

THE GARDEN

HOSPITAL

Reinventing the Healthcare Landscape using Principles of Gardens and Sustainability to Create a Visual Guidebook for Human Design

By Caitlin Jeffs

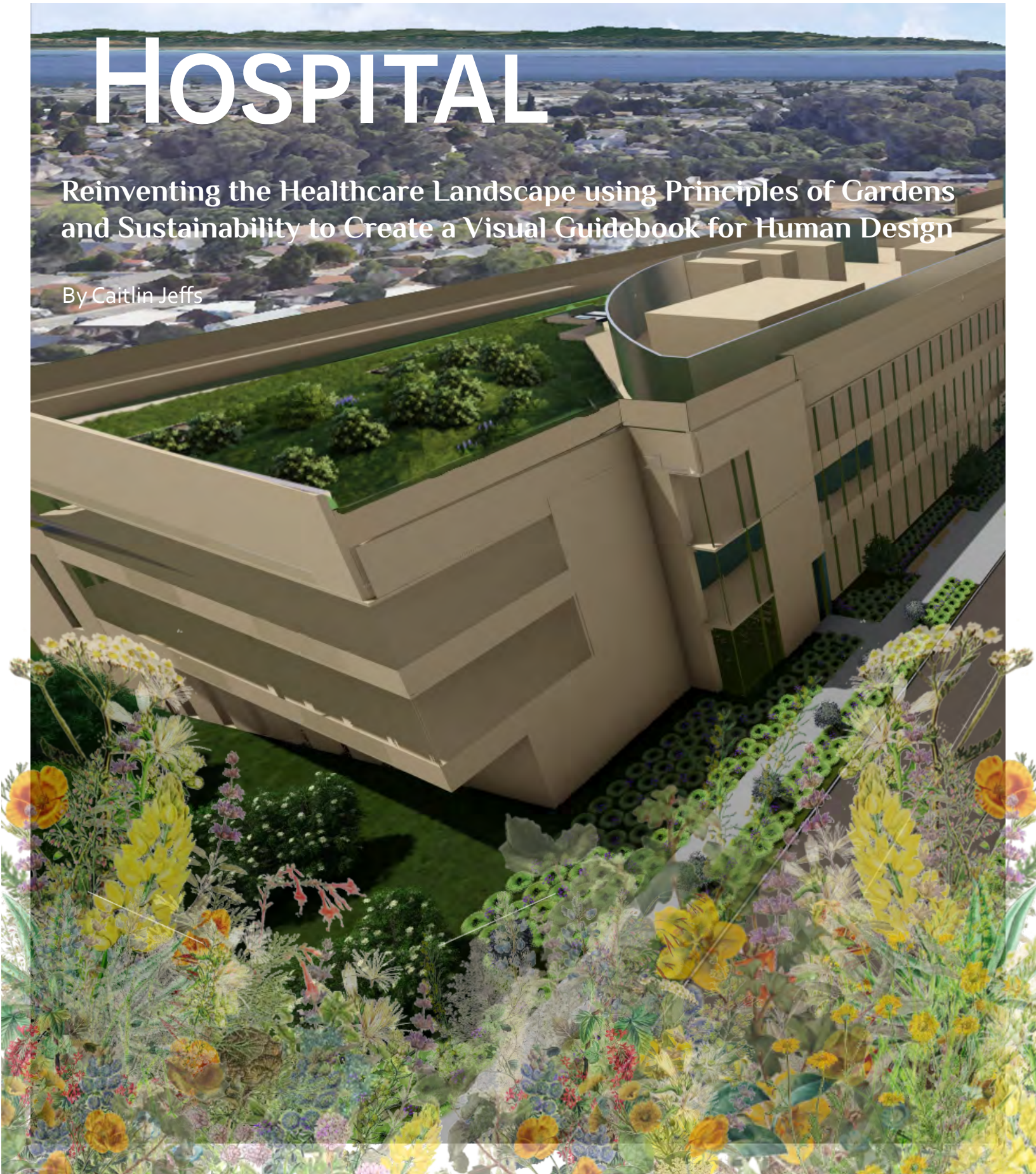


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INTRODUCTION





PREFACE

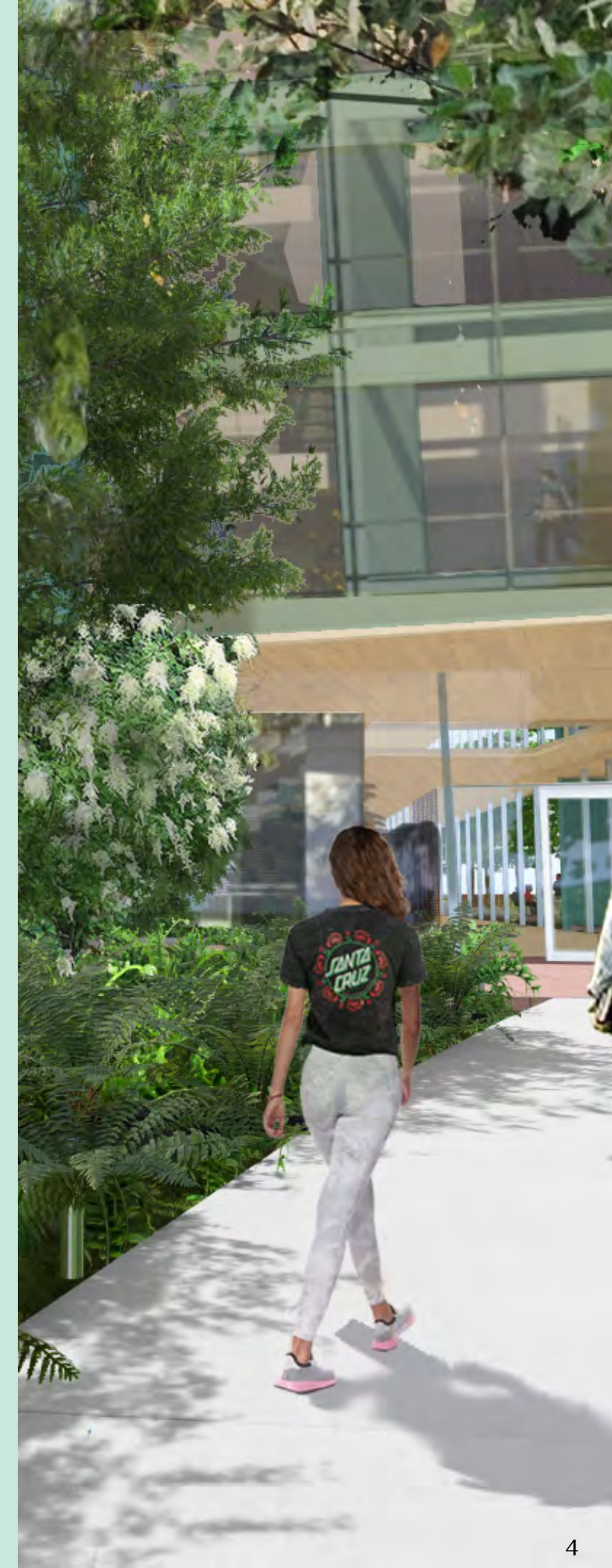
My journey to my Master's Design Project, "The Garden Hospital," began during my undergraduate degree. Prior to beginning my path into Landscape Architecture, I was a pre-medical student at the University of Redlands. As someone with the goal of becoming a doctor, I spent a lot of time interacting with medical landscapes; as a volunteer, medical shadow, or tourist. However, despite my passion for healing and love of science, I could never find myself feeling at ease within these spaces. I always wondered to myself, couldn't there be a better way to design these spaces? Is it inherent in the nature of healthcare for these spaces to feel stressful and alien?

This project was born from my interest in medicine and my belief in its potential to become better not just for patients and healthcare workers, but the surrounding community and ecosystem as well.



ABSTRACT

Healthcare landscapes, such as hospitals, medical complexes, and clinics, are not known for being pleasant spaces for the human user to engage with. Often, these spaces are associated with sickness, loss, and death, and are sources of significant stress for their users. The western concept of medical spaces is in need of a redesign, with the increased incorporation of nature and community showing great promise in reducing stress and improving health outcomes. This project seeks to explore this concept further through design, investigating the role of Landscape Architecture in developing the Garden Hospital: medical landscapes that are designed for multi-functionality, biophilia, and community. The site for this design project is the Kaiser Permanente Medical Office Building in Santa Cruz, Ca. The full hospital landscape will be transformed, including facades, rooftops, interior and outdoor spaces to explore the Garden Hospital typology and demonstrate theoretical ways in which it could be accomplished. In doing so, the Kaiser Permanente site will go beyond a medical space, becoming a central point in the lives of the local community. This shift in healthcare, backed by research into human health and wellbeing, could not only improve our experiences within and relationship to medical landscapes, but help to improve the health outcomes of the community.



PROJECT INTRODUCTION

When one thinks of a hospital or other medical landscape, it is uncommon for thoughts of comfort, fun, beauty, or joy to enter one's mind. On the contrary, they are frequently stifling, barren, and alien landscapes. The redesign of healthcare spaces is necessary and urgent to promote rest and healing, as well as to reduce stress and infection in patients (Khullar, 2017). Additionally, there is room to address the significant climate impact of healthcare, namely its contribution to greenhouse gas emissions (Schwartzman and Allaben, 2023). Especially in contemporary times, in which post-pandemic and climate change related challenges to healthcare are becoming increasingly important, there is a need to rethink the concept of a hospital. Evidence-based research is showing the huge potential of nature, such as healing gardens or biophilic design, to benefit hospital staff, visitors, and patients (Cooper Marcus, Barnes, 1995; Cordoza, et al., 2018; Healthcare Facilities Today, 2013; Jesus, 2017; Jo Kreitzer, 2016; Journal of Biophilic Design, 2022; Khullar, 2017; Moreno, 2018; Parris, 2019; Planterra; Riva Ras, 2019; Viray, A., 2018; Warshaw, R., 2017; Wisconsin DNR Forestry News, 2017; Ulrich et al, 2020; Yang, et al, 2013). Hospitals featuring green spaces often require less energy, and can contribute to the biodiversity of their region (Chris Van Uffelen, 2017; Post Carbon Institute, 2014; Schropfer et al., 2020). While incorporating nature into healthcare is gaining in popularity, there is an opportunity to take hospital landscape design to a more encompassing approach that addresses contemporary climate, mental health, and multi-functionality concerns.



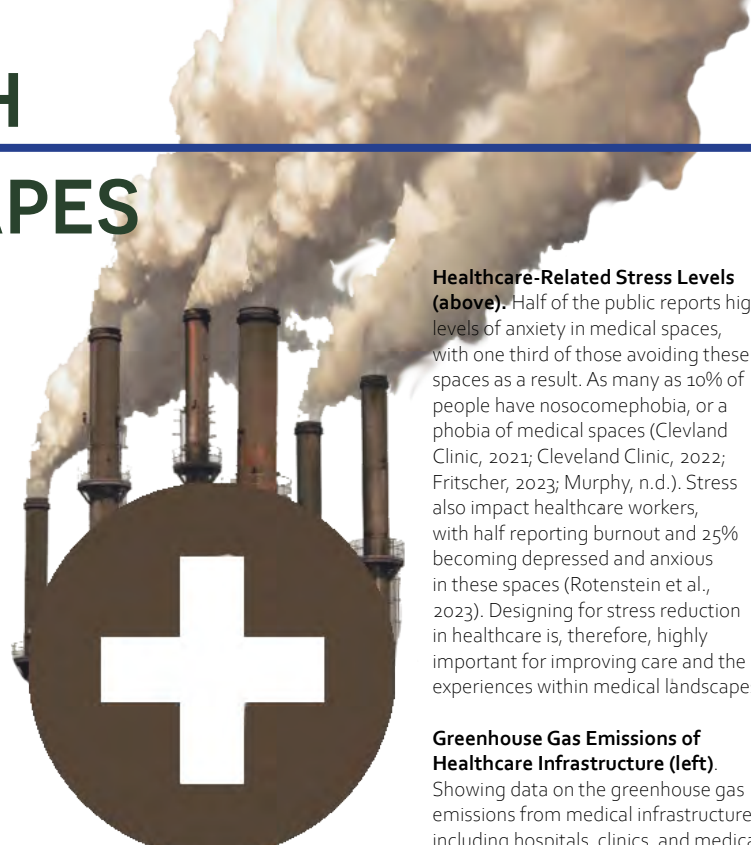
“While incorporating nature into healthcare is gaining in popularity, there is an opportunity to take hospital landscape design to a more encompassing approach that addresses contemporary climate, mental health, and multi-functionality concerns.”

“Healthcare landscapes are where life is on pause, where we hold our breath, and where we hope to never have to be... What if medical landscapes were designed to be places where life continues? Where there is reason to be in this space even when one is well...”

There is a compelling argument for Landscape Architects to take on a greater role in the design of healthcare infrastructure. This includes designing for universal access to nature, however, the reformation of healthcare could go even further, incorporating community. Creating a sense of community and fostering interpersonal relationships benefits mental and emotional health, which in turn reduces stress and promotes healing (Becker et al., 2022; Cousson-Gelie et al., 2007; Ozbay et al., 2007; Reblin and Uchino 2008). If we could design a hospital as a “garden space,” then couldn't there be room in healthcare for socialization, recreation, and education as well? This addresses a very real issue in how we construct healthcare landscapes in western society which excludes normalcy and everyday life. Healthcare landscapes are where life is on pause, where we hold our breath, and where we hope to never have to be. Being in these spaces is often accompanied by a sense of wrongness and fear. It could be argued that designing for a more biophilic, aesthetically pleasing experience within medical landscapes is not enough, although it is indeed important and will be explored further in this Masters Project. What if medical landscapes were designed to be places where life continues? Where there is reason to be in this space even when one is well, to engage in social, cultural, recreational, or educational opportunities. While there is a movement in healthcare to design for the patient, and to reduce the stress of healthcare workers and visitors alike, my Masters Project hopes to take this approach a step further. Rather than designing medical landscapes in isolation, instead I hope to integrate them into the community, culture, and ecological context in which they sit.

THE PROBLEM WITH MEDICAL LANDSCAPES

There is a need for systemic change within healthcare. Since the 2020 pandemic, stress amongst the public and burnout in healthcare workers in medical landscapes is at an all time high (Cordoza et al., 2018). Additionally, there is a need to address the significant climate impact of medical infrastructure as the consequences of climate change become more apparent, with a call to action within the healthcare industry becoming more urgent (Schwartzman and Allaben, 2023). There is opportunity for landscape architects to step in to healthcare design, addressing these concerns to improve the human experience within medical landscapes, and to make them more sustainable.

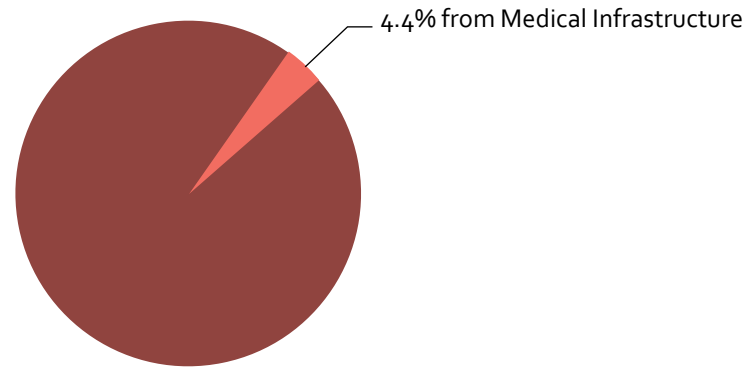


Healthcare-Related Stress Levels (above). Half of the public reports high levels of anxiety in medical spaces, with one third of those avoiding these spaces as a result. As many as 10% of people have nosocomophobia, or a phobia of medical spaces (Cleveland Clinic, 2021; Cleveland Clinic, 2022; Fritscher, 2023; Murphy, n.d.). Stress also impact healthcare workers, with half reporting burnout and 25% becoming depressed and anxious in these spaces (Rotenstein et al., 2023). Designing for stress reduction in healthcare is, therefore, highly important for improving care and the experiences within medical landscapes.

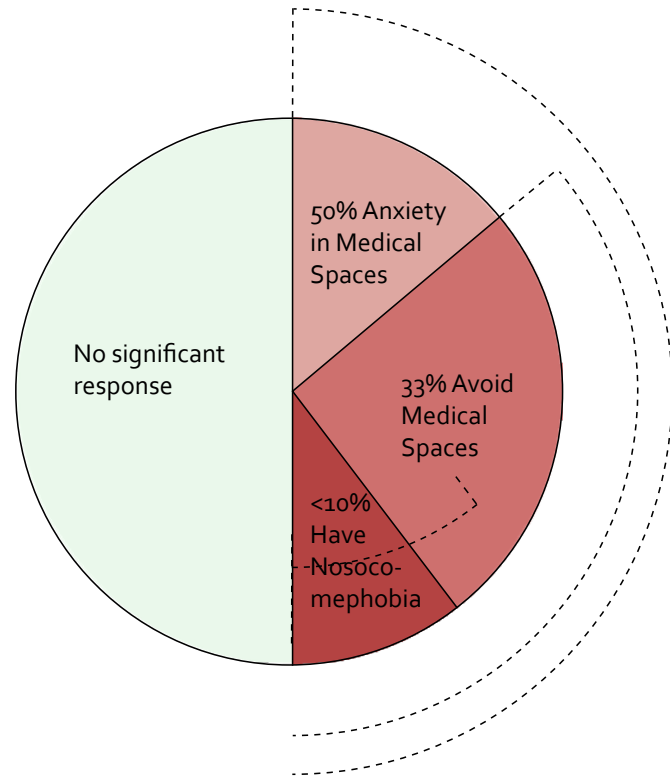
Greenhouse Gas Emissions of Healthcare Infrastructure (left). Showing data on the greenhouse gas emissions from medical infrastructure, including hospitals, clinics, and medical research facilities (Schwartzman and Allaben, 2023).

How Infrastructure Leads to Healthcare Problems (right). Many elements in how healthcare infrastructure is designed, how it operates, and how it is perceived contribute to stressful, unpleasant experience that have a negative impact on patients, visitors, and staff alike. The result of the stress this creates leads many to avoid medical spaces. And within these spaces, this stress creates burnout among workers, reduces the potential quality of care, and results in worse patient outcomes.

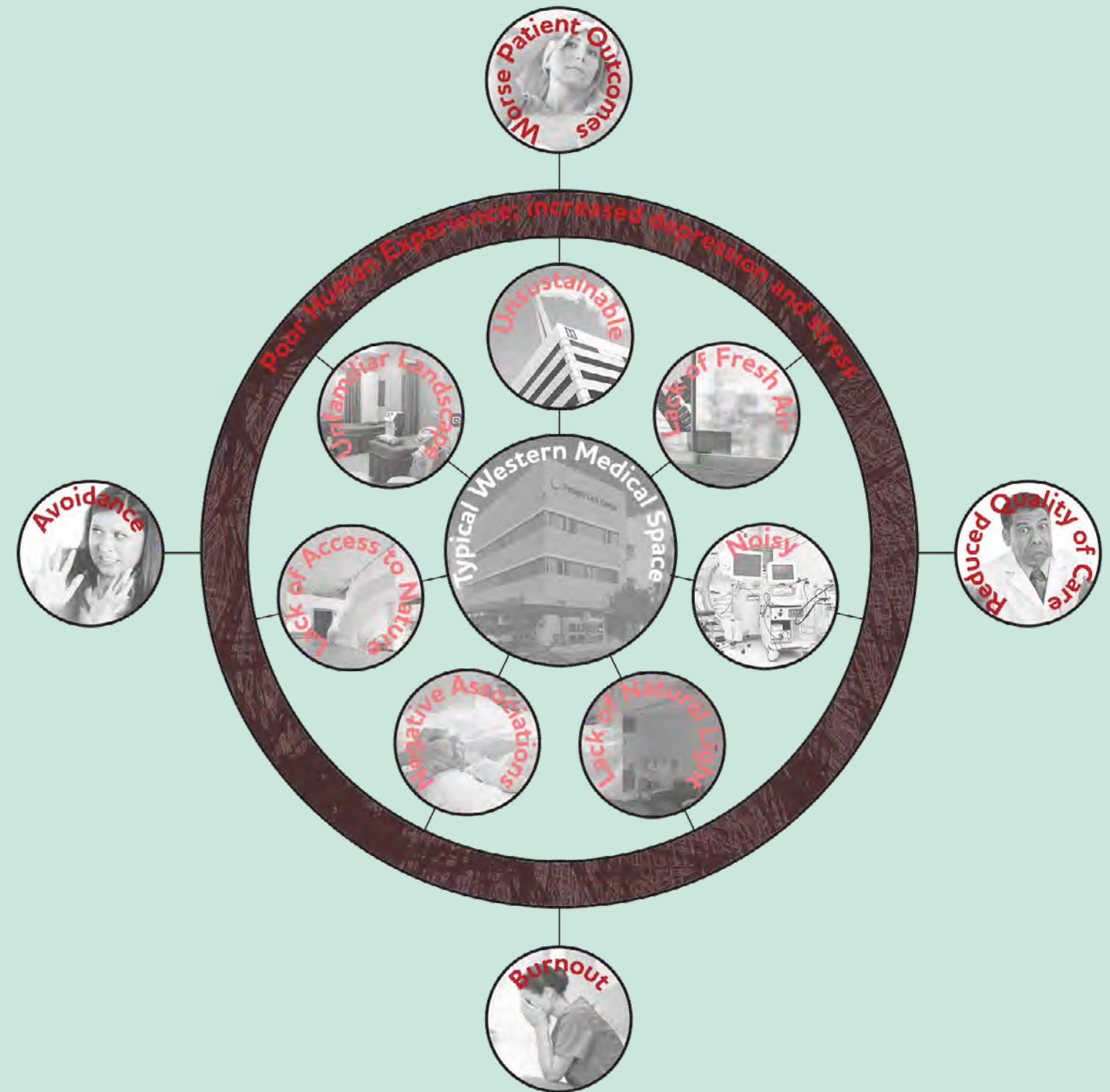
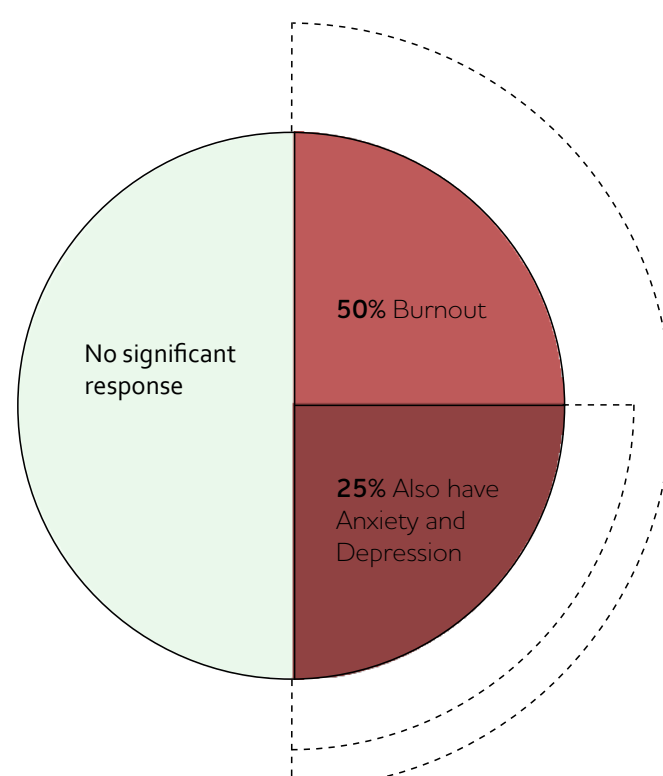
CONTRIBUTION TO GREENHOUSE GAS EMISSIONS:



AMONGST THE PUBLIC:



AMONGST MEDICAL STAFF:



Medical landscapes are often not conducive to a peaceful or comfortable human experience. Patients frequently find themselves unable to adjust to their new surroundings, enduring anxiety and depression (Alzahrani, 2021). The lack of nature, sunlight deprivation, poor ventilation, and noise within hospitals lead to increased exhaustion and stress in patients (Khullar, 2017). Visitors and healthcare workers, too, are not exempt from the negative impact of the typical medical environment (Cordoza et al, 2018; Rotenstein et al., 2023). Visitors find few places of comfort or privacy, making it difficult for them to cope

with anxiety and sadness. These same emotions impact healthcare workers as well. Although historically prevalent in healthcare, rates of burnout have increased since the pandemic, indicating a need for systemic change (Abramson, 2022; Khullar, 2017; Levine, 2021). It is important to reduce the stress of healthcare employees to reduce job turnover, shrinking of the workforce, and to increase the quality of service. By addressing the clear problems with the human experience in hospitals, there is phenomenal room for promoting healing and relaxation in this historically unpleasant space.

HOW MEDICAL LANDSCAPES

ARE CHANGING

A huge body of research is showing the healing power of nature (Chris Van Uffelen, 2017; Cooper Marcus, 1995; Cordoza et al., 2018; Healthcare Facilities Today, 2013; Jesus, 2017; Kamp, 2016; Jo Kreitzer, 2016; Khullar, 2017; Moreno, 2018; Parris, 2019; Planterra; Riva Ras, 2019; Viray, 2018; Warshaw, 2017; Wisconsin DNR Forestry News, 2017; Ulrich, et al, 2020; Yang et al, 2013). This beneficial connection we humans have to nature is biophilia, which is the human tendency to seek connection with nature and to derive a sense of wellbeing. Increasingly, medical landscapes are taking advantage of our innate connection to nature, and are being remodeled or built to provide access to green spaces. This might be in the form of healing garden spaces, or in a more universal, biophilic design throughout the medical infrastructure. This next step in healthcare design too could address sustainability concerns, pushing medical infrastructure towards being both more sustainable (Post Carbon Institute, 2014; Schropfer and Rowe, 2020) and more human.

BIOPHILIA

“The human tendency to seek connection with nature and to derive a sense of wellbeing.”

BENEFITS FROM DESIGNING FOR...

Biophilia	Sustainability	Community
By reducing energy needs, creating wildlife habitat, stormwater management, and improving environmental quality.	By creating additional opportunity for multi-functionality and land use intensification.	
By responding to local ecosystem context and in creating a unique experience within architecture.	Identity of Place	By making a space that reflects and engages with the locals, as well as creates a space for intergenerational exchange.
By creating universal physical or visual access to greenery and natural sunlight.	Access to Nature	By adding additional, accessible park space with recreational, educational, and leisure activities.
By reducing stress and making it easier for users to adjust to and even enjoy their surroundings.	Human Experience	By reducing the stress of users by making the medical landscape a garden/park experience and part of everyday life.
By reducing stress in patients, burnout in healthcare workers, increasing productivity, and reducing errors.	Quality of Care	By continuing to reduce stress levels in patients, staff, and visitors by adding to the sense of normalcy.
The sum total results in fewer complications, less inflammation, less pain medication, and a 10% faster recovery.	Patient Outcomes	By complimenting the effects of biophilia, but also contributing to improving the health of the community.
By reducing healthcare spending, and by reducing costs related to staff burnout, absences, errors, and turnover.	Economics	By providing space for local business, and continuing to reduce costs that are also prevented by biophilia.
By mitigating the impacts of air pollutants, noise, heat, and climate-related health risks.	Environmental Quality	By reducing the negative environmental impacts near communities and providing public green spaces.



Benefits of Biophilic and Community Design in Healthcare. There are many benefits to creating biophilic hospitals that also have space for communities to exist. Nature and community are vital in human health, and designing for both can improve the role and efficiency of healthcare systems.

Legend:
█ Key themes
█ Biophilic
█ Community
█ Both

THE GAP IN HEALTHY LANDSCAPES: COMMUNITY

The gap I identified in my research into healing gardens and biophilic design was that, largely, medical landscapes are separate from the community. Unless one has reason to visit a medical space, they will likely never go. However, there are a multitude of reasons why this could greatly improve the function of and experiences within medical spaces. By increasing the opportunity for social support, this type of design could benefit users mental and physical health (Becker et al., 2022; Ozbay et al., 2007; Reblin and Uchino 2008). By fostering a more social environment, there is evidence to suggest that patients will have better coping mechanisms, health outcomes, and even survival rates in the case of cancer (Cousson-Gelie et al., 2007). Similarly, healthcare workers are likely to benefit from the opportunities social landscapes present, allowing for a better quality of care. Humans are inherently social beings, and by designing space for everyday recreation and socialization within the Kaiser Permanente Medical Complex, it is possible to greatly improve the human experience within the landscape, and to make healthcare more effective for healing.

Creating spaces for the community, and by doing so creating a more social environment within the healthcare landscape, also stands to boost public health. Public green spaces reduce health issues within a community by encouraging socialization and physical activity (Becker and Browning, 2021) Additionally, increasing the sense of normalcy by making the healthcare landscape a less intimidating, pleasant part of the everyday experience can encourage people to seek medical attention sooner by combating healthcare avoidance and stress.

PRECEDENTS: DESIGNING FOR NATURE IN HEALTHCARE LANDSCAPES

Some of the key precedents I found in my research are shown here, including Mayo Clinic (lower left), Khoo Teck Puat Hospital (upper right), and Maggie's Clinics (lower right). These healthcare landscapes stood out to me for their biophilic design that merged with the regional ecosystems. Additionally, I was inspired by their healing philosophies, which were reflected in their design, that put the health and well being of the patient first. From these, I noted some common features of a successful, biophilic design: natural color palettes, accessibility, improving environmental quality, physical and visual access to nature, abundant natural light, air flow, curving shapes, and spaces for human comfort (Guenther and Vittori, 2013; Jesus, 2017; Kamp, 2016; Matheson, 2014; Mayo Clinic, n.d.). There was also evidence of creating artistic "garden" experiences that ceased to feel clinical, such as in Khoo Teck Puat and the Maggie's Clinics. And, seen only in the Khoo Teck Puat Hospital, was space for public socialization, recreation, and education.

The Mayo Clinic in Phoenix, AZ (below). This hospital is designed with the patient in mind, and features sunny, spacious waiting areas and healing gardens that allow for visual and physical access to the desert landscape.



Khoo Teck Puat Hospital in Singapore (above). This hospital features an incredible abundance of tropical greenery in its many walkways, garden terraces, and surrounding landscaping, some of which is open to the public for recreation and socialization.



Maggie's Clinics in Europe, various (below). These cancer clinics are designed to harness the healing influence of biophilia in its patients, turning the clinic into a stunning, artistic, garden space.



DEFINING THE GARDEN HOSPITAL TYPOLOGY

While investigating healing gardens and biophilic design, I found myself questioning what a garden was, and how a medical space could more fully embody a garden. Gardens are also multi-functional spaces where we go to relax, play, isolate or socialize. So, couldn't the healthcare landscape embody a garden to the full potential of the word? From this, the concept was born; the Garden Hospital as a biophilic design for medical landscapes that creates a space of gathering and community. For while nature is healing, normalcy and community too are pillars of individual health. The intent of the Garden Hospital is to design a site so that it responds to the ecological, environmental, and cultural systems of a site, bringing the spirit of the landscape and its people into healthcare infrastructure in a way that encourages it to become a part of everyday life, and not just when life is interrupted by illness.

There are five main goals in my typology for a Garden Hospital design. My intent for this new healthcare landscape format seeks to create a biophilic design that is in context with the landscape in which it sits and can provide space for local community. These goals all support each other and the philosophy of my design, which supports the health and wellbeing of its users. The main goals are as follows:

Community Space Examples:

This could include recreational spaces, such as sports/game courts, outdoor gyms, running tracks, and more. Educational or cultural spaces could also suit some sites, including stages, amphitheatres, or other spaces where events could be held.

Healing Space Examples:

Including healing gardens, chapels, water features,

Biophilic Design Examples:

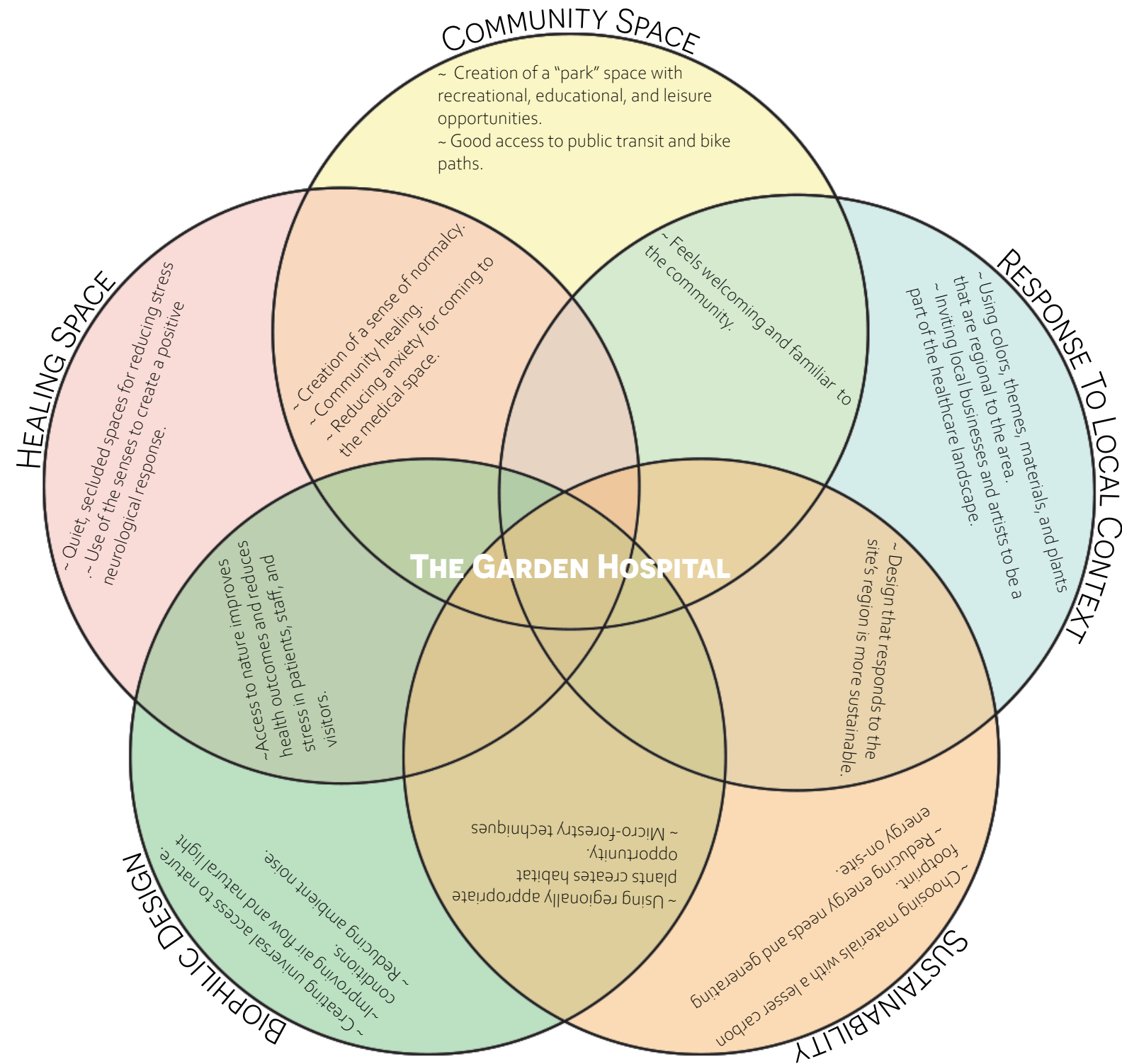
Including elements that contribute to universal access to nature throughout the healthcare experience. This could include indoor and outdoor planting, windows, skylights, material choices, natural airflow, outdoor terraces, organic forms, ways to engage the five senses, and much more.

Sustainability Examples:

This includes elements that reduce energy needs, produce resources on site, contribute to multifunctionality, and are made using more sustainable materials. Some examples might be solar panels, improved structural insulation, reducing plastic and metal usage, water-wise planting or irrigation, and more.

Response to Local Context Examples:

Taking inspiration from the local culture and landscape, this might involve works from local artists, spaces for religion, local business inclusion, community event spaces, and more to fit the design within its context.



The Main Goals of a Garden Hospital Typology. The Garden Hospital has 5 main goals; community space, healing space, biophilic design, sustainability, and response to local context. This diagram shows how these goals blend and support each other, showing how the Garden Hospital can create a landscape of healing.

RESEARCH QUESTION

What could a medical landscape that fully integrates biophilic design, sustainability, and local culture, community, and ecology into its infrastructure and healing philosophy look like?

SITE SELECTION AND ANALYSIS



SITE SELECTION


Overview

The site for this Master's Design Project, the Kaiser Permanente Medical Complex, is located in Live Oak within Santa Cruz County, Ca. Santa Cruz is a popular tourist destination with a proud, local community. The culture here is centered around the county's abundant and diverse natural landscapes, with surf, skate, mountain biking, hiking, and outdoor fun being a well loved part of life here. Any design at the Kaiser Permanente Medical complex should reflect the colors, themes, ecosystems, and local culture of Santa Cruz.

Santa Cruz County Line:



Legend:

-  Project Site
-  Santa Cruz County Boundary
-  Scenic Highway (Hwy 1)

0 mi 1 mi 2 mi



SITE SELECTION

Amenities and Residential

The site for the Kaiser Permanente Medical Complex is surrounded by largely residential areas, which makes up around 80% of the built environment within a 1 mile radius. Approximately 15,000 people live within walking distance of the site (United States Census Bureau, n.d.). However, within the area examined, there are very few restaurants or cafes. Even fewer of these are within pleasant walkable areas with easy pedestrian access or seating.

This presents an opportunity at this site to design for a local eatery or cafe to take up residence at the Kaiser Permanente Medical Complex. Not only would it provide a local flare to the cuisine available at the site, replacing a standard "clinical cafe," but it could serve as a hub to the local residents near the site.

Legend:

-  Project Site
-  Radius
-  Residential Area
-  Cafe
-  Restaurant



SITE SELECTION

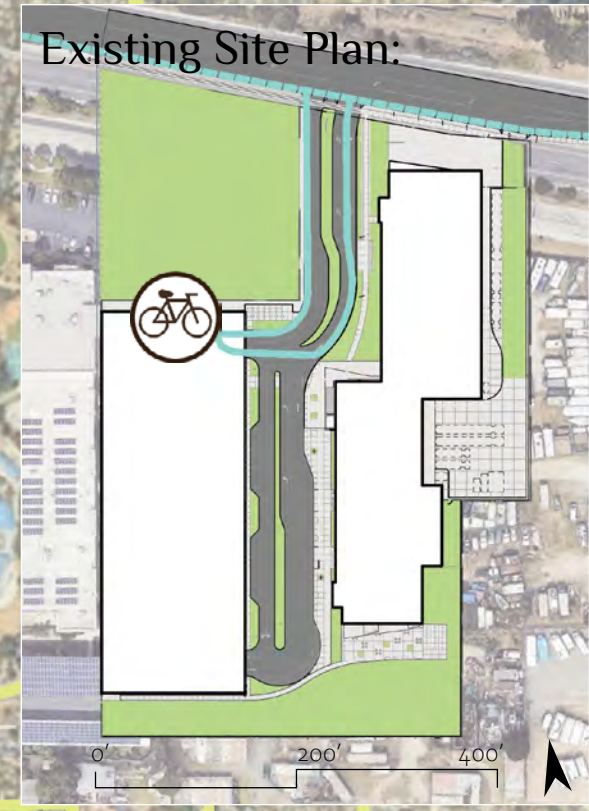
Bicycle Access and Green Spaces

Bicycle access to the site is already good, and connects the surrounding neighborhoods to various parks and serves as a mode for daily commuting. However, bicycle access to the site was set to improve. The Santa Cruz Planning Department required Kaiser Permanente to improve the existing bike paths along Soquel Ave that take bicyclist to the entrance at the northern end of the site. The existing, unprotected bike lane was set to be upgraded to a protected lane. As a result, the site already meets some of the sustainability criteria that is in the main goals of the Garden Hospital typology.

In addition to the parks within one mile of the project site, the Rodeo Gulch Ecological corridor runs less than 0.25 miles away from the eastern edge of the site. This corridor provides habitat for and facilitates the movement of several species of birds, bats, and insects that could potentially utilize the Kaiser Permanente site. This presents another opportunity in design to connect to this ecosystem and to provide resources that these species could utilize.

Legend:

-  Project Site
-  Radius
-  Rodeo Gulch Ecological Corridor
-  Public Park
-  Existing Bicycle Route
-  Future Coastal Rail Trail
-  New, Unprotected Bike Lane
-  New, Protected Bike Lane
-  Bicycle Storage





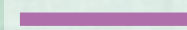



SITE SELECTION

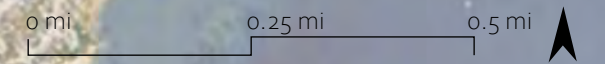
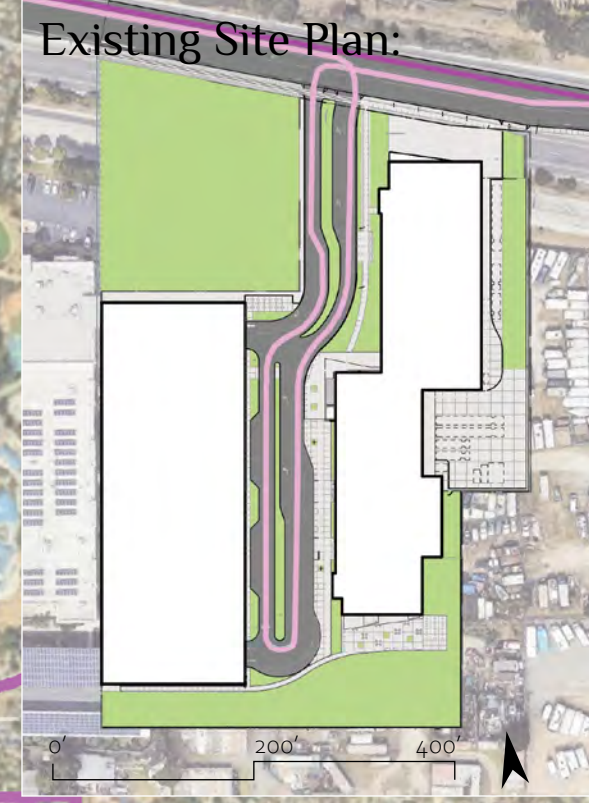
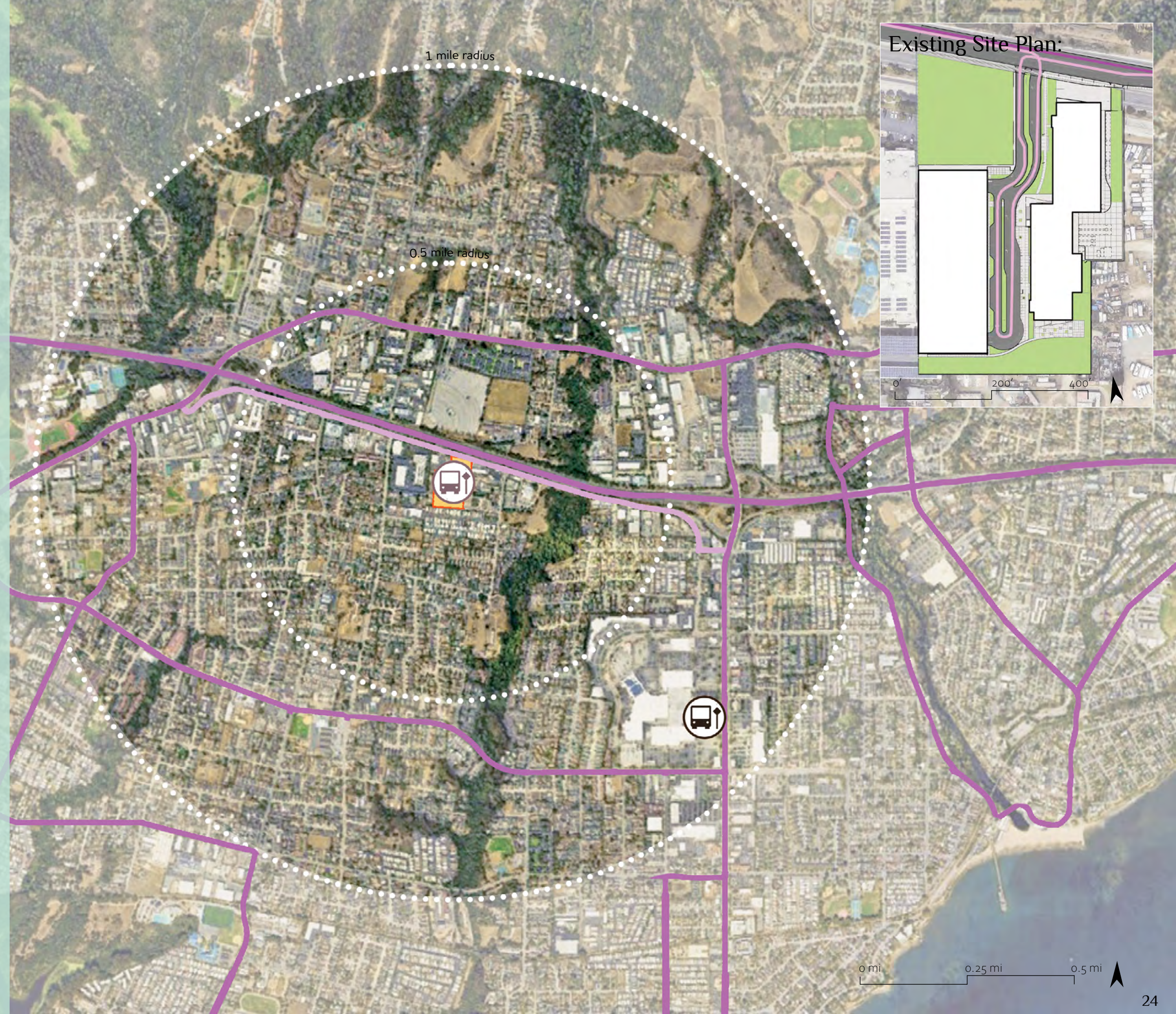
Bus Access

Bus access to the site is currently very poor, with the only bus stop being a 1.5 mile walk away. However, the Santa Cruz Planning Department required the Kaiser Permanente Medical Complex to include a bus stop within their site plan. As a result, there was intended to be direct bus access to the site. This makes access to the site without a personal vehicle easy, which provides better access to the site at a county-wide scale, and in a way that greatly benefits low income and elderly users of the site who are outside a walkable radius.

The excellent bus access continues to build up the sustainability potential of this site, but also brings more importance to the community space included in the Garden Hospital typology. This design opportunity for creating an inviting space that people can utilize in addition to or outside of their medical needs, has the potential to serve all of Santa Cruz county's residents.

Legend:

-  Project Site
-  Radius
-  Existing Bus Route
-  Future Bus Route
-  Existing Closest Bus Stop
-  Future Bus Stop



SITE SELECTION

Existing Design, Opportunities, and Constraints

The Kaiser Permanente Medical Complex is an existing design that went through the permit process with the Santa Cruz County Department. However, due to uncertain circumstances, it will never be built. However, all analysis and site plans have been made, providing this project with a solid starting point to work from. This existing design comes with several design opportunities and limitations, which are outlined below.

Opportunities:

- ① **Main Entry** - This space could connect to the outdoors in its design.
- ② **Cafe** - There is a cafe planned near the main entry that could be made a local business.
- ③ **Rooftops** - The rooftops of the Medical Office Building could be improved by green roof designs.
- ④ **Healing Garden/Recreation Space** - There is room for a small recreational "park" space and healing garden space within the current garden area.

Circulation - It would be possible to make more of this space appealing to users, and to encourage more circulation around the site.

Where No Change is Needed:

- ⑥ **Bus Access** - This site already has direct access by bus
- ⑦ **Bicycle Access** - The development would include bike lane improvement, and there is space for about 36 bicycles in the parking structure.
- ⑧ **Energy Generation** - The entire rooftop surface area of the parking structure is shaded by solar panels.

Constraints:

Layout - I cannot significantly alter the layout of the roads, sidewalks, access points, etc.

Architecture - I cannot significantly alter the layout of the buildings, especially where there are supporting beams.

Accessibility - All of my designs must follow ADA regulations.

- ⑤ **Existing Trees** - I must preserve all existing native trees that were kept in the original design.



An aerial architectural rendering of a building complex. The central focus is a large, multi-story building with a blue roof and several white rectangular volumes. To the left, there's a landscaped area with a winding path and various greenery. To the right, a road with a median and trees runs parallel to the building. The background shows a blurred cityscape. The text 'DESIGN INTRO' is prominently displayed in the center, with 'CONCEPTS' below it.

DESIGN INTRO

CONCEPTS

DESIGN

Concepts

Design was centered around the Garden Hospital Typology, as described on page 11, with the intent to create an ecological, healing space that could be utilized as both a healthcare and community landscape.

Plan View Program Concept:

Seen in plan view, there are several key attractions for both community and healthcare programs:

Main Entrance and Lobby: The primary entrance to the Kaiser Permanente Medical Complex. This space is designed to feel like a forest both inside and out, reducing stress and making the environment feel less “clinical.” It is also a nexus for accessing the other programmatic elements of the building, such as the cafe, rooftop healing garden, and leisure areas, or accessing healthcare services at the various clinics.

Cafe: Hosting a local chain, the cafe is a place for locals, patients, staff, and other visitors to get food and drinks, to relax, and to socialize.

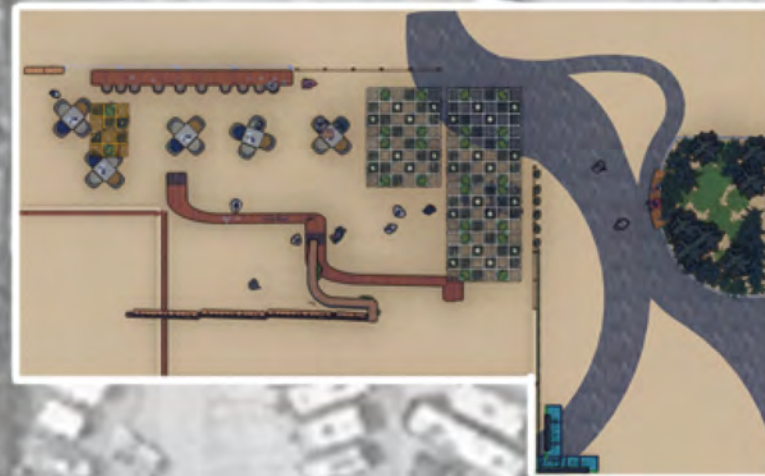
Medical Clinics and Waiting Rooms: Not intended for public access outside of healthcare needs. Various services exist in this complex, including physical therapy, chemo, optometry, pharmacy, radiology, urgent care, and more.

Oak Grove Garden Park: Providing a space for interacting with nature, light exercise, socialization, meditation, and stress relief that is accessible to healthcare-associated users of the site and the community. This includes features such as the bocce ball courts, the trail, and the pergola.

Staff Area: A private, pleasant space for staff to take a break from the bustle within the complex.

Coastal Bluff Healing Garden: An ADA accessible healing garden with multiple points to relax, socialize.

Wildflower Field Green Roof: Making a previously underutilized rooftop an ecological hub and creating access to nature via skylights.



DESIGN

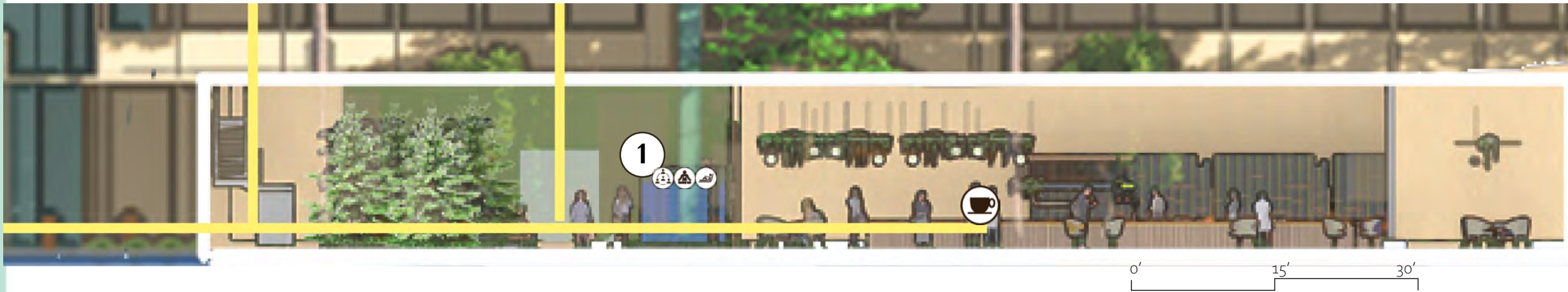
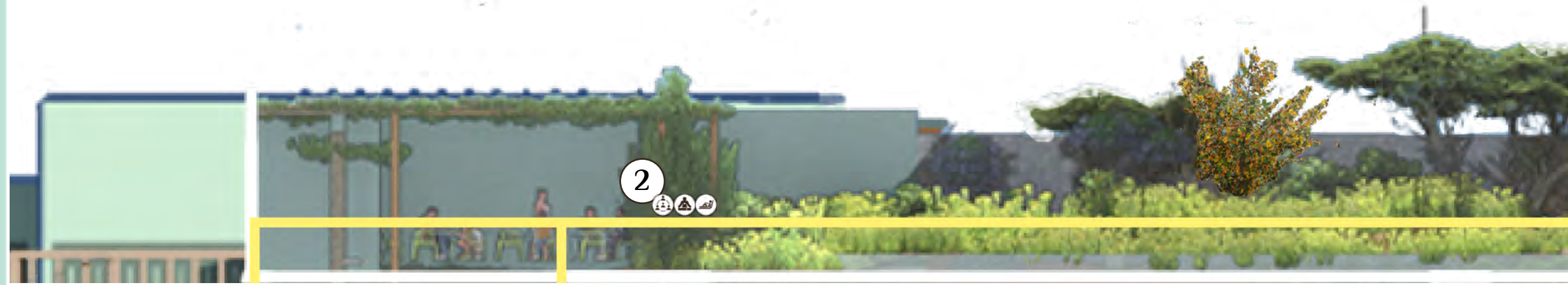
Concepts

Vertical Program Concept:

The program and circulation for the designed portion of the site extends vertically as well. Guided by signage within the Main Entrance Lobby, accessed by the stairs or elevator, visitors might ascend to the Coastal Bluff Healing Garden. At the top of the Kaiser Permanente Medical Complex, there are additional spaces within a healing garden to relax and socialize.

Legend:

- ① Main Lobby
- ② Quiet Seating Area
- ③ Seating Circle/ADA Turnout
- ④ Ocean view Seating Area
- ☕ Cafe
- 🏡 Community Space
- 🌿 Peaceful Space
- 🚶 Pedestrian Circulation
- 🌳 Leisure



DESIGN

Concepts

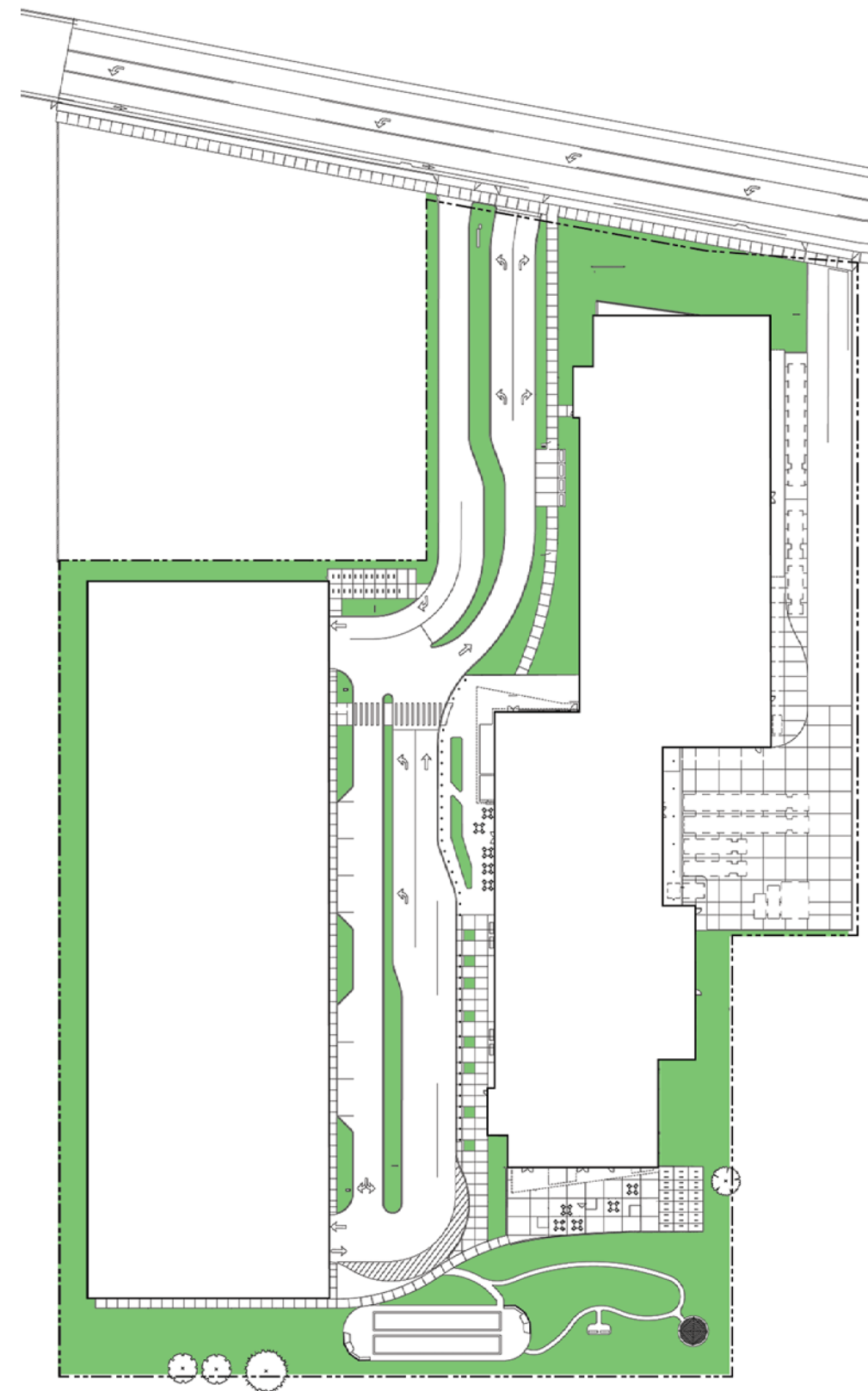
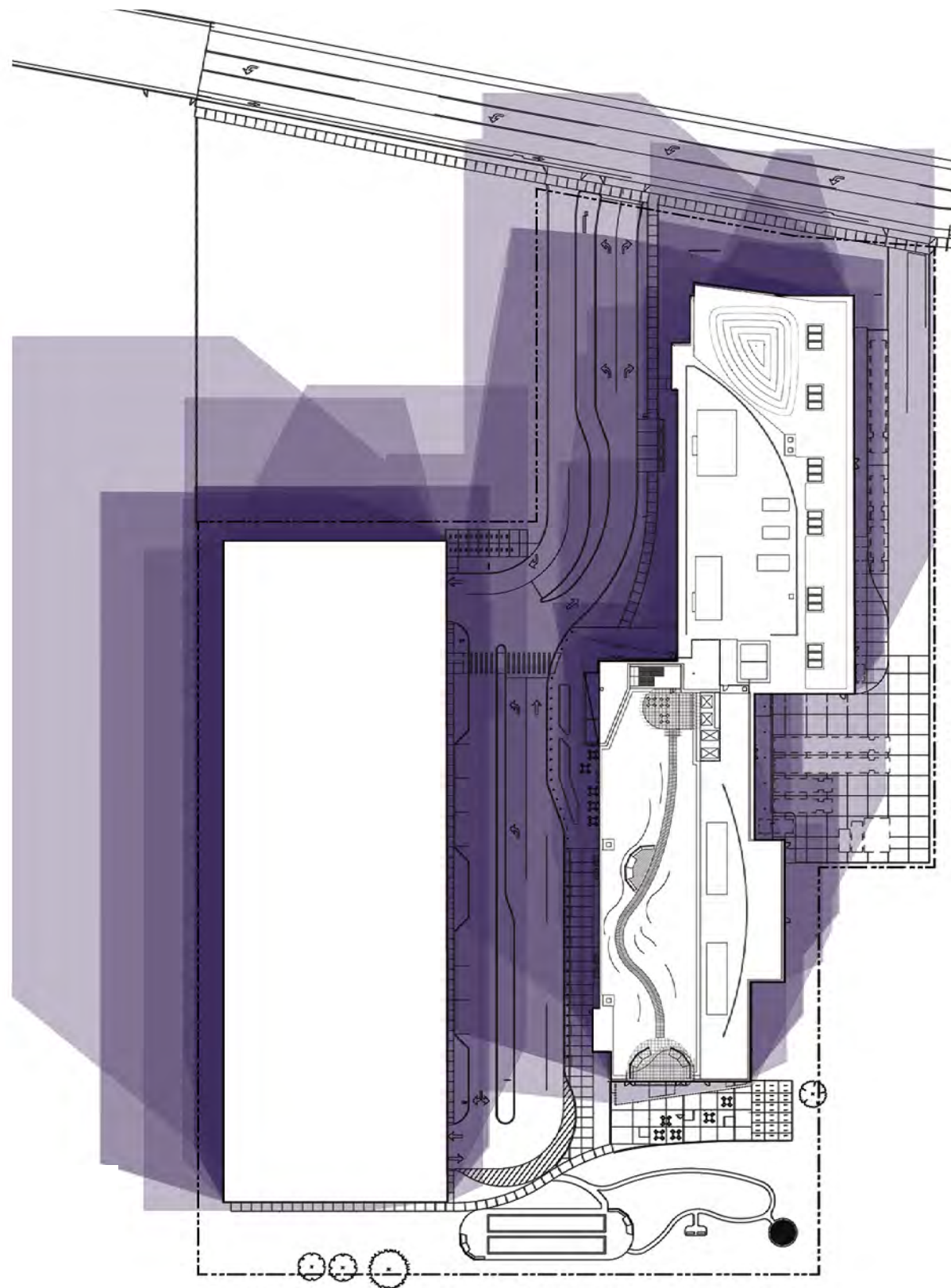
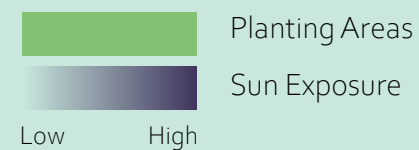
Analysis:

To determine the placement of the planting themes, each representing a regionally native plant community, a shade analysis was completed and compared to the available planting areas.

Shade Analysis (Left) - Much of my site has low sun exposure as a result of the 4-5 story tall buildings. In particular, the space between the parking structure and medical complex is frequently shaded. The southern portion of the site, however, receives full sun.

Planting Areas (Right) - There is an abundance of plant-able space at my site. These will be planted with native, drought-tolerant plants following themes determined by sun exposure

Legend:



DESIGN

Concepts

Planting Concept:

The planting themes in my design are regionally native, canonical parts of the Monterey Bay Area's landscape. Placement of each theme was decided by sun exposure or by physical factors such as viewshed opportunity and access. By using a diversity of planting themes from distinct plant communities, my design responds to local context and creates a garden experience that is rooted in the place.

Legend:



Coastal Terrace Prairie - Grass filled fields with low shrubs along windy bluffs. Native and endangered in Santa Cruz.
Dry Grassland/Wildflower Field - Seasonally very dry, but bursting with annual wildflowers. Existing in hot, dry places in the inland parts of the Monterey Bay Area.



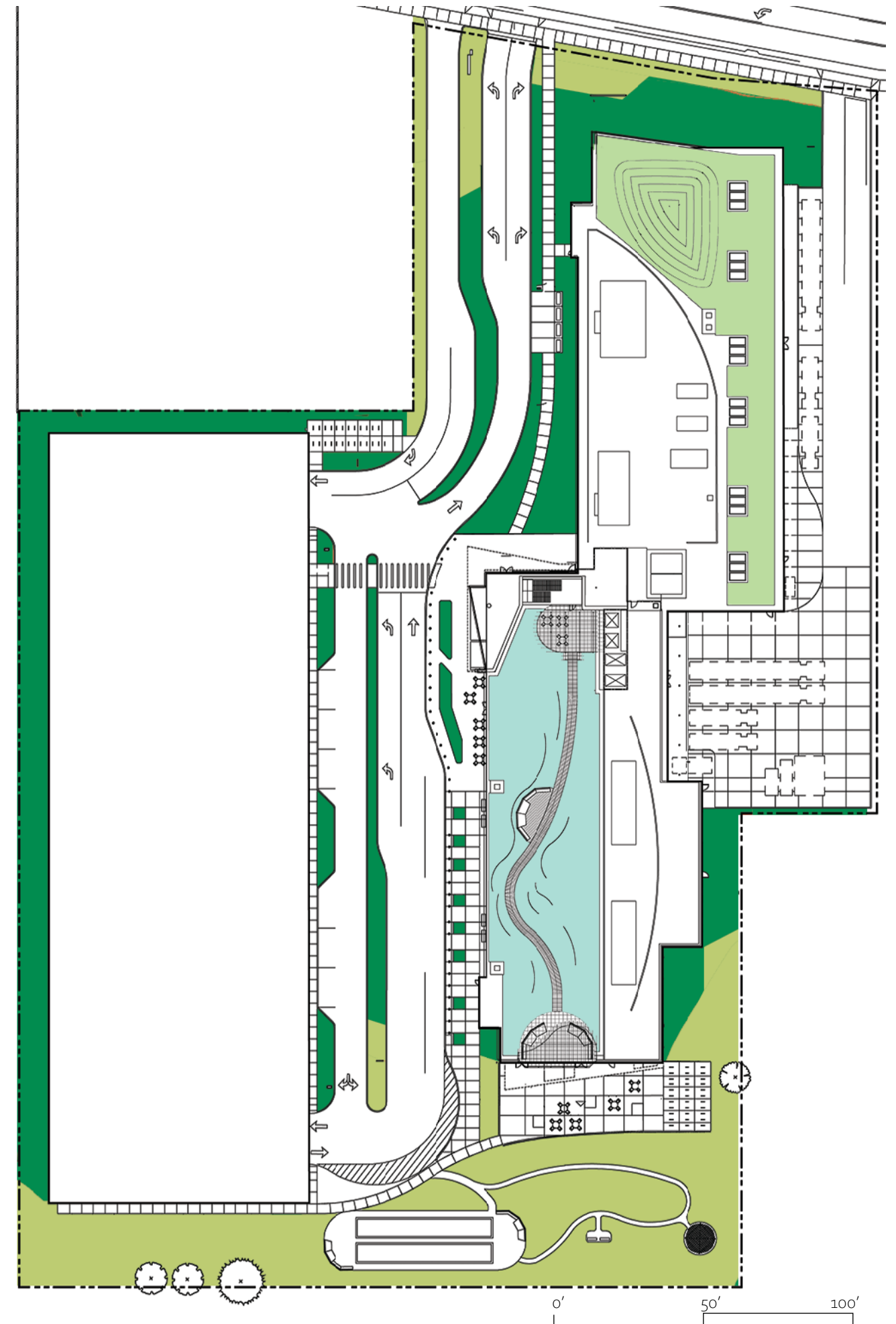
Coastal Bluff Scrub - Existing on the dry, steep bluffs bordering the ocean and featuring a diverse array of perennials, shrubs, and trees that can withstand salt and wind.



Redwood Forest - Abundant within the Santa Cruz Mountains, this cool, damp forest is a huge part of the local experience. Towering redwoods shade a lush under story of redwood sorrel and ferns, with occasional small trees and shrubs.



Oak Scrub - A common, but stunning community within the Santa Cruz landscape. Featuring twisting oaks surrounded by a diverse carpet of drought-tolerant shrubs, grasses, and wildflowers.




DESIGN






















Planting Plan

Home to the Redwood Forest and Oak Scrubland planting themes, the ground level of the Kaiser Permanente Medical Complex is heavily planted. The borders between the themes blend together, creating a pleasant, gradual transition not unlike how these plant communities exist in the local landscape. On the rooftops, plantings mimicking Dry Wildflower Fields, Coastal Terrace Grassland, and Coastal Bluff Scrub exist. Together, they recreate the sensation of a day spent in nature, similar to some of the hiking trails within Santa Cruz County.

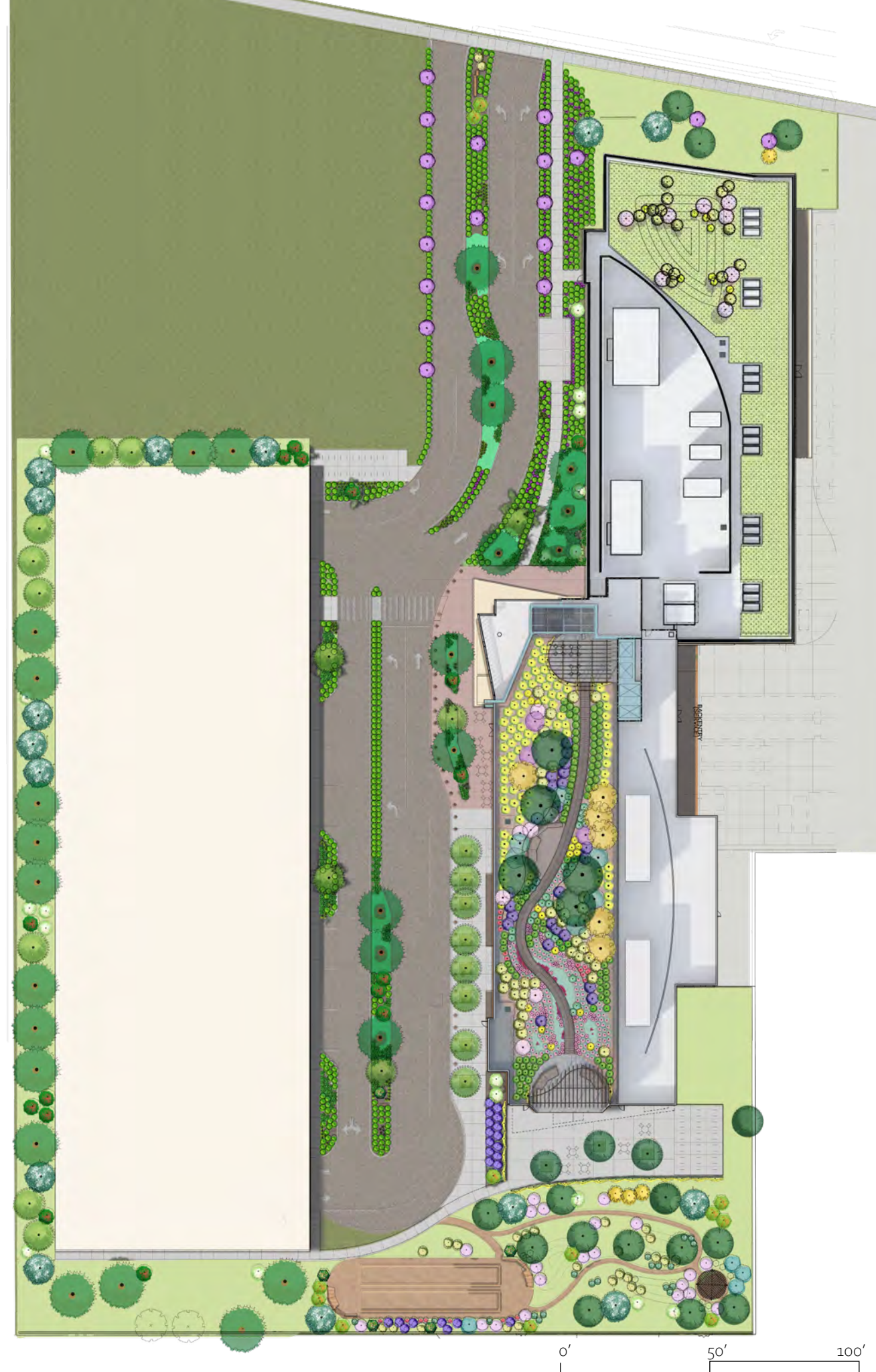
It is intended for this design to fit the ecological and climate context of the site. The lush planting is all drought tolerant, and will not require regular irrigation once established. This is perfectly suited to the dry summers and typically short wet season experienced on the central Californian coastline. The diverse planting palette creates habitat for native species, including a multitude of birds and insects. Humans, too, can thrive in this landscape. There exist many points of interest within the design. While holding mainly evergreen structure, seasonal blooms bring ephemeral splashes of color to this landscape.

Plant Palette:

-  Existing Arroyo Willow, *Salix lasiolepis*
-  Existing Coast Redwood, *Sequoia sempervirens*
-  Coast Redwood, *Sequoia sempervirens*
-  California Bay Laurel, *Umbellularia californica*
-  Coast Live Oak, *Quercus agrifolia*
-  Flannel Bush, *Fremontodendron californica*
-  Blue Elderberry, *Sambucus mexicana*
-  Coast Silktassel, *Garrya elliptica*
-  California Lilac, *Ceanothus thrysiflorus*
-  Black Sage, *Salvia melifera*
-  Coffeeberry, *Frangula californica*
-  Oceanspray, *Holodiscus discolor*

-  Toyon, *Heteromeles arbutifolia*
-  Howard McMinn Manzanita, *Arctostaphylos 'Howard McMinn'*
-  Woolly Sunflower, *Eriophyllum staechadifolium*
-  Pt Reyes Ceanothus, *Ceanothus gloriosum*
-  Coyote Bush, *Baccharis pilularis*
-  Deer Grass, *Muhlenbergia rigens*
-  California Sagebrush, *Artemisia californica*
-  Coastal Bush Lupine, *Lupinus arboreus*
-  Seaside Buckwheat, *Erigeron latifolium*
-  Seaside Daisy, *Erigeron glaucus 'Wayne Roderick'*
-  Sea Thrift, *Armeria maritima rubrifolia*
-  Red-Flowering Currant, *Ribes sanguinum*
-  California Fuchsia, *Epilobium callum*
-  Norfolk Pine, *Araucaria heterophylla*
-  Western Sword Fern, *Polystichum munitum*
-  Coastal Woodfern, *Dryopteris arguta*
-  California Maidenhair Fern, *Adiantum jordanii*
-  Douglas Iris, *Iris douglasiana*
-  Orchid Vine, *Callaem macropterum*
-  Bluff Lettuce, *Dudleya farinosa*
-  Seed Mix, native grasses and wildflowers
- Redwood Sorrel, *Oxalis oregana*

Carmel River Watershed Stewardship Manual, n.d.; Holland, 1986; Keator and Middlebrook, 2007; Santa Cruz County Native Plant Society, n.d.).



0' 50' 100'



DESIGN

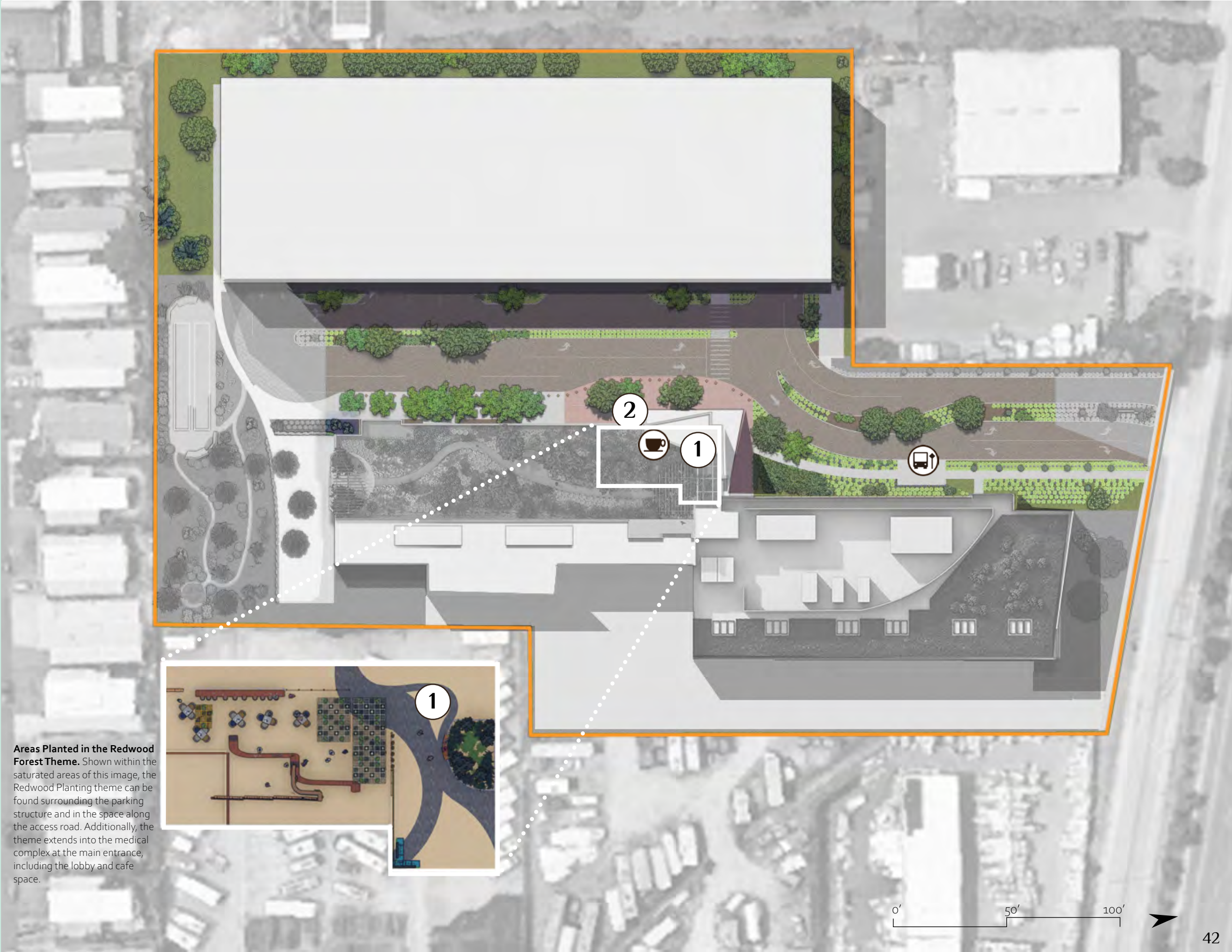
THE REDWOOD FOREST

THE REDWOOD FOREST

Location

Upon entering the Kaiser Permanente Medical Complex's site, the visitor will first experience the Redwood Forest. The whisper of grass in the breeze, speckled generously with blooms of iris, elderberry, and California Lilac lead the visitor deeper into the site. As they near the buildings, towering Coast Redwoods might give the illusion that they are standing in the shade of a local forest, rather than that of the medical complex. The line between the natural and healthcare landscape is intentionally blurred, providing visitors with an immediate and ubiquitous connection to nature.

Even after the visitor has stepped inside the Kaiser Permanente Medical Complex, the forest is still tangible and close. Plantings within the main lobby and visual access to the plantings outside through an abundance of tall windows preserve this biophilic experience. Reaching most windows of the complex, even at the highest floor, the visitor might find that the Redwood Forest is always accessible. This serves to reduce the stress of all who interact with the Kaiser Permanente Medical Complex, improving healing and the human experience.



Areas Planted in the Redwood Forest Theme. Shown within the saturated areas of this image, the Redwood Planting theme can be found surrounding the parking structure and in the space along the access road. Additionally, the theme extends into the medical complex at the main entrance, including the lobby and cafe space.

Legend:

- 1 Main Entrance and Lobby
- 2 Cafe Seating
- Coffee Cup Icon Cafe
- Bus Icon Bus Stop

THE REDWOOD FOREST

Planting Plan - Main Entrance and Access Road


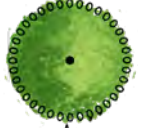












Within the Redwood Forest, tall Coast Redwoods help to shift the often shady conditions to feel more like the experience within a local forest. While the plantings are intended to resemble a forest with a lush, blooming meadow, the typically moisture-loving species were replaced with drought-tolerant plants that fulfill the same visual role. This allows for this planting theme to not require regular irrigation once established, despite its inspiration coming from a temperate rainforest.

Once the visitor reaches the main entrance, the forest will seem to expand into the building as well. A planting hosting a living, miniaturized forest uses indoor plant species, such as Norfolk Pine, to represent their larger counterparts outside. The Redwood Forest is also visually accessible at all levels of the buildings. The eventual height of the redwood trees means that as they mature, they will contribute to the universal access to nature at the Kaiser Permanente Medical Complex.



Outdoor (above) and Indoor (right) Plant Palette Bouquets.
A visual comparison of the plant palettes outside and inside the Kaiser Permanente Medical Complex within the Redwood Forest themes. While some plant species are found in both areas, each feature a largely different mix of plants. However, there is still a resemblance between these planted areas.

Plant Palette:

-  Coast Redwood, *Sequoia sempervirens*
-  California Bay Laurel, *Umbellularia californica*
-  Blue Elderberry, *Sambuccus mexicana*
-  California Lilac, *Ceanothus thrysiflorus*
-  Coffeeberry, *Frangula californica*
-  Oceanspray, *Holodiscus discolor*
-  Toyon, *Heteromeles arbutifolia*
-  Deer Grass, *Muhlenbergia rigens*
-  Norfolk Pine, *Araucaria heterophylla*
-  Western Sword Fern, *Polystichum munitum*
-  Coastal Woodfern, *Dryopteris arguta*
-  Douglas Iris, *Iris douglasiana*
-  California Maidenhair Fern, *Adiantum jordanii*
-  Redwood Sorrel, *Oxalis oregana*



0' 50' 100'



THE REDWOOD FOREST

Approaching the Main Entrance

When the visitor arrives at the Kaiser Permanente Medical Complex, they will first go through the Redwood Forest. A lush meadow of billowing Deer Grass, with seasonal Iris and California Lilac, creates a soothing whisper and sets the stage for a unique garden experience. A backdrop of Coast Redwoods helps shift the feeling of being in the shade of tall buildings to standing within a local forest. Perhaps the stress of being in a medical space can be softened by the lush planting.

The progression of experience from the meadow to the heart of the Redwood Forest sets the stage for the biophilic experience at the Kaiser Permanente Medical Complex. The visitor will be struck by both the beauty and familiarity of this iconic Santa Cruz landscape, which will help to break down the anxiety that is commonly felt when going into healthcare landscapes.

The Bus Stop (Upper Right). Stepping off the bus, the visitor is greeted by the meadow within the Redwood Forest. In the springtime, vibrant Douglas Iris and soft Oceanspray blooms create a garden-like scene. Wood benches tuck into the planting, creating a pleasant space to wait for the next bus. Within this biophilic design, the anxiety of coming and going from a healthcare landscape might be lessened.

Approaching the Main Entrance (Lower Right). As the visitor approaches the Main Entrance, the Redwood Forest begins to reach towards the sky. A thick carpet of Redwood Sorrel and ferns with bright white splashes from Oceanspray give the impression of a forest grove.

A Bird's Eye View overlooking the Redwood Forest (Lower Left). Looking South at the Kaiser Permanente Medical Complex, one can see much of the Redwood Forest planting theme.



THE REDWOOD FOREST

Inside: The Lobby and Cafe

Stepping into the Kaiser Permanente Medical Complex, the visitor will feel as though the Redwood Forest followed them inside. Greenery, natural materials, organic forms, and the sound of running water will create an immediate sense of calm, counteracting the anxiety that often accompanies medical spaces.

A lush planter filled with a living, miniaturized forest will give a sense of the Coast Redwood trees and ferns outside, with a lush groundcover of Redwood Sorrel. If one were to circle this element, they would be

able to see the central “clearing” similar to those scattered throughout the hills of Santa Cruz.

While abundant windows provide visual access to nature, the walls of the main lobby bring the forest floor to central view. Mosses and ferns are arranged into intriguing patterns, creating an art installation inside that further contribute to the biophilic experience.

All of this creates a space to linger, rather than just to pass through. The visitor might be tempted by the

sylvan ambiance and the smell coming from Verve Cafe. Rather than a generic “hospital cafe,” a local chain has taken up residence in the Kaiser Permanente Medical Complex. Perhaps visitors will come to enjoy all of the experiences this re-imagined as part of their daily life, and not just when they need medical services.



Perspective of the Main Lobby. Looking into the Kaiser Permanente Medical Complex from just inside the Main Entrance. Shows the Verve Cafe, signage, vertical forest floor, elevator, “stream” paving, water feature, indoor planter, and open ceiling.

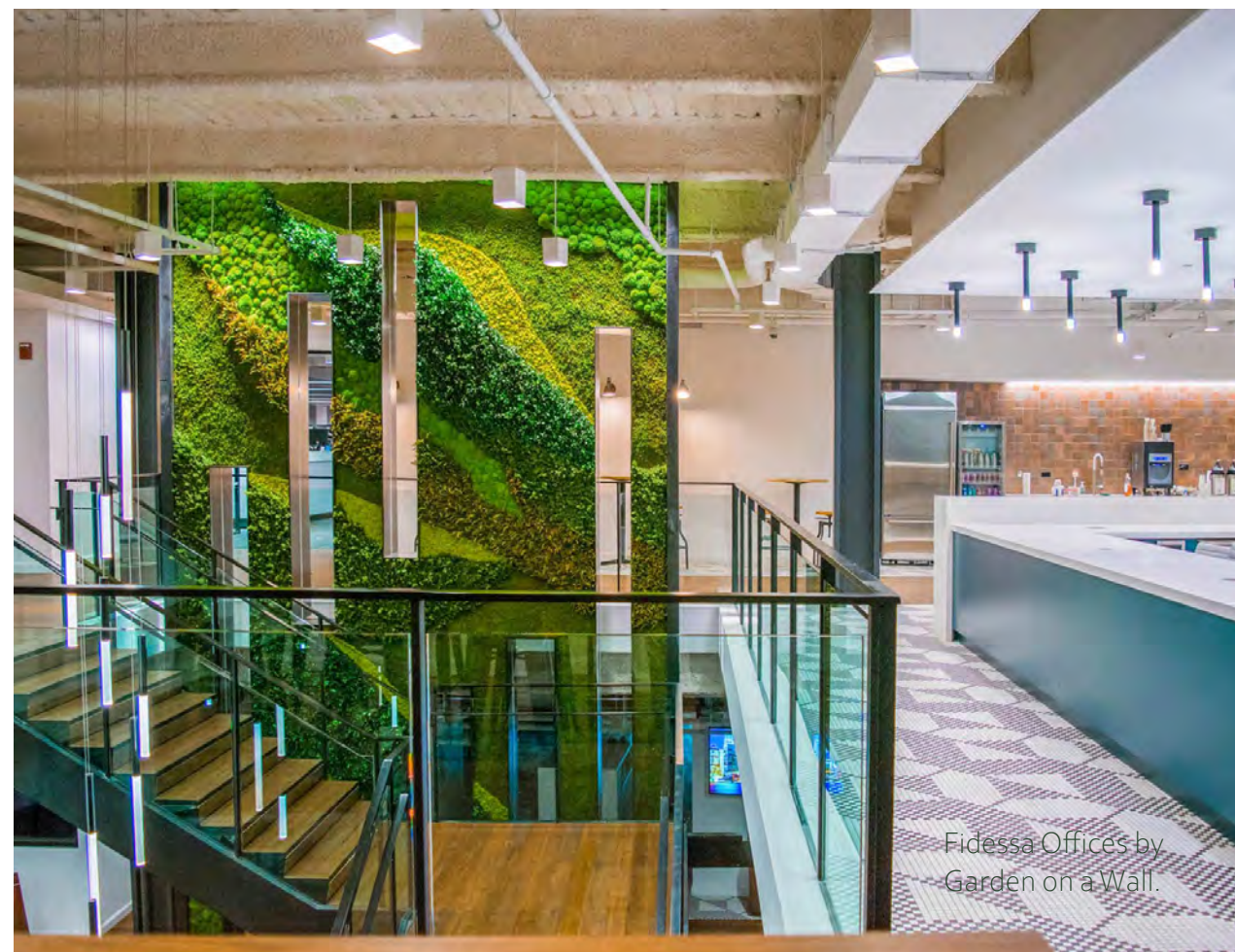
THE REDWOOD FOREST

The Vertical Forest Floor

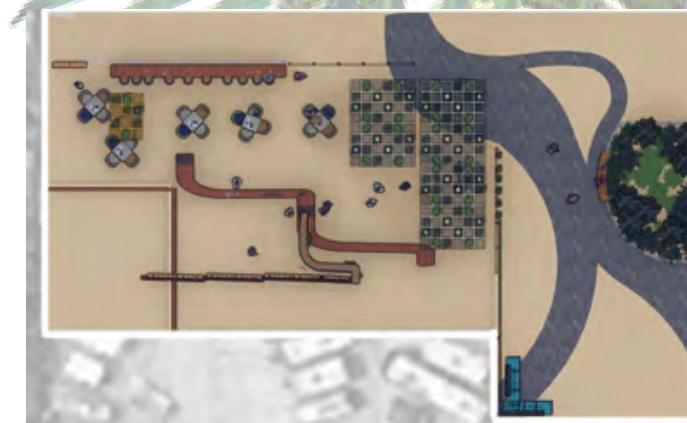


Contributing to the sense of being within a Redwood Forest inside the Kaiser Permanente Medical Complex, the green walls within the main lobby resemble the forest floor. The Vertical Forest Floor uses actual plants that have been preserved using a method employed by the firm, Garden on a Wall, in their designs. This method harvests plants at their prime and then fills them with a biodegradable substance that keeps them looking as though alive (Garden on the Wall, n.d.). This installation is low maintenance, requires no soil, light, irrigation, or fertilizer, and has a lifespan guarantee of more than 10 years. Additionally, this technology meets the WELL building standard, and is considered to be safe and beneficial for healthcare interiors. Additionally, it meets LEED standards and is considered to be sustainable.

At the Kaiser Permanente Medical Complex, the Vertical Forest Floor uses primarily ferns and mosses to create patterns and textures. Although non-living, this art installation creates a point of interest for visitors and contributes to biophilia.



Fidessa Offices by Garden on a Wall.



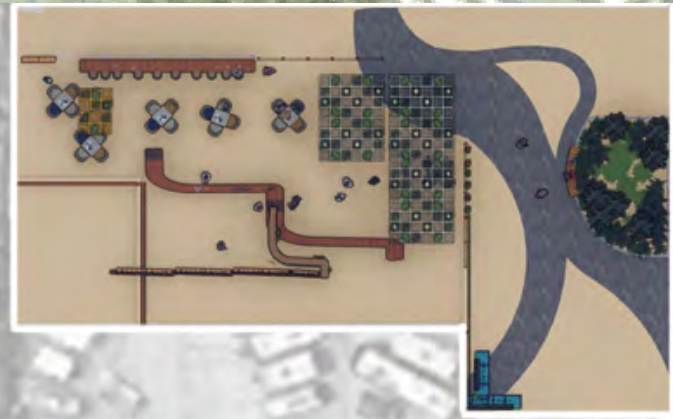
The Vertical Forest Floor Elevation (Above). This shows the relationship of the vertical garden to the Verve Cafe and elevator. This also shows how the moss and ferns can be used to create an intriguing art piece that is also a biophilic element.

THE REDWOOD FOREST

The Miniature Redwood Forest

The Miniature Redwood Forest Planter uses species that are frequently used as indoor plants to create a representation of the planting outside. This planter is designed to be in-ground, giving a more immersive feel to visitors who walk up to gaze at this installation or sit

alongside it on an adjoining bench. This large, living element of the Kaiser Permanente Main Lobby provides a living, beautiful element to present a tangible forest that helps to break down the stress of entering a medical space.



Elevation of the Miniaturized Redwood Forest Planter. Showing the indoor "forest" as an aesthetic and biophilic element within the Kaiser Permanente Main Lobby.

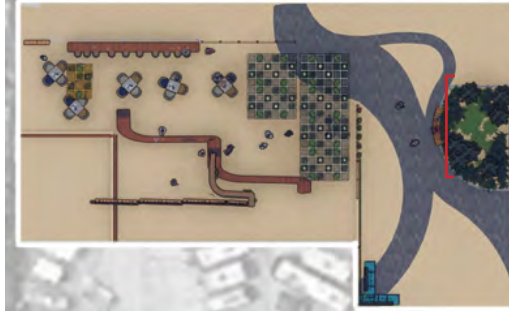
THE REDWOOD FOREST

The Miniature Redwood Forest

The planter housing the Miniature Redwood Forest is design to have efficient water usage and for safety. Using a re-circling, sub-irrigation system, the amount of water that this planting uses is reduced. Additionally, this keeps the surface of the growing media, which is sterile and inorganic (Planterra, n.d.), relatively dry. This design choice means that this design will not significantly increase airborne soil microbes (Surial et al., 2022; Thakulla et al., 2021; Urquhart, 2022). While this poses no risk to the average visitor, this removes a concern about indoor gardens in medical spaces for immunocompromized or post-operative visitors to the Kaiser Permanente Medical Complex.

Legend:

- ① Porcelain Pavers
- ② Dry-set Mortar
- ③ Cementitious Backer Unit
- ④ Cork Underlay
- ⑤ Concrete Sub floor
- ⑥ Concrete Planter with Rebar Mesh Reinforcement
- ⑦ Caulk
- ⑧ Overflow Pipe
- ⑨ Perforated Pipe
- ⑩ Transition to Solid Pipe. To pump.
- ⑪ Mona Plant Sipper Linkable Tanks
- ⑫ Inorganic Growing Media (Includes pumice, expanded clay, vermiculite, and surfactant)
- ⑬ Filter Fabric
- ⑭ Drainage/Reservoir Layer (1/4" gravel)
- ⑮ Plantings
- ⑯ Leveling Concrete





DESIGN

THE OAK GROVE GARDEN PARK

THE OAK GROVE GARDEN PARK

Location

The Oak Scrubland planting theme exists within the sunniest parts of the Kaiser Permanente site. This includes the plant-able space at the Northern end of the site where it border Soquel Ave, and the Southern end of the site. This planting theme includes several programmatic elements, such as the Bocce Ball Courts, a healing garden with a trail and pergola, and a private staff area.



- Legend:**
- ① Bocce Ball Courts
 - ② Trail
 - ③ Pergola
 - ④ Staff Area

THE OAK GROVE GARDEN PARK

Planting Plan

Plants for the Oak Scrubland theme were selected based on several considerations; drought-tolerance, blooms, pollinator-friendliness, native, and their presence within Oak Scrub plant communities or similar dry, full sun conditions. Neurological responses to color was also used in this design to reinforce the energy and programs of this space (Ghuman, 2023; Ry et al., 2021). Surrounding the Bocce Ball Courts, a vibrant palette of ornamental natives with flashes of bright red indicate a more energetic space. However, around the trails and the pergola within the healing garden, blues, greens, lavender, and pale yellows are more abundant to suggest a more peaceful space. This design also uses gentle earth mounds, planting, and a winding trail to create a sense of hide-and-reveal, as well as creating more visual and auditory separation of space within the healing garden.



- Coast Live Oak, *Quercus agrifolia*
- Flannel Bush, *Fremontodendron californica*
- Coast Silktassel, *Garrya elliptica*
- Black Sage, *Salvia melifera*



- Oceanspray, *Holodiscus discolor*
- Toyon, *Heteromeles arbutifolia*
- Howard McMinn Manzanita, *Arctostaphylos 'Howard McMinn'*
- Pt Reyes Ceanothus, *Ceanothus gloriosum 'Anchor Bay'*
- Coyote Bush, *Baccharis pilularis*
- Deer Grass, *Muhlenbergia rigens*
- California Sagebrush, *Artemisia californica*

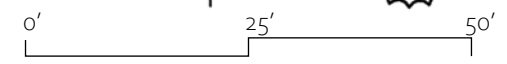


- Orchid Vine, *Callaem macropterum*
- Red-Flowering Currant, *Ribes sanguinum*
- California Fuchsia, *Epilobium callum*
- Seed Mix, native grasses and wildflowers
 California Melicgrass, *Melica Californica*
 Purple Needlegrass, *Stipa pulchra*
 Red Fescue, *Festuca rubra*
 Giant Wildrye, *Elymus condensatus*
 California Poppy, *Escholzia californica*
 Common Yarrow, *Achillea millefolium*
 Miniature Lupine, *Lupinus bicolor*
 Common Tidy Tips, *Layia platyglossa*

Healing Garden Plant Palette:



Bocce Ball Courts Plant Palette:



THE OAK GROVE GARDEN PARK

The Bocce Ball Courts

Vibrant blooms, the crunch of decomposed granite underfoot, and the cheerful hollers of visitors defines the experience at the Bocce Ball Courts, and even that of the site itself. This recreational area is positioned so as to be within the line of sight from road leading into the site, giving this unusual, recreational element a clear presence. This creates a more lively and welcoming first impression to the Kaiser Permanente Medical Complex, and may be a draw to the local community. This game with intergenerational popularity gives locals a reason to utilize this space for socialization, recreation, and everyday life. Additionally, it continues to reduce the “clinical” feel of the site while improving a sense of community and normalcy, further reducing stress and promoting healing.



THE OAK GROVE GARDEN PARK

The Healing Garden

If the visitor wishes to seek a quiet space to reflect, meditate, or simply relax, just a short walk into the healing garden will lead them to a quiet, natural space. Plants and earthen mounds quickly help the visitor to feel as though they have left the medical complex behind and are now enjoying a separate, native garden experience. Fragrant blooms and the sound of birds and insects engages the senses, and soothes the soul. At the tip of the loop, the visitor will find a pergola, proving a place to rest and stay still that provides visual and auditory separation from the rest of the site. This creates space for the more traditional healing garden to exist at the Kaiser Permanente Medical complex, providing visitors with its benefits for stress reduction.





DESIGN

INTRODUCTION TO GREEN ROOF DESIGN

THE COASTAL BLUFF ROOFTOPS

Introduction to Green Roof Design

Green Roof Material Layers:

- ① Plant Layer
 - Irrigation System
 - Temporary, for plant establishment
- ③ Jute Mat
 - 0.25" thick
 - Erosion control, biodegradable
- ④ Growing Media
 - Thickness varies. <6" extensive, >6"-10" semi, >10" intensive
 - Expanded clay, compost, additional soil amendments (varies)
 - Lightweight, water retention, aeration, resists compaction
- ⑤ Filtration Layer
 - Included layer in drainage layer
 - Removes particles, prevents system clogging
- ⑥ Drainage/Retention Layer
 - 60mm thick HDPE panels
 - Lightweight, protective, improves water flow, retains water
- ⑦ Root Barrier
 - 20-40 mm thick roll, dependent on installation intensity
 - Lightweight, non biodegradable, durable
- ⑧ Insulation Layer
 - Thickness varies, 4"-48" dependent on design,
 - Lightweight, closed cell, non biodegradable, thermal stability
- ⑨ Waterproofing Layer
 - <2mm thick, PVC membrane roll
 - Lightweight, non biodegradable, recyclable
- ⑩ Leak Detection System
 - <2mm thick, liquid application
 - Pinpoint leak detection using Electric Field Vector Mapping
- ⑪ Roof Deck
 - Presumed concrete with steel rebar
- ⑫ Parapet
- ⑬ Aluminum Edging
- ⑭ Gravel Ballast
 - Supports edging
- ⑮ Required Setback
 - Access, maintenance, protection

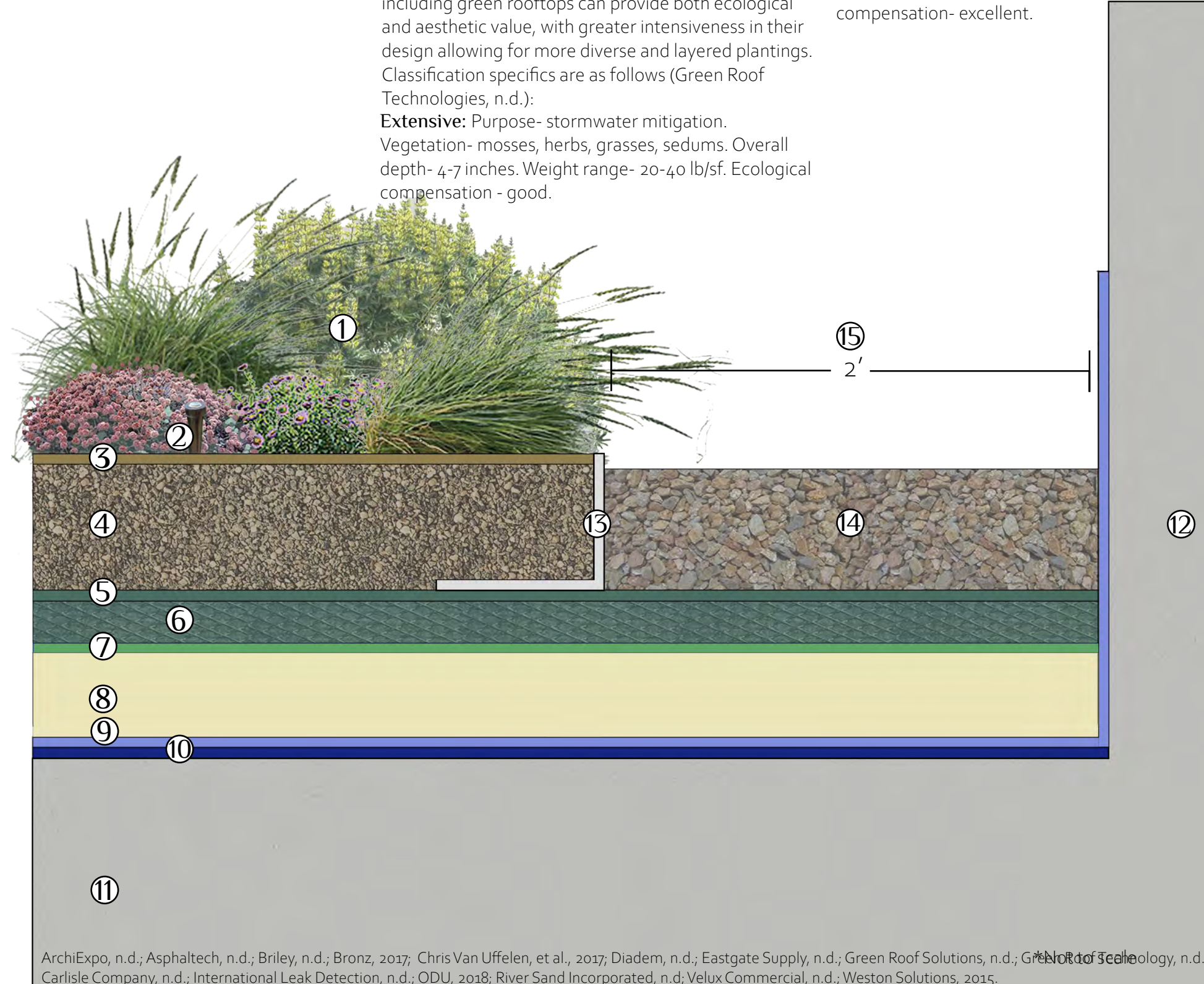
Green Roof Classifications:

Green roofs are classified as extensive, semi-intensive, or intensive based on layer thickness and weight per square foot. These classes of green roof have different ramifications for their construction costs, requiring additional engineering and reinforcement of the building structure as the weight of the green roof increases, with intensive rooftop installations requiring the most structural intervention. However, including green rooftops can provide both ecological and aesthetic value, with greater intensiveness in their design allowing for more diverse and layered plantings. Classification specifics are as follows (Green Roof Technologies, n.d.):

Extensive: Purpose- stormwater mitigation. Vegetation- mosses, herbs, grasses, sedums. Overall depth- 4-7 inches. Weight range- 20-40 lb/sf. Ecological compensation - good.

Semi-Intensive: Purpose- stormwater mitigation, biodiversity. Vegetation- mosses, herbs, grasses, sedums, shrubs. Overall depth- 6-10inches. Weight range- 25-60 lb/sf. Ecological compensation- very good.

Intensive: Purpose- stormwater mitigation, biodiversity. Vegetation- mosses, herbs, grasses, sedums, shrubs, perennials, trees. Overall depth- 8-30+ inches. Weight range- 45-160+ lb/sf. Ecological compensation- excellent.



ArchiExpo, n.d.; Asphalttech, n.d.; Briley, n.d.; Bronz, 2017; Chris Van Uffelen, et al., 2017; Diadem, n.d.; Eastgate Supply, n.d.; Green Roof Solutions, n.d.; Green Roof Technology, n.d.; Henry Carlisle Company, n.d.; International Leak Detection, n.d.; ODU, 2018; River Sand Incorporated, n.d.; Velux Commercial, n.d.; Weston Solutions, 2015.



DESIGN

THE WILDFLOWER FIELD

THE WILDFLOWER FIELD

Planting Plan

The Wildflower Field is inspired by the threatened, regional coastal bluff grassland and local dry grassland (aka wildflower fields). All plants are native, highly drought-tolerant, and add ecological benefit; they supports birds, pollinators, and more than 50 moth and butterfly species (Calscape, n.d.). Although shrubs will be planted on this rooftop, the majority of the plant-able area will be seeded with a mix of grasses and wildflowers endemic to each of the plant communities informing this design. This will allow for the plants best suited for the micro climate on the roof to establish, while some species may not thrive.

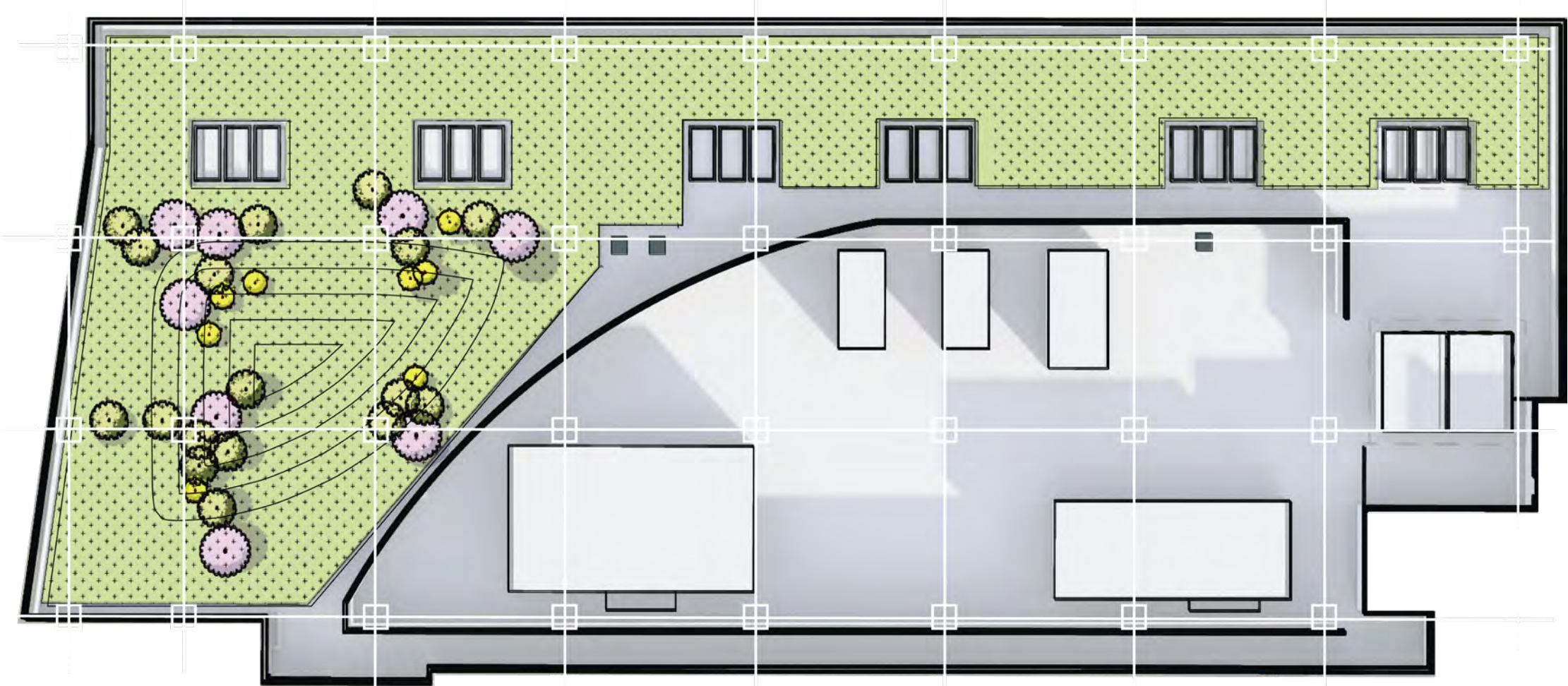
Due to their high drought-tolerance when established, this green roof design is intended to be low maintenance and to not require irrigation once established.

PLANT PALETTE:

-  Black Sage, *Salvia mellifera*
-  Coyote Bush, *Baccharis pilularis*
-  Coastal Bush Lupine, *Lupinus arboreus*
-  Seed Mix, native grasses and wildflowers
 - California Melicgrass, *Melica Californica*
 - Purple Needlegrass, *Stipa pulchra*
 - Red Fescue, *Festuca rubra*
 - Giant Wildrye, *Elymus condensatus*
 - California Poppy, *Escholzia californica*
 - Common Yarrow, *Achillea millefolium*
 - Miniature Lupine, *Lupinus bicolor*
 - Common Tidy Tips, *Layia platyglossa*



Plant Palette Concept (above). Showing the forms, textures, and blooms that might be seen growing on the Wildflower Field green roof.



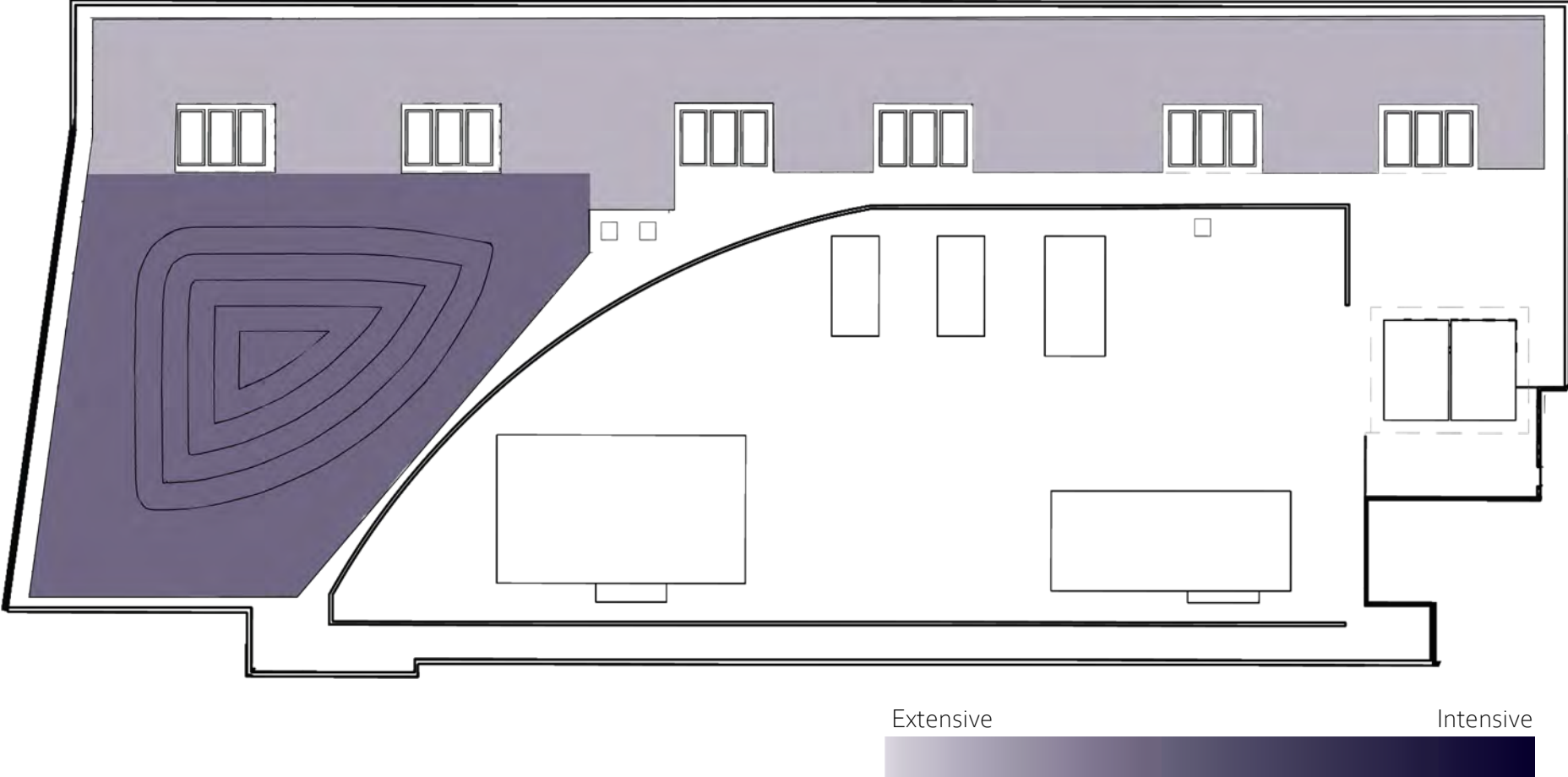
Planting Plan (right). Showing the layout and selection of plants for the wildflower Field green roof.

THE WILDFLOWER FIELD

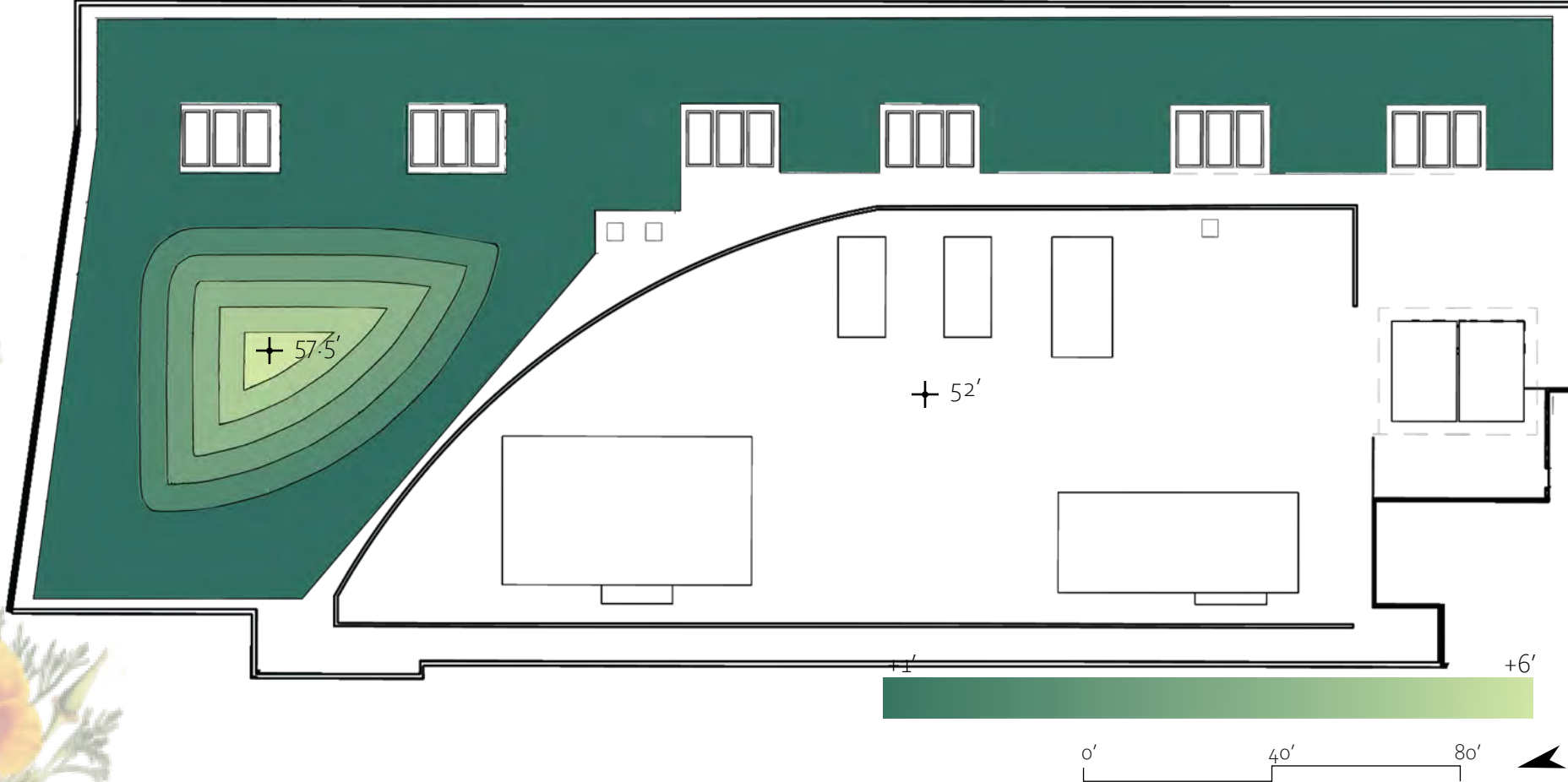
Classification and Elevation

Due to differences in the height of the green roof and varying planting needs, the Wildflower Field contains a mix of intensiveness classifications. The eastern side of the installation, including all of the plant-able space surrounding the skylights, is extensive. These areas will only support grasses and drought-tolerant herbaceous plants. Surrounding the hill at the southern end of the roof is semi-intensive, reflecting the built-up height and a deeper growing media that can also support shrubs.

Green Roof Intensiveness. Showing the areas in this green roof design that are extensive or semi-intensive.



Green Roof Elevations. Showing the relative height of the green roof installation in relation to the elevation of the rooftop.



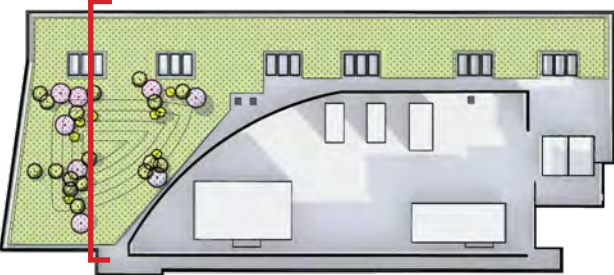
THE WILDFLOWER FIELD

Section 1: Adding to Biophilia

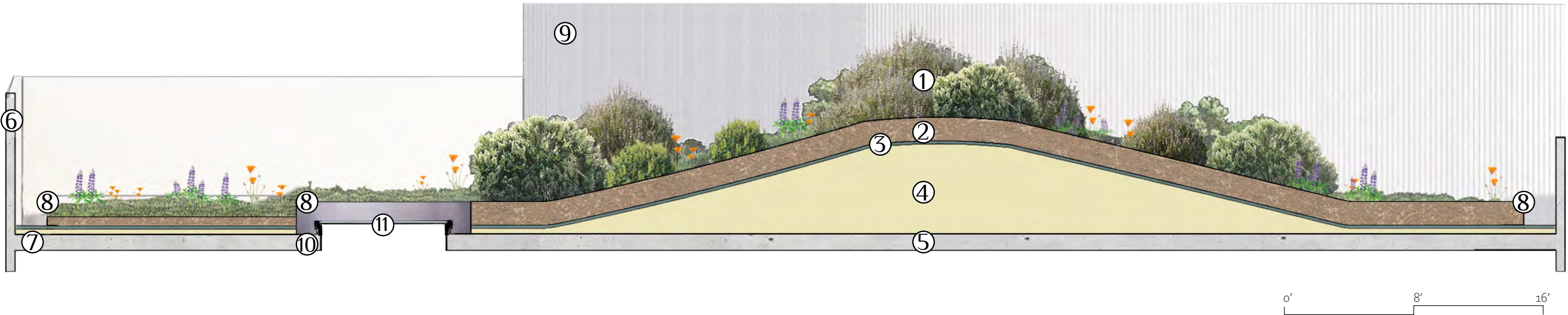
The design for the Wildflower Field, while not intended for human programming, is intended to improve access to nature within the building. Skylights built into the redesigned rooftop bring natural sunlight into the underlying clinics, adding to the biophilic experience within the Kaiser Permanente Medical Complex.

Perspective of the hill and skylights. Skylights installed into this ecological green roof allow for sunlight to flood into the clinics below. This improves access to nature at the Kaiser Permanente Medical Complex, contributing to its biophilic and healing design.

Legend:



- ① Native Plants
- ② Growing Media
- ③ Overlaying Green Roof Layers
- ④ Insulation Layer
- ⑤ Roof Deck
- ⑥ Roof Parapet
- ⑦ 2' Access Buffer
- ⑧ Aluminum Edging
- ⑨ Visual Screen
- ⑩ 1' Access Buffer
- ⑪ Skylight



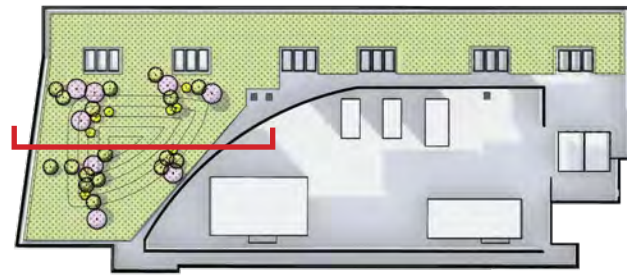
THE WILDFLOWER FIELD

Section 2: A Scenic Landmark

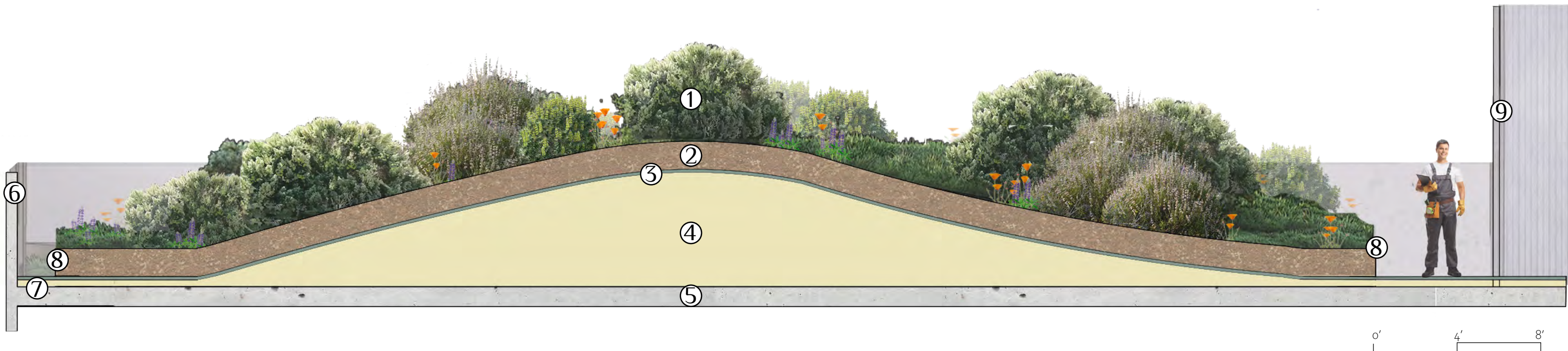
A common complaint in Santa Cruz was the negative impact this structure would have to the aesthetics of the county. In particular, to the view off of the scenic Highway 1. The rooftop of the southern side of the medical complex, proximal to the highway, is full of mechanical equipment. In the original design, a 12' visual screen blocks the rooftop mechanical equipment from view. However, in my design, the footprint of the screen is reduced, and instead viewers from the highway will see a scenic, native hillside. The elevation and plantings on the hill of the green roof partially hides this screen, and also creates a landmark in the Santa Cruz landscape.

Legend:

- ① Native Plants
- ② Growing Media
- ③ Overlaying Green Roof Layers
- ④ Insulation Layer
- ⑤ Roof Deck
- ⑥ Roof Parapet
- ⑦ 2' Access Buffer
- ⑧ Aluminum Edging
- ⑨ Visual Screen



Perspective of the planted hill from the Highway 1. The native, planted hill creates a point of interest along the scenic Highway 1 and blocks the view of necessary mechanical equipment. This new landmark might tempt passerbys to visit the site to investigate this unusual landmark.





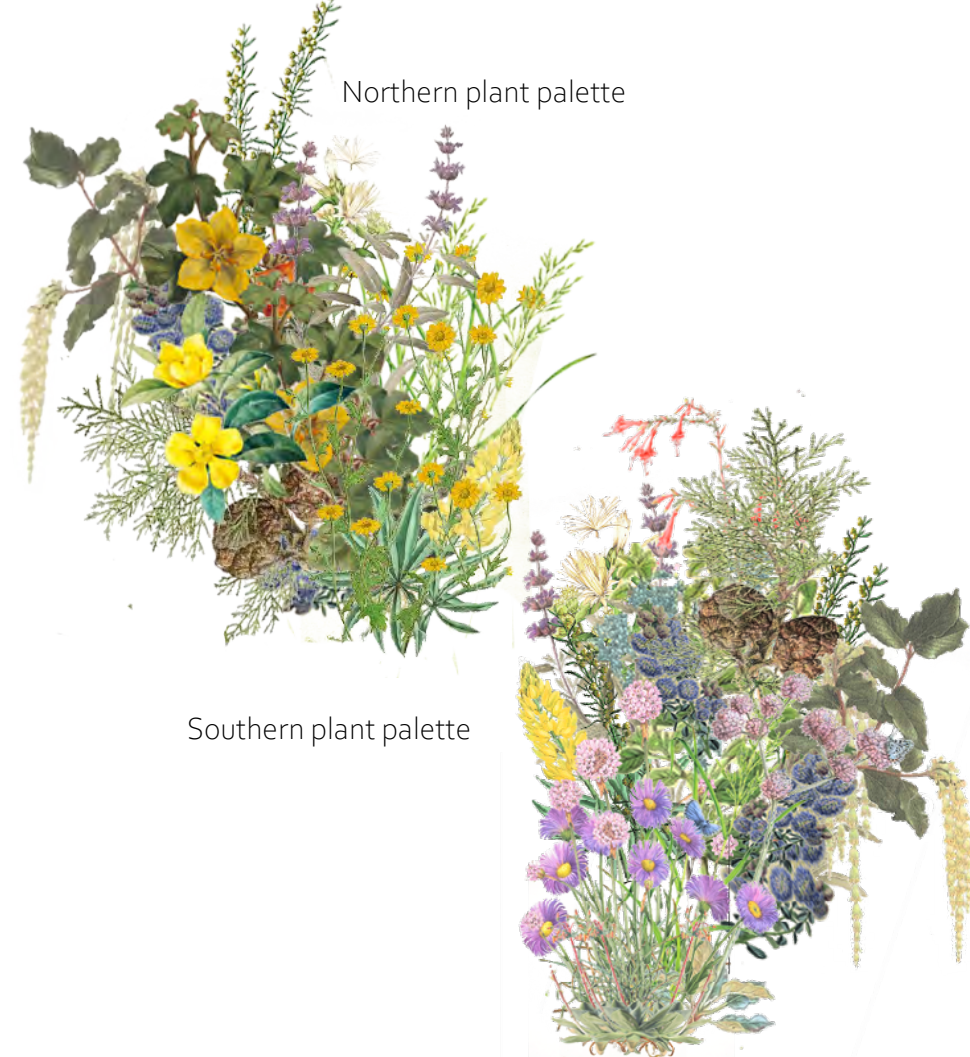
DESIGN

THE COASTAL BLUFF HEALING GARDEN

















THE COASTAL BLUFF HEALING GARDEN

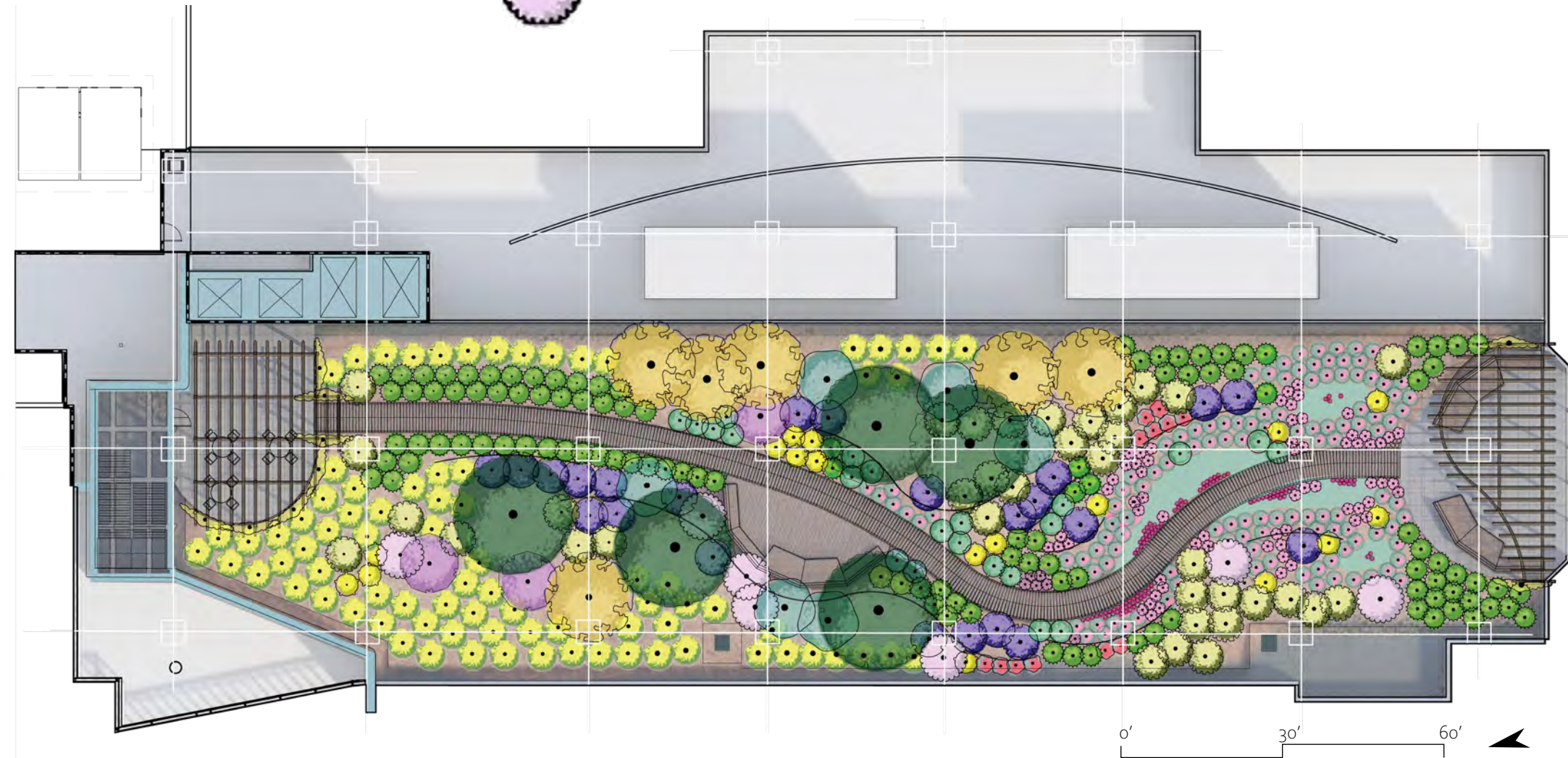
Planting Plan

The plant choices and placement for the Coastal Bluff Healing Garden was decided based on three core concepts: first, using highly drought-tolerant, native plants that either naturally or ornamentally occur on coastal bluffs, with the regional coastal bluff scrub serving as inspiration; second, creating emotional experiences informed by neurological responses to color (Ghuman, 2023; Ry et al., 2021); and lastly, using plants heights, forms, and colors to create distinct rooms or experiences as one progresses along the boardwalk path. The Coastal Bluff Healing Garden begins with a joyful, yellow color palette and then transitions to a tranquil, blue and pink palette as one travels south. This garden design also adds to the ecological impact of this Garden Hospital element, creating habitat for birds, pollinators, and more than 60 species of moth and butterfly, including the endangered Fender's Blue Butterfly (Calscape, n.d).



PLANT PALETTE:

	Santa Cruz Cypress, <i>Cupressus abramsiana</i>		Coyote Bush, <i>Baccharis pilularis</i>
	Flannel Bush, <i>Fremontodendron californica</i>		Coastal Bush Lupine, <i>Lupinus arboreus</i>
	Coast Silkassel, <i>Garrya elliptica</i>		California Sagebrush, <i>Artemisia californica</i>
	California Lilac, <i>Ceanothus thyrsiflorus</i>		Woolly Sunflower, <i>Eriophyllum staechadifolium</i>
	Pt Reyes Ceanothus, <i>Ceanothus gloriosus</i>		Deer Grass, <i>Muhlenbergia rigens</i>
	Black Sage, <i>Salvia mellifera</i>		California Fuschia, <i>Epilobium canum</i>
			Seaside Buckwheat, <i>Erigonum latifolium</i>
			Seaside Daisy, <i>Erigeron glaucus</i> 'Wayne Roderick'
			Sea Thrift, <i>Armeria maritima rubrifolia</i>
			Orchid Vine, <i>Callaeum macropterum</i>
			Bluff Lettuce, <i>Dudleya farinosa</i>



Carmel River Watershed Stewardship Manual, n.d.; Holland, 1986; Keator and Middlebrook, 2007; Santa Cruz County Native Plant Society, n.d.).

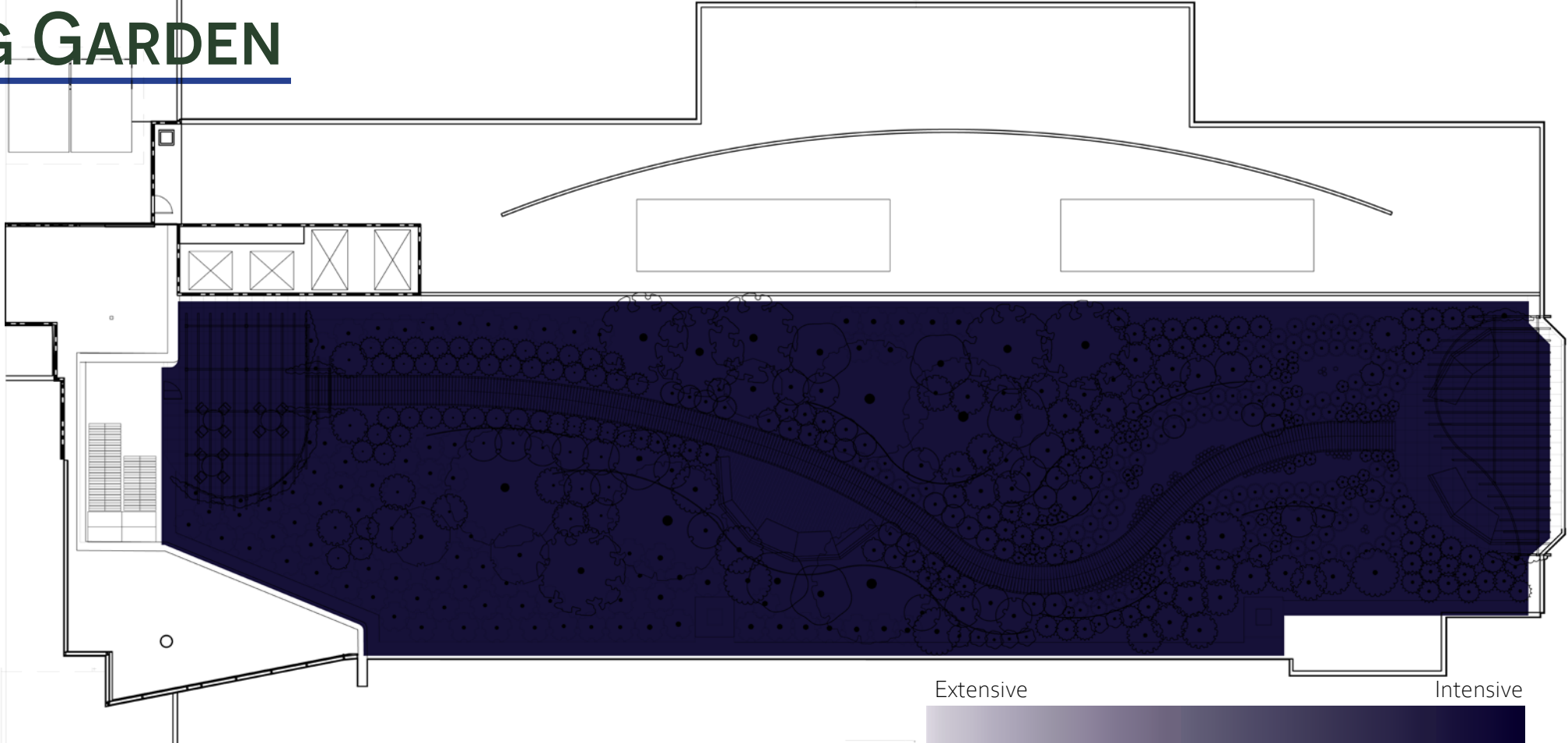
THE COASTAL BLUFF HEALING GARDEN

Classification and Elevation

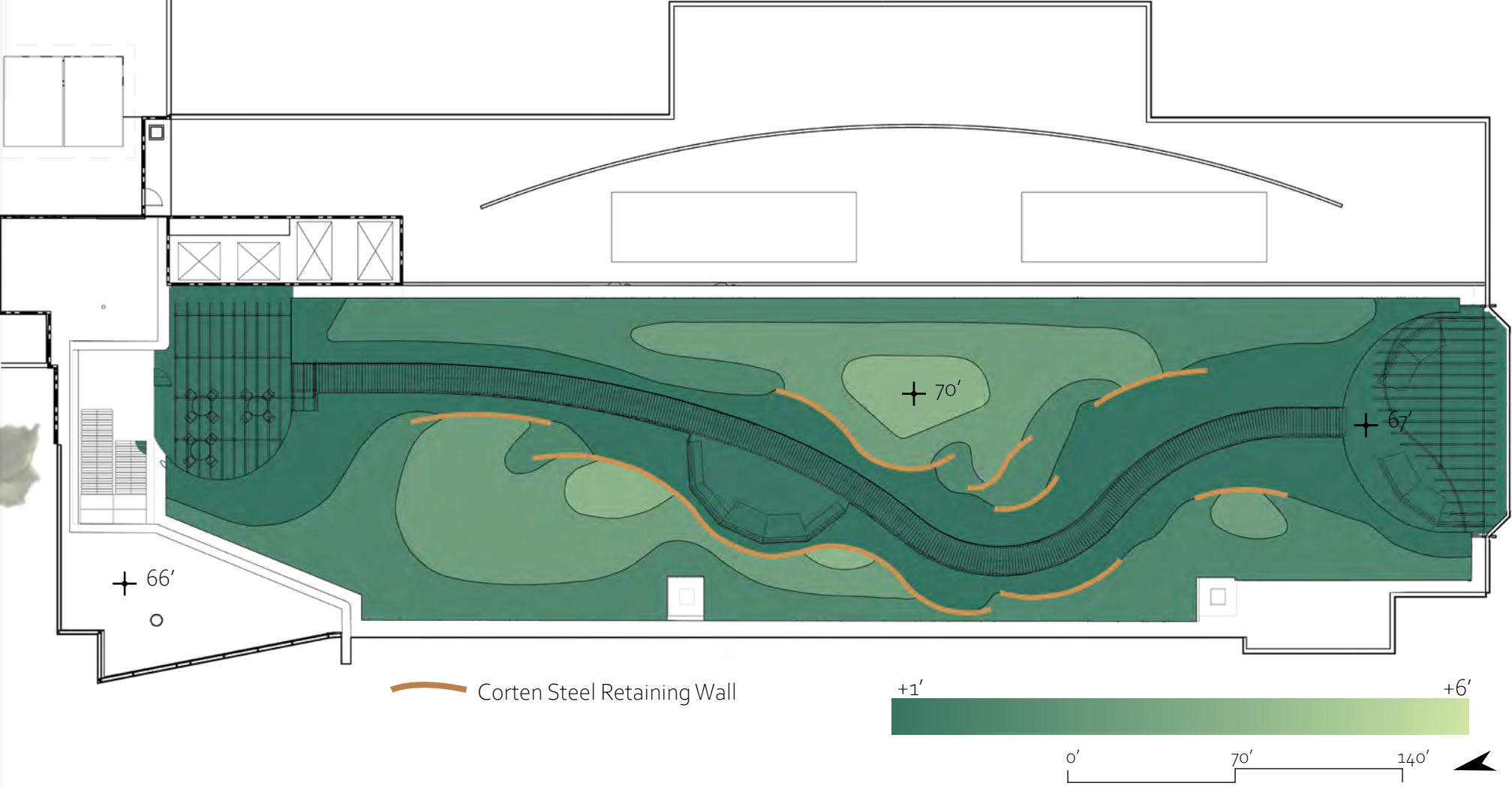
In order to support several species of large shrubs, trees, and perennials, as well as to create an immersive, garden experience, the entire planted area of the Coastal Bluff Healing Garden is classified as intensive. Taking inspiration from coastal bluffs, gently curving corten steel walls support raised topography. This creates moments in which trailing plants might cascade over these miniaturized bluffs. The topography also contributes to establishing both garden “rooms” and a sense of hide-and-reveal, making the healing garden feel more expansive and providing different experiences as one meanders down the boardwalk path.



Green Roof Intensiveness. Showing the areas in this green roof design that are extensive or semi-intensive.



Green Roof Elevations. Showing the relative height of the green roof installation in relation to the elevation of the rooftop. Corten steel retaining walls are used to support the varying topography and are also shown.



THE COASTAL BLUFF HEALING GARDEN

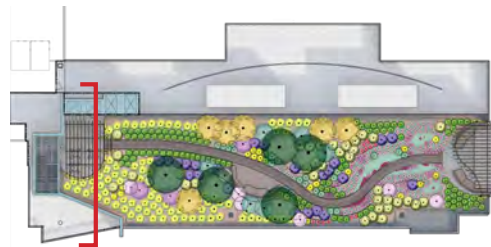
Section 1: A Joyful, Quiet Room

Once the visitor reaches the Coastal Bluff Healing Garden using the elevator or stairs, they will enter the first room of the space. Dominated by a calming, seafoam blue wall and sunny yellow flowers, this room exudes a sense of tranquil joy. Here, the sounds of the nearby highway are muffled by walls, as well as foliage that surrounds the visitor on a wooden trellis. Dappled sun provides light to this sheltered space, tempting the visitor to sit with a coffee or lunch from the cafe at the ground floor and unwind.

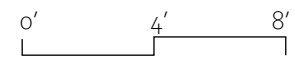
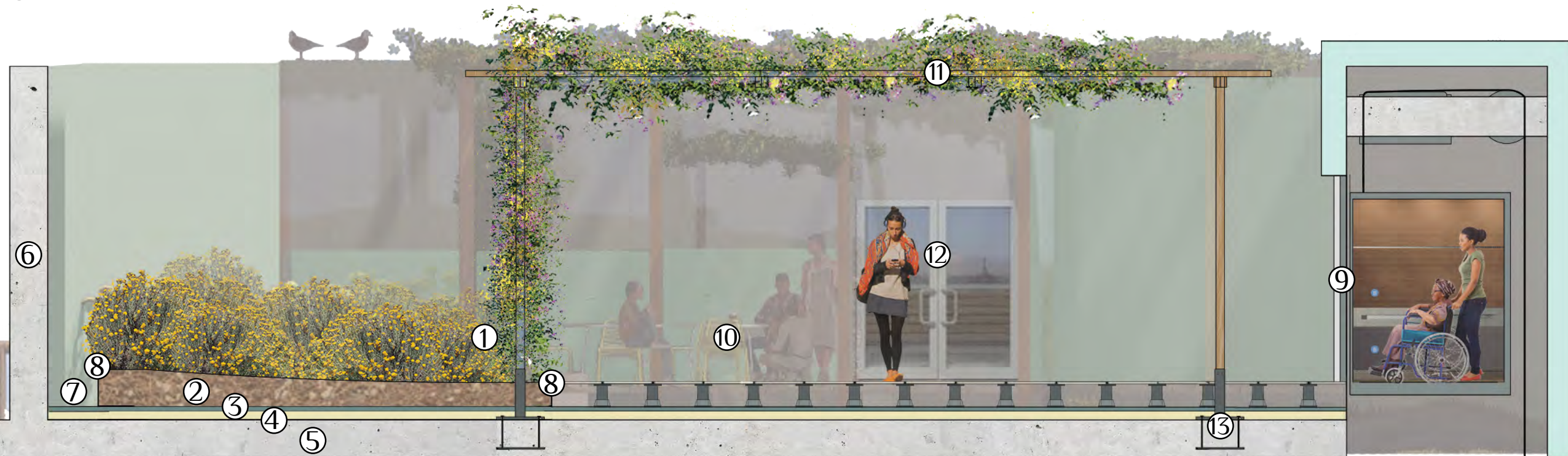
Perspective of the entry room.
Yellow blooms from Orchid Vine and Woolly Sunflowers contrast against seafoam blue walls, contributing to a calm, happiness. This sun-dappled entrance to the healing garden also acts as additional cafe seating for the Verve Coffee on the ground floor.



Legend:



- ① Native Plants
- ② Growing Media
- ③ Overlaying Green Roof Layers
- ④ Insulation Layer
- ⑤ Roof Deck
- ⑥ Roof Parapet
- ⑦ 2' Access Buffer
- ⑧ Aluminum Edging
- ⑨ Elevator
- ⑩ Tables and Chairs
- ⑪ Pergola
- ⑫ Stairway Entrance
- ⑬ Anchored Post Base



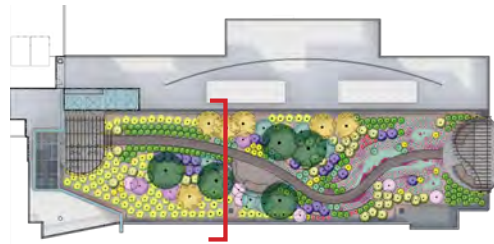
THE COASTAL BLUFF HEALING GARDEN

Section 2: Entering the Coastal Bluff

As one enters the Coastal Bluff Healing Garden, the initial plant palette has sunny yellows contrasted against a seafoam blue wall, creating a joyful and peaceful space. In this first experience within this healing garden, the visitor will find themselves in a lush meadow of Woolly Sunflowers abuzz with a host of native insects. Use of contrasting purples and hide-and-reveal spur the user to stroll along a scenic boardwalk.

Perspective of the boardwalk leading into the healing garden. A formal line of deer grass lines the boardwalk as it goes through a lush meadow of Woolly Sunflowers. Majestic, windswept Santa Cruz Cypress create a dark contrast and tempt the visitor to move along the path.

Legend:



- ① Native Plants
- ② Growing Media
- ③ Overlaying Green Roof Layers
- ④ Insulation Layer
- ⑤ Roof Deck
- ⑥ Roof Parapet
- ⑦ 2' Access Buffer
- ⑧ Aluminum Edging
- ⑨ Visual Screen
- ⑩ Corten Steel Retaining Wall
- ⑪ Boardwalk
- ⑫ Curb
- ⑬ Smart Drain
- ⑭ Waterproofing continues



THE COASTAL BLUFF HEALING GARDEN

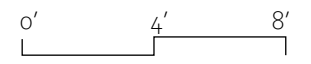
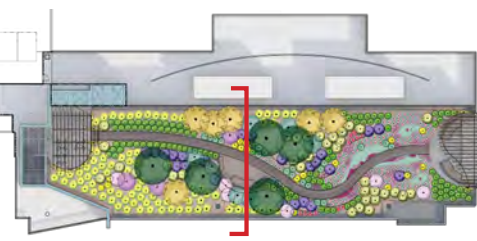
Section 3: The Cypress Seating Circle

At the center of the Coastal Bluff Healing Garden is the Cypress Seating Circle. Benches and lounge spaces sit under the majestic, windswept forms of Santa Cruz Cypress, proving a pleasant space to socialize or relax. This seating circle also doubles as a turnout or resting space, complying with ADA regulations and making the garden more usable for elderly and disabled visitors.

Perspective of Cypress Seating Circle. Showing a small gathering of visitors enjoying the lounge space and the now colorful and diverse native planting. At the center of the healing garden, the greatest variety of plant species are visible in this space, surrounding the user in a prismatic display of purples, pinks, blues, yellows, and greens.

Legend:

- ① Native Plants
- ② Growing Media
- ③ Overlaying Green Roof Layers
- ④ Insulation Layer
- ⑤ Roof Deck
- ⑥ Roof Parapet
- ⑦ 2' Access Buffer
- ⑧ Aluminum Edging
- ⑨ Visual Screen
- ⑩ Corten Steel Retaining Wall
- ⑪ Boardwalk
- ⑫ Curb
- ⑬ Boardwalk Turnout
- ⑭ Lounge Seating
- ⑮ Seating



THE COASTAL BLUFF HEALING GARDEN

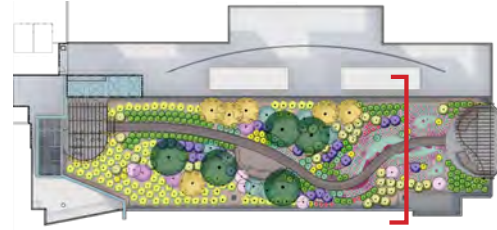
Section 4: Approaching the Bluff's Edge

Once the visitor reaches the southern portion of the Coastal Bluff Healing Garden, the plantings become lower and the topography becomes more flat. This new visual experience prepares the visitor for this garden's final surprise!

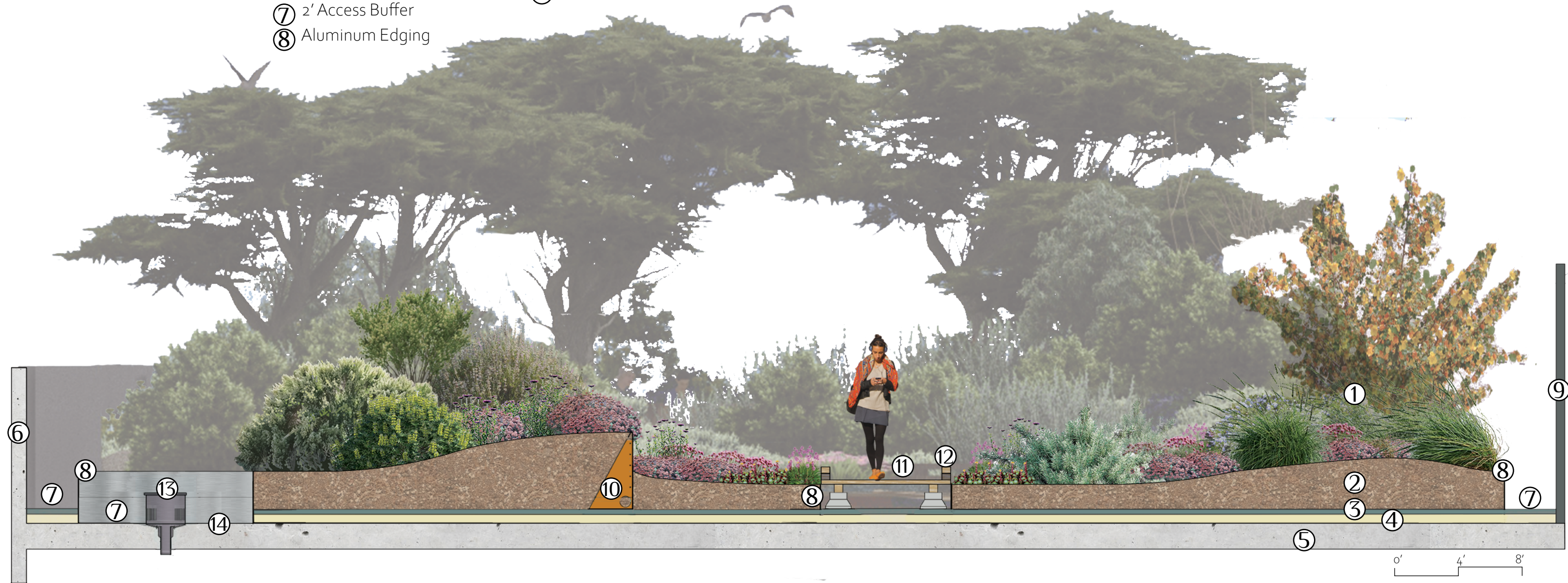
Perspective of the boardwalk along the bluff's edge. Showing the blue and pink dominated plantings and flatter topography.



Legend:



- ① Native Plants
- ② Growing Media
- ③ Overlaying Green Roof Layers
- ④ Insulation Layer
- ⑤ Roof Deck
- ⑥ Roof Parapet
- ⑦ 2' Access Buffer
- ⑧ Aluminum Edging
- ⑨ Visual Screen
- ⑩ Corten Steel Retaining Wall
- ⑪ Boardwalk
- ⑫ Curb
- ⑬ Smart Drain
- ⑭ Waterproofing continues



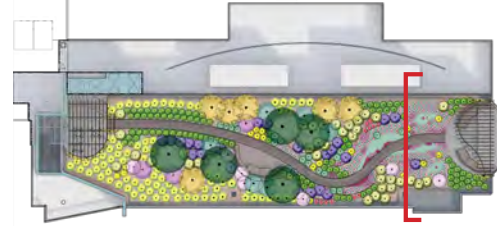
THE COASTAL BLUFF HEALING GARDEN

Section 5: A Stunning Ocean View

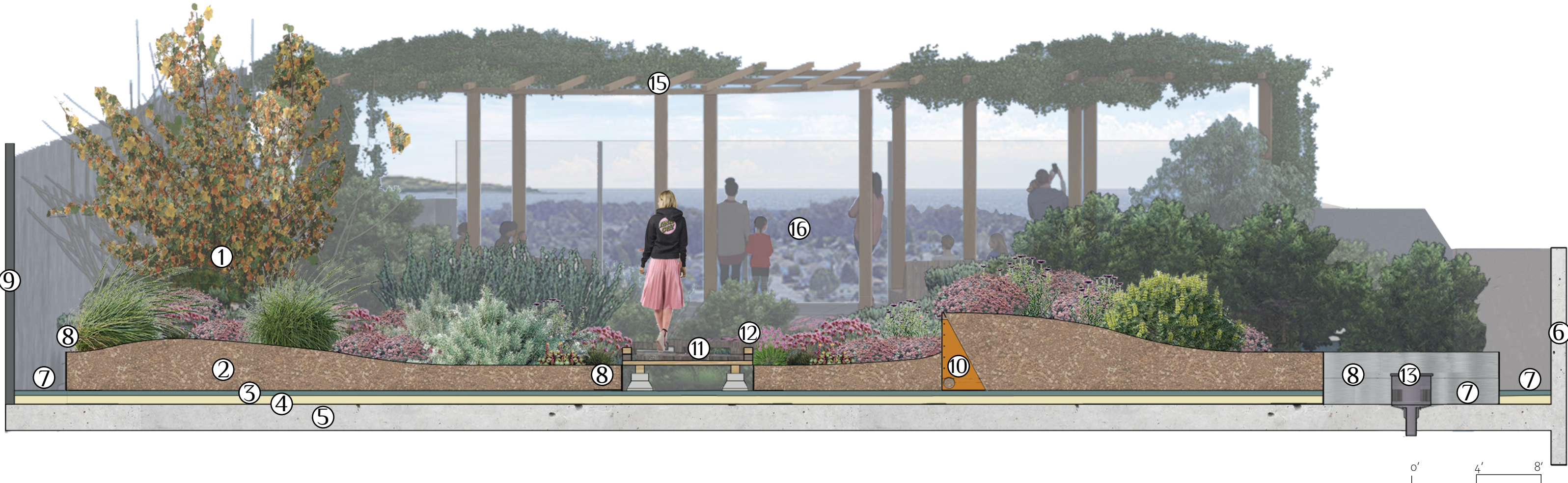
At the edge of the Coastal Bluff Healing Garden is a stunning ocean view! By taking advantage of the height of this structure, which towers above all other buildings in the area, the roof of the Kaiser Permanente Medical Complex becomes like a bluff overlooking the Monterey Bay.

Perspective of the view point and its ocean view. Showing the view of the Monterey Bay from the rooftop elevation of the Kaiser Permanente Medical Complex.

Legend:



- ① Native Plants
- ② Growing Media
- ③ Overlaying Green Roof Layers
- ④ Insulation Layer
- ⑤ Roof Deck
- ⑥ Roof Parapet
- ⑦ 2' Access Buffer
- ⑧ Aluminum Edging
- ⑨ Visual Screen
- ⑩ Corten Steel Retaining Wall
- ⑪ Boardwalk
- ⑫ Curb
- ⑬ Smart Drain
- ⑭ Waterproofing continues
- ⑮ Pergola
- ⑯ 8' Glass Viewing Wall



An aerial photograph of a large, modern hospital campus with multiple interconnected buildings. The foreground is dominated by a lush, dense garden with various flowers, including yellow and purple blooms, and green foliage. The background shows a vast residential area with many houses and a body of water in the distance under a clear sky.

CLOSING REMARKS






THE EXPERIENCE AT THE GARDEN HOSPITAL

DISCUSSION

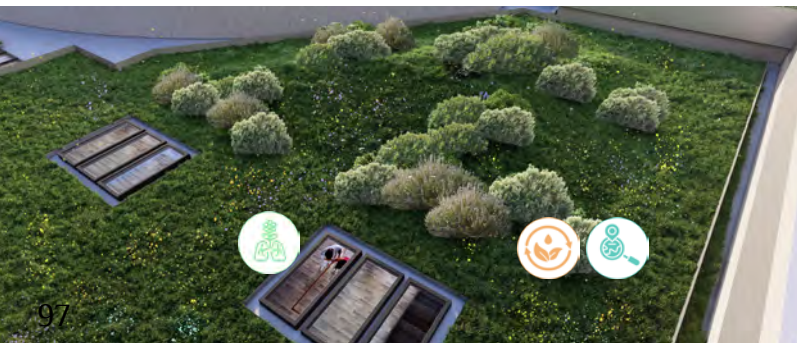
The Garden Hospital Typology in the Design

While this design is not rooted in feasibility, this project hopes to create a new vision of what healthcare spaces could be, and can inspire a new chapter of their design. The Garden Hospital Typology revolves around 5 core concepts that are intended to bolster healing and the wellbeing of the community. These core concepts include community space, healing space, sustainability, biophilic design, and response to local context. Looking back at some of the designed spaces at this re-imagined Kaiser Permanente Medical Complex, here are some examples of how the Garden Hospital typology is included in the design:

Legend:

-  Healing Space
-  Sustainability
-  Community Space
-  Biophilia
-  Response to Local Context

“The Garden Hospital as a biophilic design for medical landscapes that creates a space of gathering and community. For while nature is healing, normalcy and community too are pillars of individual health. The intent of the Garden Hospital is to design a site so that it responds to the ecological, environmental, and cultural systems of a site, bringing the spirit of the landscape and its people into healthcare infrastructure in a way that encourages it to become a part of everyday life, and not just when life is interrupted by illness.”



CONCLUSION

The Garden Hospital Experience

Upon entering this landscape, the visitor is greeted by lush, billowing grass and wildflowers, and tall redwood trees. Birds and insects might flit past their vision, tempted by native blooms or pockets of habitat. As they near the main entrance, they might hear the cheerful chatter of people or the rambunctious yells of players on the bocce ball courts just a little further south. The visitor pushes open the doors to enter the medical complex and can hardly believe they have stepped inside. Vibrant vegetation and the tantalizing smell of coffee and pastries captures the visitor's senses. A gentle sound of flowing water from a small fountain in the entry lobby calms them, and the visitor decides they might stay for a while after their appointment is done. As they turn to find the clinic they are scheduled to visit, they notice signage about the Coastal Bluff Healing Garden on the roof, and make a point of going there first once their visit is done.

The visitor feels at peace when leaving their appointment. Usually they can't shake off their discomfort and anxiety, but throughout their experience they could see trees and the gentle illumination of sunlight. Their provider seemed to be at ease too, and the visitor felt that their needs were heard and that they received amazing care.

Although they had now finished their appointment, this visitor is in no hurry to leave. Excited to continue exploring this beautiful landscape, they step onto the elevator. The space around them is soon filled by a group of friends who looked more like they were there for fun than to visit the various clinics at the Kaiser Permanente Medical Complex. The visitor had almost forgotten how the outside felt more like a public park after their visit, since the waiting rooms and clinics remained private.

The elevator doors open and the visitor is stunned by a gorgeous garden. Vibrant, yellow flowers fill their vision, and they excitedly walk along a wooden boardwalk that is reminiscent of those they had walked on across bluffs and beach sand. The group the visitor came up with steps off the trail. They all stretch out on long lounge benches in the dappled sun under Santa Cruz Cypress trees. The visitor carries on, and notices how the healing garden begins to change, becoming low and dominated by the blues and pinks of plants they know from ocean bluffs. Once they finally reach the end, the visitor gasps in surprise. In front of them they can see the Monterey Bay, and for a moment it seemed to the visitor that they could be standing on the bluff's edge to marvel at this view. While before the visitor disliked the medical complex's height, standing several stories above the other buildings in the area, they thought this was such a neat way to create an experience that everyone could enjoy. Certainly, the visitor realized, many of the people there were visiting the Kaiser Permanente Medical Complex to socialize and relax, and not to receive medical care.

A flash of red draws the visitors gaze downward towards a vibrantly colored bocce ball rolling down the court. The visitor notices that not only the recreational space, but a meandering path through coastal live oaks and familiar shrubs, similar to their favorite trails at the Pogonip or Wilder Ranch. The visitor notes how well the plantings mimic the local landscape, and it reminds them of their visits to the redwoods, coastlines, oak forests and savannas across the Monterey Bay Area. The experience today was fun, the visitor realizes with some surprise. And they look forward to coming back.

A week later, the elevator doors open, and the visitor steps inside. A group of people step in with them, surrounding the visitor. The visitor smiles at all of their wide eyed friends, all warm from a game of bocce ball outside. It was all their first time at the new Kaiser Permanente Medical Complex, and the visitor was looking forward to seeing their reaction to the surprise awaiting them at the bluff's edge. As they made their way there, the visitor smiled at the doctor who treated them at their last visit, and the doctor waved back as they settled at a cafe table near the glowing meadow of Woolly Sunflowers.

This medical complex was so different, the visitor thought. The usual sense of anxiety and overwhelm was nowhere to be seen. It was hard to separate who was there to receive care from those just there for fun, and even those dressed as staff seemed equally happy. Why couldn't all hospitals and clinics be like this? The visitor shrugged, and supposed that a change might be coming to healthcare landscapes. They hoped that someday, they all might become gardens too.



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