
<td>1.5</td>
<td>2.5</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>EXISTING</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 21: Proposed and Existing Road Lane Width Dimensions of Streets E-E, F-F. Source: Author.
TABLE OF PROPOSED AND EXISTING ROAD LANE WIDTH DIMENSIONS ON SELECTED SITE (METERS)

<table>
<thead>
<tr>
<th></th>
<th>SIDEWALK</th>
<th>VEHICULAR ROAD</th>
<th>VEGETATED STRIP</th>
<th>BICYCLE LANE</th>
<th>ON-STREET PARKING</th>
<th>ROW (RIGHT-OF-WAY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>H-H: ABYLAI KHAN STREET</td>
<td>PROPOSED</td>
<td>15</td>
<td>12</td>
<td>7</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>EXISTING</td>
<td>15</td>
<td>16</td>
<td>5</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>G-G: ALLEY IN NW BLOCK</td>
<td>PROPOSED</td>
<td>2</td>
<td>5.8</td>
<td>0.5</td>
<td>2.5</td>
<td>4.2</td>
</tr>
<tr>
<td></td>
<td>EXISTING</td>
<td>0</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 22: Proposed and Existing Road Lane Width Dimensions of Streets G-G, H-H. Source: Author.
Figure 51: Proposed Street Sections J-J, K-K, L-L. Source: Author.

### Table of Proposed and Existing Road Lane Width Dimensions on Selected Site (Meters)

<table>
<thead>
<tr>
<th></th>
<th>Sidewalk</th>
<th>Vehicular Road</th>
<th>Vegetated Strip</th>
<th>Bicycle Lane</th>
<th>On-Street Parking</th>
<th>Row (Right-of-Way)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>J-J: Alley in SE Block</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposed</td>
<td>2.6</td>
<td>5.4</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Existing</td>
<td>0</td>
<td>8</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td><strong>K-K: Alley in NE Block</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposed</td>
<td>2.6</td>
<td>5.4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Existing</td>
<td>0</td>
<td>7</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td><strong>L-L: Alley in NE Block</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposed</td>
<td>2.6</td>
<td>5.4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>No Existing</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 23: Proposed and Existing Road Lane Width Dimensions of Streets J-J, K-K, L-L. Source: Author.
**Figure 52**: Proposed Street Sections M-M. Source: Author.

**Table 24**: Proposed and Existing Road Lane Width Dimensions of Street M-M. Source: Author.

<table>
<thead>
<tr>
<th>STREET</th>
<th>PROPOSED</th>
<th>EXISTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON-STREET PARKING</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>ROW (RIGHT-OF-WAY)</td>
<td>36</td>
<td>55</td>
</tr>
<tr>
<td>SIDEWALK</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td>VEHICULAR ROAD</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>VEGETATED STRIP</td>
<td>6</td>
<td>25</td>
</tr>
<tr>
<td>BICYCLE LANE</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

**Legend**
- PROPOSED INFILL BUILDINGS
- EXISTING BUILDINGS
- FLOOR LINE INDICATION
10.2. PROPOSAL | BLOCK SCALE

The NW block was selected to be investigated at a detailed scale to bring in architectural aspects to the design because it contains more components for redevelopment—offices, residential buildings, parking structures, the size of the block, and an interesting situation for how commercial and residential areas share the space. Drawings explored at the 1:200 scale provide more detailed information on how the design performs.

10.2.1. NW BLOCK

Drawings illustrate that the removal of a one-story garage structure would open up space for a multi-family residential structure, with a partly underground parking lot that has access from two streets and a roof that would be utilized as a private space for residential functions on the block. By being enclosed by new construction on two sides and a raised elevation on one side, the private space for residents would be a safe environment for all ages. Pedestrian-path connections would be improved, providing frequent streets and more chances to turn.

Furthermore, reconstruction of the two-story structure at the back of the former regional authority building would allow for a new 4-story office building, fronting the newly created 2-lane street with a 2.5-meters bike lane, a 2-meters-wide sidewalk and street parking spaces available. Ten meters step from the existing, historically important – Soviet modernism, structure provided from a semi-private back alley for short recreation or small outdoor dine during lunch. In addition, numerous small, green spaces with planted trees would shelter buildings from busy roads and enable a tranquil environment within the urban setting.

In this case, the idea was to work with the surroundings and celebrate the area, letting history speak for itself. Therefore, for aesthetics, a plain-looking design was selected for the architectural past of the city and sites’ historical setting. Straight lines, right angles, repetitive elements and a lack of ornamental elements would be implemented to embrace the simplicity of the modernist era and allow existing historic buildings to be the face of this neighborhood of Almaty.
Figure 53: NW Block Site Plan. Source: Author.
Figure 54: NW Block Section A-A. Source: Author.
Figure 55: NW Block Section B-B. Source: Author.
Figure 56: NW Block Proposed Office Elevation. Source: Author.
10.3. EFFECTS OF PROPOSED DESIGN

NW Block: The removed inefficient private parking garages were replaced with an underground parking structure, and residential buildings receive defined private spaces for recreation, with an integrated public street connecting two sides of the block. A series of semi-private spaces adjacent to office structures would ease the movement of office users who are walking between buildings and would not collide with the private spaces of nearby residential structures.

NE Block: Each use acquired a defined private space, with a pedestrian street segmenting the block.

SE Block: The inclusion of an underground lot would allow space for cars currently parking in the inner courtyard of the blocks. Moreover, the office space would include semi-private areas in the inner yard to act as an entrance, with two access points from Aiteke and Kazybek Bi Streets; sidewalks would include retail and dining options to support street-level activity.

Relevant site characteristics of the proposed design were recorded and composed into tables, which are summarized in tables 25 – 29, including quantitative information of the FAR value, length of the sidewalk and bicycle lanes, private and semi-private space area, and area of parking space. This infill strategy includes an average of 700,000 square feet of built floor area for selected three blocks resulting in 2.63 FAR value in proposed design. In regards to pedestrian walkway, length of the sidewalk is approximately 4,000 linear feet along the centerline within NW block, and around 2,500 linear feet in NE and SE blocks. Moreover, 5,300 linear feet of bicycle lanes is planned within the area, at 2,650, 950 and 1,700 linear feet along the centerline in NW, NE and SE blocks. This design incorporates a total of 83,700 square feet of allocated private space and 68,500 square feet of semi-private space for both residential and non-residential uses. Turning to vehicular storage, area of 48,300 square feet of on-street parking, 11,100 square feet of surface lot, 31,200 square feet of covered garage and 20,200 of privately owned spaces is provided, equating to a total of 410 car spaces at 270 square feet per car. Values of proposed design were composed in tables.
### FLOOR AREA RATIO (FAR) FOR SELECTED BLOCKS (PROPOSED)

<table>
<thead>
<tr>
<th>CITY</th>
<th>FLOOR AREA (SQ. FT.)</th>
<th>LAND AREA (SQ. FT.)</th>
<th>PROPOSED AVERAGE FAR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BLOCK 1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>ALMATY</td>
<td>612K</td>
<td>522K</td>
<td>965K</td>
</tr>
</tbody>
</table>

*Table 25: Proposed Floor Area, Land Area and Floor Area Ratio Values for Selected Blocks in Central Area of Almaty. Source: Author.*

### SIDEWALK LENGTH ON SELECTED SITE (PROPOSED) (LINEAR FEET)

<table>
<thead>
<tr>
<th></th>
<th>NW BLOCK</th>
<th>NE BLOCK</th>
<th>SE BLOCK</th>
<th>PROPOSED TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3,948</td>
<td>2,642</td>
<td>2,425</td>
<td>9,015</td>
</tr>
</tbody>
</table>

*Table 26: Proposed Linear Length of Sidewalk for Selected Blocks in Central Area of Almaty. Source: Author.*

### PRIVATE AND SEMI-PRIVATE SPACE AREA ON SELECTED SITE (PROPOSED) (SQUARE FEET)

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NW BLOCK</th>
<th>NE BLOCK</th>
<th>SE BLOCK</th>
<th>PROPOSED TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRIVATE</td>
<td>36,000</td>
<td>41,700</td>
<td>6,000</td>
<td>83,700</td>
</tr>
<tr>
<td>SEMI-PRIVATE</td>
<td>23,200</td>
<td>0</td>
<td>35,300</td>
<td>58,500</td>
</tr>
<tr>
<td>TOTAL</td>
<td>59,200</td>
<td>41,700</td>
<td>41,300</td>
<td>142,200</td>
</tr>
</tbody>
</table>

*Table 27: Proposed Private and Semi-private Space Area for Selected Blocks in Central Area of Almaty. Source: Author.*

### LENGTH OF BICYCLE LANES ON SELECTED SITE (PROPOSED) (LINEAR FEET)

<table>
<thead>
<tr>
<th>NW BLOCK</th>
<th>NE BLOCK</th>
<th>SE BLOCK</th>
<th>PROPOSED TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,650</td>
<td>950</td>
<td>1,700</td>
<td>5,300</td>
</tr>
</tbody>
</table>

*Table 28: Proposed Bicycle Lane Length for Selected Blocks in Linear Feet. Source: Author.*
Table 29: Proposed Parking Space Area for Selected Blocks in Central Area of Almaty. Source: Author.

11. EVALUATION

The site plan, street section, elevation and conceptual drawing illustrations of the proposed scheme show the atmosphere of a denser and walking-friendly settlement, with an increase in built floor area, the integration of a bicycle network, segmentation into shorter and connecting streets, and the establishment of underground parking structures.

To evaluate the design, quantitative data for the FAR, sidewalk lengths, areas of private and semi-private spaces, lengths of the bicycle network, and areas of parking for existing and proposed spaces would be compared, the summaries of which can be found in Tables 24–28.

Table 30: Comparison of proposed and existing FAR in Almaty to Munich and Philadelphia. Source: Author.
Table 30 shows the result of 2.63 FAR value with proposed design, which is a 30% increase from the existing FAR value of 1.97. Moreover, with the proposed scheme FAR value matches to the one in Munich.

| PROPOSED AND EXISTING COMPARISON OF SIDEWALK LENGTH ON SELECTED SITE (LINEAR FEET) |
|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|-------------------------------|
| NW BLOCK | NE BLOCK | SE BLOCK | TOTAL |
| PROPOSED  | 3,948     | 2,642     | 2,425     | 9,015 |
| EXISTING  | 3,450     | 2,200     | 1,920     | 7,570 |

*Table 31: Comparison of proposed and existing sidewalk length on selected site. Source: Author.*

The developed design also has an overall increase of 20% in linear feet of sidewalk when compared to existing conditions, with an average boost of 450 linear feet per block. The reorganization of blocks would allow for the expansion of the total area of private and semi-private spaces in the selected area, showing a 20% increase from 118,700 square feet to 142,200 square feet and growth in private and semi-private categories within all three blocks.

| PROPOSED AND EXISTING COMPARISON OF PRIVATE AND SEMI-PRIVATE SPACE AREA ON SELECTED SITE (SQUARE FEET) |
|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|-------------------------------|
| TYPE                                      | NW BLOCK | NE BLOCK | SE BLOCK | PROPOSED TOTAL |
| PROPOSED TOTAL                           | 59,200   | 41,700   | 41,300   | 142,200         |
| EXISTING TOTAL                           | 55,200   | 37,200   | 26,300   | 118,700         |

*Table 32: Comparison of proposed and existing private and semi-private space area on selected site. Source: Author.*

Only two facilitated bike lanes were available at the existing site for a total of 630 linear feet along the centerline of the bike path, and an inclusion of 5,300 linear feet of an uninterrupted bike-lane network is proposed to provide another convenient transportation mode for downtown dwellers.
PROPOSED AND EXISTING COMPARISON OF LENGTH OF BICYCLE LANES ON SELECTED SITE (LINEAR FEET)

<table>
<thead>
<tr>
<th>PROPOSED TOTAL</th>
<th>EXISTING TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>5,300</td>
<td>630</td>
</tr>
</tbody>
</table>

Table 33: Comparison of proposed and existing length of bicycle lanes on selected site. Source: Author.

As for the parking situation, the reorganization of streets and incorporation of underground public garages and the expansion of allowed parking areas in the proposed design would increase the number of parking spaces from an estimated total of 308 to 410. The total parking area for each block and overall on-street parking area would receive gains, although a slight decrease in surface parking can be noted.

PROPOSED AND EXISTING COMPARISON OF PARKING SPACE AREA ON SELECTED SITE (SQUARE FEET)

<table>
<thead>
<tr>
<th>TYPE</th>
<th>PROPOSED TOTAL AREA</th>
<th>EXISTING TOTAL AREA</th>
<th>PROPOSED NO OF CARS (270 FT2 PER CAR)</th>
<th>EXISTING NO OF CARS (270 FT2 PER CAR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON-STREET</td>
<td>48,300</td>
<td>35,100</td>
<td>179</td>
<td>130</td>
</tr>
<tr>
<td>SURFACE LOT</td>
<td>11,100</td>
<td>8,900</td>
<td>41</td>
<td>33</td>
</tr>
<tr>
<td>GARAGE</td>
<td>31,200</td>
<td>19,000</td>
<td>115</td>
<td>0</td>
</tr>
<tr>
<td>PRIVATE OWNED</td>
<td>20,200</td>
<td>20,200</td>
<td>75</td>
<td>75</td>
</tr>
<tr>
<td>PROPOSED TOTAL</td>
<td>110,800</td>
<td>83,200</td>
<td>410</td>
<td>308</td>
</tr>
</tbody>
</table>

Table 34: Comparison of proposed and existing parking space area on selected site. Source: Author.
12. CONCLUSION

Overall, the author’s journey to Almaty, the facts and figures analyses, and local media and observations identified how effective current land use is, the movement and storage of personal vehicles and connectivity in regard to the historic central area of the city. With the help of a German precedent for square reconstruction, Jacobs’ *The Death and Life of Great American Cities* and New Urbanism, it is believed that urban environment can be enhanced to improve the quality of life for the people residing in the area and make area more connected, safe and accessible for all modes of travel.

The suggested design provides a more compact arrangement, offering more space to allow greater numbers of people to live, work and play in the downtown area. The blocks would be segmented to allow for frequent streets and various chances to turn. The demolition of buildings planned for removal would allow for new structures that could improve block access and connectivity and be more effective in regard to land use. Restructuring the streets would provide separate paths for bicycle users, with buffer areas between cars and people as a safety measure.

Furthermore, the proposal respects the area’s surroundings with new or reconstructed buildings being no higher than the historically significant buildings, the size of proposed infill projects being not big would not stay ahead or attract more attention of the structures around, and architecture presented in a way where it is not screaming and nor blending would support and emphasize on the historical presence in the area.

The suggested scheme shows a way to enhance the downtown Almaty area with the example of three selected blocks, and this work should be thought of as a sub-plan for a broader masterplan with the same idea and direction—a denser city core and convenient transportation on foot.
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