



UNIVERSITY OF OKLAHOMA
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LAURA DESTER SITE

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Degree of
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By
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LAURA DESTER SITE
A PROFESSIONAL PROJECT
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Urban Design Studio
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ACKNOWLEDGEMENTS

To my parents who paid for my schooling and instilled in me the importance of entrepreneurship, education and lifelong learning.

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INTRODUCTION

Throughout my life I have had the opportunity to travel and live abroad. As I grew older, I noticed the similarities between cities across the world, and how easy it is to move around them. When I lived in Spain and Argentina, I regularly started my day by walking to a local coffee shop and seeing familiar faces. I would walk or bike to the grocery store at least once a week and spend time in my neighborhood parks. Without knowing it, I was experiencing what is becoming known as 20-minute neighborhoods. These neighborhoods are those that have services and amenities needed for daily life such as schools, health care, restaurants, and grocery stores within a 20-minute walking distance ("What is a 20-minute Neighborhood?", n.d.). After experiencing this type of living and working in commercial real estate, I realized my passion was to bring these types of mixed-use traditional neighborhoods to the United States. I was fortunate that the developer was looking for a student to help with the urban design and placemaking aspects of the project. Projects like the Laura Dester Site present excellent learning opportunities for urban designers to work with real world projects. As our cities become larger and denser, apartment developers will need to adapt to the demands of future tenants. Urban neighborhoods are prime for redevelopment and are vital to the sustainability of our future. The Laura Dester Site is a great example of what the future will bring.

The Laura Dester Site

The Laura Dester Site is centrally located in the Pearl District Neighborhood of Tulsa. It is just one-half mile from Hillcrest Medical Center, one mile from the central business district, one and one-half miles from St. Johns Medical Center and Utica Square, and walking distance to many restaurants, coffee shops, bars, parks and more. The Tulsa Development Authority was tasked with the disposition of the property and Kevin Rice with Anenome was awarded the

contract for redevelopment in 2019. For this project I considered walking distance to be one half mile from the subject location. The sites location is an ideal location for a mixed income, mixed use development and the effects on the neighborhood cannot be understated. Working with the developers and architects, I focused on placemaking, low impact development ideas, and amenities attractive to the future tenants of Laura Dester.

Project Partners

The developer of The Laura Dester project, Anenome's Kevin Rice, and Method Architecture's Josh Kunkel agreed to partner with me as part of my professional project. I sought feedback on ideas and prototypes throughout this project and was able to sit in on meetings with both groups. The goal of the project is to redevelop the existing buildings into mixed income housing and a second phase will see development of a mixed-use facility including commercial and multifamily housing as well as individual townhomes. The developer wanted to encourage interaction between tenants and the community and was interested in incorporating placemaking principles throughout the complex. Acting as an urban design consultant, I focused mainly on the exterior areas and implemented placemaking ideas.

Market Analysis

The Site

The current site consists of five buildings which were originally built in the 1920s for the Tulsa Boys Home. The site was later named after Laura Dester, a longtime Department of Human Services employee who was the administrator of the Child Welfare programs from 1937 – 1967 (The Oklahoman, 1977). After Laura's death (see Figure 1), the name officially became The Laura Dester Boy's Home in 1979.

Figure 1

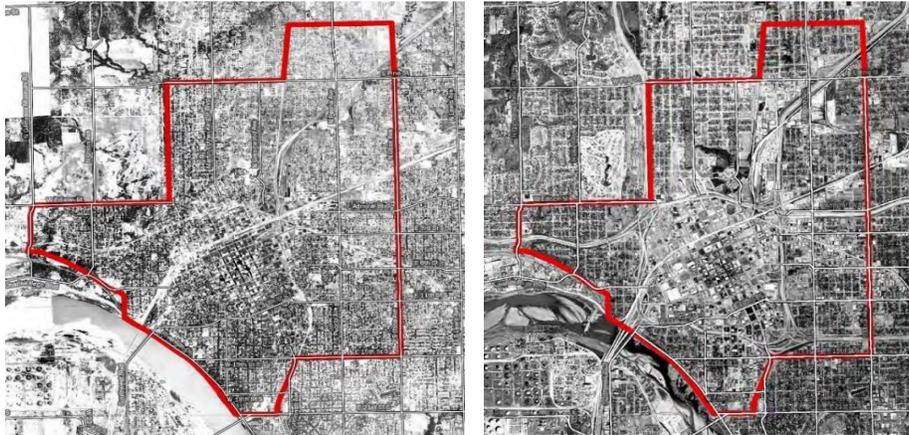
Laura Dester Obituary

Miss Laura E. Dester, supervisor of the children's division of the state welfare department, will leave Wednesday to attend the first southwest regional conference of the Children's Welfare League of America at St. Louis Thursday, Friday and Saturday. She will take part in a discussion of Oklahoma's public welfare program and rural children's welfare problems. Miss Louise Pye, director of the children's service bureau, Tulsa, also will be on the program.

Note. Adapted from The Oklahoman, 1977.

Figure 2

Reformatted City of Tulsa Comparison



Note. The figure on the left is an illustration of the layout of the City of Tulsa in 1943. The figure on the right is a layout of the city of Tulsa in 2018. Images adapted from Tulsa Planning Office, 2019.

It is 100 years since the site was first developed. Modern times have very different needs than those of the 1920s but honoring the history of the site should be preserved and celebrated. Tulsa lost many of its old buildings during the Urban Renewal of the 1960s and 1970s, and by

redeveloping prewar buildings we can honor and preserve Tulsa's history as well as its urban fabric. In November of 2019, the City of Tulsa released an updated Housing Market and Demand Strategy. The study found that 70% of the companies surveyed plan to move from the suburbs to the downtown area to attract talent (MKSK). This is a major shift that will have lasting impacts on the urban fabric of the city. One of the most prominent statistics in the study is the decrease in homeownership post 2008 financial crisis. Between 2010 and 2018, homeownership dropped 2.8% to 64% in Tulsa while rents increased 12% (Tulsa Planning Office, 2019). The study goes on to note that Oklahoma City's rents during this period dropped 2% and The United States as a whole increased at half the rate at 6%. The study also looked at vacancy rates in the downtown and surrounding neighborhoods. The subject area that encompasses the Pearl District, where Laura Dester is located, has a 29% vacancy rate and 82% of the units are renter occupied (Tulsa Planning Office). The lack of private and public investment in the area has left the neighborhood underutilized and in need of significant investment. The Laura Dester Site might very well be the catalyst to revitalize the Pearl District.

METHODOLOGY

Throughout this project, I focused on the five stages in the Design Thinking process created by Tim Brown with IDEO, a global design company, which are illustrated in Figure 5. One aspect that interested me in this methodology was that it considers desirability, viability and feasibility. IDEO (n.d.) stated, "Design thinking is a human-centered approach to innovation that

draws from the designer’s toolkit to integrate the needs of people, the possibilities of technology, and the requirements for business success” (IDEO). It encourages one to have a deep understanding of the process involved and allows for changes throughout the process as real world projects function.

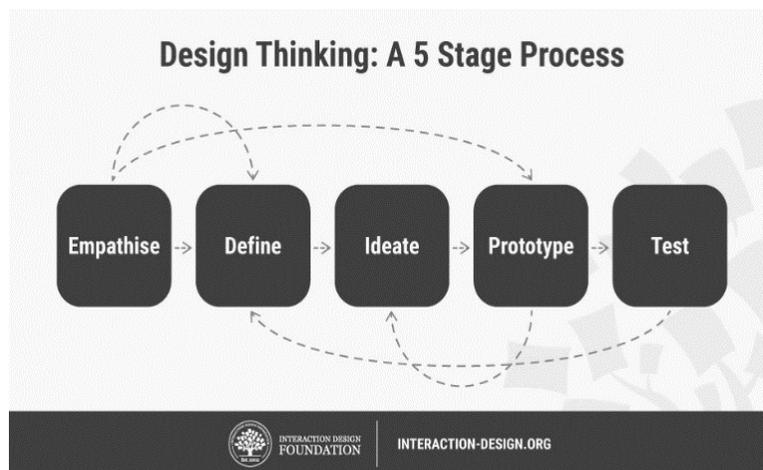
Empathize

Future Tenants

With Kevin and Josh as my primary audience, I tried to keep in mind that they would not

Figure 3

Design Thinking: 5 Stage Process



Note. Illustration of the design thinking five stage process, adapted from IDEO, n.d.

be the ultimate users of the space. The needs and desires of the future tenants were always forefront in my mind throughout this process.

The average rent for a one-bedroom apartment near the Tulsa Central Business District is \$900 while the average for the rest of Tulsa is \$670 (Numbeo, 2019). Given the rent premium, it is easy to see why many families and individuals move further away from the city center and contribute to an increase urban sprawl. While it might make sense for a single young professional to pay a 34% premium to live near work, a family of four will likely opt to live in

the suburbs where they can afford a larger home and send their kids to better schools. The average roundtrip commute time in Tulsa is 36 minutes and 81% of those trips are made by individuals driving alone in a car (Data USA). DataUSA notes that car ownership in Tulsa is nearly identical to the national average at two cars per household. Cost of car ownership varies based on the age of the car, fuel efficiency, gas prices, miles driven, etc. According to AAA, the average amount spent on car ownership in 2019 was roughly \$9,300 per year assuming driving 15,000 miles per year (Edmonds, 2019). Most indirect costs are not included in this number. The future residents of the Laura Dester site will have more options when deciding on modes of travel and commuting. While it is unlikely that Tulsans are going to start selling their cars in hordes and taking the bus to work, the Laura Dester site and similar developments are a step in the right direction to give individuals more transportation options and encourage a healthier and more sustainable way of life.

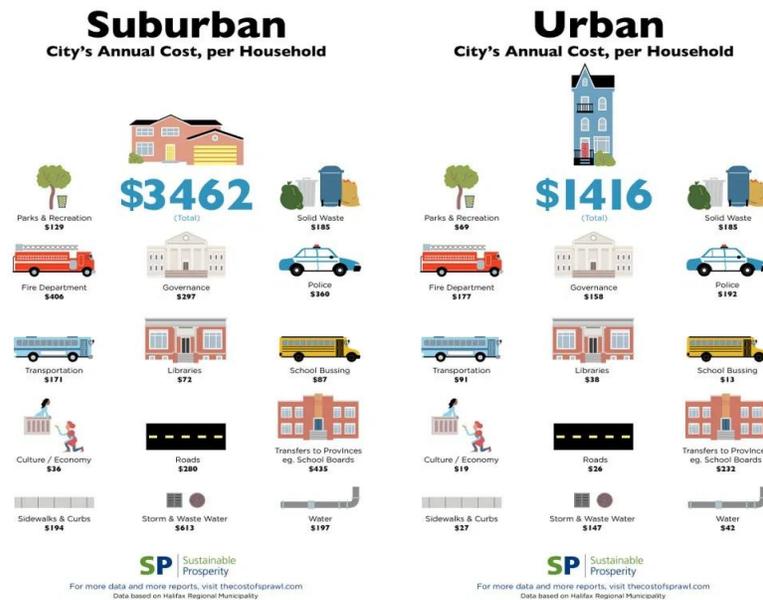
The \$230 a month premium paid to live near the city center can be offset in several ways including driving less, commuting less hours and working more, and ultimately lower car ownership. Given Edmond's data that a family of four spends \$9,300 per year driving, living near the city center and opting to become a one car household will save \$775 a month.

Additionally, driving fewer miles each day with a shorter commute will extend the life of the car and further reduce the annual cost of ownership.

One of the most obvious reasons to encourage urban living is the savings in public service costs. According to StreetsBlogUSA the cost to provide service to denser areas is substantially lower than those of lesser dense areas such as the suburbs. Additionally, Baby Boomers are retiring at a rapid rate. As they age, they are leaving behind housing stock that does not adequately meet the demand of today's home buyers. A study by Jeff Speck noted that 62% of Millennials prefer to live in mixed use communities in urban centers (Nielson). The study also noted that the percent of millennials owning a car is in decline. Car ownership of Millennials in 2011 was 66%, declining from 73% in 2007 (Nielson, 2014). Laura Dester's proximity to downtown and access to the Bus Rapid Transit stations along Peoria and 11th street would reduce the need for tenants to own cars.

Figure 4.

Sprawl Costs the Public More Than Twice as Much as Compact Development



Note. Illustration of a suburban vs urban city's annual cost per household, adapted from Schmitt (2016).

Until these problems are addressed, the City of Tulsa will continue to expand geographically, and city services will only become more strained, increasing the tax burden for

future generations. The Laura Dester Site, as well as the Pearl District neighborhood, are excellent case studies in how Tulsa can create great urban neighborhoods and encourage those of all walks of life to live near the city's core.

I toured similar projects such as the Eco Modern Flats in Northwest Arkansas and The West Village Apartments in Oklahoma City; I met with the developers and property managers to learn more about what they implemented and found to be successful versus unworkable (See appendix). Some of the most notable common elements of each project was the emphasis on encouraging interaction between tenants, focusing on amenities, and marketing the walkability of the areas. Websites for these projects emphasize these differences and much of the tours were spent discussing nearby businesses rather than the sites themselves.

Pet Friendly

According to The American Pet Products Association (Avma, 2019), roughly two-thirds of U.S. households' own pets and millennials are the most likely of all to own pets. Of Millennial and Generation Z pet owners, 80% own dogs (Avma, 2019). For this reason, apartments need to adapt to tenant preferences and design apartment complexes with pet ownership in mind. Dog parks are an excellent amenity for apartment complexes with land and lack of access to nearby parks. It encourages the owners to socialize while encouraging dogs to defecate in a single location for easy cleanup.

Mixed use developments can capitalize on dog ownership by leasing retail space to pet friendly tenants, creating both an amenity for tenants and a separate income stream for the owners. The American Pet Products Association notes that the "U.S. pet industry increased 4.4% from 2017-18 to \$72.56 billion" while veterinary care increased 6.1% to \$18.11 billion in 2018. (Avma, 2019). They also noted Americans spend \$18.11 billion on pet food in 2018. The rate of

growth in the pet industry is outpacing overall economic growth and many other sectors. Dog parks should keep in mind the size of the dogs intended to use the area. The dog park I designed consists of roughly one-half acre of land which is the smallest recommended size according to Barks and Recreation (Gelbach, 2020). Additionally, fence height should be between 5-7 feet with a different material such as gravel or decomposed granite (Gelbach, 2020). Dogs will prefer to stay on the grass and defecate in the grass, allowing for their owners to avoid stepping into a mess (Gelbach, 2020). In Figure 5, the entrance is placed in the middle and is eight feet by eight feet. In the event the developer wishes to separate dogs based on size, a fence can be added through the middle without having to add new entrances. A middle fence can also be added to allow for one side of the dog park grass to rest while dogs use the other side, extending the life of the grass and lowering overall maintenance costs. Benches and seating areas should be placed

Figure 5

Proposed Dog Park



Note. Illustration of a dog park, created for Master of Urban Design Professional Project by Clayton Harris, 2020

under shaded areas when possible and trash bags for dog poop should be added near the entrances of the dog park to encourage owners to clean up after their dogs.

Events (programming)

The developer expressed a desire to hold events on site. Pickleball and basketball tournaments were one area that was feasible as there is already a basketball court on site. By simply adding paint, you can also incorporate a pickleball court. Yoga and mobile exercise classes are becoming popular among apartment owners (see Figure 6).

Figure 6

Proposed Basketball & Pickleball Court



Note. Illustration of a dog park Created by Clayton Harris for Master of Urban Design Professional Project. 2020.

Figure 7

Proposed Pavilion



Note. Illustration of a pavillion created by Clayton Harris for Master of Urban Design Professional Project. 2020.

A covered patio or pavilion can be used for concert, exercise classes, or additional shaded seating for both the commercial and residential tenants. The site can also be roped off and used as an event center. By making the pavilion flexible, it can be used as an amenity to the tenants by not having to leave the site while allowing for local businesses and entrepreneurs to establish their customer bases. Companies like Mobile Fitness Sharing (See Figure 8) based in Denver, CO provide flexible equipment for outdoor exercise classes. Nearby Yoga and fitness studios would be an ideal target for providing onsite exercise classes. Having local artists display their work in the commercial spaces or in the courtyard will bring tenants out and create opportunities for social engagement between them.

Figure 8

Mobile Gear Sharing



Note. Image of a mobile gear sharing program provided by Reed Clanahan, 2020.

Community

While developers of a site often focus solely on the subject site, it is important to have the surrounding area in mind throughout the process. The Pearl District is very diverse with industrial properties to the north, commercial corridors along 6th street and 11th street and a large residential area in-between. High vacancy rates in the area are keeping property values low. The Laura Dester site plans to have 96 apartment units in the first phase with additional apartments, townhomes and commercial units in a second phase. The site is currently fenced off creating an opportunity for homelessness and blight. Once completed, the property will become an amenity to the entire neighborhood.

Define

Pearl District Small Area Plan

The Pearl District Small Area Plan was completed in 2006 and updated in 2018. The plan identifies four goals:

1. Stabilize and revitalize existing residential areas, promote homeownership and housing affordability and increase housing choice.
2. Promote development that retains existing businesses and increases employment, mixed-use, commercial, and retail opportunities.
3. Increase safety and security throughout the district.
4. Improve targeted infrastructure to support health and wellness and catalyze development.

The redevelopment plan for the Laura Dester Site fits squarely within these four goals. First, it stabilizes and revitalizes an unused property that has been vacant for a number of years. It increases the housing choices and affordability by providing apartments that are designated for low income households. The plan found that the Pearl District had a 22.1% vacancy rate compared to 9.9% in Tulsa as a whole (see Table 1). By redeveloping the area into a mixed-use

Table 1

Property Vacancy

Year	2000	2010	2018
Tulsa	7.7%	11.4%	9.9%
Pearl	13.0%	23.6%	22.1%

Note. Table representing LKJSLKDJFLSDJ adapted from Tulsa Planning Office, n.d.

facility, the property may provide a catalyst for similar developments in the neighborhood. By taking a blighted project site and turning into a retail and apartments, the developers are

increasing the safety and security of the neighborhood. The developer plans to implement placemaking opportunities on the site which will support the health and wellness of the future tenants.

The 2018 Pearl District Small Area Plan intended the Laura Dester Site to be used as water detention. Given its location within Tulsa as well as the Pearl District Neighborhood, a better use for this site would be to repurpose for mixed use development and become an amenity to the neighborhood rather than a detraction.

Figure 9

Land Use Plan



Note. Image of land use plan. Laura Dester is a proposed park. From Pearl District Small Area Plan

Transit/Connectivity

The Laura Dester Site will be serviced by Bus Rapid Transit on both Peoria and 11th Street. The BRT will give the tenants access to four grocery stores, multiple hospitals and urgent care access, dozens of restaurants and shops and the Central Business District within 20 minutes

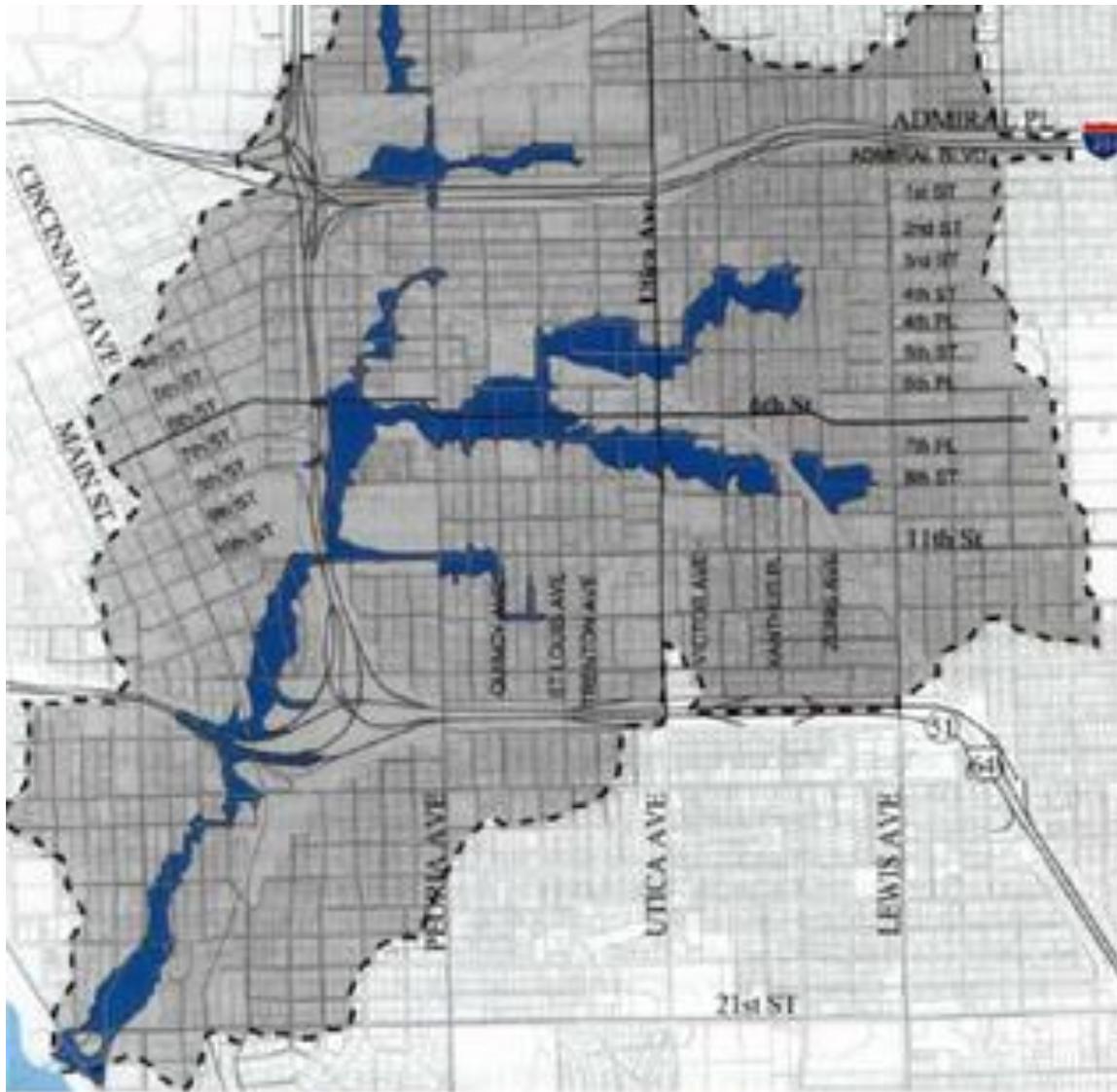
of travel time. It is also within walking and biking distance to many of these destinations. The site is in a prime location to reduce the need for car travel. While millennials continue to prefer alternate modes of transportation, apartment owners should begin building with these ideas in mind. Designated areas for bicycle parking, bike share and scooter sharing should be considered. The developers have opted to reduce the amount of on street parking to allow for more of the area to be buildings and greenspace. Plans call for roughly 45 off-street parking for 96 apartment units. A typical apartment complex in Tulsa usually has a parking ratio of 1.5 or more. Overflow parking will be accommodated by on-street parking. Parking can often take up 50% of a site and by reducing the need for parking, the developers will be able to use their property more efficiently and give the space back to the tenants. It will also reduce costs to build and maintained which can be partially passed through via lower rents. The current grassy islands in the parking lot are too small to accommodate healthy trees. Ground cover can be used in lieu of sod to help reduce water runoff and ongoing maintenance costs.

Hydrology

The 2010 Elm Creek Master Drainage Plan designated The Laura Dester Site as water retention for the Elm Creek Watershed which runs through The Pearl District and much of Midtown Tulsa. The area is prone to flooding and the study found that 236.5-acre feet of water retention is needed to mitigate flooding in the area and downstream (Elm Creek, see Figure 6). The study proposes the Laura Dester Site be used as flood detention. While this would help decrease the amount of runoff it does not solve the core issue. Adding a large retention basin in the middle of a neighborhood will create blight and take away from the aesthetic of the Pearl District. Implementing low impact development standards will improve the long-term viability of the area.

Figure 10

Elm Creek Watershed



100-Year Floodplain - Existing Conditions

(Source: Elm Creek Master Drainage Plan Summary Report - August 2008)

Note. Image of Elm Creek Watershed through the Pearl District from from Pearl District Small Area Plan

Low Impact Development

Many cities around the United States have implemented Low Impact Development standards that allow for developers to recoup some or all the costs of their efforts in reducing the environmental impact of their projects. The city of Tulsa does provide examples and suggestions on the city website; however, without incentives to developers, there is a reduced chance of developers implementing these guidelines. Many cities have found success with low impact development incentives through various programs that provide long lasting benefits to their cities. Cities with more arid climates, such as Los Angeles, provide incentives to replace sod with turf or other materials at a rate of two dollars per square foot. The intent is to lessen the burden on the city's water infrastructure which is strained from years of droughts (Marantos, 2019). The neighborhood was built along the Elm Creek Floodplain and is prone to flooding. The developers agreed with the Tulsa Development Authority that the central park on site will be reserved for future flood mitigation and no permanent structures will be built in this area. This created a challenging design problem as it is a very large area in the center of the site.

As electricity demand continues to increase in the United States, Low Impact Development Standards are needed to help prevent blackouts and to lower peak usage. The developers of the Laura Dester Site plan to use geothermal heating and air conditioning. The federal government currently provides a 30% tax credit for developers to use geothermal (Energy Star). Using geothermal has many benefits including energy savings, cost savings, longevity and there is no need to install individual condensing units which are frequently stolen, loud and unsightly.

Site Analysis

While on the surface the site might appear to be a good area for water detention, it is not necessarily the best use of land for this area nor does it fit within the urban fabric of the surrounding area. There are 30,000 jobs within the Inner Dispersal Loop (City of Tulsa), just 1.5 miles from the Laura Dester Site. According to the city of Tulsa, only 1% of those jobs are filled with workers who live within the IDL.

Environment and Health

The construction industry is one of the largest contributors to CO2 emissions contributing roughly 11% of all emissions globally in 2018 (architecture 2030). Existing structures hold carbon dioxide and one way to mitigate their environmental impact is to renovate them instead of tearing them down. The Laura Dester buildings were constructed nearly 100 years ago, and they are built to last. Repurposing the existing structures will help lower the environmental impact of those living in the units in the future. Using energy efficient geothermal heating and air and energy star appliances will help further reduce the environmental impact of the site.

Ideate

While many cities in the United States continue to build further from the city's core, others are realizing the costly adverse effects including air pollution from cars, higher operating costs for homes and businesses, and lost productivity due to traffic. One solution that is gaining attention across the United States and abroad are "20-minute neighborhoods." These neighborhoods consist of convenient and safe access to most daily needs and wants. Neighborhood grocery stores, schools, parks, commercial services are all available within 20 minutes of locals' residences. Increased modes of transportation options generally include well maintained sidewalks, bike lanes and convenient public transportation. The Pearl District

neighborhoods is an ideal candidate as Tulsa’s first 20-minute neighborhood since it already possesses many of these assets.

Walk Score rates cities, neighborhoods and homes based on walking distance to nearby amenities. The site rates The Pearl District neighborhood at 72 “Very Walkable” vs 39 for Tulsa as a whole (Walk Score). It is within biking distance to downtown Tulsa, Hillcrest Medical Center and Ascension/St. John Medical Center reaching more than 42,500 jobs (Tulsa Planning Office). The Bus Rapid Transit Lines on Peoria and 11th street will also add to the reach of residents to jobs around Tulsa.

Prototype

Figure 11

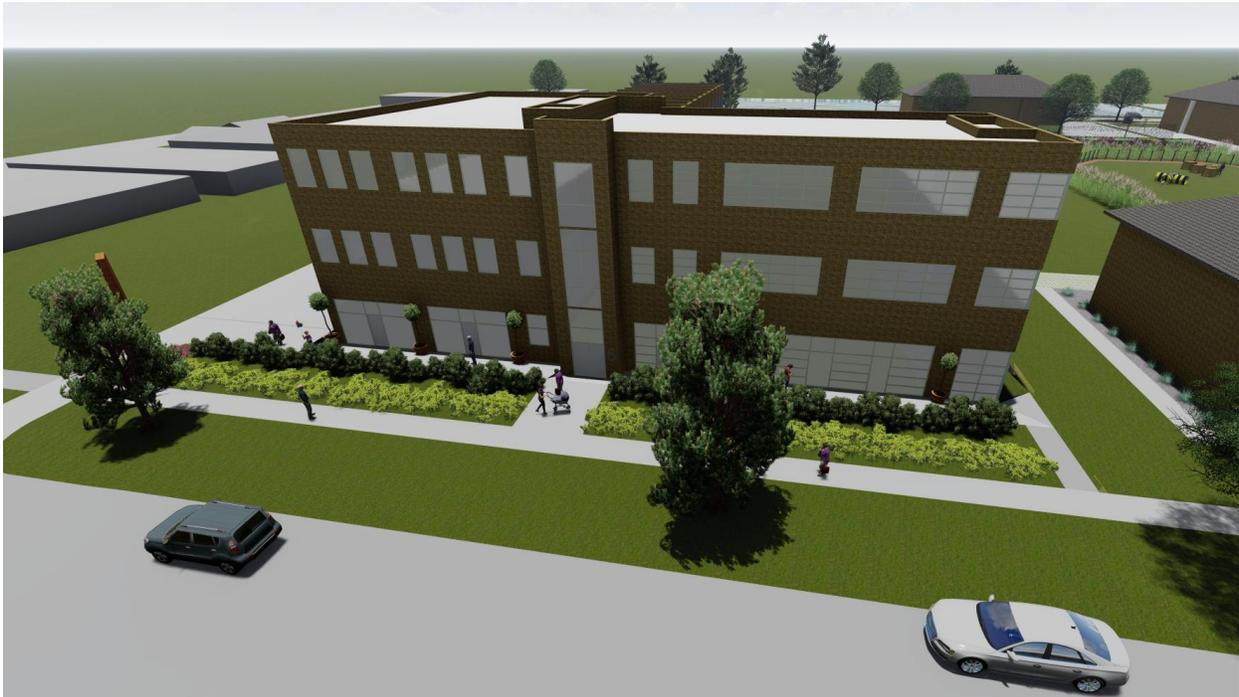
Aerial of Laura Dester



Note. Rendering of Laura Dester Site from Clayton Harris

Figure 12

Rendering of Commercial Area of Laura Dester



Note. Rendering of the commercial area of the Laura Dester Site. Plants should be kept low and ground cover can be used in place of sod to reduce maintenance and allergens. Rendering by Clayton Harris

Figure 13

Rendering east exterior of Commercial Space at the Laura Dester Site



Note. The east commercial area can be used by both the commercial tenants as well as the residential tenants. A covered patio can be used for impromptu concerts, movie nights, or other programming options. It can be leased to art galleries, other groups, or provide a shaded area for group exercise classes. Exterior commercial space with patio and covered event space.
Rendering by Clayton Harris

Figure 14

Rendering of food truck area

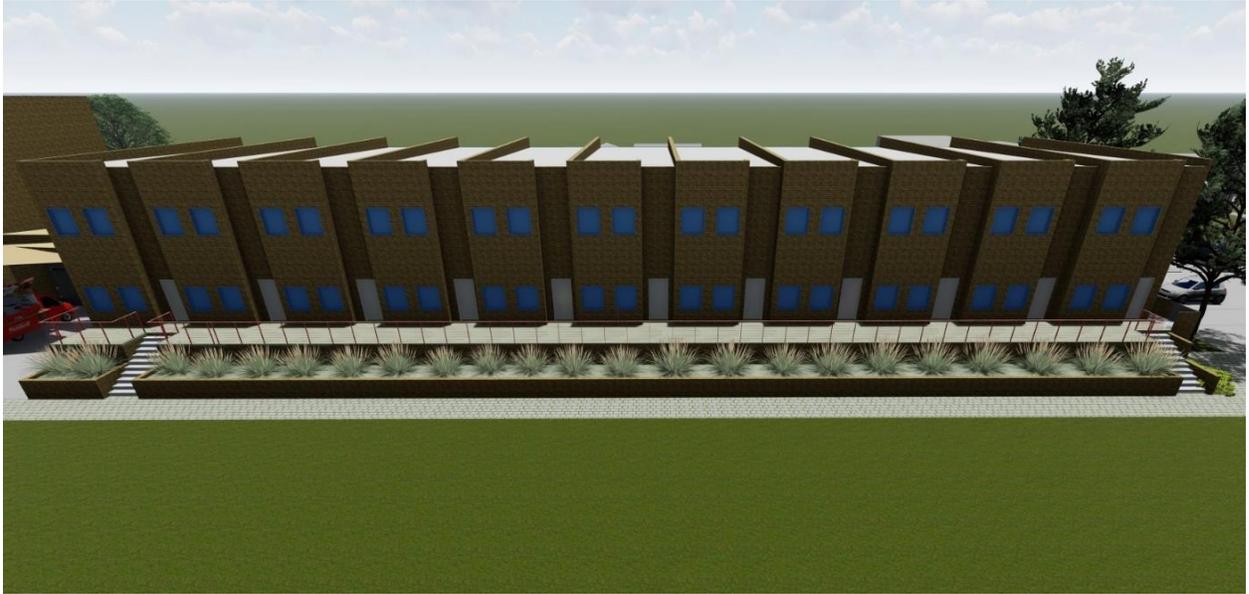


Note. Electric and water hookups along the west wall of the alleyway will allow food trucks to hook into the grid to avoid using loud generators. The space can be covered cheaply by shade sails which will encourage patrons to wait in lines in the shade during the hot summer months.

Rendering of proposed food truck area at the Laura Dester Site. Rendering by Clayton Harris

Rendering 15

Rendering of Townhomes with xeriscape plantings



Note. The townhomes will provide additional housing diversity. An ADA ramp adjacent to the parking lot may be added to allow for wheelchair accessibility to the main floors of the townhomes. A single planter bed vs an individual bed for each townhome will allow for lower maintenance costs. Renderings by Clayton Harris

Figure 16

Aerial of "Donut Hole"



Note. From Clayton Harris

Figure 17

Dog Park



Note. The dog park consists of 0.5 acres. The entrance is centrally located, allowing for the space to be converted into two separate parks if desired. Many dog parks either keep one side open while the other rests or they encourage larger dogs to stay on one side and smaller dogs on the other. Plants or other barriers around the fence line prevent the dogs from seeing outside the fence and also creates a sense of closure. Gravel or Decomposed granite along the perimeter allow for dog owners to walk in the park without stepping on feces. The fence should be five to seven feet in height depending on the size of the dogs allowed in the dog park. Rendering by Clayton Harris.

Figure 18

Community Garden



Note. Community gardens are a great way to encourage tenants to interact and create a sense of community. While size of plots vary considerably among community gardens, a 6x6 plot is a good size to begin with. On site composting can be added easily and can become an amenity for the entire complex. Guidelines and rules need to be presented upfront to allow for smooth operations. Operators should be expected to tend to their gardens at least once a week. Rendering by Clayton Harris.

Figure 19

Mixed-Use Court



Note. Currently, a basketball court is currently on site. A pickleball court can be added with simple paint to encourage multiple types of games to be played. Tournaments can take place on site for both tenants and neighbors. The pickleball net can be removed quickly and can be stored in the leasing office. Rendering by Clayton Harris

Figure 20

Parking Lot



Note. Currently, the parking lot has an inefficient layout. Restriping and slightly expanding west can accommodate significantly more cars. The unusable corners can be used for designated bike and scooter share services or as bike and motorcycle parking. The reconfigured parking lot can accommodate up to 42 cars. Rendering by Clayton Harris

Test

From the research throughout this project, the Pearl District is an excellent candidate to be Tulsa's first 20-minute neighborhood. A 20-minute neighborhood is one in which an individual has access to a number of daily needs and wants within a 20-minute walk, generally considered to be a one mile radius. While there are still areas the site needs to be improved, the redevelopment will dramatically help the Pearl District be transformed into one of Tulsa's greatest neighborhoods. With a multitude of employment, entertainment, recreation, healthcare, and transportation choices, the future tenants of Laura Dester will find themselves in one of Tulsa's best locations.

Figure 21

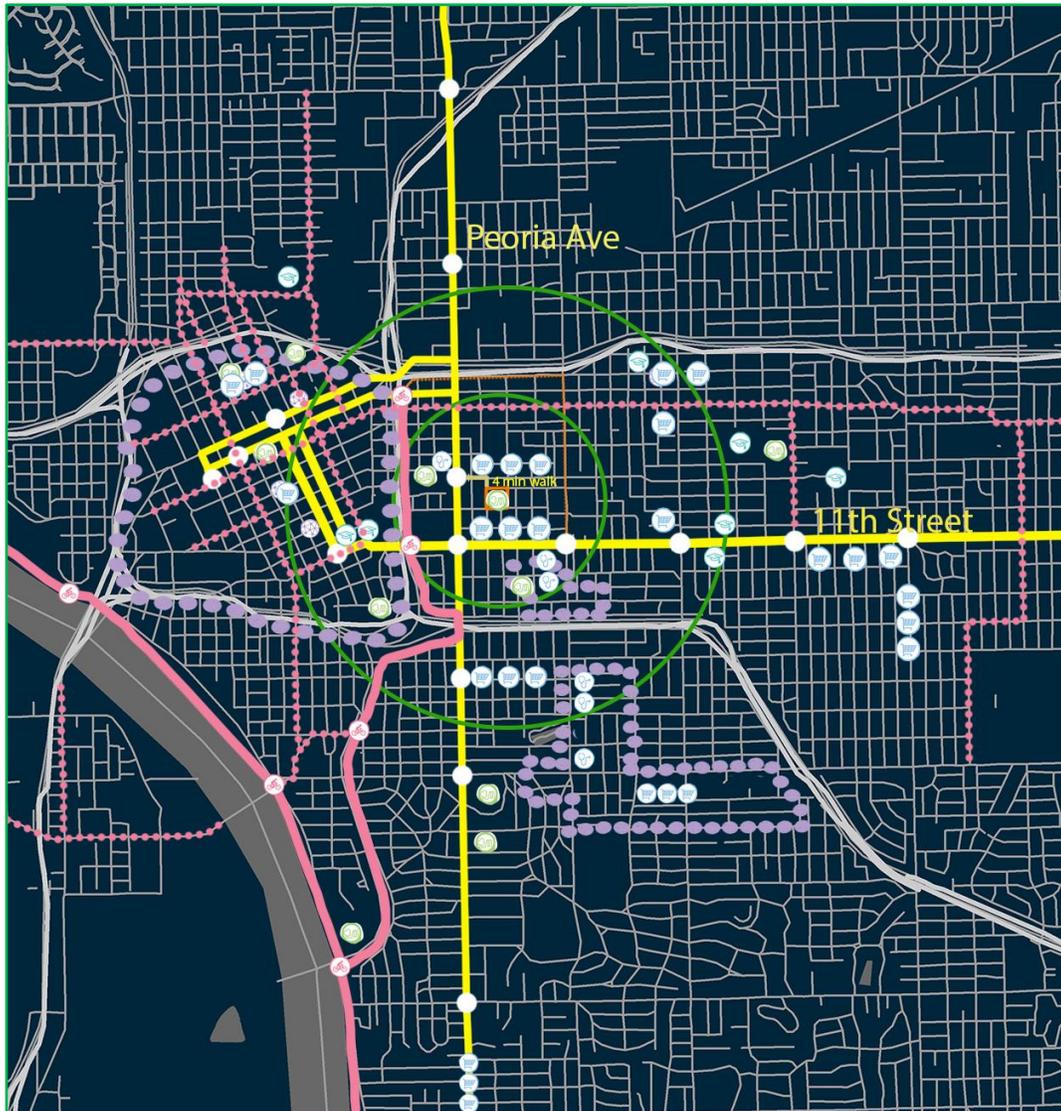
Features of a 20-Minute Neighborhood



Note. Illustration of the elements of a 20 minute neighborhood adapted from John Stanley and Roz Hansen, 2020.

Figure 22

Pearl District 20-Minute Neighborhood Map



Note. Map of the elements of a 20 minute neighborhood including education, recreation, transportation, jobs, shopping, and employment. From Clayton Harris

APPENDIX

CASE STUDIES

NW Arkansas - Eco Modern Flats

Urban Land Institute

Project Summary

The Eco Modern Flats in Fayetteville, Arkansas consists of 96 apartment units. The site is located adjacent to the University of Arkansas and consists of 2.9 acres. The redevelopment of the site cost \$7.4 million. The original structures were built between 1968 and 1972. According to Urban Land Institute, the target demographic is young professionals 20 to 30 years old which are underserved in the college town. The redevelopment cost \$7.4 million

Design

The 1970s structures had limited natural light and the decision was made to add natural light wherever possible. Glass sliding doors were added to many of the units to provide more light and windows were enlarged. Underutilized spaces were transformed to seating or gathering areas to encourage tenants to socialize. Green terraces with vines shading the buildings provide more greenery and save money on air conditioning during the warm summer months.

Sustainability

Figure 23

Solar Water Heaters and Mini Split Condensers.



Note. Solar water heaters offset energy usage and reduce operating costs. From Clayton Harris

The Eco Modern Flats are Certified and include water and energy conservation measures, recycling and a community garden. LEED is a third party certification based on strict adherence to its standards. LEED stands for Leadership in Energy and Environmental Design.

Water

Two 4,600-gallon water cisterns capture roughly 50 percent of the rainwater from the buildings roofs according to ULI. The water is used for irrigation and the community gardens. Bioswales also divert rainwater runoff from parking areas. While touring the site, the property manager noted that now that the native plants are at full maturity, much of the captured water is not needed and it is drained into the city sewer system. Although some water will be wasted in this way, the water is captured during times of inundation and returned during times when little

water is entering the city network, helping reduce the overload network. The water conservation measures inside consist of low-flow faucets, showerheads and dual flushing toilets.

Energy

Units within Eco Modern Flats are fitted with mini split heat pump systems for heating and cooling with small condensers on the roofs. The solar hot water collector system provides up to 80% of the hot water needs of the property. A large capacity gas-fired water heater provides backup during prolonged cloudy days. All units contain Energy Star appliances helping reduce overall energy consumption. According to ULI, these energy saving measures help to reduce the complex's energy consumption by half.

Recycling

Like many small cities and towns in the United States, Fayetteville lacked a recycling program when the Eco Modern Flats opened. The developer built custom recycling stations and installed recycling bins in each apartment. The project led to Fayetteville starting a pilot scheme to expand the network to other apartment complexes.

Environmental

In addition to the sustainability efforts, the developers made an effort to use chemical free materials including paints, stains, and finishes. They aimed to increase air quality both inside and out. HEPA air filters are used in the mini split units and native, noninvasive plants outside. Since no sod was used, the owners save money on lawn care including mowing and pesticides. This also helps individuals with allergies. Re-stained floors in lieu of carpet helps reduce construction costs, environmental impact, and reduces the risk of dust mites and other allergens. The 350

square foot community garden is both a marketing ploy to attract tenants as well as grow fresh produce on site.

Figure 24

Native Grasses provide shading



Note. Native grasses providing shade to rental units to reduce energy consumption. From Clayton Harris.

Leasing Performance

According to the developer, the units were fully pre-leased before opening, and since 2011, the complex has remained at 100% capacity with a waiting list. Current rents are 113 to 140% of the pro forma estimates and higher than other complexes in the area and turnover is 15% lower than the market average.

Oklahoma City - West Village Apartments

In the Fall of 2019, I was able to tour the West Village Apartments in Oklahoma City. The developer took us through much of the property and explained the reasons behind the choices made. Much of the plans were scaled back due to the city's requirements. The plans originally called for many Live/Work units where individuals could live in an upstairs unit and have an office or retail space on the first floor. Ultimately four were built and they were leased almost immediately. This type of unit is popular in European countries and was more prevalent in the United States in the early 20th Century and before.

The developers chose to save money on the individual units by using lower grade materials and smaller floorplans and use the savings to create large and very nice common areas. The idea was to encourage interaction among tenants and create a sense of community. This is a trend that is being led by the Millennial generation craving a more urban lifestyle. The property is also located adjacent to many restaurants bars and walking distance to the central business district of Oklahoma City. The developer noted that they are able to charge a significant premium over comparable properties even though their floorplates are smaller. The site consists of a full scale gym not commonly found in apartment complexes. There are multiple group classes including yoga and TRX.

The West Village Apartments are arguably the future of how developers will choose to allocate resources over the near future. I toured the property just months after opening and they were near capacity, and according to the developer, splurging on the amenities and common areas was paying off.

Claremore

While researching many aspects of the project, I had the opportunity to tour many sites around Oklahoma and Northwest Arkansas. The City of Claremore recently implemented Low

Figure 25

Claremore Baptist Church Pervious Pavement



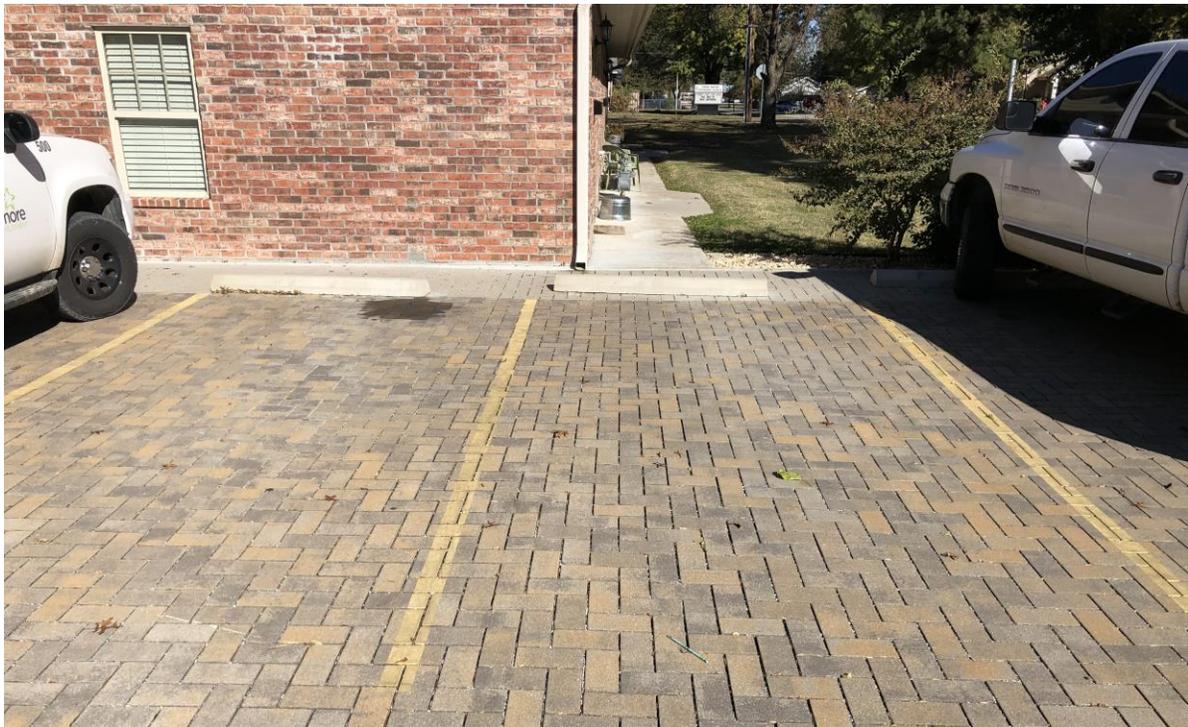
Note. Photo of pervious concrete being installed at the Claremore Baptist Church. From Clayton Harris

Impact Development incentive and guidelines. Developers have already started to implement

LID designs. LID is often seen as a benefit to the wider community to limit impact of surrounding property owners and citizens. However, it can also be used to the benefit of those who use LID standards. Claremore First Baptist Church recently added a new parking lot. The city has strict water runoff standards and they were not going to be able to utilize much of their property as it would have to be reserved for stormwater runoff. Many developers often place

Figure 26

Parking lot with pervious pavers



Note. Pervious pavers are a way to reduce water runoff and reduce the heat island effect.
From Clayton Harris

ponds on site to limit the effect of their buildings or parking lots. Claremore First Baptist Church was able to build a parking lot using almost the entire site by using porous concrete instead of traditional concrete or asphalt. Porous concrete allows water to permeate the surface and flow into the ground mimicking the natural flow.

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