“I’m not trying to stump anybody... It’s the beauty of the language that I’m interested in.”
Studio Context
Site Context
Group Work
  Programming - Goals & Objectives
  Case Studies
  Inventory
Programming
  Goals & Objectives - Heath Barfield
  Goals & Objectives - Olivia Sievers Ross
  Goals & Objectives - Surinder Aulakh
Site Analysis
  Heath Barfield
  Olivia Sievers Ross
  Surinder Aulakh
Concept Plan
  Heath Barfield
  Olivia Sievers Ross
  Surinder Aulakh

Design - Heath Barfield
Design - Olivia Sievers Ross
Design - Surinder Aulakh
Landscape Performance Benefits
  Heath Barfield
  Olivia Sievers Ross
  Surinder Aulakh
Works Cited
Comprehension of physical, cultural and ecological issues at diverse scales allow for a designer to enrich the built environment with communal and social spaces.

Enhancement and design decisions for the Buddy Holly Center are established with proprietary evidence.

Site Inventory is a process which the designer uses to assess the context and Site Analysis is the interpretation of the forces influencing a site. Conceptual design is an iterative process which entails the designer to test, make and repeat until a refined design emerges.

The methodologies implemented during the design development range from sketches, models, doodles, etc., thus, leading into finished documents.
“The Buddy Holly Center, a historical site, has dual missions; preserving, collecting and promoting the legacy of Buddy Holly and the music of Lubbock and West Texas, as well as providing exhibits on Contemporary Visual Arts and Music, for the purpose of educating and entertaining the public. The vision of the Buddy Holly Center is to discover art through music by celebrating legacy, culture and community.”
Cherry Creek North

Designer: Design Workshop, Inc
Location: Fillmore Plaza Denver, Colorado Size: 78 Acres (16 Blocks)

20 new “Art and Garden Spaces,” which contain signature art features, benches, tables and chairs, create distinct areas throughout the district, enrich the pedestrian experience, and encourage people to relax and linger.

160 pedestrian light poles, 12 benches, 10 trash receptacles, and 2,450 cubic yards of organic materials from the existing street were donated to local communities for reuse.

More than 53 new street signs, 37 street identification banners, 46 new marketing banners, 17 new parking directory signs, and 21 new free-standing directory map structures enhance navigation and walkability in the District.
Watch Factory Plaza

Designer: Richard Burck Associates
Location: 185 Crescent Street Waltham, Massachusetts
Size: 12 acres

Cobblestone runnels elegantly direct and runoff from roof gutters into rain gardens, offering a visual display of the storm water management process.

The rain gardens were planted with Pennsylvania Sedge; they include a rubber liner and pipe that discharges the cooled and filtered runoff into the Charles River.

Recreational equipment storage in the Robbins courtyard provides residents with 8 racks for kayaks and 45 spots for bikes, available on a first-come, first-served basis.

Underwood Family Sonoran Landscape Laboratory

Designer: Ten Eyck Landscape Architects, Inc.
Location: 1040 N Olive Road, University of Arizona Tucson, Arizona
Size: 1.2 acres

An accessible, sunken court serves as outdoor classroom and gathering space and retains runoff during desert storm events.

The court is composed of permeable stabilized decomposed granite and framed by cast-in-place concrete seat walls of varying heights.

Storm water runoff is reduced by 2 desert arroyo ‘micro-basins’ and the lower patio with a 5,500-gallon retention capacity total. Native Mascagnia macroptera vines climb 50 feet up a scrim on the building’s southern exposure reducing solar heat gain and blurring the lines between architecture and landscape. A bosque of native mesquite (Prosopis velutina) creates dappled shade in the entry plaza.
Site inventory is one of the beginning steps in the design process for landscape architecture. This is a collection of data that is a major influence on the design and planning decisions. Site inventory includes abiotic, biotic, and cultural data.

**Soil (Abiotic)**

The soil of the site is 100% urban soil and not prime farmland.

**Topography (Abiotic)**

The topography of the site lacks is mostly flat and lacks enough elevation change to mention.

**Climate (Abiotic)**

Site inventory includes abiotic, biotic, and cultural data.
Wildlife (Biotic)
The vertebrates and invertebrates of Lubbock represent a typical urban assemblage. European pigeons, grackles, doves, song birds, raccoons, and domestic animals are some that are regularly found in the city limits. An assortment of migratory birds and waterfowl seasonally augment the year-round residents.

On-site Vegetation (Biotic)

- **Trees**
  - Vitex agnus-castus
  - Quercus sp.
  - Ulmus sp.
  - Pinus sp.
- **Small Plants**
  - Red/Yellow Yucca  *Hesperaloe parviflora*
  - Boxwood Buxus
  - Santolina Grey  *Santolina chamaecyparissus*
  - Nandina domestica
  - Indian hawthorn  *Rhaphiolepis indica*
  - Artemisia (powis castor)
  - Creeping Juniper  *Juniperus horizontalis*
  - Elaeagnus
  - Inland Sea Oats  *Chasmanthium latifolium*

- **Grass**

Hydrology (Abiotic)
The site has massive surface drainage resulting in frequent ponding and flooding with torrential rains.

Water Restrictions (Cultural)
Stage 1 Water Restrictions
Can water on Tuesday & Friday only
Need a New Landscape Variance Request to establish new plants (good for 3 weeks)

Historical Significance (Cultural)
The eastern portion of the site served as the Lubbock stop on the Fort Worth and Denver South Plains Railway Depot. This station served as a stop for trains carrying passengers and trains carrying freight. The building was designed in the Spanish Renaissance Revival style as was much of Lubbock.

Existing Site Conditions
Goals & Objectives

Programming is one of the initial steps in the design process for a project. The programming of a site defines the project’s goals and objectives. It determines the proposed site usage and special features by describing values and desired outcomes, in addition to, the actions required to achieve those goals.

<table>
<thead>
<tr>
<th>Program:</th>
<th>Goals and Objectives</th>
</tr>
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<tbody>
<tr>
<td>Site:</td>
<td>Buddy Holly Center Plaza</td>
</tr>
<tr>
<td>Address:</td>
<td>1801 Crickets Avenue, Lubbock, TX 79401</td>
</tr>
<tr>
<td>Group:</td>
<td>Surinder Aulakh, Heath Barfield, Olivia Sievers Ross</td>
</tr>
<tr>
<td>Instructor:</td>
<td>Dr. Yi Luo</td>
</tr>
</tbody>
</table>

**Goal 1: Improve public appeal to the Center, thereby increasing visitation**
- **Objective 1:** Create additional well-designed, functional social areas
- **Objective 2:** Improve existing social areas by improving functionality, flow, and design
- **Objective 3:** Improve aesthetics of entire site
- **Objective 4:** Create outdoor educational spaces

**Goal 2: Provide noise reduction for the site**
- **Objective 1:** Add vertical planes in key locations

**Goal 3: Improve existing pedestrian circulation and safety**
- **Objective 1:** Relocate pedestrian crosswalk connecting the two sections of the Center
- **Objective 2:** Implement traffic-calming measures that will reduce traffic speeds

**Goal 4: Improve sustainability of site**
- **Objective 1:** Reduce amount of lawn
- **Objective 2:** Use only drought-tolerant plants focusing on natives and naturalized species
- **Objective 3:** Use rainwater for irrigation

**Goal 5: Address drainage and flooding**
- **Objective 1:** Design overhead structures with green roofs to delay rain runoff
- **Objective 2:** Implement rainwater collection to reduce amount of rain runoff
- **Objective 3:** Create elevation changes or swales to redirect flow of water

**Goal 6: Improve thermal comfort**
- **Objective 1:** Add overhead structures in key areas
- **Objective 2:** Plant additional trees
- **Objective 3:** Create resting areas under shaded areas

**Goal 7: Improve vehicular circulation**
- **Objective 1:** Reduce quantity of entrance driveways
- **Objective 2:** Relocate main entrance driveway so as not to interfere with pedestrian circulation
- **Objective 3:** Add directional signage effectively positioned
Program: Goals and Objectives

Site: Buddy Holly Center Plaza
Address: 1801 Crickets Avenue, Lubbock, TX 79401
Group: Heath Barfield
Instructor: Dr. Yi Luo

Goal 1: Improve public appeal to the Center, thereby increasing visitation
Objective 1: Create additional well-designed, functional social areas
Objective 2: Improve existing social areas by improving functionality, flow, and design
Objective 3: Improve aesthetics of entire site
Objective 4: Create outdoor educational spaces
Objective 5: Add children’s interactive space
Objective 6: Repurpose existing interactive exhibit into memorial wall

Goal 2: Provide noise reduction for the site
Objective 1: Reorientate memorial site

Goal 3: Improve existing pedestrian circulation and safety
Objective 1: Redesign pedestrian crosswalk connecting the two sections of the Center
Objective 2: Implement traffic-calming measures that will reduce traffic speeds

Goal 4: Improve sustainability of site
Objective 1: Use only drought-tolerant plants focusing on natives and naturalized species

Goal 5: Address drainage and flooding
Objective 1: Implement rainwater collection to reduce amount of rain runoff
Objective 2: Create elevation changes or swales to redirect flow of water

Goal 6: Improve thermal comfort
Objective 1: Add overhead structures in key areas
Objective 2: Plant additional trees
Objective 3: Create resting areas under shaded areas

Goal 7: Improve vehicular circulation
Objective 1: Reduce quantity of entrance driveways
Objective 2: Relocate main entrance driveway so as not to interfere with pedestrian circulation
Objective 3: Add directional signage effectively positioned

Visual interest and direction between sections of the site can be improved upon

Improve existing pedestrian circulation between the museum and memorial

Improve thermal comfort by adding shade features as well as new planting design.

Manage storm water runoff to prevent flooding while achieving a visually pleasing space.
Program: Goals and Objectives
Site: Buddy Holly Center Plaza
Address: 1801 Crickets Avenue, Lubbock, TX 79401
Student: Olivia Sievers Ross
Instructor: Dr. Yi Luo

Goal 1: Improve public appeal to the Center, thereby increasing visitation
Objective 1: Create additional well-designed, functional social areas
Objective 2: Improve existing social areas by improving functionality, flow, and design
Objective 3: Improve aesthetics of entire site
Objective 4: Create outdoor educational spaces

Goal 2: Provide noise reduction for the site
Objective 1: Add vertical planes in key locations

Goal 3: Improve existing pedestrian circulation and safety
Objective 1: Implement traffic-calming measures that will reduce vehicle speeds
Objective 2: Clearly designate crosswalks, thus increasing drivers’ awareness of pedestrians and creating a safer environment
Objective 3: In a safer location, create an additional pedestrian crosswalk as the primary connection between the two sections of the Center
Objective 4: Create clearly defined paths throughout site

Goal 4: Improve sustainability of site
Objective 1: Reduce amount of lawn
Objective 2: Use only drought-tolerant plants focusing on natives and naturalized species
Objective 3: Use rainwater for irrigation

Goal 5: Address drainage and flooding
Objective 1: Design overhead structure(s) with green roof(s) to delay rain runoff
Objective 2: Implement rainwater capture measures to clean and reduce amount of rain runoff
Objective 3: Create elevation changes or swales to redirect flow of water

Goal 6: Improve thermal comfort
Objective 1: Add overhead structures in key areas
Objective 2: Plant additional trees
Objective 3: Create resting and social areas under shaded areas

Goal 7: Improve vehicular circulation
Objective 1: Relocate main entrance driveway so as not to interfere with pedestrian circulation
Objective 2: Add directional signage effectively positioned
Objective 3: Reduce quantity of entrance driveways

Over 30,000 square feet of lawn requires much maintenance, time, and cost.

Unattractive on and off site views can be improved

Stormwater runoff creates flooding adjacent to buildings, in the parking lot, and on the streets. On site rain capture can help reduce runoff.

8 driveways confuse visitors and creates a lack of direction

The site has many locations that can house additional social spaces
Program:  Goals and Objectives

Site:  Buddy Holly Center Plaza

Address:  1801 Crickets Avenue, Lubbock, TX 79401

Group:  Surinder Aulakh

Instructor:  Dr. Yi Luo

Goal 1: Improve public appeal to the Center, thereby increasing visitation
Objective 1: Create additional well-designed, functional social areas
Objective 2: Improve existing social areas by improving functionality, flow, and design
Objective 3: Improve aesthetics of entire site
Objective 4: Create outdoor educational spaces

Goal 2: Provide noise reduction for the site
Objective 1: Add vertical planes in key locations

Goal 3: Improve existing pedestrian circulation and safety
Objective 1: Redesign pedestrian crosswalk connecting the two sections of the Center
Objective 2: Implement traffic-calming measures that will reduce parking lot speeds

Goal 4: Improve sustainability of site
Objective 1: Reduce amount of lawn
Objective 2: Use only drought-tolerant plants focusing on natives and naturalized species
Objective 3: Use rainwater for irrigation
Objective 4: Reduce impervious surface and replace with permeable pavers

Goal 5: Address drainage and flooding
Objective 1: Implement rainwater collection to reduce amount of rain runoff
Objective 2: Create elevation changes or swales to redirect flow of water

Goal 6: Improve thermal comfort
Objective 1: Add overhead structures in key areas
Objective 2: Plant additional trees
Objective 3: Create resting areas under shaded areas

Goal 7: Improve vehicular circulation
Objective 1: Reduce quantity of entrance driveways
Objective 2: Relocate main entrance driveway so as not to interfere with pedestrian circulation

Improving Thermal Comfort of Park space
Noise reduction and designated driveway entries

Address Pedestrian circulation and Safety

Surinder Aulakh  Programming
The site analysis was a major influence on my design. The opportunities and constraints of the site were not only all important, but some ranked very high on the necessity list. For example, safety of pedestrians is an issue on the site and was of high priority to be addressed in my design.
This was the second iteration for parking. I used this method in order to make sure there were enough spaces and that traffic flowed well while adhering to parking code.

This concept plan incorporated some ideas I had about the historical aspect of the railway station. I found the old tracks onsite an inspiration, as well as, the architecture.

In order to continue the historic feel of the existing site, I wanted to use railroad ties for planting borders, fences, and possibly walkways in the redesign.
Interstate 27 serves as a connecting factor for Southern and Northern Lubbock.

Diagram is extracted from the forces acting of the site, moments of multiple circulatory interjections and the procession through the site. The idea of the proposal is an extension of the West Texas Walk of Fame.
Site Design

The main focus of this design is to bring music back to the site by incorporating various sound features that allow people who visit the Buddy Holly center a truly unique experience. A xylophone, Whisper Wall, and an echo tube were placed at the entrance of the complex in order to bring in people by creating an interesting space. To achieve this design some of the parking lot had to be converted to open space for the new outdoor features. By doing so I was able to redirect the flow of traffic by eliminating the amount of entrances/exits to the site controlling vehicular circulation within the parking area. Adding a median to Crickets Ave would create a bridge to help gap pedestrian circulation to the memorial site in addition to providing a few outdoor seating areas shade by over head sails. Various plantings were added to the site in order to control the excess of storm water runoff while also creating an aesthetically pleasing garden scape. The green-space in front of the stage remained the same to accommodate for future concerts, outdoor classes, or any other activity that this site could facilitate.
Concept Diagram 1

Concept Diagram 2

Concept Diagram 3
Design Narrative

My design process, utilized for the Buddy Holly Center Plaza redesign, began with a comprehensive look at programming which resulted in site-specific goals and objectives. Through careful analysis of collected site inventory I was able to explore and develop design objectives that utilized available opportunities and minimized or eliminated site constraints.

This diligent use of analysis drove my entire process. It was evident from several site visits that there was a lack of linkage between the Center and the Buddy Holly statue.Informal interviews with Center visitors confirmed this. Many were unaware that the two entities were indeed part of a whole. I was also concerned about safety. I felt that there were dangerous conditions exacerbated by poorly defined automobile and pedestrian circulation on the site. In addition, it was apparent that microclimate modification in the form of shade plantings and structures were needed to make the site more comfortable and appealing to visitors. I addressed all of these inventory and analysis issues in my design.

Further, I was particularly interested in the context of the site. To honor the historic railroad station aspect of the Buddy Holly Center, I chose to bring the appropriate contextual clues to the railroad past into the design by utilizing railroad ties as edging for landscape and walkways. I brought architectural elements from the center across to the statue area and repeated forms in order to bring unity to the design. I wanted to address noise and smell concerns on the site, so I utilized plantings, land form modification, and architecture to mitigate these issues. In addition, I wanted to deal with storm water runoff while addressing circulation. I utilized planted medians that function as small bio-retention zones that clean and slow down storm water runoff from the site.

Bird’s Eye View
Section Views

Section A-A'

Section B-B'

Design

Olivia Sievers Ross
Eye-level Views

View 1
Looking south-west towards the water feature in a shady, semi-private social area

View 2
Looking north from under the shade of a pergola serving dual purpose as a social area and for watching music

View 3
Looking north-west from the outdoor educational center

View 4
Looking west from the Center toward the Buddy Holly statue

Olivia Sievers Ross
Design
Project Narrative

Contextually derived elements are composed to create experiential moments. These moments are expressions of the Legacy of Buddy Holly and extrapolations of Lubbock’s urban development.
Bird’s Eye Series
Bird’s Eye and Eye Level Renderings
Landscape Performance Benefits

The following information is based off the benefits of the proposed Buddy Holly design and uses the landscape performance benefits calculators in order to determine the environmental, economic, and social benefits that were implemented to the site. According to the National Tree Benefit calculator I was able to determine that based off the planting design of my site plan that the yearly overall benefits will be $46,833 according to the 231 trees added to the site. According to the storm water calculation the amount of storm water runoff that will be intercepted is 295,948 gallons of runoff and will remove 107,698 pounds of carbon from the atmosphere. The design will also conserve up to 24,377 kilowatt-hours of electricity by reducing the amount of heat absorb onto the site, slowing down windings reducing the amount of heat lost, and by cooling the air due to evapotranspiration which cools the air by using solar energy. The calculator did not have all the plants that I choose to place on my site as part of my design so I had to use generic broadleaf deciduous trees and broadleaf deciduous evergreen trees. This could change the amount of money, energy, storm water management, and carbon removal that would typically be removed by certain tree species. Here is one example of the cost break down per tree:

Breakdown of your tree’s benefits

This 20 inch Broadleaf Evergreen Large Other provides overall benefits of: $81 every year.

While some functional benefits of trees are well documented, others are difficult to quantify (e.g., human social and communal health). Trees’ specific geography, climate, and interactions with humans and infrastructure is highly variable and makes precise calculations that much more difficult. Given these complexities, the results presented here should be considered initial approximations—a general accounting of the benefits produced by urban street-side plantings.

The social benefits of the site are calculated based off the amount of social space added to the site according to the square footage. By adding almost 2812.67 additional square feet to the site for purely social interactive areas increase the amount of social interaction taking place on site. These will allow a larger variety of activities and area for people to gather. It will also establish the site as a prominent cultural feature for the Lubbock area which will increase site visitation which was one of the goals I wished to achieve.

The economic value of the site I feel is clearly established using the National Tree Calculator by addressing the cost benefits gained by adding more vegetation to the site and by reducing the amount of heat/electricity used by the site. Based on these calculations of my design I can conclude that the main goals for increasing site visitation, reducing environmental impact, and generating revenue to the site was achieved.

Benefits of trees do not account for the costs associated with trees’ long-term care and maintenance. If this tree is cared for and grows to 25 inches, it will provide $95 in annual benefits.

“Dep” stands for deposition. This is your tree absorbing or intercepting pollutants. “Avd” stands for avoided. This is your tree lessening the need for creation of these pollutants in the first place by reducing energy production needs.

Air quality benefits of your 20 inch Broadleaf Evergreen Large Other shown in the graph at left. Air pollution is a serious health threat that causes asthma, coughing, headaches, respiratory and heart disease, and cancer. Over 150 million people live in areas where ozone levels violate federal air quality standards; more than 100 million people are impacted when dust and other particulate levels are considered “unhealthy.” We now know that the urban forest can mitigate the health effects of pollution by:

- Absorbing pollutants like ozone, nitrogen dioxide and sulfur dioxide through leaves
- Intercepting particulate matter like dust, ash and smoke
- Releasing oxygen through photosynthesis
- Lowering air temperatures which reduces the production of ozone
- Reducing energy use and subsequent pollutant emissions from power plants

It should be noted that trees themselves emit biogenic volatile organic compounds (BVOCs) which can contribute to ground-level ozone production. This may negate the positive impact the tree has on ozone mitigation for some high emitting species (e.g. Willow Oak or Sweetgum). However, the sum total of the tree’s environmental benefits always trumps this negative
Landscape Performance Benefits
Social, Economic, and Environmental Benefit Calculations

Social, economic, and environmental benefits can be reaped by a retrofit design for the Buddy Holly Center. The Landscape Performance Series Benefits Toolkits, at http://landscapeperformance.org/benefits-toolkit, help translate intangible benefits into tangible benefits.

One of the social benefits for the Buddy Holly Center is an addition of well-designed social areas. These social spaces benefit not only to the visitors of the Center, but the public and city as well. The space allows for family, individual, and classroom usage. A total of 35,709 ft² was specifically designated as social space. The area can be used for recreation, entertainment, or education.

The economic benefits associated with the redesign are very beneficial. According to the National Tree Benefit Calculator at http://www.treebenefits.com/calculator, there is an annual cost benefit of $2,791 for the addition of 55 trees. There are three major tree species used in the redesign. 31 Desert Willows (Chilopsis linearis) will be added with an 18” trunk. Each Desert Willow provides $14 overall benefits per year. Each of the 14 Shumard Oaks (Quercus shumardii) with 20” trunks yield an annual $344 cost benefit. The 11 Junipers (Juniperus species) with 15” trunks provide $31 overall benefits per year.

According to the National Stormwater Management Calculator there will be an 82% increase in construction and maintenance total life-cycle. Site impermeable area is reduced by 56.5%, a green roof and vegetation filter strips are implemented thus drastically decreasing stormwater runoff and increasing cost benefits. With this, annual green benefits are $6,956 and annual life cycle benefits are $22,678 NPV.

### Benefits

<table>
<thead>
<tr>
<th>Annual Benefits ($)</th>
<th>Life Cycle Benefits ($)</th>
<th>NPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green Benefits</td>
<td></td>
<td></td>
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<tr>
<td>Reduced Air Pollutants</td>
<td>1</td>
<td>143</td>
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<tr>
<td>Compostable Value of Trees</td>
<td>6,875</td>
<td>237,832</td>
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<tr>
<td>Groundwater Replacement</td>
<td>45</td>
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<tr>
<td>Reduced Energy Use</td>
<td>43</td>
<td>1,207</td>
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<tr>
<td>Reduced Treatment benefits</td>
<td>25</td>
<td>706</td>
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<tr>
<td>Total 4,956</td>
<td>224,478</td>
<td></td>
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</tbody>
</table>

A major benefit of the redesigned site is the positive environmental impact of the area. The environmental benefits include a decrease of stormwater runoff and carbon footprint, in addition to, conservation of electricity and reduction of oil and natural gas usage.


According to the calculator at http://greenvalues.cnt.org/national/calculator.php, overall benefits, and pre-retrofit versus post-retrofit comparisons are listed below:

- **Average Annual Rainfall**:
  - Total Runoff (ft³) = 11,896
  - Total Runoff Volume (ft³) = 164,509
  - Cumulative Abstractions (in) = 1.22
- **Net Stormwater**:
  - Total Runoff (ft³) = 0.18
  - Total Runoff Volume (ft³) = 0.852
  - Cumulative Abstractions (in) = 0.1
- Initial Abstractions (in) = 0.27

According to the Green Roof Calculator at http://greenbuilding.pdx.edu/GR_CALC_v2/grcalc_v2.php#retain, a 7.2” increase in evapotranspiration and a 60% decrease in rain runoff was determined with a 35” x 17” (595 ft²) stage that will be constructed. Below shows the results for usage of a 100% new green roof versus a dark roof, no irrigation, conditions are similar to El Paso, TX, growing media depth of 2 inches, and leaf area index of 1.

- **Annual Average**:
  - Dark Roof: 61.6
  - Green Roof System: 58.8
- **Summer Average**:
  - Dark Roof: 54.1
  - Green Roof System: 58.1
- **Summer Daily Peak Avg.:**
  - Dark Roof: -120.2
  - Green Roof System: -128.1

According to the National Tree Benefit Calculator, there will be an atmospheric carbon reduction of 43,003 pounds. Using the Construction Carbon Calculator at http://buildcarbonneutral.org, a net embodied CO2 of 305 metric tons was approximated as shown below:

- **Total Square Feet**: 11,896
- **Stories Above Grade**: 1
- **System Type**: Mixed
- **Ecoregion**: Great Plains
- **Existing Vegetation Type**: Previously Developed
- **Installed Vegetation Type**: Shrubland
- **Landscape Disturbed (SF)**: 7,000
- **Landscape Installed (SF)**: 15,000

Olivia Sievers Ross
Landscape Performance Benefits

The benefits of utilizing Shumard Oak trees in this proposal provides the developer a monetary benefit. This design implements 21 Shumard Oak trees to maximize the opportunity of producing saving.

1. Implementation of an imbedded Storm water harvesting system, benzona a vegetative walkway, accompanied by Shumard Oak trees allows the proposal to create a natural respiration pool for rainwater.

Year 13 inch Shumard oak will intercept 5.58 gallons of storm water runoff this year.

Located in front of a small commercial business, this 13 inch Shumard oak will raise the property value by $188 this year.

5 Shumard Oaks increase the quality of air in the surrounding area and creates a micro-climate on the site. The actinized spaces naturally attract users from the city to benefit the reduction of toxins and pollutants.

Air quality benefits of your 24 inch Shumard oak shown in the graph at left.

Air pollution is a serious health threat due to chronic asthma, coughing, bronchitis, respiratory and heart disorders, and cancer. Over 400 million people live in areas where ozone levels exceed federal or state quality standards. This problem is not limited to urban centers but also particular areas are considered "hazardous." We now know that the urban forest can mitigate the health effects of pollutants by:

- Absorbing pollutants, including acid rain and sulfur oxides through leaves
- Increasing particulate removal like dust, soot and smoke
- Reducing oxygen through phytoremediation
- Increasing air temperatures which reduces the production of ozone
- Reducing average car and commuting pollutants from tree planting

Year 24 inch Shumard oak will intercept 37.8 gallons of storm water runoff this year.

Located in front of a small commercial business, this 24 inch Shumard oak will raise the property value by $248 this year.


